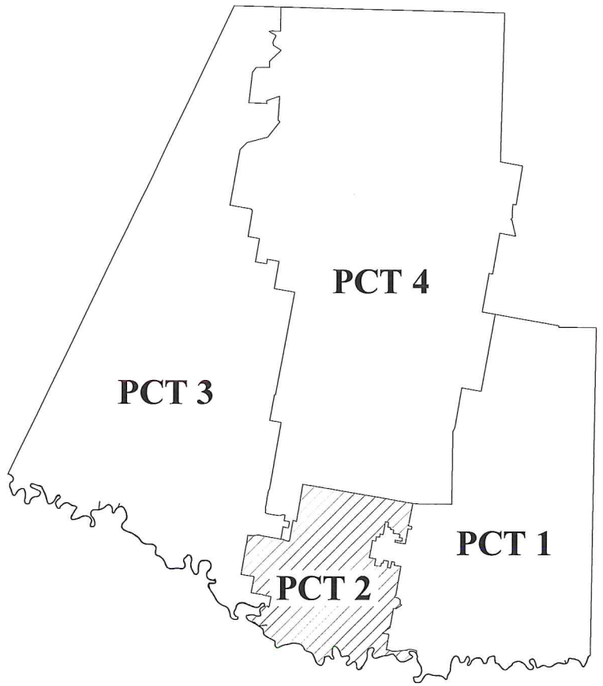


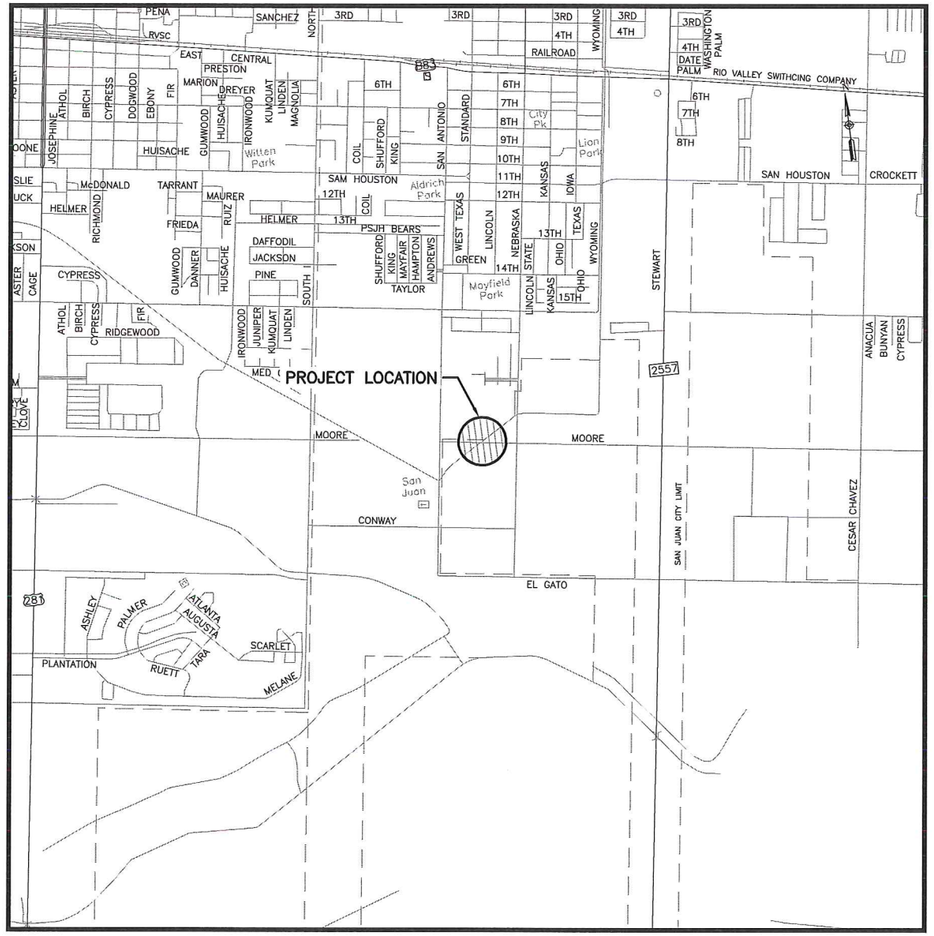
JUDGE RAMON GARCIA
CHAIRMAN OF THE BOARD

COMMISSIONER DAVID L. FUENTES
BOARD MEMBER

COMMISSIONER EDUARDO "EDDIE" CANTU
BOARD MEMBER

COMMISSIONER JOE M. FLORES
BOARD MEMBER

COMMISSIONER JOSEPH PALACIOS
BOARD MEMBER



LOCATION MAP - SCALE: 1"=3000'

MOORE ROAD

POSTED SPEED:
MOORE: 35 MPH

EXCEPTIONS:
NONE

RAILROAD CROSSING:
NONE

EQUATIONS:
NONE

EXCEPTIONS:
URBAN COLLECTOR

EXCEPTIONS:
NONE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

MOORE RD. BRIDGE IMPROVEMENTS

RAUL E. SESIN, P.E., C.F.M.
HIDALGO COUNTY DRAINAGE DISTRICT No. 1
GENERAL MANAGER
HIDALGO COUNTY FLOODPLAIN
ADMINISTRATOR

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED
PROFESSIONAL ENGINEER

This seal appearing on this document was authorized by Jose N. Saldivar P.E. No. 94076 on the above designated date.

JOSE N. SALDIVAR–P.E. No. 94076

Drawing: I:\PCT 2\Moore Rd Bridge\dwg\general\Cover Sheet.dwg) Plotted by: aracely.veliz
Layout Tab: Cover Sheet Date: 02/23/2018 Time: 08:51:31 AM

GENERAL NOTES AND SPECIFICATIONS DATA:

USE A POWER–BROOM WHEN CLEANING THE ROADWAY AS NEEDED.

REMOVE & DISPOSE ALL MATERIALS NOT DEEMED SALVAGEABLE BY THE ENGINEER AND/OR CITY, UNLESS OTHERWISE SHOWN ON THE PLANS.

ON EXISTING PAVEMENT THAT WILL REMAIN IN PLACE, SAND BLAST OR SURFACE TREAT IN ORDER TO REMOVE EXISTING STRIPPING.

DO NOT BLOCK DAMAGE WHEN HANDLING & STOCKPILING EXCAVATED MATERIAL.

MAINTAIN ACCESS TO DRIVEWAYS AND INTERSECTIONS THROUGH ALL PHASES OF CONSTRUCTION.

ITEM 540: METAL BEAM GUARD

540–1
THE OPTIONAL TERMINAL ANCHOR POST WITH THE TERMINAL CONNECTOR WILL BE REQUIRED AS SHOWN ON THE METAL BEAM GUARD FENCE STANDARD.

540–2
GALVANIZE THE RAIL ELEMENT SUPPLIED FOR THIS PROJECT USING A TYPE II ZINC COATING.

ITEM 542: REMOVING METAL BEAM GUARD FENCE

542–1
DISPOSE ALL METAL BEAM GUARD FENCE MATERIAL UNLESS SHOWN OTHERWISE IN THE PLANS.

ITEM 544: GUARDRAIL END TREATMENTS

LABEL ''END TREATMENT TYPE'' ON BACKSIDE OF UNIT AT TIME OF INSTALLATION.

INSTALLATION AND MATERIALS FOR MBGF (43'–9") ARE INCLUDED.

INDEX

HIDALGO COUNTY
DRAINAGE DISTRICT No. 1
902 DOOLITTLE RD
EDINBURG TX. 78542
TEL: (956) 292–7080
www.co.hidalgo.tx.us

MOORE RD. BRIDGE IMPROVEMENTS

GENERAL NOTES AND INDEX

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF PRELIMINARY REVIEW AND COMMENTS UNDER THE AUTHORITY OF JOSE N. SALDIVAR P.E. 94076 ON 02/23/18
IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, AND/OR PERMIT PURPOSES.

