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ATTACHMENT NO. 6-21 TO SPECIAL AGREEMENT FOR CONSTRUCTION, MAINTENANCE AND OPERATIONS OF CONTINUOUS HIGHWAY ILLUMINATION SYSTEM WITHIN A MUNICIPALITY, DATED MARCH 16, 1993. THE CITY-STATE CONSTRUCTION, MAINTENANCE AND OPERATION RESPONSIBILITIES SHALL BE AS HERETOFORE AGREED TO, ACCEPTED, AND SPECIFIED IN THE AGREEMENT TO WHICH THESE PLANS ARE MADE A PART.

CITY OF EL PASO

NAME	TITLE	DATE

STATE OF TEXAS DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. STP 2021(688)HES

SH 20 DONIPHAN DR. EL PASO COUNTY

CCSJ: 0001-01-063, ETC.

NET LENGTH OF ROADWAY (CCSJ: 0001-01-063) = 14,750.00FT. = 2.793 MI.
NET LENGTH OF ROADWAY (CSJ: 0001-01-066) = 13,640.00FT. = 2.583 MI.
NET LENGTH OF BRIDGE = 0.00FT. = 0.000 MI.
NET LENGTH OF PROJECT = 14,750.00FT. = 2.793 MI.

LIMITS (CCSJ 0001-01-063): FROM 0.598 MI. NORTH OF SH 178 TO 0.553 MI. NORTH OF PA 2401
LIMITS (CSJ 0001-01-066): FROM 0.598 MI. NORTH OF SH 178 TO 0.753 MI. NORTH OF PA 2401

FOR THE CONSTRUCTION OF OPERATIONAL IMPROVEMENTS OF EXISTING ROADWAY CONSISTING OF MEDIANS, SIDEWALKS, ILLUMINATION, SIGNING AND PAVEMENT MARKING

DESIGN SPEED:
SH 20 (DONIPHAN DR.) = 45 MPH
A.D.T. (2019) = 20071
A.D.T. (2039) = 24085

CONT	SECT	JOB	HIGHWAY
0001	01	063, ETC.	SH 20
DIST	COUNTY		SHEET NO.
ELP	EL PASO		1

CONTRACTOR: _____
TIME CHARGES BEGAN: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS COMPLETED: _____
DATE WORK WAS ACCEPTED: _____
TOTAL DAYS CHARGED: _____
ORIGINAL CONTRACT AMOUNT: \$ _____
AMOUNT OF CONTRACT AMENDMENTS: \$ _____
FINAL CONTRACT COST: \$ _____

_____ 20 _____

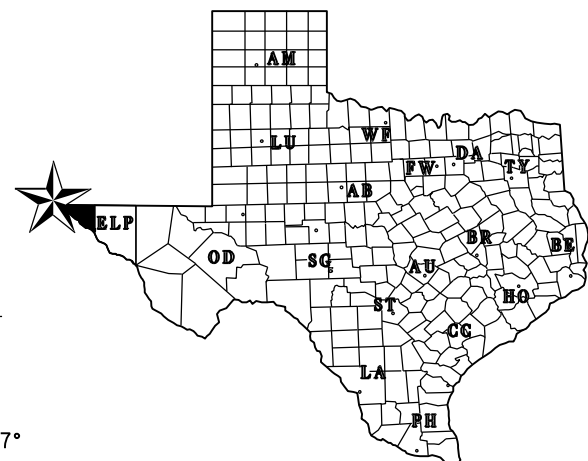
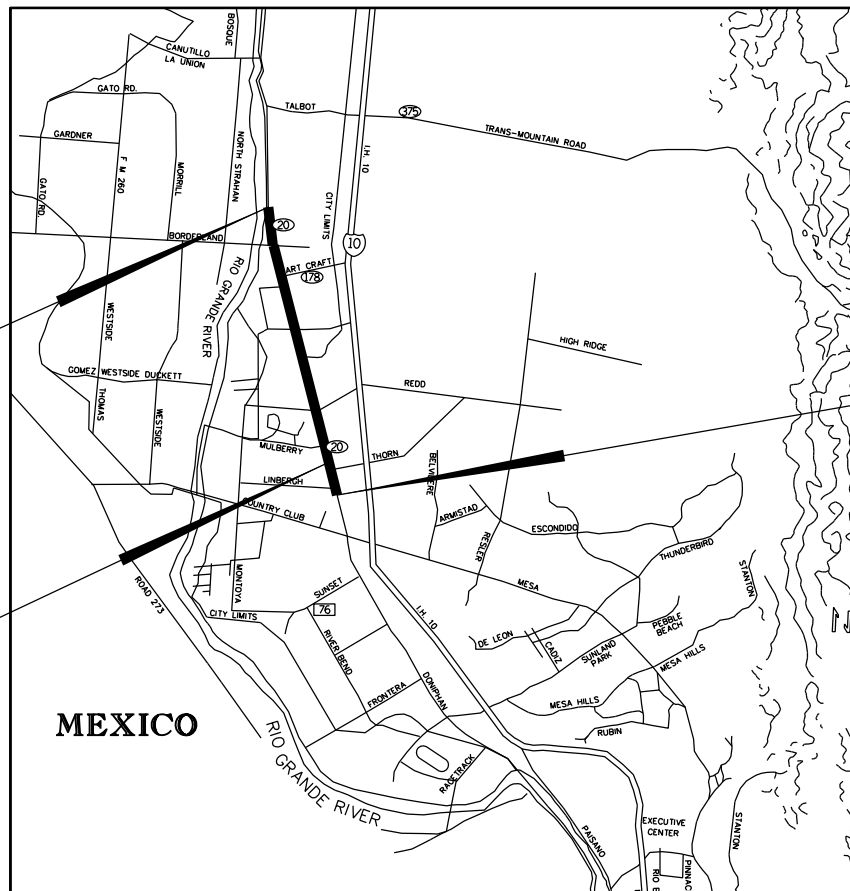
AREA ENGINEER

NOTE:
REFERENCE MARKERS AND MILE POINTS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY. THE PROJECT LIMIT STATIONS SHOWN REPRESENT THE PROJECT CONSTRUCTION LENGTH. THE PROJECT QUANTITIES ARE BASED ON THE STATION, NOT THE REFERENCE MARKERS AND MILE POINTS.

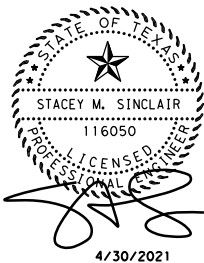
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CSJ: 0001-01-066
STA: 151+50.00
RM: 314+1.84
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LONG: -106.5971306°

BEGIN PROJECT
CCSJ: 0001-01-066
STA: 15+10.00
RM: 318+0.438
LAT: 31.8516275°
LONG: -106.5837728°

BEGIN PROJECT
CCSJ: 0001-01-063
STA: 4+00.00
RM: 318+0.638
LAT: 31.8488668°
LONG: -106.5826997°



KEY TO COUNTIES



4/30/2021

COUNTY: _____ PROJ. NO. _____
HWY. NO. _____ LETTING DATE _____
DATE ACCEPTED _____



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

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: WORK IS PARALLEL TO TRACKS AND NOT AT CROSSINGS FROM MP 1144.23 TO MP 1146.92

REGISTERED ACCESSIBILITY SPECIALIST
(RAS) INSPECTION REQUIRED
TDLR No. EABPRJ TABS2021012362

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 14 THRU BC (12)- 14 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".



RECOMMENDED FOR LETTING: 5/4/2021

DocuSigned by:
Eduardo Perales, P.E.
2778C60A85F7426... SAFETY REVIEW COMMITTEE CHAIRMAN

RECOMMENDED FOR LETTING: 5/4/2021

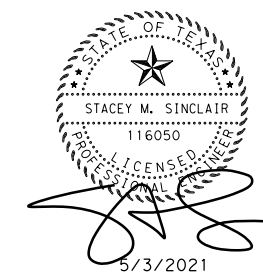
DocuSigned by:
L. Raul Ortega Jr., P.E.
0F175... DISTRICT DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 5/5/2021

DocuSigned by:
Tom ... P.E.
7A68C5EA0D94... DISTRICT ENGINEER

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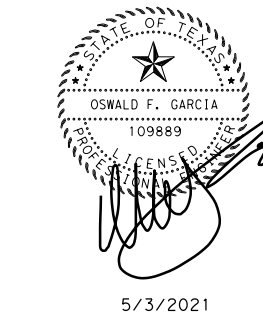
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Infrastructure Solutions
Firm Registration Number 420

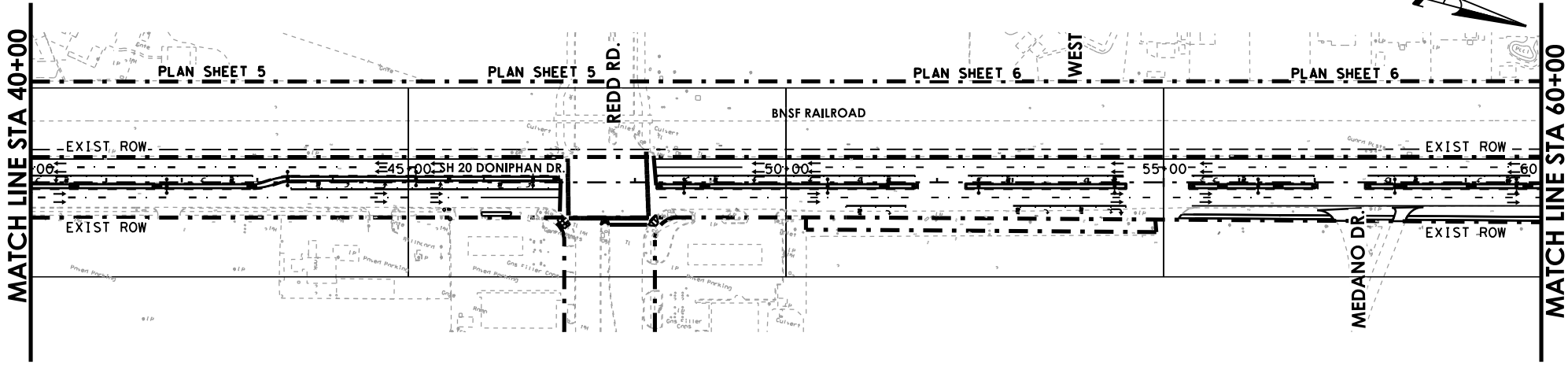
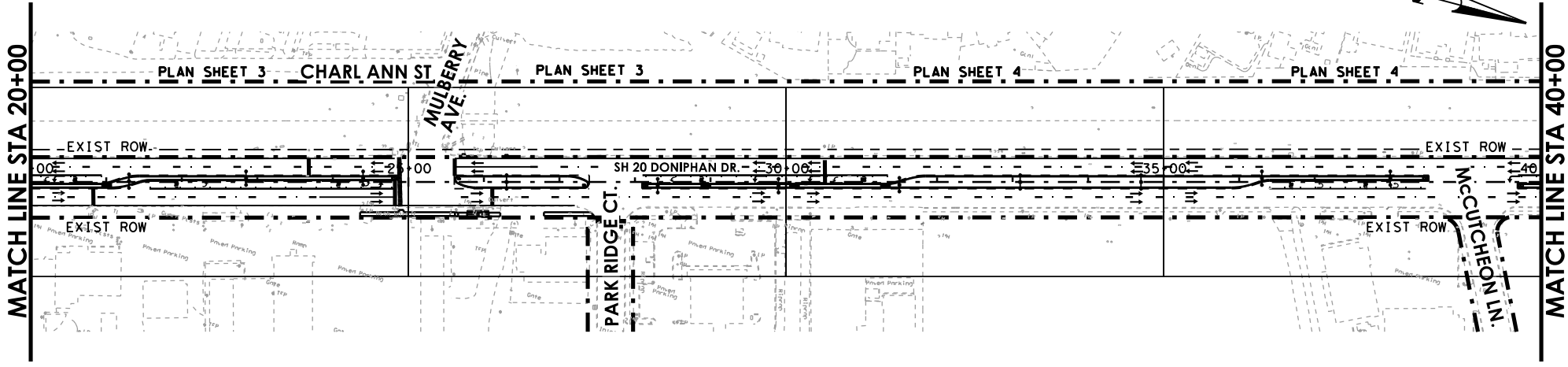
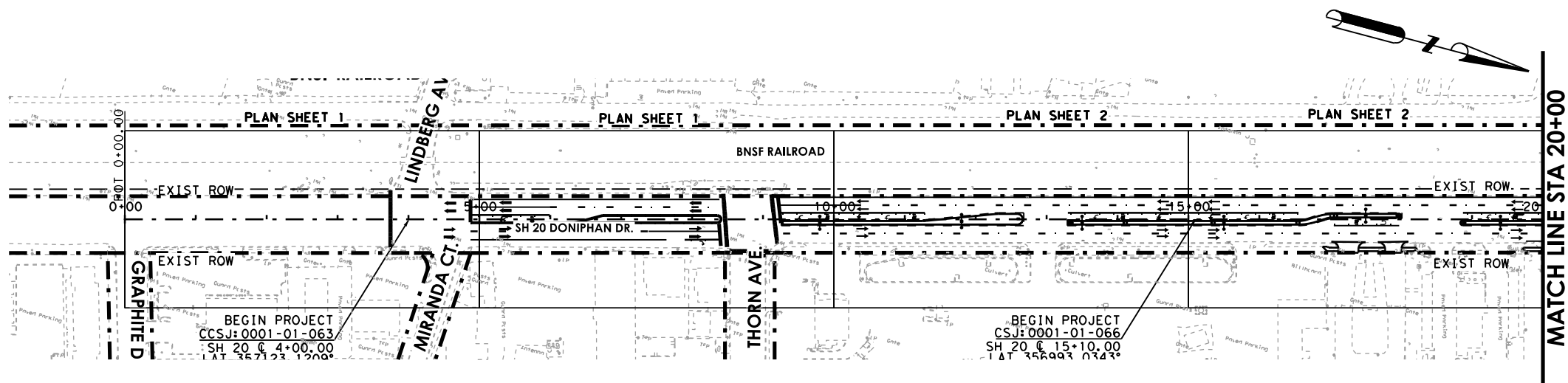
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**SH 20
DONIPHAN DR.
INDEX OF SHEETS**

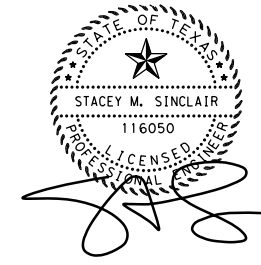
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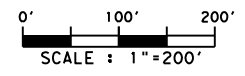
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NOTES:
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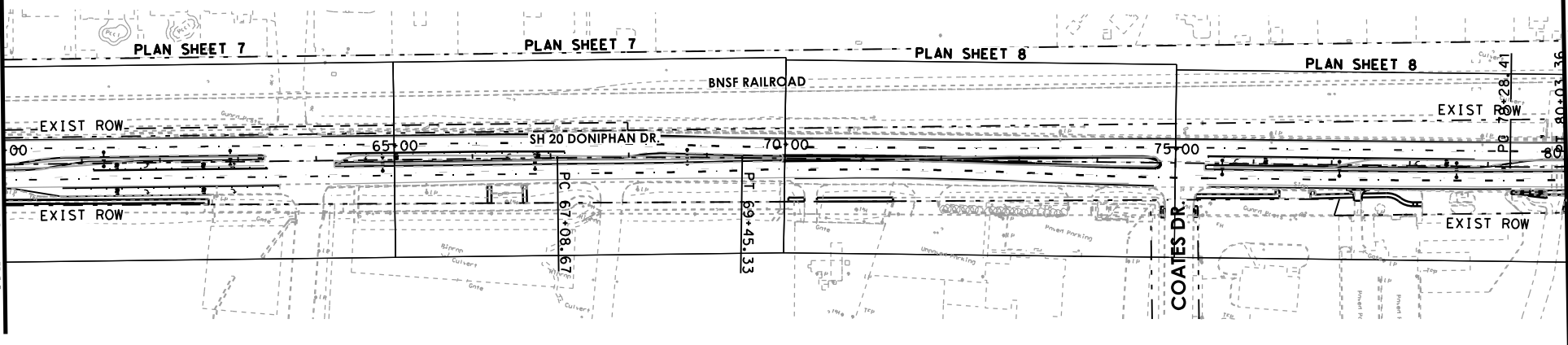
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		© 2021			
SH 20 DONIPHAN DR. PROJECT LAYOUT BEGIN TO STA. 60+00					
SHEET 1 OF 3					
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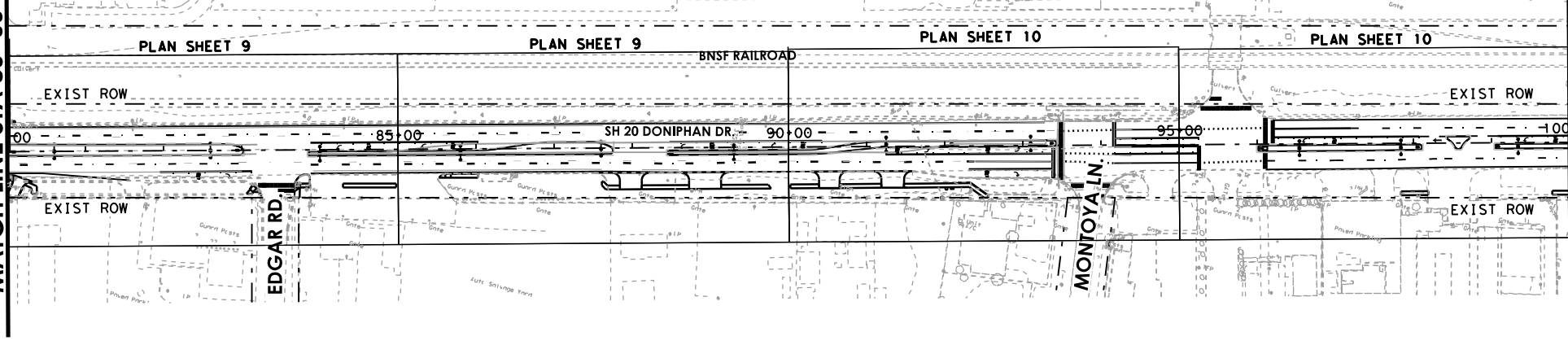
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MATCH LINE STA 60+00



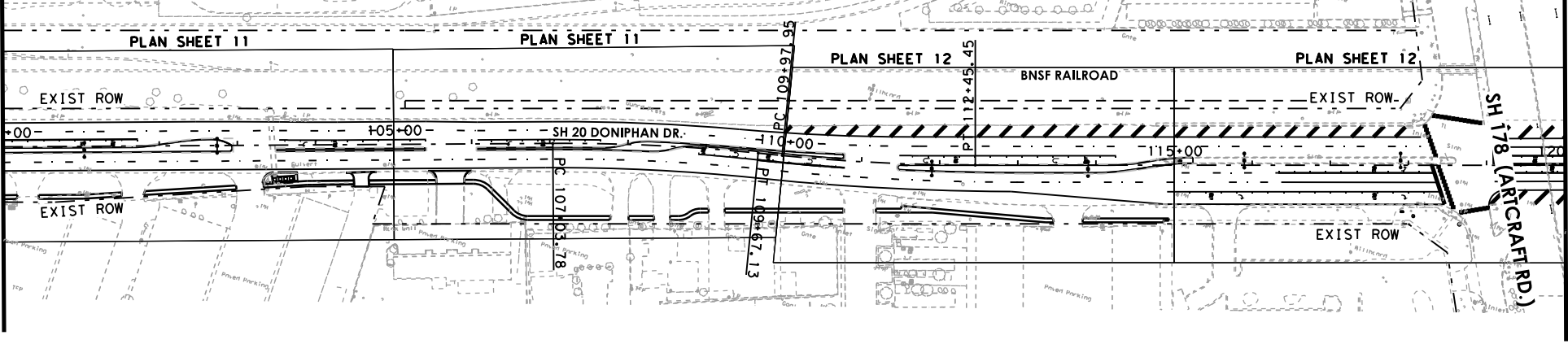
MATCH LINE STA 80+00

MATCH LINE STA 80+00



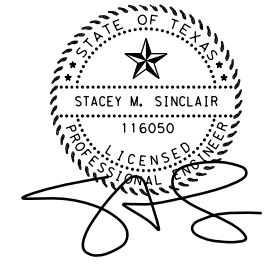
MATCH LINE STA 100+00

MATCH LINE STA 100+00

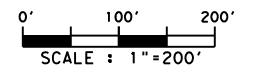


MATCH LINE STA 120+00

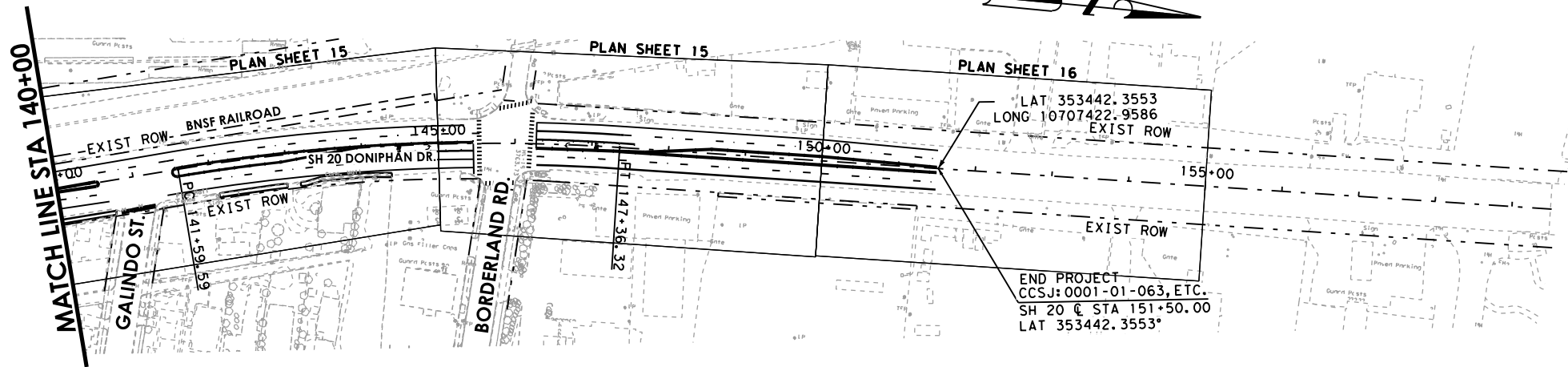
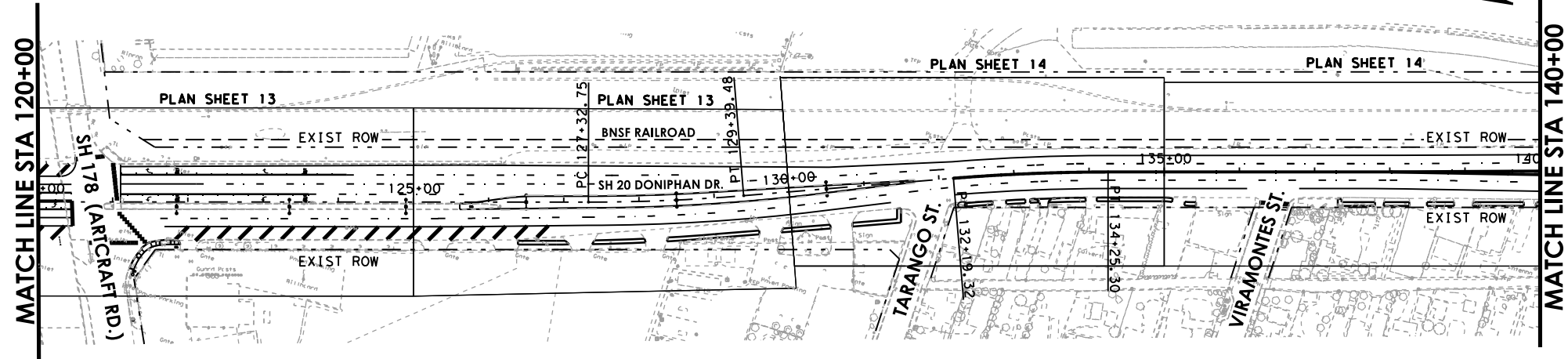
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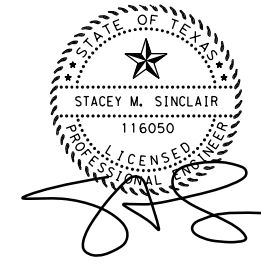
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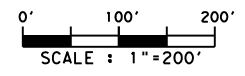
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PROJECT LAYOUT					
STA. 60+00 TO STA. 120+00					
SHEET 2 OF 3					
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NOTES:
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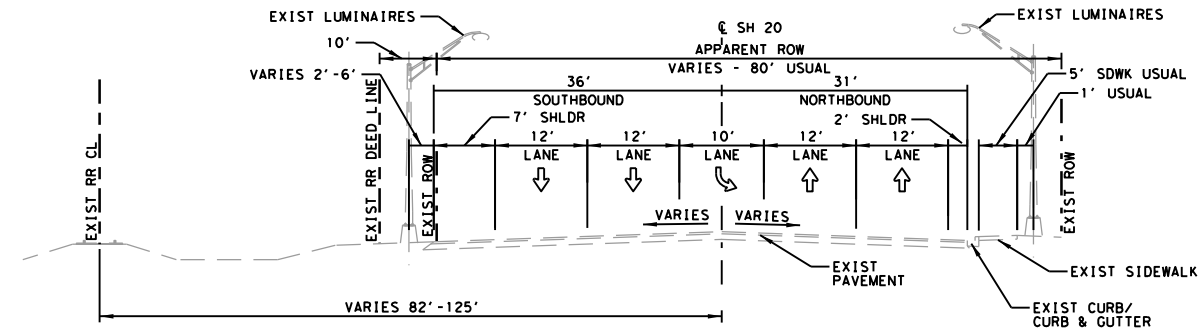


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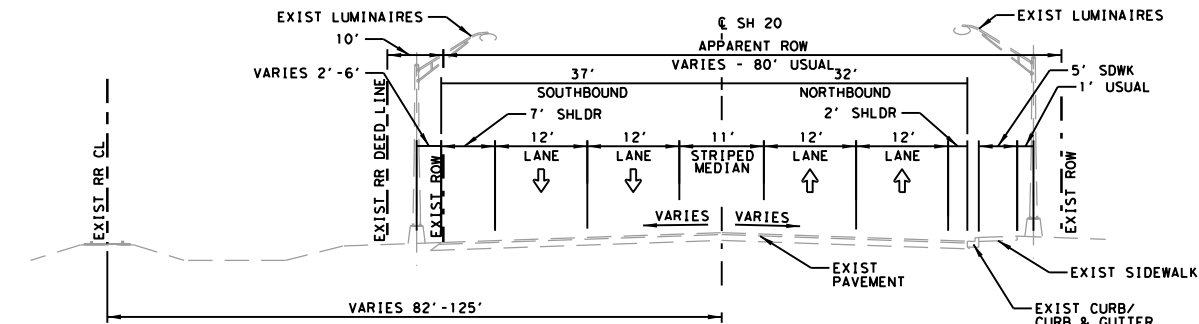
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PROJECT LAYOUT STA. 120+00 TO END					
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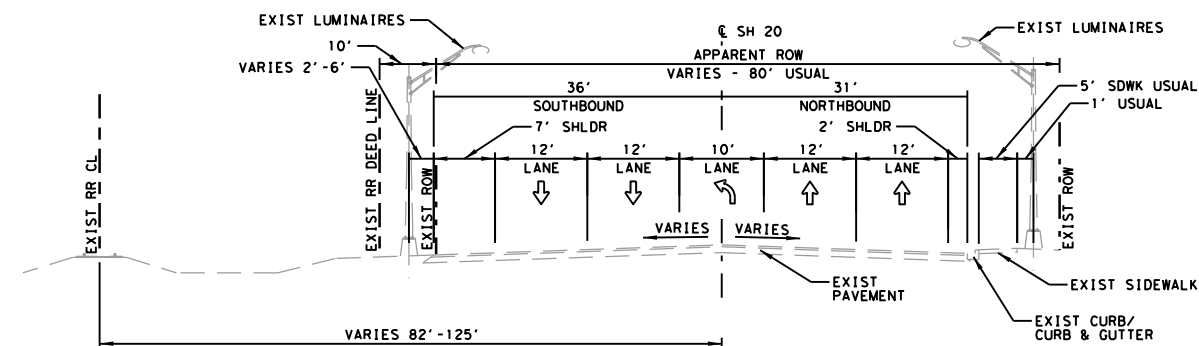
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STA 4+00 TO STA 12+00
 STA 47+00 TO STA 50+20
 STA 52+00 TO STA 52+50
 STA 55+00 TO STA 56+00
 STA 57+00 TO STA 60+00
 STA 75+00 TO STA 77+00
 STA 83+50 TO STA 85+00
 STA 146+00 TO STA 148+00



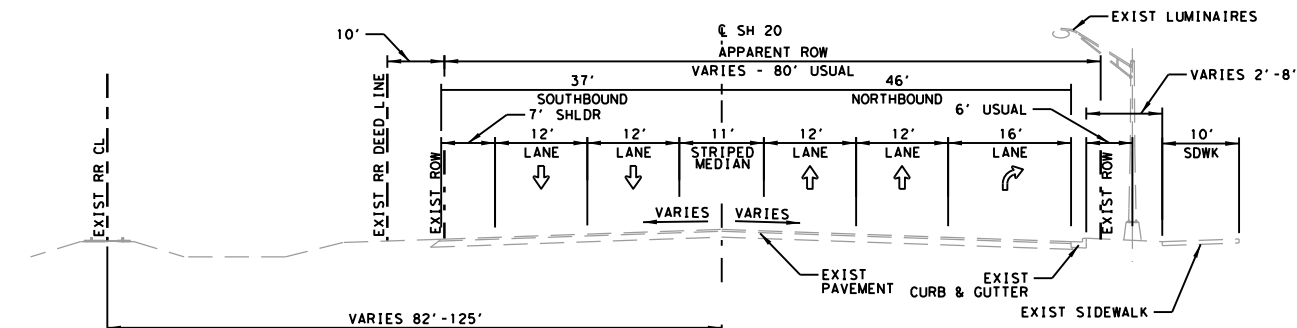
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STA 12+00 TO STA 22+00
 STA 25+60 TO STA 44+00
 STA 56+00 TO STA 57+00
 STA 64+00 TO STA 69+50
 STA 71+50 TO STA 75+00
 STA 77+00 TO STA 83+50
 STA 85+00 TO STA 91+50
 STA 98+00 TO STA 105+50
 STA 140+00 TO STA 143+00
 STA 148+00 TO STA 152+00



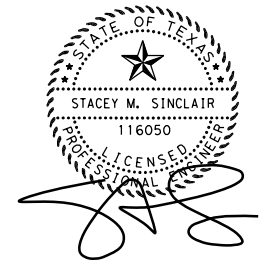
EXISTING TYPICAL SECTION

STA 22+00 TO STA 25+60
 STA 44+00 TO STA 47+00
 STA 143+00 TO STA 146+00



EXISTING TYPICAL SECTION

STA 50+20 TO STA 52+00



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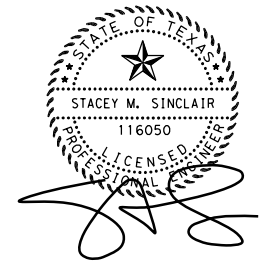
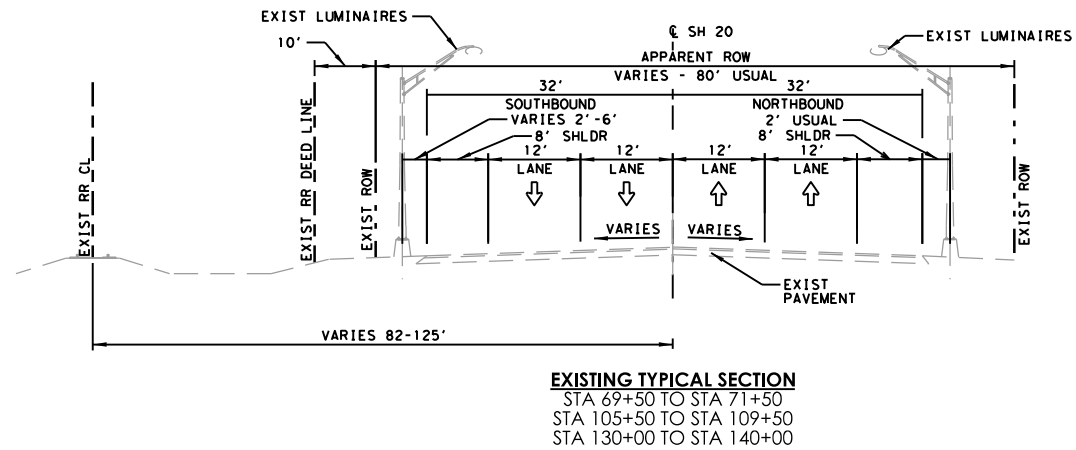
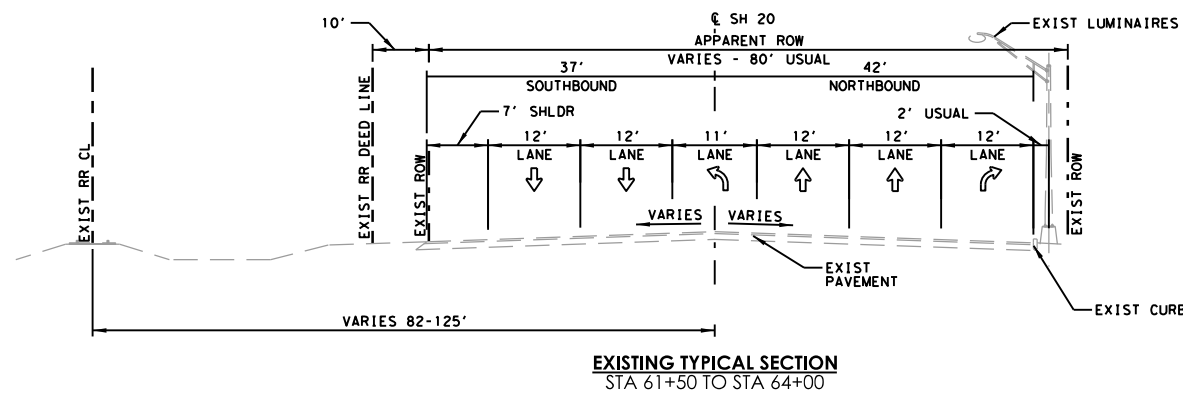
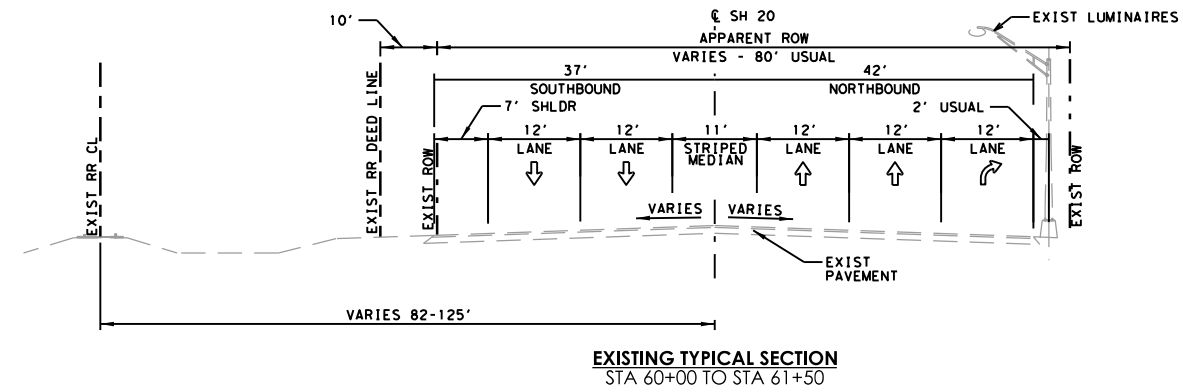
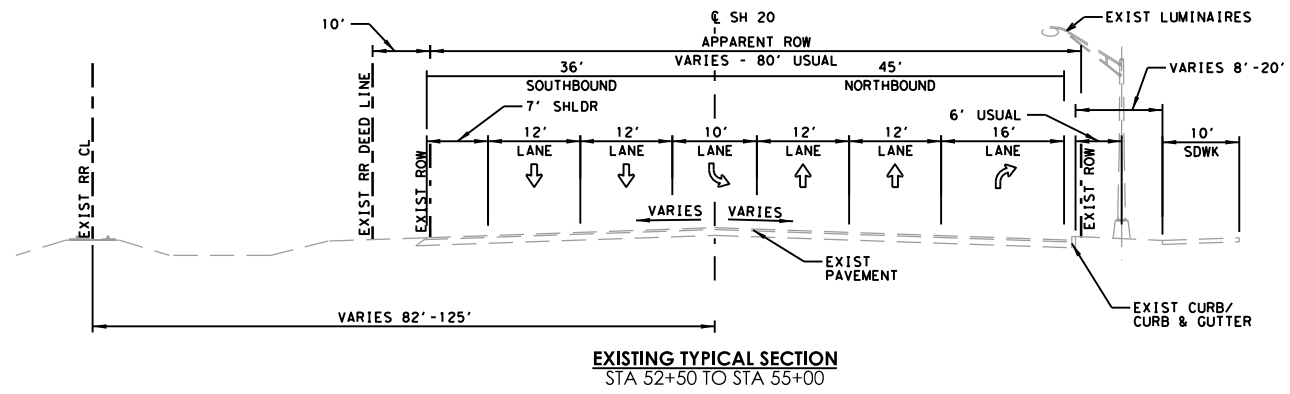
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 EXISTING
 TYPICAL SECTIONS**

SHEET 1 OF 4

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Firm Registration Number 420



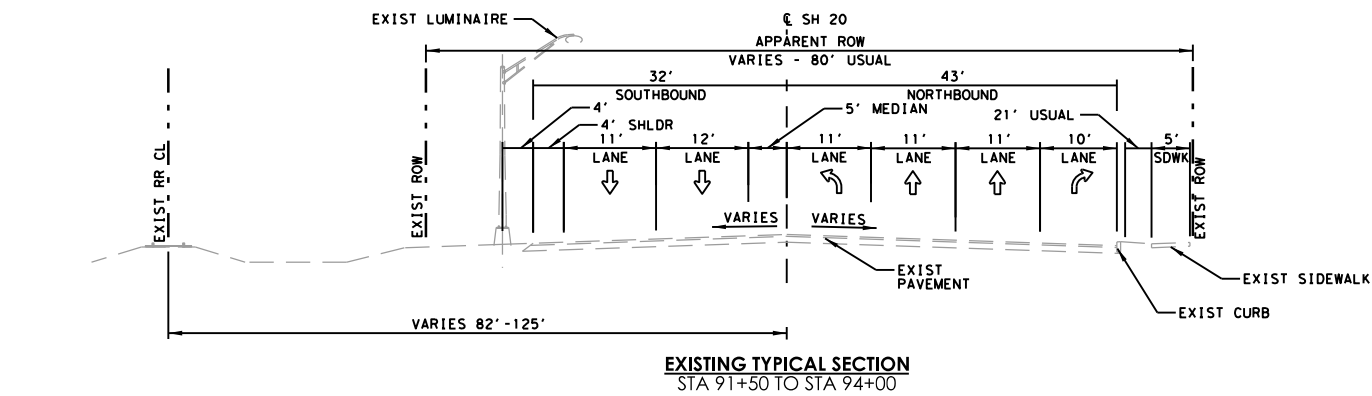
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EXISTING
TYPICAL SECTIONS

SHEET 2 OF 4

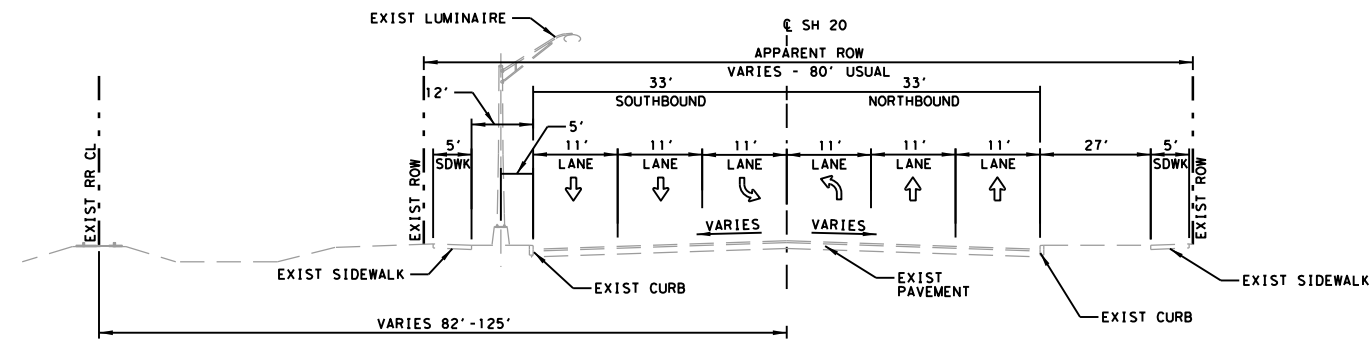
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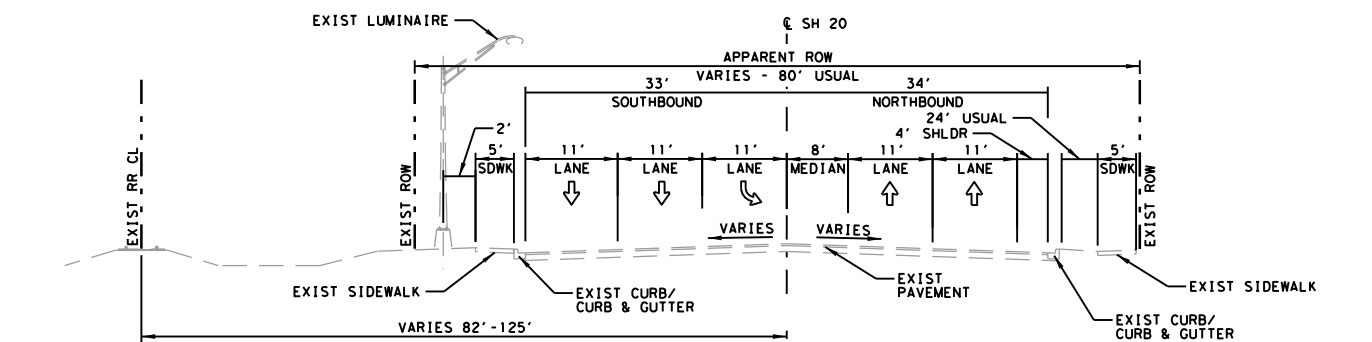
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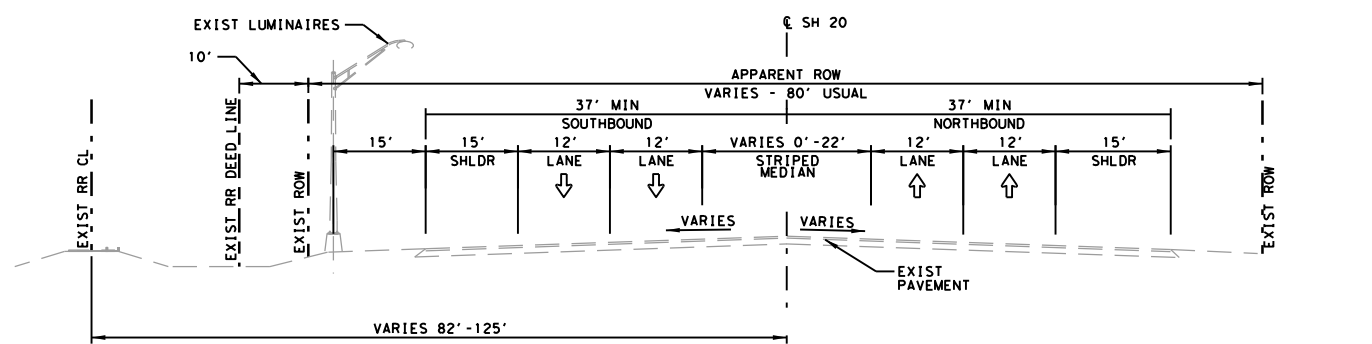
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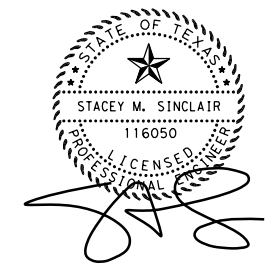
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EXISTING TYPICAL SECTION
STA 96+00 TO STA 98+00



EXISTING TYPICAL SECTION
STA 109+50 TO STA 114+80



4/30/2021



SH 20
DONIPHAN DR.
EXISTING
TYPICAL SECTIONS

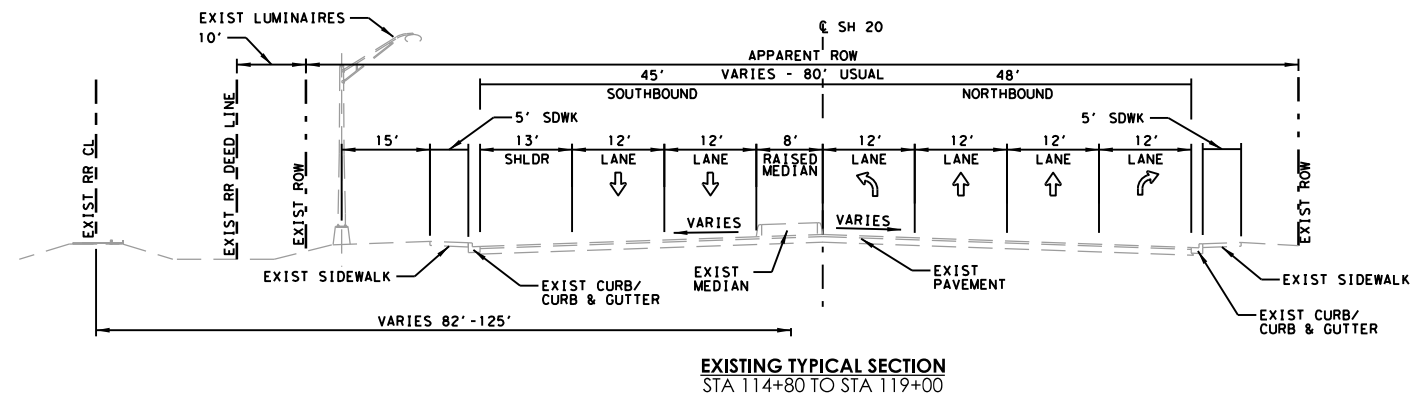
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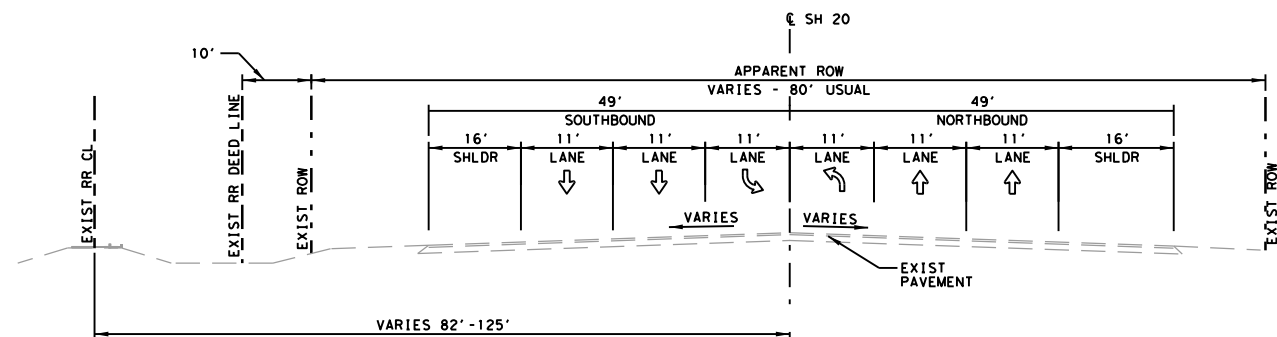
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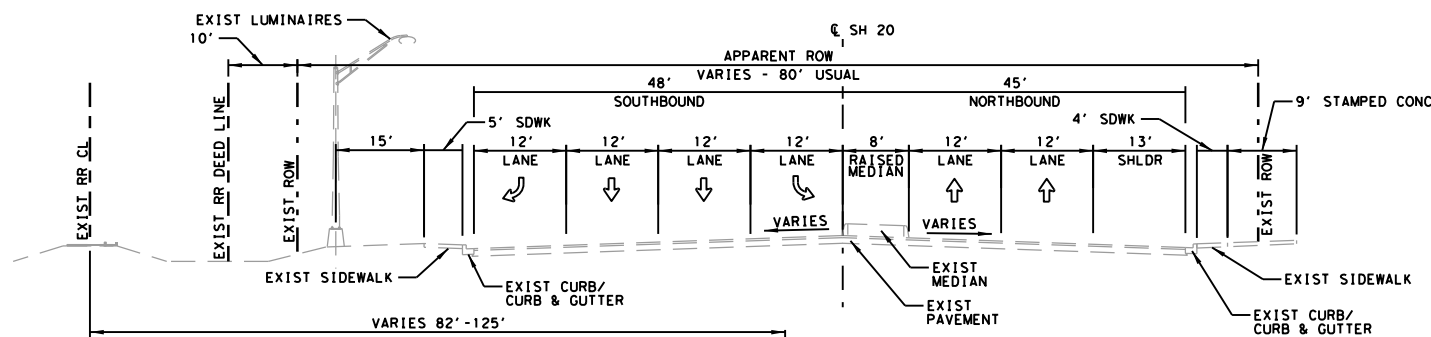
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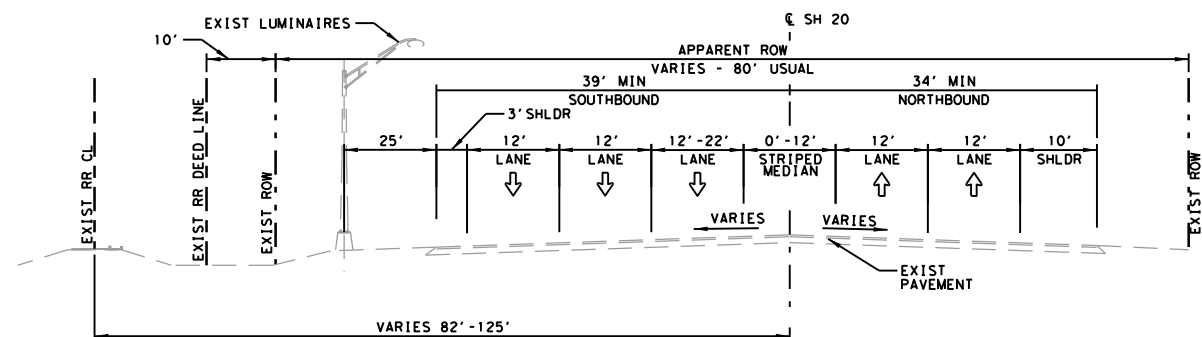
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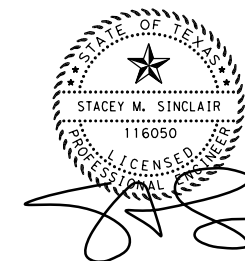
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STA 119+00 TO STA 120+75



EXISTING TYPICAL SECTION
STA 120+75 TO STA 126+00



EXISTING TYPICAL SECTION
STA 126+00 TO STA 130+00



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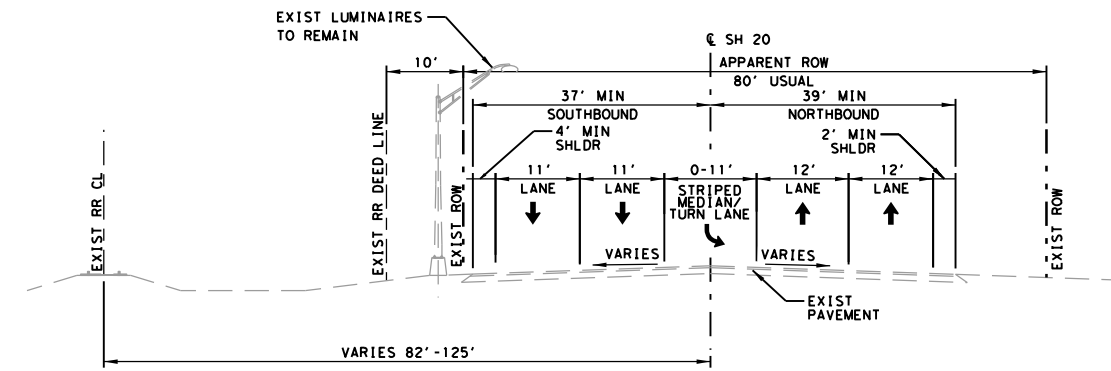
SH 20
DONIPHAN DR.
EXISTING
TYPICAL SECTIONS

SHEET 4 OF 4

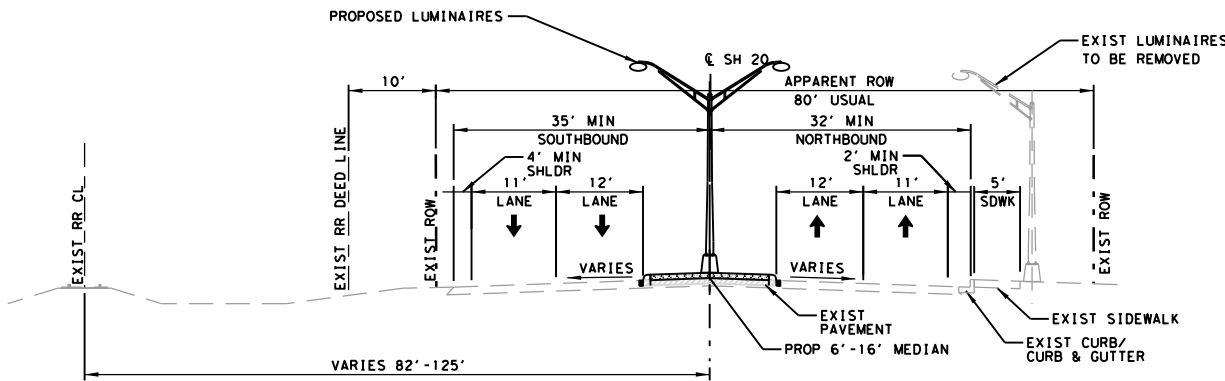
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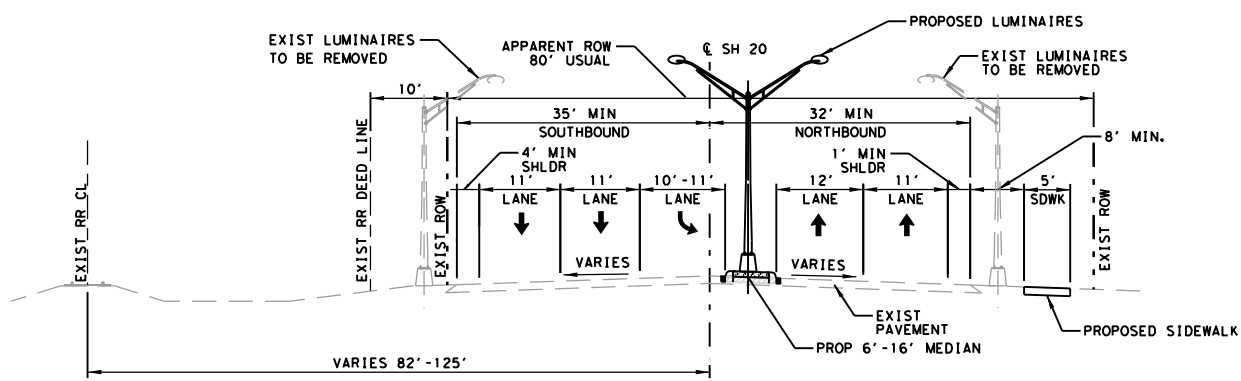
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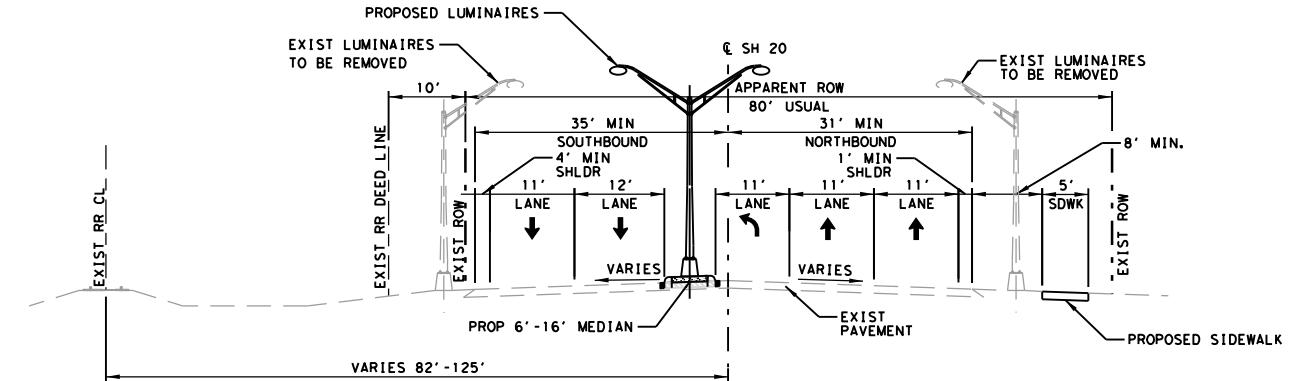
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PROPOSED TYPICAL SECTION
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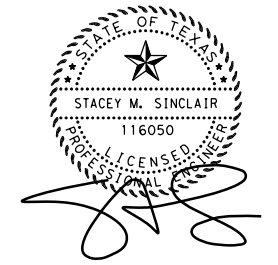
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STA 13+00 TO STA 16+80
STA 18+40 TO STA 21+50
STA 27+75 TO STA 31+50
STA 39+00 TO STA 43+25
STA 47+50 TO STA 50+50
STA 55+00 TO STA 60+50
STA 95+50 TO STA 102+00



PROPOSED TYPICAL SECTION
STA 16+80 TO STA 18+40
STA 21+50 TO STA 25+25
STA 36+00 TO STA 39+00
STA 43+25 TO STA 47+50

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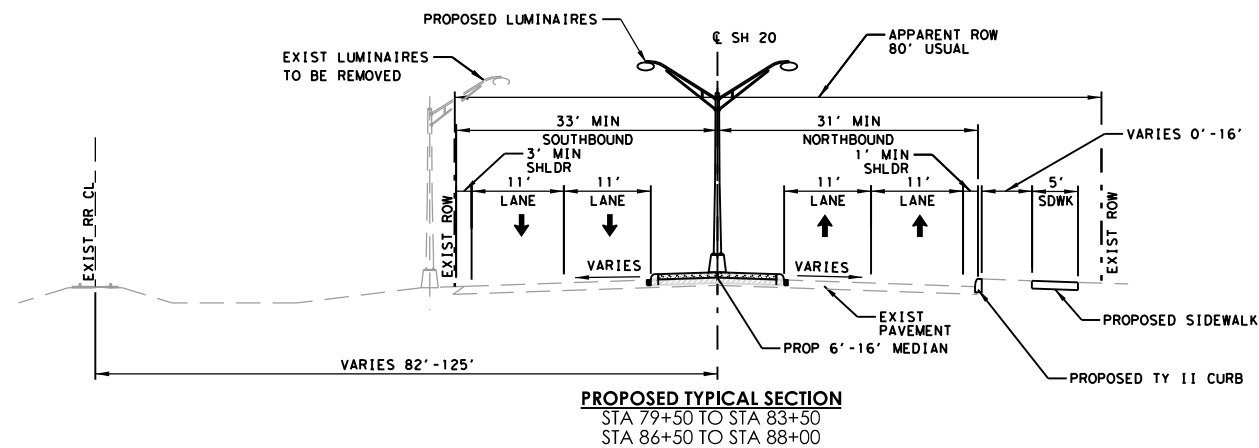
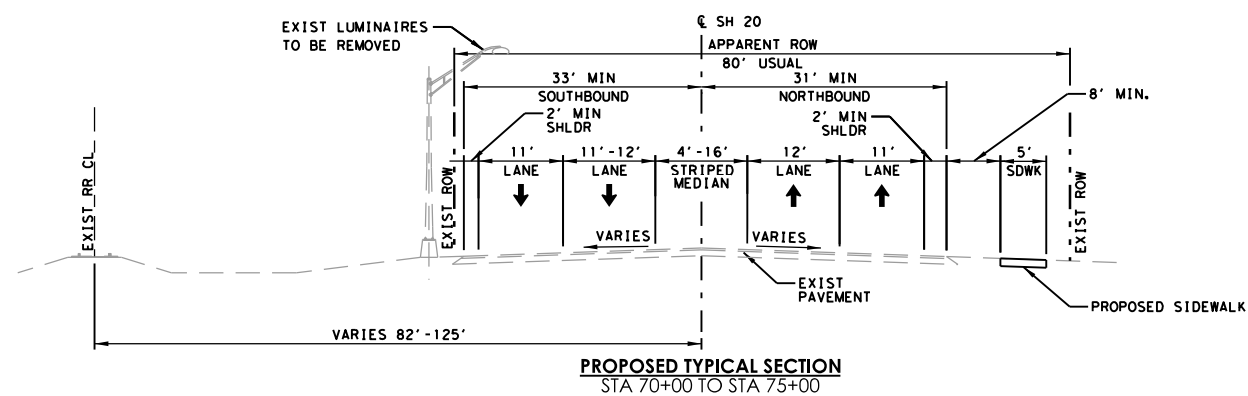
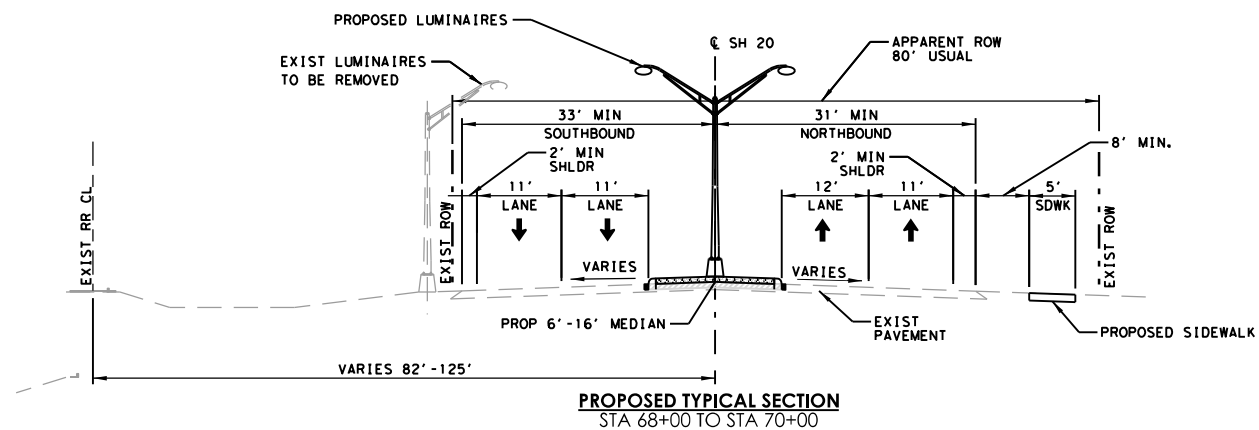
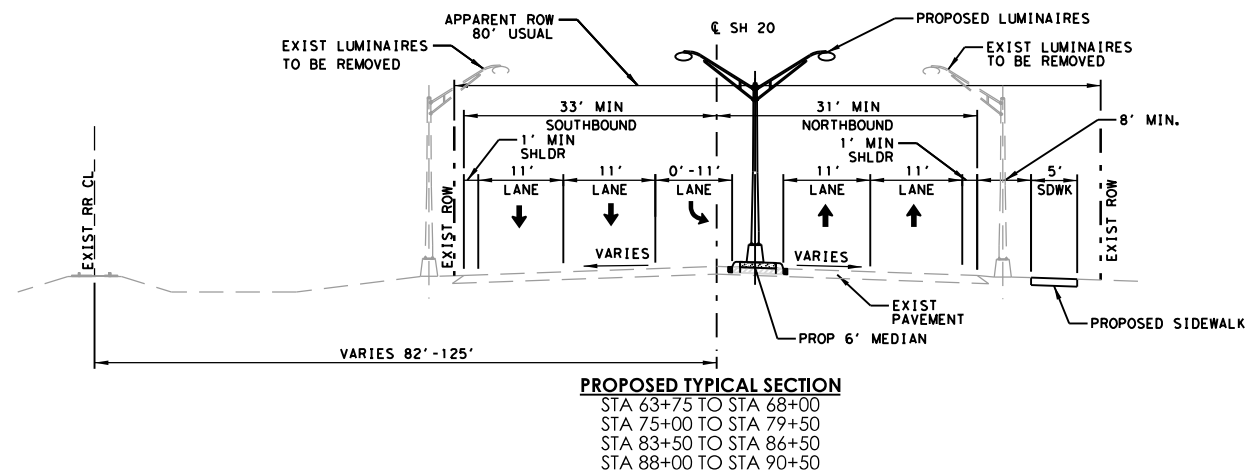
1. REFER TO TYPICAL MEDIAN DETAILS IN MISCELLANEOUS DETAILS.
2. REFER TO ROADWAY PLAN SHEETS FOR PROPOSED SIDEWALK LOCATIONS.
3. RAILROAD FLAGGING WILL BE REQUIRED FOR THE REMOVAL OF LUMINAIRES WITHIN THE EXISTING RAILROAD DEED LINE.



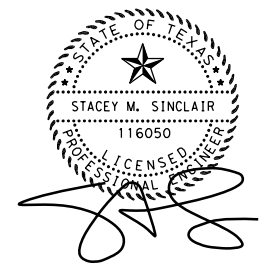
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SH 20 DONIPHAN DR.					
PROPOSED TYPICAL SECTIONS					
SHEET 1 OF 7					
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CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
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- NOTES:**
1. REFER TO TYPICAL MEDIAN DETAILS IN MISCELLANEOUS DETAILS.
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**SH 20
 DONIPHAN DR.**

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 TYPICAL SECTIONS**

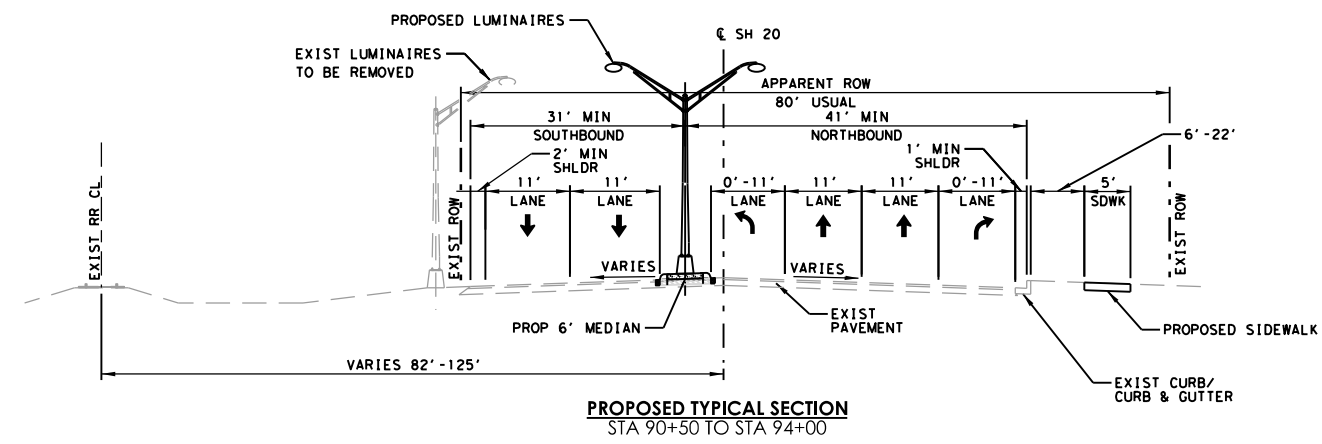
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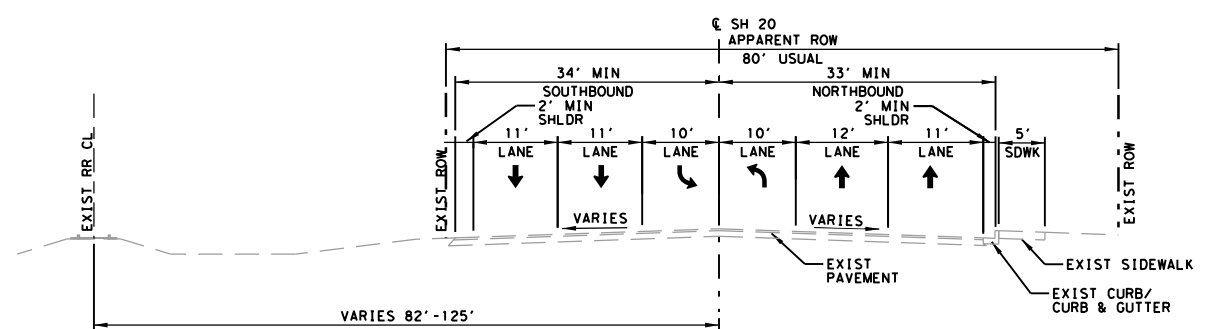
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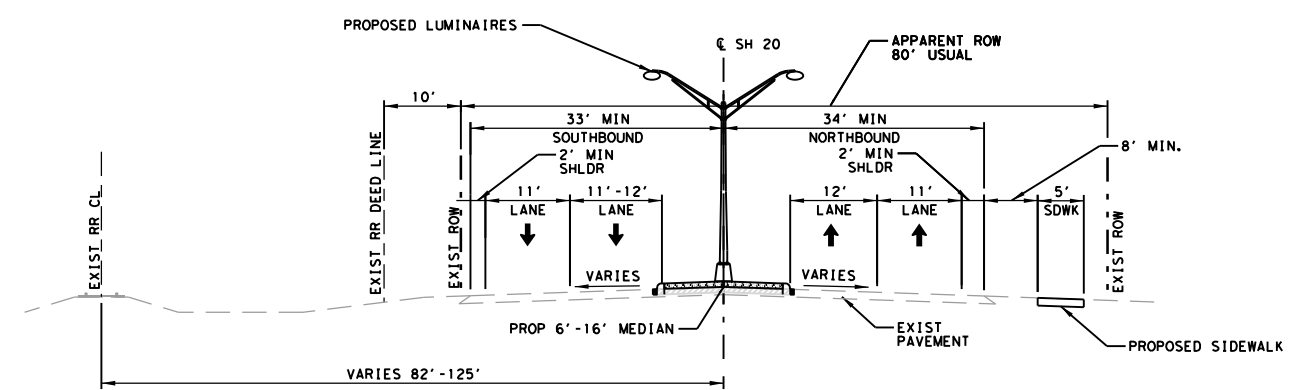
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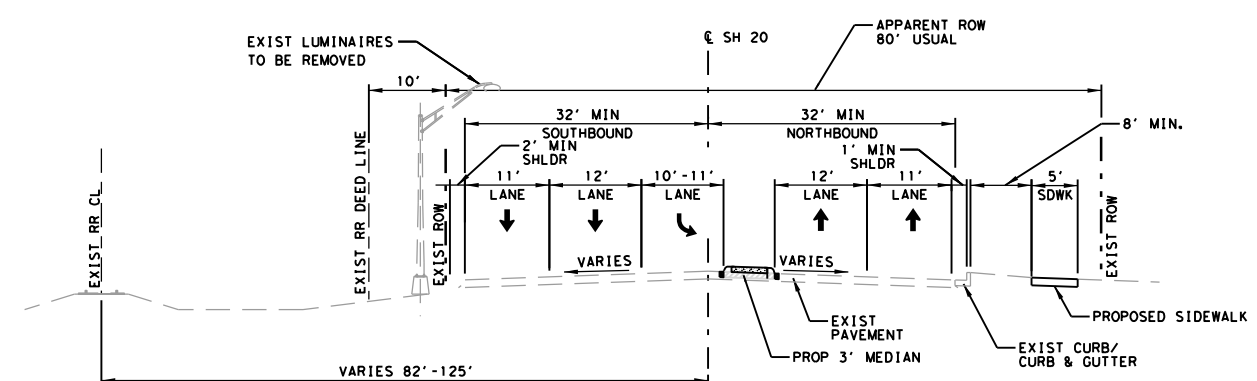
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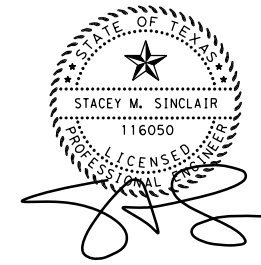
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PROPOSED TYPICAL SECTION
STA 102+00 TO STA 103+25



PROPOSED TYPICAL SECTION
STA 103+25 TO STA 108+20



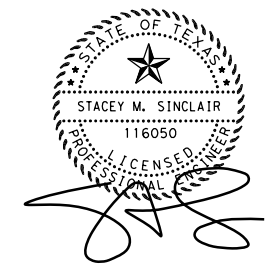
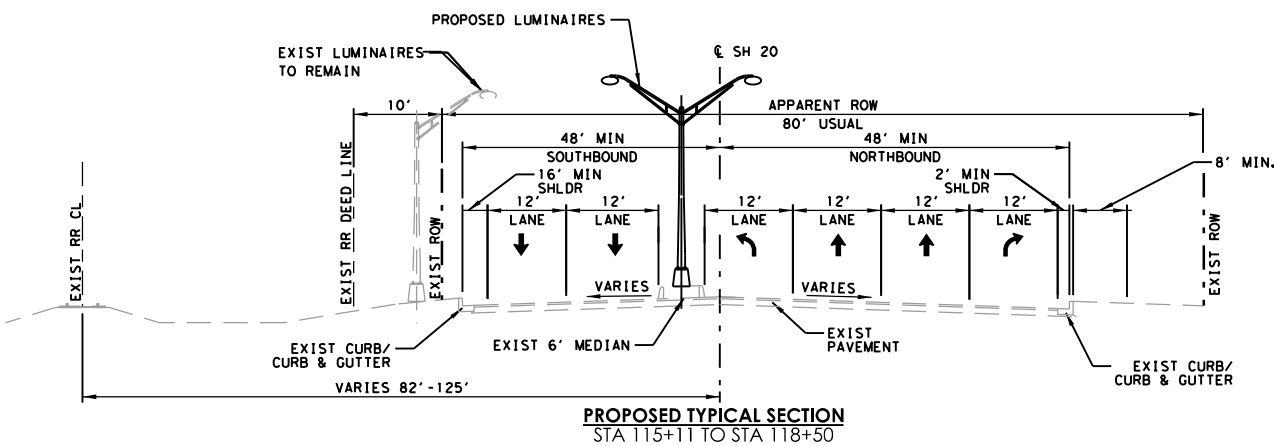
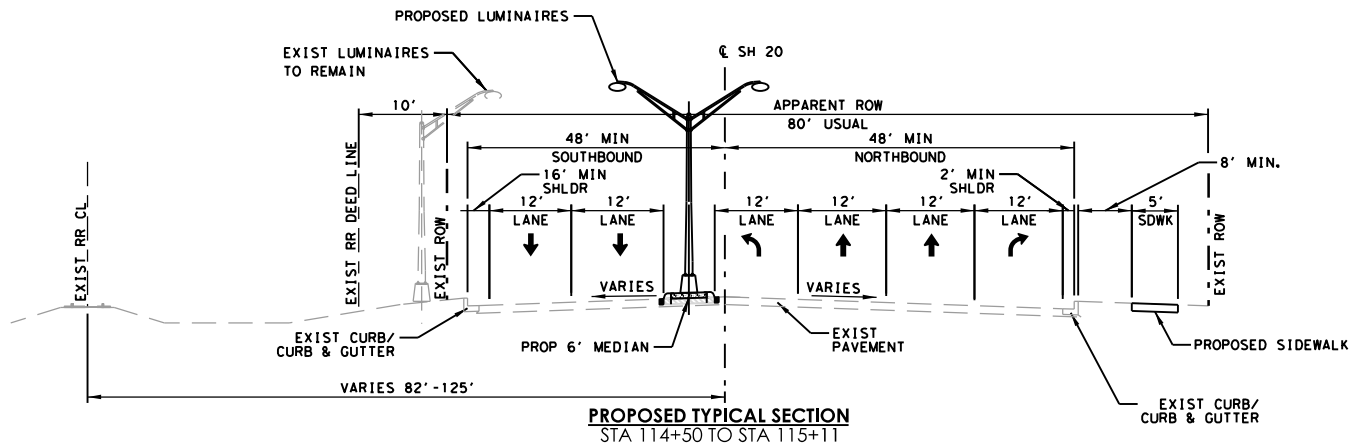
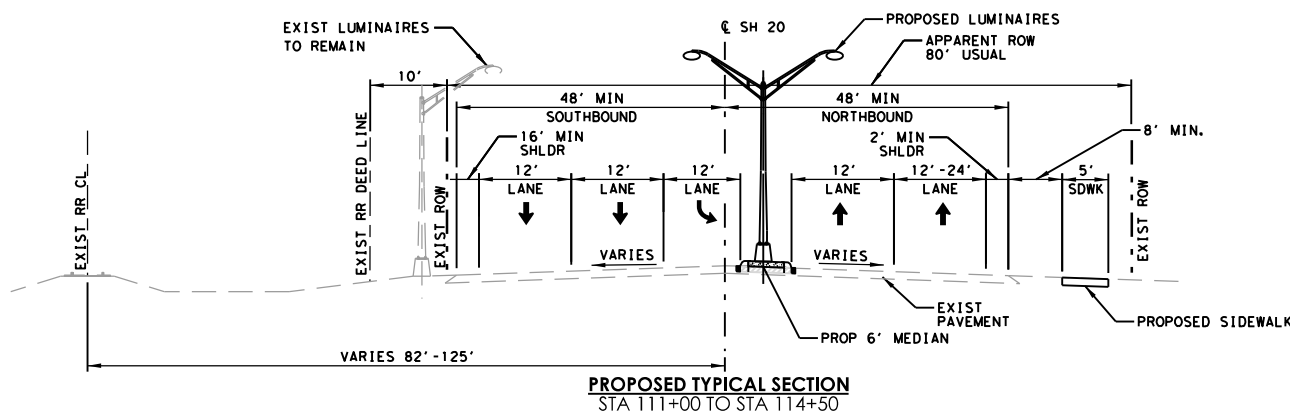
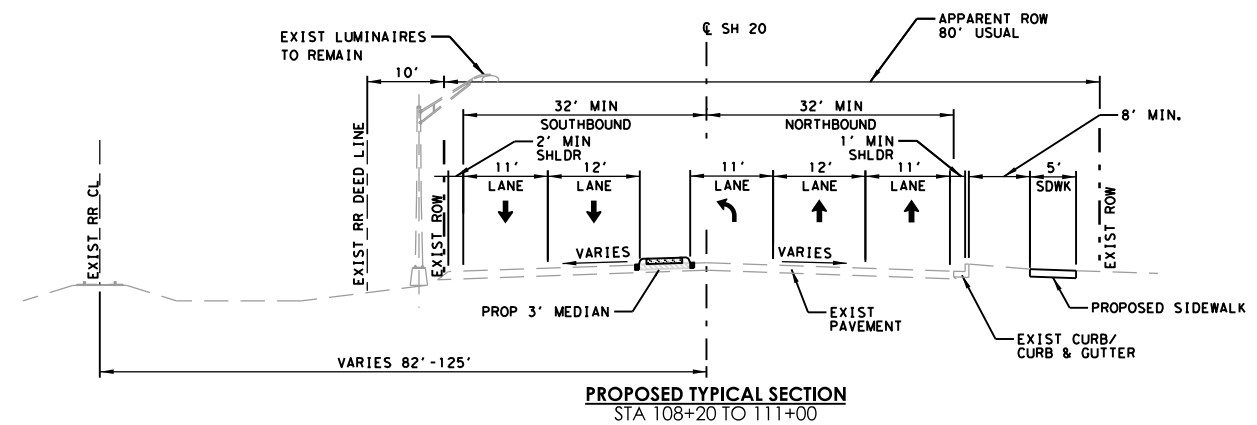
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SH 20 DONIPHAN DR.					
PROPOSED TYPICAL SECTIONS					
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DESIGNED:	BG	STATE	DISTRICT	COUNTY	HWY NUMBER
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NOTES:

1. REFER TO TYPICAL MEDIAN DETAILS IN MISCELLANEOUS DETAILS.
2. REFER TO ROADWAY PLAN SHEETS FOR PROPOSED SIDEWALK LOCATIONS.
3. RAILROAD FLAGGING WILL BE REQUIRED FOR THE REMOVAL OF LUMINAIRES WITHIN THE EXISTING RAILROAD DEED LINE.



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**SH 20
DONIPHAN DR.**

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TYPICAL SECTIONS**

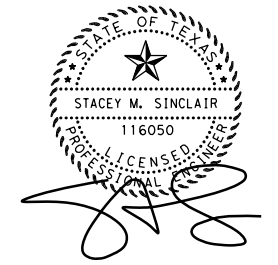
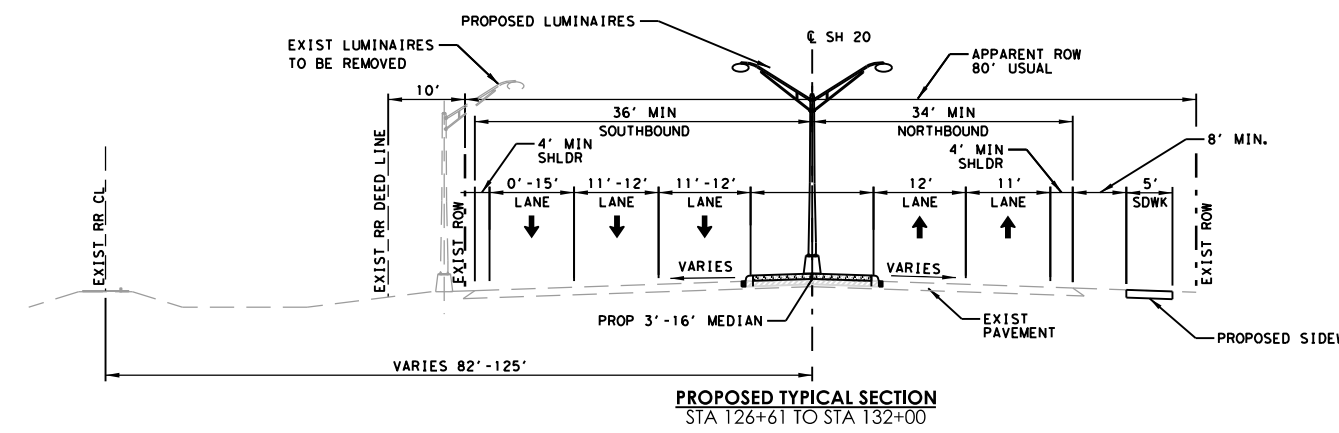
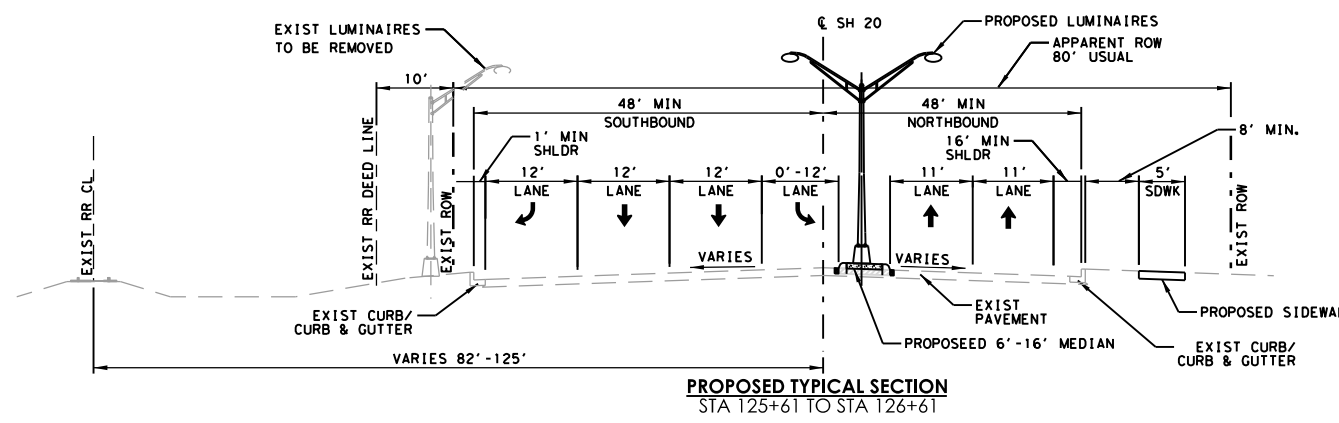
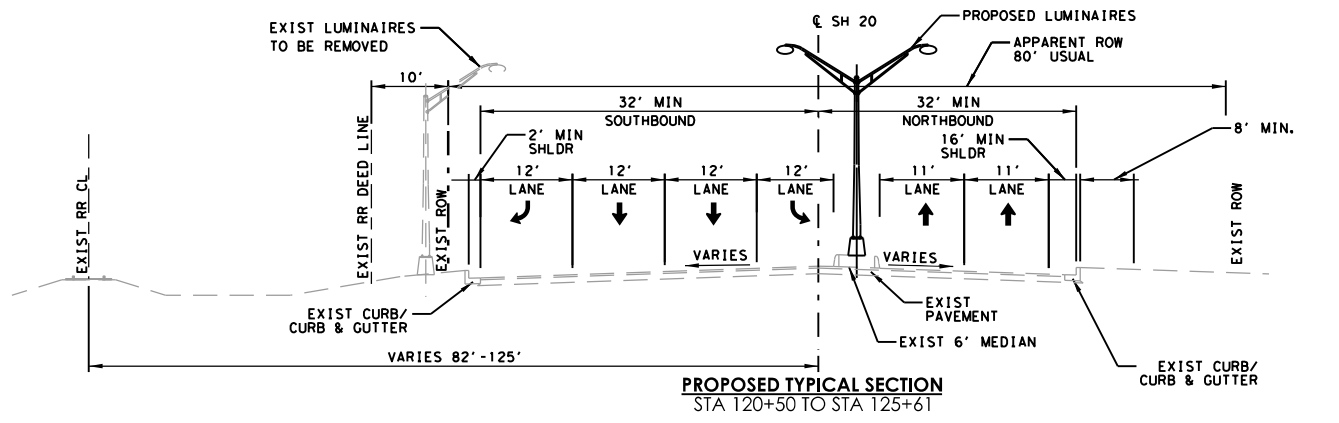
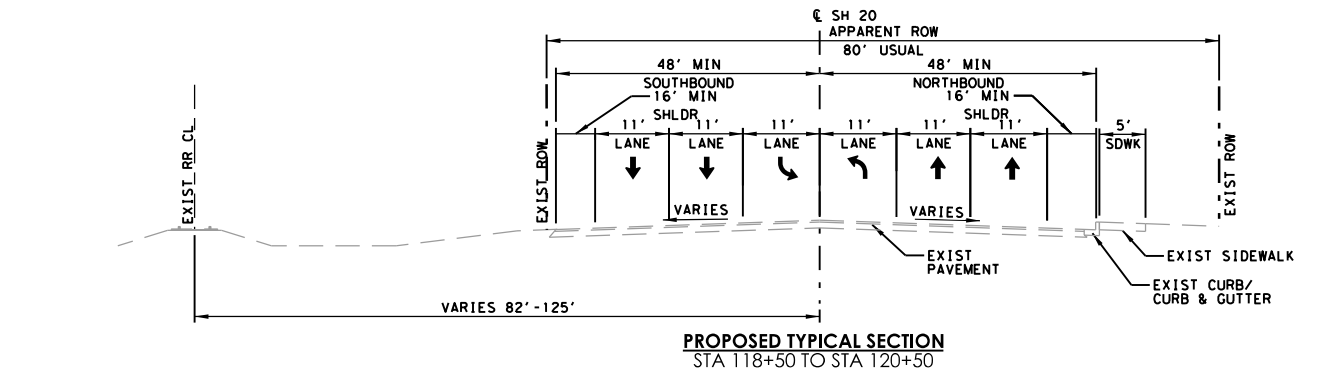
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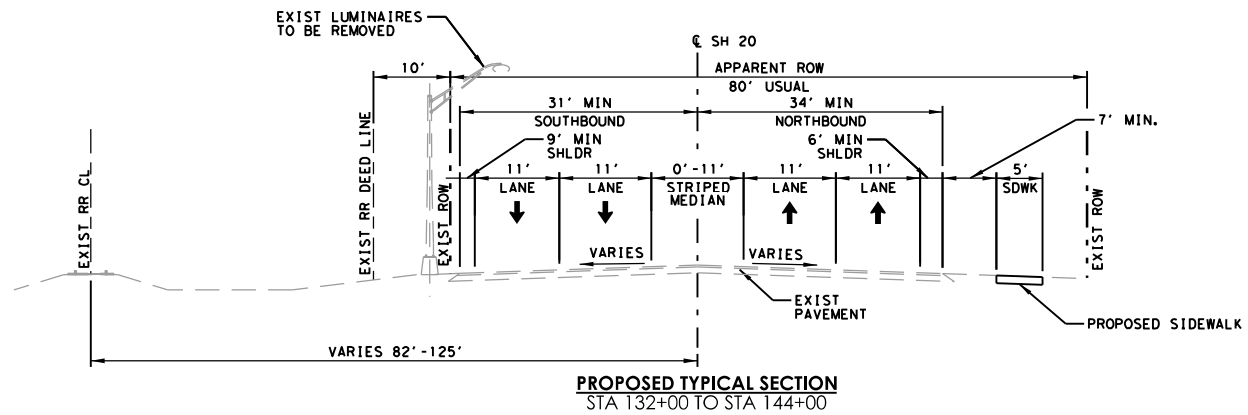
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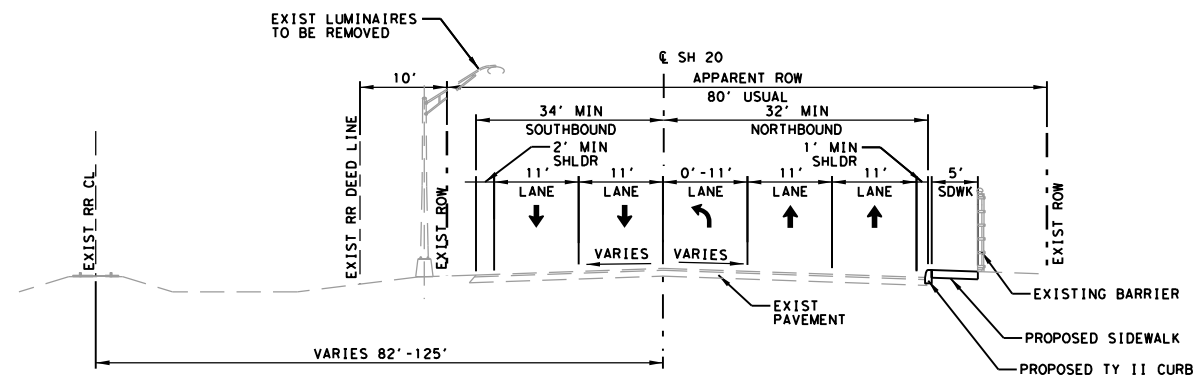
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SHEET 6 OF 7					
DESIGNED:	BG	STATE	DISTRICT	COUNTY	HWY NUMBER
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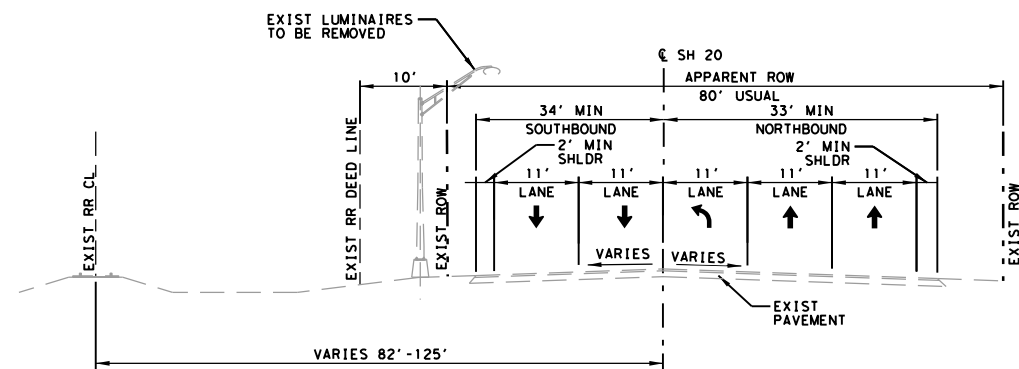
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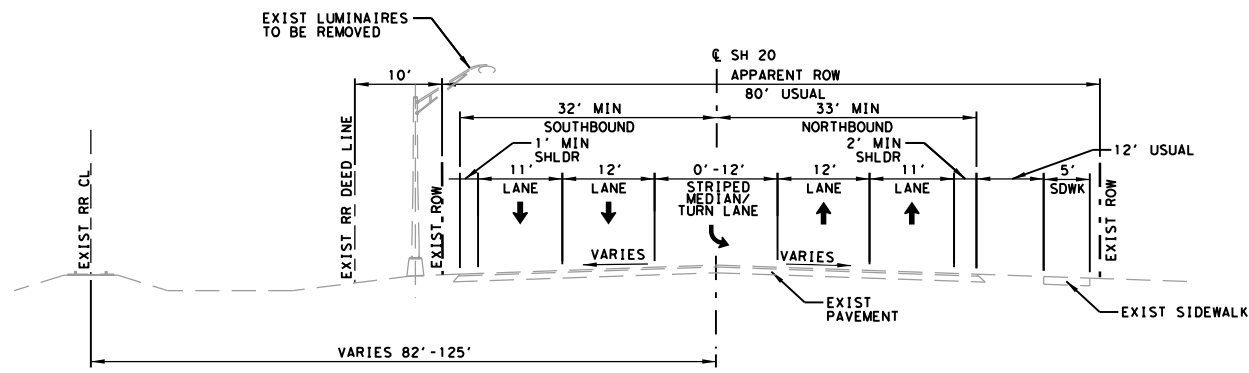
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PROPOSED TYPICAL SECTION
STA 144+00 TO STA 144+38



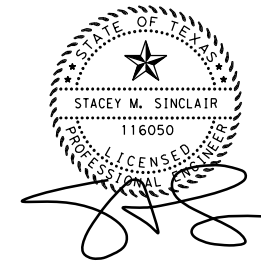
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STA 144+38 TO STA 146+00



PROPOSED TYPICAL SECTION
STA 146+00 TO STA 151+50

NOTES:

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PROPOSED TYPICAL SECTIONS					
<small>SHEET 7 OF 7</small>					
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CONTROL: 0001-01-063, ETC.

COUNTY: EL PASO

HIGHWAY: SH 20

General Notes:

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

**Table 1
Compaction Requirements for Base Courses**

Item	Description	Outside Roadway Course Density
132 ^{1,2,3}	EMBANKMENT(FINAL) (ORDINARY COMPACTION) (TY C)	SEE BELOW

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

**Table 2
Basis of Estimate**

Item	Description	Rate
340	DENSE-GRADED HOT-MIX ASPHALT D-GR HMA (SQ) TY-C PG70-22 (LEVEL-UP) TACK COAT (TRAIL) ₂ D-GR HMA (SQ) TY-D PG70-22 PRIME COAT (AE-P)	1 IN = 110 LBS/SY 1075 TONS/19,536 SY 0.15 GAL/SY 1 IN = 110 LBS/SY 0.15 GAL/SY

1. Deviation from the rates shown will require approval.
2. Tack Coat to be applied to each layer as directed by the Engineer. Rate shown is based on the desired residual application of 0.15 GAL/SY.

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.

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 various traffic control plan project overview sheets for the proposed sequence of work. Changes will not be permitted, except as approved in writing by the Engineer. Contractor questions on this project are to be addressed to the following individual(s):

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COUNTY: EL PASO

HIGHWAY: SH 20

Ricardo Romero Ricardo.Romero@txdot.gov

Mo Moabed Mohammad.Moabed@txdot.gov

Aldo Madrid Aldo.Madrid@txdot.gov

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

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

<http://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/>

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

Item 4 – Scope of Work

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.

Maintain all Contract items until final acceptance of the project.

Plan datum for this project is NAD 83, 2011 adjustments 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.

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

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

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[contractors/publications/bridge.html#design](#). Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs result in from the use of alternates are the sole responsibility of the Contractor.

Item 7 – Legal Relations and Responsibilities

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

Dispose of 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 Workweek.”

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

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. Including, but not limited to trees, vegetation, and other natural features.

Protect trees, shrubs, and other landscape features from abuse, marring, or damage within the actual construction and fenced protection areas designated for preservation. Restore any area disturbed or

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HIGHWAY: SH 20

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 **two (2)** 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.

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.

Due to limited availability of record drawings and information on existing illumination conduit and ground boxes, the Contractor shall field verify all existing ground boxes, conduit and conductors pertaining to the illumination system. The Contractor shall remove all illumination ground boxes and conductors and abandon existing conduit. This work will be paid under this item.

Item 104 – Removing Concrete

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

Item 110 – Excavation

All work items required to saw-cut the existing pavement, concrete sidewalks, driveways, etc., as shown in the plans, or as directed, will be considered subsidiary to this Item.

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

Special excavation is provided for potholing for illumination installation under separate bid item.

Item 132 – Embankment

Locate all material sources out of sight from the roadway at an approved location.

Track the side slopes of the embankment to control erosion.

Subgrade compaction will be density control and subsidiary to this Item.

Item 340 – Dense-Graded Hot-Mix Asphalt (Small Quantity)

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Provide aggregates with a Surface Aggregate Classification (SAC) of "A" for all surface mixes. Provide aggregates with a minimum SAC of B for all other layers unless otherwise shown on the plans.

In place of typical tack materials shown in Table 18 under Item 300, use a tracking resistant asphalt interlayer (TRAIL) material as a tack coat. Approved TRAIL products are found on TxDOT's Material Producer List under Asphalt Interlayer (Tracking Resistant) through <http://www.txdot.gov/business/resources/materials.html>.

Perform Surface Test Type B as per Item 585 and Tex-1001-S to locate areas requiring either corrective action or localize roughness. Place D-GR HMA(SQ) TY-D PG 70-22 (LEVEL-UP) to fill the dips identified by surface Test Type B prior to the SP-C Inlay, as directed by the Engineer. The quantity may vary.

Do not cover with asphaltic material, any existing survey monuments, manholes, or valve covers, etc. Adjustments will be done in coordination with the respective utility owners.

Place a string line or other suitable marking to ensure smooth, neat lines, or as directed. Provide smooth transitions to existing driveways and intersections.

Operate the spreading and finishing machine at a uniform forward speed consistent with the plant production rate, hauling capability, and roller train capacity to result in a continuous operation. The speed will be slow enough, so that stopping between trucks is not ordinarily required. If the Engineer determines non-uniform delivery of material is affecting the HMA placement, the Engineer may require the paving operations to cease until acceptable methods are employed to minimize starting and stopping of the paver.

Item 354 – Planing and Texturing Pavement

Reclaimed Asphalt Pavement (RAP) removed from the project shall be used to backfill pavement edges. Any remaining RAP shall be delivered to the location specified by the Engineer. The Contractor shall coordinate with the Engineer before delivery of material.

Perform Surface Test Type B as per Item 585 and Tex-1001-S to locate areas requiring either corrective action or localize roughness. Perform micro-mill at the areas identifies by surface Test Type B prior to the SP-C Inlay, as directed by the Engineer. The quantity may vary.

Item 416 – Drilled Shaft Foundations

Stake all foundations and locations approved by the Engineer prior to commencement of drilling operations in order to ensure no conflicts with utility lines. Coordinate with the Utility companies for utility location within the project limits. Repair any damage to existing utilities to the satisfaction of the Engineer and the utility owner at no additional cost to the Department.

Use Class "C" concrete.

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

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

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

Item 432 – Riprap

Wire mesh and fibers for concrete will not be allowed on this project for this Item. Reinforce all concrete riprap using bar reinforcement conforming to Item 440, "Reinforcement for Concrete," as shown on the plans, or as directed. For roadway illumination assemblies, riprap may include wire mesh per standard RID (2)-20.

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

Obtain approval for all stone riprap material sources.

Item 442 – Metal for Structures

Contractor shall provide alloy steel hot-rolled floor diamond plates for sidewalk flume crossings as shown in the plans and furnish mill test reports, supplemental test documentation, and certifications required for this item. Floor plate may be provided in the heat-treated condition and have raised diamond shaped figures at regular intervals on one surface of the plate.

Make floor plate available in dimensions that meet the classification size limits and nominal thickness as shown in the plans. Steel shall meet ASTM A786 and one of A242, A588, or A709 Gr. 50W. Contractor shall submit shop drawings that state the type and trade name of the selected material to be used.

Item 480 – Cleaning Existing Culverts

This Item will be paid for by unit or lump sum. The volume of material to be removed will be computed by the method of average ends areas in its original position. Material removed at the entrance or exit of the culvert in order to gain access to or facilitate the function of the structure, will be subsidiary to this item.

Dispose of excess material in accordance with applicable federal, state, and local regulations, or place on right of way, as directed.

Hauling and disposal of the excavated materials will not be paid for directly but will be subsidiary to this Item.

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Item 500 – Mobilization

The Contractor will be paid in accordance with the associated Item based work performed. This will fully compensate the Contractor for all associated activities.

Item 502 – Barricades, Signs, and Traffic Handling

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

Work hours defined as 9:00 pm to 6:00 am Sunday to Thursday.

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

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

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

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

CRP and CRP alternate must be trained using Department approved training. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 3 for Department approved Training.

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Refer to plans for TCP selection table for applicable standards

Table 3

Contractor Responsible Person and Alternate

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

All contractor workers involved with the traffic control implementation and maintenance must participate and complete a Department approved training course. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 4 for Department approved training.

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Table 4
Other Work Zone Personnel

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

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 4. Provide the Engineer a copy of the course curriculum for pre-approval, prior to conducting the contractor developed training. Provide the Engineer a copy of the log of attendees after training completion for project records.

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

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

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

Provide a minimum of (2) week notice to the department when construction activities will impact public transportation bus stops.

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

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

Use portable changeable message signs (PCMS) to alert public of temporary ramp construction two weeks prior to construction subsidiary to this item. Additional PCMS shall be paid using item 6001-6002, each.

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

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

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

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

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

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

For additional information pertaining to channelization, signing, spacing details, and flagging procedures required to regulate, warn, and guide traffic through project, refer to the "Barricade and Construction Standards," BC(1)-14 and to the current *Texas Manual on Uniform Traffic Control Devices(TMUTCD)*.

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

Repair 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.

The following BMP's shall be followed by the Contractor:

Compliance with the Migratory Bird Treaty Act (MBTA) and Bird BMPs (Western Burrowing Owl)

- 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.
- Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
- Avoid the removal of unoccupied, inactive nests, as practicable.
- Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
- Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

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Terrestrial Reptile BMPs (Texas Horned Lizard)

- Apply hydro mulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydro mulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
- Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
- Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
- Due to increased activity (mating) of reptiles during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (April-May) season. Also, timing ground disturbing activities before October when reptiles become less active and may be using burrows in the project area is also encouraged.
- When designing roads with curbs, consider using Type I or Type III curbs to provide a gentle slope to enable turtles and small animals to get out of roadways.
- Avoid harvester ant mounds in the selection of Project Specific Locations (PSLs) where feasible.

Vegetation BMPs (Sand Prickly-Pear)

- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. Wherever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegetation.
- To minimize adverse effects, activities should be planned to preserve mature trees, particularly acorn, nut or berry producing varieties. These types of vegetation have high value to wildlife as food and cover.
- It is strongly recommended that trees greater than 12 inches in dbh are removed be replaced. TPWD's experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3: 1) lost should be provided to the extent practicable either on-site or off-site. Trees less than 12 inches dbh should be replaced at a 1:1 ratio.
- Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted native species.
- When trees are planted, a maintenance plan that ensures at least an 85 percent survival rate after three years should be developed for the replacement trees.
- The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.

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- The use of seed mix that contains seeds from only locally adapted native species is recommended.
- Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

Bat BMPs (Cave Myotis Bat and Big Brown Bat)

- 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.

- For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.

- 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.

- 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 temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of 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 recommended acceptable methods for excluding bats from structures.

- If feature(s) used by bats are removed as a result of construction, replacement structures should be incorporated.

- Bat-friendly design or artificial roosts should be constructed to replace these features, as practicable.

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

- Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, 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 warm periods (nighttime temperatures 55°F for at least two consecutive nights), so bats can

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move away from the disturbance and find new roosts.

- 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 occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.

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

- In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

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 Intent," 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 **3.42** 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.

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Item 528 – Colored Textured Concrete and Landscape Pavers

Wire mesh will not be allowed for this Item. Reinforce all colored-stamped concrete using bar reinforcement conforming to Item 440, "Reinforcement for Concrete," as shown in the plans or as directed.

Apply color sealant to all colored-textured concrete per the manufacturer's specifications subsidiary to this item.

Use Sand antiquing release agent, Slate Green and Desert Tan hardener from the following sources:

Table 5

Sources

Bomanit®e Corp. P.O. Box 599 Madera, CA 93639-0599 (209) 673-2411	Concrete Stamping Store 373 E. 1750 North Suite D Vineyard, UT 84057 (801) 224-2599 (888) 865-5798 Fax	Brickform-Rafco Products 11061 Jersey Blvd. Rancho Cucamonga, CA 91730 (800) 483-9628 (909) 484-3318 Fax
Decosup Inc. Headquarters 8232 NW 56 St. Miami, FL 33166 (305) 468-9998 (800) 788-0014	L.M. Scofield Co. 6533 Bandini Blvd. Los Angeles, CA 90040 (323) 720-3000 (323) 720-3030 Fax	

Install colored-textured concrete on the locations shown on roadway layout sheets in the London Cobble Stone pattern as indicated on the Miscellaneous Details Sheets.

Expansion, longitudinal and contraction joints, all saw-cuts, incidentals, and materials required to complete this work will be as shown in the Miscellaneous Detail Sheets and are subsidiary to this Item.

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

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

Construct the curb opening with metal plate configuration detailed in the plans, or as directed, to ensure roadway drainage to the earthen ditch. No direct payment will be made for these features. Payment will be made under this Item. All required manipulations or incidentals required to complete the work will be considered subsidiary to these items.

Perform all requiring grading for proposed concrete curb, gutter, and combined curb and gutter construction as shown on the plans. All grading, including excavation and fill/embankment will be subsidiary to this Item.

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

Item 530 – Intersections, Driveways, and Turnouts

The existing roadway and driveways are to be saw-cut to a straight and neat line when proposed sidewalks are being constructed across them. The area then will be cleaned out prior to concrete placement. This work is subsidiary to this Item.

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

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

Item 531 – Sidewalk

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

Modify the sidewalk expansion joint spacing to 20 ft. spacing where waterlines may exist under the sidewalk. This work will not be paid for directly but will be subsidiary to this Item.

Provide standard broom finish for wheelchair ramps as directed.

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

Perform all requiring grading for proposed sidewalks construction as shown on the plans. All fine grading (+/- 6"), will be subsidiary to this Item.

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

Contractor shall include reinforcement in sidewalk with #3 rebar 18" O.C. both ways.

Item 610 – Roadway Illumination Assemblies

Conductor runs in Illumination Layouts contain 5 ft. of slack.

Limitations on Use of the RIP-19 Standard:

The Roadway Illumination Pole (RIP-19) Standard Details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25 ft. above the elevation of surrounding terrain, in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 1st Edition (2015) (AASHTO Design Specifications).

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Final acceptance of the pedestrian signals and illumination will be determined by the City of El Paso and the Department and will require coordination with the Contractor for interim and final inspections. All equipment removed, i.e. poles, cabinets, signal heads, traffic signal cables, traffic signs, traffic signs posts (free of concrete foundations and debris) and ground boxes shall be returned to:

TEXAS DEPARTMENT OF TRANSPORTATION
ATTN: TRAFFIC SIGNAL SHOP
13301 GATEWAY WEST BLVD.
EL PASO, TX 79928
915-790-4245

As directed, any other salvaged material shall be returned to the City of El Paso.

Item 618 – Conduit

The location of conduit is diagrammatic and may be varied to meet local conditions upon approval of the Engineer.

When shown on the plans, use underground warning tape in the trench installation of conduit (PVC).

For conduit placement in pavement, an earth-saw may be used provided the cut does not exceed 6 in. Backfill as shown on the trench details in the plans.

For all underground conduit bends of 45°, provide rigid metal conduit. Where the rigid metal conduit is exposed at any point and where rigid metal extends into ground boxes, bond the metal conduit to the grounding conductor with grounding type bushings or by other UL-listed grounding connectors, approved by the Engineer. Rigid metal bends will not be paid for directly but will be considered incidental to the PVC conduit system.

Use rigid metal conduit when crossing bridges or culverts. All clamps, expansion joints, bolts and accessories necessary to install the rigid metal will be subsidiary to this Item.

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

All conduit elbows and rigid metal extensions required to be installed on PVC conduit systems will not be paid for separately but will be considered subsidiary to the various bid items.

All bore items shall be directional and shall be paid for under this item. Bore quantities include the distance beneath the roadway plus an additional 2 ft. on either side of the curb, sidewalk, or edge of pavement.

For conduits install by open trench method, backfill the trench as shown on the plans.

Place conduit at a minimum depth of 18 in. below the pavement surface. Place conduit prior to the new pavement construction.

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Fit both ends of each raceway with a temporary cap to prevent dirt and debris from entering during construction.

Install a continuous green insulated copper wire No. 8 AWG or larger in every conduit throughout the electrical system in accordance with the electrical detail sheets, and the latest edition of the National Electrical Code.

When conduit is to be installed where riprap presently exists, take care in breaking the existing riprap for placement of the conduit. Do not break out a greater area that is required for placement of the conduit. Replace broken riprap with Class "C" concrete to the exact slope, pattern, color and thickness of the existing riprap. Replacement of riprap will be subsidiary to this Item.

Item 620 – Electrical Conductors

Use NEC type XHHW for all conductors.

Insulate grounding conductors with a green jacket and neutral conductors with a white jacket.

At every accessible point, bond together the grounding conductors which share the same conduit, junction box, ground box or structure in accordance with the electrical detail sheets and the latest edition of the National Electrical Code.

For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse holder as shown on the Department's Materials Producers List under "Roadway Illumination and Electrical Supplies." category. Fuse holder is shown on the list under Item 610, "Roadway Illumination Assemblies," and Item 620, "Electrical Conductors." Provide 10-amp time delay fuses.

Include extra cable length in each ground box or foundation for each run, to provide adequate slack, as provided in the plans or as directed.

Ensure a properly bonded electrical system by running wire as shown in plans between foundations and grounding it at each foundation ground-rod.

Bond metal junction boxes and metal conduit to the circuit grounding conductors in accordance with the National Electrical Code.

Refer to Article 7.18, "Electrical Requirements," for electrical certification and electrical licensing requirements

The required electrical certifications course is available and is scheduled periodically by Texas Engineering Extension Service (TEEX). Alternatively, Contractors may purchase an entire course for their personnel to be held at a time and location of their choice as negotiated through TEEX. For more information contact:

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Texas Engineering Extension Service (TEEX)
TxDOT Electrical System Course
(979) 845-6563

Item 628 – Electrical Services

Meet at the service locations with representatives of the Department, electrical utility company, and City of El Paso (Traffic Section) at least twelve weeks before electric power is needed to finalize exact service pole placement and resolve any issues.

Any electrical costs for connection, test, and operation will be the responsibility of the government agency that will have the final operational control of the items built.

Remove the existing service enclosure and conduit on service poles that are to be reused or abandoned. Payment for removal will be considered subsidiary to this Item.

Item 644 – Small Roadside Sign Assemblies

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

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

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

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

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

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

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

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

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

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All signs removed will remain property of the Department.

Item 662 – Work Zone Pavement Markings

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

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

Item 666 –Retro reflectorized Pavement Markings

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

Air blasting is required as pavement surface preparation.

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

Item 672 – Raised Pavement Markers

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

Air blasting is required for pavement surface preparation.

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

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

Removal of all existing raised pavement markers will be considered subsidiary to the various bid items.

Item 1005 – Loose Aggregate for Ground Cover

Provide a sample of aggregate color to Project Engineer for approval.

Keep rock 1 inch below top of concrete or concrete curb.

Rock colors will not be changed to match Contractor's rock.

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Secure locally quarried aggregate rock that is clean, free from foreign materials and debris prior to placement and approved by the Engineer.

Clean and wash all aggregate for groundcover prior to placement.

Use crushed rhyolite rock, graded to range 3/4 in. to 1-1/2 in. size and placed in a uniform rock layer at 3" and 1" below top of curb for Type I aggregate. Provide Padre Canyon Red or use Franklin Red, as shown on plans or as approved prior to placement.

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

All TMA Operators must participate in a TMA workshop to be conducted by the El Paso District Safety Office, on the proper use of TMAs, prior to working on Department Right of Way (ROW).

A certificate of completion will be issued to TMA Operators that successfully complete the TMA workshop. The certificate of completion must be carried by TMA Operators at all times while working on Department right of way.

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

Therefore, 2 total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

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

Table 6

Basis of Estimate for Stationary TMAS

Basis of Estimate for Stationary TMAs		
Sheet	Sheet Description	Required TMAs
TCP (2-4)-18 TCP (2-6)-18	Lane closures on Multilane Conventional Roads Lane Closures on Divided Highways	3

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Item 6394 – Smart Photocontrol

Photocell shall be compatible to ROAM system at each fixture.

The contractor shall record all photocell ID numbers and pole ID numbers prior to installation.

This information must be submitted to the Streets and Maintenance Department.

The contractor shall be responsible for coordinating the programming of the ID/Registration of each photocell with the Streets and Maintenance Department.

Performance Requirements:

Photocells shall be able to remote turn off and on and communicate with neighbor controls and gateway devices via 2.4 Gigahertz radio signals within a mas network. Capable of remote turn off or on and capable of assignment of groups to be controlled over the network as a single unit.

Photocells shall communicate with neighbor controls and gateway devices via 2.4 Gigahertz radio signals within a mash network and a communications range of 1000 ft. line of sight.

Communications between controls must require a direct line of sight view and should control all luminaires on which it is installed. Photocells shall be a locking type photocontrol as per ANSI C136.10 and should require a 7-pin receptacle for luminaire. They should communicate with other controls and gateways devices via radio signal.



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HIGHWAY SH 20

COUNTY El Paso

QUANTITY SHEET

CONTROL SECTION JOB				0001-01-063		0001-01-066		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00066142		A00133673			
COUNTY				El Paso		El Paso			
HIGHWAY				SH 20		SH 20			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW	STA			148.000		148.000	
	104-6009	REMOVING CONC (RIPRAP)	SY			207.000		207.000	
	104-6011	REMOVING CONC (MEDIANS)	SY			72.000		72.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY			87.000		87.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY			428.000		428.000	
	104-6021	REMOVING CONC (CURB)	LF			162.000		162.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF			71.000		71.000	
	105-6008	REMOVING STAB BASE AND ASPH PAV (6")	SY			64.000		64.000	
	110-6001	EXCAVATION (ROADWAY)	CY			342.000		342.000	
	110-6003	EXCAVATION (SPECIAL)	CY			26.750		26.750	
	132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CY	896.000		50.000		946.000	
	310-6005	PRIME COAT (AE-P)	GAL	322.000				322.000	
	340-6050	D-GR HMA(SQ) TY-C PG70-22	TON	477.000				477.000	
	354-6057	PLANE ASPH CONC PAV (4")	SY			10,217.000		10,217.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF			480.000		480.000	
	420-6051	CL C CONC (CULV)	CY			12.000		12.000	
	432-6003	RIPRAP (CONC)(6 IN)	CY			14.000		14.000	
	442-6012	STR STEEL (RAILS / POSTS / PLATES)	LB			187.000		187.000	
	450-6050	RAIL (HANDRAIL)(TY D)	LF			193.000		193.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF			7.000		7.000	
	465-6160	INLET(COMPL)(PAZD)(FG)(4FTX4FT-4FTX4FT)	EA			4.000		4.000	
	479-6001	ADJUSTING MANHOLES	EA			3.000		3.000	
	480-6001	CLEAN EXIST CULVERTS	EA			1.000		1.000	
	500-6001	MOBILIZATION	LS			100.00%		100.00%	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO			10.000		10.000	
	506-6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF			60.000		60.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF			60.000		60.000	
	506-6037	SANDBAGS FOR EROSION CONTROL (12")	LF			198.000		198.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF			3,902.000		3,902.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF			3,902.000		3,902.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF			498.000		498.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF			498.000		498.000	
	512-6009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF			100.000		100.000	
	512-6010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF			80.000		80.000	
	512-6057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF			100.000		100.000	
	512-6058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF			80.000		80.000	
	528-6001	COLORED TEXTURED CONC (4")	SY			2,746.000		2,746.000	



CONTROLLING PROJECT ID 0001-01-063

DISTRICT El Paso
HIGHWAY SH 20

COUNTY El Paso

QUANTITY SHEET

CONTROL SECTION JOB				0001-01-063		0001-01-066		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00066142		A00133673			
COUNTY				El Paso		El Paso			
HIGHWAY				SH 20		SH 20			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	529-6002	CONC CURB (TY II)	LF			396.000		396.000	
	529-6005	CONC CURB (MONO) (TY II)	LF	204.000				204.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF			27.000		27.000	
	529-6013	CONC CURB (SPECIAL) (TYPE II)	LF	18,340.000				18,340.000	
	529-6015	CONC CURB (TY C1)	LF			162.000		162.000	
	529-6018	CONC CURB (TY F3)	LF			102.000		102.000	
	529-6020	CONC CURB & GUTTER (ARMOR CURB)	LF			28.000		28.000	
	529-6038	CONC CURB (RIBBON)	LF			54.000		54.000	
	530-6004	DRIVEWAYS (CONC)	SY			964.000		964.000	
	531-6001	CONC SIDEWALKS (4")	SY			2,568.000		2,568.000	
	531-6004	CURB RAMPS (TY 1)	EA			6.000		6.000	
	531-6005	CURB RAMPS (TY 2)	EA			1.000		1.000	
	531-6013	CURB RAMPS (TY 10)	EA			1.000		1.000	
	531-6016	CURB RAMPS (TY 21)	EA	1.000				1.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF			109.000		109.000	
	542-6002	REMOVE TERMINAL ANCHOR SECTION	EA			1.000		1.000	
	560-6011	MAILBOX INSTALL-S (TWW-POST) TY 4	EA			2.000		2.000	
	610-6101	REPLACE LUMINAIRE W/LED (150W EQ)	EA			15.000		15.000	
	610-6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA			13.000		13.000	
	610-6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA			60.000		60.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF			7,951.000		7,951.000	
	618-6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF			2,612.000		2,612.000	
	618-6029	CONDT (PVC) (SCH 40) (3")	LF			115.000		115.000	
	618-6030	CONDT (PVC) (SCH 40) (3") (BORE)	LF			115.000		115.000	
	618-6070	CONDT (RM) (2")	LF			57.000		57.000	
	620-6006	ELEC CONDR (NO.10) INSULATED	LF			22,623.000		22,623.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF			12,264.000		12,264.000	
	620-6015	ELEC CONDR (NO.2) BARE	LF			298.000		298.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA			40.000		40.000	
	624-6008	GROUND BOX TY C (162911)W/APRON	EA			2.000		2.000	
	628-6006	ELC SRV TY A 120/240 060(NS)SS(E)GC(O)	EA			2.000		2.000	
	628-6041	ELC SRV TY A 240/480 060(NS)SS(E)GC(O)	EA			2.000		2.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA			45.000		45.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA			27.000		27.000	
	644-6067	IN SM RD SN SUP&AM (INST SIGN ONLY)	EA			1.000		1.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA			2.000		2.000	
	644-6075	RELOCATE SM RD SN SUP&AM(SIGN ONLY)	EA			2.000		2.000	



DISTRICT	COUNTY	CCSJ	SHEET
El Paso	El Paso	0001-01-063	18A



CONTROLLING PROJECT ID 0001-01-063

DISTRICT El Paso
HIGHWAY SH 20

COUNTY El Paso

QUANTITY SHEET

CONTROL SECTION JOB				0001-01-063		0001-01-066		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00066142		A00133673			
COUNTY				El Paso		El Paso			
HIGHWAY				SH 20		SH 20			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	644-6076	REMOVE SM RD SN SUP&AM	EA			2.000		2.000	
	658-6100	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	EA			5.000		5.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF			6,228.000		6,228.000	
	662-6061	WK ZN PAV MRK REMOV (W)4"(DOT)	LF			173.000		173.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF			21,839.000		21,839.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)	LF			4,566.000		4,566.000	
	662-6080	WK ZN PAV MRK REMOV (W)(ARROW)	EA			25.000		25.000	
	662-6090	WK ZN PAV MRK REMOV (W)(WORD)	EA			25.000		25.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF			22,226.000		22,226.000	
	666-6029	REFL PAV MRK TY I (W)8"(DOT)(090MIL)	LF			90.000		90.000	
	666-6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF			9,710.000		9,710.000	
	666-6176	REFL PAV MRK TY II (W) 8" (DOT)	LF			90.000		90.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF			9,710.000		9,710.000	
	666-6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF			24,983.000		24,983.000	
	666-6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF			7,655.000		7,655.000	
	666-6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF			8,856.000		8,856.000	
	666-6440	REFL PAV MRK TY II (Y)(CURB)	LF			1,376.000		1,376.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF			4,077.000		4,077.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA			57.000		57.000	
	668-6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA			7.000		7.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA			63.000		63.000	
	672-6007	REFL PAV MRKR TY I-C	EA			148.000		148.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA			513.000		513.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA			813.000		813.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF			76,854.000		76,854.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF			1,270.000		1,270.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF			2,333.000		2,333.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF			747.000		747.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA			28.000		28.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA			23.000		23.000	
	678-6001	PAV SURF PREP FOR MRK (4")	LF			33,839.000		33,839.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF			7,655.000		7,655.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF			9,800.000		9,800.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF			4,077.000		4,077.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA			57.000		57.000	
	678-6012	PAV SURF PREP FOR MRK (UTURN ARR)	EA			7.000		7.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA			63.000		63.000	



CONTROLLING PROJECT ID 0001-01-063



DISTRICT El Paso
HIGHWAY SH 20

COUNTY El Paso

QUANTITY SHEET


CONTROL SECTION JOB				0001-01-063		0001-01-066		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00066142		A00133673			
COUNTY				El Paso		El Paso			
HIGHWAY				SH 20		SH 20			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA			3.000		3.000	
	684-6010	TRF SIG CBL (TY A)(12 AWG)(5 CONDR)	LF			258.000		258.000	
	684-6053	TRF SIG CBL (TY A)(18 AWG)(2 CONDR)	LF			225.000		225.000	
	687-6001	PED POLE ASSEMBLY	EA			3.000		3.000	
	687-6005	REMOVE PED POLE ASSEMBLY	EA			1.000		1.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA			3.000		3.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA			3.000		3.000	
	1005-6001	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	CY			355.000		355.000	
	6000-6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA			41.000		41.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA			4.000		4.000	
	6027-6003	CONDUIT (PREPARE)	LF			15.000		15.000	
	6027-6008	GROUND BOX (PREPARE)	EA			1.000		1.000	
	6027-6009	GROUND BOX (ADJUST)	EA			1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY			193.000		193.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY			4.000		4.000	
	6394-6001	SMART PHOTOCONTROL	EA			133.000		133.000	
	02	RAILROAD FLAGGING: RAILROAD FORCE ACCOUNT WORK	LS			1.000		1.000	
	14	PUBLIC UTILITY FORCE ACCT WORK (PARTICIPATING)	LS			1.000		1.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS			1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000		1.000	

CSJ 0001-01-066 SUMMARY OF TRAFFIC CONTROL ITEMS																
TRAFFIC CONTROL PLAN	500 6001	502 6001	512 6009	512 6010	512 6057	512 6058	662 6060	662 6061	662 6063	662 6071	662 6080	662 6090	662 6095	6001 6002	6185 6002	6185 6005
	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	PORT CTB (REMOVE) (LOW PROF) (TY 1)	PORT CTB (REMOVE) (LOW PROF) (TY 2)	WK ZN PAV MRK REMOV (W) 4" (BRK)	WK ZN PAV MRK REMOV (W) 4" (DOT)	WK ZN PAV MRK REMOV (W) 4" (SLD)	WK ZN PAV MRK REMOV (W) 8" (SLD)	WK ZN PAV MRK REMOV (W) (ARROW)	WK ZN PAV MRK REMOV (W) (WORD)	WK ZN PAV MRK REMOV (Y) 4" (SLD)	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	LS	MO	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA	DAY	DAY
PHASE 1 STEP 1 CSJ 0001-01-066																
SHEET 1							34		135	70	1	1	156			
SHEET 2							500		2000	455	2	2	1913			
SHEET 3							460		1834	495	2	2	1808			
SHEET 4							500		1875	169	1	1	1814			
SHEET 5							350	56	1400	660	2	2	1418			
PHASE 1 SUBTOTAL							1844	56	7244	1849	8	8	7109			
PHASE 2 STEP 1 CSJ 0001-01-066																
SHEET 1							84	51	336	168	1	1	352			
SHEET 2							500		1809	788	6	6	1650			
SHEET 3							500		1530	840	2	2	1840			
SHEET 4							564		563				1238			
PHASE 2 SUBTOTAL							1648	51	4238	1796	9	9	5080			
PHASE 3 STEP 1 CSJ 0001-01-066																
SHEET 1			40	40	40	40										
SHEET 4			60	40	60	40	70		280							
PHASE 3 STEP1 SUBTOTAL			100	80	100	80	70		280							
PHASE 3 STEP 2 CSJ 0001-01-066																
SHEET 1							273		1017	343	2	2	461			
SHEET 2							500		1909	226	2	2	1875			
SHEET 3							370	66	1780	352	4	4	1650			
SHEET 4							500		2000				2000			
SHEET 5							333		1331				1041			
PHASE 3 STEP 2 SUBTOTAL							1976	66	8037	921	8	8	7027			
PHASE 4 STEP 1 CSJ 0001-01-066																
SHEET 2							373		825				889			
SHEET 3							317		1215				2121			
PHASE 4 SUBTOTAL							690		2040				3010			
PROJECT WIDE	1	10												4	193	4
PROJECT TOTALS	1	10	100	80	100	80	6228	173	21839	4566	25	25	22226	4	193	4

 <small>HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420</small>				
				
SH 20 DONIPHAN DR.				
QUANTITY SUMMARY TCP				
SHEET 1 OF 6				
DESIGNED:	AM	STATE	DISTRICT	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC. 19

CSJ 0001-01-066 SUMMARY OF REMOVAL ITEMS										
REMOVAL LAYOUT	104 6009 REMOVING CONC (RIPRAP)	104 6011 REMOVING CONC (MEDIANS)	104 6015 REMOVING CONC (SIDEWALKS)	104 6017 REMOVING CONC (DRIVEWAYS)	104 6021 REMOVING CONC (CURB)	104 6022 REMOVING CONC (CURB AND GUTTER)	105 6008 REMOVING STAB BASE AND ASPH PAV (6")	354 6057 PLANE ASPH CONC PAV (4")	542 6001 REMOVE METAL BEAM GUARD FENCE	542 6002 REMOVE TERMINAL ANCHOR SECTION
	SY	SY	SY	SY	LF	LF	SY	SY	LF	EA
SHEET 1								67		
SHEET 2				93	37		3	868		
SHEET 3	31							979		
SHEET 4								1299		
SHEET 5			30			49		788		
SHEET 6								705		
SHEET 7								1000		
SHEET 8	55		10	12			9	488	70	
SHEET 9	54		4	171	85	22	52	1177	5	
SHEET 10								718		
SHEET 11				136	40			799	34	1
SHEET 12	6	31	10					373		
SHEET 13	30	41	33					770		
SHEET 14				16				186		
SHEET 15	31									
SHEET 16										
PROJECT TOTALS	207	72	87	428	162	71	64	10217	109	1

CSJ 0001-01-066 SUMMARY OF REMOVAL ITEMS								
REMOVAL LAYOUT	677 6001 ELIM EXT PAV MRK & MRKS (4")	677 6003 ELIM EXT PAV MRK & MRKS (8")	677 6005 ELIM EXT PAV MRK & MRKS (12")	677 6007 ELIM EXT PAV MRK & MRKS (24")	677 6008 ELIM EXT PAV MRK & MRKS (ARROW)	677 6012 ELIM EXT PAV MRK & MRKS (WORD)	687 6005 REMOVE PED POLE ASSEMBLY	6000 6022 REMOVE ROADWAY ILLUM ASSEMBLY (HPS)
	LF	LF	LF	LF	EA	EA	EA	EA
SHEET 1	2465	130	154	66	2	1		
SHEET 2	6312				1	1		3
SHEET 3	5262	101	152	136	1	1		3
SHEET 4	6056			24				4
SHEET 5	5126	132	290	122	4	2	1	4
SHEET 6	4535	480			6	6		3
SHEET 7	5575				1	1		4
SHEET 8	5697				1	1		2
SHEET 9	5780				1	1		4
SHEET 10	5067		398	161	5	3		3
SHEET 11	5540							1
SHEET 12	4408		431	55	2	2		5
SHEET 13	4284	380	451	55	4	4		4
SHEET 14	4500							1
SHEET 15	5271	47	457	128				
SHEET 16	976							
PROJECT TOTALS	76854	1270	2333	747	28	23	1	41

HNTB <small>HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420</small>				
 Texas Department of Transportation				
SH 20 DONIPHAN DR.				
QUANTITY SUMMARY REMOVAL				
SHEET 2 OF 6				
DESIGNED:	AM	STATE	DISTRICT	COUNTY
CHECKED:	SH	TEXAS	EL PASO	EL PASO
DRAWN:	AM	CONTROL	SECTION	JOB
CHECKED:	SH	0001	01	063, ETC.
				20

SUMMARY OF QUANTITIES CSJ 0001-01-066

ROADWAY PLAN	100 6002	110 6001	132 6005	432 6003	442 6012	450 6050	464 6005	479 6001	528 6001	529 6002	529 6008	529 6015
	PREPARING ROW	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (ORD COMP) (TY C)	RIPRAP (CONC) (6 IN)	STR STEEL (RAILS / POSTS / PLATES)	RAIL (HANDRAIL) (TY D)	RC PIPE (CL III) (24 IN)	ADJUSTING MANHOLES	COLORED TEXTURED CONC (4")	CONC CURB (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (TY C1)
	STA	CY	CY	CY	LB	LF	LF	EA	SY	LF	LF	LF
SHEET 1	6								37			
SHEET 2	10	10	1						382			
SHEET 3	10	14	19	2		57	7	1	330			
SHEET 4	10								206			
SHEET 5	10	5							456		19	
SHEET 6	10	28	1					1	407			
SHEET 7	10	18	1						317			
SHEET 8	10	36	1	2	187	50			191	46		
SHEET 9	10	15	5	4					1	108	8	
SHEET 10	10	29				42			32			
SHEET 11	10	48	6	6		44			125	32		
SHEET 12	10	44	4						236			
SHEET 13	10	22	5									78
SHEET 14	10	50	2					1	26			
SHEET 15	10	23	5							210		84
SHEET 16	2											
PROJECT WIDE												
PROJECT TOTALS	148	342	50	14	187	193	7	3	2746	396	27	162

CSJ 0001-01-066 SUMMARY OF ROADWAY ITEMS

ROADWAY PLAN	529 6018	529 6020	529 6038	530 6004	531 6001	531 6004	531 6005	531 6013	560 6011	1005 6001
	CONC CURB (TY F3)	CONC CURB & GUTTER (ARMOR CURB)	CONC CURB (RIBBON)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)	CURB RAMPS (TY 2)	CURB RAMPS (TY 10)	MAILBOX INSTALL-S (TWW-POST) TY 4	LOOSE AGGR FOR GROUND COVER (TYPE I)
	LF	LF	LF	SY	SY	EA	EA	EA	EA	CY
SHEET 1				96	58					14
SHEET 2	58				141					27
SHEET 3										65
SHEET 4					32	2				
SHEET 5				105	239					
SHEET 6					173					29
SHEET 7		28		21	247	2				11
SHEET 8				221	182	2				74
SHEET 9				140	157					38
SHEET 10	44		54	114	438					32
SHEET 11					240					
SHEET 12					191		1	1		56
SHEET 13				17	312				2	9
SHEET 14					158					
SHEET 15										
SHEET 16										
PROJECT WIDE				250						
PROJECT TOTALS	102	28	54	964	2568	6	1	1	2	355

CSJ 0001-01-063 SUMMARY OF ROADWAY ITEMS

ROADWAY PLAN	132 6005	310 6005	340 6050	529 6005	529 6013	531 6016
	EMBANKMENT (FINAL) (ORD COMP) (TY C)	PRIME COAT (AE-P)	D-GR HMA (SQ) TY-C PG70-22	CONC CURB (MONO) (TY II)	CONC CURB (SPECIAL) (TYPE II)	CURB RAMPS (TY 21)
	CY	GAL	TON	LF	LF	EA
SHEET 1	5	3	4		150	
SHEET 2	74	31	44		1729	
SHEET 3	85	33	48		1727	
SHEET 4	122	32	45		1771	
SHEET 5	65	33	46		1750	
SHEET 6	58	28	40		1599	
SHEET 7	87	32	45		1826	
SHEET 8	43	2	23		928	
SHEET 9	108	32	45		1716	
SHEET 10	63	26	37		1397	1
SHEET 11	66	32	48		1772	
SHEET 12	28	16	22	94	872	
SHEET 13	78	16	22	110	768	
SHEET 14	14	6	8		335	
SHEET 15						
SHEET 16						
PROJECT TOTALS	896	322	477	204	18341	1

NOTE TO CONTRACTOR:
ADDITIONAL DRIVEWAY QUANTITY PROVIDED
FOR USE DURING CONSTRUCTION, AS NEEDED.

PDF Filename: 0021 - DONIPHAN DR. QUANTITY SUMMARY ROADWAY SHEET 3 OF 6.pdf

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SH 20
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QUANTITY SUMMARY
ROADWAY

SHEET 3 OF 6

DESIGNED:	AM	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	21

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CSJ 0001-01-066 SUMMARY OF DRAINAGE ITEMS				
	110-6003	420-6051	465-6160	480-6001
DRAINAGE PLAN	EXCAVATION (SPECIAL)	CL C CONC (CULV)	INLET (COMPL) (PAZD) (FG) (4FTX4FT-4FTX4FT)	CLEAN EXIST CULVERTS
	CY	CY	EA	EA
SHEET 1				
SHEET 2				
SHEET 3	15	12	4	1
SHEET 4				
PROJECT TOTALS	15	12	4	1

CSJ 0001-01-066 SUMMARY OF ILLUMINATION ITEMS														
ILLUMINATION PLAN	110 6003	416 6029	610 6101	610 6102	610 6161	618 6023	618 6024	618 6070	620 6006	620 6010	624 6002	628 6006	628 6041	6394 6001
	EXCAVATION (SPECIAL)	DRILL SHAFT (RDWY ILL POLE) (30 IN)	REPLACE LUMINAIRE W/LED (150W EQ)	REPLACE LUMINAIRE W/LED (250W EQ)	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 40) (2") (BORE)	CONDT (RM) (2")	ELEC CONDR (NO. 10) INSULATED	ELEC CONDR (NO. 6) INSULATED	GROUND BOX TY A (122311) W/A PRON	ELC SRV TY A 120/240 060 (NS) SS (E) GC (O)	ELC SRV TY A 240/480 060 (NS) SS (E) GC (O)	SMART PHOTOCONTROL
	CY	LF	EA	EA	EA	LF	LF	LF	LF	LF	EA	EA	EA	EA
SHEET 1	0.25	8			1	20				90				2
SHEET 2	1.00	40			5	830	170			3300	4			10
SHEET 3	1.00	48			6	797	238	28		3639	6			12
SHEET 4	1.00	40			5	871	130			3243	2			10
SHEET 5	1.00	48			6	871	180		1701	1992	4		1	12
SHEET 6	1.00	48			6	736	264		3330		4			12
SHEET 7	1.00	40			5	775	102		2841		2			10
SHEET 8	1.00	24		2	3	416	41	25	1446		3			8
SHEET 9	1.00	48			6	802	234	4	3120		4			12
SHEET 10	1.00	40		1	5	640	428		3855		6		1	11
SHEET 11	0.25	16		3	2	275			825					7
SHEET 12	1.00	32	6		4	335	345		2220		2	1		8
SHEET 13	1.00	40	3		5	499	446		3105		3	1		10
SHEET 14	0.25	8		3	1	50			180					5
SHEET 15				4										4
SHEET 16			6											
PROJECT TOTALS	11.75	480	15	13	60	7917	2578	57	22623	12264	40	2	2	133

CSJ 0001-01-066 SUMMARY OF TRAFFIC SIGNAL ITEMS											
TRAFFIC SIGNAL PLAN	618 6023	618 6024	618 6029	618 6030	620 6015	624 6008	684 6010	684 6053	6027 6003	6027 6008	6027 6009
	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 40) (BORE)	CONDT (PVC) (SCH 40) (3")	CONDT (PVC) (SCH 40) (3") (BORE)	ELEC CONDR (NO. 2)	GROUND BOX TY C (162911)	TRF SIG CBL (TY A) (12 AWG) (5)	TRF SIG CBL (TY A) (18 AWG) (2)	CONDUIT (PREPARE)	GROUND BOX (PREPARE)	GROUND BOX (ADJUST)
	LF	LF	LF	LF	LF	EA	LF	LF	LF	EA	EA
SHEET 1 OF 1	34	34	115	115	298	2	258	225	15	1	1
PROJECT TOTALS	34	34	115	115	298	2	258	225	15	1	1

CSJ 0001-01-066 SUMMARY OF TRAFFIC SIGNAL ADA ITEMS				
TRAFFIC SIGNAL PLAN	682 6018	687 6001	688 6001	688 6003
	PED SIG SEC (LED) (COUNTDOWN)	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)	PED DETECTOR CONTROLLER UNIT
	EA	EA	EA	EA
SHEET 1 OF 1	3	3	3	3
PROJECT TOTALS	3	3	3	3

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**SH 20
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QUANTITY SUMMARY**
ILLUMINATION, DRAINAGE
AND SIGNALS

SHEET 4 OF 6

DESIGNED:	AM	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	22

CSJ 0001-01-066 SUMMARY OF PAVEMENT MARKING ITEMS																		
SIGNS & PAVEMENT MARKINGS LAYOUT	666 6029 REFL PAV MRK TY I (W) 8" (DOT) (090MIL)	666 6035 REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	666 6176 REFL PAV MRK TY II (W) 8" (DOT)	666 6178 REFL PAV MRK TY II (W) 8" (SLD)	666 6302 RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	666 6305 RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)	666 6314 RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	666 6440 REFL PAV MRK TY II (Y) (CURB)	668 6076 PREFAB PAV MRK TY C (W) (24") (SLD)	668 6077 PREFAB PAV MRK TY C (W) (ARROW)	668 6080 PREFAB PAV MRK TY C (W) (UTURN ARROW)	668 6085 PREFAB PAV MRK TY C (W) (WORD)	672 6007 REFL PAV MRKR TY I-C	672 6009 REFL PAV MRKR TY II-A-A	672 6010 REFL PAV MRKR TY II-C-R	678 6001 PAV SURF PREP FOR MRK (4")	678 6002 PAV SURF PREP FOR MRK (6")	678 6004 PAV SURF PREP FOR MRK (8")
	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF
SHEET 1		192		192	990	1140	1092	30	362	3		2	8	60	14	2082	1140	192
SHEET 2		659		659	1053	500		134		4	1	5			65	1053	500	659
SHEET 3		609		609	1759	406		180	207	4		4			52	1759	406	609
SHEET 4		373		373	1000	500		60	31	1	2	3			50	1000	500	373
SHEET 5		814		814	1082	390		60	273	5		5			66	1082	390	814
SHEET 6		993		993	1463	500		180		9		9			77	1463	500	993
SHEET 7		833		833	1120	500	16	60		6		6			60	1136	500	833
SHEET 8		342		342	1850	500	1953	30	38	2		2	45	98	58	3803	500	342
SHEET 9		486		486	1769	500		173	100	4		3			50	1769	500	486
SHEET 10	90	864	90	864	1621	354	218	215	460	5		6	11	11	50	1839	354	954
SHEET 11		850		850	2000	500		134		3	1	5			64	2000	500	850
SHEET 12		1450		1450	3220	390	180	60	1280	4	3	7	10	10	75	3400	390	1450
SHEET 13		992		992	1931	500	90		850	5		4			128	2021	500	992
SHEET 14					1850	500	1962	60	91				25	95	4	3812	500	
SHEET 15		253		253	1975	400	2745		385	2		2	13	138		4720	400	253
SHEET 16					300	75	600						30	31		900	75	
TOTAL	90	9710	90	9710	24983	7655	8856	1376	4077	57	7	63	148	513	813	33839	7655	9800

CSJ 0001-01-066 SUMMARY OF PAVEMENT MARKING ITEMS				
SIGNS & PAVEMENT MARKINGS LAYOUT	678 6008 PAV SURF PREP FOR MRK (24")	678 6009 PAV SURF PREP FOR MRK (ARROW)	678 6012 PAV SURF PREP FOR MRK (UTURN ARROW)	678 6016 PAV SURF PREP FOR MRK (WORD)
	LF	EA	EA	EA
SHEET 1	362	3		2
SHEET 2		4	1	5
SHEET 3	207	4		4
SHEET 4	31	1	2	3
SHEET 5	273	5		5
SHEET 6		9		9
SHEET 7		6		6
SHEET 8	38	2		2
SHEET 9	100	4		3
SHEET 10	460	5		6
SHEET 11		3	1	5
SHEET 12	1280	4	3	7
SHEET 13	850	5		4
SHEET 14	91			
SHEET 15	385	2		2
SHEET 16				
PROJECT TOTALS	4077	57	7	63

CSJ 0001-01-066 SUMMARY OF SIGNING							
SIGN AND PAVEMENT MARKINGS LAYOUT	644 6001 IN SM RD SN SUP&AM TY10BWG (1) SA (P)	644 6004 IN SM RD SN SUP&AM TY10BWG (1) SA (T)	644 6067 IN SM RD SN SUP&AM (INST SIGN ONLY)	644 6068 RELOCATE SM RD SN SUP&AM TY 10BWG	644 6075 RELOCATE SM RD SN SUP&AM (SIGN ONLY)	644 6076 REMOVE SM RD SN SUP&AM	658 6100 INSTL OM ASSM (OM-2Z) (WFLX) GND (BI)
	EA	EA	EA	EA	EA	EA	EA
SHEET 1	1						
SHEET 2	4					1	
SHEET 3	6	2					
SHEET 4	1	1					
SHEET 5	5	1			1		
SHEET 6	3	6		1			
SHEET 7	2	1					
SHEET 8	3	3		1			
SHEET 9	7	4					
SHEET 10	8	3					3
SHEET 11	3	5					2
SHEET 12	1						
SHEET 13	1					1	
SHEET 14		1	1		1		
SHEET 15							
TOTAL	45	27	1	2	2	2	5

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**SH 20
DONIPHAN DR.**

QUANTITY SUMMARY
SIGNING AND PAVEMENT MARKINGS

SHEET 5 OF 6

DESIGNED:	AM	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	23

CSJ 0001-01-066 SUMMARY OF SWP3 ITEMS							
SW3P LAYOUT	506 6004 ROCK FILTER DAMS (INSTALL) (TY 4)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6037 SANDBAGS FOR EROSION CONTROL (12")	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6040 BIODEG EROSN CONT LOGS (IN STL) (8")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
	LF	LF	LF	LF	LF	LF	LF
SHEET 1	20	20	32	251	251	88	88
SHEET 2			44	471	471	103	103
SHEET 3	20	20	34	1083	1083	76	76
SHEET 4	20	20	76	1071	1071	195	195
SHEET 5			12	1026	1026	36	36
PROJECT TOTALS	60	60	198	3902	3902	498	498

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 Texas Department of Transportation				
SH 20 DONIPHAN DR.				
QUANTITY SUMMARY SWP3				
SHEET 6 OF 6				
DESIGNED:	AM	STATE	DISTRICT	COUNTY
CHECKED:	SH	TEXAS	EL PASO	EL PASO
DRAWN:	AM	CONTROL	SECTION	JOB
CHECKED:	SH	0001	01	063, ETC.
				HWY NUMBER SH 20
				SHEET NUMBER 24

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. City of El Paso

2. No Action Required Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

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

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# _____

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

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The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input checked="" type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input checked="" type="checkbox"/> Biodeg. Erosion Control Logs	<input checked="" type="checkbox"/> Biodeg. Erosion Control Logs	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

III. CULTURAL RESOURCES

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

- No Action Required Required Action

Action No.

-
-
-
-

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- No Action Required Required Action

Action No.

-
-
-
-

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

- No Action Required Required Action

1. The Cave Myotis Bat and Big Brown Bat: Bat BMPs (listed below).

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 roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.

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. Exclusion devices can be installed by a qualified individual between September 1 and March 31.

E. Exclusion Devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of 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 recommended acceptable methods for excluding bats from structures.

F. If feature(s) used by bats are removed as a result of construction, replacement structures should be incorporated.

G. Bat-friendly design or artificial roosts should be constructed to replace these features, as practicable.

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

I. Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, 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 warm periods (nighttime temperatures 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.

J. 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 occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.

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

L. In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

2. Western Burrowing Owl: In addition to complying with the Migratory Bird Treaty Act (MBTA) perform the following Bird BMPs (listed below).

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.

3. Texas Horned Lizard: Reptile BMPs (listed below)


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

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

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

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

E. Due to increased activity (mating) of reptiles during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (April-May) season. Also, timing ground disturbing activities before October when reptiles become less active and may be using burrows in the project area is also encouraged.

 Texas Department of Transportation		Design Division Standard	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC			
FILE: epic.dgn	DN: TxDOT	CK: RG	DN: VP
©TxDOT: February 2015	CONT	SECT	JOB
12-12-2011 (DS) REVISIONS	0001	01	063, ETC.
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	ELP	EL PASO	25

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DATE: FILE:

F. When designing roads with curbs, consider using Type I or Type III curbs to provide a gentle slope to enable turtles and small animals to get out of roadways.

G. Avoid harvester ant mounds in the selection of Project Specific Locations (PSLs) where feasible.

4. Sand Prickly-Pear: Vegetation BMPs (listed below).

A. Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. Wherever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegetation.

B. To minimize adverse effects, activities should be planned to preserve mature trees, particularly acorn, nut or berry producing varieties. These types of vegetation have high value to wildlife as food and cover.

C. It is strongly recommended that trees greater than 12 inches in dbh are removed be replaced. TPWD's experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3: 1) lost should be provided to the extent practicable either on-site or off-site. Trees less than 12 inches dbh should be replaced at a 1: 1 ratio.

D. Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted native species.

E. When trees are planted, a maintenance plan that ensures at least an 85 percent survival rate after three years should be developed for the replacement trees.

F. The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.

G. The use of seed mix that contains seeds from only locally adapted native species is recommended.

H. Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NMP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

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

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

Yes No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.


VII. OTHER ENVIRONMENTAL ISSUES

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

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.

 Texas Department of Transportation		Design Division Standard		
<h2>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</h2> <h1>EPIC</h1>				
FILE: epic.dgn	DN: TxDOT	CK: RG	DN: VP	CK: AR
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS) REVISIONS	0001	01	063, ETC.	SH 20
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SMALES.	ELP	EL PASO	26	

I. GENERAL

- A. HANDLE TRAFFIC APPROPRIATELY THROUGHOUT THE PROJECT DURING CONSTRUCTION. PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AT ALL TIMES. ROADWAY CLOSURES ARE NOT ALLOWED UNLESS OTHERWISE SPECIFIED IN THE PLANS OR AS APPROVED BY THE ENGINEER. PROVIDE ACCESS TO PROPERTIES AND BUSINESSES ADJACENT TO THE RIGHT-OF-WAY (ROW) AT ALL TIMES FOR THE DURATION OF THE PROJECT. THE ADEQUACY OF THE PROPERTY ACCESS WILL BE DETERMINED BY THE TXDOT ENGINEER OR REPRESENTATIVE. CONSTRUCTION EQUIPMENT AND MATERIALS SHALL NOT BE LEFT IN A POSITION THAT WILL ENDANGER THE TRAVELING PUBLIC AT THE END OF EACH WORKDAY. MAINTAIN ADEQUATE SAFETY PROVISIONS THROUGHOUT THE PROJECT BY INCLUSION OF SIGNING, PAVEMENT MARKINGS, BARRIERS AND BARRICADES. CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) WHEN USING THESE PROVISIONS.
- B. THE USE OF THE ROW IS NOT EXCLUSIVE. COOPERATE WITH THE CITY, THE VARIOUS UTILITY COMPANIES, AND THEIR CONTRACTORS AS REQUIRED TO ALLOW ADJUSTMENTS TO BE MADE BY OTHERS. IF BY VIRTUE OF THE ADJUSTMENT OF THESE UTILITIES THE CONTRACTOR IS DELAYED, AN EXTENSION OF THE WORKING TIME MAY BE GRANTED; IF IN THE OPINION OF THE ENGINEER IT IS WARRANTED.
- C. ALL DETOURS, TRAFFIC MOVEMENTS, ETC., ARE DIRECTLY RELATED TO THE SEQUENCE OF WORK; THEREFORE, PROCEED WITH CONSTRUCTION OPERATIONS IN CONFORMITY WITH THE DETAILS SHOWN ON THE PLANS AND AS REQUIRED BY THIS NARRATIVE.
- D. THE CONTRACTOR MAY PROPOSE OR RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION IN WRITING TO THE ENGINEER. PROPOSED RECOMMENDATIONS ARE TO INCLUDE ANY CHANGES TO THE VARIOUS PAY ITEMS, IMPACT TO TRAFFIC, THE EFFECT OF THE OVERALL PROJECT IN TIME, AND EASE OF CONSTRUCTION. WRITTEN APPROVAL FROM THE ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH ANY CONSTRUCTION OPERATION BASED ON A REVISED PHASE/SEQUENCE OF WORK.
- E. OFF-DUTY POLICE OFFICERS MAY BE HIRED TO SUPPLEMENT THE WORK FORCE TO CONTROL TRAFFIC AT INTERSECTIONS AND ALONG THE ROADWAY DURING LANE CLOSURES AND/OR THE DETOURING OF TRAFFIC, CLOSURE OF ROADWAYS OR INTERSECTIONS, AND ANY OTHER CRITICAL PHASES OF TRAFFIC HANDLING AS DETERMINED BY THE ENGINEER.
- F. THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE NUMBER AND LOCATION OF SIGNS AND BARRICADES FROM WHAT IS INDICATED ON THE PLANS.
- G. "WEEKDAY WORKING HOURS" ARE DEFINED AS THE HOURS BETWEEN 9:00 PM SUNDAY TO 6:00 AM THURSDAY.
- H. "WEEKEND WORKING HOURS" ARE DEFINED AS THE HOURS BETWEEN 9:00 PM THURSDAY TO 6:00 AM SUNDAY.
- I. "OFF PEAK" HOURS ARE DEFINED AS A TIME FRAME BETWEEN 9:00 AM TO 3:00 PM MONDAY THROUGH FRIDAY FOR PREPARATION WORK ONLY. WORK SCHEDULED TO BE PROTECTED WITH LPCB CAN BE CONSTRUCTED AT ANY TIME. THE CONTRACTOR TO ENSURE THAT ACTIVITIES DO NOT IMPACT TRAFFIC FLOW.
- J. MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION, INCLUDING OFFSITE DRAINAGE FROM ADJACENT PROPERTIES AND AVOID IMPEDING FLOW FROM PRIVATE PROPERTY.
- K. PLACE CONSTRUCTION EXITS AS NEEDED OR AS DIRECTED BY THE ENGINEER.
- L. INSTALL ALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS TO PROTECT DOWNSTREAM INLETS AND PROPERTIES PRIOR TO BEGINNING ANY CONSTRUCTION PHASE OR INLETS AFFECTED BY ANY GIVEN PHASE. THESE MUST BE MAINTAINED FOR THE DURATION OF WORK WITH AREAS SUBJECT TO EROSION.
- M. COORDINATE WITH THE TXDOT SIGNAL SHOP PRIOR TO DISPOSAL OF REMOVED ILLUMINATION POLES.
- N. THE CONTRACTOR SHALL ONLY BE ALLOWED TO WORK DURING THE WEEKDAY WORKING HOURS, WEEKEND WORKING HOURS, AND OFF-PEAK HOURS AS DEFINED ABOVE. DURING OFF PEAK HOURS, PREPARATION OF WORK SHALL ONLY BE DONE AND SHALL KEEP ALL LANES OPEN AT ALL TIMES DURING THIS TIME PERIOD.
- O. ALL LANES WILL BE OPENED TO TRAFFIC AT THE END OF EACH WORKING DAY, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY LONGITUDINAL DIFFERENCE IN ELEVATION SHALL BE TAPERED TO MEET A MINIMUM 3:1 SLOPE AND PROVIDE SIGNAGE PER STANDARD WZ(UL)-13 AT LOCATIONS WHERE THIS CONDITION OCCURS.

- P. CONTRACTOR SHALL ONLY CLOSE LEFT TURN LANES AND RESTRICT LEFT TURN MOVEMENTS AT ONE INTERSECTION AT A TIME, AND ONLY WHEN WORK IS BEING DONE WITHIN THE LEFT TURN BAY. LEFT TURN LANES AND MOVEMENTS SHALL BE OPEN AND ALLOWED AT ADJACENT INTERSECTIONS, TO ALLOW TRAFFIC TO DO A LEFT TURN OR U-TURN AS A DETOUR FROM THE CLOSED LEFT TURN.
- Q. CONTRACTOR SHALL COORDINATE WITH TXDOT FOR BUS STOP IMPACTED ALONG THE WORK ZONE.
- R. CONTRACTOR SHALL COORDINATE THE WORK NEAR ST. FRANCIS OF ASSISI CATHOLIC CHURCH AND AVOID WORK DURING SERVICES.

II. SEQUENCE OF CONSTRUCTION

THE PROJECT IS TO BE SPLIT INTO FOUR (4) SEPARATE WORK PHASES; EACH REQUIRING SEPARATE ADVANCE WARNING SIGN SET-UPS. THE CONTRACTOR SHALL NOT WORK ON TWO (2) ADJACENT PHASES AT THE SAME TIME, BUT MAY WORK ON TWO SEPARATE PHASES, IF TXDOT ALLOWS.

PROJECT PHASING LIST - EACH PHASE HAS 2 STEPS:

- PHASE 1: THORN AVE TO REDD RD
- PHASE 2: REDD RD TO COATES DR
- PHASE 3: COATES DR TO ARTCRAFT RD
- PHASE 4: ARTCRAFT RD TO BORDERLAND RD

INSTALL ALL ADVANCE WARNING SIGNS APPLICABLE TO EACH WORK SEGMENT PRIOR TO BEGINNING ANY WORK.

PHASE 1 - FROM THORN AVE TO REDD RD:

PHASE 1 - STEP 1

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON BOTH ENDS OF THIS PHASE FOR MEDIAN WORK.
2. ELIMINATE EXISTING PAVEMENT MARKINGS, CLOSE THE TWO-WAY LEFT TURN LANE (TWLTL) AND PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS AND DEVICES AS SHOWN ON THE PLANS. USE TCP STANDARD (2-5a)-18.
3. REFER TO TRAFFIC CONTROL PLAN SHEETS AND INSTALL ALL PEDESTRIAN PATH SIGNAGE TO MAINTAIN A SAFE PEDESTRIAN PATH. REVISIONS CAN BE MADE AS DIRECTED BY THE ENGINEER BASED ON FIELD CONDITIONS.
4. CONSTRUCT MEDIANS. THE WORK ZONE STRIPING SHALL BE SET FOR TWO LANES OF TRAFFIC IN BOTH DIRECTIONS AND ONLY ONE LANE SHALL BE OPEN TO TRAFFIC DURING THE MEDIAN CONSTRUCTION WORK. ALL EQUIPMENT AND MATERIALS SHALL BE REMOVED FROM THE WORK ZONE AND BOTH LANES OPEN TO TRAFFIC AT THE END OF EACH WORKDAY.
5. INSTALL ILLUMINATION. REFER TO THE ILLUMINATION PLANS FOR POWER SOURCE LOCATION.
6. REMOVE LANE CLOSURE SIGNING AND DEVICES.
7. INSTALL PERMANENT PAVEMENT MARKINGS AND SIGNING. USE STANDARDS TCP(3-2)-13 AND TCP(3-3c)-14.
8. ACTIVATE ILLUMINATION THROUGHOUT LIMITS OF PHASE 1 - STEP 1.

PHASE 1 - STEP 2

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON SOUTH END OF THIS PHASE FOR CURB AND SIDEWALK WORK ON THE NORTHBOUND LANES SIDE.
2. REMOVE EXISTING ILLUMINATION ON BOTH SIDES OF ROADWAY ONCE PROPOSED ILLUMINATION HAS BEEN ACTIVATED. USE STANDARD TCP (2-5a)-18.
3. REMOVE EXISTING MBGF AND ANY CONFLICTING SIGNING.
4. CONSTRUCT THE CURB, ASPHALT, SIDEWALK, AND DRIVEWAYS FROM STA. 9+28 TO STA. 47+20.
5. MAKE REPAIRS TO EXISTING SIDEWALK, DRIVEWAYS, OR ANY MISCELLANEOUS RIPRAPPED AREA DAMAGED DURING THE ILLUMINATION POLE REMOVAL. SUBSIDIARY TO REMOVAL ITEMS.
6. REMOVE LANE CLOSURE SIGNING AND DEVICES.



Salvador Hernandez Jr.

4/30/2021

HNTB <small>HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420</small>					
Texas Department of Transportation					
SH 20 DONIPHAN DR.					
TRAFFIC CONTROL PLAN NARRATIVE					
<small>SHEET 1 OF 2</small>					
<small>DESIGNED:</small>	<small>SH</small>	<small>STATE</small>	<small>DISTRICT</small>	<small>COUNTY</small>	<small>HWY NUMBER</small>
<small>CHECKED:</small>	<small>JFP</small>	<small>TEXAS</small>	<small>EL PASO</small>	<small>EL PASO</small>	<small>SH 20</small>
<small>DRAWN:</small>	<small>AM</small>	<small>CONTROL</small>	<small>SECTION</small>	<small>JOB</small>	<small>SHEET NUMBER</small>
<small>CHECKED:</small>	<small>SH</small>	<small>0001</small>	<small>01</small>	<small>063, ETC.</small>	<small>27</small>

PHASE 2 - FROM REDD RD TO COATES DR:

PHASE 2 - STEP 1

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON BOTH ENDS OF THIS PHASE FOR MEDIAN WORK.
2. ELIMINATE EXISTING PAVEMENT MARKINGS AND PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS AND DEVICES FOR LANE CLOSURES AS SHOWN ON THE PLANS. USE STANDARD TCP(2-5a)-18.
3. REFER TO TRAFFIC CONTROL PLAN SHEETS AND INSTALL ALL PEDESTRIAN PATH SIGNAGE RECOMMENDED TO MAINTAIN A SAFE PEDESTRIAN PATH. THIS PLAN IS SUBJECT TO REVISIONS BASED ON FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.
4. CONSTRUCT MEDIANS. THE WORK ZONE STRIPING SHALL BE SET FOR TWO LANES OF TRAFFIC IN BOTH DIRECTIONS AND ONLY ONE LANE SHALL BE OPEN TO TRAFFIC DURING THE MEDIAN CONSTRUCTION WORK. ALL EQUIPMENT AND MATERIALS SHALL BE REMOVED FROM THE WORK ZONE AND BOTH LANES OPEN TO TRAFFIC AT THE END OF EACH WORKDAY.
5. INSTALL ILLUMINATION. REFER TO THE ILLUMINATION PLANS FOR POWER SOURCE LOCATION.
6. REMOVE LANE CLOSURE SIGNING AND DEVICES.
7. INSTALL PERMANENT PAVEMENT MARKINGS AND SIGNING. USE STANDARDS TCP(3-2)-13 AND TCP(3-3c)-14.
8. ACTIVATE ILLUMINATION THROUGHOUT LIMITS OF PHASE 1 - STEP 1.

PHASE 2 - FROM REDD RD TO COATES DR:

PHASE 2 - STEP 2

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON SOUTH END OF THIS PHASE FOR CURB AND SIDEWALK WORK ON THE NORTHBOUND LANES SIDE.
2. REMOVE EXISTING ILLUMINATION ON BOTH SIDES OF ROADWAY ONCE PROPOSED ILLUMINATION HAS BEEN ACTIVATED. USE STANDARD TCP (2-5a)-18.
3. REMOVE EXISTING MBGF AND ANY CONFLICTING SIGNING.
4. DRIVEWAYS TO BE KEPT HALF OPEN TO PROVIDE ACCESS AT ALL TIMES.
5. CONSTRUCT CURB, SIDEWALK, AND DRIVEWAYS FROM STA. 47+50 TO STA. 74+56.
6. MAKE REPAIRS TO EXISTING SIDEWALK, DRIVEWAYS, OR ANY MISCELLANEOUS RIPRAPPED AREA DAMAGED DURING THE ILLUMINATION POLE REMOVAL. SUBSIDIARY TO REMOVAL ITEMS.
7. REMOVE LANE CLOSURE SIGNING AND DEVICES.

PHASE 3 - FROM COATES DR TO ARTCRAFT:

PHASE 3 - STEP 1

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON SOUTH END OF THIS PHASE FOR CURB AND SIDEWALK WORK ON THE NORTHBOUND LANES SIDE.
2. REMOVE EXISTING ILLUMINATION ON BOTH SIDES OF ROADWAY ONCE PROPOSED ILLUMINATION HAS BEEN ACTIVATED. USE STANDARD TCP (2-5a)-18.
3. REMOVE EXISTING CURB, ASPHALT, MISCELLANEOUS CONCRETE, MBGF AND ANY CONFLICTING SIGNING.
4. DRIVEWAYS TO BE KEPT HALF OPEN TO PROVIDE ACCESS AT ALL TIMES.
5. CONSTRUCT THE CURB, DRIVEWAY, MBGF, SIDEWALK, CURB WALLS, AND PEDESTRIAN RAIL FROM STA. 75+19 TO STA. 114+90. CONSTRUCT PROPOSED PR11 ON EXISTING HEADWALL ON CULVERT AT STA. 79+87.
6. MAKE REPAIRS TO EXISTING SIDEWALK, DRIVEWAYS, OR ANY MISCELLANEOUS RIPRAPPED AREA DAMAGED DURING THE ILLUMINATION POLE REMOVAL.
7. REMOVE LANE CLOSURE SIGNING AND DEVICES.

PHASE 3 - STEP 2

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON BOTH ENDS OF THIS PHASE FOR MEDIAN WORK.

2. ELIMINATE EXISTING PAVEMENT MARKINGS AND PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS AND DEVICES FOR LANE CLOSURES AS SHOWN ON THE PLANS. USE STANDARD TCP(2-5a)-18.

3. REFER TO TRAFFIC CONTROL PLAN SHEETS AND INSTALL ALL PEDESTRIAN DETOUR SIGNAGE RECOMMENDED TO MAINTAIN A SAFE PEDESTRIAN PATH. THIS PLAN IS SUBJECT TO REVISIONS BASED ON FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.

4. REMOVE EXISTING MEDIAN AS SHOWN IN PLANS

5. CONSTRUCT MEDIANS. THE WORK ZONE STRIPING SHALL BE SET FOR TWO LANES OF TRAFFIC IN BOTH DIRECTIONS AND ONLY ONE LANE SHALL BE OPEN TO TRAFFIC DURING THE MEDIAN CONSTRUCTION WORK. ALL EQUIPMENT AND MATERIALS SHALL BE REMOVED FROM THE WORK ZONE AND BOTH LANES OPEN TO TRAFFIC AT THE END OF EACH WORKDAY.

6. INSTALL ILLUMINATION. REFER TO THE ILLUMINATION PLANS FOR POWER SOURCE LOCATION.

7. REMOVE LANE CLOSURE SIGNING AND DEVICES.

8. INSTALL PERMANENT PAVEMENT MARKINGS AND SIGNING. USE STANDARDS TCP(3-2)-13 AND TCP(3-3c)-14.

9. ACTIVATE ILLUMINATION THROUGHOUT LIMITS OF PHASE 3 - STEP 2.

PHASE 4 - FROM ARTCRAFT RD TO BORDERLAND RD:

PHASE 4 - STEP 1

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON BOTH ENDS OF THIS PHASE FOR MEDIAN WORK.

2. ELIMINATE EXISTING PAVEMENT MARKINGS AND PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS AND DEVICES FOR LANE CLOSURES AS SHOWN ON THE PLANS. USE STANDARD TCP(2-5a)-18.

3. REFER TO TRAFFIC CONTROL PLAN SHEETS AND INSTALL ALL PEDESTRIAN DETOUR SIGNAGE RECOMMENDED TO MAINTAIN A SAFE PEDESTRIAN PATH. THIS PLAN IS SUBJECT TO REVISIONS BASED ON FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.

4. REMOVE EXISTING MEDIAN AS SHOWN IN PLANS.

5. CONSTRUCT MEDIANS. THE WORK ZONE STRIPING SHALL BE SET FOR TWO LANES OF TRAFFIC IN BOTH DIRECTIONS AND ONLY ONE LANE SHALL BE OPEN TO TRAFFIC DURING THE MEDIAN CONSTRUCTION WORK. ALL EQUIPMENT AND MATERIALS SHALL BE REMOVED FROM THE WORK ZONE AND BOTH LANES OPEN TO TRAFFIC AT THE END OF EACH WORKDAY.

6. INSTALL ILLUMINATION. REFER TO THE ILLUMINATION PLANS FOR POWER SOURCE LOCATION.

7. REMOVE LANE CLOSURE SIGNING AND DEVICES.

8. INSTALL PERMANENT PAVEMENT MARKINGS AND SIGNING. USE STANDARDS TCP(3-2)-13 AND TCP(3-3c)-14.

9. ACTIVATE ILLUMINATION THROUGHOUT LIMITS OF PHASE 4 - STEP 1.

PHASE 4 - STEP 2

1. INSTALL LANE CLOSURE SIGNING AND DEVICES ON SOUTH END OF THIS PHASE FOR CURB AND SIDEWALK WORK ON THE NORTHBOUND LANES SIDE.

2. REMOVE EXISTING ILLUMINATION ON BOTH SIDES OF ROADWAY ONCE PROPOSED ILLUMINATION HAS BEEN ACTIVATED. USE STANDARD TCP (2-5a)-18.

3. REMOVE EXISTING RIPRAP AND ANY CONFLICTING SIGNING.

4. CONSTRUCT THE CURB WALL, SIDEWALK, AND DRIVEWAYS FROM STA. 126+39 TO STA. 144+38.

5. MAKE REPAIRS TO EXISTING SIDEWALK, DRIVEWAYS, OR ANY MISCELLANEOUS RIPRAPPED AREA DAMAGED DURING THE ILLUMINATION POLE REMOVAL.

6. REMOVE LANE CLOSURE SIGNING AND DEVICES.



Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.**

**TRAFFIC CONTROL PLAN
NARRATIVE**

SHEET 2 OF 2

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	28

4/30/2021

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TRAFFIC CONTROL PLAN PHASE 1 - STEP 1					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1, 6 OF 6	LONG TERM TRAFFIC SHIFT, TEMPORARY PAVEMENT MARKING, AND CHANNELIZING DEVICES (BARRELS)	TCP(2-5)-18 WZ(STPM)-13	TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18	REFER TO TCP PHASE 1 STEP 1 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, CHANNELIZING DEVICES, AND TEMPORARY PAVEMENT MARKINGS
SHEETS 2, 3, 4, 5 OF 6	LONG TERM TRAFFIC SHIFT, TEMPORARY PAVEMENT MARKING, CHANNELIZING DEVICES (BARRELS), AND MOBILE OPERATIONS FOR PERMANENT PAVEMENT MARKINGS	TCP(2-5)-18 TCP(3-2)-13 WZ(STPM)-13	TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18 TCP(3-2b)-13 TCP(3-3c)-14	REFER TO TCP PHASE 1 STEP 1 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, TEMPORARY PAVEMENT MARKINGS FOR MEDIAN CONSTRUCTION IN MIDDLE OF ROADWAY, AND INSTALL OF PERMANENT PAVEMENT MARKINGS AND SIGNING

TRAFFIC CONTROL PLAN PHASE 1 - STEP 2					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-2 OF 2	TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE	TCP(2-5)-18	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS. ONE LANE CLOSED	TCP(2-5a)-18	REFER TO TCP PHASE 1 STEP 2 FOR SETUP OF LANE CLOSURE FOR OUTER NORTHBOUND LANE AT SOUTH END FOR CURB AND SIDEWALK CONSTRUCTION AND REMOVAL OF EXISTING LUMINAIRES ALONG CORRIDOR

TRAFFIC CONTROL PLAN PHASE 2 - STEP 1					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1, 4 OF 4	TEMPORARY PAVEMENT MARKING, TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE, AND MOBILE OPERATIONS FOR PERMANENT PAVEMENT MARKINGS	TCP(2-5)-18 TCP(3-2)-13 TCP(3-3)-14 WZ(STPM)-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS., TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS, TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/REMOVAL, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18 TCP(3-2b)-13 TCP(3-3c)-14	REFER TO TCP PHASE 2 STEP 1 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, BARREL PLACEMENT, AND TEMPORARY PAVEMENT MARKINGS FOR MEDIAN CONSTRUCTION IN MIDDLE OF ROADWAY; INSTALL PERMANENT PAVEMENT MARKINGS AFTER CONSTRUCTION
SHEETS 2, 3, 4 OF 4	TEMPORARY PAVEMENT MARKING, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE, AND MOBILE OPERATIONS FOR PERMANENT PAVEMENT MARKINGS	TCP(2-5)-18 TCP(3-2)-13 TCP(3-3)-14 WZ(STPM)-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS., TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS, TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/REMOVAL, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18 TCP(3-2b)-13 TCP(3-3c)-14	REFER TO TCP PHASE 2 STEP 1 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, BARREL PLACEMENT, AND TEMPORARY PAVEMENT MARKINGS FOR MEDIAN CONSTRUCTION IN MIDDLE OF ROADWAY; INSTALL PERMANENT PAVEMENT MARKINGS AFTER CONSTRUCTION

TRAFFIC CONTROL PLAN PHASE 2 - STEP 2					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-3 OF 3	TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE	TCP(2-5)-18 WZ(BTS-1)-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS. ONE LANE CLOSED	TCP(2-5a)-18 NEAR SIDE LANE CLOSURE	REFER TO TCP PHASE 2 STEP 2 FOR SETUP OF LANE CLOSURE FOR OUTER NORTHBOUND LANE AT SOUTH END FOR CURB AND SIDEWALK CONSTRUCTION AND REMOVAL OF EXISTING LUMINAIRES ALONG CORRIDOR



Salvador Hernandez Jr.

4/30/2021

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SH 20 DONIPHAN DR.					
TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE					
SHEET 1 OF 2					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	29

4/30/2021

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TRAFFIC CONTROL PLAN PHASE 3 - STEP 1					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-5 OF 5	TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE	TCP(2-5)-18 LPCB-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS. ONE LANE CLOSED	TCP(2-5a)-18	REFER TO TCP PHASE 3 STEP 1 FOR SETUP OF LANE CLOSURE FOR OUTER NORTHBOUND LANE AT SOUTH END FOR CURB AND SIDEWALK CONSTRUCTION AND REMOVAL OF EXISTING LUMINAIRES ALONG CORRIDOR

TRAFFIC CONTROL PLAN PHASE 3 - STEP 2					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-5 OF 6	TEMPORARY PAVEMENT MARKING, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE, AND MOBILE OPERATIONS FOR PERMANENT PAVEMENT MARKINGS	TCP(2-5)-18 TCP(3-2)-13 TCP(3-3)-14 WZ(STPM)-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS., TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS, TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/REMOVAL, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18 TCP(3-2b)-13 TCP(3-3c)-14	REFER TO TCP PHASE 3 STEP 2 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, BARREL PLACEMENT, AND TEMPORARY PAVEMENT MARKINGS FOR MEDIAN CONSTRUCTION IN MIDDLE OF ROADWAY; INSTALL PERMANENT PAVEMENT MARKINGS AFTER CONSTRUCTION



TRAFFIC CONTROL PLAN PHASE 4 - STEP 1					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-3 OF 3	TEMPORARY PAVEMENT MARKING, TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE, AND MOBILE OPERATIONS FOR PERMANENT PAVEMENT MARKINGS	TCP(2-5)-18 TCP(3-2)-13 TCP(3-3)-14 WZ(STPM)-13	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS., TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS, TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/REMOVAL, WORK ZONE SHORT TERM PAVEMENT MARKINGS	TCP(2-5a)-18 TCP(3-2b)-13 TCP(3-3c)-14	REFER TO TCP PHASE 4 STEP 1 FOR SETUP OF LANE SHIFT FOR SOUTHBOUND AND NORTHBOUND TRAFFIC, BARREL PLACEMENT, AND TEMPORARY PAVEMENT MARKINGS FOR MEDIAN CONSTRUCTION IN MIDDLE OF ROADWAY; INSTALL PERMANENT PAVEMENT MARKINGS AFTER CONSTRUCTION

TRAFFIC CONTROL PLAN PHASE 4 - STEP 2					
SHEET NO.	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
SHEETS 1-4 OF 4	TRANSITION PLACEMENT OF TCP CHANNELING DEVICES, CHANNELIZING DEVICES (BARRELS), LONG TERM LANE CLOSURE	TCP(2-5)-18	TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS. ONE LANE CLOSED	TCP(2-5a)-18	REFER TO TCP PHASE 4 STEP 2 FOR SETUP OF LANE CLOSURE FOR OUTER NORTHBOUND LANE AT SOUTH END FOR CURB AND SIDEWALK CONSTRUCTION AND REMOVAL OF EXISTING LUMINAIRES ALONG CORRIDOR



Salvador Hernandez Jr.

4/30/2021

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 Texas Department of Transportation					
SH 20 DONIPHAN DR.					
TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE					
SHEET 2 OF 2					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	30

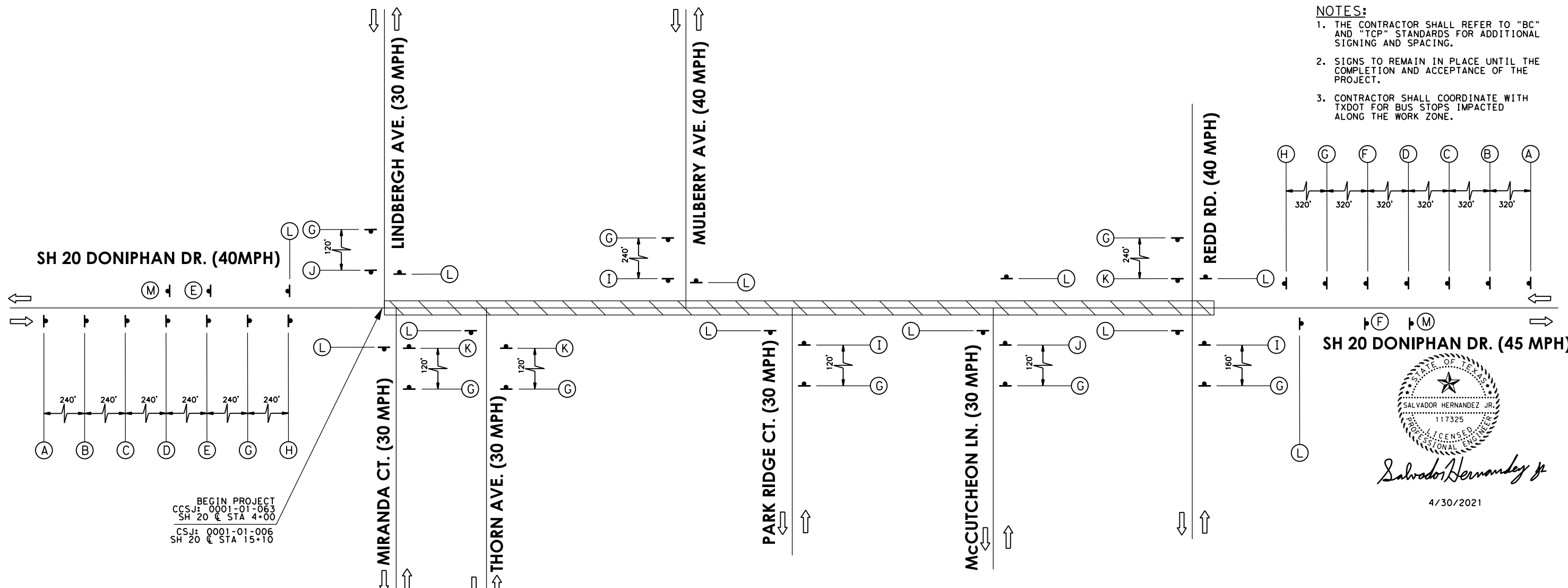
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LEGEND

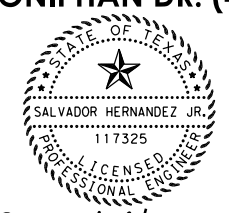
-  SIGN POST
-  SIGN NUMBER
-  TRAFFIC FLOW
-  WORK ZONE

NOTES:

1. THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR ADDITIONAL SIGNING AND SPACING.
2. SIGNS TO REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. CONTRACTOR SHALL COORDINATE WITH TXDOT FOR BUS STOPS IMPACTED ALONG THE WORK ZONE.






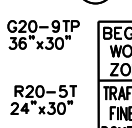
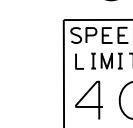
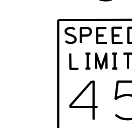

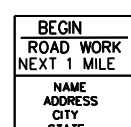
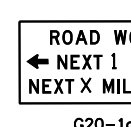
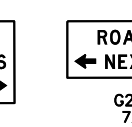
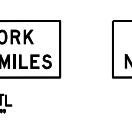
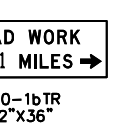
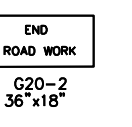
BEGIN PROJECT
 CCSJ: 0001-01-063
 SH 20 @ STA 4+00
 CSJ: 0001-01-006
 SH 20 @ STA 15+10




Salvador Hernandez Jr.

4/30/2021

NOT TO SCALE

 CW21-1T 48"x48"	 R20-3T 48"x42"	 G20-10T 60"x48"	 G20-9TP 36"x30" R20-5T 24"x30" R20-5gTP 24"x12"	 R2-1 24"x30"	 R2-1 24"x30"	 CW20-1D 48"x48"
 G20-5T 48"x24" G20-6T 48"x30"	 G20-1aT 72"x36"	 G20-1bTL 72"x36"	 G20-1bTR 72"x36"	 G20-2 36"x18"	 G20-2bT 36"x18"	

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SH 20 DONIPHAN DR.
TRAFFIC CONTROL PLAN
ADVANCE WARNING SIGNS
 PHASE 1

SHEET 1 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	31

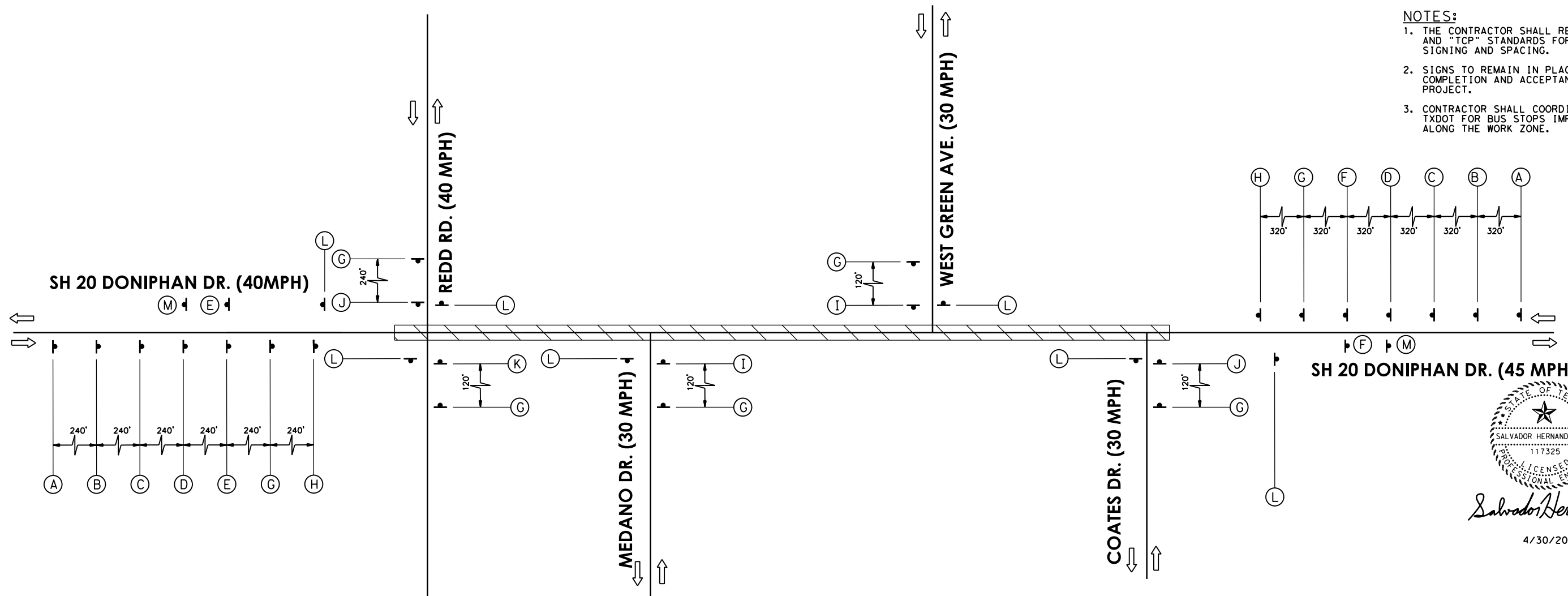
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LEGEND

-  SIGN POST
-  SIGN NUMBER
-  TRAFFIC FLOW
-  WORK ZONE

NOTES:




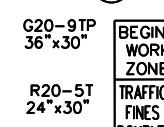



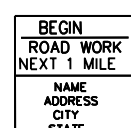

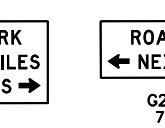
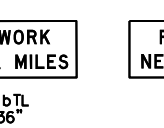
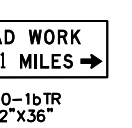
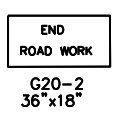
1. THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR ADDITIONAL SIGNING AND SPACING.
2. SIGNS TO REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. CONTRACTOR SHALL COORDINATE WITH TXDOT FOR BUS STOPS IMPACTED ALONG THE WORK ZONE.




Salvador Hernandez Jr.

4/30/2021

NOT TO SCALE

(A)	(B)	(C)	(D)	(E)	(F)	(G)
						
CW21-1T 48"x48"	R20-3T 48"x42"	G20-10T 60"x48"	G20-9TP 36"x30" R20-5T 24"x30" R20-5gTP 24"x12"	R2-1 24"x30"	R2-1 24"x30"	CW20-1D 48"x48"
(H)	(I)	(J)	(K)	(L)	(M)	
						
G20-5T 48"x24" G20-6T 48"x30"	G20-1aT 72"x36"	G20-1bTL 72"x36"	G20-1bTR 72"x36"	G20-2 36"x18"	G20-2bT 30"x18"	

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 **Texas Department of Transportation**

**SH 20
DONIPHAN DR.**

**TRAFFIC CONTROL PLAN
ADVANCE WARNING SIGNS
PHASE 2**

SHEET 2 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	32

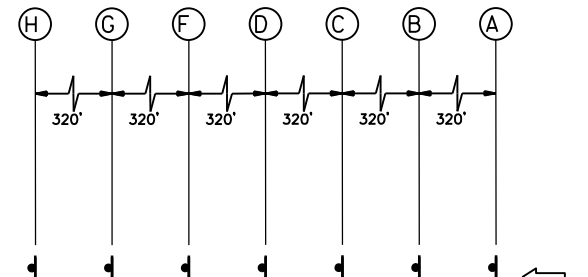
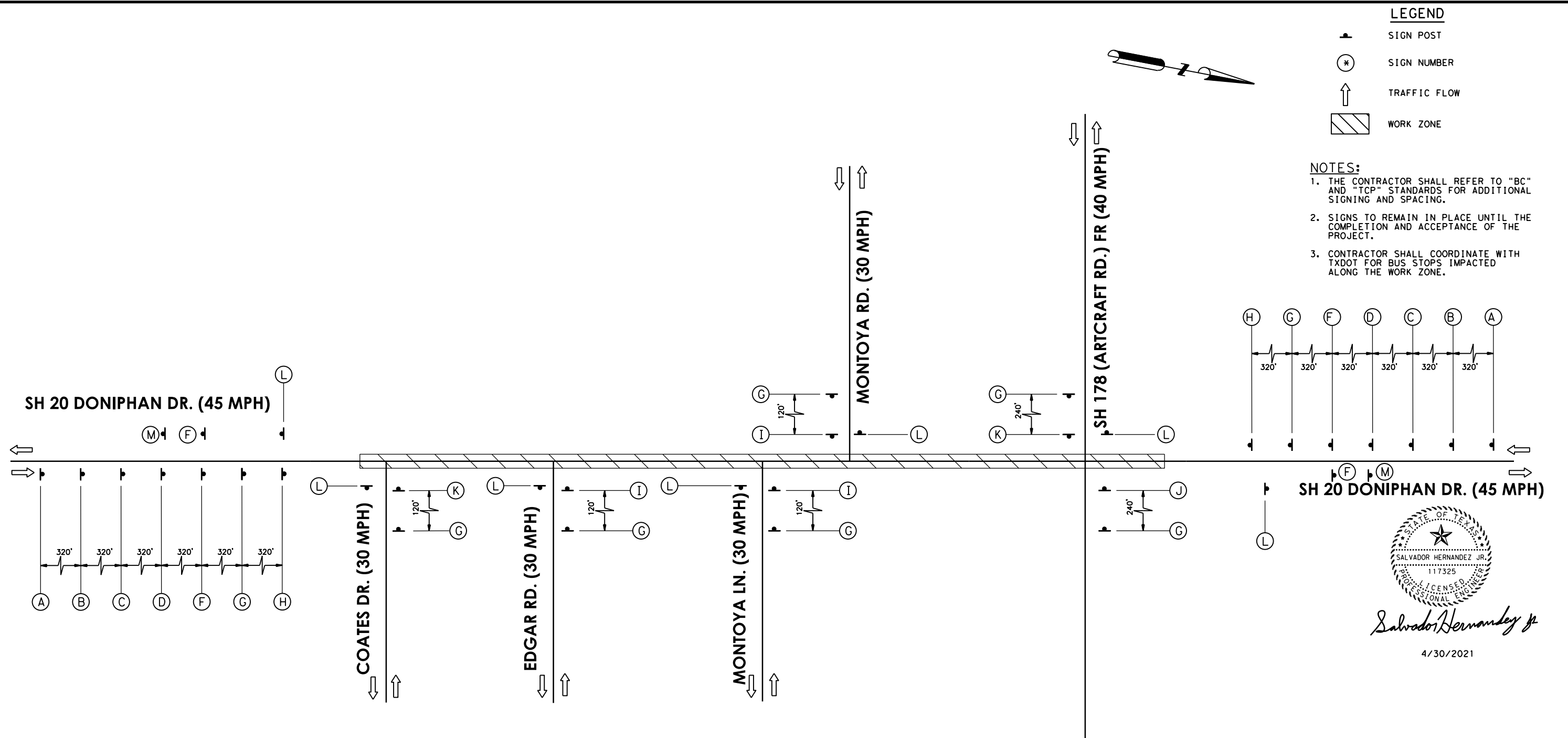
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LEGEND

-  SIGN POST
-  SIGN NUMBER
-  TRAFFIC FLOW
-  WORK ZONE




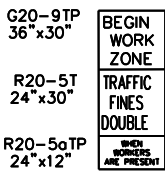




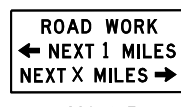


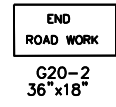
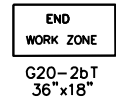
NOTES:

1. THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR ADDITIONAL SIGNING AND SPACING.
2. SIGNS TO REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. CONTRACTOR SHALL COORDINATE WITH TXDOT FOR BUS STOPS IMPACTED ALONG THE WORK ZONE.




Salvador Hernandez Jr.
4/30/2021

NOT TO SCALE

<p>(A)</p>  <p>CW21-1T 48"x48"</p>	<p>(B)</p>  <p>R20-3T 48"x42"</p>	<p>(C)</p>  <p>G20-10T 60"x48"</p>	<p>(D)</p>  <p>G20-9TP 36"x30"</p> <p>R20-5T 24"x30"</p> <p>R20-5gTP 24"x12"</p>	<p>(E)</p>  <p>R2-1 24"x30"</p>	<p>(F)</p>  <p>R2-1 24"x30"</p>	<p>(G)</p>  <p>CW20-1D 48"x48"</p>
<p>(H)</p>  <p>G20-5T 48"x24"</p> <p>G20-6T 48"x30"</p>	<p>(I)</p>  <p>G20-1aT 72"x36"</p>	<p>(J)</p>  <p>G20-1bTL 72"x36"</p>	<p>(K)</p>  <p>G20-1bTR 72"x36"</p>	<p>(L)</p>  <p>G20-2 36"x18"</p>	<p>(M)</p>  <p>G20-2bT 36"x18"</p>	

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Firm Registration Number 420

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**SH 20
DONIPHAN DR.**

**TRAFFIC CONTROL PLAN
ADVANCE WARNING SIGNS
PHASE 3**

SHEET 3 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	33

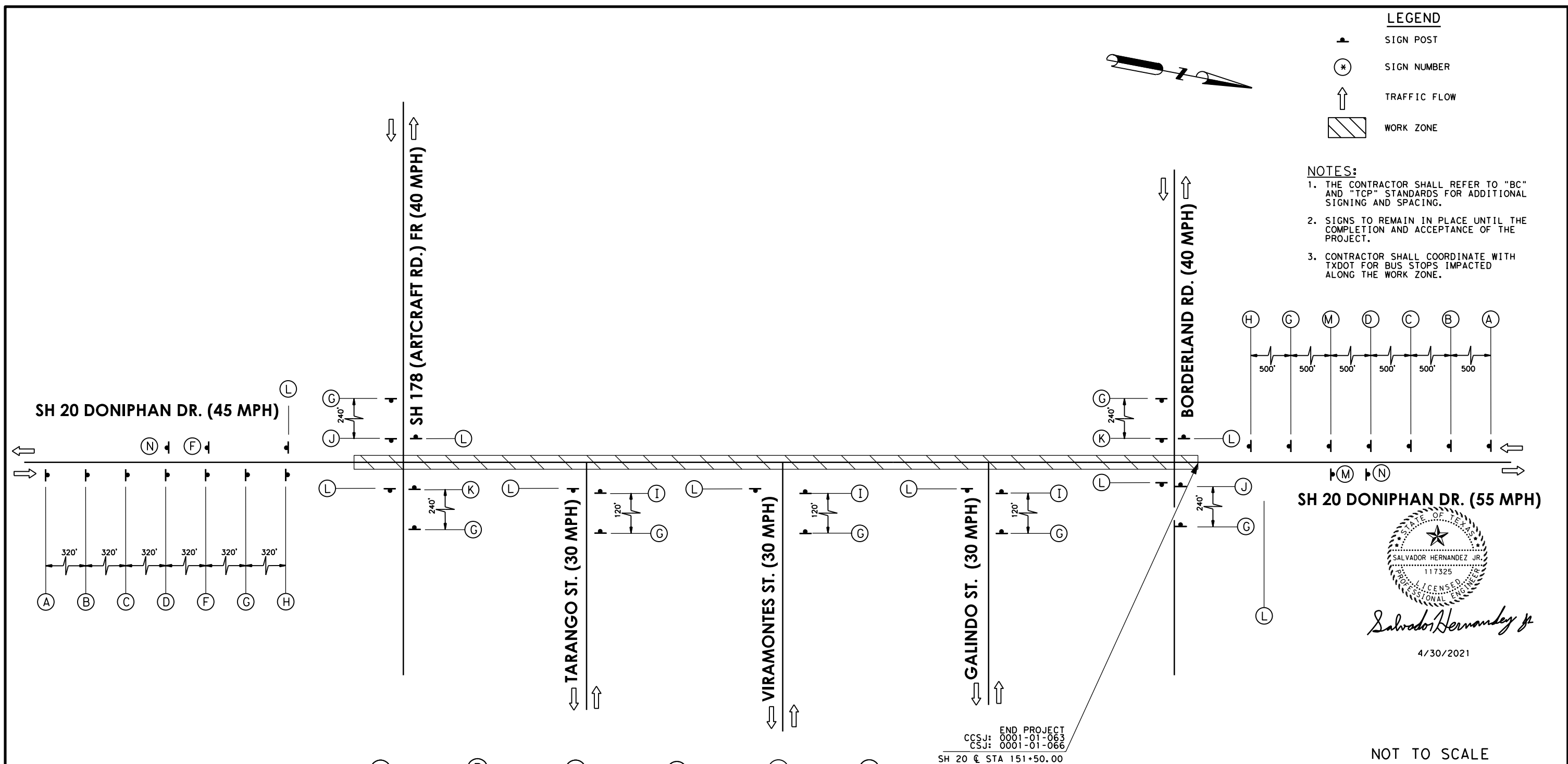
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LEGEND

-  SIGN POST
-  SIGN NUMBER
-  TRAFFIC FLOW
-  WORK ZONE

NOTES:

1. THE CONTRACTOR SHALL REFER TO "BC" AND "TCP" STANDARDS FOR ADDITIONAL SIGNING AND SPACING.
2. SIGNS TO REMAIN IN PLACE UNTIL THE COMPLETION AND ACCEPTANCE OF THE PROJECT.
3. CONTRACTOR SHALL COORDINATE WITH TXDOT FOR BUS STOPS IMPACTED ALONG THE WORK ZONE.




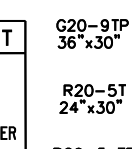
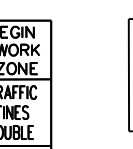


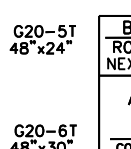
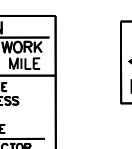
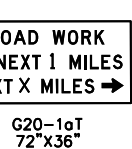
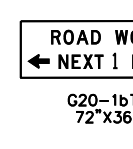
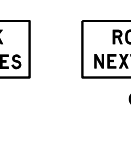
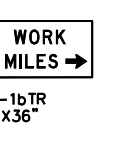
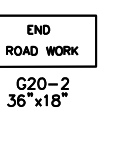


END PROJECT
 CCSJ: 0001-01-063
 CSJ: 0001-01-066
 SH 20 @ STA 151+50.00




Salvador Hernandez Jr.
 4/30/2021

NOT TO SCALE

<p>(A)</p>  <p>CW21-1T 48"x48"</p>	<p>(B)</p>  <p>R20-3T 48"x42"</p>	<p>(C)</p>  <p>G20-10T 60"x48"</p>	<p>(D)</p>  <p>G20-9TP 36"x30"</p> <p>R20-5T 24"x30"</p> <p>R20-5aTP 24"x12"</p>	<p>(E)</p>  <p>R2-1 24"x30"</p>	<p>(F)</p>  <p>R2-1 24"x30"</p>	<p>(G)</p>  <p>CW20-1D 48"x48"</p>	<p>(H)</p>  <p>G20-5T 48"x24"</p> <p>G20-6T 48"x30"</p>	<p>(I)</p>  <p>G20-1aT 72"x36"</p>	<p>(J)</p>  <p>G20-1bTL 72"x36"</p>	<p>(K)</p>  <p>G20-1bTR 72"x36"</p>	<p>(L)</p>  <p>G20-2 36"x18"</p>	<p>(M)</p>  <p>R2-1 24"x30"</p>	<p>(N)</p>  <p>G20-2bT 36"x18"</p>
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 Infrastructure Solutions
 Firm Registration Number 420

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SH 20 DONIPHAN DR.
TRAFFIC CONTROL PLAN
ADVANCE WARNING SIGNS
 PHASE 4

SHEET 4 OF 4

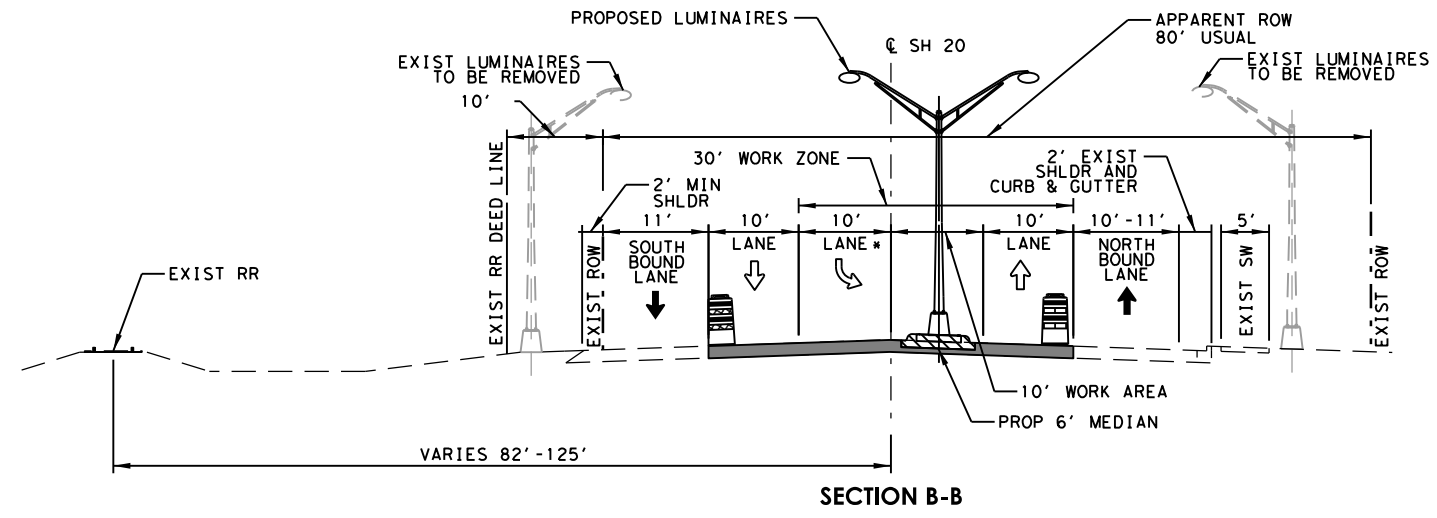
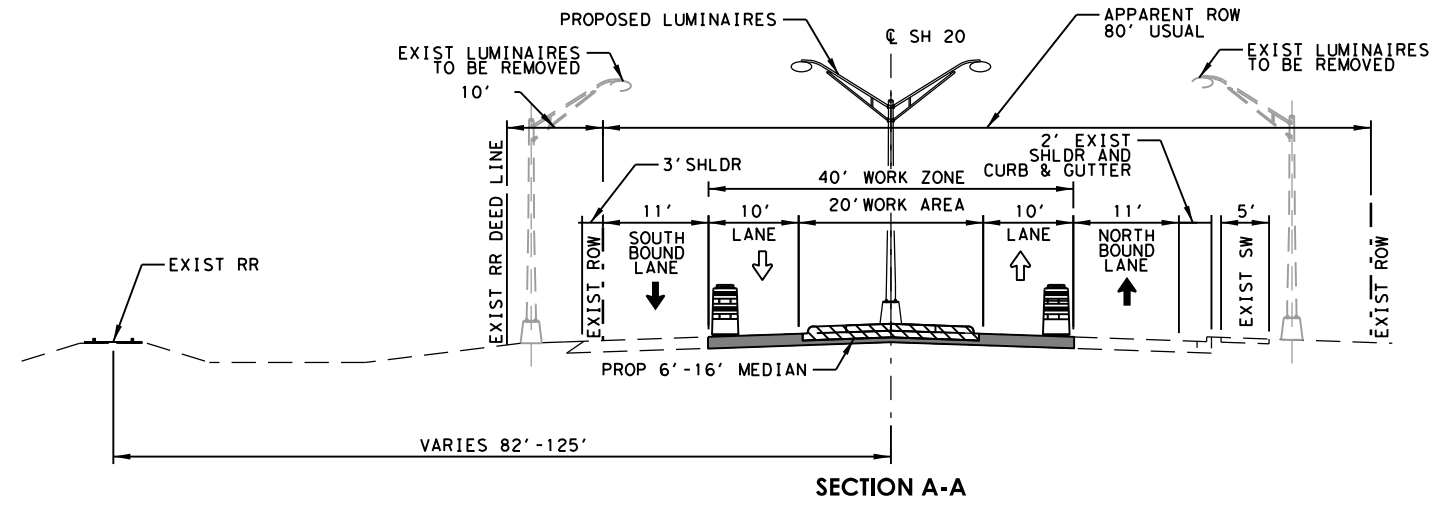
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CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	34

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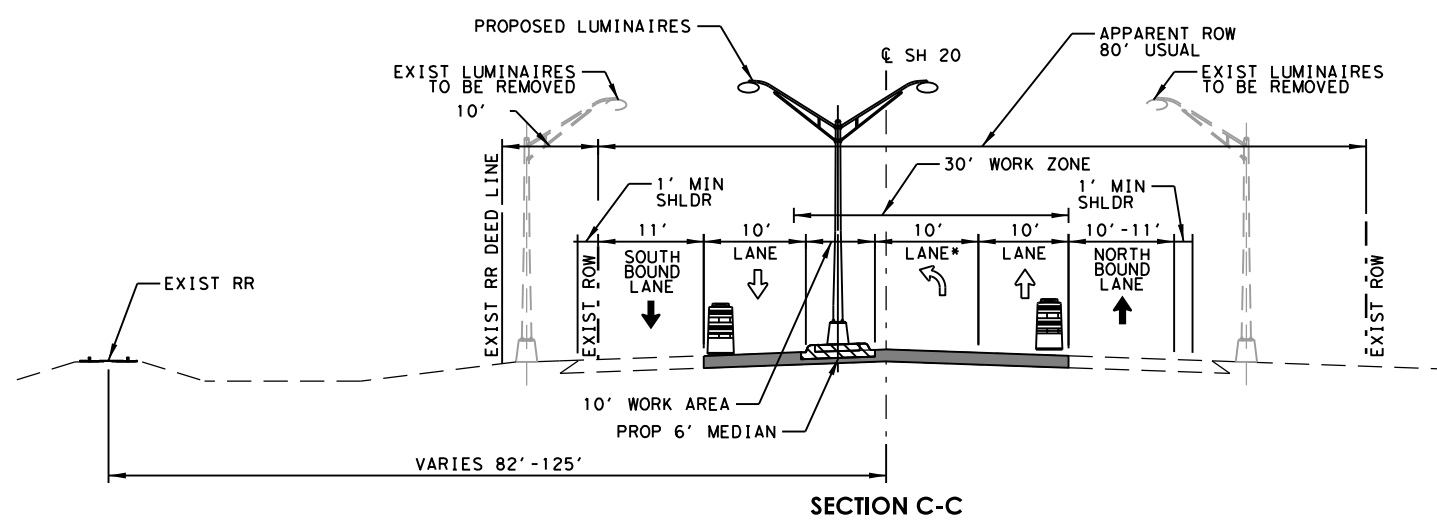
LEGEND

-  TRAFFIC FLOW DURING CONSTRUCTION HOURS
-  TRAFFIC FLOW OUTSIDE OF CONSTRUCTION HOURS
-  WORK AREA
-  WORK ZONE
-  PERMANENT WORK PREVIOUSLY COMPLETED

NOTE:
 1. THE CONTRACTOR SHALL REFER TO THE TCP NARRATIVE FOR WORKING HOURS.
 2. TYPICAL SECTIONS REFERRED IN TCP SHEETS



* SOME LEFT TURN LANE ARE CLOSED SEE TCP LAYOUTS




* SOME LEFT TURN LANE ARE CLOSED SEE TCP LAYOUTS








Salvador Hernandez Jr.

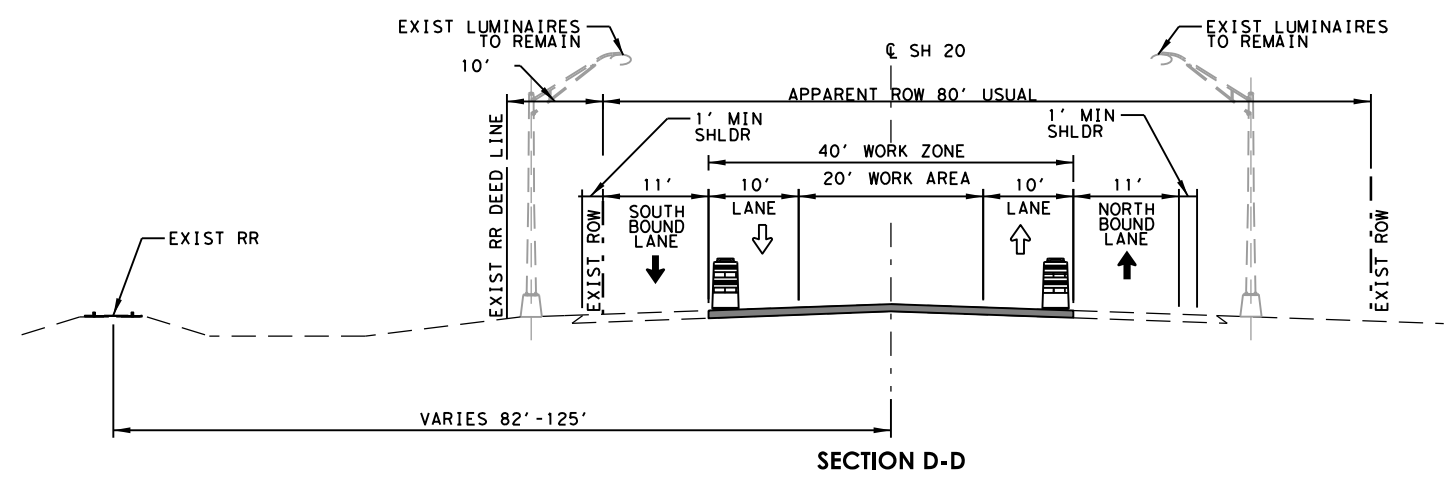
4/30/2021

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SH 20 DONIPHAN DR. TRAFFIC CONTROL PLAN TYPICAL SECTIONS					
SHEET 1 OF 5					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	35

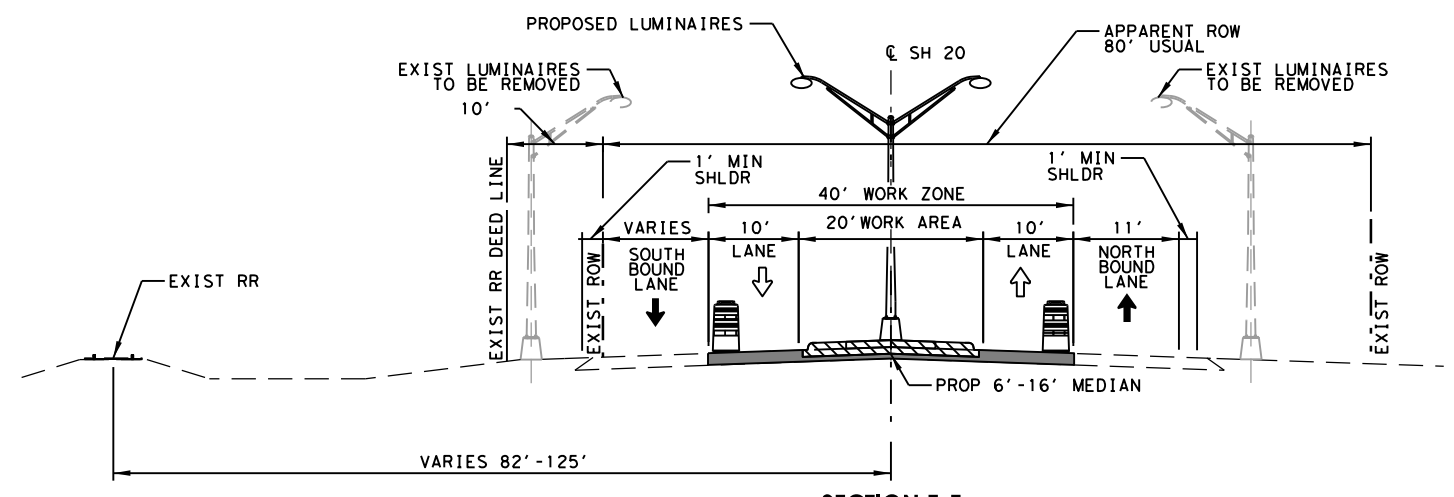
LEGEND

-  TRAFFIC FLOW DURING CONSTRUCTION HOURS
-  TRAFFIC FLOW OUTSIDE OF CONSTRUCTION HOURS
-  WORK AREA
-  WORK ZONE
-  PERMANENT WORK PREVIOUSLY COMPLETED

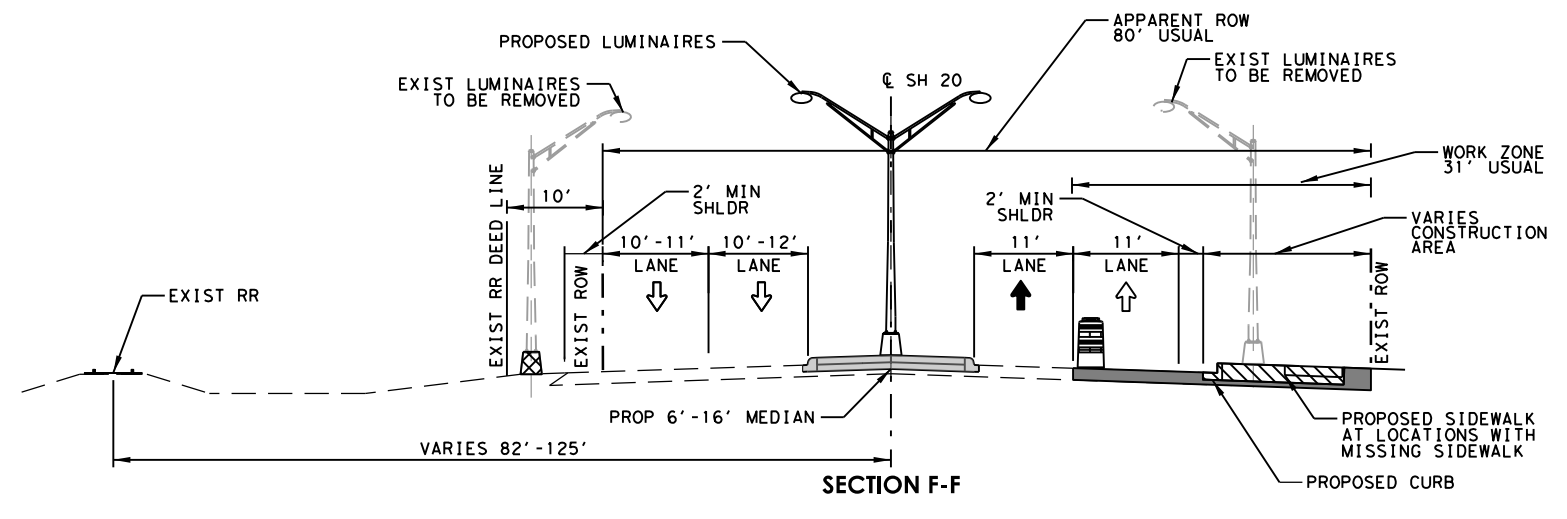
- NOTE:**
1. THE CONTRACTOR SHALL REFER TO THE TCP NARRATIVE FOR WORKING HOURS.
 2. TYPICAL SECTIONS REFERRED IN TCP SHEETS



SECTION D-D



SECTION E-E




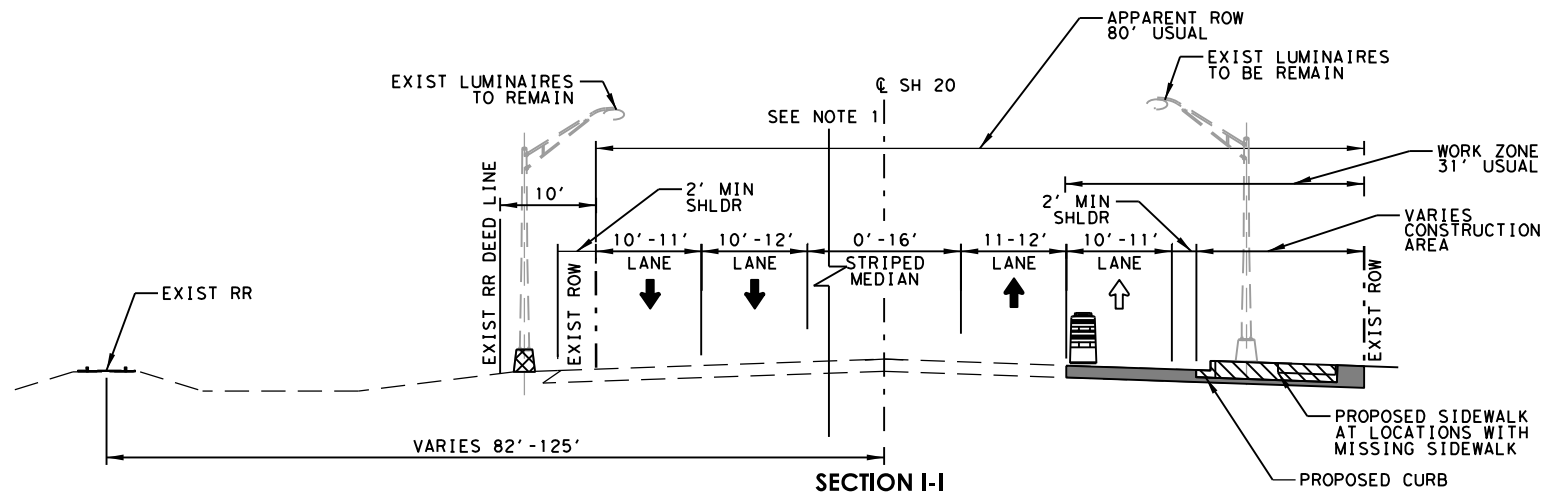
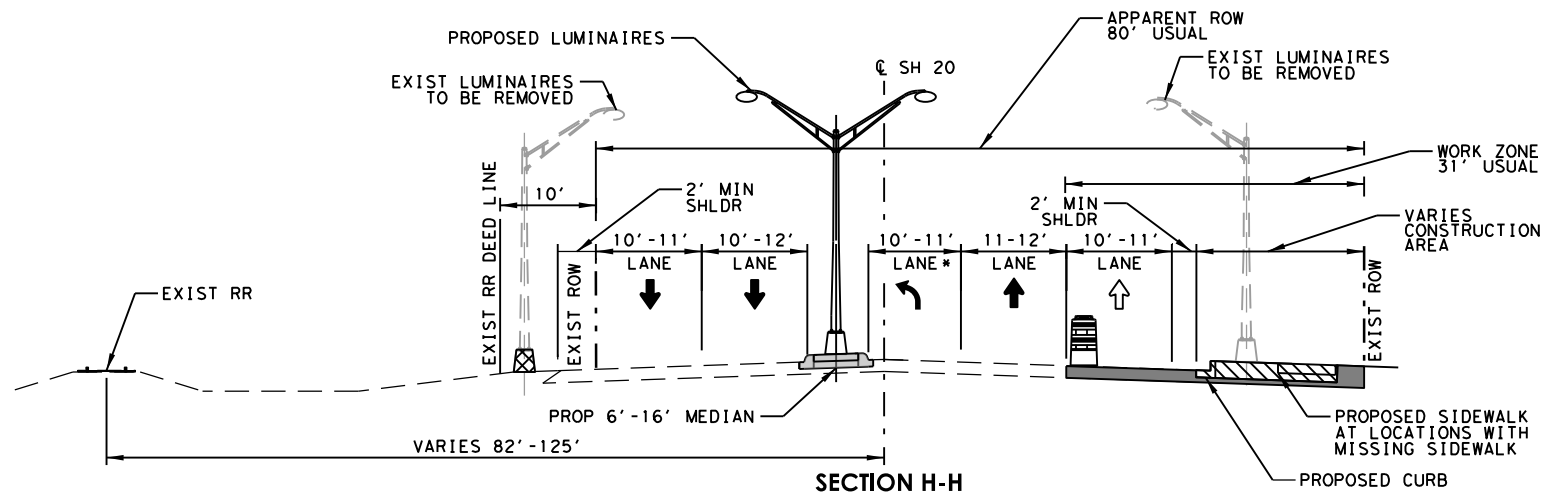
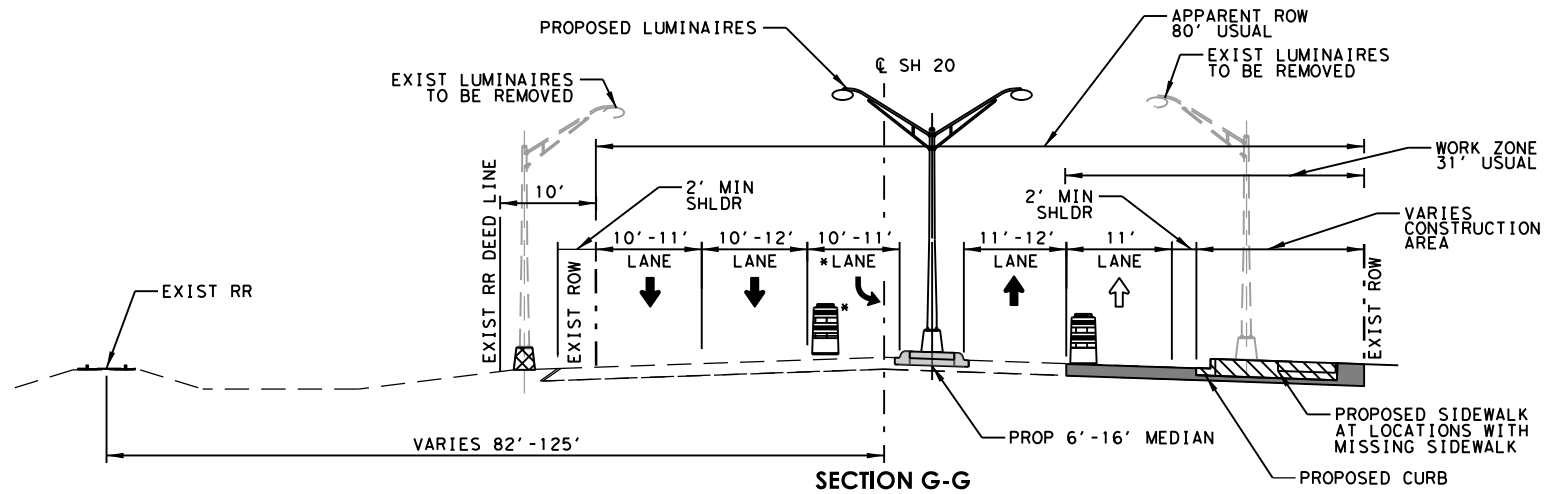
SECTION F-F



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© 2021  Texas Department of Transportation					
SH 20 DONIPHAN DR.					
TRAFFIC CONTROL PLAN TYPICAL SECTIONS					
SHEET 2 OF 5					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	36

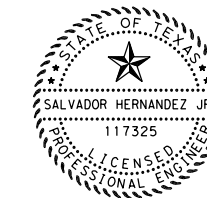


LEGEND

- TRAFFIC FLOW DURING CONSTRUCTION HOURS
- TRAFFIC FLOW OUTSIDE OF CONSTRUCTION HOURS
- WORK AREA
- WORK ZONE
- PERMANENT WORK PREVIOUSLY COMPLETED

NOTE:

1. THE CONTRACTOR SHALL REFER TO THE TCP NARRATIVE FOR WORKING HOURS.
2. TYPICAL SECTIONS REFERRED IN TCP SHEETS



Salvador Hernandez Jr.

4/30/2021



HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420



SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
TYPICAL SECTIONS






SHEET 3 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	37

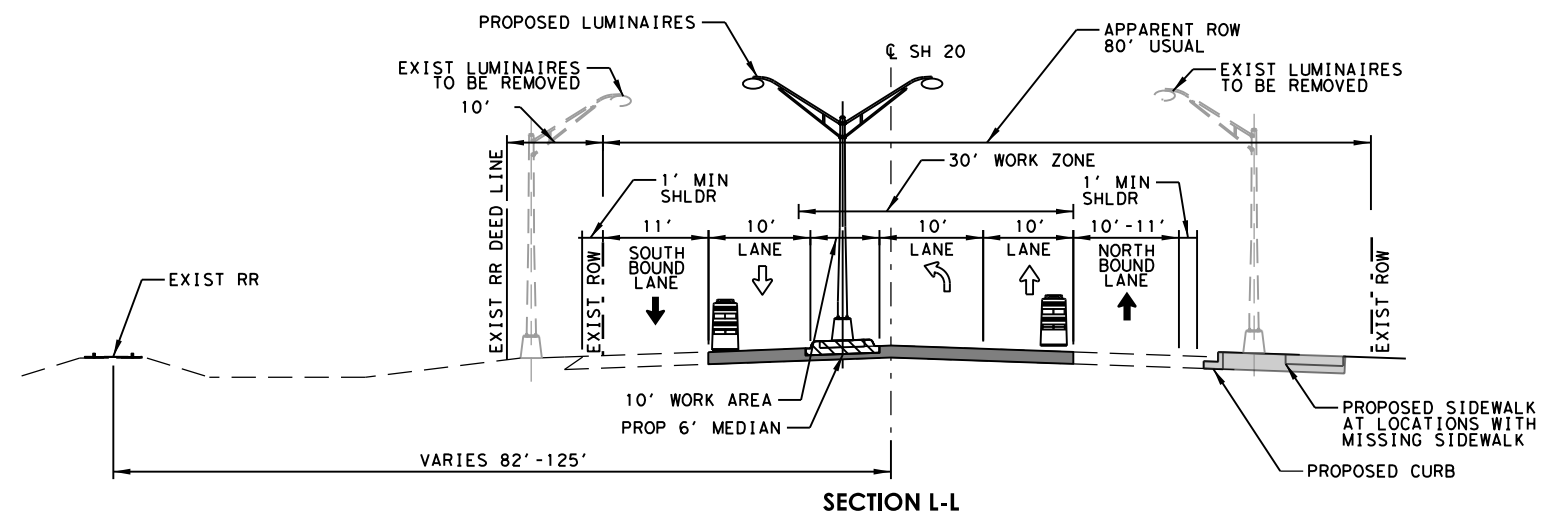
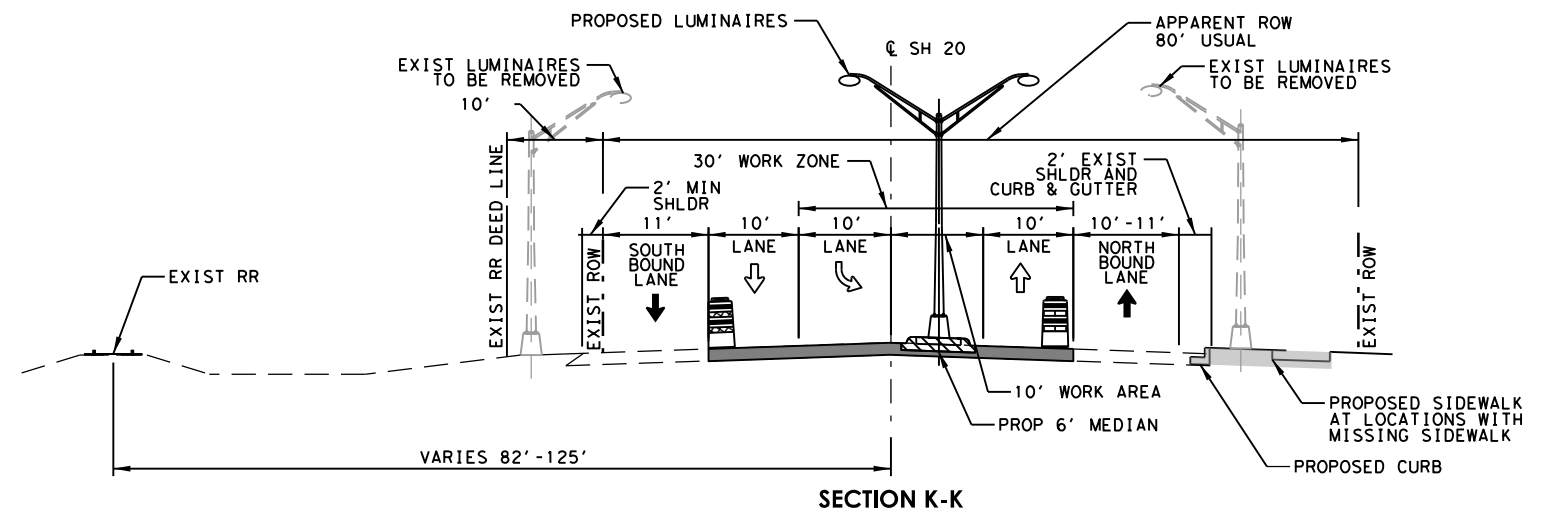
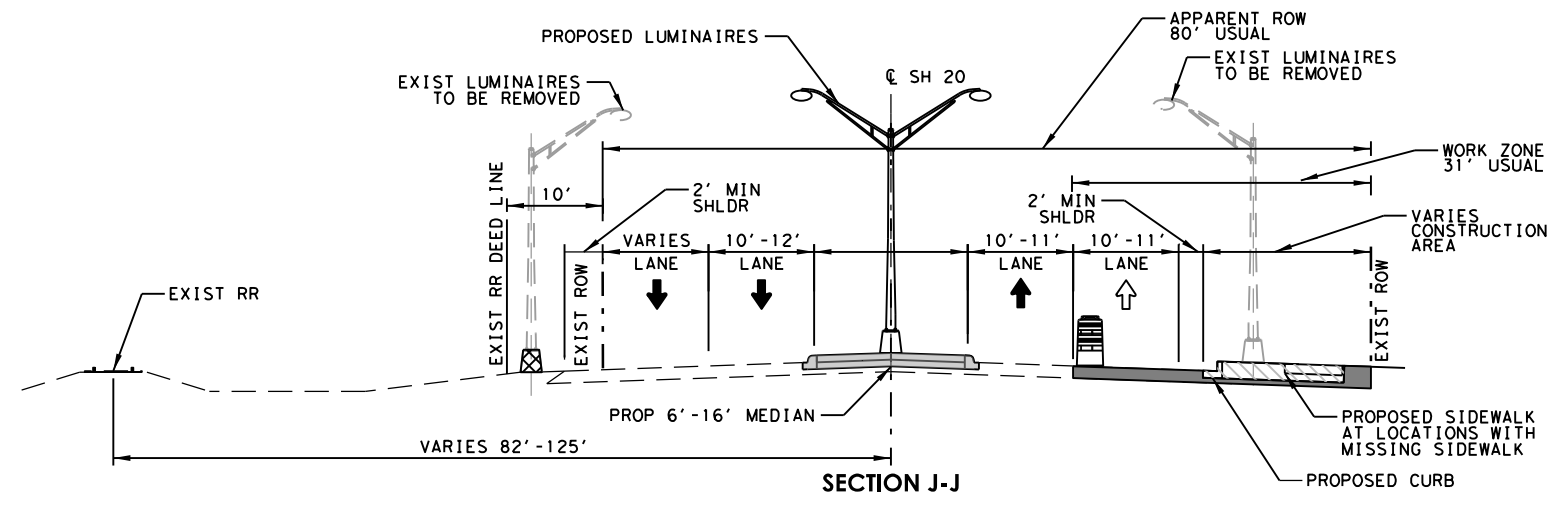
4/30/2021

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LEGEND



-  TRAFFIC FLOW DURING CONSTRUCTION HOURS
-  TRAFFIC FLOW OUTSIDE OF CONSTRUCTION HOURS
-  WORK AREA
-  WORK ZONE
-  PERMANENT WORK PREVIOUSLY COMPLETED

NOTE:
 1. THE CONTRACTOR SHALL REFER TO THE TCP NARRATIVE FOR WORKING HOURS.
 2. TYPICAL SECTIONS REFERRED IN TCP SHEETS








Salvador Hernandez Jr.

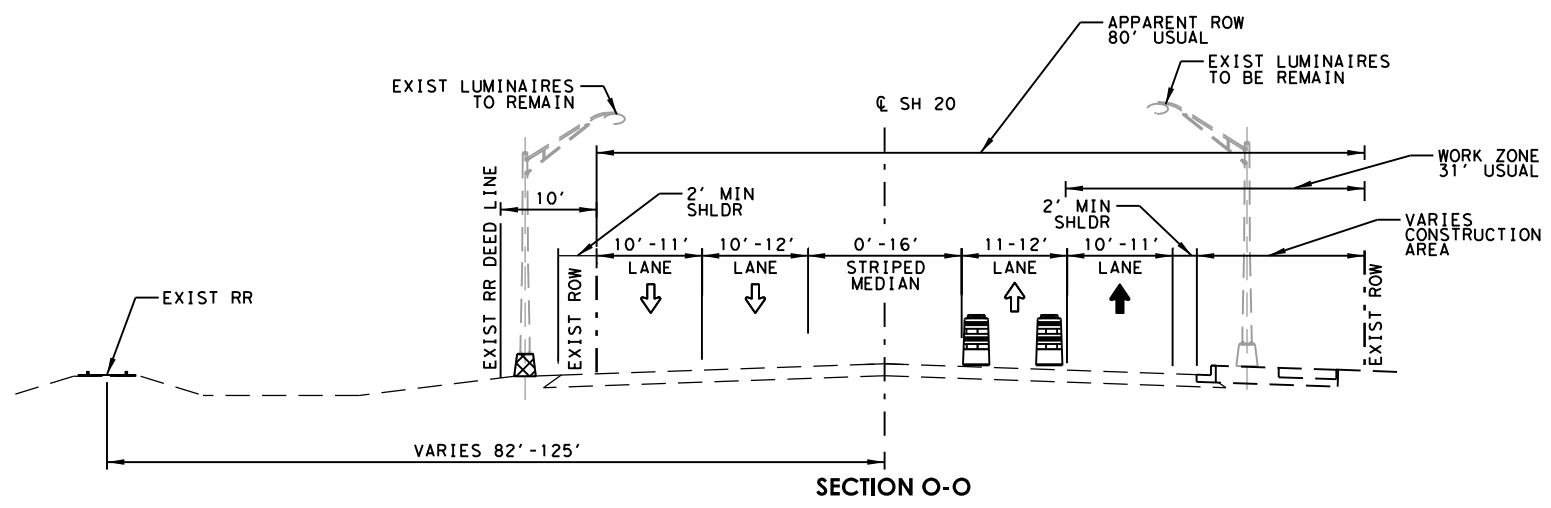
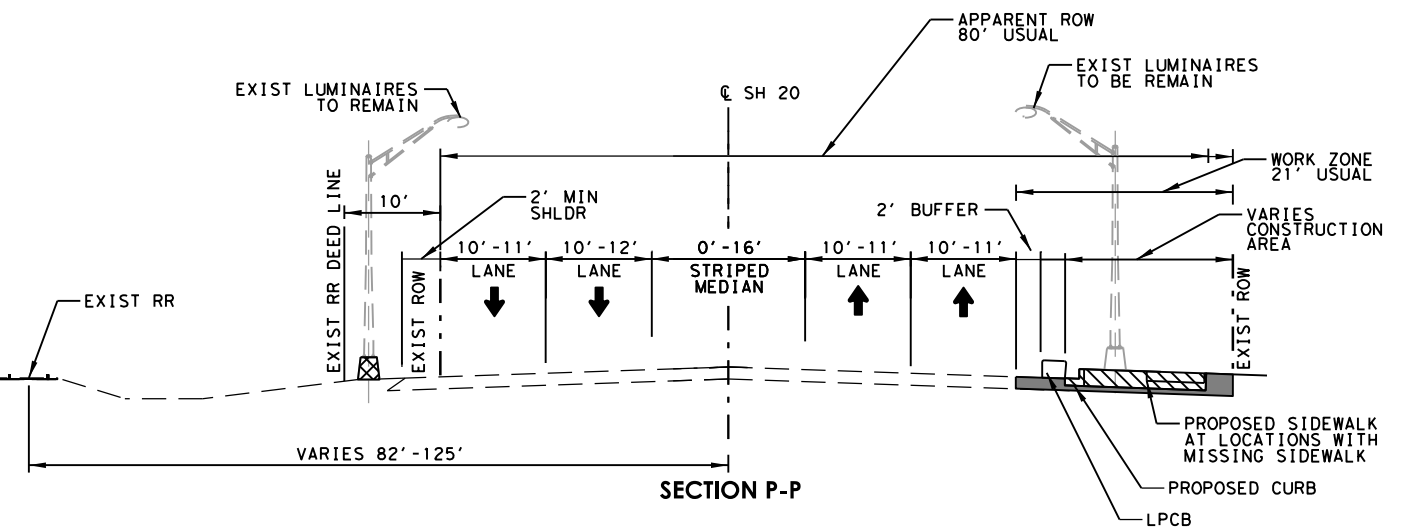
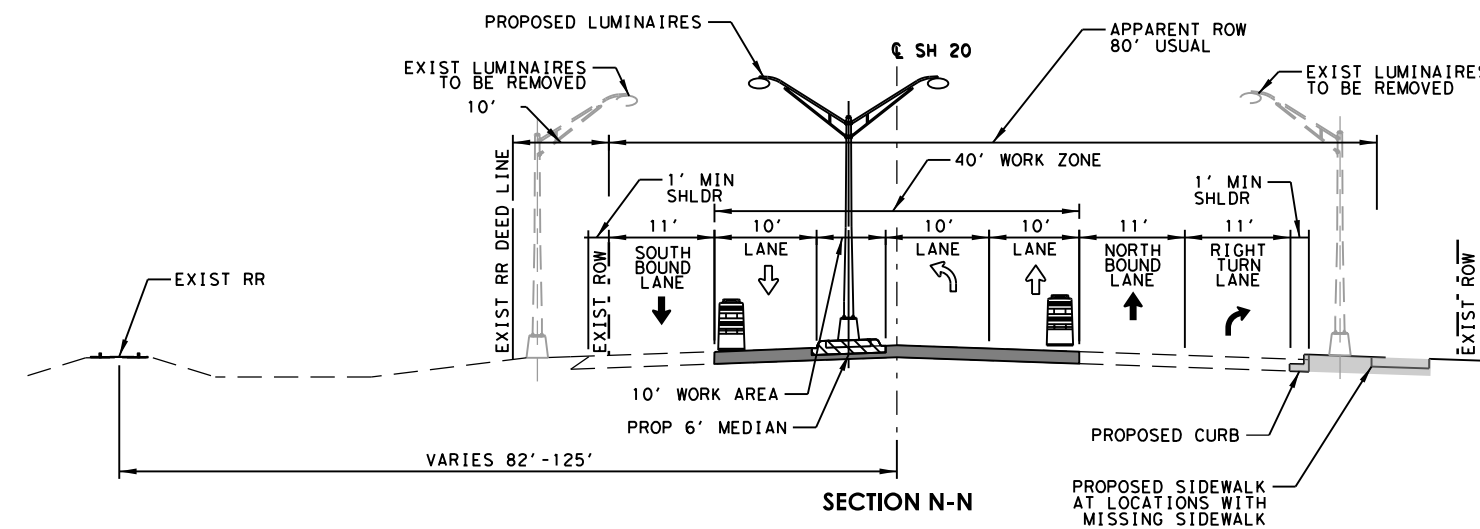
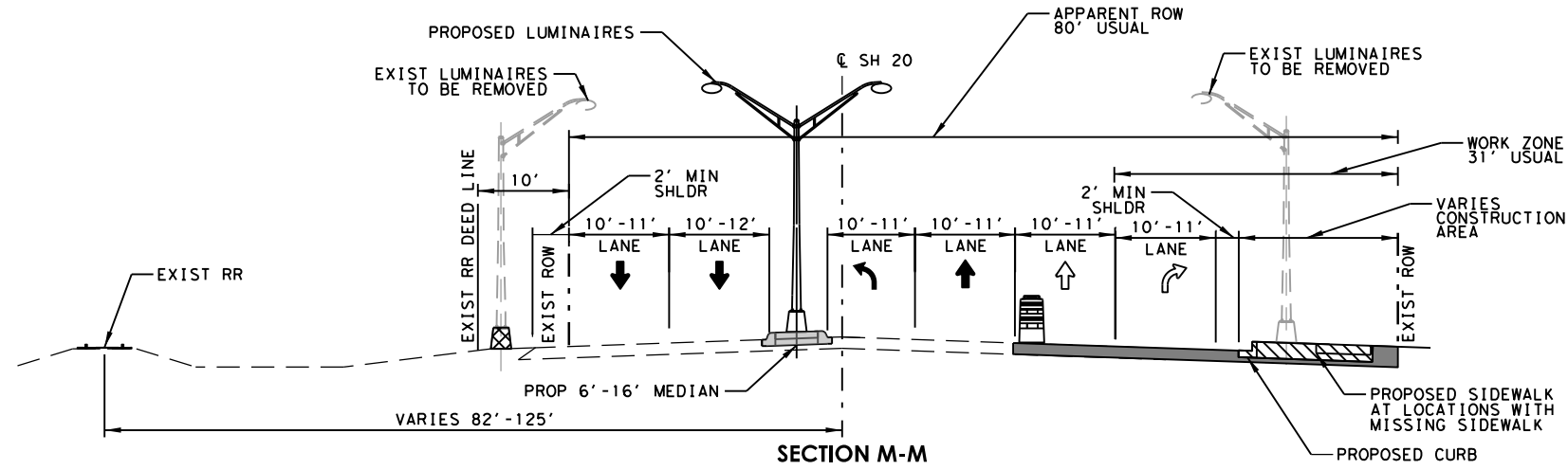
4/30/2021

					
<small>HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420</small>					
					
SH 20 DONIPHAN DR.					
TRAFFIC CONTROL PLAN TYPICAL SECTIONS					
SHEET 4 OF 5					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	38

LEGEND


-  TRAFFIC FLOW DURING CONSTRUCTION HOURS
-  TRAFFIC FLOW OUTSIDE OF CONSTRUCTION HOURS
-  WORK AREA
-  WORK ZONE
-  PERMANENT WORK PREVIOUSLY COMPLETED

NOTE:
 1. THE CONTRACTOR SHALL REFER TO THE TCP NARRATIVE FOR WORKING HOURS.
 2. TYPICAL SECTIONS REFERRED IN TCP SHEETS

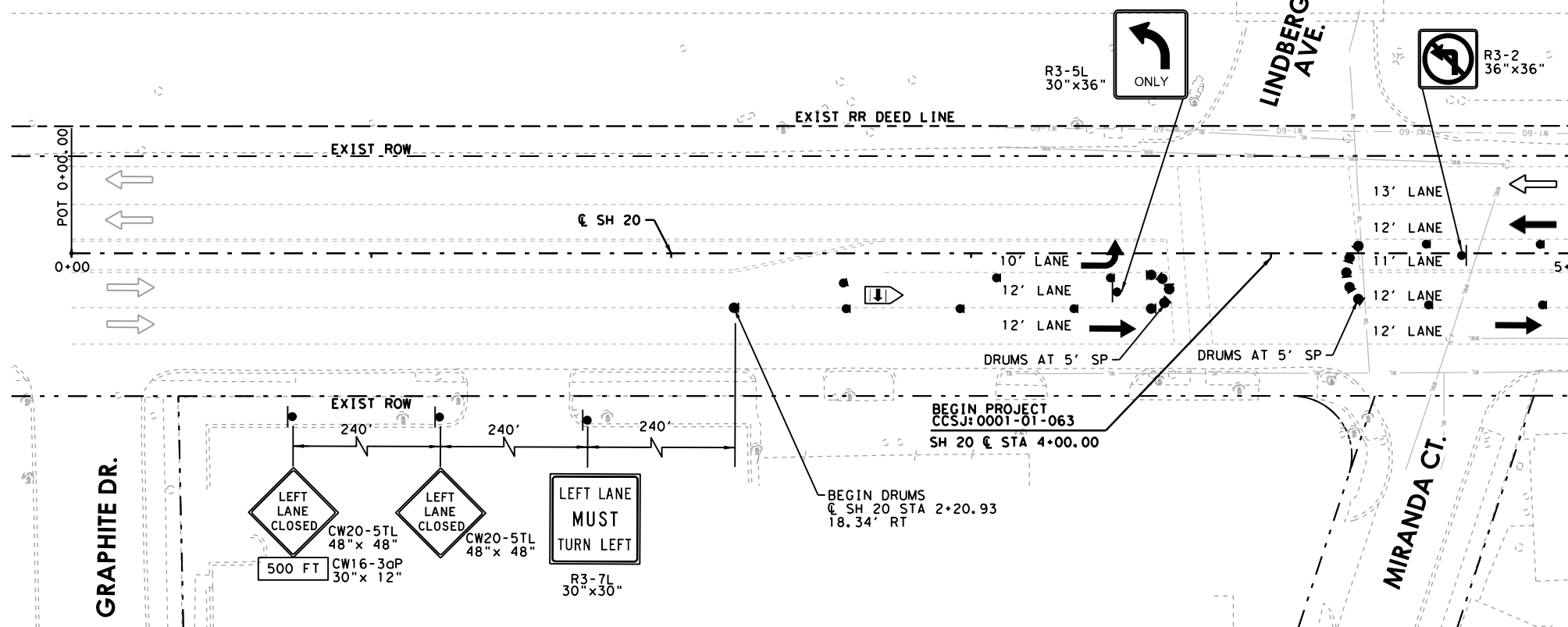


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4/30/2021

HNTB HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420				
 Texas Department of Transportation				
SH 20 DONIPHAN DR.				
TRAFFIC CONTROL PLAN TYPICAL SECTIONS				
SHEET 5 OF 5				
DESIGNED:	SH	STATE	DISTRICT	COUNTY
CHECKED:	JFP	TEXAS	EL PASO	EL PASO
DRAWN:	AM	CONTROL	SECTION	JOB
CHECKED:	SH	0001	01	063, ETC.
				39

BNSF RAILROAD



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

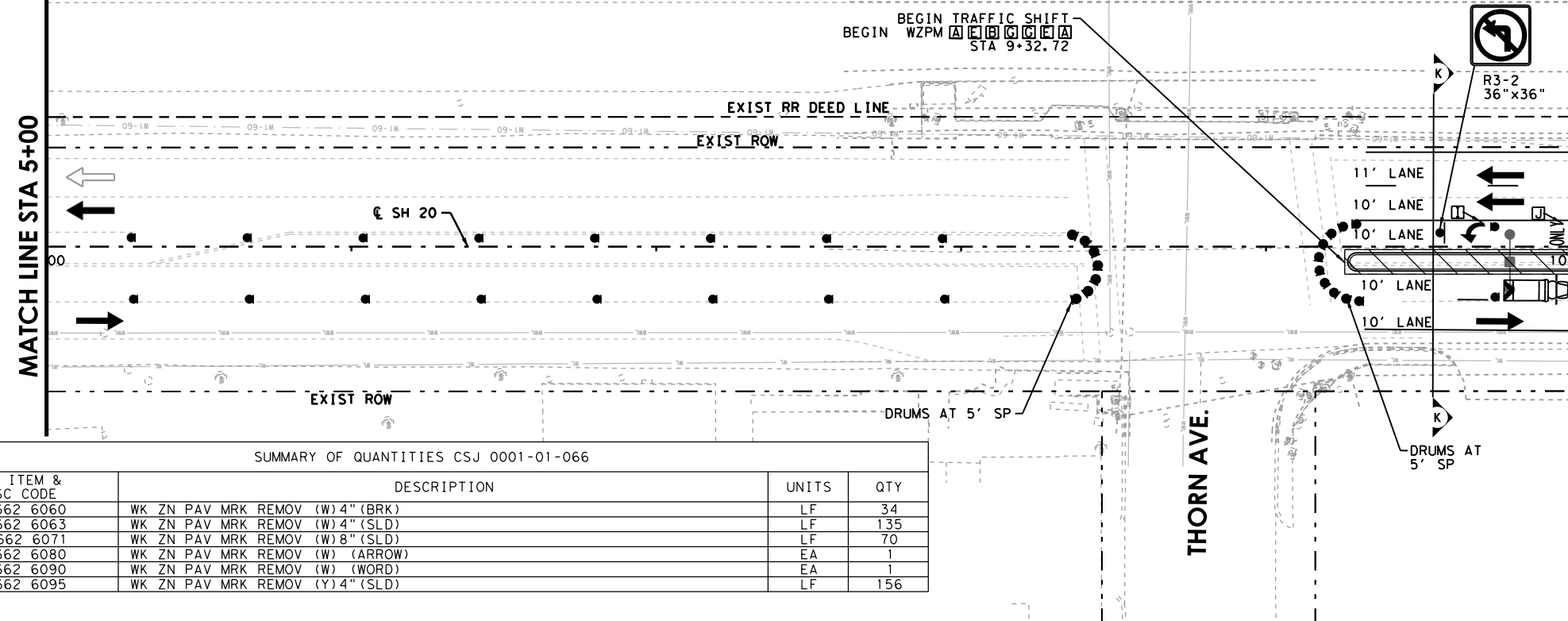
NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.
4/30/2021

BNSF RAILROAD



MATCH LINE STA 5+00

MATCH LINE STA 10+00



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 1
BEGIN TO STA 10+00**

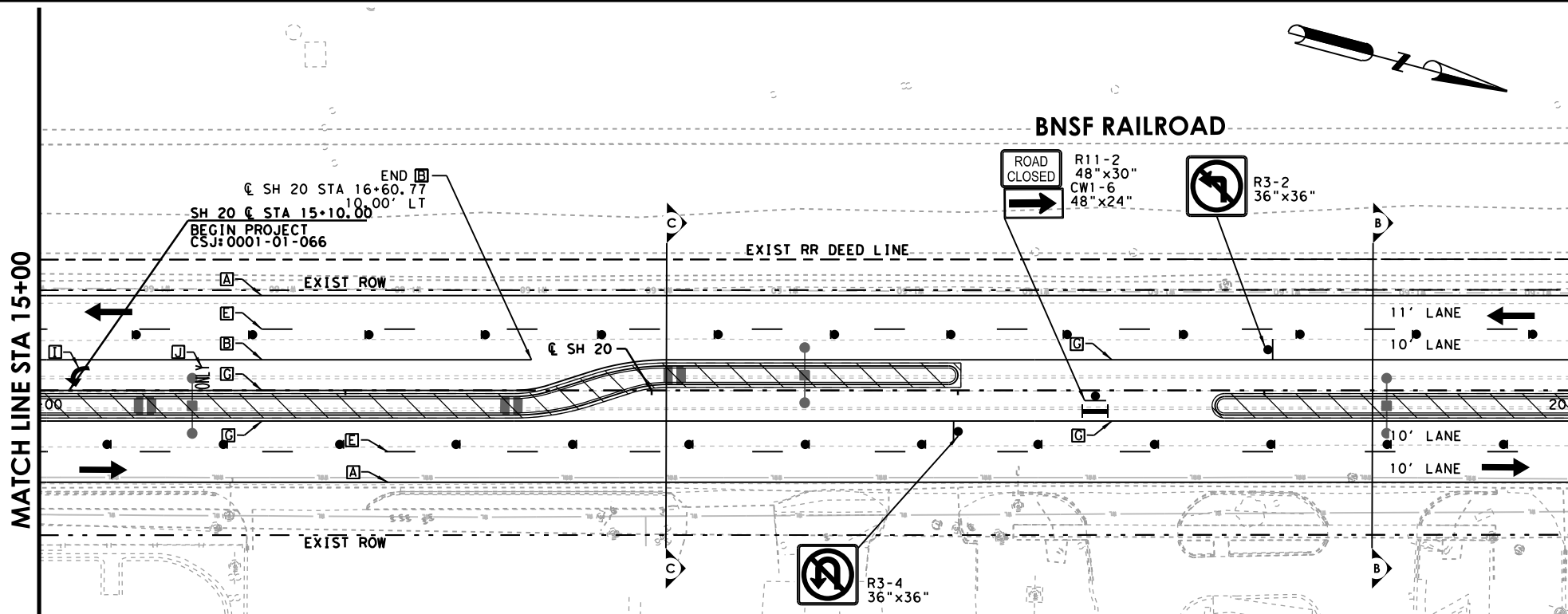
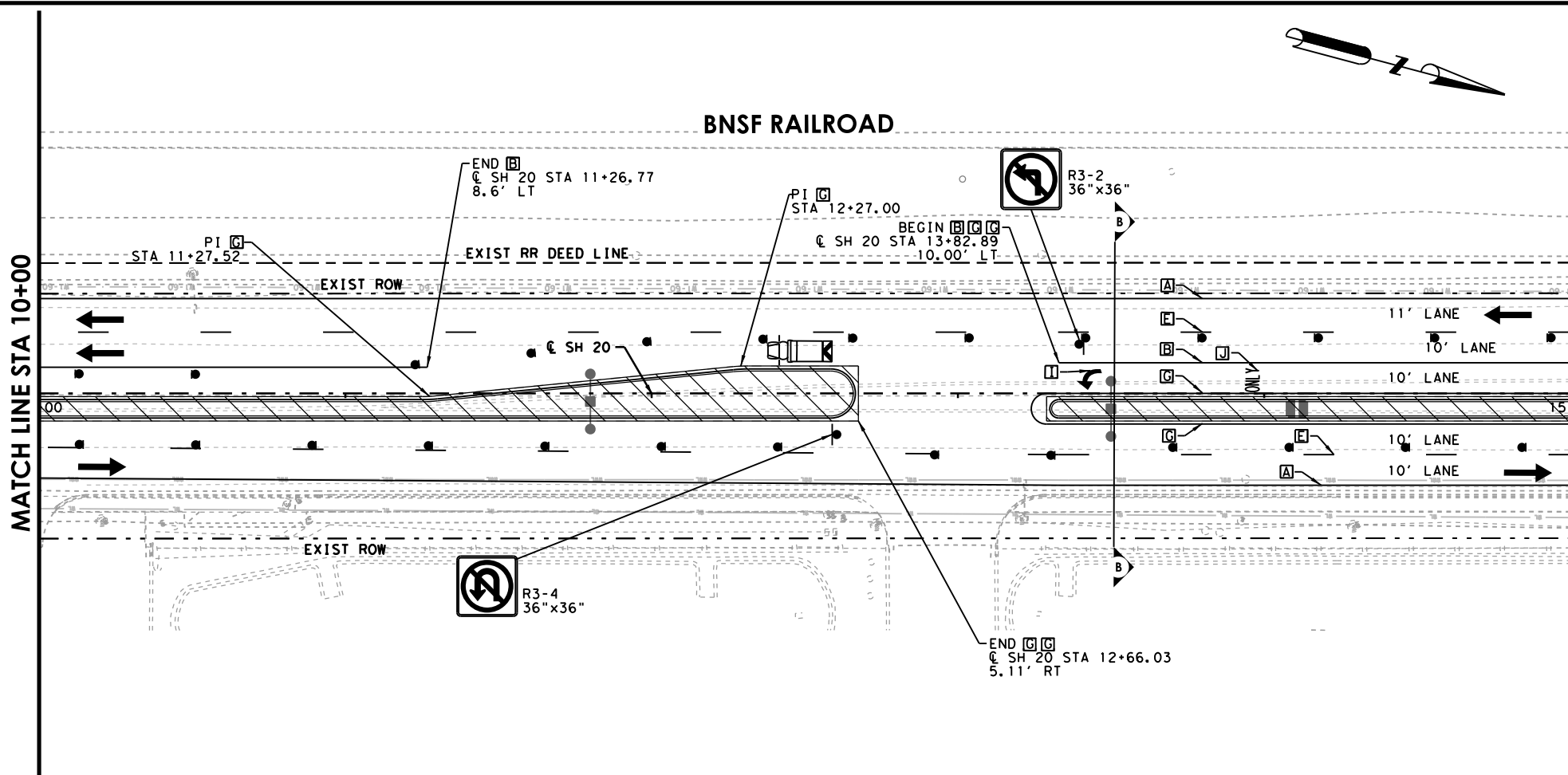
SHEET 1 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	40

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	34
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	135
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	70
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	1
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	1
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	156

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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	2000
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	455
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1913



- ### LEGEND
- WORK AREA
 - PERMANENT WORK PREVIOUSLY COMPLETED
 - TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
 - EXISTING/PREVIOUS PAVEMENT MARKINGS
 - PROPOSED PAVEMENT MARKINGS THIS PHASE
 - CONSTRUCTION SIGN
 - PLASTIC DRUMS
 - PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
 - TRUCK MOUNTED ATTENUATOR
 - TYPE III BARRICADE
 - LOW PROFILE CONCRETE BARRIER (LPCB)
 - WRK ZN PAV MRK REMOV (W) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 8" (SLD)
 - WRK ZN PAV MRK REMOV (W) 24" (SLD)
 - WRK ZN PAV MRK REMOV (Y) 4" (DBL)
 - WRK ZN PAV MRK REMOV (W) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 4" (DOT)

- ### NOTES:
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 - REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 - REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

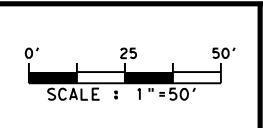
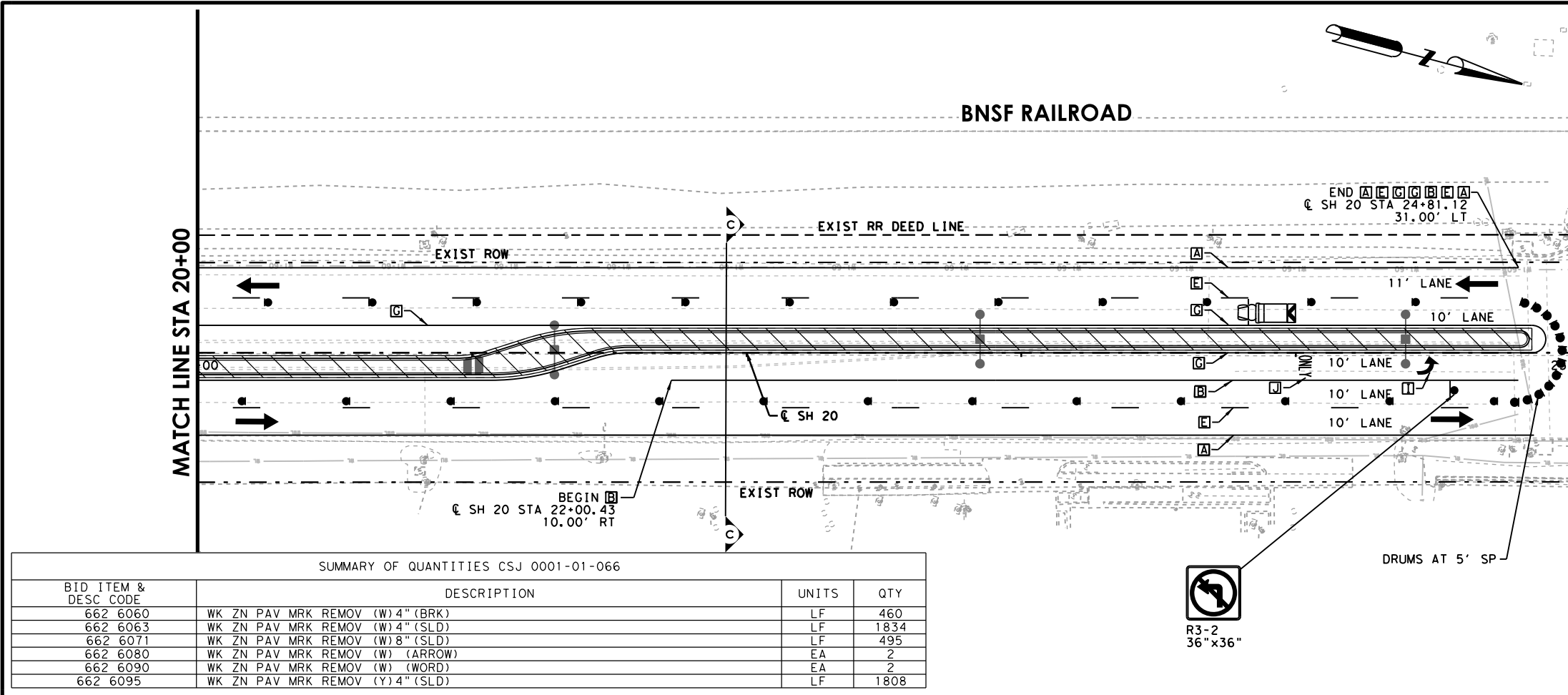
Texas Department of Transportation

SH 20 DONIPHAN DR. TRAFFIC CONTROL PLAN PHASE 1 - STEP 1 STA 10+00 TO STA 20+00

SHEET 2 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	41

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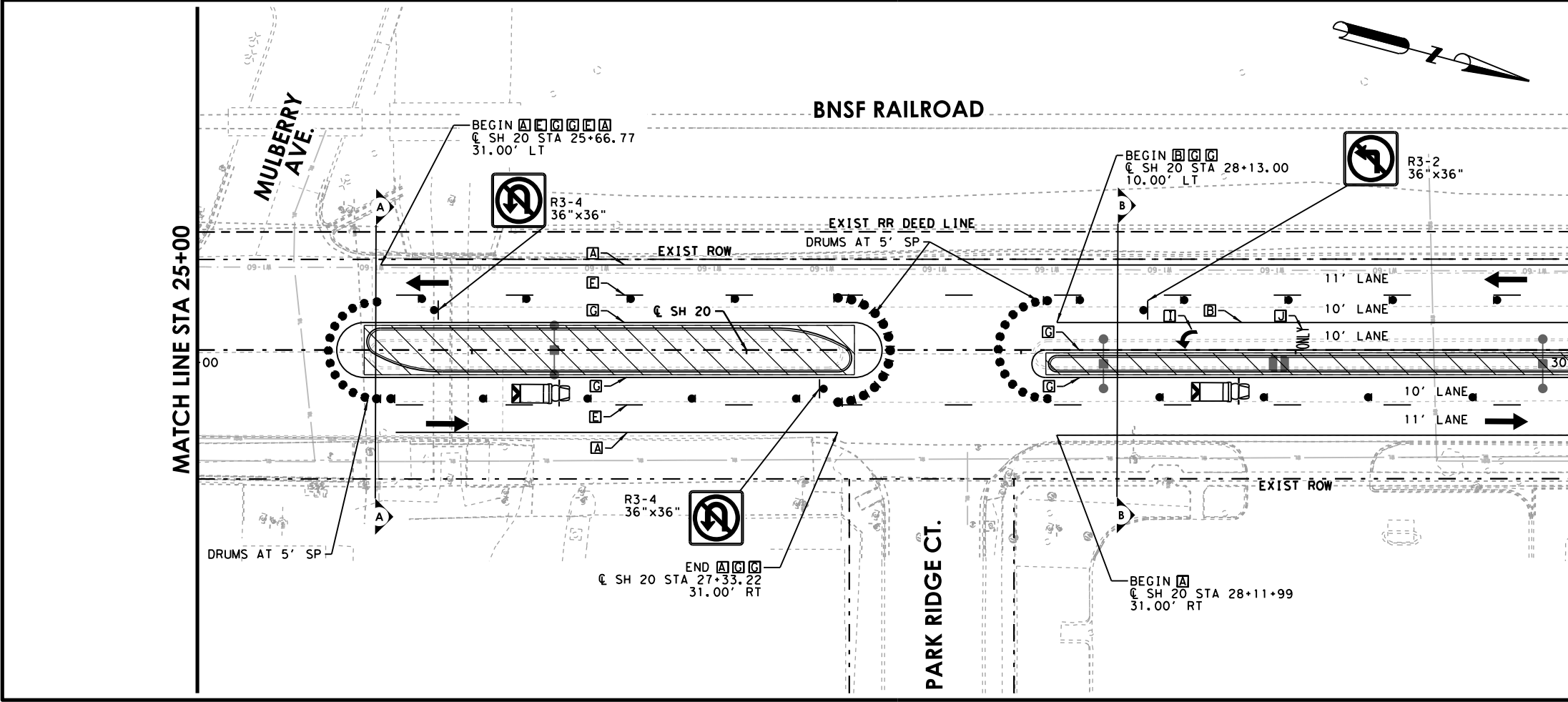


- LEGEND**
- WORK AREA
 - PERMANENT WORK PREVIOUSLY COMPLETED
 - TRAFFIC FLOW THIS PHASE OR PREVIOUS
 - EXISTING/PREVIOUS PAVEMENT MARKINGS
 - PROPOSED PAVEMENT MARKINGS THIS PHASE
 - CONSTRUCTION SIGN
 - PLASTIC DRUMS
 - PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
 - TRUCK MOUNTED ATTENUATOR
 - TYPE III BARRICADE
 - LOW PROFILE CONCRETE BARRIER (LPCB)
 - WRK ZN PAV MRK REMOV (W) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 8" (SLD)
 - WRK ZN PAV MRK REMOV (W) 24" (SLD)
 - WRK ZN PAV MRK REMOV (Y) 4" (DBL)
 - WRK ZN PAV MRK REMOV (W) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 4" (DOT)

- NOTES:**
1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	460
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1834
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	495
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1808



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4/30/2021

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Infrastructure Solutions
Firm Registration Number 420

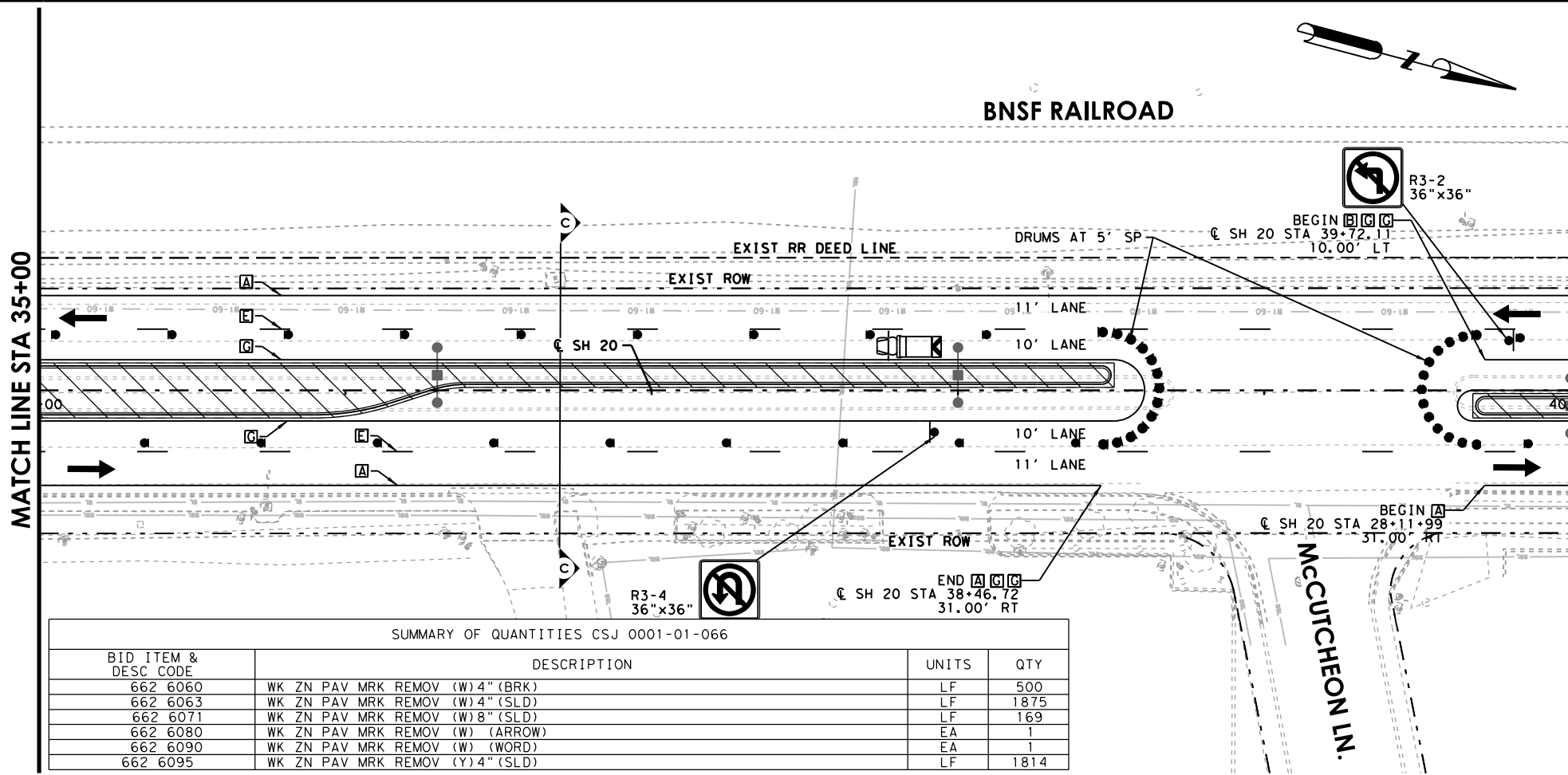
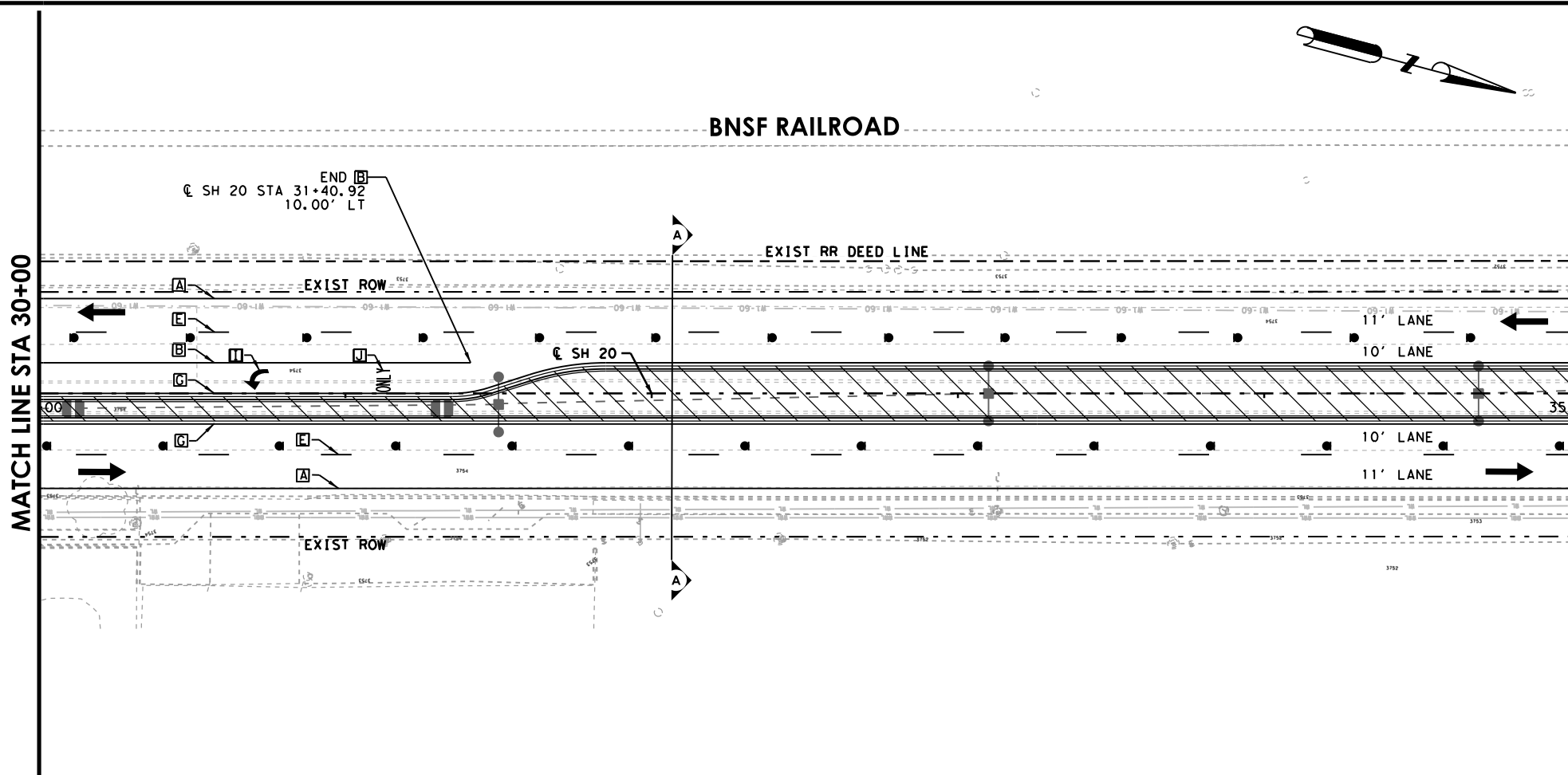
Texas Department of Transportation

**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 1
STA 20+00 TO STA 30+00**

SHEET 3 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	42

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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1875
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	169
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	1
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	1
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1814

LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

- ### NOTES:
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 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
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 - REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

SH 20 DONIPHAN DR.

