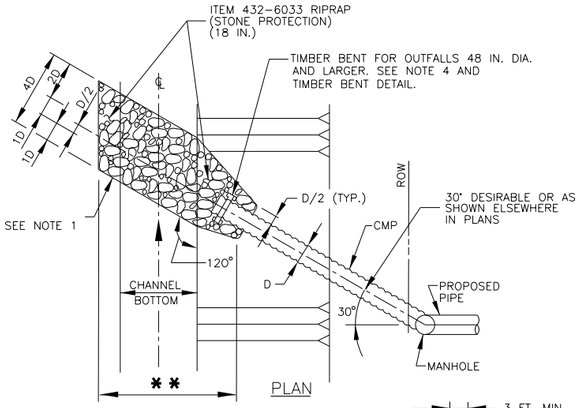
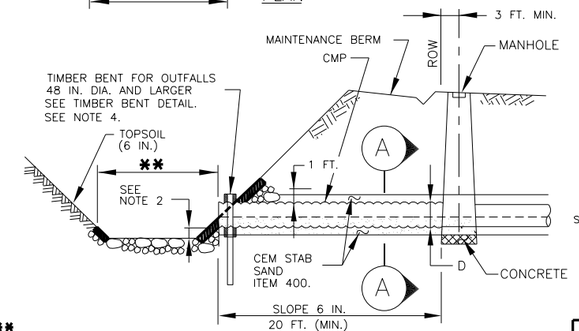


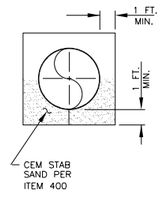
PLAN



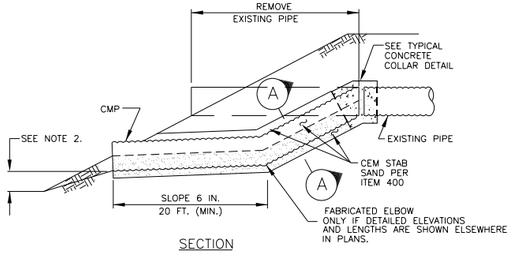
SECTION

** SIX TIMES CMP DIA OR TOP OF PIPE ELEV ON OPPOSITE BANK, WHICHEVER IS SMALLER.

TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT

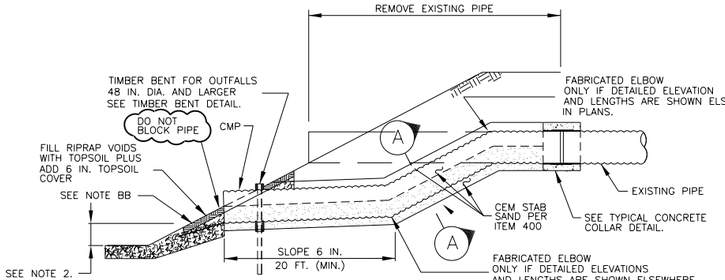


BEDDING CMP DETAIL



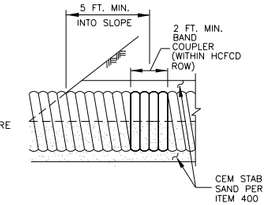
SECTION

PIPE ADJUSTMENT DETAIL
24-INCH TO 42-INCH DIAMETER



SECTION

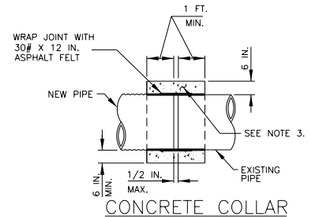
PIPE ADJUSTMENT DETAIL
48-INCH AND LARGER DIAMETER



CMP BAND COUPLER DETAIL

NOTE BB

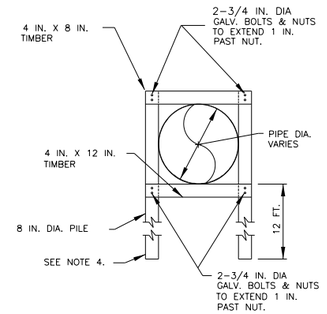
TOPSOIL EXTENDS DOWN ONLY TO OHWE (IF APPLICABLE) OR TO NORMAL WATER ELEVATION, WHICHEVER IS HIGHER.



