

State Level Historic Documentation Report

State Project No. S314-28-22.27
Federal Project No. BR-0028(058)D

John Blue Bridge Hampshire County



Prepared by:

Randy Epperly, Historian

Department of Transportation
Division of Highways
Engineering Division
Environmental Section

May 22, 2018

STATE LEVEL HISTORIC DOCUMENTATION
JOHN BLUE BRIDGE

Location: WV Route 28, Spanning South Branch Potomac River
Hampshire County
West Virginia

USGS Springfield Quadrangle

Date of Construction: 1936

Builder: Fort Pitt Bridge Works

Present Owner: West Virginia Department of Transportation
Division of Highways
1900 Kanawha Boulevard, Building 5, Room A-110
Charleston, WV 25305

Present Use: Vehicular Bridge

Significance: John Blue Bridge is eligible for the National Register under Criterion C as a good example of a truss bridge and its association with a known builder, Fort Pitt Bridge Works. John Blue Bridge was formerly known as Grace Bridge and is listed on the 1990 Final List of Historic Bridges in WV.

Project Information: The project has been undertaken due to its poor condition and deficiencies of the structure. The project will provide a new bridge crossing the South Branch Potomac River. The existing bridge is posted for weight limits and trucks and buses must cross one at time. The existing bridge warrants replacement. The documentation was undertaken in May 2018 in accordance with a Memorandum of Agreement among the Federal Highway Administration, West Virginia Department of Transportation, and West State Historic Preservation Office. The bridge is scheduled to be replaced in 2020.

Original bridge plans are attached.

Randy Epperly, Historian
West Virginia Division of Highways
Charleston, WV 25305
May 22, 2018

John Blue Bridge, formerly the Grace Bridge, is located on WV Route 28 in Hampshire County, spanning the South Branch of the Potomac River in the Blues Beach area. The bridge consists of steel riveted pony trusses for the end spans and the main span is a steel riveted through truss. It is supported by two concrete abutments and two rectangular concrete piers. The overall length is 419 feet 6 inches and the overall width is 25 feet 2 inches. The Average Daily Traffic in 2015 was 3,054 Vehicles Per Day. The bridge was built in 1936 by Fort Pitt Bridge Works. The bridge was constructed as a replacement to a flood damaged bridge.

John Blue Bridge is listed on the 1990 Final List of Historic Bridges in WV under the name Grace Bridge, with a rating of 32. It is eligible for the National Register of Historic Places under Criterion C for its engineering significance (good example of a truss bridge) and its association with an important bridge builder, Fort Pitt Bridge Works.

The bridge is showing many signs of deterioration and contains fracture critical members. It is posted for weight limits and trucks and buses must cross one at a time. The steel superstructure contains heavy section loss, portal members have been damaged by vehicles, and both abutments show cracking and heavy deterioration. The concrete deck is cracking, the piers have underwater deterioration, and several steel members have been bent and twisted due to high water damage (WVDOH, 2017).

Camp Washington was built in 1861 by the Union on Washington Bottom Farm, home to ancestors of George Washington who surveyed the area. The camp was located near the Wire Bridge (located in the vicinity of the John Blue Bridge) and was used to secure the Baltimore and Ohio Railroad. The camp was later occupied by the Confederacy after the Union forces withdrew (Civil War Trails). In 1861 the Wire Bridge Engagement occurred as Union General Benjamin Kelly attempted to march from Keyser to Romney in order to occupy the town. Kelly was to attack from the west while Colonel Thomas Johns attacked from the north. Johns encountered enemy troops at the Wire Bridge and during the battle Johns' troops had to take cover behind the bridge parapets. Johns withdrew to Maryland when he heard Kelly's troops entering Romney. The Union took control of Romney for nearly 3 months before retreating over the Wire Bridge into Maryland as Stonewall Jackson arrived reinforcing the Confederacy (Civil War Trails).

The Wire Bridge was destroyed during the war. It would be rebuilt, and then demolished 2 more times before the current bridge was built. The bridge was named for John Blue, one of the first settlers in the area. He came to the area around 1725 and owned land where present day WV 28 is located (WV Legislature, 2003).

WV Route 28 roughly follows the alignment of the Moorefield and North Branch Turnpike, chartered in 1847. The turnpike crossed the river near the location of the current John Blue Bridge, but no remnants of the turnpike remain (Moorefield and North Branch Turnpike).

Fort Pitt Bridge Works was founded in 1896 and eventually sold in 1986 (Fort Pitt Bridge Works). Fort Pitt Bridge Works is known for its steel fabrications for bridges and steel used in both World Wars (Barnes, 2006). The company's steel was also used for post offices, hospitals, schools, etc. (Mounts, 2006).

BIBLIOGRAPHY

- 1990 Final List of Historic Bridges. West Virginia Division of Highways. 1990.
- Barnes, Tom. "Fort Pitt Bridge Works Site to Be Redeveloped." Pittsburgh Post-Gazette 26 July 2006, Local sec.: n. pag. Web.
- Civil War Trails, West Virginia. Kiosk located along WV Route 28.
- Fort Pitt Bridge Works, Pittsburgh, Pa., Records 1886-1949, AIS 1963.27, Archives Service Center, University of Pittsburgh.
- Moorefield & North Branch Turnpike. Turnpike Files. West Virginia Division of Highways, Engineering Division. Charleston, WV.
- Mounts, Carol. Washington PA Nostalgia. "Fort Pitt Bridge Works." 2006. Retrieved 29 Oct. 2014. www.freepages.nostalgia.rootsweb.ancestry.com/~ebgschol/ftpitt~1.htm
- West Virginia Division of Highways, Bridge Files, Maintenance Division, Building 5, Capitol Complex, Charleston, WV 25305. 2014, 2017.
- West Virginia State Legislature. Senate Concurrent Resolution No. 21. 2003. http://www.legis.state.wv.us/Bill_Text_html/2003_SESSIONS/RS/bills/scr21%20intr.htm
Retrieved 30 October 2014.

STATE LEVEL HISTORIC DOCUMENTATION
INDEX TO PHOTOGRAPHS

John Blue Bridge
WV Route 28
South Branch Potomac River
Hampshire County, West Virginia

Photographer: Randy Epperly

October 2014

JOHN BLUE BRIDGE-1	View of John Blue Bridge looking south.
JOHN BLUE BRIDGE-2	View of John Blue Bridge looking south.
JOHN BLUE BRIDGE-3	View of John Blue Bridge looking north.
JOHN BLUE BRIDGE-4	View of John Blue Bridge from riverbank looking southwest.
JOHN BLUE BRIDGE-5	View of bridge plate on northern end of the bridge.
JOHN BLUE BRIDGE-6	View of bridge plate on southern end of the bridge.
JOHN BLUE BRIDGE-7	View of through truss looking north.
JOHN BLUE BRIDGE-8	View of pony truss approach.
JOHN BLUE BRIDGE-9	View of bridge pier.
JOHN BLUE BRIDGE-10	View of bridge abutment.
JOHN BLUE BRIDGE-11	View of underside of bridge.



Photo #1



Photo #2



Photo #3



Photo #4



Photo #5



Photo #6



Photo #7



Photo #8



Photo #9



Photo #10



Photo #11

**MEMORANDUM OF AGREEMENT
BY AND AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER
AND THE WEST VIRGINIA DIVISION OF HIGHWAYS
REGARDING IMPLEMENTATION OF THE JOHN BLUE BRIDGE REPLACEMENT
PROJECT
STATE PROJECT #S314-28-22.27
FEDERAL PROJECT #STP-0028(060)D
HAMPSHIRE COUNTY, WEST VIRGINIA
NOVEMBER 2017**

WHEREAS, the Federal Highway Administration (FHWA), in cooperation with the West Virginia Division of Highways (WVDOH), proposes to replace the John Blue Bridge, hereinafter referred to as the Project. The project will replace the existing bridge with a new bridge upstream and demolish the existing bridge; and

WHEREAS, the FHWA has determined that the Project will have an adverse effect upon the John Blue Bridge, a property eligible for the National Register of Historic Places (NRHP); and

WHEREAS, the FHWA has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to 36 CFR Part 800 Implementing Section 106 of the National Historic Preservation Act; (16 U.S.C., 470f); and

WHEREAS, the FHWA has determined that the Project will not affect archaeological properties with WVSHPO concurrence in a letter dated July 26, 2017; and

WHEREAS, The WVDOH has contacted the Preservation Alliance of West Virginia, Historic Hampshire County, Seneca Nation of Indians, Pemunkey Indian Tribe, Seneca-Cayuga Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Eastern Band of Cherokee Indians, and the Delaware Nation. The Historic Hampshire County responded to the letter with information regarding the project area and the Seneca Nation of Indians responded to potential archaeological resources; and

WHEREAS, in accordance with 36 CFR 800.6 (a) (1), the FHWA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination providing the specified documentation, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR 800.6 (a) (1) (iii);

NOW, THEREFORE, the FHWA, the WVSHPO, and the WVDOH agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

STIPULATIONS

The FHWA shall ensure that the following stipulations are carried out:

John Blue Bridge Replacement Project

- I. The John Blue Bridge will be documented in its present historic setting. The documentation package will include 5"x7" black and white digital prints in accordance with the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion of January 2009.
- II. A brief history of the structure will be included along with fully completed West Virginia Historic Property Inventory forms and copies of any available plan sheets and drawings of the bridge from WVDOH bridge files
- III. West Virginia Division of Highways staff will provide the Hampshire County Public Library in Romney a copy of the John Blue Bridge State Level Historic Documentation for references and educational purposes.
- IV. 50 color brochures of the John Blue Bridge will be developed by the WVDOH and distributed to the Hampshire County Public Library in Romney. The WVSHPO will be given the opportunity to review all educational materials developed for this stipulation. A CD containing the brochure will also be given to the library to print brochures when the original total has been exhausted.
- V. The John Blue Bridge will be documented on the West Virginia historic bridge website.

VI. Duration

This MOA will expire if its stipulations are not carried out within five (5) years from the date of its execution. At such time, and prior to work continuing on the undertaking, the FHWA shall either (a) execute an MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. Prior to such time, FHWA may consult with other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation X below. FHWA shall notify the signatories as to the course of action it will pursue.

VII. Post-Review Discoveries

If any unanticipated effects to or discoveries of historic properties or archaeological sites, including human burial sites and/or skeletal remains, are encountered during the implementation of this undertaking, work shall be suspended in the area of the discovery until the WVDOH has developed and implemented an appropriate treatment plan in consultation with the WVSHPO pursuant to 36 CFR 800.13 (b).

VIII. Monitoring and Reporting

Each year following the execution of this MOA until it expires or is terminated, FHWA shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in FHWA's efforts to carry out the terms of this MOA.

IX. Dispute Resolution

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FHWA shall consult with such party to resolve the objection. If FHWA determines that such objection cannot be resolved, FHWA will:

- A. Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide FHWA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. FHWA will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, FHWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- C. FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

X. Amendments

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

XI. Termination

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation X, above. If within thirty (30) days (or another time period

agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, FHWA must either (a) execute a MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. FHWA shall notify the signatories as to the course of action it will pursue.

EXECUTION of the Memorandum of Agreement by the FHWA, WWSHPO, the WVDOT and the Council, and implementation of its terms evidence that the FHWA has afforded the Council an opportunity to comment on the John Blue Bridge Replacement Project and its effects on historic properties, and that the FHWA has taken into account the effects of the undertaking on the historic properties.

Signatories Page



Federal Highway Administration

5/11/18
Date



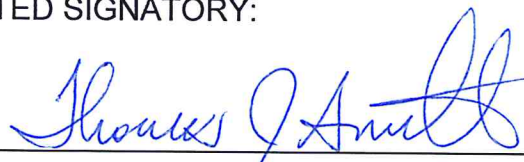
West Virginia Deputy State Historic Preservation Officer

11/27/17
Date

Advisory Council on Historic Preservation

Date

INVITED SIGNATORY:



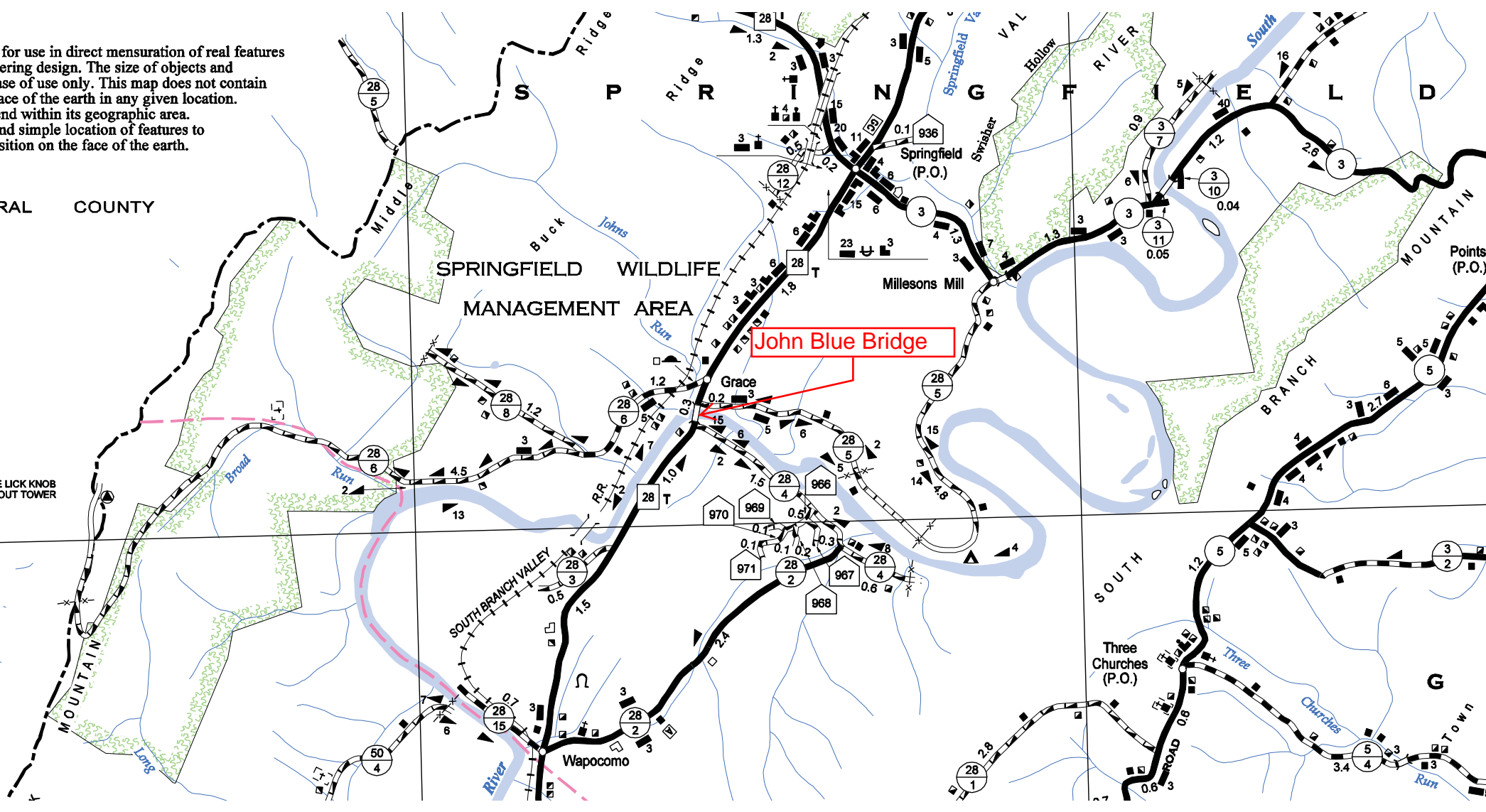
West Virginia Division of Highways

3/12/18
Date

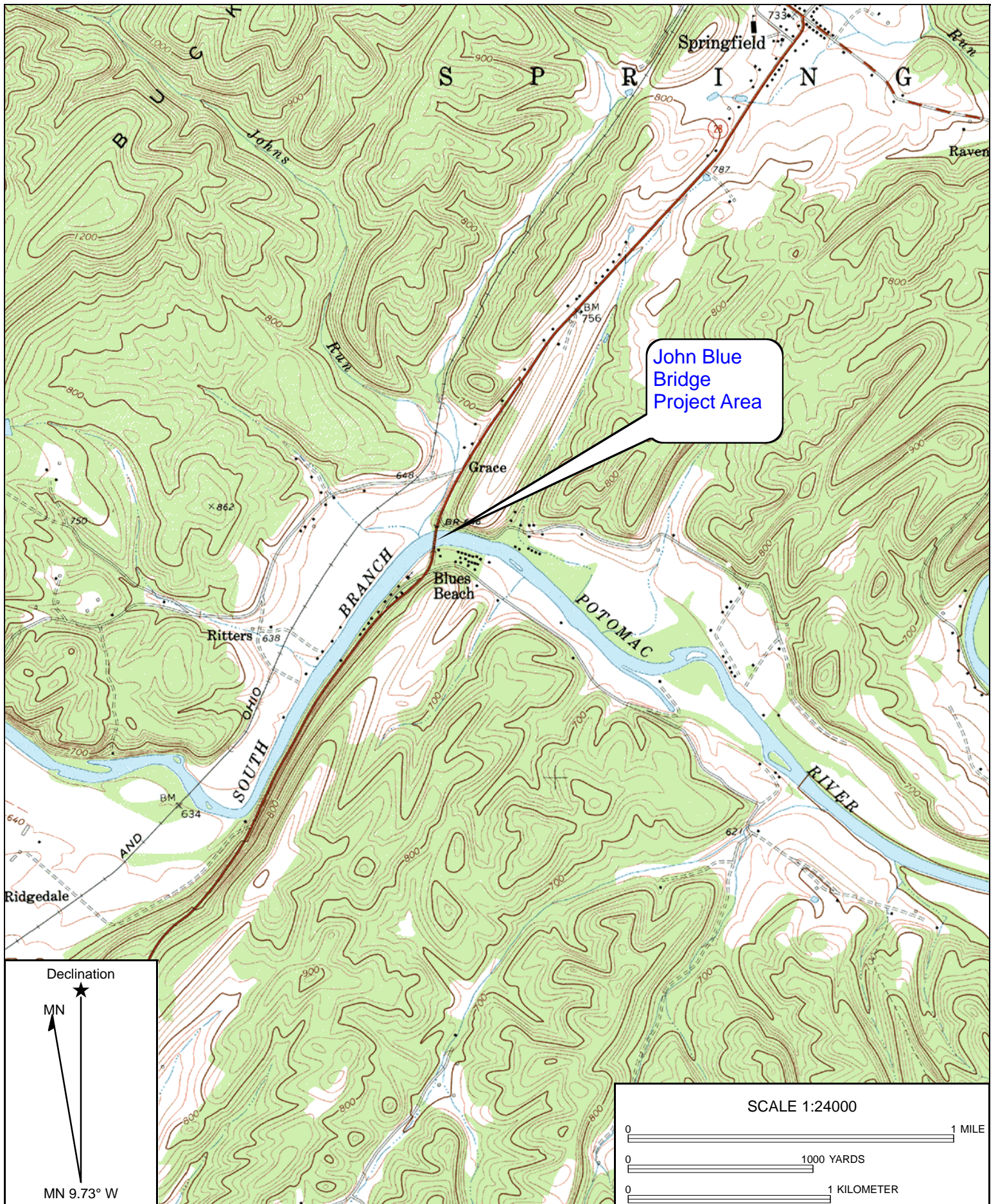
ed for use in direct mensuration of real features
neering design. The size of objects and
ease of use only. This map does not contain
e face of the earth in any given location.
end within its geographic area.
g and simple location of features to
osition on the face of the earth.

ERAL COUNTY

LATE LICK KNOB
OKOUT TOWER

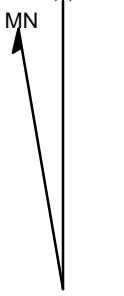


John Blue Bridge

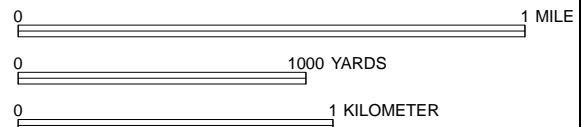


John Blue
Bridge
Project Area

Declination



SCALE 1:24000



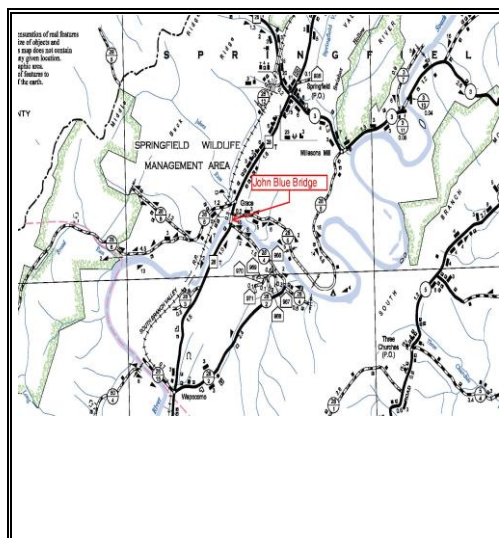
John Blue Bridge
Hampshire County

Location: 17 0696992 E 4366376 N



WEST VIRGINIA HISTORIC PROPERTY INVENTORY FORM

Street Address Located along WV Route 28, spanning South Branch of the Potomac River, near Grace.	Common/Historic Name/Both <input checked="" type="checkbox"/> John Blue Bridge-common <input checked="" type="checkbox"/> Grace Bridge-historic <input type="checkbox"/>	Field Survey # HPI #1	Site # (SHPO Only)
Town or Community Grace	County Hampshire	Negative No.	NR Listed Date
Architect/Builder Fort Pitt Bridge Works	Date of Construction 1936	Style (SHPO Only)	
Exterior Siding / Materials Main Span: Steel Riveted Through Truss End Span: Steel Riveted Pony Trusses	Roofing Material Deck Material: Concrete	Foundation Abutments: Concrete Piers: Concrete	
Property Use or Function Transportation	UTM Zone 17 NAD 1983 Easting 0696673E Northing 4366701N		
Survey Organization & Date WVDOH October 16, 2014	Quadrangle Name Springfield		
Part of What Survey / FR# State County Route S314-28-22.27 Federal Route BR-0028(058)D			



Name: John Blue Bridge

Survey #: HPI #1

Survey / FR#: State County Route S314-28-22.27 Federal Project #BR-0028(058)D

Present Owners WVDOH	Owners Mailing Address Capitol Complex Building 5 Charleston, WV 25305
Describe Setting <div style="float: right;">Unknown -- <1 Acres <input type="checkbox"/> Archaeological Artifacts Present</div> <p>The bridge is located in a rural area in Hampshire County near Grace. The bridge carries WV Route 28 over South Branch of the Potomac River approximately 0.03 miles south of County Route 28/5. The bridge is situated between horizontal curves on each side.</p>	
Description of Buildings or Site (Original and Present) <div style="float: right;">Stories Front Bays</div> <p>The structure was built by Fort Pitt Bridge Works in 1936. It consists of two 90 foot end spans and a 230 foot main central span. The end spans are steel riveted pony trusses and the main span is a steel riveted through truss. The bridge has an overall total length of 419 feet 6 inches. It is supported by two concrete abutments and two rectangular concrete piers. The overall width is 25 feet 2 inches. The bridge has a concrete deck. It is posted for weight limits and trucks and buses are restricted to cross one at a time. The Average Daily Traffic (ADT) is 2,900 Vehicles Per Day (VPD) with a 20 year ADT projected to be 3,800 VPD.</p>	
Alterations <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe Painting and routine maintenance work.	
Additions <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe	
Describe All Outbuildings N/A	
Statement of Significance: See Continuation Sheet.	
Bibliographical References WVDOH Bridge Inspection Report. Maintenance Division. 2014. Barnes, Tom. "Fort Pitt Bridge Works Site to be Redeveloped." <u>Pittsburgh Post-Gazette</u> . 23 July 2006. Fort Pitt Bridge Works, Pittsburgh, Pa., Records 1886-1949, AIS 1963.27, Archives Service Center, University of Pittsburgh.	
Form Prepared By: <div style="float: right;">Date: October 20, 2014</div> Name/Organization: Randy Epperly Address: WV Division of Highways Capitol Complex Building 5, Rm. 431 Charleston, WV 25305 Phone #: 304-558-9385	

WEST VIRGINIA HISTORIC PROPERTY FORM CONTINUATION SHEET

Name John Blue Bridge
Survey Number: HPI #1
Project / FR#: State County Route S314-28-22.27 Federal Project # BR-0028(058)D

Other than a general association with the history of the area, the John Blue Bridge has no important link with events or trends that have made a significant contribution to the broad patterns of history. The bridge was constructed in 1936 to replace a bridge in the general location that had been damaged in the 1936 flood. This bridge was not built as a new linkage between major towns but was a replacement needed for a damaged bridge. Therefore this bridge is not eligible for the National Register under Criterion A.

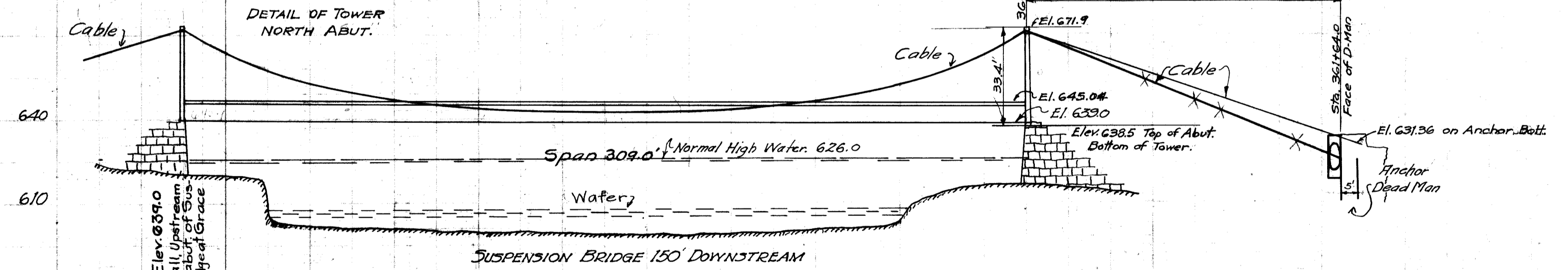
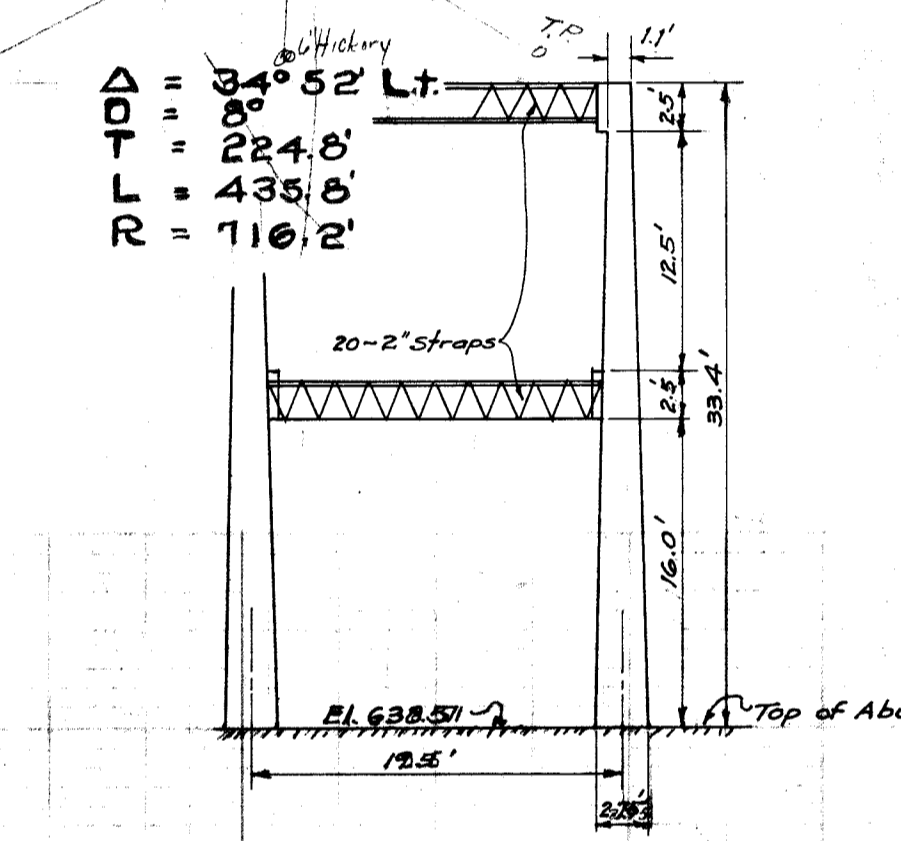
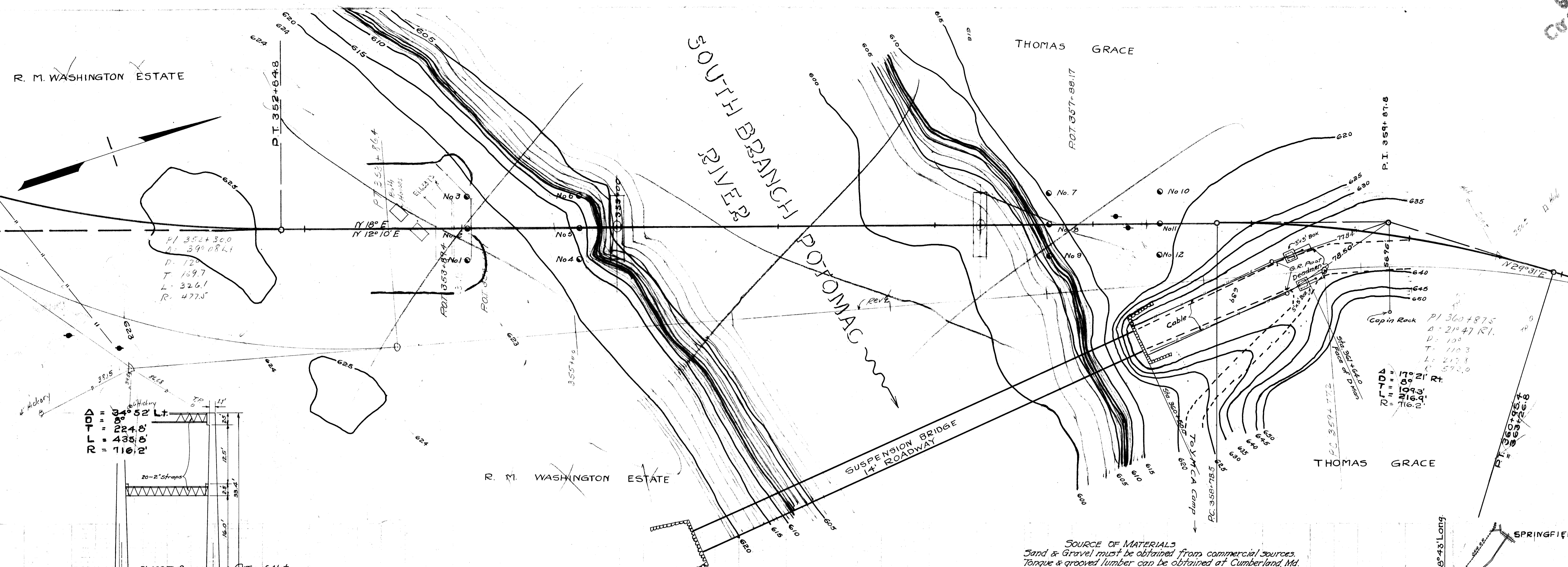
The bridge was named for John Blue, one of the first settlers in Hampshire County. Blue came to the area around 1725 and owned the land where present day WV Route 28 is located. The bridge itself does not have a direct association with the family. The Blue family settled in the area and may have had a connection to the original wire bridge. The current bridge was built in 1936 and named in honor of John Blue in 2003. The bridge is also known as Grace Bridge and Blue Beach Bridge. The bridge is not associated with a significant person or significant person's life and is not eligible under Criterion B.

The John Blue Bridge is a 419 foot 6 inch truss bridge consisting of a through truss and pony trusses. It was listed as Grace Bridge on the 1990 Final List of Historic Bridges for West Virginia. The bridge contains few alterations and remains a good example of a steel truss bridge. It was built by Fort Pitt Bridge Works, founded in 1896 and was eventually sold in 1986. Fort Pitt Bridge Works is known for its steel fabrications for bridges and also steel used in both World Wars. The bridge is eligible under Criterion C for being a good example of its bridge type and its association with a known builder.

The bridge is not likely to contain any important information that will contribute to our understanding of human history or prehistory. It is not eligible under Criterion D.

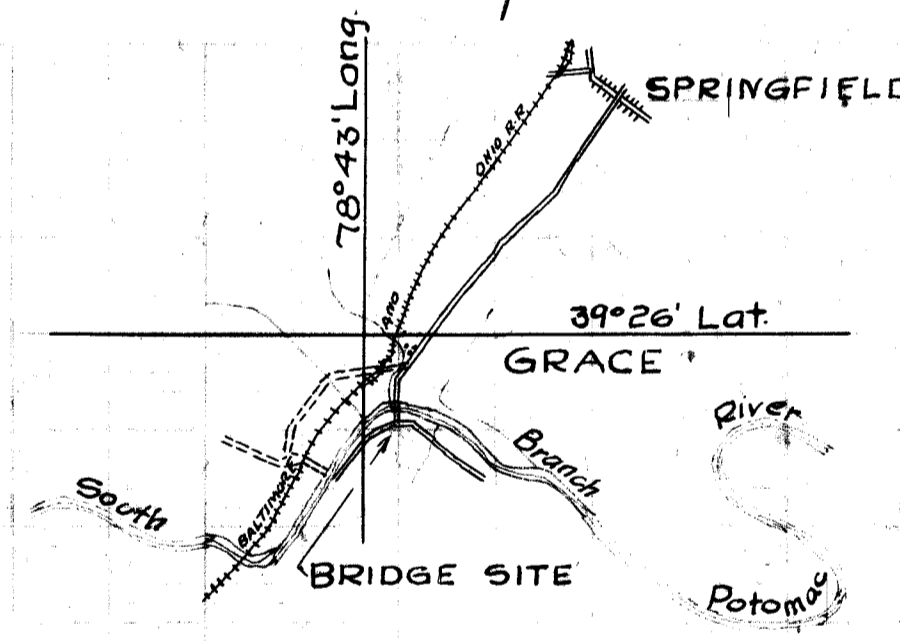
303475
455128
358450.98

83
COPY



SOURCE OF MATERIALS
Sand & Gravel must be obtained from commercial sources.
Tongue & grooved lumber can be obtained at Cumberland Md.
Grace siding on Romney Branch of B. & O. R.R. nearest shipping
point, 1/4 mi. from bridge site. Paved road to bridge site.

