

**Appendix A**

**GORDON R. WHITTUM, PORTFOLIO OF BRIDGE DESIGNS  
FOR THE NEW HAMPSHIRE STATE HIGHWAY DEPARTMENT, 1934-1937**

## APPENDIX A

### Gordon R. Whittum, Portfolio of Bridge Designs for the New Hampshire State Highway Department, 1934-1937

#### A Note on How This List Was Compiled

The following table was compiled by review of New Hampshire Department of Transportation (NHDOT) bridge plan files at the main office in Concord. Unless otherwise noted, Gordon R. Whittum is attributed as the principal designer based on his initials entered in the “designed by” block of the plans. This list is believed to represent a majority of the projects designed by Whittum while working for the New Hampshire State Highway Department from 1934 to 1937, but it is not believed to be a comprehensive list. NHDOT retains plans for bridges that continue in service but does not always retain plans for bridges that are replaced. Plans for replaced bridges are typically sent to the state archives for storage. Stored plans were not readily accessible and may have been disposed of due to retention schedules.

\* A representative selection of Whittum’s plan sheets have been selected for reproduction in this portfolio appendix. The plan sheets are presented in chronological order and follow the table. Special thanks go to the NHDOT bridge department for scanning the plans. An asterisk next to the town name in the table indicates that a plan sheet has been included in the portfolio.

Date	Town	Bridge/Structure	NHDOT Plan Number	Notes
1934	Andover*	Bridge No. 053/092, NH Route 11 over Blackwater River	P2	One-span, 36-foot-long, reinforced-concrete T beam.
1934	Exeter*	Bridge No. 075/078, Brentwood Road over Little River	P23	One-span, 30-foot-long, reinforced-concrete slab.
1934	Exeter	Bridge No. 103/073, Water and High Streets/NH Route 101 over Exeter River	P24	One-span, 65-foot-long, haunched reinforced-concrete T beam. Traced by Gordon Whittum, not designed.
1934	Littleton	Bridge over Dodge Brook, later replaced by culvert, no bridge number.	P36	Timber-stringer bridge on timber crib abutments.
1934	Londonderry*	Bridge No. 166/021, Mammoth Road over Beaver Brook	Q27	One-span, 28-foot-long, reinforced-concrete rigid frame.

## APPENDIX A

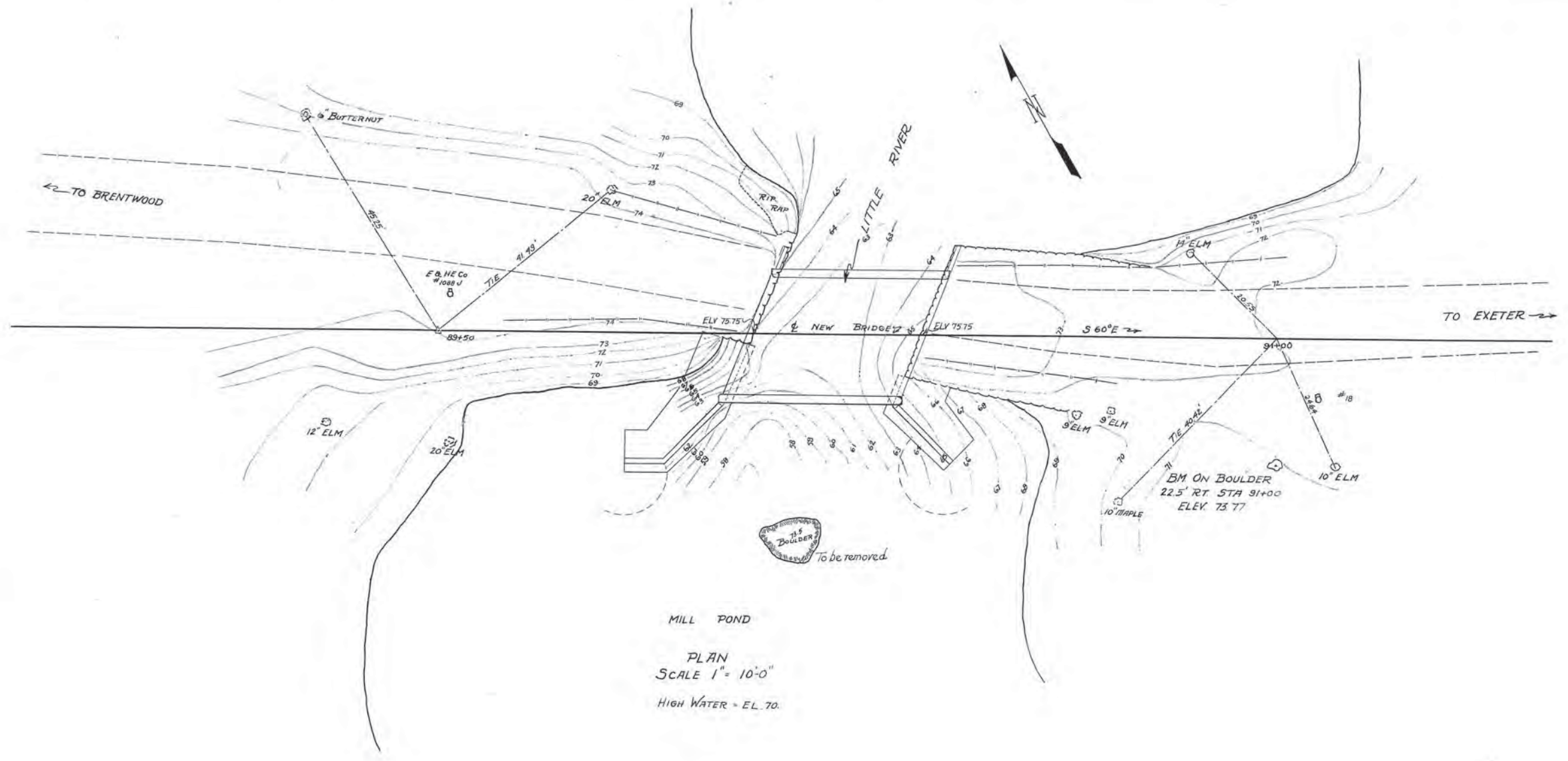
Date	Town	Bridge/Structure	NHDOT Plan Number	Notes
1934	Marlborough*	Bridge No. 089/127, NH Route 44 over Robbins Brook	Q1	One-span, 27-foot-long, reinforced-concrete slab.
1934	Marlborough*	Bridge No. 113/132, NH Route 101 over Robbins Brook	Q5	Reinforced-concrete box culvert, 10-foot span.
1935	Alstead*	Bridge No. 073/163, NH Route 101 over Warren Pond Brook	T1	One-span, 37-foot-long, reinforced-concrete T beam. Whittum designed forms for balustrades; bridge designed by others.
1935	Croydon*	Bridge No. 112/069, Dartmouth College Road/NH Route 10 over Croydon Branch River	T10	One-span 58-foot-long, haunched reinforced-concrete T beam; horizontal curvature.
1935	Gilsum*	Bridge No. 097/129, Dartmouth College Road/NH Route 10 over Unnamed Stream	T18	Reinforced-concrete box culvert, 9-foot span.
1935	Winchester*	Bridge No. 152/181, Dartmouth College Road/NH Route 10 over Ashuelot River	U33	Three-span, 180-foot-long, continuous haunched steel multi-girder.
1936	Barrington*	Bridge No. 170/093, Barrington-Lee Road over Bellamy River	1-12-2-6	Rehabilitation of existing steel deck girder bridge.
1936	Gilford*	Bridge No. 138/137, Back of Mountain Road (N.H. Route 11-A) over Poor Farm Brook	1-11-2-6	One-span reinforced-concrete T beam, clear span of 30 ft.
1936	Greenville*	Bridge No. 071/101, Main Street over Souhegan River, Columbian Mills	1-15-2-1	One-span, 47-foot-long, reinforced-concrete rigid frame.
1936	Lebanon, N.H.- Hartford, Vt.*	Bridge No. 058/127, U.S. Route 4 over Connecticut River	1-10-2-1	Two-span through-truss and one-span pony truss, total length of 382 ft. Whittum designed rehabilitation of existing substructure units only.
1936	Lyme, N.H.-Thetford, Vt.*	Bridge No. 053/112, Lyme Road over Connecticut River	1-14-2-6	Two-span through-truss , total length of 463 ft. Whittum designed substructure units, only.
1936	Peterborough*	Bridge No. 087/087, Grove Street over Nubanusit River	1-9-1-1	One-span reinforced-concrete rigid frame with stone veneer.
1936	Peterborough*	Bridge No. 057/108, South Side Road/Union Street over Nubanusit River	1-13-3-2	One-span reinforced-concrete rigid frame with stone veneer.
1937	Newbury*	Bridge No. 116/085, NH Route 103 (Newbury Cut-off) over Andrews Brook	1-14-1-3	One-span 80-foot-long steel-plate deck girder



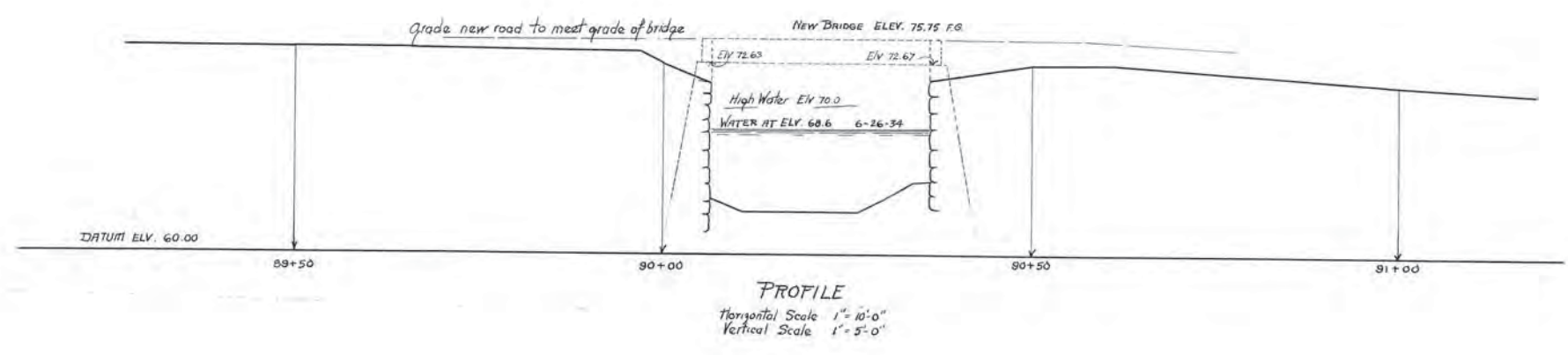




DES. NAME	DATE	DES. NO.	YEAR	SHEET	TOTAL SHEETS
0	N.H.		1934	1	5



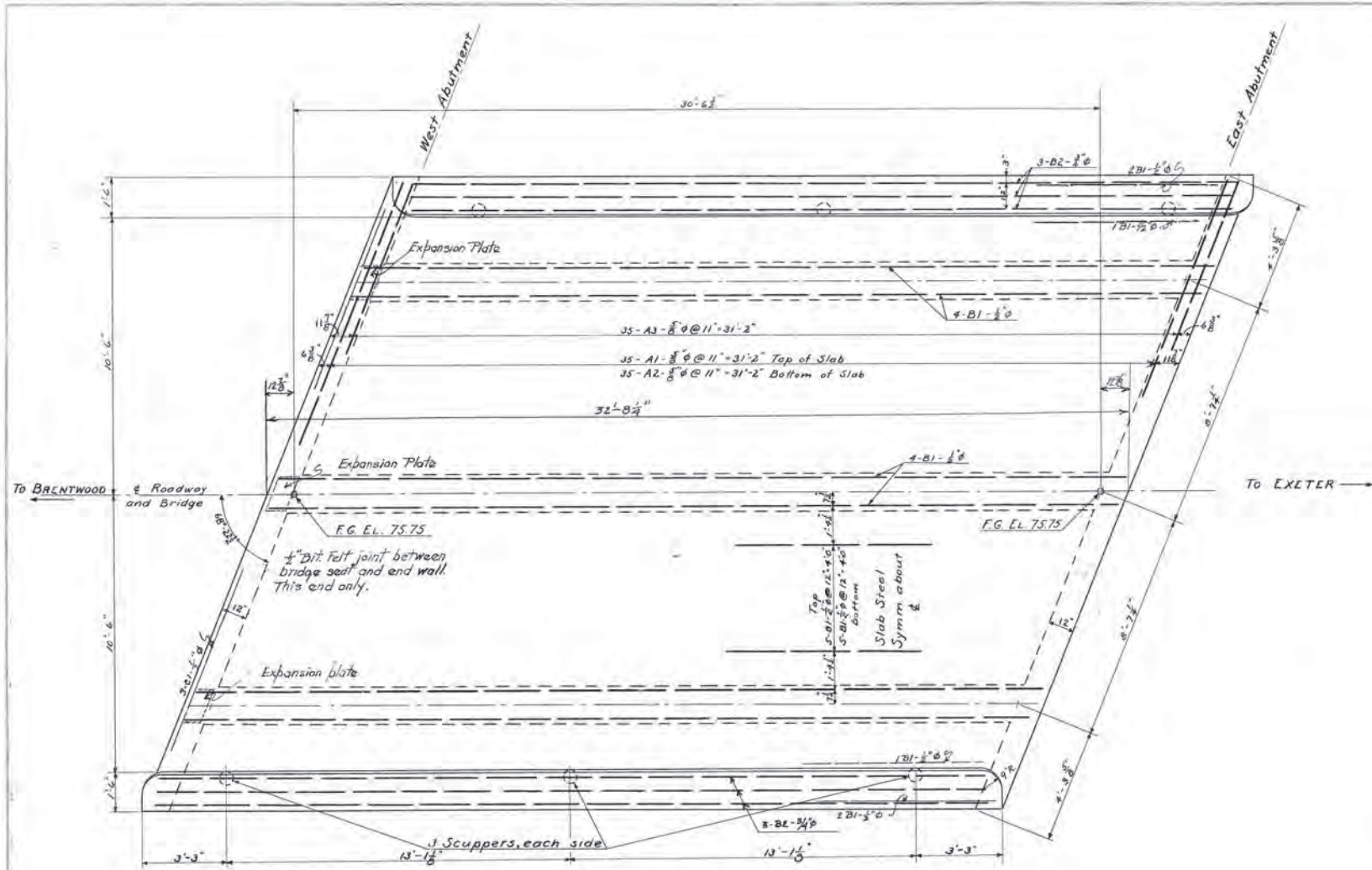
MILL POND  
PLAN  
SCALE 1" = 10'-0"  
HIGH WATER = EL. 70.



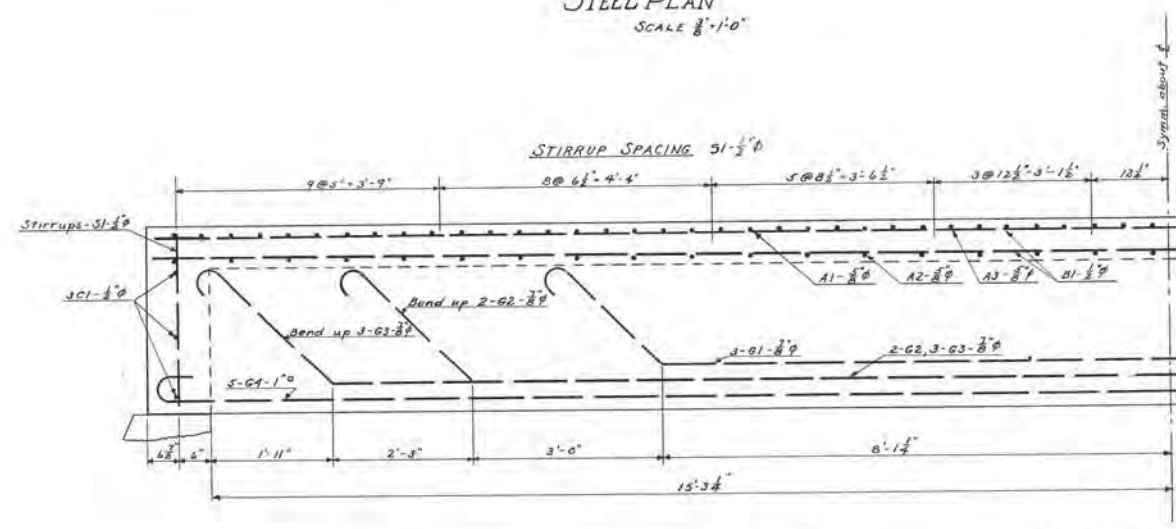
PROFILE  
Horizontal Scale 1" = 10'-0"  
Vertical Scale 1" = 5'-0"

STATE OF NEW HAMPSHIRE	
HIGHWAY DEPARTMENT	
TOWN	EXETER
PROJECT	SAB
LOCATION	
ROAD	EXETER TO BRENTWOOD
STREAM	LITTLE RIVER
SURVEYED BY	R.H.R. DATE 6-24-34
PLOTTED	H.P.D. 6-27-34
TRACED	S.H.W. 7-7-34
CHECKED	G.R.W. 8-9-34
SHEET 1 OF 5 SHEETS	



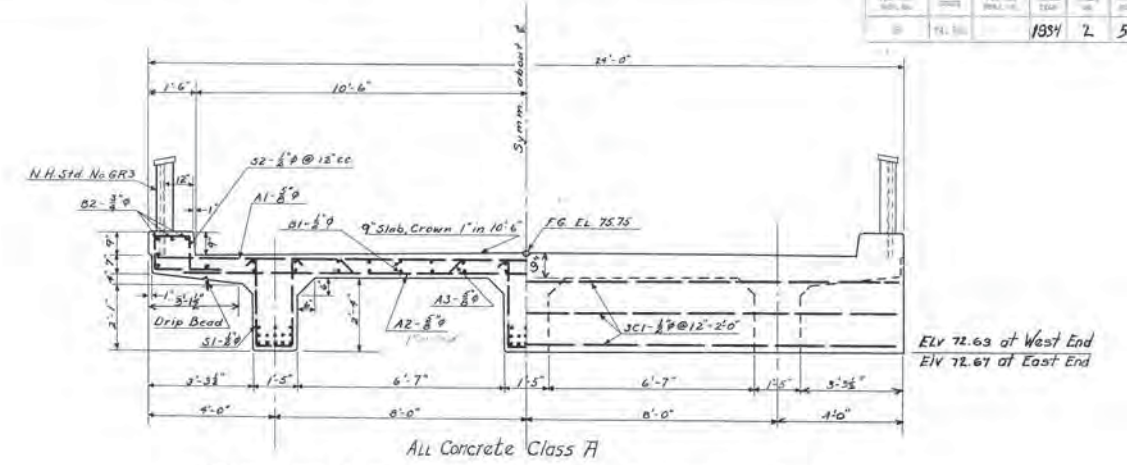


STEEL PLAN  
SCALE 3/8"=1'-0"



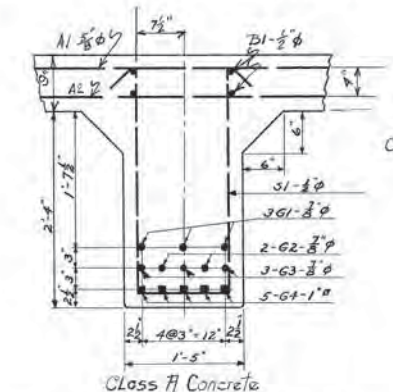
LONGITUDINAL SECTION THRU GIRDER  
SCALE 3/4"=1'-0"

NOTE: Spliced bars to lap 40 diameters

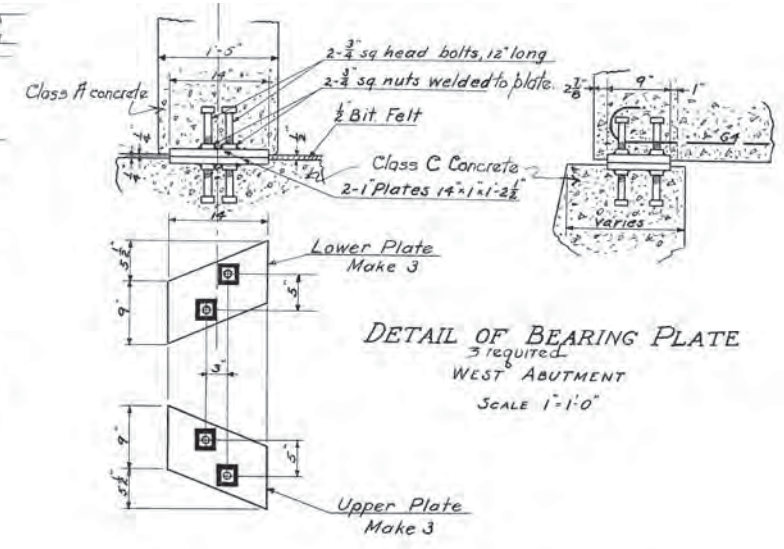


TRANSVERSE SECTION  
SCALE 3/8"=1'-0"

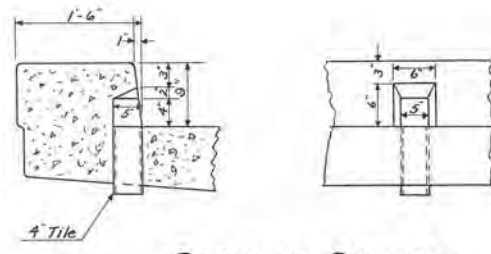
END ELEVATION OF DECK  
SCALE 3/8"=1'-0"



DETAIL OF GIRDER AT C  
SCALE 1'-1'-0"



DETAIL OF BEARING PLATE  
SCALE 1'-1'-0"



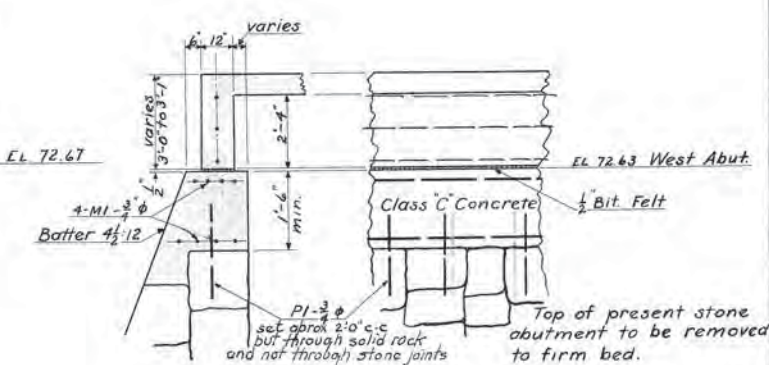
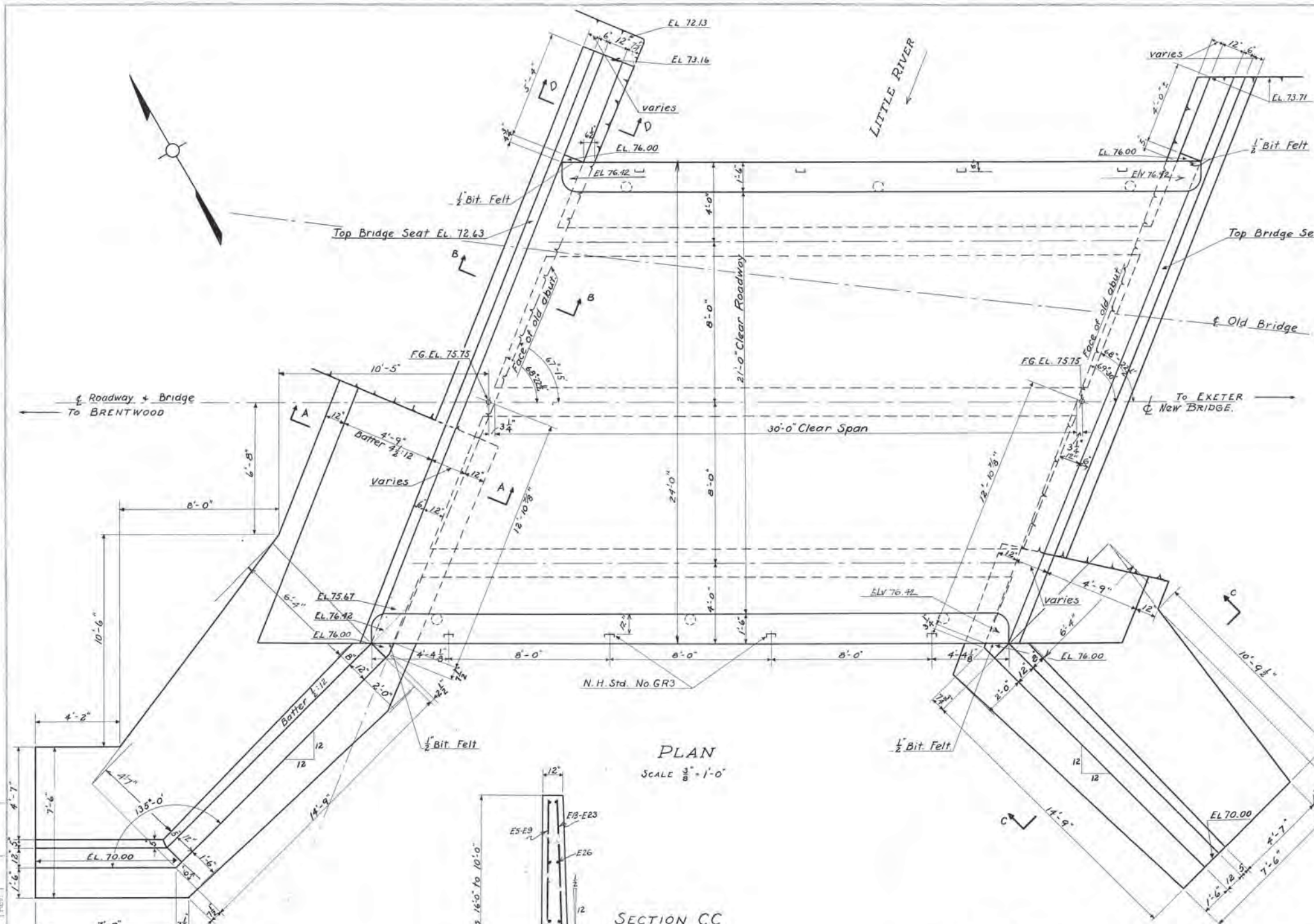
DETAIL OF SCUPPER  
SCALE 1'-1'-0"

Notes:  
No concrete to be placed until steel has been checked by engineer.  
Edges of curbs to be rounded with edging tool.  
All other exposed edges to be rounded with carborundum stone after concrete is thoroughly set.  
All concrete in superstructure to be Class A (3000) with a minimum cement factor of 1.61.  
Concrete in bridge seats and backwalls to be Class C (2000) with a minimum cement factor of 1.30.  
Concrete in wingwalls to be Class A (3000) with a minimum cement factor of 1.61.  
Concrete in footings to be Class A (3000) with a minimum cement factor of 1.61.

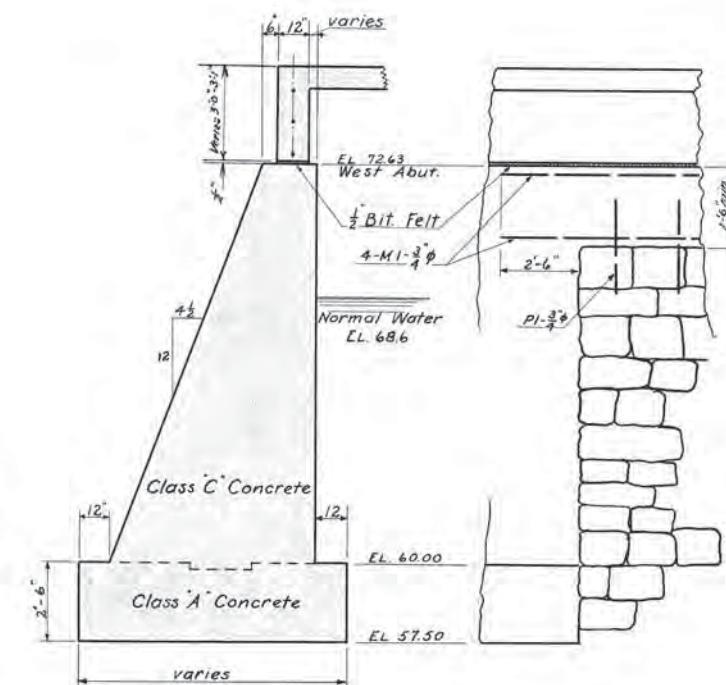
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	EXETER
PROJECT	S.A.B. 1934
LOCATION	ROAD BRENTWOOD RD.
STREAM	LITTLE RIVER
DESIGNED BY	G.R.W. DATE 7-3-34
DRAWN	G.R.W. " 7-7-34
TRACED	G.R.W. " 7-9-34
CHECKED	B.H.W. " 8-3-34
SHEET 2 OF 5 SHEETS	

CORRECT BY John W. Childs DATE 8-23-34  
BRIDGE ENGINEER  
APPROVED BY W. D. Simon DATE 8-23-34  
CHIEF ENGINEER

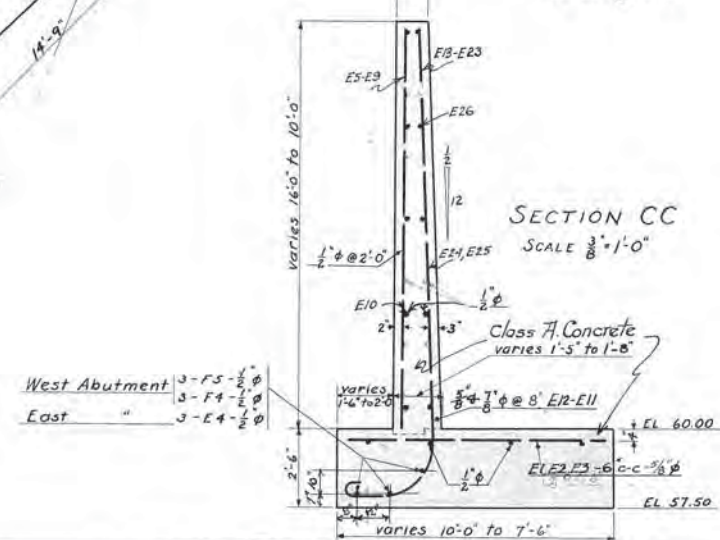




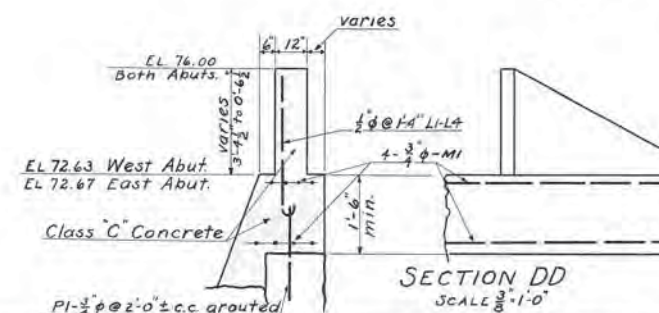
SECTION BB  
SCALE  $\frac{3}{8}'' = 1'-0''$



SECTION AA  
SCALE  $\frac{3}{8}'' = 1'-0''$



SECTION CC  
SCALE  $\frac{3}{8}" = 1'-0"$



SECTION DD  
SCALE  $\frac{3}{8}'' = 1'-0''$

ESTIMATE OF QUANTITIES	
STRUCTURE EXCAVATION	143 cu yd
CONCRETE, CLASS A	100 -
CONCRETE, CLASS C	34 -
REINFORCING STEEL	12,156 lbs
CABLE GUARD RAIL	65 ft
BEARING PLATES + BOLTS	6 pl
DISMANTLE PRESENT SUPERSTRUCTURE	1
REMOVE STREAM BOULDER	1

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWN EXETER

TOWN EXETER  
PROJECT S.A.B. 1934

PROJECT S.A.B. 1934  
LOCATION

LOCATION \_\_\_\_\_  
ROAD BRENTWOOD RD.

ROAD BRENTWOOD RD.  
STREAM LITTLE RIVER

STREAM LITTLE RIVER  
DESIGNED BY C.B.W. DATE

DESIGNED BY G.R.W. DATE 7-12-34  
DRAWN " G.R.W. " 7-18-34

DRAWN " G. R. W. " 7-18-34  
TRACED " G. R. W. " 7-19-34

TRACED " G. R. W. " 7-14-34  
CHECKED " S. H. W. " 8-9-34

SHEET 3 OF 5 SHEETS



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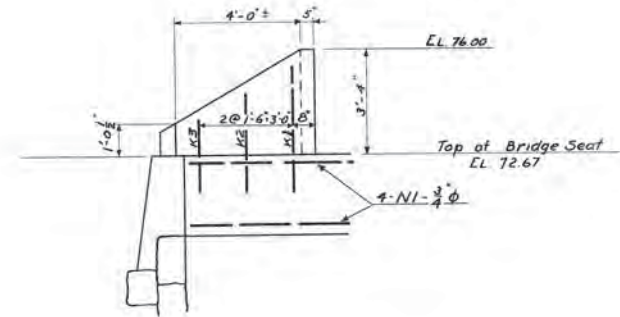
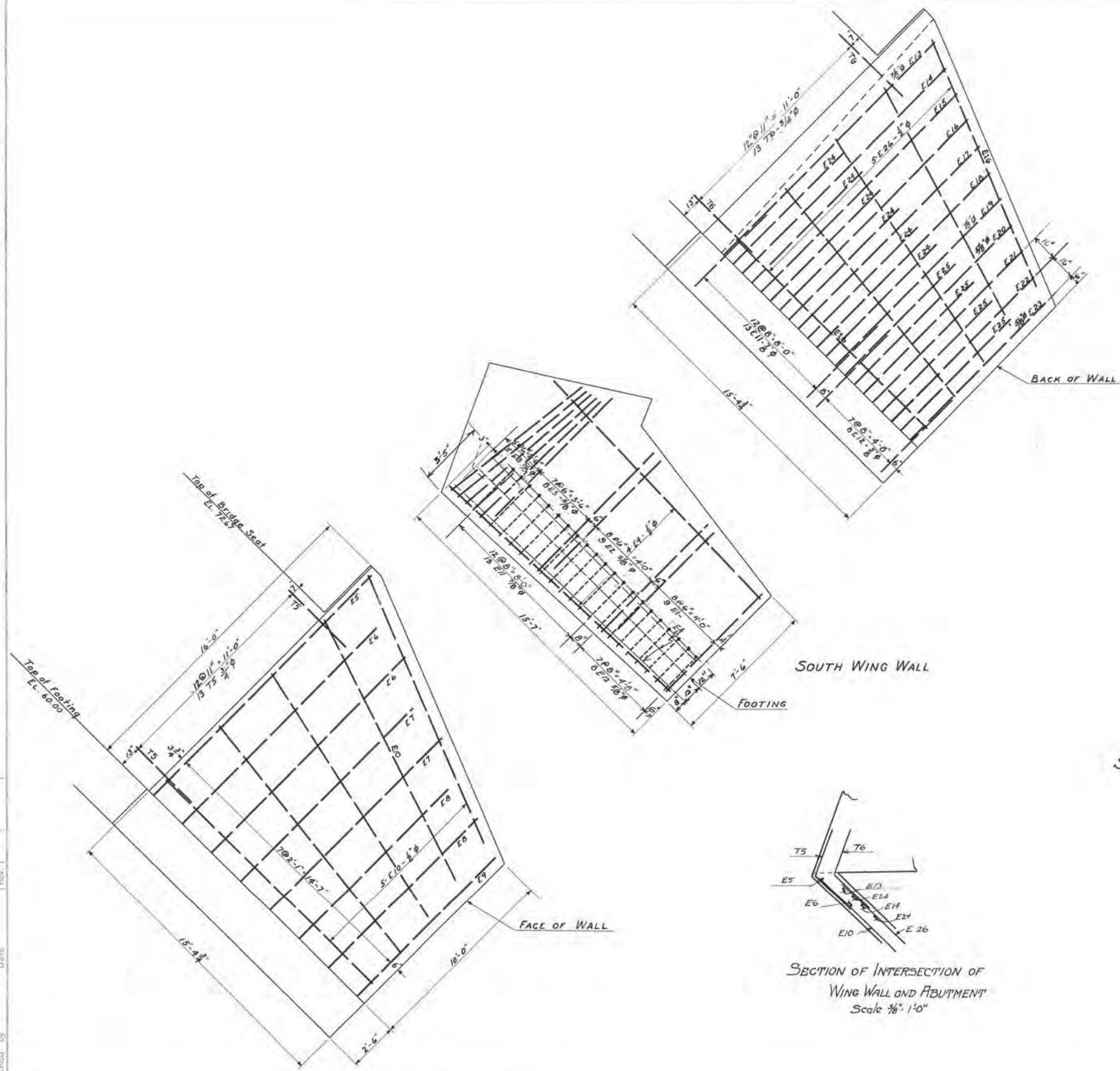
SOUTH WING WALL

SCALE  $\frac{3}{8}'' = 1'-0''$

SHEET 4 OF 5 SHEETS

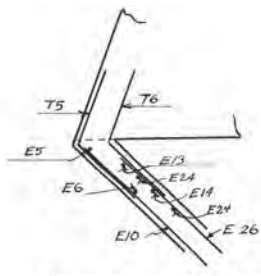


DATE	BY	CHKD	APPD	REV	DATE
1934	5	5			



NORTH WING WALL

STEEL DETAIL - EAST ABUTMENT  
SCALE 3/8" = 1'-0"

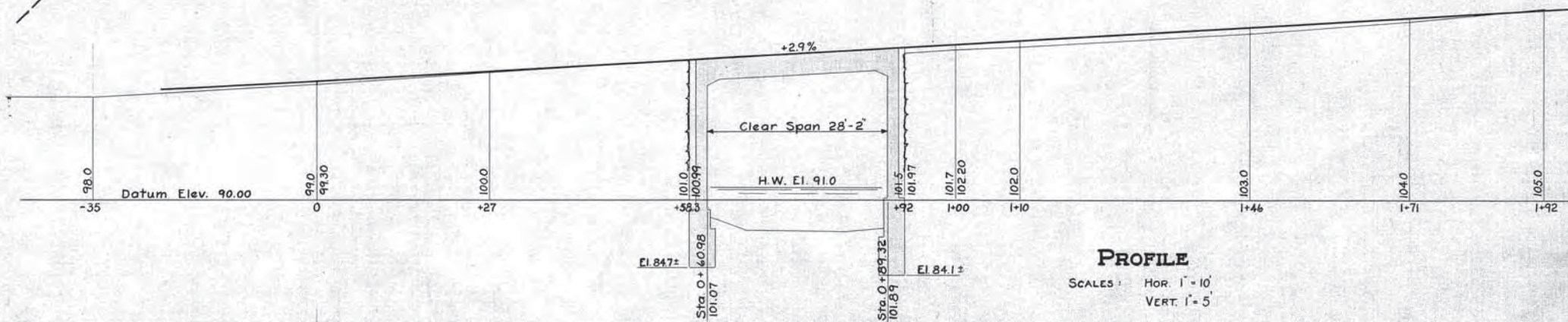
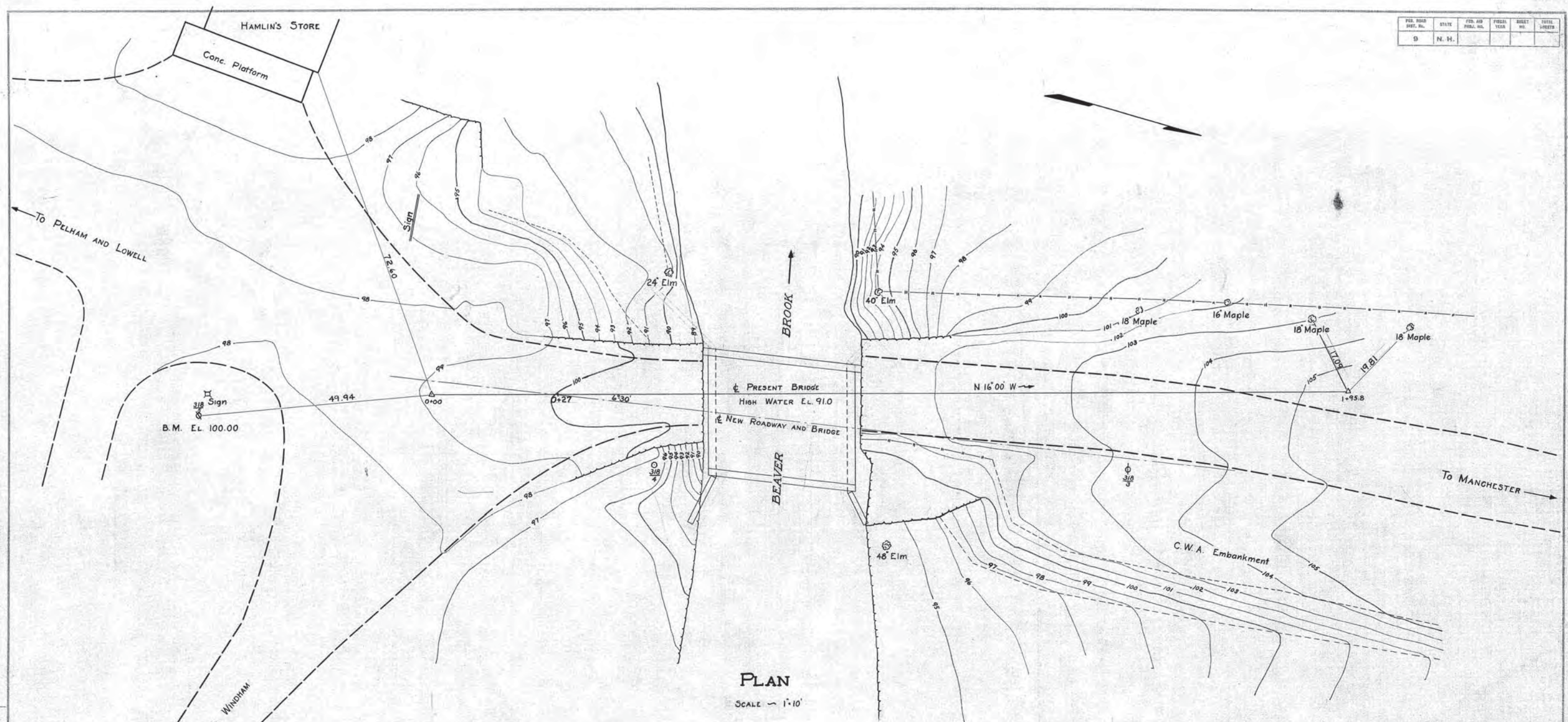


SECTION OF INTERSECTION OF  
WING WALL AND ABUTMENT  
Scale 3/8" = 1'-0"

STATE OF NEW HAMPSHIRE	
HIGHWAY DEPARTMENT	
TOWN	EXETER
PROJECT	S.A.B. 1934
LOCATION	ROAD BRENTWOOD RD.
STREAM	LITTLE RIVER
DESIGNED BY	G.R.W. DATE 7-12-34
DRAWN	G.R.W. 7-18-34
TRACED	G.R.W. 7-25-34
CHECKED	S.H.W. 8-4-34
SHEET 5 OF 5 SHEETS	



PUR. ROAD DIST. No.	STATE	FED. AID PER. No.	FISCAL YEAR	BUDGET No.	TOTAL SHEETS
9	N. H.				