TRAFFIC CONTROL PLAN PHASE 1 - STEP 1 STA 30+00 TO STA 40+00

SHEET 4 OF 6

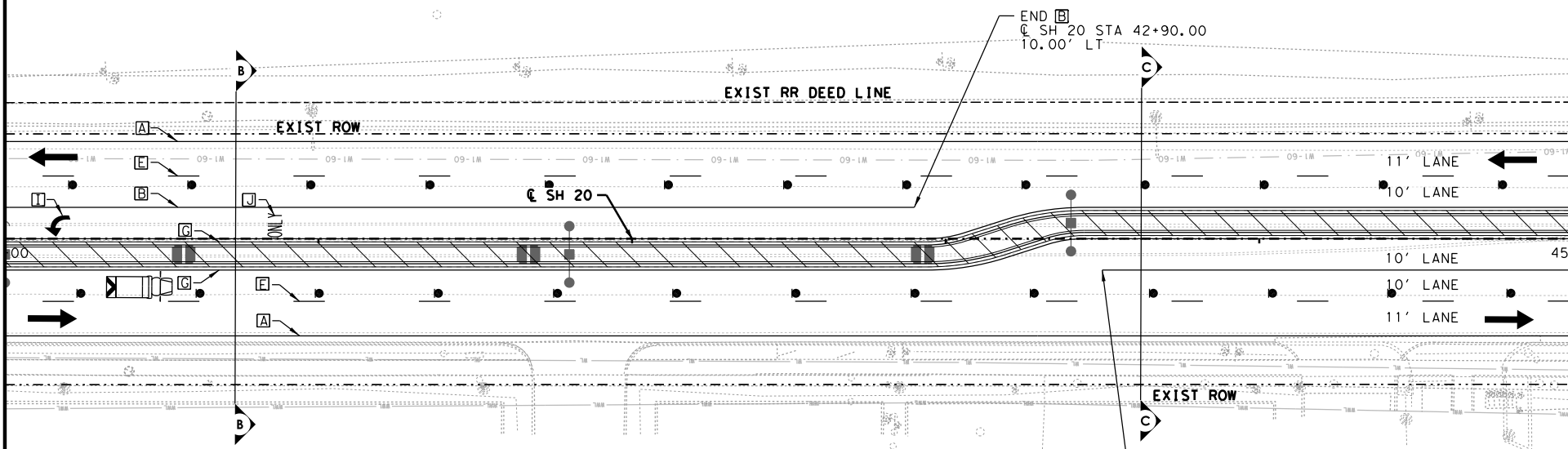
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	43

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BNSF RAILROAD

MATCH LINE STA 40+00

MATCH LINE STA 45+00



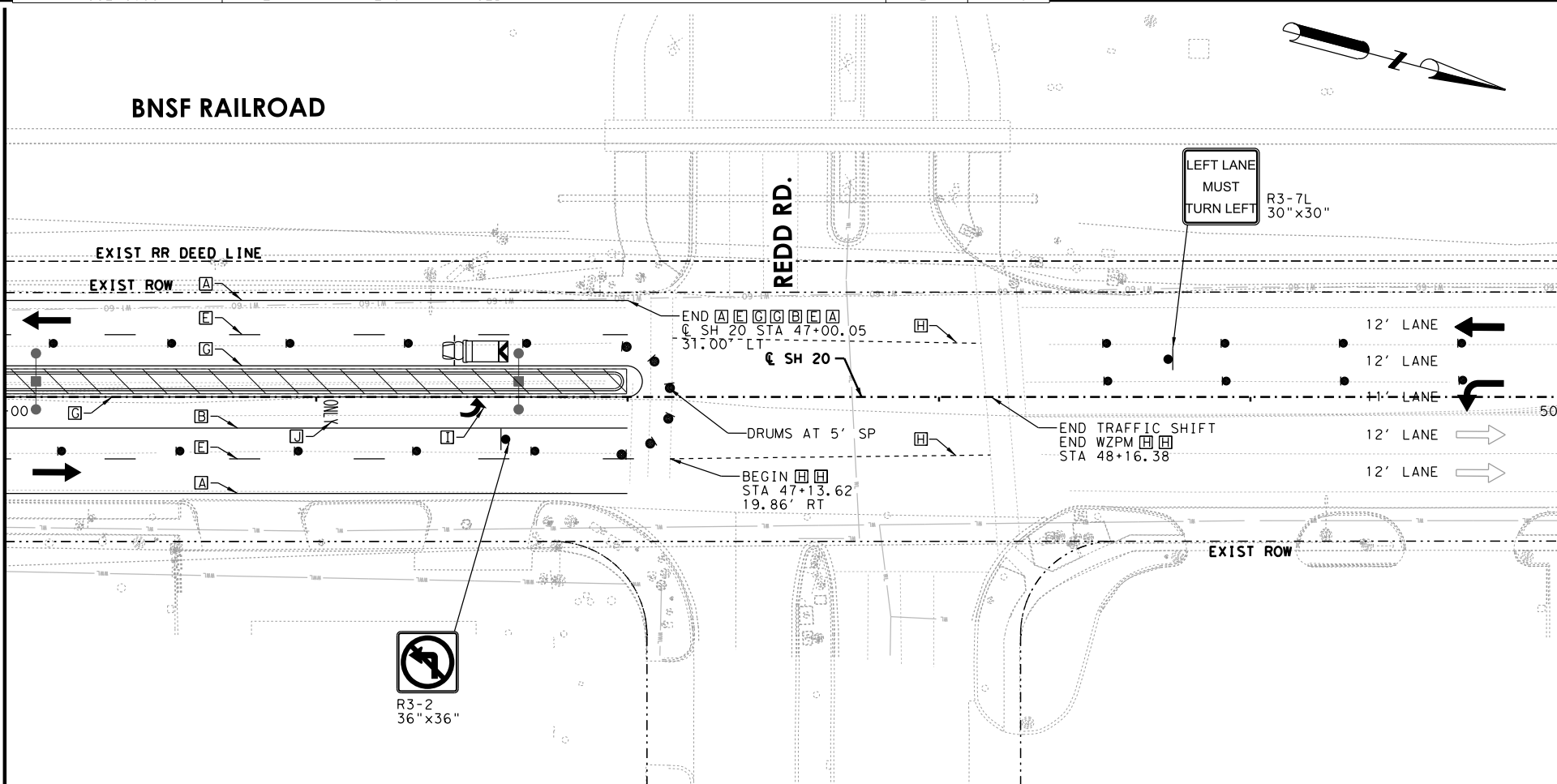
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	350
662 6061	WK ZN PAV MRK REMOV (W) 4" (DOT)	LF	56
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1400
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	660
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1418

BNSF RAILROAD

MATCH LINE STA 45+00

MATCH LINE STA 50+00



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
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5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 1
STA 40+00 TO STA 50+00**

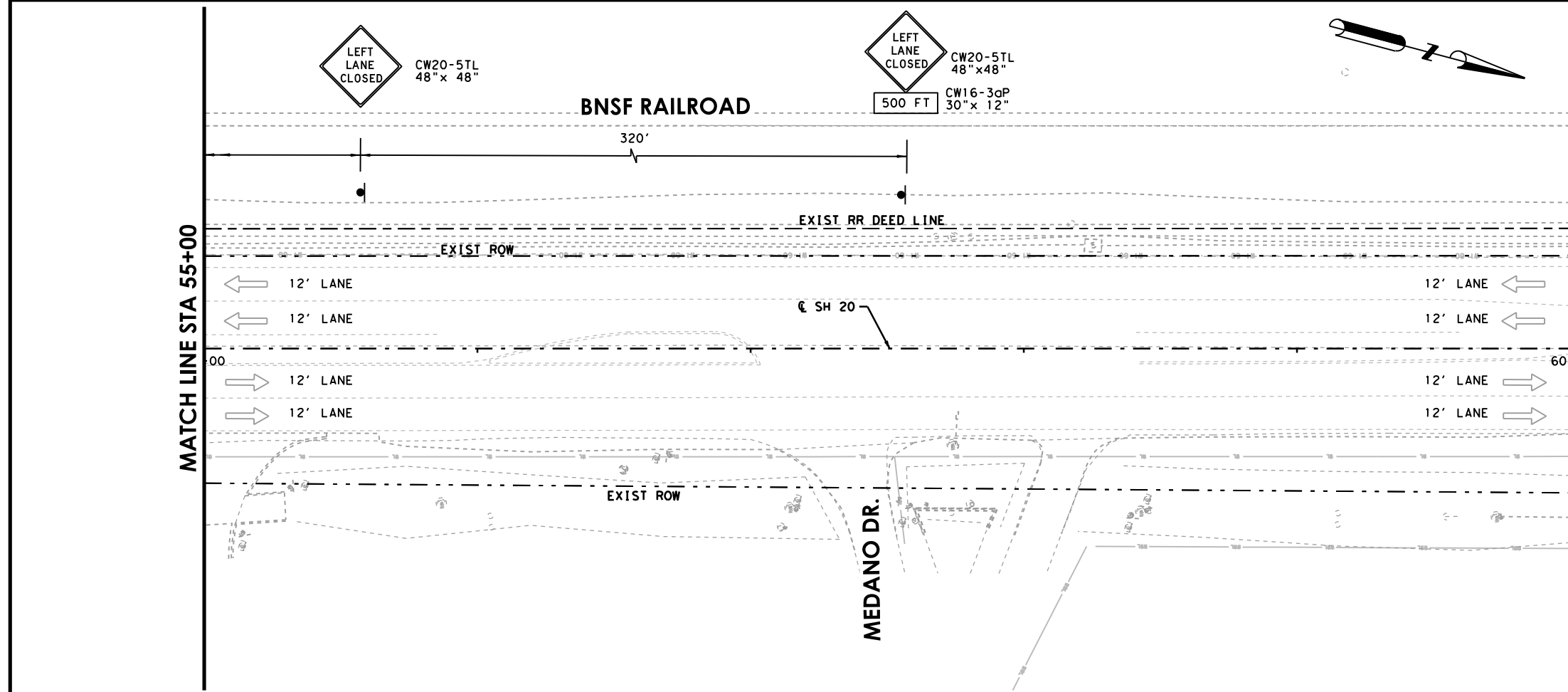
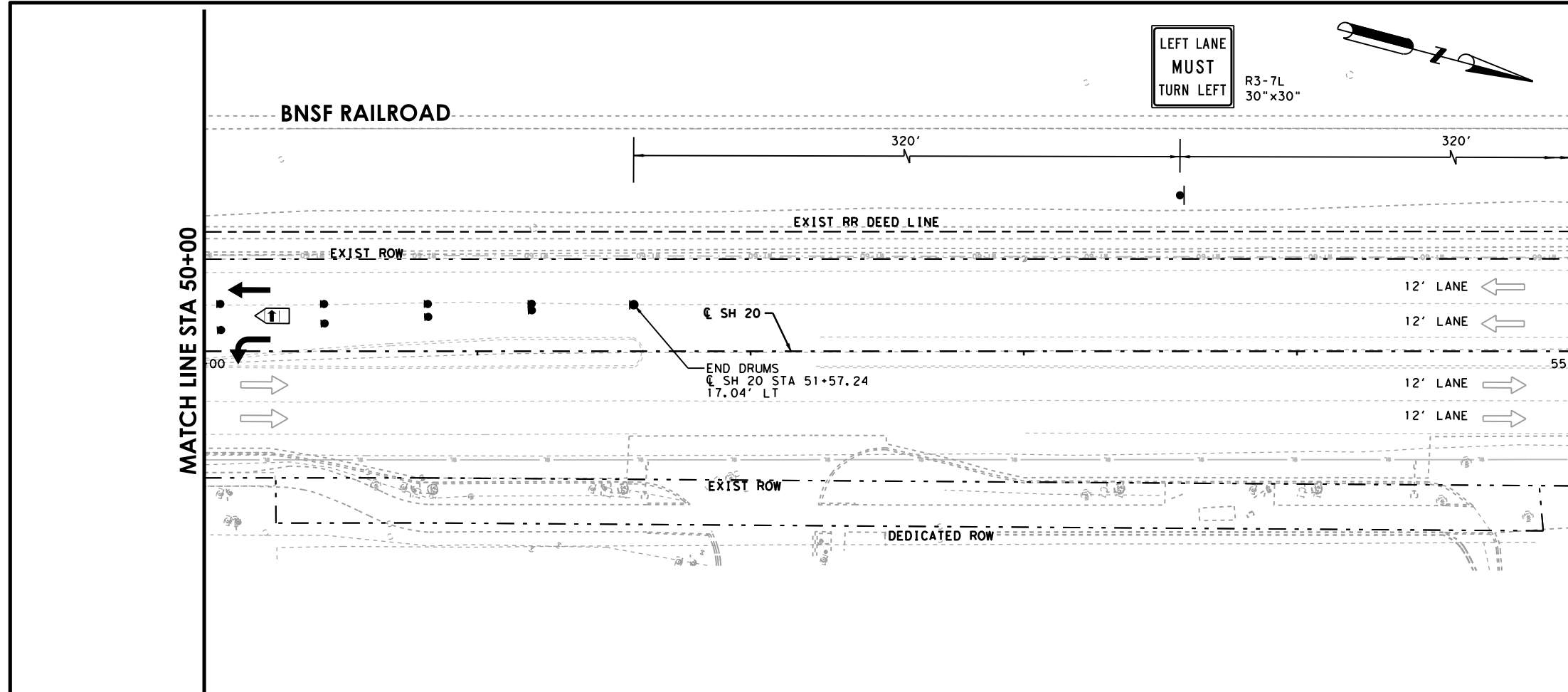
SHEET 5 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	44

5/2/2021

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- ### NOTES:
1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

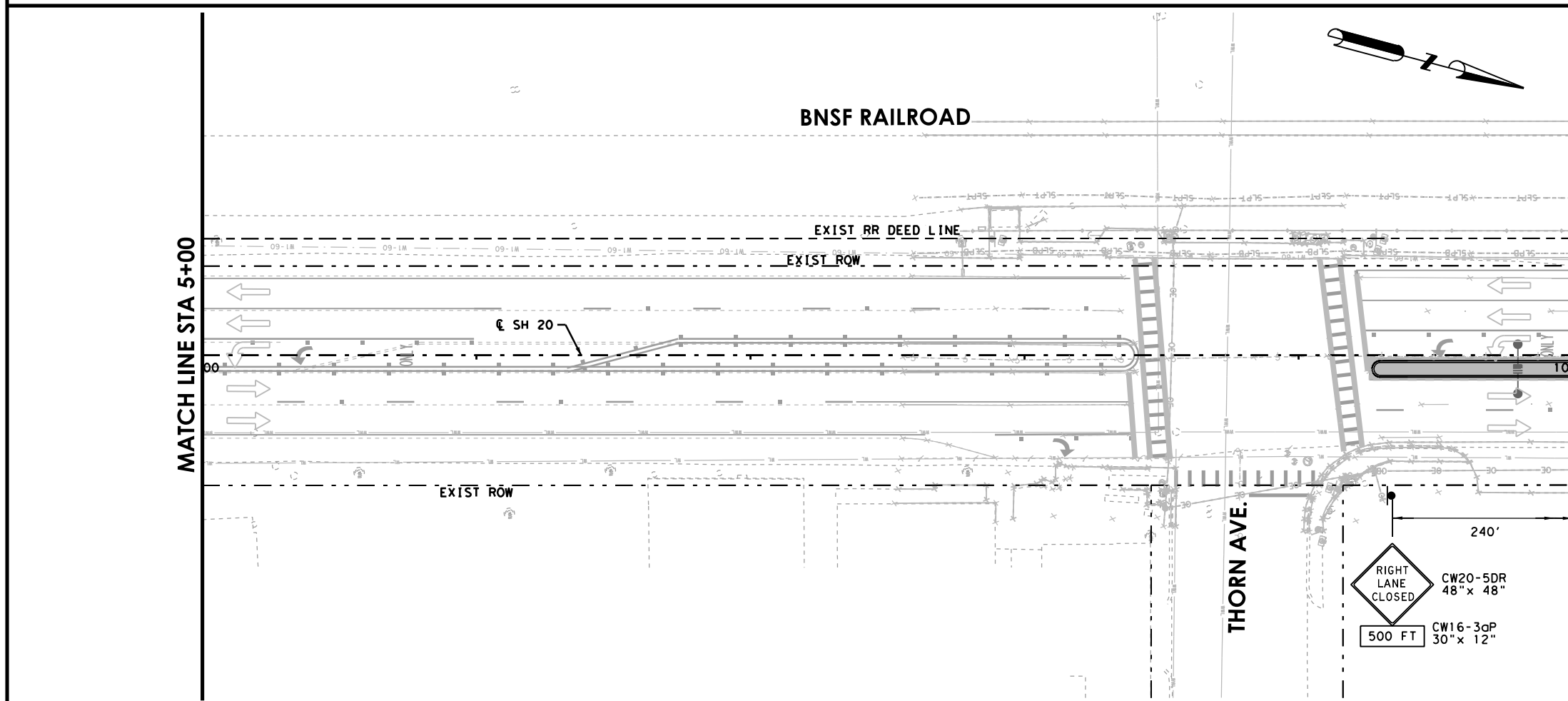
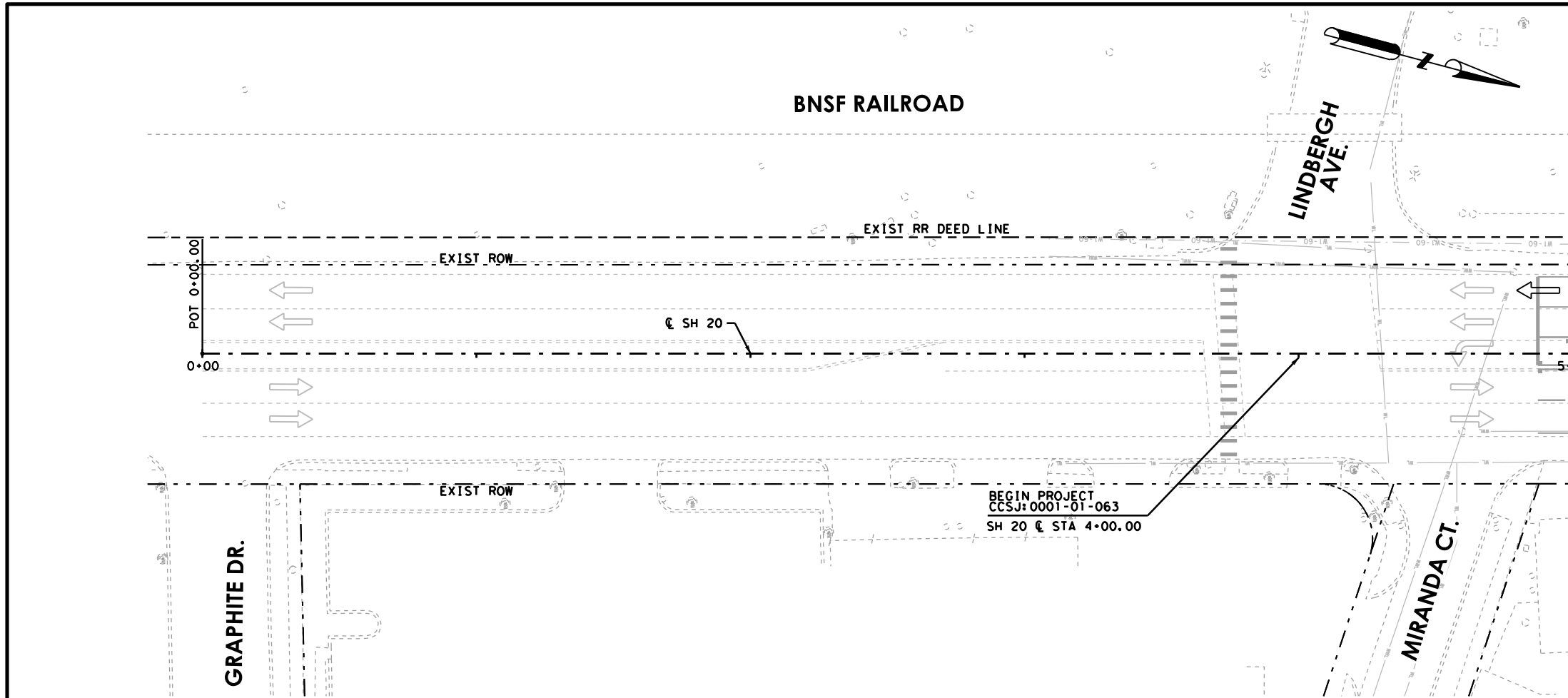


SH 20 DONIPHAN DR. TRAFFIC CONTROL PLAN PHASE 1 - STEP 1 STA 50+00 TO 60+00

SHEET 6 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	45

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- A** WRK ZN PAV MRK REMOV (W) (4") (SLD)
- B** WRK ZN PAV MRK REMOV (W) (8") (SLD)
- C** WRK ZN PAV MRK REMOV (W) (24") (SLD)
- D** WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- E** WRK ZN PAV MRK REMOV (W) (4") (BRK)
- F** WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- G** WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- H** WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
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5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

4/30/2021

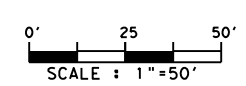
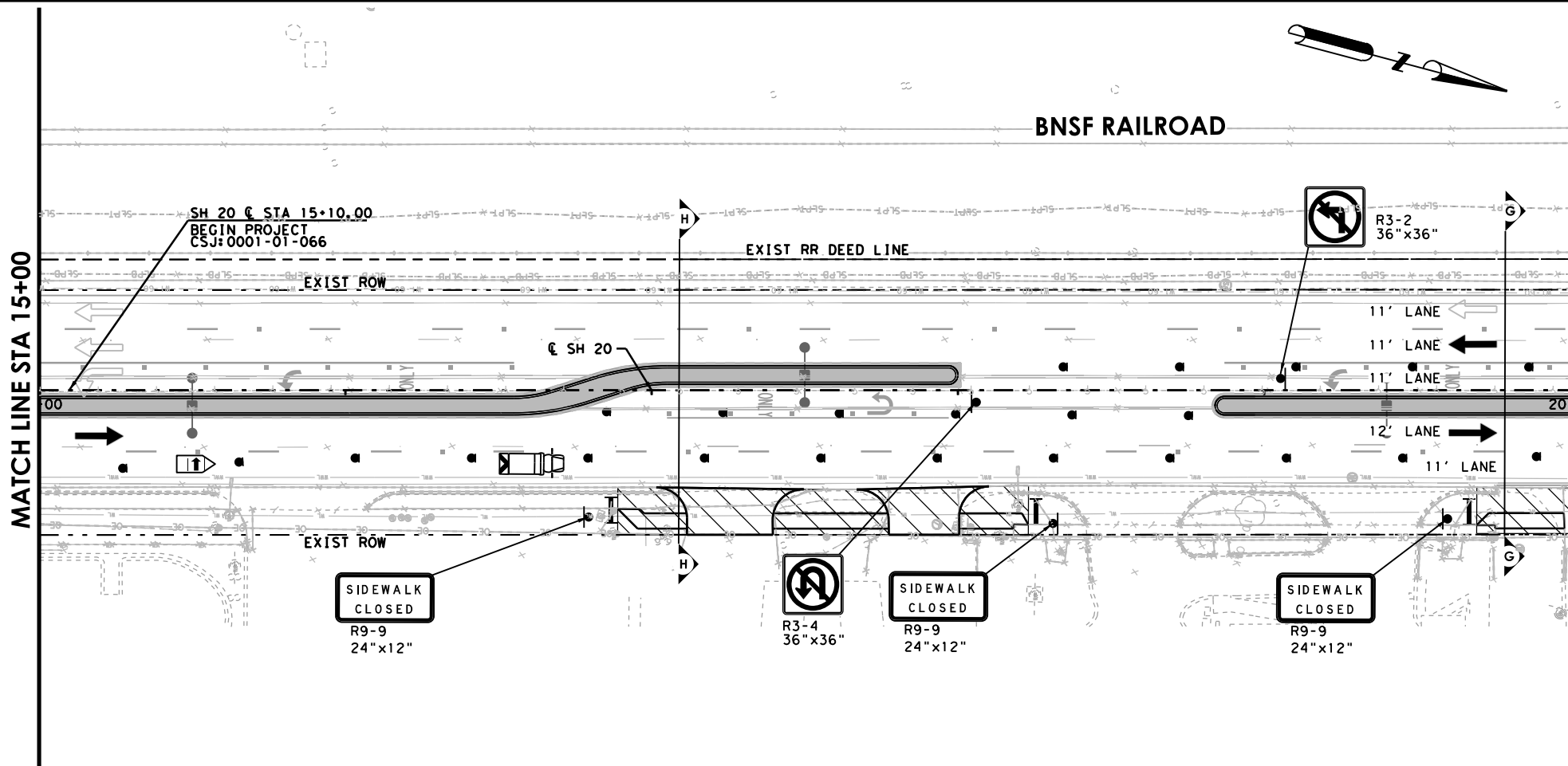
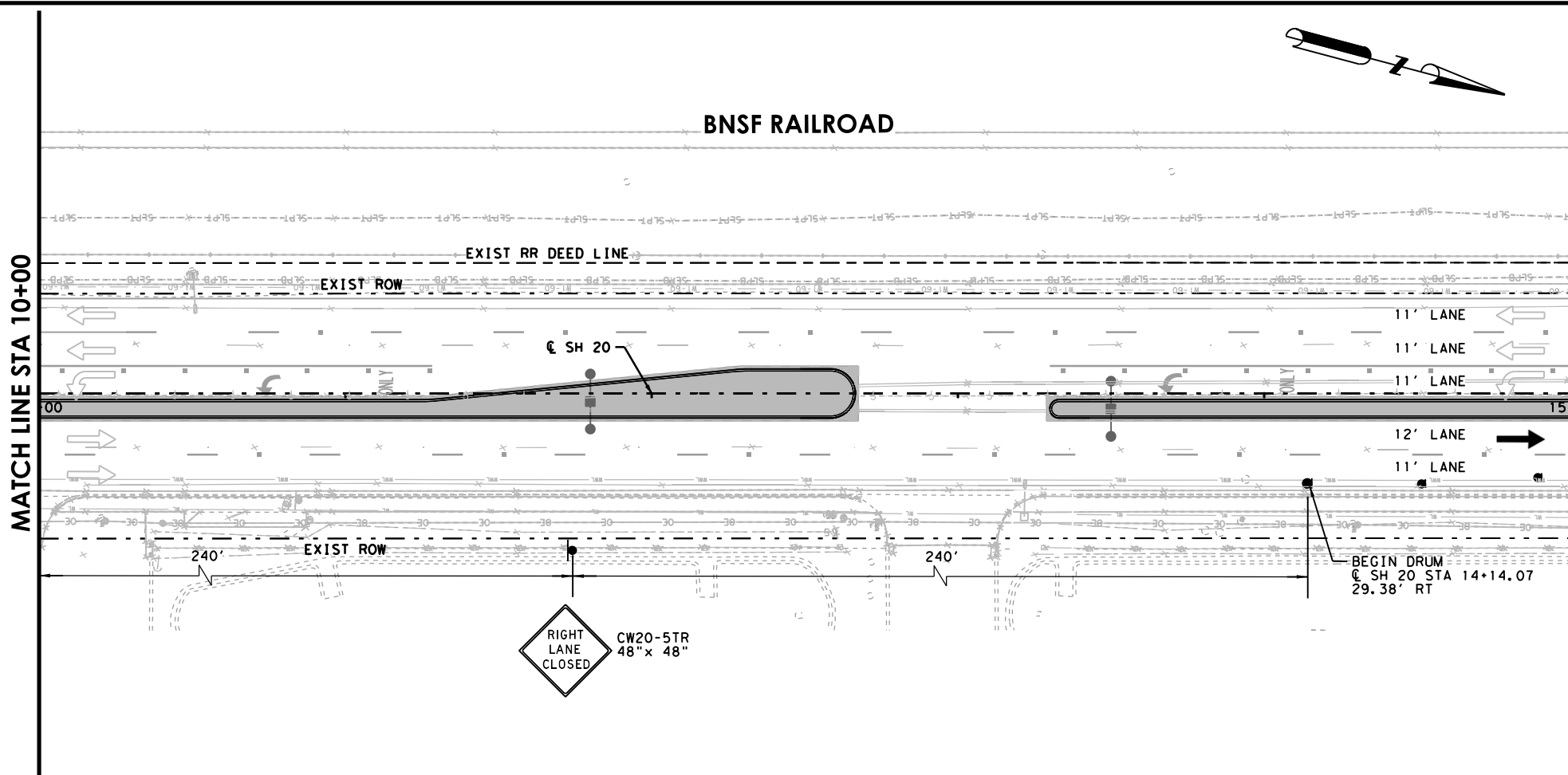


**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 2
BEGIN TO STA 10+00**

SHEET 1 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	46

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- A** WRK ZN PAV MRK REMOV (W) (4") (SLD)
- B** WRK ZN PAV MRK REMOV (W) (8") (SLD)
- C** WRK ZN PAV MRK REMOV (W) (24") (SLD)
- D** WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- E** WRK ZN PAV MRK REMOV (W) (4") (BRK)
- F** WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- G** WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- H** WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

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2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
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5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 2
STA 10+00 TO STA 20+00**

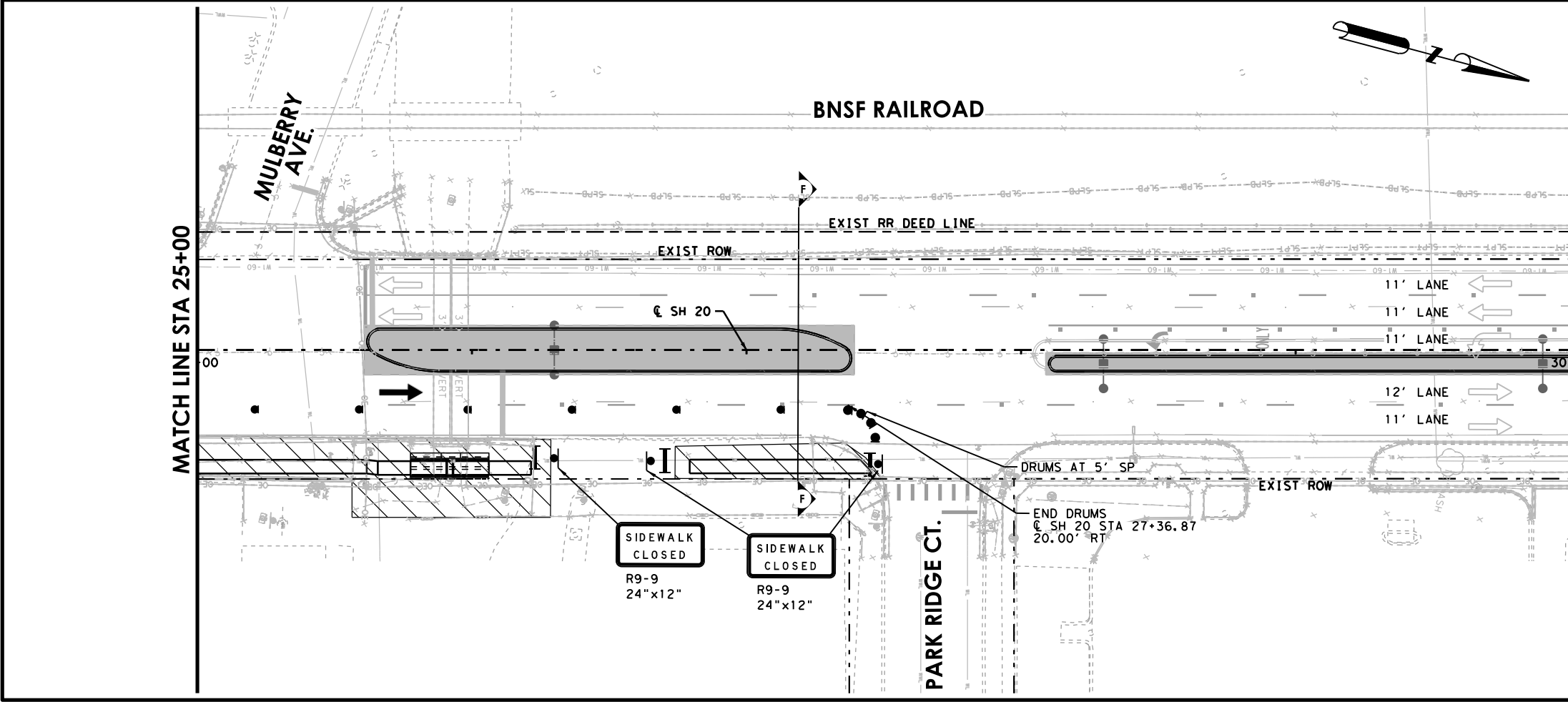
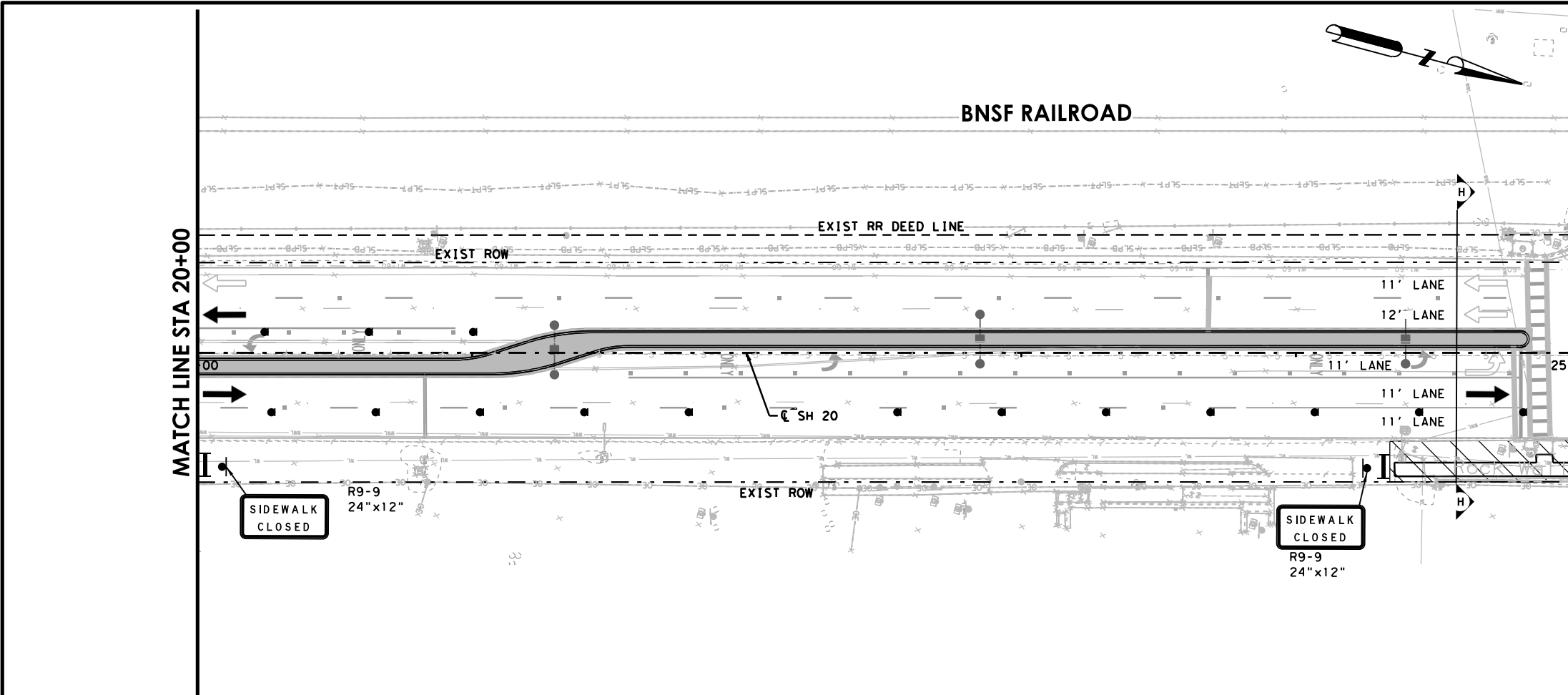
SHEET 2 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	47

4/30/2021

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

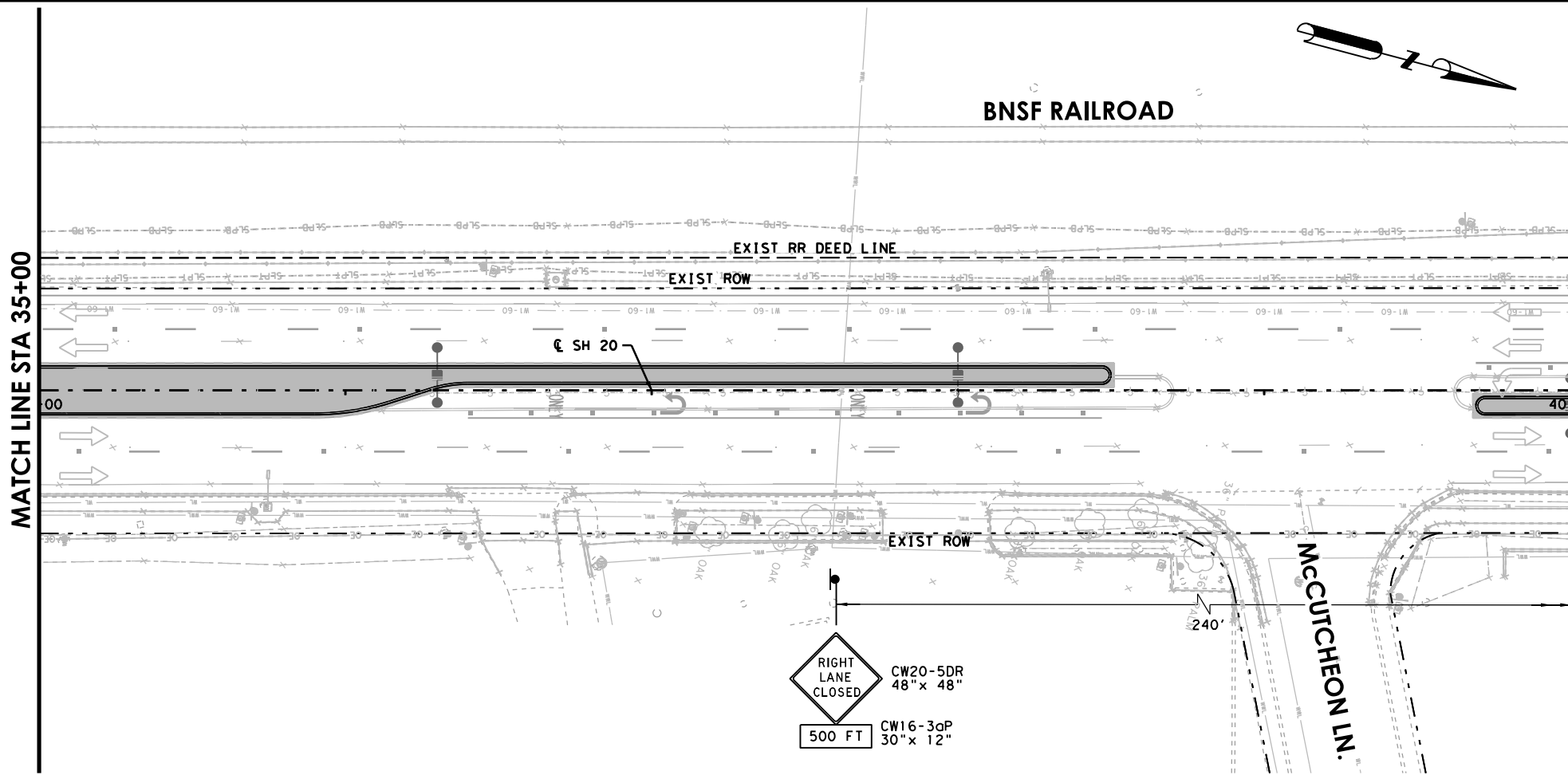
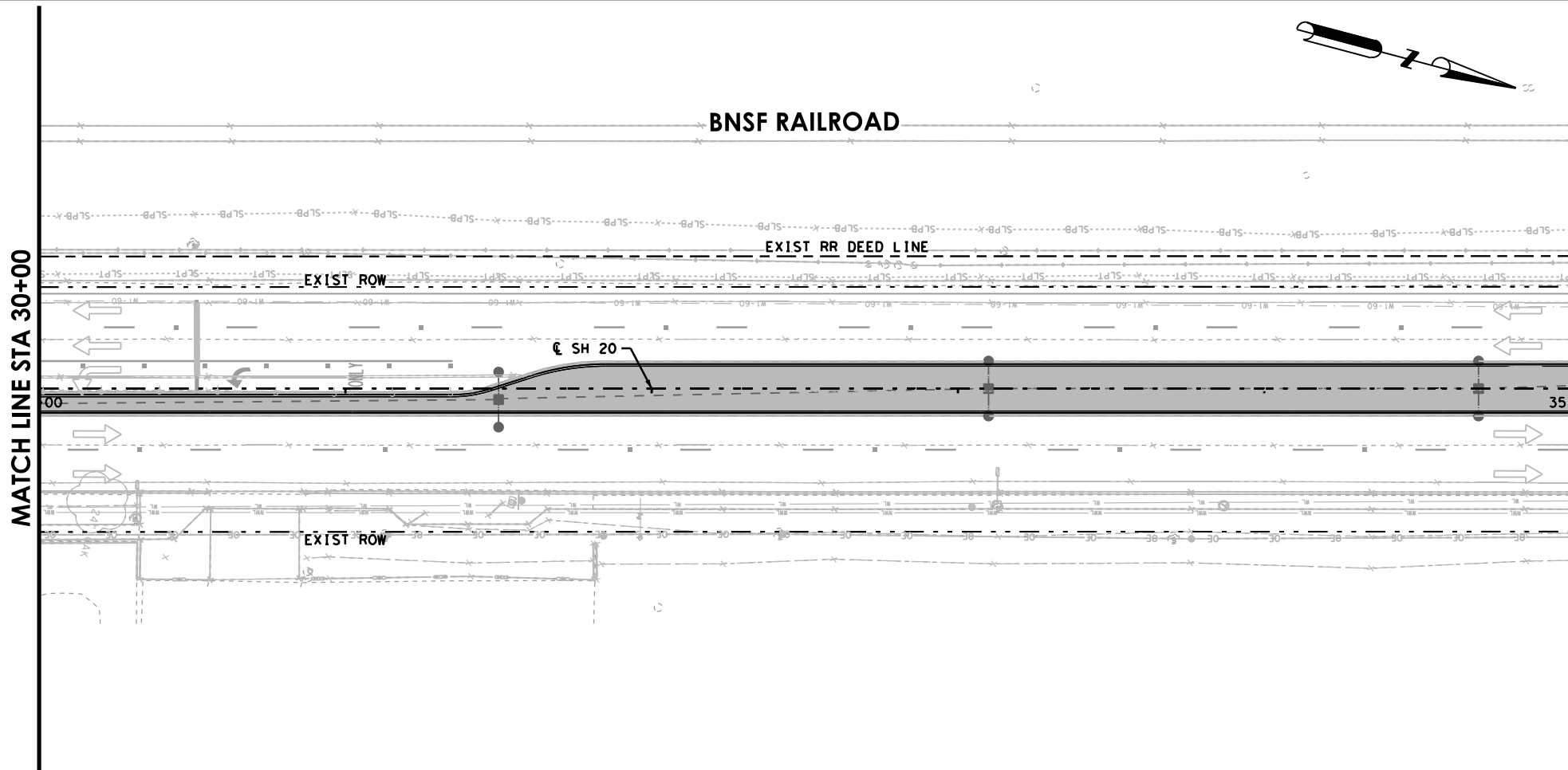
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**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 2
STA 20+00 TO STA 30+00**

SHEET 3 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	48

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
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7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 2
STA 30+00 TO STA 40+00**

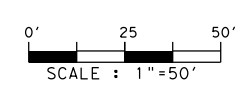
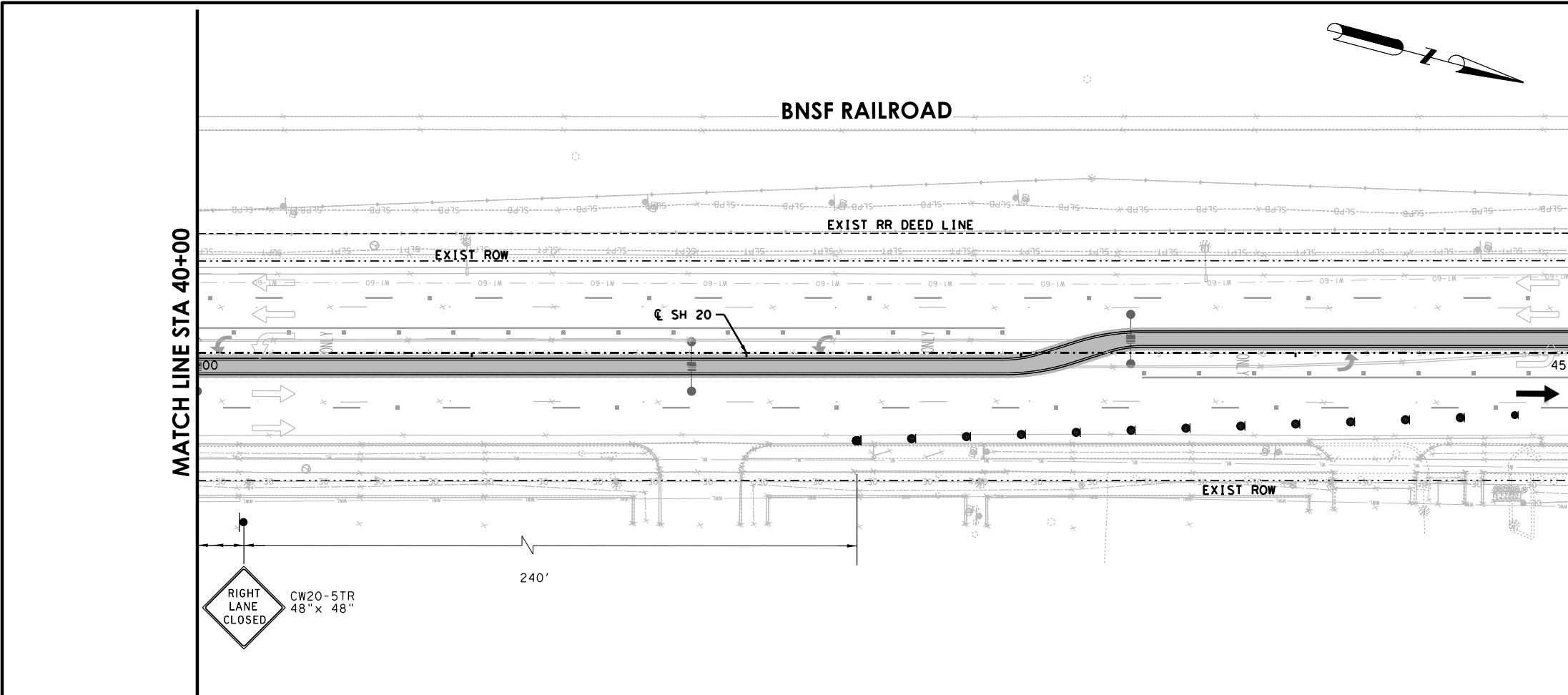
SHEET 4 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	49

4/30/2021

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LEGEND

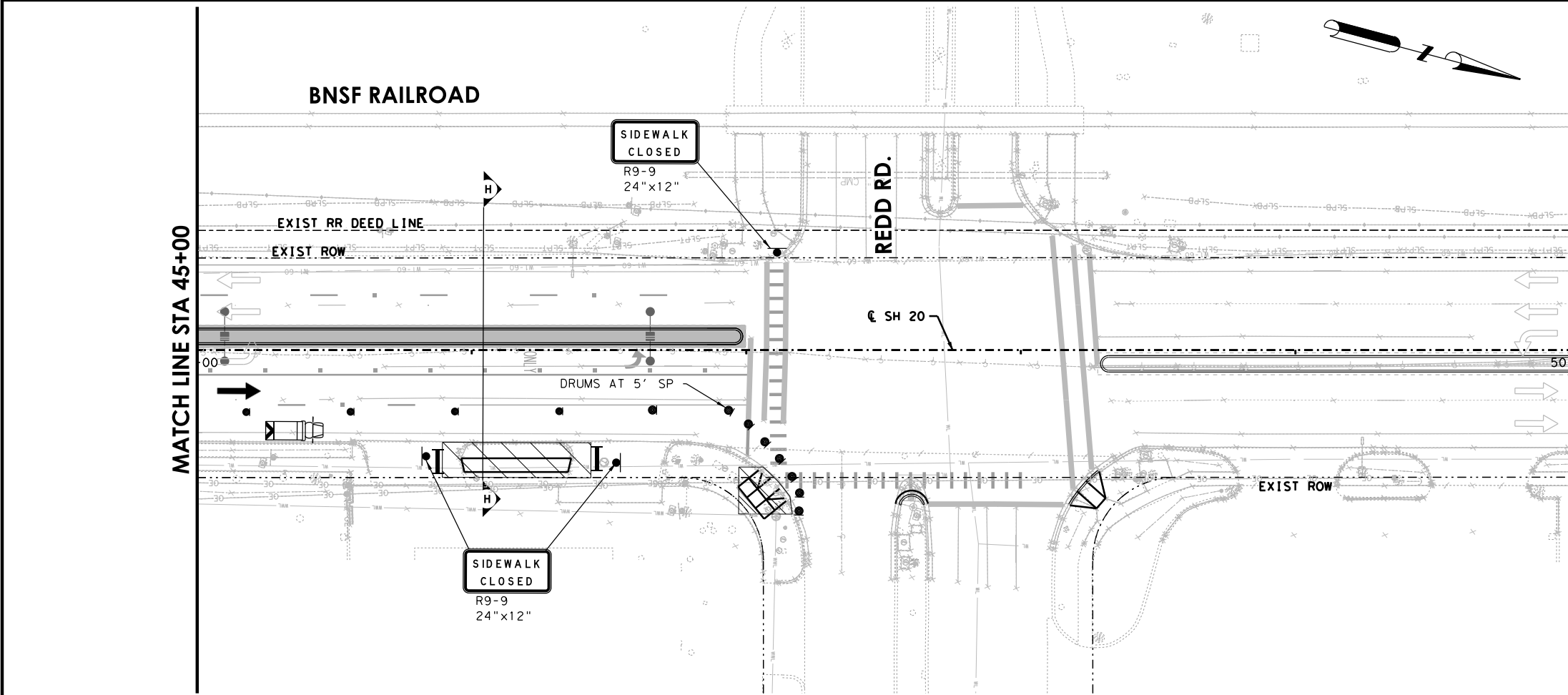
	WORK AREA
	PERMANENT WORK PREVIOUSLY COMPLETED
	TRAFFIC FLOW THIS PHASE OR PREVIOUS
	EXISTING/PREVIOUS PAVEMENT MARKINGS
	PROPOSED PAVEMENT MARKINGS THIS PHASE
	CONSTRUCTION SIGN
	PLASTIC DRUMS
	PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
	TRUCK MOUNTED ATTENUATOR
	TYPE III BARRICADE
	LOW PROFILE CONCRETE BARRIER (LPCB)
A	WRK ZN PAV MRK REMOV (W) (4") (SLD)
B	WRK ZN PAV MRK REMOV (W) (8") (SLD)
C	WRK ZN PAV MRK REMOV (W) (24") (SLD)
D	WRK ZN PAV MRK REMOV (Y) (4") (DBL)
E	WRK ZN PAV MRK REMOV (W) (4") (BRK)
F	WRK ZN PAV MRK REMOV (Y) (4") (BRK)
G	WRK ZN PAV MRK REMOV (Y) (4") (SLD)
H	WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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Salvador Hernandez Jr.

5/3/2021

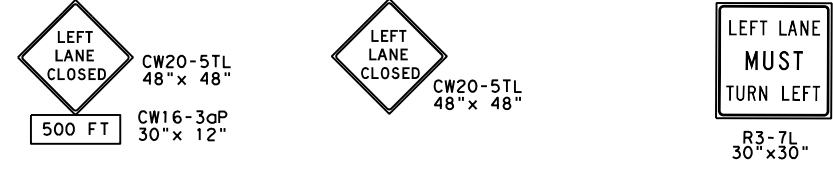
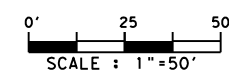
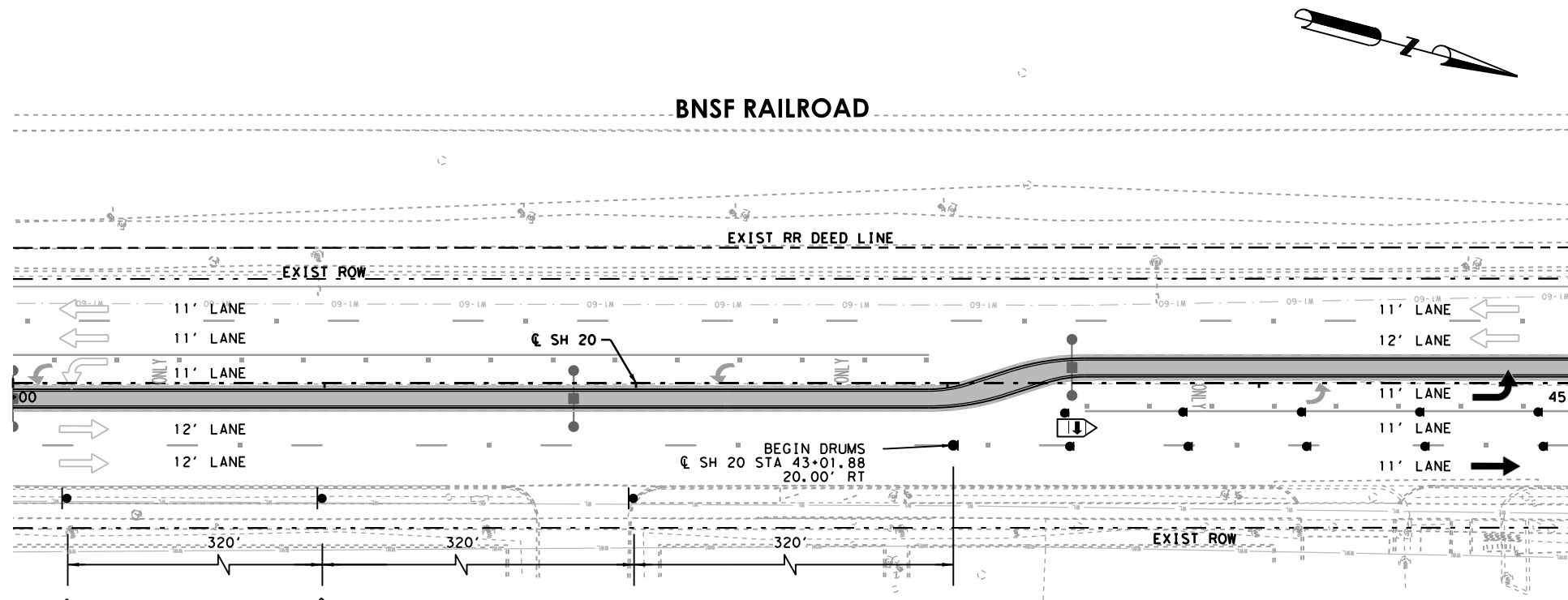


**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 1 - STEP 2
STA 40+00 TO STA 50+00**

SHEET 5 OF 5

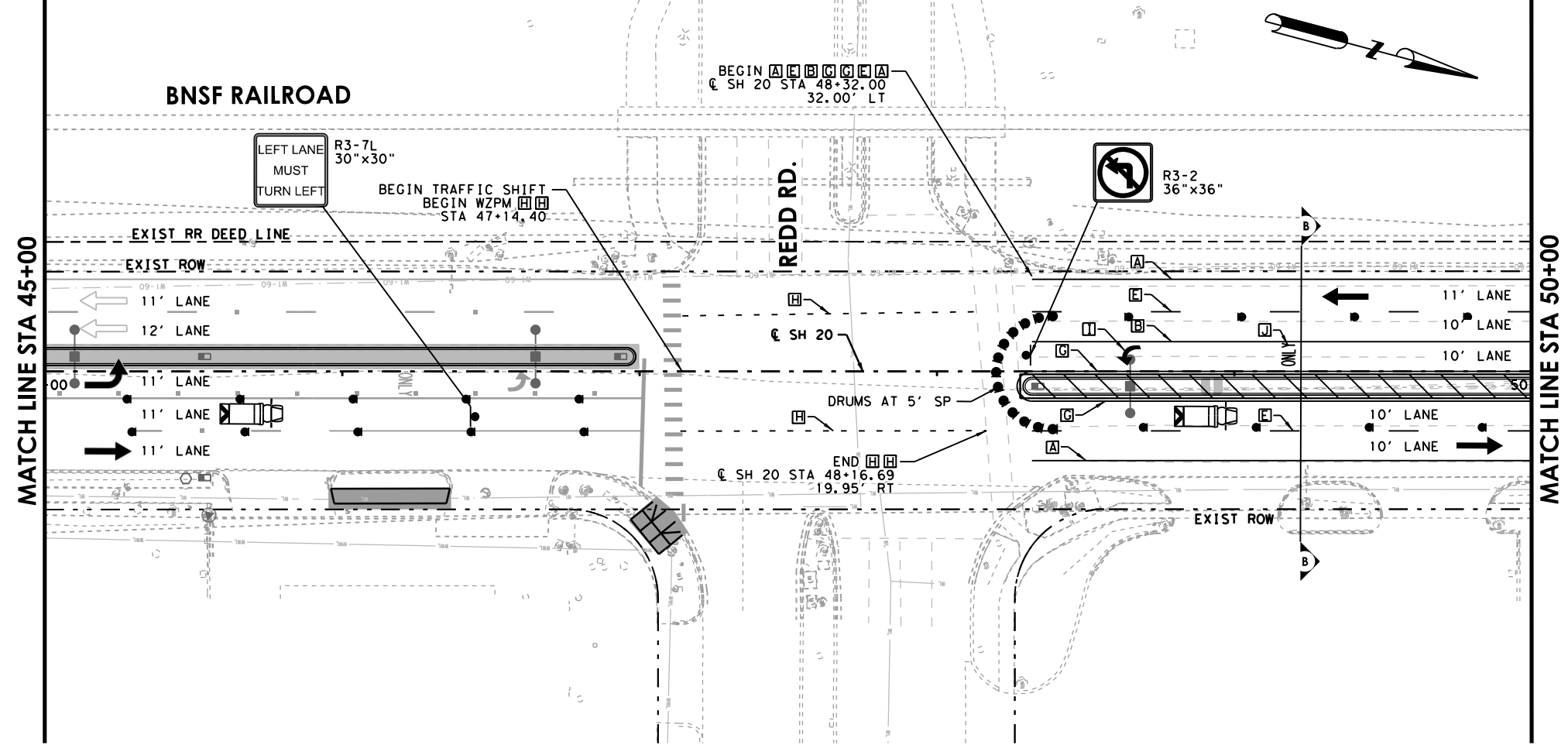
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CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	50

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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	84
662 6061	WK ZN PAV MRK REMOV (W) 4" (DOT)	LF	51
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	336
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	168
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	1
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	1
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	352



MATCH LINE STA 45+00

MATCH LINE STA 50+00

LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
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Salvador Hernandez Jr.

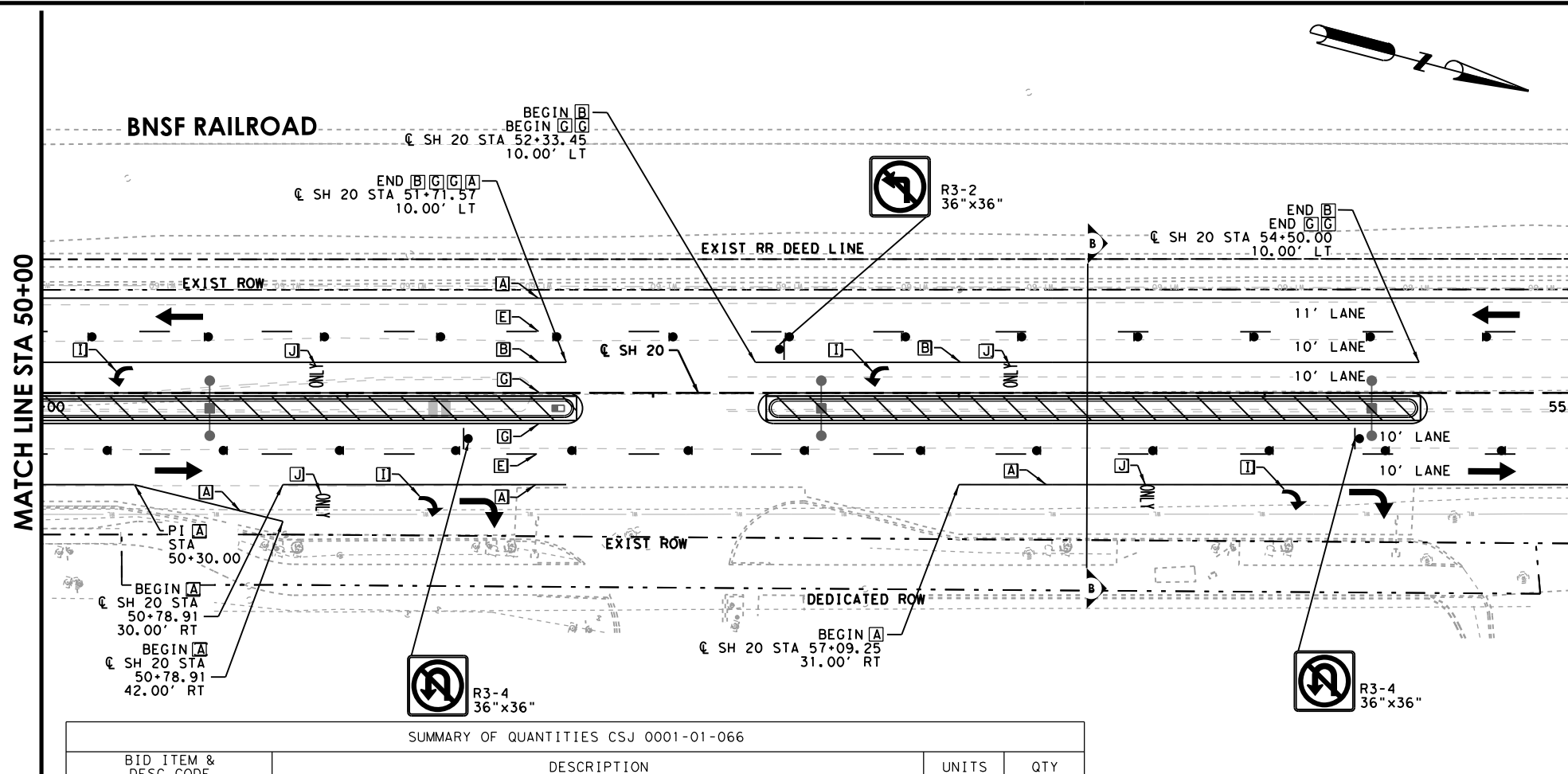
4/30/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 2 - STEP 1
STA. 40+00 TO STA. 50+00**

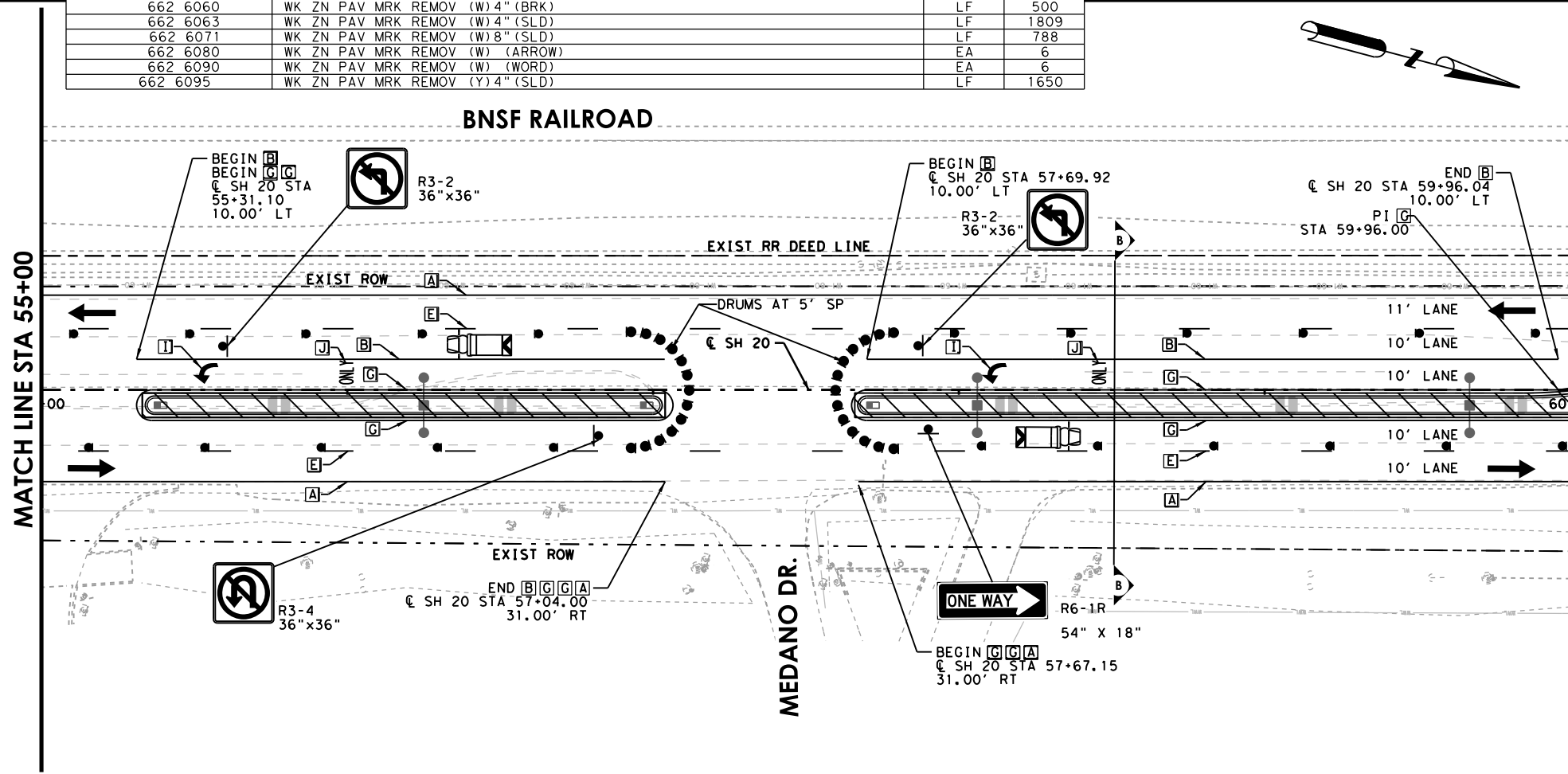
SHEET 1 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	51



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1809
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	788
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	6
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	6
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1650



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
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- PROPOSED PAVEMENT MARKINGS THIS PHASE
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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB

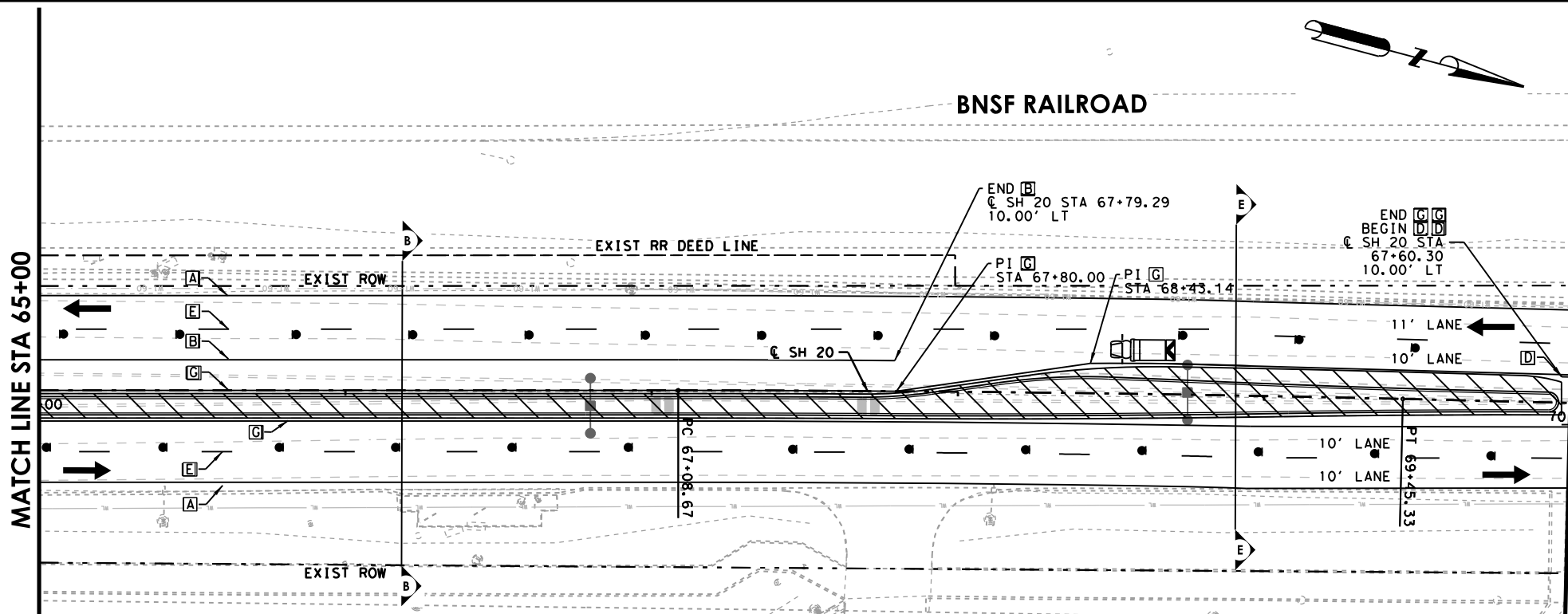
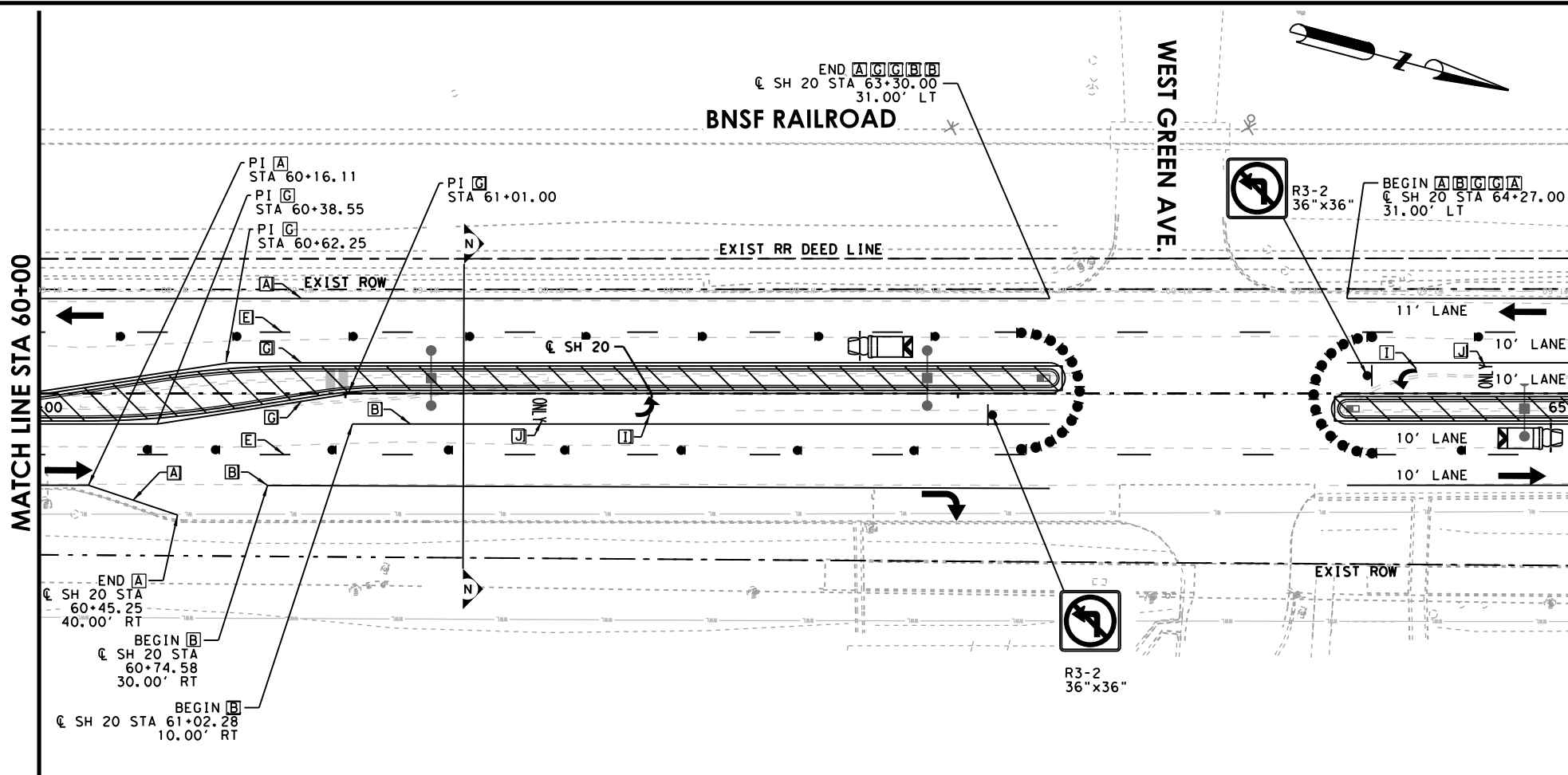
HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 2 - STEP 1
STA. 50+00 TO STA. 60+00**

SHEET 2 OF 4

DESIGNED: SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	52



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1530
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	840
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1840



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRIAGE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

- ### NOTES:
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 - REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 - REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB

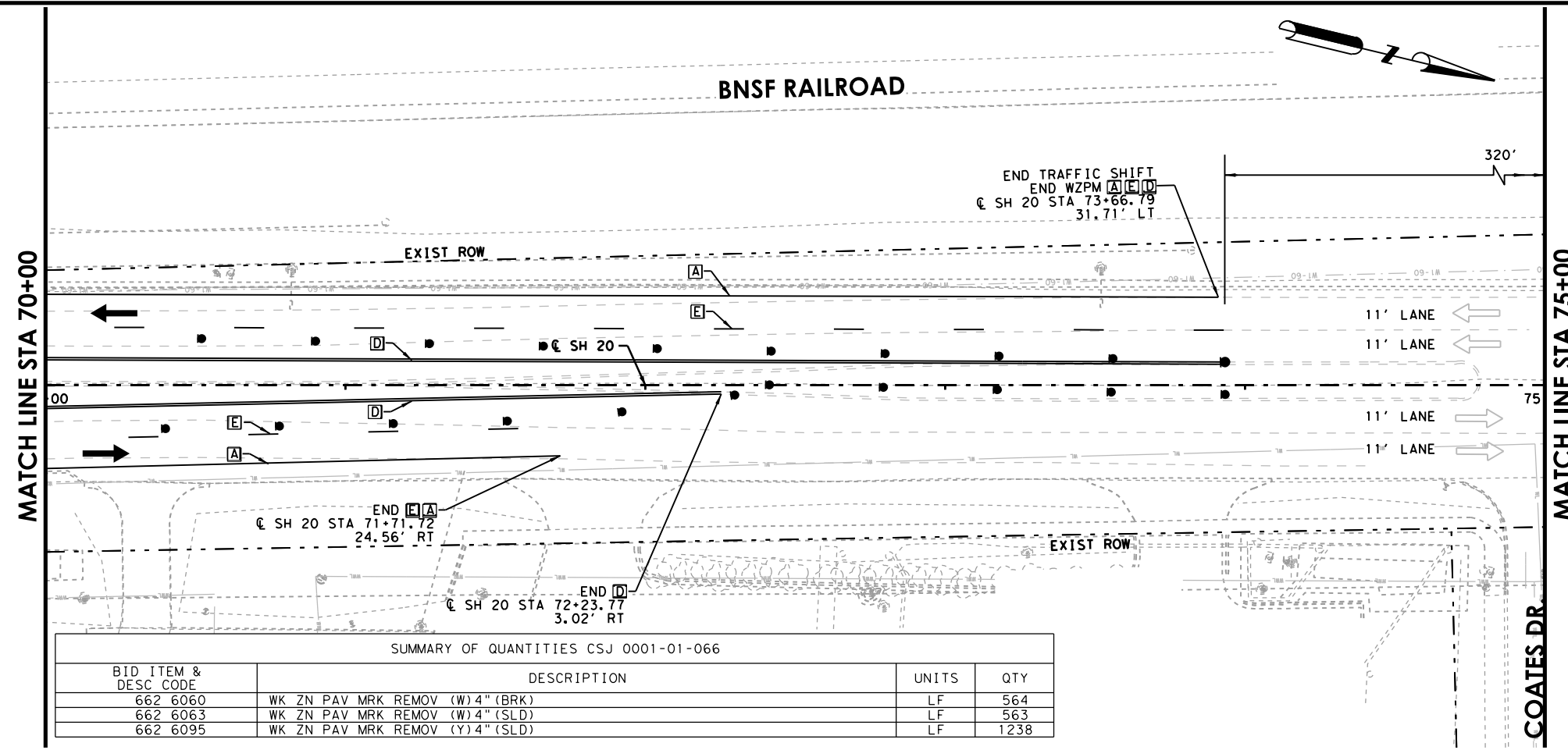
HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

SH 20 DONIPHAN DR. TRAFFIC CONTROL PLAN PHASE 2 - STEP 1 STA. 60+00 TO STA. 70+00

SHEET 3 OF 4

DESIGNED: SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	53



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	564
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	563
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1238

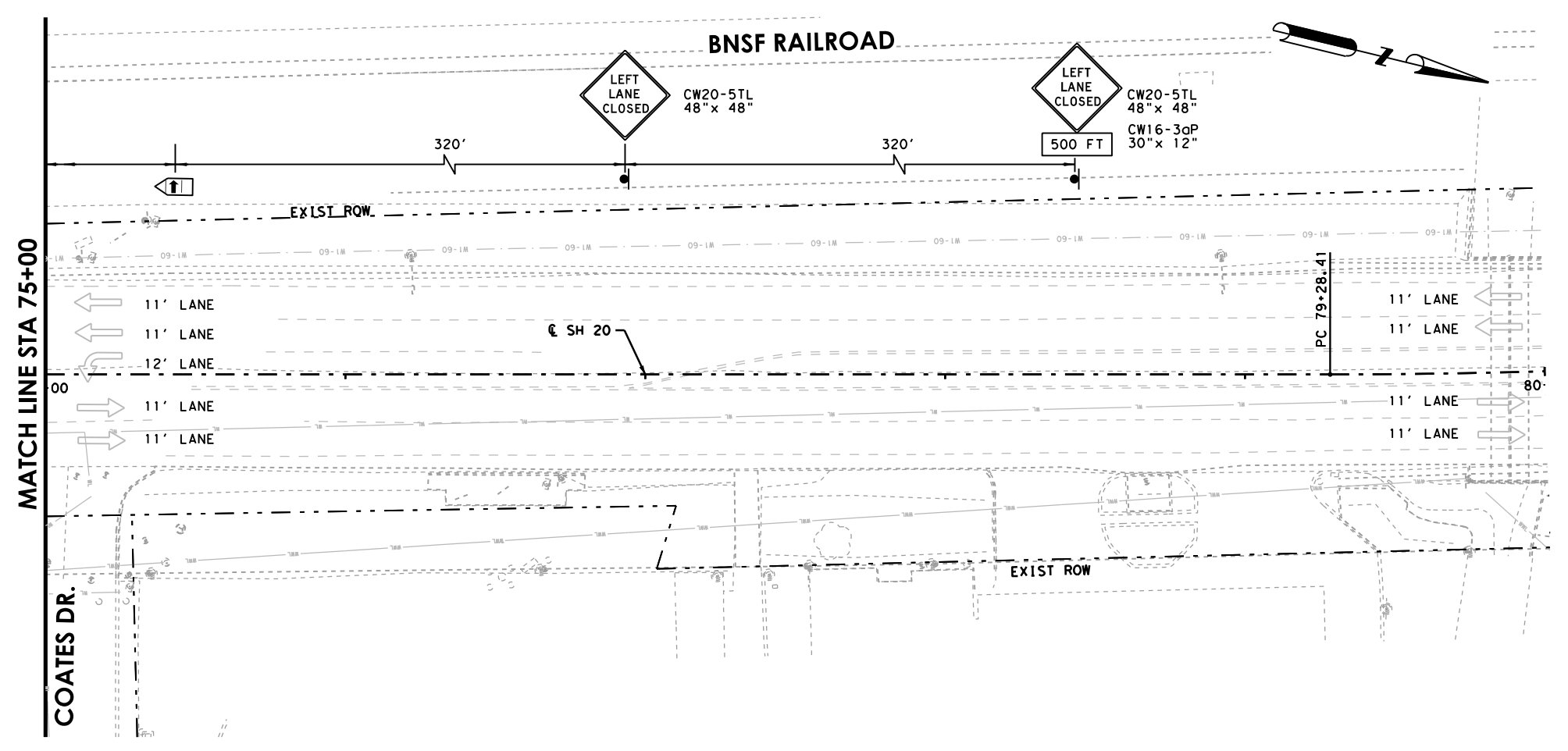
LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- ### NOTES:
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 - REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021



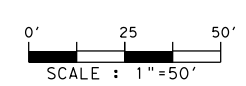
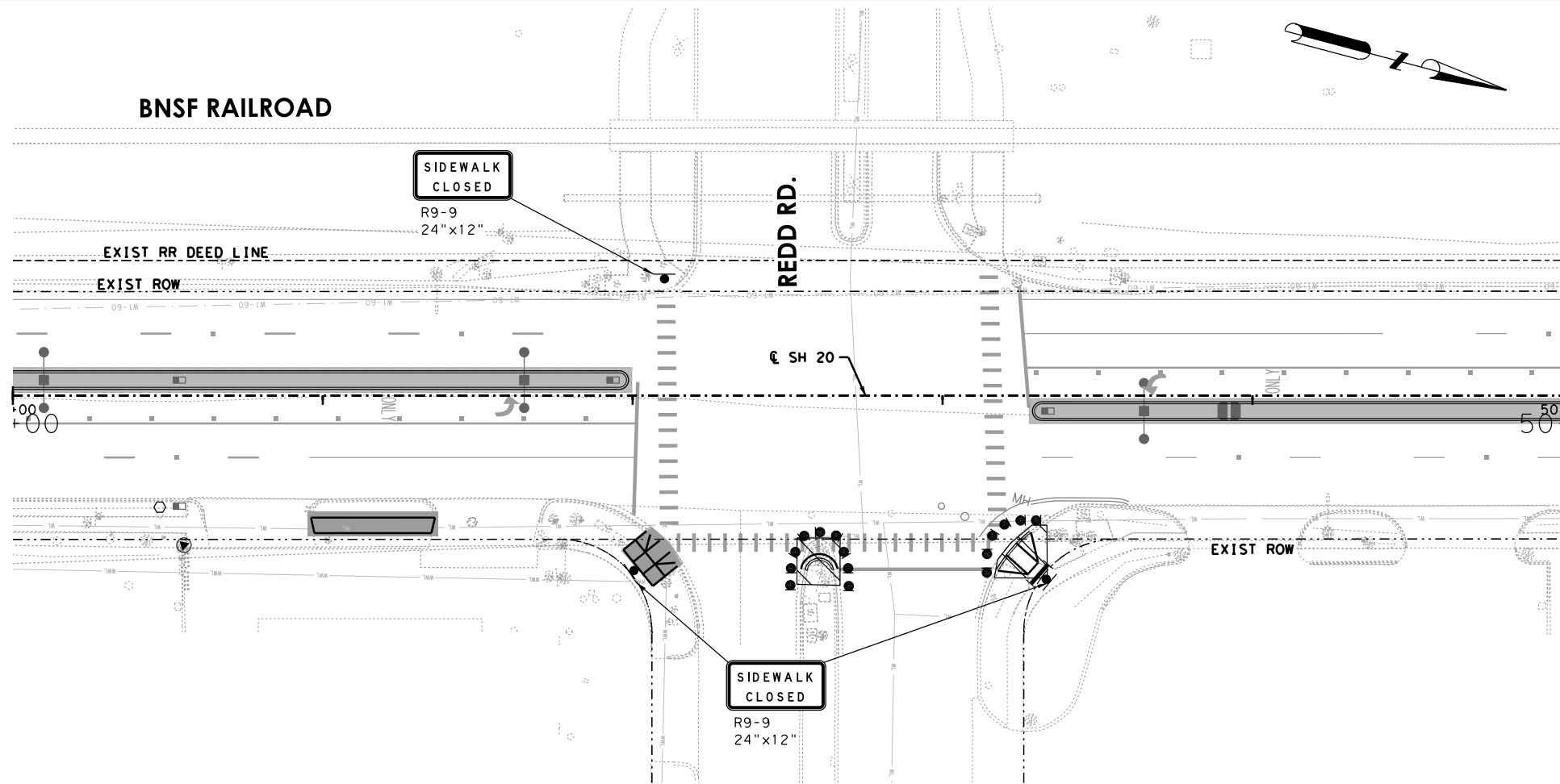
HNTB Corporation
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Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation





















**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 2 - STEP 1
STA. 70+00 TO STA. 80+00**

SHEET 4 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	54



LEGEND

-  WORK AREA
-  PERMANENT WORK PREVIOUSLY COMPLETED
-  TRAFFIC FLOW THIS PHASE OR PREVIOUS
-  EXISTING TRAFFIC FLOW
-  EXISTING/PREVIOUS PAVEMENT MARKINGS
-  PROPOSED PAVEMENT MARKINGS THIS PHASE
-  CONSTRUCTION SIGN
-  PLASTIC DRUMS
-  PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
-  TRUCK MOUNTED ATTENUATOR
-  TYPE III BARRICADE
-  LOW PROFILE CONCRETE BARRIER (LPCB)
-  WRK ZN PAV MRK REMOV (W) (4") (SLD)
-  WRK ZN PAV MRK REMOV (W) (8") (SLD)
-  WRK ZN PAV MRK REMOV (W) (24") (SLD)
-  WRK ZN PAV MRK REMOV (Y) (4") (DBL)
-  WRK ZN PAV MRK REMOV (W) (4") (BRK)
-  WRK ZN PAV MRK REMOV (Y) (4") (BRK)
-  WRK ZN PAV MRK REMOV (Y) (4") (SLD)
-  WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 2 - STEP 2
STA 45+00 TO STA 50+00**

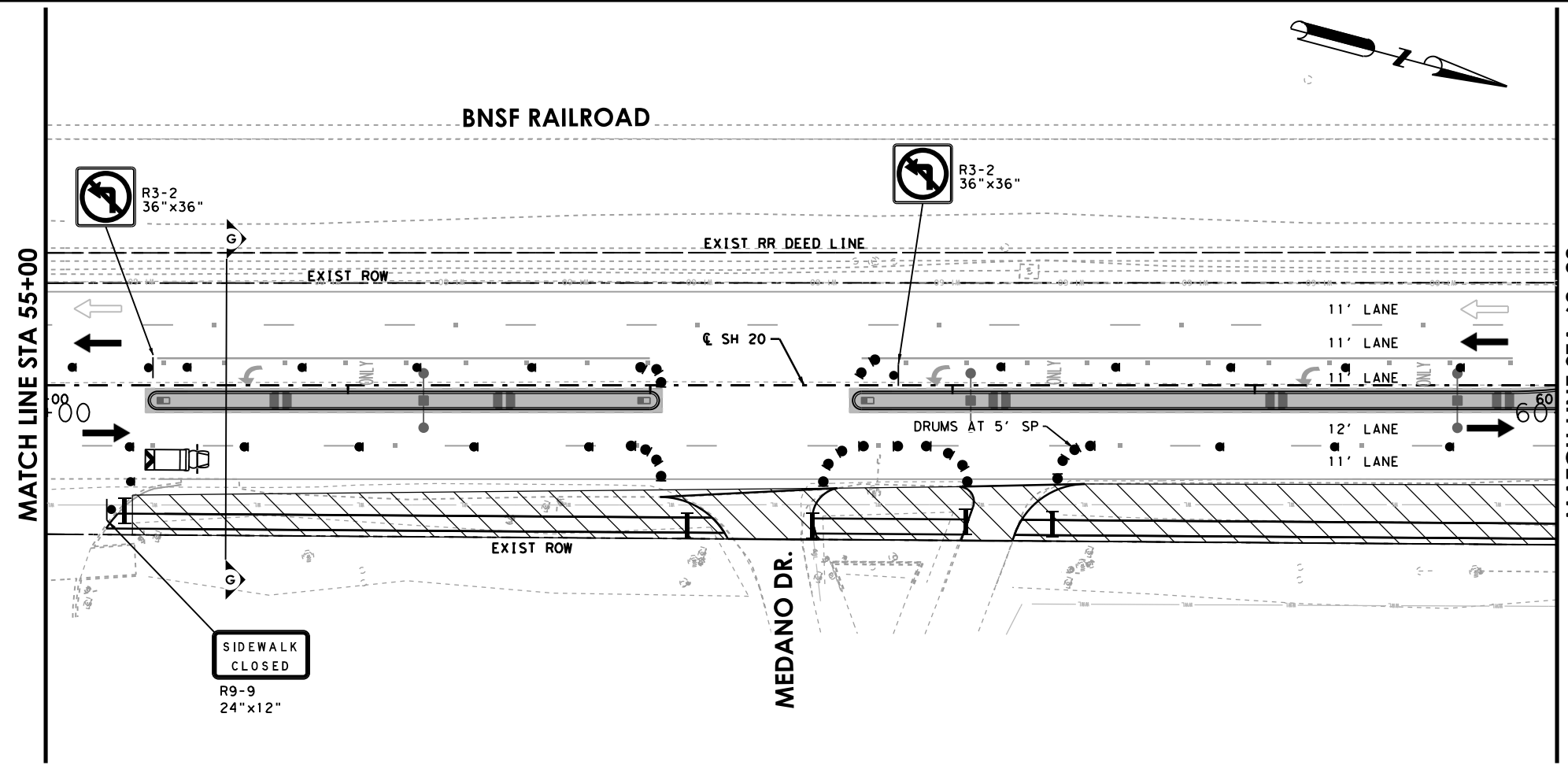
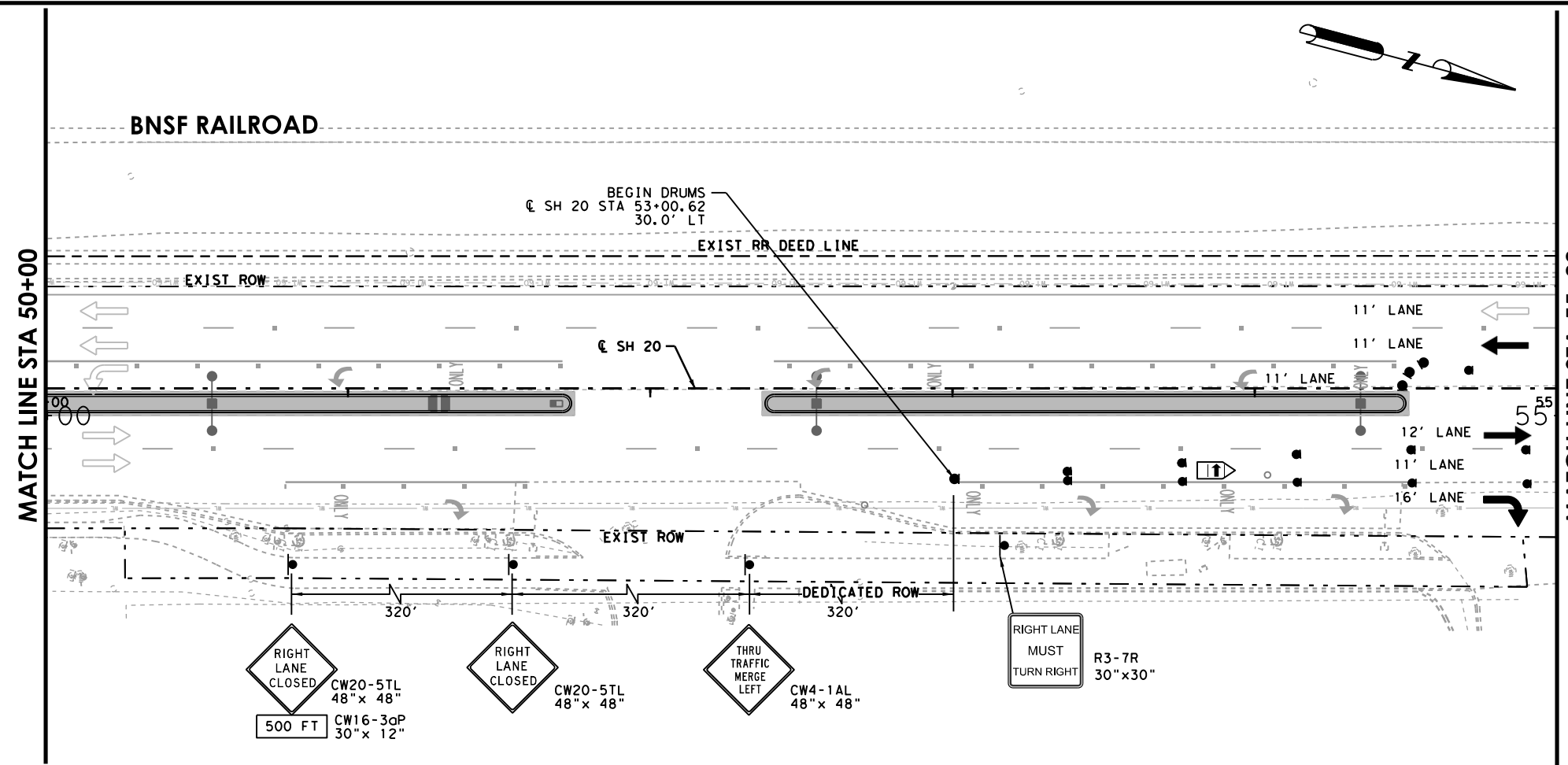
SHEET 1 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	55

5/2/2021

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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Salvador Hernandez Jr.
 4/30/2021

HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

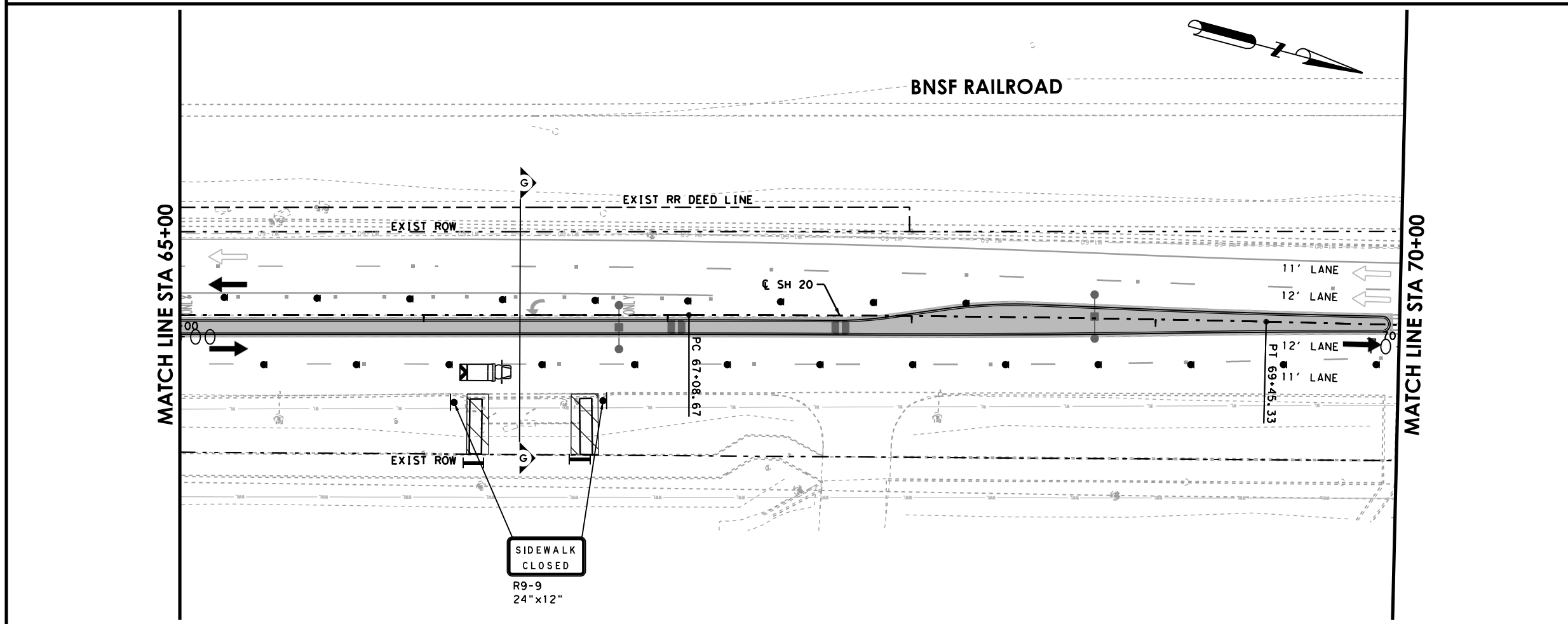
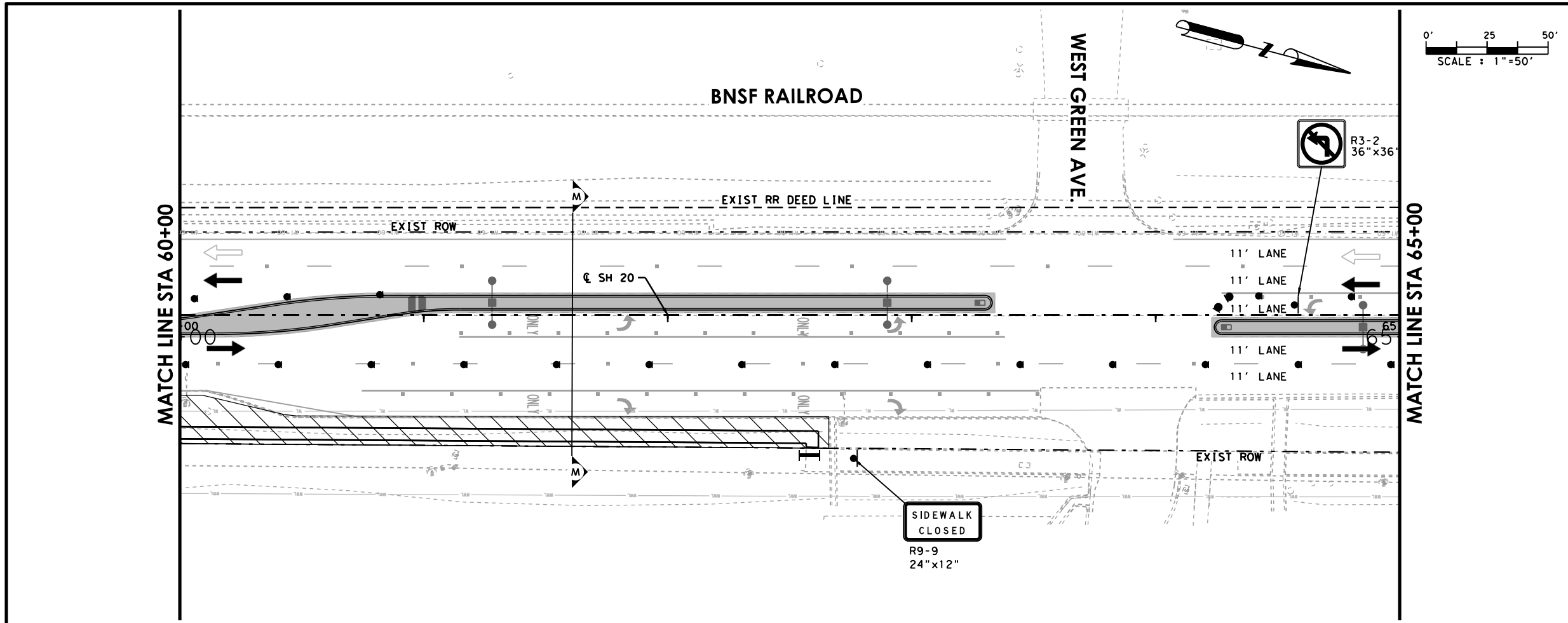
Texas Department of Transportation

**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PHASE 2 - STEP 2
 STA 50+00 TO STA 60+00**

SHEET 2 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	56

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.
 4/30/2021

HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

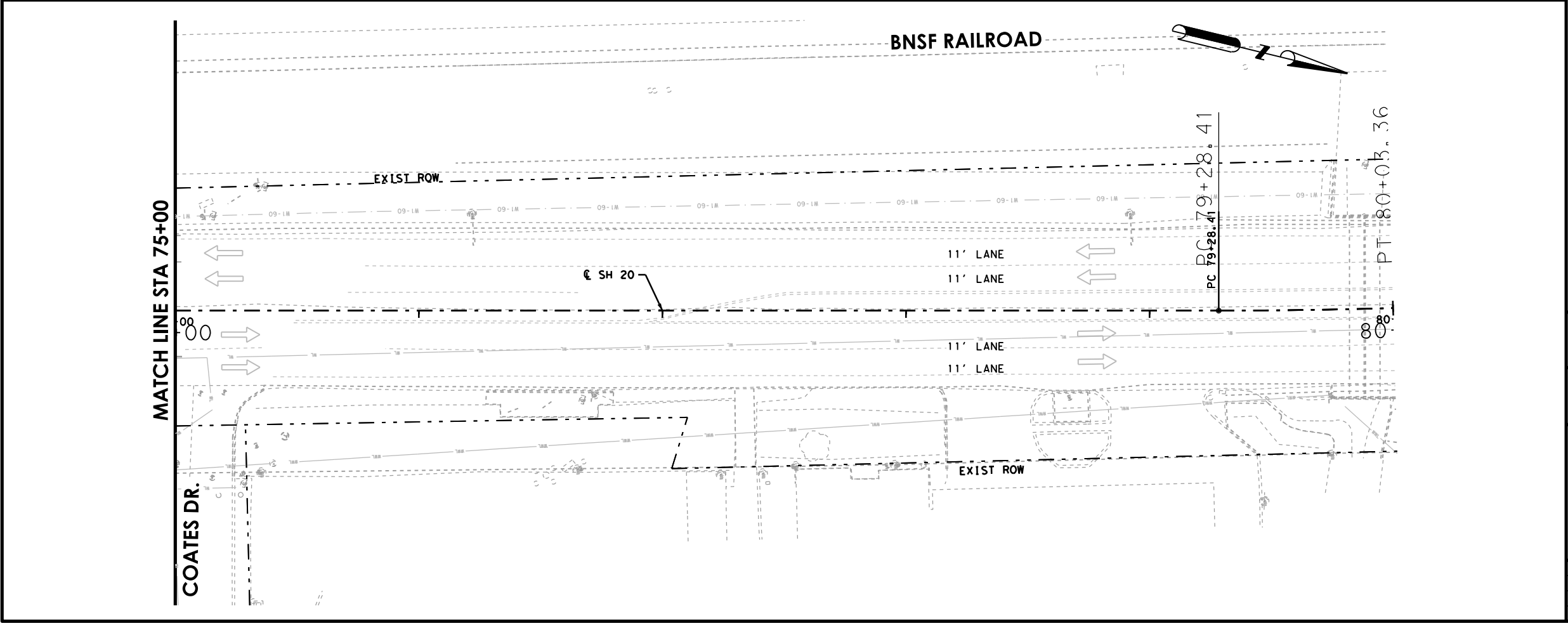
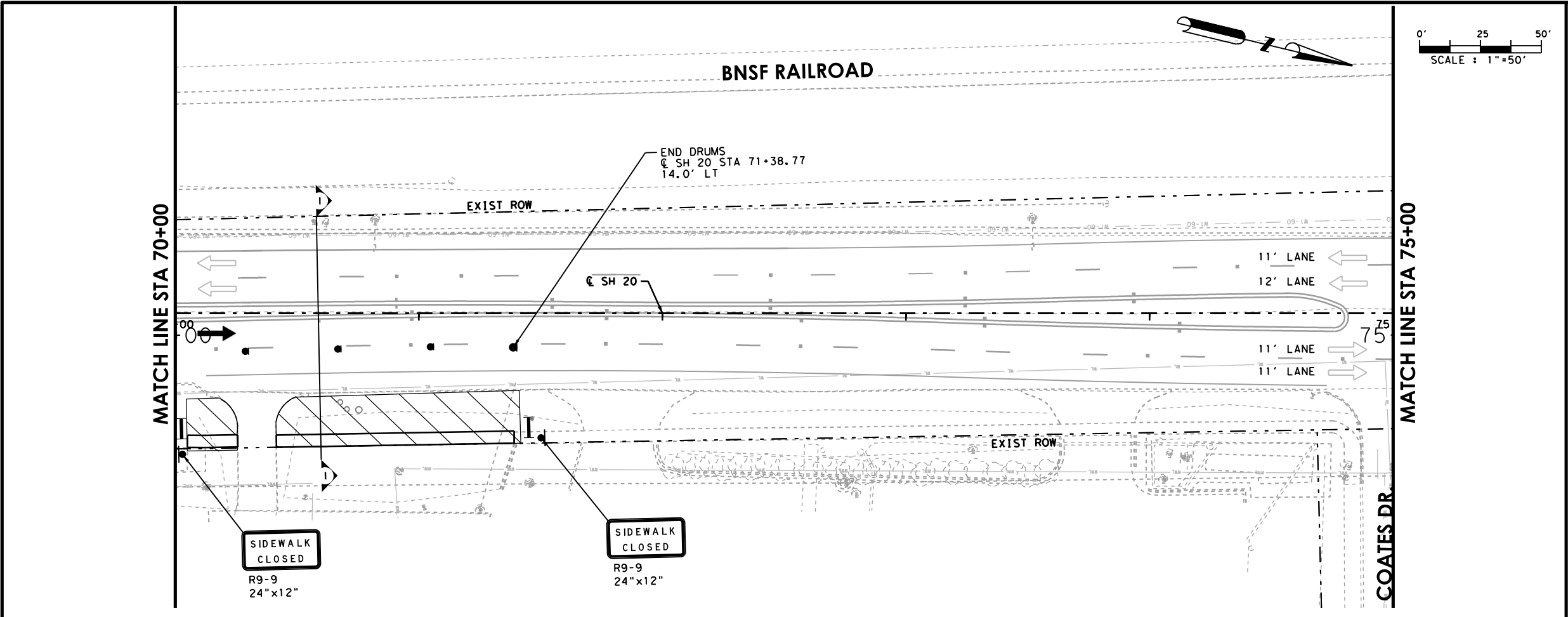
Texas Department of Transportation

**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PHASE 2 - STEP 2
 STA 60+00 TO STA 70+00**

SHEET 3 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	57

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
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- NOTES:**
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Salvador Hernandez Jr.
 4/30/2021

HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

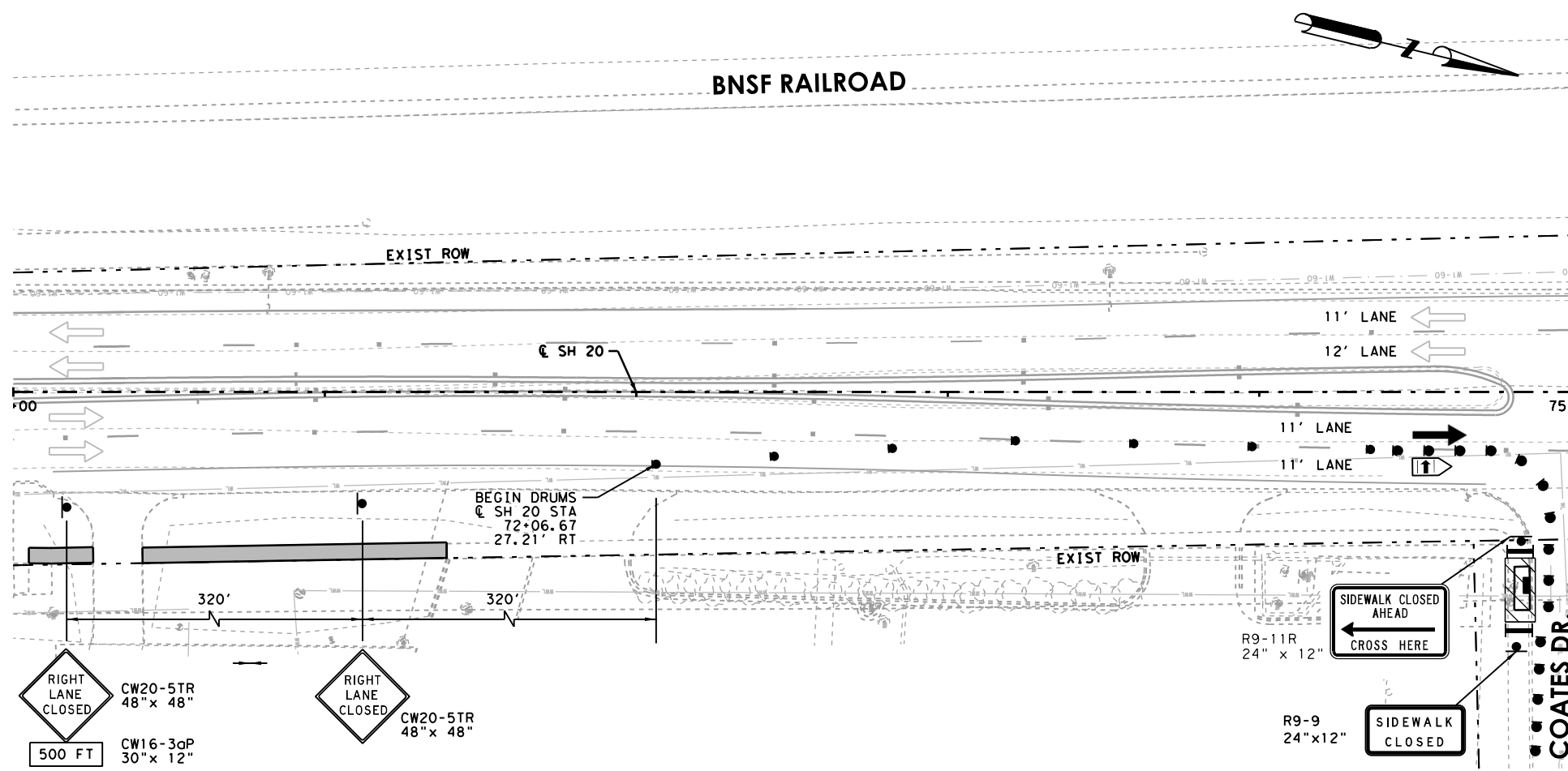
Texas Department of Transportation

**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PHASE 2 - STEP 2
 STA 70+00 TO STA 80+00**

SHEET 4 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	58

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LEGEND

	WORK AREA
	PERMANENT WORK PREVIOUSLY COMPLETED
	TRAFFIC FLOW THIS PHASE OR PREVIOUS
	EXISTING/PREVIOUS PAVEMENT MARKINGS
	PROPOSED PAVEMENT MARKINGS THIS PHASE
	CONSTRUCTION SIGN
	PLASTIC DRUMS
	PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
	TRUCK MOUNTED ATTENUATOR
	TYPE III BARRICADE
	LOW PROFILE CONCRETE BARRIER (LPCB)
A	WRK ZN PAV MRK REMOV (W) (4") (SLD)
B	WRK ZN PAV MRK REMOV (W) (8") (SLD)
C	WRK ZN PAV MRK REMOV (W) (24") (SLD)
D	WRK ZN PAV MRK REMOV (Y) (4") (DBL)
E	WRK ZN PAV MRK REMOV (W) (4") (BRK)
F	WRK ZN PAV MRK REMOV (Y) (4") (BRK)
G	WRK ZN PAV MRK REMOV (Y) (4") (SLD)
H	WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 3 - STEP 1
STA 70+00 TO STA 80+00**

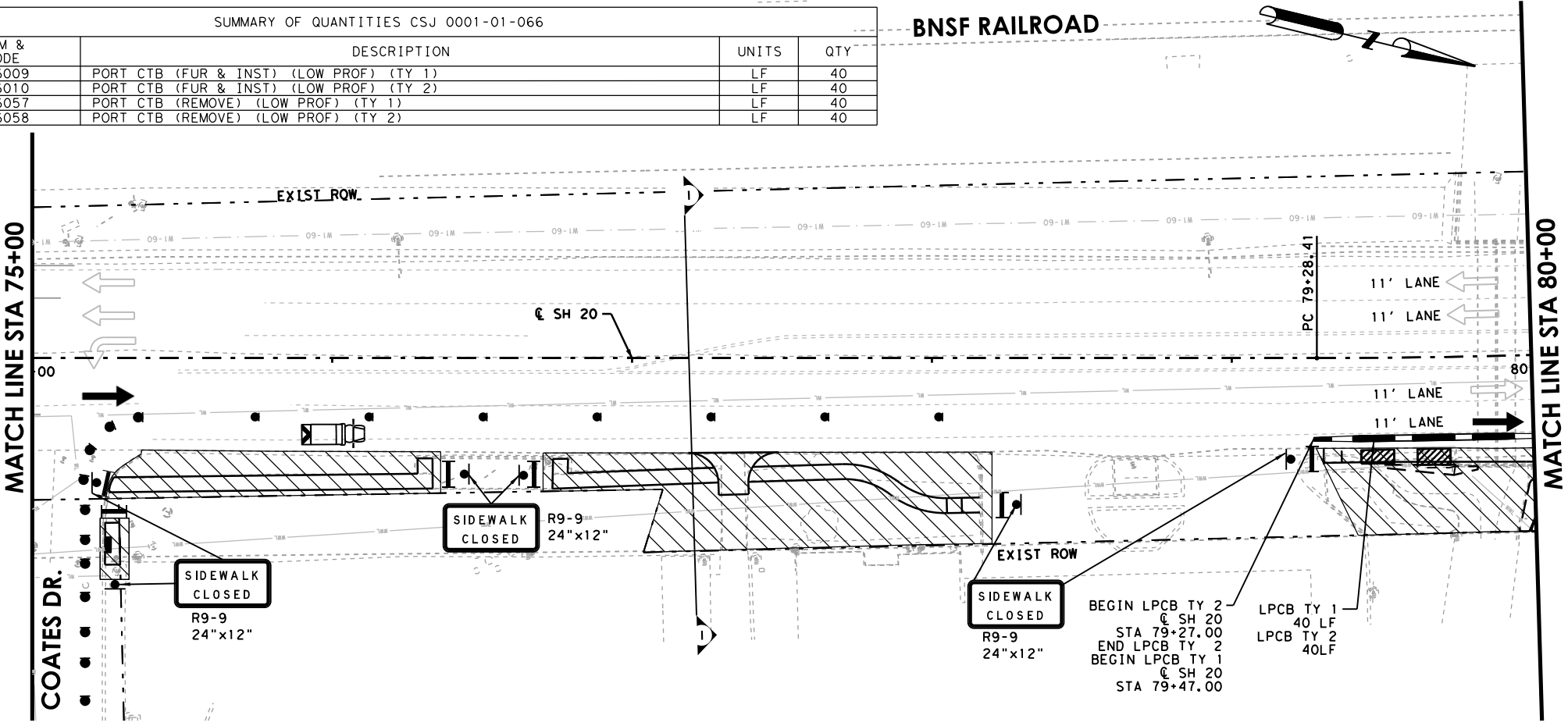
SHEET 1 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	59

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SUMMARY OF QUANTITIES CSJ 0001-01-066

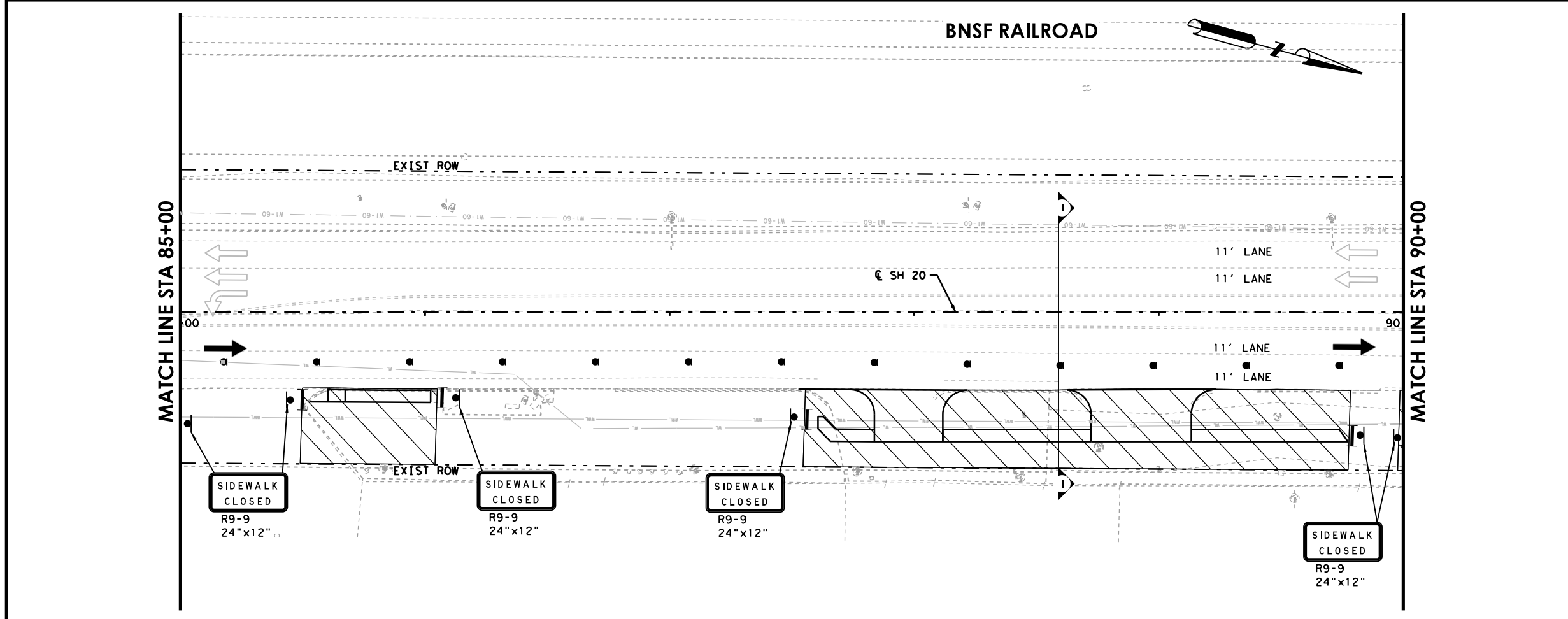
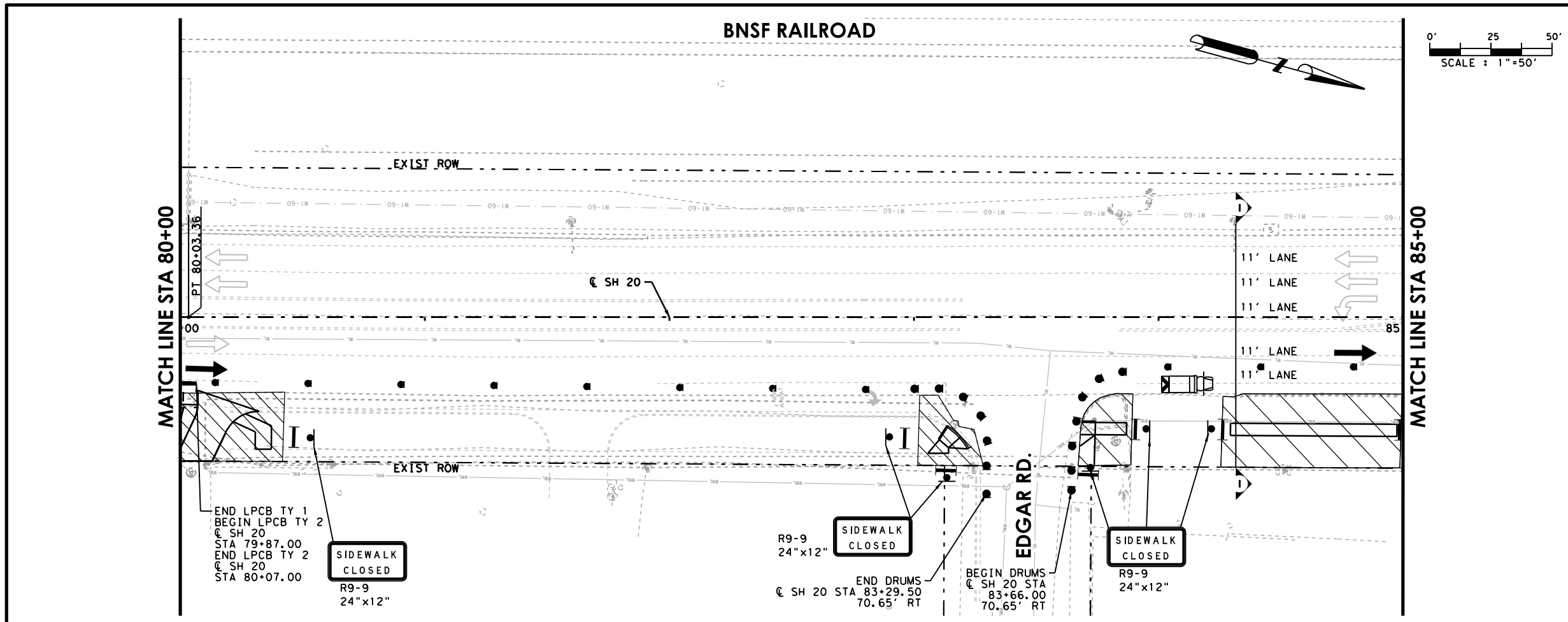
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
512 6009	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	LF	40
512 6010	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	LF	40
512 6057	PORT CTB (REMOVE) (LOW PROF) (TY 1)	LF	40
512 6058	PORT CTB (REMOVE) (LOW PROF) (TY 2)	LF	40



BEGIN LPCB TY 2
 @ SH 20
 STA 79+27.00
 END LPCB TY 2
 BEGIN LPCB TY 1
 @ SH 20
 STA 79+47.00

LPCB TY 1
 40 LF
 LPCB TY 2
 40LF

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- ### NOTES:
1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

SH 20 DONIPHAN DR.

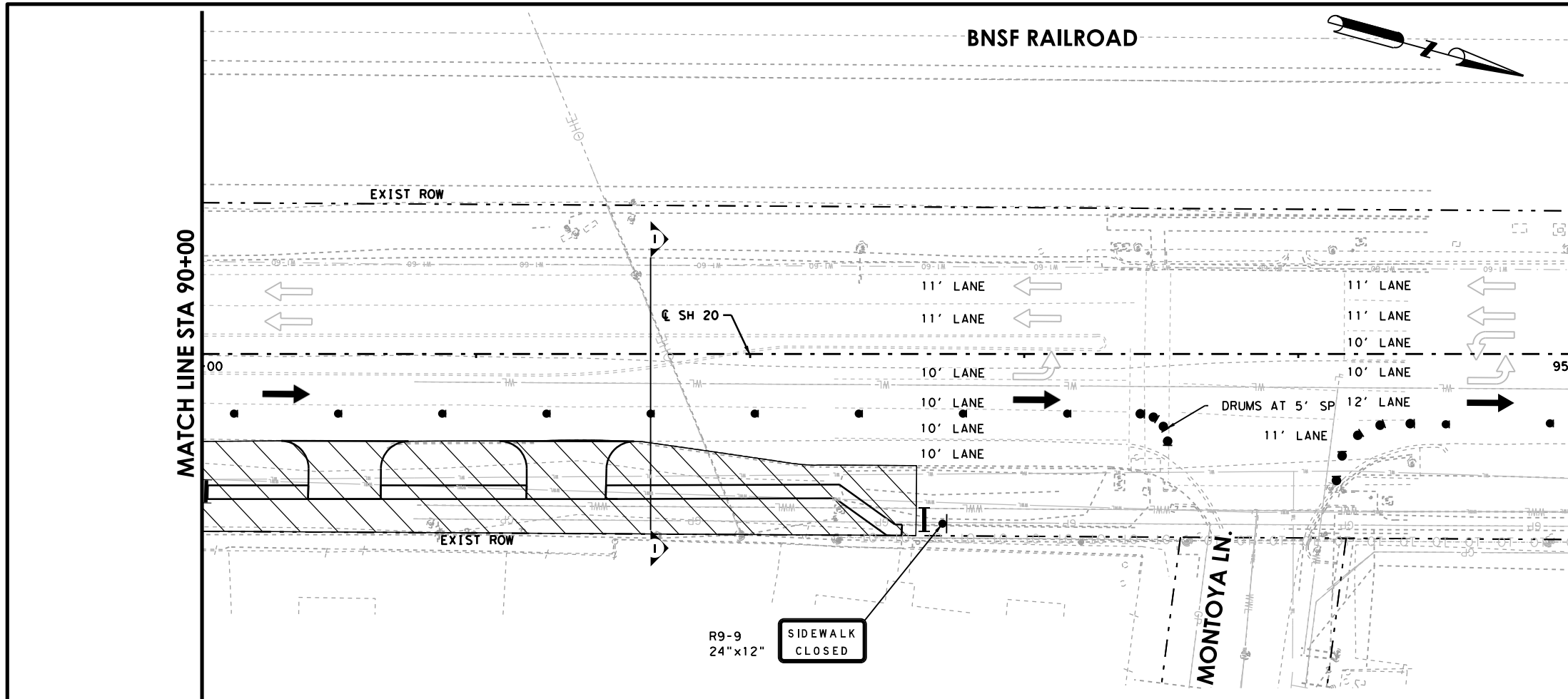
TRAFFIC CONTROL PLAN

PHASE 3 - STEP 1
STA 80+00 TO STA 90+00

SHEET 2 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	60

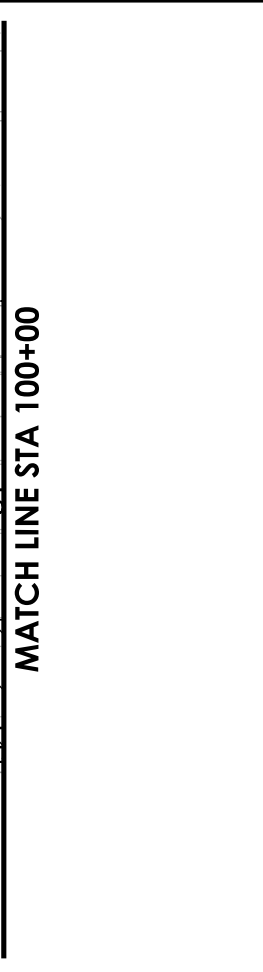
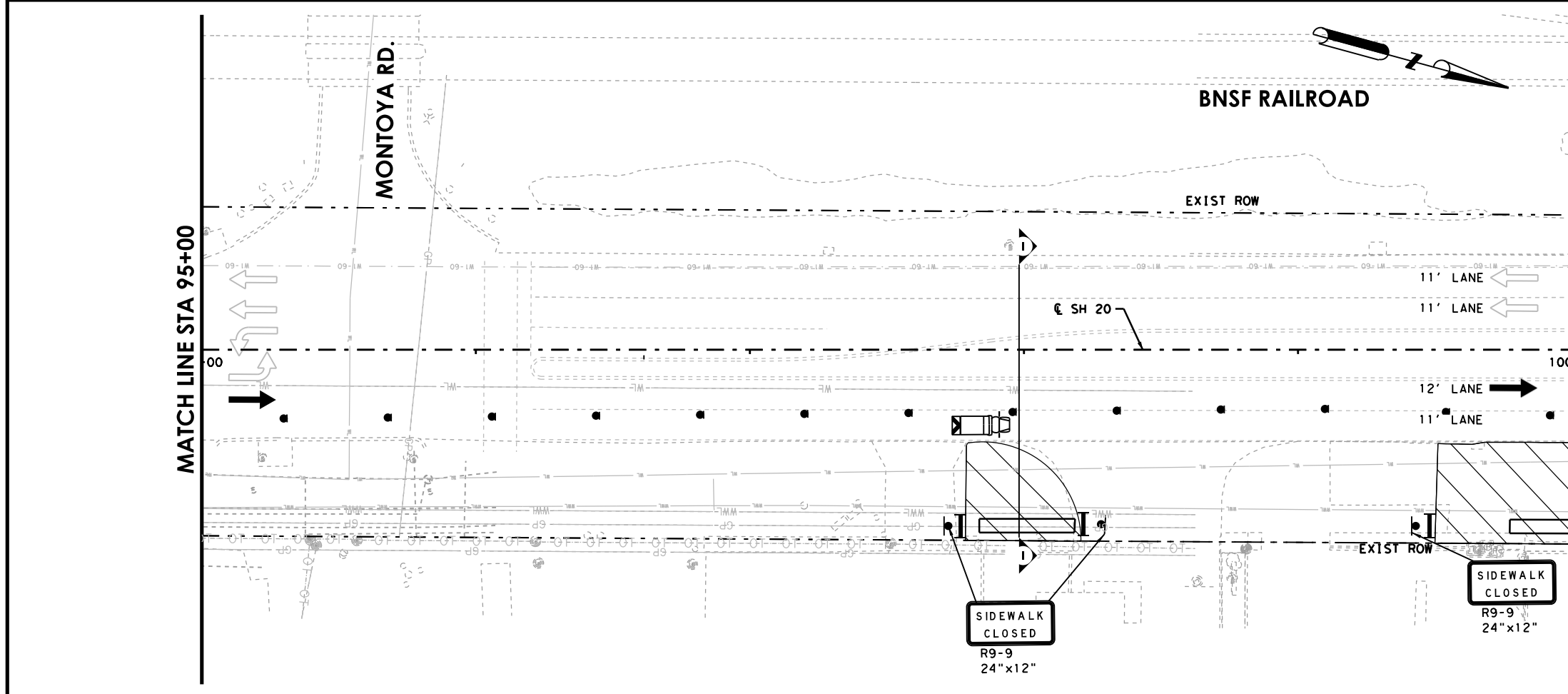
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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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Salvador Hernandez Jr.
 4/30/2021

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 Firm Registration Number 420

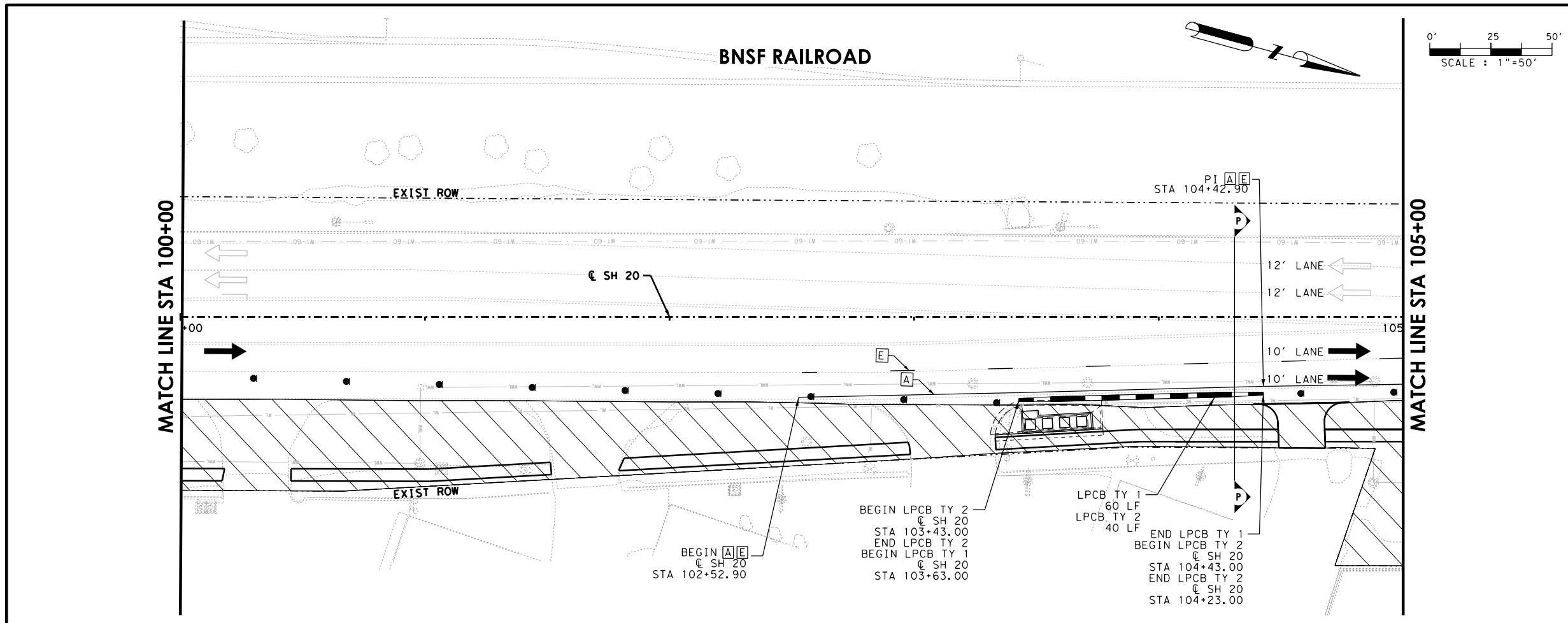
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**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PHASE 3 - STEP 1
 STA 90+00 TO STA 100+00**

SHEET 3 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	61

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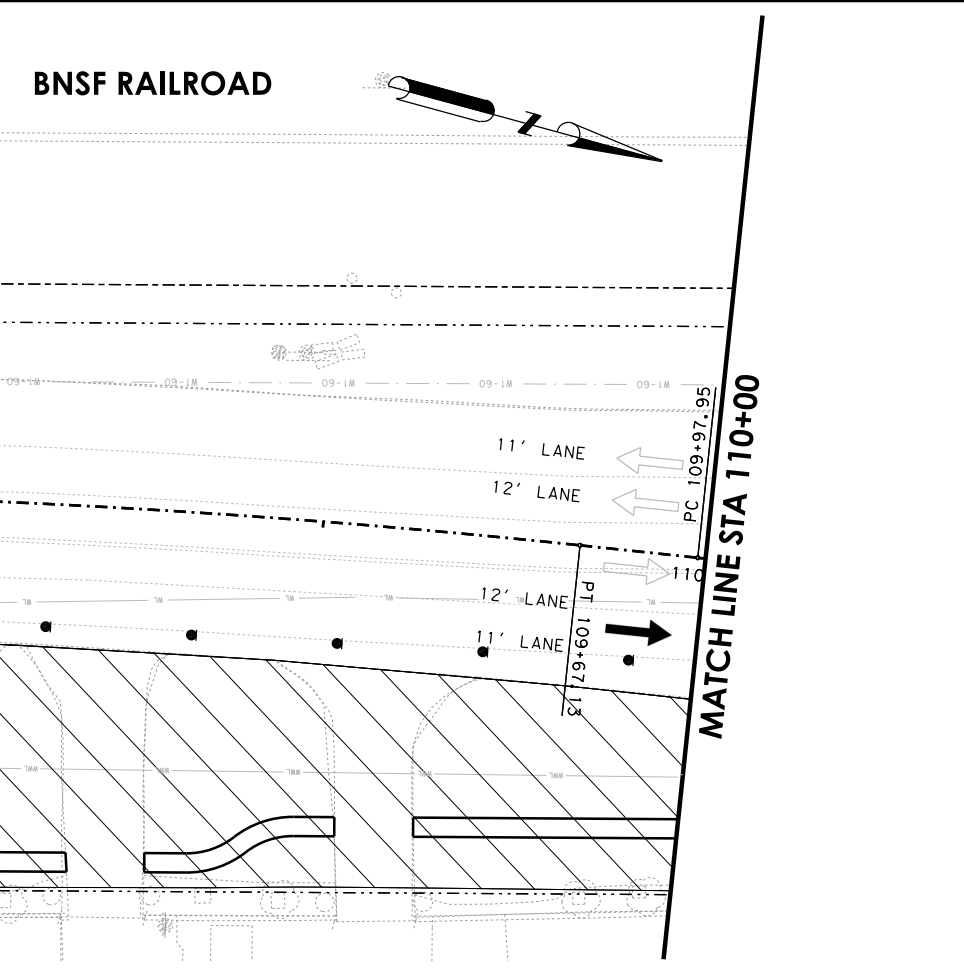
LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MK REMOV (W) (4") (SLD)
- WRK ZN PAV MK REMOV (W) (8") (SLD)
- WRK ZN PAV MK REMOV (W) (24") (SLD)
- WRK ZN PAV MK REMOV (Y) (4") (DBL)
- WRK ZN PAV MK REMOV (W) (4") (BRK)
- WRK ZN PAV MK REMOV (Y) (4") (BRK)
- WRK ZN PAV MK REMOV (Y) (4") (SLD)
- WRK ZN PAV MK REMOV (W) (4") (DOT)

- ### NOTES:
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
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 - REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
512 6009	PORT CTB (FUR & INST) (LOW PROF) (TY 1)	LF	60
512 6010	PORT CTB (FUR & INST) (LOW PROF) (TY 2)	LF	40
512 6057	PORT CTB (REMOVE) (LOW PROF) (TY 1)	LF	60
512 6058	PORT CTB (REMOVE) (LOW PROF) (TY 2)	LF	40
662 6060	WK ZN PAV MK REMOV (W) 4" (BRK)	LF	70
662 6063	WK ZN PAV MK REMOV (W) 4" (SLD)	LF	280



BNSF RAILROAD

Salvador Hernandez Jr.
5/2/2021

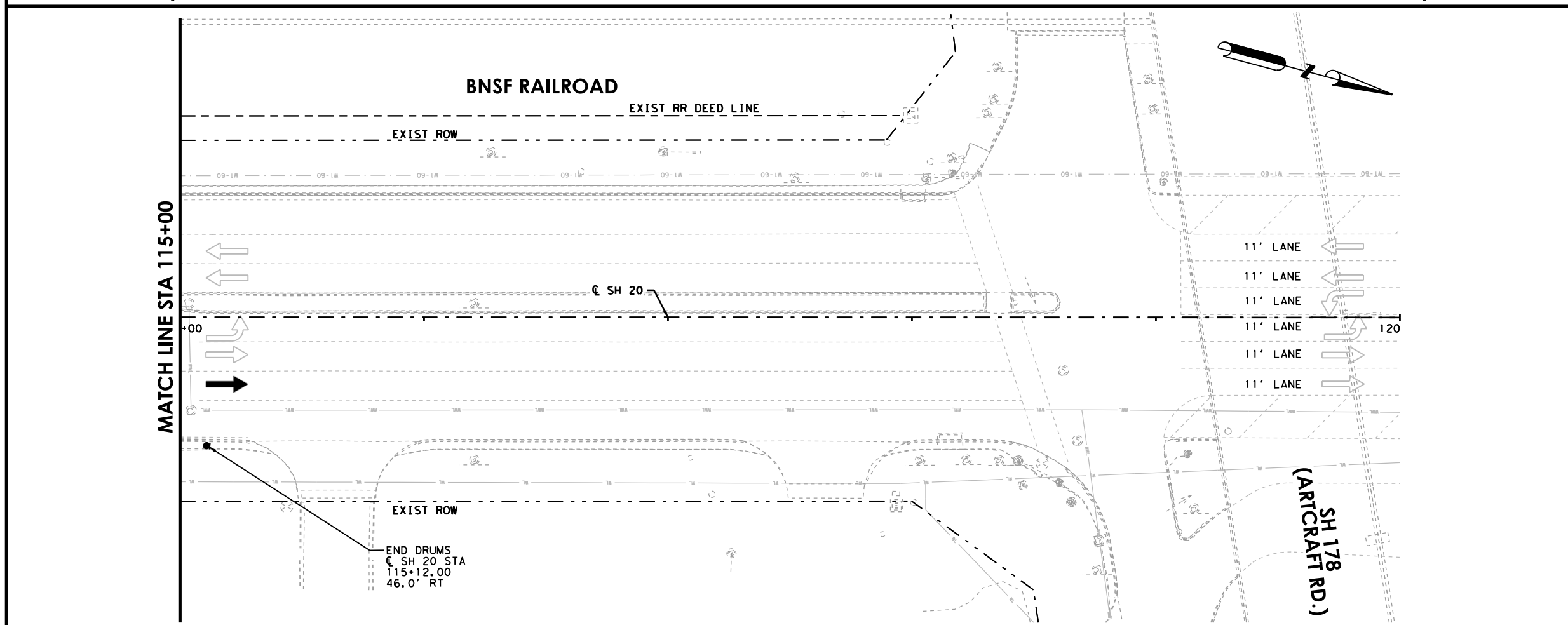
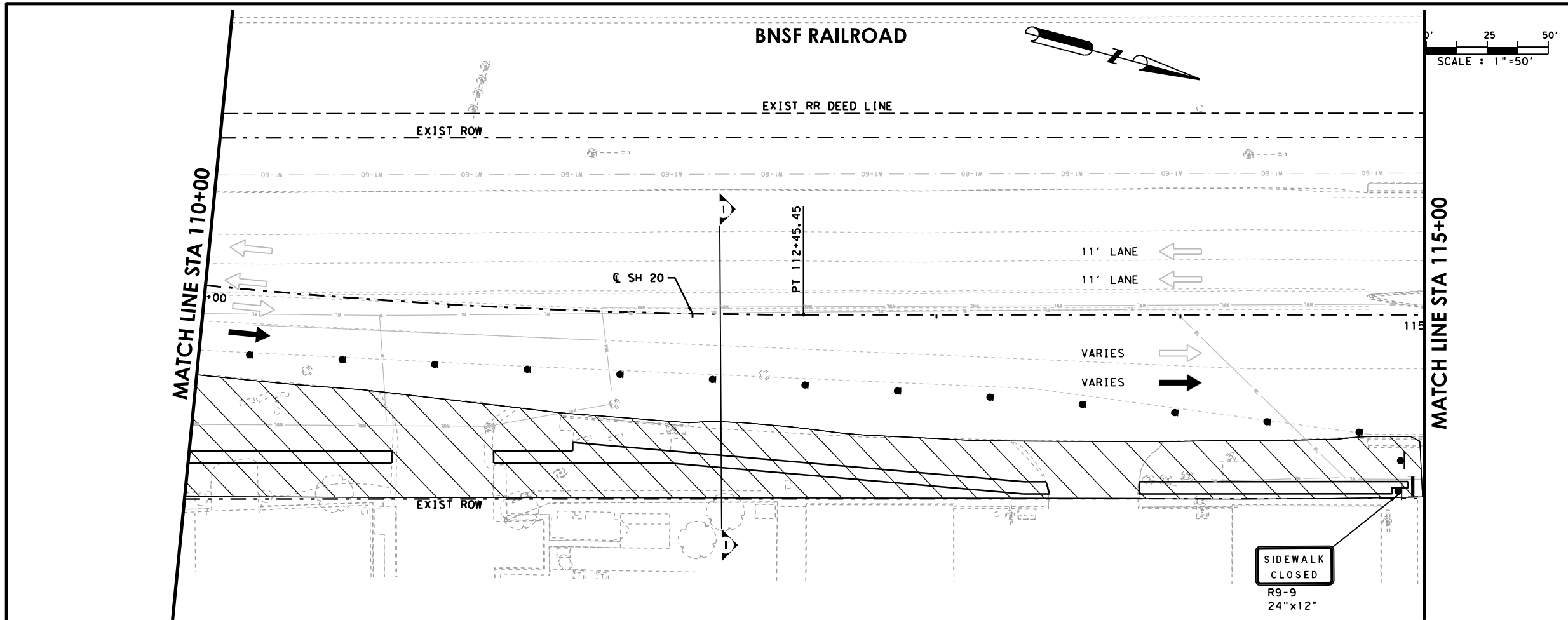
HNTB
HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 3 - STEP 1
STA 100+00 TO STA 110+00**

SHEET 4 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	62



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
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Salvador Hernandez Jr.
 4/30/2021

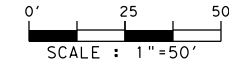
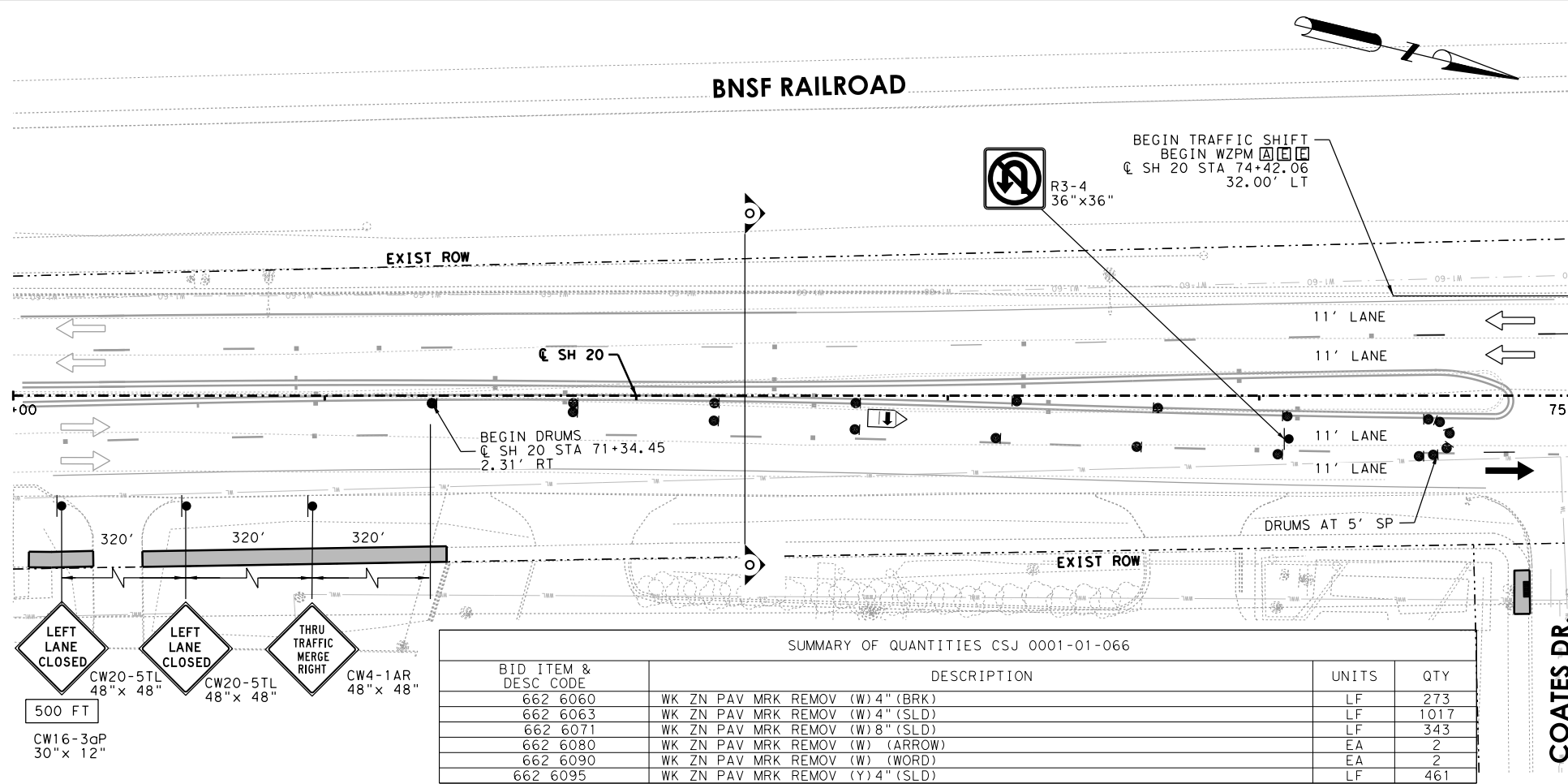
HNTB Corporation
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 Infrastructure Solutions
 Firm Registration Number 420

Texas Department of Transportation

**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PHASE 3 - STEP 1
 STA 110+00 TO STA 120+00**
 SHEET 5 OF 5

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	63

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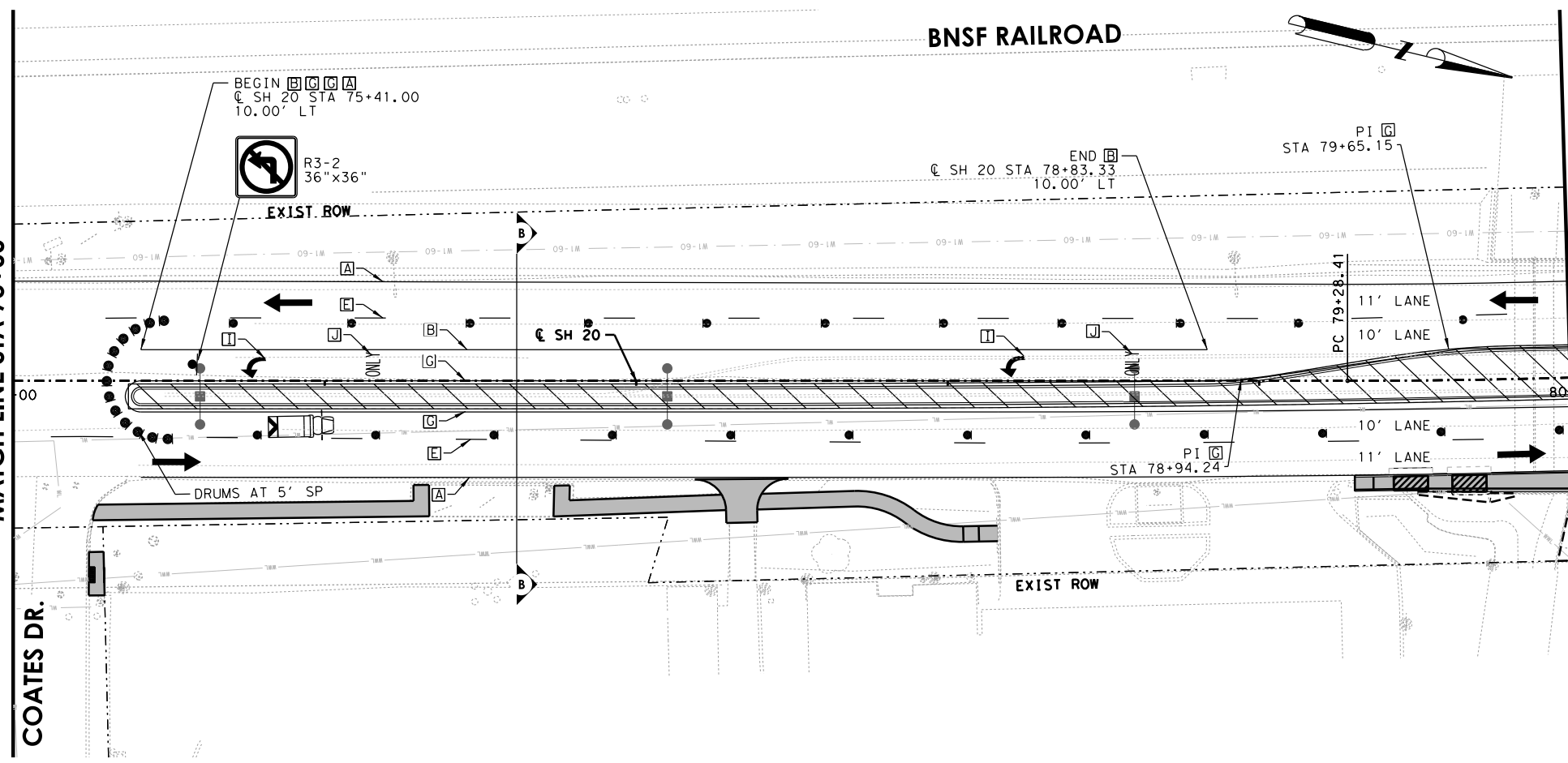


- ### LEGEND
- WORK AREA
 - PERMANENT WORK PREVIOUSLY COMPLETED
 - TRAFFIC FLOW THIS PHASE OR PREVIOUS
 - EXISTING TRAFFIC FLOW
 - EXISTING/PREVIOUS PAVEMENT MARKINGS
 - PROPOSED PAVEMENT MARKINGS THIS PHASE
 - CONSTRUCTION SIGN
 - PLASTIC DRUMS
 - PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
 - TRUCK MOUNTED ATTENUATOR
 - TYPE III BARRICADE
 - LOW PROFILE CONCRETE BARRIER (LPCB)
 - WRK ZN PAV MRK REMOV (W) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 8" (SLD)
 - WRK ZN PAV MRK REMOV (W) 24" (SLD)
 - WRK ZN PAV MRK REMOV (Y) 4" (DBL)
 - WRK ZN PAV MRK REMOV (W) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (BRK)
 - WRK ZN PAV MRK REMOV (Y) 4" (SLD)
 - WRK ZN PAV MRK REMOV (W) 4" (DOT)

- ### NOTES:
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 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	273
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1017
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	343
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	461



Salvador Hernandez Jr.

5/2/2021

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Texas Department of Transportation

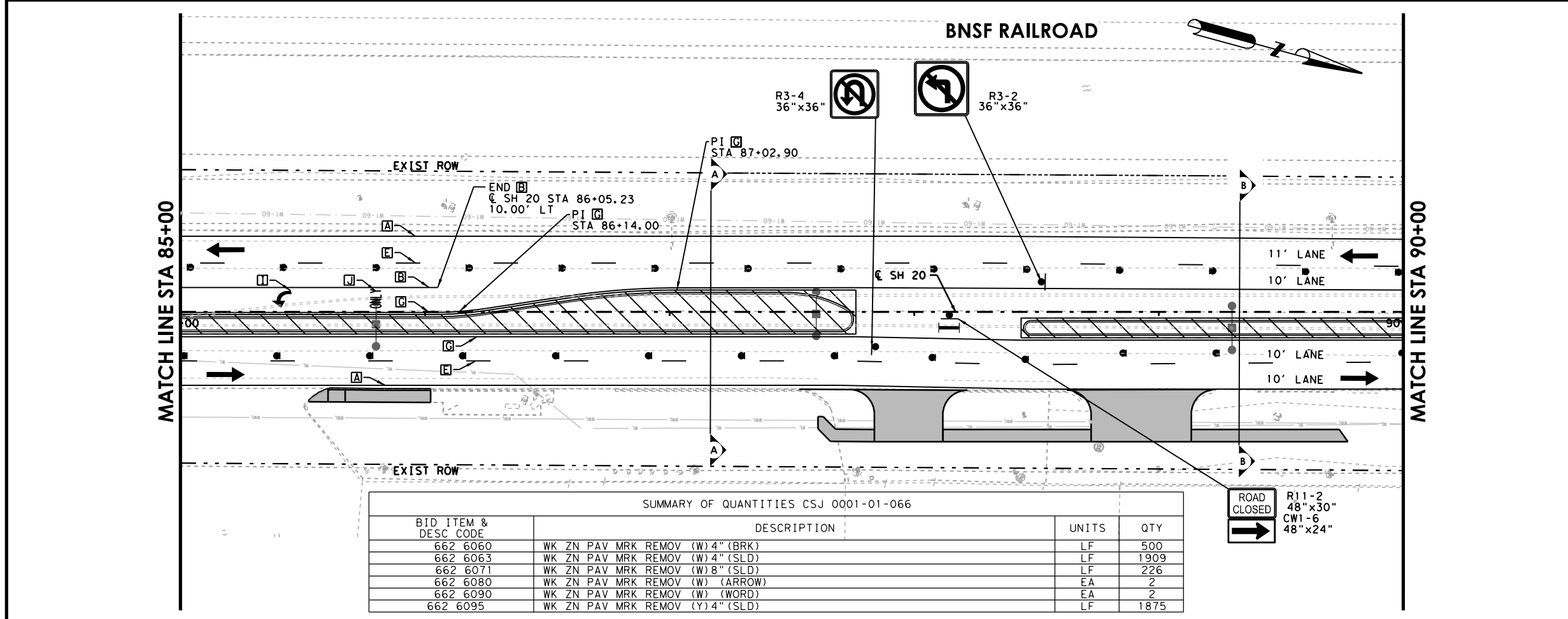
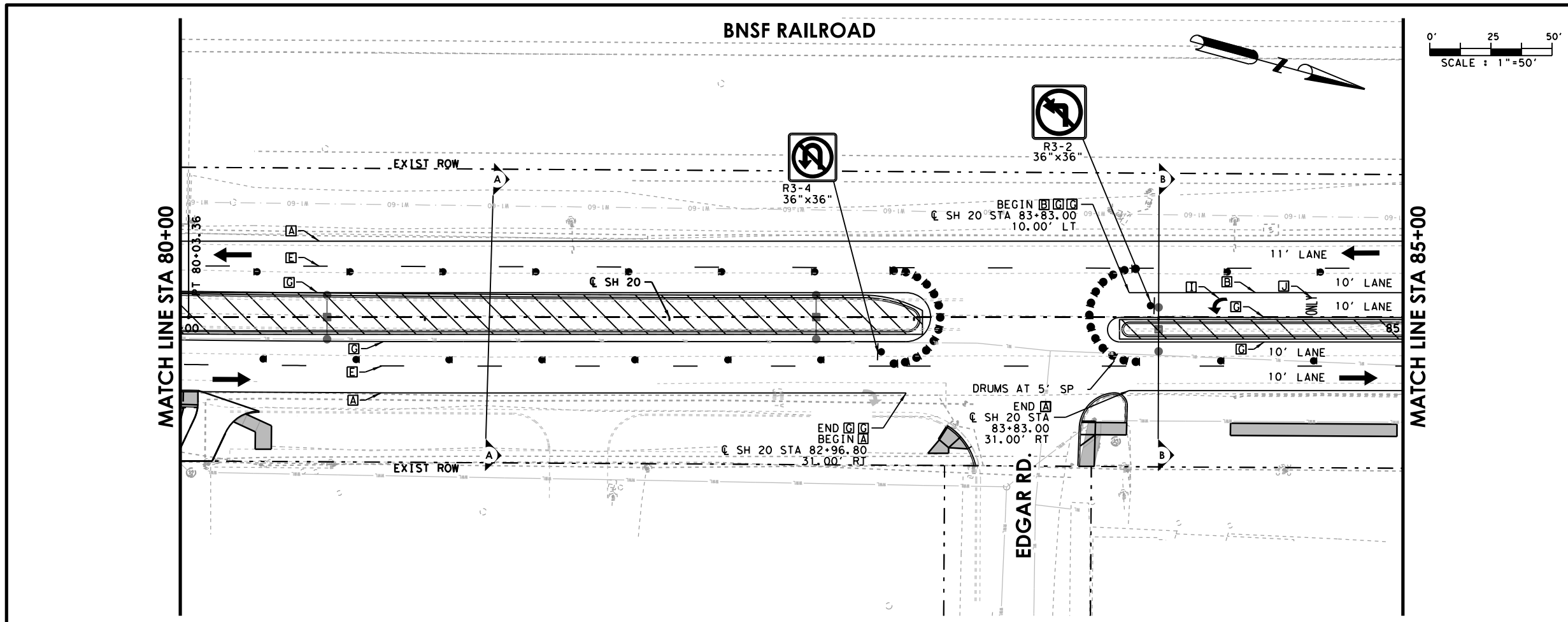
**SH 20
DONIPHAN DR.**

TRAFFIC CONTROL PLAN

PHASE 3 - STEP 2
STA 70+00 TO STA 80+00

SHEET 1 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	64



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1909
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	226
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	2
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	2
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1875

LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
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Salvador Hernandez Jr.

4/30/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

SH 20 DONIPHAN DR.

TRAFFIC CONTROL PLAN

PHASE 3 - STEP 2
STA 80+00 TO STA 90+00

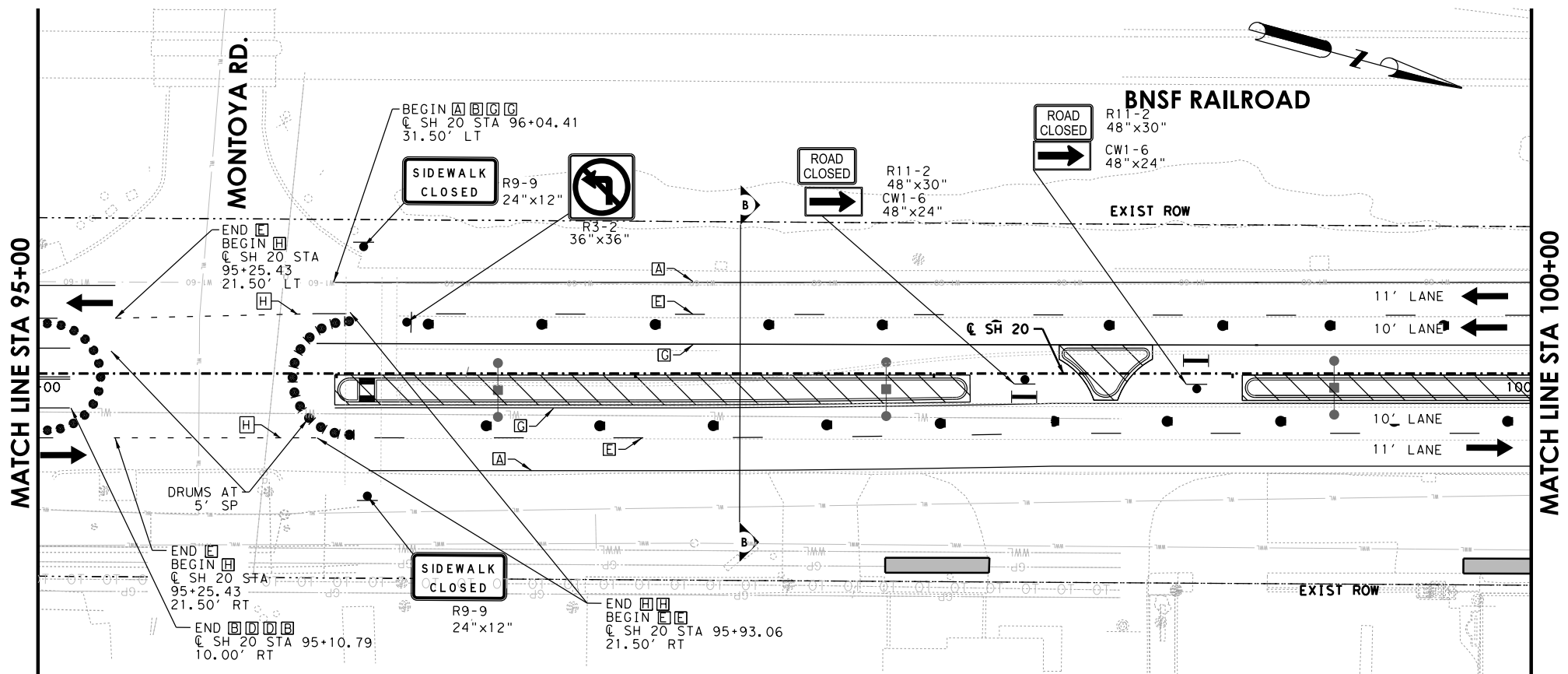
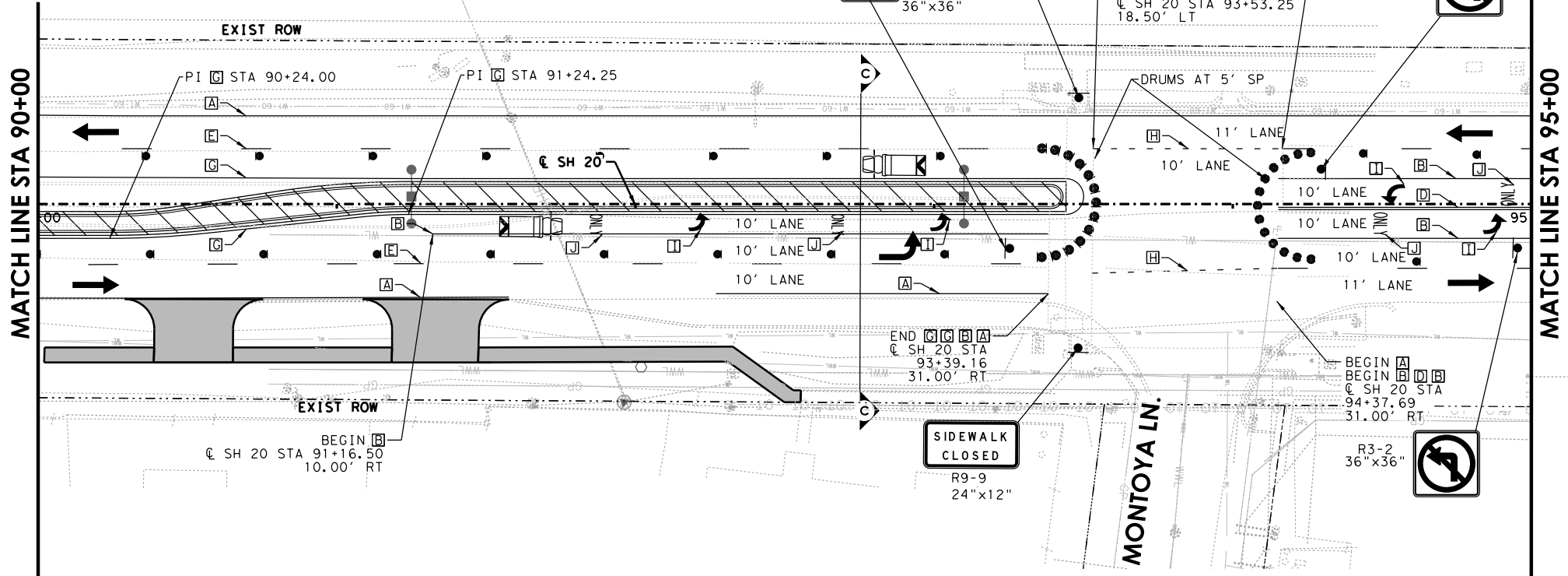
SHEET 2 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	65

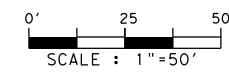
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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	370
662 6061	WK ZN PAV MRK REMOV (W) 4" (DOT)	LF	66
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1780
662 6071	WK ZN PAV MRK REMOV (W) 8" (SLD)	LF	352
662 6080	WK ZN PAV MRK REMOV (W) (ARROW)	EA	4
662 6090	WK ZN PAV MRK REMOV (W) (WORD)	EA	4
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1650



BNSF RAILROAD



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
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- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

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Salvador Hernandez Jr.

5/3/2021



SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 3 - STEP 2
STA 90+00 TO STA 100+00

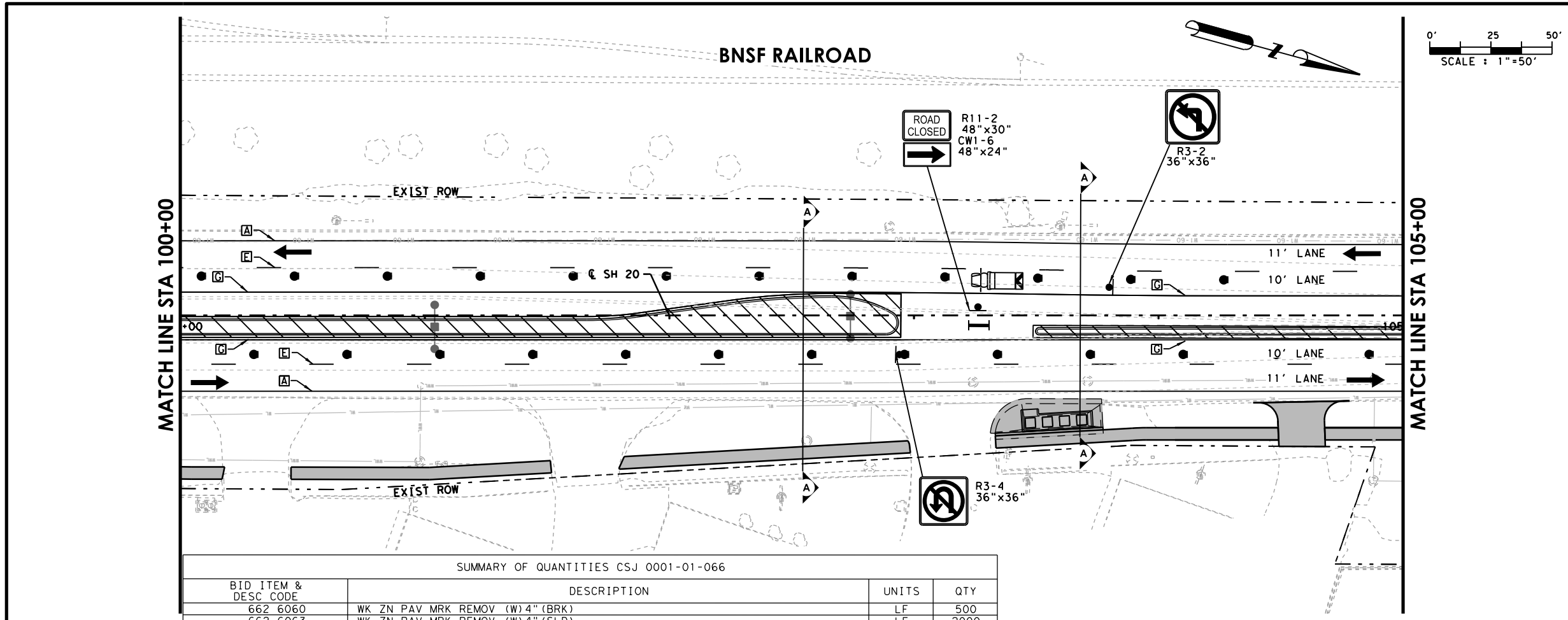
SHEET 3 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	66

5/3/2021

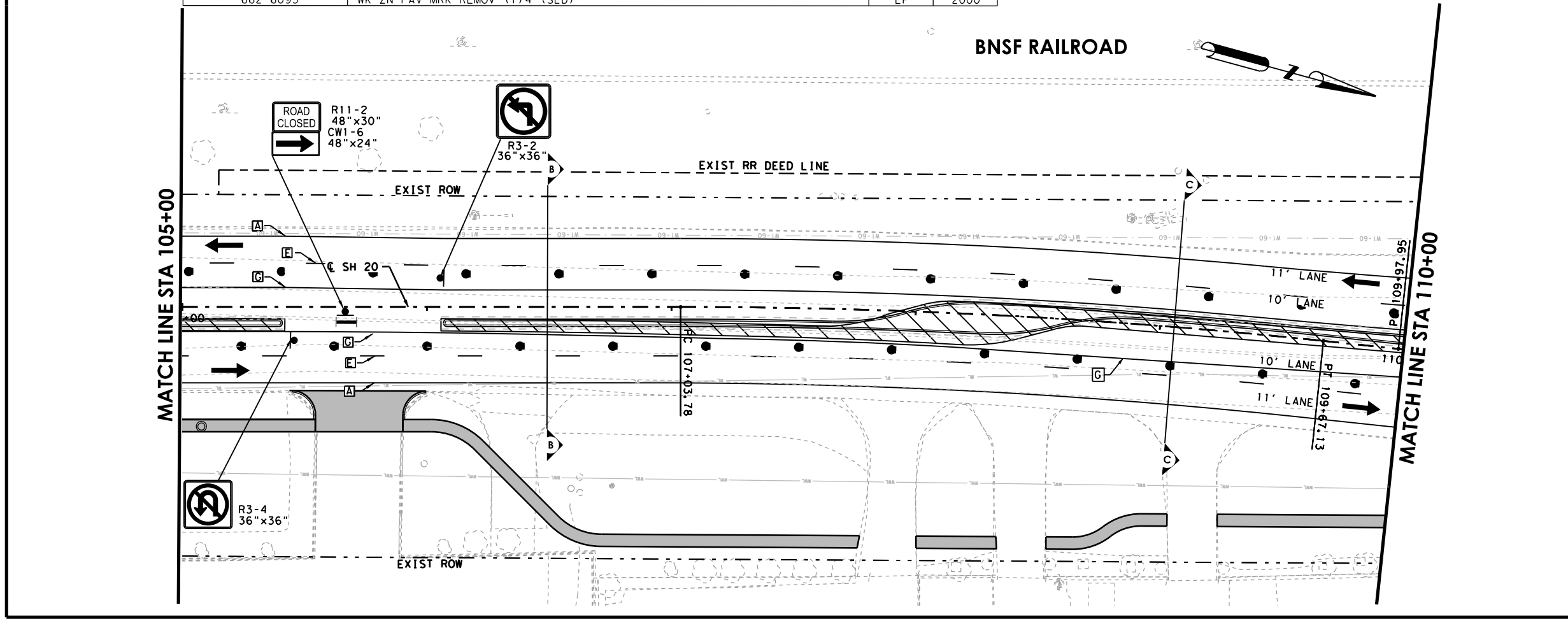
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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	500
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	2000
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	2000



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

- ### NOTES:
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
 - REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 - REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 - REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

4/30/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

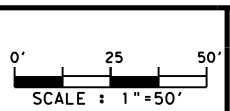
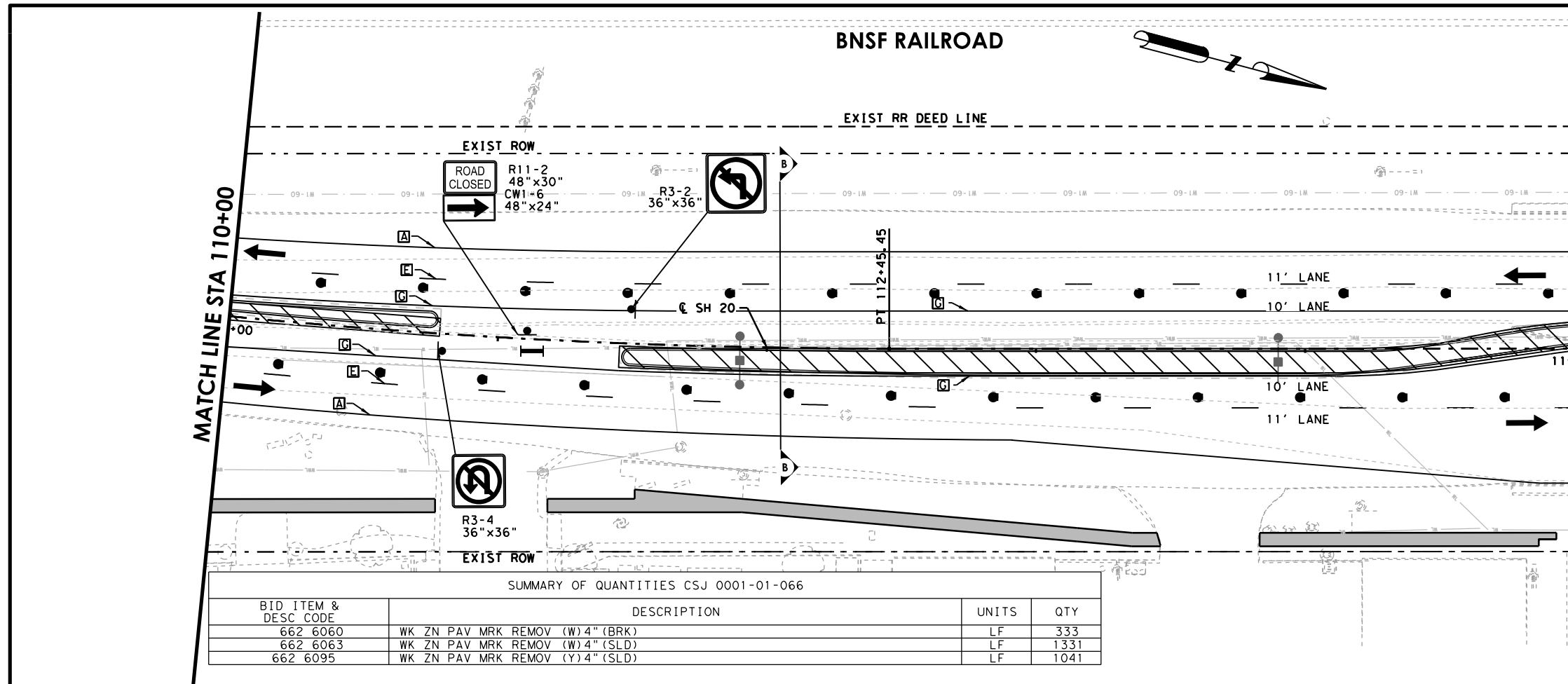
**SH 20
DONIPHAN DR.**

TRAFFIC CONTROL PLAN
PHASE 3 - STEP 2
STA 100+00 TO STA 110+00

SHEET 4 OF 6

DESIGNED:	NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	67

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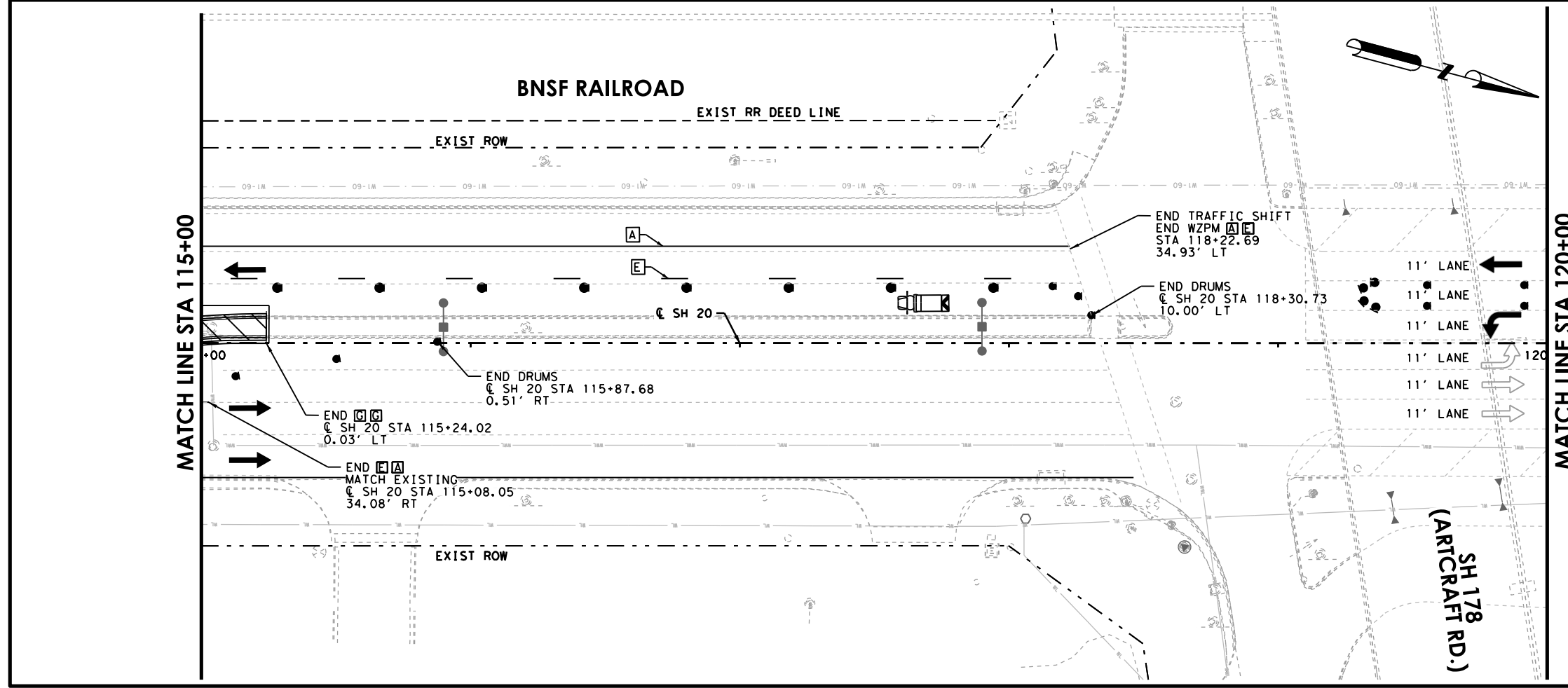


- LEGEND**
- WORK AREA
 - PERMANENT WORK PREVIOUSLY COMPLETED
 - TRAFFIC FLOW THIS PHASE OR PREVIOUS
 - EXISTING/PREVIOUS PAVEMENT MARKINGS
 - PROPOSED PAVEMENT MARKINGS THIS PHASE
 - CONSTRUCTION SIGN
 - PLASTIC DRUMS
 - PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
 - TRUCK MOUNTED ATTENUATOR
 - TYPE III BARRICADE
 - LOW PROFILE CONCRETE BARRIER (LPCB)
 - A** WRK ZN PAV MRK REMOV (W) 4" (SLD)
 - B** WRK ZN PAV MRK REMOV (W) 8" (SLD)
 - C** WRK ZN PAV MRK REMOV (W) 24" (SLD)
 - D** WRK ZN PAV MRK REMOV (Y) 4" (DBL)
 - E** WRK ZN PAV MRK REMOV (W) 4" (BRK)
 - F** WRK ZN PAV MRK REMOV (Y) 4" (BRK)
 - G** WRK ZN PAV MRK REMOV (Y) 4" (SLD)
 - H** WRK ZN PAV MRK REMOV (W) 4" (DOT)

- NOTES:**
1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
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 4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
 5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
 6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	333
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1331
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	1041

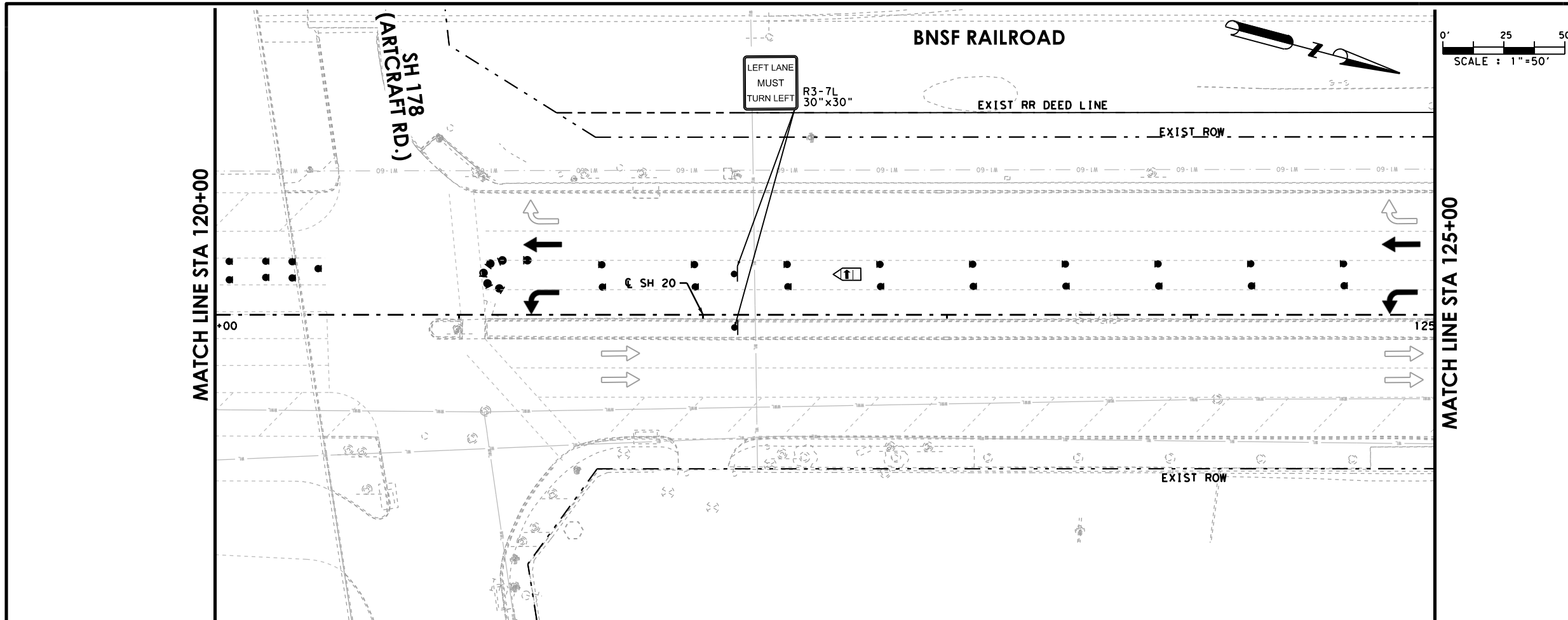


Salvador Hernandez Jr.
4/30/2021

**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 3 - STEP 2
STA 110+00 TO STA 120+00**

SHEET 5 OF 6

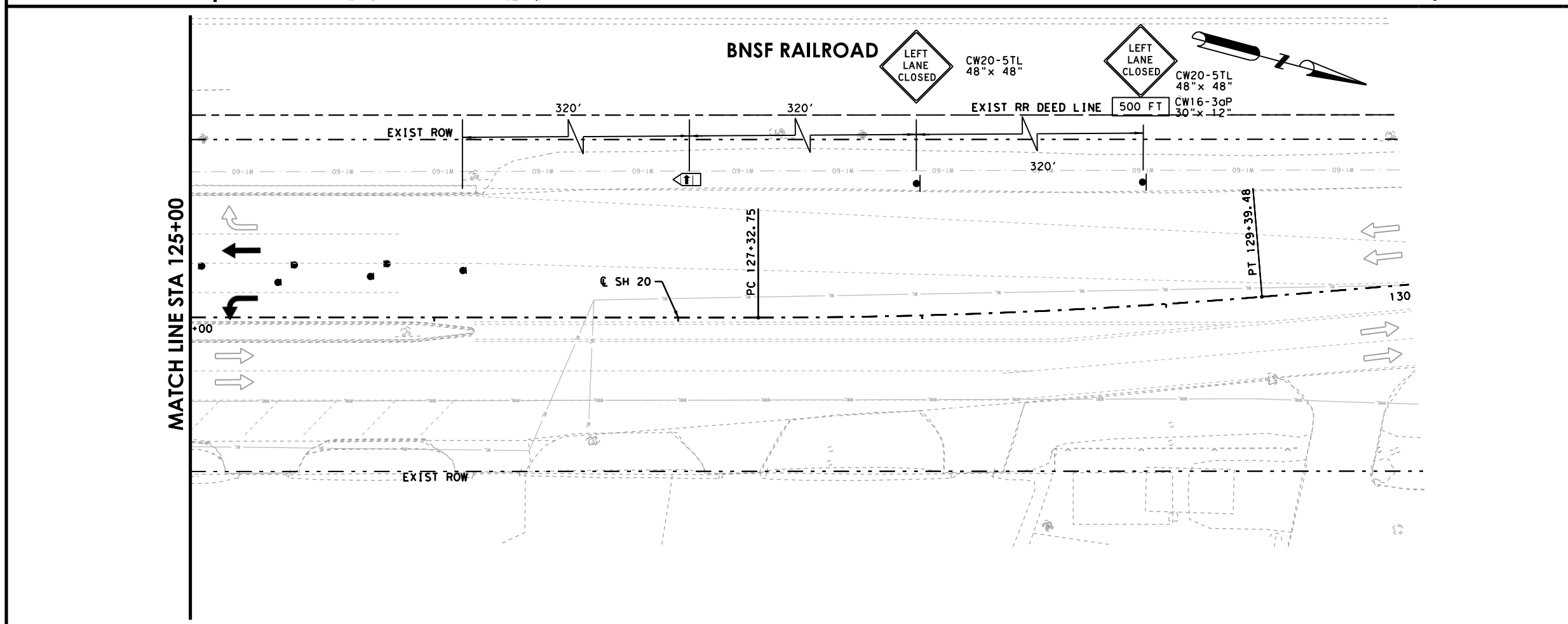
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CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	68



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
- REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
 - REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
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 - PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.
 4/30/2021

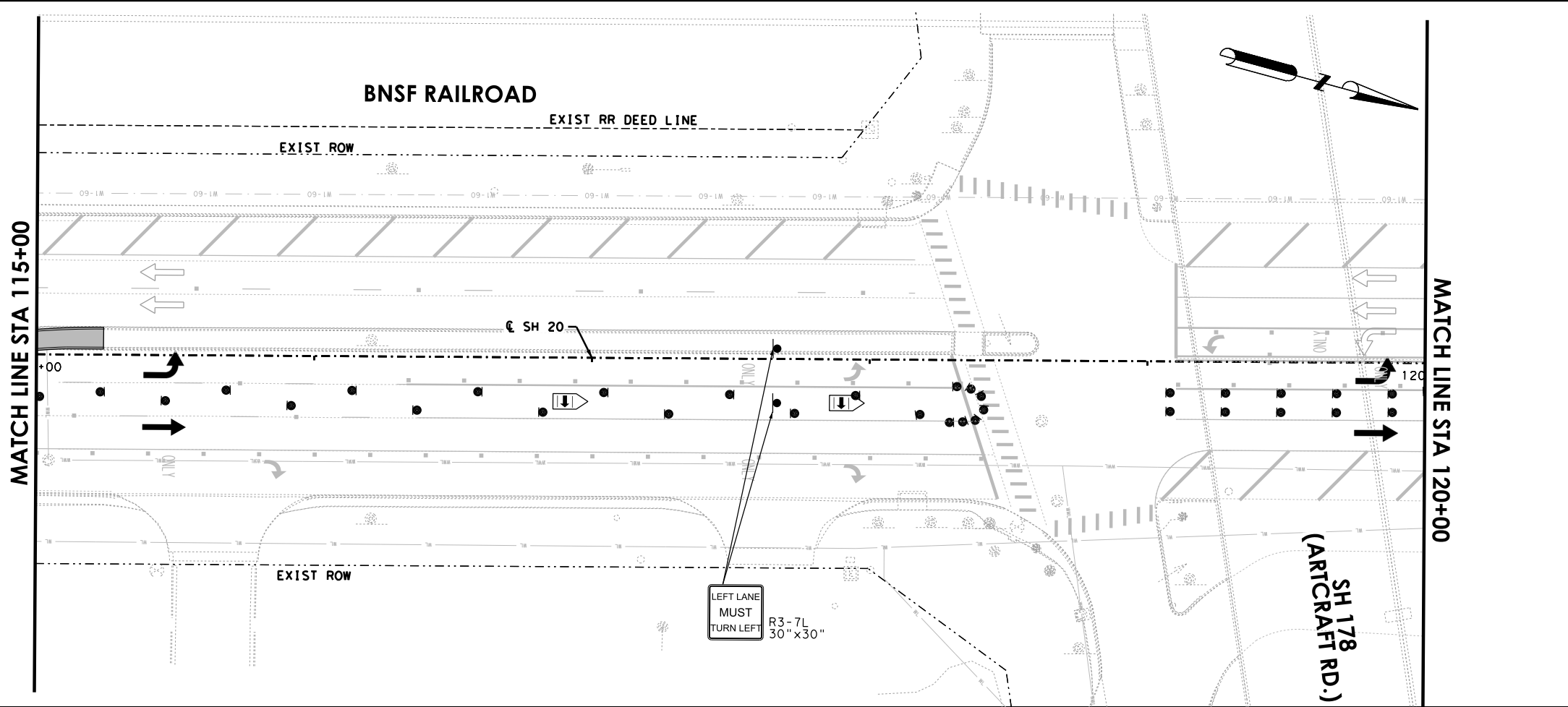
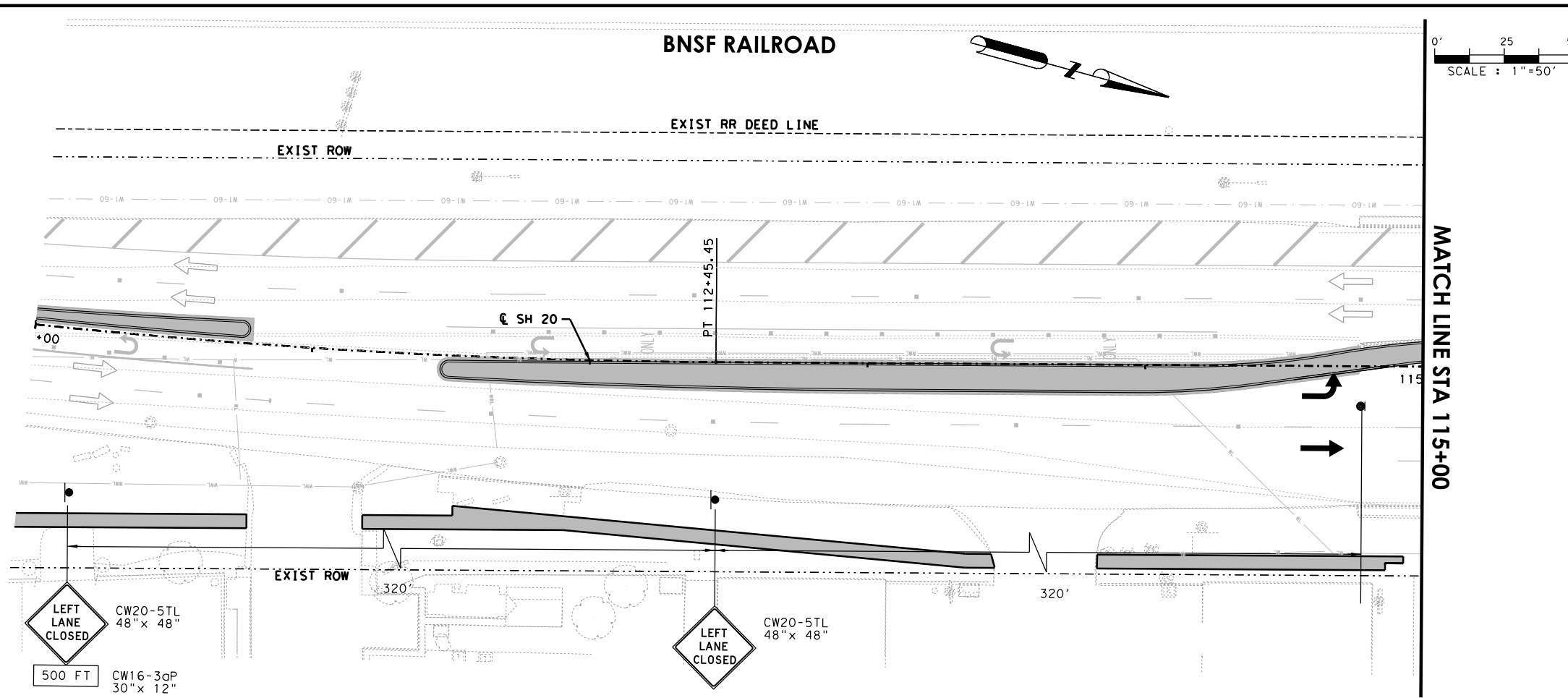
HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

Texas Department of Transportation

**SH 20
 DONIPHAN DR.**
TRAFFIC CONTROL PLAN
 PHASE 3 - STEP 2
 STA 120+00 TO STA 130+00

SHEET 6 OF 6

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	69



LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- A** WRK ZN PAV MRK REMOV (W) (4") (SLD)
- B** WRK ZN PAV MRK REMOV (W) (8") (SLD)
- C** WRK ZN PAV MRK REMOV (W) (24") (SLD)
- D** WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- E** WRK ZN PAV MRK REMOV (W) (4") (BRK)
- F** WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- G** WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- H** WRK ZN PAV MRK REMOV (W) (4") (DOT)

- ### NOTES:
1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
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 7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.

Salvador Hernandez Jr.

5/3/2021

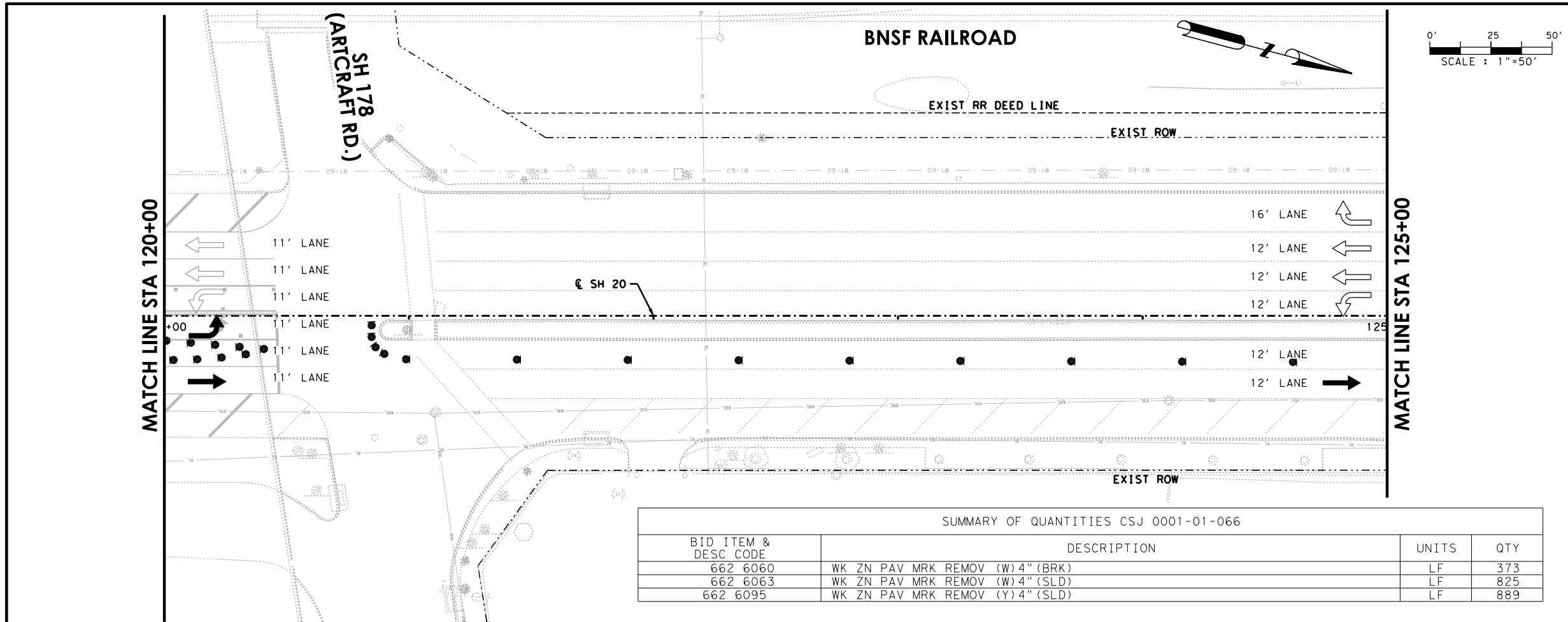
HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 1
STA. 110+00 TO STA. 120+00**

SHEET 1 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	70



SUMMARY OF QUANTITIES CSJ 0001-01-066

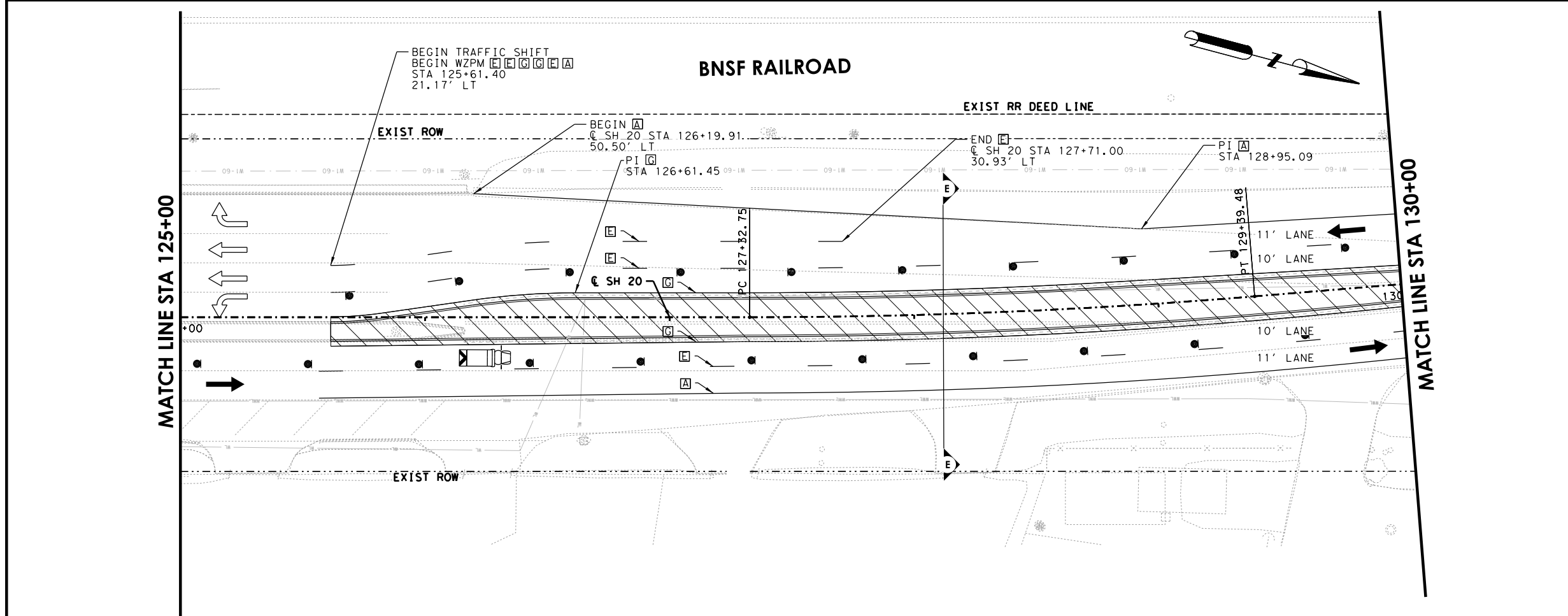
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	373
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	825
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	889

LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 8" (SLD)
- WRK ZN PAV MRK REMOV (W) 24" (SLD)
- WRK ZN PAV MRK REMOV (Y) 4" (DBL)
- WRK ZN PAV MRK REMOV (W) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (BRK)
- WRK ZN PAV MRK REMOV (Y) 4" (SLD)
- WRK ZN PAV MRK REMOV (W) 4" (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
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6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

5/3/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 1
STA 120+00 TO STA 130+00**

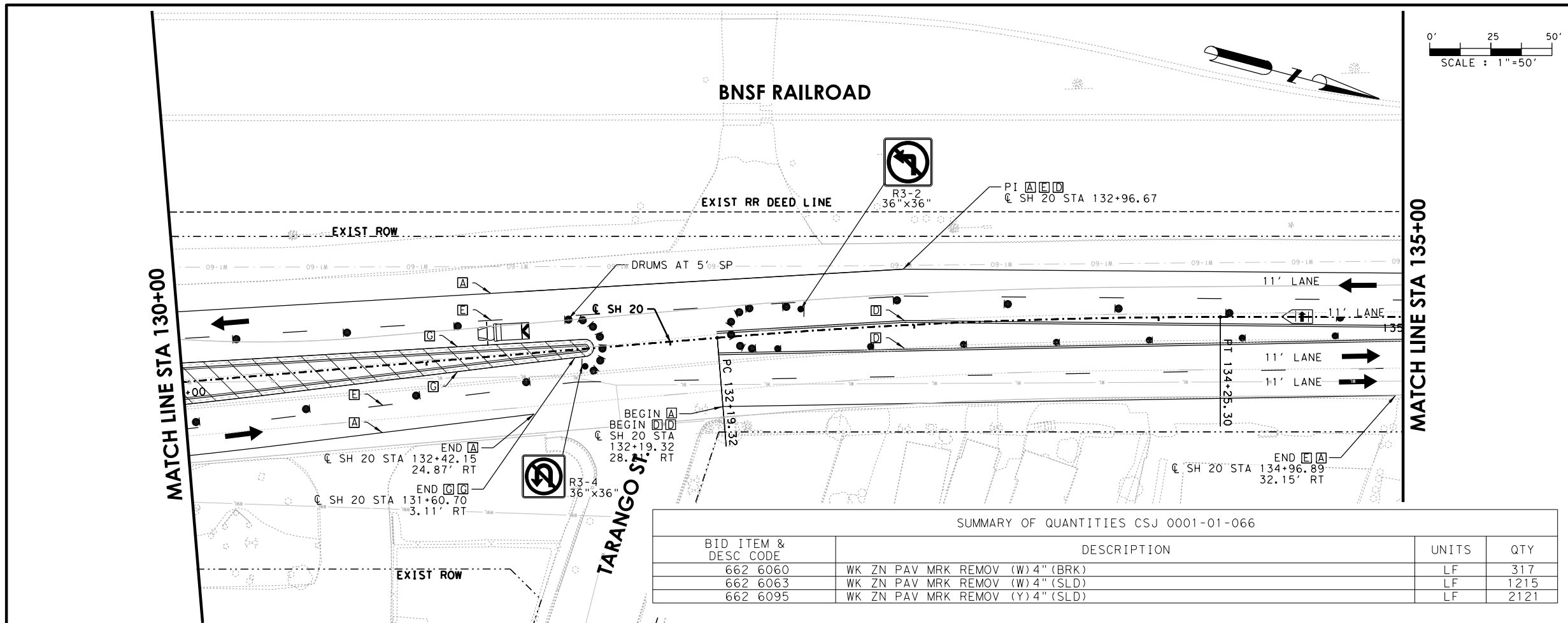
SHEET 2 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	71

5/3/2021

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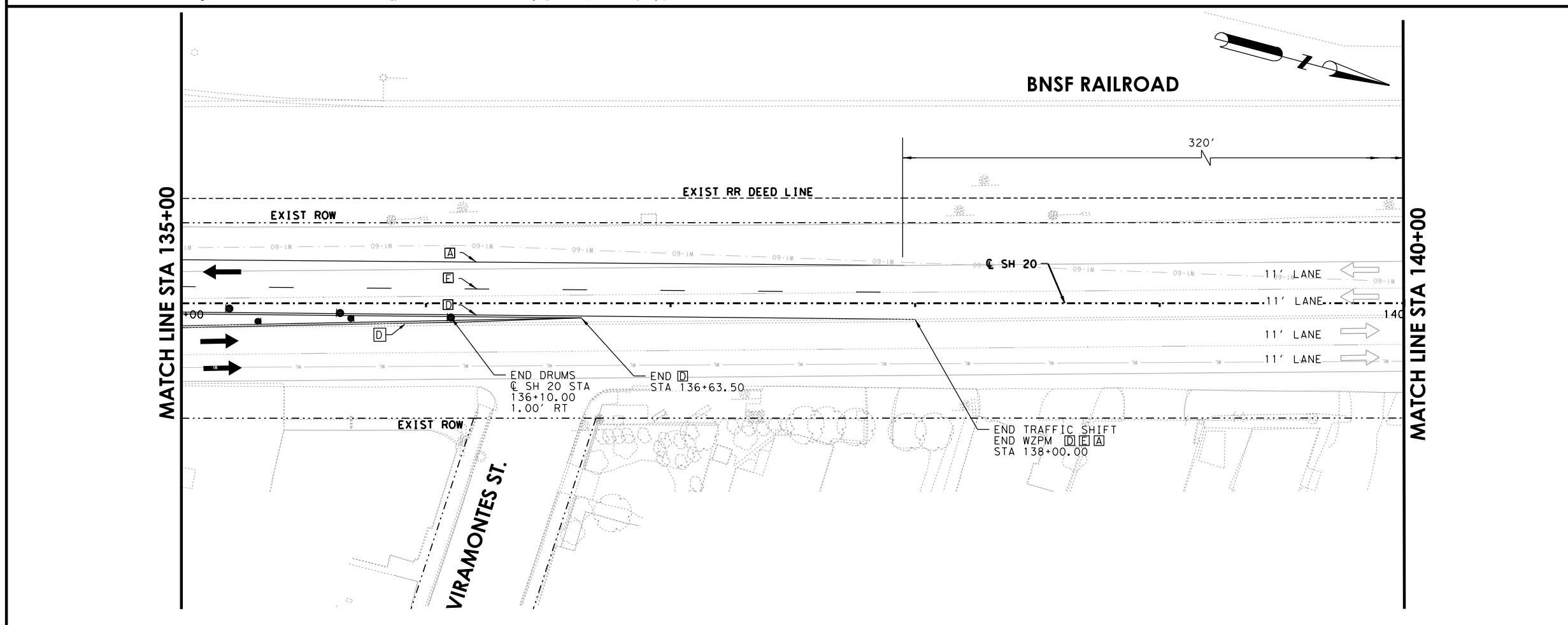
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
662 6060	WK ZN PAV MRK REMOV (W) 4" (BRK)	LF	317
662 6063	WK ZN PAV MRK REMOV (W) 4" (SLD)	LF	1215
662 6095	WK ZN PAV MRK REMOV (Y) 4" (SLD)	LF	2121

LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

- ### NOTES:
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Salvador Hernandez Jr.

5/2/2021

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

**SH 20
DONIPHAN DR.**

TRAFFIC CONTROL PLAN

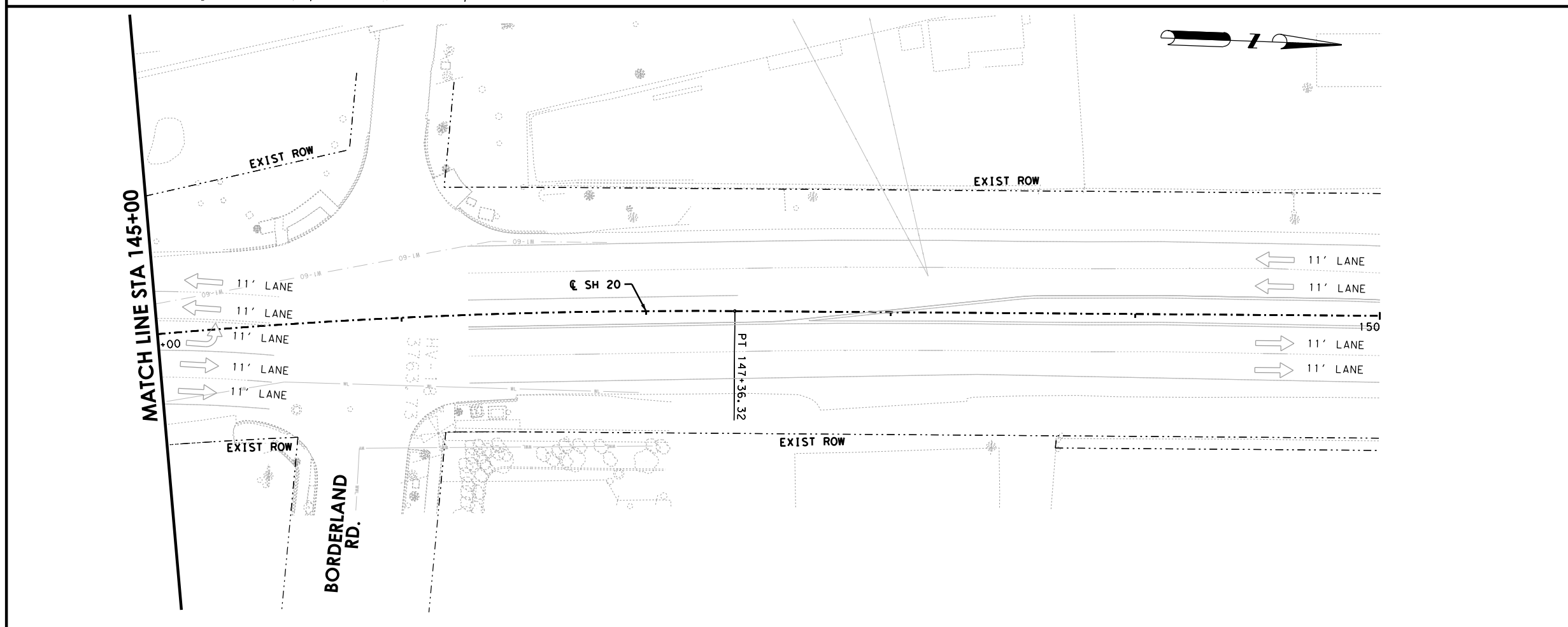
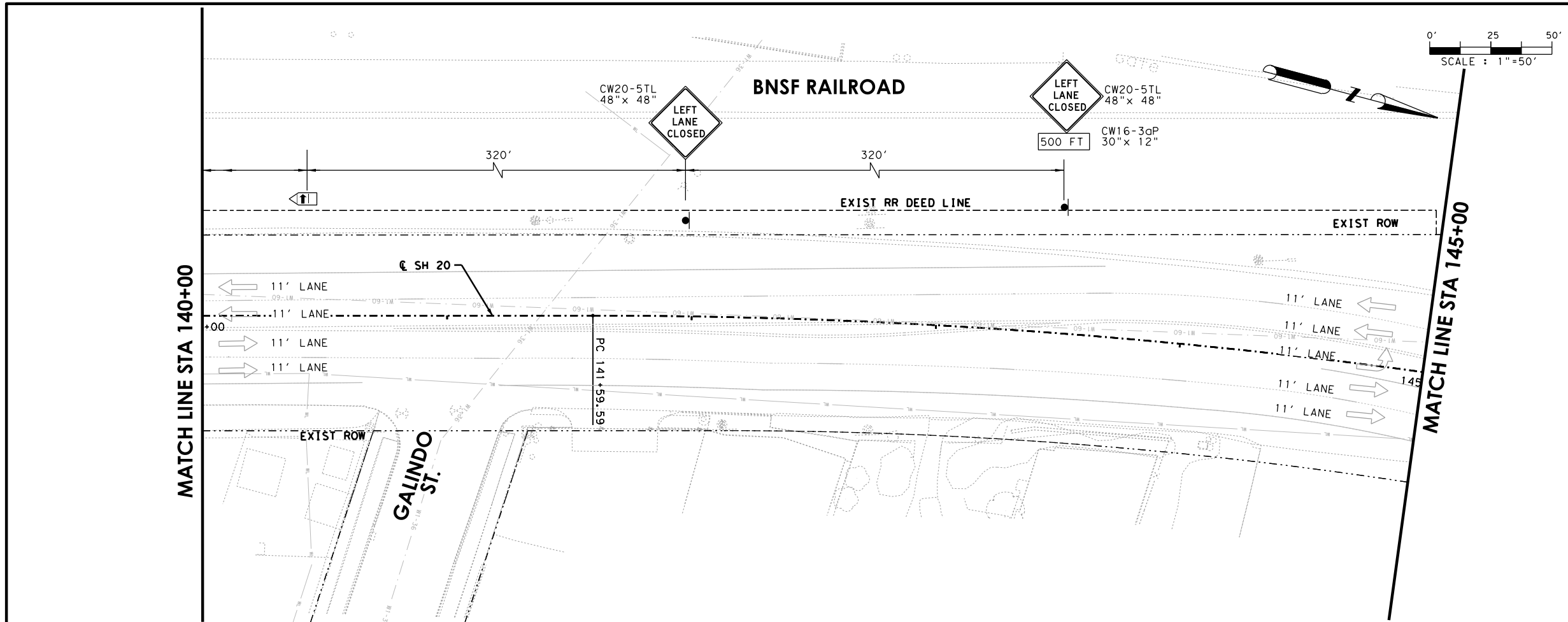
PHASE 4 - STEP 1

STA 130+00 TO STA 140+00

SHEET 3 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	72

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING TRAFFIC FLOW
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- A** WRK ZN PAV MRK REMOV (W) (4") (SLD)
- B** WRK ZN PAV MRK REMOV (W) (8") (SLD)
- C** WRK ZN PAV MRK REMOV (W) (24") (SLD)
- D** WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- E** WRK ZN PAV MRK REMOV (W) (4") (BRK)
- F** WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- G** WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- H** WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
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6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 1
STA 140+00 TO STA 150+00**

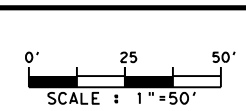
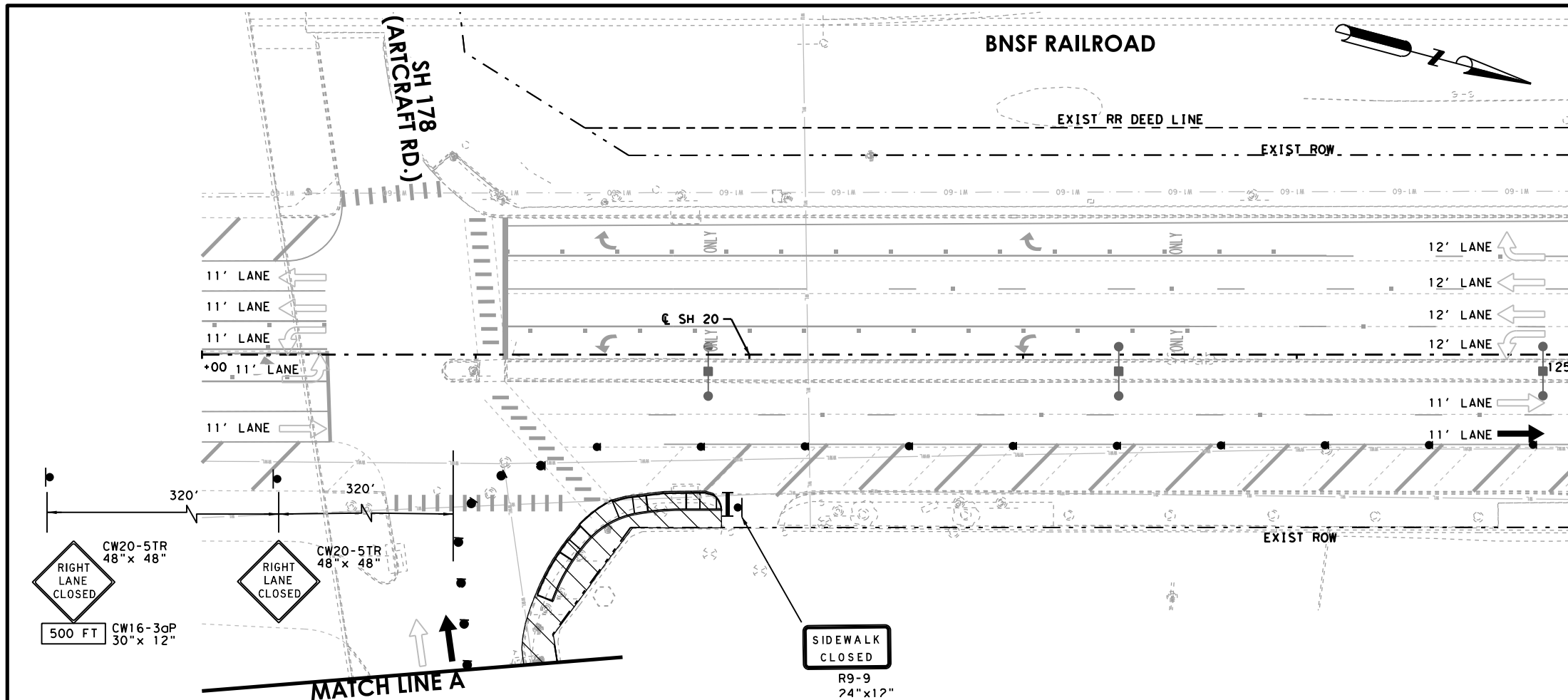
SHEET 4 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	73

5/2/2021

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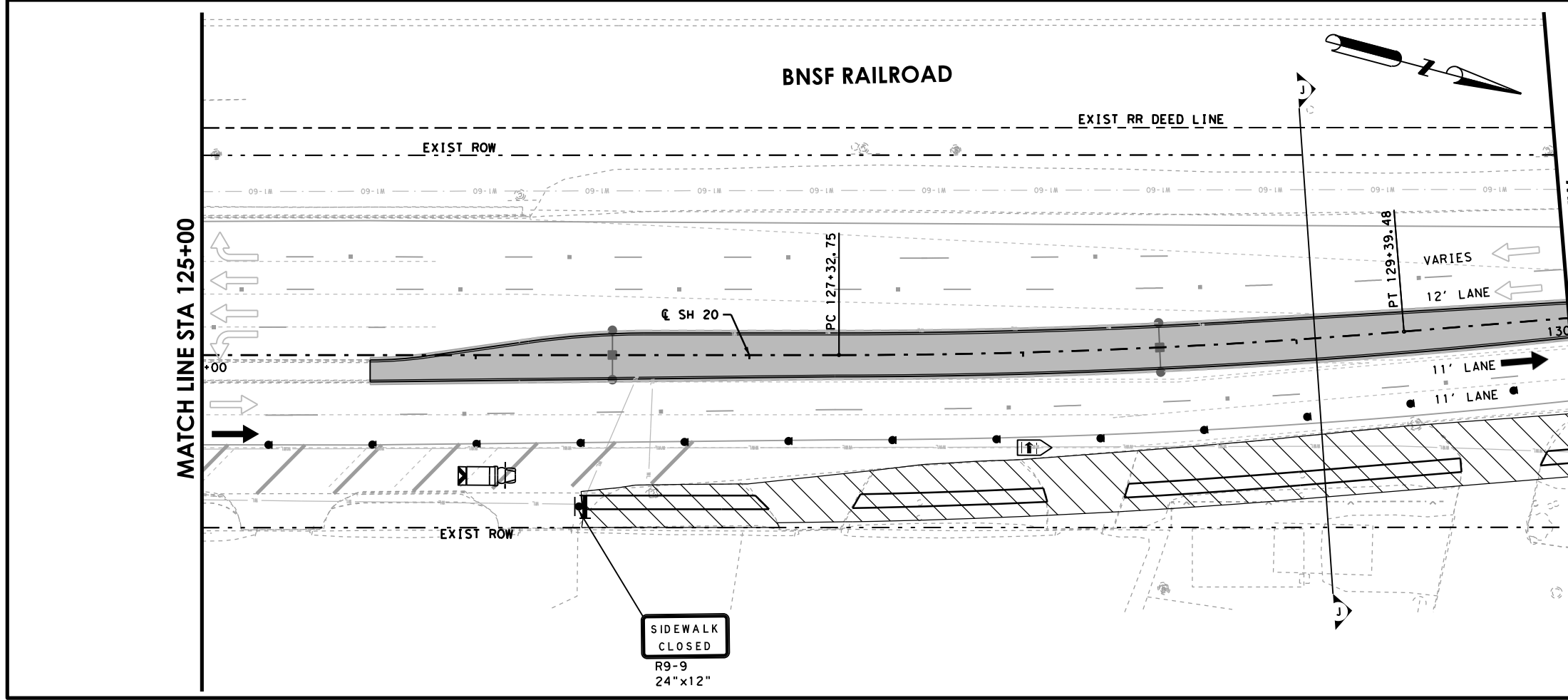


LEGEND

	WORK AREA
	PERMANENT WORK PREVIOUSLY COMPLETED
	TRAFFIC FLOW THIS PHASE OR PREVIOUS
	EXISTING TRAFFIC FLOW
	EXISTING/PREVIOUS PAVEMENT MARKINGS
	PROPOSED PAVEMENT MARKINGS THIS PHASE
	CONSTRUCTION SIGN
	PLASTIC DRUMS
	PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
	TRUCK MOUNTED ATTENUATOR
	TYPE III BARRICADE
	LOW PROFILE CONCRETE BARRIER (LPCB)
	WRK ZN PAV MRK REMOV (W) (4") (SLD)
	WRK ZN PAV MRK REMOV (W) (8") (SLD)
	WRK ZN PAV MRK REMOV (W) (24") (SLD)
	WRK ZN PAV MRK REMOV (Y) (4") (DBL)
	WRK ZN PAV MRK REMOV (W) (4") (BRK)
	WRK ZN PAV MRK REMOV (Y) (4") (BRK)
	WRK ZN PAV MRK REMOV (Y) (4") (SLD)
	WRK ZN PAV MRK REMOV (W) (4") (DOT)

- NOTES:**
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Salvador Hernandez Jr.
4/30/2021



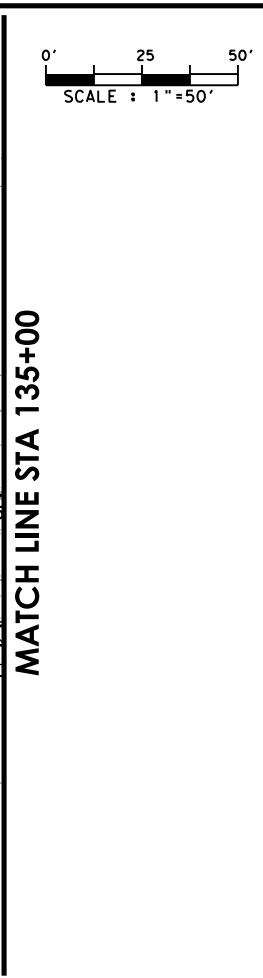
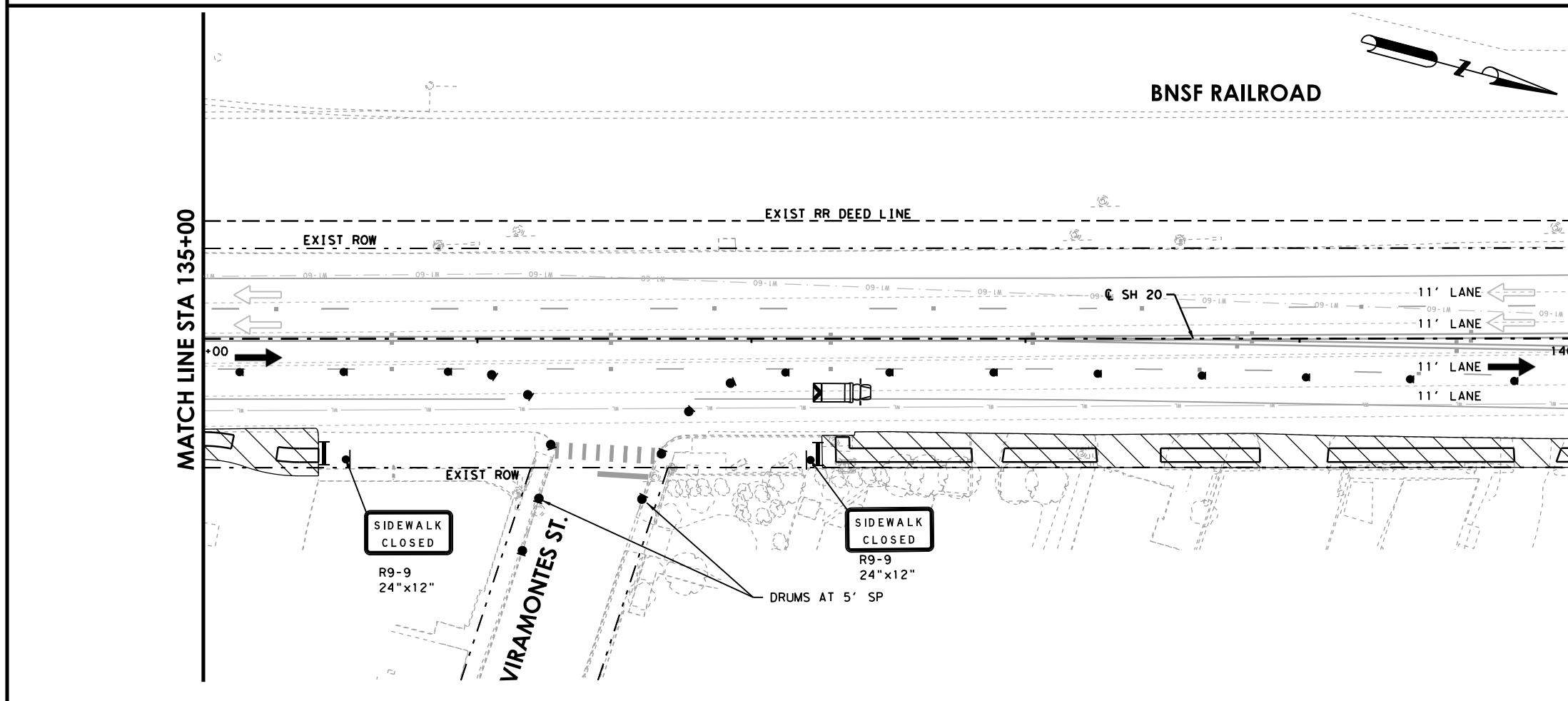
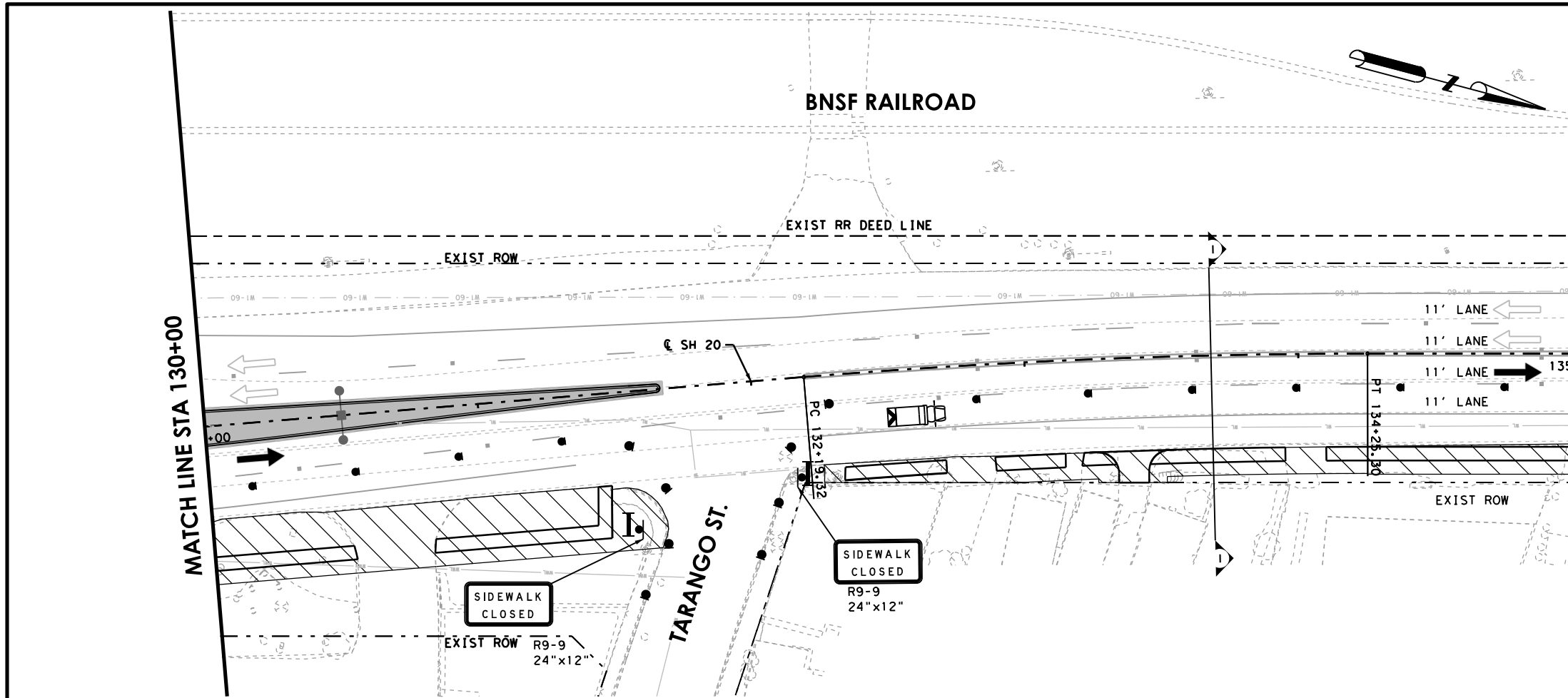
HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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



















**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 2
STA 120+00 TO STA 130+00**

SHEET 1 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	74



LEGEND

-  WORK AREA
-  PERMANENT WORK PREVIOUSLY COMPLETED
-  TRAFFIC FLOW THIS PHASE OR PREVIOUS
-  EXISTING TRAFFIC FLOW
-  EXISTING/PREVIOUS PAVEMENT MARKINGS
-  PROPOSED PAVEMENT MARKINGS THIS PHASE
-  CONSTRUCTION SIGN
-  PLASTIC DRUMS
-  PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
-  TRUCK MOUNTED ATTENUATOR
-  TYPE III BARRICADE
-  LOW PROFILE CONCRETE BARRIER (LPCB)
-  WRK ZN PAV MRK REMOV (W) (4") (SLD)
-  WRK ZN PAV MRK REMOV (W) (8") (SLD)
-  WRK ZN PAV MRK REMOV (W) (24") (SLD)
-  WRK ZN PAV MRK REMOV (Y) (4") (DBL)
-  WRK ZN PAV MRK REMOV (W) (4") (BRK)
-  WRK ZN PAV MRK REMOV (Y) (4") (BRK)
-  WRK ZN PAV MRK REMOV (Y) (4") (SLD)
-  WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



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4/30/2021

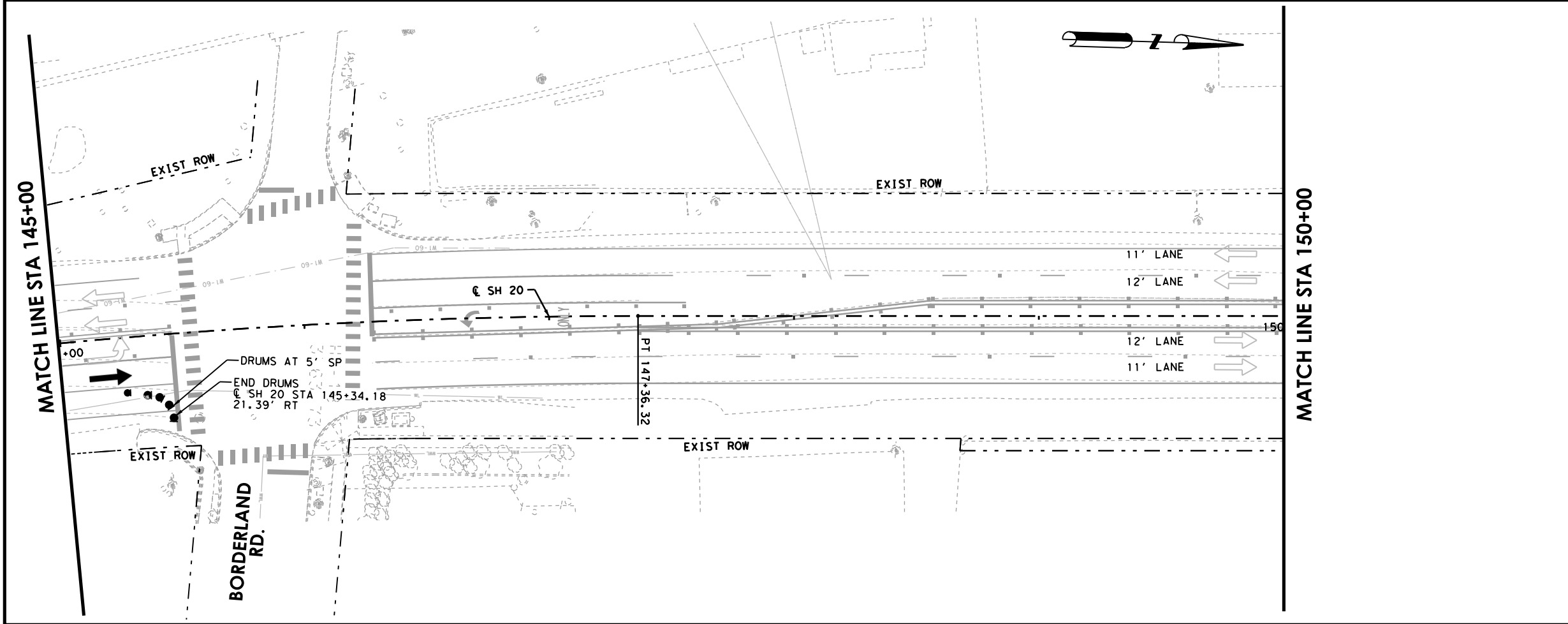
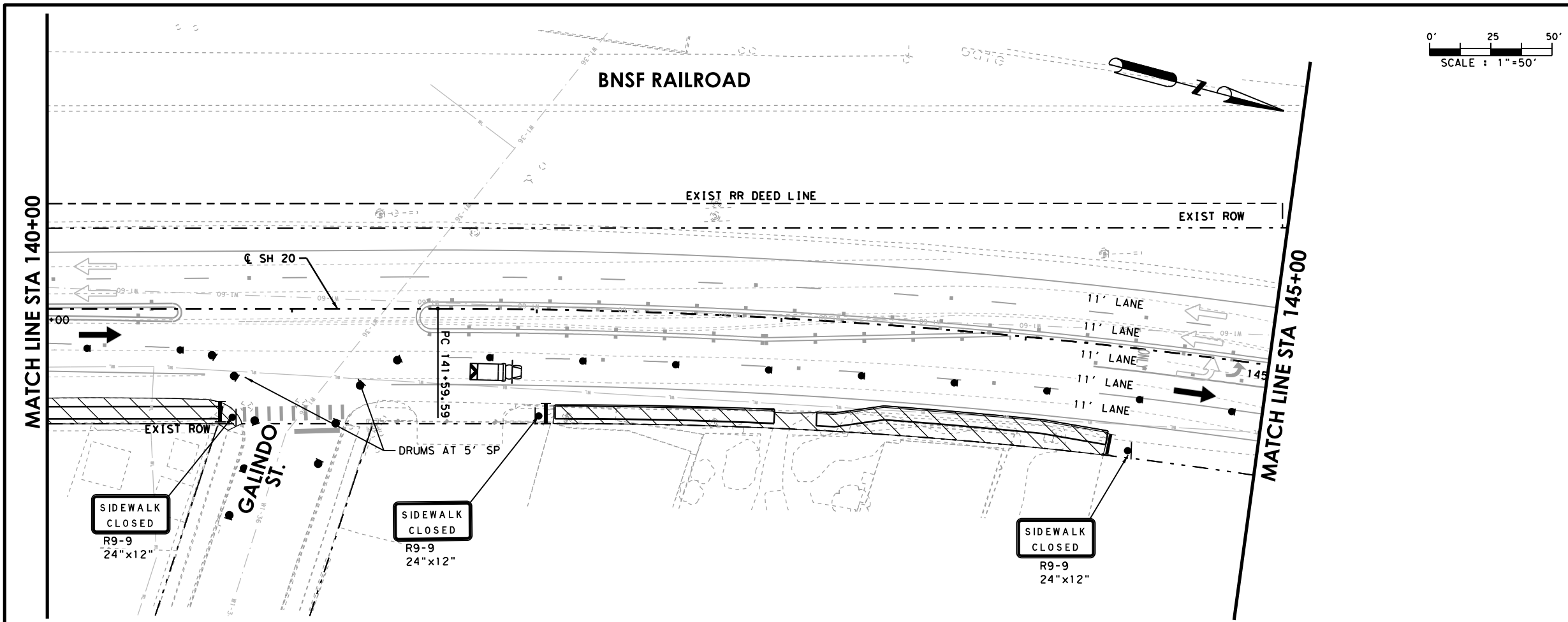


**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 2
STA 130+00 TO STA 140+00**

SHEET 2 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	75

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRIAGE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- WRK ZN PAV MRK REMOV (W) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (8") (SLD)
- WRK ZN PAV MRK REMOV (W) (24") (SLD)
- WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- WRK ZN PAV MRK REMOV (W) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



Salvador Hernandez Jr.

4/30/2021



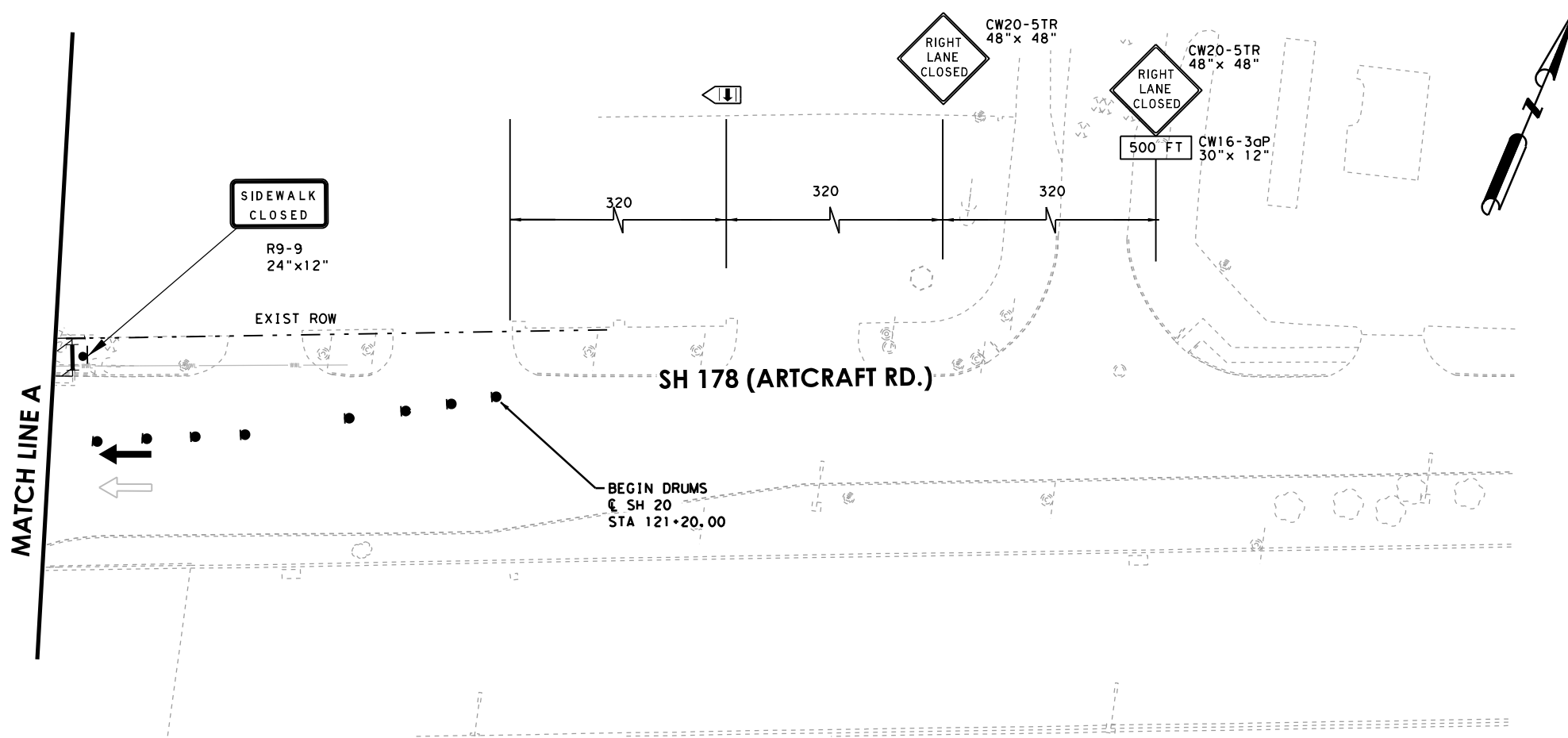
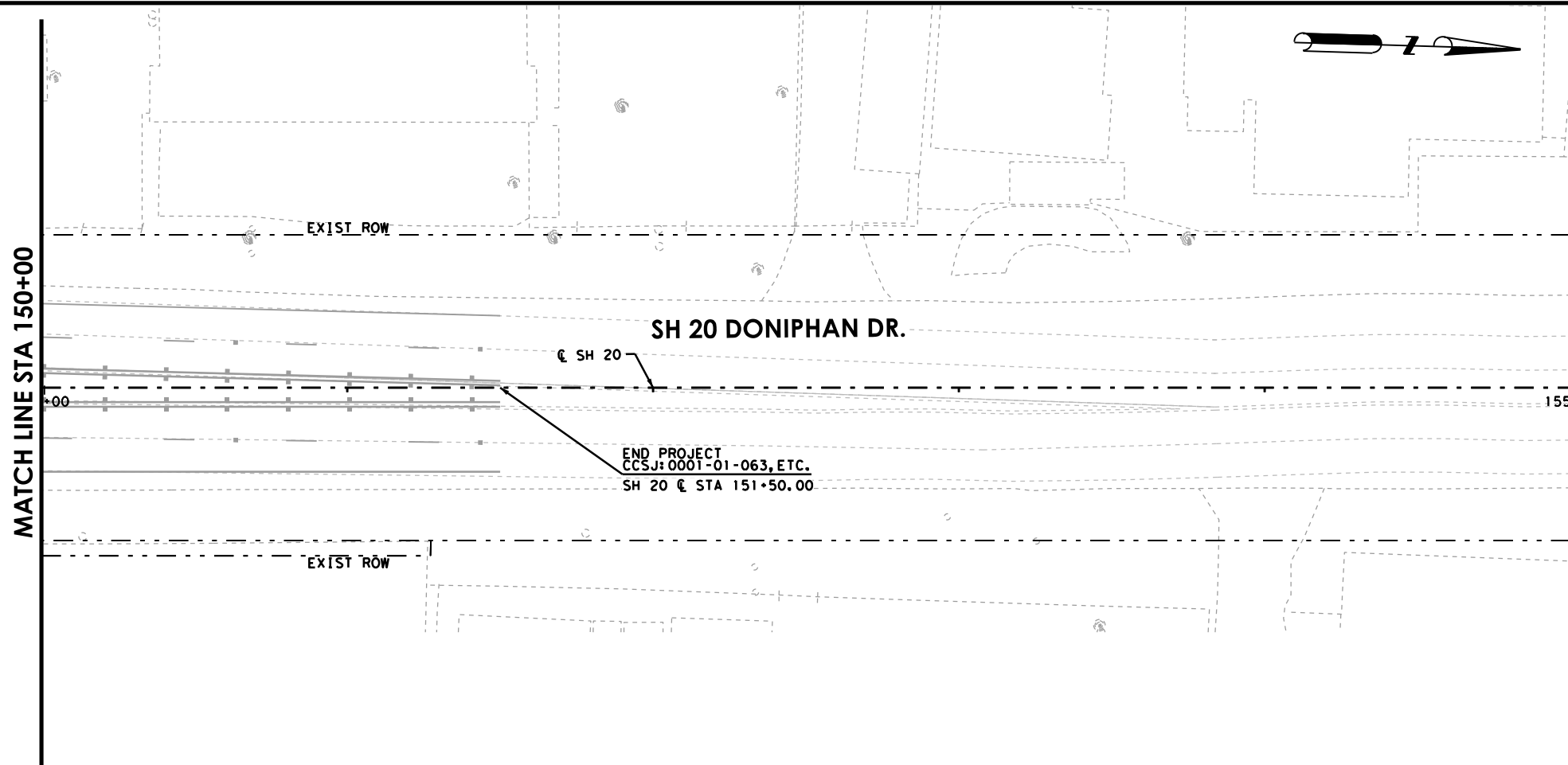
**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 2
STA. 140+00 TO STA. 150+00**

SHEET 3 OF 4

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	76

4/30/2021

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LEGEND

- WORK AREA
- PERMANENT WORK PREVIOUSLY COMPLETED
- TRAFFIC FLOW THIS PHASE OR PREVIOUS
- EXISTING/PREVIOUS PAVEMENT MARKINGS
- PROPOSED PAVEMENT MARKINGS THIS PHASE
- CONSTRUCTION SIGN
- PLASTIC DRUMS
- PORTABLE CHANGEABLE MESSAGE SIGN/ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER (LPCB)
- A** WRK ZN PAV MRK REMOV (W) (4") (SLD)
- B** WRK ZN PAV MRK REMOV (W) (8") (SLD)
- C** WRK ZN PAV MRK REMOV (W) (24") (SLD)
- D** WRK ZN PAV MRK REMOV (Y) (4") (DBL)
- E** WRK ZN PAV MRK REMOV (W) (4") (BRK)
- F** WRK ZN PAV MRK REMOV (Y) (4") (BRK)
- G** WRK ZN PAV MRK REMOV (Y) (4") (SLD)
- H** WRK ZN PAV MRK REMOV (W) (4") (DOT)

NOTES:

1. REFER TO TRAFFIC CONTROL PLAN NARRATIVE FOR FURTHER INFORMATION ON TRAFFIC CONTROL AND DESCRIPTION OF WORK FOR EACH PHASE.
2. REFER TO TRAFFIC CONTROL PLAN ADVANCE WARNING SIGNS FOR FURTHER INFORMATION ON ADVANCE WARNING SIGN PLACEMENT.
3. REFER TO TRAFFIC CONTROL PLAN STANDARD SELECTION TABLE FOR FURTHER INFORMATION ON TXDOT STANDARD THAT ARE APPLICABLE TO EACH PHASE.
4. REFER TO TXDOT STANDARDS FOR FURTHER INFORMATION AND GUIDANCE ON TRAFFIC CONTROL PLACEMENT.
5. REFER TO TRAFFIC CONTROL PLAN TYPICAL SECTION SHEETS FOR ALL CROSS SECTIONS.
6. REFER TO THE TCP SUMMARY OF QUANTITIES FOR TMA REQUIRED.
7. PLACE PERMANENT PAVEMENT MARKINGS UPON MEDIAN CONSTRUCTION COMPLETION.