LOCATION CHANGED
SEE SITUATION PLAN, OCT. 1933



0.0% Grade Elev. Proposed finished grade of Roadway 648.0

Formation	Thickness	Elevation at Top	Elevation at Bottom	Notes
Loom and Gravel	16.0	603.7	602.4	
Gravel and Small Boulders	15	607.4	602.3	
Hard Sandstone	4.5	603.2	598.7	
Sandy Loam	7.0	614.3	611.5	
Gravel	2.0	607.3	607.5	
Sandstone	0.2	607.3	598.5	
Sandy Loam	8.8	612.7	610.8	
Gravel	2.0	603.2	602.3	
Hard Sandstone	1.0	601.1	600.4	
Soft Stone and Mud Seams	0.7	601.1	599.6	
Hard Sandstone	3.5	598.4	597.9	
Sandy Loam	4.3	616.8	612.5	
Gravel	6.0	609.2	607.9	
Hard Sandstone	0.7	604.9	604.7	
Sandy Loam	1.0	604.9	604.7	
Hard Sandstone	5.0	602.3	604.3	

NOTE - All test pits are 5'x5' holes to top of solid rock.

PLAN & PROFILE
BRIDGE SITE
SOUTH BRANCH
POTOMAC RIVER
GRACE
HAMPSHIRE CO., WVA
SCALE: Horizontal 1" = 30'
Vertical 1" = 30'
DEC 1930

PROFILES
H.R. Mulheisen

660

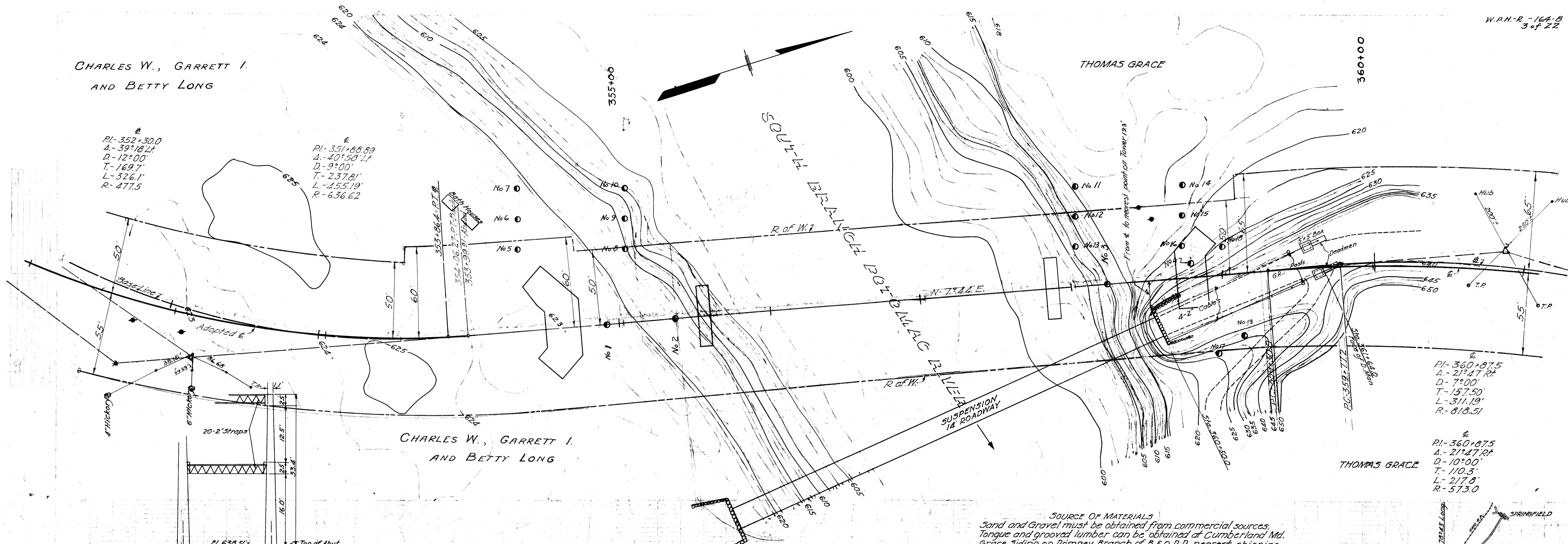
630

U.S. DATUM 600

636.4

CHARLES W., GARRETT I.
AND BETTY LONG

THOMAS GRACE

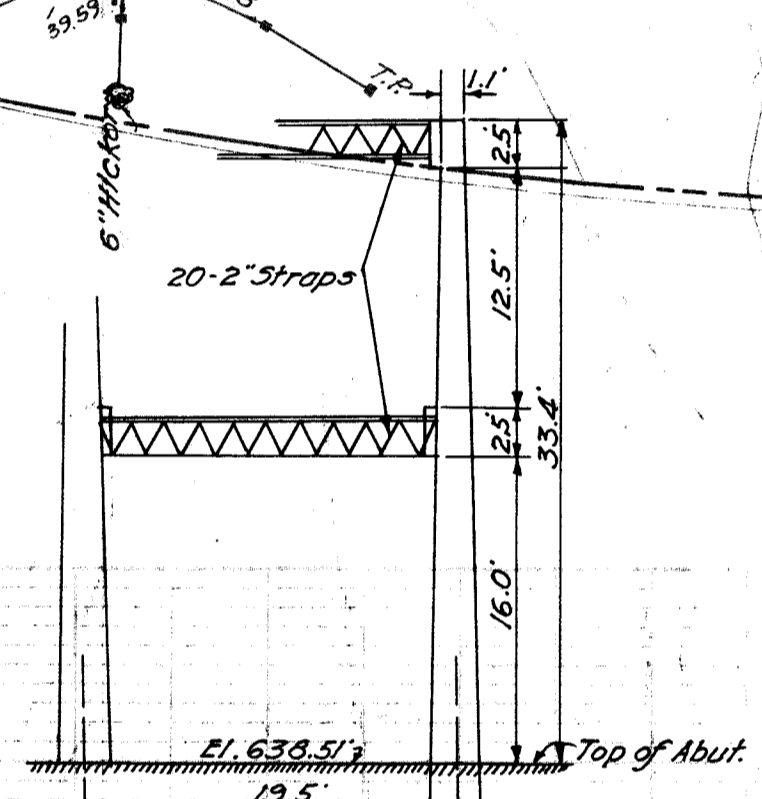


PI-352+30.0
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D-12°00'
T-169.7'
L-326.1'
R-477.5

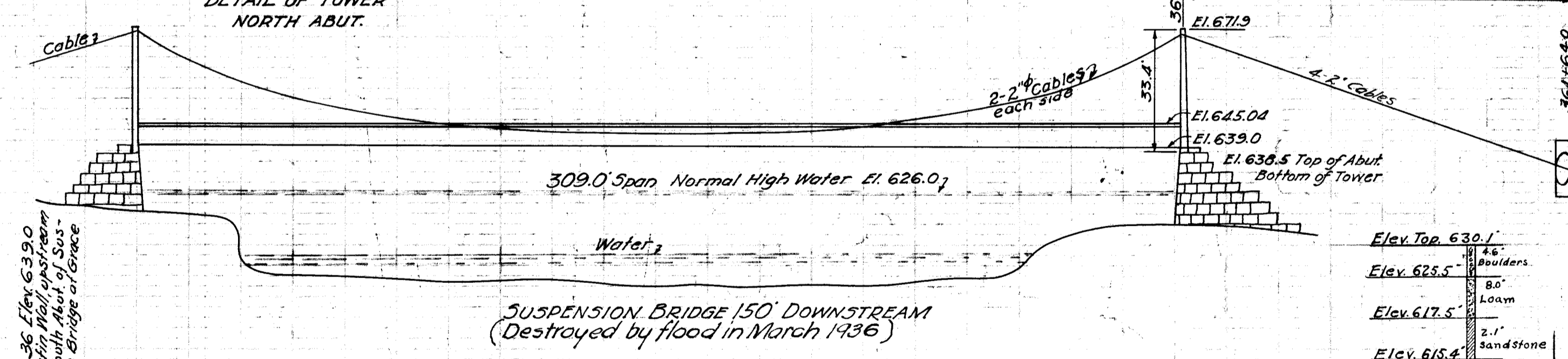
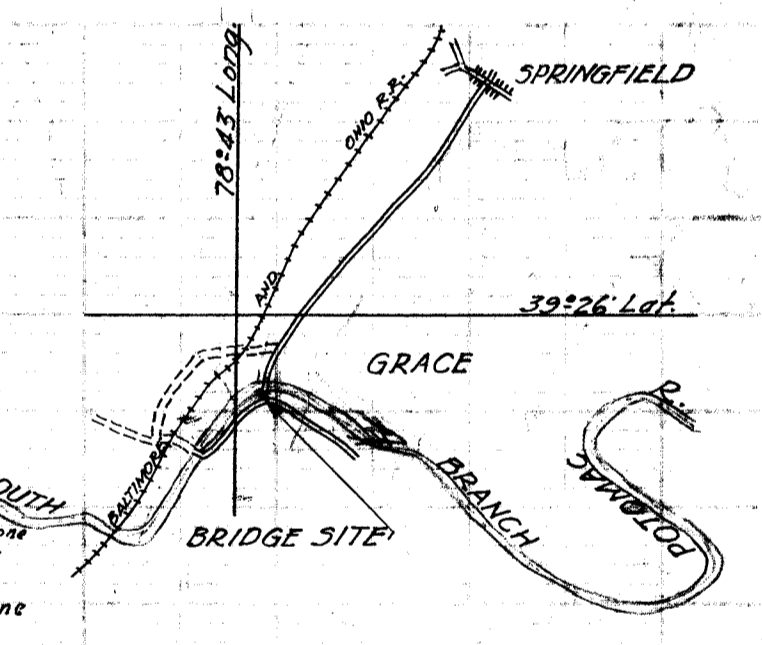
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A-40°58'11"
D-9°00'
T-237.81'
L-455.19'
R-636.62

PI-360+87.5
A-21°47'24"
D-7°00'
T-157.50'
L-311.19'
R-818.51

PI-360+87.5
A-21°47'24"
D-10°00'
T-110.3'
L-217.8'
R-573.0

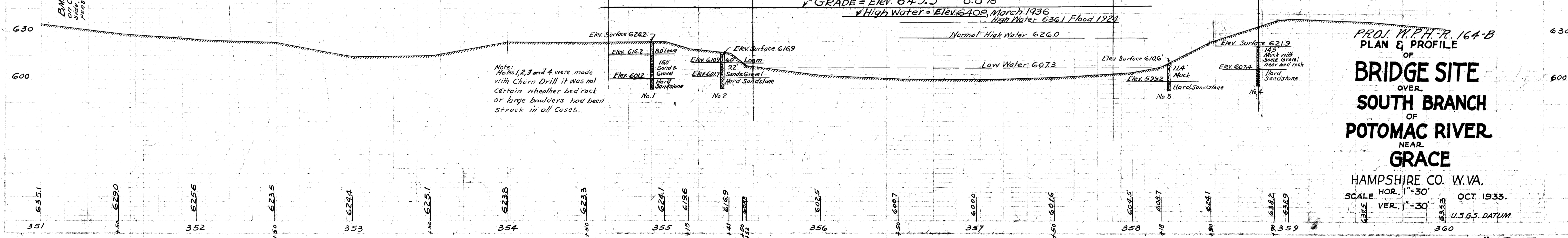


SOURCE OF MATERIALS
Sand and Gravel must be obtained from commercial sources.
Tongue and Grooved Lumber can be obtained at Cumberland Md.
Grace siding on Romney Branch of B. & O. R.R. nearest shipping
point, 1/4 mi. from bridge site. Paved road to bridge site.



Elev. Top 623.7 160' Loom & Gravel Elev. 6077	Elev. Top 624.3 20.4' Loom & Gravel Elev. 6039	Elev. Top 624.7 15.5' Loom & Gravel Elev. 6044	Elev. Top 614.3 70' Sandy Loom Elev. 6073	Elev. Top 6115 70' Sandy Loom Elev. 6075	Elev. Top 614.4 70' Sandy Loom Elev. 6074	Elev. Top 612.6 35' Sandy Loom Elev. 6031
Elev. 6032 Gravel Elev. 5987	Elev. 5979 Gravel Elev. 5920	Elev. 6019 Gravel Elev. 5959	Elev. 5920 Gravel Elev. 5985	Elev. 5985 Gravel Elev. 5945	Elev. 6005 Gravel Elev. 5992	Elev. 6001 2.0' Gravel Elev. 6001 10' Hard Sandstone Elev. 5992 3.1' Hard Sandstone Elev. 5979 3' Hard Sandstone
No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11

Elev. Top 630.1 14.6' Boulders Elev. 625.5	Elev. Top 625.8 14.6' Boulders Elev. 623.8	Elev. Top 620.7 11.8' Sandy Loom Elev. 608.9	Elev. Top 617.4 72.5' Sandy Loom Elev. 6049	Elev. Top 616.8 14.3' Sandy Loom Elev. 602.5	Elev. Top 610.8 8.5' Sandy Loom Elev. 602.3	Elev. Top 610.2 3.5' Sandy Loom Elev. 6031
Elev. 617.5 2.1' Sandstone Elev. 615.4	Elev. 610.3 2.1' Sandstone Elev. 609.4	Elev. 608.7 2.1' Sandstone Elev. 603.4	Elev. 610.3 2.1' Sandstone Elev. 609.4	Elev. 607.5 2.1' Sandstone Elev. 607.5	Elev. 602.3 2.1' Sandstone Elev. 599.8	Elev. 600.6 2.5' Gravel Elev. 599.6 10' Hard Sandstone Elev. 597.8 0.7' Soft Stone mud Elev. 595.4 3.5' Hard Sandstone
No. 19	No. 17	No. 16	No. 15	No. 14	No. 13	No. 12

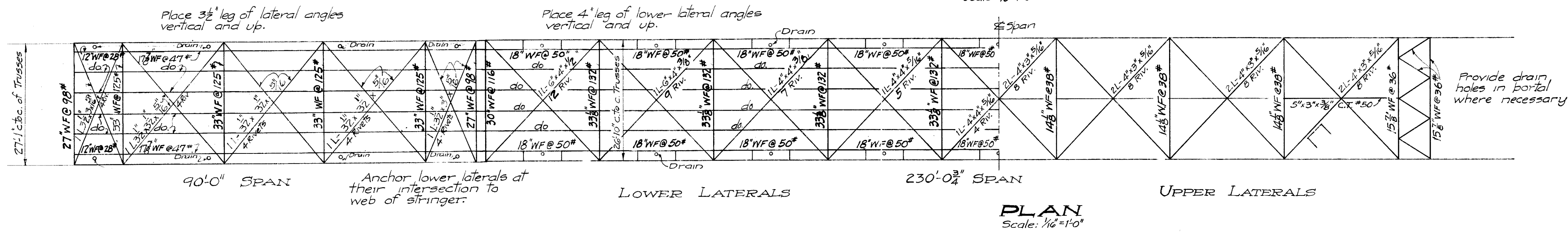
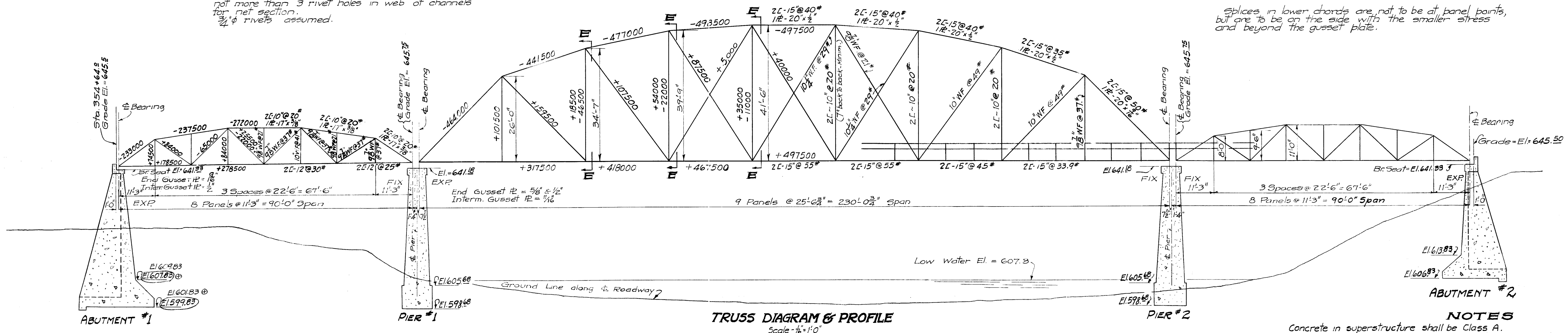


Note: Holes 1, 2, 3 and 4 were made with Churn Drill it was not certain whether bed rock or large boulders had been struck in all cases.

PROJ. W.P.H.R. 164-B
PLAN & PROFILE
OF
BRIDGE SITE
OVER
SOUTH BRANCH
OF
POTOMAC RIVER
NEAR
GRACE
HAMPSHIRE CO. W.VA.
SCALE HOR. 1"=30'
VER. 1"=30'
OCT. 1933.
U.S.G.S. DATUM

Lower chord members to be detailed to deduct not more than 3 rivet holes in web of channels for net section.
3/4" φ rivets assumed.

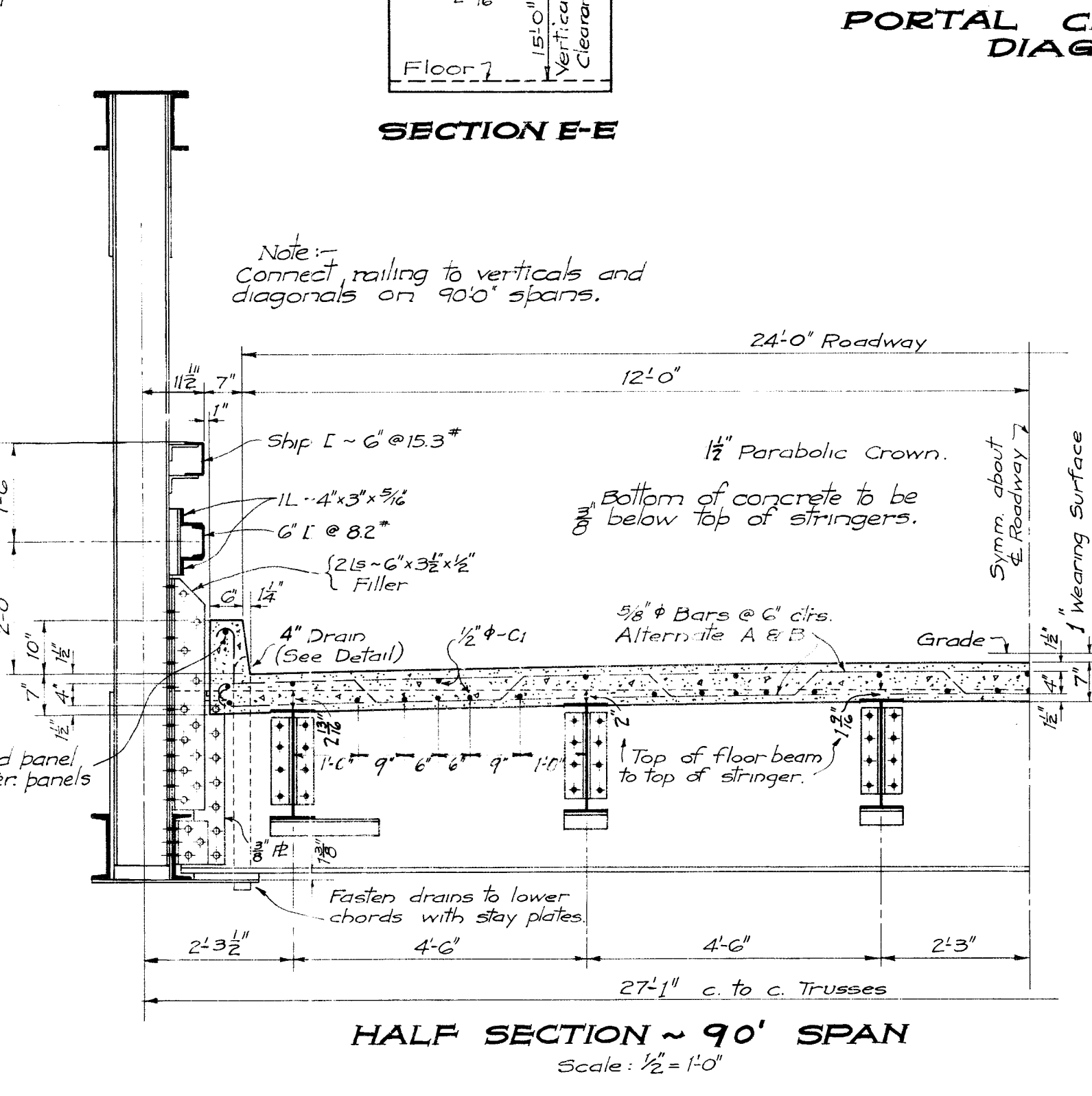
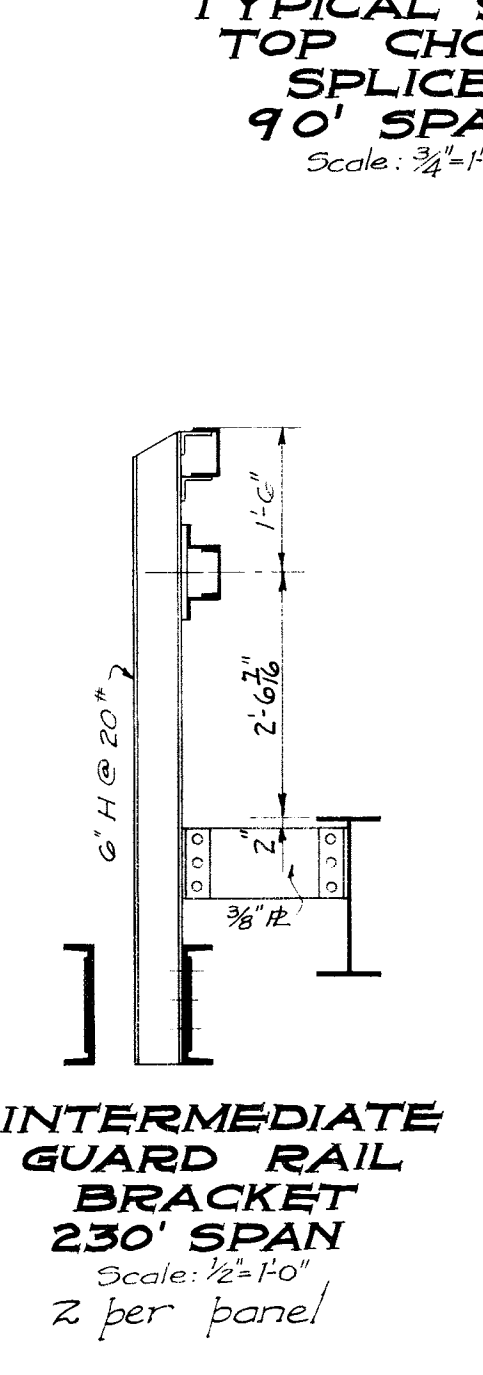
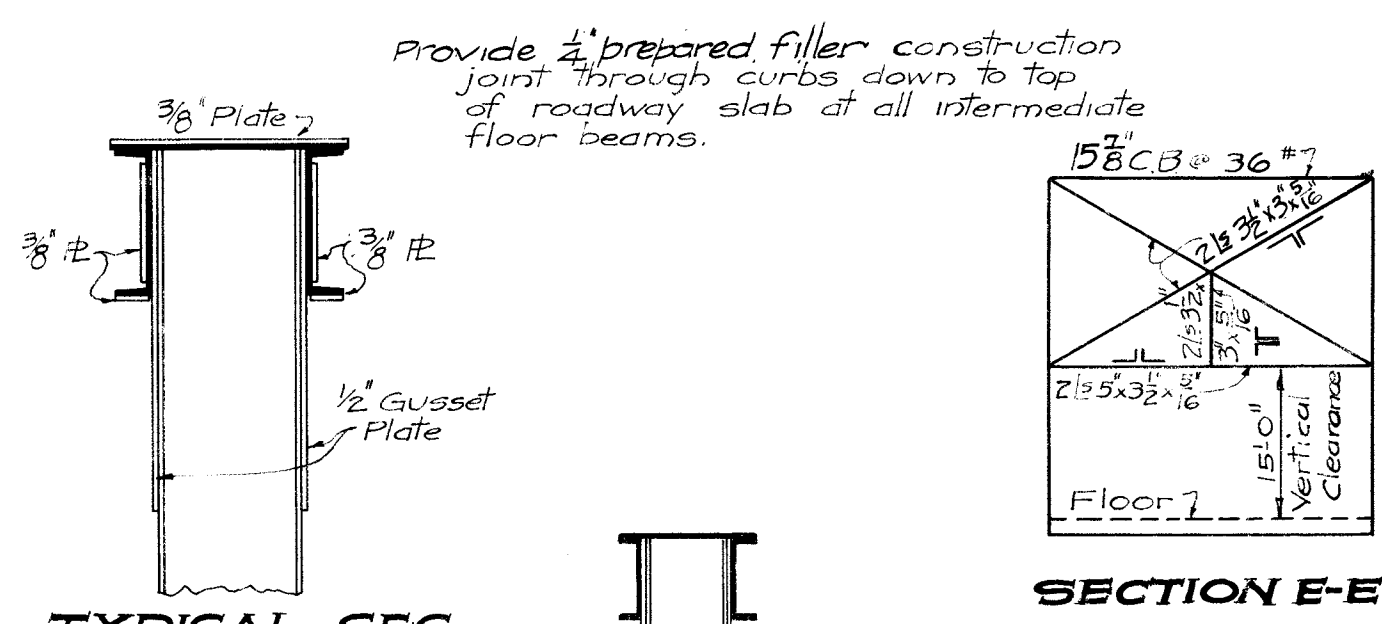
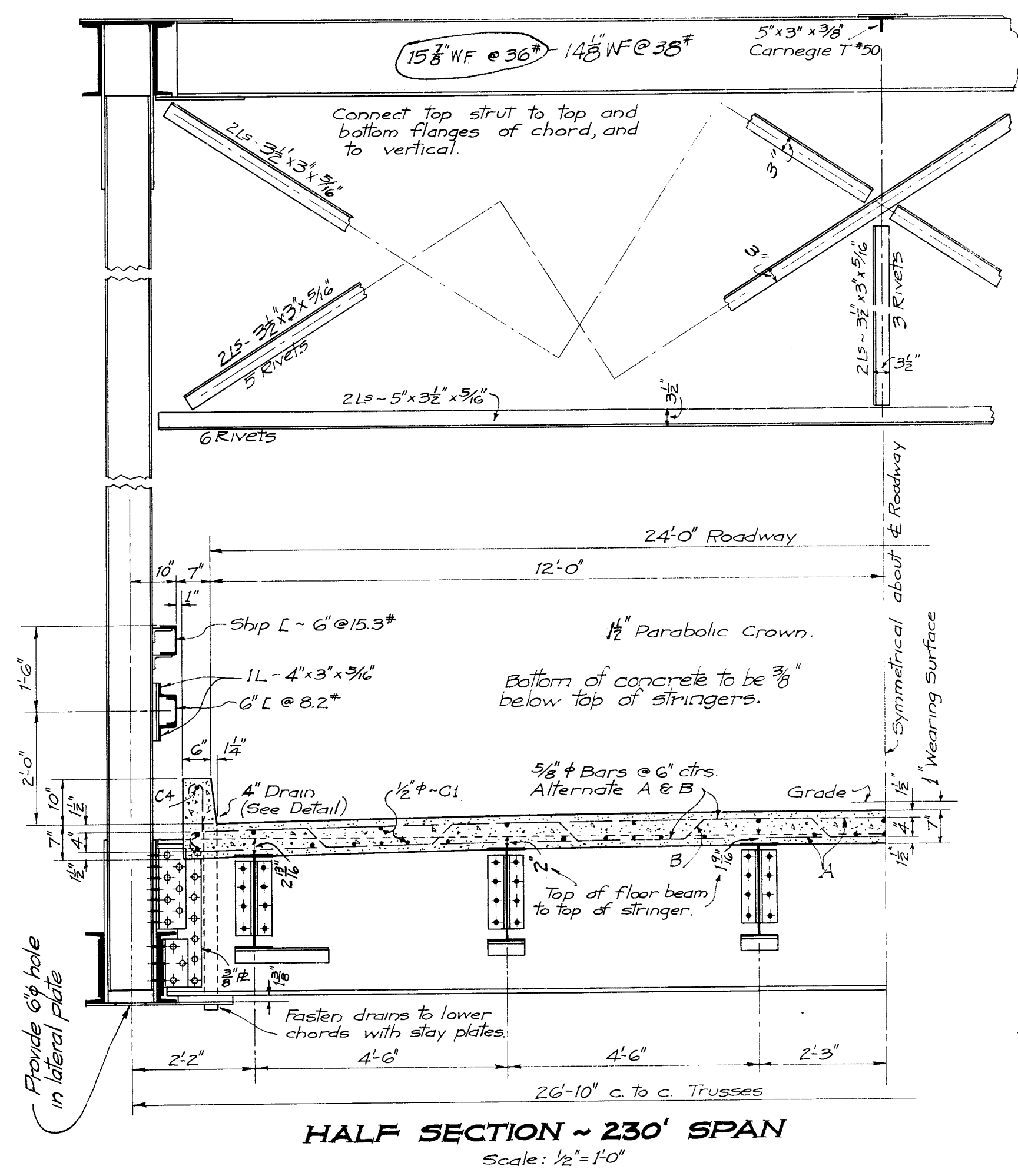
Splices in lower chords are not to be at panel points, but are to be on the side with the smaller stress and beyond the gusset plate.



NOTES

Concrete in superstructure shall be Class A. Concrete in curtain walls (36 cubic yards) which is not included in the substructure contract is included in this contract and shall be Class A. Reinforcing bars shall be made from new billet steel of intermediate grade. Shop drawings shall be in ink on tracing cloth and the tracings delivered to the Commission upon completion of the contract. The final coat of field paint shall be aluminum according to the State Road Commission specifications dated October, 1935. Allowable unit stresses for structural steel, rivet steel and cast steel shall be increased 12 1/2% over those given in the specifications with a maximum of 15000 psi in axial compression. The contractor shall submit a lump sum bid on the steel superstructure complete in place (excluding the concrete floor), item 23, and a unit bid on all other items shown in the Estimate. Specifications by State Road Commission June, 1928, with Modifications and Changes effective January, 1933. Special provisions governing Works Program Highway Funds adopted by the State Road Commission, August 26, 1935, revised September 6, 1935, will govern this project, except as noted.

A high-early-strength cement shall be used for all Class A concrete in accordance with the Specifications. The temperature of all materials shall not be less than 70° Fahr. nor more than 150° Fahr. when the concrete is made. A minimum temperature of 70° Fahr. shall be maintained in the concrete for a period of two days.



ASSUMED LOADINGS

90'-0" SPANS
Live Load = H-15
Dead Load = Truss and Rail = 280 lb/ft of truss.
Floor System = 1740 lb/ft of truss.

230'-0" SPAN
Live Load = H-15
Dead Load = 2310 lb/ft of truss.
Bridge designed for a wearing surface of 25" per sq. ft. of roadway.

