STATE	PROJECT NUMBER	SHEET No.	TOTAL SHEETS
GA.	CSSTP-0006-00(476)	94	221

NOTE: THE DESIGN OF CULVERT SHALL BE DETERMINED BY THE MAXIMUM AMOUNT OF FILL WITH ONLY A SINGLE DESIGN BEING USED FOR THE ENTIRE INSTALLATION.

DATA CHART

DESIGN	7-7-10	7-7-20	7-7-30	7-7-40	7-7-50	7-7-60	7-7-70	7-7-80
BARREL DIMENSIONS	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'	S=7'; H=7'
T_1	7¼"	9"	10½"	11¾"	1'-1"	1'-2"	1'-2¾"	1'-3½"
T_2	9"	9"	9¾"	11"	1'-0"	1'-1½"	1'-3¼"	1'-5"
BAR "A"	NO.6 @ 12"	2-NO.5 @ 12"	2-NO.6 @ 12"	2-NO.6 @ 12"	2-NO.6 @ 11½"	NO.9 @ 12"	NO.9 @ 12"	NO.8 @ 12"
BAR "B"	NO.4 @ 12" E=1'-5"; F=2'-2"	NO.5 @ 12" E=1'-2"; F=2'-10"	NO.6 @ 12" E=1'-1"; F=3'-3"	NO.6 @ 12" E=1'-1"; F=2'-5"	NO.7 @ 11½" E=1'-1"; F=3'-6"	NO.7 @ 12" E=1'-1"; F=2'-9"	NO.7 @ 12" E=1'-2"; F=3'-7"	NO.9 @ 12" E=1'-4"; F=3'-5"
BAR "C"	NO.5 @ 12" A=2'-8"	NO.5 @ 12" A=2'-6"	NO.4 @ 12" A=2'-6"	NO.5 @ 12" A=2'-7"	NO.4 @ 11½" A=2'-7¼"	NO.4 @ 12" A=2'-8½"	NO.5 @ 12" A=2'-10"	NO.6 @ 12" A=3'-8¾"
NO. BARS "D" IN TWO SLABS	28	28	28	28	28	28	28	28
BAR "E"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 11½"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "F" IN TWO WALLS	14	14	14	14	14	14	14	14
NO. BARS "G" IN TWO WALLS	12	12	12	12	12	12	12	12
BAR "H"	NO.6 @ 12"	NO.5 @ 12"	NO.4 @ 12"	NO.5 @ 12"	NO.4 @ 11½"	NO.7 @ 12"	NO.6 @ 12"	NO.6 @ 12"
NO. BARS "J" PER CORNER	0	0	1 @ 10"	2 @ 6½"	3 @ 5¼"	4 @ 4"	5 @ 3⅜"	7 @ 2¾"
CU. YDS. CONCRETE PER FT.	0.7786	0.8704	0.9896	1.1253	1.2500	1.3920	1.5368	1.6847
LB. REINF. STEEL PER FT.	121.863	140.33	170.65	190.54	196.06	247.96	274.59	348.71
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'