STATE OF NEW HAMPSHIRE	
HIGHWAY DEPARTMENT	
TOWNS WINDHAM AND LONDONDERRY	
PROJECT S.A.B. 1934	
LOCATION AT TOWN LINE	
ROAD MAMMOTH RD.	
STREAM BEAVER BROOK	
SURVEYED BY	R.H.R. DATE 6-18-34
PLOTTED	H.P.D. 6-19-34
TRACED	G.R.W. 9-6-34
CHECKED	E.S.B. 9-22-34
SHEET 1 OF 3 SHEETS	

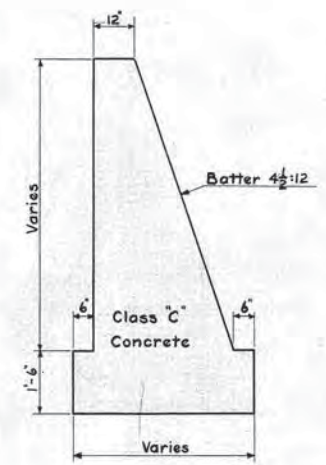
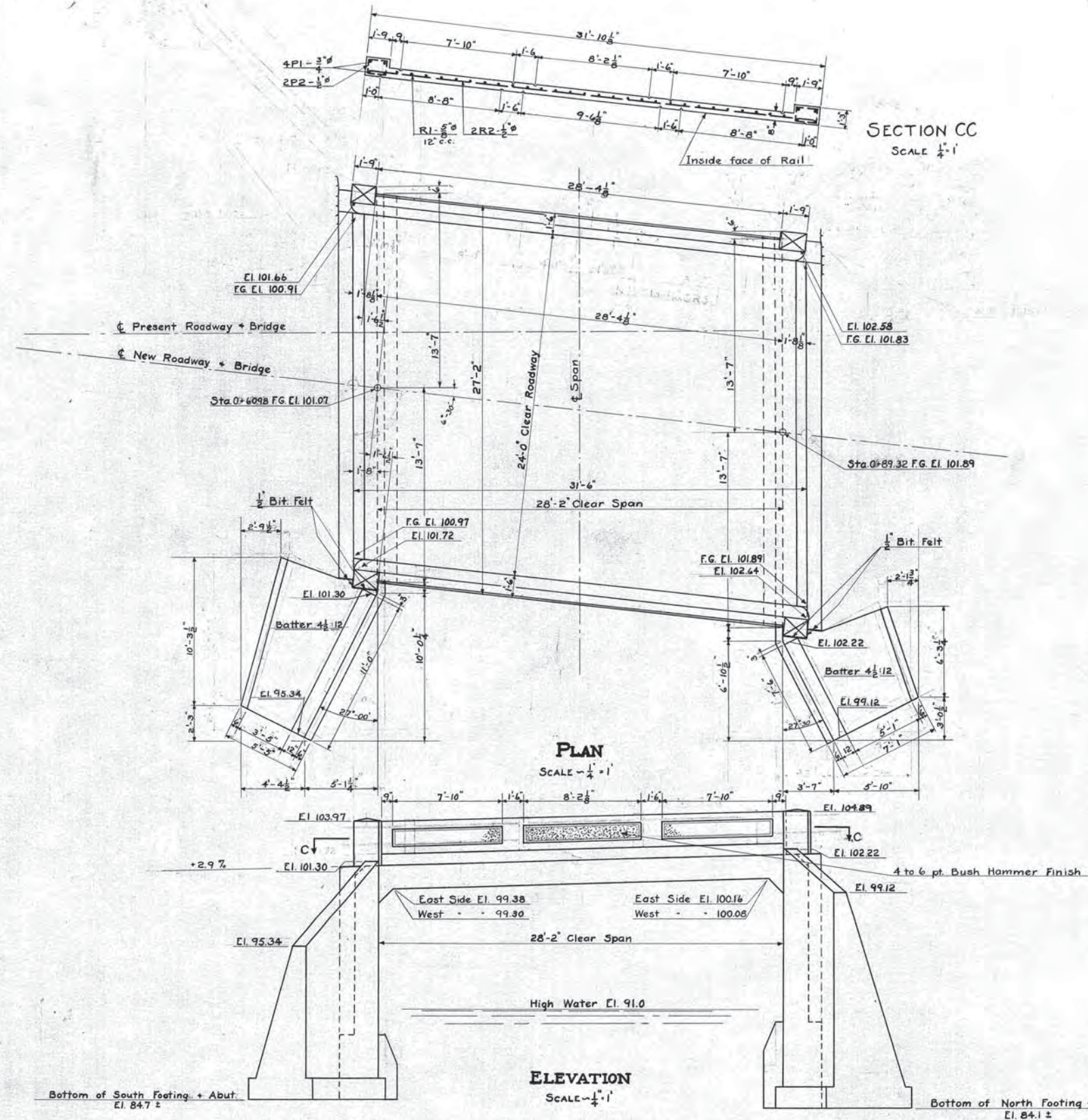
REVISIONS AFTER PROPOSAL	
Date	Station
Orig.	
Rev.	
Orig.	
Rev.	
Orig.	
Rev.	
Orig.	
Rev.	

Traced by	Date
Checked by	Date









**NOTES:**

- No concrete to be placed until steel has been checked by engineer.
- Footings to be carried to firm foundation as directed by engineer.
- All exposed corners to be cast square and slightly rounded with carborundum after concrete has thoroughly set.
- 4" tile drains, 10 ft ± c-c to be placed in Abutment Legs at such elevation as will best drain backfill. Backfill around drains to be of stone.
- Concrete in Rigid Frame to be Class A (3000').
- Concrete in Wings to be Class C (2000').
- Minimum Cement Factors: Class A 1.61
- Class C 1.30
- Top edges of curbs to be rounded with edging tool.

ESTIMATE OF QUANTITIES	
Concrete, Class A (3000')	134 cu. yds.
Concrete, Class C (2000')	38.0 cu. yds.
Reinforcing Steel	19,996 lbs.
Conc. Bridge Rail	64 lin. ft.
Structure Excavation, Unclassified	103 cu. yds.
Removal of Present Superstructure	1 lump sum
Temporary Bridge	1 lump sum

CORRECT BY: *John W. Childs* DATE 10-1-34  
Bridge Engineer

APPROVED BY: *W. H. O'Connell* DATE 10-6-34  
Chief Engineer

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWNS WINDHAM AND LONDONDERRY  
PROJECT S.A.B. 1934  
LOCATION AT TOWN LINE  
ROAD MAMMOTH RD.  
STREAM BEAVER BROOK

DESIGNED BY G.R.W. DATE 9-12-34  
DRAWN - G.R.W. - 9-14-34  
TRACED - G.R.W. - 9-17-34  
CHECKED - R.S.B. - 10-6-34

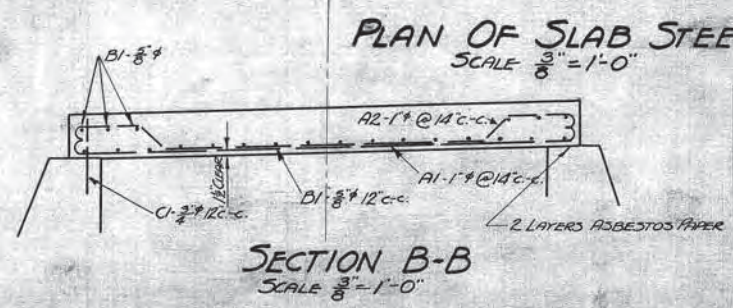
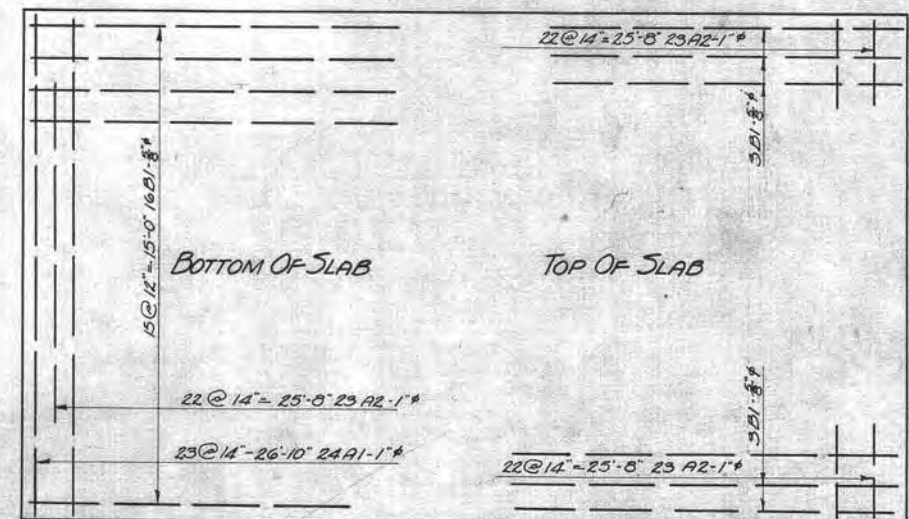
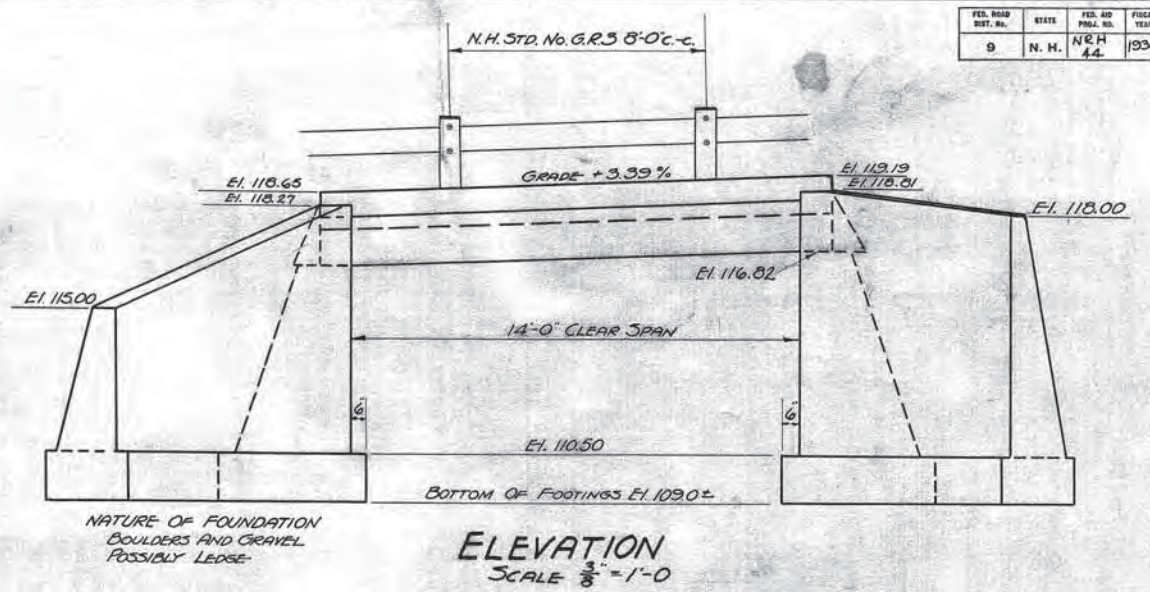
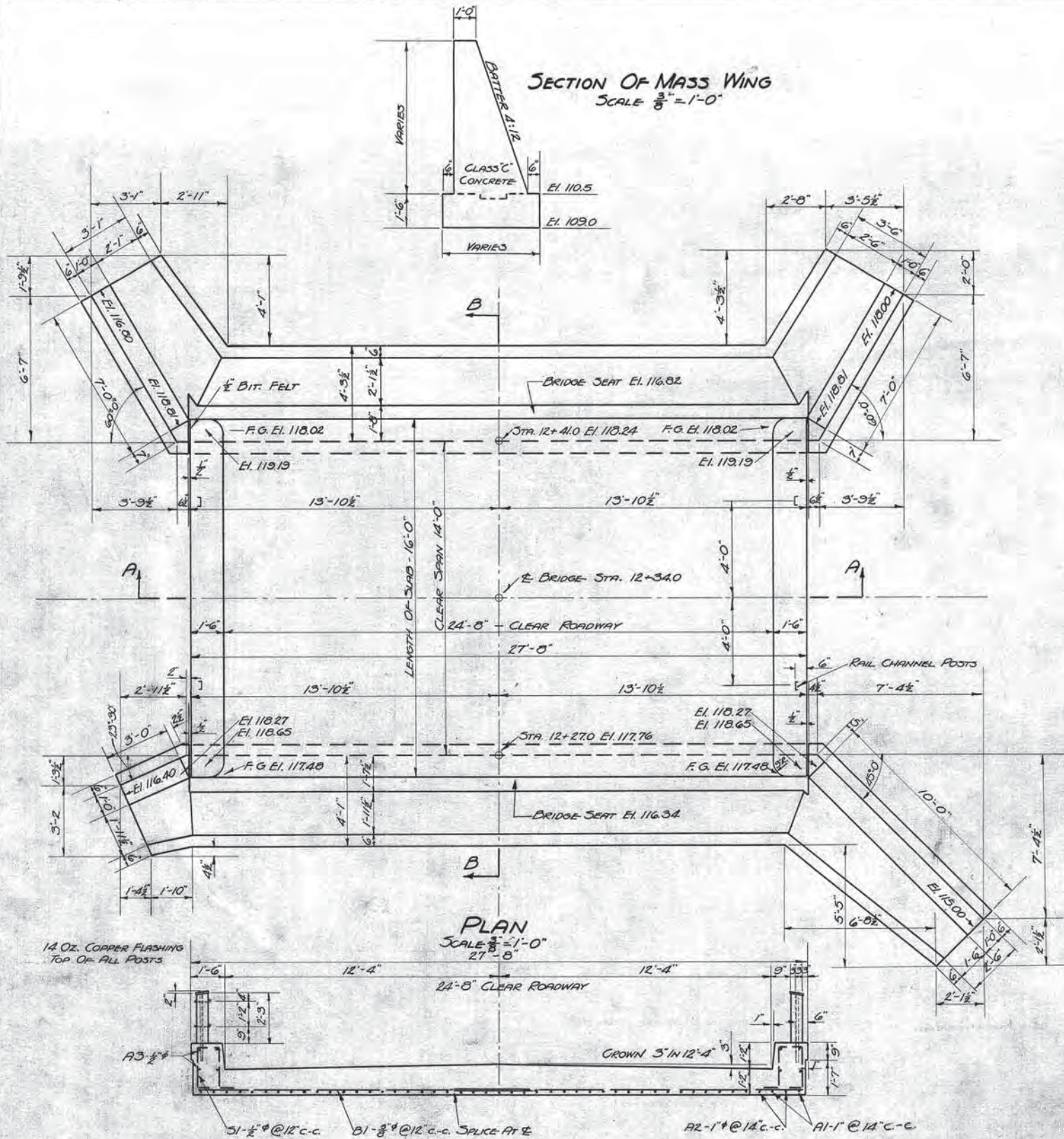
SHEET 2 OF 3 SHEETS

REVISIONS AFTER PROPOSAL		Date	Station	From or to
Orig.	Rev.			



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N. H.	N. H. 44	1935	4	5

62



ESTIMATE OF QUANTITIES	
CONCRETE CLASS "A" 3000"	24 CUYDS
" CLASS "C" 2000"	69 " "
REINFORCING STEEL	3193 LBS.
STRUCTURE EXCAVATION (UNCLASSIFIED)	110 CUYDS
CABLE BRIDGE RAIL	32 LIN. FT.
REMOVAL OF PRESENT SUPERSTRUCTURE	LUMP SUM
TEMPORARY BRIDGE	LUMP SUM

GENERAL NOTES:  
 NO CONCRETE TO BE PLACED UNTIL STEEL HAS BEEN CHECKED BY ENGINEER.  
 FOOTINGS TO BE CARRIED TO FIRM FOUNDATION AS DIRECTED BY ENGINEER.  
 ALL EXPOSED CORNERS TO BE CAST SQUARE AND SLIGHTLY ROUNDED WITH CARBORUNDUM  
 AFTER CONCRETE IS THOROUGHLY SET. TOP EDGES OF CURBS TO BE ROUNDED WITH EDGING TOOL  
 4" TILE WEEPERS IN ABUTMENTS TO BE ABOUT 10'-0" c-c. AND AT SUCH ELEVATION AS  
 WILL BEST DRAIN BACKFILL. BACKFILL AROUND WEEPERS TO BE MADE OF STONE-  
 CONCRETE IN DECK SLAB TO BE CLASS "A" (3000) MINIMUM CEMENT FACTOR 1.61  
 CONCRETE IN ABUTMENTS AND WINGS TO BE CLASS "C" (2000) MIN. CEMENT FACTOR 1.30

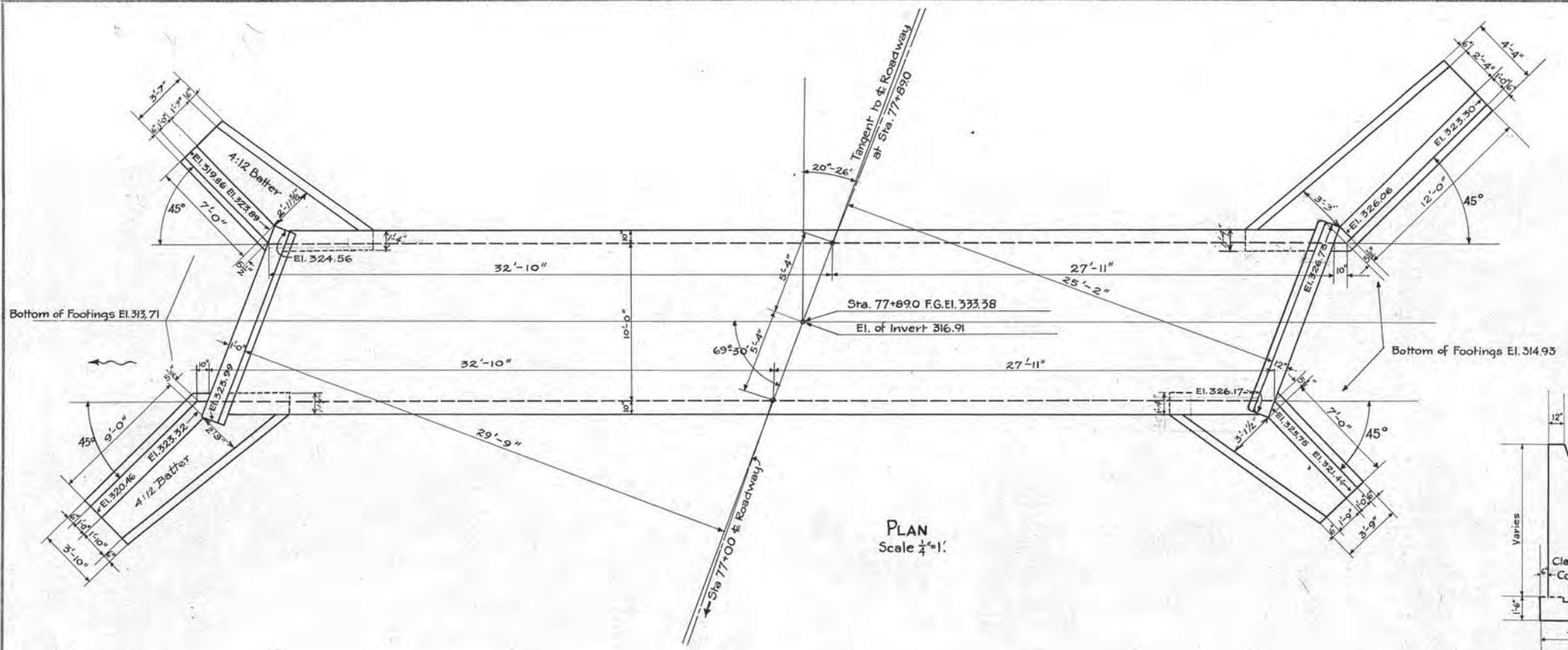
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	MARLBORO
PROJECT	N.H. 44-1935
LOCATION	STA. 12+34.0
ROAD	SOUTH SIDE ROAD
STREAM	ROBBINS BROOK
DESIGNED BY	G.R.W. DATE 3-26-34
DRAWN	G.R.W. 3-27-34
TRACED	W.J.D. 12-21-34
CHECKED	R.S.B. 10-8-34
SHEET 1 OF 1 SHEETS	

FILE NO. 2-10-1

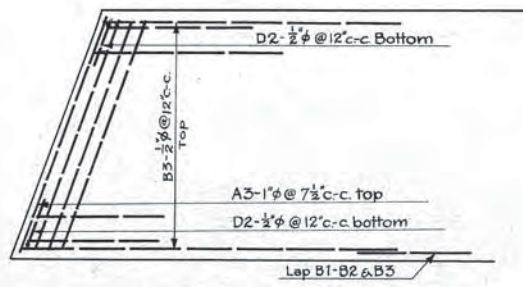


FED. ROAD DIST. NO.	STATE	U.S.P.W. PROJ. NO.	FIGURE	SHEET NO.	TOTAL SHEETS
9	N. H.	N.R.H. 235-D	1935	33	35

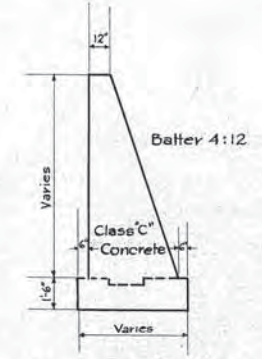
57



PLAN  
Scale 1/4"=1'

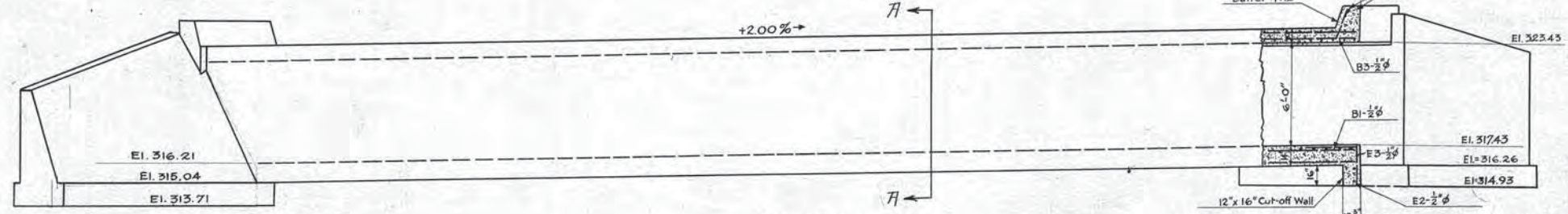


STEEL DETAIL  
BOTTOM SLAB

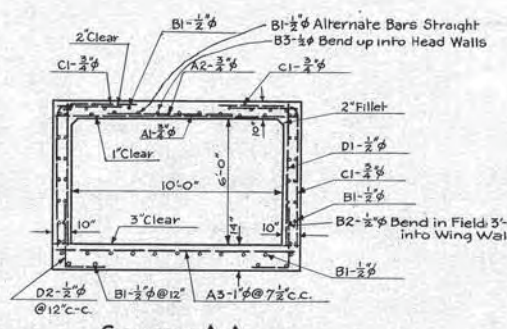


SECTION THRU MASS WING  
Scale 1/4"=1'

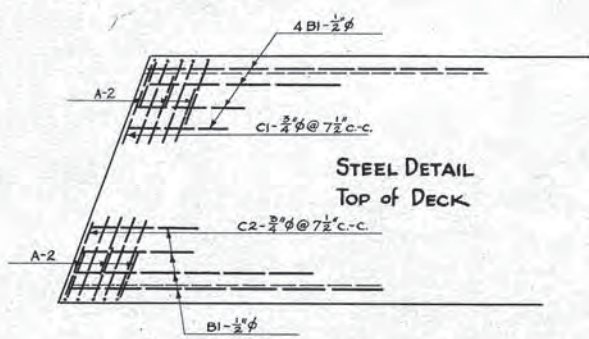
NOTES:  
No concrete to be placed until steel has been checked by engineer.  
Footings to be carried to firm foundation as directed by engineer.  
All concrete in Box to be Class "A" (3000#)  
All concrete in Wings to be Class "C" (2000#)  
Minimum Cement Factors:  
Class "A" 1.61  
Class "C" 1.30.  
All reinforcing steel to be 2" clear from face of concrete except as noted.



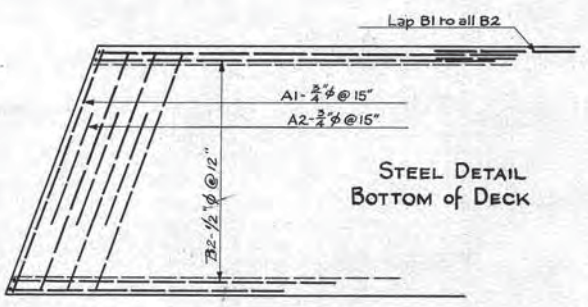
ELEVATION  
Scale 1/4"=1'



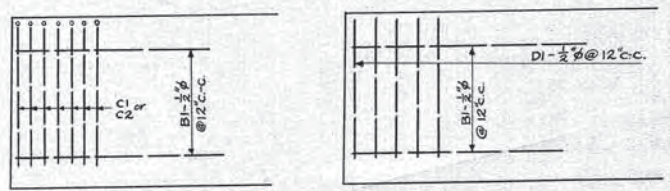
SECTION A-A.



STEEL DETAIL  
TOP OF DECK



STEEL DETAIL  
BOTTOM OF DECK



STEEL DETAIL~ SIDEWALLS

ESTIMATE OF QUANTITIES

TRENCH EXCAVATION 0-5' (EARTH)	114 Cu. Yds
" " 5'-10' "	69 " "
REINFORCING STEEL	11,397 Lbs.
CONCRETE, CLASS "A" (3000#)	755 Cu. Yds.
" " "C" (2000#)	38.0 " "
TRENCH EXCAVATION 0-5' (LEDGE)	34.5 " "
" " 5'-10' "	480 " "

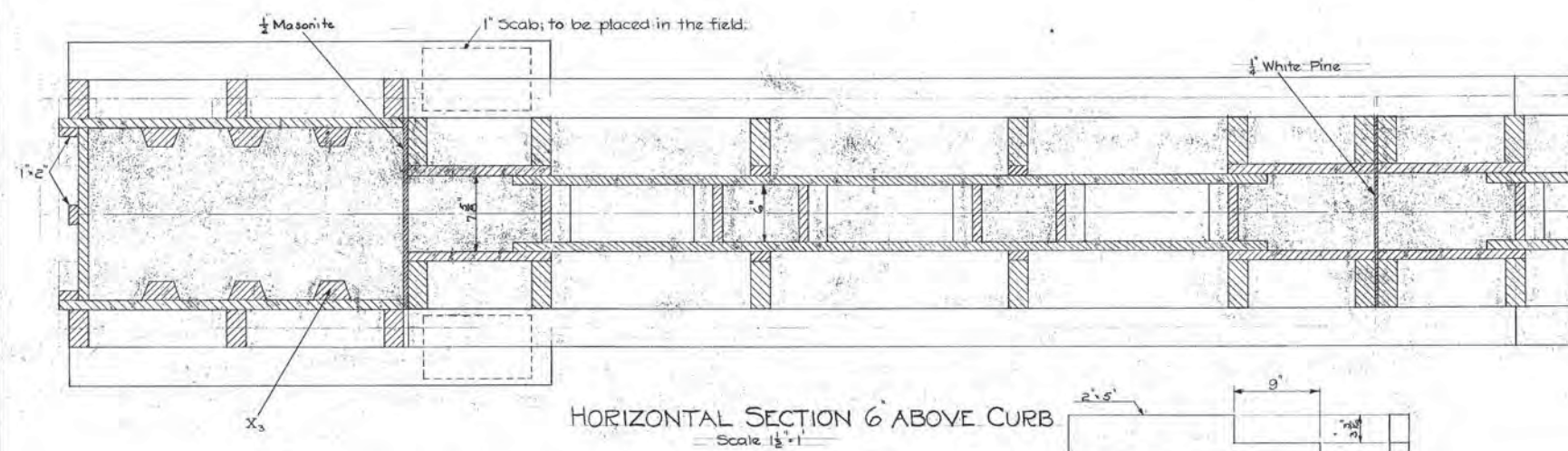
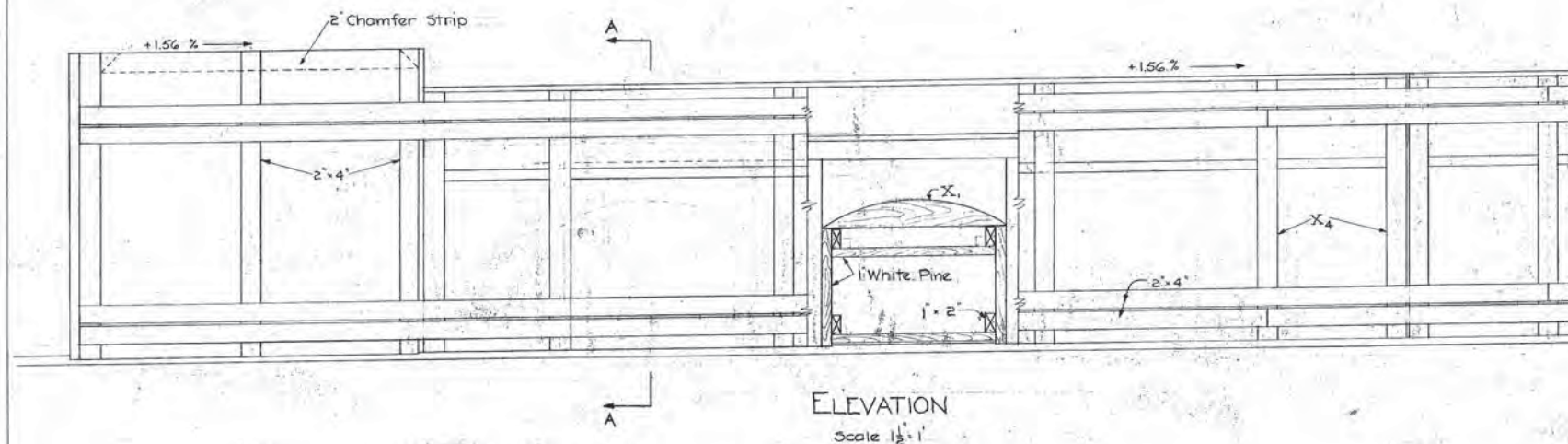
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	MARLBORO
PROJECT	N.R.H. 235-D (1935)
LOCATION	Sta 77+89.0
ROAD	ROUTE 101
STREAM	ROBBINS BROOK
DESIGNED BY	G.R.W. DATE 10-1-34
DRAWN	" G.R.W. " 10-2-34
TRACED	" F.H.B. " 12-19-34
CHECKED	" E.W.G.S. " 10-6-34
SHEET 33 OF SHEETS	

FILE NO. 235-D-33 Q. 5

REVISIONS	AFTER	PROPOSAL
DATE	STATION	FROM OF TO
Orig		
Rev		
Rev		
Rev		
Rev		
Rev		
Rev		
Rev		
Rev		
Rev		

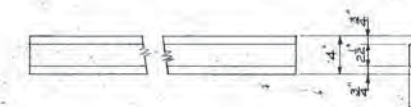
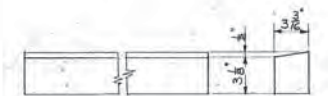
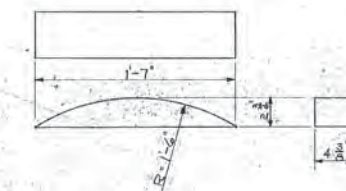
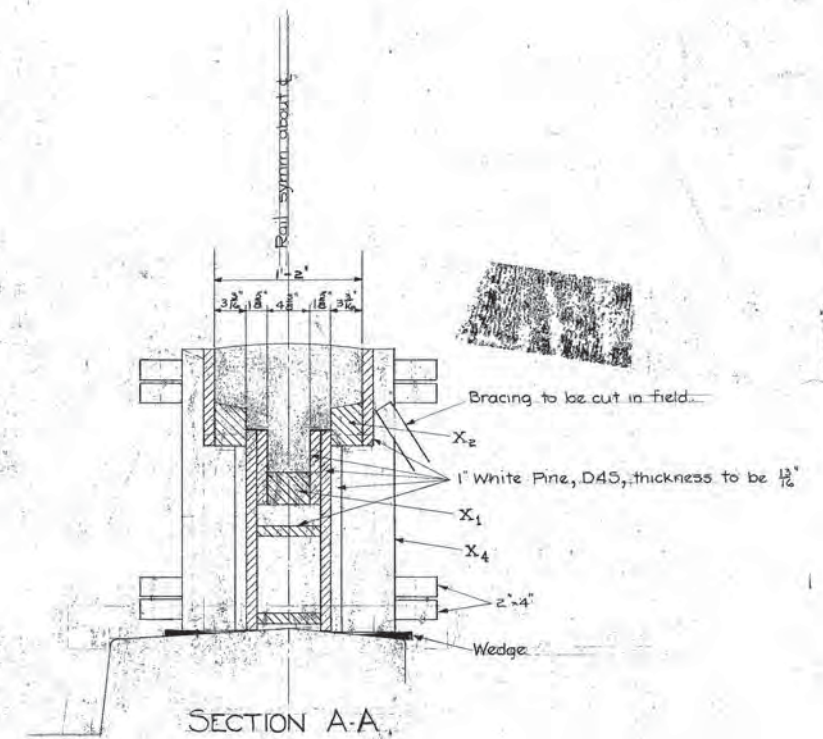
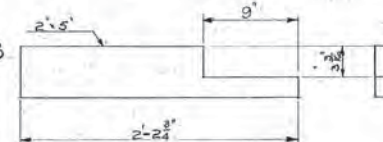
Traced by Burroughs Date 12-19-34  
Checked by S.H.W. Date 12-20-34





#### ESTIMATE OF QUANTITIES

Description	Quantity
X1, Spruce or Western Fir	11 Pieces 22 B.F.
X2, " " " "	62 Lin. Ft. 85 " "
X3, " " " "	42 " " 28 " "
X4, " " " "	40 Pieces 80 " "
2x4, " " " "	329 Lin. Ft. 226 " "
1x2, " " " "	50 Lin. Ft. 9 " "
1" White Pine Sheathing, Dress 4 sides, thickness to be 1 1/2"	226 " "
1/2 Masonite 2'4" x 2'0"	4 pos.
1/2 " 1'0" x 2'4"	4 " "
2" Chamfer Strip	34 Lin. Ft.

