

#3/4 shared



Permit to Construct Access Driveway Facilities on Highway Right of Way

Form 1058
(Rev. 12/17)
Page 1 of 2

PERMIT NUMBER:			
REQUESTOR	GPS*	ROADWAY	
	LATITUDE, LONGITUDE	HWY NAME	SH 150
	30°31'22.46"N 95°22'59.30"W	FOR TxDOT'S USE	
NAME	CONTROL		
MAILING ADDRESS	SECTION		
CITY, STATE, ZIP			
PHONE NUMBER			
<small>*GLOBAL POSITIONING SYSTEM COORDINATES AT INTERSECTION OF DRIVEWAY CENTERLINE WITH ABUTTING ROADWAY</small>			

The Texas Department of Transportation, hereinafter called the State, hereby authorizes Renee Howes, hereinafter called the Permittee, to construct / reconstruct a 24' with 25' radius shared residential (residential, convenience store, retail mall, farm, etc.) access driveway on the highway right of way abutting highway number SH 150 in Walker County County, located 2,018' west of RM 678 on the south side of SH 150 for tract #3 & #4. GARZA J M (A-22) This will be a shared access.

USE ADDITIONAL SHEETS AS NEEDED

Subject to the Access Driveway Policy described on page 2 and the following:

1. The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the state highway right of way.
2. Design of facilities shall be as follows and/or as shown on sketch on page 2 and is subject to conditions stated below:
Culvert dimensions shall be 18" X 42' plus 6 to 1 sloped ends (SETs). SETs shall be cast in concrete or pre-cast concrete. The pipe shall be set 2" below existing ditch line grade. The following are approved culverts for use on TX DOT right-of-way (CGM, RCP, plastic or pre-approved oil field pipe). All culverts shall be installed according to the manufacturer's installation instructions. The final driving surface shall be non-tracking type material. No curbs or headwalls are allowed within TX DOT right-of-way. All required items shall be completed within 45 days after starting installation. RH

All construction of materials shall be subject to inspection and approval by the State.

3. Maintenance of facilities constructed hereunder shall be the responsibility of the Permittee, and the State reserves the right to require any changes, maintenance or repairs as may be necessary to provide protection of life or property on or adjacent to the highway. Changes in design will be made only with approval of the State.
4. The Permittee shall hold harmless the State and its duly appointed agents and employees against any action for personal injury or property damage sustained by reason of the exercise of this permit.
5. Except for regulatory and guide signs at county roads and city streets, the Permittee shall not erect any sign on or extending over any portion of the highway right of way, and vehicle service fixtures such as fuel pumps, vendor stands, or tanks and shall be located at least 12 feet from the right of way line to ensure that any vehicle services from these fixtures will be off the highway right of way.
6. The State reserves the right to require a new access driveway permit in the event of a material change in land use or change in driveway traffic volume or vehicle types.
7. This permit will become null and void if the above-referenced driveway facilities are not constructed within six (6) months from the issuance date of this permit.
8. The Permittee will contact the State's representative William Ray telephone, (936) 295-7491, at least twenty-four (24) hours prior to beginning the work authorized by this permit.
9. The requesting Permittee will be provided instructions on the appeal process if this permit request is denied by the State.

May 22, 2019
Date of Issuance

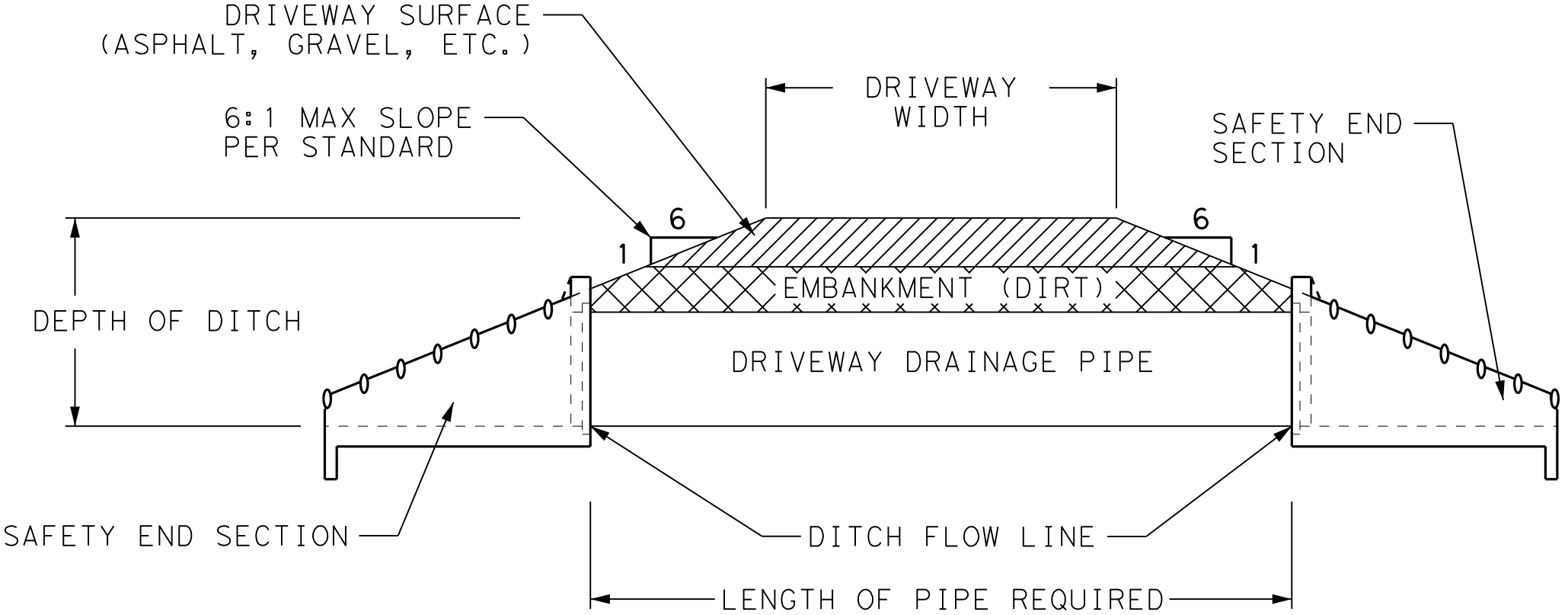
State Authorized Representative

The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the highway right of way.