DESIGN	10-9-10	10-9-20	10-9-30	10-9-40	10-9-50	10-9-60	10-9-70	10-9-80
BARREL DIMENSIONS	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'	S=10'; H=9'
T_1	9¼"	1'-0"	1'-1½"	1'-4"	1'-5½"	1'-7"	1'-8¼"	1'-9½"
T_2	9"	11"	1'-0¾"	1'-2½"	1'-3¾"	1'-5¼"	1'-7¼"	1'-9½"
BAR "A"	NO.7 @ 12"	2-NO.7 @ 12"	2-NO.7 @ 12"	2-NO.7 @ 12"	2-NO.8 @ 12"	2-NO.8 @ 12"	2-NO.8 @ 12"	NO.11 @ 12"
BAR "B"	NO.6 @ 12" E=1'-7"; F=3'-3"	NO.6 @ 12" E=1'-6"; F=3'-8"	NO.7 @ 12" E=1'-6"; F=3'-11"	NO.8 @ 12" E=1'-6"; F=4'-4"	NO.8 @ 12" E=1'-5"; F=4'-8"	NO.8 @ 12" E=1'-5"; F=4'-10"	NO.9 @ 12" E=1'-6"; F=5'-2"	NO.10 @ 12" E=1'-7"; F=6'-0"
BAR "C"	NO.4 @ 12" A=3'-0"	NO.6 @ 12" A=2'-10"	NO.6 @ 12" A=3'-0"	NO.5 @ 12" A=3'-1"	NO.6 @ 12" A=3'-1"	NO.6 @ 12" A=3'-4"	NO.6 @ 12" A=3'-3"	NO.5 @ 12" A=3'-0"
NO. BARS "D" IN TWO SLABS	30	30	30	30	30	30	30	30
BAR "E"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "F" IN TWO WALLS	18	18	18	18	18	18	18	18
NO. BARS "G" IN TWO WALLS	16	16	16	16	16	16	16	16
BAR "H"	NO.5 @ 12"	NO.6 @ 12"	NO.6 @ 12"	NO.5 @ 12"	NO.6 @ 12"	NO.6 @ 12"	NO.6 @ 12"	NO.5 @ 12"
NO. BARS "J" PER CORNER	0	0	2 @ 9¼"	3 @ 6½"	5 @ 4¾"	7 @ 4"	9 @ 3¼"	10 @ 3"
CU. YDS. CONCRETE PER FT.	1.1658	1.4969	1.7280	2.0410	2.2480	2.4775	2.7297	3.0064
LB. REINF. STEEL PER FT.	182.60	261.43	301.39	327.47	396.80	420.15	480.73	537.17
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'

DESIGN	9-9-10	9-9-20	9-9-30	9-9-40	9-9-50	9-9-60	9-9-70	9-9-80
BARREL DIMENSIONS	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'	S=9'; H=9'
T_1	9½"	11"	1'-1"	1'-2½"	1'-4"	1'-5¼"	1'-6¼"	1'-7¼"
T_2	9"	10¼"	1'-0"	1'-1½"	1'-3"	1'-4¾"	1'-7"	1'-9½"
BAR "A"	NO.7 @ 12"	2-NO.6 @ 12"	NO.9 @ 12"	NO.9 @ 12"	2-NO.7 @ 12"	NO.9 @ 11½"	2-NO.7 @ 12"	NO.10 @ 12"
BAR "B"	NO.4 @ 12" E=1'-4"; F=2'-4"	NO.6 @ 12" E=1'-5"; F=3'-4"	NO.7 @ 12" E=1'-4"; F=3'-7"	NO.8 @ 12" E=1'-4"; F=4'-2"	NO.8 @ 12" E=1'-4"; F=4'-1"	NO.9 @ 11½" E=1'-5"; F=4'-3"	NO.9 @ 12" E=1'-7"; F=4'-2"	NO.9 @ 12" E=1'-9"; F=4'-0"
BAR "C"	NO.5 @ 12" A=2'-10½"	NO.5 @ 12" A=2'-10⅝"	NO.5 @ 12" A=2'-10¾"	NO.4 @ 12" A=2'-11¾"	NO.5 @ 12" A=3'-0½"	NO.5 @ 11½" A=3'-1⅞"	NO.6 @ 12" A=3'-3⅞"	NO.7 @ 12" A=3'-6⅛"
NO. BARS "D" IN TWO SLABS	32	32	32	32	32	32	32	32
BAR "E"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "F" IN TWO WALLS	18	18	18	18	18	18	18	18
NO. BARS "G" IN TWO WALLS	16	16	16	16	16	16	16	16
BAR "H"	NO.6 @ 12"	NO.5 @ 12"	NO.5 @ 12"	NO.4 @ 12"	NO.5 @ 12"	NO.5 @ 12"	NO.6 @ 12"	NO.7 @ 12"
NO. BARS "J" PER CORNER	0	0	1 @ 9½"	3 @ 6¼"	4 @ 4⅞"	5 @ 4"	7 @ 3¼"	9 @ 2¾"
CU. YDS. CONCRETE PER FT.	1.1250	1.3059	1.5586	1.7662	1.9784	2.1954	2.4354	2.6990
LB. REINF. STEEL PER FT.	159.82	209.00	253.64	296.82	342.95	392.88	446.59	508.09
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'