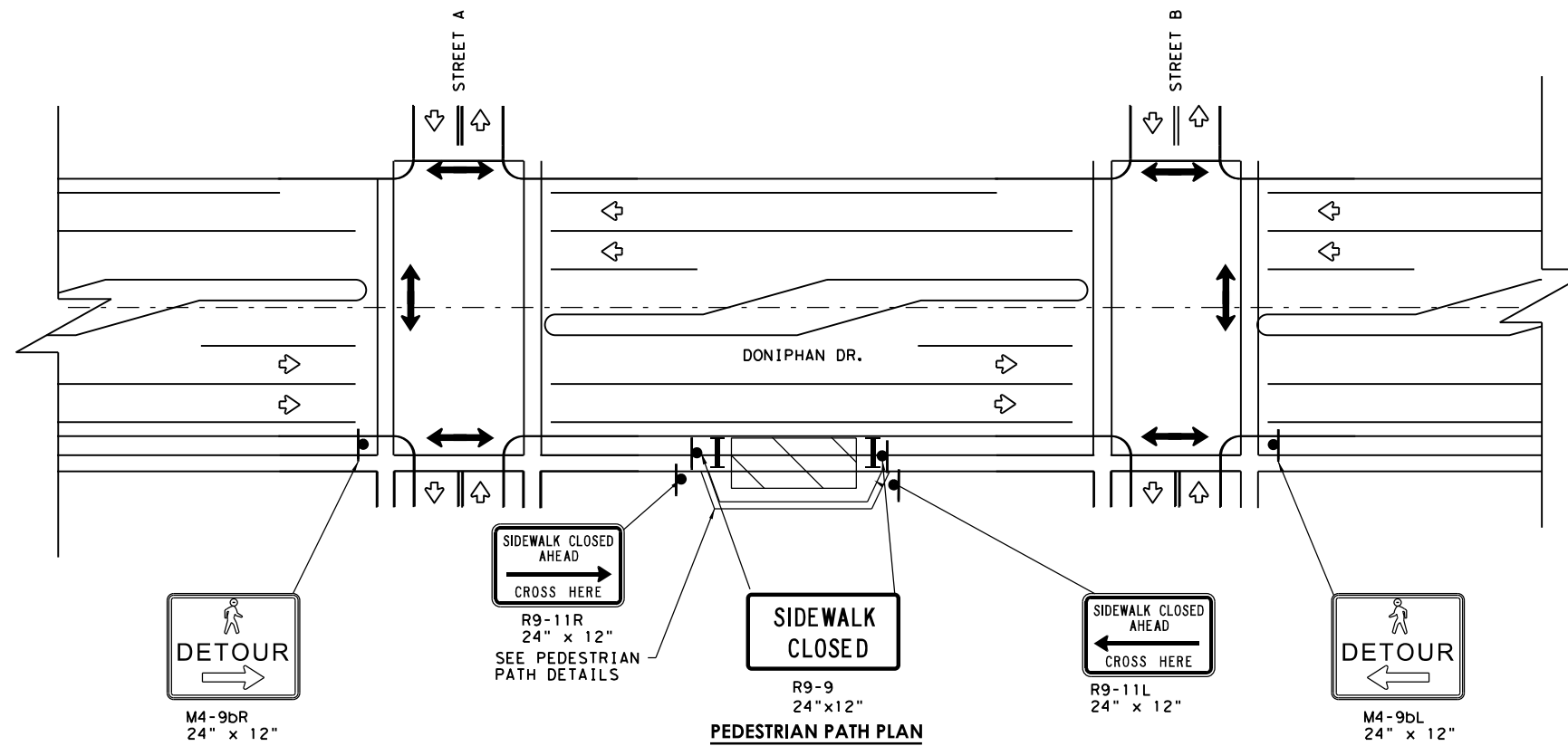
Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.
TRAFFIC CONTROL PLAN
PHASE 4 - STEP 2
STA. 150+00 TO END**

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	77

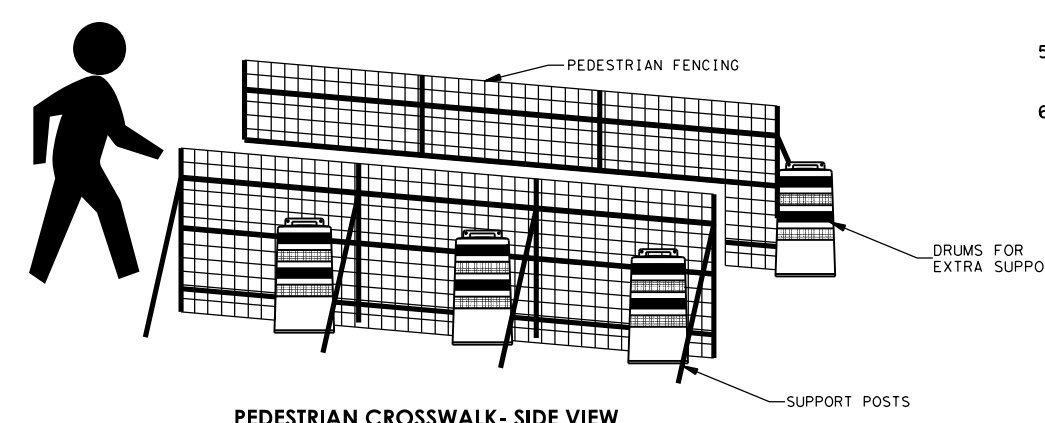


LEGEND

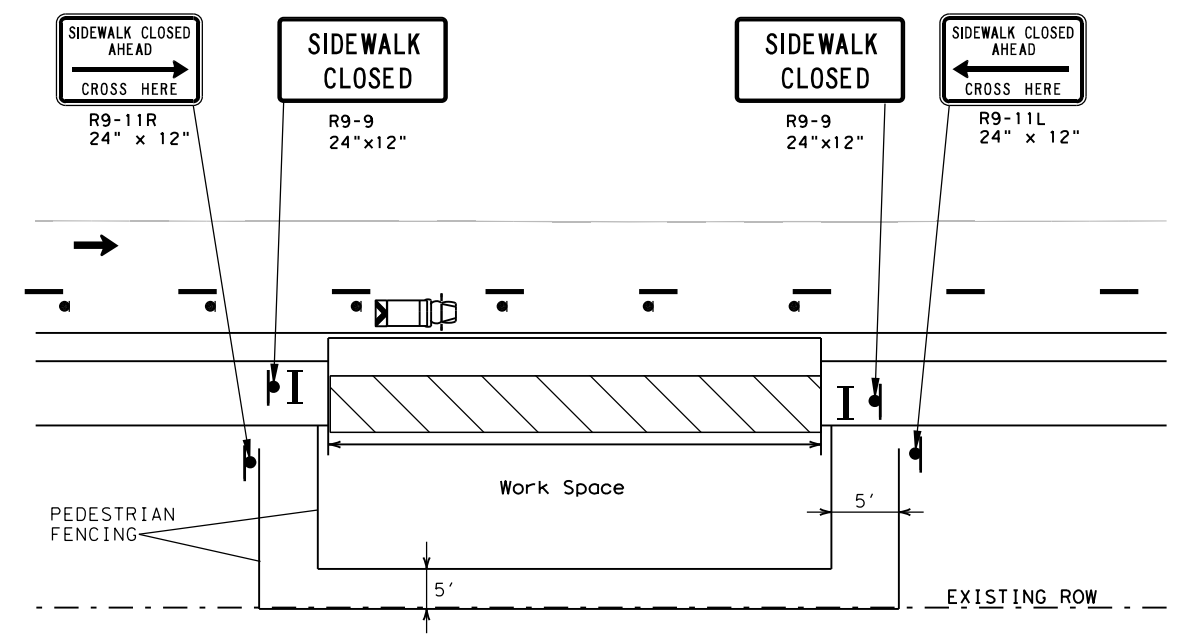
- WORK ZONE
- SIGN
- TY III BARRICADE
- TRUCK MOUNTED ATTENUATOR

NOTES:

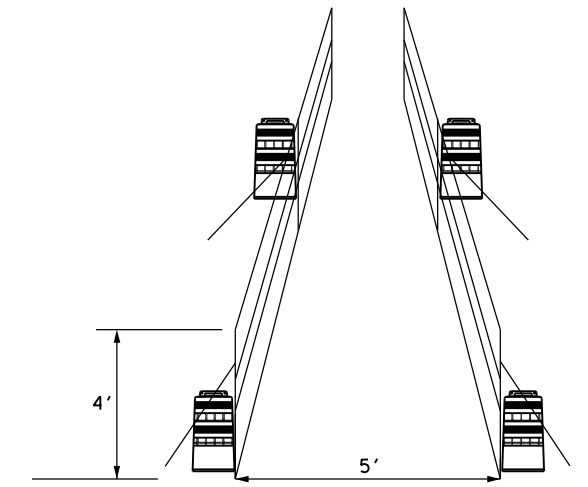
1. PEDESTRIAN ACCESS SHALL BE PROVIDED TO ALL ADJACENT PROPERTIES, BUILDINGS, RESIDENCES AND COMMERCIAL PROPERTIES AT ALL TIMES WITH TEMPORARY PEDESTRIAN FENCING WITHIN THE WORK ZONE AREA. IF PEDESTRIAN PATH IS NOT FEASIBLE, COORDINATE WITH ENGINEER FOR FURTHER DIRECTION.
2. CONTRACTOR SHALL COORDINATE WITH EACH PROPERTY OWNER TO MAINTAIN ACCESS.
3. TEMPORARY PEDESTRIAN FENCING SHALL BE SUBSIDIARY TO ITEM 502.
4. CONTRACTOR MUST MAINTAIN EXISTING PEDESTRIAN CROWDSWALKS AT INTERSECTIONS DURING CONSTRUCTION.
5. REFER TO TCP PHASING LAYOUTS FOR MORE INFORMATION.
6. CONTRACTOR SHALL NOT STORE OR PLACE ANY CONSTRUCTION MATERIALS, EQUIPMENT OR SIGNS IN THE PEDESTRIAN PATH OF TRAVEL.



PEDESTRIAN CROSSWALK - SIDE VIEW



PEDESTRIAN PATH DETAILS - PLAN VIEW



PEDESTRIAN CROSSWALK - FRONT VIEW

STATE OF TEXAS
 SALVADOR HERNANDEZ JR.
 117325
 LICENSED PROFESSIONAL ENGINEER

Salvador Hernandez Jr.

4/30/2021
 SCALE : N.T.S

HNTB HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

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**SH 20
 DONIPHAN DR.
 TRAFFIC CONTROL PLAN
 PEDESTRIAN PATH
 DETAILS**

SHEET 1 OF 1

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JFP	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	78

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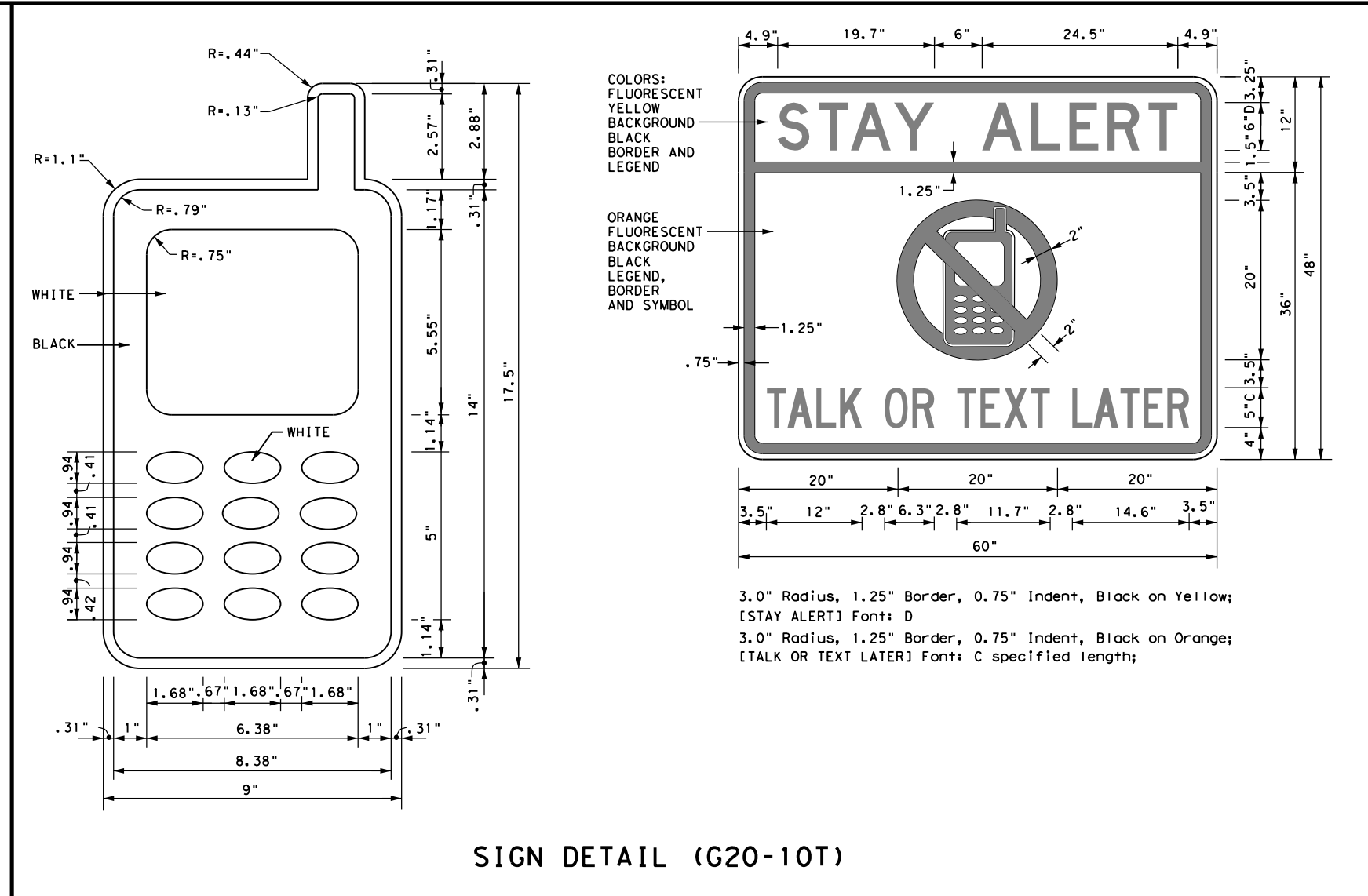
BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
- Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

- 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.

DATE:
FILE:



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

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

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

SHEET 1 OF 12

Traffic Operations Division Standard

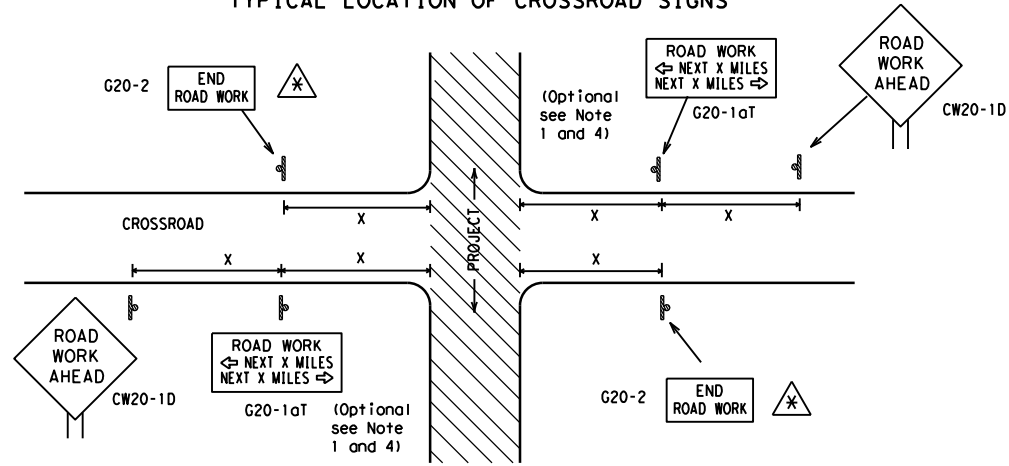
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC (1) - 14

FILE:	bc-14.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0001	01	063, ETC.	SH 20				
4-03	5-10	8-14	DIST		COUNTY		SHEET NO.		
9-07	7-13	ELP		EL PASO		79			

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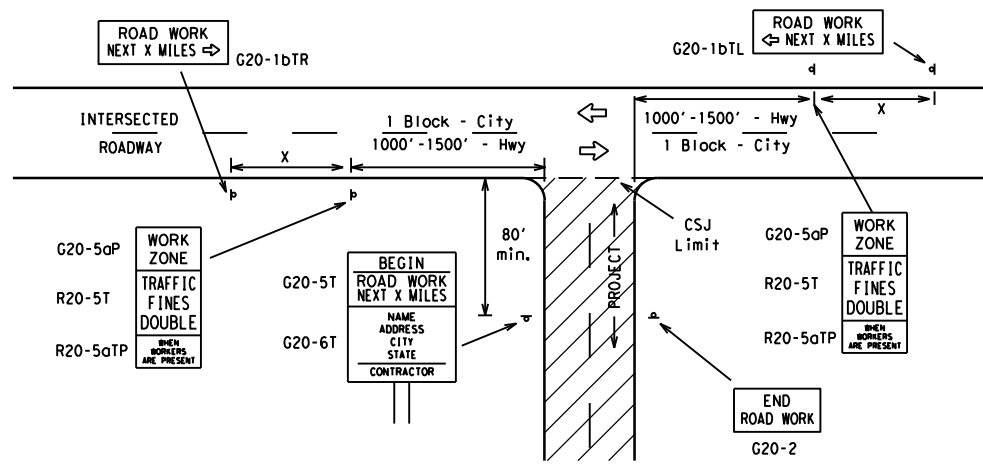
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "X" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
			*	* ³

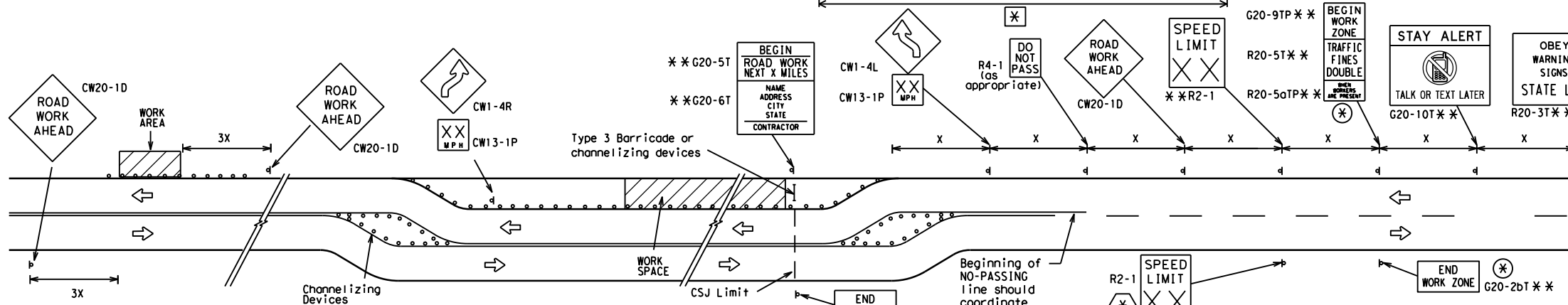
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

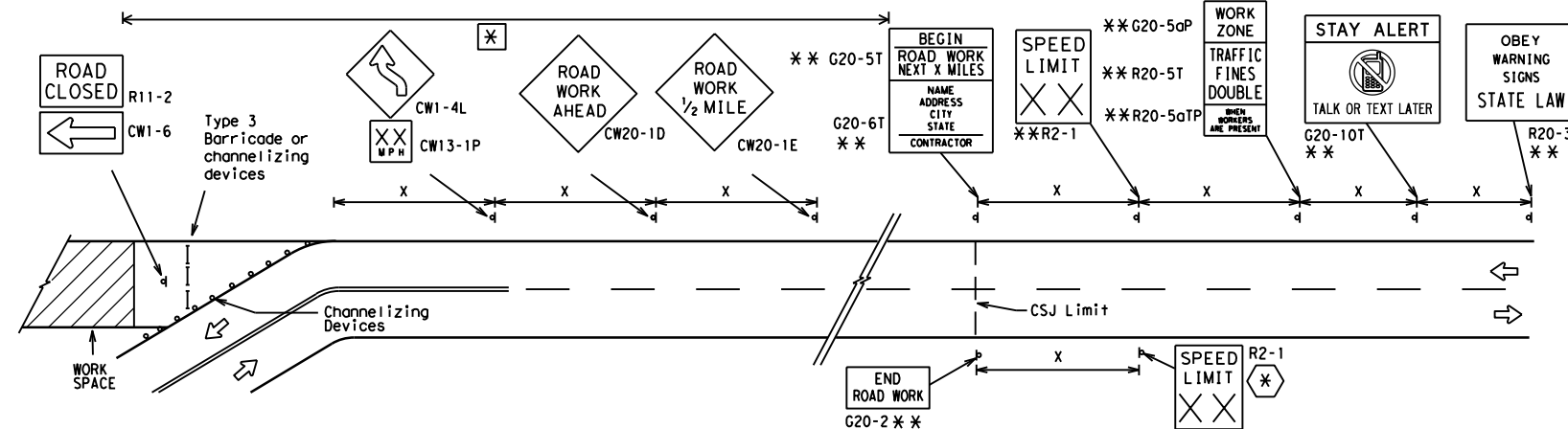
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

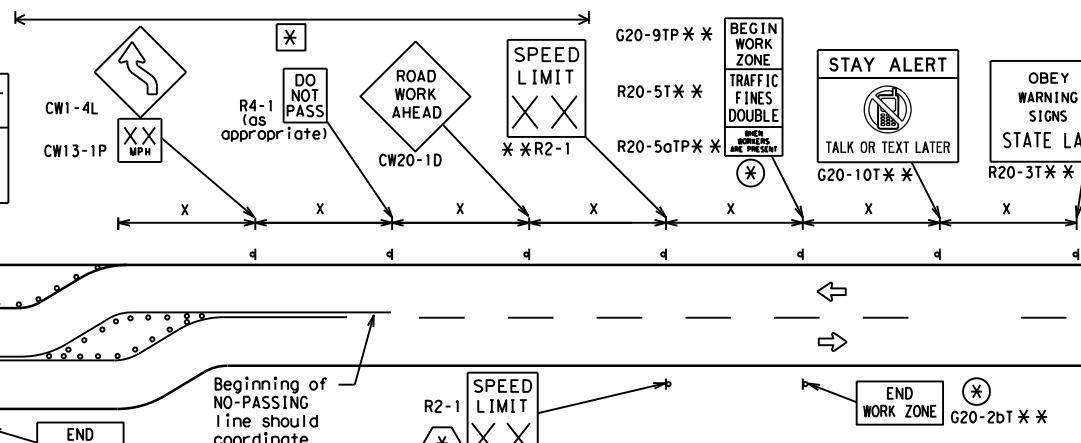


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

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

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

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

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

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

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

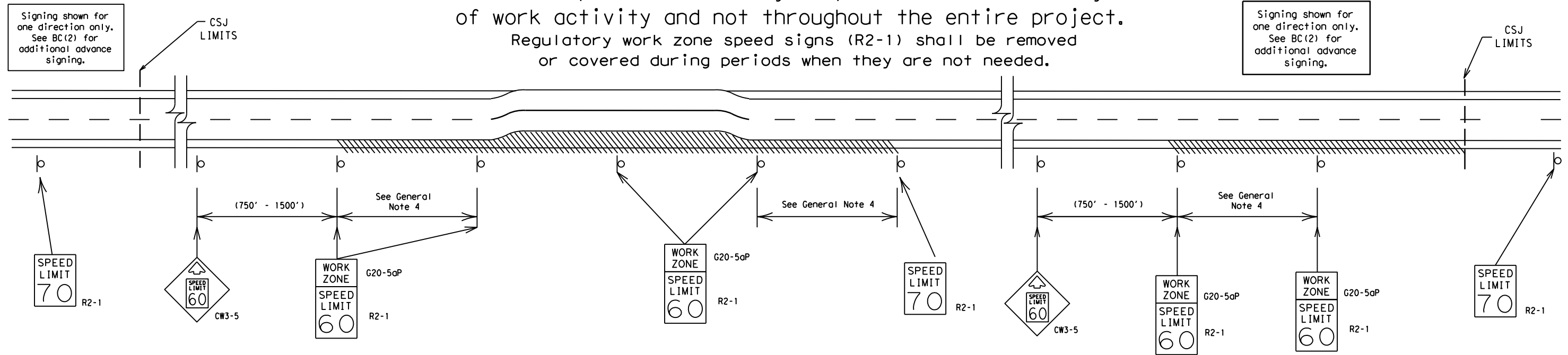
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- 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.

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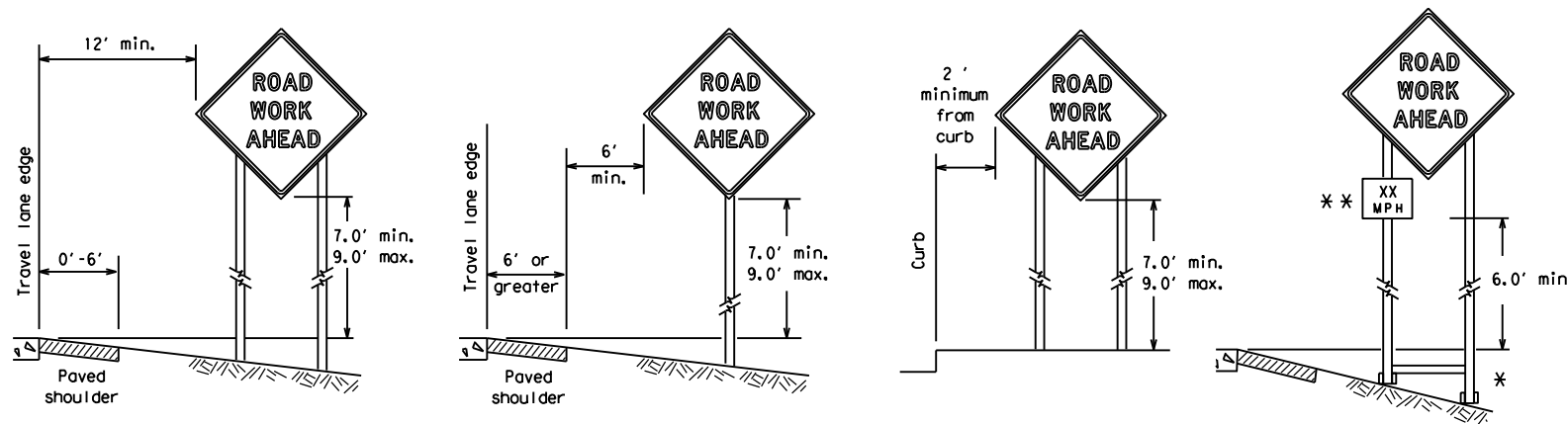


BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 14

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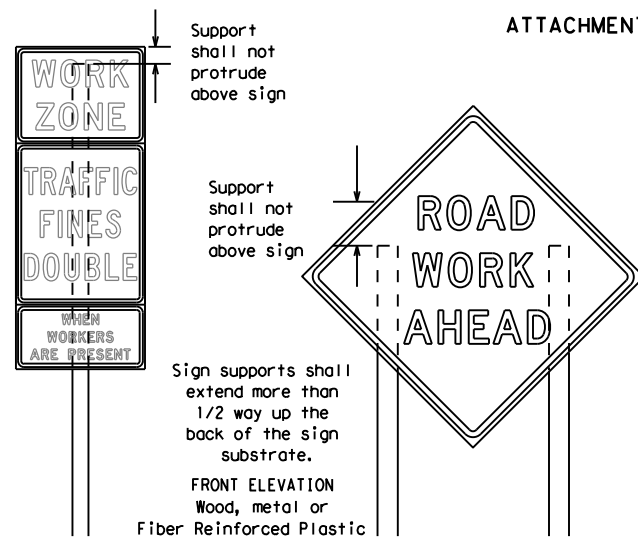
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



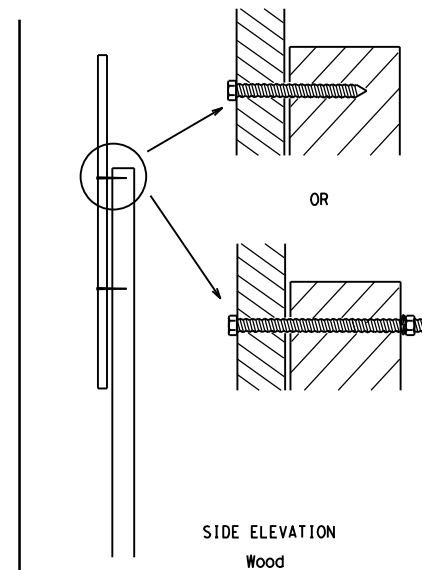
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



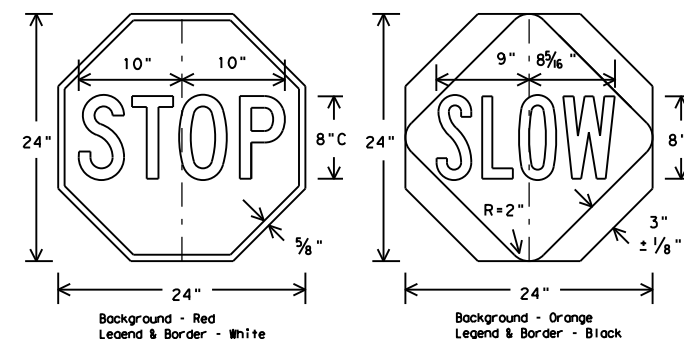
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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 splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
 2. Wooden sign posts shall be painted white.
 3. Barricades shall NOT be used as sign supports.
 4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
 5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
 6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
 7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
 8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
 9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.
- DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)**
1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
 - a. Long-term stationary - work that occupies a location more than 3 days.
 - b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
 - c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - d. Short, duration - work that occupies a location up to 1 hour.
 - e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

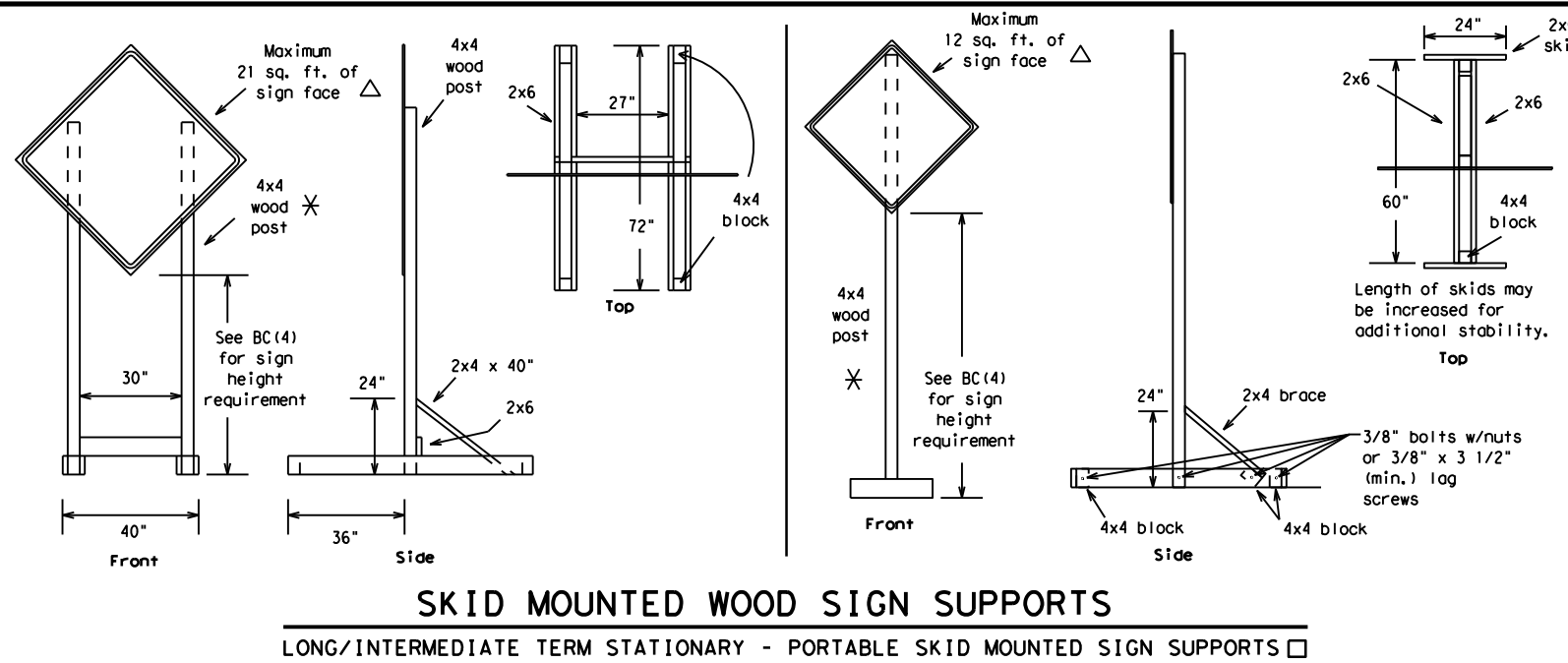
1. Flags may be used to draw attention to warning signs. When used the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

		Traffic Operations Division Standard	
<h2>BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES</h2>			
<h3>BC (4) - 14</h3>			
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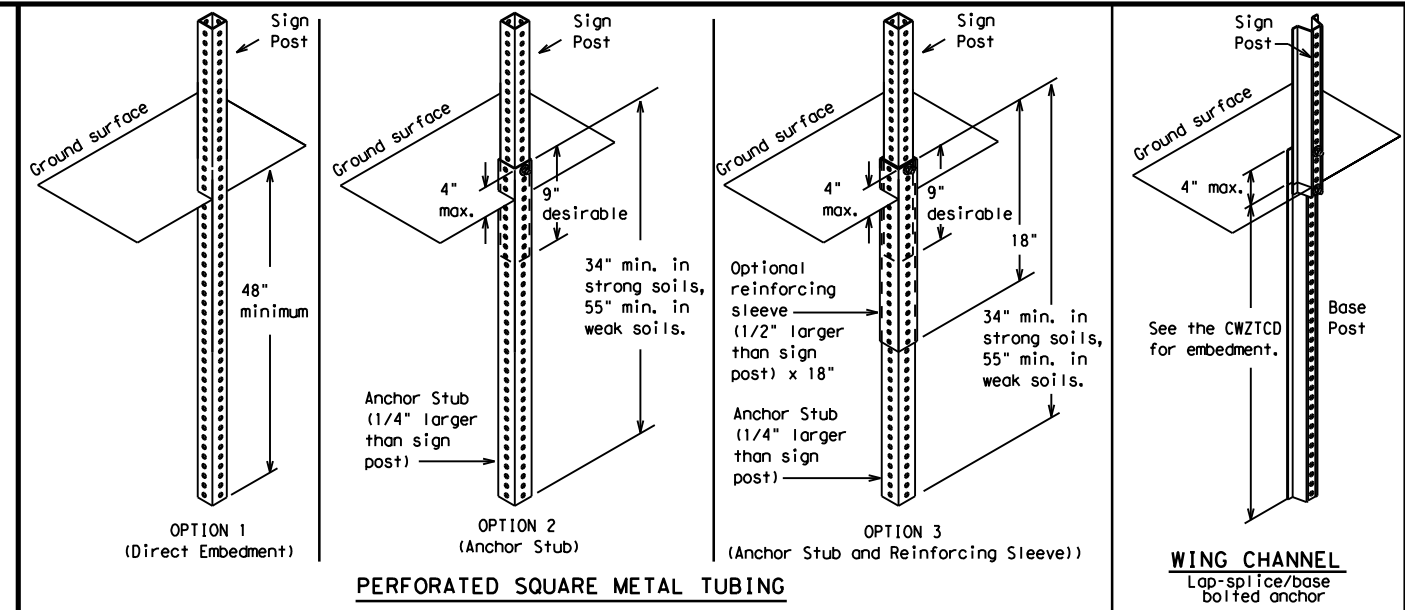
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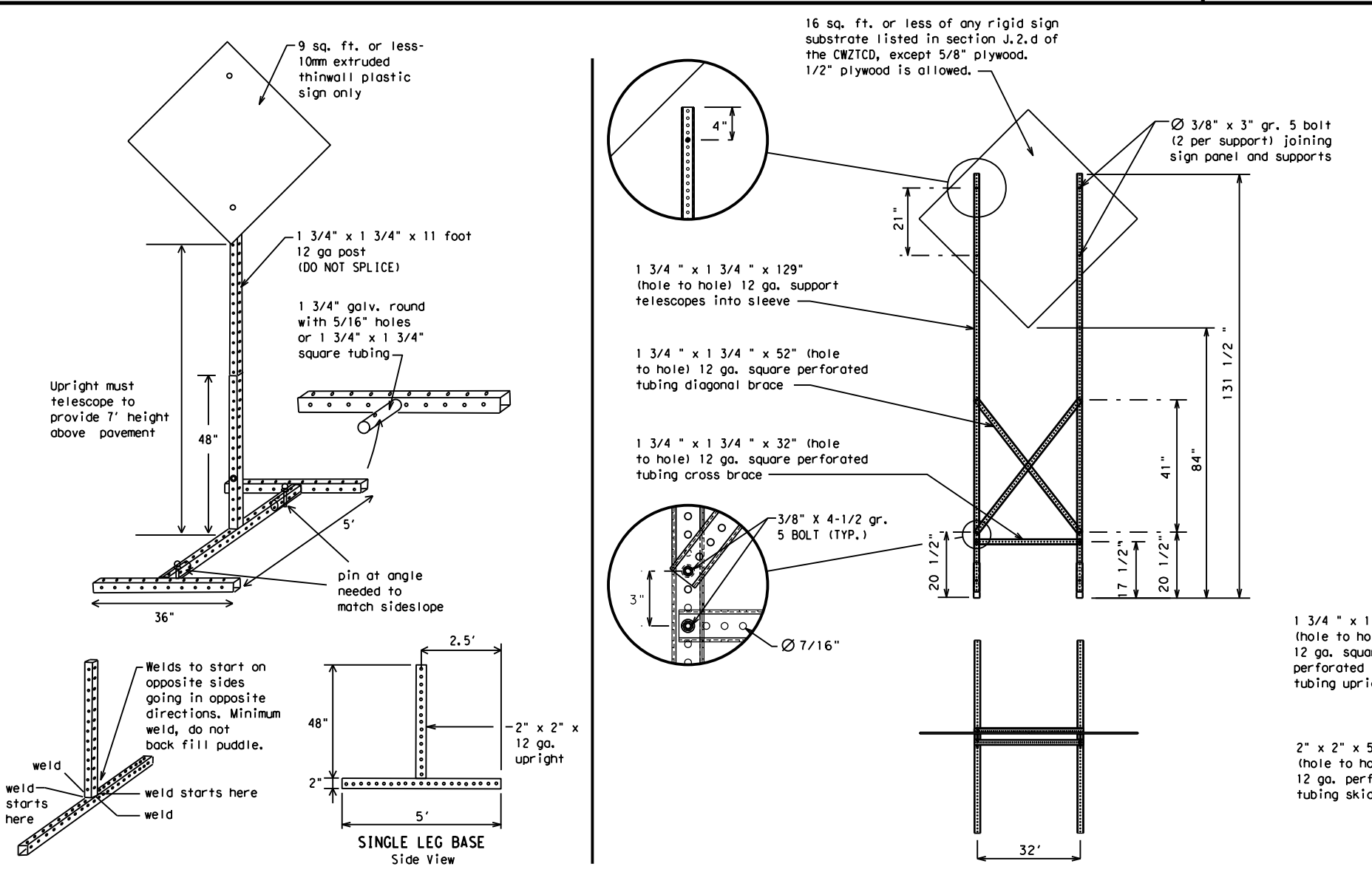
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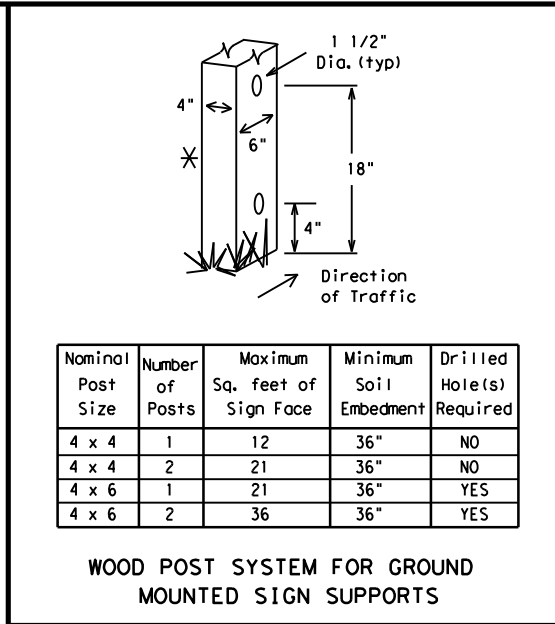
SKID MOUNTED WOOD SIGN SUPPORTS
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □



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



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

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

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

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

- GENERAL NOTES**
- 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.
 - No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
 - 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.

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BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 14

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- 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.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- 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.

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI

ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT

ROAD REPAIRS XXXX FT
LANE NARROWS XXXX FT
TWO-WAY TRAFFIC XX MILE
CONST TRAFFIC XXX FT
UNEVEN LANES XXXX FT
ROUGH ROAD XXXX FT
ROADWORK NEXT FRI-SUN
US XXX EXIT X MILES
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
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE *

FORM X LINES RIGHT
USE XXXXX RD EXIT
USE EXIT I-XX NORTH
USE I-XX E TO I-XX N
WATCH FOR TRUCKS
EXPECT DELAYS
PREPARE TO STOP
END SHOULDER USE
WATCH FOR WORKERS

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXXX 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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

- 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.
- 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.
- 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.
- 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.

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WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canal	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLR
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

DATE: FILE:



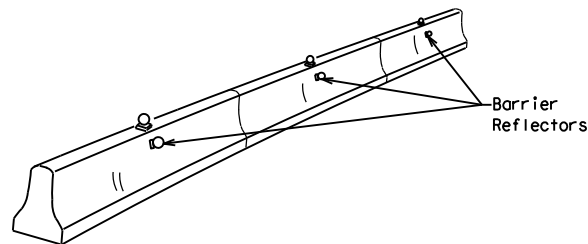
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC (6) - 14

FILE: bc-14.dgn	DN: TxDOT	CR: TxDOT	DN: TxDOT	CR: TxDOT
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7-13	ELP	EL PASO	84	

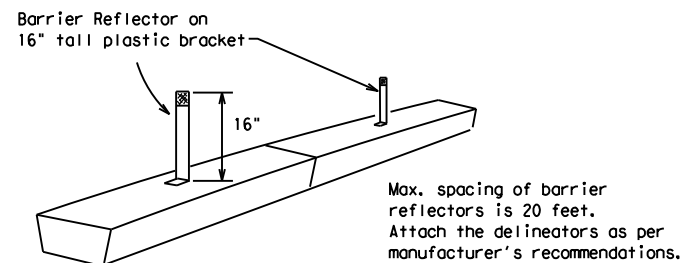
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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

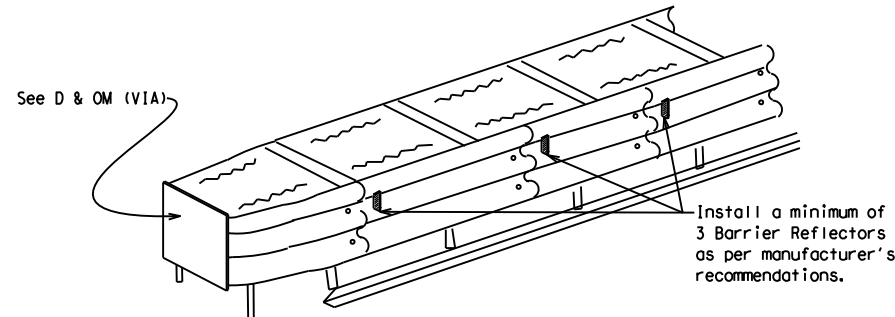


CONCRETE TRAFFIC BARRIER (CTB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

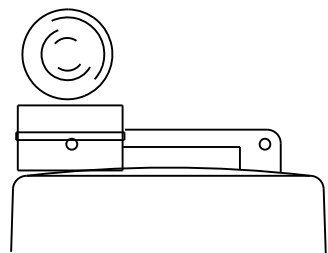
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

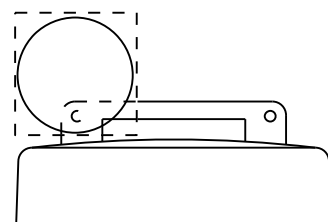
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

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

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.



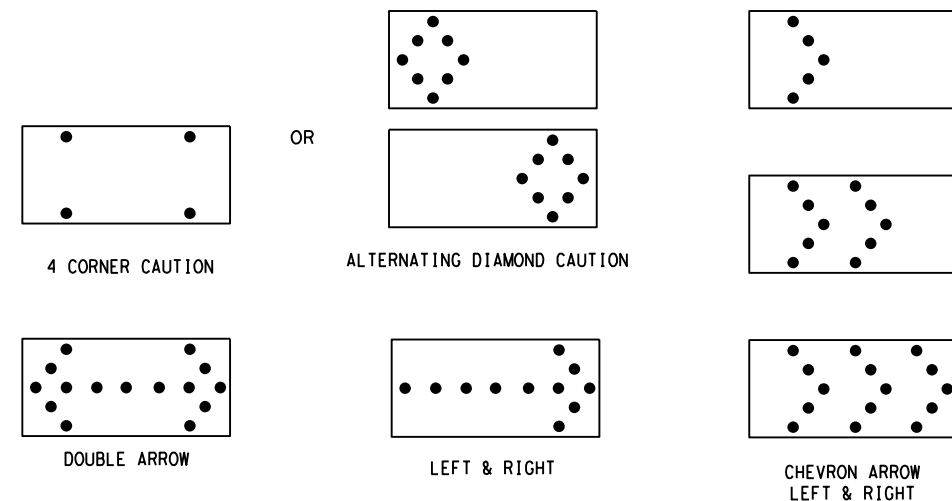
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- 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

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- 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.



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

BC (7) - 14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13	ELP	EL PASO	85	

DATE: FILE:

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

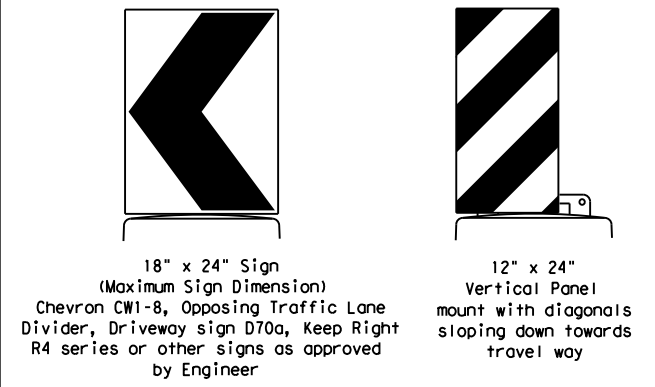
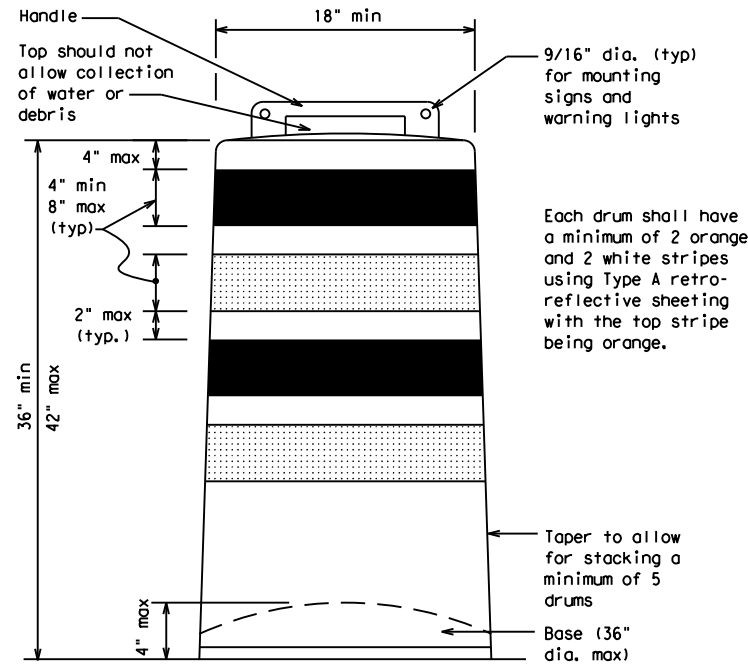
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
- 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

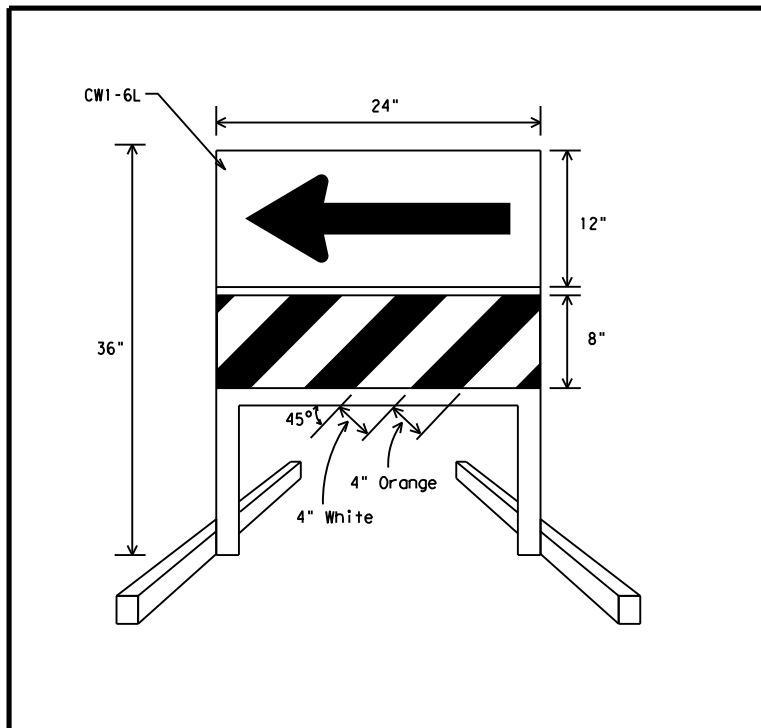
- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other 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.
- 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.



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

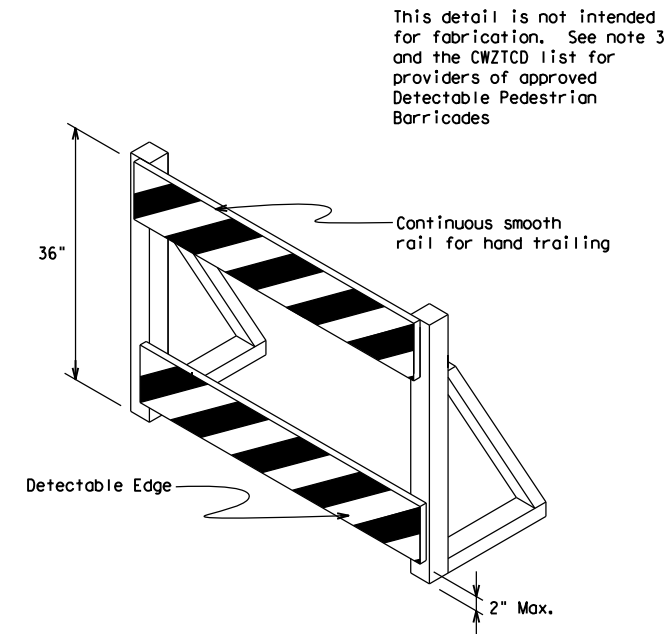
SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- 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.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.



DIRECTION INDICATOR BARRICADE

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



DETECTABLE PEDESTRIAN BARRICADES

- 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.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- 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.
- Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



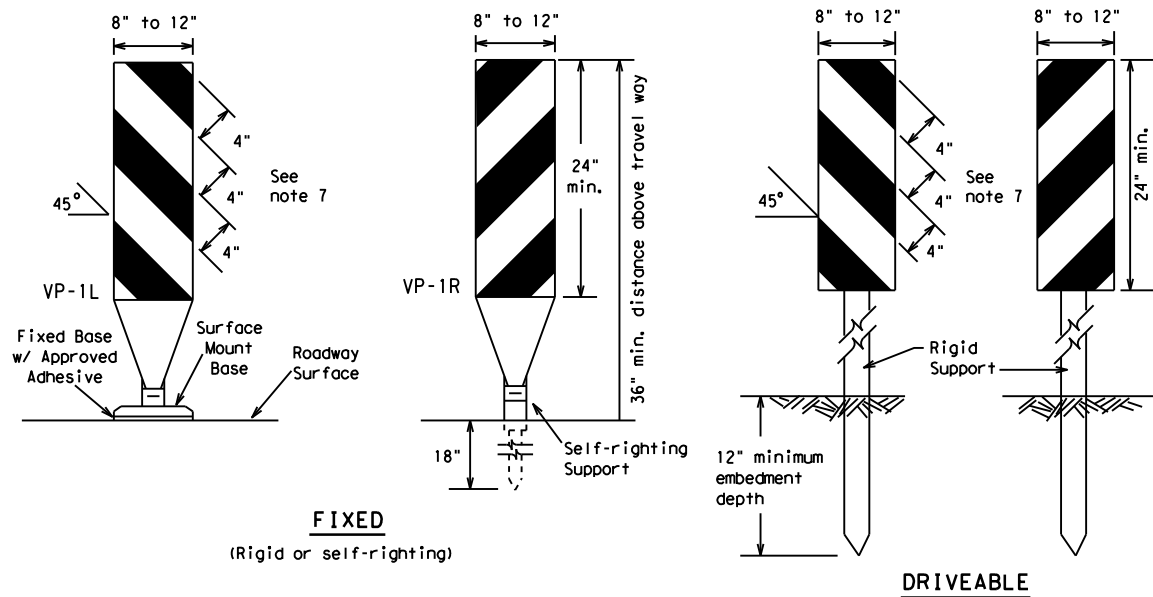
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 14

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9-07	8-14	ELP	EL PASO		86				

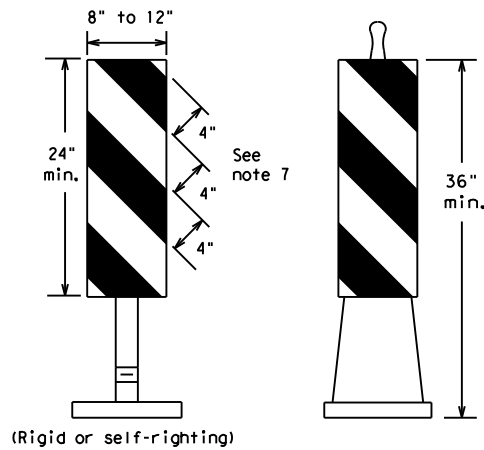
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FIXED
(Rigid or self-righting)

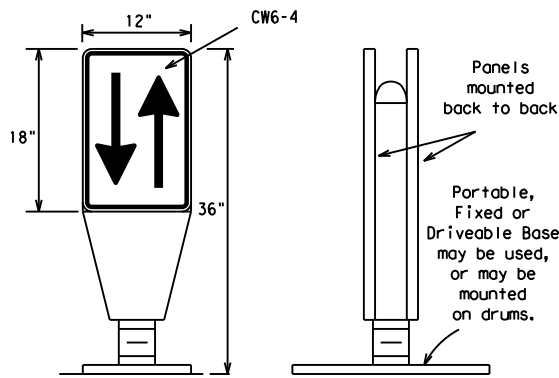
DRIVEABLE



PORTABLE

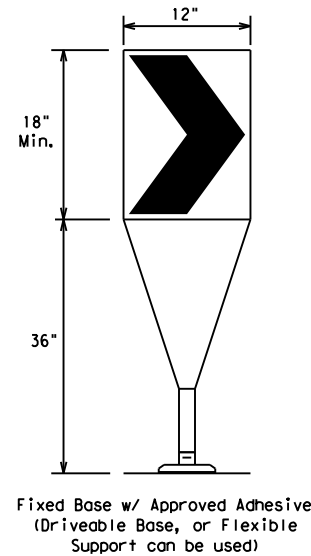
VERTICAL PANELS (VPs)

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



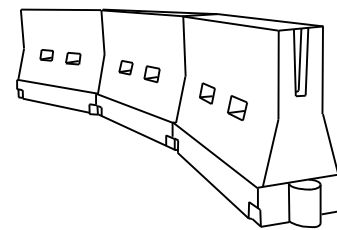
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- 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.



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- 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.
- 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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
- 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.
- 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.
- 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.
- 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

GENERAL NOTES

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- 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.

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = 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



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 14

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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13	ELP	EL PASO	87	

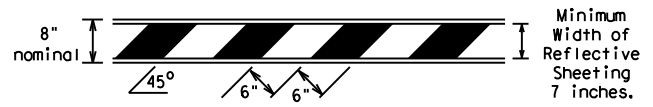
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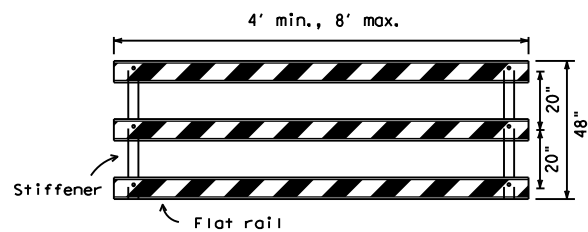
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.

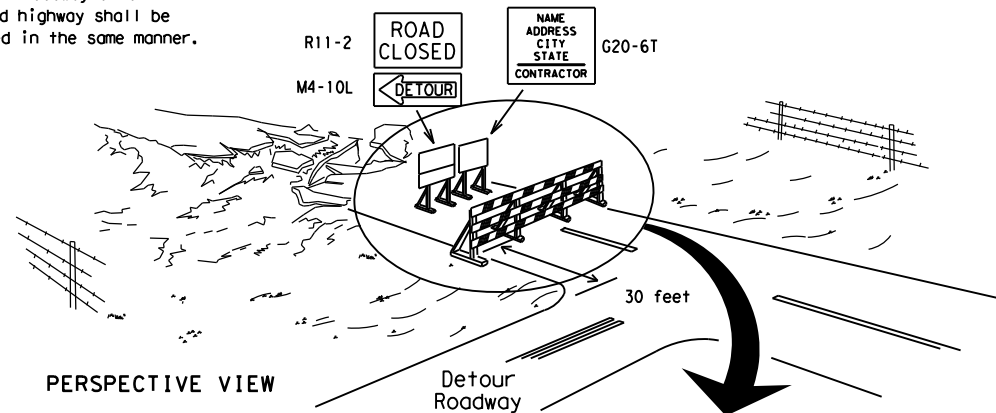


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



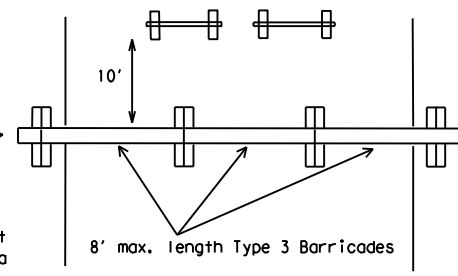
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

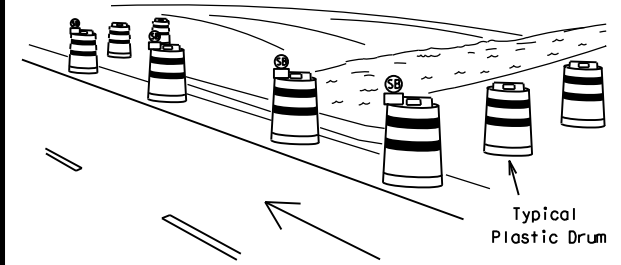
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



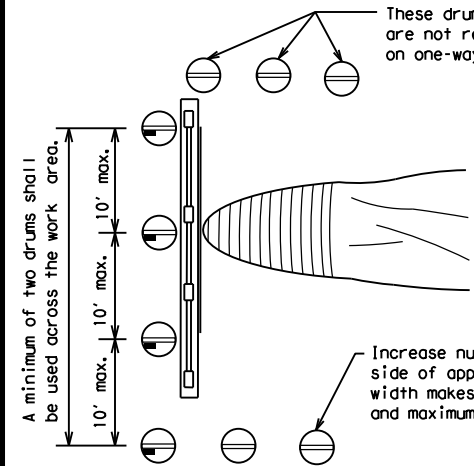
PLAN VIEW

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

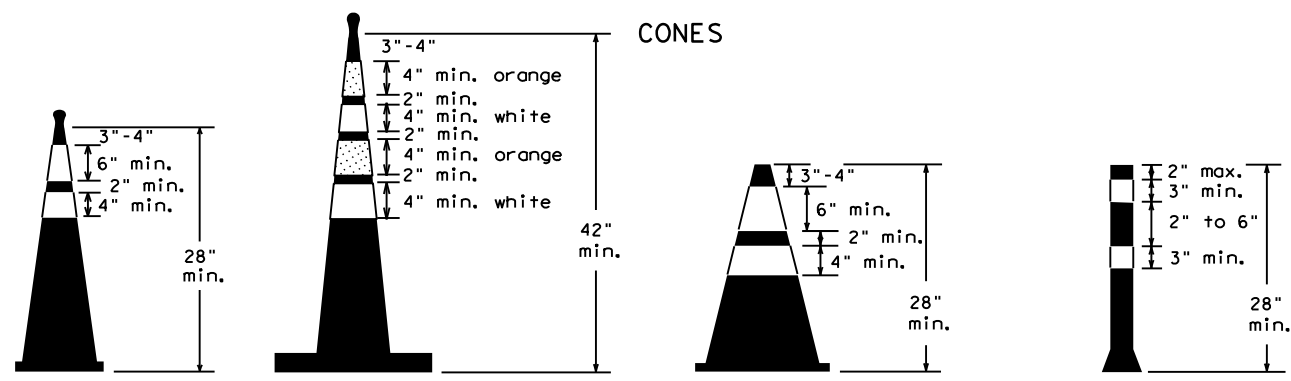


PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

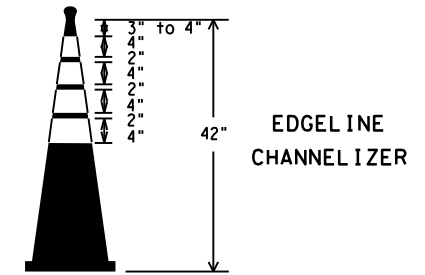
1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.

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



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.

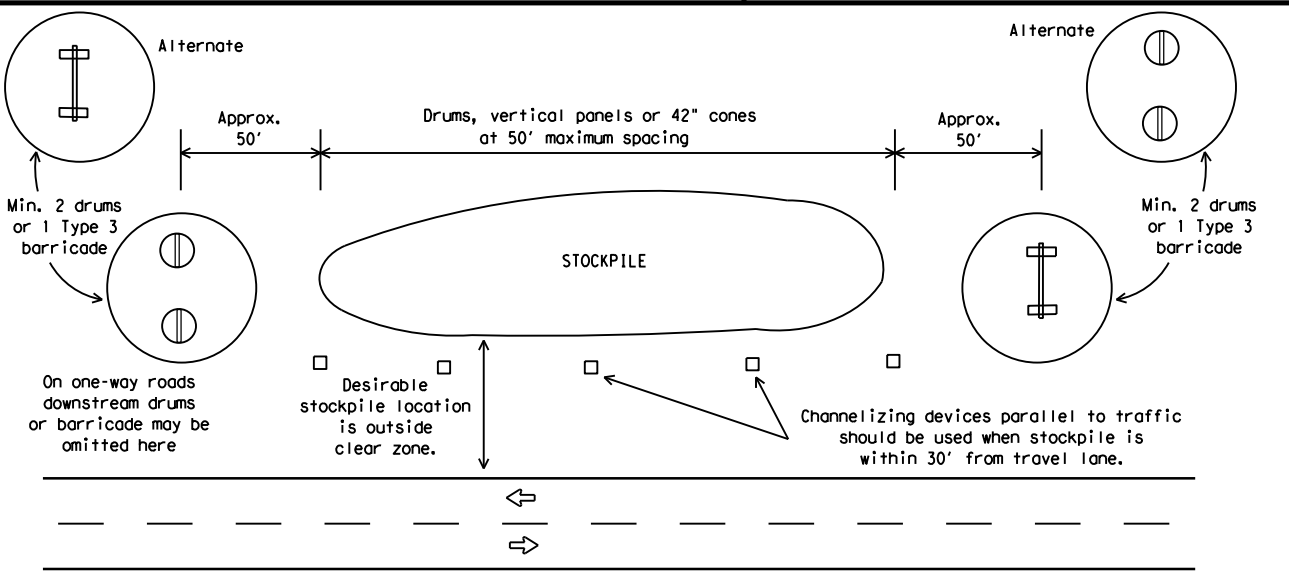
THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGE LINE CHANNELIZER

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

SHEET 10 OF 12



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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

		Traffic Operations Division Standard	
<h2>BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES</h2>			
<h3>BC (10) - 14</h3>			
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WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

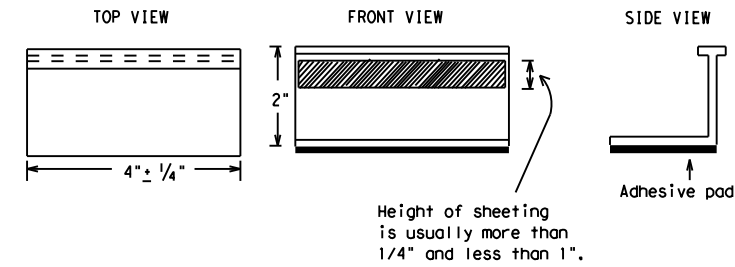
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- 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.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

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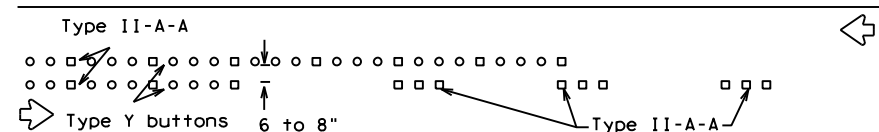
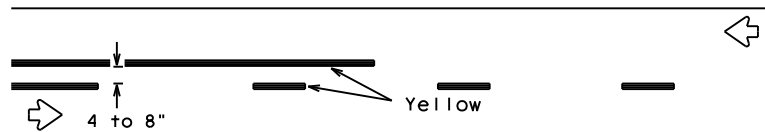
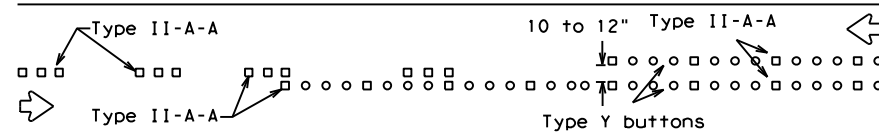
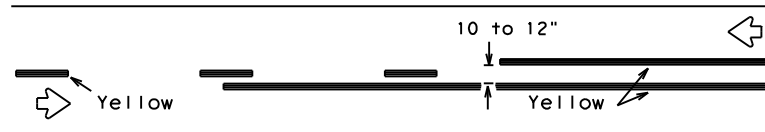


BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11) - 14

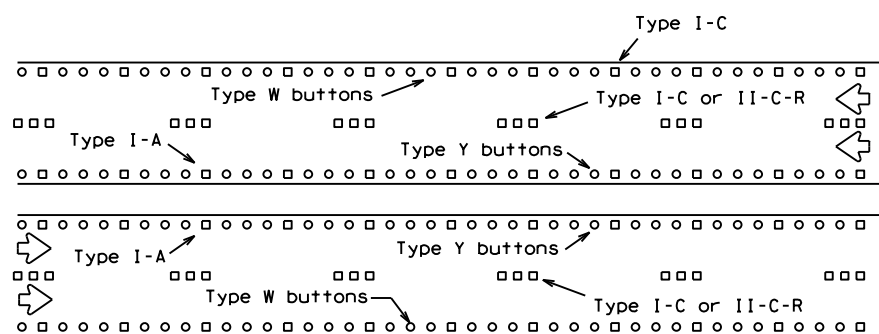
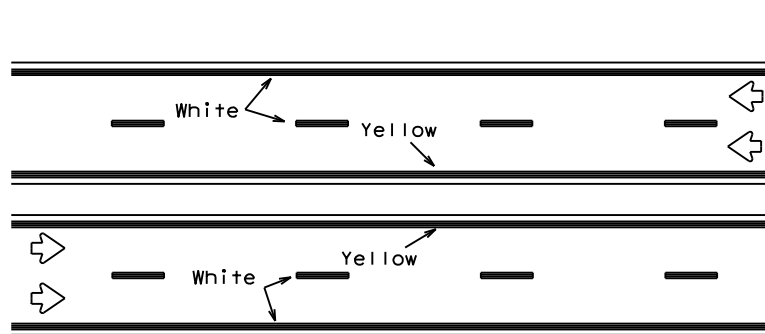
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PAVEMENT MARKING PATTERNS



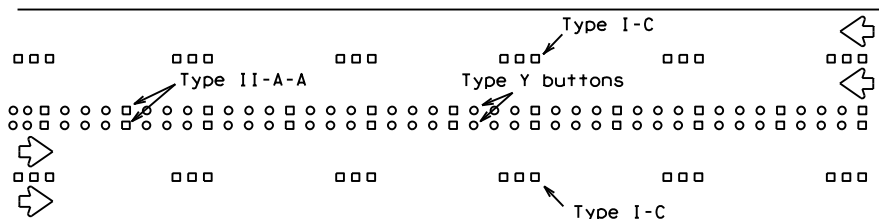
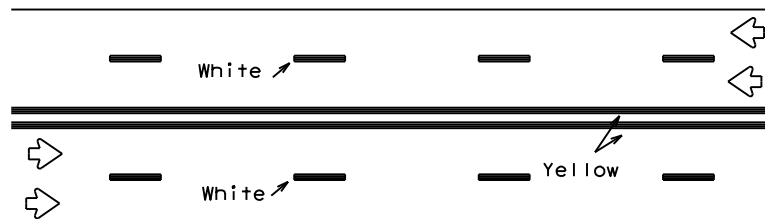
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

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



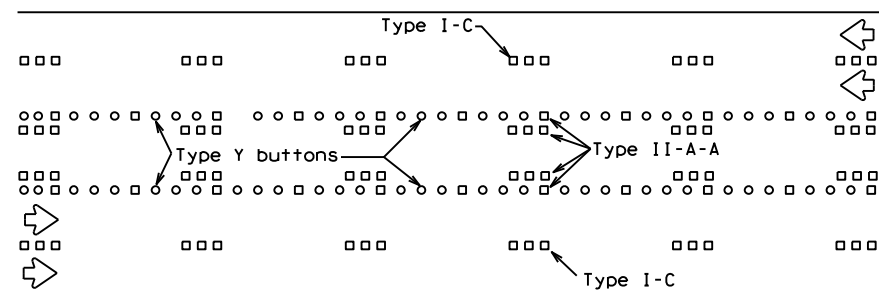
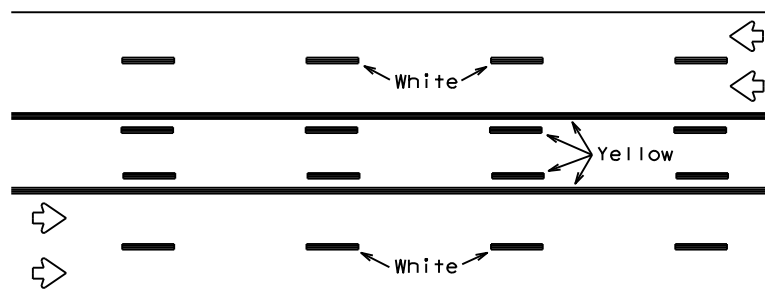
Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectorized pavement markings.

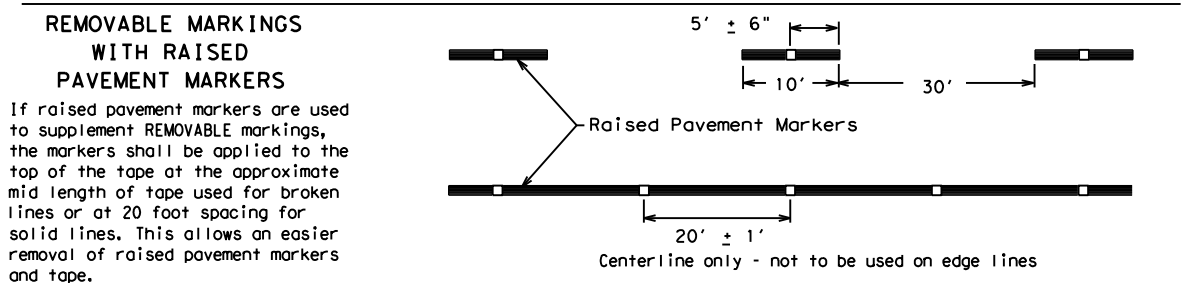
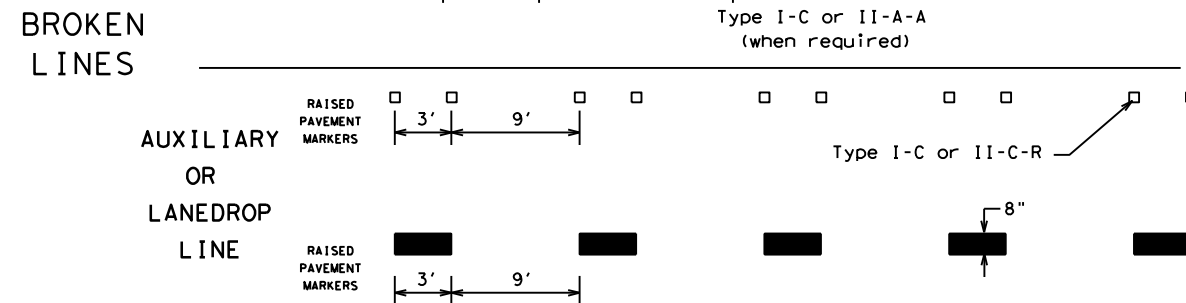
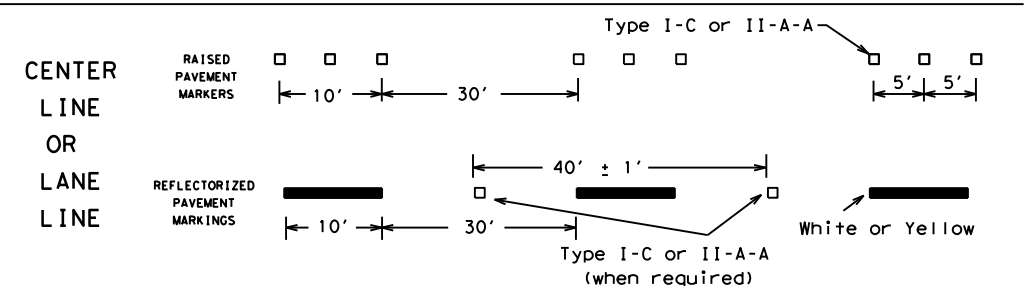
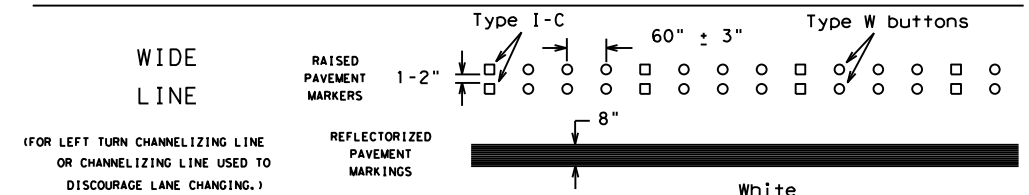
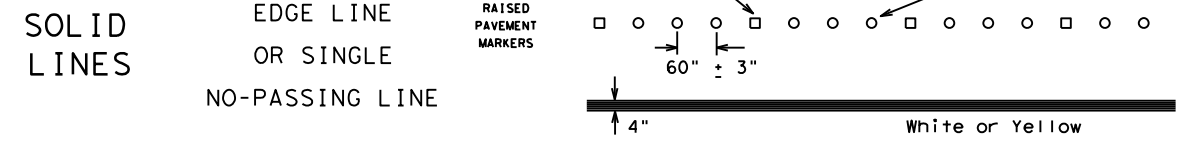
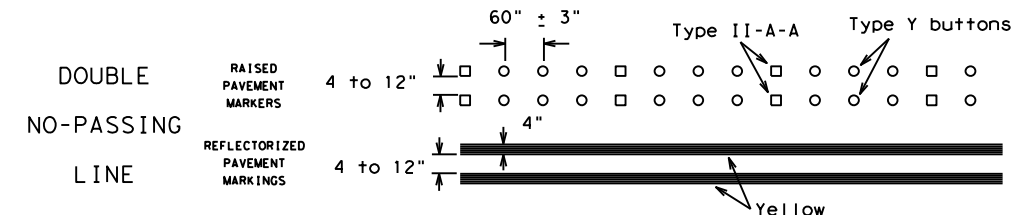
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



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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."

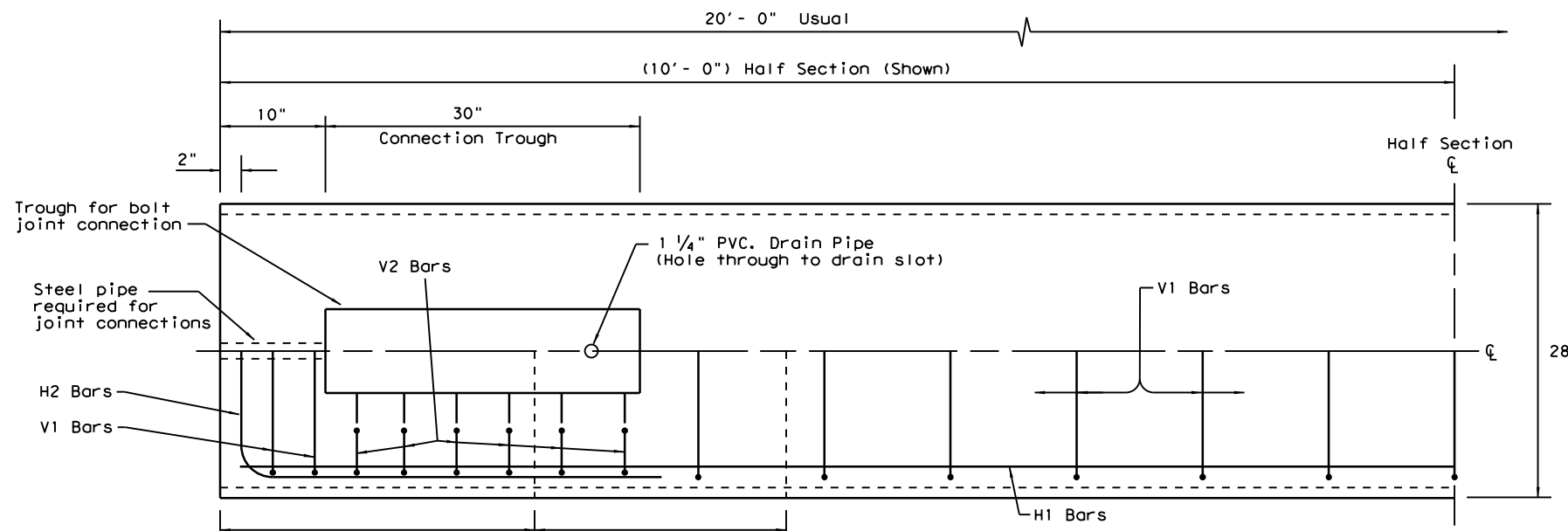


BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC (12) - 14

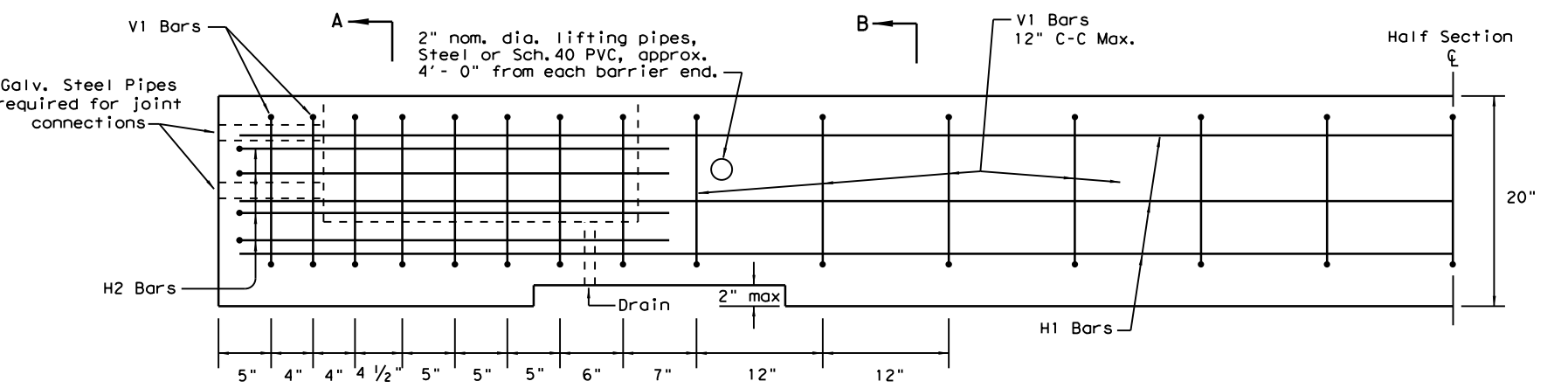
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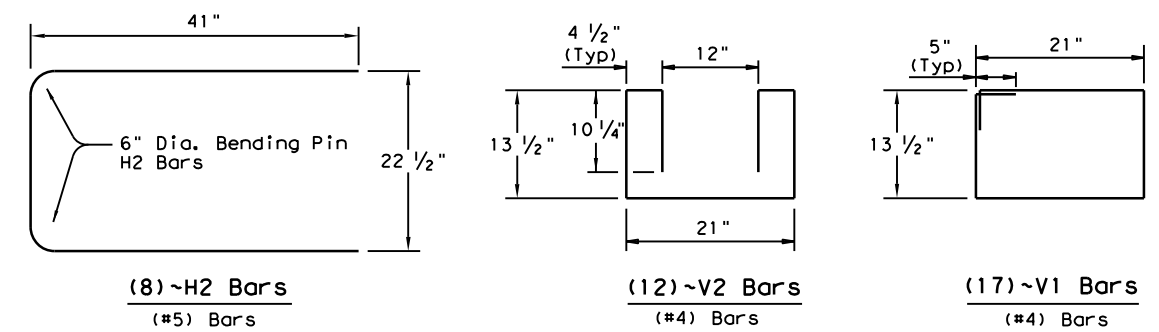


PLAN
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)

NOTE: CONCRETE ON BOTTOM HALF OF PLAN VIEW IS REMOVED IN ORDER TO SHOW DETAILS

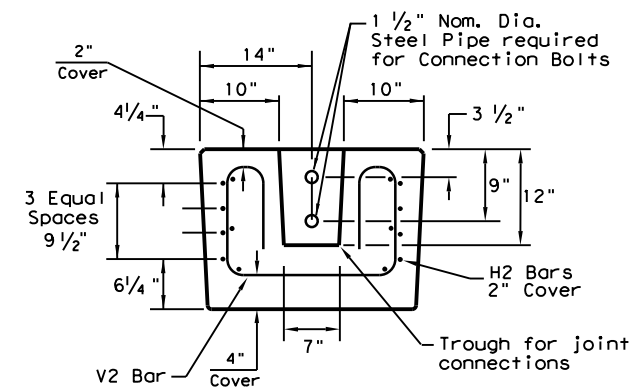


ELEVATION
(TYPE 1) BARRIER SEGMENT
(SYMMETRICAL ABOUT CENTER LINES)

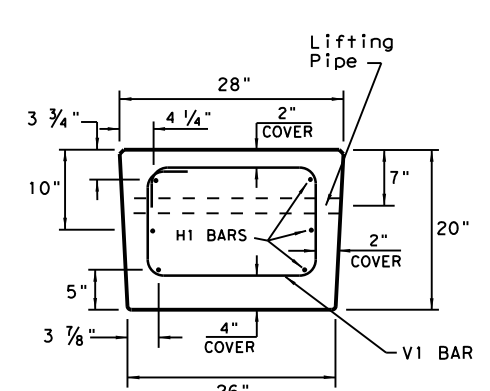


REINFORCING STEEL DETAILS
TYPE 1 - BARRIER SEGMENT

Note: Use 2" Dia. Bending Pin, unless otherwise shown



SECTION A-A

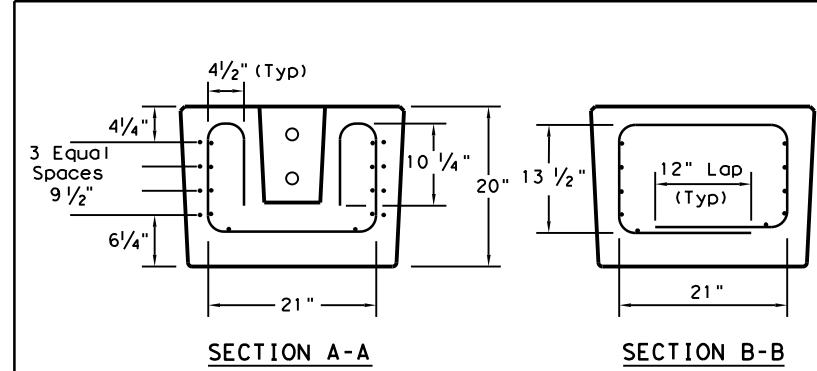


SECTION B-B

- GENERAL NOTES**
1. Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
 2. Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
 3. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
 4. Precast LPCB barrier length shall be 20 ft.
 5. All barrier edges shall have 3/4" chamfer or a tooled radius.
 6. Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts," and is considered subsidiary.
 7. Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445, "Galvanizing."
 8. Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

FOR CONTRACTORS INFORMATION ONLY

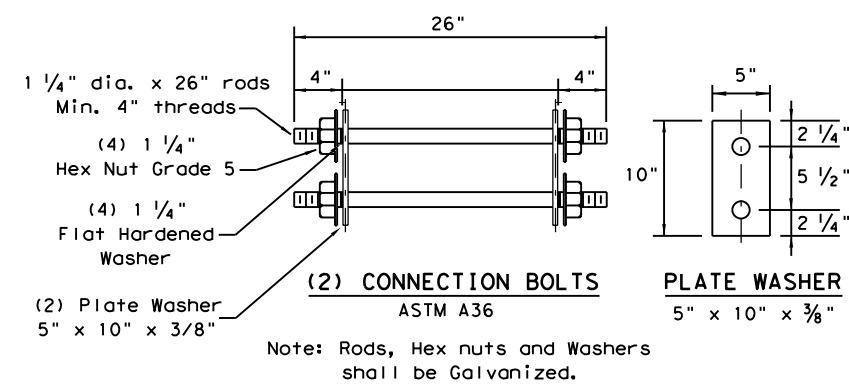
(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



SECTION A-A SECTION B-B

- (WWR) GENERAL NOTES**
1. Deformed Welded Wire Reinforcement shall conform to ASTM A497.
 2. Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
 3. Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".
- REQUIRED (WWR) WIRE DESIGN**
- 8 ~ (D31) Horizontal Wires (Equally spaced)
 - 10 ~ (D20) Horizontal Wires (Equally spaced)
 - 29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)

WELDED WIRE REINFORCEMENT (WWR) - OPTIONAL REINFORCING



(2) CONNECTION BOLTS
ASTM A36

PLATE WASHER
5" x 10" x 3/8"

Note: Rods, Hex nuts and Washers shall be Galvanized.

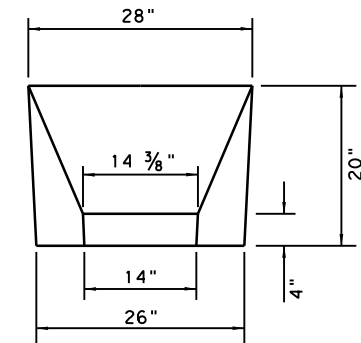
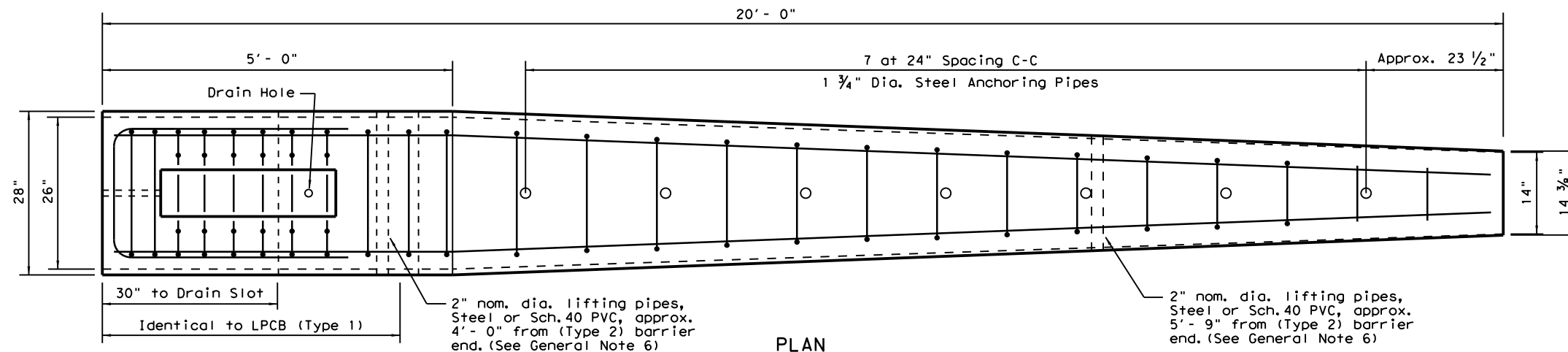
Texas Department of Transportation
Design Division Standard

LOW PROFILE CONCRETE BARRIER PRECAST BARRIER (TYPE 1) LPCB-13

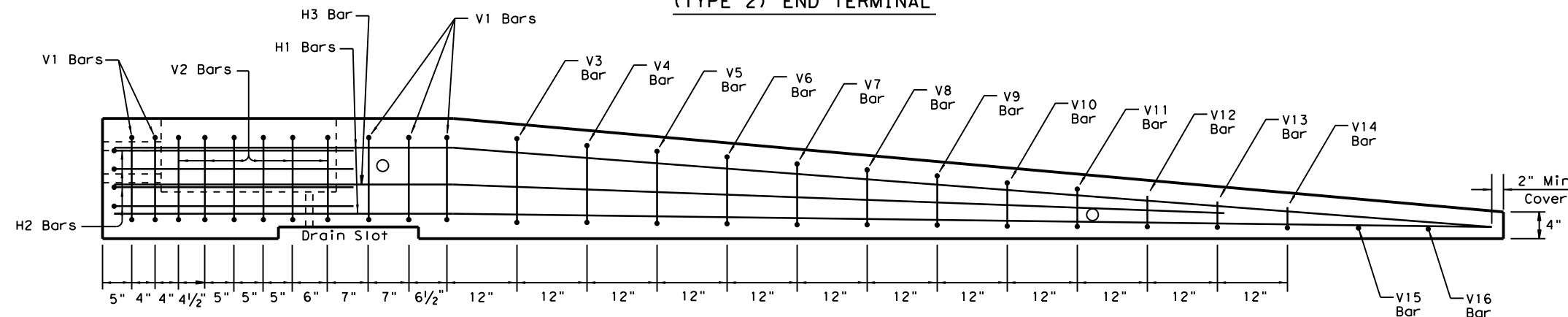
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© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	91	

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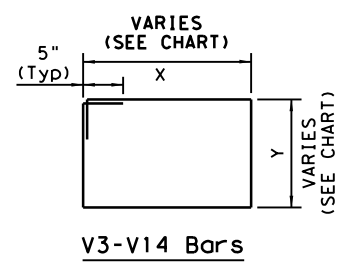
APPROACH VIEW



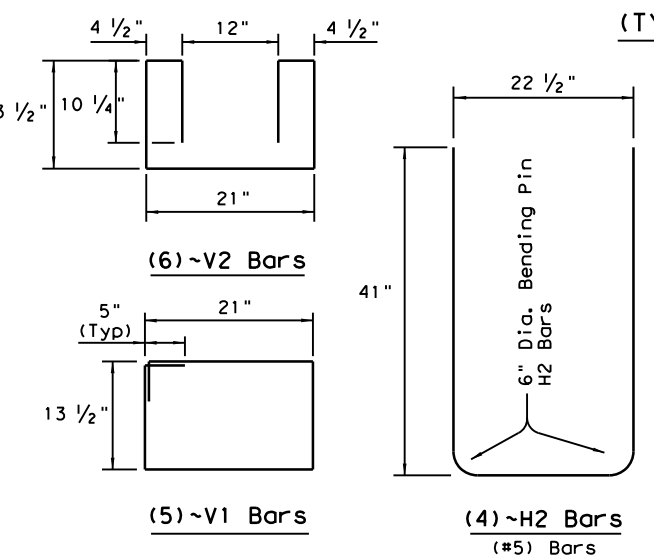
PLAN (TYPE 2) END TERMINAL

ELEVATION (TYPE 2) END TERMINAL

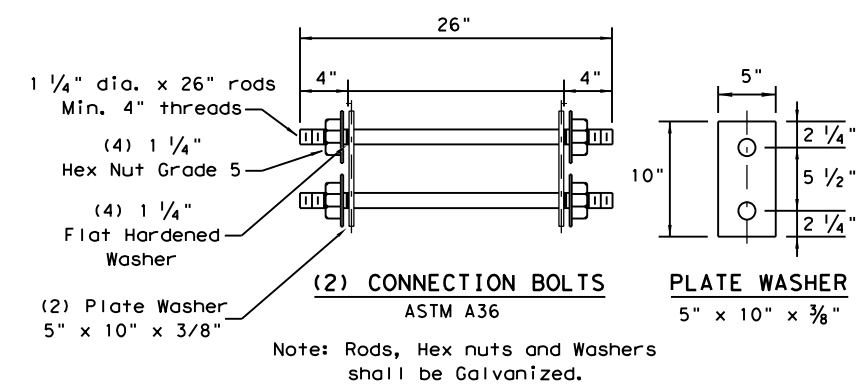
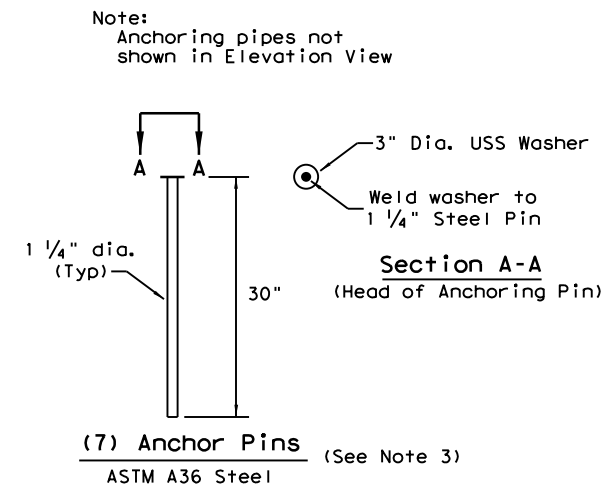
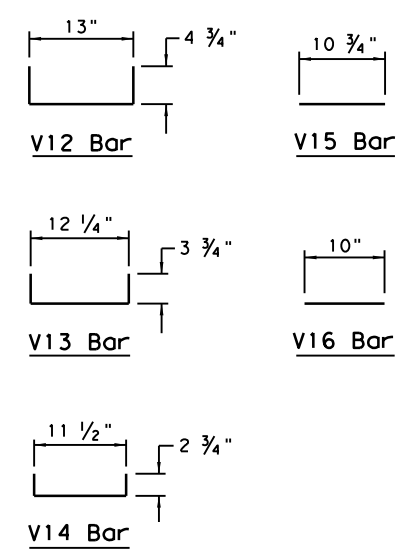
- TYPE 2 - NOTES**
1. Welded wire reinforcement (WWR) is "not" an option for Type 2 Barrier.
 2. Type 2 Barrier shall be used as an end treatment for the Type 1 barrier segments, when applicable.
 3. The end treatment can be used without the anchor pins in locations that can accommodate approximately 4 ft. of lateral displacement of the end treatment. The use of non-pinned end treatment does not affect the performance or the deflection of the Low-Profile barrier system.
 4. The anchor pins are all the same length and are to be driven flush with the top of the (Type 2) barrier surface.
 5. The bends in the H3 and H1 bars are slight, no formal bend is necessary.
 6. The Type 2 barrier segment must be lifted from the rear first, to prevent cracking of sloped section.
 7. See LPCB sheet 1 for additional information.



BAR (#4)	X (IN.)	Y (IN.)
V3 BAR	20 1/4	14 1/2
V4 BAR	19 1/2	13 1/2
V5 BAR	18 1/2	12 1/4
V6 BAR	17 1/2	11 1/4
V7 BAR	17	10 1/4
V8 BAR	16 1/4	9
V9 BAR	15 1/2	8
V10 BAR	14 1/2	7
V11 BAR	13 3/4	6

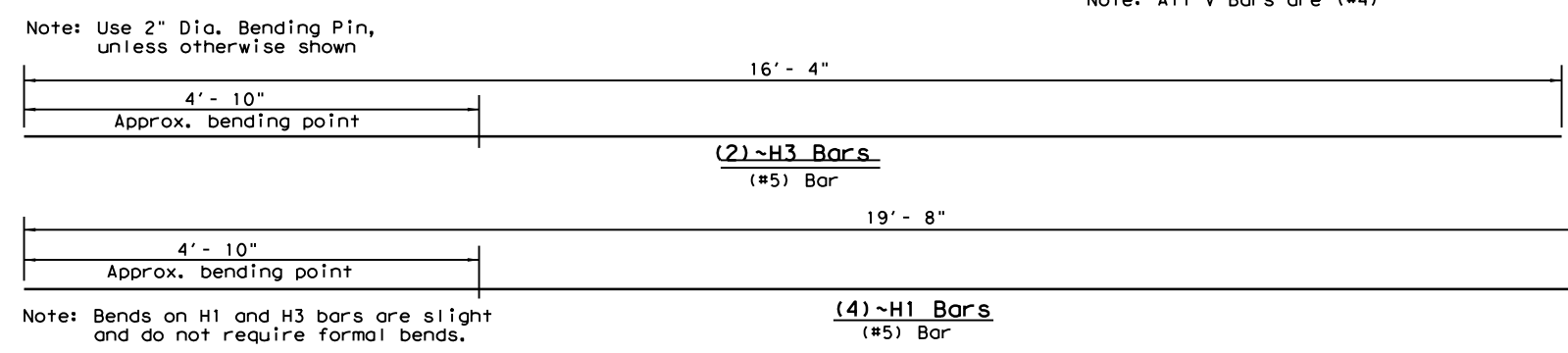


REINFORCING STEEL DETAILS TYPE 2 - END TERMINAL



FOR CONTRACTORS INFORMATION ONLY

(TYPE 2) APPROX. QUANTITIES 20 FT. SECTION			
CONCRETE	CY	1.65	
REINFORCING STEEL	LBS	240	
TOTAL BARRIER WT.	LBS	7000	



Note: Bends on H1 and H3 bars are slight and do not require formal bends.

Note: All V Bars are (#4)

SHEET 2 OF 2

Design Division Standard

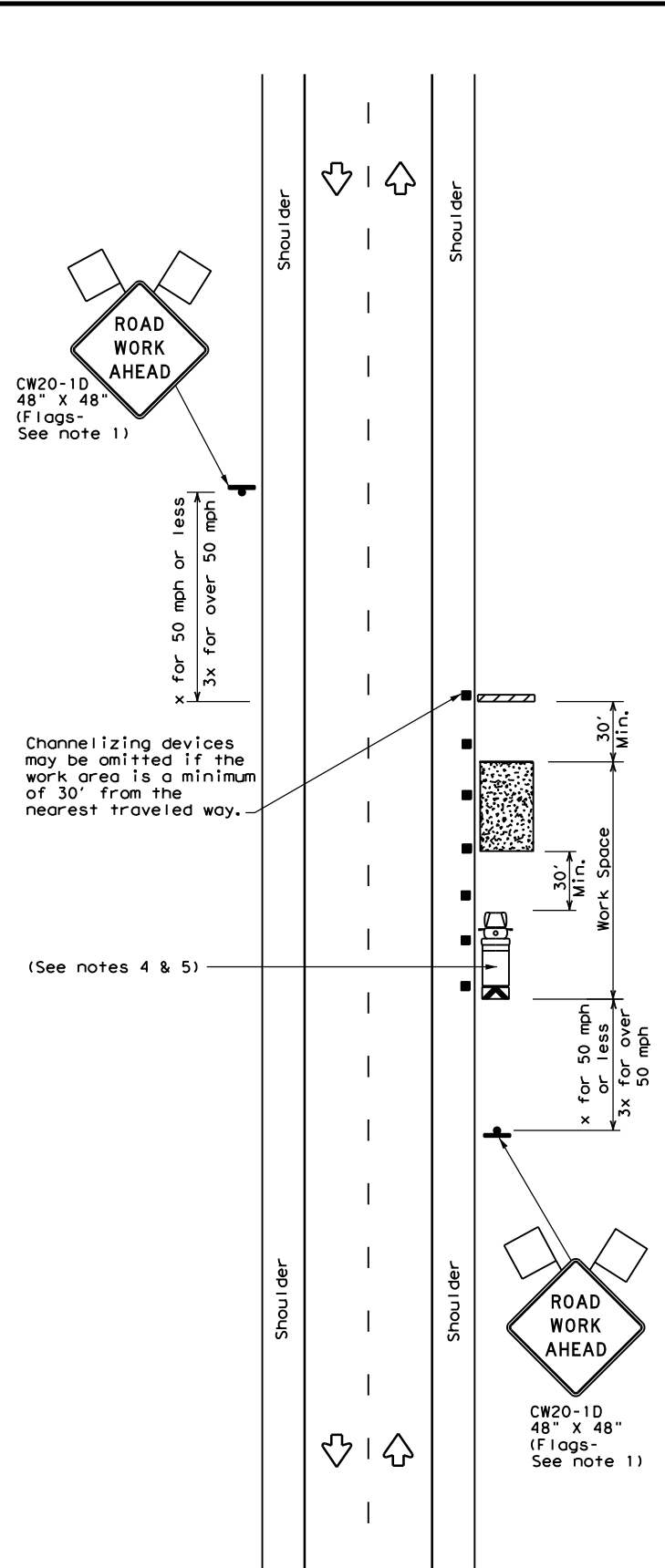
LOW PROFILE CONCRETE BARRIER PRECAST BARRIER (TYPE 2) LPCB-13

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© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
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	ELP	EL PASO	92	

DATE: FILE:

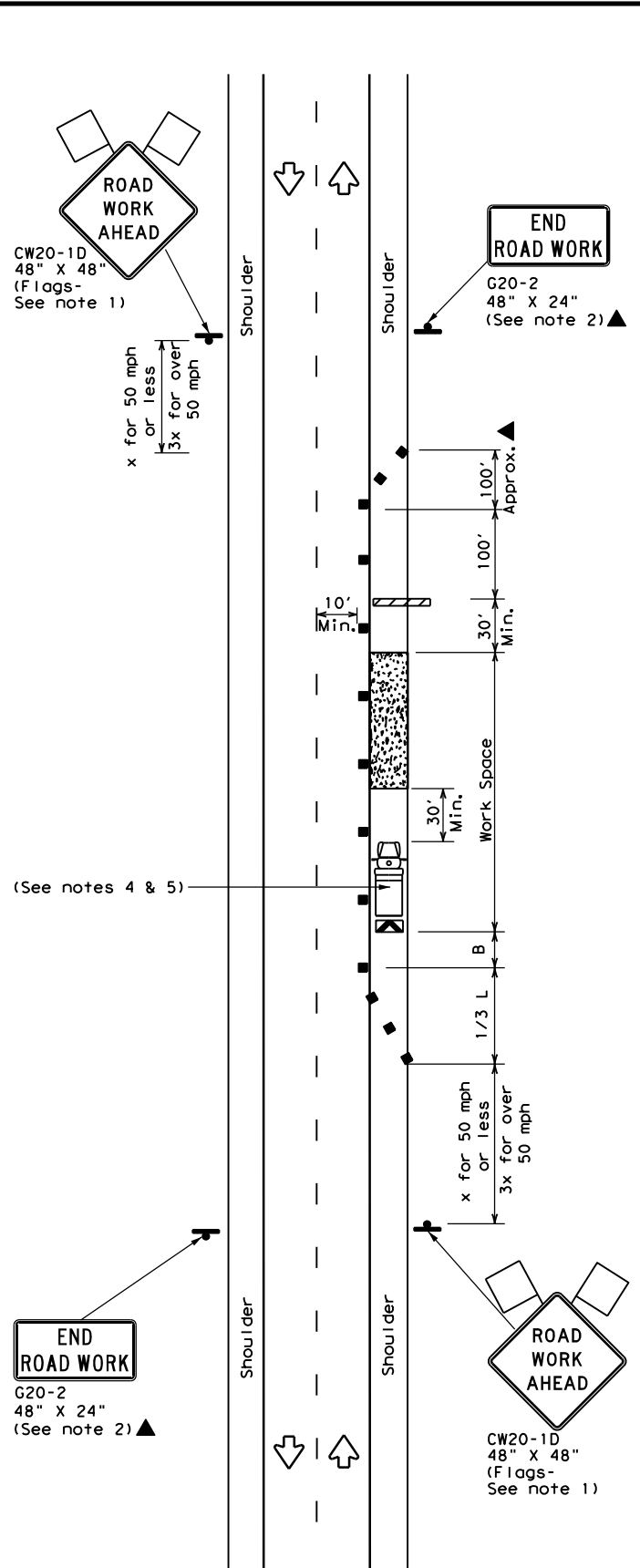
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DATE: FILE:



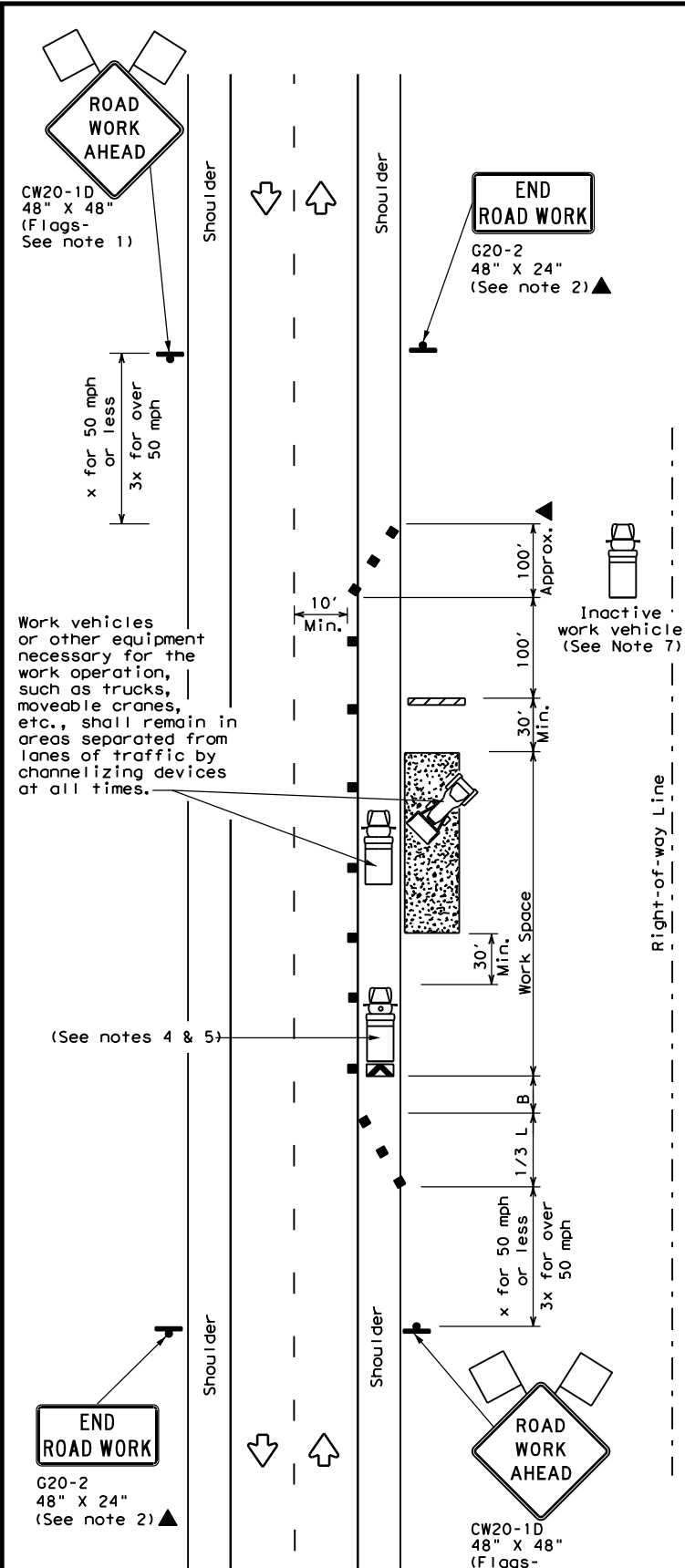
TCP (2-1a)

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		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

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

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

GENERAL NOTES

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
- Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
- 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.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



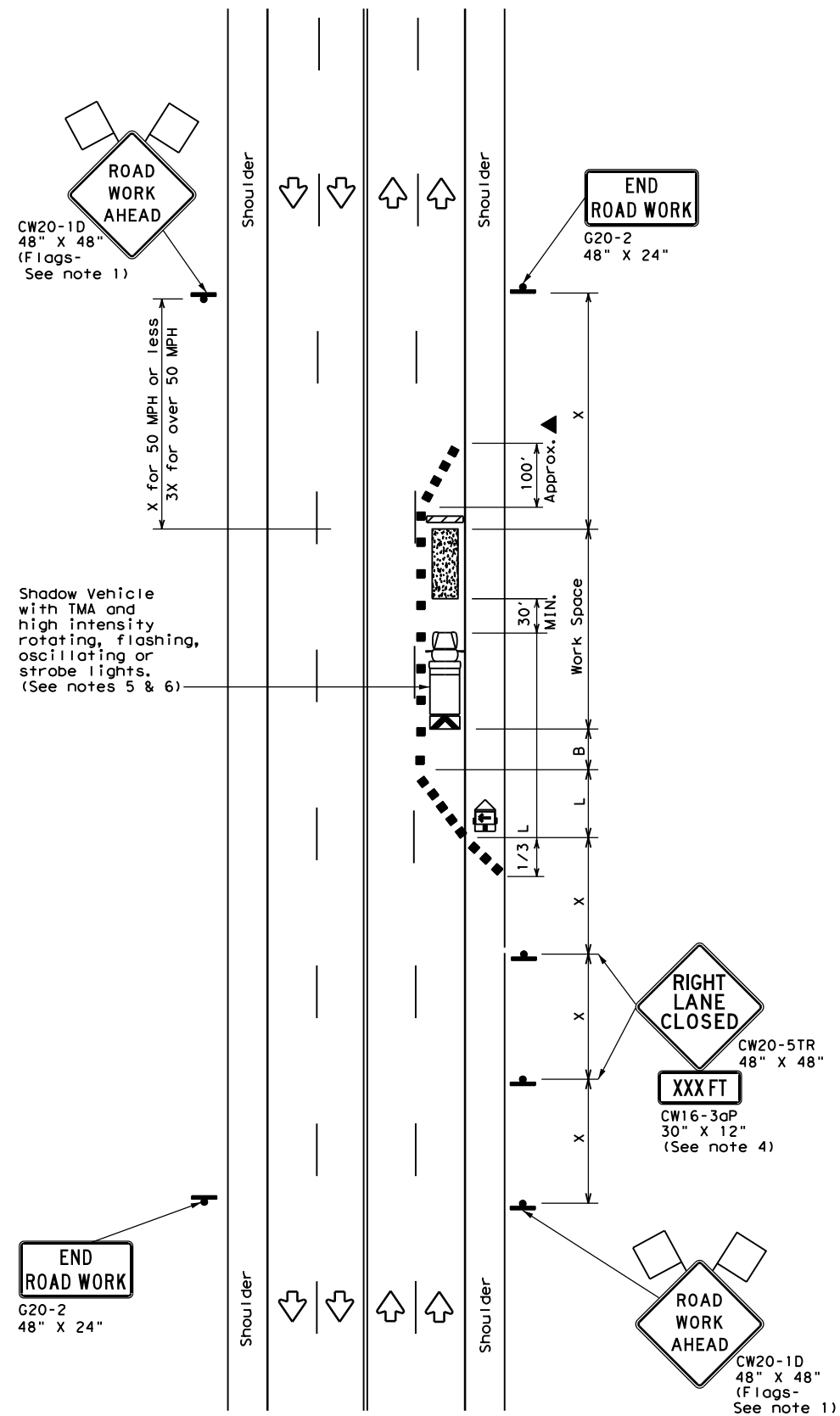
TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) - 18

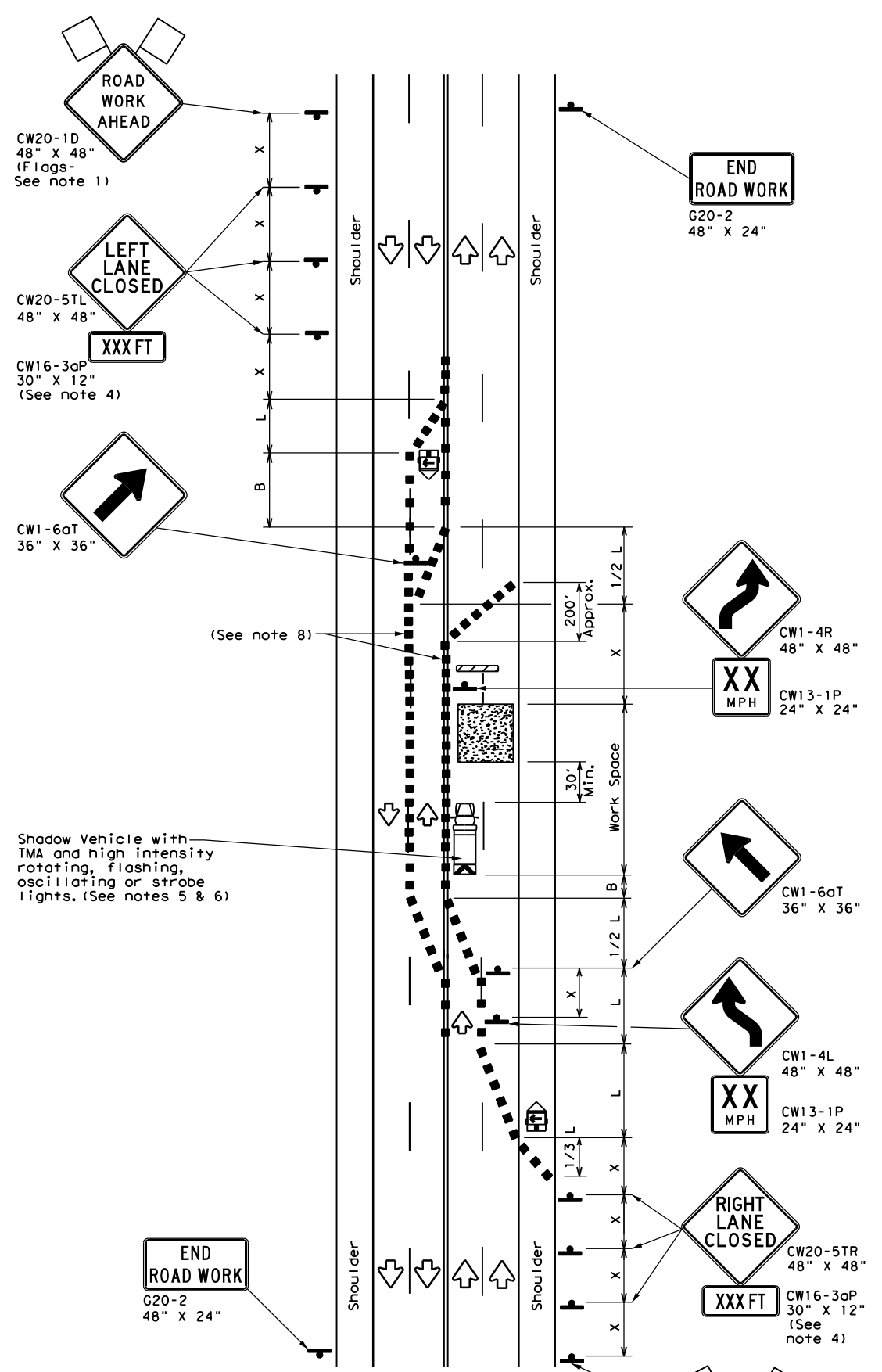
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	ELP	EL PASO	93	
1-97 2-18				

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DATE: FILE:



TCP (2-4a)
ONE LANE CLOSED



TCP (2-4b)
TWO LANES CLOSED

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
 - For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
 - 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.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-4a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-4b)**
- For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation
Traffic Operations Division Standard

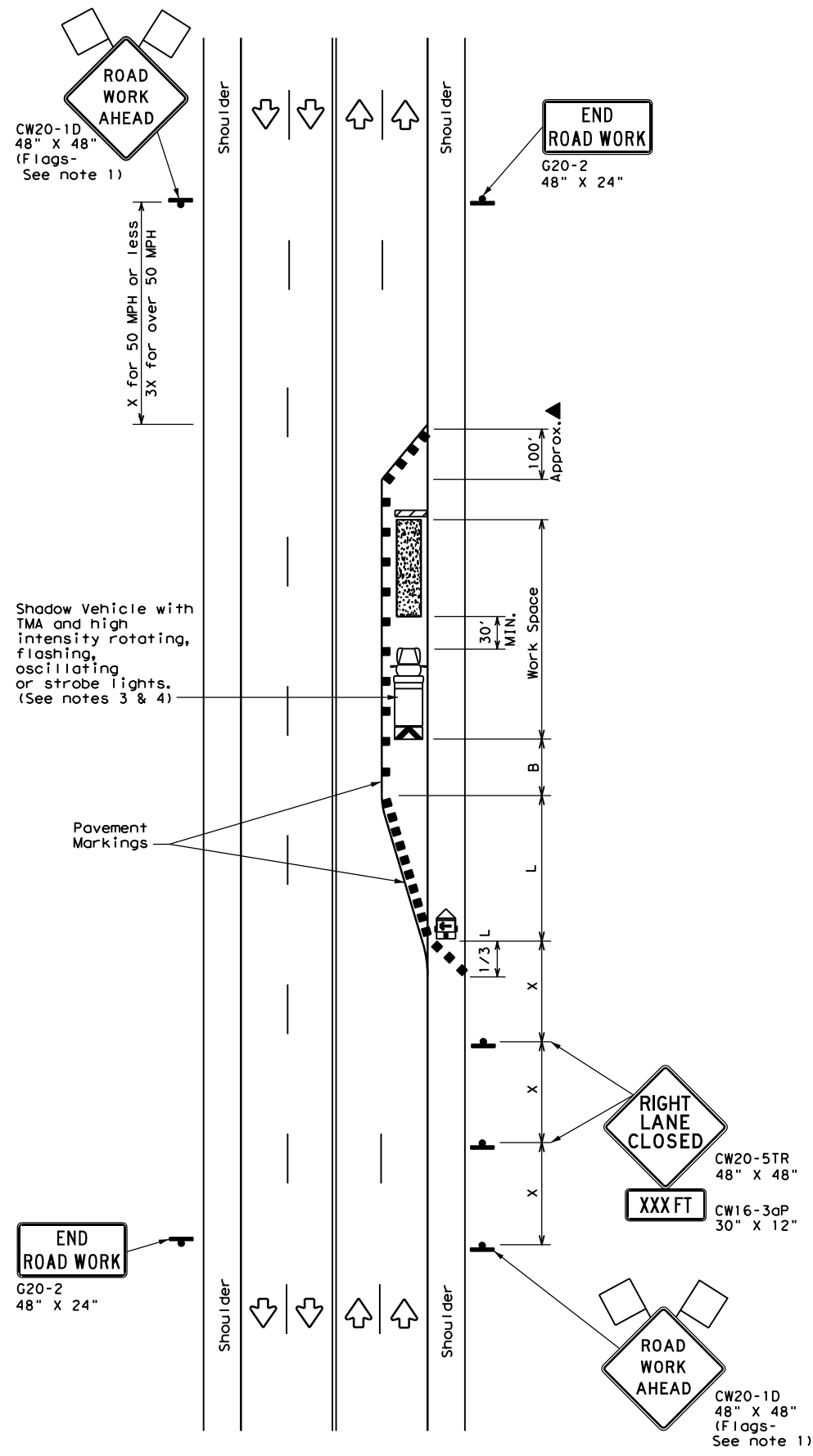
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP (2-4) - 18

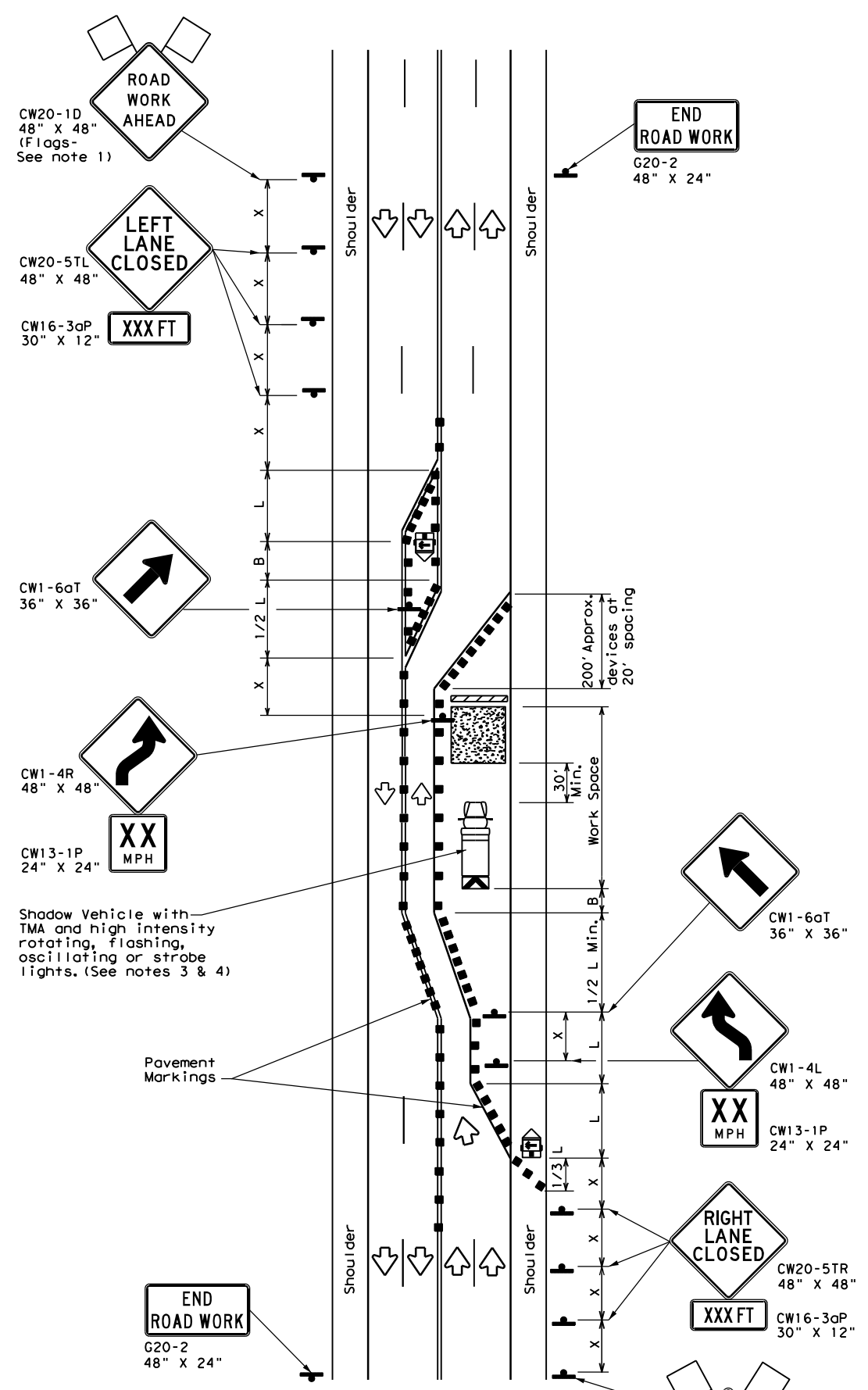
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1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	ELP	EL PASO		94

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DATE: FILE:



TCP (2-5a)
ONE LANE CLOSED



TCP (2-5b)
TWO LANES CLOSED

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

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

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

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

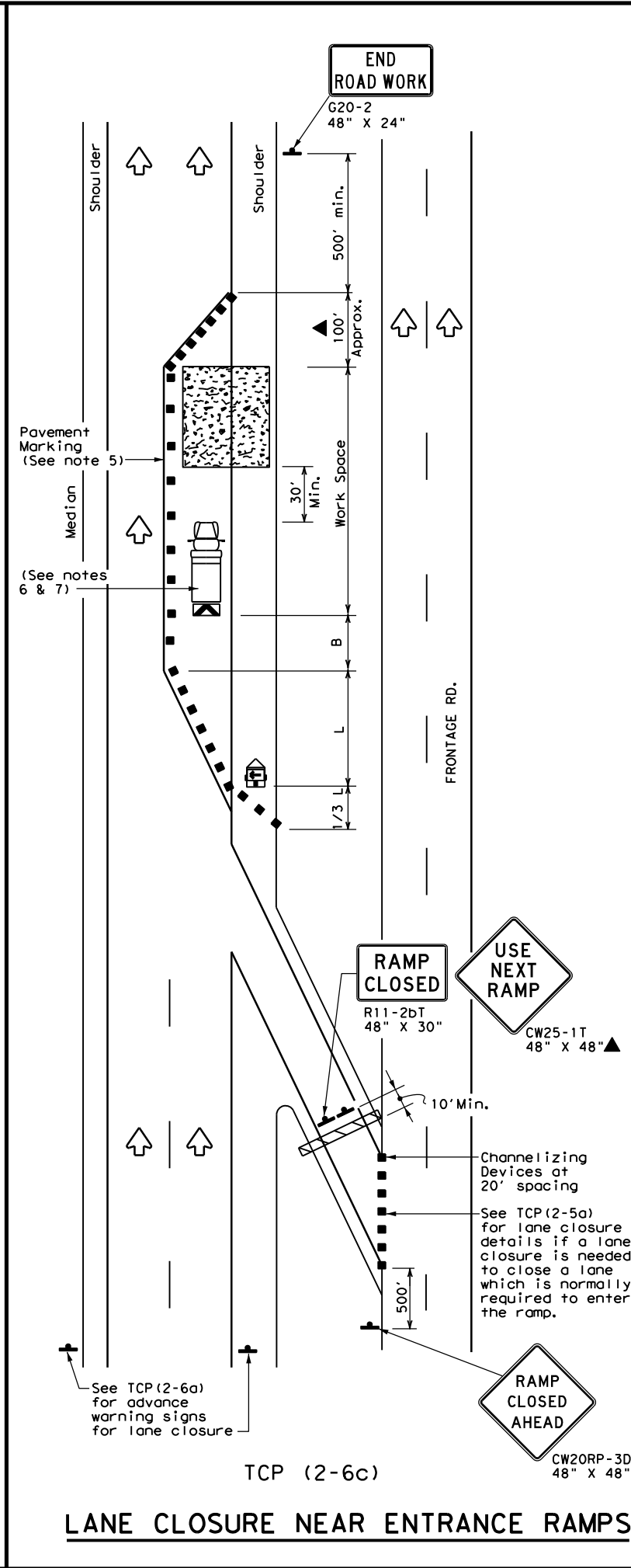
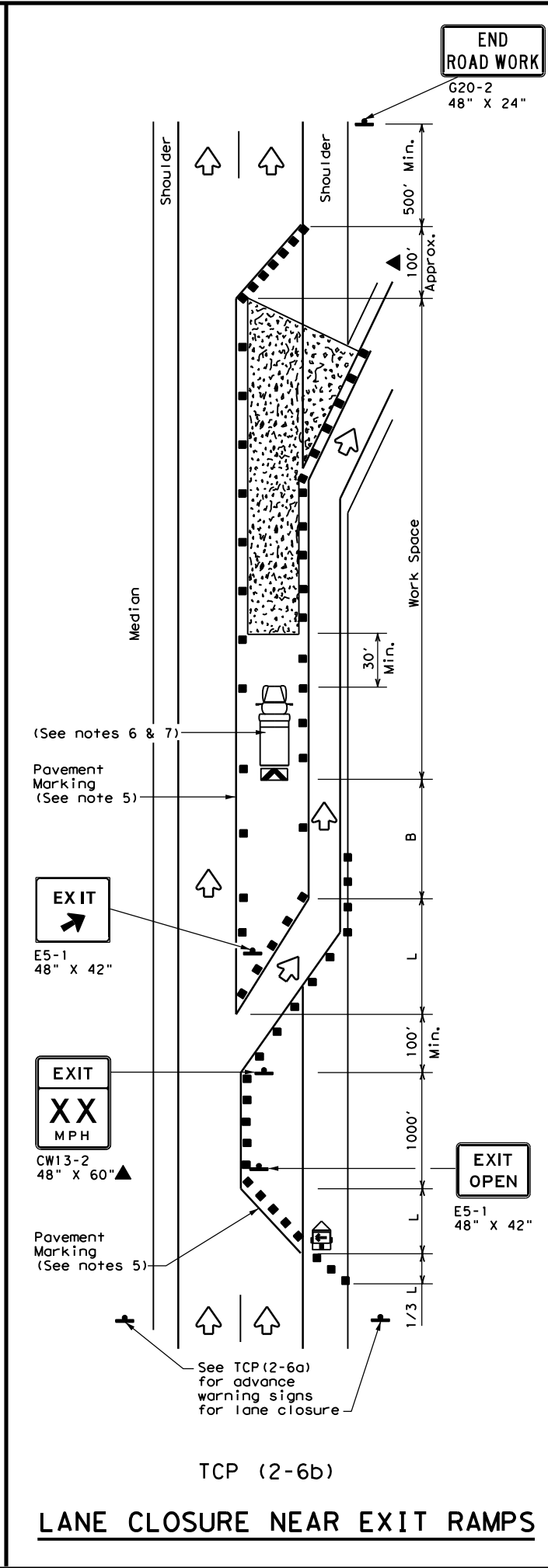
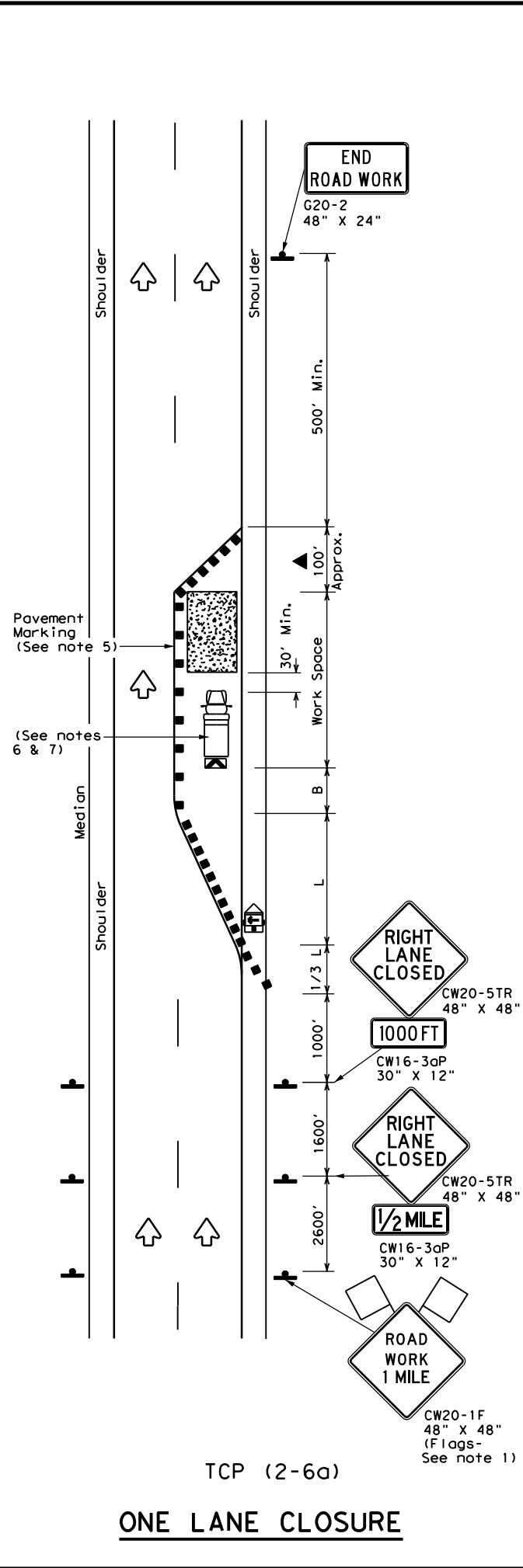
- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - A Shadow 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.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
 - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

- TCP (2-5a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)**
- Conflicting pavement markings shall be removed for long-term projects.

		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN			
LONG TERM LANE CLOSURES			
MULTILANE CONVENTIONAL RDS.			
TCP (2-5) - 18			
FILE: tcp2-5-18.dgn	DN:	CK:	DW:
© TxDOT December 1985	CONT	SECT	JOB
8-95 2-12	0001	01	063, ETC.
1-97 3-03	DIST	COUNTY	SHEET NO.
4-98 2-18	ELP	EL PASO	95

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
 - Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on every other channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
 - The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
 - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

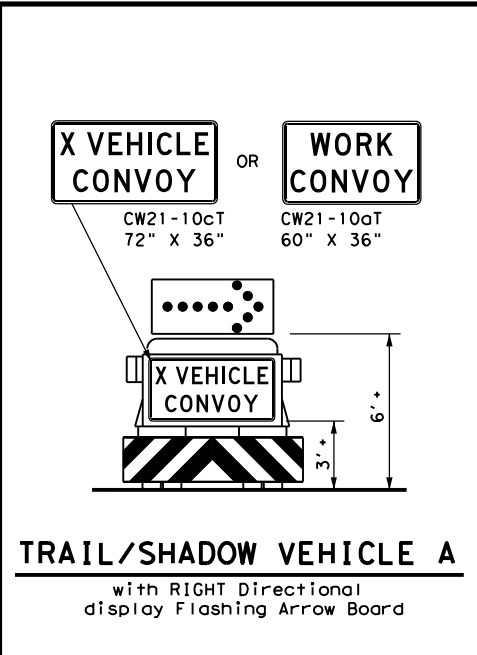
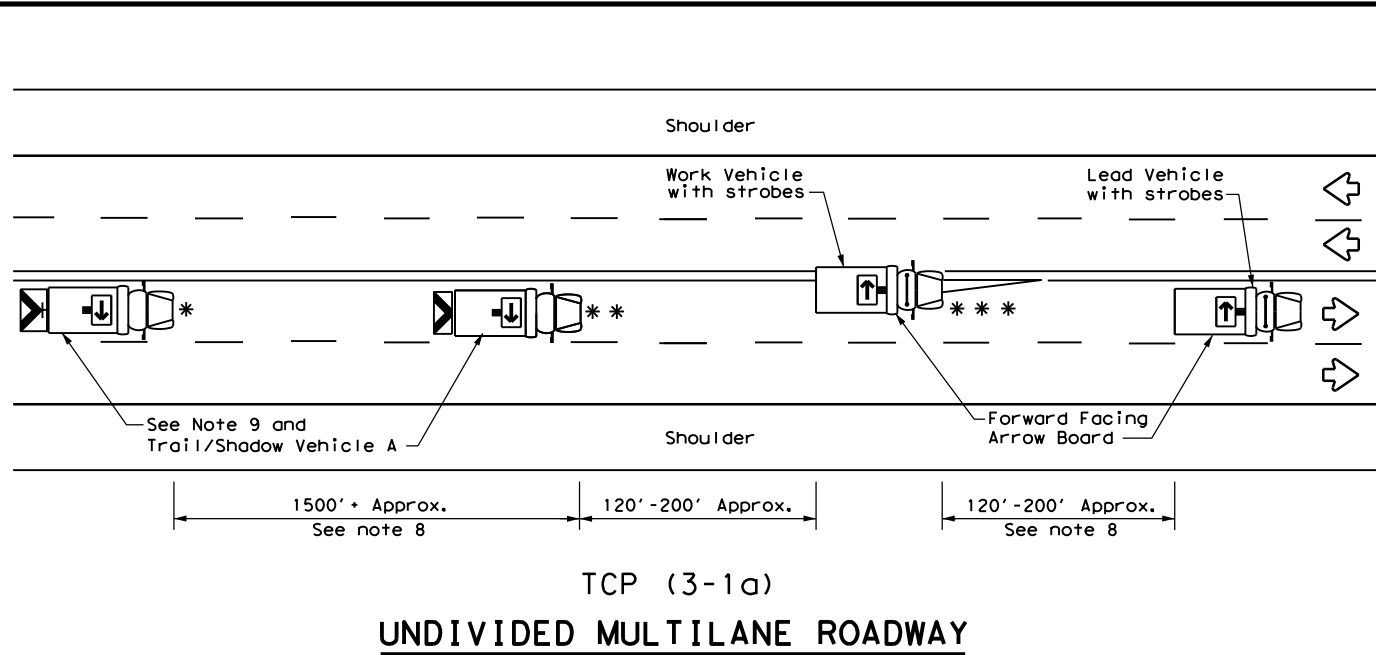
Texas Department of Transportation
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
 LANE CLOSURES ON
 DIVIDED HIGHWAYS**

TCP (2-6) - 18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0001	01	063, ETC.	SH 20
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8-95 2-12	ELP	EL PASO	96	
1-97 2-18				

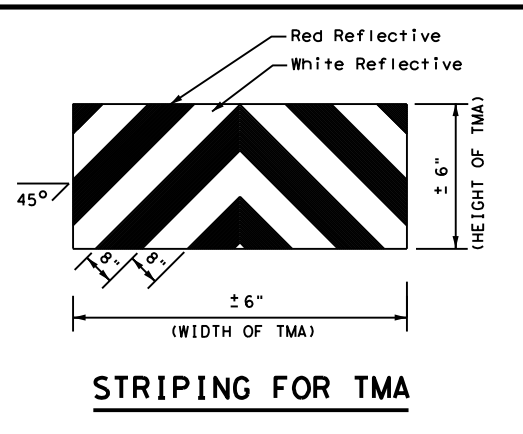
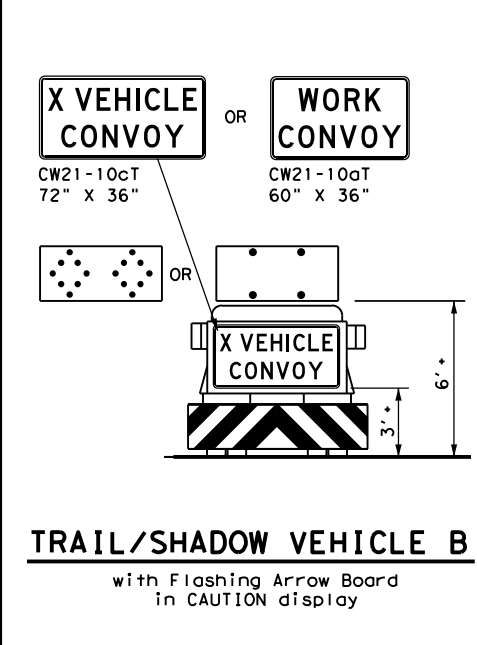
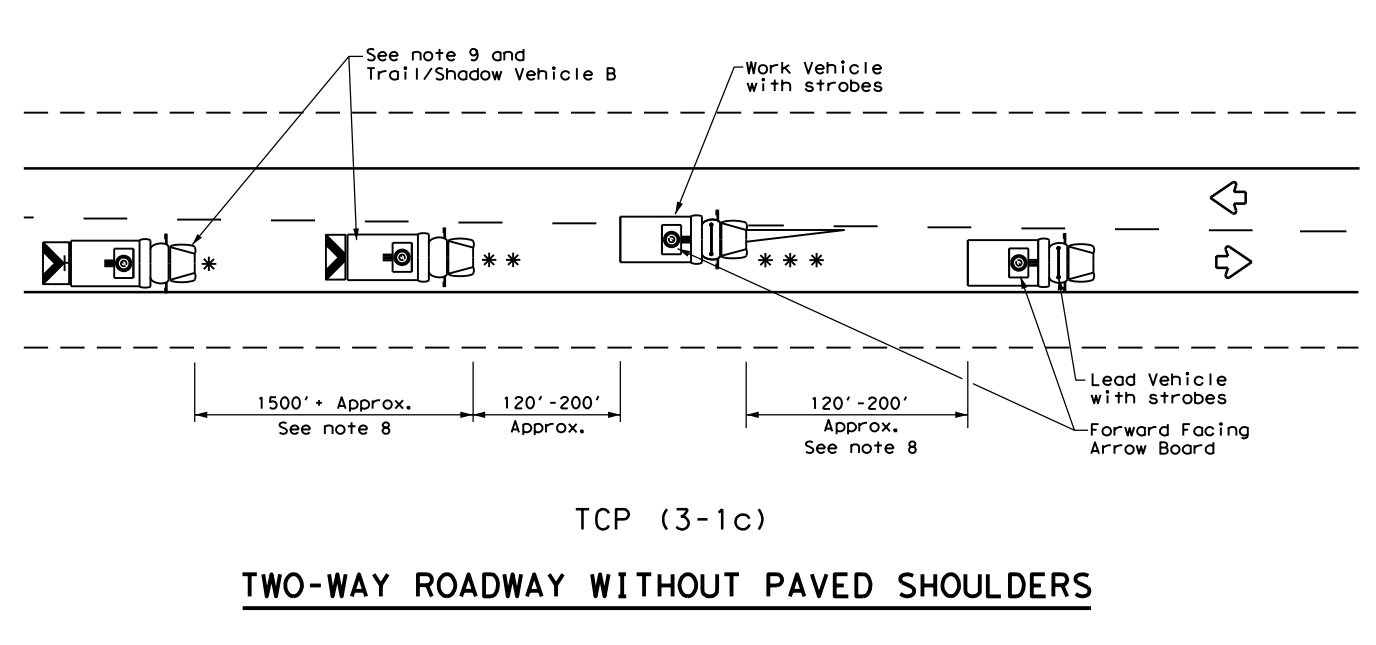
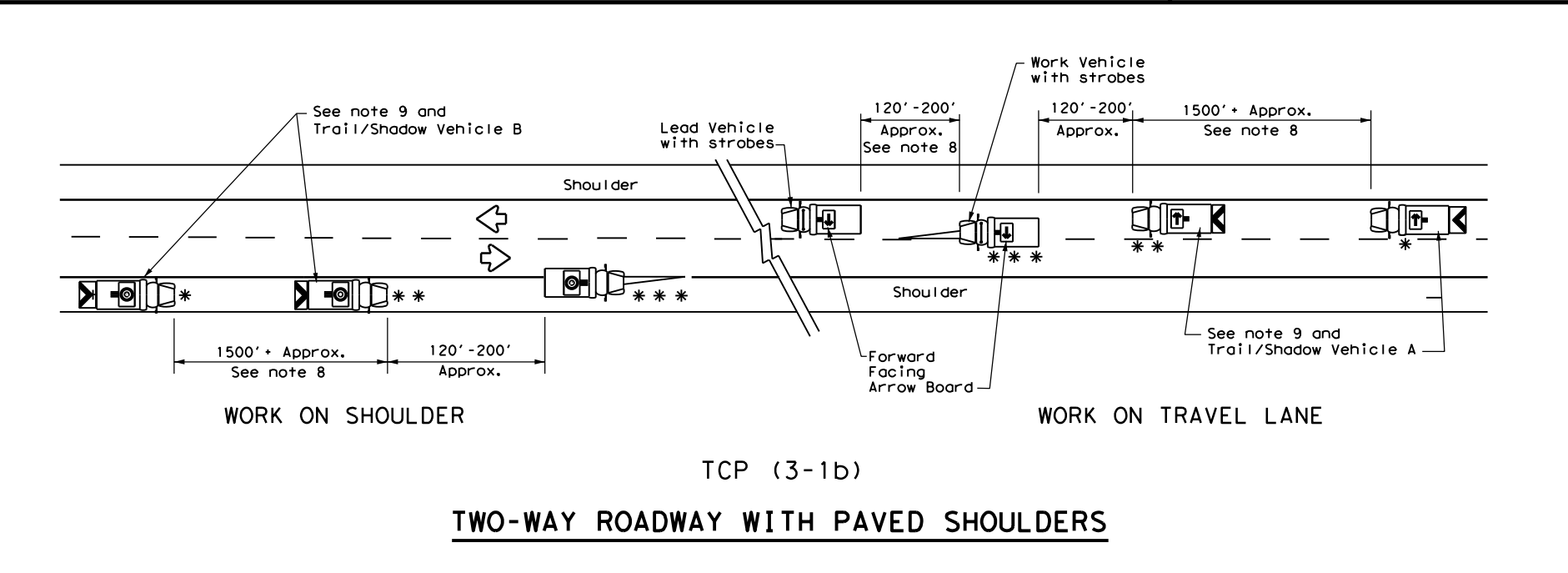
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LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- GENERAL NOTES**
- TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
 - The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
 - The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
 - Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
 - Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
 - Each vehicle shall have two-way radio communication capability.
 - When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
 - Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
 - "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY" (CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
 - On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 UNDIVIDED HIGHWAYS

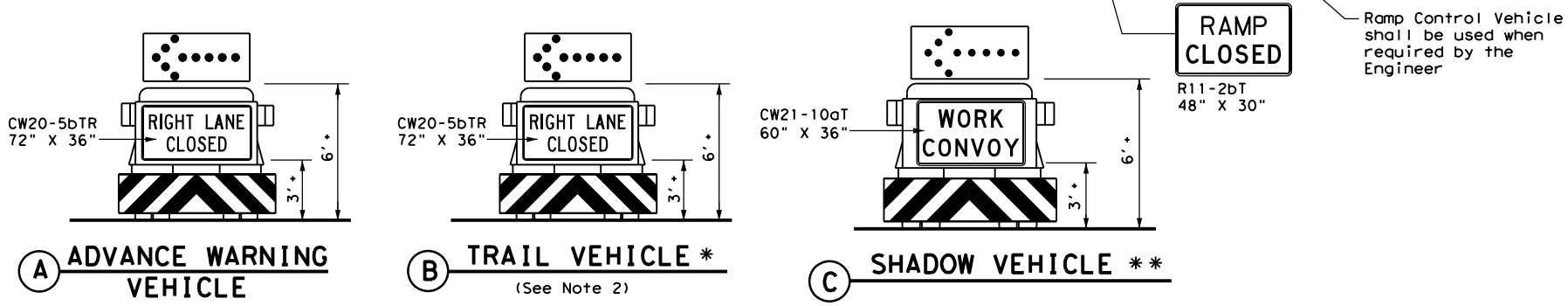
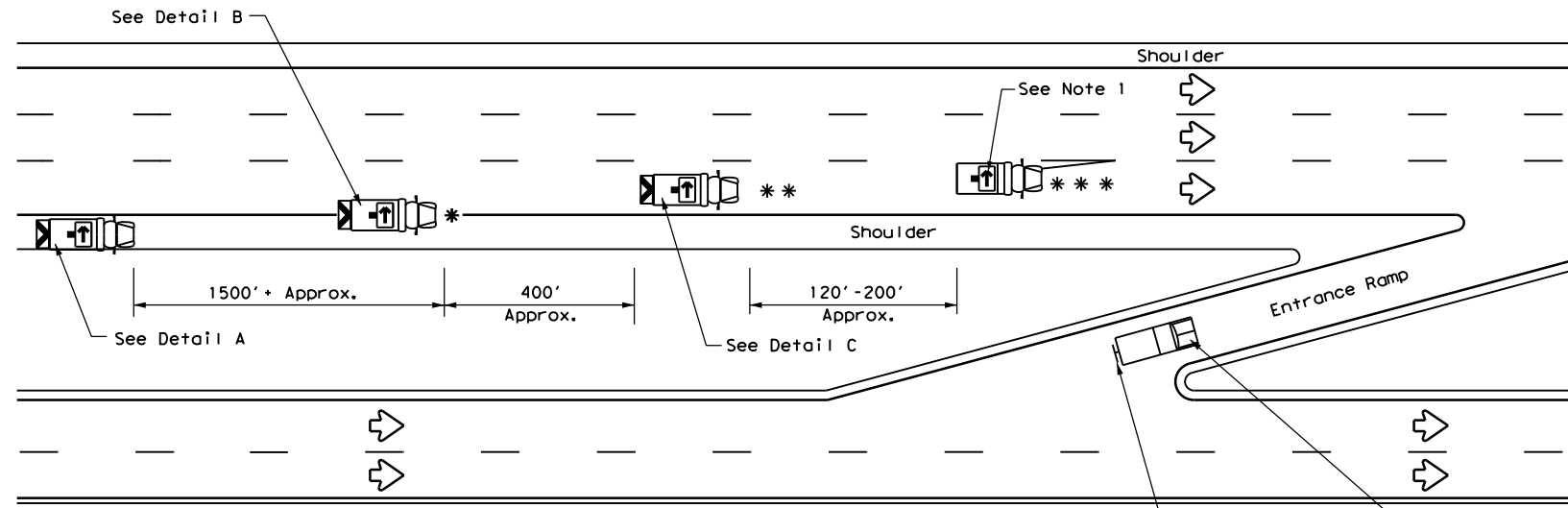
TCP (3-1) - 13

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	ELP	EL PASO	97	
1-97				

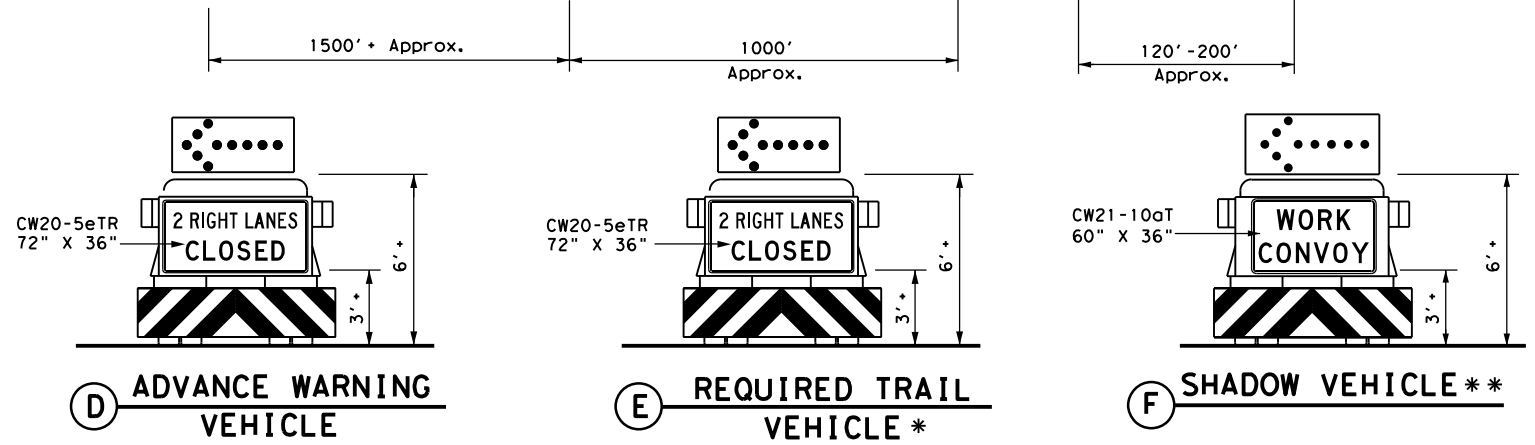
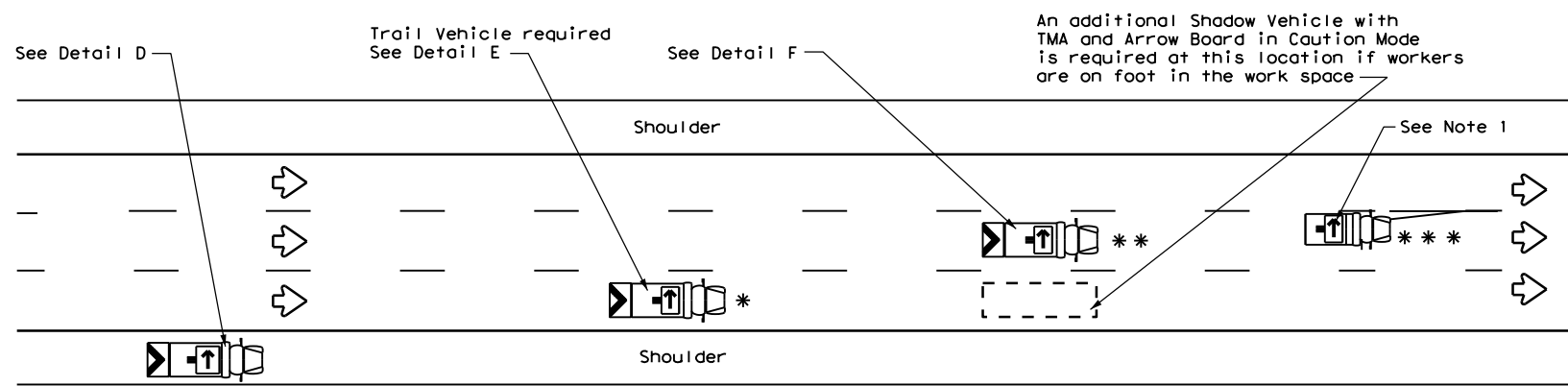
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RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



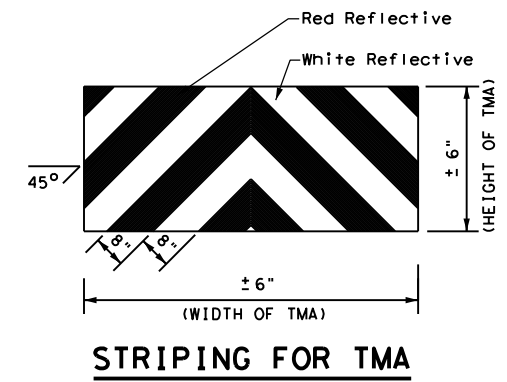
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle	→	RIGHT Directional
☐	Heavy Work Vehicle	←	LEFT Directional
▲	Truck Mounted Attenuator (TMA)	↔	Double Arrow
⬅	Traffic Flow	⊠	CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

- ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
- For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
- The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
- Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
- Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
- The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
- Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
- The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

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 Traffic Operations Division Standard

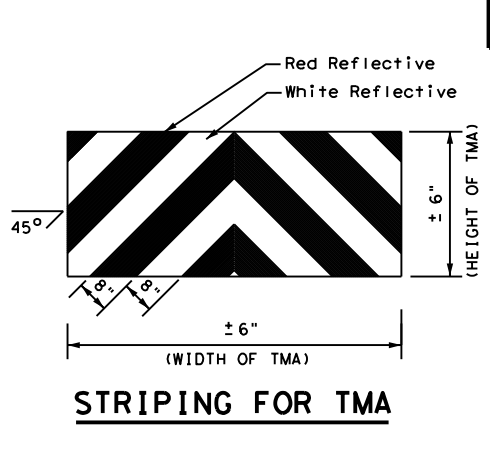
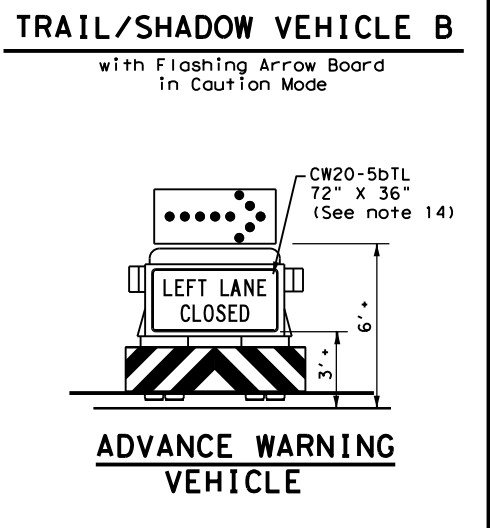
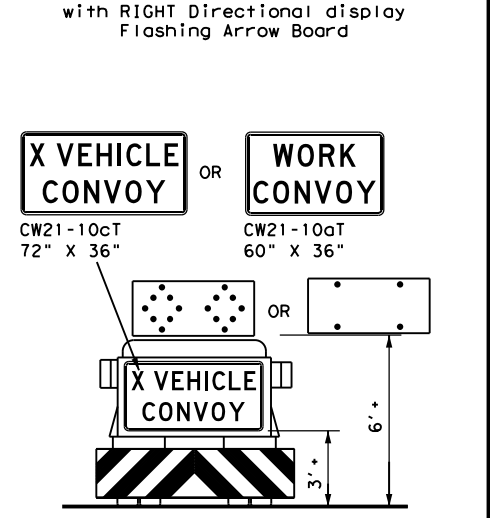
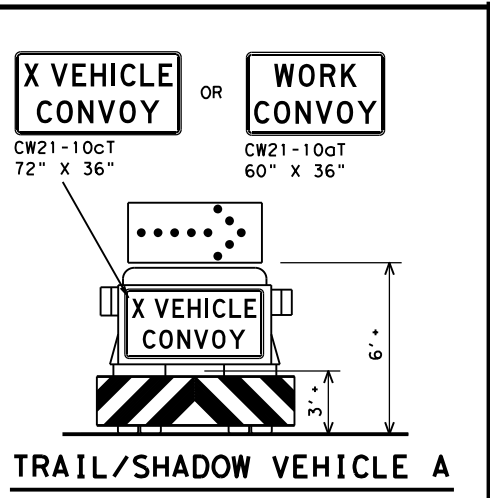
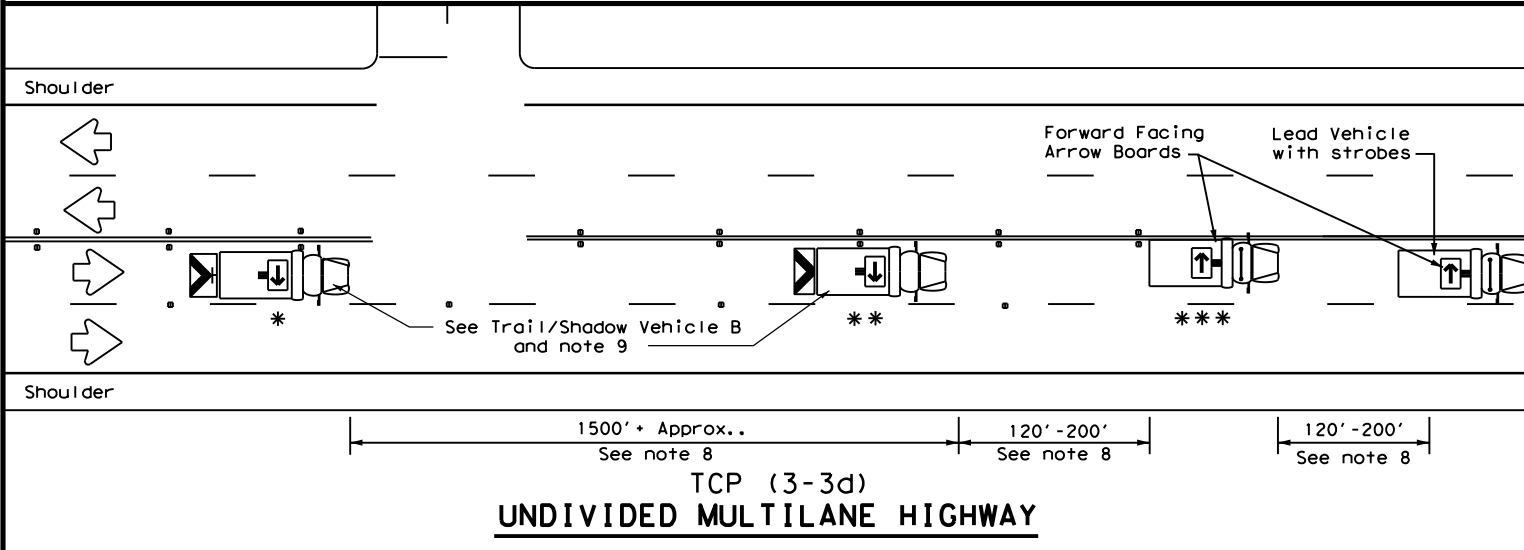
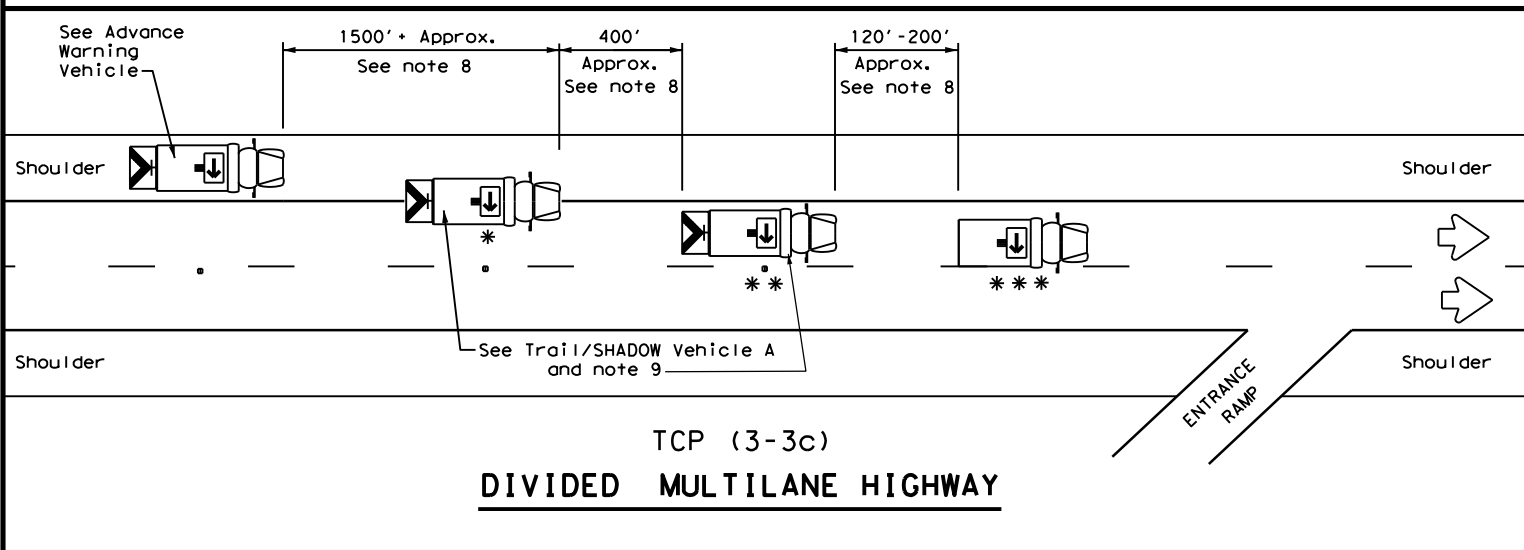
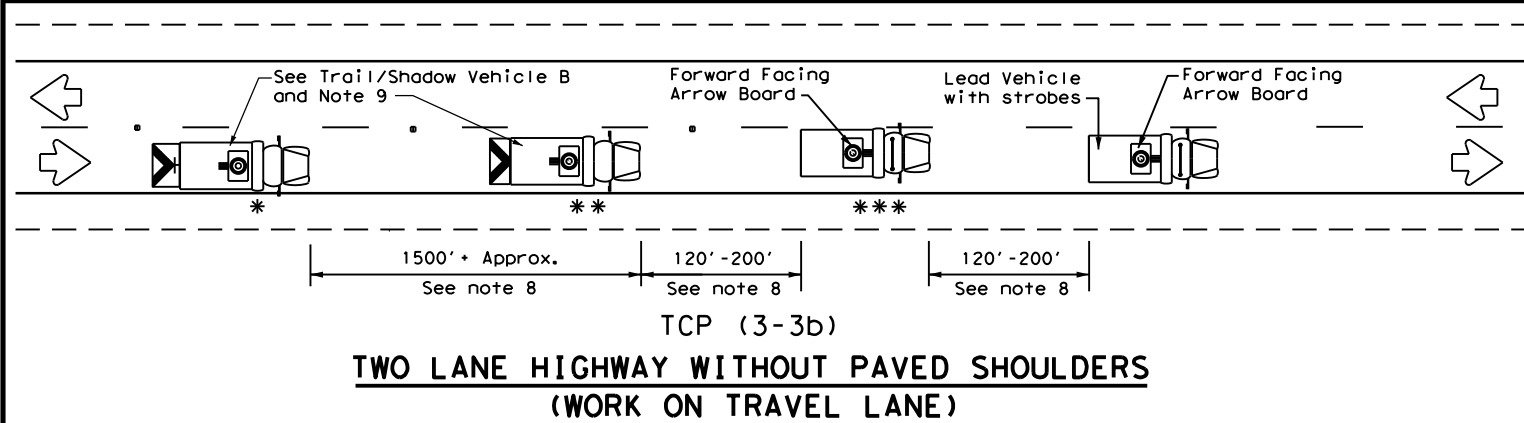
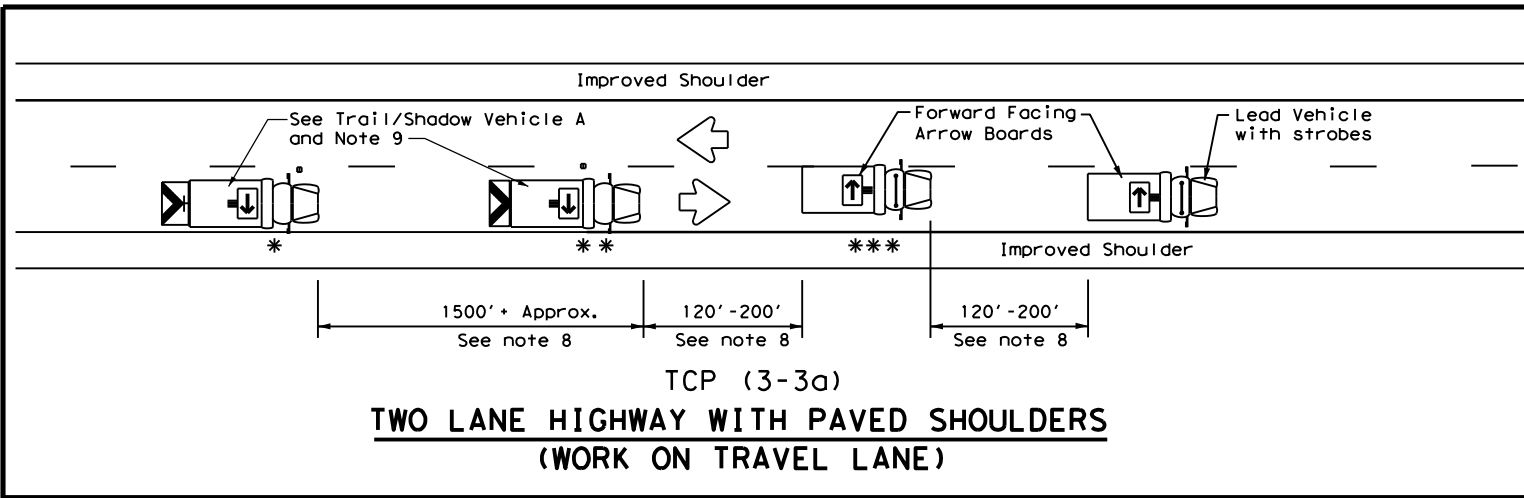
**TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 DIVIDED HIGHWAYS**

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	ELP	EL PASO	98	
1-97				

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LEGEND		
* Trail Vehicle	ARROW BOARD DISPLAY	
** Shadow Vehicle		
*** Work Vehicle		RIGHT Directional
Heavy Work Vehicle		LEFT Directional
Truck Mounted Attenuator (TMA)		Double Arrow
Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

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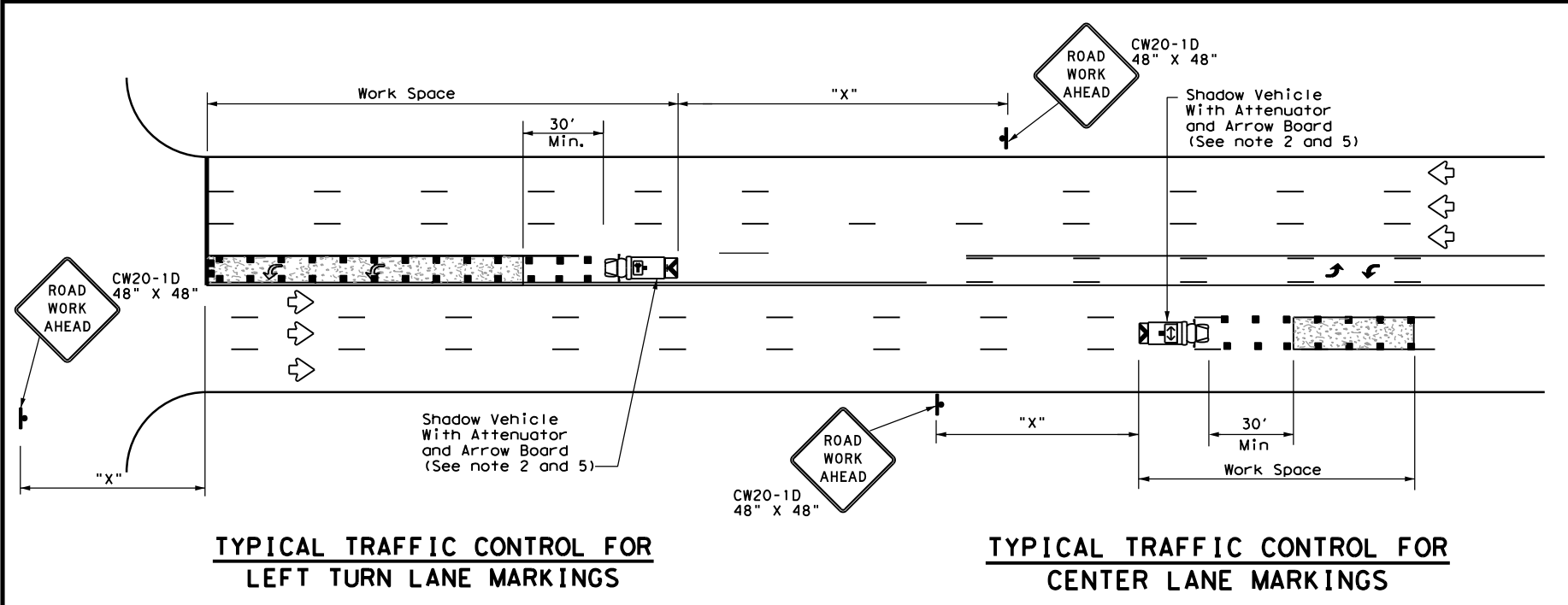
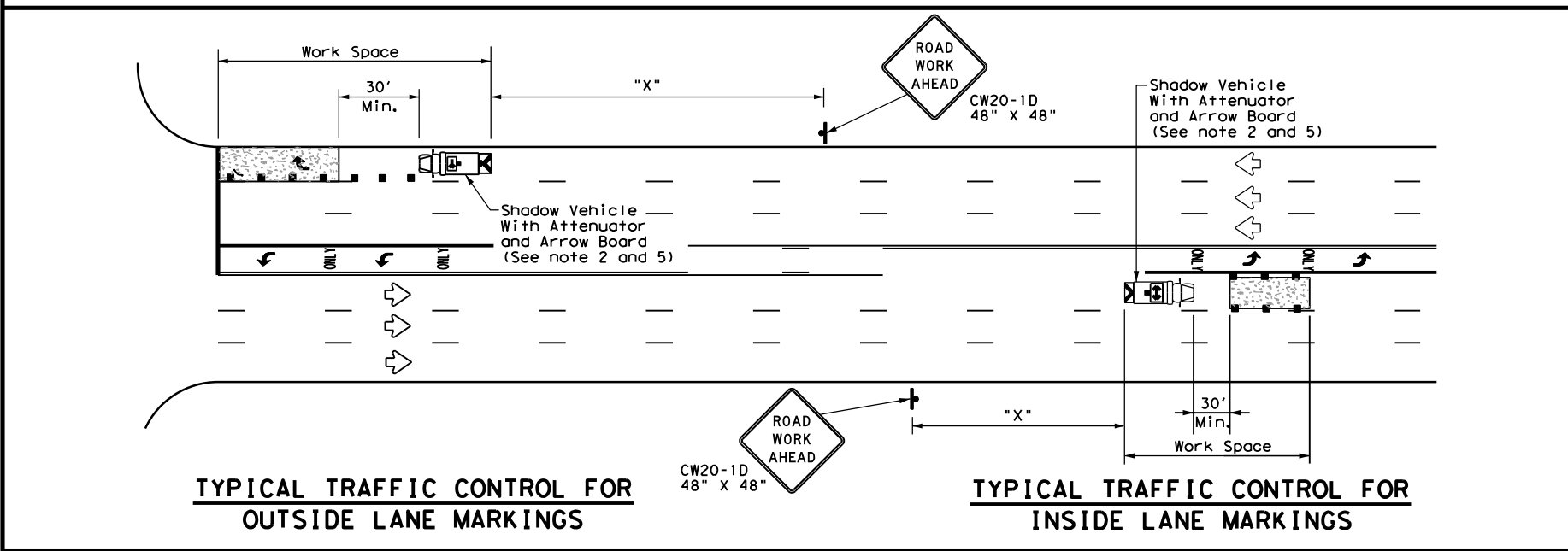
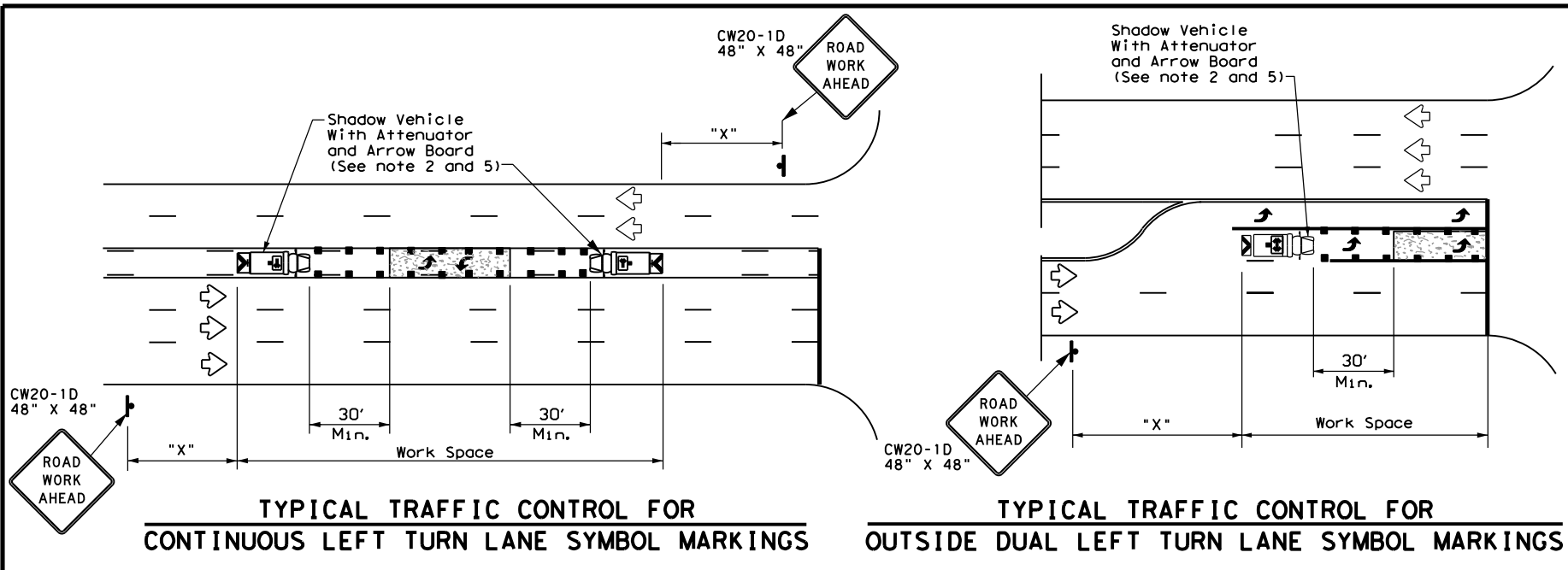
Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
RAISED PAVEMENT
MARKER INSTALLATION/
REMOVAL
TCP (3-3) - 14**

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	ELP	EL PASO	99	
1-97 7-14				

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LEGEND		
*	Trail Vehicle	ARROW BOARD DISPLAY
**	Shadow Vehicle	
***	Work Vehicle	RIGHT Directional
	Heavy Work Vehicle	LEFT Directional
	Truck Mounted Attenuator (TMA)	Double Arrow
	Traffic Flow	Channelizing Devices

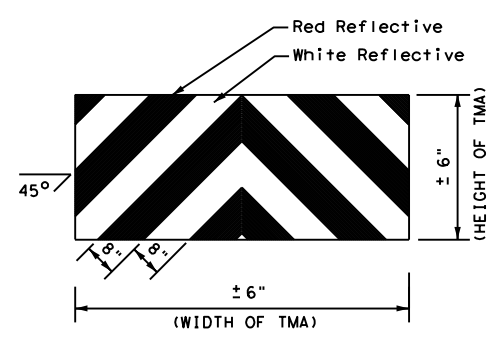
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	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. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation
 Traffic Operations Division Standard

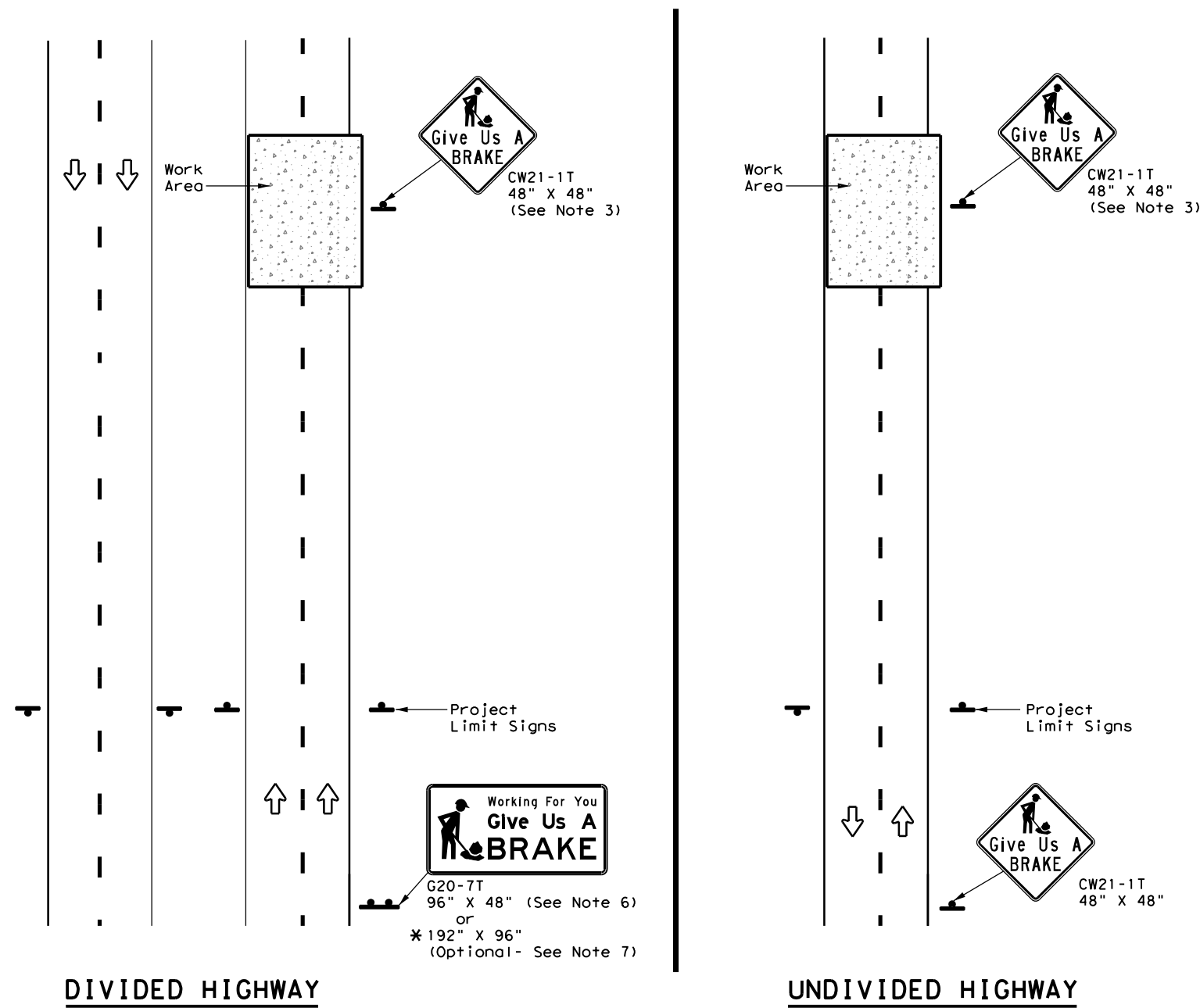
**TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS FOR
 ISOLATED WORK AREAS
 UNDIVIDED HIGHWAYS**

TCP (3-4) - 13

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	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	100	

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SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

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

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL		DRILLED SHAFT
						Size	(LF)	
							① ②	24" DIA. (LF)
Orange	G20-7T		96" X 48"	Type B _{FL} or C _{FL}	32	▲	▲ ▲	▲
Orange	G20-7T		192" X 96"	Type B _{FL} or C _{FL}	128	W8x18	16 17	12

▲ See Note 6 Below

LEGEND

	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

- See BC and SMD sheets for additional sign support details.
- Sign locations shall be approved by the Engineer.
- For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
- Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
- Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
- The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
- The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
 Item 636 - Aluminum Signs
 Item 647 - Large Roadside Sign Supports and Assemblies.
 Item 416 - Drilled Shaft Foundations
- 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.



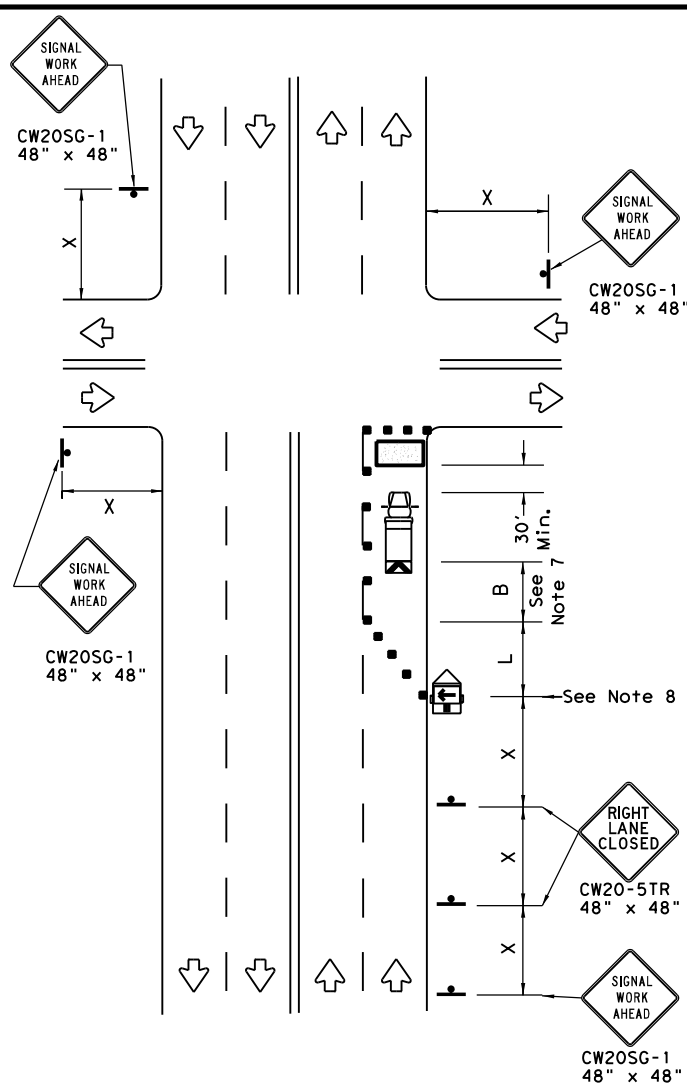
**WORK ZONE
"GIVE US A BRAKE"
SIGNS**

WZ (BRK) - 13

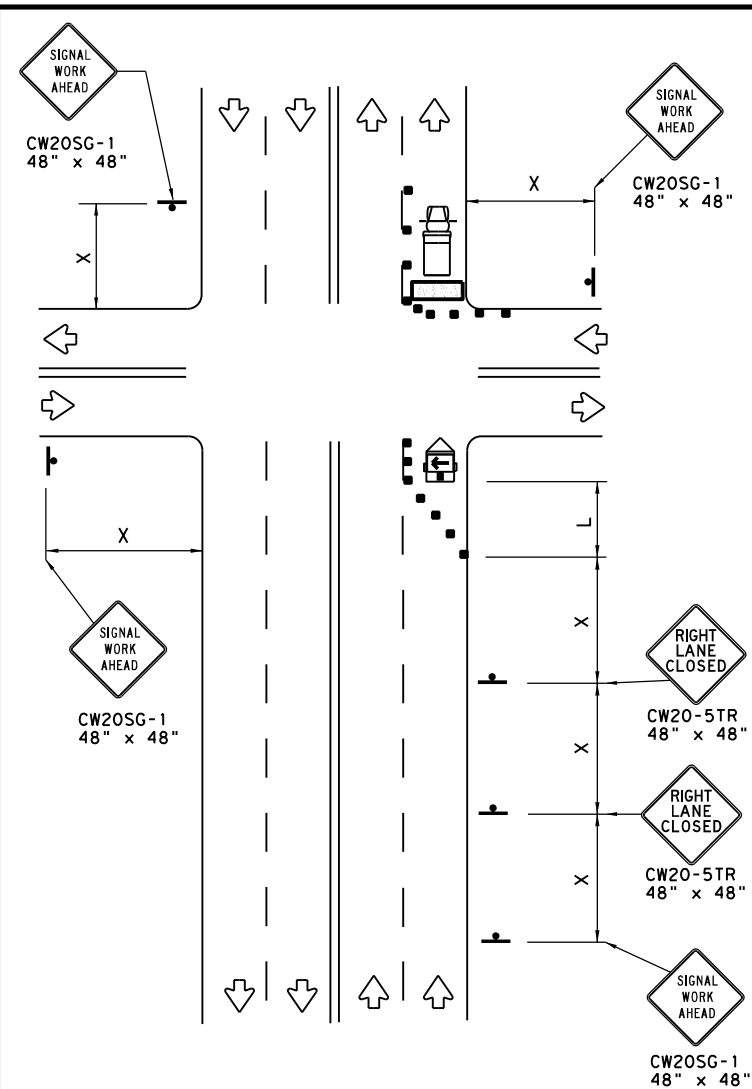
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6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	ELP	EL PASO		101

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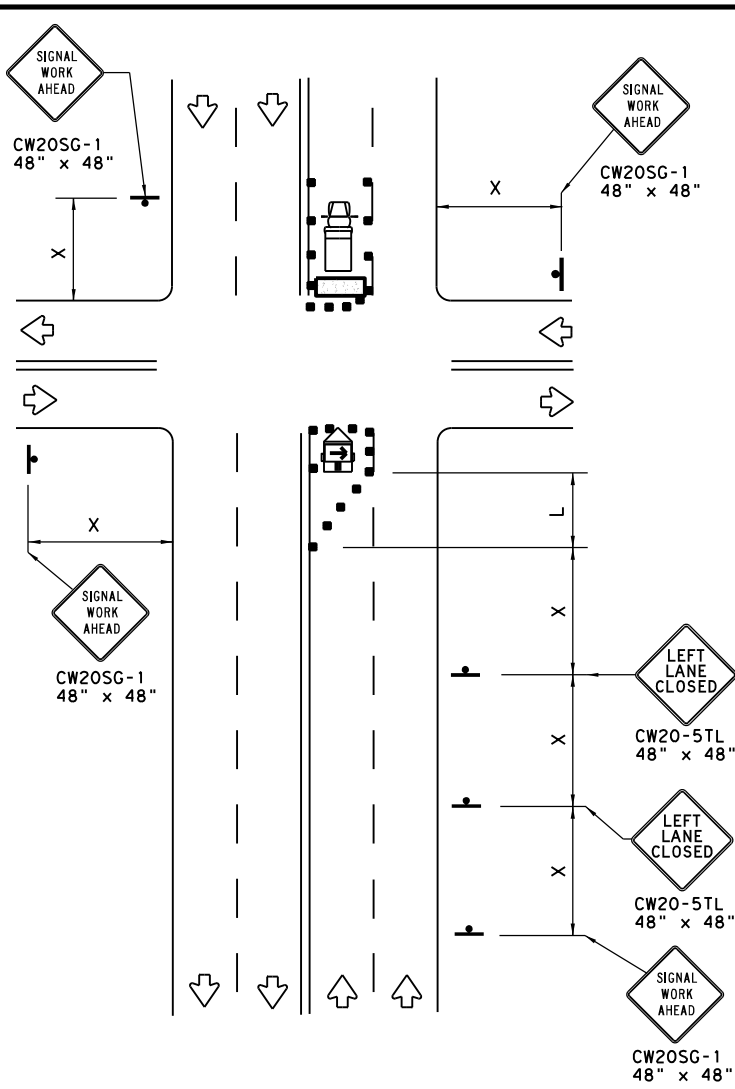
DATE: FILE:



NEAR SIDE LANE CLOSURE
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE
SHORT DURATION OR SHORT TERM STATIONARY



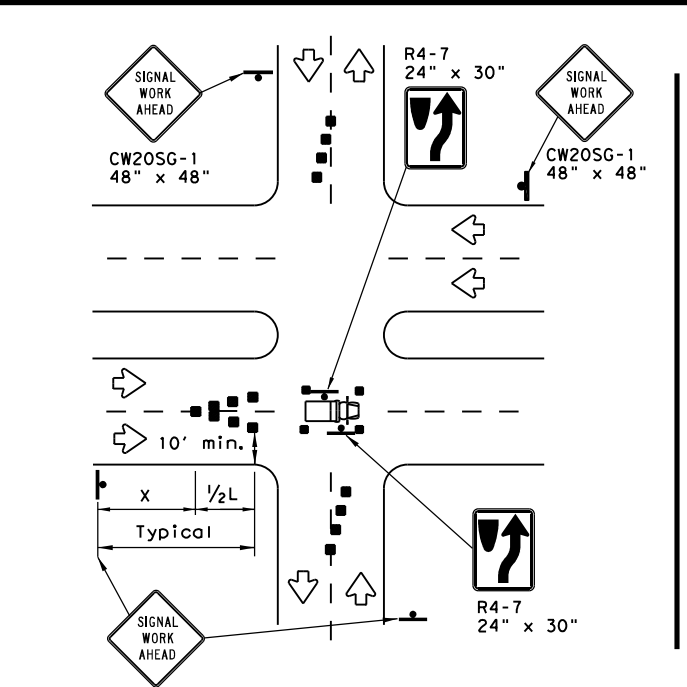
FAR SIDE LEFT LANE CLOSURE
SHORT DURATION OR SHORT TERM STATIONARY

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

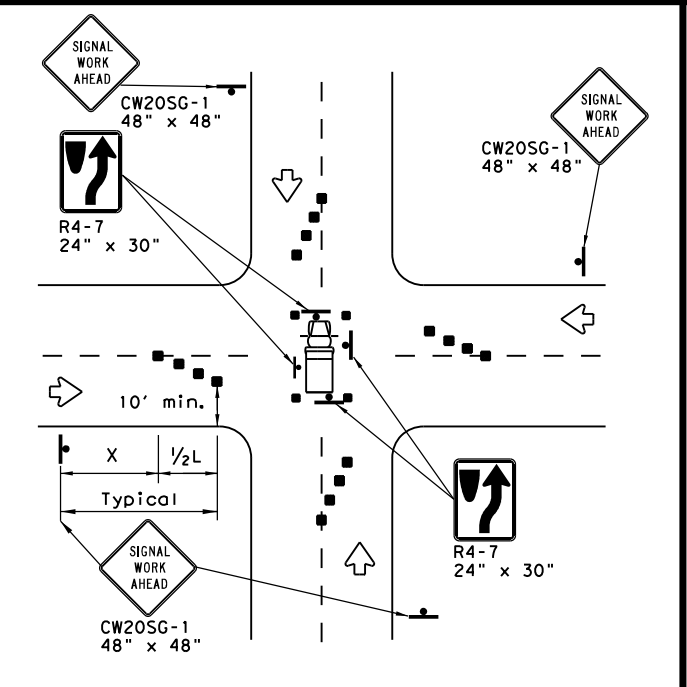
Posted Speed *	Formula	Minimum Desirable Taper Lengths * X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'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

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.



OPERATIONS IN THE INTERSECTION
SHORT DURATION



GENERAL NOTES

- The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
- Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
- Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
- Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
- High level warning devices (flag trees) may be used at corners of the vehicle.
- When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
- For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
- The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
- Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

SHEET 1 OF 1

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbtts-13.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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2-98 10-99 7-13	DIST	COUNTY	SHEET NO.	
4-98 3-03	DIST	COUNTY	103	

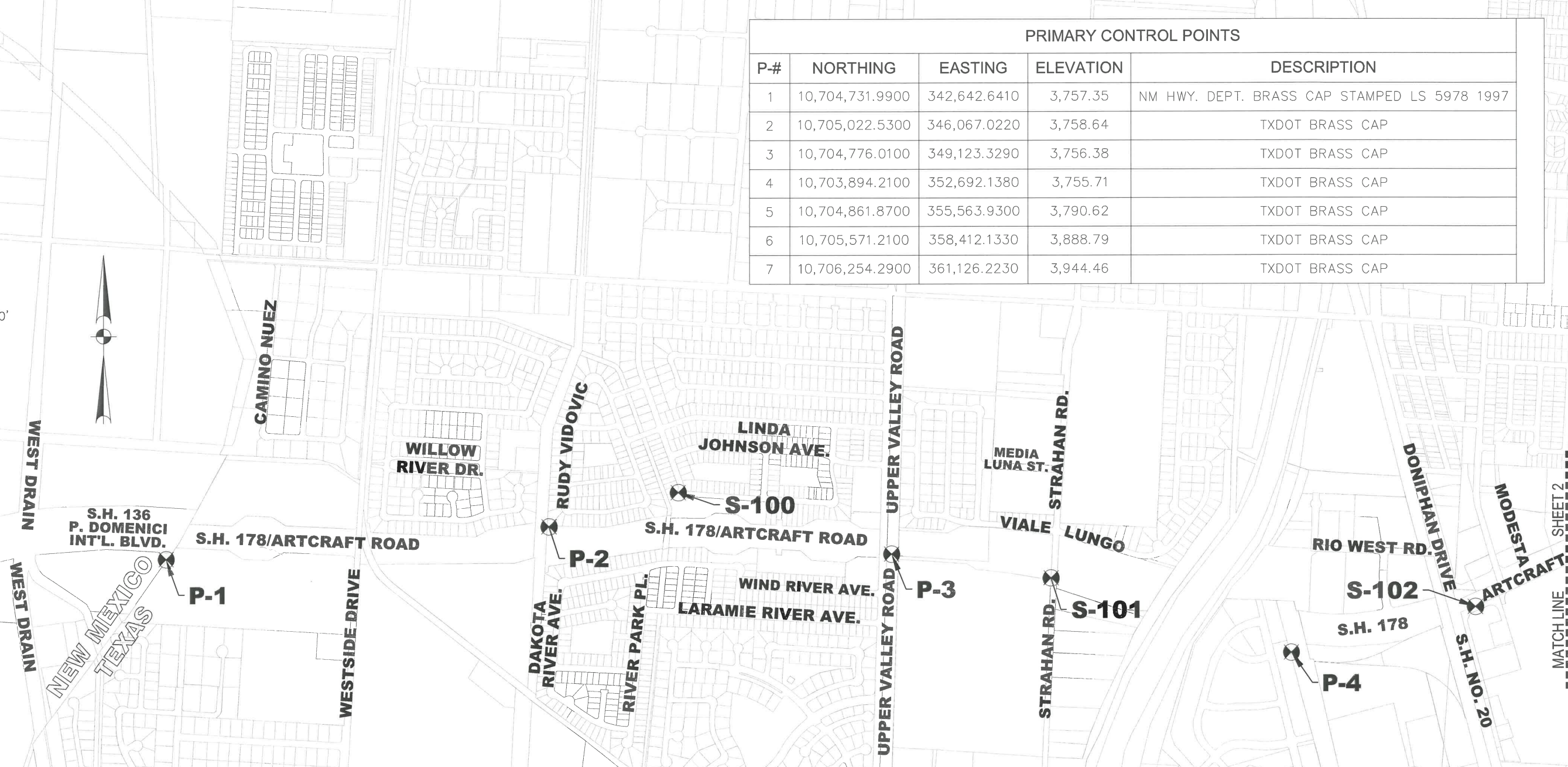
PRIMARY CONTROL POINTS

P-#	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	10,704,731.9900	342,642.6410	3,757.35	NM HWY. DEPT. BRASS CAP STAMPED LS 5978 1997
2	10,705,022.5300	346,067.0220	3,758.64	TXDOT BRASS CAP
3	10,704,776.0100	349,123.3290	3,756.38	TXDOT BRASS CAP
4	10,703,894.2100	352,692.1380	3,755.71	TXDOT BRASS CAP
5	10,704,861.8700	355,563.9300	3,790.62	TXDOT BRASS CAP
6	10,705,571.2100	358,412.1330	3,888.79	TXDOT BRASS CAP
7	10,706,254.2900	361,126.2230	3,944.46	TXDOT BRASS CAP

0' 500' 1,000' 2,000'
SCALE: 1"=200'



CRAWFORD RD.

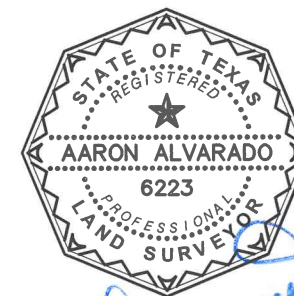


SUPPLEMENTAL NOTES

1. ALL COORDINATES AND BEARINGS ARE REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE NO. 4203, NAD 83 (2011 ADJUSTMENT, EPOCH 2010) DETERMINED THROUGH G.P.S. OBSERVATION AT NATIONAL GEODETIC SURVEY (N.G.S.) MONUMENT "EL PASO" (P.I.D. CE0732), A SURVEY DISK IN CONCRETE LOCATED INSIDE THE TXDOT MAINTENANCE YARD AT 6496 DONIPHAN ROAD.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (N.A.V.D. 88) DETERMINED THROUGH G.P.S. OBSERVATION AT A NATIONAL GEODETIC SURVEY (N.G.S.) MONUMENT "EL PASO" (P.I.D. CE0732), A SURVEY DISK IN CONCRETE LOCATED INSIDE THE TXDOT MAINTENANCE YARD AT 6496 DONIPHAN ROAD. ELEVATION = 3764.44' (N.A.V.D.88.).
3. THE UNIT OF MEASURE IS THE U.S. SURVEY FOOT.
4. ALL COORDINATES ARE SURFACE VALUES AND CAN BE CONVERTED TO GRID VALUES BY DIVIDING BY THE PROJECT SURFACE ADJUSTMENT FACTOR OF 1.00023100.

SECONDARY CONTROL POINTS

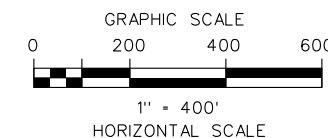
S - #	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	10,705,324.7150	347,214.7810	3,756.44	SET 5/8" REBAR W/ ALUMINUM CAP
101	10,704,561.1440	350,548.8710	3,757.40	SET 5/8" REBAR W/ ALUMINUM CAP
102	10,704,302.2350	354,341.7370	3,761.85	SET 5/8" REBAR W/ ALUMINUM CAP
103	10,705,387.6210	357,015.6960	3,862.88	SET 5/8" REBAR W/ ALUMINUM CAP



Aaron Alvarado
06/15/2020

REV. NO.	DATE	DESCRIPTION	BY
LANDTECH 2525 North Loop West, Suite 300, Houston, Texas 77008 T: 713-861-7068 F: 713-861-4131 TBPELS Registration No. 10019100			
BROCK & BUSTILLOS INC. CONSULTING CIVIL ENGINEERS 417 EXECUTIVE CENTER LAND SURVEYORS EL PASO, TEXAS 79902 TBPE REG. NO. F-737 PH (915) 542-4900			
Texas Department of Transportation 2020			
S.H. 178 (ARTCRAFT ROAD) SURVEY CONTROL SHEET			
SHEET 1 OF 3			
DSN:	FED. NO. DIV. NO.	STATE	PROJECT NO.
CK:		TEXAS	3592-01-007
DRN-UM	STATE DISTRICT	COUNTY	CONTROL NO. SECTION NO. JOB NO.
CK-AA	ELP	EL PASO	3592 01 007
			104

Jan 16, 2020 - 2:51pm
S:\Projects\07145 - LANDTECH INC\07145-008-020\CONTROL SHEET\07145-008-ARTCRAFT SURVEY CONTROL LAYOUT-SHEET 1.dwg



NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.000231.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOX VRS/GPS NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM AVERAGING AND HOLDING A GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS PERFORMED IN NOVEMBER 2020.



Henry C. Casal, Jr.
HENRY C. CASAL JR., R.P.L.S. #4905

01/04/21

NO.	REVISIONS	BY	DATE

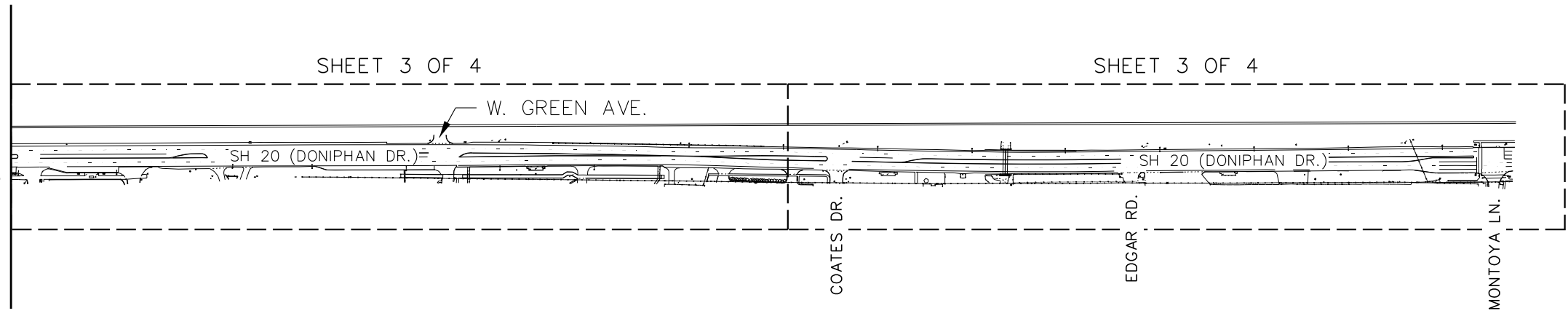
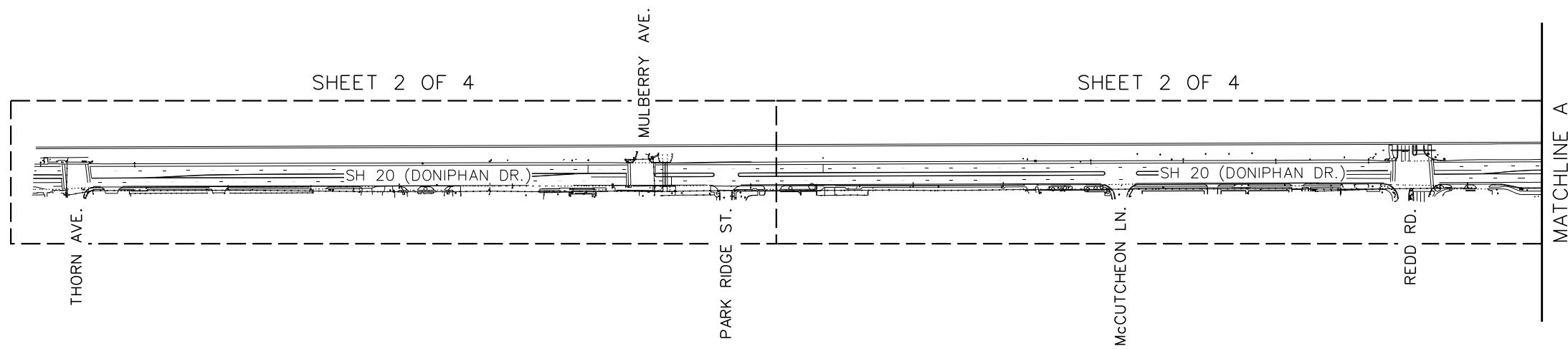
AG3 4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
AG3 Group, LLC TBPE #F-21809
ENGINEERING - SURVEY - CONSTRUCTION TBPLS #10194622

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420



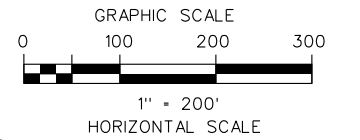
SH 20
OVERALL CONTROL

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	24 (EL PASO)	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	066	105



MATCHLINE A

MATCHLINE A



NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.000231.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOX VRS/GPS NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM AVERAGING AND HOLDING A GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS PERFORMED IN NOVEMBER 2020.



Henry C. Casal, Jr.
HENRY C. CASAL JR., R.P.L.S. #4905

01/04/21

NO.	REVISIONS	BY	DATE

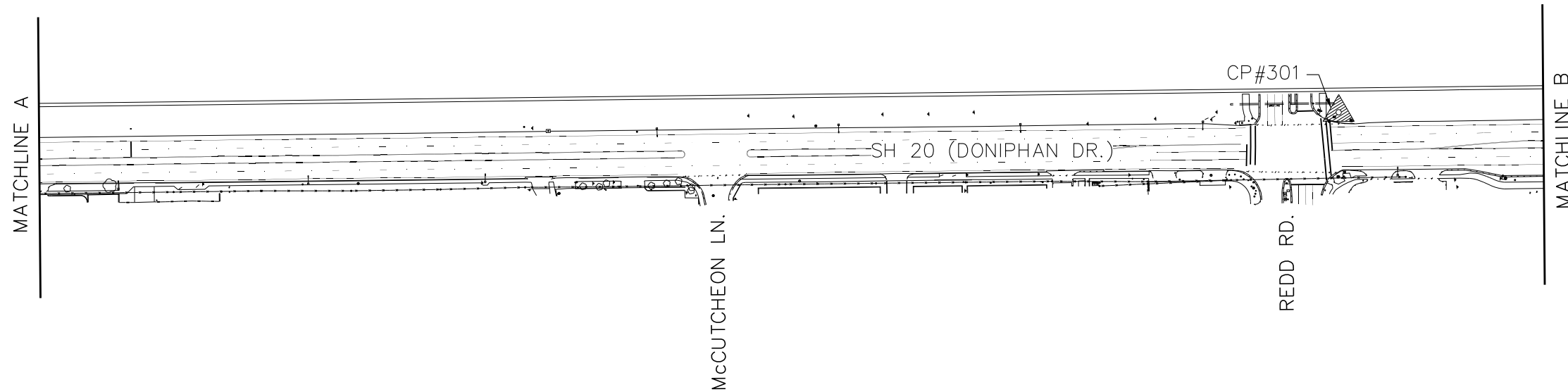
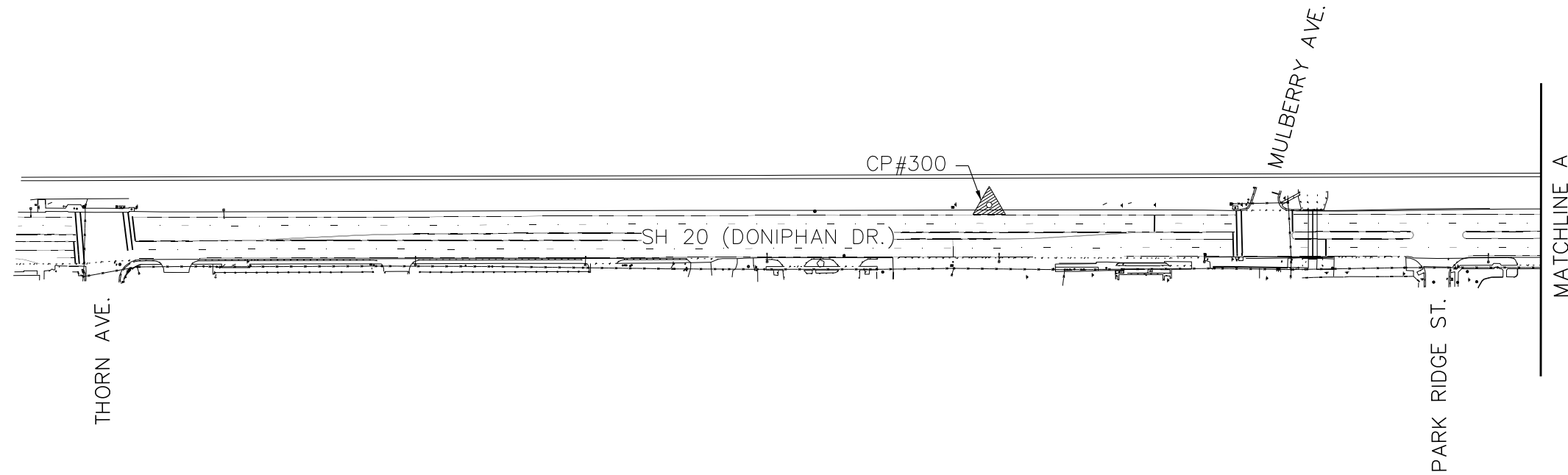
AG3 4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
AG3 Group, LLC TBPE #F-21809
ENGINEERING - SURVEY - CONSTRUCTION TBPLS #10194622

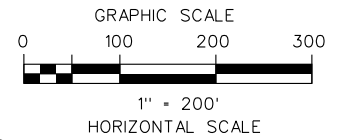
HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420



SH 20
CONTROL INDEX

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	24 (EL PASO)	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	066	106





NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.000231.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOX VRS/GPS NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM AVERAGING AND HOLDING A GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS PERFORMED IN NOVEMBER 2020.



Henry C. Casal, Jr.
HENRY C. CASAL JR., R.P.L.S. #4905

01/04/21

NO.	REVISIONS	BY	DATE

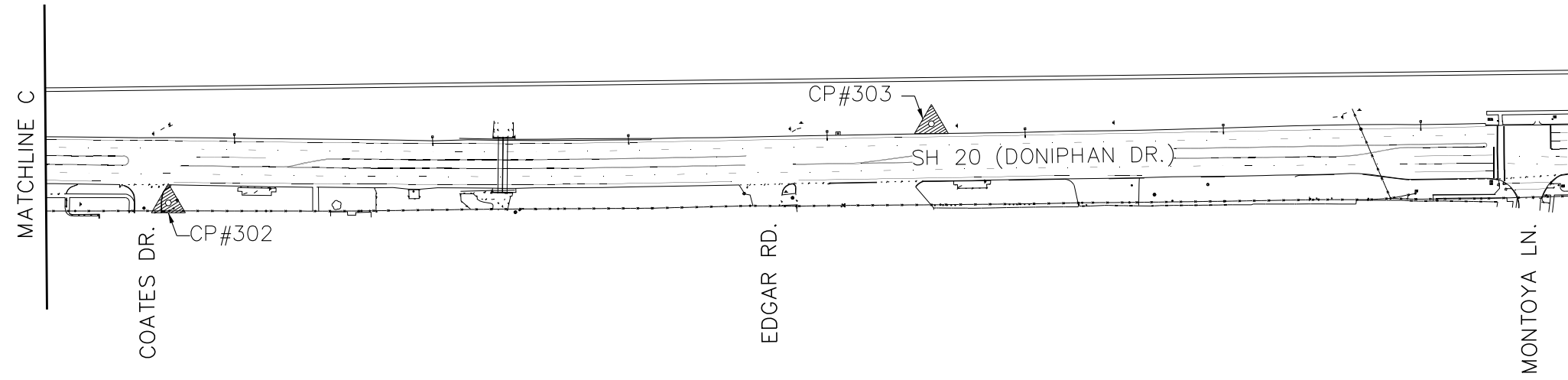
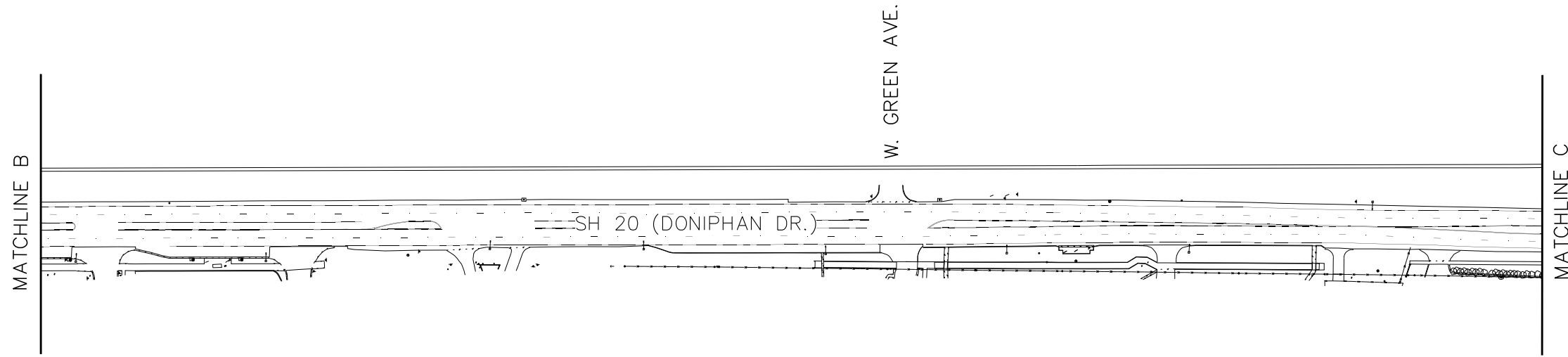
AG3 4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622
AG3 Group, LLC
ENGINEERING - SURVEY - CONSTRUCTION

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

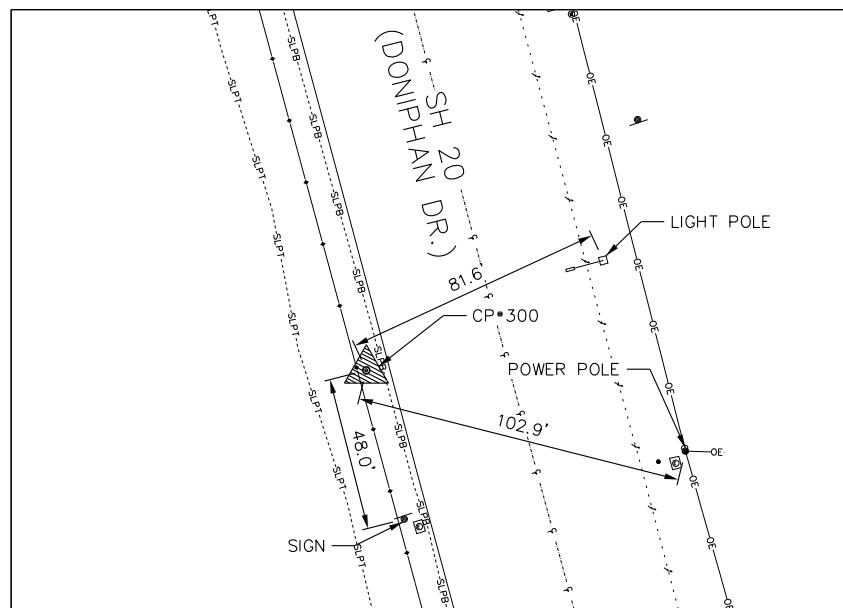


SH 20
CONTROL INDEX

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	24 (EL PASO)	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	066	107

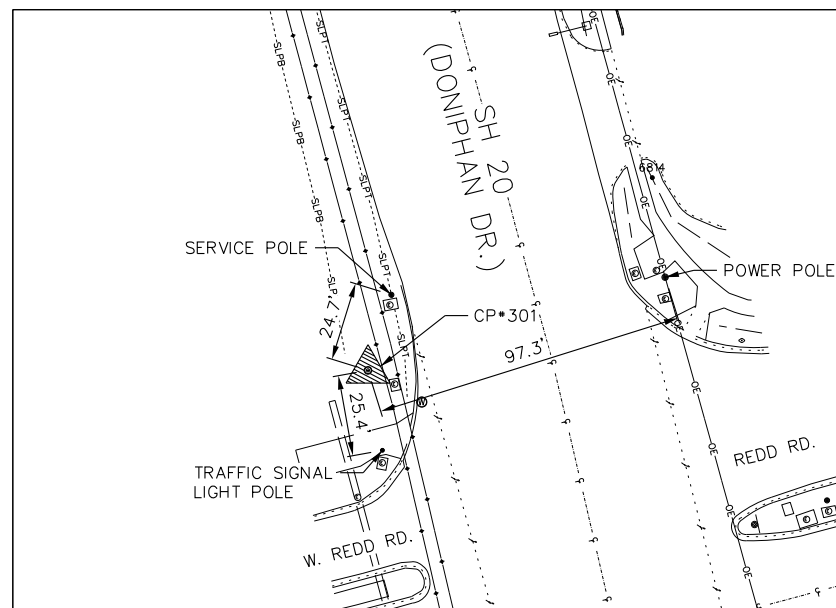


CP#300
 Y = 10,694,819.82
 X = 356,630.67
 Z = 3,754.69



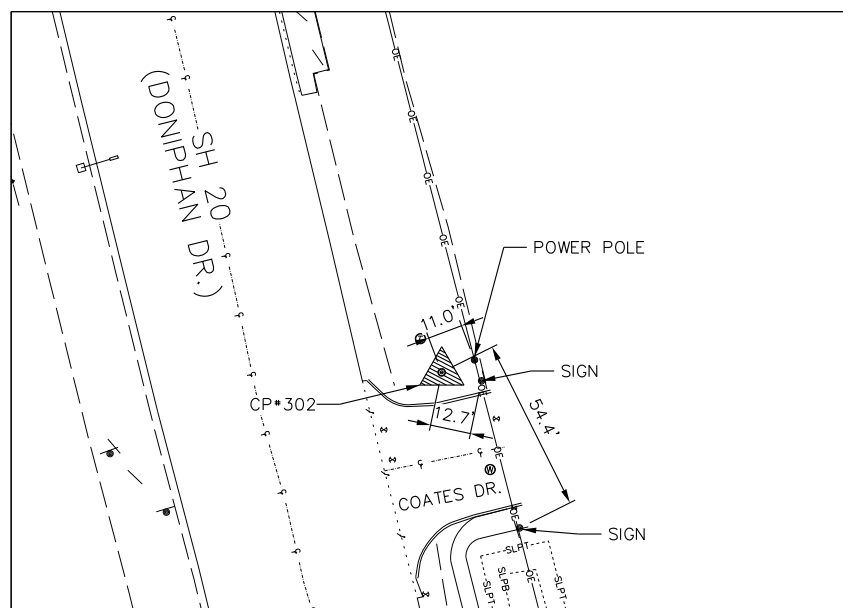
CONTROL POINT 300 IS A 5/8" IRON ROD WITH AN ALUMINUM SURVEY CONTROL CAP LOCATED ON THE WEST SIDE OF SH 20 APPROXIMATELY 380 FEET SOUTH OF THE INTERSECTION OF SH 20 (DONIPHAN DR.) AND MULBERRY AVE., 81.6' SOUTHWEST OF A LIGHT POLE, 102.9' NORTHWEST OF THE POWER POLE, AND 48.0' NORTHWEST OF A SIGN.

CP#301
 Y = 10,697,428.47
 X = 355,919.98
 Z = 3,751.483



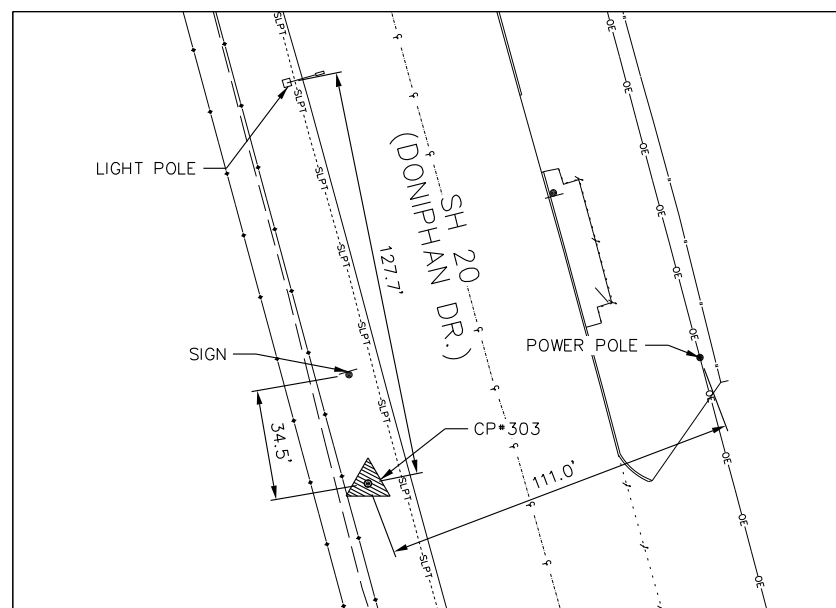
CONTROL POINT 301 IS A 5/8" IRON ROD WITH AN ALUMINUM SURVEY CONTROL CAP LOCATED ON THE WEST SIDE OF SH 20 APPROXIMATELY 90 FEET NORTHWEST OF THE INTERSECTION OF SH 20 (DONIPHAN DR.) AND REDD RD., 97.3' SOUTHWEST OF A POWER POLE, 24.7' SOUTHWEST OF A SERVICE POLE, AND 25.4' NORTHWEST OF A TRAFFIC SIGNAL POLE

CP#302
 Y = 10,700,061.28
 X = 355,337.25
 Z = 3,755.37



CONTROL POINT 302 IS A 5/8" IRON ROD WITH AN ALUMINUM SURVEY CONTROL CAP LOCATED ON THE EAST SIDE OF SH 20 APPROXIMATELY 66 FEET NORTHEAST OF THE INTERSECTION OF SH 20 (DONIPHAN DR.) AND COATES DR., 54.4' NORTHWEST OF A SIGN, 11.0' SOUTHWEST OF A POWER POLE, AND 12.7' NORTHWEST OF A SIGN.

CP#303
 Y = 10,701,041.56
 X = 354,973.98
 Z = 3,752.14



CONTROL POINT 303 IS A 5/8" IRON ROD WITH AN ALUMINUM SURVEY CONTROL CAP LOCATED ON THE WEST SIDE OF SH 20 APPROXIMATELY 232 FEET NORTHWEST OF THE INTERSECTION OF SH 20 (DONIPHAN DR.) AND EDGAR RD., 127.7' SOUTHWEST OF A LIGHT POLE, 111.0' SOUTHWEST OF THE POWER POLE, AND 34.5' SOUTHWEST OF A SIGN.



N.T.S.

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.000231.
2. HORIZONTAL VALUES WERE ESTABLISHED FROM TXDOX VRS/GPS NETWORK. VERTICAL VALUES WERE ESTABLISHED FROM AVERAGING AND HOLDING A GPS ELEVATION BASED ON GEOID 12B, AND NAVD88.
3. THIS CONTROL WAS PERFORMED IN NOVEMBER 2020.



Henry C. Casal, Jr.
 HENRY C. CASAL, JR., R.P.L.S. #4905

01/04/21

NO.	REVISIONS	BY	DATE



4800 FREDERICKSBURG RD SUITE 200SL
 SAN ANTONIO, TX 78229
 P:210-208-9400 F:210-208-9401
 TBPE #F-21809
 TBPLS #10194622

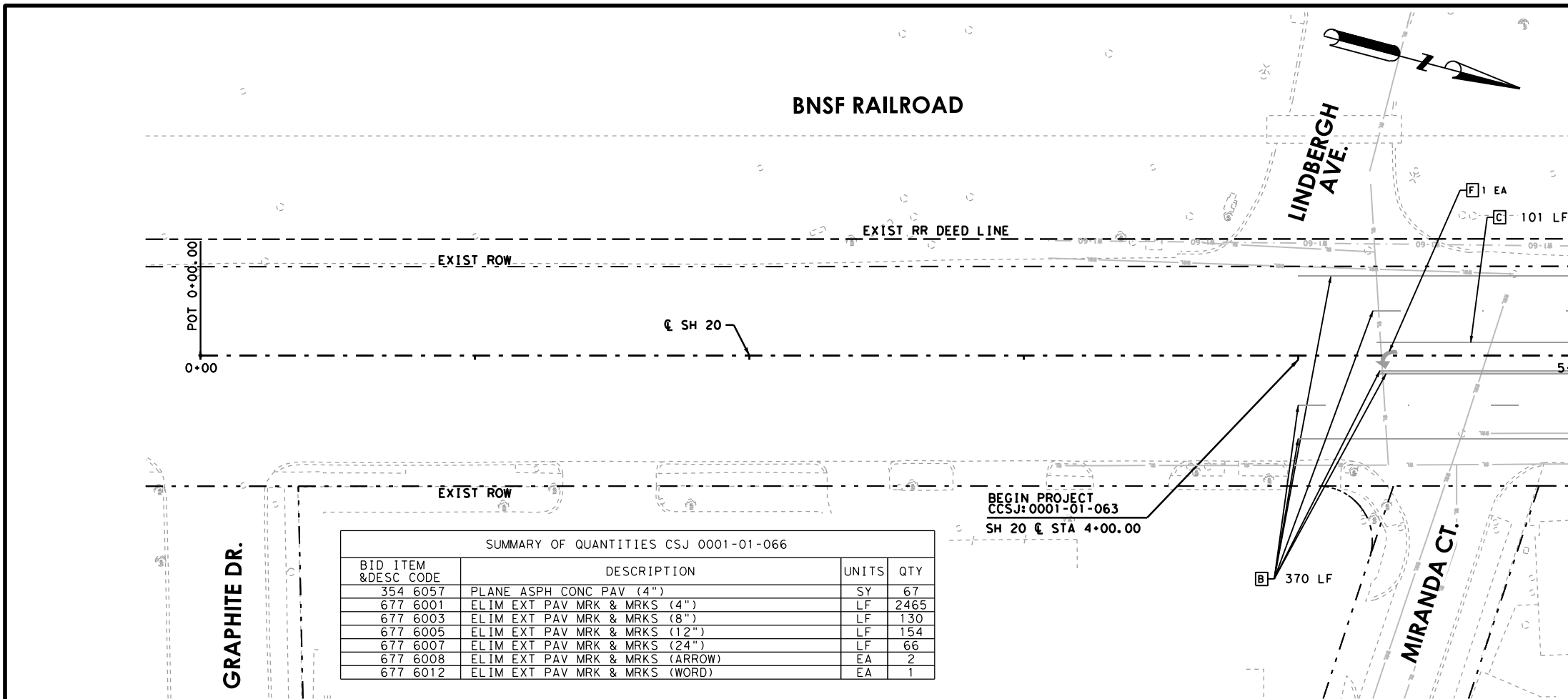


HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420



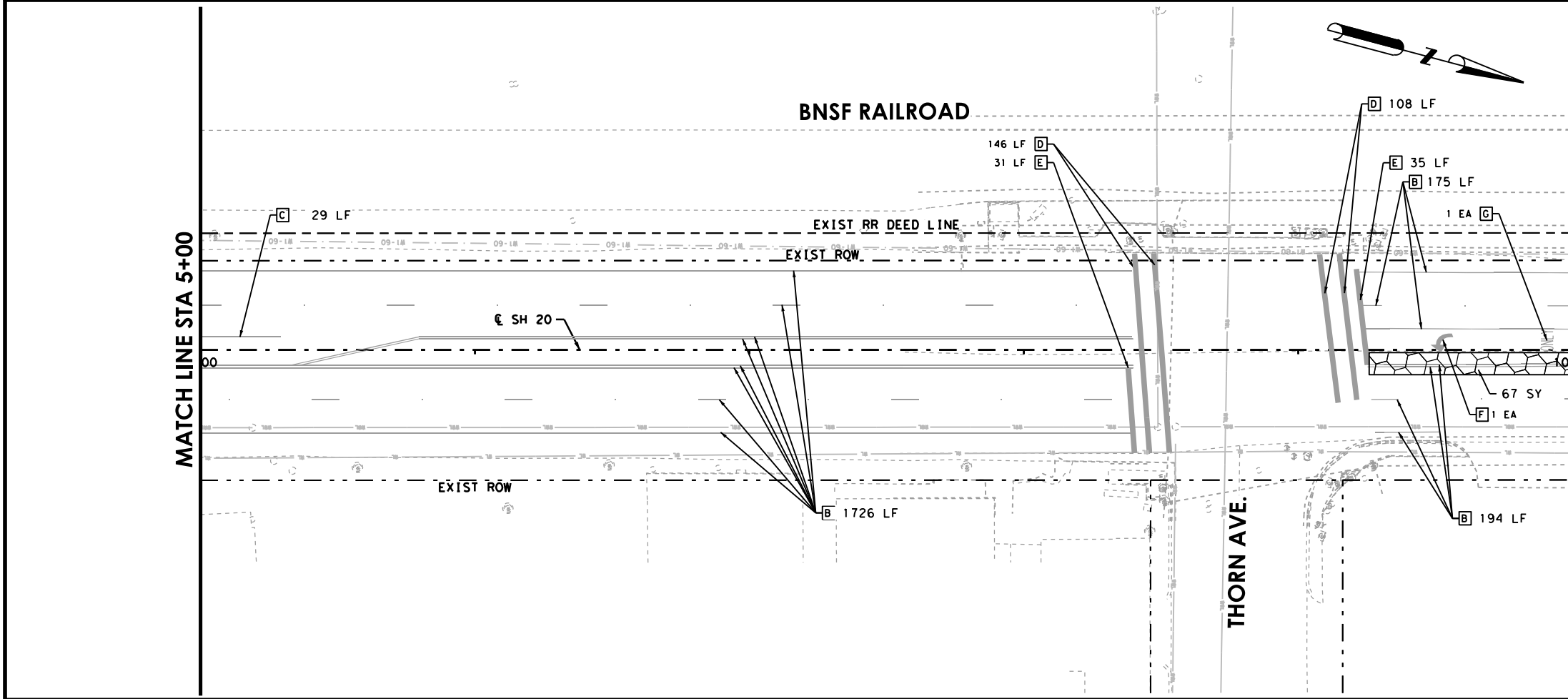
SH 20
 HORIZONTAL AND VERTICAL
 CONTROL SHEET

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	24 (EL PASO)	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	066	108



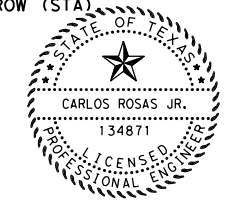
SUMMARY OF QUANTITIES CCSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
354 6057	PLANE ASPH CONC PAV (4")	SY	67
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	2465
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	130
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	154
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	66
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1

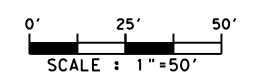


- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
- B** ELIM EXT PAV MRK & MRKS (4")
 - C** ELIM EXT PAV MRK & MRKS (8")
 - D** ELIM EXT PAV MRK & MRKS (12")
 - E** ELIM EXT PAV MRK & MRKS (24")
 - F** ELIM EXT PAV MRK & MRKS (ARROW)
 - G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021

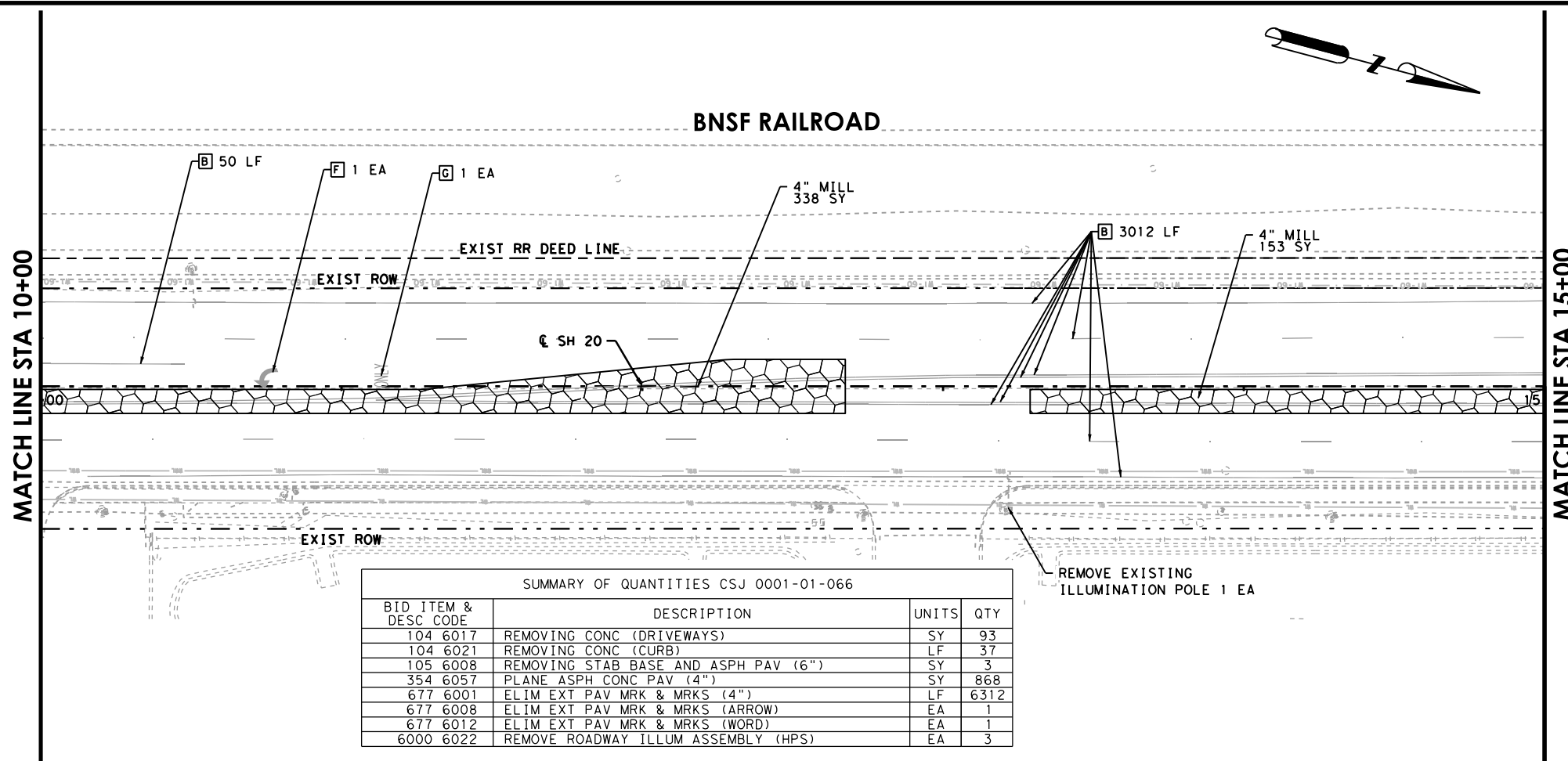


**SH 20
DONIPHAN DR.**

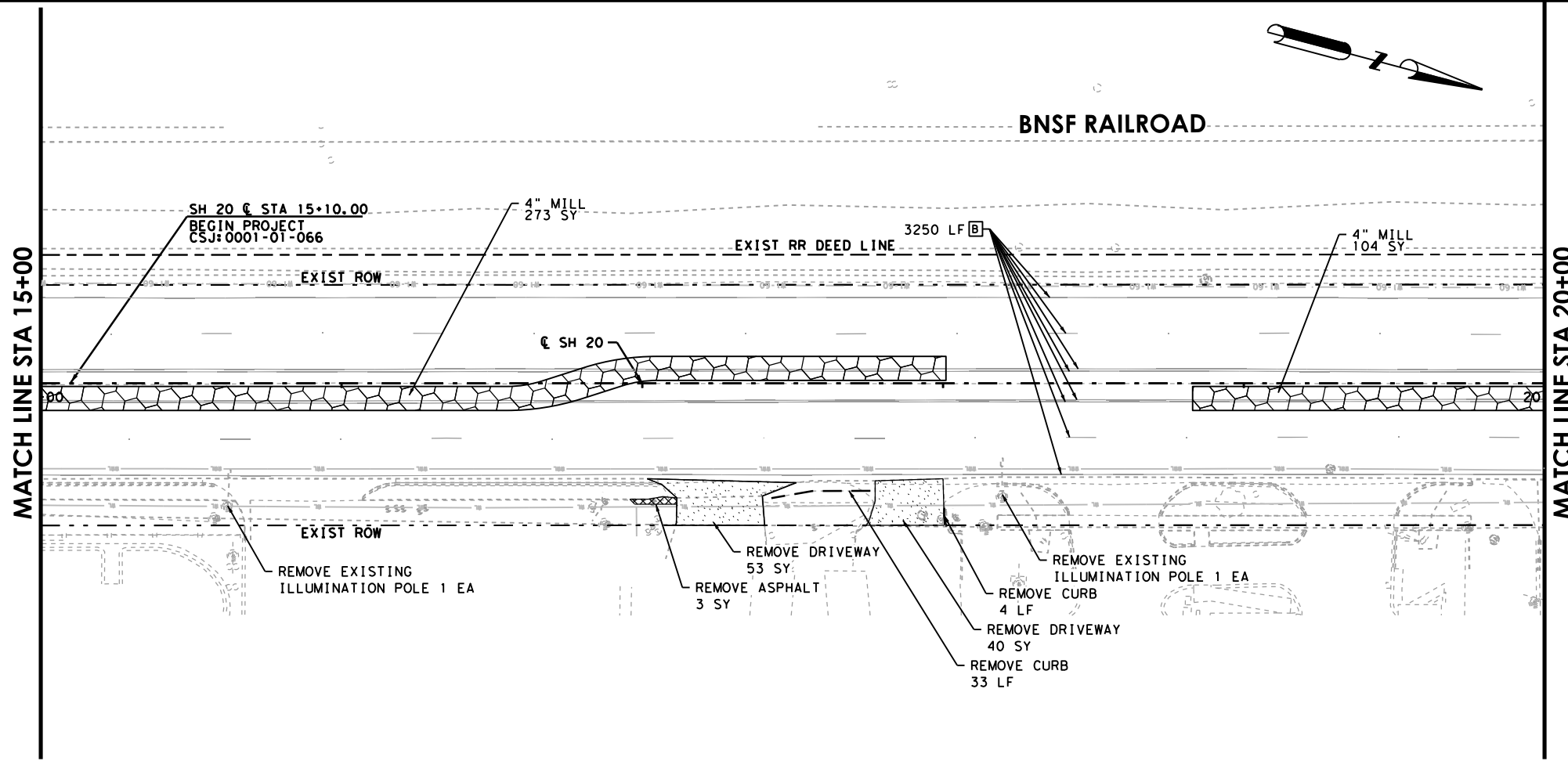
**REMOVAL LAYOUT
BEGIN TO STA. 10+00**

SHEET 1 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	109



SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
104 6017	REMOVING CONC (DRIVEWAYS)	SY	93	
104 6021	REMOVING CONC (CURB)	LF	37	
105 6008	REMOVING STAB BASE AND ASPH PAV (6")	SY	3	
354 6057	PLANE ASPH CONC PAV (4")	SY	868	
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	6312	
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1	
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1	
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	3	



LEGEND

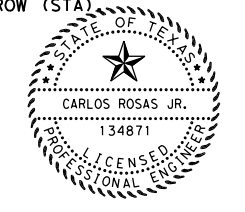
- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE MEDIAN TO BE REMOVED
- CONCRETE RIPRAP TO BE REMOVED
- CONCRETE SIDEWALK TO BE REMOVED
- DRIVEWAY TO BE REMOVED
- MEDIAN MILLING AREA
- CONCRETE CURB TO BE REMOVED
- MBGF TO BE REMOVED

NOTES:

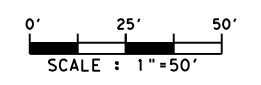
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
- ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
- ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).