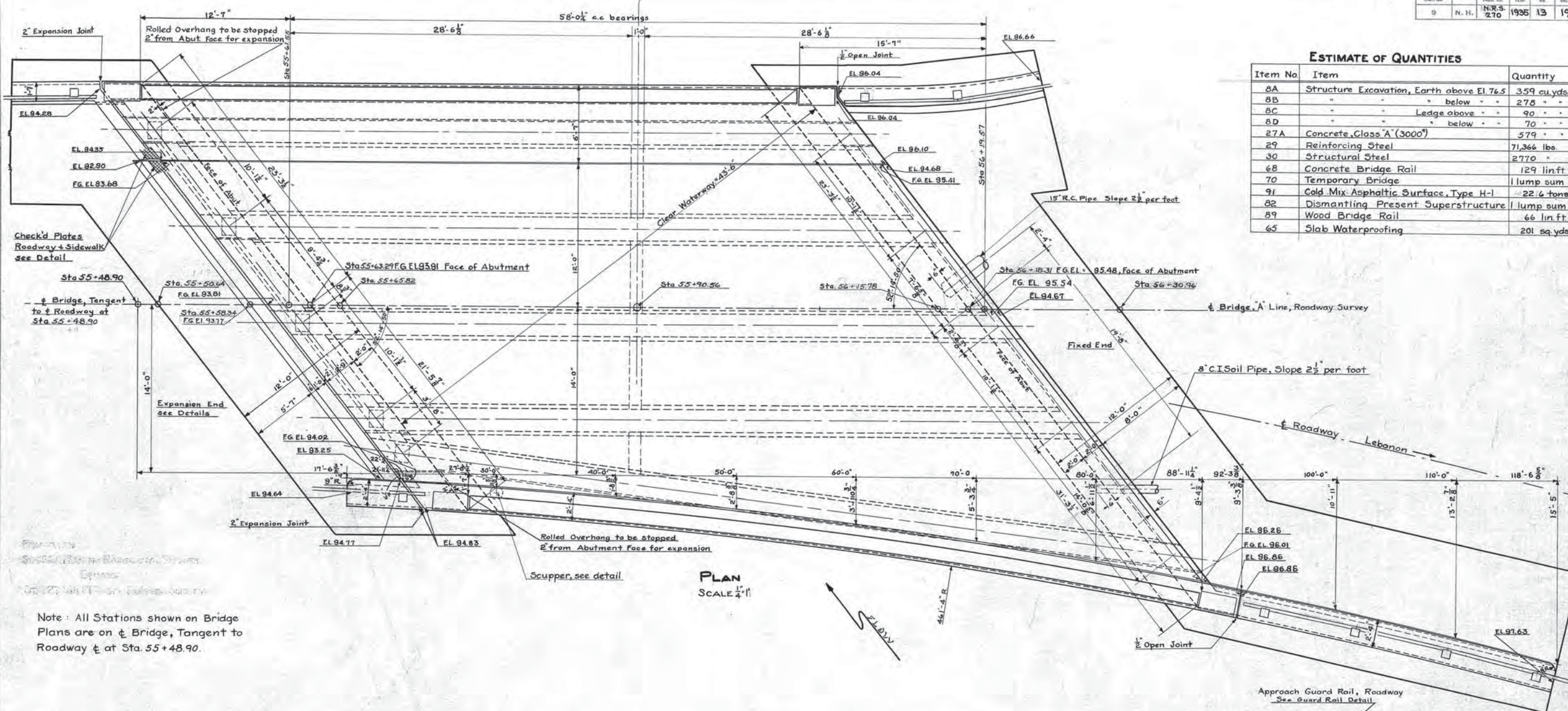


#### FORMS FOR BRIDGE RAILING

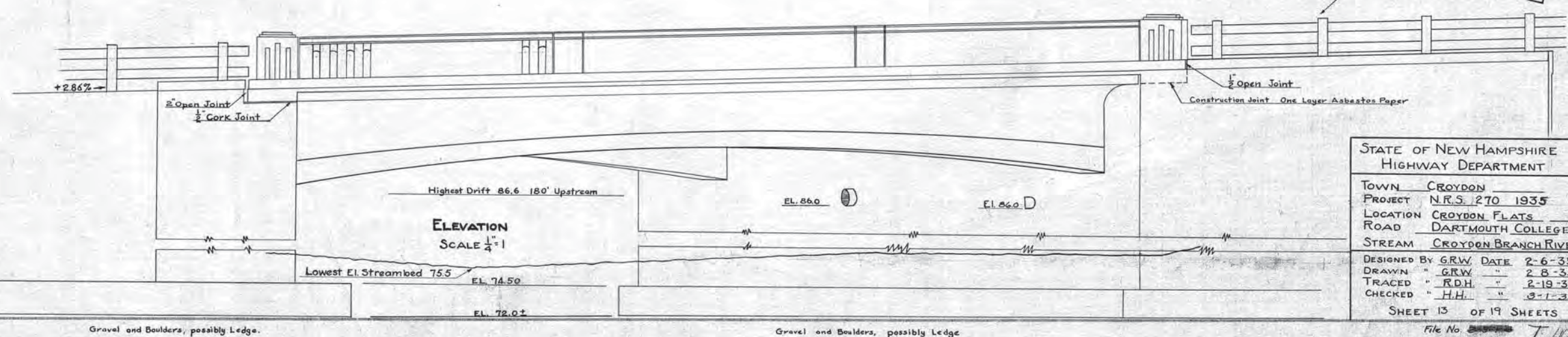
STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT  
TOWN ALSTEAD  
PROJECT T.L.B.  
LOCATION Jct. E. ALSTEAD RD. & RT. 101  
ROAD ROUTE #101  
STREAM WARREN POND BROOK  
DESIGNED BY G.W. DATE 8-19-35  
DRAWN BY G.W. 8-21-35  
CHECKED BY C.W.C. 8-22-35  
SHEET 5A OF 6 SHEETS



ESTIMATE OF QUANTITIES		
Item No	Item	Quantity
8A	Structure Excavation, Earth above El. 76.5	359 cu. yds.
8B	" " " below " "	278 " "
8C	" " " Ledge above " "	90 " "
8D	" " " below " "	70 " "
27A	Concrete, Class A (3000')	379 " "
29	Reinforcing Steel	71,366 lbs.
30	Structural Steel	2770 " "
68	Concrete Bridge Rail	129 lin. ft.
70	Temporary Bridge	1 lump sum
91	Cold Mix Asphaltic Surface, Type H-1	22.4 tons
82	Dismantling Present Superstructure	1 lump sum
89	Wood Bridge Rail	66 lin. ft.
65	Slab Waterproofing	201 sq. yds.



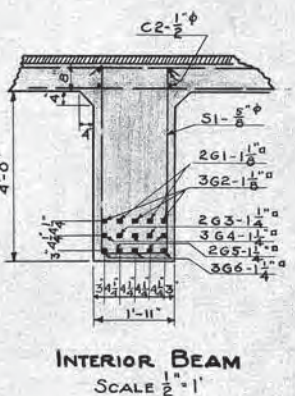
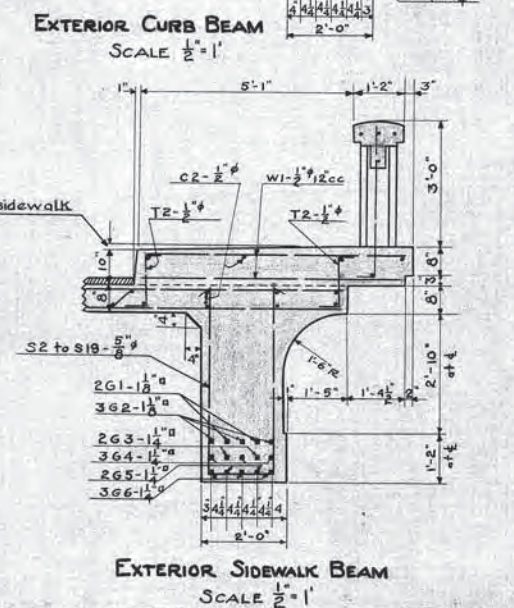
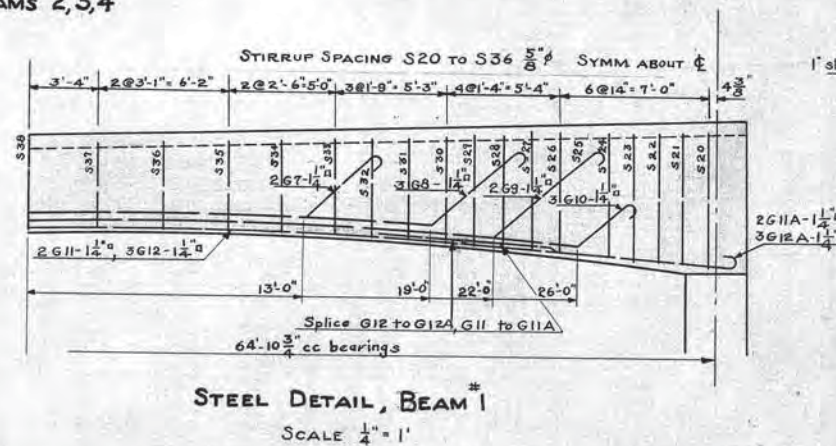
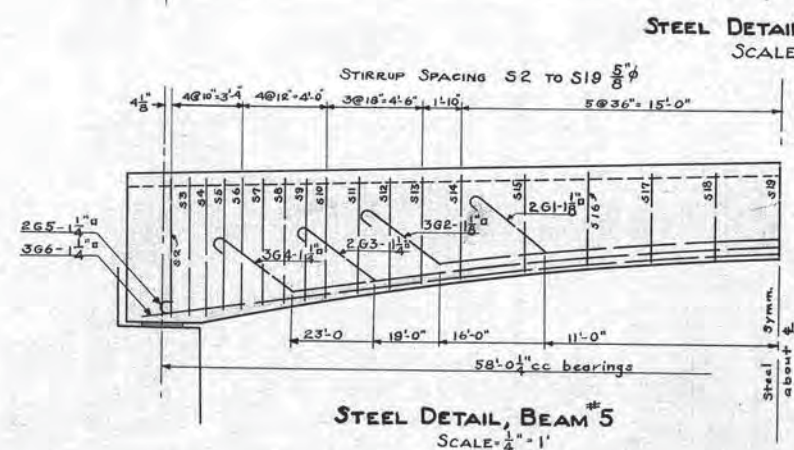
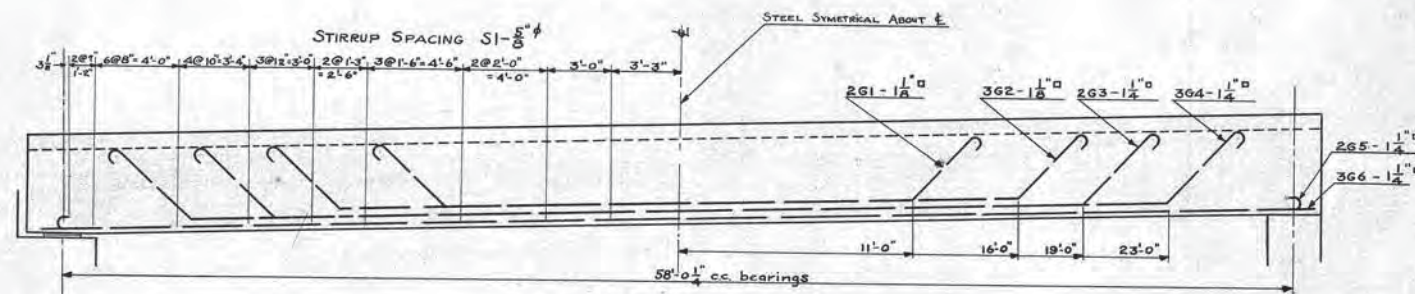
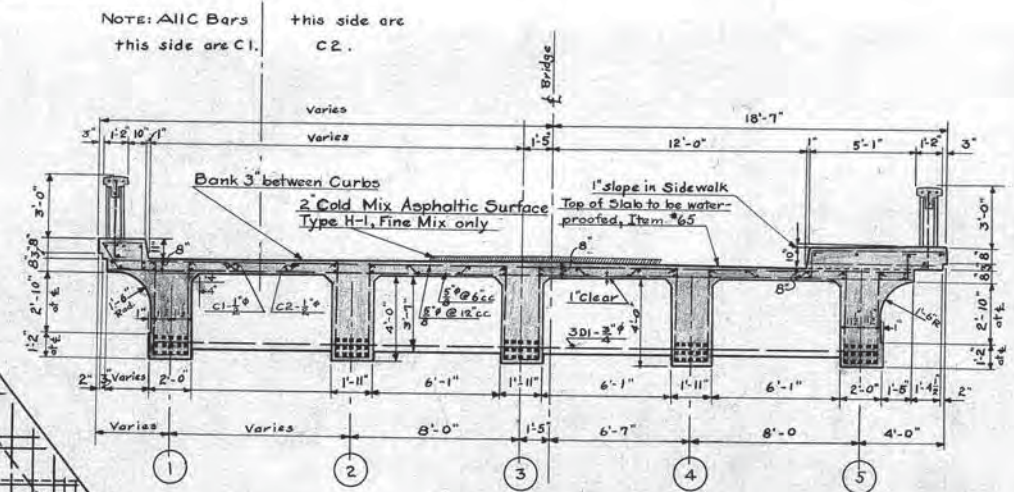
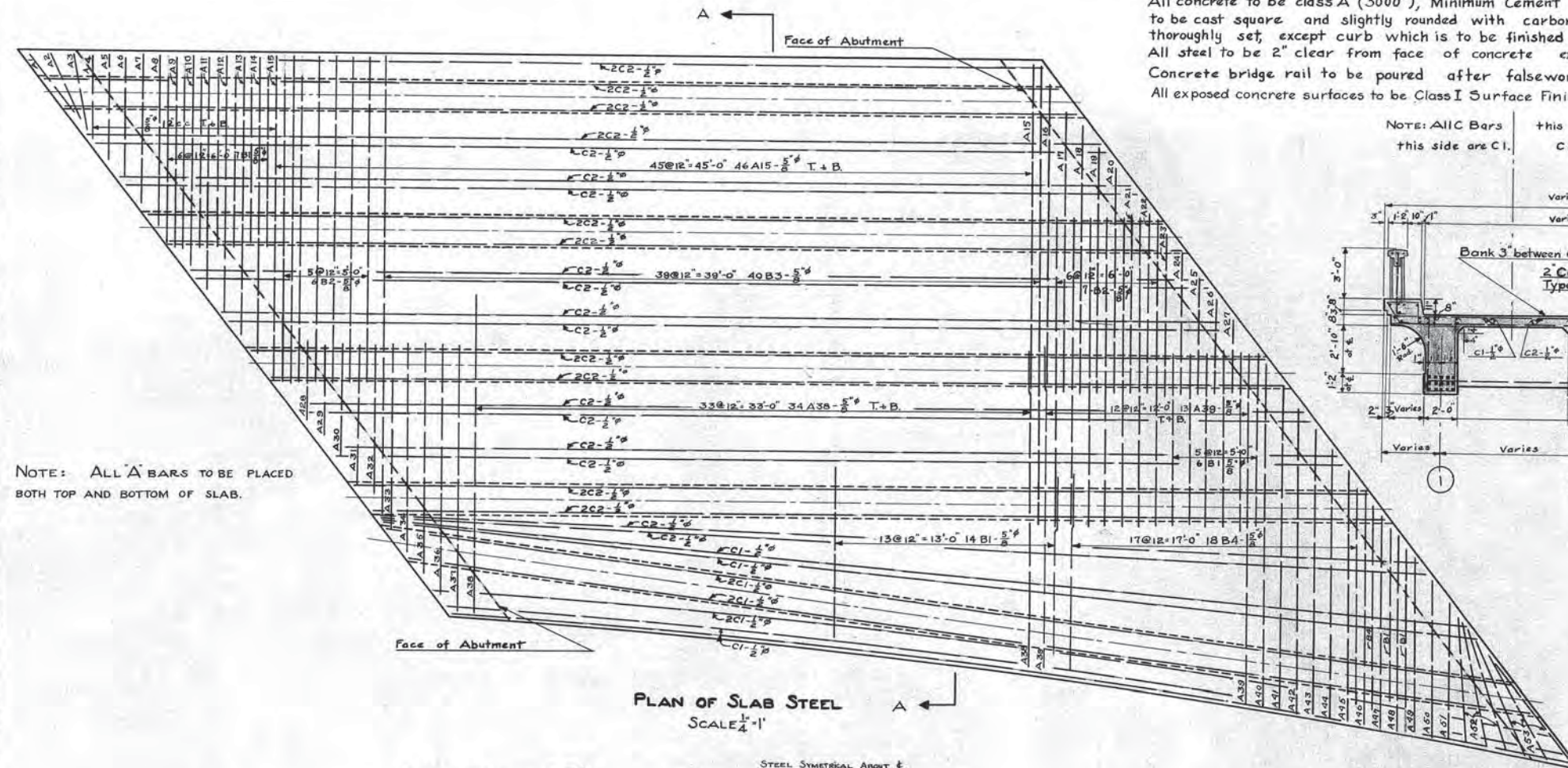
Note : All Stations shown on Bridge Plans are on  $\frac{1}{2}$  Bridge, Tangent to Roadway & at Sta. 55+48.90



STATE OF NEW HAMPSHIRE		
HIGHWAY DEPARTMENT		
TOWN	CROYDON	
PROJECT	N.R.S. 270 1935	
LOCATION	CROYDON FLATS	
ROAD	DARTMOUTH COLLEGE	
STREAM	CROYDON BRANCH RIVER	
DESIGNED BY	GRW	DATE 2-6-3
DRAWN "	GRW	" 2-8-3
TRACED "	R.D.H.	" 2-19-3
CHECKED "	H.H.	" 3-1-3
SHEET 13 OF 19 SHEETS		



NOTES: No concrete to be placed until steel has been checked by the engineer.  
All concrete to be class A (3000"), Minimum Cement Factor = 161. All exposed corners to be cast square and slightly rounded with carborundum brick after concrete has thoroughly set, except curb which is to be finished with edging tool.  
All steel to be 2" clear from face of concrete except as noted.  
Concrete bridge rail to be poured after falsework is removed.  
All exposed concrete surfaces to be Class I Surface Finish.



STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT  
TOWN CROYDON  
PROJECT N.R.S. 270 1935  
LOCATION CROYDON FLATS  
ROAD DARTMOUTH COLLEGE  
STREAM CROYDON BRANCH RIVER  
DESIGNED BY GRW. DATE 1-23-35  
DRAWN " GRW " 1-24-35  
TRACED " R.D.H. " 2-14-35  
CHECKED " C.B. " 1-30-35  
SHEET OF SHEETS

File No. 270-14 T/10



NOTES: No concrete to be placed until steel has been checked by the engineer.

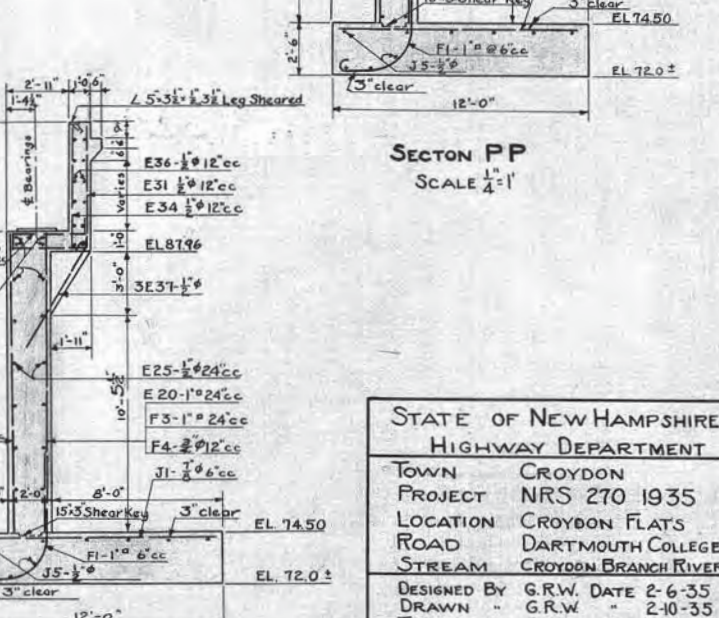
Footings to be carried to firm foundation as directed by the engineer. 4" Tile drains to be placed in abutments 10" ± c.c. at such elevation as will best drain backfill. Backfill around drain to be of stone.

All concrete to be class A (3000<sup>psi</sup>), Min. Cement Factor = 161

All exposed corners to be cast square and slightly rounded with carborundum brick, after concrete has thoroughly set.

All exposed concrete surfaces to be class I Surface Finish. Finish on Wing Walls and abutments to be carried 1' below top of fill.

All steel to be 2" clear from face of concrete except as noted.



SECTION MN  
SCALE  $\frac{1}{4}'' = 1'$

STATE OF NEW HAMPSHIRE	
HIGHWAY DEPARTMENT	
TOWN	CROYDON
PROJECT	NRS 270 1935
LOCATION	CROYDON FLATS
ROAD	DARTMOUTH COLLEGE
STREAM	CROYDON BRANCH RIVER
DESIGNED BY	G.R.W. DATE 2-6-35
DRAWN "	G.R.W. " 2-10-35
TRACED "	R.D.H. " 2-27-35
CHECKED "	R.H.W. " 2-28-35
SHEET 15 OF 19 SHEETS	



NOTES: No concrete to be placed until steel has been checked by the engineer.  
 Footings to be carried to firm foundation as directed by the engineer.  
 4" tile drains to be placed in abutments 10'± c.c. at such elevations as will best drain backfill. Backfill around drains to be of stone.  
 All concrete to be of class A (3000#), Minimum Cement Factor = 1.61  
 All exposed corners to be cast square and slightly rounded with carborundum brick after concrete has thoroughly set.  
 All steel to be 2' clear from face of concrete except as noted.  
 All exposed concrete surfaces to be Class I Surface Finish. Finish on Wing Walls and Abutments to be carried 1' below top of Fill.

ELEVATION LEFT WING  
 SCALE 1/4" = 1'

PLAN, LEBANON ABUTMENT  
 SCALE 1/4" = 1'

ELEVATION, RIGHT WING  
 SCALE 1/4" = 1'

SECTION JJ  
 SCALE 1/4" = 1'

SECTION GG  
 SCALE 1/4" = 1'

ELEVATION, FACE OF ABUTMENT  
 SCALE 1/4" = 1'

SECTION HH  
 SCALE 1/4" = 1'

STATE OF NEW HAMPSHIRE  
 HIGHWAY DEPARTMENT  
 TOWN CROYDON  
 PROJECT NRS 270 1935  
 LOCATION CROYDON FLATS  
 ROAD DARTMOUTH COLLEGE  
 STREAM CROYDON BRANCH RIVER  
 DESIGNED BY G.R.W. DATE 1-30-35  
 DRAWN " G.R.W. "  
 TRACED " R.D.H. " 2-14-35  
 CHECKED " H.G.H. " 2-18-35  
 SHEET 16 OF 19 SHEETS

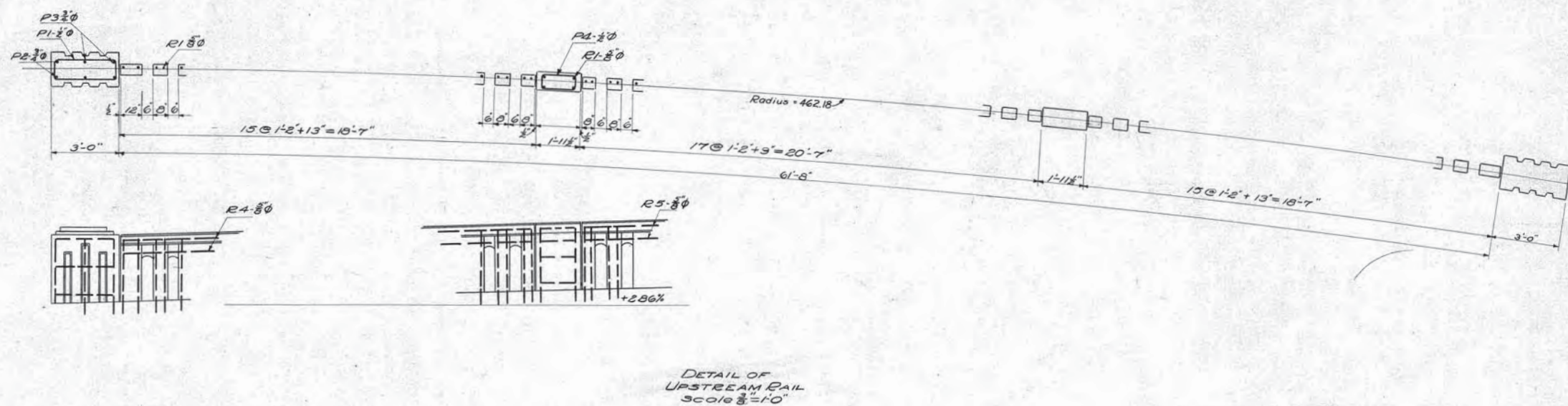
File No. 270-16



REVISIONS		AFTER PROPOSAL	
Date	Station	From	or To
Orig			
Rev			
Orig			
Rev			
Orig			
Rev			
Orig			
Rev			
Orig			
Rev			

Traced by	Date
Checked by	Date



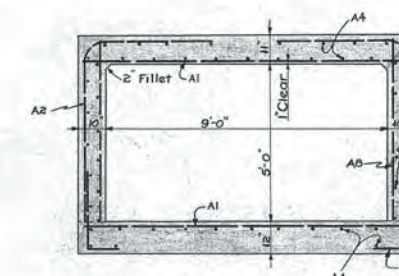
File No. ~~237~~ T10







PROJ. NO.	STATE	ADD. NO.	FEED. NO.	SHEET NO.	TOTAL SHEETS
9	N. H.	TLR	35	4	16
14/21					



SECTION B-B

ESTIMATE OF QUANTITIES

Item No.	Item	Quantity
33	Reinforcing Steel	7533 lbs.
34	Concrete, Class "A" (3000')	45 cu. yds.
36	Concrete, Class "C" (2000')	28 cu. yds.
4	Earth Excavation, 150 %	68 cu. yds.

Notes:

No concrete to be poured until steel has been checked by engineer.

Footings to be carried to firm foundation as directed by engineer.

All concrete in box to be Class "A" (3000').

All concrete in wings, footings and cut-off walls to be Class "C" (2000').

Minimum Cement Factors: Class "A" 160  
Class "C" 130

All steel to be 2" clear from face of concrete unless otherwise noted.

All corners in concrete to be cast square and feather edge removed with carborundum brick after concrete has thoroughly set.

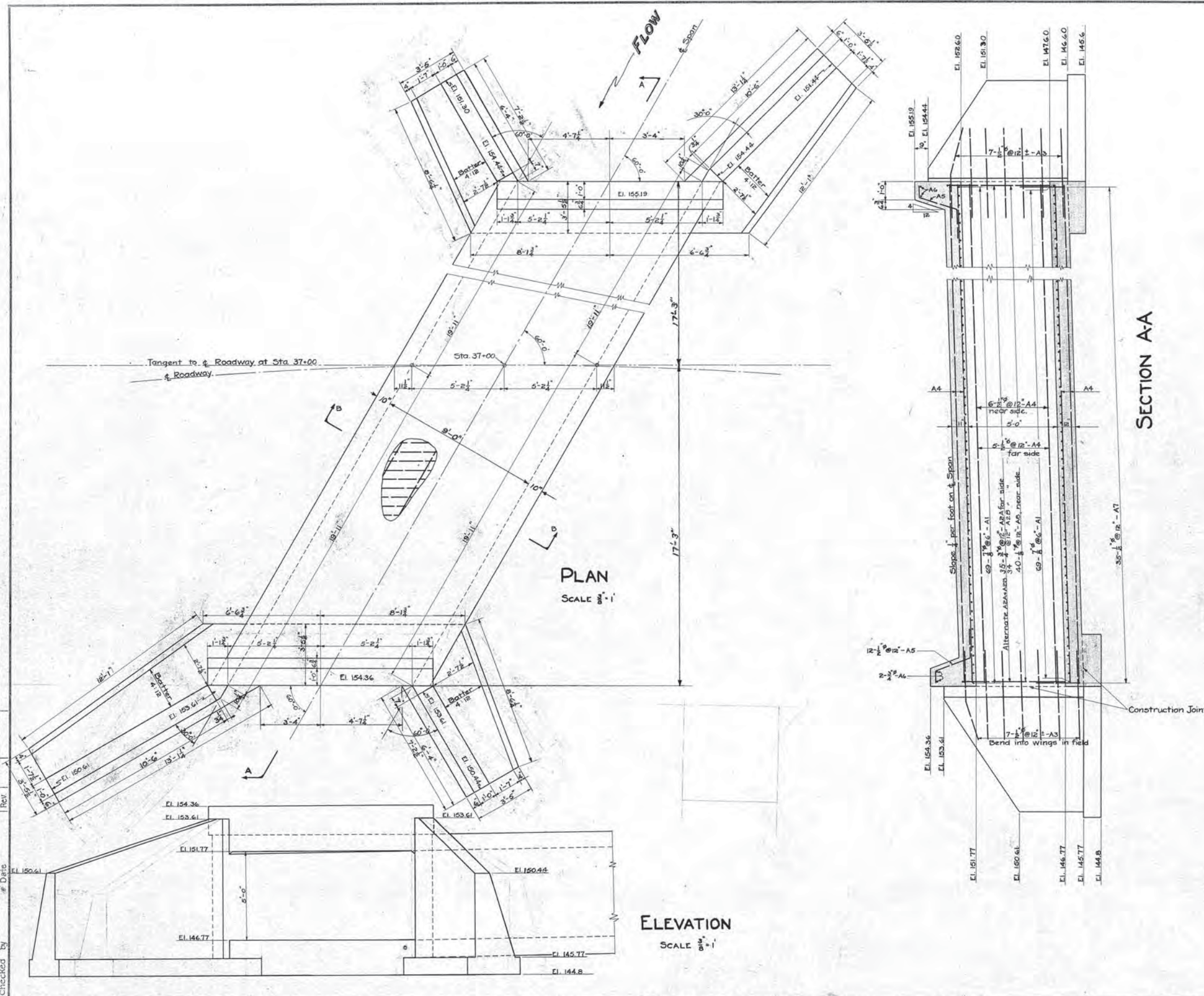
9'-5" BOX CULVERT

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWN GILSUM  
PROJECT TLR  
LOCATION Sta. 37+00  
ROAD DARTMOUTH COLLEGE HWY.  
STREAM

DESIGNED BY G.R.W. DATE 8-5-35  
DRAWN - G.R.W. 8-7-35  
TRACED - G.R.W. 8-13-35  
CHECKED - F.W.G.S. 8-24-35  
SHEET 1 OF 1 SHEETS

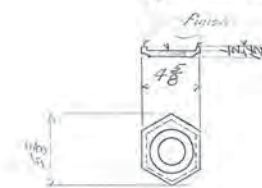
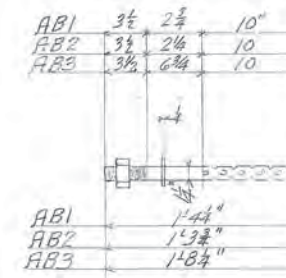
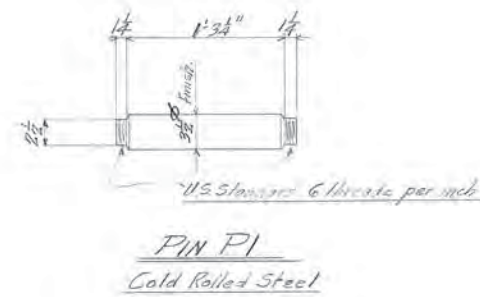
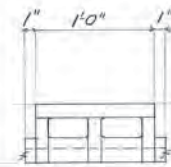
T18



REVISED	DATE	BY	REASON

Traced By  
Checked By  
Date





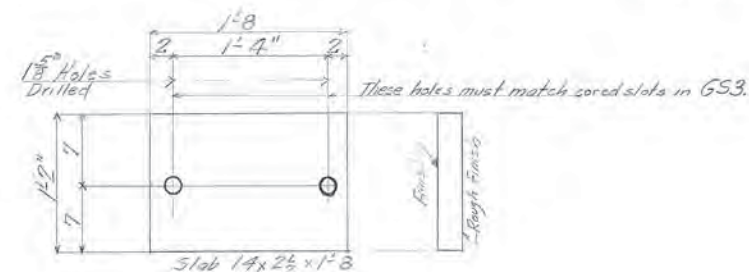
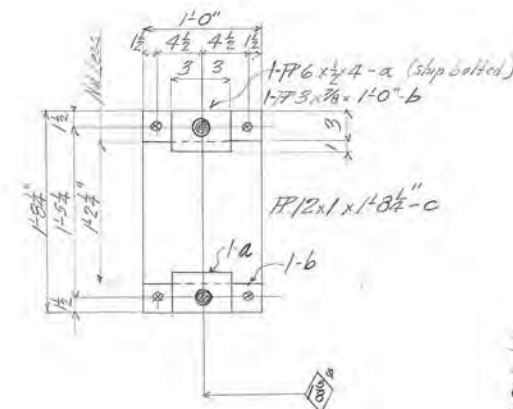
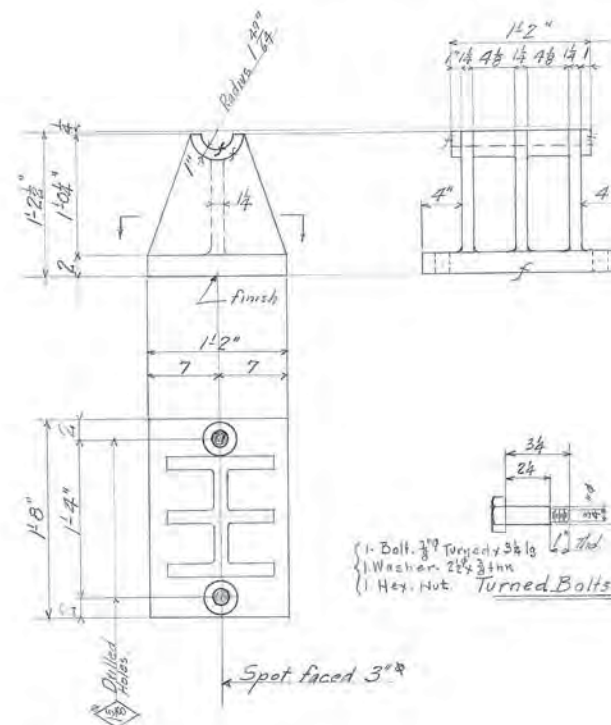
No	Part	DESCRIPTION	REMARKS
3	GS1	Girdler Shoe	
4	GS2	" "	
4	GS3	" "	
4	BP1	Base Plate	
8	W1	Washer	
8	P1	Pin	
16	LN1	Lomas Nut	
16	W2	Washer	
16	W3	Pin Ring	
8	BP2	Base Plate	
16	AB1	Swadge Bolt	
8	AB2	" "	
8	AB3	" "	
32	W4	Washer	
32	T1	Turn Bolts	

Steel Castings shall conform to the current Standard Specification for Steel Castings ASTM A27-24 as revised to date. Steel Castings shall be Class B, medium grade annealed.

All corners of castings to be filletted.

All finishing and drilling to be done at Brifton.

Girder Shop shipped assembled. See Sketch



BASE PLATE BP  
Structural Steel

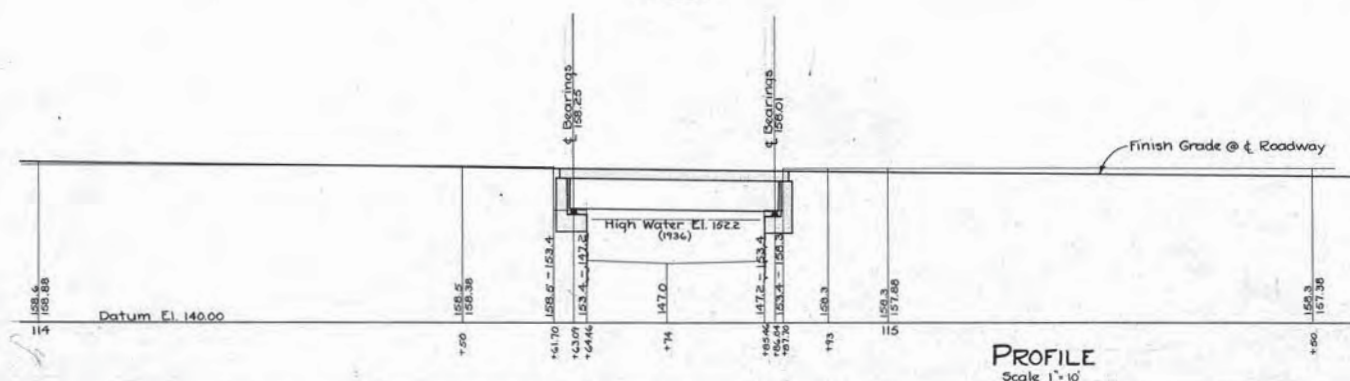
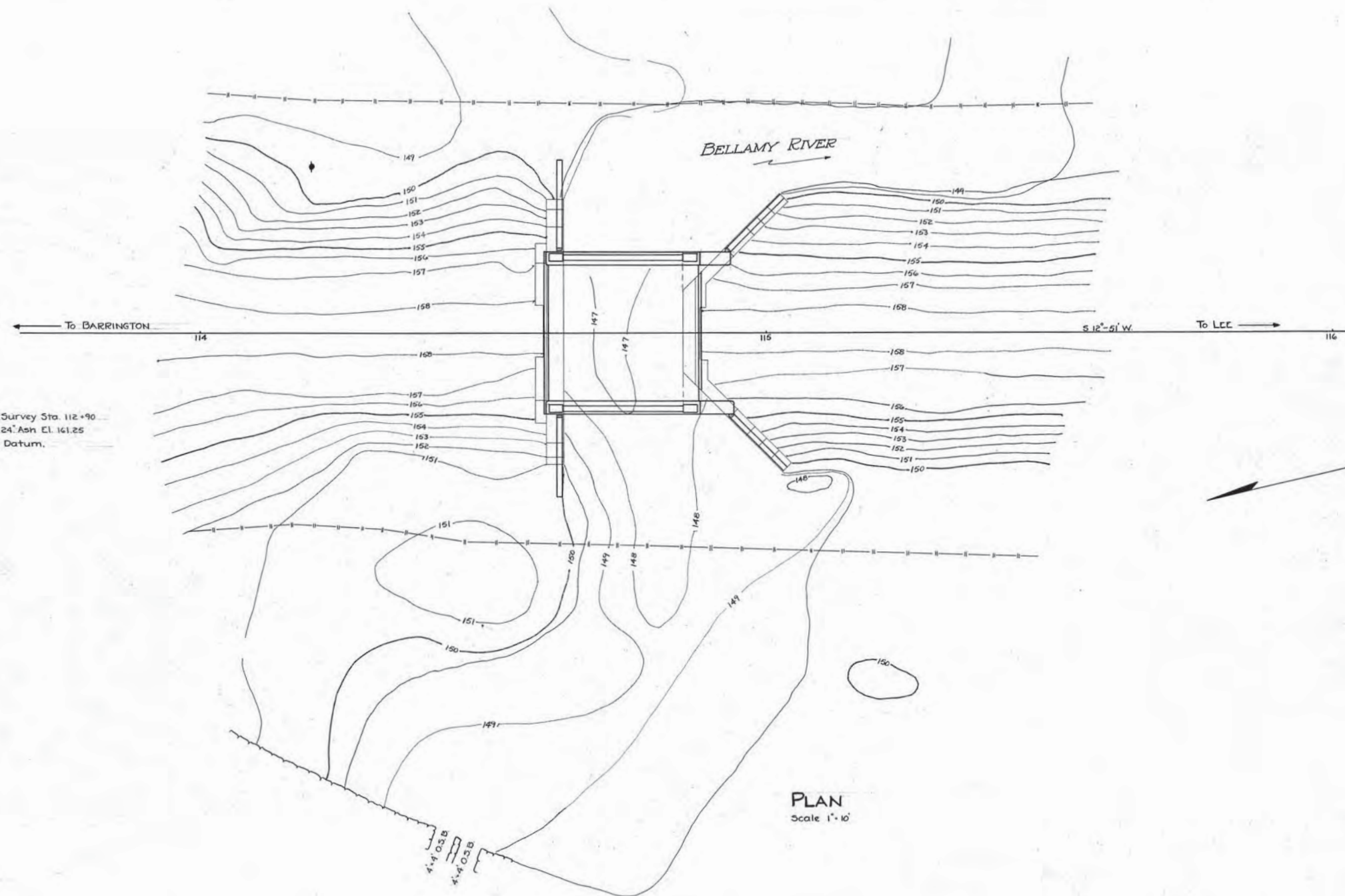
GIRDER SHOPS & MASONRY DETAILS  
BRIDGE OVER ASHUELOT RIVER  
WINCHESTER N.H.  
R.H. NEWELL - CONTRACTOR

As noted  
"  
"  
One Snow Cant. Red Lead  
except parts finished which should  
be given coat of "Fe-oxide"



FED. ROAD DIST. NO.	STATE	U.S. W.P.R. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	W.P.S. 274	1935	7	59

B.M. #11 of Road Survey Sta. 112+90  
50' Rt. Spike Root 24' Ash Cl. 161.25  
Geological Survey Datum.



