

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
**BRIDGE OVER BOKES CR.**  
BRIDGE No UN-47-121.  
S.H. 240.~SEC. MAGNETIC SPRINGS(BR.)

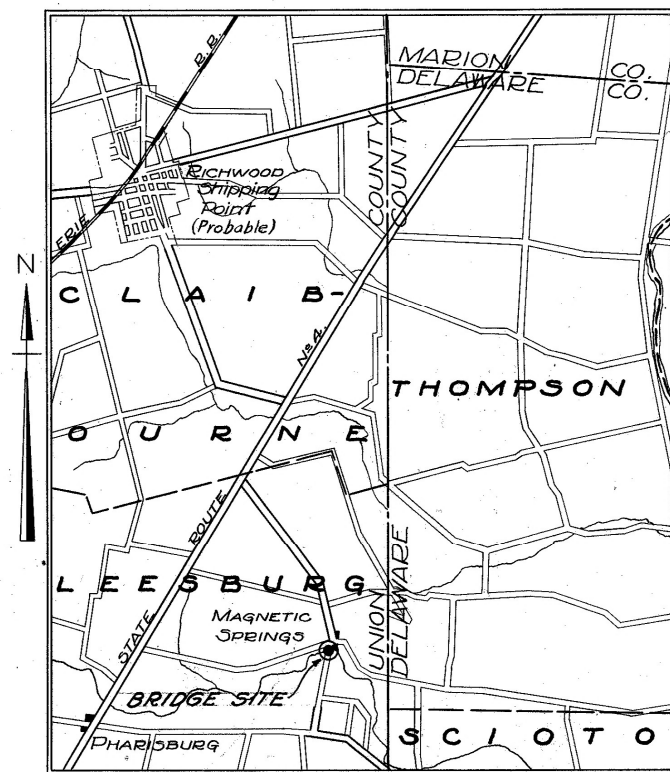
**UNION CO. ~ VILLAGE OF MAGNETIC SPRINGS**

File # 8

SCALES	
PLAN	1" = 20'
PROFILE VERTICAL	1" = 5'
PROFILE HORIZONTAL	1" = 20'
CROSS SECTIONS	1" = 5'
SITE PLAN	1" = 20'

INDEX	
TITLE SHEET	P. 1
TYPICAL SECTION	2
PLAN & PROFILE	3
PLAN & APPROACH SUMMARY	4
CROSS SECTION	5
CHANNEL CROSS SECTIONS	6-7
SITE PLAN	8
STRUCTURAL PLANS	9-10-11
SUMMARY OF BRIDGE QUANTITIES	9

SUPPLEMENTAL PRINTS OF STRUCTURAL STANDARDS. DRAWINGS No W5B-31, WAP-31, 305 & 129.



LOCATION PLAN



The Standard Specifications of the STATE OF Ohio, Department of Highways, in force on date of contract, together with the Supplemental Specifications for Winter Bridge Construction for Emergency Relief will govern this improvement.

I, hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that temporary detour bridges will be provided as shown on the plans and estimate and certify that the right-of-way is available for the construction, maintenance and repair of the above highway and traffic will be maintained.

APPROVED: \_\_\_\_\_  
DATE \_\_\_\_\_ RESIDENT DISTRICT DEPUTY DIRECTOR

APPROVED: *H. Dehouwer*  
DATE 12/4/31 RESIDENT DIVISION DEPUTY DIRECTOR

APPROVED: \_\_\_\_\_  
DATE \_\_\_\_\_ DEPUTY DIRECTOR BUREAU OF MAINTENANCE

APPROVED: *J.P. Burkey*  
DATE 12-11-31 DEPUTY DIRECTOR BUREAU OF BRIDGES

APPROVED: *Edmund Hilty*  
DATE 12 DEPUTY DIRECTOR BUREAU OF CONSTRUCTION

APPROVED: *H.P. Chapman*  
DATE 12/12-31 CHIEF ENGINEER, 1st ASST. DIRECTOR

APPROVED: *W. Murrell*  
DATE 12/12-31 DIRECTOR OF HIGHWAYS

We, the Commissioners of Union County, hereby approve these plans.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PORTION TO BE IMPROVED



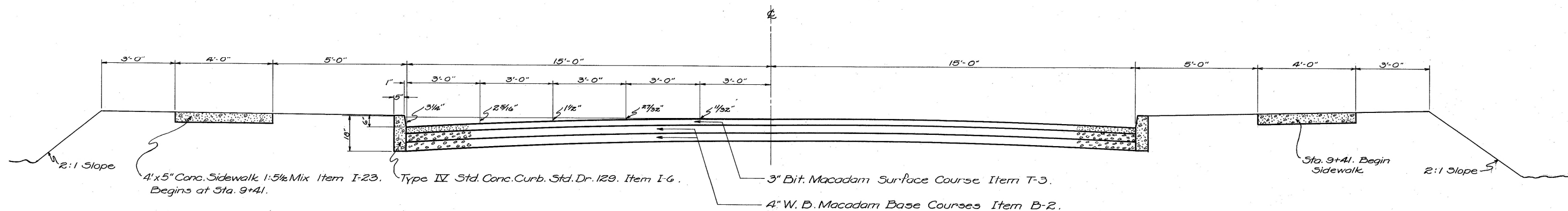
Date \_\_\_\_\_ County Commissioners.

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO		

UNION COUNTY  
S.H. 240 SEC. MAGNET  
SPRINGS (L)

# TYPICAL SECTION

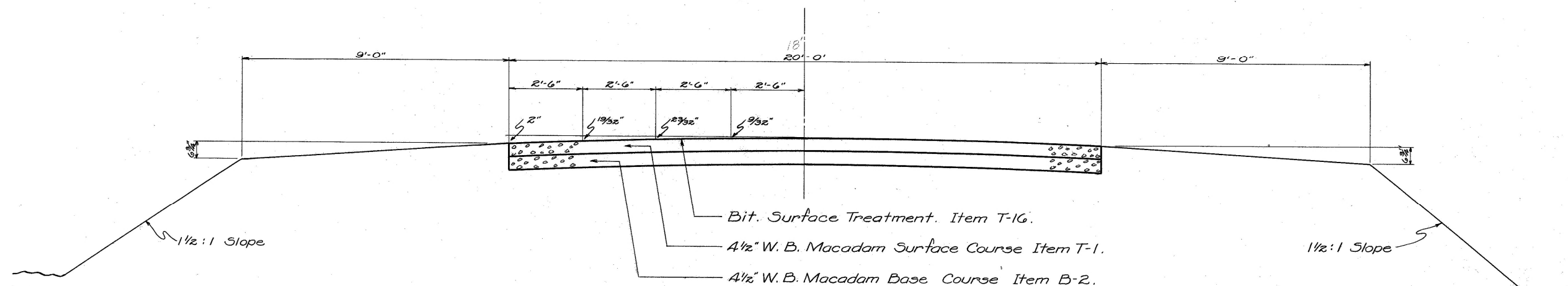
## TYPE M(B)



This Section to be used between Sta. 9+00 to 9+70.

The same section to be used between Sta. 9+70 to 9+97.75 except that the width between curbs will vary from 30' to 24' and the distance of the sidewalk from the curb will vary from 4'-6" to 0'.