NOTES:

- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
- ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
- ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C.R.J.
4/30/2021

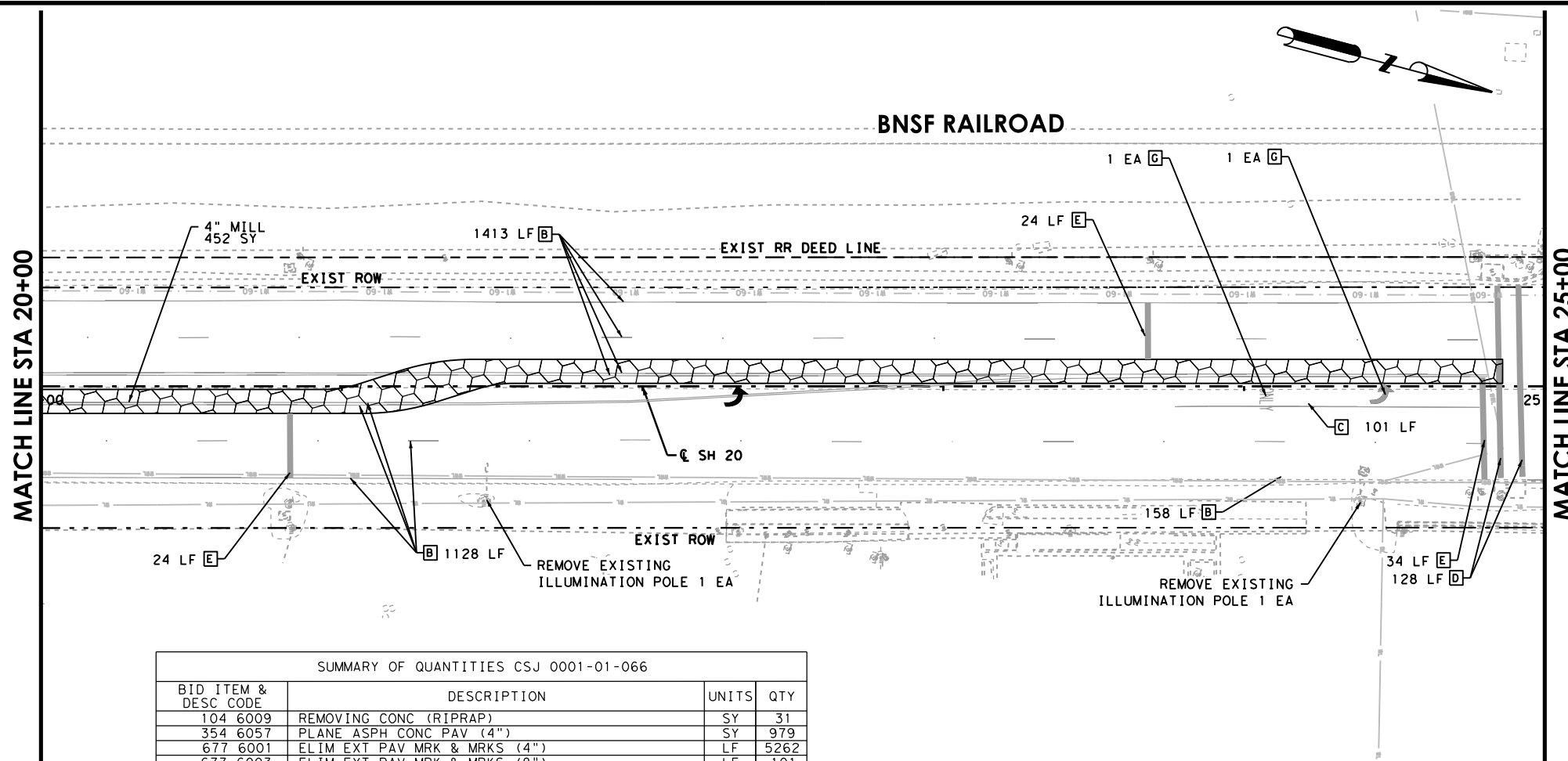


**SH 20
DONIPHAN DR.**

REMOVAL LAYOUT
STA. 10+00 TO STA. 20+00

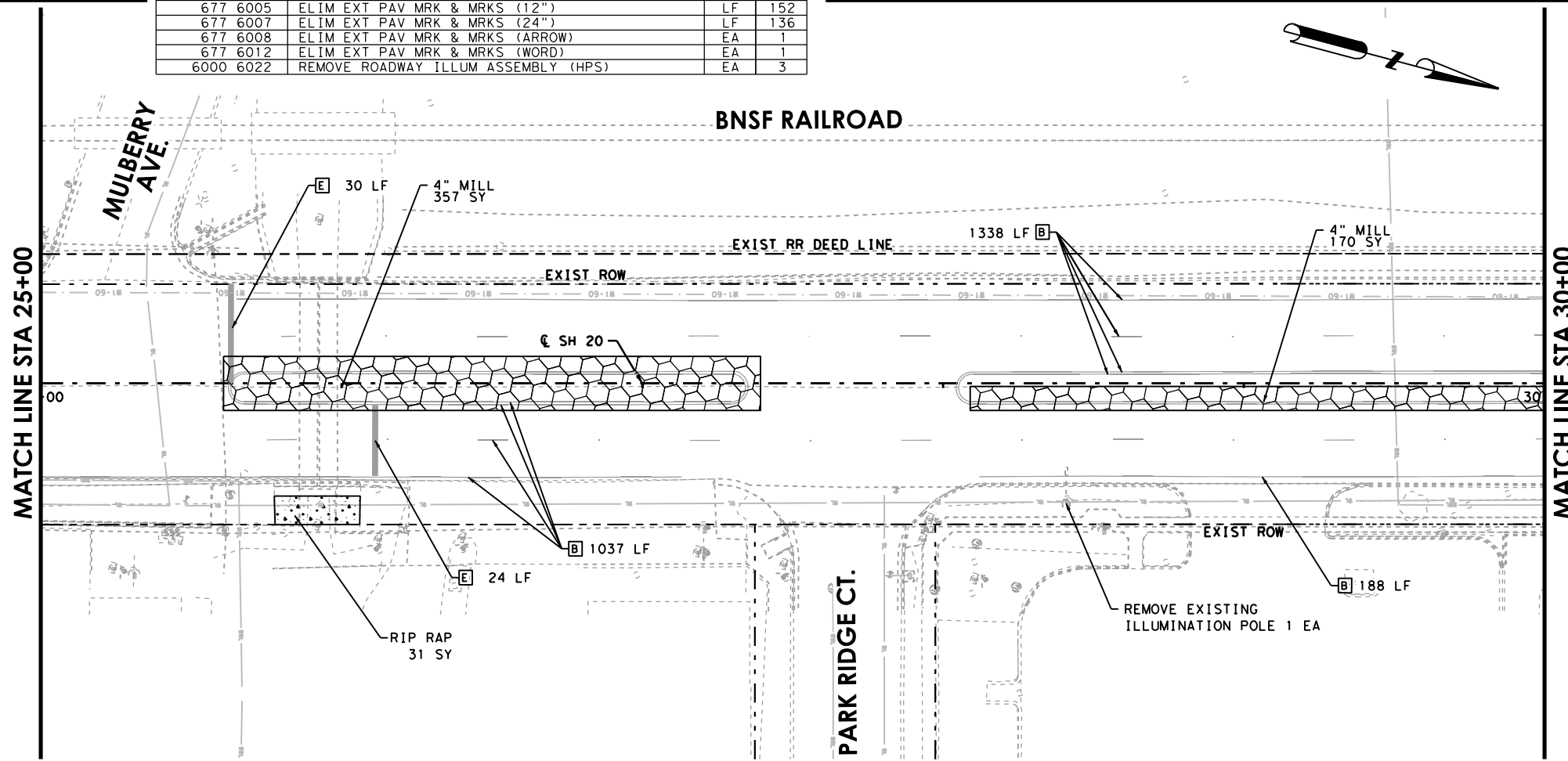
SHEET 2 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	110



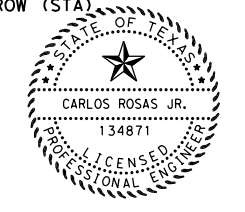
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6009	REMOVING CONC (RIPRAP)	SY	31
354 6057	PLANE ASPH CONC PAV (4")	SY	979
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5262
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	101
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	152
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	136
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	3

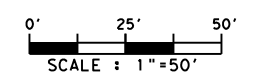


- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
 - ELIM EXT PAV MRK & MRKS (4")
 - ELIM EXT PAV MRK & MRKS (8")
 - ELIM EXT PAV MRK & MRKS (12")
 - ELIM EXT PAV MRK & MRKS (24")
 - ELIM EXT PAV MRK & MRKS (ARROW)
 - ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021

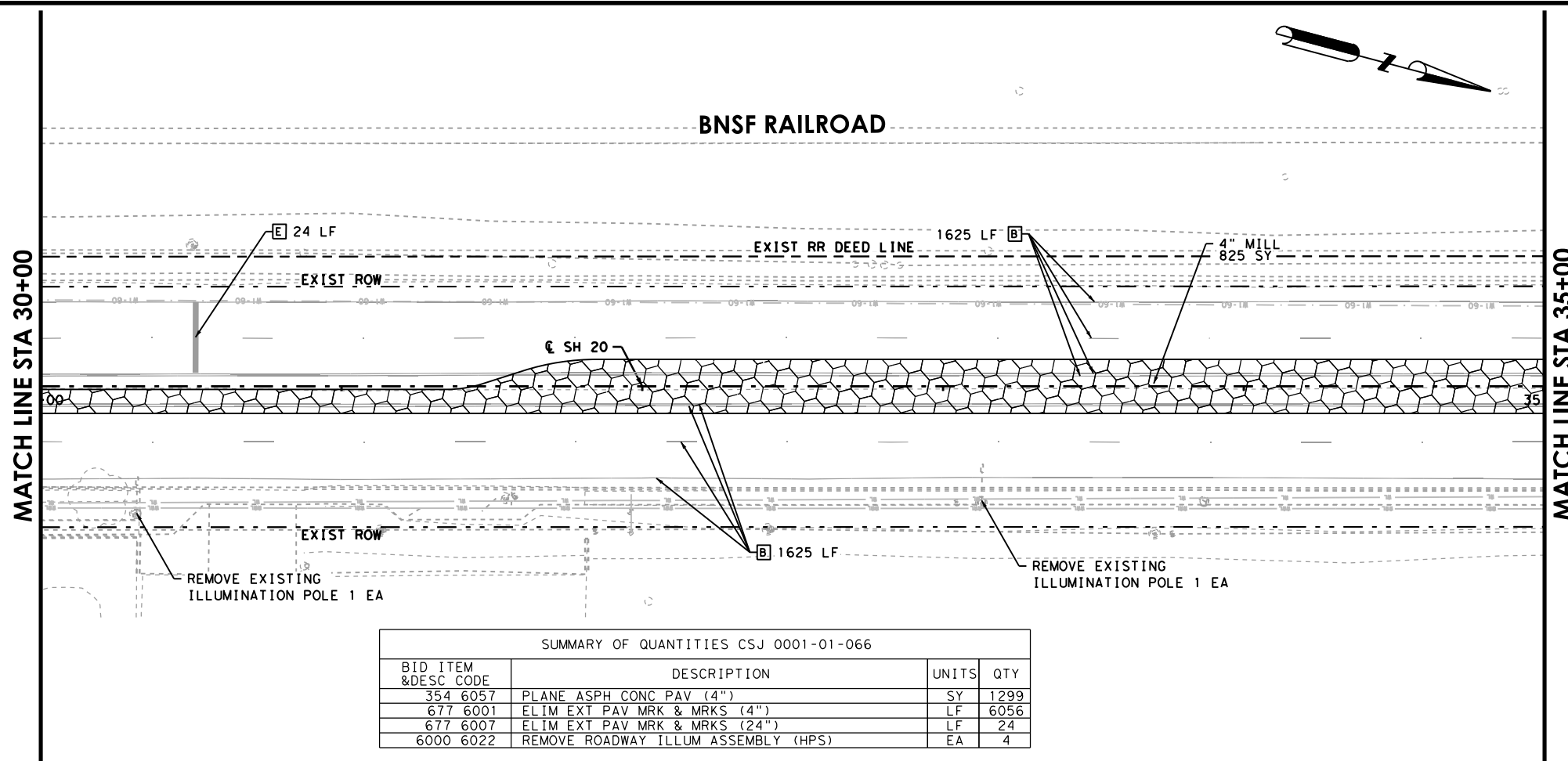


**SH 20
DONIPHAN DR.**

REMOVAL LAYOUT
STA. 20+00 TO STA. 30+00

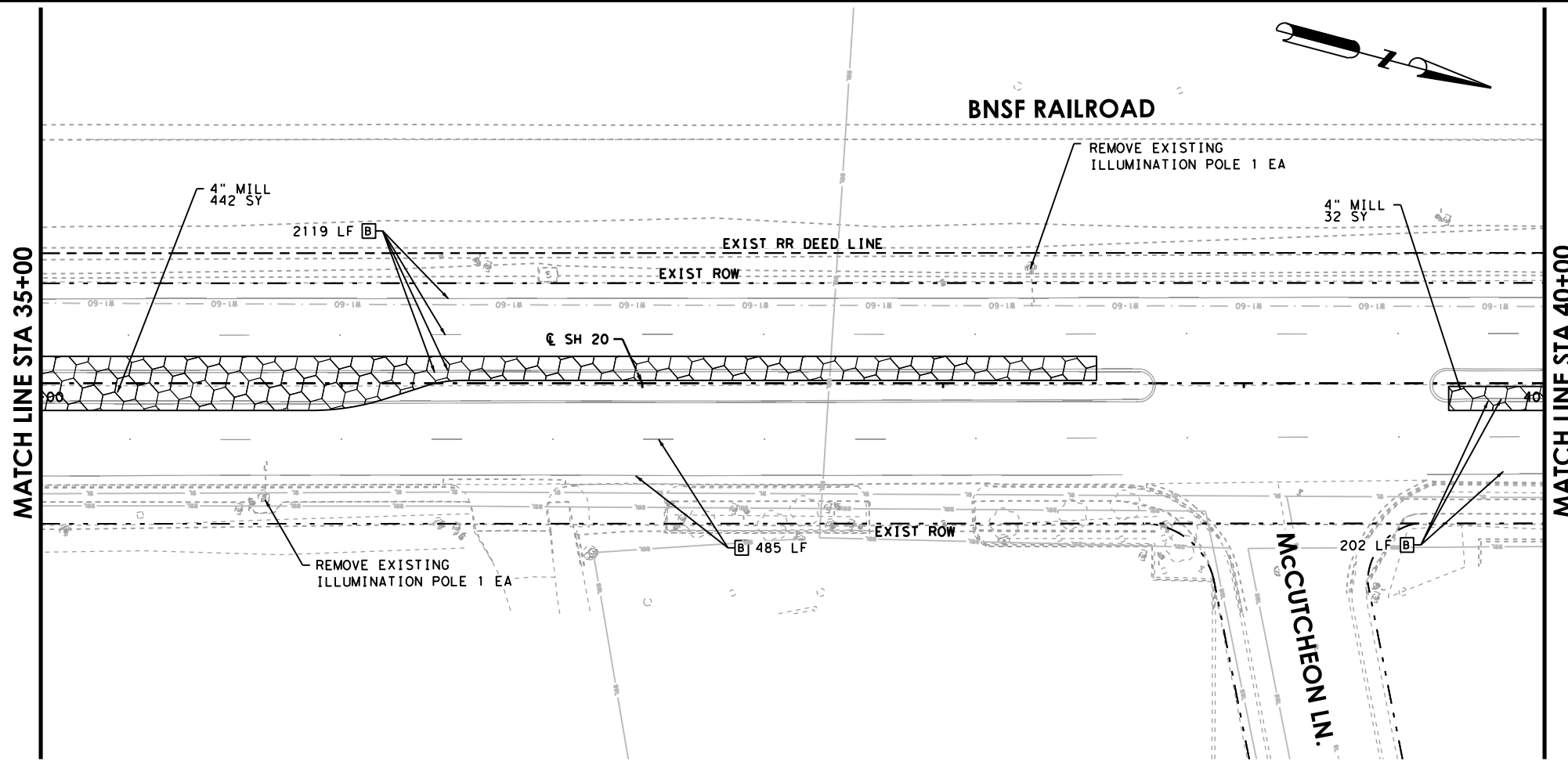
SHEET 3 OF 16

DESIGNED:	CRR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SSS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CRR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SSS	0001	01	063, ETC.	111



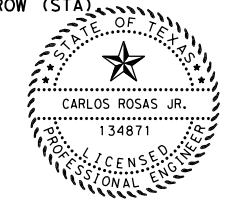
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
354 6057	PLANE ASPH CONC PAV (4")	SY	1299
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	6056
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	24
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	4



- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
 - B** ELIM EXT PAV MRK & MRKS (4")
 - C** ELIM EXT PAV MRK & MRKS (8")
 - D** ELIM EXT PAV MRK & MRKS (12")
 - E** ELIM EXT PAV MRK & MRKS (24")
 - F** ELIM EXT PAV MRK & MRKS (ARROW)
 - G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021



**SH 20
DONIPHAN DR.**

REMOVAL LAYOUT
STA. 30+00 TO STA. 40+00

SHEET 4 OF 16

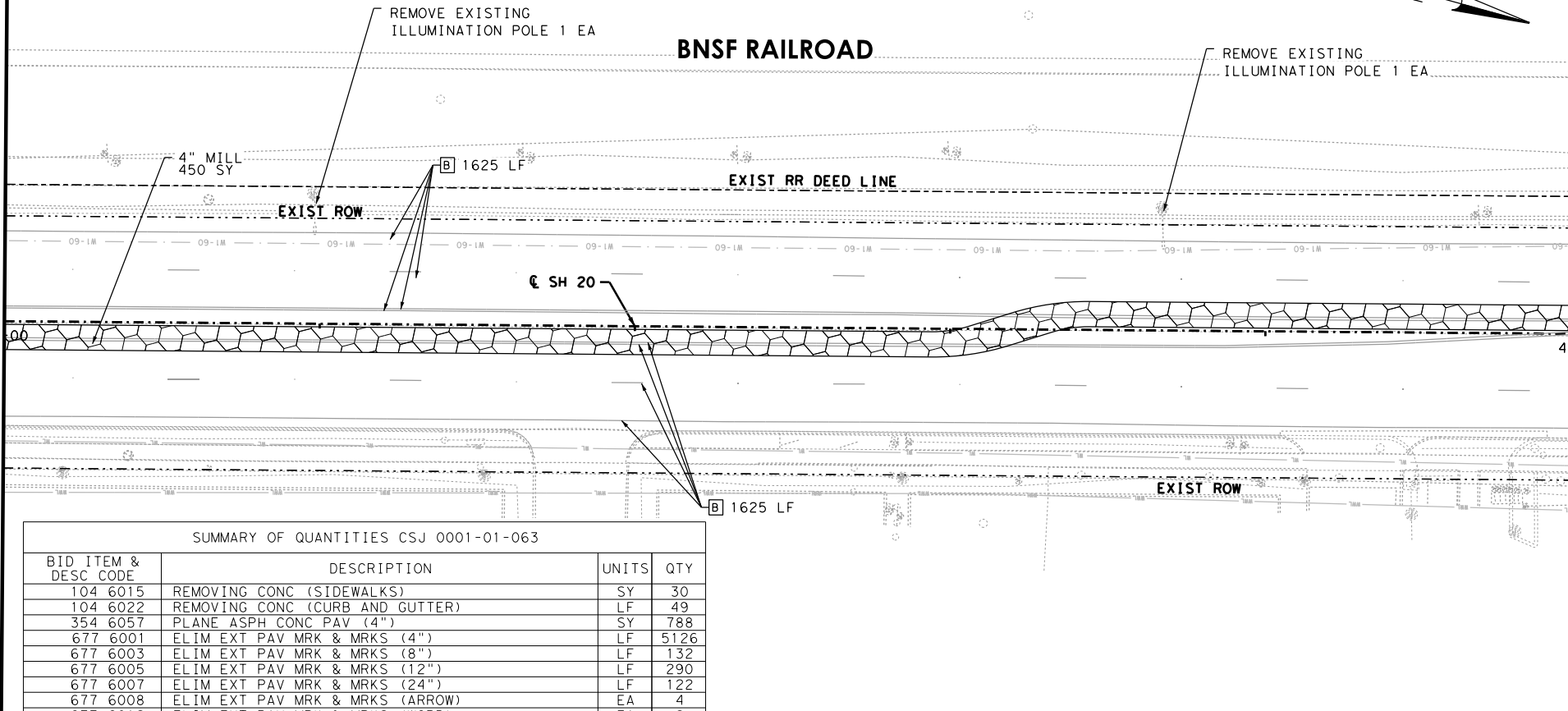
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CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	112

MATCH LINE STA 40+00

MATCH LINE STA 45+00

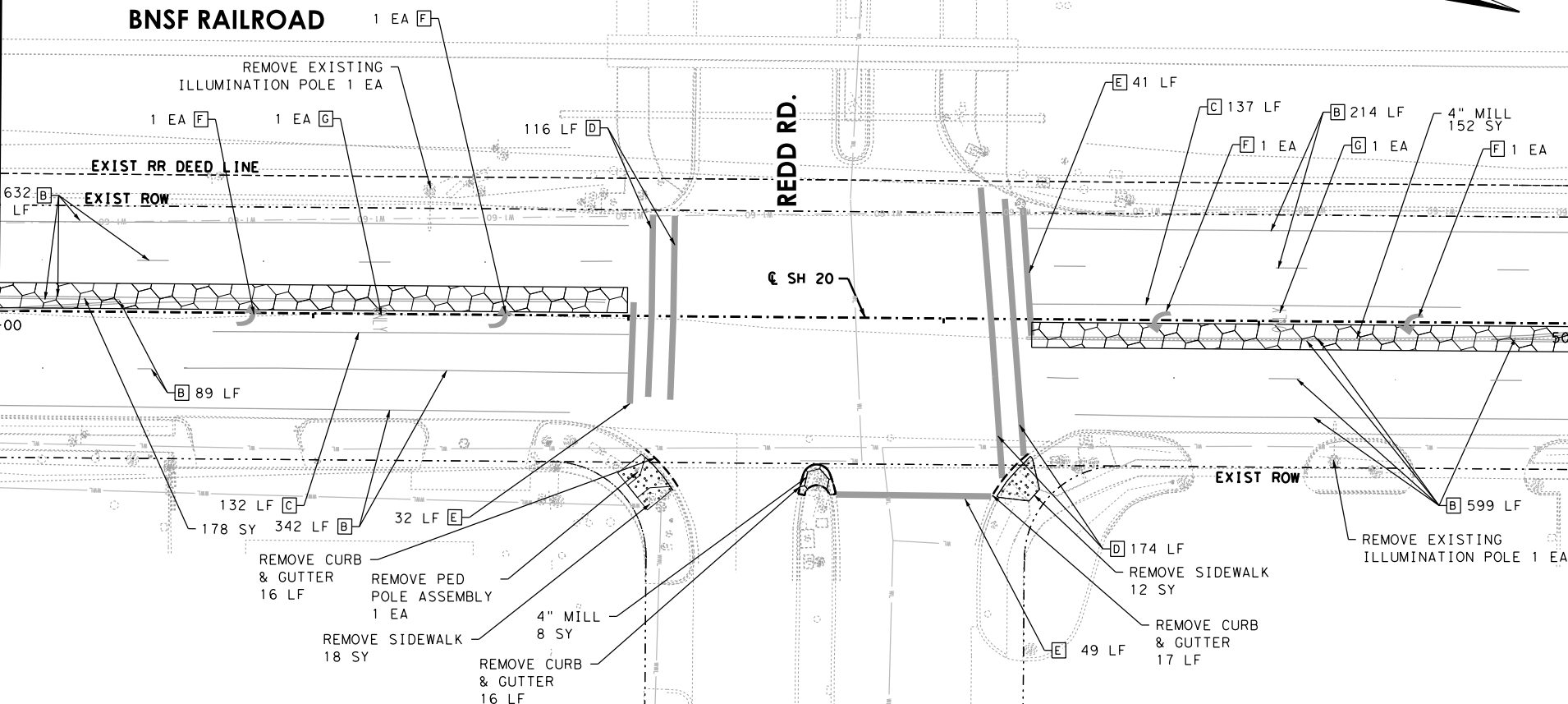
MATCH LINE STA 45+00

MATCH LINE STA 50+00



SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6015	REMOVING CONC (SIDEWALKS)	SY	30
104 6022	REMOVING CONC (CURB AND GUTTER)	LF	49
354 6057	PLANE ASPH CONC PAV (4")	SY	788
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5126
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	132
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	290
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	122
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	2
687 6005	REMOVE PED POLE ASSEMBLY	EA	1
6000 6002	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	4

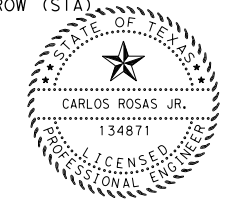


LEGEND

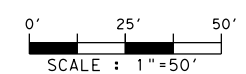
- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE MEDIAN TO BE REMOVED
- CONCRETE RIPRAP TO BE REMOVED
- CONCRETE SIDEWALK TO BE REMOVED
- DRIVEWAY TO BE REMOVED
- MEDIAN MILLING AREA
- CONCRETE CURB TO BE REMOVED
- MBGF TO BE REMOVED
- ELIM EXT PAV MRK & MRKS (4")
- ELIM EXT PAV MRK & MRKS (8")
- ELIM EXT PAV MRK & MRKS (12")
- ELIM EXT PAV MRK & MRKS (24")
- ELIM EXT PAV MRK & MRKS (ARROW)
- ELIM EXT PAV MRK & MRKS (WORD)

NOTES:

1. ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
2. ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
3. ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



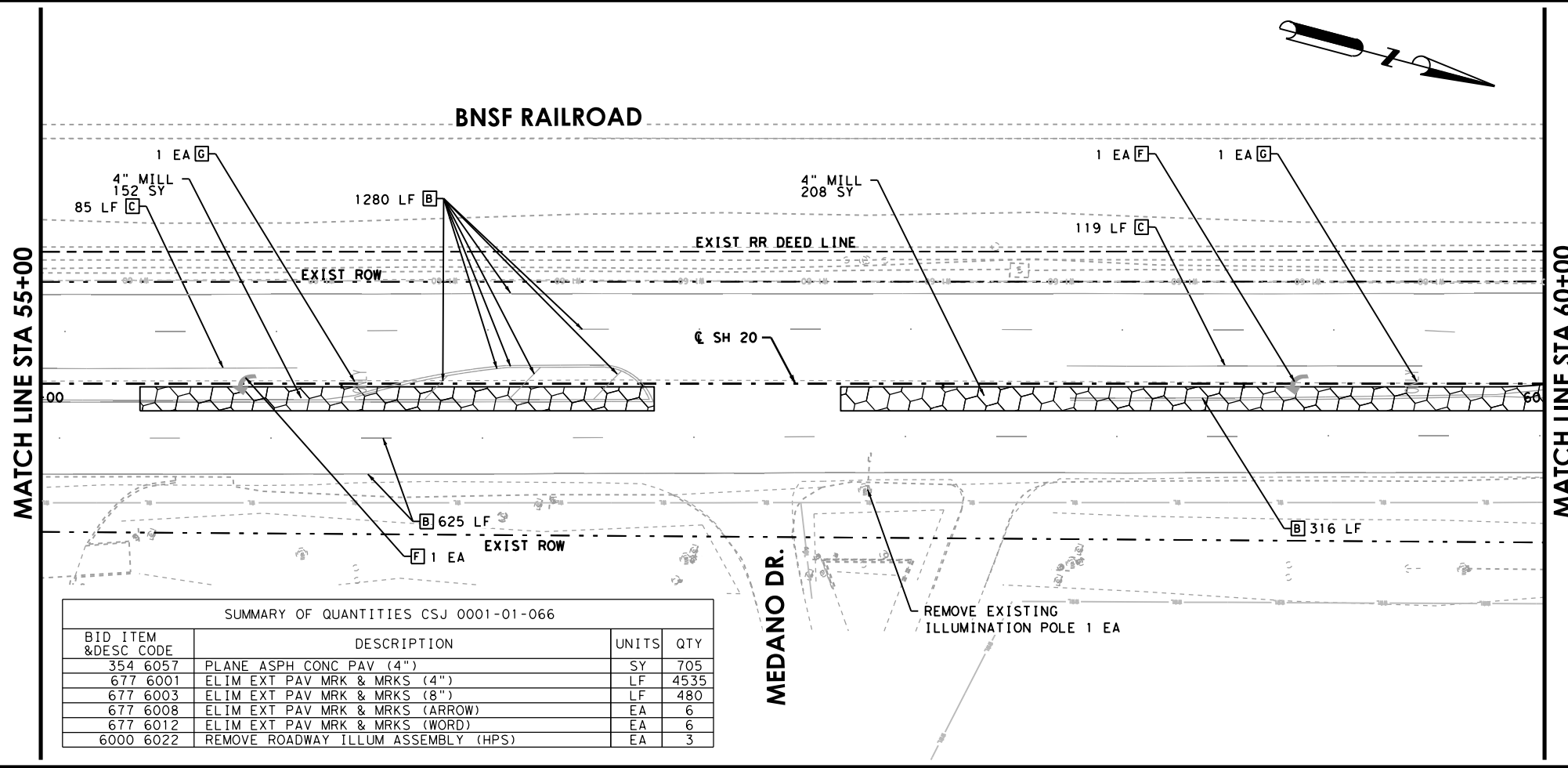
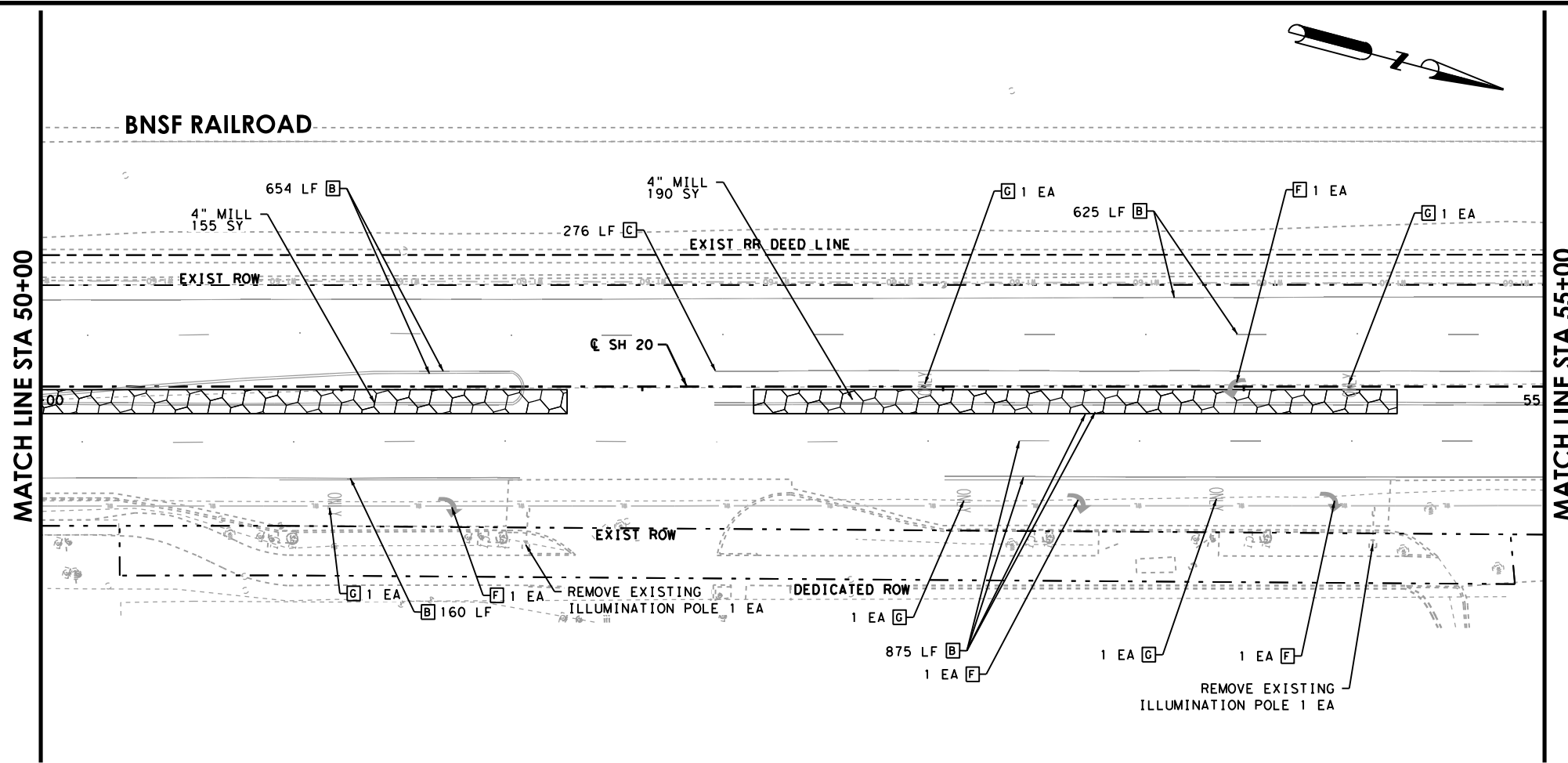
C-R-J
5/2/2021



**SH 20
DONIPHAN DR.**
REMOVAL LAYOUT
STA. 40+00 TO STA. 50+00

SHEET 5 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	113

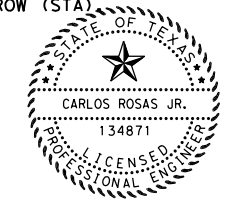


SUMMARY OF QUANTITIES CSJ 0001-01-066

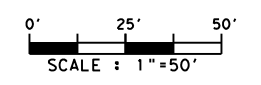
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
354 6057	PLANE ASPH CONC PAV (4")	SY	705
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	4535
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	480
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	6
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	6
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	3

- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
 - [B]** ELIM EXT PAV MRK & MRKS (4")
 - [C]** ELIM EXT PAV MRK & MRKS (8")
 - [D]** ELIM EXT PAV MRK & MRKS (12")
 - [E]** ELIM EXT PAV MRK & MRKS (24")
 - [F]** ELIM EXT PAV MRK & MRKS (ARROW)
 - [G]** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



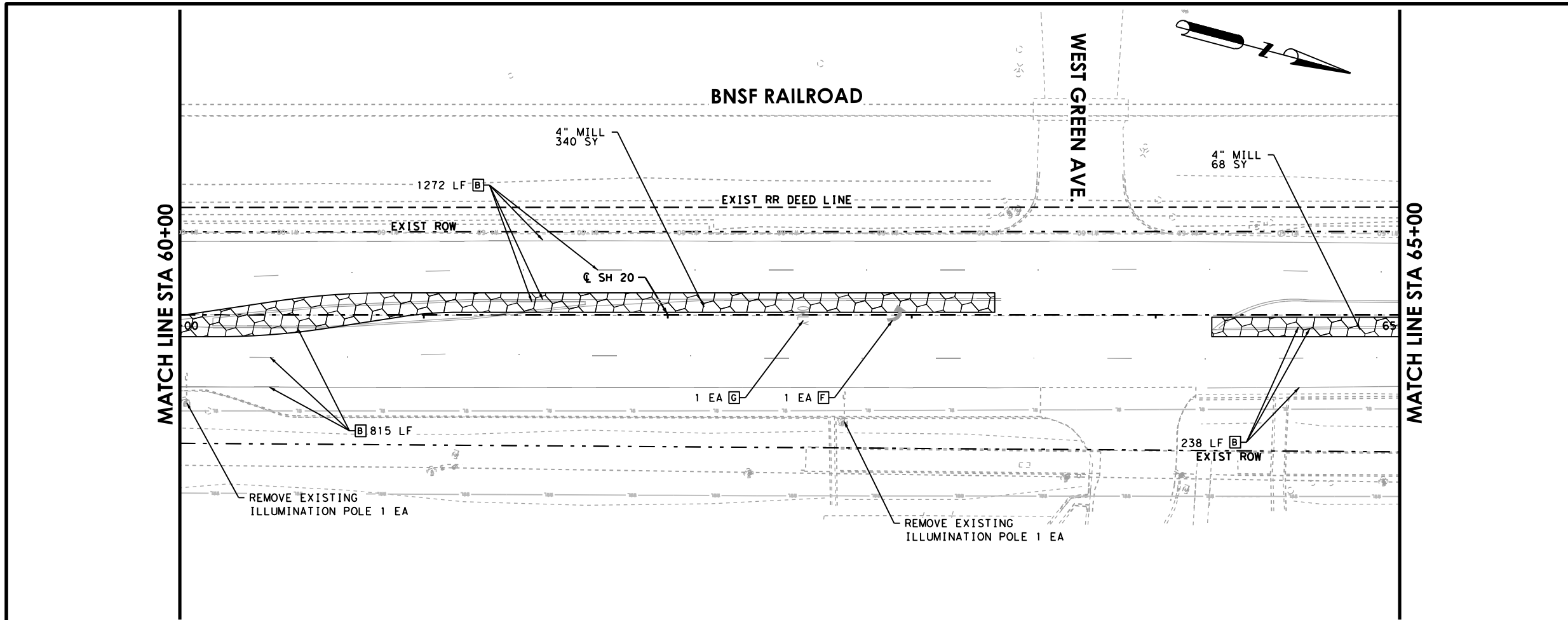
C-R-J
4/30/2021



**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 50+00 TO STA. 60+00**

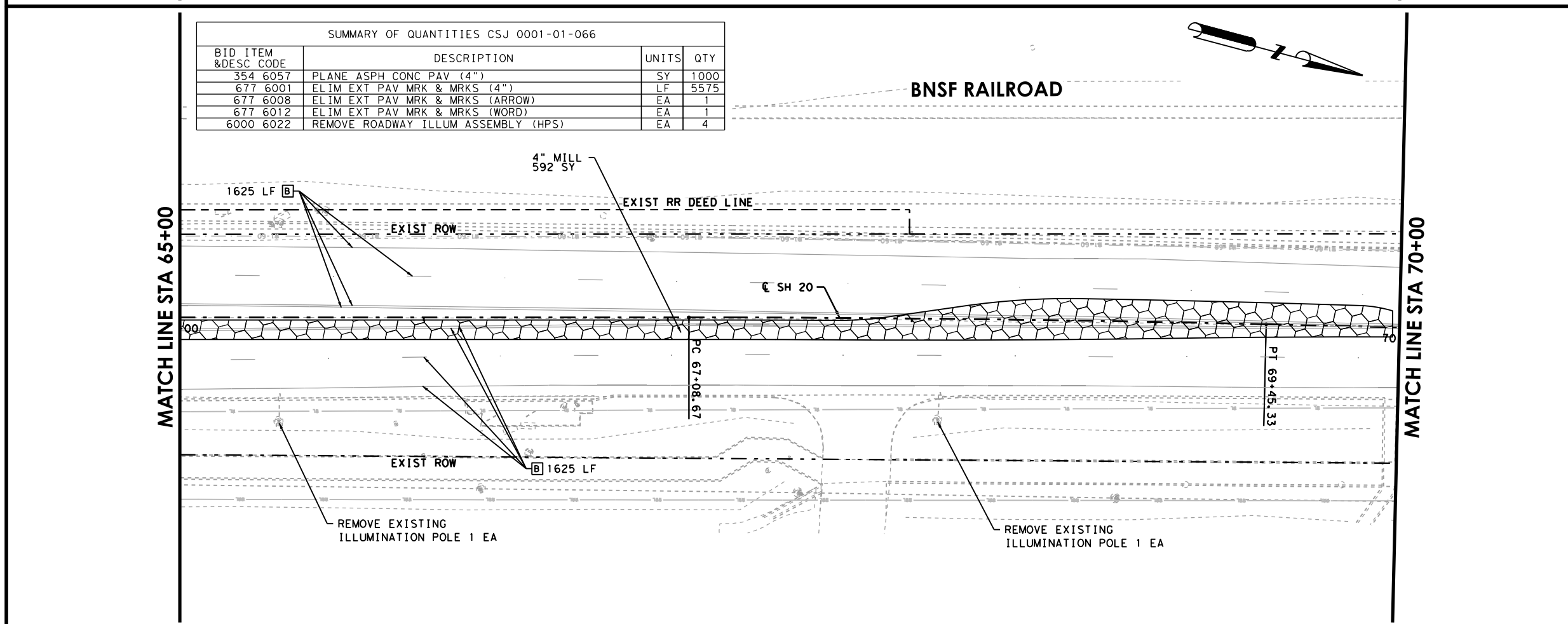
SHEET 6 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	114



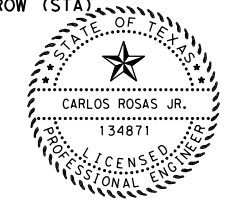
- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
- B** ELIM EXT PAV MRK & MRKS (4")
 - C** ELIM EXT PAV MRK & MRKS (8")
 - D** ELIM EXT PAV MRK & MRKS (12")
 - E** ELIM EXT PAV MRK & MRKS (24")
 - F** ELIM EXT PAV MRK & MRKS (ARROW)
 - G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).

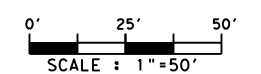


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
354 6057	PLANE ASPH CONC PAV (4")	SY	1000
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5575
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	4



C-R-J
4/30/2021

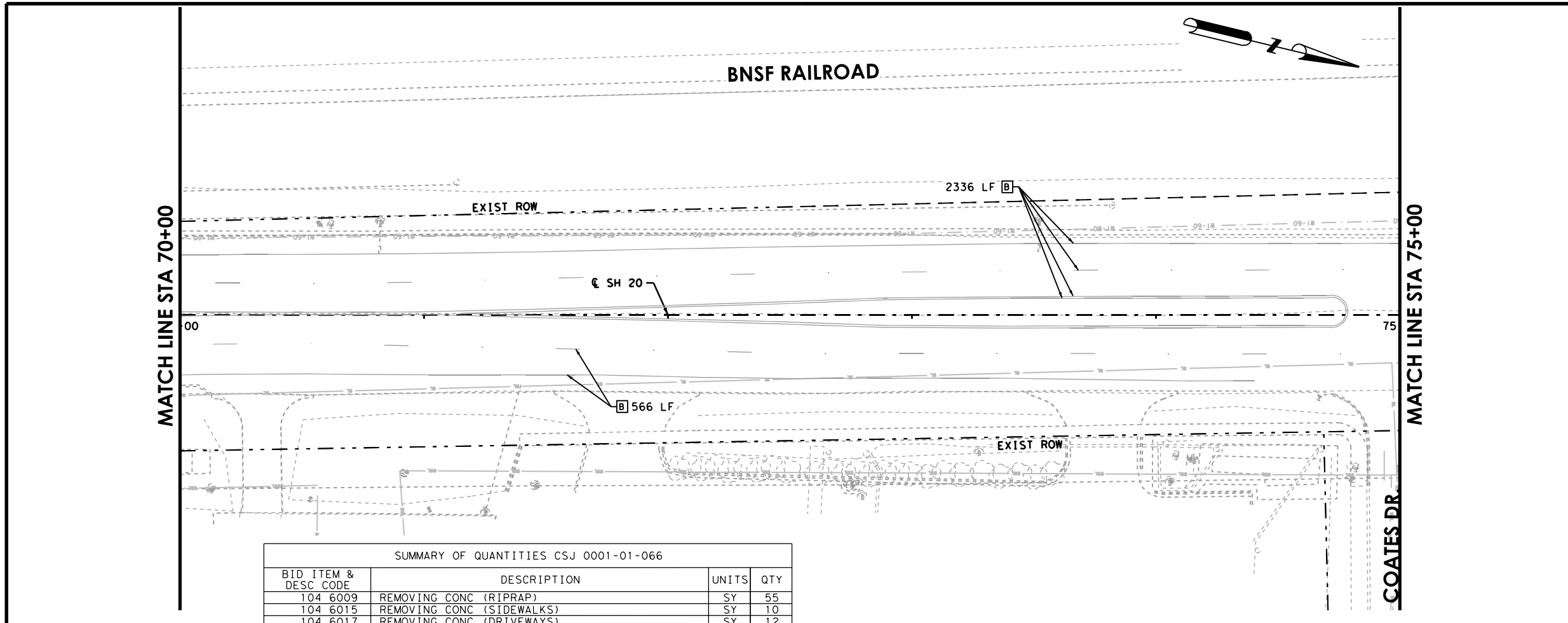


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 60+00 TO STA. 70+00**

SHEET 7 OF 16

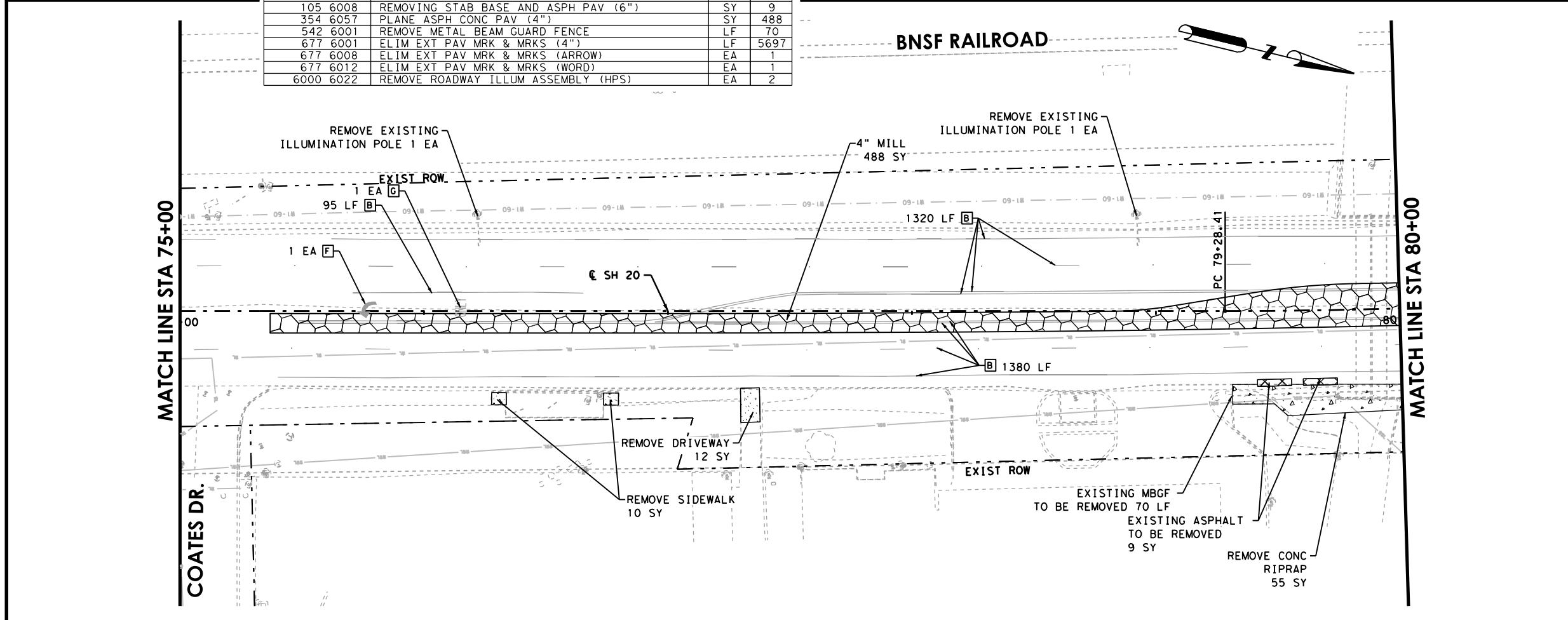
DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	115

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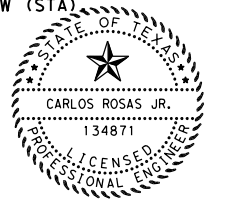
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6009	REMOVING CONC (RIPRAP)	SY	55
104 6015	REMOVING CONC (SIDEWALKS)	SY	10
104 6017	REMOVING CONC (DRIVEWAYS)	SY	12
105 6008	REMOVING STAB BASE AND ASPH PAV (6")	SY	9
354 6057	PLANE ASPH CONC PAV (4")	SY	488
542 6001	REMOVE METAL BEAM GUARD FENCE	LF	70
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5697
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	2

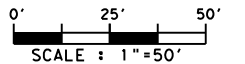


- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
- [B]** ELIM EXT PAV MRK & MRKS (4")
 - [C]** ELIM EXT PAV MRK & MRKS (8")
 - [D]** ELIM EXT PAV MRK & MRKS (12")
 - [E]** ELIM EXT PAV MRK & MRKS (24")
 - [F]** ELIM EXT PAV MRK & MRKS (ARROW)
 - [G]** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021



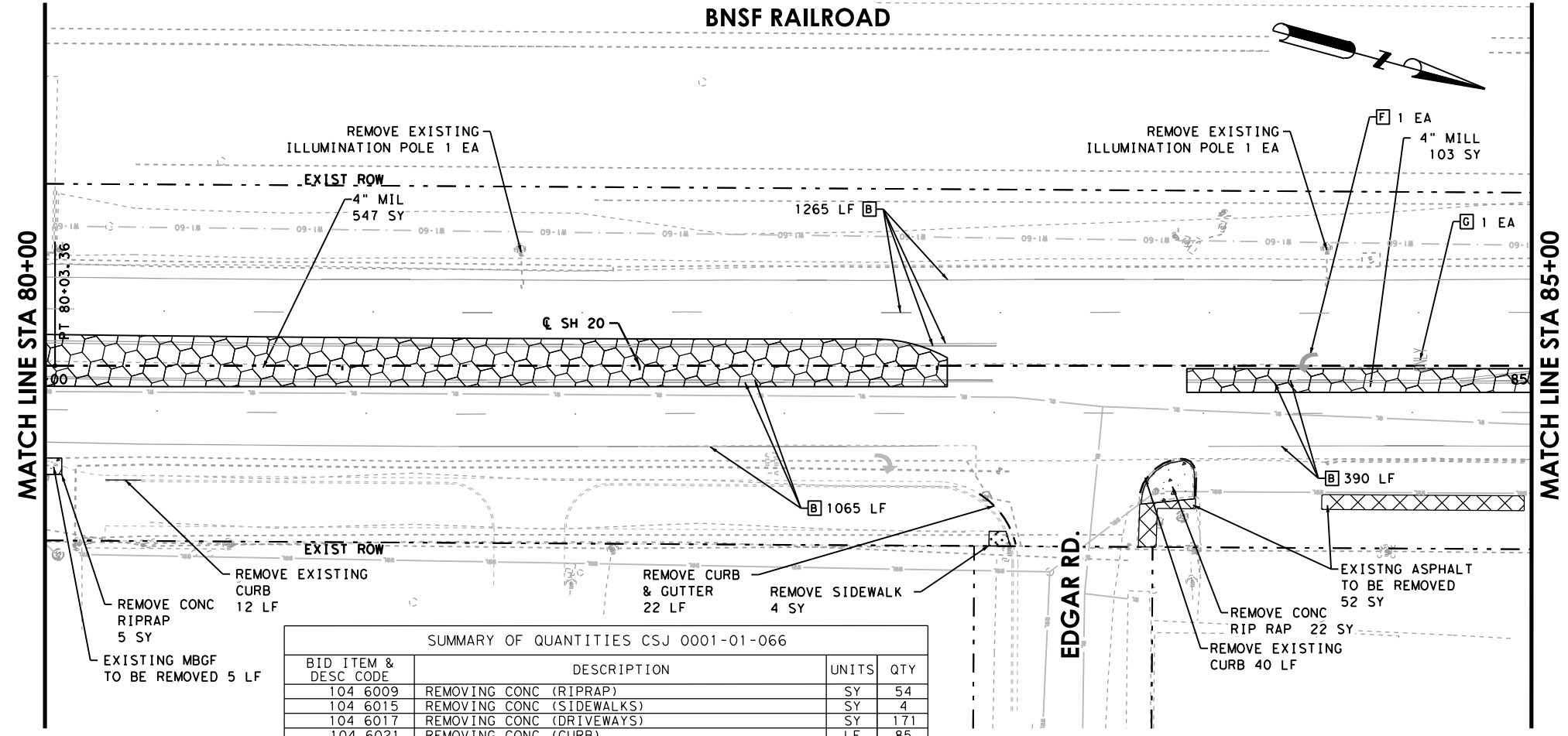
**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 70+00 TO STA. 80+00**

SHEET 8 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	116

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BNSF RAILROAD



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6009	REMOVING CONC (RIPRAP)	SY	54
104 6015	REMOVING CONC (SIDEWALKS)	SY	4
104 6017	REMOVING CONC (DRIVEWAYS)	SY	171
104 6021	REMOVING CONC (CURB)	LF	85
104 6022	REMOVING CONC (CURB & GUTTER)	LF	22
105 6008	REMOVING STAB BASE AND ASPH PAV (6")	SY	52
354 6057	PLANE ASPH CONC PAV (4")	SY	1177
542 6001	REMOVE METAL BEAM GUARD FENCE	LF	5
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5780
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	4

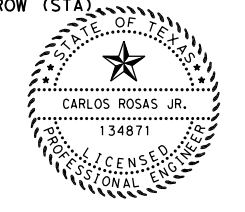
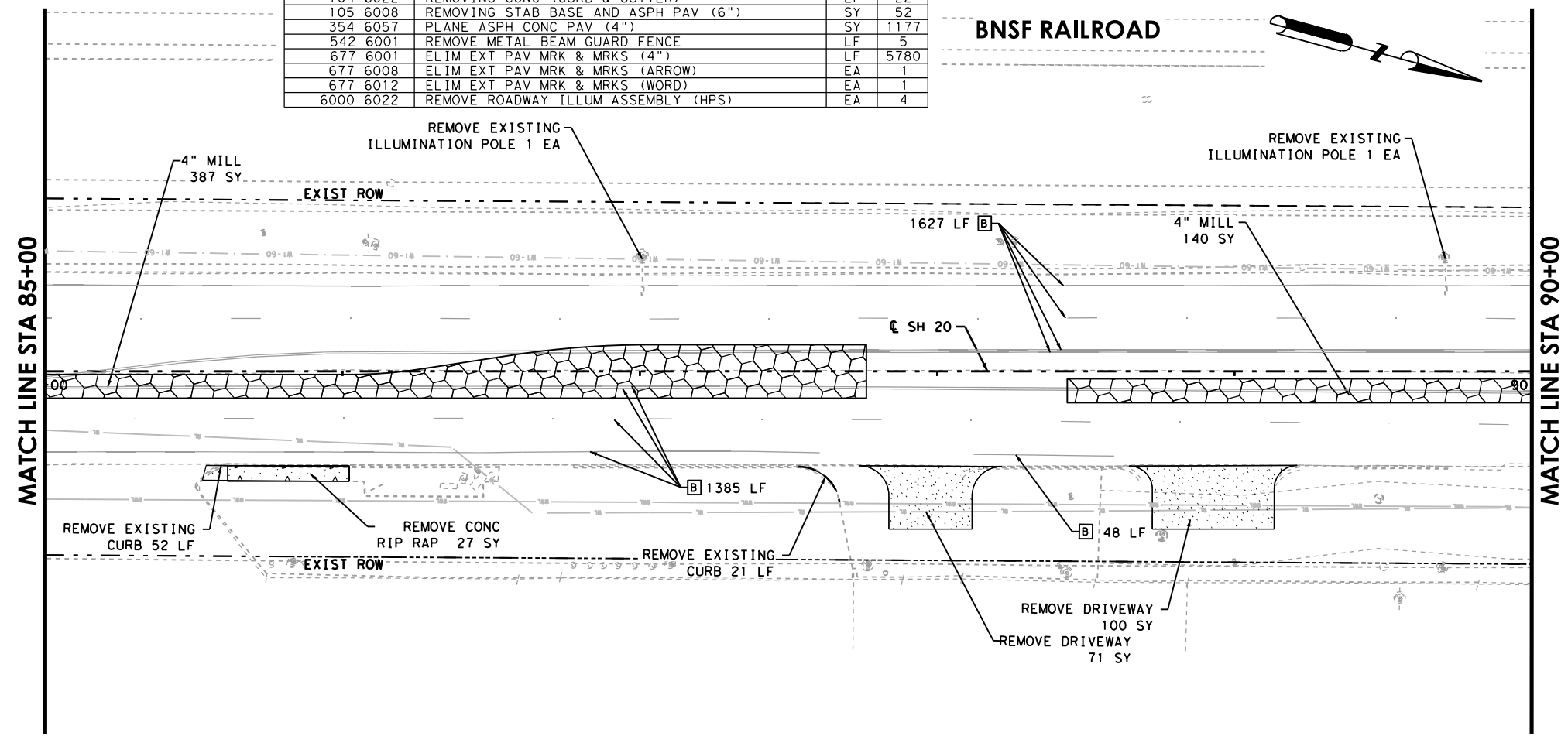
LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE MEDIAN TO BE REMOVED
- CONCRETE RIPRAP TO BE REMOVED
- CONCRETE SIDEWALK TO BE REMOVED
- DRIVEWAY TO BE REMOVED
- MEDIAN MILLING AREA
- CONCRETE CURB TO BE REMOVED
- MBGF TO BE REMOVED
- ELIM EXT PAV MRK & MRKS (4")
- ELIM EXT PAV MRK & MRKS (8")
- ELIM EXT PAV MRK & MRKS (12")
- ELIM EXT PAV MRK & MRKS (24")
- ELIM EXT PAV MRK & MRKS (ARROW)
- ELIM EXT PAV MRK & MRKS (WORD)

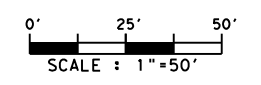
NOTES:

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BNSF RAILROAD



C.R.J.
4/30/2021

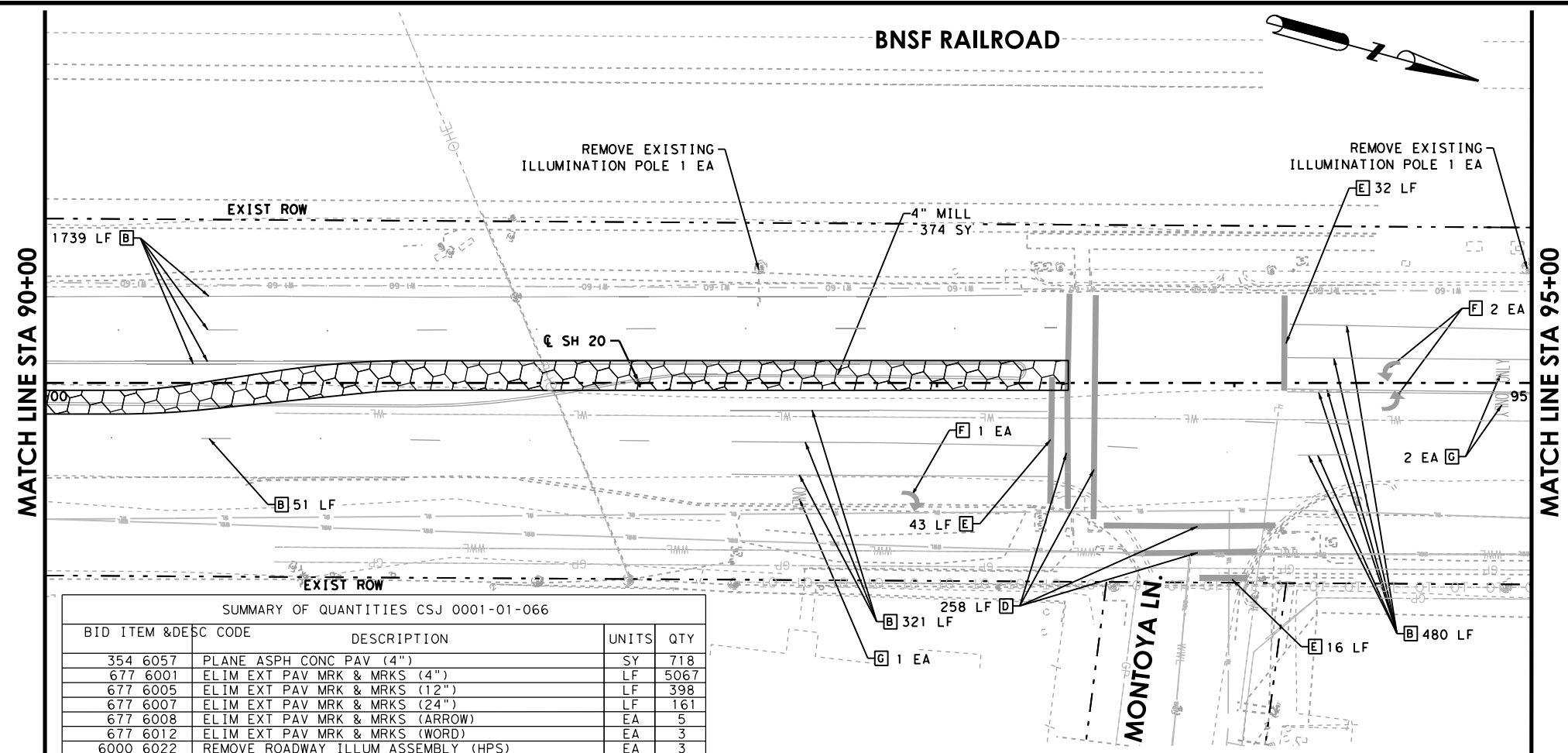


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 80+00 TO STA. 90+00**

SHEET 9 OF 16

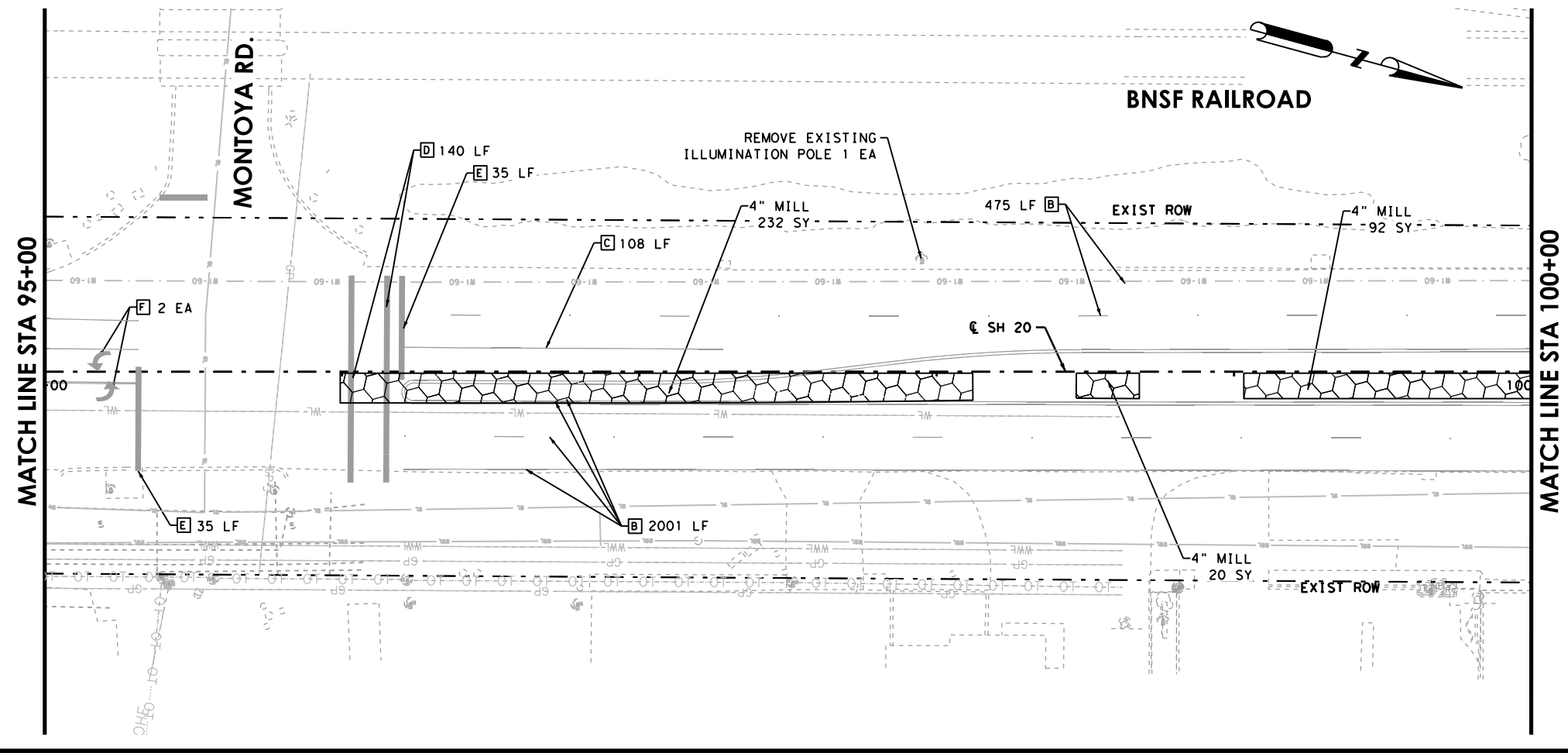
DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	117

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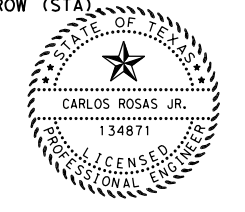
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
354 6057	PLANE ASPH CONC PAV (4")	SY	718
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5067
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	398
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	161
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	3
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	3



- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
 - ELIM EXT PAV MRK & MRKS (4")
 - ELIM EXT PAV MRK & MRKS (8")
 - ELIM EXT PAV MRK & MRKS (12")
 - ELIM EXT PAV MRK & MRKS (24")
 - ELIM EXT PAV MRK & MRKS (ARROW)
 - ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
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C.R.J.
4/30/2021

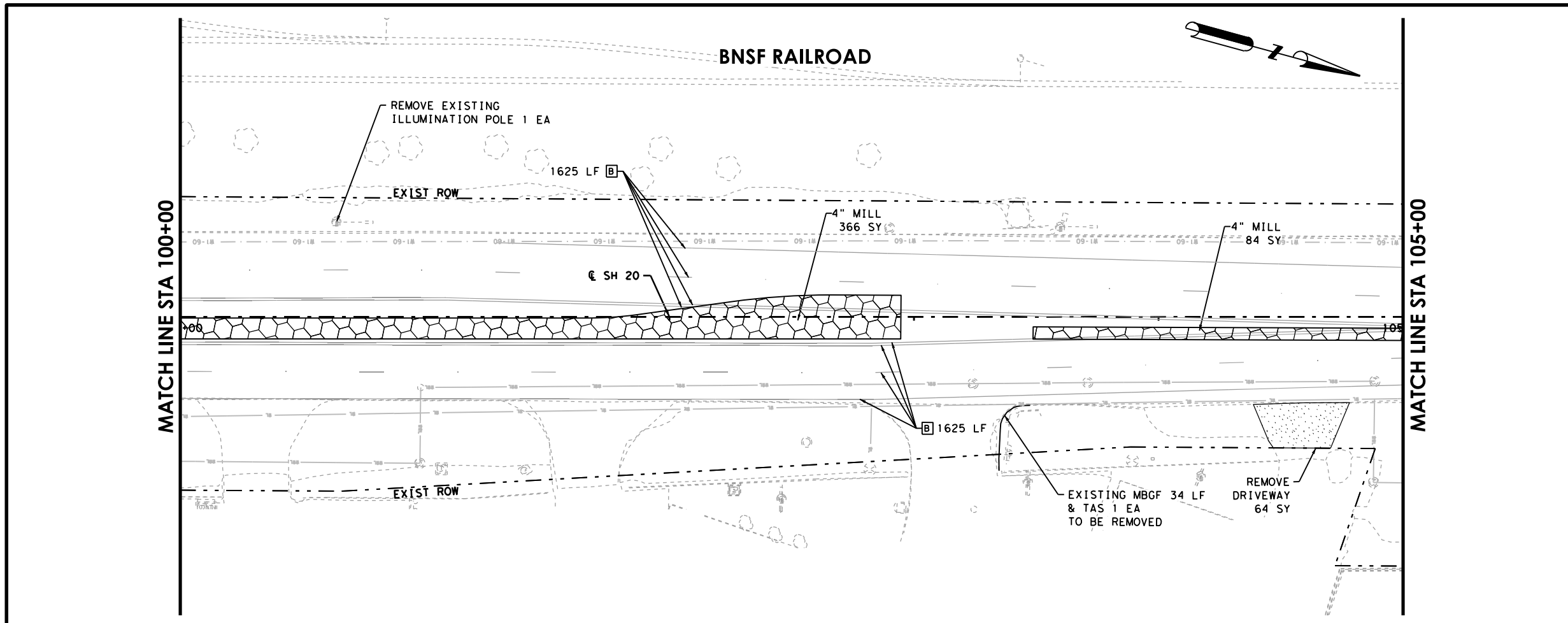


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 90+00 TO STA. 100+00**

SHEET 10 OF 16

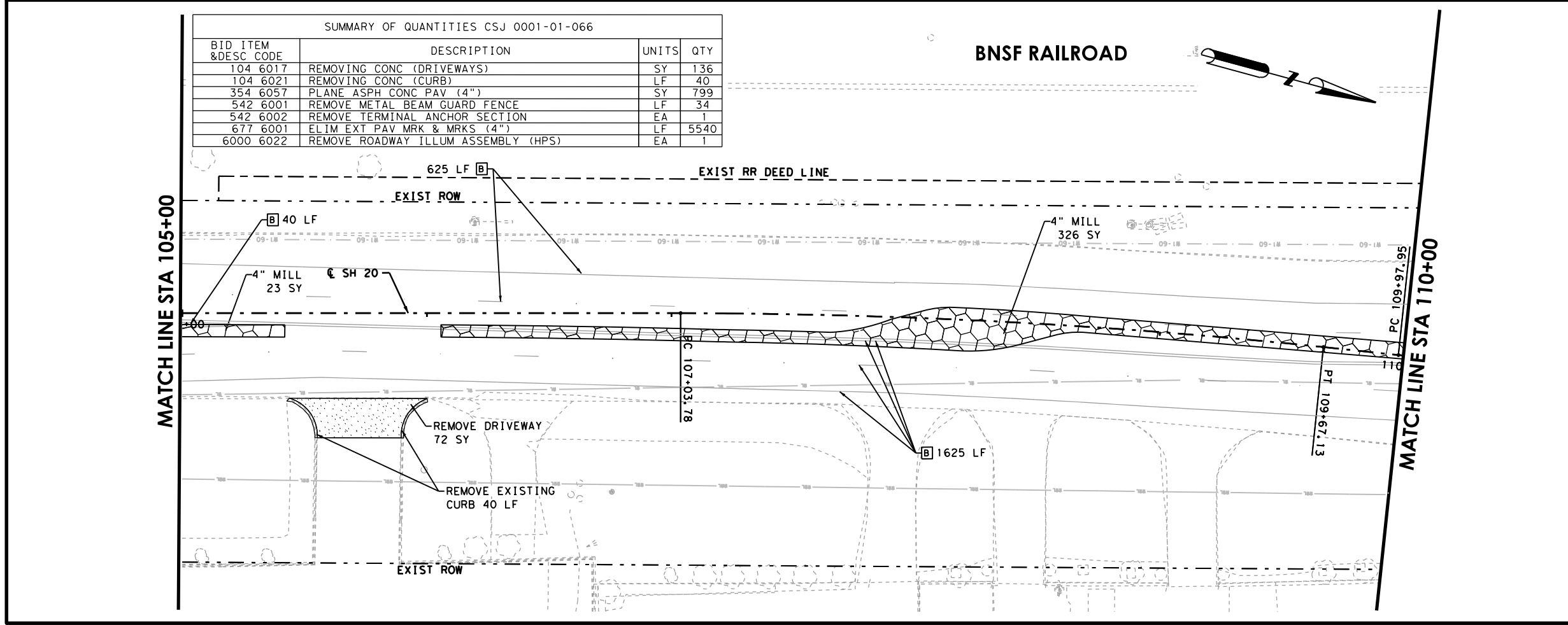
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CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	118

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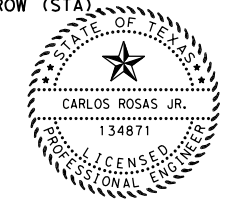
- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
 - ELIM EXT PAV MRK & MRKS (4")
 - ELIM EXT PAV MRK & MRKS (8")
 - ELIM EXT PAV MRK & MRKS (12")
 - ELIM EXT PAV MRK & MRKS (24")
 - ELIM EXT PAV MRK & MRKS (ARROW)
 - ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
1. ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 2. ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 3. ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6017	REMOVING CONC (DRIVEWAYS)	SY	136
104 6021	REMOVING CONC (CURB)	LF	40
354 6057	PLANE ASPH CONC PAV (4")	SY	799
542 6001	REMOVE METAL BEAM GUARD FENCE	LF	34
542 6002	REMOVE TERMINAL ANCHOR SECTION	EA	1
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5540
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	1



C.R.J.
4/30/2021

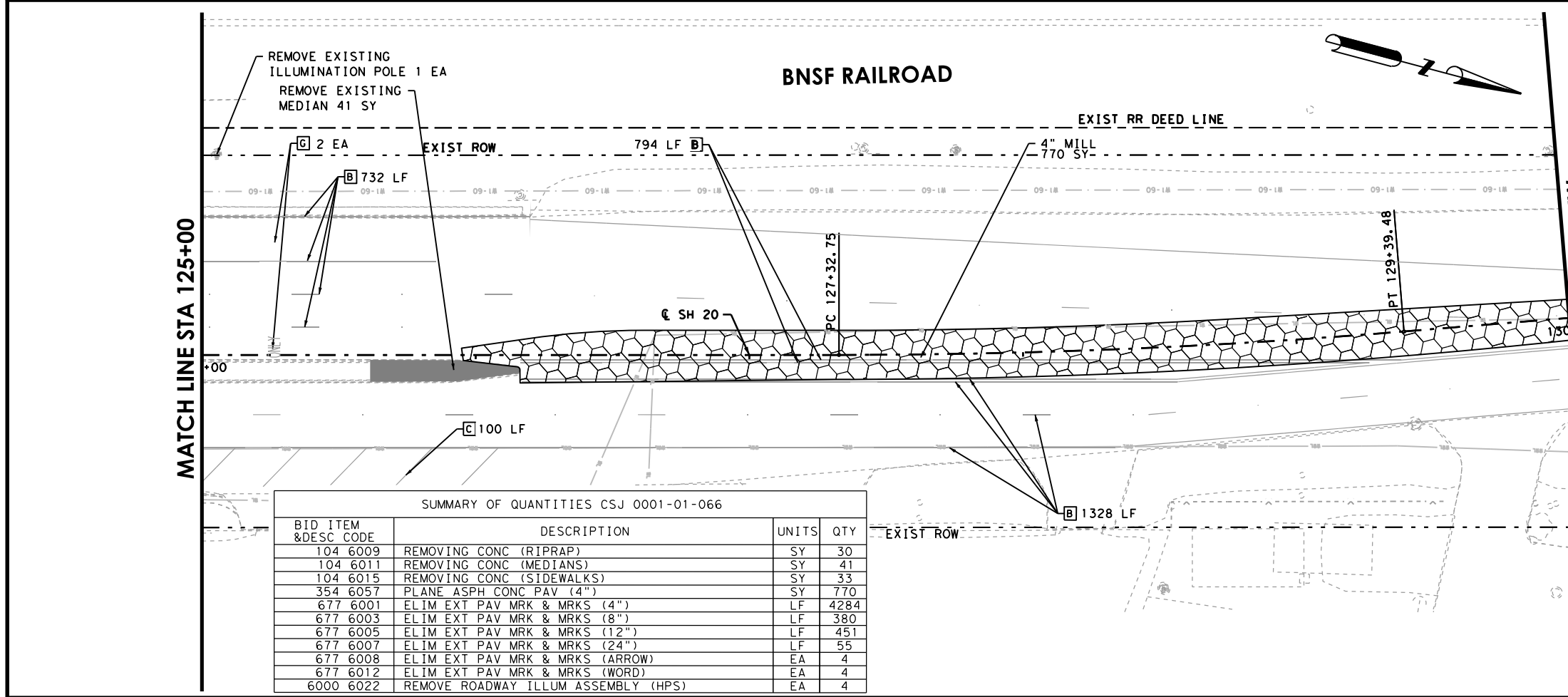
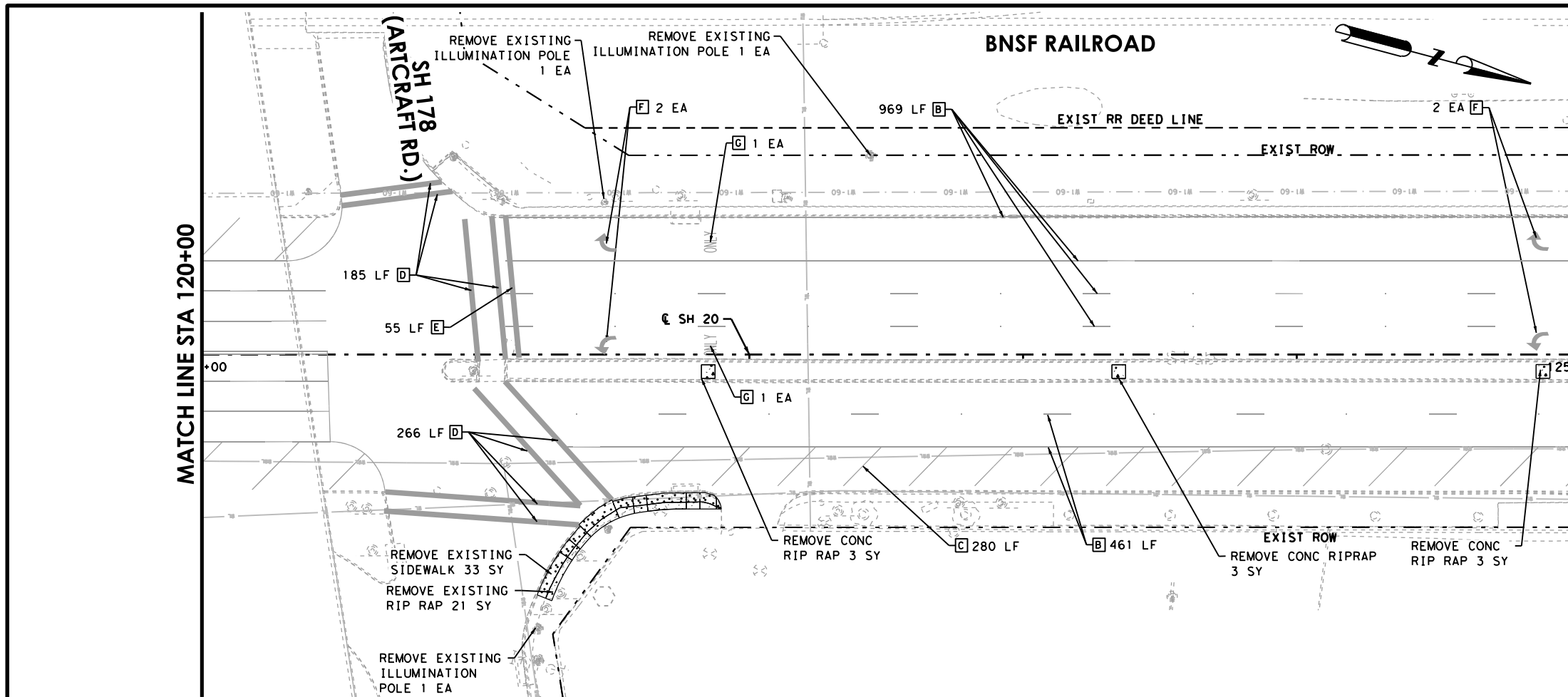


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 100+00 TO STA. 110+00**

SHEET 11 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	119

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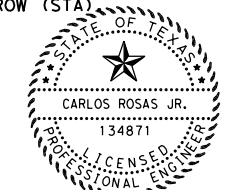


SUMMARY OF QUANTITIES CSJ 0001-01-066

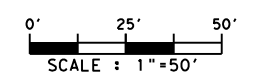
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6009	REMOVING CONC (RIPRAP)	SY	30
104 6011	REMOVING CONC (MEDIANS)	SY	41
104 6015	REMOVING CONC (SIDEWALKS)	SY	33
354 6057	PLANE ASPH CONC PAV (4")	SY	770
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	4284
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	380
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	451
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	55
677 6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
677 6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	4

- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
- B** ELIM EXT PAV MRK & MRKS (4")
 - C** ELIM EXT PAV MRK & MRKS (8")
 - D** ELIM EXT PAV MRK & MRKS (12")
 - E** ELIM EXT PAV MRK & MRKS (24")
 - F** ELIM EXT PAV MRK & MRKS (ARROW)
 - G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021

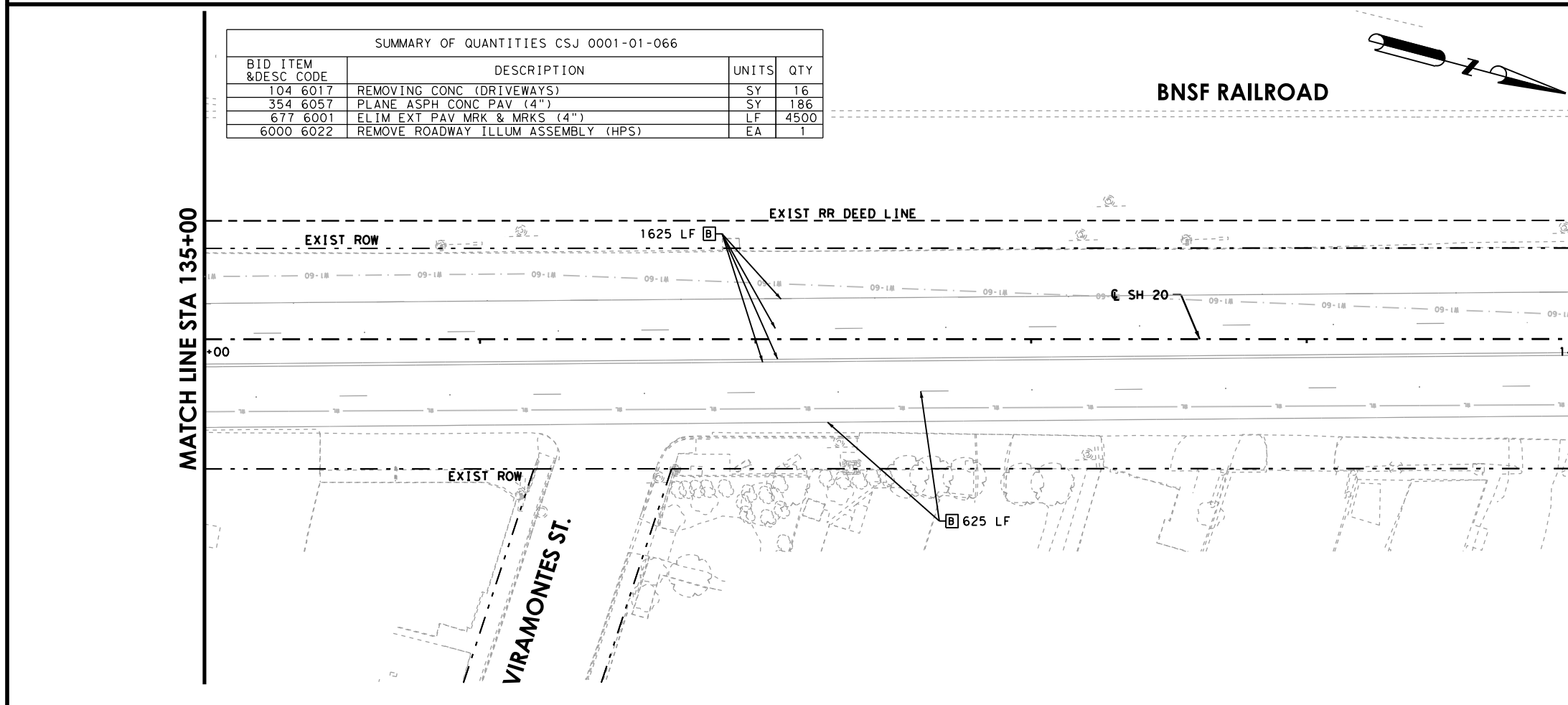
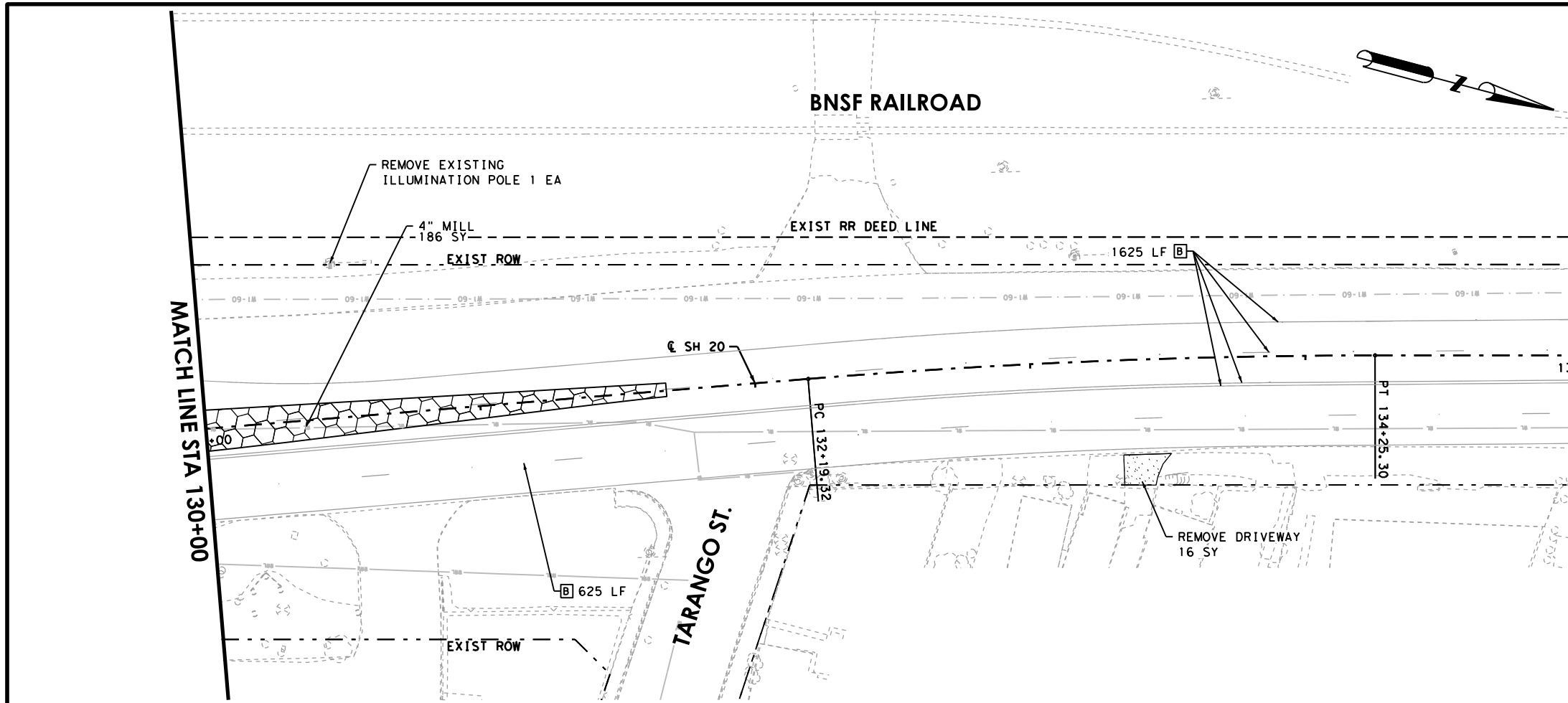


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 120+00 TO STA. 130+00**

SHEET 13 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	121

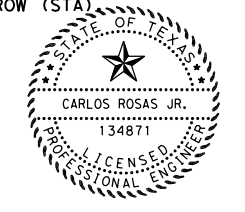
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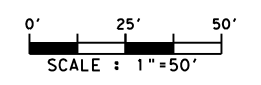
SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
104 6017	REMOVING CONC (DRIVEWAYS)	SY	16	
354 6057	PLANE ASPH CONC PAV (4")	SY	186	
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	4500	
6000 6022	REMOVE ROADWAY ILLUM ASSEMBLY (HPS)	EA	1	

- LEGEND**
- ASPHALT PAVEMENT TO BE REMOVED
 - CONCRETE MEDIAN TO BE REMOVED
 - CONCRETE RIPRAP TO BE REMOVED
 - CONCRETE SIDEWALK TO BE REMOVED
 - DRIVEWAY TO BE REMOVED
 - MEDIAN MILLING AREA
 - CONCRETE CURB TO BE REMOVED
 - MBGF TO BE REMOVED
- B** ELIM EXT PAV MRK & MRKS (4")
 - C** ELIM EXT PAV MRK & MRKS (8")
 - D** ELIM EXT PAV MRK & MRKS (12")
 - E** ELIM EXT PAV MRK & MRKS (24")
 - F** ELIM EXT PAV MRK & MRKS (ARROW)
 - G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J
4/30/2021

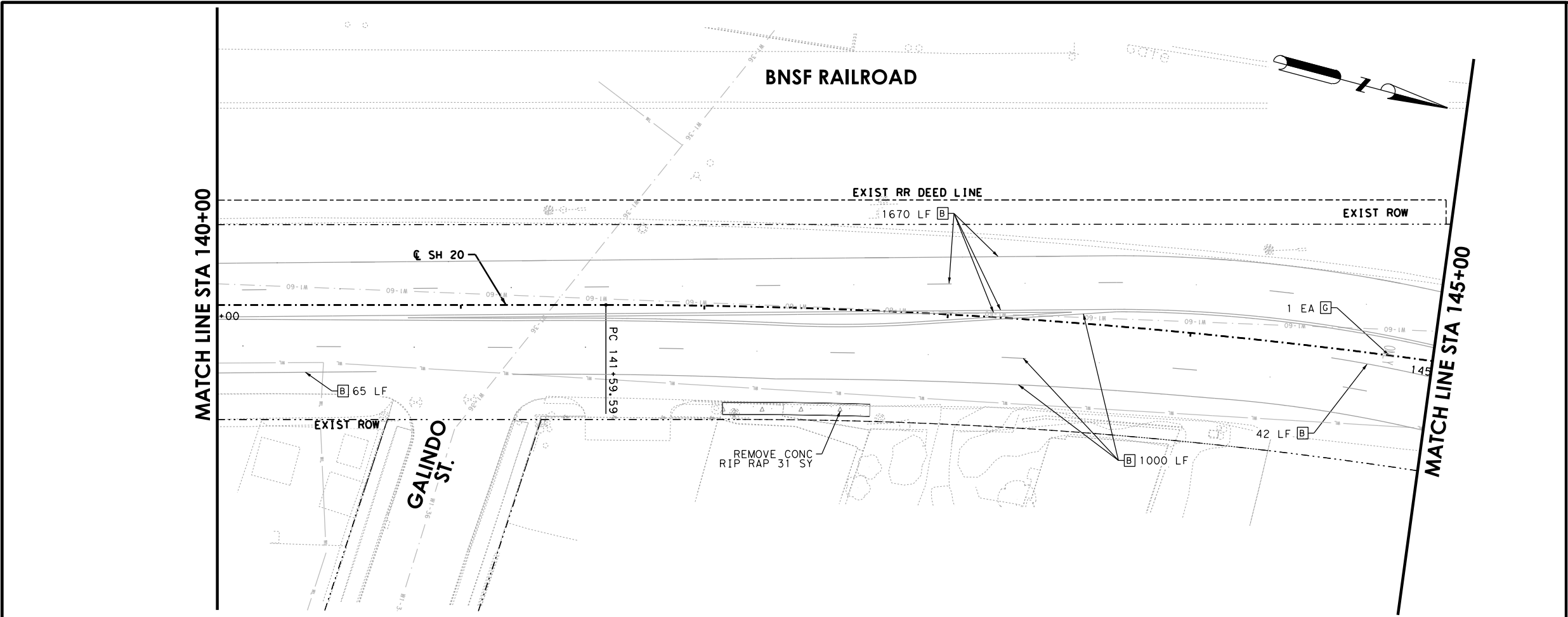


**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 130+00 TO STA. 140+00**

SHEET 14 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	122

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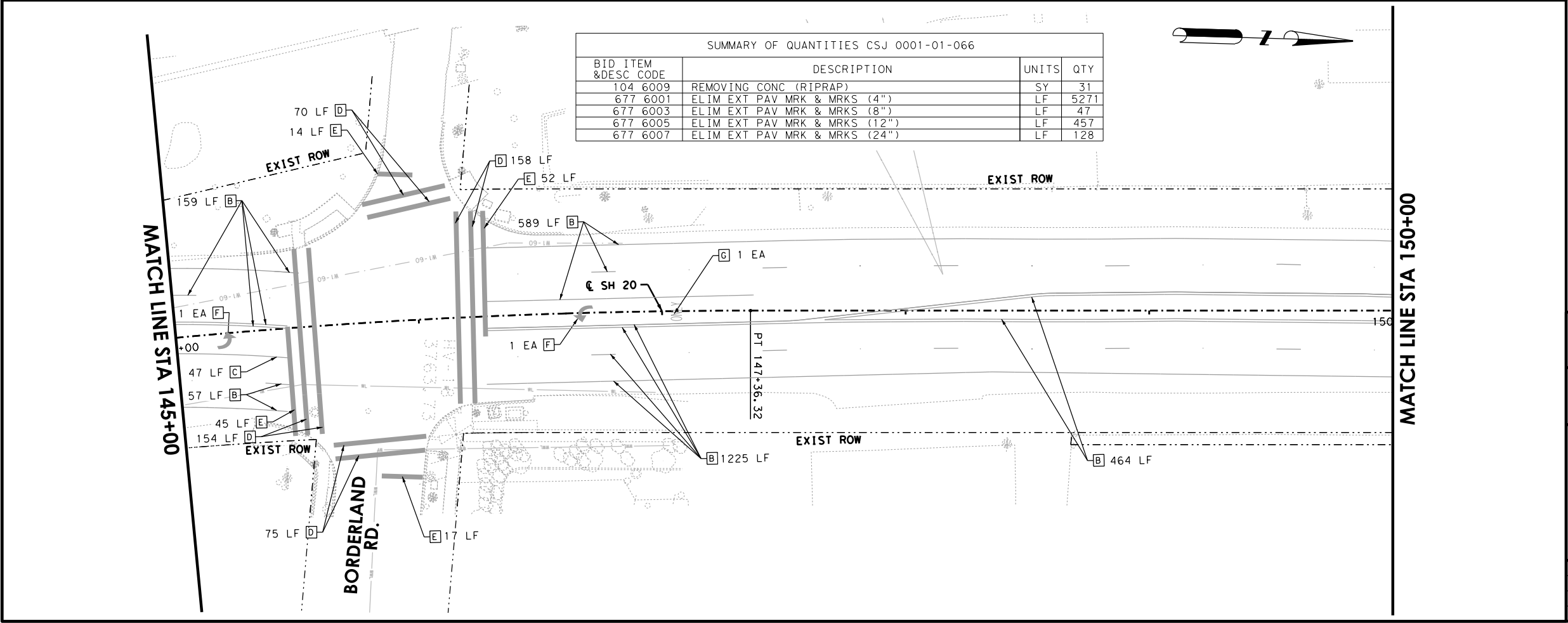


LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- CONCRETE MEDIAN TO BE REMOVED
- CONCRETE RIPRAP TO BE REMOVED
- CONCRETE SIDEWALK TO BE REMOVED
- DRIVEWAY TO BE REMOVED
- MEDIAN MILLING AREA
- CONCRETE CURB TO BE REMOVED
- MBGF TO BE REMOVED

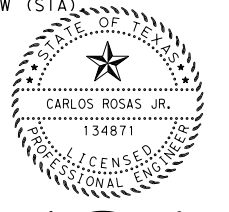
- B** ELIM EXT PAV MRK & MRKS (4")
- C** ELIM EXT PAV MRK & MRKS (8")
- D** ELIM EXT PAV MRK & MRKS (12")
- E** ELIM EXT PAV MRK & MRKS (24")
- F** ELIM EXT PAV MRK & MRKS (ARROW)
- G** ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
- ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 - ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 - ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



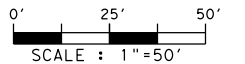
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
104 6009	REMOVING CONC (RIPRAP)	SY	31
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	5271
677 6003	ELIM EXT PAV MRK & MRKS (8")	LF	47
677 6005	ELIM EXT PAV MRK & MRKS (12")	LF	457
677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	128



C-R-J

5/3/2021



HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

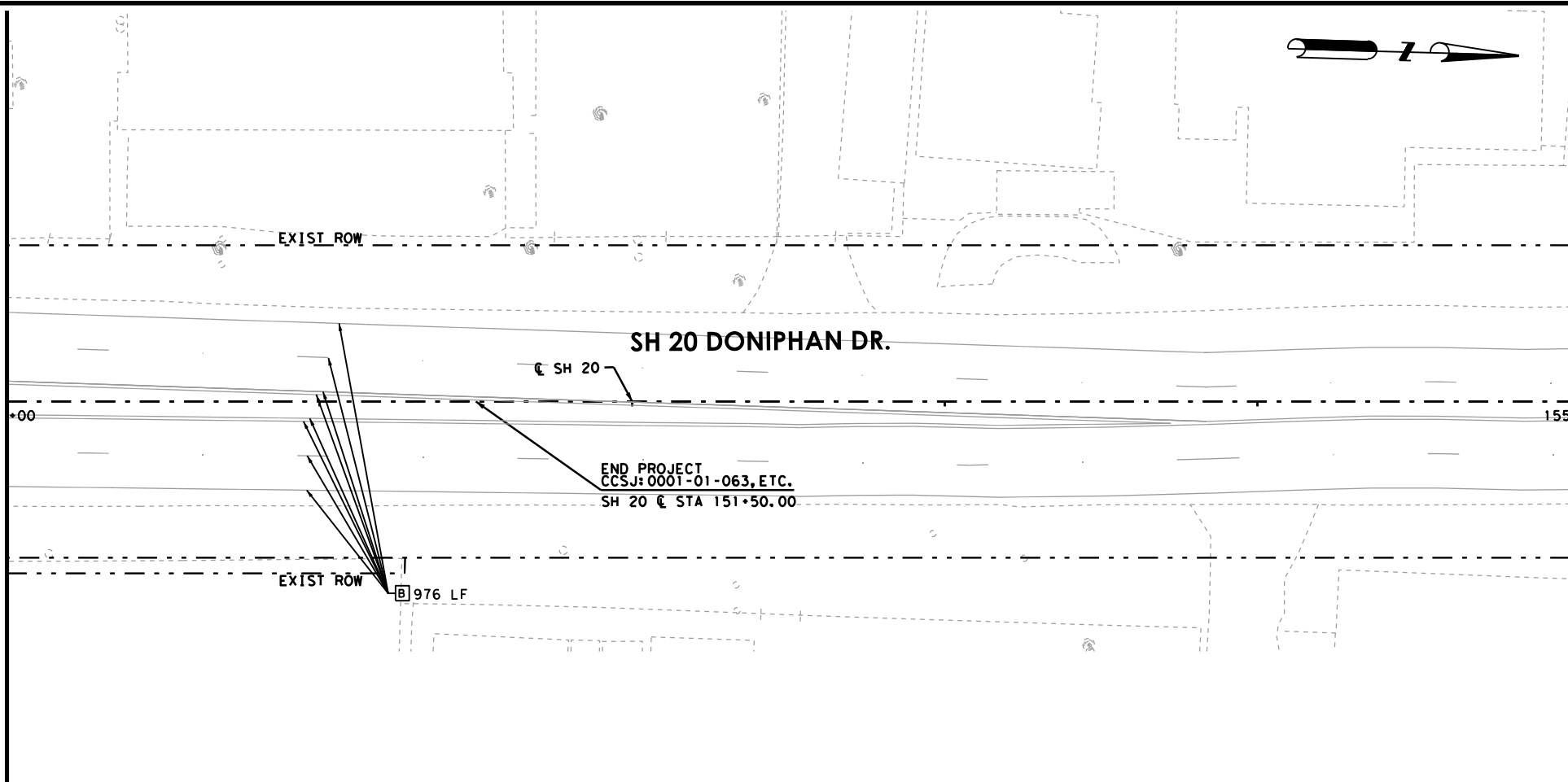
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**SH 20
DONIPHAN DR.
REMOVAL LAYOUT
STA. 140+00 TO STA. 150+00**









SHEET 15 OF 16







DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	123

MATCH LINE STA 150+00

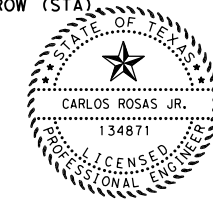


SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
677 6001	ELIM EXT PAV MRK & MRKS (4")	LF	976	

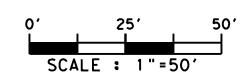
- LEGEND**
-  ASPHALT PAVEMENT TO BE REMOVED
 -  CONCRETE MEDIAN TO BE REMOVED
 -  CONCRETE RIPRAP TO BE REMOVED
 -  CONCRETE SIDEWALK TO BE REMOVED
 -  DRIVEWAY TO BE REMOVED
 -  MEDIAN MILLING AREA
 -  CONCRETE CURB TO BE REMOVED
 -  MBGF TO BE REMOVED

 -  ELIM EXT PAV MRK & MRKS (4")
 -  ELIM EXT PAV MRK & MRKS (8")
 -  ELIM EXT PAV MRK & MRKS (12")
 -  ELIM EXT PAV MRK & MRKS (24")
 -  ELIM EXT PAV MRK & MRKS (ARROW)
 -  ELIM EXT PAV MRK & MRKS (WORD)

- NOTES:**
1. ALL EXISTING UTILITIES, DRIVEWAYS, SIDEWALKS, ADA RAMPS, AND SIGNALS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER.
 2. ALL EXISTING CONDUIT GROUNDBOXES FOR EXISTING ILLUMINATION SHALL BE ABANDONED.
 3. ALL EXISTING CONDUCTORS AND GROUND-BOXES FOR EXISTING ILLUMINATION SYSTEM SHALL BE REMOVED. DUE TO LIMITED RECORD DRAWINGS INFORMATION ON ILLUMINATION, CONTRACTOR SHALL FIELD VERIFY LOCATION OF CONDUCTORS AND GROUND BOX. THIS WORK SHALL BE PAID FOR UNDER ITEM 100-6002 PREP ROW (STA).



C-R-J.
4/30/2021



**SH 20
DONIPHAN DR.**

**REMOVAL LAYOUT
STA. 150+00 TO END**

SHEET 16 OF 16

DESIGNED:	CR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CR	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	124

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Beginning chain SH20_ALIGN description

Point 13 N 10,692,770.1447 E 357,227.1903 Sta 0+00.00
 Course from 13 to PC SH20_ALIGN_3 N 15° 04' 49.26" W Dist 6,708.6718

Curve Data

Curve SH20_ALIGN_3
 P.I. Station = 68+27.01 N 10,699,362.0414 E 355,450.9853
 Delta = 1° 21' 21.40" (RT)
 Degree = 0° 34' 22.65"
 Tangent = 118.3339
 Length = 236.6568
 Radius = 10,000.0000
 External = 0.7001
 Long Chord = 236.6513
 Mid. Ord. = 0.7001
 P.C. Station = 67+08.67 N 10,699,247.7826 E 355,481.7727
 P.T. Station = 69+45.33 N 10,699,476.9967 E 355,422.9104
 C.C. = N 10,701,849.5162 E 365,137.3919
 Back = N 15° 04' 49.26" W
 Ahead = N 13° 43' 27.86" W
 Chord Bear = N 14° 24' 08.56" W

Course from PT SH20_ALIGN_3 to PC SH20_ALIGN_6 N 13° 43' 27.86" W Dist 983.0859

Curve Data

Curve SH20_ALIGN_6
 P.I. Station = 79+65.89 N 10,700,468.4175 E 355,180.7806
 Delta = 1° 43' 03.15" (LT)
 Degree = 2° 17' 30.59"
 Tangent = 37.4738
 Length = 74.9419
 Radius = 2,500.0000
 External = 0.2808
 Long Chord = 74.9391
 Mid. Ord. = 0.2808
 P.C. Station = 79+28.41 N 10,700,432.0137 E 355,189.6713
 P.T. Station = 80+03.36 N 10,700,504.5385 E 355,170.8028
 C.C. = N 10,699,838.8838 E 352,761.0509
 Back = N 13° 43' 27.86" W
 Ahead = N 15° 26' 31.01" W
 Chord Bear = N 14° 34' 59.43" W

Course from PT SH20_ALIGN_6 to PC SH20_ALIGN_9 N 15° 26' 31.01" W Dist 2,700.4259

Curve Data

Curve SH20_ALIGN_9
 P.I. Station = 108+35.58 N 10,703,234.5213 E 354,416.6895
 Delta = 6° 02' 08.13" (RT)
 Degree = 2° 17' 30.59"
 Tangent = 131.7981
 Length = 263.3524
 Radius = 2,500.0000
 External = 3.4717
 Long Chord = 263.2306
 Mid. Ord. = 3.4669
 P.C. Station = 107+03.78 N 10,703,107.4810 E 354,451.7823
 P.T. Station = 109+67.13 N 10,703,364.5472 E 354,395.1490
 C.C. = N 10,703,773.1357 E 356,861.5341
 Back = N 15° 26' 31.01" W
 Ahead = N 9° 24' 22.88" W
 Chord Bear = N 12° 25' 26.94" W

Course from PT SH20_ALIGN_9 to PC SH20_ALIGN_12 N 9° 24' 22.88" W Dist 30.8203

Curve Data

Curve SH20_ALIGN_12
 P.I. Station = 111+21.81 N 10,703,517.1385 E 354,369.8703
 Delta = 5° 40' 20.15" (LT)
 Degree = 2° 17' 30.59"
 Tangent = 123.8508
 Length = 247.4992
 Radius = 2,500.0000
 External = 3.0659
 Long Chord = 247.3981
 Mid. Ord. = 3.0622
 P.C. Station = 109+97.95 N 10,703,394.9531 E 354,390.1119
 P.T. Station = 112+45.45 N 10,703,636.7251 E 354,337.6512
 C.C. = N 10,702,986.3646 E 351,923.7268
 Back = N 9° 24' 22.88" W
 Ahead = N 15° 04' 43.02" W
 Chord Bear = N 12° 14' 32.95" W

Course from PT SH20_ALIGN_12 to PC SH20_ALIGN_15 N 15° 04' 43.02" W Dist 1,487.2992

Curve Data

Curve SH20_ALIGN_15
 P.I. Station = 128+36.18 N 10,705,172.6792 E 353,923.8339
 Delta = 4° 44' 16.43" (LT)
 Degree = 2° 17' 30.59"
 Tangent = 103.4238
 Length = 206.7297
 Radius = 2,500.0000
 External = 2.1384
 Long Chord = 206.6708
 Mid. Ord. = 2.1366
 P.C. Station = 127+32.75 N 10,705,072.8162 E 353,950.7390
 P.T. Station = 129+39.48 N 10,705,269.9785 E 353,888.7723
 C.C. = N 10,704,422.4558 E 351,536.8146
 Back = N 15° 04' 43.02" W
 Ahead = N 19° 48' 59.45" W
 Chord Bear = N 17° 26' 51.24" W

Course from PT SH20_ALIGN_15 to PC SH20_ALIGN_18 N 19° 48' 59.45" W Dist 279.8403

Curve Data

Curve SH20_ALIGN_18
 P.I. Station = 133+22.37 N 10,705,630.1930 E 353,758.9698
 Delta = 4° 43' 14.45" (RT)
 Degree = 2° 17' 30.59"
 Tangent = 103.0476
 Length = 205.9786
 Radius = 2,500.0000
 External = 2.1229
 Long Chord = 205.9203
 Mid. Ord. = 2.1211
 P.C. Station = 132+19.32 N 10,705,533.2476 E 353,793.9039
 P.T. Station = 134+25.30 N 10,705,729.6846 E 353,732.1327
 C.C. = N 10,706,380.7703 E 356,145.8616
 Back = N 19° 48' 59.45" W
 Ahead = N 15° 05' 45.00" W
 Chord Bear = N 17° 27' 22.23" W

Course from PT SH20_ALIGN_18 to PC SH20_ALIGN_21 N 15° 05' 45.00" W Dist 734.2899

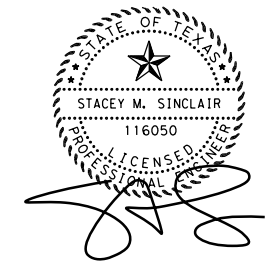
Curve Data

Curve SH20_ALIGN_21
 P.I. Station = 144+49.24 N 10,706,718.2881 E 353,465.4641
 Delta = 13° 13' 03.21" (RT)
 Degree = 2° 17' 30.59"
 Tangent = 289.6481
 Length = 576.7248
 Radius = 2,500.0000
 External = 16.7233
 Long Chord = 575.4468
 Mid. Ord. = 16.6121
 P.C. Station = 141+59.59 N 10,706,438.6353 E 353,540.8984
 P.T. Station = 147+36.32 N 10,707,007.7806 E 353,455.9705
 C.C. = N 10,707,089.7211 E 355,954.6273
 Back = N 15° 05' 45.00" W
 Ahead = N 1° 52' 41.79" W
 Chord Bear = N 8° 29' 13.39" W

Course from PT SH20_ALIGN_21 to 14 N 1° 52' 41.79" W Dist 2,156.0674

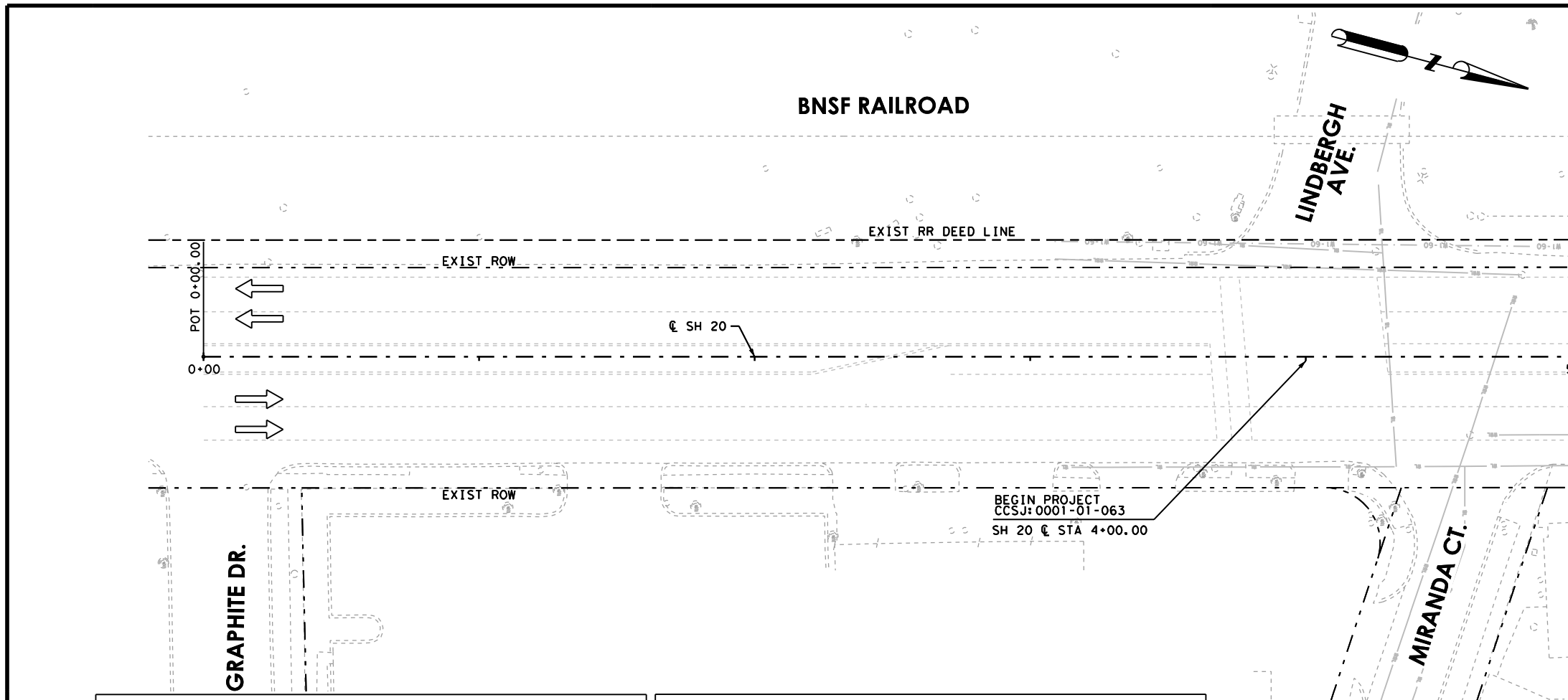
Point 14 N 10,709,162.6895 E 353,385.3028 Sta 168+92.38

Ending chain SH20_ALIGN description



4/30/2021

© 2021					
SH 20 DONIPHAN DR. ALIGNMENT DATA					
SHEET 1 OF 1					
DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	SY	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	125

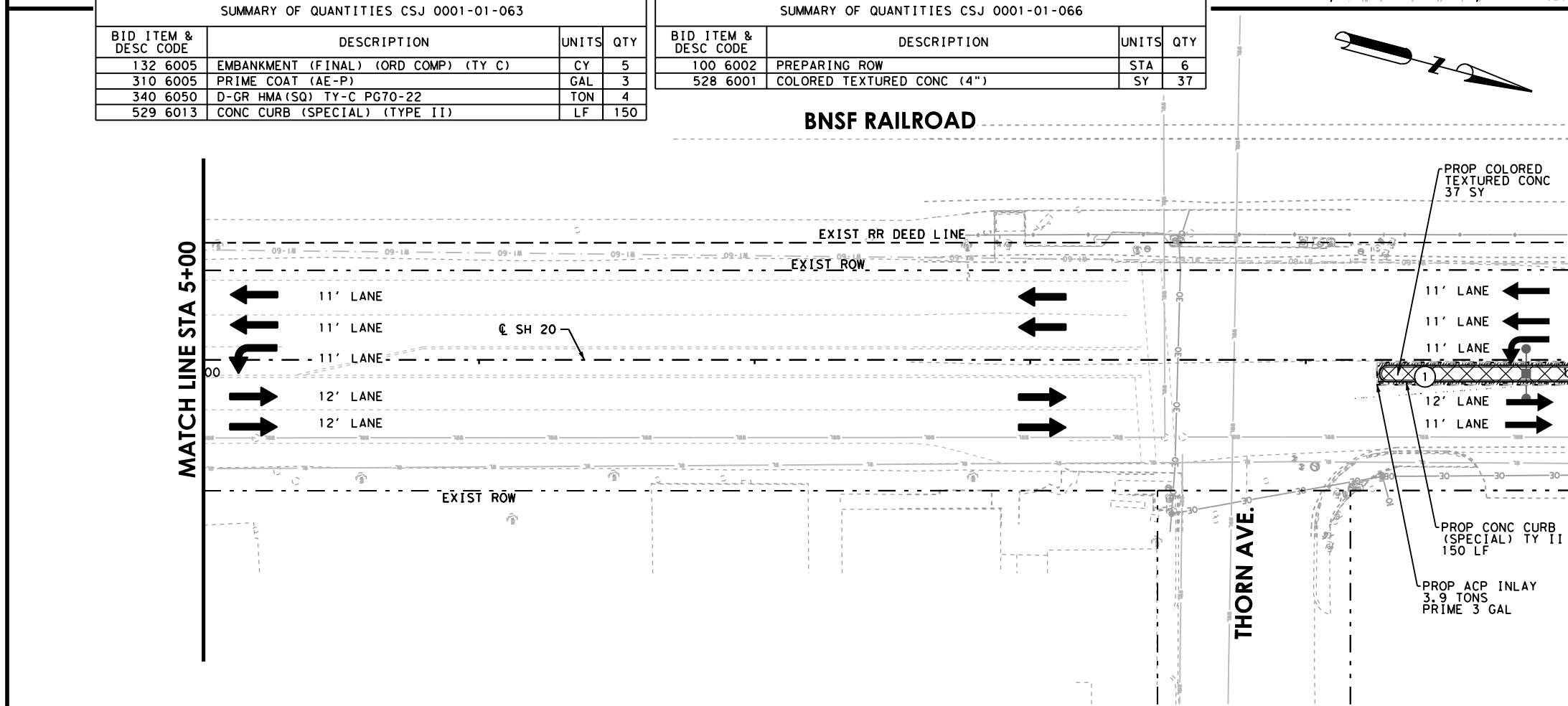


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	5
310 6005	PRIME COAT (AE-P)	GAL	3
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	4
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	150

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	6
528 6001	COLORED TEXTURED CONC (4")	SY	37



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.

5/25/2021

SCALE : 1"=50'

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

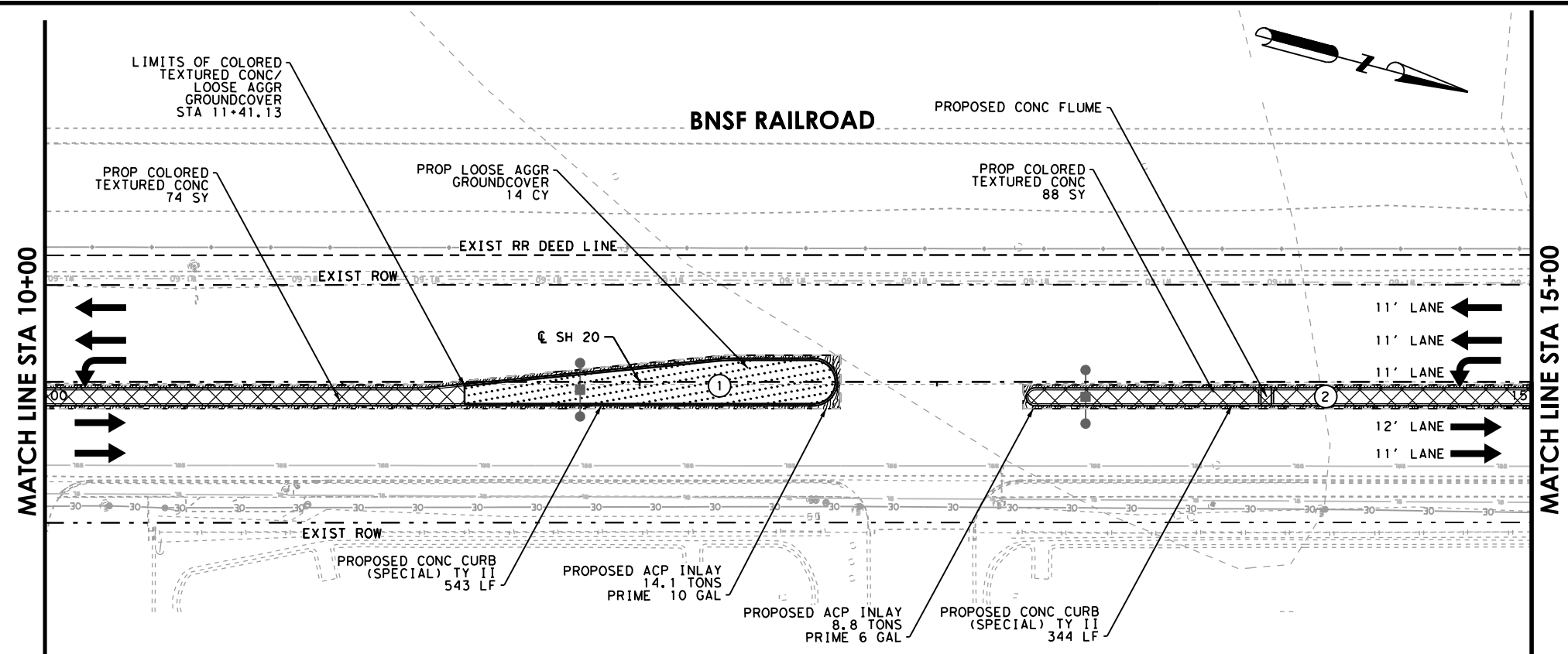
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SH 20
DONIPHAN DR.
ROADWAY PLAN
BEGIN TO STA. 10+00

SHEET 1 OF 16

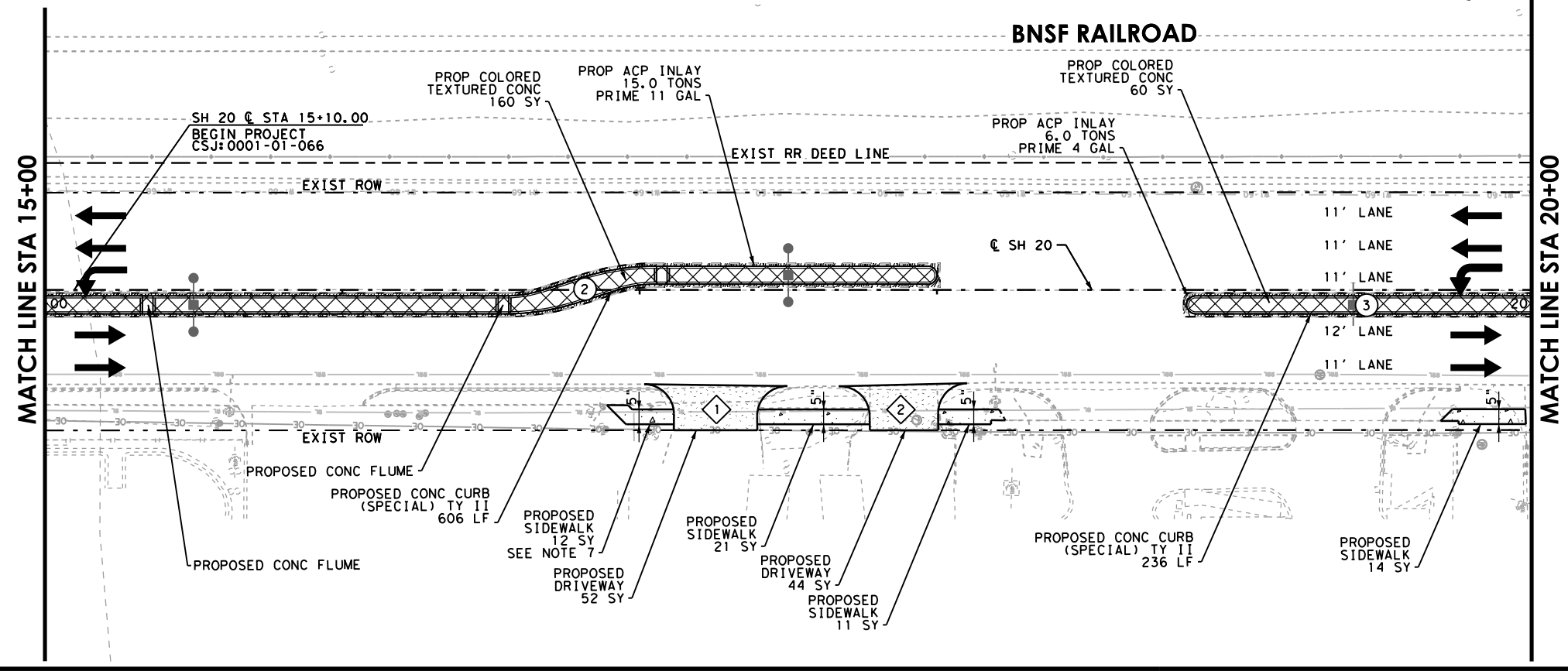
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CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	126

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SUMMARY OF QUANTITIES CSJ 0001-01-063				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	74	
310 6005	PRIME COAT (AE-P)	GAL	31	
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	44	
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1729	

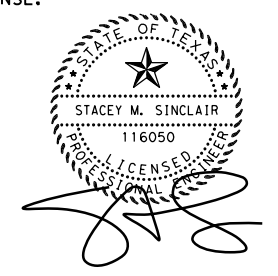
SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
100 6002	PREPARING ROW	STA	10	
110 6001	EXCAVATION (ROADWAY)	CY	10	
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	1	
528 6001	COLORLED TEXTURED CONC (4")	SY	382	
530 6004	DRIVEWAYS (CONC)	SY	96	
531 6001	CONC SIDEWALKS (4")	SY	58	
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	14	



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- ### NOTES:
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



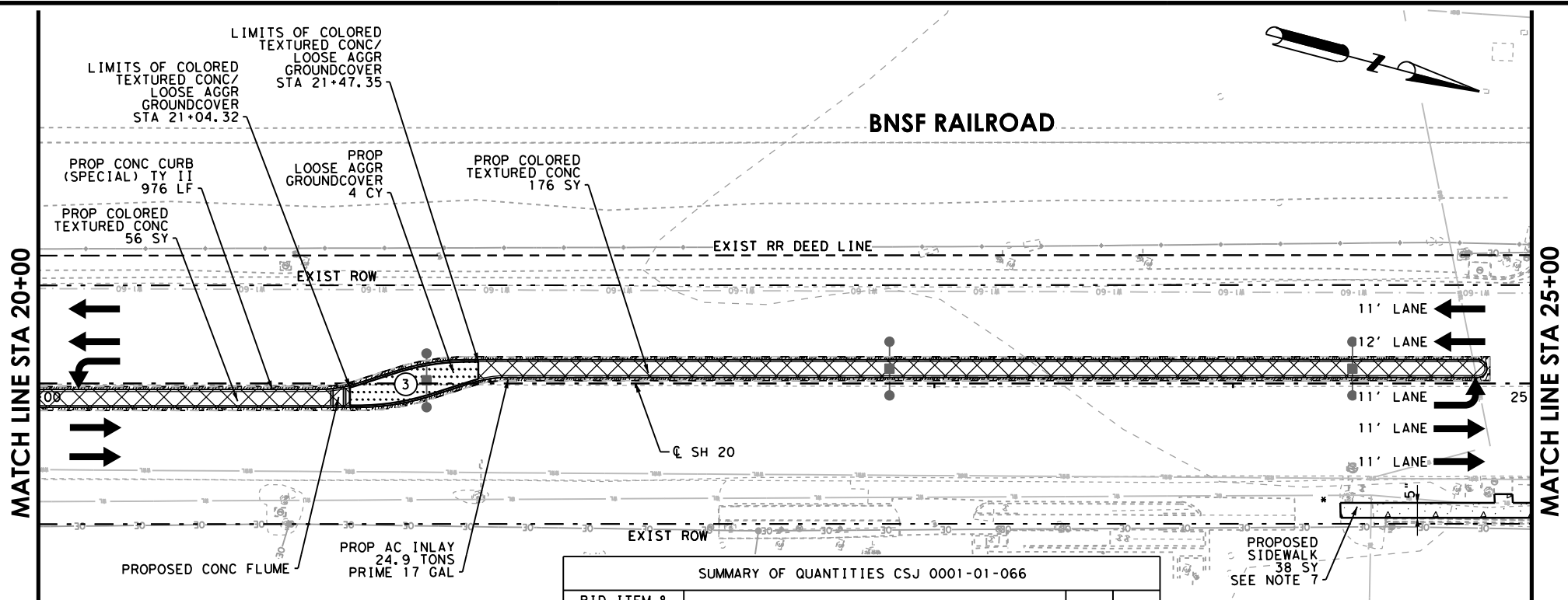
5/25/2021



SH 20 DONIPHAN DR. ROADWAY PLAN STA. 10+00 TO STA. 20+00

SHEET 2 OF 16					
DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	127

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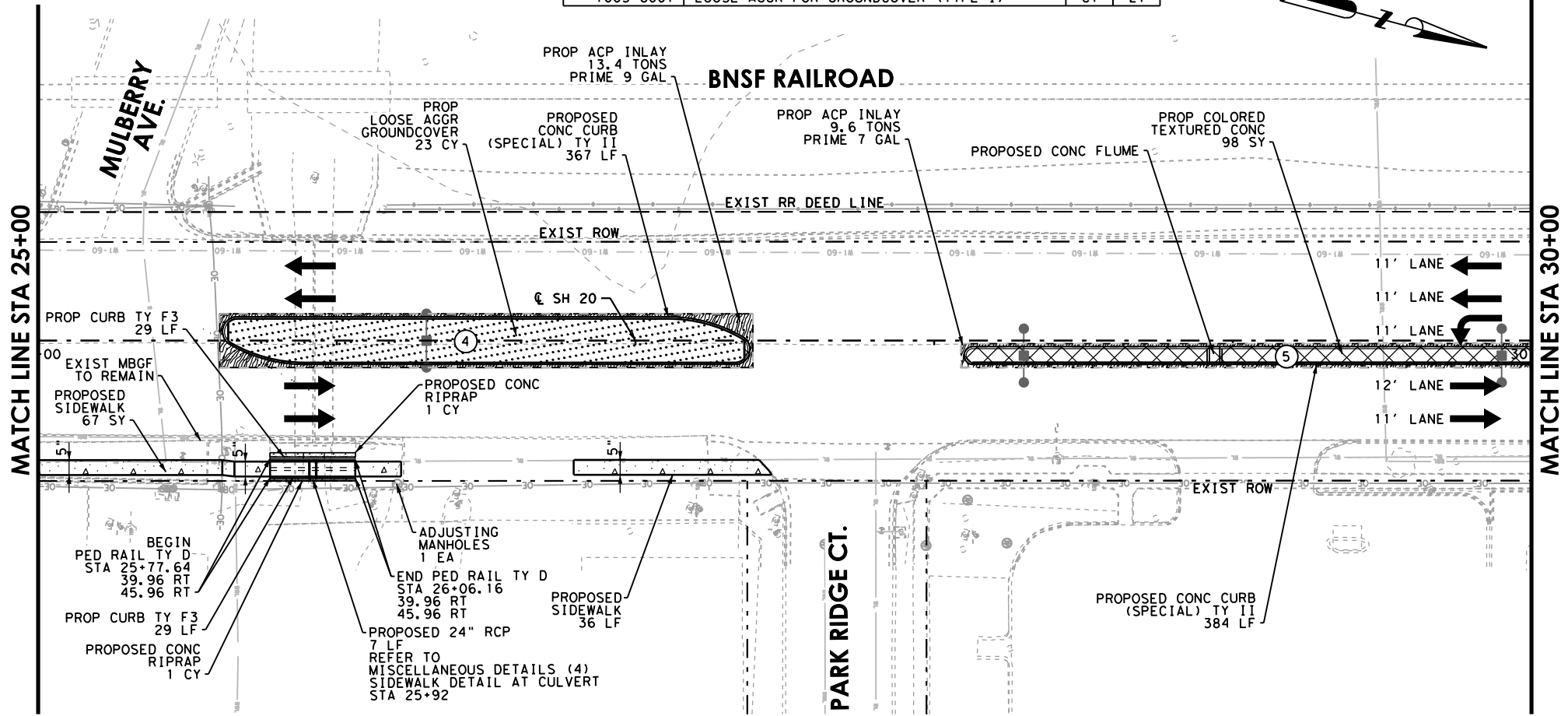


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	85
310 6005	PRIME COAT (AE-P)	GAL	33
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	48
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1727

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	14
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	19
432 6003	RIPRAP (CONC) (6 IN)	CY	2
450 6050	RAIL (HANDRAIL) (TY D)	LF	57
464 6005	RC PIPE (CL III) (24 IN)	LF	7
479 6001	ADJUSTING MANHOLES	EA	1
528 6001	COLORED TEXTURED CONC (4")	SY	330
529 6018	CONC CURB (TY F3)	LF	58
531 6001	CONC SIDEWALKS (4")	SY	141
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	27



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - EXISTING ROCK WALL TO REMAIN. NO WATER CONTRACTOR SHALL REPAIR/REPLACER'S DAMAGE AT CONTRACTOR'S EXPENSE.

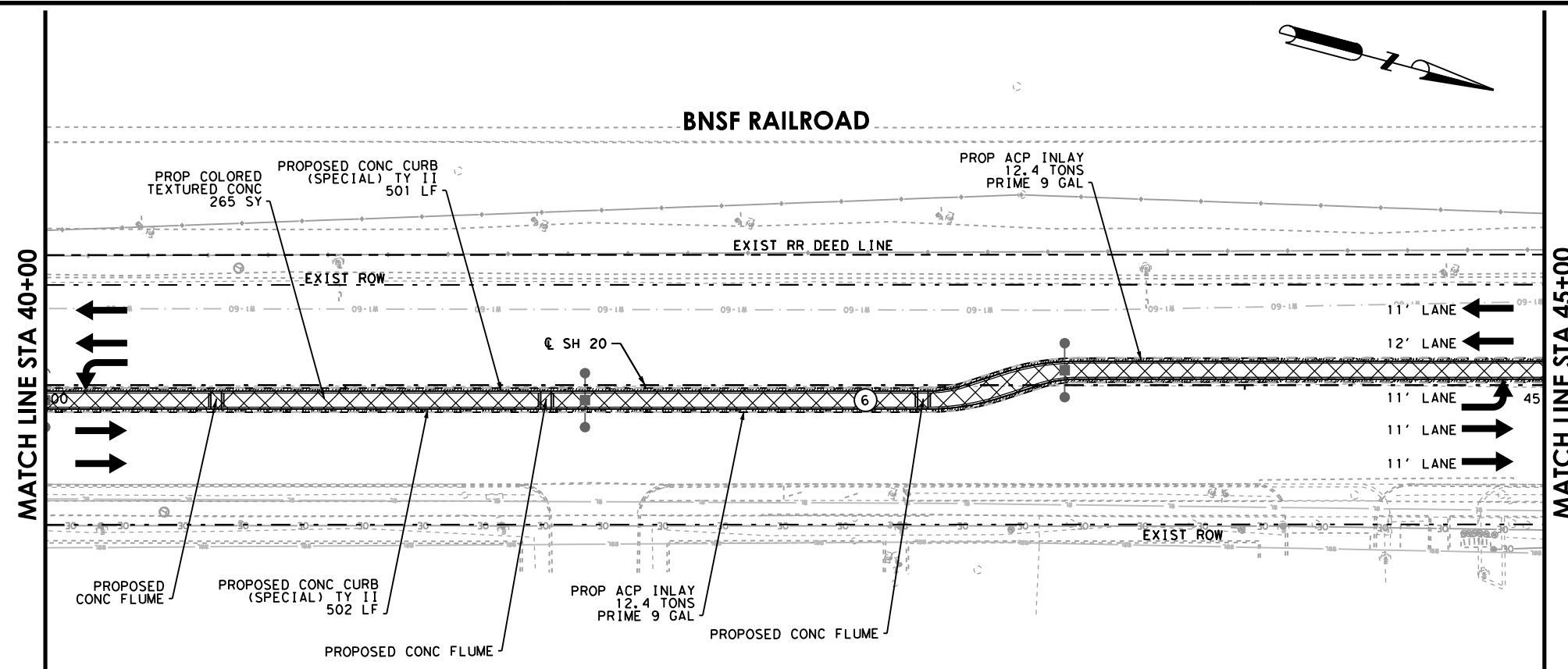
Professional Engineer Seal for Stacey M. Sinclair, License No. 116050, State of Texas. Date: 5/25/2021. Scale: 1"=50'.

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SH 20 DONIPHAN DR. ROADWAY PLAN
STA. 20+00 TO STA. 30+00

SHEET 3 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	128

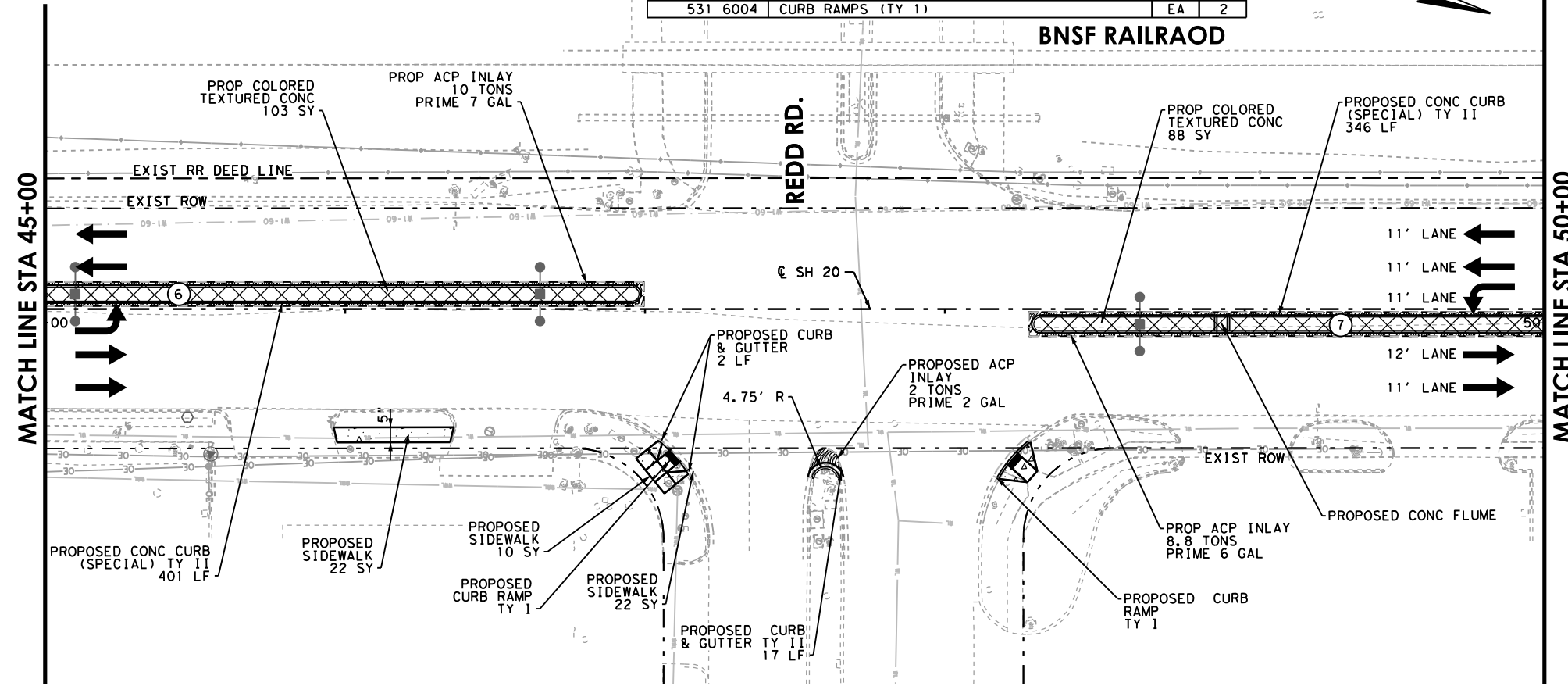


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	65
310 6005	PRIME COAT (AE-P)	GAL	33
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	46
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1750

SUMMARY OF QUANTITIES CSJ 0001-01-066

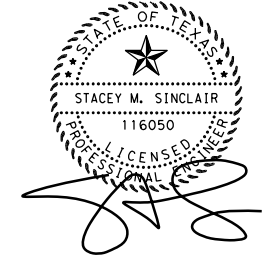
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	5
528 6001	COLORED TEXTURED CONC (4")	SY	456
529 6008	CONC CURB & GUTTER (TY II)	LF	19
531 6001	CONC SIDEWALKS (4")	SY	32
531 6004	CURB RAMPS (TY 1)	EA	2



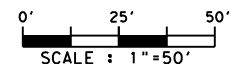
LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



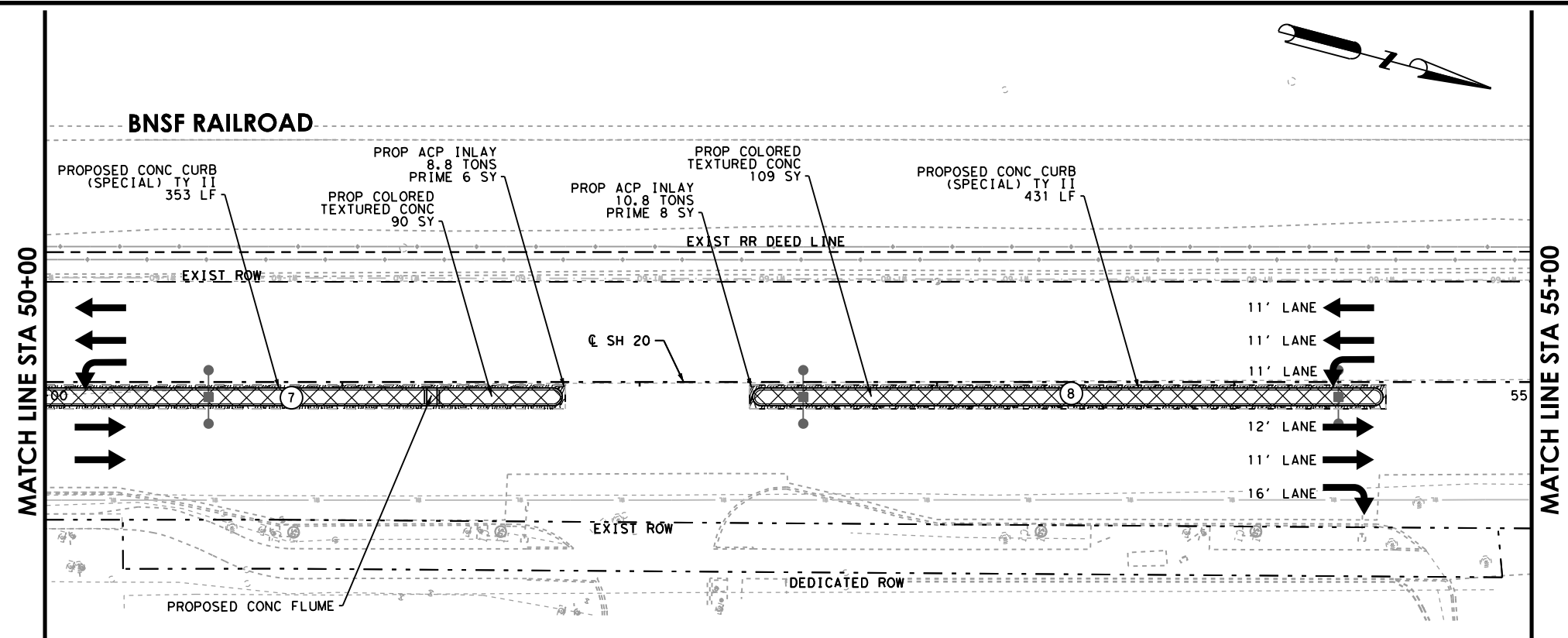
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Infrastructure Solutions
Firm Registration Number 420

Texas Department of Transportation

**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 40+00 TO STA. 50+00**

SHEET 5 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	130

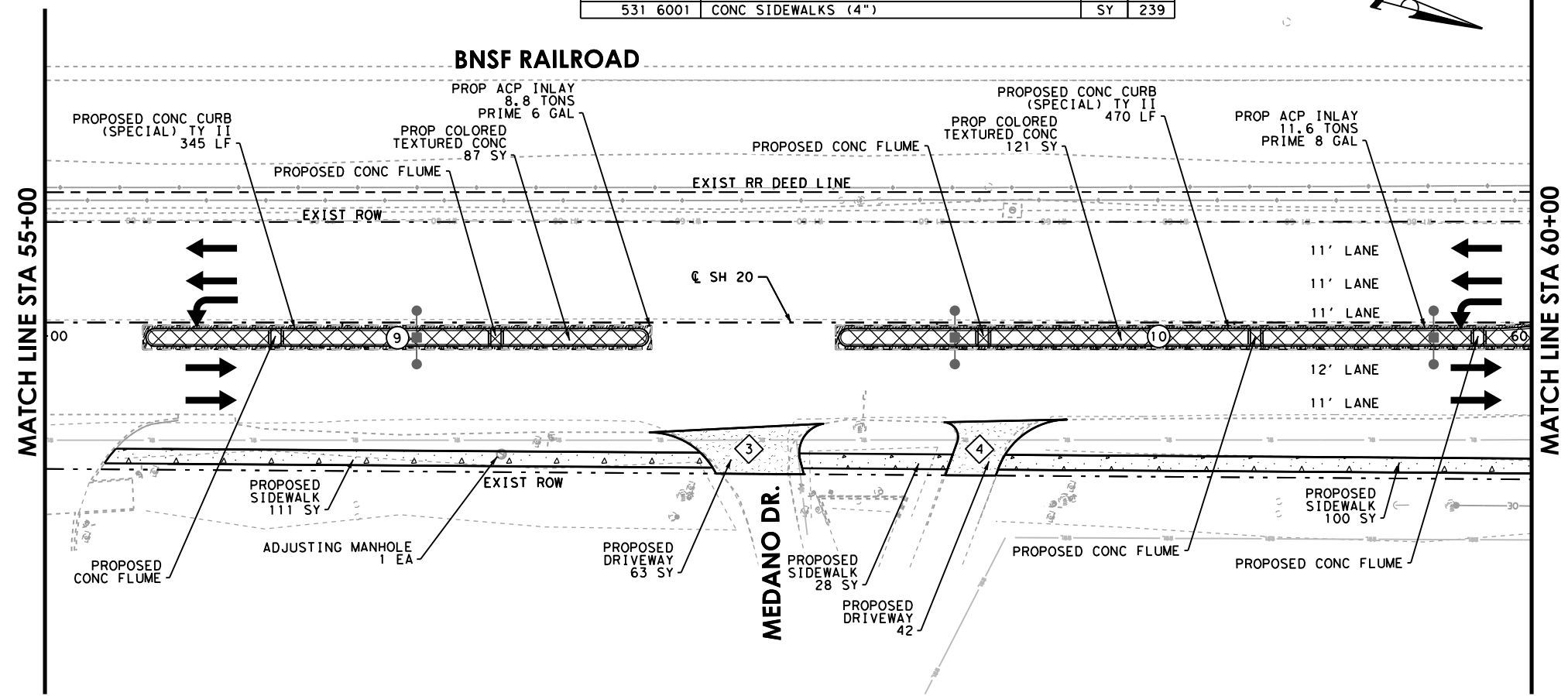


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	58
310 6005	PRIME COAT (AE-P)	GAL	28
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	40
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1599

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	28
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	1
479 6001	ADJUSTING MANHOLES	EA	1
528 6001	COLORLED TEXTURED CONC (4")	SY	407
530 6004	DRIVEWAYS (CONC)	SY	105
531 6001	CONC SIDEWALKS (4")	SY	239

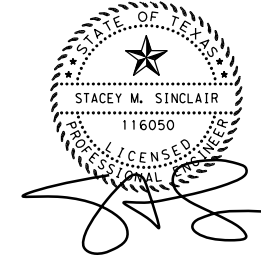


LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

NOTES:

1. SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
2. SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
3. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
4. SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
5. PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
6. UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
7. DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



**SH 20
DONIPHAN DR.**

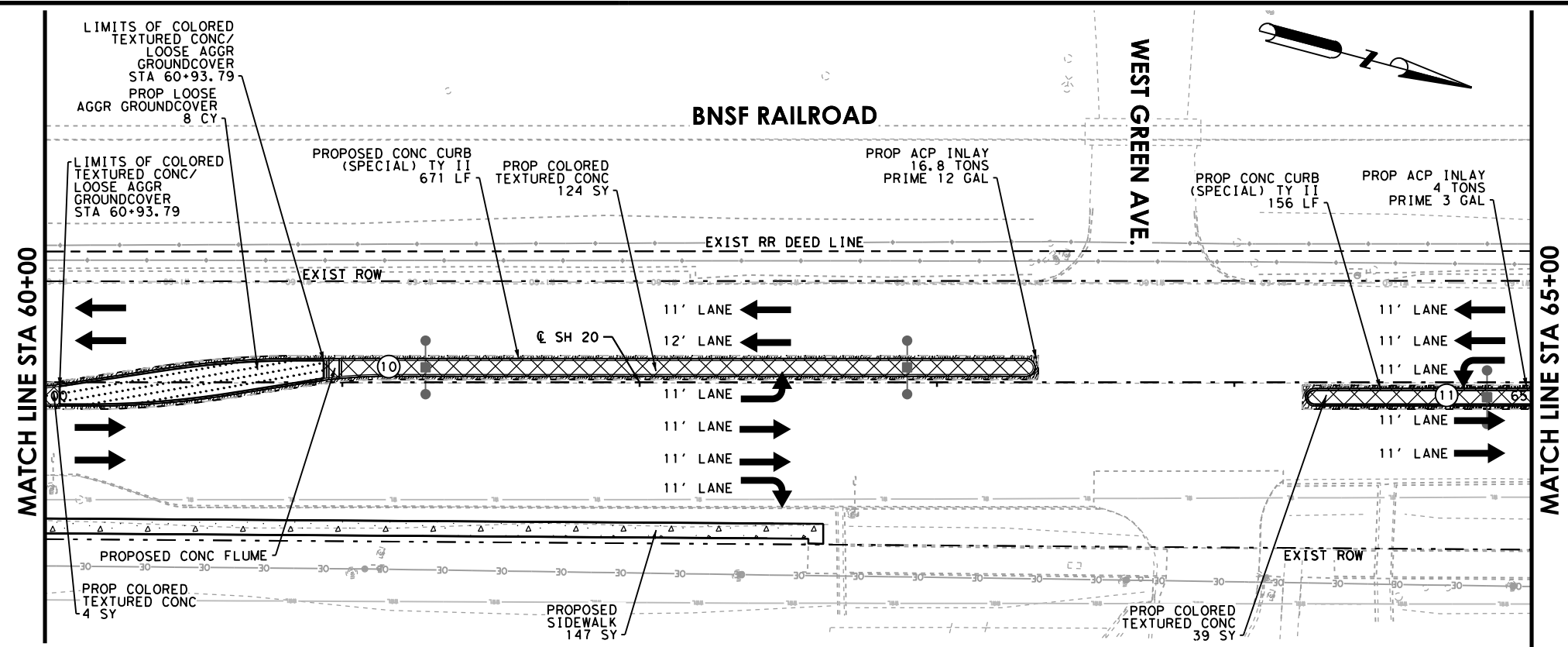
ROADWAY PLAN
STA. 50+00 TO STA. 60+00

SHEET 6 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	131

5/25/2021

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SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	87
310 6005	PRIME COAT (AE-P)	GAL	32
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	45
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1826

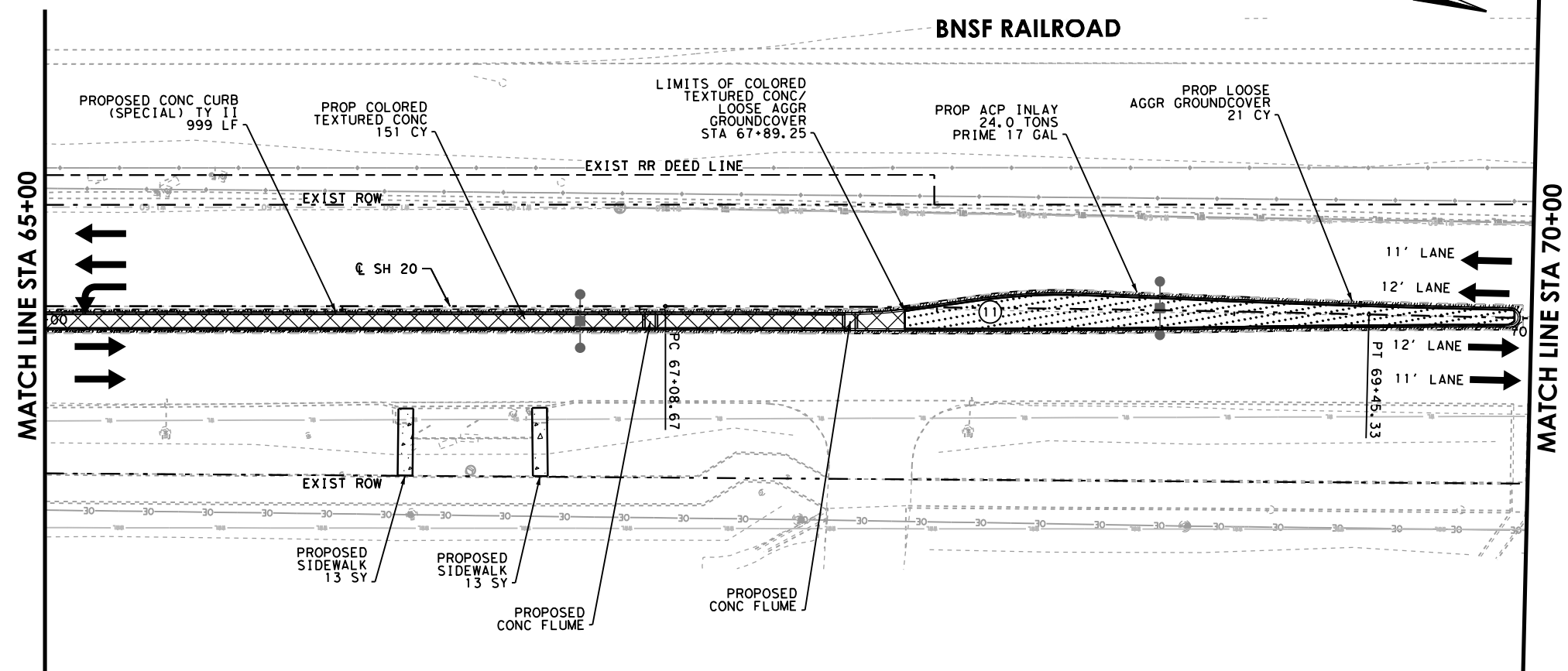
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	18
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	1
528 6001	COLORED TEXTURED CONC (4")	SY	317
531 6001	CONC SIDEWALKS (4")	SY	173
1005 6001	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	CY	29

LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021

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

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Infrastructure Solutions
Firm Registration Number 420

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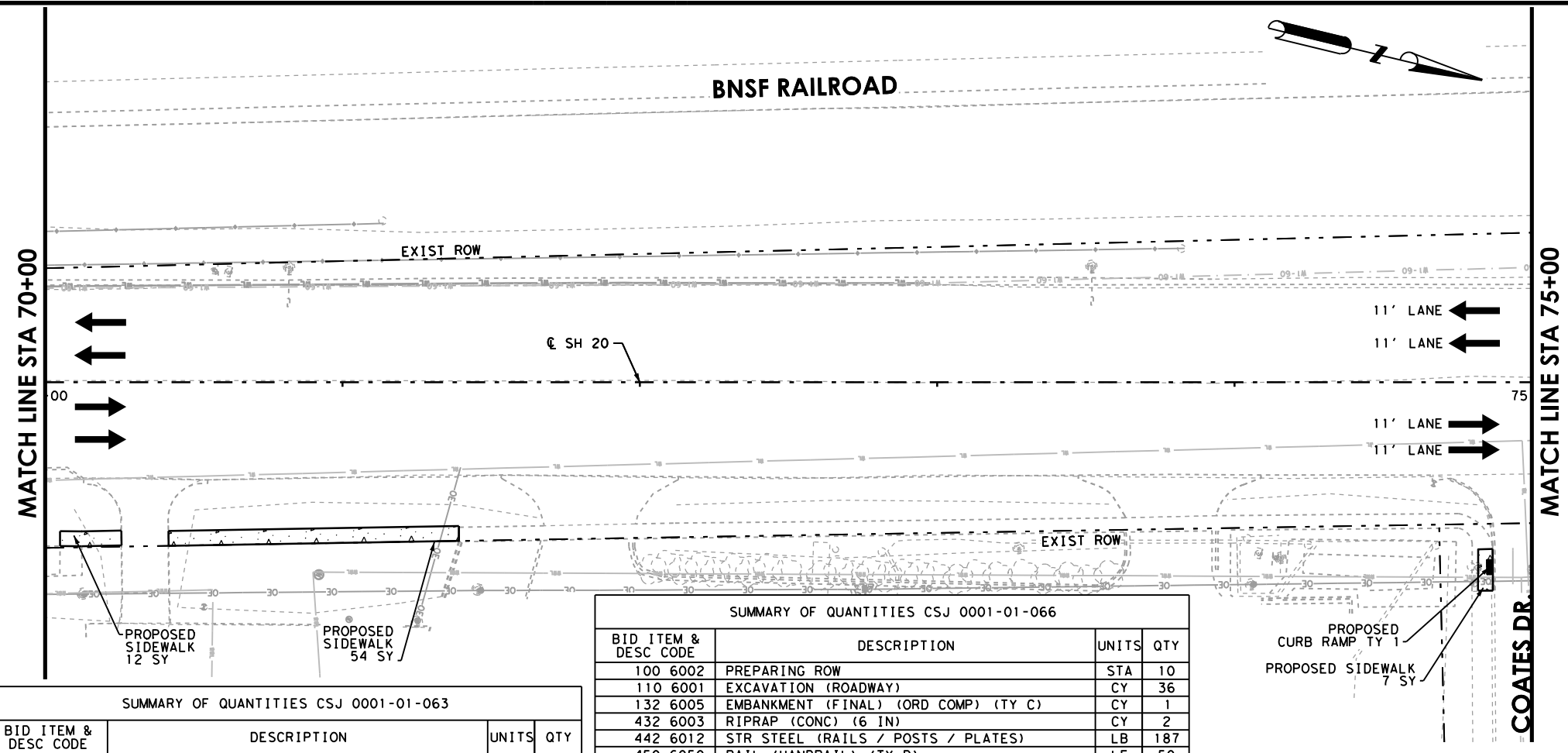
**SH 20
DONIPHAN DR.**

ROADWAY PLAN
STA. 60+00 TO STA. 70+00

SHEET 7 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	132

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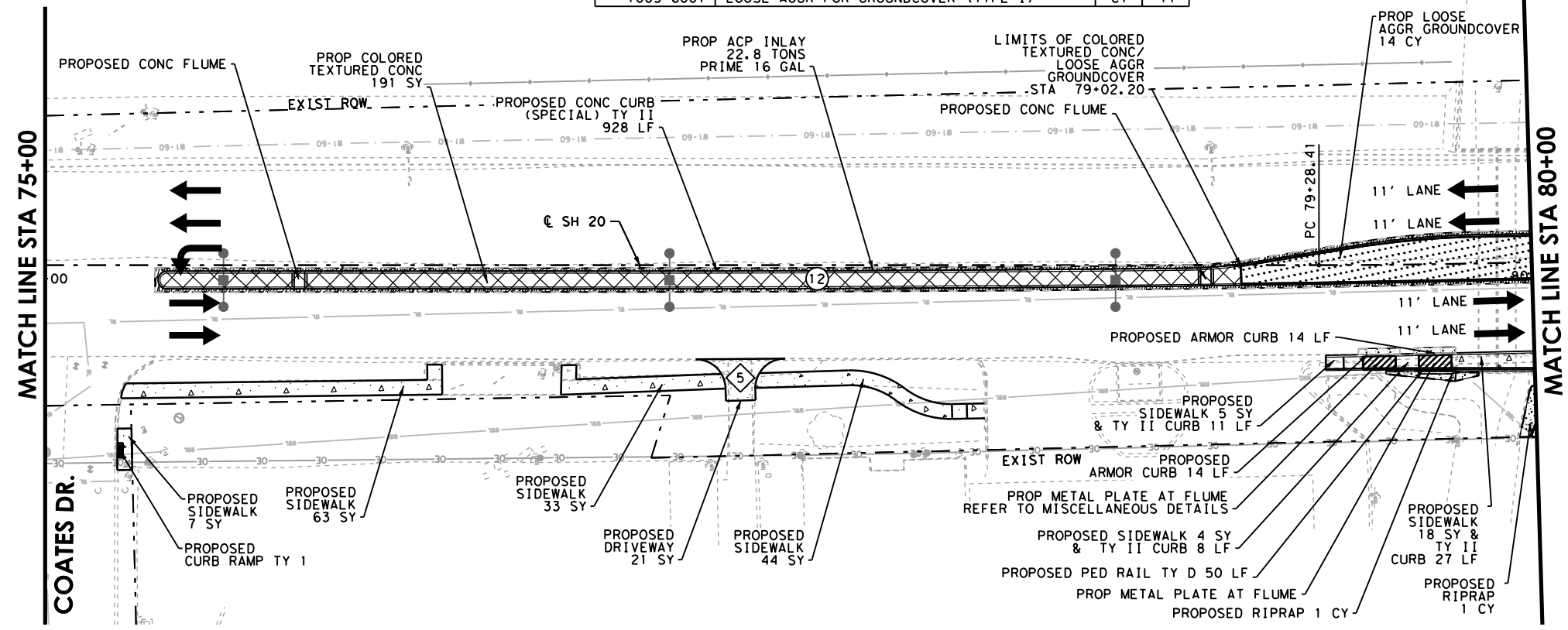


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	43
310 6005	PRIME COAT (AE-P)	GAL	2
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	23
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	928

SUMMARY OF QUANTITIES CSJ 0001-01-066

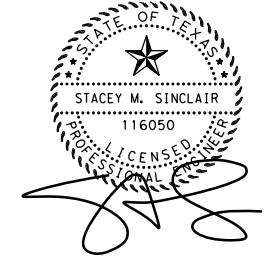
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	36
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	1
432 6003	RIPRAP (CONC) (6 IN)	CY	2
442 6012	STR STEEL (RAILS / POSTS / PLATES)	LB	187
450 6050	RAIL (HANDRAIL) (TY D)	LF	50
528 6001	COLORLED TEXTURED CONC (4")	SY	191
529 6002	CONC CURB (TY II)	LF	46
529 6020	CONC CURB & GUTTER (ARMOR CURB)	LF	28
530 6004	DRIVEWAYS (CONC)	SY	21
531 6001	CONC SIDEWALKS (4")	SY	247
531 6004	CURB RAMPS (TY I)	EA	2
1005 6001	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	CY	11



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



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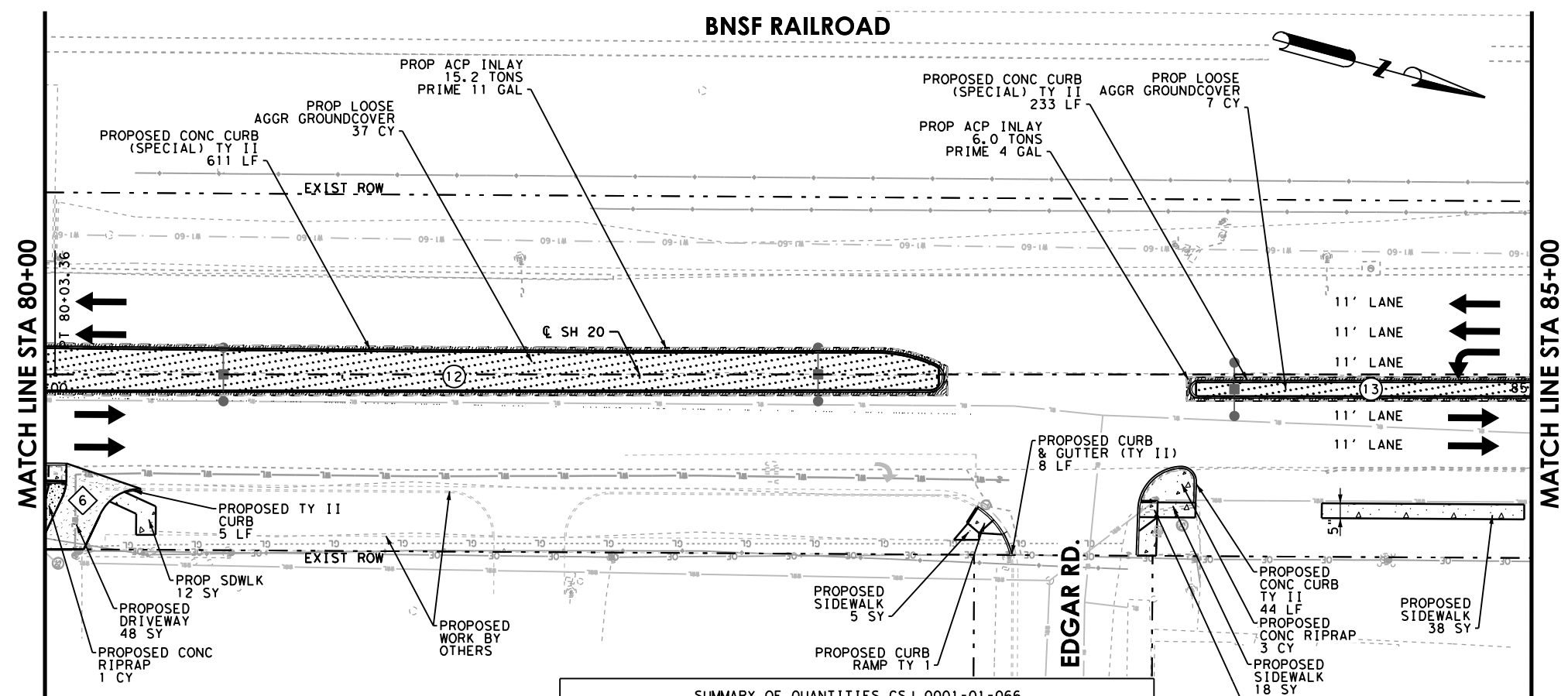
**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 70+00 TO STA. 80+00**

SHEET 8 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	133

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BNSF RAILROAD

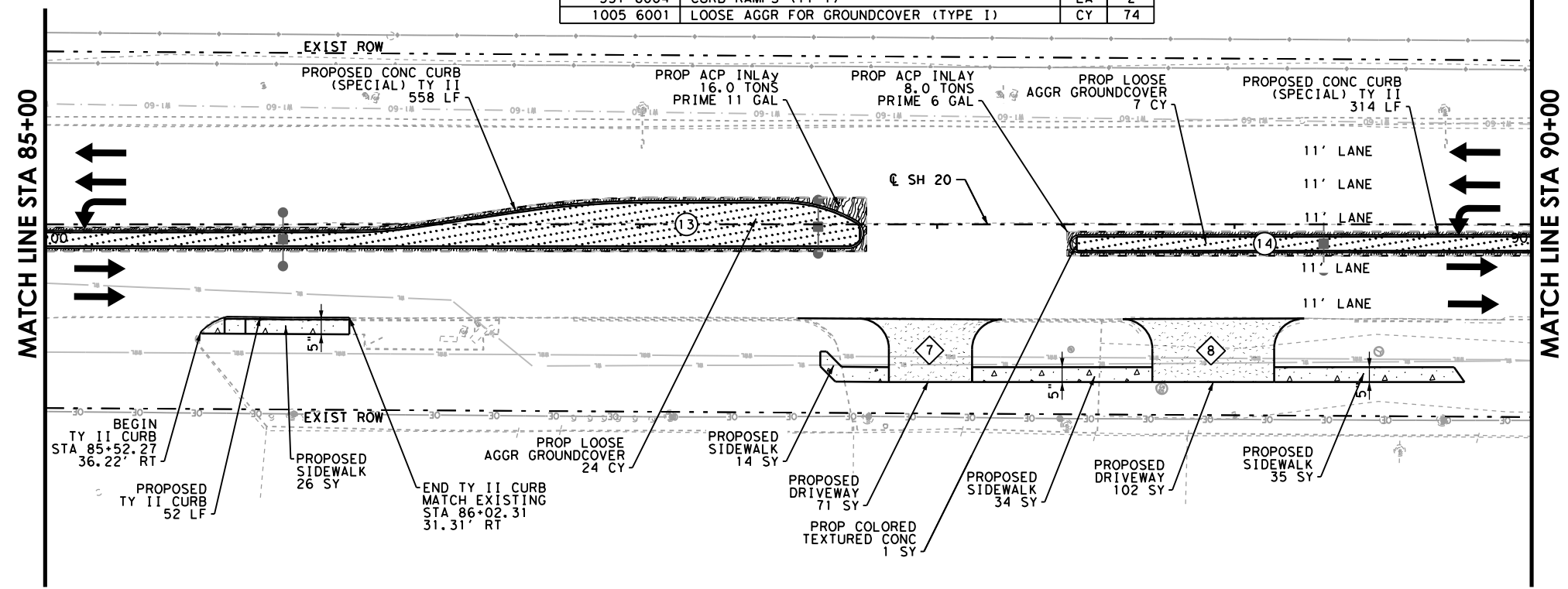


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	108
310 6005	PRIME COAT (AE-P)	GAL	32
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	45
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1716

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	15
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	5
432 6003	RIPRAP (CONC) (6 IN)	CY	4
528 6001	COLORLED TEXTURED CONC (4")	SY	1
529 6002	CONC CURB (TY II)	LF	108
529 6008	CONC CURB & GUTTER (TY II)	LF	8
530 6004	DRIVEWAYS (CONC)	SY	221
531 6001	CONC SIDEWALKS (4")	SY	182
531 6004	CURB RAMPS (TY I)	EA	2
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	74

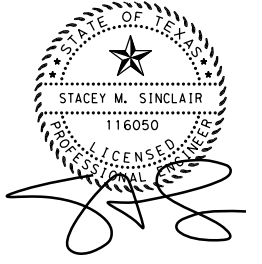


LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

NOTES:

1. SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
2. SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
3. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
4. SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
5. PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
6. UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
7. DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



**SH 20
DONIPHAN DR.**

ROADWAY PLAN
STA. 80+00 TO STA. 90+00

SHEET 9 OF 16

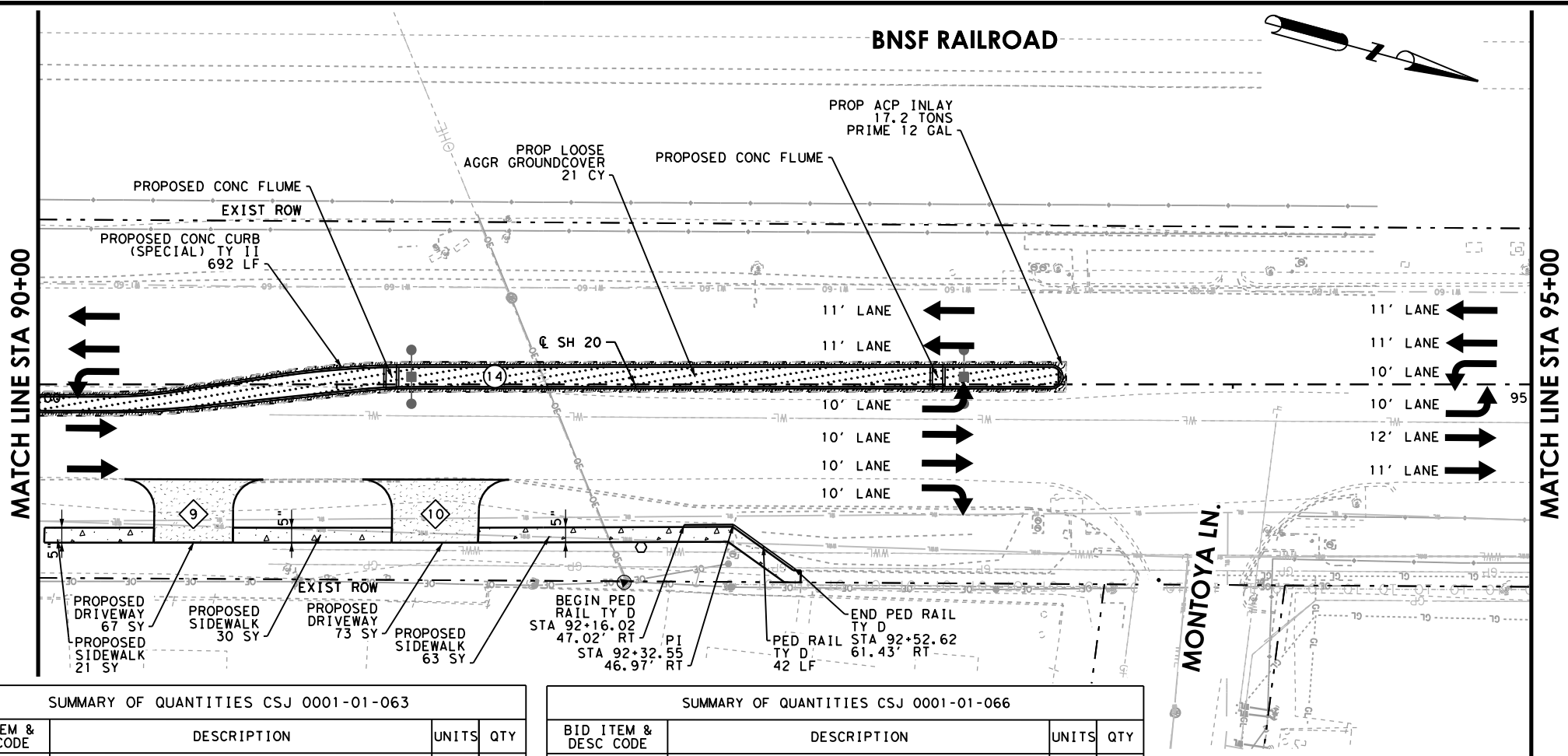
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5/25/2021

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BNSF RAILROAD

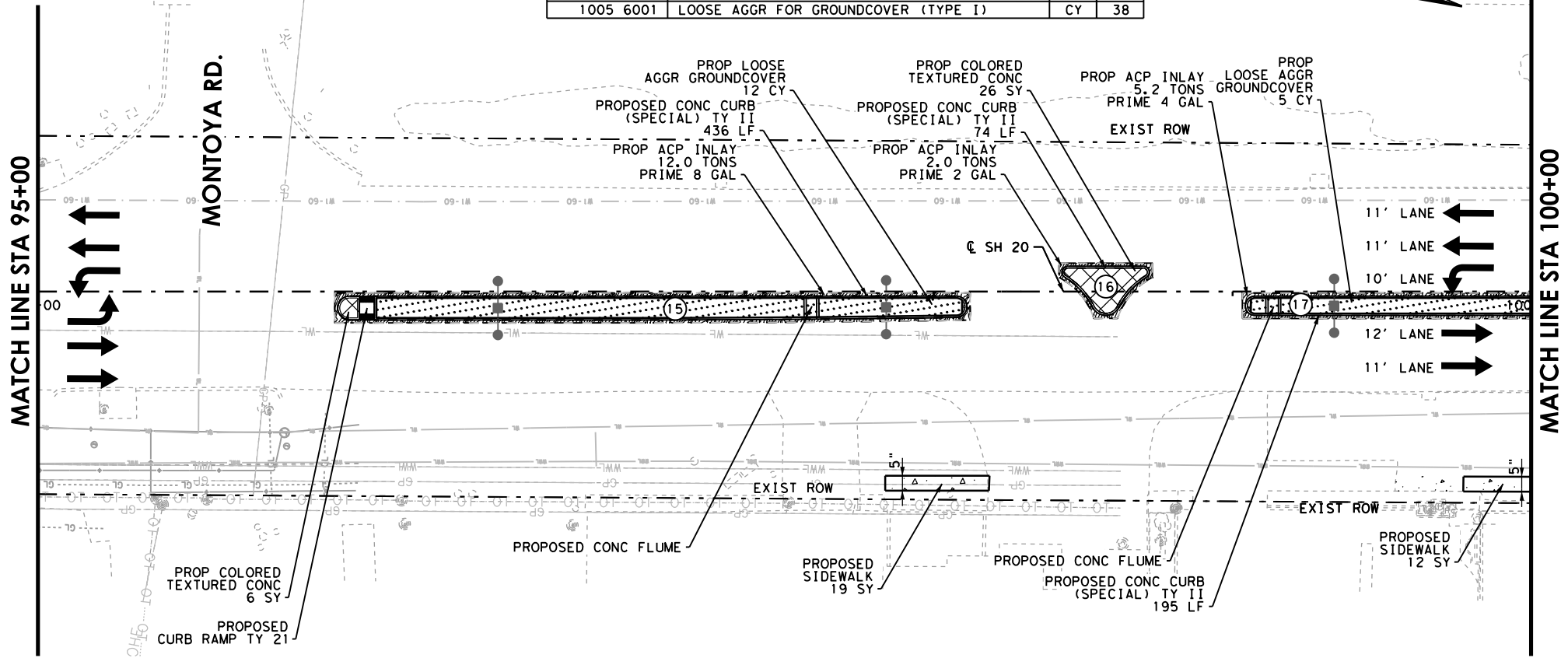


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	63
310 6005	PRIME COAT (AE-P)	GAL	26
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	37
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1397
531 6016	CURB RAMPS (TY 21)	EA	1

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	29
450 6050	RAIL (HANDRAIL) (TY D)	LF	42
528 6001	COLORLED TEXTURED CONC (4")	SY	32
530 6004	DRIVEWAYS (CONC)	SY	140
531 6001	CONC SIDEWALKS (4")	SY	157
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	38



MATCH LINE STA 95+00

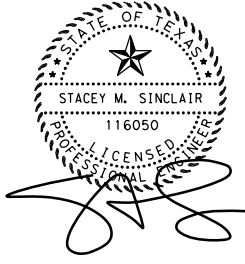
MATCH LINE STA 100+00

LEGEND

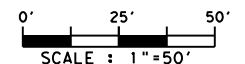
- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

NOTES:

1. SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
2. SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
3. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
4. SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
5. PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
6. UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
7. DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 90+00 TO STA. 100+00**

SHEET 10 OF 16

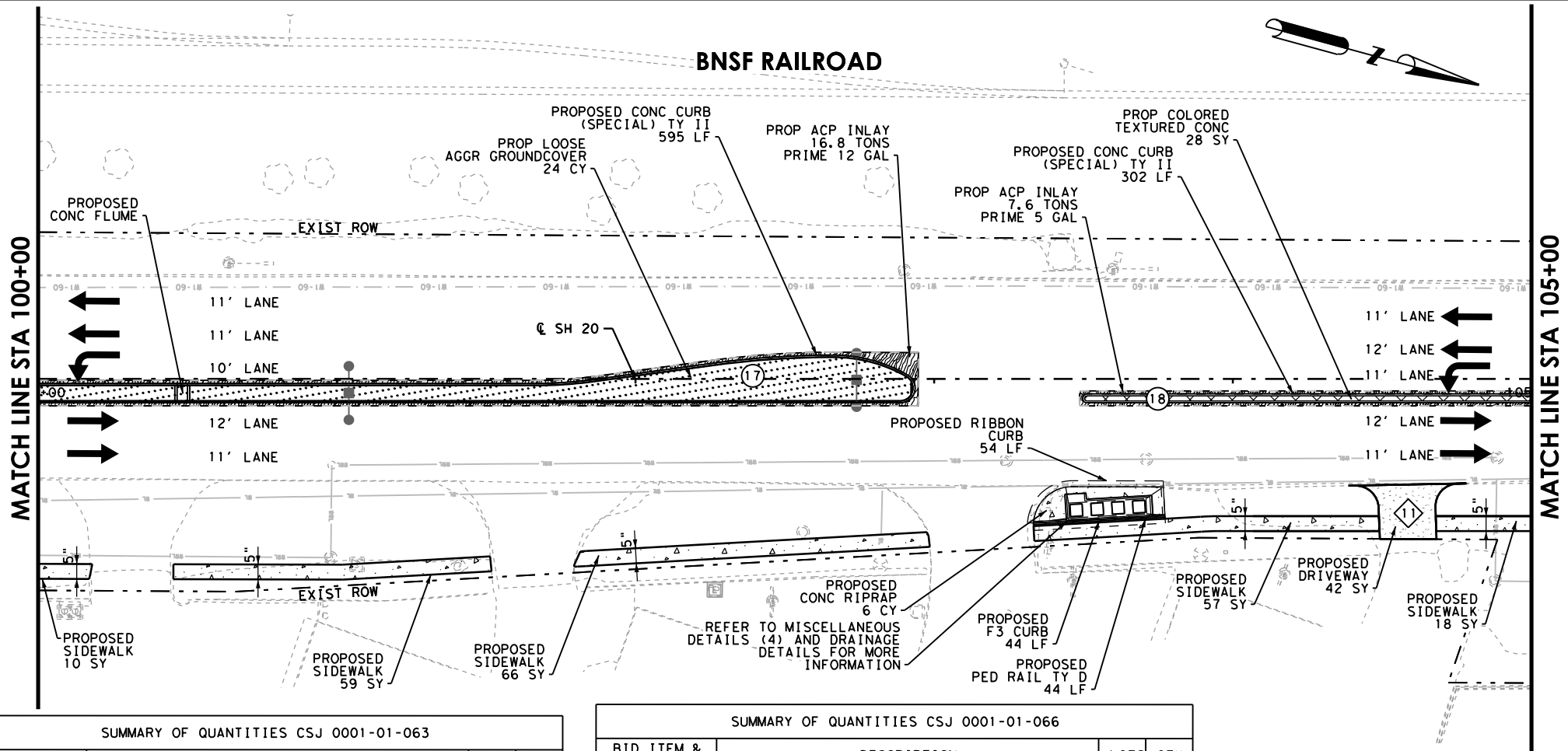
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CHECKED:	SS	0001	01	063, ETC.	135

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BNSF RAILROAD

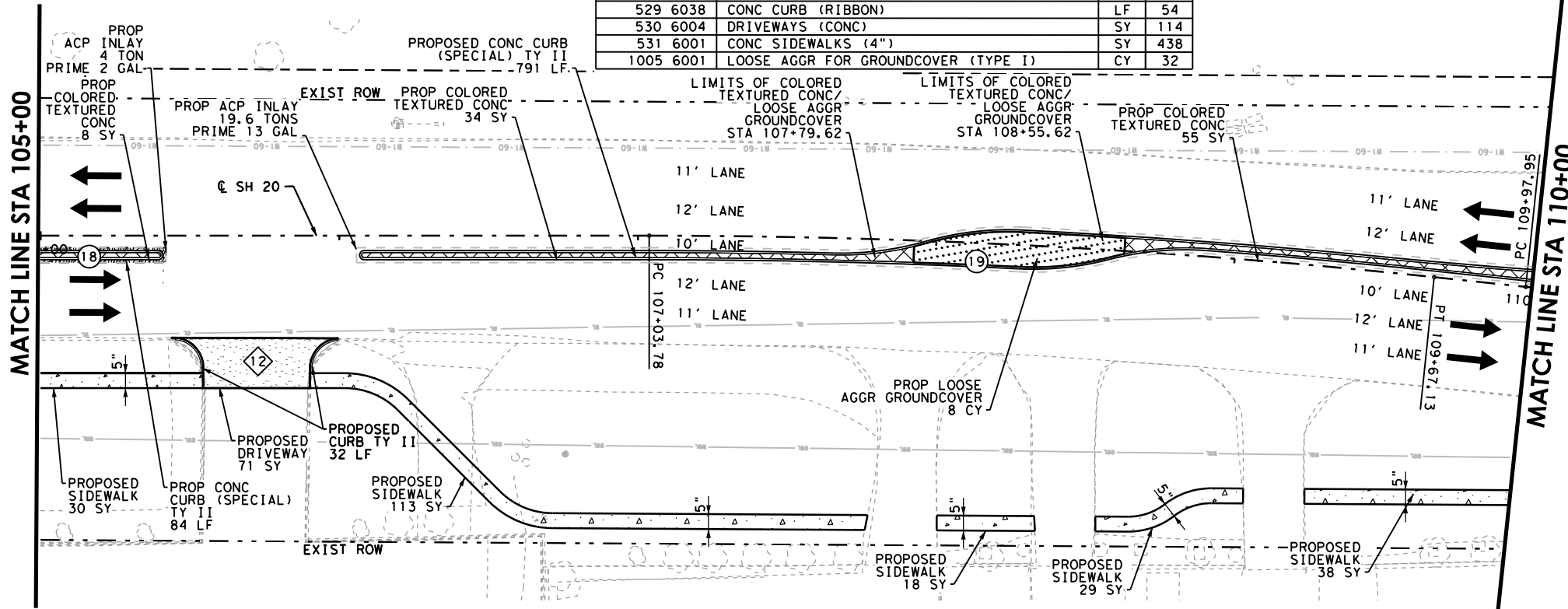


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	66
310 6005	PRIME COAT (AE-P)	GAL	32
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	48
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	1772

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	48
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	6
432 6003	RIPRAP (CONC) (6 IN)	CY	6
450 6050	RAIL (HANDRAIL) (TY D)	LF	44
528 6001	COLORLED TEXTURED CONC (4")	SY	125
529 6002	CONC CURB (TY II)	LF	32
529 6018	CONC CURB (TY F3)	LF	44
529 6038	CONC CURB (RIBBON)	LF	54
530 6004	DRIVEWAYS (CONC)	SY	114
531 6001	CONC SIDEWALKS (4")	SY	438
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	32

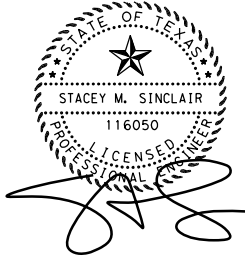


LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

NOTES:

1. SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
2. SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
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7. DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



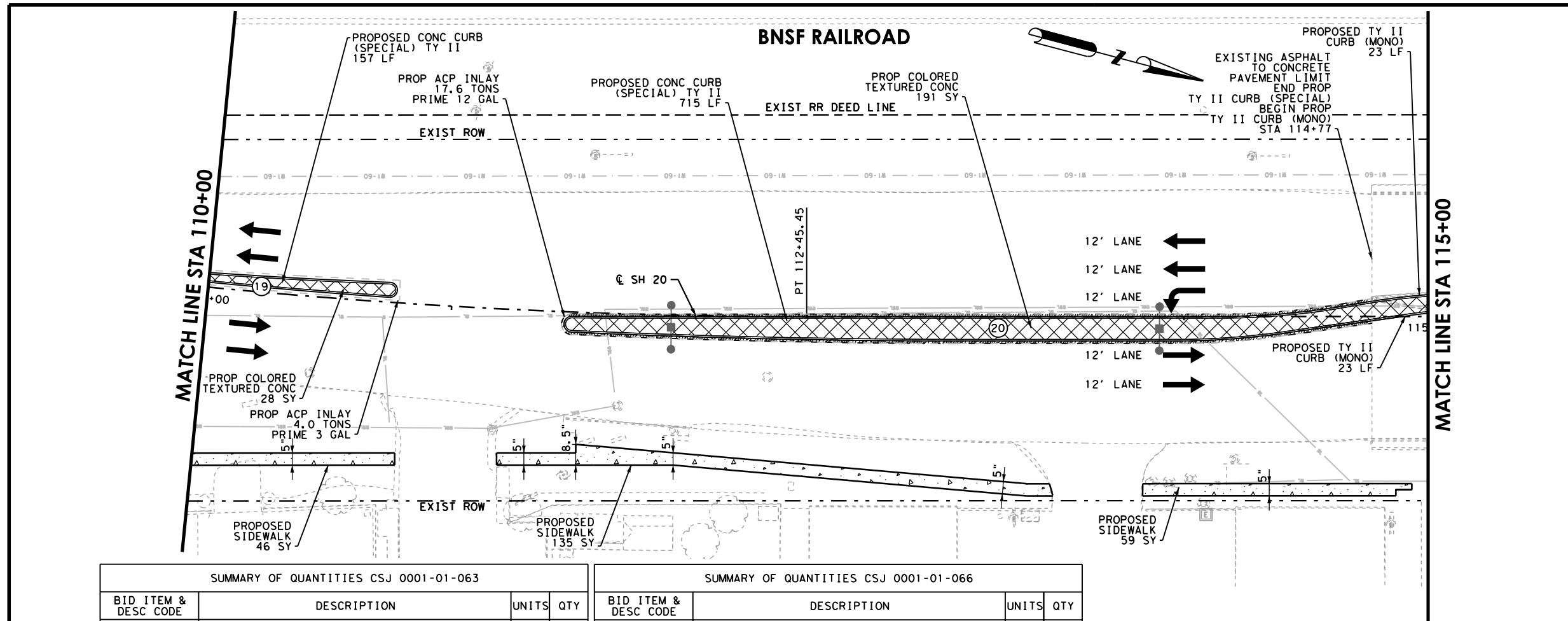
5/25/2021



**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 100+00 TO STA. 110+00**

SHEET 11 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	136



SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	28
310 6005	PRIME COAT (AE-P)	GAL	16
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	22
529 6005	CONC CURB (MONO) (TY II)	LF	94
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	872

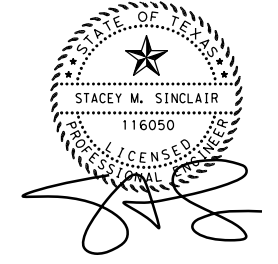
SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	44
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	4
528 6001	COLORED TEXTURED CONC (4")	SY	236
531 6001	CONC SIDEWALKS (4")	SY	240

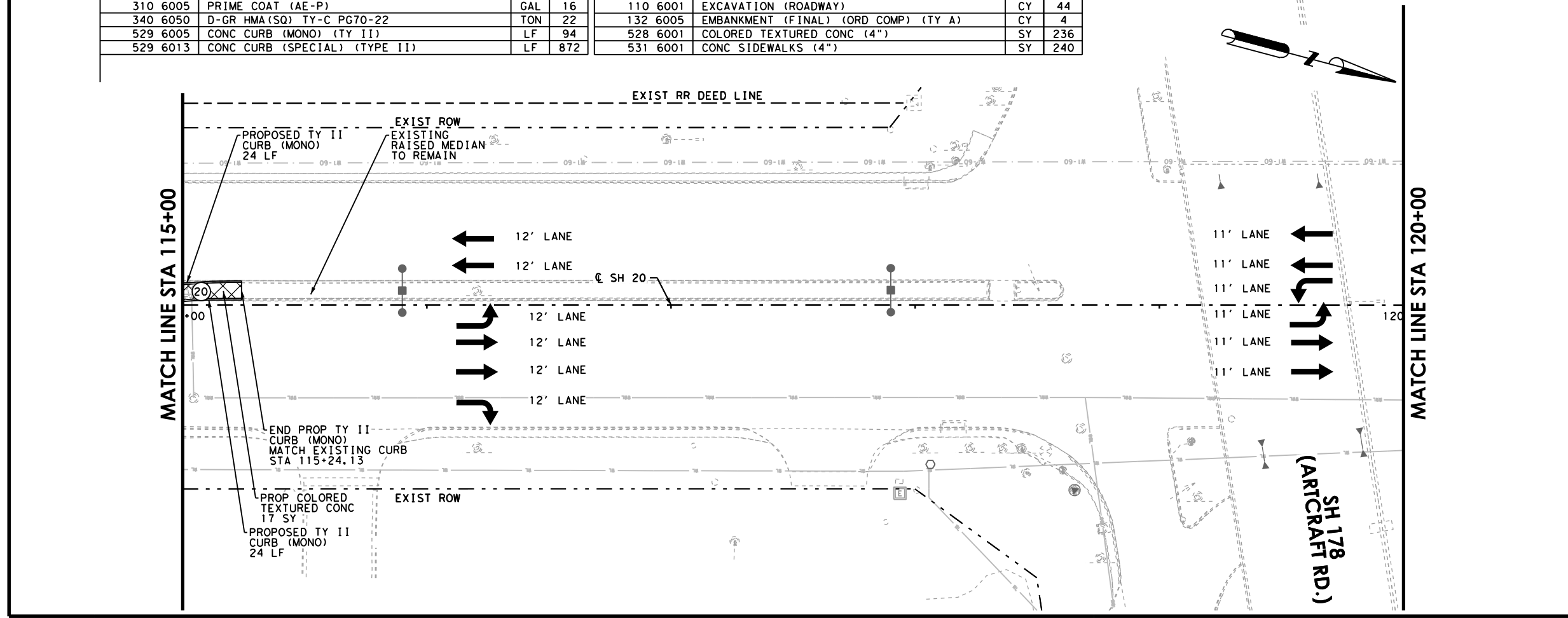
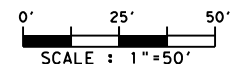
LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
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 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
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 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
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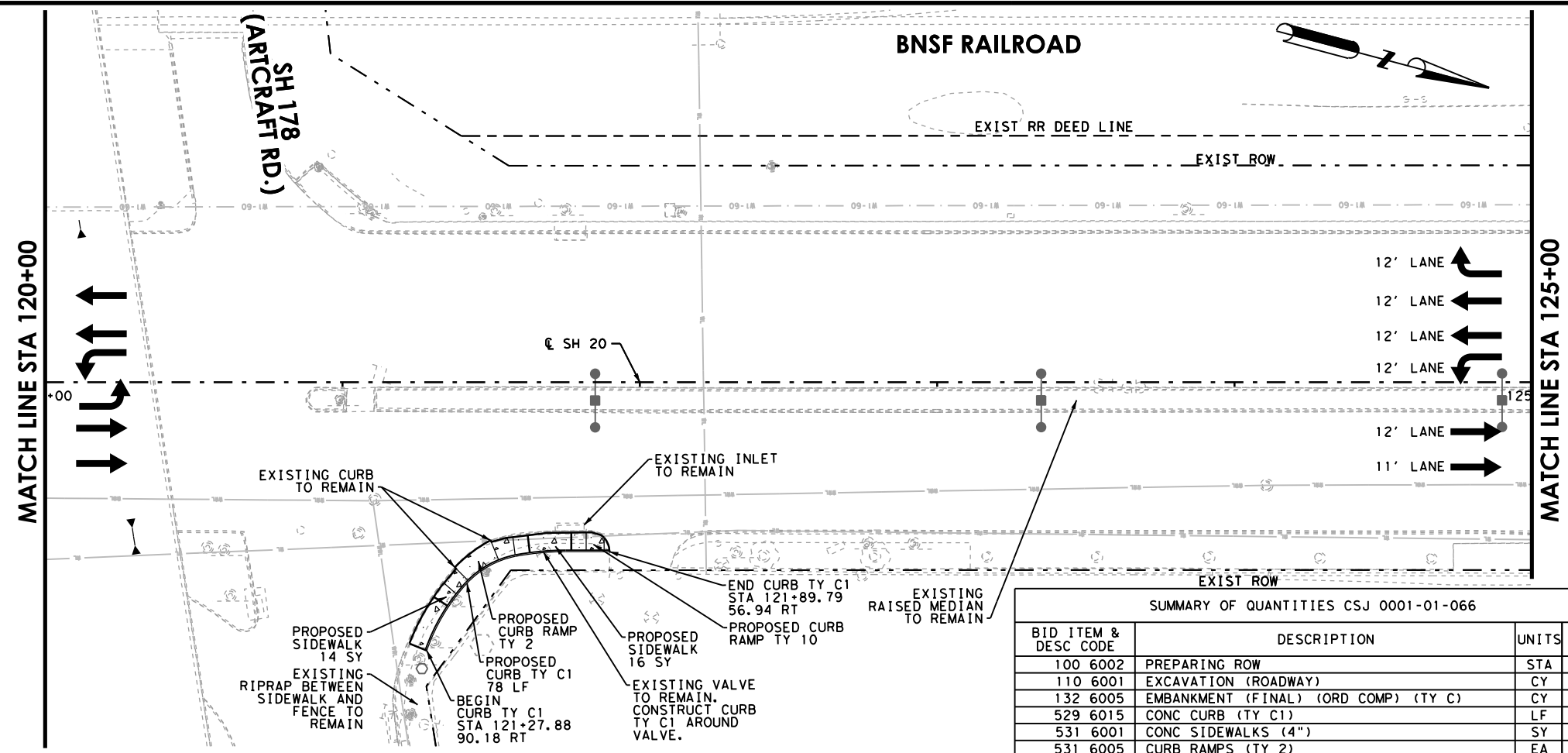


**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 110+00 TO STA. 120+00**

SHEET 12 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	137

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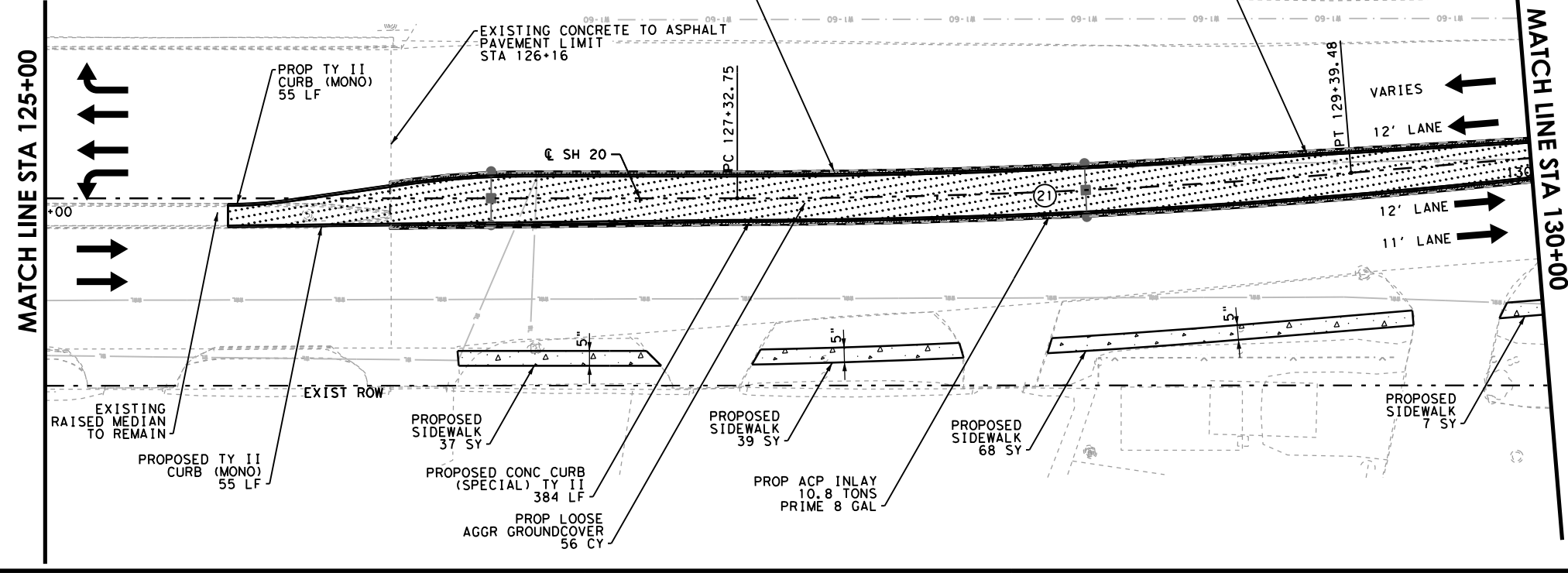


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	78
310 6005	PRIME COAT (AE-P)	GAL	16
340 6050	D-GR HMA (SQ) TY-C PG70-22	TON	22
529 6005	CONC CURB (MONO) (TY II)	LF	110
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	768

SUMMARY OF QUANTITIES CSJ 0001-01-066

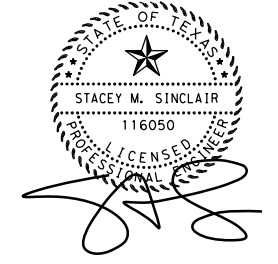
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	22
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	5
529 6015	CONC CURB (TY C1)	LF	78
531 6001	CONC SIDEWALKS (4")	SY	191
531 6005	CURB RAMPS (TY 2)	EA	1
531 6013	CURB RAMPS (TY 10)	EA	1
1005 6001	LOOSE AGGR FOR GROUND COVER (TYPE I)	CY	56



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
 - SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
 - PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
 - UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
 - DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



HNTB
HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

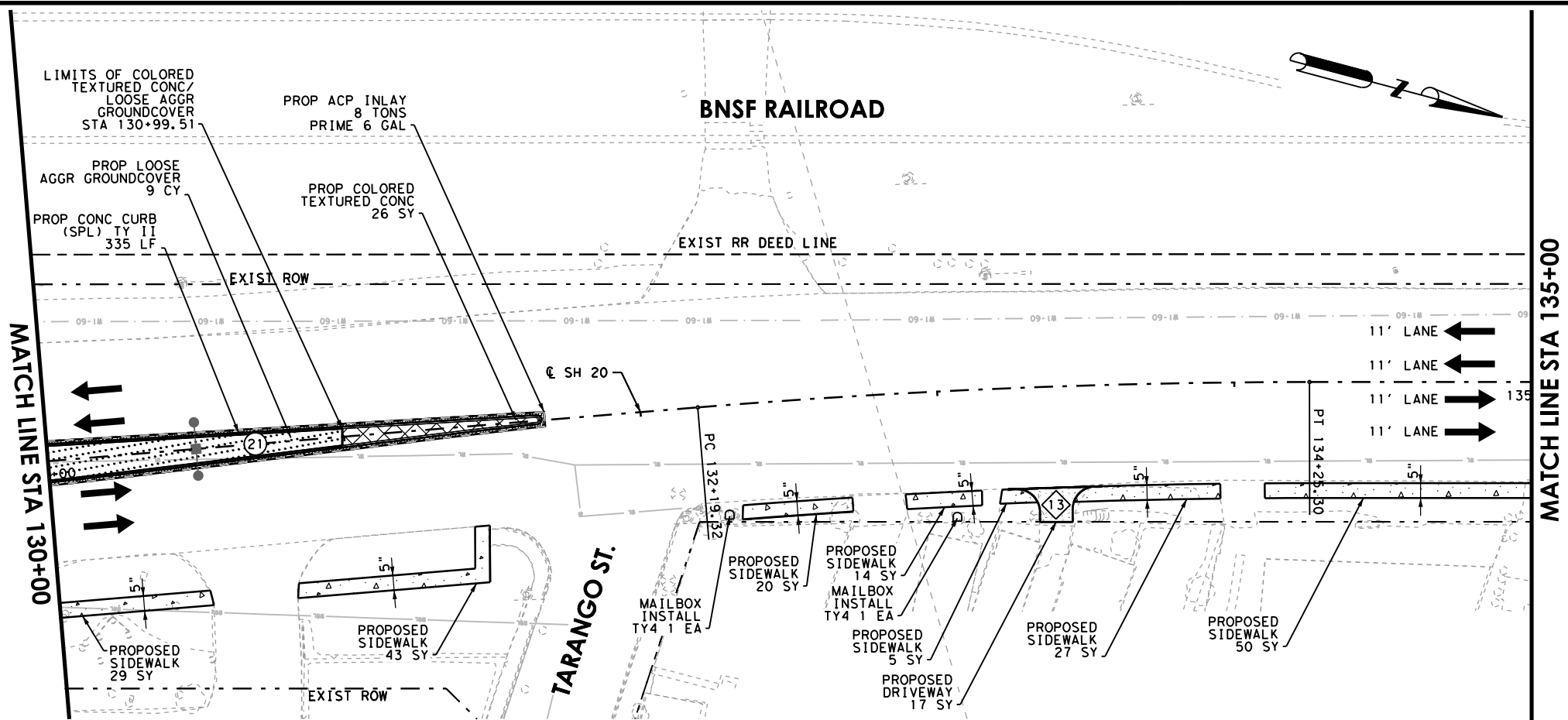
Texas Department of Transportation

**SH 20
 DONIPHAN DR.
 ROADWAY PLAN
 STA. 120+00 TO STA. 130+00**

SHEET 13 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	138

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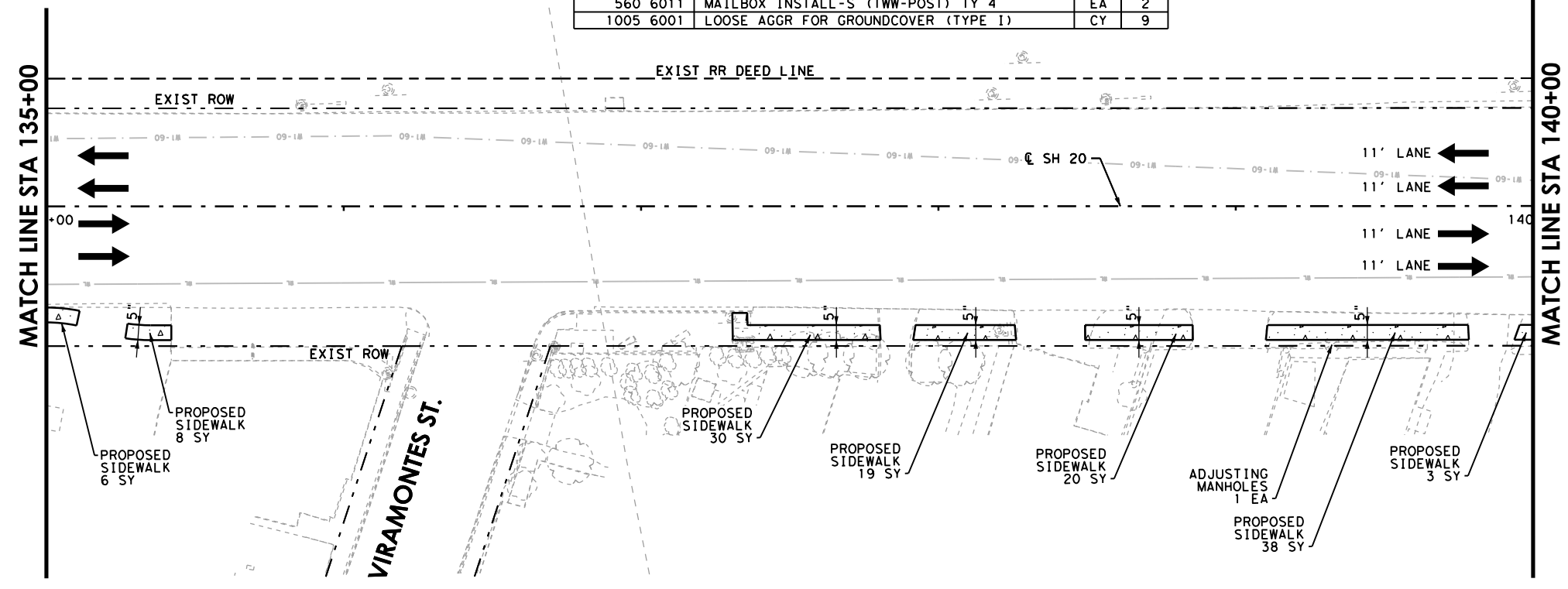


SUMMARY OF QUANTITIES CSJ 0001-01-063

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	14
310 6005	PRIME COAT (AE-P)	GAL	6
340 6050	D-GR HMA (S0) TY-C PG70-22	TON	8
529 6013	CONC CURB (SPECIAL) (TYPE II)	LF	335

SUMMARY OF QUANTITIES CSJ 0001-01-066

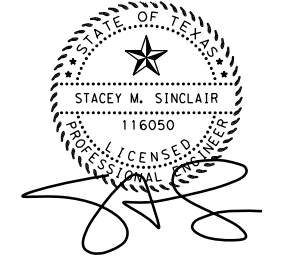
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100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	50
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY C)	CY	2
479 6001	ADJUSTING MANHOLES	EA	1
528 6001	COLORLED TEXTURED CONC (4")	SY	26
530 6004	DRIVEWAYS (CONC)	SY	17
531 6001	CONC SIDEWALKS (4")	SY	312
560 6011	MAILBOX INSTALL-S (TWW-POST) TY 4	EA	2
1005 6001	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	CY	9



LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
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- FLOOD PLAIN

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- SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
 - SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
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 - SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
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5/25/2021

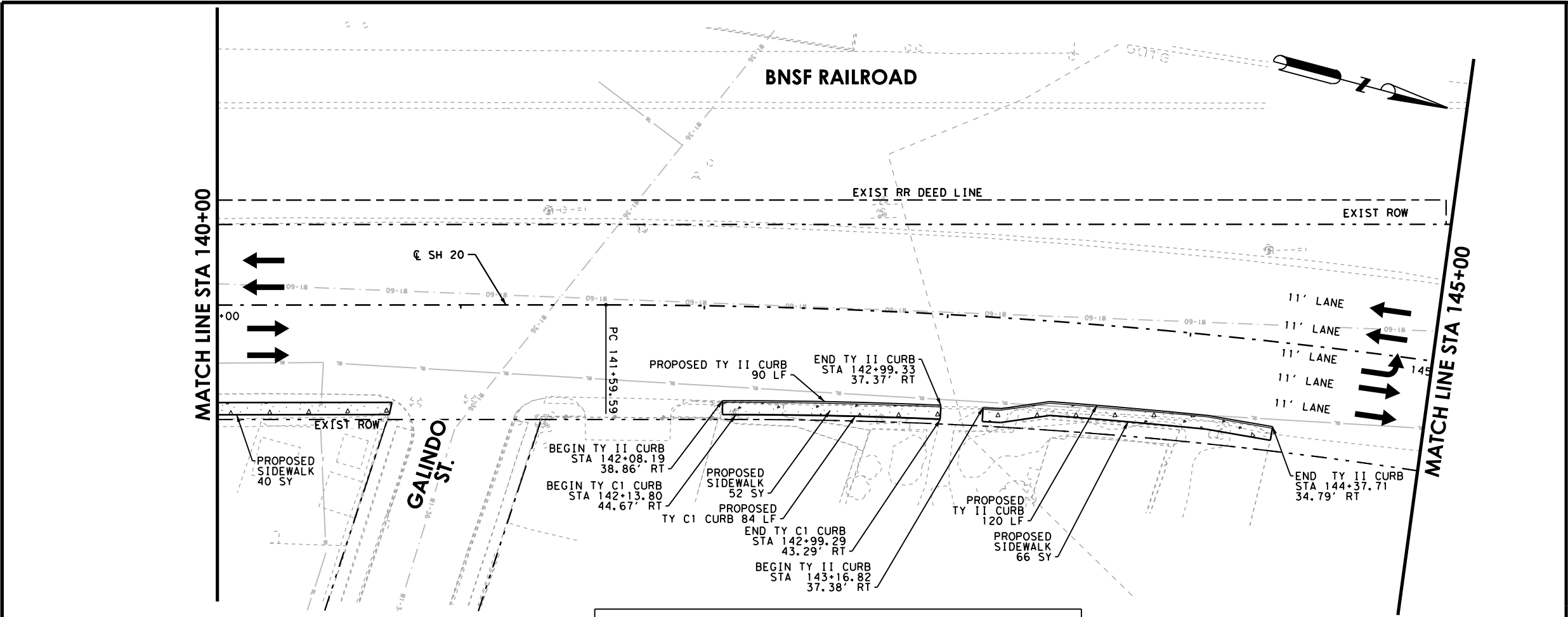


**SH 20
DONIPHAN DR.
ROADWAY PLAN
STA. 130+00 TO STA. 140+00**

SHEET 14 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	139

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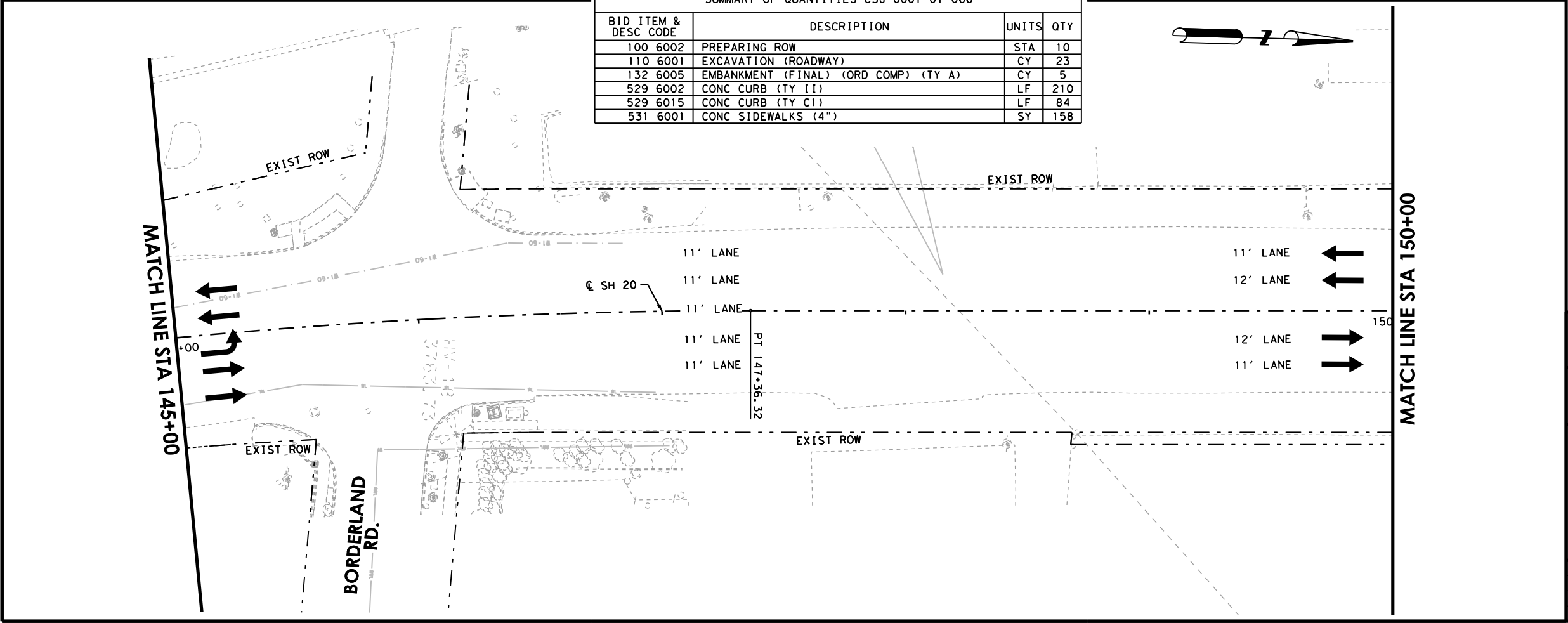
LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
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- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

- NOTES:**
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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
100 6002	PREPARING ROW	STA	10
110 6001	EXCAVATION (ROADWAY)	CY	23
132 6005	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CY	5
529 6002	CONC CURB (TY II)	LF	210
529 6015	CONC CURB (TY C1)	LF	84
531 6001	CONC SIDEWALKS (4")	SY	158



5/25/2021

 SCALE : 1"=50'

HNTB

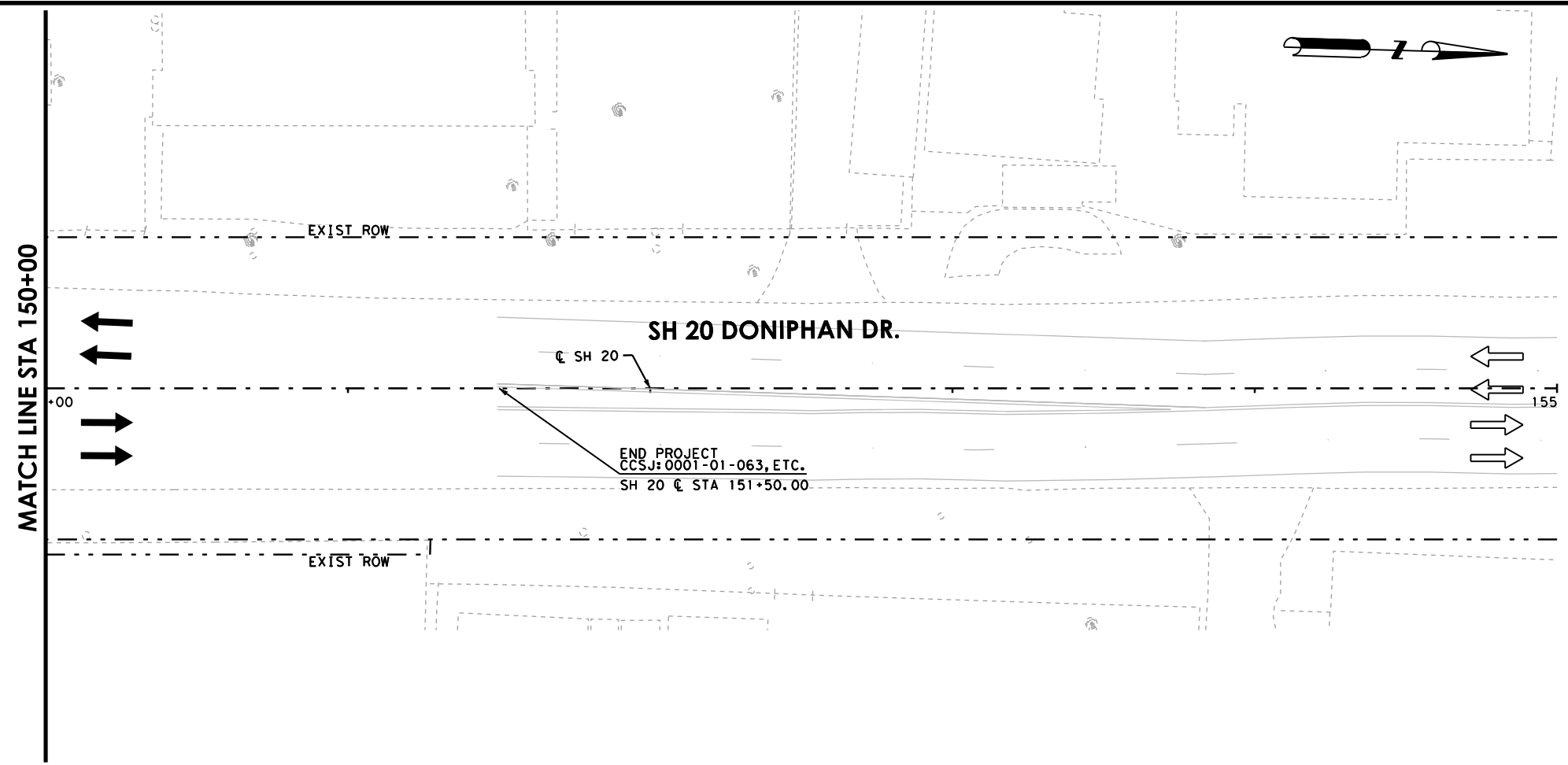
Texas Department of Transportation

**SH 20
DONIPHAN DR.**
ROADWAY PLAN
 STA. 140+00 TO STA. 150+00

SHEET 15 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	140

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MATCH LINE STA 150+00

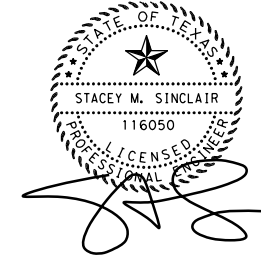
SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
100 6002	PREPARING ROW	STA	2	

LEGEND

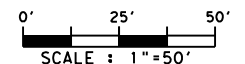
- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- PROPOSED SIDEWALK
- PROPOSED METAL FLUME
- PROPOSED DRIVEWAY
- PROPOSED COLORED TEXTURED CONCRETE
- PROPOSED LOOSE AGGREGATE GROUND COVER (FRANKLIN RED)
- PROPOSED ACP INLAY
- MEDIAN NUMBER
- DRIVEWAY NUMBER
- PROPOSED PEDESTRIAN RAMP
- FLOOD PLAIN

NOTES:

1. SEE MEDIAN LAYOUT SHEETS FOR LIMITS OF PROPOSED CURB.
2. SEE SIGNING AND PAVEMENT MARKING LAYOUT SHEETS FOR STRIPING DETAILS.
3. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
4. SEE MISCELLANEOUS DETAILS FOR SIDEWALK, CURB, AND FLUME DETAILS.
5. PROPOSED CONCRETE FLUME MEDIAN CURB OPENINGS SHALL BE SUBSIDIARY TO ITEM 529-6013 CONC CURB (SPECIAL) TY II.
6. UTILITY INFORMATION IS NOT GUARANTEED TO BE ACCURATE OR INCLUSIVE. CONTRACTOR RESPONSIBLE TO DETERMINE TYPE AND LOCATION OF ALL UTILITIES AS NECESSARY TO AVOID DAMAGE THERETO.
7. DAMAGE TO EXISTING BOLLARDS AND WATER VALVE TO BE REPAIRED AT CONTRACTOR'S EXPENSE.



5/25/2021



**SH 20
DONIPHAN DR.**

**ROADWAY PLAN
STA. 150+00 TO END**

SHEET 16 OF 16

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	141

5/25/2021

11:00:39 AM

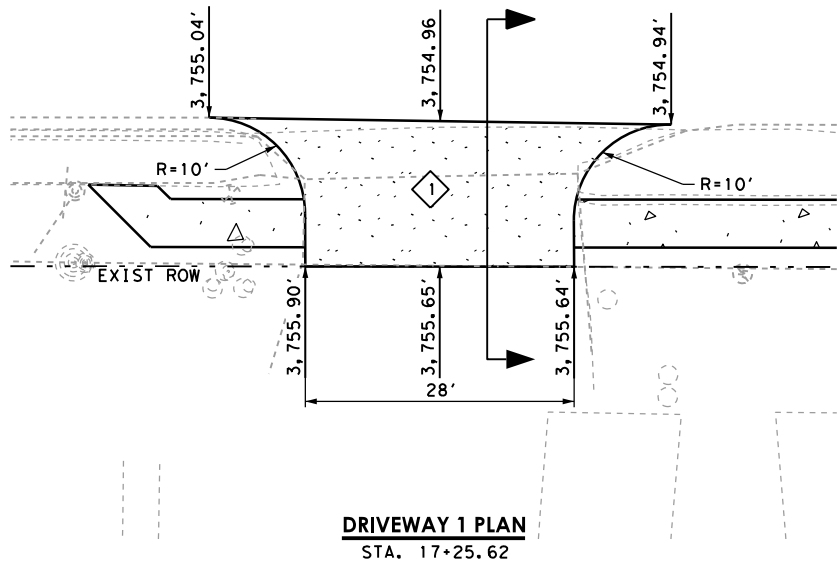
D:\pwworking\hntb.org\Projects\4264\Documents\El Paso Projects\4264 WA02 SH 20 Doniphan\Design and Engineer\ing\Roadway\Sheet DGN\74264_S-RDWY04.dgn

LEGEND

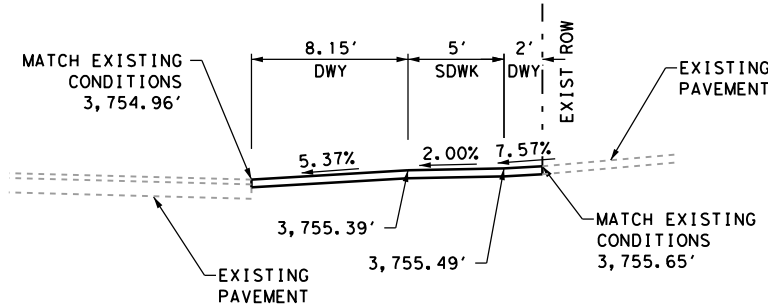
- PROPOSED CURB
- PROPOSED SIDEWALK
- PROPOSED DRIVEWAY
- DRIVEWAY NUMBER
- EXISTING ROW

NOTES:

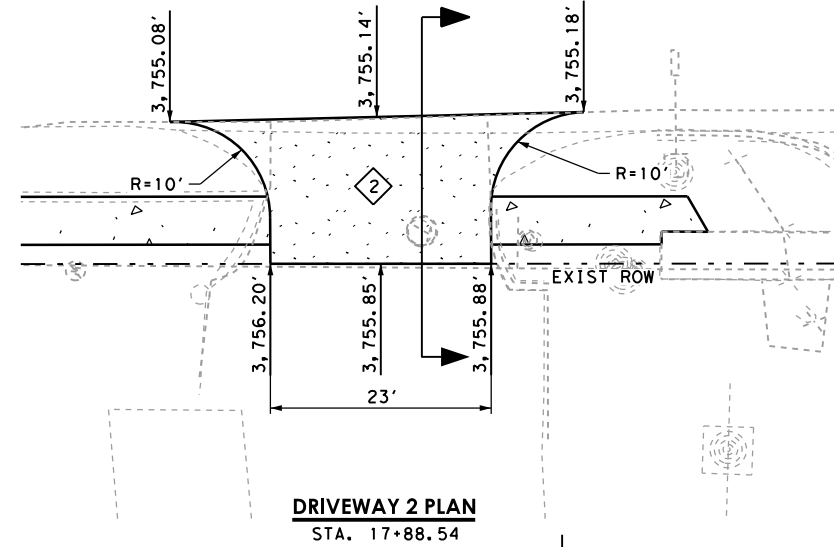
1. DRIVEWAY ELEVATIONS ARE APPROXIMATE DUE TO LIMITED TXDOT TOPOGRAPHIC SURVEY INFORMATION AVAILABLE. CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND ENSURE DRIVEWAY ELEVATIONS MATCH EXISTING CONDITIONS.
2. REFER TO "DRIVEWAY PAVEMENT STRUCTURE DETAIL" ON SHEET 4 OF 4 FOR DRIVEWAY PAVEMENT STRUCTURE.



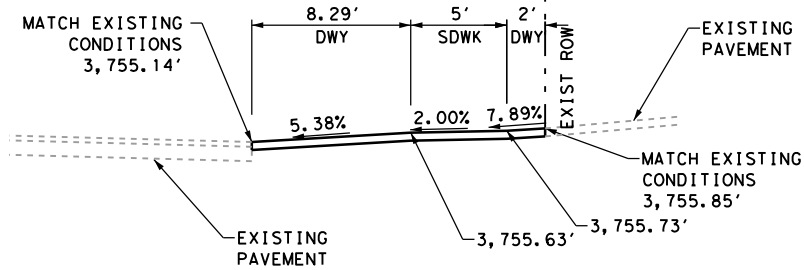
DRIVEWAY 1 PLAN
STA. 17+25.62



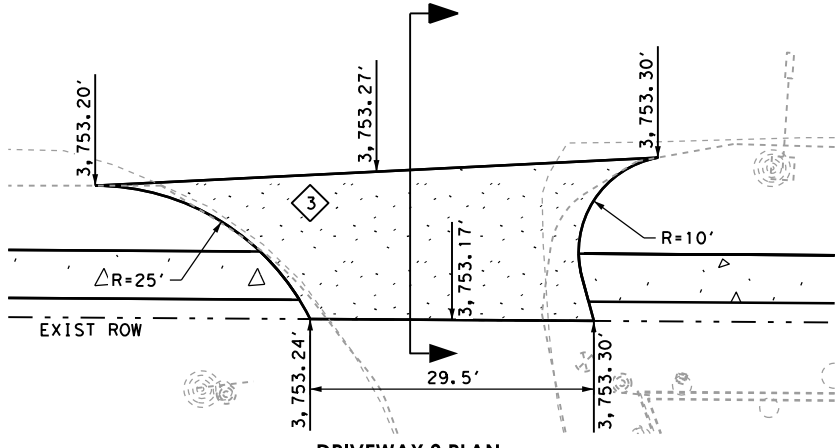
DRIVEWAY 1 SECTION



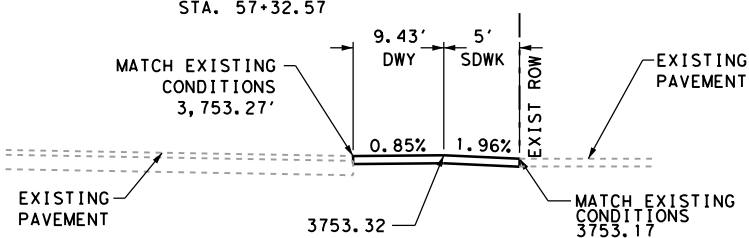
DRIVEWAY 2 PLAN
STA. 17+88.54



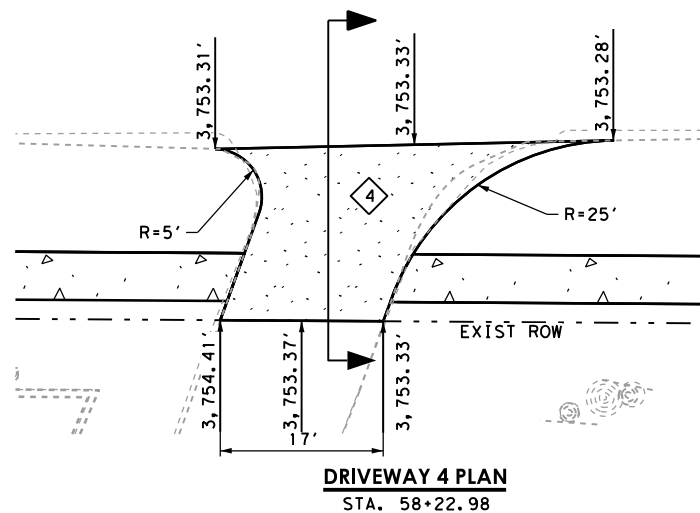
DRIVEWAY 2 SECTION



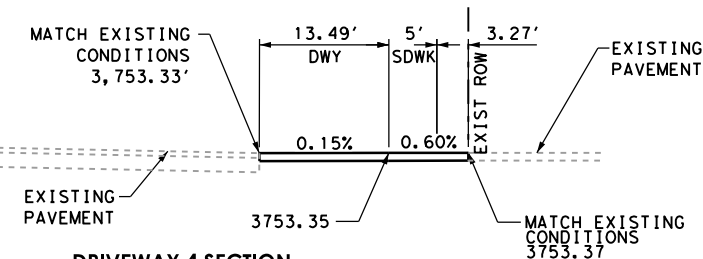
DRIVEWAY 3 PLAN
STA. 57+32.57



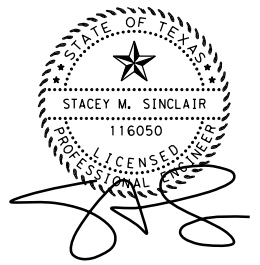
DRIVEWAY 3 SECTION



DRIVEWAY 4 PLAN
STA. 58+22.98



DRIVEWAY 4 SECTION



4/30/2021

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Infrastructure Solutions
Firm Registration Number 420






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**SH 20
DONIPHAN DR.
DRIVEWAY DETAILS**

SHEET 1 OF 4

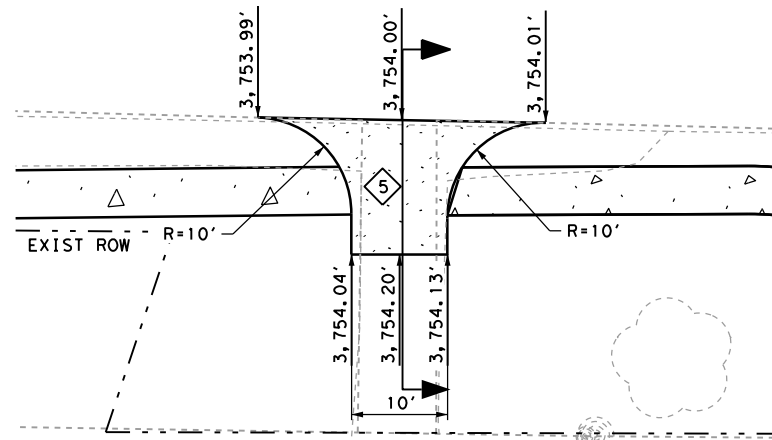
DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	142

LEGEND

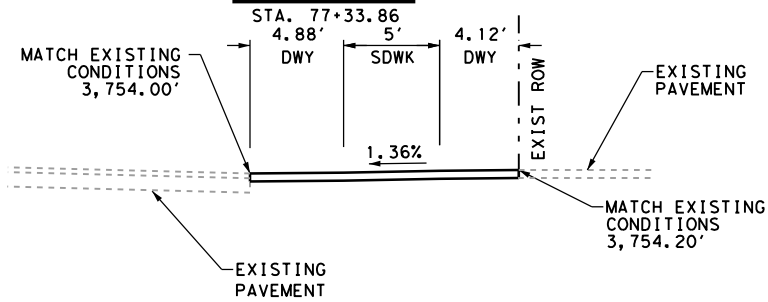
-  PROPOSED CURB
-  PROPOSED SIDEWALK
-  PROPOSED DRIVEWAY
-  DRIVEWAY NUMBER
-  EXISTING ROW

NOTES:

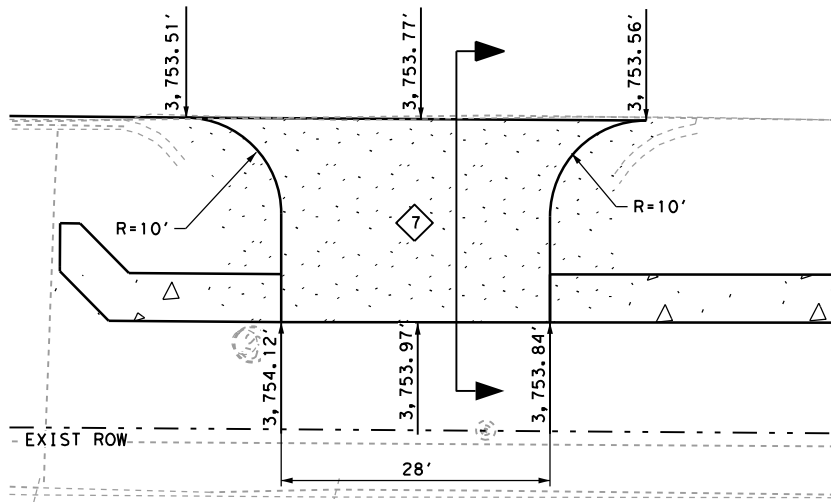
1. DRIVEWAY ELEVATIONS ARE APPROXIMATE DUE TO LIMITED TXDOT TOPOGRAPHIC SURVEY INFORMATION AVAILABLE. CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND ENSURE DRIVEWAY ELEVATIONS MATCH EXISTING CONDITIONS.
2. REFER TO "DRIVEWAY PAVEMENT STRUCTURE DETAIL" ON SHEET 4 OF 4 FOR DRIVEWAY PAVEMENT STRUCTURE.



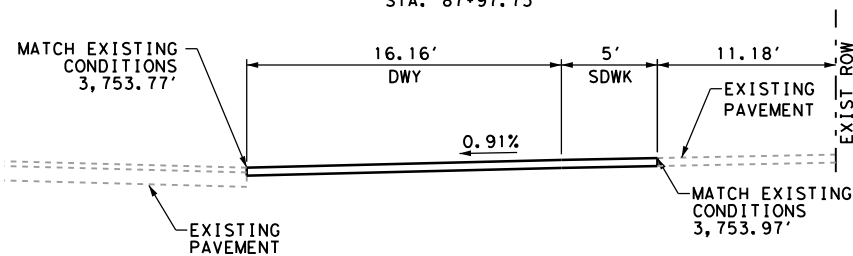
DRIVEWAY 5 PLAN



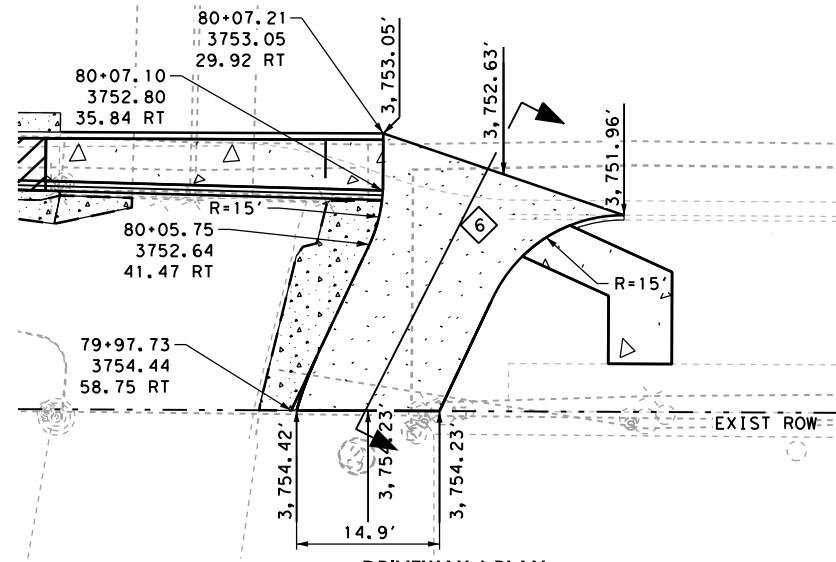
DRIVEWAY 5 SECTION



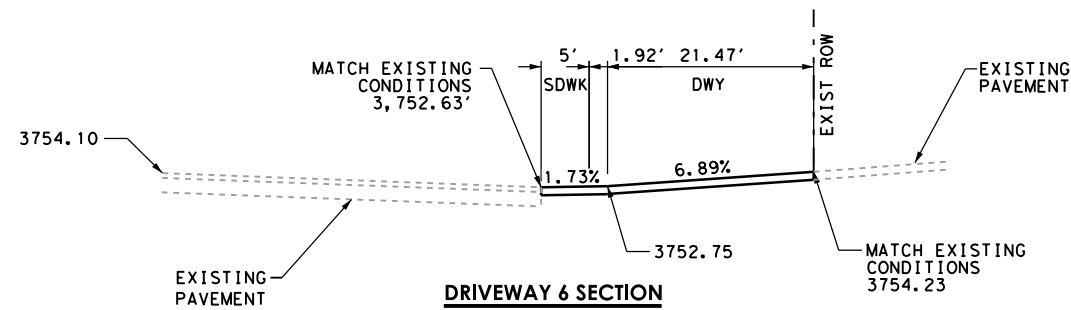
DRIVEWAY 7 PLAN



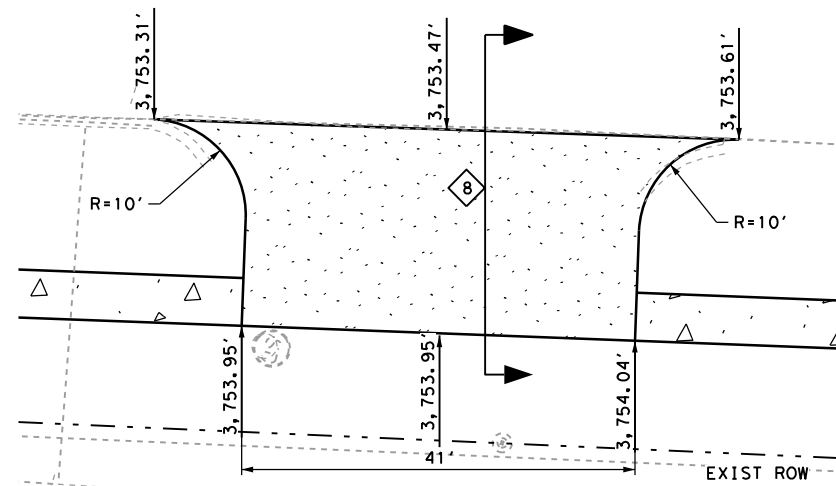
DRIVEWAY 7 SECTION



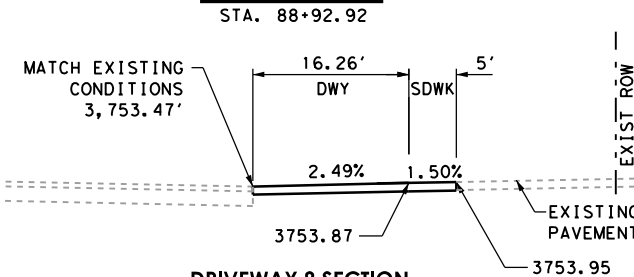
DRIVEWAY 6 PLAN



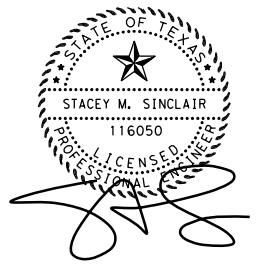
DRIVEWAY 6 SECTION



DRIVEWAY 8 PLAN



DRIVEWAY 8 SECTION



4/30/2021








**SH 20
DONIPHAN DR.
DRIVEWAY DETAILS**

SHEET 2 OF 4					
DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	143

4/30/2021

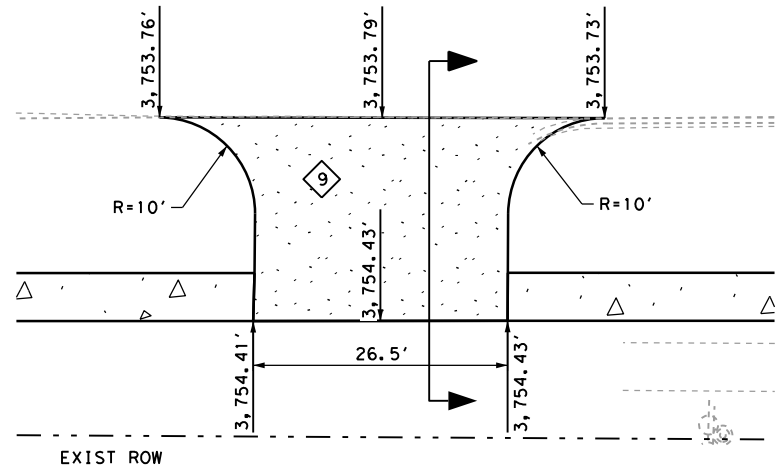
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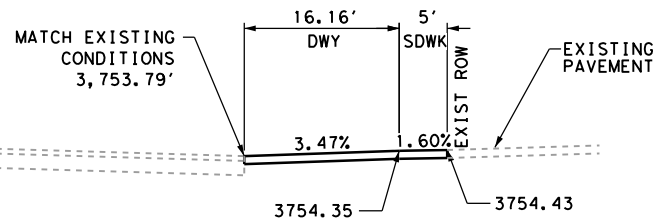
-  PROPOSED CURB
-  PROPOSED SIDEWALK
-  PROPOSED DRIVEWAY
-  DRIVEWAY NUMBER
-  EXISTING ROW

NOTES:

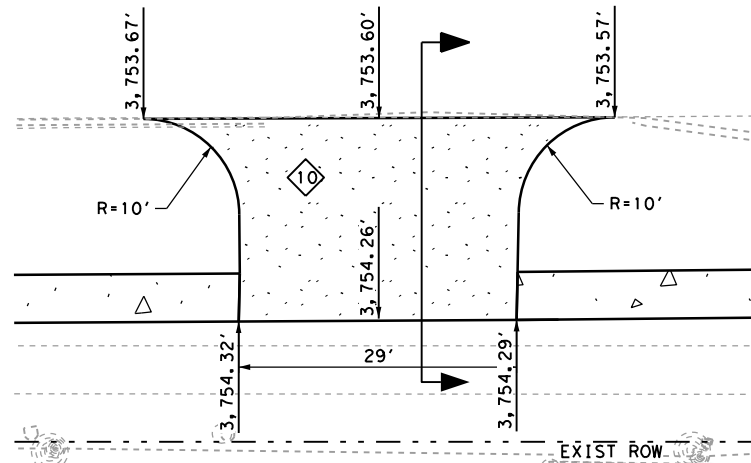
1. DRIVEWAY ELEVATIONS ARE APPROXIMATE DUE TO LIMITED TXDOT TOPOGRAPHIC SURVEY INFORMATION AVAILABLE. CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND ENSURE DRIVEWAY ELEVATIONS MATCH EXISTING CONDITIONS.
2. REFER TO "DRIVEWAY PAVEMENT STRUCTURE DETAIL" ON SHEET 4 OF 4 FOR DRIVEWAY PAVEMENT STRUCTURE.



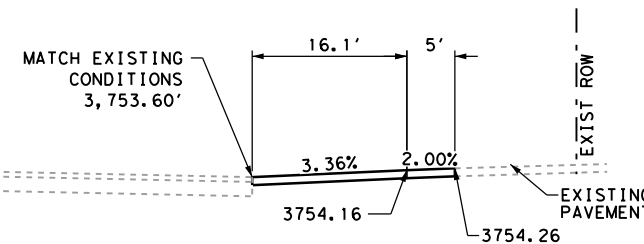
DRIVEWAY 9 PLAN
STA. 90+52.15



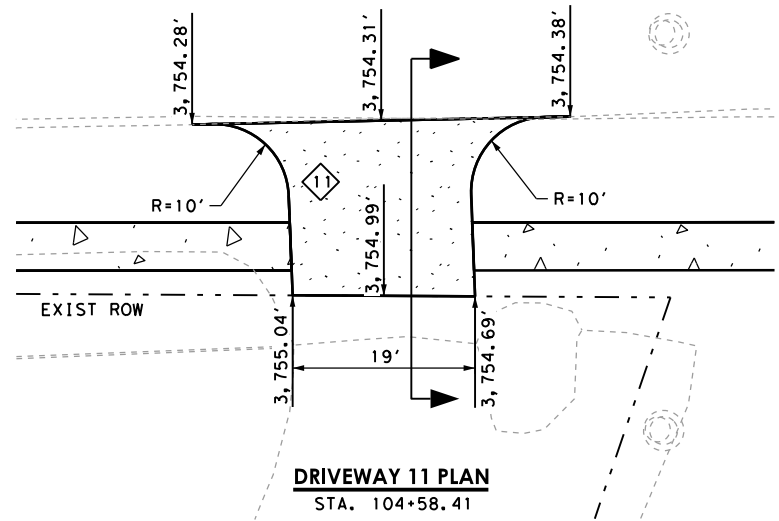
DRIVEWAY 9 SECTION



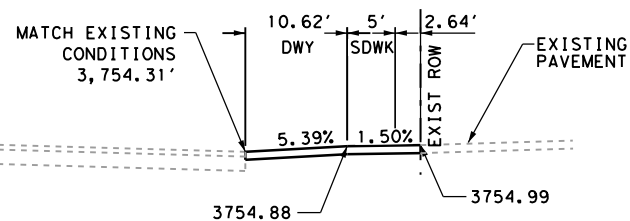
DRIVEWAY 10 PLAN
STA. 91+33.12



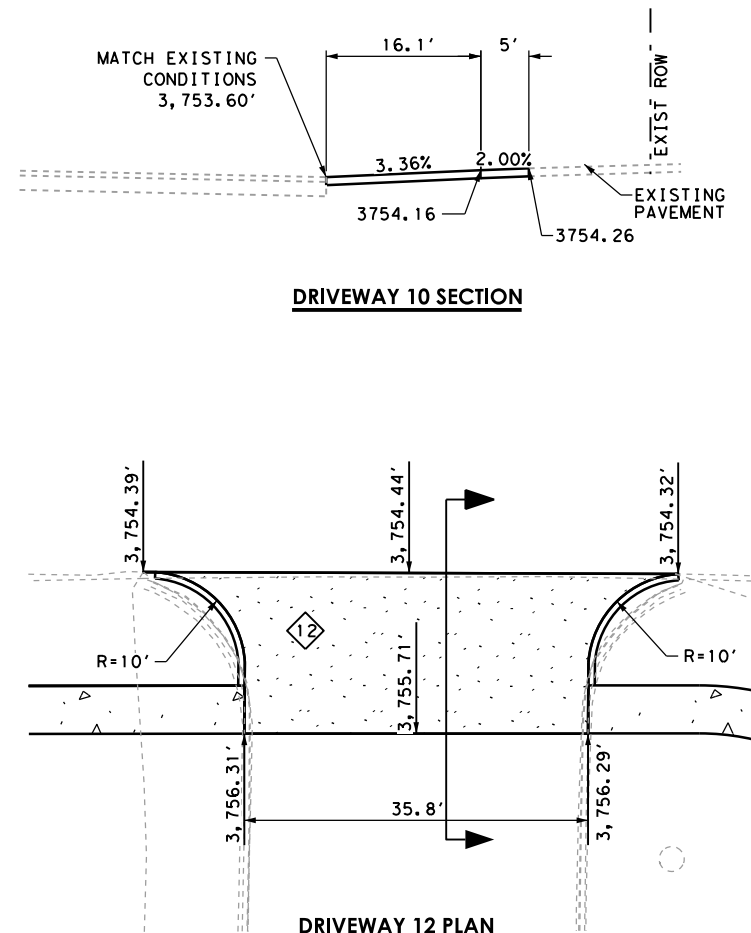
DRIVEWAY 10 SECTION



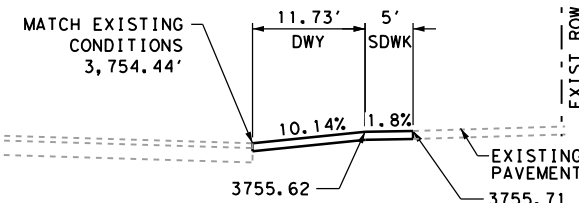
DRIVEWAY 11 PLAN
STA. 104+58.41



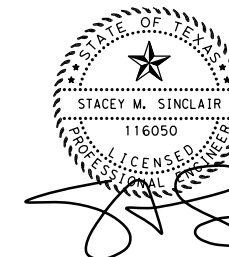
DRIVEWAY 11 SECTION



DRIVEWAY 12 PLAN
STA. 105+71.58



DRIVEWAY 12 SECTION



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**SH 20
DONIPHAN DR.
DRIVEWAY DETAILS**






SHEET 3 OF 4

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	144

4/30/2021

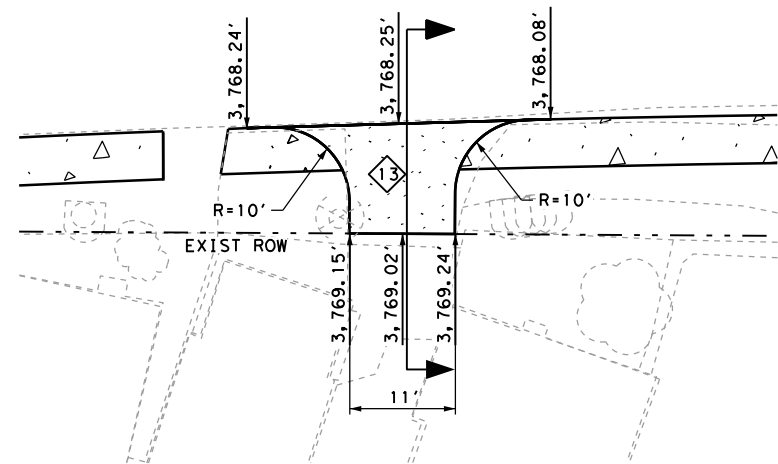
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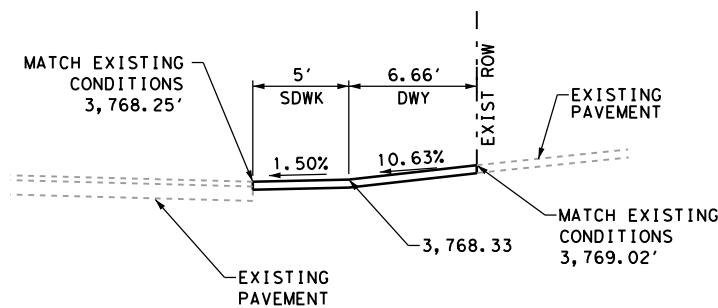
-  PROPOSED CURB
-  PROPOSED SIDEWALK
-  PROPOSED DRIVEWAY
-  DRIVEWAY NUMBER
-  EXISTING ROW

NOTES:

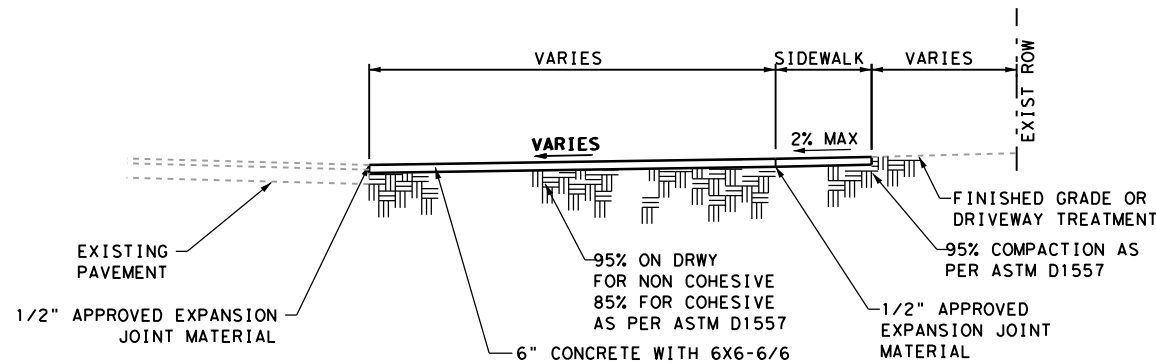
1. DRIVEWAY ELEVATIONS ARE APPROXIMATE DUE TO LIMITED TXDOT TOPOGRAPHIC SURVEY INFORMATION AVAILABLE. CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND ENSURE DRIVEWAY ELEVATIONS MATCH EXISTING CONDITIONS.
2. REFER TO "DRIVEWAY PAVEMENT STRUCTURE DETAIL" ON THIS SHEET.



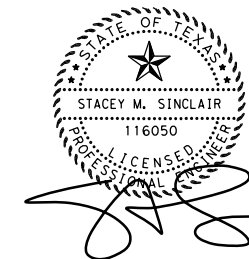
DRIVEWAY 13 PLAN
STA. 133+38.50



DRIVEWAY 13 SECTION



DRIVEWAY PAVEMENT STRUCTURE DETAIL



4/30/2021



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Firm Registration Number 420



**SH 20
DONIPHAN DR.
DRIVEWAY DETAILS**



SHEET 4 OF 4

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	145

4/30/2021

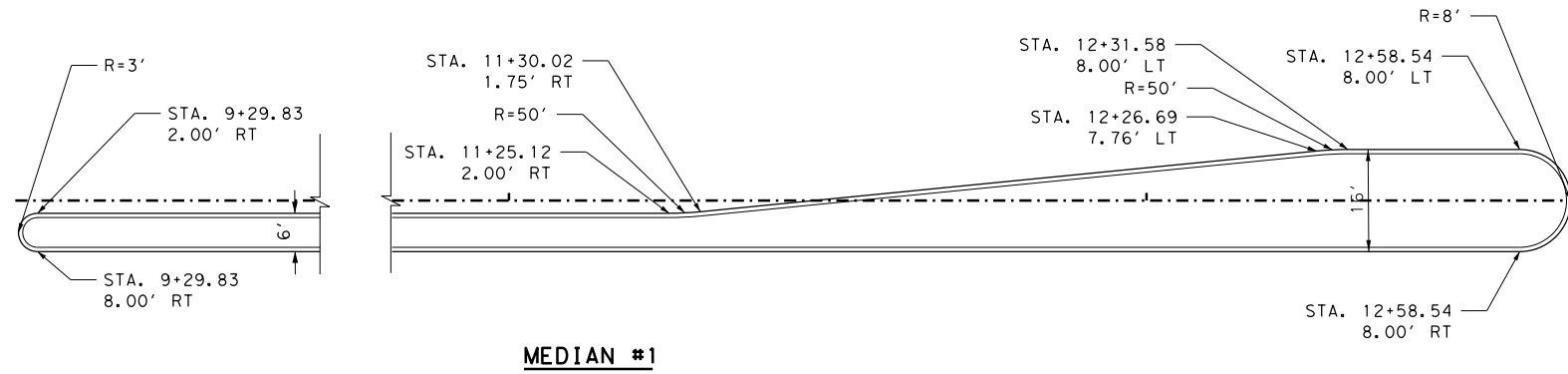
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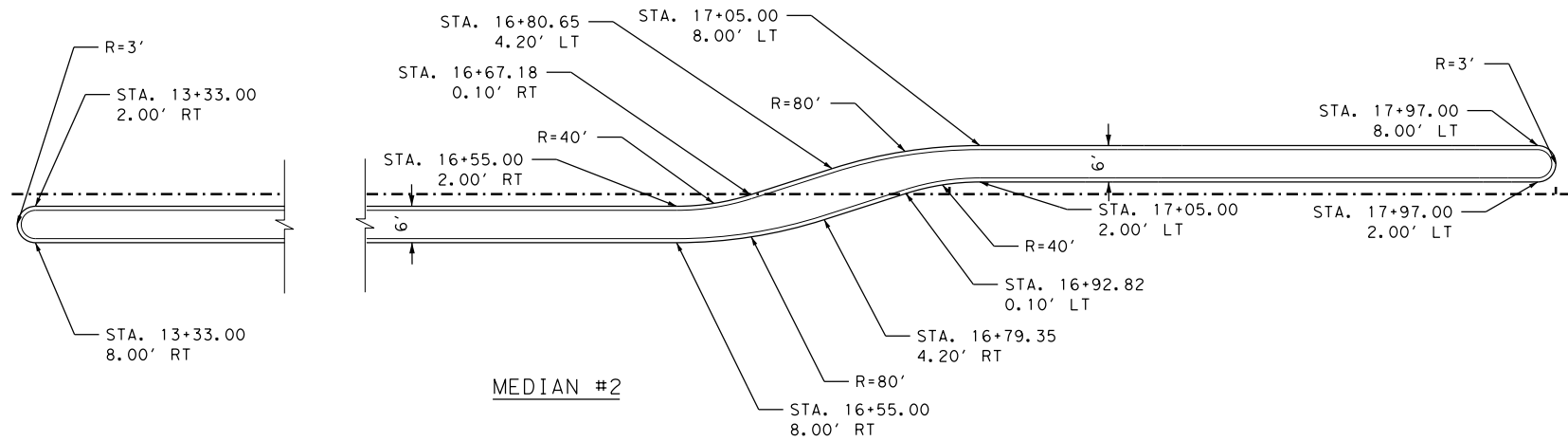
-  PROPOSED TY II CURB
-  EXISTING CURB

NOTES:

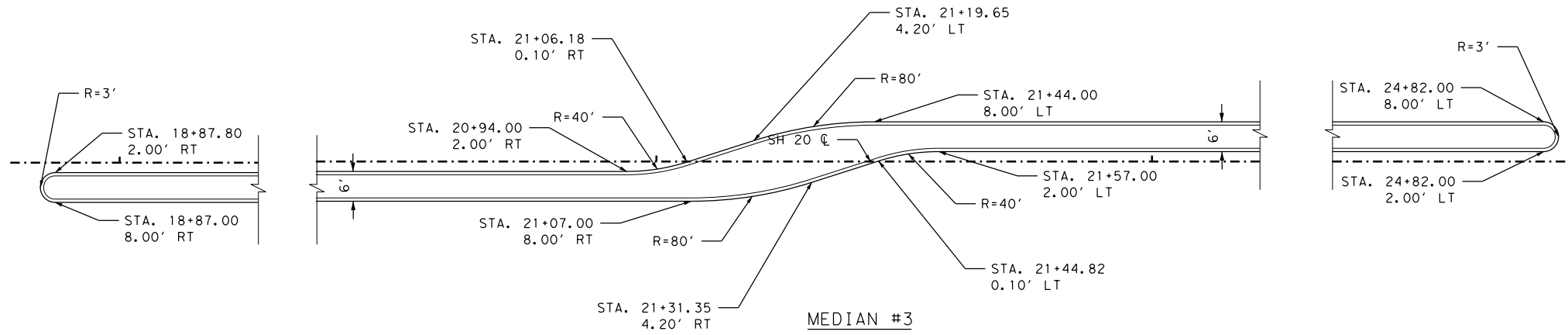
1. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
2. STATIONS AND OFFSETS ARE MEASURED FROM FACE OF CURB.



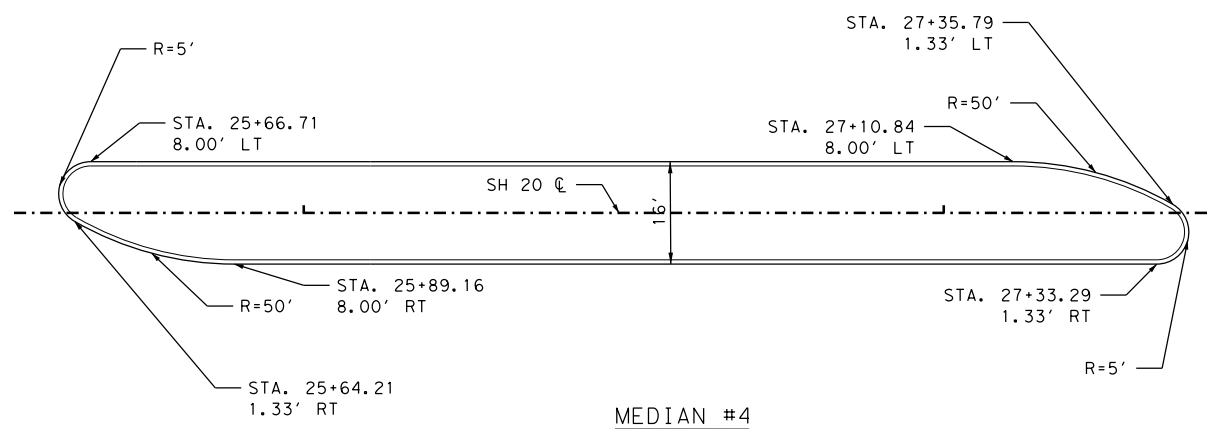
MEDIAN #1



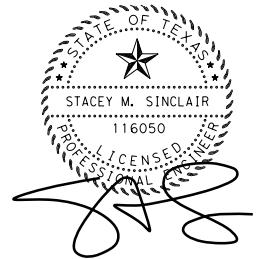
MEDIAN #2



MEDIAN #3




MEDIAN #4



5/2/2021



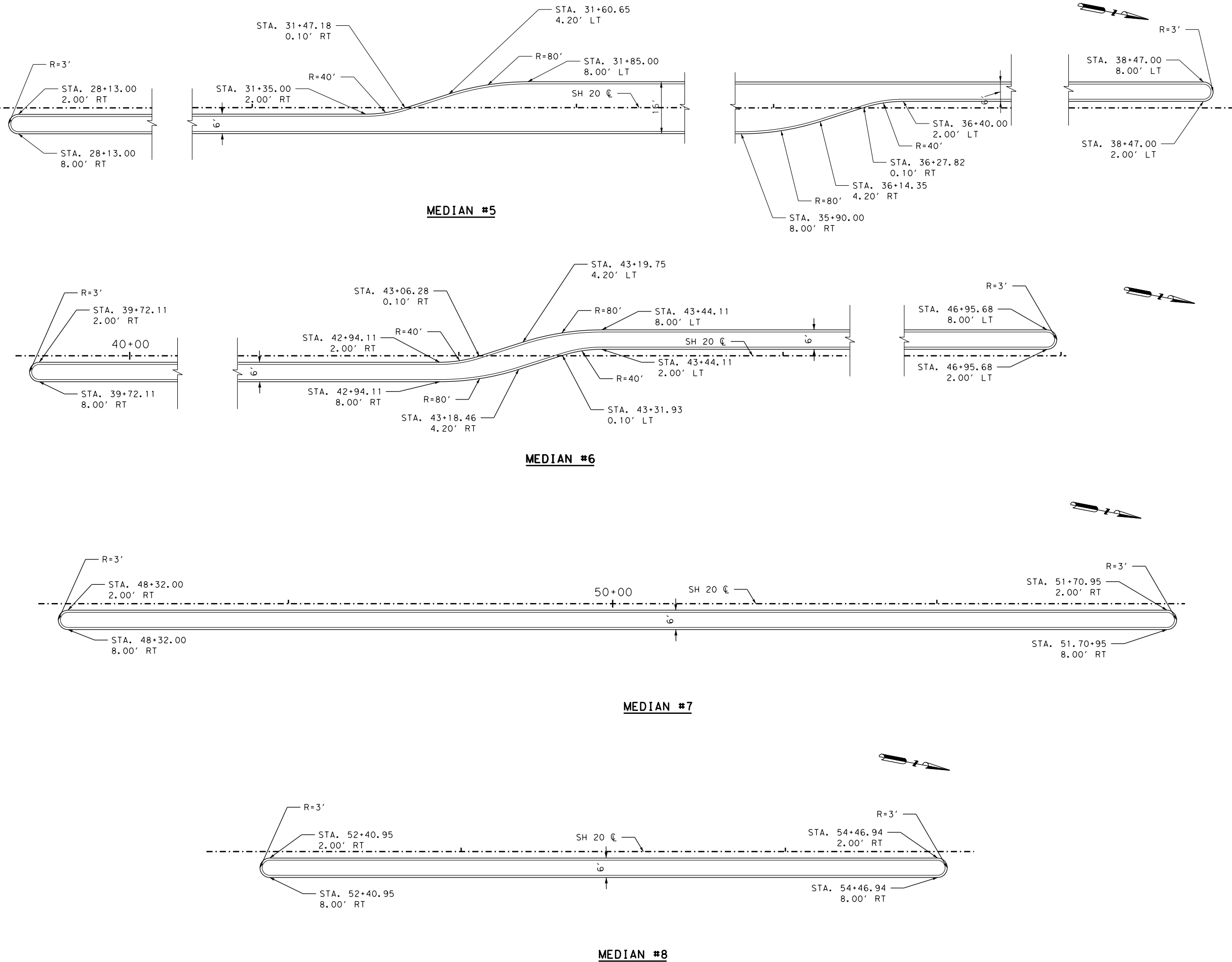
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**SH 20
 DONIPHAN DR.
 MEDIAN LAYOUT**

SHEET 1 OF 5

DESIGNED: NR	STATE: TEXAS	DISTRICT: EL PASO	COUNTY: EL PASO	HWY NUMBER: SH 20
CHECKED: SH	CONTROL: 0001	SECTION: 01	JOB: 063, ETC.	SHEET NUMBER: 146

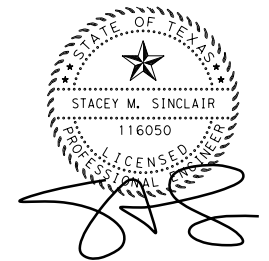


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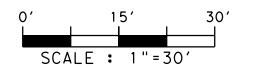
- PROPOSED TY II CURB
- - - - - EXISTING CURB

NOTES:

1. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
2. STATIONS AND OFFSETS ARE MEASURED FROM FACE OF CURB.



5/2/2021



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Firm Registration Number 420



**SH 20
DONIPHAN DR.
MEDIAN LAYOUT**

SHEET 2 OF 5

DESIGNED:	NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	147

5/2/2021

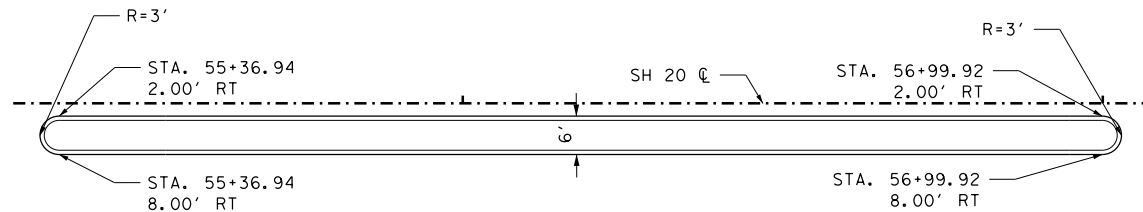
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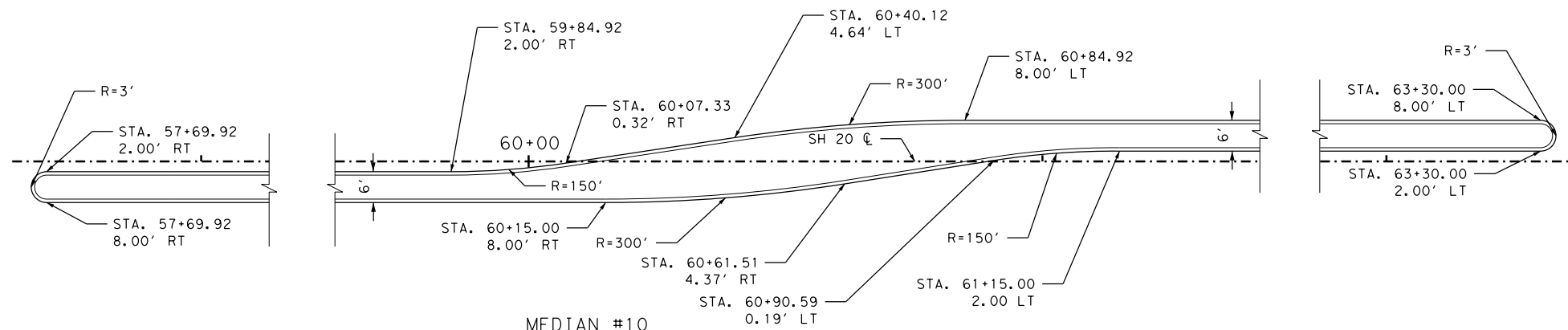
- PROPOSED TY II CURB
- - - EXISTING CURB

NOTES:

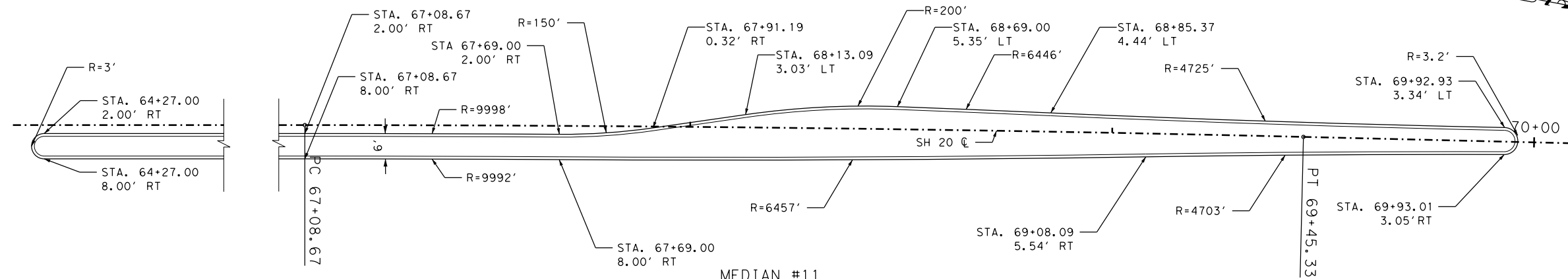
1. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
2. STATIONS AND OFFSETS ARE MEASURED FROM FACE OF CURB.



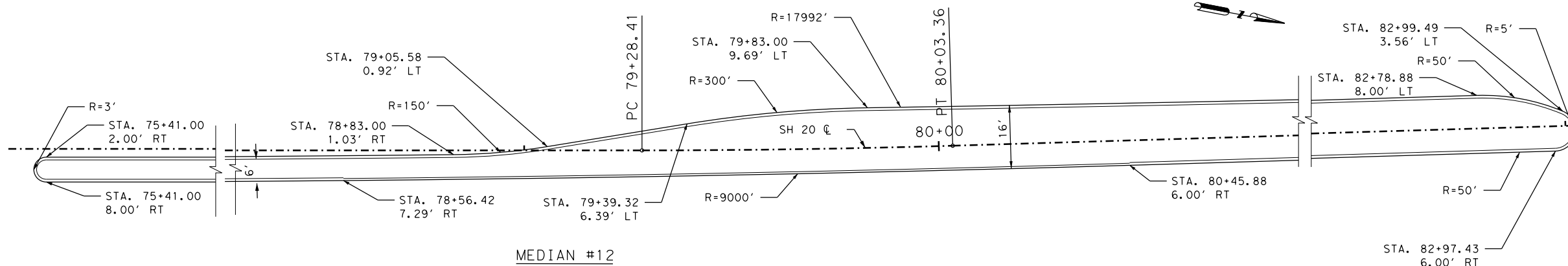
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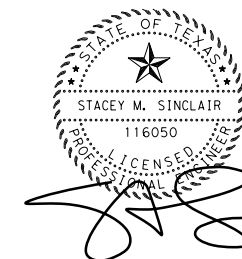
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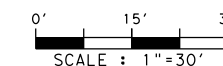
MEDIAN #11



MEDIAN #12



5/2/2021



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Infrastructure Solutions
Firm Registration Number 420



**SH 20
DONIPHAN DR.
MEDIAN LAYOUT**

SHEET 3 OF 5

DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	148

5/2/2021

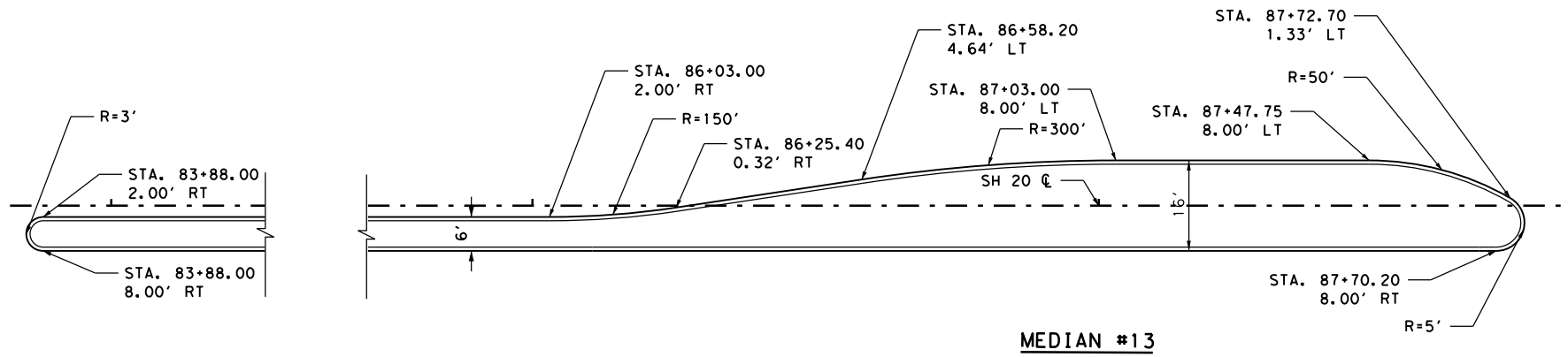
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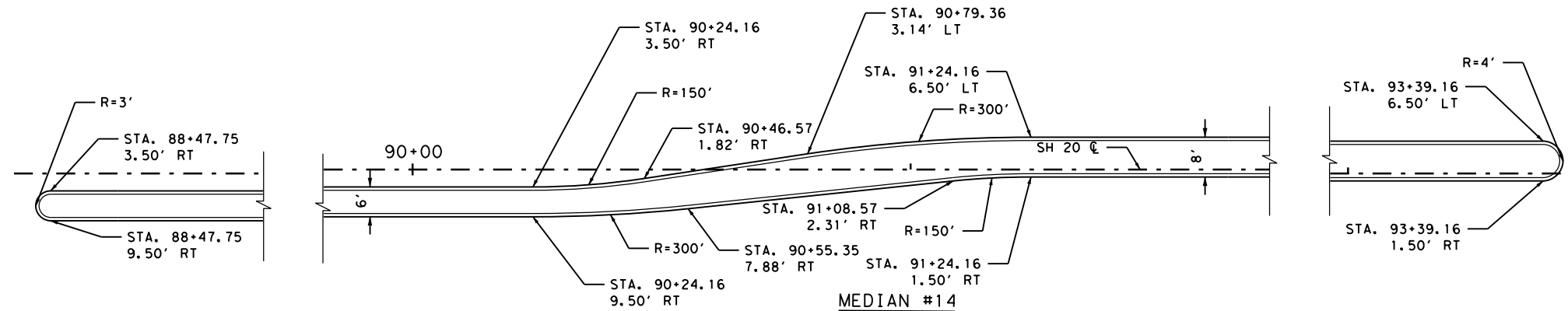
- PROPOSED TY II CURB
- - - EXISTING CURB

NOTES:

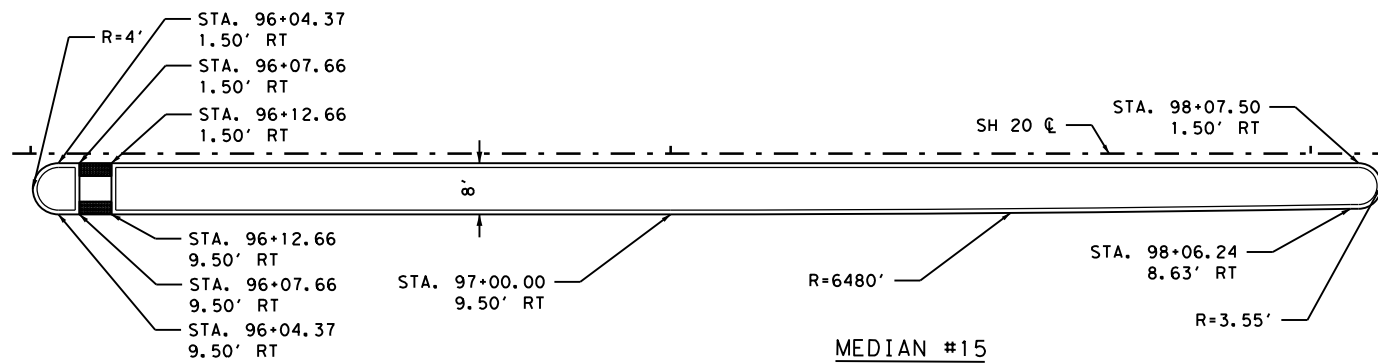
1. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
2. STATIONS AND OFFSETS ARE MEASURED FROM FACE OF CURB.