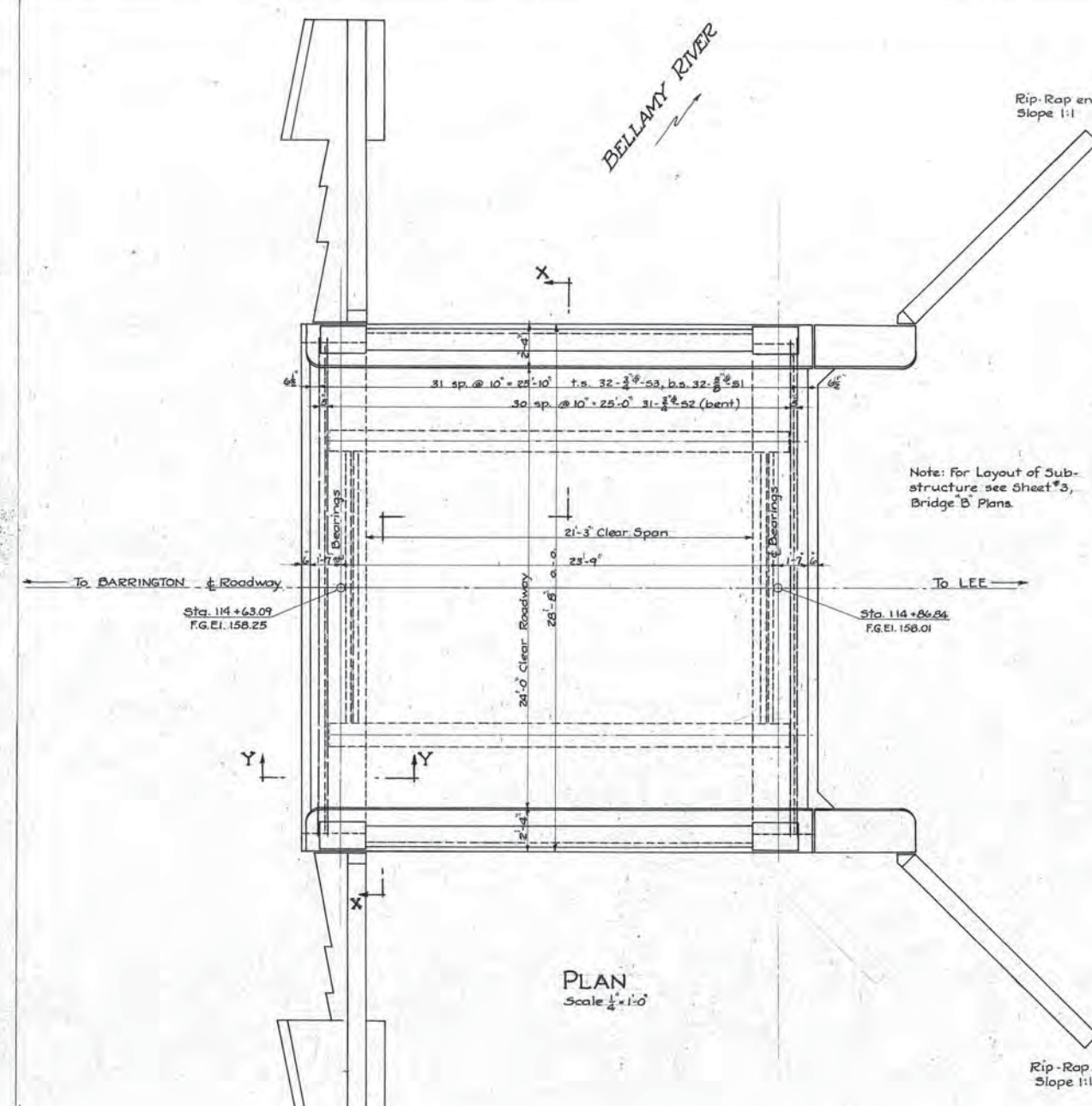
Correct by *John W. Childs* Date *6-8-36*  
Bridge Engineer

Bridge 15	
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	BARRINGTON
PROJECT	W.P.S. 274
LOCATION	Sta 114+75±
ROAD	
STREAM	BELLAMY RIVER
Surveyed by	W.H.E. Date 4-10-36
Plotted	H.A.E. 4-13-36
Traced	G.R.W. 6-1-36
Checked	
Sheet 7 of 3 Sheets	

1-72-2-6



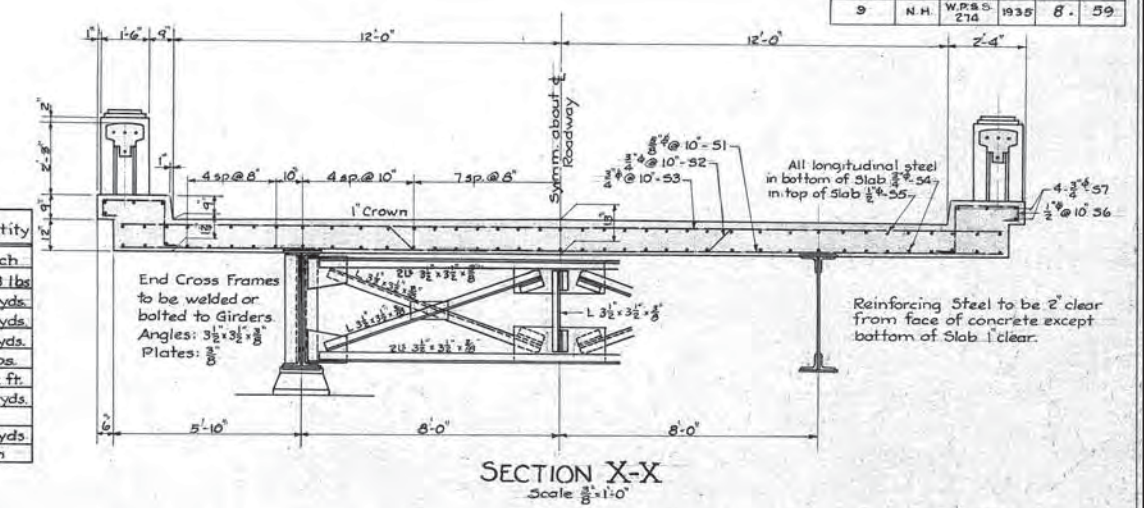
FED. ROAD PROJ. NO.	STATE	USW P.H. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	274	1935	6	59



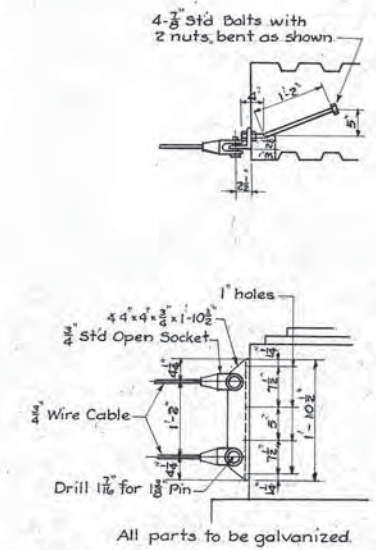
PLAN  
Scale  $\frac{1}{4}$ " = 1'-0"

No.	Item	Quantity
29	Anchorage for Cable Rail	4 each
33	Reinforcing Steel	9993 lbs
34	Concrete Class "A" (3000 <sup>+</sup> )	80 cu. yds.
36	" " "C" (2000)	20 cu. yds.
78	Rip-Rap "C"	20 cu. yds.
80	Structural Steel	2160 lbs.
83	Bridge Railing "B"	53 lin. ft.
98	Structure Excavation, Unclass.	45 cu. yds.
109	Removing Substructure	36 cu. yds.
3128	Remov. + Re-erecting Structural Steel	1 each

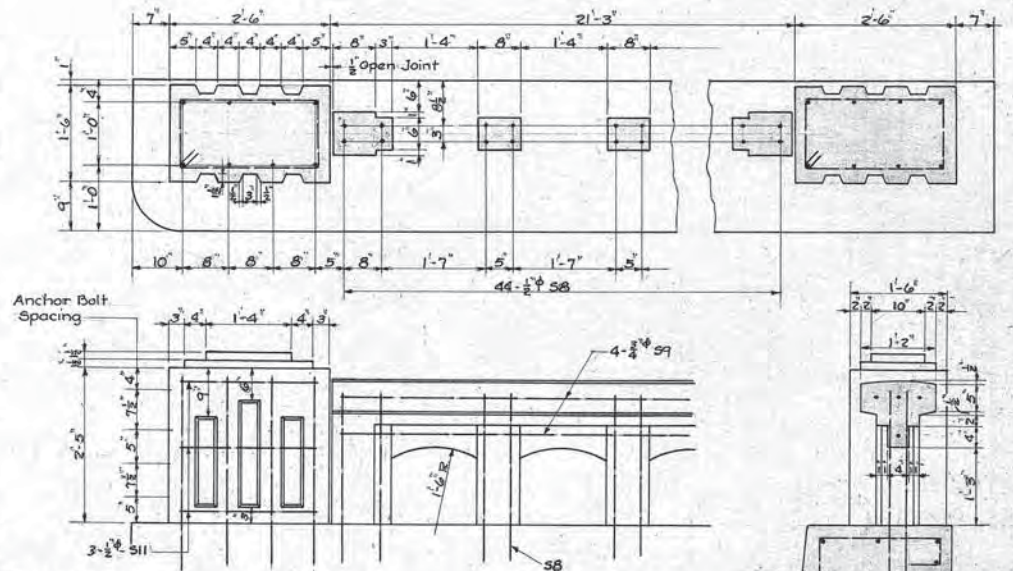
Note: For Layout of Substructure see Sheet #3, Bridge "B" Plans.



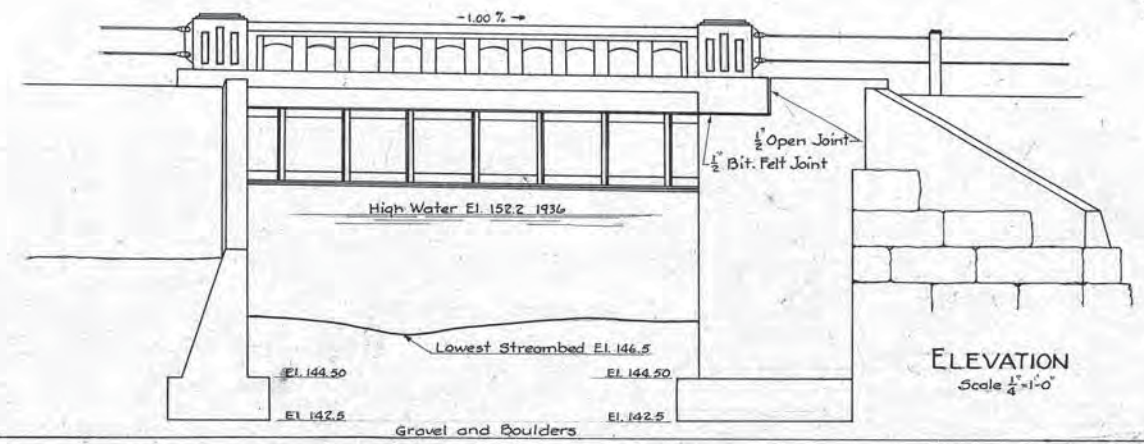
SECTION X-X  
Scale  $\frac{3}{8}$ " = 1'-0"



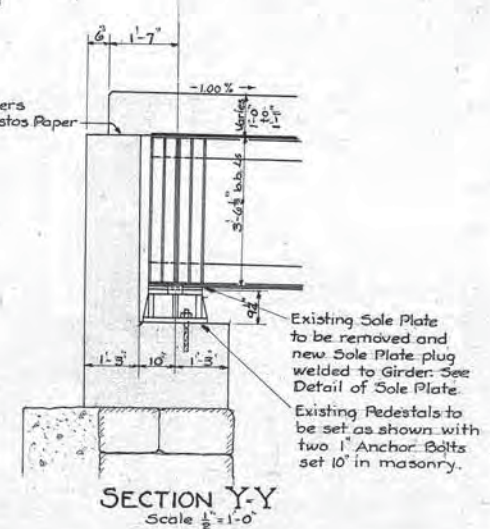
DETAIL OF CABLE RAIL ANCHORAGE  
Scale  $\frac{3}{8}$ " = 1'-0"



RAIL DETAIL  
Scale  $\frac{3}{4}$ " = 1'-0"

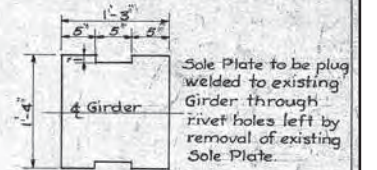


ELEVATION  
Scale  $\frac{1}{4}$ " = 1'-0"



SECTION Y-Y  
Scale  $\frac{1}{2}$ " = 1'-0"

Notes.  
Specifications: A.A.S.H.O. 1935 and N.H.D. 1935.  
Design Loading H15.  
All concrete in Superstructure to be Class "A" (3000<sup>+</sup>) with a minimum cement factor = 1.60. Max. size coarse aggregate =  $\frac{1}{2}$ ".  
The Contractor shall make measurements necessary for the fabrication of all new Structural Steel.  
Rivets or Bolts -  $\frac{3}{4}$ ". Holes -  $\frac{1}{2}$ ".  
Field Connections to Girders to be welded or bolted. All other Field Connections to be bolted. Bolted connections to be made with turned bolts and Anco nuts or equivalent.  
Shop Paint: One coat red lead.  
Field Paint: Two coats approved green.  
No concrete to be poured until steel and forms have been checked by the engineer.  
All exposed corners in concrete to be cast square and slightly rounded with carborundum brick after concrete has thoroughly set.  
All bracing and gusset plates in existing superstructure to be removed except gusset plates in end cross frames.

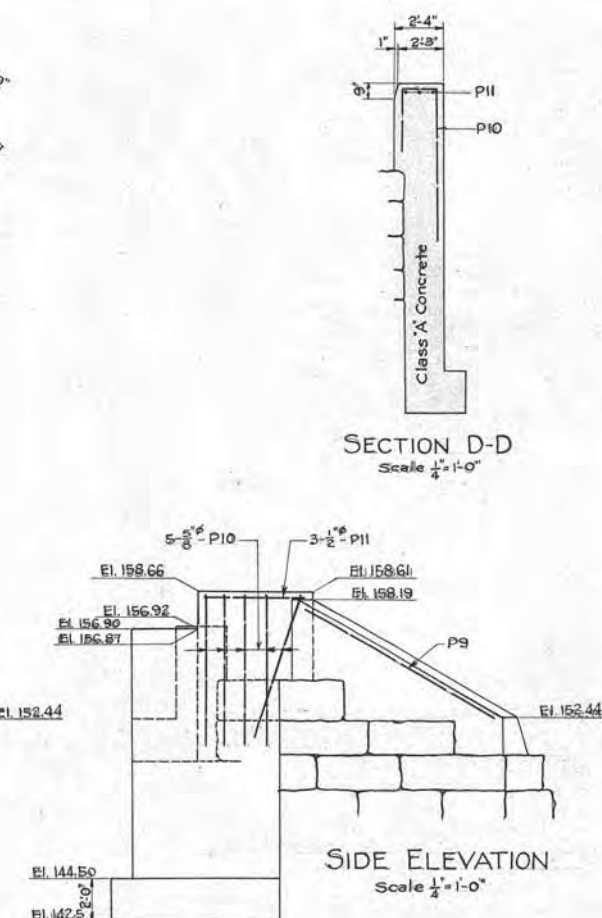
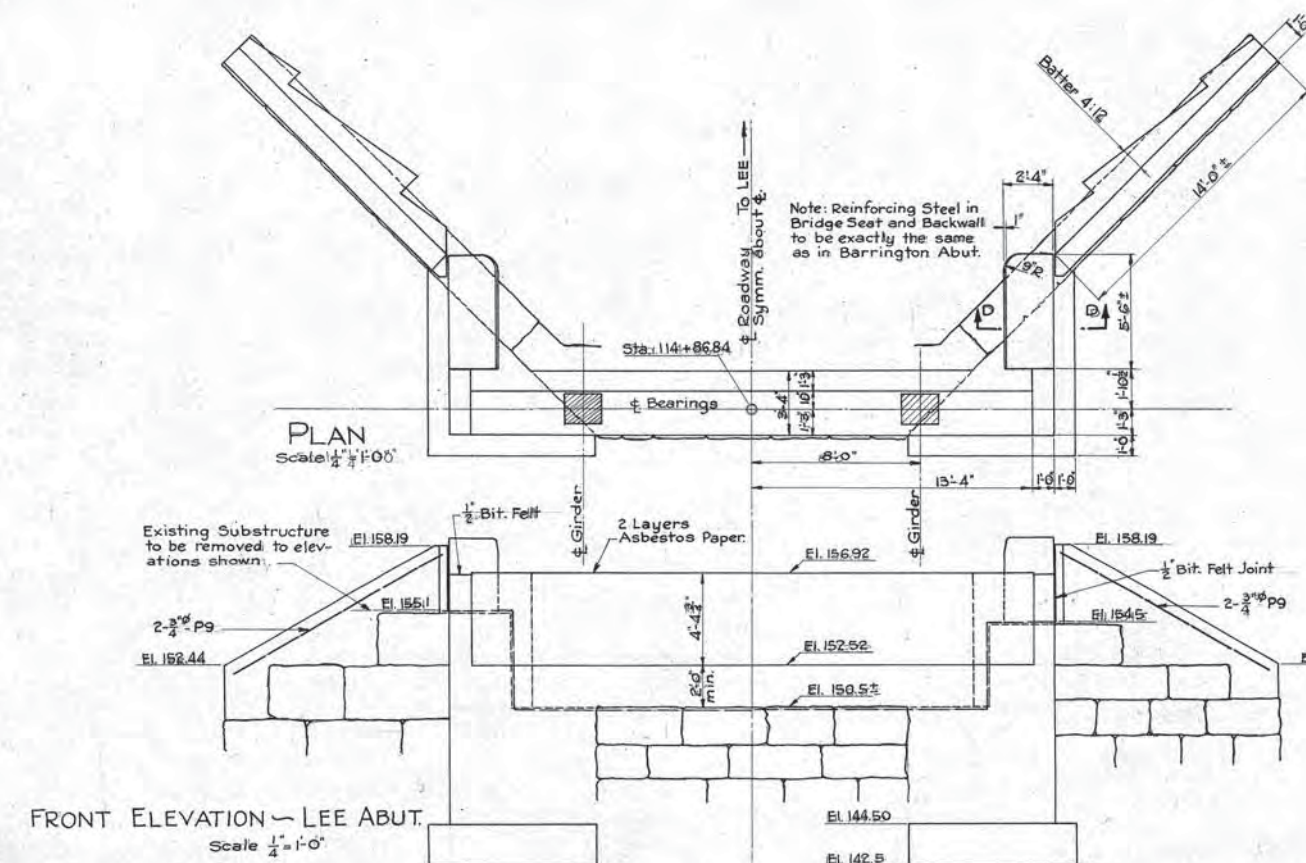
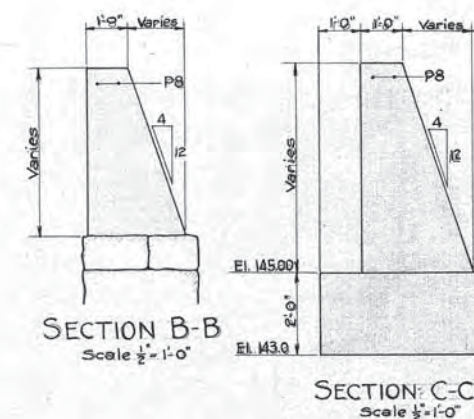
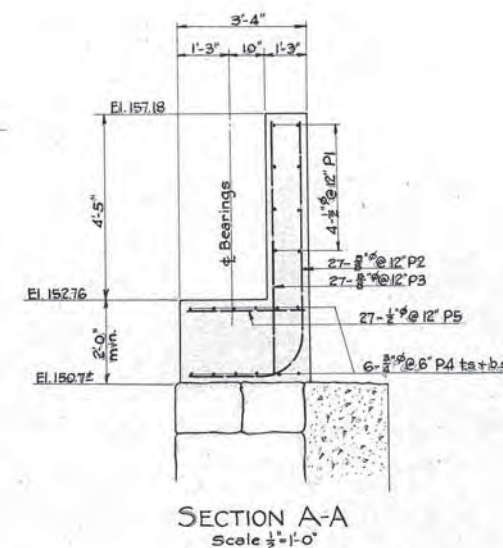
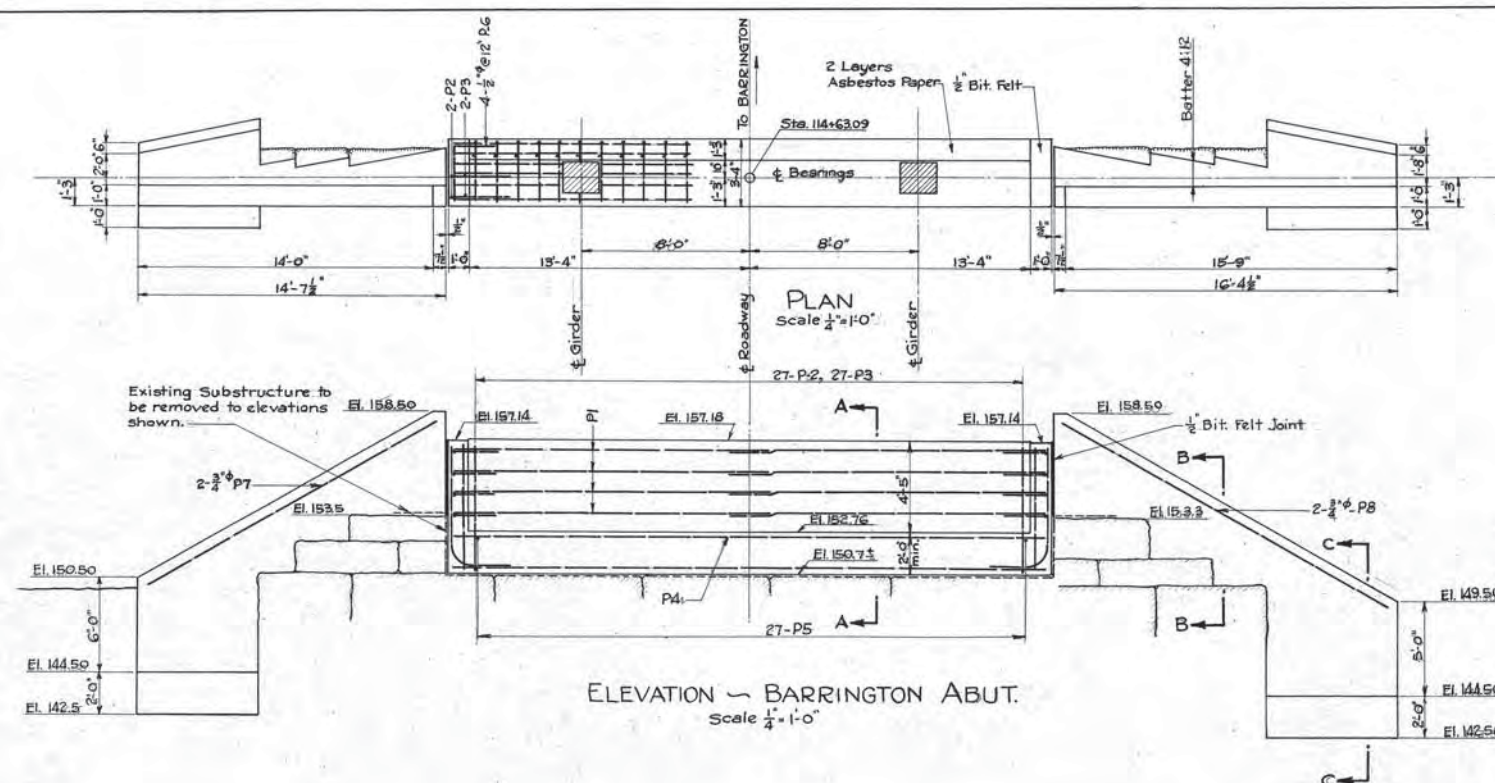


DETAIL OF SOLE PLATE  
Scale 1" = 1'-0"

BRIDGE "B"			
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT			
TOWN	BARRINGTON	PROJECT	W.P.S.S. 274
LOCATION	STA. 114+75±	ROAD	
STREAM	BELLAMY RIVER	DESIGNED BY	G.R.W.
		DRAWN	"
		TRACED	"
		CHECKED	R.R.K.
			DATE 5-26-36
			5-28-36
			6-3-36
			SHEET 2 OF 3 SHEETS



FED. ROAD DIST. NO.	STATE	U.S.W.P.H. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	W.P.S.S. 274	1935	9	59



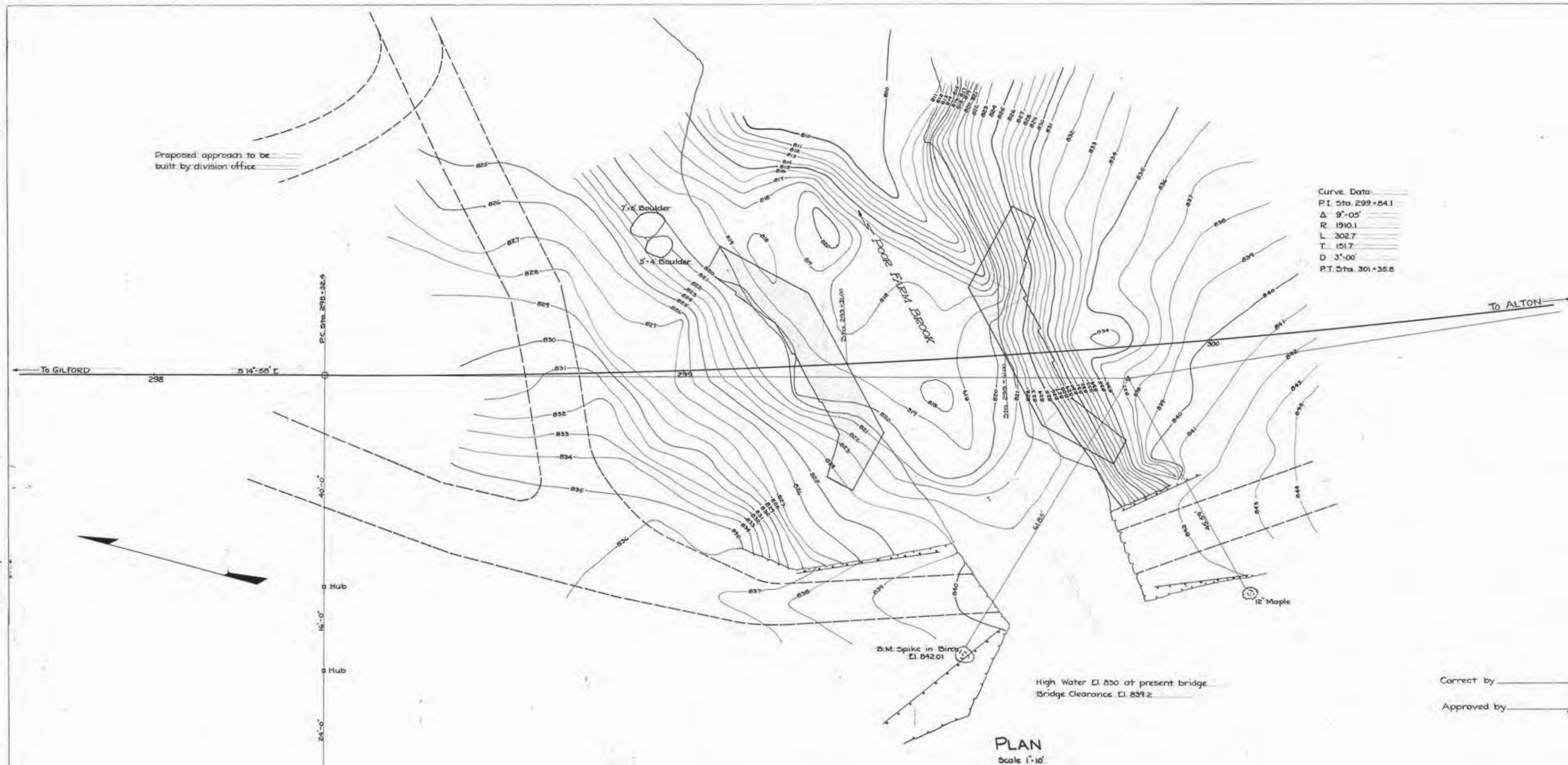
Notes:

- All concrete in bridge seats and backwalls to be Class 'A' (3000').
- All concrete in wings to be Class 'C' (2000').
- Minimum Cement Factors:
- Class 'A' 160.
- Class 'C' 130.
- No concrete to be poured until steel and forms have been checked by the engineer.
- Shaded areas on bridge seats to be dressed to exact elevation and finished to a true, smooth surface.
- Top of backwalls to be finished level, smooth and to elevations shown.
- Backwalls to be poured after steel is erected.
- Footings to be carried to firm foundation as directed by the engineer.

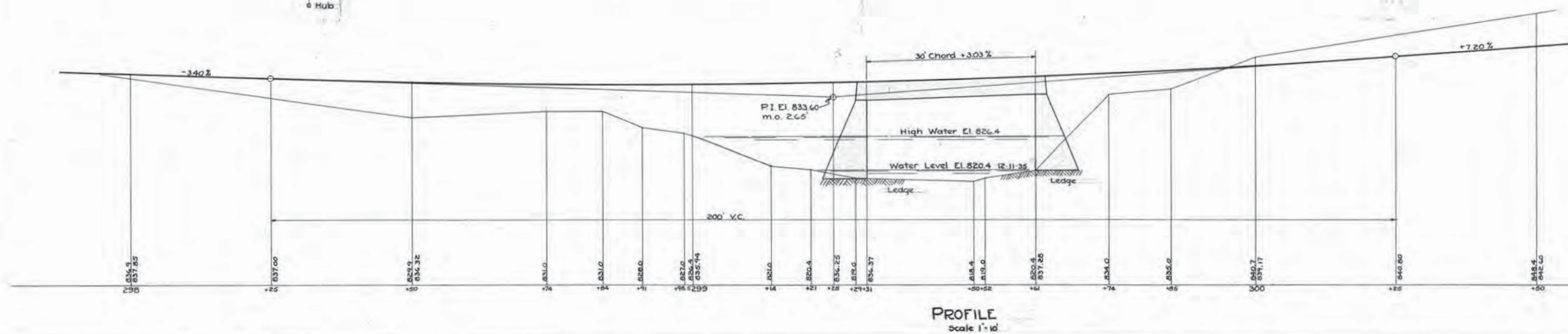
BRIDGE 'B'	
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN:	BARRINGTON
PROJECT:	W.P.S.S. 274
LOCATION:	Sta. 114+75±
ROAD:	
STREAM:	BELLAMY RIVER
DESIGNED BY G.R.W.	DATE 5-26-36
DRAWN	" 5-27-36
TRACED	" R.H.R. 10-27-36
CHECKED	" R.R.K. 6-4-36
SHEET 3 OF 3 SHEETS	

8-8-12-6  
1-12-2-6





Correct by \_\_\_\_\_ Bridge Engineer \_\_\_\_\_ Date \_\_\_\_\_  
 Approved by \_\_\_\_\_ Chief Engineer \_\_\_\_\_ Date \_\_\_\_\_



STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
Town:	GILFORD
Project:	S.A.D. 1936
Location:	Sta. 299+31 to Sta. 299+41
Road:	BACK OF MOUNTAIN ROAD
Stream:	POOR FARM BROOK
Surveyed by:	R.H.R. Date 12-11-35
Plotted:	H.J.A.+H.A.E. 12-17-35
Traced:	G.R.W. 3-14-36
Checked:	T.H.M. 4-1-36
Sheet 1 of 4 Sheets	

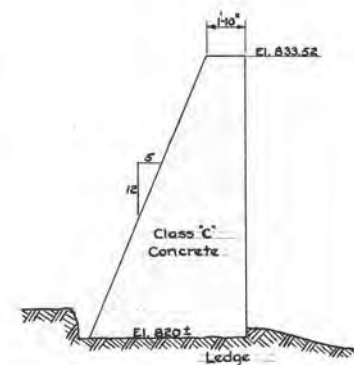
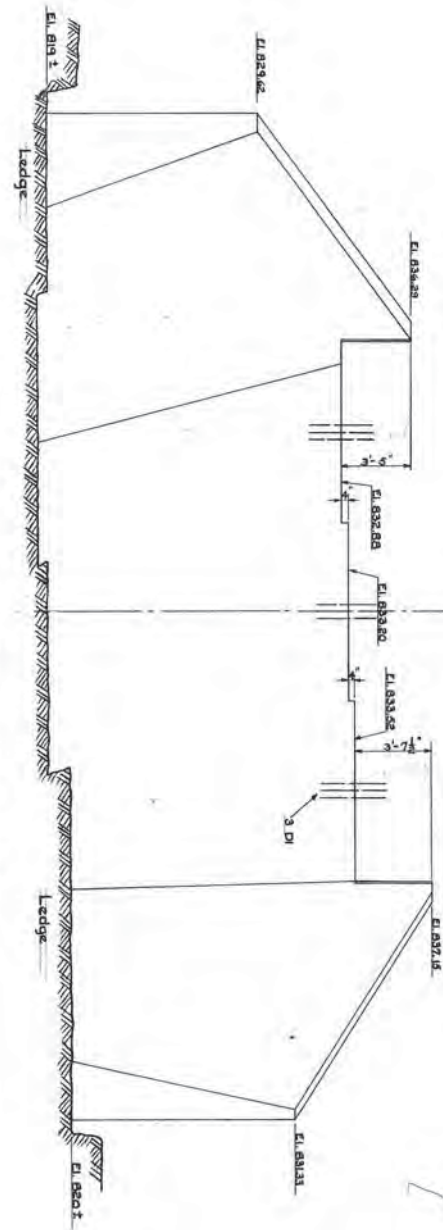




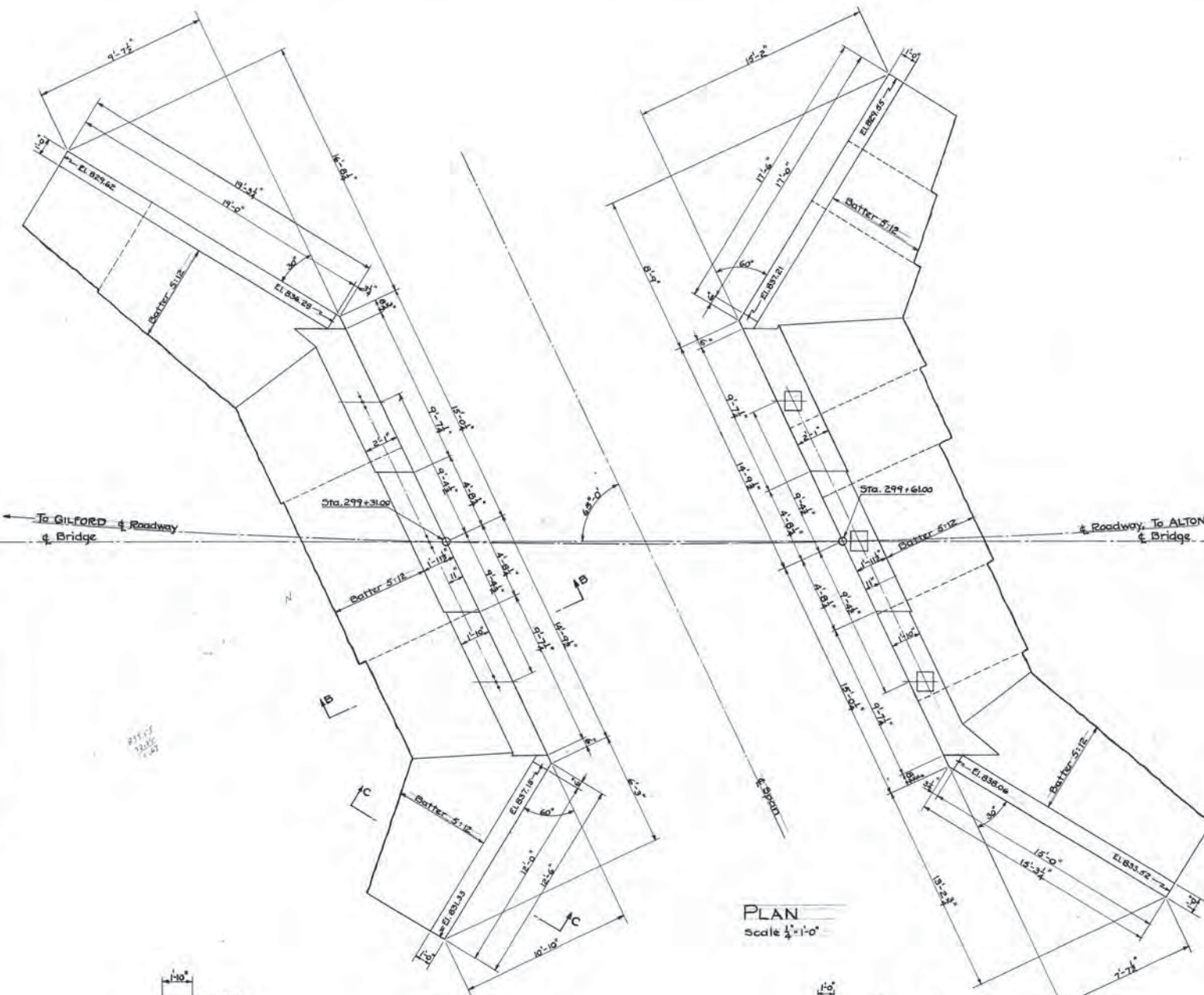


# REAR ELEVATION - GILFORD ABUTMENT

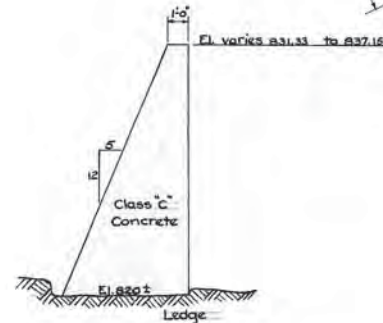
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SECTION B-B  
Scale  $\frac{1}{4}"=1'-0"$

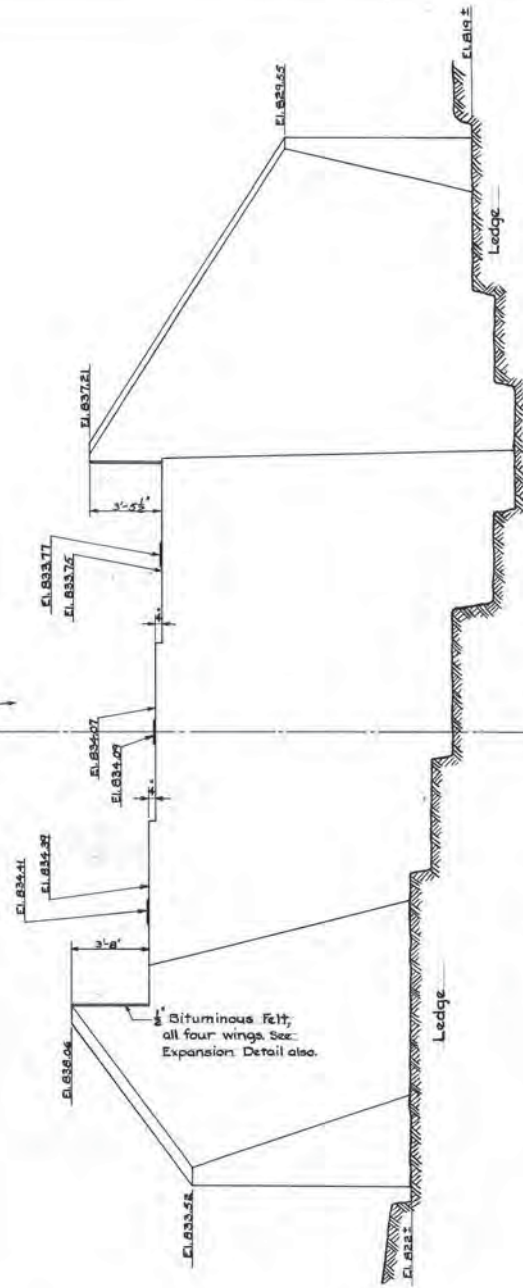


PLAN  
Scale  $\frac{1}{4}"=1'-0"$



SECTION C-C  
Scale  $\frac{1}{4}"=1'-0"$

NOTE:  
Abutments to be carried to Ledge Foundation as directed by the engineer. Top of Ledge Excavation to be stepped as shown and level. Ledge to be roughened sufficiently to provide bond.