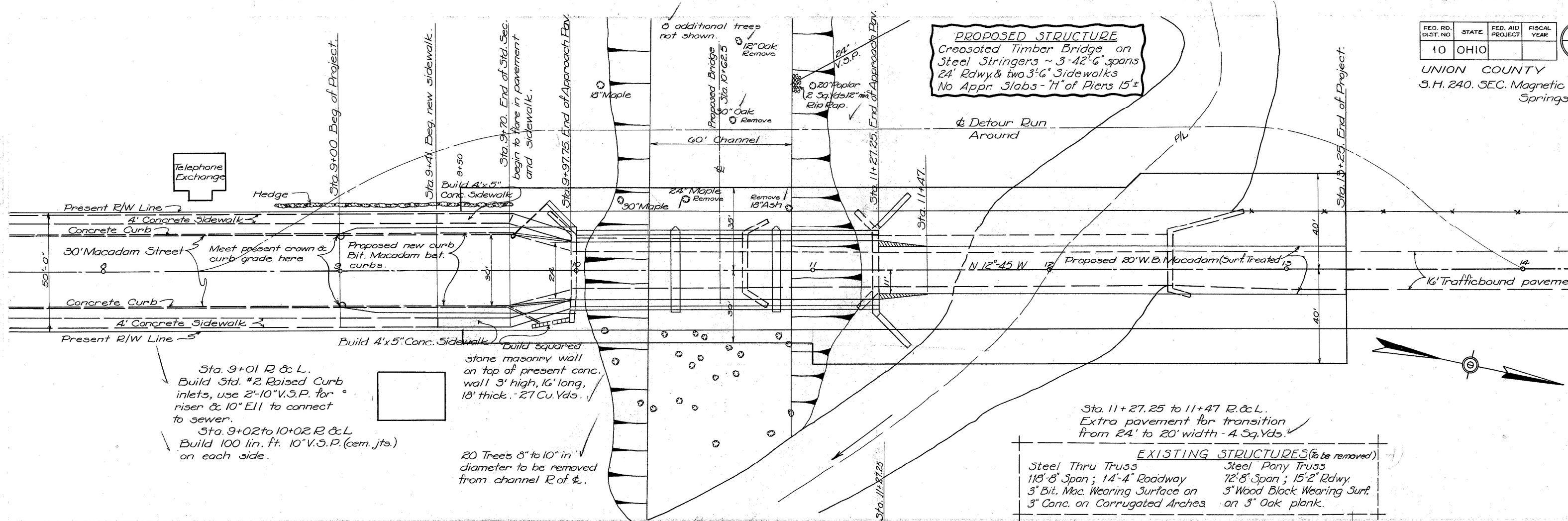
## TYPE M(WB) SURF. TREATED



This Section to be used between Sta. 11+27.25 to 13+25.

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
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UNION COUNTY  
S.H. 240, SEC. Magnetic Springs



**PROPOSED STRUCTURE**  
Creosoted Timber Bridge on Steel Stringers ~ 3-42" G spans  
24' Rdwy. & two 3'-6" Sidewalks  
No Appr. Slabs - 7" of Piers 15"±

Sta. 9+01 R & L.  
Build Std. #2 Raised Curb inlets, use 2'-10" V.S.P. for riser & 10" E.I. to connect to sewer.

Sta. 9+02 to 10+02 R & L  
Build 100 lin. ft. 10" V.S.P. (cem. jts.) on each side.

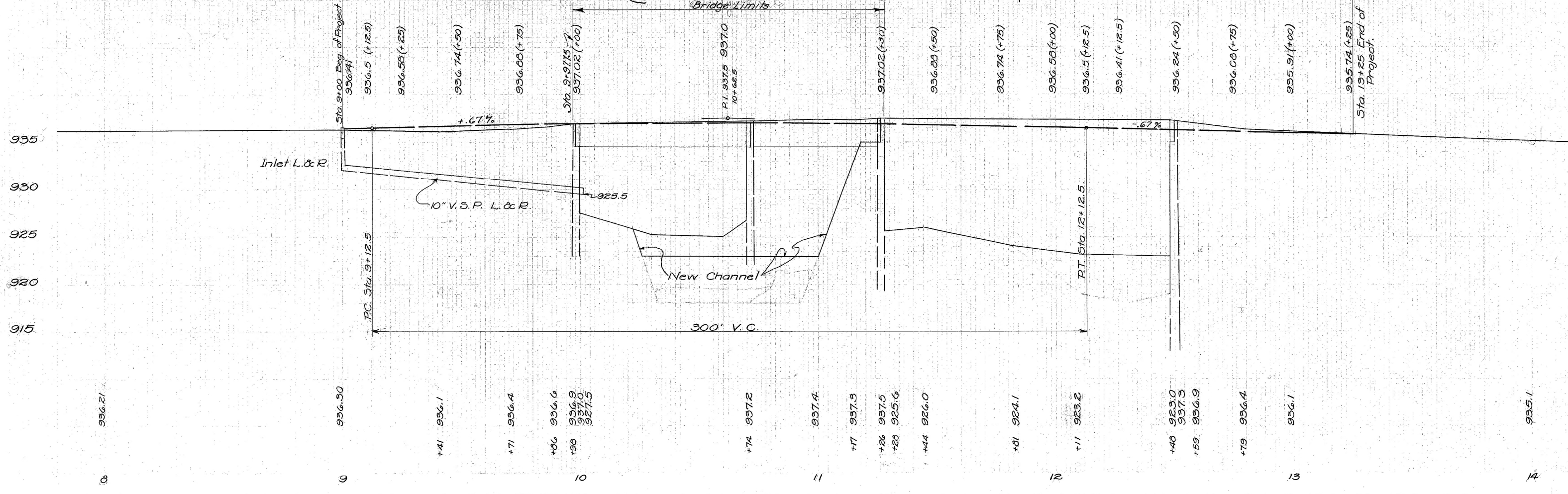
Build squared stone masonry wall on top of present conc. wall 3' high, 16' long, 18" thick. - 27 Cu. Yds.

20 Trees 8" to 10" in diameter to be removed from channel R of  $\Phi$ .

Sta. 11+27.25 to 11+47 R. & L.  
Extra pavement for transition from 24' to 20' width - 4 Sq. Yds.

**EXISTING STRUCTURES (to be removed)**

Steel Thru Truss 118'-8" Span; 14'-4" Roadway 3" Bit. Mac. Wearing Surface on 3" Conc. on Corrugated Arches	Steel Pony Truss 72'-8" Span; 15'-2" Rdwy. 3" Wood Block Wearing Surf. on 3" Oak plank.
--	--