Date: 5/22/2019

Signed: Renee Howes
(Property owner or owner's representative)

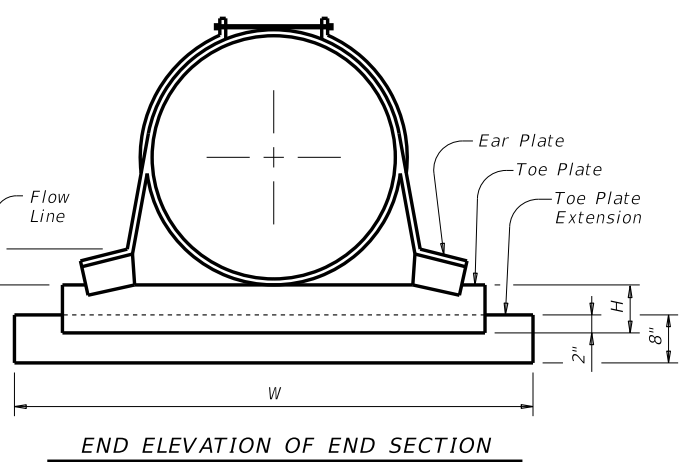
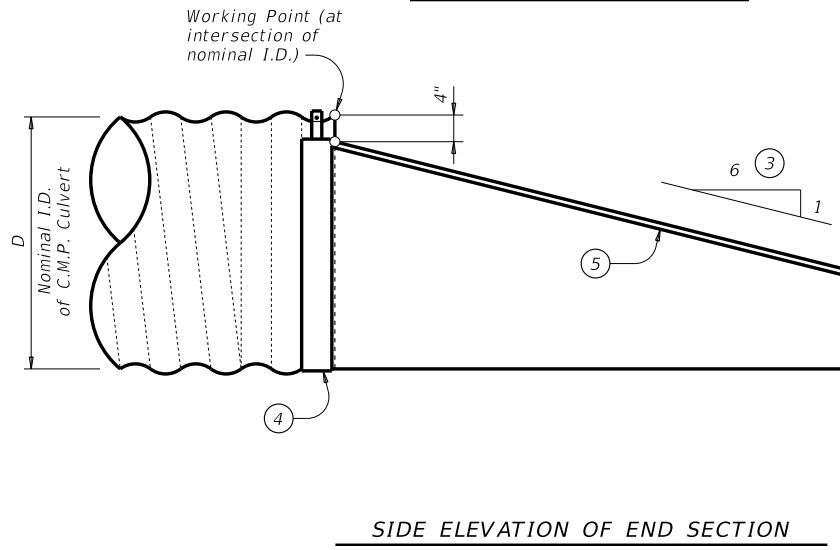
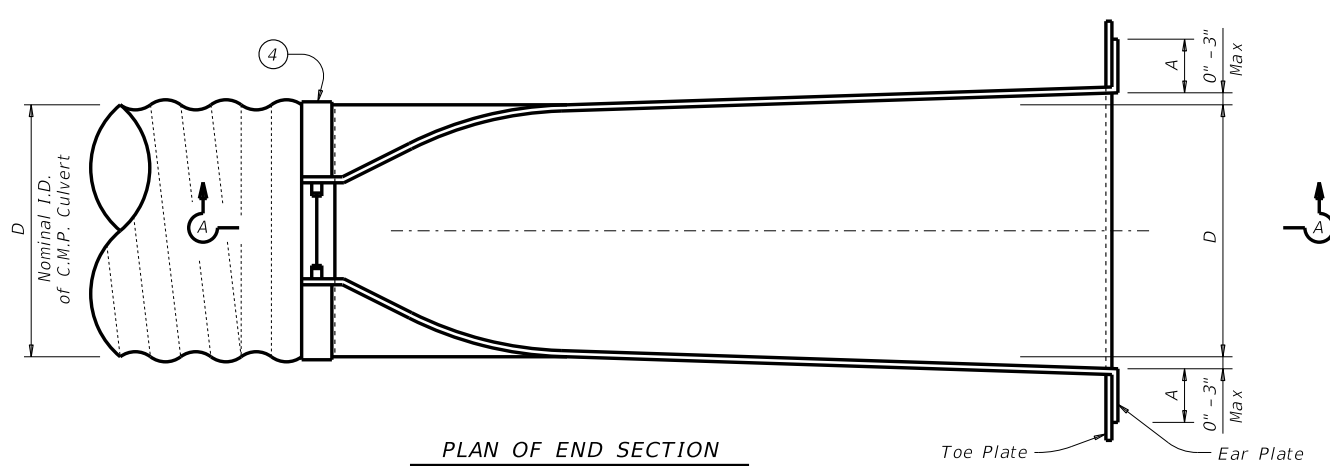
DRIVEWAY SAFETY TREATMENT EXAMPLE



NOTE: SEE STANDARD REQUIREMENTS FOR PIPE RUNNER NEED.

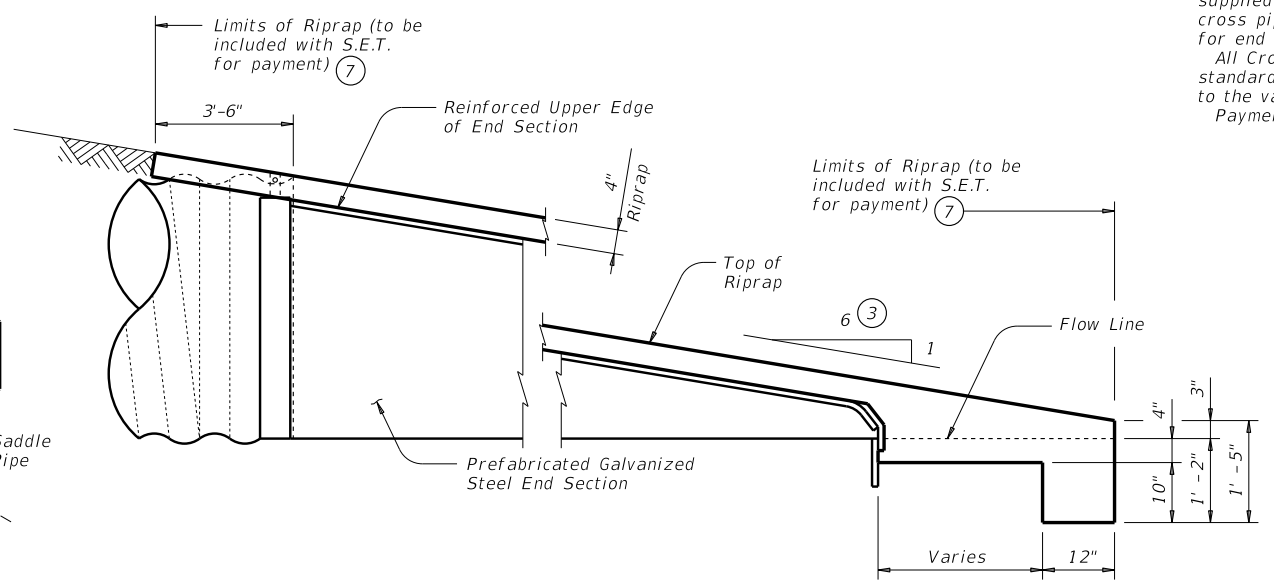
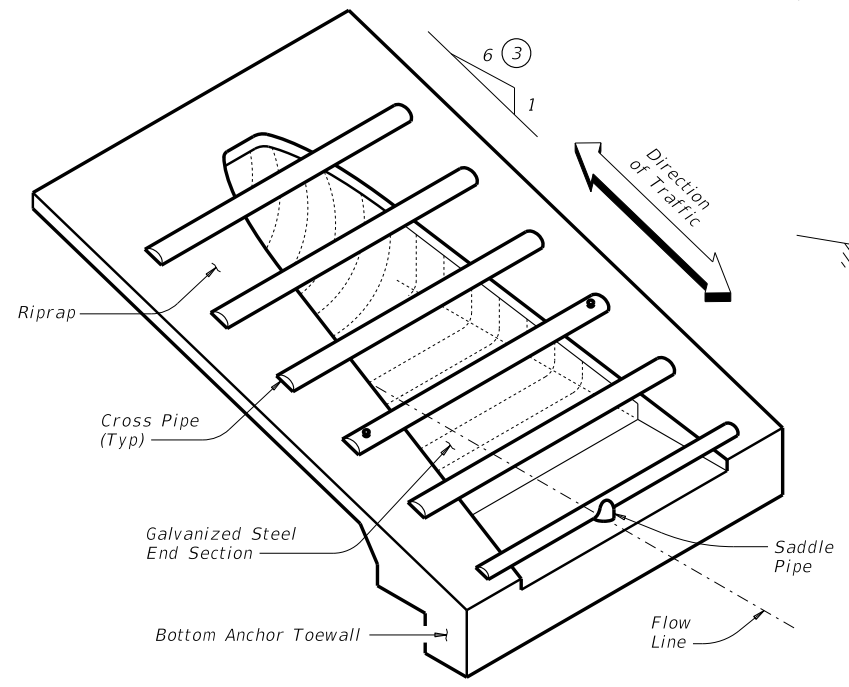
(NOT TO SCALE)