DESIGN	9-6-10	9-6-20	9-6-30	9-6-40	9-6-50	9-6-60	9-6-70	9-6-80
BARREL DIMENSIONS	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'	S=9'; H=6'
T_1	8¾"	11¼"	13¼"	15"	16¼"	17¾"	19"	20"
T_2	8¼"	10½"	12½"	14¼"	16¼"	18"	20"	22"
BAR "A"	NO 7 @ 12"	2 NO 6 @ 12"	2 NO 6 @ 12"	2 NO 7 @ 12"	2 NO 7 @ 12"	2 NO 7 @ 12"	2 NO 7 @ 12"	2 NO 8 @ 12"
BAR "B"	NO 5 @ 12" E=1'-3"; F=4'-3"	NO 5 @ 12" E=1'-3"; F=4'-9"	NO 6 @ 12" E=1'-3"; F=4'-9	NO 5 @ 12" E=1'-4"; F=4'-9"	NO 6 @ 12" E=1'-5"; F=4'-9	NO 7 @ 12" E=1'-6"; F=5'-3"	NO 7 @ 12" E=1'-8"; F=5'-6	NO 5 @ 12" E=1'-10"; F=5'-2"
BAR "C"	NO 4 @ 12" A=2'-6"	NO 4 @ 12" A=2'-7"	NO 4 @ 12" A=2'-10"	NO 6 @ 12" A=3'-0"	NO 5 @ 12" A=3'-2"	NO 5 @ 12" A=3'-3"	NO 5 @ 12" A=3'-5"	NO 7 @ 12" A=4'-3"
NO BARS "D" IN TWO SLABS	30	30	30	30	30	30	30	30
BAR "E"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"
NO BARS "F" IN TWO WALLS	12	12	12	12	12	12	12	12
NO BARS "G" IN TWO WALLS	10	10	10	10	10	10	10	10
BAR "H"	NO 4 @ 12"	NO 4 @ 12"	NO 4 @ 12"	NO 6 @ 12"	NO 5 @ 12"	NO 5 @ 12"	NO 5 @ 12"	NO 7 @ 12"
NO BARS "J" PER CORNER	0	0	1 @ 6"	2 @ 8"	3 @ 5½"	4 @ 4½"	5 @ 4"	6 @ 3½"
CU. YDS. CONC. PER FT.	0.8752	1.1446	1.3787	1.5902	1.7855	1.9907	2.1964	2.3878
LBS. REINF STEEL PER FT.	141.80	167.89	196.73	237.12	254.08	294.05	309.47	342.54
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'

DESIGN	7-5-10	7-5-20	7-5-30	7-5-40	7-5-50	7-5-60	7-5-70	7-5-80
BARREL DIMENSIONS	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'	S=7'; H=5'
T_1	7"	8¾"	10½"	11¾"	1'-1"	1'-2"	1'-3"	1'-4"
T_2	9"	9"	9¾"	10½"	11¼"	1'-0¼"	1'-1"	1'-1¾"
BAR "A"	NO.6 @ 12"	NO.8 @ 12"	2-NO.6 @ 12"	NO.9 @ 12"	NO.9 @ 12"	2-NO.7 @ 12"	2-NO.6 @ 12"	NO.9 @ 12"
BAR "B"	NO.4 @ 12" E=1'-4"; F=2'-2"	NO.4 @ 12" E=1'-1"; F=2'-5"	NO.5 @ 12" E=11"; F=3'-3"	NO.6 @ 12" E=11"; F=3'-4"	NO.7 @ 12" E=10"; F=3'-9"	NO.7 @ 12" E=10"; F=3'-11"	NO.9 @ 12" E=10"; F=3'-11"	NO.9 @ 12" E=10"; F=4'-0"
BAR "C"	NO.5 @ 12" A=2'-7¾"	NO.6 @ 12" A=2'-5¼"	NO.5 @ 12" A=2'-4⅜"	NO.5 @ 12" A=2'-4½"	NO.4 @ 12" A=2'-4½"	NO.4 @ 12" A=2'-6"	NO.4 @ 12" A=2'-5¼"	NO.4 @ 12" A=2'-4½"
NO. BARS "D" IN TWO SLABS	28	28	28	28	28	28	28	28
BAR "E"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "F" IN TWO WALLS	10	10	10	10	10	10	10	10
NO. BARS "G" IN TWO WALLS	8	8	8	8	8	8	8	8
BAR "H"	NO.6 @ 12"	NO.6 @ 12"	NO.5 @ 12"	NO.5 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "J" PER CORNER	0	0	1 @ 10½"	2 @ 7"	3 @ 5½"	4 @ 4⅜"	5 @ 3¾"	6 @ 3¼"
CU. YDS. CONCRETE PER FT.	0.6543	0.7462	0.8692	0.9680	1.0687	1.1687	1.2592	1.3513
LB. REINF. STEEL PER FT.	109.42	136.63	155.2638	189.45	213.61	241.69	285.52	309.37
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'

