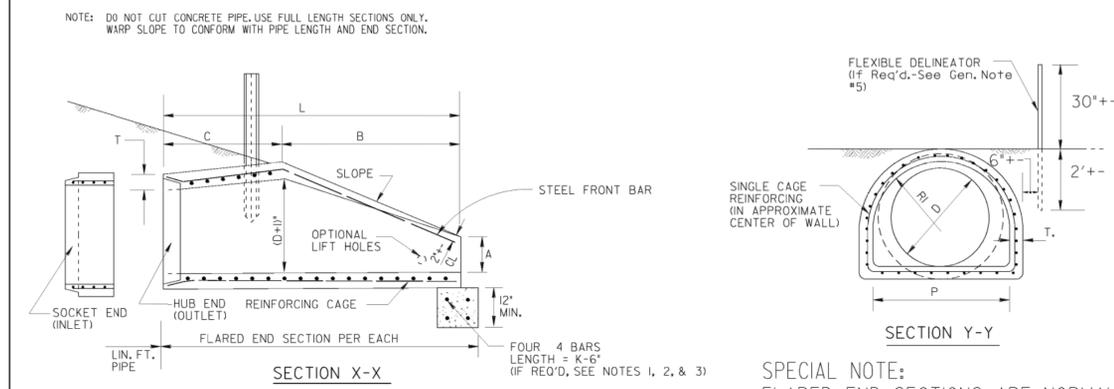
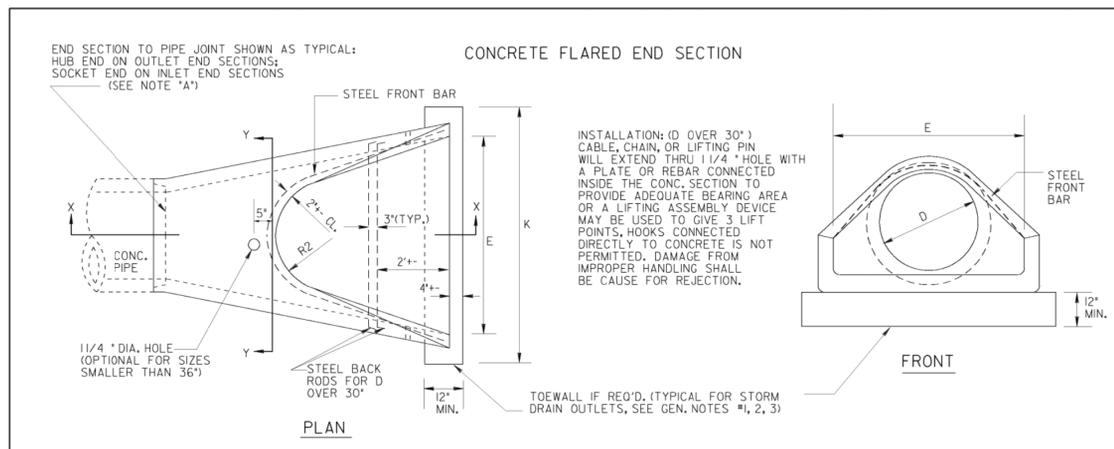


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DIMENSIONS AND REINFORCING FOR CONCRETE FLARED END SECTIONS (+/- 1" TOLERANCE)

PIPE DIA	FRONT BAR	BACK RODS	SLOPE +/-	A	B	C	L	E	P	R1	R2	K ± 2'	CU YDS. CONC.
12"	1-#3 x 5'-4"	NOT REQ'D.	2.2%	4'	2'-0"	4'-1"	6'-1"	2'-0"	18"	10"	9"	4'-0"	.148
15"	1-#3 x 6'-0"	NOT REQ'D.	2.2%	6'	2'-3"	3'-0"	6'-1"	2'-6"	2'-0"	10"	11"	4'-6"	.167
18"	1-#3 x 7'-2"	NOT REQ'D.	2.2%	9'	2'-3"	3'-0"	6'-1"	3'-0"	2'-5"	14"	10"	5'-0"	.185
24"	1-#3 x 9'-10"	NOT REQ'D.	2.4%	10'	3'-8"	2'-6"	6'-2"	4'-0"	2'-9"	15"	12"	6'-0"	.222
30"	1-#4 x 11'-8"	NOT REQ'D.	2.4%	12'	4'-6"	1'-8"	6'-2"	5'-0"	3'-9"	16"	13"	7'-0"	.259
36"	1-#4 x 13'-10"	2-#4 x 6'-3"	2.4%	15'	5'-3"	2'-9"	8'-2"	6'-0"	4'-0"	2'-0"	18"	8'-0"	.296
42"	1-#4 x 13'-10"	2-#4 x 7'-4"	2.4%	21'	5'-3"	2'-9"	8'-2"	6'-6"	4'-6"	2'-4"	11'-0"	8'-6"	.35

NOTE: SPECIFIED REINFORCING IS MINIMAL AND MAY BE INCREASED AT PRODUCER'S OPTION TO
 ADD CASTING & HANDLING. ALTERNATE REINFORCEMENT PERMITTED IF APPROVED.

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

SPECIAL NOTE:
 FLARED END SECTIONS ARE NORMALLY LIMITED TO
 USE OUTSIDE THE CLEAR ZONE OR BEHIND BARRIER AND
 WHERE HYDRAULICS PERMIT. SEE OTHER STANDARDS OR
 DETAILS FOR TAPERED HEADWALLS, SAFETY SLOPE END
 SECTIONS OR OTHER PIPE END STRUCTURES.

