

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

261

**MAH-18-15.50
MAHONING COUNTY**

FOUNDATION SOUNDINGS: Foundation design and foundation quantities are based on a study of borings and soil-sampling soundings made at the site. The sounding information may be inspected in the office of the Bureau of Bridges in Columbus, or in the Division Office, but the State assumes no responsibility for the accuracy thereof.

BENCH MARK 200: Top stem of hydrant on north side of Concord Avenue, 180 feet east from Gem Avenue. Elev. 948.204.

BENCH MARK 201: Top stem of hydrant on north side of Concord Avenue, 430 feet west from Gem Avenue. Elev. 965.264.

A.D.T. (1975) 44,910 (Each Structure)

PROPOSED STRUCTURE

TYPE: 3-Span continuous steel beam with reinforced concrete deck and sub-structure.

SPANS: 56'-0", 70'-0", 56'-0"

ROADWAY: Right 50'-0" $\frac{1}{2}$ parapets including 1'-2" curbs. Left varies.

LOAD FREQUENCY: CF 2000 (57) (Adequate for alternate A.A.S.H.O. Loading).

SKWEAR: 22° 58' L.F.

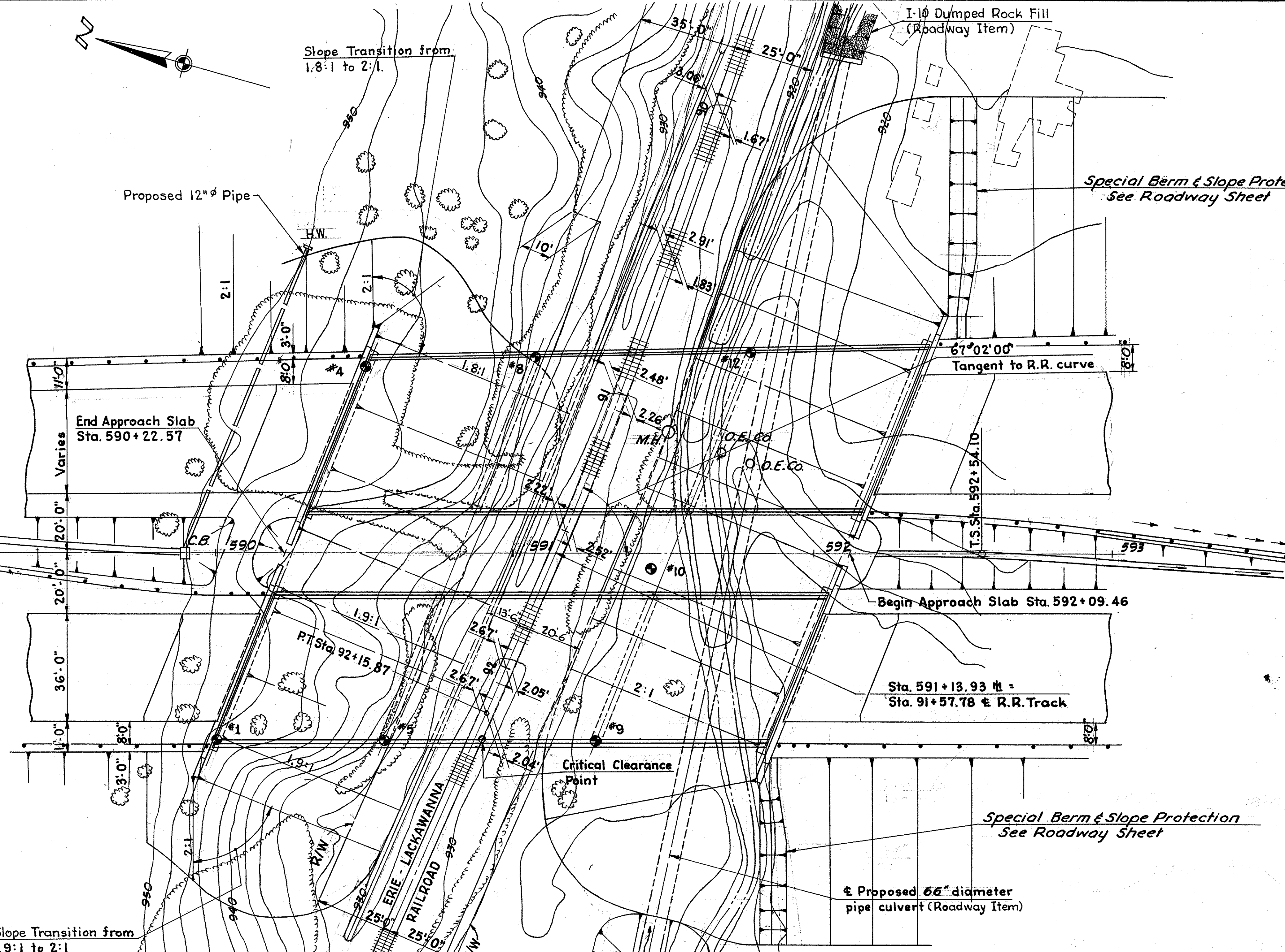
WEARING SURFACE: 1" Monolithic concrete.

APPROACH SLABS: AS-1-54 (25' long).

ALIGNMENT: Tangent.

€ R.R. RIGHT OF WAY

P.I. Sta. 90+83.37
 $\Delta = 07^\circ 30'$
 $D_c = 02^\circ 50' 01''$
 $T = 132.54'$
 $L = 264.68$
 $R = 2022.17$
 P.C. Sta. 89+51.19
 P.T. Sta. 92+15.87



€ Wickliffe Expressway

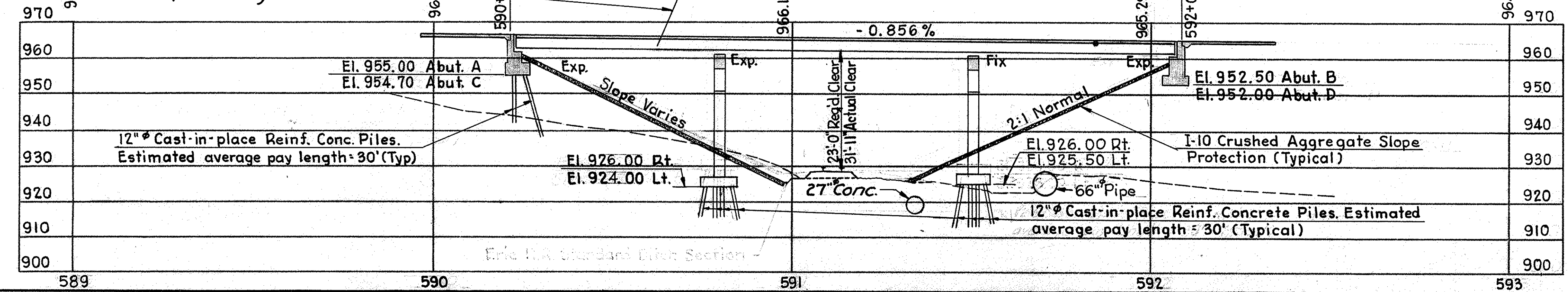
⊙ Indicates boring location.

