FED. AID DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	528-C	1932

1/18

S.H. 79 SEC. C-1 C-2
HOLMES CO.

STATE OF OHIO

DEPARTMENT OF HIGHWAYS

NAVARRE-BERLIN ROAD

S.H. NO. 79 TOTAL LENGTH 5921.3 FT = 1.1214 MI. SEC. C-1

HOLMES COUNTY

PAINT TOWNSHIP MARCH 1932

LOCATION PLAN

SCALE of MILES

1/4 1/2 3/4 0 1 2 3

PORTION TO BE IMPROVED

DETOURS SHOWN THUS

CONVENTIONAL SIGNS

- State Line
- County Line
- Township Line
- Section Line
- Property Line not fenced
- Center Line
- City or Village Line
- Fence
- Telephone or Telegraph
- Steam Railroad
- Electric Line
- Guard Rail
- Drain Pipe - new
- Drain Pipe - old

SCALES

Plan	1" = 100'
Profile (Vertical)	1" = 10'
Profile (Horizontal)	1" = 100
Cross Sections	1" = 5'

INDEX OF SHEETS
PROJECT TRACINGS

Title Page	1
Typical Cross Section	2
Plans and Profile	3-4
Cross Sections	5-13
Superelevation Tables	14
Structural Plans	15-17
Summary Sheet	18

Supplemental Prints of Structural Standards. Numbers 95 - 96 - 98 - 100 - 123 - 300 - BC-A SC-A, SB-31, AS-31, RR-A.

The Standard Specifications of the State of Ohio, Division of Highways in force on date of Contract will govern this Improvement.

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway and that detours will be provided as shown on the plan and estimates. This detour will also be used for Section C-2 "F.A.P. 60 Reopened" which is to be repaved as a part of this years program.

Necessary R/W will be provided.

Approved Karl Snyder
Date 3/28/32 Resident District Deputy Director

Approved [illegible]
Date 4/5/32 Resident Division Deputy Director

Approved Elmer Hilty
Date 4/9-32 Chief Engineer
Bureau of Construction

Approved
Date Chief Engineer
Bureau of Maintenance

Approved
Date Chief Engineer
Bureau of Bridges

Approved H. P. Chapman
Date 4/9-32 Chief Engineer and
First Asst. Director

Approved O. W. Merrill
Date 4/9-32 Director of Highways

Recommended for Approval
Date District Engineer
Bureau of Public Roads

Recommended for Approval
Date Chief Engineer
Bureau of Public Roads

Approved
Date Chief of Bureau

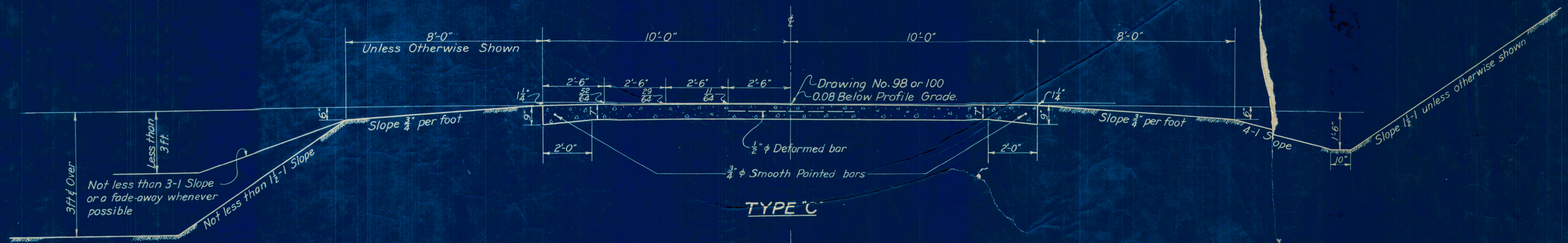
OK For 20 Conc. Reconstruction, Relocation, Grdy & Strs. [illegible]

Apr. 21, 1932 Sale
[illegible]

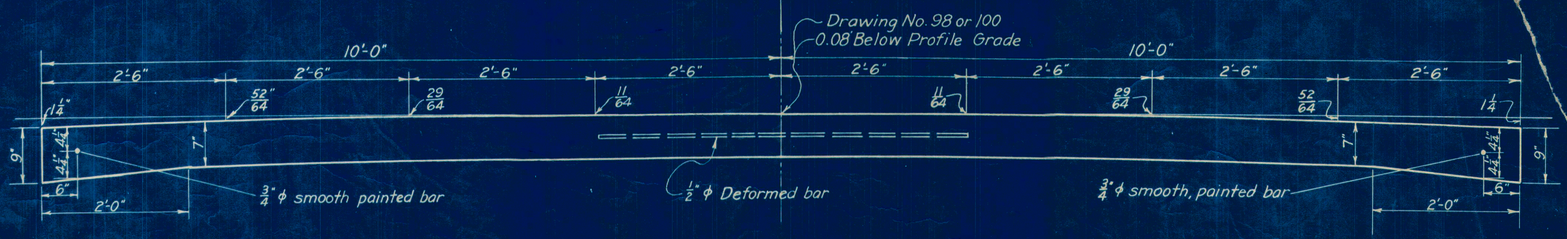
Fed. Aid Dist. No.	State	Fed. Aid Project	Fiscal Year	2
10	Ohio	528-C	1932	18

S.H. 79 SEC. C-1
HOLMES COUNTY

TYPE "C"



TYPE "C"

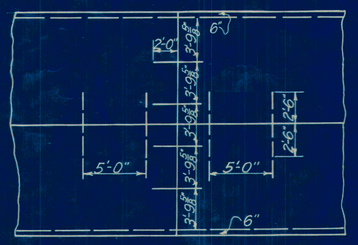


INCLUDING: Center joint, dowels and edge bars as per Standard Drwgs. No. 98 or 100 and including transverse, expansion, contraction and construction joints as per Std Drawings No. 95, 96 and 123 as per specifications.

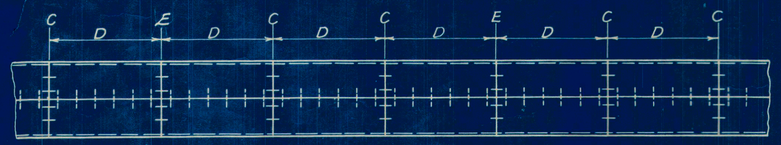
Typical Section

Sta. 0-01.50 to Sta. 0+00	=	1.50 Lin. Ft.
Sta. 0+00 " " 6+00	=	600.00 " "
Sta. 6+00 to Sta. 7+01.20 = Sta. 7+00	=	101.20 Lin. Ft.
Sta. 7+00 " " 58+9426	=	5194.26 " "
Total		5896.96 " "

Note- The Excavation quantities on this plan were calculated for a section having an 8" uniform depth trench for 20' width pavement with a 2" crown and 8-0" shoulders. For a 9"-7"-9" pavement 20' wide lower the profile grade 0.08 and the yardage remains the same.



Detail of Transverse Joint



C = Contraction Joint
E = Expansion Joint
} As per specifications
D = 30 ft. for gravel aggregate
D = 40 ft. for stone or slag aggregate

Detail Showing Center Joint and Frequency of Transverse Joints

NOTE: All Curves to be Superelevated as shown in Tables, Sheet #14
NOTE: The unit price bid per Cu. Yd of Excavation shall include the removal of all trees & stumps; as directed by Engineer in charge.

FED. AID DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	
10	OHIO	528-C	1932	3 / 18

S.H. 79 SEC. C-1
HOLMES COUNTY

STA. 0+0-01.5 BEG. OF F.A. PROJ. NO. 528-C

STARK CO. / HOLMES CO. 0-01.5

Nail in Hub 97.7' Nail in Hub 10.4' P.I. Sta. 0+28.6

P.I. Sta. 0+28.6
Δ 13°54'
D 3°36'
T 194.0
L 386.11
Ex. 11.8
R = 1591.55

101.5'

N. 85° 25' W

P.T. Z+22.6

DRIVE 4.0Z GARDEN

DRIVE 4.4 RES.

DRIVE 4.8 GARDEN

DRIVE 4.8 Poultry House

DRIVE 7.8 Shrow Barn

Hedge Fence

Adjoining Pavem. Stark Co.

Sec. C-1 Pavem. Holmes Co.

PLAN OF PAVEMENT CONNECTION

P.I. Sta. 16+22.46
Δ 16°36'
D 3°0'
T 278.63
L 553.33
Ex. 20.23
R 1909.86

P.C. 13+43.33

P.T. 18+97.16

Old P.I. Nail in hub P.I. Sta 16+22.46 Nail in hub

PRESENT MONTPELIER GRAVEL PAVEMENT

ORCHARD +74.5

PRESENT ROAD

PLAN FOR STONE UNDERDRAIN SEE SHEET No. 6

S 77° 59' W

RES.

DRIVE 7.8

TYPICAL SECTION OF PAVEMENT ADJOINING PROJECT AT STA. 0+00

6" 16'-0" 6"
4" Brick
1" Cushion
6" Concrete

16'-0" 20'-0"

REMOVAL EXISTING PAVEMENT (R)

Item No.	Station From	Station To	Lin. Ft.	Width	Sq. Yds.	Thickness	Type	Remarks
1-R	0-01.5	0+00	1.5	16	3	11"	Brick & Base	
2-R	0+00	9+55	956.2	10	1062	8"	Monolithic Brick	Long Sta.
3-R	21+40	30+00	860	10	956	8"	"	"

PLACING SIDE UNDERDRAINS (D)

Item No.	Station From	Station To	Right or Lft.	Removal Type	Removal Size in.	Removal Lin. Ft.	Relay Type	Relay Size in.	Relay Lin. Ft.	New Work Type	New Work Size in.	New Work Lin. Ft.	New Work Remarks	Head-Walls	See Sheet No.
1-D	3+89	6+85	Lft.	V.S.P.	24	296									5
2-D	4+00	6+70	Lft				V.S.P.	24	270				Removed Sta 3+89 to 6+85	1	5
3-D	6+70	7+01.2 / 7+00	Lft.							V.S.P.	24"	31.2	Long Sta.		5
4-D	7+00	7+24.8	Lft.							V.S.P.	24"	24.8		1	5

PLACING STONE UNDERDRAIN (S)

Item No.	Station From	Station To	Lin. Ft.	Remarks
1-S	21+98	24+16	220	See Sheet 10 for details
2-S	12+25	13+25	124	" " 6 " "

GUTTER PAVEMENT (P)

Item No.	Station From	Station To	Rt. or Lft.	Remarks	Lin. Ft.
1-P	3+00	4+00	Lt.	See Sheet 5 for Details	100

GUARD RAIL (G)

Item No.	Station From	Station To	Rt. or Lft.	Remove Lin. Ft.
1-G	6+89	9+33	Rt.	244 ±
2-G	9+58	9+82	Rt.	24 ±
3-G	26+48	27+10	Rt.	62 ±
4-G	0-01.5	0+30	Lft.	31.5 ±
5-G	0-01.5	0+10	Rt.	11.5 ±

PRIVATE DRIVE APPROACHES (A)

Item No.	Station	Right or Left	Place Corr. I.P	Place Lin. Ft.	Place #46 Traffic Bound Matl. & Depth Cu. Yds.
1-A	4+08	Lt.	12"		6.6
2-A	10+15	Lt.	24		8.0
3-A	18+00	Lt.	32		32.5
4-A	25+93	Lt.	20		5.0
5-A	9+34	Rt			18.5

CULVERTS (C)

Item No.	Station	Removals Type	Removals Size in.	Removals Lin. Ft.	Extensions Type (End)	Extensions Size (in.)	Extensions Lin. Ft. Rt.	Extensions Lin. Ft. Lt.	New Work Special Box	New Work Length	New Work Outlet Paving	Head-Walls	For Details See Sheet
1-C	0+04.5	C.I. P. Box	2'6" 3'6"	2½ 36					8'x4'	42'-6¾"			15
2-C	10+00								5'x6'	49			15
3-C	21+97				V.S.P.	12"		38				1	16
4-C	26+57				V.S.P.	20"	20	8			2.3 Sq. Yd	2	16

Equation: Sta. 7+01.2 back = Sta. 7+00 ahead

B.M. Blaze & Nail 24" W. Oak 75' Right Sta. 0+00-200' Elevation 1021.15

B.M. Top 3d. Course of Stone S.W. Cor. Barnwall Rt. Sta. 9+20 Elevation 1033.71

B.M. Blaze & Nail 24" Ash 50' Right Sta. 16+75 Elevation 1105.49

B.M. Top Head Wall N.E. Cor. Culvert Sta. 21+97 Elevation 1098.50

B.M. N.E. Cor. of South Head Wall Sta. 26+57 Elevation 1107.03

Grade line shown is 0.08 above Crown of Finished Pavement

V.C. 200' Ex 1.25
V.C. 300' Ex 0.25
V.C. 300' Ex 2.31
V.C. 550' Ex 6.05
V.C. 600' Ex 4.27

-2.30% +2.70% +2.036% +8.2% -8.2% -0.55%

P.I. 1018.59 P.I. 1032.09 P.I. 1039.75 P.I. 1111.50 P.I. 1105.98

24" V.S.P 168' 1025.00

Special ditch 1031.25 1030.50

Stone Underdrain

F.L. outlet 1040.0' F.L. outlet 1014.26 F.L. outlet 1073.37 F.L. outlet 1075.34 F.L. outlet 1104.40 1106.25 1104.50

Special ditch left

Sta. 0+01.5 Long Sta. 101.5' Sta. 7+00 Long Sta. 101.2'

STA. 0+0-01.5 BEG. OF F.A. PROJ. 528-C

Excavation	8972 cu. yds.	2390 cu. yds.
Embankment	8156 cu. yds.	1988 cu. yds.
Emb. +10%	8972 cu. yds.	Emb. km. +20% 2386 cu. yds.
		Waste 4 cu. yds.

HIGHWAY PLAN-PROFILE-PLATE-3
THE H. COLE CO., COLUMBUS, OHIO

PRIVATE DRIVE APPROACHES (A)

Item No.	Station	Rght or Lft.	Removals C.I.P. Lin.Ft. 10"	12"	18"	V.S.P. 12"	18"	Relay Head-Walls	Relay C.I.P. Lin.ft. 10"	12"	18"	V.S.P. 12"	Place New Corr. I.P. Lin.ft. 12"	21"	24"	Place No.46 Traffic Bound Matl. 6" Depth Cu. Yds.	Remarks
5-A	34+29	Rght	16													4.5	
6-A	38+88	Lft.				18						18				5.5	
7-A	39+48	Rght							16							5.5	Removed at Sta.34+29
8-A	45+96	Rght			12		10	2						24		5.5	
9-A	51+75	Rght				16										2.6	
10-A	57+24	Lft.				32									18	6.0	
11-A	57+24	Rght			16						16					4.5	
12-A	57+58	Rght	14							14						5.5	
13-A	49+61	Rght														27.8	Public Road Appr.
14-A	52+19	Lft.														4.5	

REMOVAL EXISTING PAVEMENT (R)

Item No.	Station From	To	Lin Ft.	Width Ft.	Sq. Yds.	Thick ness	Type	Remarks
4-R	30+00	59+18.6	2918.6	10	3243	8"	Monolithic Brick	Pav. Ext. over Br.

FEDAID DIST. No. 10 | STATE | FED. PROJ. | 528

S.H. 7
HOLMS

Sta. 58+26 to S

Remove sent
14 ft. span ft Rd
Construct a Con
with spec footi
14 ft. span, ft Rd
Deduct 24 lin. ft.
16.34 lin ft. 1 finis
slopes & dikes. (
Sheet 17 fo

Sta. 59+18.6 End of Sec. C-I
Beginning of Sec. C-I
F.A.P. No. 060
End of F.A. Proj.

Sta.P.I. 44+27.67
Δ 51°40' Left.
D 3°0'
T 924.70
L 1722.22
Ex. 212.1
R 1909.86

Δ 22°24'L
D 5°30'

Δ 26°56'L
D 7°0'

P.C. 35+70.97
P.T. 35+16.33
P.C. 38+70.87
P.C. 40+78.15
P.T. 46+54.69
P.C. 46+54.69
P.T. 52+26.19

S 71°59 W
S 26°19' W

PRESENT MONOLITHIC PAVEMENT
R/W Line

16"x16" C.I.P. +29 Drive
18"x12"-Tile Drive +88
+48 Drive
12"x16" C.I.P.
+96 Drive
10"x18"-V.S.P.
+19 Drive
+61 Road
+38.5
+32.5
Garage
School
4"x8" Wall
4"x12" Wall
12"x12" Wall
Res.