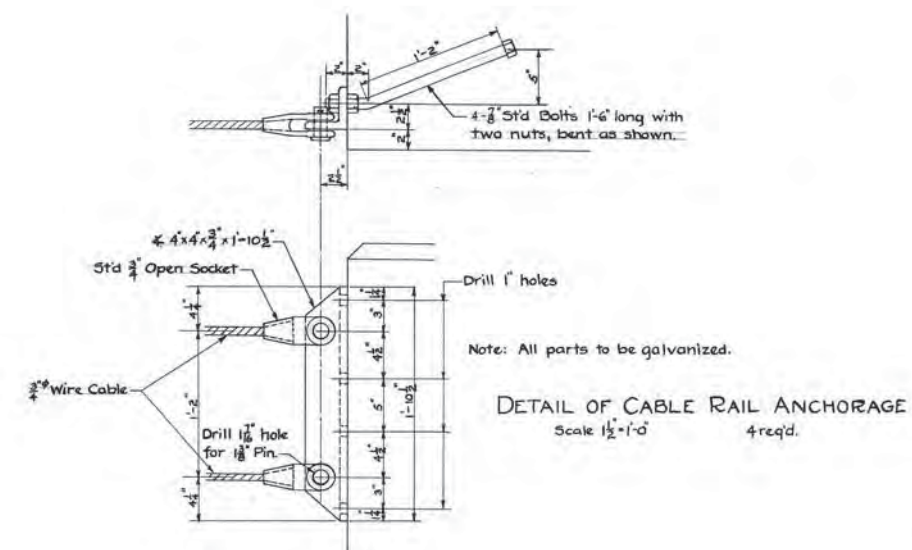
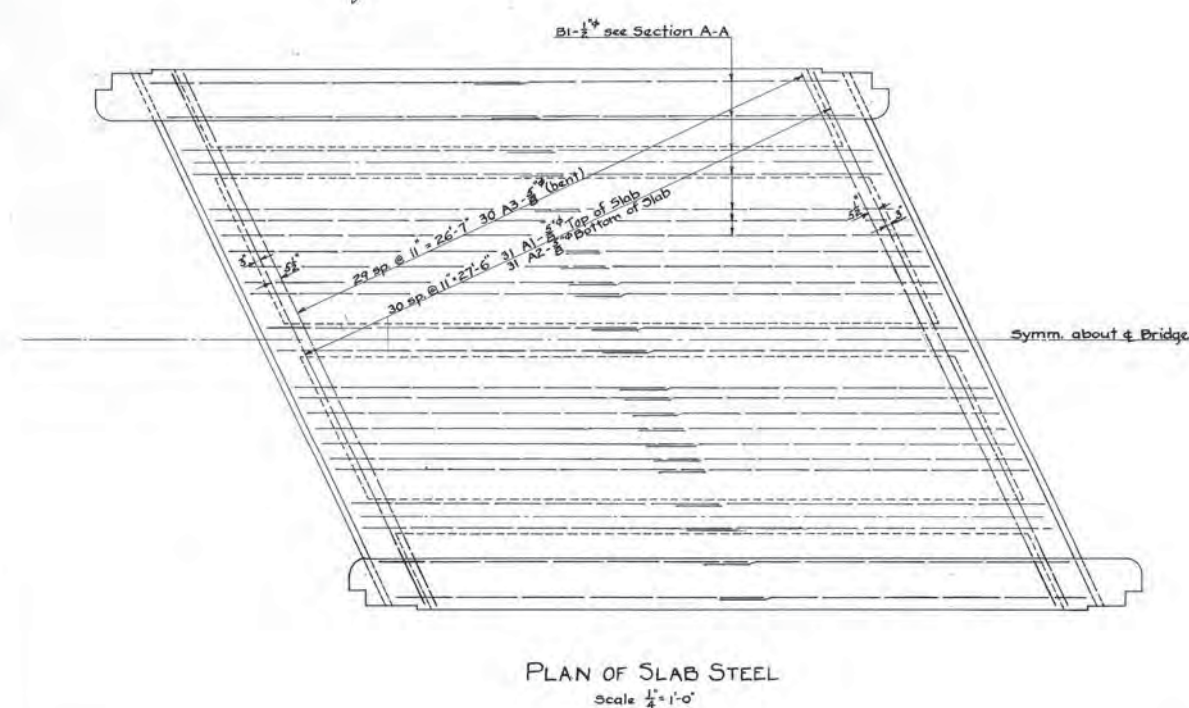
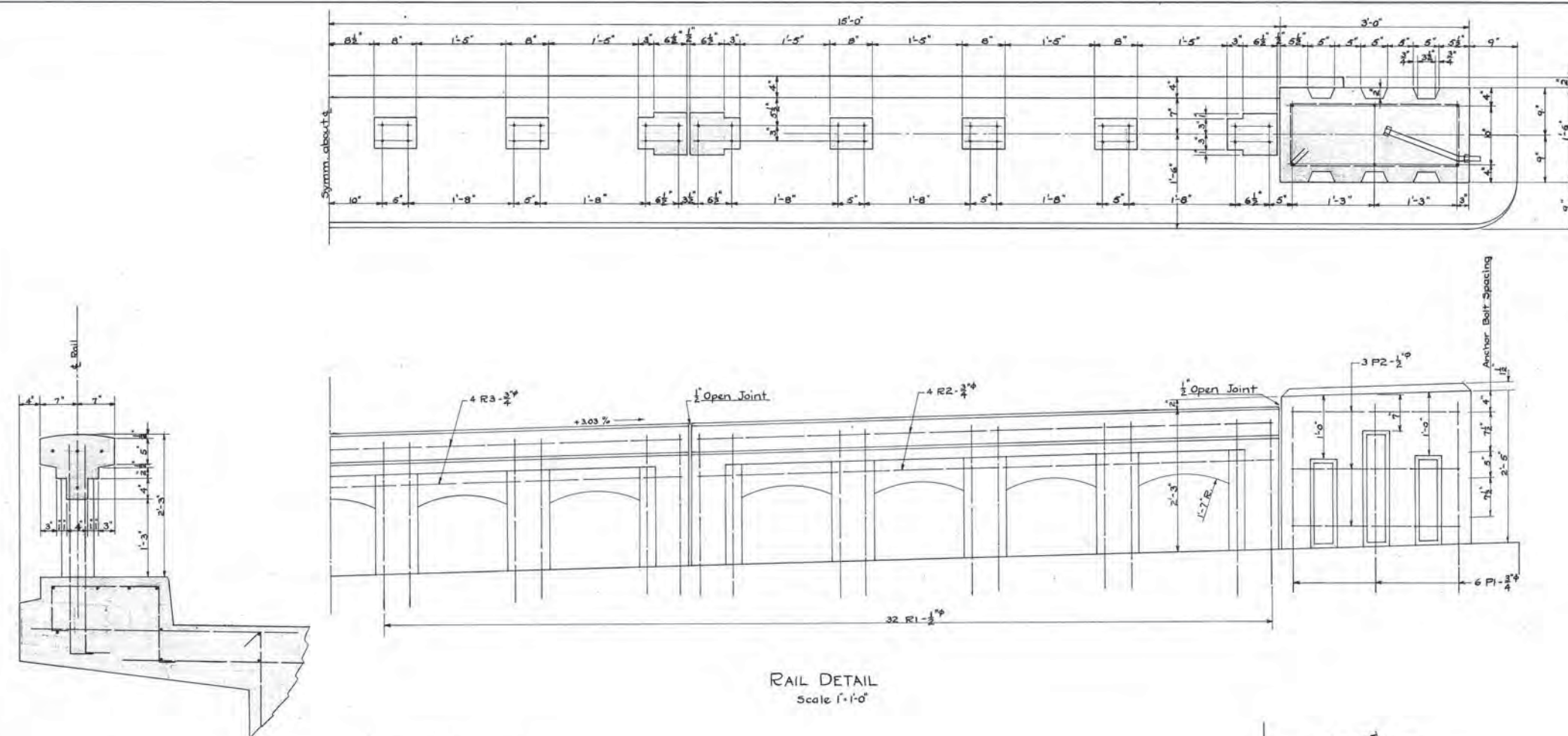


# REAR ELEVATION - ALTON ABUTMENT

Scale  $\frac{1}{4}"=1'-0"$

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT			
Town	GILFORD	Project	S.A.B. 1936
Location	Sta. 299+31 to Sta. 299+61	Stream	POOR FARM BROOK
Designed by	G.R.W.	Date	2-28-36
Drawn	"		3-2-36
Traced	R.M.A.		4-9-36
Checked	T.H.M.		4-1-36
Sheet 3 of 4 Sheets			

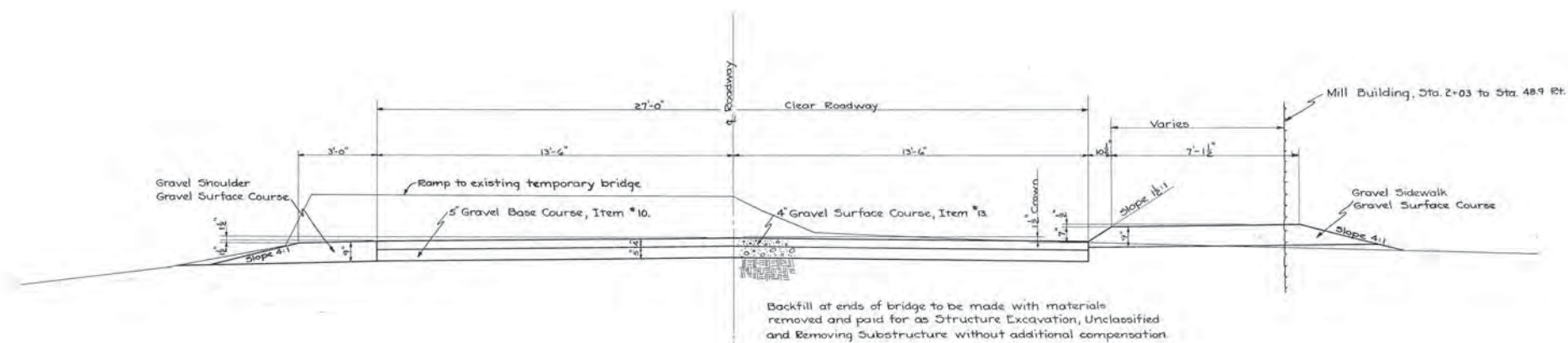




STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
Town	<u>GILFORD</u>
Project	<u>S.A.B. 1936</u>
Location	<u>Sta. 219+31 to Sta. 219+61</u>
Road	<u>BACK OF MOUNTAIN ROAD</u>
Stream	<u>FOUR FARM BROOK</u>
Designed by	<u>G.R.W.</u> Date <u>3-3-36</u>
Drawn "	<u>G.R.W.</u> " <u>3-4-36</u>
Traced "	<u>R.M.A.</u> " <u>4-9-36</u>
Checked "	<u>T.H.M.</u> " <u>4-1-36</u>
Sheet 4 of 4 Sheets	



12-1936	12-1936	WPA	12-1936	12-1936	12-1936
12-1936	12-1936	WPA	12-1936	12-1936	12-1936
12-1936	12-1936	WPA	12-1936	12-1936	12-1936
12-1936	12-1936	WPA	12-1936	12-1936	12-1936



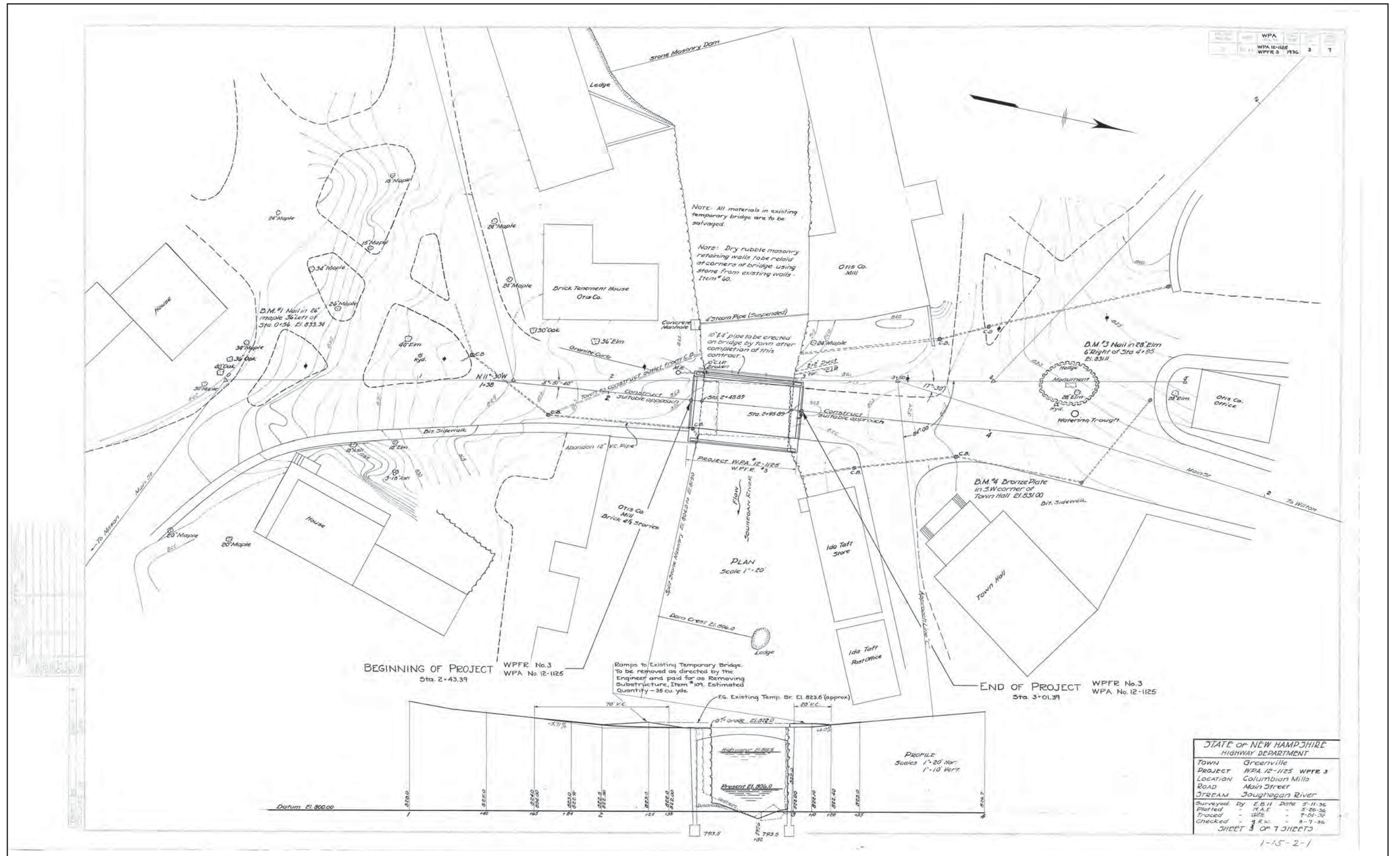
TYPICAL SECTION AT ENDS OF BRIDGE  
SCALE  $\frac{3}{8}$ " = 1'-0"

REVISIONS		DATE	BY	REASON
1	2			
3	4			
5	6			
7	8			
9	10			
11	12			
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95	96			
97	98			
99	100			

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN:	GREENVILLE
PROJECT:	WPA 12-1936, WPR 3
LOCATION:	COLUMBIAN MILLS
ROAD:	MAIN STREET, GREENVILLE
STREAM:	SOUHEGAN RIVER
Designed by	G.R.W. Date 9-19-36
Drawn	" " " 9-21-36
Traced	" " " 9-21-36
Checked	" " " 9-21-36
Sheet 2 of 7 Sheets	

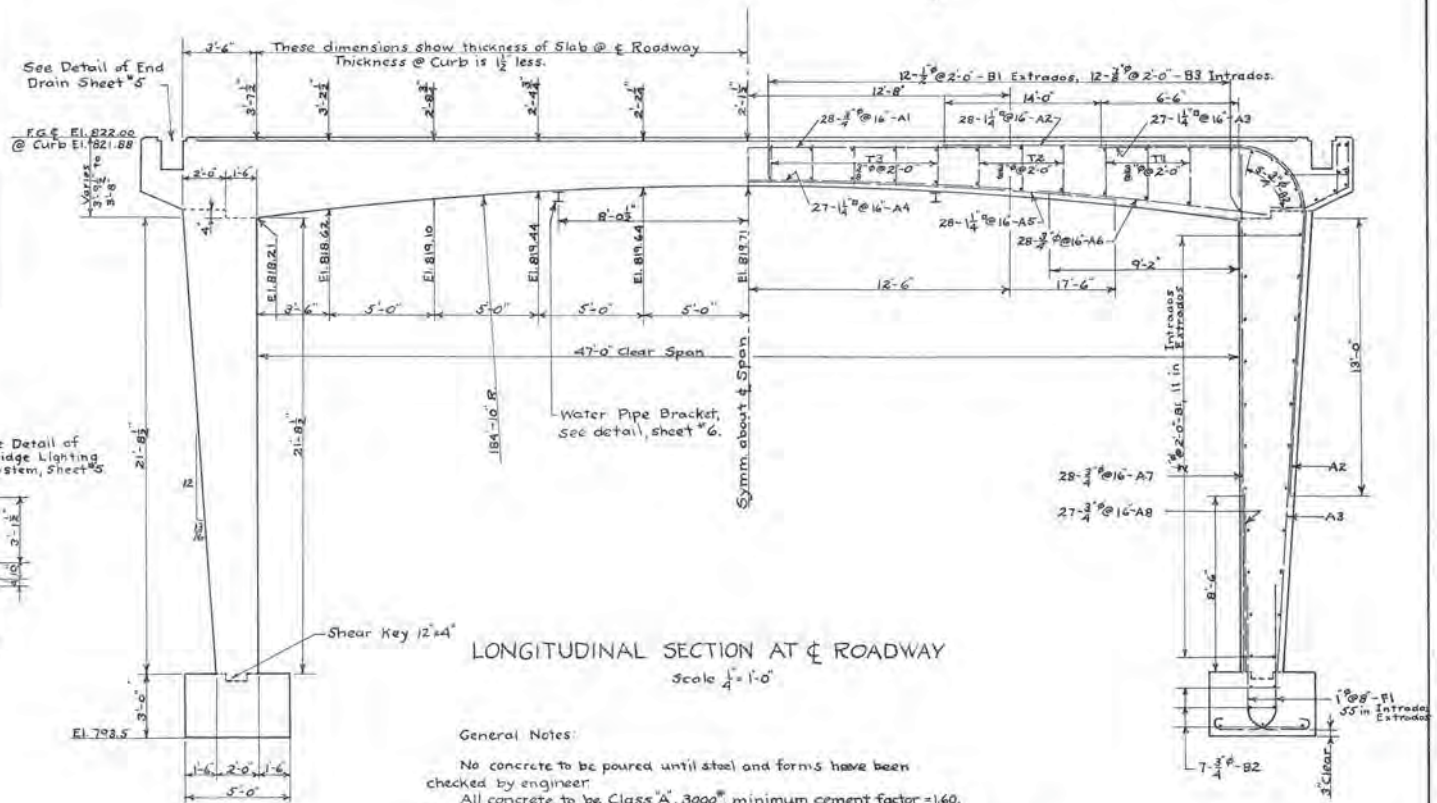
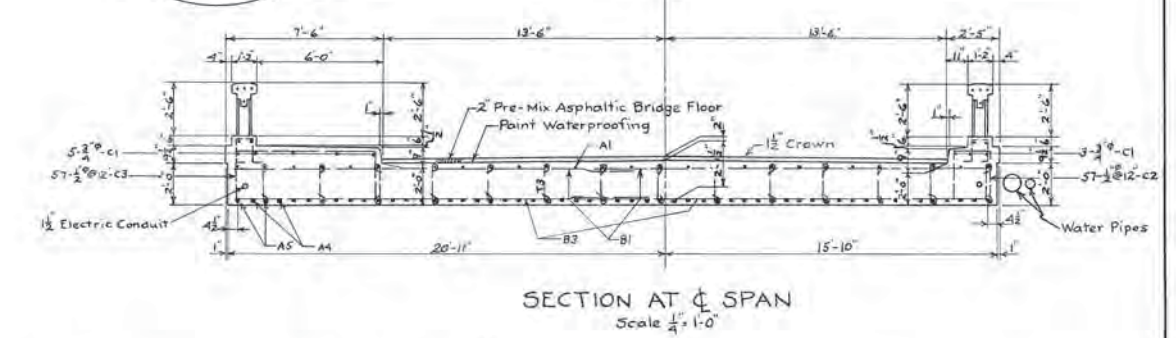
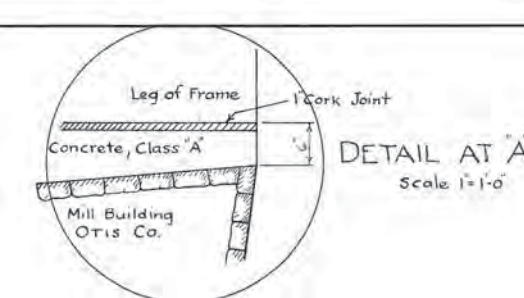
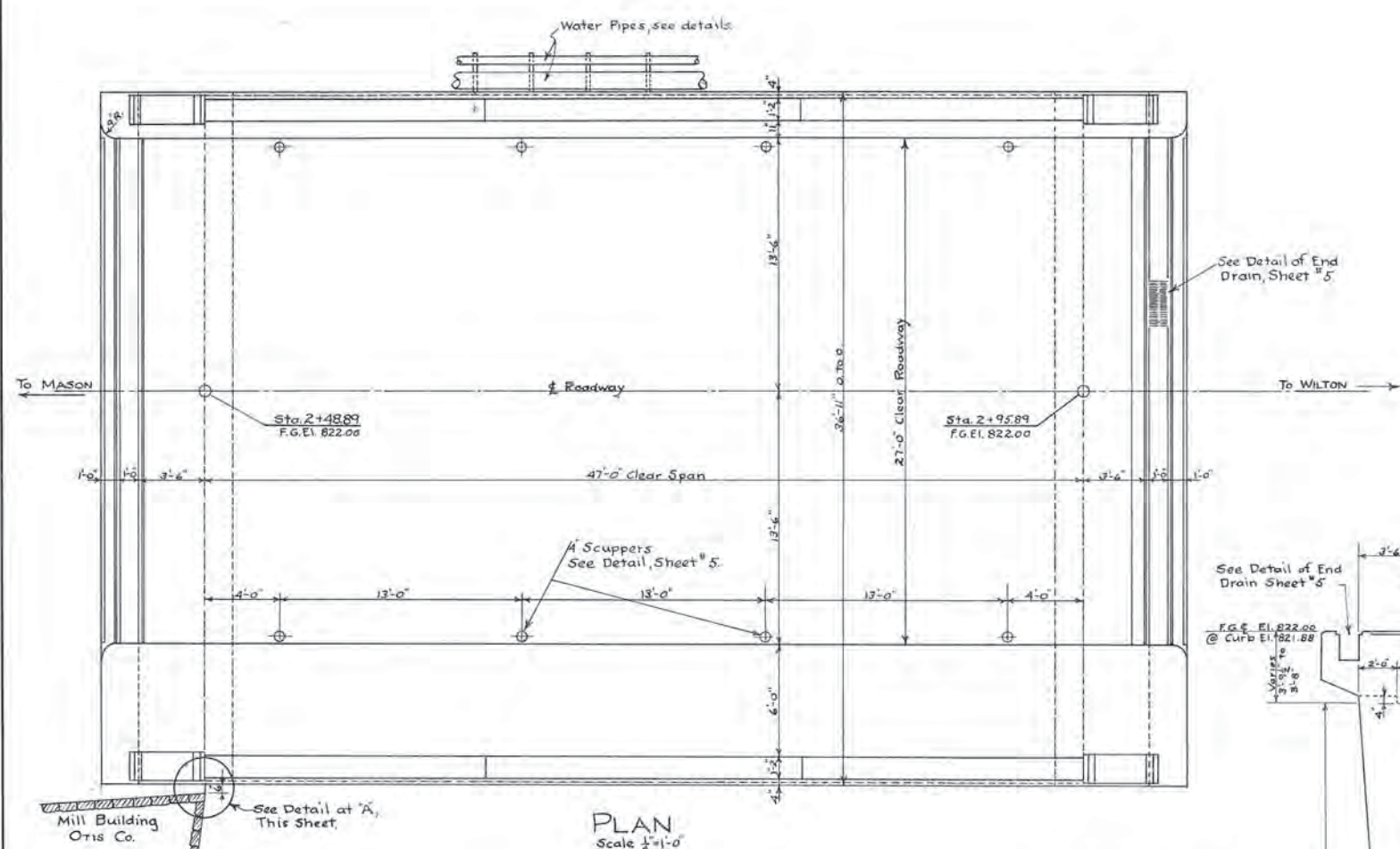
1-15-2-1







FED. ROAD DIST. NO.	STATE	WPA PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N.H.	WPA 12-1125 WPR 3	1934	4	7



**General Notes:**

No concrete to be poured until steel and forms have been checked by engineer.

All concrete to be Class "A", 3000#, minimum cement factor = 140.

Maximum size coarse aggregate = 1 1/2".

Backfill shall be placed at both ends of bridge simultaneously and top of backfill shall be at same elevation at both ends of bridge at all times.

Bridge Railing shall not be built until falsework centering has been removed and backfill placed and compacted.

4" Tile Drains to be placed in abutments 10' cc, at such elevation as will best drain backfill. Backfill around drains to be of stone.

Footings to be carried to firm foundation as directed by the engineer.

Design Loading: H-15. Specifications: AASHTO 1935 and NHHD 1935.

All steel to be 2" clear from face of concrete unless otherwise noted.

Exposed Structural Steel in Water Pipe Bracket to be painted.

Shop Paint - one coat red lead.

Field Paint - two coats approved aluminum.

**STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT**

Town: GREENVILLE  
Project: WPA 12-1125 WPR 3  
Location: COLUMBIAN MILLS  
Road: MAIN STREET, GREENVILLE  
Stream: SOUHEGAN RIVER

Designed by G.R.W. Date 7-10-36  
Drawn " " " 7-14-36  
Traced " L.W.H. " 10-23-36  
Checked " H.C. " 8-7-36

Sheet 4 of 7 Sheets

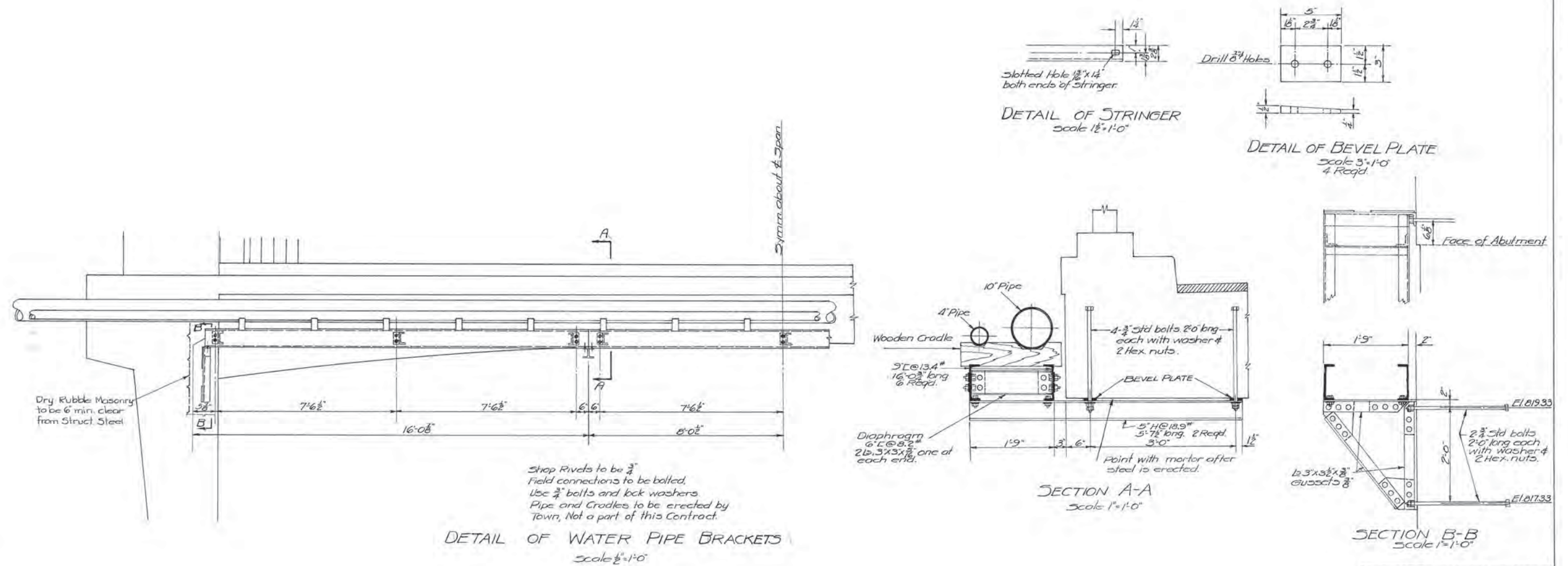
1-15-2-1  
2-8-2-10







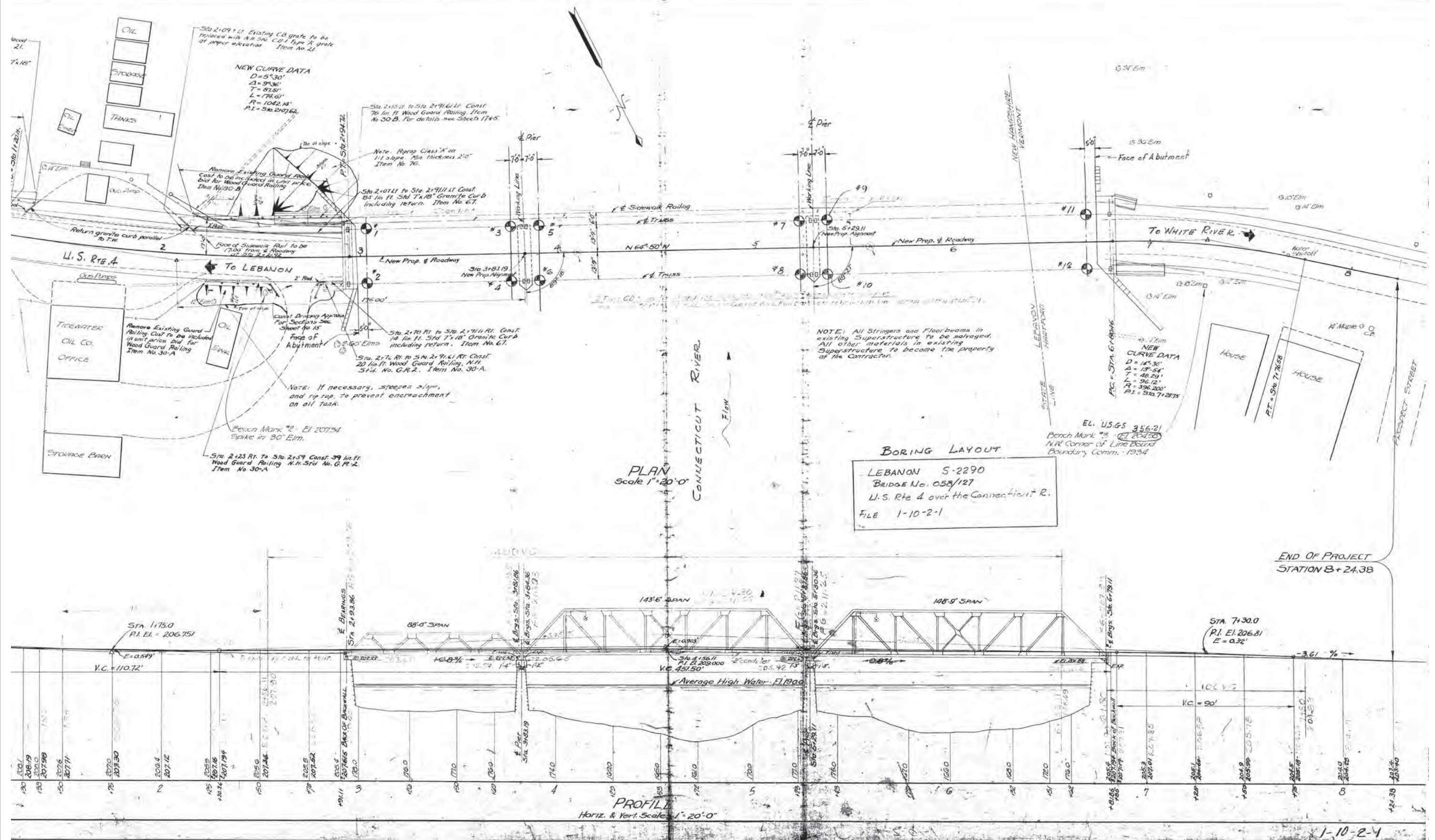
FED. ROAD DIST. NO.	STATE	W.P.A. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	WPA 12-1125 WFR#3	1936	6	7



STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	GREENVILLE
PROJECT	WPA 12-1125 WFR#3
LOCATION	COLUMBIAN MILLS
ROAD	MAIN STREET
STREAM	SOUHEGAN RIVER
DESIGNED by	GRW. DATE 8-4-36
DRAWN by	GRW. " 8-4-36
TRACED by	H.J.A. " 10-23-36
CHECKED by	GRW. " 8-7-36
SHEET 6 OF 7 SHEETS	

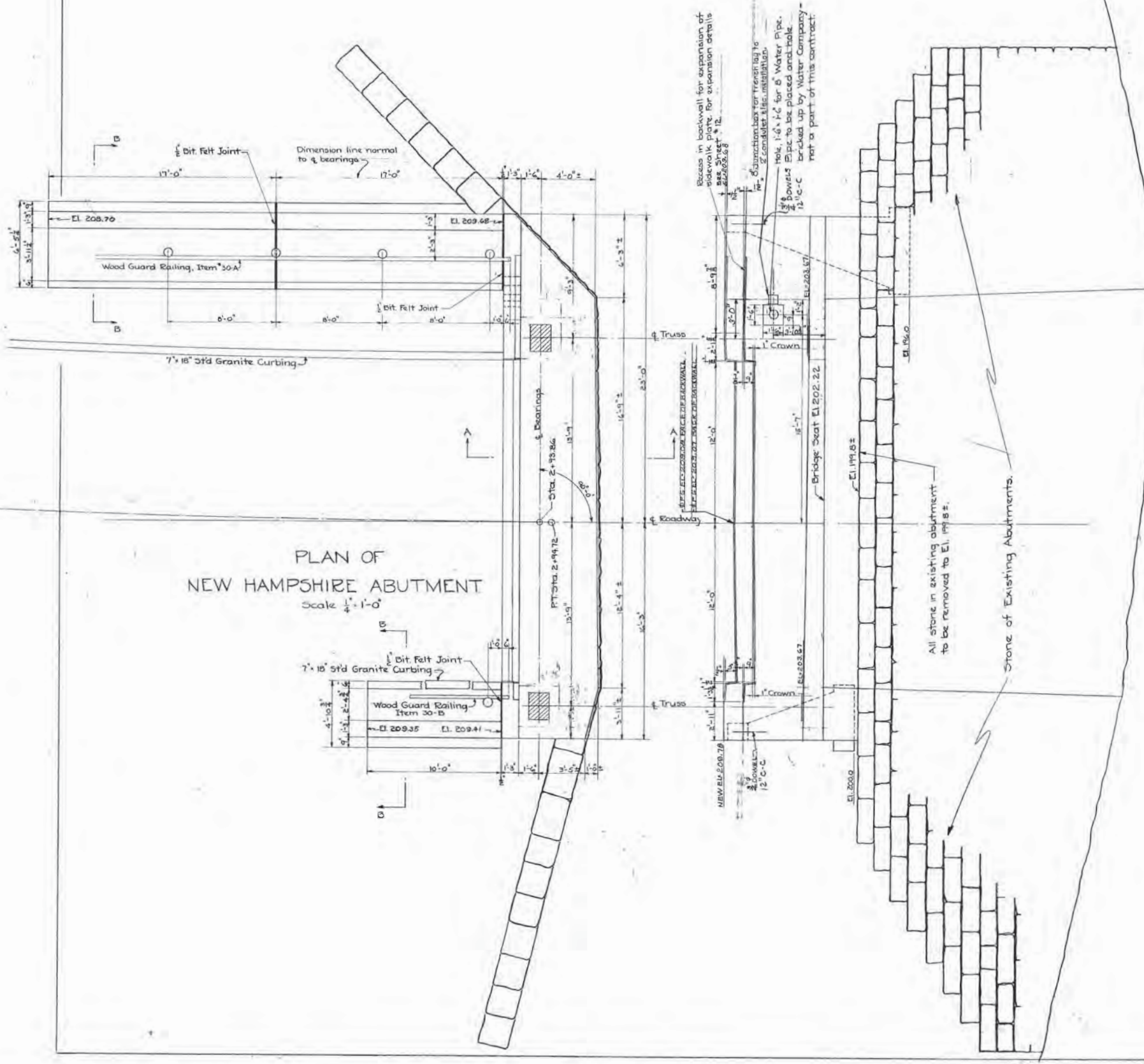
1-15-2-1 20876





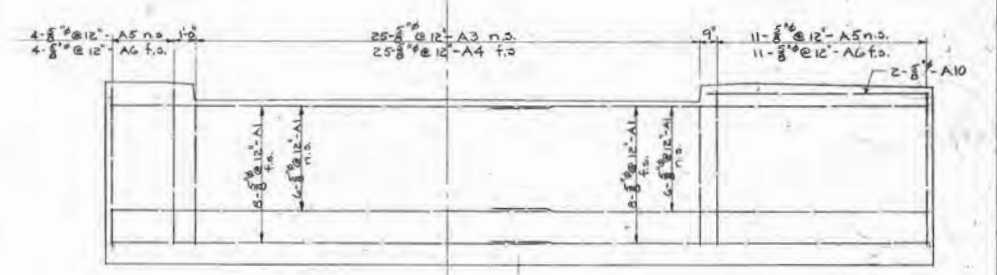


FILE NO.	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
9	NH	ERD 1936	5	21

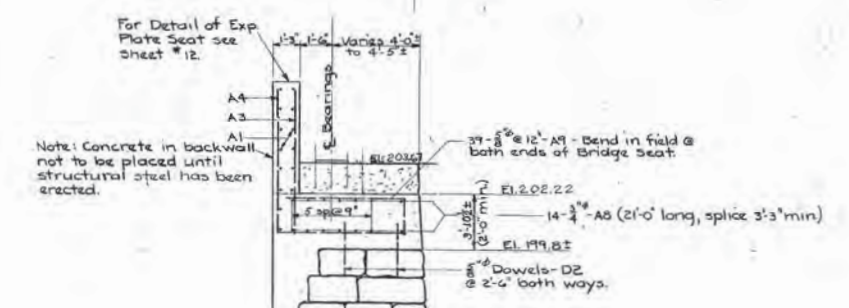


PLAN OF  
NEW HAMPSHIRE ABUTMENT  
Scale  $\frac{1}{4}'' = 1'-0''$

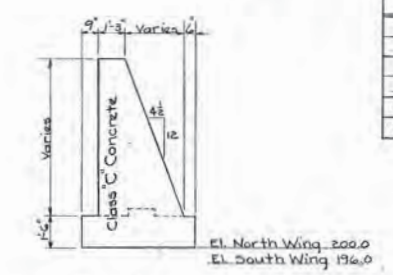
ELEVATION OF NEW HAMPSHIRE ABUTMENT  
Scale  $\frac{1}{4}'' = 1'-0''$



STEEL IN BACKWALL  
Scale  $\frac{1}{4}'' = 1'-0''$



SECTION A-A  
Scale  $\frac{1}{4}'' = 1'-0''$



SECTION B-B  
Scale  $\frac{1}{4}'' = 1'-0''$

ESTIMATE OF QUANTITIES, THIS SHEET

No.	Item	Quantity
33	Reinforcing Steel	2770 lbs.
34	Concrete, Class 'A' (3000')	48 cu. yds.
36	" " " 'C' (2000')	45 " "
98	Structure Excavation, Unclass.	132 " "
109	Removing Substructure	24 " "
318	Re-pointing Stone Masonry	181 sq. yds.