ESTIMATE

⑤ Class A Concrete (Super)	=	238 Cu. Yds
⑥ Class A Concrete (Sub)	=	36 Cu. Yds
⑦ Reinforcing Steel	=	44,250 Lbs
⑧ Structural Steel	=	610,000 Lbs
⑨ Cast Steel	=	9,900 Lbs
⑩ Sheet Lead	=	660 Lbs
⑪ Asphalt Conc. Pav. Wearing Course (90')	=	50 Tons
⑫ Asphalt Conc. Pav. Top Dressing (5")	=	3 Tons

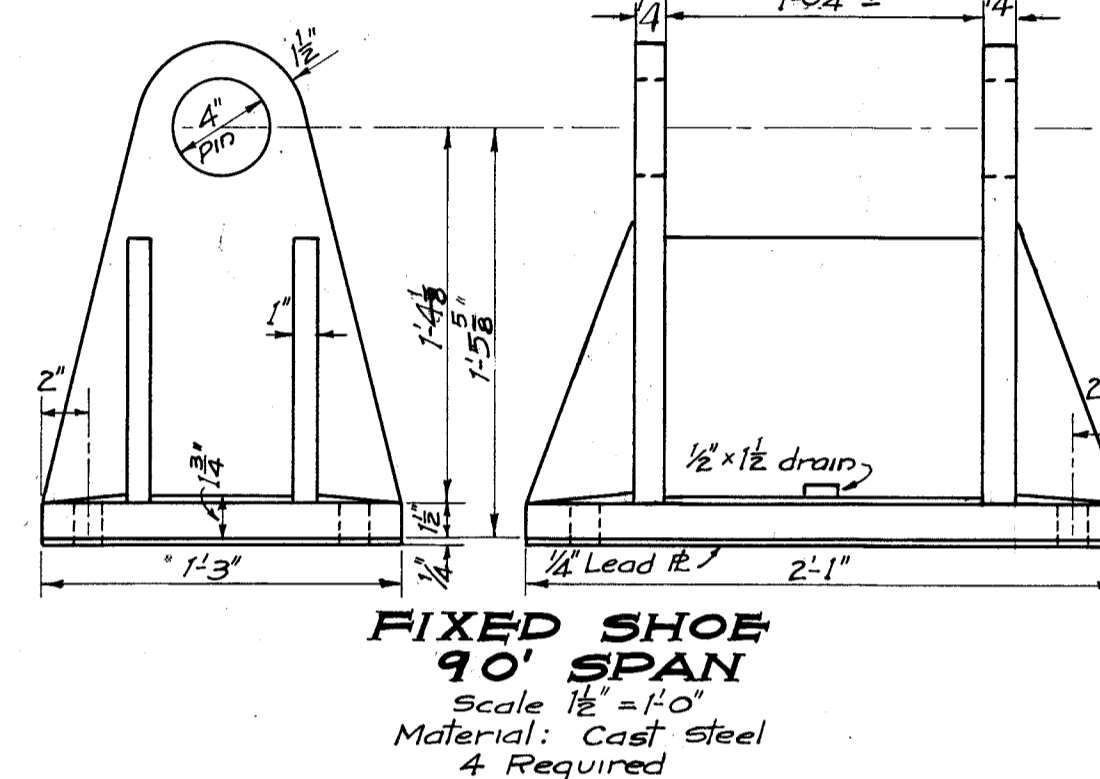
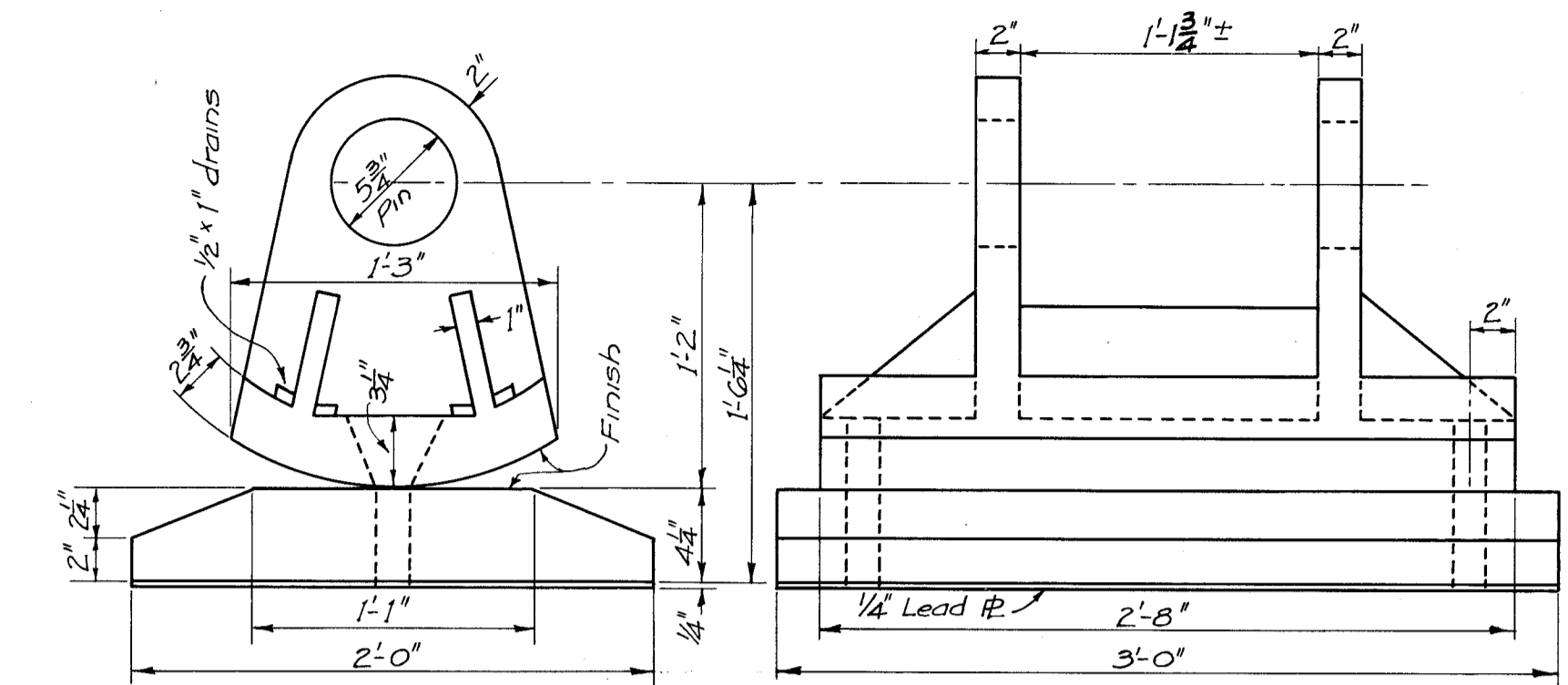
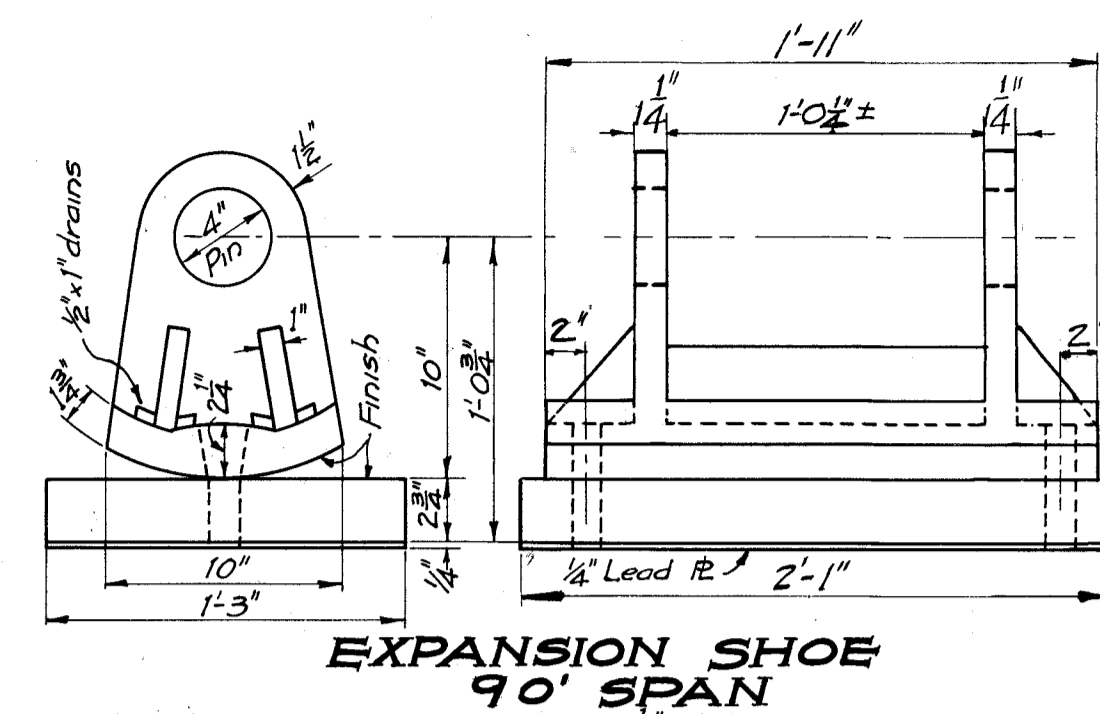
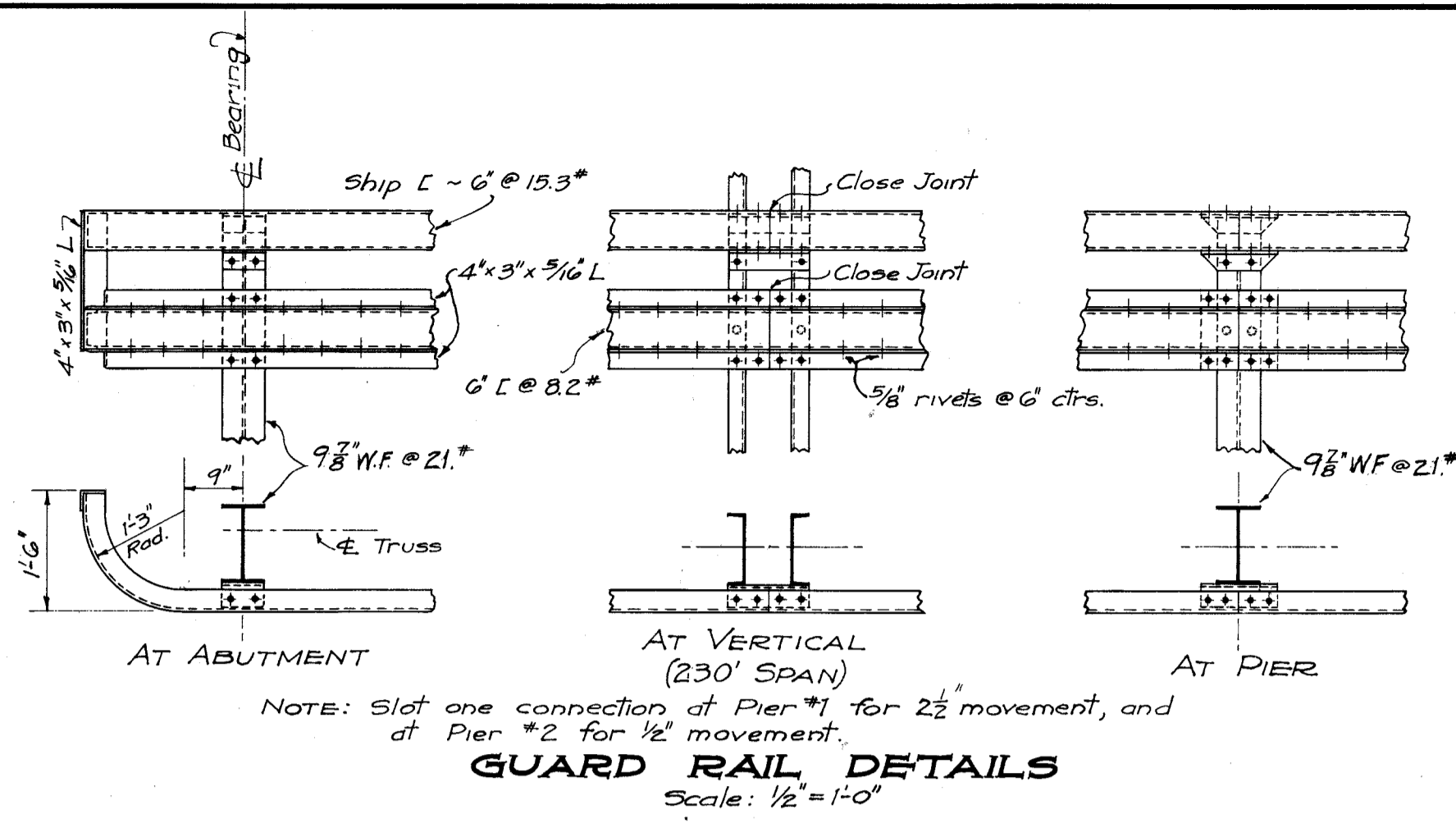
Note: Items 32 and 33 are for wearing surface and are to be in accordance with items 31-1 and 31-3 of the Standard Road Specifications approved July, 1935.

PRIMARY STATE ROUTE # 28
PROJECT: W.P.H. 164-D
Prepared and recommended:
B. J. Johnson
Recommended for approval:
[Signature]
Chief Engineer.
Approved:
[Signature]
Commissioner.
Approved by official order of the State Road Commission of W.Va. Entered _____ day of _____ 1936.
Secretary.

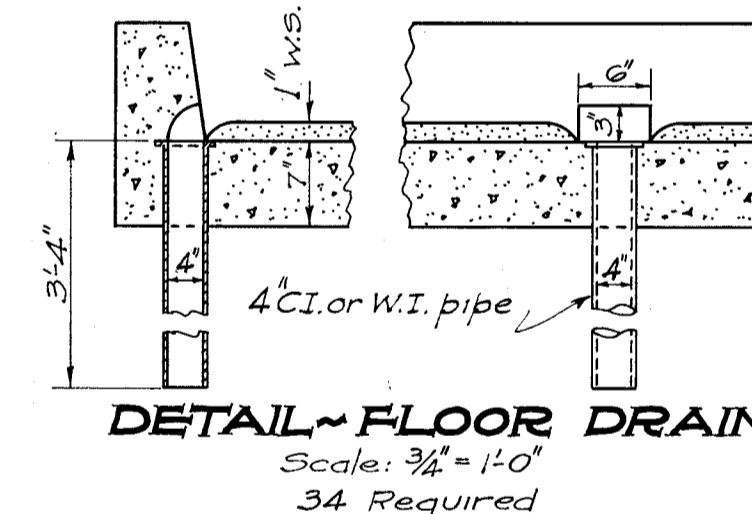
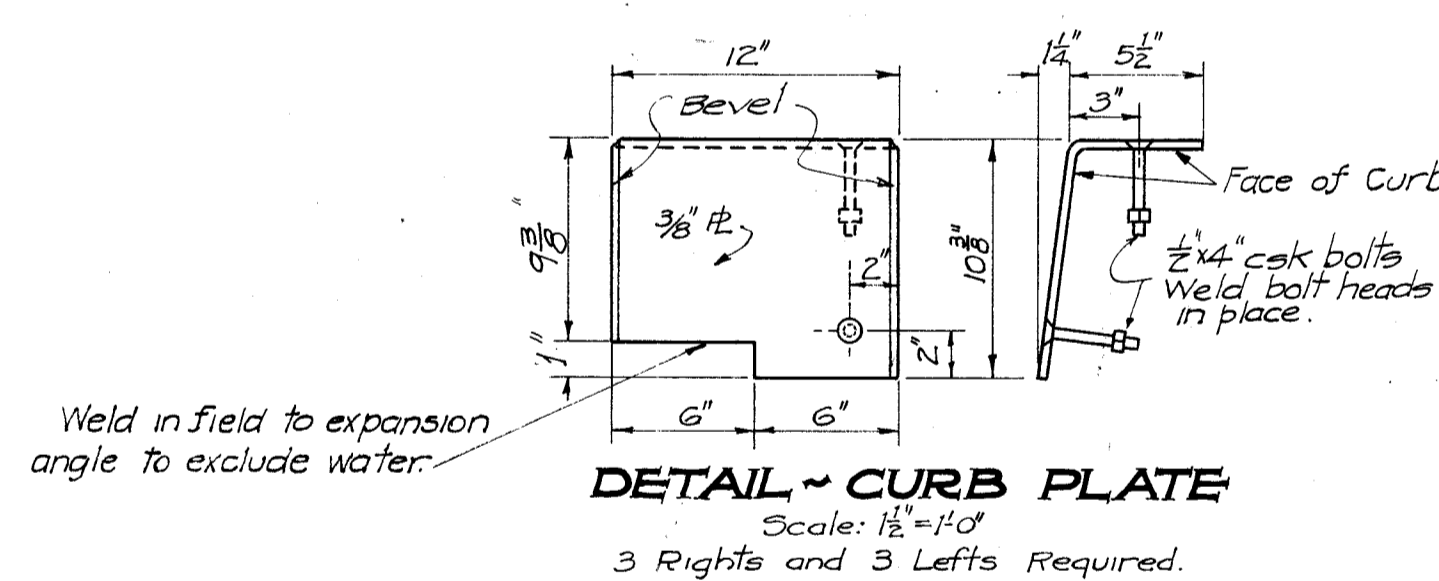
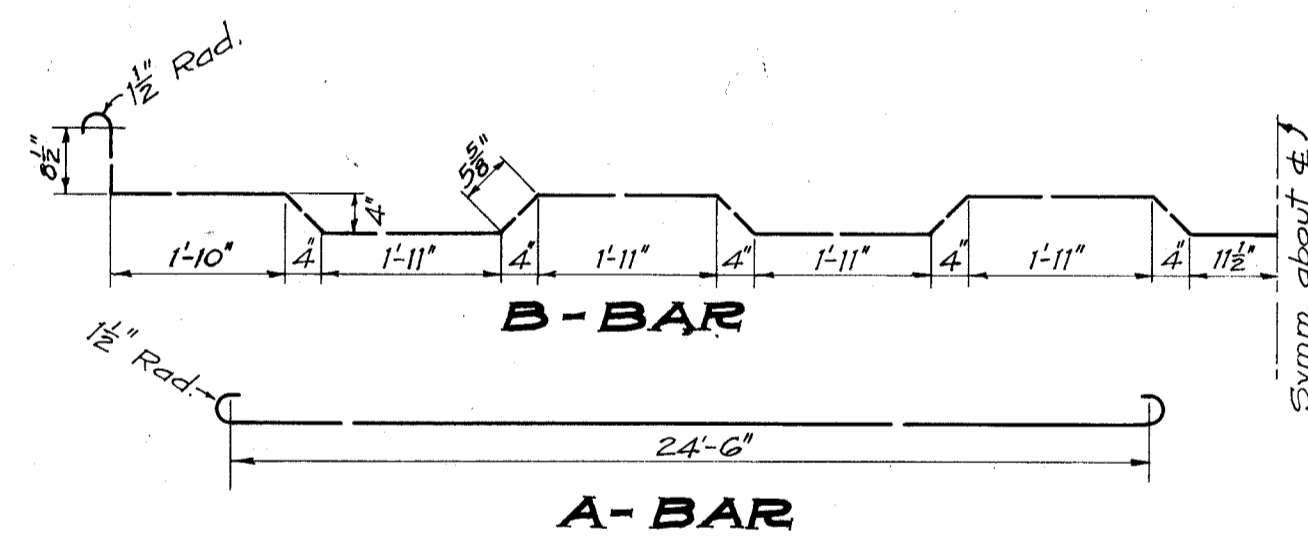
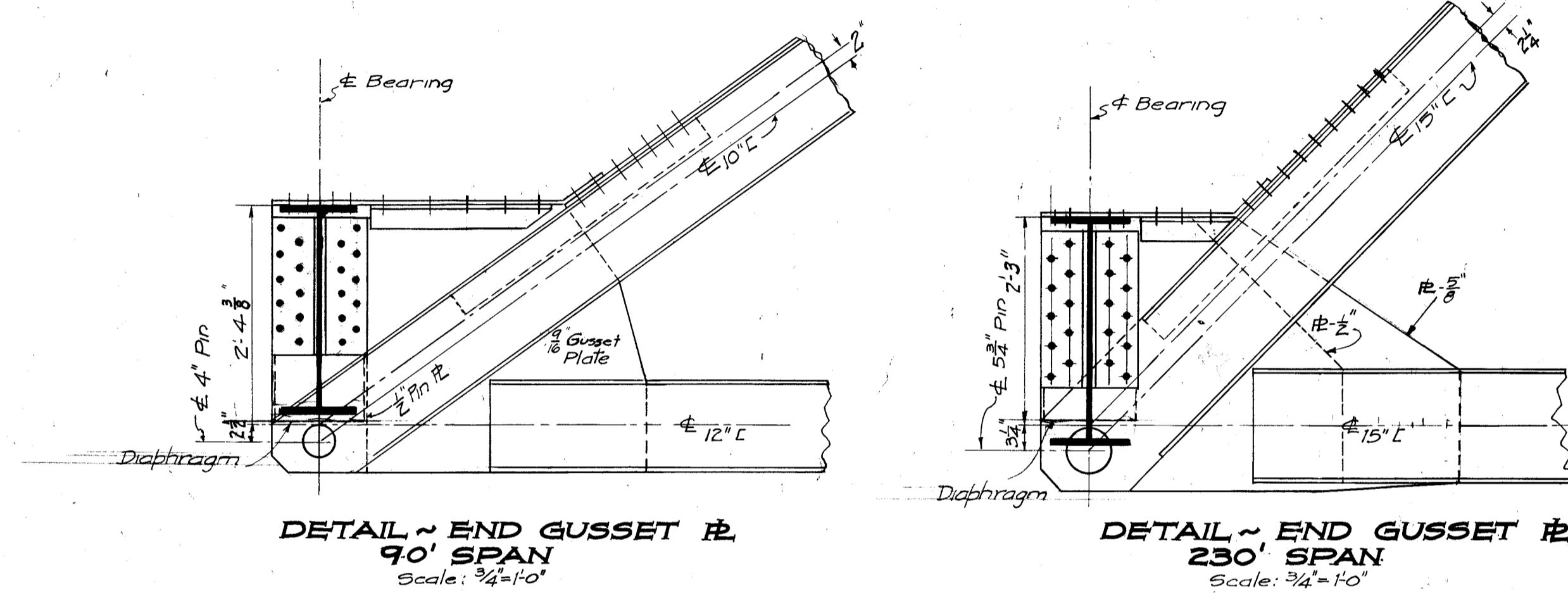
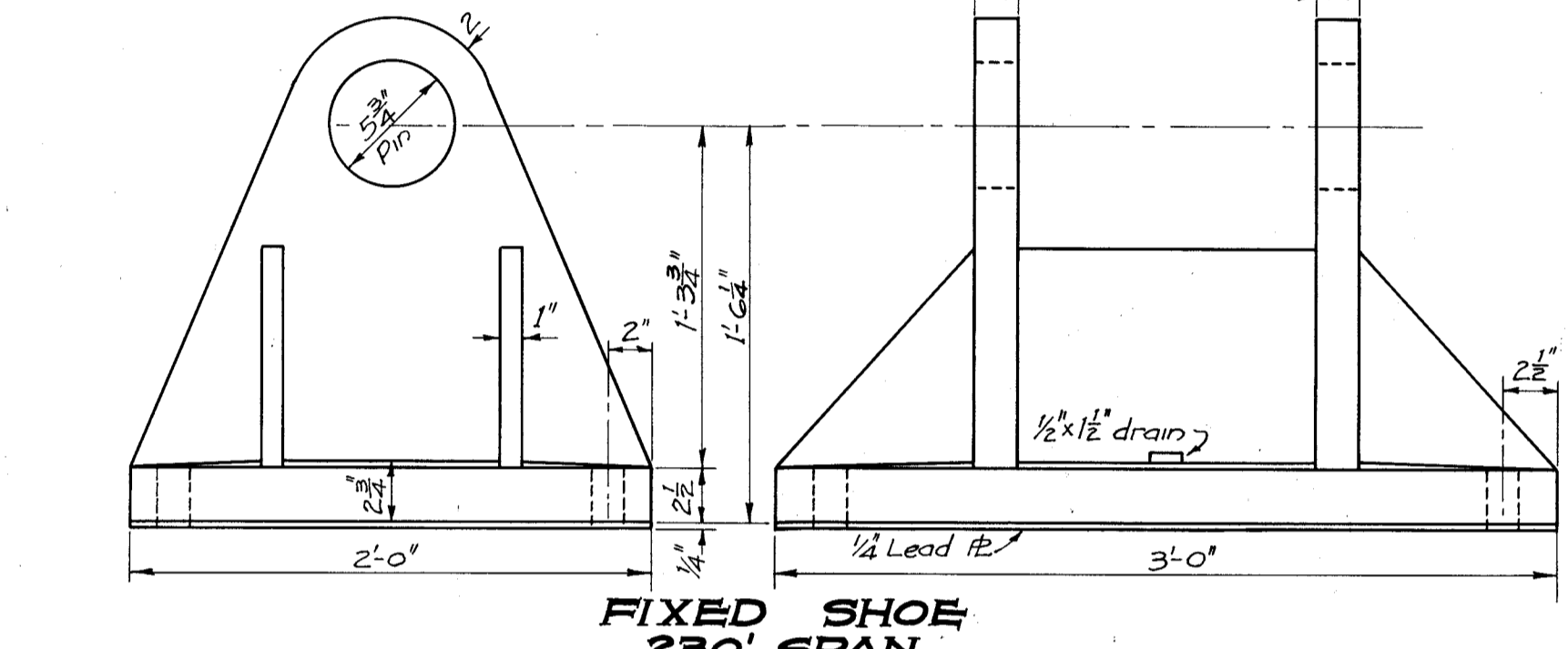
REFERENCE -
For Substructure Plan see SUBSTRUCTURE #1265.
For Situation Plan see #1265-A.

SUPERSTRUCTURE STEEL THRU TRUSS GRACE BRIDGE
FINAL 2-90'-0" S.P.T. SPANS; 1-230'-0" S.T.T. SPAN; 24'-0" ROWY.
ON
PRIMARY STATE ROUTE # 28
ROMNEY - SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.

SCALE: AS NOTED
JUNE, 1936
SHEET #1 OF 2
PROJECT: W.P.H. 164-D
#1265

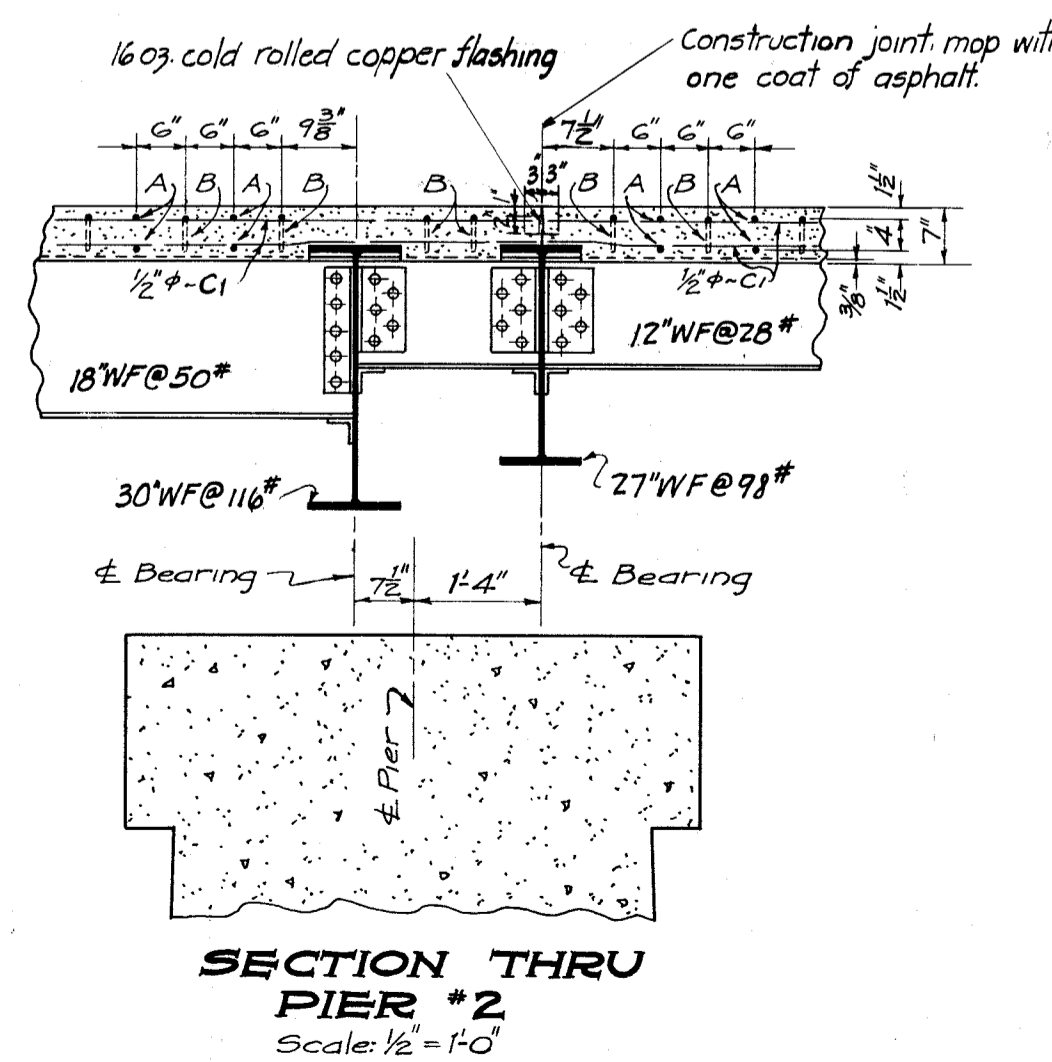
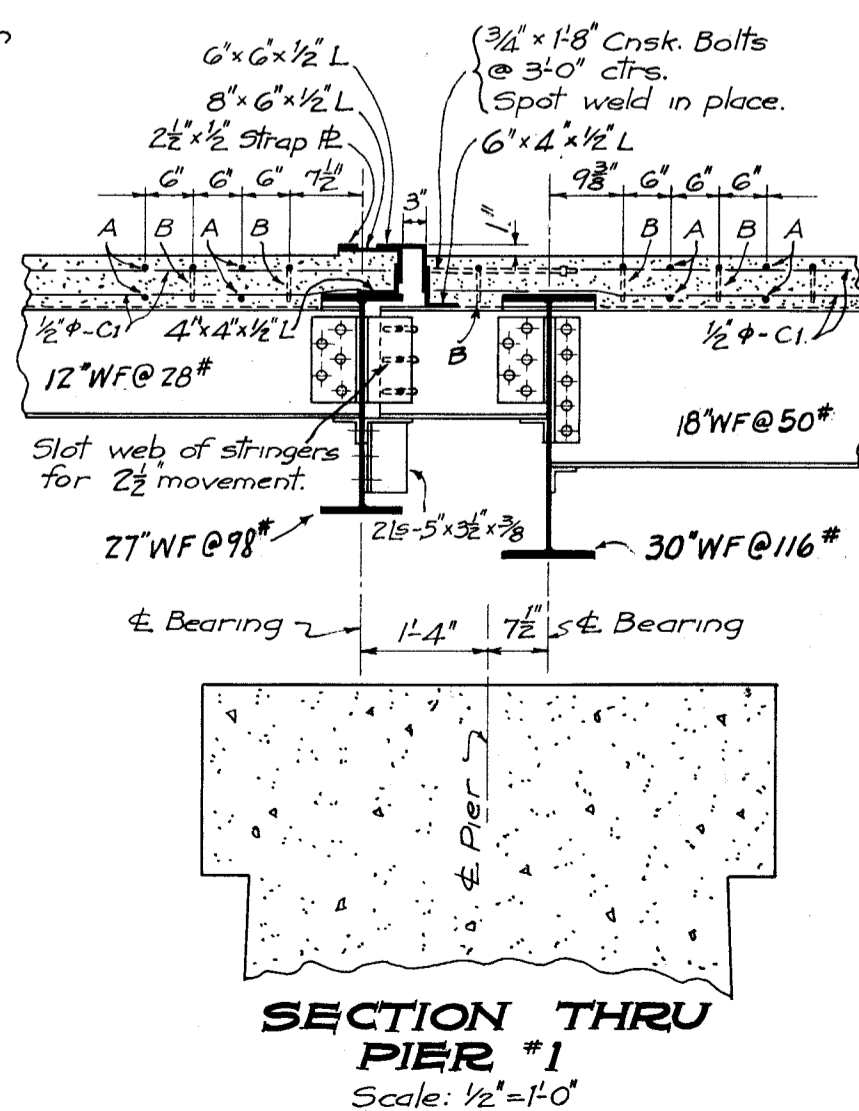
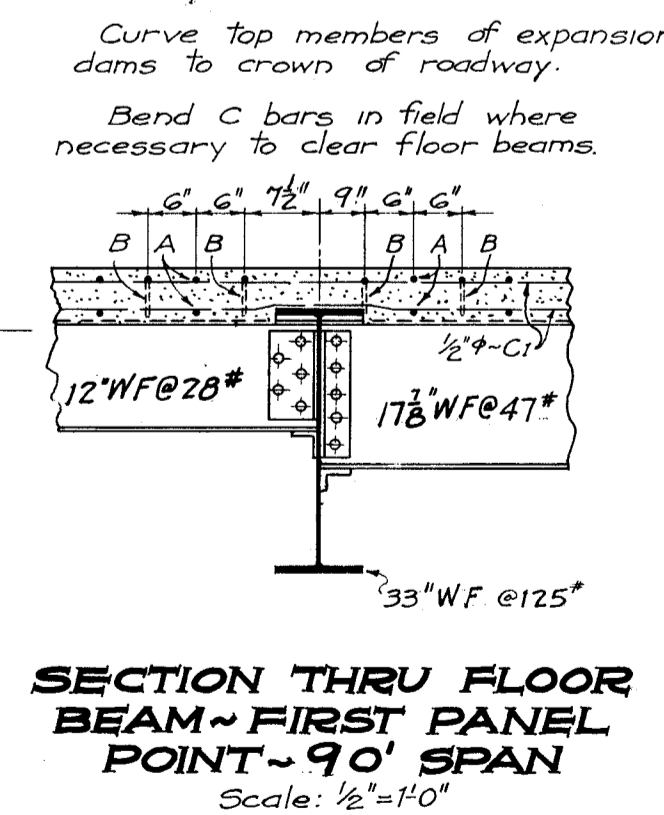
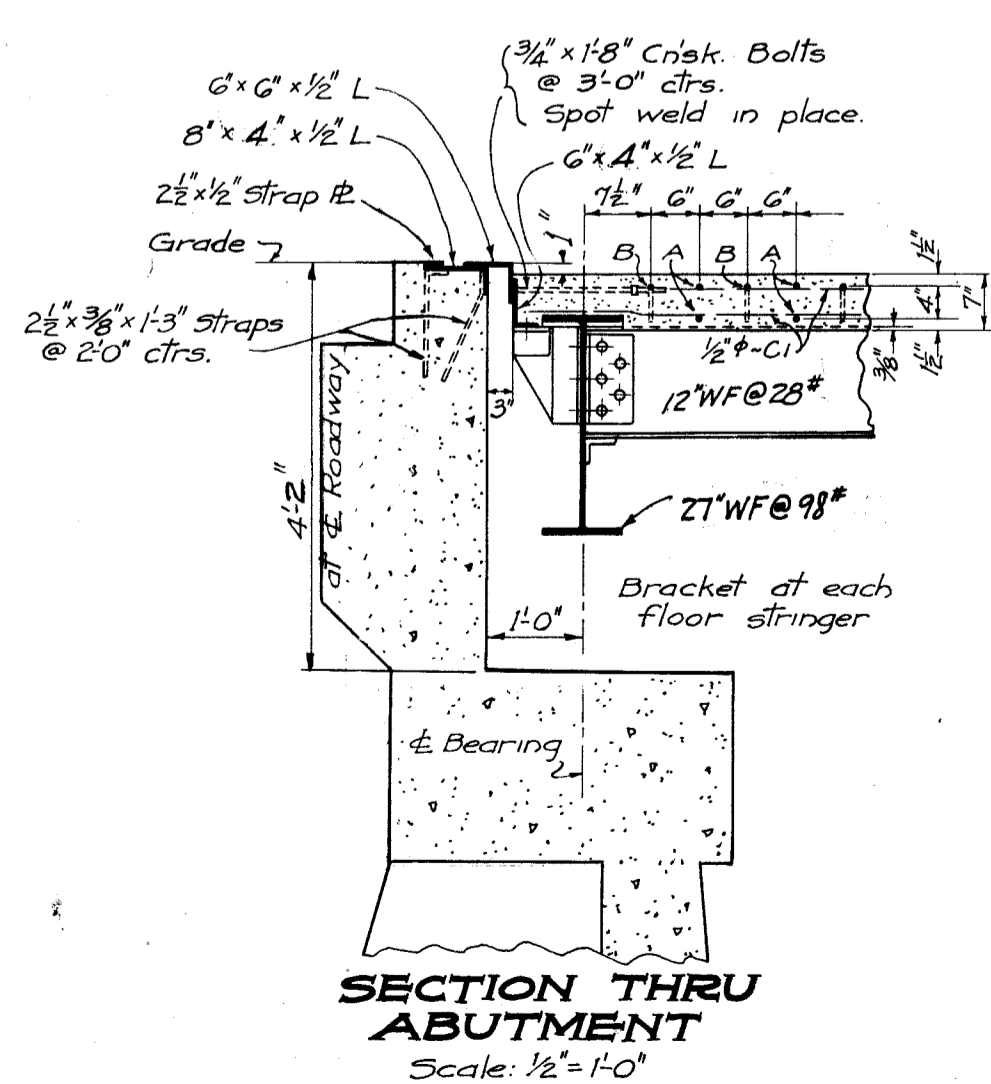


Note: Fill pockets in all shoes with concrete.