5-A, 6-A, 7-A, 8-A, 4-R, 5-C, 2-P, 13-A, 5-D, 6-D, 7-D, 14-A, 9-A, 3-P, 11-A, 12-A, 10-A

CULVERTS (C)

Item No.	Station	Removals Type (Enc.)	Size (in.)	Lin. Ft.	Head-Walls	New Structures Type	Size (in.)	Lin. Ft.	Head Walls	For Details See Sheet No.
15-C	48+14.2	V.S.P.	2-18"	39.3	2	R.C.P.	30"	60	2	16

GUTTER PAVEMENT (P)

Item No.	Station From	To	Lft. or Right	Remarks	Lin. Ft.
2-P	46+08	48+81	Right	See Sheet #12 for details	273
3-P	53+44	54+00	Lft.	" " 13 " "	56

PLACING SIDE UNDERDRAINS (D)

Item No.	Station From	To	Rght or Lft	New Work Type	Size (in.)	Lin.ft	Remarks	Head-Walls	See Sheet No.
5-D	52+20	53+06	Lft	V.S.P	18"	86	D.S. Pipe	1	13
6-D	53+06	53+08	Lft	V.S.P	16"x8"	2	D.S. Special (Y)		13
7-D	53+08	53+44	Lft	V.S.P	18	36	D.S. Pipe	1	13

ROAD APPROACH

*Remove & Dispose of Exist. Conc. Pav. 10' Wide 8" Thick 9 Sq. Yds.
Const. 17.8 Sq. Yds. Reinf. Conc. App. 7" thick 1-5 mix. 17.8 .. ..
For Details of Construction See Sheet No. 17

B.M. Top of Iron Bar
35' Left. Sta. 39+00
Elevation 1111.49

B.M. Spike in top of Apple Stump 30' Rt. Sta. 46+75
Elevation 1066.71

B.M. X Top Conc. Wall under Porch Lt. Sta. 52+
Elevation 1026.42

B.M. N.E. Cor. Porch Fd
School House Rt. Sta. 57
Elevation 1015.9

Grade line shown is 0.08 above Crown of Finished Pavement

V.C.=700' Ex. 9.22
V.C.=300' Ex. 0.51
V.C.=300' Ex. 1.83
V.C.=300 Ex. 0.72

+5.1%
-5.44%
-6.80%
-1.92%
1.46%
0.0%

P.I. 1140.40
P.I. 1072.40
P.I. 1021.40
P.I. 1015.64
P.I. 44+27.67

F.L. Outlet 1042.50

Special Ditch Lft.

Excavation 2970 cu.yds.
Embankment 2475 cu.yds.
Embank+20% 2970 cu.yds.

Excavation – 4456 c.y.
Embankment – 3713 c.y.
Embank.+20% 4456 c.y.

Excavation 1164 cu.yds.
Embankment 970 cu.yds.
Embank.+20% 1164 cu.yds

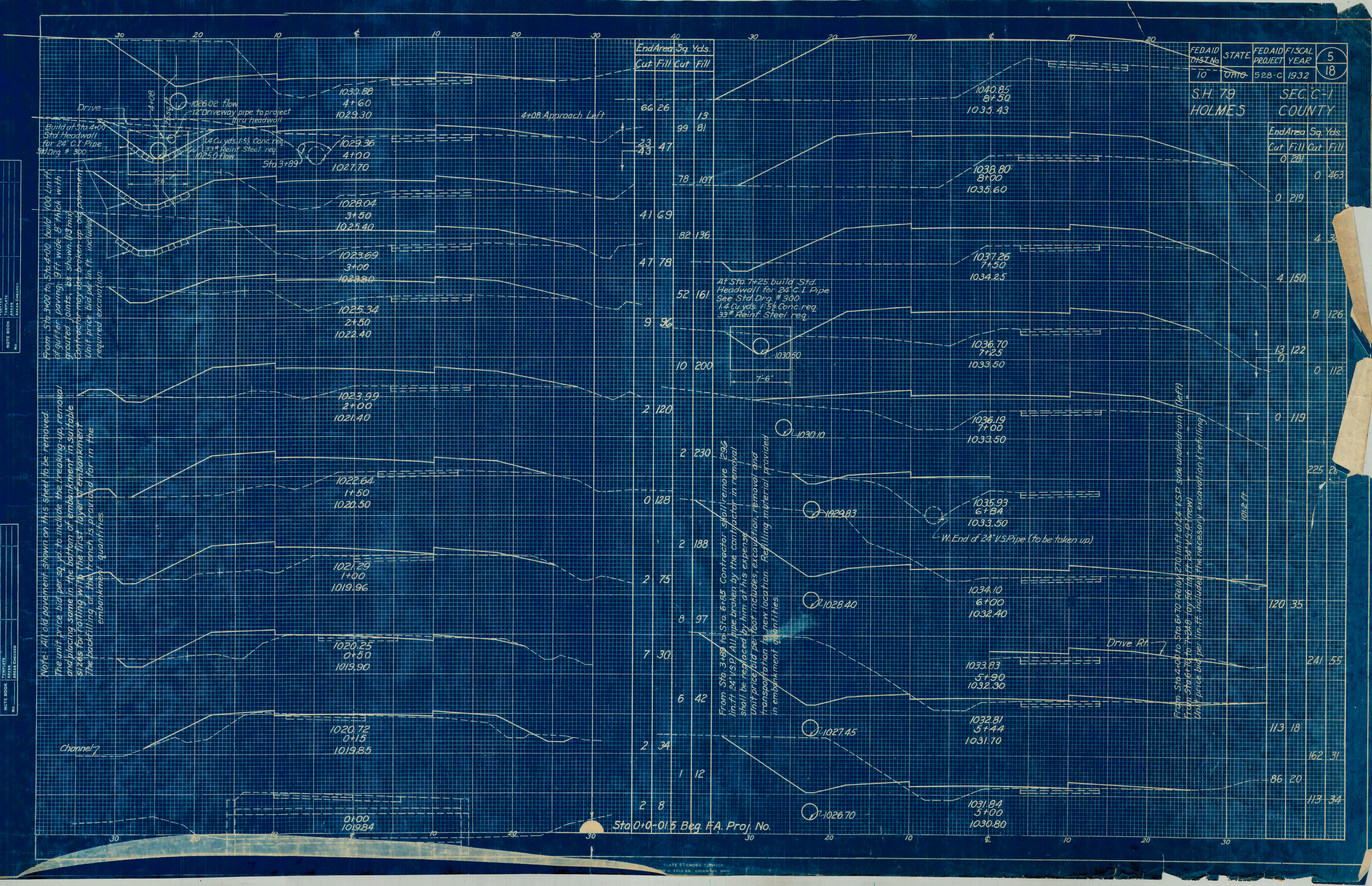
Nail in hub
Nail in hub

BRIDGE & APPROACHES
Sta 58+94.26 to Sta. 59+18.6

8.0' Appr. Slab.
16.34'
8.0' Road Appr.
12'
Sta. 59+94.26
Sta. 59+42.88
Sta. 59+18.6 End of Br.

PLAN
SURVEYED: DATE
BY
NOTE BOOK
NO.
PAGES
GRADES CHECKED.
B. M.S NOTED.
STRUCTURE NOTATIONS CHKD.
ALIGNMENT CHECKED.
RT. OF WAY CHECKED.

HIGHWAY PLAN-PROFILE-PLATE-3
THE H. COLE CO., COLUMBUS, OHIO



FED. AID DIST. No. 10
STATE OHIO
FED. AID PROJECT 528-C
FISCAL YEAR 1932
5
18
S.H. 79
HOLMES
SEC. "C"-1
COUNTY
End Area Sq. Yds.
Cut Fill Cut Fill
Drive
Build at Sta. 4+00 Std. Headwall for 24" C.I. Pipe Std. Drg. # 300
1026.02 flow
12" Driveway pipe to project thru headwall
1.4 Cu. yds. 1:5½ Conc. req.
33# Reinf. Steel req.
1025.0 flow
Sta. 3+89
4+08 Approach Left
1030.88 4+60 1029.30
1029.36 4+00 1027.70
1028.04 3+50 1025.40
1023.69 3+00 1023.80
1025.34 2+50 1022.40
1023.99 2+00 1021.40
1022.64 1+50 1020.50
1021.29 1+00 1019.96
1020.25 0+50 1019.90
1020.72 0+15 1019.85
0+00 1019.84
Channel
From Sta. 3+00 to Sta. 4+00 build 100 Lin. ft. of gutter paving, 9 ft. wide 8" thick with grouted joints, as shown (1:3 mix). Contractor may use broken-up old pavement. Unit price bid per lin. ft. includes required excavation.
Note: All old pavement shown on this sheet to be removed. The unit price bid per sq. yd. to include the breaking-up, removal and placing same in the bottom of embankment in suitable sizes for rolling with the first layer of embankment. The backfilling of the trench is provided for in the embankment quantities.
At Sta. 7+25 build Std. Headwall for 24" C.I. Pipe See Std. Drg. # 300 1.4 Cu. yds. 1:5½ Conc. req. 33# Reinf. Steel req.
1030.50
7'-6"
1030.10
1029.83
1028.40
1027.45
1026.70
From Sta. 3+89 to Sta. 6+85 Contractor shall remove 296 lin. ft. 24" V.S.P. All pipe broken by the contractor in removal shall be replaced by him at his expense. Unit price bid per foot includes, excavation, removal and transportation to new location. Refilling material provided in embankment quantities.
1040.85 8+50 1035.43
1038.80 8+00 1035.60
1037.26 7+50 1034.25
1036.70 7+25 1033.50
1036.19 7+00 1033.50
1035.93 6+84 1033.50
W. End of 24" V.S. Pipe (to be taken up)
1034.10 6+00 1032.40
Drive Rt.
1033.83 5+90 1032.30
1032.81 5+44 1031.70
1031.84 5+00 1030.80
From Sta. 4+00 to Sta. 6+70 Relay 270 lin. ft. of 24" V.S.P. side underdrain (left) From Sta. 6+70 to 7+24.8 lay 56 lin. ft. 24" V.S.P. (new) Unit price bid per lin. ft. includes the necessary excavation & refilling
101.2 ft.
Sta. 0+0-01.5 Beg. F.A. Proj. No.

FED. AID DIST. No.	STATE	FED. AID PROJECT	FISCAL YEAR	
10	OHIO	328-C	1932	6 / 18

SH 79
HOLMES

SEC "C-H"
COUNTY

From 27ft left of Sta 12+25 to 22ft right of Sta 13+25 build Stone underdrain to plan and grade as shown here and Sheet 3. 124 lin ft req'd
The unit price bid per Ft includes regd excavation

Typical Section

Stone drain

Note: Remove old pavement to subgrade and construct new pavement as shown on this sheet. The unit price bid per Sq Yd for pavement includes the cost of removing the old pavement, the construction of a suitable subgrade as shown on the plans, and the furnishing and placing of the new pavement.

Note: Remove old pavement to subgrade and construct new pavement as shown on this sheet. The unit price bid per Sq Yd for pavement includes the cost of removing the old pavement, the construction of a suitable subgrade as shown on the plans, and the furnishing and placing of the new pavement.

End Area	Cu Yds	
Cut	Fill	Cut Fill
0 529		
0 54		
0 442		
0 97		
0 446		
0 173		
0 422		
0 34		
0 506		
0 636		
0 629		

			84	3	
			83	70	
			6	73	
			6	272	
			0	221	
			0	470	
			0	286	
			0	16	
			0	333	
			0	750	
			0	417	
			0	820	
				20	
			0	490	

1046.74
9+54
1036.90

1046.55
9+51
1038.25

1046.14
9+45
1038.3

1045.37
9+34
1037.5

1045.25
9+32
1037.95

1043.41
9+00
1034.00

1044.60
13+00
1037.40

1070.98

1044.60
13+00
1037.40

1070.50
12+50
1066.71

1066.46
12+00
1061.08

1062.30
11+50
1055.9

1058.20
11+00
1049.10

1054.10
10+50
1045.0

1050.06
10+00
1041.15

Sta 1045
400
Left

Flow 1040.00

Flow 1040.50

PLATE 3 – CROSS SECTION O. P. R. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

ORIGINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE

FINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE

FED.AID DIST. No.	STATE	FED.AID PROJECT	FISCAL YEAR	7 / 18
10	OHIO	528-C	1932	

S.H. 79 SEC. C-J
HOLMES COUNTY

FINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS CHECKED
BY
DATE

ORIGINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE

Station 2660 | 1639 | 1622 | 1634 | 1633 | 1723 | 1602 | 1751 | 1809 | 1844 | 1783 | 1803 | 1823 | 1771 | 1658 | 1751 | 1212

Embankment
Cut
Fill

PLATE 3—CROSS SECTION O. P. R. & R. E. STANDARD

KEUFFEL & ESSER CO., NEW YORK.

PLAN FOR LEFT APPROACH

Scale 10' = 1"

From ℄ 100'

Beg. 0+00

Δ 83°00
R. 45'
T. 39.81'
Ex. 15.08'
L. 65.2

P.T. 0+65.2

0+27

1.0

1.50

R/W ℄

8' × 8'

Radius 5

Δ 72°08'
R. 30'
T. 21.85
L. 37.76
Ex. 7.12

Slope 1 1/2 : 1

20'

1.50

P.T. 18+97.16

On Appr. 1:18

1107.50

Radius 5

Lay 32' of 12" Corr. pipe

℄

Shoulder ℄

1106.50

16+88

17+00

1.50

℄ Main Road ℄ on 3° curve

18+00

19+00

18'

10'

Shoulder ℄

End Area		Excav. Emb.	
Cut	Emb.	C.Y.	C.Y.
0	0		
		11	9
22	17		
		79	12
87	0		
		51	0
109	0		
		101	0
0	0		

Sta 18+00

Totals 242 21

{See Sheet No. 9
{These quant. forwarded

0+00
1117.5

1115.79
0+27
1115.75

1112.59
0+66
1115.8

1111.44
0+80
1115.6

South Rd. Slopes N

1118.00

0.4%

1111.29

1111.44

-5.2%

1107.50

1106.98

0+00

0+27

0+66

0+80

+64

+80

+128

1111.78

1111.27

1111.58

1111.58

0 10 20 30 40 50 60 70 80 90 100 110 120 130

SURVEY
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
No.

PLATE 2 - CROSS SECTION
THE H. COLE CO., COLUMBUS, OHIO

FED. AID DIST. No.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	528-C	1932

S.H. 79 SEC
HOLMES COU

FINAL SURVEY
NOTE BOOK NO.
SURVEYED BY
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
DATE

ORIGINAL SURVEY
NOTE BOOK NO.
SURVEYED BY
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
DATE

Excavation = 2390 C. yards
Embankment = 1088 C. yds
Emb. +20% = 2506 C. yds.
Waste = 4 C. yds

Cuttings Cu. Yds.
Embankments Cu. Yds.

PLATE 3—CROSS SECTION O. P. R. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

FED.AID DIST.No.	STATE	FED.AID PROJECT	FISCAL YEAR	10/18
10	OHIO	528-C	1932	

SH. 79 SEC. C-1
HOLMES COUNTY

End Area Cu.Yds.	
Cut	Fill
3	42
4	117
0	60
0	194
0	92
0	184
0	105
0	349
0	125
0	369
0	168
4	228
4	120
14	152
14	77
74	176
18	
26	108
62	101

Note: All old pavement shown on this sheet beyond Sta. 1140 is to be removed.

The unit price bid per ft. of Stone drain includes the excavation required for the construction of the stone drain and the refilling of the trench for the stone drain.

Note: The unit price bid per ft. of Stone drain includes rock excavation.

Note: The unit price bid per ft. of Stone drain includes rock excavation.

Stone drain

Stone drain

Stone drain

FED. AID DIST. No.	STATE	FED. AID PROJECT	FISCAL YEAR	11 / 18
10	OHIO	528-C	1932	

SH. 79 HOLMES — SEC. C-1 COUNTY

Note: Remove all pavement shown on this sheet.
The unit price bid per sq. yd. includes the breaking up, removal and disposing of same in the manner directed by the Engineer. The grading necessary to bring the earth shoulders to the proper elevation, the placing of the trench material in the embankment and the finishing of the trench is provided for in the excavation quantities.

FINAL SURVEY — NOTE BOOK NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — CROSS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTE BOOK NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — CROSS CHECKED — BY — DATE

Field drive left

Relay to here

Appr. left

Approach Right

Drive Right

Excavation Embankment Earth Rock

Sta.	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
1111.73				
38+38				
1109.36				
			0	6
	16	70		
1115.92				
39+00				
1114.41				
			61	222
	17	50		
1121.36				
37+00				
1120.37				
			113	104
	44	6		
1126.02				
36+00				
1124.51				
			243	11
	249	0		
1129.33				
35+00				
1127.60				
			1328	0
	461	0		
1130.91				
34+00				
1137.13				
	852	0		
	915	0		
	82	0		
1131.18				
33+50				
1137.44				
	521	0		
			907	0
	458	0		
1131.08				
33+00				
1136.80				
			1209	0
	192	0		
1123.74				
32+00				
1132.22				
			407	24
	28	13		
1126.90				
31+00				
1126.74				
			40	71

Sta.	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
1074.89				
45+50				
1072.90				
			33	33
				36
				79
1077.78				
45+00				
1077.80				
			6	52
				19
				322
1083.28				
44+00				
1081.20				
			4	122
				13
				535
1088.72				
43+00				
1085.51				
			3	167
				13
				583
1094.16				
42+00				
1091.81				
			4	149
			8	321
1097.26				
41+43				
1095.21			4	156
			6	230
1098.60				
41+00				
1095.26			3	133
				11
				411
1105.04				
40+00				
1102.41			3	90
				11
				356
			0	15
1101.87				
39+48				
1105.52				
			3	102
				35
				312
1110.48				
39+00				
1108.66				

PLATE 3 - CROSS SECTION O. P. R. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

FED.AID DIST. No	STATE	FED.AID PROJECT	FISCAL YEAR
10	OHIO	528-C	1932

S.H. 79 SEC
HOLMES COUN

FINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, NOTE BOOK, AREAS, AREAS CHECKED, NO., BY, DATE

ORIGINAL SURVEY — SURVEYED, PLOTTED, TEMPLATE, NOTE BOOK, AREAS, AREAS CHECKED, NO., BY, DATE

Note: Remove all pavement shown on this sheet and that portion of shoulders underlain by pavement. Shoulders shall be removed to the same depth as the pavement. Excavation resulting from removal of pavement and shoulders shall be considered unclassified excavation.

