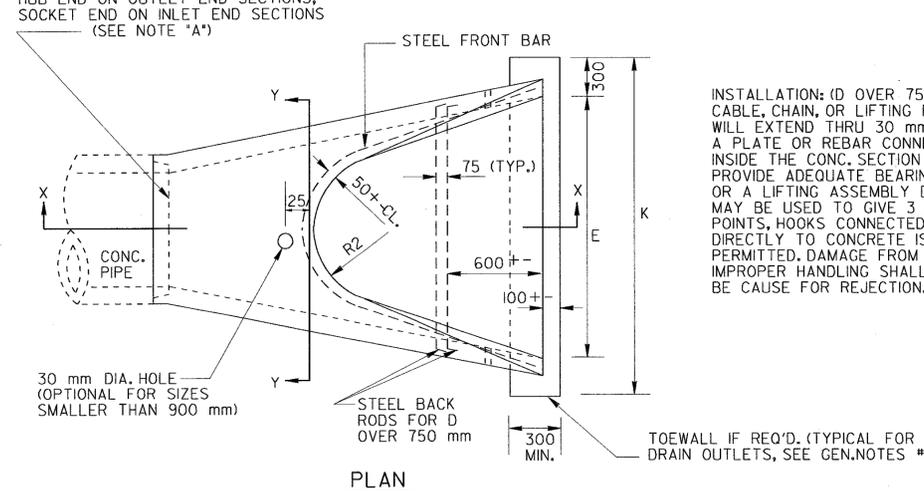
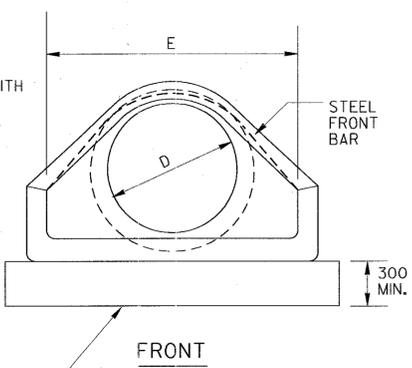




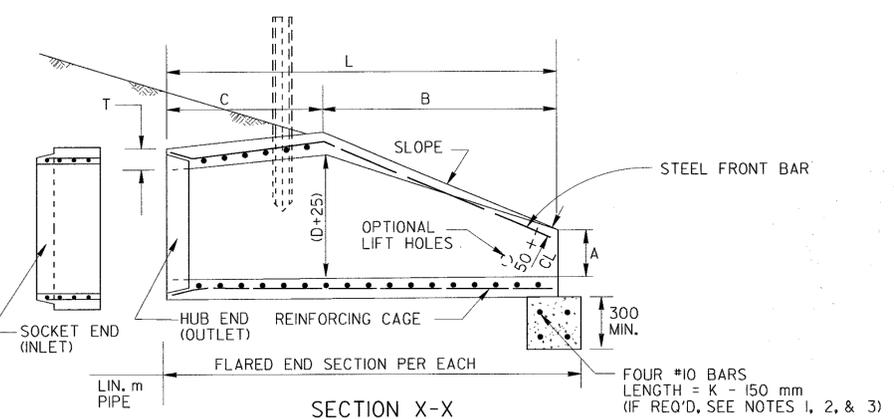
END SECTION TO PIPE JOINT AS SHOWN AS TYPICAL:
HUB END ON OUTLET END SECTIONS;
SOCKET END ON INLET END SECTIONS
(SEE NOTE "A")



INSTALLATION: (D OVER 750 mm)
CABLE, CHAIN, OR LIFTING PIN
WILL EXTEND THRU 30 mm HOLE WITH
A PLATE OR REBAR CONNECTED
INSIDE THE CONC. SECTION TO
PROVIDE ADEQUATE BEARING AREA
OR A LIFTING ASSEMBLY DEVICE
MAY BE USED TO GIVE 3 LIFT
POINTS, HOOKS CONNECTED
DIRECTLY TO CONCRETE IS NOT
PERMITTED. DAMAGE FROM
IMPROPER HANDLING SHALL
BE CAUSE FOR REJECTION.



