

**GENERAL NOTES**

**STEEL**  
Steel shall meet A.A.S.H.T.O. Specifications.

**CONNECTORS**  
Sizes thru 24" attach to pipe with Type #1 straps. All other sizes attach with Type #2 Rods and Lugs.

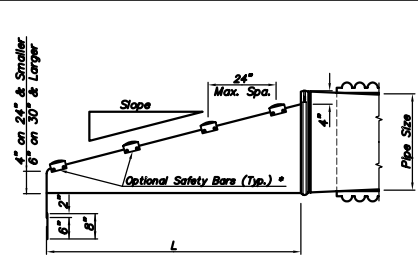
**TOE PLATE EXTENSIONS**  
When required, toe plate extensions are to be the same gage as End Section. Dimensions shall be Overall Width less 6 inches by 8 inches high.

**OPTIONAL SAFETY BARS**  
Safety bars, when specified, shall be Schedule 40 Galvanized Steel Pipe. Pipe to be Galvanized after forming.

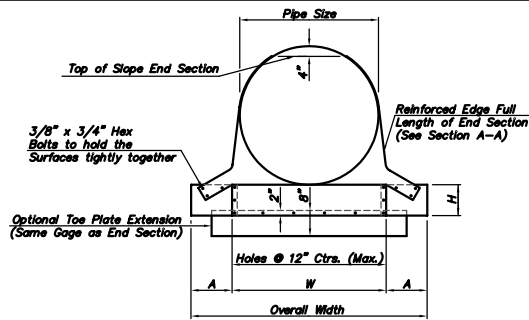
**MISCELLANEOUS DETAILS**  
Details of Construction Materials and Workmanship not shown on this drawing shall conform to J & J Drainage Products Standards.

Sizes over 24" have multiple panels joined with bolts and nuts.

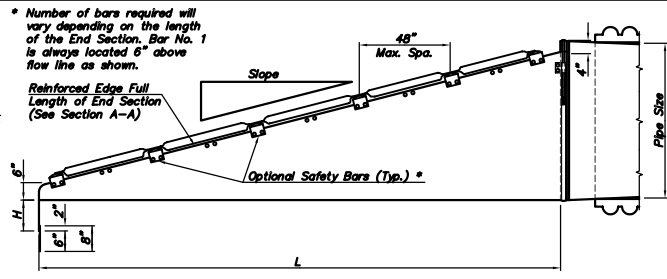
Slotted holes for safety bar attachment shall be provided for all End Sections.



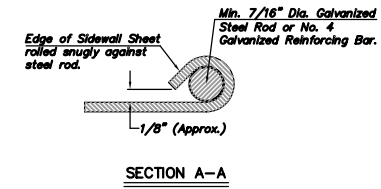
**SIDE ELEVATION OF PARALLEL DRAINAGE STRUCTURE**



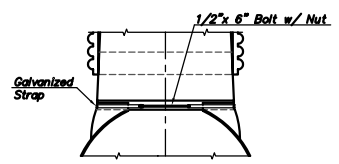
**FRONT VIEW**



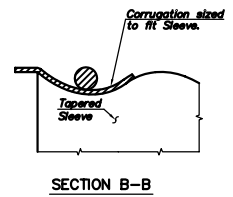
**SIDE ELEVATION FOR CROSS DRAINAGE STRUCTURE**



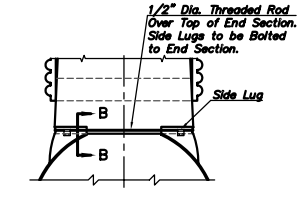
**SECTION A-A**



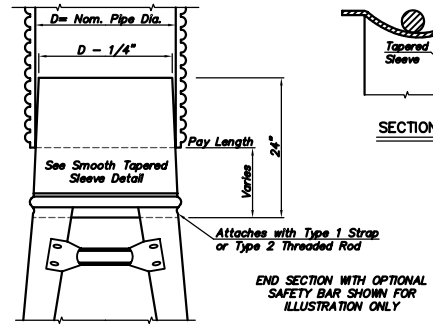
**TYPE #1 CONNECTOR DETAIL**  
Thru 24"