End Area Co. Yds.
Cut Fill Cut Fill

1055.40	48.50	1055.02		
1058.90	48.00	1058.80		
1062.20	47.50	1062.04		
1065.54	47.00	1065.56		
1068.77	46.50	1068.76		
1071.93	46.00	1071.60		
1075.13	45.96	1075.00		

1:3 Mix Grout
From Sta 46+08 to Sta 48+81 (only)
273 lin ft of gutter paving, 9'ft wide, 6 in thick with grouted joints as shown. Connection may be made to old pavement. Work to be written in to include required excavation

Drive Left

1055.2	30	11		
1056.6	23	2		
1060.0	15	9		
1065.7	38	11		
1067.50	17	30		
	51	42		
	38	15		
	66	44		
	0	13		

Drive Right

Appr Rt C 1+96

1030.34	52.19	1029.97		
1031.27	52.05	1030.96		
1031.60	52.00	1031.28		
1038.30	51.75	1038.06		
1038.40	51.00	1038.02		
1045.20	50.20	1044.72		
1047.85	49.61	1047.12		
1048.60	49.50	1047.92		
1052.00	49.00	1051.82		

On 20° Angle Left Foreward

Drive Left

Drive Remove

Road Right

Road Appr

1+18	0	0	4	
Cut only 1+65	16	0	2	
	0	37	39	
			27	20
			92	10
			108	8
			165	5

49+696

End Area Co. Yds.
Cut Fill Cut Fill

494 19
232 10
356 17
151 9
194 19
69 38
51 42
0 13

PLATE 9 — CROSS SECTION O. P. R. & B. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

FED.AID DIST. No.	STATE	FED.AID PROJECT	FISCAL YEAR	SHEET
10	OHIO	528-C	1932	13 / 18

S.H. 79 SEC. C
HOLMES COUN

FINAL SURVEY — NOTE BOOK NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTE BOOK NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

Note: Remove all old pavement shown on this sheet. The unit price bid per sq. yd. includes the breaking up, removing the pieces, some in the bottom of the embankment near to suitable sizes for mixing with the first layer of concrete and the loading of the trucks as provided for in the embankment specifications.

End Area Cu. Yds.

Cut	Fill	Cut	Fill
0	0		
		3	6
20	34		
		62	105
16	27		
		52	41
			10
		0	11
2	2		10
		14	1
11	14		
		24	17
2	9		
		49	26
23	18		
		50	72
4	25		
		13	130
3	0	45	
		0	193
0	59		
0	89		
0	29		
2	54		

59+02.26

101+5.64 / 58+33 / 101+5.13

101+5.64 / 58+00 / 101+5.32

35 Ft. Approach

101+5.70 / 57+58 / 101+5.49

Drive Right

Relay to here 1.58

Appr. 1 Ft.

Remark

Drive Left

101+5.88 / 57+26 / 101+5.65

Drive Right

Appr. 8 Ft.

See Relay to here 1.84

35 Ft. Appr.

101+5.96 / 57+00 / 101+5.77

101+6.27 / 56+60 / 101+5.99

101+6.92 / 56+00 / 101+6.49

From Sta 55+44 to Sta 54+00 build 56 lin ft of gutter paving, 9 ft. wide, 8 in. thick with grouted (1:3 mix) joints as shown. Contractor may use broken up old pavement. Unit price bid includes regd. excavation.

101+9.52 / 55+00 / 101+9.04

Std. Side Road Curb Headwall See Std. Drg. 900

101+8.34

102+1.25 / 54+00 / 102+0.27

102+3.42 / 53+44

#44 End of Storm Sewer

102+5.61 / 53+00 / 102+4.77

101+9.38

102+8.70 / 52+45 / 102+8.26

102+3.95

From Sta 52+40 to Sta 53+44 form left side of roadway to conform to section 10.18% side undercut unit price bid per lin ft includes the necessary excavation and refilling

Embankment 1647 Cu. Yds. Embankment 1647 Cu. Yds.

PLATE 3—CROSS SECTION © P. R. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

HEADWALL DETAIL
See Sheet Apron Culvert
Std. Dwg. 906

PLAN
Scale 1/4" = 1'-0"

ELEVATION
Scale 1/4" = 1'-0"

DETAIL OF SIDE UNDERDRAIN
(Construction to replace Sta. 52+40 to Sta. 53+44 (See Sheet No. 6))

ESTIMATED QUANTITIES
Concrete (Class "A") 3.96 cu. yds.
Reinf. Steel (3/8" Rds.) 70 lbs.
Header (Class "A") 1.08 cu. yds.

STEEL LIST

3° 36' CURVE RIGHT

Sup.	Rt. Edge	Width	Sta.	Alin.	℄ Grade	Width	Lft. Edge
.82	1020.21	10.00	0+15		1019.84	10.45	1019.39
	1020.36		1+25		1019.97	.43	1019.54
	1020.66		+50		1020.25	4.1	1019.84
	1021.12		+75		1020.69	.39	1020.30
	1021.74		2+00		1021.29	.37	1020.92
	1022.43		+25		1021.96	.35	1021.61
	1023.13		+50		1022.64	.33	1022.31
.82	1023.76		+72.6	E.T.C.	1023.25	.31	1022.94
.80	1023.80		+75		1023.31	.31	1023.00
.67	1024.37		3+00		1023.99	.29	1023.70
.55	1024.88		+22.6	P.T.	1024.60	.27	1024.33
.53	1024.92		+25		1024.66	.27	1024.39
.40	1025.50		+50		1025.34	.24	1025.10
.26	1026.07		+75		1026.01	.21	1025.80
.13	1026.64		4+00		1026.69	.19	1026.50
.00	1027.13	10.00	+22.6	P.T.C.	1027.30	10.00	1027.13

No Additional Pavement

3° CURVE LEFT

Sup.	Rt. Edge	Width	Sta.	Alin.	℄ Grade	Width	Lft. Edge
.00	1069.82	10.00	12+43.83	P.T.C.	1069.99	10.00	1069.82
.03	1070.33		+50		1070.80		1070.36
.13	1072.38		+75		1072.53		1072.53
.27	1074.43		13+00		1074.60		1074.70
.39	1076.48		+25		1076.65		1076.87
.48	1078.02		+43.83	P.C.	1078.19		1078.50
.51	1078.53		+50		1078.70		1079.04
.63	1080.58		+75		1080.75		1081.21
.72	1082.12		+93.83	E.T.C.	1082.29		1082.84
	1082.63		14+00		1082.80		1083.35
	1084.68		+25		1084.85		1085.40
	1086.73		+50		1086.90		1087.45
	1088.78		+75		1088.95		1089.50
	1090.78		15+00		1090.95		1091.50
	1092.68		+25		1092.85		1093.40
	1094.48		+50		1094.63		1095.20
	1096.18		+75		1096.35		1096.90
	1097.78		16+00		1097.95		1098.50
	1099.28		+25		1099.45		1100.00
	1100.68		+50		1100.85		1101.40
	1101.98		+75		1102.15		1102.70
	1103.18		17+00		1103.35		1103.90
	1104.28		+25		1104.45		1105.00
	1105.28		+50		1105.45		1106.00
	1106.18		+75		1106.35		1106.90
	1106.98		18+00		1107.15		1107.70
	1107.68		+25		1107.85		1108.40
.72	1108.22		+47.16	E.T.C.	1108.39		1108.94
.71	1108.28		+50		1108.45		1108.99
.59	1108.78		+75		1108.95		1109.37
.48	1109.14		+97.16	P.T.	1109.31		1109.62
.47	1109.18		19+00		1109.35		1109.65
.35	1109.48		+25		1109.65		1109.83
.23	1109.69		+50		1109.86		1109.92
.11	1109.78		+75		1109.95		1109.89
.00	1109.79	10.00	+97.16	P.T.C.	1109.96	10.00	1109.79

No Additional Pavement

3° CURVE LEFT

Sup.	Rt. Edge	Width	Sta.	Alin.	℄ Grade	Width	Lft. Edge
.00	1130.71	10.00	34+02.97	P.T.C.	1130.88	10.00	1130.71
.11	1130.46		+25		1130.63		1130.57
.23	1130.09		+50		1130.26		1130.32
.35	1129.62		+75		1129.79		1129.97
.47	1129.06		35+00		1129.23		1129.53
.48	1128.99		+02.97	P.C.	1129.16		1129.47
.59	1128.40		+25		1128.57		1128.99
.71	1127.66		+50		1127.83		1128.37
.72	1127.56		+52.97	E.T.C.	1127.73		1128.28
	1126.81		+75		1126.98		1127.53
	1125.88		36+00		1126.05		1126.60
	1124.83		+25		1125.02		1125.57
	1123.72		+50		1123.89		1124.44
	1122.51		+75		1122.68		1123.23
	1121.19		37+00		1121.36		1121.91
	1119.83		+25		1120.00		1120.55
	1118.47		+50		1118.64		1119.19
	1117.11		+75		1117.28		1117.83
	1115.75		38+00		1115.92		1116.47
	1114.39		+25		1114.56		1115.11
	1113.03		+50		1113.20		1113.75
	1111.67		+75		1111.84		1112.39
	1110.31		39+00		1110.48		1111.03
	1108.95		+25		1109.12		1109.67
	1107.59		+50		1107.76		1108.31
	1106.23		+75		1106.40		1106.95
	1104.87		40+00		1105.04		1105.59
	1103.51		+25		1103.68		1104.23
	1102.15		+50		1102.32		1102.87
	1100.79		+75		1100.96		1101.51
	1099.43		41+00		1099.60		1100.15
	1098.07		+25		1098.24		1098.79
	1096.71		+50		1096.88		1097.43
	1095.35		+75		1095.52		1096.07
	1093.99		42+00		1094.16		1094.71
	1092.63		+25		1092.80		1093.35
	1091.27		+50		1091.44		1091.99
	1089.91		+75		1090.08		1090.63
	1088.55		43+00		1088.72		1089.27
	1087.19		+25		1087.36		1087.91
	1085.83		+50		1086.00		1086.55
	1084.87		+75		1084.67		1085.19
	1083.11		44+00		1083.28		1083.83
	1081.75		+25		1081.92		1082.47
	1080.39		+50		1080.56		1081.11
	1078.98		+75		1079.15		1079.70
	1077.61		45+00		1077.78		1078.33
	1076.18		+25		1076.35		1076.90
	1074.72		+50		1074.89		1075.44
	1073.23		+75		1073.40		1073.95
	1071.82		46+00		1071.99		1072.54
	1070.17		+25		1070.34		1070.89
	1068.60		+50		1068.77		1069.32
	1067.00		+75		1067.17		1067.72
	1065.37		47+00		1065.54		1066.09
	1063.70		+25		1063.87		1064.42
	1062.03		+50		1062.20		1062.75
	1060.33		+75		1060.50		1061.05
	1058.63		48+00		1058.80		1059.36
	1056.93		+25		1057.10		1057.65
	1055.23		+50		1055.40		1055.95

Sup.	Rt. Edge	Width	Sta.	Alin.	℄ Grade	Width	Lft. Edge
	1053.53		48+75		1053.70		1054.25
	1051.83		49+00		1052.00		1052.55
	1050.13		+25		1050.30		1050.85
	1048.43		+50		1048.60		1048.15
	1046.73		+75		1046.90		1047.45
	1045.03		50+00		1045.20		1045.75
	1043.33		+25		1043.50		1044.05
	1041.63		+50		1041.80		1042.35
	1039.93		+75		1040.10		1040.65
	1038.23		51+00		1038.40		1038.95
	1036.53		+25		1036.70		1037.25
	1034.83		+50		1035.00		1035.55
	1033.13		+75		1033.30		1033.85
.72	1033.12		+75.19	E.T.C.	1033.29		1033.84
.61	1031.43		52+00		1031.60		1032.04
.49	1029.78		+25		1029.95		1030.27
.48	1029.77		+25.19	P.T.	1029.94		1030.25
.37	1028.23		+50		1028.40		1028.60
.25	1026.83		+75		1027.00		1027.08
.13	1025.44		53+00		1025.61		1025.57
.01	1024.20		+25		1024.37		1024.21
.00	1024.19	10.00	+25.19	P.T.C.	1024.36	10.00	1024.19

No Additional Pavement

FINAL SURVEY — NOTE BOOK NO. — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTE BOOK — SURVEYED — PLOTTED — TEMPLATE — AREAS — AREAS CHECKED — BY — DATE

CULVERT DATA

Type: Slab Top Culvert Dr. # SC-A
Size: 8'-1"x4'-1"x42'-6 7/8"
Work Req'd. Remove existing culv. consist of 24' of 36" CIP and 36"x3"x3" Concr Culv. Build 8'-1" x 4'-1" Std. 20° Skew conc. Slab top culv.
Drawn by: R.J. Baker
Checked by: W.L. Reidenbach
Reviewed by:

ESTIMATED QUANTITIES

Removal & Disposal of Exist. Culv.	Lump Sum	
Excav. & Refill	57	Cu. Yds.
Channel Excav.	55	"
Conc. I-6½ mix (footings)	13.80	"
Conc. I-5½ mix	34.20	"
Reinf. Steel in place	2756	Lbs.

STEEL LIST

No.	Mark	Size	Shape	Length	Weight
10	W2a	½" ø	Bent	10'-3"	68
10	W2a	½" ø	"	12'-0"	80
8	W2b	½" ø	"	7'-0"	37
8	W2b	½" ø	"	8'-9"	47
12	W2c	½" ø	Str.	6'-6"	52
4	W2d	½" ø	"	8'-6"	23
16	W2e	½" ø	"	5'-0"	53
90	V2a	½" ø	"	7'-0"	421
18	T2a	½" ø	"	42'-0"	505
103	S5a	⅝" ø	"	9'-6"	1470
Total					2756

STEEL LIST

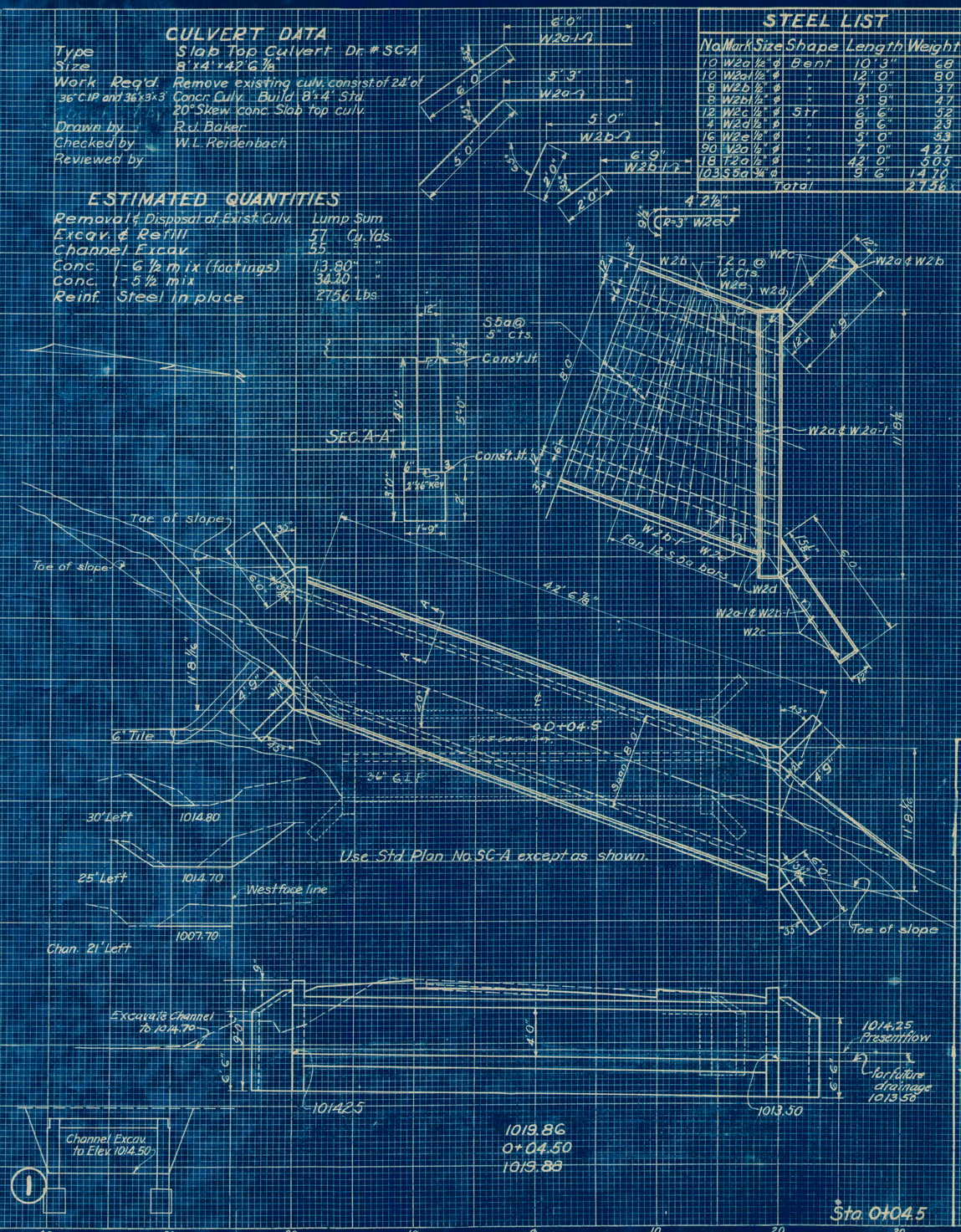
No.	Mark	Size	Shape	Length	Weight
16	W2a	½" ø	Bent	11'-9"	126
24	W2b	½" ø	"	10'-3"	164
12	W3c	½" □	"	9'-0"	92
16	W3c1	½" □	"	10'-0"	136
4	W2d	½" ø	Str.	10'-0"	27
24	W2e	½" ø	Bent	5'-0"	80
98	V2a	½" ø	Str.	7'-0"	458
22	T2a	½" ø	"	28'-6"	419
22	T2a	½" ø	"	22'-0"	323
262	S4a	⅝" ø	"	6'-6"	1176
Total					3601

CULVERT DATA

Type: Special Box Culvert
Size: 5' span x 6'-4" x 49'-0" Special Box
Work Req'd. Build New Culvert (no exist. culv.)
Drawn by: R.J. Baker
Checked by: W.L. Reidenbach
Reviewed:

ESTIMATED QUANTITIES

Excav. & Refill	36.00	Cu. Yds.
Channel Excav	30.00	"
Conc. I-5½ mix	52.00	"
Reinf. Steel in place	3601	Lbs.