BILL OF REINFORCING STEEL

NO BARS	LETTER	SIZE	LENGTH
766	A	3/8" φ	25'-6"
404	B	3/8" φ	28'-0"
561	C1	1/2" φ	31'-0"
8	C2	1/2" φ	11'-0"
12	C3	1/2" φ	22'-0"
18	C4	1/2" φ	25'-0"



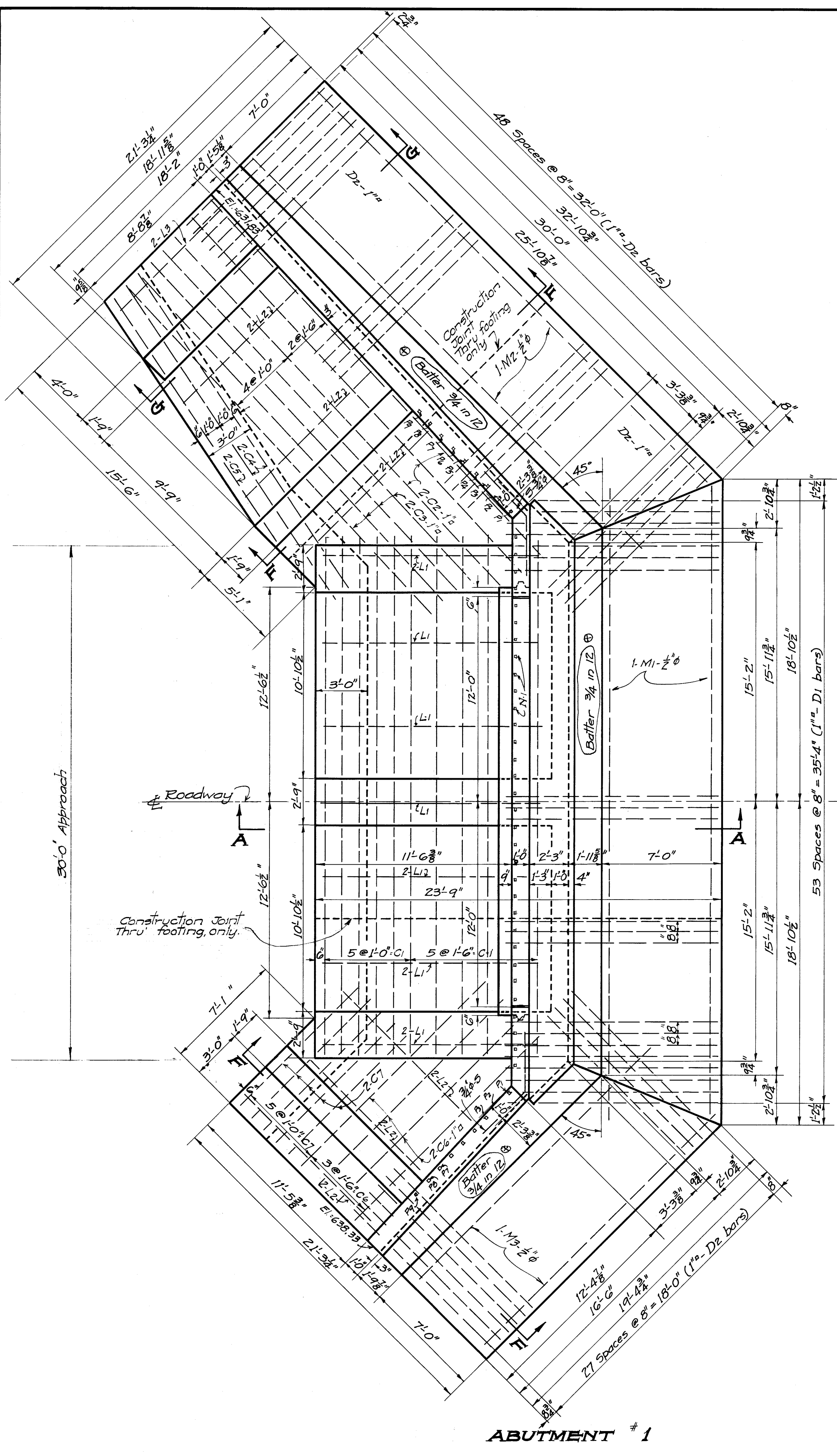
Copper flashing and asphalt paint to be included in price bid on Class A concrete.

SUPERSTRUCTURE STEEL THRU TRUSS GRACE BRIDGE
2-90'-0" S.P.T. SPANS; 1-230'-0 3/4" S.T.T. SPAN; 24'-0" Rdwy. CR.

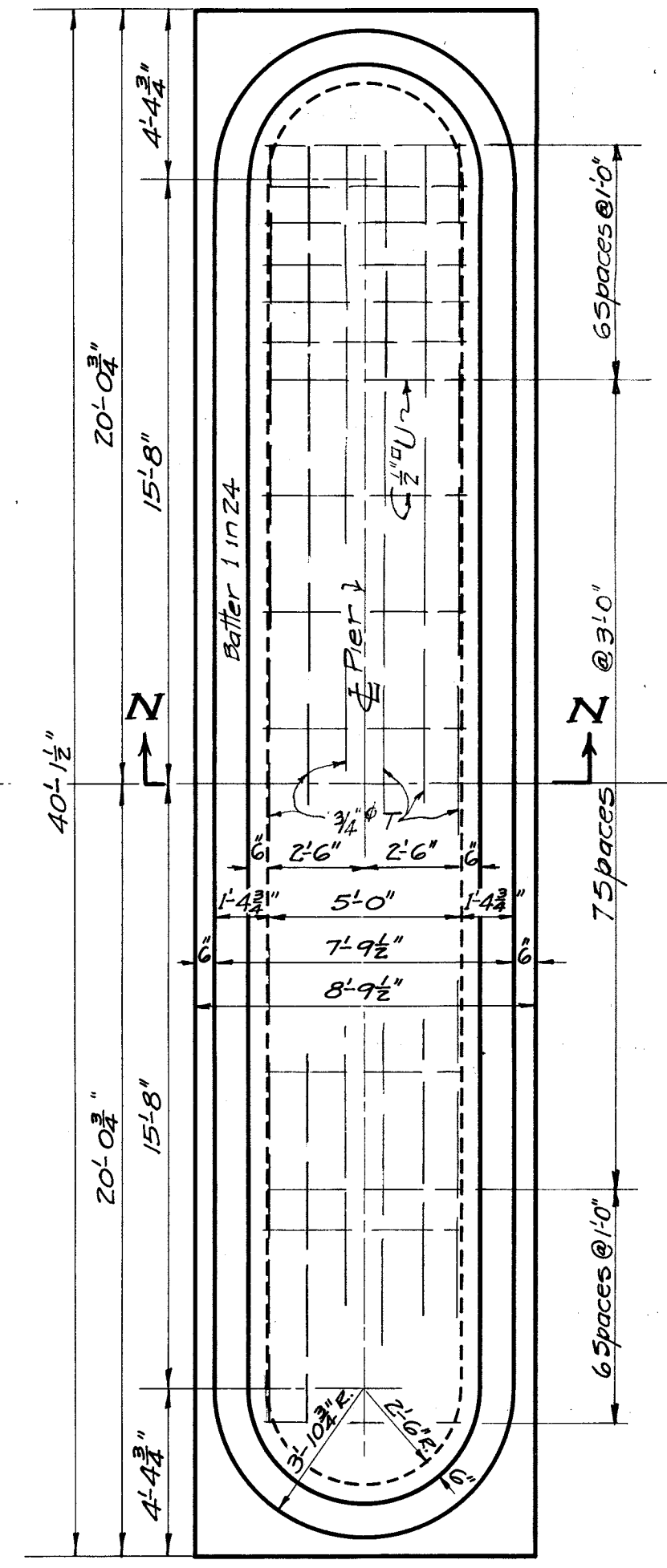
PRIMARY STATE ROUTE # 28 ROMNEY - SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD HAMPSHIRE CO., W.VA.

DESIGNED BY
STATE ROAD COMMISSION CHARLESTON, W.VA.

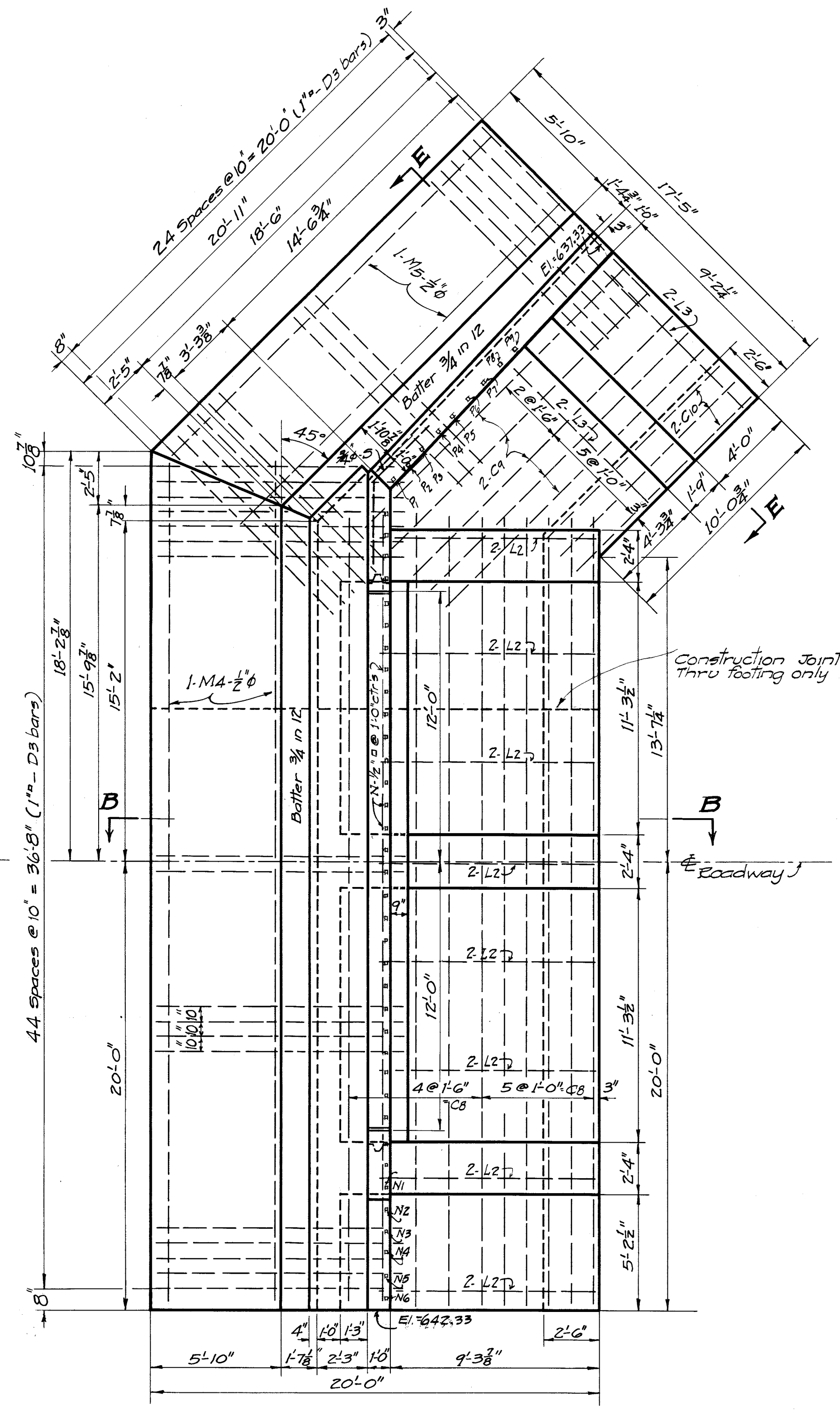
SCALE: AS NOTED
JUNE, 1936
PROJECT W.P.H.-164-B
SHEET #2 OF 2
#1265



ABUTMENT #1

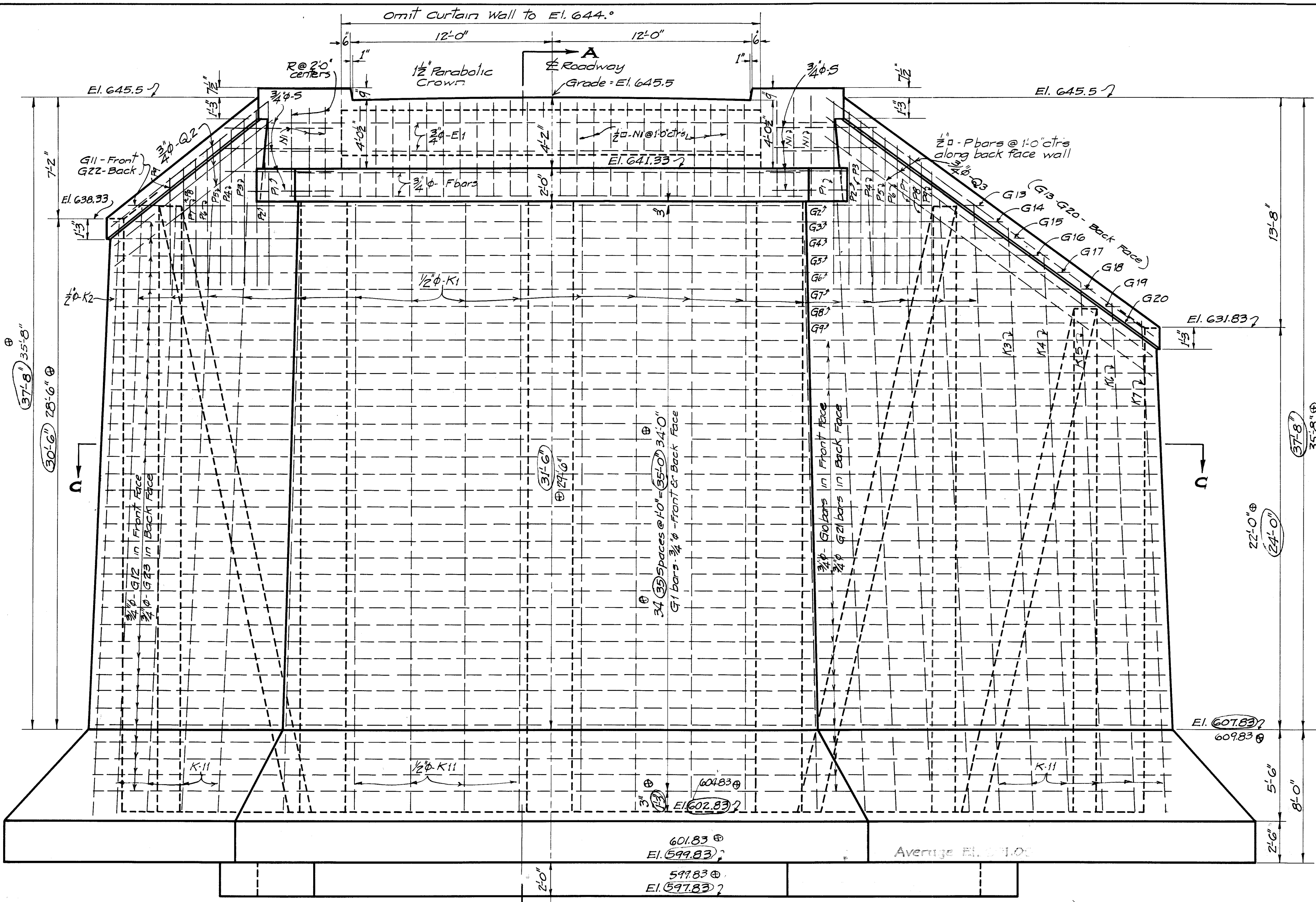


PIERS #1 & 2

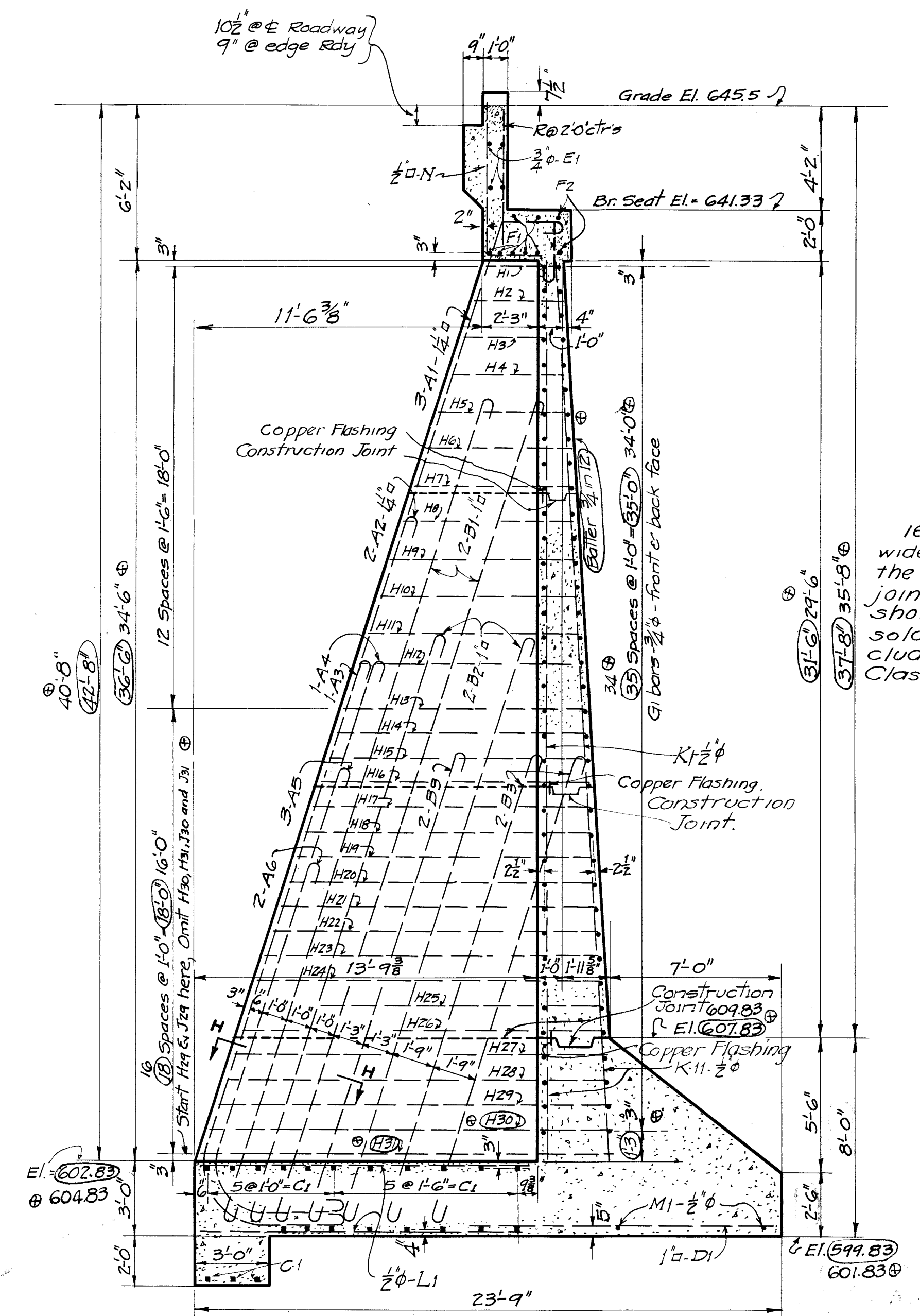


ABUTMENT #2

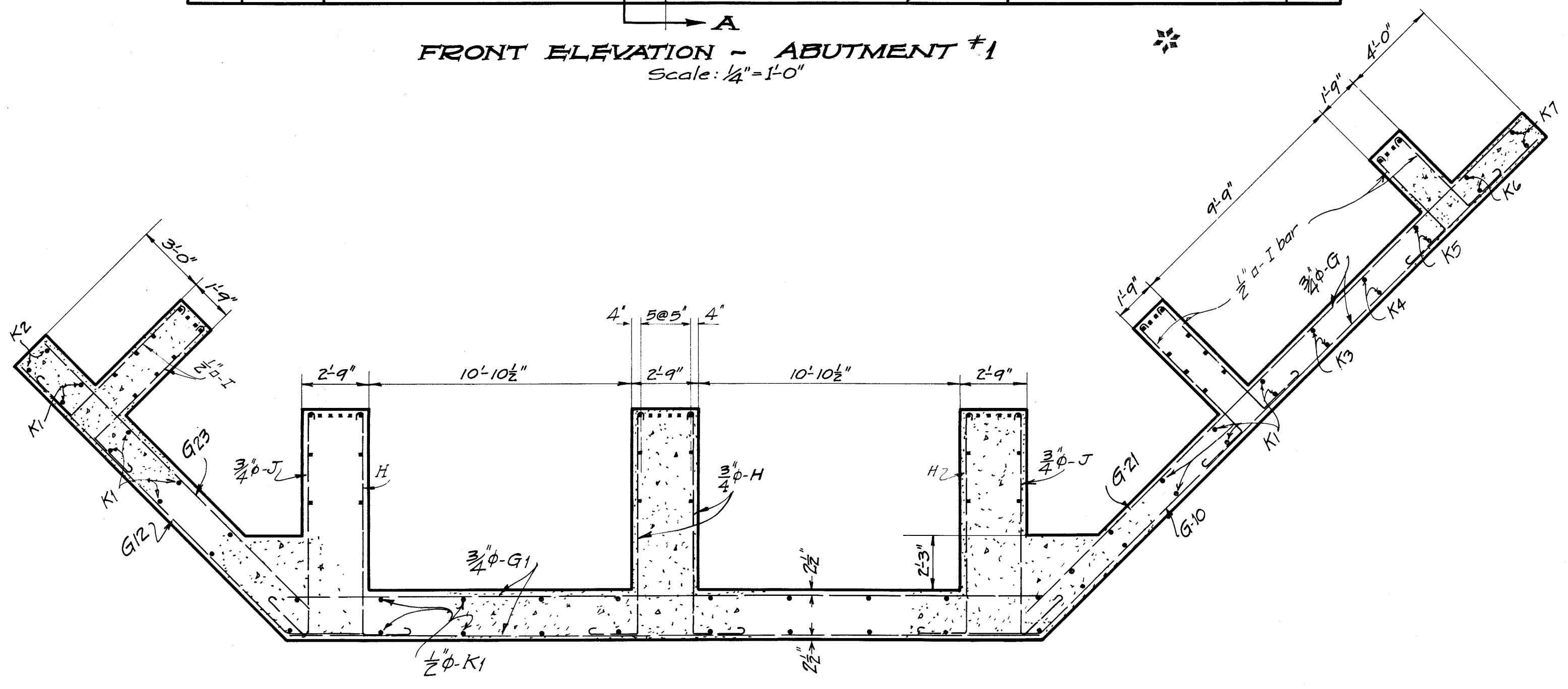
**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**
2-90' SPT SPANS ~ 1-230-0" ST.T.SPAN ~ 24' RDWY.
ON
PRIMARY STATE ROUTE #28
ROMNEY ~ SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., WVA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, WVA.
SCALE: 1/4" = 1'-0" JUNE, 1936
PROJECT: W.P.H.-R. 164-B SHEET #2 OF 5 #1265
PROJ. W.P.H.-R. 164-B JBL



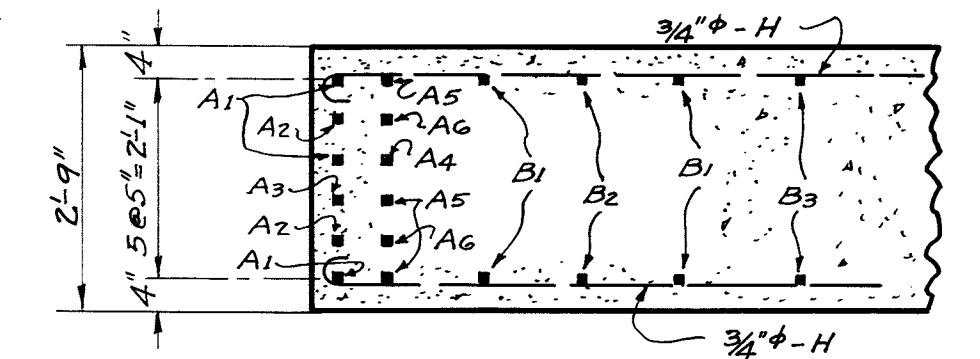
FRONT ELEVATION - ABUTMENT #1
Scale: 1/4" = 1'-0"



SECTION A-A - ABUTMENT #1
Scale: 1/4" = 1'-0"



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



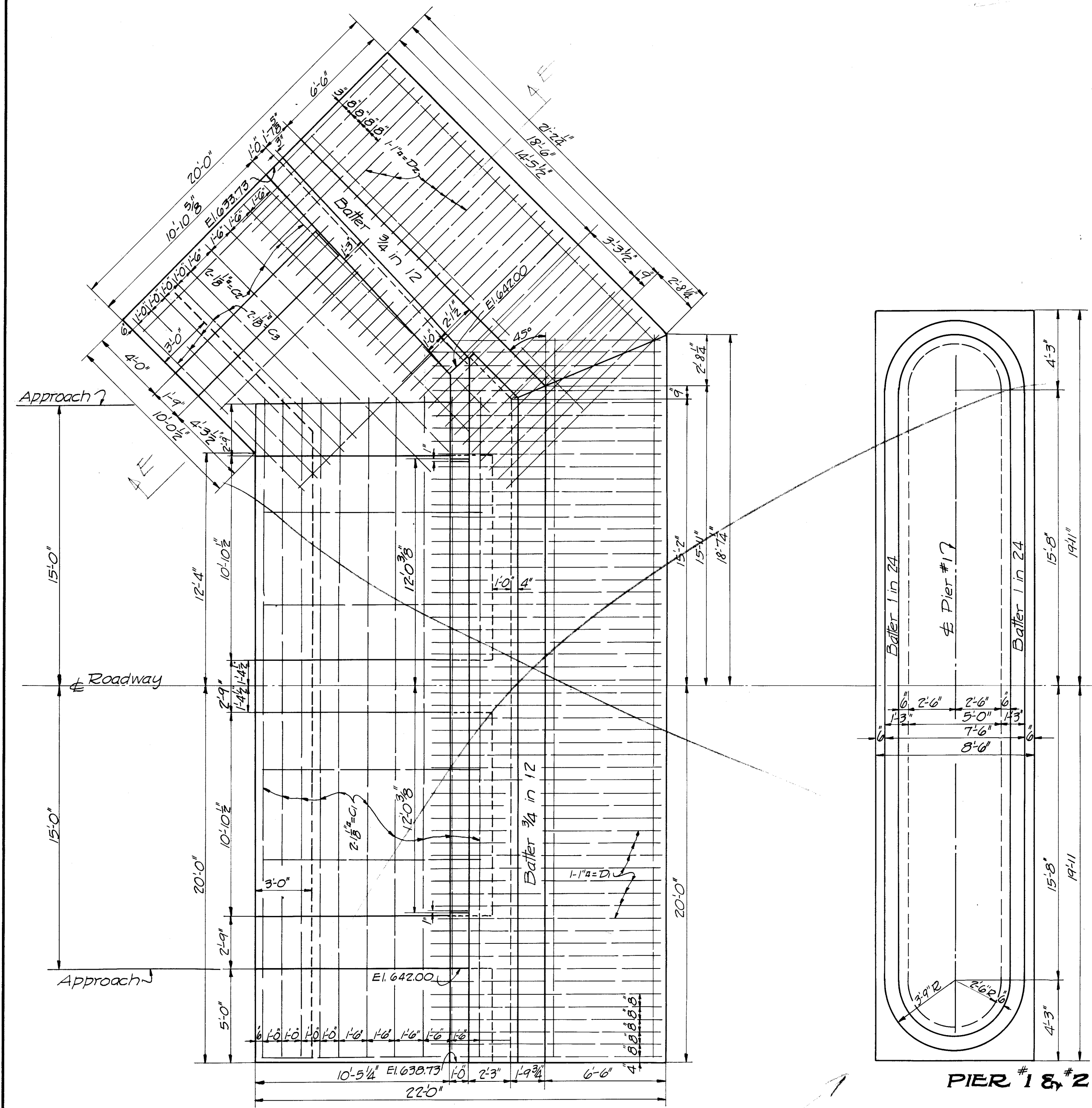
SECTION H-H
Scale: 1/2" = 1'-0"

Revised June 1, 1957 to show structure as built.