NOTE: DO NOT CUT CONCRETE PIPE. USE FULL LENGTH SECTIONS ONLY
WRAP SLOPE TO CONFORM WITH PIPE LENGTH AND END SECTION.



FOUR #10 BARS
LENGTH = K - 150 mm
(IF REQ'D, SEE NOTES 1, 2, & 3)

REINFORCING CAGE:
(1) WIRE FABRIC CAGE SHALL HAVE SAME STEEL AREA AS CL. II PIPE, AASHTO M-170M.
(2) ALTERNATE: #10 BARS SPACED 400 mm +/- LONGITUDINALLY WITH #6 BARS TRANSVERSELY AT 200 mm O.C.
MAX. SPACING, SPOT WELDED OR TIED TO FORM CAGE. (BACK RODS MAY BE OMITTED.)

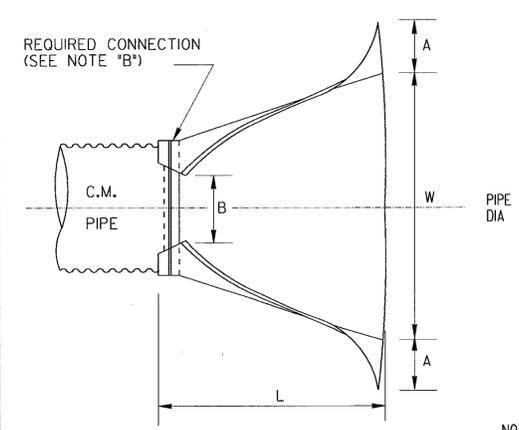
NOTE "A":
CONTRACTOR WILL INFORM PRODUCER IF CONCRETE FLARED END SECTION IS FOR
INLET OR FOR OUTLET END. SOCKET (TONGUE OR SPIGOT) END IS REQUIRED FOR INLETS.
HUB (GROOVE OR BELL) END IS REQUIRED FOR OUTLETS. SOCKET TO SOCKET OR HUB TO
HUB JOINT WILL NOT BE ACCEPTED UNLESS A REINFORCED CONCRETE COLLAR IS
BUILT AROUND THE JOINT WITH NO PAYMENT BEING MADE FOR THE COLLAR.
FLARED END SECTIONS SHALL BE JOINED TO PIPE WITH ALL SPACE IN THE JOINT FILLED WITH EITHER BITUMINOUS
PLASTIC CEMENT OR PREFORMED PLASTIC GASKET (SEC. 848).

WALL THICKNESS (T) IS SHOWN AS NOMINAL AND MAY BE INCREASED AT PRODUCER'S OPTION FOR DESIRED JOINT
DESIGN OR TO ALLOW A FLAT OUTSIDE BOTTOM ON THE FLARE, WITH INSIDE DIMENSIONS OF FLARE RETAINED AS SHOWN.
T = PIPE WALL THICKNESS (0.0833D + 25 mm +/- TYPICAL)

DIMENSIONS AND REINFORCING FOR CONCRETE FLARED END SECTIONS (+35 mm TOLERANCE)											OUTLET TOEWALL (IF REQ'D)		
PIPE DIA	FRONT BAR	BACK RODS	SLOPE +/-	A	B	C	L	E	P	R1	R2	K = E = 0.6m	m ³ CONC.
300	I-#10 x 1600	NOT REQ'D.	2.2%	100	610	1250	1850	610	510	250	225	1.2	.11
375	I-#10 x 1800	NOT REQ'D.	2.2%	150	680	1180	1850	760	610	300	280	1.4	.13
450	I-#10 x 2150	NOT REQ'D.	2.2%	225	680	1180	1850	910	740	410	300	1.5	.14
600	I-#10 x 2950	NOT REQ'D.	2.4%	250	1100	760	1880	1210	810	430	360	1.8	.17
750	I-#13 x 3500	NOT REQ'D.	2.4%	300	1380	500	1880	1510	940	460	380	2.1	.20
900	I-#13 x 4150	2-#13 x 1875	2.4%	380	1600	890	2500	1830	1210	610	510	2.4	.23
1050	I-#13 x 4150	2-#13 x 2200	2.4%	520	1600	890	2500	1980	1360	710	560	2.6	.24

* NOTE: "C" AND "L" DIMENSIONS MAY BE MEASURED TO EITHER END OF JOINT CONNECTION AT PIPE.