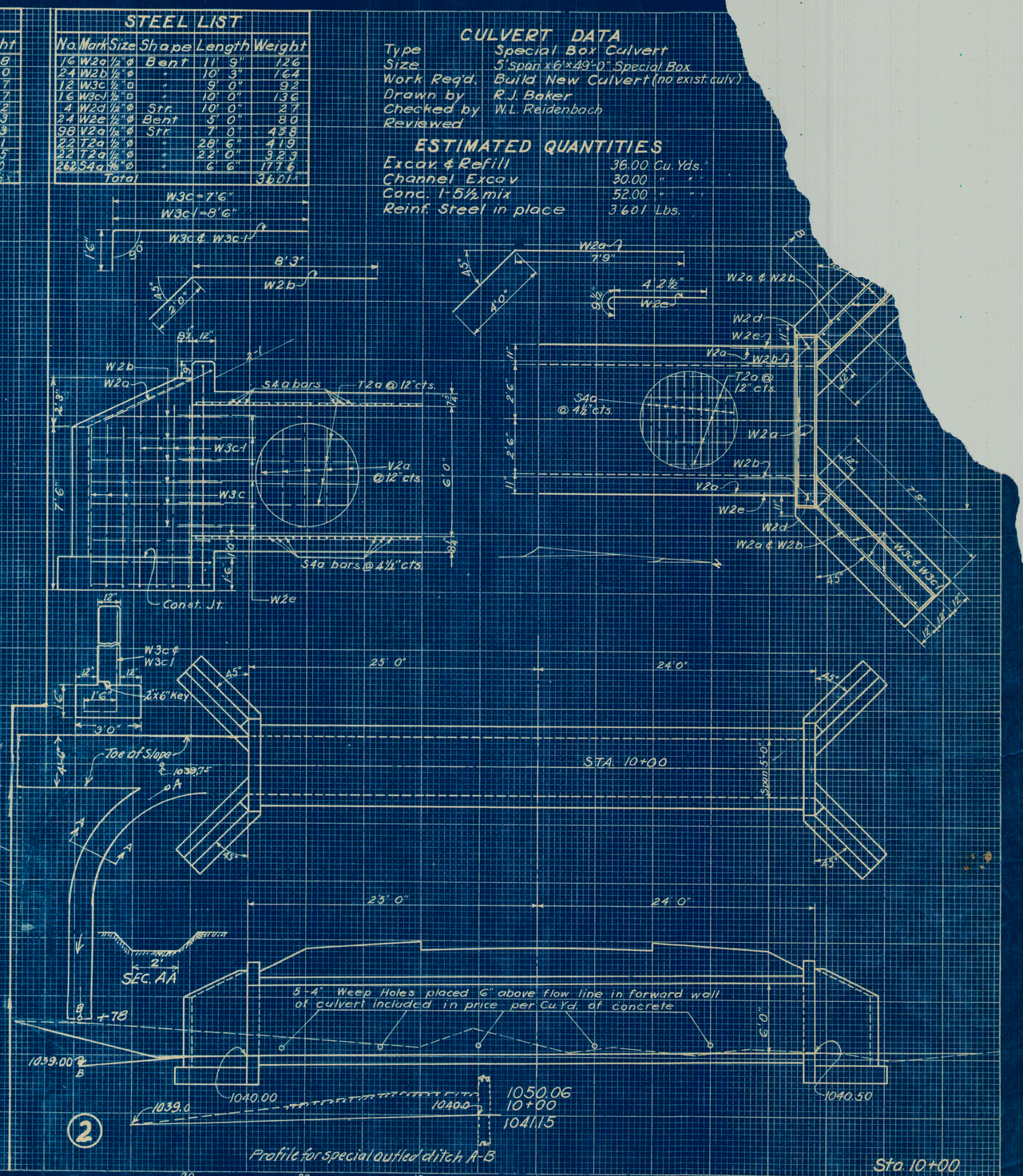


PLATE 2 - CROSS SECTION
THE F. COLE CO., COLUMBUS, OHIO

FED. AID DIST. NO. 10

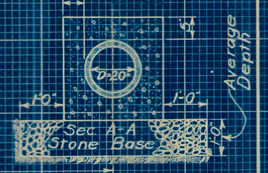
S.H. HOLMES

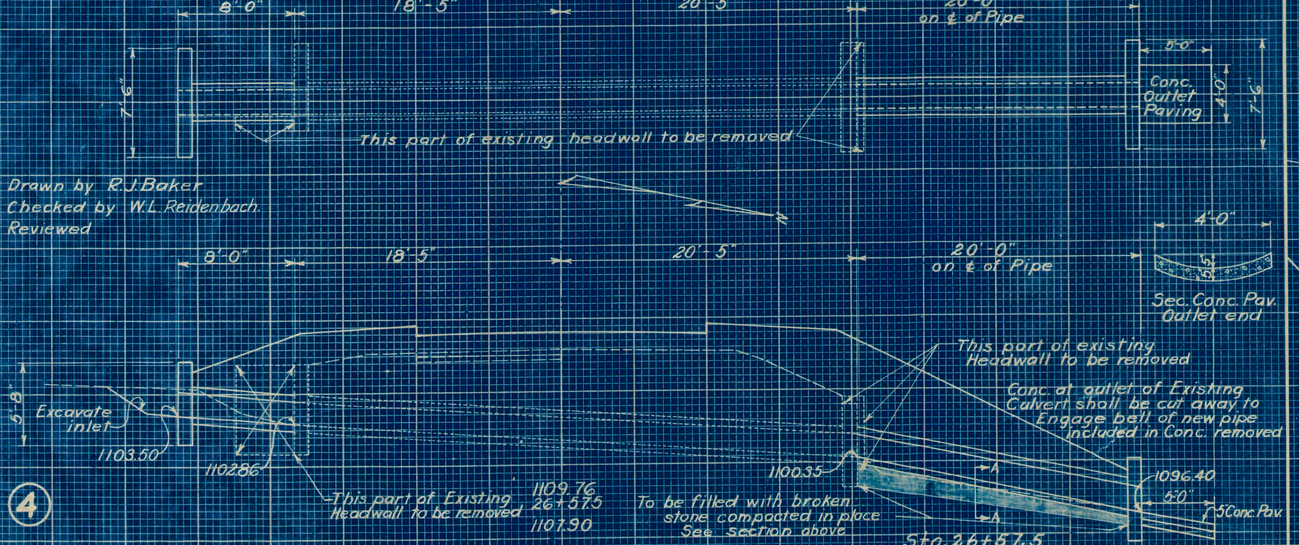
Culvert Data

Type: Std V.S. Pipe Encased Culvert extensions Dr. #300
Size: 20" x 8 lin. ft. on Left and 20" x 20 lin. ft. on Rt.
Work Req'd: Remove existing concrete as shown
Build 8 lin. ft. of 20" encased V.S. Pipe Culvert extension on Left and 1 std. Headwall
Build 20 lin. ft. of 20" encased V.S. Pipe Culvert extension on Right and 1 std. Headwall
Build stone base and concrete outlet paving as shown

Estimated Quantities

Excav. and Refill	8.0 Cu. Yds.
Conc. 1-5½ mix	3.0 " "
Conc. Outlet Pav. 1-5½	2.3 5 Sq. Yds.
Reinf. Steel in place	85 lbs.
Existing Conc. Removed	1.7 Cu. Yds.
Compacted Stone Base	3.3 " "
20" V.S. Pipe (Std. encased)	28 lin. ft.





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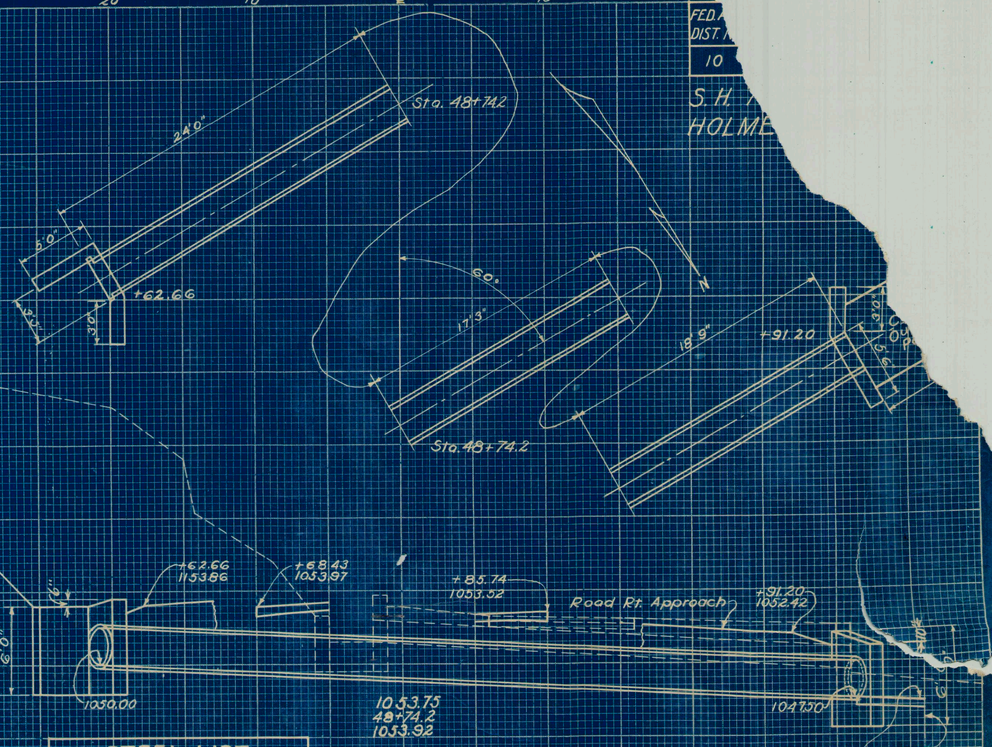
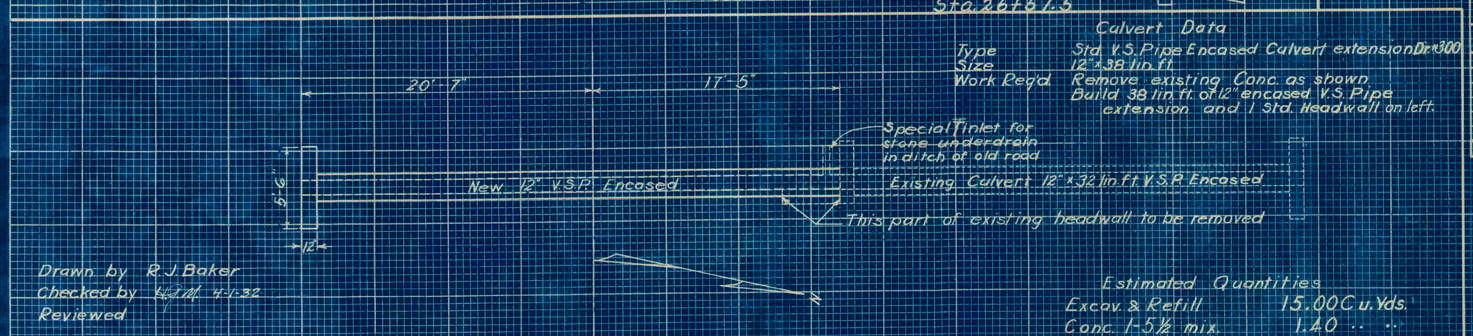


STEEL LIST

No.	Mark	Size	Shape	Length	Weight
7	A	½" ø	Str.	5' 6"	26
8	B	½" ø	"	6' 0"	32
2	C	½" ø	Bent	8' 9"	12
2	D	½" ø	"	12' 3"	17
1	E	½" ø	"	10' 6"	7
1	F	½" ø	"	8' 0"	5
		Total			99 #

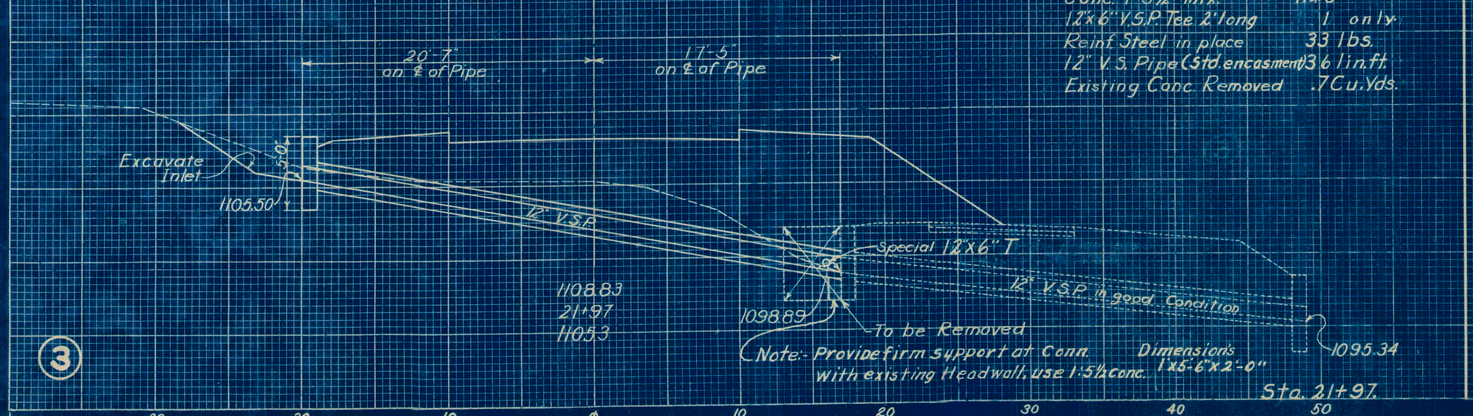
Culvert Data

Type: Std V.S. Pipe Encased Culvert extension Dr. #300
Size: 12" x 38 lin. ft.
Work Req'd: Remove existing Conc. as shown
Build 38 lin. ft. of 12" encased V.S. Pipe extension and 1 Std. Headwall on left.



Estimated Quantities

Excav. & Refill	15.00 Cu. Yds.
Conc. 1-5½ mix.	1.40 " "
12" x 6" V.S.P. Tee 2' long	1 only
Reinf. Steel in place	33 lbs.
12" V.S. Pipe (Std. encasement)	36 lin. ft.
Existing Conc. Removed	.7 Cu. Yds.



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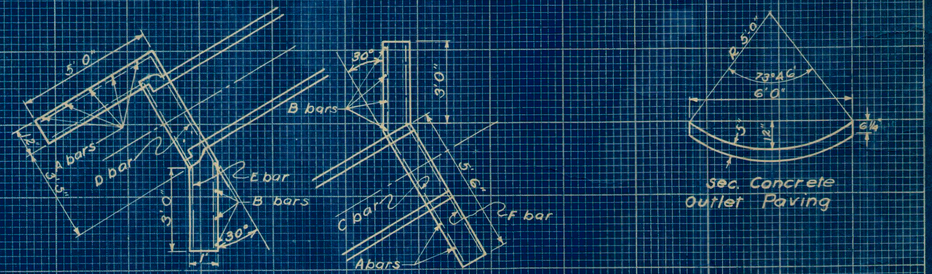


CULVERT DATA

Type: Reinf. C.P. Pipe Culvert with special headwalls
Size: 30" x 60 lin. ft.
Work Req'd: Remove existing Culvert, consisting of 2 lines of 18" x 39' of encased V.S.P. & Conc. hdwls.
Build Spec. R.C.P. Culv. 30" x 60'
Drawn by: R.J. Baker
Checked by: W.L. Reidenbach

ESTIMATED QUANTITIES

Removal & disposal of existing culvert	Lump Sum
Excav. & Refill	43.00 Cu. Yds.
Conc. 1-5½ mix	3.60 " "
Reinf. Steel in place	99 lbs.
30" Reinf. Conc. Pipe	60 lin. ft.
5" Conc. Outlet Pav.	7.2 Sq. Yds.