P.V.I. Sta. 583+00
 Elev. 972.99
 $G_1 = +2.58\%$
 $G_2 = -0.856\%$

Slope Transition from 1.9:1 to 2:1

€ 27" Concrete Combined Storm & Sanitary Sewer

Bridge Limits = 186.89'



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SITE PLAN

BRIDGE NO. MAH-18-1688 L.&R.
 OVER ERIE - LACKAWANNA R.R.

STA. 590+22.57
 STA. 592+09.46

MAHONING COUNTY

PRESENT TOPOGRAPHY			PROPOSED WORK		
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aurilio	CWC	DM	P.T.R.	V.R.	DM

**MAH-18-15.50
MAHONING COUNTY**

GENERAL NOTES:

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57, together with current revisions thereof.

REFERENCE shall be made to Standard Drawings CSB-2-56, Sheets 2 and 3 of 6, revised 2-2-59; AR-1-57 revised 4-2-62; FSB-1-62 revised 1-15-63; Supplemental Specifications S-101 dated 7-12-62 and AS-1-54 revised 7-5-62.

EXCAVATION QUANTITY includes the removal of fill material required for construction of the abutments and piers.

PILES shall be driven to a minimum bearing capacity of 31.3 tons per pile for the abutments and 39.1 tons per pile for the piers.

FOUNDATION BEARING PRESSURE: Abutment B and D footings are designed for a maximum bearing pressure of 1.8 tons per square foot.

WELDING of structural steel shall be Class "A" except as otherwise shown. Welds shown as field welds may, at the option of the Contractor, be made in the shop.

RAILROAD AERIAL LINES will be relocated by the railroad. The Contractor shall use all precautions necessary to see that the lines are not disturbed during the construction stage and shall cooperate with the railroad in the relocation of these lines. The cost of the relocation shall be included in the railroad force account work.

CONSTRUCTION CLEARANCE of 27'-0" vertically above the top of the railroad rails and 8'-0" horizontally from the center of tracks shall be maintained at all times.

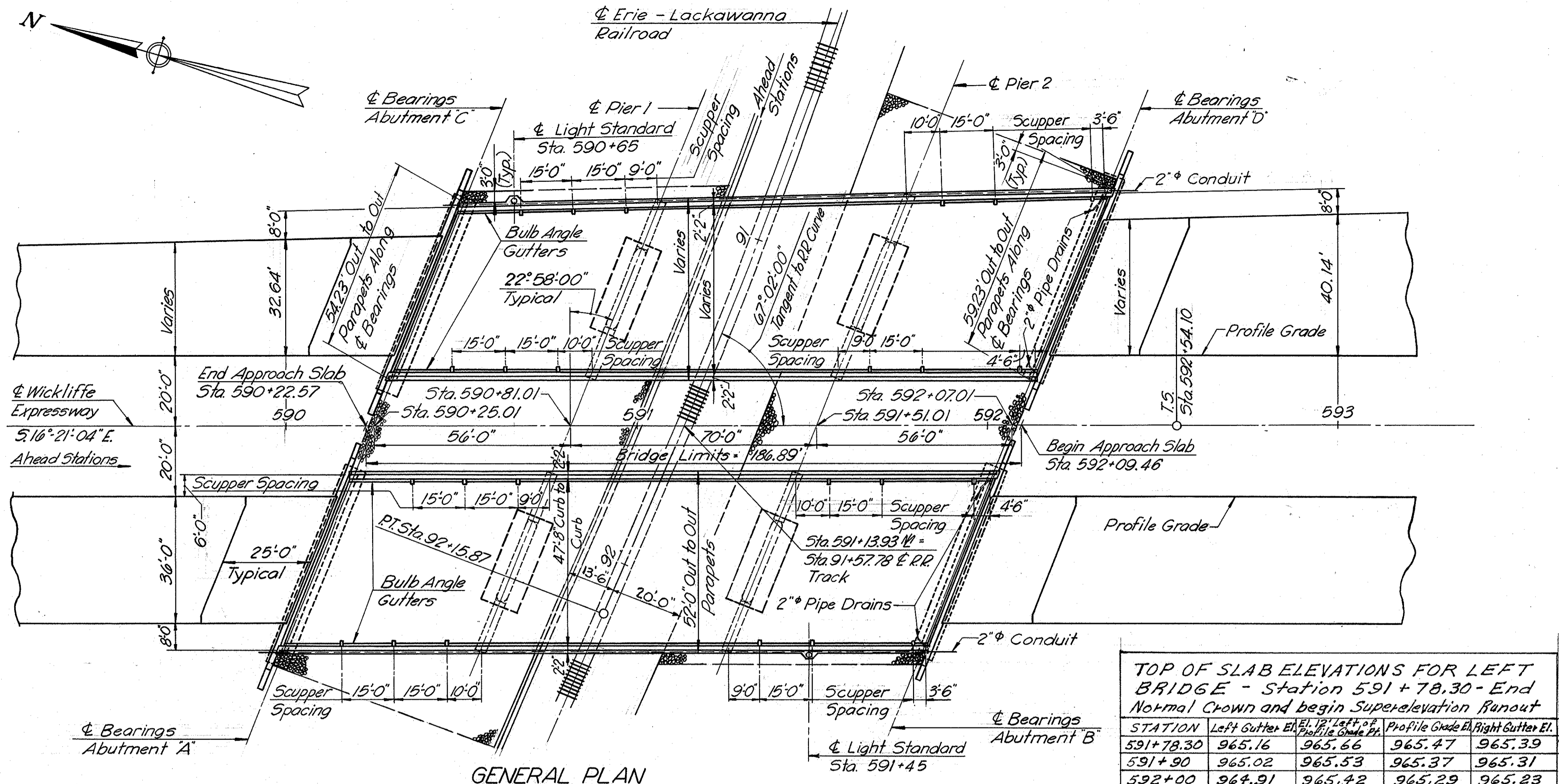
SHEETING AND BRACING: Before construction is started, eight sets of prints showing details of the sheeting and bracing to be used for excavation adjacent to the railroad tracks shall be submitted to the Director for approval by the Department of Highways and by the railroad company.