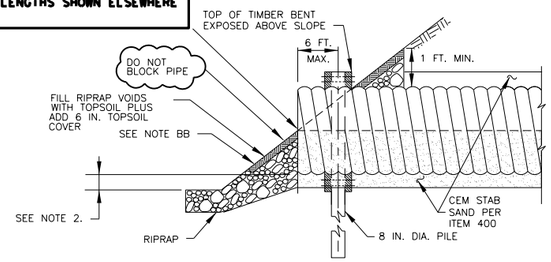
CONCRETE COLLAR DETAIL

NOTE AA

THIS DETAIL OF CENTERLINE OF ANY PIPE END ALIGNING WITH CHANNEL SIDE SLOPE IS OF UTMOST IMPORTANCE. THIS DETAIL SHALL SUPERSEDE ANY OTHER DETAILS/PIPE LENGTHS SHOWN ELSEWHERE IN PLANS.



ELEVATION



TYPICAL SECTION

TIMBER BENT DETAIL
REQUIRED ONLY FOR 48-INCH CMP AND LARGER OUTFALLS

OPTION 1

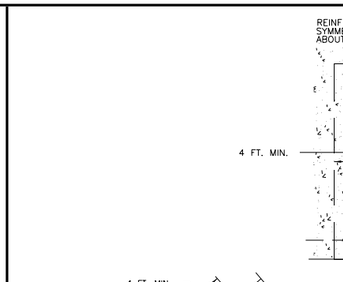
CORRUGATED GALVANIZED STEEL PIPE (TYPE I)
(WITHIN HCFCD ROW)

PIPE DIA. (in.)	2 - 2/3" X 1/2" CORRUGATION MIN. FILL * (in.)	SHEET THICKNESS gage	SHEET THICKNESS (in.)	SHEET THICKNESS (mm)	3" X 1" & 5" X 1" CORRUGATION MIN. FILL * (in.)	SHEET THICKNESS gage	SHEET THICKNESS (in.)	SHEET THICKNESS (mm)
24	12	16	.064	1.63	—	—	—	—
30	12	16	.064	1.63	—	—	—	—
36	12	16	.064	1.63	—	—	—	—
42	12	16	.064	1.63	12	16	.064	1.63
48	12	16	.064	1.63	12	16	.064	1.63
54	12	14	.079	2.01	12	16	.064	1.63
60	15	12	.109	2.77	12	16	.064	1.63
66	15	12	.109	2.77	15	16	.064	1.63
72	18	10	.138	3.51	15	16	.064	1.63
78	18	8	.168	4.27	18	16	.064	1.63
84	18	8	.168	4.27	18	14	.079	2.01
90	—	—	—	—	18	14	.079	2.01
96	—	—	—	—	18	14	.079	2.01

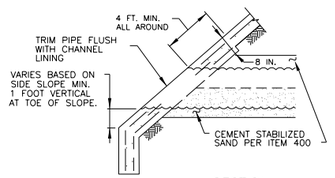
* MINIMUM DEPTH OF COVER ABOVE TOP OF PIPE.
MAXIMUM DEPTH OF COVER ABOVE TOP OF PIPE IS 20 FEET.

STORM SEWER OUTFALL NOTES

1. INSTALL OUTFALLS 48 INCHES OR LARGER, AND STORM SEWER OUTFALLS OF ANY DIAMETER, WITH RIPRAP EROSION DIMENSIONED AS SHOWN IN "TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT."
2. IN ANY HCFCD'S DETENTION BASIN(S), SET FLOWLINE OF OUTFALL AT TOE OF SLOPE. IN CHANNEL, USE ELEVATION INDICATED IN TABLE 1 OR 1 FOOT ABOVE NORMAL WATER LEVEL, WHICHEVER IS HIGHER.
3. PROVIDE AND PLACE STRUCTURAL CONCRETE CLASS "C" WITH #4 BARS (GRADE 40)12 INCH ON CENTER EACH WAY FOR - COLLARS ONLY.
4. PROVIDE TIMBER BENT PER ITEM 490, "TIMBER STRUCTURES," NO DIRECT PAY.
5. PLACE CORRUGATED METAL PIPE IN ACCORDANCE WITH ITEM 460, "CORRUGATED METAL PIPE."
6. PROVIDE AND PLACE CEMENT STABILIZED BACKFILL AND STRUCTURAL EXCAVATION IN ACCORDANCE WITH ITEM 400, "EXCAVATION AND BACKFILL FOR STRUCTURES."



