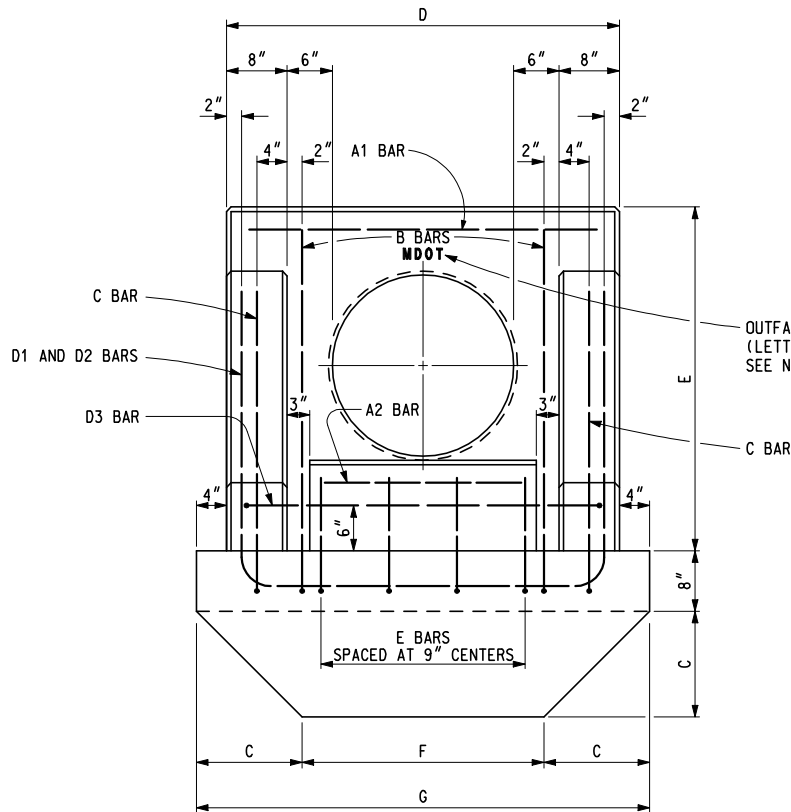




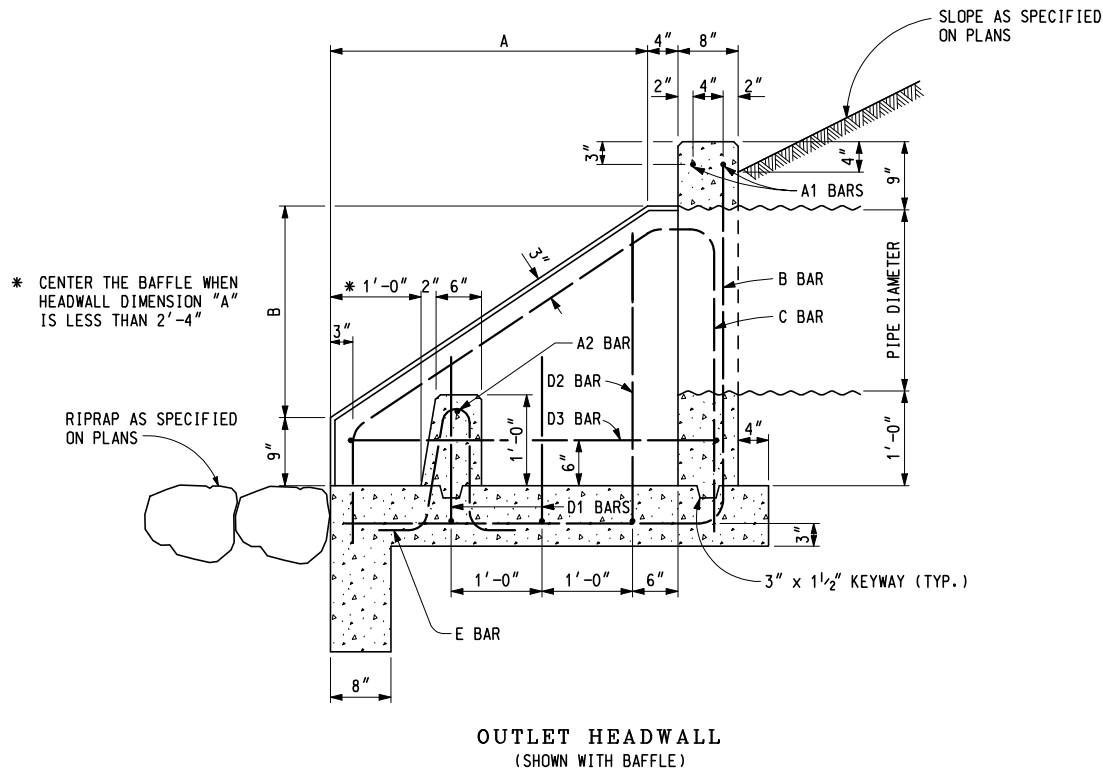
NOTES:

ALL STEEL REINFORCEMENT SHALL BE #4 BARS.

EXPOSED EDGES OF THE HEADWALL SHALL BE CHAMFERED $\frac{1}{2}$ ".

OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

OUTFALL LABEL INSCRIBED INTO CONCRETE (LETTERING: $1\frac{1}{2}$ " HIGH x 1" WIDE x $\frac{1}{4}$ " DEEP) SEE NOTES



OUTLET HEADWALL
(SHOWN WITH BAFFLE)



PREPARED BY
DESIGN
SUPPORT AREA

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Gloria J. Jeff

APPROVED BY: John C. Friend
ENGINEER OF DELIVERY

APPROVED BY: John C. Friend
ENGINEER OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

OUTLET HEADWALLS

11-17-2005
F.H.W.A. APPROVAL

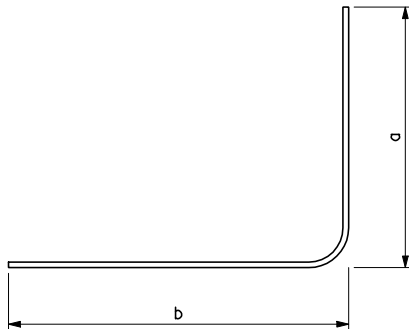
4-21-2005
PLAN DATE

R-85-D

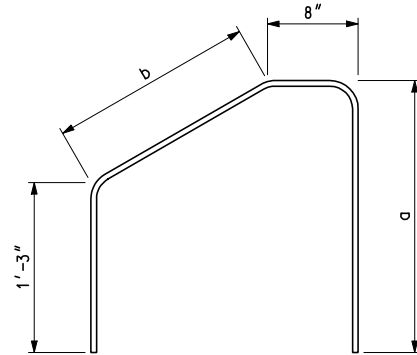
SHEET
1 OF 2



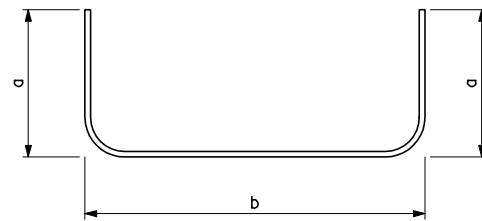
A BAR



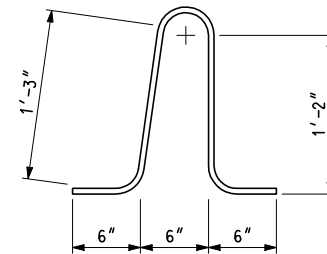
B BAR



C BAR



D BAR



E BAR

PIPE DIAMETER	HEADWALL DIMENSIONS							CONCRETE PER ONE HEADWALL (CYD)
	A	B	C	D	E	F	G	
6"	1'-3"	10"	10"	2'-10"	2'-3"	1'-10"	3'-6"	0.5
8"	1'-6"	1'-0"	10"	3'-0"	2'-5"	2'-0"	3'-8"	0.6
10"	1'-9"	1'-2"	10"	3'-2"	2'-7"	2'-2"	3'-10"	0.7
12"	2'-0"	1'-4"	10"	3'-4"	2'-9"	2'-4"	4'-0"	0.8
15"	2'-4"	1'-7"	11"	3'-7"	3'-0"	2'-5"	4'-3"	0.9
18"	2'-9"	1'-10"	1'-0"	3'-10"	3'-3"	2'-6"	4'-6"	1.0
24"	3'-6"	2'-4"	1'-1"	4'-4"	3'-9"	2'-10"	5'-0"	1.5
30"	4'-3"	2'-10"	1'-4"	4'-10"	4'-3"	2'-10"	5'-6"	1.8
36"	5'-0"	3'-4"	1'-4"	5'-4"	4'-9"	3'-4"	6'-0"	2.2

