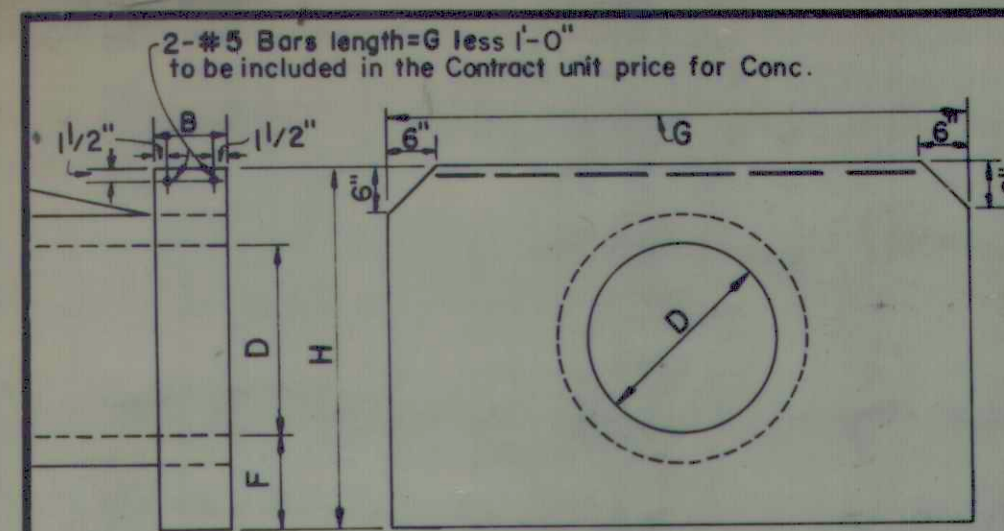
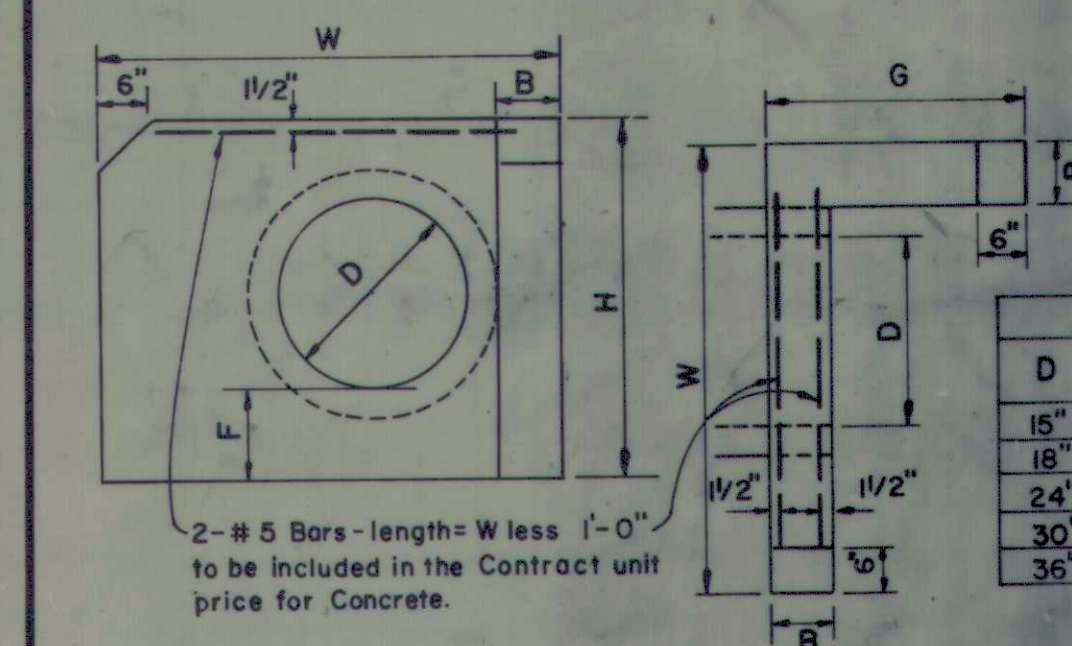




STRAIGHT HEADWALL



"L" HEADWALL

PRIVATE ENTRANCE HEADWALLS
SCALE: 1/2"=1'-0"