Sta. 48+74.2

5

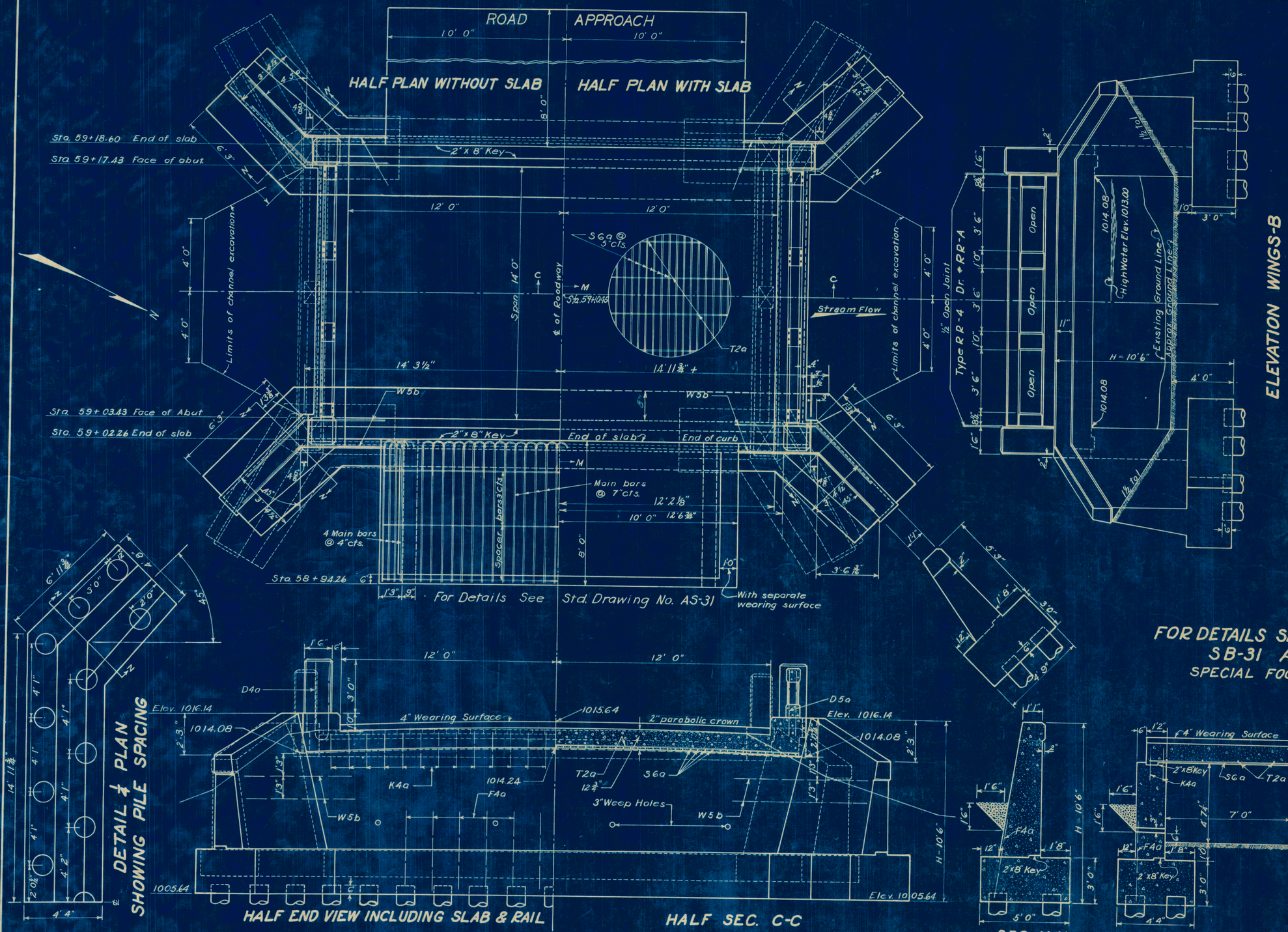
FINAL SURVEY — NOTE BOOK No. — Surveyed — Plotted — Template — Areas — Areas Checked — BY — DATE

ORIGINAL SURVEY — NOTE BOOK No. — Surveyed — Plotted — Template — Areas — Areas Checked — BY — DATE

PLATE 2 - CROSS SECTION
THE H. COLE CO., COLUMBUS, OHIO

FED. AID DIST. No.	STATE	FED. AID PROJECT	FISCAL YEAR	17 / 18
10	OHIO	528-C	1932	

S.H. 79 SEC "C"-1
HOLMES · COUNTY



STEEL LIST

No.	MARK	SIZE	SHAPE	LENGTH	WEIGHT
48	F4a	⅝" ø	Str.	4' 6"	224
16	W5b	¾" ø	Bent	9' 0"	216
52	K4a	⅝" ø	Str.	2' 0"	108
8	T2a	½" ø	"	26' 9"	143
65	S6a	⅞" ø	Bent	17' 0"	2259
8	D4a	⅝" ø	"	9' 0"	75
16	D5a	¾" ø	"	8' 3"	198
Total					3223
RAILING STEEL INCLUDED IN PRICE PER LIN. FT. RAILING					
4	R1a	⅜" ø	Str.	13' 7"	
4	R4a	⅝" ø	Bent	15' 7"	
4	R4b	⅝" ø	"	15' 0"	

ESTIMATED QUANTITIES

Removal & Disposal of existing bridge	Lump Sum +
Cofferdams, sheeting & pumping	" "
Excavation unclassified	85 Cu. Yds. +
Channel Excavation	14.0 " " +
Concrete - Footers 1-6½ mix	38.5 " " +
Concrete - Walls 1-6½ mix	29.4 " " +
Concrete - Superstructure 1-5½ mix	20.2 " " +
Reinforcing steel in place	3223 lbs. +
Type RR-4 concrete railing	34 lin. ft. +
¼" Premolded expansion joint filler	29 sq. ft. +
4" Wearing Surface 1-5½ mix	43.6 sq. yds.
1 Approach slab - 7" thick 1-5½ mix	17.8 " " +
42 Timber Piling - Estimated length 20'	840 lin. ft. +

NOTE
FOR DETAILS SEE STD. DRAWINGS NOS.
SB-31 AS-31 RR-A
SPECIAL FOOTINGS REQUIRED

6

STA. 59+10.45

STANDARD SLAB BRIDGE & APPROACH SLABS

SPAN 14'-0" H 10'-0"
ROADWAY 24'0"

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
March 1932 S.H. 79 SEC. "C"-1

DRAWN	TRACED	CHECKED	REVIEWED	STRUCTURE NUMBER
R.J.B.	R.V.M.	W.L.R.		SB6 51

FED.AID DIST. No.	STATE	FED.AID PROJECT	FISCAL YEAR	18
10	OHIO	528-C	1932	18

S.H. 79 SEC. "C" -1
HOLMES COUNTY

SUMMARY OF QUANTITIES

PROJECT LENGTH
Sta. 0+0-01.5 to Sta 7+01.2 = 7+00 = 702.70'
Sta. 7+00 to Sta. 59+18.6 = 5218.60'
Total Length 5921.30'

TOTAL LENGTH = 5921.3 ft. - 1.1214 mi.

Pavement Length 5921.3
Length of Project 2434
Deduct for Bridge & Appr. Slab
Total Length 5896.96'

LENGTH PAV. = 5896.96 ft. - 1.11636 mi.

STRUCTURES 20' & UNDER

No	Station	Type	Size	Length Feet	Excav. Unclassd. Cu.Yds.	Channel Excav.	REMOVAL EXISTING CONCRETE Cu.Yds.	Removal Existing Structs.	Concrete Cu.Yds. 1-5½	1-6½	1-8	Rein'f. Steel Lbs.	Enc. V.S.P. Lin.Ft. Spec.	12"	20"	Rein'f. Conc. Pipe Lin.Ft. 30"	Comp't. Stone Base Cu.Yds.	5" Conc Outlet Paving Sq.Yds.	Type R.P.-4 Railing Lin.Ft.	¼" Exp. Jt. Filler Sq.Ft.	4" Conc. W. Sur. Sq.Yds.	7" App. Slab Sq.Yds.	Timber Piling Lin.Ft.	Coffer dams	REMARKS
1	0+04.5	SLAB TOP	8'x4'	42.57	57.00	55.00		LUMPSUM	34.20	13.80		2756													Removal & Disposal of exist. culv. 3'3"x3'6" Bar & 2'4"x3'6" C.L.P. Build new culv. Channel excav. as shown
2	10+00	SPEC. BOX CULV.	5'x6'	49.00	36.00	30.00			52.00			3601													Build new special box culvert
3	21+97	STD. ENC. V.S.P.	12"	38.00	15.00		0.70		1.40			33	12'6"	36											Build std. exten. 1 ft. & 1 std. hdw.
4	26+57.5	" " " "	20"	29' 00" Rt. 8' 00" Lt.	8.00		1.70		3.00			85			28		3.30	2.30							Build std. 20' ext. rt. & 1 std. hdw. & std. 8' ext. lft. & 1 std. hdw. Place compacted stone base & Conc. outlet pa
5	48+74.2	SPEC. R.C.P.	30"	60.00	43.00			LUMPSUM	3.60			99				60.00		7.20							Removal & disposal of existing twin 18" V.S. PCulv. Build new 30" R.C.P. culv. & 2 spec. hdws.
6	59+10.43	STD. SLAB BR'DG	14'	24' Rdwy.	85.00	14.00		LUMPSUM	20.20	67.90		3223							34	29	43.60	17.80	840	Lump	Removal & disposal of exist. 14' Span x 24' Rdwy. Bridge. Build new bridge. See Sheet 17
	TOTAL			244	99	2.40			114.40	(81.70)		9797	1	36	28	60.00	3.30	9.50	34	29	43.60	17.80	840		

52.3 Cu Yds Footers
29.4 " " Walls

SUMMARY OF EXCAVATION & EMBANKMENT

STATION FROM	STATION TO	LONG STA.	CUBIC YARDS EXCAV.	EMBT.	EMBT. 10%	EMBT. 20%	WASTE
0-01.50	16+74.4	101.30 101.20	8972	8156	8972		
16+74.4	22+84		2390	1988		2386	4
22+84	33+54.3		2970	2475		2970	3
33+54.3	47+69.6		4456	3713		4456	
47+69.6	59+02.26		1164	970		1164	12
TOTAL			19952	17302	8972	10976	41

SUMMARY REMOVAL OF EXISTING PAVEMENT

STATION FROM	STATION TO	LONG STA.	LINEAL FEET	WIDTH FEET	SQUARE YARDS	THICKNESS	TYPE	REMARKS
0-01.5	0+00		1.50	16	3	11"	B & Base	
0+00	9+55	101.20	956.20	10	1062	8"	Monol. B.	Long Sta.
21+40	30+00		860.60	10	956	8"	" "	
30+00	59+18.6		2918.60	10	3243	8"	" "	
59+18.6	59+26.6		8.00	10	9	8"		
TOTAL			4736.90		5273			

SUMMARY PLACING V.S. PIPE SIDE UNDERDRAIN

STATION FROM	STATION TO	RIGHT LEFT	REMOVAL TYPE	REMOVAL SIZE INCHES	REMOVAL LIN. FEET	RELAY TYPE	RELAY SIZE INCHES	RELAY LIN. FEET	NEW PIPE REQ'D TYPE	NEW PIPE REQ'D LIN. FT. 18"	NEW PIPE REQ'D LIN. FT. 24"	HEAD WALLS No.	HEAD WALLS Conc. Cu.yds.	HEAD WALLS Reinf. Steel lbs.	REMARKS
3+89	6+85	Lt.	V.S.P.	24"	296										
4+00	6+70	"	"			V.S.P.	24"	270							
6+70	7+00	"	"									1	1.4	33	Removed Sta. 6+83
7+00	7+24.8	"	"						V.S.P.		31.2				Long Sta.
									"		24.8	1	1.4	33	
52+20	53+06	"	"						"	86		1	1.65	35	D.S. Pipe
53+06	53+08	"	"						"	18"-8"					D.S. Spec. 1868 Y
53+08	53+44	"	"						"	36		1	1.65	35	D.S. Pipe
TOTAL					296			270		122	56.0	4	6.10	136	

SUMMARY OF FINISHING SHOULDERS, SLOPES & DITCHES

STATION FROM	STATION TO	LONG STA.	Lineal Ft. Both Sides
0-01.50	0+00		1.50
0+00	6+00		600.00
6+00	7+00	101.20	101.20
7+00	59+02.26		5202.26
TOTAL			5904.96

Use 5905 ±

SUMMARY REMOVAL OF GUARD RAIL

STATION FROM	STATION TO	RIGHT LEFT	REMOVE LIN. FEET
0-01.50	0+30	Lt.	31.50
0-01.50	0+10	Rt.	11.50
6+89	9+33	Rt.	244.00
9+58	9+82	"	24.00
26+48	27+10	"	62.00
TOTAL			373.00

SUMMARY PRIVATE DRIVE APPROACHES

STATION	RIGHT OR LEFT	REMOVALS C.I.P. 10"	REMOVALS C.I.P. LIN. FT. 12"	REMOVALS V.S.P. 18"	REMOVALS V.S.P. 12"	REMOVALS V.S.P. 18"	REMOVALS HEAD WALLS Cu. yds.	RELAY C.I.P. 10"	RELAY C.I.P. LIN. FT. 12"	RELAY C.I.P. 18"	RELAY V.S.P. 12"	PLACE NEW CORR. I.P. 12"	PLACE NEW CORR. I.P. LIN. FT. 21"	PLACE NEW CORR. I.P. 24"	REMARKS
4+08	Lt.											16			Excav. & Emb. in Rdwy. Q.
10+15	Lt.											24			" " " "
18+00	Lt.											32			" " " "
25+93	Lt.											20			" " " "
34+29	Rt.		16												Remove to Sta. 33+46
38+88	Lt.				18						18				Same Sta.
39+48	Rt.								16						Removed at Sta. 34+29
45+96	Rt			12		10	3.3						24		Excav. & Emb. in Rdwy. Q.
51+75	Rt.				16										None Req'd.
57+24	Lt.				32									18	Excav. & Emb. in Rdwy. Q.
57+24	Rt.			16						16					Same Sta.
57+58	Rt.		14						14						" "
TOTALS		16	14	28	66	10	3.3	16	14	16	18	92	24	18	

134' All Sizes

SUMMARY OF GUTTER PAVEMENT

STATION FROM	STATION TO	RIGHT LEFT	LINEAL FEET	REMARKS
3+00	4+00	Lt.	100	See Sheet 5 details
46+08	48+81	Rt.	273	" " 12 "
53+44	54+00	Lt.	56	" " 13 "
TOTAL			429	

SUMMARY OF STONE UNDERDRAIN

STATION FROM	STATION TO	LINEAL FEET	REMARKS
Lt. 12+25	Rt. 13+25	124	See Sheet 3 & 6 for Details
Rt. 21+98	Lt. 24+16	220	" " 10 " "
			Note these are diagonal distances
TOTAL		344	

SUMMARY OF PAVEMENT TYPE "C"

STATION FROM	STATION TO	LONG STA.	LINEAL FEET	WIDTH FEET	SQUARE YARDS
0-01.50	0+00		1.50	20	3.33
0+00	6+00		600.00	20	1333.33
6+00	7+00	101.20	101.20	20	224.89
7+00	58+19.26		5194.26	20	11542.80
TOTAL			5896.96		13104.35

PAVEMENT QUANTITIES

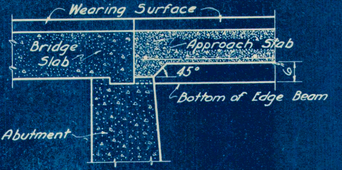
9"-7"-9" Conc. pavement 20' wide 13104.35 Sq. yds.