ALIGNING RAILROAD TRACKS: After the Contractor has completed all excavation and backfill adjacent to the railroad tracks in compliance with Sec. E-2.04 and E-2.08 of the Construction and Material Specifications, subject to the supervision of the railroad company, nothing in Sec. E-2.04, E-2.08 or G-8.07 of the Specifications shall be construed to hold the Contractor liable for aligning and resurfacing the railroad tracks.

EMBANKMENT PROCEDURES: The embankment shall be placed and compacted up to the finished Spill-thru Slopes and to the level of the Subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutments and for piers that are set in the filled area.

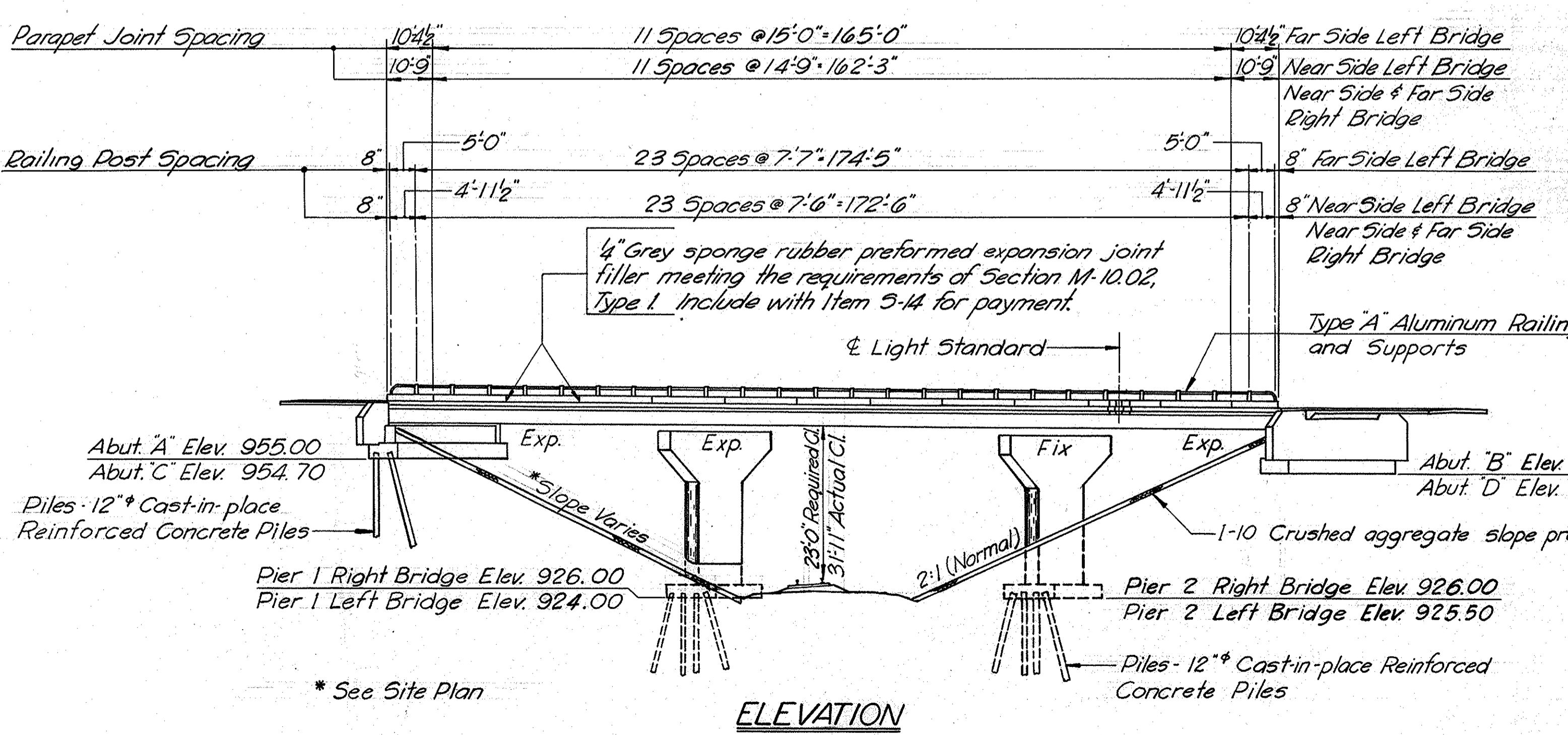
Special care shall be given to the construction of the embankment between Stations 591+50 and 594+00 (parallel to abutments). All soils placed in embankment within these limits shall be spread in layers not greater than 6" loose depth and shall be compacted to not less than 102 percent of Laboratory Maximum Dry Weight. Each lift shall be approved before material for the next lift is brought in.

All shale or rock placed as fill in this area shall be spread in layers not greater than 8 inches loose depth. Rock which cannot be incorporated in an 8 inch lift shall either be reduced in size or excluded from this part of the embankment. All shale layers and layers containing a mixture of shale and rock shall be sprinkled as directed by the Engineer prior to or during compaction until the moisture content of the shale is not less than optimum minus 3 percent and not more than optimum. Each shale or rock layer shall be rolled with at least four complete coverages of a fully ballasted tamping roller and at least two complete coverages of fully ballasted 50 Ton. pneumatic tired roller as specified in Supplemental Specification CE-101.04. All other provisions of Section E-108 of the general specifications shall remain in effect.