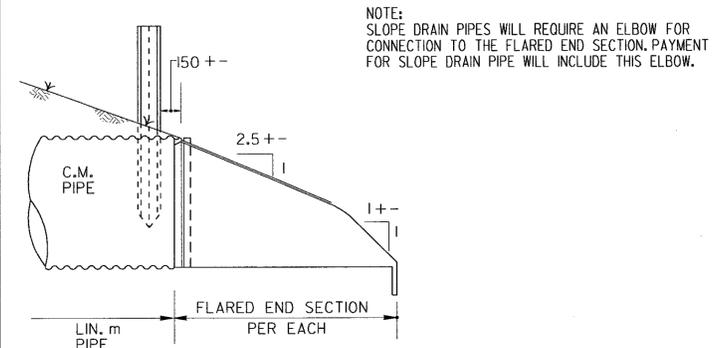
METAL FLARED END SECTION
(USE ONLY WITH COR. METAL PIPE)



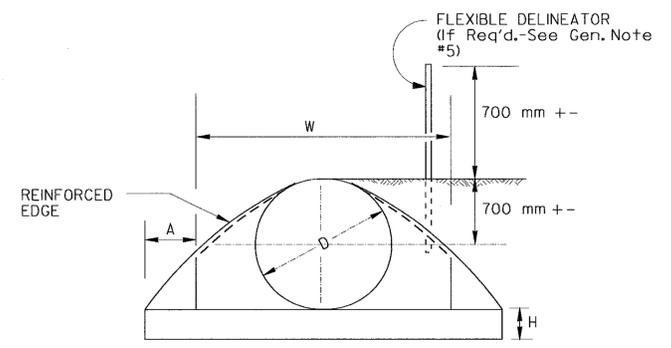
NOTE: GALVANIZED STEEL FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED STEEL PIPE AND ALUMINUM FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED ALUMINUM PIPE UNLESS OTHERWISE APPROVED BY D.O.T. OFFICE OF MATERIALS AND TESTS.

FLARED END SECTION DIMENSIONS							
PIPE SIZE "D" (mm)	THICKNESS (mm)		A	B	H	L	W
	GALV. STEEL	ALUM.	A=0.4 D +/-25	B=0.5 D +/-25	H=0.25 D +/-25 MIN 150	L=L67 D +/-40	W=2.0 D +/-50
300	1.6	1.5	125	150	150	500	600
375	1.6	1.5	150	175	150	680	750
450	1.6	1.5	175	225	150	760	900
600	1.6	1.5	225	300	150	1010	1200
750	2.0	1.9	300	380	178	1280	1500
900	2.0	1.9	360	430	225	1510	1800
1050	2.8	4.2	430	520	250	1780	2100

NOTE: WHERE METAL FLARED END SECTIONS ARE USED WITH MULTIPLE PIPE LINES, THE STANDARD SPACING BETWEEN PIPES (S=D OR 900 mm) MAY HAVE TO BE INCREASED (S=1.75 D TYPICAL) TO PREVENT OVERLAP OF END SECTION WINGTIPS. SEE ALSO STD. 10300.

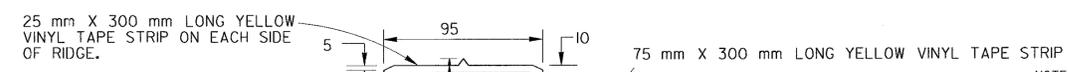


NOTE: SLOPE DRAIN PIPES WILL REQUIRE AN ELBOW FOR CONNECTION TO THE FLARED END SECTION. PAYMENT FOR SLOPE DRAIN PIPE WILL INCLUDE THIS ELBOW.