SUMMARY OF NO. 46 TRAFFIC BOUND MATERIAL FOR ROAD APPROACHES

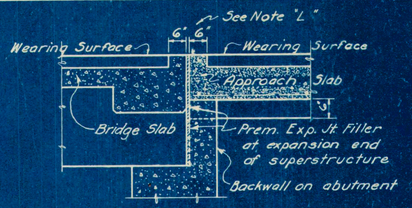
Station	Side of Road	Cu. Yds.	Depth	Width	Length	Remarks
4+08	Lt.	6.6	6"	12'	30'	
9+34	Rt.	18.5	"	40'	25'	
10+15	Lt.	8.0	"	12'	30'	
18+00	Lt.	32.5	"	16'	110'	
25+93	Lt.	5.0	"	12'	22'	
38+88	Lt.	4.5	"	12'	20'	
39+48	Rt.	5.5	"	12'	25'	
45+96	Rt.	5.5	"	12'	25'	
49+61	Rt.	27.8	"	50'	30'	Pub. Rd.
51+75	Rt.	2.6	"	12'	12'	
52+19	Lt.	4.5	"	12'	20'	
57+24	Lt.	6.0	"	12'	20'	
57+24	Rt.	4.5	"	12'	27'	
57+58	Rt.	5.5	"	12'	26'	
TOTAL		137.0				

ROADWAY QUANTITIES

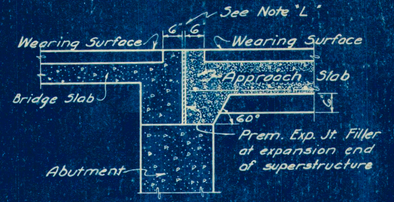
Excavation Unclassified	19952	Cu. Yds
Finishing shoulder's, slopes and ditches, both sides	5905	Lin. ft.
Removing existing guard rail	373.0	" "
Removing existing 10"-12"-18" C.I. Pipe & V.S. Pipe private drives	134	" "
Removing existing 24" V.S. Pipe Side Underdrain	296	" "
Removing existing conc. S.P. Hd. Wls.	3.30	Cu. yds.
Existing Mono. brick pav. taken up and placed in embankment	52.73	Sq. Yds.
Relaying 10" C.I. Pipe, private drives	16	Lin. ft.
" 12" " " " "	14	" "
" 18" " " " "	16	" "
" 12" V.S. Pipe, " "	18	" "
12" Corr. I.P. for private drives	92	" "
21" " " " "	24	" "
24" " " " "	18	" "
No. 46 Traffic Bound Material for road approaches	137	Cu. Yds
24" x 18" Stone underdrain	344	Lin. Ft.
Relaying 24" V.S.P. Side underdrain	270	" "
24" V.S.P. Side underdrain in place	56	" "
18" " " " " "	122	" "
1 special 18" x 8" Y in place	1	Pc.
1-5½ Conc. headwalls	6.10	Cu. yds.
Reinf. steel in place	136	lbs.
8" Hand placed gutter paving cement grout filled (1-3 mix)	429	Lin. ft.
~~Remove & Dispose of Exist. Pvmt. 8" Thick~~	~~3~~	~~Sq. Yds.~~
Const. Reinf. Conc. App. 7" thick 1-5½ mix.	17.8	" "



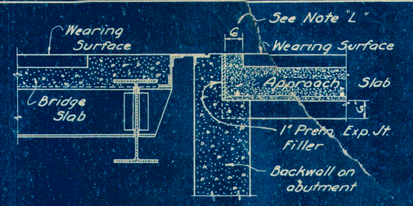
WITH WEARING SURFACE ON APPROACH SLAB



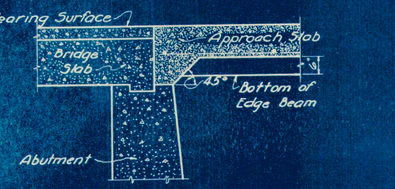
WITH WEARING SURFACE ON APPROACH SLAB



WITH WEARING SURFACE ON APPROACH SLAB

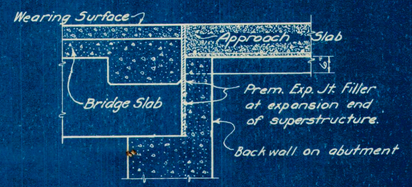


WITH WEARING SURFACE ON APPROACH SLAB



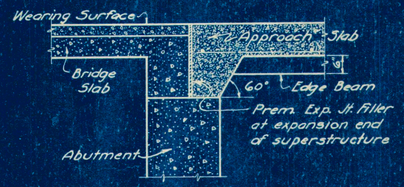
WITHOUT WEARING SURFACE ON APPROACH SLAB

FOR STANDARD SLAB BRIDGES



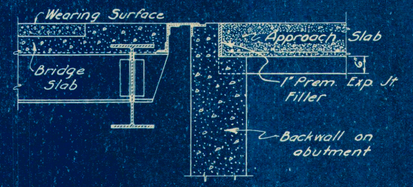
WITHOUT WEARING SURFACE ON APPROACH SLAB

FOR STANDARD CONCRETE BEAM BRIDGES



WITHOUT WEARING SURFACE ON APPROACH SLAB

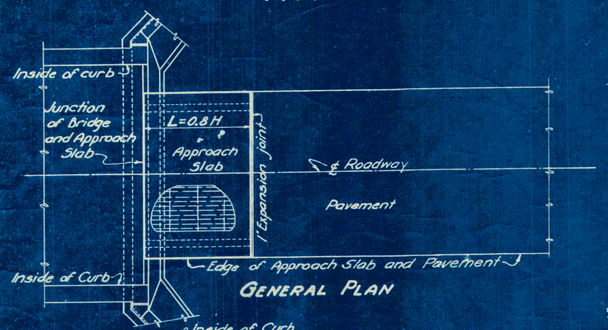
FOR STANDARD CONCRETE THROUGH GIRDER BRIDGES



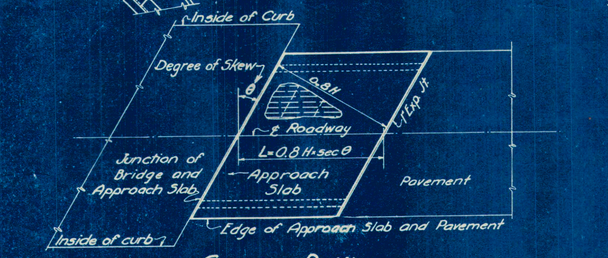
WITHOUT WEARING SURFACE ON APPROACH SLAB

FOR STANDARD STEEL TRUSS BRIDGES

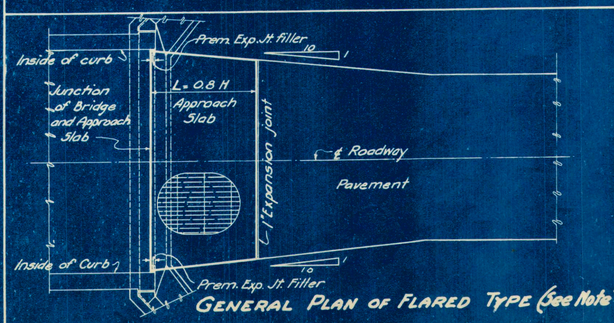
TYPICAL SECTIONS SHOWING JUNCTION OF BRIDGE AND APPROACH SLAB



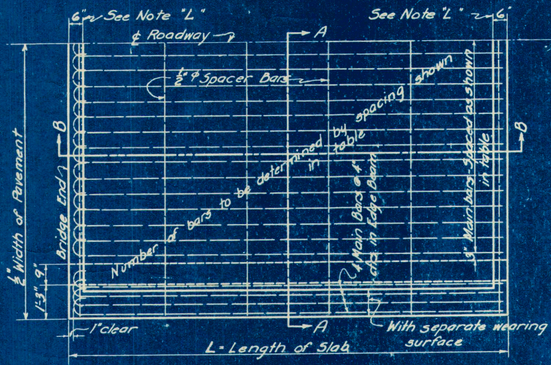
GENERAL PLAN



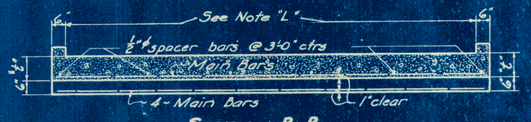
GENERAL PLAN
FOR SKEW BRIDGES



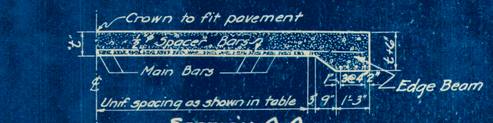
GENERAL PLAN OF FLARED TYPE (See Note "O")



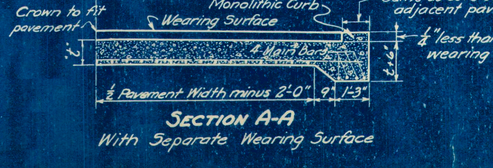
HALF DETAIL PLAN OF APPROACH SLAB



SECTION B-B



SECTION A-A
Without Separate Wearing Surface



SECTION A-A
With Separate Wearing Surface

DIMENSIONS AND QUANTITIES

Length "L"	Thickness "t"	Approx. Average Lbs. Steel Per Sq. Yd.	* Sq. Yds. in one approach slab for pavement width of			Main Bars			Spacer Bars	
			18 Ft.	20 Ft.	30 Ft.	Size	Spacing	Length	Size	Spacing
8'	7"	28	16.0	17.8	26.7	⅝" ℓ	7"	8'-6"	½" ℓ	3'-0"
9'	7½"	30	18.0	20.0	30.0	⅝" ℓ	6½"	9'-6"	½" ℓ	3'-0"
10'	8"	30	20.0	22.2	33.3	⅝" ℓ	6½"	10'-6"	½" ℓ	3'-0"
11'	8½"	31	22.0	24.4	36.7	⅝" ℓ	6"	11'-6"	½" ℓ	3'-0"
12'	9"	31	24.0	26.7	40.0	⅝" ℓ	6"	12'-6"	½" ℓ	3'-0"
13'	9"	33	26.0	28.9	43.3	⅝" ℓ	5½"	13'-6"	½" ℓ	3'-0"
14'	9½"	36	28.0	31.1	46.7	⅝" ℓ	7"	14'-6"	½" ℓ	3'-0"
15	10"	36	30.0	33.3	50.0	⅝" ℓ	7"	15'-6"	½" ℓ	3'-0"
16'	10½"	38	32.0	35.6	53.3	⅝" ℓ	6½"	16'-6"	½" ℓ	3'-0"
17'	11"	40	34.0	37.8	56.7	⅝" ℓ	6"	17'-6"	½" ℓ	3'-0"
18'	11½"	40	36.0	40.0	60.0	⅝" ℓ	6"	18'-6"	½" ℓ	3'-0"
19'	11½"	43	38.0	42.2	63.3	⅝" ℓ	5½"	19'-6"	½" ℓ	3'-0"
20'	12"	46	40.0	44.4	66.7	1" ℓ	7"	20'-6"	½" ℓ	3'-0"
21'	12½"	47	42.0	46.7	70.0	1" ℓ	6¾"	21'-6"	½" ℓ	3'-0"
22'	13"	49	44.0	48.9	73.3	1" ℓ	6½"	22'-6"	½" ℓ	3'-0"
23'	13½"	50	46.0	51.1	76.7	1" ℓ	6¼"	23'-6"	½" ℓ	3'-0"
24'	14"	51	48.0	53.3	80.0	1" ℓ	6"	24'-6"	½" ℓ	3'-0"
25'	14"	53	50.0	55.6	83.3	1" ℓ	5½"	25-6"	½" ℓ	3'-0"

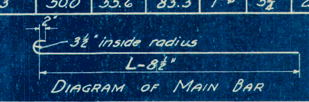


DIAGRAM OF MAIN BAR

* These quantities apply for the pavement widths indicated where the pavement is not flared and where the width of approach slab is the same as the pavement. For other cases, the area must be specially computed.

NOTES

(A) General. This drawing illustrates approach slab design and shall also be a working drawing for the contractor.

(B) When to be used. Approach slabs shall be used in connection with all new abutments except those for spandrel-filled arches and except those on traffic-bound road projects.

(C) Method of Measurement. Approach slabs shall be measured and estimated by the square yard. Payment per sq.yd. shall include the slab concrete, reinforcing steel, side curbs (if required), edge beams, premolded expansion joint filler and any extra concrete needed under the slab at its seat.

(D) Concrete Mix. The concrete proportions shall be 1:5½.

(E) Adaptation. For bridges other than the types indicated thereon, the approach slab shall be adapted to fit the end of bridge.

(F) Bearing. The one end will rest on the abutment and the other is intended to have at least two feet bearing on solid earth.

(G) Extra Length. If, because of the contractor's operations, a longer slab than specified on project plans is required in order to provide this bearing, the contractor shall, at his own expense, provide the necessary additional length with additional thickness and reinforcing steel as tabulated or required hereon.

(H) Length Limitations. The length shall generally be not less than 8 ft. nor more than 25 ft. In case a greater length is required, the slab thickness and reinforcing steel can be determined by extrapolation from tabulated dimensions and quantities.

(I) Edge Beam construction (as shown hereon) shall be provided where wheel loads may come near the edge of slab.

(J) Wearing Surface. In case of brick or bituminous wearing surface on adjacent pavement, the same shall be carried over approach slabs. Where the adjacent pavement is concrete, the top of approach slab shall be made flush with top of pavement; it may also be made flush for water-bound macadam.

(K) Side Curbs. These shall be provided at the edges of slab when a separate wearing surface is used on approach slab.

(L) Concrete Header. 6" wide and flush with top of wearing surface, shall be placed monolithic with approach slab in case of brick wearing surface, to prevent leakage of sand cushion into expansion joints. Paid for as sq.yds., with wearing surface.

(M) Finish. This shall be the same as specified for concrete base course in case of separate wearing surface, and shall be the same as for concrete pavement when so used.

(N) Specifications. Construction specifications in force on date of contract shall govern.

(O) Flared Construction is illustrated in the "GENERAL PLAN OF FLARED TYPE." This is to apply only where the Department's practice on pavements is to provide flare. In many cases this rate of flare should be different from the 1:10 rate shown (as at the "outlet" end of a bridge on a curve where a more gradual flare may be provided). (The Highway Department's new practice is to generally not provide flared construction.).

DESIGN NOTATIONS

H = Height from bottom of footing to top of curb.
L = Length of Slab = 0.8 H (to nearest foot).
L (on Skew bridges) = 0.8 H multiplied by the secant of the angle of the skew (to nearest foot). (The 0.8 H is measured normal to the junction of the bridge and approach slab).

REVISIONS
Date:
Jan. 27, 1931
Sept. 1, 1931

STANDARD APPROACH SLABS FOR BRIDGES

FOR PAVEMENT WIDTHS OF 18 FT., 20 FT. AND 30 FT.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
JAN. 1931 BUREAU OF BRIDGES

APPROVED BY C. P. Burkey			DRAWING NUMBER
DATE 1-20-31 CHIEF ENG'R OF BRIDGES			AS-31
DES. & DR. K.E.D.	TRACED J.P.N.	CHECKED V.B.C.	REVIEWED H.H.W.

Revision Jan. 27, 1931 - Expansion Joints in pavement, beyond ends of approach slabs, not shown.

Note: Height at ends of wings on all skewed culverts shall be made to fit slope of earth fill.

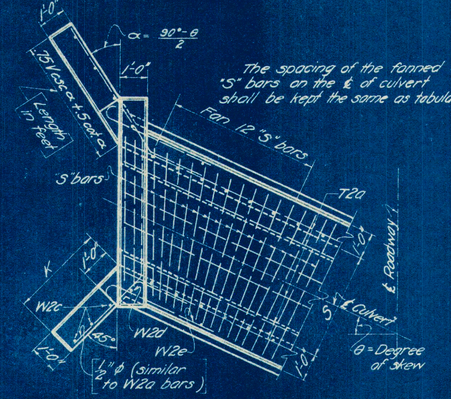
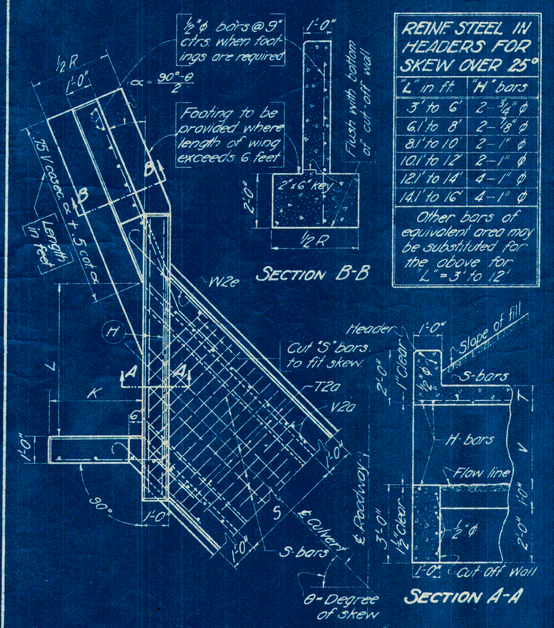


ILLUSTRATION OF DESIGN FOR SKEW OF 25° OR LESS



REINF. STEEL IN HEADERS FOR SKEW OVER 25°	
"L" in ft.	"H" bars
3' to 6'	2 - ¾" ϕ
6.1 to 8'	2 - 1" ϕ
8.1' to 10'	2 - 1" ϕ
10.1' to 12'	2 - 1" ϕ
12.1' to 14'	4 - 1" ϕ
14.1' to 16'	4 - 1" ϕ
Other bars of equivalent area may be substituted for the above for L' = 3' to 12'	

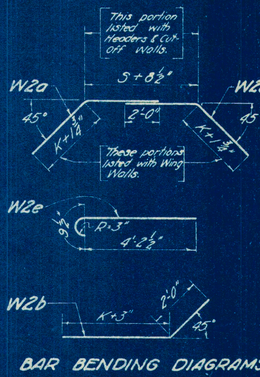
ILLUSTRATION OF DESIGN FOR SKEW OVER 25°

ILLUSTRATION OF COMPUTATION OF QUANTITIES

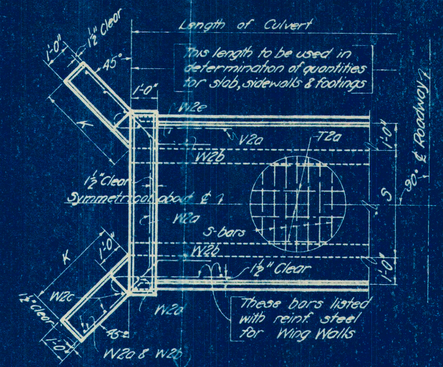
SPAN = 4'-0"; "V" = 3'-0"; LENGTH 50 FT.; WITHOUT SKEW.