GENERAL NOTES, ABUTMENTS:

All concrete in backwalls and bridge seats to be Class 'A' (3000') with a min. cement factor = 1.60. Max. size coarse aggregate = 2".  
 All concrete in mass wings to be Class 'C' (2000') with a min. cement factor = 1.30. Max. size coarse aggregate = 3".  
 Footings to be carried to firm foundation as directed by the Engineer.  
 All reinforcing steel to be 2" clear from face of concrete except as noted.  
 No concrete to be placed until steel and forms have been checked by the Engineer.  
 Concrete area in contact with bearing plates to be dressed to a true surface at exact elevation shown on bridge seats.  
 All exposed surfaces of concrete to be cast square and trimmed to a uniform round with carborundum stone after concrete has thoroughly set.  
 Existing Stone Masonry to be pointed up as directed by the Engineer, Item #318. Use grooved joint.  
 All stone removed from Existing Abutments to be paid for as Removing Substructure, Item #109. All other excavation for New Abutments to be paid for as Structure Excavation, Unclass., Item #98.  
 REVISED 3-18-37 GRADE CHANGED (DESTROY PREVIOUS PRINTS)

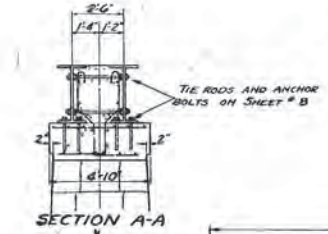
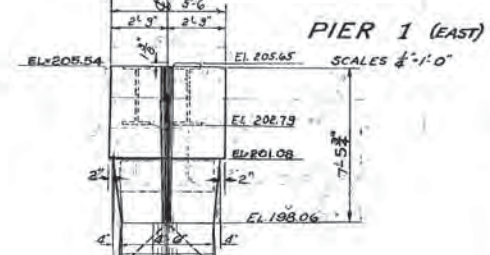
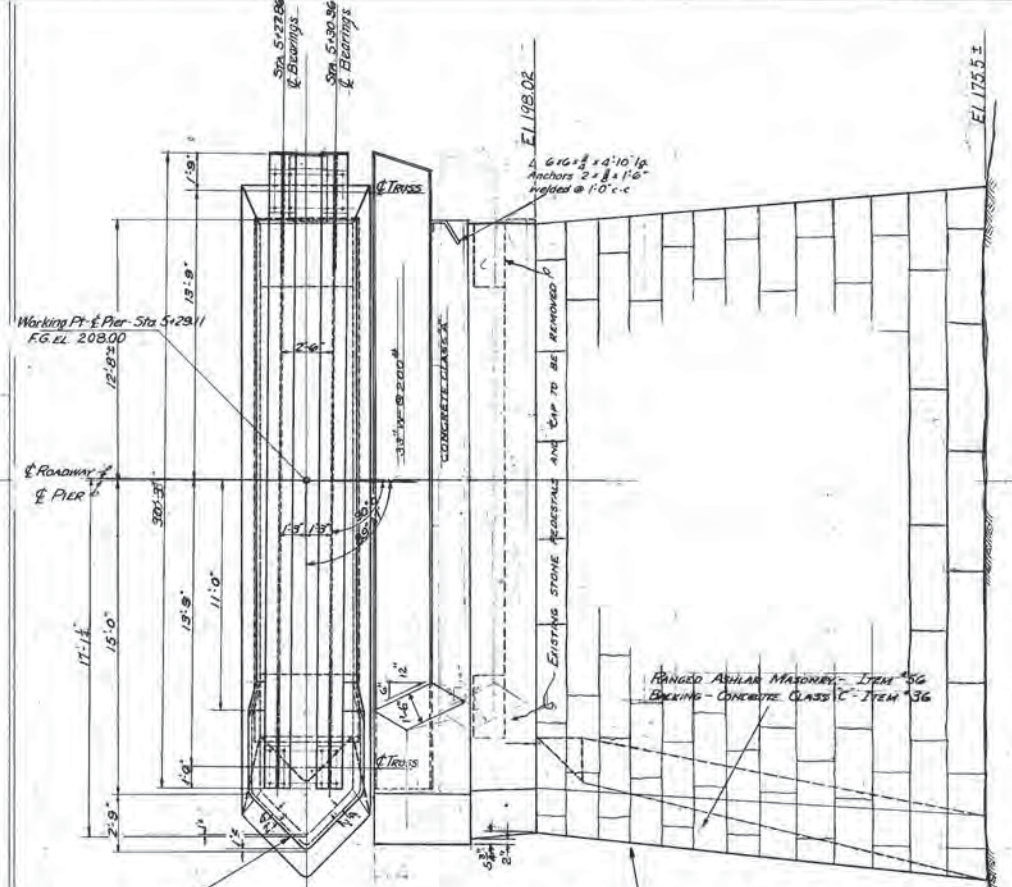
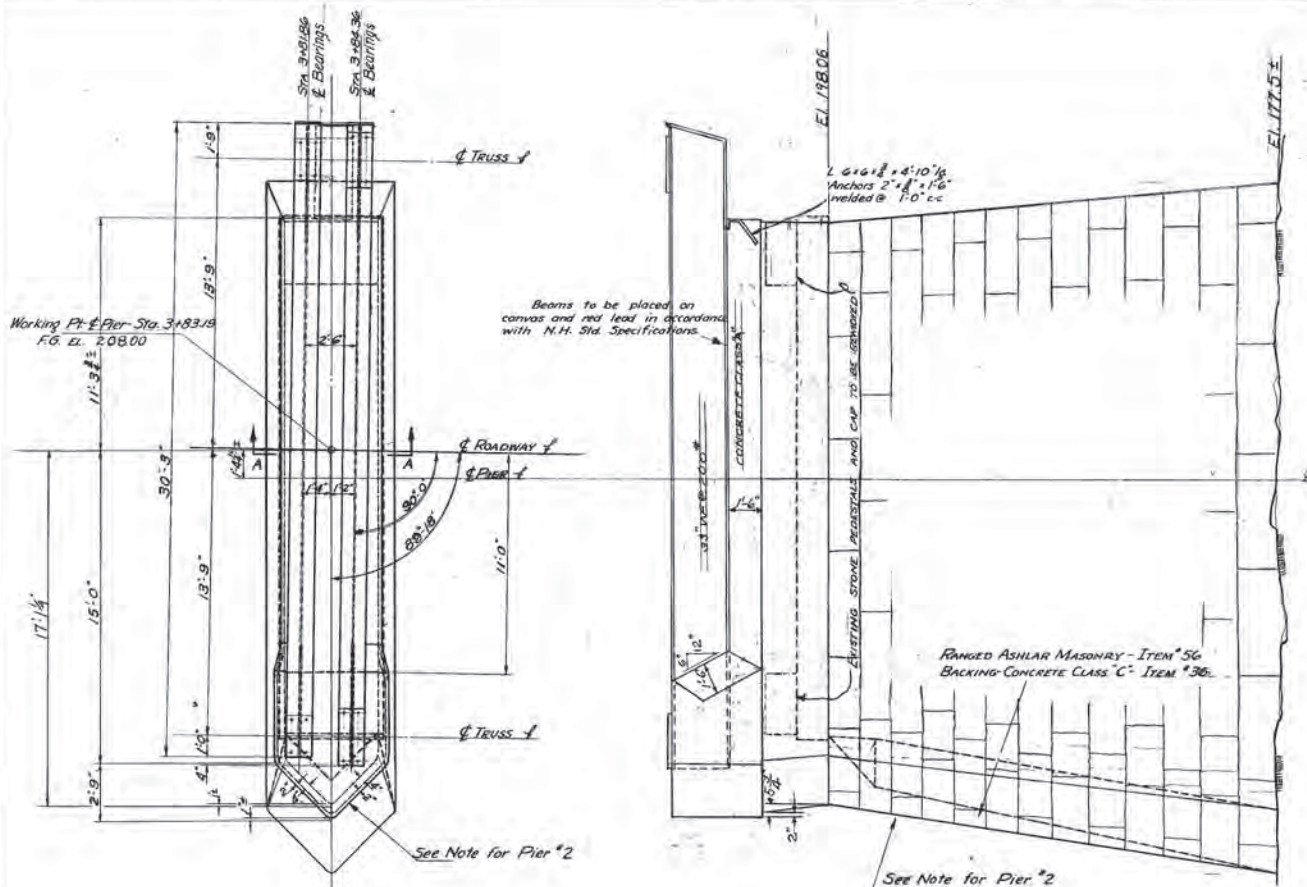
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN:	LEBANON, NH. - HARTFORD VT.
PROJECT:	E.R. #10
LOCATION:	NEAR WEST LEBANON
ROAD:	U.S. ROUTE #4
STREAM:	CONNECTICUT RIVER
Designed by	G.R.W. Date 8-28-36
Drawn	" " " 8-29-36
Traced	" " " 9-11-36
Checked	G.W.H. " 9-11-36
Sheet 5 of 21 Sheets	

2977 1-10-21

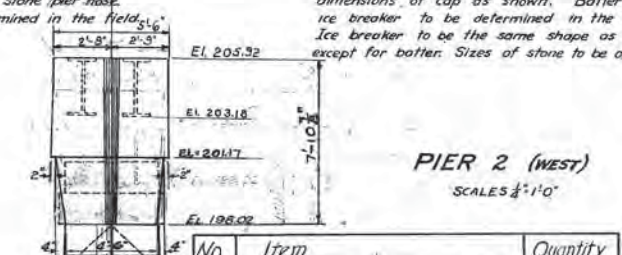
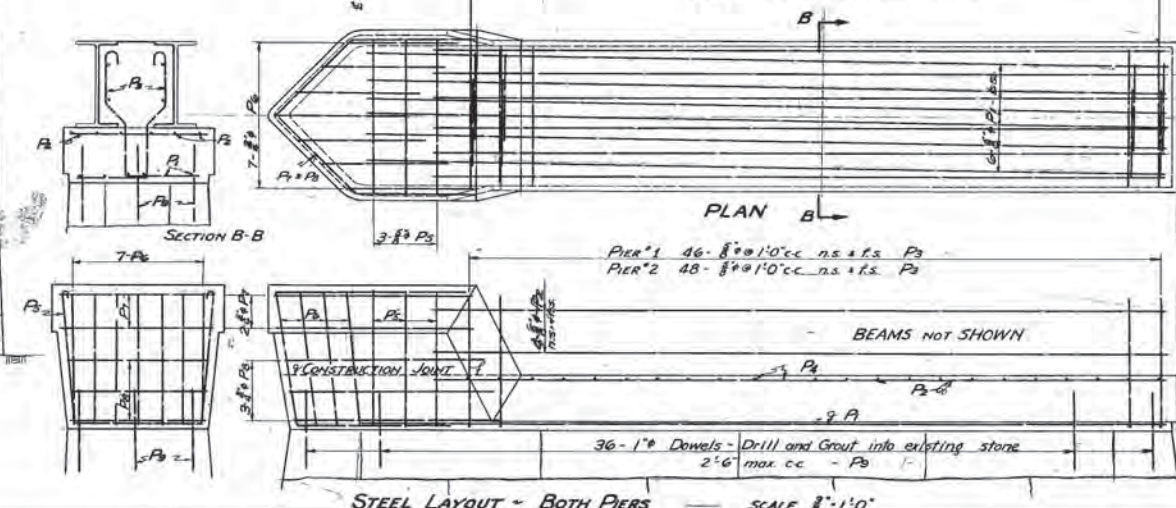






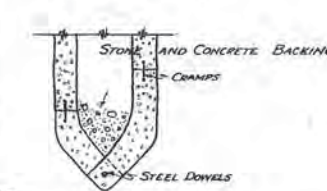


NOTE: DETAILS OF STRUCTURAL STEEL BEAMS ON SHEET #8 BEARING DETAILS AT PIERS ON SHEET #12



No.	Item	Quantity
33	Reinforcing Steel	2767 lbs.
34	Concrete Cl. A	38 cu. yds.
36	" Cl. C	5 "
56	Ashlar Masonry	33 "
80	Structural Steel	25,700 lbs.
109	Removing Substructure	55 cu. yds.
318	Repainting Stone Masonry	257 sq. yds.

Estimate of Quantities this sheet



- GENERAL NOTES**
- Concrete pier caps shall be concrete class A (3000) MIN. CEM. FACTOR 1.60. MAX. SIZE AGGREGATE 2".
  - Backing shall be concrete class C (2000). MIN. CEM. FACTOR 1.50. MAX. SIZE AGGREGATE 3".
  - Stones on present pier noses are tied together with vertical dowels and cramps. (See sketch).
  - All stones laid in new work shall be Ranged Ashlar Masonry - Item #56.
  - Stones laid on both pier noses shall break joints with adjacent stones for a distance preferably not less than their depth.
  - Stone removed may be used in new work. If any stone is so used, the quantity used shall be deducted from Item 109. (Removing Substructure) and paid for as Item #56 (Ranged Ashlar Masonry).
  - Thickness of stone shall not be less than the depth.
  - Surface finish of stone to be the same as at present.
  - Stones shall be thoroughly cleaned of old mortar before placing concrete or laying new stone.
  - Edges of concrete exposed to action of ice or drift shall be rounded to 2" radius. Other edges to be skiently rounded with a carbide stone.
  - Reinforcing steel to be not less than 2" clear from inside of forms.
  - No concrete shall be placed until forms and steel have been checked by the engineer.
  - Existing stone masonry to be painted up as directed by the engineer.

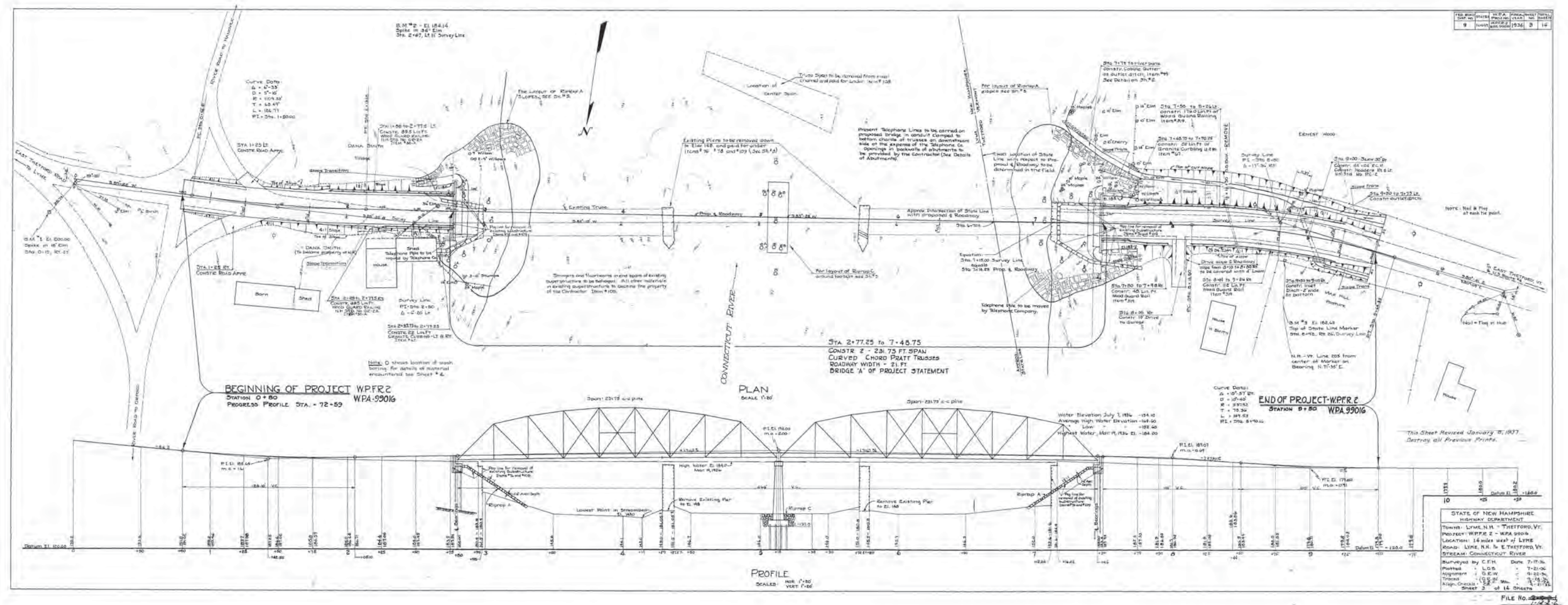
**STATE OF NEW HAMPSHIRE**  
**HIGHWAY DEPARTMENT**  
TOWN - LEBANON, N.H. - HARTFORD, VT.  
PROJECT - E.R. NO. 10  
LOCATION - WEST LEBANON  
ROAD - U.S. 4  
STREAM - CONNECTICUT RIVER

Designed by W.E.H. Date 8-22-36  
Drawn by W.E.H. Date 8-24-36  
Design Chkd. by G.R.W. Date 9-16-36  
Details by G.R.W. Date 9-16-36

SHEET 7 OF 21 SHEETS

2977 1-10-2-1

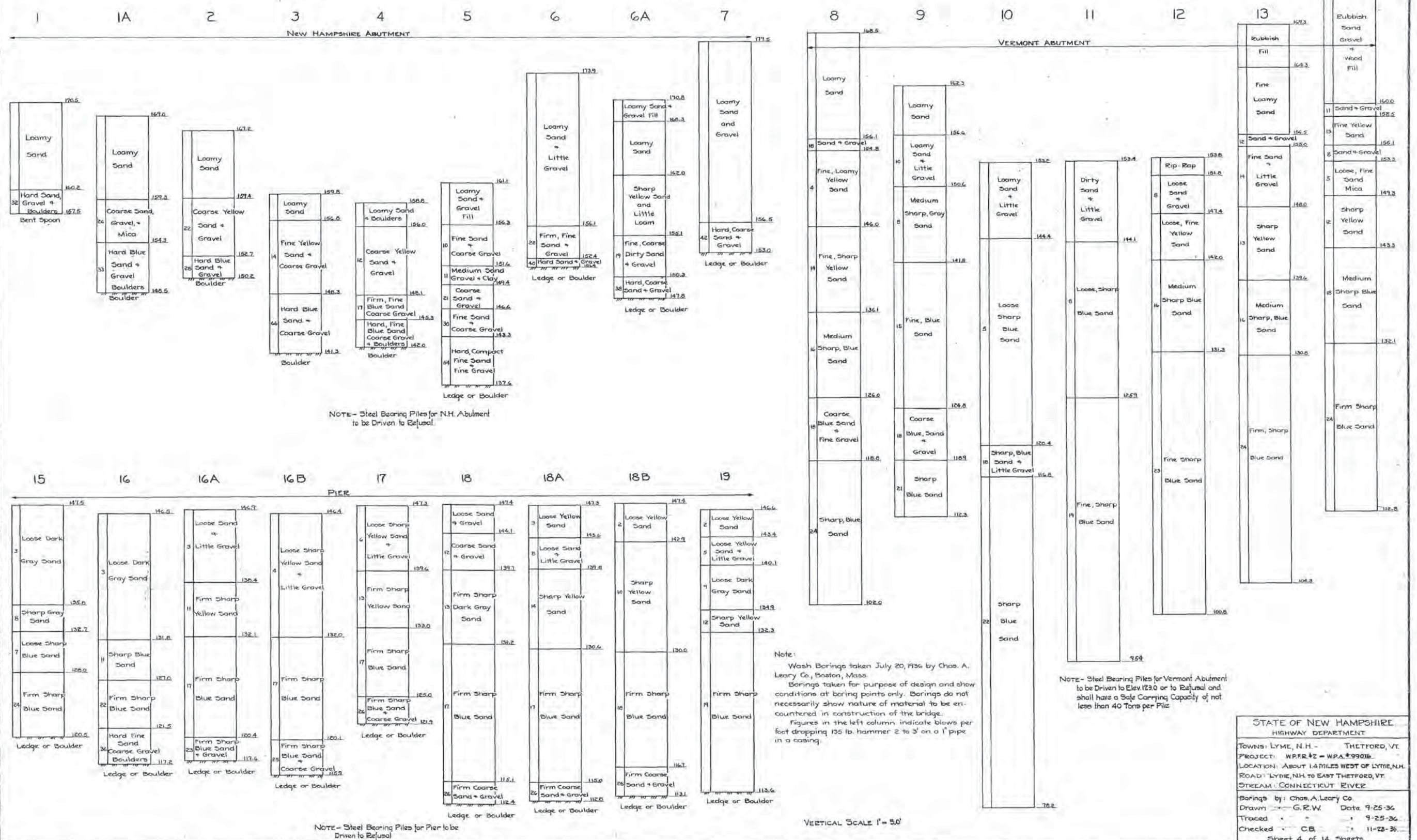






BORING NO.

FILE NO.	DATE	W.P.A. NO.	PIER NO.	SHEET NO.	TOTAL SHEETS
9	NH-VT	W.P.R.#2 W.P.A.#9906	1936	4	14



STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWNS: LYME, N.H. - THETFORD, VT.  
PROJECT: W.P.R.#2 - W.P.A.#9906  
LOCATION: ABOUT 1.4 MILES WEST OF LYME, N.H.  
ROAD: LYME, NH TO EAST THETFORD, VT.  
STREAM: CONNECTICUT RIVER

Borings by: Chas. A. Leary Co.  
Drawn: G.R.W. Date: 9-25-36  
Traced: " " 9-25-36  
Checked: C.B. " 11-28-36

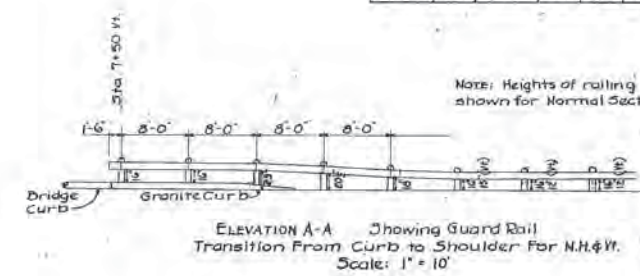
Sheet 4 of 14 Sheets

FILE NO. 2-3-3-1

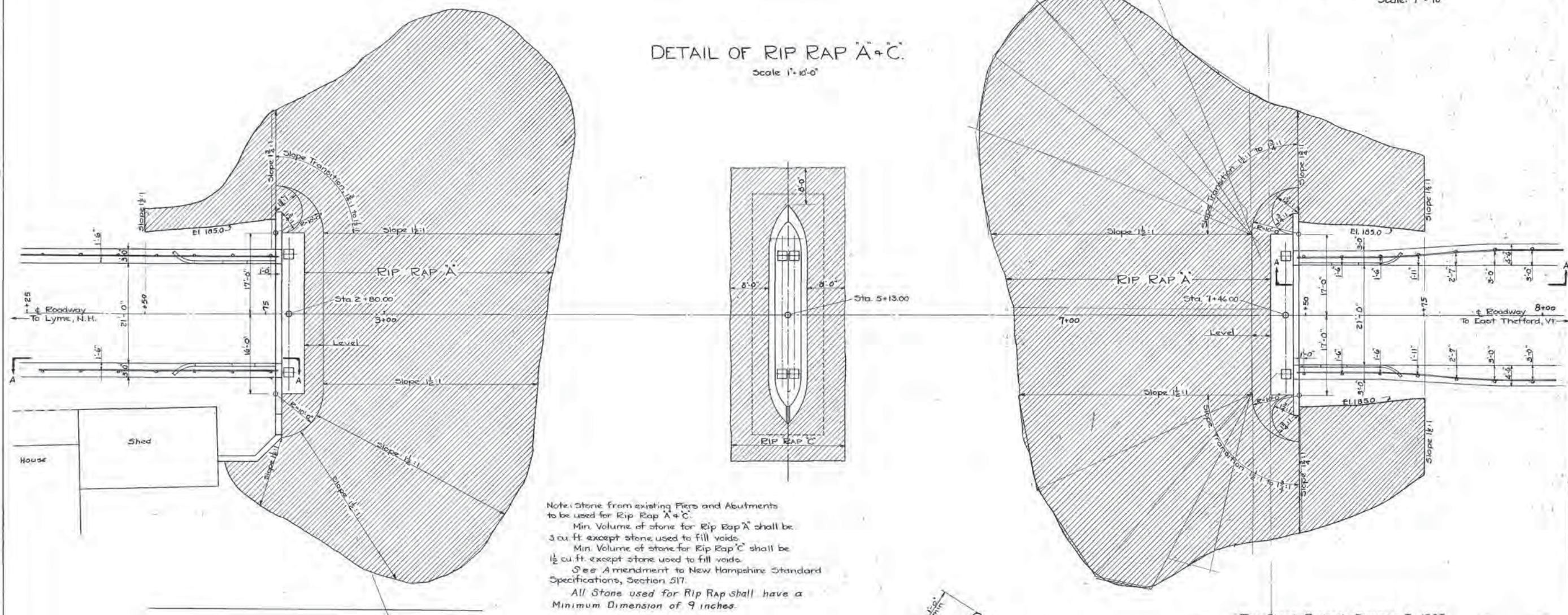


FED. ROAD DIST. NO.	STATE	W.P.A. YEAR	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.-VT.	1936	1936	5	14

Note: Heights of railing shown for Normal Sections.

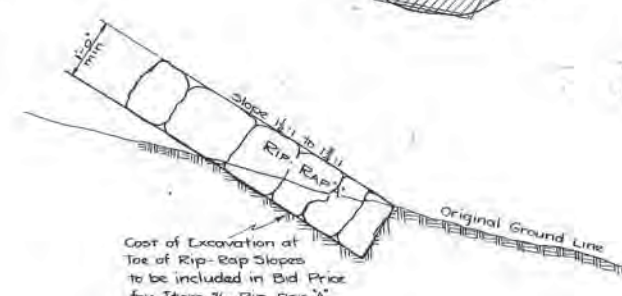
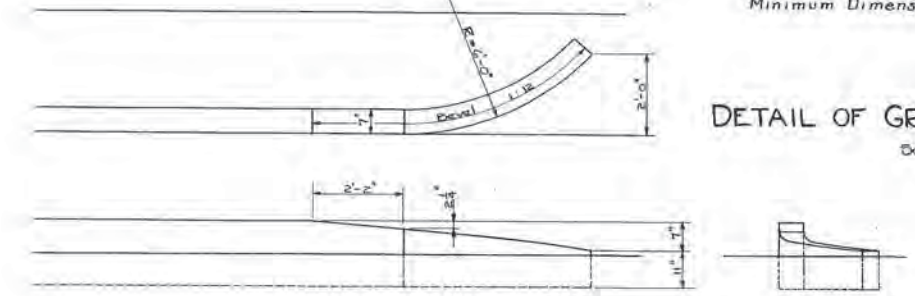


DETAIL OF RIP RAP A+C.  
Scale 1" = 10'-0"



Note: Stone from existing Piers and Abutments to be used for Rip Rap A+C.  
Min. Volume of stone for Rip Rap A shall be 3 cu. ft. except stone used to fill voids.  
Min. Volume of stone for Rip Rap C shall be 1 1/2 cu. ft. except stone used to fill voids.  
See Amendment to New Hampshire Standard Specifications, Section 517.  
All Stone used for Rip Rap shall have a Minimum Dimension of 9 inches.

DETAIL OF GRANITE CURB RETURN  
Scale 1/2" = 1'-0"



DETAIL AT TOE OF RIP RAP SLOPE

This Sheet Revised January 8, 1937  
Destroy all Previous Prints.

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWNS: LYME, N.H. - THETFORD, VT.	
PROJECT: W.P.R. 2 - W.P.A. 99016	
LOCATION: About 1/4 miles west of LYME, N.H.	
ROAD: LYME, N.H. to E. THETFORD, VT.	
STREAM: CONNECTICUT RIVER	
Designed by G.R.W.	Date 10-30-36
Drawn by	10-30-36
Traced by	12-21-36
Checked by	12-21-36
Sheet 5 of 14 Sheets	
File No. 1-18-2-6	

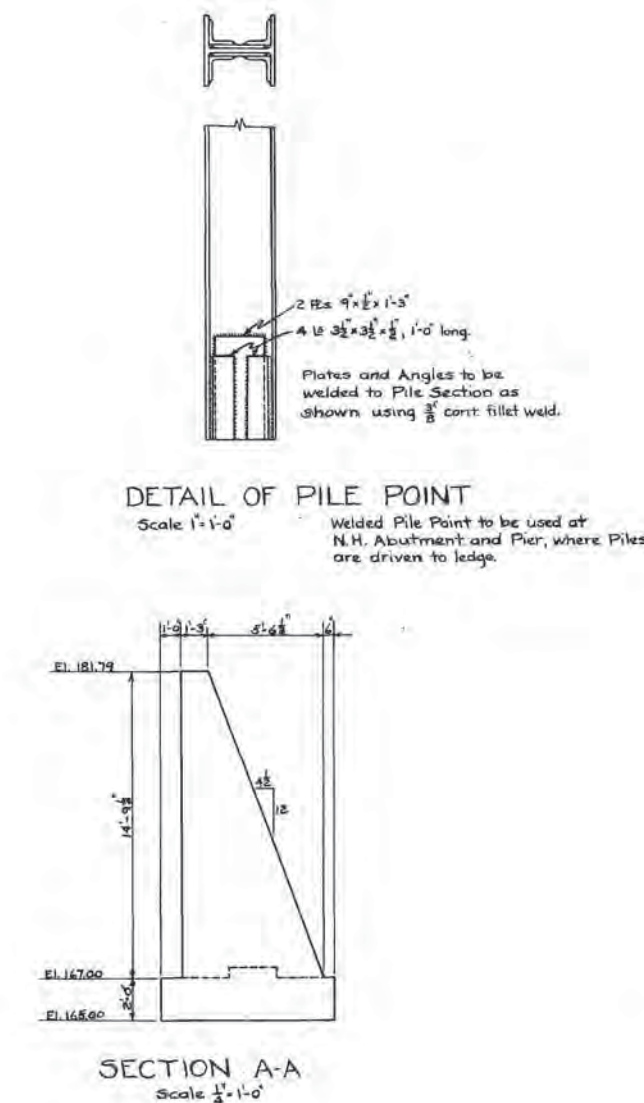


STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWNS: LYME, N.H. → TETFORD, VT.  
PROJECT: WPRF 72 - WPA '99016  
LOCATION: About 14 mi. west of LYME, N.H.  
ROAD: LYME, N.H. to E. TETFORD, VT.  
STREAM: CONNECTICUT RIVER

Designed by G.R.W.      Date 10-20-36  
Drawn      G.R.W.      "      10-21-36  
Traced      L.W.H.      "      6-7-37  
Checked      C.B.      "      11-13-36

Sheet 6 of 14 Sheets



General Notes:

The number of loading tests for steel bearing piles shall be determined by the Engineer in the field.

All concrete in bridge seat and backwall to be Class "B". Minimum Cement Factor = 145. Maximum size Coarse Aggregate = 1 1/2".

All concrete in mass wing to be Class "C". Minimum Cement Factor = 130. Maximum size Coarse Aggregate = 3".

Fill behind backwall shall not be placed until all Riprap in front of abutment is in place.

Shaded areas on bridge seat are to be poured high, dressed to exact elevation, and finished to a true smooth surface.

* Estimated Volume of Substructure to be removed	= 225 cu yds.
* " " " to be paid for under Item 76	= 70 " "
* " " " " " " " " " "	= 109A
* " " " " " " " " " "	= 155 "

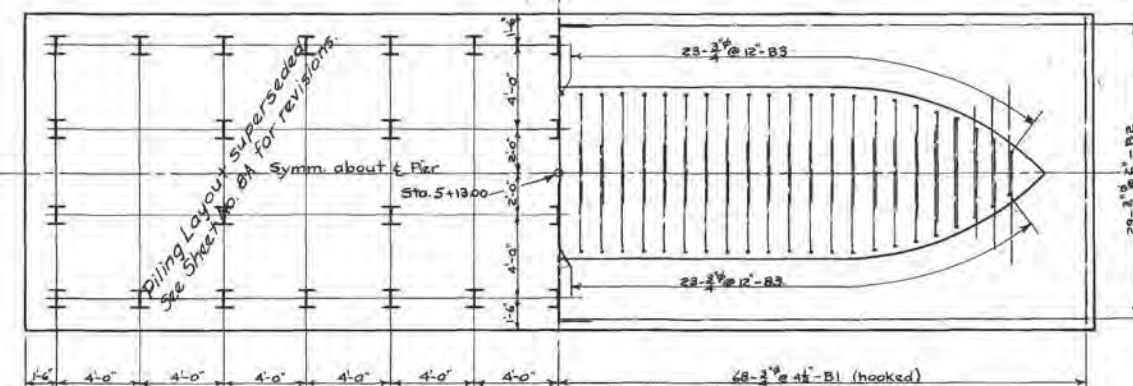
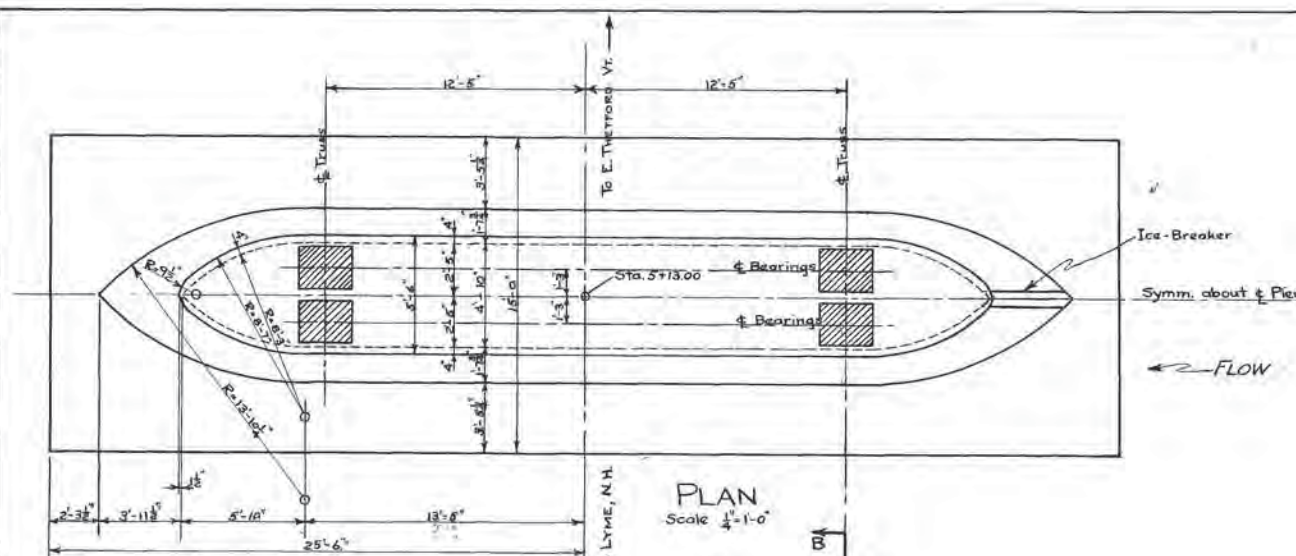
Steel bearing piles must be driven at exact location shown on plans.







FED. ROAD DIST. NO.	STATES	WPA PROJ. NO.	FISCAL YEAR	SHEET NO.	TOT. SHE.
9	NH-VT	WPFR #2 WPA #99016	1936	8	1

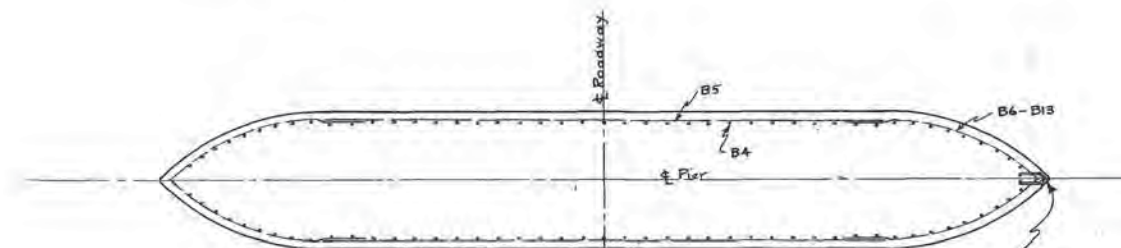


### HALF PILING LAYOUT

Scale  $\frac{1}{4}'' = 1'-0''$   
40 Piles required

### HALF FOOTING STEEL LAYOUT

Scale  $\frac{1}{4} = 1'-0"$



SECTION A-A  
Scale  $\frac{1}{4}'' = 1'-0''$

Ice-Breaker on upstream  
nose of Pier: L  $6' \times 6' \times \frac{1}{2} \times 39'-5"$   
Anchor Straps: R  $1\frac{1}{2}' \times \frac{1}{4}' \times 1'-6"$ ,  
weld to angle (using  $\frac{1}{4}$  corr.  
fillet weld) @  $1'-6"$ , alternate  
legs of angle.

This Sheet Revised January 8, 1937  
 Destroy all Previous Prints.  
 Revised March 15, 1937. HCN

ESTIMATE OF QUANTITIES - PIER

No.	Item	Quantity
33	Reinforcing Steel	15713 lbs.
35	Concrete, Class "B" (2500')	508 cu yd.
78	Riprap "C"	315 cu yd.
80	Structural Steel	2260 lbs.
98	Structure Excavation, Uniclass, Pier	300 cu yd.
103	Steel Bearing Piles, 12" x 74"	1400 lin. ft.
104B	Removing Substructure (Exist Piers)	124 cu yd.
103A	Loading Tests for Steel Bearing Piles	1 each

General Notes:

The number of loading tests for steel bearing piles shall be determined by the Engineer in the field.

Steel bearing piles must be driven at exact location shown on plans.

All concrete to be Class "B" (2500<sup>psi</sup>) Minimum Cement Factor = 1.45. Maximum Size Coarse Aggregate = 1½".

Shaded areas on bridge seat are to be poured high, dressed to exact elevation, and finished to a true smooth surface.

\* Estimated Volume of Substructure to be removed = 619 cu.yds.

\* " " to be paid for under Item 76478 = 495 " "

\* 21 22 23 24 25 26 27 28 29 30 1098 x 124 ✓

\* The quantity of Substructure to be removed and the quantity of concrete to be removed.

ties to be paid for under Items 74, 78, 109A, & 109B shall be determined accurately by the Engineer in the field.

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWNS: LYME, N.H. - THETFORD, VT.

PROJECT: WFFR #2 - WPA # 99016

LOCATION: About 1.4 mi west of LYME, NH

ROAD: LYME, N.H. to E. THETFORD, VT.

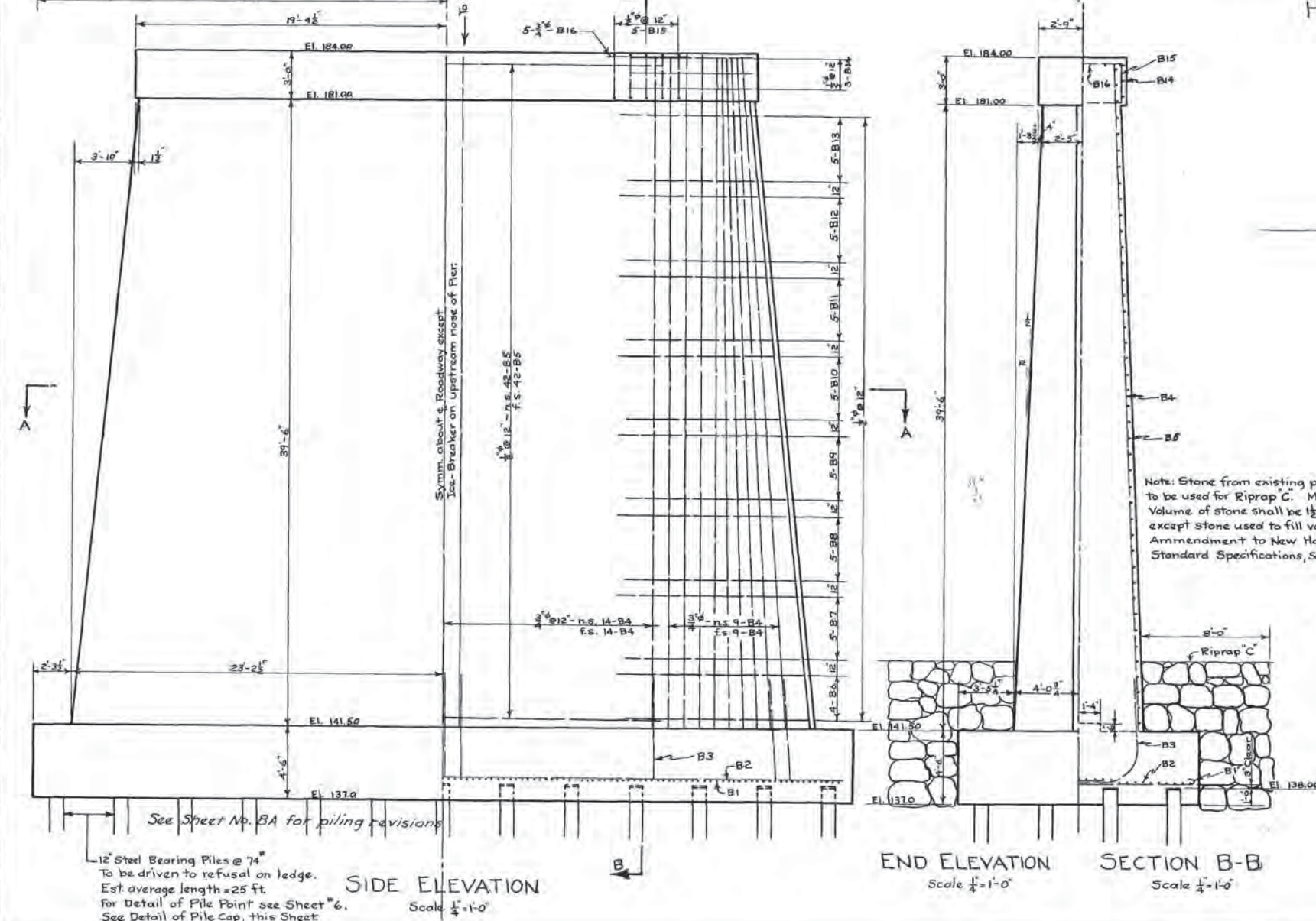
STREAM: CONNECTICUT RIVER

Designed by G.R.W. Date 10-23-36

Drawn	" G.R.W.	" 10-27-36
Forwarded	"	" 11-2-36

Traced	"	L.W.H.	"	6-8-37
Checked	"	C.B.	"	11-18-36

FILE NO. ~~2-2-1~~



END ELEVATION  
Scale  $\frac{1}{4}'' = 1'-0''$

SECTION B-B  
Scale  $\frac{1}{4}'' = 1'-0''$

12" Steel Bearing Piles @ 74"  
To be driven to refusal on ledge.  
Est. average length = 25 ft.  
For Detail of Pile Point see Shee  
See Detail of Pile Cap, this Sheet

SIDE ELEVATION  
6. Scale  $\frac{1}{4}'' = 1'-0''$

DETAIL OF PILE CAP  
Scale 1"=1'-0"

Scale: 1" = 1'-0"

Note: Stone from existing piers to be used for Riprap "C." Minimum Volume of stone shall be  $\frac{1}{2}$  cu ft except stone used to fill voids. See Amendment to New Hampshire Standard Specifications, Section 517.