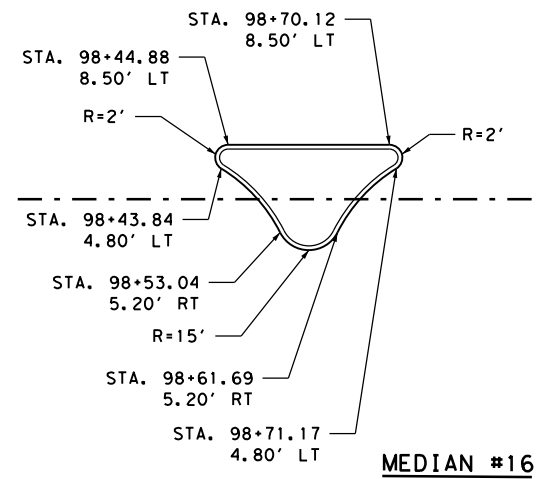
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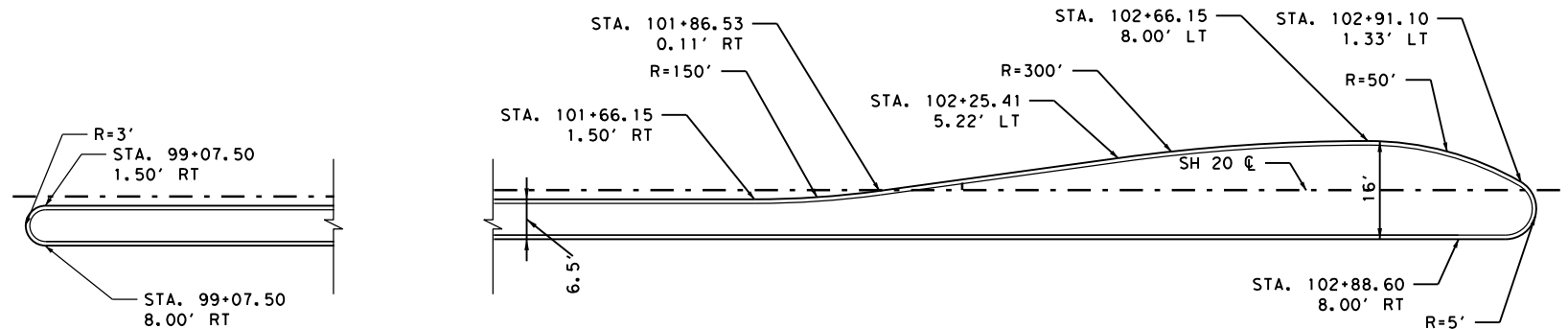
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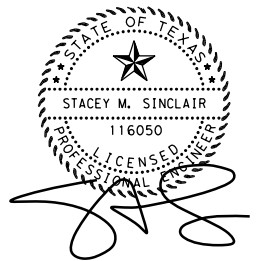
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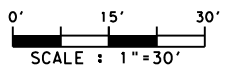
MEDIAN #16



MEDIAN #17



4/30/2021



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Firm Registration Number 420

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**SH 20
DONIPHAN DR.
MEDIAN LAYOUT**

SHEET 4 OF 5

DESIGNED: NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	149

4/30/2021

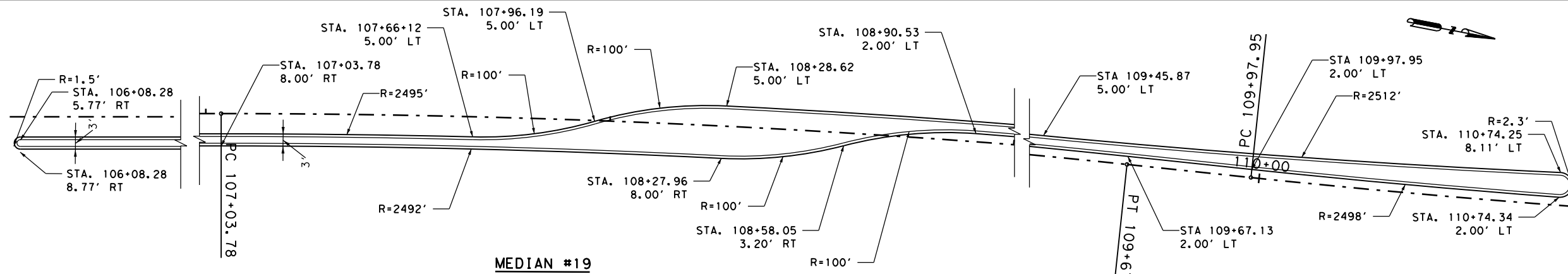
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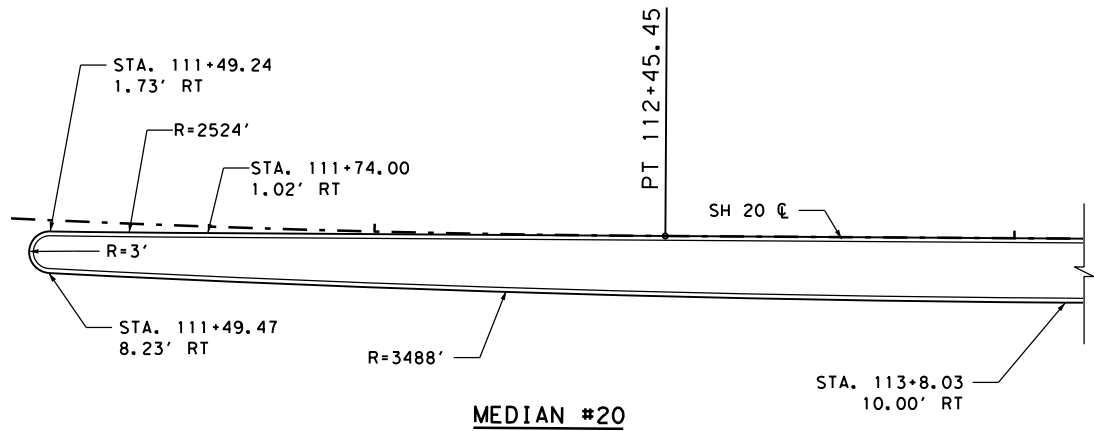
- PROPOSED TY II CURB
- - - EXISTING CURB

NOTES:

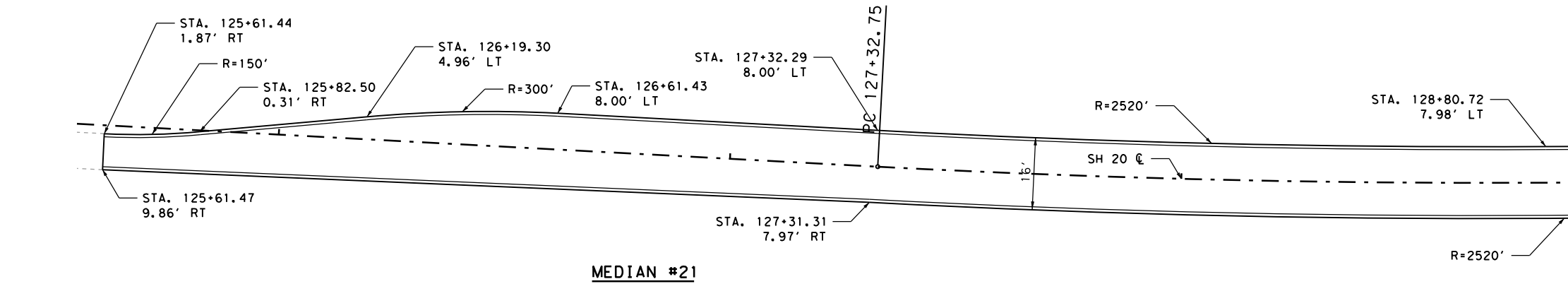
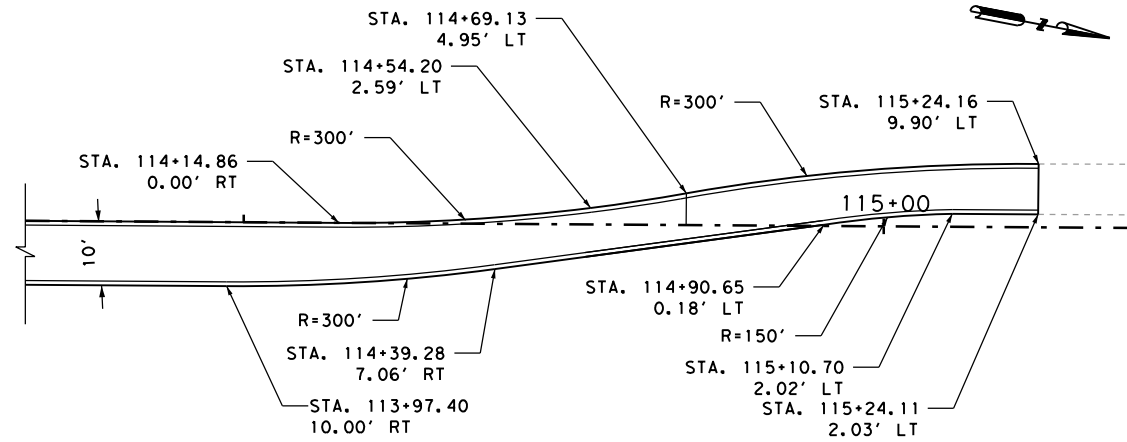
1. SEE DRAINAGE PLAN SHEETS FOR MEDIAN FLUME LOCATIONS AND DETAILS.
2. STATIONS AND OFFSETS ARE MEASURED FROM FACE OF CURB.



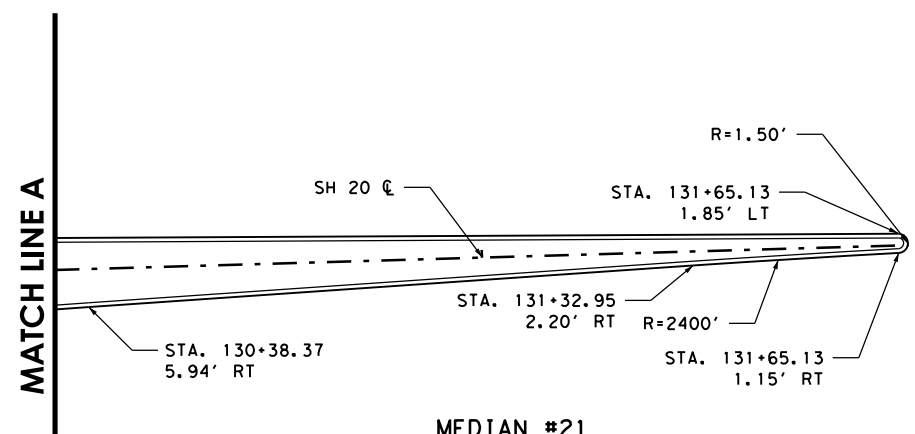
MEDIAN #19



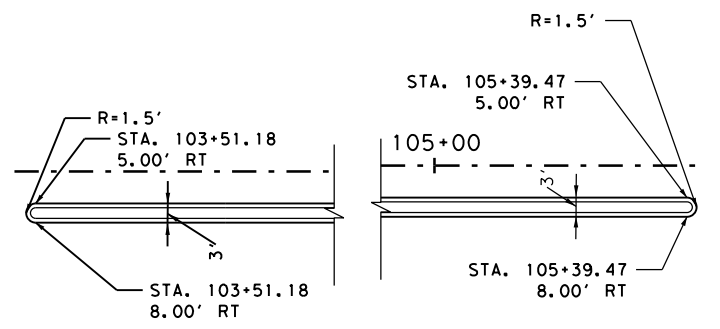
MEDIAN #20



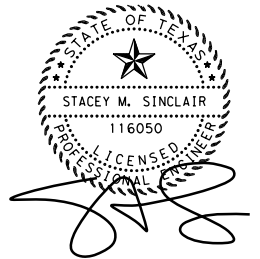
MEDIAN #21



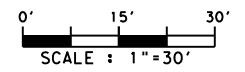
MEDIAN #21



MEDIAN #18



4/30/2021



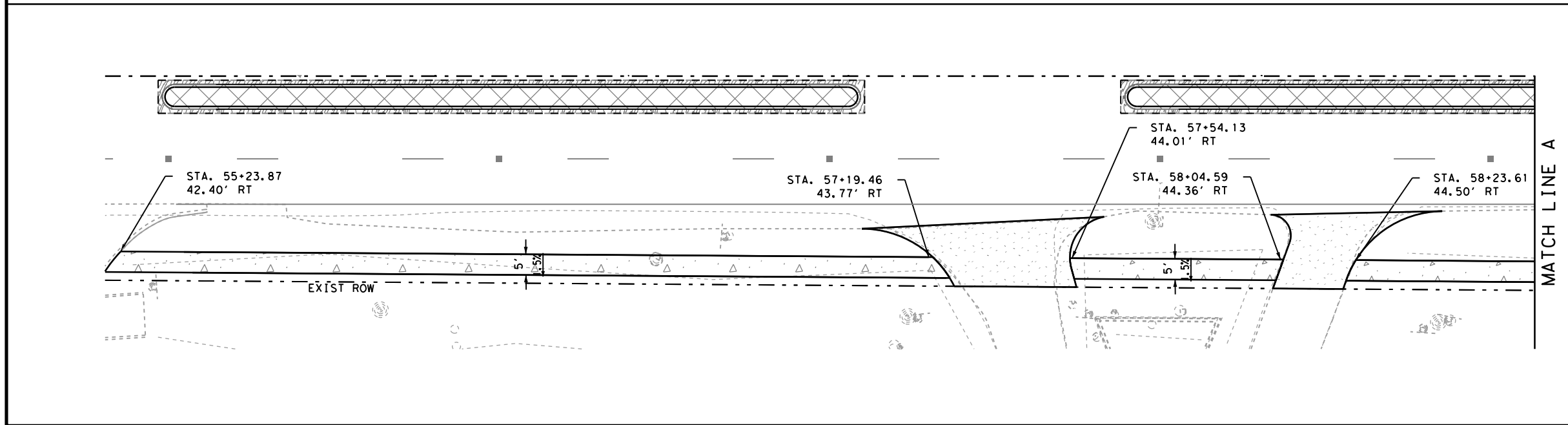
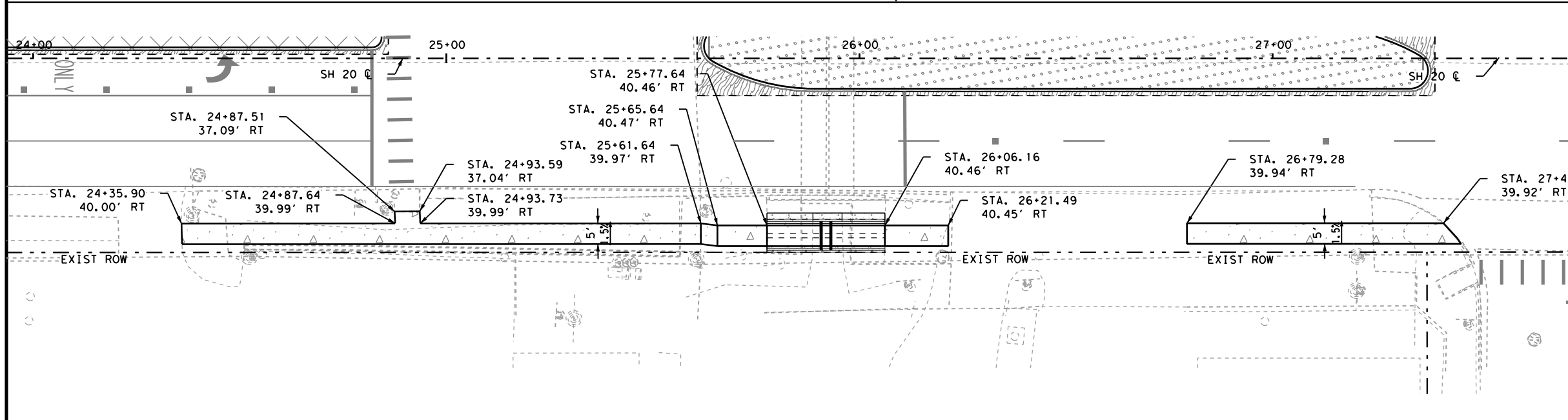
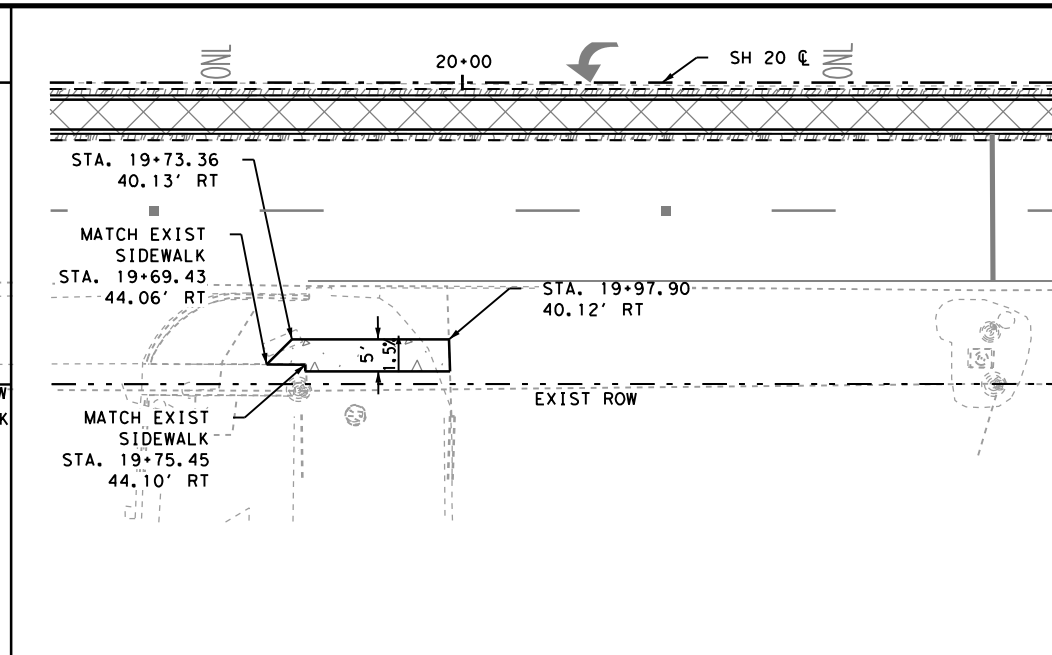
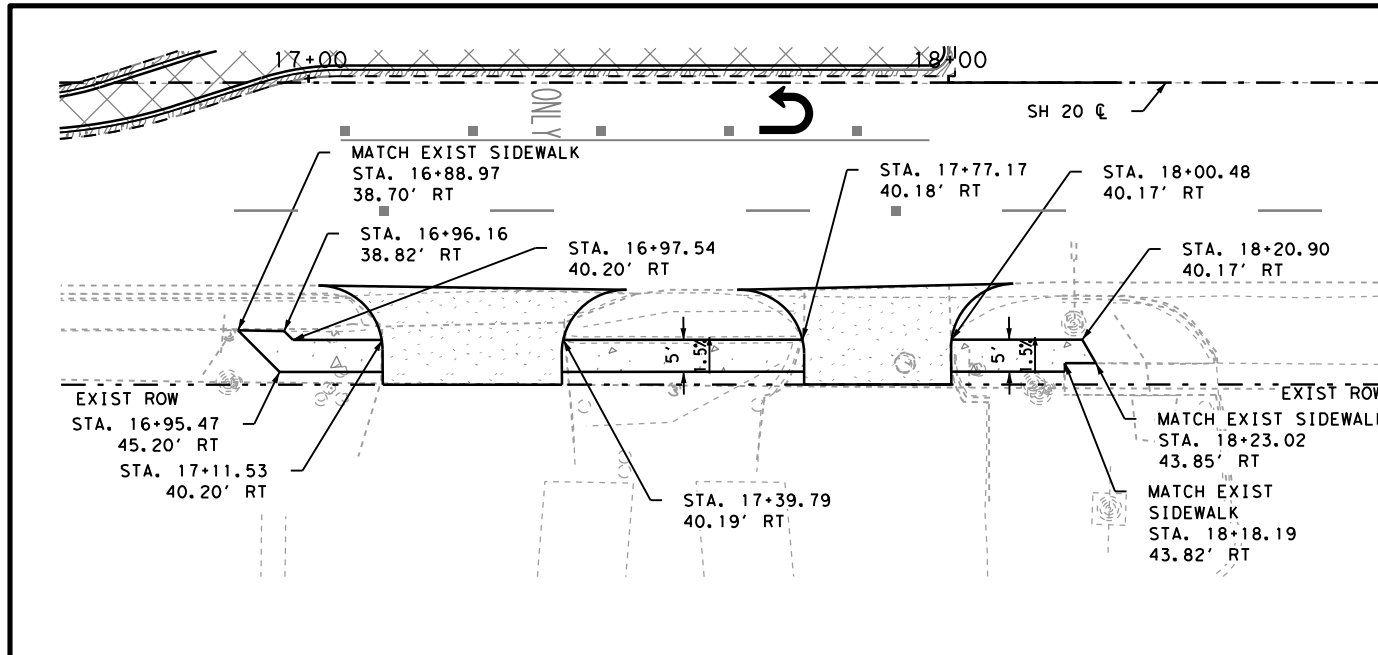
**SH 20
DONIPHAN DR.
MEDIAN LAYOUT**

SHEET 5 OF 5

DESIGNED: NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	150

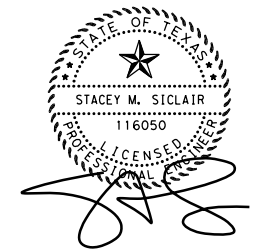
4/30/2021

12:37:54 PM



NOTES:

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4. REFER TO ROADWAY PLAN SHEETS FOR MORE INFORMATION.

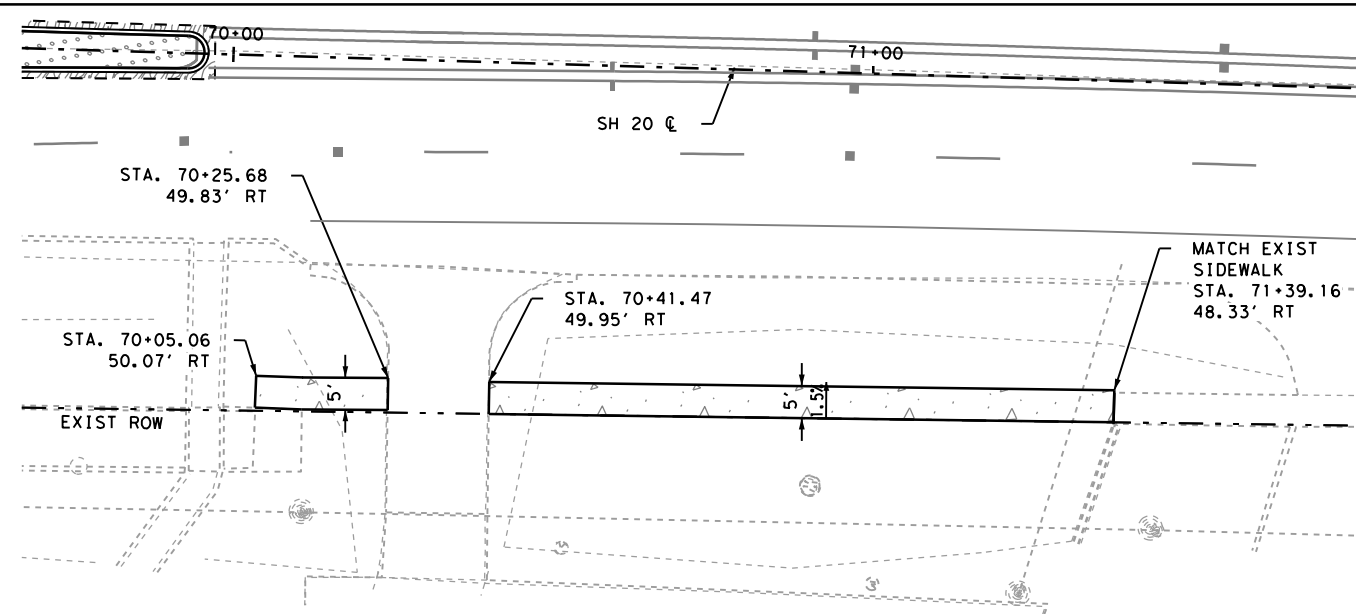
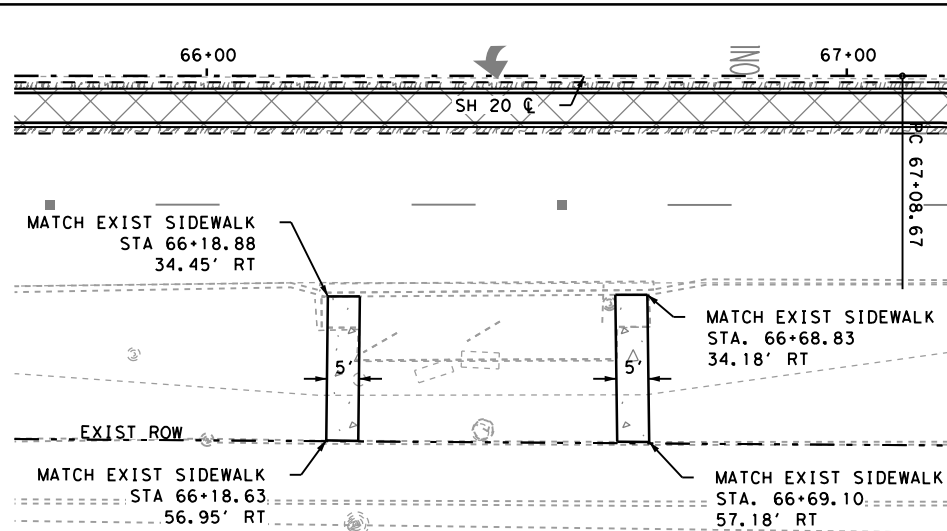
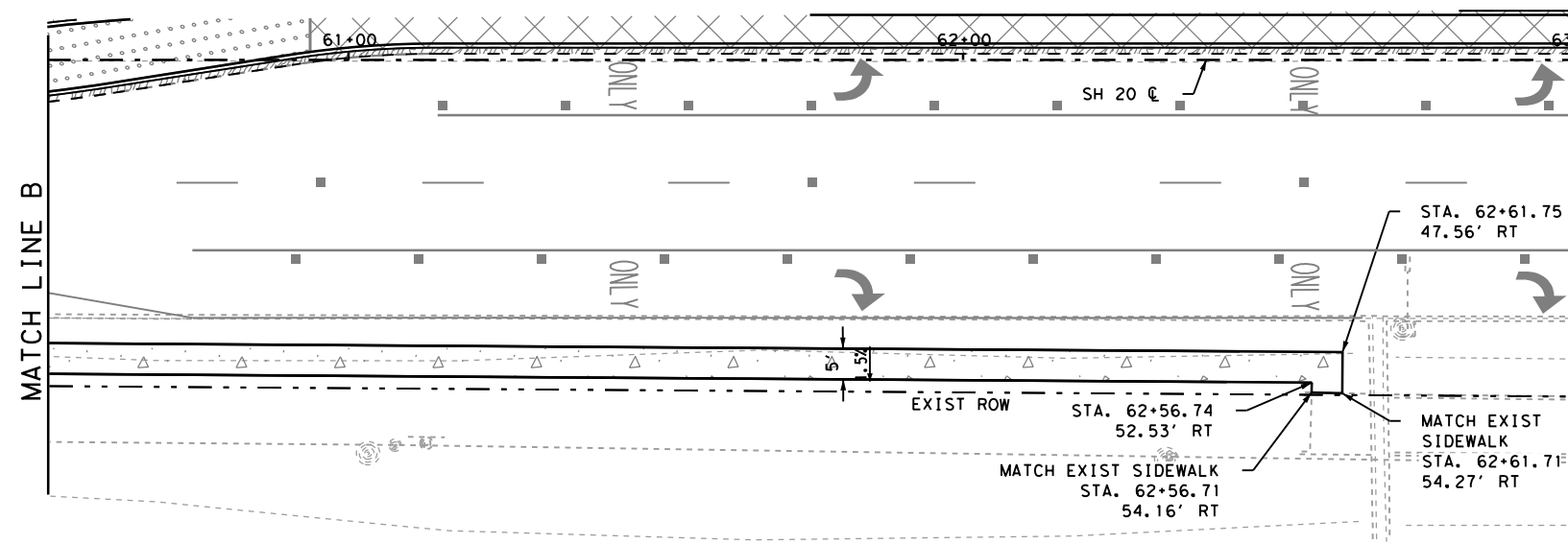
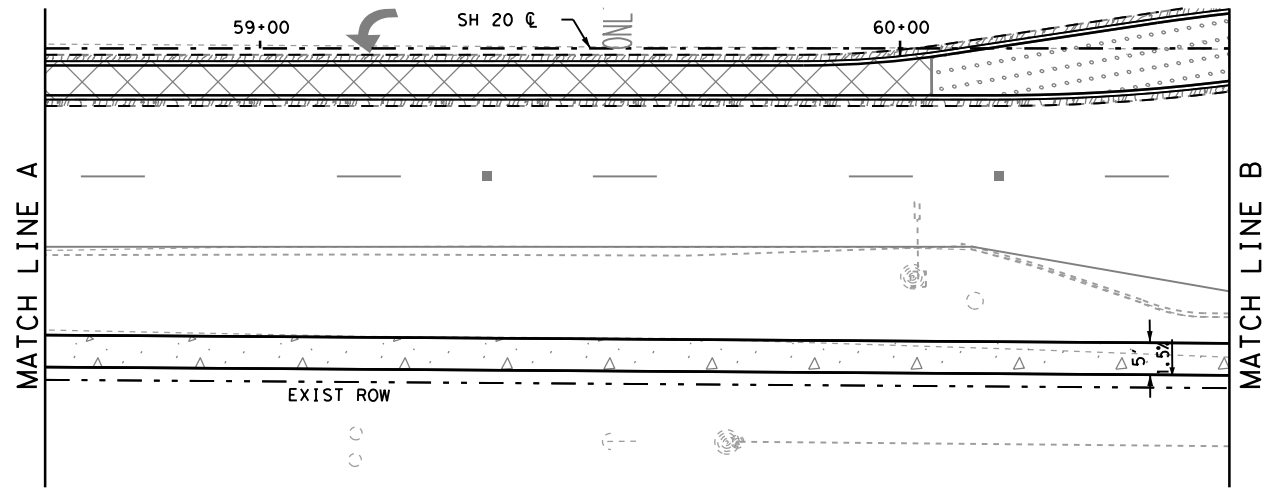


4/30/2021



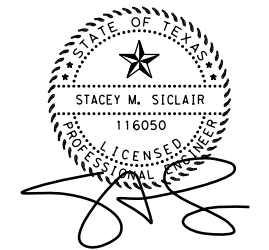
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

DESIGNED:	VD	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	151

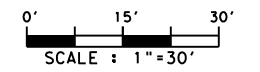


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4/30/2021



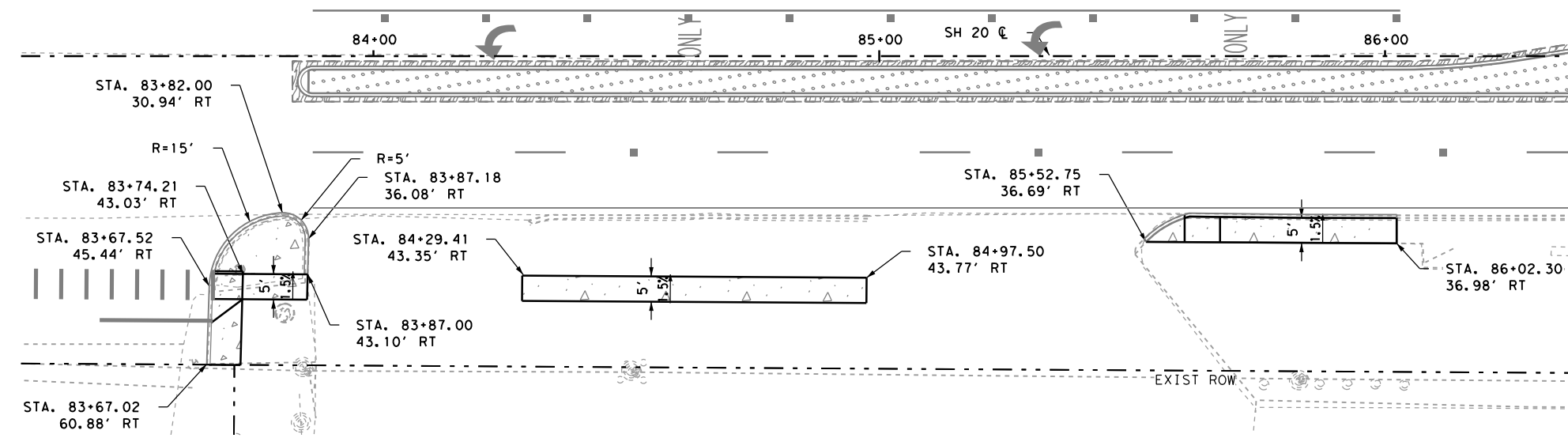
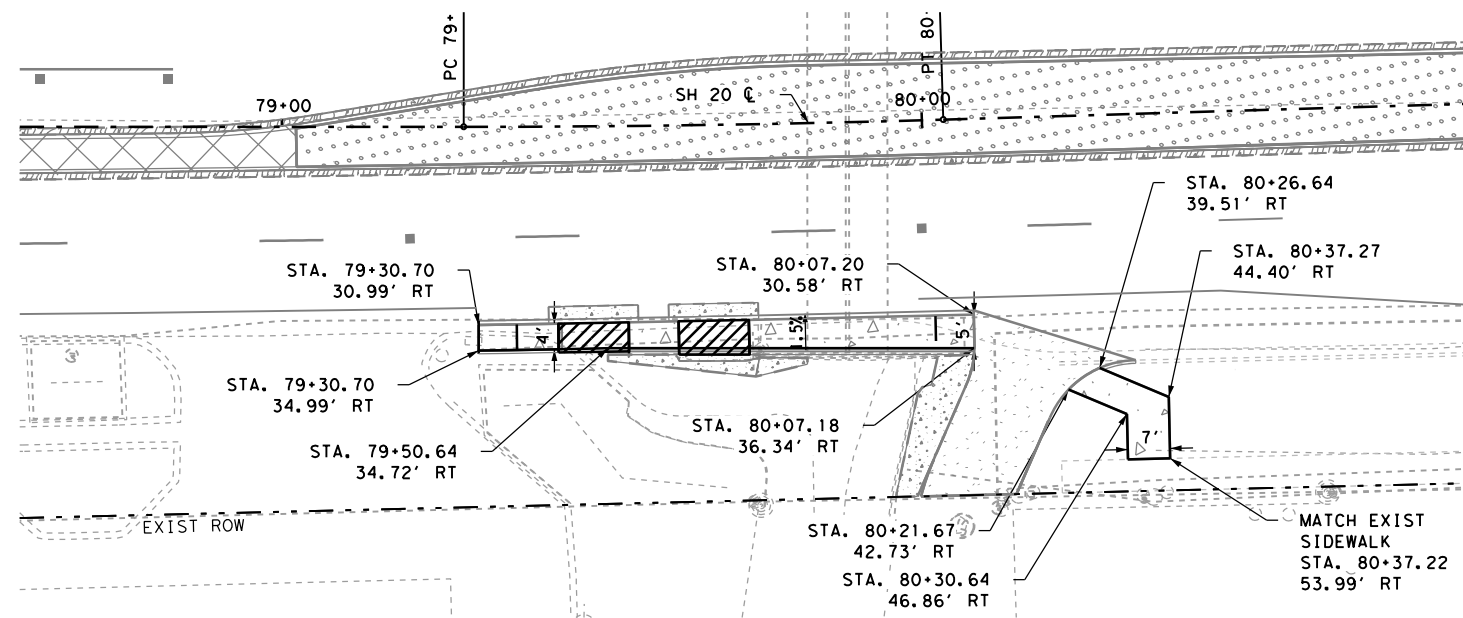
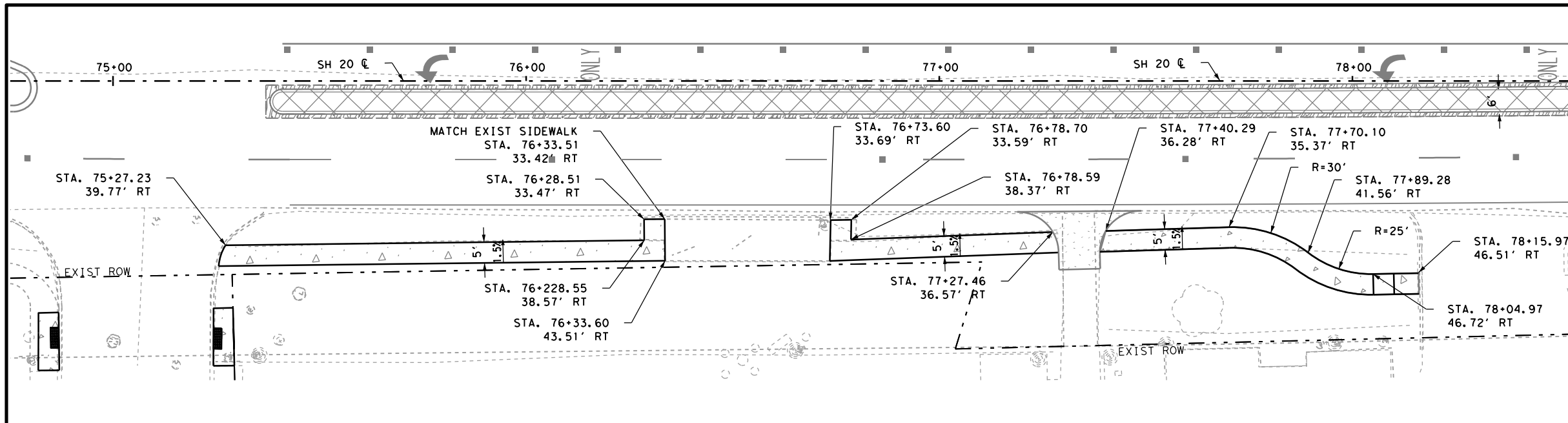
**SH 20
DONIPHAN DR.
SIDEWALK LAYOUT**

SHEET 2 OF 7

DESIGNED:	VD	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	152

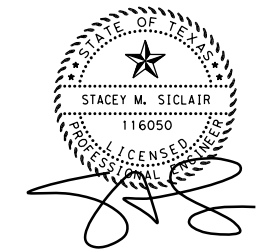
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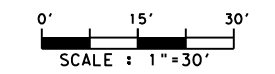


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4/30/2021



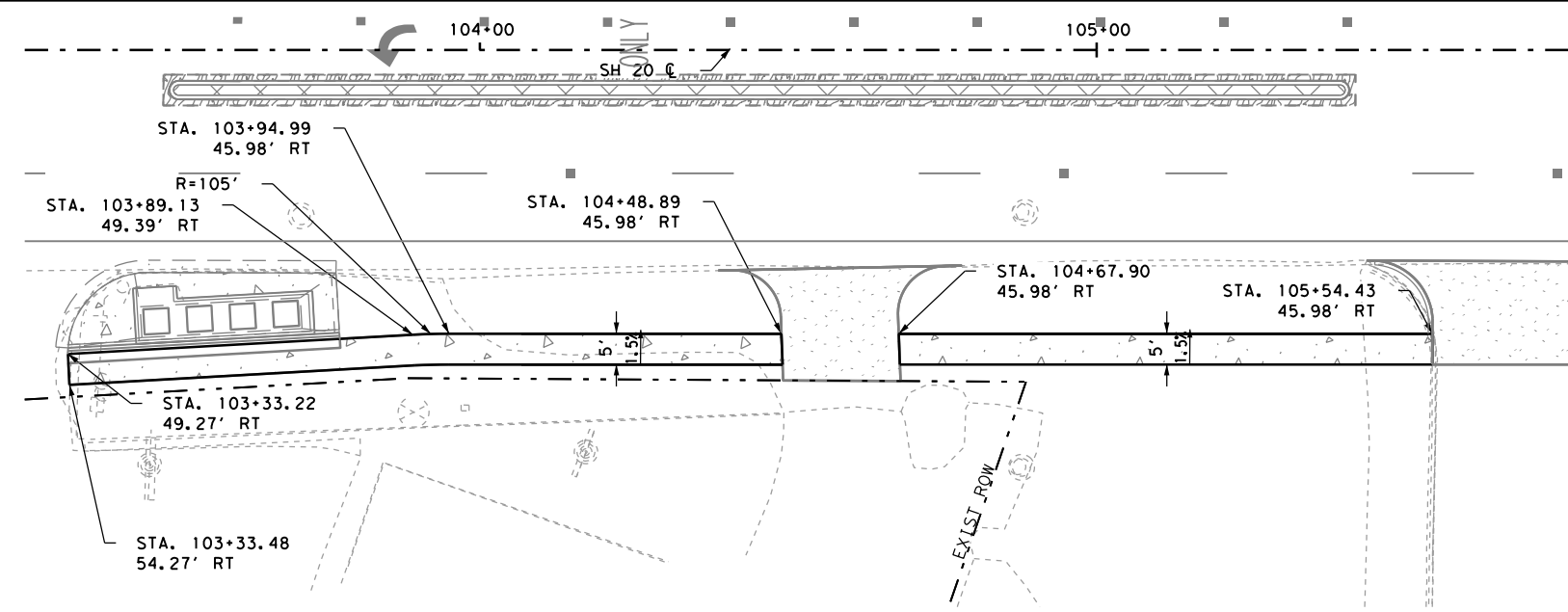
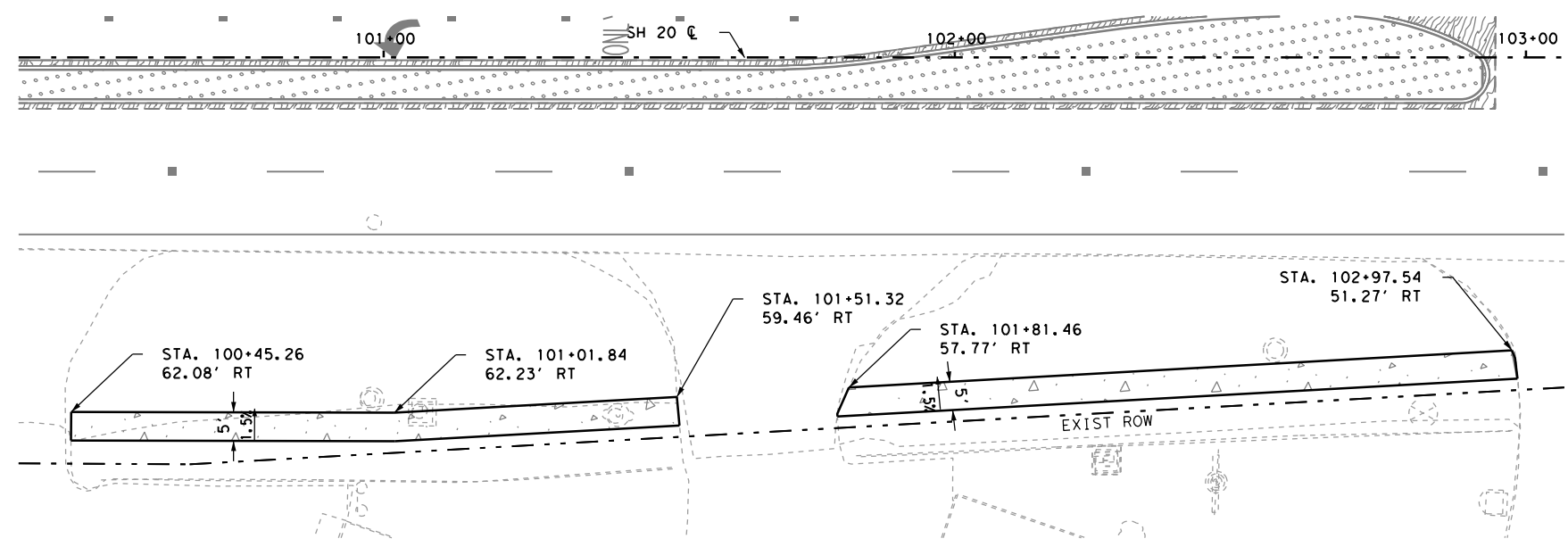
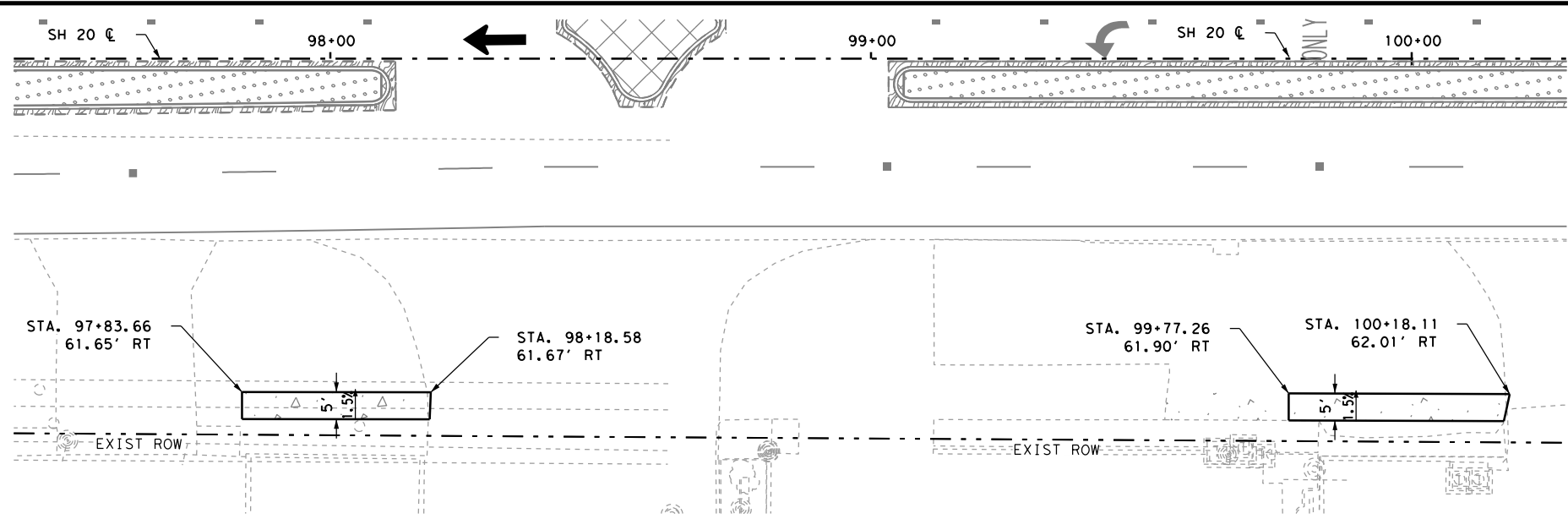
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

SHEET 3 OF 7

DESIGNED:	VD	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	153

4/30/2021

12:39:52 PM

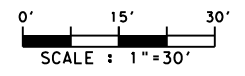


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4/30/2021



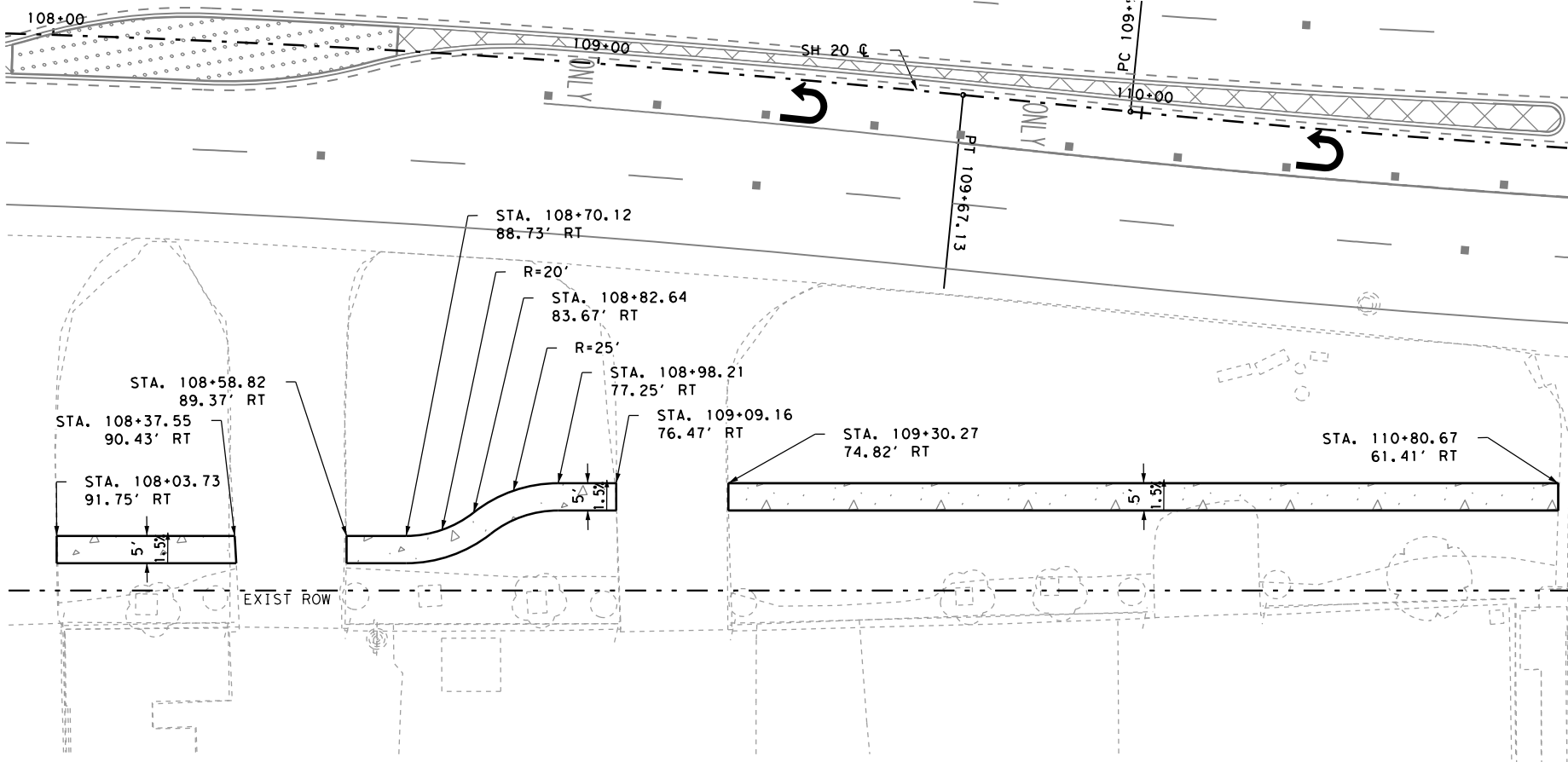
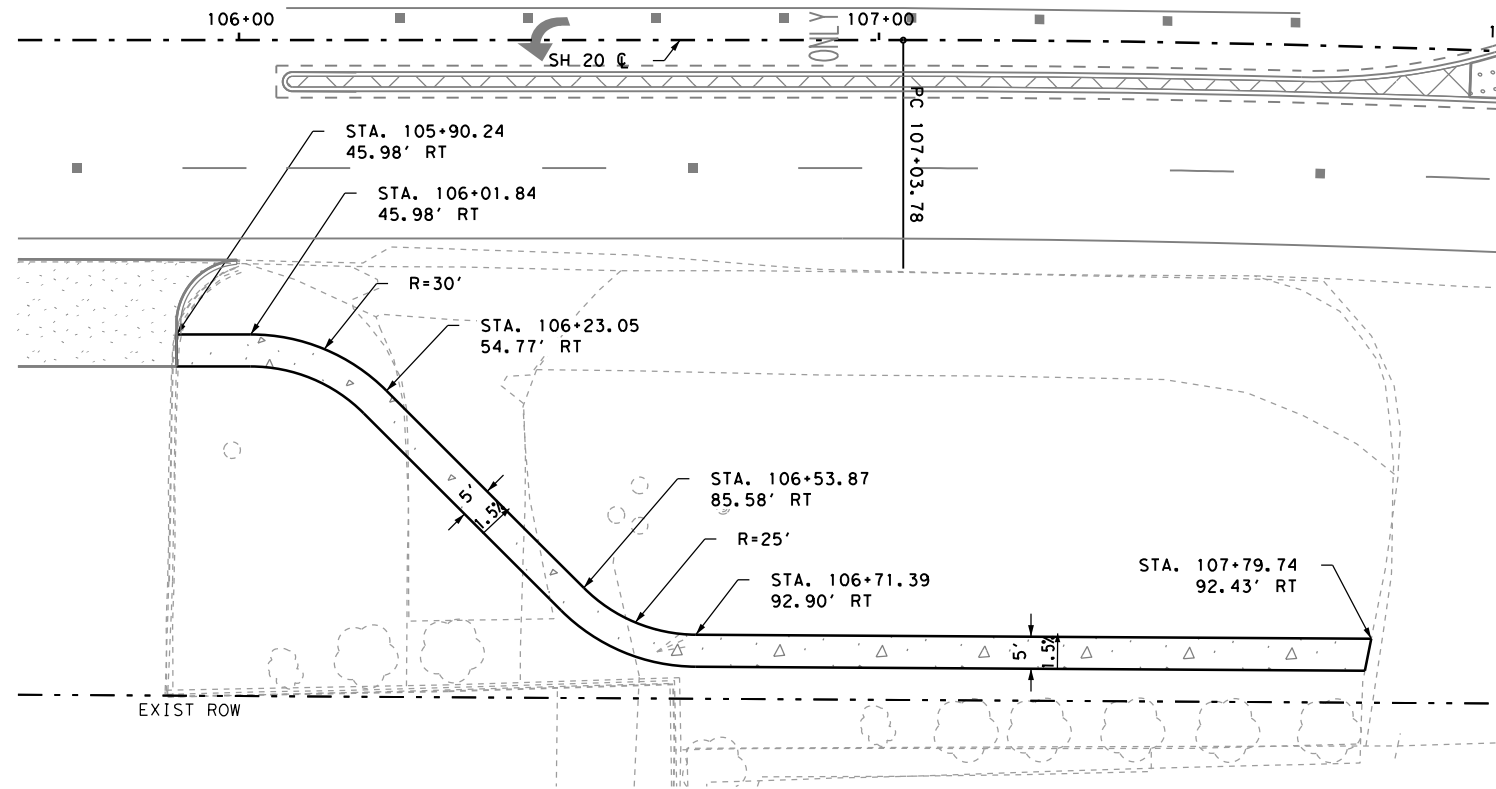
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

SHEET 4 OF 7

DESIGNED:	VD	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	154

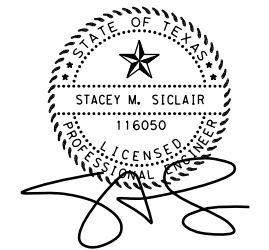
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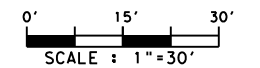


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4/30/2021



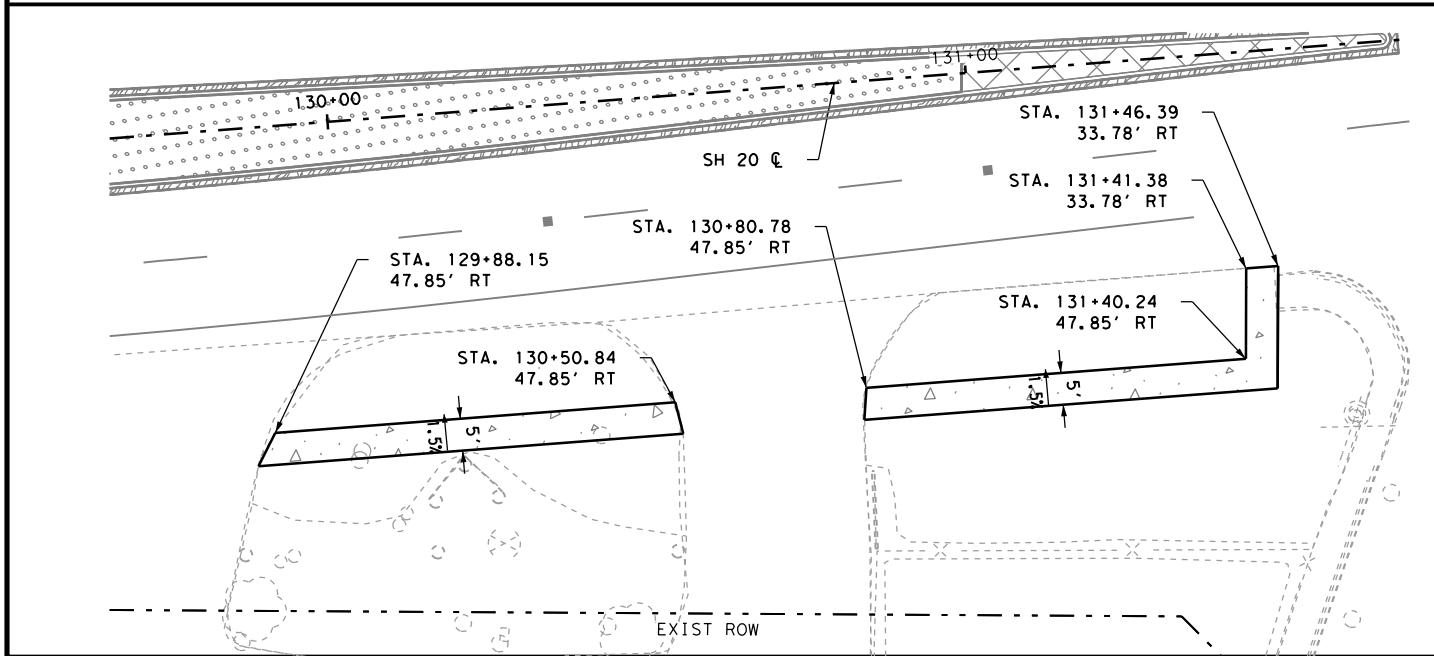
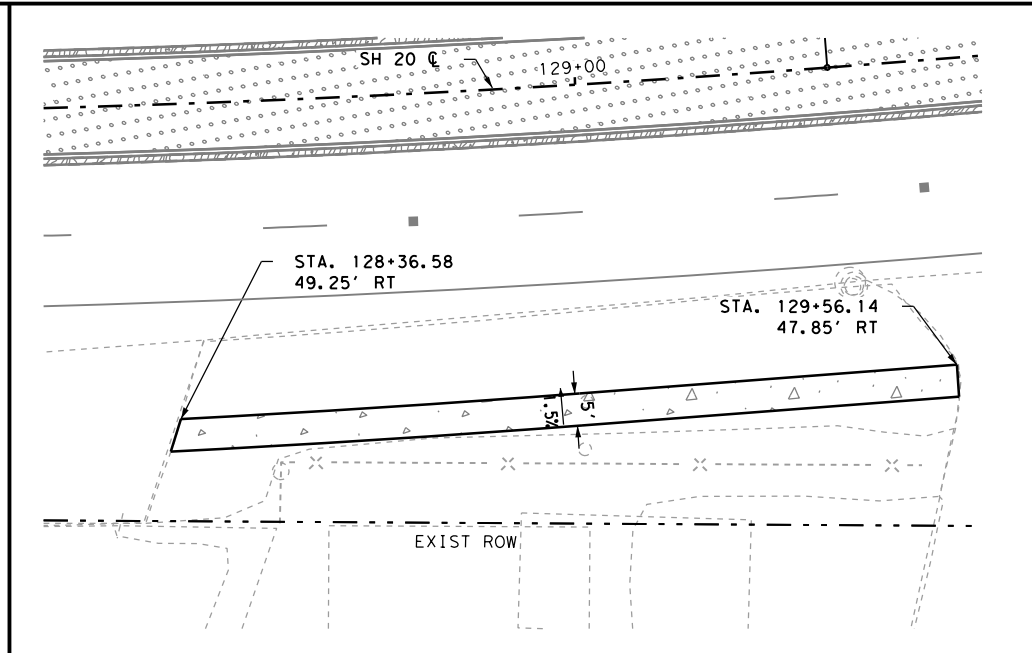
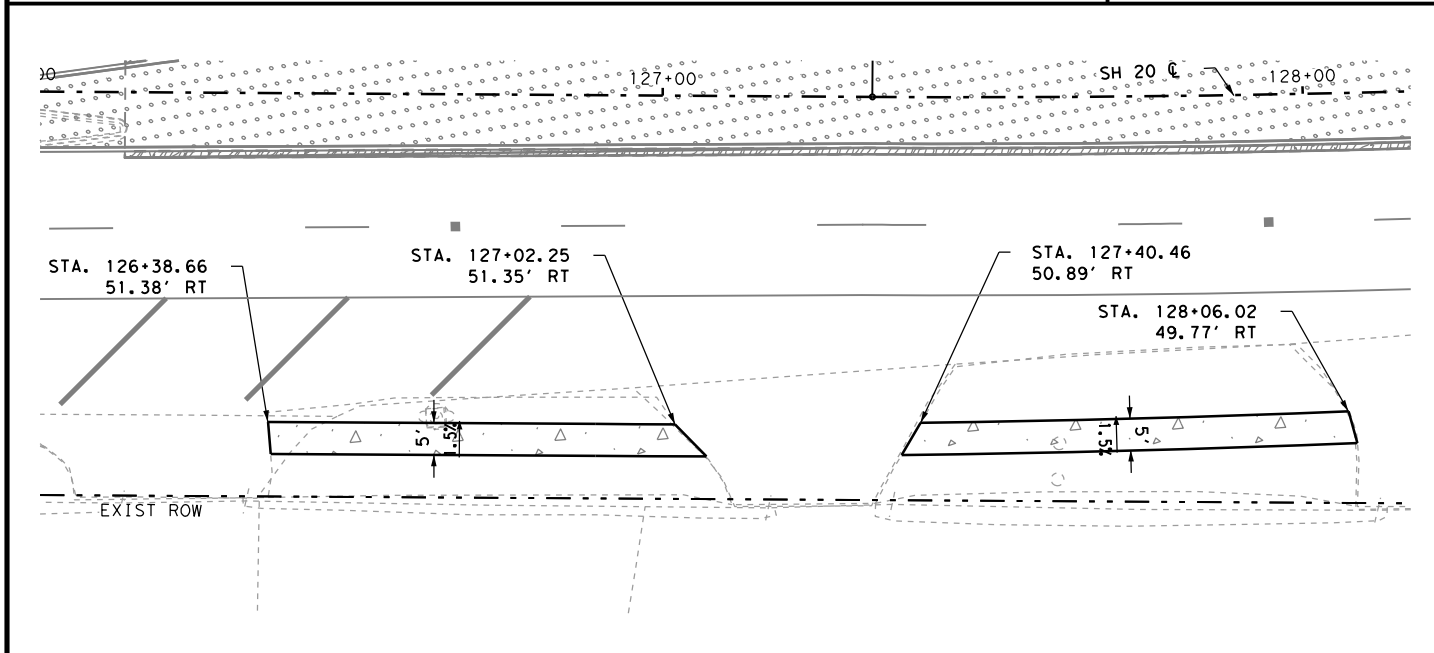
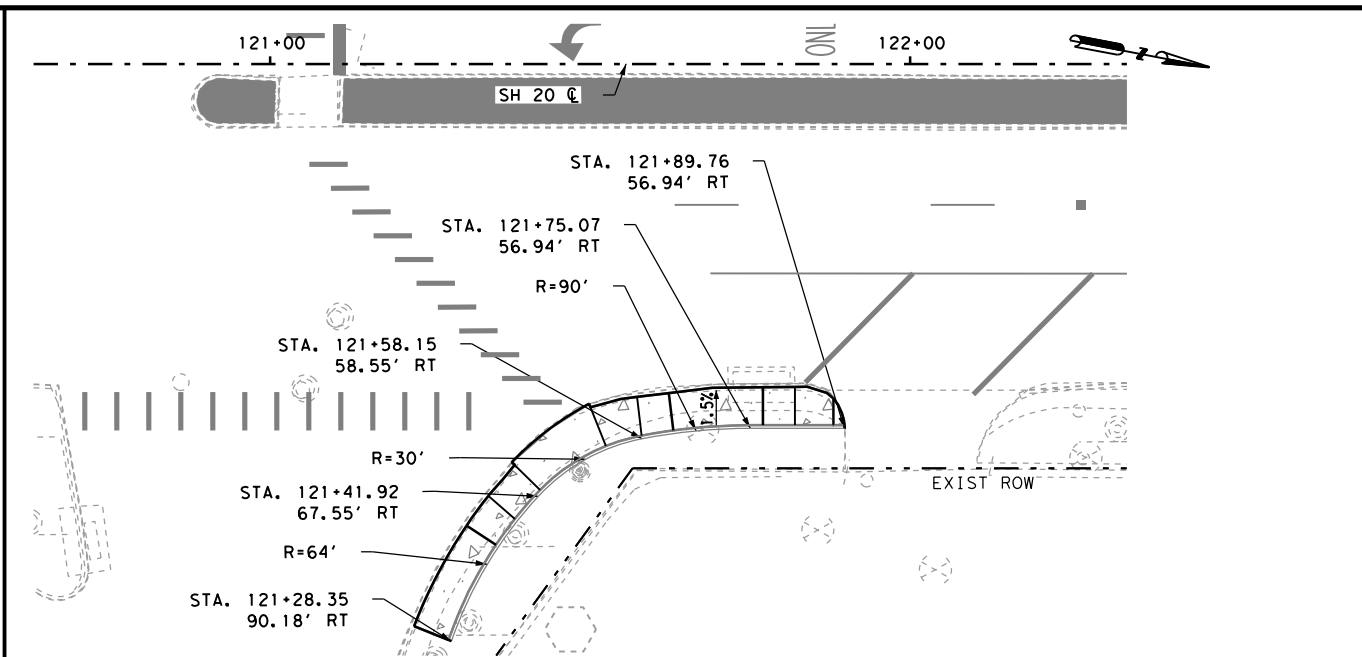
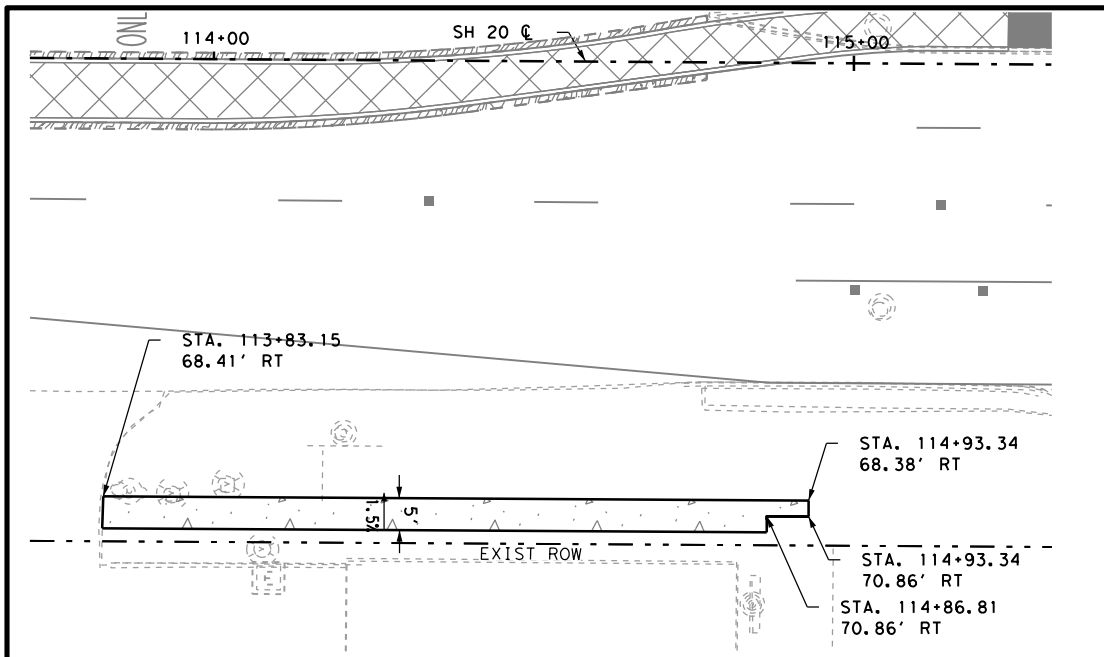
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

SHEET 5 OF 7

DESIGNED:	RR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	155

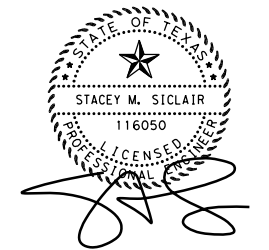
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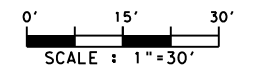


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4/30/2021



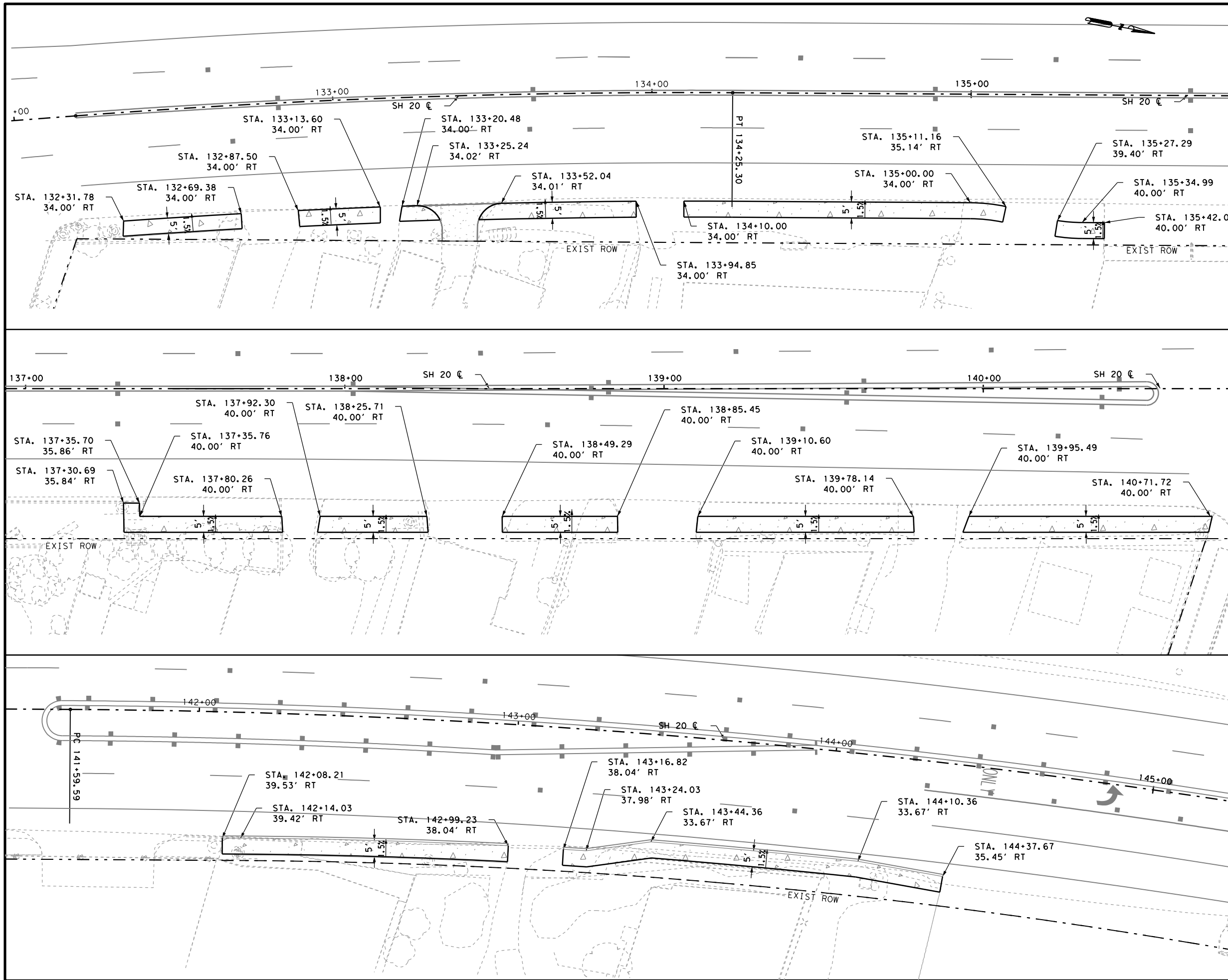
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

SHEET 6 OF 7

DESIGNED:	RR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	156

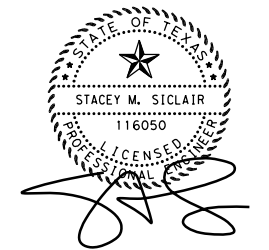
4/30/2021

12:40:30 PM

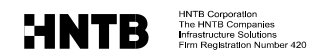
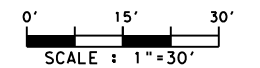


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4/30/2021



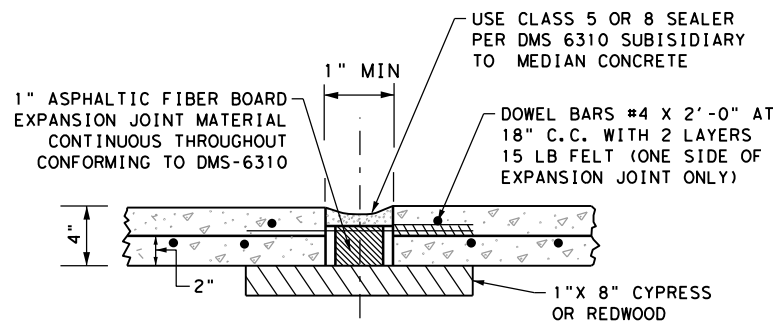
SH 20
DONIPHAN DR.
SIDEWALK LAYOUT

SHEET 7 OF 7

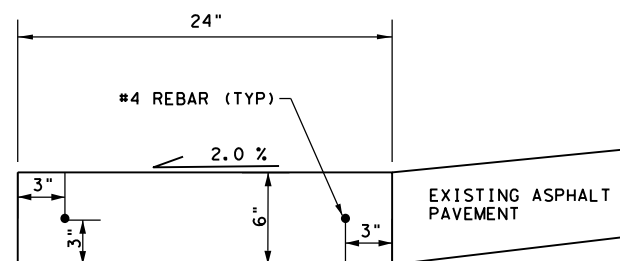
DESIGNED:	RR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SS	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	VD	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	157

4/30/2021

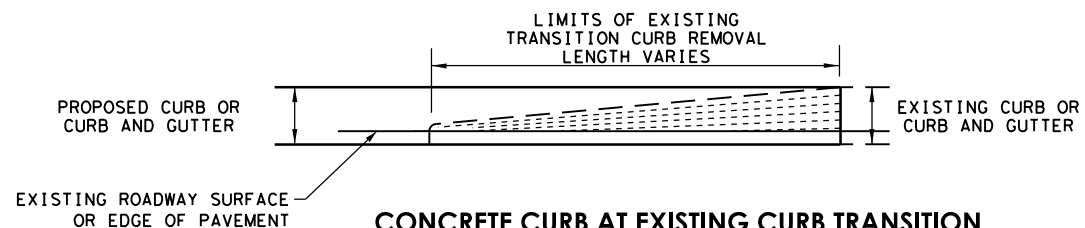
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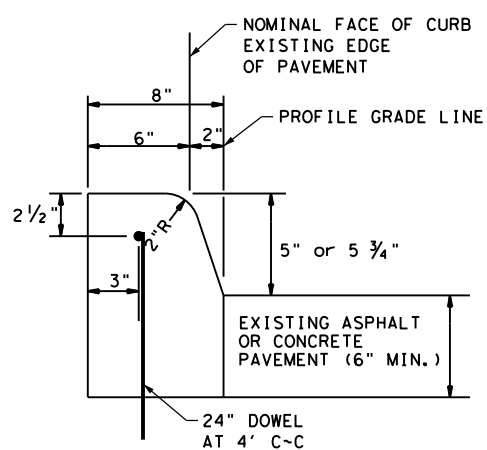
SIDEWALK EXPANSION JOINT DETAIL



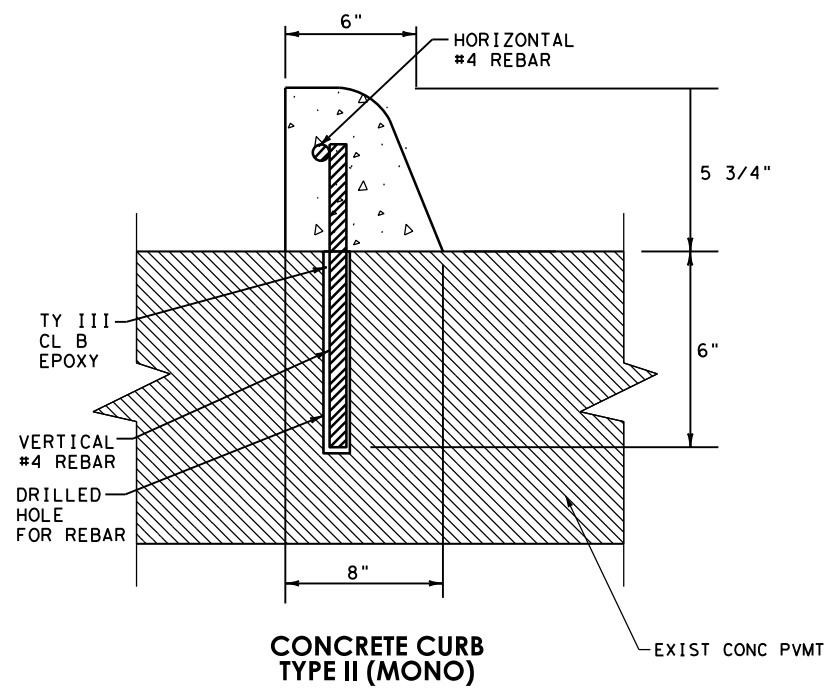
CONCRETE RIBBON CURB



CONCRETE CURB AT EXISTING CURB TRANSITION



CONCRETE CURB TYPE II PLACEMENT AT EDGE OF PAVEMENT DETAIL



CONCRETE CURB TYPE II (MONO)

NOTES:

1. PROVIDE EPOXY MATERIAL IN ACCORDANCE WITH DMS-6100.
2. #4 DEFORMED BAR WITH ADHESIVE ANCHOR (TY III CL C EPOXY). ESTIMATED REQUIRED EMBEDMENT DEPTH IS 6".
3. CURB SHALL BE TIED TO EXISTING SUBGRADE IN A MANNER SATISFACTORY TO THE ENGINEER WITH 24" LONG #4 BARS SPACED AT 4'. 24" DOWELS ARE SUBSIDIARY TO ITEM 529 6003.



4/30/2021

N. T. S

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420



SH 20
DONIPHAN DR.

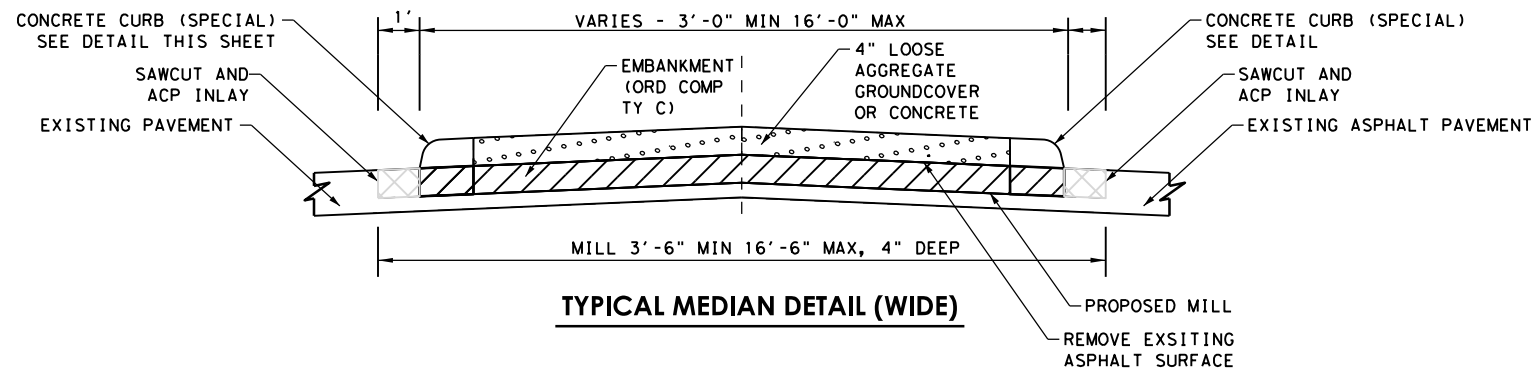
MISCELLANEOUS
DETAILS

SHEET 1 OF 5

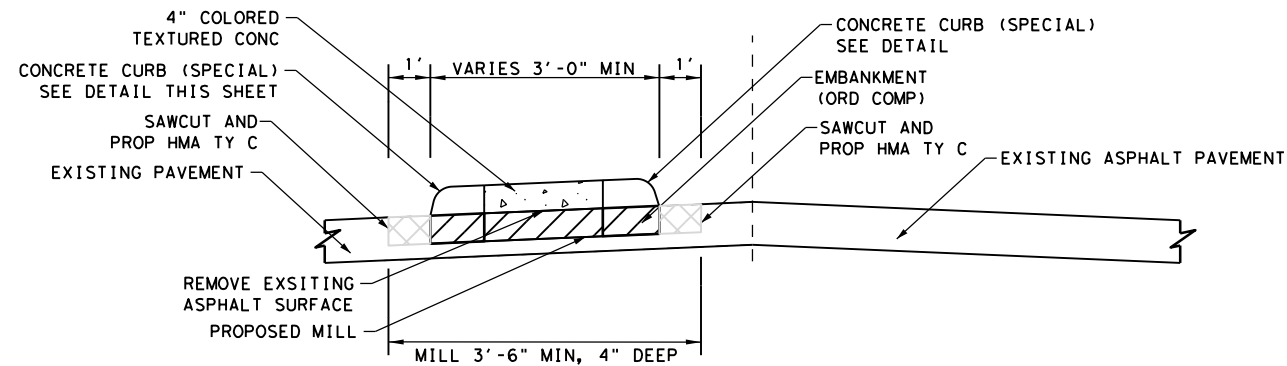
DESIGNED:	SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	JP	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SS	0001	01	063, ETC.	158

4/30/2021

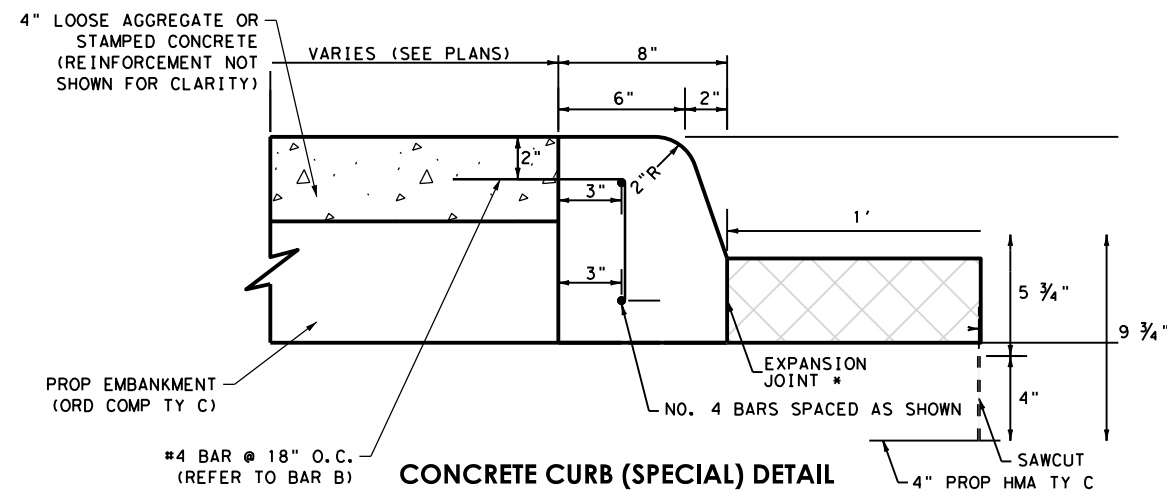
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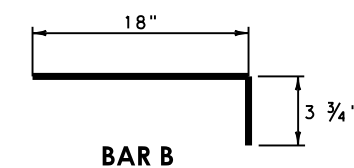
TYPICAL MEDIAN DETAIL (WIDE)



TYPICAL MEDIAN DETAIL (NARROW)

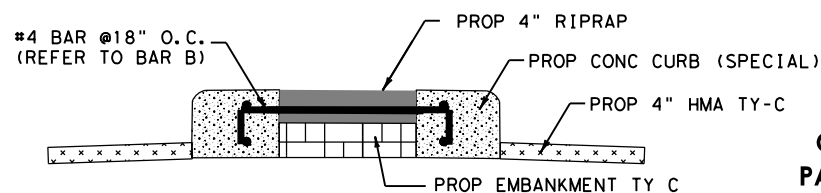


CONCRETE CURB (SPECIAL) DETAIL

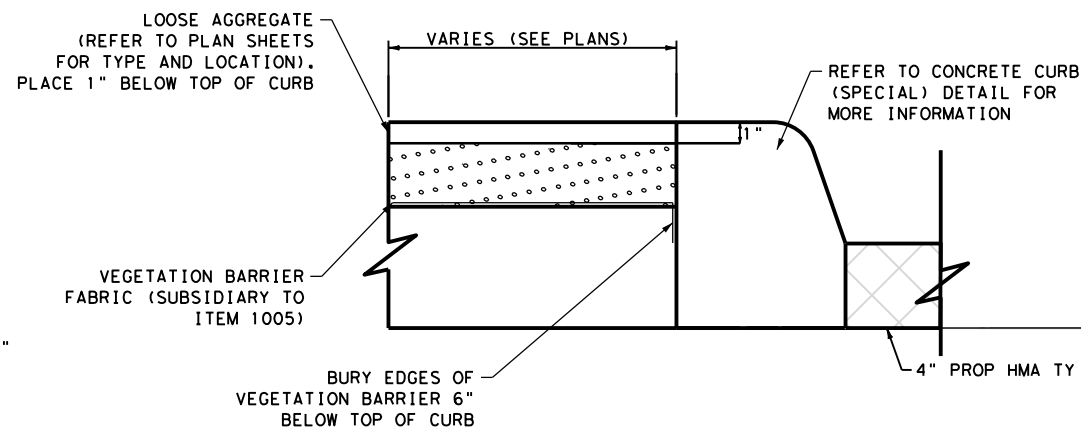


BAR B

BAR B WILL BE LAPPED ON MEDIANS WITH WIDTH BETWEEN 4' TO 2'

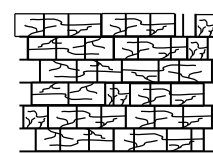


CURB DETAIL (CURB)



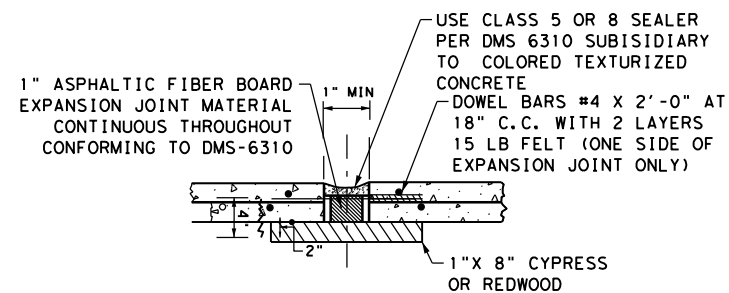
LOOSE AGGREGATE DETAIL

NTS

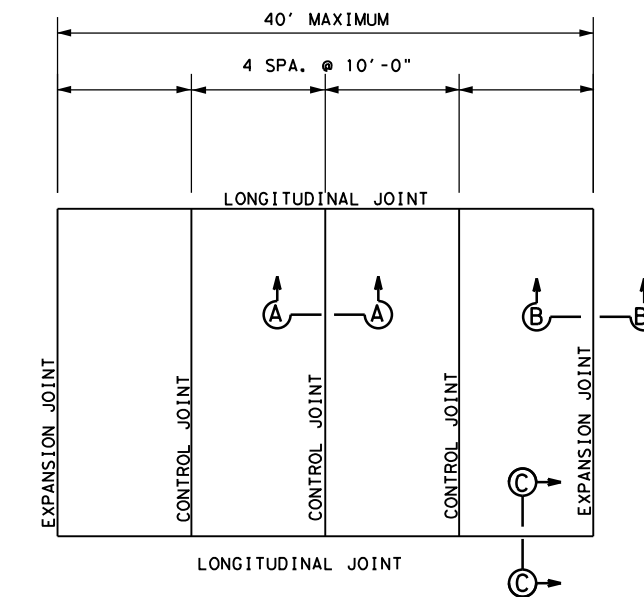


COLORED TEXTURED CONCRETE PATTERN: LONDON COBBLE STONE

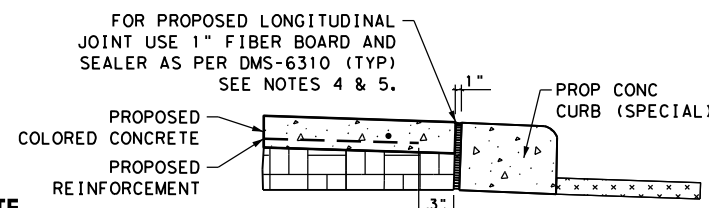
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SECTION B-B EXPANSION JOINT



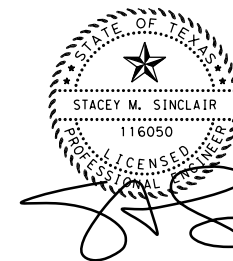
4" COLORED TEXTURED CONCRETE JOINT DIAGRAM



SECTION C-C LONGITUDINAL JOINT DETAIL

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ITEM 529, "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER."
2. CONCRETE SHALL BE CLASS A.
3. WHEN REINFORCING BARS ARE USED, THEY SHALL BE NO.4 UNLESS OTHERWISE SHOWN. THE USE OF SYNTHETIC FIBER IN LIEU OF STEEL REINFORCING IS ACCEPTABLE, PROVIDED THE FIBER PRODUCER IS ON THE DEPARTMENT PRODUCER LIST (MPL), MAINTAINED BY TXDOT, CONSTRUCTION DIVISION.
4. ROUND EXPOSED SHARP EDGES WITH A ROUNDING TOOL, TO A MINIMUM RADIUS OF 1/4".
5. ALL EXISTING CURBS AND DRIVEWAYS TO BE REMOVED SHALL BE SAWED OR REMOVED AT EXISTING JOINTS.
6. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED IN PLACE.
7. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
8. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4' C-C.
9. DIMENSION 'T' SHOWN IS THE THICKNESS OF CONCRETE PAVEMENT. WHEN CURB IS INSTALLED ADJACENT TO FLEXIBLE PAVEMENT DIMENSION 'T' IS 8" MAXIMUM.
10. USUAL PROFILE GRADE LINE. REFER TO TYPICAL SECTIONS AND PLAN-PROFILE SHEETS FOR EXACT LOCATIONS.
11. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.
12. WHEN VERTICAL PERMISSIBLE CONSTRUCTION JOINTS ARE USED, RESULTING IN A LONGITUDINAL CONSTRUCTION JOINT IN THE PAVEMENT, THE LONGITUDINAL PAVEMENT STEEL SHALL BE PLACED IN ACCORDANCE WITH PAVEMENT DETAILS SHOWN ELSEWHERE IN THE PLANS FOR LONGITUDINAL CONSTRUCTION JOINTS. REINFORCING STEEL FOR CURB SECTION SHALL THEN CONFORM TO THAT REQUIRED FOR CONCRETE CURB.



4/30/2021 N.T.S

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Infrastructure Solutions
Firm Registration Number 420



SH 20 DONIPHAN DR.

MISCELLANEOUS DETAILS

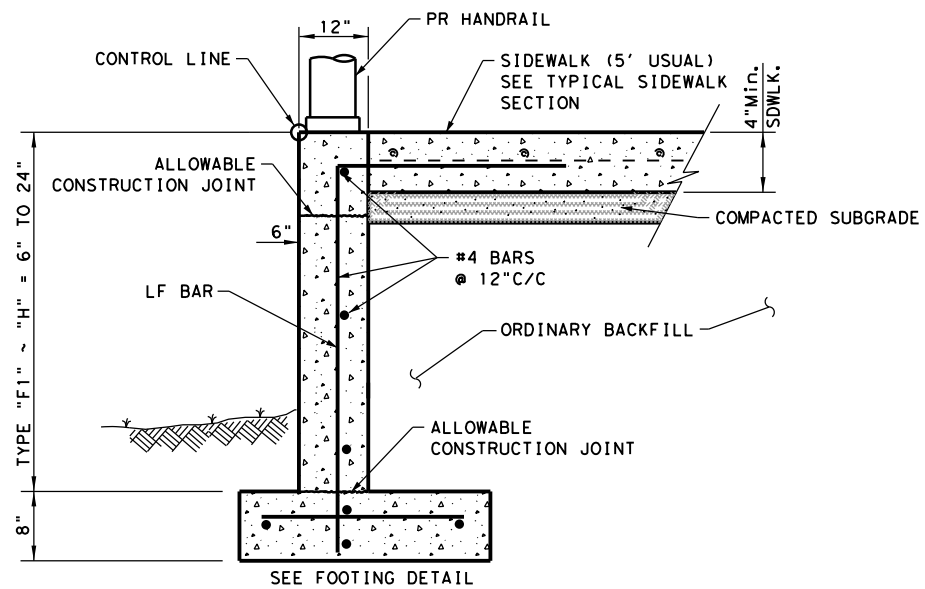
SHEET 2 OF 5

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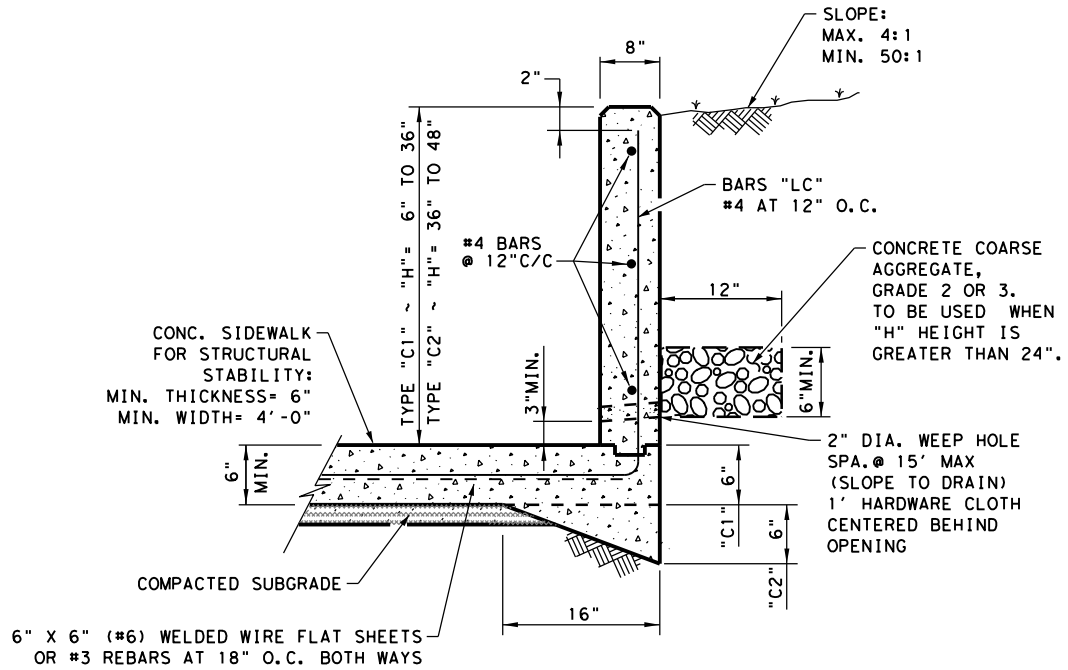
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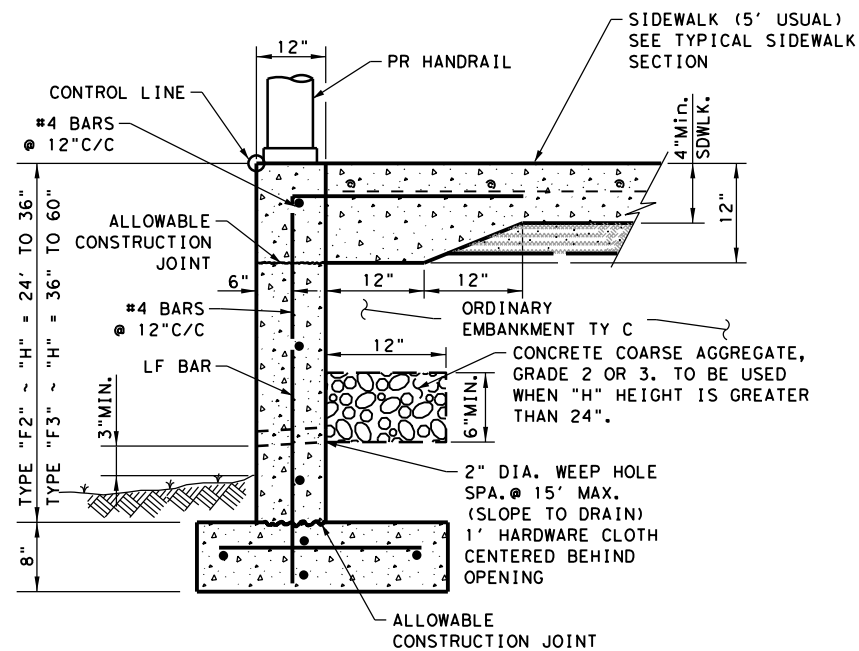
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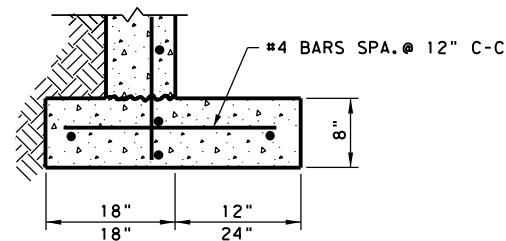
TYPE "F1" CURB



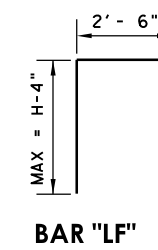
TYPE "C1" & "C2" CURB



TYPE "F2" & "F3" CURB



F1, F2, & F3 FOOTING DETAIL



4/30/2021

N. T. S



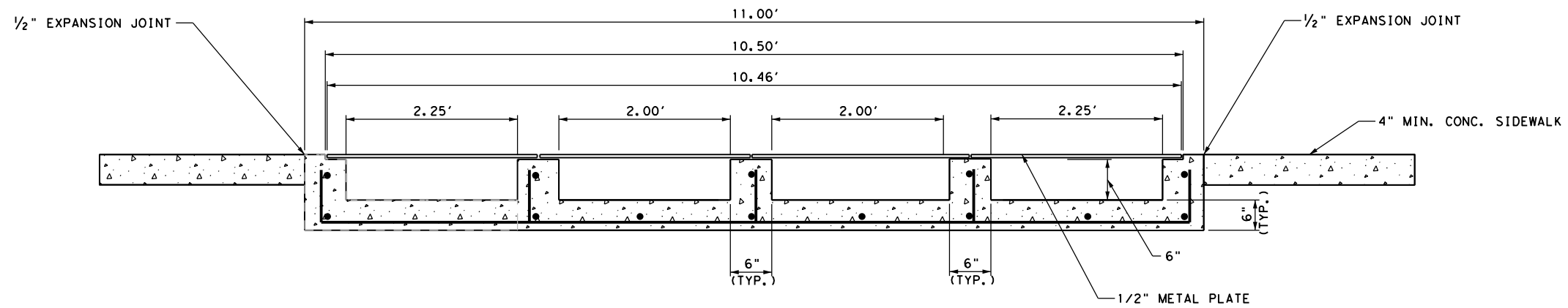
SH 20
DONIPHAN DR.
MISCELLANEOUS
DETAILS

SHEET 3 OF 5

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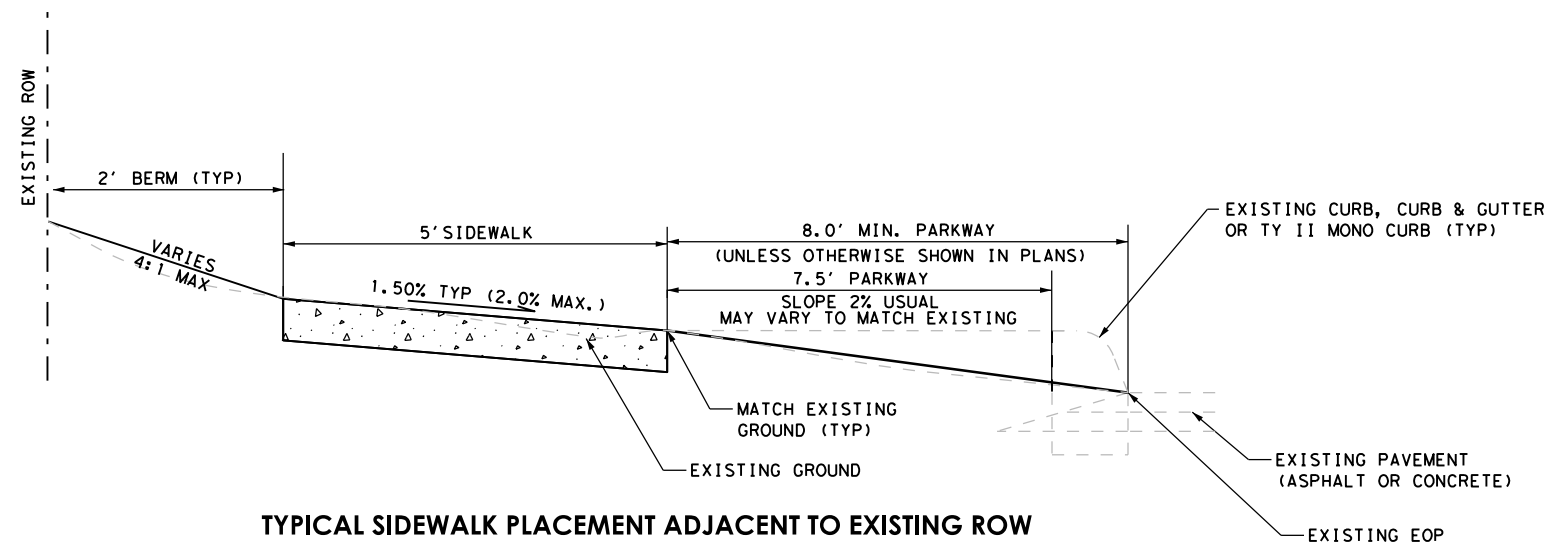
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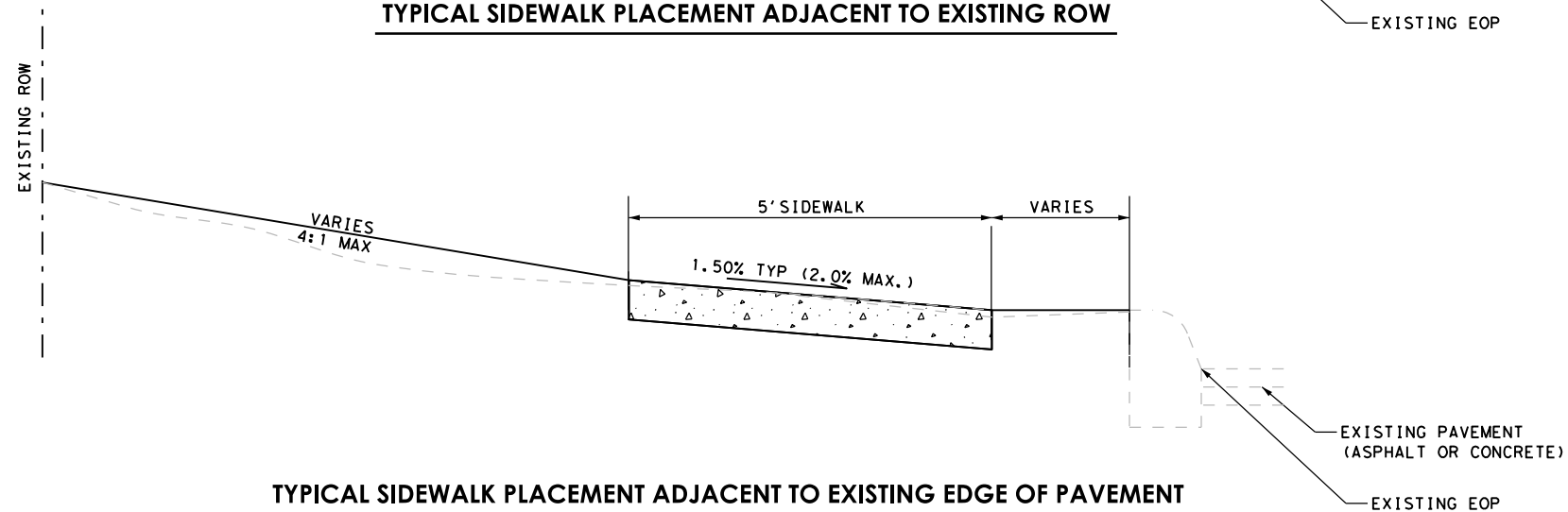


METAL PLATE AT FLUME DETAIL (2.5' MAX PLATE)

NOTES:
 1. METAL FLUME TO BE CONSTRUCTED USING CLASS A CONCRETE WITH #3 REBARS AT 12" O.C. THE MAXIMUM HEIGHT SHALL NOT EXCEED 6".



TYPICAL SIDEWALK PLACEMENT ADJACENT TO EXISTING ROW



TYPICAL SIDEWALK PLACEMENT ADJACENT TO EXISTING EDGE OF PAVEMENT



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**SH 20
 DONIPHAN DR.**

**MISCELLANEOUS
 DETAILS**

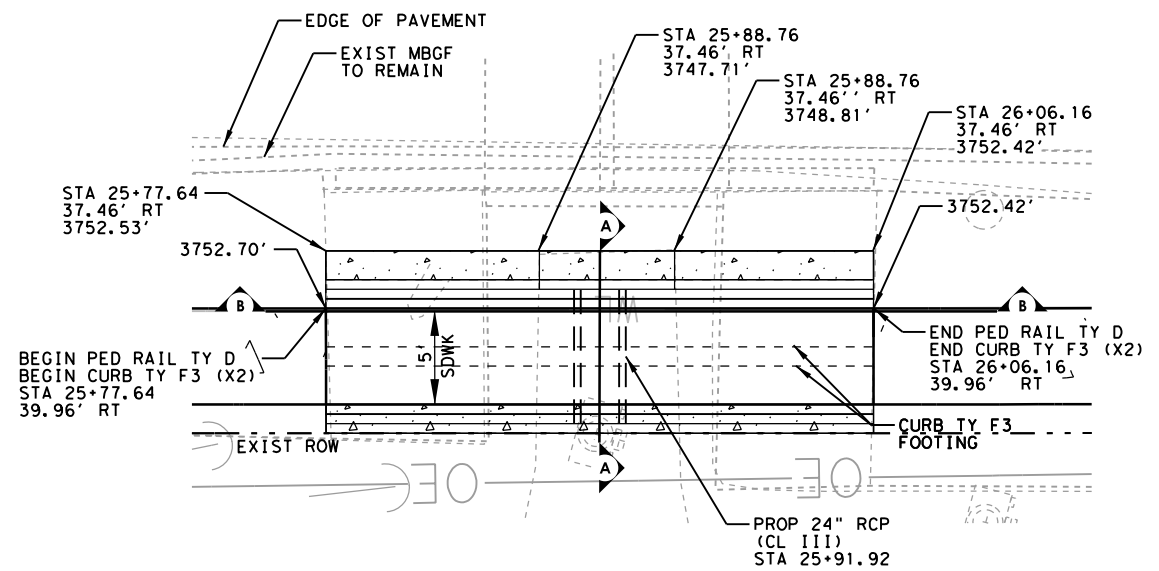
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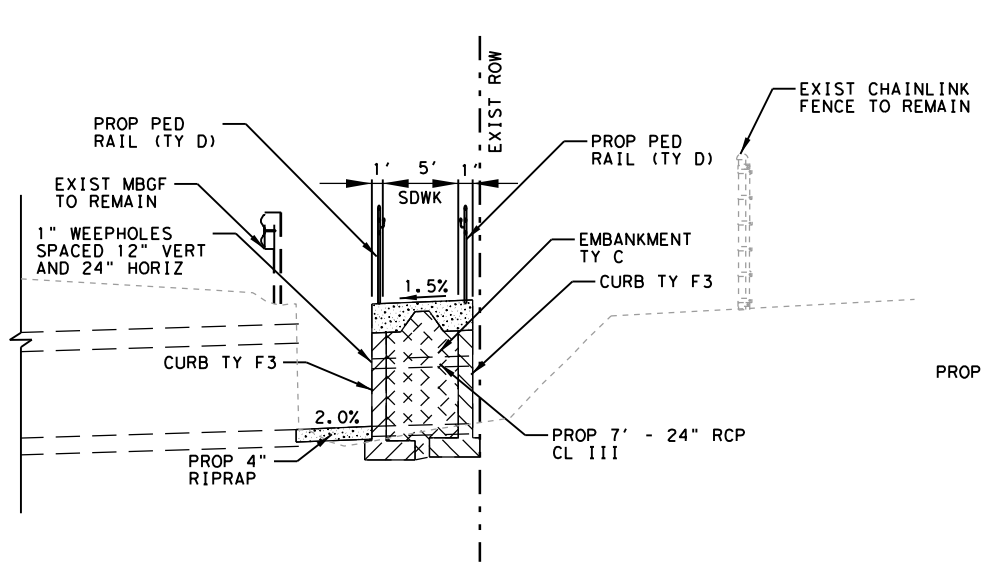
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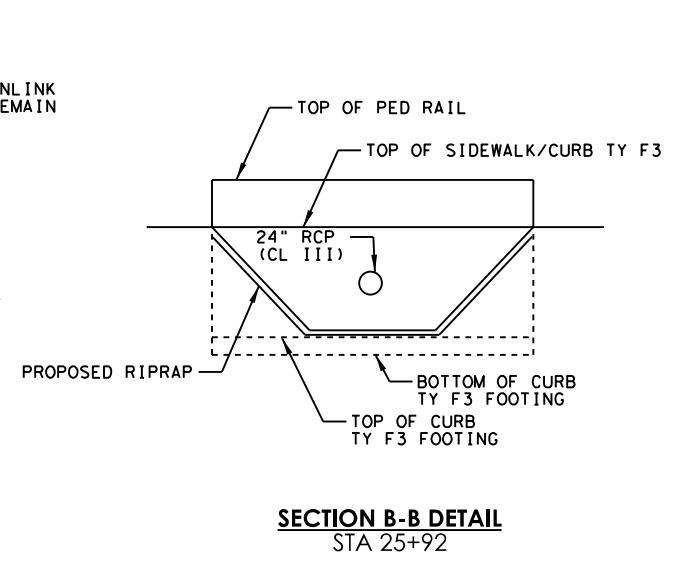
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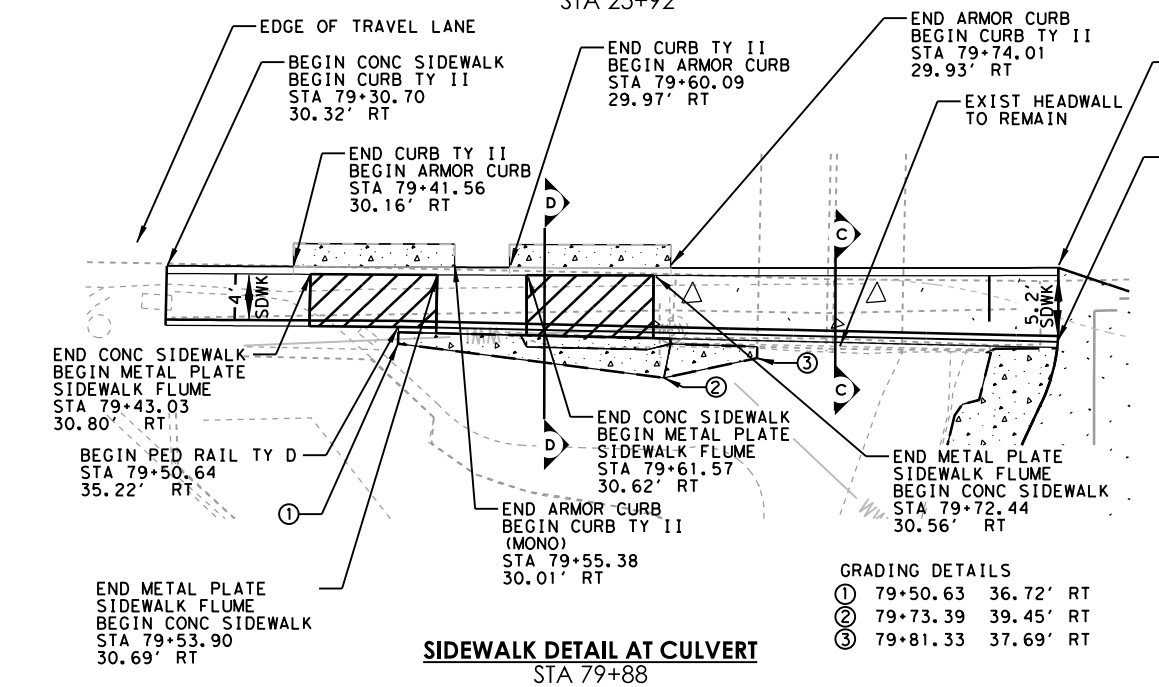
SIDEWALK DETAIL AT CULVERT
STA 25+92



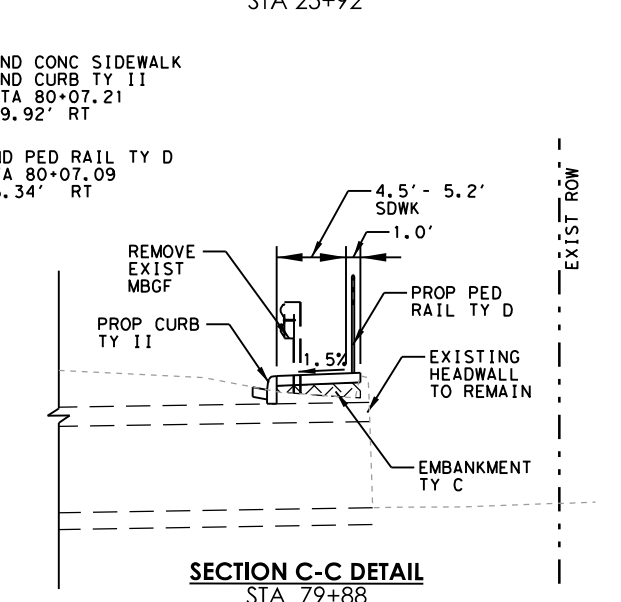
SECTION A-A DETAIL
STA 25+92



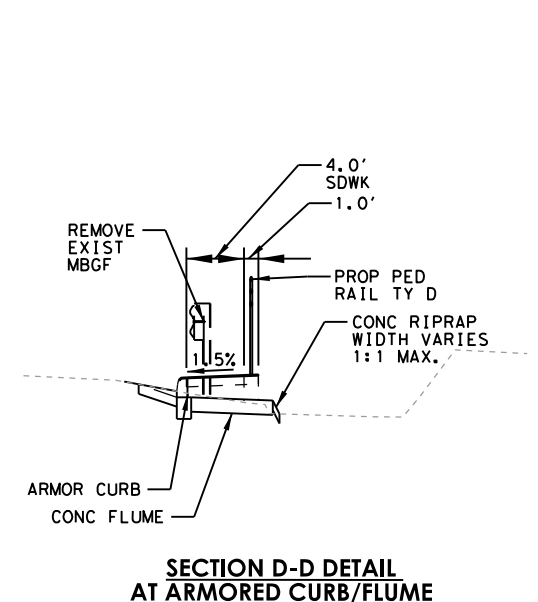
SECTION B-B DETAIL
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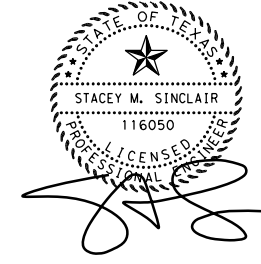
SIDEWALK DETAIL AT CULVERT
STA 79+88



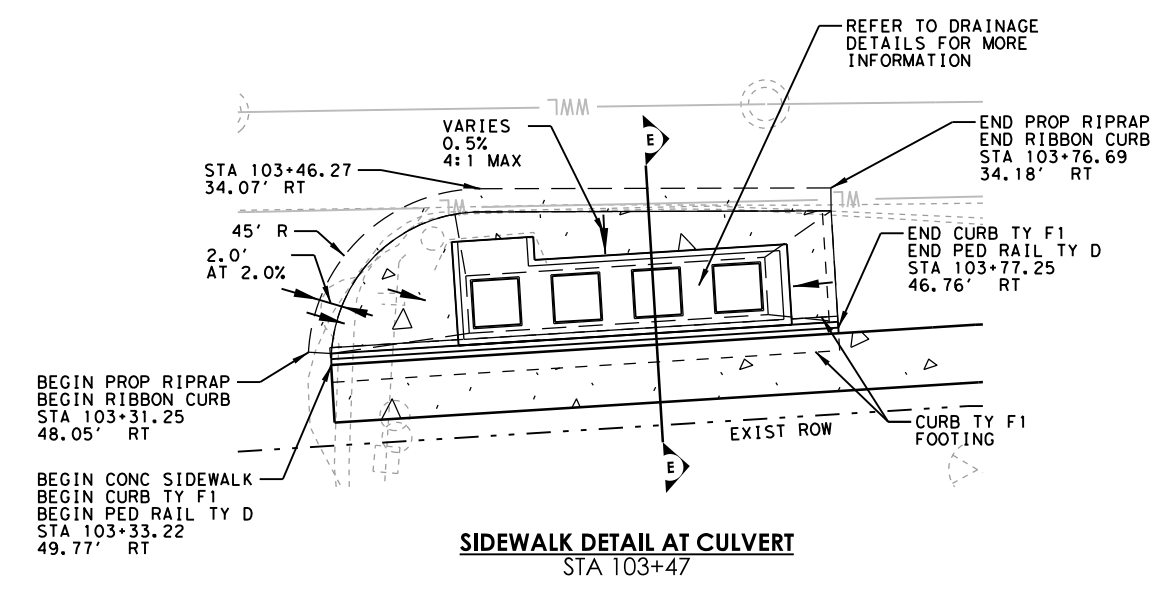
SECTION C-C DETAIL
STA 79+88



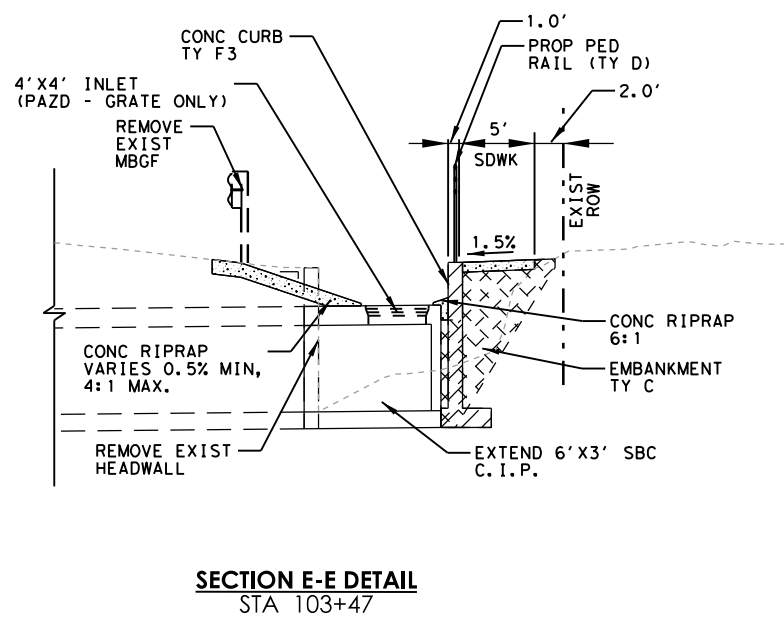
SECTION D-D DETAIL
AT ARMORED CURB/FLUME



4/30/2021



SIDEWALK DETAIL AT CULVERT
STA 103+47



SECTION E-E DETAIL
STA 103+47

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SH 20 DONIPHAN DR.

MISCELLANEOUS DETAILS

SHEET 5 OF 5

DESIGNED: SS	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: SS	CONTROL	SECTION	JOB	SHEET NUMBER
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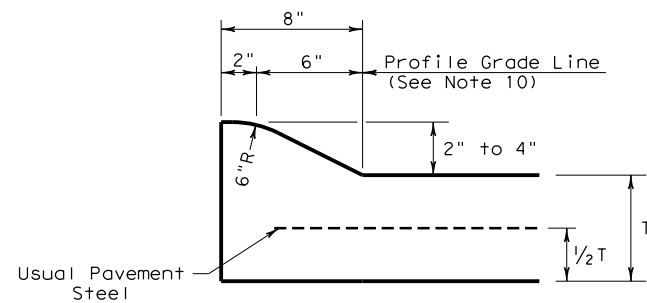
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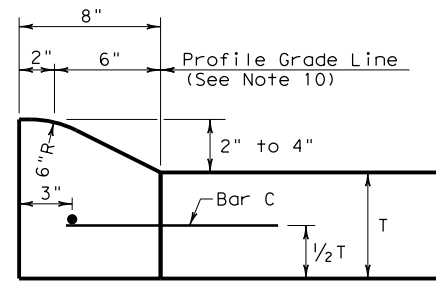
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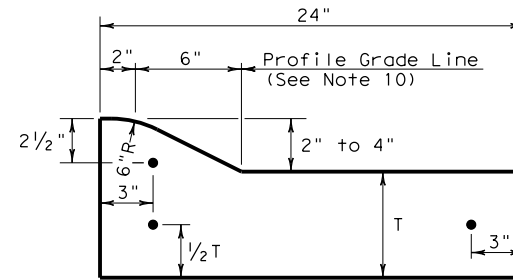
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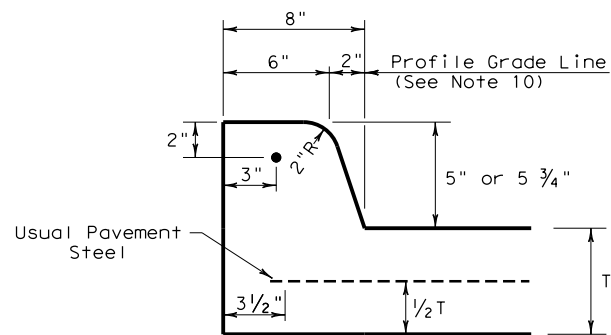
**TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT**



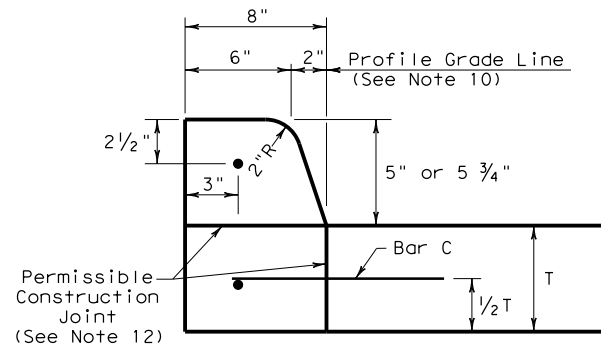
**TYPE I CURB
2" - 4" HEIGHT**



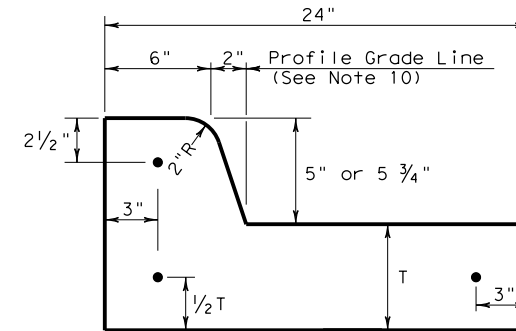
**TYPE I CURB AND GUTTER
2" - 4" HEIGHT**



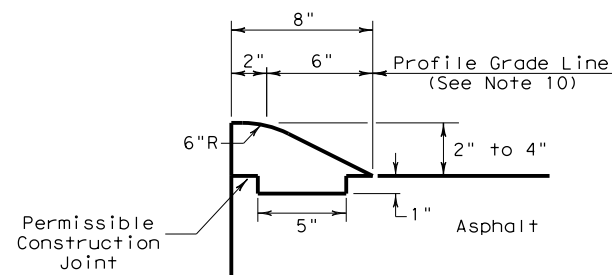
**TYPE II CURB (MONOLITHIC)
5" - 5 3/4" HEIGHT**



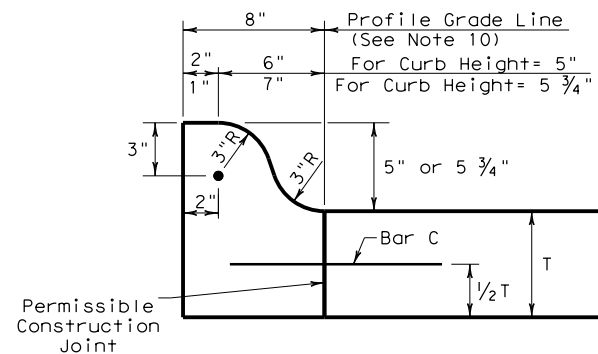
**TYPE II CURB
5" - 5 3/4" HEIGHT**



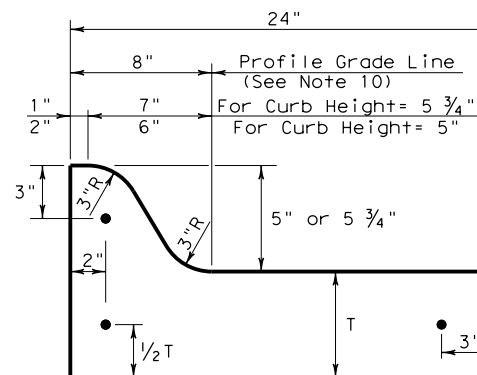
**TYPE II CURB AND GUTTER
5" - 5 3/4" HEIGHT**



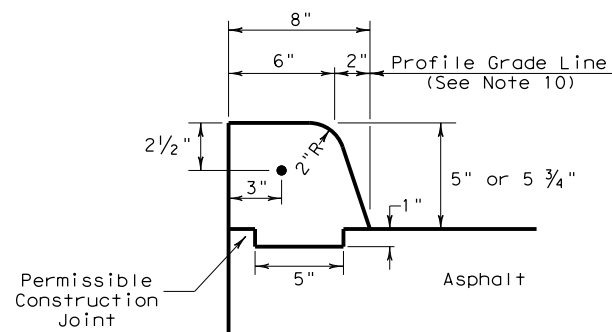
**TYPE III CURB (KEYED)
2" - 4" HEIGHT**



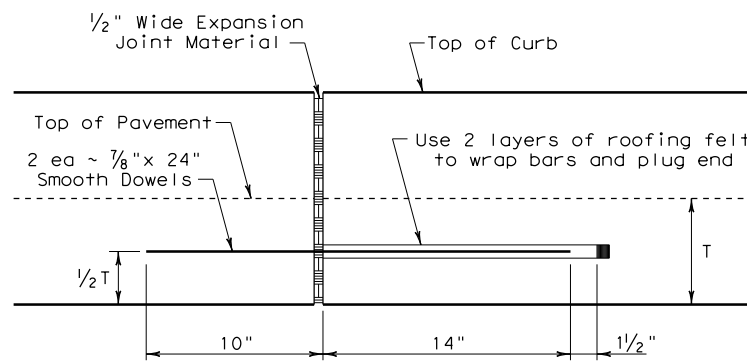
**TYPE IIa CURB
5" - 5 3/4" HEIGHT**



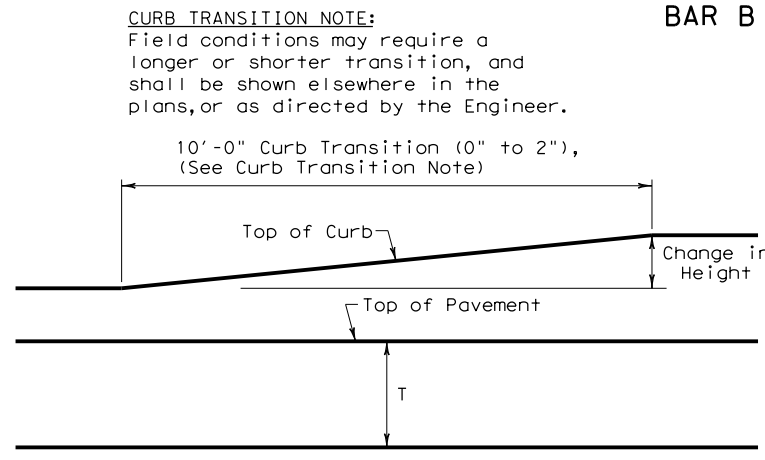
**TYPE IIa CURB AND GUTTER
5" - 5 3/4" HEIGHT**



**TYPE IV CURB (KEYED)
5" - 5 3/4" HEIGHT**



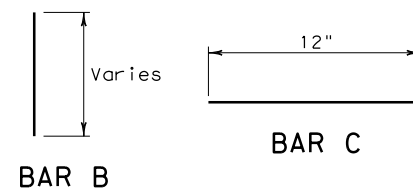
EXPANSION JOINT DETAIL



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

- All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- Concrete shall be Class A.
- When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
- Round exposed sharp edges with a rounding tool, to a minimum radius of 1/4 inch.
- All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
- Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and the grouted in place, or may be inserted into fresh concrete.
- Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
- Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
- Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
- Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
- One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
- When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
- Bar B used as needed to support curb reinforcing steel during concrete placement.

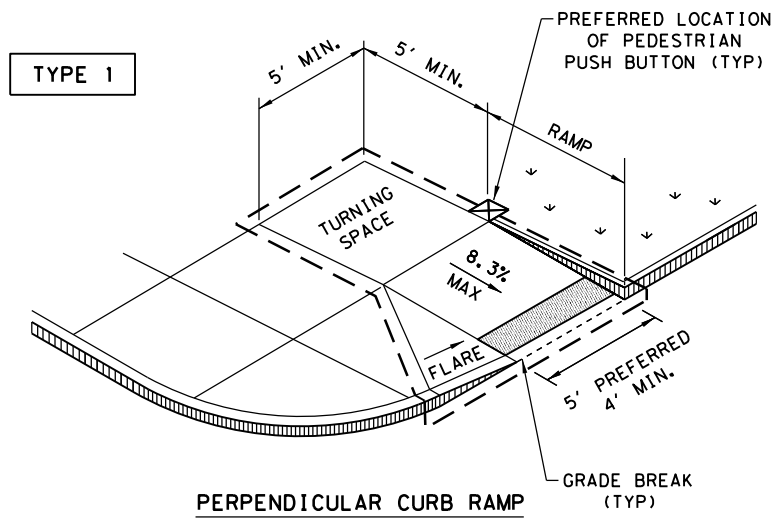


CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

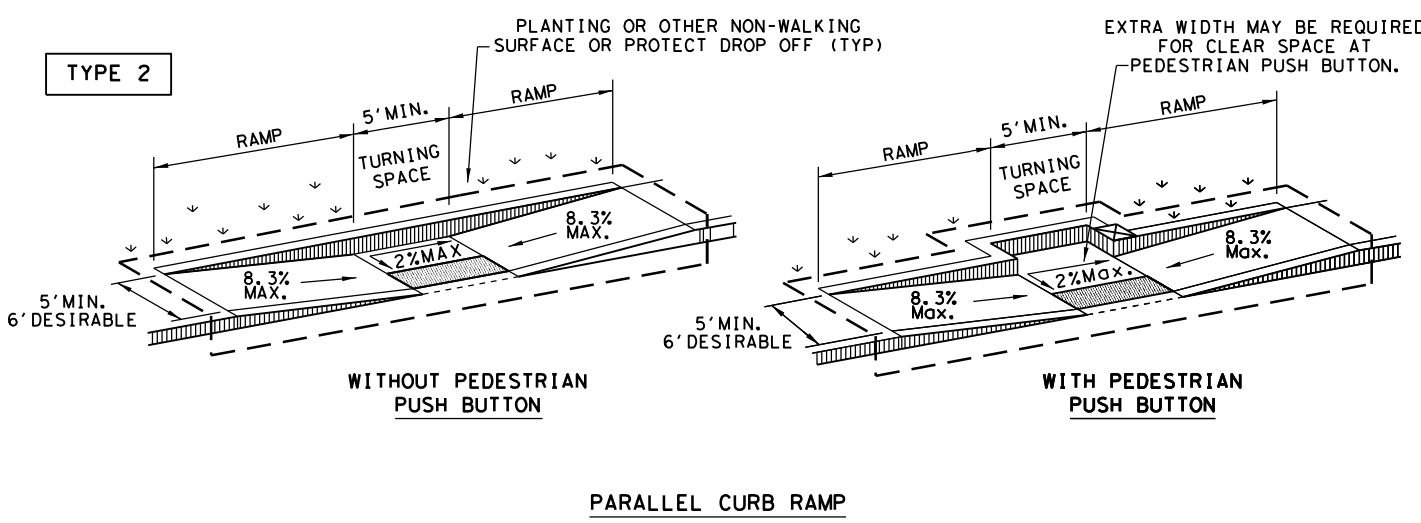
				Design Division Standard
CONCRETE CURB AND GUTTER				
CCCG-21				
FILE: cccg21.dgn	DN: TxDOT	CK: AN	DW: SS	CK: KM
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	163	

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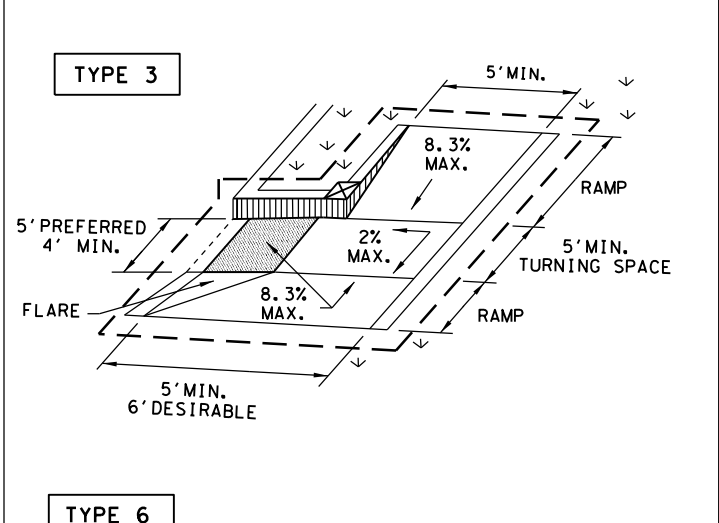
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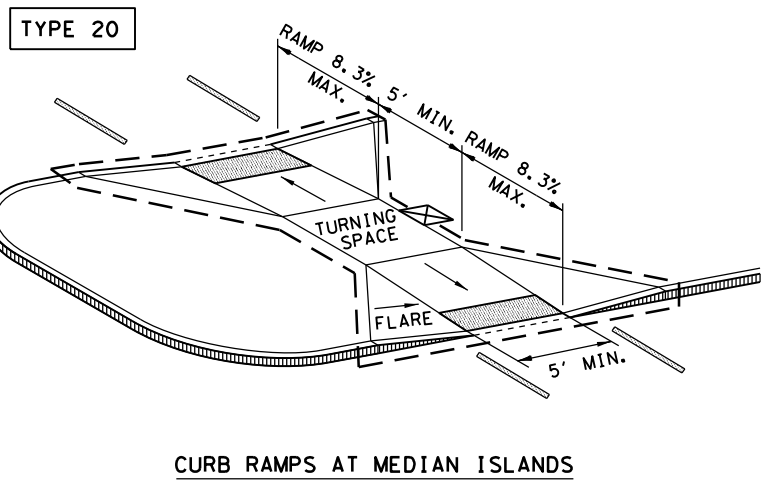
PERPENDICULAR CURB RAMP



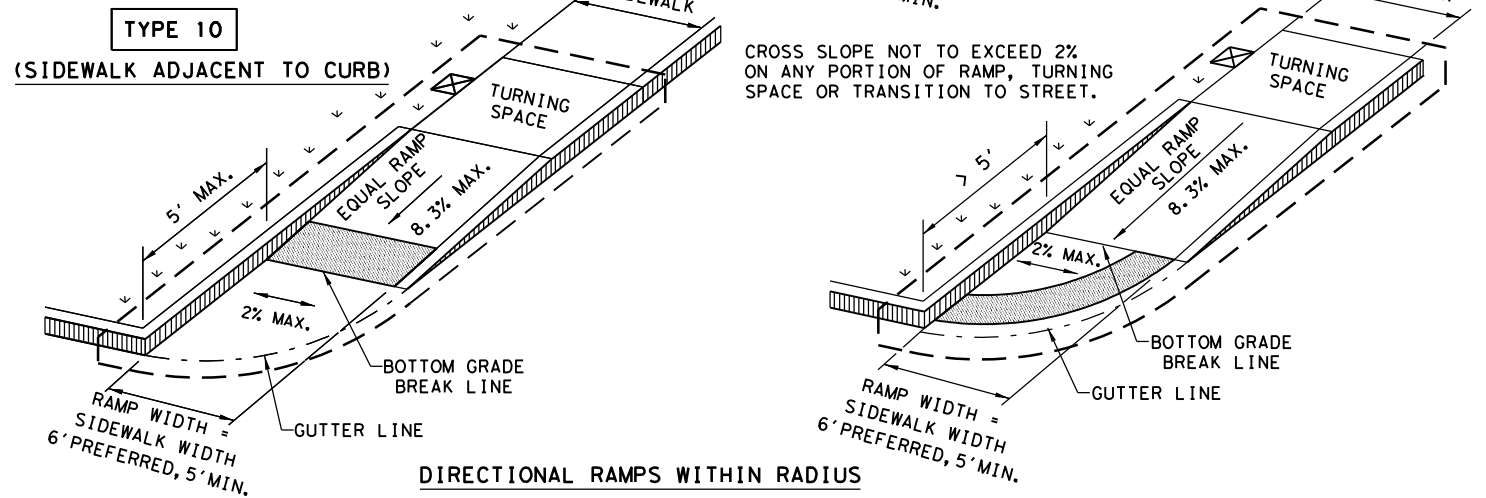
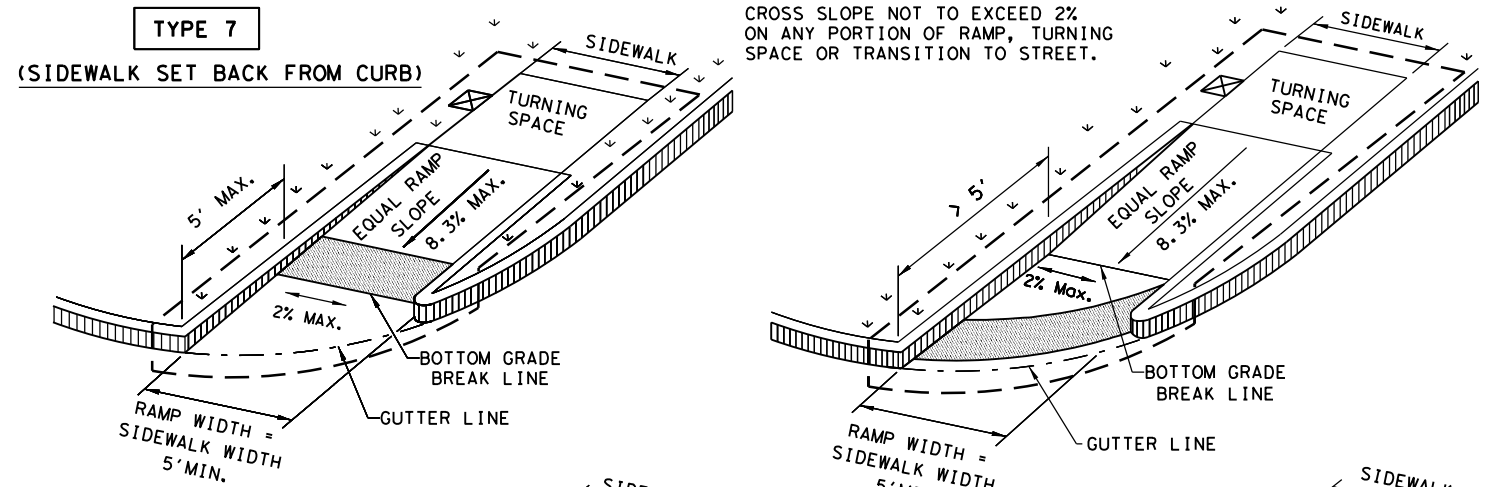
PARALLEL CURB RAMP



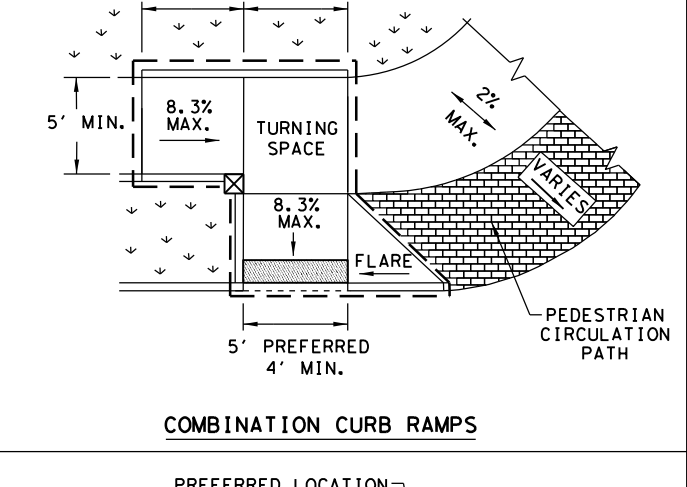
COMBINATION CURB RAMPS



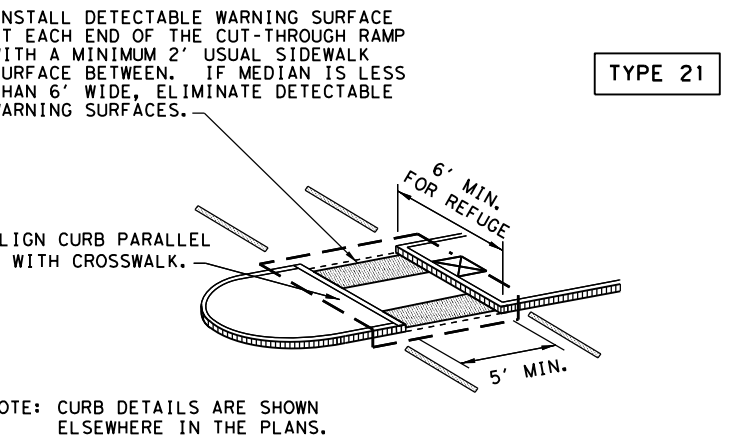
CURB RAMPS AT MEDIAN ISLANDS



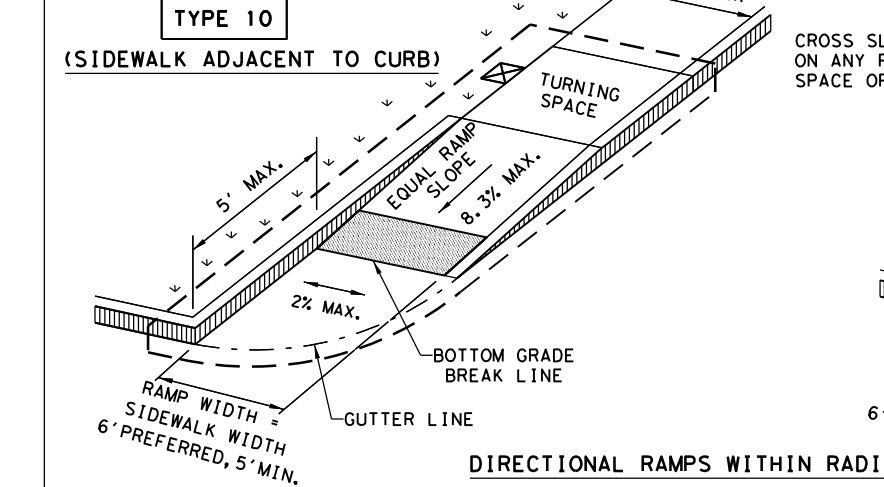
DIRECTIONAL RAMPS WITHIN RADIUS



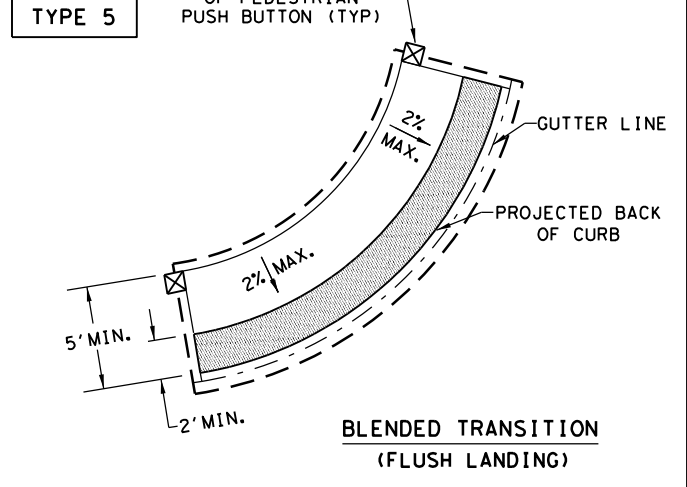
COMBINATION CURB RAMPS



COMBINATION ISLAND RAMPS

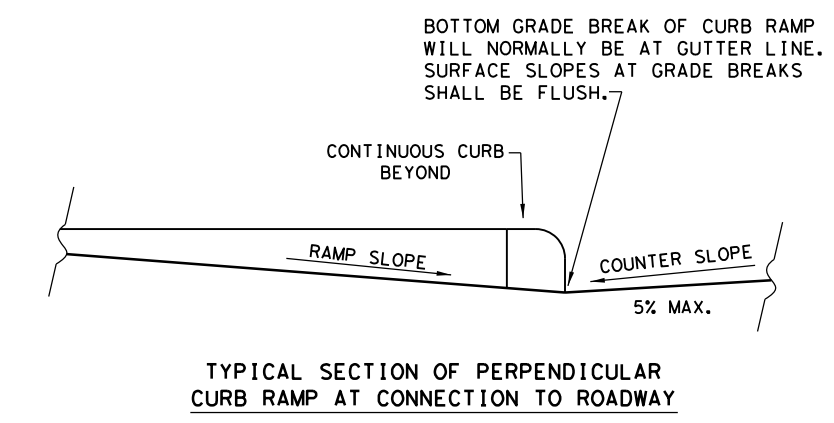


TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY



BLENDED TRANSITION (FLUSH LANDING)

NOTES / LEGEND:
 SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.
 DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.
 DETECTABLE WARNING SURFACE
 DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.
 GUTTER LINE
 GRADE BREAK
 RAMP LIMITS OF PAYMENT



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

Texas Department of Transportation
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
REVISED 08, 2009	DIST	COUNTY		SHEET NO.
REVISED 06, 2012	ELP	EL PASO		164
REVISED 01, 2018				

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GENERAL NOTES

CURB RAMP

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5' x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5' x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5' x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

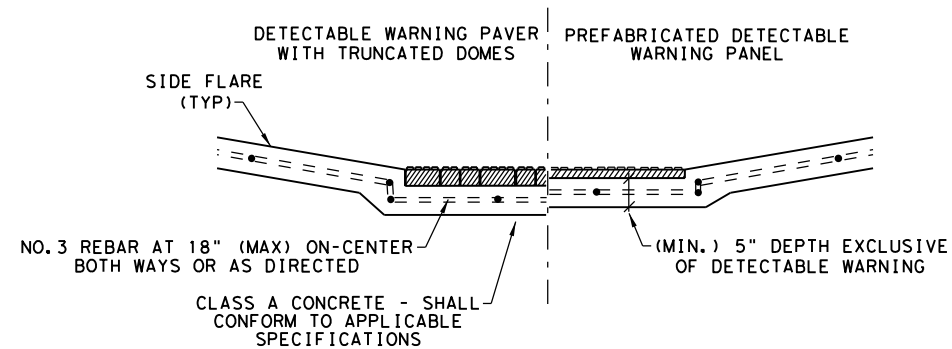
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

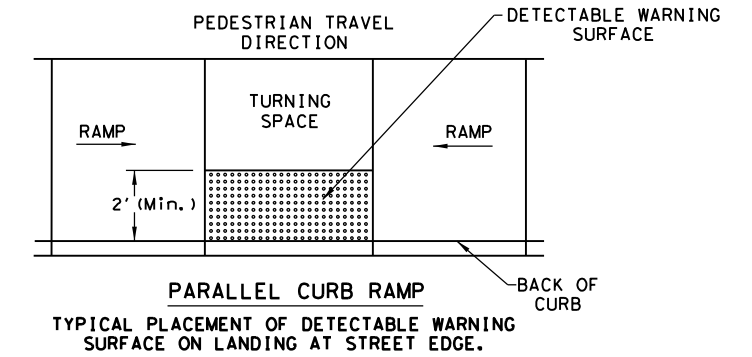
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

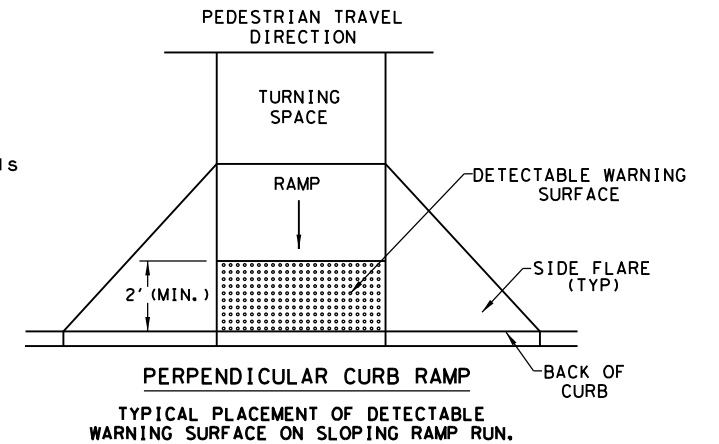


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

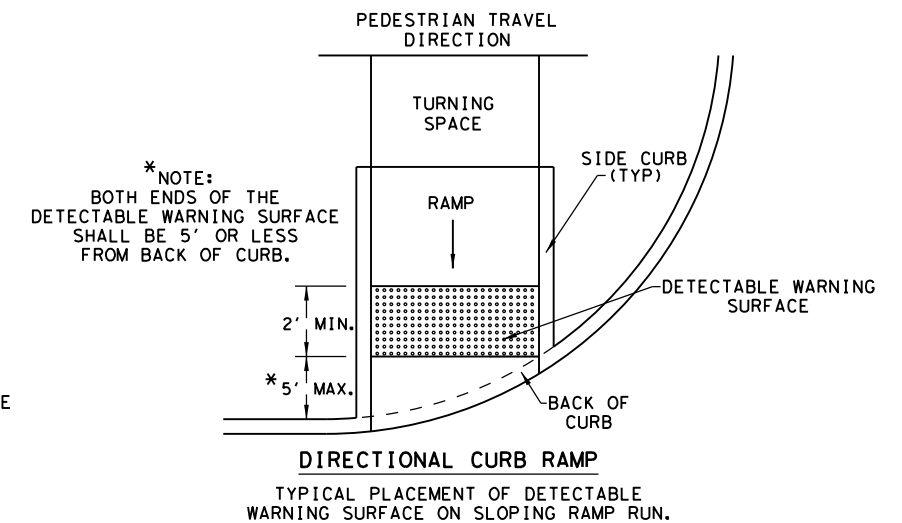
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4



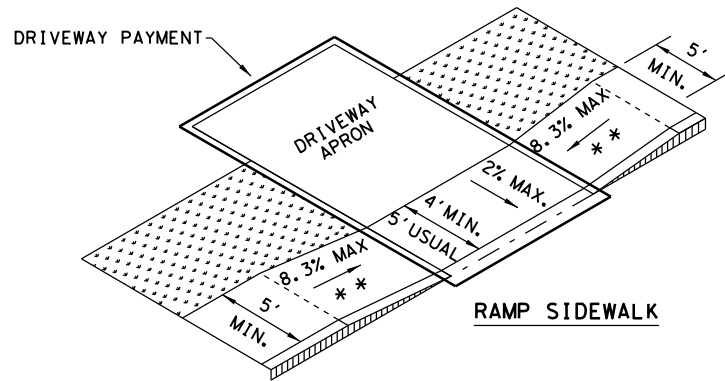
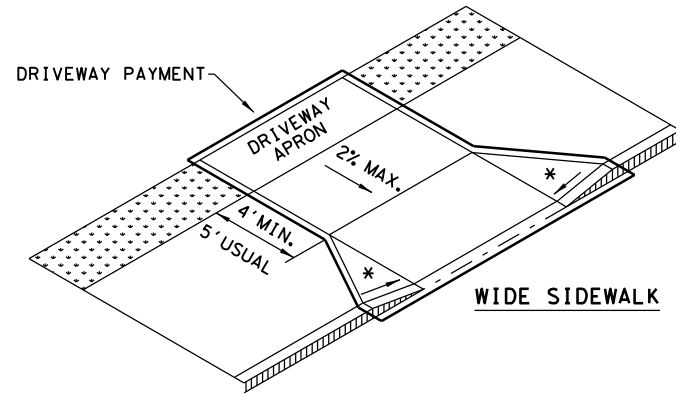
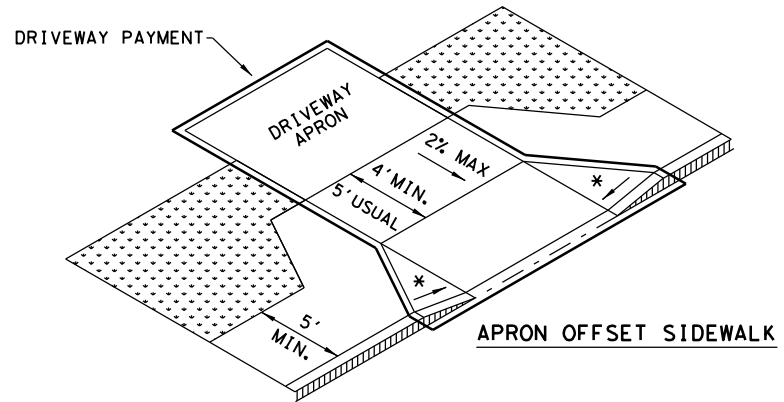
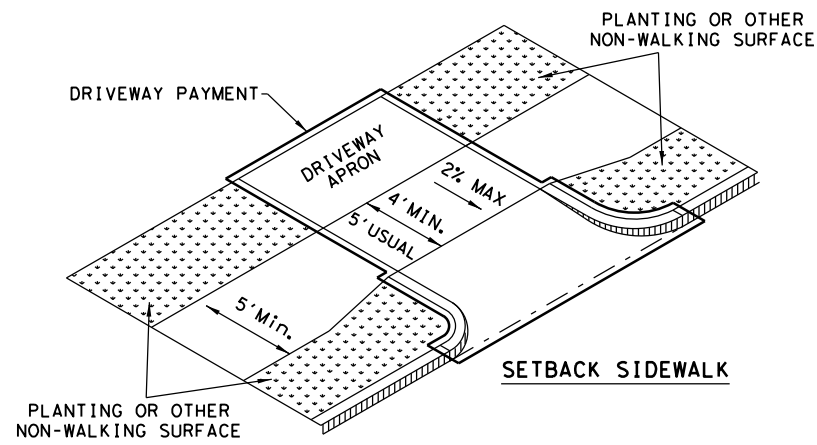
PEDESTRIAN FACILITIES CURB RAMPS PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
REVISED 08, 2009	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	ELP	EL PASO	165	
REVISED 01, 2018				

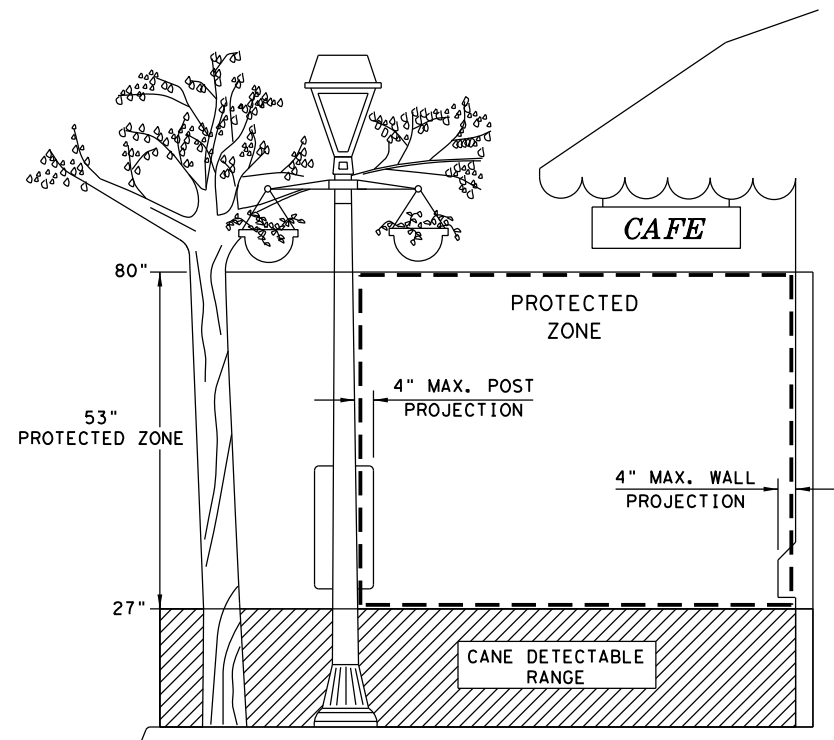
DATE: FILE:

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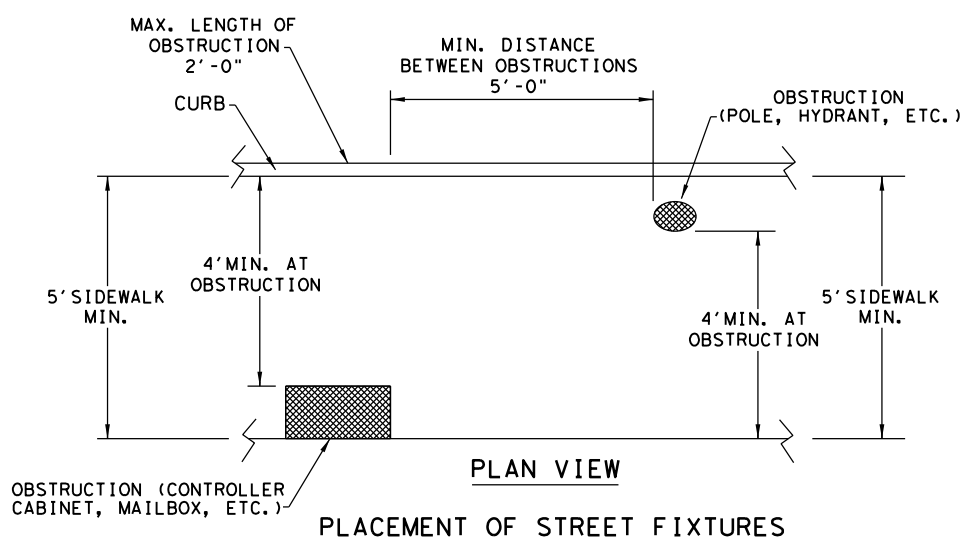
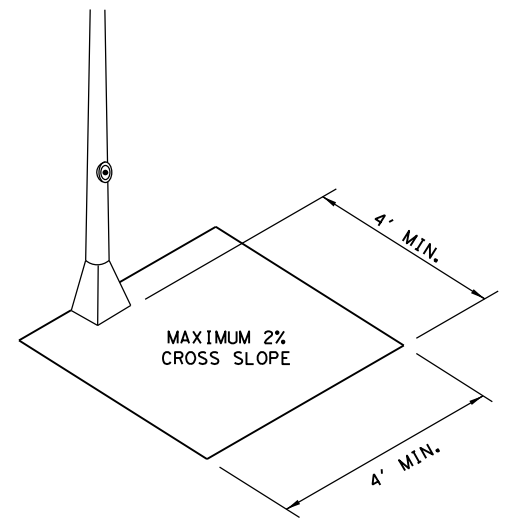
SIDEWALK TREATMENT AT DRIVEWAYS



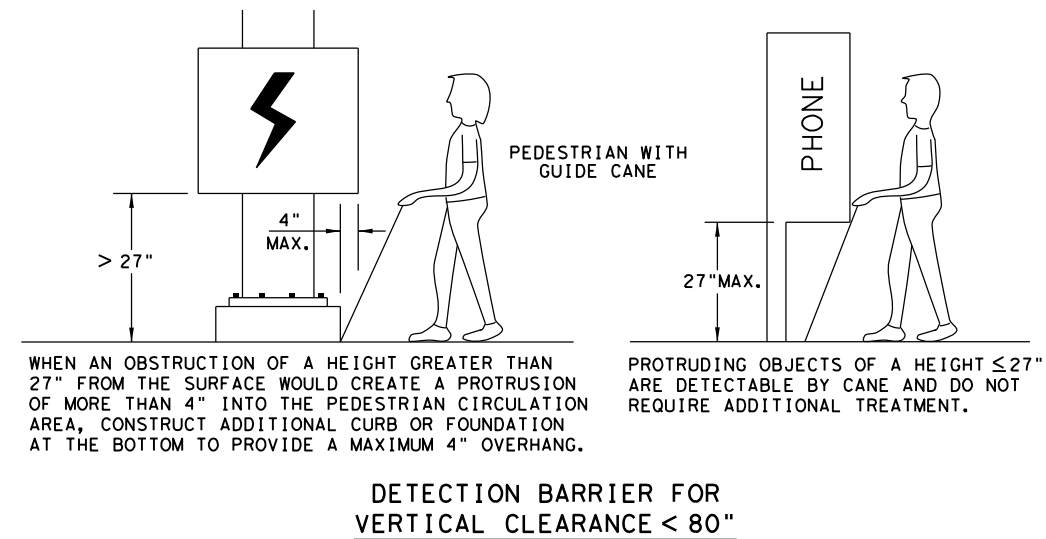
NOTES:
 * WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
 * * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.

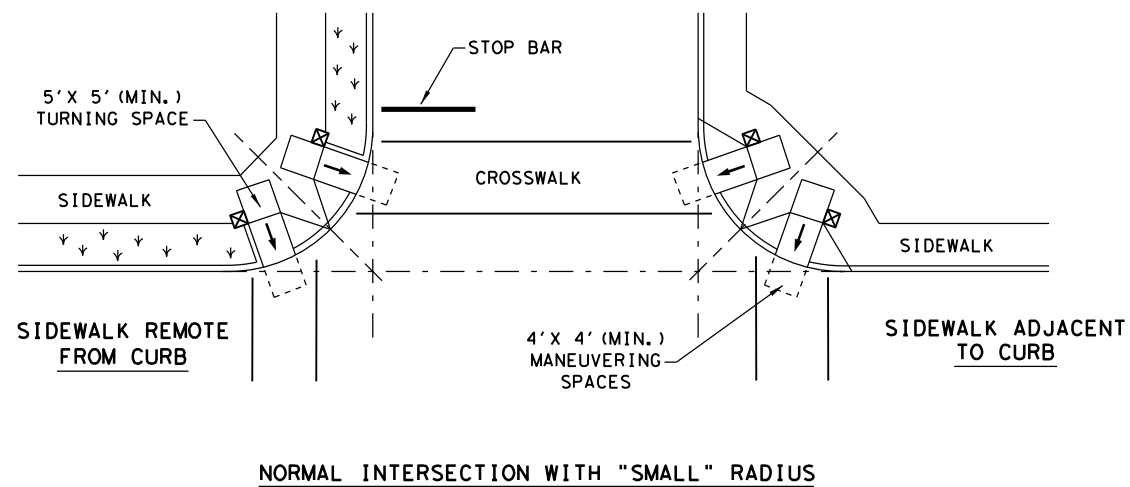
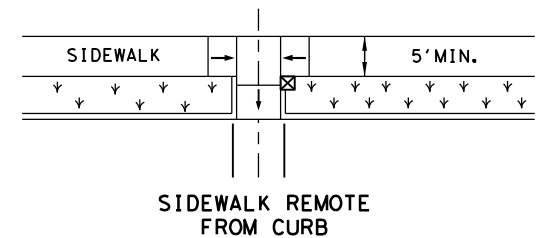
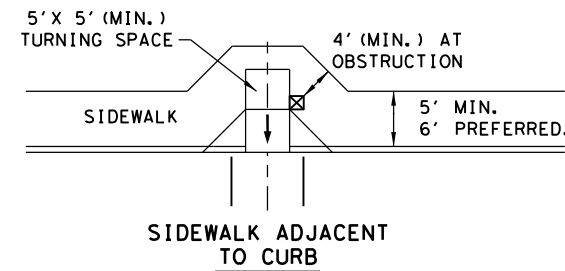
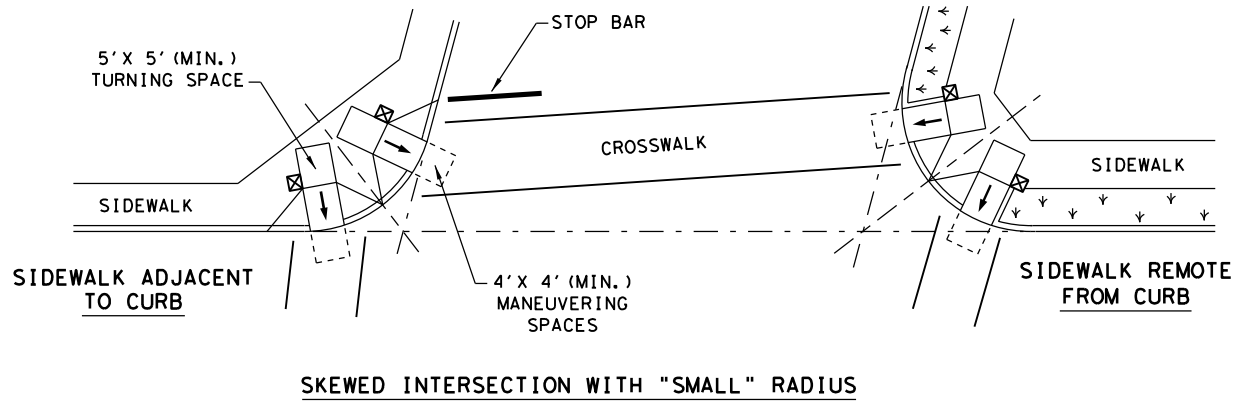
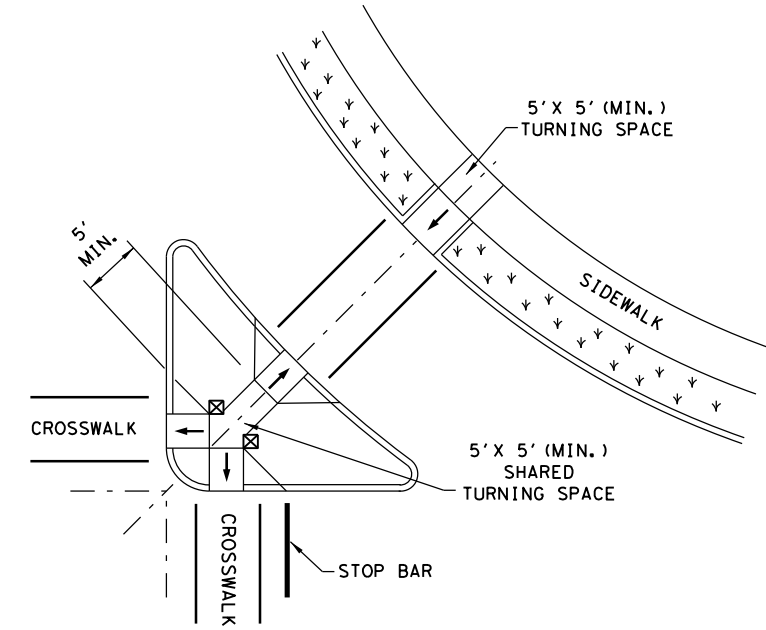
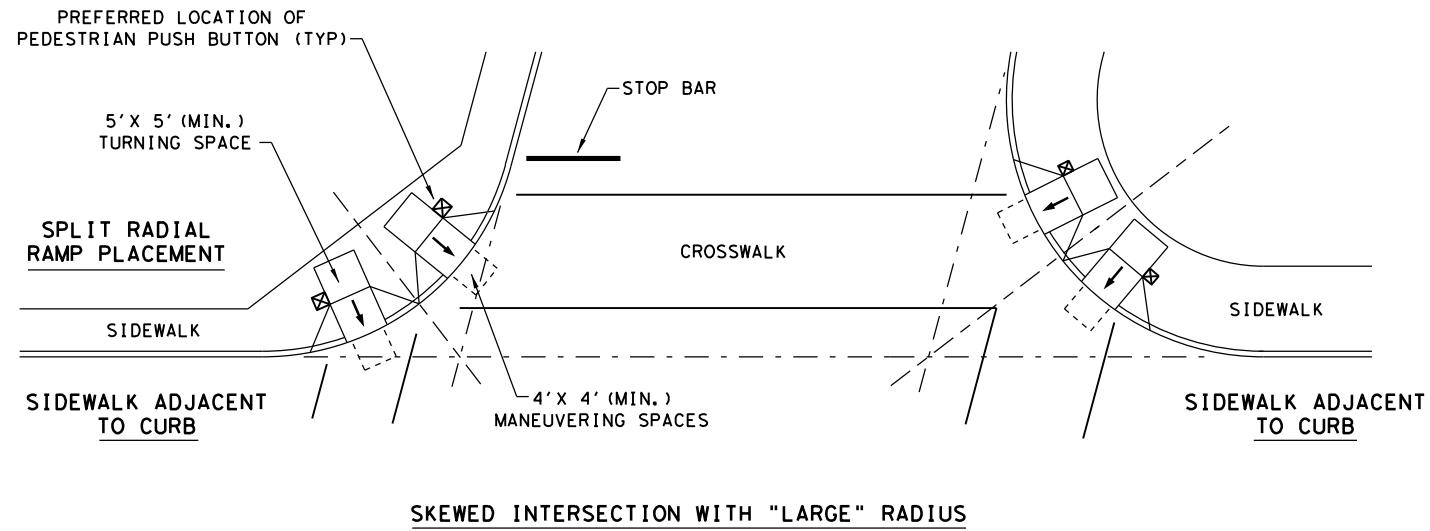


WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.
 PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

		Design Division Standard	
PEDESTRIAN FACILITIES CURB RAMPS PED-18			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CON: SECT	JOB	HIGHWAY
REVISIONS	0001 01	063, ETC.	SH 20
REVISOR: 08, 2005	DIST	COUNTY	SHEET NO.
REVISOR: 06, 2012	ELP	EL PASO	166
REVISOR: 01, 2018			

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TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND

SKewed INTERSECTION WITH "SMALL" RADIUS

MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

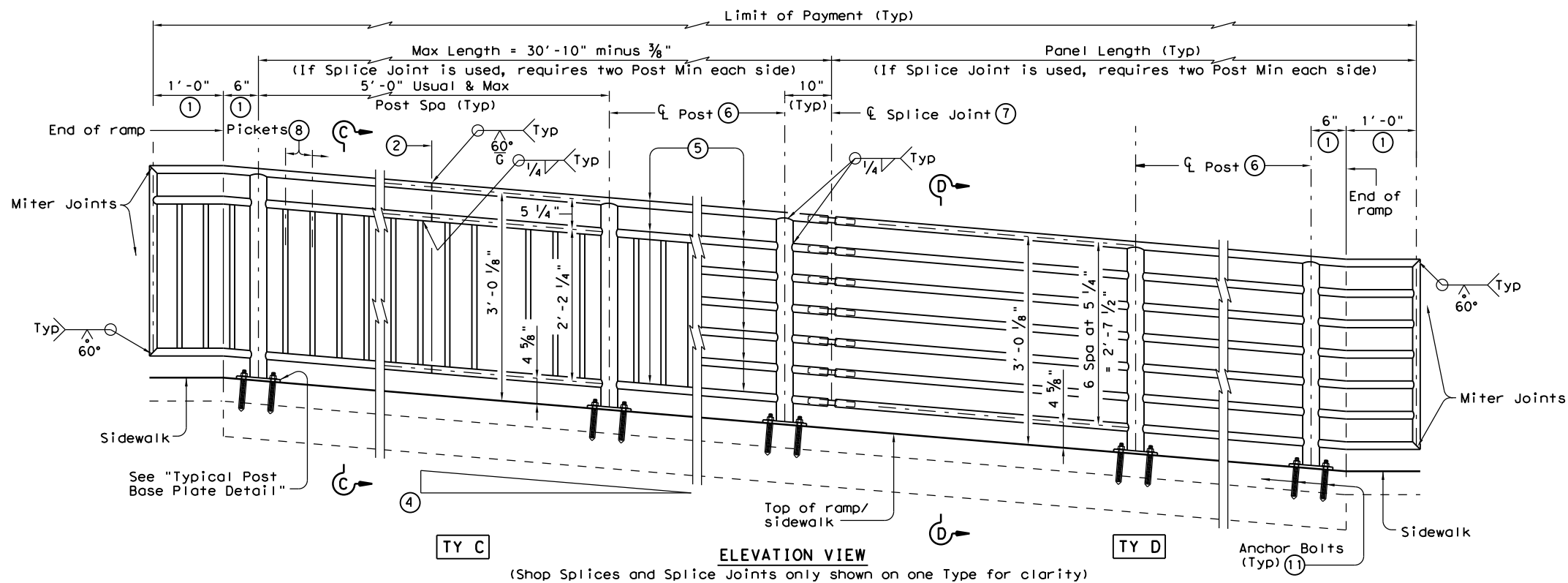
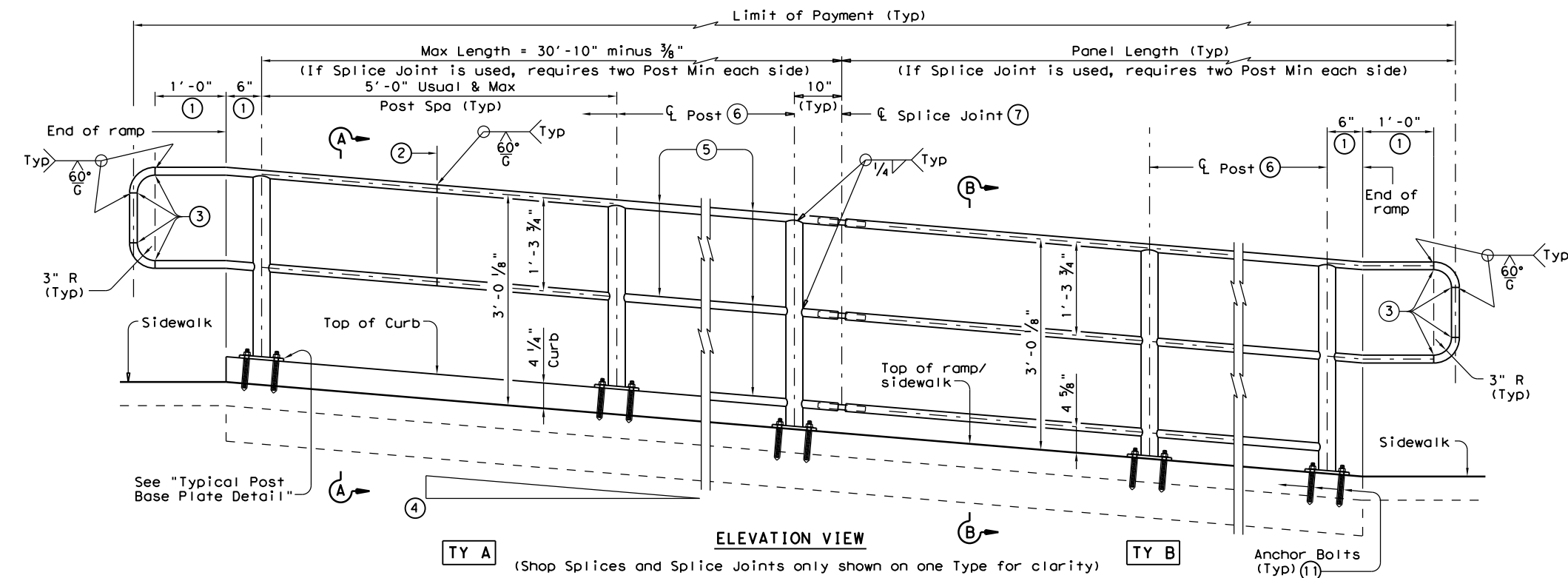
DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘ ↙ ↘ ↙ ↘

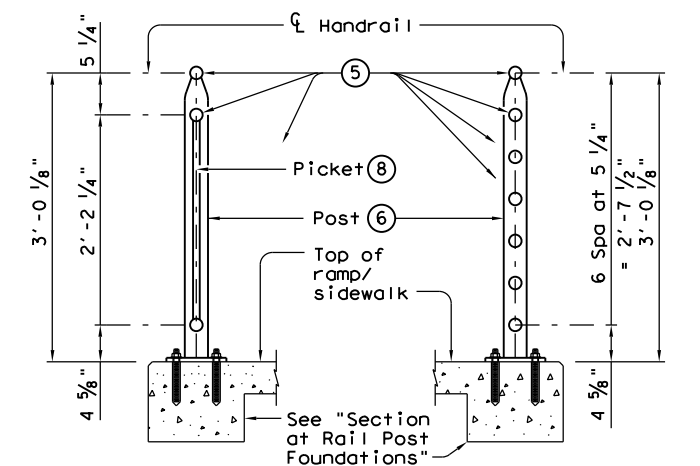
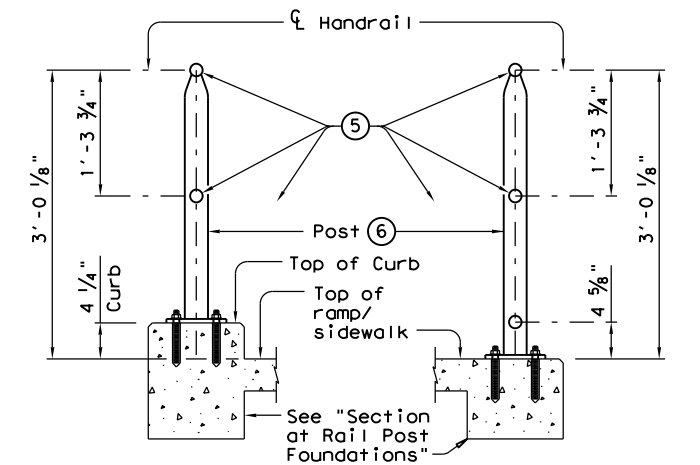
		Design Division Standard	
<h2>PEDESTRIAN FACILITIES</h2> <h3>CURB RAMPS</h3> <h1>PED-18</h1>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
	0001	01	063, ETC.
REVISIONS			SH 20
REVISED 08, 2005	DIST	COUNTY	SHEET NO.
REVISED 06, 2012	ELP	EL PASO	167
REVISED 01, 2018			

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DATE:
FILE:



RECOMMENDED USAGE ⑨ ⑩	
Dropoff Height/Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.

- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑨ When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
- ⑩ Not to be used on bridges.
- ⑪ See "General Notes" for anchor bolt information.

SHEET 1 OF 3

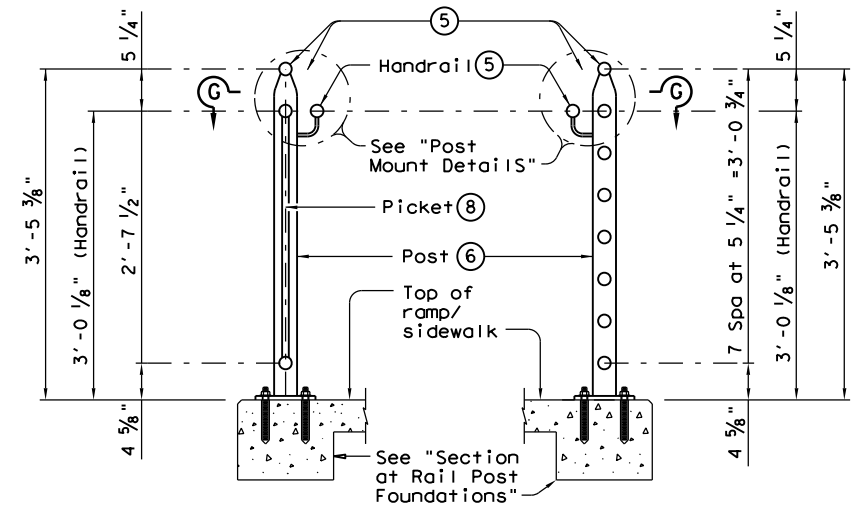
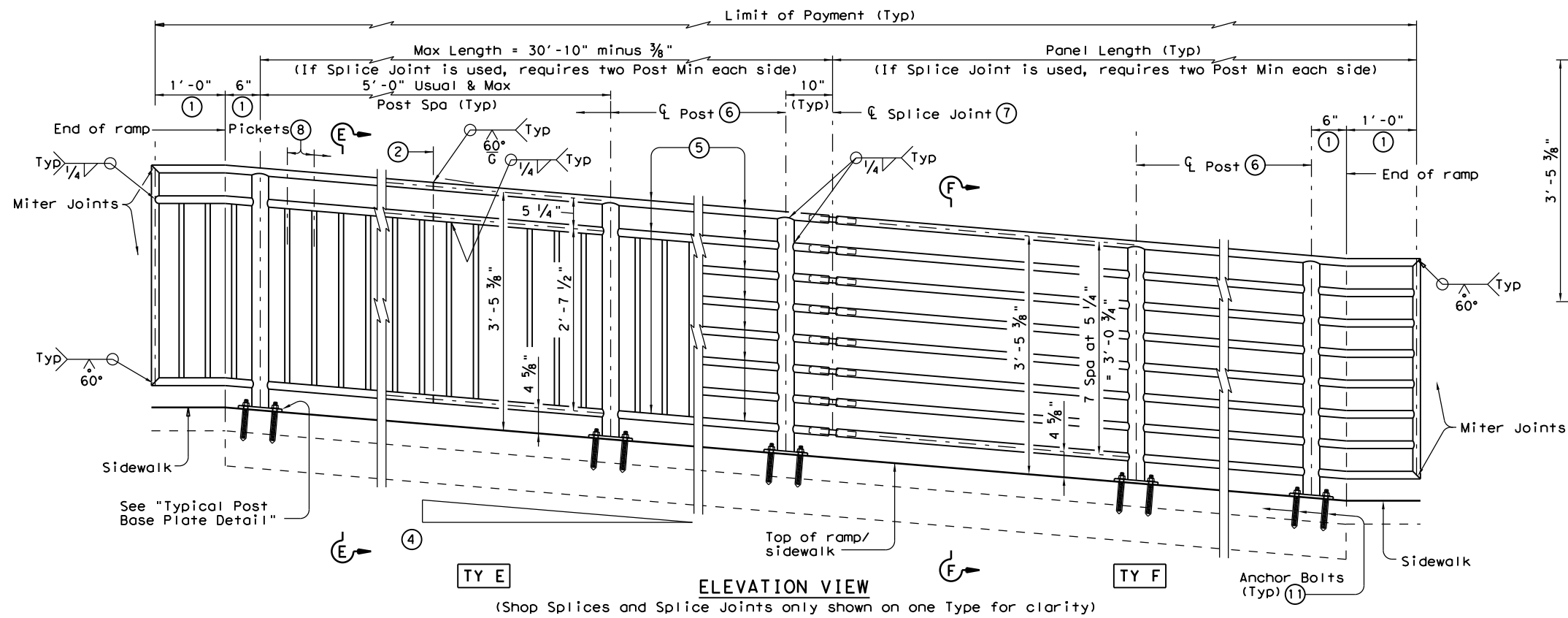


PEDESTRIAN HANDRAIL DETAILS PRD-13

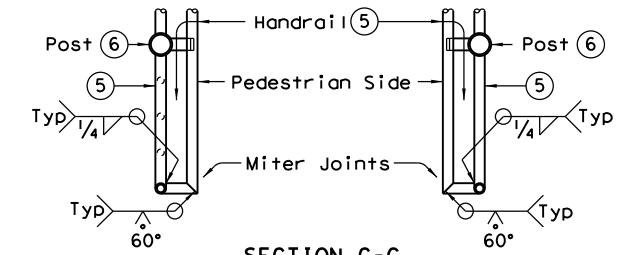
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© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	168	

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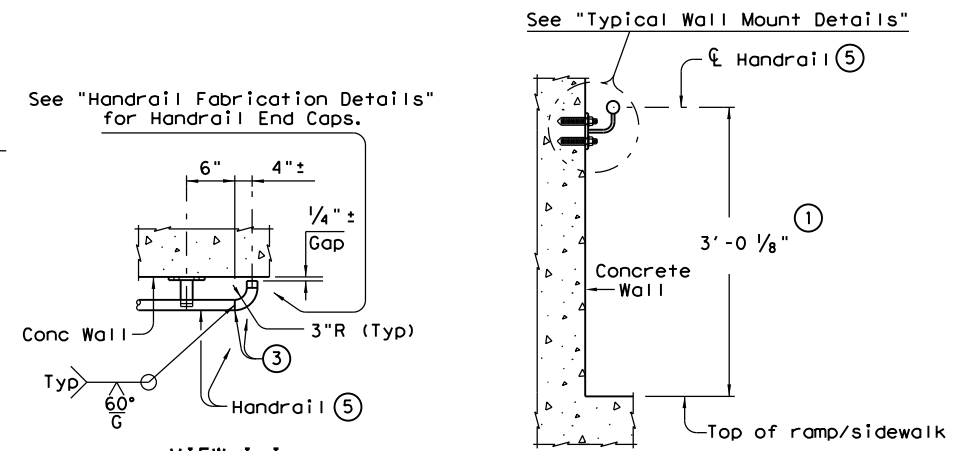
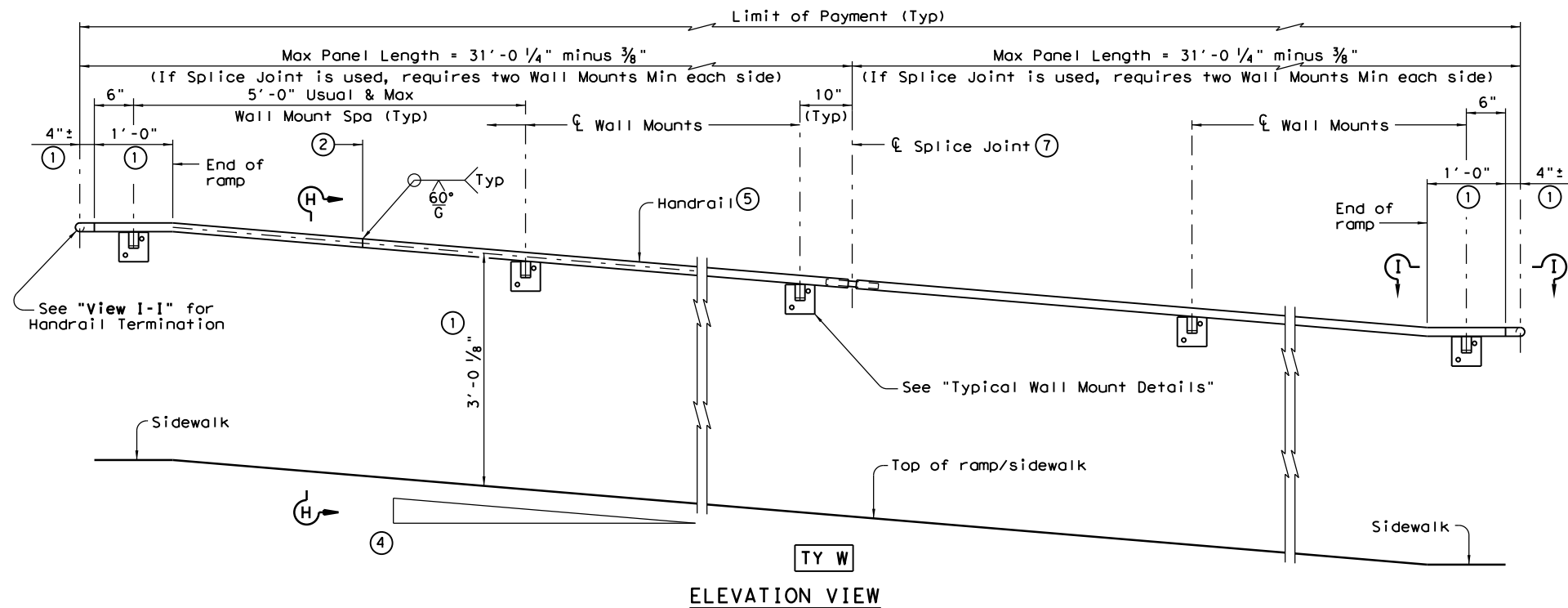
DATE:
FILE:



SECTION E-E (Showing Handrail TY E)
SECTION F-F (Showing Handrail TY F)



SECTION G-G (Showing Handrail Termination)



VIEW I-I (Showing Handrail Termination)

SECTION H-H (Showing Handrail TY W)

- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑪ See "General Notes" for anchor bolt information.

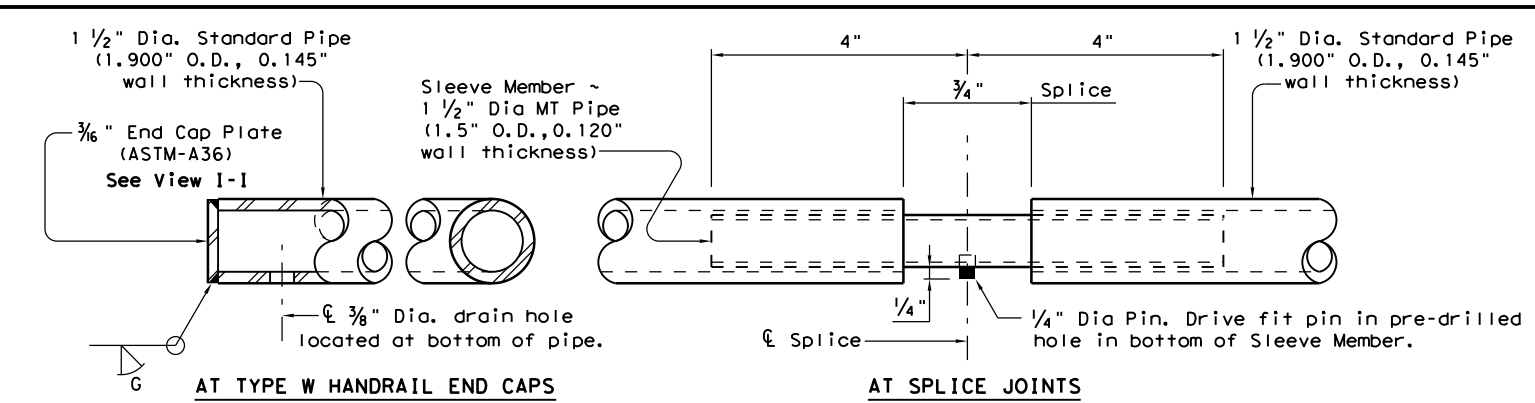
SHEET 2 OF 3



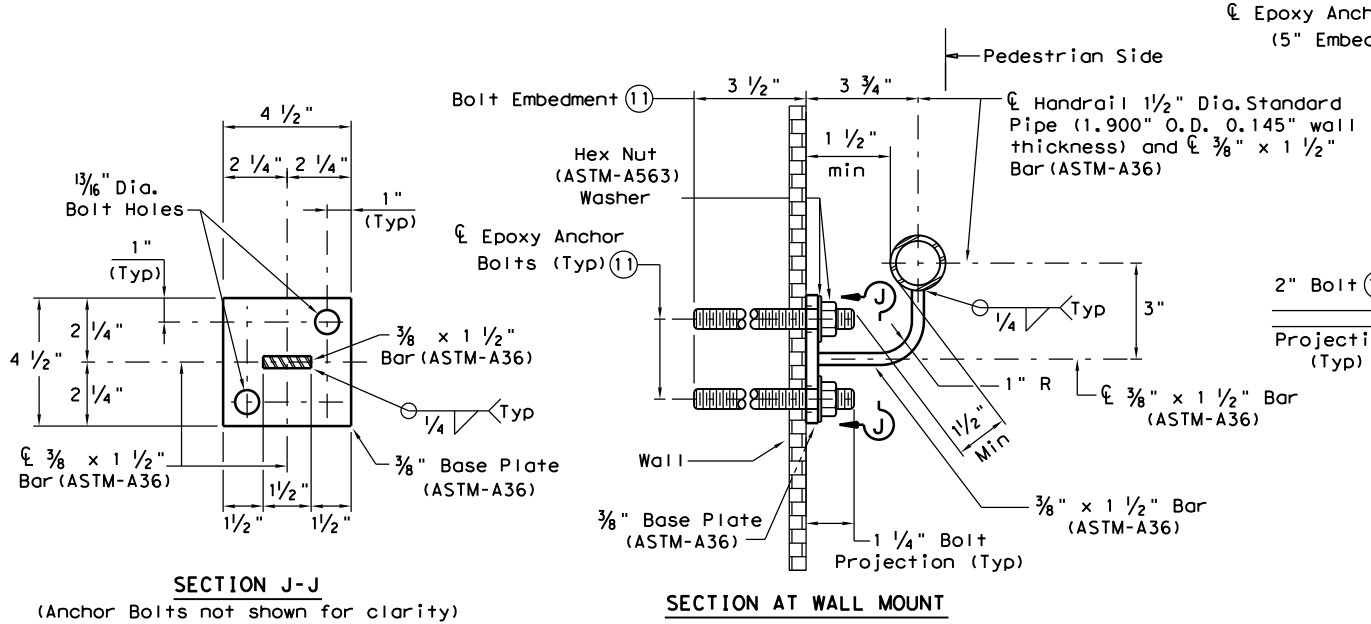
**PEDESTRIAN HANDRAIL
DETAILS
PRD-13**

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	169	

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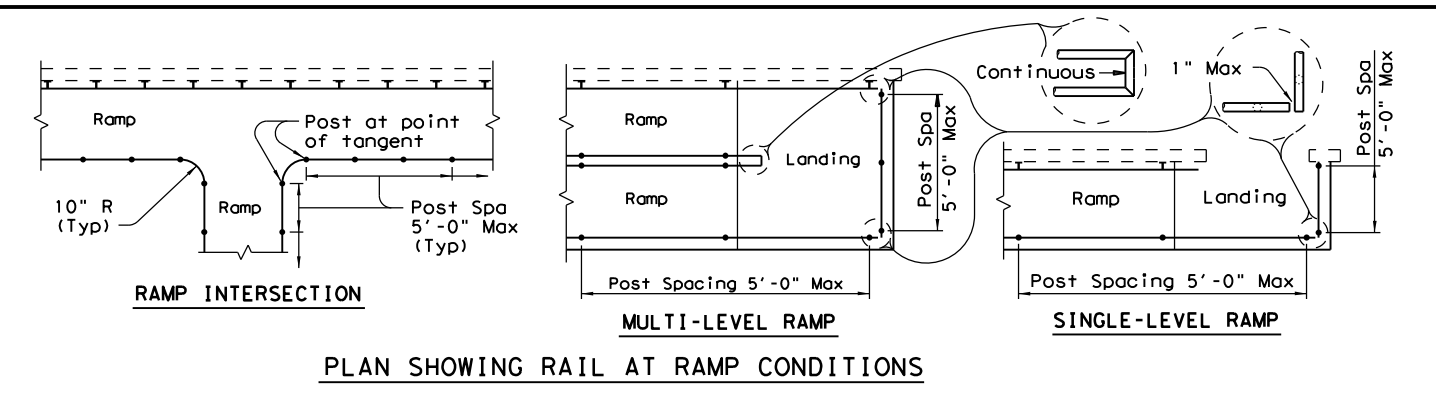
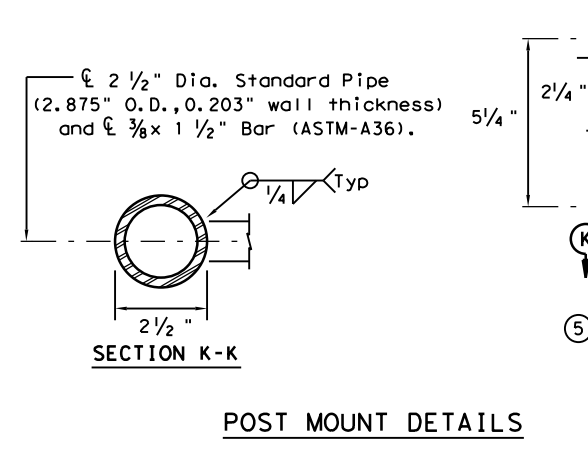
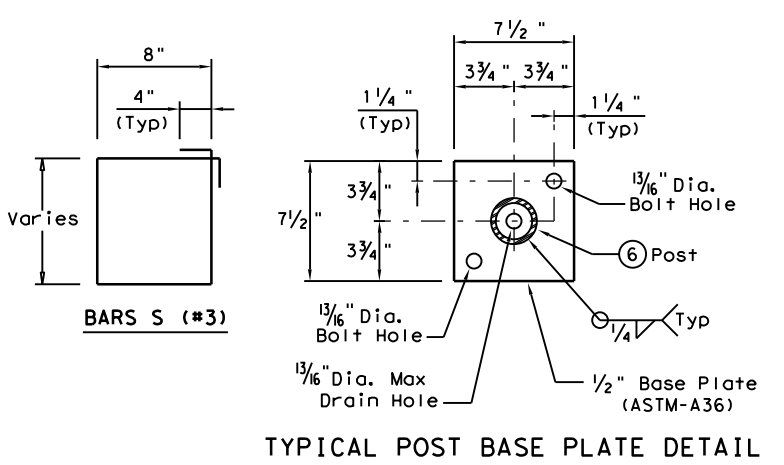


HANDRAIL FABRICATION DETAILS



TYPICAL WALL MOUNT DETAILS

- (5) 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- (6) 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diameter of top rail. Provide holes as needed in post for galvanizing drainage and venting.
- (11) See "General Notes" for anchor bolt information.
- (12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).
- (13) Provide 1 1/2" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



GENERAL NOTES

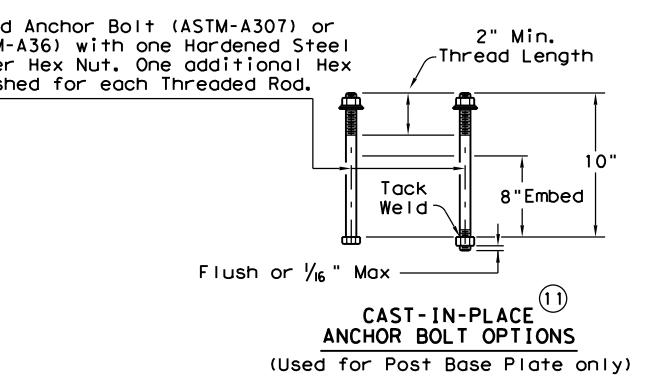
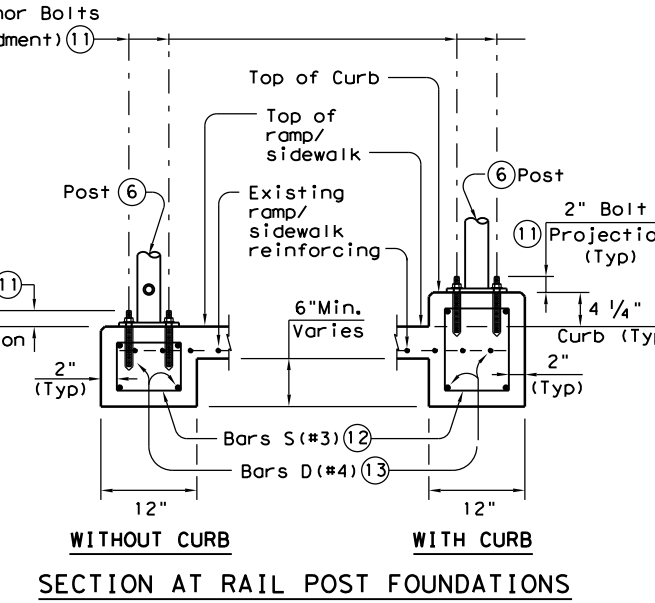
Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.



Epoxy Anchor bolts for wall mount and post base plate will be 5/8" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 5/8" Dia. threaded rod embedment depth for wall mounts is 3 1/2" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxyes and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be 5/8" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

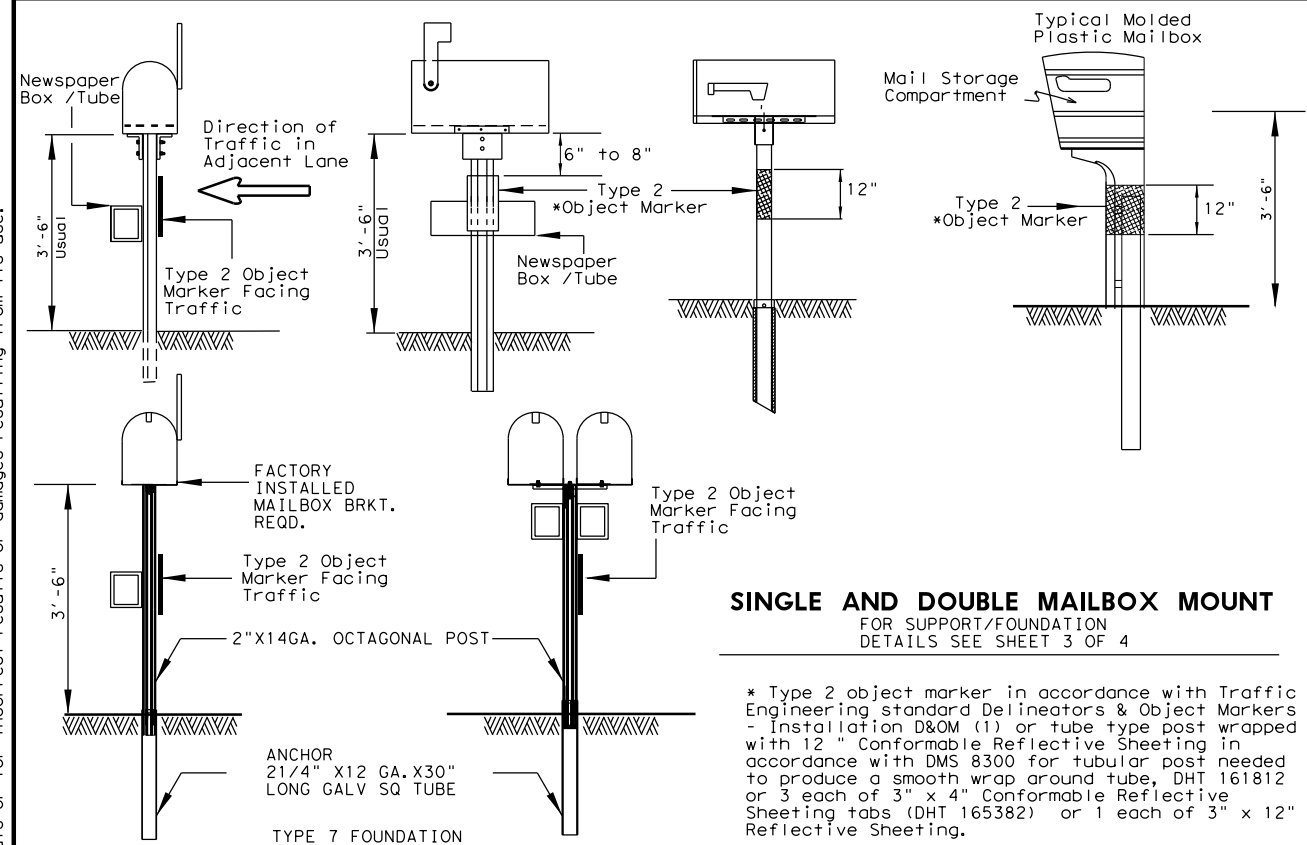
Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately 1/8" by grinding.

		Design Division Standard	
<h2>PEDESTRIAN HANDRAIL DETAILS</h2> <h3>PRD-13</h3>			
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR
© TxDOT December 2006	CONT	SECT	JOB
REVISIONS	0001	01	063, ETC.
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.
	ELP	EL PASO	170

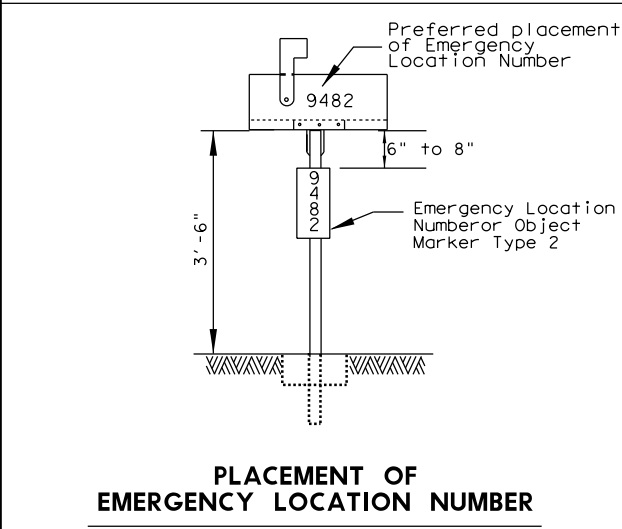
DATE: FILE:

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Note: Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Pedestrian Facilities Curb ramps standard *PED-XX for pedestrian facilities.

*PED-XX: XX is the standard year for example PED-12, PED-13, etc.



Location Number shall be placed on: 1. A yellow, type A plate with class 1 flat surface reflective sheeting in accordance with DMS 8600. The color of numbers shall be black, or 2. A green or blue plate with white numbers attached to post beside the object marker. Other contrasting color configuration, as approved, may be used. (Use Same type plate as used for the type 2 Object Marker. Recommended sign size is 6" by 15")

SIZE	TYPICAL MAILBOX SIZE			LIGHT WEIGHT MATERIAL	
	LENGTH	WIDTH	HEIGHT	SHEET METAL	**PLASTIC
				MAXIMUM WEIGHT	
INCHES			POUNDS		
SMALL	19 1/2	6	7	5	5
MEDIUM	22 1/2	8	11 1/2	7	7
LARGE	23 1/2*	11 1/2*	13 1/2*	10	10

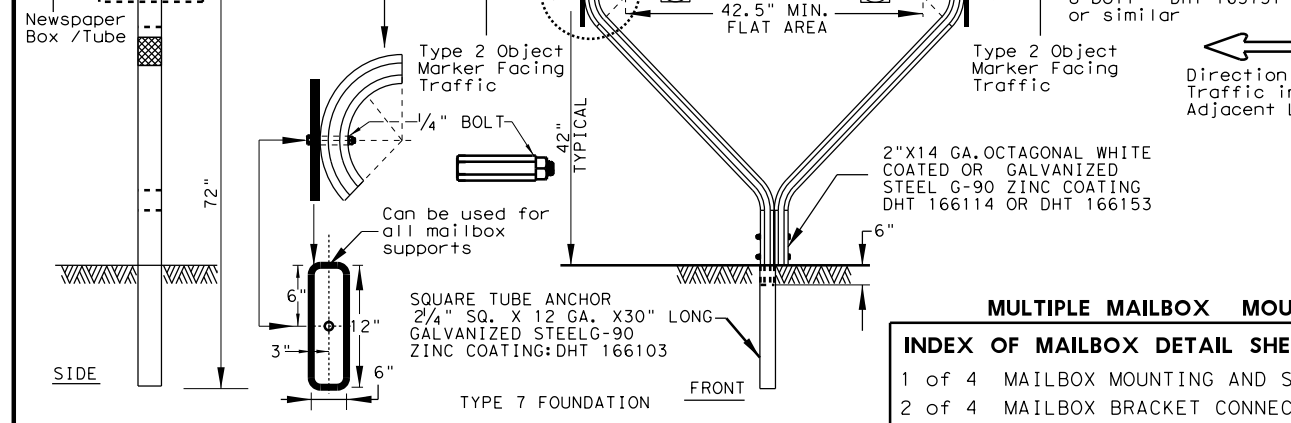
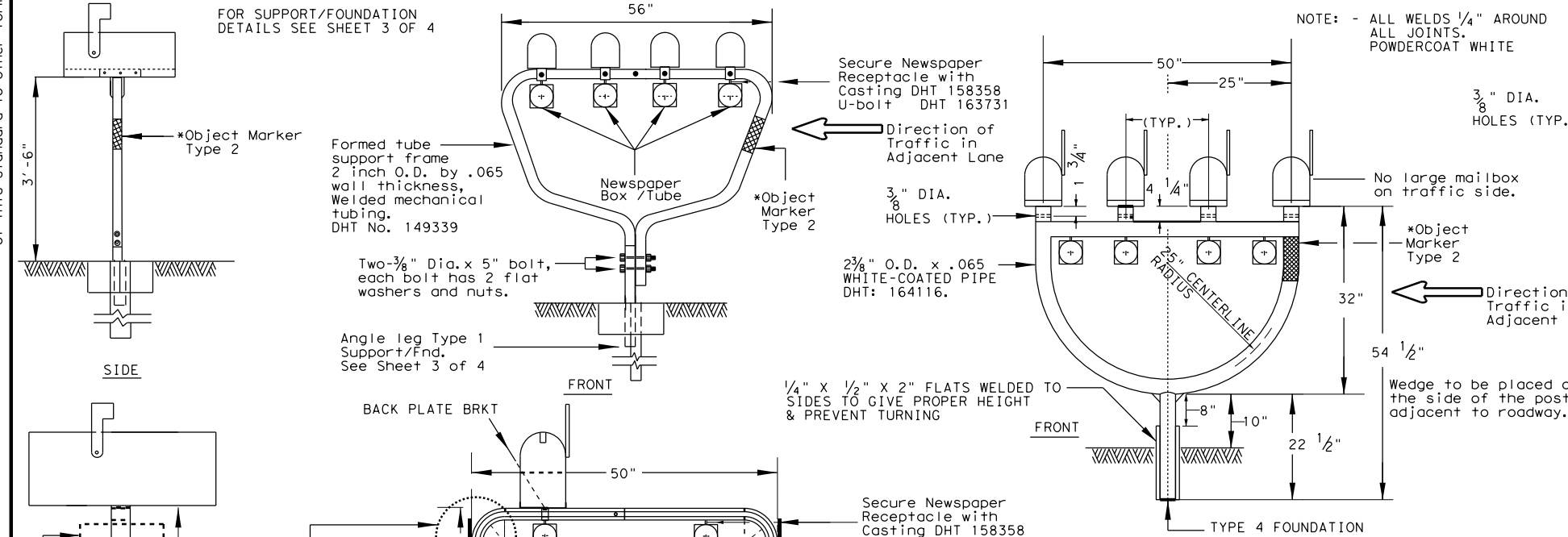
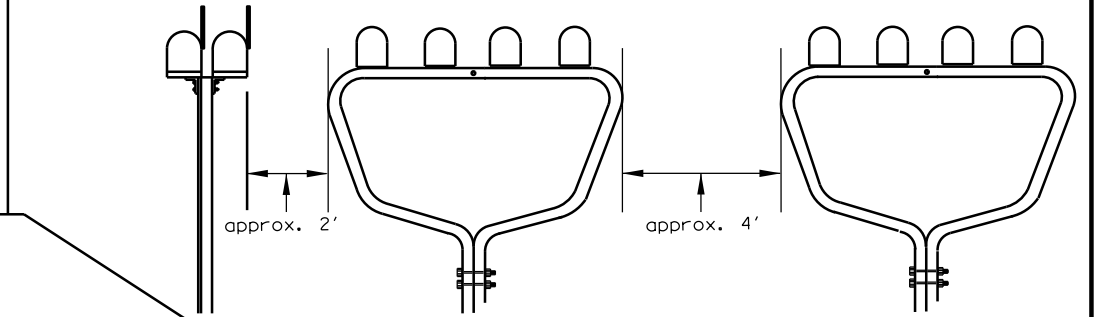
* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

LOCKABLE ARCHITECTURAL MAILBOX SIZE (INCHES)					
VIEW	TOP	BOTTOM	FRONT SIDE	BACK SIDE	WEIGHT
SIDE	18	15	18.3	15	(POUNDS)
BACK	11 1/2	11 1/2		15	22.4

SEE TOP RIGHT CORNER OF SHEET 2 OF 4

MAILBOX SIZES

Mailboxes shall be made of light weight sheet metal or light weight plastic. Lockable architectural mailboxes shall meet the requirements of the above table. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.



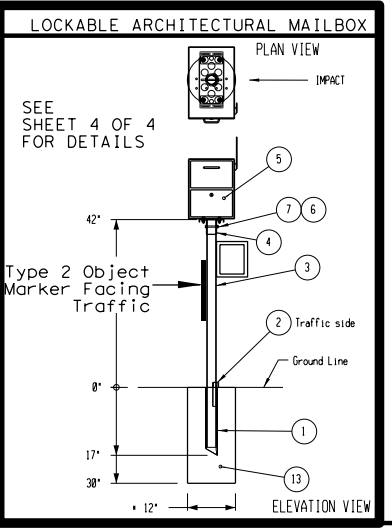
INDEX OF MAILBOX DETAIL SHEETS

1 of 4	MAILBOX MOUNTING AND SPACING
2 of 4	MAILBOX BRACKET CONNECTING DETAILS
3 of 4	MAILBOX SUPPORT / FOUNDATION
4 of 4	TABLE OF DHT NUMBERS

NEWSPAPER RECEPTACLE

A light weight receptacle for newspaper delivery can be attached to mailbox posts as shown on this page if the receptacle:

- Does not touch the mailbox.
- Does not present a hazard to traffic or delivery of the mail.
- Does not extend beyond the front of the mailbox.
- Does not display advertising, except the publication title.
- Newspaper receptacles on separate supports are prohibited.



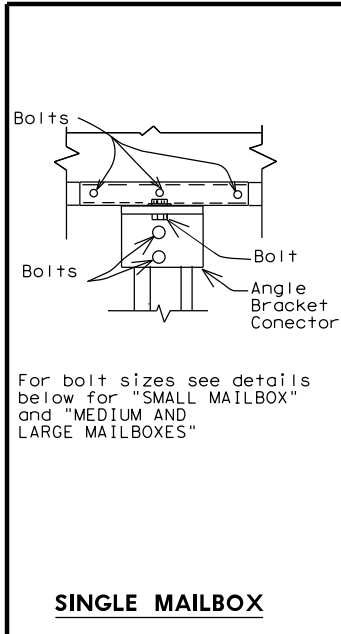
SHEET 1 OF 4

Maintenance Division Standard

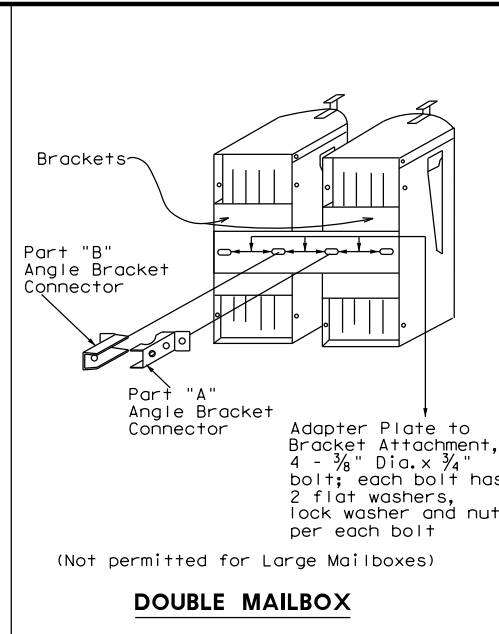
MAILBOX MOUNTING AND SPACING
MB-15(1)

FILE: MB15(1).DGN	DW: JEO	CK: JEO	DW: TXDOT	CK: TXDOT
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS:	0001	01	063, ETC.	SH 20
Added additional newspaper receptacle for double mailbox support	DIST	COUNTY	SHEET NO.	
	EP	EL PASO	171	

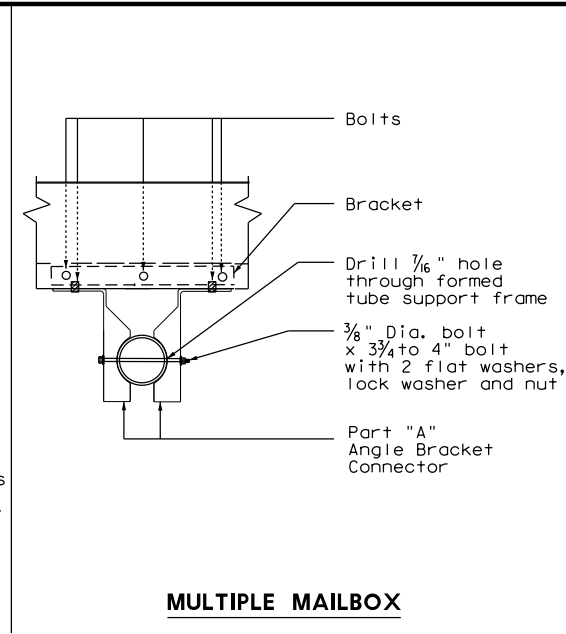
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



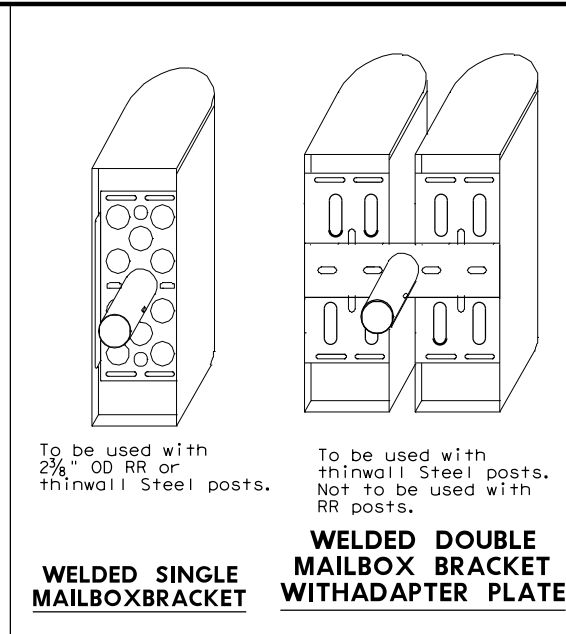
SINGLE MAILBOX



DOUBLE MAILBOX

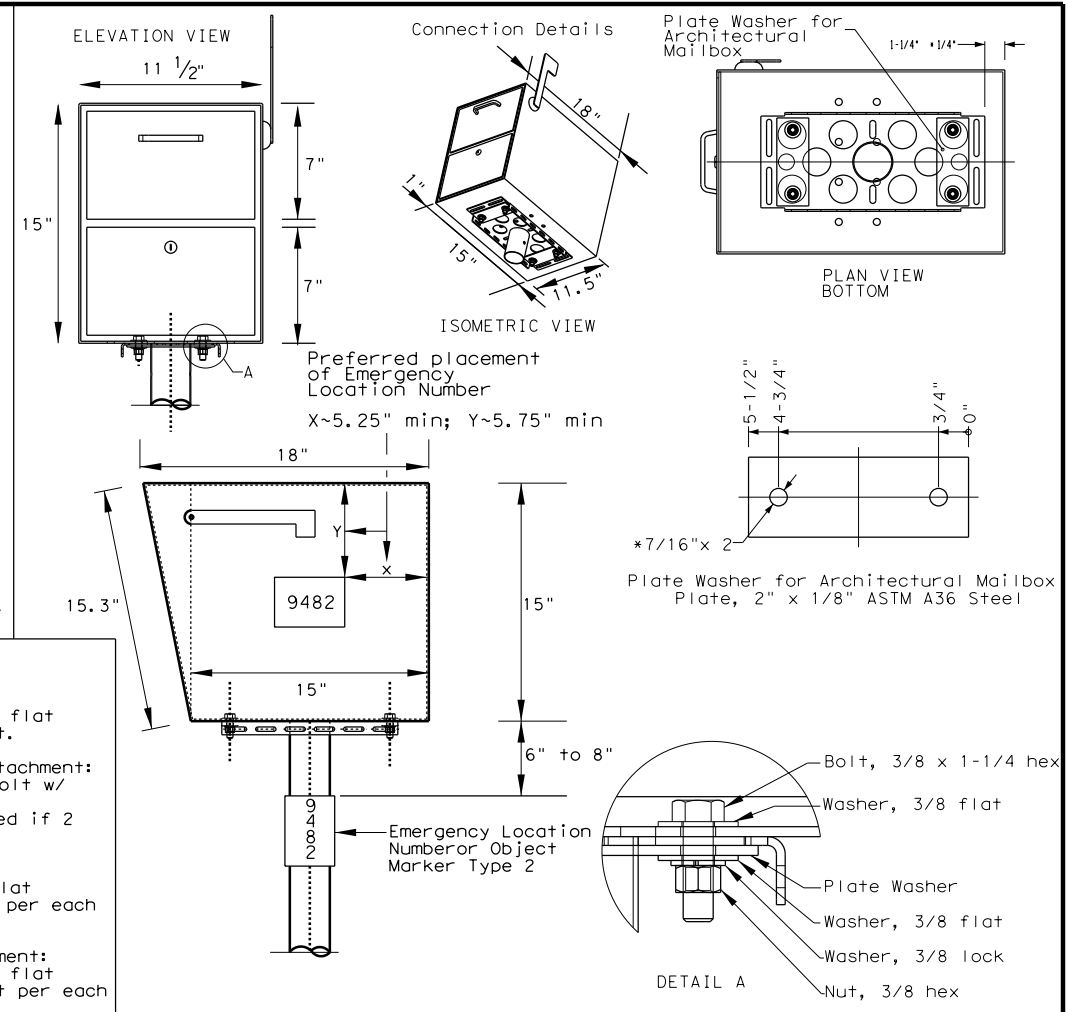


MULTIPLE MAILBOX

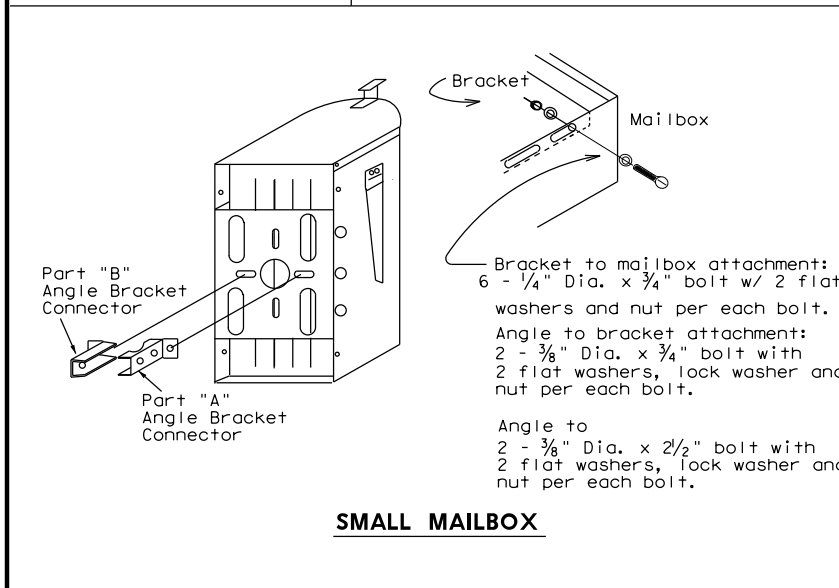


WELDED SINGLE MAILBOX BRACKET

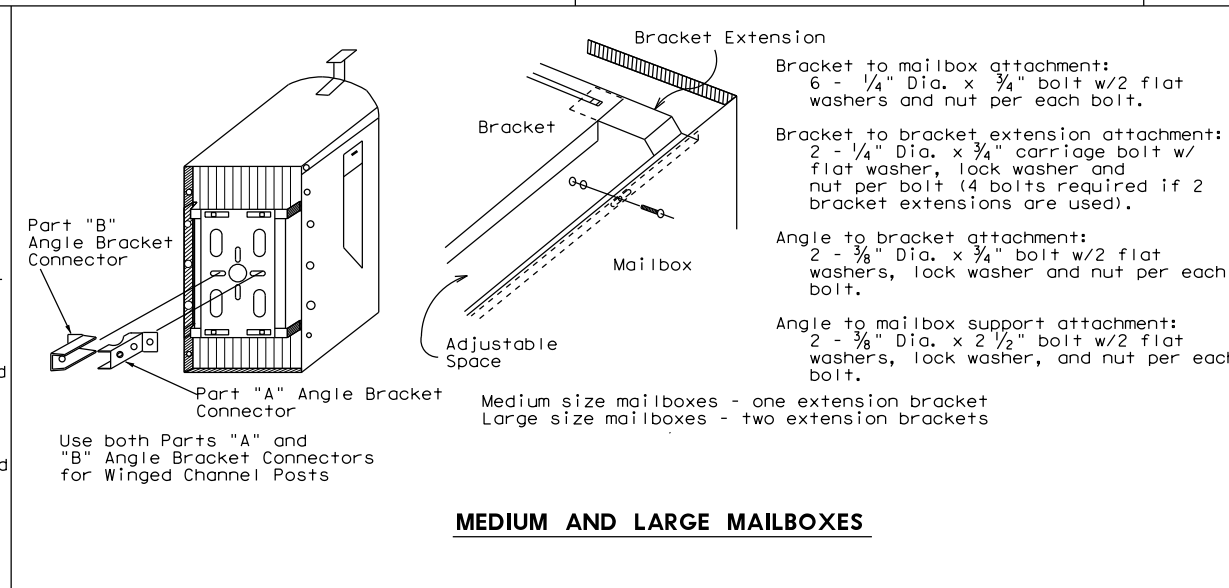
WELDED DOUBLE MAILBOX BRACKET WITH ADAPTER PLATE



LOCKABLE ARCHITECTURAL MAILBOX CONNECTION DETAILS



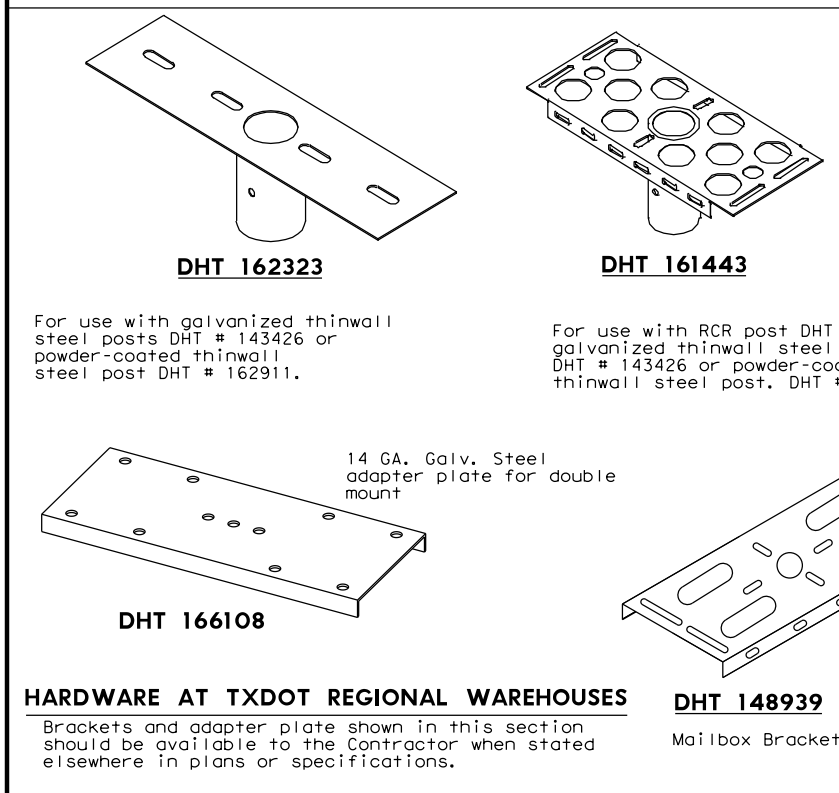
SMALL MAILBOX



MEDIUM AND LARGE MAILBOXES

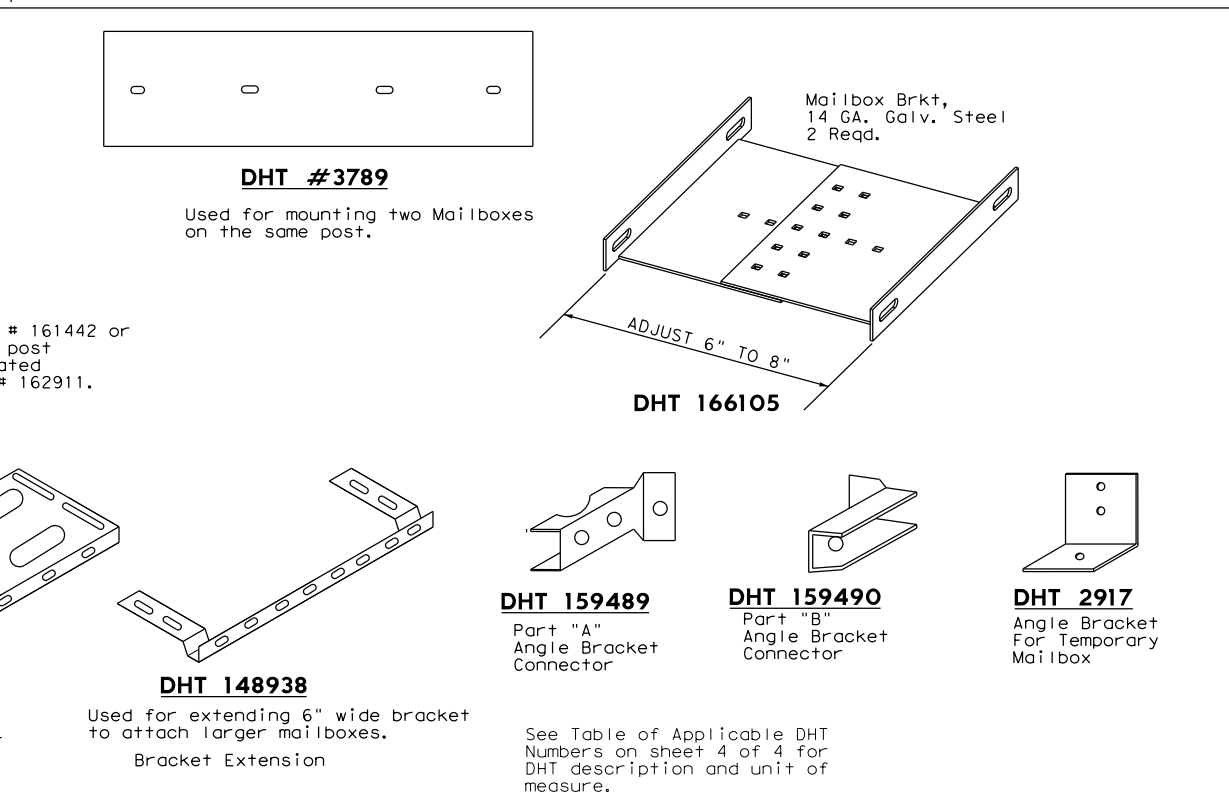
GENERAL NOTES

1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



HARDWARE AT TXDOT REGIONAL WAREHOUSES

Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

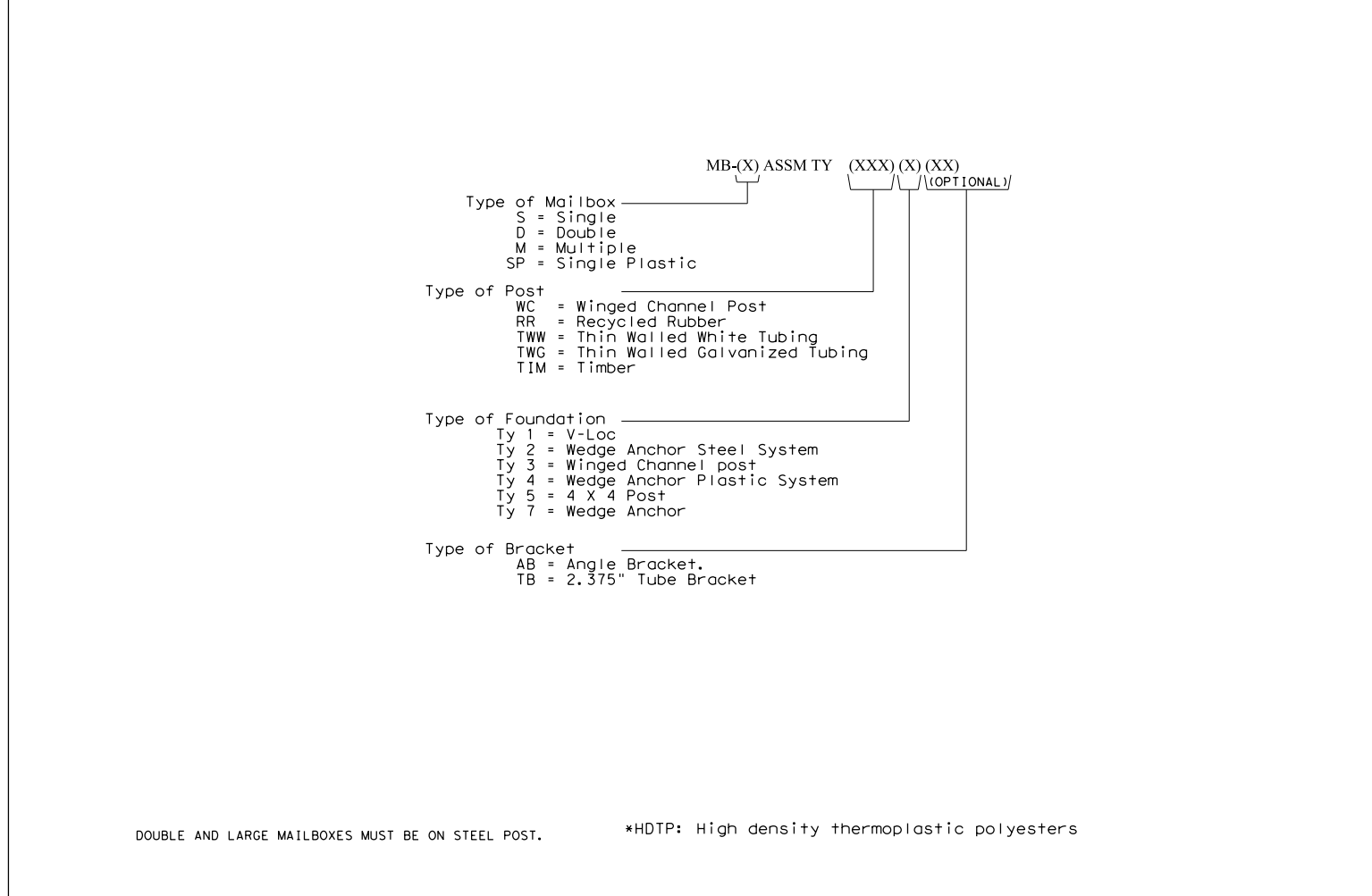
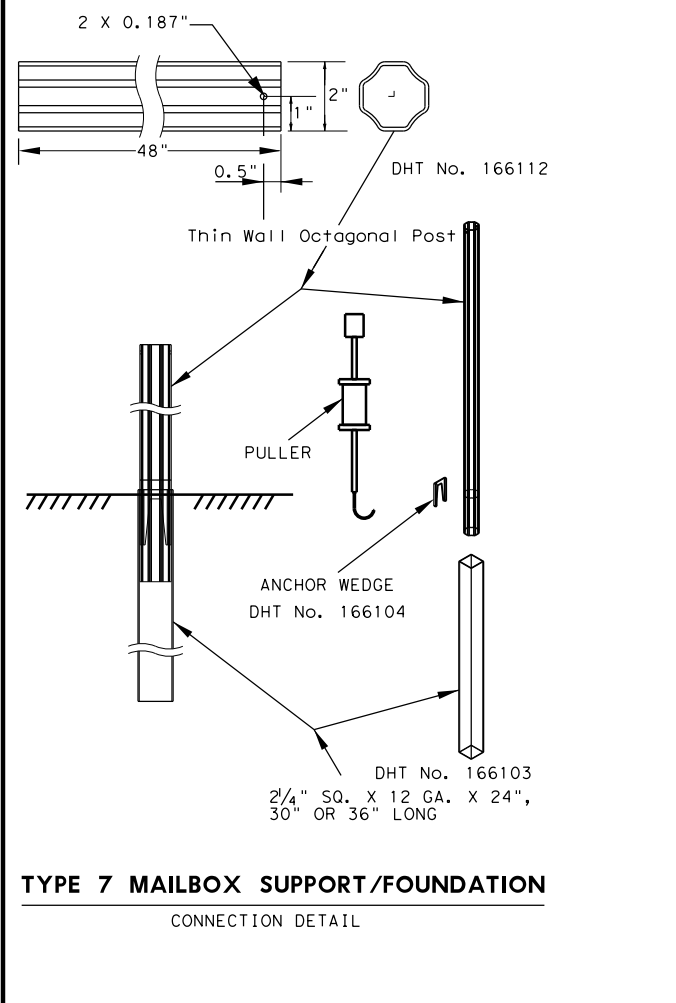
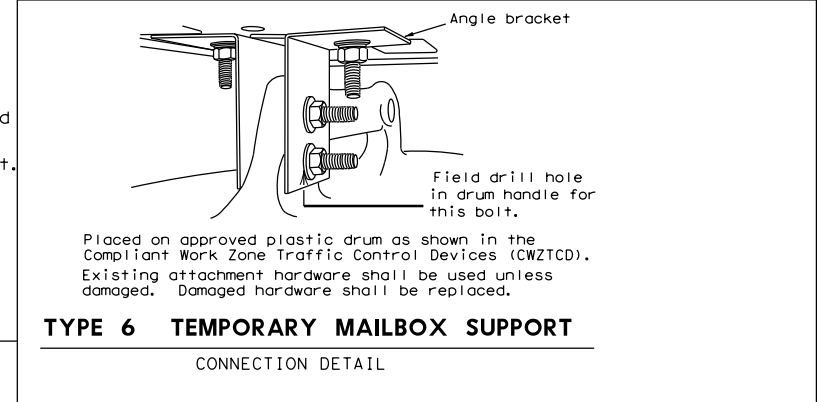
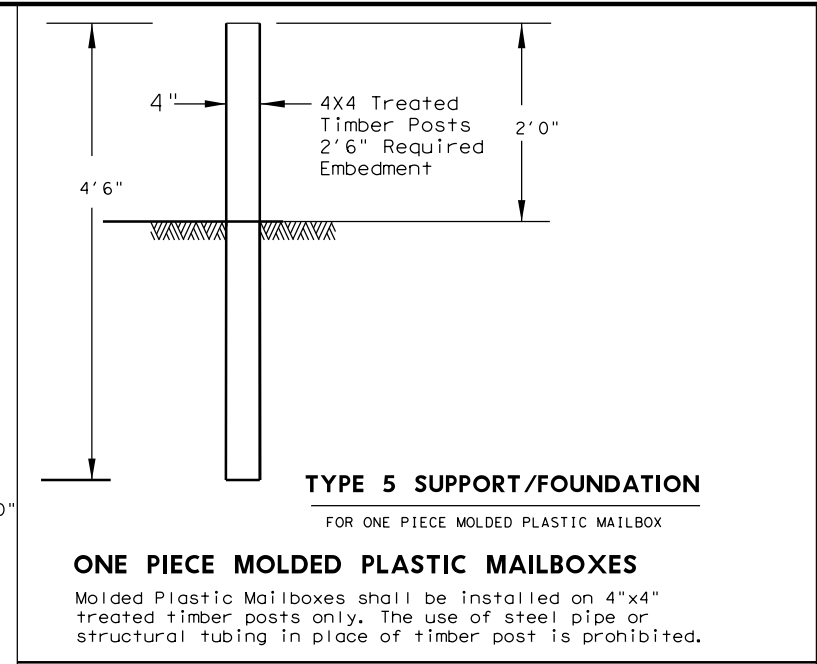
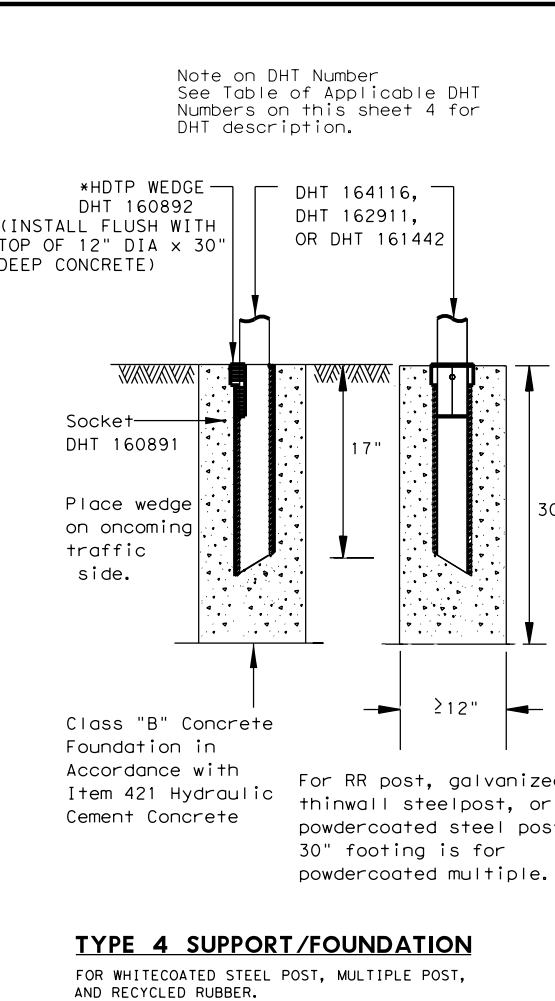
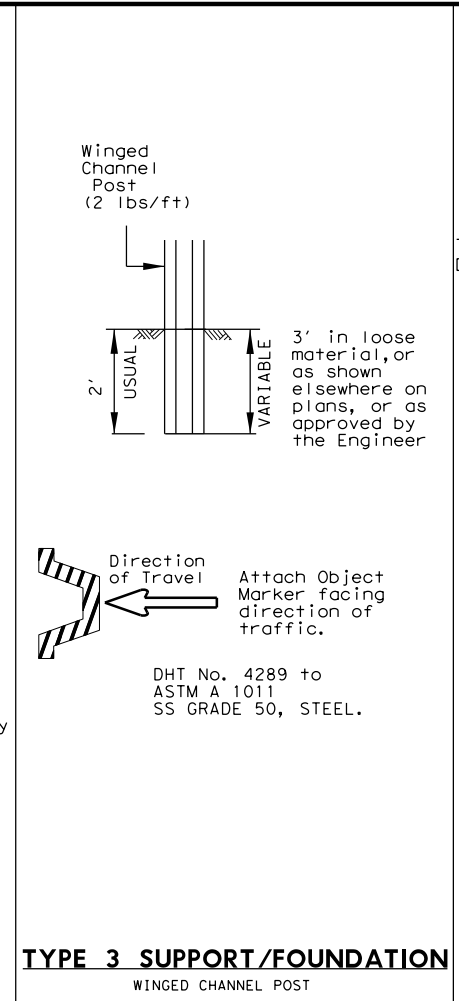
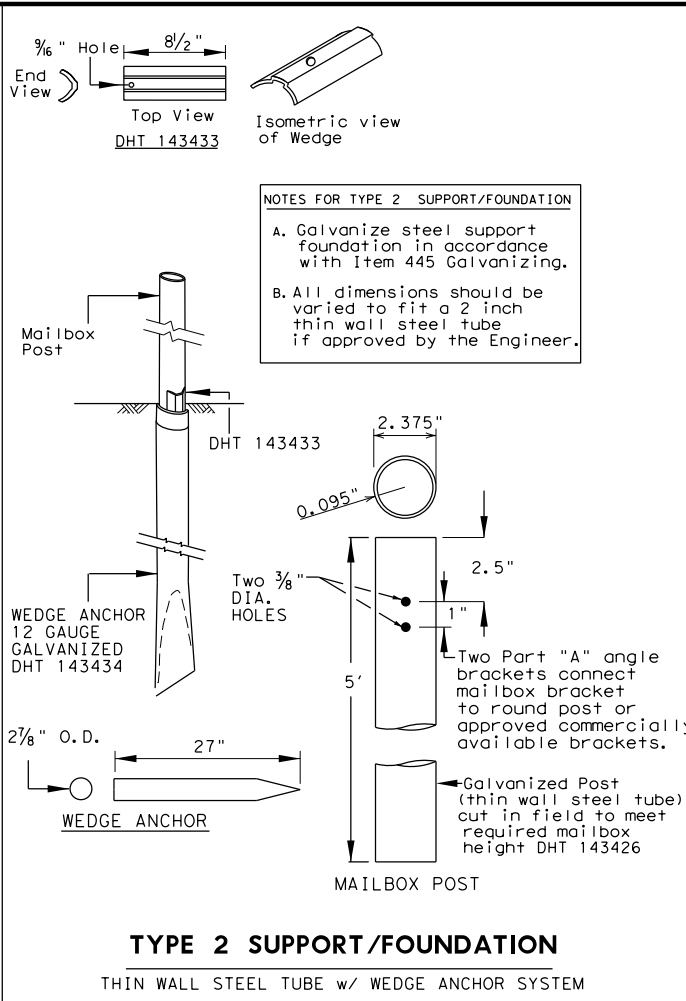
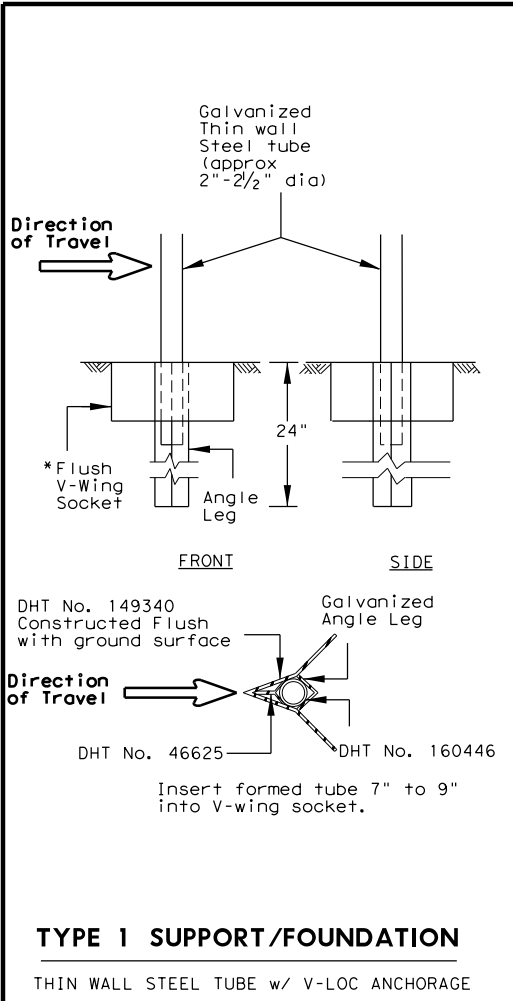


Texas Department of Transportation
Maintenance Division Standard

MAILBOX BRACKET CONNECTING DETAILS MB-15(1)

FILE: MB14(1).DGN	DN: JEO	CK: TXDOT	DW: JEO	CK: TXDOT
© TXDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
ADDED DHT 163730	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	EP	EL PASO	172	

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- GENERAL NOTES**
- Erect post plumb or vertical.
 - When galvanized part is required galvanized in accordance with Item 445.
 - type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RR post, thin wall steel post, and white multiple mailbox post.
 - The Type 1 or type 7 support/foundation can be used for a multiple mailbox mount.
 - The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
 - Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition.

SHEET 3 OF 4

Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION
MB-15(1)

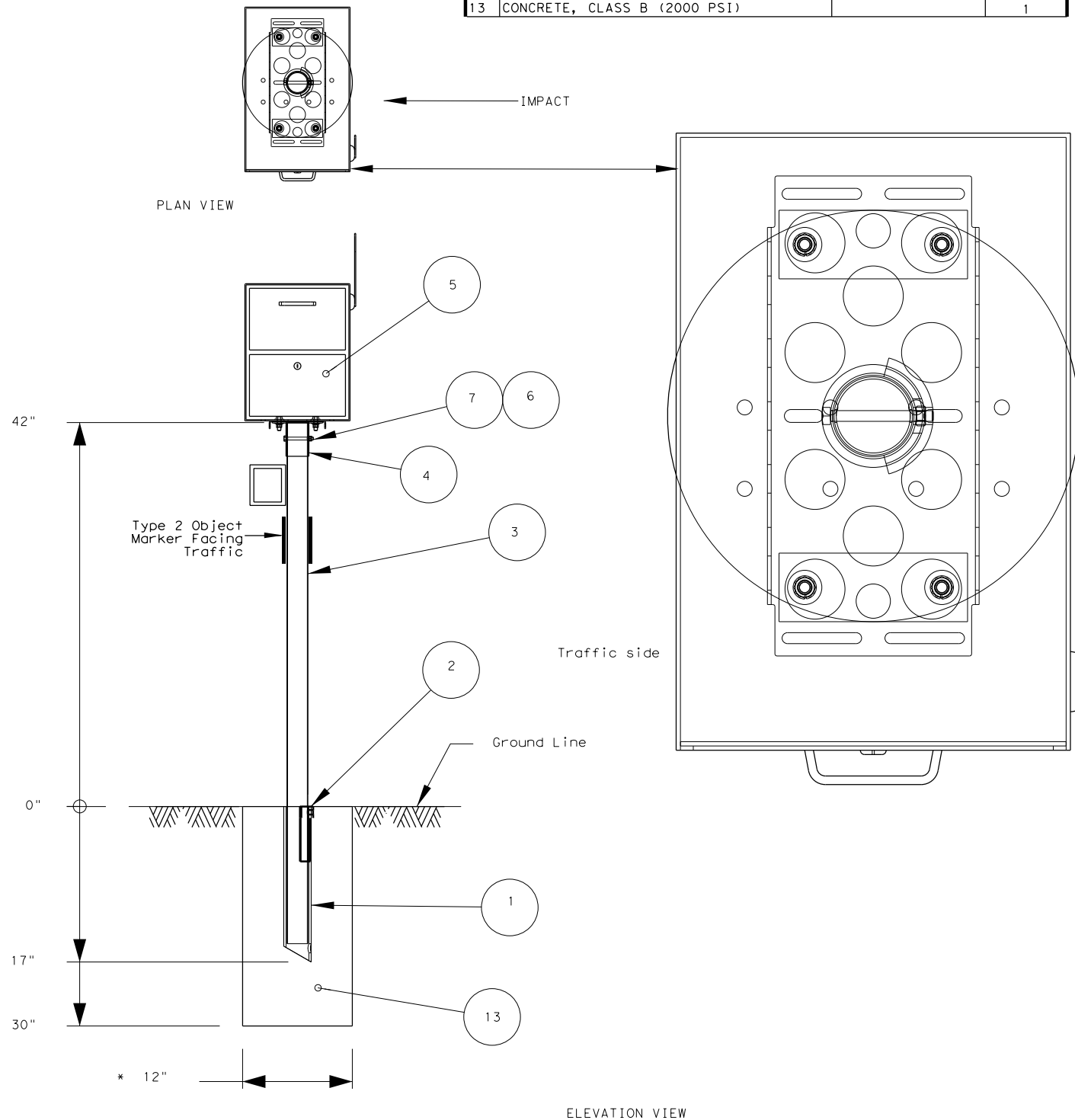
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© TXDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	EP	EL PASO	173	

LOCKABLE ARCHITECTURAL MAILBOX

SINGLE-MOUNT INSTALLATION PARTS

#	PART NAME	PART/DHT #	QTY
1	SOCKET, TYPE 4 FOUNDATION	160891	1
2	WEDGE FOR TYPE 4 FOUNDATION	160892	1
3	THIN-WALL WHITE STEEL TUBE 2.375 OD	162911	1
4	BRACKET FOR ATTACHING MAILBOX	161443	1
5	ARCHITECTURAL MAILBOX	SEE NOTE	1
6	NUT, 5/16" HEX	NUT, 5/16" HEX	1
7	BOLT, 5/16 X 3 HEX	GRADE 5	1
8	PLATE WASHER FOR ARCHITECTURAL MAILBOX	SEE SEE SHEET 2	2
9	WASHER, 3/8 FLAT		8
10	WASHER, 3/8 LOCK		4
11	NUT, 3/8 HEX		4
12	BOLT, 3/8 X 1-1/4 HEX	GRADE 5	4
13	CONCRETE, CLASS B (2000 PSI)		1

LOCKABLE ARCHITECTURAL MAILBOX DETAILS



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TABLE OF APPLICABLE DHT NUMBERS

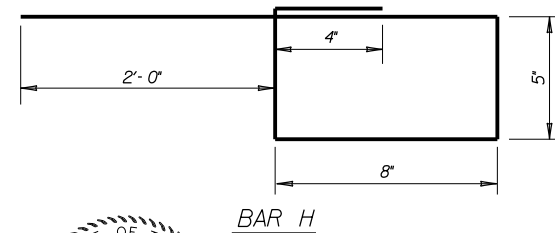
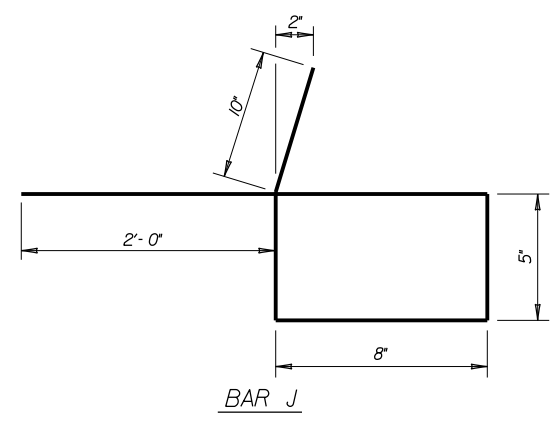
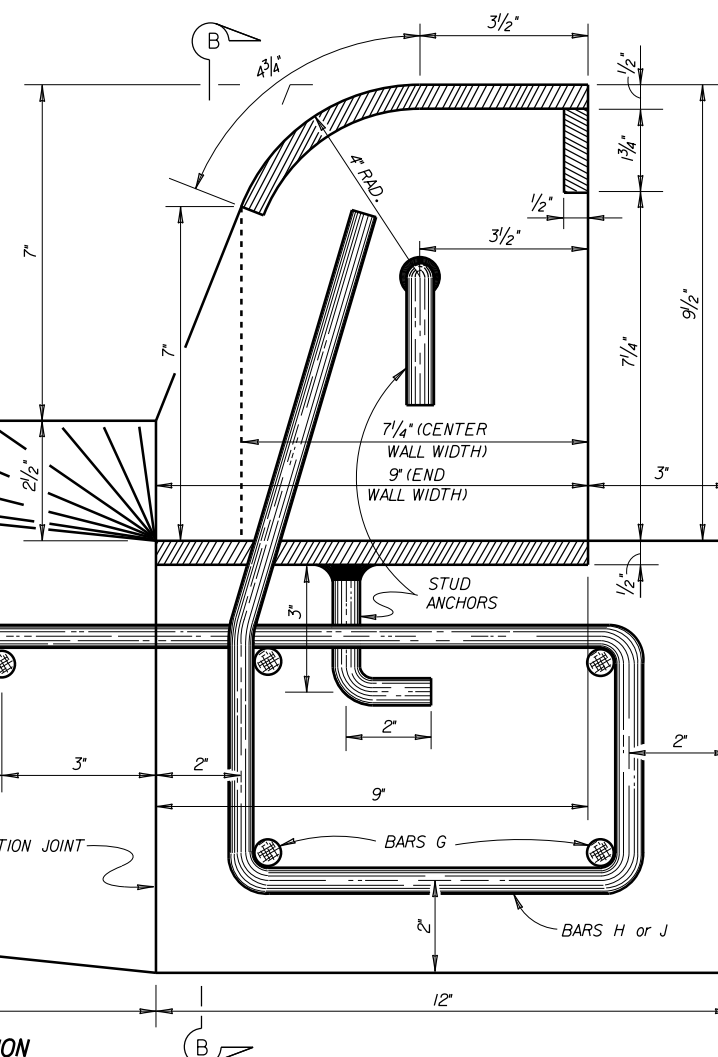
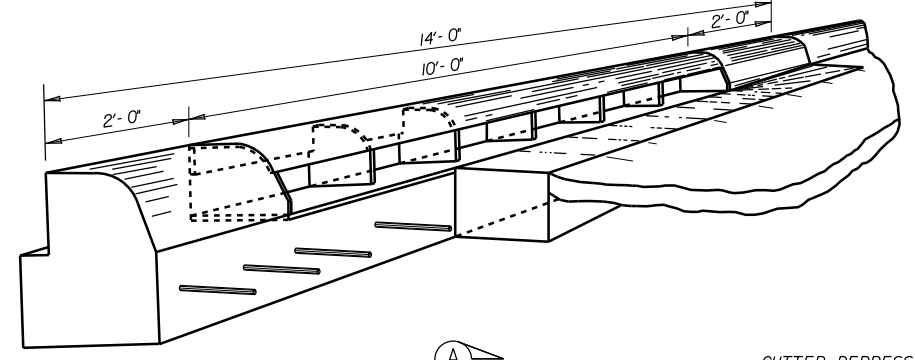
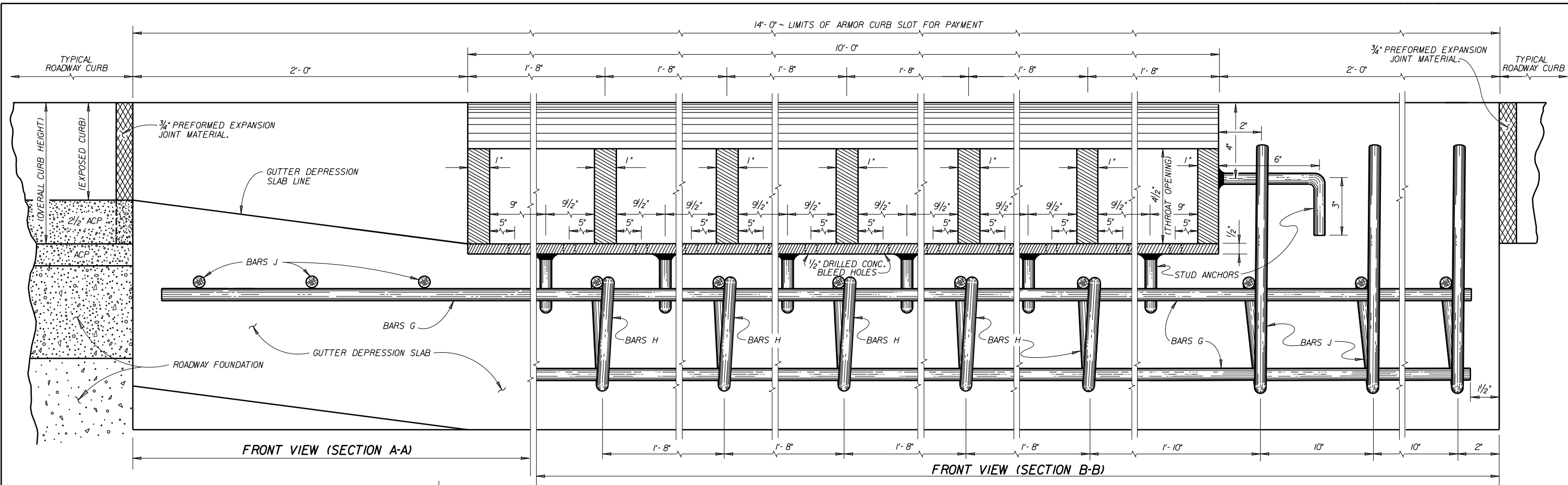
DHT NUMBER	DESCRIPTION
FOUNDATIONS	
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
POSTS	
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED
166152	2" OCTAGONAL
	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED
166112	2" OCTAGONAL
REFLECTIVE SHEETING	
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
CONNECTING HARDWARE	
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL
162323	STEEL POST, GALVANIZED OR POWDERCOATED.
	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST
161443	AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)
160698	BOLT; HEX HEAD, GALV; 3/8"DIA X 3/4"L HD, W/2-FLAT WASHERS
163750	BOLT; HEX HEAD, GALV; 3/8" X 1-1/2, 16 NC, W/WASHERS
160701	BOLT; HEX HEAD, GALV; 3/8"DIA X 2-1/2"L, HD, W/2-FLAT WASHERS
163730	BOLT; HEX HEAD, GALV; 3/8" X 3-1/2", NC, W/NUT, 2 FLAT WASHERS
160699	BOLT; HEX HEAD, GALV; 3/8"DIA X 3-3/4"L HD, W/2-FLAT WASHERS
160700	BOLT; HEX HEAD, GALV; 3/8"DIA X 4"L HD, W/2-FLAT WASHERS

SHEET 4 OF 4



**DHT NUMBERS TABLE
MB-15(1)**

FILE:MB14(1).DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	EP	EL PASO	174	



ESTIMATED QUANTITIES FOR REINFORCING STEEL

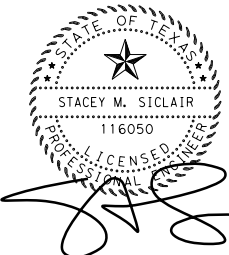
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	5	#4	1'-8"	4'-6"	15
J	6	#4	8"	5'-0"	20
TOTAL WEIGHT *					LBS. 99
CONCRETE FOR FOUNDATION *					C.Y. 0.47
CONCRETE FOR GUTTER DEPRESSION * C.Y.					0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT

STUD ANCHORS (1/2" DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

- GENERAL NOTES:**
- ALL CONCRETE SHALL BE CL.#A.
 - ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
 - ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.
 - ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.
 - ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.
 - THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.