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PREFABRICATED GALVANIZED STEEL END SECTION DETAILS

(Safety End Treatment & Riprap not shown for clarity)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Cross Pipes not shown for clarity)

- ① Provide Size and Lengths of Cross Pipes as shown in the tables, except the first Cross Pipe from the bottom and the Saddle Pipe must be 3 1/2".
- ② Provide all 3-piece apron sections with 12 gage sides and 10 gage center panels.
- ③ Match Cross Slope as shown elsewhere in the plans. All quantities, calculations, and dimensions shown herein are based on the 6:1 Slope. 6:1 slope or flatter is required for vehicle safety.
- ④ Connection between Corrugated Metal Pipe Culvert and Galvanized Prefabricated End Section may be with strap and bolt as shown or other combinations of threaded rods and/or coupling bands.
- ⑤ Reinforce upper edge of Prefabricated End Section with minimum 3/8" dia smooth or deformed bar (pre-galvanized).
- ⑥ Values shown are minimum requirements.
- ⑦ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

CROSS PIPE LENGTHS & REQUIRED PIPE SIZES ①

D (Nominal Culvert I.D.)	Length of Cross Pipes	Cross Pipes Required	Cross Pipe Size
30" or Less	N/A	Not Required	N/A
36"	4'- 5"	Always Required	4.500 x 0.237
42"	4'-11"		
48"	5'- 5"	Always Required	5.563 x 0.258
54"	5'-11"		
60"	6'- 5"		

PREFABRICATED END SECTION INFORMATION

D (Nominal) (Culvert I.D.)	H ⑥	A ⑥	W ⑥	Gage ⑥
24" or less	6"	9"	D + 24"	16
30"	9"	12"	D + 32"	14
36"	9"	12"	D + 32"	14
42" or greater	12"	16"	D + 40"	12/10 ②

STANDARD PIPE SIZES ①

HSS Size	STD Size
4.000 x 0.226	3 1/2"
4.500 x 0.237	4"
5.563 x 0.258	5"

MATERIAL NOTES:

Provide Cross Pipes and Saddle Pipes conforming to ASTM A1085, A500 (Grade B), A53 (Type E or S, Grade B), or API 5LX52.
 Provide bolts and nuts conforming to ASTM A307.
 Galvanize all steel components, except reinforcement, after fabrication. Repair galvanizing damaged during transport or construction in accordance with Item 445, "Galvanizing".
 Toe Plate Extensions are required only when shown elsewhere in the Plans.
 Concrete Riprap is required only when Cross Pipes are required, unless otherwise shown in the Plans. Provide Concrete Riprap in accordance with Item 432, "Riprap". Bolted Anchor Toewall may be omitted when an alternate End Section with pre-attached cross pipes is supplied.
 Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of reinforcing steel in concrete riprap unless noted otherwise.

GENERAL NOTES:

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.
 Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.
 Alternate styles of End Sections, including those with pre-attached cross pipes, may be supplied. Alternate styles must meet all of the following: design values shown in tables for cross pipe size; spacing of cross pipes and location of first cross pipe; H, A, W, and gage for end section; and material requirements noted.
 All Cross Pipes, calculations, and dimensions are based on the End Section shown on this standard. Alternate styles of End Sections will require that appropriate adjustments be made to the values presented on this standard.
 Payment for riprap and toewall is included in price bid for each Safety End Treatment.

Bridge Division Standard

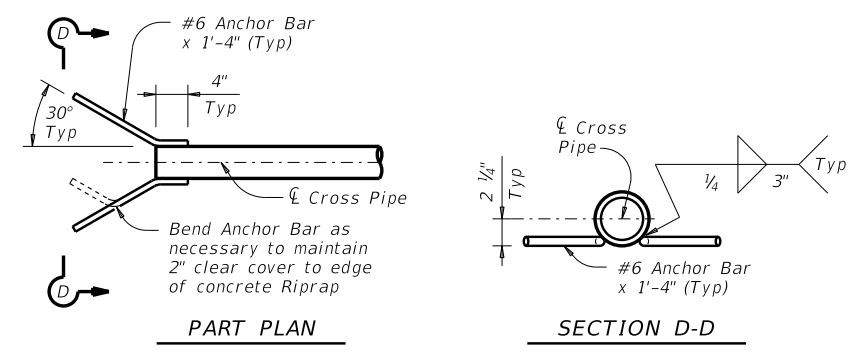
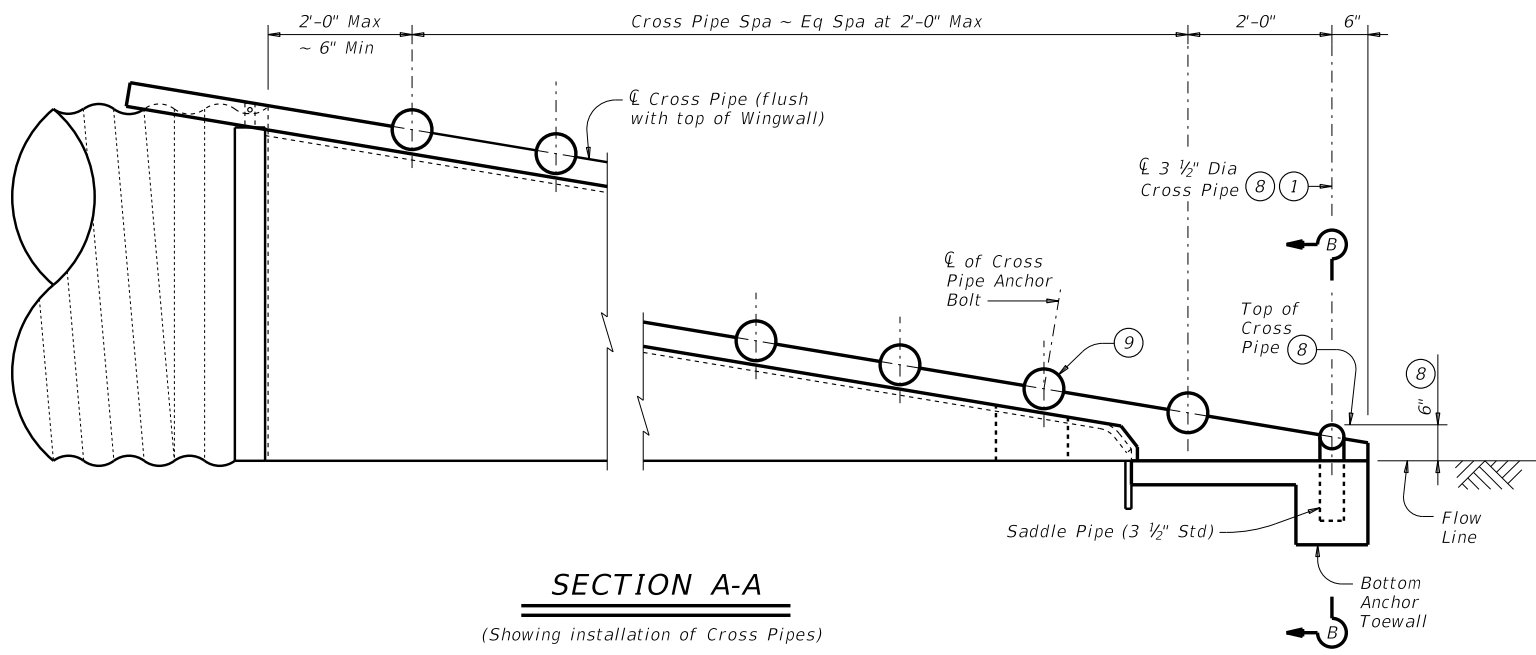
PREFABRICATED GALVANIZED STEEL END SECTION SAFETY END TREATMENT FOR 12" TO 60" DIA C.M.P. CULVERTS TYPE II ~ PARALLEL DRAINAGE
GS-ES-PD

