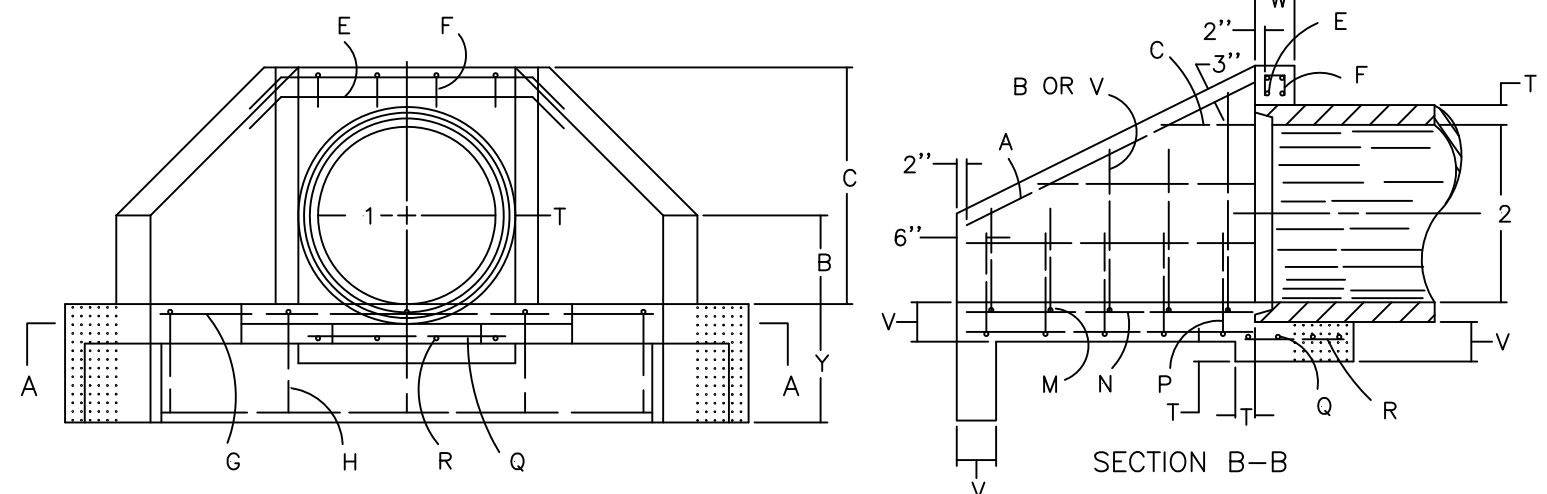
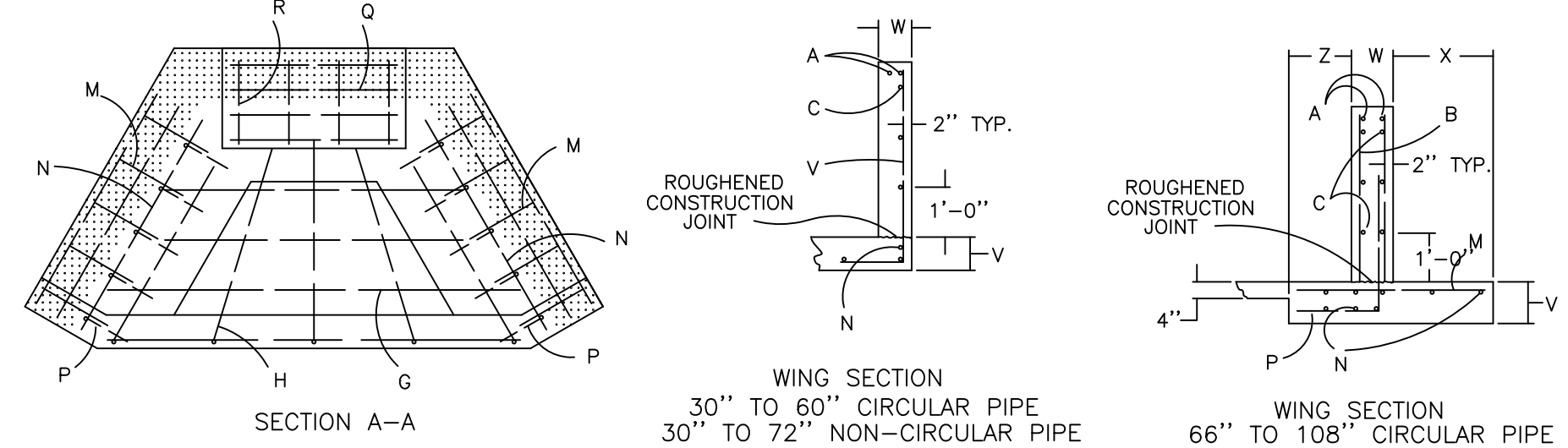
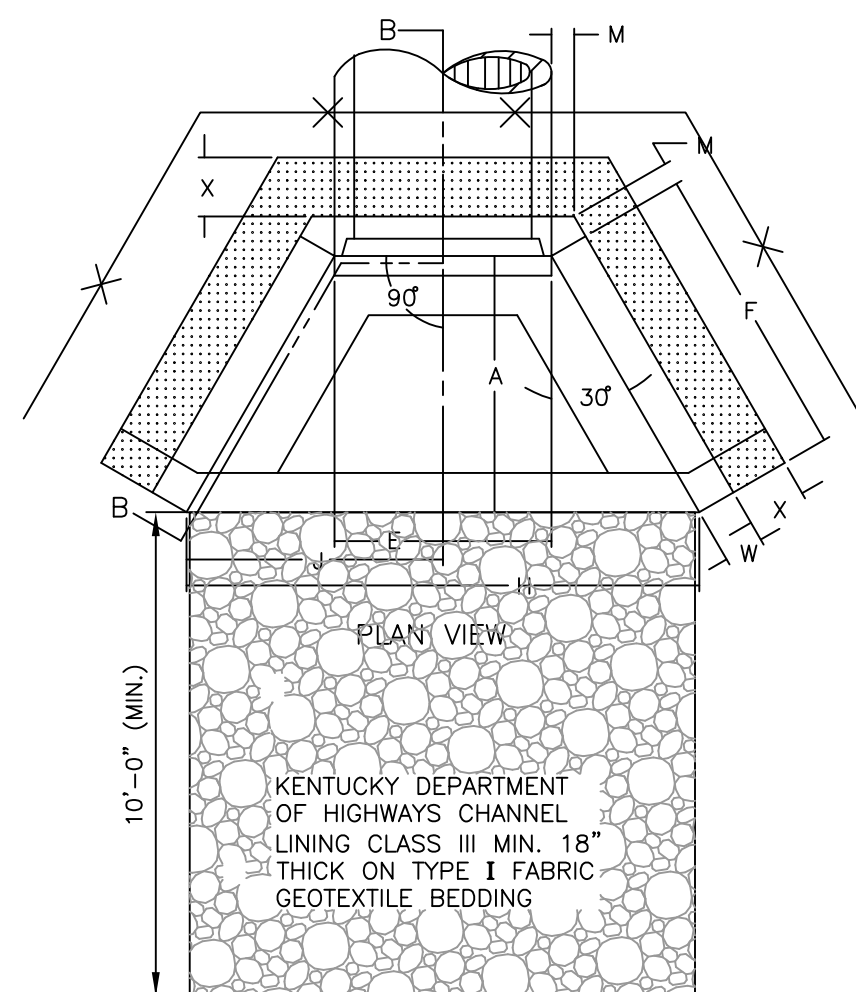
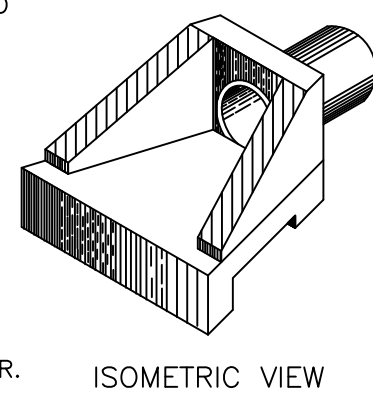


