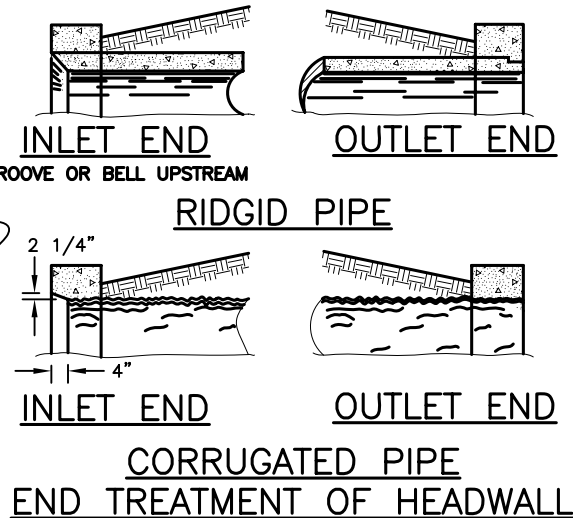
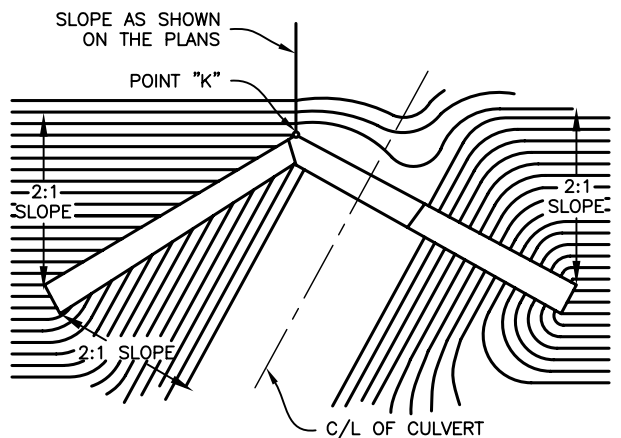
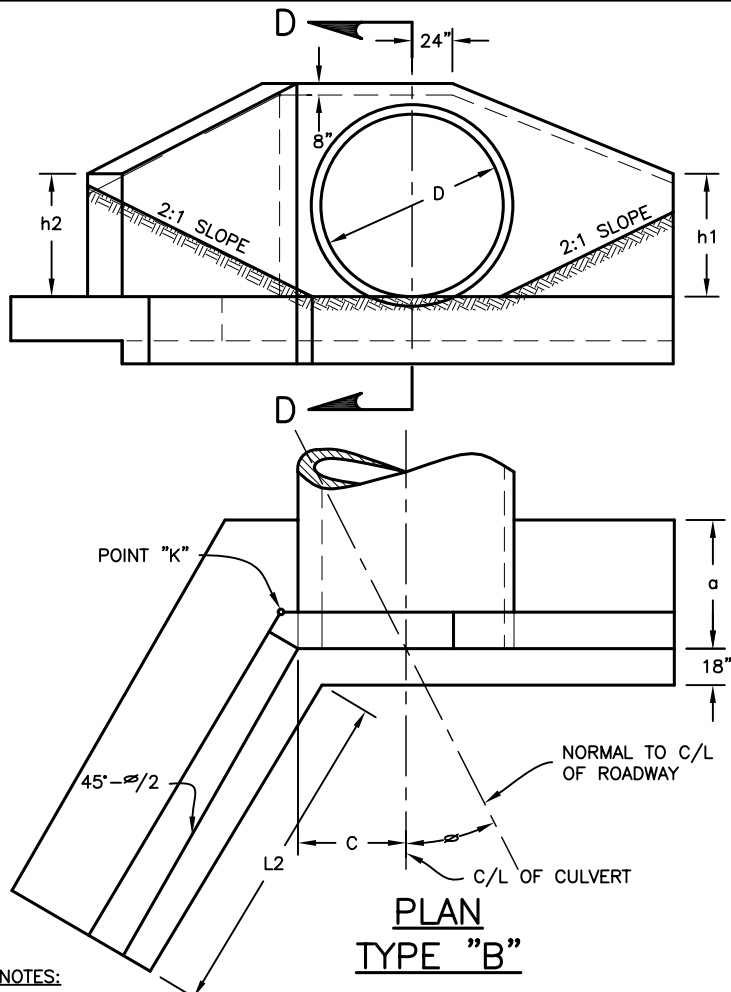