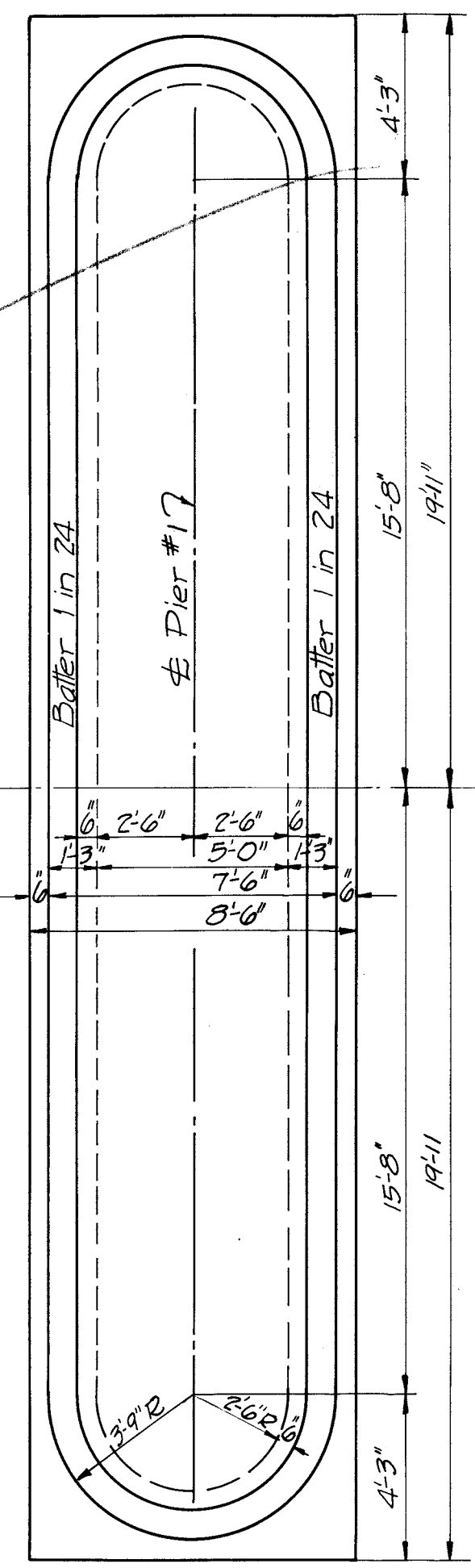
SUBSTRUCTURE
STEEL THROUGH
GRADE ELEVATION
2.90' SPT SPANS - 1-230' ON
ON
PRIMARY STATE
ROMNEY - SPRING
OVER
SOUTH BRANCH
NEAR SPRING
HAMPshire
DESIGNED
STATE ROAD CO
CHARLESTON

SCALE: AS NOTED
PROJECT: W.P.H. 1642
REVISED 7-23-3
© REVISED 10-16-36

Profile



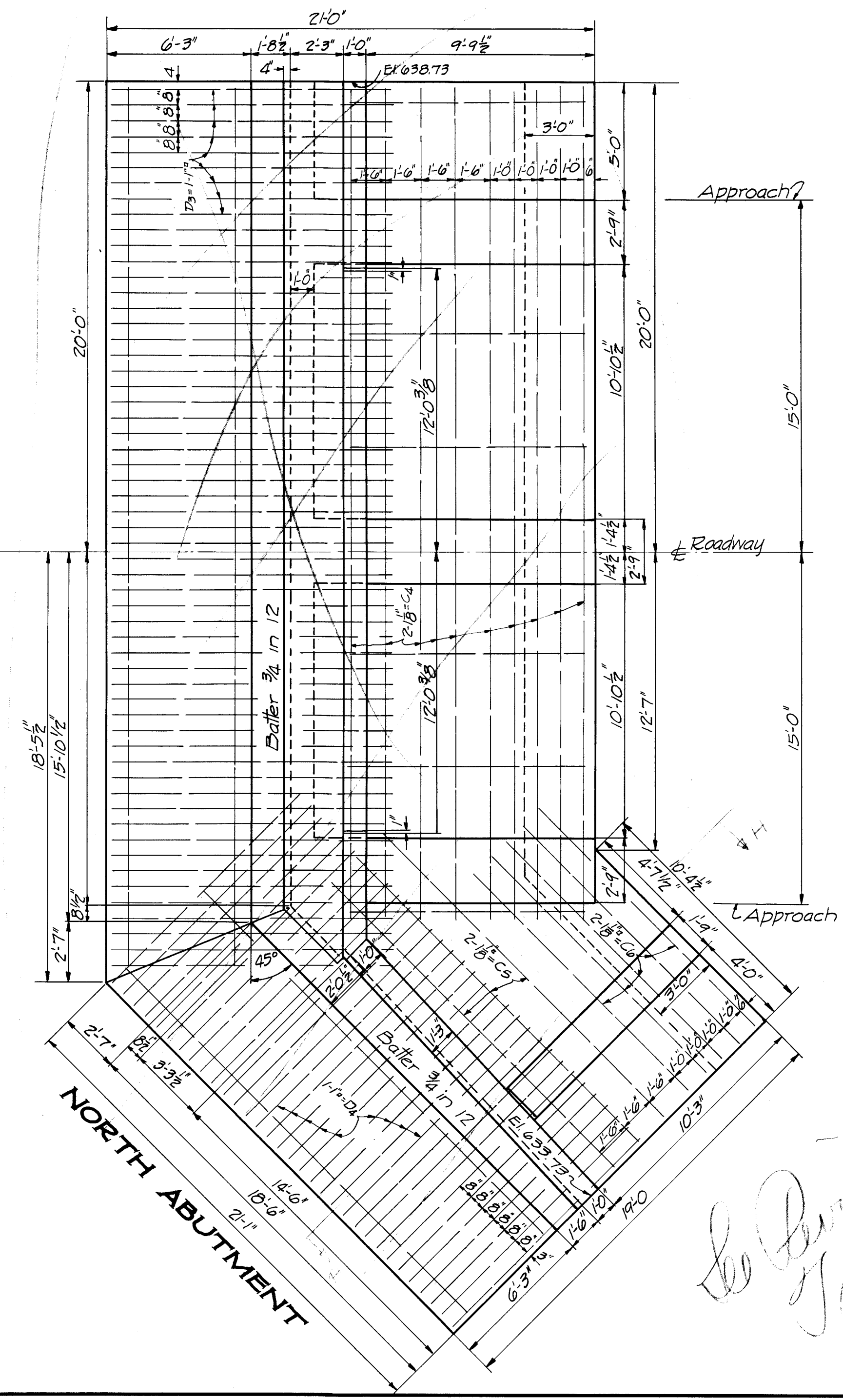
SOUTH ABUTMENT



PIER # 18 & 2

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

Note: Pier #2 is the same as Pier #1



NORTH ABUTMENT

Revised for 90' Piers

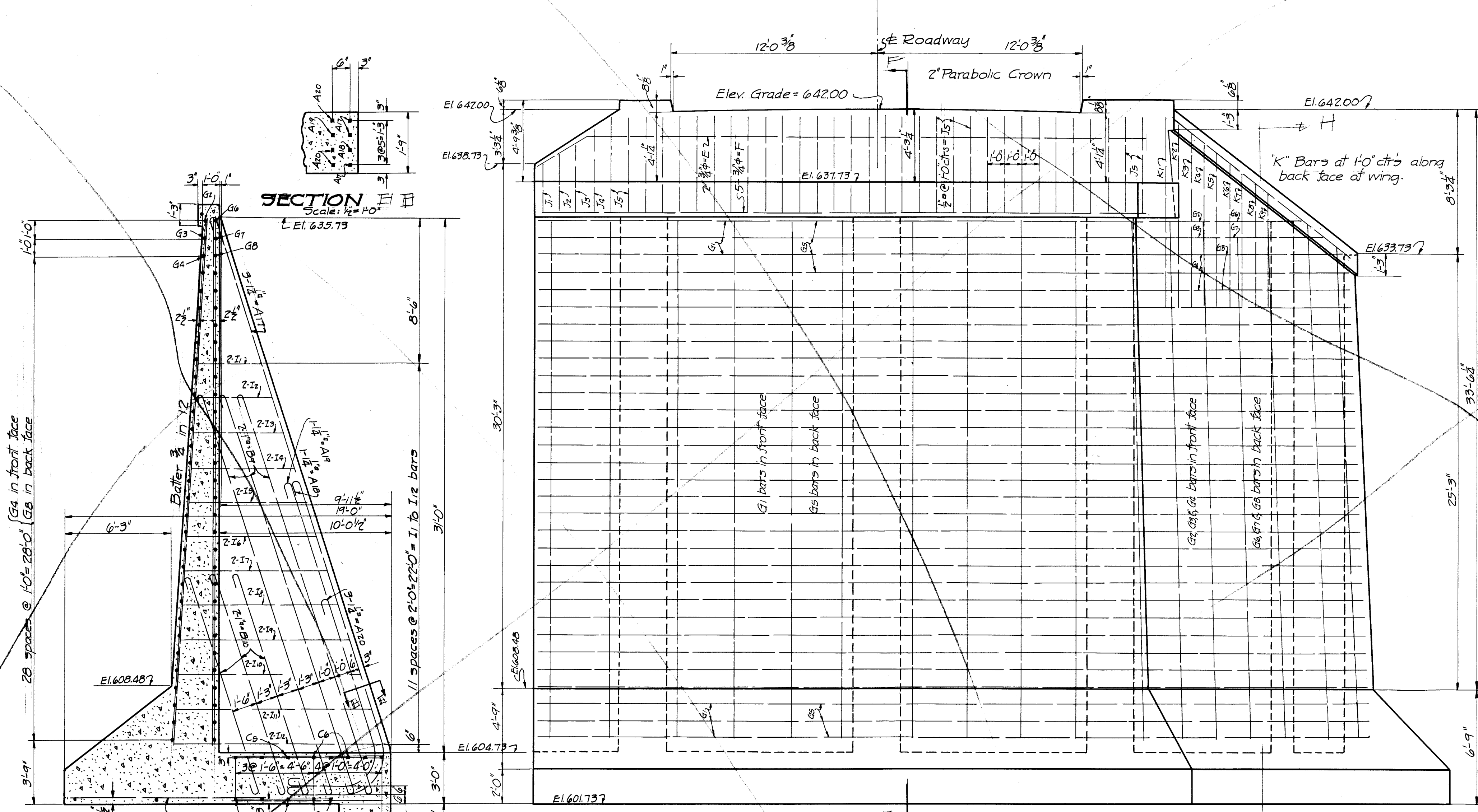
90'

to Revised Tracing

**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**
 2-100'0" SPT SPANS / 1-230'0" S.T.T. SPAN; 24'-0" Rdwy.
 OR
ROMNEY-SPRINGFIELD ROAD
 OVER
SOUTH BRANCH POTOMAC RIVER
 NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
 DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.
 SCALE: AS NOTED
 SEPTEMBER, 1933
 SHEET 1 OF 2
 #1265

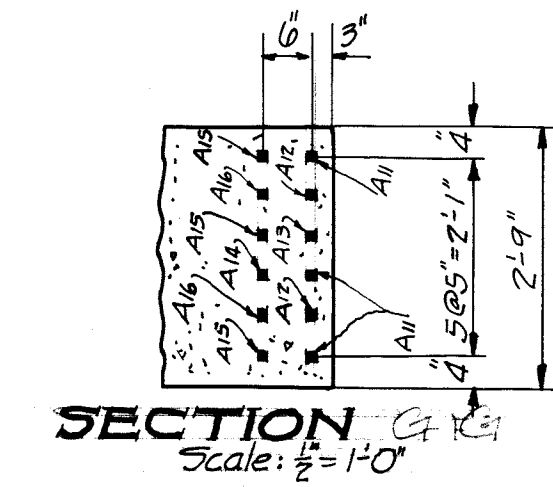
1157

AA8

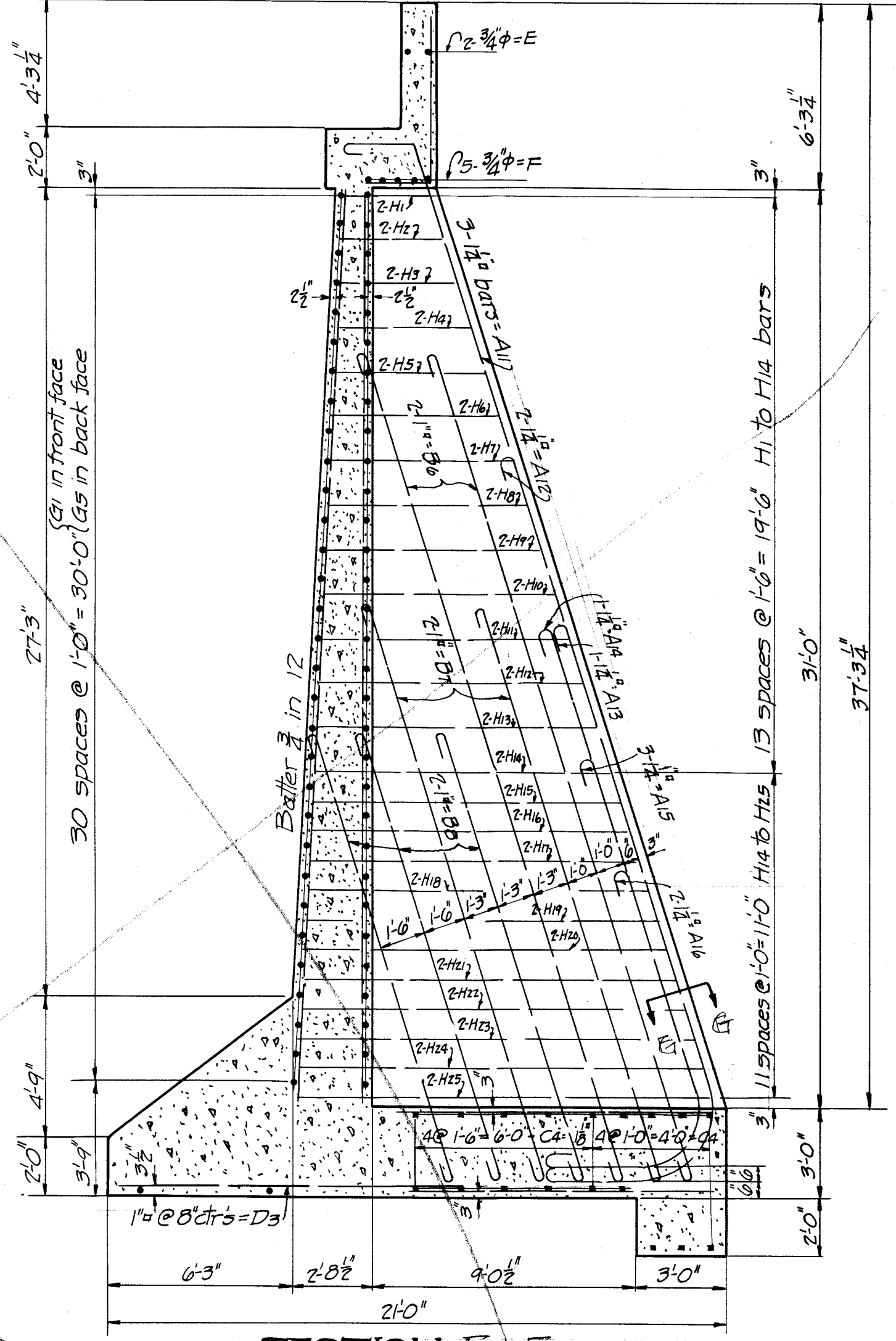


FRONT ELEVATION NORTH ABUTMENT

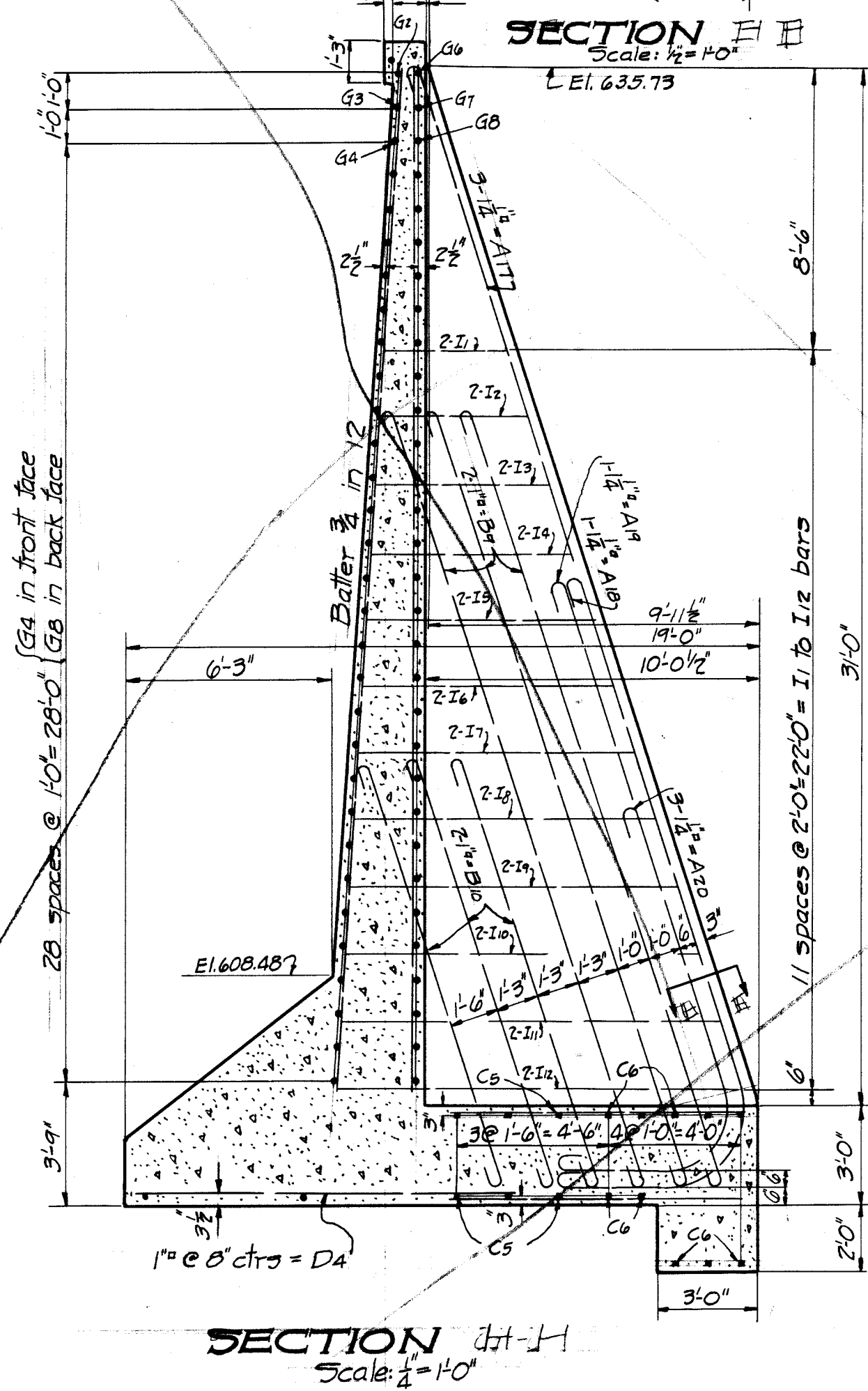
Scale: 1/4" = 1'-0"



SECTION G-G
Scale: 1/2" = 1'-0"



SECTION F-F
Scale: 1/4" = 1'-0"



SECTION D-D
Scale: 1/4" = 1'-0"

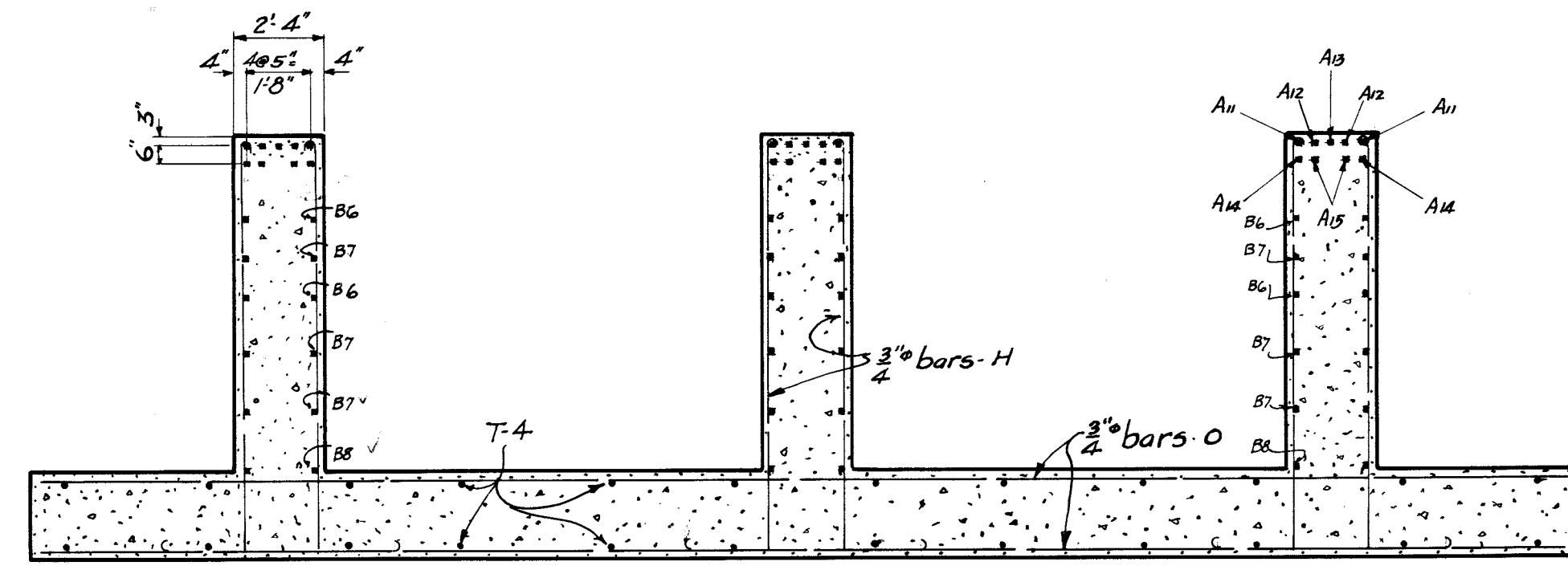
Revise for 90' Pumps

Out

SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE
2-100'-0" 5PT SPANS; 1-230'-0" STT SPAN; 24'-0" Rdwy.
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.

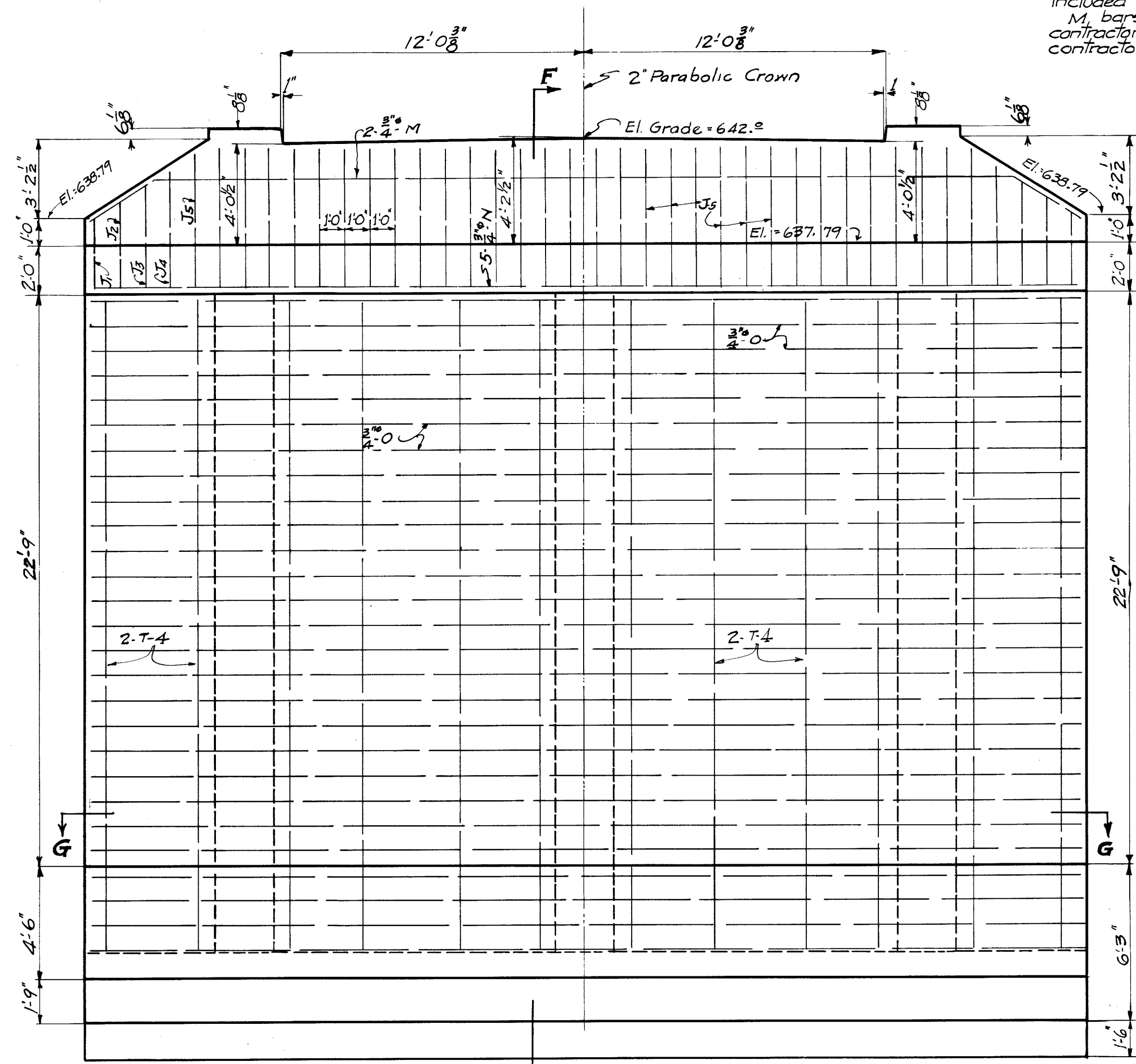
SCALE: AS NOTED
SEPTEMBER, 1993
SHEET #3 OF 4
1265
A.A.B.

1ST

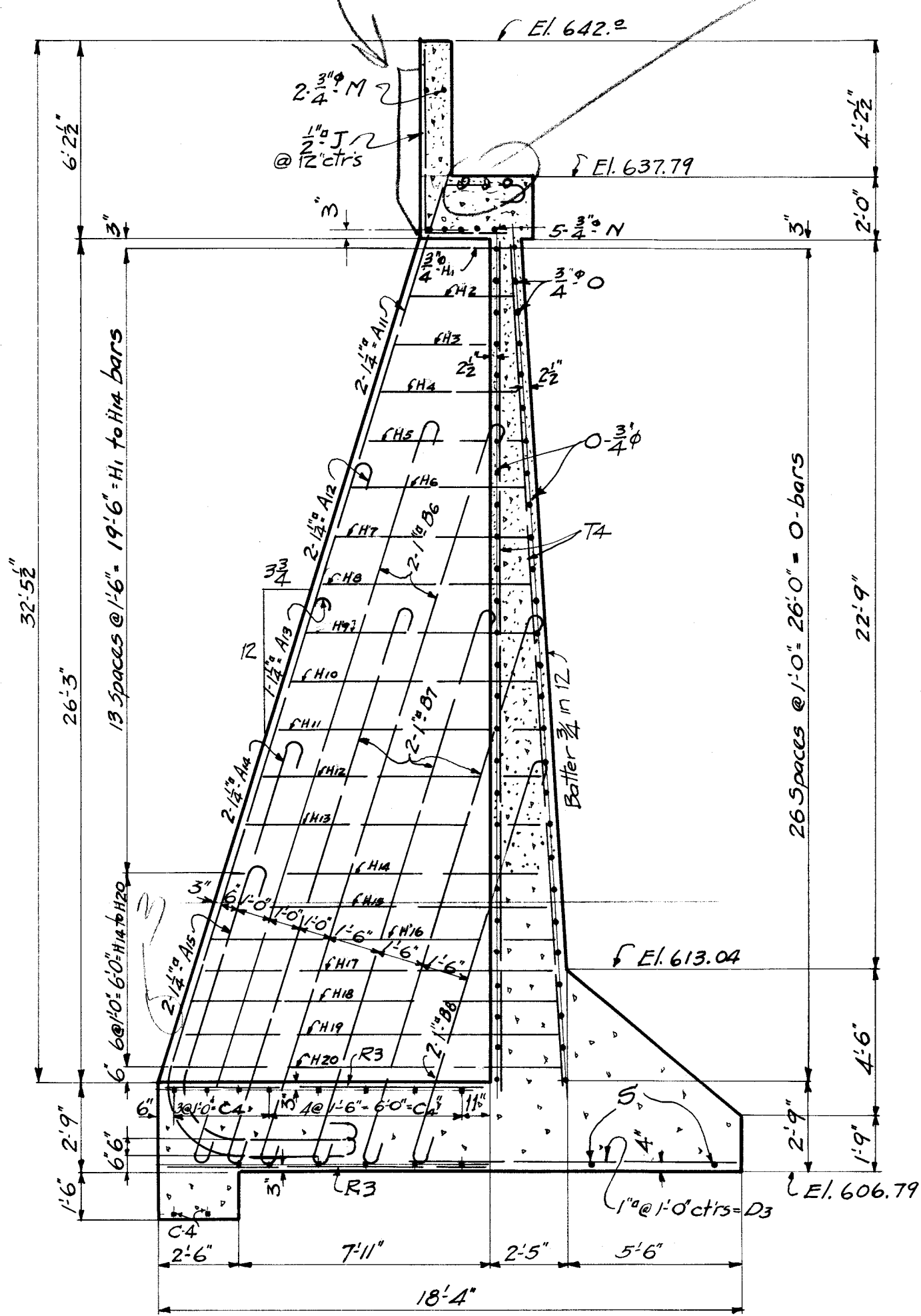


SECTION G-G
Scale: 1/4"=1'-0"

Note:
Concrete above top of bridge seat (El. 637.79) not included in substructure contract.
M₁ bars to be furnished by substructure contractor and left at site for superstructure contractor.



FRONT ELEVATION NORTH ABUT.
Scale: 1/4"=1'-0"

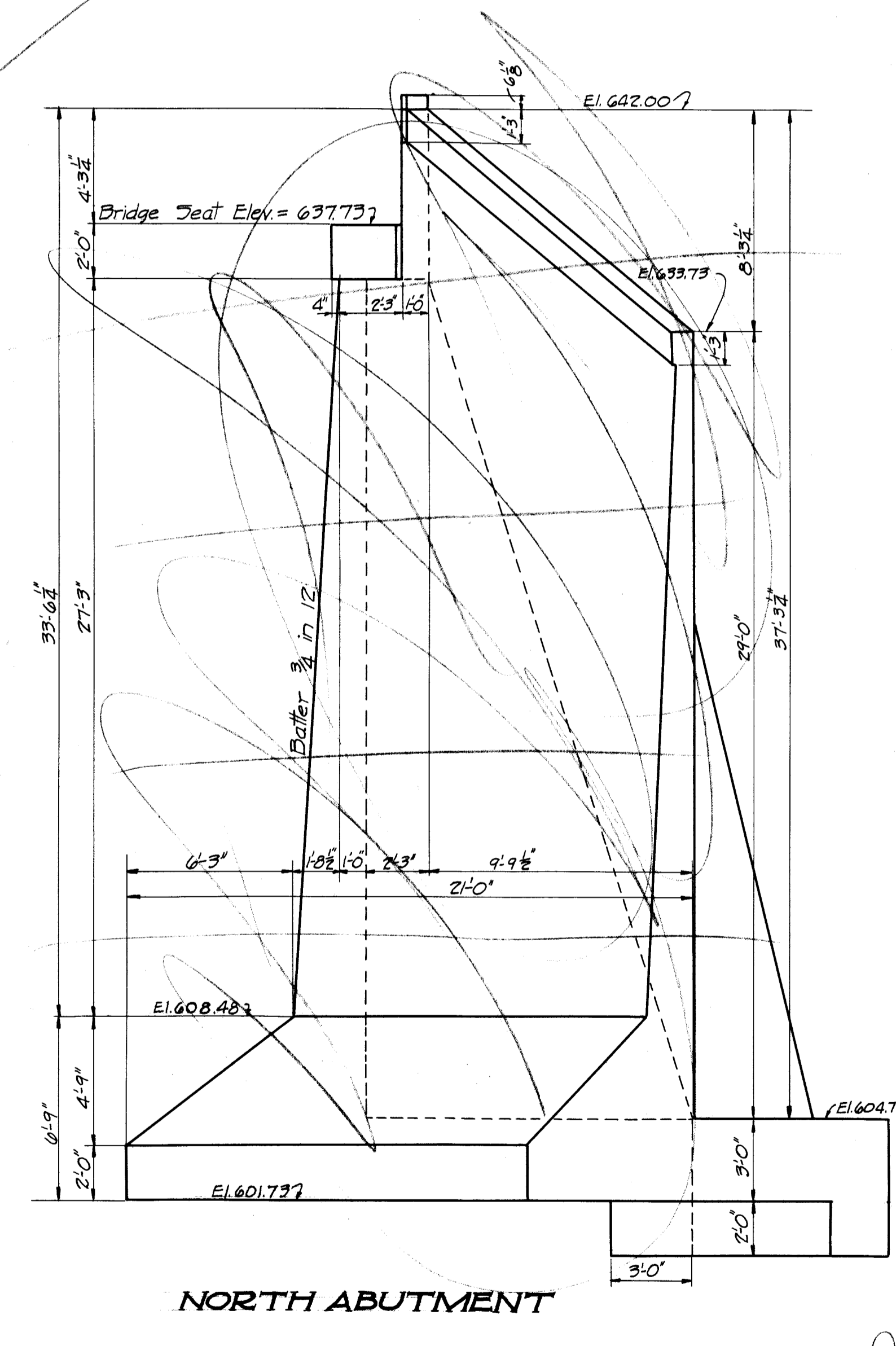
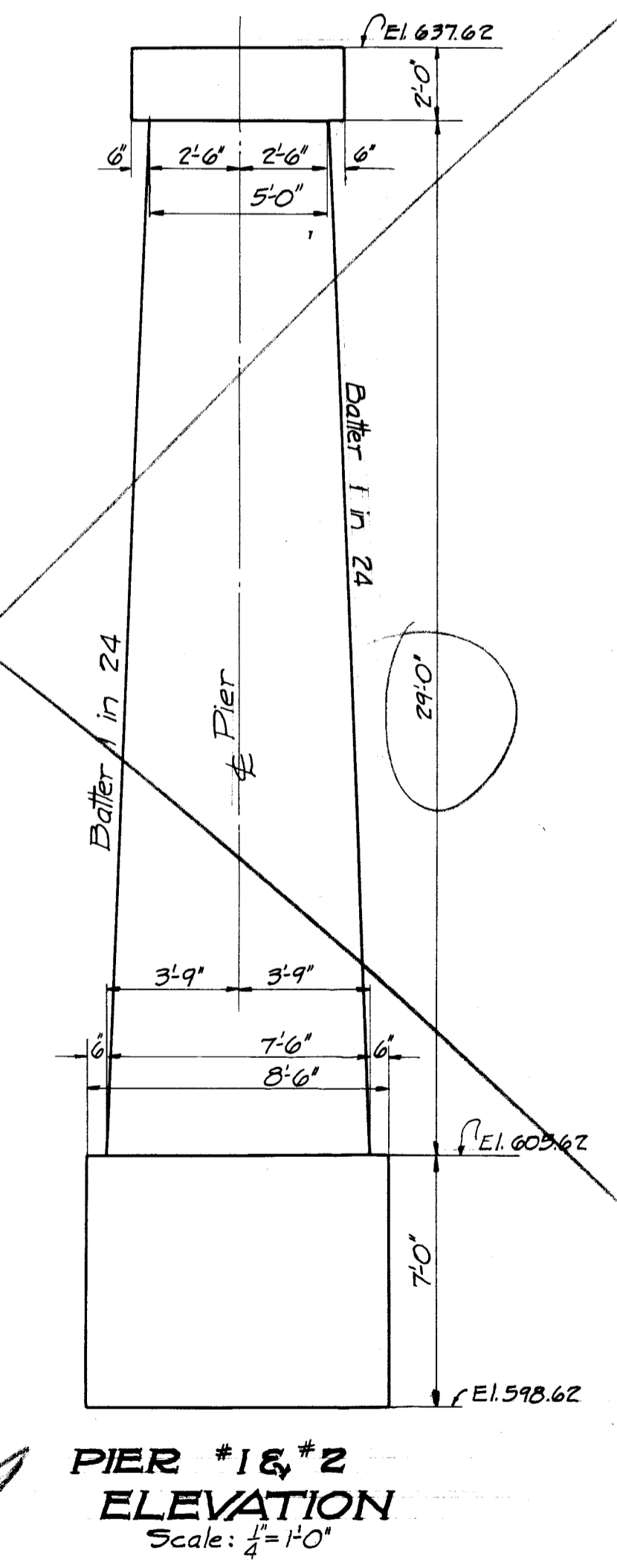
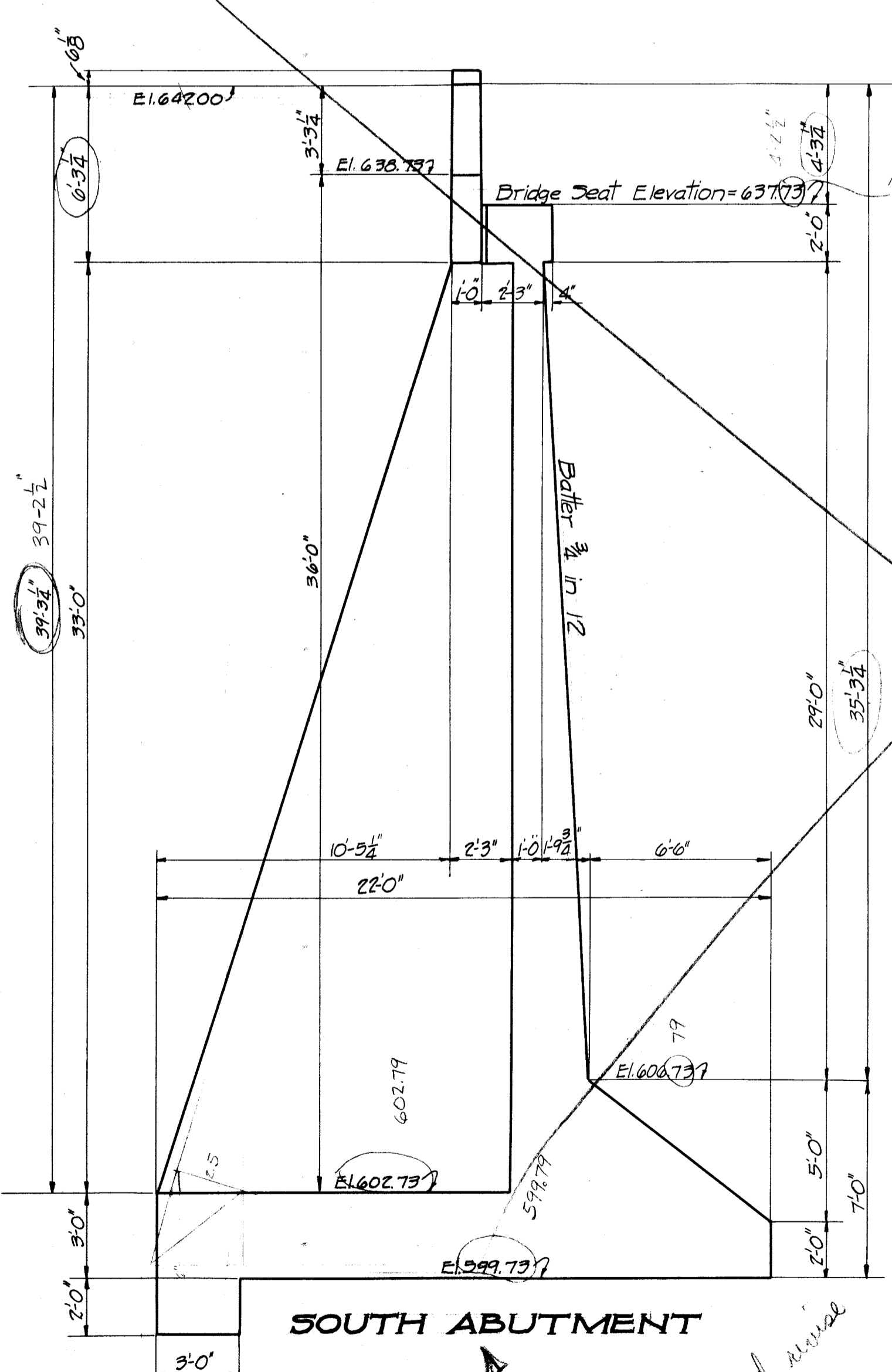
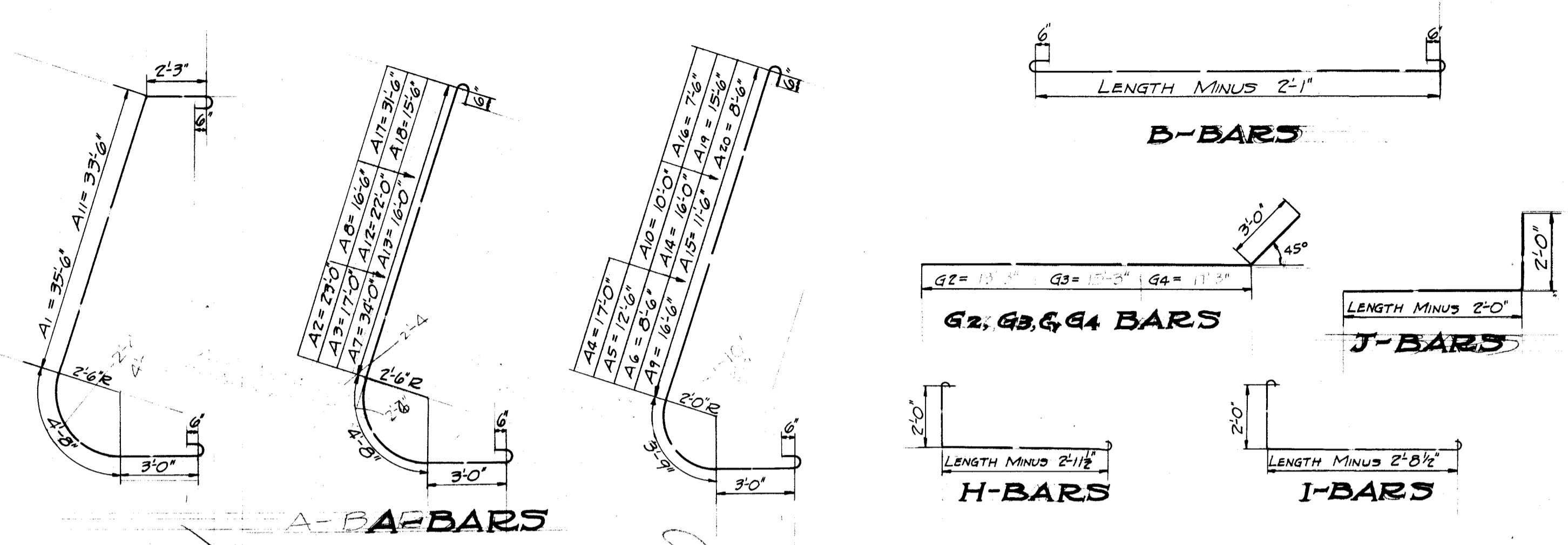