PIPE DIA. OR EQUIV. DIA.	SHAPE	DIMENSIONS						CLASS A CONC. C. Y.	REINF. STEEL LBS.
		C	E	F	L	W	T		
12"	○	1'-9"	2'-6"	2'-3"	3'-6"	4'-0"	2"	0.58	7
15"	○	2'-0"	2'-9"	2'-9"	4'-0"	4'-9"	2-1/4"	0.68	7
18"	○	2'-3"	3'-0"	3'-6"	4'-6"	5'-3"	2-1/2"	0.93	8
21"	○	2'-6"	3'-3"	3'-0"	4'-0"	5'-0"	2-3/4"	1.14	8
24"	○	2'-9"	3'-6"	3'-6"	4'-6"	6'-0"	3"	1.35	9
27"	○	3'-0"	3'-9"	5'-0"	6'-0"	7'-0"	3-1/4"	1.57	9
	○	2'-9"	4'-6"	4'-3"	5'-3"	7'-3"	3-1/2"	1.51	10

- NOTES
- DIMENSIONS AND QUANTITIES ARE BASED ON CONCRETE PIPE AND WILL VARY INSIGNIFICANTLY FOR CORRUGATED METAL PIPE.
 - REINFORCING STEEL - MINIMUM GRADE 40, BARS EVENLY SPACED.
 - Ø = NO. 4 x 1'-0" DOWEL BARS.
 - Ø = NO. 4 x (E DIMENSION MINUS 4").
 - SLOPES SHALL BE WARPED TO FIT HEADWALL WHEN PIPE IS SKEWED AND/OR NORMAL SLOPE VARIES FROM 2:1.
 - VOLUME DISPLACED BY PIPE COMPUTED USING INSIDE DIAMETER OF PIPE.
 - WING ANGLES AND/OR DIMENSIONS MAY BE ALTERED DURING CONSTRUCTION TO ACCOMMODATE FLOW OF WATER.
 - APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE OF HEADWALL SHALL REMAIN VERTICAL.
 - HEADWALLS ARE FOR CIRCULAR, ARCH, AND HORIZONTAL ELLIPTICAL 12" - 27" EQUIVALENT PIPE SIZES. SEE CURRENT STD. DWG. RD-016, FOR NON-CIRCULAR PIPE EQUIVALENT SIZES.
 - 4" HIGH CHAIN LINK FENCE IS REQUIRED FOR PIPES 24" OR LARGER.