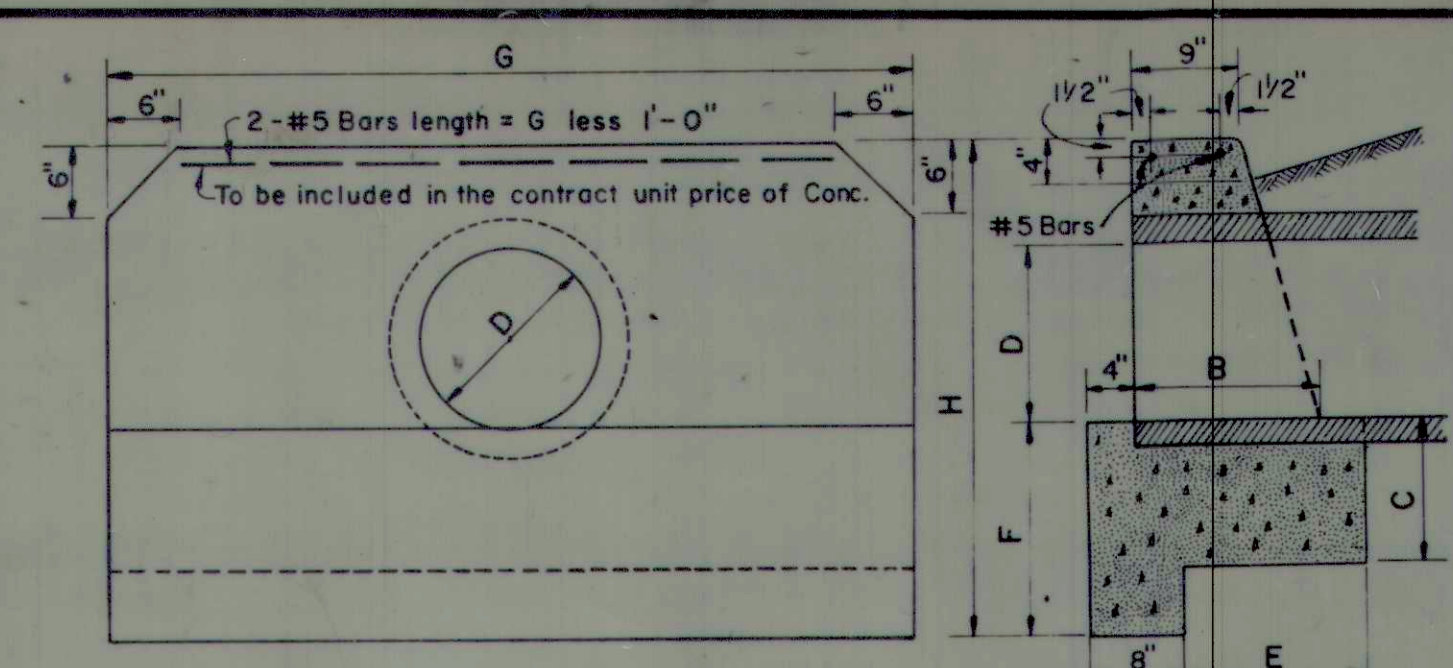
CIRCULAR PIPE CULVERTS					
D	F	H	B	G	CUYDS. CONC. 2 HEADWALLS
8"	1'-0"	2'-4"	0'-9"	3'-8"	0.46
10"	1'-0"	2'-6"	0'-9"	3'-10"	0.52
12"	1'-0"	2'-8"	0'-9"	4'-0"	0.58
15"	1'-0"	3'-0"	0'-9"	4'-3"	0.69
18"	1'-0"	3'-3"	0'-9"	4'-6"	0.80
24"	1'-0"	3'-9"	0'-9"	5'-0"	1.24
30"	1'-0"	4'-10"	1'-0"	7'-0"	2.49
36"	1'-6"	5'-4"	1'-0"	8'-0"	3.14

C.S. PIPE ARCH					
PIPE	F	H	B	G	CUYDS. CONC. 2 HEADWALLS
18"	1'-0"	2'-6"	0'-9"	3'-4"	0.45
22"	1'-0"	2'-9"	0'-9"	4'-3"	0.64
25"	1'-0"	3'-0"	0'-9"	4'-9"	0.78
29"	1'-0"	3'-0"	0'-9"	5'-6"	0.90
36"	1'-0"	3'-6"	1'-0"	6'-8"	1.71
43"	1'-0"	4'-0"	1'-0"	8'-0"	2.35

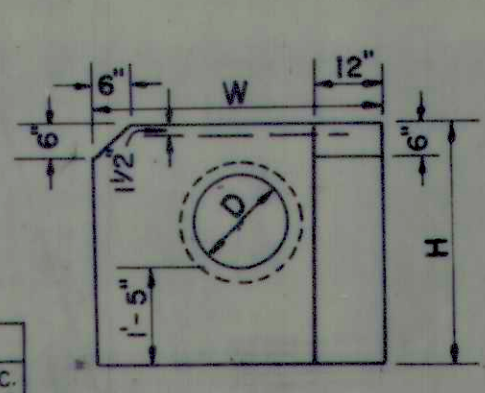
REINF. ELLIPTICAL CONC. CULV. PIPE					
PIPE	F	H	B	G	CUYDS. CONC. 2 HEADWALLS
23"	1'-0"	2'-9"	0'-9"	4'-3"	0.64
30"	1'-0"	3'-0"	0'-9"	5'-6"	0.90
34"	1'-0"	3'-3"	1'-0"	6'-6"	1.55
38"	1'-0"	3'-6"	1'-0"	6'-8"	1.71
42"	1'-0"	3'-9"	1'-0"	8'-0"	2.20