DESIGN	9-5-10
BARREL DIMENSIONS	S=9"; H=5'
T_1	8¼"
T_2	9"
BAR "A"	NO. 6 AT 12"
BAR "B"	NO. 5 AT 12" E=1'-5"; F=2'-3"
BAR "C"	NO. 5 AT 12" A=2'-8"
NO. BARS "D" IN 2 SLABS	30
BAR "E"	NO. 4 AT 12"
NO. BARS "F" IN 2 WALLS	10
NO. BARS "G" IN 2 WALLS	8
BAR "H"	NO. 5 AT 12"
NO. BARS "J" PER CORNER	0
CU. YDS. CONC. PER FT.	0.8218
LBS. REINF. STEEL PER FT.	127.42
MAX. HT. OF FILL OVER TOP	10'

DESIGN	9-8-10	9-8-20	9-8-30	9-8-40	9-8-50	9-8-60	9-8-70	9-8-80	9-8-90
BARREL DIMENSIONS	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'	S=9'; H=8'
T_1	9"	11"	1'-1"	1'-2½"	1'-4"	1'-5¼"	1'-6½"	1'-7½"	1'-9¼"
T_2	9"	10¼"	11¾"	1'-1"	1'-2¼"	1'-3¾"	1'-5¼"	1'-7½"	1'-11½"
BAR "A"	NO.7 @ 12"	2-NO.6 @ 12"	NO.9 @ 12"	2-NO.7 @ 12"	2-NO.8 @ 12"	NO.10 @ 11½"	2-NO.8 @ 12"	2-NO.8 @ 12"	2 NO.8 @ 12"
BAR "B"	NO.5 @ 12" E=1'-5"; F=3'-5"	NO.6 @ 12" E=1'-4"; F=3'-6"	NO.7 @ 12" E=1'-3"; F=4'-1"	NO.7 @ 12" E=1'-3"; F=4'-0"	NO.6 @ 12" E=1'-3"; F=3'-6"	NO.8 @ 11½" E=1'-2"; F=4'-3"	NO.8 @ 12" E=1'-4"; F=4'-2"	NO.8 @ 12" E=1'-5"; F=3'-8"	NO.8 @ 12" E=1'-8"; F=4'-2"
BAR "C"	NO.4 @ 12" A=2'-9¾"	NO.5 @ 12" A=2'-9"	NO.4 @ 12" A=2'-9⅜"	NO.5 @ 12" A=2'-9⅞"	NO.7 @ 12" A=2'-10¾"	NO.5 @ 11½" A=2'-11⅝"	NO.6 @ 12" A=3'-0¾"	NO.8 @ 12" A=3'-2⅞"	NO. 8 @ 12" A=5'-3"
NO. BARS "D" IN TWO SLABS	30	30	30	30	30	30	30	30	30
BAR "E"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 11½"	NO.4 @ 12"	NO.4 @ 12"	NO.4 @ 12"
NO. BARS "F" IN TWO WALLS	16	16	16	16	16	16	16	16	16
NO. BARS "G" IN TWO WALLS	14	14	14	14	14	14	14	14	14
BAR "H"	NO.5 @ 12"	NO.5 @ 12"	NO.4 @ 12"	NO.5 @ 12"	NO.7 @ 12"	NO.5 @ 11½"	NO.6 @ 12"	NO.8 @ 12"	NO.8 @ 12"
NO. BARS "J" PER CORNER	0	0	1 @ 10"	3 @ 6½"	4 @ 5"	5 @ 4⅛"	6 @ 3½"	8 @ 3"	7 @ 3"
CU. YDS. CONCRETE PER FT.	1.0370	1.2426	1.4689	1.6507	1.8528	2.0249	2.2172	2.4468	2.8640
LB. REINF. STEEL PER FT.	154.71	202.23	236.68	289.17	344.98	370.27	419.38	493.96	479.55
MAX. HT. OF FILL OVER TOP	10'	20'	30'	40'	50'	60'	70'	80'	90'