SCALE:	AS SHOWN
DRAWN BY:	A.V.
CHECKED BY:	N.S/E.Y.
TOPO BY:	E.I./S.S.
SHEET:	G01–02

Drawing: I:\PCT- 2\Moore Rd Bridge\dgn\general\General Notes.dwg)
Layout Tab: GENERAL NOTES Date: 02/23/2018 Time: 03:37:57 PM

ABBREVIATIONS

A	ASPHALT
ADR	ASPHALT DRIVE
APV	ASPHALT PAVEMENT
AVE	AVENUE
BM	BENCHMARK
BOC	BACK OF CURB
CONC.	CONCRETE
CONST.	CONSTRUCT
CL	CENTER LINE
CDR	CONCRETE DRIVE
CPV	CONCRETE PAVEMENT
CA	CALICHE
CADR	CALICHE DRIVE
CARD	CALICHE ROAD
CFN	CHAIN LINK FENCE
CI	CURB INLET
CLV	CULVERT
CP	CONTROL POINT
CPV	CONCRETE PAVEMENT
CR	CENTER OF ROAD
CRB	CURB
CSM	CABLE SPOT MARKING
D	DIRT
DR	DRIVE
DDR	DIRT DRIVE
DT	DITCH
DTB	DITCH BOTTOM
DTBB	DITCH BOTTOM OF BERM
DTE	DITCH EDGE
DTFL	DITCH FLOW LINE
DTT	DITCH TOP
DTTB	DITCH TOP OF BERM
DTTOE	DITCH TOE
EXIST.	EXISTING
ESMT.	EASEMENT
EBX	ELECTRIC BOX
EOCA	EDGE OF CALICHE
EOP	EDGE OF PAVEMENT
EW	EDGE OF WATER
EWL	END WALL
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FM	FARM-TO-MARKET
FN	FENCE
FOC	FIBER OPTIC CABLE
FOCM	FIBER OPTIC CABLE MARKING
G	GRAVEL
GDR	GRAVEL DRIVE
GL	GAS LINE
GLMKR	GAS LINE MARKER
GLSM	GAS LINE SPOT MARKING
GM	GAS METER
GV	GAS VALVE
GW	GUY WIRE
HCDR	HIDALGO COUNTY DEED RECORDS
HCOR	HIDALGO COUNTY OFFICIAL RECORDS
HCMR	HIDALGO COUNTY MAP RECORDS
HCR	HANDICAP RAMP
HDW	HEADWALL
HWM	HIGH WATER MARK
IR	IRON ROD
IRS	IRON ROD SET
IGV	IRRIGATION GATE VALVE
IGW	IRRIGATION GATEWELL
ISP	IRRIGATION STAND PIPE
INV	INVERT
IV	IRRIGATION VENT
LT	LEFT
LOT	LOT CORNER
MB	MAIL BOX
MH	MANHOLE
MON	MONUMENT
N.T.S	NOT TO SCALE
NAIL	NAIL
NAWSC	NORTH ALAMO WATER SUPPLY CORPORATION
NG	NATURAL GROUND
OHE	OVERHEAD ELECTRIC LINE
PFL	PIPE FLOW LINE
PGL	PROPOSED GRADE LINE
PL	PROPERTY LINE
PP	POWER POLE
PROP	PROPOSED
PV	PAVEMENT
PVC	PVC PIPE
RT	RIGHT
RCP	REINFORCED CONCRETE PIPE
RIP	RIP-RAP
RD	ROAD
RM	REFERENCE MARKER
ROW	RIGHT-OF-WAY
RR	RAIL ROAD
RSD	ROAD SIDE DITCH
RW	RETAINING WALL
SBOT	SWALE BOTTOM
SDL	STORM DRAIN LINE
SEP	SEPTIC TANK COVER
SET	SAFETY-END TREATMENT
SP	SERVICE POLE
SPOL	SIGNAL POLE TRAFFIC
STOP	SWALE TOP
STA	STATION
SW	SIDEWALK
TELBX	TELEPHONE BOX
TBX	TRAFFIC CONTROL BOX
TMKR	TELEPHONE MARKER
TOA	TOP OF ASPHALT
TOC	TOP OF CURB
TOW	TOP OF WATER
TR	TREE
TRNS	TRANSFORMER
TSL	TRAFFIC SIGNAL LIGHT
TSM	TELEPHONE LINE SPOT MARKING
VA	VALVE
WB	WATER BIBB
WDFN	WOODEN FENCE
WFN	WIRE FENCE
WL	WATER LINE
WLSM	WATER LINE SPOT MARKING
WM	WATER METER
WP	WOODEN POST
WV	WATER VALVE
WWSM	WASTE WATER LINE SPOT MARKING
YD	YARD DRAIN

SYMBOLS

- Iron Pipe
- Iron Rod
- Tree
- Sign
- HL&P Tower
- Mhel (Manhole electric)
- Power pole
- Pptrn (Power Pole w/transformer)
- Guy (Down guy)
- Gas meter (Gm)
- Gv (Gas valve)
- Mhsn (Sanitary sewer manhole)
- Snco (Clean out)
- Culv (Culvert pipe)
- Grinl (Grate inlet)
- Mhst (Storm sewer manhole)
- Sgnstp (Stop sign)
- Trjb (Traffic junction box)
- Trlpl (Traffic light pole)
- Fh (Fire hydrant)
- Wm (Water meter)
- Wv (Water valve)
- Shrub
- Acap (Aluminum cap)
- Bdisk (Brass disk)
- Fnd IP (Iron Pipe found)
- Fnd IR (Iron Rod found)
- Nail
- Bm (Benchmark)
- Rowmkr (R.O.W. marker)
- Irr Box
- Irr standpipe
- Irr gate valve
- Grdpst (Guardrail post)
- Mailbox
- Stsgn (Street sign)
- Palm
- Catvbox (Cable Tv box)
- Ebox (Electrical box)
- Eltrn (Electrical transformer)
- Emkr (Electrical marker)
- Lp (Light Pole)
- Pplt (Power pole w/light)
- Pipe
- Gasreg (Gas regulator)
- Mhgs (Mahole Gas)
- Pipvnt (Pipe vent/stand pipe)
- Wvmkr (Water valve marker)
- Crbinl (Curb Inlet)
- Trlt (Traffic light)
- Trsgn (Traffic sign)
- Tsbox (Traffic signal box)
- Tsigpl (Traffic signal pole)
- Mhtel (Manhole telephone)
- Pbox (Telephone pedestal)
- Phmkr (Telephone marker)
- Tlbox (Telephone box)
- Tljnc (Telephone junction box)
- Tlpol (Telephone pole)
- Spkhd (Sprinkler head)
- Wtrwell (Water well)
- Water Bibb
- Cps (Cotton Picker Spindle)

LEGEND

- WATER PIPE
- SANITARY SEWER PIPE
- STORM DRAIN PIPE
- IRRIGATION PIPE
- TELEPHONE LINE
- FIBER OPTIC CABLE
- GAS LINE
- OVERHEAD ELECTRICAL LINE
- WOOD FENCE
- HOG-WIRE FENCE
- CHAINLINK FENCE
- RIGHT-OF-WAY LINE

NOTE:
THE (HORIZONTAL AND/OR VERTICAL LOCATION OF EXISTING UNDERGROUND UTILITIES AS ILLUSTRATED ON THESE PLANS IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION IN THE AREA OF SAID UTILITIES. CONTRACTOR SHALL CONTACT THE FOLLOWING AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION/EXCAVATING IN THE AREA OF EXISTING UTILITIES

UTILITY COMPANY:	CONTACT PERSON:	PHONE:
DIG-TESS		800-DIG-TESS
A.E.P.	Carmen Morales	956-283-2369
MAGIC VALLEY	Bryan Acosta	956-289-4040
TIME WARNER COMMUNICATION	Rick Pupek	956-412-5458
ATT SWBT	Lucy Salinas	956-630-8261
HIDALGO COUNTY DRAINAGE DISTRICT #1	Noe Saldivar	956-292-7080
NORTH ALAMO WATER SUPPLY CORPORATION	Lucy Leal	956-383-1619
HIDALGO COUNTY IRRIGATION DISTRICT #2	Bert Wessling	956-787-1422
TEXAS GAS SERVICE	Mike Martinez	956-444-3926
SPECTA ENERGY (TEXAS EASTERN CORP.)	Freddy Pattalan	956-607-6255
TXDOT		956-702-6101
CITY OF SAN JUAN	Ramiro Ramirez	956-223-2200

QUANTITY ABBREVIATIONS

AC	ACRE
CF	CUBIC FEET
CY	CUBIC YARD(S)
EA	EACH
LF	LINEAR FEET
LS	LUMP SUM
SF	SQUARE FEET
SY	SQUARE YARD(S)

HIDALGO COUNTY
DRAINAGE DISTRICT No. 1
902 DOOLITTLE RD
EDINBURG TX. 78542
TEL:(956) 292-7080
www.co.hidalgo.tx.us

MOORE RD. BRIDGE IMPROVEMENTS

SYMBOLS, LEGENDS & ABBREVIATIONS

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF PRELIMINARY REVIEW AND COMMENTS UNDER THE AUTHORITY OF JOSE N. SALDIVAR P.E. 94076 ON 02/23/18 IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, AND/OR PERMIT PURPOSES.