C.S. PIPE ARCH					
PIPE	F	H	B	G	CUYDS. CONC. 2 HEADWALLS
18"	1'-0"	2'-6"	0'-9"	2'-8"	0.70
22"	1'-0"	2'-9"	0'-9"	2'-8"	0.85
25"	1'-0"	3'-0"	0'-9"	2'-8"	1.01
29"	1'-0"	3'-0"	0'-9"	2'-10"	1.12
36"	1'-0"	3'-6"	1'-0"	3'-5"	2.16
43"	1'-0"	4'-0"	1'-0"	4'-0"	2.94

REINF. ELLIPTICAL CONC. CULV. PIPE					
PIPE	F	H	B	G	CUYDS. CONC. 2 HEADWALLS
23"	1'-0"	2'-9"	0'-9"	2'-8"	0.85
30"	1'-0"	3'-0"	0'-9"	2'-10"	1.12
34"	1'-0"	3'-6"	1'-0"	3'-3"	1.99
38"	1'-0"	3'-6"	1'-0"	3'-5"	2.16
42"	1'-0"	4'-0"	1'-0"	3'-9"	2.72



STRAIGHT HEADWALL
SCALE: 3/4"=1'-0"



L HEADWALL
SCALE: 3/8"=1'-0"

PIPE CULVERT HEADWALLS

CIRCULAR PIPE CULVERTS					
D	H	C	F	E	G
12"	3'-3"	1'-0"	1'-6"	1'-2"	4'-6"
15"	3'-5 1/2"	1'-0"	1'-6"	1'-3"	5'-6"
18"	3'-9"	1'-1"	1'-7"	1'-4"	6'-6"
24"	4'-5"	1'-2"	1'-8"	1'-6"	8'-6"
30"	5'-1"	1'-3"	1'-9"	1'-7"	11'-0"
36"	5'-10"	1'-5"	1'-11"	1'-9"	12'-9"

C.S. PIPE ARCH					
PIPE	H	C	F	E	G
18"	3'-3"	1'-0"	1'-6"	1'-2"	5'-0"
22"	3'-6"	1'-0"	1'-6"	1'-3"	6'-2"
25"	3'-8"	1'-0"	1'-6"	1'-3"	7'-0"
29"	3'-10"	1'-0"	1'-6"	1'-4"	8'-6"
36"	4'-3"	1'-0"	1'-6"	1'-5"	10'-4"
43"	5'-0"	1'-3"	1'-9"	1'-7"	12'-0"

REINF. ELLIPTICAL CONC. CULV. PIPE					
PIPE	H	C	F	E	G
23"	3'-6"	1'-0"	1'-6"	1'-3"	6'-2"
30"	3'-10"	1'-0"	1'-6"	1'-4"	8'-6"
34"	4'-3"	1'-0"	1'-6"	1'-5"	9'-6"
38"	4'-3"	1'-0"	1'-6"	1'-5"	10'-4"
42"	5'-0"	1'-3"	1'-9"	1'-6"	11'-9"

CIRCULAR PIPE CULVERTS					
D	W	H	C	F	G
15"	4'-0"	3'-3"	1'-6"	1'-2"	5'-0"
18"	4'-3"	3'-8"	1'-6"	1'-3"	6'-2"
24"	4'-9"	4'-2"	1'-6"	1'-4"	8'-6"
30"	5'-6"	4'-9"	1'-6"	1'-5"	10'-4"
36"	6'-0"	5'-3"	1'-6"	1'-5"	12'-0"

C.S. PIPE ARCH					
PIPE	W	H	C	F	G
18"	3'-6"	3'-2"	1'-6"	1'-2"	5'-0"
22"	4'-3"	3'-5"	1'-6"	1'-3"	6'-2"
25"	4'-10"	3'-7"	1'-6"	1'-3"	7'-0"
29"	5'-8"	3'-9"	1'-6"	1'-4"	8'-6"
36"	6'-11"	4'-3"	1'-6"	1'-5"	10'-4"
43"	7'-10"	4'-8"	1'-6"	1'-5"	12'-0"