SECTION F-F
Scale: 1/4"=1'-0"

NOT USED
See Plans for Grade 645.5

**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**
90'-0" SPT. SPAN ; 1:230'-0" S.T.T. SPAN ; 24'-0" ROWY.
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.
SCALE: As Noted
PROJECT #

FOR ZND CK



*Traced for
Revised North Abutment
11/18/33 - By M.H.T.*

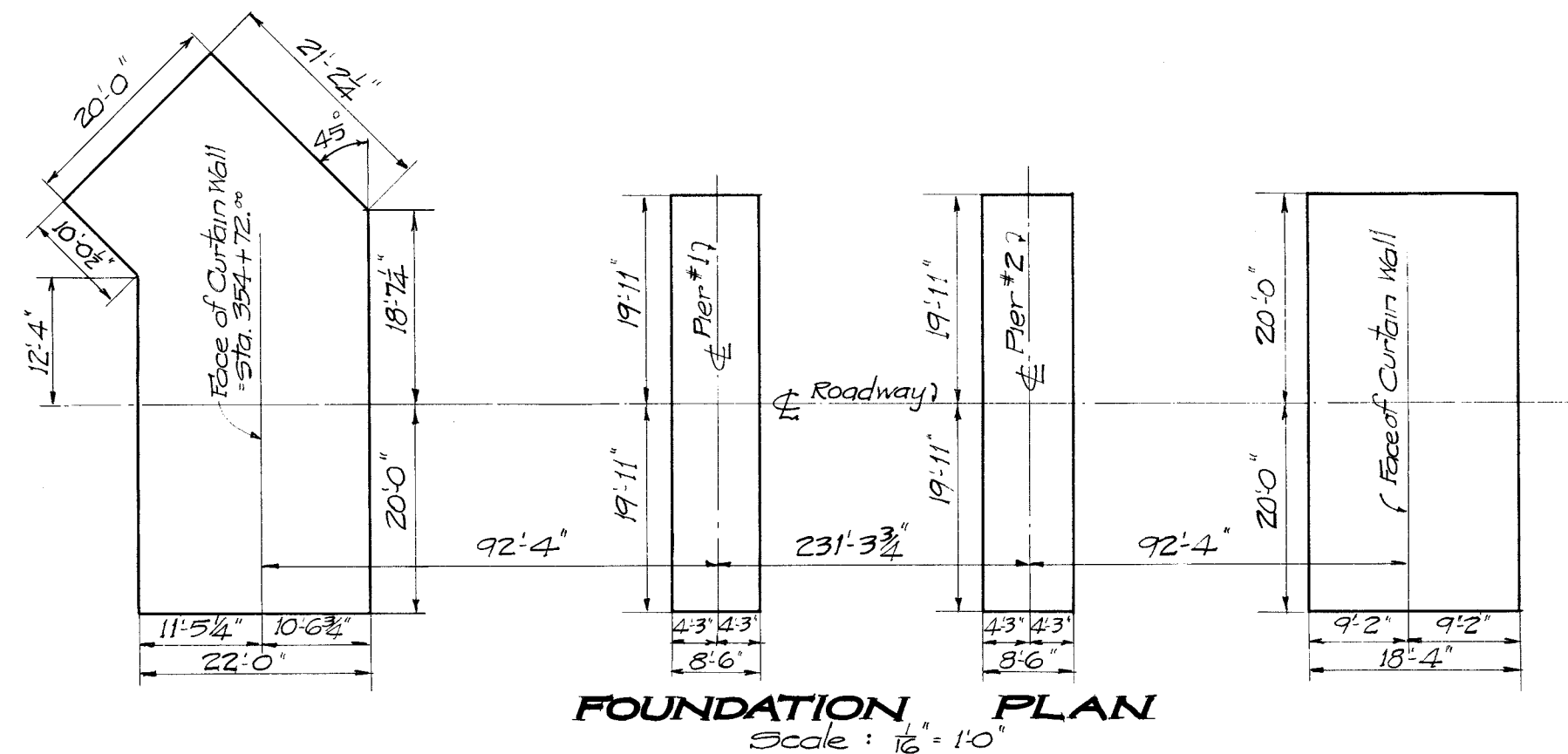
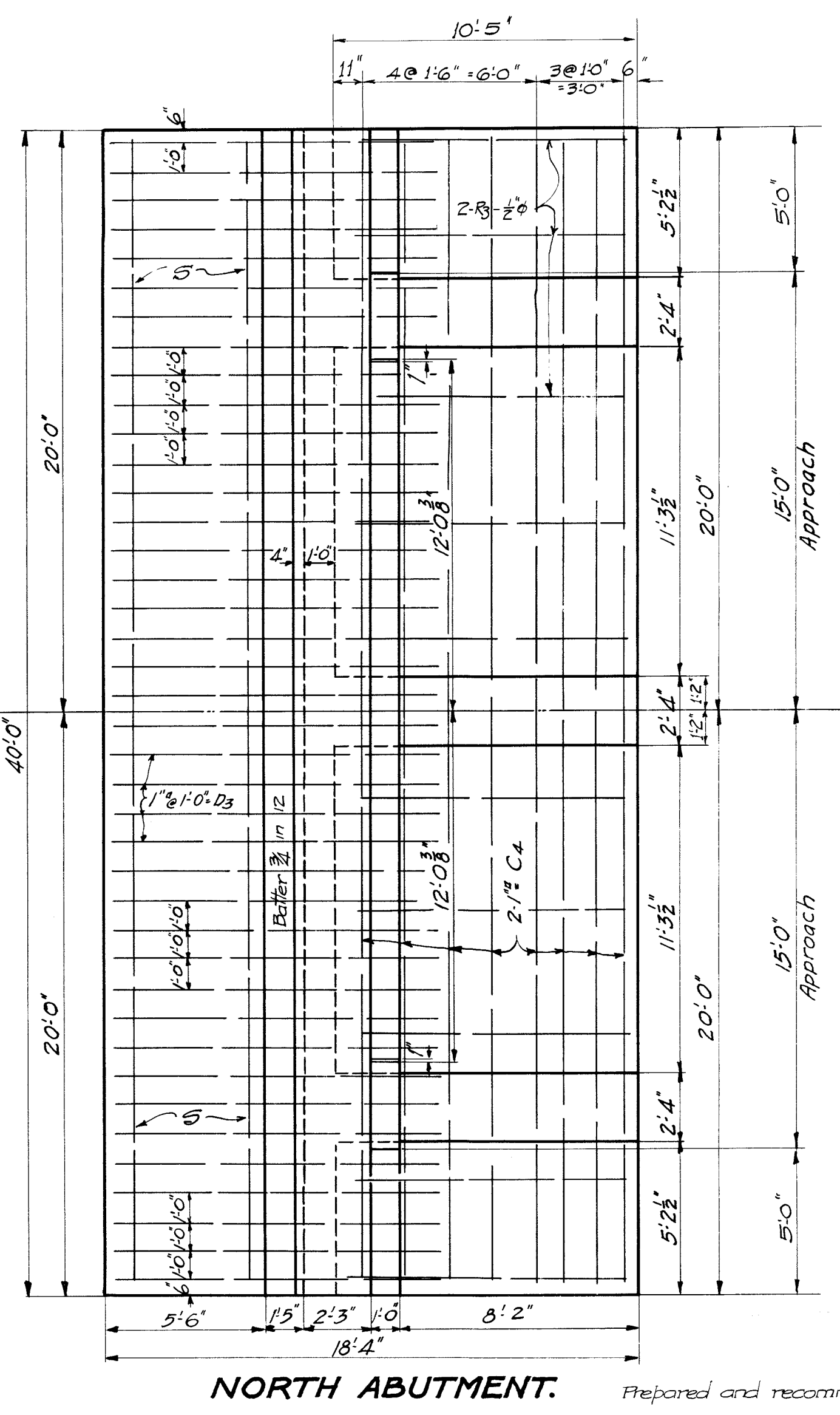
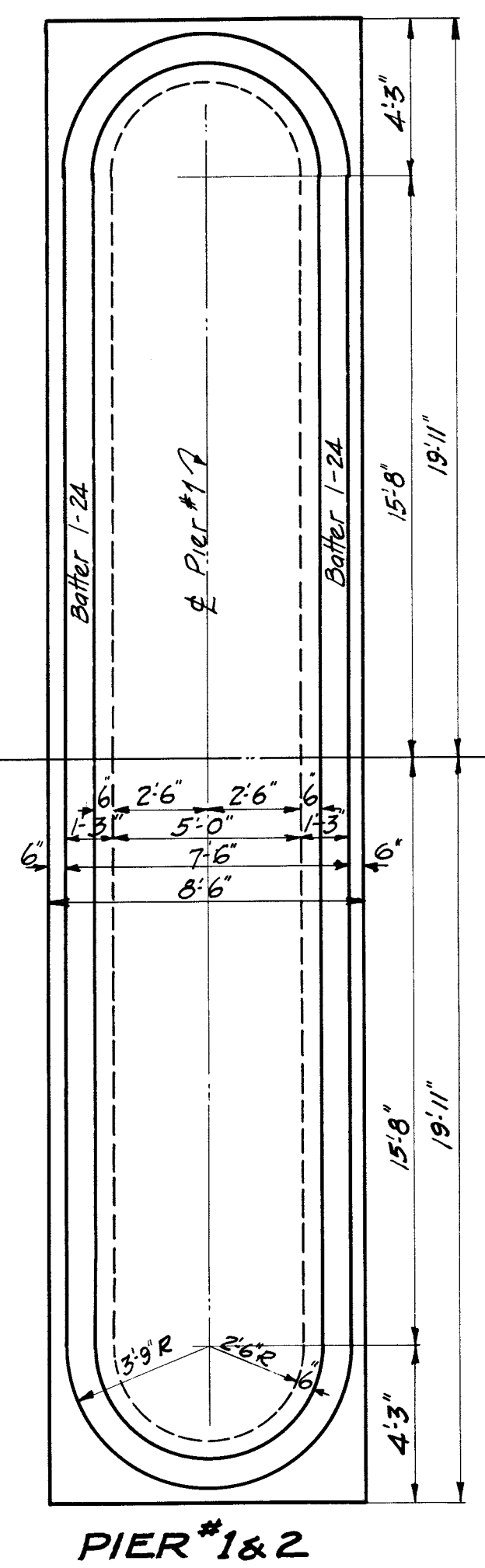
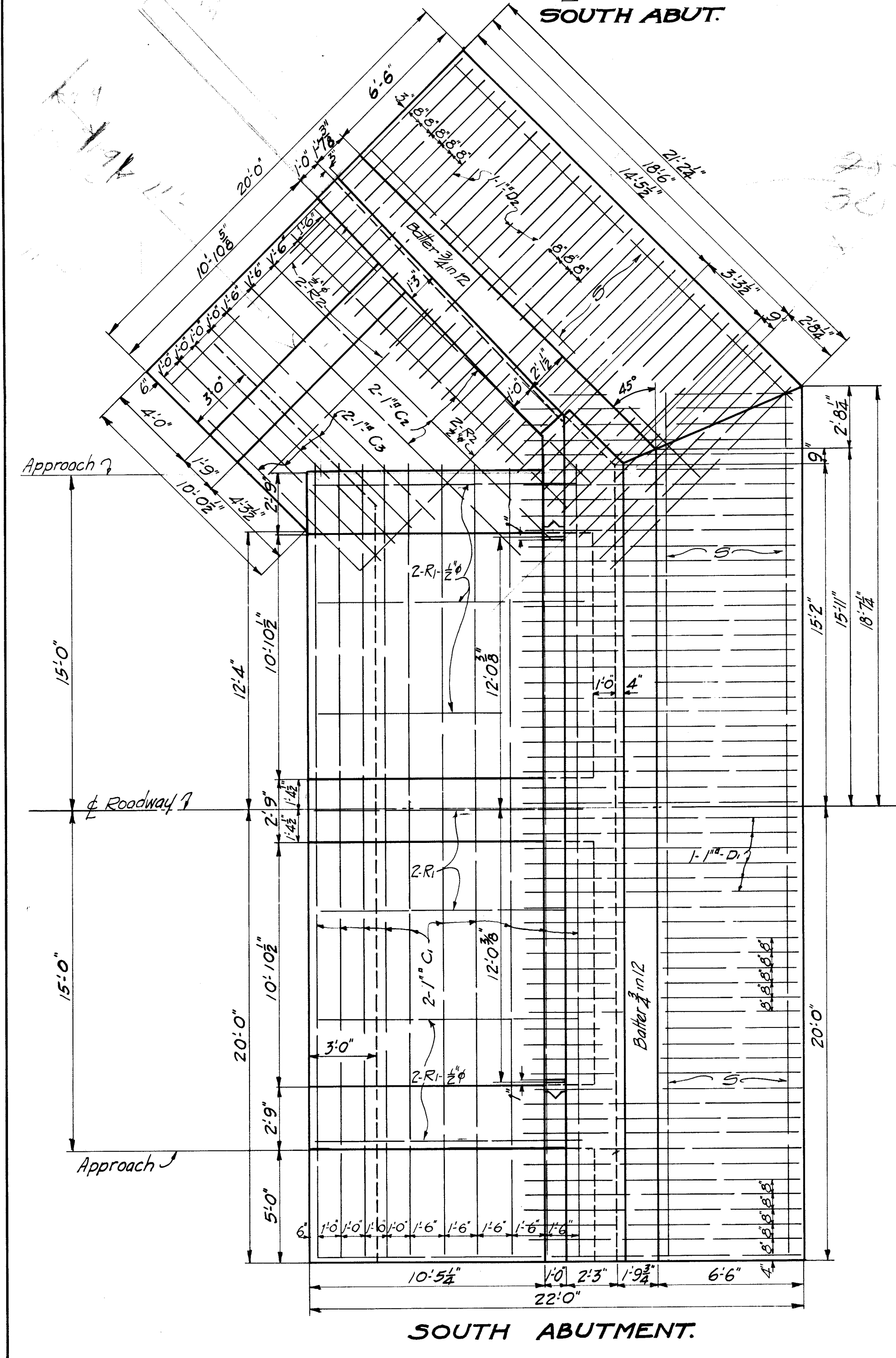
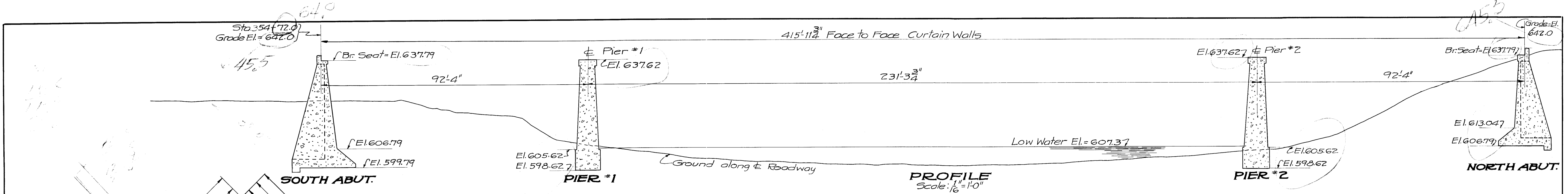
90' Revis

*See New
Tracing*

SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE
2-100'-0" SPT SPANS; 1-230'-0" STT SPAN; 24'-0" RDWY
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO. WVA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, WVA.
SCALE: AS NOTED SEPTEMBER, 1933
SHEET #4 OF 4
#1265
R.A.B.

*True and revised
for #2*

11ST



NOTES

Concrete in abutments to be Class A.
Concrete in piers to be Class B.
Reinforcing bars to be made from new billet steel of intermediate grade.
Place a 4" drain thru abutments in each space between counterforts and one thru each counterfort. Drains to be placed at about Elev. 610.
The State to furnish and apply waterproofing as directed by the Engineer, with materials recommended and approved by the Materials Engineer, on surfaces of wings and abutments exposed to the fill. Area to be waterproofed = 700 Square Yards.
The Contractor is to build and maintain until completion of his contract, a temporary structure for two way traffic over the North Abutment where construction will interfere with the present roadway, Item 32. This structure to be left in place in good condition upon completion of the contract.
Contractor to submit a lump sum bid on Item 32 and a unit bid on all other items shown in the Estimate.
Specifications by State Road Commission, June, 1928, with modifications and changes effective January, 1933.

ESTIMATE

① Dry Excavation	1700 Cu. Yds.
② Wet Excavation	525 Cu. Yds.
③ Rock Excavation	140 Cu. Yds.
④ Class A Concrete	602 Cu. Yds.
⑤ Class B Concrete	712 Cu. Yds.
⑥ 1 1/2" Bars	10780 Lbs.
⑦ 1" Bars	17300 Lbs.
⑧ 3/4" Bars	14510 Lbs. \$5200 Lbs.
⑨ 1/2" Bars	1000 Lbs.
⑩ 1/4" Bars	1610 Lbs.
⑪ Building and maintaining temporary structure of North Abutment	Lump Sum

645.5

Prepared and recommended:

Bridge Engineer

Recommended for approval:

Chief Engineer

Approved:

Commissioner

Approved by official order of the State Road Commission of West Virginia, day of _____, 1934.

Secretary

References:
See Superstructure Plan see SUPERSTRUCTURE #1265
See Foundation Plan see #1265-A

**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**

2-90'0" S.P.T. SPANS; 1-250'0" S.T.T. SPAN; 24'0" RdW'y.

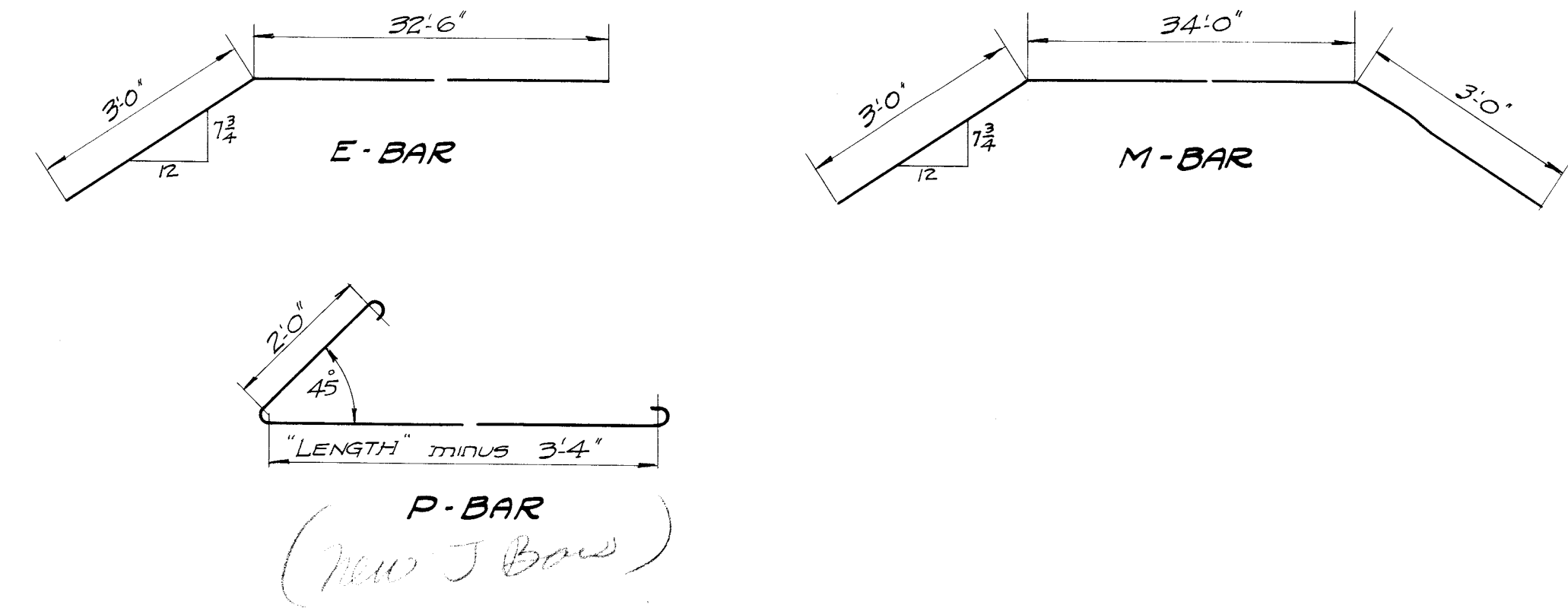
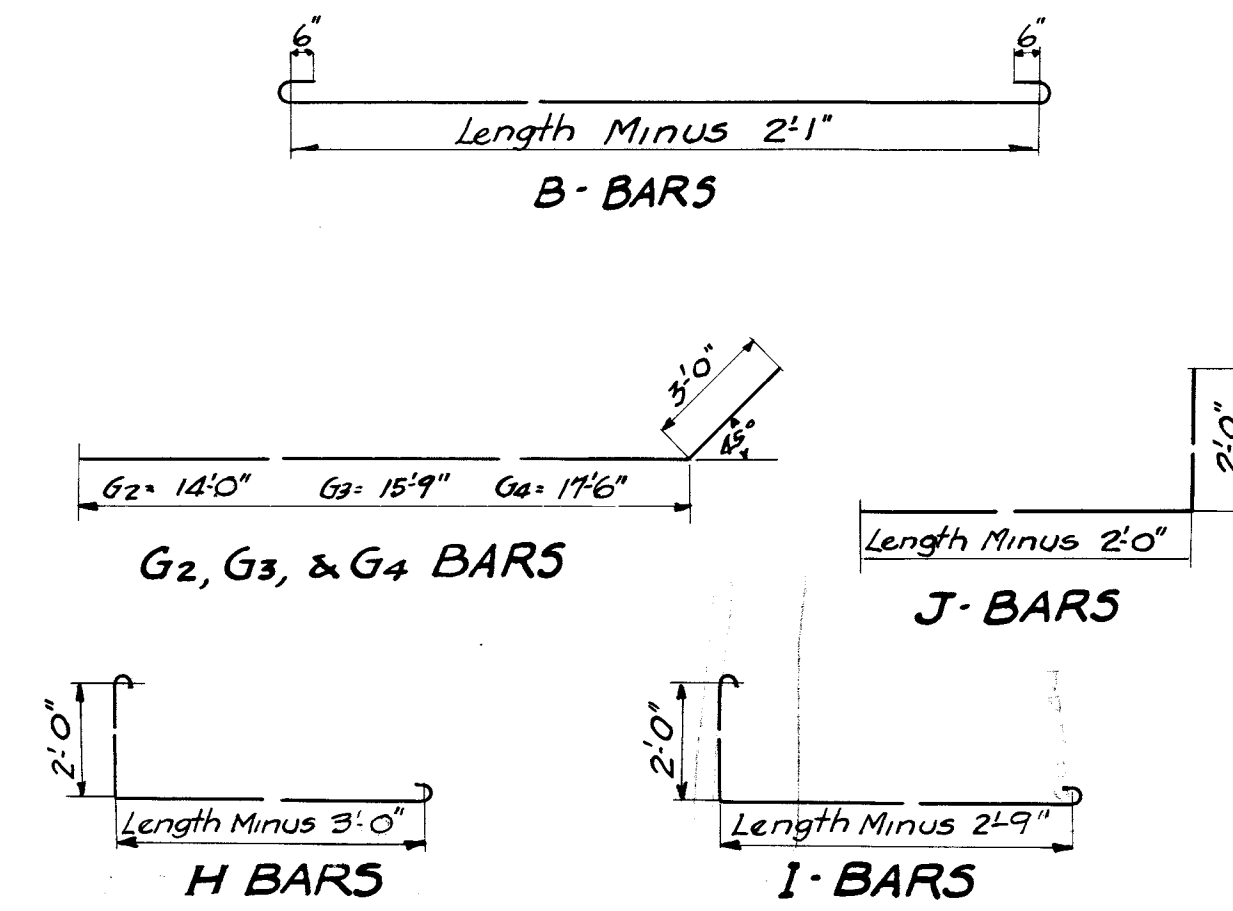
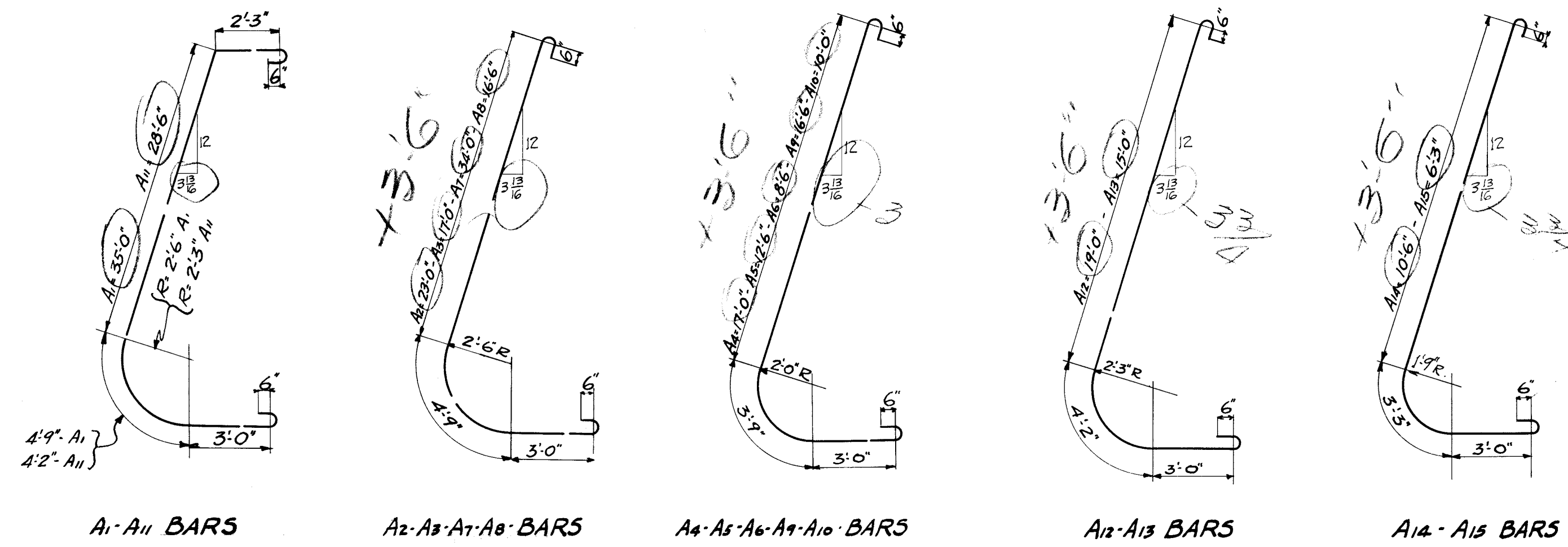
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.

DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.