BOX CULVERT REQUIREMENTS:

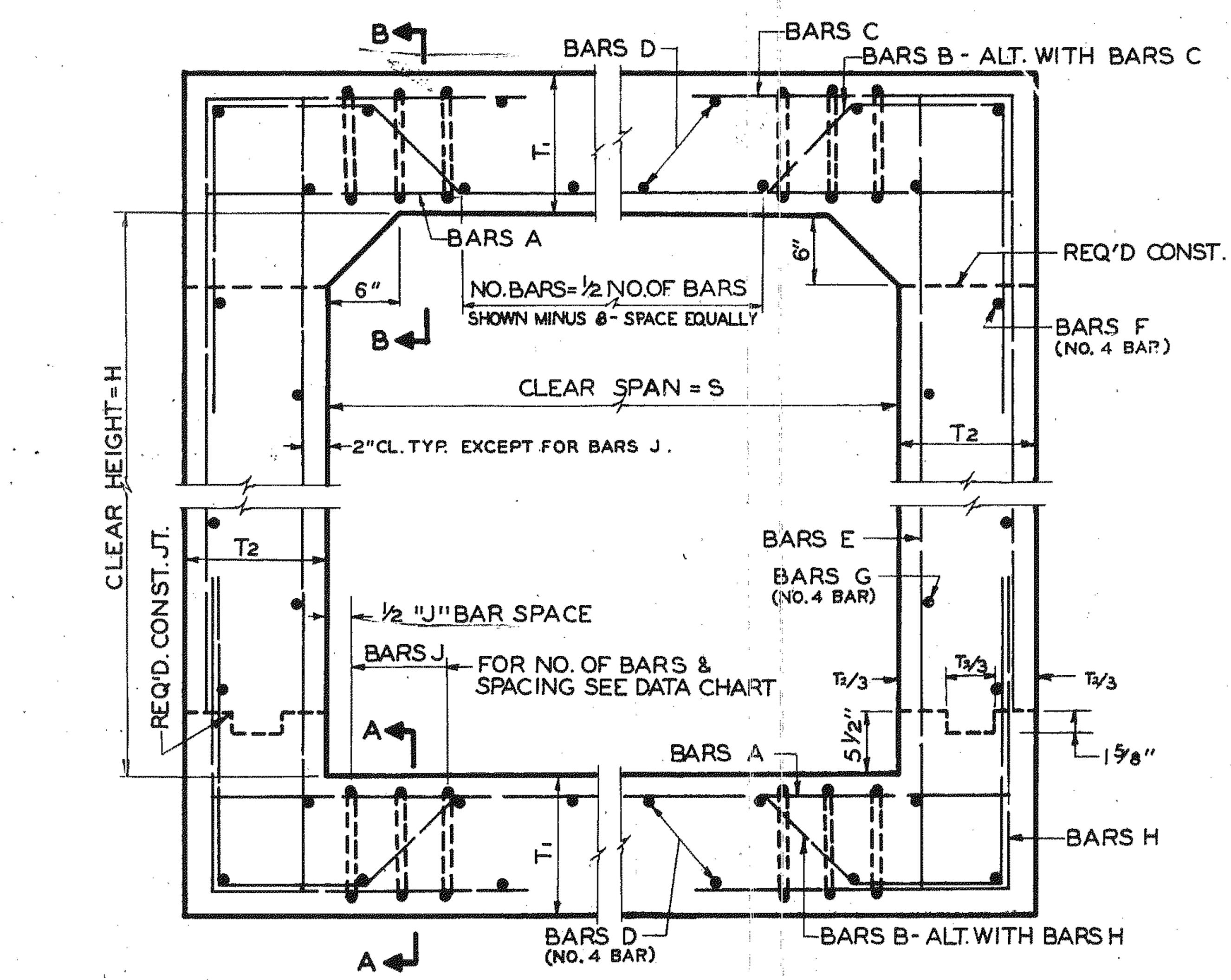
MINIMUM FILL HEIGHT FROM TOP OF CULVERT TO BOTTOM OF BASE WITHIN TRAVELWAY SHALL BE 12 INCHES.