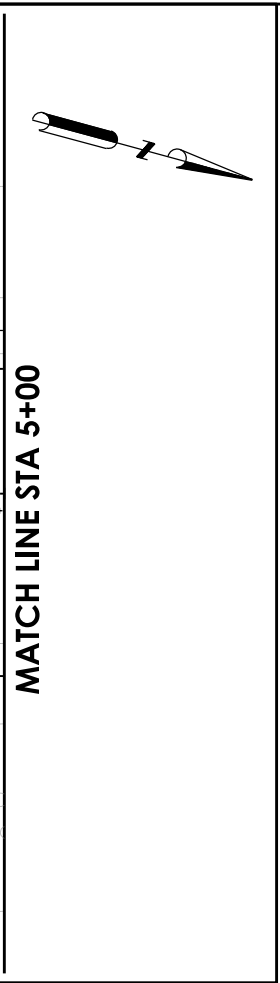
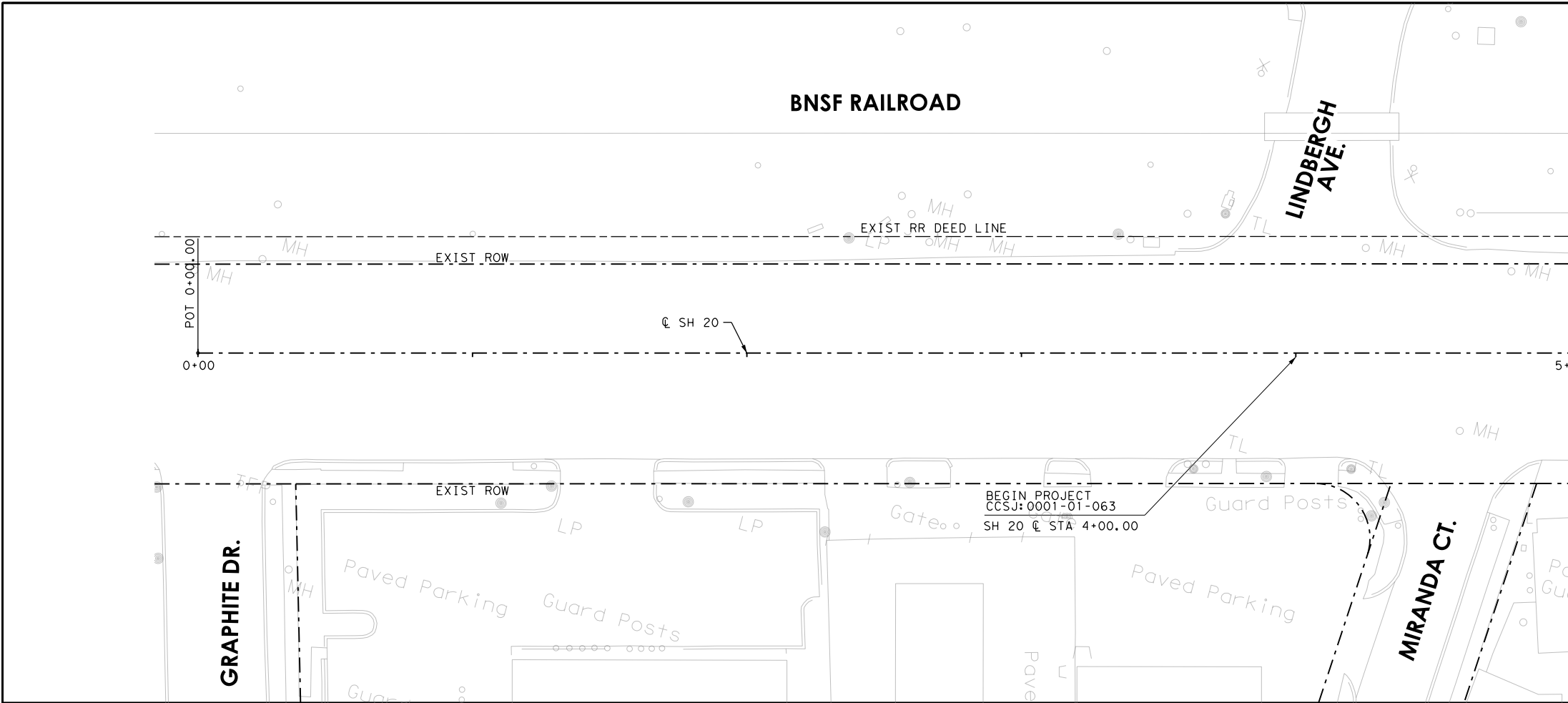
ARMOR CURB SLOT WITH CONCRETE FOUNDATION

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FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		175
STATE	STATE DISTRICT	COUNTY
TEXAS	ELP	EL PASO
CONT.	SECT.	JOB
0001	01	063
REV. 07/01		SH 20

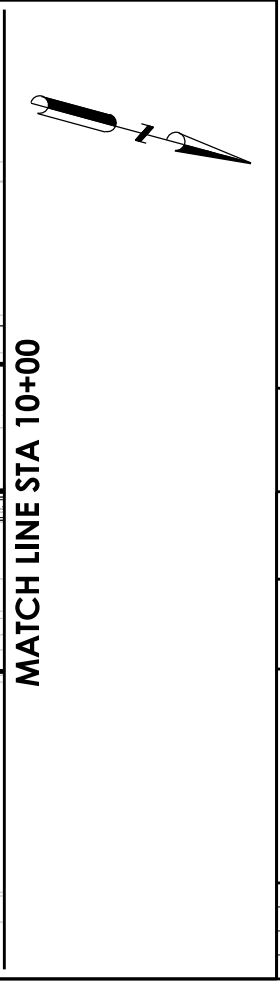
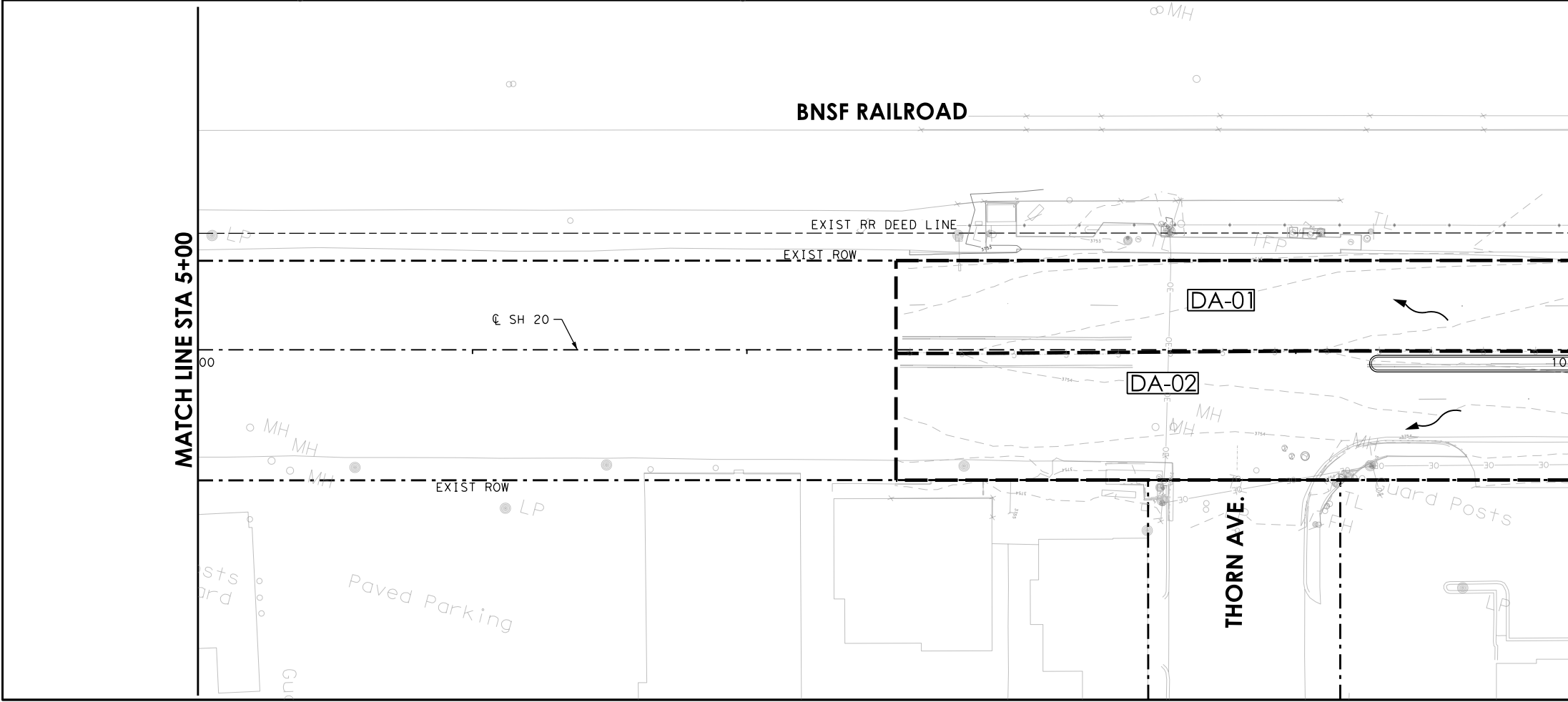
STRUCTURE DESIGN / BRIDGE/STD5/ARMORCURB.DGN

5/3/2021



LEGEND

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	DRAINAGE AREA
	DIRECTION OF FLOW
	EXISTING ROW
	MAJOR CONTOUR
	MINOR CONTOUR
	HIGH POINT
	LOW POINT



MATCH LINE STA 5+00

MATCH LINE STA 10+00

BEGIN PROJECT
CCSJ: 0001-01-063
SH 20 CL STA 4+00.00

OSWALD F. GARCIA
109889
LICENSED PROFESSIONAL ENGINEER

04/30/2021
STATE OF TEXAS
SCALE: 1"=50'

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

HNTB
HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

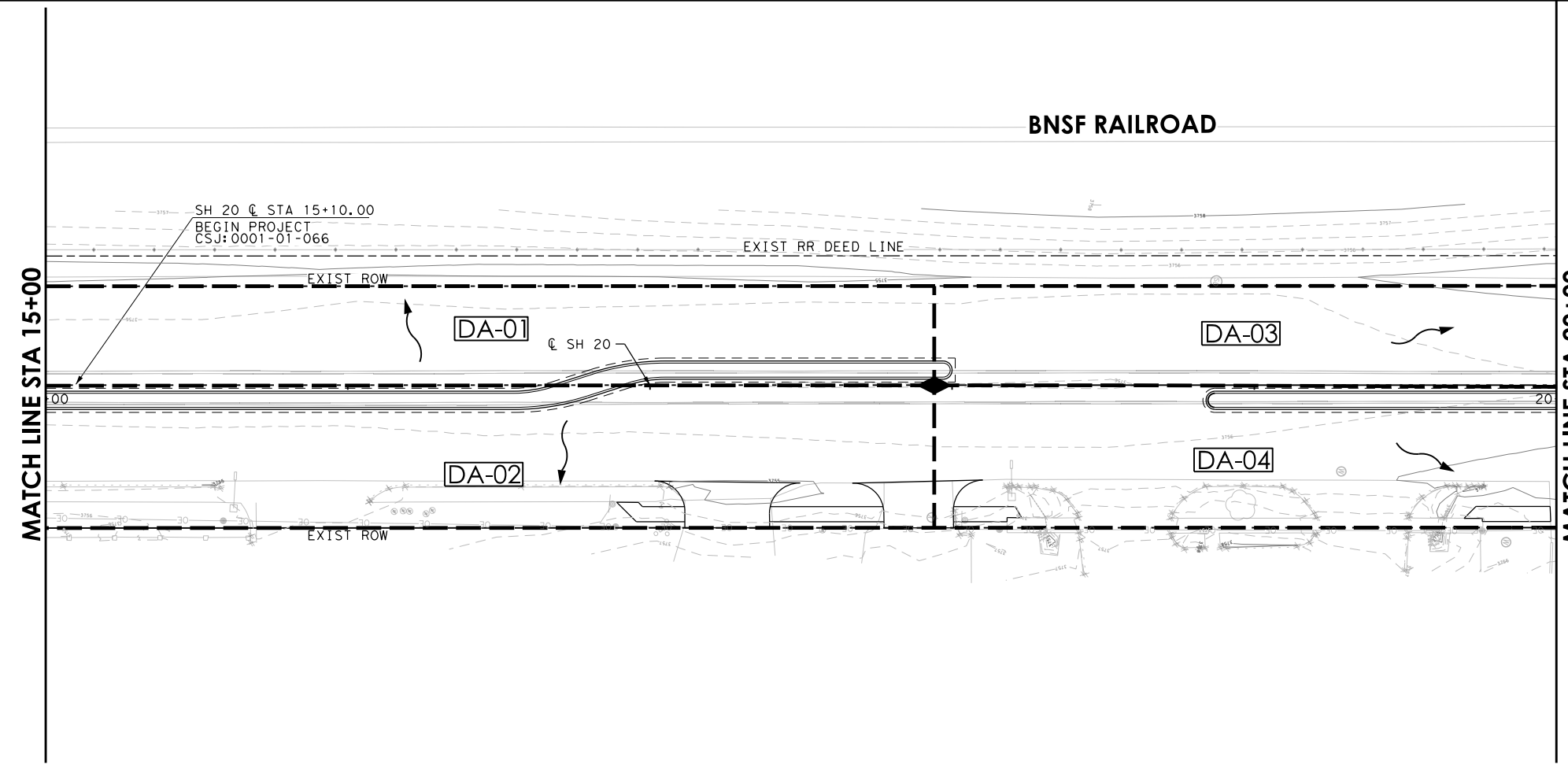
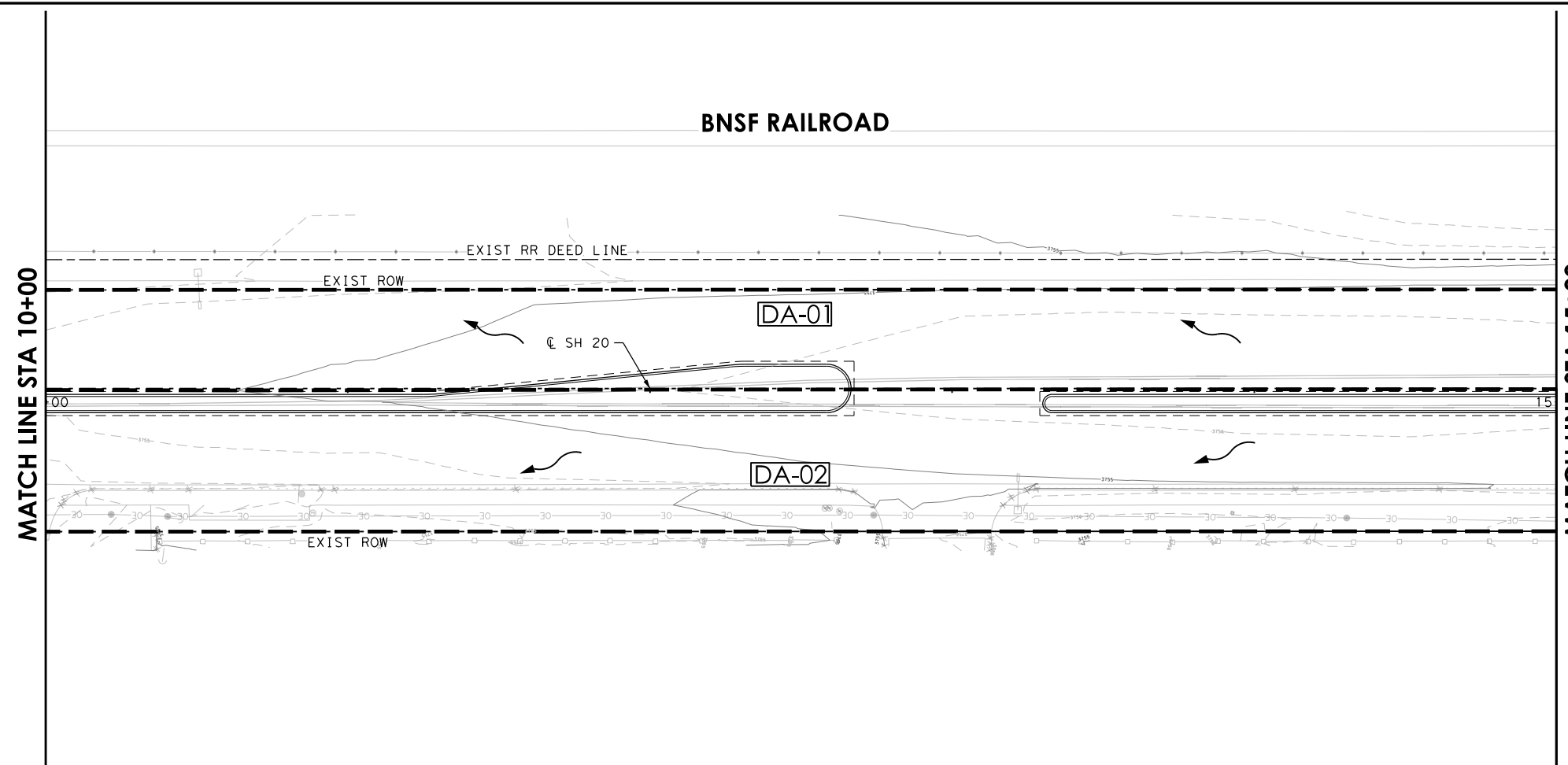
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SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS
BEGIN TO STA 10+00

SHEET 1 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	176

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



04/30/2021
 STATE OF TEXAS
 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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

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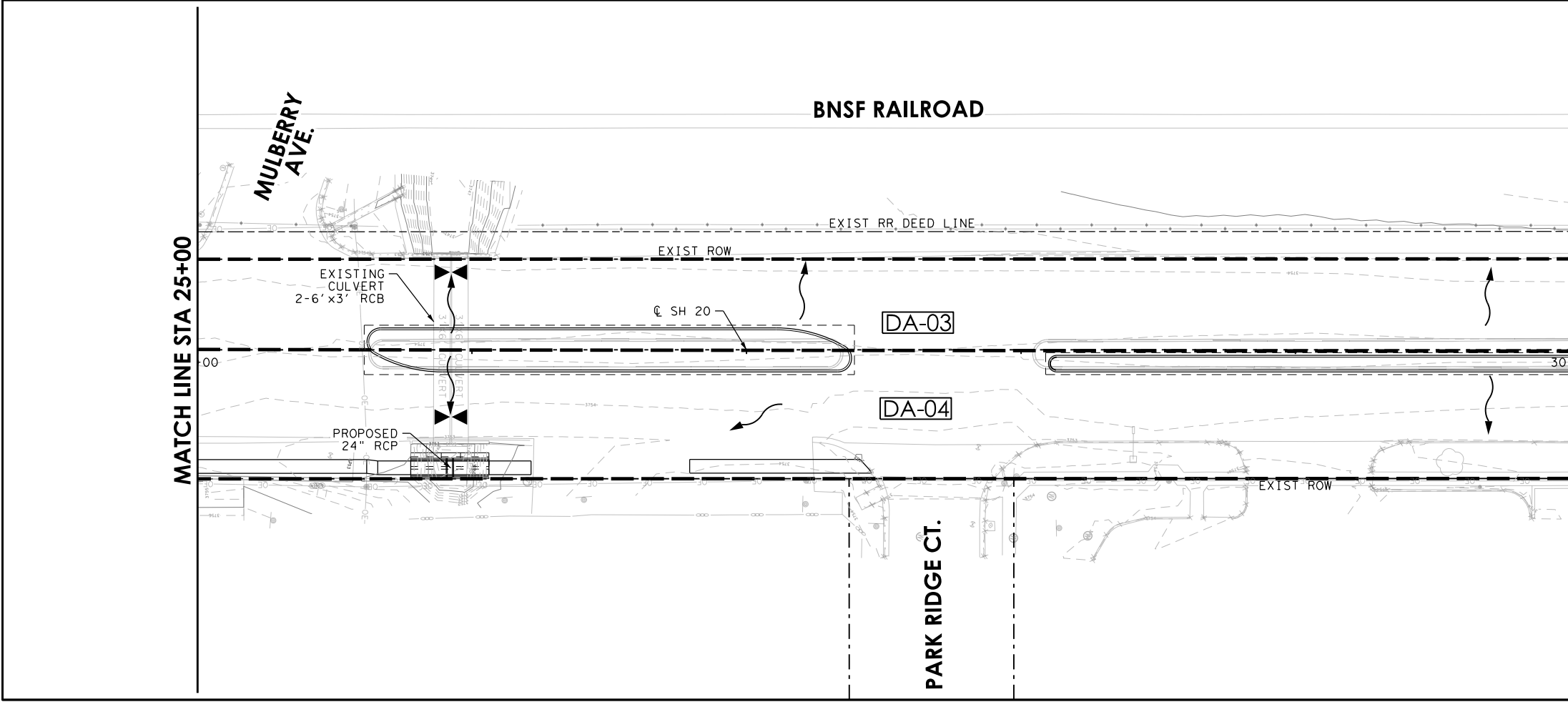
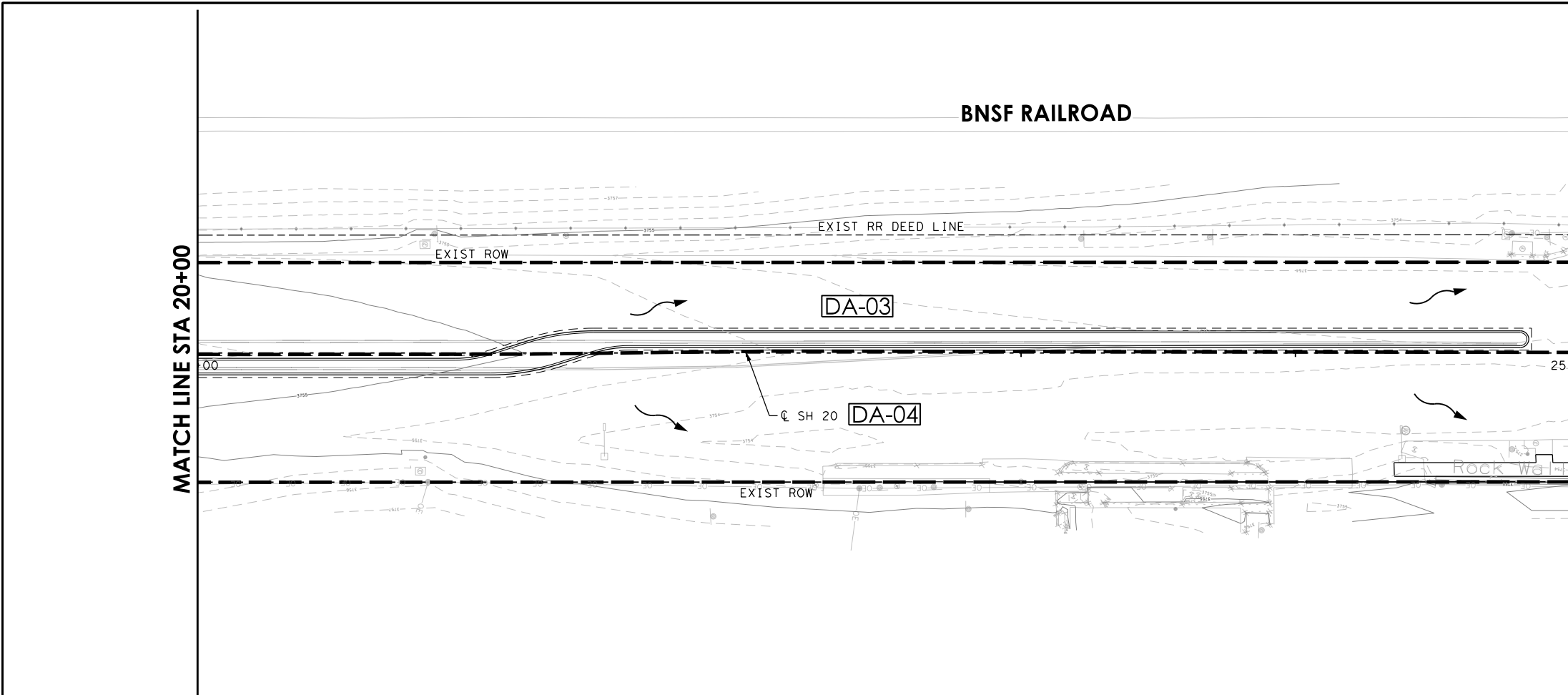
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SH 20
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 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 10+00 TO STA 20+00

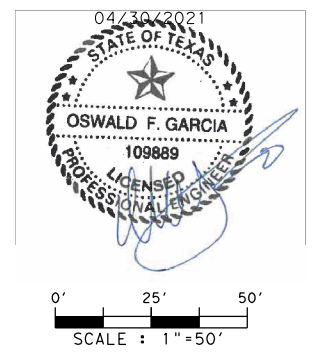
SHEET 2 OF 16

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DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	177

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- LEGEND
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 - DRAINAGE AREA
 - ~> DIRECTION OF FLOW
 - - - EXISTING ROW
 - MAJOR CONTOUR
 - - - MINOR CONTOUR
 - ▲ HIGH POINT
 - ▼ LOW POINT



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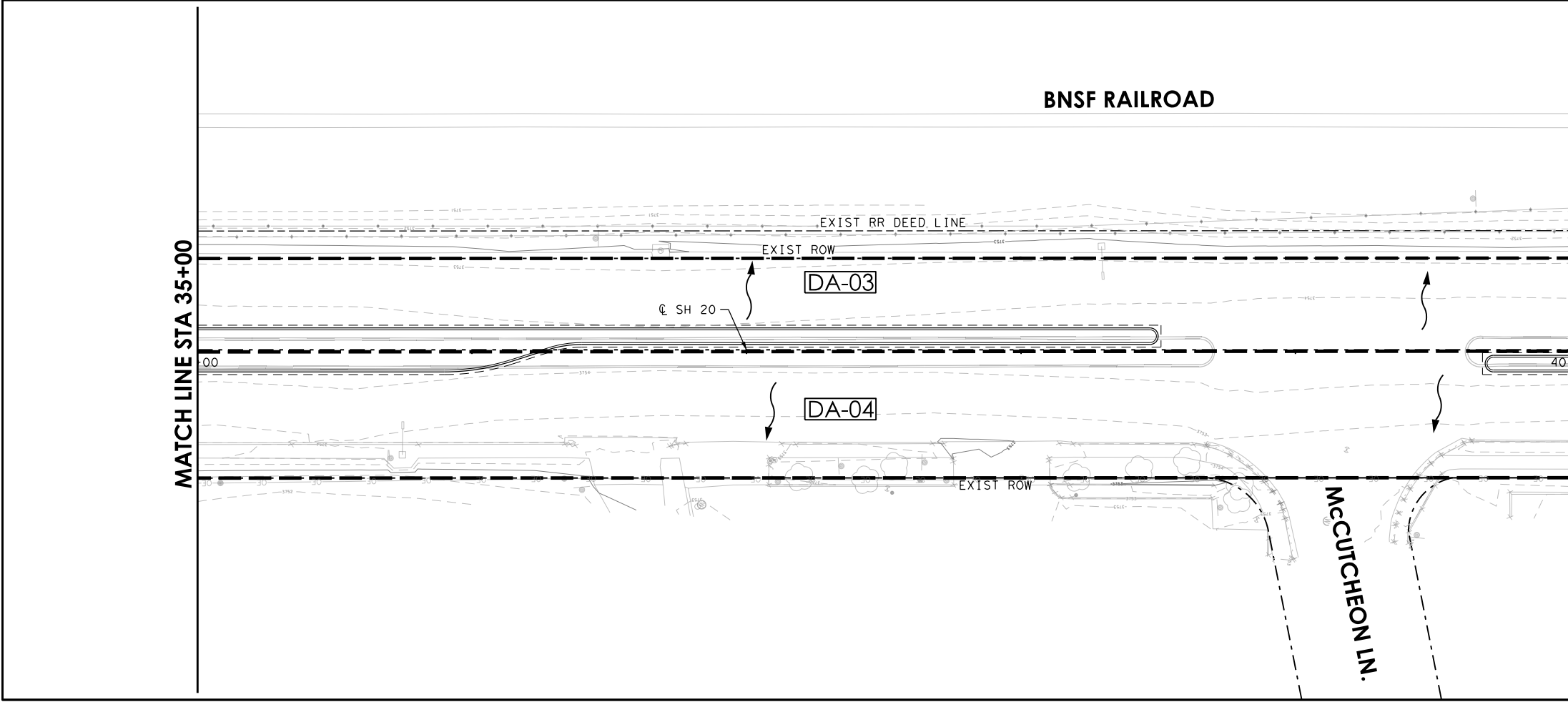
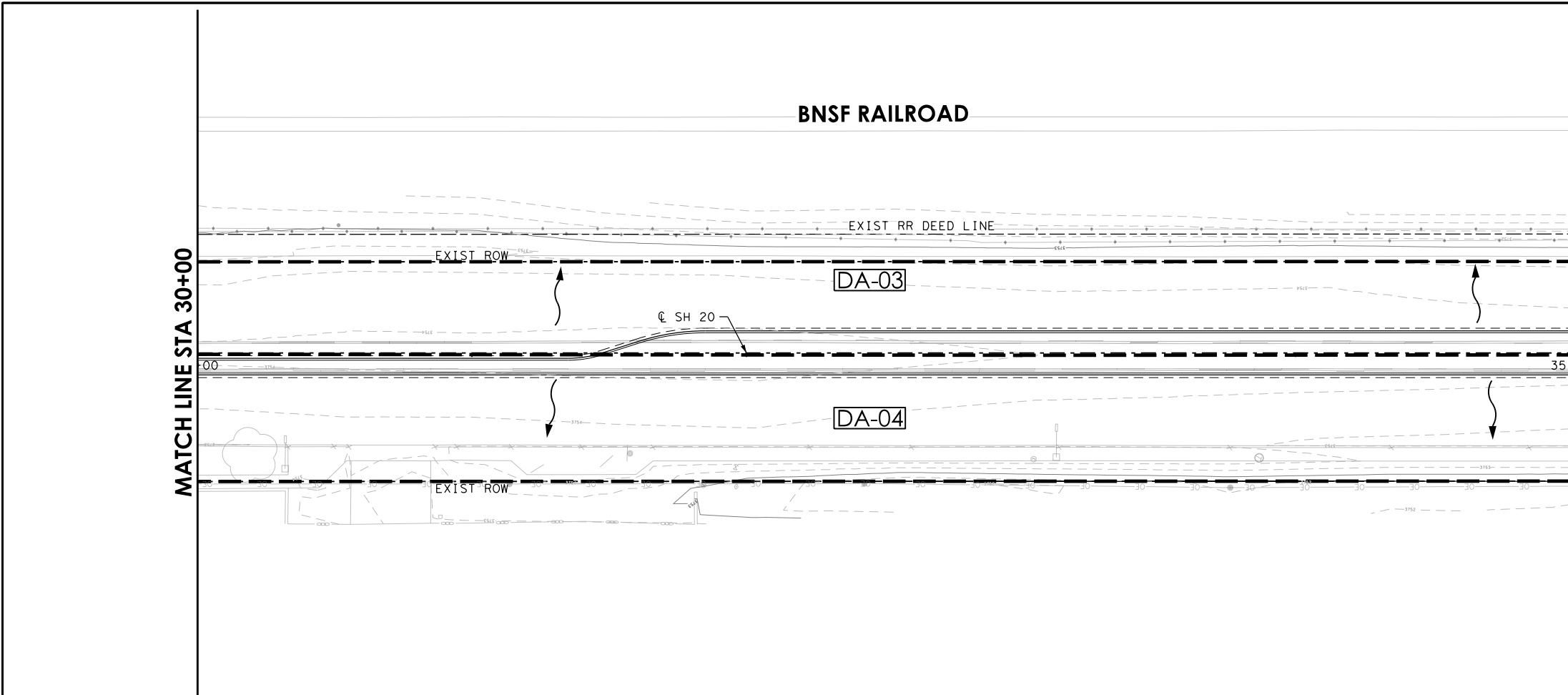


SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 20+00 TO STA 30+00

SHEET 3 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
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CHECKED:	0001	01	063, ETC.	178

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- LEGEND
- DA-01 DRAINAGE AREA ID
 - DRAINAGE AREA
 - DIRECTION OF FLOW
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04/30/2021

OSWALD F. GARCIA
109889
LICENSED PROFESSIONAL ENGINEER

SCALE : 1" = 50'

MCI Moreno Cardenas Inc.
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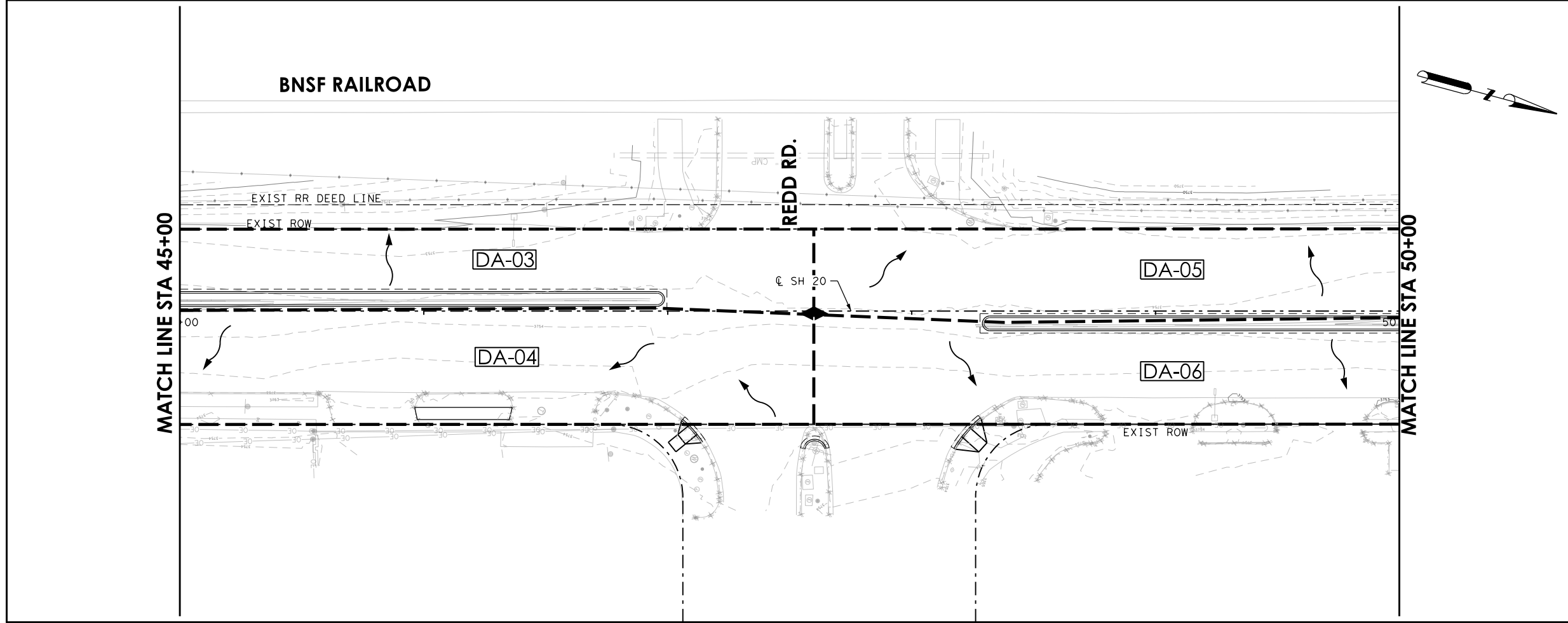
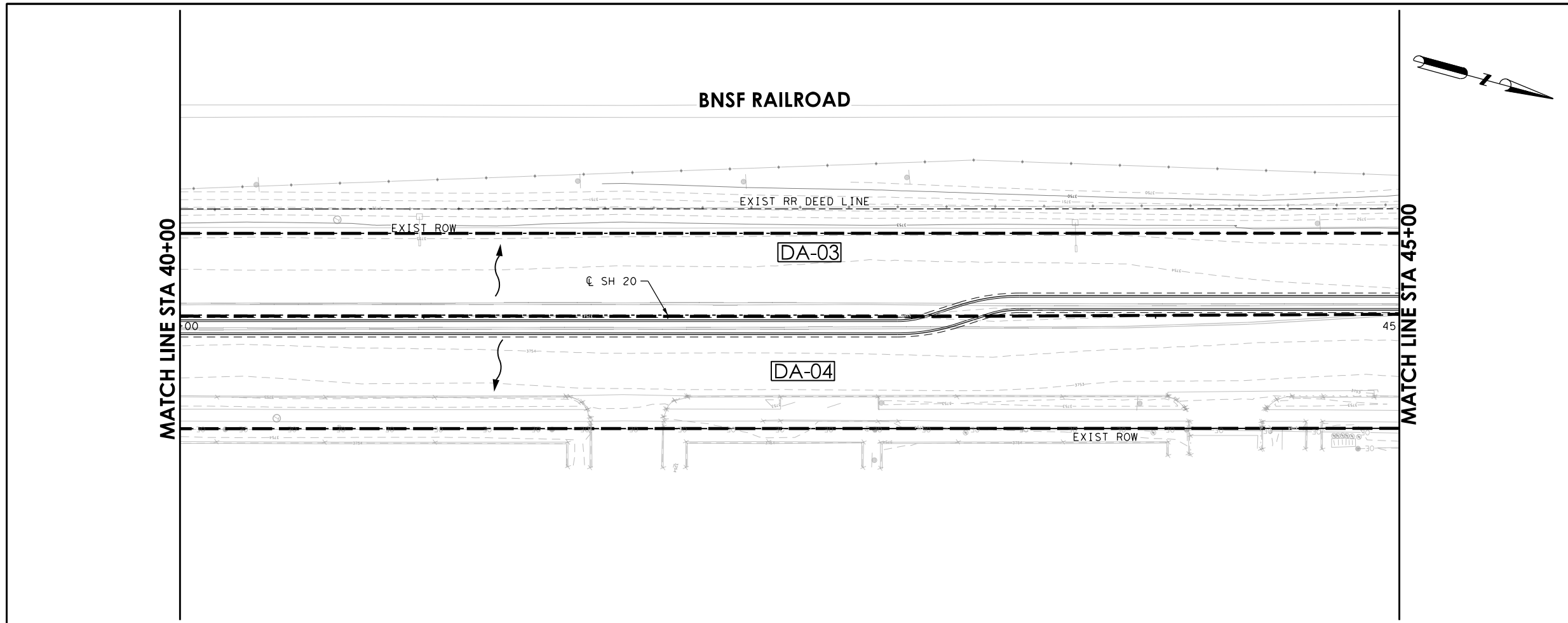
SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS
STA 30+00 TO STA 40+00

SHEET 4 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



04/30/2021
 STATE OF TEXAS

 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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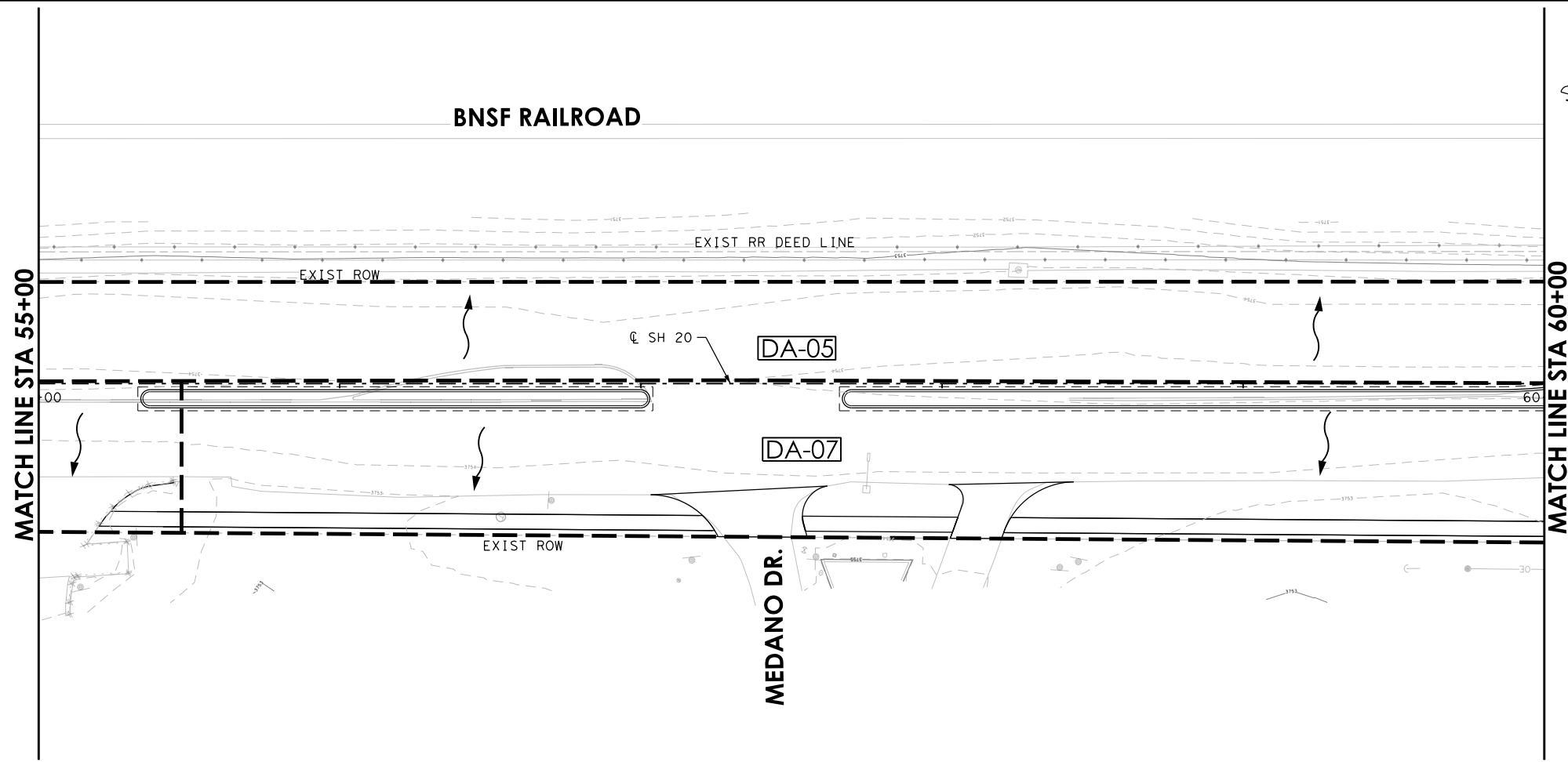
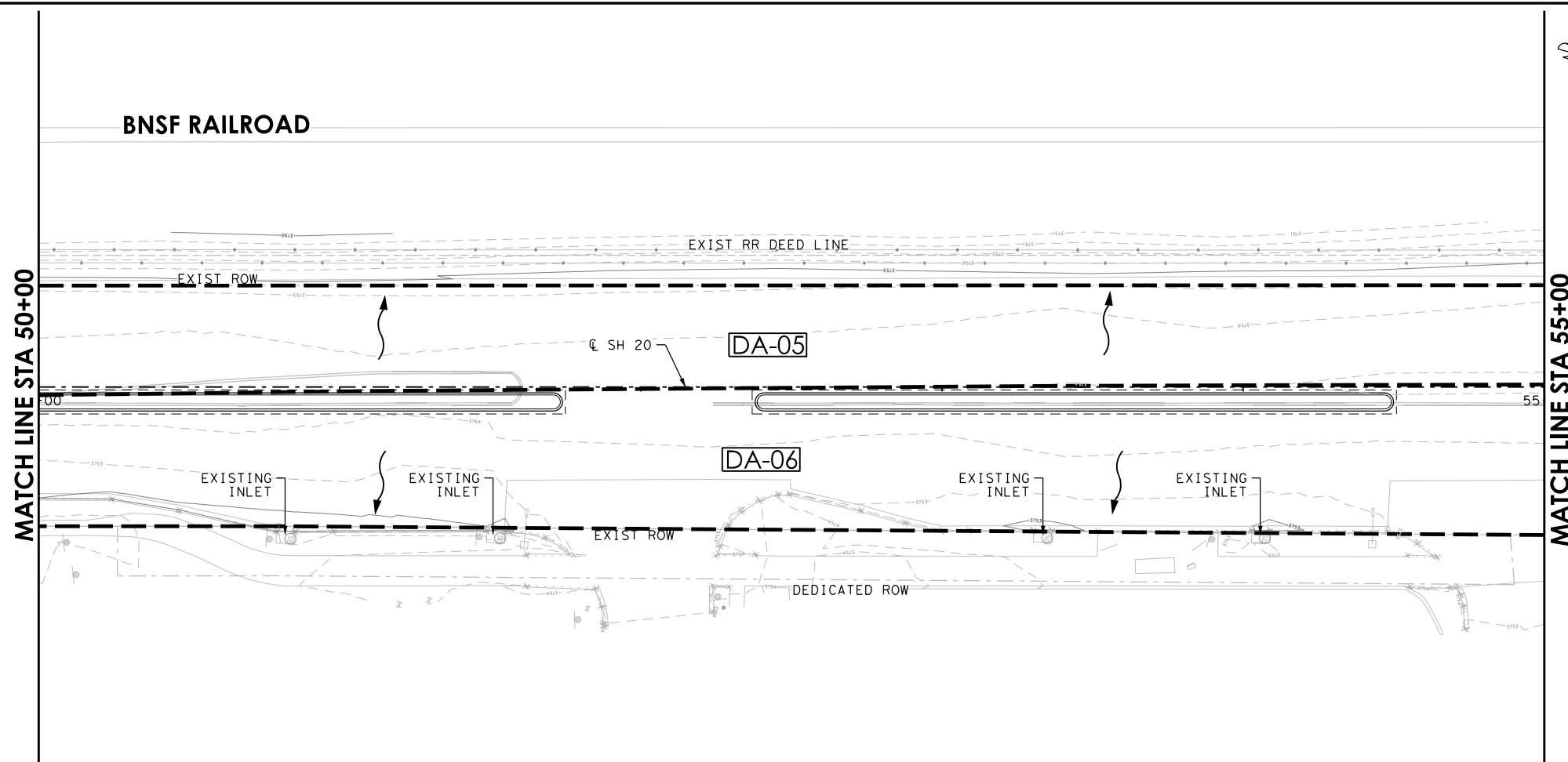
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**SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 40+00 TO STA 50+00**

SHEET 5 OF 16

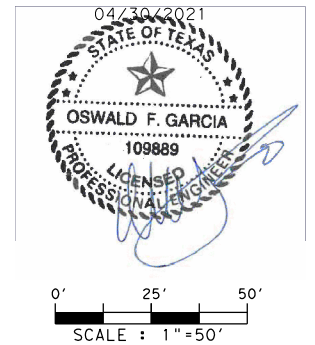
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CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	180

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



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

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

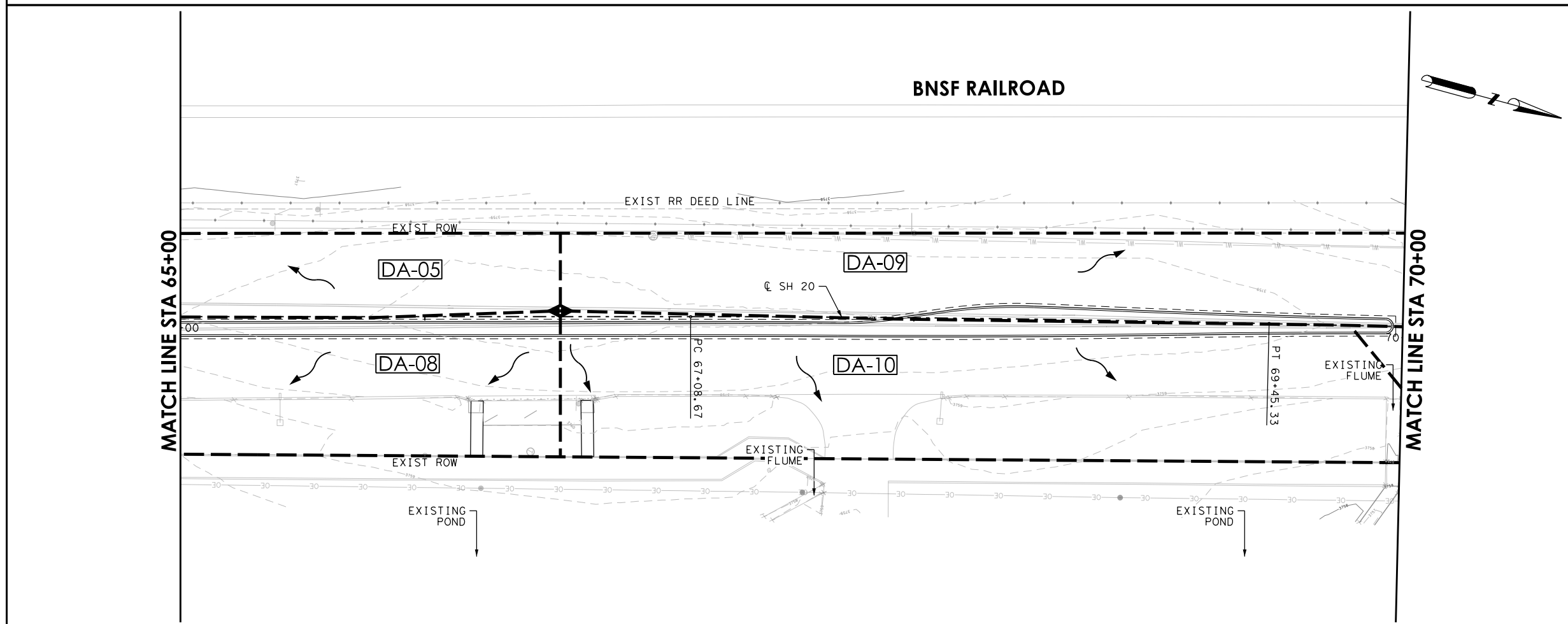
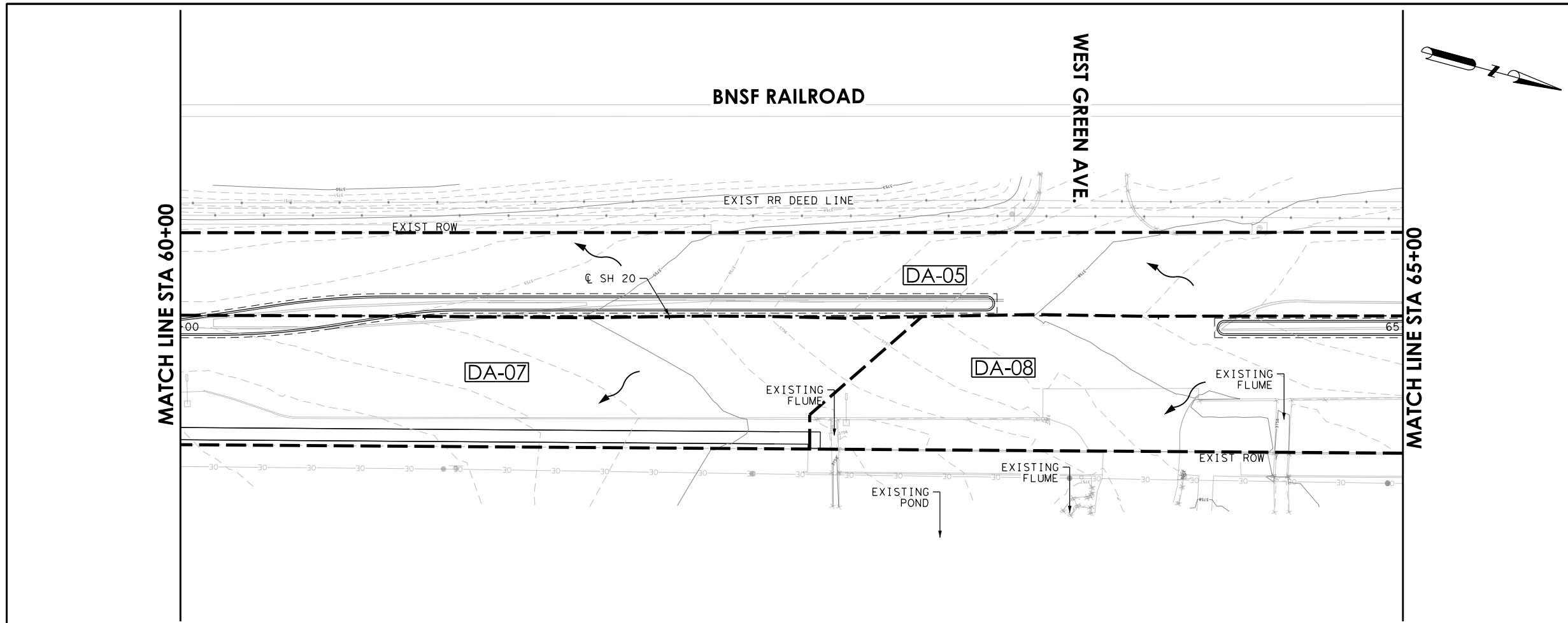
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The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS
STA 50+00 TO STA 60+00

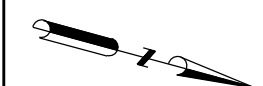
SHEET 6 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	181



LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- ~> DIRECTION OF FLOW
- - - - EXISTING ROW
- MAJOR CONTOUR
- - - - MINOR CONTOUR
- ◆ HIGH POINT
- ◀ LOW POINT



04/30/2021
 STATE OF TEXAS
 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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

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HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

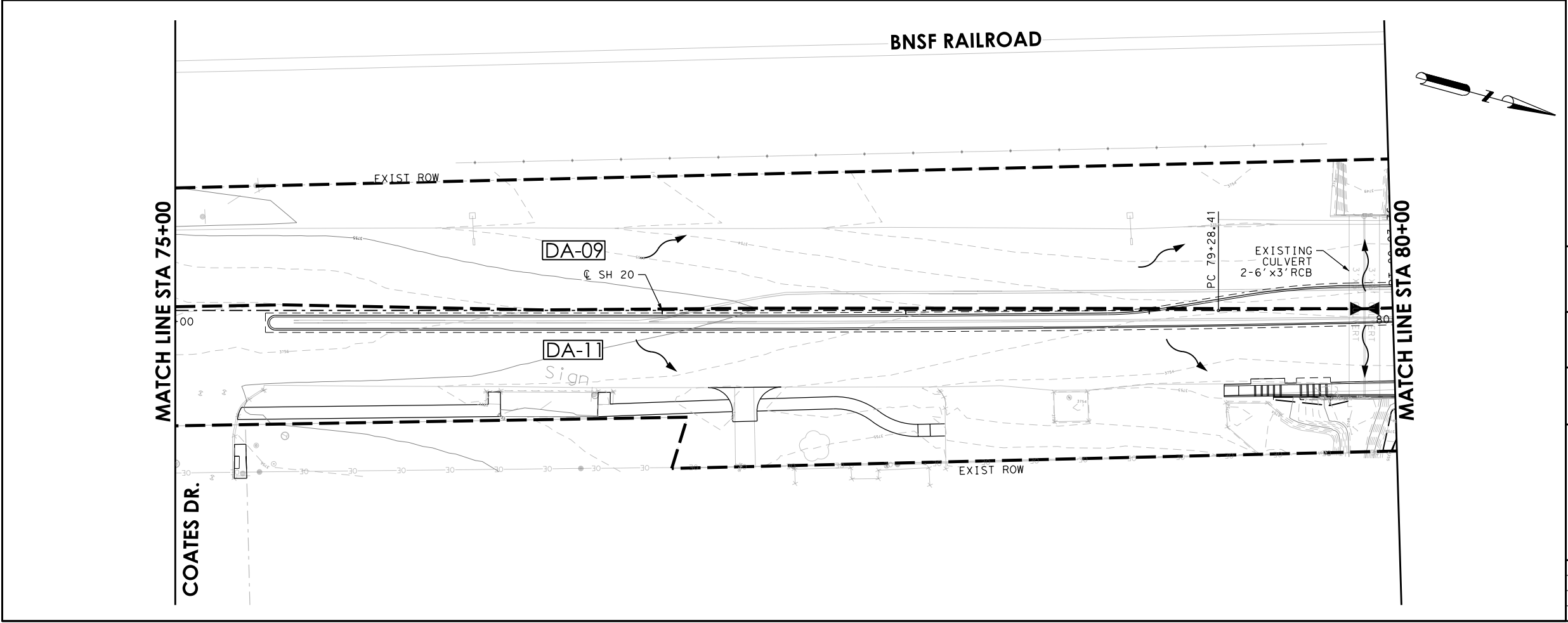
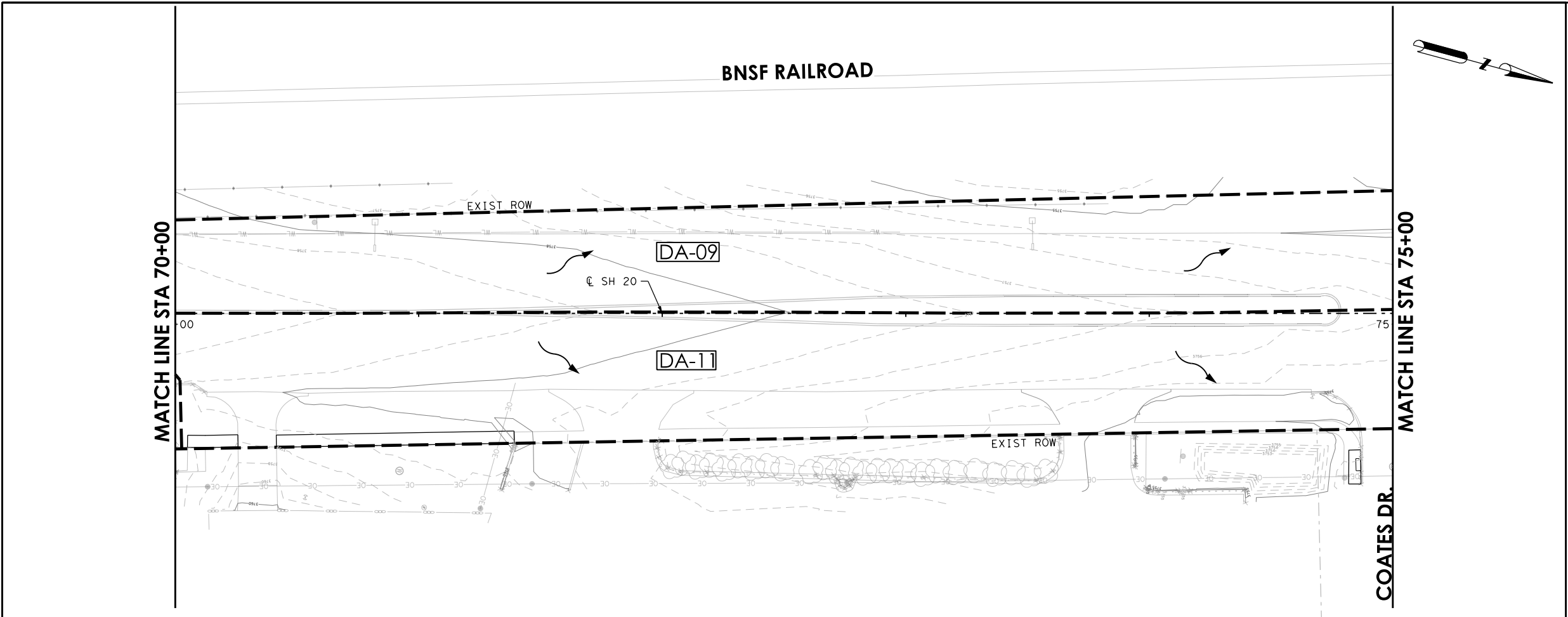
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SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 60+00 TO STA 70+00

SHEET 7 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	182

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT

04/30/2021
 STATE OF TEXAS

 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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

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 Infrastructure Solutions
 Firm Registration Number 420

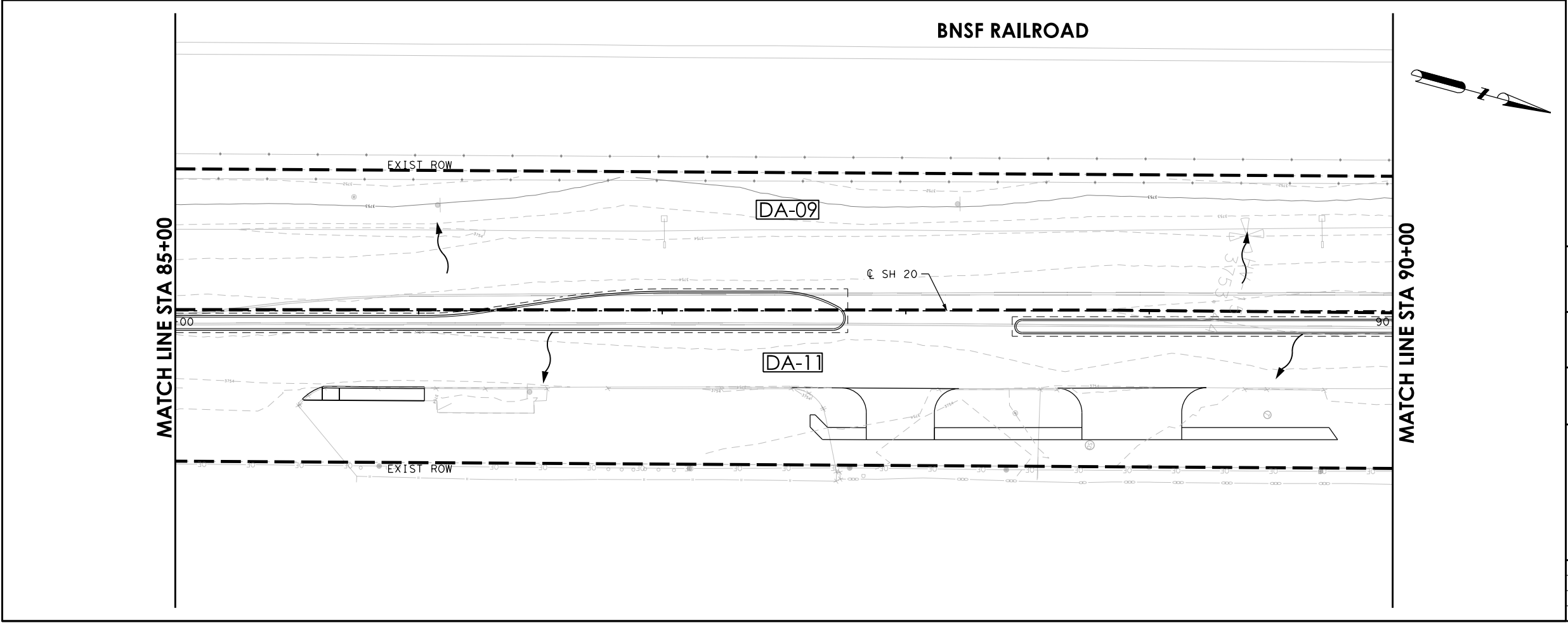
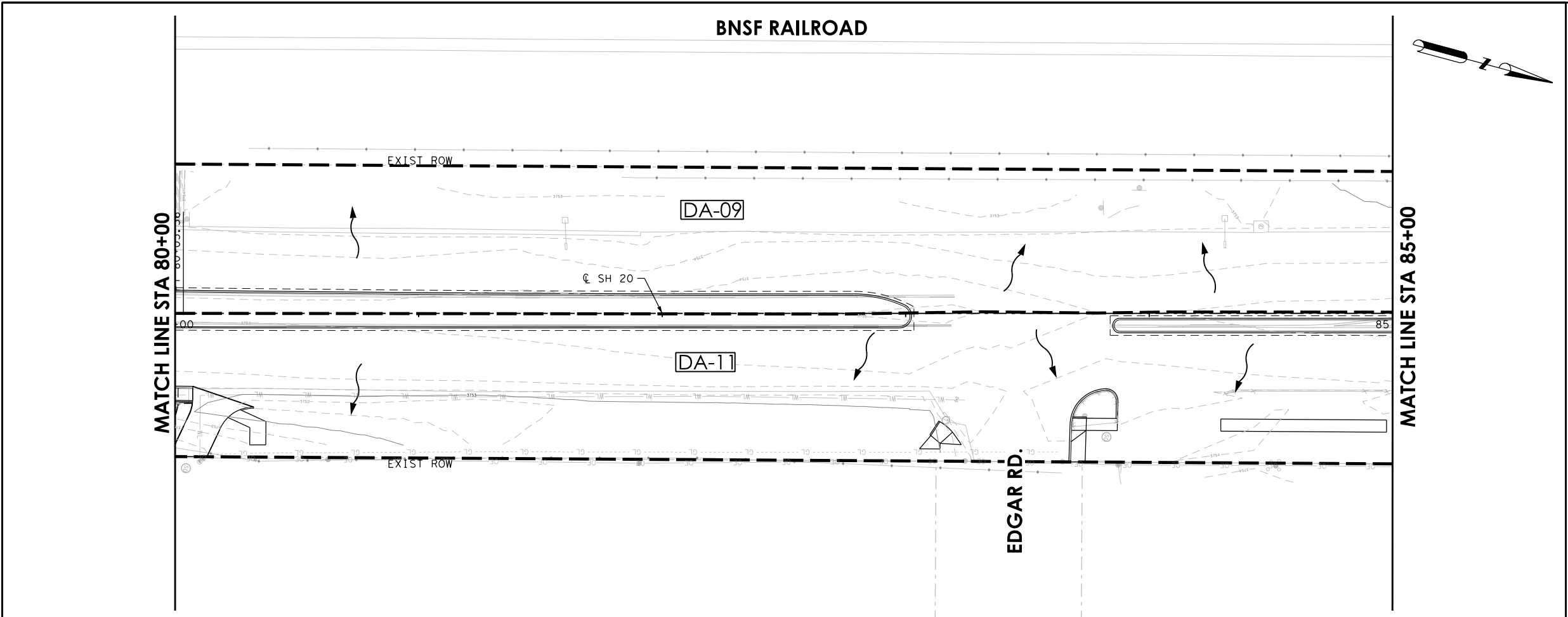
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**SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 70+00 TO STA 80+00**

SHEET 8 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	183

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- LEGEND**
- DA-01 DRAINAGE AREA ID
 - DRAINAGE AREA
 - DIRECTION OF FLOW
 - - - - EXISTING ROW
 - MAJOR CONTOUR
 - - - - MINOR CONTOUR
 - ▲ HIGH POINT
 - ▼ LOW POINT

04/30/2021
 STATE OF TEXAS
 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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

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 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

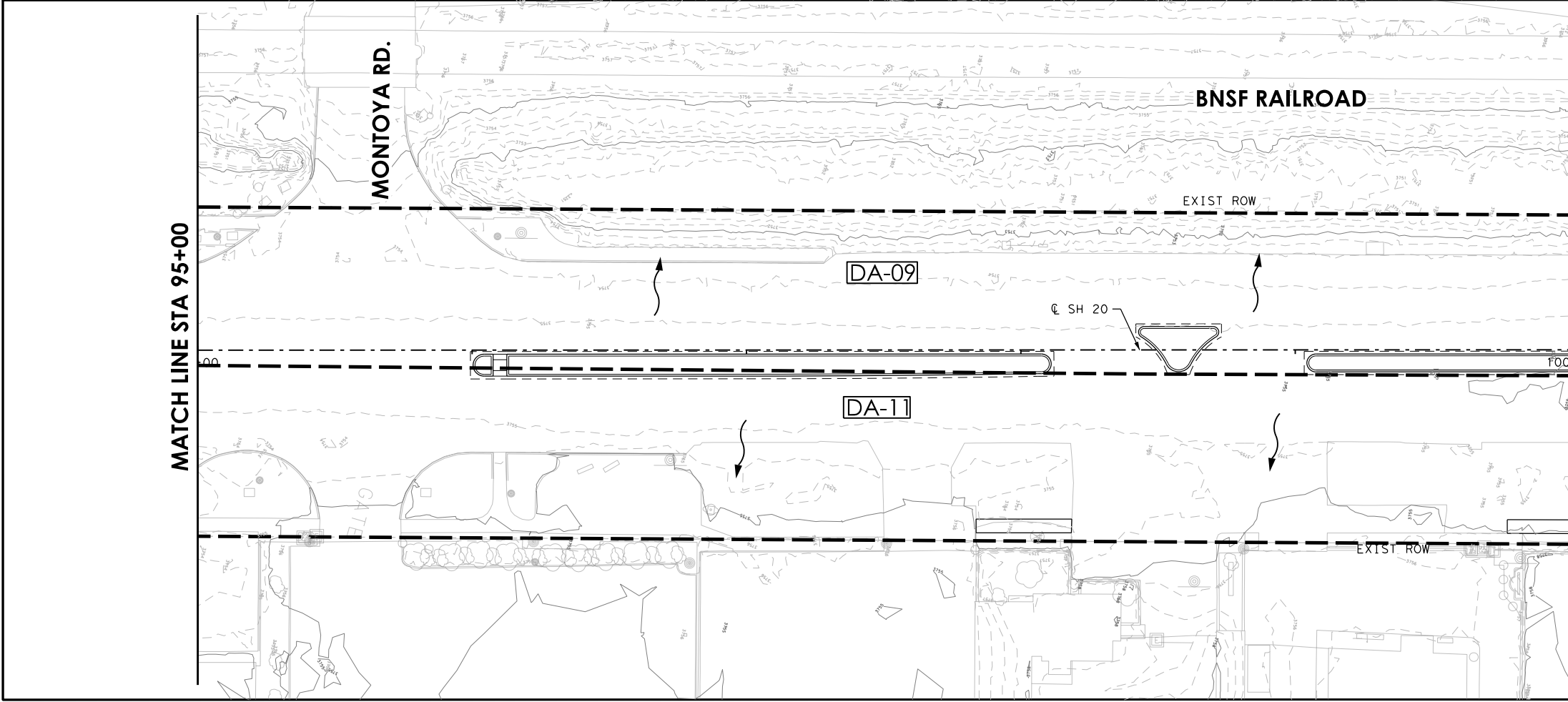
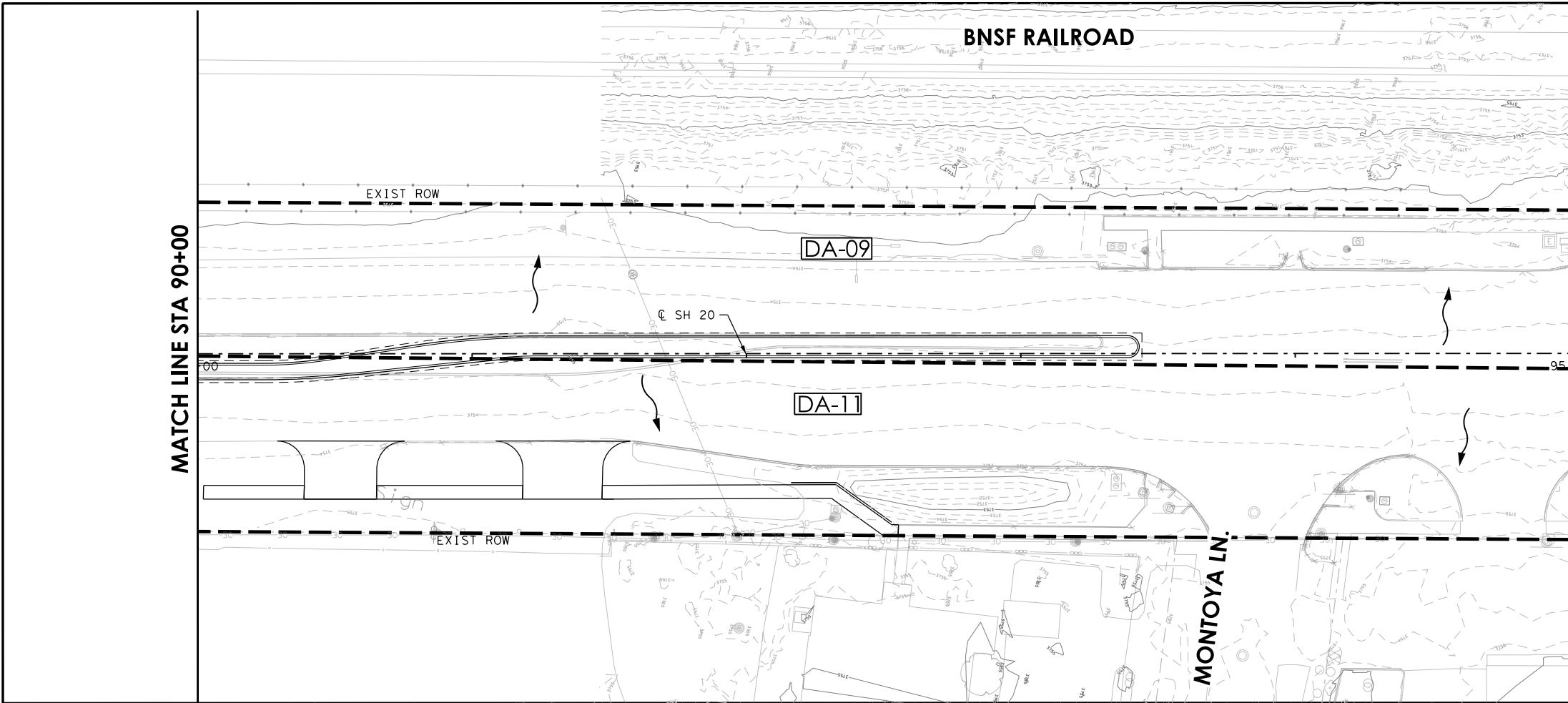
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**SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 80+00 TO STA 90+00**

SHEET 9 OF 16

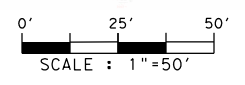
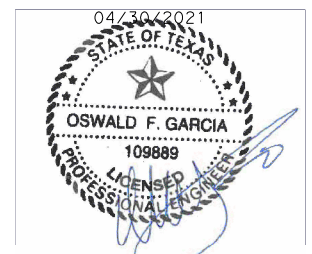
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CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	184

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



MCI Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
 TBPE Firm Registration No. F-00054

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 Infrastructure Solutions
 Firm Registration Number 420



SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 90+00 TO STA 100+00

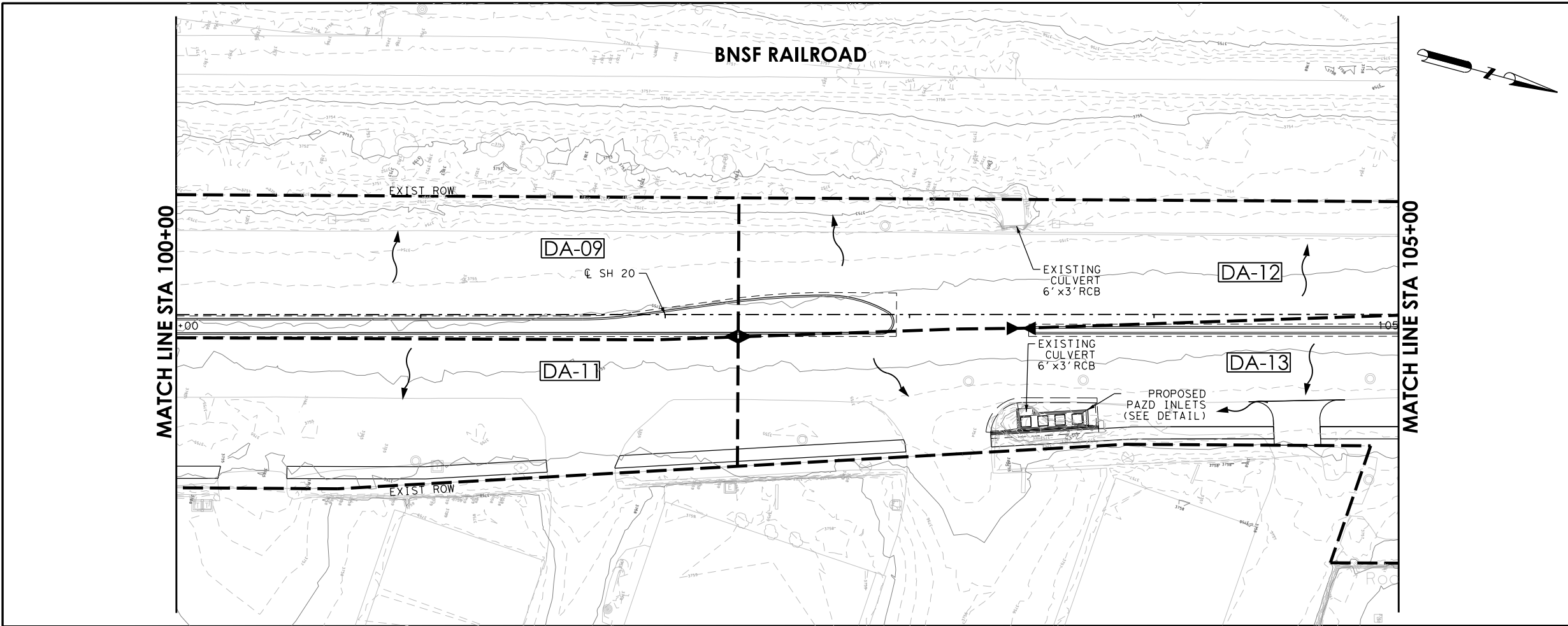
SHEET 10 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
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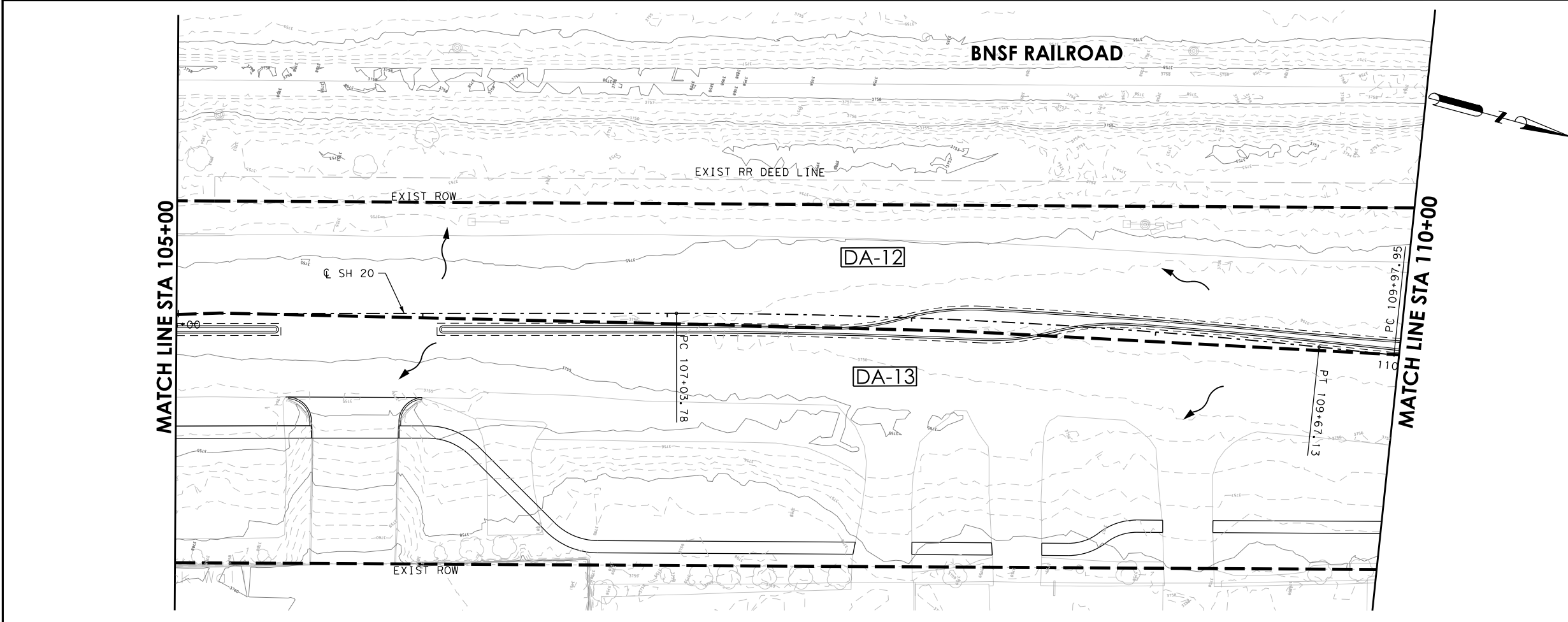
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- LEGEND**
- DA-01 DRAINAGE AREA ID
 - DRAINAGE AREA
 - DIRECTION OF FLOW
 - EXISTING ROW
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - HIGH POINT
 - LOW POINT



04/30/2021

OSWALD F. GARCIA
109889
LICENSED PROFESSIONAL ENGINEER

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

MCI Moreno Cardenas Inc.
Leaders in Project Delivery & Performance

TBPE Firm Registration No. F-00054

HNTB

HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

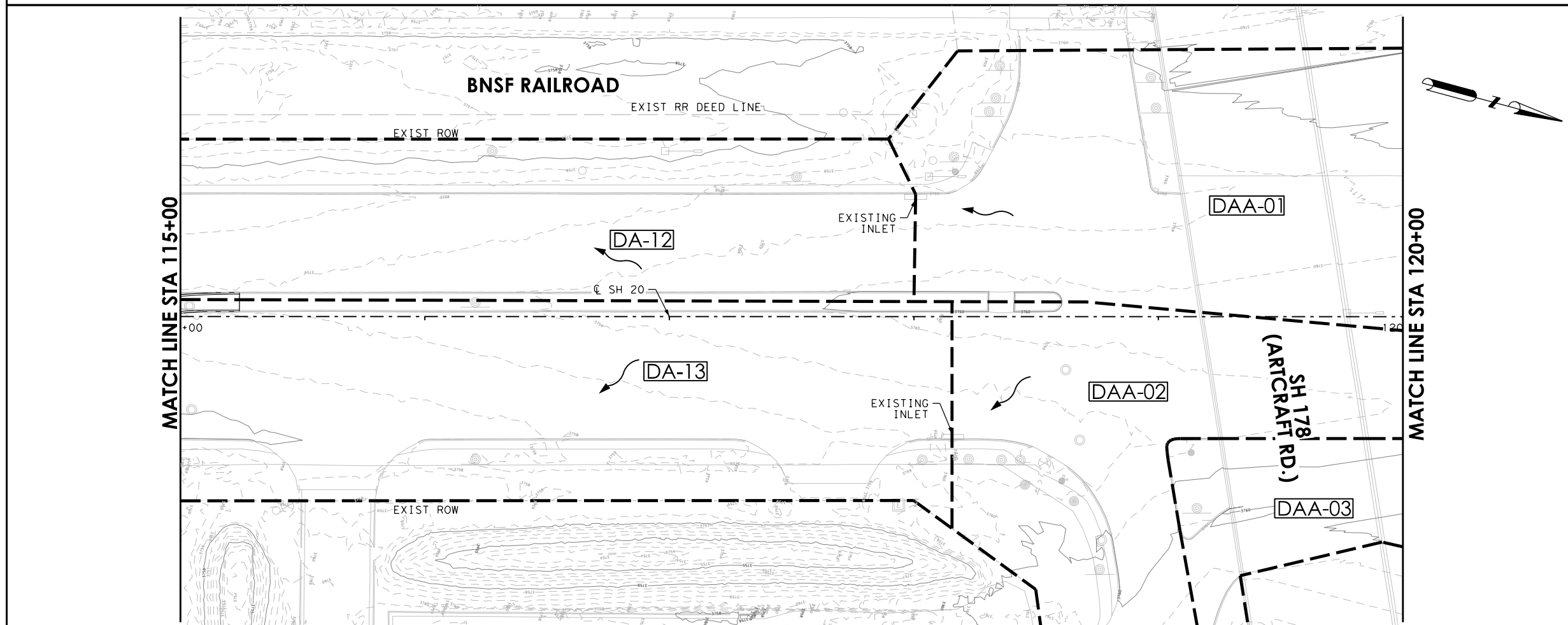
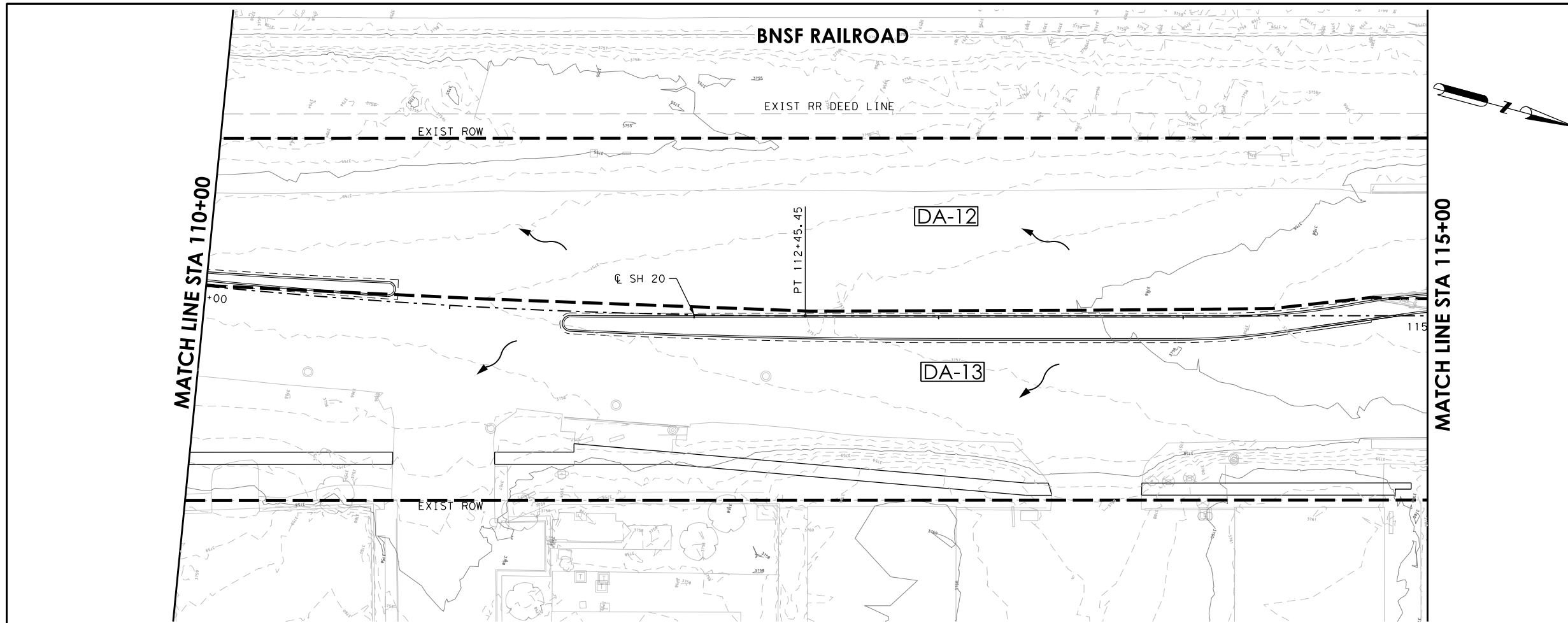
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SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS
STA 100+00 TO STA 110+00

SHEET 11 OF 16

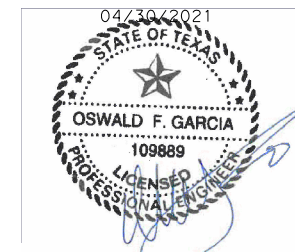
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CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	186

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



MCI Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-00054

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HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420

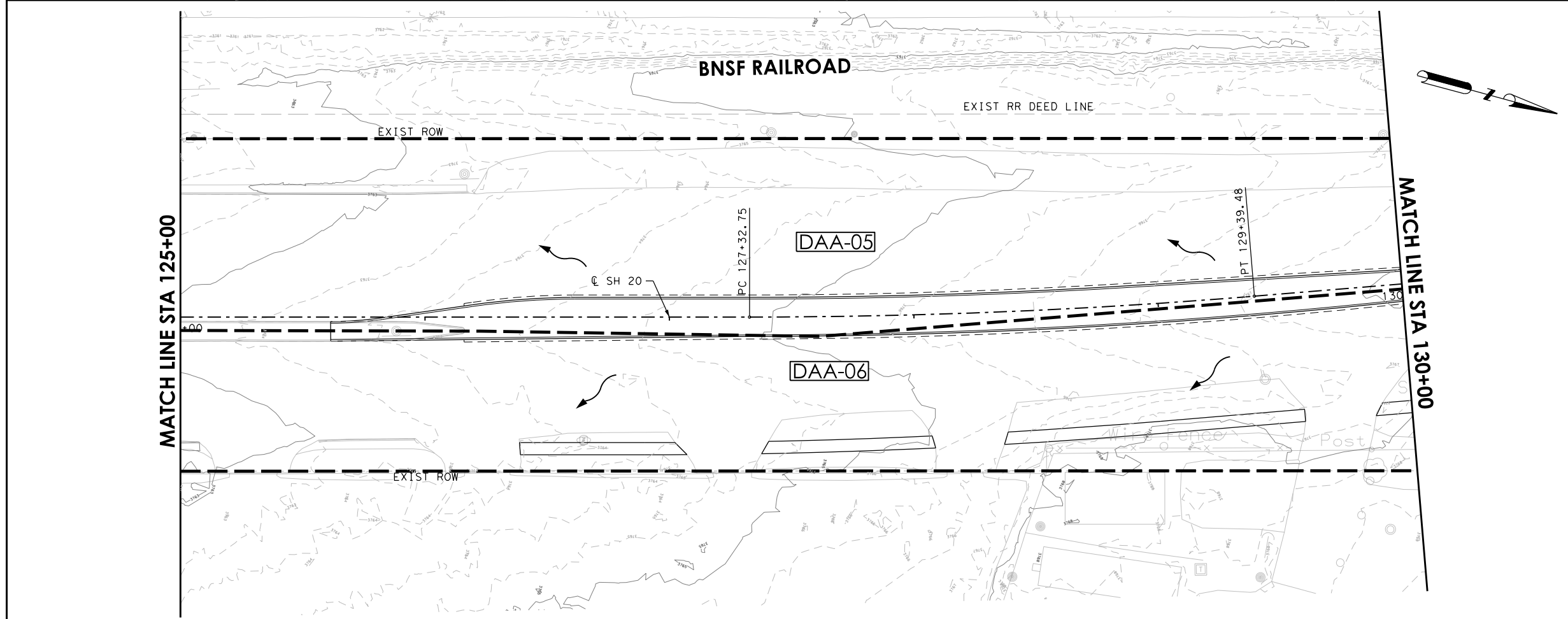
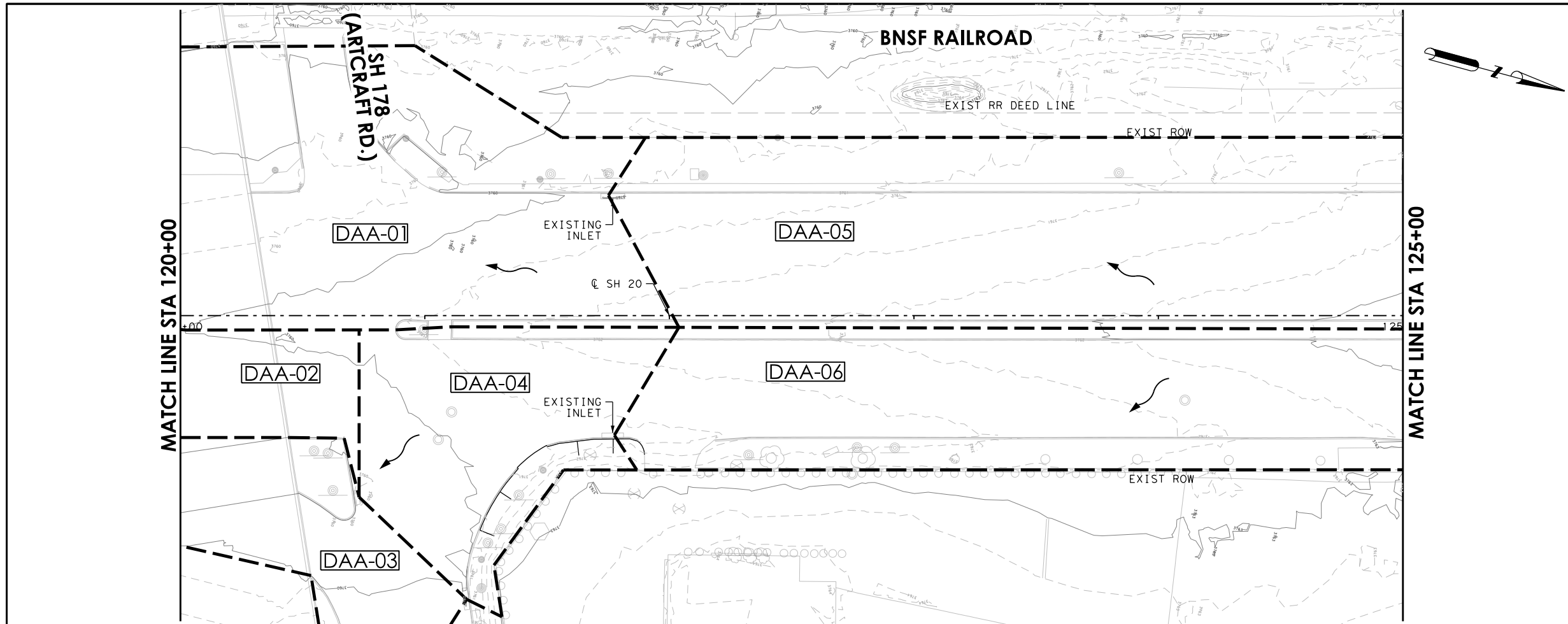


SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 110+00 TO STA 120+00

SHEET 12 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	187

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT



04/30/2021
 STATE OF TEXAS
 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

MCI Moreno Cardenas Inc.
 Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-00054

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HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

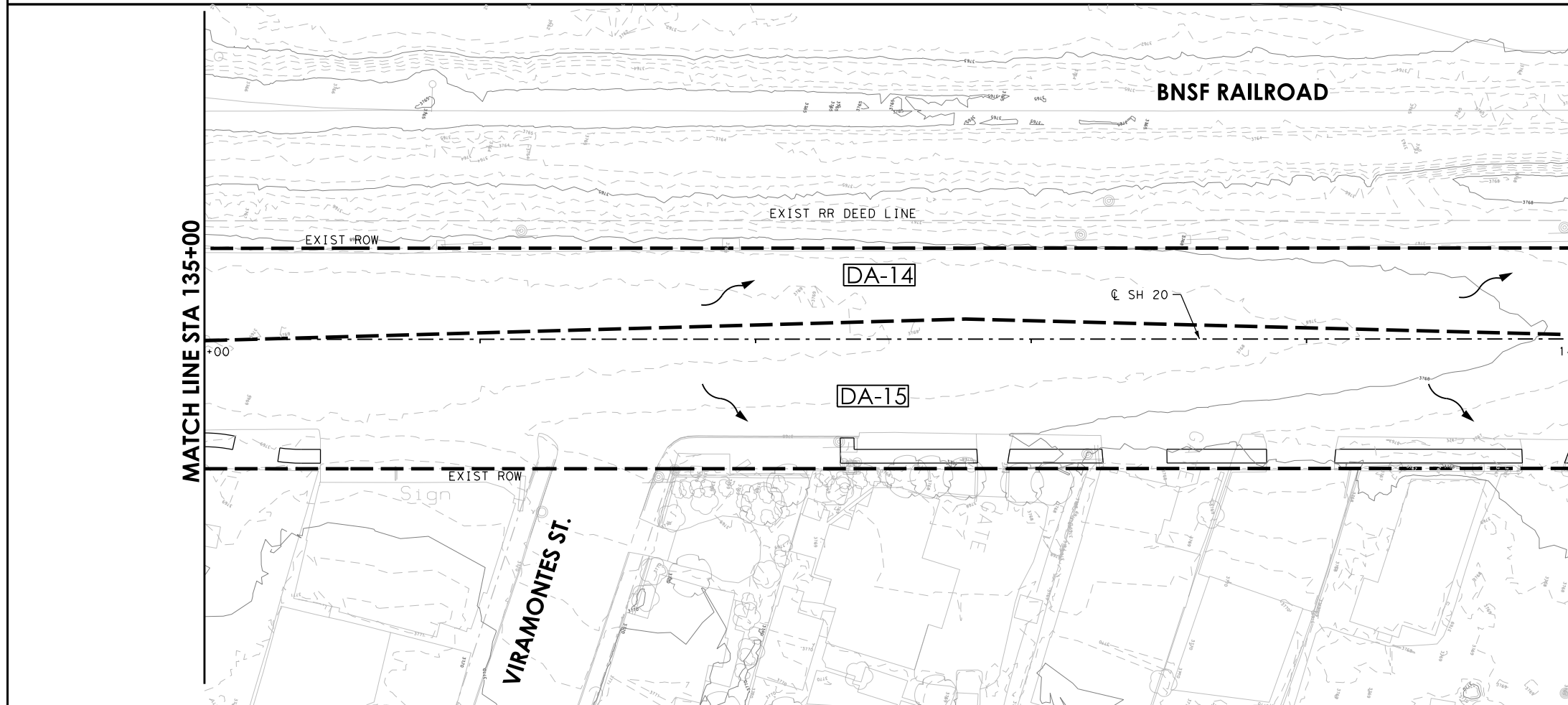
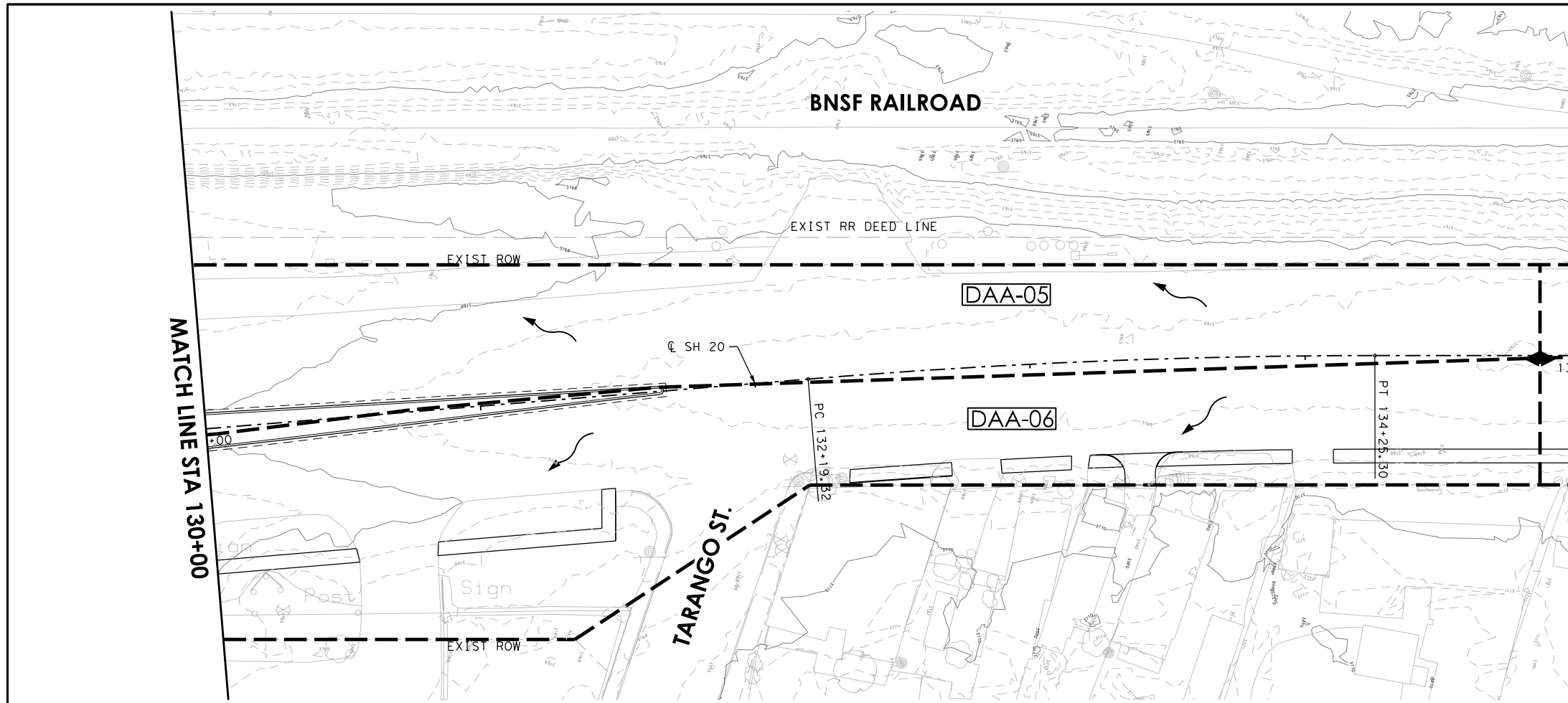
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SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 120+00 TO STA 130+00

SHEET 13 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	188

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LEGEND

- DA-01 DRAINAGE AREA ID
- DRAINAGE AREA
- DIRECTION OF FLOW
- EXISTING ROW
- MAJOR CONTOUR
- MINOR CONTOUR
- HIGH POINT
- LOW POINT

04/30/2021
 STATE OF TEXAS

 OSWALD F. GARCIA
 109889
 LICENSED PROFESSIONAL ENGINEER

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

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

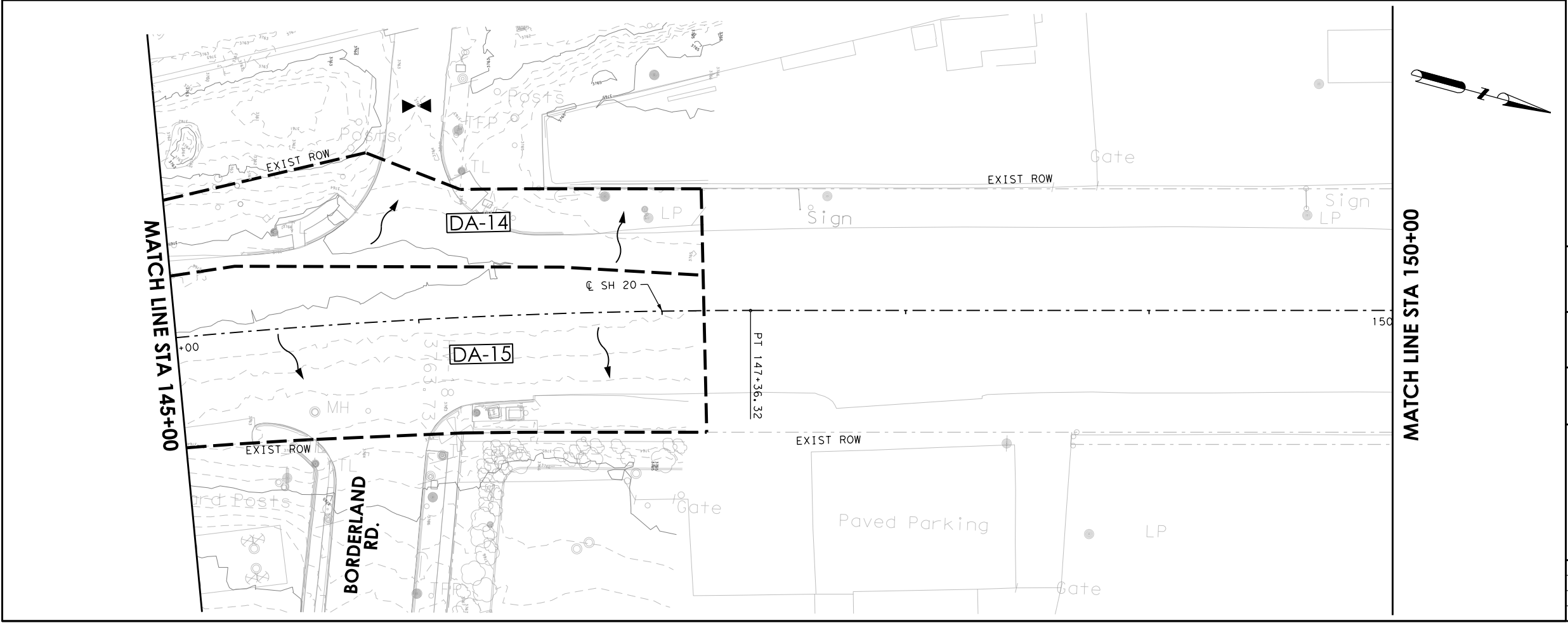
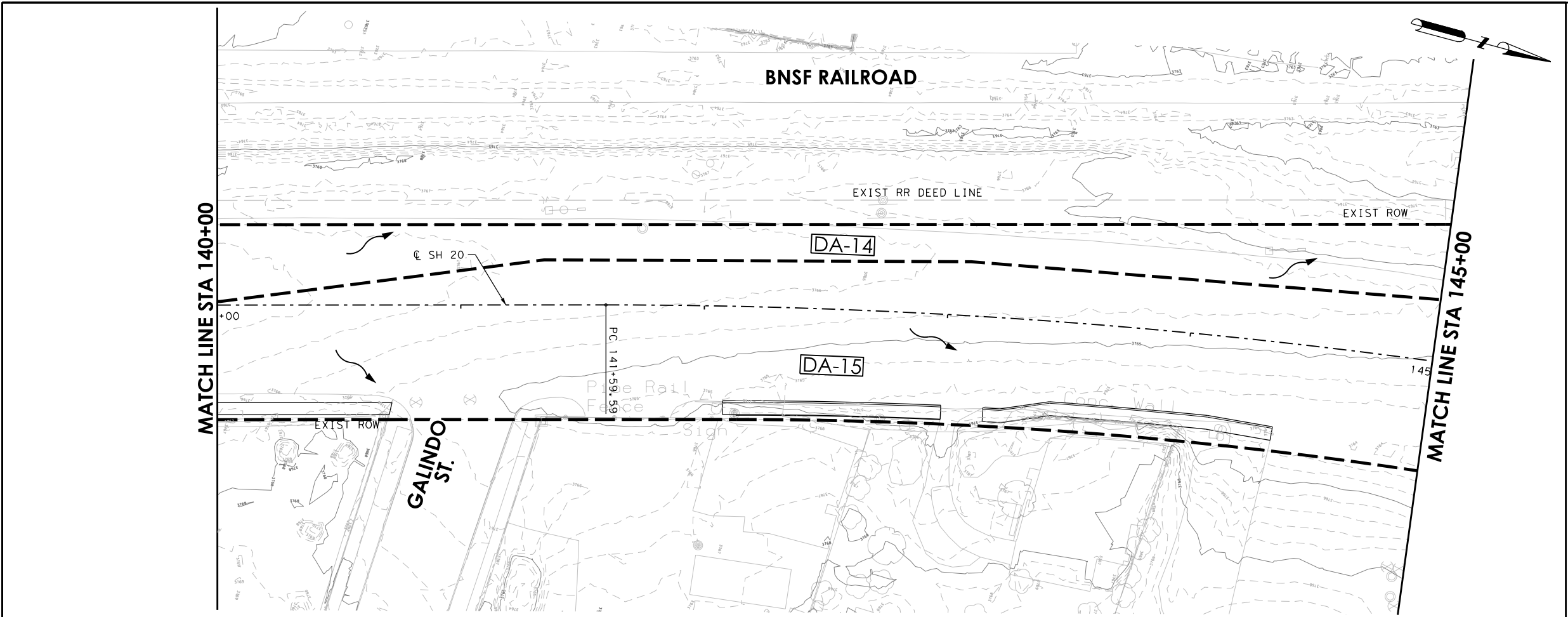
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 Infrastructure Solutions
 Firm Registration Number 420

Texas Department of Transportation

SH 20
 DONIPHAN DR.
 INTERIOR DRAINAGE
 AREA LAYOUTS
 STA 130+00 TO STA 140+00

SHEET 14 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	189



- LEGEND**
- DA-01 DRAINAGE AREA ID
 - DRAINAGE AREA
 - DIRECTION OF FLOW
 - EXISTING ROW
 - MAJOR CONTOUR
 - MINOR CONTOUR
 - HIGH POINT
 - LOW POINT

04/30/2021

OSWALD F. GARCIA
109889
LICENSED PROFESSIONAL ENGINEER

0' 25' 50'

SCALE : 1"=50'

MCI Moreno Cardenas Inc.
Leaders in Project Delivery & Performance

TBPE Firm Registration No. F-000554

HNTB

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The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

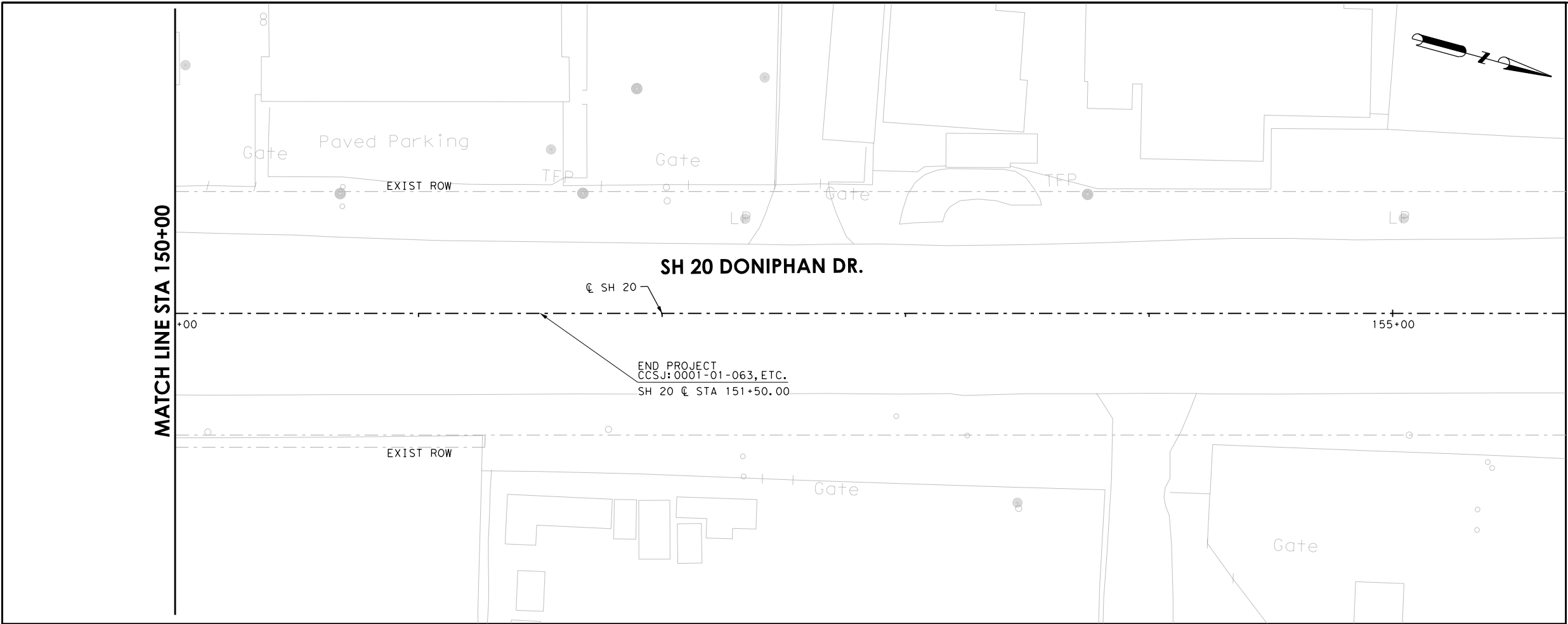
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SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS
STA 140+00 TO STA 150+00

SHEET 15 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	190

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- LEGEND**
- DA-01 DRAINAGE AREA ID
 - DRAINAGE AREA
 - ~> DIRECTION OF FLOW
 - - - EXISTING ROW
 - MAJOR CONTOUR
 - - - MINOR CONTOUR
 - ◀▶ HIGH POINT
 - ◀▶ LOW POINT

MATCH LINE STA 150+00

SH 20 DONIPHAN DR.

END PROJECT
CCSJ: 0001-01-063, ETC.
SH 20 CL STA 151+50.00

04/30/2021

0' 25' 50'

SCALE : 1" = 50'

MCI Moreno Cardenas Inc.
Leaders in Project Delivery & Performance

TBPE Firm
Registration
No. F-000554

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The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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**SH 20
DONIPHAN DR.
INTERIOR DRAINAGE
AREA LAYOUTS**

STA 150+00 TO END

SHEET 16 OF 16

DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	191

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HYDROLOGIC METHODOLOGY
 TIME OF CONCENTRATION
 KERBY-KIRPICH METHOD
 $T_c = T_{ov} + T_{ch}$

EQUATION 4-13. CHAPTER 4 SECTION 11 TXDOT HDM 2019

WHERE:
 T_{ov} = OVERLAND FLOW TIME
 T_{ch} = CHANNEL FLOW TIME

$$T_{OV} = K(LXN)^{0.467} S^{-0.235}$$

EQUATION 4-14. CHAPTER 4 SECTION 11 TXDOT HDM 2019

WHERE:
 T_{ov} = OVERLAND FLOW TIME OF CONCENTRATION, IN MINUTES
 K = A UNITS CONVERSION COEFFICIENT, IN WHICH $K = 0.828$ FOR TRADITIONAL UNITS AND $K = 1.44$ FOR SI UNITS
 L = THE OVERLAND-FLOW LENGTH, IN FEET OR METERS AS DICTATED BY K
 N = A DIMENSIONLESS RETARDANCE COEFFICIENT
 S = THE DIMENSIONLESS SLOPE OF TERRAIN CONVEYING THE OVERLANDFLOW

$$T_{ch} = KL^{0.770} S^{-0.385}$$

EQUATION 4-15. CHAPTER 4 SECTION 11 TXDOT HDM 2019

WHERE:
 T_{ch} = THE TIME OF CONCENTRATION, IN MINUTES
 K = A UNITS CONVERSION COEFFICIENT, IN WHICH $K = 0.0078$ FOR TRADITIONAL UNITS AND $K = 0.0195$ FOR SI UNITS
 L = THE CHANNEL FLOW LENGTH, IN FEET OR METERS AS DICTATED BY K
 S = THE DIMENSIONLESS MAIN- CHANNEL SLOPE

RATIONAL METHOD

$$Q = \frac{CIA}{Z}$$

EQUATION 4-20. CHAPTER 4 SECTION 12 TXDOT HDM 2019

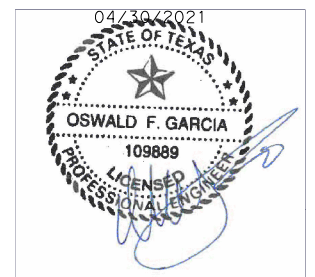
WHERE:
 Q = MAXIMUM RATE OF RUNOFF (CFS OR M³/SEC.)
 C = RUNOFF COEFFICIENT
 I = AVERAGE RAINFALL INTENSITY (IN./HR. OR MM/HR.)
 A = DRAINAGE AREA (AC OR HA)
 Z = CONVERSION FACTOR, 1 FOR ENGLISH, 360 FOR METRIC

INTENSITY OBTAINED FROM NOAA'S PRECIPITATION FREQUENCY DATA SERVER
[HTTPS://HDSC.NWS.NOAA.GOV/HDSC/PFDS/](https://hdsc.nws.noaa.gov/hdsc/pfds/)
 AS PER CHAPTER 4 SECTION 12 TXDOT HDM 2019

DONIPHAN DRAINAGE AREAS						
DRAINAGE AREA ID	AREA (ACRES)	C(EX)	C(PROP)	I	Q (EX) (CFS)	Q (PROP) (CFS)
DA-01	0.79	0.95	0.95	5.19	3.89	3.89
DA-02	1.12	0.91	0.91	4.99	5.09	5.10
DA-03	2.28	0.95	0.95	3.84	8.31	8.31
DA-04	3.17	0.91	0.91	3.83	11.03	11.05
DA-05	1.49	0.95	0.95	4.92	6.97	6.97
DA-06	0.83	0.87	0.87	5.19	3.74	3.74
DA-07	0.88	0.82	0.86	5.19	3.75	3.92
DA-08	0.49	0.79	0.79	5.19	2.02	2.02
DA-09	4.38	0.82	0.82	4.60	16.61	16.61
DA-10	0.45	0.77	0.77	5.19	1.80	1.80
DA-11	4.40	0.77	0.79	5.05	17.06	17.47
DA-12	2.14	0.82	0.82	4.48	7.82	7.82
DA-13	2.97	0.79	0.80	4.49	10.49	10.67
DA-14	0.76	0.86	0.86	5.19	3.40	3.40
DA-15	1.67	0.95	0.95	4.90	7.75	7.75

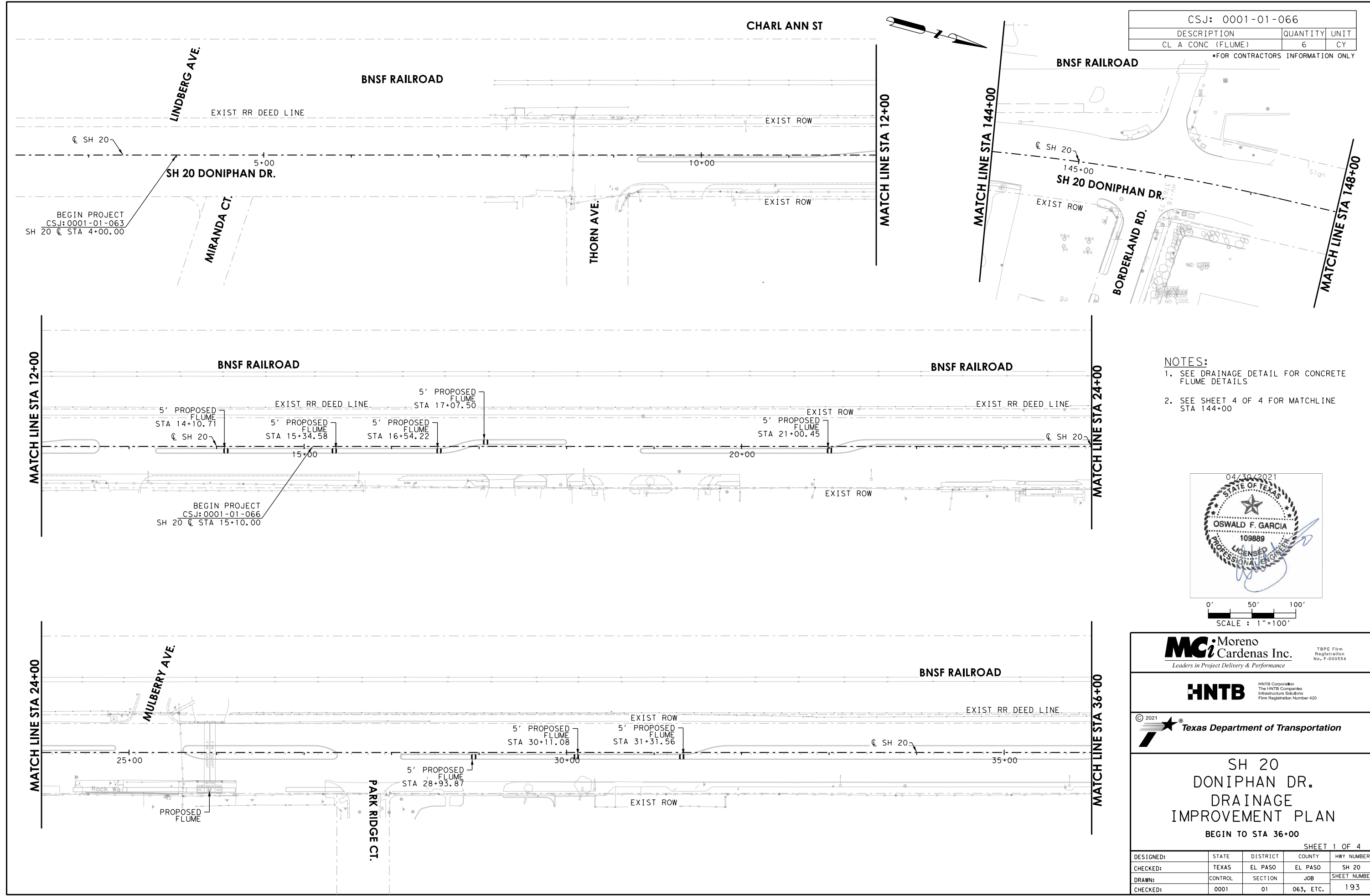
ARTCRAFT DRAINAGE AREAS						
DRAINAGE AREA ID	AREA (ACRES)	C(EX)	C(PROP)	I	Q (EX) (CFS)	Q (PROP) (CFS)
DAA-01	0.93	0.89	0.89	5.19	4.30	4.30
DAA-02	0.50	0.82	0.82	5.19	2.11	2.11
DAA-03	0.30	0.80	0.80	5.19	1.25	1.25
DAA-04	0.21	0.95	0.95	5.19	1.04	1.04
DAA-05	1.91	0.84	0.84	4.66	7.51	7.51
DAA-06	1.74	0.85	0.85	4.66	6.89	6.89

NOTE:
 INTENSITY OBTAINED FROM NOAA ATLAS 14 POINT PRECIPITATION FREQUENTLY ESTIMATES



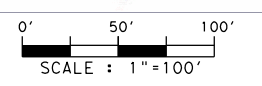
SH 20 DONIPHAN DR. DRAINAGE AREA CALCULATIONS				
DESIGNED:	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	0001	01	063, ETC.	192

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CSJ: 0001-01-066		
DESCRIPTION	QUANTITY	UNIT
CL A CONC (FLUME)	6	CY
*FOR CONTRACTORS INFORMATION ONLY		

- NOTES:**
1. SEE DRAINAGE DETAIL FOR CONCRETE FLUME DETAILS
 2. SEE SHEET 4 OF 4 FOR MATCHLINE STA 144+00



MCI Moreno Cardenas Inc.
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**SH 20 DONIPHAN DR.
 DRAINAGE IMPROVEMENT PLAN
 BEGIN TO STA 36+00**

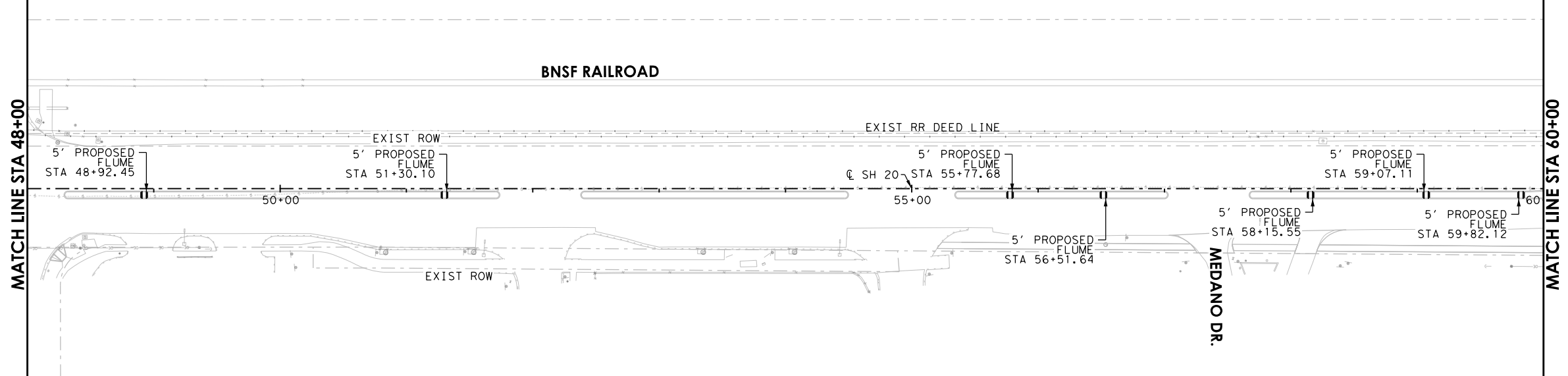
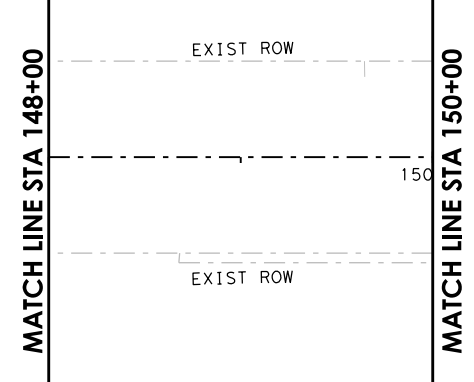
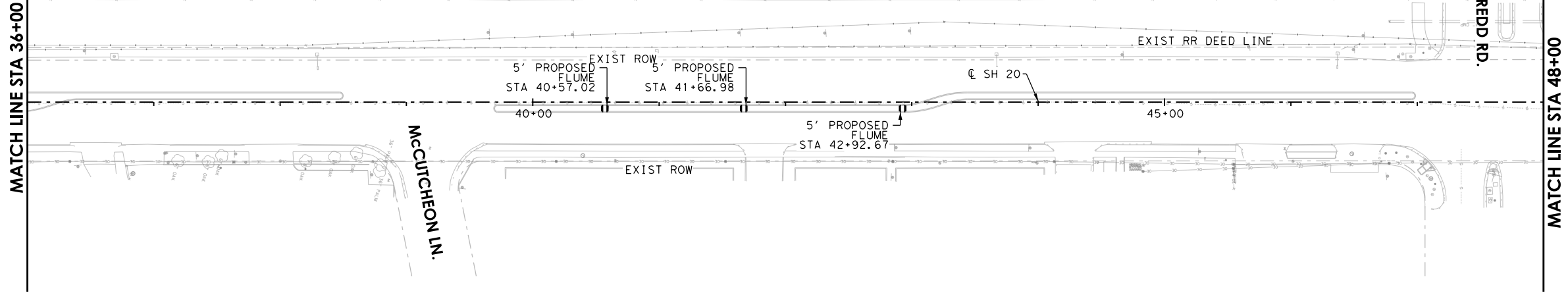
SHEET 1 OF 4

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CHECKED:	0001	01	063, ETC.	193

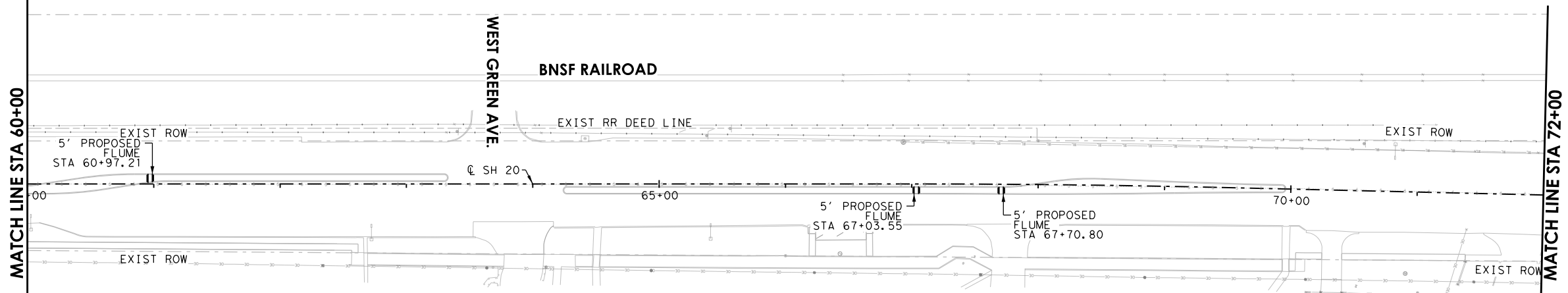
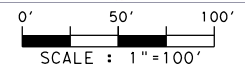
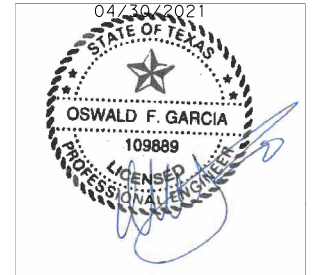
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CSJ: 0001-01-066		
DESCRIPTION	QUANTITY	UNIT
CL A CONC (FLUME)	11	CY
*FOR CONTRACTORS INFORMATION ONLY		



NOTES:
 1. SEE DRAINAGE DETAIL FOR CONCRETE FLUME DETAILS



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**SH 20
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 DRAINAGE
 IMPROVEMENT PLAN
 STA 36+00 TO STA 72+00**

SHEET 2 OF 4

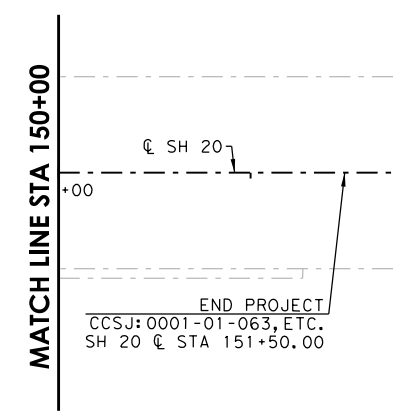
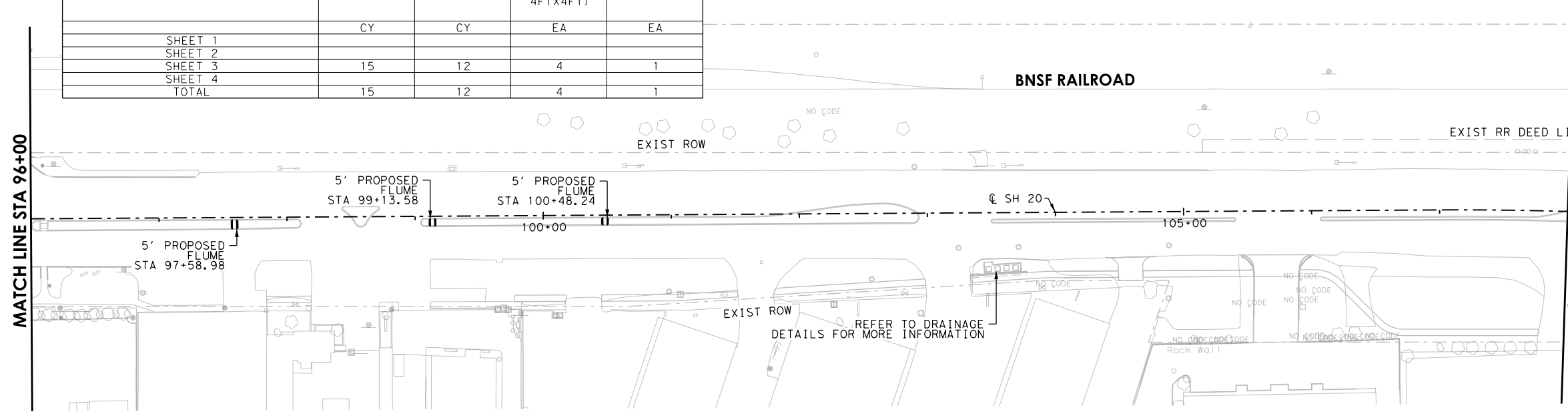
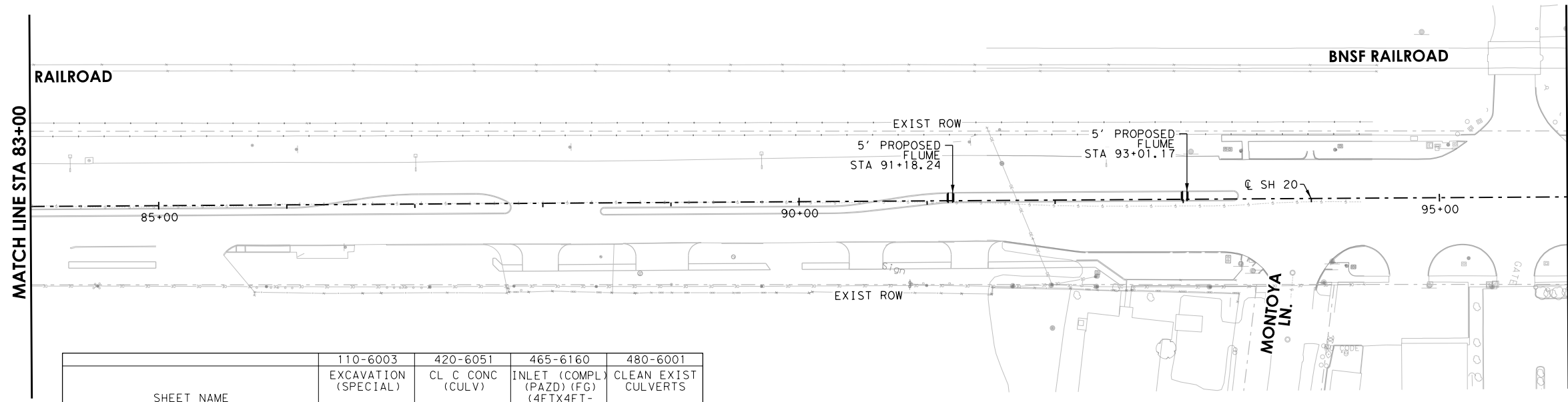
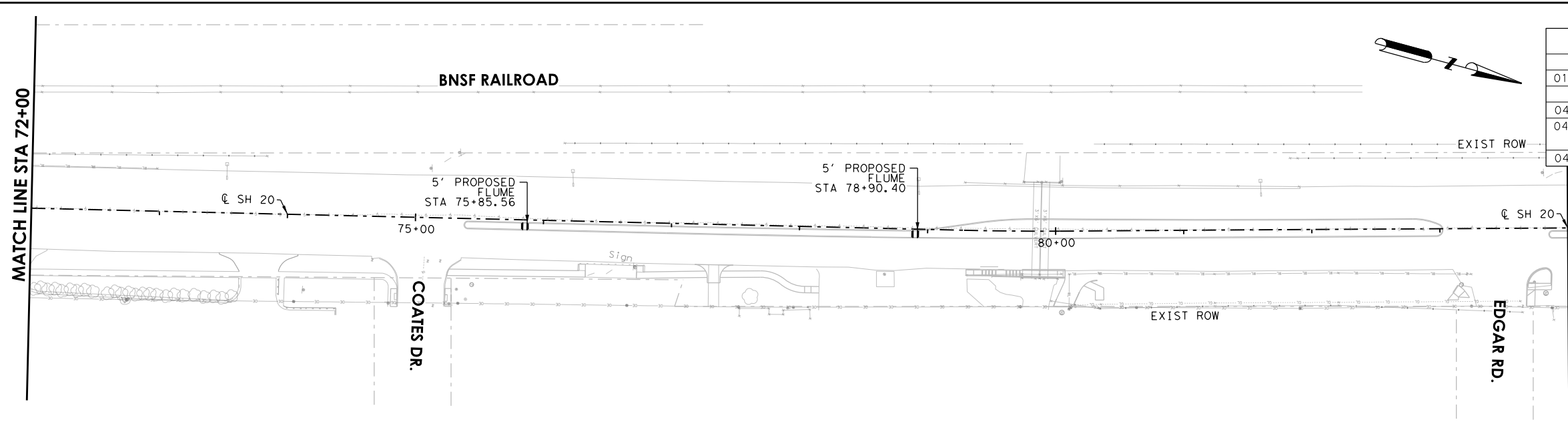
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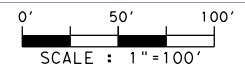


CSJ: 0001-01-066			
ITEM	DESCRIPTION	QUANTITY	UNIT
0110-6003	EXCAVATION (SPECIAL)	15	CY
*	CL A CONC (FLUME)	6	CY
0420-6051	CL C CONC (CULV)	12	CY
0465-6160	INLET (COMPL) (PAZD) (FG) (4FTX4FT-4FTX4FT)	4	EA
0480-6001	CLEAN EXIST CULVERTS	1	EA

*FOR CONTRACTORS INFORMATION ONLY



NOTES:
1. SEE DRAINAGE DETAIL FOR CONCRETE FLUME DETAILS



SHEET NAME	110-6003 EXCAVATION (SPECIAL)	420-6051 CL C CONC (CULV)	465-6160 INLET (COMPL) (PAZD) (FG) (4FTX4FT- 4FTX4FT)	480-6001 CLEAN EXIST CULVERTS
SHEET 1	CY	CY	EA	EA
SHEET 2				
SHEET 3	15	12	4	1
SHEET 4				
TOTAL	15	12	4	1

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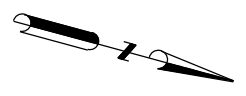
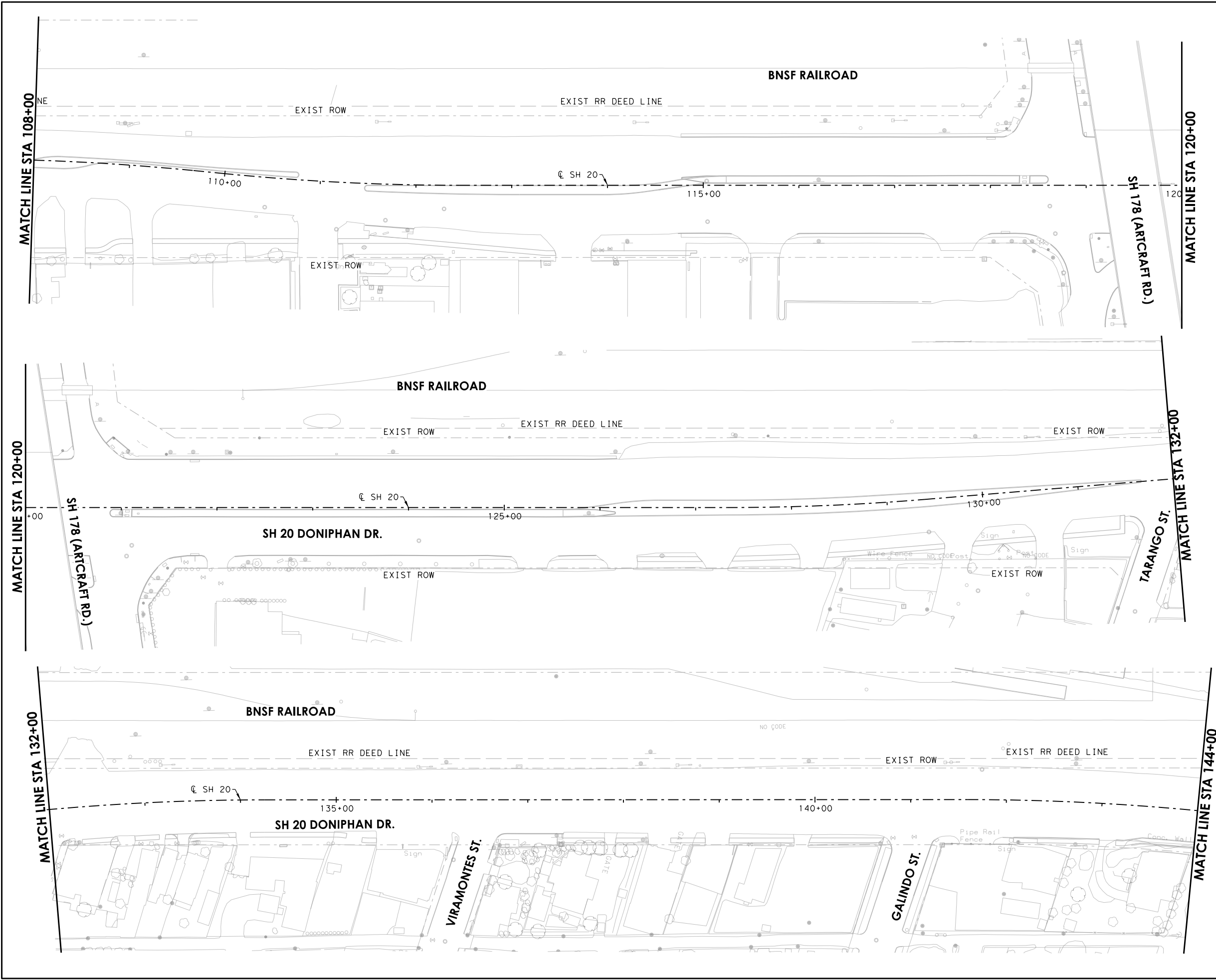
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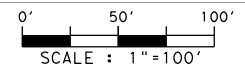
**SH 20
DONIPHAN DR.
DRAINAGE
IMPROVEMENT PLAN
STA 72+00 TO STA 108+00**

SHEET 3 OF 4				
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CHECKED:	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	CONTROL	SECTION	JOB	SHEET NUMBER
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- NOTES:**
1. SEE DRAINAGE DETAIL FOR CONCRETE FLUME DETAILS
 2. SEE SHEET 1 OF 4 FOR MATCHLINE STA 144+00
 3. NO DRAINAGE WORK PROPOSED THIS SHEET



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**SH 20
 DONIPHAN DR.
 DRAINAGE
 IMPROVEMENT PLAN**
 STA 108+00 TO STA 144+00

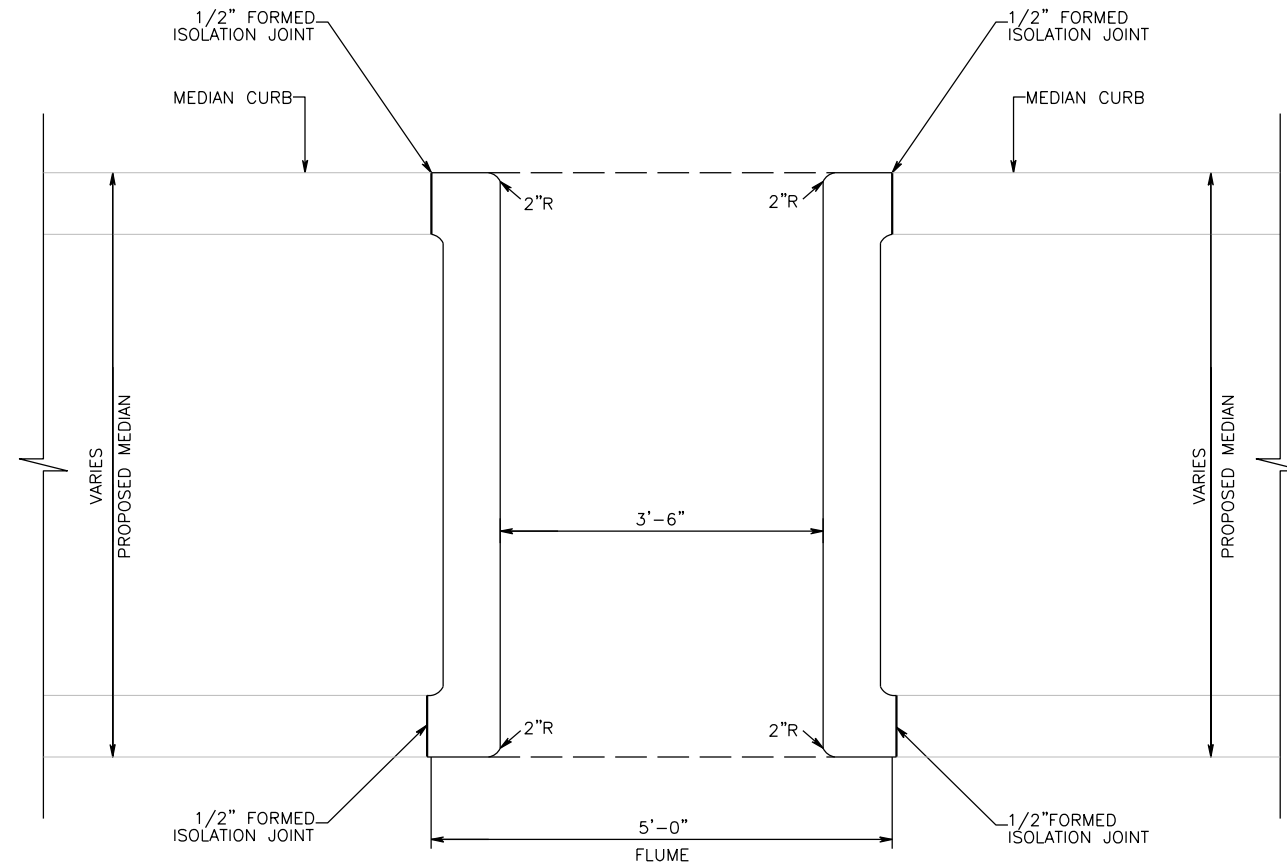
SHEET 4 OF 4

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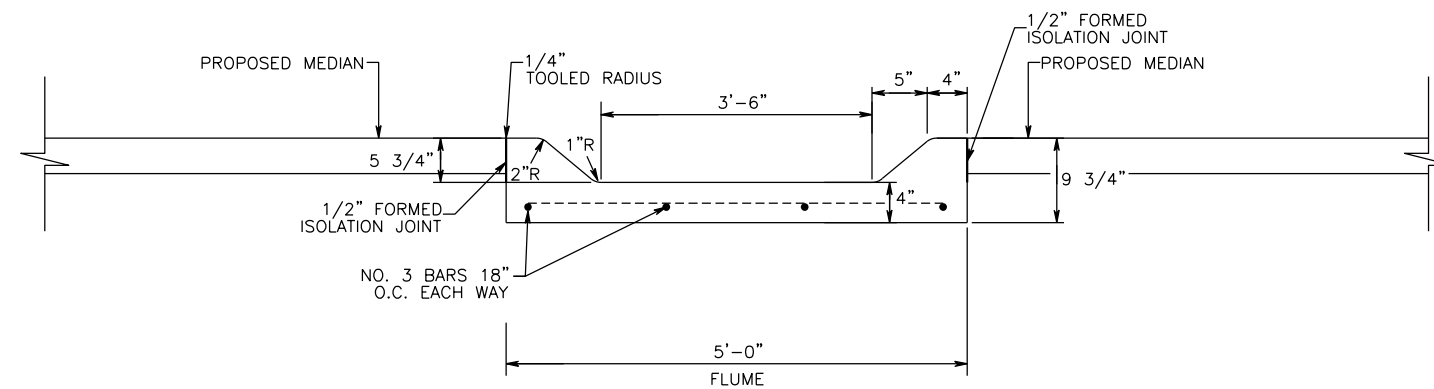
\\pww-int.hntb.org\pwwcentral\Documents\El Paso Projects\74264 WA02 SH 20 Doniphan\Design and Engineering\Drawings\74264-SH20-DRG-PLAN_01.dgn

NOTE:

1. 0.8 CY OF CONCRETE PER EACH FLUME LOCATED AT MEDIAN OPENINGS.
2. FOR CONTRACTORS INFORMATION ONLY.



PLAN VIEW



PROFILE VIEW

1 MEDIAN CONCRETE FLUME DETAIL
NTS



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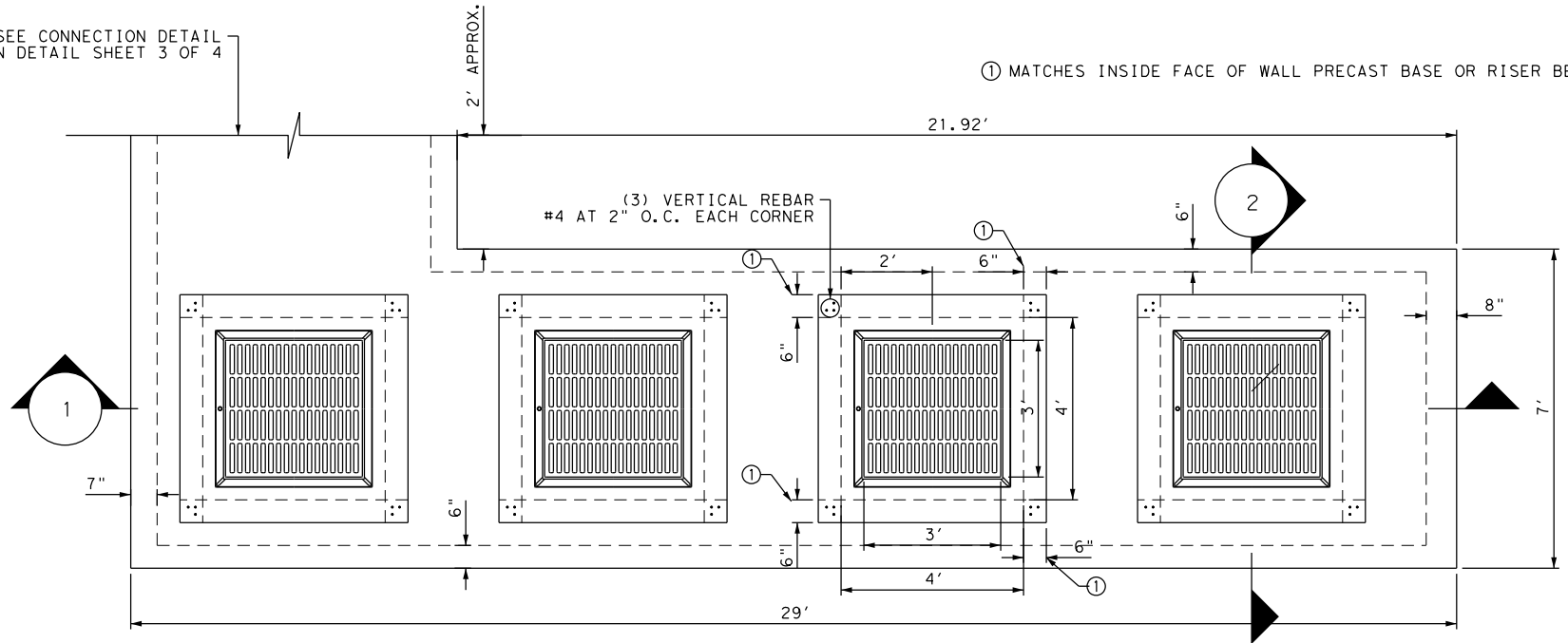
SH 20
DONIPHAN DR.
DRAINAGE DETAILS

SHEET 1 OF 4

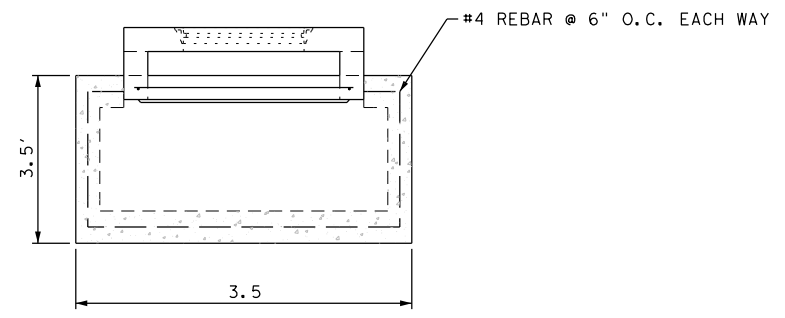
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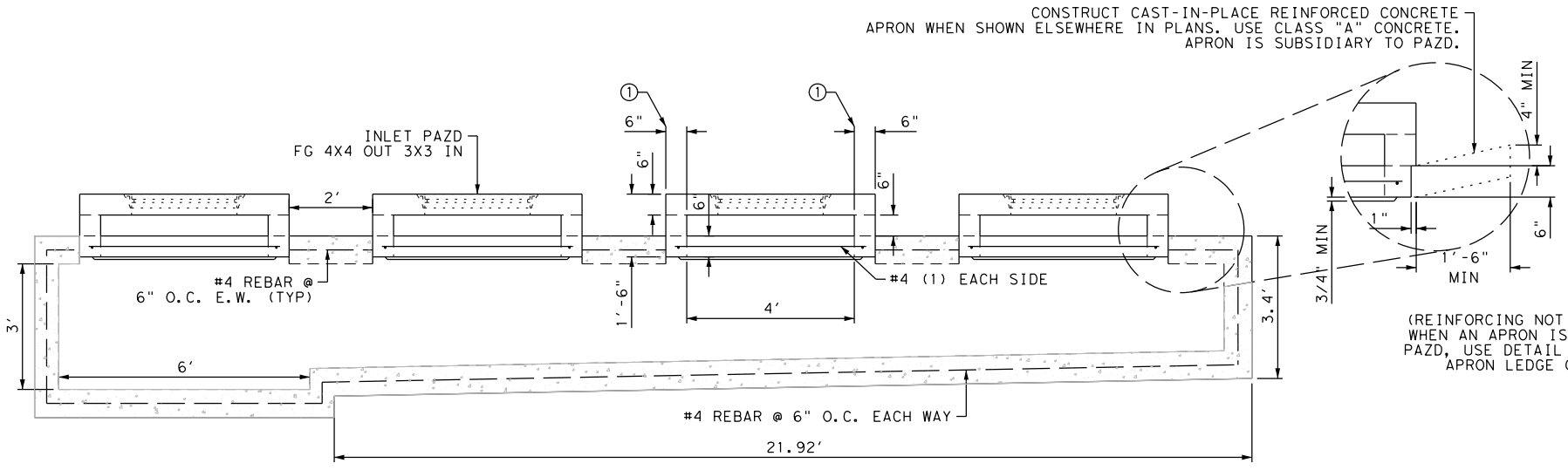
SEE CONNECTION DETAIL ON DETAIL SHEET 3 OF 4



PLAN VIEW

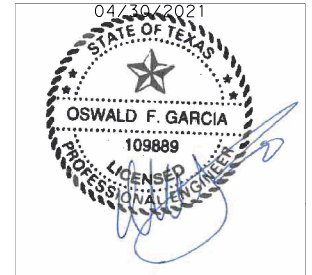


2 INLET SECTION NTS



1 INLET SECTION NTS

(REINFORCING NOT SHOWN FOR CLARITY) WHEN AN APRON IS TO BE CAST AROUND PAZD, USE DETAIL ABOVE TO CREATE AN APRON LEDGE ON ALL 4 SIDES.



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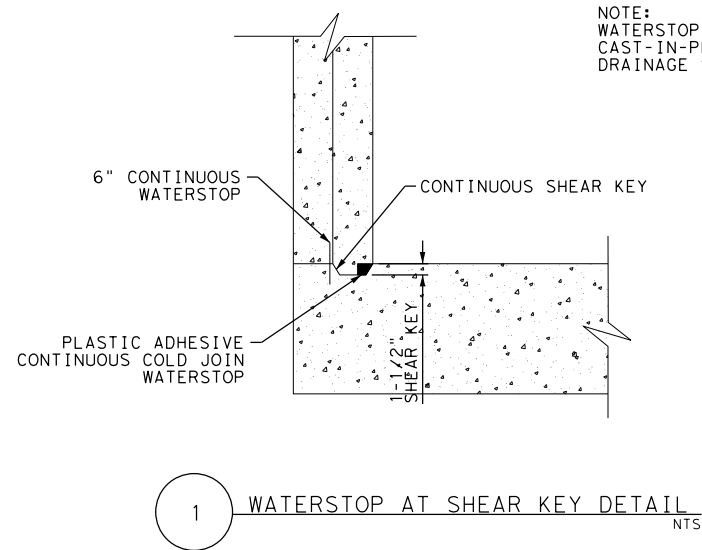
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SH 20
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 DRAINAGE DETAILS

SHEET 2 OF 4

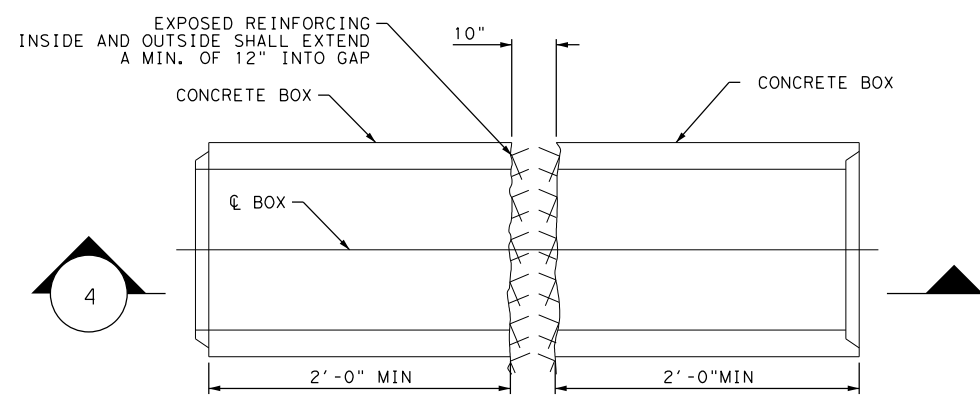
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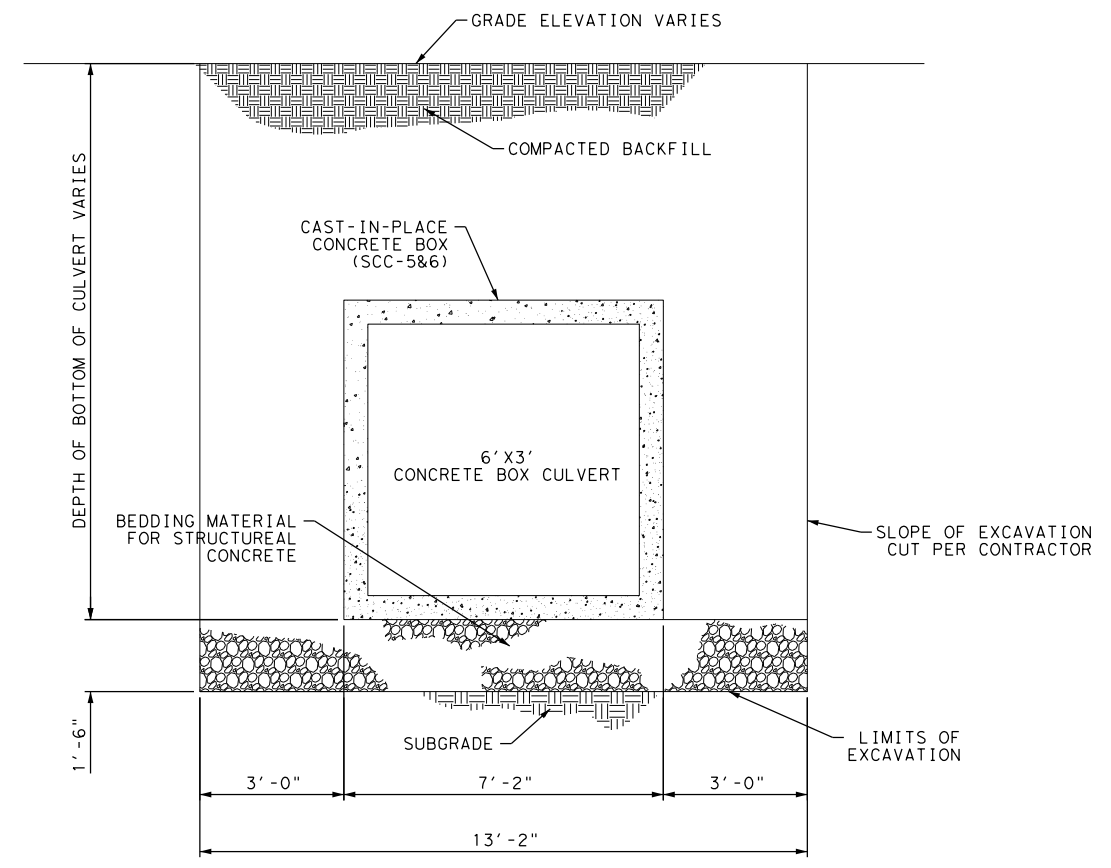


1 WATERSTOP AT SHEAR KEY DETAIL
NTS

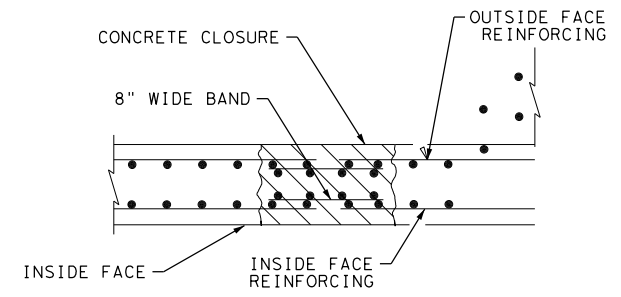
NOTE:
WATERSTOP TO BE USED AT
CAST-IN-PLACE CONCRETE
DRAINAGE STRUCTURE JOINTS



3 CONNECTION DETAIL
NTS



2 BEDDING FOR CONCRETE BOX CULVERT
NTS



4 SECTION
NTS



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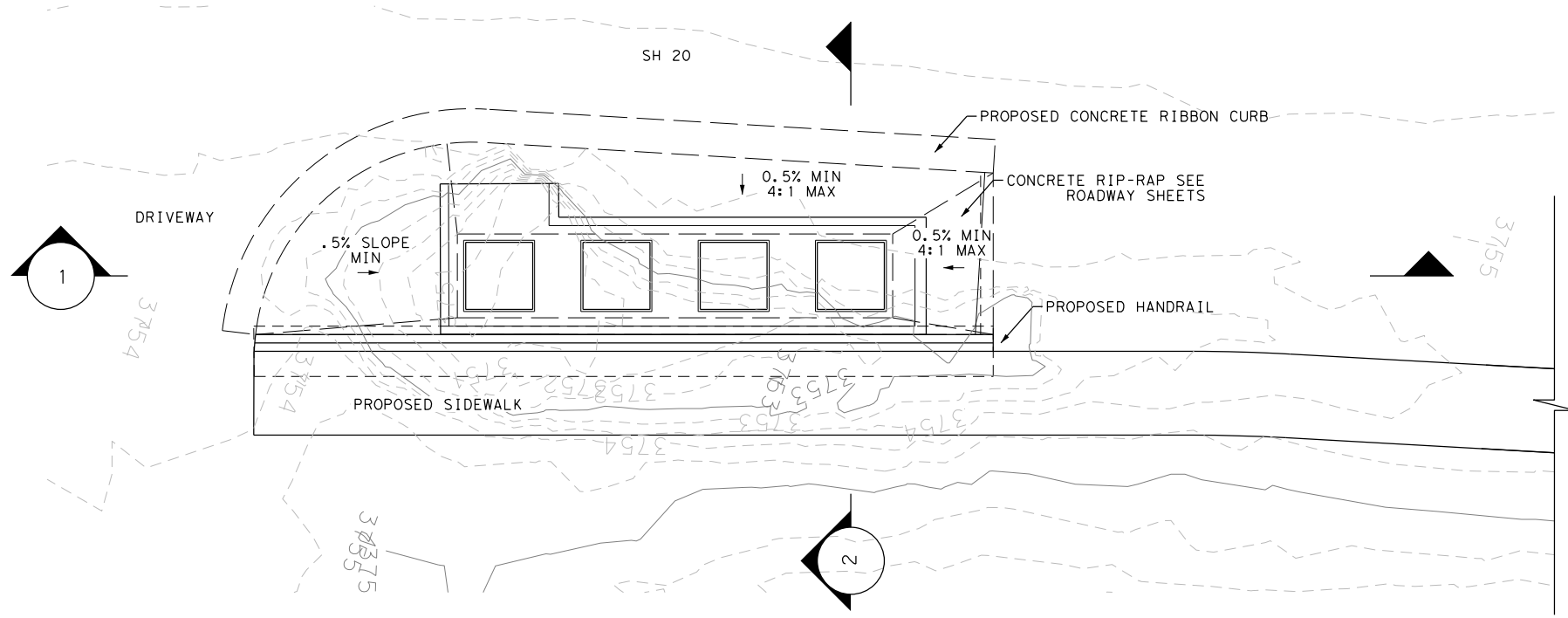
SH 20
DONIPHAN DR.
DRAINAGE DETAILS

SHEET 3 OF 4

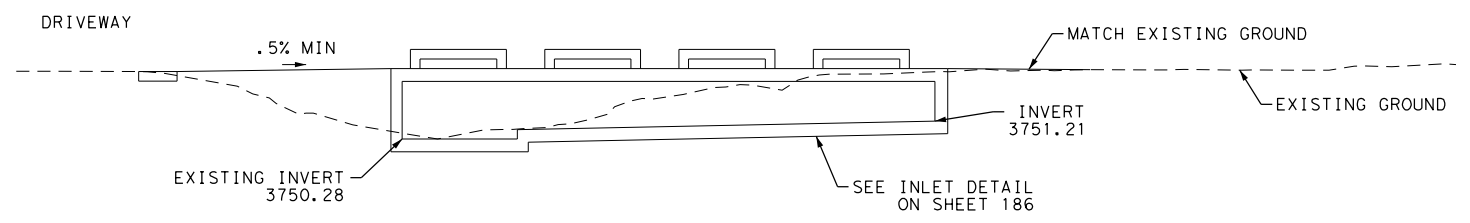
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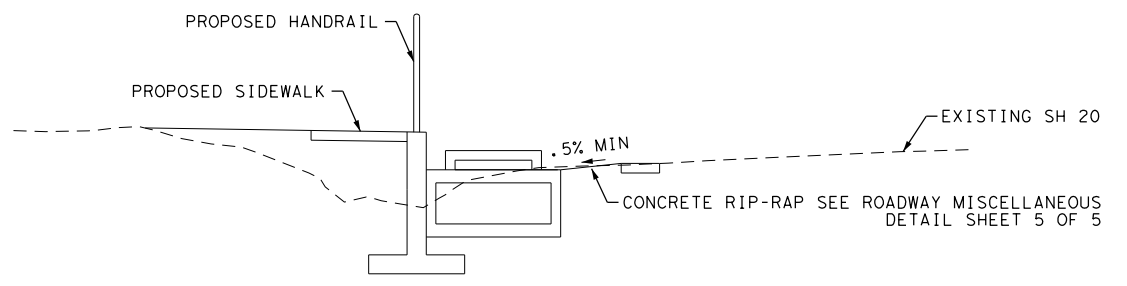
NOTE:
 1. CULVERT INVERT TO BE VERIFIED BY CONTRACTOR BEFORE START OF CONSTRUCTION. IF DISCREPANCY IN ELEVATION, CONTRACTOR MUST NOTIFY ENGINEER.



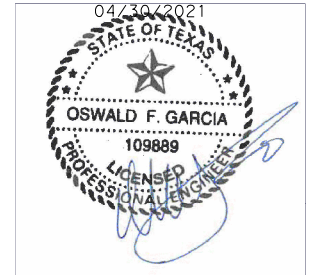
PLAN VIEW
 STA 103+47



1 SECTION
 1"=1'-0"



2 SECTION
 1"=1'-0"



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SH 20
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 DRAINAGE DETAILS

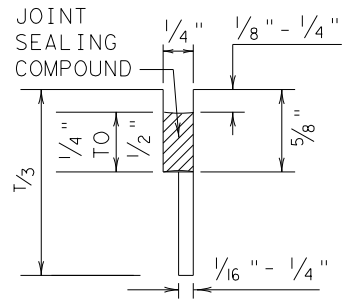
SHEET 4 OF 4

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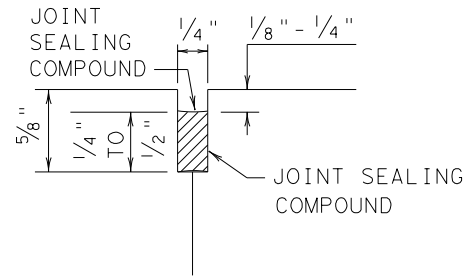
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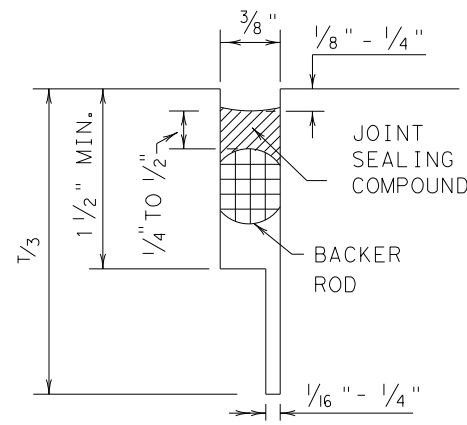
METHOD B: JOINT SEALING COMPOUND



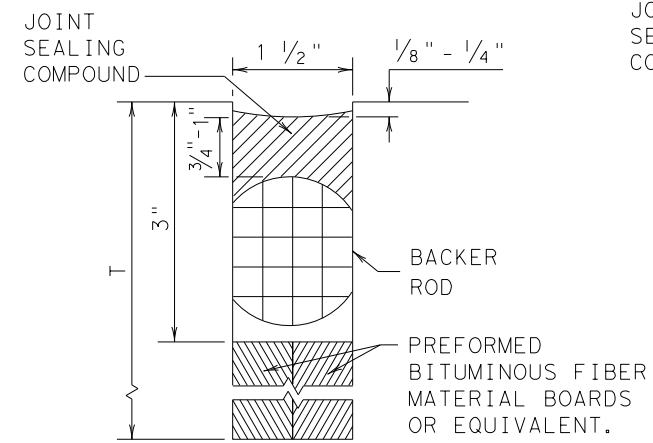
LONGITUDINAL SAWED CONTRACTION JOINT



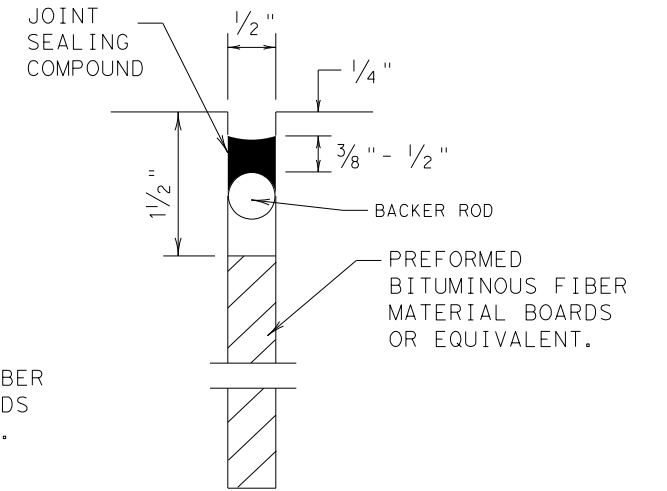
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

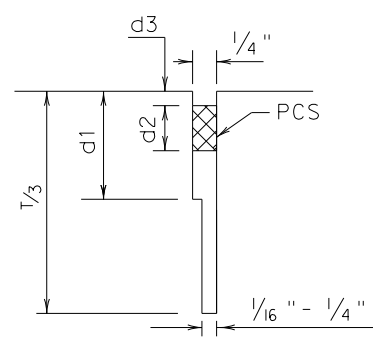


TRANSVERSE FORMED EXPANSION JOINT

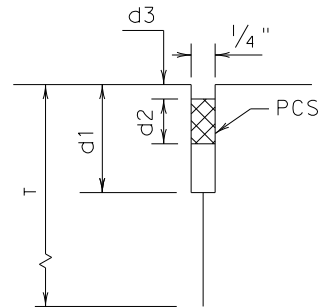


FORMED ISOLATION JOINT

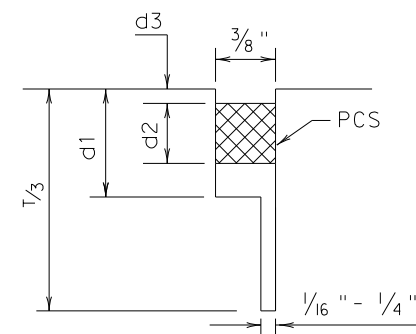
METHOD A: PREFORMED COMPRESSION SEALS (PCS) (DMS-6310 CLASS 6)



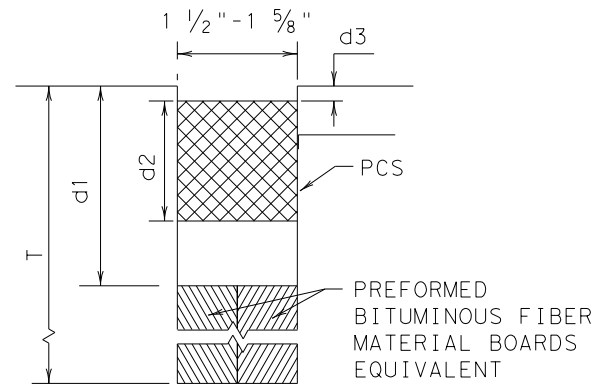
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

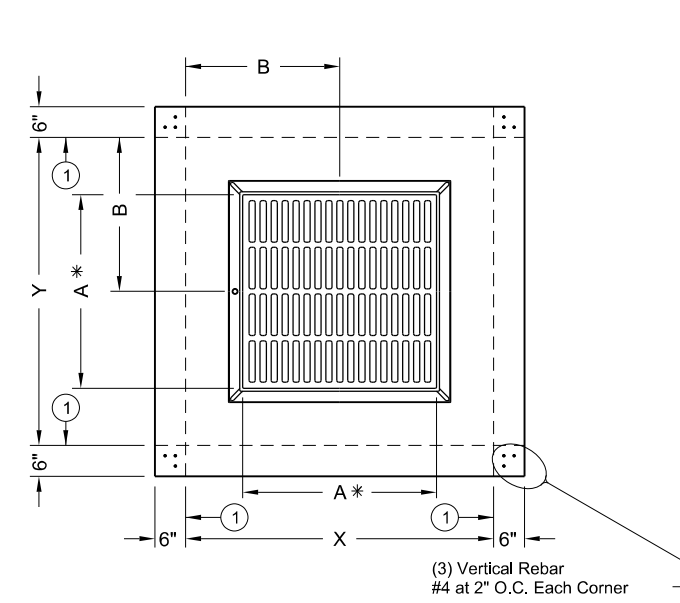
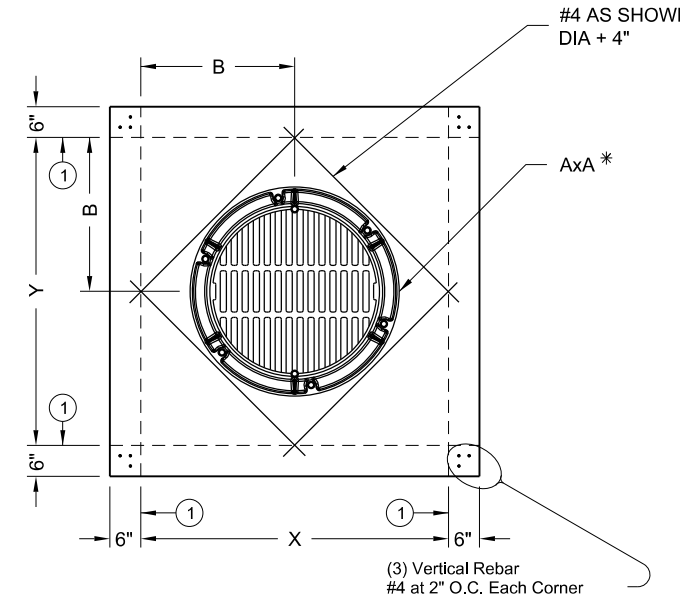
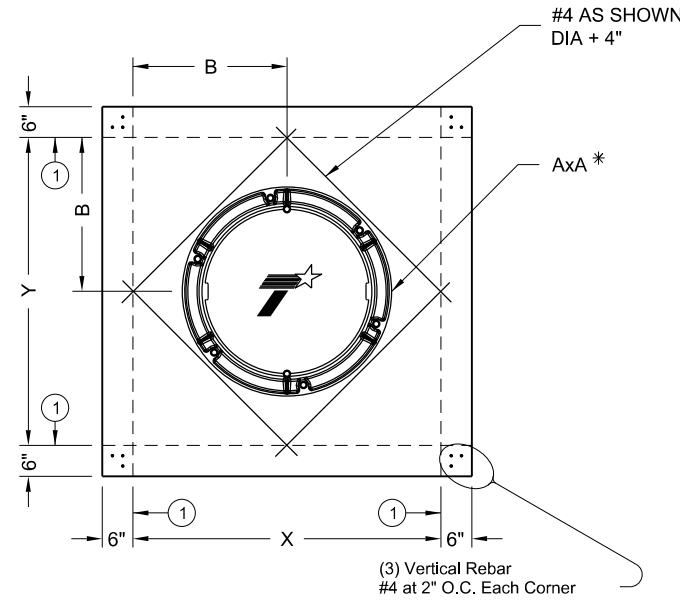
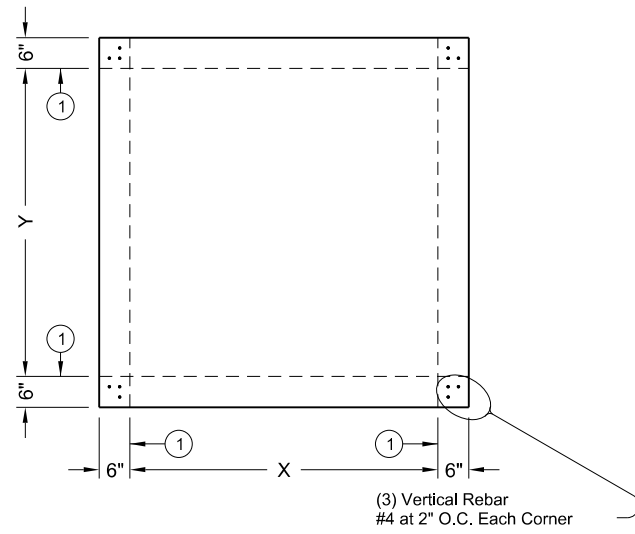
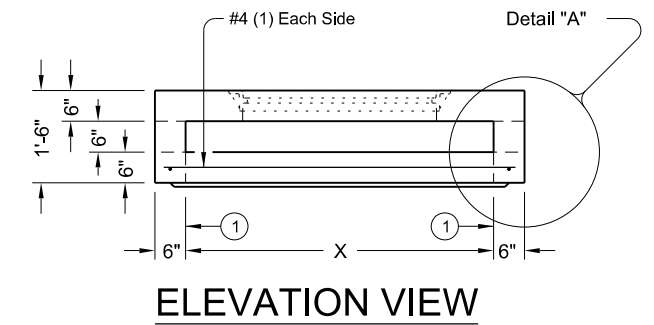
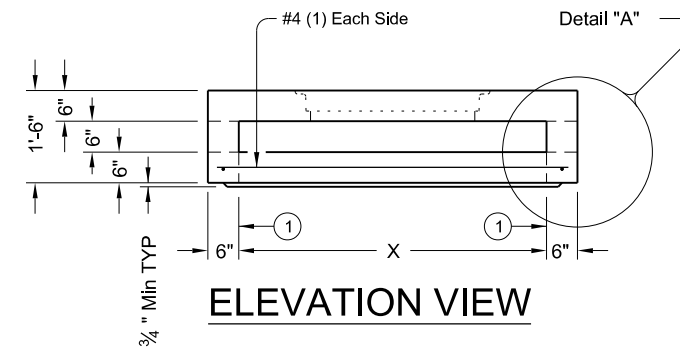
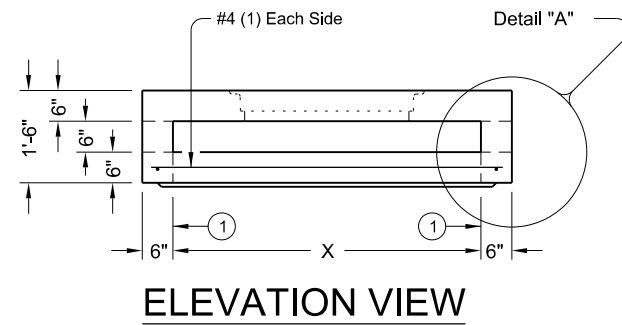
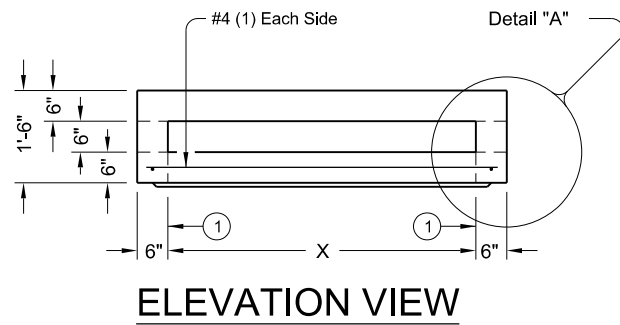
GENERAL NOTES

- UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
- THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
- THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
- DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
- REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
- FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
- FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4, 5, 7, OR 8 FOR MAINTAINING EXISTING JOINTS.
- THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
- ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

DATE:
FILE:

				Design Division Standard	
CONCRETE PAVING DETAILS JOINT SEALS JS-14					
FILE: js14.dgn	DN: TxDOT	DN: HC	DN: HC	CK: AN	
© TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0001	01	063, ETC.	SH 20	
	DIST	COUNTY	SHEET NO.		
	EL PASO	EL PASO	201		

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STYLE 'SL'

STYLE 'RC'

STYLE 'RG'

STYLE 'FG'

① Matches inside face of wall of precast base or riser below inlet.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of 3/4" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

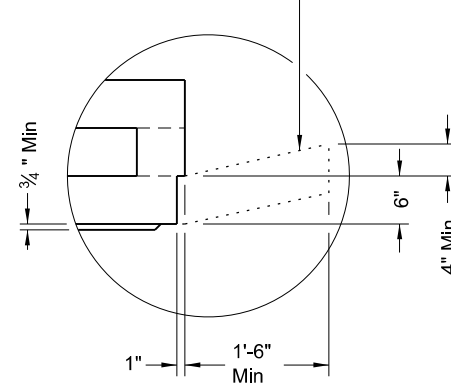
INSTALLATION NOTES:

1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)
When an apron is to be cast around PAZD, use detail above to create an apron ledge on all 4 sides.

Style	Size (X x Y)	A x A *	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in ² /ft	0.37 in ² /ft
RC, RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in ² /ft	0.37 in ² /ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in ² /ft	0.37 in ² /ft
SL	4'x4'	n/a	n/a	0.34 in ² /ft	0.34 in ² /ft
RC, RG	4'x4'	32" Dia	2'x2'	0.34 in ² /ft	0.34 in ² /ft
FG	4'x4'	3'x3'	2'x2'	0.34 in ² /ft	0.34 in ² /ft
FG	4'x4'	4'x4'	2'x2'	0.34 in ² /ft	0.34 in ² /ft
SL	5'x5'	n/a	n/a	0.43 in ² /ft	0.43 in ² /ft
RC, RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in ² /ft	0.68 in ² /ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in ² /ft	0.43 in ² /ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in ² /ft	0.43 in ² /ft

* Nominal frame/grate or ring/cover size.

Bridge Division Standard

PRECAST AREA ZONE DRAIN

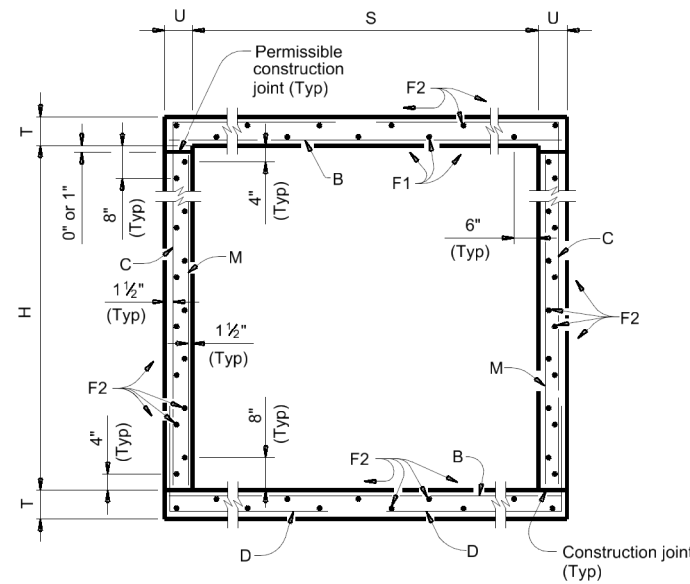
PAZD

FILE: presto08-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT: 0001	SECT: 01	JOB: 063, ETC.	HIGHWAY: SH 20
REVISIONS	DIST: EL PASO	COUNTY: EL PASO	SHEET NO. 202	

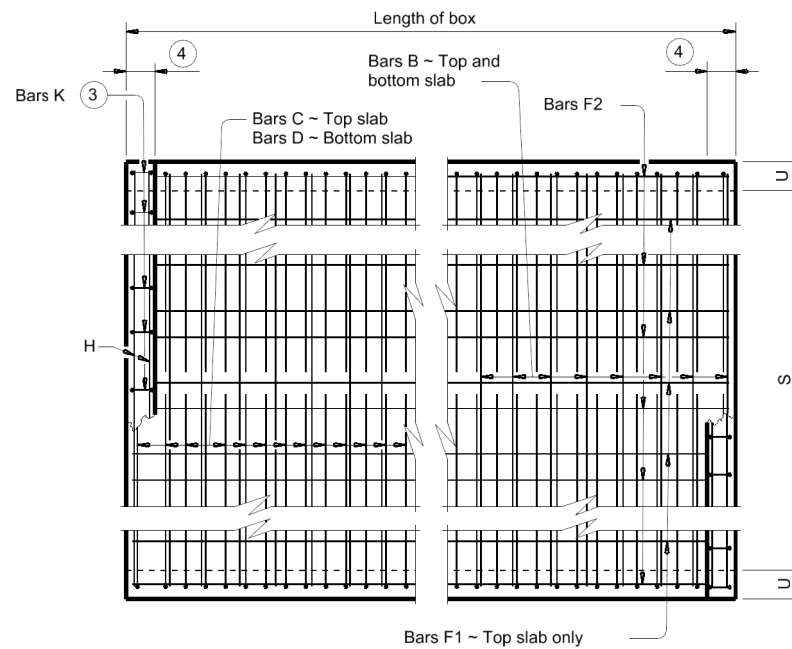
DATE:
FILE:

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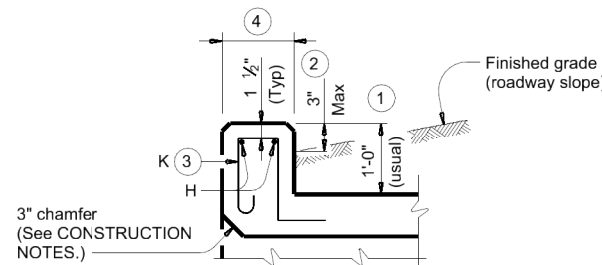
DATE: FILE:



TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
 - For structures without bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade.
 Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

- Do not use permanent forms.
- Chamfer the bottom edge of the top slab 3" at the entrance.
- Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

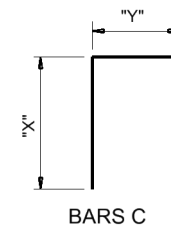
MATERIAL NOTES:

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Provide Class C concrete (f_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f_c = 4,000 psi) for top slabs of:
 - culverts with overlay,
 - culverts with 1-to-2 course surface treatment, or
 - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
 - Uncoated or galvanized ~ #4 = 1'-8" Min
 - Uncoated or galvanized ~ #5 = 2'-1" Min
 - Uncoated or galvanized ~ #6 = 2'-6" Min

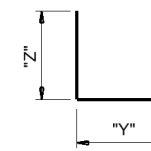
GENERAL NOTES:

- Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
- See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

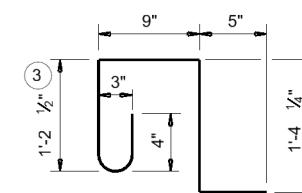
Cover dimensions are clear dimensions, unless noted otherwise.
 Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
 (Spa = 1'-0" Max)
 (Length = 4'-2")



**SINGLE BOX CULVERTS
 CAST-IN-PLACE
 0' TO 30' FILL**

SCC-5 & 6


FILE: scc56ste-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
0001	01		063, ETC.	SH 20
04/2021 Updated X values.	DIST	COUNTY	SHEET NO.	
	EL PASO	EL PASO	203	

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DATE:
FILE:

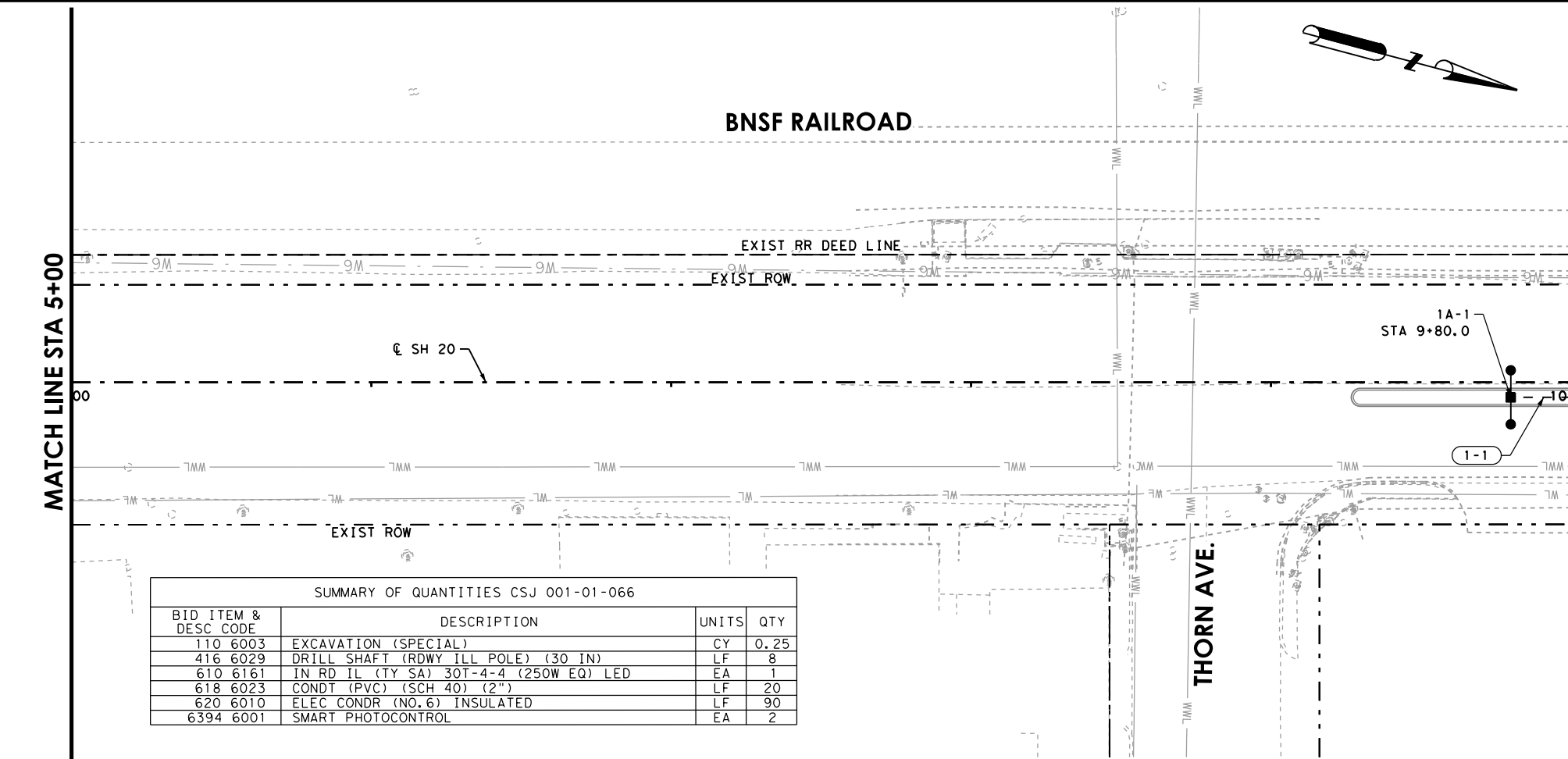
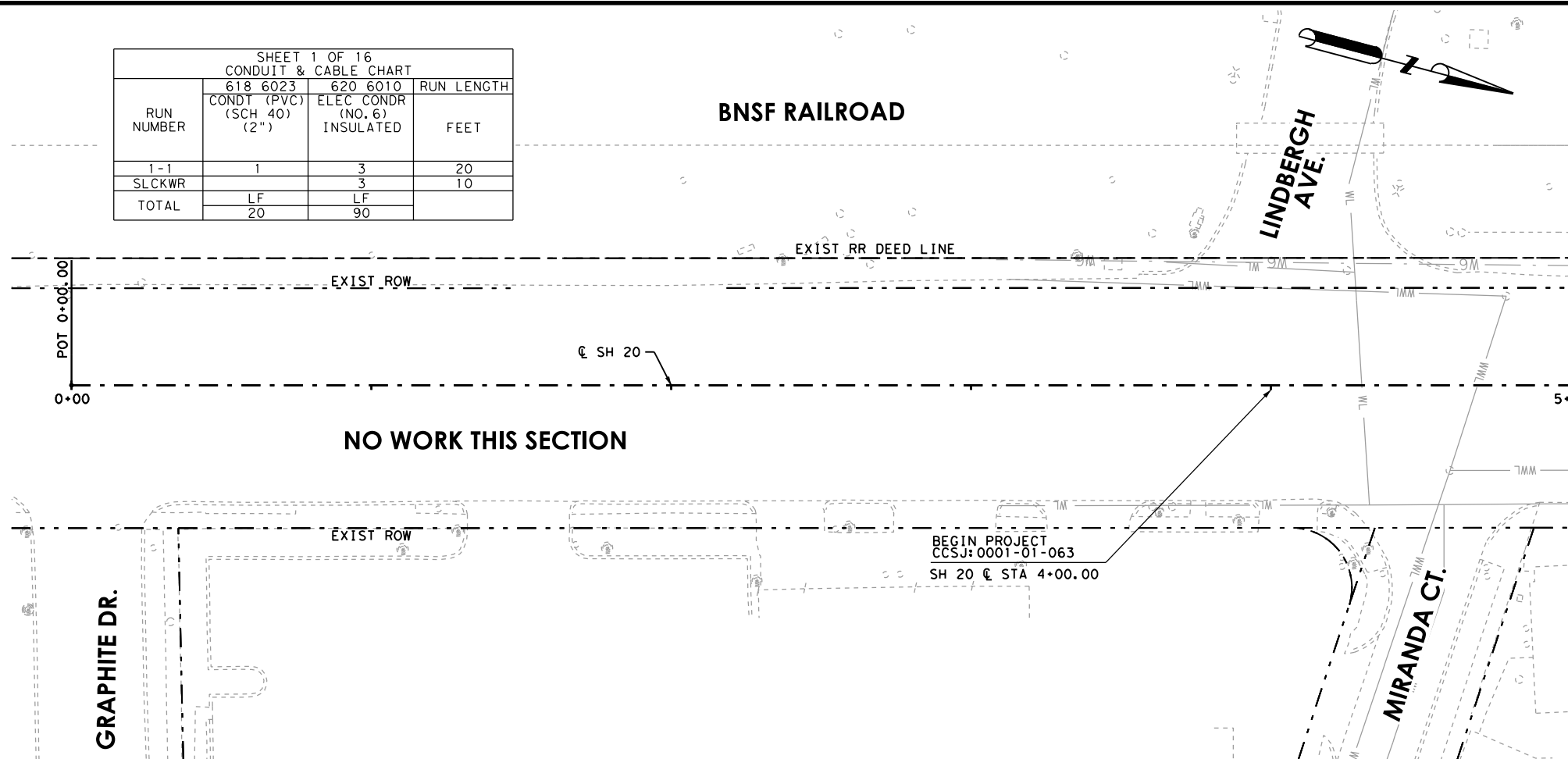
SECTION DIMENSIONS				FILL HEIGHT	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES														
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total					
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5' - 0"	2' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	6' - 3"	704	2' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	2' - 0"	144	4	39' - 9"	106	22	39' - 9"	584	5' - 11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5' - 0"	2' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	6' - 4"	713	2' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	2' - 0"	144	4	39' - 9"	106	22	39' - 9"	584	5' - 11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5' - 0"	3' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	7' - 3"	817	3' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	3' - 0"	216	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5' - 0"	3' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	7' - 4"	826	3' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	3' - 0"	216	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5' - 0"	4' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	8' - 3"	929	4' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	4' - 0"	289	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5' - 0"	4' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	8' - 4"	939	4' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 8"	108	9"	4' - 0"	289	4	39' - 9"	106	26	39' - 9"	690	5' - 11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5' - 0"	5' - 0"	8"	7"	26'	108	#6	9"	5' - 11"	960	108	#5	9"	9' - 3"	1,042	5' - 6"	3' - 9"	108	#5	9"	6' - 5"	723	3' - 9"	2' - 8"	108	9"	5' - 0"	361	4	39' - 9"	106	30	39' - 9"	797	5' - 11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5' - 0"	5' - 0"	9"	7"	30'	108	#6	9"	5' - 11"	960	108	#5	9"	9' - 4"	1,051	5' - 7"	3' - 9"	108	#5	9"	6' - 6"	732	3' - 9"	2' - 9"	108	9"	5' - 0"	361	4	39' - 9"	106	30	39' - 9"	797	5' - 11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6' - 0"	2' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	6' - 7"	742	2' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	2' - 0"	144	5	39' - 9"	133	25	39' - 9"	664	6' - 11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6' - 0"	2' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	6' - 8"	1,126	2' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	2' - 0"	144	5	39' - 9"	133	25	39' - 9"	664	6' - 11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6' - 0"	2' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	6' - 10"	1,155	2' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	2' - 0"	110	5	39' - 9"	133	25	39' - 9"	664	7' - 1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6' - 0"	3' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	7' - 7"	854	3' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	3' - 0"	216	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6' - 0"	3' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	7' - 8"	1,295	3' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	3' - 0"	216	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6' - 0"	3' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	7' - 10"	1,324	3' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	3' - 0"	164	5	39' - 9"	133	29	39' - 9"	770	7' - 1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6' - 0"	4' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	8' - 7"	967	4' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	4' - 0"	289	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6' - 0"	4' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	8' - 8"	1,464	4' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	4' - 0"	289	5	39' - 9"	133	29	39' - 9"	770	6' - 11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6' - 0"	4' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	8' - 10"	1,493	4' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	4' - 0"	219	5	39' - 9"	133	29	39' - 9"	770	7' - 1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6' - 0"	5' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	9' - 7"	1,080	5' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	5' - 0"	361	5	39' - 9"	133	33	39' - 9"	876	6' - 11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6' - 0"	5' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	9' - 8"	1,633	5' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	5' - 0"	361	5	39' - 9"	133	33	39' - 9"	876	6' - 11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6' - 0"	5' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	9' - 10"	1,661	5' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	5' - 0"	274	5	39' - 9"	133	33	39' - 9"	876	7' - 1"	19	18	50	0.700	131.9	0.5	69	28.5	5,345
6' - 0"	6' - 0"	8"	7"	20'	108	#6	9"	6' - 11"	1,122	108	#5	9"	10' - 7"	1,192	6' - 6"	4' - 1"	108	#5	9"	6' - 9"	760	4' - 1"	2' - 8"	108	9"	6' - 0"	433	5	39' - 9"	133	37	39' - 9"	982	6' - 11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6' - 0"	6' - 0"	9"	7"	26'	108	#6	9"	6' - 11"	1,122	162	#5	6"	10' - 8"	1,802	6' - 7"	4' - 1"	162	#5	6"	6' - 10"	1,155	4' - 1"	2' - 9"	108	9"	6' - 0"	433	5	39' - 9"	133	37	39' - 9"	982	6' - 11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6' - 0"	6' - 0"	10"	8"	30'	108	#6	9"	7' - 1"	1,149	162	#5	6"	10' - 10"	1,830	6' - 8"	4' - 2"	162	#5	6"	7' - 0"	1,183	4' - 2"	2' - 10"	82	12"	6' - 0"	329	5	39' - 9"	133	37	39' - 9"	982	7' - 1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

5 For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

		Bridge Division Standard	
SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL			
SCC-5 & 6			
FILE: scc56ste-21.dgn	DN: TBE	CK: BMP	DW: TxDOT
REVISIONS	CONC	SECT	JOB
04/2021 Updated X values.	0001	01	063, ETC.
	DIST	COUNTY	SHEET NO.
	EL PASO	EL PASO	204

SHEET 1 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023	620 6010	RUN LENGTH FEET
	CONDT (PVC) (SCH 40) (2")	ELEC CONDR (NO. 6) INSULATED	
1-1	1	3	20
SLCKWR		3	10
TOTAL	LF 20	LF 90	



SUMMARY OF QUANTITIES CSJ 001-01-066

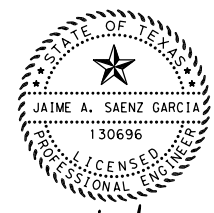
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	0.25
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	1
618 6023	CONDT (PVC) (SCH 40) (2")	LF	20
620 6010	ELEC CONDR (NO. 6) INSULATED	LF	90
6394 6001	SMART PHOTOCONTROL	EA	2

LEGEND

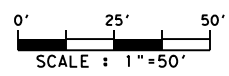
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

NOTES:

1. UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
3. REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



Jaime A. Saenz Garcia
4/30/2021



**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
BEGIN TO STA. 10+00**

SHEET 1 OF 16

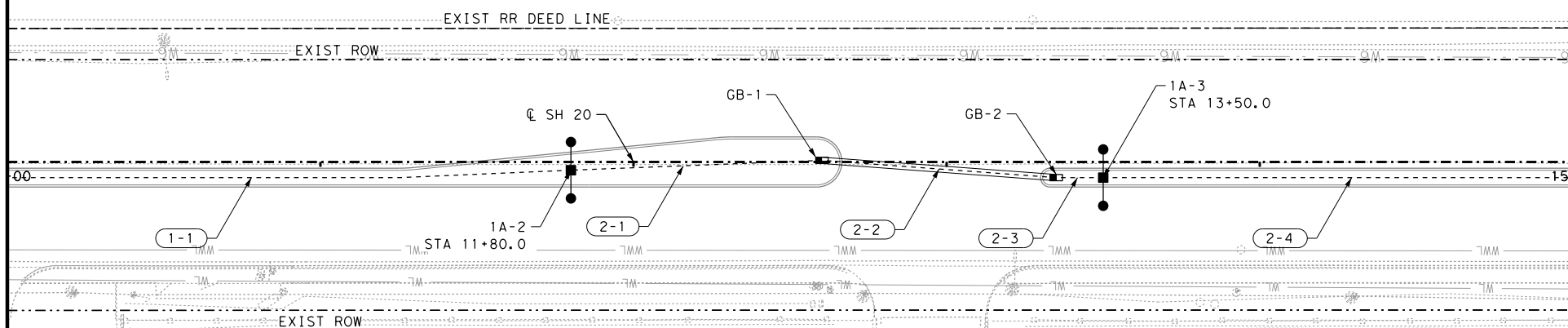
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	205

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BNSF RAILROAD

MATCH LINE STA 10+00

MATCH LINE STA 15+00



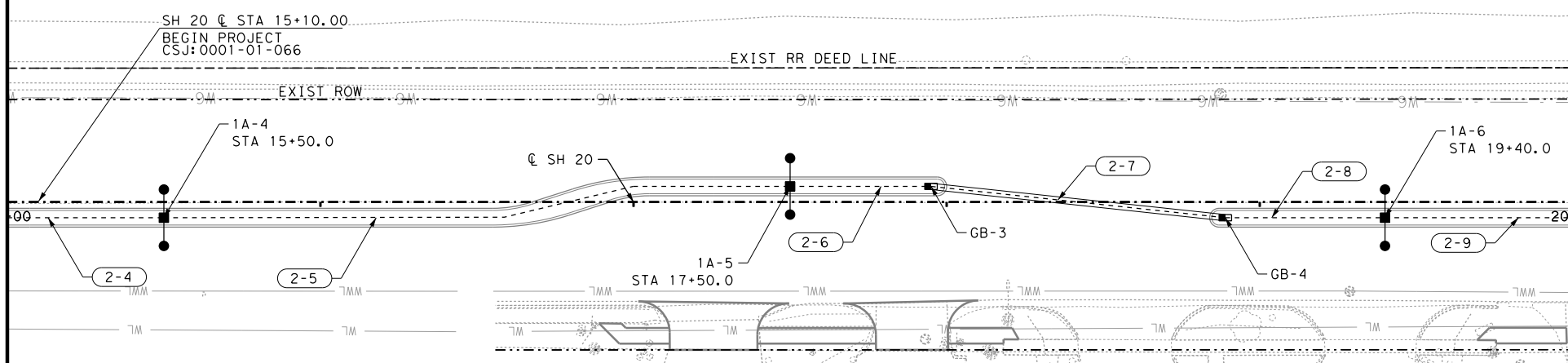
SHEET 2 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6010 ELEC CONDR (NO. 6) INSULATED	RUN LENGTH FEET
1-1	1		3	180
2-1	1		3	80
2-2		1	3	75
2-3	1		3	15
2-4	1		3	200
2-5	1		3	200
2-6	1		3	45
2-7		1	3	95
2-8	1		3	50
2-9	1		3	60
SLCKWR			30	10
TOTAL	LF 830	LF 170	LF 3300	

BNSF RAILROAD

MATCH LINE STA 15+00

MATCH LINE STA 20+00



SUMMARY OF QUANTITIES CSJ 001-01-066

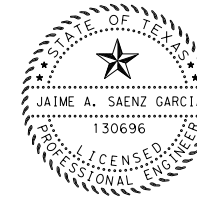
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	5
618 6023	CONDT (PVC) (SCH 40) (2")	LF	830
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	170
620 6010	ELEC CONDR (NO. 6) INSULATED	LF	3300
624 6002	GROUND BOX TY A (122311)W/APRON	EA	4
6394 6001	SMART PHOTOCONTROL	EA	10

LEGEND

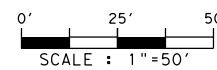
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

NOTES:

1. UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
3. REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



6/2/2021



**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 10+00 TO STA. 20+00

SHEET 2 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	206

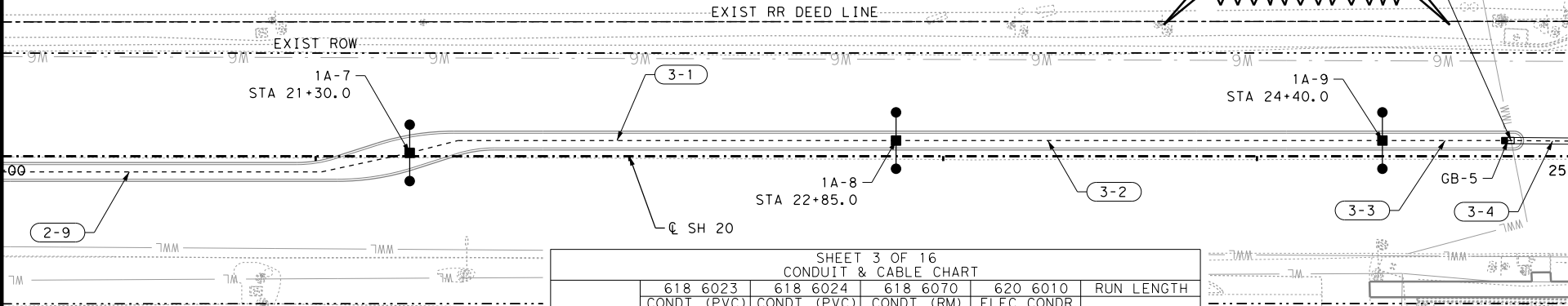
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SUMMARY OF QUANTITIES CSJ 001-01-066			
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	6
618 6023	CONDT (PVC) (SCH 40) (2")	LF	797
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	238
618 6070	CONDT (RM) (2")	LF	28
620 6010	ELEC CONDR (NO.6) INSULATED	LF	3639
624 6002	GROUND BOX TY A (122311)W/APRON	EA	6
6394 6001	SMART PHOTOCONTROL	EA	12

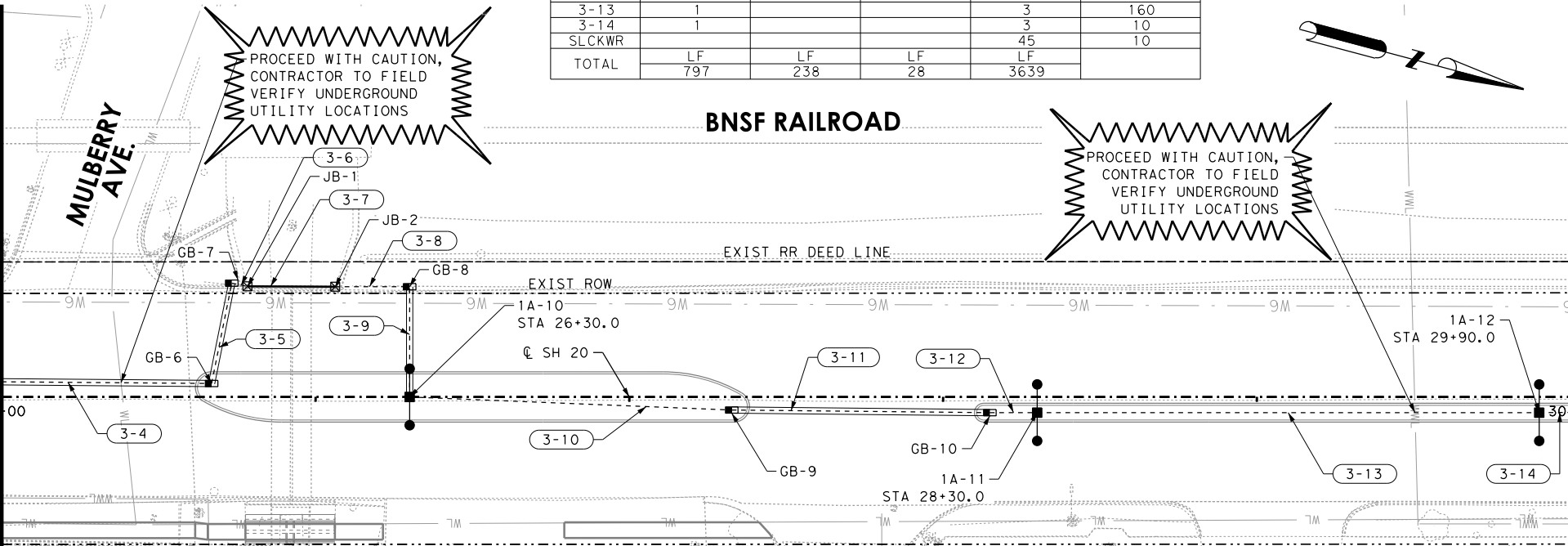
MATCH LINE STA 20+00



MATCH LINE STA 25+00

SHEET 3 OF 16 CONDUIT & CABLE CHART					
RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	618 6070 CONDT (RM) (2")	620 6010 ELEC CONDR (NO.6) INSULATED	RUN LENGTH FEET
2-9	1			3	130
3-1	1			3	155
3-2	1			3	155
3-3	1			3	40
3-4		1		3	87
3-5		1		3	33
3-6	1			3	5
3-7			1	3	28
3-8	1			3	24
3-9		1		3	35
3-10	1			3	103
3-11		1		3	83
3-12	1			3	15
3-13	1			3	160
3-14	1			3	10
SLCKWR				45	10
TOTAL	LF 797	LF 238	LF 28	LF 3639	

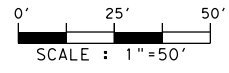
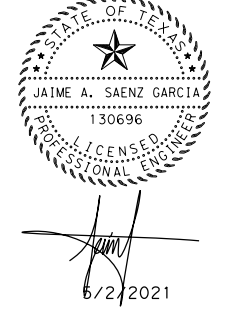
MATCH LINE STA 25+00



MATCH LINE STA 30+00

- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
 - PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 20+00 TO STA. 30+00

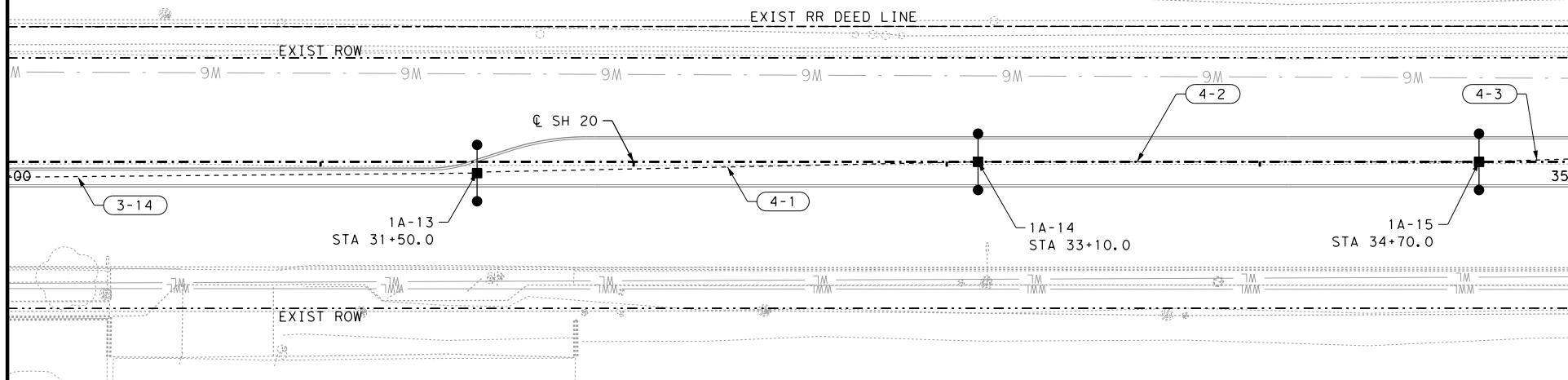
SHEET 3 OF 16					
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	207

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BNSF RAILROAD

MATCH LINE STA 30+00

MATCH LINE STA 35+00

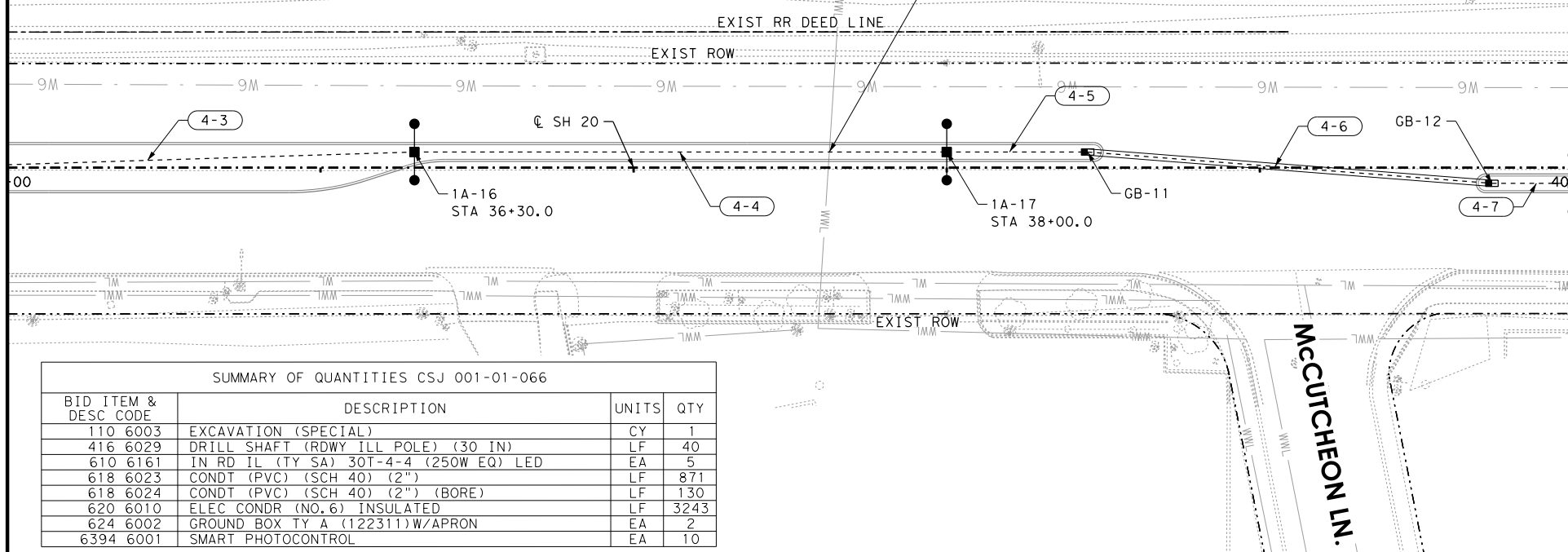


SHEET 4 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6010 ELEC CONDR (NO. 6) INSULATED	RUN LENGTH FEET
3-14	1		3	150
4-1	1		3	160
4-2	1		3	160
4-3	1		3	160
4-4	1		3	170
4-5	1		3	45
4-6		1	3	130
4-7	1		3	26
SLCKWR			24	10
TOTAL	LF 871	LF 130	LF 3243	

MATCH LINE STA 35+00

MATCH LINE STA 40+00



SUMMARY OF QUANTITIES CSJ 001-01-066

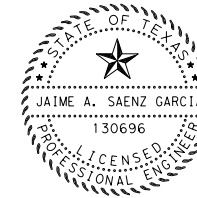
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	5
618 6023	CONDT (PVC) (SCH 40) (2")	LF	871
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	130
620 6010	ELEC CONDR (NO. 6) INSULATED	LF	3243
624 6002	GROUND BOX TY A (122311)W/APRON	EA	2
6394 6001	SMART PHOTOCONTROL	EA	10

LEGEND

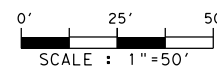
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

NOTES:

1. UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
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6/2/2021



**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 30+00 TO STA. 40+00

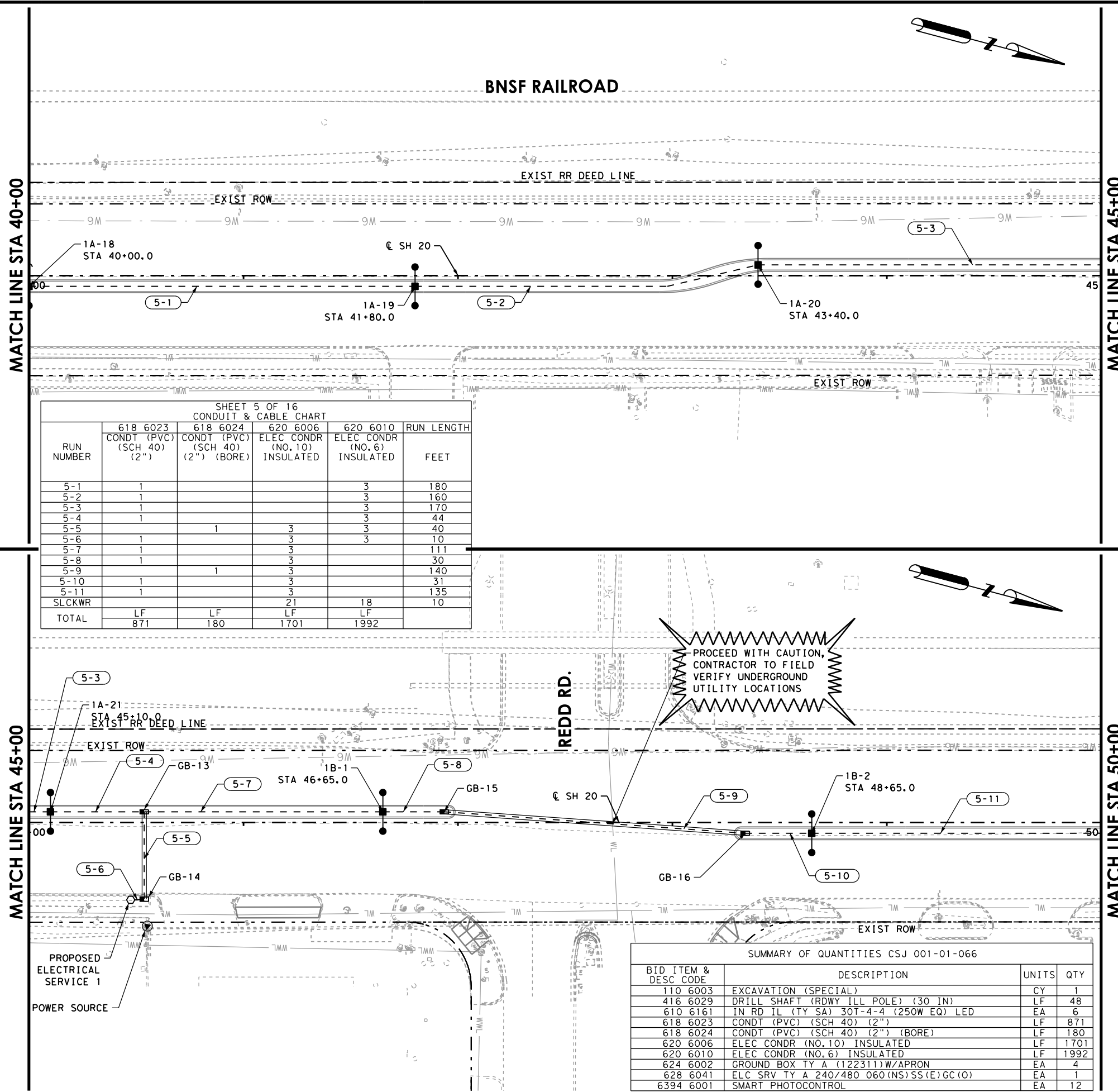
SHEET 4 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	208

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SHEET 5 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	620 6010 ELEC CONDR (NO. 6) INSULATED	RUN LENGTH FEET
5-1	1			3	180
5-2	1			3	160
5-3	1			3	170
5-4	1			3	44
5-5		1	3	3	40
5-6	1		3	3	10
5-7	1		3		111
5-8	1		3		30
5-9		1	3		140
5-10	1		3		31
5-11	1		3		135
SLCKWR			21	18	10
TOTAL	LF 871	LF 180	LF 1701	LF 1992	

SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	6
618 6023	CONDT (PVC) (SCH 40) (2")	LF	871
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	180
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	1701
620 6010	ELEC CONDR (NO. 6) INSULATED	LF	1992
624 6002	GROUND BOX TY A (122311)W/APRON	EA	4
628 6041	ELC SRV TY A 240/480 060 (NS) SS (E) GC (O)	EA	1
6394 6001	SMART PHOTOCONTROL	EA	12

LEGEND

- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
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 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



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The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 40+00 TO STA. 50+00**

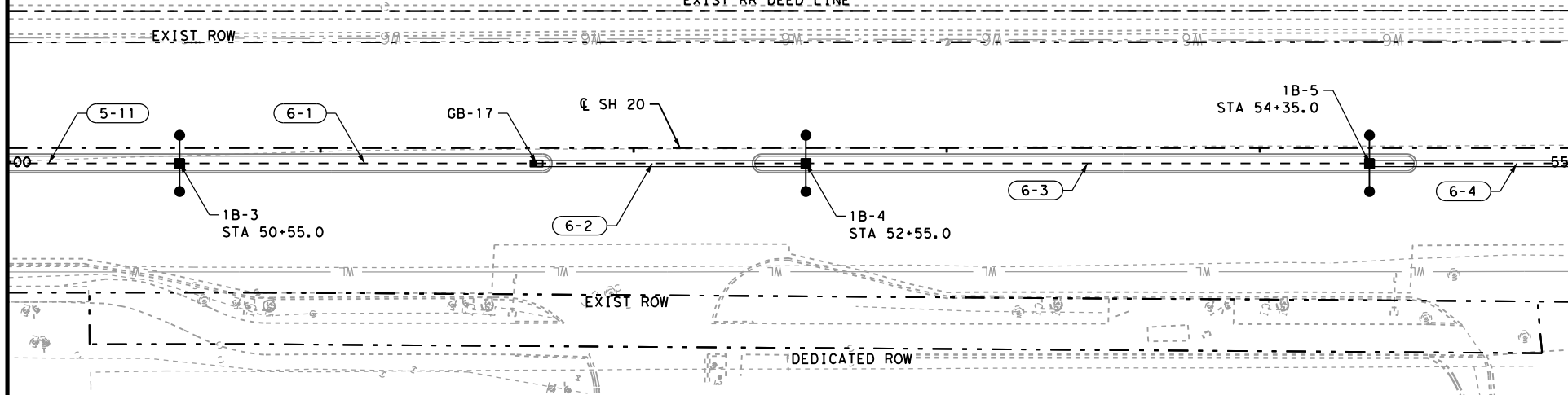
SHEET 5 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	209

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SUMMARY OF QUANTITIES CSJ 001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
110 6003	EXCAVATION (SPECIAL)	CY	1	
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48	
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	6	
618 6023	CONDT (PVC) (SCH 40) (2")	LF	736	
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	264	
620 6006	ELEC CONDR (NO.10) INSULATED	LF	3330	
624 6002	GROUND BOX TY A (122311)W/APRON	EA	4	
6394 6001	SMART PHOTOCONTROL	EA	12	

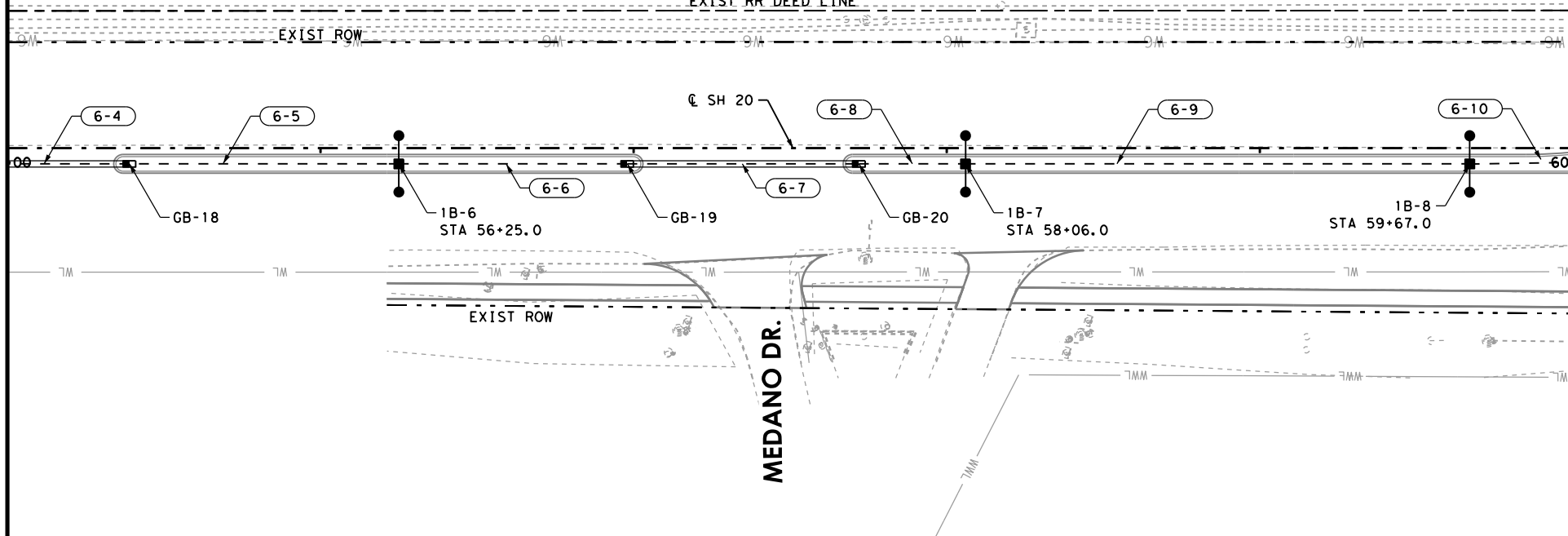
MATCH LINE STA 50+00



MATCH LINE STA 55+00

SHEET 6 OF 16 CONDUIT & CABLE CHART				
RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
5-11	1		3	55
6-1	1		3	114
6-2		1	3	86
6-3	1		3	180
6-4		1	3	104
6-5	1		3	86
6-6	1		3	73
6-7		1	3	74
6-8	1		3	34
6-9	1		3	161
6-10	1		3	33
SLCKWR			33	10
TOTAL	LF 736	LF 264	LF 3330	

MATCH LINE STA 55+00



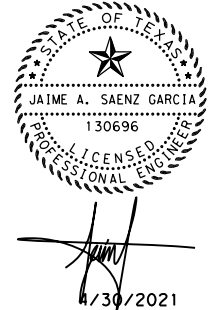
MATCH LINE STA 60+00

LEGEND

- PROPOSED ROADWAY ILL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

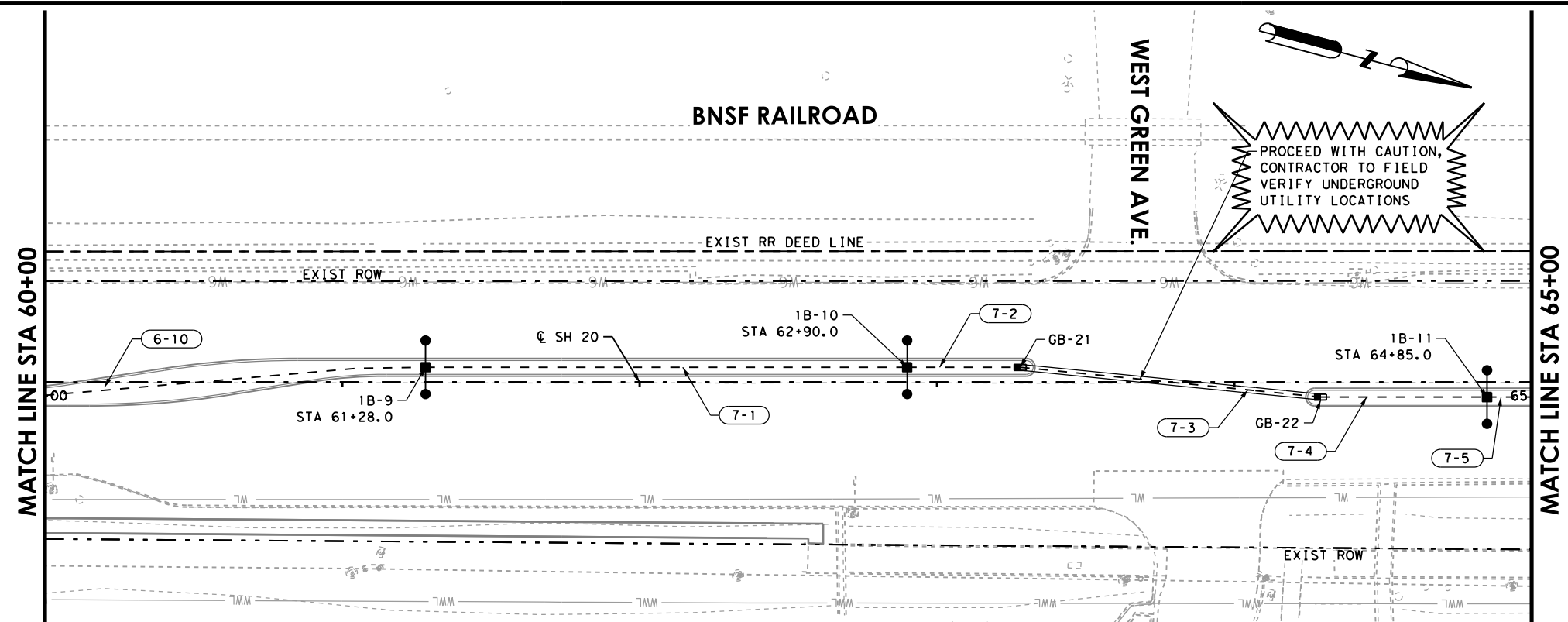
NOTES:

1. UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
3. REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 50+00 TO STA. 60+00

SHEET 6 OF 16					
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	210

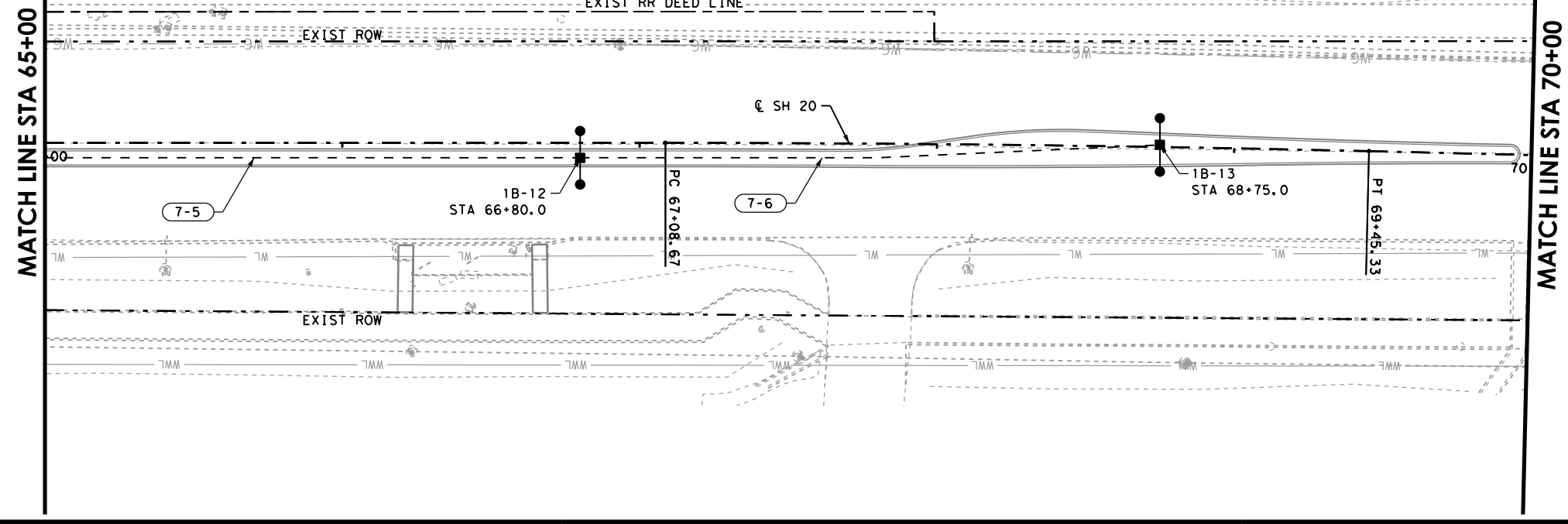


SHEET 7 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023 COND (PVC) (SCH 40) (2")	618 6024 COND (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
6-10	1		3	129
7-1	1		3	162
7-2	1		3	38
7-3		1	3	102
7-4	1		3	56
7-5	1		3	195
7-6	1		3	195
SLCKWR			21	10
TOTAL	LF 775	LF 102	LF 2841	

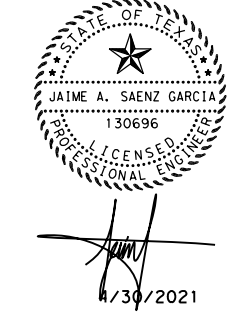
SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	5
618 6023	COND (PVC) (SCH 40) (2") (BORE)	LF	775
618 6024	COND (PVC) (SCH 40) (2") (BORE)	LF	102
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	2841
624 6002	GROUND BOX TY A (122311)W/APRON	EA	2
6394 6001	SMART PHOTOCONTROL	EA	10



- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
 - PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
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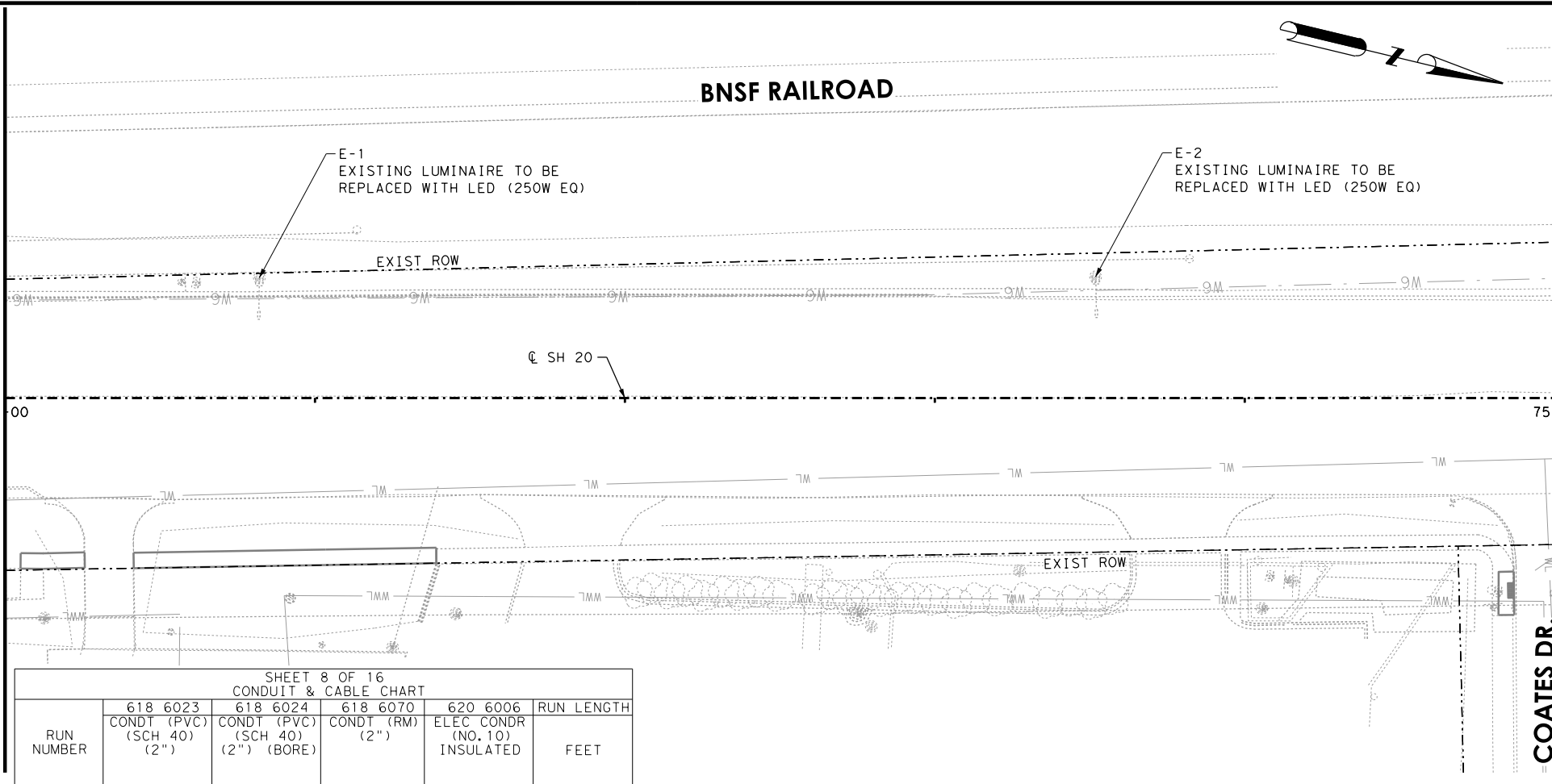
**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 60+00 TO STA. 70+00**

SHEET 7 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	211

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MATCH LINE STA 70+00

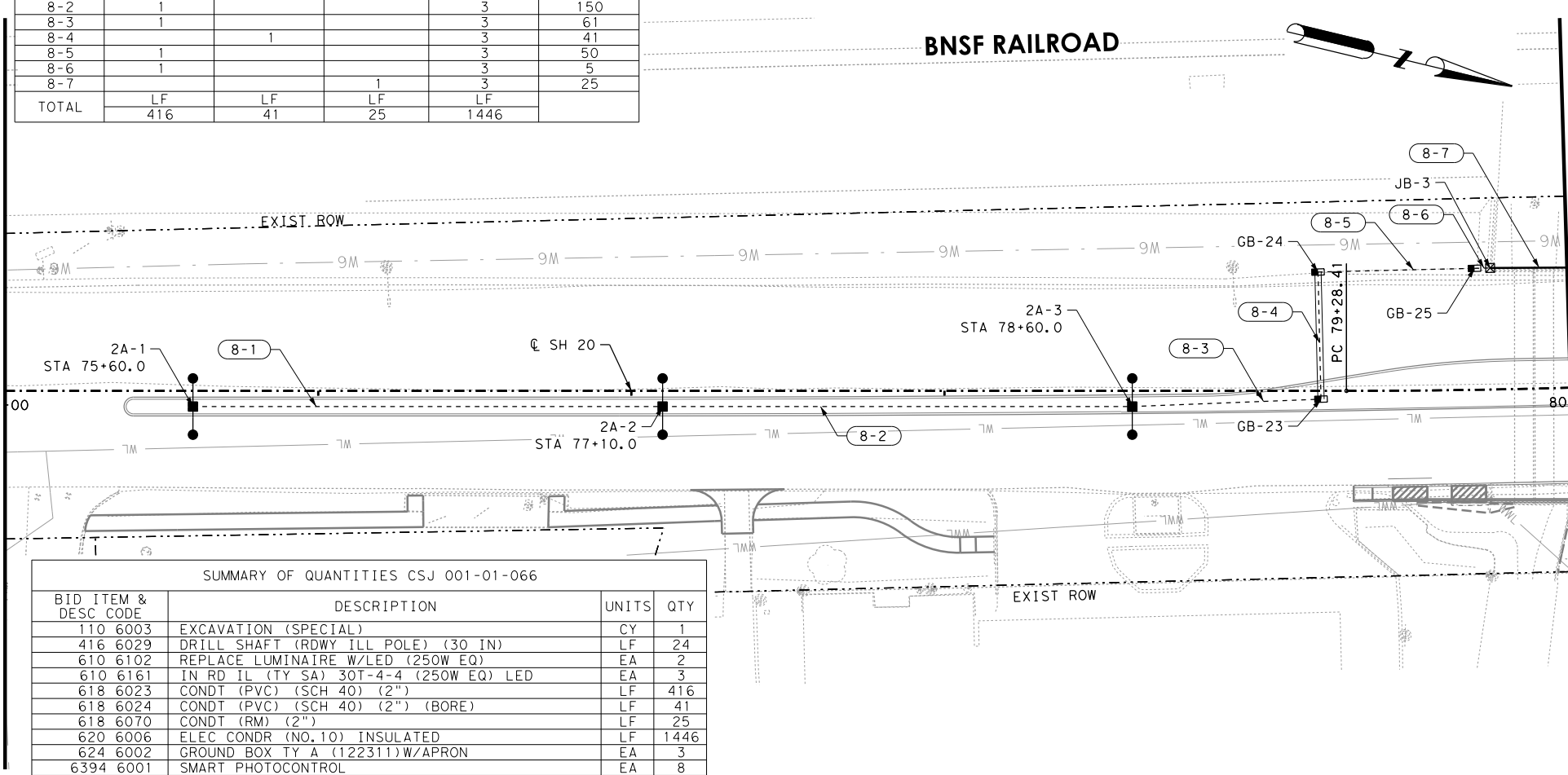


MATCH LINE STA 75+00

SHEET 8 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	618 6070 CONDT (RM) (2")	620 6006 ELEC CONDR (NO.10) INSULATED	RUN LENGTH FEET
8-1	1			3	150
8-2	1			3	150
8-3	1			3	61
8-4		1		3	41
8-5	1			3	50
8-6	1			3	5
8-7			1	3	25
TOTAL	LF 416	LF 41	LF 25	LF 1446	

MATCH LINE STA 75+00



MATCH LINE STA 80+00

SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	24
610 6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA	2
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	3
618 6023	CONDT (PVC) (SCH 40) (2")	LF	416
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	41
618 6070	CONDT (RM) (2")	LF	25
620 6006	ELEC CONDR (NO.10) INSULATED	LF	1446
624 6002	GROUND BOX TY A (122311)W/APRON	EA	3
6394 6001	SMART PHOTOCONTROL	EA	8

LEGEND

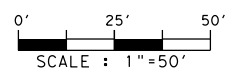
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

NOTES:

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6/2/2021



**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 70+00 TO STA. 80+00

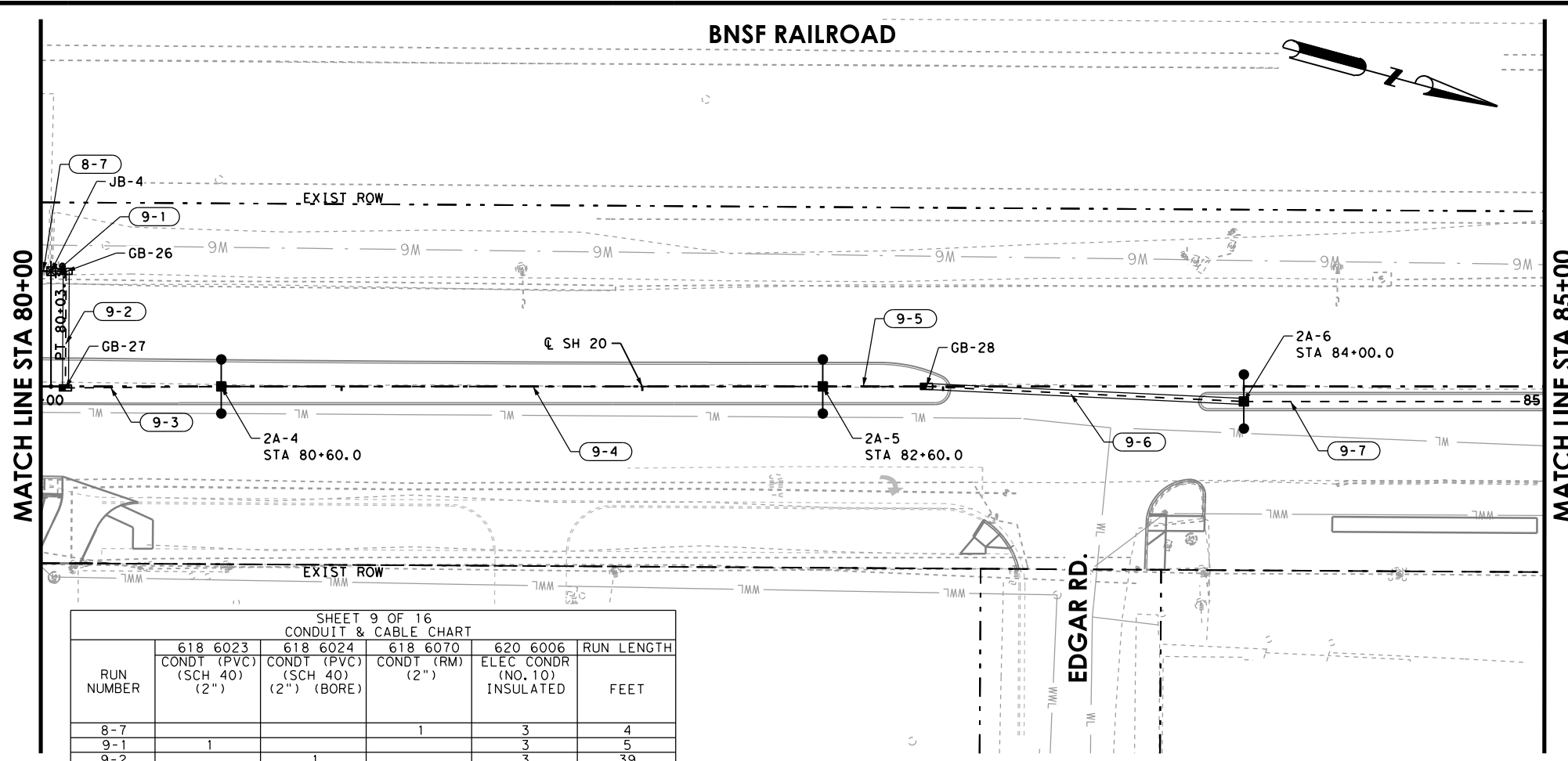
SHEET 8 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	212

5/2/2021

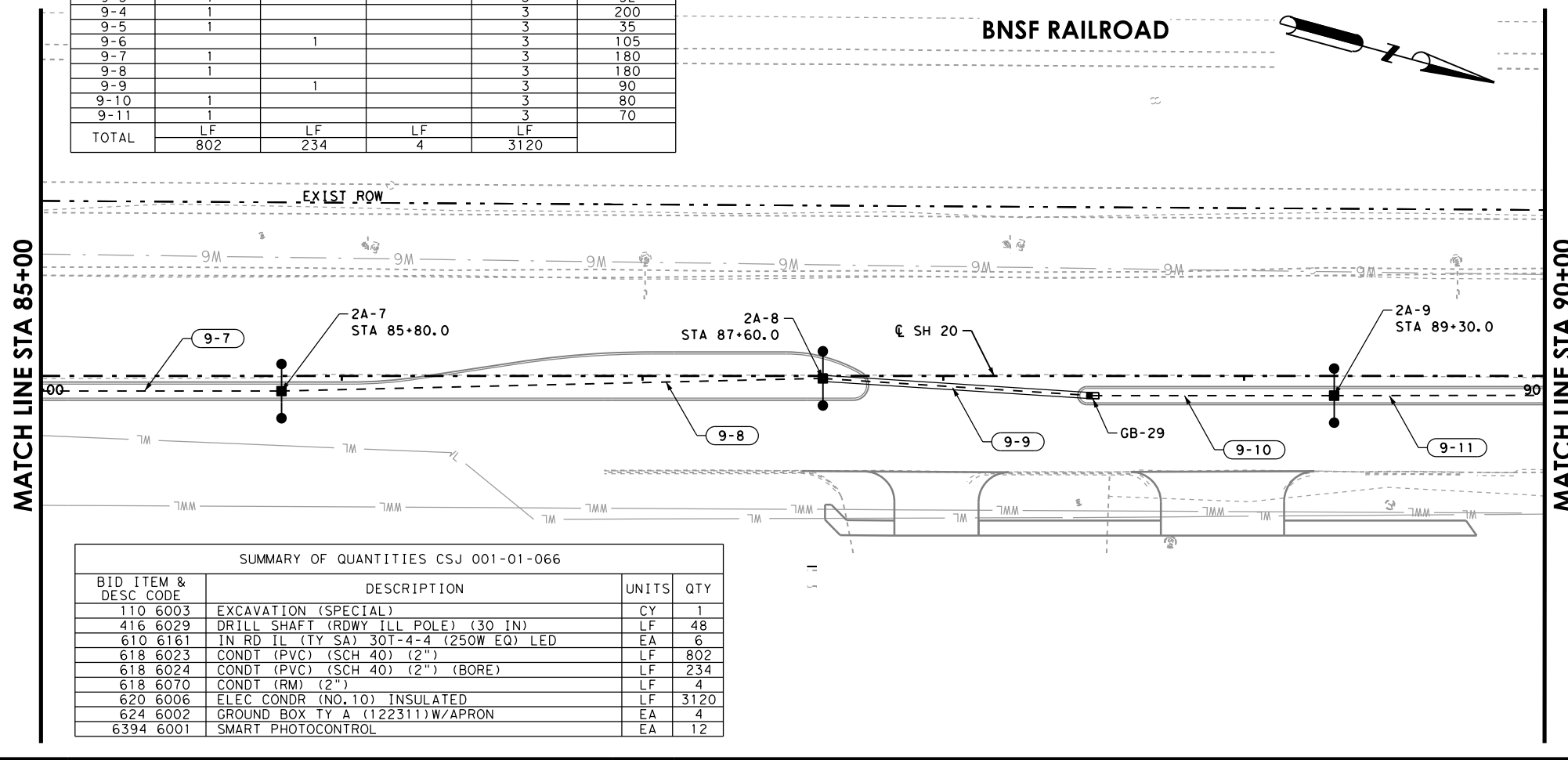
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SHEET 9 OF 16
CONDUIT & CABLE CHART

CONDUIT RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	618 6070 CONDT (RM) (2")	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
8-7			1	3	4
9-1	1			3	5
9-2		1		3	39
9-3	1			3	52
9-4	1			3	200
9-5	1			3	35
9-6		1		3	105
9-7	1			3	180
9-8	1			3	180
9-9		1		3	90
9-10	1			3	80
9-11	1			3	70
TOTAL	LF 802	LF 234	LF 4	LF 3120	



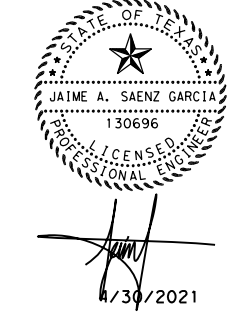
SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	6
618 6023	CONDT (PVC) (SCH 40) (2")	LF	802
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	234
618 6070	CONDT (RM) (2")	LF	4
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	3120
624 6002	GROUND BOX TY A (122311)W/APRON	EA	4
6394 6001	SMART PHOTOCONTROL	EA	12

LEGEND

- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
 - PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



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Firm Registration Number 420

Texas Department of Transportation

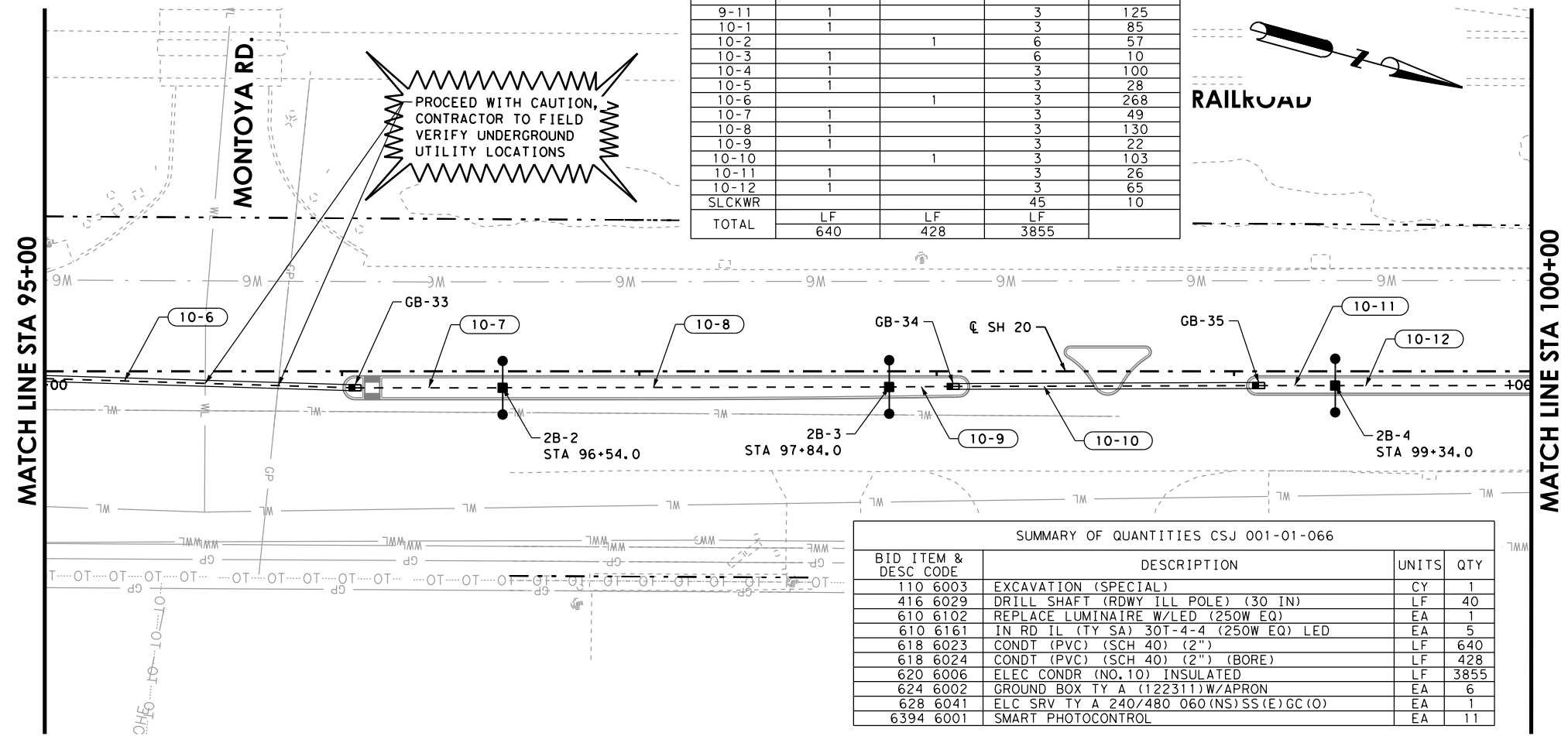
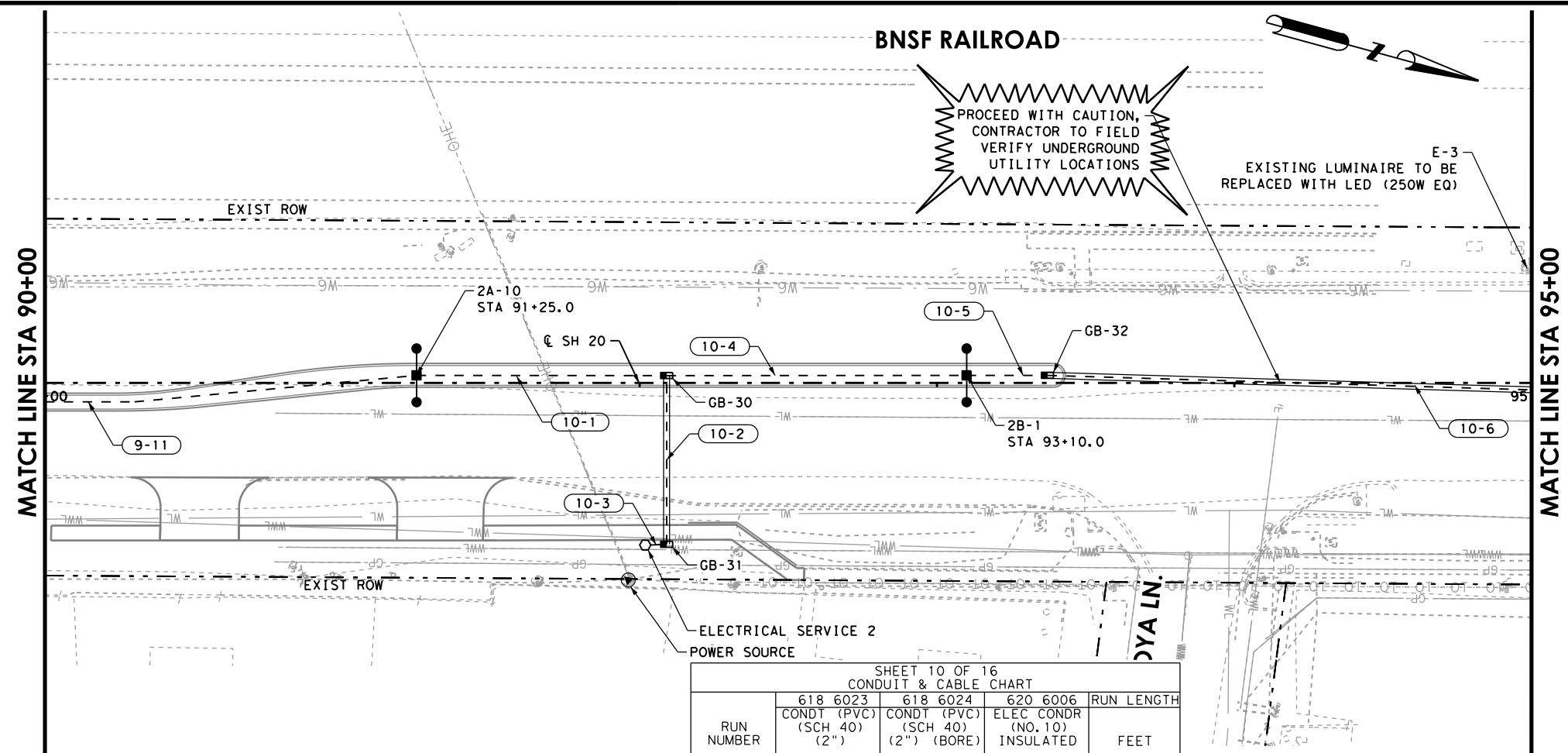
**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 80+00 TO STA. 90+00

SHEET 9 OF 16

DESIGNED: MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: JG	0001	01	063, ETC.	213

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SHEET 10 OF 16
CONDUIT & CABLE CHART

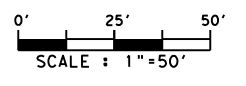
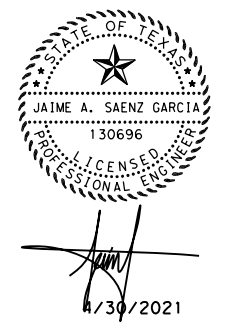
RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
9-11	1		3	125
10-1	1		3	85
10-2		1	6	57
10-3	1		6	10
10-4	1		3	100
10-5	1		3	28
10-6		1	3	268
10-7	1		3	49
10-8	1		3	130
10-9	1		3	22
10-10		1	3	103
10-11	1		3	26
10-12	1		3	65
SLCKWR			45	10
TOTAL	LF 640	LF 428	LF 3855	

SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
610 6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA	1
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	5
618 6023	CONDT (PVC) (SCH 40) (2")	LF	640
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	428
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	3855
624 6002	GROUND BOX TY A (122311)W/APRON	EA	6
628 6041	ELC SRV TY A 240/480 060(NS)SS(E)GC(O)	EA	1
6394 6001	SMART PHOTOCONTROL	EA	11

- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
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 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



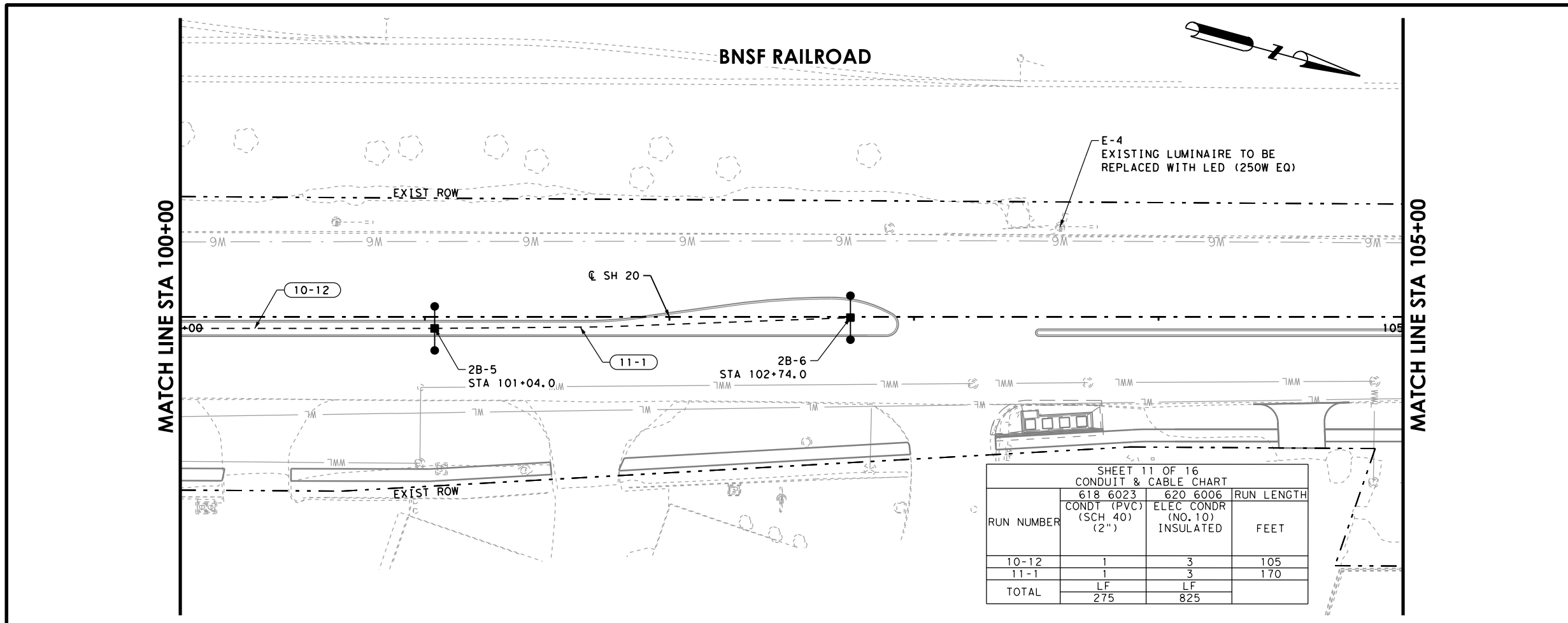
**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 90+00 TO STA. 100+00

SHEET 10 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	214

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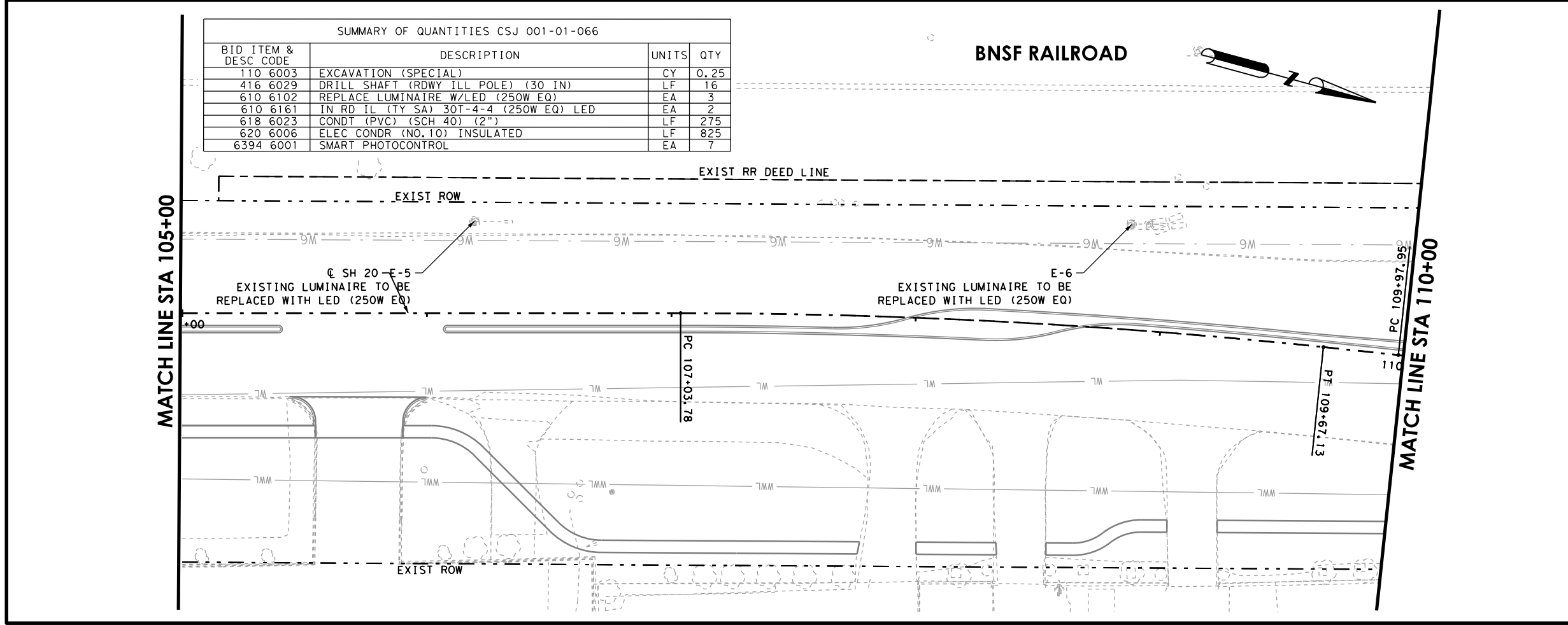


SHEET 11 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	618 6023	620 6006	RUN LENGTH FEET
	CONDT (PVC) (SCH 40) (2")	ELEC CONDR (NO. 10) INSULATED	
10-12	1	3	105
11-1	1	3	170
TOTAL	LF 275	LF 825	

- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
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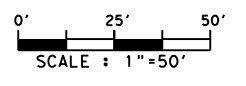


SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	0.25
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	16
610 6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA	3
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	2
618 6023	CONDT (PVC) (SCH 40) (2")	LF	275
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	825
6394 6001	SMART PHOTOCONTROL	EA	7



4/30/2021



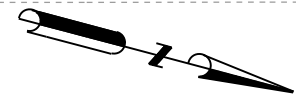
**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 100+00 TO STA. 110+00**

SHEET 11 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	215

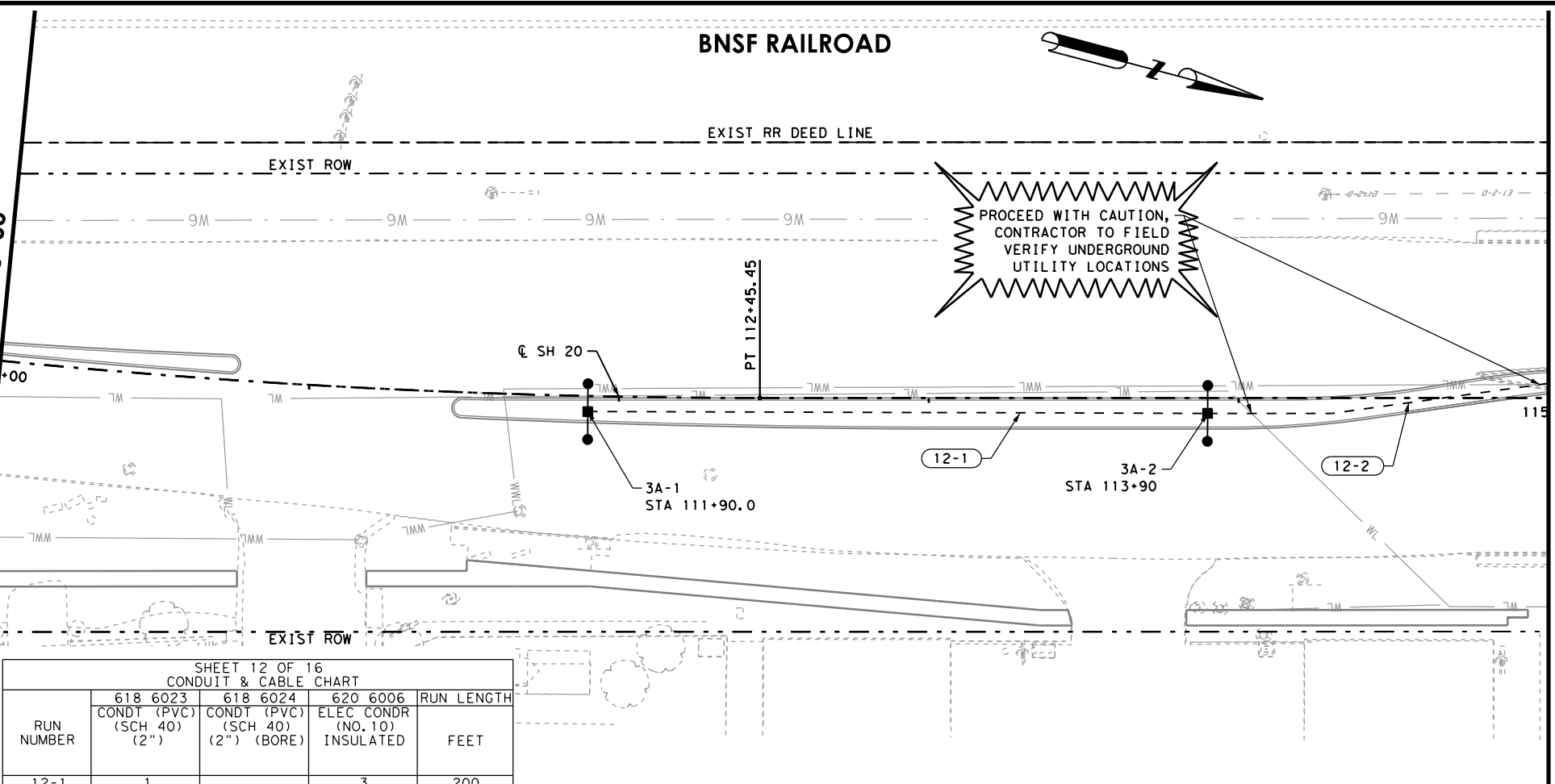
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BNSF RAILROAD



MATCH LINE STA 110+00

MATCH LINE STA 115+00



SHEET 12 OF 16
CONDUIT & CABLE CHART

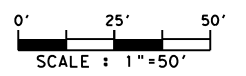
RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
12-1	1		3	200
12-2	1		3	120
12-3		1	3	80
12-4		1	3	200
12-5		1	3	65
12-6	1		3	15
SLCKWR			18	10
TOTAL	LF 335	LF 345	LF 2220	

- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
1. UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
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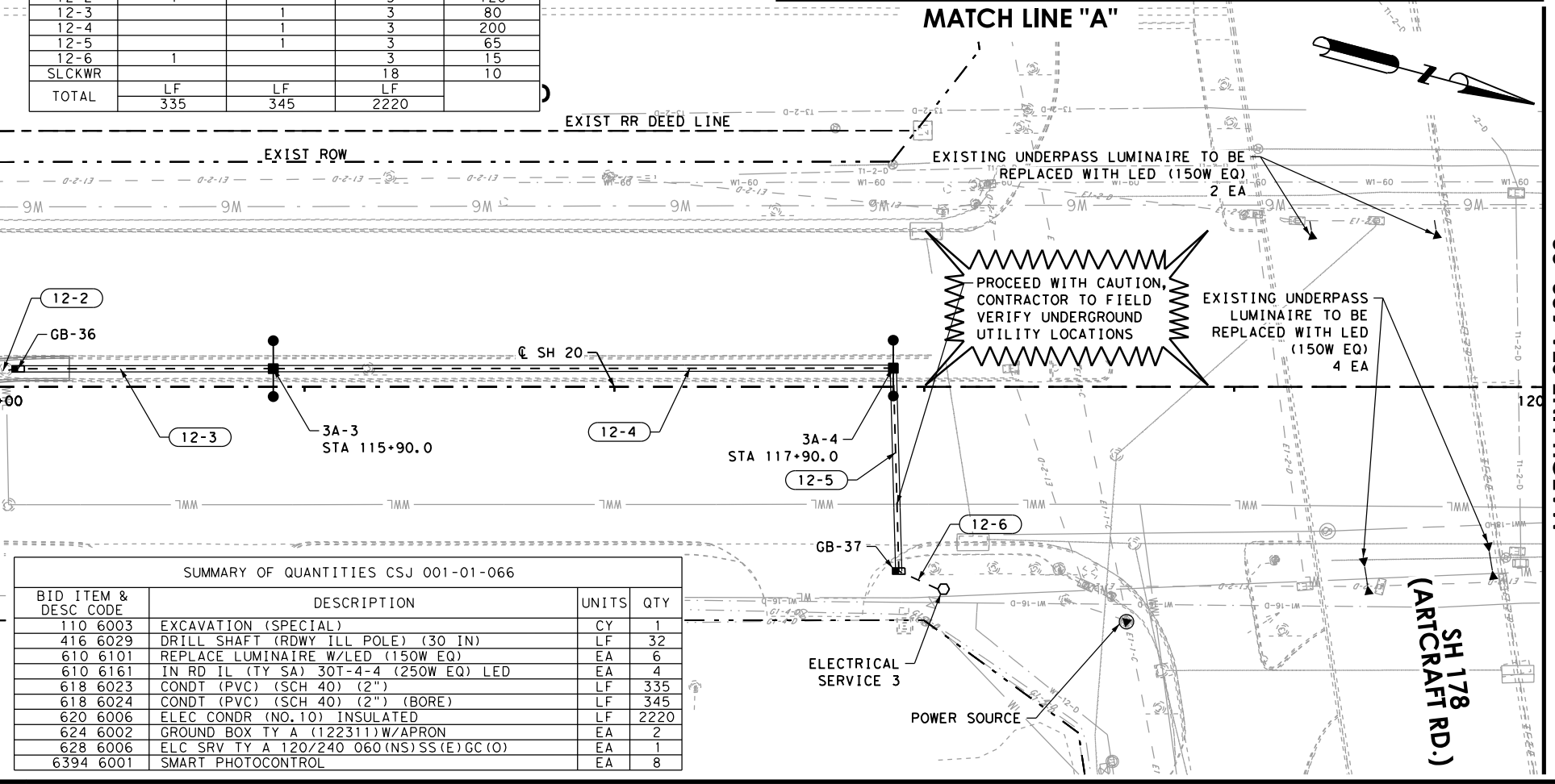
4/30/2021



MATCH LINE "A"

MATCH LINE STA 115+00

MATCH LINE STA 120+00



SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	32
610 6101	REPLACE LUMINAIRE W/LED (150W EQ)	EA	6
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	4
618 6023	CONDT (PVC) (SCH 40) (2")	LF	335
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	345
620 6006	ELEC CONDR (NO.10) INSULATED	LF	2220
624 6002	GROUND BOX TY A (122311)W/APRON	EA	2
628 6006	ELC SRV TY A 120/240 060(NS)SS(E)GC(O)	EA	1
6394 6001	SMART PHOTOCONTROL	EA	8

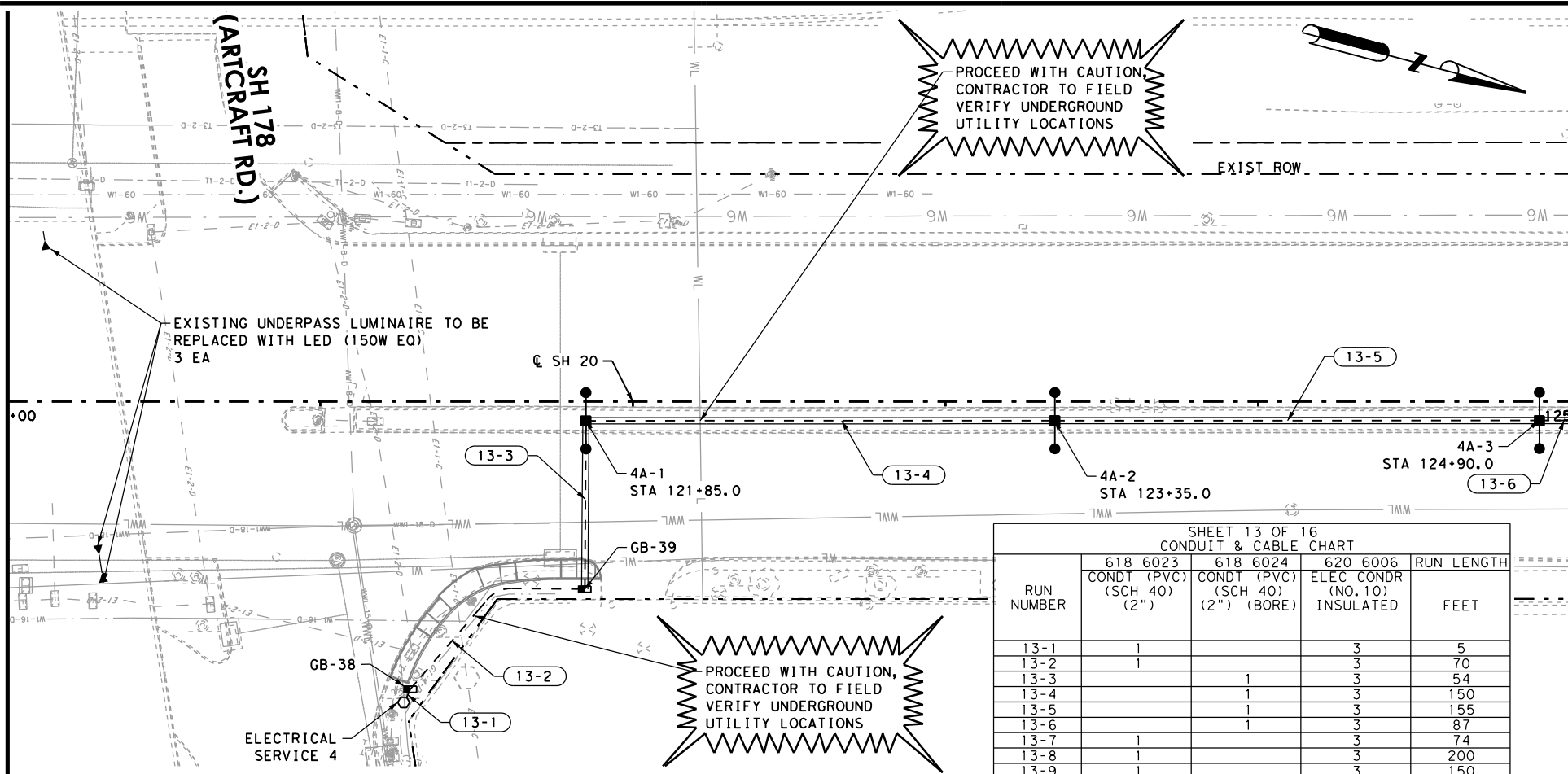


**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 110+00 TO STA. 120+00**

SHEET 12 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	216

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MATCH LINE STA 120+00

MATCH LINE STA 125+00

SHEET 13 OF 16
CONDUIT & CABLE CHART

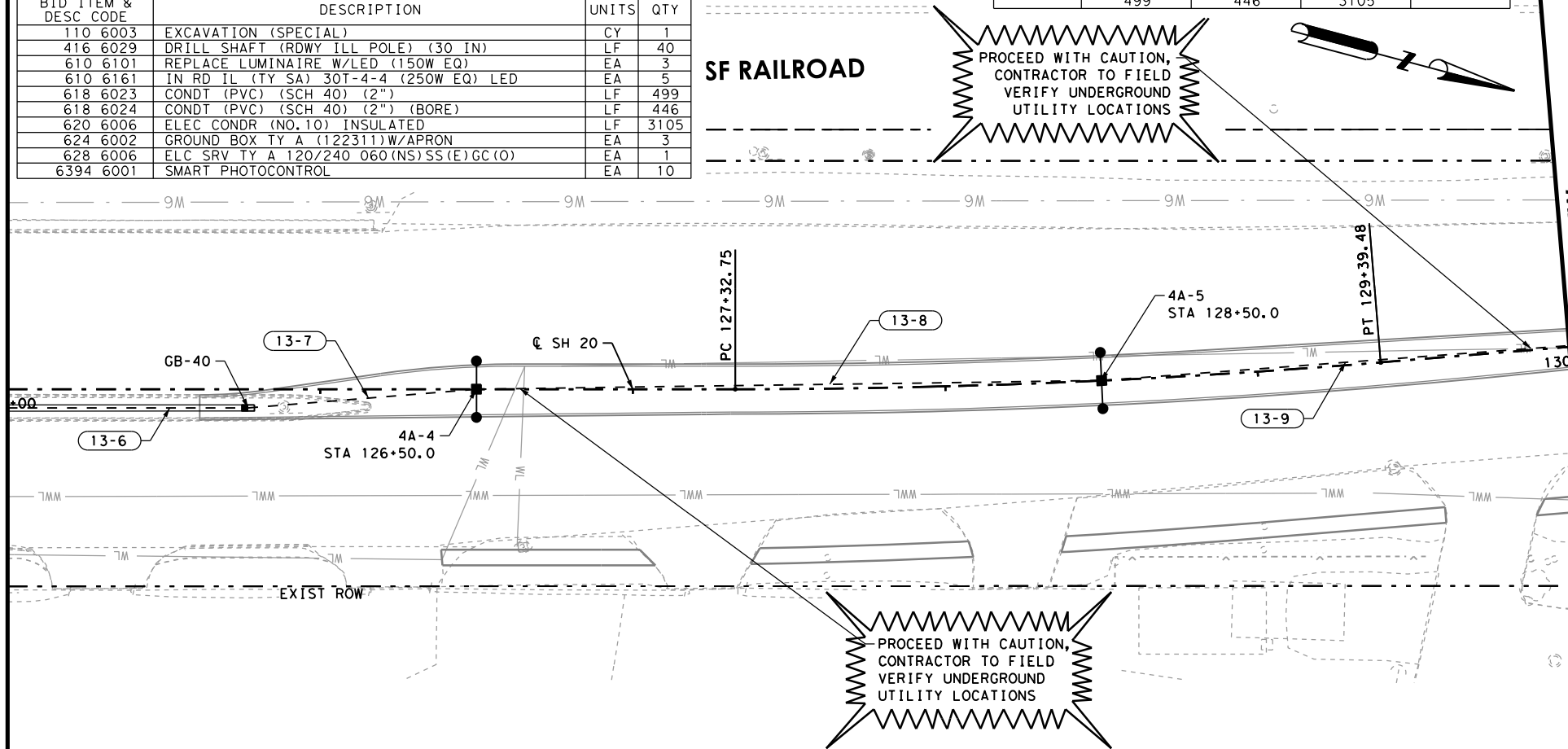
RUN NUMBER	618 6023 CONDT (PVC) (SCH 40) (2")	618 6024 CONDT (PVC) (SCH 40) (2") (BORE)	620 6006 ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
13-1	1		3	5
13-2	1		3	70
13-3		1	3	54
13-4		1	3	150
13-5		1	3	155
13-6		1	3	87
13-7	1		3	74
13-8	1		3	200
13-9	1		3	150
SLCKWR			27	10
TOTAL	LF 499	LF 446	LF 3105	

SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	1
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
610 6101	REPLACE LUMINAIRE W/LED (150W EQ)	EA	3
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	5
618 6023	CONDT (PVC) (SCH 40) (2")	LF	499
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	446
620 6006	ELEC CONDR (NO.10) INSULATED	LF	3105
624 6002	GROUND BOX TY A (122311)W/APRON	EA	3
628 6006	ELC SRV TY A 120/240 060 (NS) SS (E) GC (O)	EA	1
6394 6001	SMART PHOTOCONTROL	EA	10

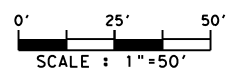
MATCH LINE STA 125+00

MATCH LINE STA 130+00



- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4(250W EQ)LED (BREAKAWAY)
 - XX-X CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
 - PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.