TOP OF SLAB ELEVATIONS FOR LEFT BRIDGE - Station 591+78.30 - End Normal Crown and begin Superelevation Runout

STATION	Left Gutter El.	Profile Grade El.	Right Gutter El.
591+78.30	965.16	965.66	965.47
591+90	965.02	965.53	965.37
592+00	964.91	965.42	965.29
592+10	964.79	965.31	965.20
592+20	964.68	965.20	965.15
592+30	964.56		



Utility Lines
All expense involved in relocating affected utility lines shall be born by the owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

Extreme care must be used during the construction of these bridges due to the existing Ohio Edison Company power lines. These lines are located approximately in the area of the forward piers and are 65 ± ft above the final location of the pier piling.

REFERENCE shall be made to Supplemental Specification 3307 revised 10-1-64 and Standard Drawing SD-2-64 dated 11-25-64.

DESIGN LOADING: Cf 2000 (57)

CONCRETE CLASS "C": Basic unit stress 1333 psi.

CONCRETE CLASS "E": Basic unit stress 1133 psi.

STRUCTURAL STEEL: ASTM A36 - basic unit stress 20,000 psi. (ASTM A7 and A373 steel not permitted)

REINFORCING STEEL: ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 psi. Except spiral reinforcement may be plain, structural Grade with basic unit stress of 18,000 psi.