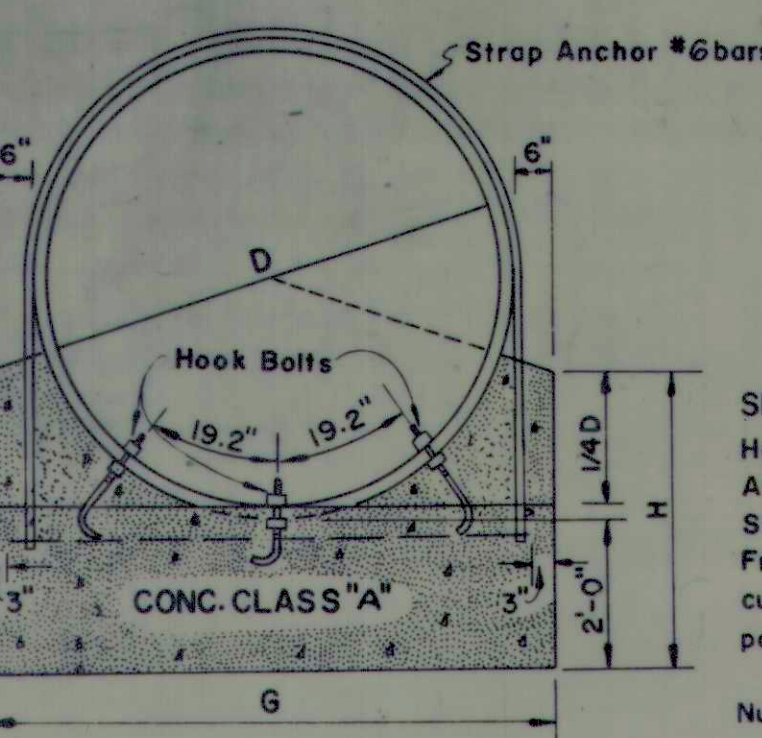
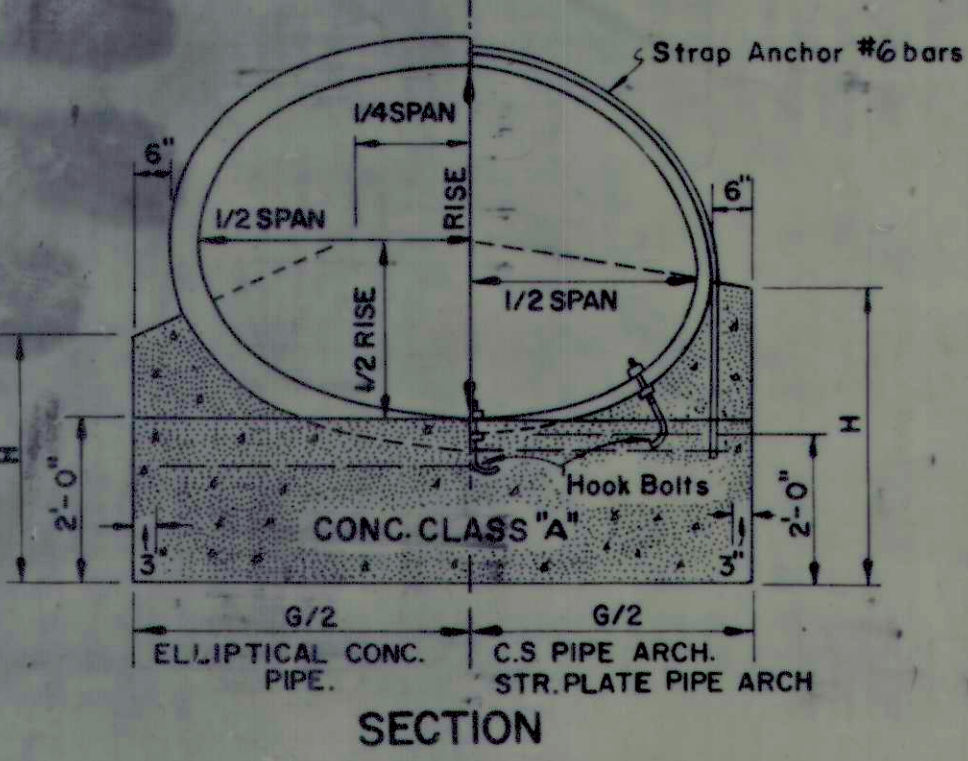
REINF. ELLIPTICAL CONC. CULV. PIPE					
PIPE	W	H	C	F	G
23"	4'-3"	3'-5"	1'-6"	1'-3"	6'-2"
30"	5'-8"	3'-9"	1'-6"	1'-4"	8'-6"
34"	6'-7"	4'-3"	1'-6"	1'-5"	9'-6"
38"	6'-11"	4'-3"	1'-6"	1'-5"	10'-4"
42"	7'-10"	4'-8"	1'-6"	1'-5"	12'-0"