MAXIMUM POUR LENGTH SHALL NOT EXCEED 30 FEET ALONG THE LENGTH OF THE CULVERT.

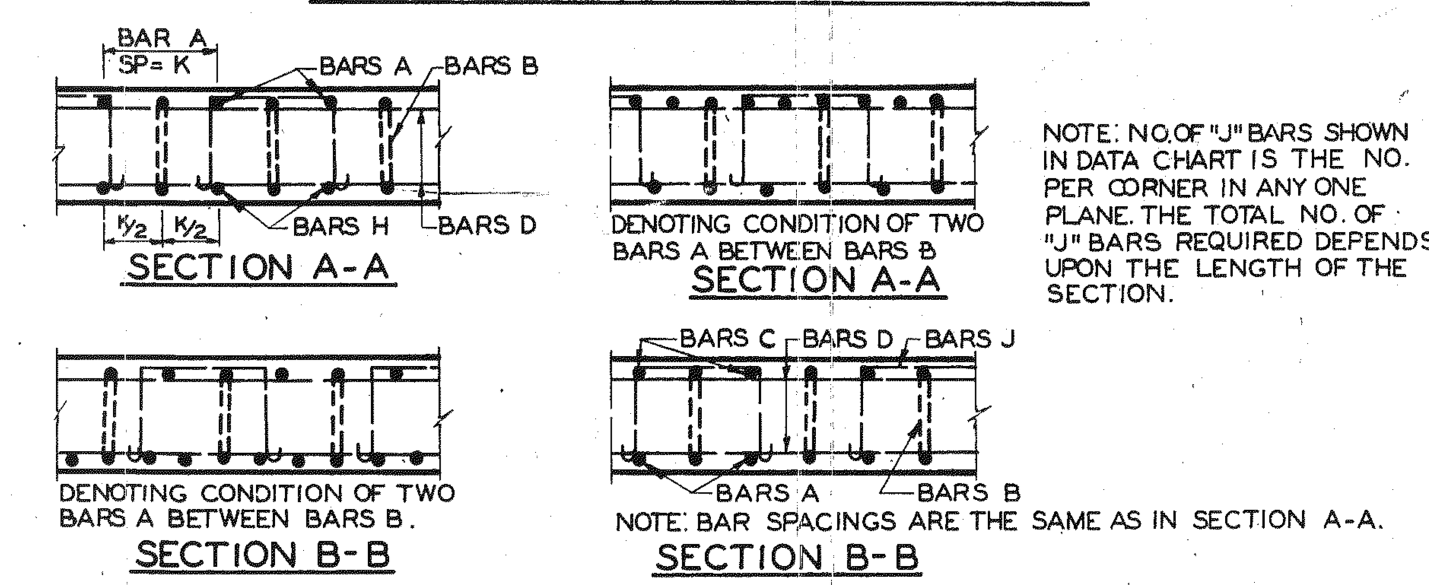
TRANSVERSE CONSTRUCTION JOINTS SHALL BE PLACED IN THE BARREL, NORMAL TO THE CENTERLINE OF CULVERT, AT THE OUTSIDE SHOULDER BREAK POINTS. LONGITUDINAL BARREL REINFORCING STEEL SHALL NOT BE CONTINUOUS THROUGH THESE JOINTS, PROVIDED THAT THE JOINTS ARE MORE THAN 15 FEET FROM THE BARREL ENDS.
WHEN TRANSVERSE CONSTRUCTION JOINTS OCCUR WITHIN 15 FEET OF THE BARREL ENDS OR WITHIN THE LIMITS OF THE PAVEMENT, THE LONGITUDINAL BARREL REINFORCING SHALL THEN BE CONTINOUS THROUGH SUCH JOINTS. THE MINIMUM LENGTH OF LAP SPLICE FOR LONGITUDINAL REINFORCING SHALL BE 24 INCHES.