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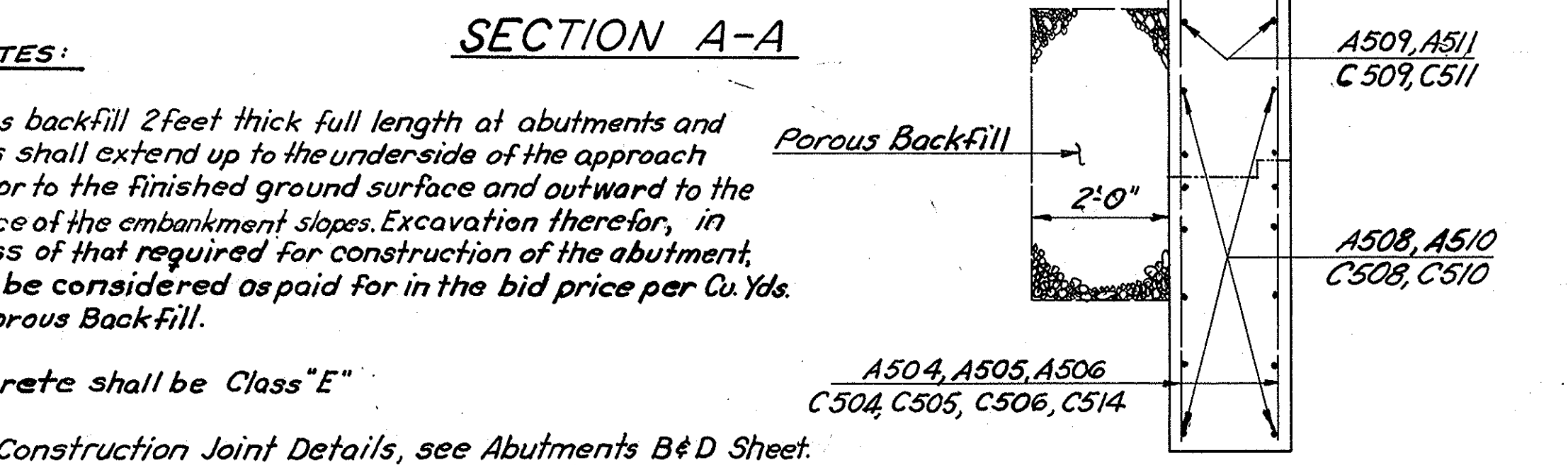
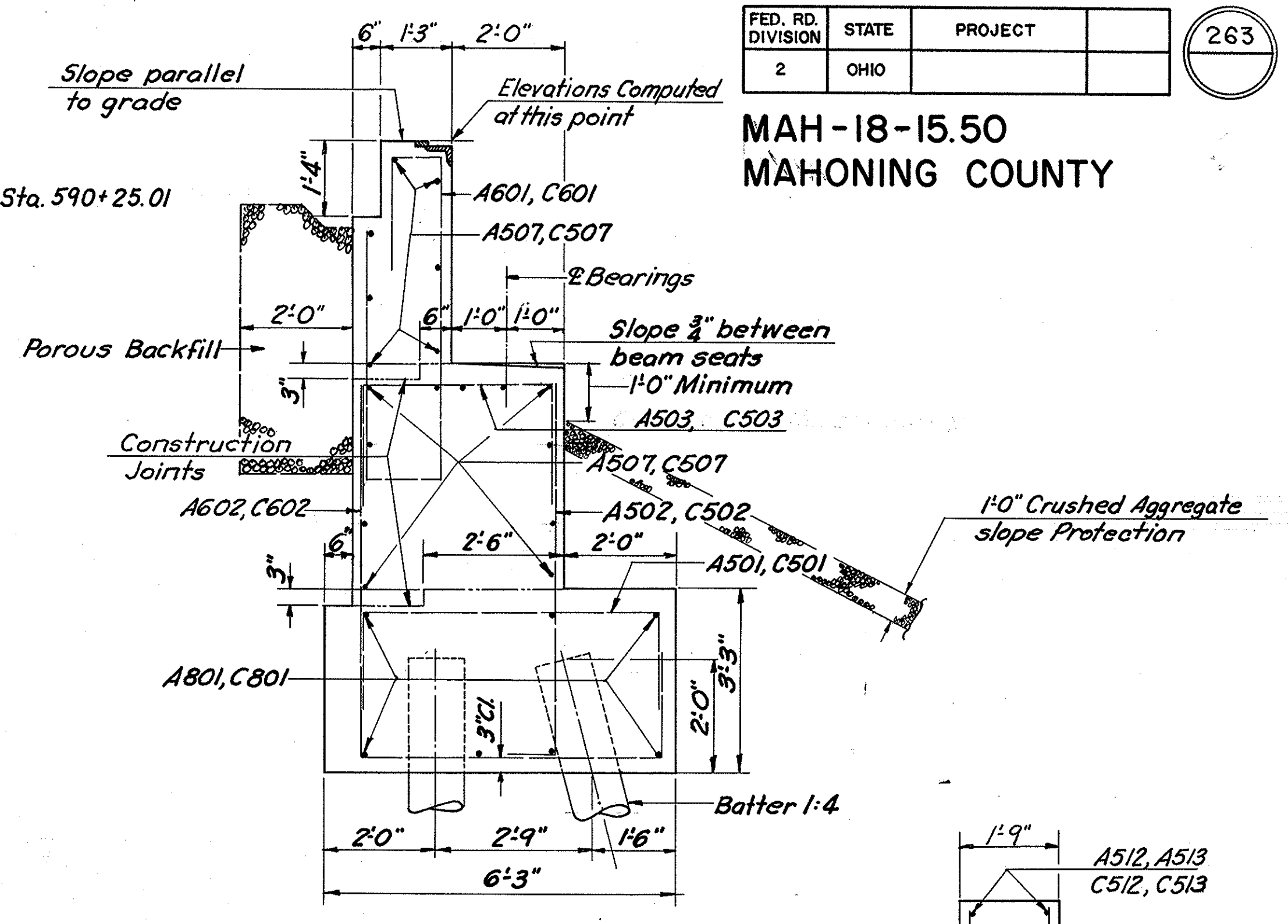
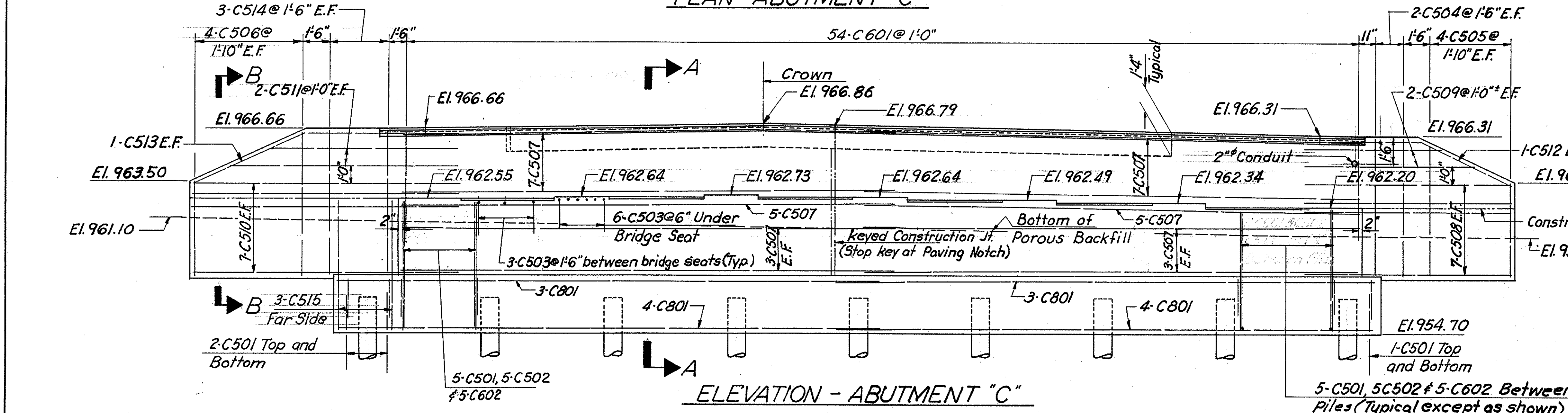