DIMENSION	DIAMETER OF PIPE													DIMENSION	
	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"		108"
A	3'-9"	4'-4"	4'-11"	5'-6"	6'-11"	6'-8"	7'-5"	8'-0"	8'-7"	9'-2"	9'-9"	10'-4"	10'-11"	11'-6"	A
B	1'-3"	1'-6"	1'-9"	2'-0"	2'-3"	2'-8"	2'-9"	3'-0"	3'-3"	3'-8"	3'-9"	4'-0"	4'-3"	4'-8"	B
C	3'-6"	4'-0"	4'-7"	5'-11"	5'-8"	6'-2"	7'-0"	7'-5"	8'-0"	8'-6"	9'-1"	9'-7"	10'-2"	10'-8"	C
E	3'-11"	3'-8"	4'-3"	4'-10"	5'-5"	6'-0"	6'-7"	7'-2"	7'-9"	8'-4"	8'-11"	9'-6"	10'-1"	10'-8"	E
F	4'-4"	5'-0"	5'-8"	6'-4"	7'-0"	7'-8"	8'-7"	9'-3"	9'-11"	10'-7"	11'-3"	11'-11"	12'-7"	13'-3"	F
H	7'-4"	8'-0"	10'-0"	11'-2"	12'-6"	13'-8"	15'-2"	16'-6"	17'-8"	19'-0"	20'-2"	21'-6"	22'-8"	24'-0"	H
J	3'-9"	4'-4"	5'-0"	5'-7"	6'-3"	6'-10"	7'-7"	8'-3"	8'-10"	9'-4"	10'-1"	10'-9"	11'-4"	12'-0"	J
M	0'-5"	---	---	---	---	---	---	---	0'-6"	---	---	---	---	---	M
T	0'-3.5"	0'-4.0"	0'-4.5"	0'-5.0"	0'-5.5"	0'-6.0"	0'-6.5"	0'-7.0"	0'-7.5"	0'-8.0"	0'-8.5"	0'-9.0"	0'-9.5"	0'-10.0"	T
V	0'-8"	---	---	---	---	---	---	---	1'-0"	---	---	---	---	---	V
W	0'-8"	---	---	---	---	---	---	---	1'-0"	---	---	---	---	---	W
X	---	---	---	---	---	---	---	2'-0"	0'-10"	---	---	---	---	---	X
Y	---	---	---	---	---	---	---	2'-0"	---	---	---	---	---	---	Y
Z	---	---	---	---	---	---	---	1'-3"	---	---	---	---	---	---	Z