FILE: gsespdse.dgn	DN: TxDOT	CK: TxDOT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	
5-14: Notes; add alternate requirements.				

DATE: FILE:

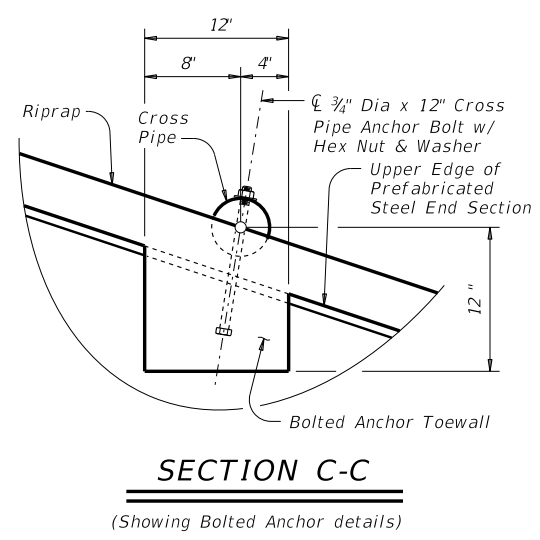
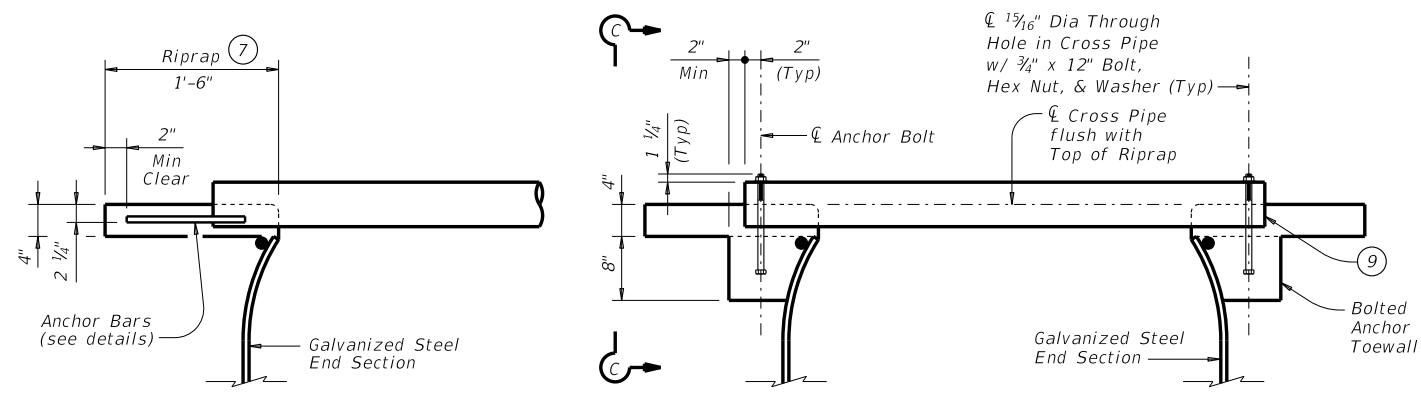
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DATE:
FILE:

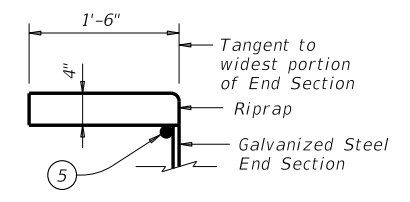
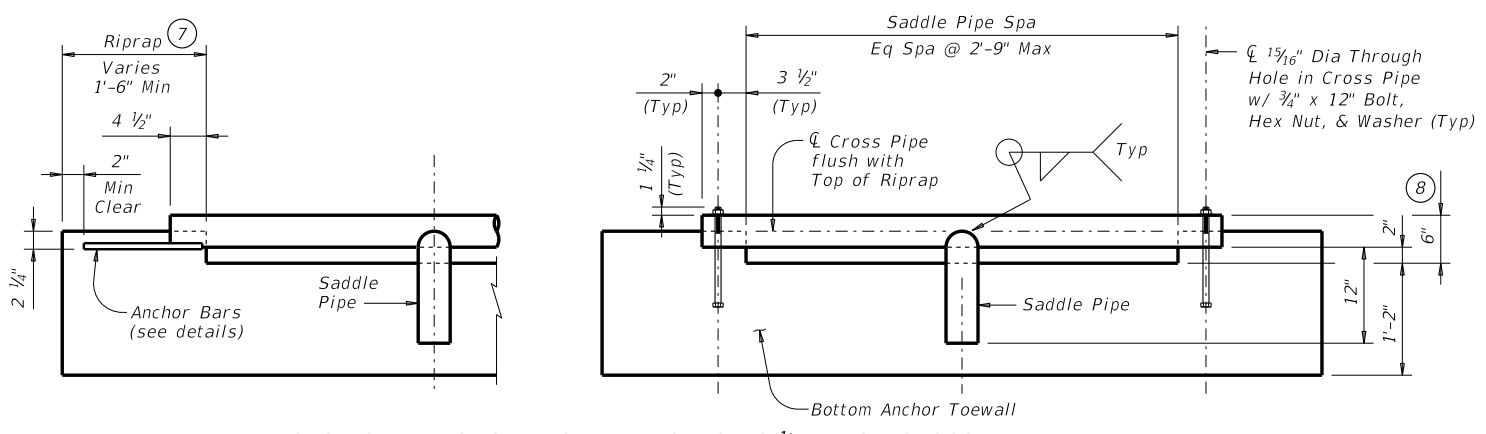


ESTIMATED CONCRETE RIPRAP QUANTITIES (10)

D (Nominal Culvert I.D.)	Concrete (CY)
12"	0.8
15"	0.9
18"	1.0
21"	1.1
24"	1.2
27"	1.3
30"	1.4
33"	1.5
36"	1.6
42"	1.8
48"	2.0
54"	2.2
60"	2.4



- 1 Provide Size and Lengths of Cross Pipes as shown in the tables, except the first Cross Pipe from the bottom and the Saddle Pipe must be 3 1/2". All other values shown are minimum requirements.
- 5 Reinforce upper edge of Prefabricated End Section with minimum 3/8" diameter smooth or deformed bar (pre-galvanized).
- 7 Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
- 8 The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.
- 9 The third Cross Pipe from the bottom of the Culvert must always be installed using a bolted connection. Ensure that concrete does not flow into this Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.
- 10 Riprap quantities shown are for one end of one culvert only. For multiple culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.