SCALE:	N.T.S.
DRAWN BY:	A.V.
CHECKED BY:	N.S/E.Y.
TOPO BY:	E.I./S.S.
SHEET:	G01-03

Drawing: I:\PCT 2\Moore Rd Bridge\dwg\general\Symbols and legend.dwg)
Layout Tab: General_Notes Date: 02/23/2018 Time: 08:52:33 AM

MOORE RD. BRIDGE IMPROVEMENTS

SUMMARY OF ESTIMATED QUANTITIES

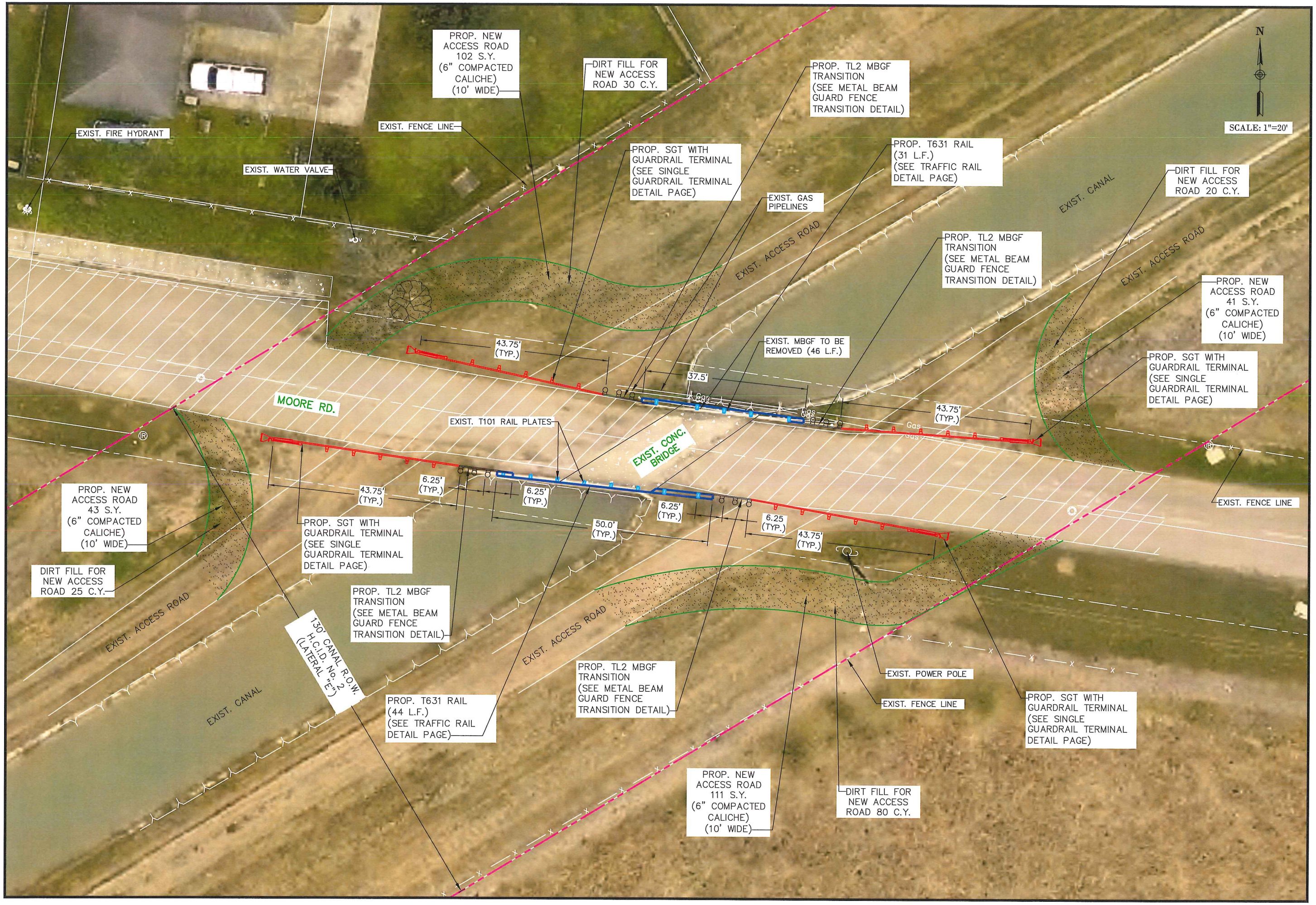
HIDALGO COUNTY
DRAINAGE DISTRICT No. 1

902 DOOLITTLE RD
EDINBURG TX. 78542
TEL:(956) 292-7080
www.co.hidalgo.tx.us

INDEX OF SHEETS					
ITEM 451	ITEM 540	ITEM 542	ITEM 544	ITEM 247	ITEM 242
TRAFFIC RAIL (TY T631)	MTL BEAM GD FEN TRANS (TL2)	REMOVING MTL BEAM GD FEN	GUARD RAIL END TRTMT	CALICHE (6" COMPACTED)	DIRT FILL
LF	EA	LF	EA	SY	CY
87.5	4	46	4	297	155

SCALE: AS SHOWN
DRAWN BY: A.V.
CHECKED BY: N.S/E.Y.
TOPO BY: E.I./S.S.
SHEET: G01-04

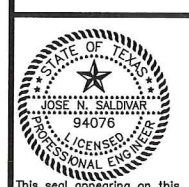
Drawing: I:\FCT 2\Moore Rd. Bridge\dwg\general\Summary of Estimated Quantities.dwg)
Layout: Tab: Sheet Index Date: 02/23/2018 Time: 03:37:40 PM



HIDALGO COUNTY DRAINAGE DISTRICT No. 1
902 DOOLITTLE RD
EDINBURG TX. 78542
TEL:(956) 292-7080
www.co.hidalgo.tx.us

MOORE RD. BRIDGE IMPROVEMENTS

BRIDGE REPAIR PLAN



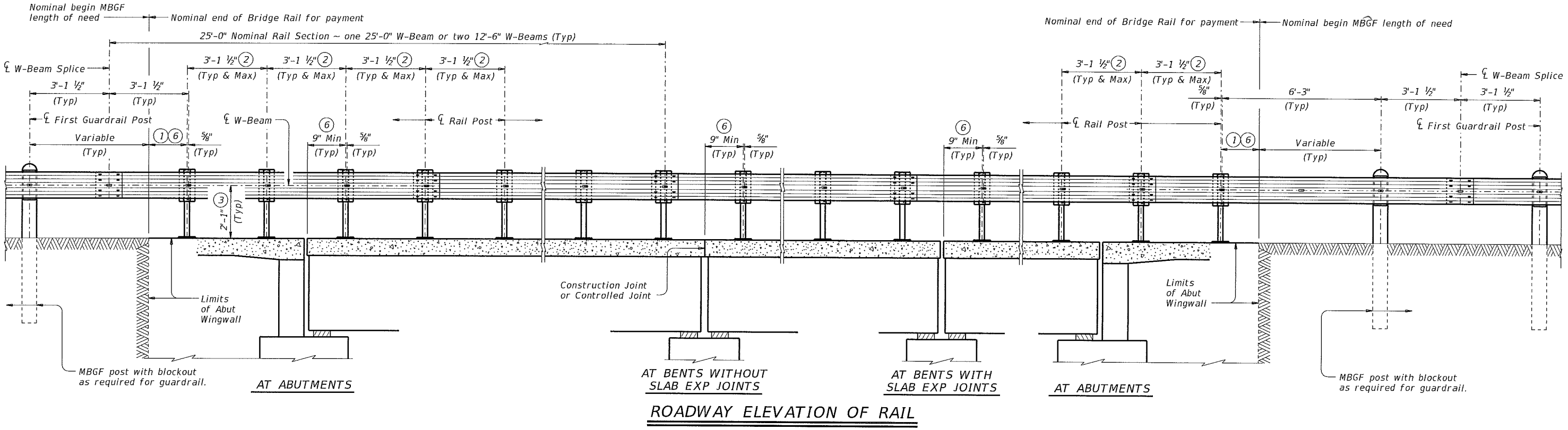
This seal appearing on this document was authorized by Jose N. Saldivar P.E. No. 94076 on the above designated date.