STRUCTURAL PLATE PIPE ARCH ANCHORS					
SPAN	RISE	H	G	CUYDS. CONC. 2 ANCHORS	
6'-1"	4'-7"	3'-11"	7'-5"	3.53	
6'-4"	4'-9"	3'-11"	7'-8"	3.61	
6'-9"	4'-11"	4'-0"	8'-1"	3.85	
7'-0"	5'-1"	4'-0"	8'-4"	3.92	
7'-3"	5'-3"	4'-11"	8'-7"	3.99	
7'-8"	5'-5"	4'-0"	9'-0"	4.27	
7'-11"	5'-7"	4'-0"	9'-3"	4.32	
8'-2"	5'-9"	4'-11"	9'-6"	4.37	
8'-7"	5'-11"	4'-11"	9'-11"	4.69	
8'-10"	6'-1"	4'-0"	10'-2"	4.72	
9'-4"	6'-3"	4'-2"	10'-8"	5.06	
9'-6"	6'-5"	4'-11"	10'-10"	5.11	
9'-9"	6'-7"	4'-0"	11'-1"	5.11	
10'-3"	6'-9"	4'-2"	11'-7"	5.46	
10'-8"	6'-11"	4'-4"	12'-0"	5.79	
10'-11"	7'-1"	4'-3"	12'-3"	5.81	
11'-5"	7'-3"	4'-6"	12'-9"	6.22	

REINF. ELLIPTICAL CONCRETE PIPE ANCHORS					
SPAN	RISE	H	G	CUYDS. CONC. 2 ANCHORS	
49"	32"	2'-8"	5'-10"	2.26	
53"	34"	2'-8"	6'-3"	2.37	
60"	38"	2'-9"	6'-11"	2.62	
68"	43"	2'-11"	7'-8"	2.92	
76"	48"	3'-0"	8'-5"	3.21	

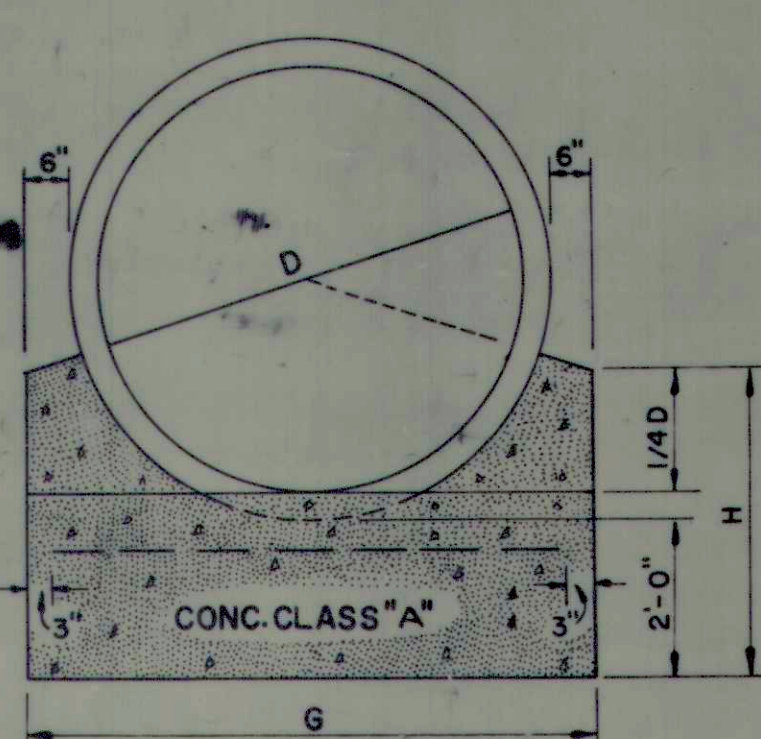
STRUCTURAL PLATE PIPE ANCHORS					
D	H	G	CUYDS. CONC. 2 ANCHORS		
60"	3'-5"	6'-4"	3.12		
66"	3'-7"	6'-10"	3.42		
72"	3'-8"	7'-4"	3.72		
78"	3'-10"	7'-10"	4.03		
84"	3'-11"	8'-4"	4.35		
90"	4'-1"	8'-10"	4.68		
96"	4'-2"	9'-4"	5.01		
102"	4'-4"	9'-10"	5.35		
108"	4'-5"	10'-4"	5.70		
114"	4'-7"	10'-10"	6.06		
120"	4'-8"	11'-4"	6.42		