936.21

936.50

+41 936.1

+71 936.4

+86 936.6  
+98 936.9  
+97.0  
+97.5

+74 937.2

937.4

+17 937.5

+26 937.5  
+28 925.6

+44 926.0

+81 924.1

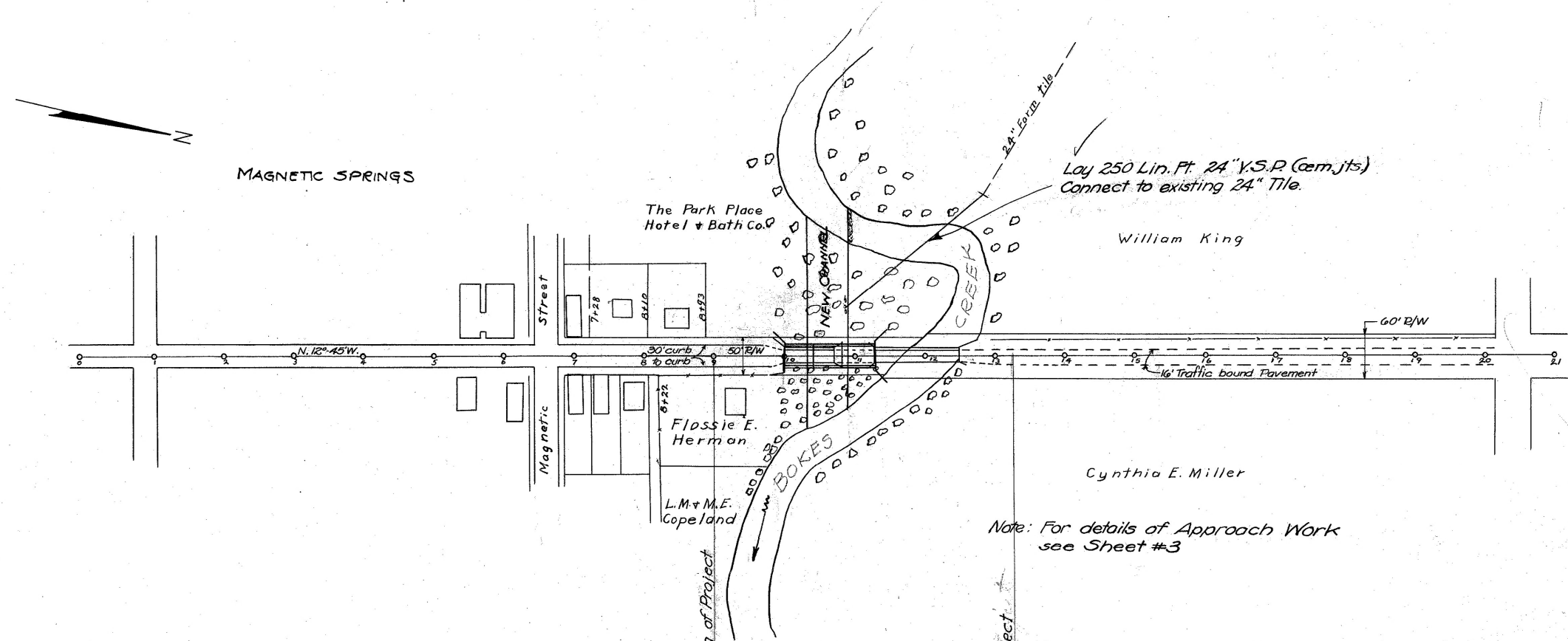
+11 923.2

+48 923.0  
+37.5  
+59 926.9

+79 926.4

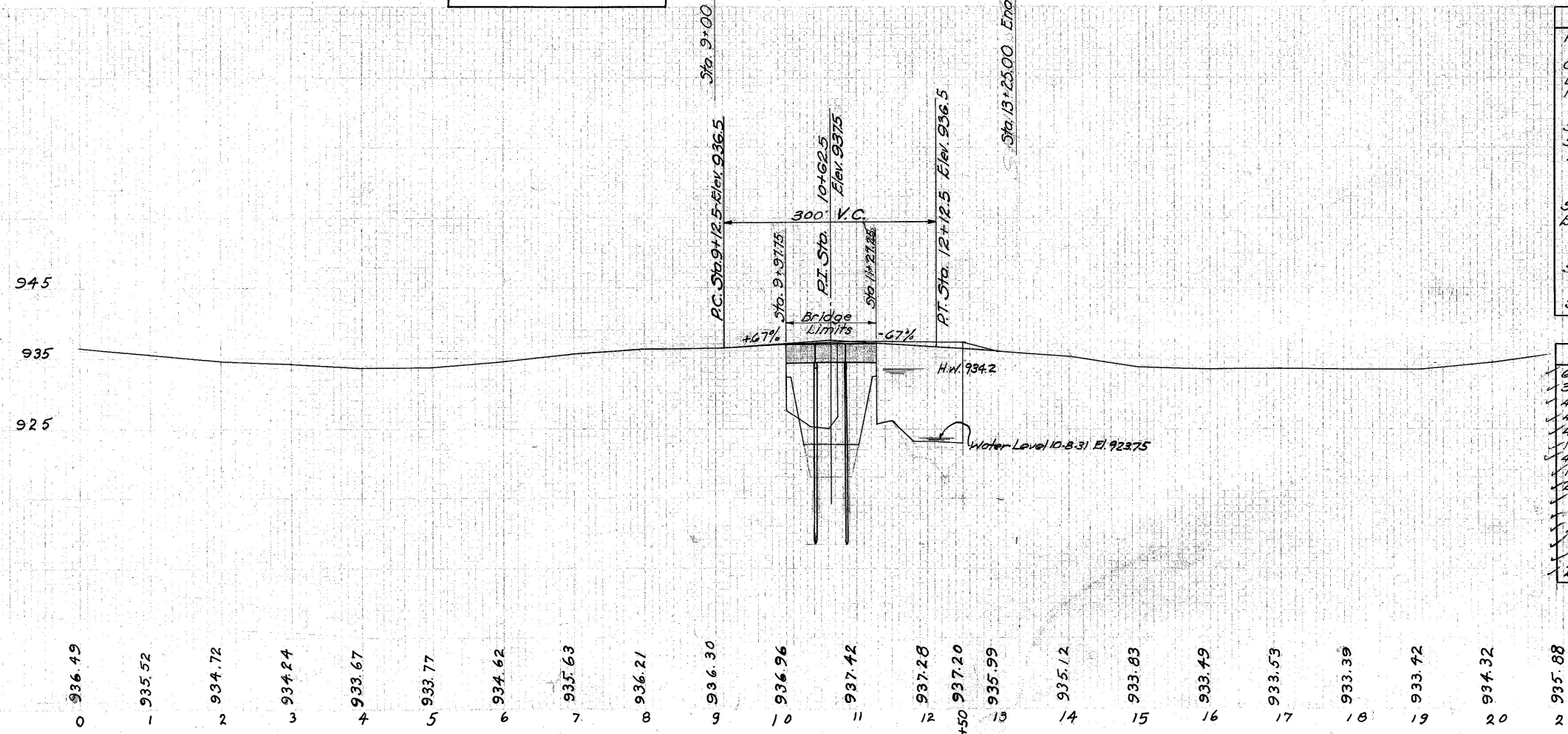
926.1

925.1



B.M. #1 End of Curb  
Lt. of Sta. 9+72  
Elev. - 935.49

Note: For details of Approach Work  
see Sheet #3



PAVEMENT CALCULATIONS	
Point of Beginning	Sta. 9+00
Ending	Sta. 13+25
Gross Length of Project	425 Lin. Ft.
Deduct for Bridge (9+72.5 to 11+27.25)	129.5 "
Net Length of Approach Pavement	295.5 "
2-4" W.B. Mac. Base Course & 3" Bit. Surface Course	
Sta. 9+00 to 9+70 (30' wide)	233 Sq. Yds.
Sta. 9+70 to 9+97.75 (Av. 27' wide)	83 "
Total	316.5 Sq. Yds.
Bituminous Surface Treatment	
4 1/2" W.B. Mac. Base and Surface Courses	
Sta. 11+27.25 to 13+25 (20' wide)	439 Sq. Yds.
Extra for transition Sta. 11+27.25 to 11+47	4 "
Total	443 Sq. Yds.
Concrete Curb 6" x 18"	
Sta. 9+00 to 9+97.75 (both sides)	195.5 Lin. Ft.
4" x 5" Concrete Side walk	
Sta. 9+41 to 9+97.75 (both sides)	454 Sq. Ft.