JOSE N. SALDIVAR-P.E. No. 94076

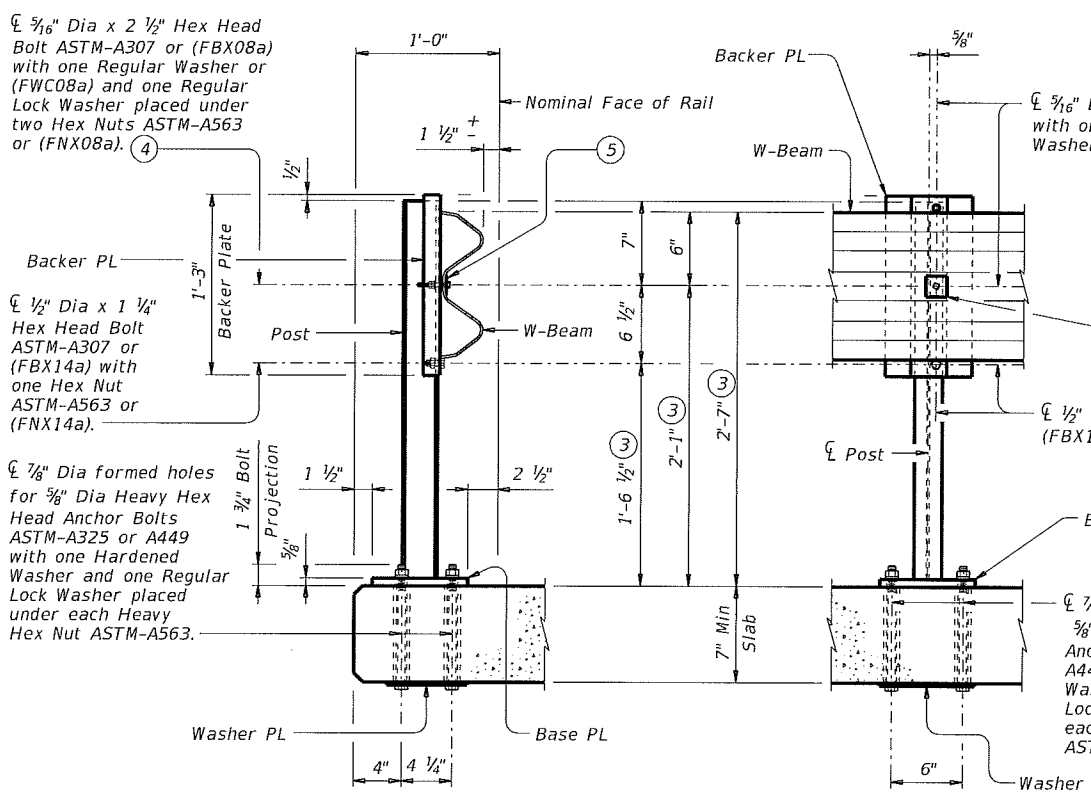
SCALE:	1"=20'
DRAWN BY:	N.C.
CHECKED BY:	R.S./N.S.
TOPO BY:	E.I./C.T.
SHEET:	C01-01

Drawing: I:\PCT 2\Moore Rd Bridge\dwg\Topo.dwg
Layout Tab: Layout1 Date: 02/23/2018 Time: 03:28:25 PM

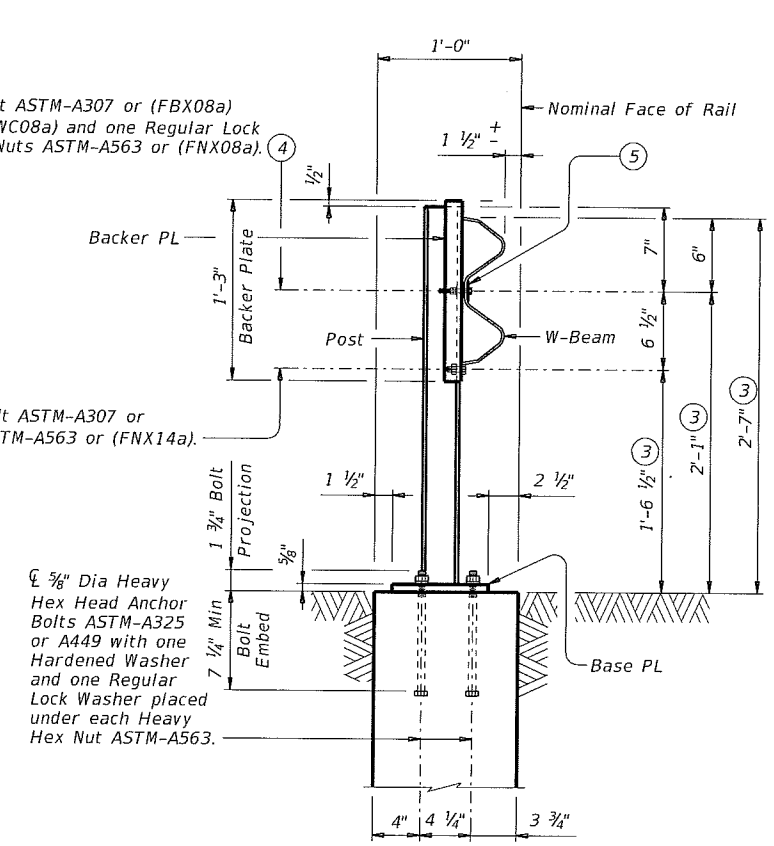
DATE:
FILE:



ROADWAY ELEVATION OF RAIL



RAIL DETAILS ON BRIDGE SLAB



RAIL SECTION ON ABUTMENT WINGWALL

(1) 9" Min, 5'-9" Max

(2) Maintain 3'-1 ½" Rail Post spacing wherever possible for use with nominal 25'-0" or 12'-6" W-Beam sections. Symmetry of post spacing on both sides and along the structure is not necessary.

(3) Increase 2" for structures with overlay.

(4) Tighten the first hex nut by hand until the top and bottom edges of the W-Beam engage the Backer Plate (Backer Plate should be snug against the post). Then tighten hex nut one revolution with wrench and secure with the second hex nut.

(5) PL ⅛ x 1 ¾ x 1¾ with ⅜ Dia Hole centered in PL, ASTM-A36. Square Guardrail Washer (FWR01).

(6) The post nearest to a slab joint or end of structure may be shifted up to 9" in order to satisfy the minimum offset dimension. Drill a new ¾" Dia hole on the centerline of W-beam for shifted post. Paint hole with two coats of zinc-rich paint conforming to the Item "Galvanizing". All other posts must remain on the typical spacing.

Texas Department of Transportation

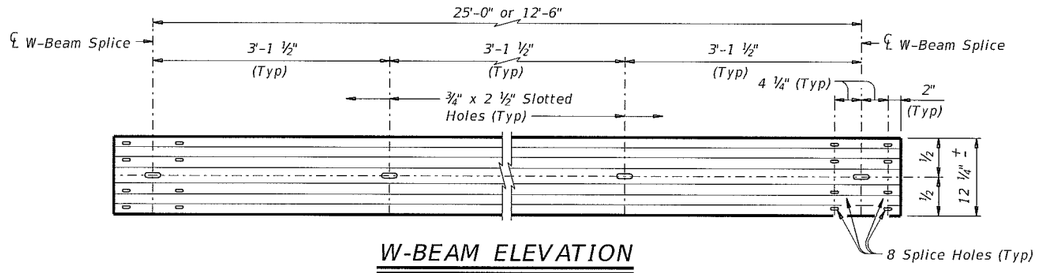
Bridge Division Standard

TRAFFIC RAIL

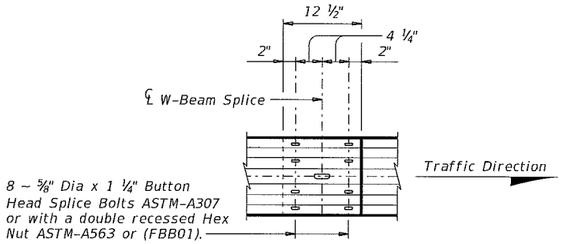
TYPE T631

FILE: rlstd038.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: Added note for post near joint, additional baker PL material and MBGF end treatment notes.	DIST	COUNTY		SHEET NO.