A-44







Item #7.5 Unc'l Channel Excav. Est. 135 cu yds.  
Material to be moved into hole at  
U.S. and back leaving subgrade as  
shown on plans.

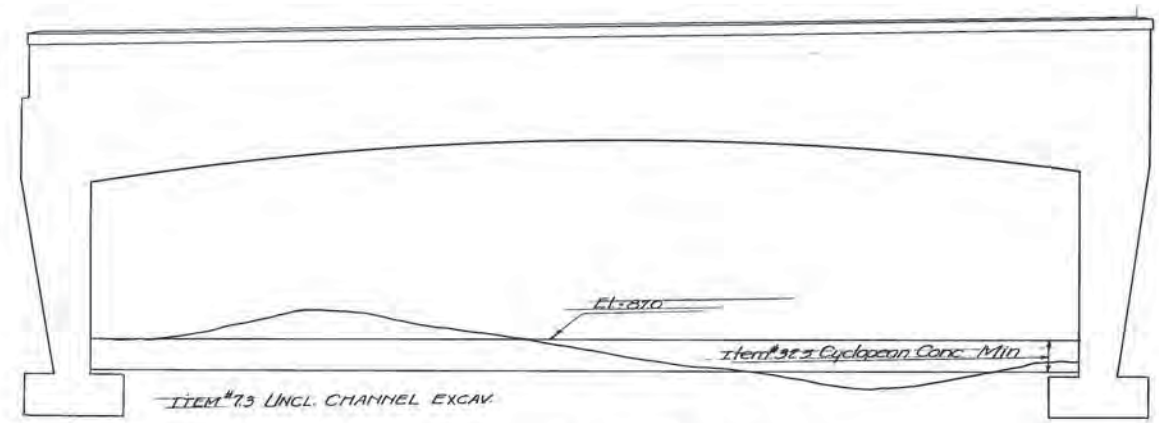
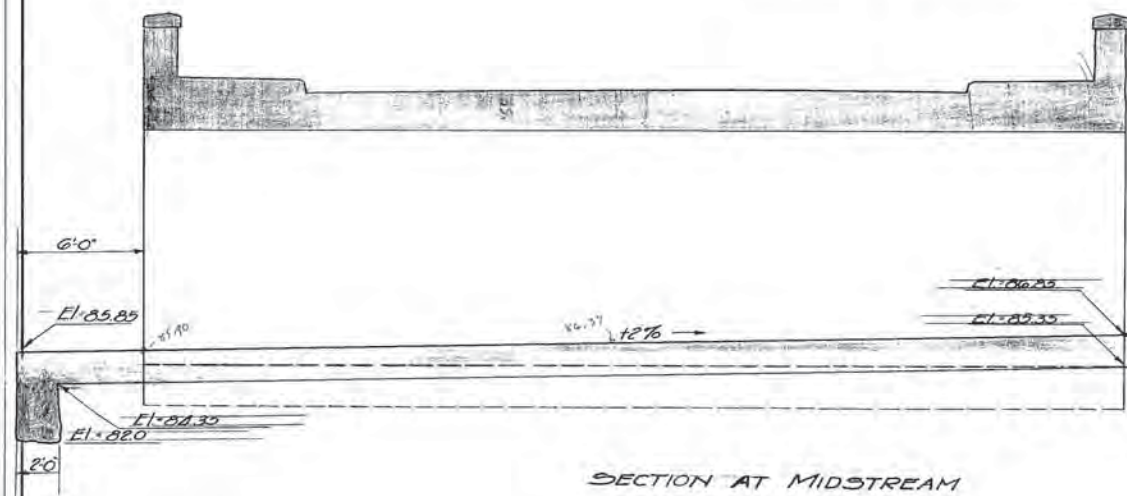
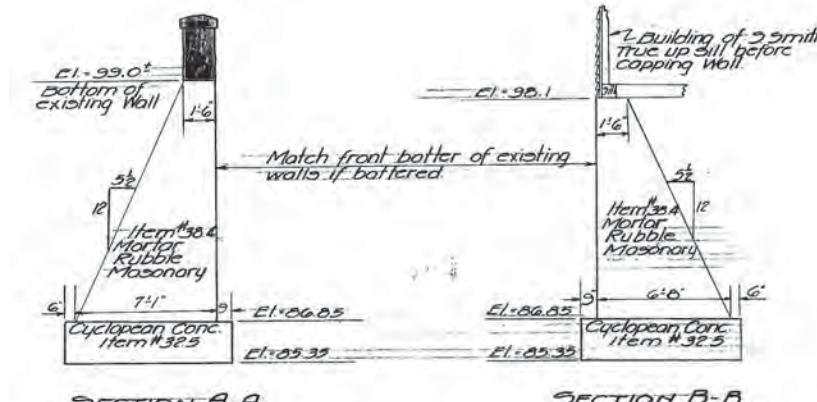
Item #14.1 Gravel Borrow Est. 500 cu yds.  
Material may be washed into place  
or washed in water as directed  
by the Engineer.

Item #22.5 Cyclopean Conc. Est. 475 cu yds.  
The Concrete shall be Class  
having a min. cement factor of 130  
bbls. per cu yd. Max. size of coarse  
aggregate 2 1/2" →

Item #38.4 Mortar Rubble Masonry  
Est. 100 cu yds.  
Demolition and salvage of stone  
from any wrecked portion of old  
Masonry walls shall be included  
in price bid for this item.

Plum Stone shall be clean, sound  
and free from plant growths.

WORK TO BE DONE UNDER  
N.H.H.D. SPECS MAY 1, 1938



UPSTREAM ELEVATION

PLAN TRACED BY	DATE
" CHECKED "	" "
PROFILE TRACED BY	" "
" CHECKED "	" "
SECTIONS TRACED BY	" "



FDL ROAD DIST. NO.	STATE	E. R. PROJ. NO.	FINISH YEAR	SHEET NO.	TOTAL SHEETS
9	N. H.	ER 6		1	10

INDEX OF SHEETS

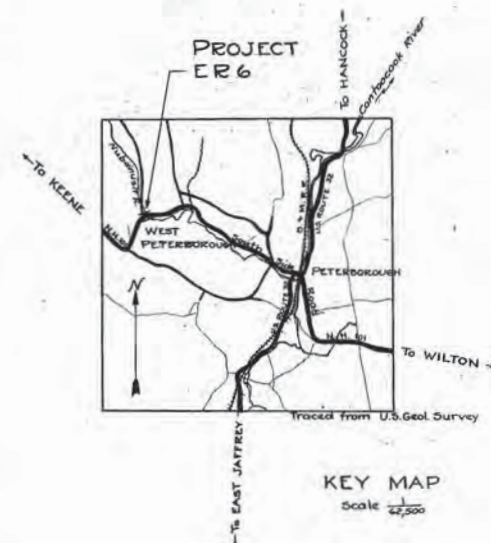
SHEET NO 1	TITLE PAGE
" "	2 TYPICAL SECTION OF IMPROVEMENT
" "	3 PLAN AND PROFILE
" "	4 CROSS SECTIONS
" "	5-9 BRIDGE PLANS
" "	10 STANDARDS

STATE OF NEW HAMPSHIRE  
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED  
**EMERGENCY RELIEF PROJECT**  
NO - ER 6  
**SOUTH SIDE**  
ROAD

SCALES { PLAN, 1"=20'-0"  
          { PROFILE, VERT: 1"=20'-0" HOR: 1"=20'-0"  
          { CROSS SECTION, VERT: 1"=5'-0" HOR: 1"=5'-0"

NOTE. This project to be constructed in accordance with standard specifications on file with the Bureau of Public Roads.



FOR LAYOUT  
SEE SHEET NO-3

**TOWN OF PETERBOROUGH**  
**HILLSBORO COUNTY**

LAYOUT  
SCALE 1"=20'-0"

CONVENTIONAL SIGNS

TOWN LINE	-----	SURVEY LINE	-----
FENCE LINE	-----	CULVERTS	-----
STONE WALL	-----	POWER POLE	-----
UNFENCED PROPERTY	-----	TELEPHONE POLE	-----
TRAVELED WAY	-----	GROUND ELEVATION	-----
RAILROADS	-----	GRADE ELEVATION	-----
RETAINING WALL	-----		

Plans drawn by G.R.W.  
Plans traced by .....  
Plans checked by .....

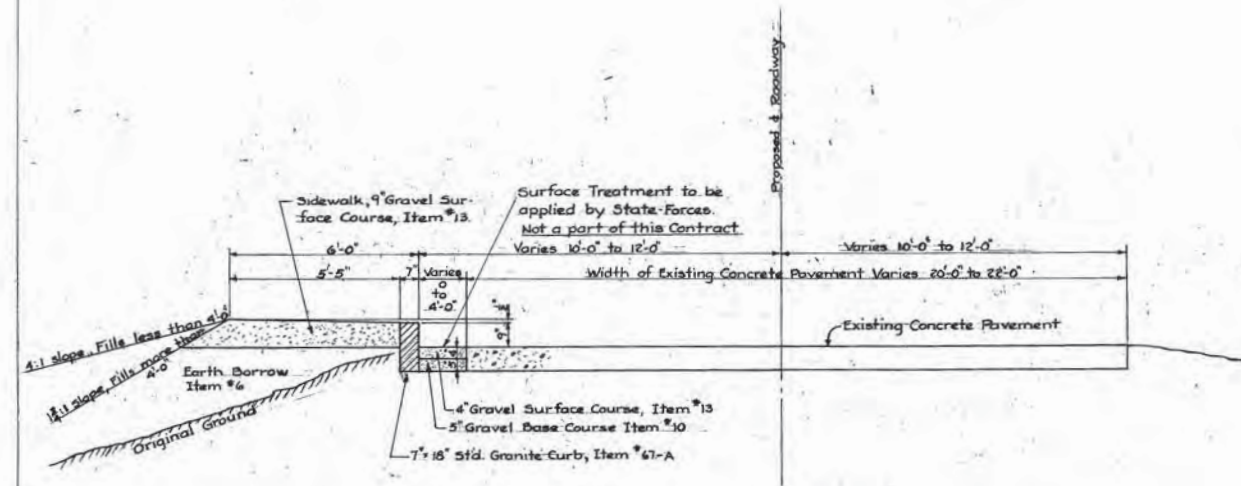
APPROVED: *W.H. Dickinson*  
CHIEF ENGINEER  
APPROVED: *J.C. Couett*  
HIGHWAY COMMISSIONER

RECOMMENDED FOR APPROVAL: \_\_\_\_\_  
DISTRICT ENGINEER, BUREAU OF PUBLIC ROADS.  
RECOMMENDED FOR APPROVAL: \_\_\_\_\_  
CHIEF ENGINEER, BUREAU OF PUBLIC ROADS.  
APPROVED: \_\_\_\_\_  
DIRECTOR, BUREAU OF PUBLIC ROADS.

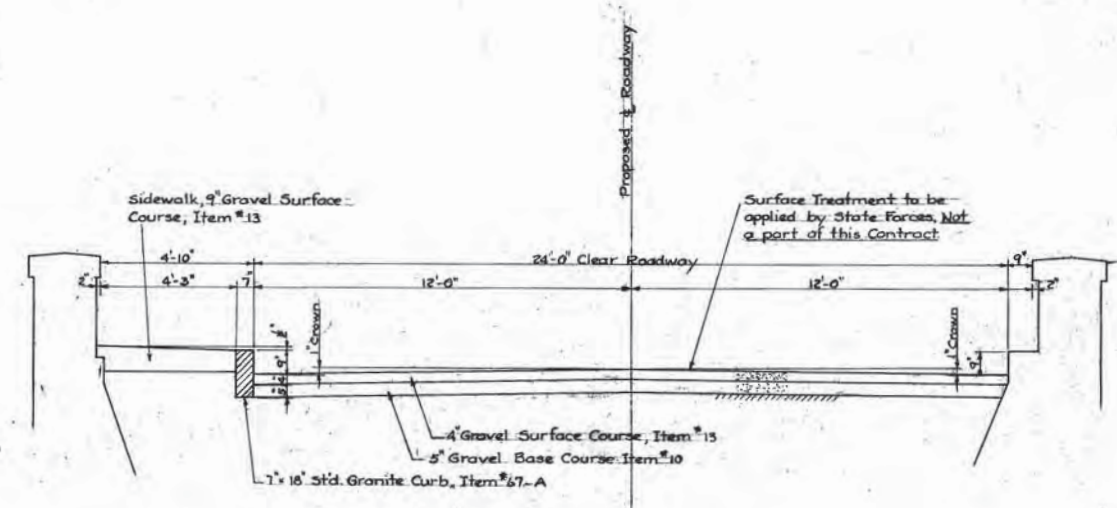
1-13-3-2



FED. ROAD DIST. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	ER 6	2	10



TYPICAL SECTION OF IMPROVEMENT  
SCALE  $\frac{3}{8}$ " = 1'-0"



TYPICAL SECTION ADJACENT TO BRIDGE  
(Existing Concrete Pavement to be removed Sta. 0+86 to 2+86)  
SCALE  $\frac{3}{8}$ " = 1'-0"

Note: Roadway areas surfaced with Gravel in this contract shall be resurfaced by the State with Concrete Pavement as soon as the embankments have settled sufficiently. Not a part of this contract.

057/108  
BRIDGE No. 17.6 AM

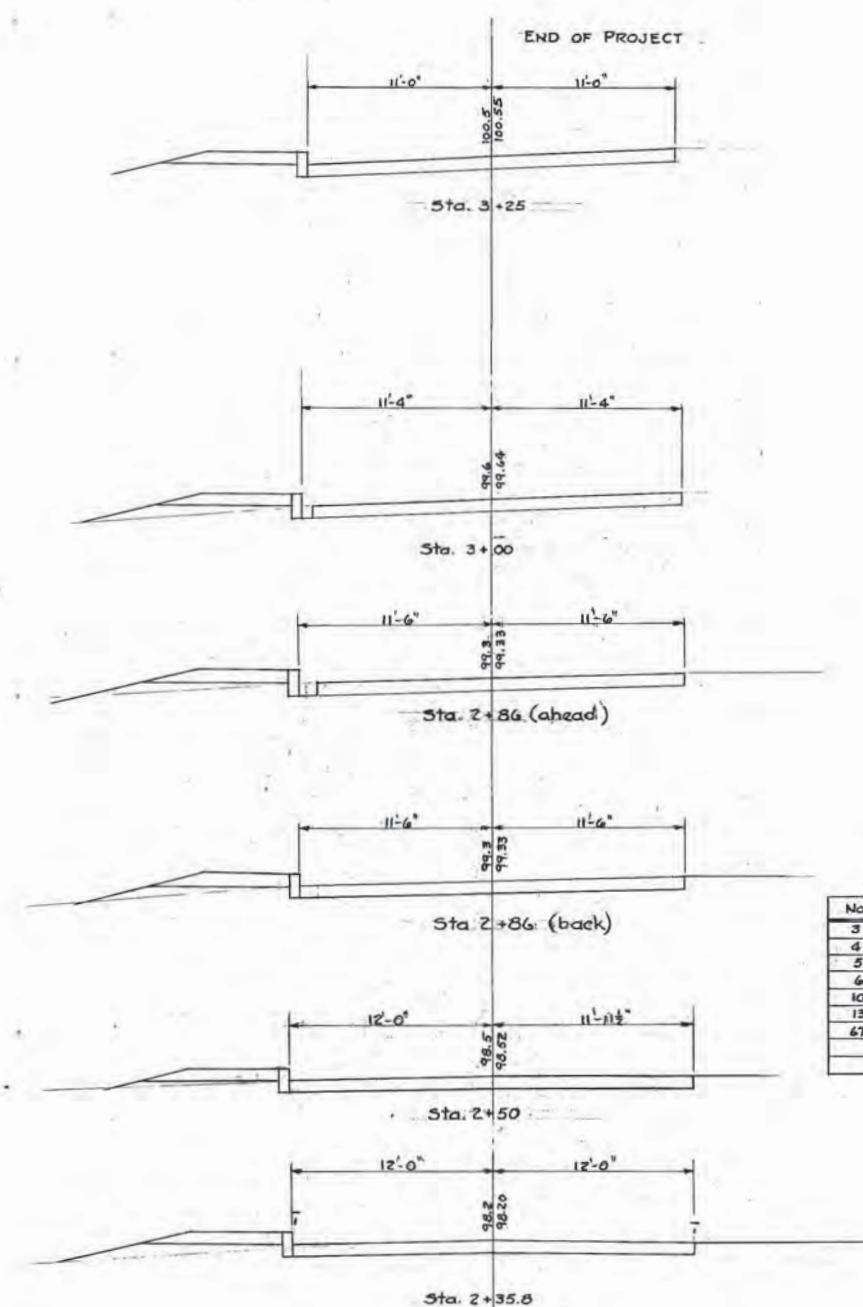
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	WEST PETERBOROUGH
PROJECT	ER 6
LOCATION	3 mi. west of PETERSBOROUGH
ROAD	SOUTH SIDE, ROUTE N.H. 101
STREAM	NUBANUSIT RIVER
DESIGNED BY	G.R.W. DATE 6-23-36
DRAWN	" " " "
TRACED	" " " "
CHECKED	" " " " 8-18-36
SHEET 2 OF 10 SHEETS	

1-13-3-2







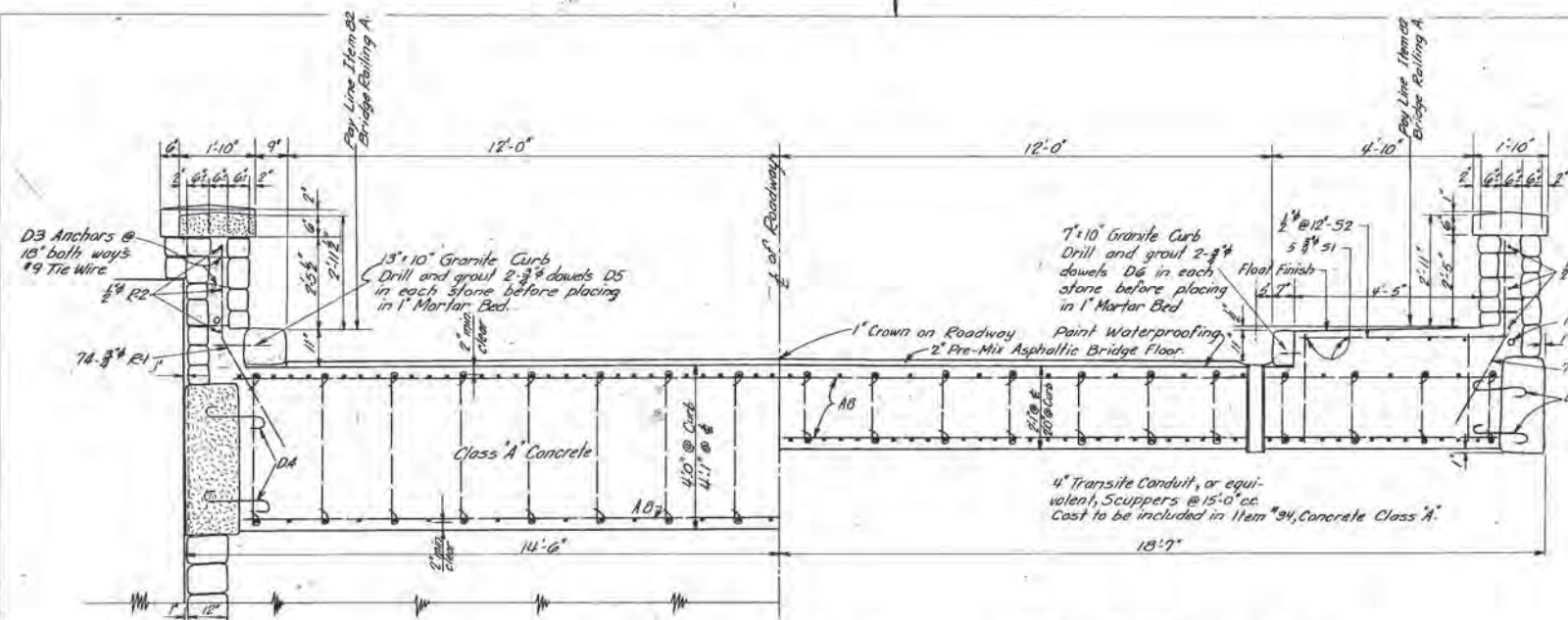
[illegible]

BRIDGE No. 176 AH	
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	WEST PETERBOROUGH
PROJECT	E R 6
LOCATION	3 mi. west of PETERBOROUGH
ROAD	SOUTH SIDE, ROUTE NH. 101
STREAM	NUBANUSIT RIVER
DESIGNED BY	G. R. W. DATE 6-24-36
DRAWN " "	" " 6-25-36
TRACED " "	" " " "
CHECKED " H.C.N.	" " 8-18-36
SHEET 4 OF 10 SHEETS	

A-50



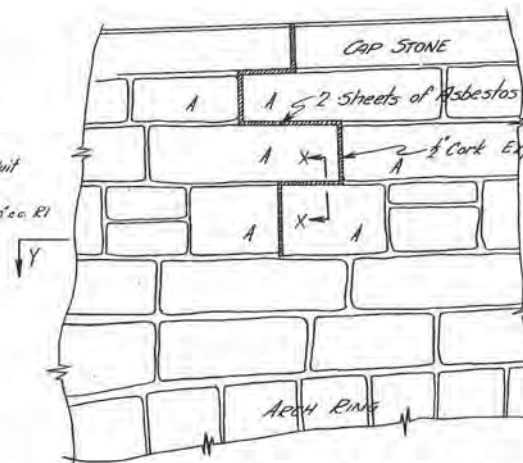
FED. ROAD DIST. NO.	STATE	E. R. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	ER-6	1936	5	10



HALF CROSS SECTION AT ABUTMENT

Scale 1/4" = 1'-0"

HALF CROSS SECTION AT CROWN

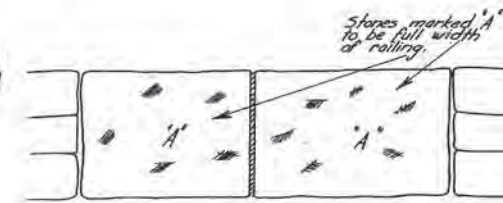


DETAIL OF RAILING EXPANSION JOINT

Scale 1" = 1'-0"

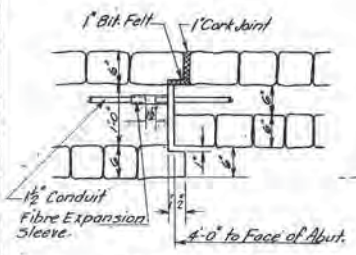
Bed surface of stone in contact with asbestos paper to be dressed to insure proper expansion

SECTION X-X



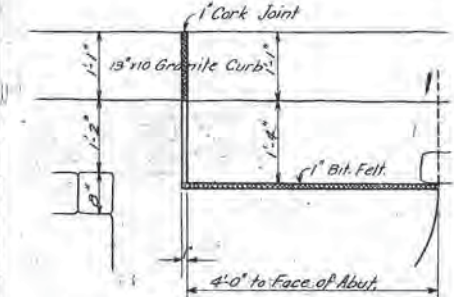
SECTION Y-Y

Scale 1" = 1'-0"



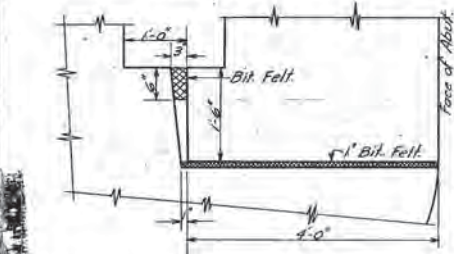
SECTION F-F

Scale 1/2" = 1'-0"



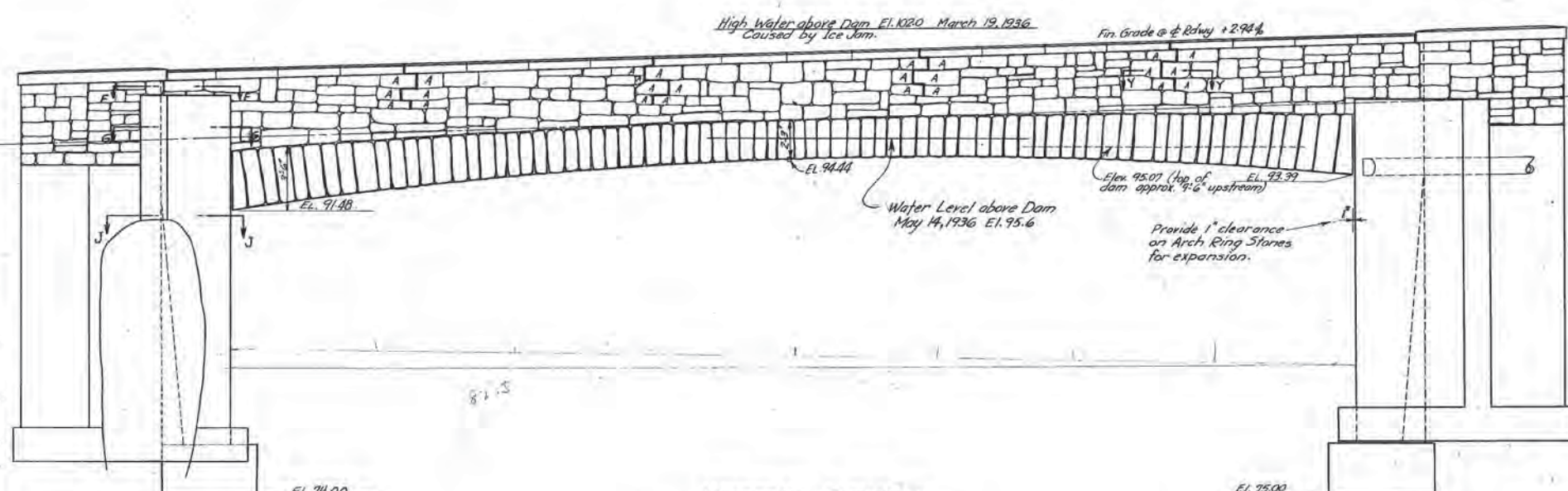
SECTION G-G

Scale 1/2" = 1'-0"



SECTION J-J

Scale 1/2" = 1'-0"



UPSTREAM ELEVATION

Scale 1/4" = 1'-0"

#### Notes on Stone Masonry:

Arch Ring Stones to be Rock-Faced with a maximum projection 2" Height to be as indicated on plans, length shall average 12"; depth shall be 16"x4".  
Random Mortar Squared Stone Masonry shall be Split-Faced with a maximum projection 1 1/2". Joints shall be vertical and horizontal. Average Area shall be 18 sq. ft. and not more than 10% of stones shall be laid with greater dimension vertical. Depth of stone used in Spandrel Walls and Bridge Rail shall be 6"x1", in wing walls 6"x2", in Legs of Frame 12"x2". Sizes and colors of stones shall be well assorted.  
Capstones to be rough-pointed to dimensions shown on plans. Lengths used on superstructure shall be random from 3'-0" to 6'-0", on wings as indicated on the plans.  
Stone from existing structure to be used as far as possible in construction of new structure.  
Layout of Arch Ring Stones, Capstones, and Granite Curbing shall be submitted for approval before laying of stone is started.

#### GENERAL NOTES

Design Loading: H15  
Specifications: A.A.S.H.O. 1931 and N.H.D. 1935.  
Reinforcing steel to be checked by the Engineer before concrete is placed.  
All steel to be 2" clear from face of concrete except as noted.  
4" tile drains to be placed in abutments @ 10' o.c. at such elevations as will best drain the backfill. Backfill adjacent to drains to be of stone.  
Minimum Cement Factors: Class A (3000) concrete 160  
Class C (2000) " 130  
1/2" in. Cork Expansion Joint material as manufactured by Johns-Manville, or equivalent, to be placed in expansion joints as shown on plans.  
Bridge Rail not to be built until falsework centering has been struck and backfill has been placed.  
Concrete in frame including footings to be Class A Concrete.  
Concrete in wings to be Class A and Class C as shown on plans.  
Maximum Size Coarse Aggregate Class A 1 1/2"; Class C 1 1/4".  
Footings to be carried to firm foundation as directed by the Engineer.  
The Contractor shall assume full responsibility for the safety of the dam adjacent to the bridge during the construction of the bridge.

Correct by John W. Childs Date June 27, 1936  
Bridge Engineer

BRIDGE No. 1764H

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT  
TOWN: WEST PETERBOROUGH  
PROJECT: FR 6  
LOCATION: 3 MI. WEST OF PETERBOROUGH  
ROAD: SOUTH SIDE, ROUTE NH 101  
OVER: NUBANUSIT RIVER

Designed by R.D.F. & ANN Date 7-11-34  
Drawn by R.J.P. & G.W. 5-28-36  
Traced by  
Checked by Ann 8-18-36  
SHEET 5 OF 10 SHEETS

1-13-3-2



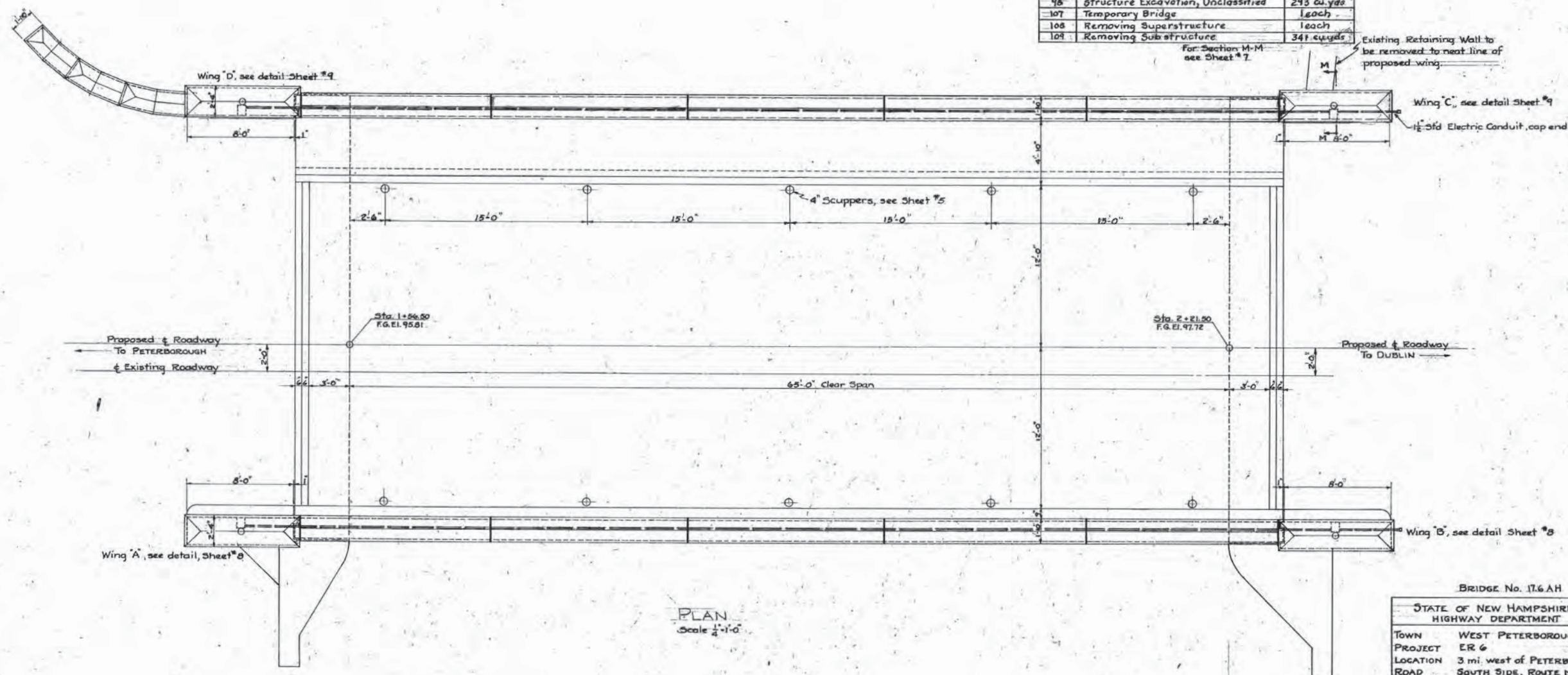
F.D. ROAD DIST. NO.	STATE	E. R. PROJ. NO.	YEAR	SHEET NO.	TOTAL SHEETS
3	N.H.	ER 6		6	10

# ESTIMATE OF BRIDGE QUANTITIES

No.	Item	Quantity
33	Reinforcing Steel	60,416 lbs.
34	Concrete, Class "A" (3000')	400 cu. yds.
36	Concrete, Class "C" (2000')	174 cu. yds.
57-A	Mortar Squared Stone Masonry (Arch Ribs)	20 cu. yds.
57-B	" " " " (6" depth)	4 cu. yds.
57-C	" " " " (8" depth)	6 cu. yds.
57-D	" " " " (12" depth)	4 cu. yds.
67-B	Granite Curbing (7'x10')	13 lin. ft.
67-C	" " (13'x10')	89 lin. ft.
317	Grouted Rubble Apron for Stream Bed	326 sq. yds.
82	Bridge Railing "A"	190 lin. ft.
88	Pre-Mix Asphaltic Bridge Floor	24 tons
89	Waterproofing, Paint	190 sq. yds.
91	Bridge Lighting System	1 each
96	Structure Excavation, Unclassified	293 cu. yds.
107	Temporary Bridge	1 each
108	Removing Superstructure	1 each
109	Removing Substructure	341 cu. yds.

For Section M-M see Sheet # 7.

Existing Retaining Wall to be removed to neat line of proposed wing.