SUMMARY OF APPROACH QUANTITIES	
632 Sq. Yds. - 4" W.B. Mac. Base Course	B-2
316 " " - 3" Bit. Mac. Surface Course	T-3
443 " " - 4 1/2" W.B. Mac. Base Course	B-2
443 " " - 4 1/2" W.B. Mac. Surface Course	T-1
443 " " - Bituminous Surface Treatment	T-1
195.5 Lin. Ft. - 6" x 18" Concrete Curb (1.5" mix)	I-2
454 Sq. Ft. - 5" Plain Concrete Sidewalk - 4' wide - 1.5" mix	I-2
187 Cu. Yds. - Excavation	R-
296 Lin. Ft. - Finishing slopes and shoulders (both sides)	R-2
27 Cu. Yds. - Squared Stone Masonry	S-4
2 only - Std #2 Raised Curb Inlets (complete)	I-5
200 Lin. Ft. - 10" V.S.P. (cem. jts.) in place	I-6
60 Sq. Yds. - 12" Hand laid Rip-Rap	I-2
32 only - Trees - 8" to 30" in diam. to be removed	I-3
250 Lin. Ft. - 24" V.S.P. (cem. joints) in place	I-8

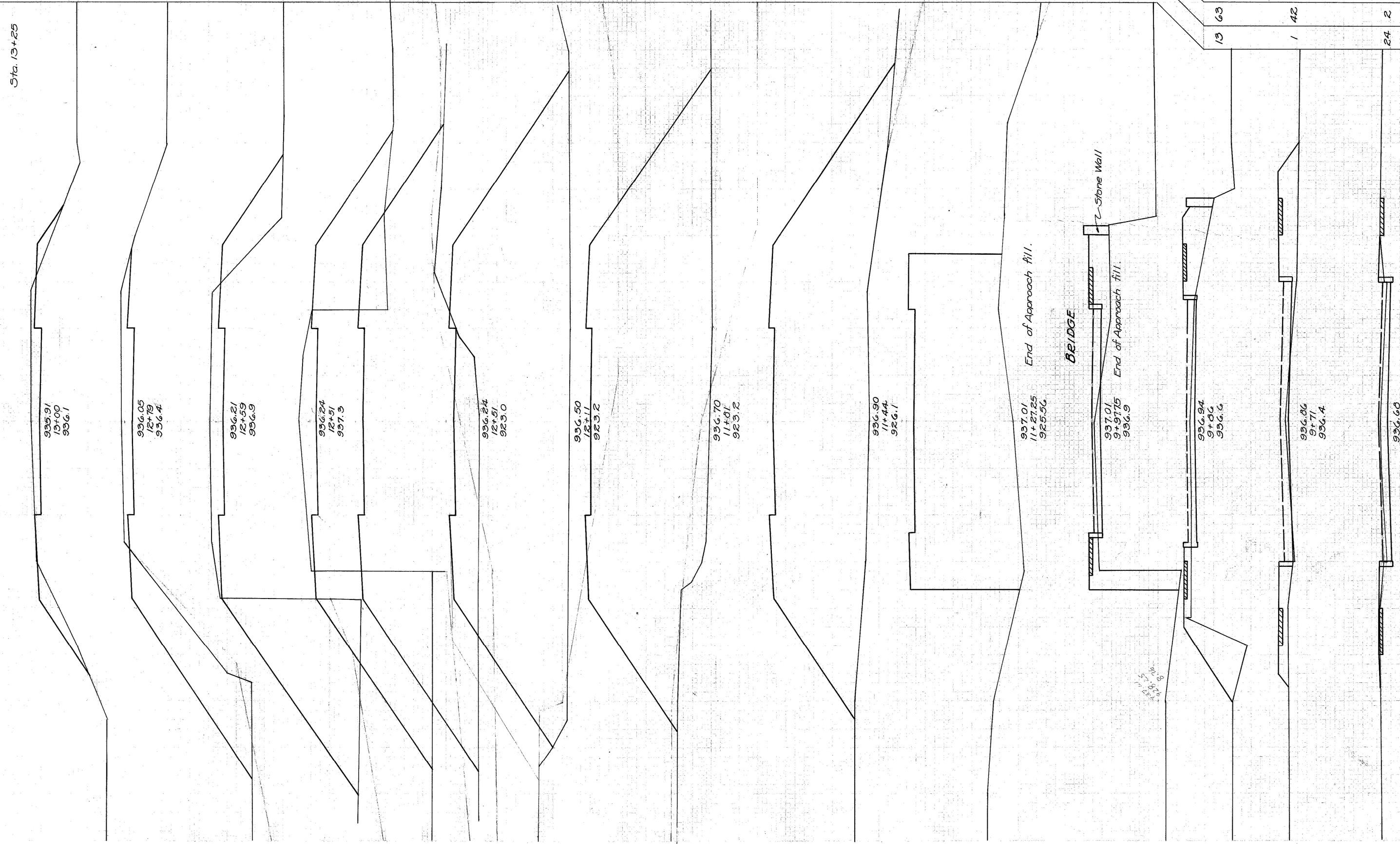
FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO		

UNION COUNTY  
S.H. 240 SEC. MAGNET  
SPRINGS (

Sta.	End Area Cut	End Area Fill	Cu. Yds. Cut	Cu. Yds. Fill
13+25	15	16	15	16
15	21	16	21	15
39	33	35	33	39
105	37	199	37	199
67	11	11	11	67
250	36	250	36	250
606	0	606	0	606
702	0	702	0	702
799	0	799	0	799
841	0	841	0	841
957	0	957	0	957
289	0	289	0	289
375	0	375	0	375
43	9	43	9	43
28	5	28	5	28
63	13	63	13	63
42	1	42	1	42
2	24	2	24	2
0	39	0	39	0
9+00	23	0	23	0

Excavation = 137 Cu. Yds.  
Embankment = 316  
Emb. + 20% Borrow from Channel = 362 (To be paid for as channel excavation)

End of Project Sta 13+25



Beginning of Project Sta 9+00

13+25  
12+75  
12+30

936.60  
934.41  
936.1

936.86  
937.71  
936.4

936.94  
937.06  
936.6

937.01  
937.15  
936.9

937.01  
937.25  
925.56

936.90  
937.44  
926.1

936.70  
937.01  
923.2

936.50  
937.11  
923.2

936.24  
937.51  
937.3

936.21  
937.59  
936.9

936.05  
937.79  
936.4

935.91  
937.00  
936.1

BRIDGE

End of Approach fill.