GENERAL NOTES :

- TOEWALLS ARE REQ'D. FOR OUTLETS OF CONC. STORM DRAINS, EXCEPT WHERE DITCH PAVING OR OTHER EROSION PROTECTION IS PROVIDED OR WHERE THE OUTLET VELOCITY IS LESS THAN 2.4 m/sec. TOEWALLS ARE NOT REQUIRED FOR SIDE DRAINS, SLOPE DRAINS OR INLETS OF STORM DRAINS THIS CRITERIA MAY BE VARIED WHERE SPECIFIED BY THE DESIGNER OR THE ENGINEER.
- TOEWALLS WILL BE PAID FOR AS CUBIC METERS OF CLASS "A" OR "B" CONCRETE. CONTRACTOR MAY ELECT TO CONSTRUCT TOE WALL WITH SAND CEMENT BAG RIPRAP OR STONE RIPRAP TO SAME MINIMUM DIMENSIONS WITH NO ADDITIONAL PAYMENT.
- PRECAST TOEWALLS SHALL BE CL. "A" CONCRETE; CAST-IN-PLACE TOEWALLS MAY BE CL. "A" OR "B" CONCRETE AND MAY BE TRENCH FORMED WHERE PLANS ITEMIZE ONE CLASS OF CONCRETE AND CONTRACTOR ELECTS TO USE OTHER CLASS, NO ADDITIONAL PAYMENT IS MADE. NO PAYMENT IS MADE FOR STEEL IN TOEWALL.
- CENTERLINE OF FLARED END SECTION WILL ALIGN WITH CENTERLINE OF PIPE. IF PIPE IS SKEWED, THE EMBANKMENT SLOPE WILL BE WARPED TO CONFORM WITH END SECTION.
- FLEXIBLE DELINEATORS SHALL BE REQUIRED AT CROSS DRAIN FLARED END SECTIONS, BOTH INLET AND OUTLET. PAYMENT FOR FLARED END SECTION WILL INCLUDE DELINEATORS, SEE DETAIL AND NOTES BELOW. DELINEATORS NOT REQ'D. FOR SIDE DRAIN, SLOPE DRAIN, OR LONG PIPE.



NOTE: DELINATOR POST SHALL CONFORM TO SEC. 911 FOR FLEXIBLE DELINATOR POST EXCEPT REFLECTIVE SHEETING IS NOT REQUIRED AND LENGTH IS 1.4 m FROM TOP TO BOTTOM POINT. ALTERNATES PERMITTED IF APPROVED BY D.O.T. LABORATORY.

SPECIAL NOTE :
PIPE SIZES (D) ARE "NOMINAL-MINIMUM" INSIDE DIAMETERS IN ACCORDANCE WITH GEORGIA STANDARD FOR PIPE CULVERTS. "B" DIMENSION FOR FLARED END SECTION SHALL EQUAL THE "D" DIMENSION FOR CONNECTING PIPE CULVERT.

- NOTE "B":
THE CONNECTION BETWEEN METAL FLARED END SECTION AND C.M. PIPE WILL BE ONE OF THE FOLLOWING:
- A STRAP BAND OR THREADED ROD PROVIDED BY THE MANUFACTURER WILL LOCK END SECTION ONTO PIPE. A CORRUGATION AT THE PIPE END WILL BE NON-SPIRALED (PERPENDICULAR TO Q OF PIPE)
 - A DIMPLE BAND COLLAR WILL BE SHOP BOLTED TO END SECTION. PIPE WILL BE INSERTED INTO BAND COLLAR TO MEET THE END SECTION.
 - A STUB PIPE WILL BE RIVETED TO THE END SECTION AND THE MAIN PIPE CONNECTED TO THE STUB WITH A NORMAL CONNECTING BAND.
 - OTHER TYPE CONNECTION IF RECOMMENDED BY MANUFACTURER AND APPROVED BY THE D.O.T.

REBAR SIZES ARE PER ASTM A615M, SI UNITS, EQUIVALENT U.S. STANDARD SIZE AND/OR EQUAL STEEL AREAS WILL BE ALLOWED.

NOTE: DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED OTHERWISE, AND MAY VARY WITH THE TOLERANCES GIVEN.

9-8-99		1-16-97		DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
GENERAL REVISION	REVISED	METRIC REINFORCING	REVISION	STANDARD FLARED END SECTIONS FOR PIPES (METRIC)			
	BY	DES.	TRA.	CHK.	(SUBMITTED) (APPROVED)		NOV. 1995 NUMBER 1120
				STATE ROAD & AIRPORT DESIGN ENGR.		CHIEF ENGINEER	