GENERAL NOTES:

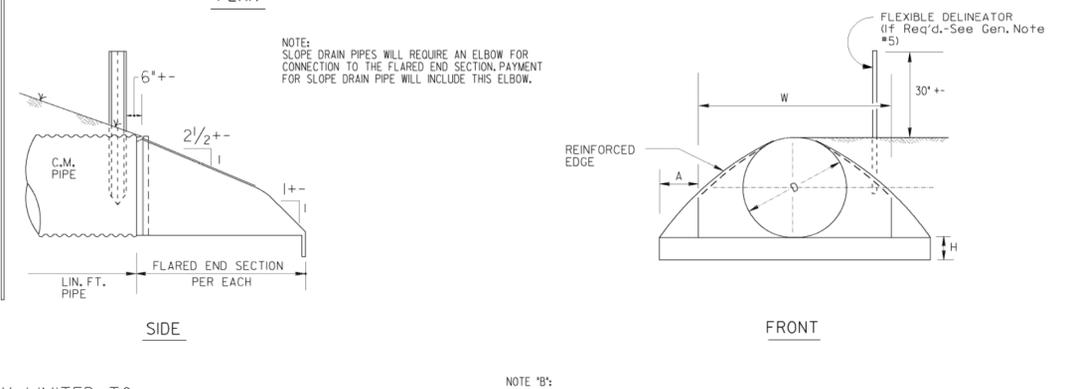
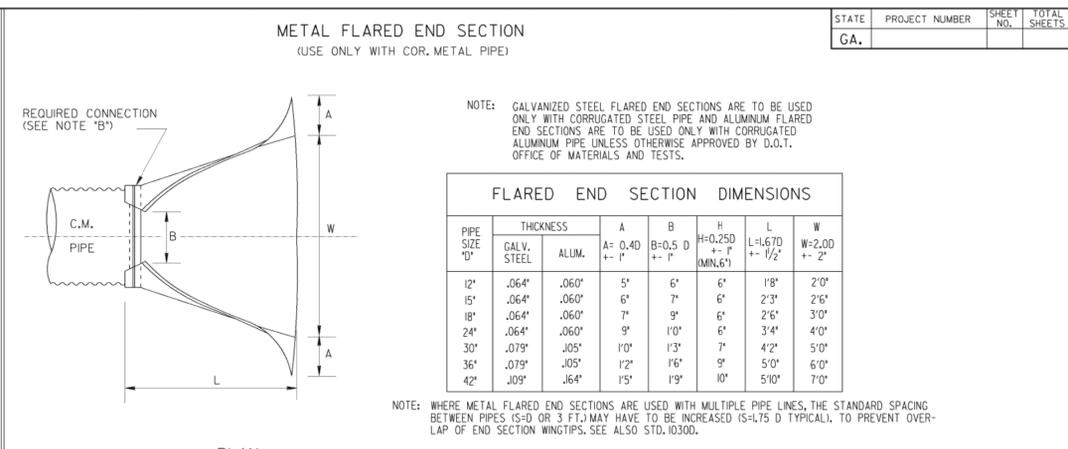
- TOEWALLS ARE REQ'D. FOR OUTLETS OF CONC. STORM DRAINS, EXCEPT WHERE DITCH PAVING OR OTHER EROSION PROTECTION IS PROVIDED OR WHERE THE OUTLET VELOCITY IS LESS THAN 8 FT/SEC. TOEWALLS ARE NOT REQUIRED FOR SIDE DRAINS, SLOPE DRAINS OR INLETS OF STORM DRAINS THIS CRITERIA MAY BE VARIED WHERE SPECIFIED BY THE DESIGNER OR THE ENGINEER.
- TOEWALLS WILL BE PAID FOR AS CU YDS. 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.

1" X 12" LONG YELLOW REFLECTIVE SHEETING TYPE IX, ON EACH SIDE OF RIDGE.

DELINERATOR POST SECTION (TYP.)

NOTE: DELINERATOR POST SHALL CONFORM TO SEC. 911 FOR FLEXIBLE DELINERATOR POST EXCEPT REFLECTIVE SHEETING IS NOT REQUIRED AND LENGTH IS 4'-6" FROM TOP TO BOTTOM POINT. ALTERNATES PERMITTED IF APPROVED BY D.O.T. LABORATORY.

SPECIAL NOTE:
 PIPE SIZES (D) ARE "NOMINAL" MINIMUM DIAMETERS IN ACCORDANCE WITH GEORGIA STANDARD FOR PIPE CULVERTS. "D" 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 AND WILL BE NON-SPIRALED (PERPENDICULAR TO CL 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.

DEPARTMENT OF TRANSPORTATION
 STATE OF GEORGIA

STANDARD
 FLARED END SECTIONS
 FOR PIPES

NO SCALE REV. & REDR. SEPT., 1999

DES. (SUBMITTED) [Signature]
 REV. STATE ROAD & AIRPORT DESIGN ENGINEER
 RETR. (APPROVED) [Signature]
 CHK. CHIEF ENGINEER

NUMBER 1120

THE LPA GROUP
 TRANSPORTATION CONSULTANTS
 A UNIT OF MICHAEL BAKER CORPORATION

3595 ENGINEERING DRIVE
 NORCROSS, GEORGIA 30092
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REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE PROGRAM DELIVERY
 GEORGIA STANDARDS

DRAWING NO. 41-006