WITH ANCHOR BARS & RIPRAP WITH BOLTED ANCHOR

SECTION B-B
(Showing installation of Cross Pipes)

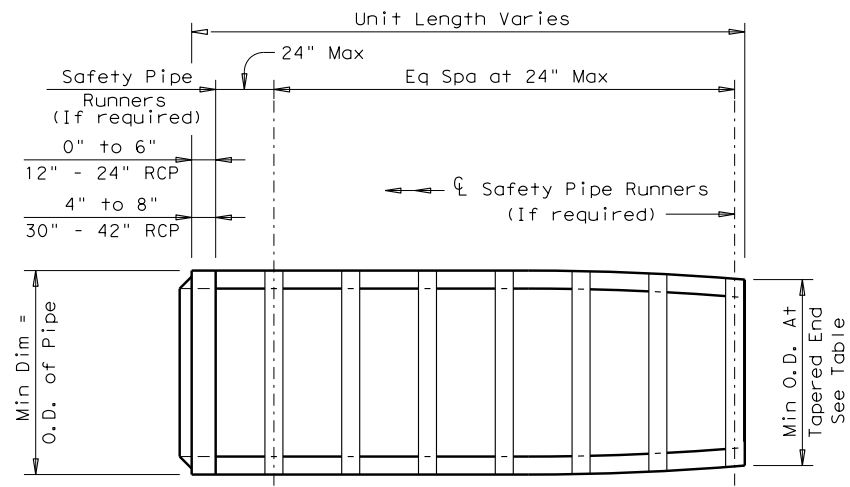
Texas Department of Transportation
Bridge Division Standard

PREFABRICATED GALVANIZED STEEL END SECTION SAFETY END TREATMENT FOR 12" TO 60" DIA C.M.P. CULVERTS TYPE II ~ PARALLEL DRAINAGE

GS-ES-PD

FILE: gsespdse.dgn	DN: TxDOT	CK: TxDOT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	
5-14: Notes; add alternate requirements.				

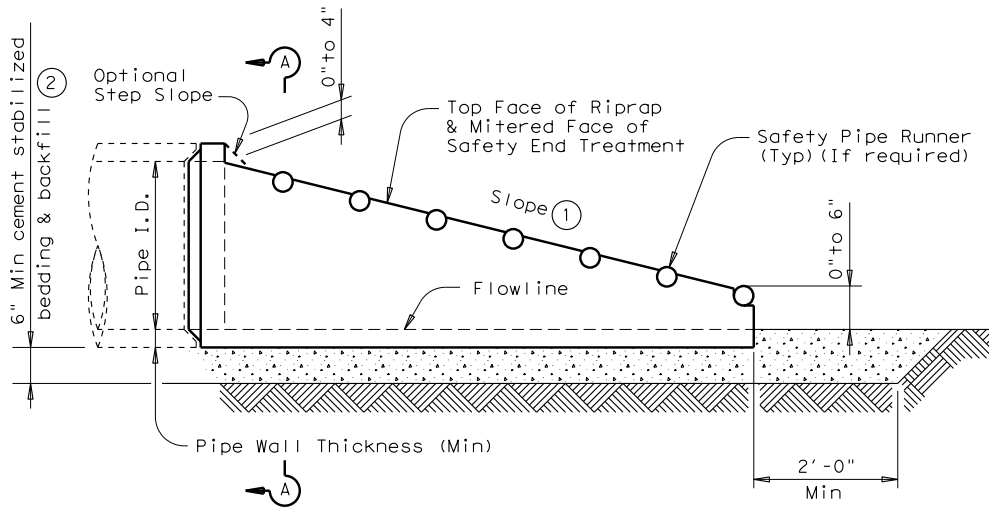
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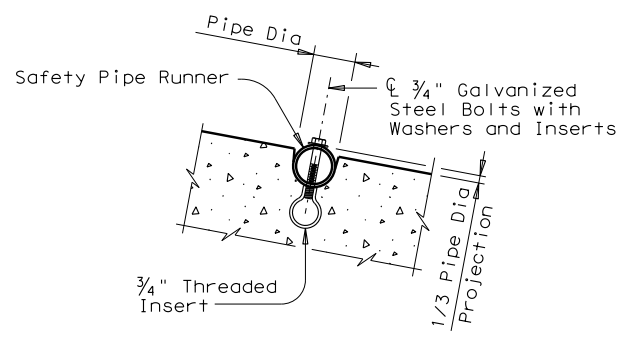
PLAN VIEW - 12" THRU 24"

- ① Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- ② Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the Safety End Treatment backfill shall be as directed by Engineer.
- ③ The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
- ④ Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.

PIPE I.D.	MINIMUM WALL THICKNESS	MINIMUM O.D.	MIN O.D. AT TAPERED END	MIN REINF REQUIREMENTS (Sq in/ft of pipe)	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
							SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O.D.	I.D.
12"	2"	16"	16"	0.07 CIRC.	6:1	4'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	19 1/2"	19"	0.07 CIRC.	6:1	5'-8"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	23"	21 1/2"	0.07 CIRC.	6:1	7'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 CIRC.	6:1	10'-6"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	37"	31"	0.18 CIRC.	6:1	12'-1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 ELIP.	6:1	15'-4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	51"	41 1/2"	0.23 ELIP.	6:1	18'-7"	Yes	Yes	4" STD	4.500"	4.026"



LONGITUDINAL ELEVATION - 12" THRU 24"



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS
(If required)

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment". When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

All precast concrete end sections shall be manufactured in accordance with Item "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

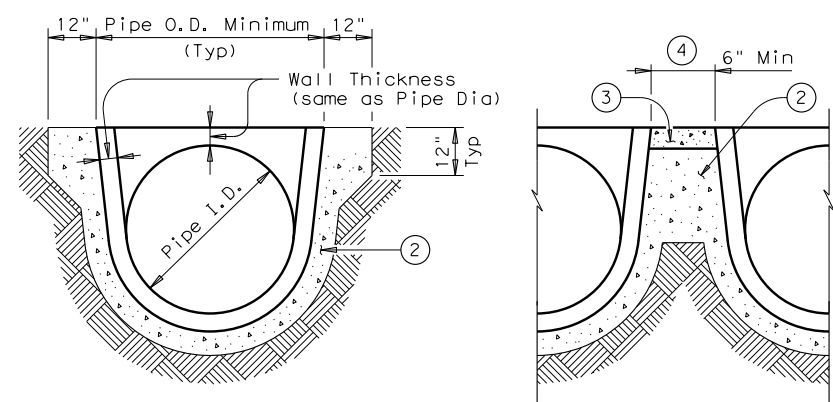
Precast concrete end sections shall be provided with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