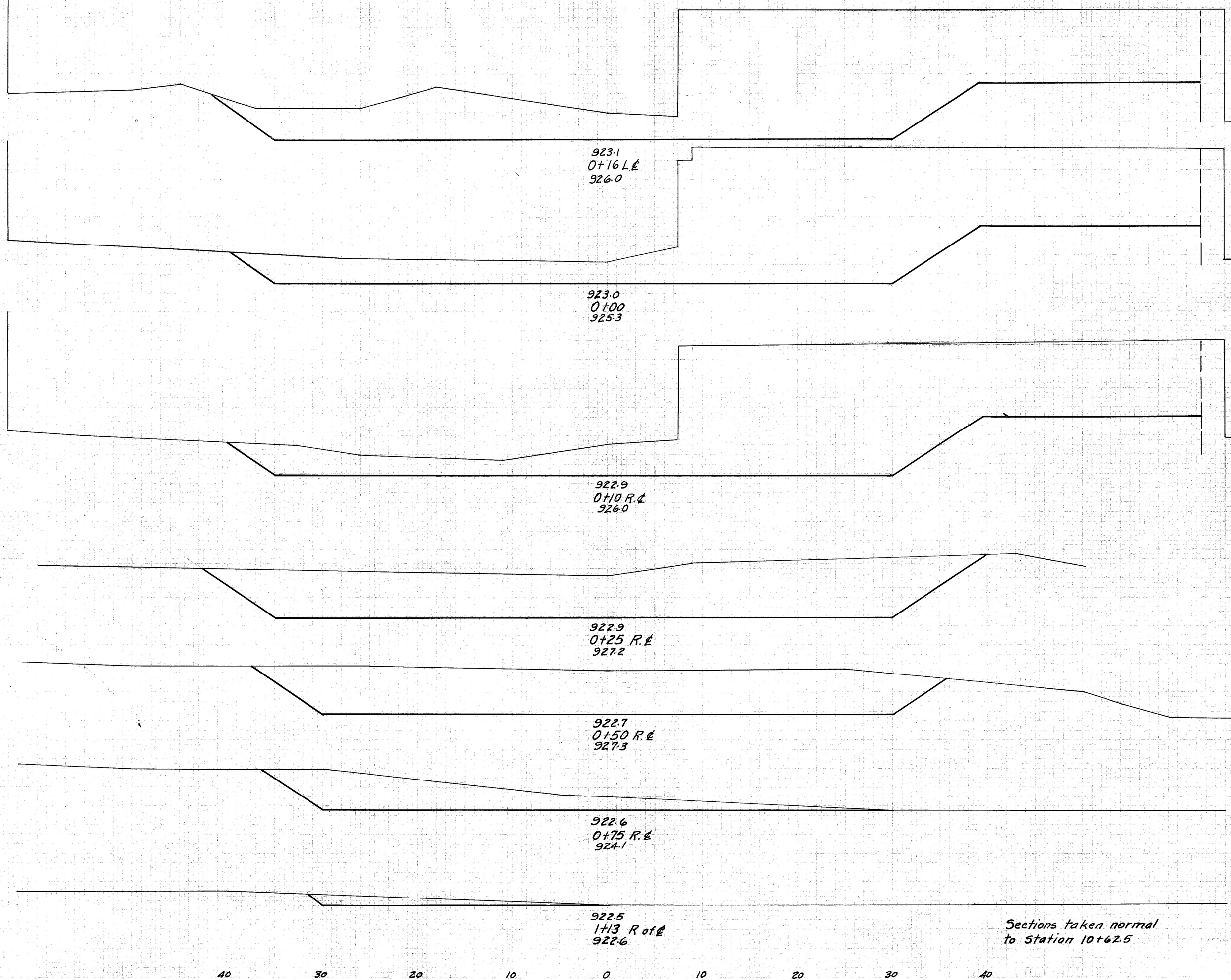
Stone Wall

End of Approach fill

Channel Cross-Sections

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO		

UNION COUNTY  
S.H. 240 SEC. Magnetic



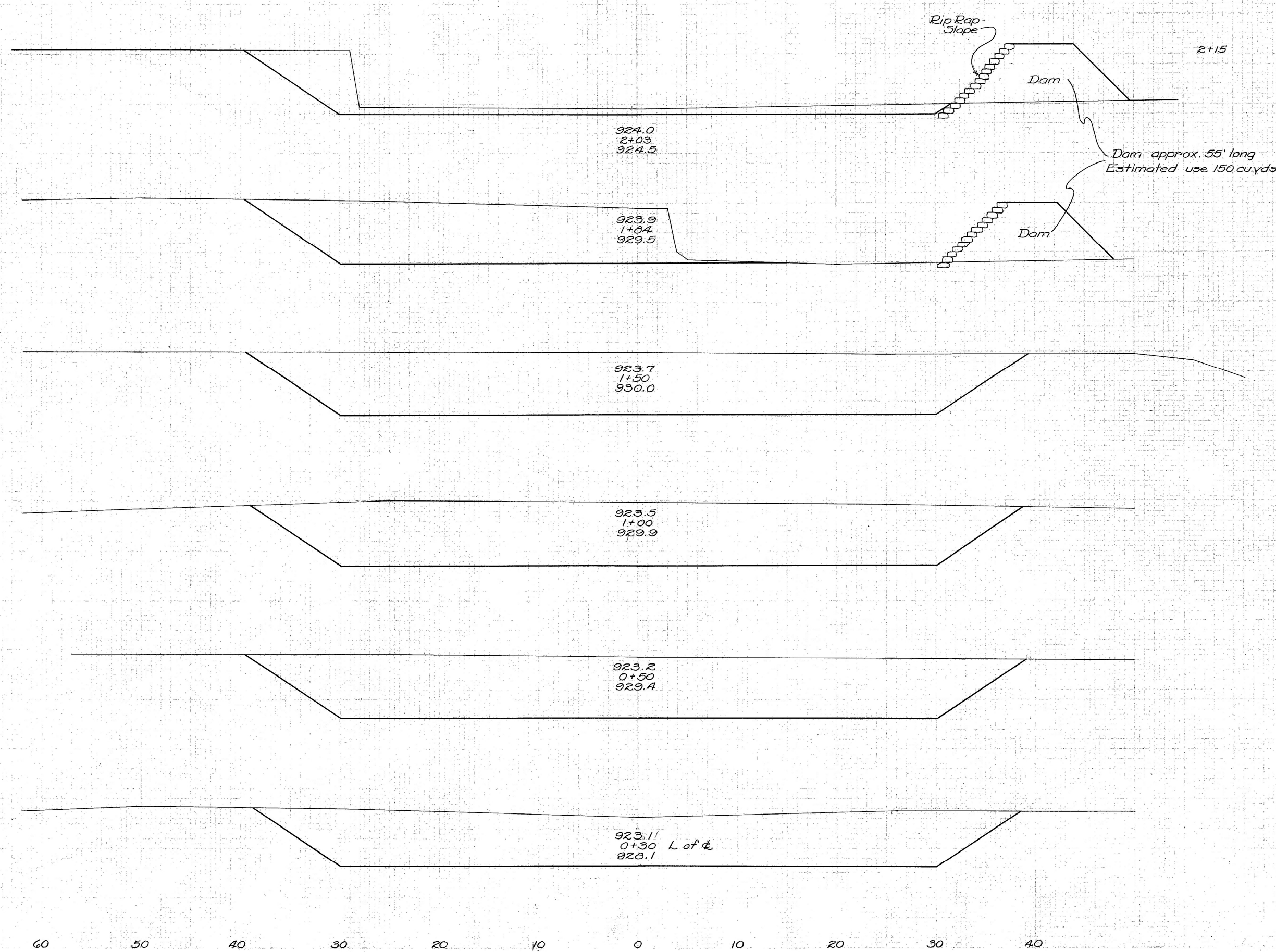
End Area	Cu. Yds
755	
	437
720	
	263
700	
	302
383	
	326
320	
	201
114	
	95
24	

Sections taken normal  
to Station 10+62.5

40 30 20 10 0 10 20 30 40

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO		

UNION COUNTY  
S.H. 240 SEC. MAGNET  
SPRINGS



End Area	Cu. Yds.
0	20
92	116
237	423
435	802
431	793
425	296
375	293

Total Channel Excavation = 4367 Cu. Yds.  
 For Use in dam = 150 " " "  
 For Use in roadway fill = 3662 " " "  
 Waste in old channel = 555 " " "

60 50 40 30 20 10 0 10 20 30 40

**PROPOSED STRUCTURE**  
Creosoted Timber Bridge on  
Steel Stringer - 3-42'-6" spans  
24' Rdwy + two 3'-6" Sidewalks.  
No Appr. Slabs. "H" of piers = 15' ±

**EXISTING STRUCTURE**  
Steel Pony Truss  
72'-8" Span; 15'-2" Rdwy  
3" Wood Block W. Surf. on  
3" Oak Plank.  
To be removed

**EXISTING STRUCTURE**  
Steel Thru Truss  
118'-8" Span; 14'-4" Rdwy  
3" Bit. Mac. W. Surf. on 3"  
Conc. on Corrugated Arches.  
To be removed.