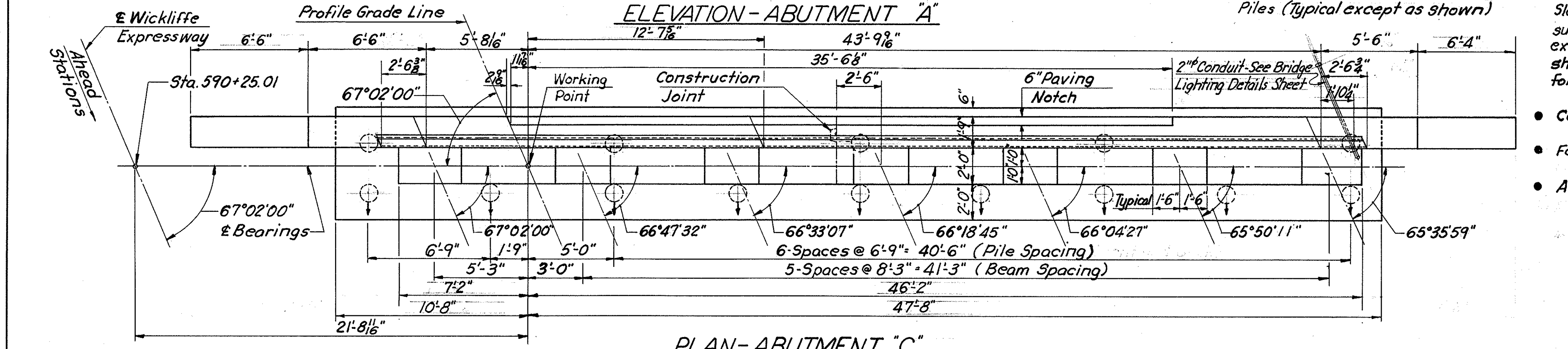
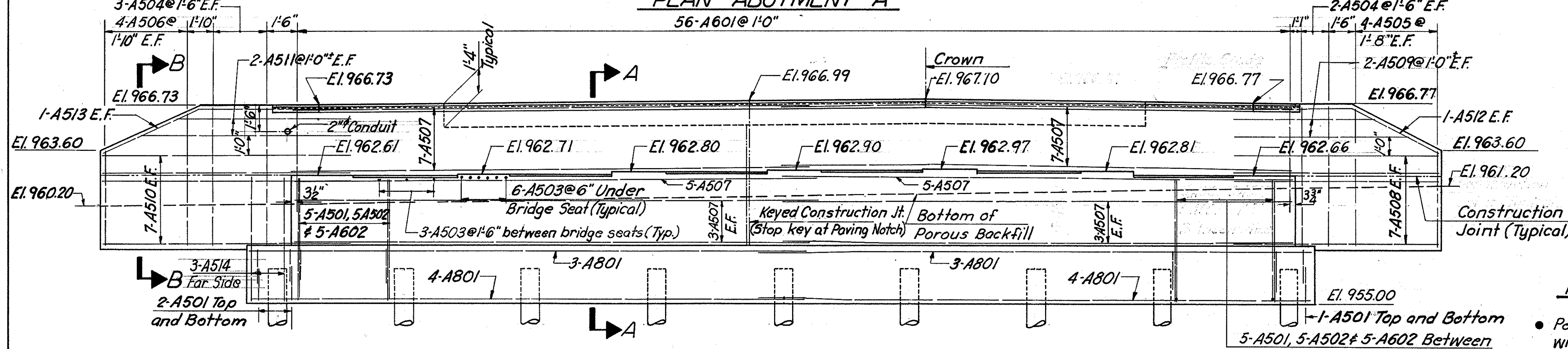
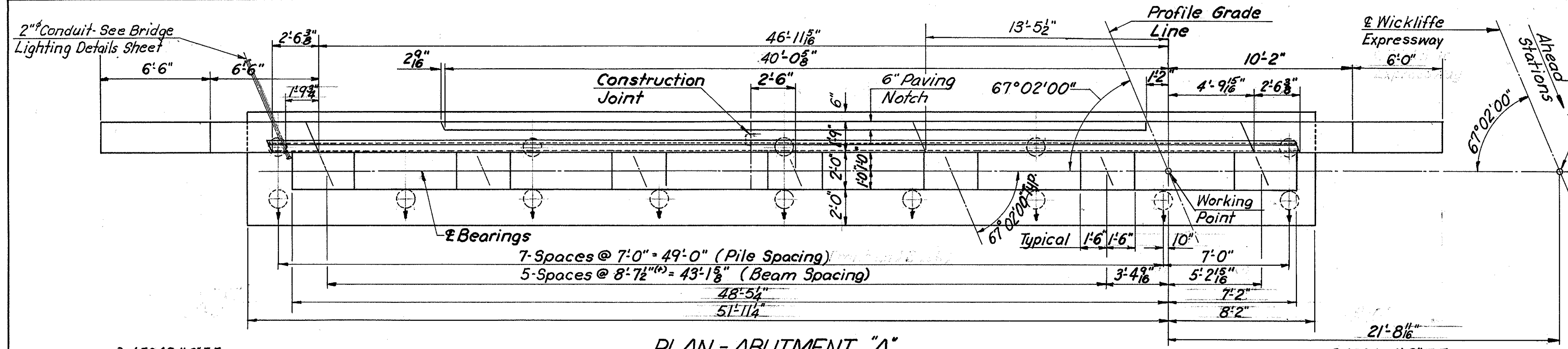
GENERAL PLAN & ELEVATION
BRIDGE NO. MAH-18-1688 L.&R.
OVER ERIE - LACKAWANNA R.R.