TRANSVERSE CONSTRUCTION JOINTS PLACED AT ANY OTHER LOCATION NOT SPECIFIED ABOVE SHALL BE FORMED WITH NO LONGITUDINAL REINFORCING STEEL PASSING THROUGH THE JOINTS.

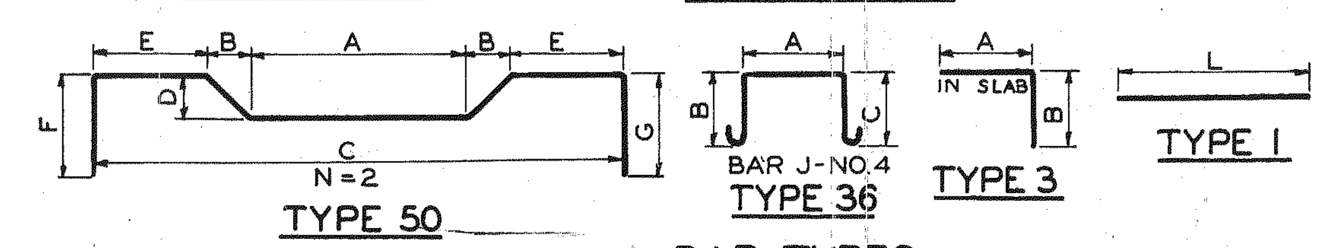
NOTE: BARS "A" THAT ARE SHOWN AS TWO SHALL BE EQUALLY SPACED BETWEEN BARS "B" TOP AND BOTTOM SLABS.



TYPICAL BARREL SECTION - ALL DESIGNS



NOTE: NO. OF "J" BARS SHOWN IN DATA CHART IS THE NO. PER CORNER IN ANY ONE PLANE. THE TOTAL NO. OF "J" BARS REQUIRED DEPENDS UPON THE LENGTH OF THE SECTION.



BAR TYPES

BAR "A": $L = S + 2T_2 - 4"$
BAR "B": $B\&D = T_1 - 4"$; $C = S + 2T_2 - 4"$; $A = C - 2E - 2B$; $G = F$
BAR "C": $B = H + T_1 - 7½"$
BAR "E": $L = H + 2T_1 - 4"$
BAR "H": $B = T_1 + 3½" + 16.67d$. NOTE: d = DIAMETER OF BAR "H"; A = DIM. A OF BAR "C".
BAR "J": A = SPACING OF BAR "C" + 1" + DIAMETER OF BAR "C": $B \& C = T_1 - 3"$.

NOTE: SEE DATA CHART FOR DIMENSIONS OF BAR DETAILS NOT INDICATED ABOVE.

REINFORCEMENT DETAILS

⚠ NOTE: BEND LONGITUDINAL BARS INTO WINGS AND PARAPETS SIMILAR TO STANDARDS. IF CULVERT IS SKEWED CUT TRANSVERSE STEEL AND BEND 12" INTO PARAPET OR TOE WALL AND HOOK

REVISIONS	BY	DATE
ADD REQUIREMENT NOTE		11-26-01
ADD FILL HEIGHT NOTE	RMJ	10-23-91
DELETE BAR INCREASE TO #9	R.J.S.	2-28-80
ADD NOTE	R.J.S.	7-25-74
CONC. QUANTITIES	R.J.S.	12-2-70
ADD 9 X 6; 10' TO 80' FILL	R.J.S.	9-18-73
Add 9-8-90	R.J.S.	9-18-73
Add 9-5-10	R.J.S.	1-8-74

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL DESIGN BOX CULVERTS
7X7; 9X9; 7X5; 9X8; 10 X 9; 9X6; 9X5

BRIDGE SHEET OF

DESIGNED J.T.K. - R.J.S. TRACED C.U. REVIEWED
DRAWN J.M.B. CHECKED APPROVED

(8)