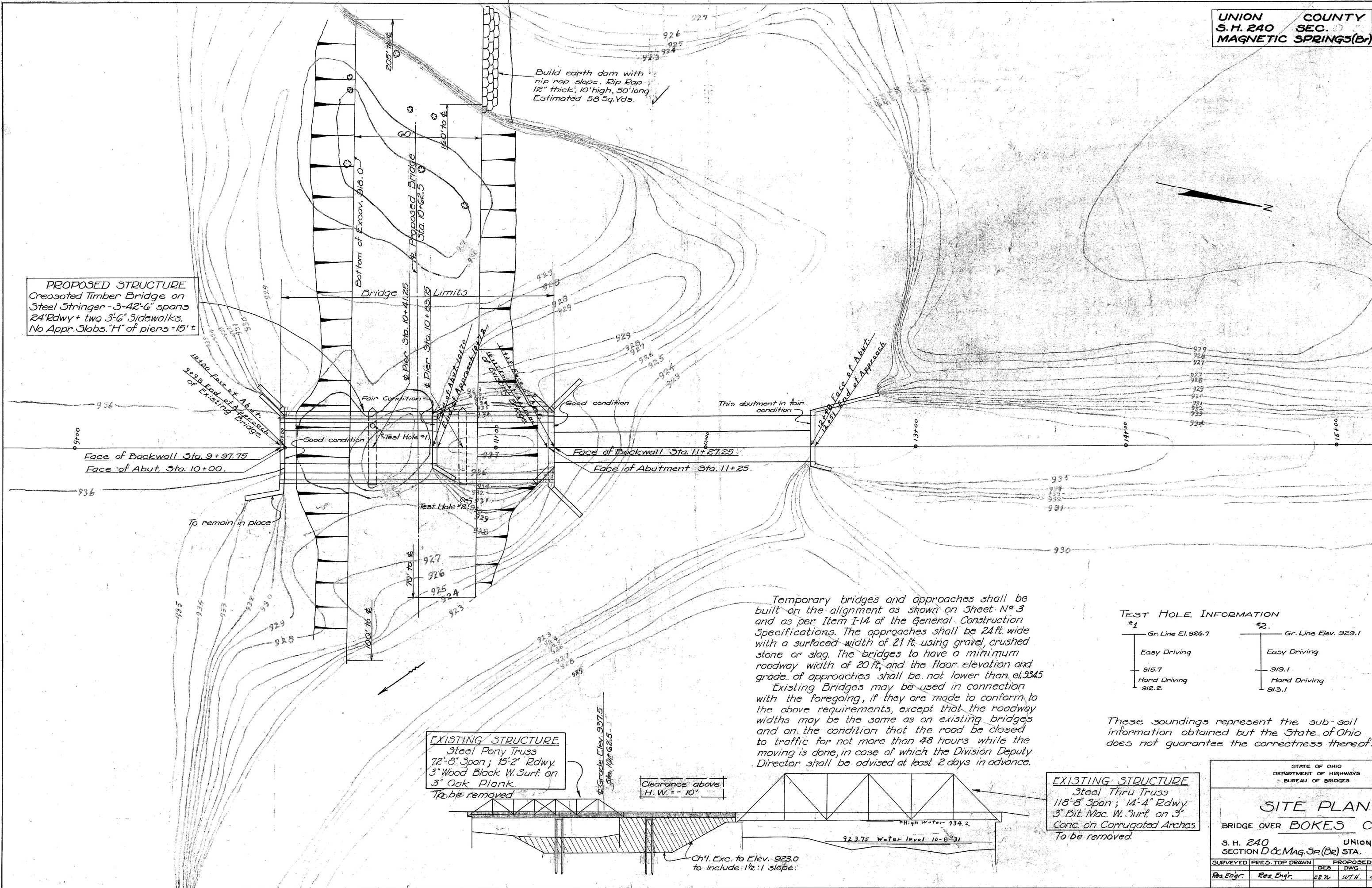
Build earth dam with  
rip rap slope. Rip Rap  
12" thick, 10' high, 50' long.  
Estimated 58 Sq. Yds.

Temporary bridges and approaches shall be  
built on the alignment as shown on Sheet N<sup>o</sup> 3  
and as per Item I-14 of the General Construction  
Specifications. The approaches shall be 24ft. wide  
with a surfaced width of 21 ft. using gravel, crushed  
stone or slag. The bridges to have a minimum  
roadway width of 20 ft., and the floor elevation and  
grade of approaches shall be not lower than el. 934.5  
Existing Bridges may be used in connection  
with the foregoing, if they are made to conform to  
the above requirements, except that the roadway  
widths may be the same as on existing bridges  
and on the condition that the road be closed  
to traffic for not more than 48 hours while the  
moving is done, in case of which the Division Deputy  
Director shall be advised at least 2 days in advance.

**TEST HOLE INFORMATION**

#1	#2
Gr. Line El. 926.7	Gr. Line Elev. 929.1
Easy Driving	Easy Driving
915.7	919.1
Hard Driving	Hard Driving
912.2	913.1

These soundings represent the sub-soil  
information obtained but the State of Ohio  
does not guarantee the correctness thereof.



STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

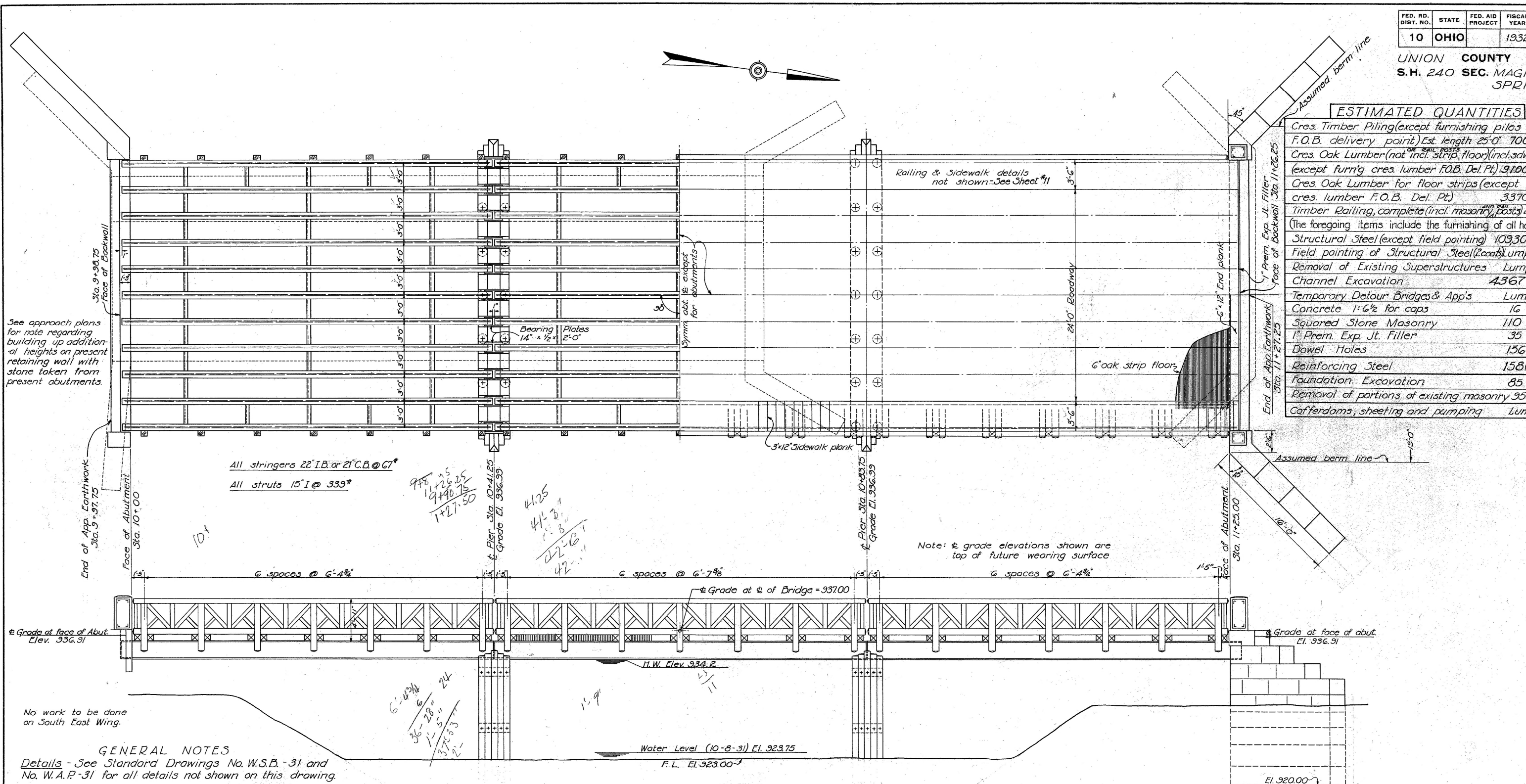
**SITE PLAN**  
BRIDGE OVER BOKES CR.  
S. H. 240 UNION COU  
SECTION D & MAG. SR. (Br) STA.