DIVISION OF HEADWALLS

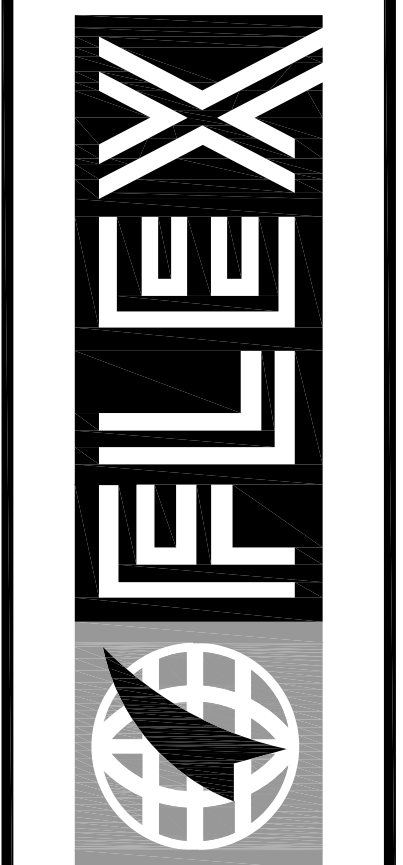
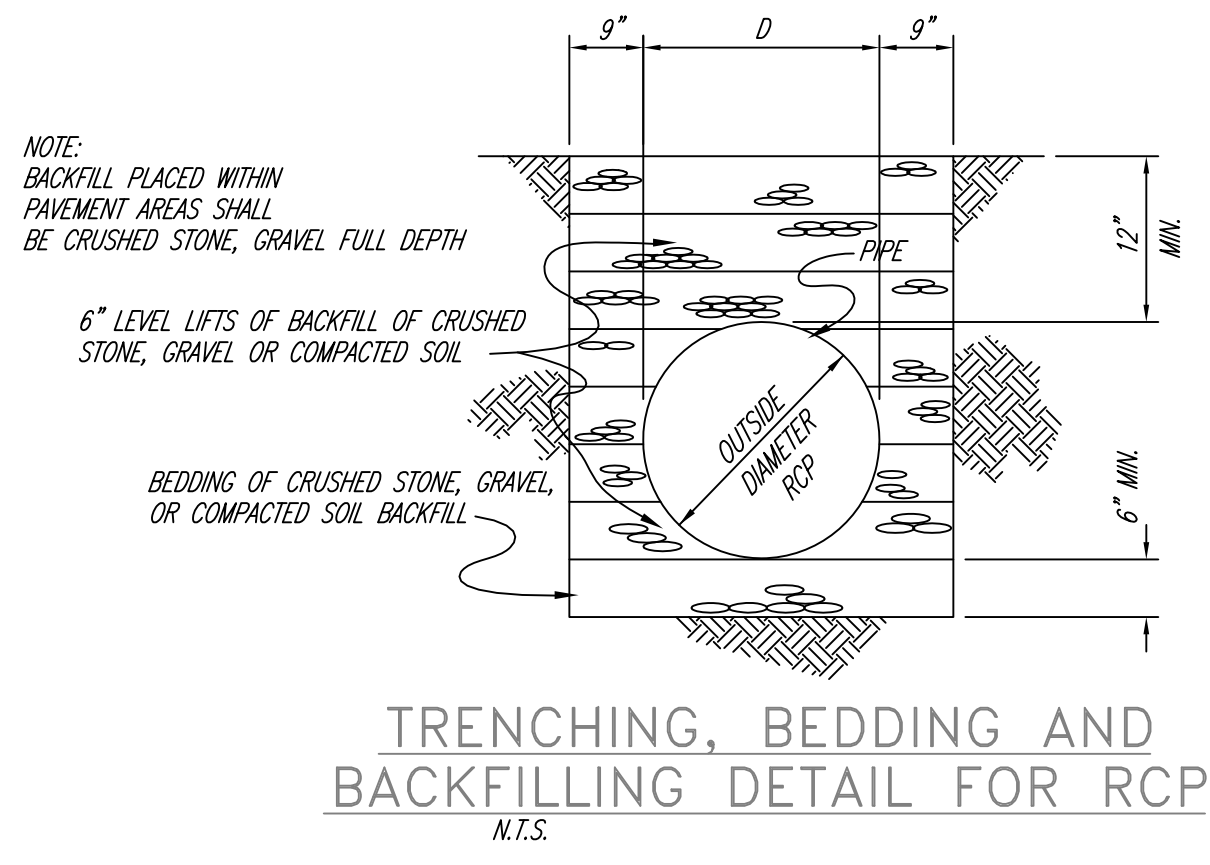
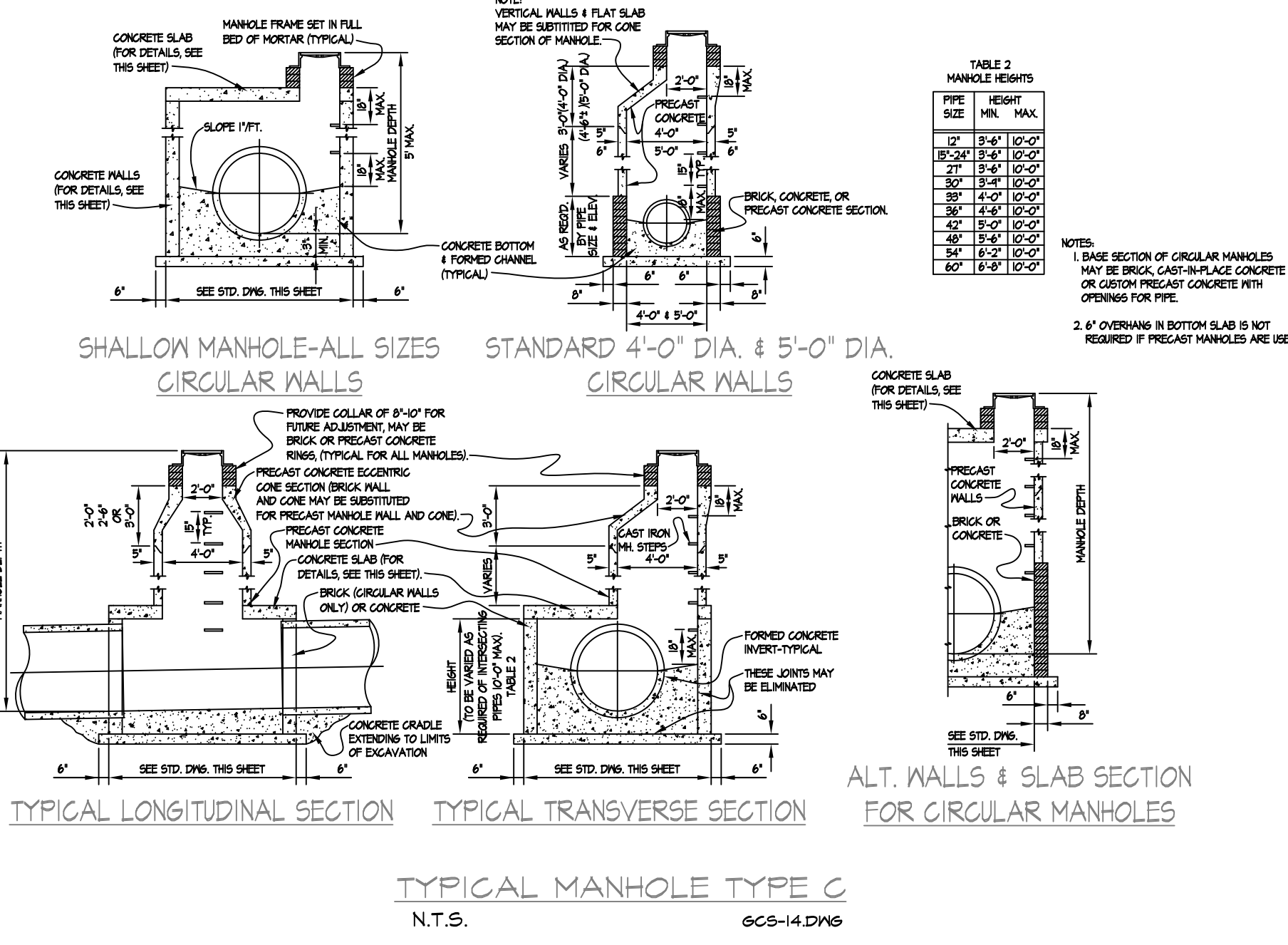
DIVISION OF HEADWALLS