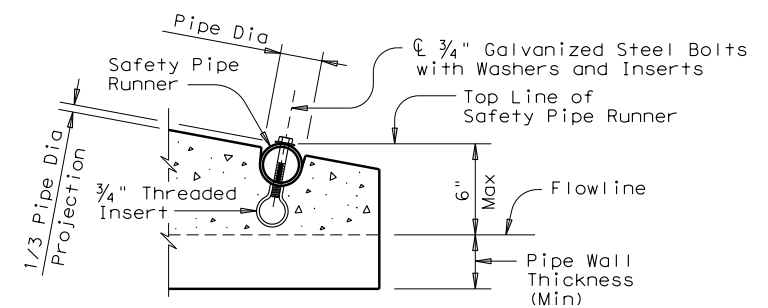
Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

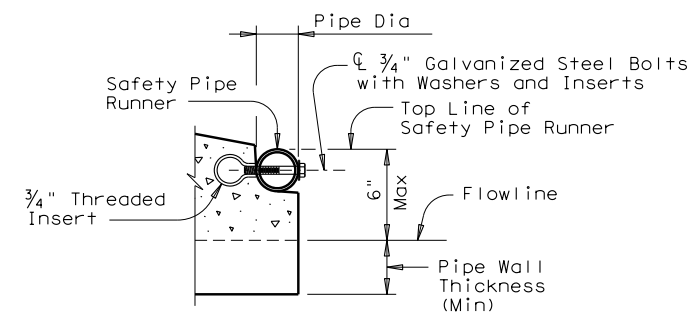
All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.



SECTION A-A MULTIPLE PIPE INSTALLATION



OPTION A



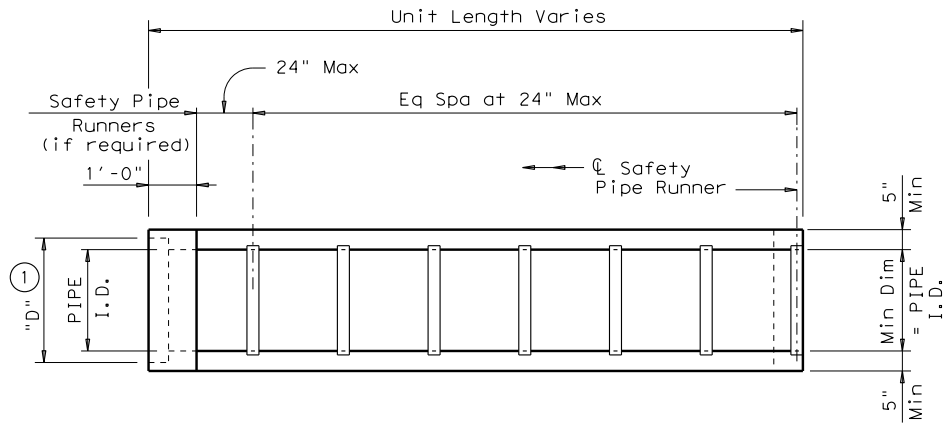
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS
(If required)

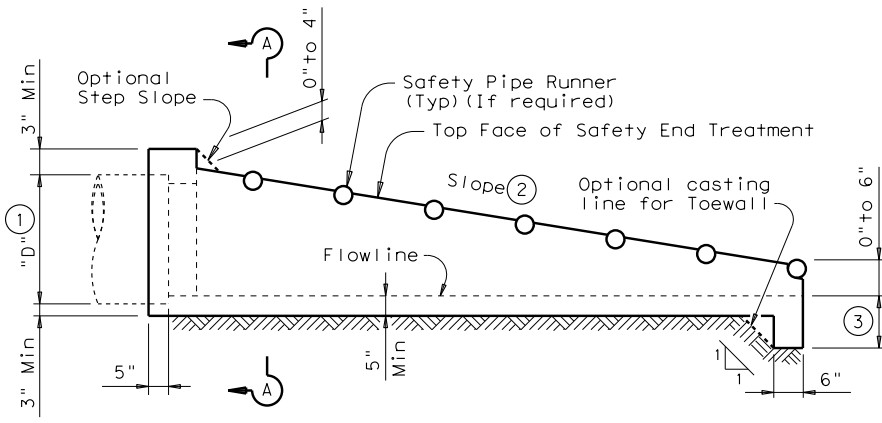
					Bridge Division Standard	
PRECAST SAFETY END TREATMENT TYPE II ~ PARALLEL DRAINAGE PSET-RP						
FILE: psetrpss.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF		
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY		
REVISIONS						
11-10: Add note for synthetic fibers.						
DIST		COUNTY			SHEET NO.	

DATE: FILE:

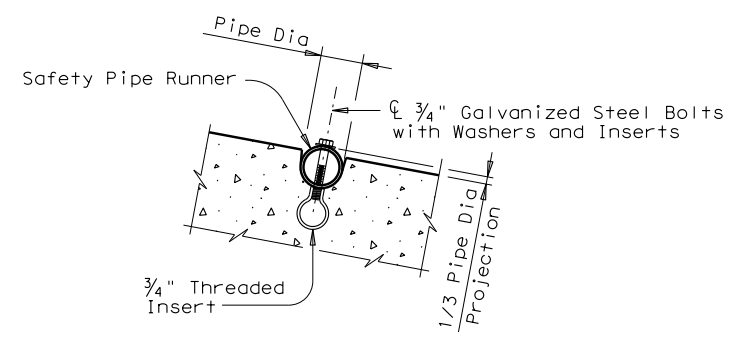
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PLAN