MAHONING COUNTY

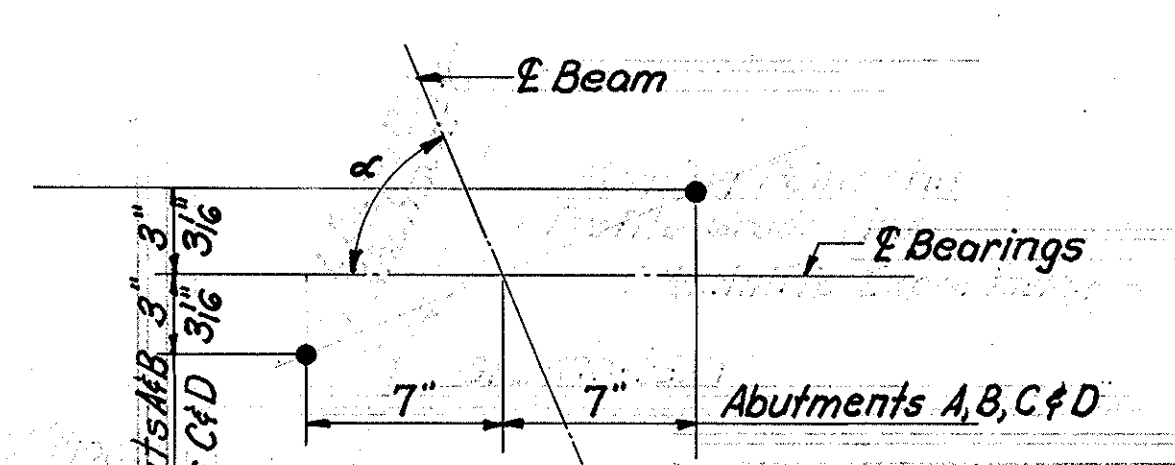
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D.M.	E.J.	E.J.	M.R.	F.J.K.	8-16-63	2-15-66

STA. 590+22.57
STA. 592+09.46

MAH-18-15.50
MAHONING COUNTY



- NOTES:**
- Porous backfill 2 feet thick full length at abutments and wings shall extend up to the underside of the approach Slab or to the finished ground surface and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for construction of the abutment, shall be considered as paid for in the bid price per Cu. Yds. for Porous Backfill.
 - Concrete shall be Class "E"
 - For Construction Joint Details, see Abutments B & D Sheet.
 - All piles to be 12" Cast-in-Place Reinforced Concrete Piles.