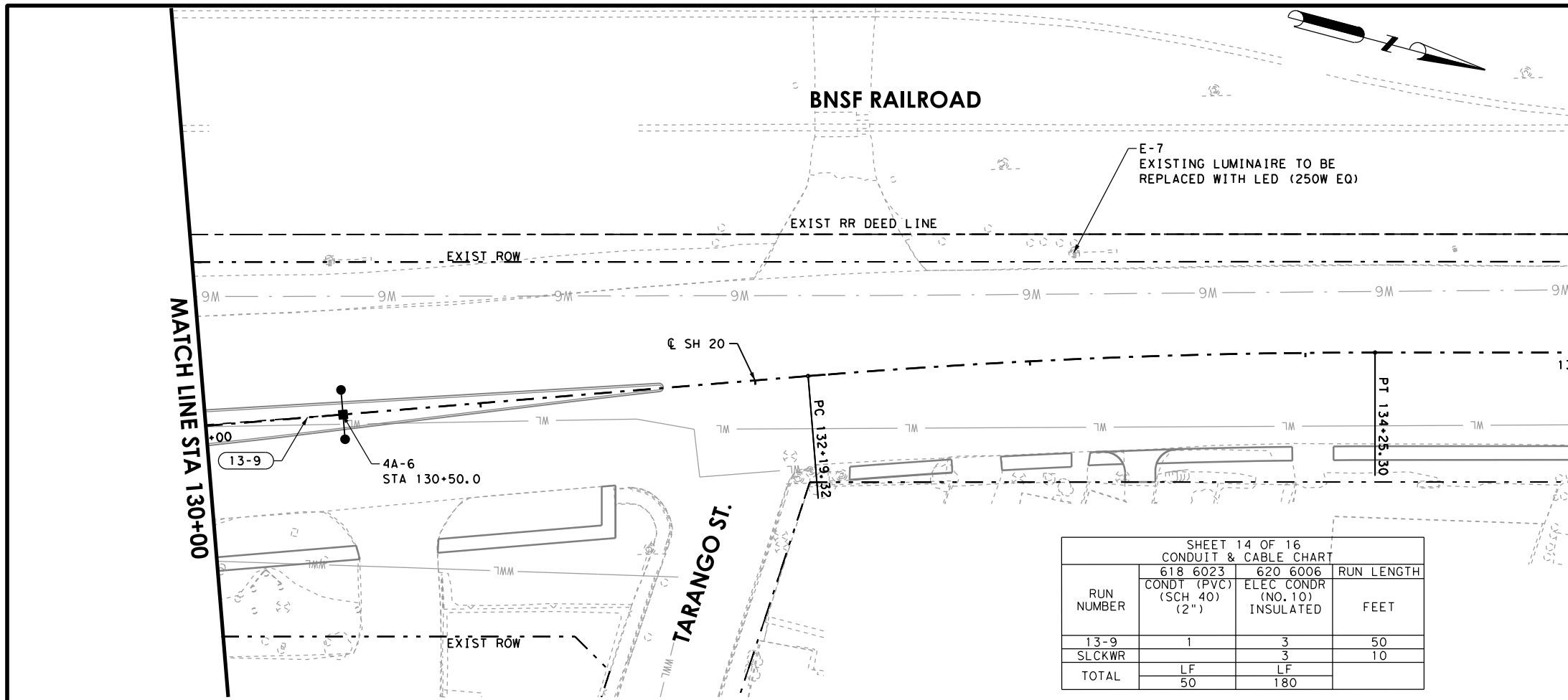


**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 120+00 TO STA. 130+00**

SHEET 13 OF 16

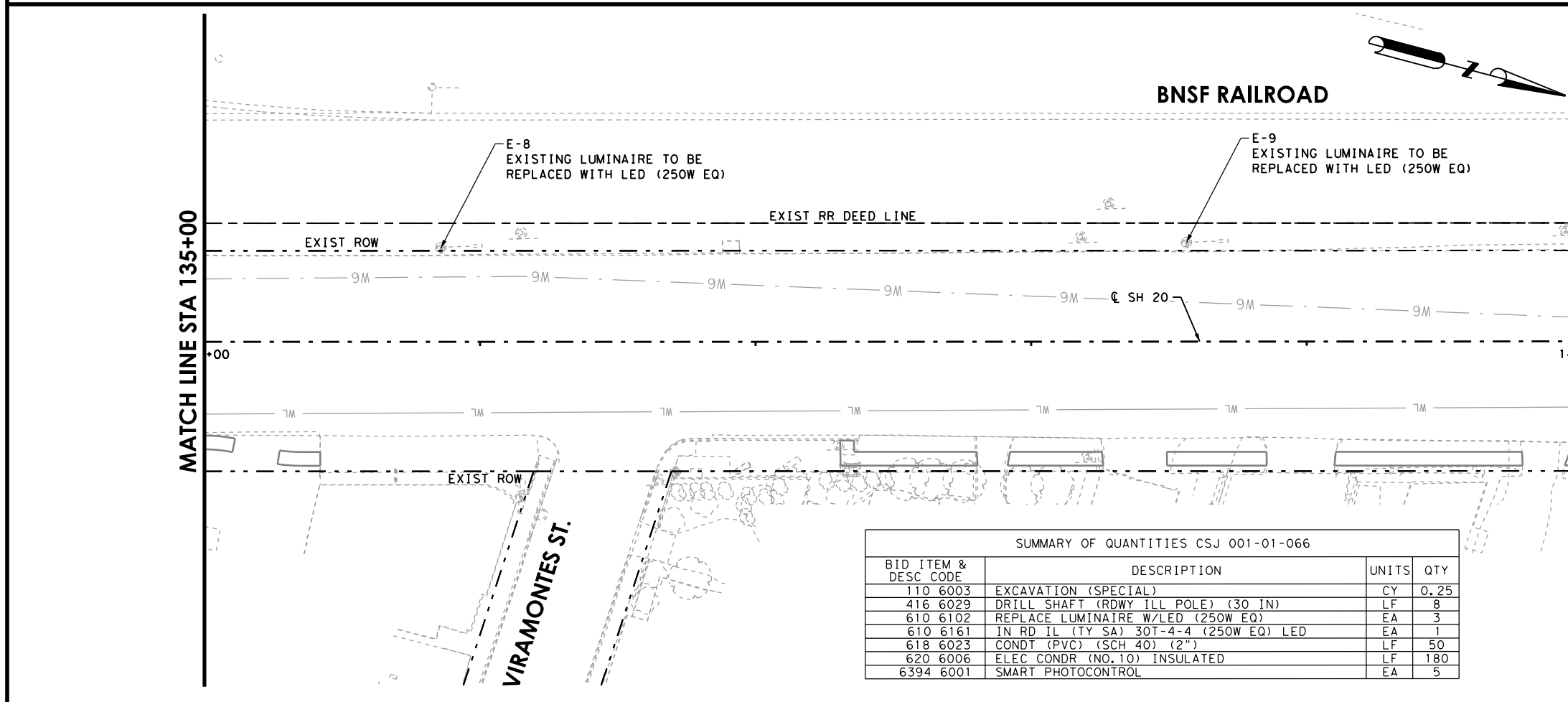
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CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	217

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SHEET 14 OF 16
CONDUIT & CABLE CHART

RUN NUMBER	COND (PVC) (SCH 40) (2")	ELEC CONDR (NO. 10) INSULATED	RUN LENGTH FEET
13-9	1	3	50
SLCKWR		3	10
TOTAL	50	180	

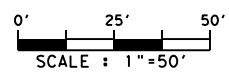
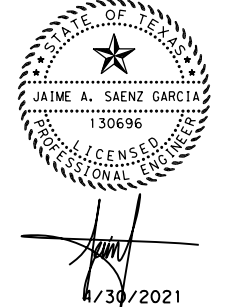


SUMMARY OF QUANTITIES CSJ 001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
110 6003	EXCAVATION (SPECIAL)	CY	0.25
416 6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8
610 6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA	3
610 6161	IN RD IL (TY SA) 30T-4-4 (250W EQ) LED	EA	3
618 6023	COND (PVC) (SCH 40) (2")	LF	50
620 6006	ELEC CONDR (NO. 10) INSULATED	LF	180
6394 6001	SMART PHOTOCONTROL	EA	5

- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
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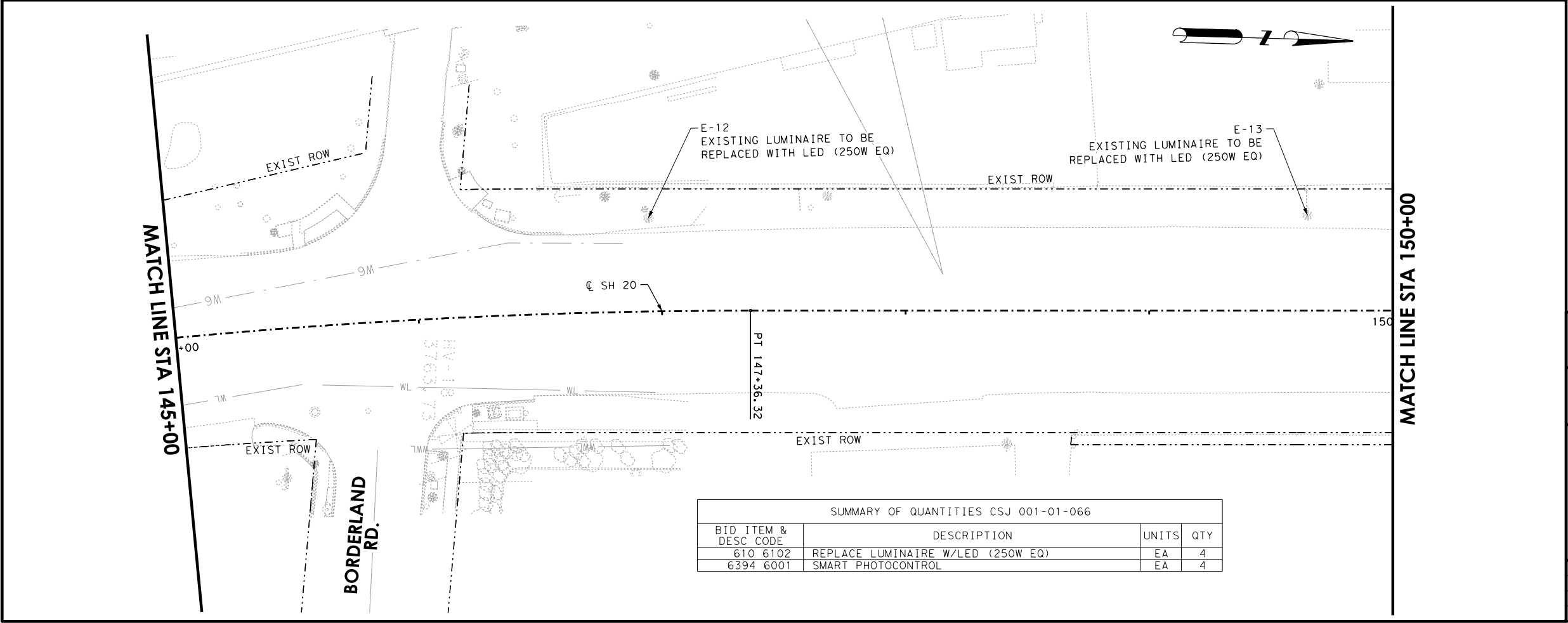
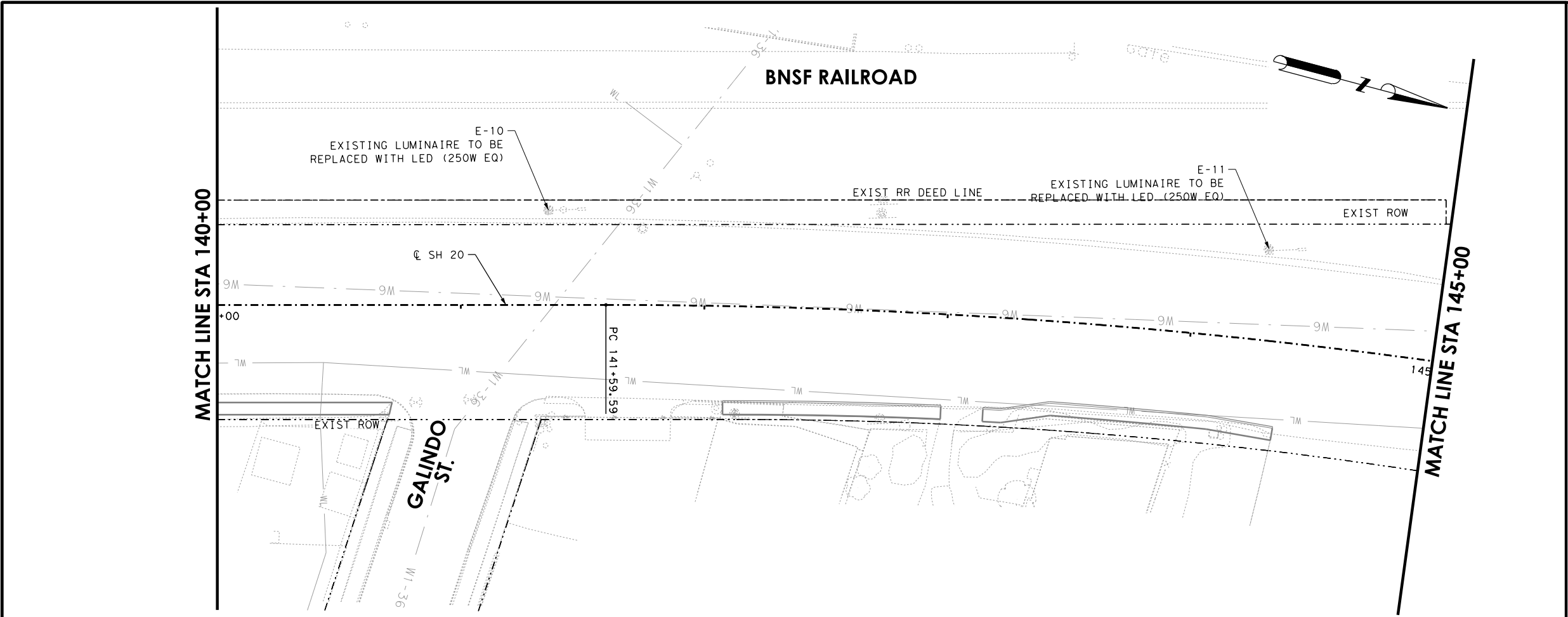


**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 130+00 TO STA. 140+00**

SHEET 14 OF 16

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	218

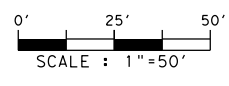
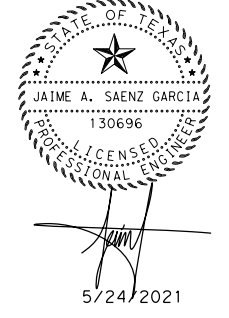
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LEGEND

- PROPOSED ROADWAY IL (TY SA) 30T-4-4(250W EQ)LED (BREAKAWAY)
- CONDUIT RUN NO. IDENTIFICATION
- PROPOSED CONDUIT RUN - TRENCHED
- PROPOSED CONDUIT RUN - BORED
- PROPOSED RIGID METAL CONDUIT
- PROPOSED ELECTRICAL SERVICE
- PROPOSED GROUND BOX TY A
- PROPOSED JUNCTION BOX
- EXIST POWER SOURCE
- EXIST UNDERPASS LUMINAIRE

- NOTES:**
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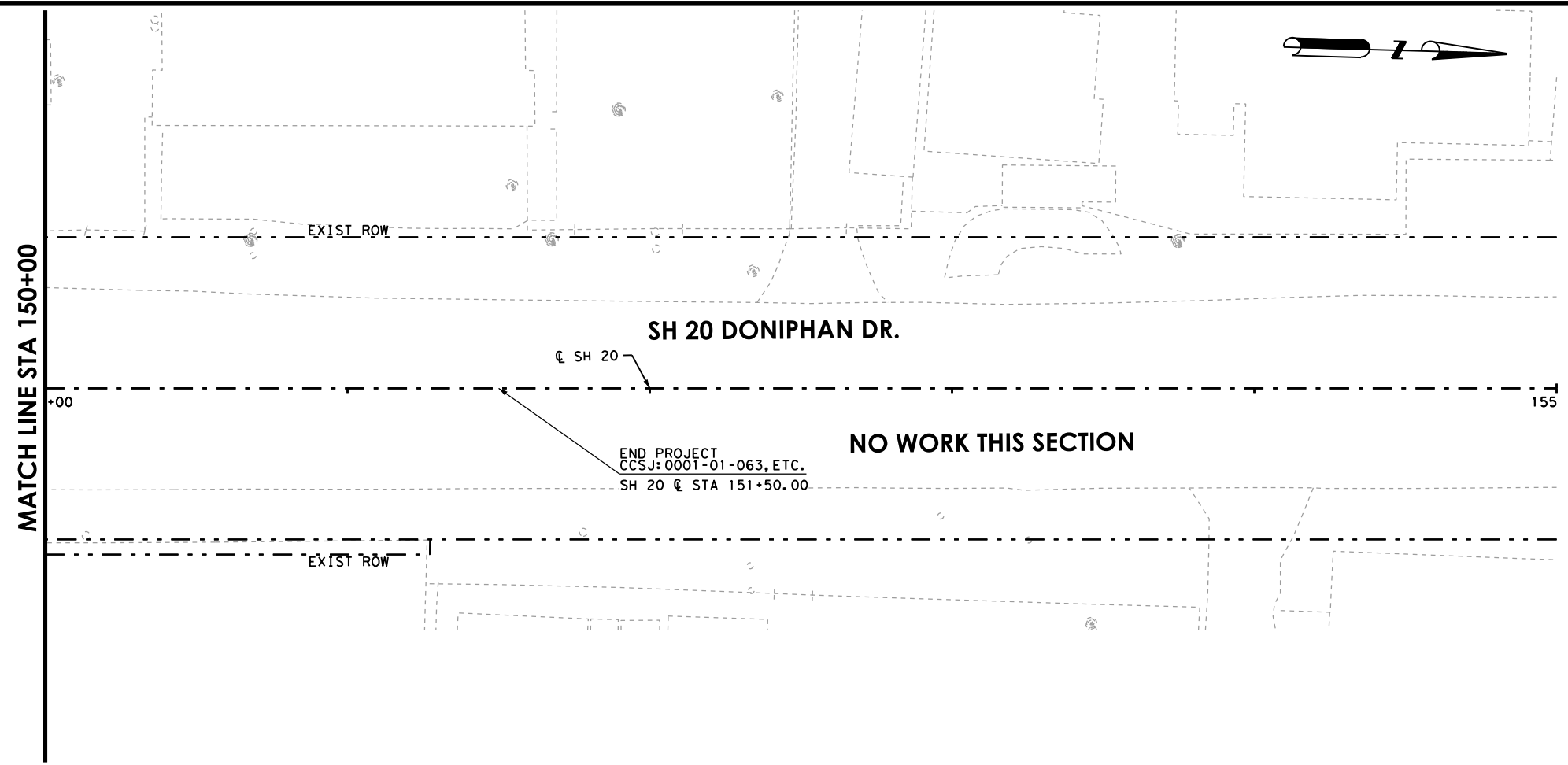
**SH 20
DONIPHAN DR.
ILLUMINATION PLAN
STA. 140+00 TO STA. 150+00**

SHEET 15 OF 16

SUMMARY OF QUANTITIES CSJ 001-01-066			
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
610 6102	REPLACE LUMINAIRE W/LED (250W EQ)	EA	4
6394 6001	SMART PHOTOCONTROL	EA	4

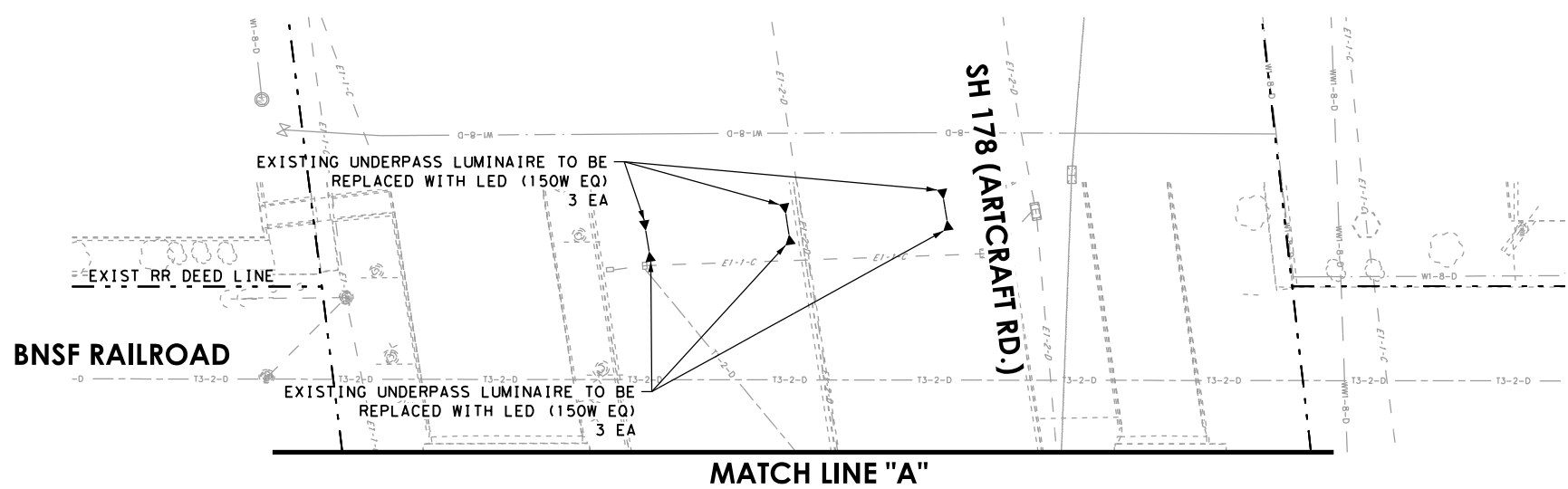
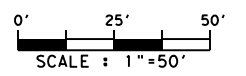
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	219

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- LEGEND**
- PROPOSED ROADWAY IL (TY SA) 30T-4-4 (250W EQ) LED (BREAKAWAY)
 - CONDUIT RUN NO. IDENTIFICATION
 - PROPOSED CONDUIT RUN - TRENCHED
 - PROPOSED CONDUIT RUN - BORED
 - PROPOSED RIGID METAL CONDUIT
 - PROPOSED ELECTRICAL SERVICE
 - PROPOSED GROUND BOX TY A
 - PROPOSED JUNCTION BOX
 - EXIST POWER SOURCE
 - EXIST UNDERPASS LUMINAIRE

- NOTES:**
- UTILITIES SHOWN IN PLANS ARE IN APPROXIMATE LOCATIONS. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
 - PROPOSED ILLUMINATION POLES ARE TO BE CENTERED ALONG THE PROPOSED MEDIAN UNLESS OTHERWISE NOTED.
 - REFER TO "REMOVAL LAYOUT" SHEETS FOR INFORMATION ON REMOVAL OF ILLUMINATION ITEMS.



SUMMARY OF QUANTITIES CSJ 001-01-066			
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
610 6101	REPLACE LUMINAIRE W/LED (150W EQ)	EA	6



**SH 20
DONIPHAN DR.**

ILLUMINATION PLAN
STA. 150+00 TO END

SHEET 16 OF 16

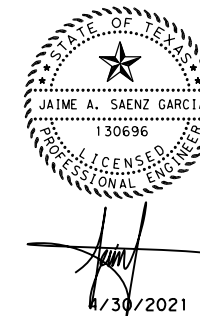
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	220

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ELECTRIC SERVICE SUMMARY									
ITEM & CODE	SERVICE NUMBER	STATION & OFFSET	ELECTRICAL SERVICE DESCRIPTION DATA (SEE ED(5) - 14 AND ED(6) - 14)	SERVICE SUPPORT TYPE	SERVICE FEED	SERVICE CONDUIT SIZE (RMC)*	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP
628 6041	ELECTRIC SERVICE 1	STA 45+47, 36.5' RT	ELC SRV TY A 240/480 060(NS)SS(E)GC(O)	GRANITE CONCRETE	OVERHEAD	1 1/4"	3/#4	N/A	2P/60
628 6041	ELECTRIC SERVICE 2	STA 92+02, 55' RT	ELC SRV TY A 240/480 060(NS)SS(E)GC(O)	GRANITE CONCRETE	OVERHEAD	1 1/4"	3/#4	N/A	2P/60
628 6006	ELECTRIC SERVICE 3	STA 118+06, 66' RT	ELC SRV TY A 120/240 060(NS)SS(E)GC(O)	GRANITE CONCRETE	OVERHEAD	1 1/4"	3/#4	N/A	2P/60
628 6006	ELECTRIC SERVICE 4	STA 121+27, 96' RT	ELC SRV TY A 120/240 060(NS)SS(E)GC(O)	GRANITE CONCRETE	OVERHEAD	1 1/4"	3/#4	N/A	2P/60

*VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.

ELECTRIC SERVICE SUMMARY							
PHOTOCELL MOUNTING LOCATION	TWO-POLE CONTACTOR AMPS	PANEL BD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	BRANCH CIRCUIT AMPS	VOLTAGE	KVA LOAD
INSIDE SERVICE/ENCLOSURE	30	60	ILLUMINATION 1A	2P/20	14.7	480	7.06
			ILLUMINATION 1B	2P/20	9.1	480	4.37
INSIDE SERVICE/ENCLOSURE	30	60	ILLUMINATION 2A	2P/20	7	480	3.36
			ILLUMINATION 2B	2P/20	4.2	480	2.02
INSIDE SERVICE/ENCLOSURE	30	60	ILLUMINATION 3A	2P/20	5.68	240	1.36
INSIDE SERVICE/ENCLOSURE	30	60	ILLUMINATION 4A	2P/20	8.52	240	2.04



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Firm Registration Number 420



SH 20
DONIPHAN DR.

ILLUMINATION
ELECTRIC SERVICE SUMMARY

SHEET 1 OF 1

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	221

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VOLTAGE DROP CALCULATION SUMMARY

LAYOUT SHEET	ELECTRIC SERVICE ID AND BRANCH	RUN ID	RUN VOLTAGE (VOLTS)	CURRENT THIS RUN (AMPS)	LENGTH OF RUN (FEET)	ITEM NUMBER	CONDUCTOR DESCRIPTION	WIRE LOOP RESISTANCE 2 X (OHM / 1000 FT)	VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP NOT TO EXCEED 8% DROP
SHEET 1 OF 16	1A-1	1-1	480	0.70	20	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.01	22.2850	4.64%
SHEET 2 OF 16		1-1	480	0.70	180	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.10	22.2735	4.64%
SHEET 2 OF 16	1A-2	2-1	480	1.40	80	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.09	22.1702	4.62%
SHEET 2 OF 16		2-2	480	1.40	75	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.09	22.0783	4.60%
SHEET 2 OF 16		2-3	480	1.40	15	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.02	21.9922	4.58%
SHEET 2 OF 16	1A-3	2-4	480	2.10	200	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.34	21.9750	4.58%
SHEET 2 OF 16	1A-4	2-5	480	2.80	200	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.46	21.6306	4.51%
SHEET 2 OF 16	1A-5	2-6	480	3.50	45	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.13	21.1714	4.41%
SHEET 2 OF 16		2-7	480	3.50	95	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.27	21.0423	4.38%
SHEET 2 OF 16		2-8	480	3.50	50	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.14	20.7696	4.33%
SHEET 2 OF 16	1A-6	2-9	480	4.20	60	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.21	20.6261	4.30%
SHEET 3 OF 16		2-9	480	4.20	130	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.45	20.4195	4.25%
SHEET 3 OF 16	1A-7	3-1	480	4.90	155	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.62	19.9718	4.16%
SHEET 3 OF 16	1A-8	3-2	480	5.60	155	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.71	19.3490	4.03%
SHEET 3 OF 16	1A-9	3-3	480	6.30	40	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.21	18.6372	3.88%
SHEET 3 OF 16		3-4	480	6.30	87	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.45	18.4306	3.84%
SHEET 3 OF 16		3-5	480	6.30	33	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.17	17.9811	3.75%
SHEET 3 OF 16		3-6	480	6.30	5	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.03	17.8106	3.71%
SHEET 3 OF 16		3-7	480	6.30	28	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.14	17.7848	3.71%
SHEET 3 OF 16		3-8	480	6.30	24	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.12	17.6402	3.68%
SHEET 3 OF 16		3-9	480	6.30	35	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.18	17.5162	3.65%
SHEET 3 OF 16	1A-10	3-10	480	7.00	103	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.59	17.3354	3.61%
SHEET 3 OF 16		3-11	480	7.00	83	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.48	16.7442	3.49%
SHEET 3 OF 16		3-12	480	7.00	15	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.09	16.2677	3.39%
SHEET 3 OF 16	1A-11	3-13	480	7.70	160	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.01	16.1816	3.37%
SHEET 3 OF 16	1A-12	3-14	480	8.40	10	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.07	15.1714	3.16%
SHEET 4 OF 16		3-14	480	8.40	150	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.03	15.1025	3.15%
SHEET 4 OF 16	1A-13	4-1	480	9.10	160	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.19	14.0693	2.93%
SHEET 4 OF 16	1A-14	4-2	480	9.80	160	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.29	12.8754	2.68%
SHEET 4 OF 16	1A-15	4-3	480	10.50	160	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.38	11.5896	2.41%
SHEET 4 OF 16	1A-16	4-4	480	11.20	170	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.56	10.2120	2.13%
SHEET 4 OF 16	1A-17	4-5	480	11.90	45	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.44	8.6508	1.80%
SHEET 4 OF 16		4-6	480	11.90	130	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.27	8.2116	1.71%
SHEET 4 OF 16		4-7	480	11.90	26	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.25	6.9431	1.45%
SHEET 5 OF 16	1A-18	5-1	480	12.60	180	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.86	6.6894	1.39%
SHEET 5 OF 16	1A-19	5-2	480	13.30	160	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.74	4.8296	1.01%
SHEET 5 OF 16	1A-20	5-3	480	14.00	170	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	1.95	3.0847	0.64%
SHEET 5 OF 16	1A-21	5-4	480	14.70	44	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.53	1.1331	0.24%
SHEET 5 OF 16		5-5	480	14.70	40	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.48	0.6027	0.13%
SHEET 5 OF 16		5-6	480	14.70	10	620 6010	ELEC CONDR (NO.6) INSULATED	0.82	0.12	0.1205	0.03%
CIRCUIT "1A" START		START	480	14.70	START					0.0000	



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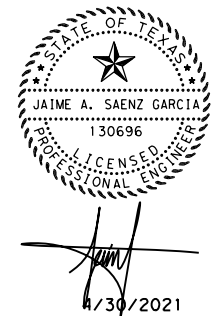
**SH 20
DONIPHAN DR.
ILLUMINATION
VOLTAGE DROP**

SHEET 1 OF 3

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	222

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VOLTAGE DROP CALCULATION SUMMARY											
LAYOUT SHEET	ELECTRIC SERVICE ID AND BRANCH	RUN ID	RUN VOLTAGE (VOLTS)	CURRENT THIS RUN (AMPS)	LENGTH OF RUN (FEET)	ITEM NUMBER	CONDUCTOR DESCRIPTION	WIRE LOOP RESISTANCE 2 X (OHM / 1000 FT)	VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP NOT TO EXCEED 8% DROP
SHEET 7 OF 16	1B-13	7-6	480	0.70	195	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.28	23.6569	4.93%
SHEET 7 OF 16	1B-12	7-5	480	1.40	195	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.56	23.3790	4.87%
SHEET 7 OF 16	1B-11	7-4	480	2.10	56	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.24	22.8232	4.75%
SHEET 7 OF 16		7-3	480	2.10	102	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.44	22.5837	4.70%
SHEET 7 OF 16		7-2	480	2.10	38	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.16	22.1476	4.61%
SHEET 7 OF 16	1B-10	7-1	480	2.80	162	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.92	21.9851	4.58%
SHEET 7 OF 16	1B-9	6-10	480	3.50	129	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.92	21.0616	4.39%
SHEET 6 OF 16		6-10	480	3.50	33	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.24	20.1424	4.20%
SHEET 6 OF 16	1B-8	6-9	480	4.20	161	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.38	19.9072	4.15%
SHEET 6 OF 16	1B-7	6-8	480	4.90	34	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.34	18.5305	3.86%
SHEET 6 OF 16		6-7	480	4.90	74	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.74	18.1913	3.79%
SHEET 6 OF 16		6-6	480	4.90	73	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.73	17.4530	3.64%
SHEET 6 OF 16	1B-6	6-5	480	5.60	86	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.98	16.7247	3.48%
SHEET 6 OF 16		6-4	480	5.60	104	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.19	15.7442	3.28%
SHEET 6 OF 16	1B-5	6-3	480	6.30	180	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	2.31	14.5584	3.03%
SHEET 6 OF 16	1B-4	6-2	480	7.00	86	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.23	12.2496	2.55%
SHEET 6 OF 16		6-1	480	7.00	114	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.62	11.0239	2.30%
SHEET 6 OF 16	1B-3	5-11	480	7.70	55	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.86	9.3992	1.96%
SHEET 5 OF 16		5-11	480	7.70	135	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	2.12	8.5369	1.78%
SHEET 5 OF 16	1B-2	5-10	480	8.40	31	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.53	6.4205	1.34%
SHEET 5 OF 16		5-9	480	8.40	140	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	2.39	5.8904	1.23%
SHEET 5 OF 16		5-8	480	8.40	30	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.51	3.4960	0.73%
SHEET 5 OF 16	1B-1	5-7	480	9.10	111	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	2.06	2.9829	0.62%
SHEET 5 OF 16		5-5	480	9.10	40	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.74	0.9264	0.19%
SHEET 5 OF 16		5-6	480	9.10	10	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.19	0.1853	0.04%
'CIRCUIT "1B" START		START	480	9.10	START					0.0000	
SHEET 8 OF 16	2A-1	8-1	480	0.70	150	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.21	13.9256	2.90%
SHEET 8 OF 16	2A-2	8-2	480	1.40	150	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.43	13.7118	2.86%
SHEET 8 OF 16	2A-3	8-3	480	2.10	61	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.26	13.2843	2.77%
SHEET 8 OF 16		8-4	480	2.10	41	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.18	13.0235	2.71%
SHEET 8 OF 16		8-5	480	2.10	50	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.21	12.8482	2.68%
SHEET 8 OF 16		8-6	480	2.10	5	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.02	12.6344	2.63%
SHEET 8 OF 16		8-7	480	2.10	25	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.11	12.6130	2.63%
SHEET 8 OF 16		8-7	480	2.10	4	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.02	12.5061	2.61%
SHEET 9 OF 16		9-1	480	2.10	5	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.02	12.4890	2.60%
SHEET 9 OF 16		9-2	480	2.10	39	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.17	12.4676	2.60%
SHEET 9 OF 16		9-3	480	2.10	52	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.22	12.3009	2.56%
SHEET 9 OF 16	2A-4	9-4	480	2.80	200	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.14	12.0786	2.52%
SHEET 9 OF 16	2A-5	9-5	480	3.50	35	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.25	10.9384	2.28%
SHEET 9 OF 16		9-6	480	3.50	105	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.75	10.6890	2.23%
SHEET 9 OF 16	2A-6	9-7	480	4.20	180	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.54	9.9408	2.07%
SHEET 9 OF 16	2A-7	9-8	480	4.90	180	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.80	8.4016	1.75%
SHEET 9 OF 16	2A-8	9-9	480	5.60	90	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.03	6.6058	1.38%
SHEET 9 OF 16		9-10	480	5.60	80	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.91	5.5797	1.16%
SHEET 9 OF 16	2A-9	9-11	480	6.30	70	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.90	4.6675	0.97%
SHEET 10 OF 16		9-11	480	6.30	125	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.60	3.7697	0.79%
SHEET 10 OF 16	2A-10	10-1	480	7.00	85	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.21	2.1663	0.45%
SHEET 10 OF 16		10-2	480	7.00	57	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.81	0.9549	0.20%
SHEET 10 OF 16		10-3	480	7.00	10	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.14	0.1425	0.03%
CIRCUIT "2A" START		END	480	7.00	START					0.0000	



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**SH 20
DONIPHAN DR.
ILLUMINATION
VOLTAGE DROP**

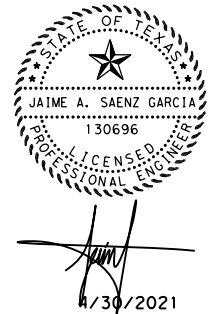
SHEET 2 OF 3

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	223

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VOLTAGE DROP CALCULATION SUMMARY

LAYOUT SHEET	ELECTRIC SERVICE ID AND BRANCH	RUN ID	RUN VOLTAGE (VOLTS)	CURRENT THIS RUN (AMPS)	LENGTH OF RUN (FEET)	ITEM NUMBER	CONDUCTOR DESCRIPTION	WIRE LOOP RESISTANCE 2 X (OHM / 1000 FT)	VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP (VOLTS)	RUNNING TOTAL VOLTAGE DROP NOT TO EXCEED 8% DROP
SHEET 11 OF 16	2B-6	11-1	480	0.70	170	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.24	6.0001	1.25%
SHEET 11 OF 16	2B-5	10-12	480	1.40	105	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.30	5.7578	1.20%
SHEET 10 OF 16		10-12	480	1.40	65	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.19	5.4585	1.14%
SHEET 10 OF 16	2B-4	10-11	480	2.10	26	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.11	5.2732	1.10%
SHEET 10 OF 16		10-10	480	2.10	103	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.44	5.1621	1.08%
SHEET 10 OF 16		10-9	480	2.10	22	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.09	4.7217	0.98%
SHEET 10 OF 16	2B-3	10-8	480	2.80	130	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.74	4.6276	0.96%
SHEET 10 OF 16	2B-2	10-7	480	3.50	49	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.35	3.8865	0.81%
SHEET 10 OF 16		10-6	480	3.50	268	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.91	3.5373	0.74%
SHEET 10 OF 16		10-5	480	3.50	28	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.20	1.6276	0.34%
SHEET 10 OF 16	2B-1	10-4	480	4.20	100	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.86	1.4281	0.30%
SHEET 10 OF 16		10-2	480	4.20	57	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.49	0.5729	0.12%
SHEET 10 OF 16		10-3	480	4.20	10	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.09	0.0855	0.02%
CIRCUIT "2B" START		START	480	4.20	START					0.0000	
SHEET 12 OF 16	3A-1	12-1	240	1.42	200	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.58	4.3945	1.83%
SHEET 12 OF 16	3A-2	12-2	240	2.84	120	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.69	3.8163	1.59%
SHEET 12 OF 16		12-3	240	2.84	80	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.46	3.1224	1.30%
SHEET 12 OF 16	3A-3	12-4	240	4.26	200	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.73	2.6598	1.11%
SHEET 12 OF 16	3A-4	12-5	240	5.68	65	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.75	0.9252	0.39%
SHEET 12 OF 16		12-6	240	5.68	15	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.17	0.1735	0.07%
CIRCUIT "3A" START		START	240	5.68	START					0.0000	
SHEET 14 OF 16	4A-6	13-9	240	1.42	50	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.14	9.3296	3.89%
SHEET 13 OF 16		13-9	240	1.42	150	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.43	9.1851	3.83%
SHEET 13 OF 16	4A-5	13-8	240	2.84	200	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.16	8.7514	3.65%
SHEET 13 OF 16	4A-4	13-7	240	4.26	74	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.64	7.5950	3.16%
SHEET 13 OF 16		13-6	240	4.26	87	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.75	6.9531	2.90%
SHEET 13 OF 16	4A-3	13-5	240	5.68	155	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.79	6.1986	2.58%
SHEET 13 OF 16	4A-2	13-4	240	7.10	150	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	2.17	4.4061	1.84%
SHEET 13 OF 16	4A-1	13-3	240	8.52	54	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.94	2.2377	0.93%
SHEET 13 OF 16		13-2	240	8.52	70	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	1.21	1.3010	0.54%
SHEET 13 OF 16		13-1	240	8.52	5	620 6006	ELEC CONDR (NO.10) INSULATED	2.036	0.09	0.0867	0.04%
CIRCUIT "4A" START		START	240	8.52	START					0.0000	



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**SH 20
DONIPHAN DR.
ILLUMINATION
VOLTAGE DROP**

SHEET 3 OF 3

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	224

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LEGEND

- PROPOSED ROADWAY IL (TY SA)
30T-4-4(250W EQ)LED (BREAKAWAY)
- PROPOSED CONDUIT RUN
- PROPOSED GROUND BOX TY A
- ⊠ PROPOSED JUNCTION BOX

ELECTRICAL SERVICE 1
TY A 240/480 060(NS)SS(E)GC(O)

ILLUMINATION 1A	ILLUMINATION 1B
2P/20 480VAC	2P/20 480VAC

ELECTRICAL SERVICE 2
TY A 240/480 060(NS)SS(E)GC(O)

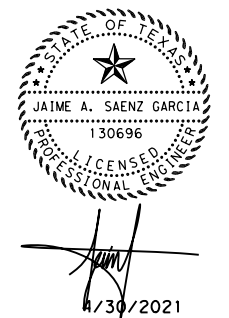
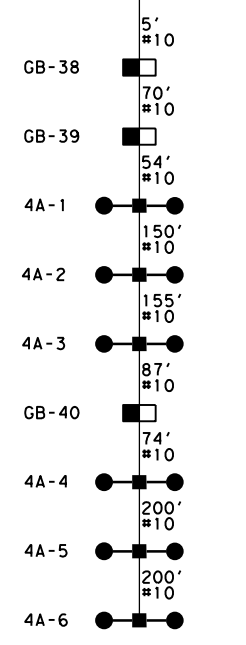
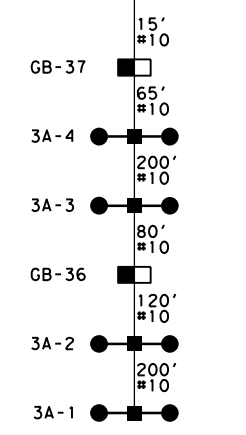
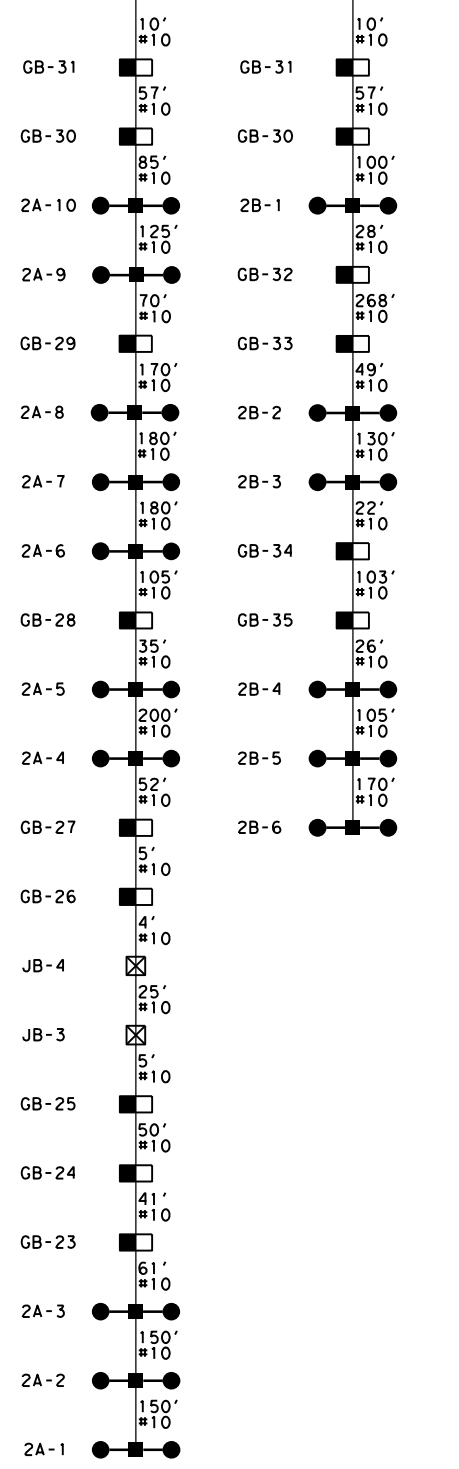
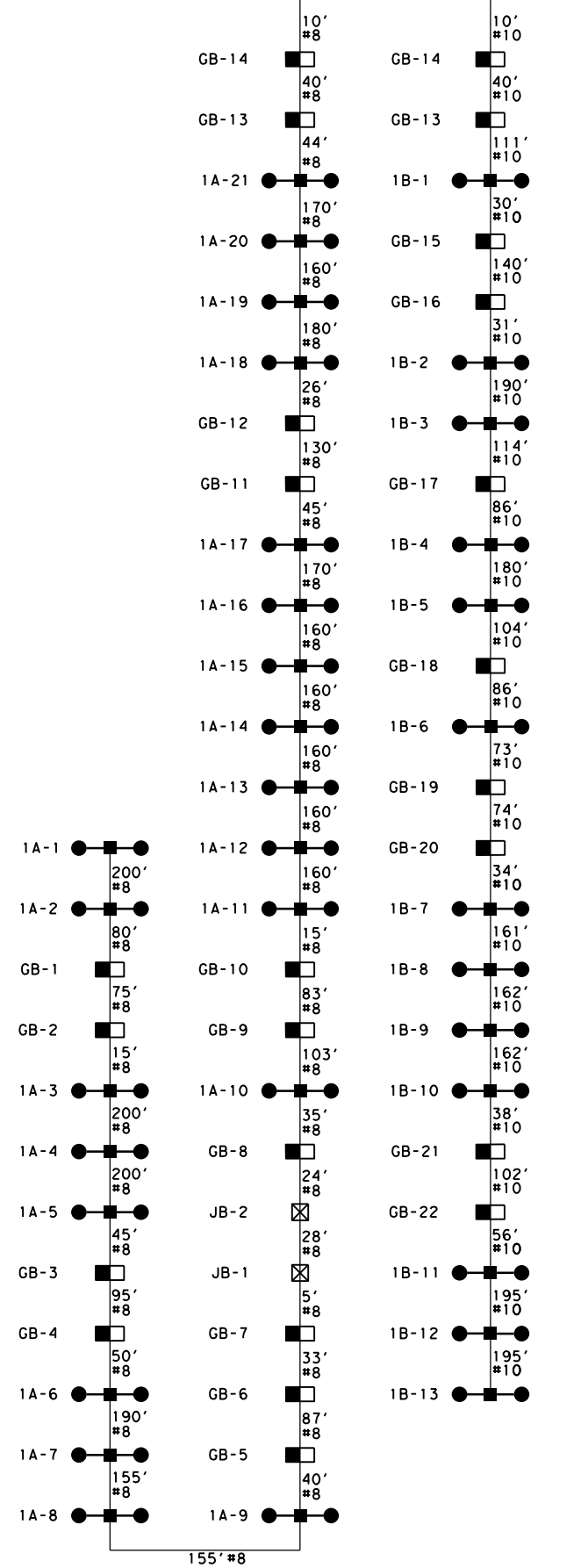
ILLUMINATION 2A	ILLUMINATION 2B
2P/20 480VAC	2P/20 480VAC

ELECTRICAL SERVICE 3
TY A 120/240 060(NS)SS(E)GC(O)

ILLUMINATION 3A
2P/20 240VAC

ELECTRICAL SERVICE 4
TY A 120/240 060(NS)SS(E)GC(O)

ILLUMINATION 4A
2P/20 240VAC



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**SH 20
DONIPHAN DR.**

**ILLUMINATION
CIRCUIT DIAGRAMS**

SHEET 1 OF 1

DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	225

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ELECTRICAL SERVICE 1	CIRCUIT 1A	
	POLE NUMBER	PHOTOCELL ID
	1A-1	
	1A-2	
	1A-3	
	1A-4	
	1A-5	
	1A-6	
	1A-7	
	1A-8	
	1A-9	
	1A-10	
	1A-11	
	1A-12	
	1A-13	
	1A-14	
	1A-15	
	1A-16	
	1A-17	
	1A-18	
	1A-19	
	1A-20	
	1A-21	

ELECTRICAL SERVICE 1	CIRCUIT 1B	
	POLE NUMBER	PHOTOCELL ID
	1B-1	
	1B-2	
	1B-3	
	1B-4	
	1B-5	
	1B-6	
	1B-7	
	1B-8	
	1B-9	
	1B-10	
	1B-11	
	1B-12	
	1B-13	

ELECTRICAL SERVICE 2	CIRCUIT 2A	
	POLE NUMBER	PHOTOCELL ID
	2A-1	
	2A-2	
	2A-3	
	2A-4	
	2A-5	
	2A-6	
	2A-7	
	2A-8	
	2A-9	
	2A-10	

ELECTRICAL SERVICE 2	CIRCUIT 2B	
	POLE NUMBER	PHOTOCELL ID
	2B-1	
	2B-2	
	2B-3	
	2B-4	
	2B-5	
	2B-6	

ELECTRICAL SERVICE 3	CIRCUIT 3A	
	POLE NUMBER	PHOTOCELL ID
	3A-1	
	3A-2	
	3A-3	
	3A-4	

ELECTRICAL SERVICE 4	CIRCUIT 4A	
	POLE NUMBER	PHOTOCELL ID
	4A-1	
	4A-2	
	4A-3	
	4A-4	
	4A-5	
	4A-6	

EXISTING SERVICE	EXISTING CIRCUIT	
	POLE NUMBER	PHOTOCELL ID
	E-1	
	E-2	
	E-3	
	E-4	
	E-5	
	E-6	
	E-7	
	E-8	
	E-9	
	E-10	
	E-11	
	E-12	
	E-13	

- NOTES:
1. MOUNT SO THAT PHOTO CELL IS FACING NORTH.
 2. INSTALLATION MUST COMPLY WITH LOCAL CODE REQUIREMENTS.
 3. POLE SHALL BE GROUNDED AS REQUIRED BY N.E.C. LATEST REVISION.
 4. A GROUND ROD MUST BE USED.
 5. REFER TO TXDOT ROADWAY ILLUMINATION DETAILS AND ROADWAY ILLUMINATION POLES STANDARDS FOR FURTHER INFORMATION ON ILLUMINATION POLES AND FOUNDATIONS.

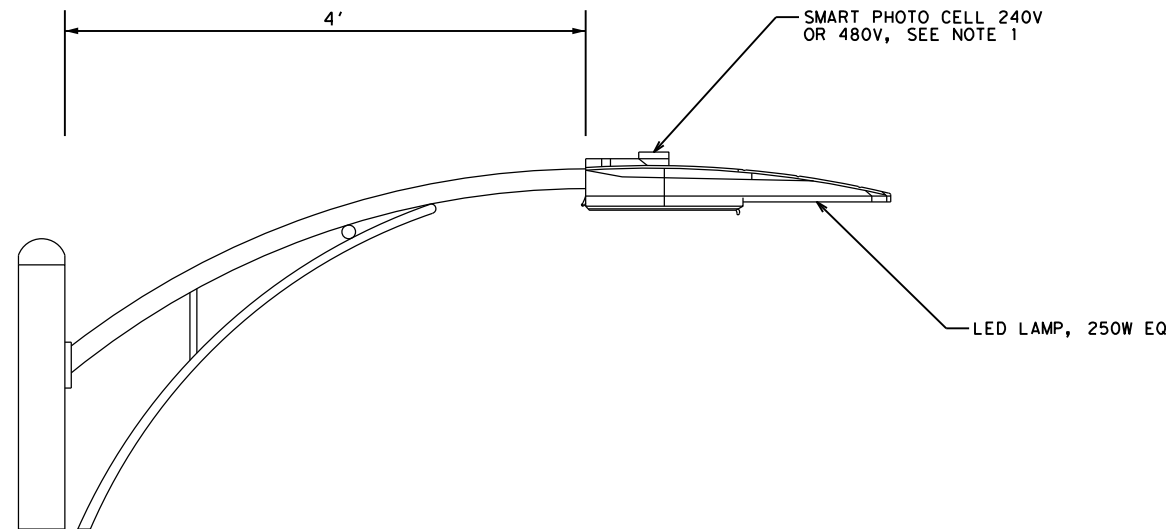
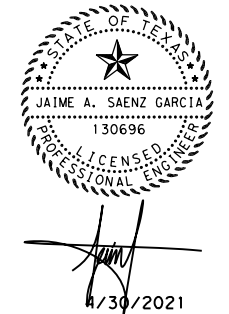


PHOTO CELL PLACEMENT DETAIL

HNTB		<small>HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420</small>			
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SH 20 DONIPHAN DR. ILLUMINATION PHOTOCELL PLACEMENT DETAIL AND TABLES					
SHEET 1 OF 1					
DESIGNED:	MG	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	JG	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	BG	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	JG	0001	01	063, ETC.	226

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DATE: FILE:

GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.
- Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
- Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.
- Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.
- When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

- Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.


AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

- Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.
- Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.
- Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

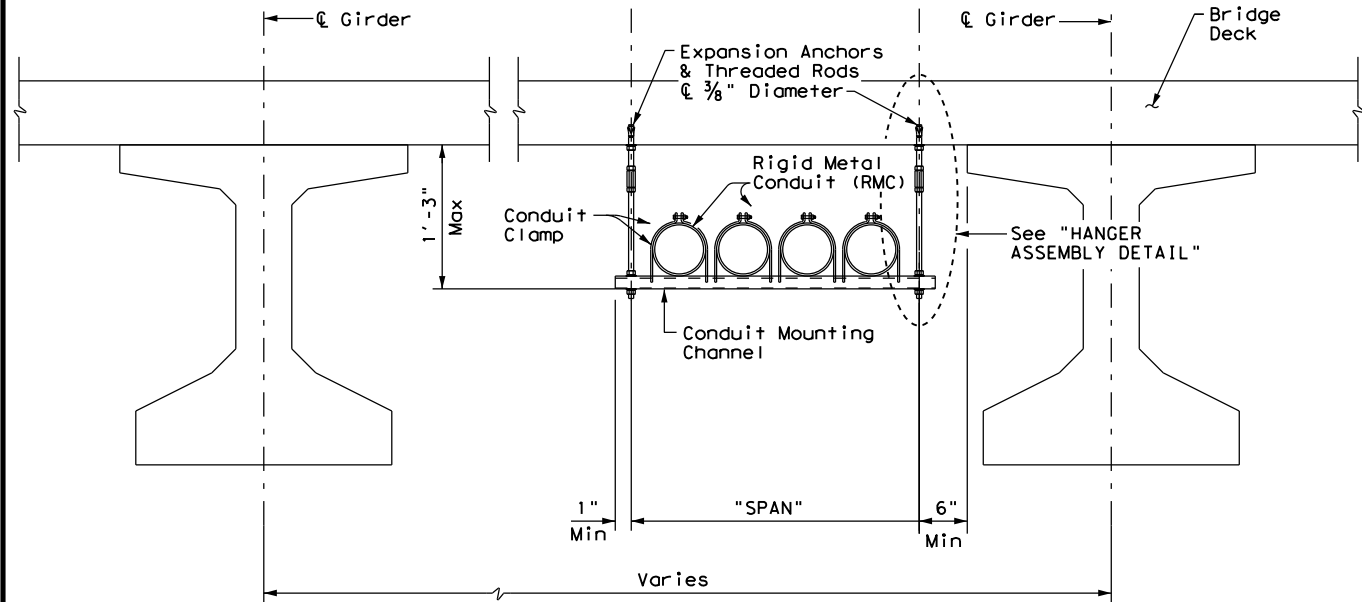
- Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.
- When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.
- Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

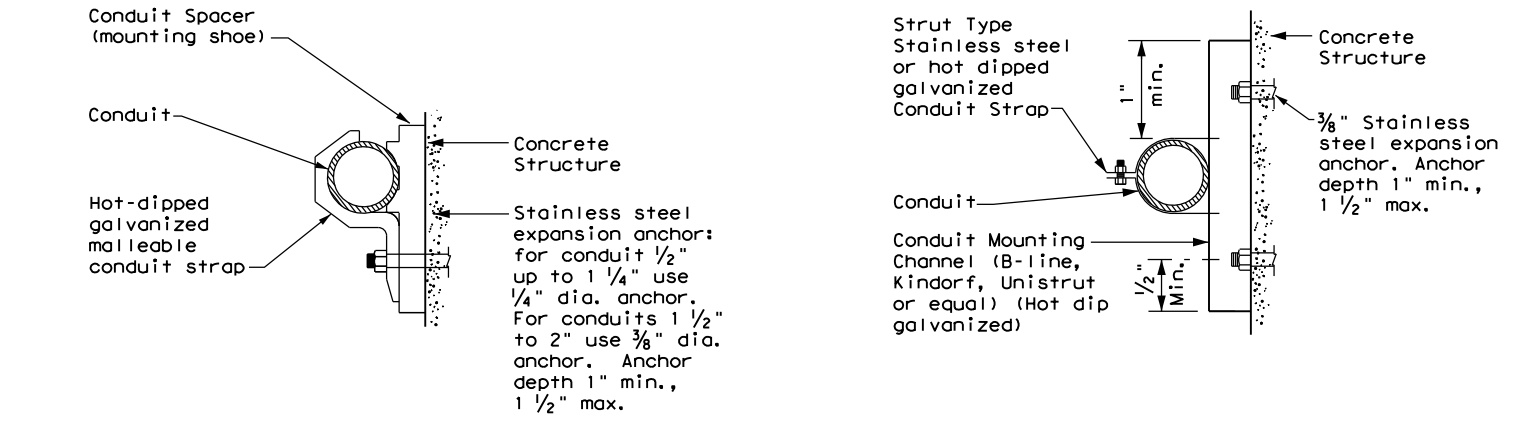
- Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.
- Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.
- When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.
- Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.
- Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.
- Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).
- Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.
- File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

 Texas Department of Transportation				Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUITS & NOTES</h1>					
<h2>ED(1) - 14</h2>					
FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0001	01	063, ETC.	SH 20
		DIST	COUNTY		SHEET NO.
		ELP	EL PASO		227

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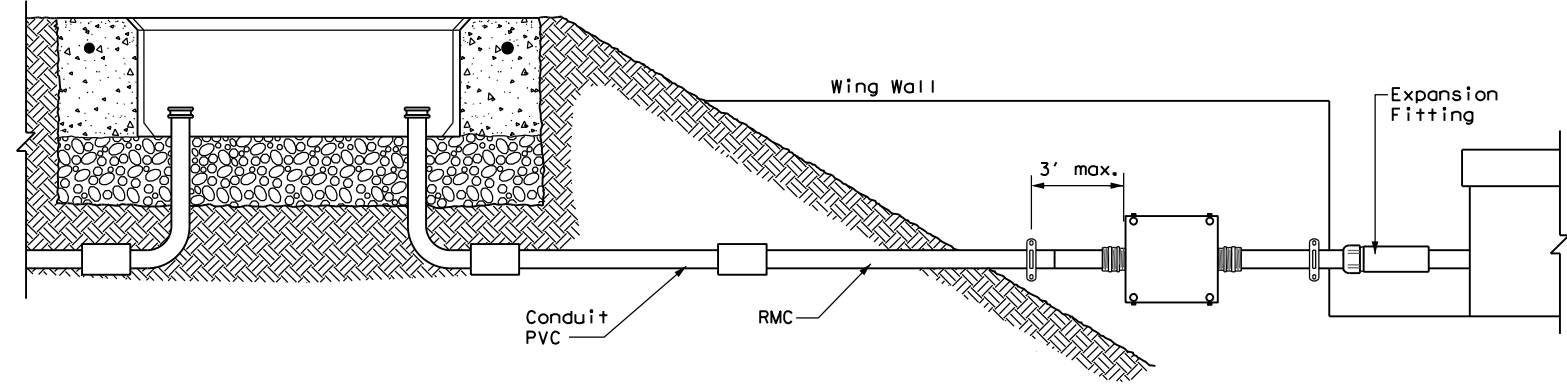
CONDUIT HANGING DETAIL



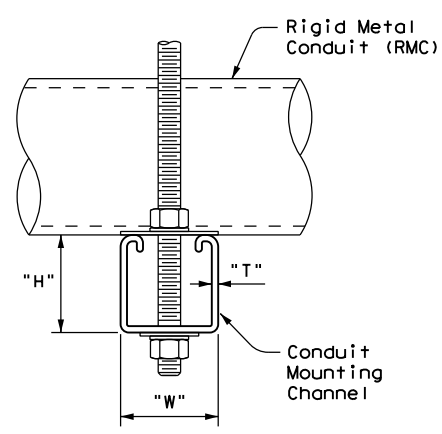
CONDUIT MOUNTING OPTIONS
Attachment to concrete surfaces
See ED(1)B.2

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

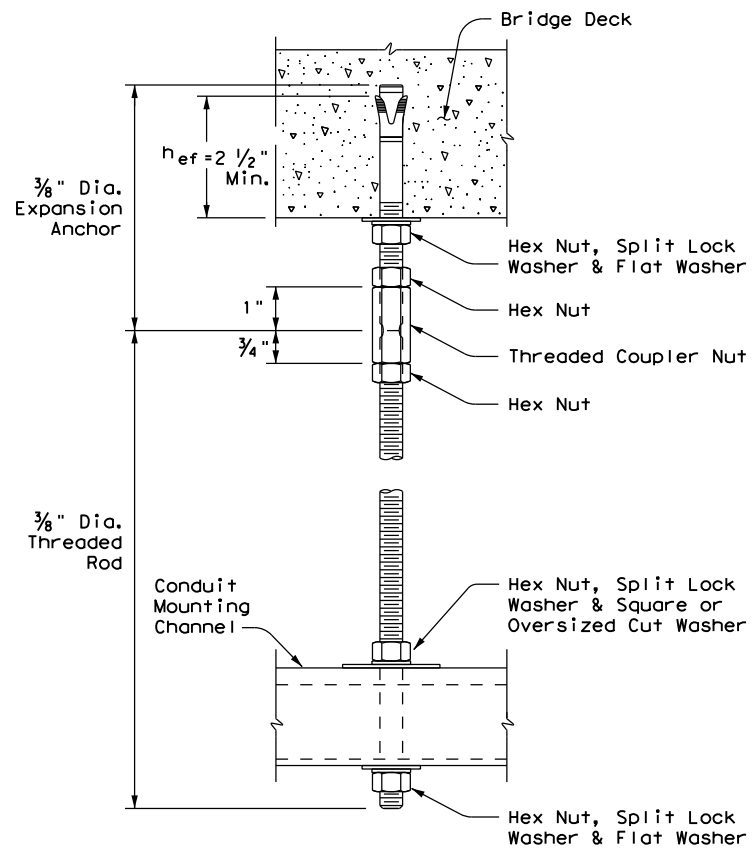
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL



HANGER ASSEMBLY DETAIL



ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef}) as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.



ELECTRICAL DETAILS
CONDUIT SUPPORTS

ED(2) - 14

FILE: ed2-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	228	

DATE:
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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS) 11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

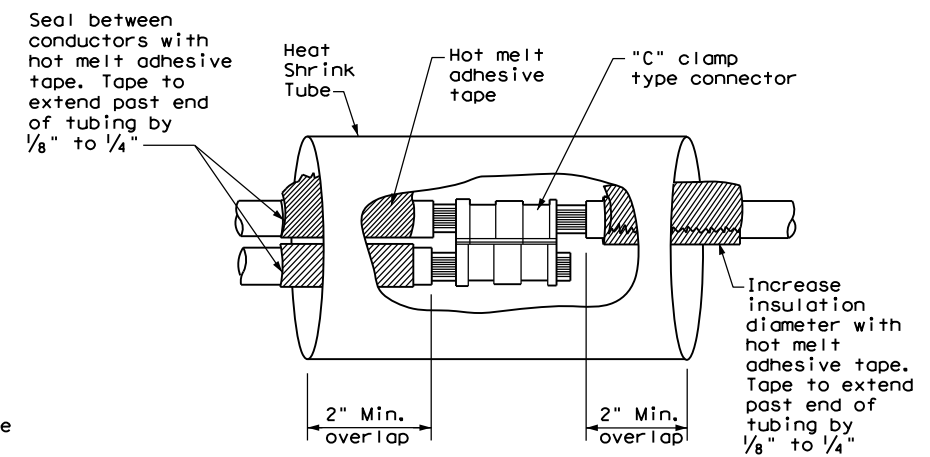
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

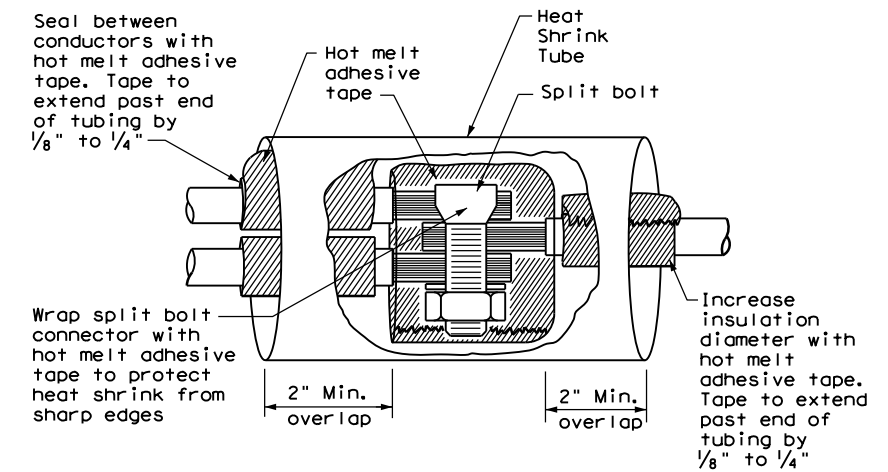
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

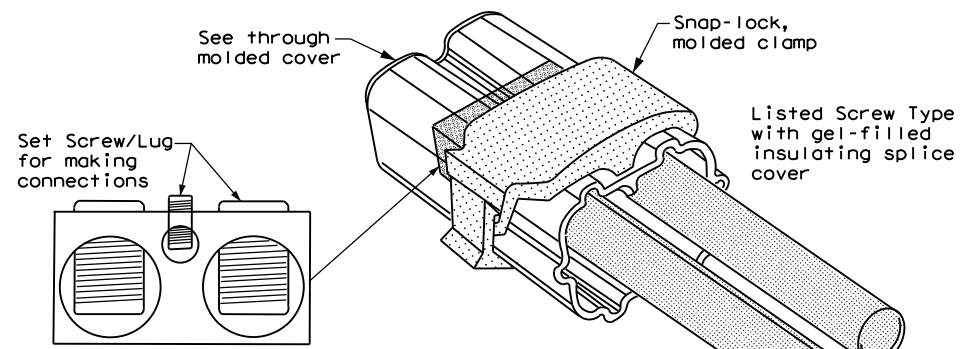
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



**SPLICE OPTION 1
Compression Type**



**SPLICE OPTION 2
Split Bolt Type**



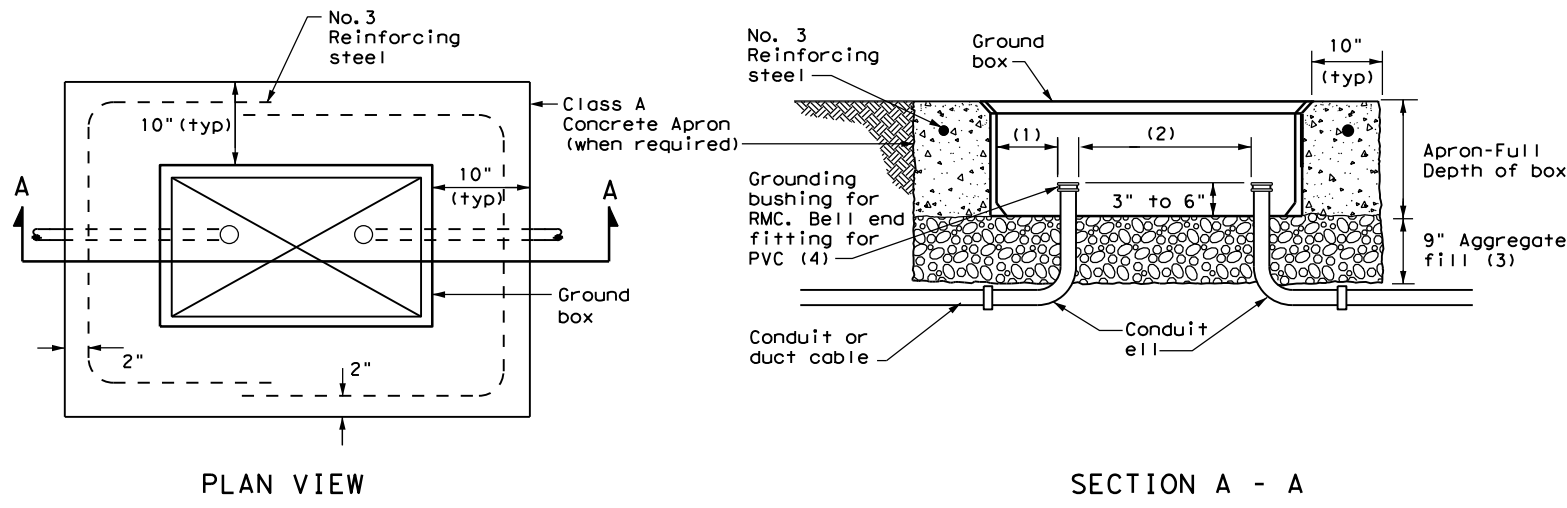
**SPLICE OPTION 3
Listed Screw Type**

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		Texas Department of Transportation		Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUCTORS</h1>					
<h2>ED(3) - 14</h2>					
FILE:	ed3-14.dgn	DN:	TxDOT	CK:	TxDOT
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		DIST:	COUNTY		SHEET NO.
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APRON FOR GROUND BOX

- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.
- (4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

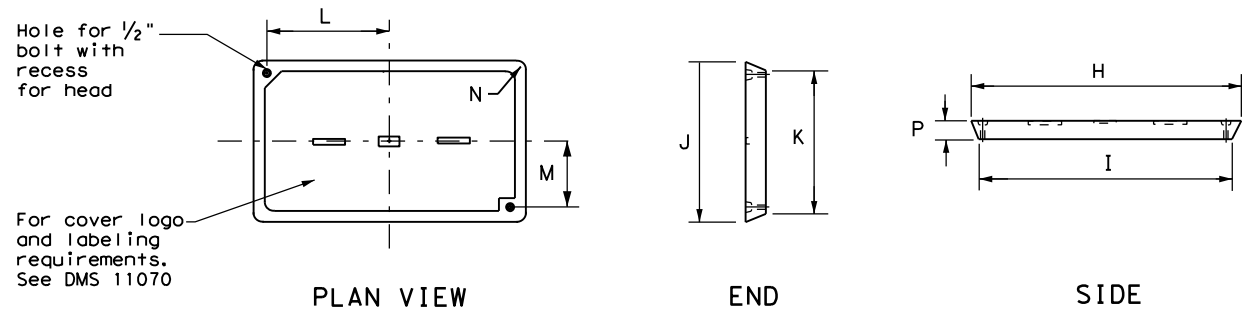
1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

GROUND BOX DIMENSIONS

TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS

TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



GROUND BOX COVER

				Traffic Operations Division Standard	
ELECTRICAL DETAILS GROUND BOXES					
ED(4) - 14					
FILE:	ed4-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
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		ELP	EL PASO		230

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ELECTRICAL SERVICES NOTES

- Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.
- Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services," DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.
- Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.
- Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.
- The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.
- Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.
- When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.
- Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.
- All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.
- Provide rigid metal conduit (RMC) for all conduits on service, except for the 1/2 in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.
- Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.
- Ensure all mounting hardware and installation details of services conform to utility company specifications.
- For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.
- When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.
- Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

- Provide threaded hub for all conduit entries into the top of enclosure.
- Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photoceII or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.
- Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.
- Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

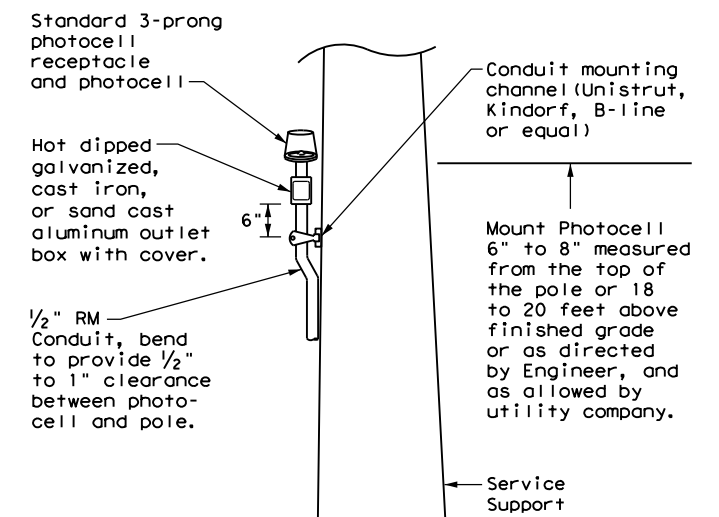
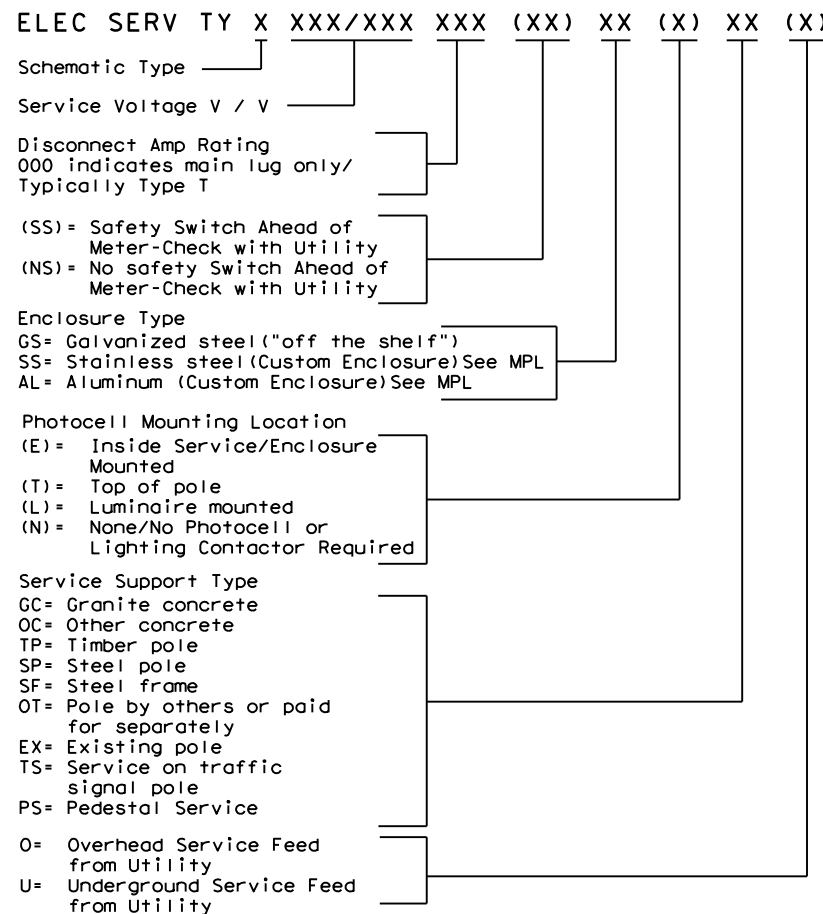
PHOTOELECTRIC CONTROL

- Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 1/4"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 1/4"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.
 ** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation
 Traffic Operations Division Standard

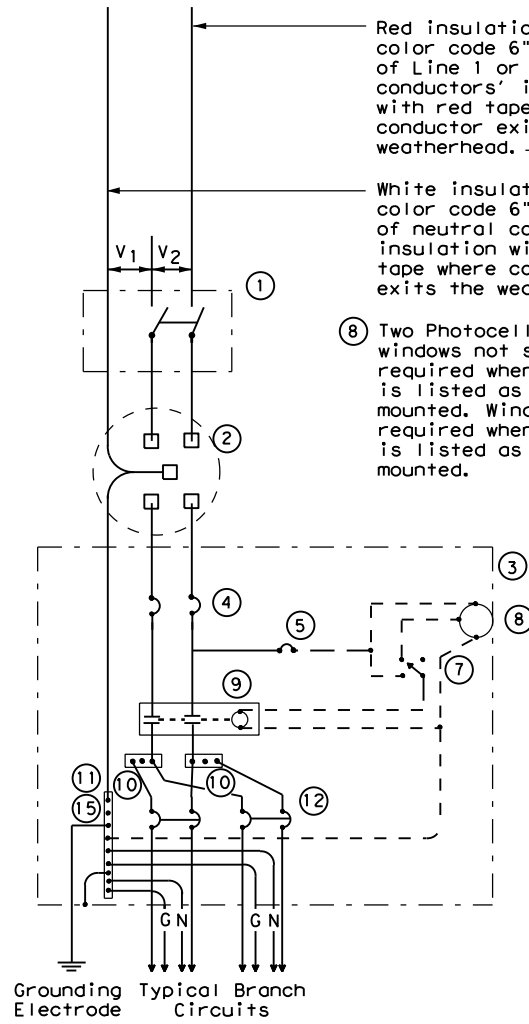
ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5) - 14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		231

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**SCHEMATIC TYPE A
THREE WIRE**

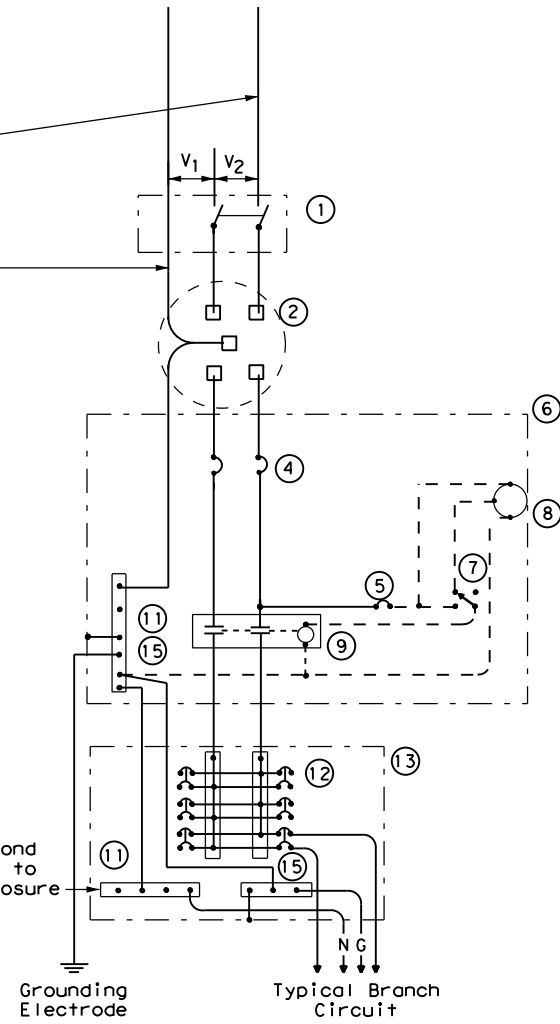
Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.

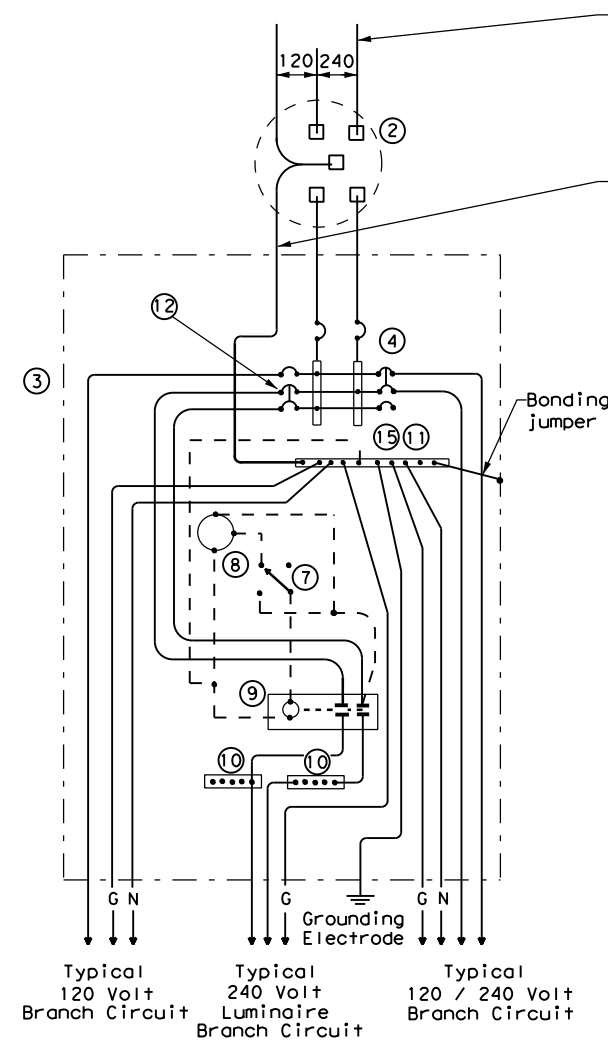
⑧ Two Photocell viewing windows not shown but required when photocell is listed as enclosure mounted. Windows not required when photocell is listed as pole top mounted.

Do not bond this bus to the enclosure

WIRING LEGEND	
————	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required



**SCHEMATIC TYPE C
THREE WIRE**

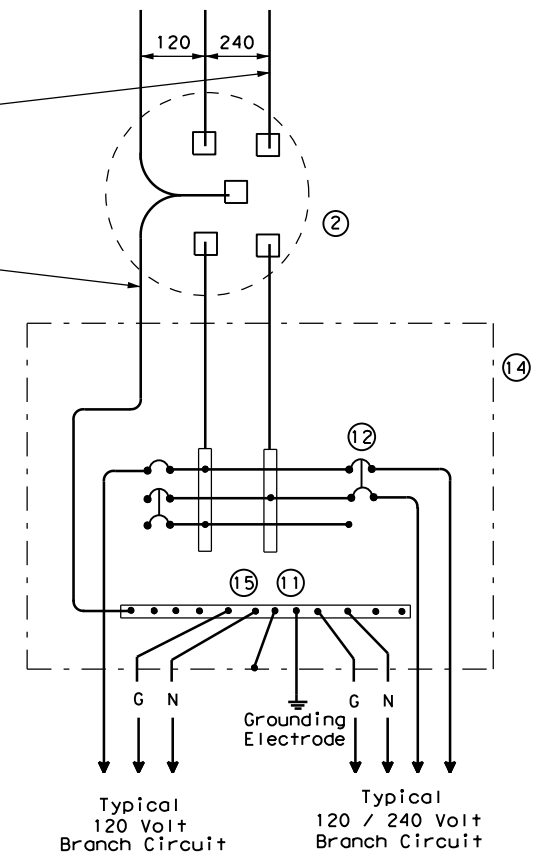


**SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE**

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.

Bonding jumper



**SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE**
Galvanized steel - "Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

				Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES					
ED(6) - 14					
FILE:	ed6-14.dgn	DN:	TxDOT	CK:	TxDOT
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REVISIONS		0001	01	063, ETC.	SH 20
		DIST	COUNTY	SHEET NO.	
		ELP	EL PASO	232	

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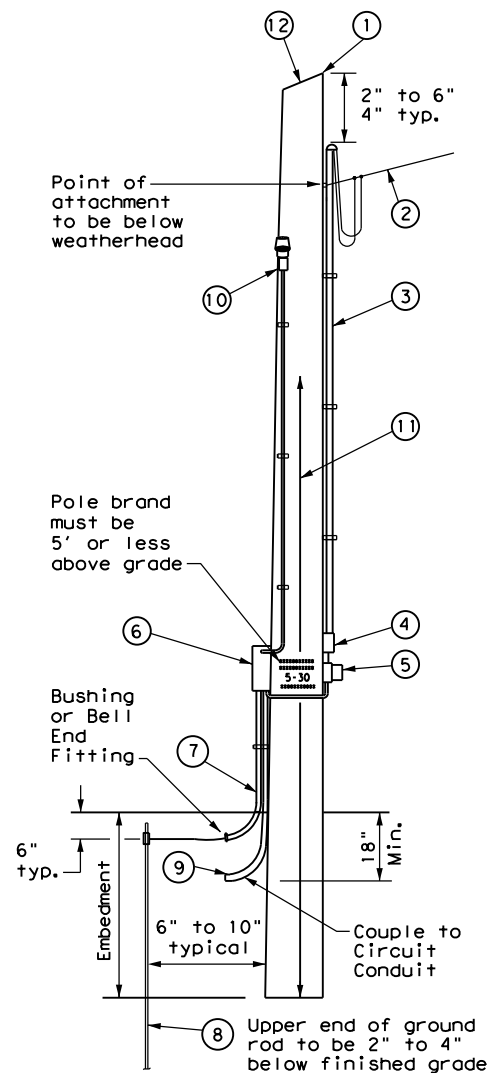
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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrical service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to $\frac{3}{8}$ in. max. depth and $1\frac{1}{8}$ in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to $3\frac{3}{4}$ in. maximum depth, and $1\frac{1}{2}$ in. to $1\frac{5}{8}$ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, $\frac{1}{4}$ in. minimum diameter by $1\frac{1}{2}$ in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

- 1 Class 5 pole, height as required
- 2 Service drop from utility company (attached below weatherhead)
- 3 Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)
- 4 Safety switch (when required)
- 5 Meter (when required)
- 6 Service enclosure
- 7 6 AWG bare grounding electrode conductor in $\frac{1}{2}$ in. PVC to ground rod - extend $\frac{1}{2}$ in. PVC 6 in. underground.
- 8 $\frac{5}{8}$ in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
- 9 RMC same size as branch circuit conduit.
- 10 See pole-top mounted photocell detail on ED(5).
- 11 When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.
- 12 When required by utility, cut top of pole at an angle to enhance rain run off.

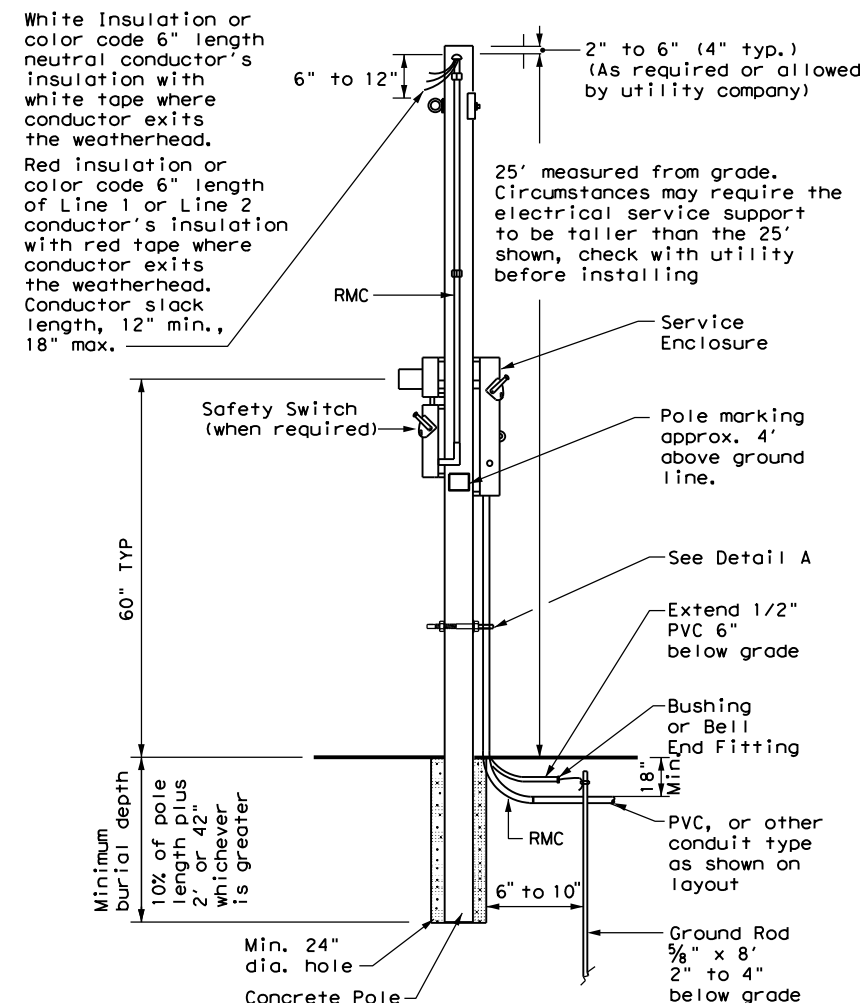


SERVICE SUPPORT TYPE TP (O)

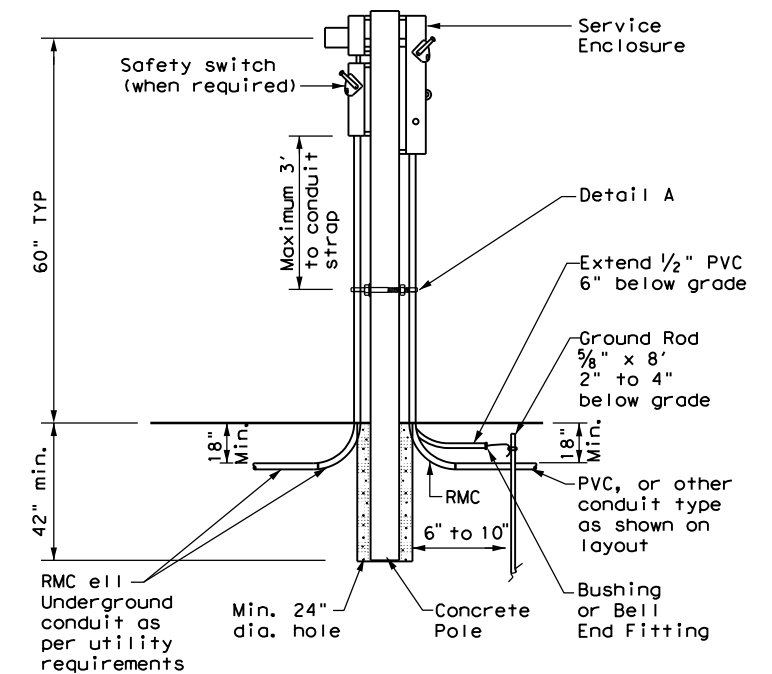
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

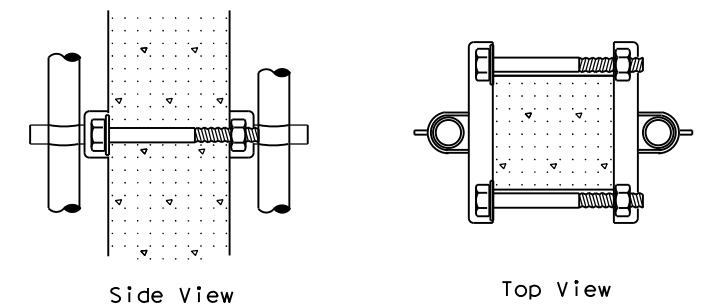
1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut $1\frac{1}{2}$ in. or $1\frac{3}{8}$ in. wide by 1 in. up to $3\frac{3}{4}$ in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



CONCRETE SERVICE SUPPORT Overhead (O)



CONCRETE SERVICE SUPPORT Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

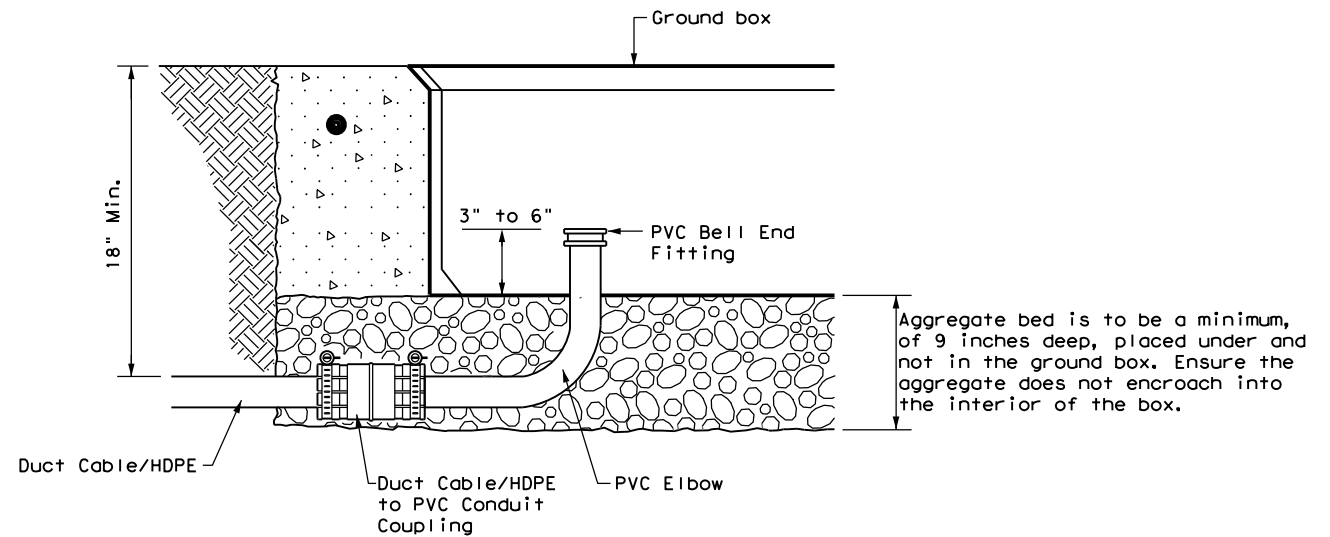
		Texas Department of Transportation		Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP					
ED(10)-14					
FILE:	ed10-14.dgn	DN:	TxDOT	CK:	TxDOT
REVISIONS	0001	CONT	01	JOB	SH 20
		DIST	EL PASO	COUNTY	SHEET NO.
					233

DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.
2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.
3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.
4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."
6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.
7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.
9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

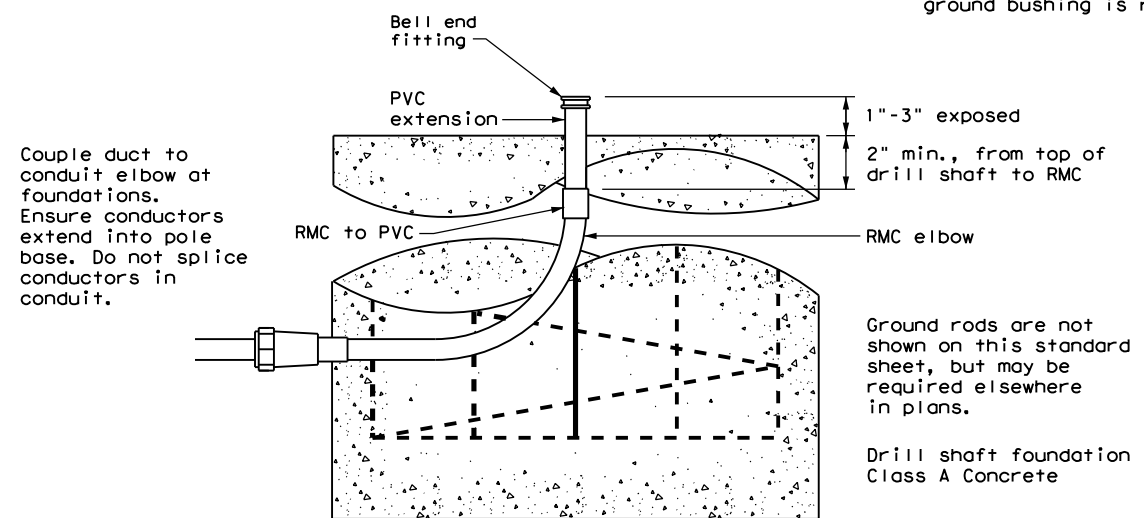
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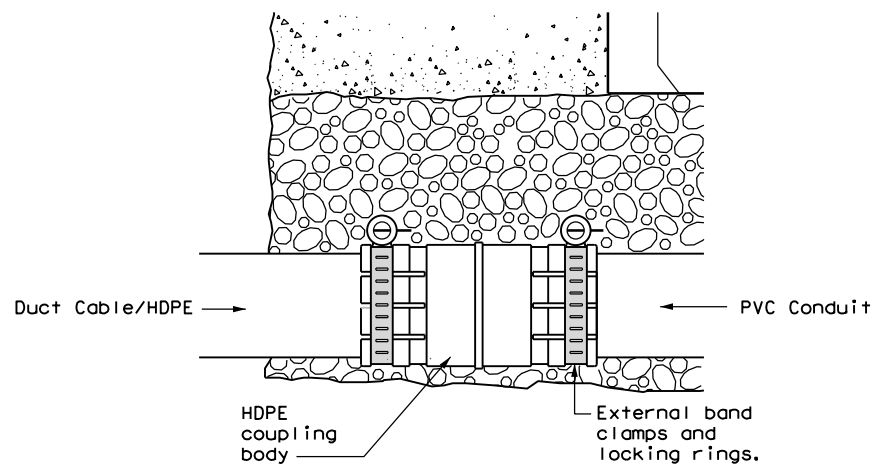


DUCT CABLE/HDPE AT GROUND BOX

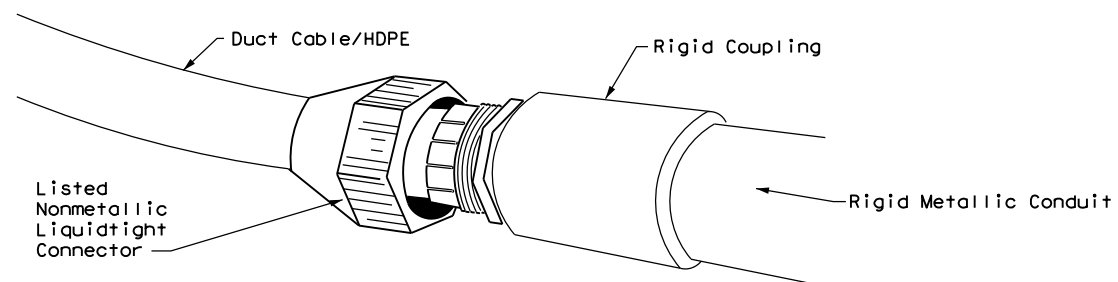
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



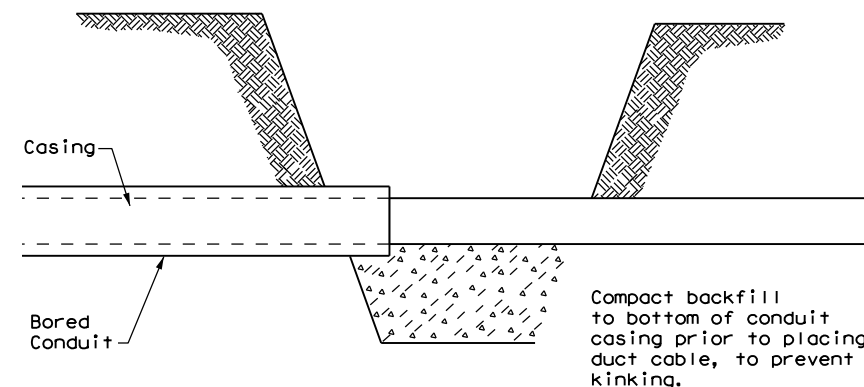
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

		Traffic Operations Division Standard	
ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT			
ED(11)-14			
FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT October 2014	CONT: 0001	SECT: 01	JOB: 063, ETC.
REVISIONS		HIGHWAY: SH 20	
		SHEET NO.:	
		EL PASO	
		234	

ROADWAY ILLUMINATION ASSEMBLY NOTES

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1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.
2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.
4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.
5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.
 - a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.
 - b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
 - i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).
 - ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.
7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.
8. Install T-Base with following procedure:
 - a. Anchor Bolt Tightening.
 - i. Coat the threads of the anchor bolts with electrically conductive lubricant.
 - ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.
 - iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.
 - iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.
 - v. Check top of T-base for level. If not level then foundation must be leveled.
 - b. Top Bolt Procedure
 - i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

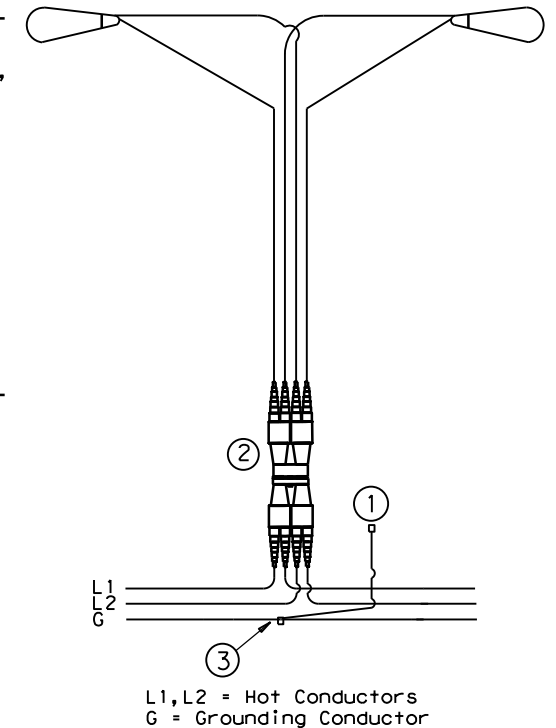
- ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."
 - iii. Tighten each nut to 150 ft-lb. using a torque wrench.
- c. Level and Plumb
- i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).
 10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.
 11. Mount luminaires on arms level as shown by the luminaire level indicator.
 12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:

- ① Use 1/2 in. -13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.
- ② Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.
- ③ Split Bolt or other connector.

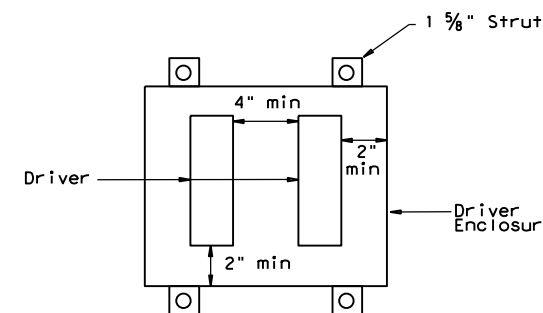
Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):
 - a. Provide NEMA 3R outdoor enclosure or as approved.
 - b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.
 - c. Install drivers with at least 2 inches of space from enclosure walls.
 - d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment
 - e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.
 - f. Provide remote drivers with a maximum of 100 watts
 - g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

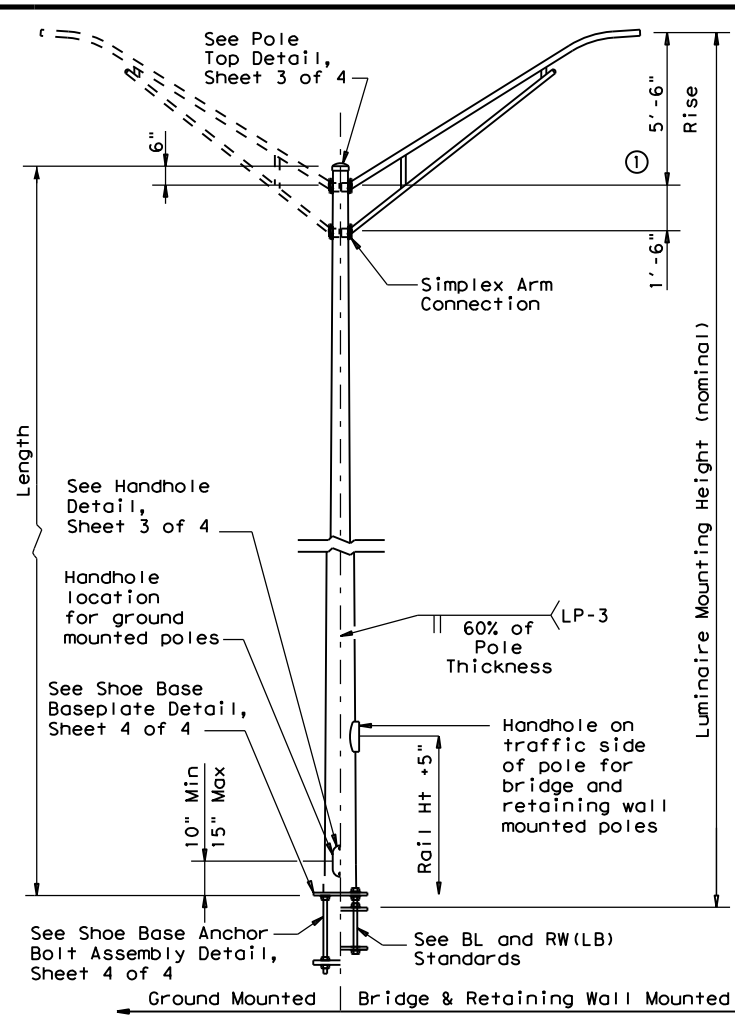


Driver Spacing In Remote Enclosure

				Traffic Safety Division Standard	
<h1>ROADWAY ILLUMINATION DETAILS</h1> <h2>RID(1)-20</h2>					
FILE:	rid1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007		CONT	SECT	JOB	HIGHWAY
REVISIONS		0001	01	063, ETC.	SH 20
7-17		DIST	COUNTY		SHEET NO.
12-20		ELP	EL PASO		235

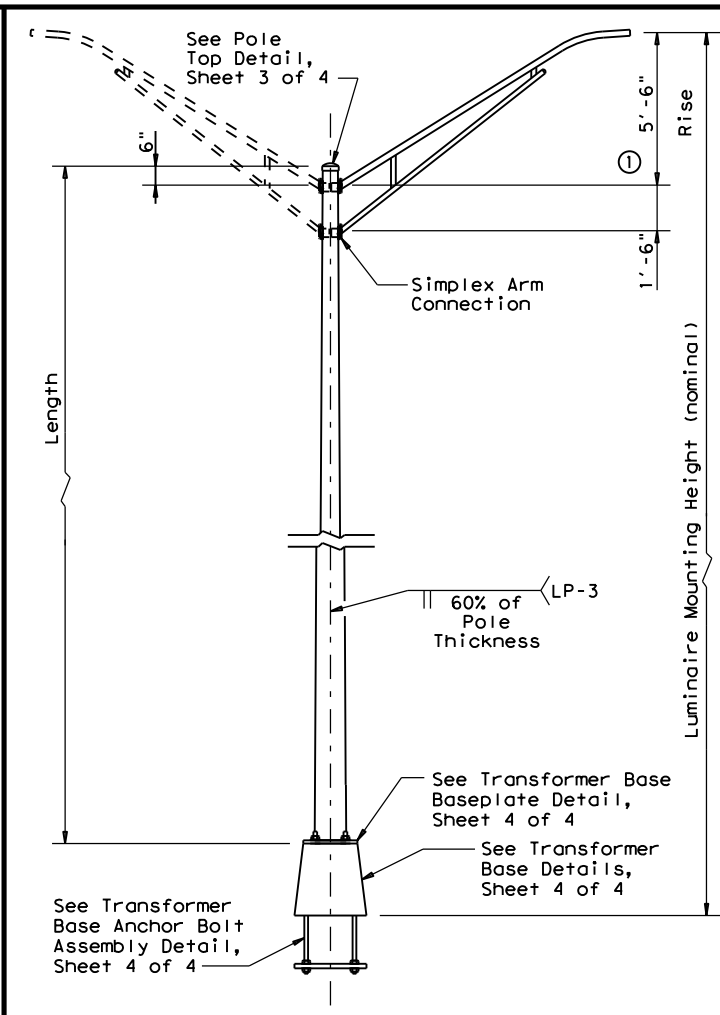
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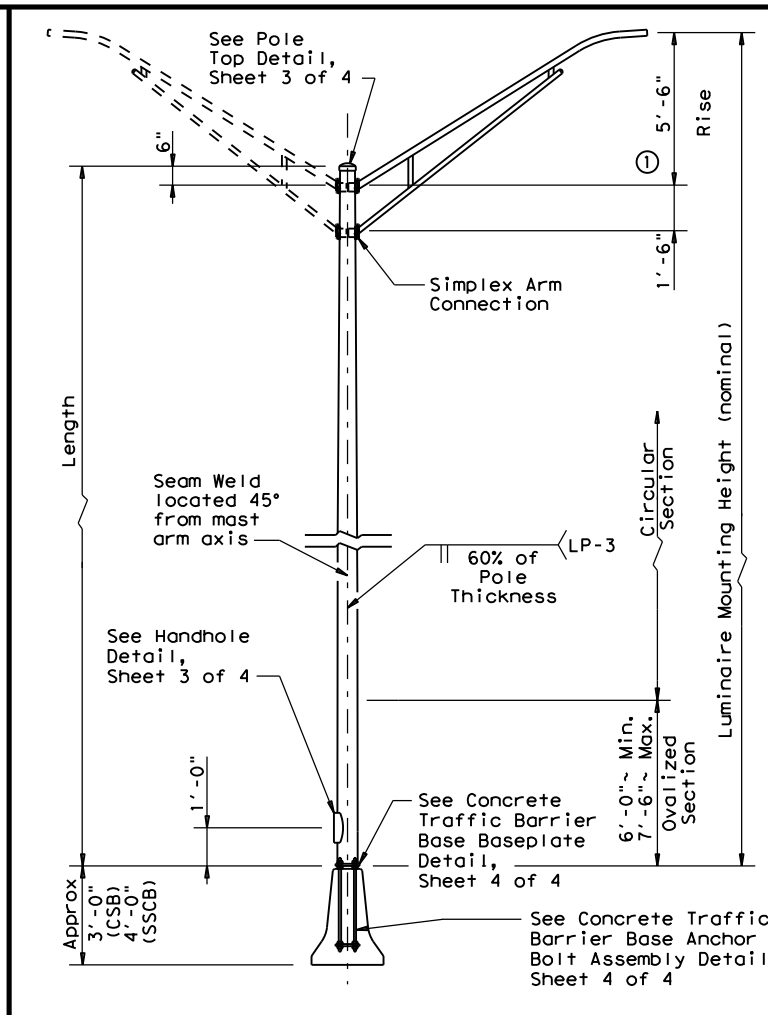
SHOE BASE POLE

Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About C of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

GENERAL NOTES:

- Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
- Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
- Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
- For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
- Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
- Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
- Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
- All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
- The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
- Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
- Erect transformer base poles in accordance with sheet RID(1).

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

- 2'-6" rise for 4 ft. luminaire arms.
- Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.
- A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE

DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

SHEET 2 OF 4

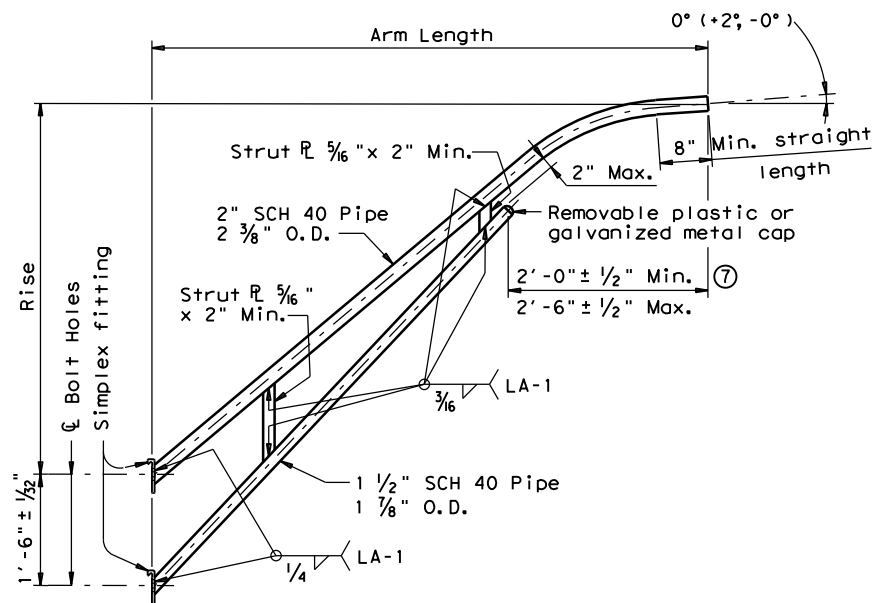


**ROADWAY ILLUMINATION POLES
RIP(2) - 19**

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
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REVISIONS	0001	01	063, ETC.	SH 20
7-17	DIST	COUNTY	SHEET NO.	
12-19	ELP	EL PASO	238	

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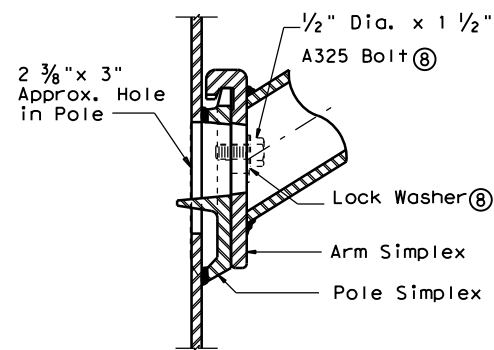
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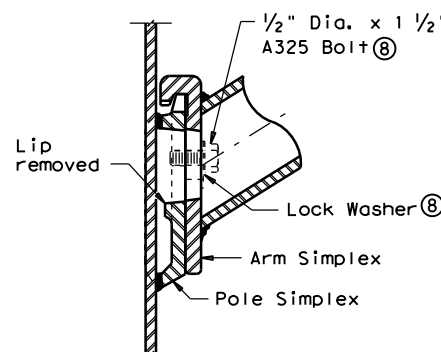
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

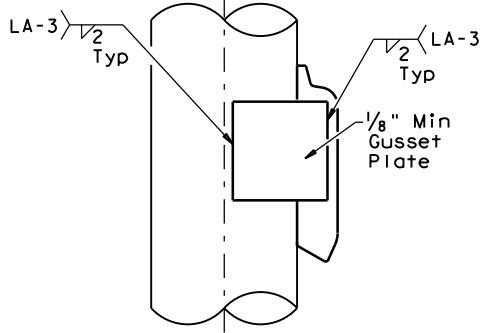
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



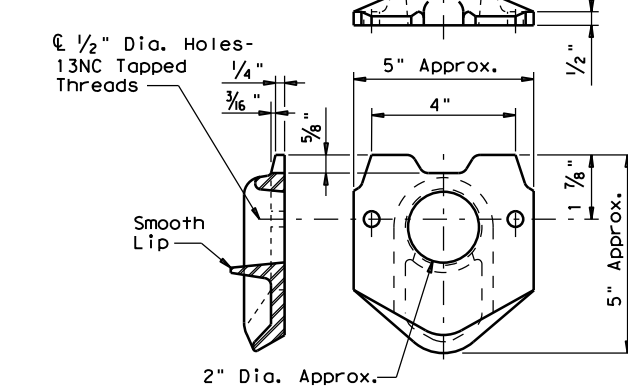
UPPER SIMPLEX FITTING
(Gusset not shown for clarity)



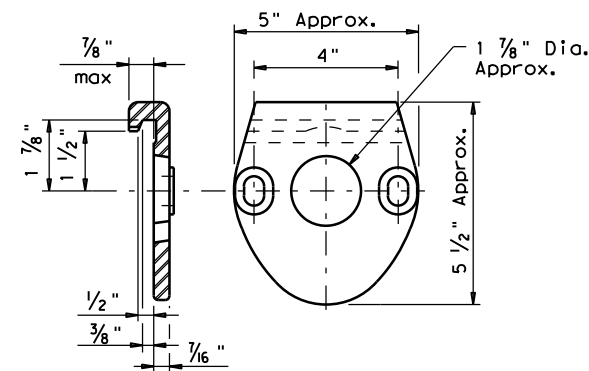
LOWER SIMPLEX FITTING
(Gusset not shown for clarity)



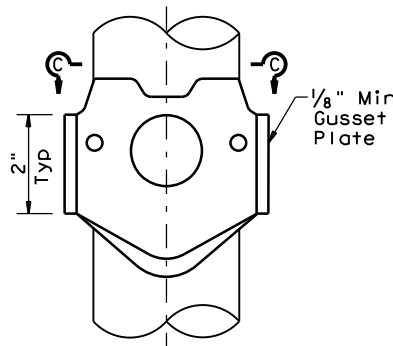
SIDE



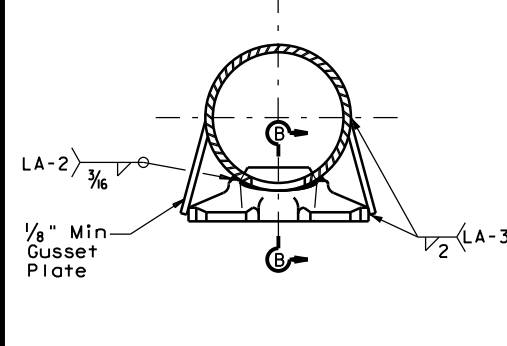
POLE SIMPLEX DETAIL



ARM SIMPLEX DETAIL

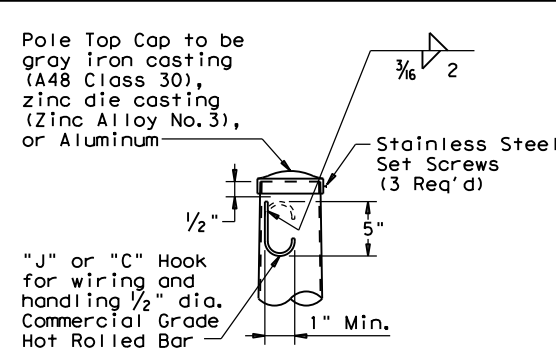


ELEVATION

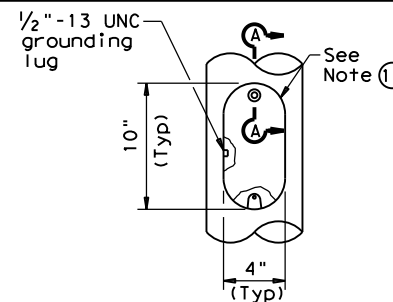


SECTION C-C

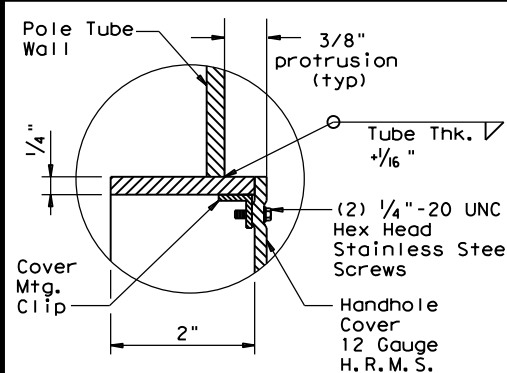
SIMPLEX ATTACHMENT DETAIL



POLE TOP



ELEVATION



SECTION A-A

HANDHOLE

NOTES:

- ④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- ⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.
- ⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- ⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.
- ⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.
- ⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

MATERIALS

Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted

SHEET 3 OF 4

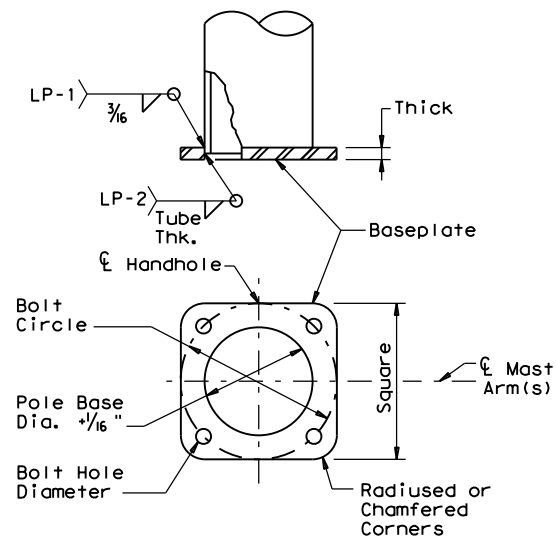


ROADWAY ILLUMINATION POLES
RIP(3) - 19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
7-17	DIST	COUNTY	SHEET NO.	
12-19	ELP	EL PASO	239	

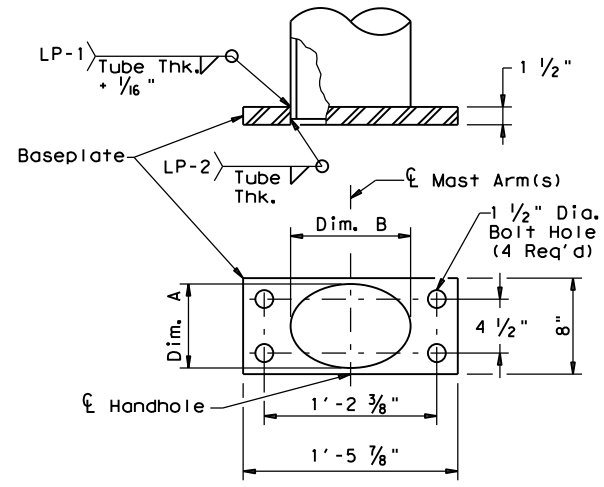
73C

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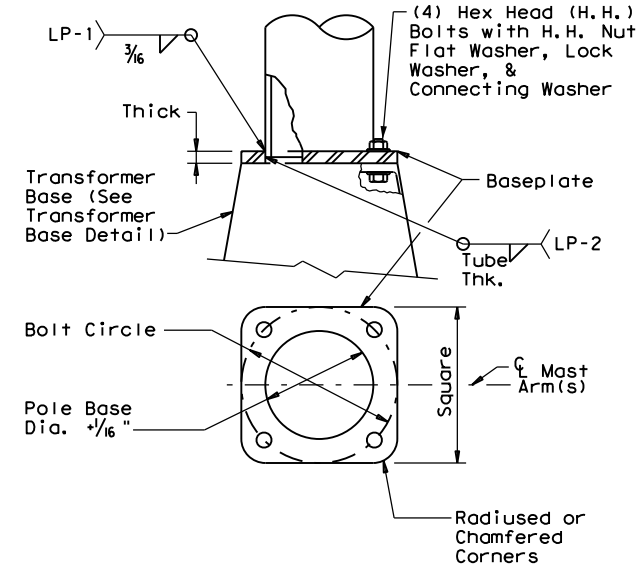
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20' - 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



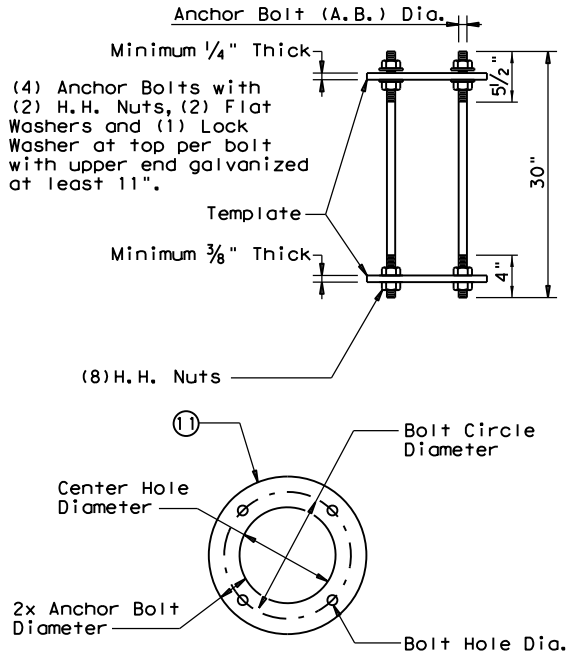
CONCRETE TRAFFIC BARRIER BASE BASEPLATE

CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (1)	DIM. A	DIM. B
28' - 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



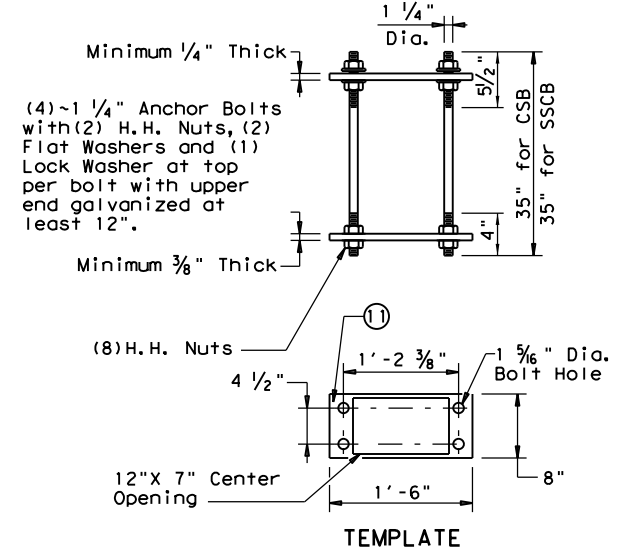
TRANSFORMER BASE BASEPLATE

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFORMER BASE TYPE
20' - 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B



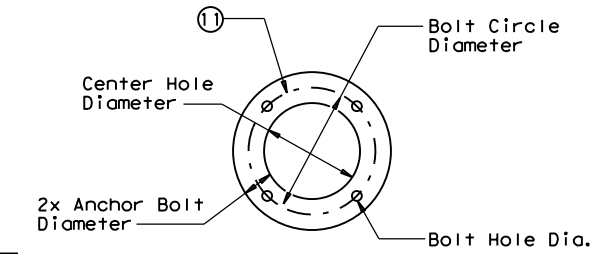
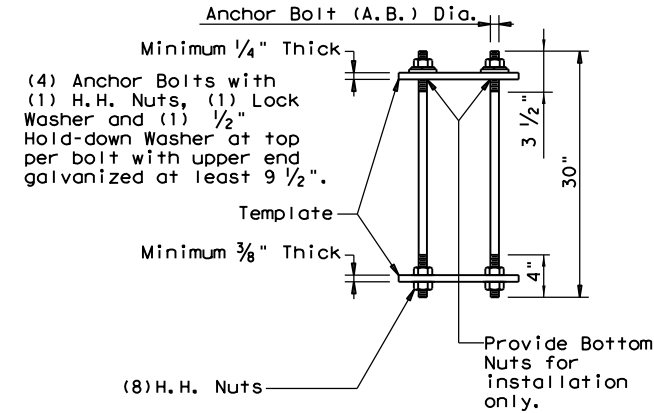
SHOE BASE ANCHOR BOLT ASSEMBLY

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	13"	11"	1 1/16"
40' - 50'	1 1/4"	15"	12 1/2"	1 5/16"



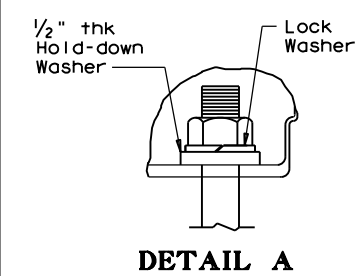
CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	14"	12"	1 1/16"
40' - 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"

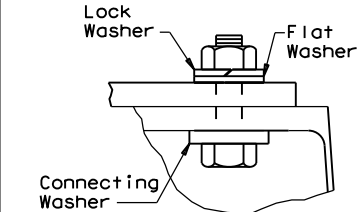


TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

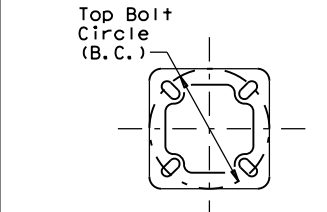
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



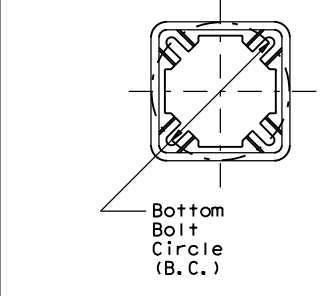
DETAIL A



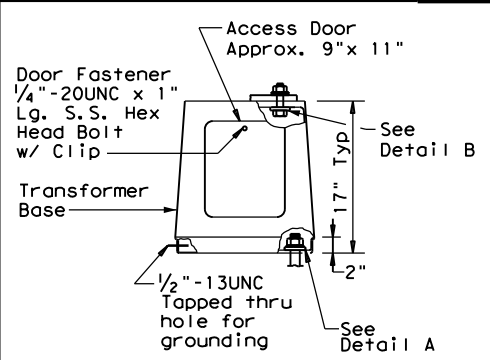
DETAIL B



TOP PLAN



BOTTOM PLAN



ELEVATION

TRANSFORMER BASE DETAILS

GENERAL NOTES:

- For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
- All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
- Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

- Anchor Bolt Templates do not need to be galvanized.
- Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"

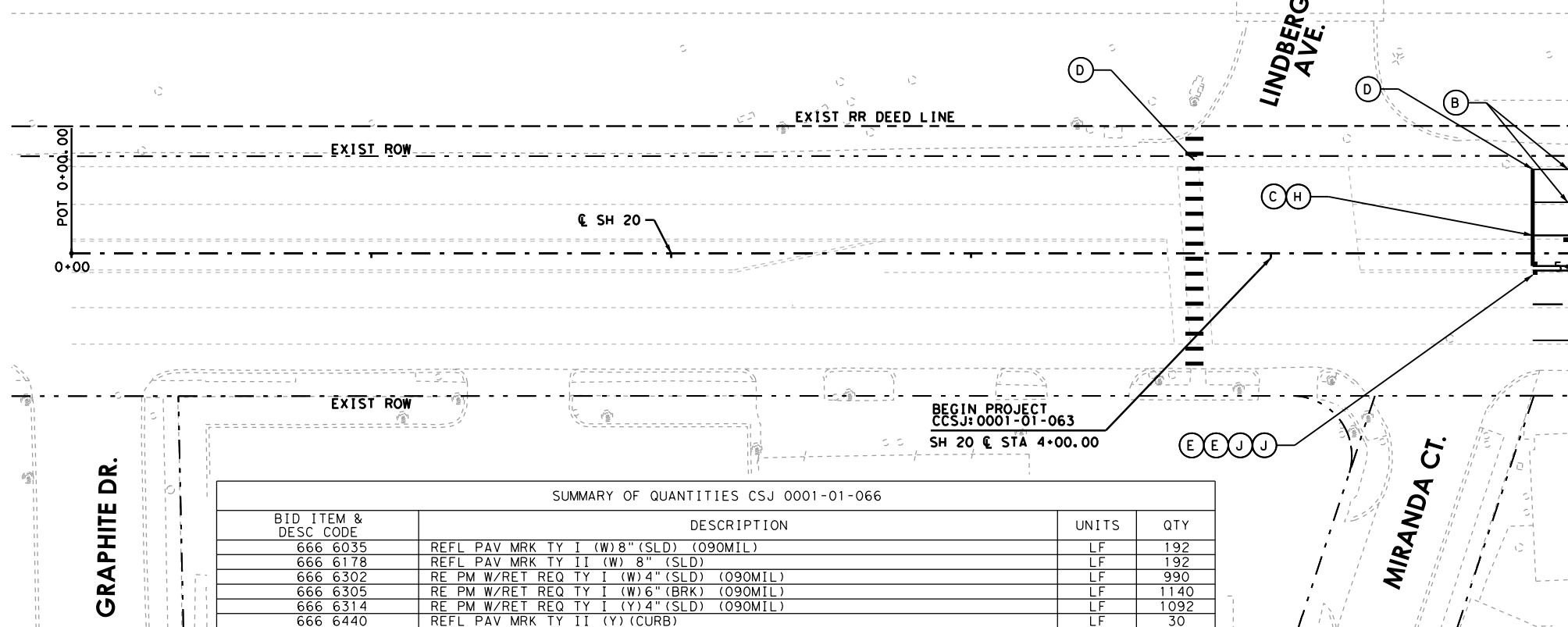


**ROADWAY ILLUMINATION POLES
RIP(4) - 19**

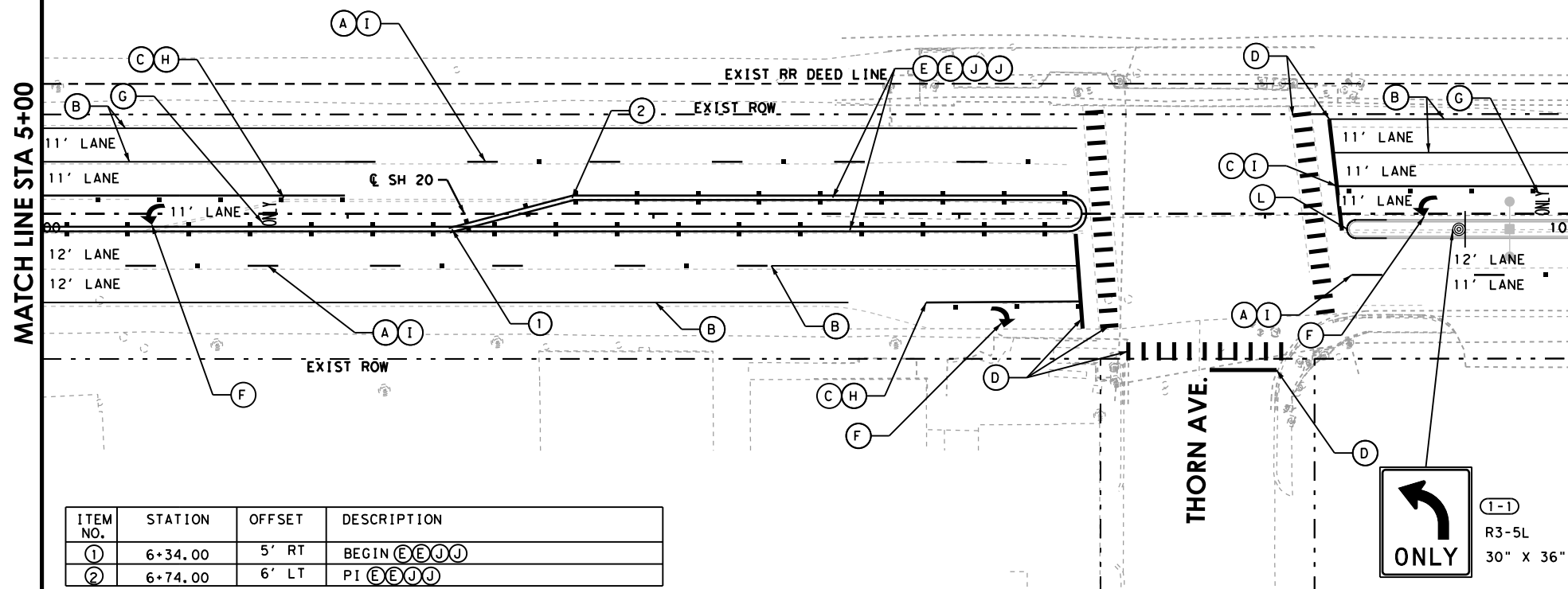
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© TxDOT January 2007	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0001	01	063, ETC.	SH 20
7-17	DIST:	COUNTY:	SHEET NO.:	
12-19	ELP	EL PASO	240	

SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1	

BNSF RAILROAD



SUMMARY OF QUANTITIES CSJ 0001-01-066				
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY	
666 6035	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	LF	192	
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	192	
666 6302	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	LF	990	
666 6305	RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)	LF	1140	
666 6314	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	LF	1092	
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	30	
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	362	
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	3	
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2	
672 6007	REFL PAV MRKR TY I-C	EA	8	
672 6009	REFL PAV MRKR TY II-A-A	EA	60	
672 6010	REFL PAV MRKR TY II-C-R	EA	14	
678 6001	PAV SURF PREP FOR MRK (4")	LF	2082	
678 6002	PAV SURF PREP FOR MRK (6")	LF	1140	
678 6004	PAV SURF PREP FOR MRK (8")	LF	192	
678 6008	PAV SURF PREP FOR MRK (24")	LF	362	
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	3	
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	2	



ITEM NO.	STATION	OFFSET	DESCRIPTION
①	6+34.00	5' RT	BEGIN (E)(E)(J)(J)
②	6+74.00	6' LT	PI (E)(E)(J)(J)

- LEGEND**
- (A) RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W) 8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W) 8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

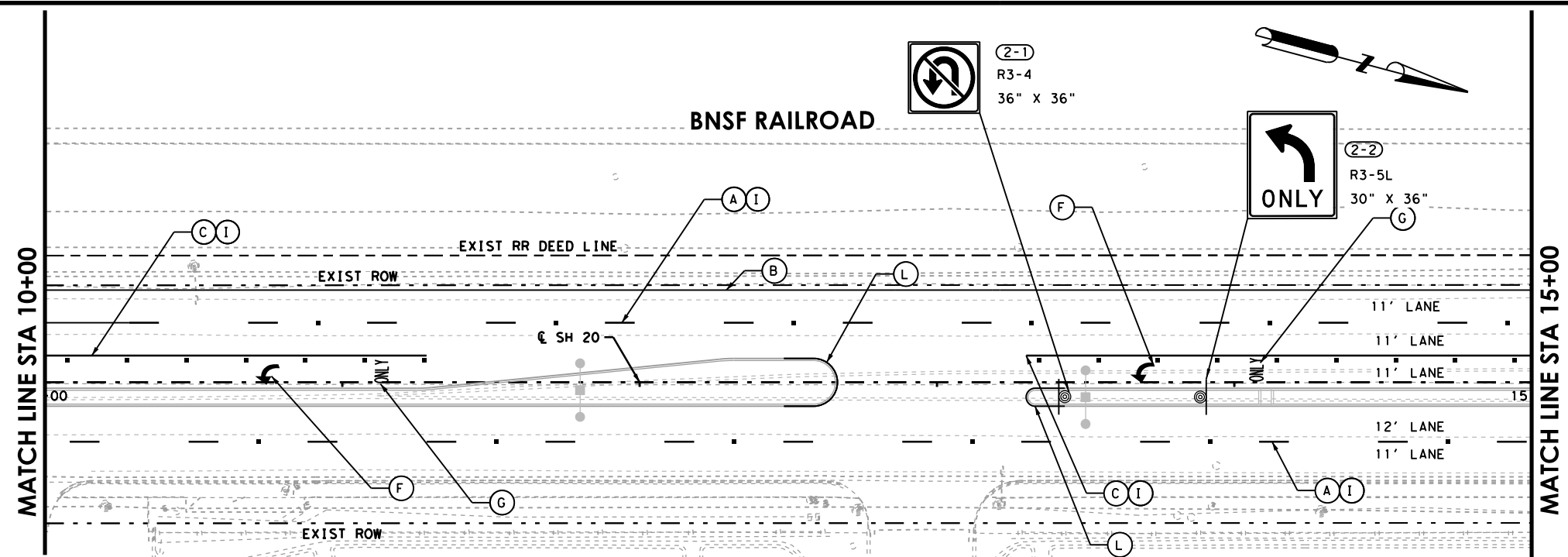
4/30/2021



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
BEGIN TO STA. 10+00**

SHEET 1 OF 16					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	241

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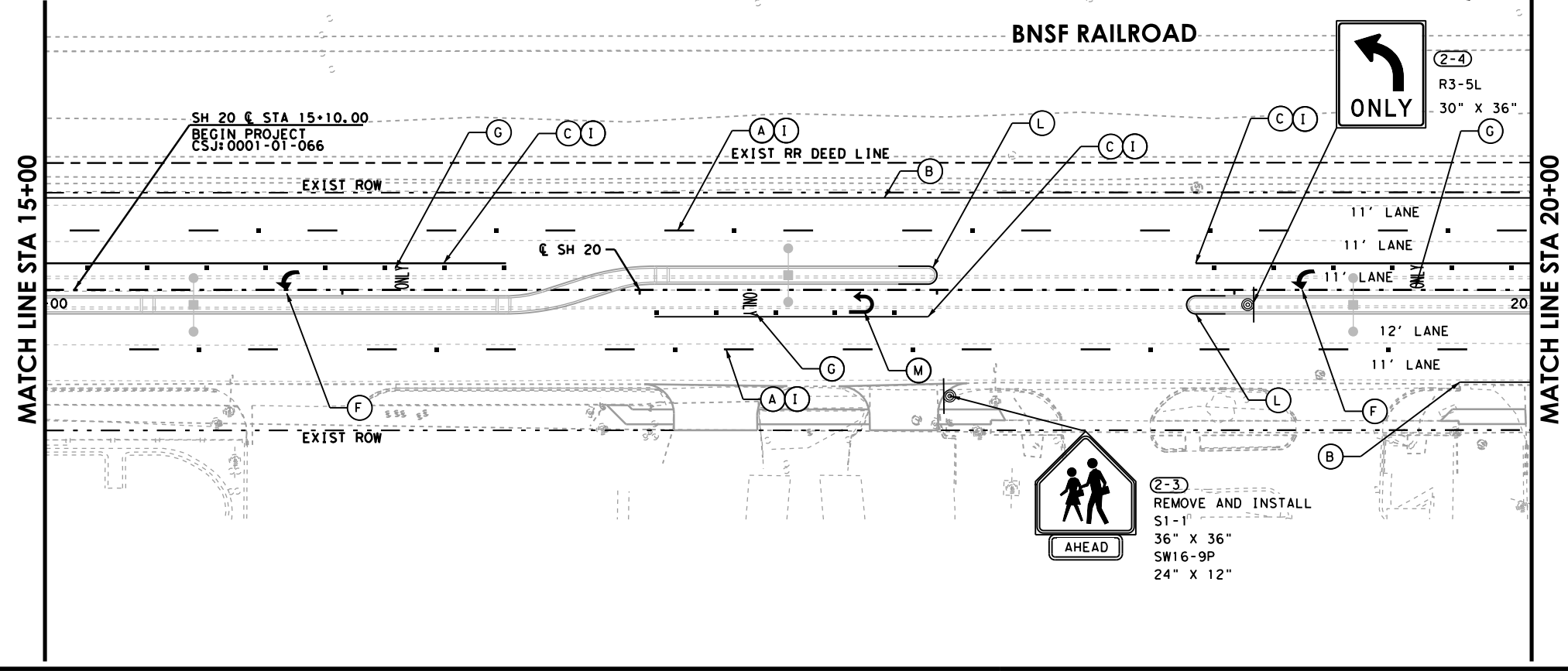


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	659
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	659
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1053
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	134
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
668 6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA	1
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5
672 6010	REFL PAV MRKR TY II-C-R	EA	65
678 6001	PAV SURF PREP FOR MRK (4")	LF	1053
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	659
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678 6012	PAV SURF PREP FOR MRK (UTURN ARROW)	EA	1
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	5

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	4
644 6076	REMOVE SM RD SN SUP&AM	EA	1



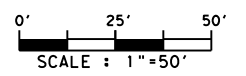
- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021



HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
P/E Registration Number 420



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 10+00 TO STA. 20+00**

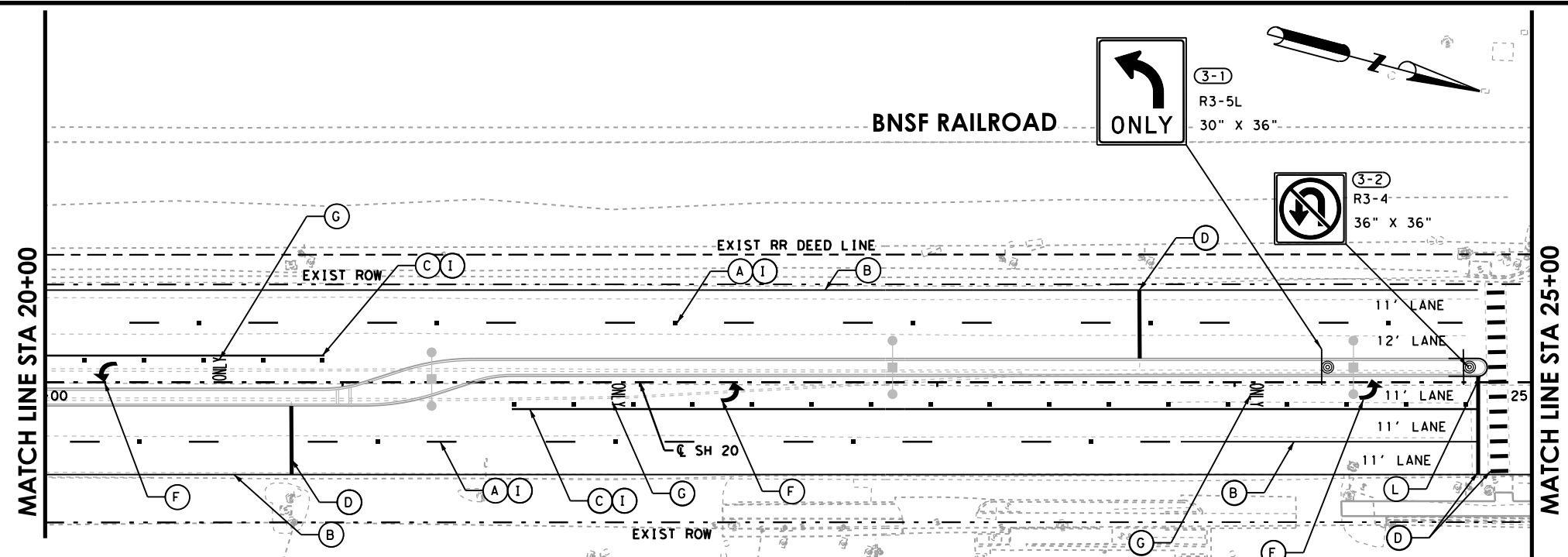
SHEET 2 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	242

4/30/2021

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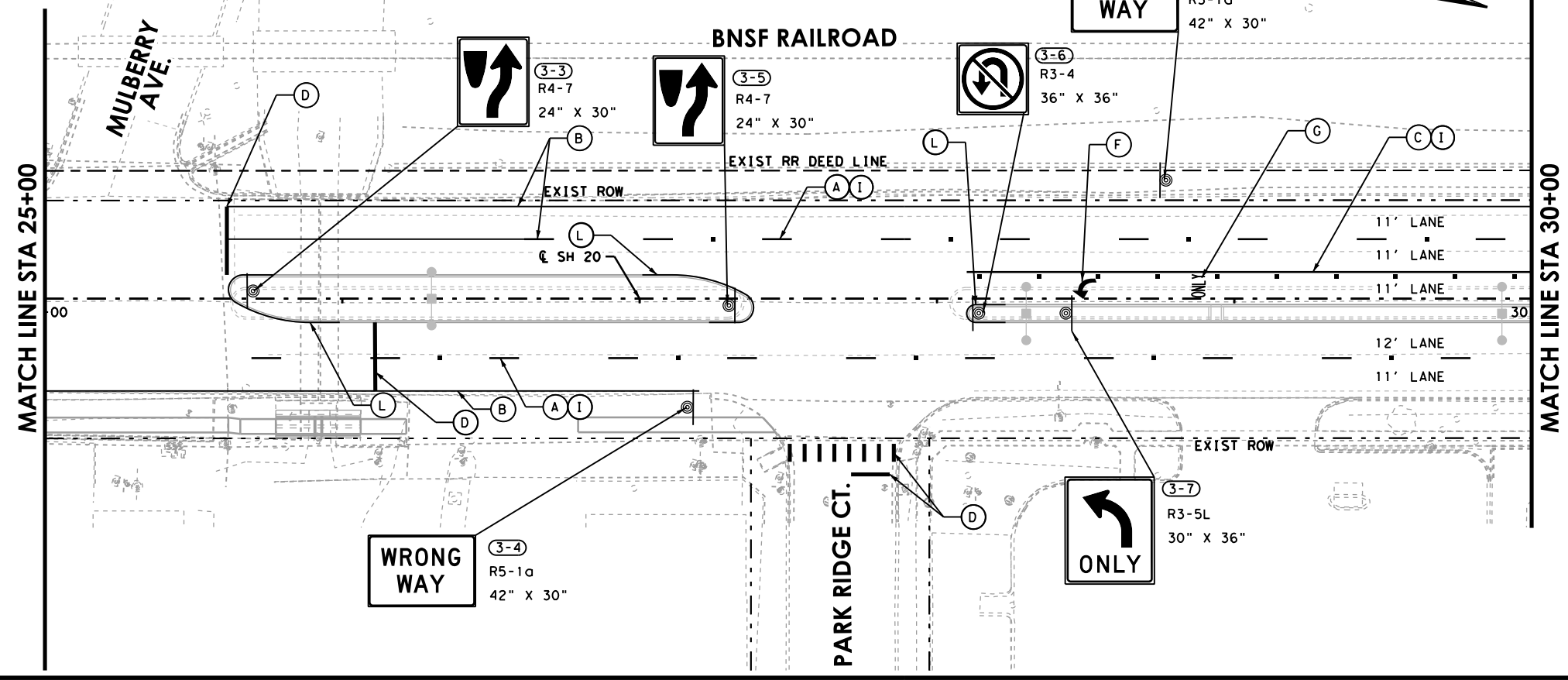


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	609
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	609
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1759
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	406
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	180
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	207
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	4
672 6010	REFL PAV MRKR TY II-C-R	EA	52
678 6001	PAV SURF PREP FOR MRK (4")	LF	1759
678 6002	PAV SURF PREP FOR MRK (6")	LF	406
678 6004	PAV SURF PREP FOR MRK (8")	LF	609
678 6008	PAV SURF PREP FOR MRK (24")	LF	207
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	4

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	6
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	2



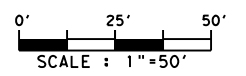
- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - ■ ■ OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021

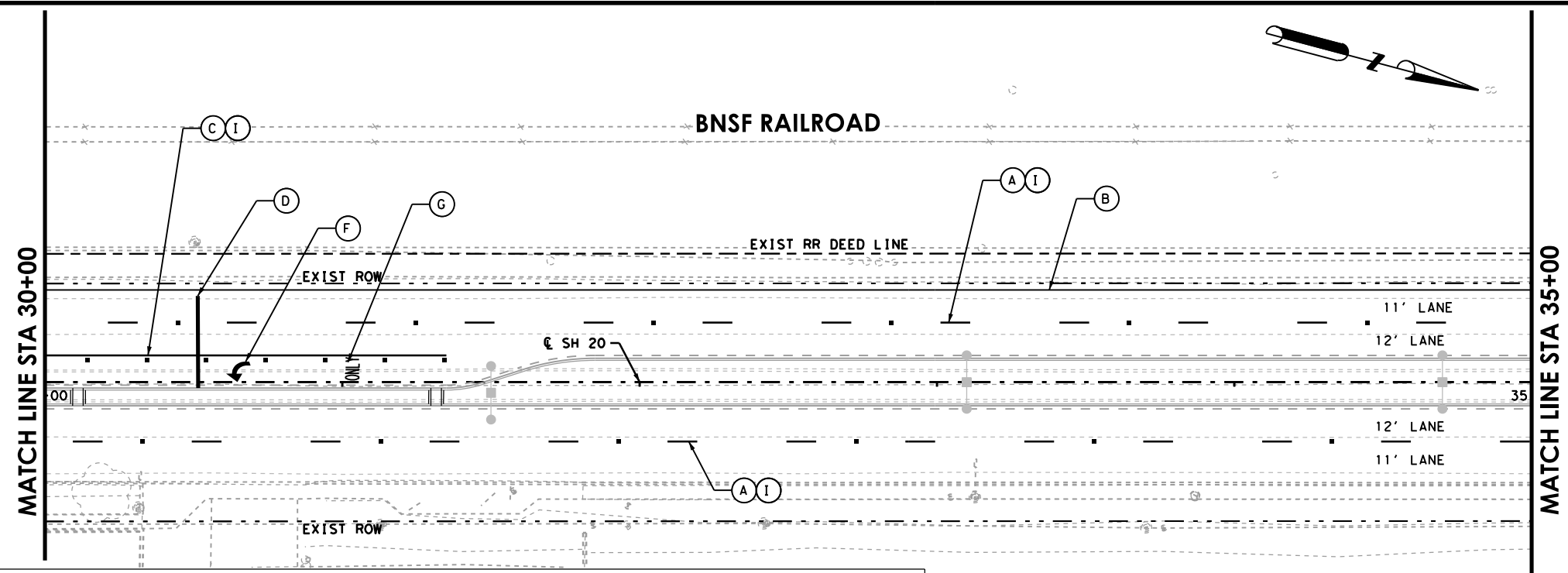


SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 20+00 TO STA. 30+00

SHEET 3 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	243

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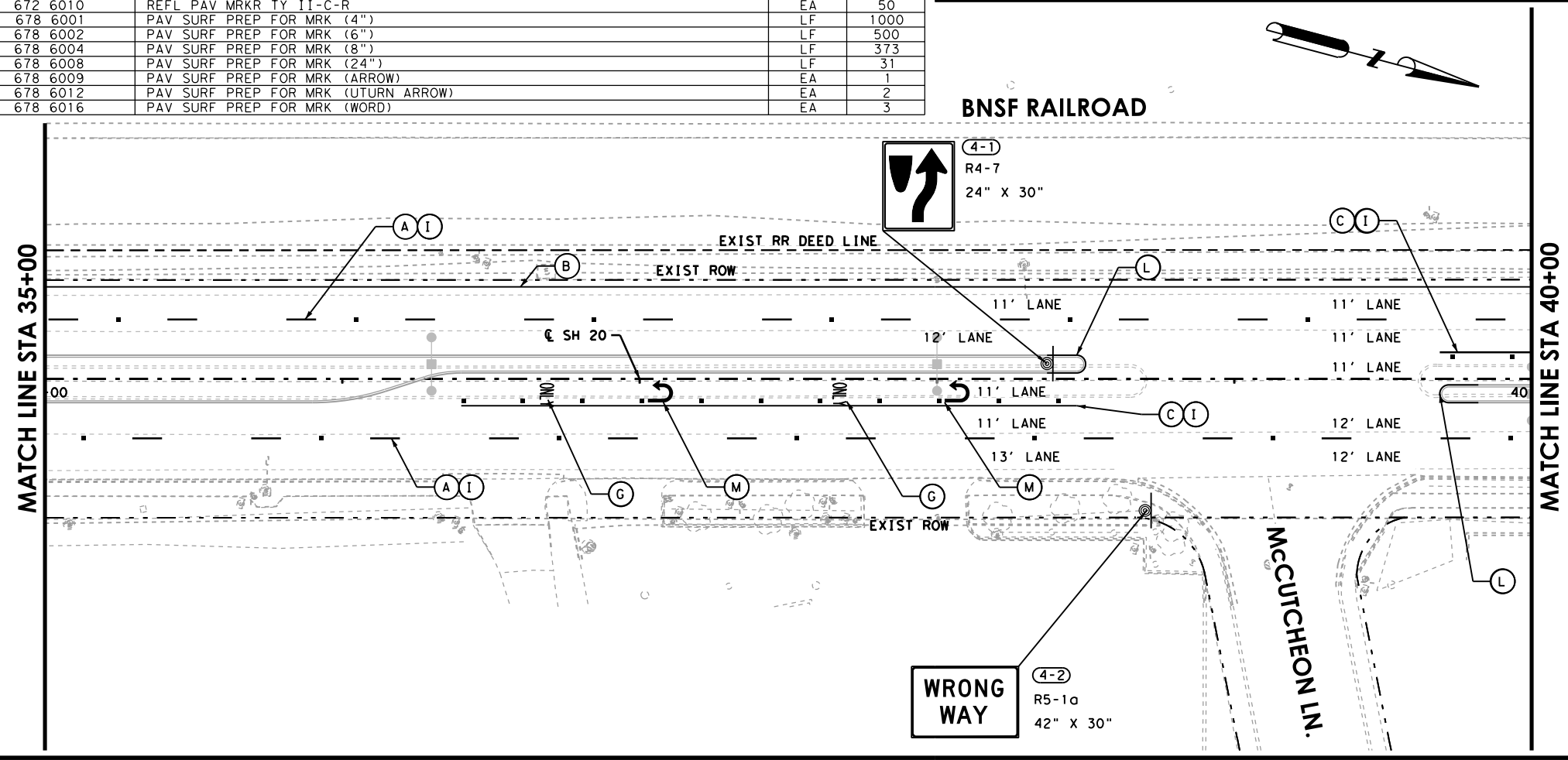


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	373
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	373
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1000
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	60
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	31
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
668 6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA	2
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	3
672 6010	REFL PAV MRKR TY II-C-R	EA	50
678 6001	PAV SURF PREP FOR MRK (4")	LF	1000
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	373
678 6008	PAV SURF PREP FOR MRK (24")	LF	31
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	1
678 6012	PAV SURF PREP FOR MRK (UTURN ARROW)	EA	2
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	3

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1



- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - ■ ■ OM - OBJECT MARKERS
- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021

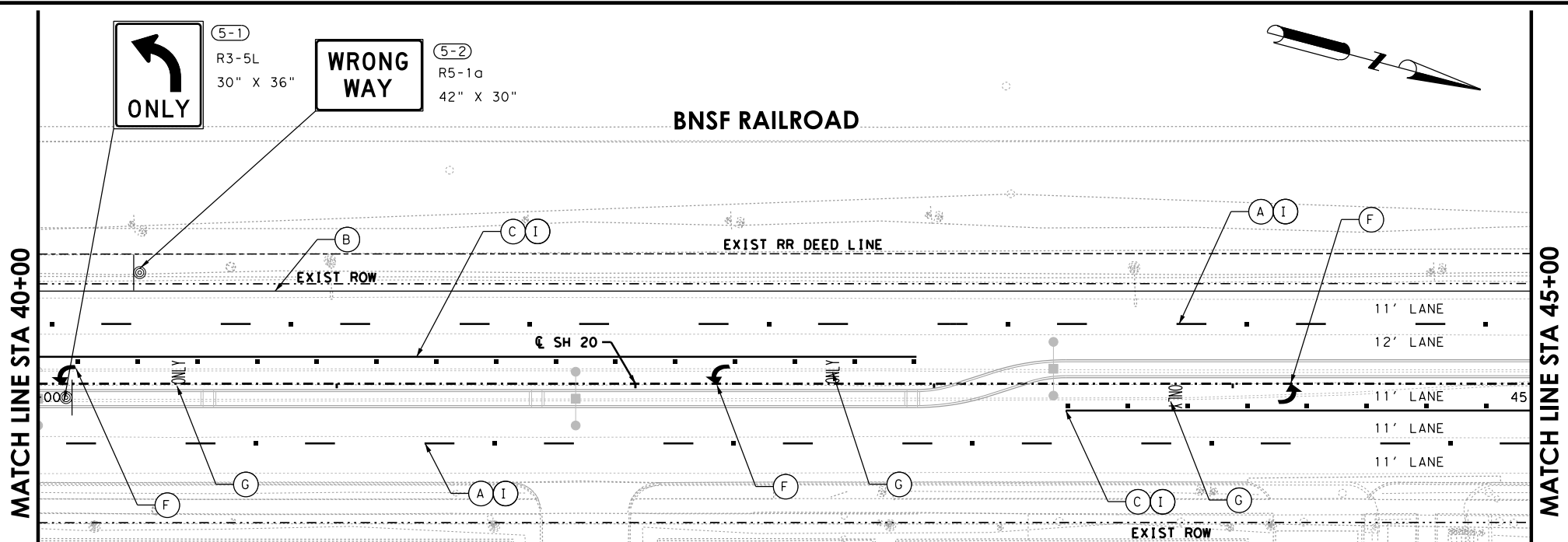


**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT**
STA. 30+00 TO STA. 40+00

SHEET 4 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	244

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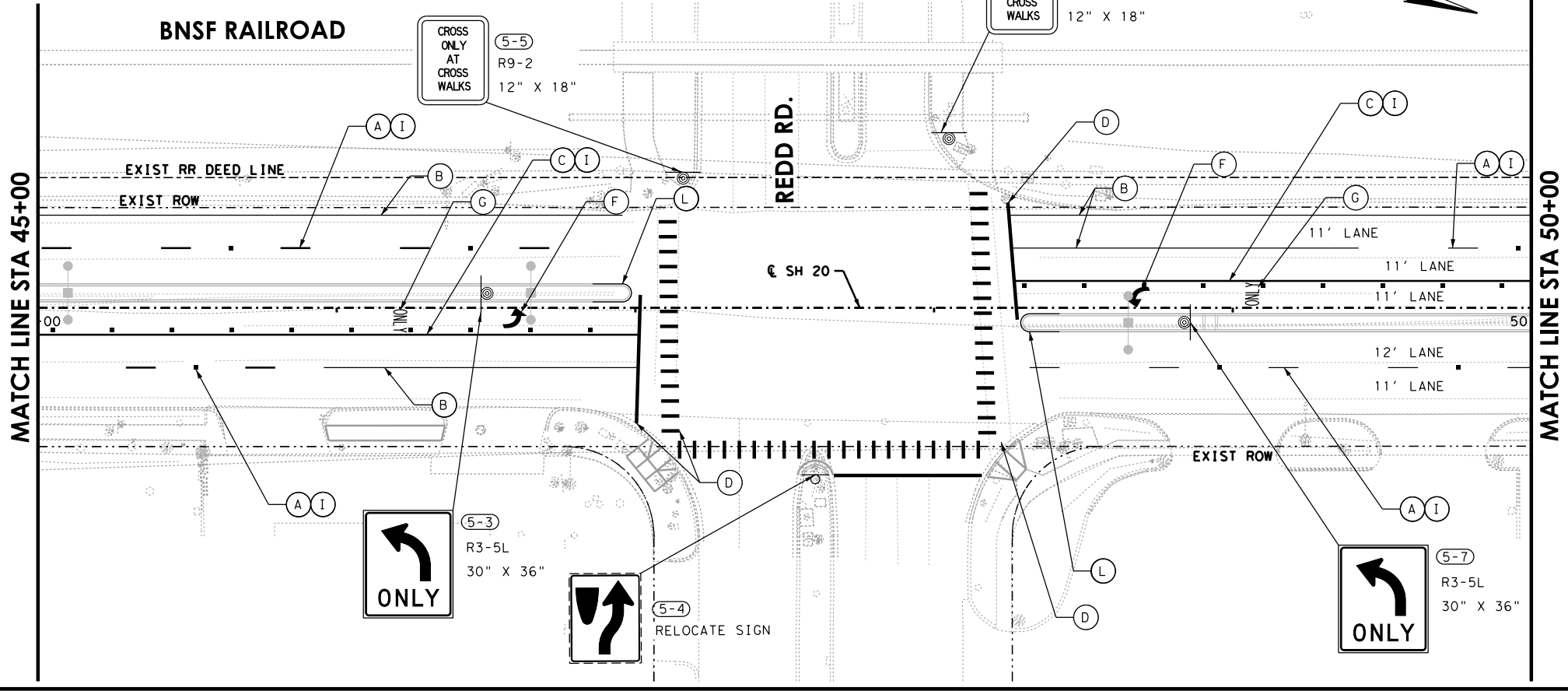


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	LF	814
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	814
666 6302	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	LF	1082
666 6305	RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)	LF	390
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	60
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	EA	273
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5
672 6010	REFL PAV MRKR TY II-C-R	EA	66
678 6001	PAV SURF PREP FOR MRK (4")	LF	1082
678 6002	PAV SURF PREP FOR MRK (6")	LF	390
678 6004	PAV SURF PREP FOR MRK (8")	LF	814
678 6008	PAV SURF PREP FOR MRK (24")	LF	273
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	5
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	5

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	5
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1
644 6075	RELOCATE SM RD SN SUP&AM(SIGN ONLY)	EA	1

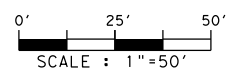


- LEGEND**
- (A) RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W) 8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W) 8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS
- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT**
STA. 40+00 TO STA. 50+00

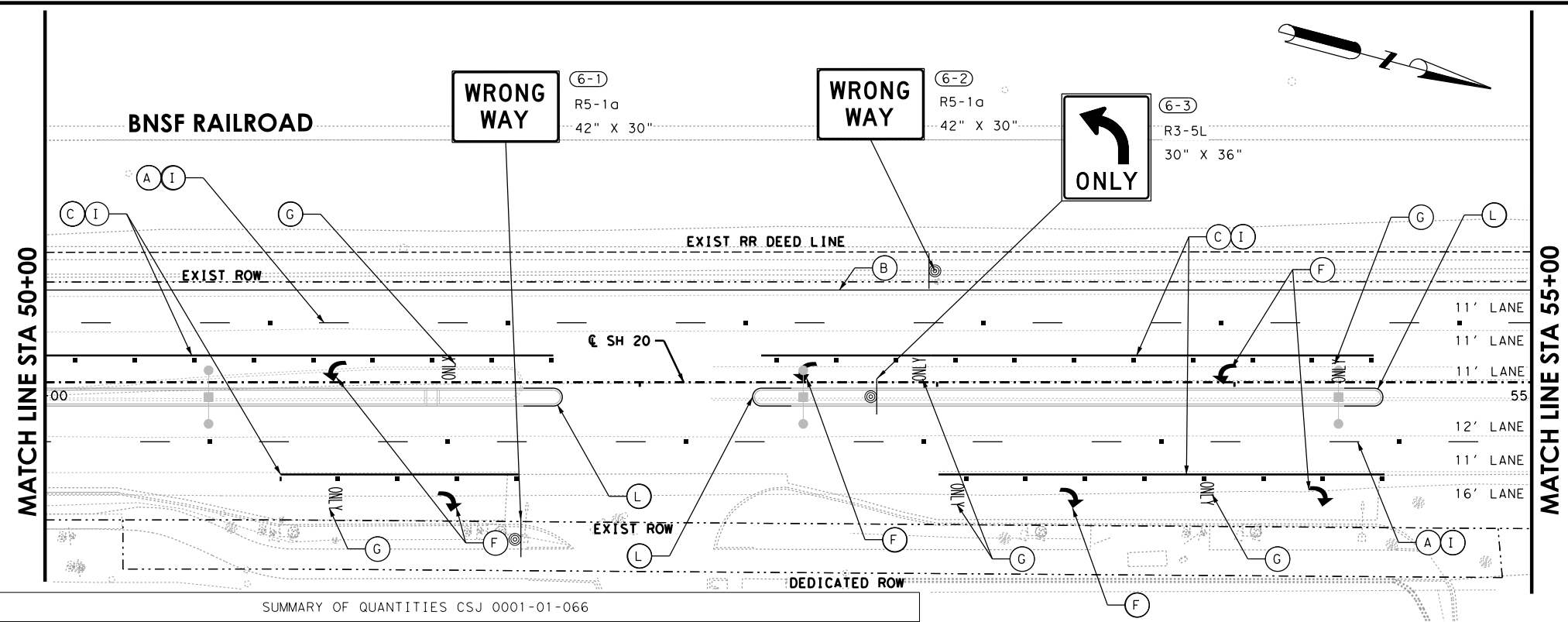
SHEET 5 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	245

5/2/2021

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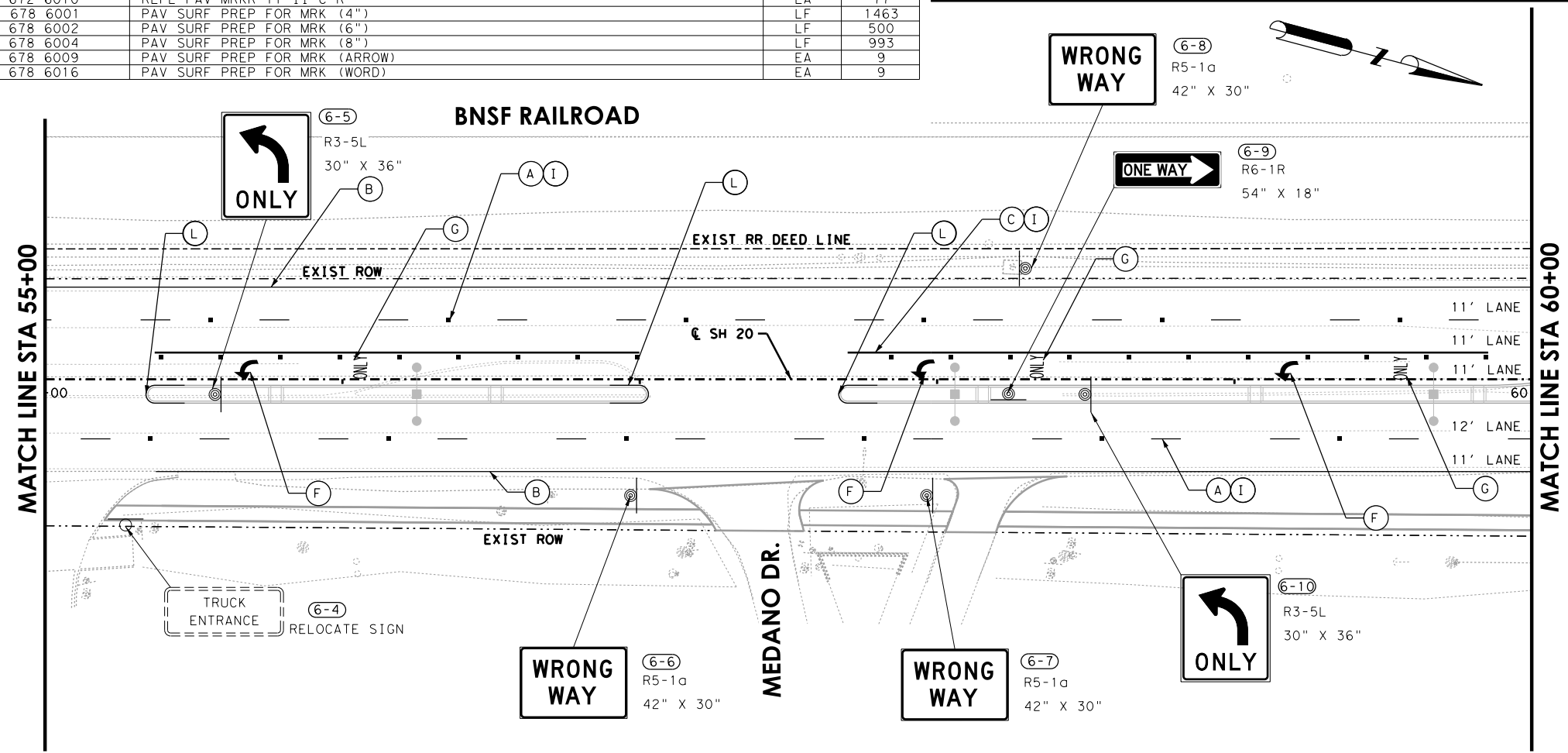


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	993
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	993
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1463
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	180
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	9
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	9
672 6010	REFL PAV MRKR TY II-C-R	EA	77
678 6001	PAV SURF PREP FOR MRK (4")	LF	1463
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	993
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	9
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	9

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	6
644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1



LEGEND

- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
- (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
- (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
- (D) PREFAB PAV MRK TY C (W) (24") (SLD)
- (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (WORD)
- (H) REFL PAV MRKR TY I-C
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR TY II-A-A
- (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
- (L) REFL PAV MRK TY II (Y) (CURB)
- (M) REFL PAV MRK TY C (W) (UTURN ARROW)
- ⊙ PROPOSED SMALL SIGN POST
- EXISTING SMALL SIGN POST
- (X-X) SIGN NUMBER
- OM - OBJECT MARKERS

NOTES:

- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
- SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.

Salvador Hernandez Jr.
 5/2/2021

HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

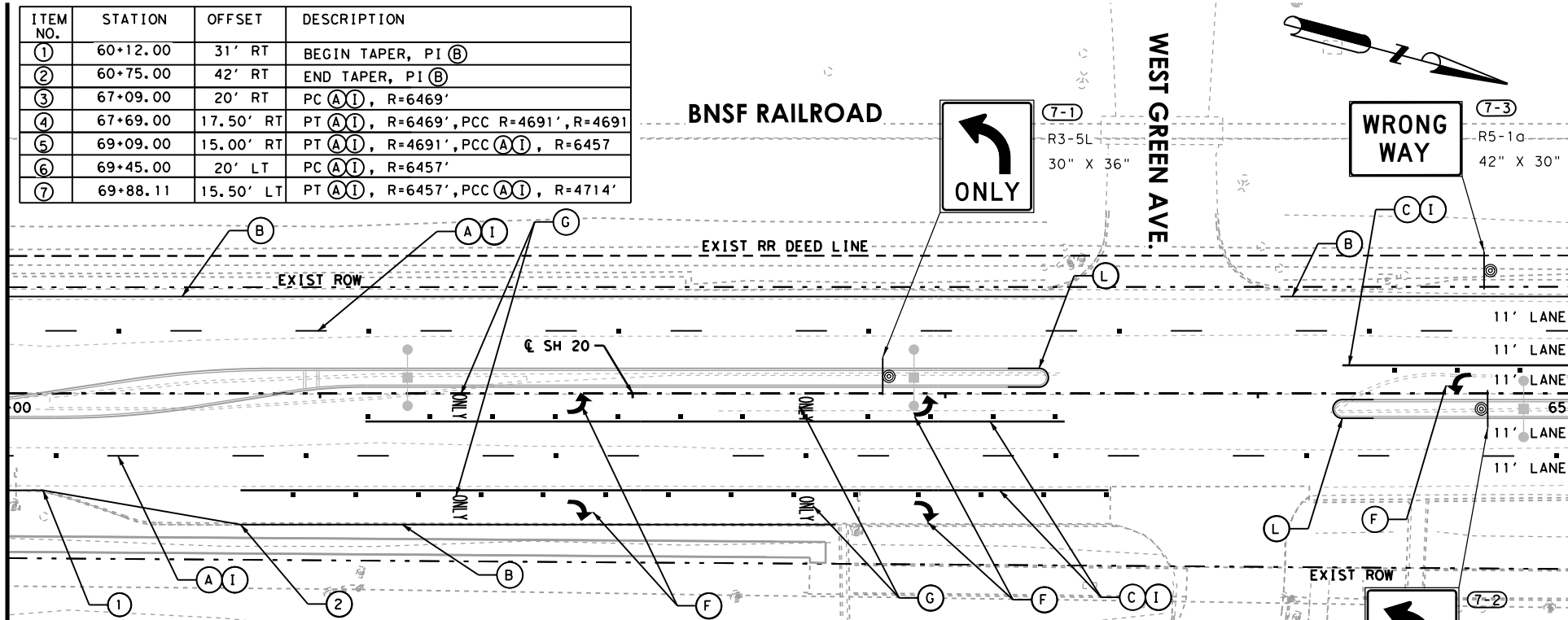
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**SH 20
 DONIPHAN DR.
 SIGNS & PAVEMENT
 MARKINGS LAYOUT**
 STA. 50+00 TO STA. 60+00
 SHEET 6 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	246

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ITEM NO.	STATION	OFFSET	DESCRIPTION
1	60+12.00	31' RT	BEGIN TAPER, PI (B)
2	60+75.00	42' RT	END TAPER, PI (B)
3	67+09.00	20' RT	PC (A1), R=6469'
4	67+69.00	17.50' RT	PT (A1), R=6469', PCC R=4691', R=4691'
5	69+09.00	15.00' RT	PT (A1), R=4691', PCC (A1), R=6457'
6	69+45.00	20' LT	PC (A1), R=6457'
7	69+88.11	15.50' LT	PT (A1), R=6457', PCC (A1), R=4714'

MATCH LINE STA 60+00



MATCH LINE STA 65+00

- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	833
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	833
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1120
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	16
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	60
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	6
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	6
672 6010	REFL PAV MRKR TY II-C-R	EA	60
678 6001	PAV SURF PREP FOR MRK (4")	LF	1136
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	833
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	6
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	6

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG (1) SA (P)	EA	2
644 6004	IN SM RD SN SUP&AM TY10BWG (1) SA (T)	EA	1

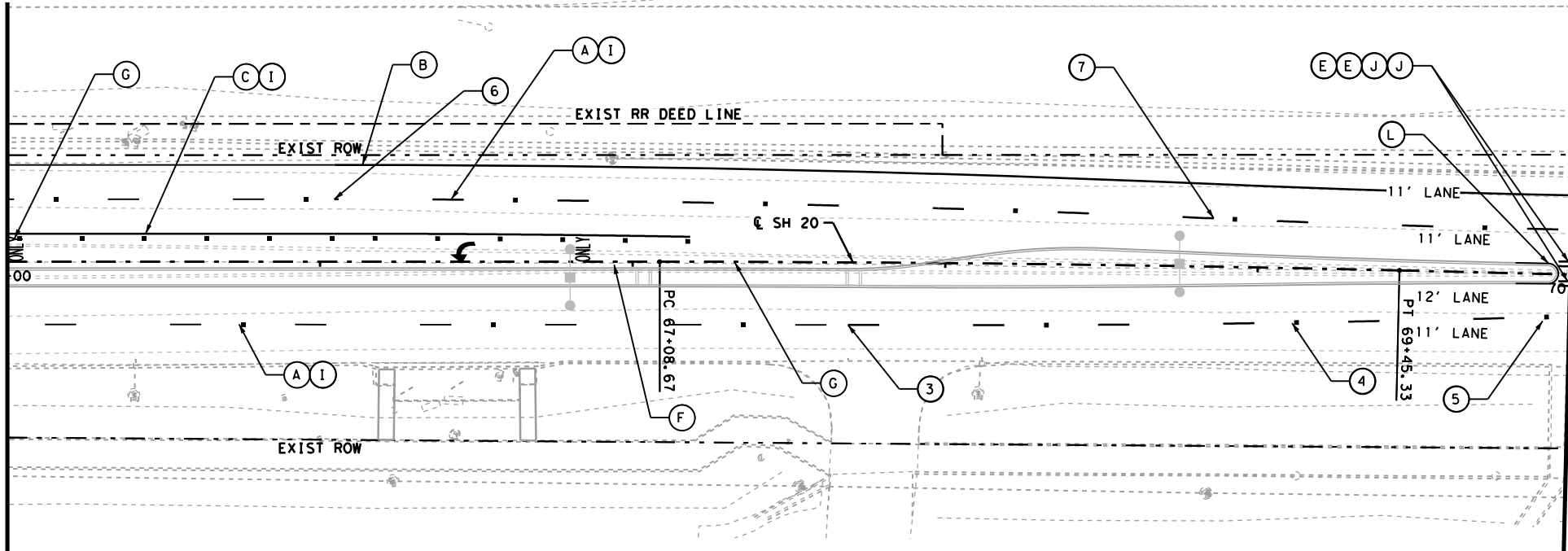


Salvador Hernandez Jr.

4/30/2021



MATCH LINE STA 65+00



MATCH LINE STA 70+00

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

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**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT**
STA. 60+00 TO STA. 70+00

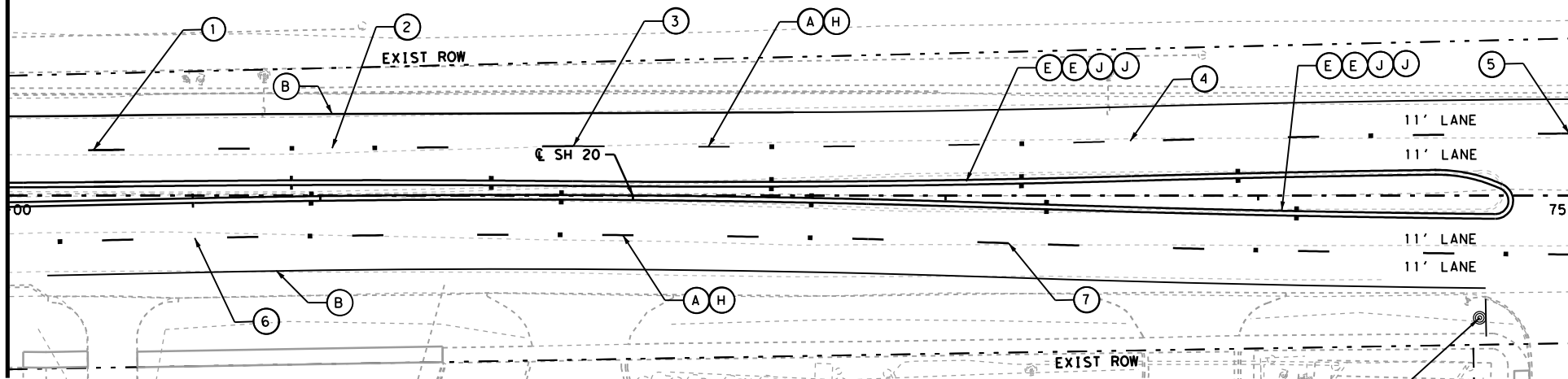
SHEET 7 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	247

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ITEM NO.	STATION	OFFSET	DESCRIPTION
①	70+28.00	14.50' LT	PT (A)(H), R=4714', PCC (A)(H), R=6479'
②	71+04.00	15.15' LT	PT (A)(H), R=6479', PCC (A)(H), R=46911'
③	71+82.00	17.00' LT	PT (A)(H), R=46911', PCC (A)(H), R=4691'
④	73+59.00	17.50' LT	PT (A)(H), R=4691', PCC (A)(H), R=6491'
⑤	75+00.00	20.00' LT	PT (A)(H), R=6491'
⑥	60+00.00	13.60' RT	PC (A)(H), R=4691'
⑦	73+20.00	15.30' RT	PT (A)(H), R=4691', PCC (A)(H), R=6491'
⑧	75+46.00	19.00' RT	PC (A)(H), R=6491'

MATCH LINE STA 70+00

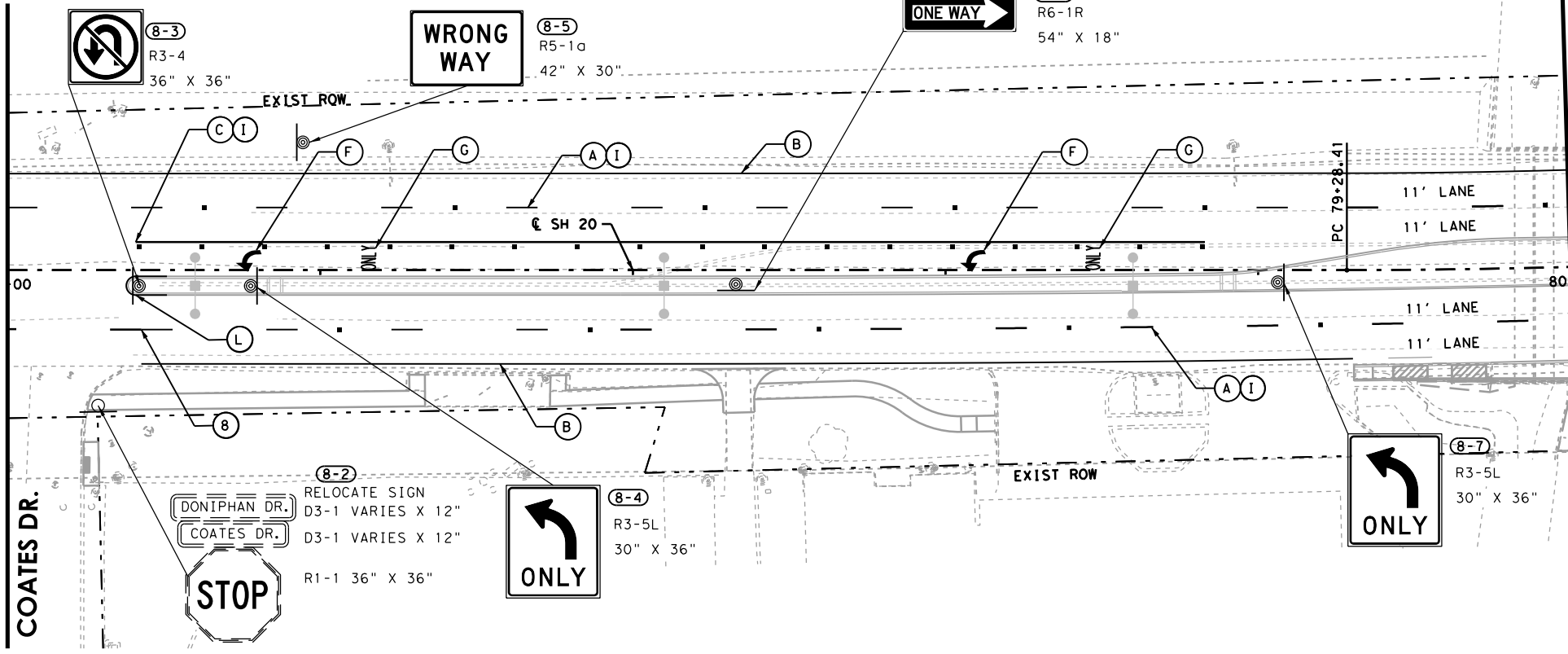


MATCH LINE STA 75+00

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	342
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	342
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1850
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	1953
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	30
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	EA	38
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	2
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2
672 6007	REFL PAV MRKR TY I-C	EA	45
672 6009	REFL PAV MRKR TY II-A-A	EA	98
672 6010	REFL PAV MRKR TY II-C-R	EA	58
678 6001	PAV SURF PREP FOR MRK (4")	LF	3804
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	342
678 6008	PAV SURF PREP FOR MRK (24")	LF	38
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	2
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	2

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	3
644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1

MATCH LINE STA 75+00



MATCH LINE STA 80+00

LEGEND

- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
- (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
- (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
- (D) PREFAB PAV MRK TY C (W) (24") (SLD)
- (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (WORD)
- (H) REFL PAV MRKR TY I-C
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR TY II-A-A
- (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
- (L) REFL PAV MRK TY II (Y) (CURB)
- (M) REFL PAV MRK TY C (W) (UTURN ARROW)
- ⊙ PROPOSED SMALL SIGN POST
- EXISTING SMALL SIGN POST
- (X-X) SIGN NUMBER
- OM - OBJECT MARKERS

NOTES:

- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
- SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 70+00 TO STA. 80+00**

SHEET 8 OF 16

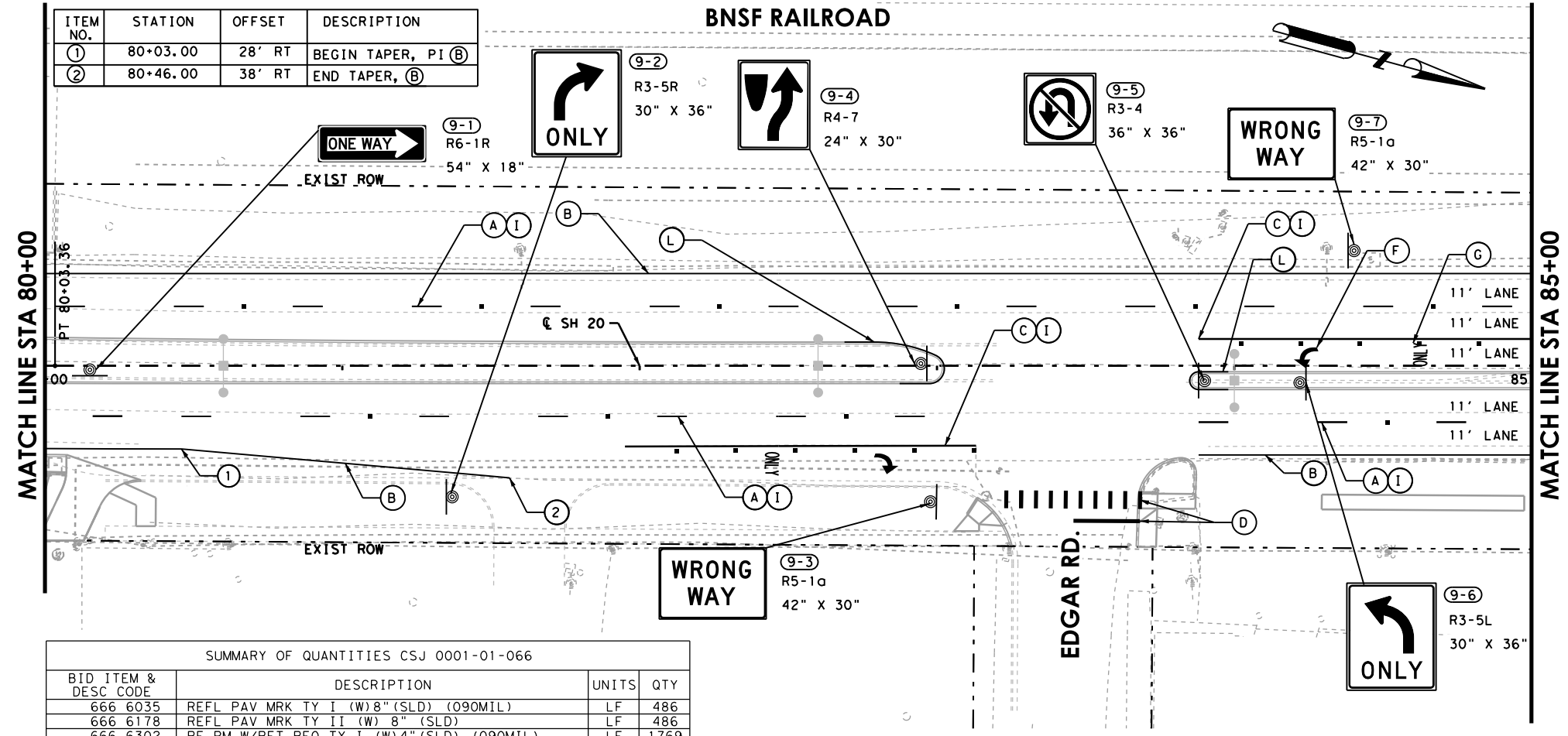
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CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	248

4/30/2021

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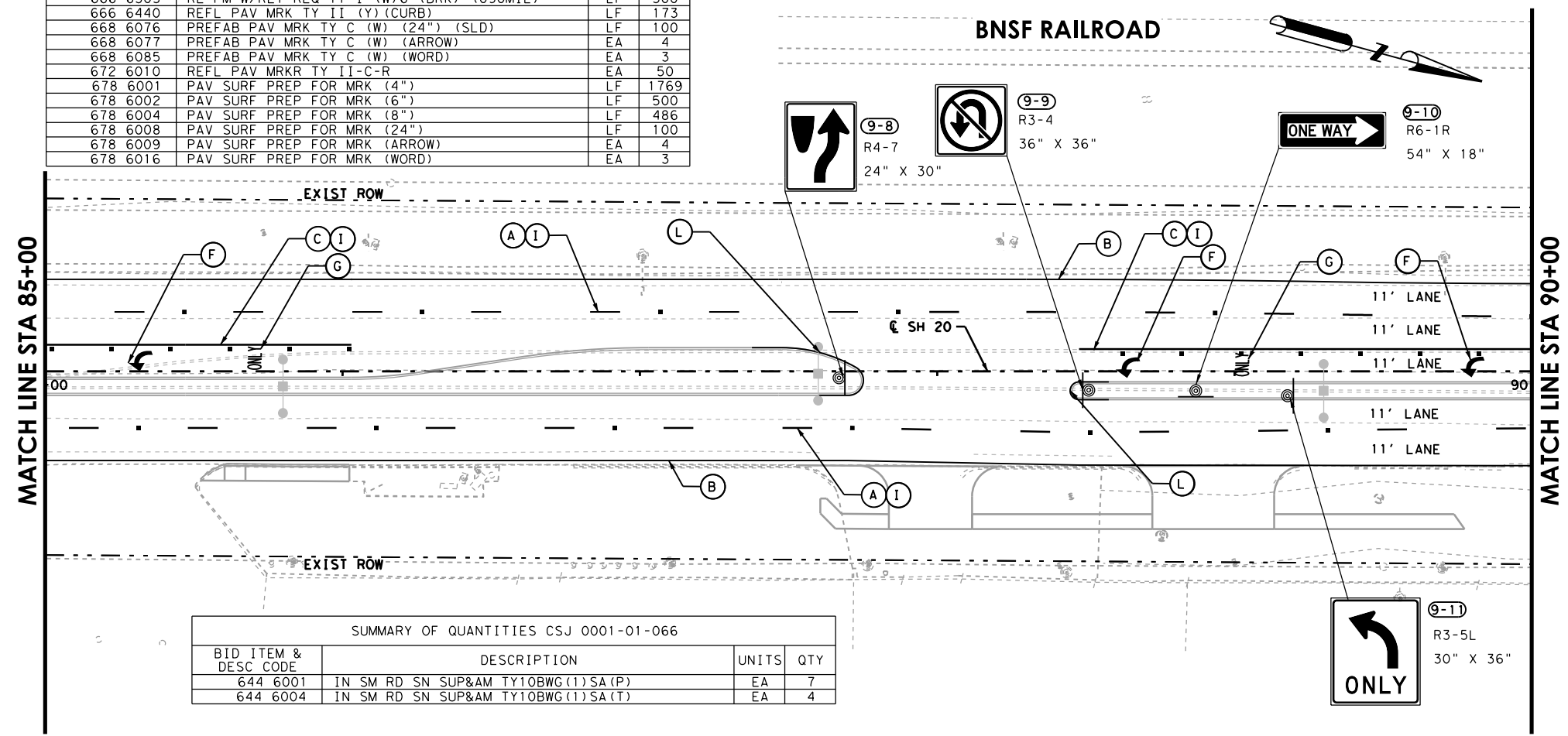
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ITEM NO.	STATION	OFFSET	DESCRIPTION
1	80+03.00	28' RT	BEGIN TAPER, PI (B)
2	80+46.00	38' RT	END TAPER, (B)



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	486
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	486
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1769
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	173
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	100
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	3
672 6010	REFL PAV MRKR TY II-C-R	EA	50
678 6001	PAV SURF PREP FOR MRK (4")	LF	1769
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	486
678 6008	PAV SURF PREP FOR MRK (24")	LF	100
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	3



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	7
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	4

- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - ■ ■ OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021

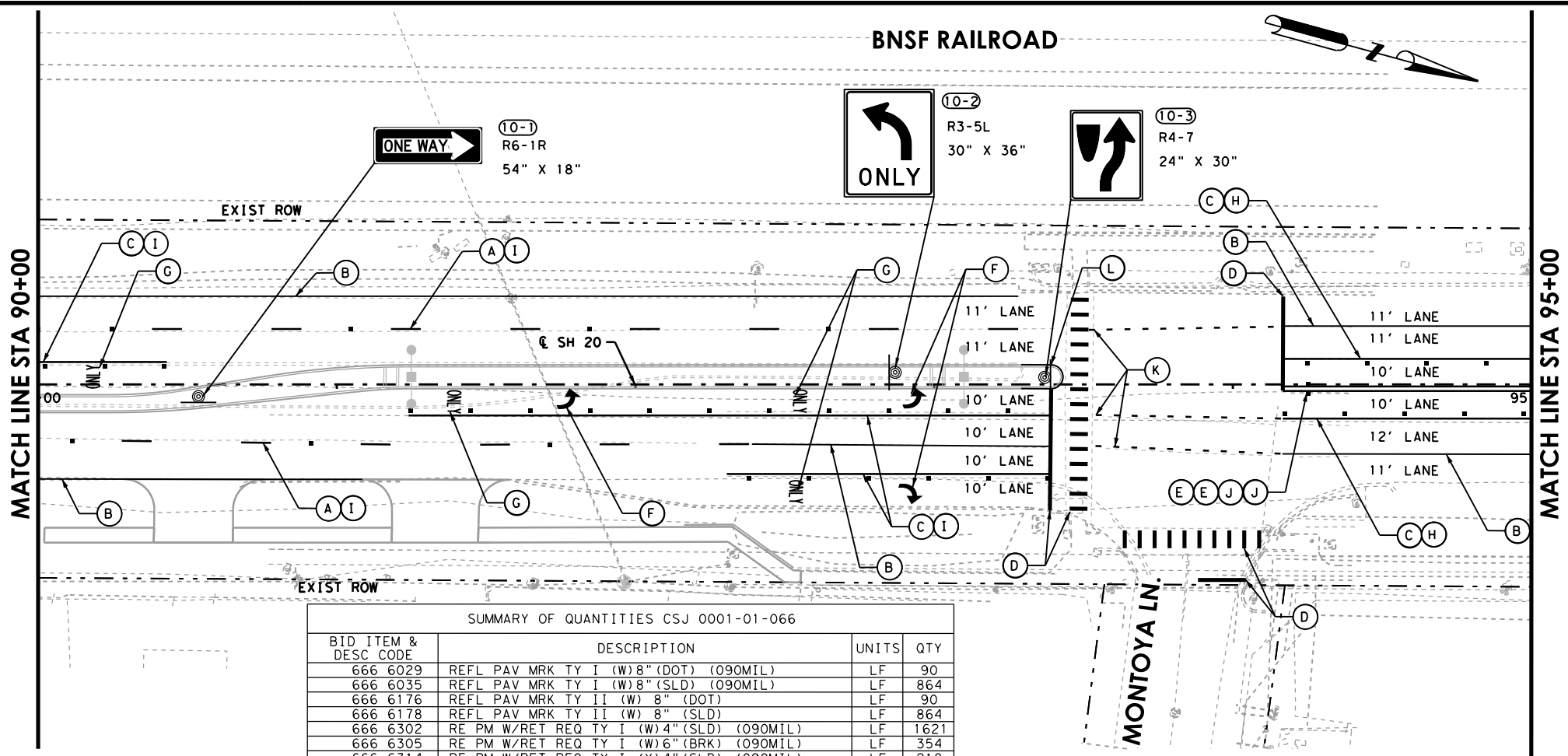


**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 80+00 TO STA. 90+00**

SHEET 9 OF 16

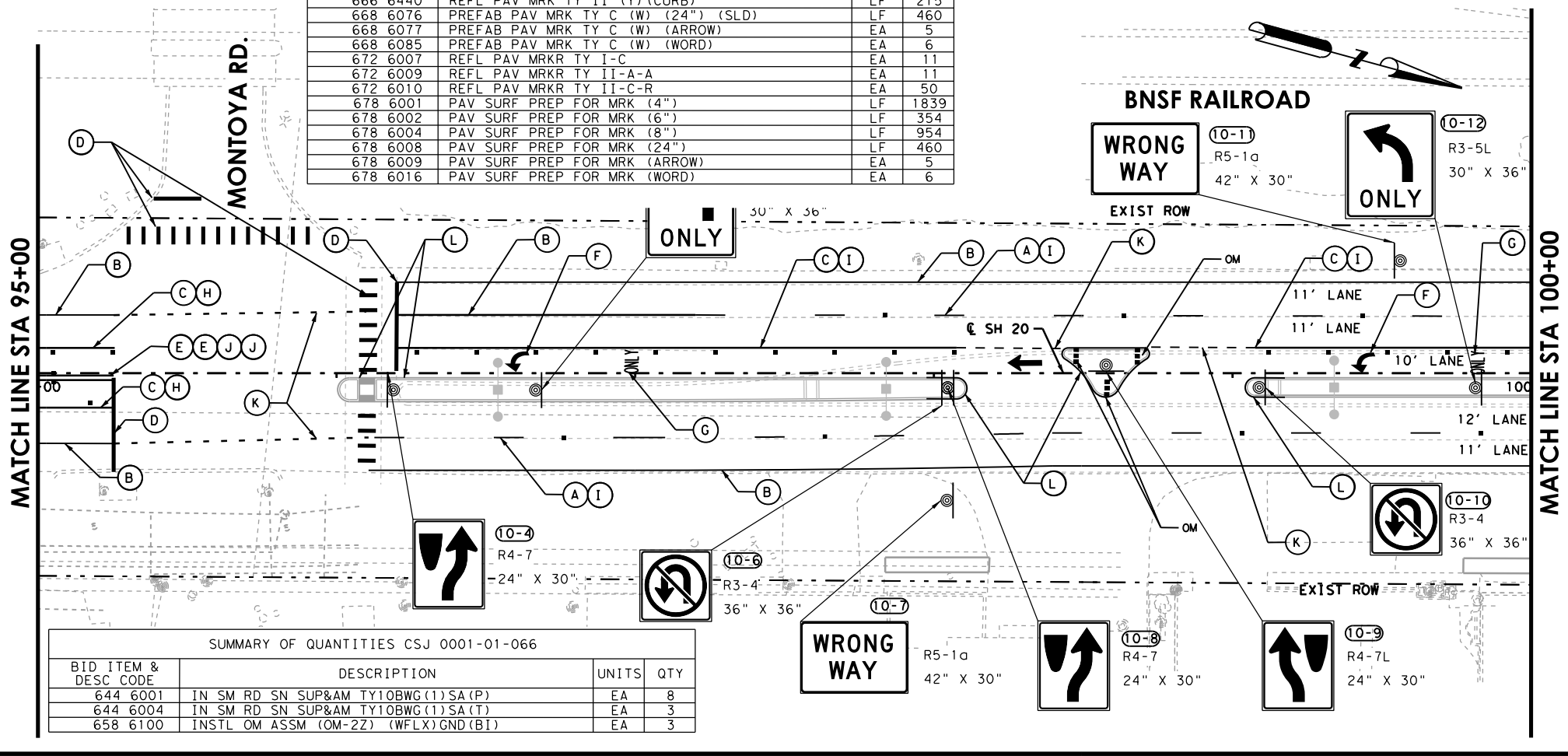
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	249

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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6029	REFL PAV MRK TY I (W)8" (DOT) (090MIL)	LF	90
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	864
666 6176	REFL PAV MRK TY II (W) 8" (DOT)	LF	90
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	864
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1621
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	354
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	218
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	215
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	460
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	6
672 6007	REFL PAV MRKR TY I-C	EA	11
672 6009	REFL PAV MRKR TY II-A-A	EA	11
672 6010	REFL PAV MRKR TY II-C-R	EA	50
678 6001	PAV SURF PREP FOR MRK (4")	LF	1839
678 6002	PAV SURF PREP FOR MRK (6")	LF	354
678 6004	PAV SURF PREP FOR MRK (8")	LF	954
678 6008	PAV SURF PREP FOR MRK (24")	LF	460
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	5
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	6



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	8
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	3
658 6100	INSTL OM ASSM (OM=2Z) (WFLX)GND(B1)	EA	3

LEGEND

- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
- (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
- (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
- (D) PREFAB PAV MRK TY C (W) (24") (SLD)
- (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (WORD)
- (H) REFL PAV MRKR TY I-C
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR TY II-A-A
- (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
- (L) REFL PAV MRK TY II (Y) (CURB)
- (M) REFL PAV MRK TY C (W) (UTURN ARROW)
- ⊙ PROPOSED SMALL SIGN POST
- EXISTING SMALL SIGN POST
- (X-X) SIGN NUMBER
- OM - OBJECT MARKERS

NOTES:

- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
- SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021

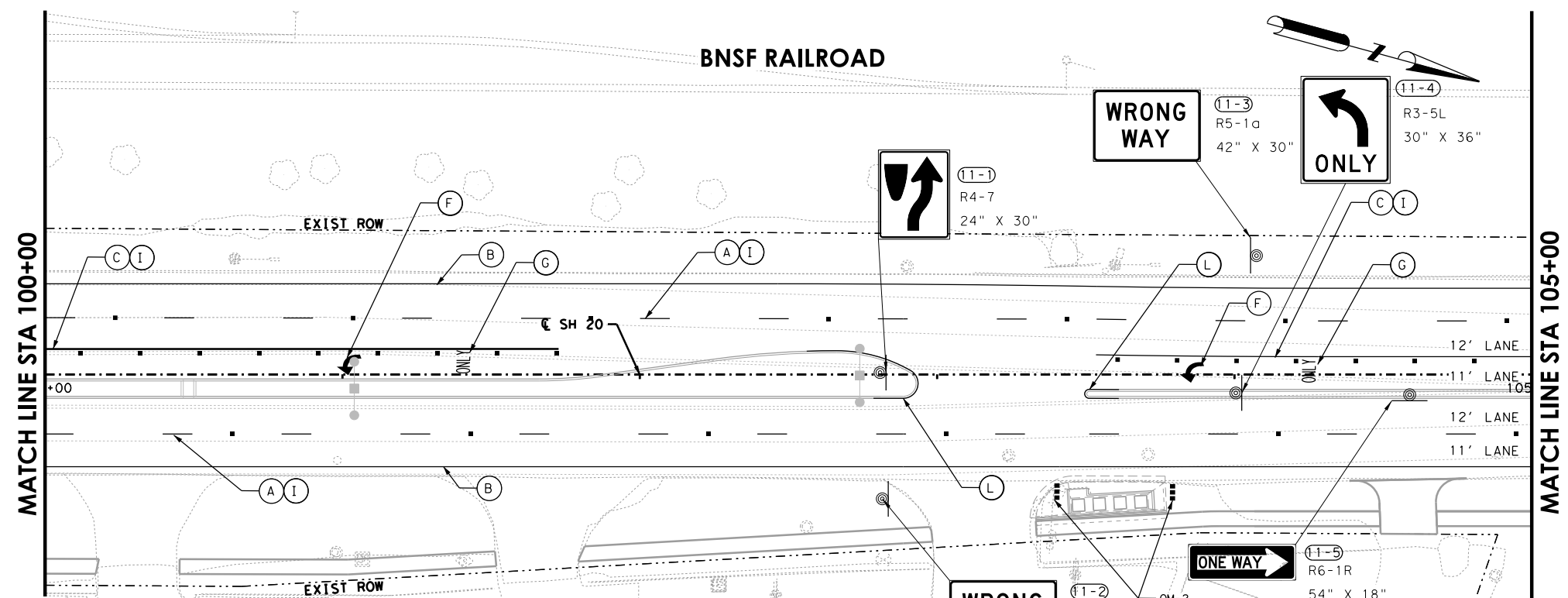


**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 90+00 TO STA. 100+00**

SHEET 10 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	250

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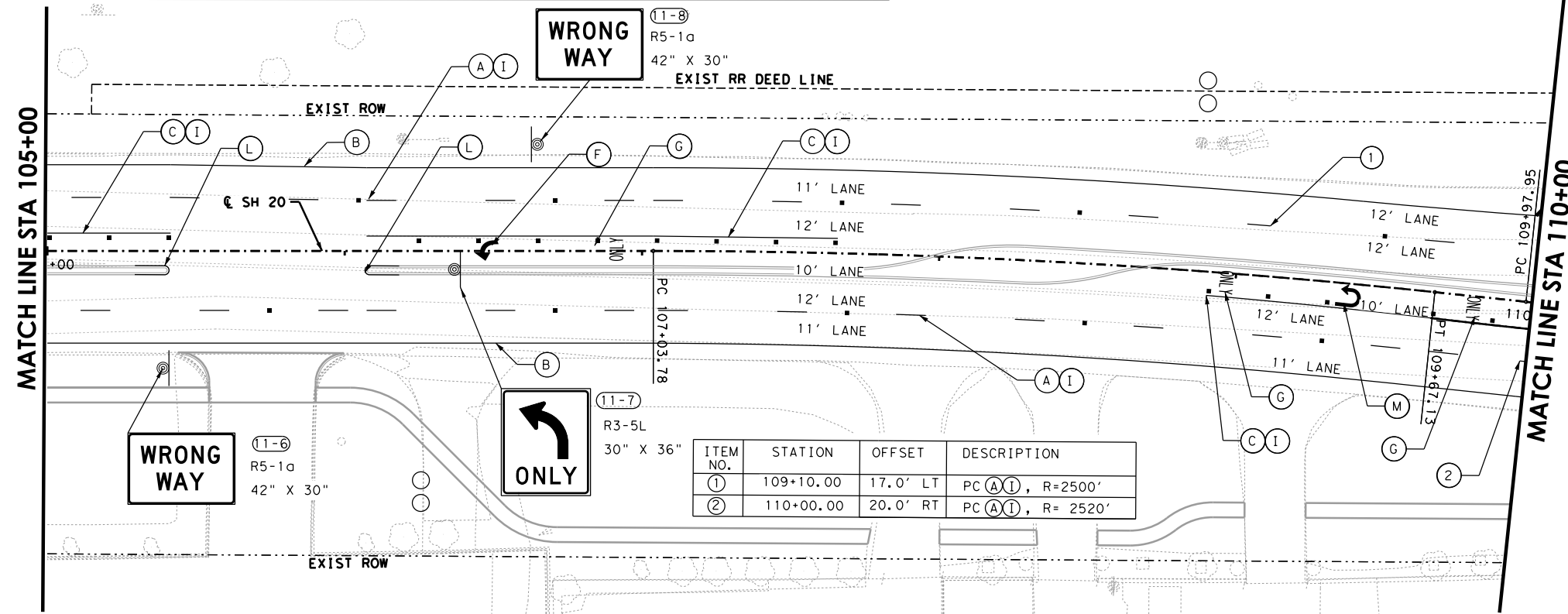


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	850
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	850
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	2000
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	134
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	3
668 6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA	1
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5
672 6010	REFL PAV MRKR TY II-C-R	EA	64
678 6001	PAV SURF PREP FOR MRK (4")	LF	2000
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	850
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	3
678 6012	PAV SURF PREP FOR MRK (UTURN ARROW)	EA	1
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	5

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	5
658 6100	INSTR OM ASSM (OM-22) (WFLX)GND(BI)	EA	2



ITEM NO.	STATION	OFFSET	DESCRIPTION
①	109+10.00	17.0' LT	PC (A)I, R=2500'
②	110+00.00	20.0' RT	PC (A)I, R= 2520'

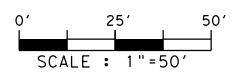
- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT**
STA. 100+00 TO STA. 110+00

SHEET 11 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	251

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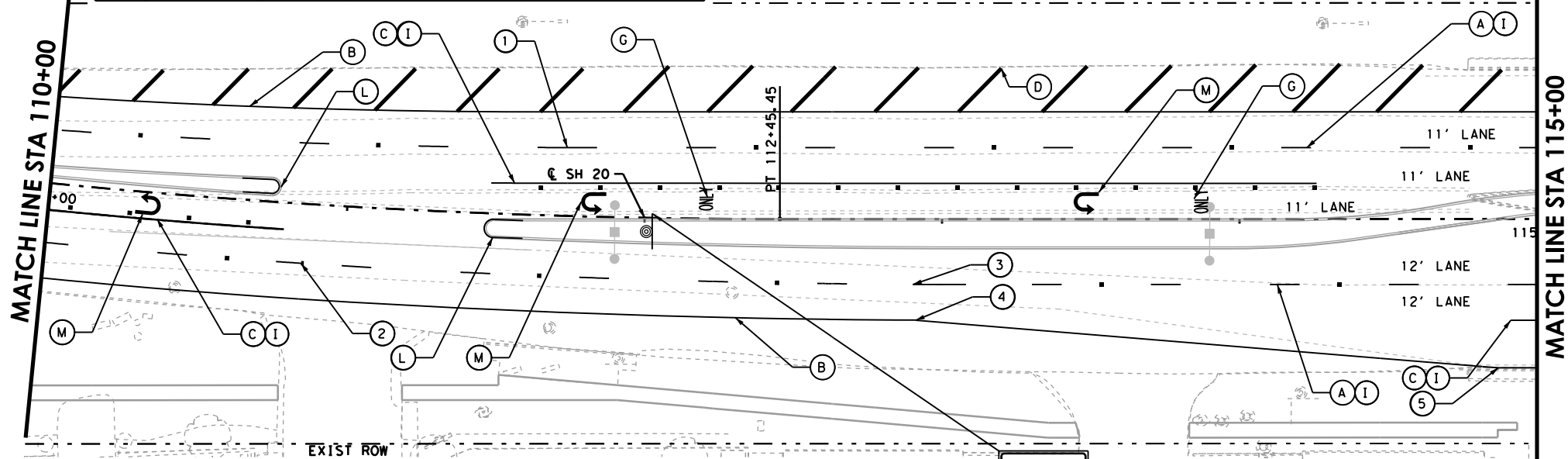
ITEM NO.	STATION	OFFSET	DESCRIPTION
①	111+73.00	23.00' LT	PT (A) I, R=2500'
②	110+86.00	19.00' RT	PT (A) I, R=2520', PCC (A) I, R=3500'
③	112+90.00	21.00' RT	PT (A) I, R=3500'
④	112+90.00	34.00' RT	BEGIN TAPER, PI (B)
⑤	114+87.00	50.00' RT	END TAPER, PI (B)

BNSF RAILROAD

EXIST RR DEED LINE

MATCH LINE STA 110+00

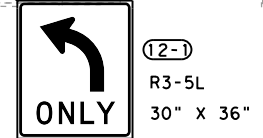
MATCH LINE STA 115+00



SUMMARY OF QUANTITIES CSJ 0001-01-066

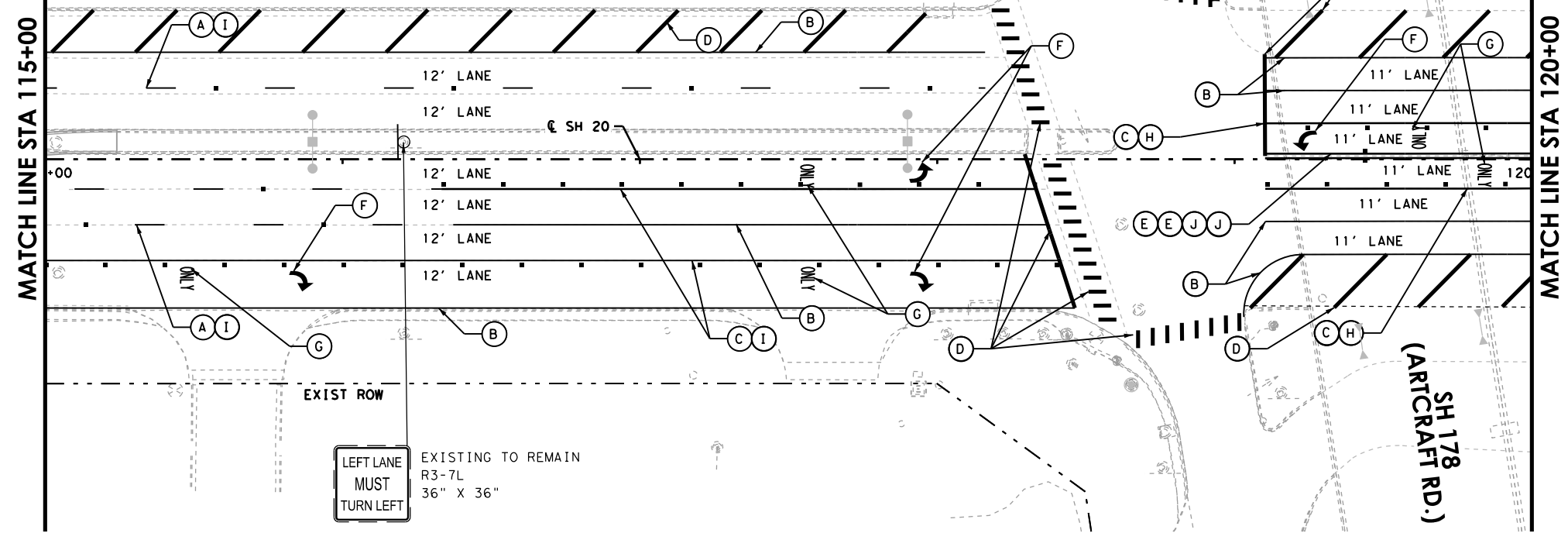
BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	LF	1450
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	1450
666 6302	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	LF	3220
666 6305	RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)	LF	390
666 6314	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	LF	180
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	60
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	1280
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
668 6080	PREFAB PAV MRK TY C (W) (UTURN ARROW)	EA	3
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	7
672 6007	REFL PAV MRKR TY I-C	EA	10
672 6009	REFL PAV MRKR TY II-A-A	EA	10
672 6010	REFL PAV MRKR TY II-C-R	EA	75
678 6001	PAV SURF PREP FOR MRK (4")	LF	3400
678 6002	PAV SURF PREP FOR MRK (6")	LF	390
678 6004	PAV SURF PREP FOR MRK (8")	LF	1450
678 6008	PAV SURF PREP FOR MRK (24")	LF	1280
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678 6012	PAV SURF PREP FOR MRK (UTURN ARROW)	EA	3
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	7

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1



MATCH LINE STA 115+00

MATCH LINE STA 120+00



LEFT LANE EXISTING TO REMAIN R3-7L 36" X 36" MUST TURN LEFT

LEGEND

- (A) RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)
- (B) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
- (C) REFL PAV MRK TY I (W) 8" (SLD) (090 MIL)
- (D) PREFAB PAV MRK TY C (W) (24") (SLD)
- (E) RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (WORD)
- (H) REFL PAV MRKR TY I-C
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR TY II-A-A
- (K) REFL PAV MRK TY I (W) 8" (DOT) (090 MIL)
- (L) REFL PAV MRK TY II (Y) (CURB)
- (M) REFL PAV MRK TY C (W) (UTURN ARROW)
- ⊙ PROPOSED SMALL SIGN POST
- EXISTING SMALL SIGN POST
- (X-X) SIGN NUMBER
- OM - OBJECT MARKERS

NOTES:

1. SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
2. SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021



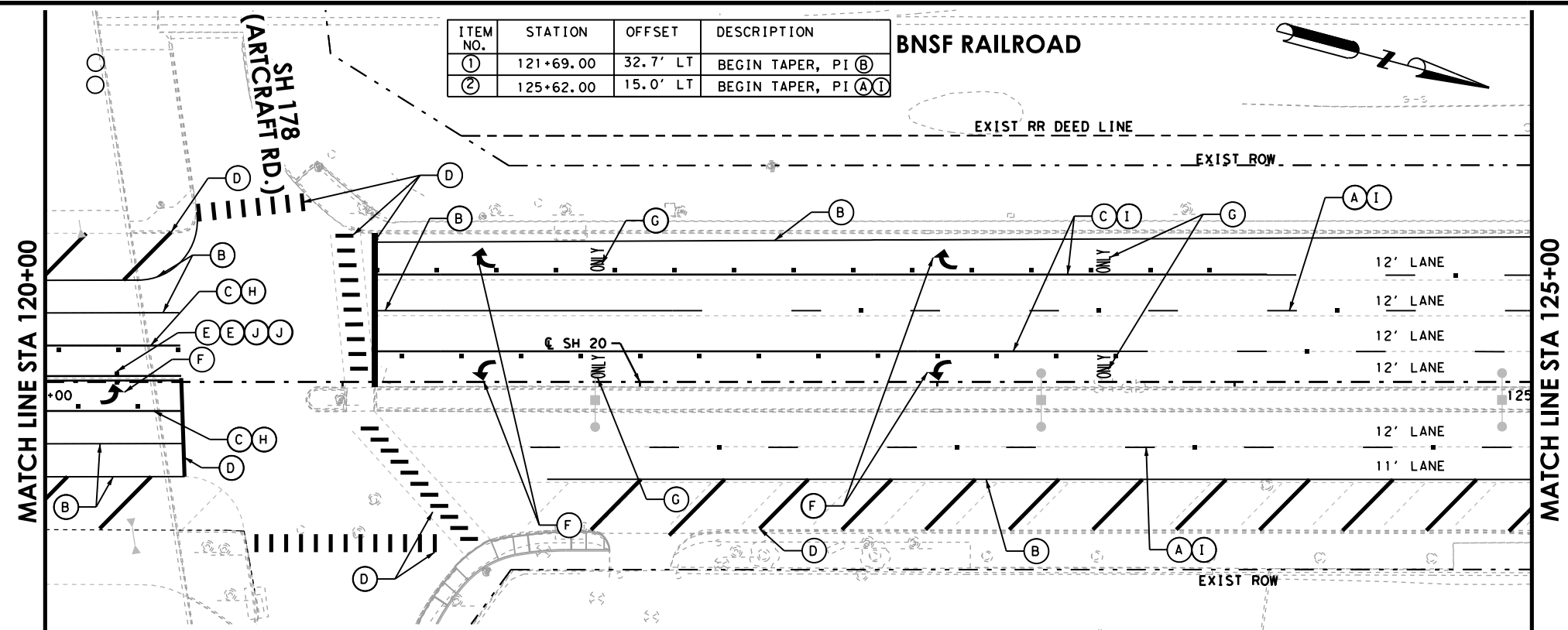
SH 20 DONIPHAN DR. SIGNS & PAVEMENT MARKINGS LAYOUT
STA. 110+00 TO STA. 120+00

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	252

4/30/2021

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ITEM NO.	STATION	OFFSET	DESCRIPTION
1	121+69.00	32.7' LT	BEGIN TAPER, PI (B)
2	125+62.00	15.0' LT	BEGIN TAPER, PI (A)

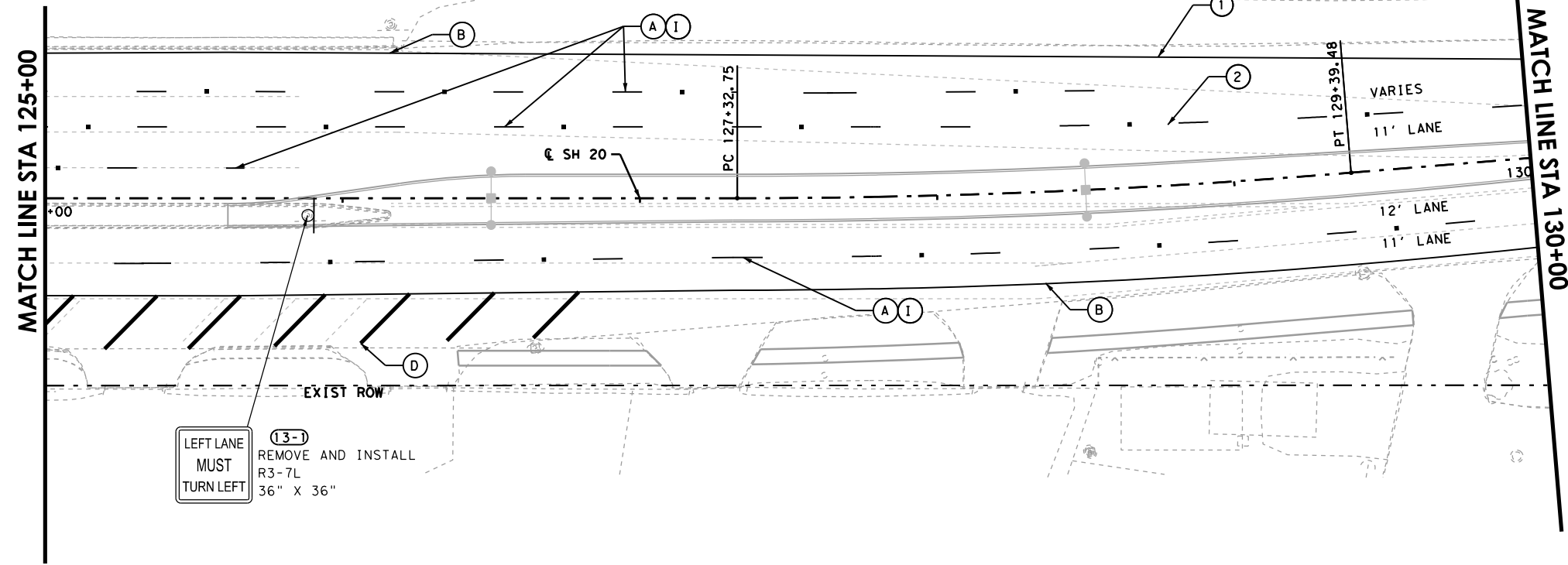
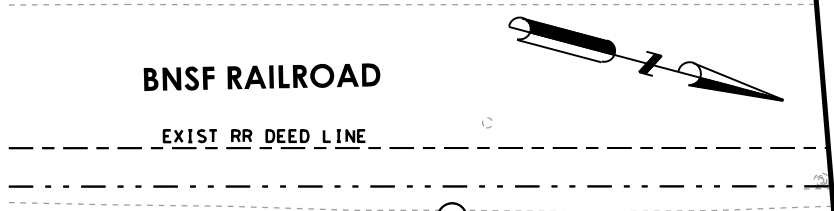
BNSF RAILROAD

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	992
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	992
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1931
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	90
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	850
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	4
672 6007	REFL PAV MRKR TY I-C	EA	6
672 6009	REFL PAV MRKR TY II-A-A	EA	70
672 6010	REFL PAV MRKR TY II-C-R	EA	128
678 6001	PAV SURF PREP FOR MRK (4")	LF	2021
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6004	PAV SURF PREP FOR MRK (8")	LF	992
678 6008	PAV SURF PREP FOR MRK (24")	LF	850
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	5
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	4

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6001	IN SM RD SN SUP&AM TY 10BWG (1)SA(P)	EA	1
644 6076	REMOVE SM RD SN SUP&AM	EA	1



LEFT LANE (13-1) MUST REMOVE AND INSTALL TURN LEFT R3-7L 36" X 36"

- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

- NOTES:**
- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 - SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021



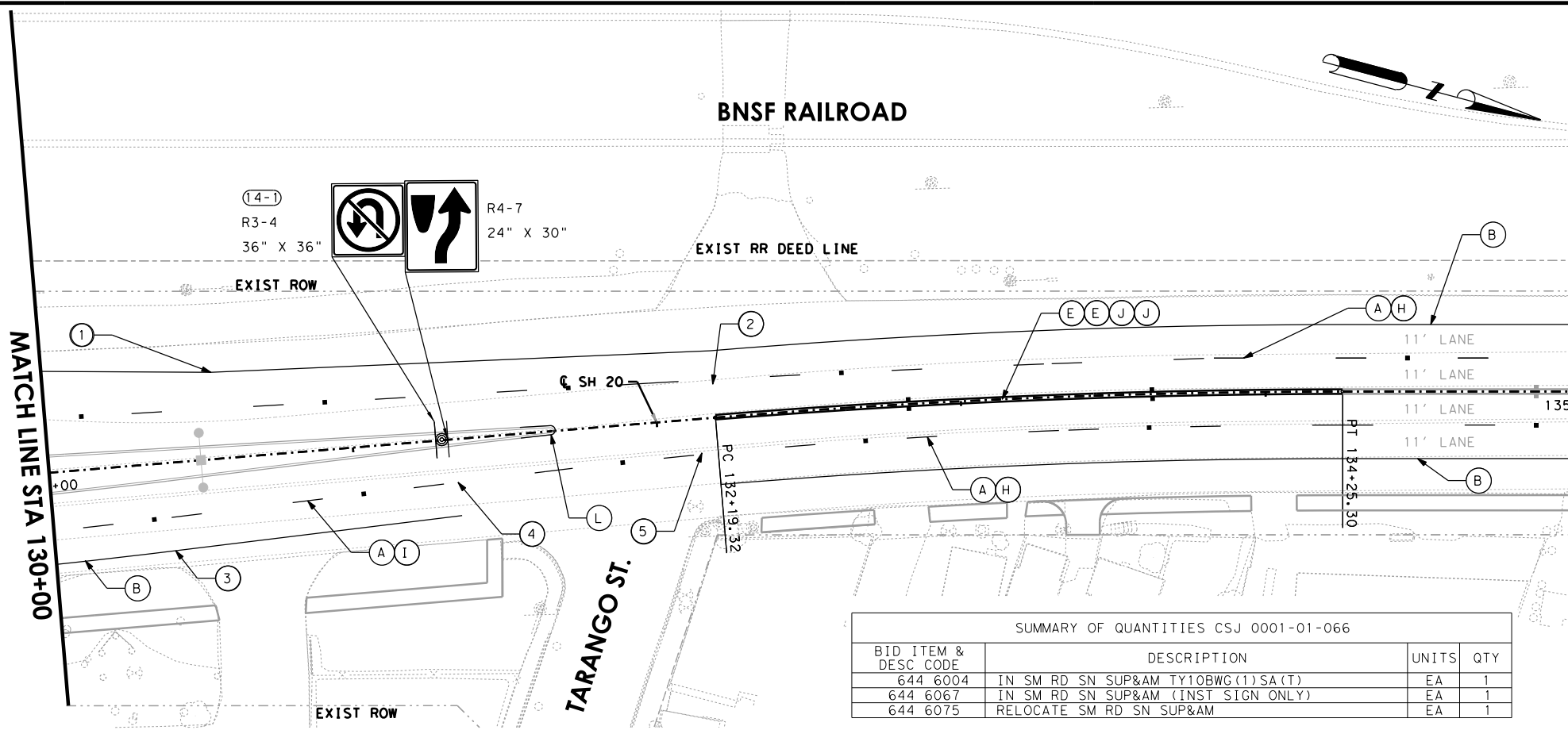
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SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 120+00 TO STA. 130+00

SHEET 13 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	253

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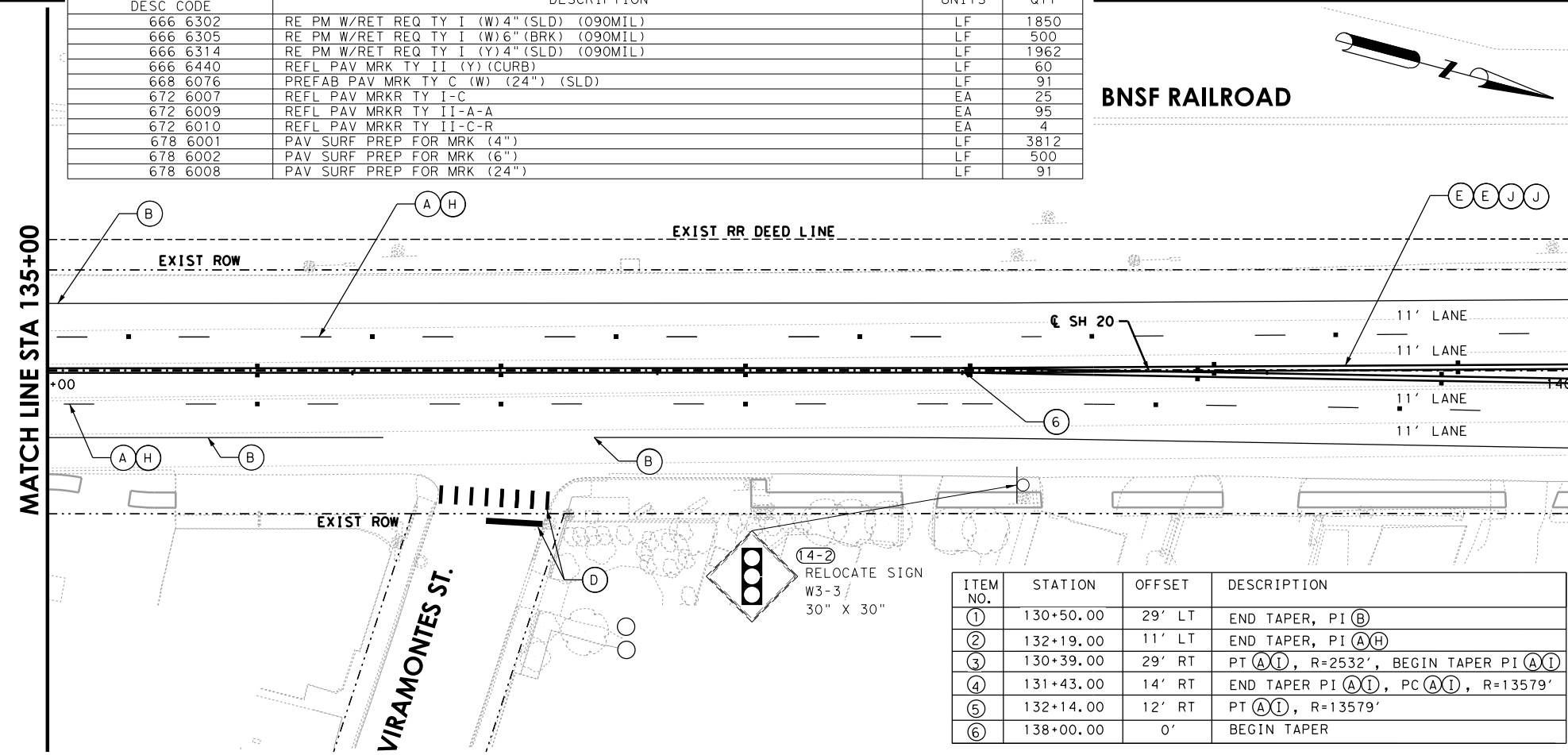


SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
644 6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1
644 6067	IN SM RD SN SUP&AM (INST SIGN ONLY)	EA	1
644 6075	RELOCATE SM RD SN SUP&AM	EA	1

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1850
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	500
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	1962
666 6440	REFL PAV MRK TY II (Y) (CURB)	LF	60
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	91
672 6007	REFL PAV MRKR TY I-C	EA	25
672 6009	REFL PAV MRKR TY II-A-A	EA	95
672 6010	REFL PAV MRKR TY II-C-R	EA	4
678 6001	PAV SURF PREP FOR MRK (4")	LF	3812
678 6002	PAV SURF PREP FOR MRK (6")	LF	500
678 6008	PAV SURF PREP FOR MRK (24")	LF	91



SUMMARY OF QUANTITIES CSJ 0001-01-066

ITEM NO.	STATION	OFFSET	DESCRIPTION
①	130+50.00	29' LT	END TAPER, PI (B)
②	132+19.00	11' LT	END TAPER, PI (A,H)
③	130+39.00	29' RT	PT (A,I), R=2532', BEGIN TAPER PI (A,I)
④	131+43.00	14' RT	END TAPER PI (A,I), PC (A,I), R=13579'
⑤	132+14.00	12' RT	PT (A,I), R=13579'
⑥	138+00.00	0'	BEGIN TAPER

- LEGEND**
- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - OM - OBJECT MARKERS

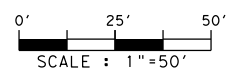
NOTES:

- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
- SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

5/2/2021



**SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT**
STA. 130+00 TO STA. 140+00

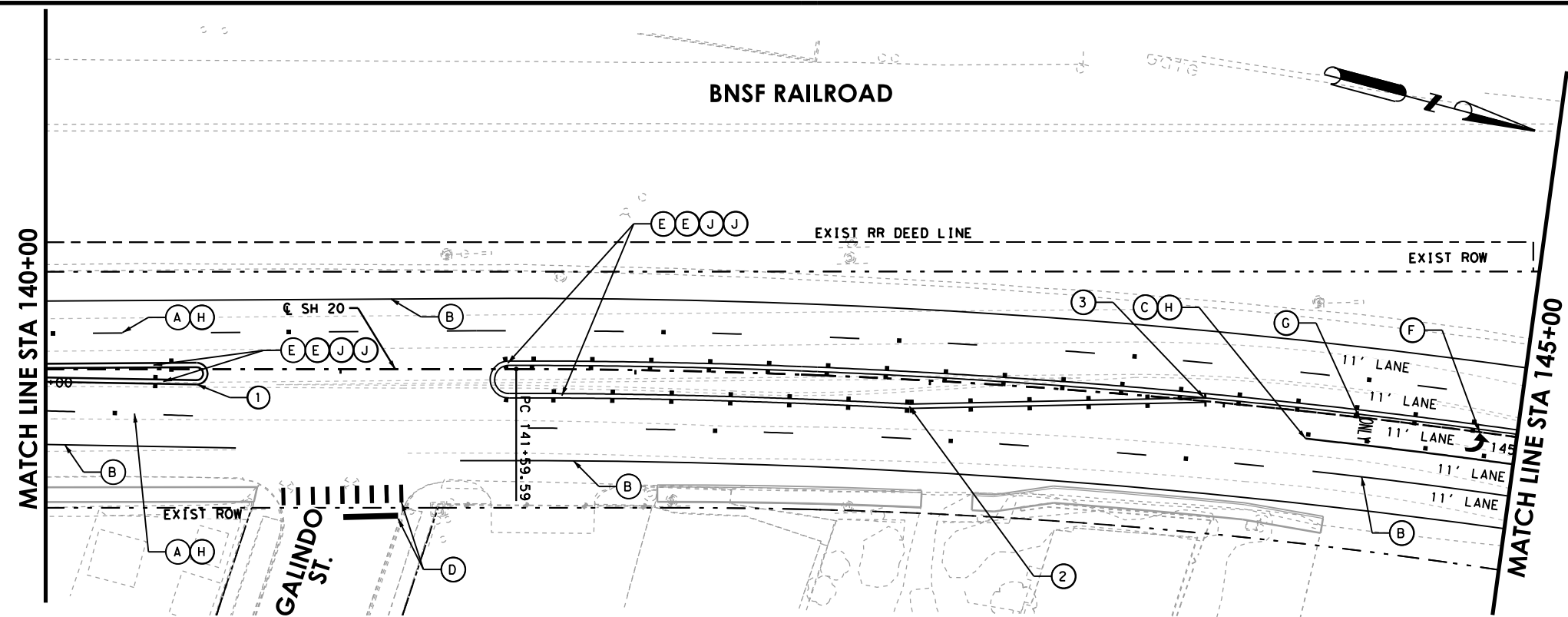
SHEET 14 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	254

5/2/2021

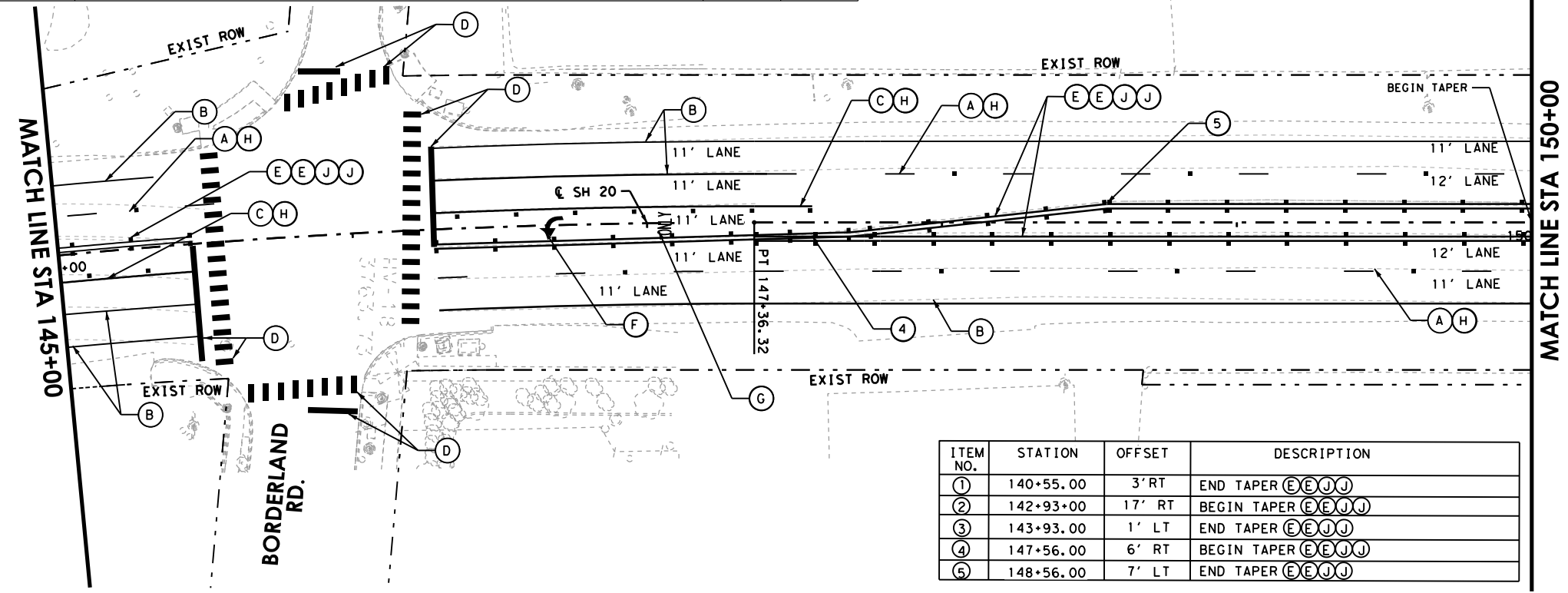
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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6035	REFL PAV MRK TY I (W)8" (SLD) (090MIL)	LF	253
666 6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	253
666 6302	RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)	LF	1975
666 6305	RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)	LF	400
666 6314	RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)	LF	2745
668 6076	PREFAB PAV MRK TY C (W) (24") (SLD)	EA	385
668 6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	2
668 6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2
672 6007	REFL PAV MRKR TY I-C	EA	13
672 6009	REFL PAV MRKR TY II-A-A	EA	138
678 6001	PAV SURF PREP FOR MRK (4")	LF	4720
678 6002	PAV SURF PREP FOR MRK (6")	LF	400
678 6004	PAV SURF PREP FOR MRK (8")	LF	253
678 6008	PAV SURF PREP FOR MRK (24")	LF	385
678 6009	PAV SURF PREP FOR MRK (ARROW)	EA	2
678 6016	PAV SURF PREP FOR MRK (WORD)	EA	2



ITEM NO.	STATION	OFFSET	DESCRIPTION
①	140+55.00	3' RT	END TAPER (E E J J)
②	142+93.00	17' RT	BEGIN TAPER (E E J J)
③	143+93.00	1' LT	END TAPER (E E J J)
④	147+56.00	6' RT	BEGIN TAPER (E E J J)
⑤	148+56.00	7' LT	END TAPER (E E J J)

LEGEND

- (A) RE PM W/RET REQ TY I (W)6" (BRK) (090MIL)
- (B) RE PM W/RET REQ TY I (W)4" (SLD) (090MIL)
- (C) REFL PAV MRK TY I (W)8" (SLD) (090 MIL)
- (D) PREFAB PAV MRK TY C (W) (24") (SLD)
- (E) RE PM W/RET REQ TY I (Y)4" (SLD) (090MIL)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (WORD)
- (H) REFL PAV MRKR TY I-C
- (I) REFL PAV MRKR TY II-C-R
- (J) REFL PAV MRKR TY II-A-A
- (K) REFL PAV MRK TY I (W)8" (DOT) (090 MIL)
- (L) REFL PAV MRK TY II (Y) (CURB)
- (M) REFL PAV MRK TY C (W) (UTURN ARROW)
- ⊙ PROPOSED SMALL SIGN POST
- EXISTING SMALL SIGN POST
- (X-X) SIGN NUMBER
- OM - OBJECT MARKERS

NOTES:

- SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
- SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.