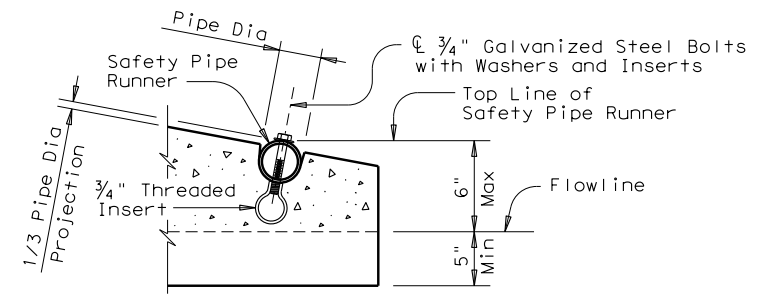


LONGITUDINAL ELEVATION

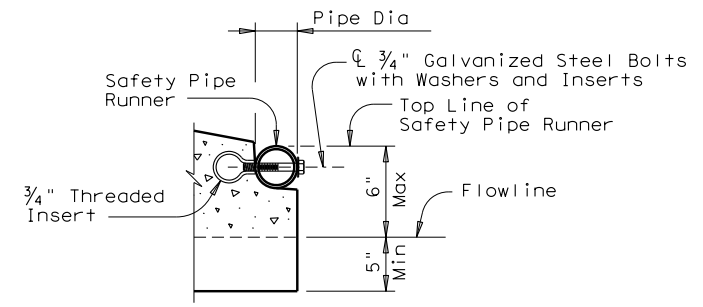


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



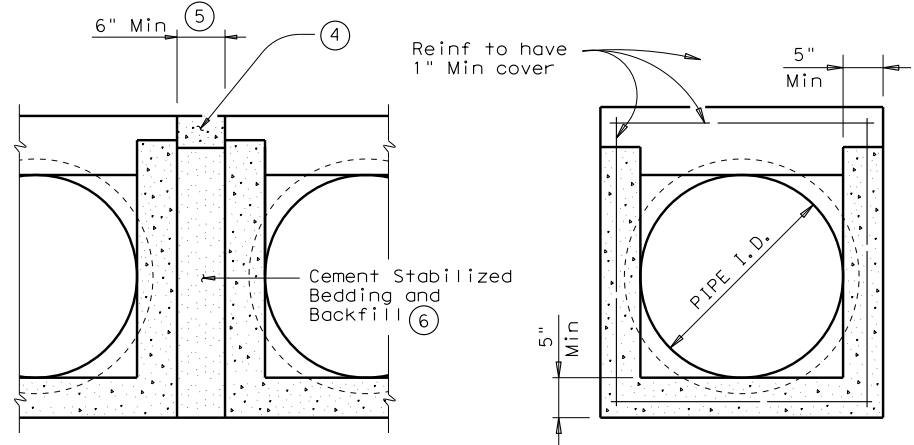
OPTION A



OPTION B

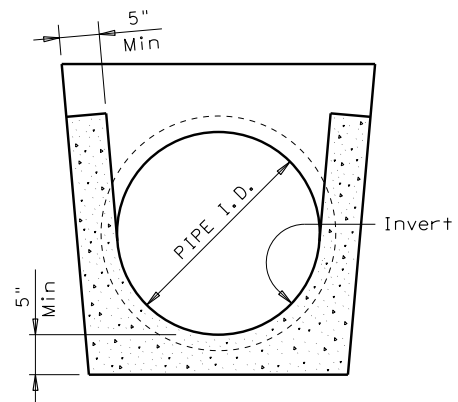
END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

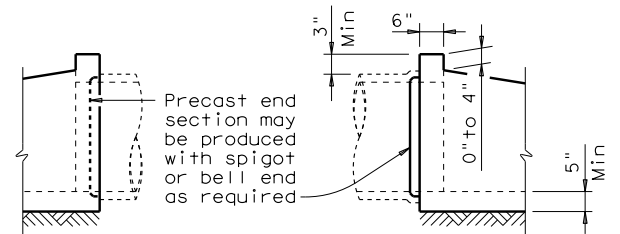


MULTIPLE PIPE INSTALLATION

SECTION A-A



OPTION WITH SQUARE BOTTOM



OPTIONAL JOINT

(Showing joint between RCP and Precast Safety End Treatment)

PIPE I. D.	PIPE WALL "B" THICKNESS	"D"	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
					SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O. D.	I. D.
12"	2"	17"	6:1	4'-9"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	20 1/2"	6:1	6'-5"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	24"	6:1	8'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	31"	6:1	11'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	38 1/2"	6:1	14'-8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	45 1/2"	6:1	17'-11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	52 1/2"	6:1	21'-2"	Yes	Yes	4" STD	4.500"	4.026"

- Dimension "D" is based on ASTM C-76, Class III, Wall "B" thickness. If any other wall thickness is used, dimension "D" must be adjusted accordingly.
- Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- Toewall to be used only when dimension is shown elsewhere in the plans.
- The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
- Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.
- Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill shall be as directed by Engineer.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment". When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture of this product shall conform to requirements of Item "Safety End Treatment" except as noted below:

- Minimum reinforcing shall be #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6 x 6 - W12 x W12 or 5 x 5 - W10 x W10 welded wire reinforcement (WWR).
- Concrete for precast (steel formed) sections shall be Class "C" with a minimum compressive strength of 3600 psi.

At the option and expense of the Contractor the next larger size of Safety End Treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Bridge Division Standard

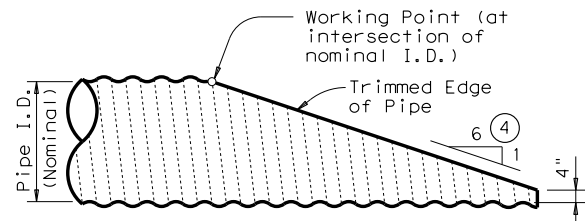
PRECAST SAFETY END TREATMENT
TYPE II ~ PARALLEL DRAINAGE

PSET-SP

FILE: psetspss.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	

DATE: FILE:

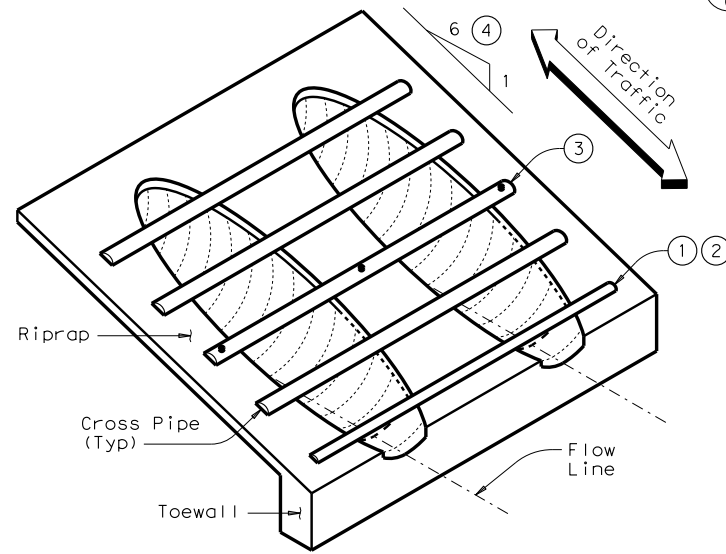
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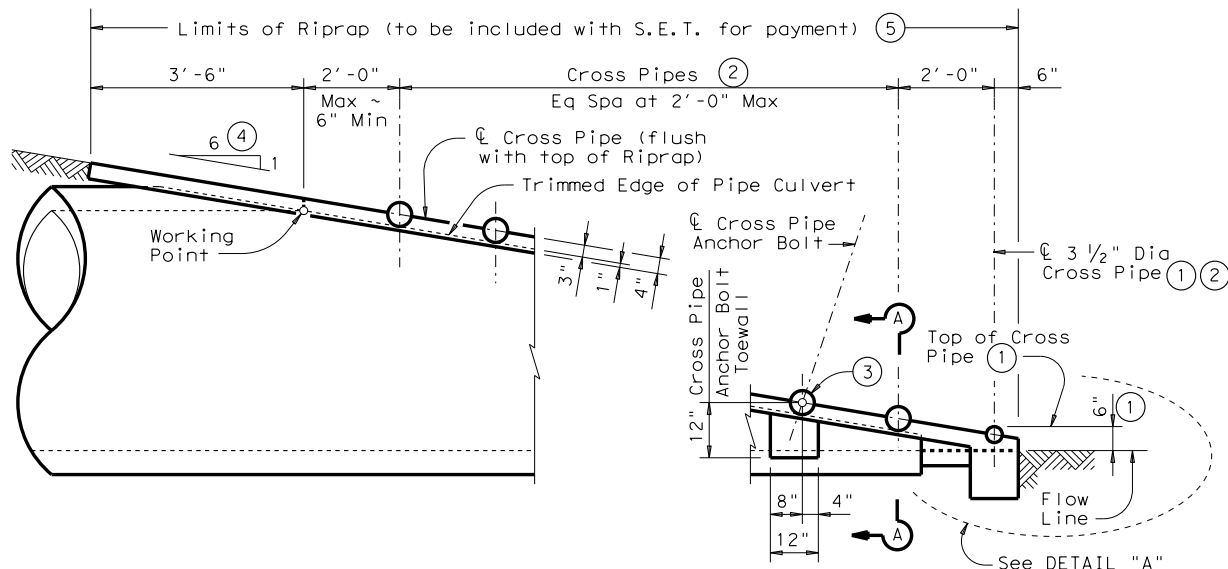
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.)
(Details at Concrete Pipe Culvert are similar.)