BRIDGE No. 17.6 AH

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	WEST PETERBOROUGH
PROJECT	ER 6
LOCATION	3 mi. west of PETERBOROUGH
ROAD	SOUTH SIDE, ROUTE N.H. 101
STREAM	NUBANUSIT RIVER
Designed by	G.R.W. Date: 6-12-36
Drawn	" " " "
Traced	" " " "
Checked	#6 Date: 8-18-36
Sheet 6 of 10 Sheets	

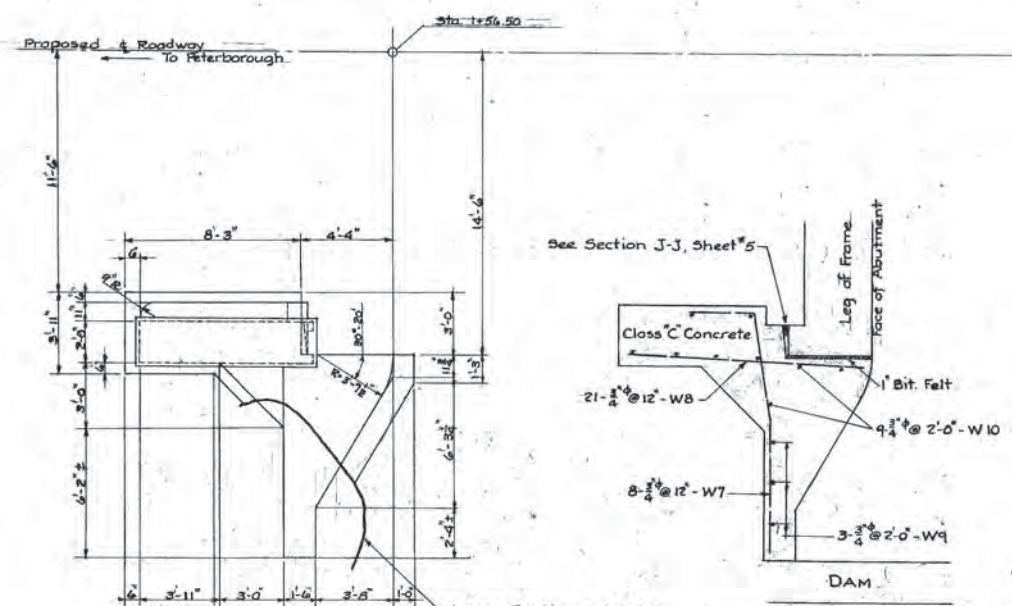
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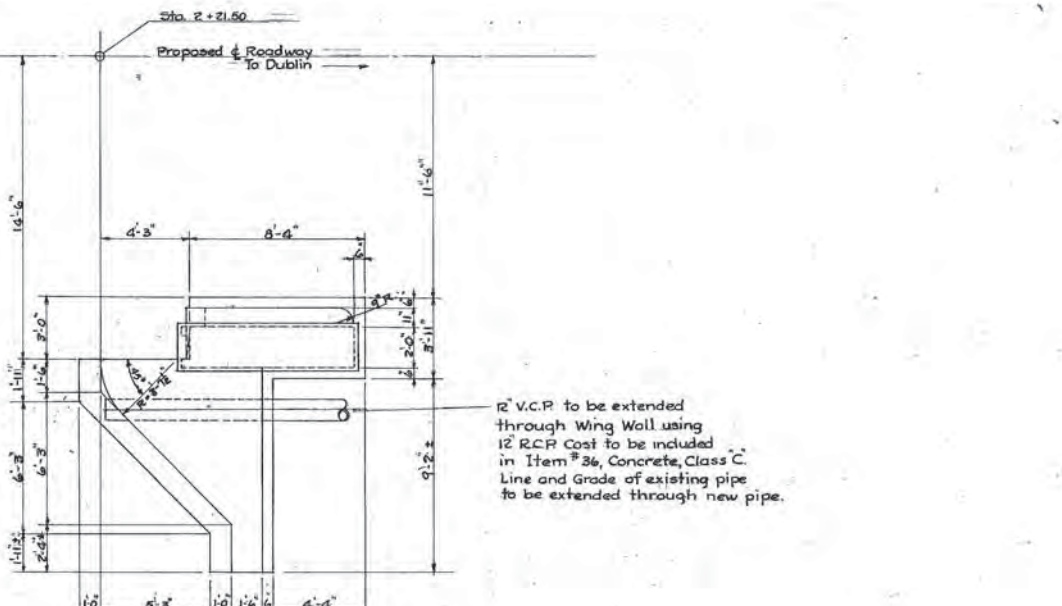
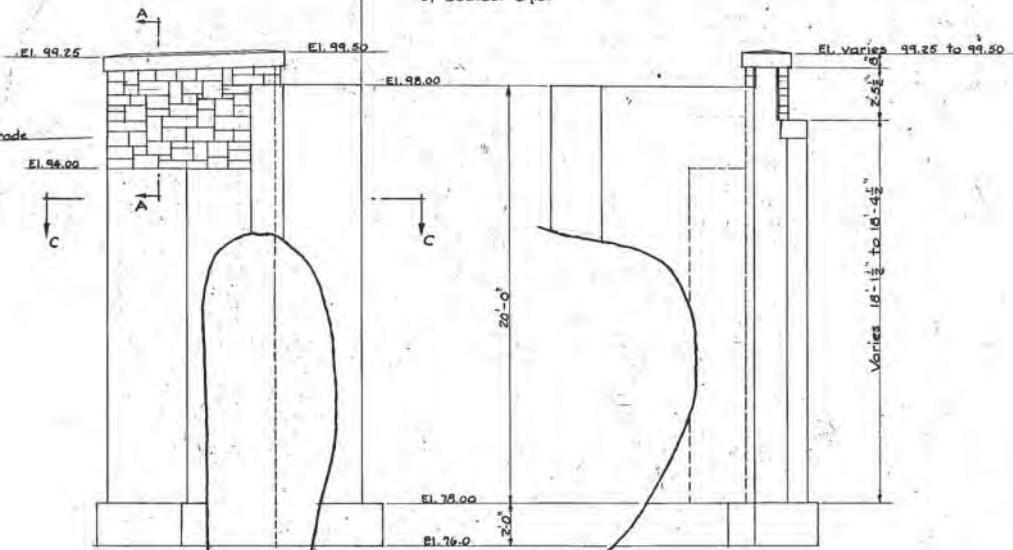




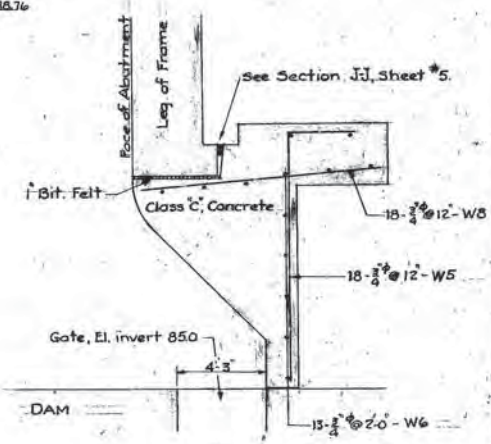
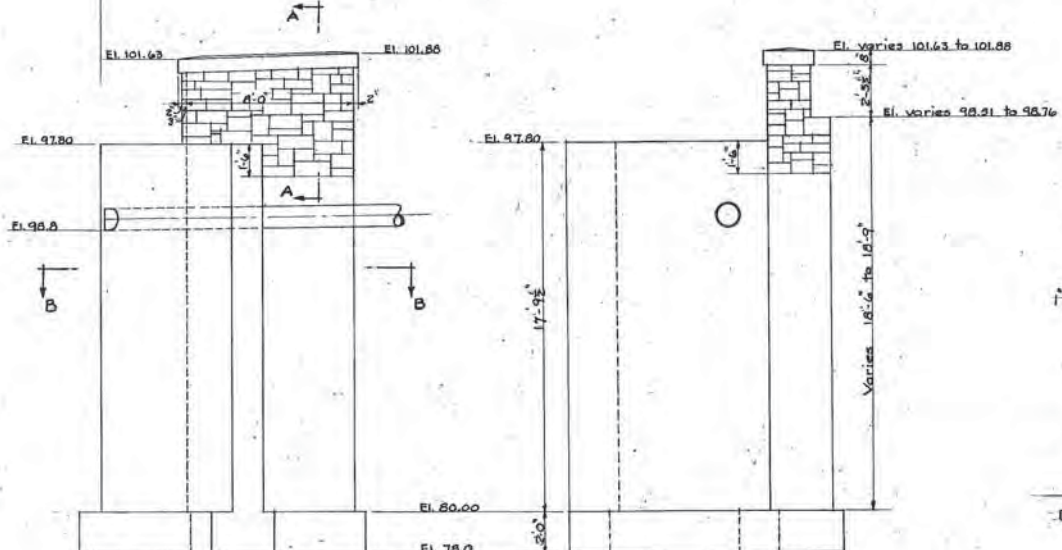
FED. ROAD DIST. NO.	STATE	E. R. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	N.H.	ER 6		8	10



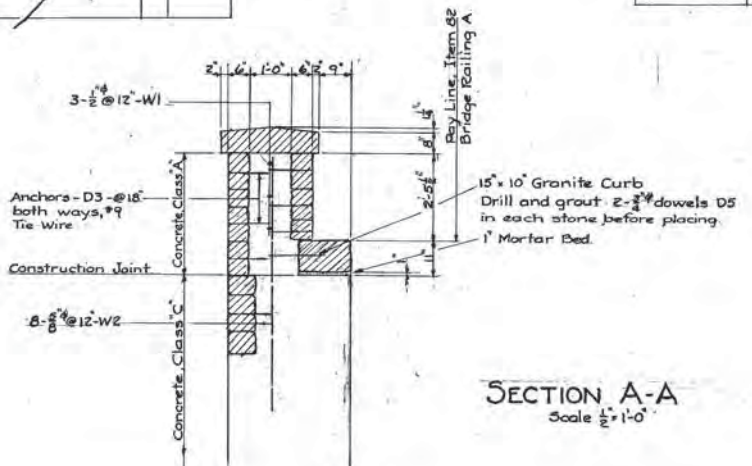
SECTION C-C  
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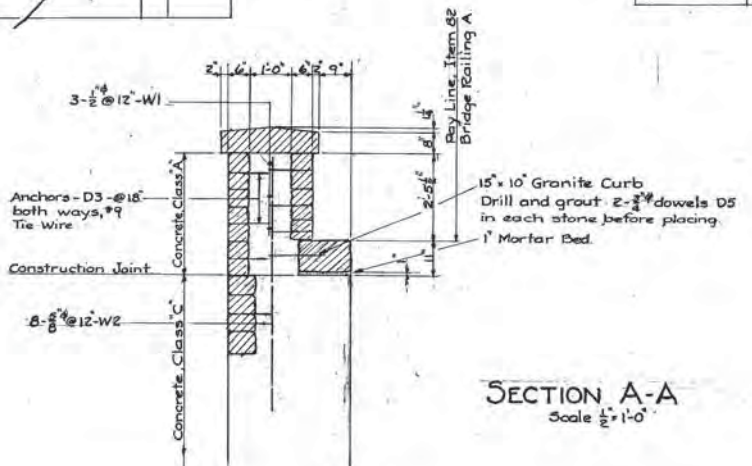
DETAIL OF WING B  
Scale 1/4" = 1'-0"



SECTION B-B  
Scale 1/4" = 1'-0"



SECTION A-A  
Scale 1/2" = 1'-0"

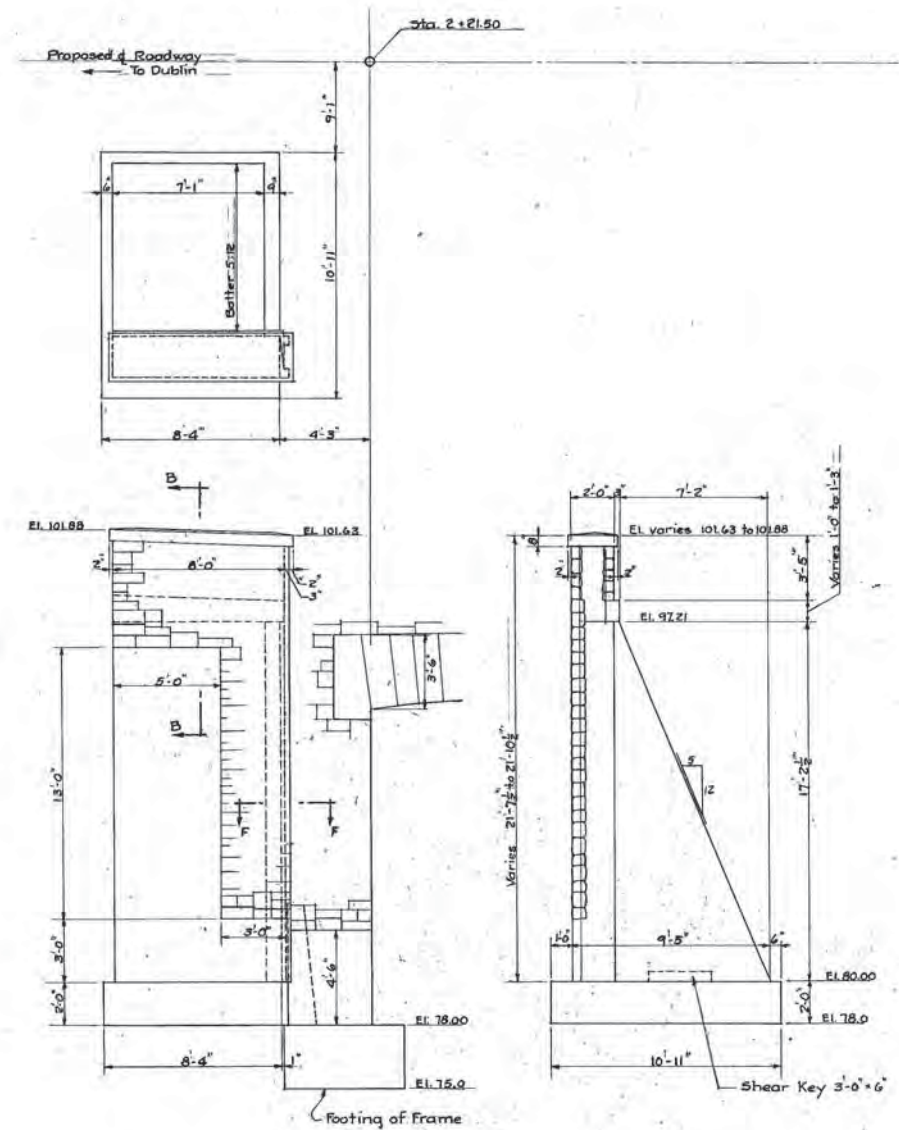


BRIDGE No. 17.6 AH	
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	WEST PETERBOROUGH
PROJECT	ER 6
LOCATION	3mi. west of PETERBOROUGH
ROAD	SOUTH SIDE, ROUTE N.H. 101
STREAM	NUBANUSIT RIVER
Designed by G.R.W.	Date 6-8-36
Drawn	6-9-36
Traced	8-18-36
Checked	7-10-36
Sheet 8 of 10 Sheets	

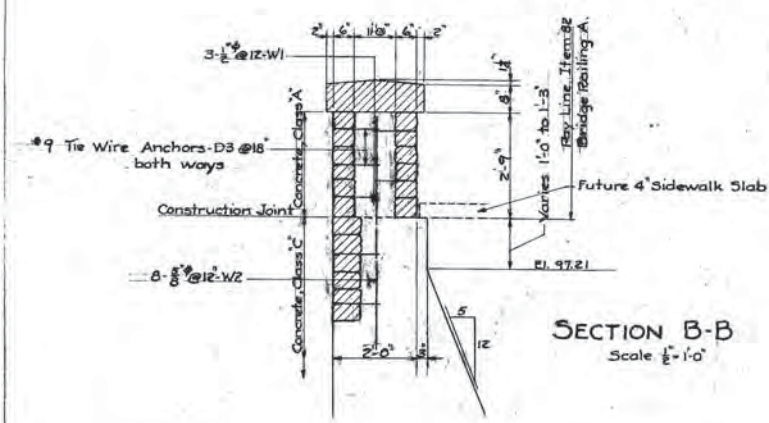
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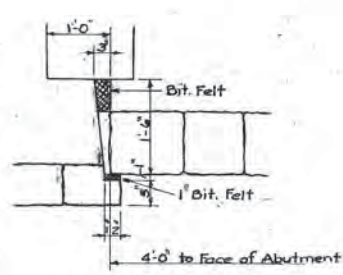
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9	N.H.	ER 6		9	10



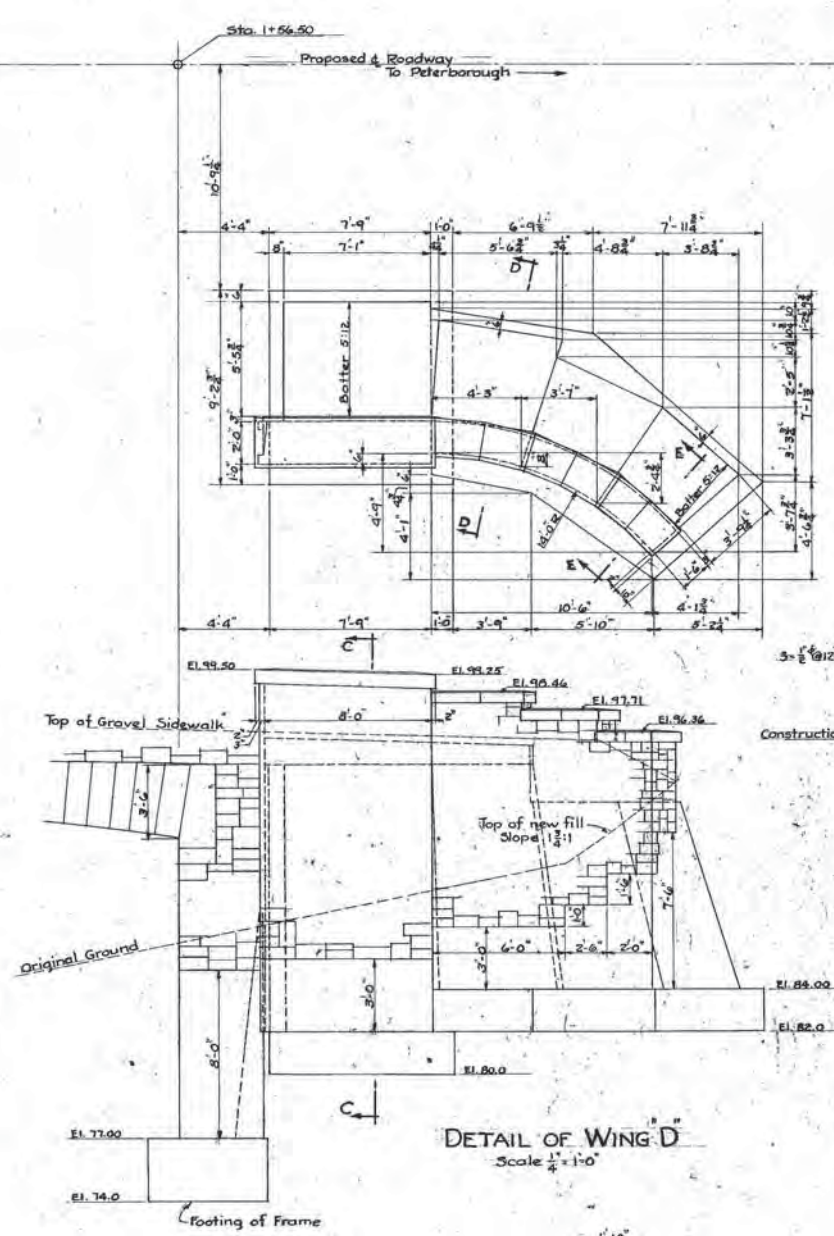
DETAIL OF WING C  
Scale 1/4" = 1'-0"



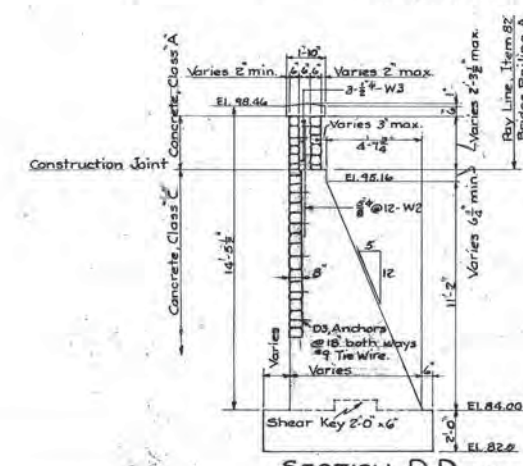
SECTION B-B  
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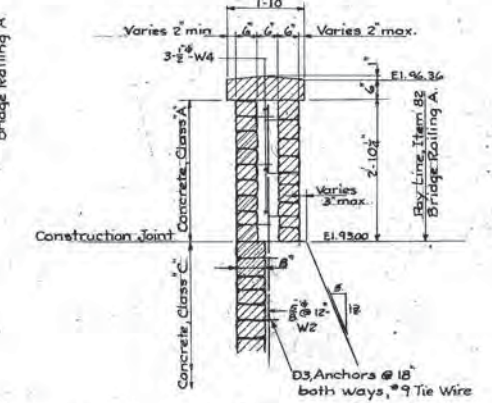
SECTION F-F  
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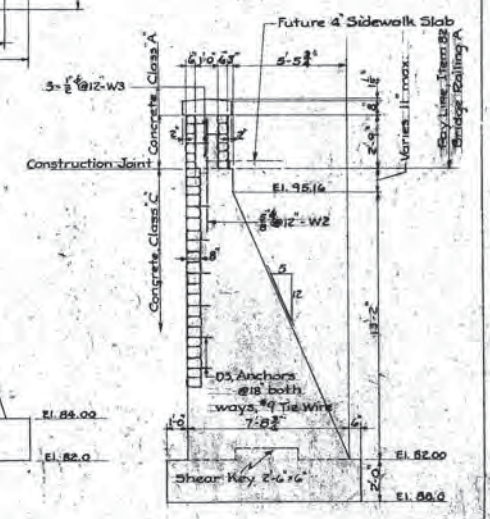
DETAIL OF WING D  
Scale 1/4" = 1'-0"



SECTION D-D  
Scale 1/2" = 1'-0"



SECTION E-E  
Scale 1/2" = 1'-0"



SECTION C-C  
Scale 1/4" = 1'-0"

BRIDGE No. 176 AH	
STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	WEST PETERBOROUGH
PROJECT	ER 6
LOCATION	3 mi west of PETERBOROUGH
ROAD	SOUTH SIDE, ROUTE N.H. 101
STREAM	NUBANUSIT RIVER
Designed by G.R.W.	Date 6-10-36
Drawn	6-11-36
Traced	
Checked	6-18-36
Sheet 9 of 10 Sheets	

5-0-1-43-3-2



Curve Data:  
 P.I. Sta 3+12.4  
 $\Delta$  10°-28' R  
 D 2°-0'  
 T 262.4  
 L 523.3  
 R 2864.3

Flow

To BRADFORD

ROUTE 10

To NEWPORT

1950

1951

© indicates location of Wash Boring  
 For Wash Boring Data see SH-10

PLAN  
Scale 1"=10'

CORRECT BY \_\_\_\_\_ DATE \_\_\_\_\_  
BRIDGE ENGINEER

300' VC

30.64' Chord +5.18%

+5.97%

To NEWPORT

PLAN  
Scale 1" = 10'

Bridge No. _____ STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT			
Town	NEWBURY		
Project	FA. 208 C		
Location	NEWBURY CUTOFF		
Road	CENTRAL ROAD, ROUTE 103		
Stream	ANDREW'S BROOK		
Surveyed by	W. H. E.	Date	3-10-33
Plotted	H. A. E.		3-11-33
Traced	G. R. W.		5-5-33
Checked	<i>W. H. E.</i>		6-30-33
Sheet	<i>4</i>	of	<i>45</i> Sheets

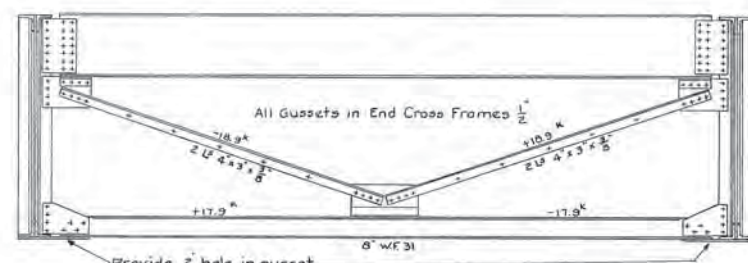
FILE NO. 1-14-1-3, 10 Sheets



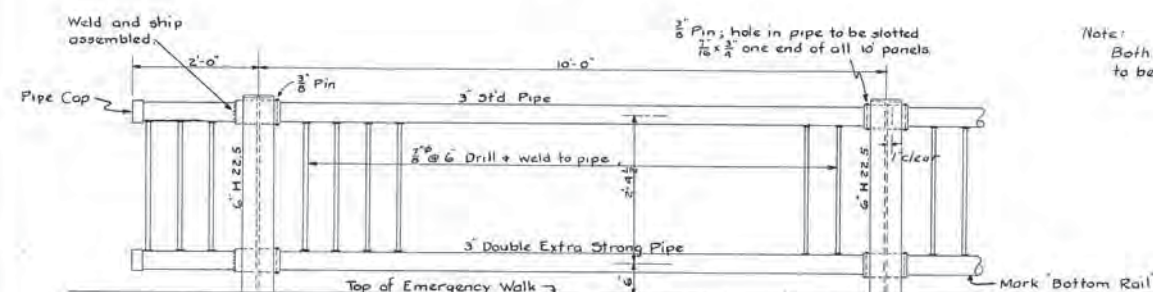




FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	FA 208C	1936	8	46

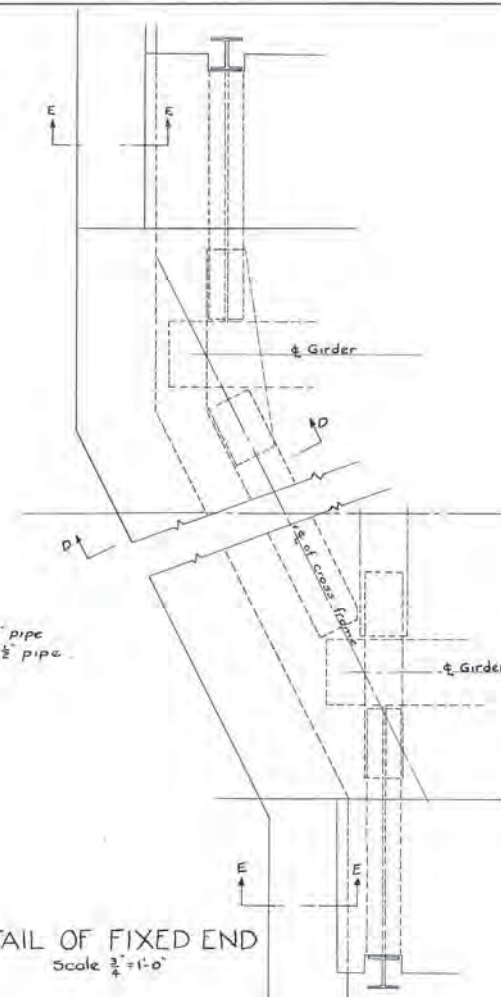


DETAIL OF END CROSS FRAMES  
Scale  $\frac{3}{8} = 1'-0''$

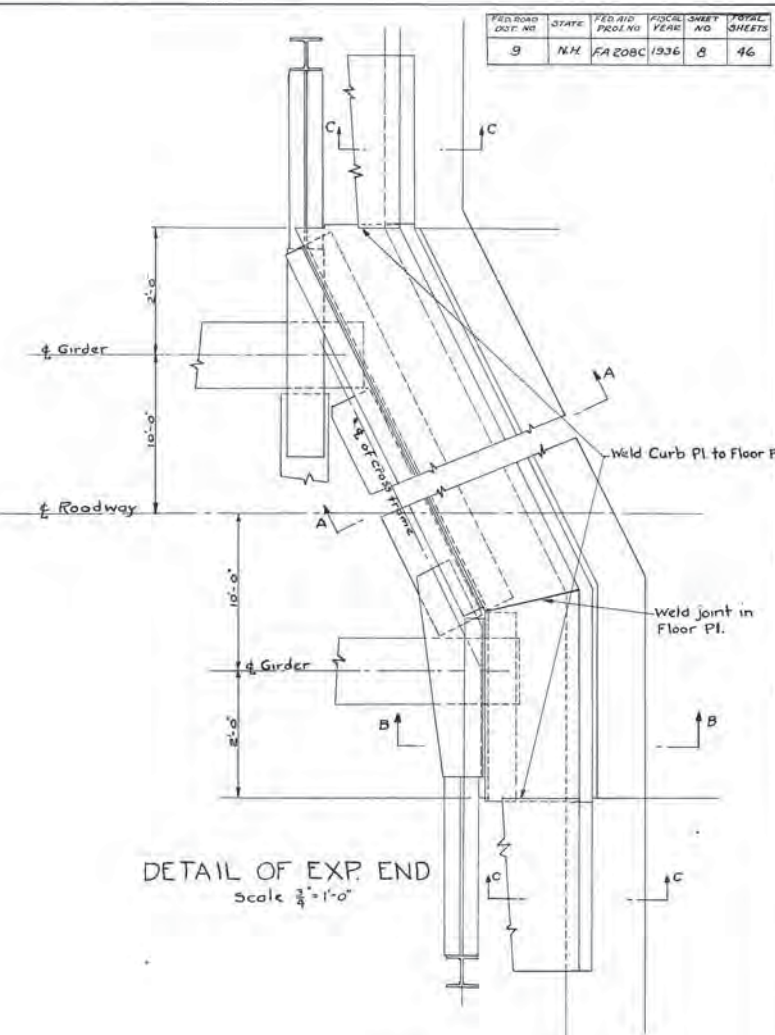


RAIL DETAIL  
Scale  $\frac{3}{4} = 1'-0''$

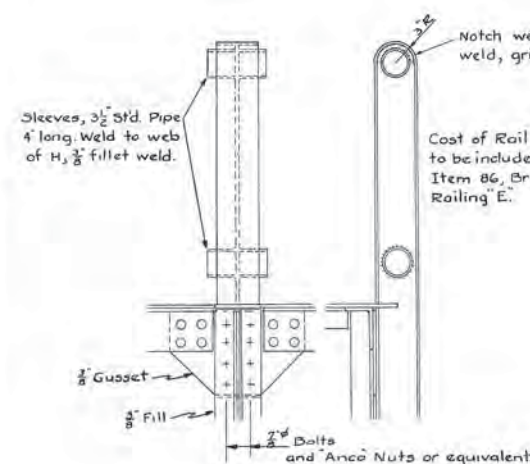
Note:  
Both ends of all 3" pipe  
to be fitted into 3 1/2" pipe.



DETAIL OF FIXED END  
Scale  $\frac{3}{4} = 1'-0''$



DETAIL OF EXP. END  
Scale  $\frac{3}{4} = 1'-0''$



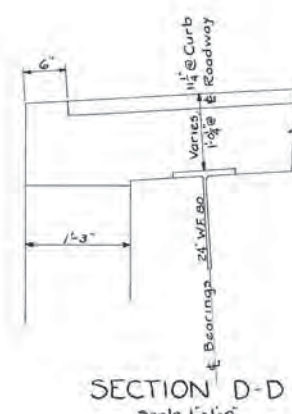
DETAIL OF RAIL POST  
Scale 1" = 1'-0"

#### ESTIMATE OF QUANTITIES, SUPERSTRUCTURE

These quantities included in Total Estimate for Bridge, Sheet #6.

No.	Item	Quantity
33	Reinforcing Steel	13,113 lbs.
34	Concrete, Class 'A' (3000*)	65 cu. yds.
80	Structural Steel	117,500 lbs.
86	Bridge Railing 'E'	168 lin. ft.
88	Pre-Mix Asphaltic Bridge Floor	27 tons
89	Paint Waterproofing	220 sq. yds.

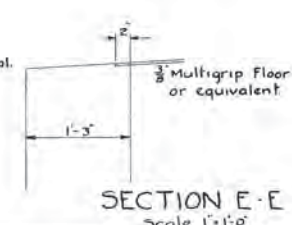
Notes:  
Rivets:  $\frac{1}{2}$ " except in sidewalk plate  $\frac{3}{4}$ "  
Holes:  $\frac{15}{16}$ " and  $\frac{13}{16}$ "  
Shop Paint: One coat red lead except surfaces which are to be in contact with concrete shall not be painted.  
Field Paint: Two coats green, second coat to be dark olive green, first coat to be lighter shade readily distinguished from second coat sample to be submitted for approval.  
Contractor shall furnish the Bridge Engineer, N.H.D. with the following before final payment is made:  
1. Mill Test Reports in triplicate in lieu of mill inspection.  
2. One copy of itemized weights of structural steel.  
3. Tracings of Shop Drawings.  
Structural Steel Shoes and Pedestals may be submitted for approval in place of Cast Steel.



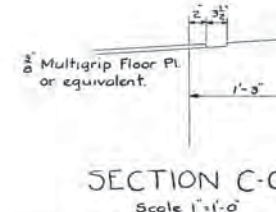
SECTION D-D  
Scale 1" = 1'-0"



SECTION B-B  
Scale 1" = 1'-0"



SECTION E-E  
Scale 1" = 1'-0"



SECTION C-C  
Scale 1" = 1'-0"



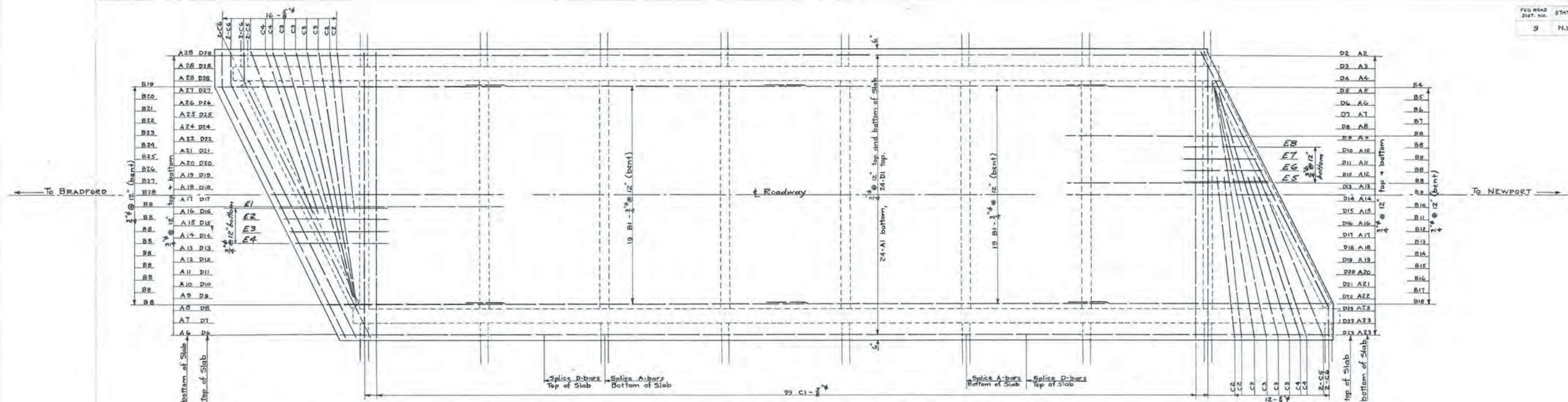
SECTION A-A  
Scale 1" = 1'-0"

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
TOWN	NEWBURY
PROJECT	F.A. 208C
LOCATION	NEWBURY CUTOFF STA 5+85.2
ROAD	CENTRAL ROAD ROUTE 103
STREAM	ANDREW BROOK
DESIGNED BY	G.R.W. DATE 4-23-37
DRAWN	" " 4-24-37
TRACED	" R.H.D. " 2-2-38
CHECKED	" J.M.W. " 6-30-37
SHEET 8 OF 46 SHEETS	

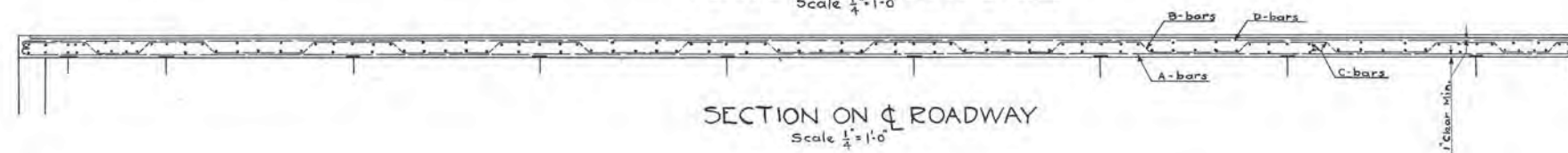
N.H. Proj. No. P40

FILE No. 1-12-3  
210-29





PLAN OF REINFORCING STEEL  
Scale  $\frac{1}{4}" = 1'-0"$



SECTION ON ROADWAY  
Scale  $\frac{1}{4}" = 1'-0"$

STATE OF NEW HAMPSHIRE  
HIGHWAY DEPARTMENT

TOWN NEWBURY  
PROJECT FA. 208 C  
LOCATION NEWBURY CUTOFF STA. 5+85+  
ROAD CENTRAL ROAD ROUTE 103  
STREAM ANDREW BROOK

DESIGNED BY G.R.W. DATE 4-23-37  
DRAWN " " " "  
TRACED " " " "  
CHECKED " *Amv* " 6-30-37

SHEET 9 OF 46 SHEETS

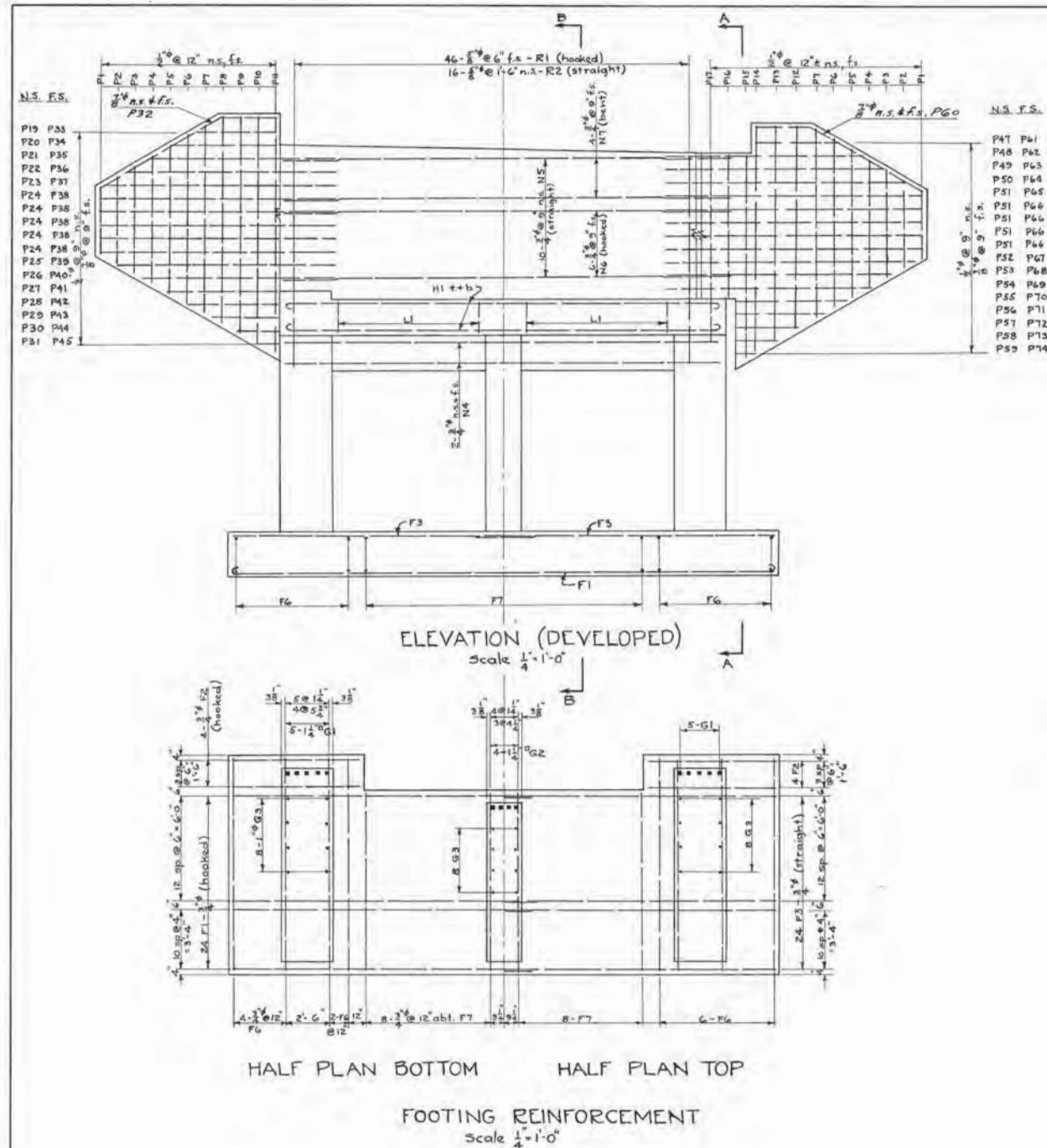
FILE NO. *1-14-1-3*  
*2-16-2-9*

"E" bars added  
Rev. 7-12-37 A.M.W.

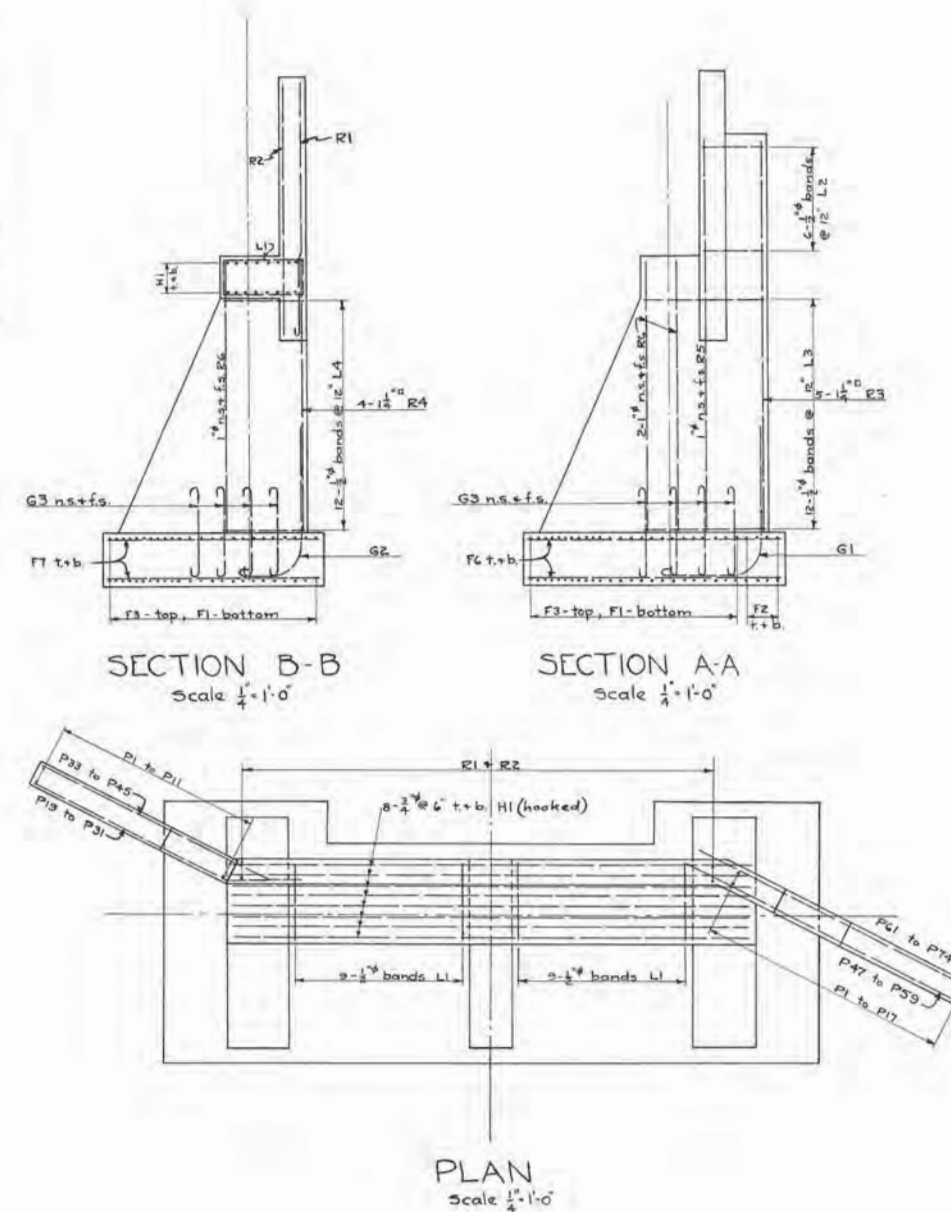
N.H. Proj. No. P40



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
9	N.H.	FA208C	1936	13	46



SOUTH ABUTMENT



P32 & P60 bars revised.  
Rev. 7-12-37 A.M.W.

STATE OF NEW HAMPSHIRE HIGHWAY DEPARTMENT	
Town	NEWBURY
Project	FA208C
Location	NEWBURY CUT-OFF
Road	CENTRAL ROAD, ROUTE 103
Stream	ANDREW BROOK
Design by	G.R.W. Date 5-28-37
Drawn by	" " " "
Traced by	" " " "
Checked by	Amw Date 6-30-37
Sheet 13 of 46 Sheets	

N.H. Proj. No. 208

FILE NO. 6-12-37