Salvador Hernandez Jr.

4/30/2021



SH 20
DONIPHAN DR.
SIGNS & PAVEMENT
MARKINGS LAYOUT
STA. 140+00 TO STA. 150+00

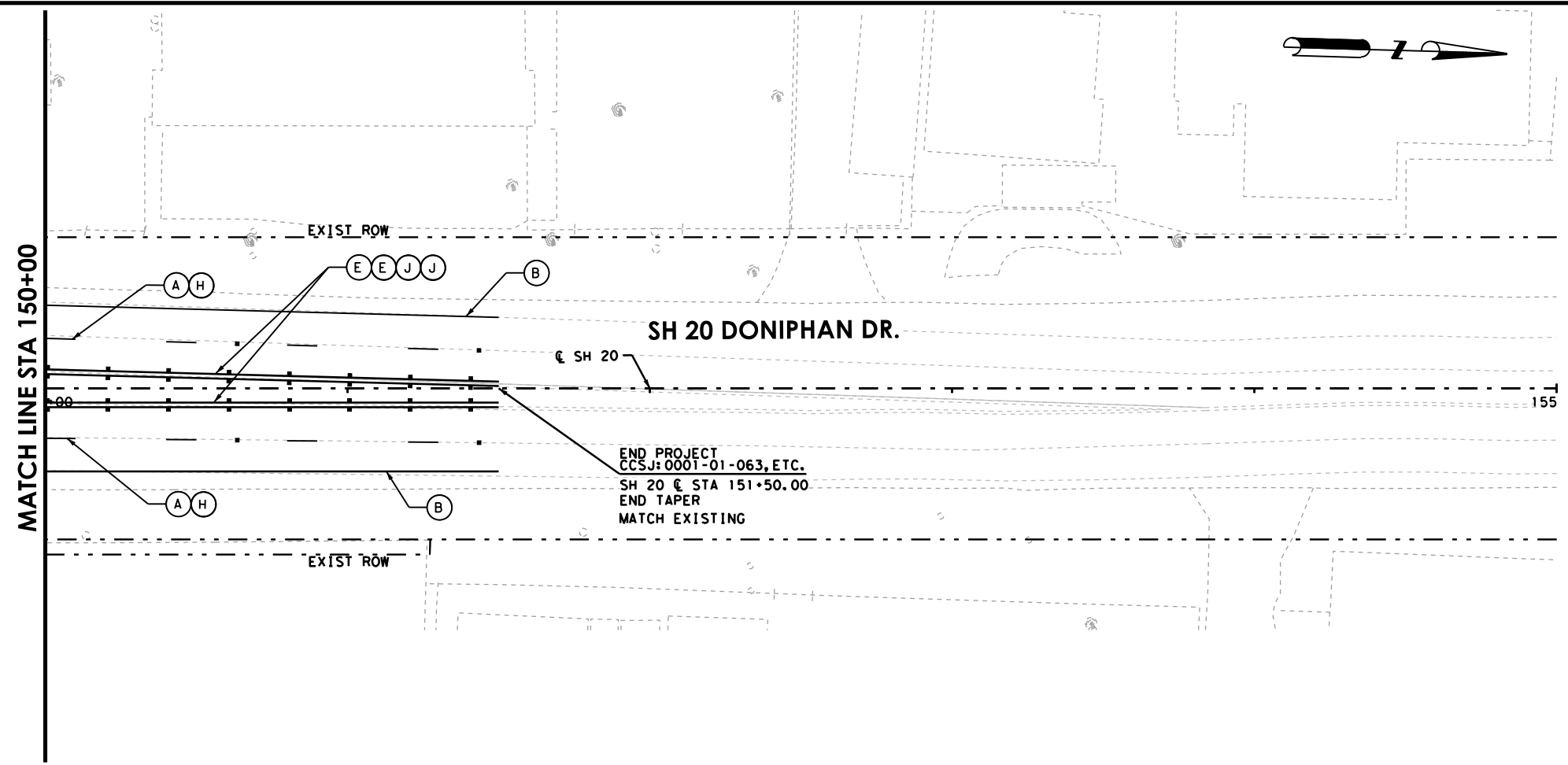
SHEET 15 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	255

4/30/2021

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- LEGEND**
- (A) RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)
 - (B) RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
 - (C) REFL PAV MRK TY I (W) 8" (SLD) (090 MIL)
 - (D) PREFAB PAV MRK TY C (W) (24") (SLD)
 - (E) RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)
 - (F) PREFAB PAV MRK TY C (W) (ARROW)
 - (G) PREFAB PAV MRK TY C (W) (WORD)
 - (H) REFL PAV MRKR TY I-C
 - (I) REFL PAV MRKR TY II-C-R
 - (J) REFL PAV MRKR TY II-A-A
 - (K) REFL PAV MRK TY I (W) 8" (DOT) (090 MIL)
 - (L) REFL PAV MRK TY II (Y) (CURB)
 - (M) REFL PAV MRK TY C (W) (UTURN ARROW)
 - ⊙ PROPOSED SMALL SIGN POST
 - EXISTING SMALL SIGN POST
 - (X-X) SIGN NUMBER
 - ■ ■ OM - OBJECT MARKERS

- NOTES:**
1. SEE SIGNS AND PAVEMENT DETAILS SHEET AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL DETAILS.
 2. SEE TYPICAL SECTIONS, ROADWAY PLANS, MEDIAN LAYOUT FOR ADDITIONAL DETAILS.

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
666 6302	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	LF	300
666 6305	RE PM W/RET REQ TY I (W) 6" (BRK) (090MIL)	LF	75
666 6314	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	LF	600
672 6007	REFL PAV MRKR TY I-C	EA	30
672 6009	REFL PAV MRKR TY II-A-A	EA	31
678 6001	PAV SURF PREP FOR MRK (4")	LF	900
678 6002	PAV SURF PREP FOR MRK (6")	LF	75



Salvador Hernandez Jr.

4/30/2021



HNTB
HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

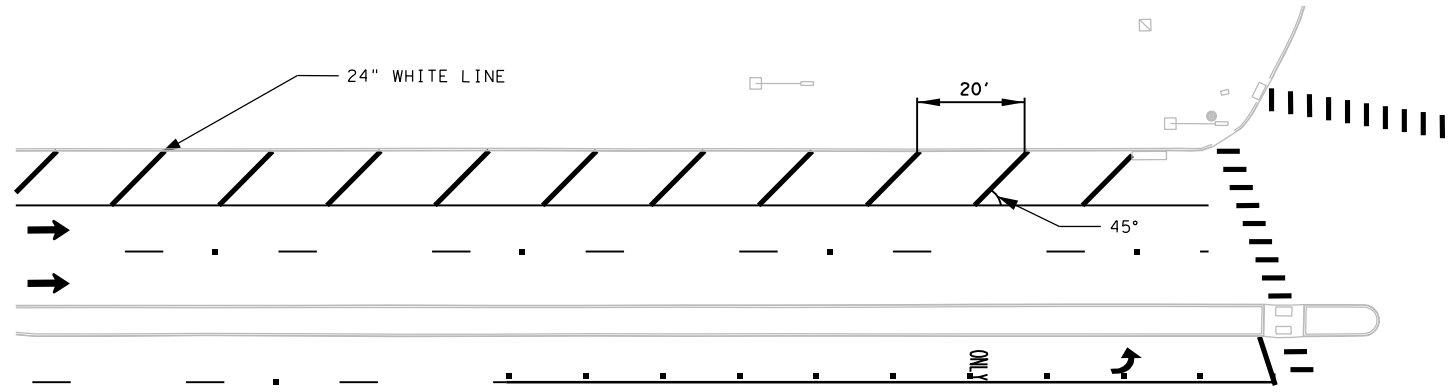
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**SH 20
 DONIPHAN DR.
 SIGNS & PAVEMENT
 MARKINGS LAYOUT
 STA. 150+00 TO END**

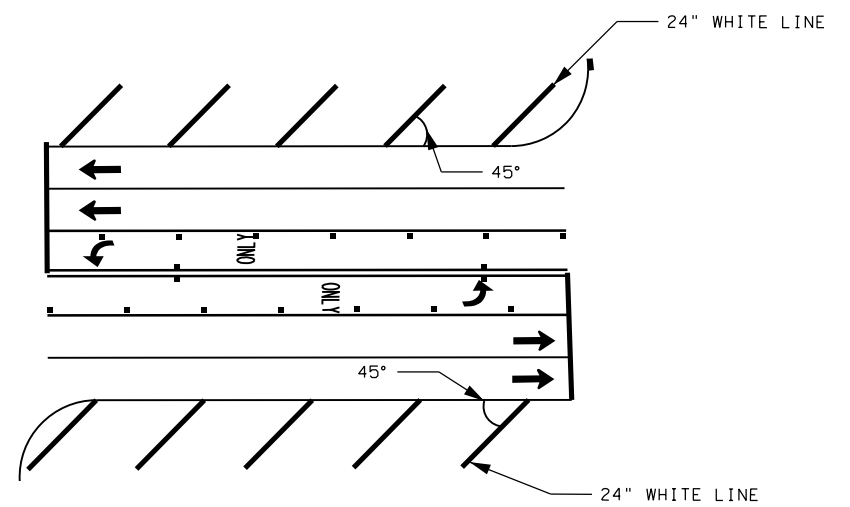
SHEET 16 OF 16

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	256

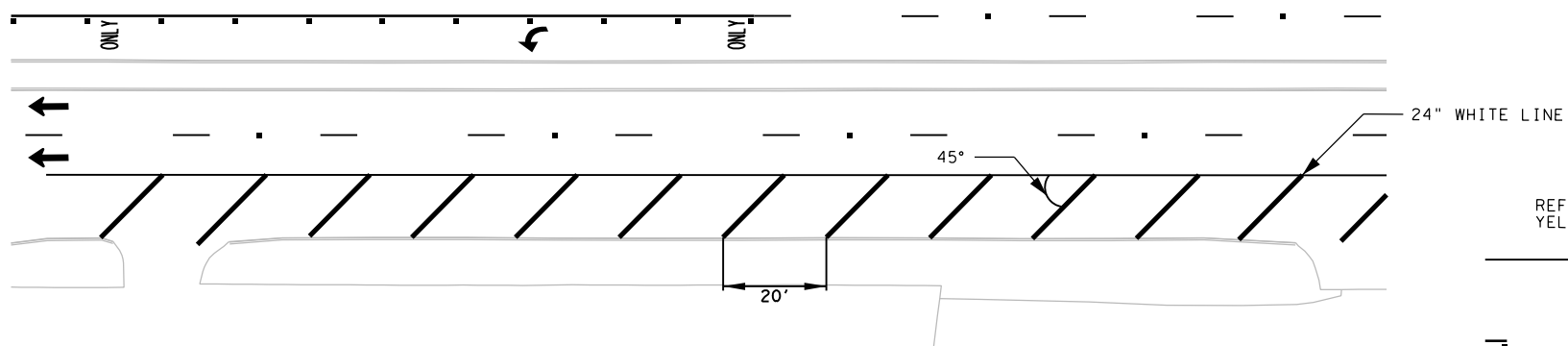
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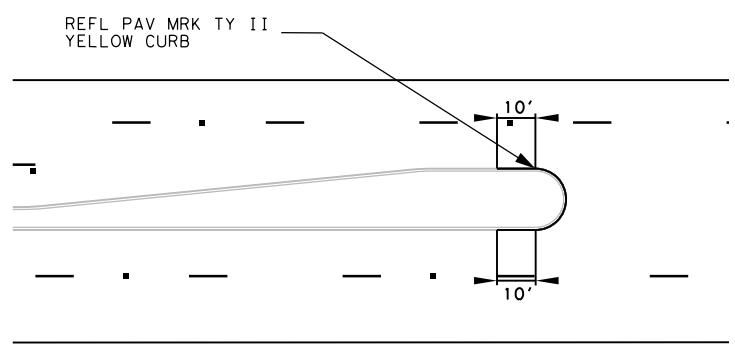
CROSS HATCH DETAIL- SOUTH OF SH178
N. T. S



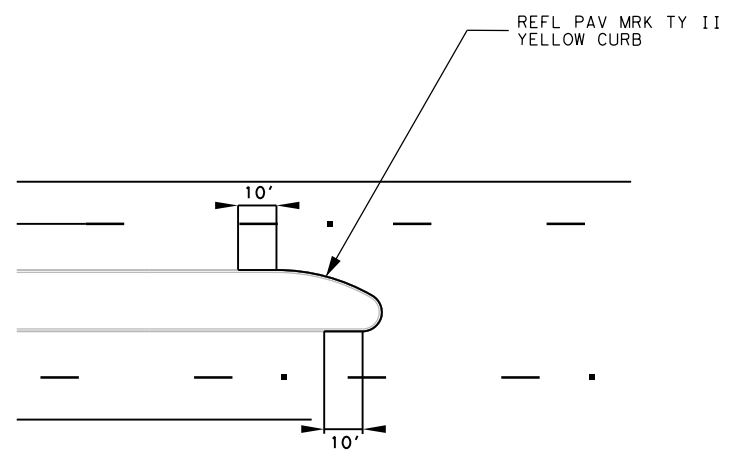
CROSS HATCH DETAIL- UNDERNEATH SH178
N. T. S



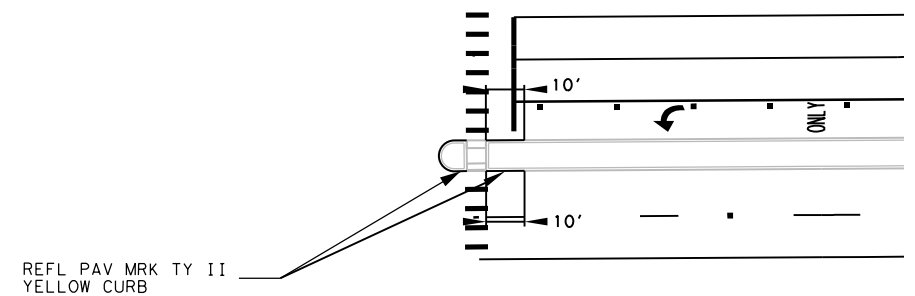
CROSS HATCH DETAIL- NORTH OF SH178
N. T. S



YELLOW CURB - DETAIL A
N. T. S



YELLOW CURB - DETAIL B
N. T. S



YELLOW CURB - DETAIL C
N. T. S



Salvador Hernandez Jr.

4/30/2021

HNTB		HNTB Corporation The HNTB Companies Infrastructure Solutions Firm Registration Number 420			
© 2021		Texas Department of Transportation			
SH 20 DONIPHAN DR.					
SIGNS & PAVEMENT MARKINGS DETAIL					
DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	257

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SUMMARY OF SMALL SIGNS

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PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
1	1-1	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
2	2-1	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	2-2	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	2-3	S1-1	SCHOOL AHEAD	36x36	X	-	10BWG	1	SA	P	-	-
		SW16-9P	AHEAD	24x12	X	-	10BWG	1	SA	P	-	-
	2-4	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
3	3-1	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	3-2	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	3-3	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	3-4	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	3-5	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	3-6	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	3-7	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	3-8	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
4	4-1	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	4-2	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
5	5-1	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	5-2	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	5-3	R9-2	CROSS ONLY AT CROSS WALK	12x18	X	-	10BWG	1	SA	P	-	-
	5-4	R9-2	CROSS ONLY AT CROSS WALK	12x18	X	-	10BWG	1	SA	P	-	-
	5-5	R4-7	KEEP RIGHT	RELOCATE	X	-	10BWG	1	SA	P	-	-
	5-6	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
6	6-1	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	6-2	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	6-3	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	6-4		TRUCK ENTRANCE	RELOCATE	X	-	-	-	-	-	-	-
	6-5	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	6-6	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	6-7	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	6-8	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	6-9	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	6-10	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
7	7-1	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	7-2	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	7-3	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
8	8-1	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	8-2	D3-1 D3-1 R1-1	DONIPHAN DR COATES DR STOP SIGN	RELOCATE	X	-	-	-	-	-	-	-
	8-3	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	8-4	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	8-5	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	8-6	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	8-7	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
9	9-1	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	9-2	R3-5R	RIGHT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	9-3	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	9-4	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	9-5	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	9-6	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	9-7	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	9-8	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	9-9	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	9-10	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	9-11	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
10	10-1	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	10-2	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	10-3	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	10-4	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	10-5	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: slums16.dgn	DN: AMM	CK: SH	DW: AMM	CK: SH
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
4-16	DIST	COUNTY		SHEET NO.
8-16	ELP	EL PASO		258

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SUMMARY OF SMALL SIGNS

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DATE: DATE TIME
 FILE: DOCUMENT NAME

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
	10-6	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	10-7	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	10-8	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	10-9	R4-7L	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	10-10	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
	10-11	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	10-12	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
11	11-1	R4-7	KEEP RIGHT	24x30	X	-	10BWG	1	SA	P	-	-
	11-2	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	11-3	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	11-4	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	11-5	R6-1R	ONE WAY (RIGHT ARROW)	54x18	X	-	10BWG	1	SA	T	-	-
	11-6	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
	11-7	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
	11-8	R5-1a	WRONG WAY	42x30	X	-	10BWG	1	SA	T	-	-
12	12-1	R3-5L	LEFT TURN ARROW ONLY	30x36	X	-	10BWG	1	SA	P	-	-
13	13-1	R3-7L	LEFT LANE MUST TURN LEFT	30x30	X	-	10BWG	1	SA	P	-	-
14	14-1	R3-4	NO U-TURN	36x36	X	-	10BWG	1	SA	P	-	-
		R4-7	KEEP RIGHT	24x30	X	-	-	-	-	-	-	-
	14-2	W3-3	SIGNAL AHEAD	RELOCATE	X	-	-	-	-	-	-	-

INTERIM REVIEW ONLY
 Document incomplete: not intended for permit, bidding or construction.
 Engineer: SALVADOR HERNANDEZ JR.
 P.E. Serial No.: 117325
 Date: 5/2/2021

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

- NOTE:
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD (GEN).



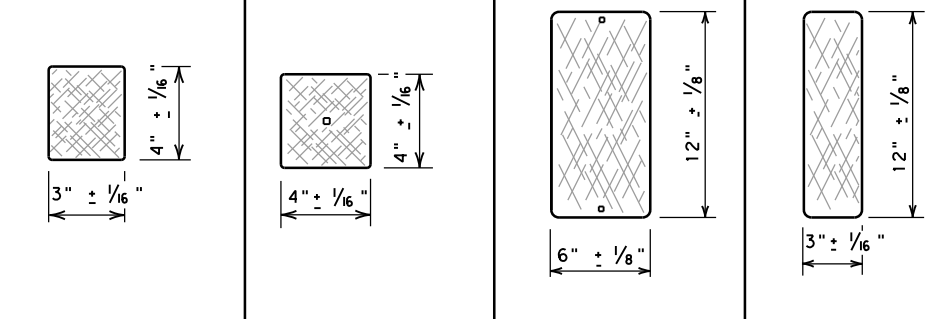
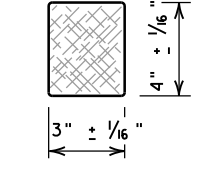
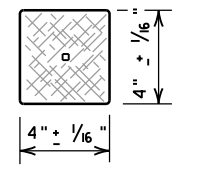
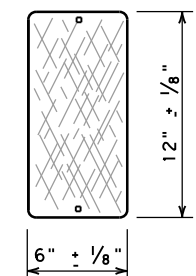
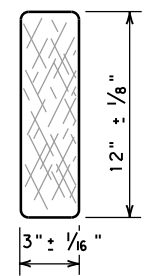
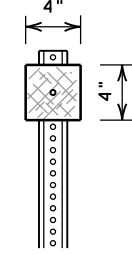
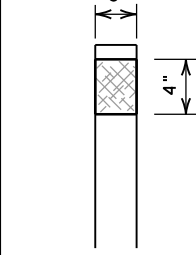
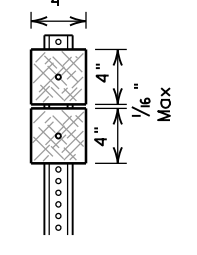
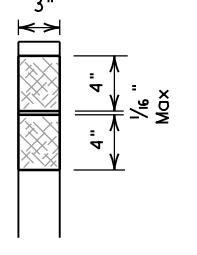
SUMMARY OF SMALL SIGNS

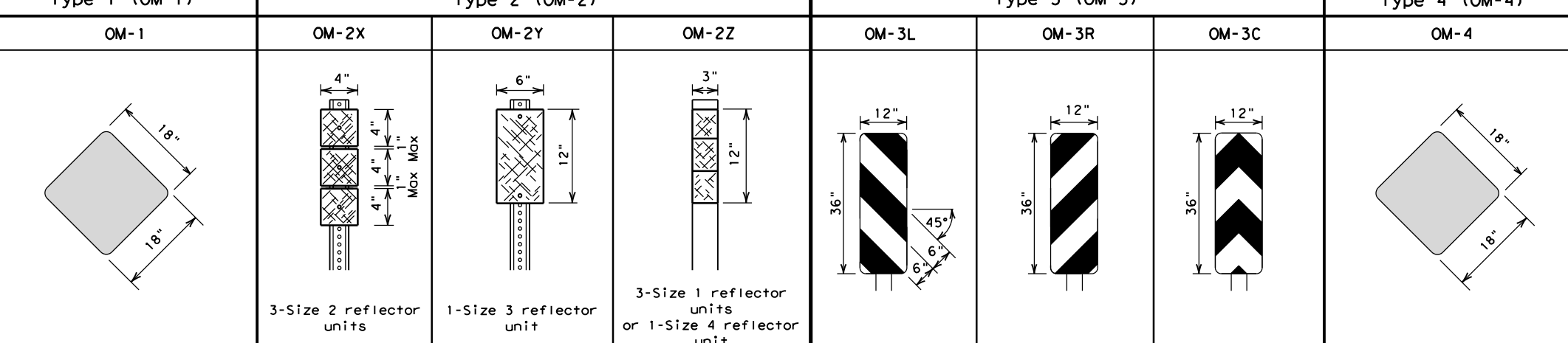
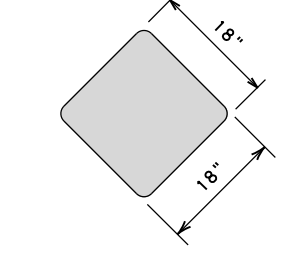
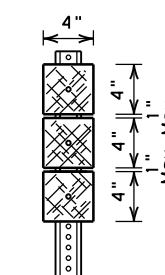
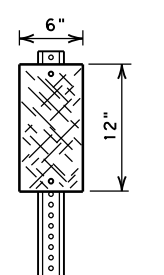
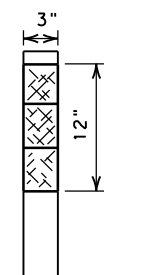
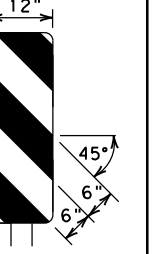
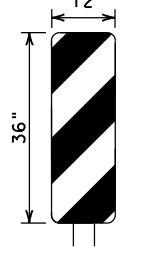
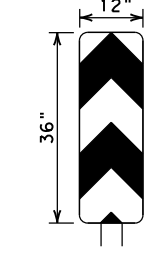
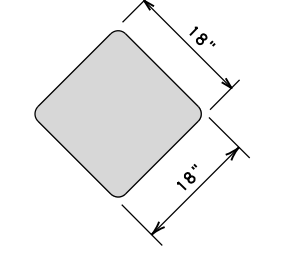
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4-16	DIST	COUNTY	SHEET NO.	
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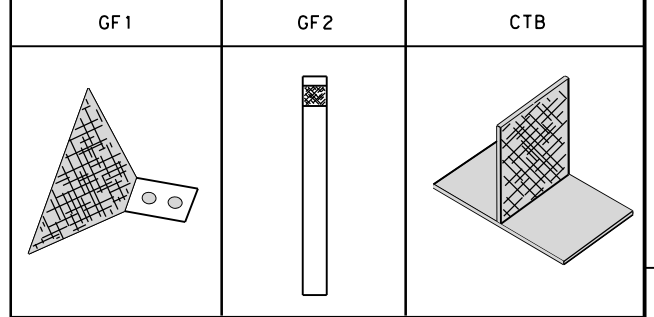
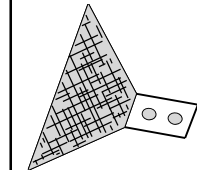
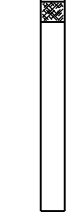
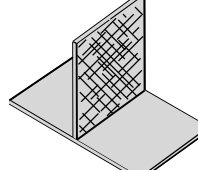
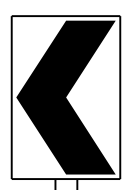
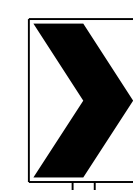
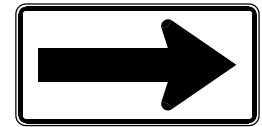
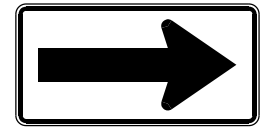
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REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS				DELINEATORS				D & OM DESCRIPTIVE CODES		
DEVICE	SIZE 1	SIZE 2	SIZE 3	SIZE 4	SINGLE		DOUBLE		INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX (XX) NUMBER OF REFLECTORS S = Single D = Double COLOR OF REFLECTORS W = White Y = Yellow R = Red REFLECTOR UNIT SIZE 1 or 2 TYPE OF POST OR DELINEATOR WC = Wing Channel Post YFLX = Yellow Flexible Post WFLX = White Flexible Post BRFL = Barrier Reflector TYPE OF MOUNT GND = Embedded (drivable or set in concrete) CTB = Concrete Barrier Mount GF1 or GF2 = Guard Fence Attachment SRF = Surface Mount DIRECTION If Required BI = Bi-Directional BR = Bi-Directional with red on back	
										
SHEETING	Yellow, White or Red Type B or C reflective sheeting				Yellow, White or Red Type B or C Reflective Sheeting					
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (fix). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.				POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX	INSTL OM ASSM (OM-XX) (XXXX)XXX (XX) TYPE OF OBJECT MARKER 1, 2, 3, or 4 NUMBER OF REFLECTORS OR DIRECTION X = 3-Size 2 reflector units (Type 2 only) Y = 1-Size 3 reflector unit (Type 2 only) Z = 3-Size 1 or 1-Size 4 reflector units (Type 2 only) L = Left Side (Type 3 Object Marker only) R = Right Side (Type 3 Object Marker only) C = Center (Type 3 Object Marker only) TYPE OF POST WC = Wing Channel Post WFLX = White Flexible Post TWT = Thin Walled Tubing TYPE OF MOUNT GND = Embedded (drivable) SRF = Surface Mount WAS = Wedge Anchor Steel WAP = Wedge Anchor Plastic DIRECTION If Required BI = Bi-Directional
					MOUNT TYPE	GND	GND, SRF	GND	GND, SRF	

OBJECT MARKERS								
DEVICE	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
								
SHEETING	Yellow-Type B _{FL} or C _{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroreflective yellow - Type B _{FL} or C _{FL} Sheeting			Red -Type B _{FL} or C _{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)			CHEVRONS				ONE DIRECTION LARGE ARROW								
DEVICE	GF1	GF2	CTB	W1-8				W1-6							
															
SHEETING	Yellow, White, Red			18" x 24" (Conventional)				24" x 30" (Conventional Oversize)	30" x 36" (Expressway)	36" x 48" (Freeway)	48" x 24" (Conventional)		60" x 30" (Expressway & Freeway)		
NOTE	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.			MOUNTING HEIGHT				4'-0" or 7'-0"		7'-0" Only		MOUNTING HEIGHT		7'-0"	
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.			NOTE				1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).							

NOTE:
 Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

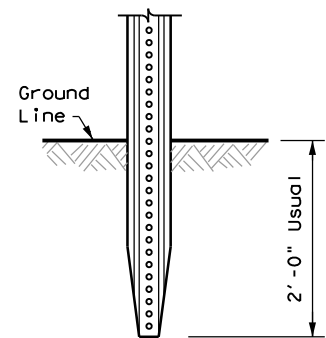
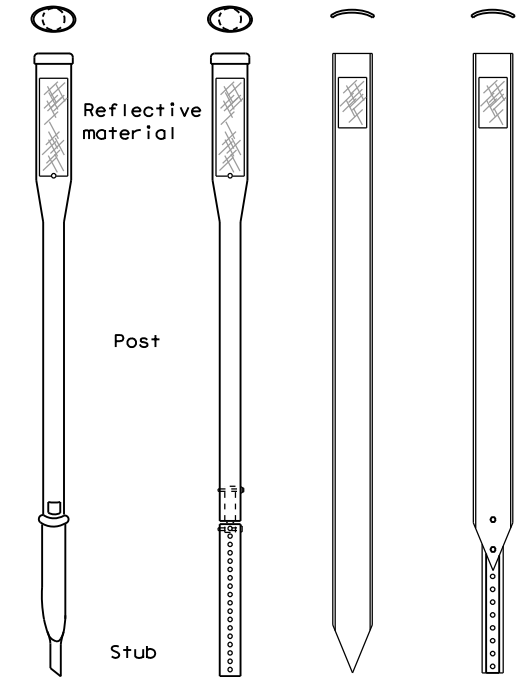
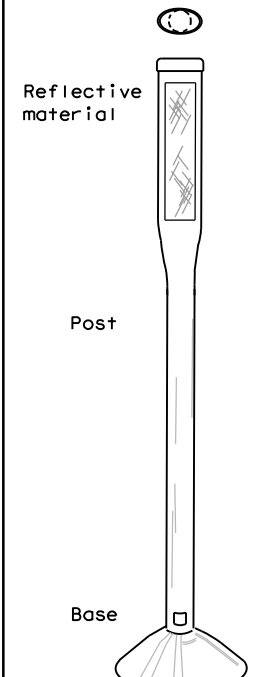
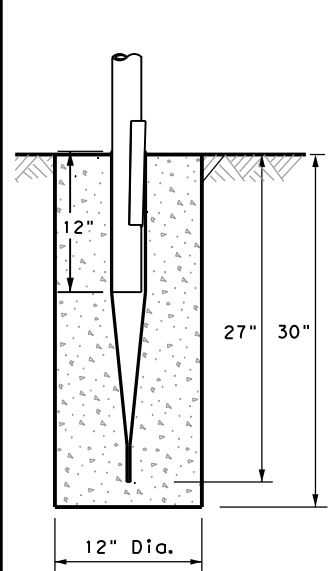
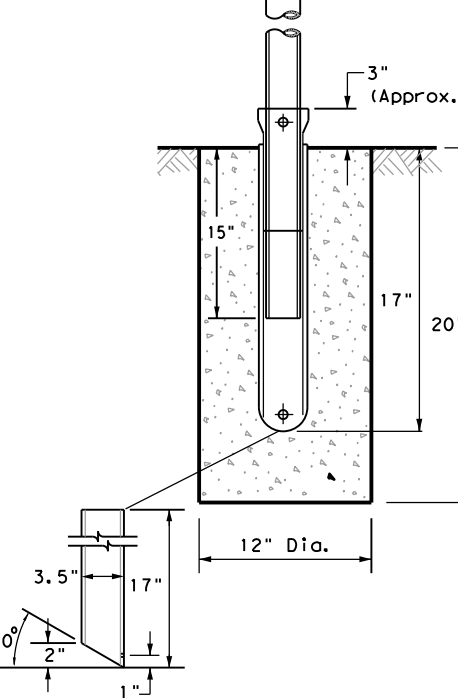
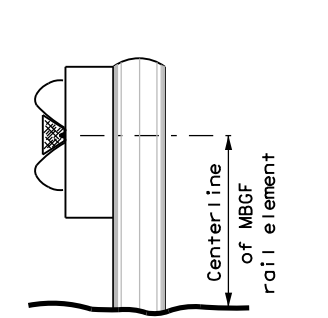
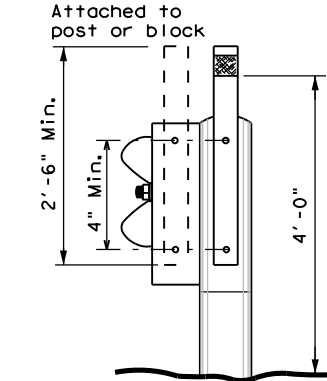



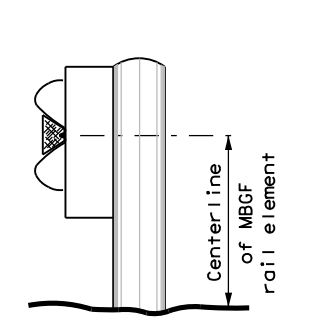
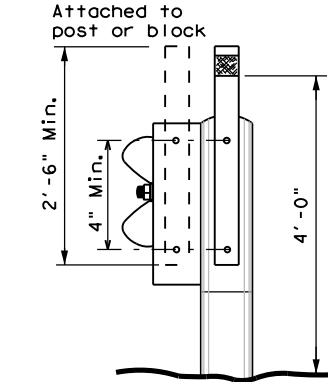
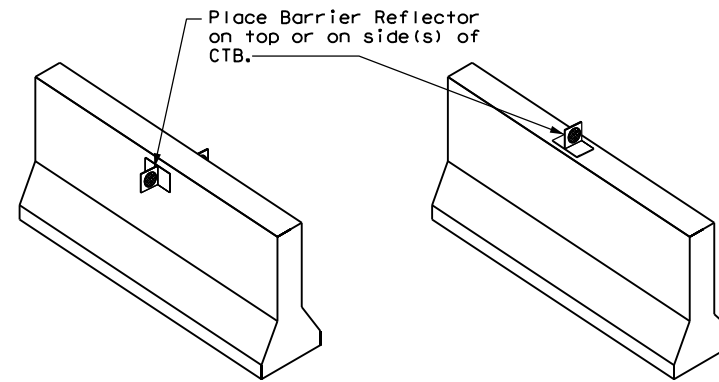
DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

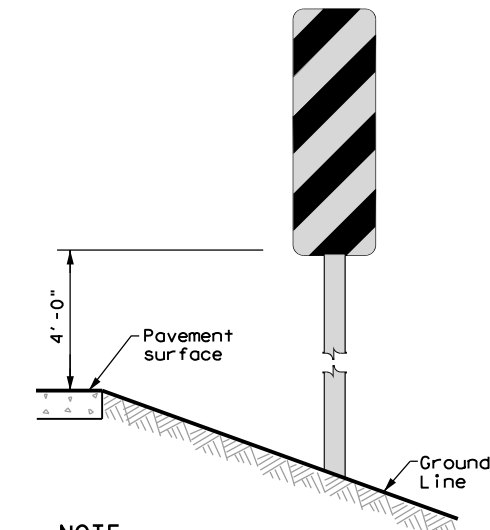
D & OM(1)-20

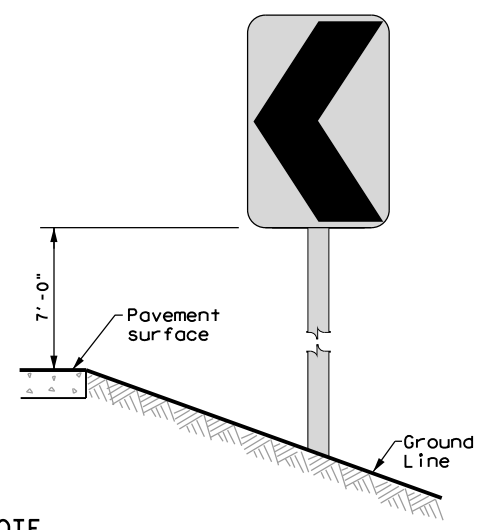
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10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	ELP	EL PASO	260	

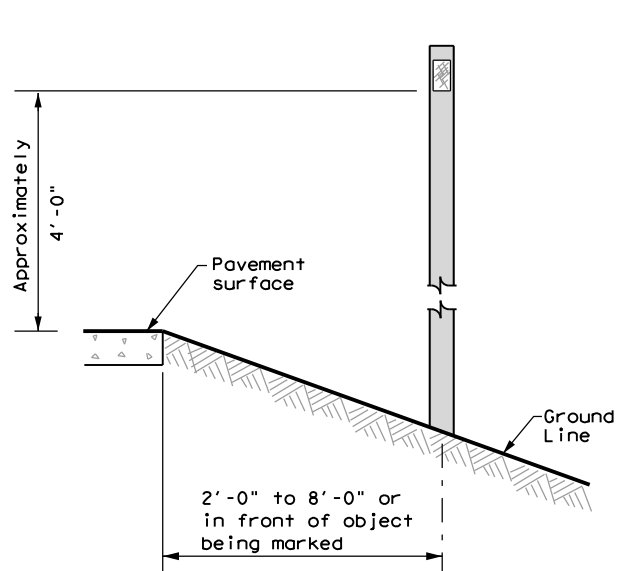
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POST TYPE AND SUPPORT FOUNDATION DETAILS				TYPE OF BARRIER MOUNTS	
WING CHANNEL (WC)	FLEXIBLE POSTS (YFLX, WFLX)		WEDGE ANCHOR SYSTEMS		GUARD FENCE ATTACHMENT
GND	GND	SRF	WAS	WAP	GF 1
					
	EMBEDDED	SURFACE MOUNT	STEEL	PLASTIC	GF 2
NOTES 1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only. 2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.	NOTES 1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices. 2. Install per manufacturer's recommendations. 3. Post length may vary to meet field conditions. 4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.		NOTE 1. Install per manufacturer's recommendations.		

TYPE OF BARRIER MOUNTS	
GUARD FENCE ATTACHMENT	
GF 1	GF 2
	
CONCRETE TRAFFIC BARRIER (CTB)	
	
GENERAL NOTES 1. Place delineators on a section of roadway at a consistent distance from the edge of pavement. 2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction. 3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible. 4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation. 5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface. 6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.	

TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS

NOTE Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN

NOTE Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS

NOTE See general notes 1, 2 and 3.



Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

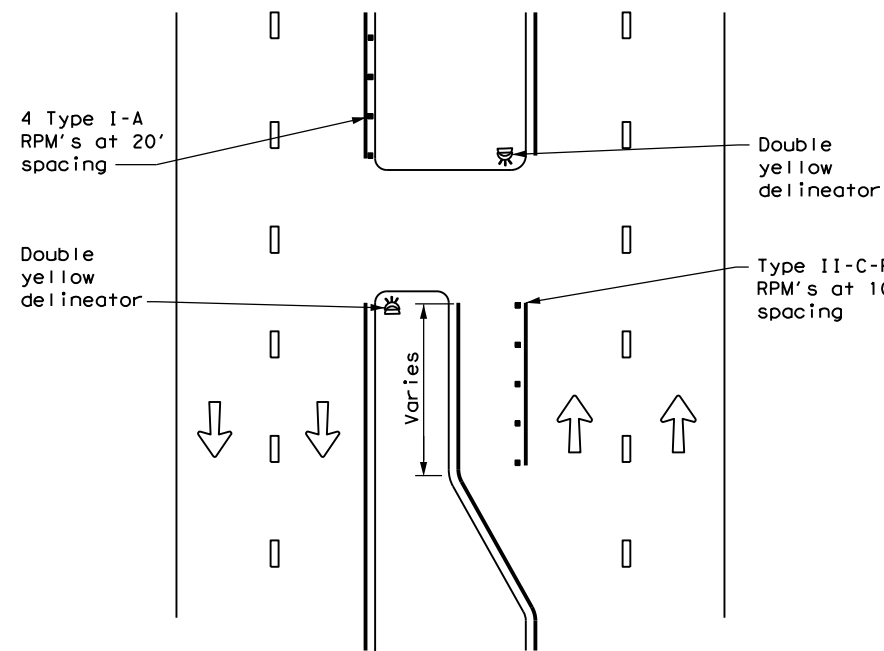
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10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	ELP	EL PASO	261	

DATE: FILE:

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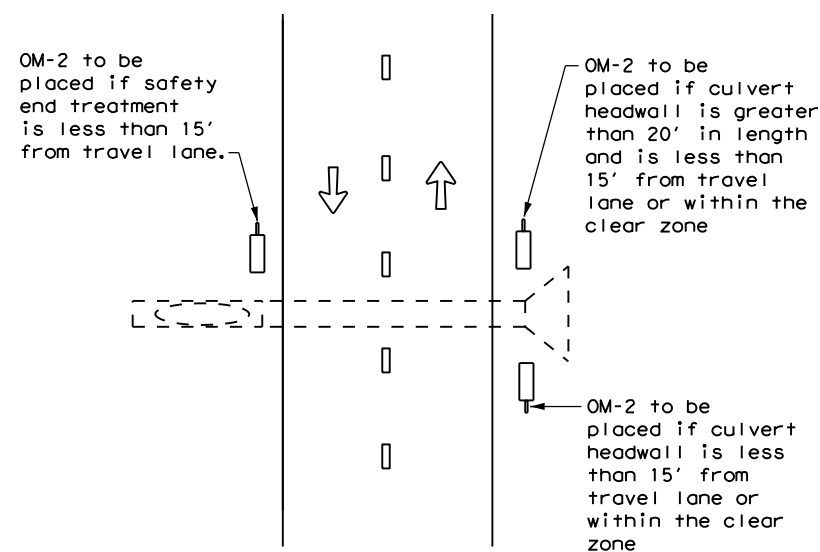
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CROSSOVERS



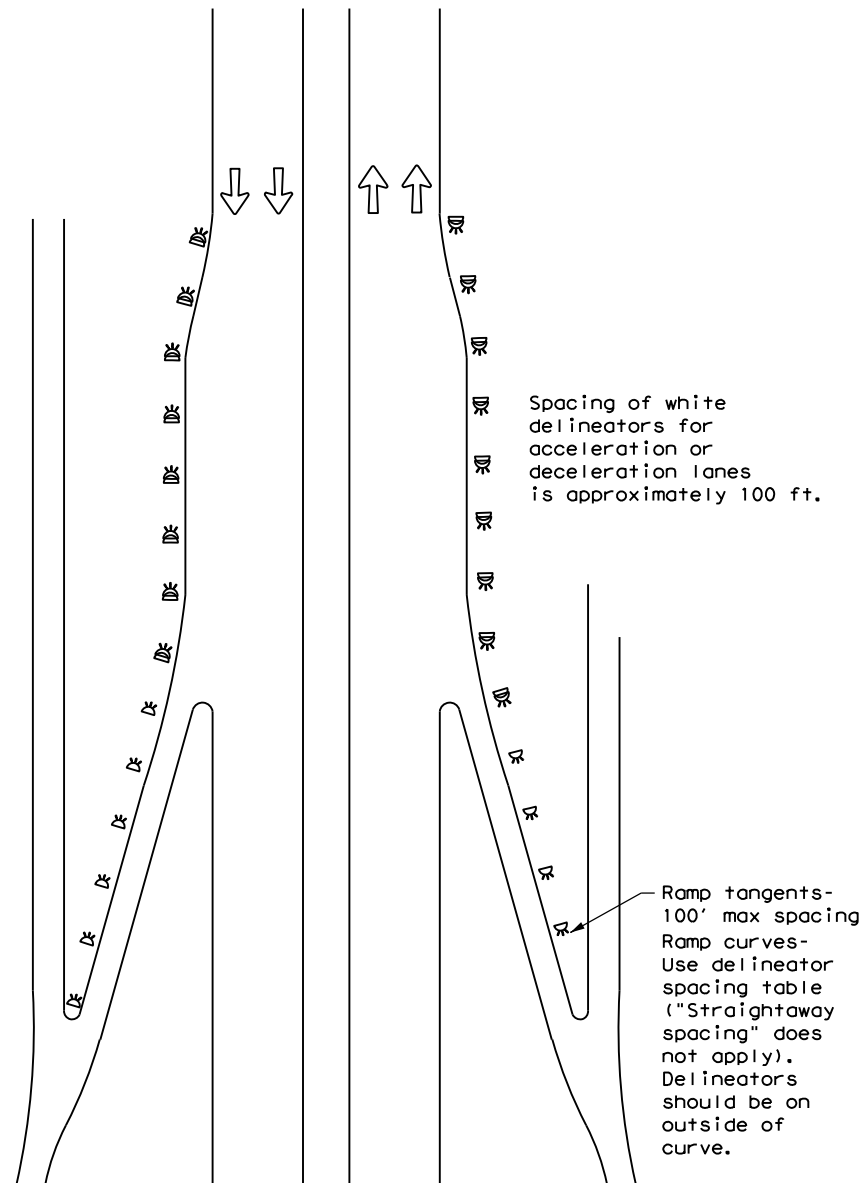
DETAIL 1

FOR CULVERTS WITHOUT MBGF



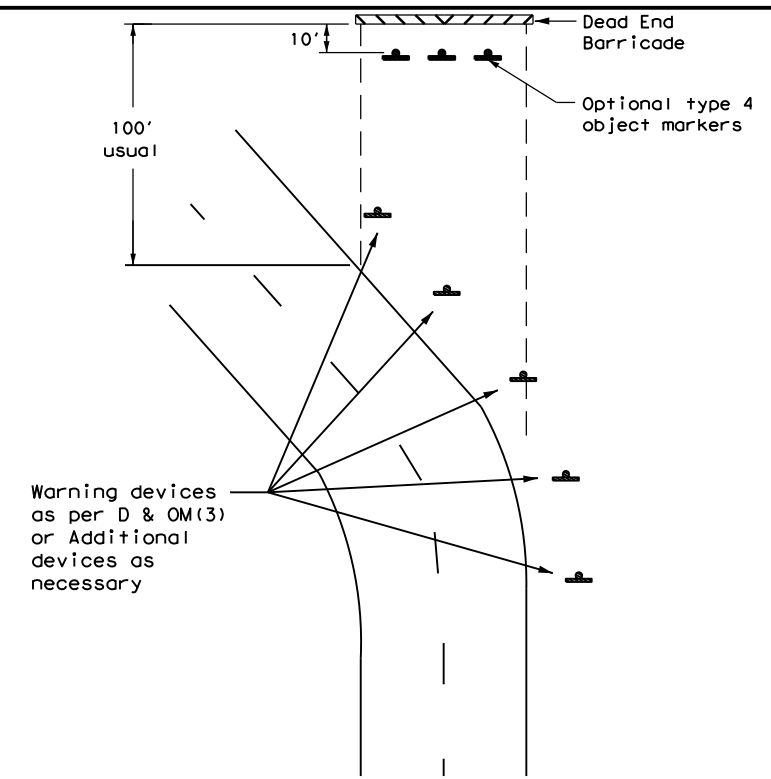
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



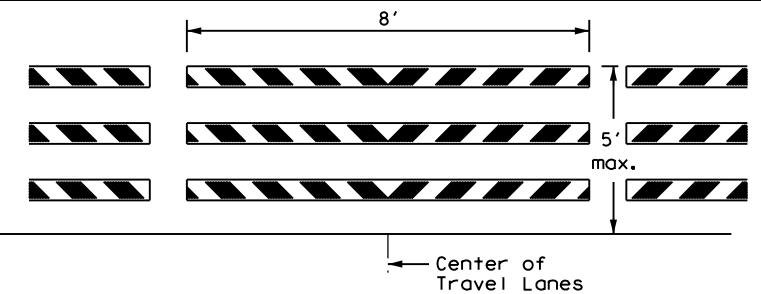
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

- Barricade striping shall be red and white reflective sheeting for all permanent road closures.
- Barricade striping is red and white sloping toward the center of the roadway.
- Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator



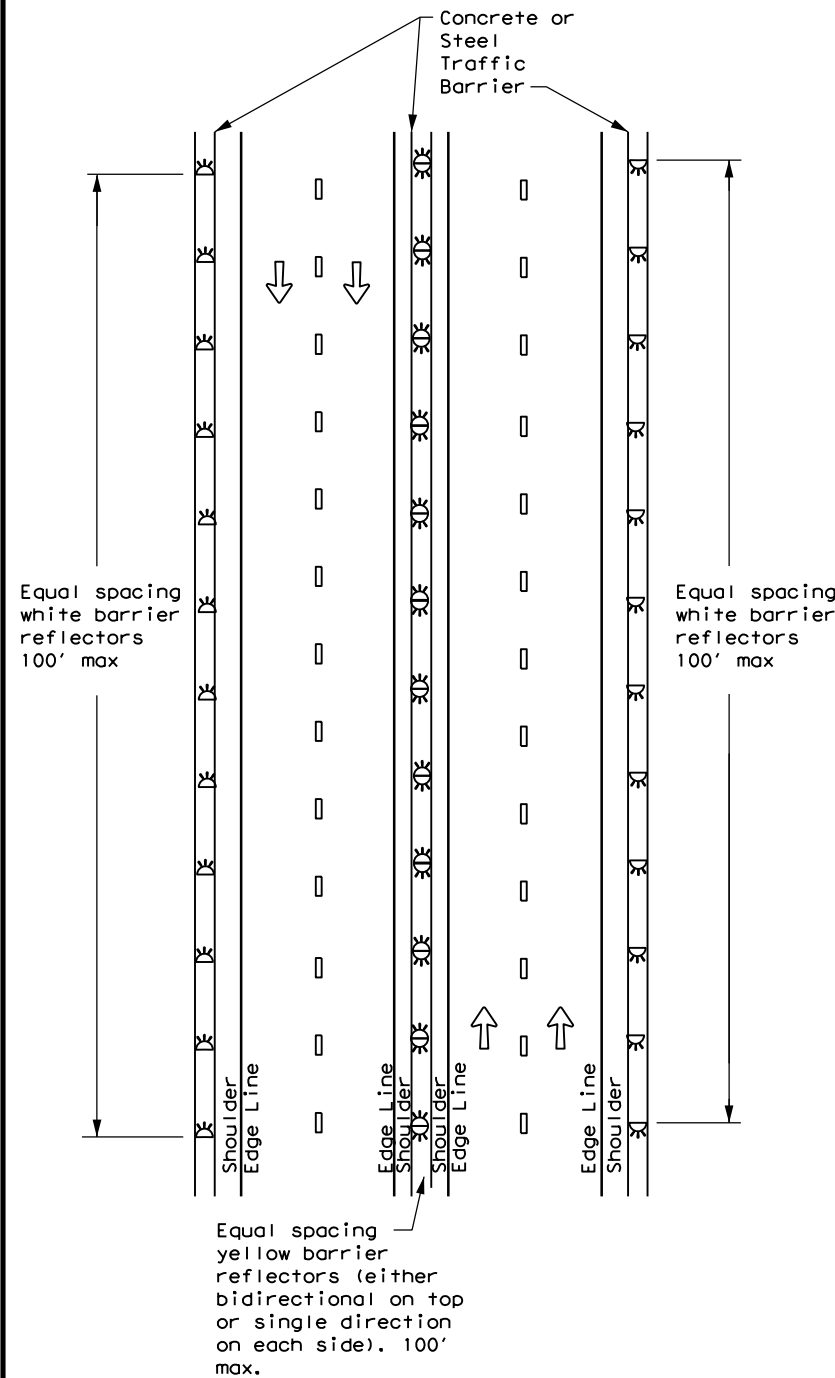
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4) - 20

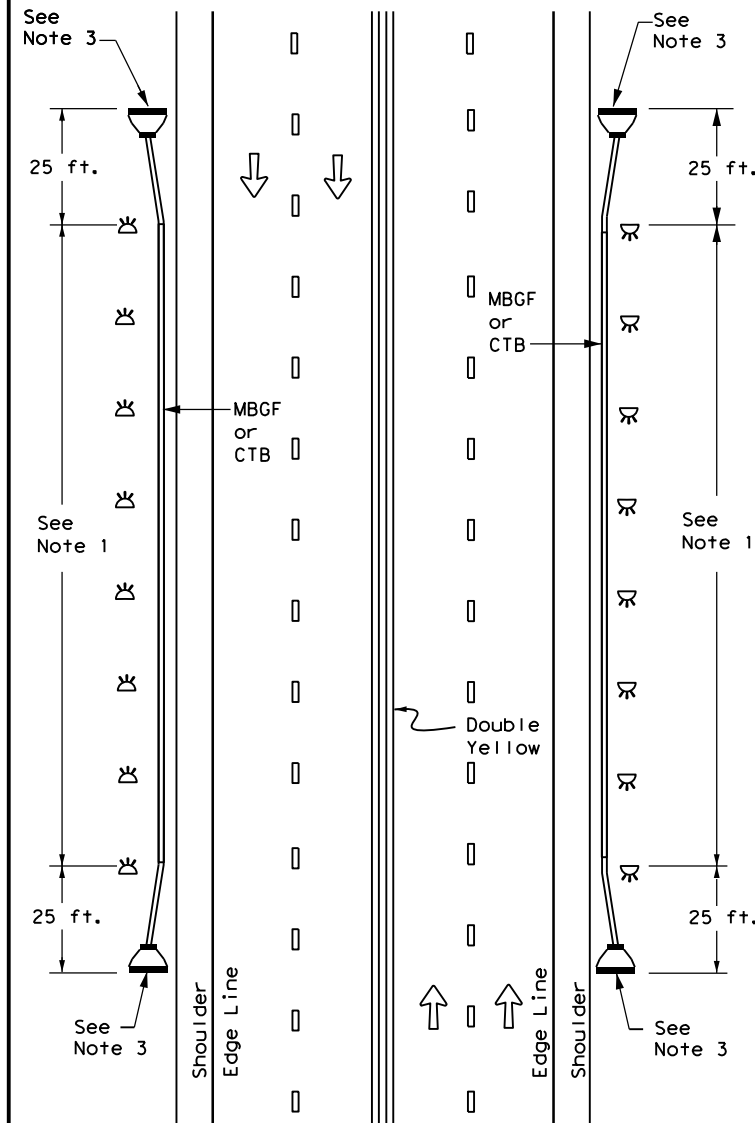
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REVISIONS	0001	01	063, ETC.	SH 20
3-15	DIST	COUNTY	SHEET NO.	
7-20	ELP	EL PASO	262	

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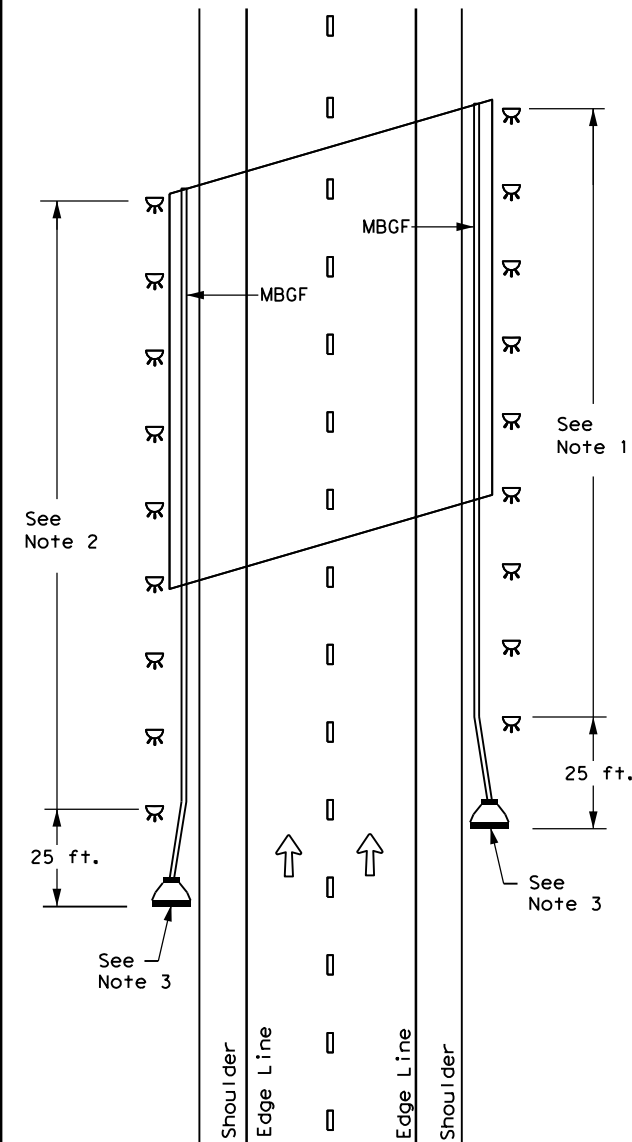
CONTINUOUS CONCRETE OR STEEL BARRIER



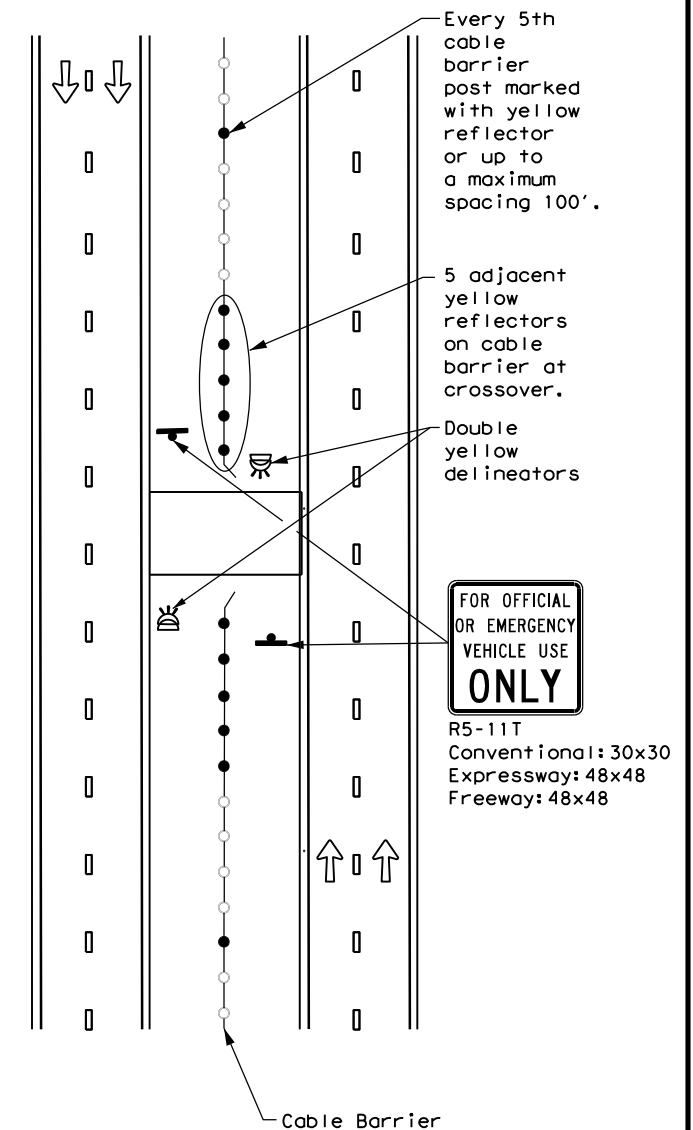
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuous Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow



DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

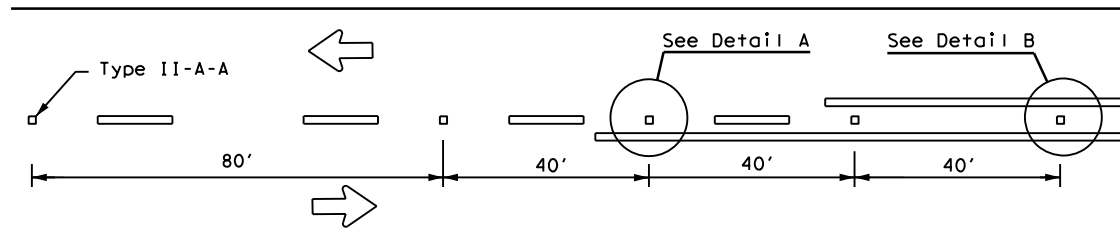
D & OM(6) - 20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
7-20	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	263	

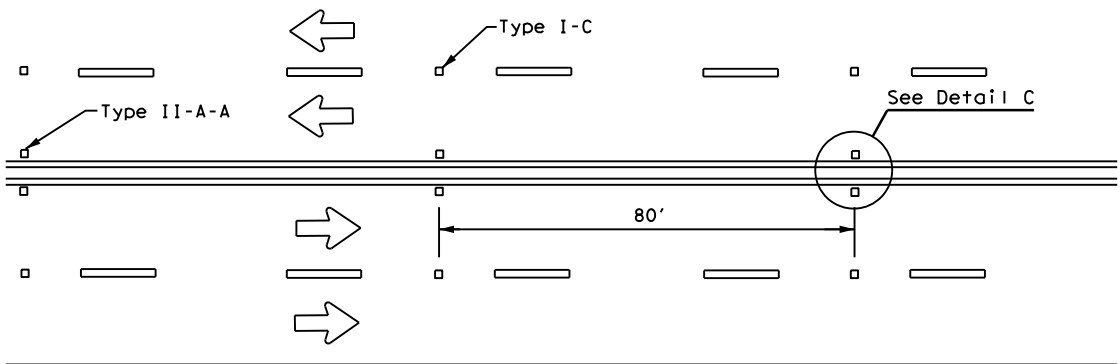
DATE:
FILE:

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

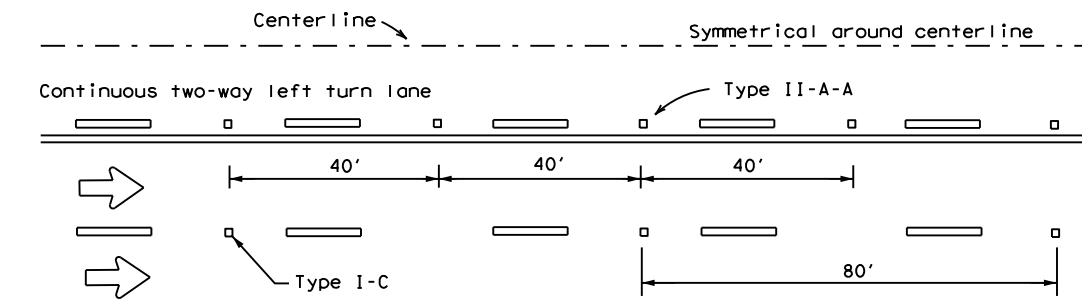
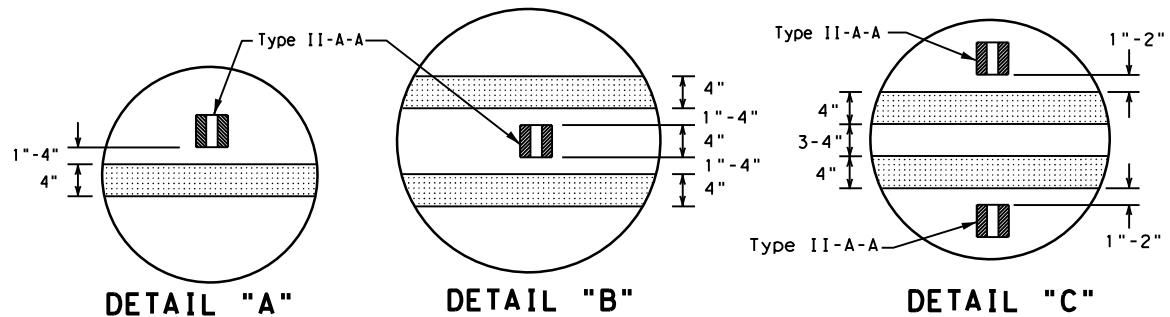
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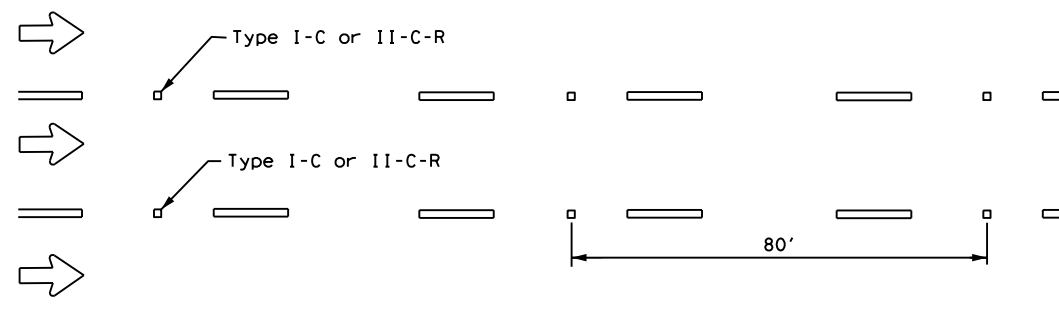
CENTERLINE FOR ALL TWO LANE ROADWAYS



**CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

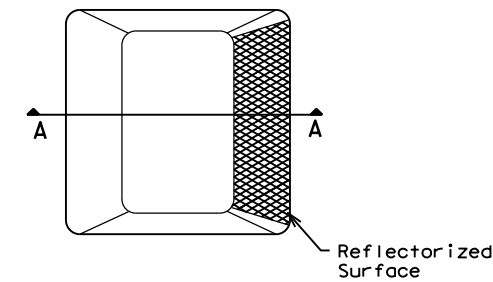


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

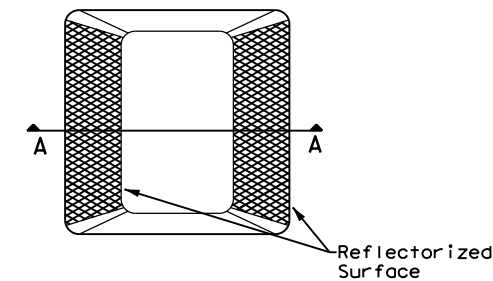
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

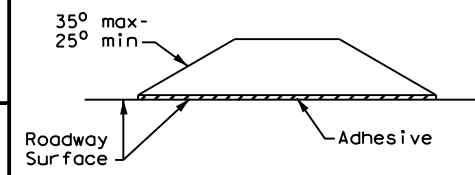
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

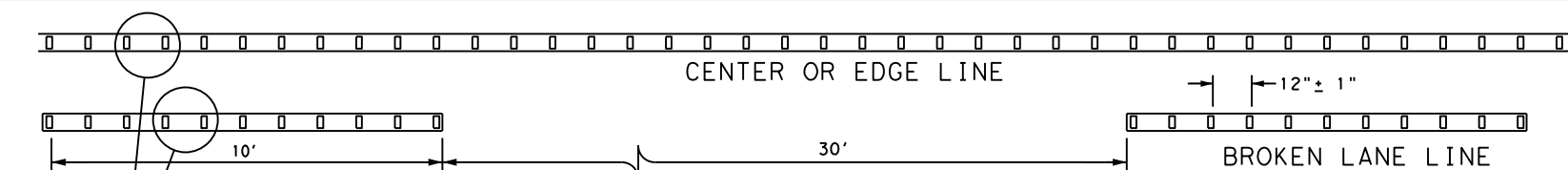


POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2) - 20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
4-92 2-10 REVISIONS	0001	01	063, ETC.	SH 20
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	ELP	EL PASO		265

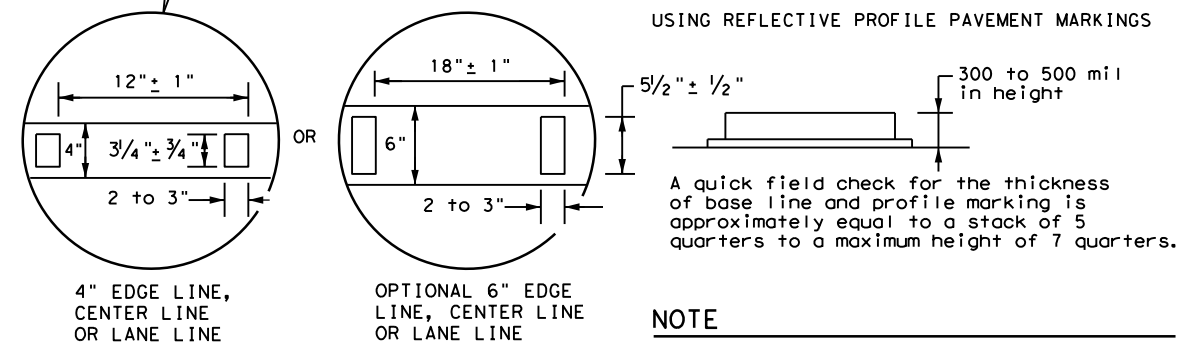
GENERAL NOTES

- All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
- On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

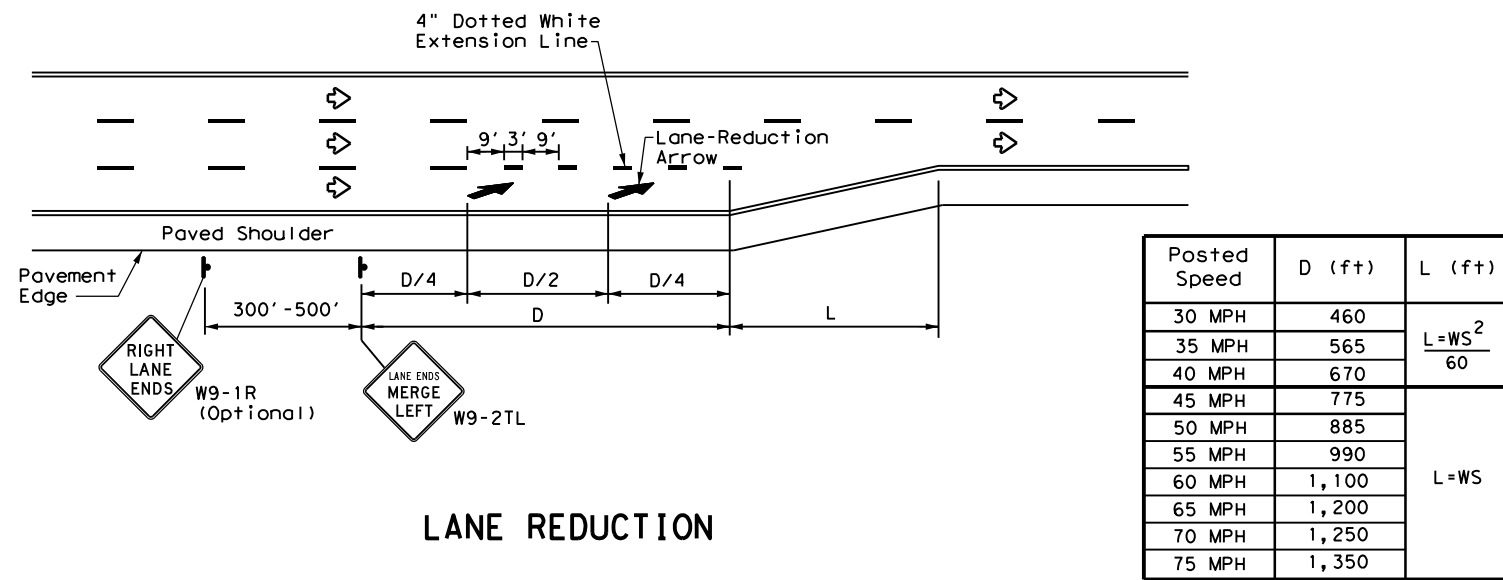


NOTE

Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

DATE:
FILE:

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LANE REDUCTION

NOTES

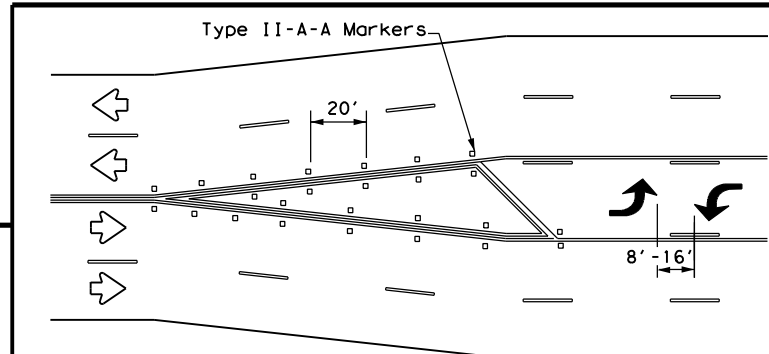
- Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
- On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

GENERAL NOTES

- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
- Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

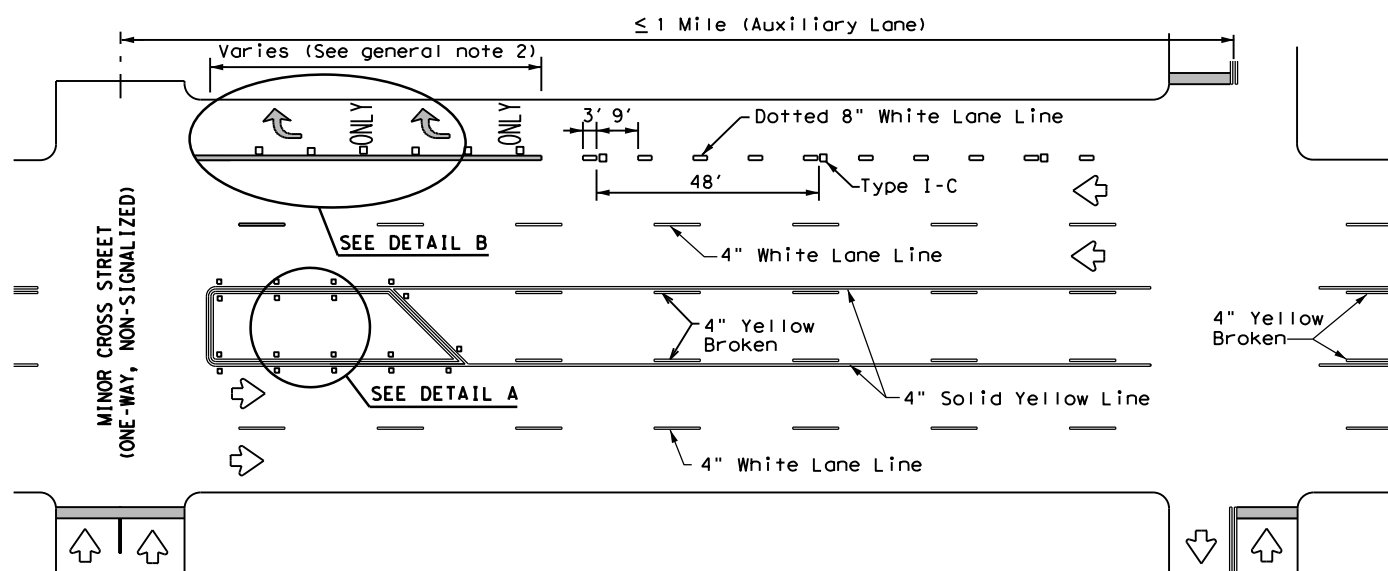
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

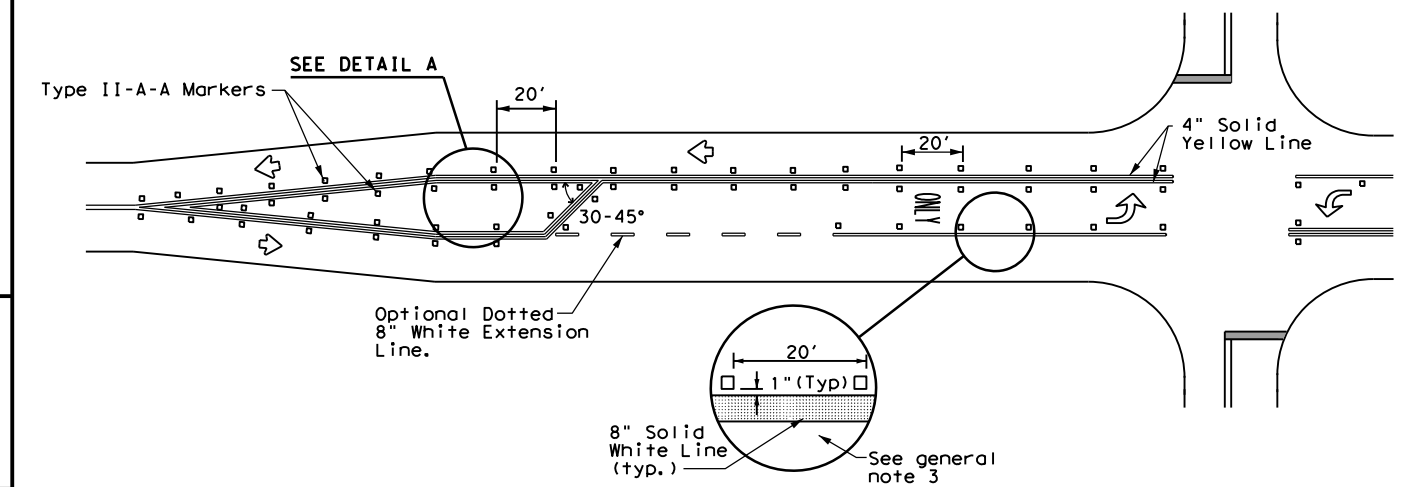


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

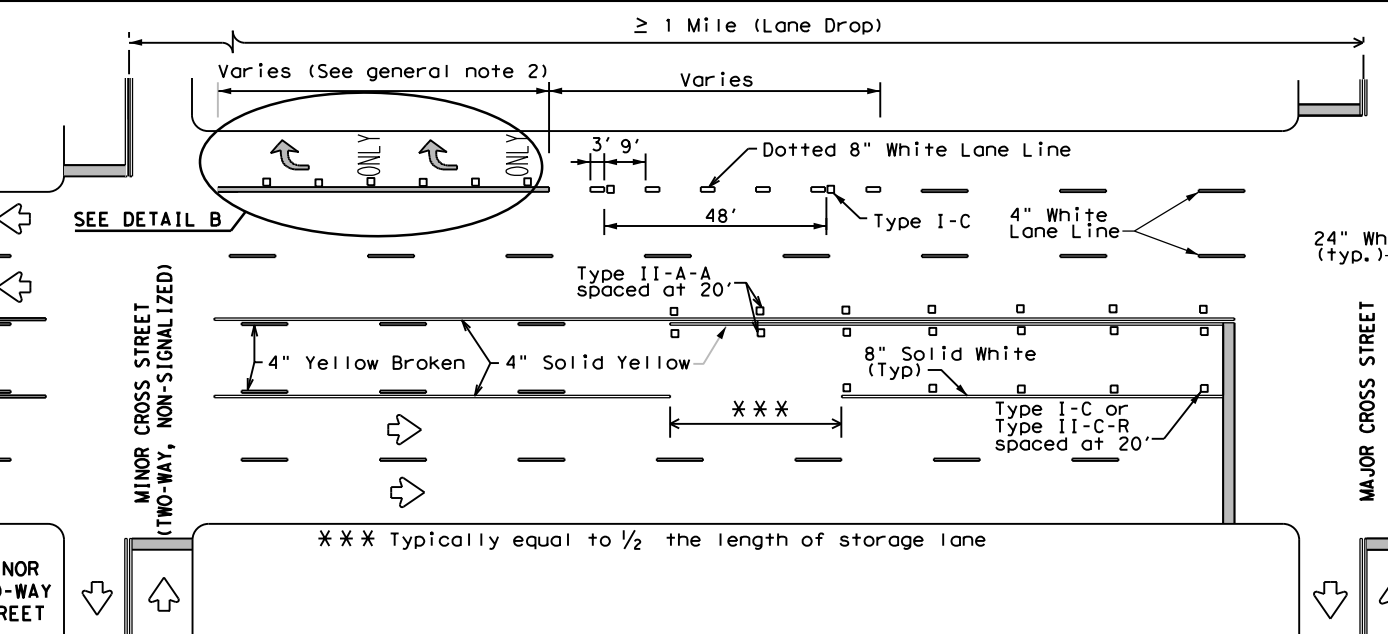
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



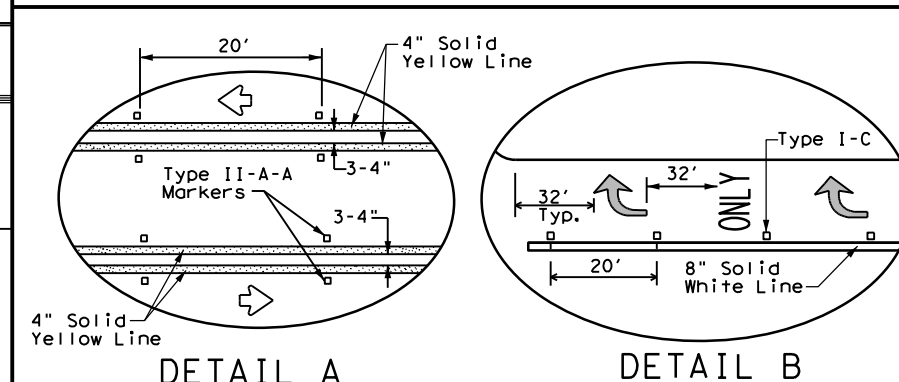
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



DETAIL A

DETAIL B

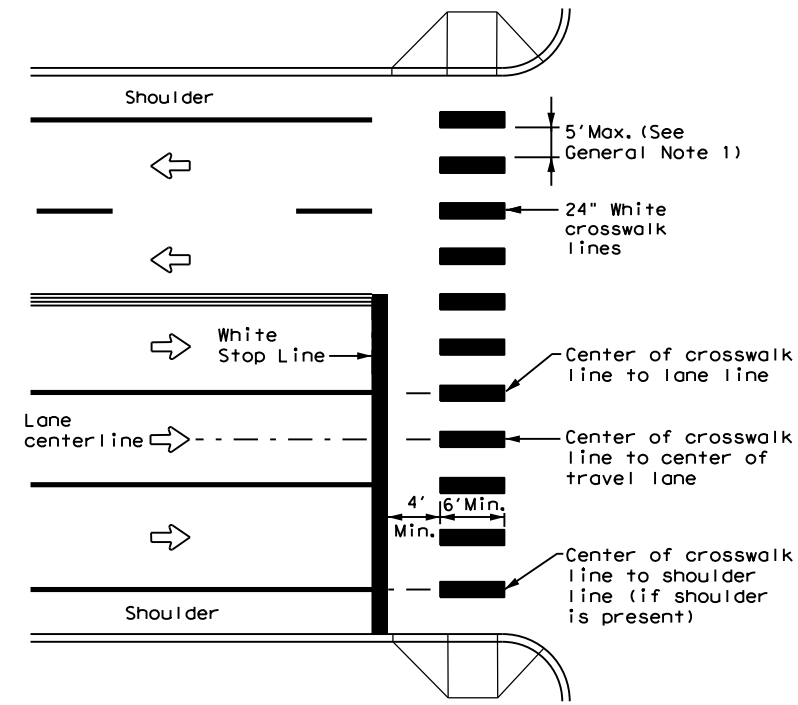
Texas Department of Transportation
Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1998	CON	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
5-00 2-10	DIST	COUNTY	SHEET NO.	
8-00 2-12	ELP	EL PASO	266	
3-03 6-20				

DATE: FILE:

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HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

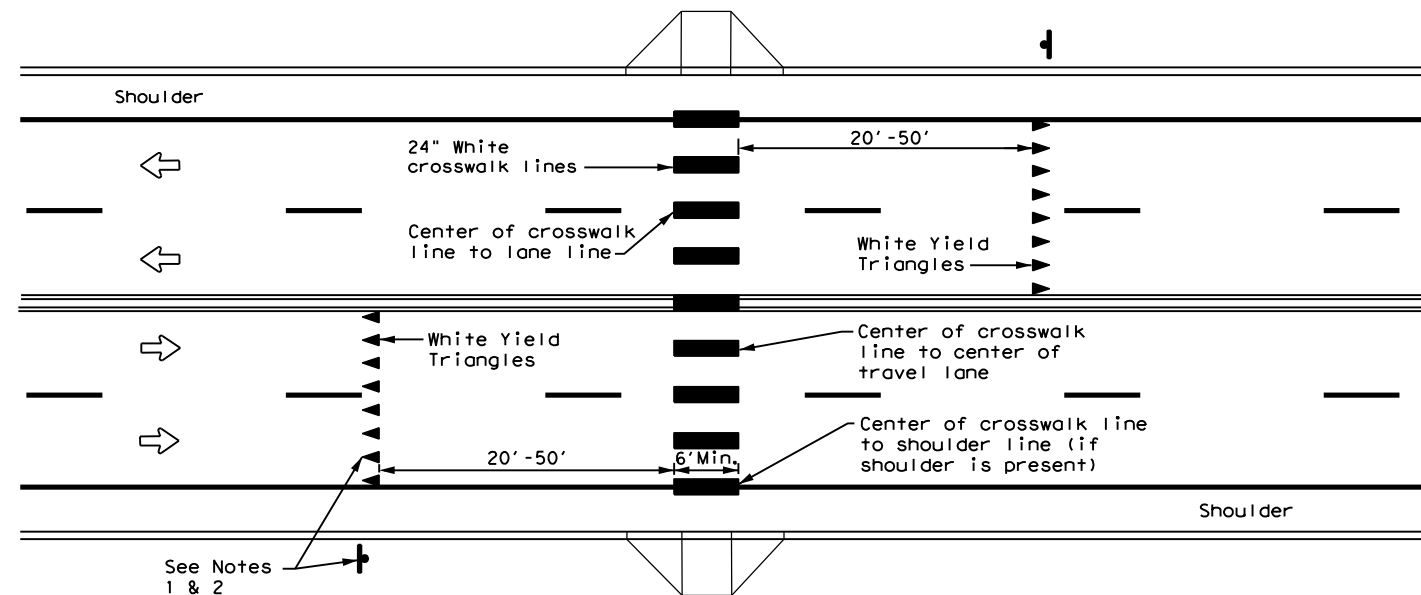
GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.



CROSSWALK PAVEMENT MARKINGS

PM(4) - 20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		267

DATE:
FILE:

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
 TWT = Thin-Walled Tubing (see SMD(TWT))
 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
 S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

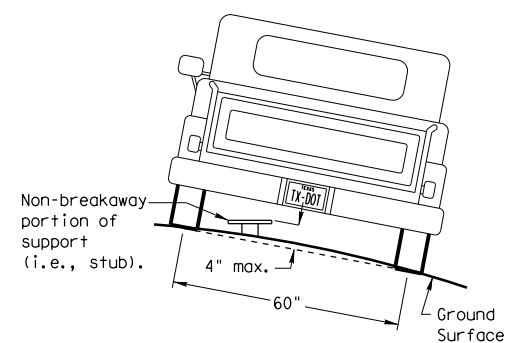
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
 UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
 WS = Wedge Anchor Steel - (see SMD(TWT))
 WP = Wedge Anchor Plastic (see SMD(TWT))
 SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
 SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
 T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
 U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
 IF REQUIRED
 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
 BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
 WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
 EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

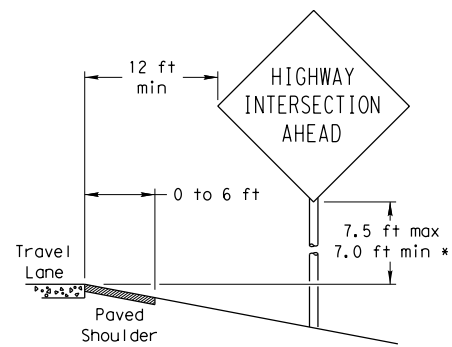
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

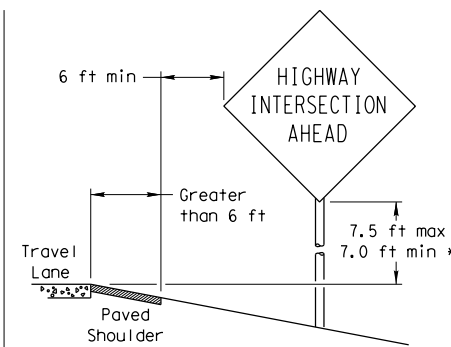
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

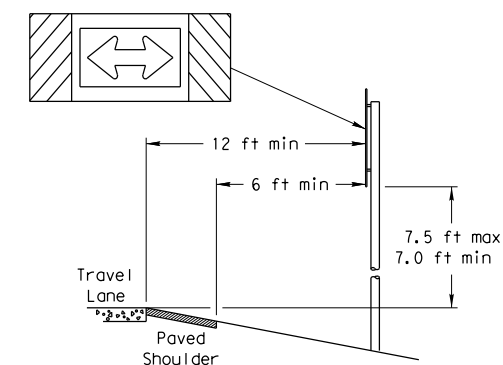
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

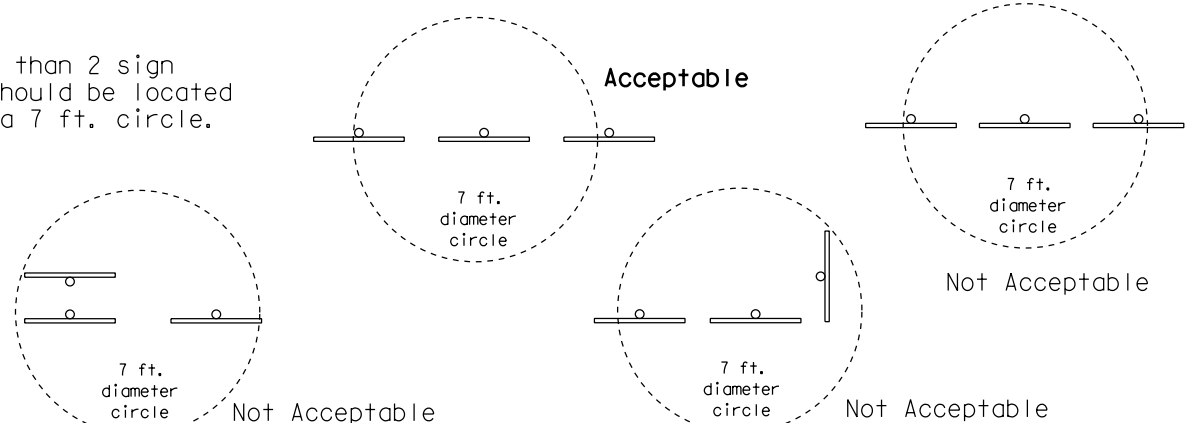
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

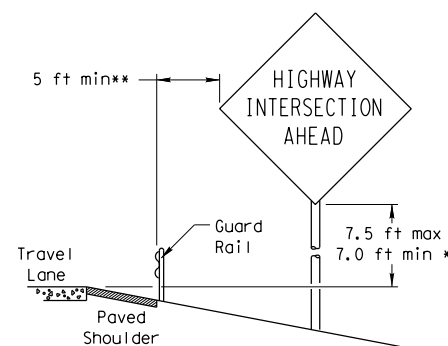


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

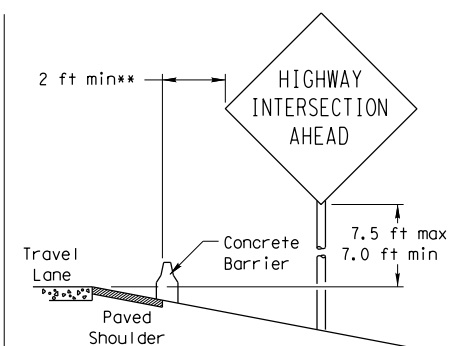
No more than 2 sign posts should be located within a 7 ft. circle.



BEHIND BARRIER



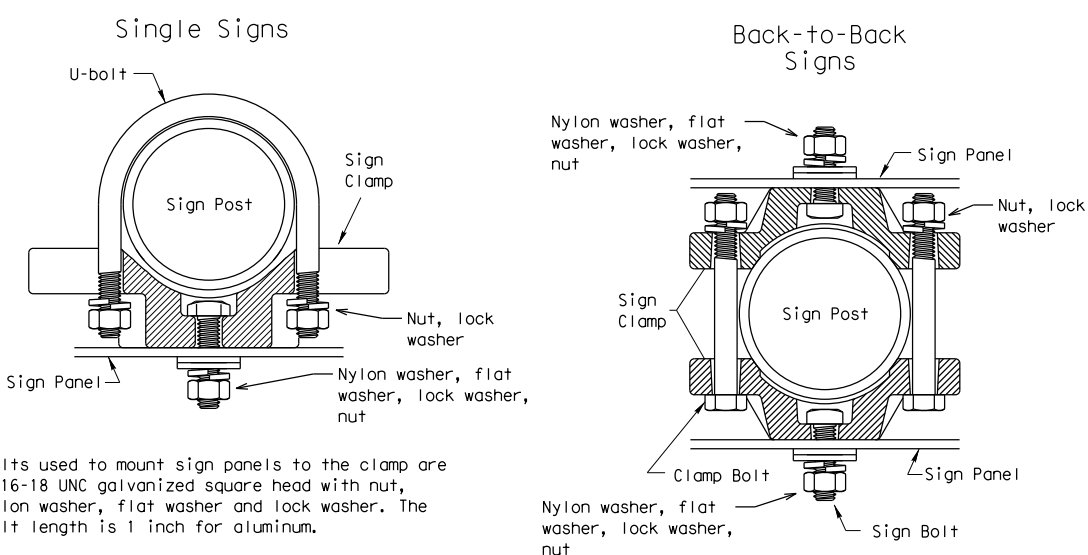
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

TYPICAL SIGN ATTACHMENT DETAIL



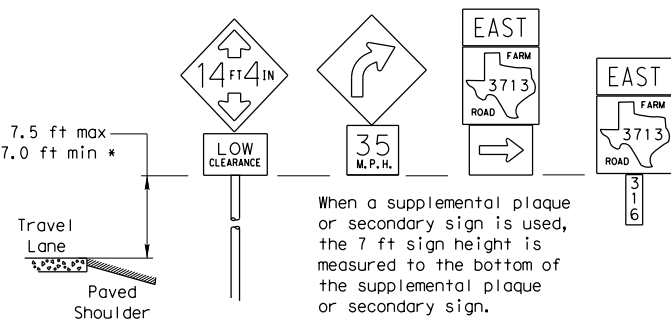
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

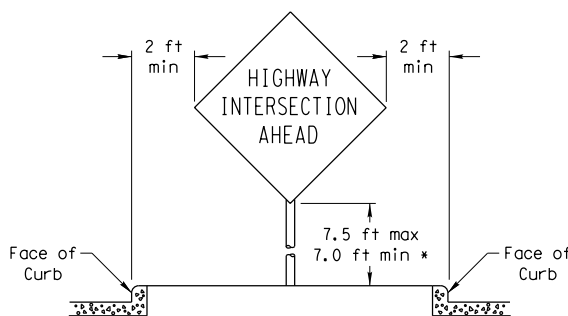
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

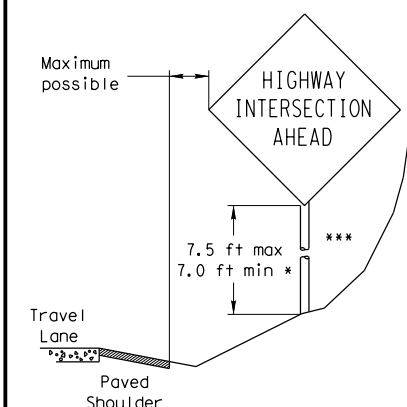


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



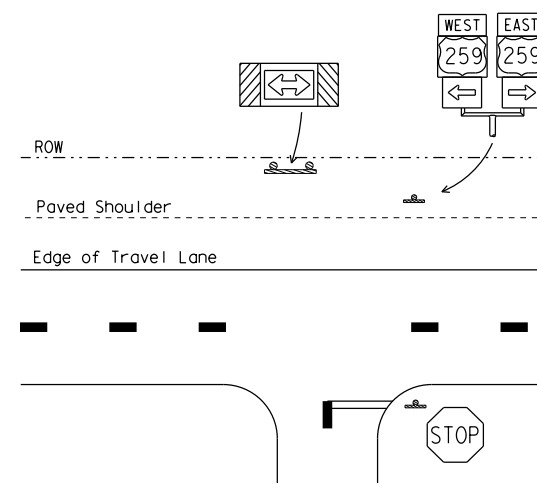
RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
<http://www.txdot.gov/publications/traffic.htm>

Texas Department of Transportation
 Traffic Operations Division

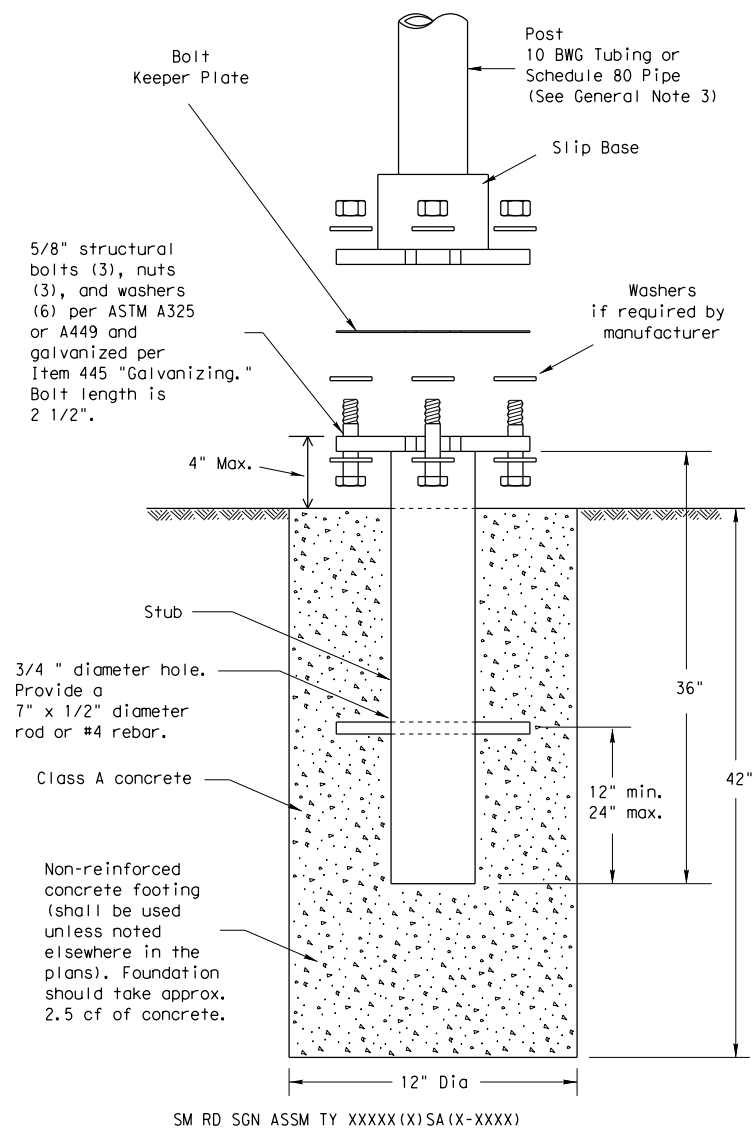
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB
		0001	01	063, ETC.
		DIST	COUNTY	SHEET NO.
		ELP	EL PASO	268

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
 - 10 BWG Tubing (2.875" outside diameter)
 - 0.134" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing or pipe
 - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
 - Other steels may be used if they meet the following:
 - 55,000 PSI minimum yield strength
 - 70,000 PSI minimum tensile strength
 - 20% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
 - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
 - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
 - Schedule 80 Pipe (2.875" outside diameter)
 - 0.276" nominal wall thickness
 - Steel tubing per ASTM A500 Gr C
 - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
 - 46,000 PSI minimum yield strength
 - 62,000 PSI minimum tensile strength
 - 21% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
 - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
 - Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

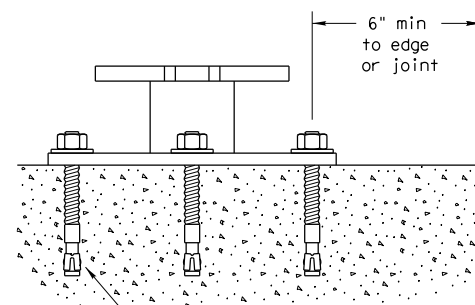
Foundation

- Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
- The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
- Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
- Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



5/8" diameter Concrete Anchor - 8 places (embed a minimum of 5 1/2" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.



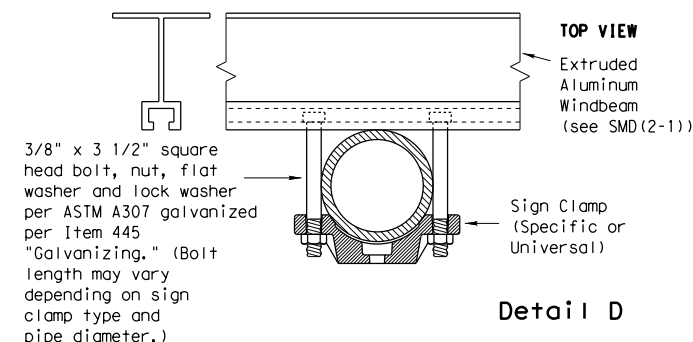
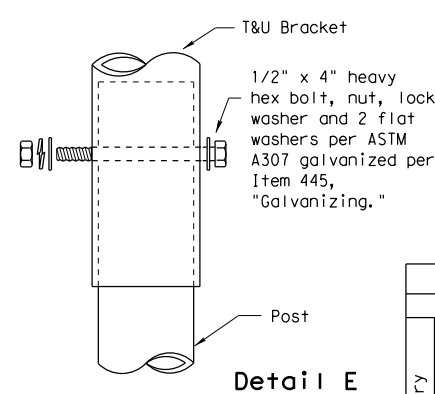
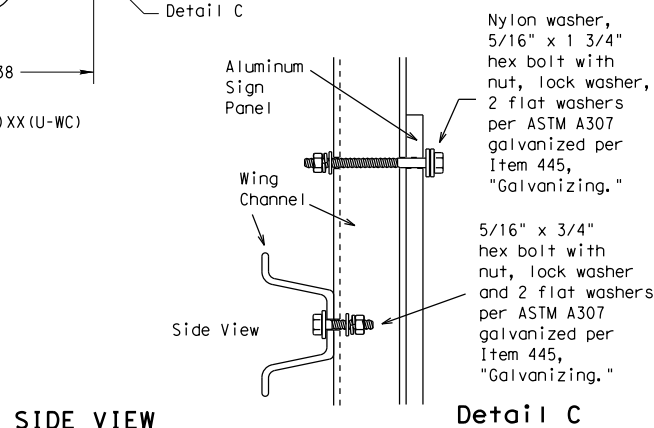
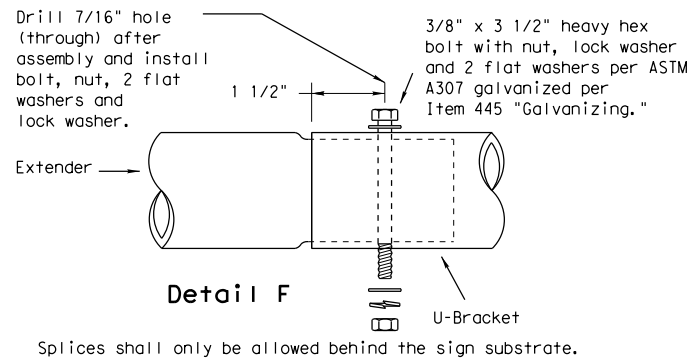
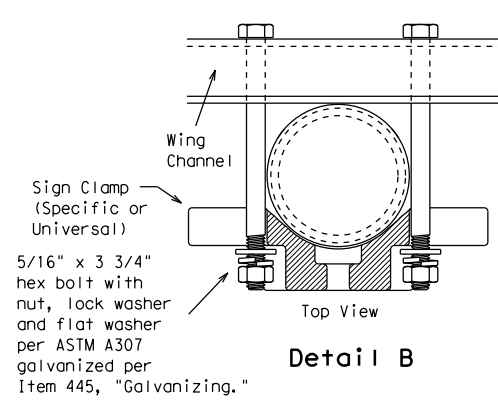
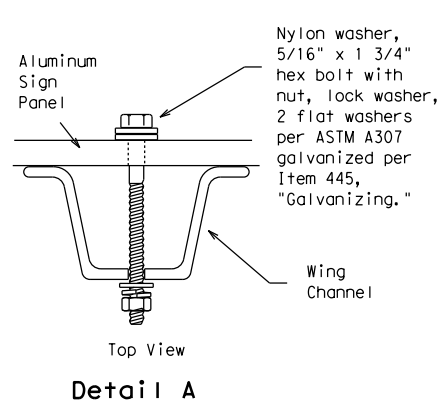
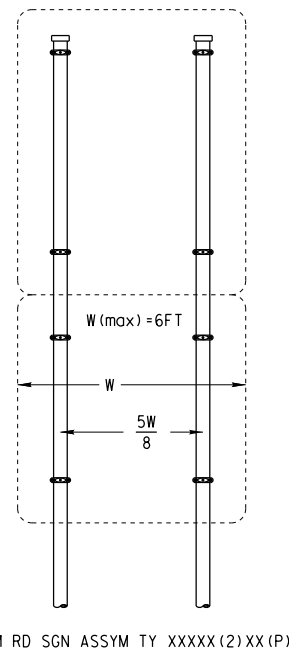
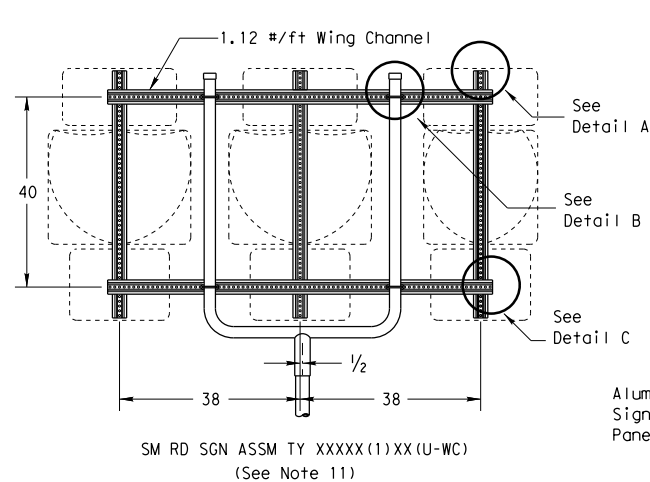
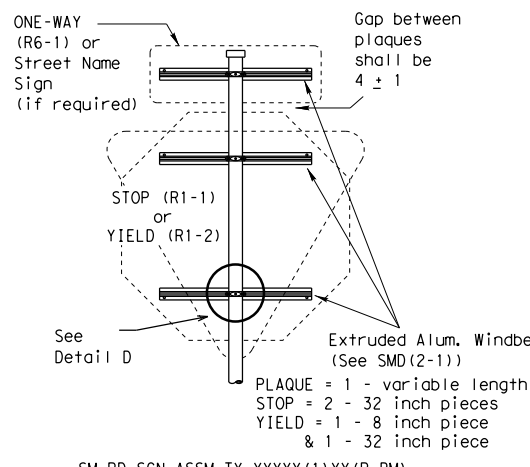
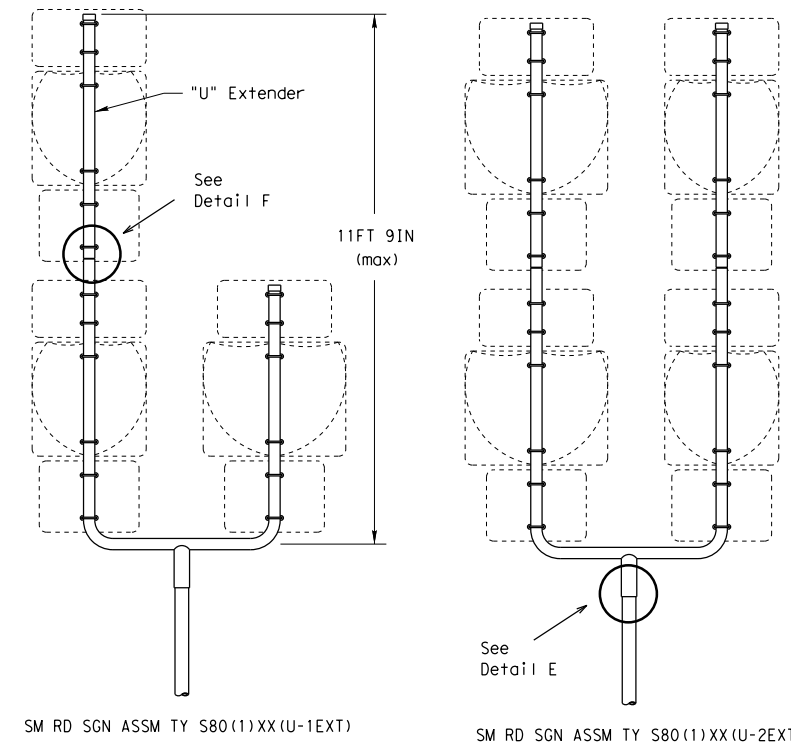
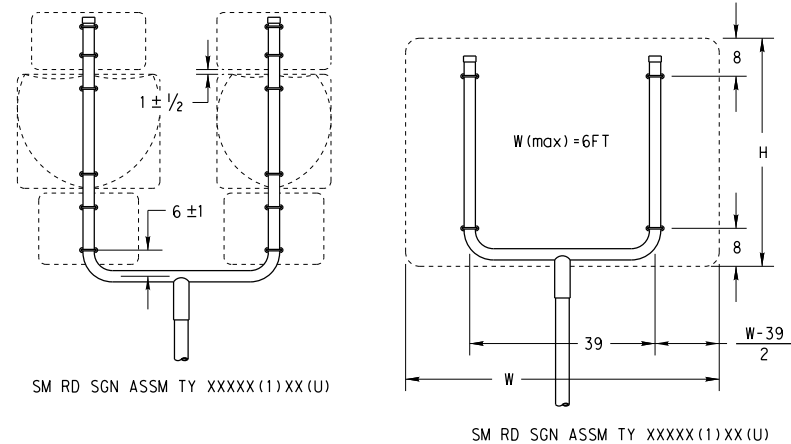
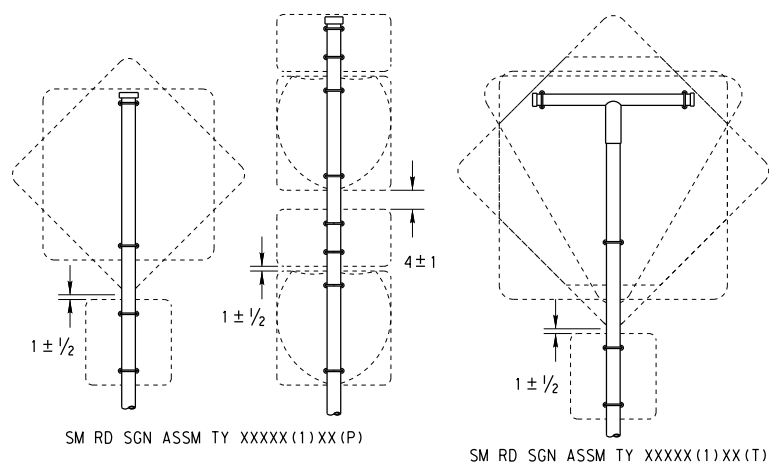
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

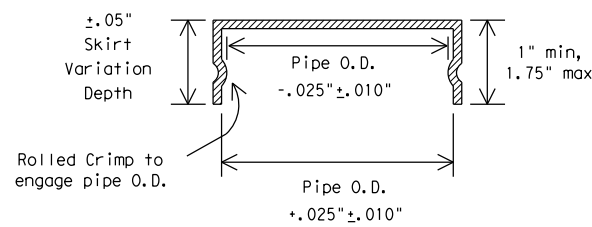
© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
9-08	REVISIONS		CONT	SECT	JOB	HIGHWAY
			0001	01	063, ETC.	SH 20
			DIST	COUNTY		SHEET NO.
		ELP	EL PASO		269	

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DATE: FILE:



FRICION CAP DETAIL



GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
SIGN DESCRIPTION	SUPPORT	
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)	

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

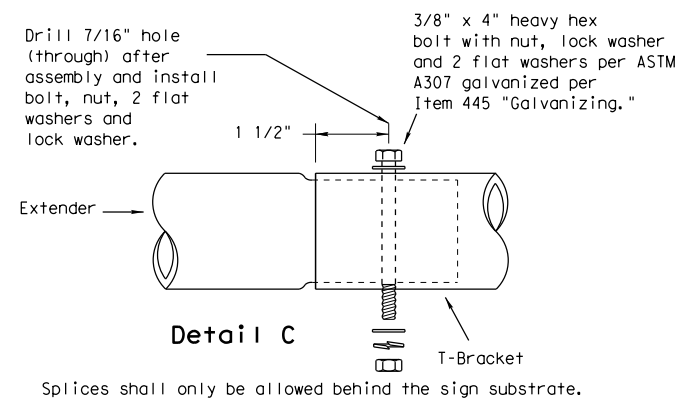
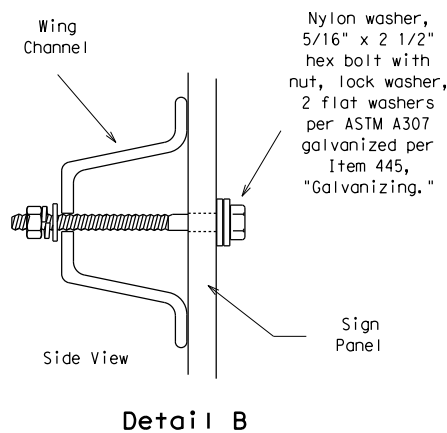
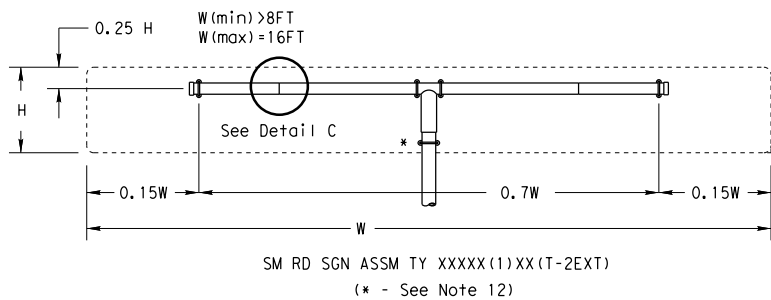


SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-2)-08

© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0001	01	063, ETC.	SH 20
		DIST		COUNTY	SHEET NO.
		ELP		EL PASO	270

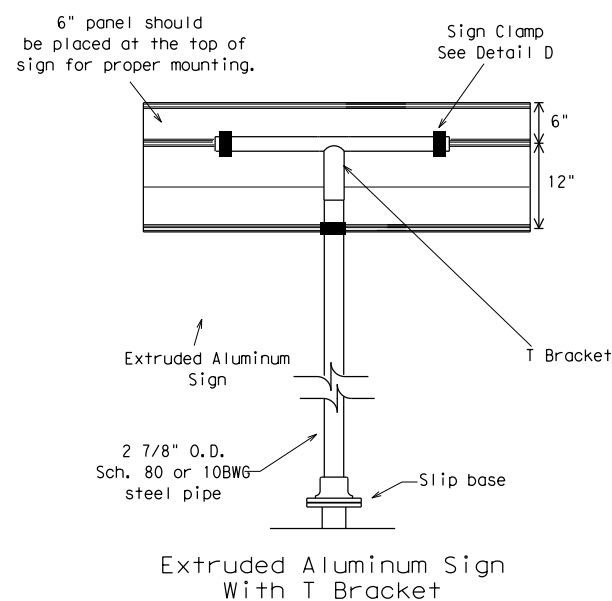
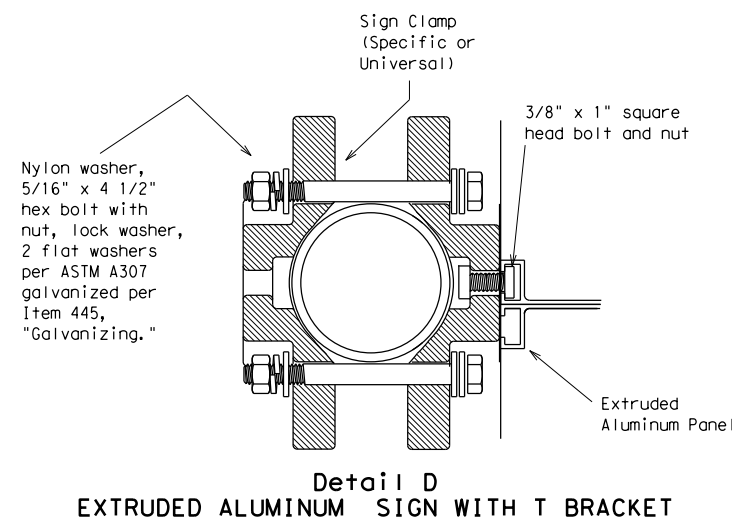
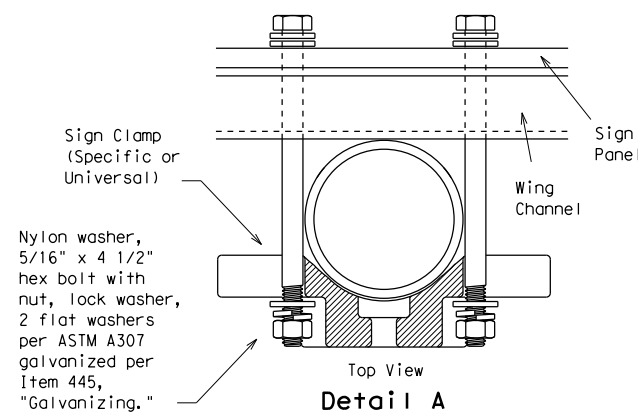
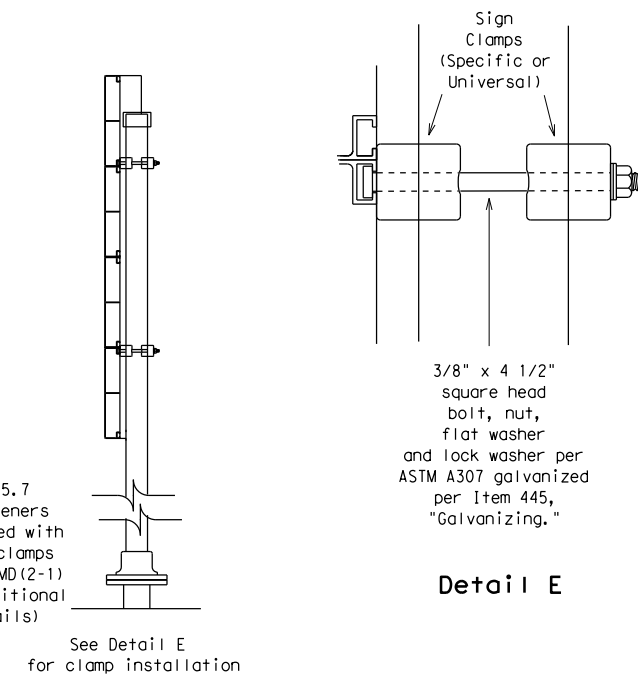
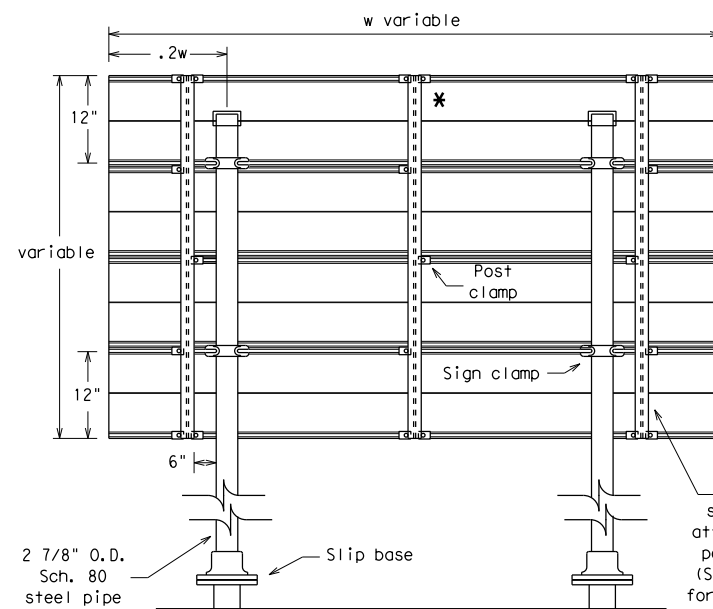
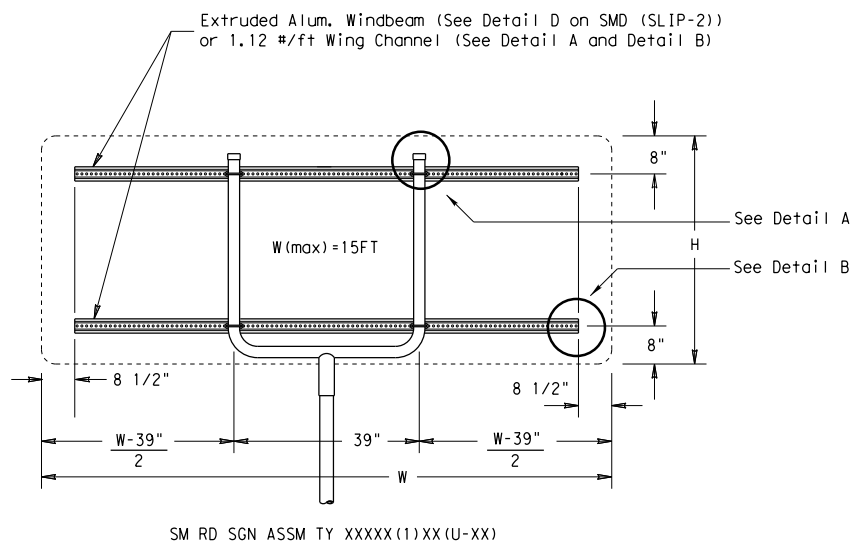
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
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- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
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- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.



REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD (SLIP-3) -08

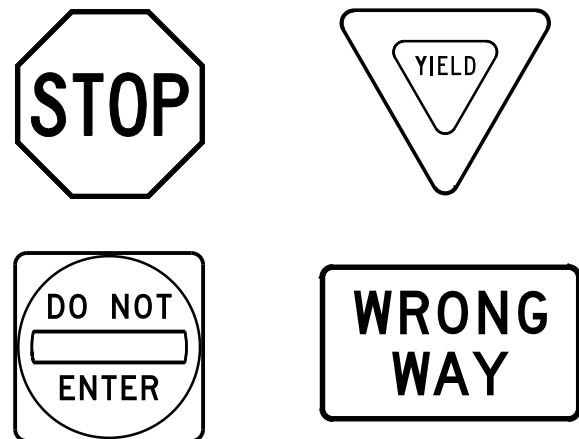
© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0001	01	063, ETC.	SH 20
		DIST	COUNTY		SHEET NO.
		ELP	EL PASO		271

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DATE: FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

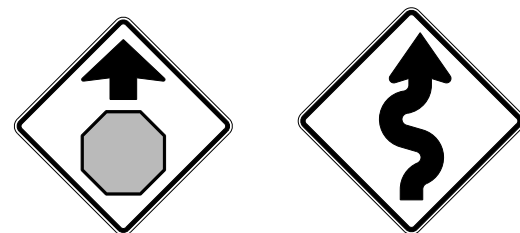
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS

Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

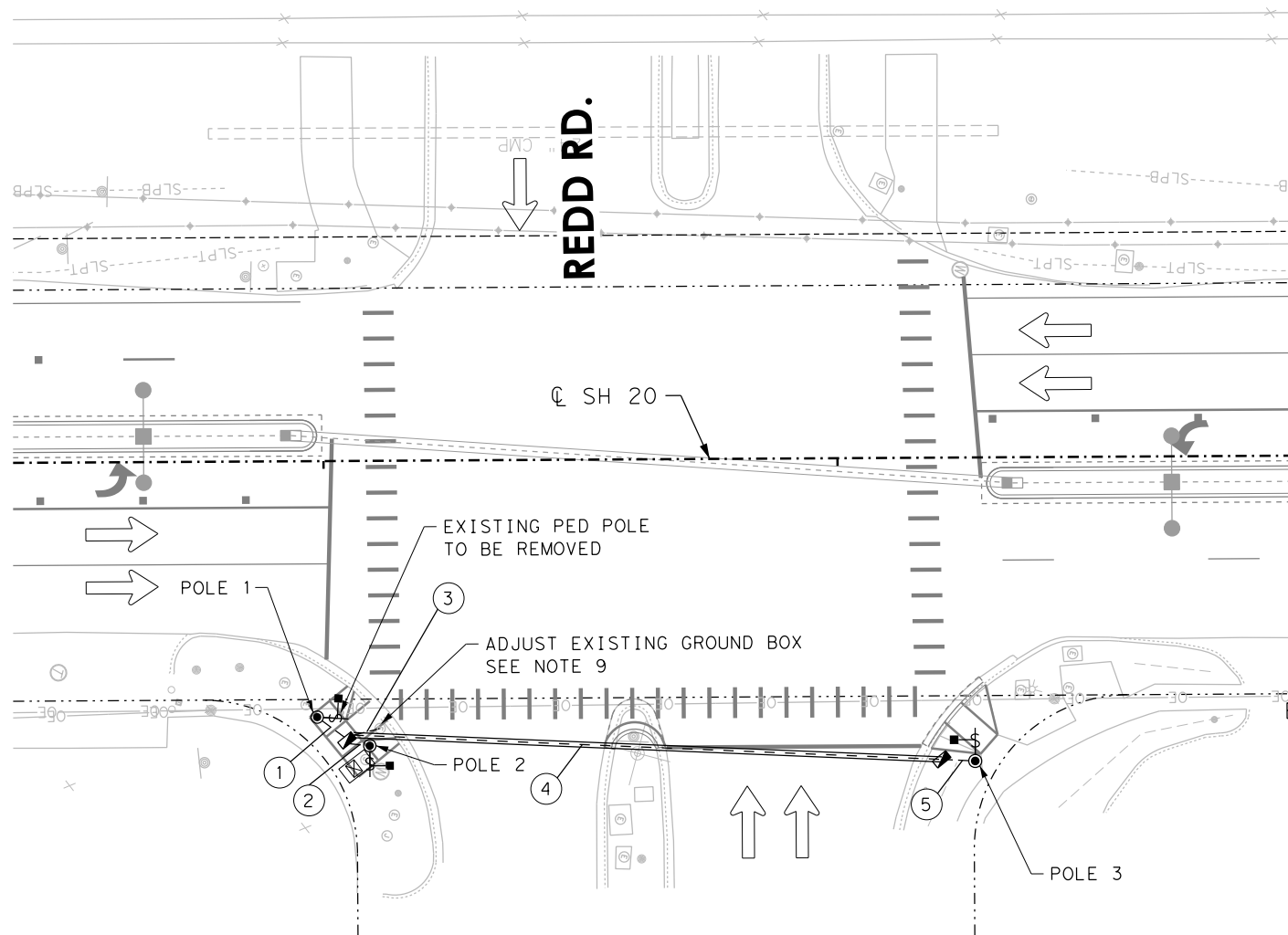
<http://www.txdot.gov/>



TYPICAL SIGN REQUIREMENTS

TSR(4) - 13

FILE:	tsr4-13.dgn	DN:TXDOT	CK:TXDOT	DW:TXDOT	CK:TXDOT
© TXDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0001	01	063, ETC.	SH 20
12-03	7-13	DIST	COUNTY	SHEET NO.	
9-08		ELP	EL PASO	272	



NEW POLES

- NOTES:**
1. THE LOCATION OF THE POLES ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE LOCAL CONDITIONS. EXACT LOCATION OF PEDESTRIAN POLES TO BE APPROVED BY THE ENGINEER IN THE FIELD.
 2. INTERVAL TIMING AND PEDESTRIAN PHASING TO BE PROVIDED BY TxDOT.
 3. NEW TRAFFIC SIGNAL INSTALLATION SHALL INCLUDE ALL FOUNDATIONS, PEDESTRIAN POLES WITH TRANSFORMER BASES, PEDESTRIAN SIGNALS, ALL CONDUIT OF THE SIZES AND LENGTHS SHOWN, ALL TRAFFIC CONDUCTORS, AND GROUND BOXES AS SHOWN ON PLANS.
 4. ALL PEDESTRIAN HEADS SHALL HAVE LED LIGHTS AND SHALL BE COUNTDOWN PEDESTRIAN SIGNALS. SEE TRAFFIC SIGNAL DETAILS SHEET FOR FURTHER DETAIL.
 5. SALVAGED MATERIALS SHALL BE RETURNED TO STREETS AND MAINTENANCE, 7968 SAN PAULO DRIVE, EL PASO, TEXAS 79907. POINT OF CONTACT: TONY DO (915-212-7021).
 6. PROPOSED PUSH BUTTONS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX. SLOPE IN ALL DIRECTIONS), AND 18" MAX DISTANCE FROM LANDING.
 7. THE CLEAR WIDTH OF WALKING SURFACES SHALL BE 5 FT MIN.
 8. ALL GROUND BOXES SHALL BE INSTALLED WITH EXPANSION JOINT MATERIAL AROUND IT.
 9. EXISTING GROUND BOX TO BE ADJUSTED IN HEIGHT TO PROPOSED RAMP FINISHED GRADE. EXISTING CONDUIT FROM GROUND BOX TO EXISTING TRAFFIC SIGNAL CABINET SHALL BE USED TO INSTALL PROPOSED PEDESTRIAN HEADS AND PUSH BUTTONS WIRING.

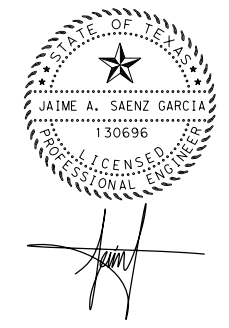
LEGEND

- PROPOSED PEDESTAL POLE
- PROPOSED PEDESTRIAN HEAD
- ⊕ PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED GROUND BOX TYPE C
- PROPOSED CONDUIT
- ===== PROPOSED CONDUIT (BORE)
- ⊕ PROPOSED RUN NUMBER
- # PROPOSED SIGNAL HEAD NUMBER
- ⊠ EXISTING TRAFFIC SIGNAL CABINET
- ← TRAFFIC FLOW
- EXIST RIGHT OF WAY

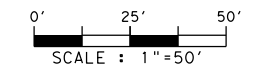
WARNING!
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHETHER INDICATED ON THE DRAWINGS OR NOT, TO VERIFY THE LOCATION, DEPTH, AND CONDITION OF ALL EXISTING UTILITIES AND SUBSTRUCTURES AND PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL CONTACT ALL THE UTILITY COMPANIES AND CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION.

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	UNI	QTY
618 6023	CONDT (PVC) (SCH 40) (2")	LF	34
618 6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF	34
618 6029	CONDT (PVC) (SCH 40) (3")	LF	115
618 6030	CONDT (PVC) (SCH 40) (3") (BORE)	LF	115
620 6015	ELEC CNDR (NO.2) BARE	LF	298
624 6008	GROUND BOX TY C (162911)W/APRON	EA	2
684 6010	TRF SIG CBL (TY A) (12 AWG) (5 CNDR)	LF	258
684 6053	TRF SIG CBL (TY A) (18 AWG) (2 CNDR)	LF	225
6027 6003	CONDUIT (PREPARE)	LF	15
6027 6008	GROUND BOX (PREPARE)	EA	1
6027 6009	GROUND BOX (ADJUST)	EA	1

ADA ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	UNI	QTY
682 6018	PED SIG SEC (LED) (COUNTDOWN)	EA	3
687 6001	PED POLE ASSEMBLY	EA	3
688 6001	PED DETECT PUSH BUTTON (APS)	EA	3
688 6003	PED DETECTOR CONTROLLER UNIT	EA	3



5/3/2021



RUN NO.	CONDUIT STATUS	CONDUIT AND CABLE SCHEDULE									
		CONDUIT						GROUND BARE	PED PUSH BUTTONS	PED HEAD	LENGTH OF RUN
		ITEM 618 SIZE/TYPE CONDUIT		BORED		CONDUIT (PREPARE)	ELEC CNDR (NO. 2)				
		PVC SCHD 40 (2")	PVC SCHD 40 (3")	PVC SCHD 40 (2")	PVC SCHD 40 (3")						
1	I	1	1				2	1	1	10	
2	I	1	1				2	1	1	8	
3	I	1	1				2	3	3	8	
4	I			1	1		2	1	1	115	
5	I	1	1				2	1	1	8	
-	E					1		3	3	15	
TOTAL		34	34	115	115	15	298	210	210		

CONDUCTOR FROM BASE TO PUSH BUTTON			
POLE ID	PUSH BUTT	SUB-TOTAL	CONDUCTOR TYPE
POLE 1	5	5	(TY A) (2 CNDR) (18 AWG)
POLE 2	5	5	(TY A) (2 CNDR) (18 AWG)
POLE 3	5	5	(TY A) (2 CNDR) (18 AWG)
TOTAL		15	

CONDUCTOR FROM BASE TO PEDESTRIAN HEAD					
POLE ID	PEDESTRIAN HEAD NO.			SUB-TOTAL (FT)	CONDUCTOR TYPE
	A	B	C		
POLE 1	16			16	(TY A) (5 CNDR) (12 AWG)
POLE 2		16		16	(TY A) (5 CNDR) (12 AWG)
POLE 3			16	16	(TY A) (5 CNDR) (12 AWG)
TOTAL				48	

WARNING!
BEFORE YOU DIG

CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

UTILITY LOCATOR SERVICES

TEXAS811	811
CITY OF EL PASO STREETS AND MAINTENANCE	1-915-212-0118
CAPITAL IMPROVEMENT DEPT	1-915-212-0065
EL PASO WATER UTILITIES	1-915-594-5500
TEXAS GAS SERVICE	1-800-700-2443
EL PASO NATURAL GAS	1-800-334-8047
AT&T	1-800-924-9420
EL PASO ELECTRIC COMPANY	1-800-252-1133
SPECTRUM	1-915-772-1123
LINE SPOTS	LINESPOTS@ELPASOTEXAS.GOV

HNTB HNTB Corporation
The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420

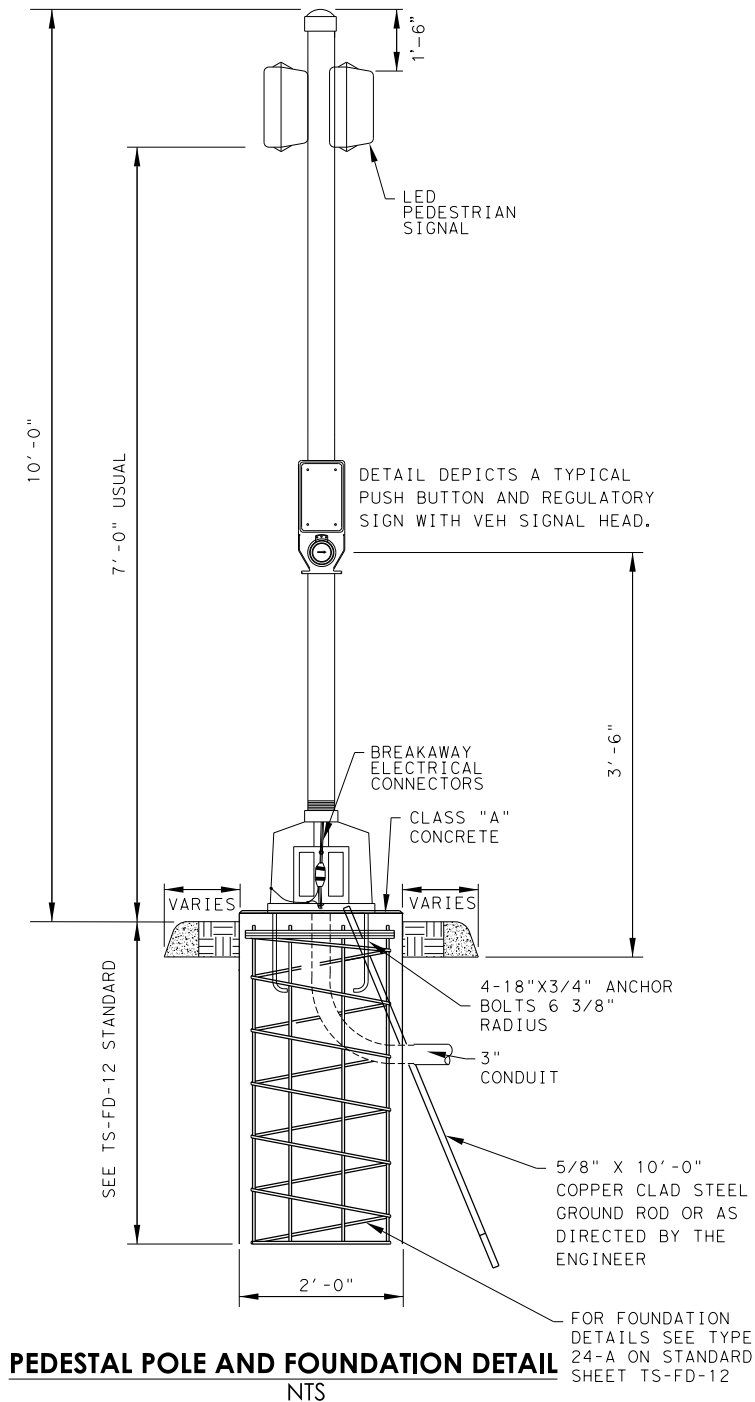
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SH 20 DONIPHAN DR. PEDESTRIAN SIGNAL LAYOUT

SHEET 1 OF 1

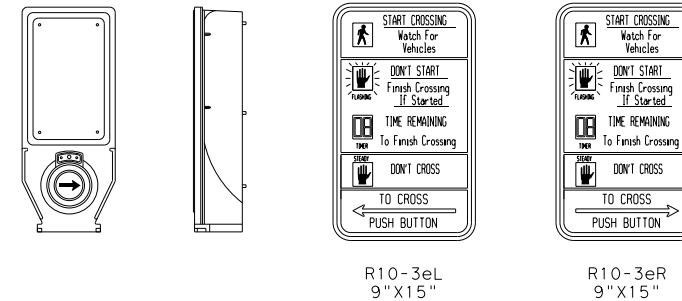
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CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	273

5/3/2021 11:42:23 AM

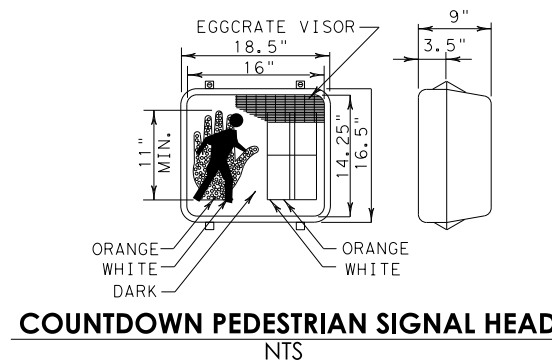


PEDESTAL POLE AND FOUNDATION DETAIL
NTS

ARROW DIRECTION INFORMATION		
INTERSECTION	SIGN SIZE: 9" X 15"	
	LEFT	RIGHT
DONIPHAN DR AT REDD RD	1	2



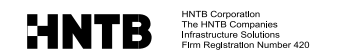
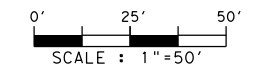
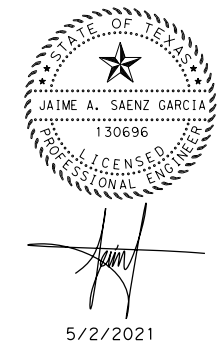
PEDESTRIAN PUSH BUTTON UNIT WITH MOUNTABLE SIGNS
NTS



COUNTDOWN PEDESTRIAN SIGNAL HEAD
NTS

NOTES:

1. ALL SIGNAL HEADS SHALL BE OF THE SAME MANUFACTURER AND ALL OF THESE SHALL BE INTERCHANGEABLE WITH OTHER UNITS OF THE SAME TYPE.
2. PUSH BUTTON, AND SIGN SHALL BE INSTALLED IN FRONT OF THE TRAFFIC SIGNAL POLE OR PEDESTRIAN POLE IN THE DIRECTIONAL PATH OF PEDESTRIANS.
3. ACCESSIBLE PEDESTRIAN SIGNAL PUSH BUTTON SHALL COMPLY WITH THE MUTCD.
4. THE COMBINATION PUSH BUTTON AND SIGN IS SHOWN AS AN EXAMPLE. SIGNS AND BUTTONS OF OTHER DESIGNS MAY BE USED WITH APPROVAL BY THE ENGINEER.
5. REFER TO SPECIFICATIONS FOR LATERAL AND VERTICAL CLEARANCES AND SIGN MOUNTING DETAILS.
6. PER CITY OF EL PASO STANDARDS, THE DISTANCE FROM THE PUSH BUTTON TO THE LANDING SHALL NOT EXCEED 18 INCHES.
8. PEDESTRIAN SIGNAL HEADS SHALL BE EQUIPPED WITH EGGRATE VISORS AND SHALL COMPLY WITH MATERIAL SPECIFICATION TO-7062. BOTH SYMBOLIC PEDESTRIAN SIGNAL INDICATIONS SHALL BE SOLID. OUTLINES INDICATIONS ARE NOT ACCEPTABLE.



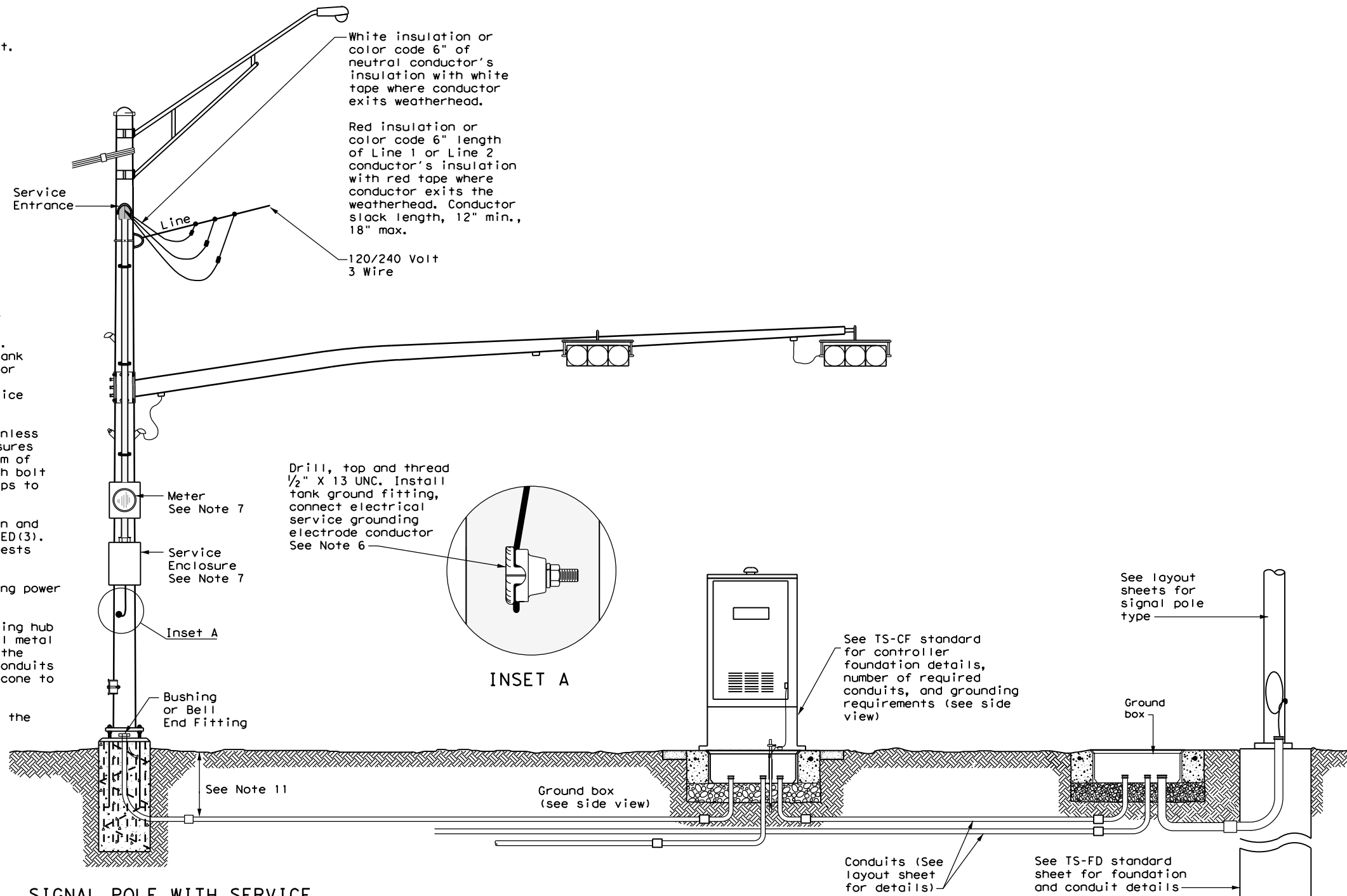
**SH 20
DONIPHAN DR.
PEDESTRIAN SIGNAL
DETAILS**

SHEET 1 OF 1

DESIGNED:	SH	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	274

TRAFFIC SIGNAL NOTES

1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for 1/2 in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of 3/4 in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".

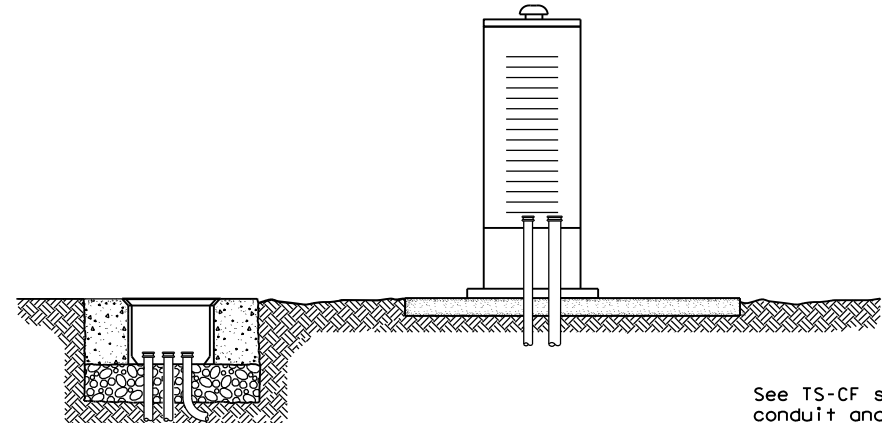


SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

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DATE:
FILE:

**ELECTRICAL DETAILS
TYPICAL TRAFFIC SIGNAL
SYSTEM DETAILS
ED(8) - 14**

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TXDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.	
	ELP	EL PASO	275	

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DATE: 4/30/2021 2:46:52 AM
FILE: ts-fd.dgn

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)			FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

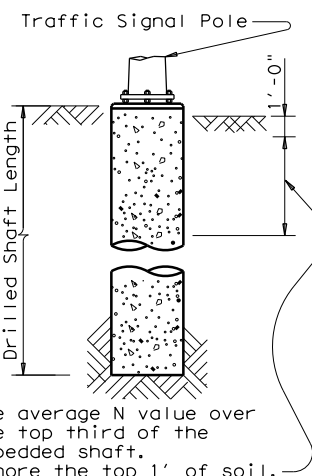
- Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- Foundation Design Loads are the allowable moments and shears at the base of the structure.
- Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
- Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
- If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
- Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE (3)

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET)				
				24-A	30-A	36-A	36-B	42-A
POLE 1	10	24-A	1	6				
POLE 2	10	24-A	1	6				
POLE 3	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				18				

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
		24' X 24'			
MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	28' X 28'				
	32' X 28'				
		32' X 32'			
		36' X 36'			
		40' X 36'			
		44' X 28'	44' X 36'		
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
		28' X 28'			
		32' X 24'	32' X 32'		
			36' X 36'		
			40' X 24'	40' X 36'	
				44' X 36'	



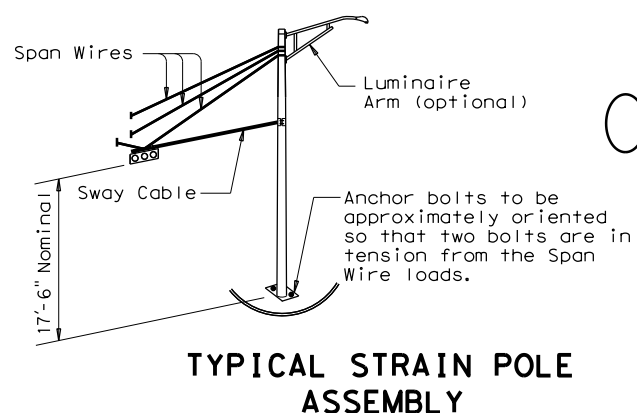
ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

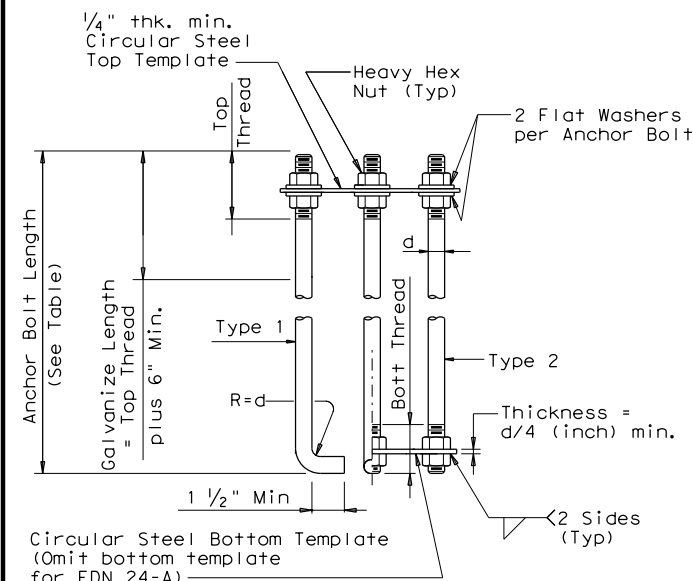
(7) Min dimensions given, longer bolts are acceptable.

EXAMPLE:

- For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
- For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

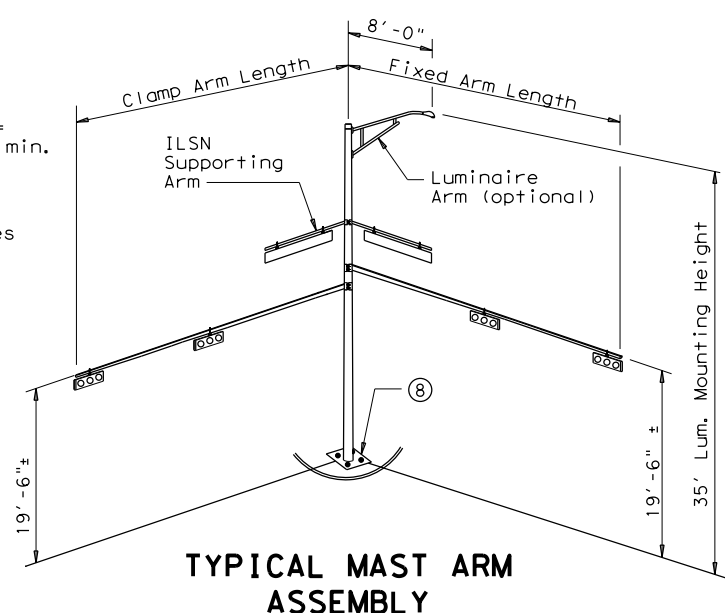


TYPICAL STRAIN POLE ASSEMBLY

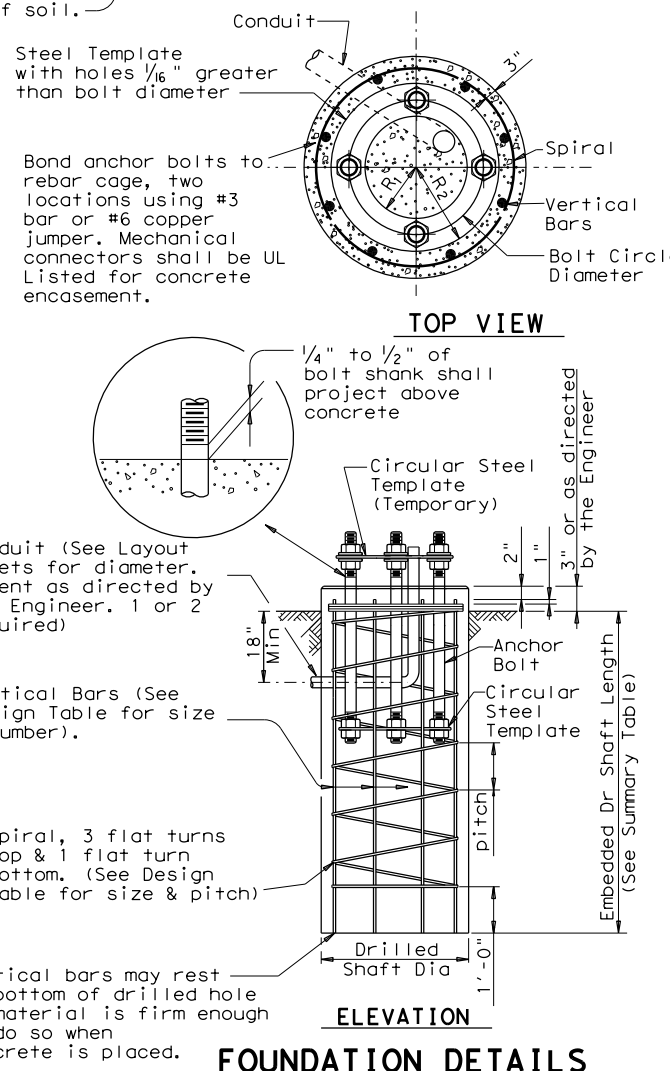


HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2) ANCHOR BOLT ASSEMBLY

(8) Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL MAST ARM ASSEMBLY



FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".



TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

© TxDOT August 1995		DN: MS	CK: JSY	DW: MAD/MMF	CK: JSY/TEB
5-96	REVISIONS	CONT	SECT	JOB	HIGHWAY
11-99		0001	01	063, ETC.	SH 20
1-12		DIST	COUNTY		SHEET NO.
		ELP	EL PASO		276

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:

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

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

1. *Prep existing ROW, including removing existing pavement, sidewalk, driveways, and illumination poles.*
2. *Prep ROW for new medians, including windrowing existing pavement.*
3. *Construct new medians.*
4. *Install all sidewalks, illumination poles, and driveways.*
5. *Install traffic devices and clean up project.*

AREAS:

TOTAL AREA OF PROJECT: 43.86 ACRES
 TOTAL AREA OF SOIL DISTURBANCE: 3.42 ACRES
 TOTAL AREA OFF-SITE: 0
 WEIGHTED RUNOFF COEFFICIENT (BEFORE AND AFTER CONSTRUCTION): 0

DATA DESCRIBING THE SOIL: *Storm water runoff passing through project will be intercepted on site by existing box culvert, concrete line channel, inlets and open existing ditches.*

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: SEE SWP3 LAYOUT PLAN SHEETS 269-273.

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

Supporting Concrete Plant Facilities shall be located off site.

NAME OF RECEIVING WATERS: *Storm water runoff passing through project will be intercepted on site by existing box culvert, concrete line channel, inlets and open existing ditches. One detention pond on the left side of the project, near Mulberry Ave., detention pond at Walmart and Shephert of the Valley Church, at each location on the right side of the project.*

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	SEDIMENT CONTROLS:	401	INT	PER
<input checked="" type="checkbox"/> <i>Compaction & Tracking of slopes</i>		<u>X</u>		<input checked="" type="checkbox"/> <i>Silt Fence</i>		<u>X</u>	
<input type="checkbox"/> <i>Diverson Dike</i>				<input checked="" type="checkbox"/> <i>Rock Berm</i>		<u>X</u>	
<input type="checkbox"/> <i>Preserve Existing Vegetation</i>				<input type="checkbox"/> <i>Buffer Zones</i>			
<input type="checkbox"/> <i>Soil Stabilization</i>				<input type="checkbox"/> <i>Vegetative Filter Strips</i>			
<input type="checkbox"/> <i>Permanent Vegetation</i>				<input type="checkbox"/> <i>Ditch Block</i>			
<input type="checkbox"/> <i>No Erosion Controls are Required.</i>				<input type="checkbox"/> <i>No Sediment Controls are Required.</i>			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

- | | |
|---|---|
| <input type="checkbox"/> <i>Vegetation Lined Drainage Ditch</i> | <input type="checkbox"/> <i>Grassy Swales</i> |
| <input type="checkbox"/> <i>Retention/Irrigation</i> | <input type="checkbox"/> <i>Vegetative Filter Strips</i> |
| <input type="checkbox"/> <i>Erosion Control Compost</i> | <input checked="" type="checkbox"/> <i>No Post Construction TSS Control Required.</i> |

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

1. *Install silt fences.*
2. *Install biodegrade erosion control logs and sand bags.*
3. *Install rock filter dams.*
4. *Maintain silt fences.*
5. *Inspect until construction is complete.*

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.

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 washed 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.



Salvador Hernandez Jr.

5/2/2021





TxDOT STORM WATER POLLUTION PREVENTION PLAN (SWP3)

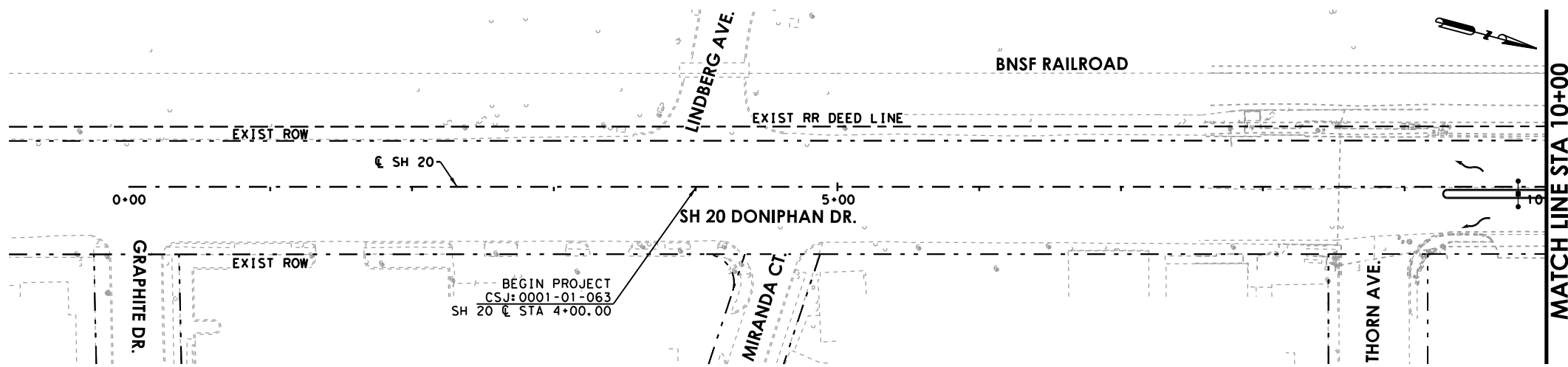


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FED. RD. DIV. NO.				SHEET NO.
6				277
STATE	STATE DIST.	COUNTY		
TX	ELP	EL PASO		
CONT.	SECT.	JOB	HIGHWAY NO.	
0001	01	063, ETC.	SH 20	

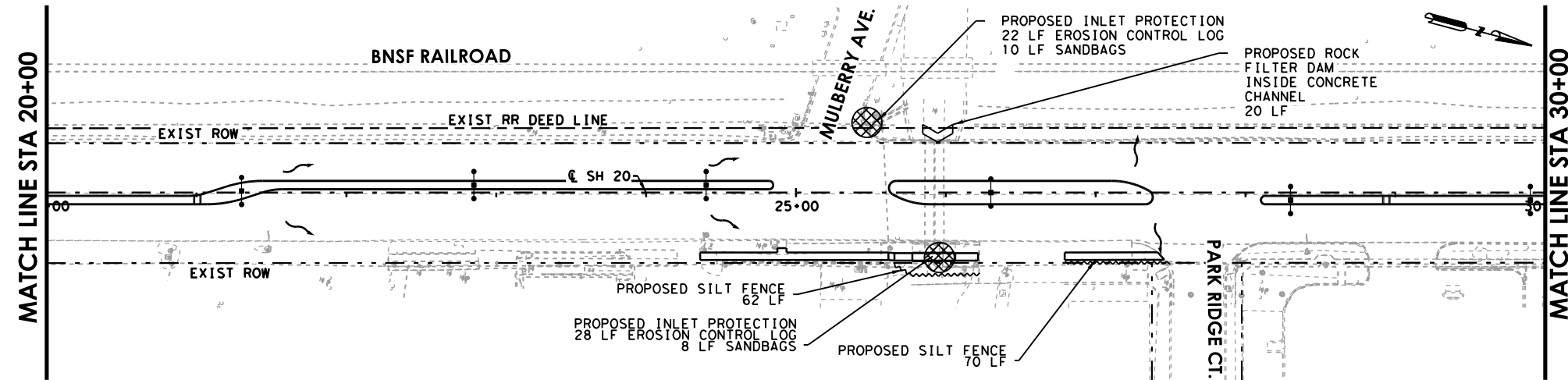
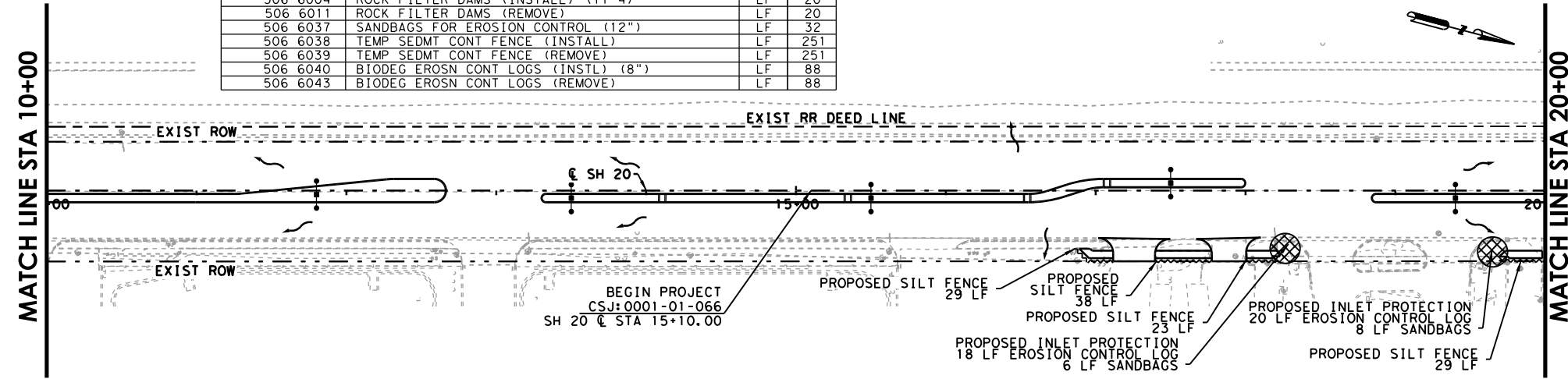
LEGEND

-  INLET PROTECTION
-  ROCK FILTER DAM
-  SILT FENCE
-  DIRECTION OF FLOW



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
506 6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	20
506 6011	ROCK FILTER DAMS (REMOVE)	LF	20
506 6037	SANDBAGS FOR EROSION CONTROL (12")	LF	32
506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	251
506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	251
506 6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	88
506 6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	88

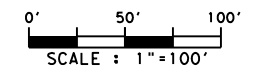


- NOTES:**
- REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION STAGES.
 - REFER TO ROADWAY PLAN FOR INLET LOCATIONS.
 - LOCATIONS FOR CONSTRUCTION EXITS TO BE VERIFIED BY ENGINEER IN THE FIELD.
 - ALL SWP3 MEASURES ARE TO BE PLACED WITHIN TXDOT RIGHT OF WAY AND AS SHOWN IN STANDARD EC(1)-16 THRU (3)-16 AND EC(9)-16.




Salvador Hernandez Jr.

4/30/2021



HNTB
HNTB Corporation
 The HNTB Companies
 Infrastructure Solutions
 Firm Registration Number 420

 **Texas Department of Transportation**

**SH 20
 DONIPHAN DR.**





**SWP3 LAYOUT
 BEGIN TO STA. 30+00**

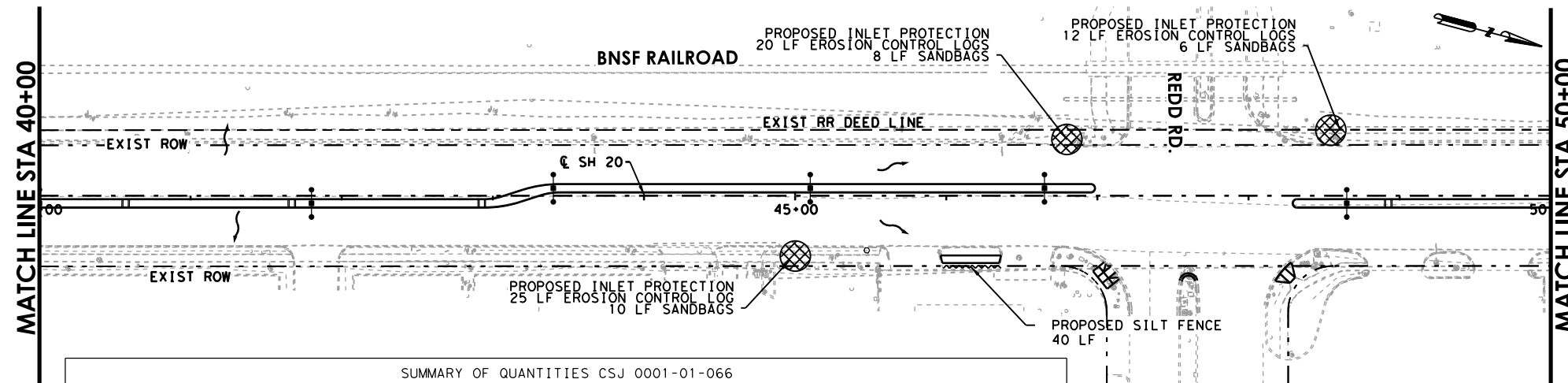
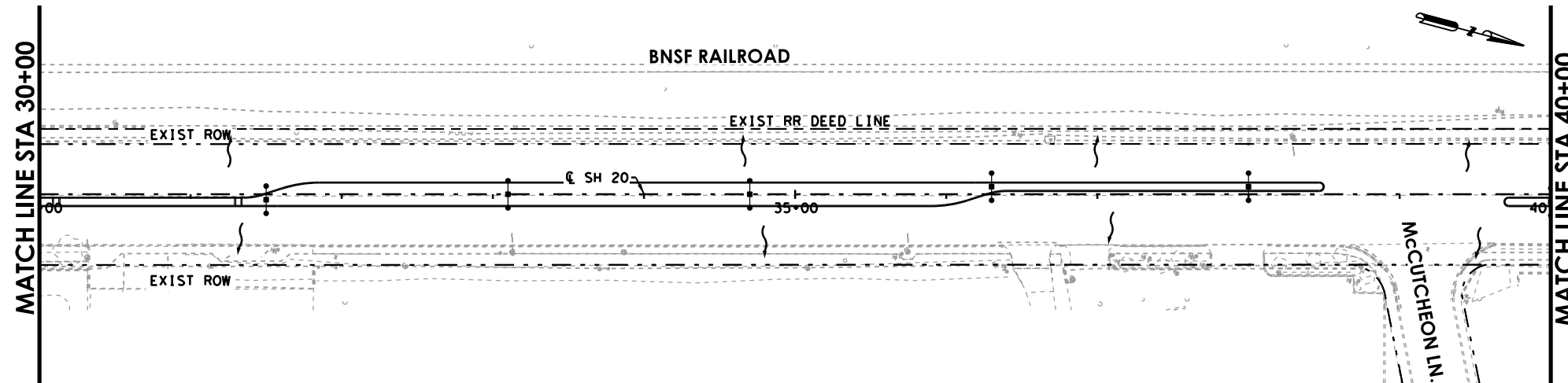
SHEET 1 OF 5

DESIGNED:	NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	278

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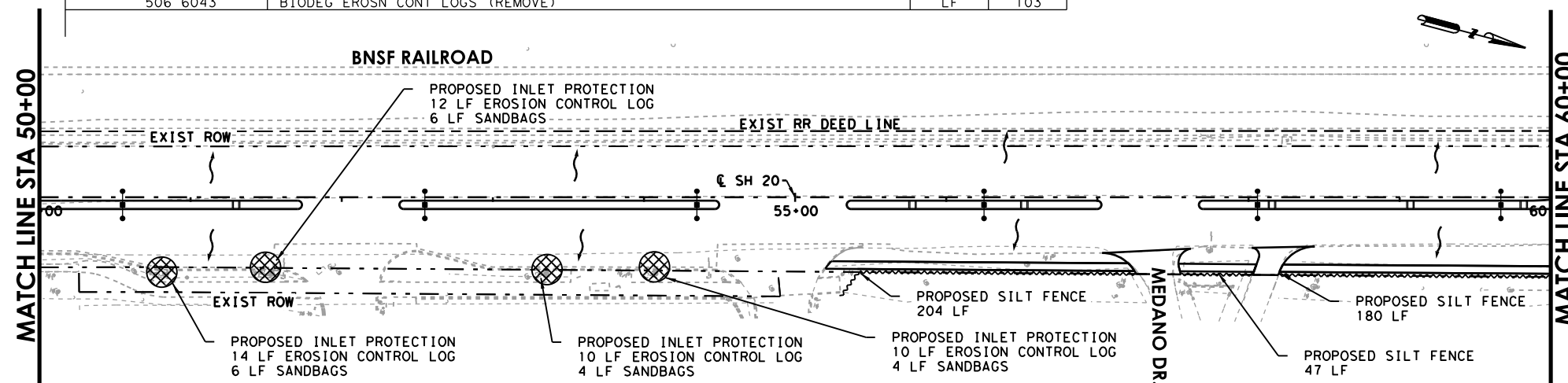
LEGEND

-  INLET PROTECTION
-  ROCK FILTER DAM
-  SILT FENCE
-  DIRECTION OF FLOW



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
506 6037	SANDBAGS FOR EROSION CONTROL (12")	LF	44
506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	471
506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	471
506 6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	103
506 6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	103

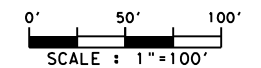


- NOTES:**
- REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION STAGES.
 - REFER TO ROADWAY PLAN FOR INLET LOCATIONS.
 - LOCATIONS FOR CONSTRUCTION EXITS TO BE VERIFIED BY ENGINEER IN THE FIELD.
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Salvador Hernandez Jr.

4/30/2021



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The HNTB Companies
Infrastructure Solutions
Firm Registration Number 420



**SH 20
DONIPHAN DR.**

SWP3 LAYOUT
STA. 30+00 TO STA. 60+00

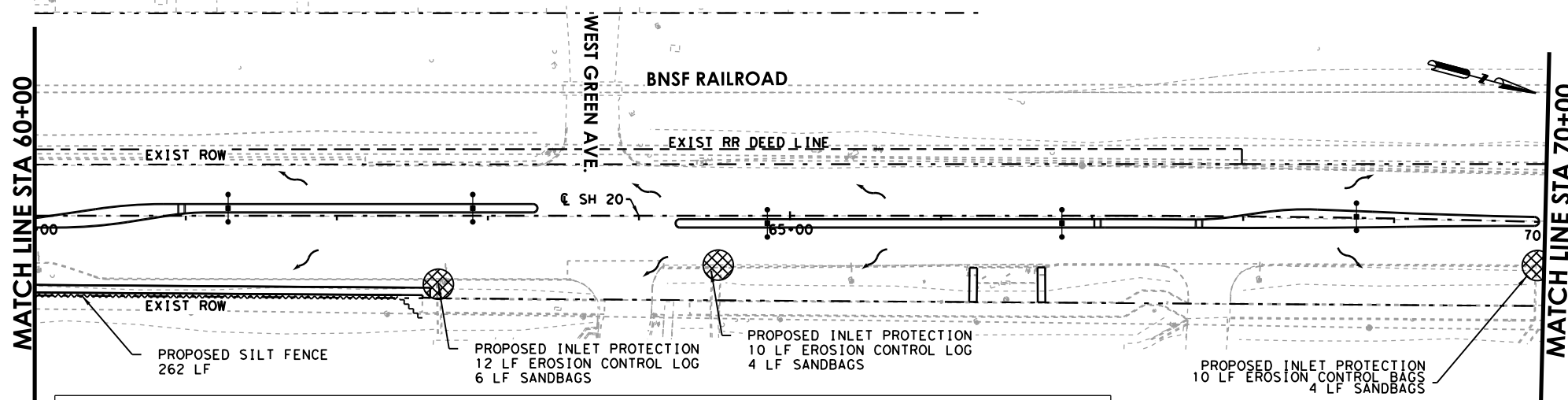
SHEET 2 OF 5

DESIGNED:	NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	279

4/30/2021

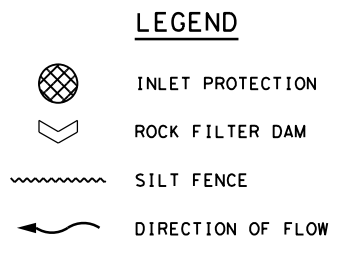
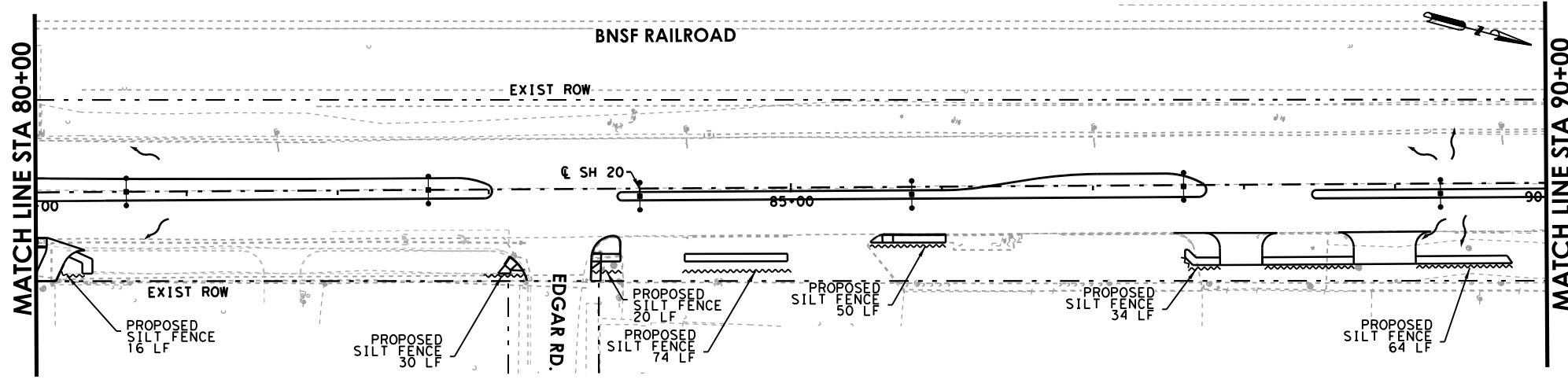
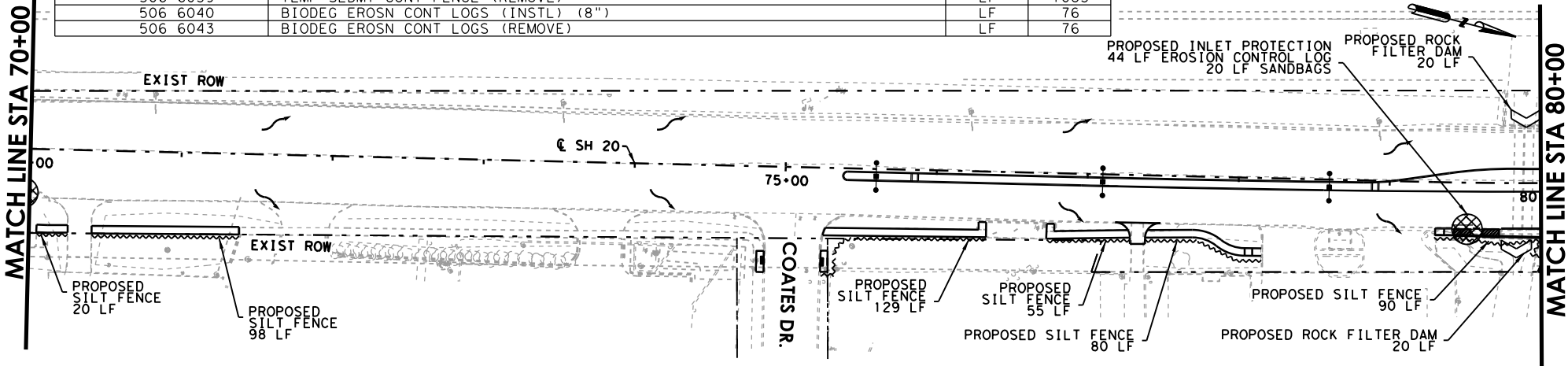
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SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
506 6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	20
506 6011	ROCK FILTER DAMS (REMOVE)	LF	20
506 6037	SANDBAGS FOR EROSION CONTROL (12")	LF	34
506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1083
506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1083
506 6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	76
506 6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	76

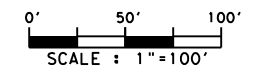


- NOTES:**
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Salvador Hernandez Jr.

4/30/2021



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 Firm Registration Number 420

Texas Department of Transportation

**SH 20
 DONIPHAN DR.**





SWP3 LAYOUT
 STA. 60+00 TO STA. 90+00

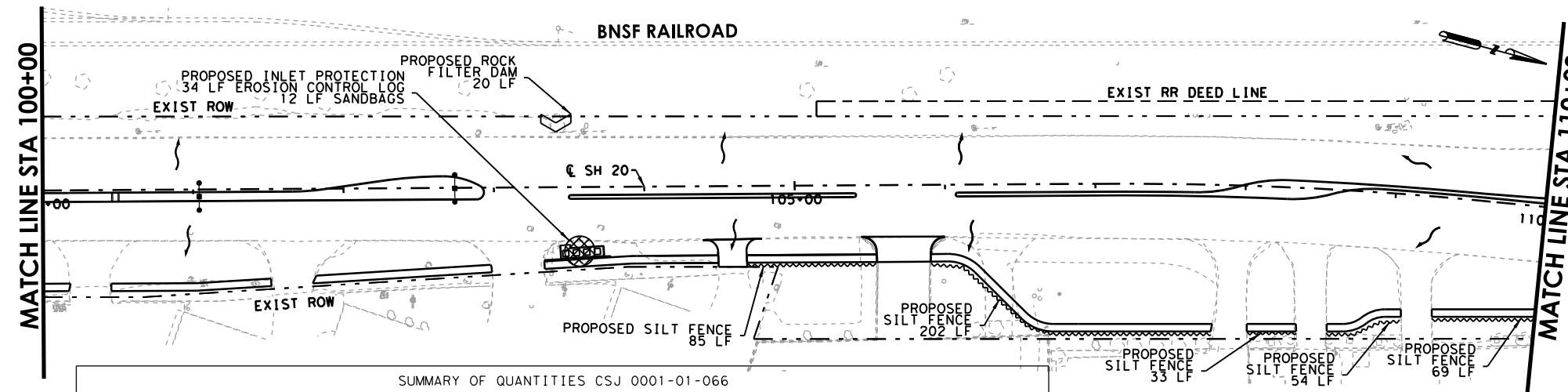
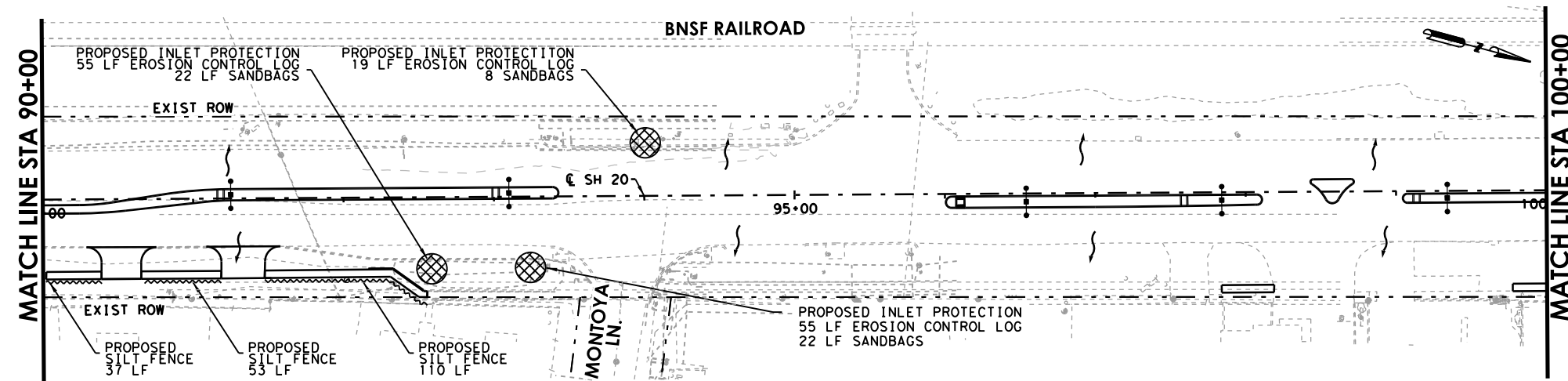
SHEET 3 OF 5

DESIGNED: NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	280

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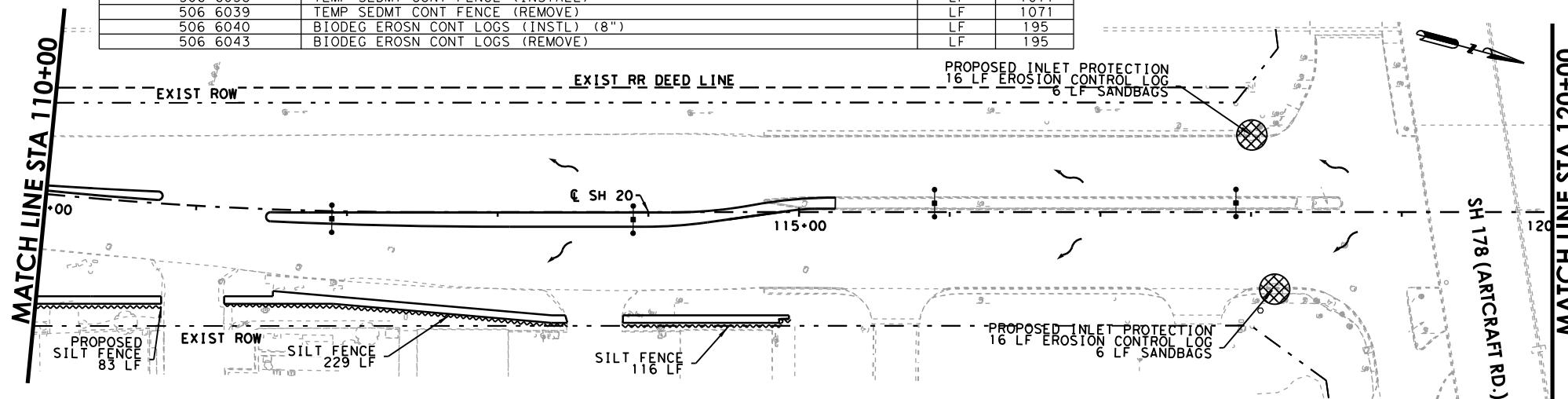
LEGEND

-  INLET PROTECTION
-  ROCK FILTER DAM
-  SILT FENCE
-  DIRECTION OF FLOW



SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
506 6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	20
506 6011	ROCK FILTER DAMS (REMOVE)	LF	20
506 6037	SANDBAGS FOR EROSION CONTROL (12")	LF	76
506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1071
506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1071
506 6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	195
506 6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	195

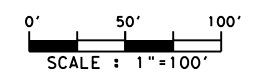


- NOTES:**
- REFER TO TRAFFIC CONTROL PLANS FOR CONSTRUCTION STAGES.
 - REFER TO ROADWAY PLAN FOR INLET LOCATIONS.
 - LOCATIONS FOR CONSTRUCTION EXITS TO BE VERIFIED BY ENGINEER IN THE FIELD.
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Salvador Hernandez Jr.

4/30/2021



**SH 20
DONIPHAN DR.**

SWP3 LAYOUT
STA. 90+00 TO STA. 120+00

SHEET 4 OF 5





DESIGNED:	NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED:	SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN:	AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED:	SH	0001	01	063, ETC.	281

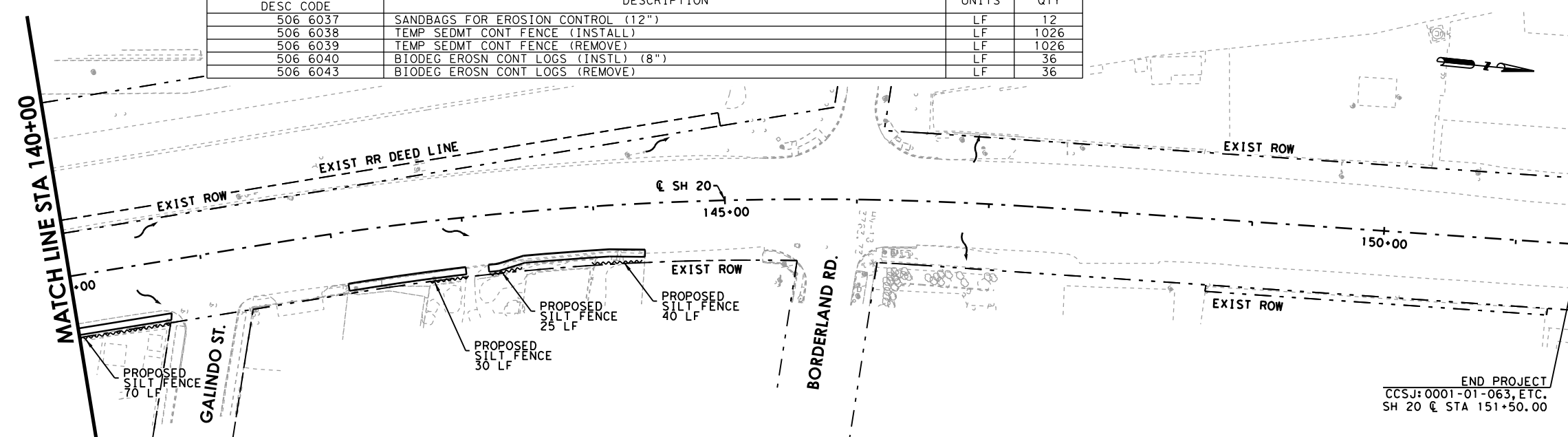
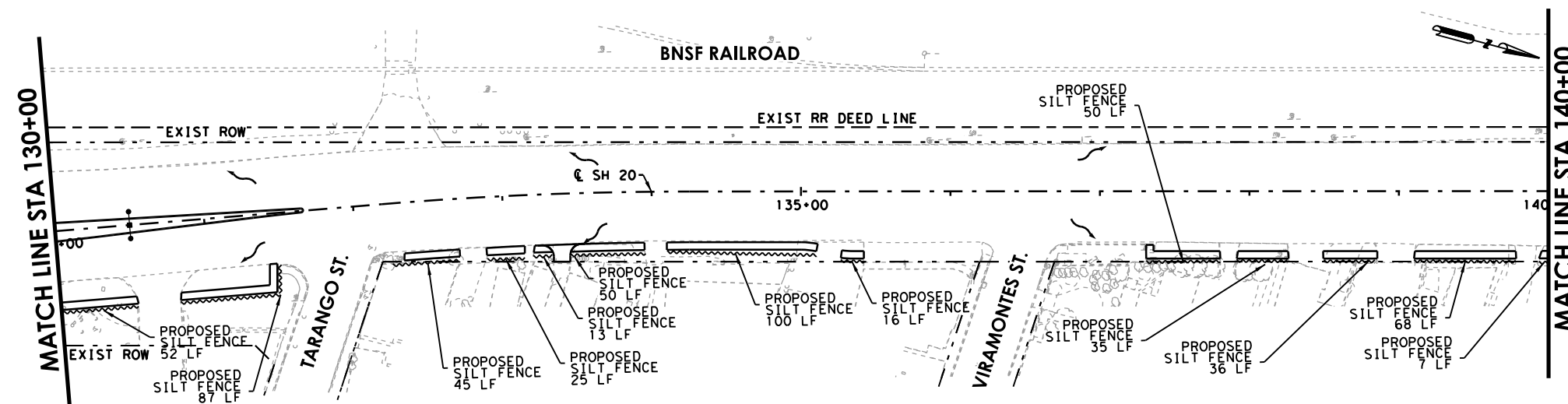
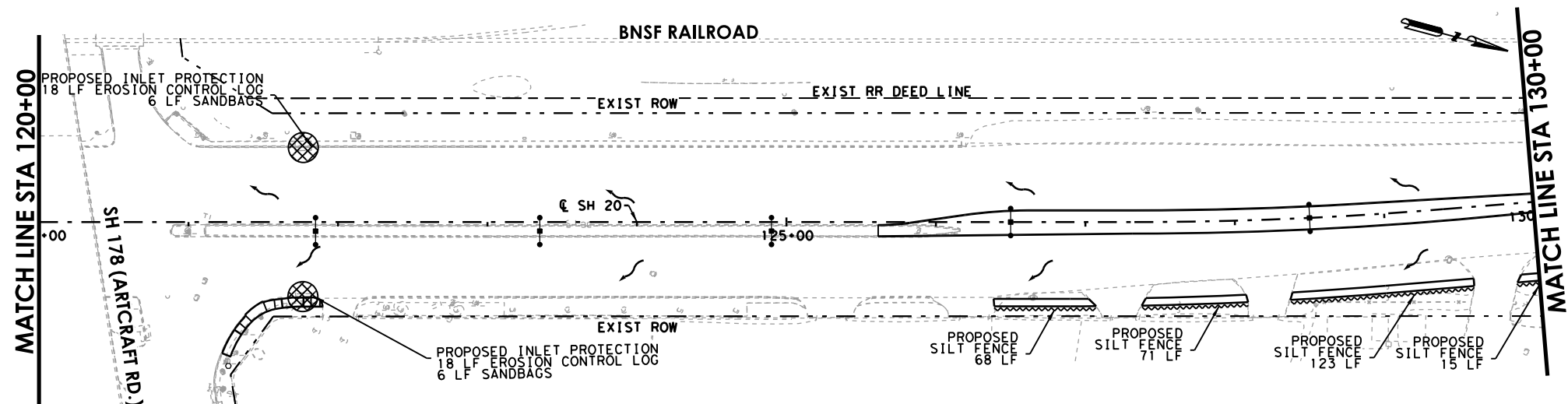
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LEGEND

-  INLET PROTECTION
-  ROCK FILTER DAM
-  SILT FENCE
-  DIRECTION OF FLOW



- NOTES:**
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Salvador Hernandez Jr.


4/30/2021

SUMMARY OF QUANTITIES CSJ 0001-01-066

BID ITEM & DESC CODE	DESCRIPTION	UNITS	QTY
506 6037	SANDBAGS FOR EROSION CONTROL (12")	LF	12
506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1026
506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1026
506 6040	BIODEG EROSN CONT LOGS (INSL) (8")	LF	36
506 6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	36



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**SH 20
 DONIPHAN DR.**

SWP3 LAYOUT
 STA. 120+00 TO STA. 151+50

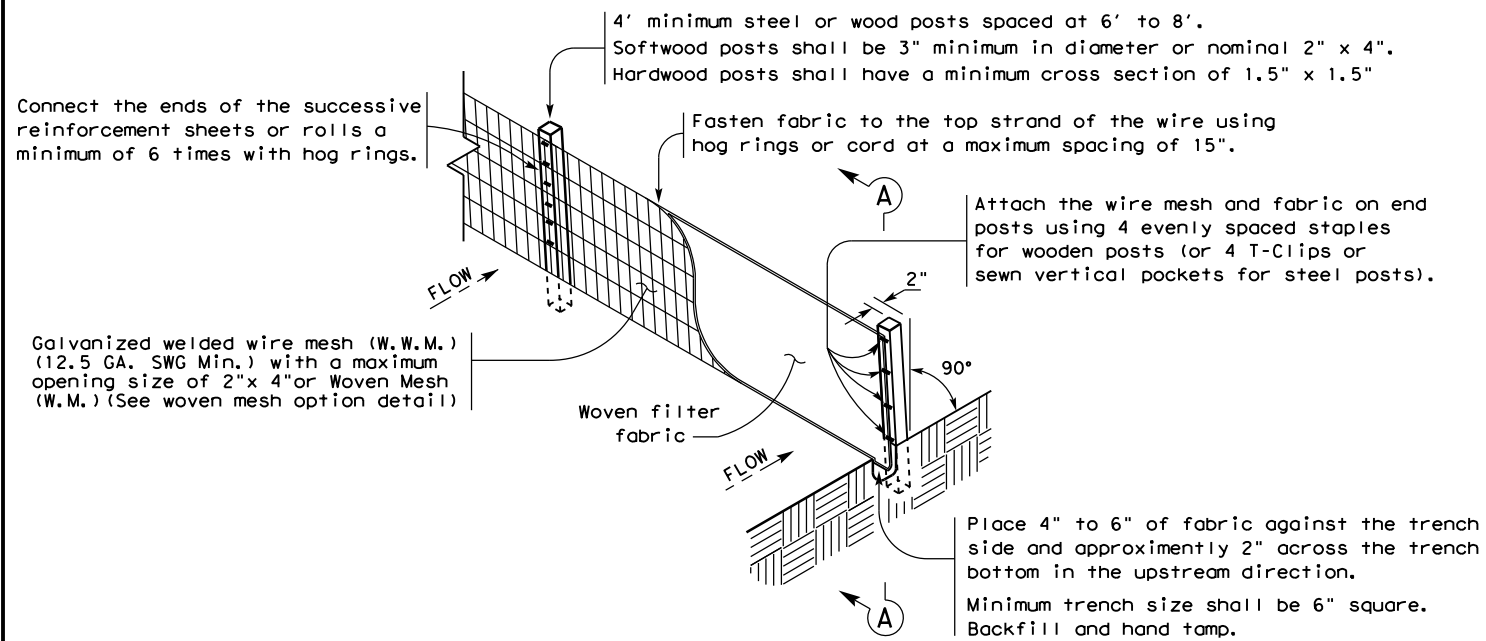
SHEET 5 OF 5

DESIGNED: NR	STATE	DISTRICT	COUNTY	HWY NUMBER
CHECKED: SH	TEXAS	EL PASO	EL PASO	SH 20
DRAWN: AM	CONTROL	SECTION	JOB	SHEET NUMBER
CHECKED: SH	0001	01	063, ETC.	282

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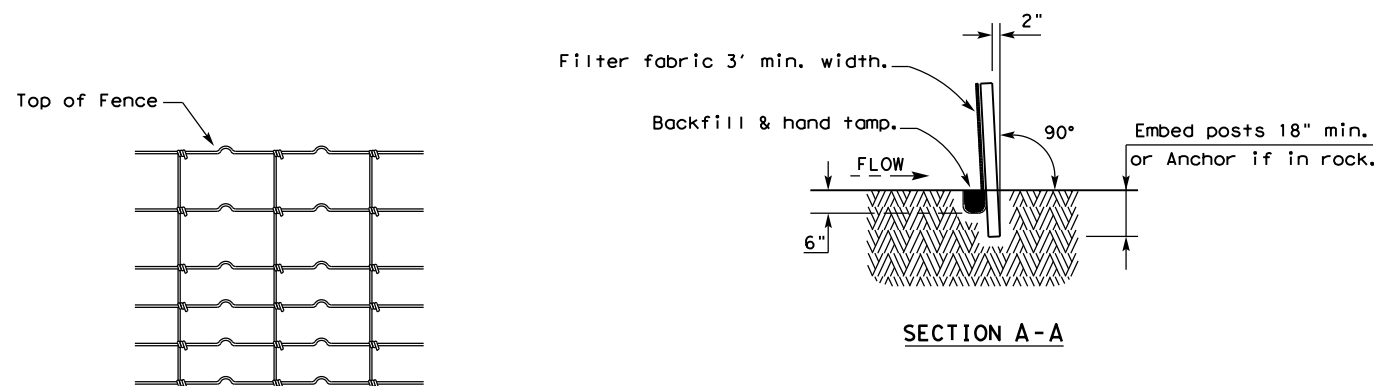
DISCLAIMER: This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE
FILE



TEMPORARY SEDIMENT CONTROL FENCE

SCF



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/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

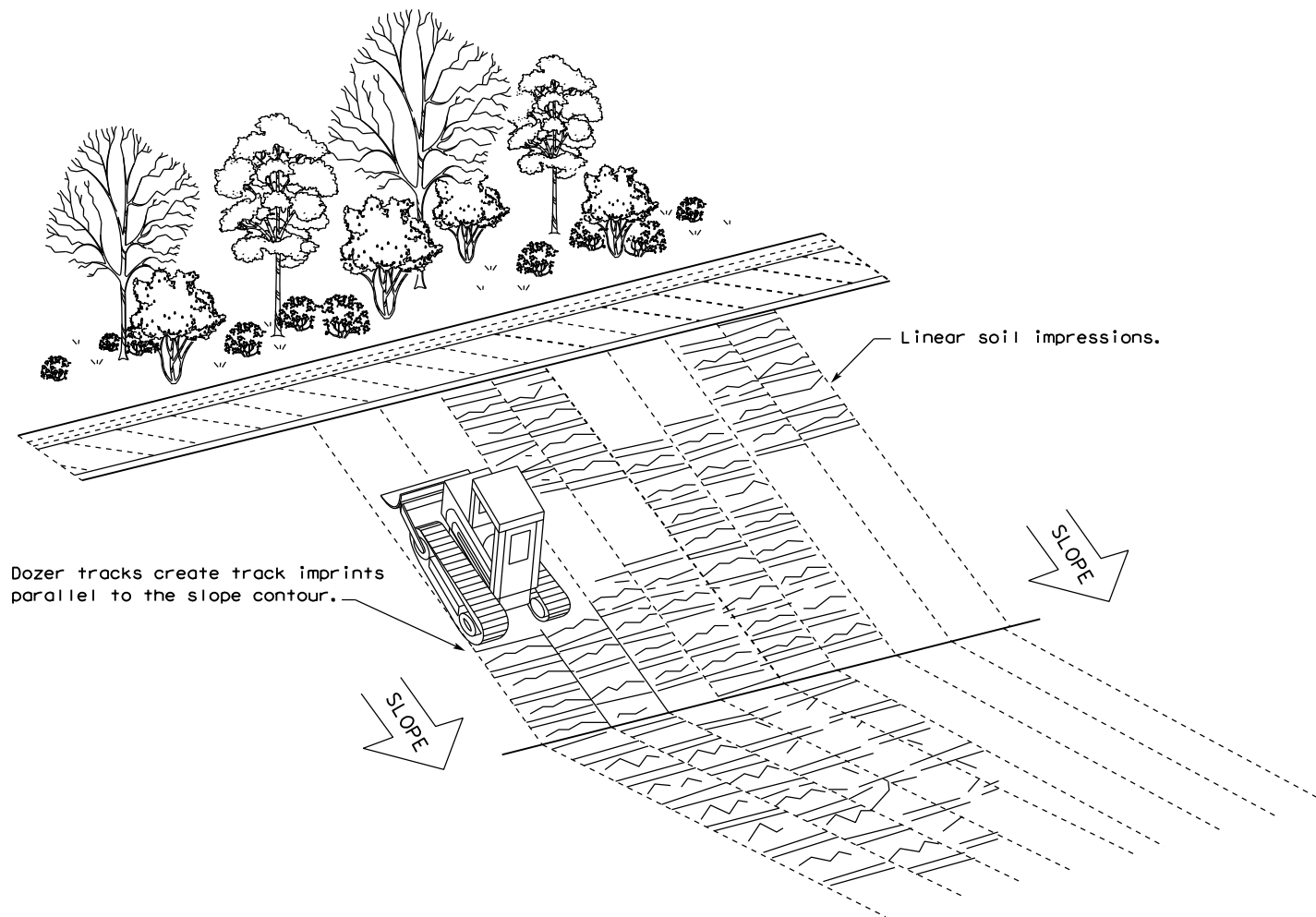
LEGEND

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 continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

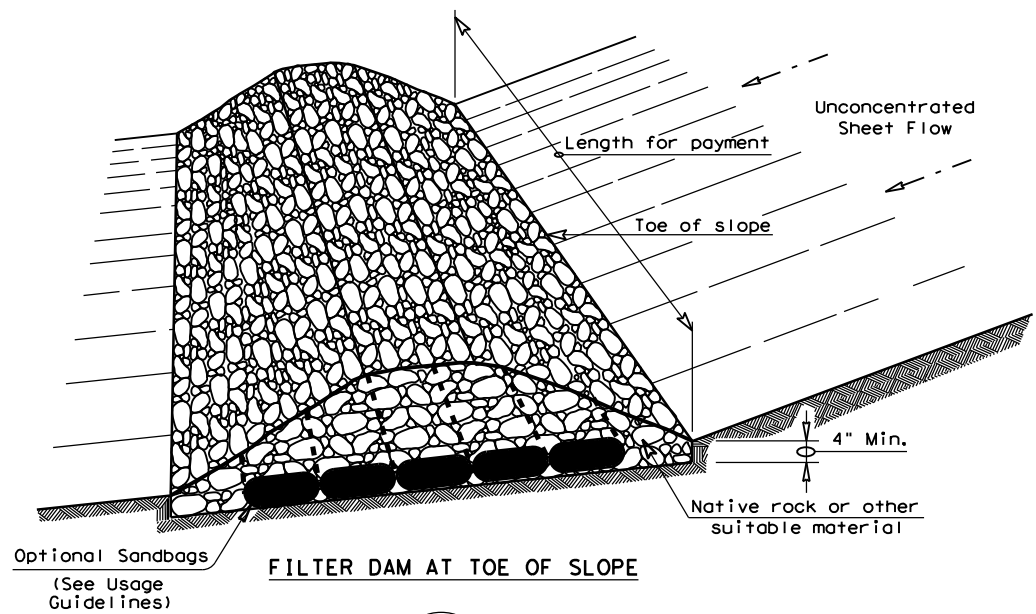


TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0001	01	063, ETC.	SH 20
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		283

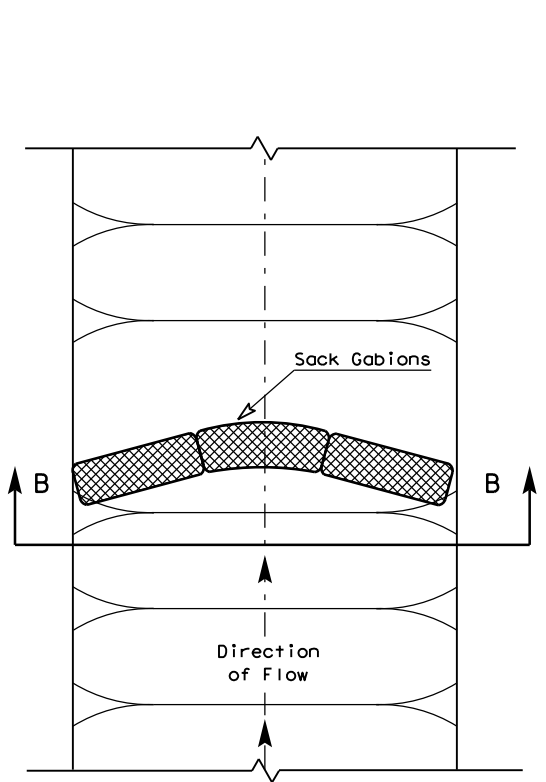
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

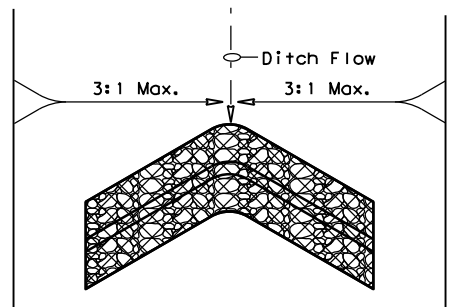


FILTER DAM AT TOE OF SLOPE

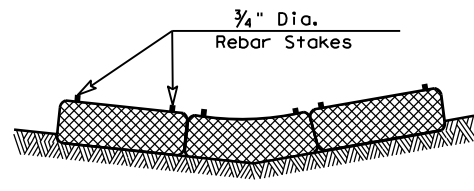
(RFD1)



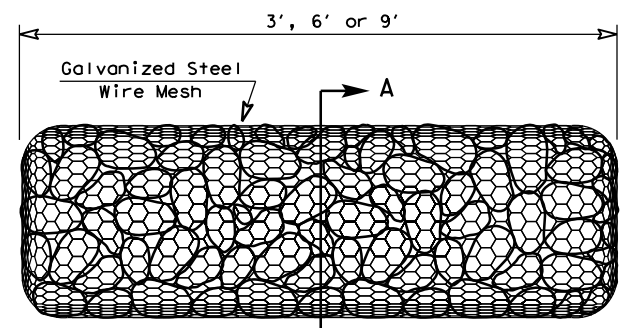
PLAN VIEW



"V" SHAPE PLAN VIEW

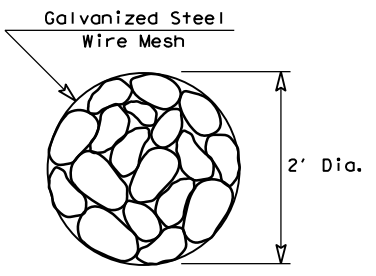


SECTION B-B

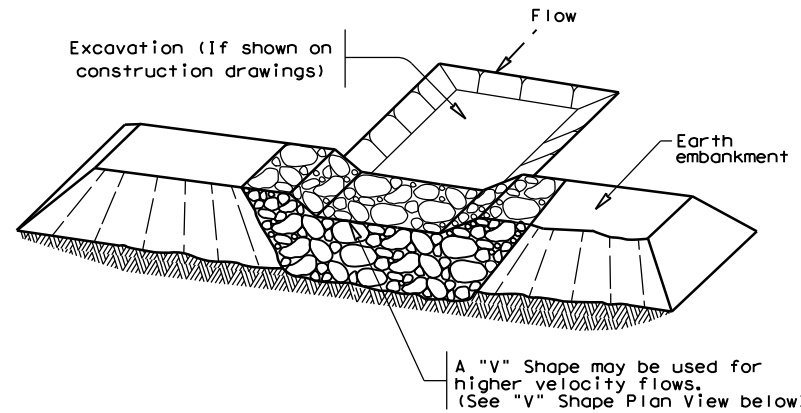


TYPE 4 (SACK GABIONS)

(RFD4)

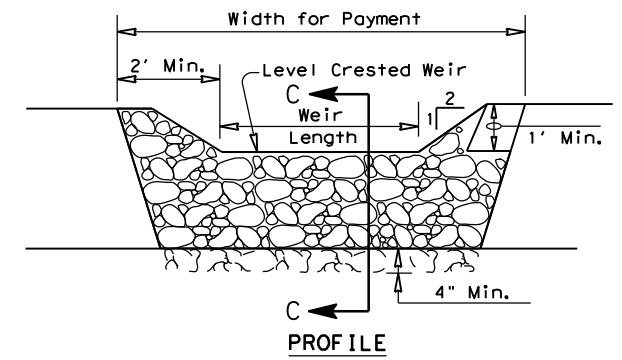


SECTION A-A

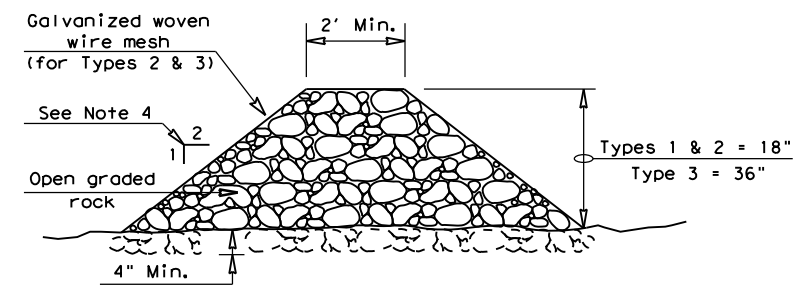


FILTER DAM AT SEDIMENT TRAP

(RFD1) OR (RFD2)



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

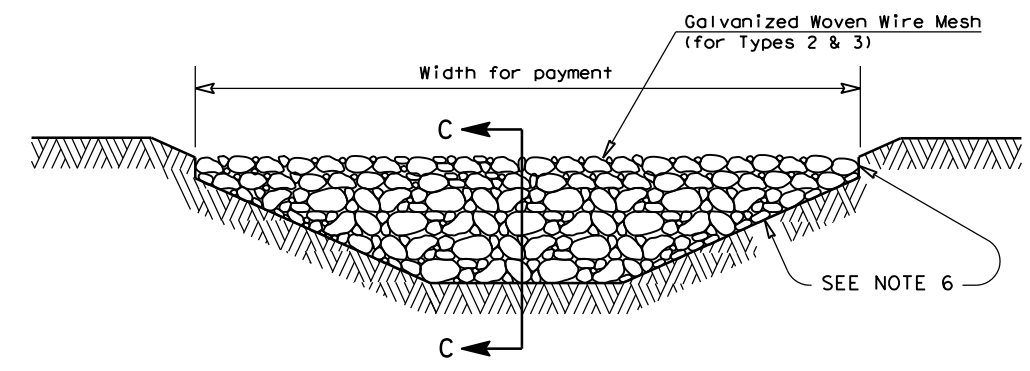
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.



FILTER DAM AT CHANNEL SECTIONS

(RFD1) OR (RFD2) OR (RFD3)

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

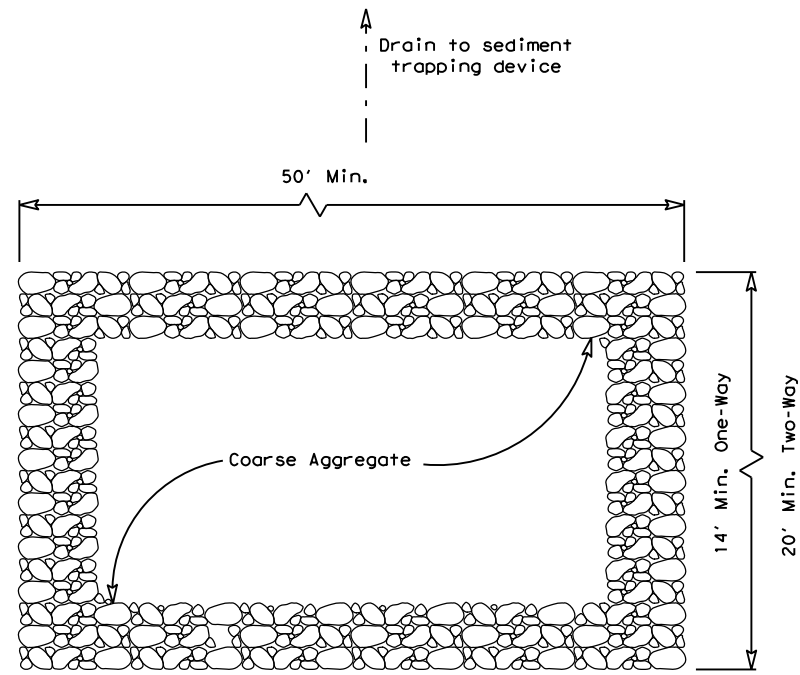
PLAN SHEET LEGEND

- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

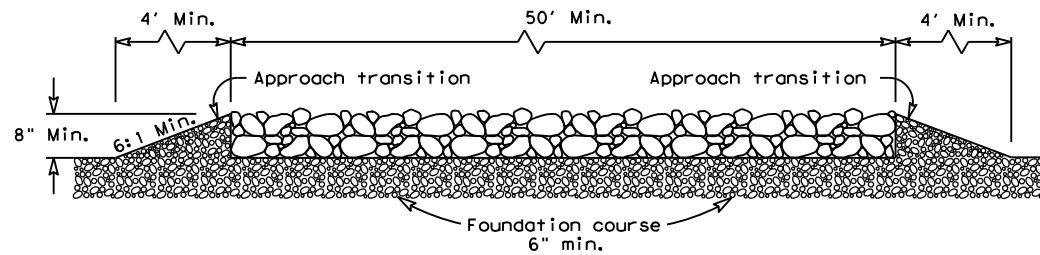
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC (2) - 16			
FILE: ec216	DN: TxDOT	CK: KM	DN: VP
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0001	01	063, ETC.
	DIST	COUNTY	SHEET NO.
	ELP	EL PASO	284

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DATE: 4/30/2021
 FILE: ec316.dgn



PLAN VIEW

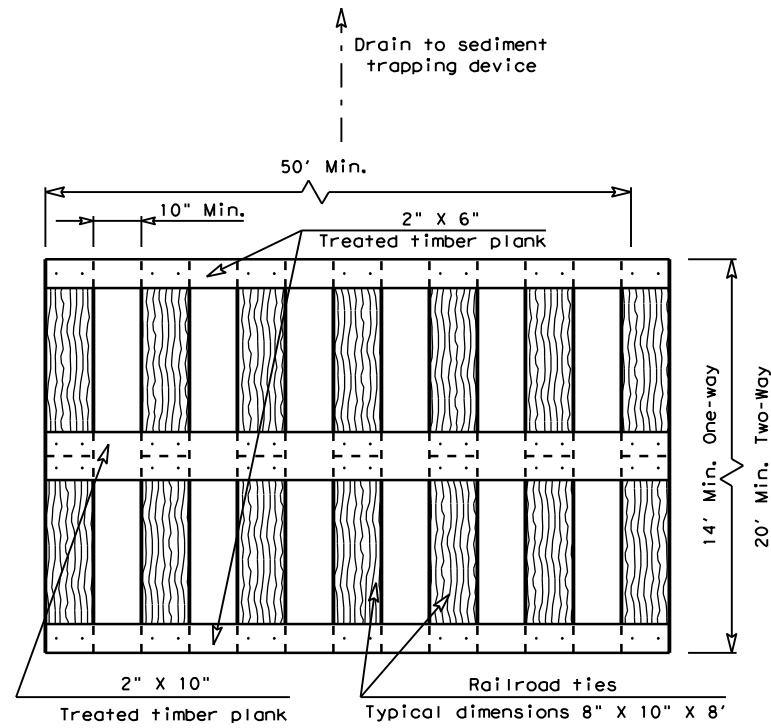


ELEVATION VIEW

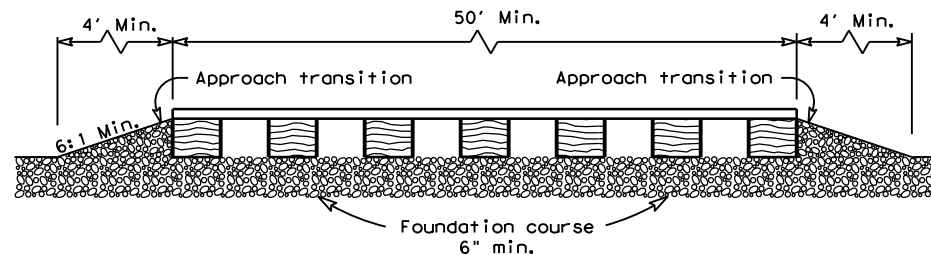
CONSTRUCTION EXIT (TYPE 1)
 ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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.



PLAN VIEW

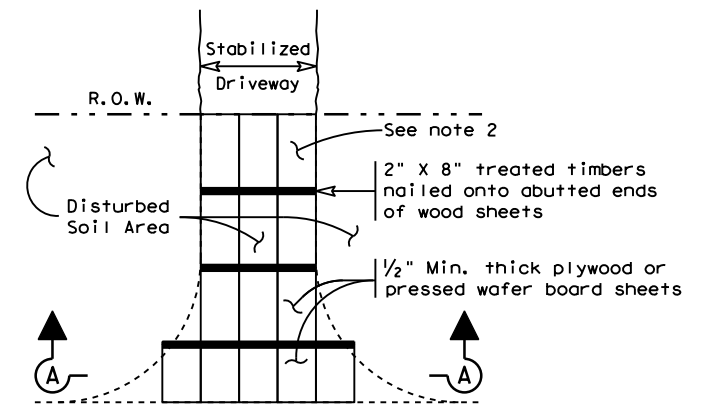


ELEVATION VIEW

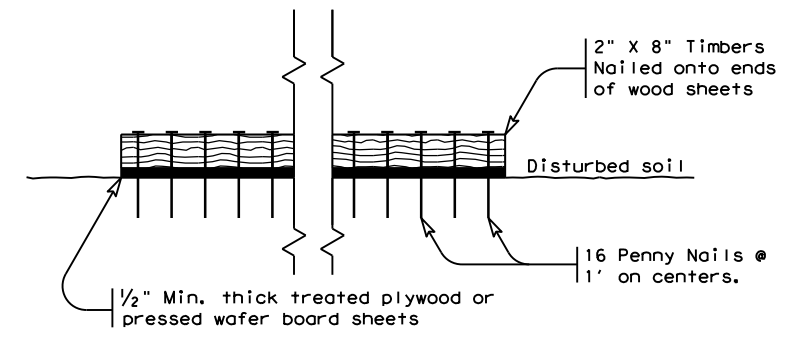
CONSTRUCTION EXIT (TYPE 2)
 TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- 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.



PLAN VIEW



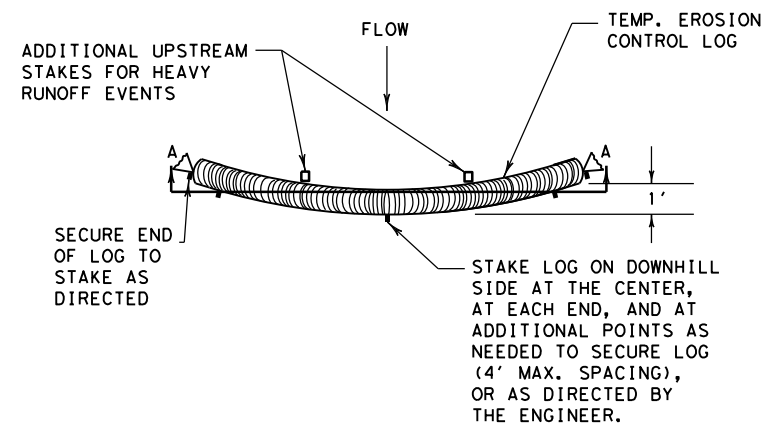
SECTION A-A
 CONSTRUCTION EXIT (TYPE 3)
 SHORT TERM

GENERAL NOTES (TYPE 3)

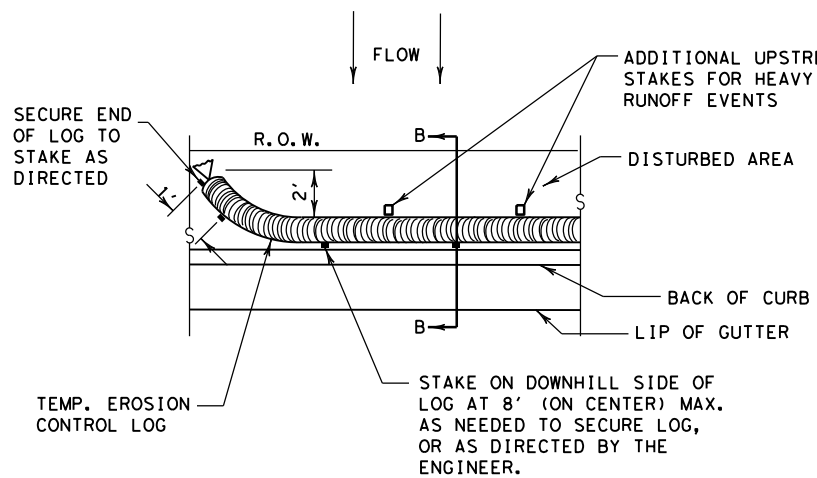
- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
- The treated timber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

		<i>Design Division Standard</i>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES CONSTRUCTION EXITS EC(3)-16			
FILE: ec316	DN: IxDOT	CK: KM	DN: VP
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0001 01	063, ETC.	SH 20
	DIST	COUNTY	SHEET NO.
	ELP	EL PASO	285

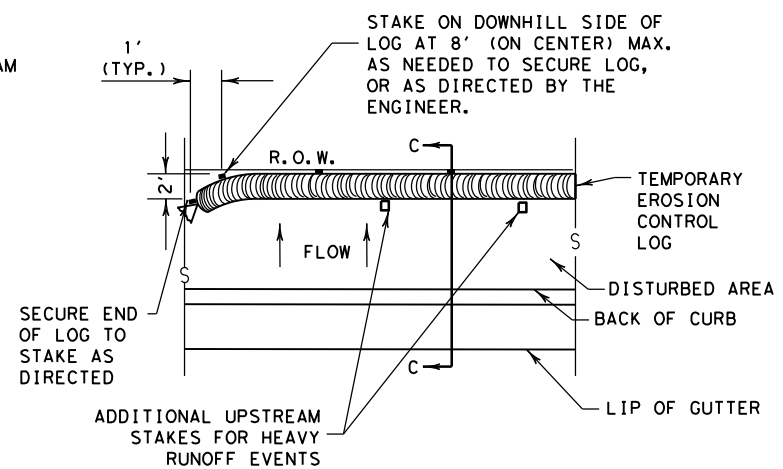
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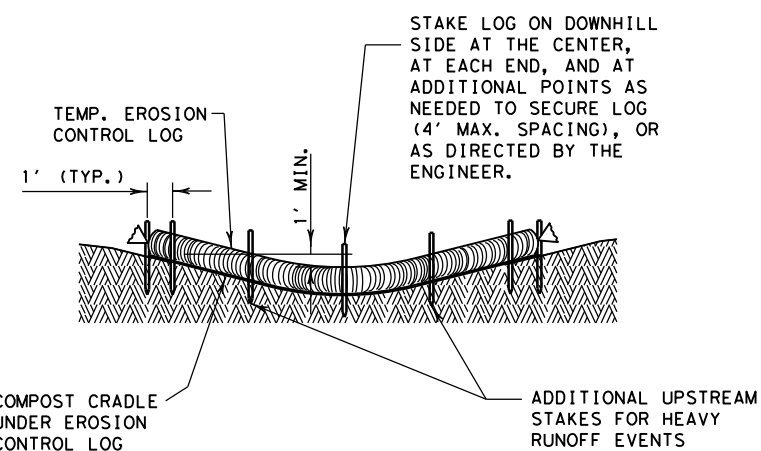
PLAN VIEW



PLAN VIEW



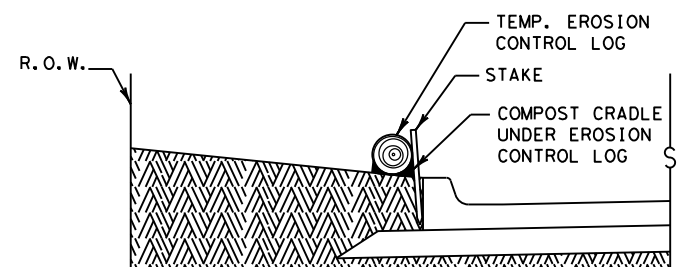
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

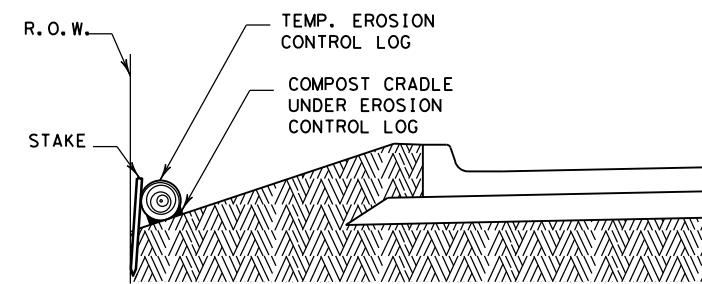
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

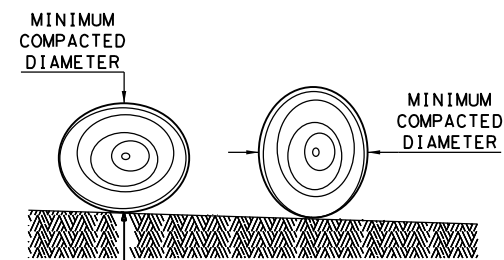
CL-BOC



SECTION C-C

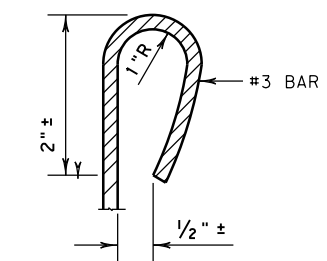
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- LEGEND
- CL-D EROSION CONTROL LOG DAM
 - CL-BOC EROSION CONTROL LOG AT BACK OF CURB
 - CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
 - CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
 - CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
 - CL-DI EROSION CONTROL LOG AT DROP INLET
 - CL-CI EROSION CONTROL LOG AT CURB INLET
 - CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

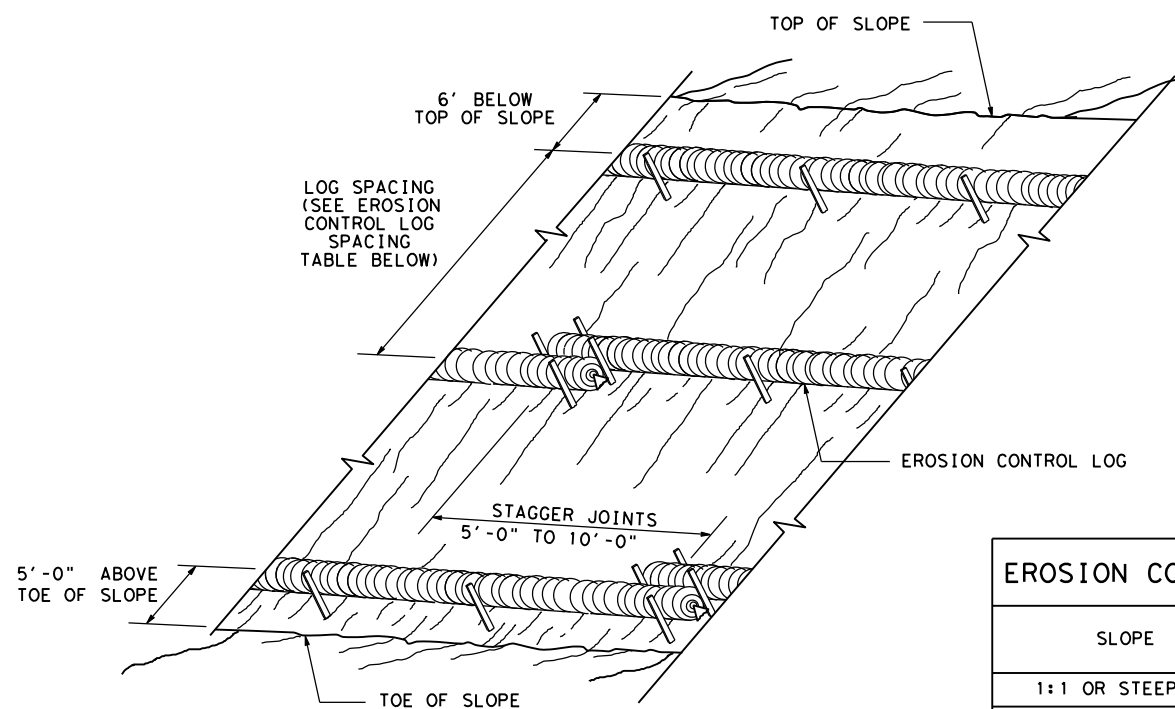
SHEET 1 OF 3

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES			
EROSION CONTROL LOG			
EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DN: LS/PT
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REVISIONS	0001	01	063, ETC.
	DIST	COUNTY	SHEET NO.
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DATE: FILE:

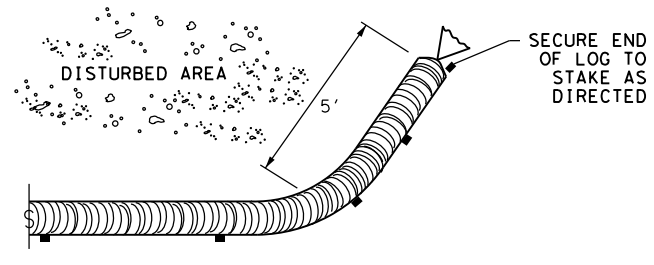
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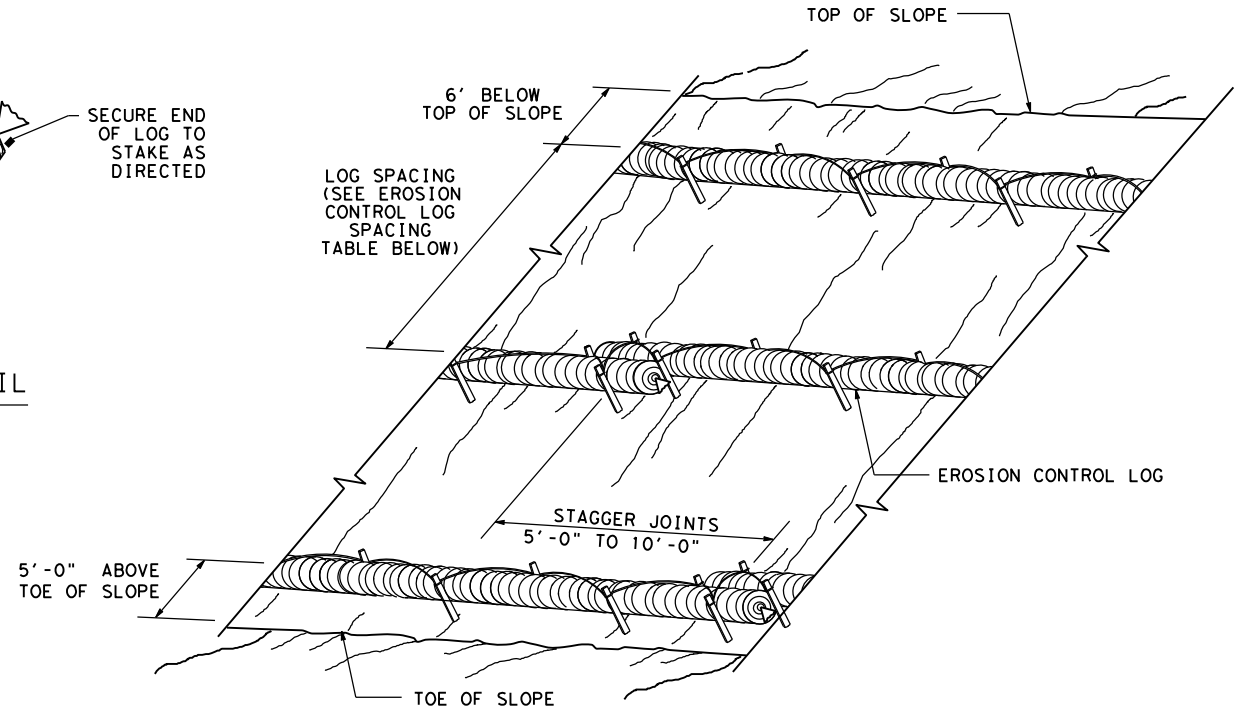


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

CL-SST



END SECTION RAP DETAIL

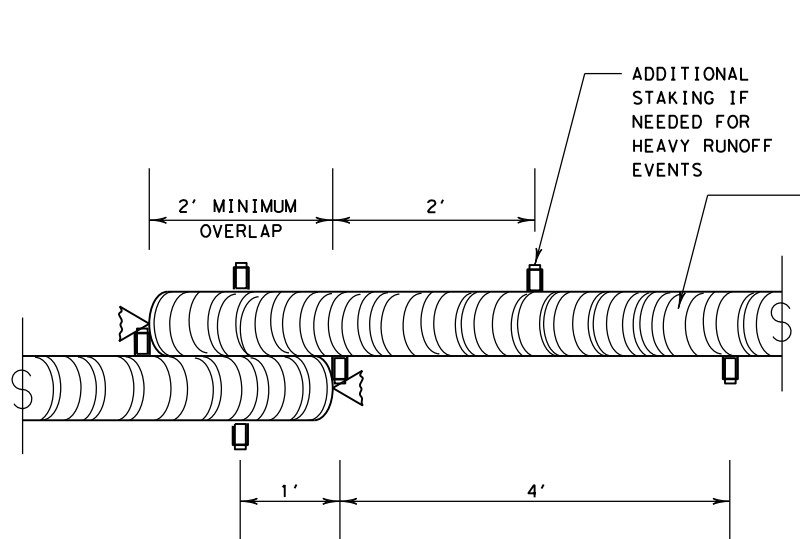


EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

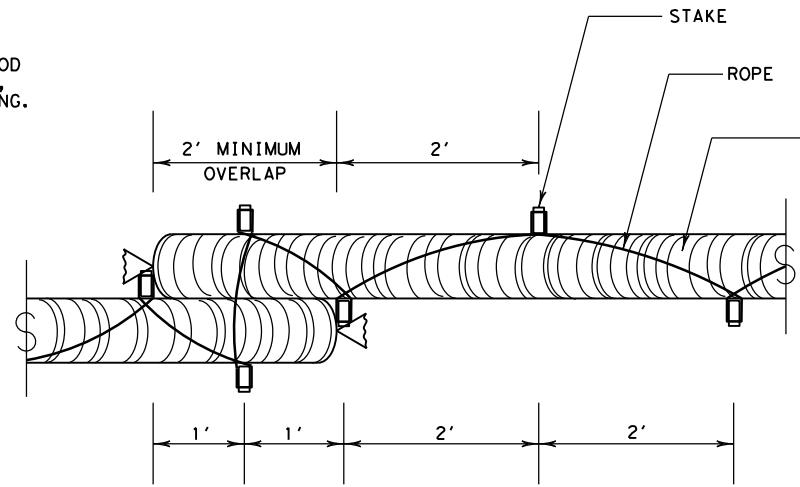
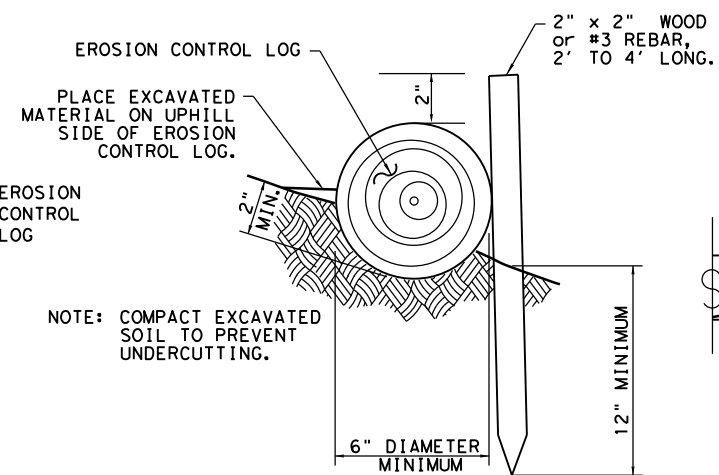
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

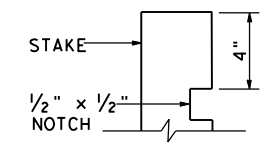


STAKE AND LASHING ANCHORING DETAIL

CL-SSL

LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

TRENCH DEPTH TABLE

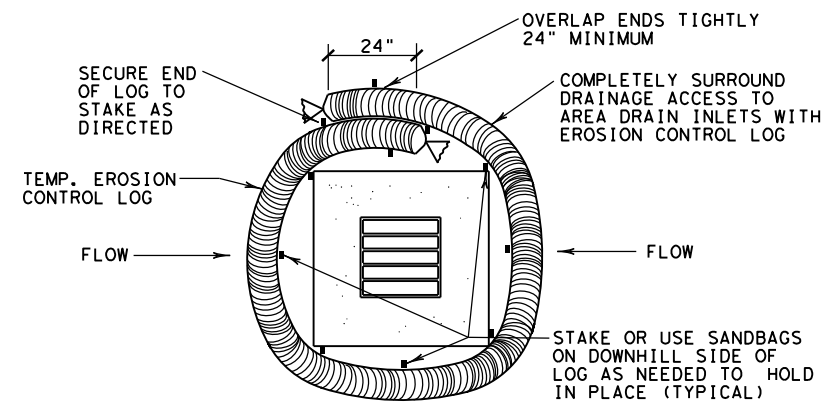


STAKE NOTCH DETAIL

SHEET 2 OF 3

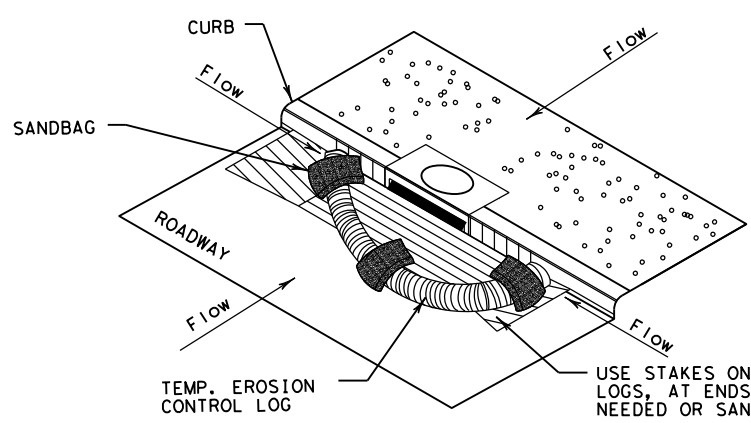
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0001 01	063, ETC.	SH 20
DIST	COUNTY	SHEET NO.	
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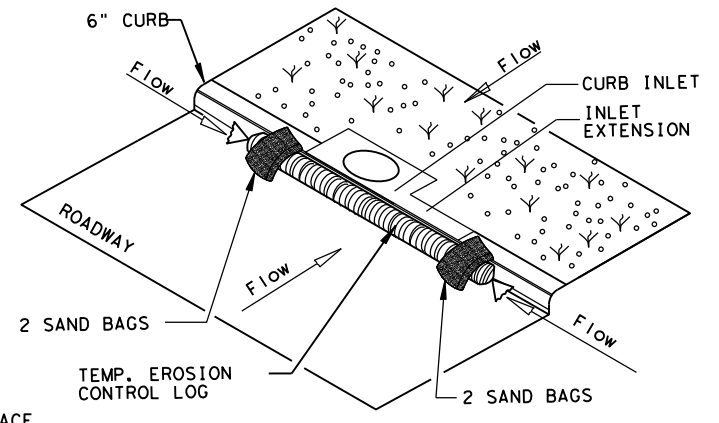
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

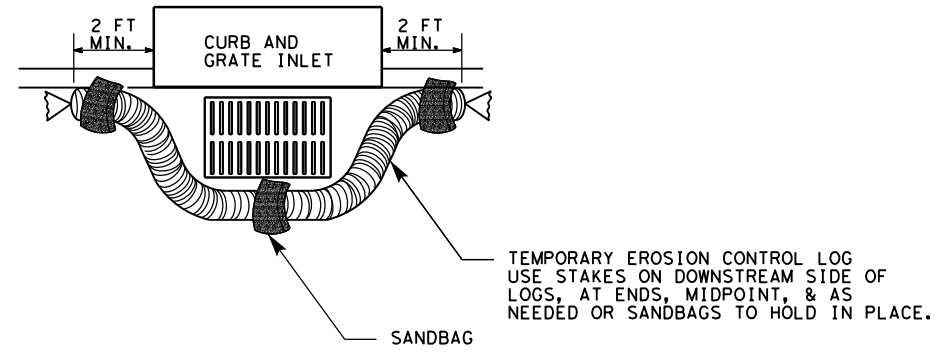
CL-CI



EROSION CONTROL LOG AT CURB INLET

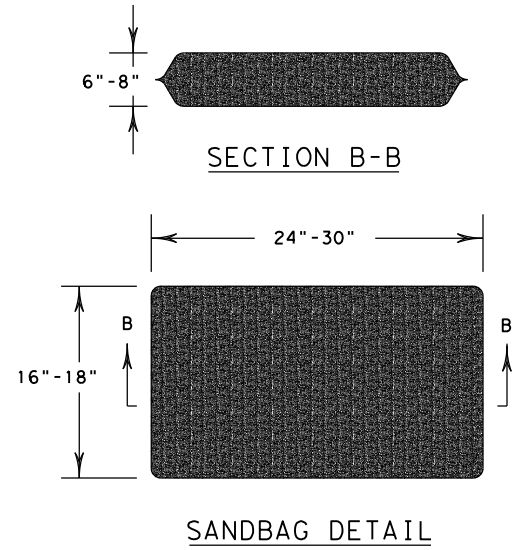
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SHEET 3 OF 3

		<i>Design Division Standard</i>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0001	01	063, ETC.
	DIST	COUNTY	SHEET NO.
	ELP	EL PASO	288

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DATE: _____
 FILE: _____

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: WORK IS PARALLEL TO TRACKS AND NOT AT CROSSINGS
 Crossing Type: ** WORK IS PARALLEL TO TRACKS AND NOT AT CROSSINGS
 RR Company Owning Track at Crossing: BNSF
 Operating RR Company at Track: BNSF
 RR MP: FROM MP 1144.23 TO MP 1146.92
 RR Subdivision: EL PASO
 City: EL PASO
 County: EL PASO
 CSJ at this Crossing: 0001-01-063
 Highway/Roadway name crossing the railroad: SH 20 (DONIPHAN AVE)
 # of regularly scheduled trains per day at this crossing: 8
 # of switching movements per day at this crossing: 0
 % of estimated contract cost of work within railroad ROW: < 5%

Scope of Work at this Crossing to Be Performed by State Contractor:
Existing illumination pole removal within RR ROW deed line

Scope of Work at this Crossing to Be Performed by Railroad Company:
N/A

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

N/A

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 10

On this project, night or weekend flagging is:

- Expected
 Not Expected

Flagging services will be provided by:

Railroad Company: TxDOT will pay flagging invoices

Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30 day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

- UPRR - UP.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 BNSF - BNSF.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 KCS - KCS.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 - Bottom Line On-Track Safety Services
 bottomline076@aol.com, 903-767-7630

OTHERS _____

Contractor must incorporate Construction Inspection into anticipated construction schedule.

Not Required

Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

- Required
 Not Required

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	\$500,000 / \$500,000 / \$500,000
Commercial General Liability	\$2,000,000 / \$4,000,000
Business Automobile	\$2,000,000 combined single limit
Railroad Protective Liability	
<input type="checkbox"/> Not Required	
<input checked="" type="checkbox"/> Non - Bridge Projects	\$2,000,000 / \$6,000,000
<input type="checkbox"/> Bridge Projects	\$5,000,000 / \$10,000,000
<input type="checkbox"/> Other	

VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:

- Not Required
 Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)
 Required: Contractor to obtain (see Item 5, Article 8.4)

With the following railroad companies: BNSF

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

<http://www.txdot.gov/inside-txdot/division/rail/samples.html>

Approved ROE Agreement templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed ROE agreement between the Contractor and the Railroad if required on project.

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

- Not Required
 Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
 Call BNSF
 Railroad Emergency Line at (800)-832-5452
 Location: Non-Crossing Related
 RR Milepost FROM 1144.23 TO 1146.92
 Subdivision El Paso



4/30/2021

				Rail Division	
RAILROAD SCOPE OF WORK PROJECT SPECIFIC DETAILS					
FILE:	RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
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3/2020	REVISIONS	0001	01	063, ETC	SH 20
		DIST	COUNTY	SHEET NO.	
		ELP	EL PASO	289	

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

- A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.
- B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.
- C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.
- D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.
- E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.
- F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.
- G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

- A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.
- B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.
- C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:
 - 1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.
 - 2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

- A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.
- B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.
- C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.
- D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
 - 1. Exactly what the work entails.
 - 2. The days and hours that work will be performed.
 - 3. The exact location of work, and proximity to the tracks.
 - 4. The type of window requested and the amount of time requested.
 - 5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.
- E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

- A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."
- B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.



3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
 A. 15' - 0" (BNSF) (UPRR) and 14' - 0" (KCS) horizontal from centerline of track
 B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

- A. Maintain minimum track clearances during construction as specified in Section 3.07.
- B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.
- C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

			
<p>RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS</p>			
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS March 2020	0001	01	063, ETC.
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3.09 MAINTENANCE OF RAILROAD FACILITIES

- A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.
- B. Perform all such maintenance and repair of damages due to the Contractor's operations at Contractor's expense.
- C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD'S DESIGNATED REPRESENTATIVE

- A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
 1. Pre-construction meetings.
 2. Pile driving/drilling of caissons or drilled shafts.
 3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
 4. Erection of precast concrete or steel bridge superstructure.
 5. Placement of waterproofing (prior to placing ballast on bridge deck).
 6. Completion of the bridge structure.
- B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.
- C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

- A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
- B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.
- C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.
- D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.
- E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

- A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".
- B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

UPRR 1-800-336-9193
7:00 AM to 9:00 PM CST Monday-Friday except holidays,
staffed 24 hrs/day for emergencies
48 hrs notice required

BNSF 1-800-533-2891
24 hour number
5 working days notice required

KCS 1-800-344-8377
Texas One Call, a 24 hour number
48 hrs notice required, excluding weekends and holidays

If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

- C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.



RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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March 2020	DIST	COUNTY		SHEET NO.
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