PLAN

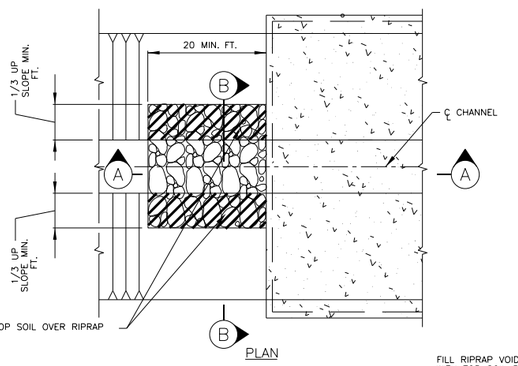


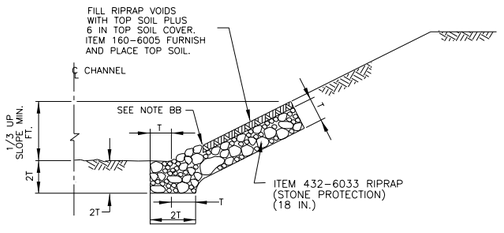
SECTION

PIPE OUTFALL NOTES FOR EXISTING CHANNEL LINING

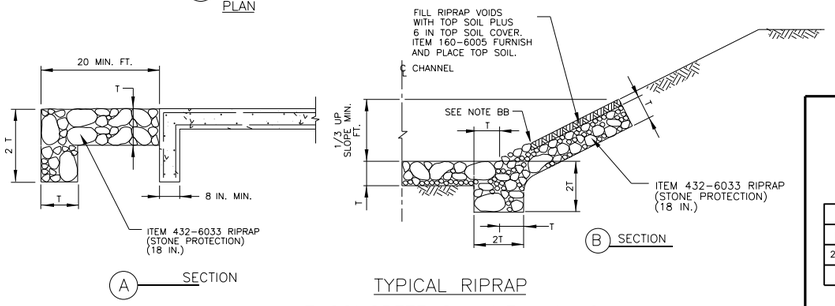
1. WHEN PLACING THROUGH EXISTING CHANNEL LINING, SAW-CUT 1 INCH AND REMOVE 4 FEET ALL AROUND.
2. EXPOSE A MIN. OF 18 INCHES OF STEEL.

PIPE OUTFALL DETAILS
(FOR OUTFALLS 24-42 INCH DIA.)





TYPICAL RIPRAP LINING
DETAIL-SIDE SLOPE ONLY



TYPICAL RIPRAP
AT CONCRETE CHANNEL LINING

PIPE OUTFALL IN CHANNELS

BOTTOM WIDTH	PIPE OUTLET INVERT (FLOW LINE)
6 FEET ≤ BW ≤ 20 FT	1 FOOT ABOVE CHANNEL FLOWLINE
20 FEET ≤ BW ≤ 60 FT	AT TOE OF SLOPE
BW > 60 FT	AT TOE OF SLOPE

TABLE 1

(A) THESE ARE GENERAL DETAILS AND NOTES. IF THERE ARE ANY DISCREPANCIES BETWEEN THIS STANDARD AND THE DETAILED SEALED DRAINAGE PLANS, THE SEALED PLANS WILL OVERRIDE. THE ONLY EXCEPTION IS NOTE AA ABOVE.

(B) DESIGNER TO CONSULT WITH DISTRICT ENVIRONMENTAL SECTION TO DETERMINE IF OUTFALL IS OR IS NOT JURISDICTIONAL. IF JURISDICTIONAL, REQUEST ORDINARY HIGH WATER ELEVATION AND CORP OF ENGINEER'S PERMIT FROM ENVIRONMENTAL SECTION FOR ANY WORK BELOW ORDINARY HIGH WATER ELEVATION.

Texas Department of Transportation
Houston District

HCFCD
STORM SEWER OUTFALL DETAILS
HCFCD-SSOD

FILE: STDG5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT DEC, 2012	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS 11/2013 FIX MISSPELLINGS 02/2015 2014 SPECS	HOU	6		
	COUNTY	CONTROL	SECT	JOB	HIGHWAY

STDG5D