DIMENSIONS AND QUANTITIES ARE BASED ON CONCRETE PIPE AND WILL VARY SLIGHTLY FOR CORRUGATED METAL PIPE.

- DIAMETER OF CIRCULAR PIPE OR SPAN OF NON-CIRCULAR PIPE
- DIAMETER OF CIRCULAR PIPE OR RISE OF NON-CIRCULAR PIPE
- Ø APPLIES TO 60" DIAMETER AND GREATER (CIRCULAR PIPE)
- SEE CURRENT STANDARD DRAWINGS RDH-200 AND 300 SERIES FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
- DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE.
- ENCIRCLED LETTERS, INDICATE STEEL BAR LOCATIONS
- BARS B, C, G, P, M, V, ARE SPACED 1'-0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
- BARS B AND V ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
- BARS C ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE TOP OF EACH WING.
- HEADWALLS LOCATED AT EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
- APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE OF HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.
- 4" HIGH CHAIN LINK FENCE IS REQUIRED FOR PIPES 30" OR LARGER.

SLOPED & FLARED HEADWALLS FOR 12" TO 27" PIPE
DOH STD. DWG#: RDH-020-03

PIPE CULVERT HEADWALL 0° SKEW
DOH STD. DWG#: RDH-110-02



FLEX FILMS (U.S.A.) INC.
 1221 NORTH BLACK BRANCH ROAD
 ELIZABETHTOWN, KENTUCKY 42702

PROJECT L-12 BOPET U.S.A.

DATE	REVISION

PROJECT NO. 2064-25
 DESIGNED BY G.A.R.
 DRAWN BY J.R.M.
 CHECKED BY G.A.R.
 REVIEWED BY G.A.R.
 DATE JUNE 2011
 SCALE AS SHOWN

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DRAWING NO.
UFL-L12
C-110

STORM DRAINAGE DETAILS