SURVEYED		PREP. TOP DRAWN		PROPOSED WORK	
DES.	DWG.	DES.	DWG.	CHKD.	BY
Res. Engr.	Res. Engr.	CEW	WTH	W.D.	



**ESTIMATED QUANTITIES**

Cres. Timber Piling (except furnishing piles)	
F.O.B. delivery point) Est. length 25'-0" 700 Lin. Ft.	
Cres. Oak Lumber (not incl. strip floor) (incl. sdwk. plank)	
(except furn'g cres. lumber F.O.B. Del. Pt.) 9100 Bd. Ft.	
Cres. Oak Lumber for floor strips (except furn'g)	
cres. lumber F.O.B. Del. Pt.) 3370 Sq. Ft.	
Timber Railing, complete (incl. masonry, posts) 258 Lin. Ft.	
(The foregoing items include the furnishing of all hardware)	
Structural Steel (except field painting) 109,300 Lbs.	
Field painting of Structural Steel (2 coats) Lump Sum	
Removal of Existing Superstructures Lump Sum	
Channel Excavation 4367 Cu. Yds.	
Temporary Detour Bridges & Apps Lump Sum	
Concrete 1:6 1/2 for caps 16 Cu. Yds.	
Squared Stone Masonry 110 Cu. Yds.	
1" Prem. Exp. Jt. Filler 35 Sq. Ft.	
Dowel Holes 156 Lin. Ft.	
Reinforcing Steel 1580 Lbs.	
Foundation Excavation 85 Cu. Yds.	
Removal of portions of existing masonry 95 " "	
Cofferdams, sheeting and pumping Lump Sum	



See approach plans for note regarding building up additional heights on present retaining wall with stone taken from present abutments.

All stringers 22" I.B. or 21" C.B. @ 67"  
All struts 15" I @ 333"

Note: ± grade elevations shown are top of future wearing surface

**GENERAL ELEVATION**

**GENERAL NOTES**  
Details - See Standard Drawings No. W.S.B.-31 and No. W.A.P.-31 for all details not shown on this drawing.

**Disposal of Old Bridge** - Old Superstructures to be carefully matchmarked, dismantled and hauled to the State Highway Garage at Marysville after they are no longer needed for detour purposes. The north abutment of the south bridge to be removed to elev. 918 and used as rip-rap as shown on sheet #7&8. Such stone as is necessary to reconstruct the south abutments of both bridges as shown in detail on sheets #10&11 shall be removed from the north abutment of the north bridge.  
**Railing** - All railing lumber including posts and 6"x8" brackets to be dense select all heart structural Redwood. See note on Sheet No. 11. All framing cuts to be accurately made so that a snug fit results. Threaded end of bolt to be peened over nut. If bolt protrudes too far it shall be cut off to such a length that this is possible.

**Railing Cont.**  
Cut washers to be used under head and nuts of all bolts except such places where a bevel washer is required in which case a malleable cast washer will be used. Price bid per lin. ft. of railing includes furnishing all lumber and hardware including 6"x8"x8" bracket blocks and 6"x8"x3-3" tie-blocks.

Removal of North Abutment of South Bridge included for payment with channel excavation.

**Detour Bridge and Approaches** - See sheet No. 8.

Br. No. UN-47-121

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**GENERAL PLAN & ELEVATION**

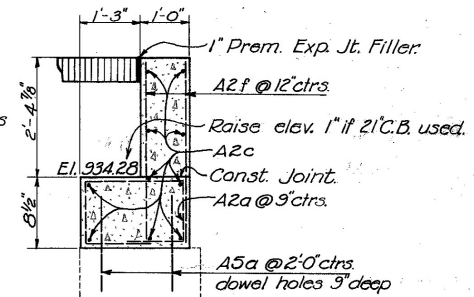
BRIDGE OVER **BOKES CREEK**

S.H. 240 UNION COUNTY  
SECTION **MAG. SPRINGS BR. STA. 10+62.5**

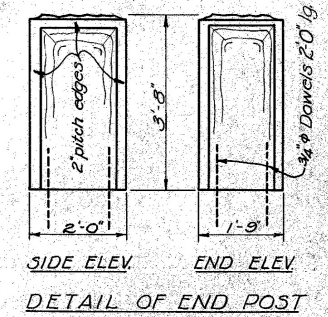
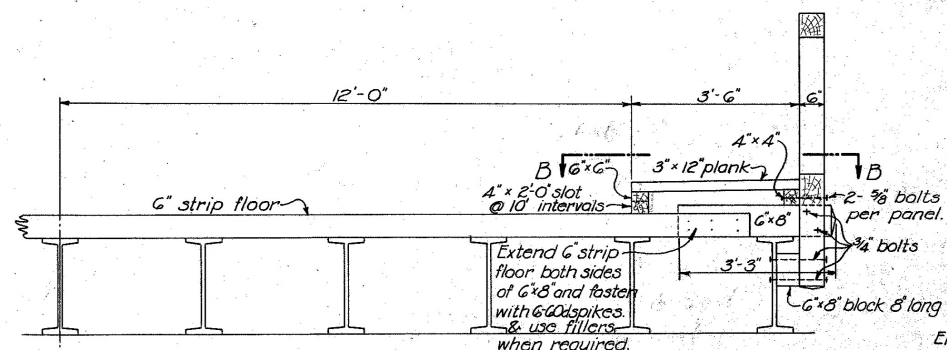
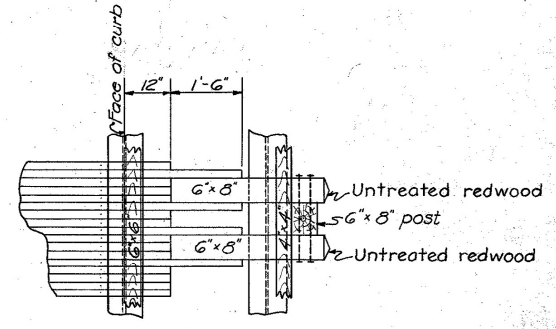
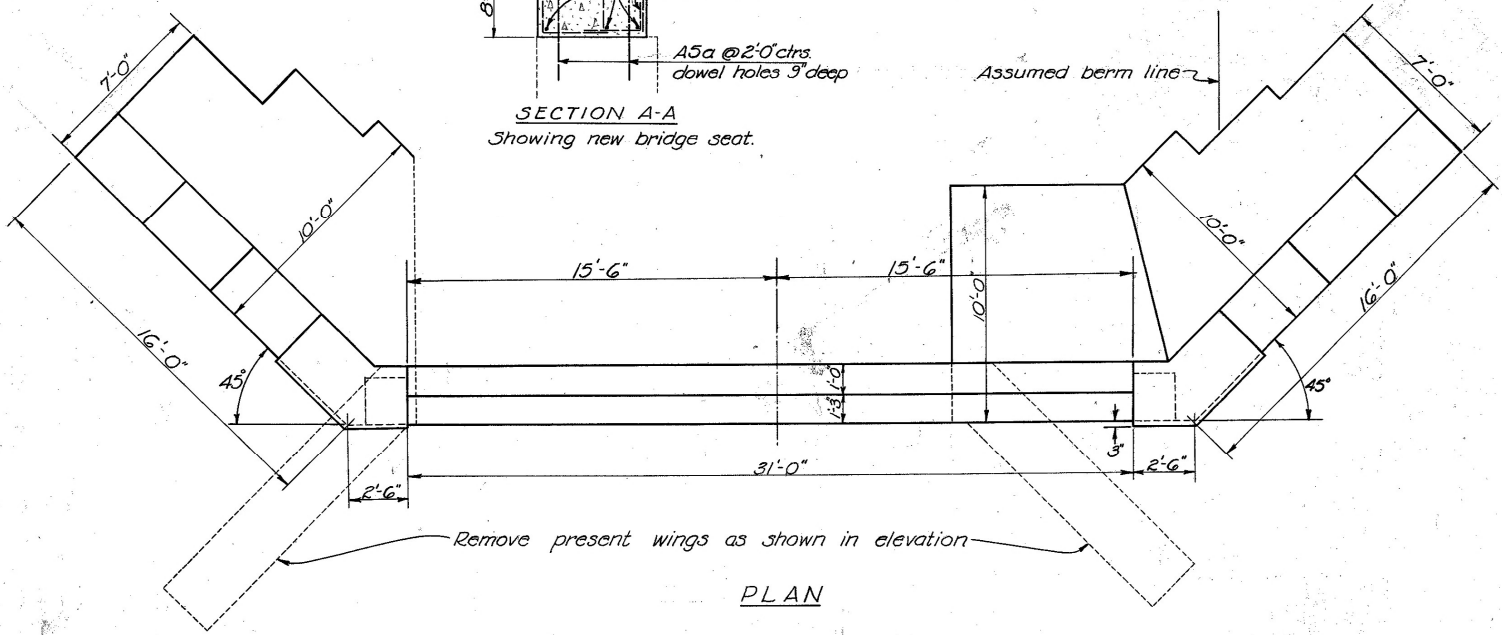
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
R.Q.N.	R.Q.N.	G.H.D.	J.M.M.	A.S.T.	12-10-31