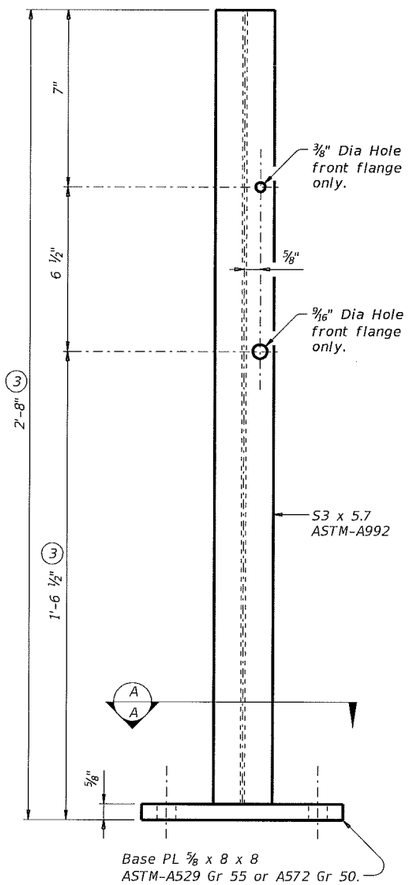
DATE:
FILE:



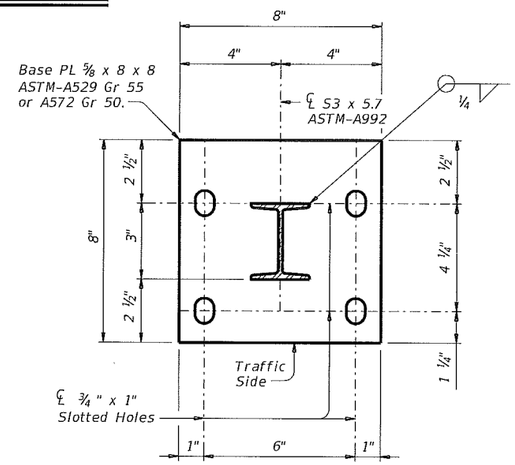
W-BEAM ELEVATION



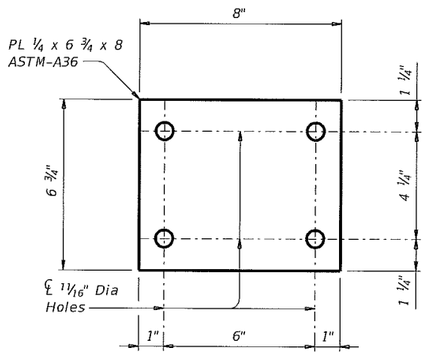
W-BEAM SPLICE ELEVATION



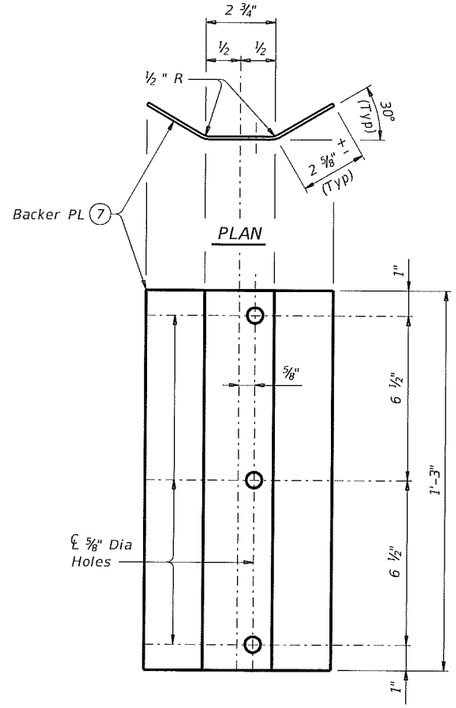
POST ELEVATION



SECTION A-A



WASHER PLATE DETAIL



BACKER PLATE

(3) Increase 2" for structures with overlay.

(7) Backer PL ⅛ x 8 x 1'-3" ASTM-A1011 CS or SS Gr 33, or A1008 CS or SS Gr 33 (11 Gage acceptable).

MBGF AND END TREATMENT NOTES:

This traffic railing must be anchored by metal beam guard fence (MBGF) and guard fence end treatments. Determine MBGF length of need in accordance with the Roadway Design Manual, unless otherwise specified. The minimum MBGF length of need required for anchoring the railing is 25' of MBGF plus the appropriate end treatment.

CONSTRUCTION NOTES:

Face of rail post must be plumb unless otherwise approved by the Engineer. Post must be perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than 1/16" exist.

Fully anchored guardrail must be attached to each end of rail. A metal beam guard fence transition is not used with this rail.

It is recommended to show a Rail Layout with rail posts and W-beam splices. Fabricator must submit erection drawings to the Engineer for approval.

Round or chamfer exposed edges of rail post and backer plate to approximately 1/16" by grinding.

Shop drawings are not required for this rail.

MATERIAL NOTES:

Galvanize all steel components.

Anchor bolts for base plate must be ⅝" Dia ASTM-A325 or A449 bolts with one hardened washer and one regular lock washer placed under each heavy hex nut. Nuts must conform to A563 requirements.

W-beam must meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'-0", or 12'-6" (Nominal) lengths. W-Beam must have slotted holes at 3'-1 ½".

Some part numbers from the "Task Force 13" Guide to Standardized Highway Barrier Hardware have been furnished for quick reference.

GENERAL NOTES:

This railing has been successfully evaluated by full-scale crash test to meet MASH TL-3 criteria. This railing can be used for speeds of 50 mph and greater.

This rail is designed to deflect approximately 4' to 4'-6" as it contains and redirects the errant vehicle. This rail may not be installed on top of or behind curbs that project above finished grade, on bridges with expansion joints providing more than 5" movement, on retaining walls, or on grade separations and interchanges.

Repairs to impact-damaged post and base plate unit are not permitted. Replace all impact-damaged posts with a new post and base plate unit.

Average weight of railing with no overlay: 19 plf total.