C.S. PIPE ARCH ANCHORS					
SPAN	RISE	H	G	CUYDS. CONC. 2 ANCHORS	
50"	31"	2'-8"	5'-3"	2.13	
58"	36"	2'-9"	5'-11"	2.44	
65"	40"	2'-10"	6'-6"	2.69	
72"	44"	2'-11"	7'-1"	2.95	



ANCHORS

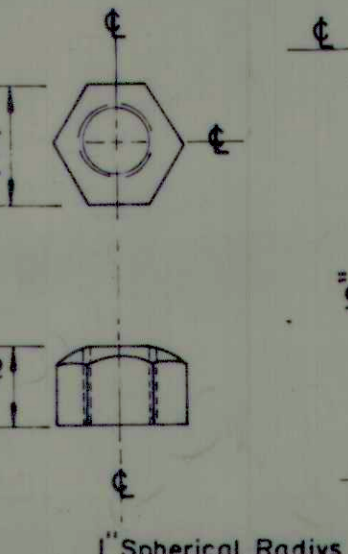
PIPE CULVERT ANCHORS FOR PIPE GROUP A,B,C,D,E & F					
D	H	G	CUYDS. CONC. 2 ANCHORS		
42"	3'-3"	5'-3"	2.50		
48"	3'-5"	5'-10"	2.83		
54"	3'-7"	6'-5"	3.18		
60"	3'-9"	7'-0"	3.55		
66"	3'-11"	7'-7"	3.92		
72"	4'-1"	8'-2"	4.31		
78"	4'-3"	8'-9"	4.71		
84"	4'-5"	9'-4"	5.12		
90"	4'-7"	9'-10"	5.47		
96"	4'-9"	10'-5"	5.90		
102"	4'-10"	10'-11"	6.26		
108"	5'-0"	11'-6"	6.72		



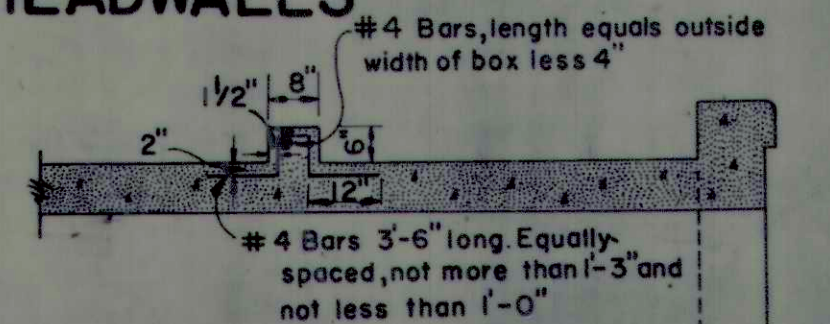
SECTION

SPECIFICATION FOR HOOK BOLT & NUT
Hook Bolt material shall meet the current ASTM A-307. Threads shall be American Standard Coarse Thread Series, Class 2, Free Fit. Bolts shall be galvanized to meet current ASTM specification A-153. The threaded portion shall not prevent turning the nut by hand.

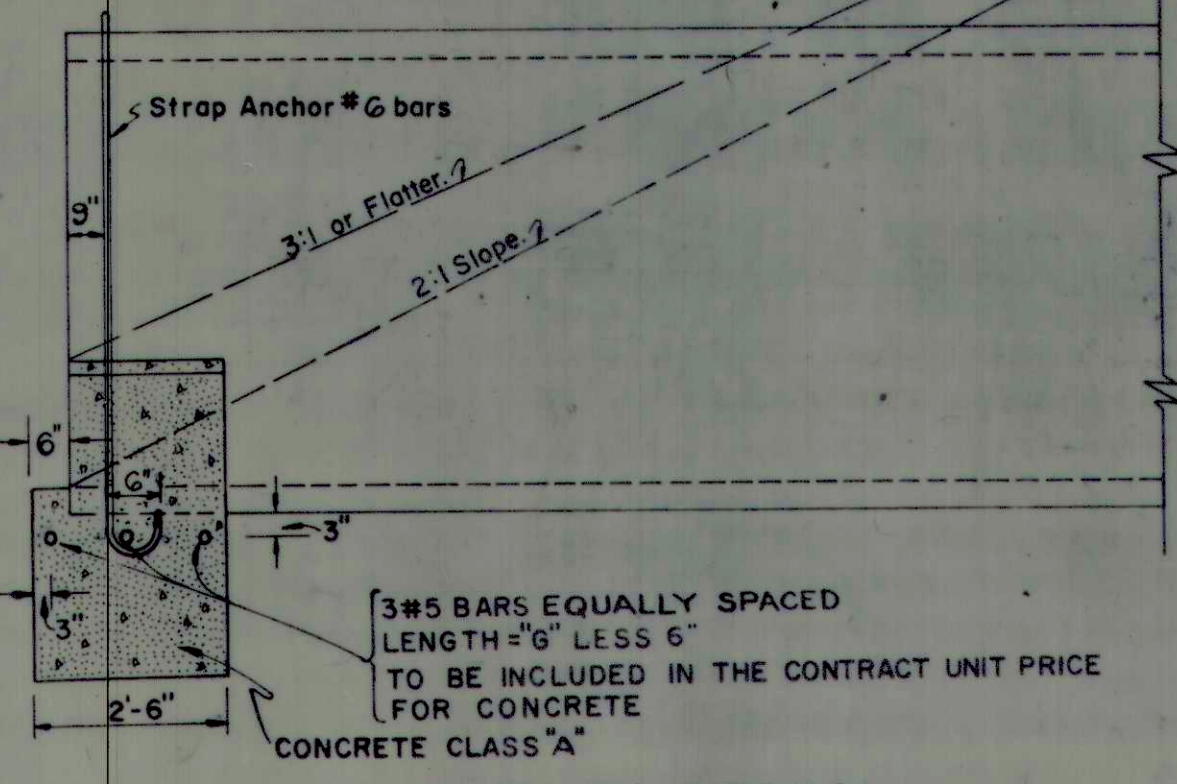
Nuts shall be carbon steel hot dip galvanized to meet ASTM specification A-153. Nut threads shall be American Standard Coarse Thread Series (1/64" maximum oversize), cleaned after galvanizing to provide a free running fit on the Class 2 bolt. Nuts shall be 1/4" across flats, 13/16" thick, curve crowned to approximately 1" radius.