Excavation	(to nearest Cu. Yd.)	(?) Cu. Yds.
1:6½ Concr. in Footings	(Column No. 26) ... 27 x 50	13.5 Cu. Yds.
1:5½ Concr. in Wing Walls	(Column No. 11)	3.0 Cu. Yds.
1:5½ Concr. in Slab	(Column No. 19) ... 13 x 50	6.5 Cu. Yds.
1:5½ Concr. in Headers & Cut-Off Walls	(Column No. 22)	1.5 Cu. Yds.
1:5½ Concr. in Side Walls	(Column No. 27) ... 29 x 50	14.5 Cu. Yds.
Total 1:5½ Concrete	(to nearest 1/10 Cu. Yd.)	25.5 Cu. Yds.
Reinf. Steel in Wing Walls	(Column No. 10)	219 Lbs.
Reinf. Steel in Slab	(Column No. 18) ... 16.4 x 50	820 Lbs.
Reinf. Steel in Headers & Cut-Off Walls	(Column No. 21)	45 Lbs.
Reinf. Steel in Side Walls	(Column No. 28) ... 13.4 x 50	670 Lbs.
Total Reinf. Steel	(to nearest 1/4)	1134 Lbs.

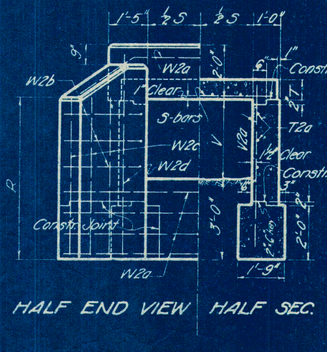
If parapets are used, concrete and steel quantities must be increased accordingly.



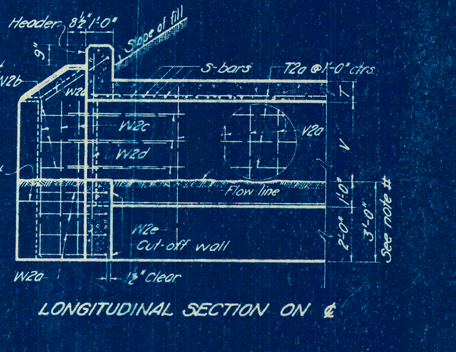
BAR BENDING DIAGRAMS



PART PLAN



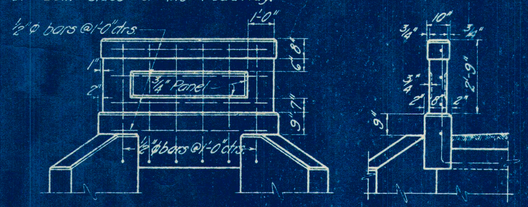
HALF END VIEW | HALF SEC.



LONGITUDINAL SECTION ON ℄

Allowance will be made for additional concrete and steel required for the parapet.

The elevation of top of parapet will generally be the same on both sides of the roadway.



PARAPET DETAILS

NOTE

THIS DRAWING IS TO SCALE FOR A CLEAR SPAN (S) OF 4 FT. AND A CLEAR HEIGHT (V) OF 3 FT.

BAR LEGEND	
SIZES	
⅜" ϕ	1
½" ϕ	2
⅝" ϕ	3
¾" ϕ	4
⅞" ϕ	5
1" ϕ	6
1'-0 ϕ	7
1'-0 ϕ	8
1'-0 ϕ	9
1'-0 ϕ	0

Illustration of W2a - W indicates bar in Wing Wall; 2 indicates size of bar; 5" ϕ; 0 indicates an individual bar.

FOUR WING WALLS

1	2	3	4	5	6	7	8	9	10	11	12
Clear Height "V"	Dimensions of Wing		W2a ⓞ	W2b	STEEL REINFORCEMENT W2c	W2d	W2e	V2a	Total Steel in Lbs.	Total 1:5½ Concr. Cu. Yds.	Total 1:6½ Concr. Cu. Yds.
	"K"	"R"	Lin. Ft.	No. Lengths	No. Length	No. Length	No. Length	No. Length			
2'-6"	3'-0"	5'-0"	63	8 3'-4"	12 5'-9"	4 7'-0"	8 5'-0"	4 5'-6"	176	2.4	—
3'-0"	3'-6"	6'-0"	73	12 3'-9"	12 6'-0"	4 7'-6"	12 5'-0"	4 6'-0"	219	3.0	—
4'-0"	4'-9"	6'-6"			12 6'-6"	4 8'-0"	12 5'-0"	4 6'-0"	287	4.8	—
5'-0"	5'-9"	7'-0"	118	20 8'-0"	12 7'-0"	4 9'-6"	20 5'-0"	4 8'-0"	355	6.5	—
6'-0"	6'-9" ‡	7'-6"	138	24 9'-0"	32 ‡ 7'-6"	4 10'-6"	24 5'-0"	4 9'-0"	529	6.6	7.4
7'-0"	7'-9" ‡	8'-0"	158	28 10'-0"	36 ‡ 8'-0"	4 11'-6"	28 5'-0"	4 10'-0"	636	8.4	9.1
8'-0"	9'-0" ‡	8'-6"	183	32 11'-3"	40 ‡ 8'-6"	4 12'-6"	32 5'-0"	4 11'-0"	760	10.8	11.3

ⓞ 20-W2a bars required for each culvert; length of each according to bending diagram.
‡ Where "K" is greater than 6 ft., footing will be provided as shown in skew details.

CULVERT SLAB, HEADERS AND CUT-OFF WALLS

13	14	15						16	17	18	19	20	21	22
Clear Span "S"	"T"	SLAB REINFORCEMENT							Max. Fill using S.A.S. Thick. "T"	Steel per Lin. Ft. of Slab Lbs.	Concr. per Lin. Ft. of Slab Cu. Yds.	H Dirs. & C.O. Walls		
		S bars					T2a					W2a bars ⓞ Lin. Ft.	Total Steel Lbs.	Total Concr. Cu. Yds.
		Mark	Size	No.	Ft.	Length	Spacing	No.	Length					
2'-6"	6"	53a	⅝" ϕ	2	4.0	4'-0"	5"	3	16.0'	10.2	.09	52	35	1.0
3'-0"	6½"	53a	⅝" ϕ	2	6.7	4'-6"	4½"	3	14.5'	12.2	.10	57	38	1.2
4'-0"	7"	54a	¾" ϕ	2	8.0	5'-6"	5"	4	12.0'	16.4	.13	67	45	1.5
5'-0"	7½"	54a	¾" ϕ	2	9.7	6'-6"	4½"	5	10.5'	21.4	.17	77	51	1.8
6'-0"	8½"	55a	¾" ϕ	2	11.0	7'-6"	5¼"	6	9.5'	27.5	.21	87	58	2.1
7'-0"	9"	55a	¾" ϕ	2	12.8	8'-6"	5¼"	7	8.5'	33.9	.25	97	65	2.3
8'-0"	9½"	55a	¾" ϕ	2	14.0	9'-6"	5"	8	8.0'	39.6	.30	107	71	2.6
9'-0"	10"	55a	¾" ϕ	2	15.3	10'-6"	4½"	9	6.0'	45.9	.34	117	78	2.9

Length culvert "V" 6"

TWO SIDE WALLS AND FOOTINGS

23	24	25	26	27	28
Clear Height "V"	STEEL REINF.		1:6½ Concr. per Lin. Ft. of Culvert Cu. Yds.	1:5½ Concr. per Lin. Ft. of Culvert Cu. Yds.	Steel per Lin. Ft. of Culvert Lbs.
	W2a bars	T2a			
	No. Lengths	No. Length			
2'-6"	2 5'-6"	1'-0" 8	.27	.25	12.7
3'-0"	2 6'-0"	1'-0" 8	.27	.29	13.4
4'-0"	2 7'-0"	1'-0" 10	.27	.36	16.0
5'-0"	2 8'-0"	1'-0" 12	.27	.44	18.7
6'-0"	2 9'-0"	1'-0" 14	.27	.51	21.4
7'-0"	2 10'-0"	1'-0" 16	.27	.59	24.1
8'-0"	2 11'-0"	1'-0" 18	.27	.66	26.7

Length culvert "S" 6"

GENERAL This drawing (supplemented by a lay-out plan) provides design and construction details for slab top culverts. In case of a skew, deep fill, parapets, or other special features, the special modifications will be shown in connection with the lay-out plan.

SPAN should generally be greater than "V" (such as: 4'x2', 4'x3', 9'x5', 9½'x6' or 9'x7').

DESIGNATION OF SIZE shall always include Span, Clear Height and Length.

CONCRETE MIX shall be 1:5½ except for footings, for which it shall be 1:6½.

WING lengths and heights are based on the assumption of an earth slope of ½:1 and a level highway gradient. In case of an appreciable deviation from either or both of these assumptions, the design will be revised accordingly. This applies particularly to the long wings of skewed culverts.

HEADERS will generally be placed beyond edges of earth shoulders. If they are placed at or within edges of shoulders, parapets (as illustrated herein) or railings should be provided in the design.

CROWN OR SUPERELEVATION will be provided, if required, in case of no fill. In such cases the slab will have a uniform thickness and the height of walls will be adjusted to fit.

VERTICAL CONSTRUCTION JOINTS in side walls are permissible but shall be provided with keys, and the T2a bars shall be continuous through the joints. Wing walls, cut-off walls and at least five (5) feet of culvert walls shall be cast integrally. Culvert walls and slab may be constructed monolithically if desired.

EXPOSED EDGES shall have ¾" bevel.

SPLICING of bars permitted only for T2a, which shall have a minimum lap of 2'-0".

DEPTH BELOW FLOW LINE should be increased from 3 ft. to 4 ft., or more, if scour is probable because of poor soil or restricted waterway.

SUBSOIL of approximately uniform bearing capacity is contemplated with a bearing value of not less than 4000 lbs. per sq. ft. If spots of soft material exist, they shall be replaced with compacted material. If the soil as a whole has a lower bearing value, the footings will be increased in width (with a minimum thickness of one and one-half (1½) times the projection beyond the walls) or provided with bearing piles. In case of rock, the dimensions and quantities of culvert footings, walls, and ends will be altered, if necessary, to fit.

EMBANKMENT shall be placed symmetrically on both sides of the culvert and shall not be placed until after slab is in position. Embankment over slab shall be placed in horizontal layers, simultaneously with that on each side of culvert.

QUANTITIES will be determined from the tables, except for the "Ends" of skewed culverts or when other alterations are made, in which cases they will be specially computed. Special features of each culvert will be taken into account. The excavation will be specially computed. (See illustration).

* MODIFICATIONS FOR DEEP FILL

When the fill exceeds that tabulated above, (column No. 17) the box culvert type (according to Dr. No. BC-A or BC-B) should generally be used, unless the probability of future drain pipe installation under flow line (in connection with a future drainage project) makes the slab top type mandatory. But where it is necessary to use a slab top under fill greater than that tabulated above, the size and spacing of the steel will remain the same, but the thickness of the slab will be increased ⅛" inches (in which "S" = span in feet and "d" = increased depth in feet). (The increase in thickness ⅛" should be computed to the nearest ¼ inch). When a slab top culvert is placed under a deep fill, the footing will usually be designed to provide an average soil pressure of 4000 lbs. per sq. ft. (or less, if necessary), taking into consideration the earth fill over slab, wall and footing and the weight of concrete.

Slab thickness and reinforcing steel for the entire length of culvert, should generally be that required under the fill of its greatest depth.

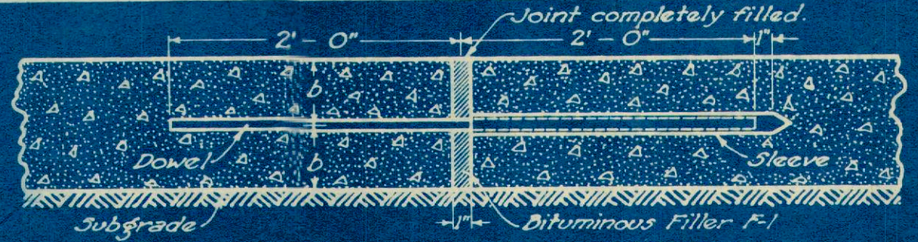
REVISIONS
Date:
April 15, 1930

STANDARD SLAB TOP CULVERTS

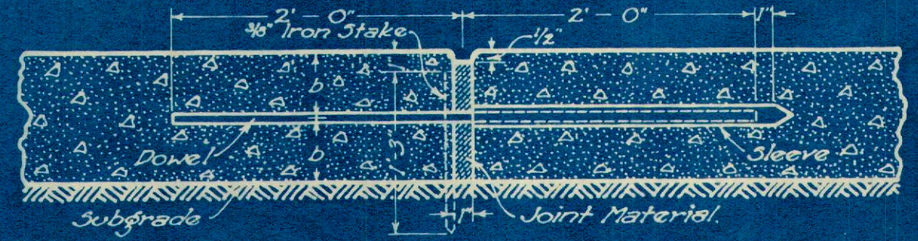
SPANS 2½' TO 9'
CLEAR HEIGHTS 2½' TO 8'

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
MAR. 1929 BUREAU OF BRIDGES

Approved By					Drawing No.
Date 3-15-29	Chief Engineer of Bridges				SC-A
Designed KED 6.05	Drawn KED 6.50	Traced C.E.O.	Checked 6.25	Approved W.H.R.	

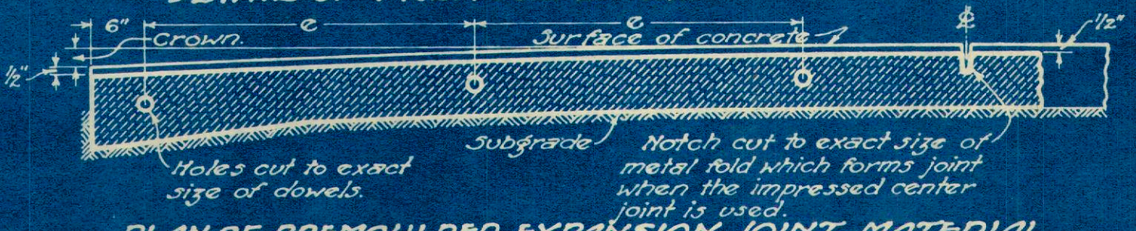


DETAIL OF POURED EXPANSION JOINT



DETAIL OF PREMOULDED EXPANSION JOINT

If the pavement is constructed between the dates of September 15 and May 15 expansion joints shall be constructed at each third joint as per specifications.



PLAN OF PREMOULDED EXPANSION JOINT MATERIAL

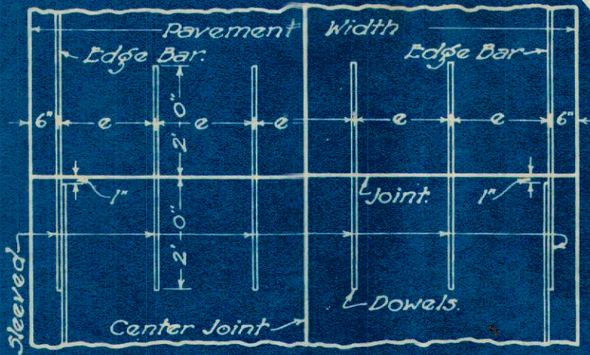
Expansion and Contraction Joints shall be placed as per General Specifications unless otherwise specifically mentioned on the plans.

If the expansion joint material is not in a single piece the adjoining portions of it shall be cut so that when laid all ends will be closely joined.

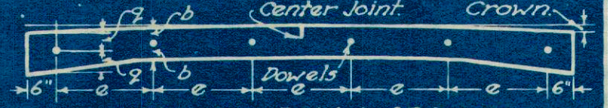
Dowels, edge bars, sleeves, their support and spacing and beading of joint edges to conform to Standard Construction Drawing No. 95.

BITUMINOUS PREMOULDED EXPANSION JOINT MATERIAL :- Item M-10, Material Details.

BITUMINOUS POURED EXPANSION JOINT FILLER:- Sec. M-5.4, Material Details.



PLAN OF JOINT



DETAIL OF DOWEL SPACING

DETAIL OF JOINT SPACING

If the width of the pavement exceeds 24', additional sleeved dowel bars shall be placed to preclude of dimension "e" exceeding 4.5'.

"C" = Contraction Joint.

"E" = Expansion Joint.

BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

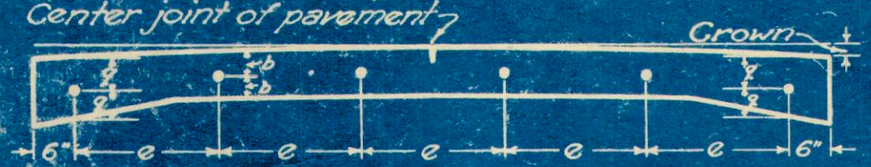
EXPANSION JOINT
CONCRETE PAVEMENT

STANDARD
CONSTRUCTION DRAWING 123
JAN. 11, 1932

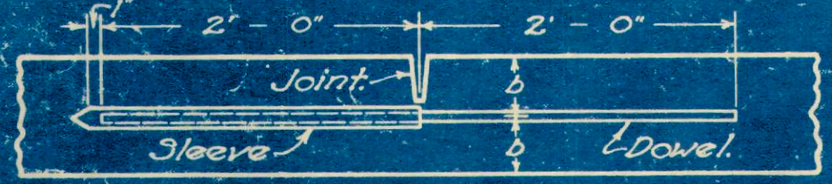
APPROVED E. H. CHIEF ENGR. CONST.