NOTES:
 CHART CONTINUED ON SHEET 2 OF 2
 * ONE WALL



											Ø = 0'				Ø = 15'			
PIPE DIA. "D"	H	a	b	c	BAR "d"	L2	h2	C.Y. * CONC. C.M.P.	C.Y. * CONC. R.C.P.	STEEL LBS.	L1	L2	h1	h2	C.Y. * CONC. C.M.P.	C.Y. * CONC. R.C.P.	STEEL LBS.	
42"	4'-11"	3'-3"	1'-6"	2'-6"	#5	3'-7"	3'-1"	7.0	6.7	598	8'-9"	4'-6"	3'-8"	3'-2"	7.3	7.1	619	
48"	5'-5"	3'-6"	1'-6"	2'-9"	#5	4'-4"	3'-4"	8.5	8.2	793	10'-0"	5'-4"	4'-1"	3'-5"	9.0	8.7	776	
54"	5'-11"	3'-9"	1'-6"	3'-0"	#5	5'-2"	3'-8"	10.3	10.0	1069	11'-4"	6'-3"	4'-6"	3'-8"	10.9	10.5	1026	
60"	6'-6"	4'-0"	1'-6"	3'-3"	#5	5'-11"	3'-11"	12.3	11.8	1149	12'-7"	7'-2"	4'-10"	4'-0"	12.9	12.4	1174	
72"	7'-7"	4'-6"	1'-7"	3'-9"	#7	7'-5"	4'-5"	17.0	16.2	1783	15'-1"	8'-11"	5'-7"	4'-6"	17.8	17.1	1811	
84"	8'-8"	5'-0"	1'-10"	4'-3"	#8	9'-0"	5'-0"	23.7	22.8	2595	17'-7"	10'-9"	6'-4"	5'-1"	24.8	23.9	2596	

CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF SEWERAGE & DRAINAGE <i>John J. Newson</i> SSES MANAGER	CAST-IN-PLACE PIPE CULVERT HEADWALLS 42" TO 84"	STANDARD DRAWING AA-S167	
		REVISED 12/6/13	
		PAGE	1 / 2



LOCATION AND GRADING PLAN FOR SKEWED PIPE CULVERT - TYPE "B"

PLAN TYPE "B"

NOTES:

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR SKEWED AND NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 43" TO 84". TYPE "A" IS USED WHEN SKEW ANGLE(ϕ) IS 10° OR LESS AND TYPE "B" WHEN ANGLE IS 11° OR OVER.
2. REINFORCING STEEL SHALL BE #5 BAR.
3. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE ARCHES IN ACCORDANCE WITH NEAREST SIZE CIRCULAR PIPE. ESTABLISHED DIMENSIONS FOR VERTICAL DIAMETER SHALL APPLY FOR RISE AND DIMENSIONS FOR HORIZONTAL DIAMETER SHALL APPLY TO SPAN.
4. CONCRETE SHALL BE CLASS "C".
5. FOUNDATION: INCREASE WIDTH OF BASE WHERE SOIL BORINGS INDICATE A BEARING CAPACITY LESS THAN 2600 LBS. PER SQ. FT. IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE FOOTING.
6. WHEN SLOPES OTHER THAN 2:1 ARE USED ADJUST LENGTH "L₁" & "L₂" AND HEIGHT "h₁" & "h₂" AS REQUIRED.
7. HEADWALL LOCATION TO BE DETERMINED BY THE INTERSECTION OF THE EMBANKMENT SLOPE AT THE BACK OF THE HEADWALL AT POINT "K". THE SLOPES ADJACENT TO THE HEADWALL SHALL BE 2:1.
8. THE CONTRACTOR MAY PROPOSE TO USE PRECAST IN LIEU OF CAST IN PLACE BUT MUST SUBMIT DETAILED DRAWINGS OF THE PROPOSED STRUCTURE WITH AN OHIO REGISTERED PROFESSIONAL ENGINEER'S STAMP OF APPROVAL.

* ONE WALL

PIPE DIA. "D"	H	a	b	c	BAR "d"	$\phi = 30^\circ$					$\phi = 45^\circ$					C.Y.* CONC. C.M.P.	C.Y.* CONC. R.C.P.	STEEL LBS.	
						L ₁	L ₂	h ₁	h ₂	L ₁	L ₂	h ₁	h ₂						
42"	4'-11"	3'-3"	1'-6"	2'-6"	#5	7'-10"	5'-9"	3'-2"	3'-3"	7.5	7.3	633	7'-10"	7'-9"	3'-2"	3'-3"	8.7	8.5	718
48"	5'-5"	3'-6"	1'-6"	2'-9"	#5	8'-9"	6'-10"	3'-5"	3'-6"	9.1	8.8	801	8'-9"	9'-2"	3'-5"	3'-7"	10.6	10.3	925
54"	5'-11"	3'-9"	1'-6"	3'-0"	#5	9'-8"	7'-11"	3'-8"	3'-9"	10.8	10.5	1,024	9'-8"	10'-7"	3'-8"	3'-10"	12.6	12.2	1,188
60"	6'-6"	4'-0"	1'-6"	3'-3"	#5	10'-7"	9'-0"	3'-10"	4'-1"	12.7	12.3	1,157	10'-7"	12'-0"	3'-10"	4'-1"	14.8	14.3	1,354
72"	7'-7"	4'-6"	1'-7"	3'-9"	#7	12'-5"	11'-2"	4'-3"	4'-7"	17.3	16.6	1,788	12'-5"	14'-10"	4'-3"	4'-8"	20.2	19.6	2,076
84"	8'-8"	5'-10"	1'-10"	4'-3"	#8	14'-7"	13'-4"	4'-10"	5'-2"	24.1	23.3	2,511	14'-3"	17'-8"	4'-8"	5'-2"	27.9	27.0	2,990

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF SEWERAGE & DRAINAGE

CAST-IN-PLACE
PIPE CULVERT
HEADWALLS
42" TO 84"

STANDARD DRAWING
AA-S167

REVISED 12/6/13

SSSES MANAGER

John J. Newson

PAGE

2
2