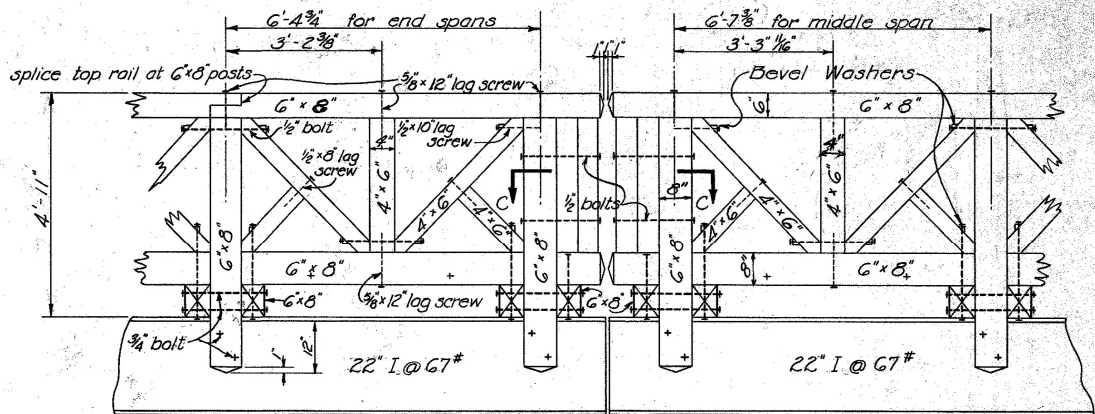
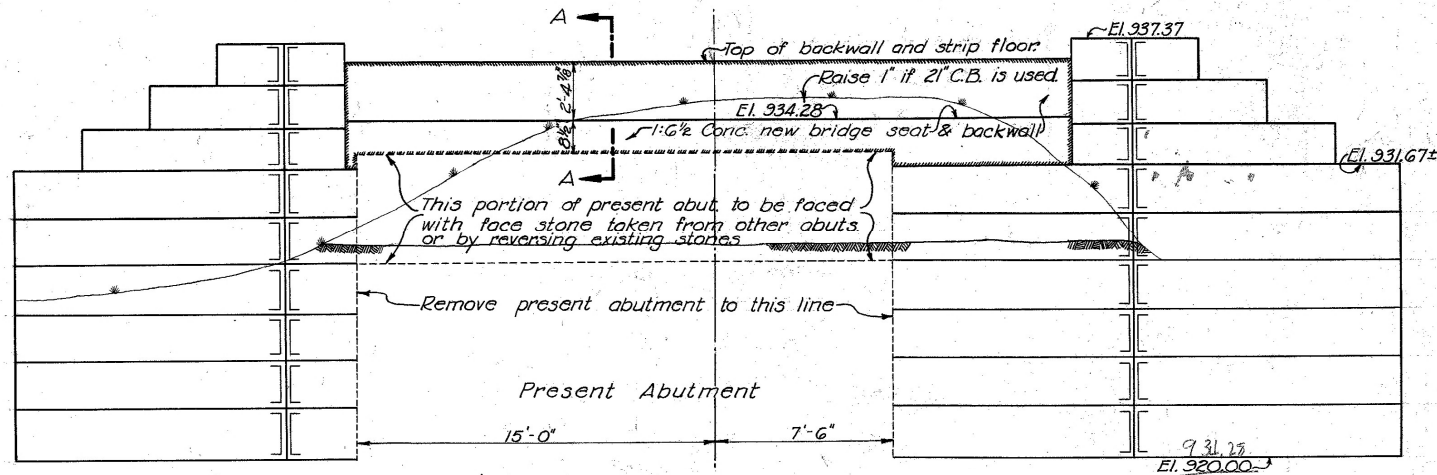
REIN STEEL IN 2 ABUTS.					BAR BENDING DIAGRAMS	
Mark	Size	Shape	N <sup>o</sup>	Length	Weight	
A2a	1/2 φ	Bent	42	5'-6"	154	
A2b	1/2 φ	Bent	64	4'-3"	182	
A2c	1/2 φ	Str.	20	30'-6"	405	
A5a	3/4 φ	Str.	64	1'-6"	144	
W2a	1/2 φ	Bent	74	2'-3"	111	
A2d	1/2 φ	Bent	42	7'-0"	196	
A2f	1/2 φ	Bent	64	4'-6"	192	
Total					1580	



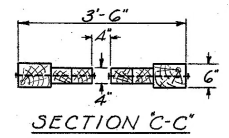
For detail of bearing plates See std drg. WAP-31



End post to be cut from old abutment stone and to the dimensions as shown. In lieu of the above, cracked granite boulders may be laid up to conform to these dimensions under the direction of the Engineer. Stones to be placed with cracked surface exposed. End post included with railing for payment.



NOTE:-  
The handrail lumber shall be adzed to a smooth surface free from slivers. The maximum thickness, chipped off shall not exceed 1/4 inch.  
Before any work is done on the rail a specimen 4'-0" long shall be adzed giving the desired rustic effect, and submitted to the Engineer for approval.



BR. N<sup>o</sup> UN-47-121

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

DETAILS OF NORTH  
ABUTMENT & SUPERSTRUCTURE  
BRIDGE OVER BOKES CREEK

S. H. 240 UNION COUNTY  
SECTION MAG. SPRINGS STA. 10+62.5

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
RON	RON	G.H.D.	J.M.M.	A.P.R.	12-10-31