REVISED

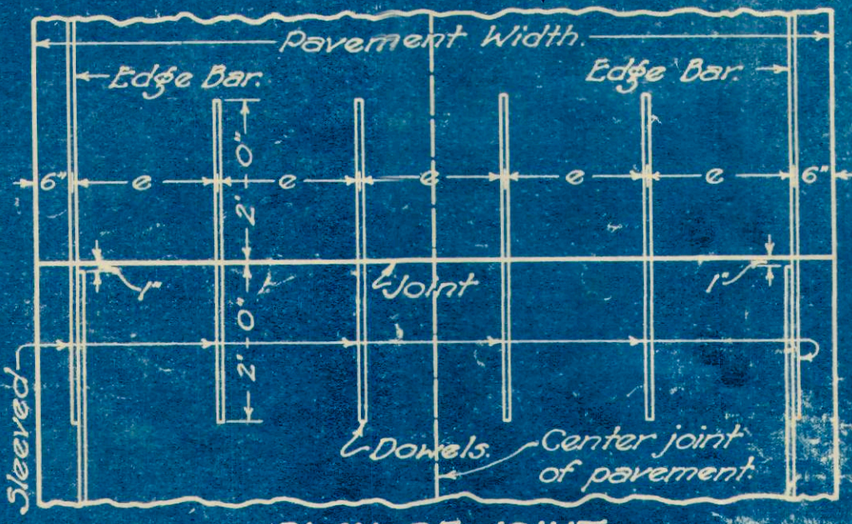
DETAIL OF JOINT SPACING



DETAIL OF DOWEL SPACING



DETAIL OF IMPRESSED CONTRACTION JOINT
(To conform to Const. Drawing No. 98).



PLAN OF JOINT

C-C = Contraction Joints.
If the pavement is constructed between the dates of September 15th and May 15th expansion joints shall be constructed at each third joint as per specifications.

Expansion joints shall also be constructed if shown on the plans, special provisions and proposal.

All dowel and edge bars to be 3/4" round, smooth bars with neat fitting sliding sleeve on one end.

All sleeves shall be of metal.

All dowel and edge bars shall be supported by means of an approved device.

All joints to be edged with a beading tool of 1/4" radius.

If the width of the pavement exceeds 24', additional sleeved dowel bars shall be placed to preclude of dimension "e" exceeding 4.5'.

The spacing for joints ("a" in diagram above) will be 25' to 30' for a gravel aggregate or resurfacing and 30' to 50' for a broken stone or slag aggregate. Exact spacing to be indicated on typical section sheet for coarse aggregate or type contemplated.

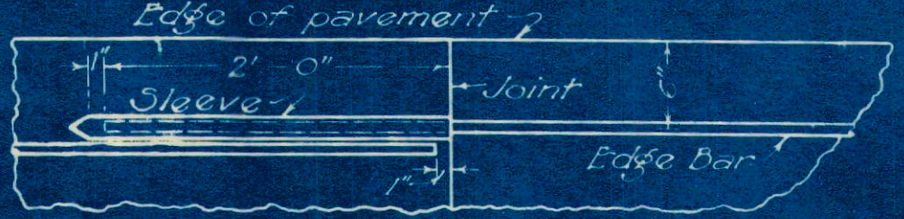
BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

SLEEVED DOWEL CONTRACTION JOINT

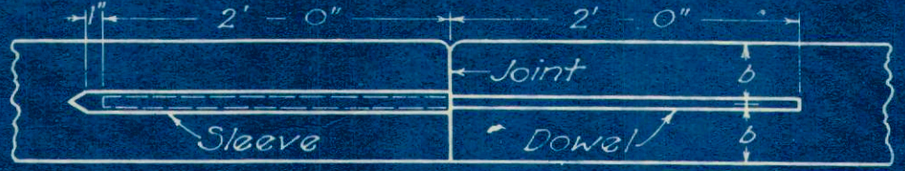
STANDARD
CONSTRUCTION DRAWING 95
1930

APPROVED H.S.C. CHIEF ENGR. CONST.

REVISED
8-1-30
8-6-31

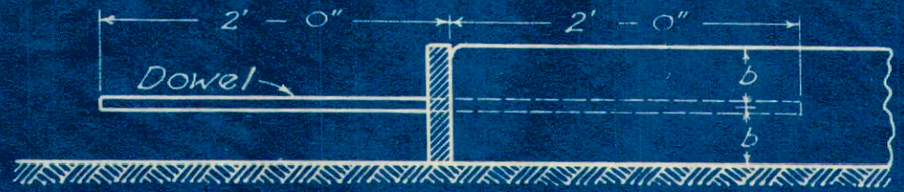


PLAN OF EDGE BARS AT JOINT



DOWEL JOINT

Using round smooth bars with neat fitting sliding sleeves on one end.



BULKHEAD

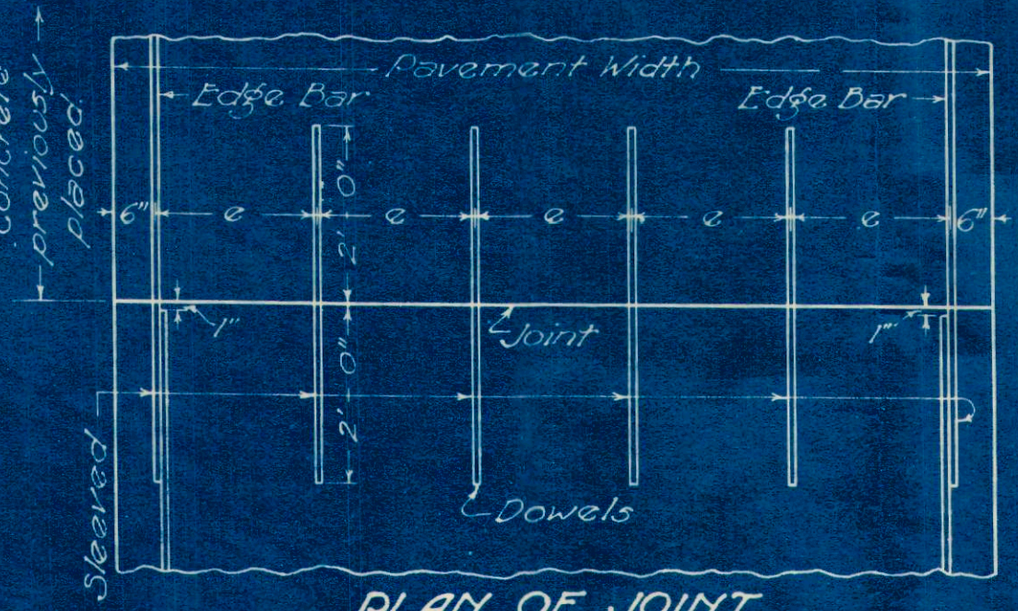
All bulkheads to be constructed to permit edge bars to be continuous through joints.

Care shall be taken in removing bulkhead and placing adjacent concrete, to see that the dowel bars are embedded in the concrete without being bent.

All construction joints to be edged with a beading tool of 1/4" radius.

If the width of the pavement exceeds 24' additional Sleeved Dowel Bars shall be placed to preclude of dimension "e" exceeding 4.5'.

All sleeves shall be of metal.



PLAN OF JOINT

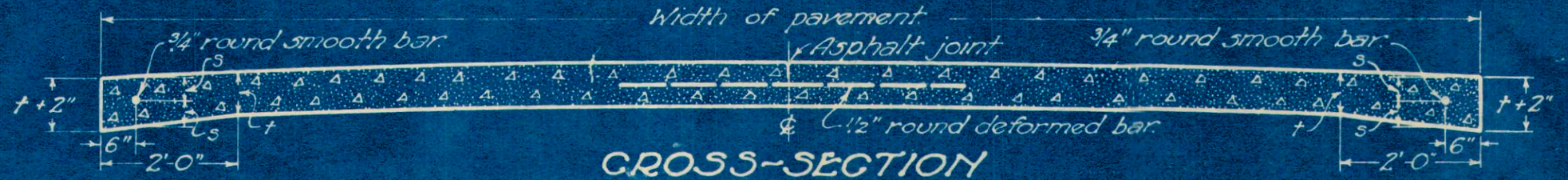
BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

CONSTRUCTION JOINT

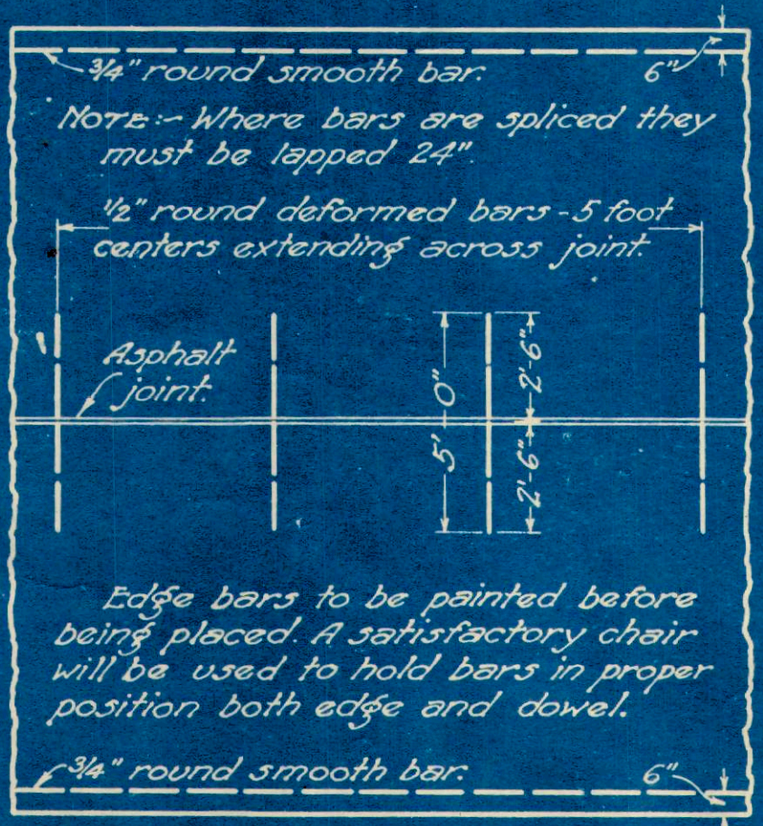
STANDARD CONSTRUCTION DRAWING 96

REVISED 1930

APPROVED R.J.B. CHIEF ENGR. CONST.



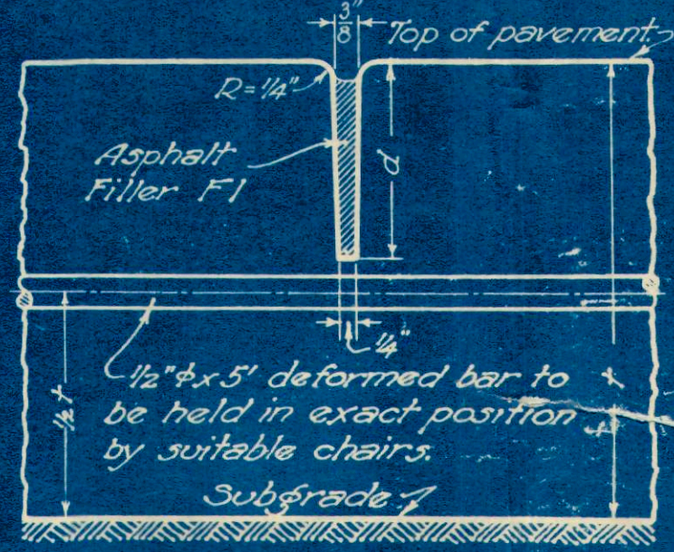
CROSS-SECTION



PLAN

t	6"	7"	8"	9"	10"
d	2½"	3"	3½"	3½"	3½"

DESCRIPTION:- This joint shall be formed by impressing a device or bar into the newly deposited concrete before initial setting. The device or bar shall be removed as soon as the concrete is in such condition as to preclude of distortion or injury to the concrete. The groove thus formed shall be on the center line of the pavement and of the dimensions shown on the plan. After the joint is formed it must be protected from dirt and foreign matter until the filler is placed. The joint shall be filled to within one quarter inch of the top with Asphalt Filler F.I. The asphalt filler shall be handled in such manner that it will be confined to the joint and in nowise mar the surface of the pavement.



DETAIL OF JOINT

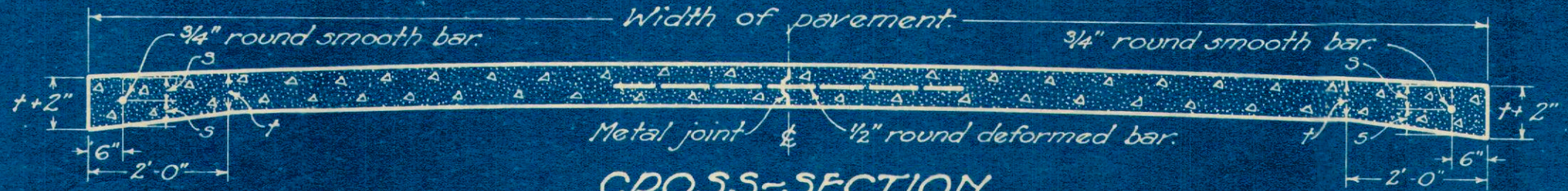
BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT
WITH IMPRESSED CENTERJOINT

STANDARD
CONSTRUCTION DRAWING 98
JAN. 2, 1930

APPROVED H.P.C. CHIEF ENGR. CONST.

REVISED 8-9-30



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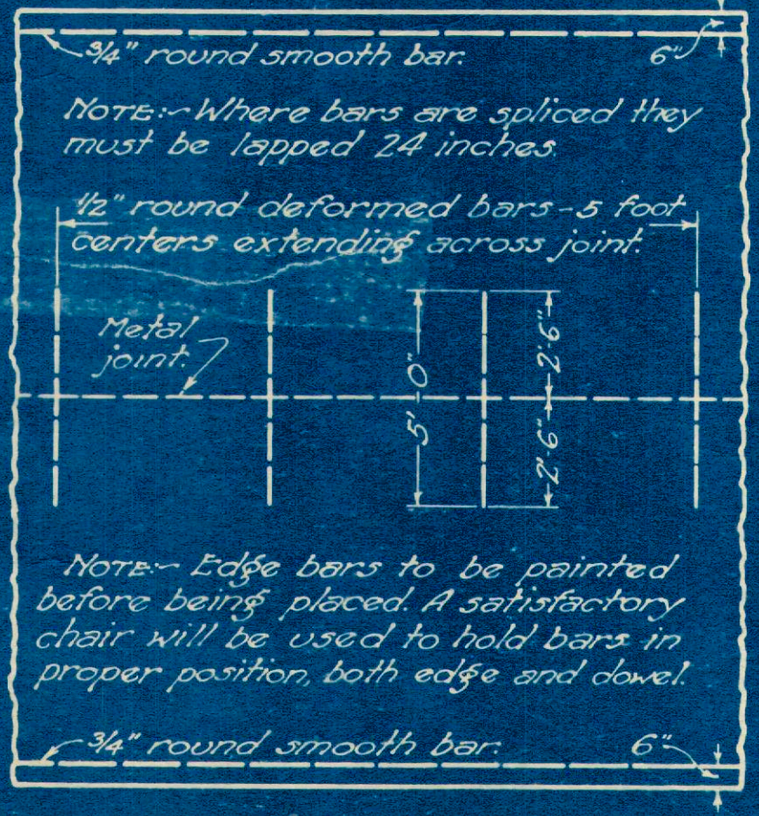
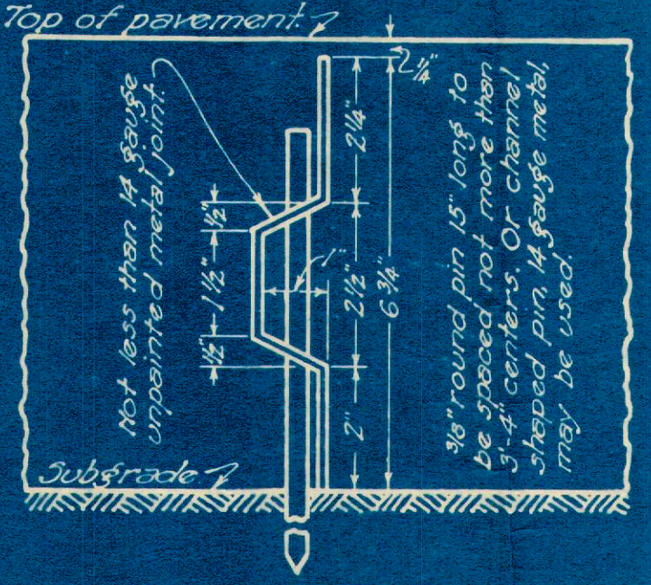


PLAN

NOTE:- This joint is designed for 7" pavement. When a greater or less thickness is used the joint shall be proportionally designed to extend within ¼" of the surface of the pavement. (Other deformations may be used if approved by the engineer.)



DETAIL OF JOINT

BUREAU OF CONSTRUCTION
OHIO
DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT
WITH METAL CENTERJOINT

STANDARD
CONSTRUCTION DRAWING 100
JAN. 2, 1930

APPROVED: H P C CHIEF ENGR. CONST.

REVISED
8-12-30