STEEL QUANTITIES FOR ONE OUTLET HEADWALL WITH BAFFLE

STEEL QUANTITIES FOR ONE OUTLET HEADWALL WITHOUT BAFFLE

PIPE DIA.	A1 BAR			B BAR				C BAR				D1 BAR				D2 BAR				D3 BAR				TOTAL WEIGHT OF BARS (LBS)	A2 BAR		E BAR		TOTAL WEIGHT OF BARS (LBS)			
	TOTAL LENGTH	NO.		DIMENSIONS		TOTAL LENGTH	NO.		DIMENSIONS		TOTAL LENGTH	NO.		DIMENSIONS		TOTAL LENGTH	NO.		DIMENSIONS		TOTAL LENGTH	NO.			TOTAL LENGTH	NO.	TOTAL LENGTH	NO.				
				a	b				a	b				a	b				a	b										a	b	
6"	2'-6"	2		1'-11"	2'-6"	4'-5"	2		1'-10"	1'-3"	5'-0"	2		1'-1"	2'-6"	4'-8"	1					1'-7"	2'-6"	5'-8"	1	23	8"	1	3'-8"	2	29	
8"	2'-8"	2		2'-2"	2'-8"	4'-10"	2		2'-0"	1'-6"	5'-5"	2		1'-3"	2'-8"	5'-2"	1					1'-10"	2'-8"	6'-4"	1	26	10"	1	3'-8"	2	32	
10"	2'-10"	2		2'-5"	2'-10"	5'-3"	2		2'-2"	1'-10"	5'-11"	2		1'-5"	2'-10"	5'-8"	1					2'-1"	2'-10"	7'-0"	1	28	1'-0"	1	3'-8"	2	34	
12"	3'-0"	2		2'-8"	3'-0"	5'-8"	2		2'-4"	2'-1"	6'-4"	2		1'-7"	3'-0"	6'-2"	2					2'-4"	3'-0"	7'-8"	1	34	1'-2"	1	3'-8"	2	40	
15"	3'-3"	2		3'-0"	3'-3"	6'-3"	2		2'-7"	2'-6"	7'-0"	2		1'-10"	3'-3"	6'-11"	2					2'-8"	3'-3"	8'-7"	1	38	1'-5"	1	3'-8"	3	46	
18"	3'-6"	2		3'-5"	3'-6"	6'-11"	2		2'-10"	3'-0"	7'-9"	2		2'-1"	3'-6"	7'-8"	2					3'-1"	3'-6"	9'-8"	1	41	1'-8"	1	3'-8"	3	50	
24"	4'-0"	2		4'-2"	4'-0"	8'-2"	2		3'-4"	3'-11"	9'-2"	2		1'-10"	4'-0"	7'-8"	2		3'-3"	4'-0"	10'-6"	1	3'-10"	4'-0"	11'-8"	1	54	2'-2"	1	3'-8"	4	65
30"	4'-6"	2		4'-11"	4'-6"	9'-5"	2		3'-10"	4'-10"	10'-7"	2		2'-4"	4'-6"	9'-2"	2		3'-8"	4'-6"	11'-10"	1	4'-7"	4'-6"	13'-8"	1	62	2'-8"	1	3'-8"	4	74
36"	5'-0"	2		5'-8"	5'-0"	10'-8"	2		4'-4"	5'-9"	12'-0"	2		2'-2"	5'-0"	9'-4"	2		3'-5"	5'-0"	11'-10"	2	5'-4"	5'-0"	15'-8"	1	76	3'-2"	1	3'-8"	5	90

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

OUTLET HEADWALLS

11-17-2005
F.H.W.A. APPROVAL

4-21-2005
PLAN DATE

R-85-D

SHEET
2 OF 2