SCALE: AS NOTED APRIL, 1934

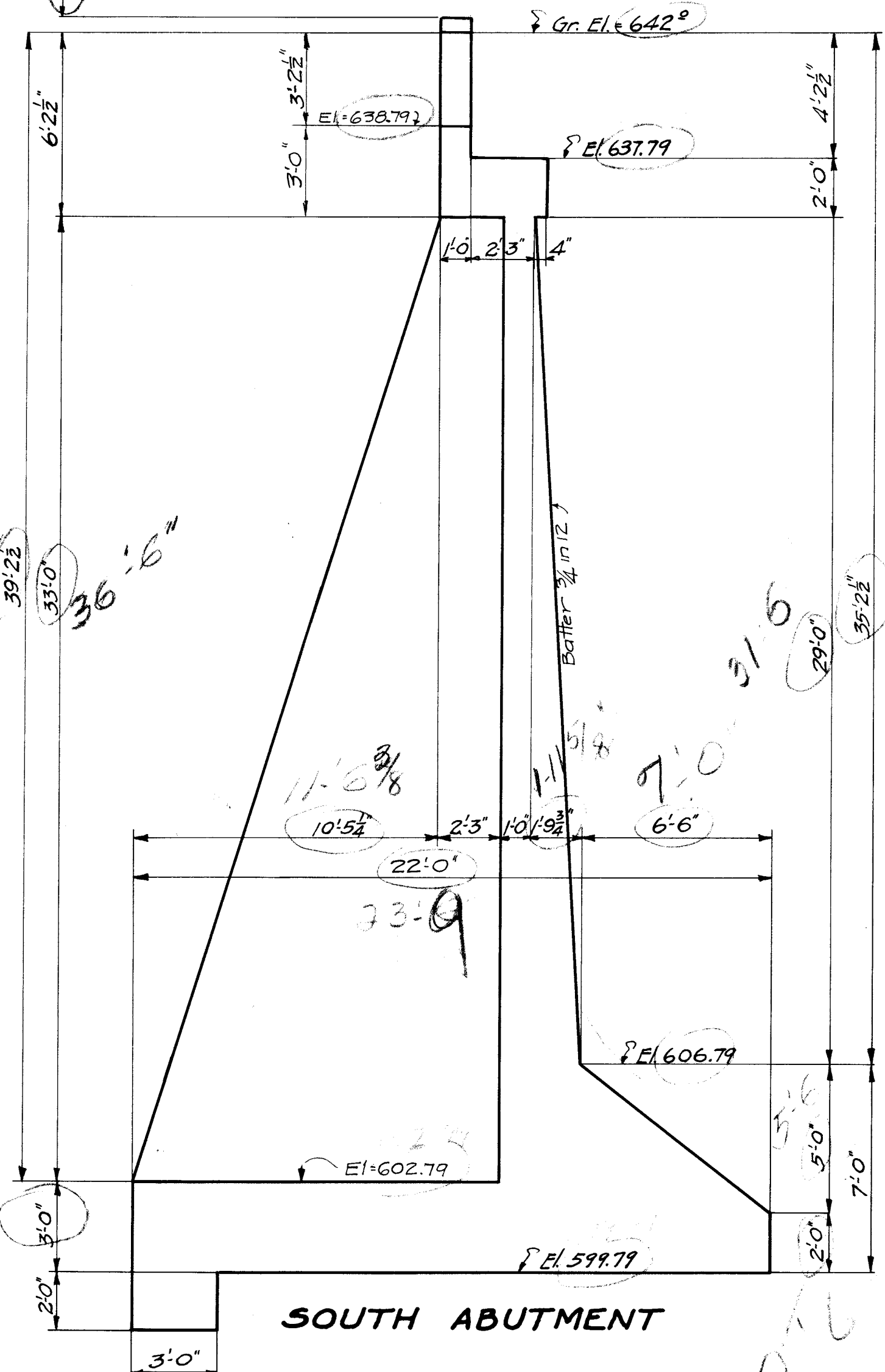
PROJECT SHEET #1 OF 4 #1265

FOR 250' OK

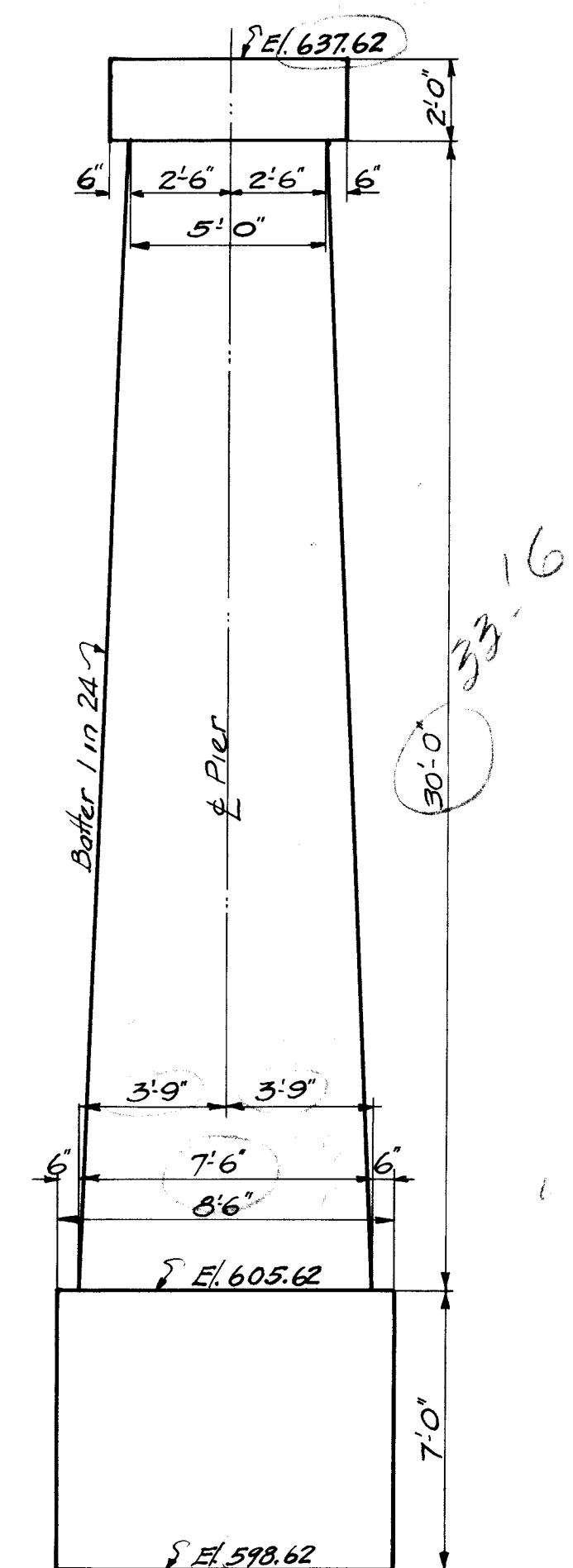


BILL OF REINFORCING STEEL

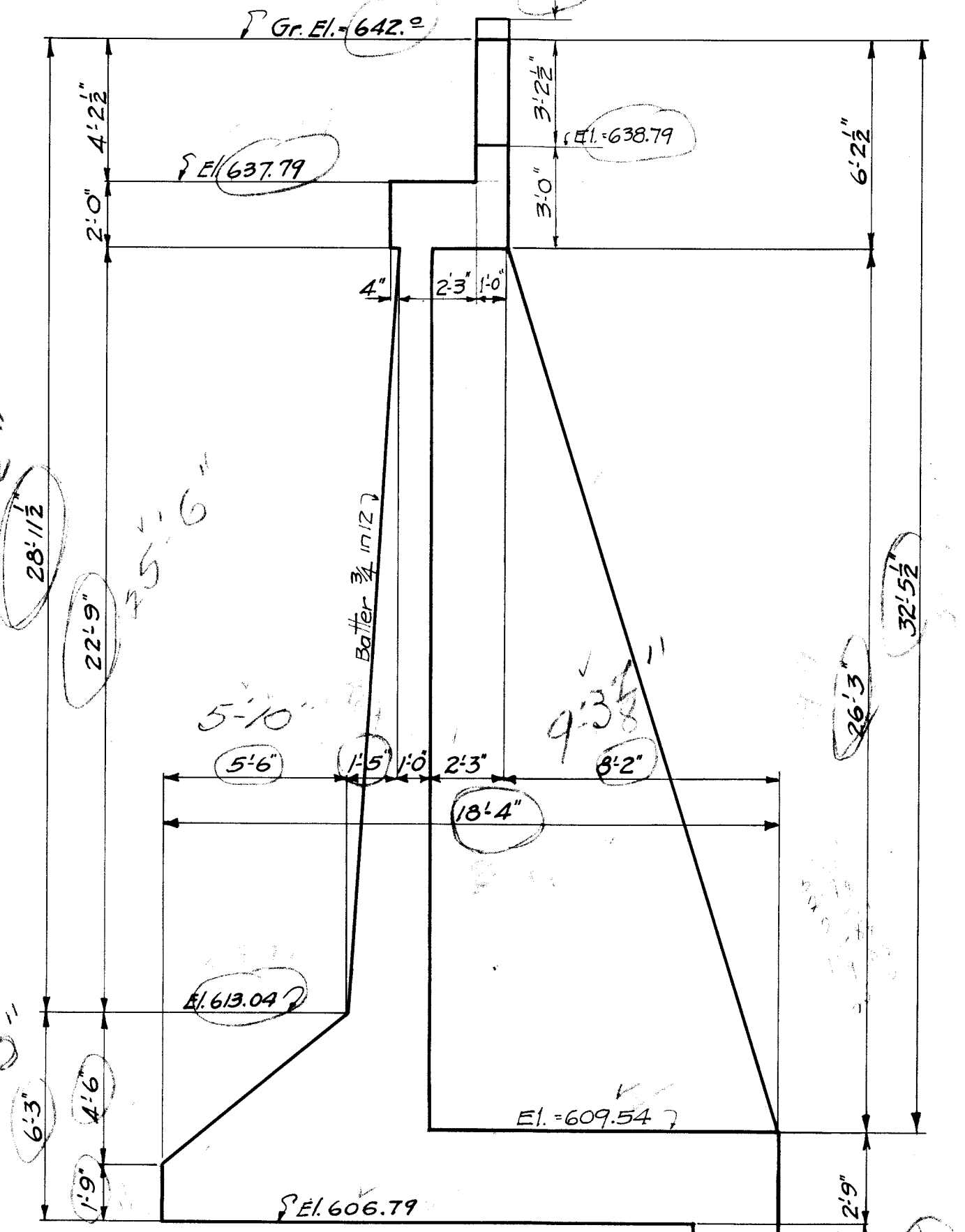
NO	LETTER	SIZE	LENGTH	NO	LETTER	SIZE	LENGTH	NO	LETTER	SIZE	LENGTH
9	A-1	1 1/2"	47'4"	11	H-11	3/4"	11'6"	1	K-4	1/2"	9'3"
6	A-2	do	33'1"	11	H-12	do	12'1"	1	K-5	do	8'8"
3	A-3	do	27'1"	11	H-13	do	12'8"	1	K-6	do	8'1"
3	A-4	do	26'1"	11	H-14	do	13'3"	1	K-7	do	7'6"
9	A-5	do	21'7"	11	H-15	do	13'8"	1	K-8	do	6'11"
7	A-6	do	17'7"	11	H-16	do	14'0"	1	K-9	1/2"	6'4"
3	A-7	do	44'1"	11	H-17	do	14'5"	4	L	3/4"	15'9"
1	A-8	do	26'7"	11	H-18	do	14'9"	2	M	3/4"	40'0"
1	A-9	do	25'7"	11	H-19	do	15'2"	5	N	3/4"	39'6"
3	A-10	do	19'1"	11	H-20	do	15'6"	54	O	3/4"	37'6"
6	A-11	do	40'3"	5	H-21	do	15'11"	1	P-1	3/4"	6'2"
6	A-12	do	28'6"	5	H-22	do	16'3"	1	P-2	do	6'9"
3	A-13	do	24'6"	5	H-23	do	16'8"	1	P-3	do	7'6"
6	A-14	do	18'11"	5	H-24	do	17'0"	1	P-4	do	8'1"
6	A-15	1 1/2"	14'8"	5	H-25	do	17'5"	1	P-5	do	8'7"
12	B-1	1"	33'1"	5	H-26	do	17'9"	1	P-6	do	9'2"
12	B-2	do	23'1"	5	H-27	3/4"	18'2"	1	P-7	do	9'9"
18	B-3	do	18'1"	2	I-1	1/2"	5'0"	1	P-8	do	10'2"
6	B-4	do	28'1"	2	I-2	do	5'9"	1	P-9	do	10'9"
6	B-5	do	16'7"	2	I-3	do	6'6"	1	P-10	do	11'4"
12	B-6	do	25'9"	2	I-4	do	7'3"	1	P-11	do	11'10"
18	B-7	do	19'9"	2	I-5	do	8'0"	1	P-12	do	12'5"
6	B-8	1"	14'9"	2	I-6	do	8'10"	1	P-13	do	13'0"
20	C-1	1"	35'0"	2	I-7	do	9'2"	1	P-14	do	13'7"
8	C-2	1"	17'0"	2	I-8	do	9'7"	1	P-15	do	14'0"
10	C-3	1"	12'6"	2	I-9	do	9'11"	1	P-16	do	14'4"
16	C-4	1"	39'6"	2	I-10	do	10'4"	1	P-17	do	14'9"
58	D-1	1"	12'0"	2	I-11	do	10'8"	1	P-18	do	15'1"
32	D-2	1"	11'0"	2	I-12	do	11'2"	1	P-19	do	15'6"
41	D-3	1"	10'6"	2	I-13	do	11'6"	1	P-20	do	15'10"
2	E	3/4"	35'6"	2	I-14	do	11'11"	1	P-21	do	16'3"
5	F	3/4"	35'0"	2	I-15	do	12'3"	1	P-22	do	16'7"
66	G-1	3/4"	35'0"	2	I-16	do	12'9"	1	P-23	do	17'0"
1	G-2	do	17'0"	2	I-17	do	13'1"	1	P-24	do	17'4"
1	G-3	do	18'9"	2	I-18	do	13'6"	1	P-25	do	17'9"
31	G-4	do	20'6"	2	I-19	do	13'10"	1	P-26	do	18'1"
1	G-5	do	14'6"	2	I-20	do	14'4"	1	P-27	3/4"	18'6"
1	G-6	do	16'3"	2	I-21	do	14'8"	16	R-1	1/2"	12'6"
31	G-7	3/4"	18'0"	2	I-22	do	15'1"	6	R-2	1/2"	11'0"
11	H-1	3/4"	5'10"	2	I-23	do	15'5"	20	R-3	1/2"	10'0"
11	H-2	do	6'5"	2	I-24	1/2"	15'10"	10	S	1/2"	21'0"
11	H-3	do	7'2"	3	J-1	1/2"	4'9"	30	T-1	1/2"	32'6"
11	H-4	do	7'9"	3	J-2	do	5'5"	2	T-2	1/2"	31'6"
11	H-5	do	8'3"	3	J-3	do	6'1"	2	T-3	1/2"	30'6"
11	H-6	do	8'10"	3	J-4	do	6'9"	24	T-4	1/2"	26'6"
11	H-7	do	9'5"	64	J-5	1/2"	7'6"				
11	H-8	do	9'10"	2	K-1	1/2"	11'0"				
11	H-9	do	10'5"	1	K-2	1/2"	10'5"				
11	H-10	3/4"	11'0"	1	K-3	1/2"	9'10"				



SOUTH ABUTMENT



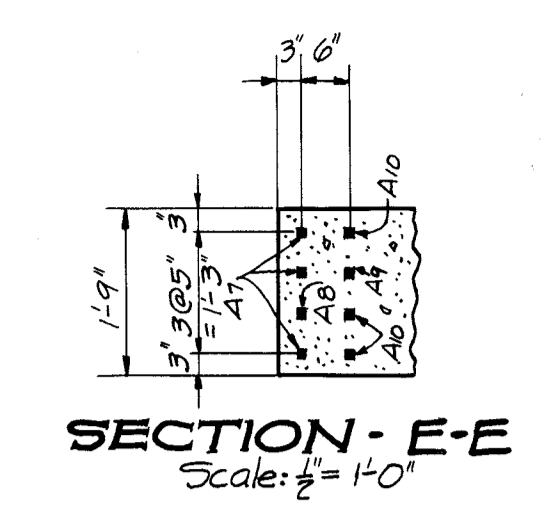
PIER 1 & 2 ELEVATION
Scale: 1/4" = 1'0"



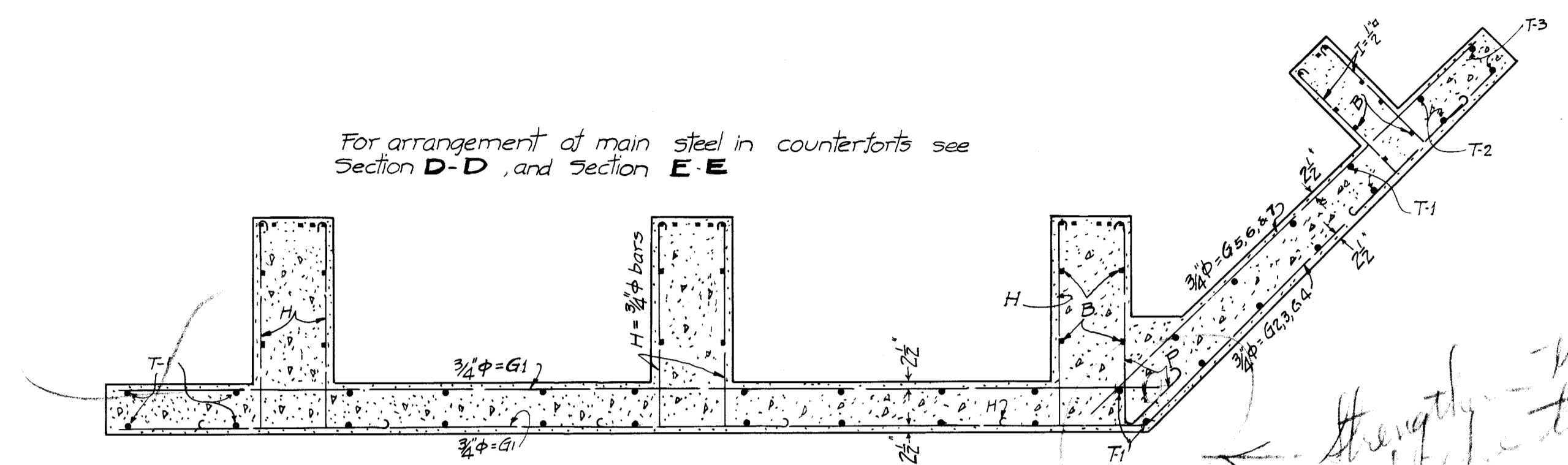
NORTH ABUTMENT

Grade raised not used

**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**
2-90'0" S.P.T. SPANS; 1-23'0" ST.I. SPAN; 24'0" RD.WY.
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.
SCALE: AS NOTED
PROJECT
APRIL 1934
SHEET 1000
FOR 2ND

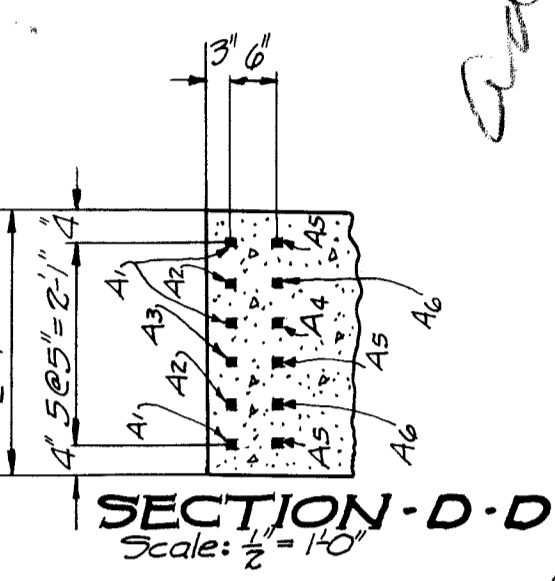


For arrangement of main steel in counterforts see Section D-D, and Section E-E



SECTION B-B
Scale: 1/2" = 1'-0"

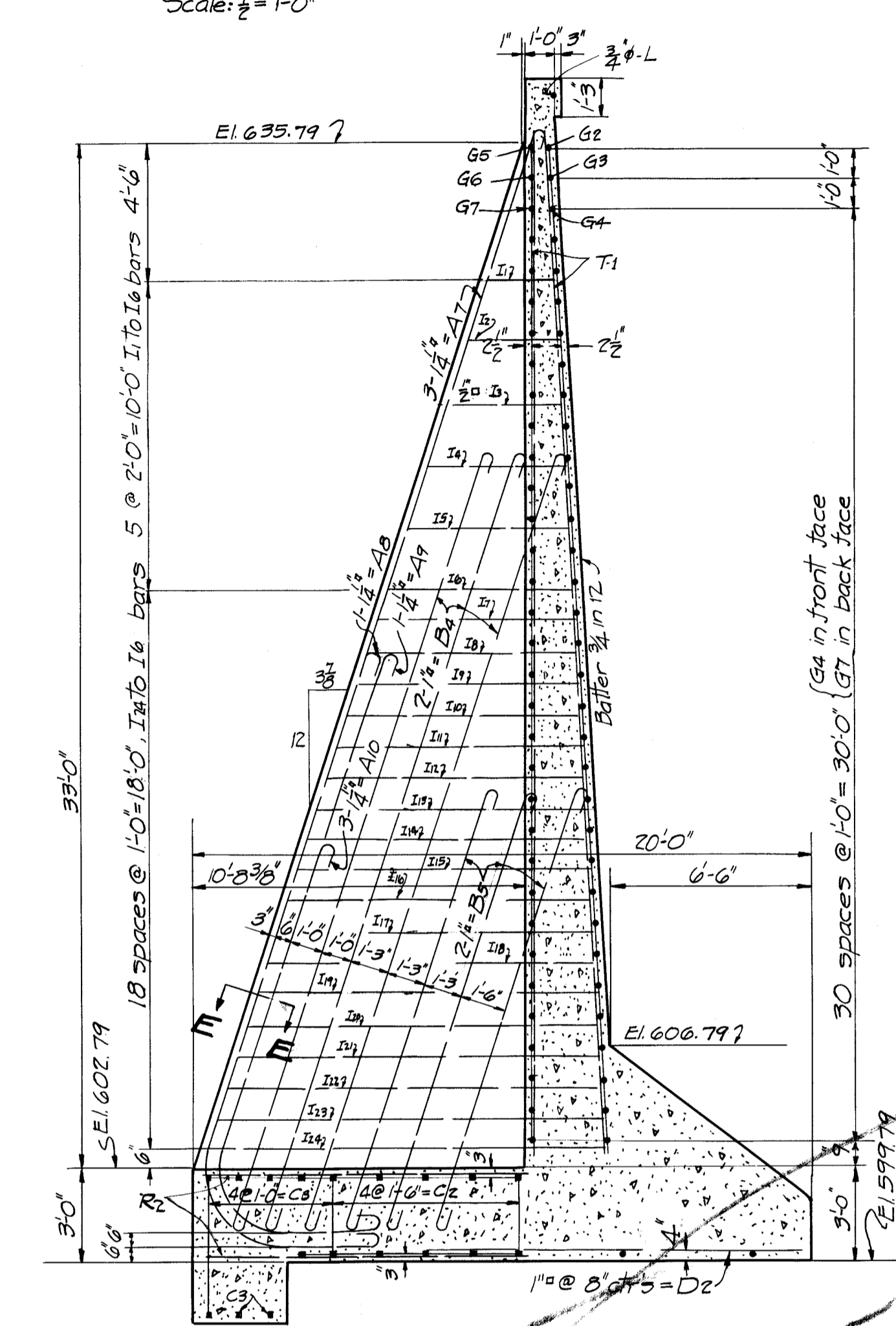
Note: Concrete between these lines and above El. 640.5 not included in substructure contract.



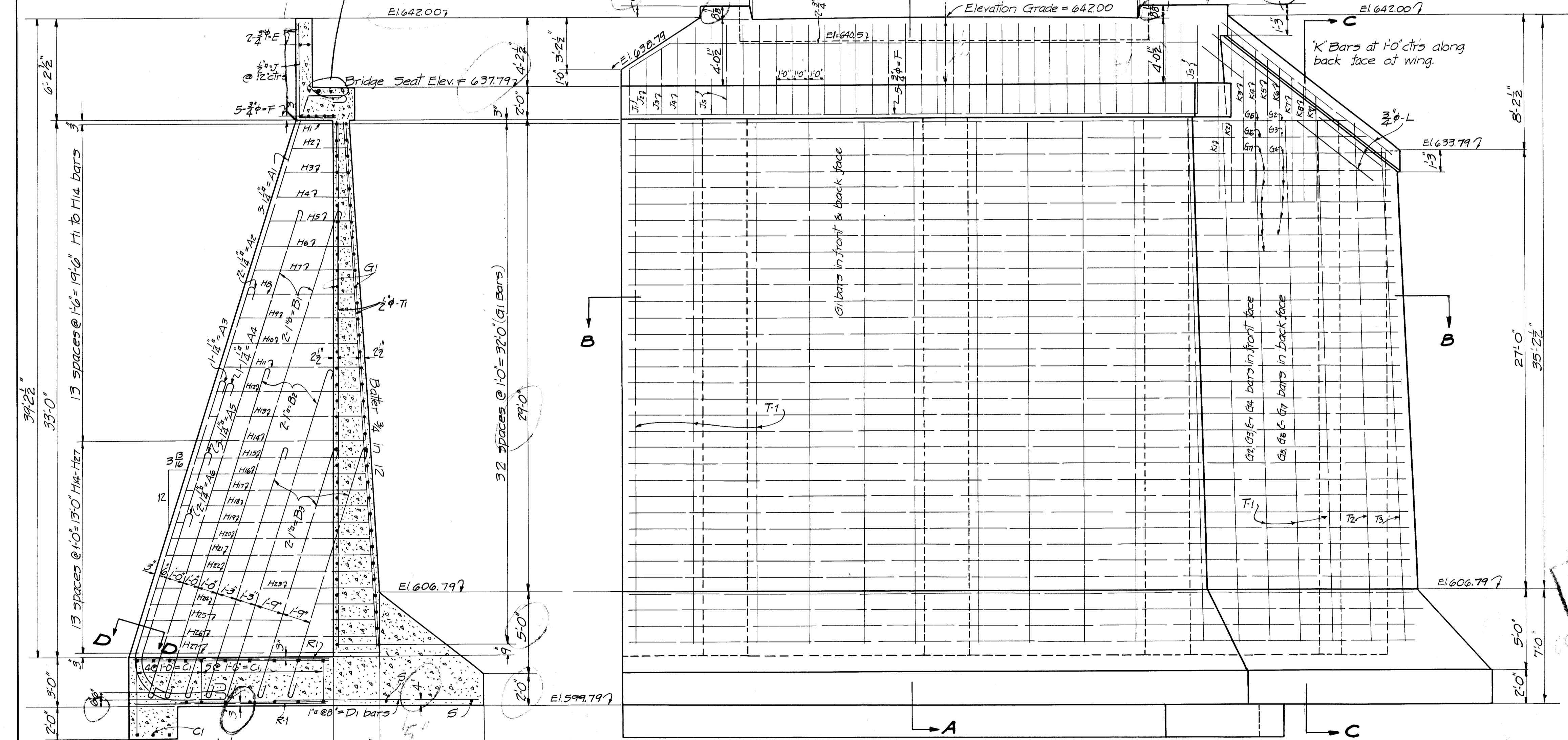
SECTION D-D
Scale: 1/2" = 1'-0"

add seat
add 3 - 3/4" dia

Strength - has concrete with the top



SECTION C-C
Scale: 1/2" = 1'-0"



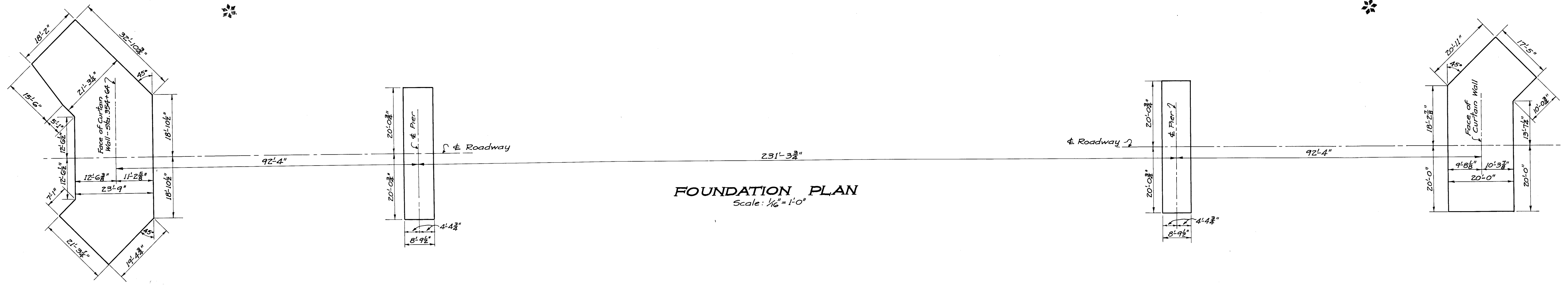
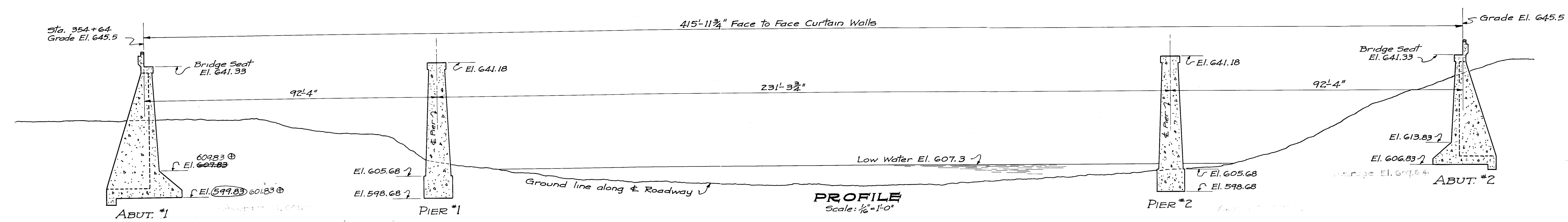
FRONT ELEVATION SOUTH ABUTMENT
Scale: 1/4" = 1'-0"

SECTION A-A
Scale: 1/4" = 1'-0"

NOT US E D
Grade was raised to 645.5
and wings changed

SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE
2-90'-0" SPT. SPANS; 1-230'-0" ST.T. SPAN 24'-0" Rdwy.
ON
ROMNEY-SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.
SCALE: AS NOTED
APRIL, 1934
SHEET 3
PROJECT

FOR 2ND



NOTES

Concrete in abutments shall be Class "A".
 Concrete in piers shall be Class "B".
 Reinforcing bars shall be made from new billet steel of intermediate grade or from rail steel.
 Place a 4" drain through abutments in each space between counterforts and one through each counterfort. Drains to be placed at about Elevation 610.
 The backs of abutments from the base slab to within one foot of the top, including the top of the base slab, shall be waterproofed in accordance with Section 10 of Division II of the specifications, except that the protection course need not be applied. The contractor will, however, be responsible for and must make good any damages to the waterproofing.
 The contractor shall submit a unit bid on the items shown in the estimate and an alternate bid for rail steel reinforcing bars, item 32.
 Specifications by the State Road Commission, June 1928, with Modifications and Changes effective January 1933.
 Special provisions governing Works Program Highway Funds adopted by the State Road Commission August 26, 1935, revised September 6, 1935, will govern this project.
 For basis of payment for reinforcing bars see note on sheet # 5 of 5.

ESTIMATE

① Dry Excavation	=	2100. Cu. Yds	
② Wet Excavation	=	665. Cu. Yds	
③ Rock Excavation	=	150. Cu. Yds	
④ Class "A" Concrete	=	(917) Cu. Yds @ 898.5	
⑤ Class "B" Concrete	=	793. Cu. Yds	
⑥ 1 1/2" Reinf. bars	=	16,170. Lbs	
⑦ 1" " "	=	26,055. " "	
⑧ 3/4" " "	=	2,270. " "	
⑨ 1/2" " "	=	2,140. " "	
⑩ 1/2" " "	=	(2,679) " "	
⑪ Bituminous Waterproofing	=	1,100. Sq. Yds	
⑫ Rail Steel Bars	=	(70,070) Lbs @ 69,219.	

Note:-
 Item 32 is alternate for Item 11.

PRIMARY STATE ROUTE No 28.
 PROJECT: W.P.H. 164 D

Prepared and Recommended:
J. J. Olmstead Bridge Engineer.

Recommended for Approval:
W. J. Smith Chief Engineer.