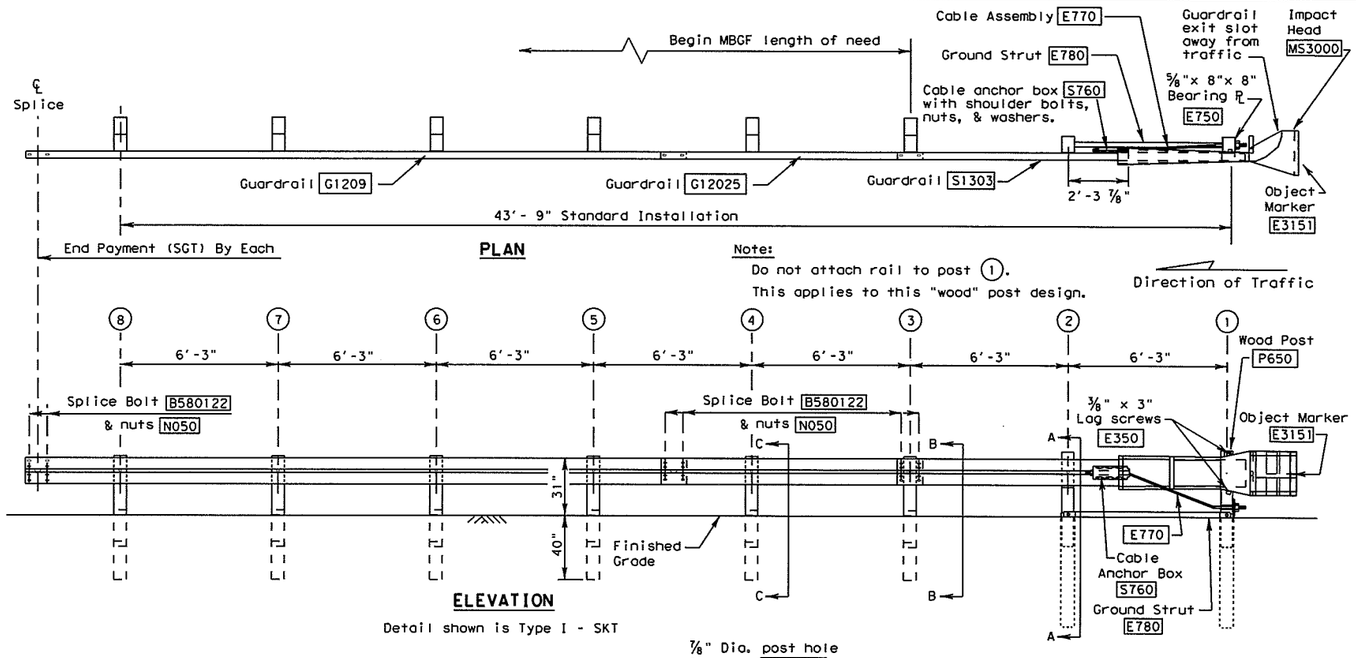
Texas Department of Transportation

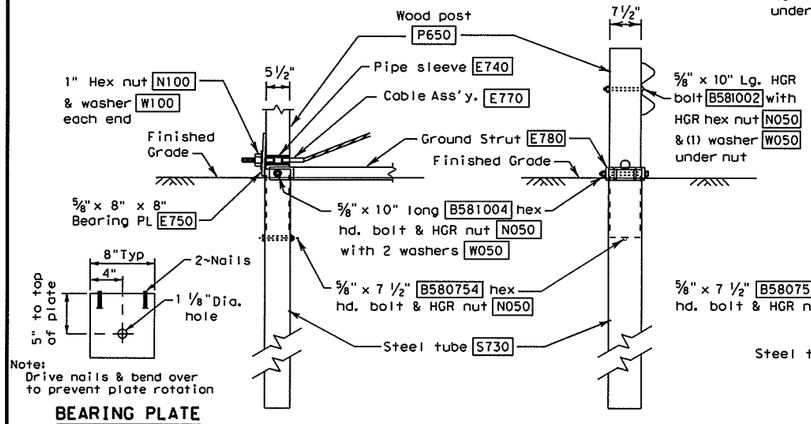
Bridge Division Standard

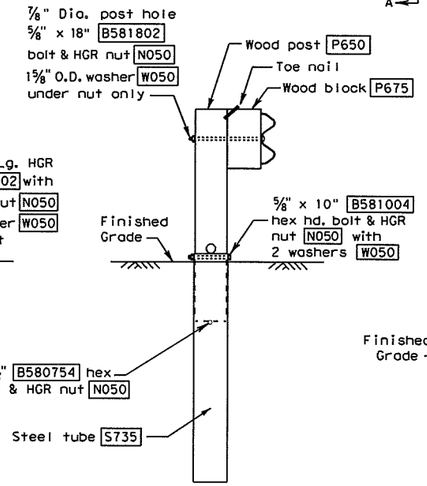
TRAFFIC RAIL

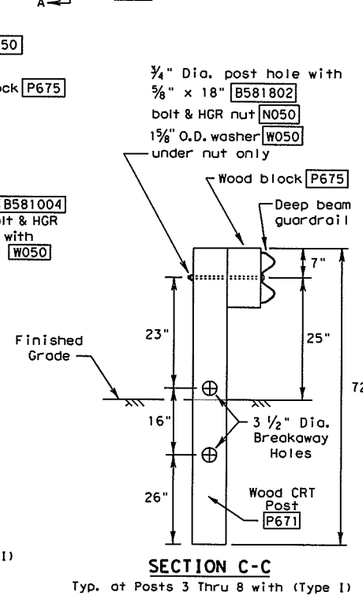
TYPE T631

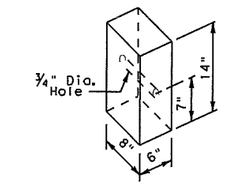
FILE:	rlstd038.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT	July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS					
03-16: Added note for post near joint, additional baker PL material and MBGF end treatment notes.		DIST	COUNTY		SHEET NO.

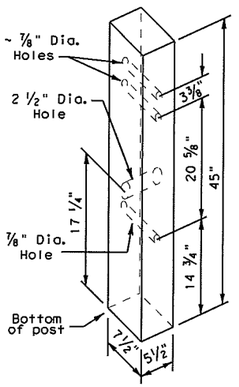


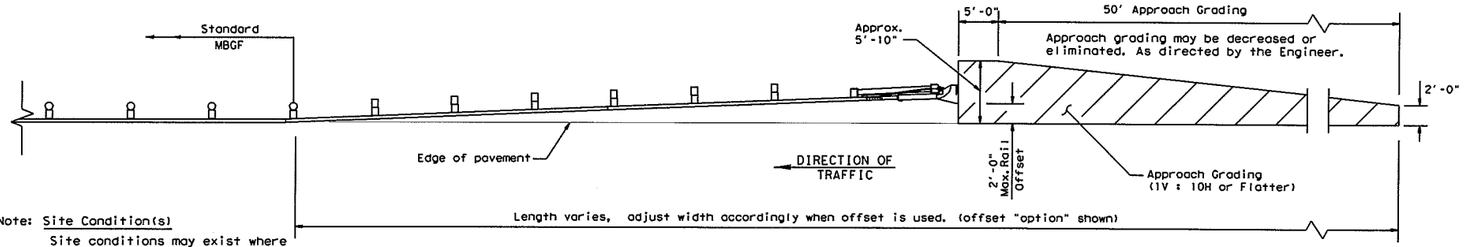












Note: Site Conditions

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

GENERAL NOTES

1. For additional information contact: Interstate Steel Inc. (432) 263-3725
2. The Type of SGT unit will be specified elsewhere in the plans. The numbers in the circles indicate post position. The Type of SGT unit chosen is a maintenance consideration and does not affect the systems performance.

	Post & Tube Options	Post Only
Type I	Posts (1) thru (2)	Posts (3) thru (8)
Type II	Posts (1) thru (4)	Posts (5) thru (8)
Type III	Posts (1) thru (8)	None

3. SGT's placed within the "minimum" 150 ft. radius, shall be installed straight. Standard rail elements may be installed within the radius, without special fabrication.
4. All bolts, nuts cable assemblies, cable anchors, steel tubes & bearing plates shall be galvanized.
5. A flare rate of 25:1 may be used over the first 50 ft. of the system to prevent the terminal head from encroaching the shoulder. The flare may be decreased or eliminated for specific installations, if directed by the Engineer.
6. The steel tubes shall not protrude more than 4 inches above ground. Site grading may be necessary to meet this requirement.
7. The steel tubes may be driven with an approved driving head. They shall not be driven with the wood post in the tube. If the steel tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent tube settlement.
8. If solid rock is encountered. See the Manufacturer's installation manual for the proper installation guidance.
9. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening the nuts.
10. The wood blocks shall be "toe nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks. The bearing plate on the front post shall also be "toe nailed" to prevent rotation.
11. For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts will then require field drilling new holes to accommodate the rail to post connection bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the Engineer.
12. An object marker shall be installed on the front of the impact head as detailed on D&OM(VIA).

BILL OF MATERIAL

Item #	Post & Tube Options: Type I	Type II	Type III	DESCRIPTION
S1303	1	1	1	Guardrail (12 Ga.) 12'- 6" SKT
G12025	1	1	1	Guardrail (12 Ga.) 9'- 4 ½"
G1209	1	1	1	Guardrail (12 Ga.) 25'- 0"
S730	2	2	2	Steel Tube - 6" x 8" x 72" x ⅛" min. or ⅜"
S735	0	2	6	Steel Tube - 6" x 8" x 54" x ⅛" min. or ⅜"
P650	2	4	8	Wood Posts - 5 ½" x 7 ½" x 45"
P671	6	4	0	Wood CRT Posts - 6" x 8" x 72"
P675	6	6	6	Wood Block - 6" x 8" x 14"
E740	1	1	1	Pipe Sleeve - 2" Std. Pipe x 5 ½"
E750	1	1	1	Bearing Plate - ⅝" x 8" x 8"
S760	1	1	1	Cable Anchor Box
E770	1	1	1	Cable Assembly
E780	1	1	1	Ground Strut
MS3000	1	1	1	Impact Head
HARDWARE				
B580754	2	4	8	⅝" x 7 ½" Hex Hd. Bolt
B581004	2	4	8	⅝" x 10" Hex Hd. Bolt (Top of Tubes)
W050	11	15	23	⅝" Washers
B581002	1	1	1	⅝" x 10" HGR Post Bolt (Post 2)
B580122	16	16	16	⅝" x 1 ¼" HGR Splice Bolt
B581802	6	6	6	⅝" x 18" HGR Post Bolt (Posts (3) thru (8))
N050	35	39	47	⅝" HGR Nut (24-Spl, Varies-Posts, 2-Strut)
E350	2	2	2	⅜" x 3" Lag Screw
N100	2	2	2	1" Hex Nut (Anchor Cable)
W100	2	2	2	1" Washer (Anchor Cable)
SB12A	8	8	8	Cable Anchor Box Shoulder Bolts
N012A	8	8	8	½" Structural Nut
W012A	8	8	8	½" Structural Washer
E3151	1	1	1	Object Marker - (18" x 18")

POST & TUBE OPTIONS	
Type I	post (1) thru (2)
Type II	post (1) thru (4)
Type III	post (1) thru (8)

Texas Department of Transportation — Design Division Standard

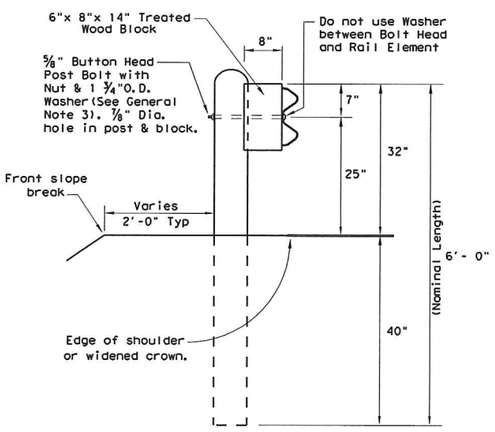
SINGLE GUARDRAIL TERMINAL (SKT-31) (WOOD POST)