**SECTION B-B**



**TYPE #2 CONNECTOR DETAILS**  
For 30" and Larger



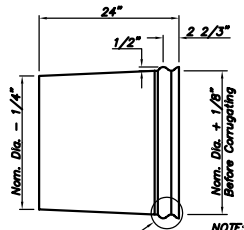
**END SECTION WITH OPTIONAL SAFETY BAR SHOWN FOR ILLUSTRATION ONLY**

**CROSS DRAINAGE BAR DETAIL OF OPTIONAL SAFETY BARS**

Pipe Dia. (In.)	Min. Thick.	Dimensions + or - 2"				L Dimensions + or - 2"				
		Gage	A	H	W	Overall Width	Slope	Length (In.)	Slope	Length (In.)
12	.064	16	8	4	18	34		6:1	27	
15	.064	16	8	6	21	37	4:1	20	6:1	30
18	.064	16	8	6	24	40	4:1	32	6:1	48
18	.064	16	8	6	30	46	4:1	56	6:1	64
24	.109	12	12	9	36	60	4:1	80	6:1	120
30	.109	12	12	9	42	66	4:1	104	6:1	156
36	.109	12	12	9	48	72	4:1	128	6:1	192
42	.109	12	16	12	54	78	4:1	152	6:1	228
48	.109	12	16	12	60	84	4:1	176	6:1	264
54	.109	12	16	12	66	90	4:1	200	6:1	300
60	.109	12	16	12	72	96	4:1	224	6:1	336

\* - Minimum Thickness of all 10:1 Slope End Sections is 0.109" (12 Gage)

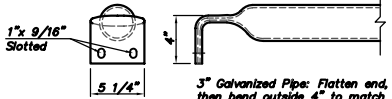
**TAPERED SLEEVE FOR ATTACHING STEEL END SECTIONS TO SMOOTH PIPE**



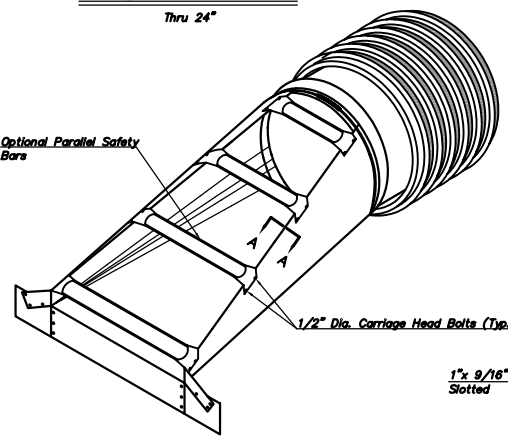
**SMOOTH TAPERED SLEEVE DETAIL**

NOTE: Metal to be 12 Gage Smooth Galvanized in Accordance with AASHTO M218.

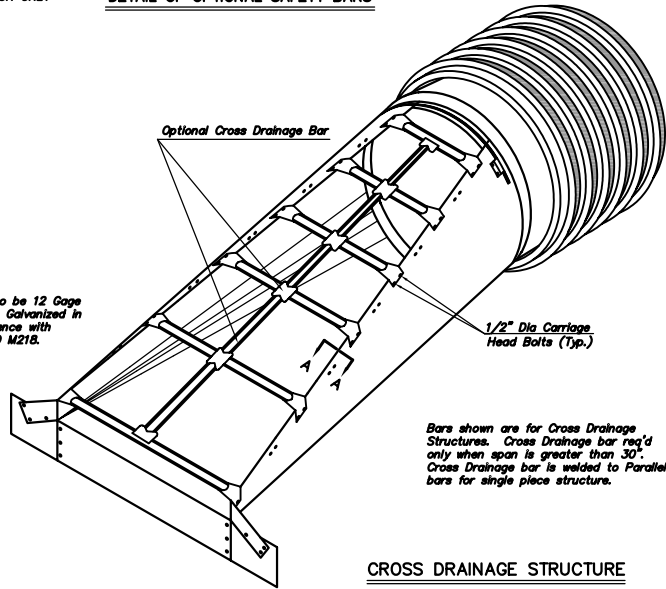
Form 1/2" x 2 2/3" Corrugations. Maintain Inside Diameter of Sleeve.



**PARALLEL BARS DETAIL OF OPTIONAL SAFETY BARS**



**24" PARALLEL DRAINAGE STRUCTURE**



**CROSS DRAINAGE STRUCTURE**

Bars shown are for Cross Drainage Structures. Cross Drainage bar req'd only when span is greater than 30". Cross Drainage bar is welded to Parallel bars for single piece structure.

No.	Date	Revisions

**SAFETY SLOPE END SECTION FOR HDPE PIPES**