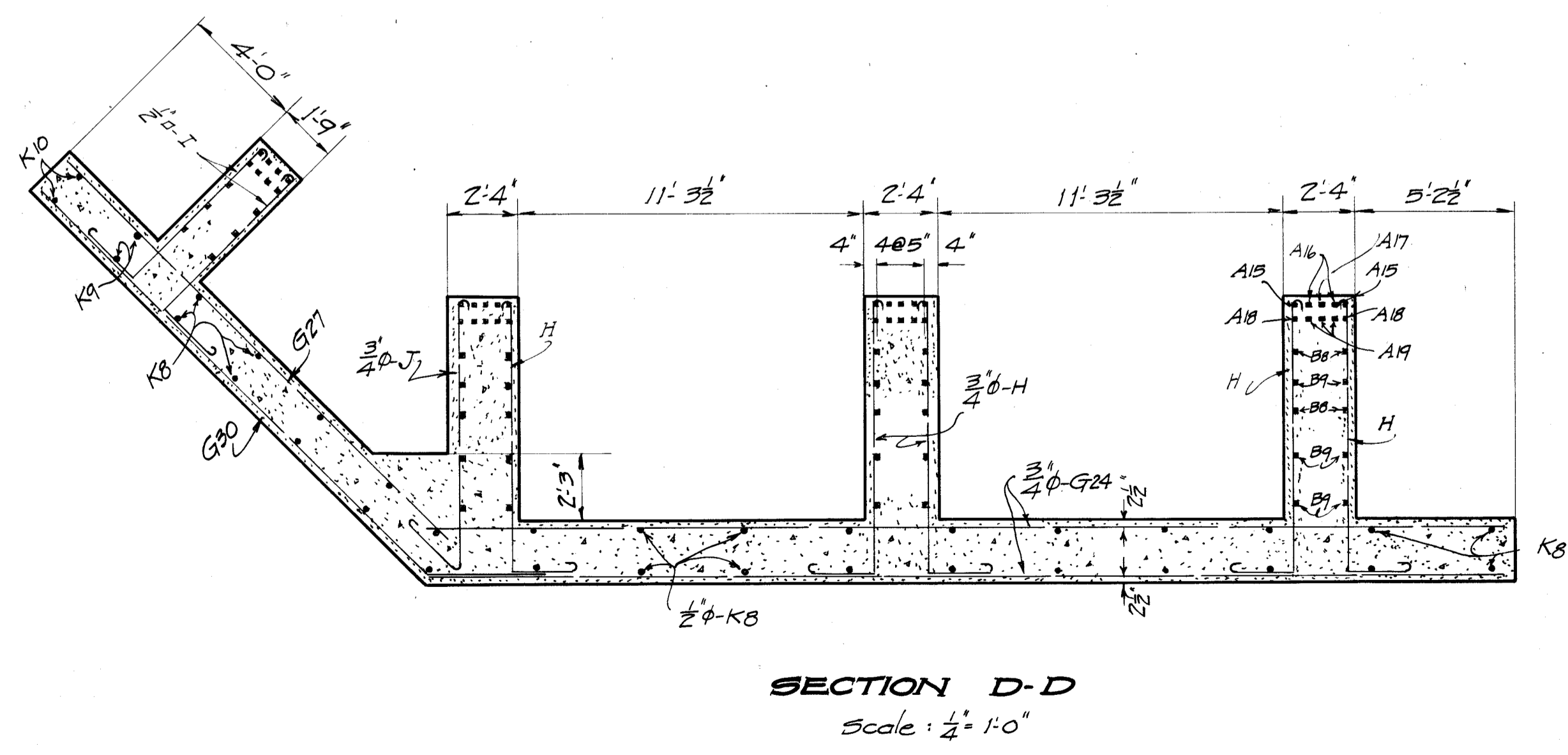
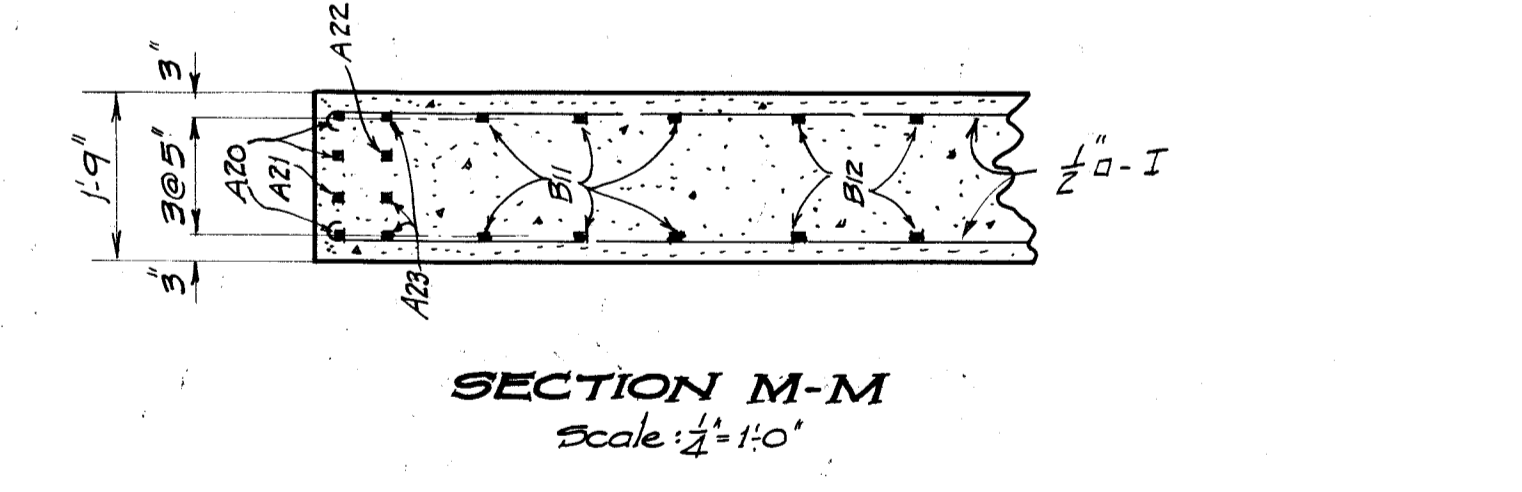
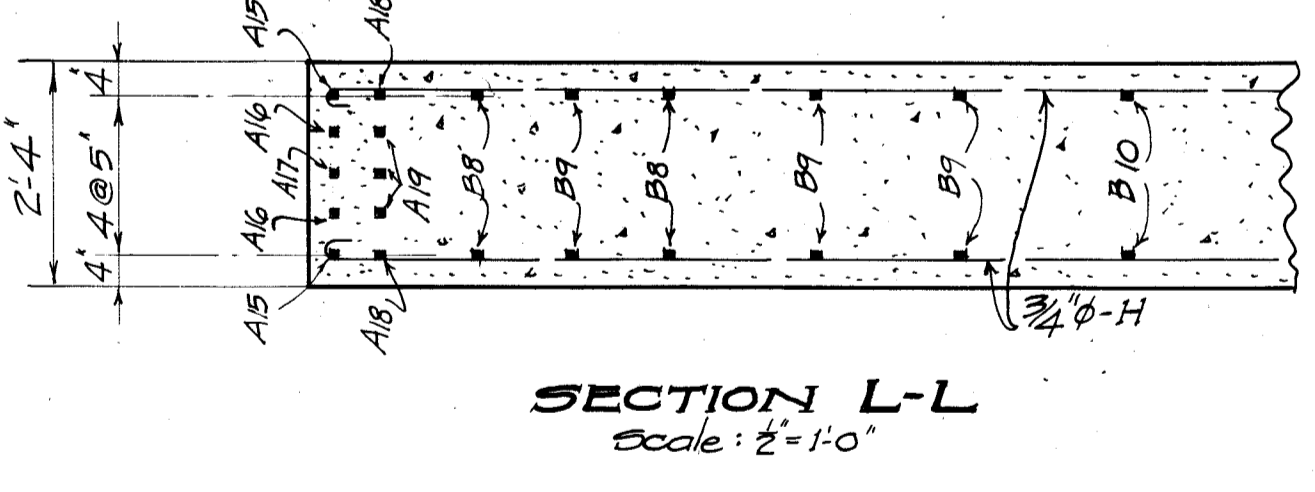
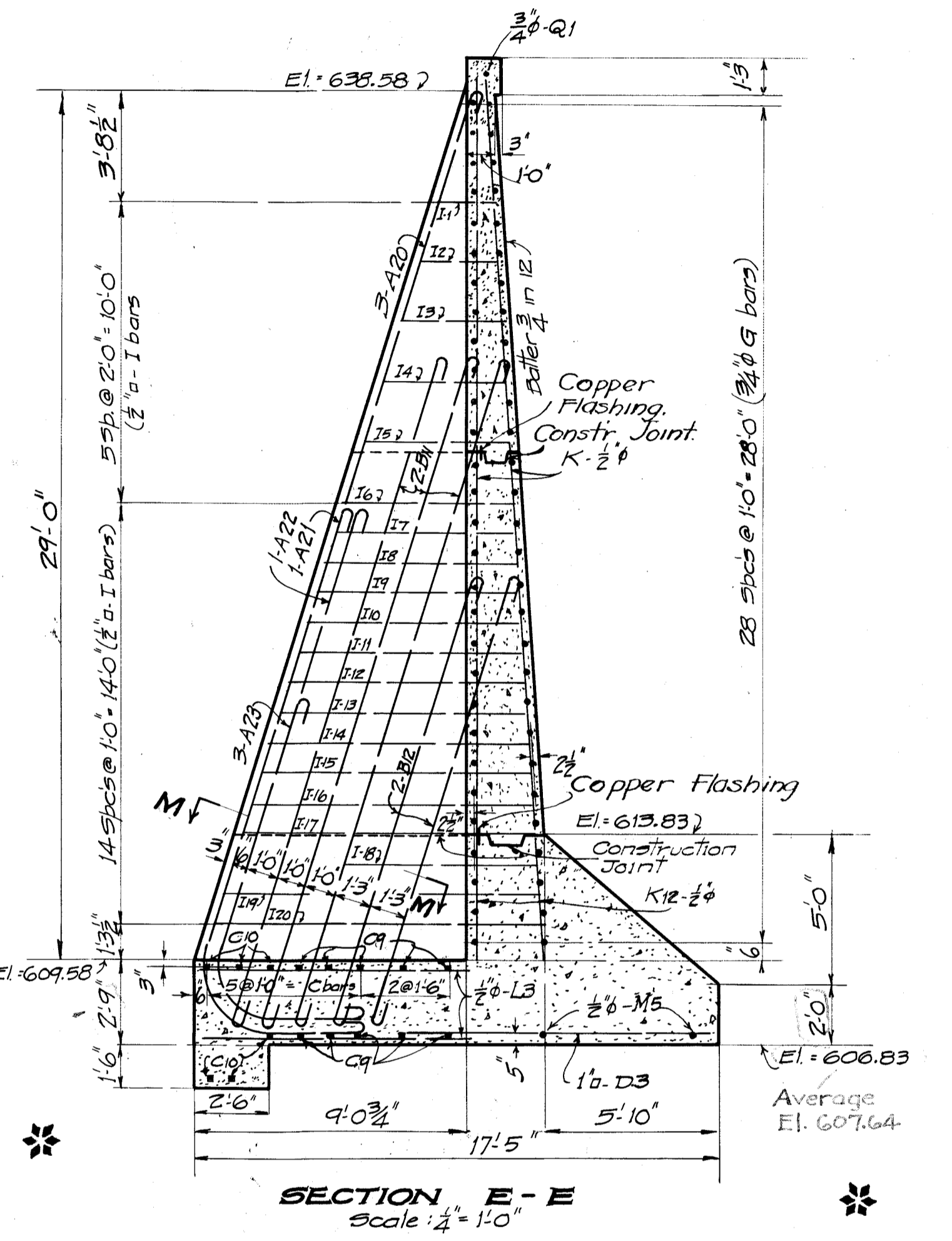
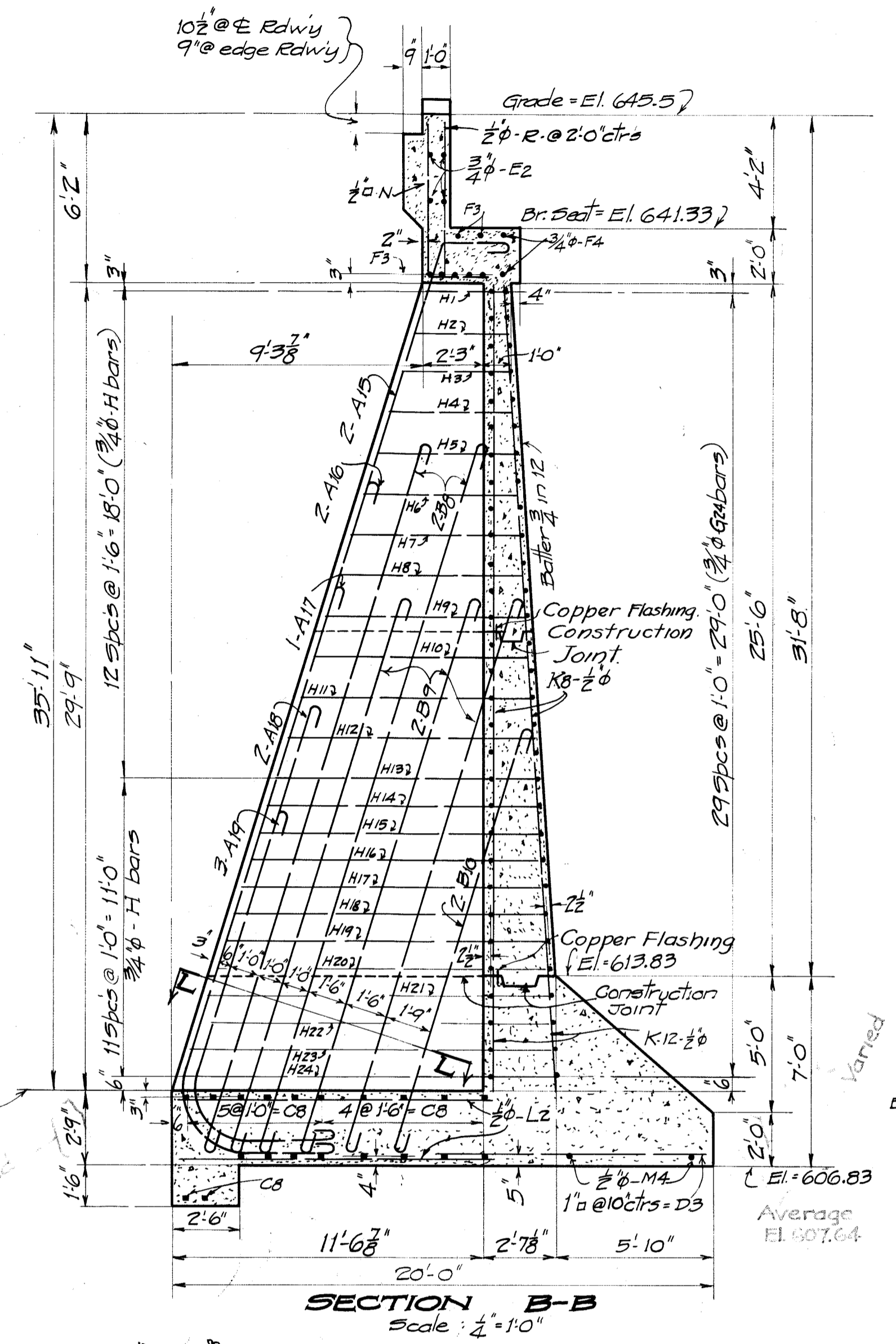
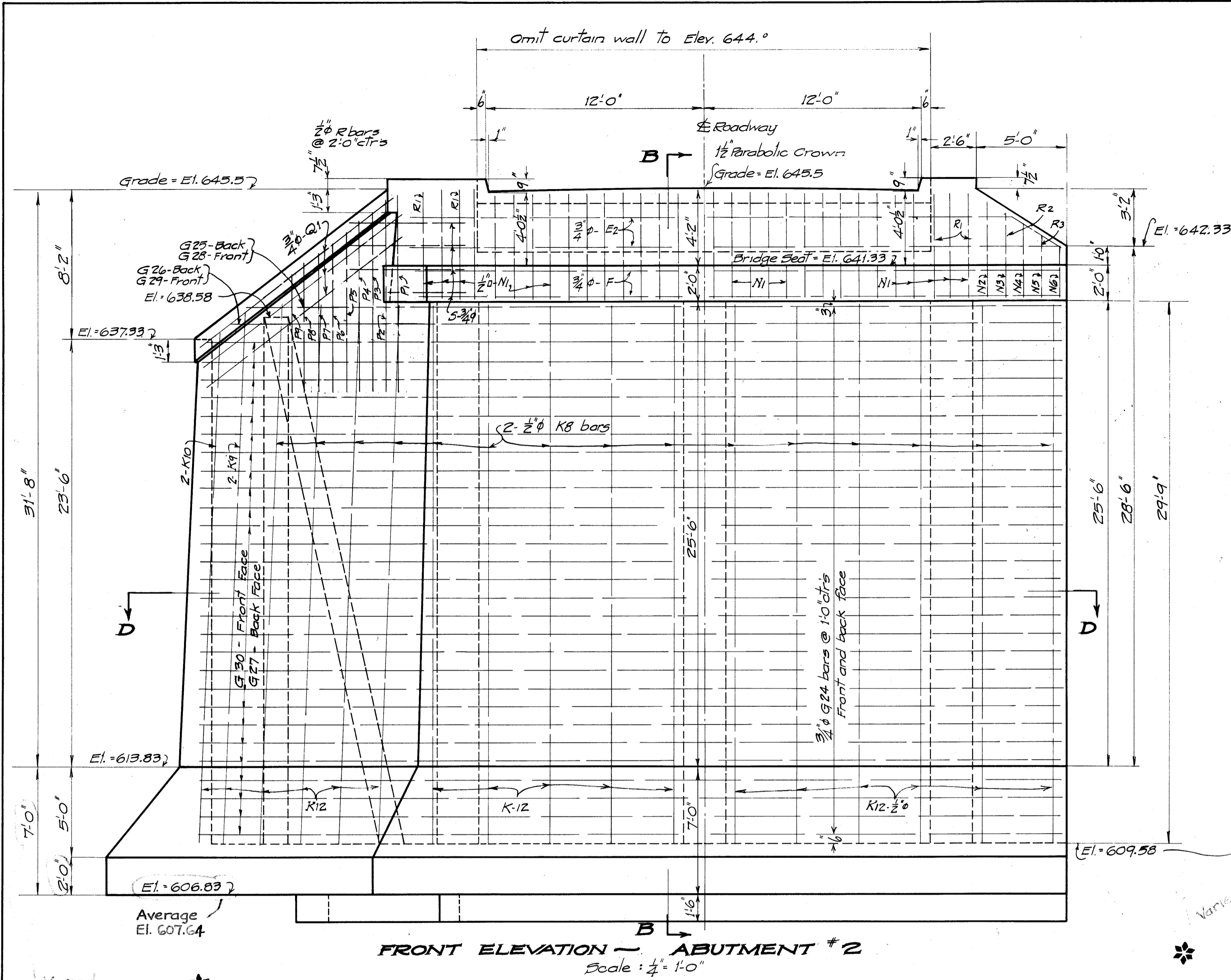
Approved:
W. J. Smith Commissioner.

Approved by official order of the State Road Commission of West Virginia.
 Entered the 24th day of June, 1936.
W. J. Smith Secretary.

REFERENCES:
 For SITUATION PLAN see #1265 A.
 For SUPERSTRUCTURE PLAN see SUPERSTRUCTURE #1265

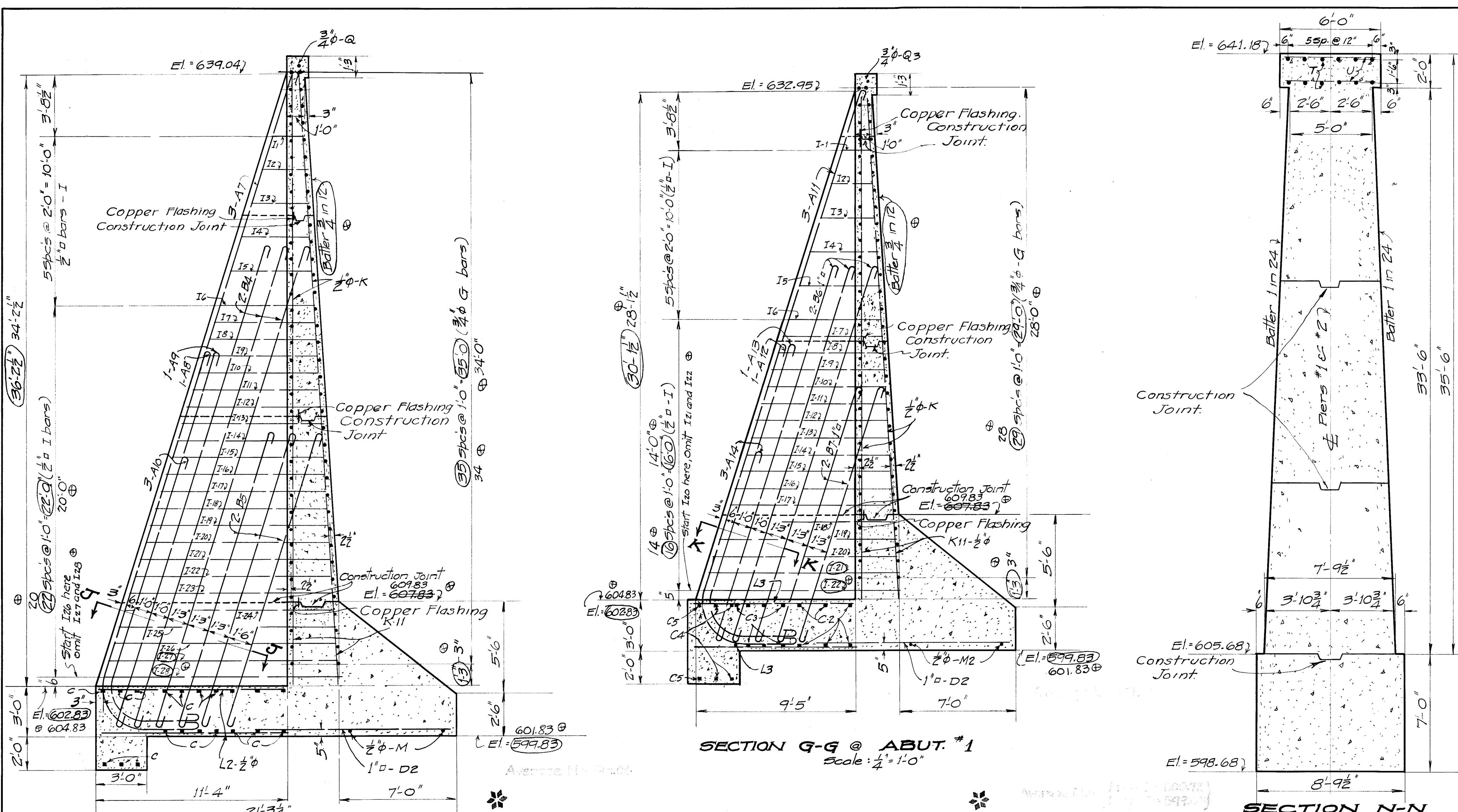
SUBSTRUCTURE
STEEL THRU TRUSS
GRACE TRUSS BRIDGE
 2-90' S.P.T. SPANS - 1-230' 0 3/4" S.T.T. SPAN - 24' RDWY.
 ON
PRIMARY STATE ROUTE #28
ROMNEY - SPRINGFIELD ROAD
 OVER
SOUTH BRANCH POTOMAC RIVER
 NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
 DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.

SCALE: AS NOTED
 PROJECT: W.P.H. 164 D
 SHEET #1 of 5
 #1265



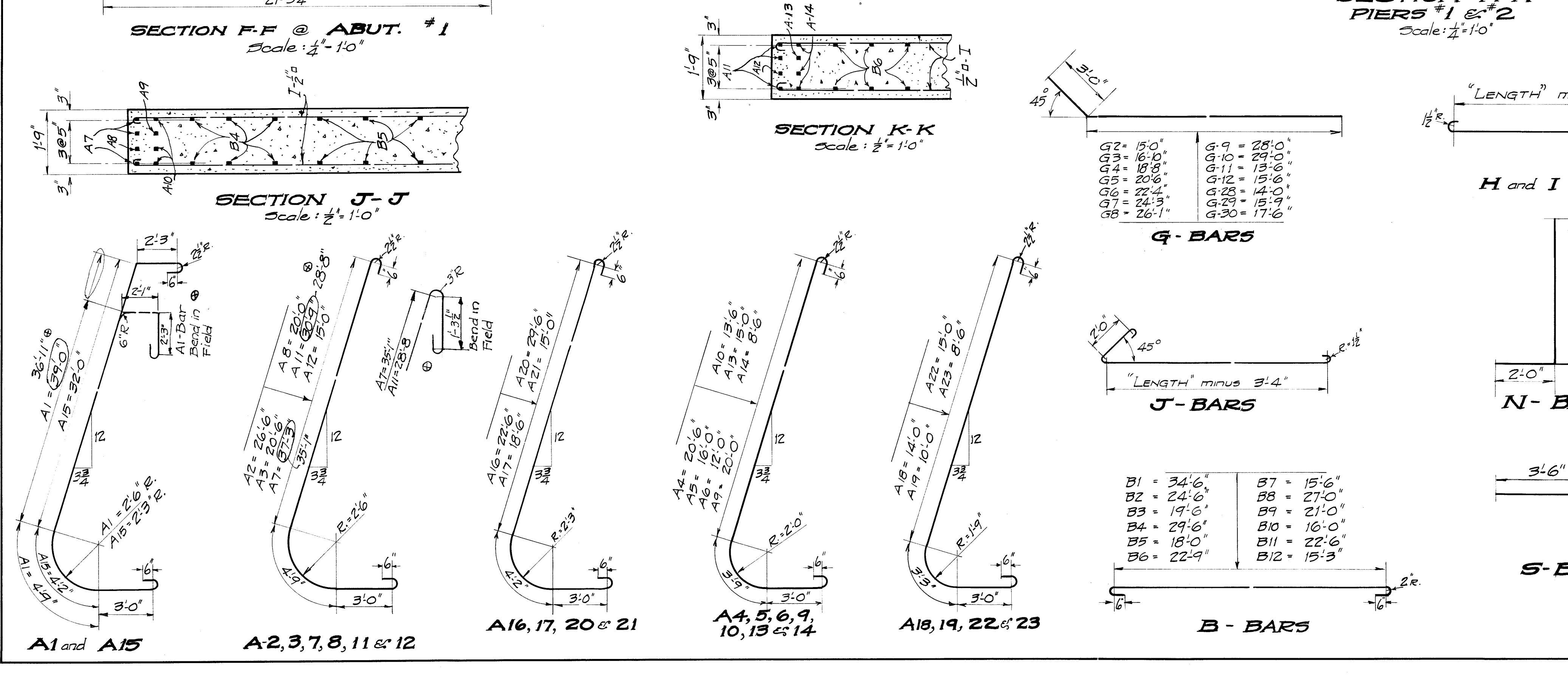
**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE BRIDGE**
2-90' SPT. SPANS - 1-230' 0 1/2' SPT. SPANS - 24' RDWY
ON
PRIMARY STATE ROUTE #28
ROMNEY - SPRINGFIELD ROAD
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.
SCALE: AS NOTED
PROJECT: W.P.H.R. 164-B
JUNE, 1936
SHEET 4 OF 5
1265
Revised 7-23-36
PROJ. W.P.H.R. 164-B
J.E.M.

Revised June 1, 1937 to show structure as built.



BILL OF REINFORCING STEEL

NO	LETTER	SIZE	LENGTH	NO	LETTER	SIZE	LENGTH	NO	LETTER	SIZE	LENGTH	NO	LETTER	SIZE	LENGTH
9	A-1	1 1/2"	51'-4"	7	F-3	3/4"	35'-6"	9	H-23	3/4"	16'-4"	3	J-18	3/4"	14'-10"
6	A-2	do	36'-7"	2	F-4	3/4"	34'-6"	9	H-24	do	16'-9"	3	J-19	do	15'-2"
3	A-3	do	30'-7"					4	H-25	do	17'-1"	3	J-20	do	15'-7"
3	A-4	do	29'-7"	1	G-1	3/4"	30'-3"	4	H-26	do	17'-6"	3	J-21	do	15'-11"
9	A-5	do	25'-1"	1	G-2	do	18'-0"	4	H-27	do	17'-10"	3	J-22	do	16'-4"
6	A-6	do	21'-1"	1	G-3	do	19'-10"	4	H-28	do	18'-3"	3	J-23	do	16'-8"
6	A-7	do	47'-4"	1	G-4	do	21'-8"	4	H-29	do	18'-7"	3	J-24	do	17'-1"
2	A-8	do	30'-1"	1	G-5	do	23'-6"	4	H-30	do	19'-0"	2	J-25	do	17'-5"
2	A-9	do	29'-1"	1	G-6	do	25'-4"	4	H-31	do	19'-4"	2	J-26	do	17'-10"
6	A-10	do	22'-7"	1	G-7	do	27'-3"					2	J-27	do	18'-2"
3	A-11	do	40'-10"	1	G-8	do	29'-1"	8	I-1	1/2"	4'-11"	2	J-28	do	18'-7"
1	A-12	do	25'-1"	1	G-9	do	31'-0"	8	I-2	do	5'-8"	2	J-29	do	18'-11"
1	A-13	do	24'-1"	1	G-10	do	32'-0"	8	I-3	do	6'-5"	2	J-30	do	19'-4"
3	A-14	do	17'-7"	1	G-11	do	16'-6"	8	I-4	do	7'-2"	2	J-31	do	19'-8"
6	A-15	do	43'-9"	1	G-12	do	18'-6"	8	I-5	do	7'-11"				
6	A-16	do	32'-0"	1	G-13	do	15'-0"	8	I-6	do	8'-8"	38	K-1	1/2"	31'-0"
3	A-17	do	28'-0"	1	G-14	do	16'-10"	8	I-7	do	9'-1"	2	K-2	do	29'-10"
6	A-18	do	22'-7"	1	G-15	do	18'-8"	8	I-8	do	9'-5"	2	K-3	do	29'-3"
9	A-19	do	18'-7"	1	G-16	do	20'-6"	8	I-9	do	9'-10"	2	K-4	do	27'-3"
3	A-20	do	39'-0"	1	G-17	do	22'-4"	8	I-10	do	10'-2"	2	K-5	do	26'-3"
1	A-21	do	24'-6"	1	G-18	do	24'-3"	8	I-11	do	10'-7"	2	K-6	do	24'-9"
1	A-22	do	23'-7"	1	G-19	do	26'-1"	8	I-12	do	10'-11"	2	K-7	do	23'-2"
3	A-23	do	17'-1"	1	G-20	do	28'-0"	8	I-13	do	11'-4"	30	K-8	do	25'-6"
1	A-24	do	9'-0"	1	G-21	do	29'-0"	8	I-14	do	11'-8"	2	K-9	do	24'-3"
12	B-1	1"	36'-7"	1	G-22	do	13'-6"	8	I-15	do	12'-1"	2	K-10	1/2"	22'-6"
12	B-2	do	26'-7"	1	G-23	do	15'-6"	8	I-16	do	12'-5"				
18	B-3	do	21'-7"	1	G-24	do	12'-0"	8	I-17	do	12'-10"	14	L-1	1/2"	12'-9"
12	B-4	do	31'-7"	1	G-25	do	14'-0"	8	I-18	do	13'-2"	28	L-2	1/2"	11'-3"
12	B-5	do	20'-1"	1	G-26	do	15'-9"	8	I-19	do	13'-7"	6	L-3	1/2"	8'-6"
6	B-6	do	24'-10"	28	G-27	do	17'-6"	8	I-20	do	13'-11"				
4	B-7	do	17'-7"	1	G-28	do	17'-0"	4	I-21	do	14'-4"	4	M-1	1/2"	18'-8"
12	B-8	do	29'-1"	1	G-29	do	18'-9"	4	I-22	do	14'-8"	4	M-2	do	17'-0"
18	B-9	do	23'-1"	28	G-30	do	20'-6"	4	I-23	do	15'-1"	2	M-3	do	18'-3"
6	B-10	do	18'-1"					4	I-24	do	15'-5"	4	M-4	do	19'-0"
6	B-11	do	24'-7"	9	H-1	3/4"	5'-10"	4	I-25	do	15'-10"	2	M-5	1/2"	20'-3"
4	B-12	1"	17'-4"	9	H-2	do	6'-5"	4	I-26	do	16'-2"				
				9	H-3	do	7'-0"	4	I-27	do	16'-7"	63	N-1	1/2"	7'-8"
				9	H-4	do	7'-6"	4	I-28	do	16'-11"	1	N-2	do	7'-4"
22	C-1	1"	31'-0"	9	H-5	do	8'-1"	3	J-1	3/4"	6'-2"	1	N-3	do	6'-8"
6	C-2	do	28'-0"	9	H-6	do	8'-8"	3	J-2	do	6'-9"	1	N-4	do	6'-0"
4	C-3	do	26'-0"	9	H-7	do	9'-3"	3	J-3	do	7'-4"	1	N-5	do	5'-4"
2	C-5	do	17'-0"	9	H-8	do	9'-9"	3	J-4	do	7'-10"	3	P-1	1/2"	10'-10"
8	C-6	do	15'-0"	9	H-9	do	10'-4"	3	J-5	do	8'-5"	3	P-2	do	9'-4"
11	C-7	do	9'-6"	9	H-10	do	10'-11"	3	J-6	do	9'-0"	3	P-3	do	9'-10"
20	C-8	do	35'-0"	9	H-11	do	11'-6"	3	J-7	do	9'-7"	3	P-4	do	9'-4"
10	C-9	do	16'-0"	9	H-12	do	12'-0"	3	J-8	do	10'-1"	3	P-5	do	8'-4"
6	C-10	1"	11'-0"	9	H-13	do	12'-7"	3	J-9	do	10'-8"	3	P-6	do	8'-4"
				9	H-14	do	13'-0"	3	J-10	do	11'-3"	3	P-7	do	7'-10"
54	D-1	1"	12'-3"	9	H-15	do	13'-4"	3	J-11	do	11'-10"	3	P-8	do	7'-4"
77	D-2	1"	11'-6"	9	H-16	do	13'-9"	3	J-12	do	12'-4"	4	P-9	1/2"	6'-10"
71	D-3	1"	10'-0"	9	H-17	do	14'-1"	3	J-13	do	12'-11"	3	Q-1	3/4"	16'-0"
				9	H-18	do	14'-6"	3	J-14	do	13'-4"	3	Q-2	3/4"	13'-6"
4	E-1	3/4"	32'-0"	9	H-19	do	14'-10"	3	J-15	do	13'-8"	3	Q-3	3/4"	29'-0"
4	E-2	3/4"	35'-0"	9	H-20	do	15'-3"	3	J-16	do	14'-1"	34	R-1	1/2"	5'-9"
7	F-1	3/4"	32'-0"	9	H-21	do	15'-7"	3	J-17	do	14'-5"	1	R-2	1/2"	4'-10"
2	F-2	3/4"	30'-0"	9	H-22	do	16'-0"	3	J-18	do	14'-5"	1	R-3	1/2"	3'-6"
												13	S	3/4"	7'-0"
												50	K-11	1/2"	7'-6"
												34	K-12	1/2"	7'-0"
												24	T	3/4"	33'-0"
												80	U	1/2"	5'-7"



Note:—
If rail steel bars are used, the minimum diameter of bends shall be five times the thickness of the bar. The length of the bars to be increased where necessary to provide for the increase in the size of bends.
Payment for reinforcing bars will be based upon the lengths shown in the bill of steel.

**SUBSTRUCTURE
STEEL THRU TRUSS
GRACE THRU BRIDGE**
2-90' SPT SPANS - 1-230' O.C. T.T. SPAN - 24' EDWY ON
ON
**PRIMARY STATE ROUTE #28
ROMNEY - SPRINGFIELD ROAD**
OVER
SOUTH BRANCH POTOMAC RIVER
NEAR SPRINGFIELD
HAMPSHIRE CO., W.VA.
DESIGNED BY
STATE ROAD COMMISSION
CHARLESTON, W.VA.

REVISION 7-23-36
REVISED 10-16-36
SCALE: AS NOTED
PROJ. W.R.H.R. 164-B
JUNE, 1936
SHEET 5 OF 5
1265
J.E.M.