SGT(8)31-17

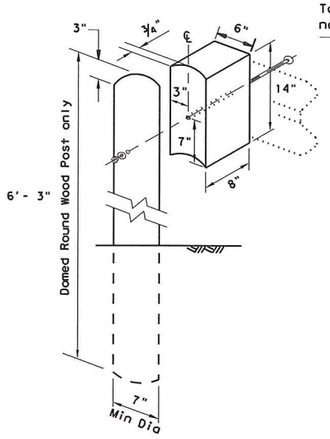
FILE: sgt83117.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK:
©TxDOT December 2011 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

DATE:
FILE:

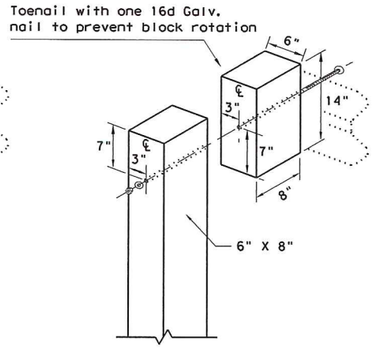
DATE:
FILE:



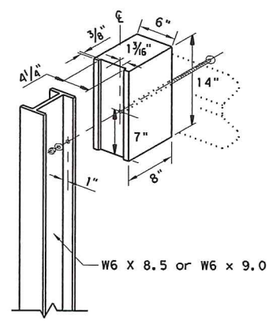
TYPICAL POST



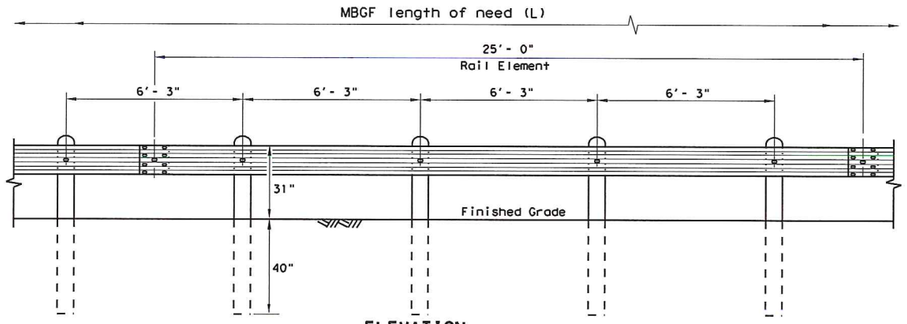
WOOD BLOCK TO ROUND WOOD POST



WOOD BLOCK TO RECTANGULAR WOOD POST

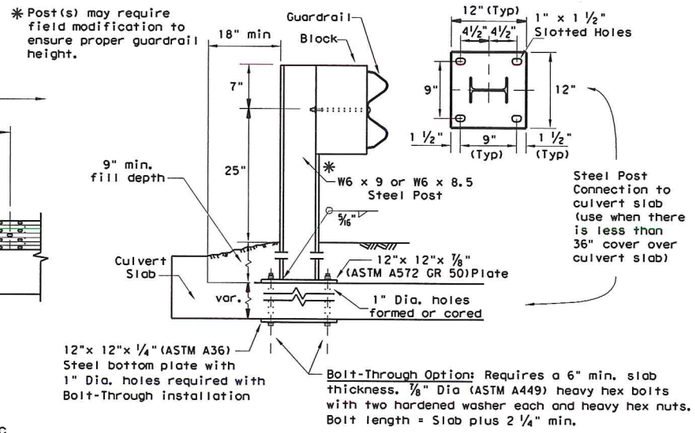


WOOD BLOCK TO STEEL POST



ELEVATION MID-SPAN RAIL SPLICE

Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)



Bolt-Through Option: Requires a 6" min. slab thickness. ⅞" Dia (ASTM A449) heavy hex bolts with two hardened washer each and heavy hex nuts. Bolt length = Slab plus 2 ¼" min.

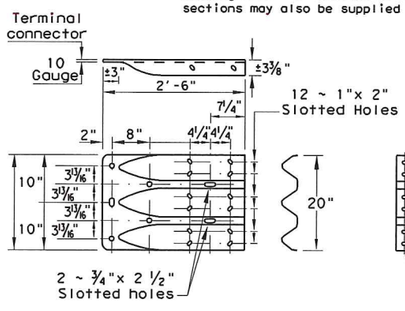
LOW FILL CULVERT POST

Culverts of 25 ft. or less, see GF(31)LS standard for "Long Span" option.

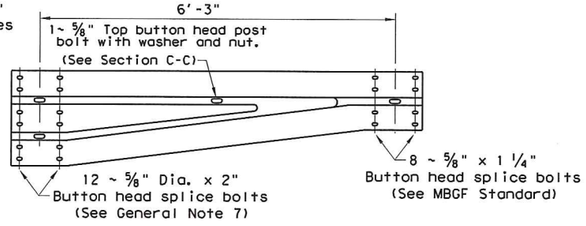
Epoxy Note:
Epoxy Anchor Option: This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be ⅞" Dia. ASTM A449 or A193 Grade B7 with heavy hex nut, and one hardened washer each. Embed anchor rods 6" with Hilti HIT RE 500 epoxy adhesive. Other Type III Class C epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT RE 500 with the same embedment depth and threaded rod dia. Follow the manufacturer's requirements for installing epoxied threaded rods. Extend rods ¼" min. beyond nut.

GENERAL NOTES

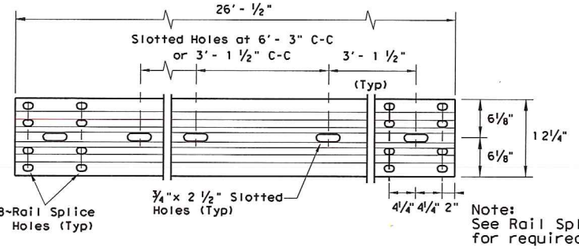
1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of MBGF shall be shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, "Galvanizing."
2. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'- 0", or 12'- 6" (nom.) lengths. Rail elements may have slotted holes at 3'-1½" C-C or 6'-3" C-C. A special length of rail may be manufactured to accommodate the downstream anchor terminal (DAT) and the transition sections of guardrail.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563). Thrie beam "connection" ⅞" dia. (ASTM A325) hex bolts shall be of sufficient length to extend through the full thickness of the rail, washers, and nuts.
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
5. Crown shall be widened to accommodate the Metal Beam Guard Fence.
6. The lateral approach to the guard fence, shall have a maximum slope of 1V:10H.
7. If shown elsewhere in the plans or as directed by the Engineer, the guard fence may be flared at a rate of 25:1 or flatter.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the rail. Rail placed over curbs shall be installed so that the post bolt is located approximately 25 inches above the gutter pan or edge of shoulder.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18", drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever maybe less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Posts shall not be set in concrete, of any depth.
11. Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
12. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
13. For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard SCP-MD.



THRIE-BEAM TERMINAL CONNECTION
(SEE GENERAL NOTES 6 & 7 FOR REQUIRED HARDWARE)

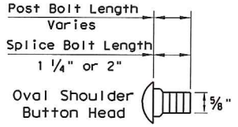


NON-SYMMETRICAL TRANSITION TO W-BEAM (10 Gauge)

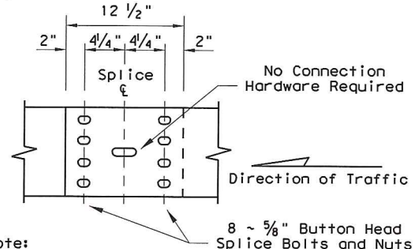


Note: See Rail Splice Detail for required hardware.

ELEVATION 25'- 0" (NOM.) W-BEAM SECTION
12'- 6" RAIL SECTIONS MAY ALSO BE SUPPLIED (SEE GENERAL NOTE 2)

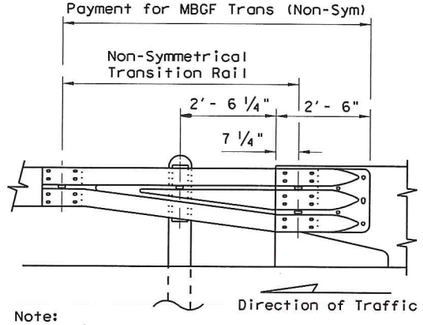


BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)



Note: GF(31), Mid-Span rail splices are required with 6'-3" post spacings.