HOOK BOLT & NUTS

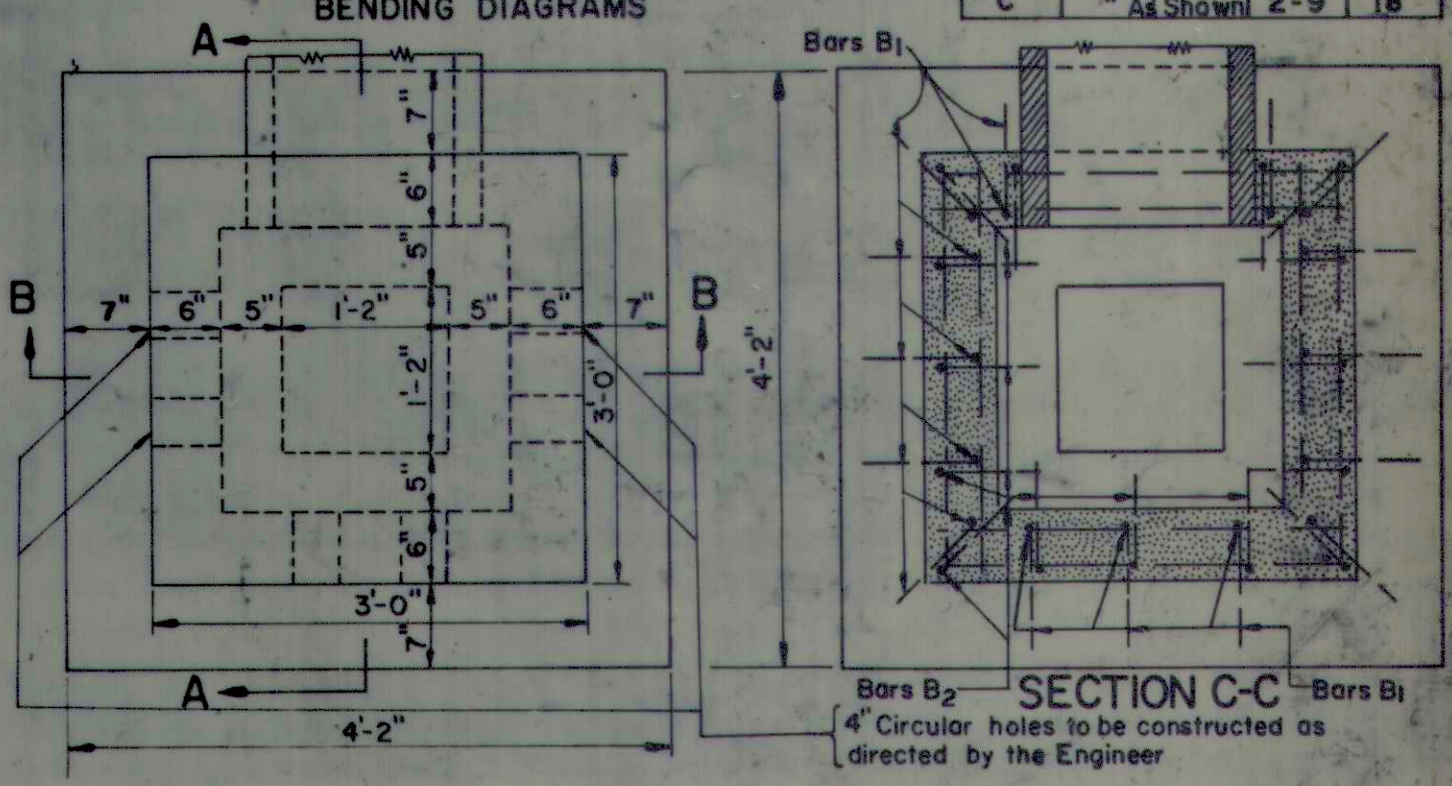
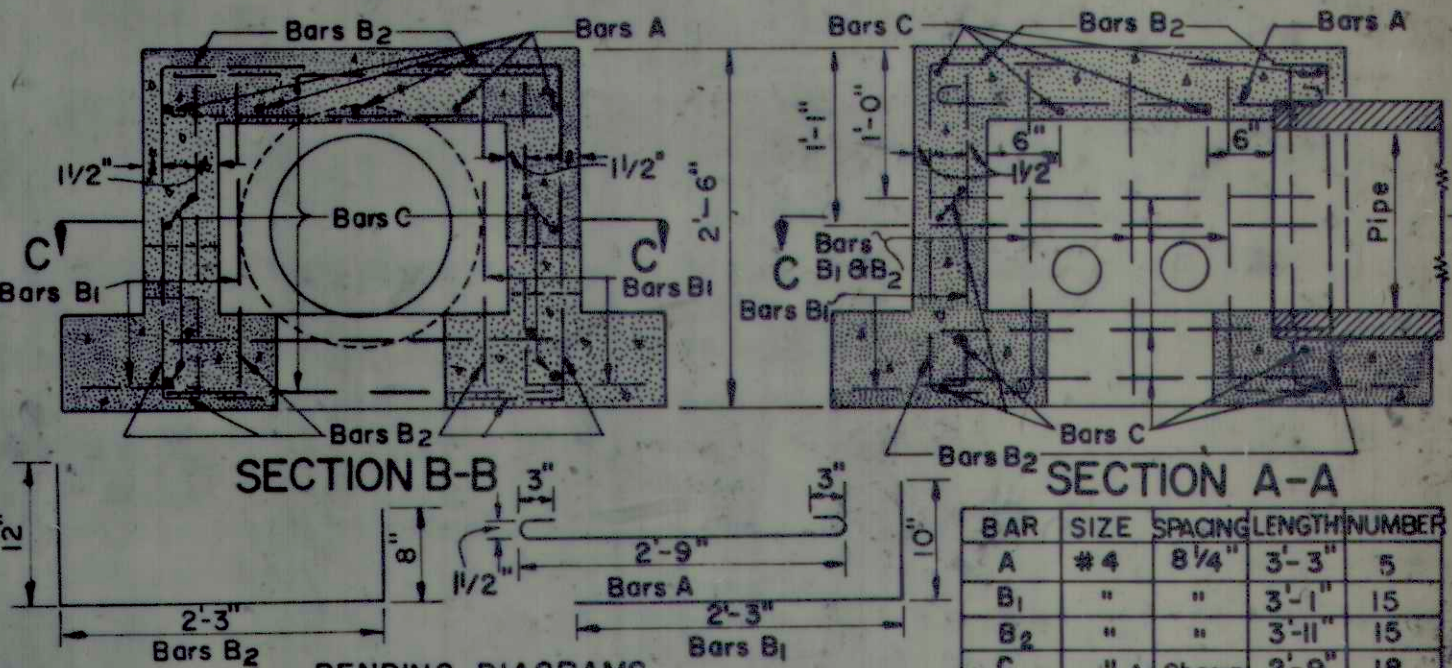


BOX CULVERT ANCHORS
SCALE: 3/8"=1'-0"



SIDE ELEVATION

NOTE: Aggregate Size No. 7 to be placed under and around box to thickness of 6". Aggregate to be included in price of box. Reinforcing steel covering shall be 1/2".



REINF. CONC. SPRING BOX
SCALE: 3/4"=1'-0"

MISCELLANEOUS STANDARDS

STATE HIGHWAY COMMISSION OF INDIANA

JULY 1965

RECOMMENDED FOR APPROVAL
APPROVED
APPROVED

REVISIONS			
10-18-65	2	HOOK BOLT	
5-11-66	2	STRAP ANCHOR	
1-2-68	2	ANCHORS	
6-17-68	2	NOTES	
4-1-69	2	5 pgs.	

SHEET
ME 1

SHEET NO. 86 14

RECORD DRAWING