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PROJECT REFERENCE NO.	SHEET NO.
I-5987B	2C-5

ENGLISH DETAIL DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15″ THRU 48″ PIPE 60° OR 120° SKEW

838d02s1 — SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

END ELEVATION

DOWEL
BAR-"X"

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE

LOC.	PIPE DIA.	SINGLE PIPE 15″	18″	24″	30″	36″	42″	48″		DOUBLE PIPE 15″	18″	24″	30″	36″	42″	48″	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*
G1	QTY.	2	2	2	2	3	3	4		2	2	2	2	3	3	4	
S	QTY.	-	-	-	-	-	-	-	2					2	2	3	2
G2	QTY.	3	4	4	5	6	6	7		3	4	5	6	6	6	7	
TOT. lbs.		11.7	13.9	13.9	16.3	20.9	60.4	70.3		11.7	13.9	13.9	20.9	25.6	85.3	102.1	

DOWELS IN ENDWALL WITH CORRUGATED STEEL PIPE

LOC.	PIPE DIA.	SINGLE PIPE 16″	18″	24″	32″	36″	40″	48″		DOUBLE PIPE 16″	18″	24″	32″	36″	40″	48″	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	"X"	Y*
G1	QTY.	2	2	2	3	3	3	4		2	2	2	3	3	3	4	
S	QTY.	-	-	-	-	-	-	-	2					2	2	2	2
G2	QTY.	3	3	4	5	5	6	7		3	3	4	5	5	6	7	
TOT. lbs.		11.7	11.7	13.9	16.3	18.5	57.4	67.0		11.7	5.3	13.9	16.3	23.1	80.7	92.8	

DIMENSIONS AND CONCRETE QUANTITIES

USING CONCRETE PIPE

D	COMMON DIMS. H	B	T	SINGLE PIPE G1	G2	L 30	YD³	G1	G2	DOUBLE PIPE S	S 30	L 30	YD³
15″	3'-4″	1′-8″	1⅞″	2'-9″	3'-2″	5'-11″	0.792	2'-9″	3'-2″	2'-2″	2'-6″	8'-5″	1.054
18″	3'-7″	1'-10″	2″	3'-2″	3'-8″	6'-10″	1.023	3'-2″	3'-8¼″	2'-7″	2'-11¾″	9'-10″	1.390
24″	4'-2″	2'-1″	2½″	4'-0″	4'-8″	8'-8″	1.613	4'-0″	4'-8″	3'-5″	3'-11½″	12'-8″	2.207
30″	4'-9″	2'-5″	2¾″	4'-7″	5'-4″	9'-11″	2.289	4'-7″	5'-4″	4'-3″	4'-10¾″	14'-10″	3.186
36″	5'-3″	2'-8″	3″	5'-6″	6'-4″	11'-10″	3.220	5'-6″	6'-4⅜″	5'-0″	5'-9¼″	17'-8″	4.447
42″	5'-10″	2'-11″	3½″	6'-4″	7'-4″	13'-8″	4.375	6'-4″	7'-4″	5'-10″	6'-8¾″	20'-5″	6.012
48″	6'-5″	3'-3″	4″	7'-2″	8'-3″	15'-5″	5.580	7'-2″	8'-3¼″	6'-8″	7'-8¼″	23'-2″	8.062

*SEE SHEET 2

PLAN **ELEVATION**

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15″ THRU 48″ PIPE 60° OR 120° SKEW

838d02s1 — SHEET 1 OF 2

GENERAL NOTES:

* ALL CORNERS TO BE CHAMFERED 1".
* THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 - #6 BARS "Y" IN THE TOP OF ALL ENDWALLS FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
* WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT ARE USED ONLY IN COMPUTING ENDWALL QUANTITIES.
* IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR X (DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS TO BE APPROXIMATELY 12" CENTERS UNLESS ENGINEER DIRECTS OTHERWISE.
* WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPERATELY, THE TOP BASE SHALL BE LEFT ROUGH.
* WHEN SKEW ANGLE OF PIPE IS OVER/UNDER 30° USE G-1 DIMENSION FOR 30° PLUS/MINUS 3" FOR EACH 5° OVER/UNDER 30°. G2 DIMENSION WILL BE THE NEW DIMENSION DIVIDED BY THE COSINE OF THE ANGLE OF PIPE SKEW.
* CLASS "B" CONCRETE SHALL BE USED.

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15″ THRU 48″ PIPE

838d02s1 — SHEET 2 OF 2

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jhowerton
AT CSD-292695

NORTH CAROLINA PROFESSIONAL SEAL 022071 ENGINEER KEVIN DAVENPORT
DocuSigned by: Kevin Davenport F81B6038A47A442...
4/29/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

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