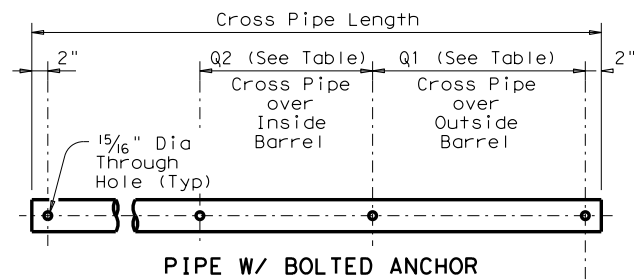


ISOMETRIC VIEW OF TYPICAL INSTALLATION

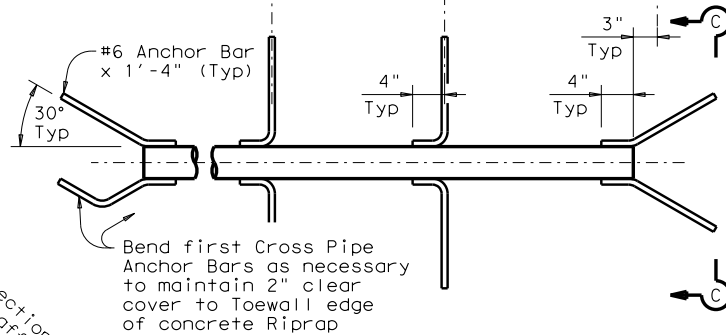


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

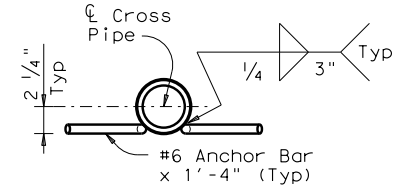
(Showing Concrete Pipe Culvert.)
(Details at Corrugated Metal Pipe Culvert are similar.)



PIPE W/ BOLTED ANCHOR

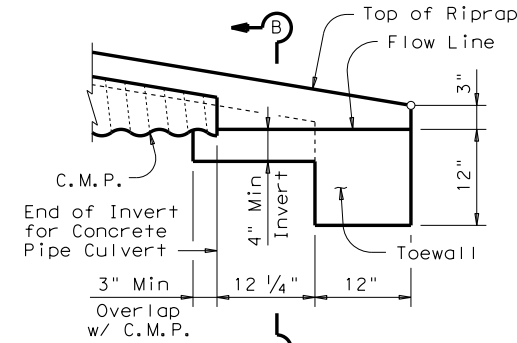


PIPE W/ ANCHOR BARS



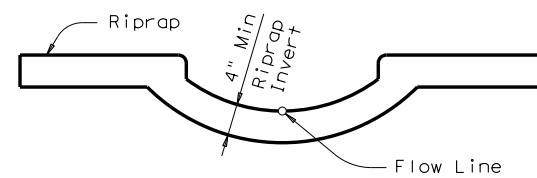
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

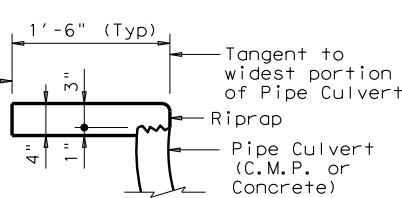
(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)



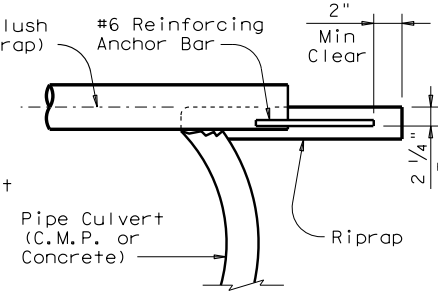
SECTION B-B

(Cross Pipes not shown for clarity.)

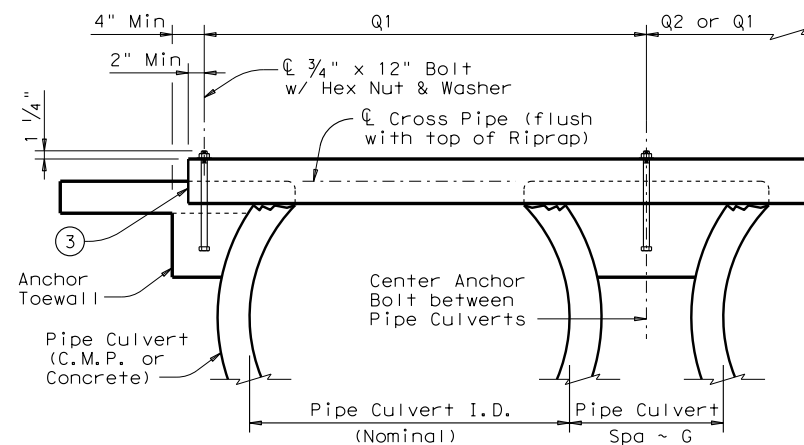
Limits of Riprap (to be included with S.E.T. for payment) ⑤



SHOWING TYPICAL PIPE CULVERT & RIPRAP



SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②

Nominal Culvert I.D.	Conc Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'-1"	1'-9"	3 or more Pipe Culverts	3" Std (3.500" O.D.)
15"	0.7	11"	N/A	2'-5"	2'-2"		
18"	0.8	1'-2"	N/A	2'-10"	2'-8"		
21"	0.9	1'-4"	N/A	3'-2"	3'-1"		
24"	0.9	1'-7"	N/A	3'-6"	3'-7"	3 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
27"	1.0	1'-8"	N/A	3'-10"	3'-11"		
30"	1.1	1'-10"	N/A	4'-2"	4'-4"	2 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
33"	1.2	1'-11"	4'-2"	4'-5"	4'-8"	All Pipe Culverts	
36"	1.3	2'-1"	4'-5"	4'-9"	5'-1"	All Pipe Culverts	4" Std (4.500" O.D.)
42"	1.5	2'-4"	4'-11"	5'-5"	5'-10"		
48"	1.7	2'-7"	5'-5"	6'-0"	6'-7"	All Pipe Culverts	5" Std (5.563" O.D.)
54"	2.0	3'-0"	5'-11"	6'-9"	7'-6"		
60"	2.2	3'-3"	6'-5"	7'-4"	8'-3"		
66"	2.4	3'-3"	6'-11"	7'-10"	8'-9"		
72"	2.7	3'-4"	7'-5"	8'-5"	9'-4"		

- ① The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.
- ② Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 1/2" Standard Pipe (4" O.D.).
- ③ The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.
- ④ Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.
- ⑤ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
- ⑥ Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52. Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation
Bridge Division Standard

SAFETY END TREATMENT
 FOR 12" DIA TO 72" DIA
 PIPE CULVERTS
 TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE: setppdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	

DATE: FILE: