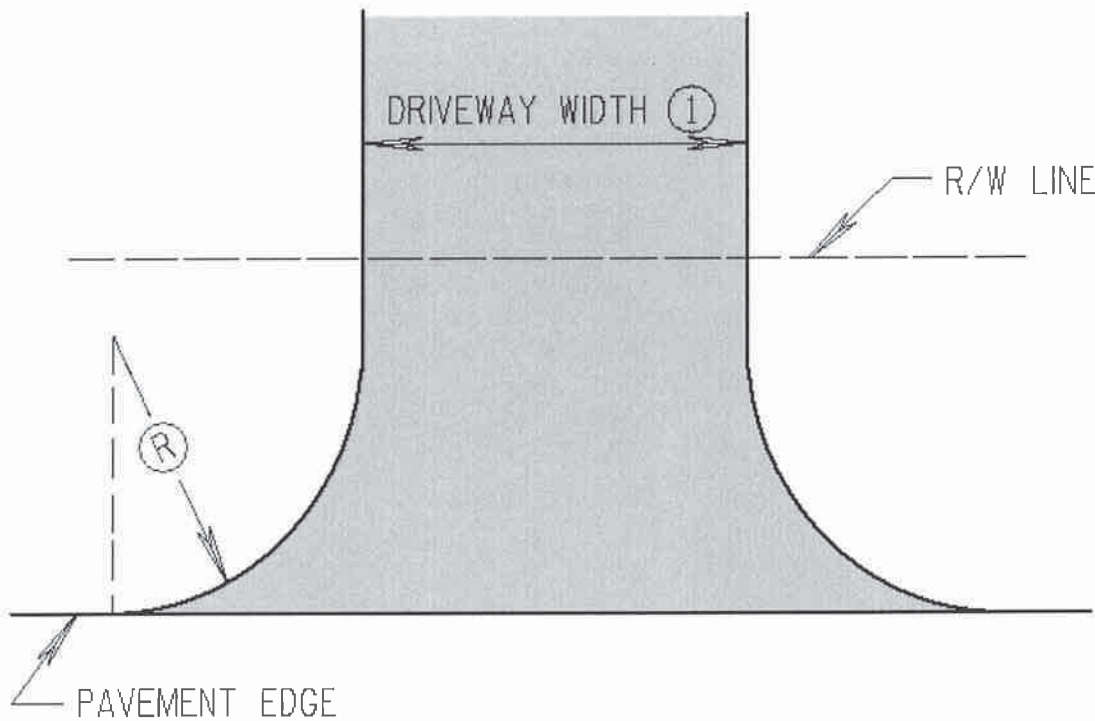


DRIVEWAY CONSTRUCTION DETAILS



COMMERCIAL

① DRIVEWAY WIDTH: 35' max, 12' min

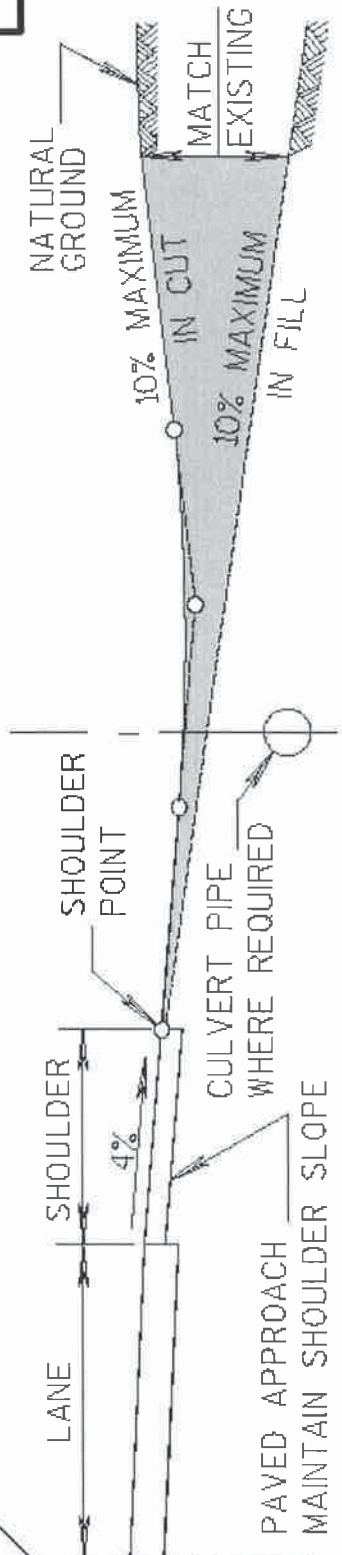
Ⓡ RADII: 40' max,
(20' for inside angled driveway)

NON-COMMERCIAL

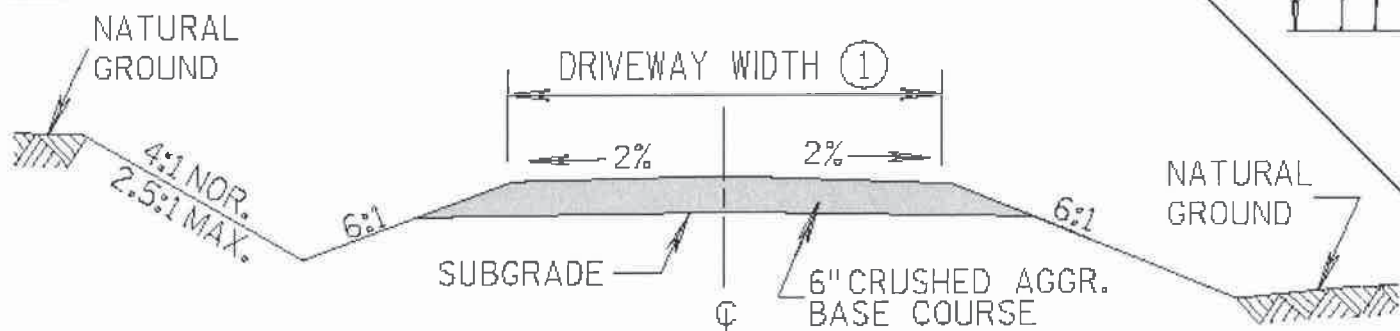
① DRIVEWAY WIDTH: 24' max, 12' min
16' desirable

Ⓡ RADII: 8.5' normal, 10' max

ALL CURVILINEAR PRIVATE ENTRANCE OUTLINES SHALL
BE CONTAINED WITHIN THE HIGHWAY RIGHT-OF-WAY



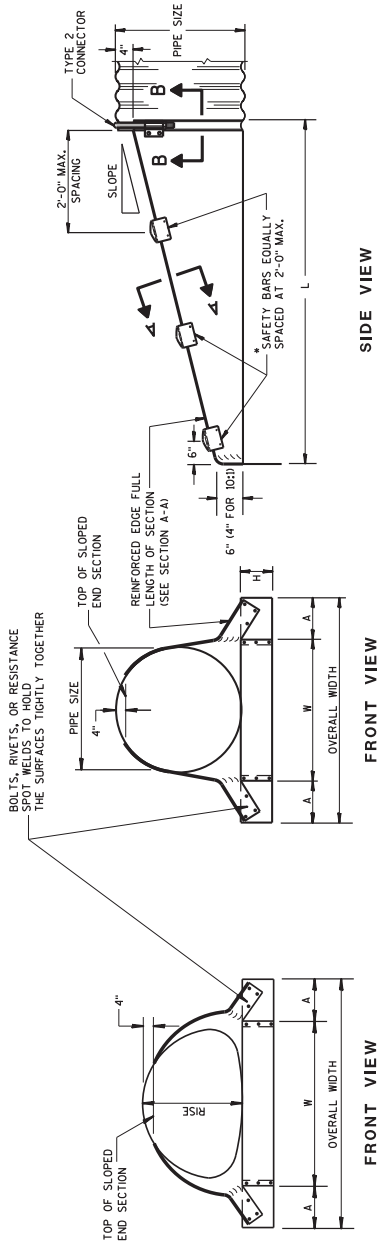
CROSS-SECTION





8F7: Steel Apron Endwalls for Culvert Pipe and Pipe Arch Sloped Side Drains

BOLTS, RIVETS, OR RESISTANCE
SPOT WELDS TO HOLD
THE SURFACES TIGHTLY TOGETHER

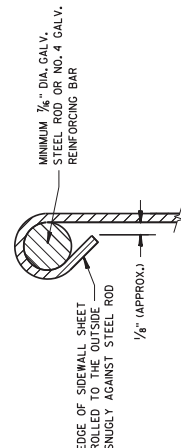


FRONT VIEW

FRONT VIEW

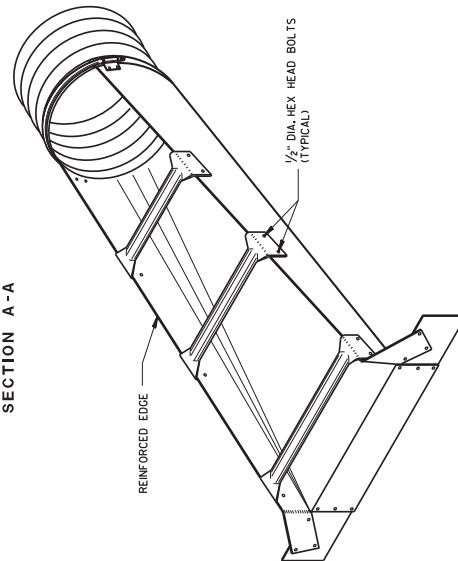
FRONT VIEW

*NOTE: MINIMUM 1/4" DIA. GALV. STEEL ROD OR NO. 4 GALV. REINFORCING BAR
EDGES OF SIDEWALL SHEET
ROLLED TO THE OUTSIDE
SNUGLY AGAINST STEEL ROD
1/8" (APPROX.)



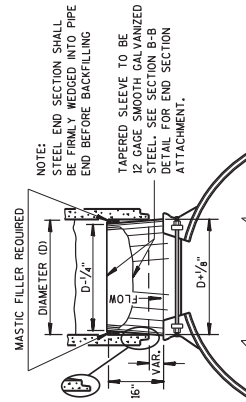
DETAIL OF SAFETY BAR

SECTION A-A



ISOMETRIC VIEW

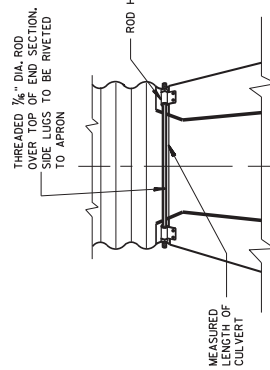
STEEL ADAPTER SLEEVE FOR
CONCRETE PIPE



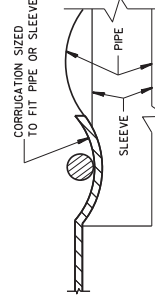
NOTE: STEEL END SECTION SHALL
BE FIRMLY WEDGED INTO PIPE
END BEFORE BACKFILLING
TAPERED SLEEVE TO BE
12 GAGE SMOOTH GALVANIZED
STEEL - SEE SECTION B-B
DETAIL FOR END SECTION
ATTACHMENT.

TYPE 2

CONNECTION DETAIL



SECTION B-B



STEEL APRON ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH
SLOPED SIDE DRAINS

DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

APPROVED
DATE 9/14/2022
JERRY H. ZOGG
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

SLOPED END SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, SECTION 521 FOR STEEL APRON ENDWALLS.

SAFETY BARS SHALL BE FABRICATED FROM GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL.

STEEL APRON ENDWALLS FOR CULVERT PIPE SLOPED SIDE DRAINS									
PIPE DIA. (IN.)	MIN. THICK. (INCHES)	DIMENSIONS (INCHES)			L. DIMENSIONS				
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30
18	.064	8	6	24	40	4:1	32	6:1	48
21	.064	8	6	27	43	4:1	44	6:1	66
24	.064	8	6	30	46	4:1	56	6:1	84
30	.109	12	9	36	60	4:1	80	6:1	120
36	.109	12	9	42	66	4:1	104	6:1	156
42	.109	16	12	48	80	4:1	128	6:1	192
48	.109	16	12	54	86	4:1	152	6:1	228
54	.109	16	12	60	92	4:1	176	6:1	264
60	.109	16	12	66	98	4:1	200	6:1	300

STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED SIDE DRAINS

EQUIV. DIA. (INCHES)	SPAN (INCHES)	MIN. THICK. (INCHES) ①	RISE (INCHES)	DIMENSIONS (INCHES)			L. DIMENSIONS				
				A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	17	.13	.064	7	6	30	44	4:1	19	6:1	30
18	21	.15	.064	8	6	27	43	4:1	20	6:1	30
21	24	.18	.064	8	6	30	46	4:1	32	6:1	48
24	28	.20	.064	8	6	34	50	4:1	40	6:1	60
30	35	.24	.079	12	9	41	65	4:1	56	6:1	84
36	42	.29	.109	12	9	48	72	4:1	76	6:1	114
42	49	.33	.109	16	12	55	87	4:1	92	6:1	138
48	57	.38	.109	16	12	63	95	4:1	112	6:1	168
54	64	.43	.109	16	12	70	102	4:1	132	6:1	198

① * MINIMUM THICKNESS OF ALL 10:1 SLOPED SIDE DRAINS IS 0.109".

② ACTUAL SLOPE GREATER THAN 10:1