MID-SPAN RAIL SPLICE DETAIL



Note: All rail elements shall be lapped in the direction of adjacent traffic.

DOWNSTREAM RAIL ATTACHMENT

Texas Department of Transportation

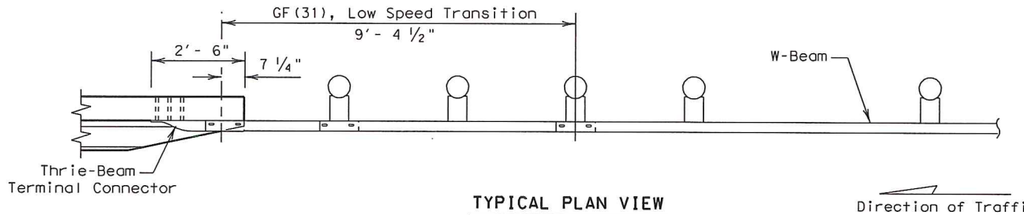
Design Division Standard

METAL BEAM GUARD FENCE

GF(31)-14

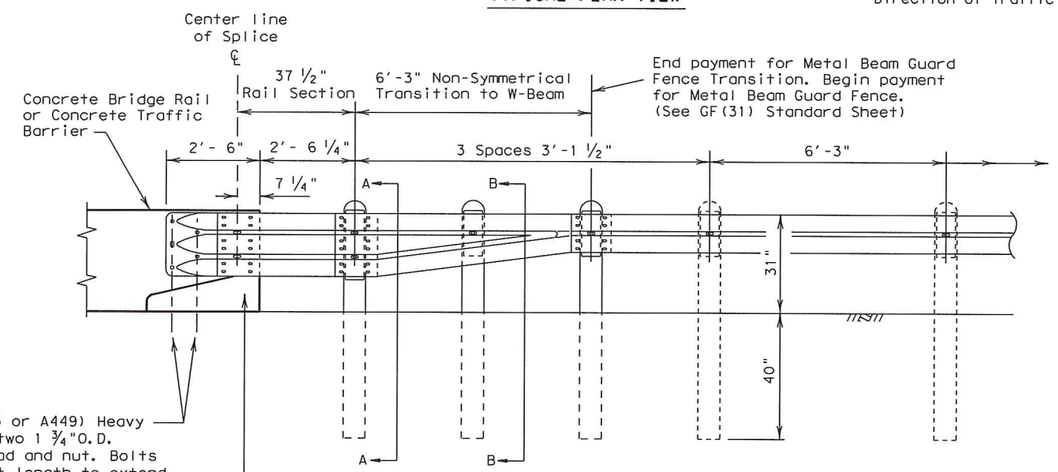
FILE: gf3114.dgn	DN: TxDOT	CK: AM	DW: VP	CK: CGL
©TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

DATE:
FILE:



TYPICAL PLAN VIEW

Direction of Traffic



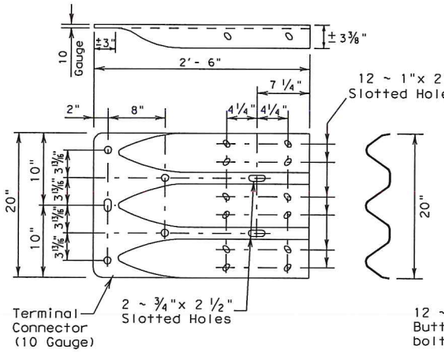
TYPICAL ELEVATION VIEW

GENERAL NOTES

1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of transitions shall be as shown in the plans or as directed by the Engineer.
2. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut and Type A 1 3/4" O.D. washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are 5/8" x 1 1/4" with 5/8" double recessed nuts (ASTM A563).
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item requiring construction of the transition.
5. Crown will be widened to accommodate transitions.
6. If solid rock is encountered. See the GF(31) standard sheet for the proper installation guidance.
7. Posts shall not be set in concrete, of any depth.
8. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT, maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.
9. Refer to GF(31) standard sheet for additional details.

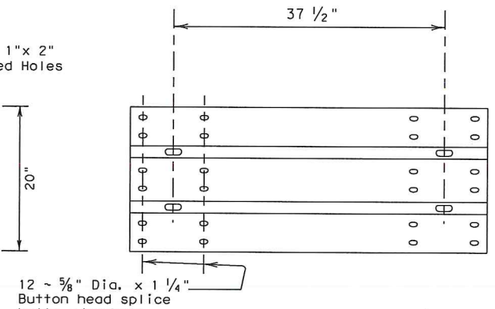
TERMINAL CONNECTION NOTE

To ensure a stable connection. (12) Rectangular Washers (FWR03) are required under the recessed nuts at the Terminal Connection splice.

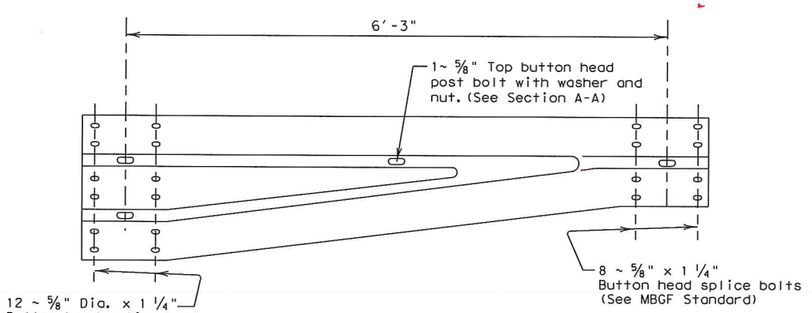


THRIE-BEAM TERMINAL CONNECTION

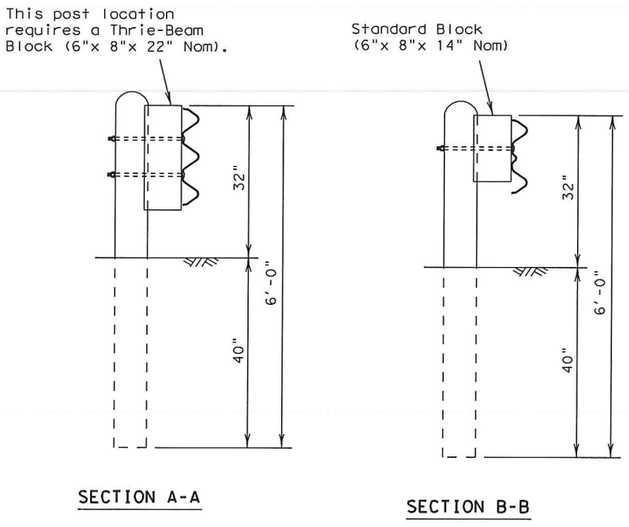
(See Terminal Connection Note)



THRIE-BEAM (3'- 1 1/2") (10 GA.) ELEMENT SECTION

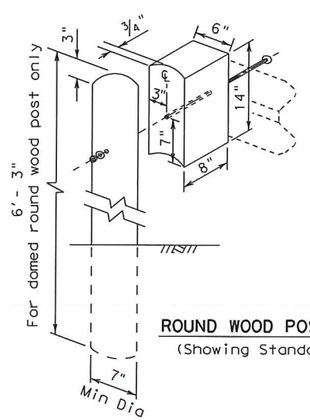


NON-SYMMETRICAL (10 GA.) TRANSITION SECTION



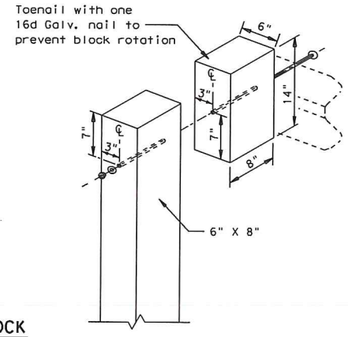
SECTION A-A

SECTION B-B

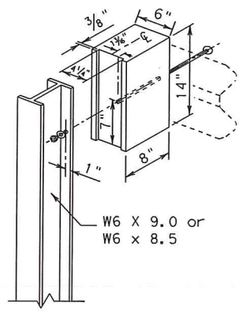


ROUND WOOD POST & BLOCK

(Showing Standard Block)



WOOD BLOCK TO RECTANGULAR WOOD POST



STEEL POST & BLOCK

(Showing Standard Block)

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE TRANSITION (TL-2)

(Low Speed Transition)

GF(31)TL2-11

FILE: gf31t211.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
©TxDOT December 2011 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.