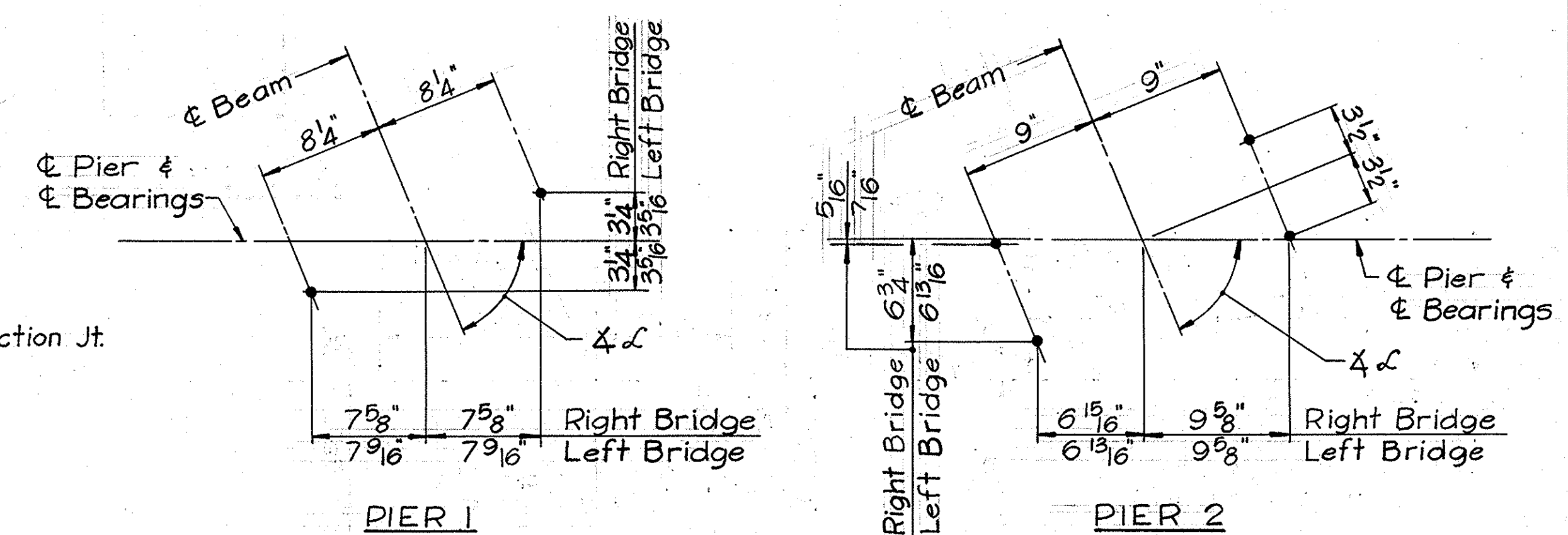
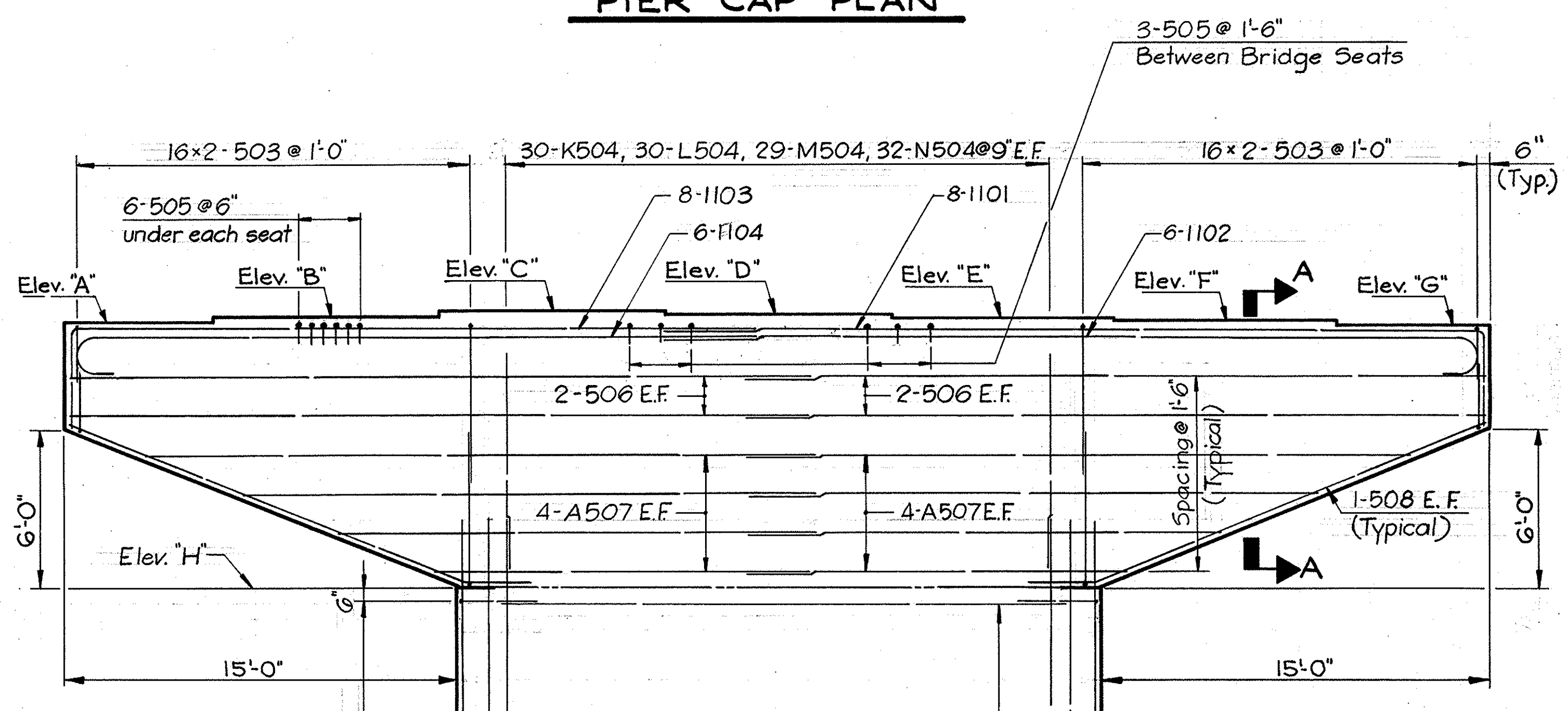
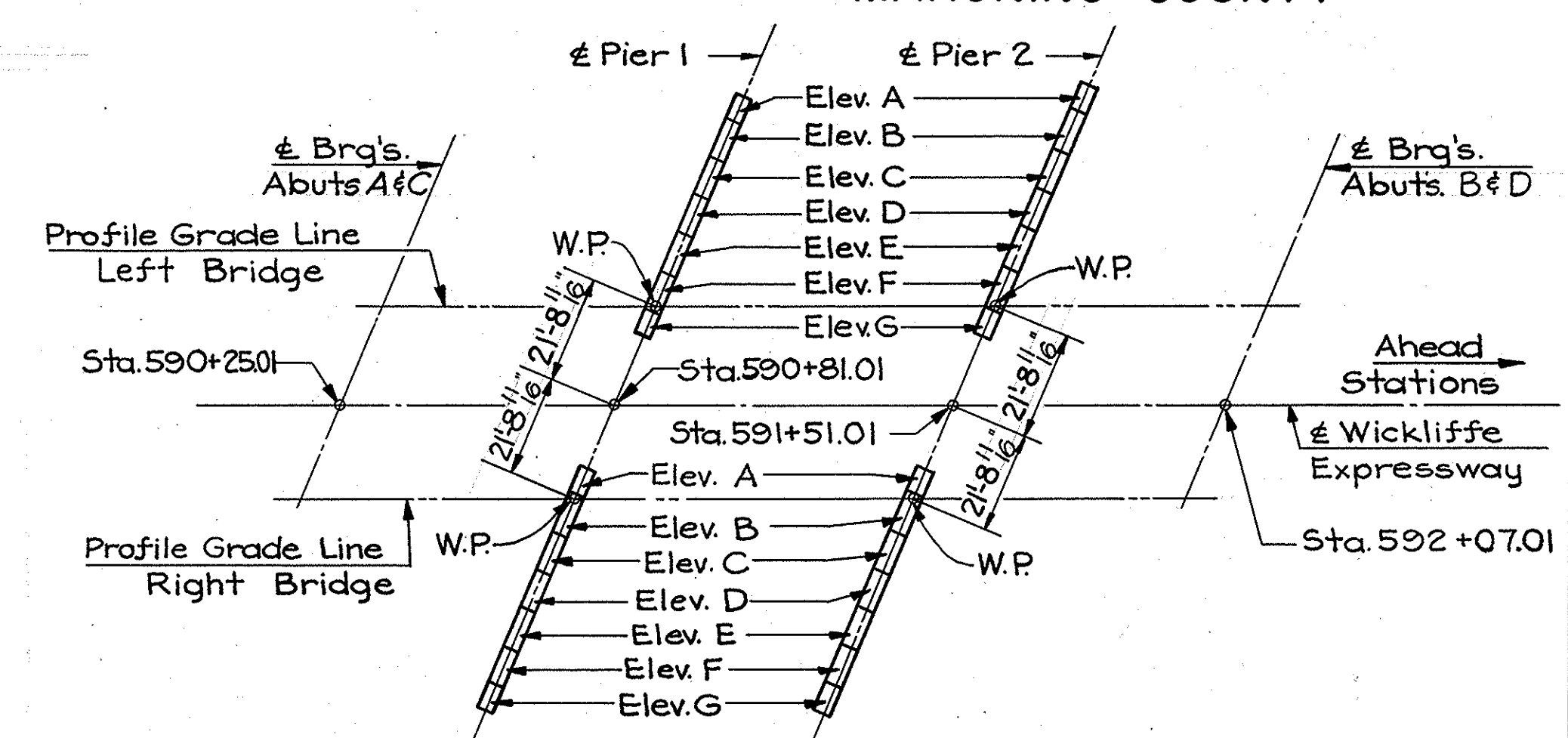
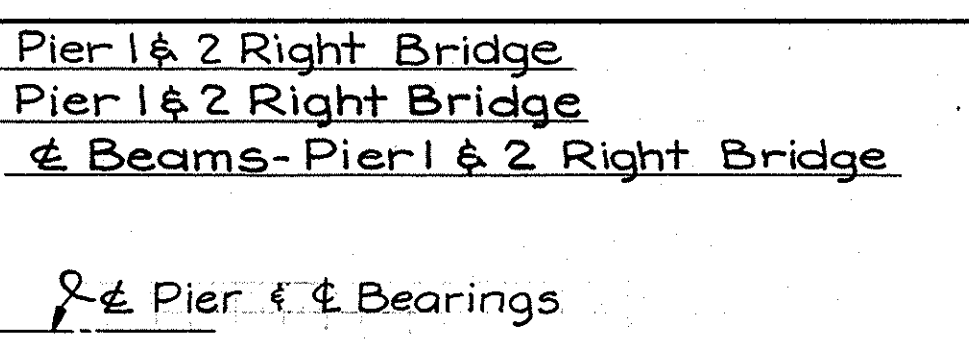
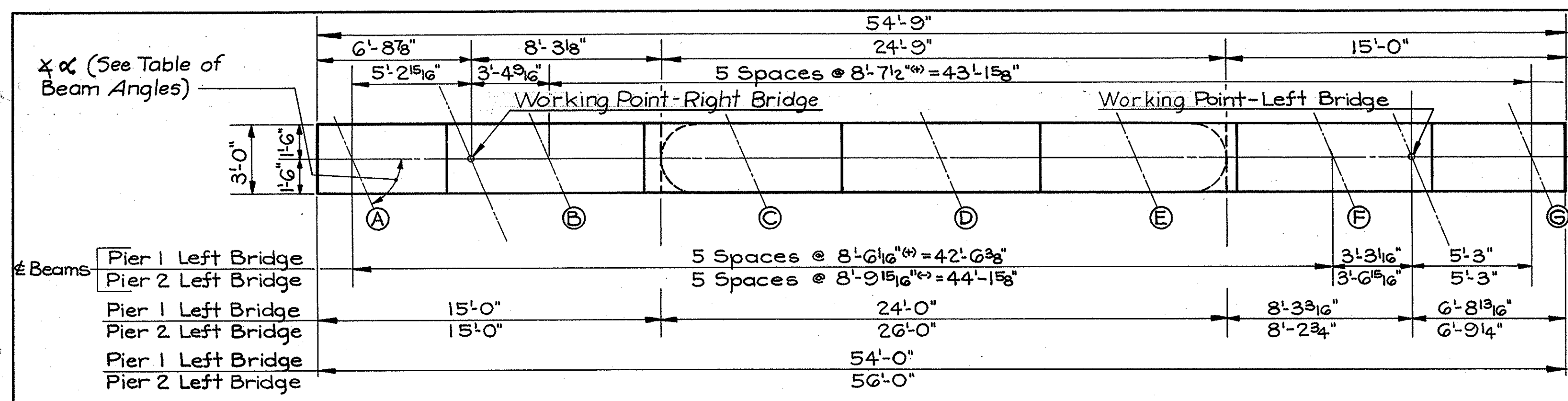
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ABUTMENTS A & C
BRIDGE NO. MAH-18-1688 L.&R.
OVER ERIE - LACKAWANNA R.R.

MAHONING COUNTY
STA. 590+22.57
STA. 592+09.46

Designed	Drawn	Traced	Checked	Reviewed	Date	Revised
DWN	DWN	RJ	EVR	DFR	8-16-65	

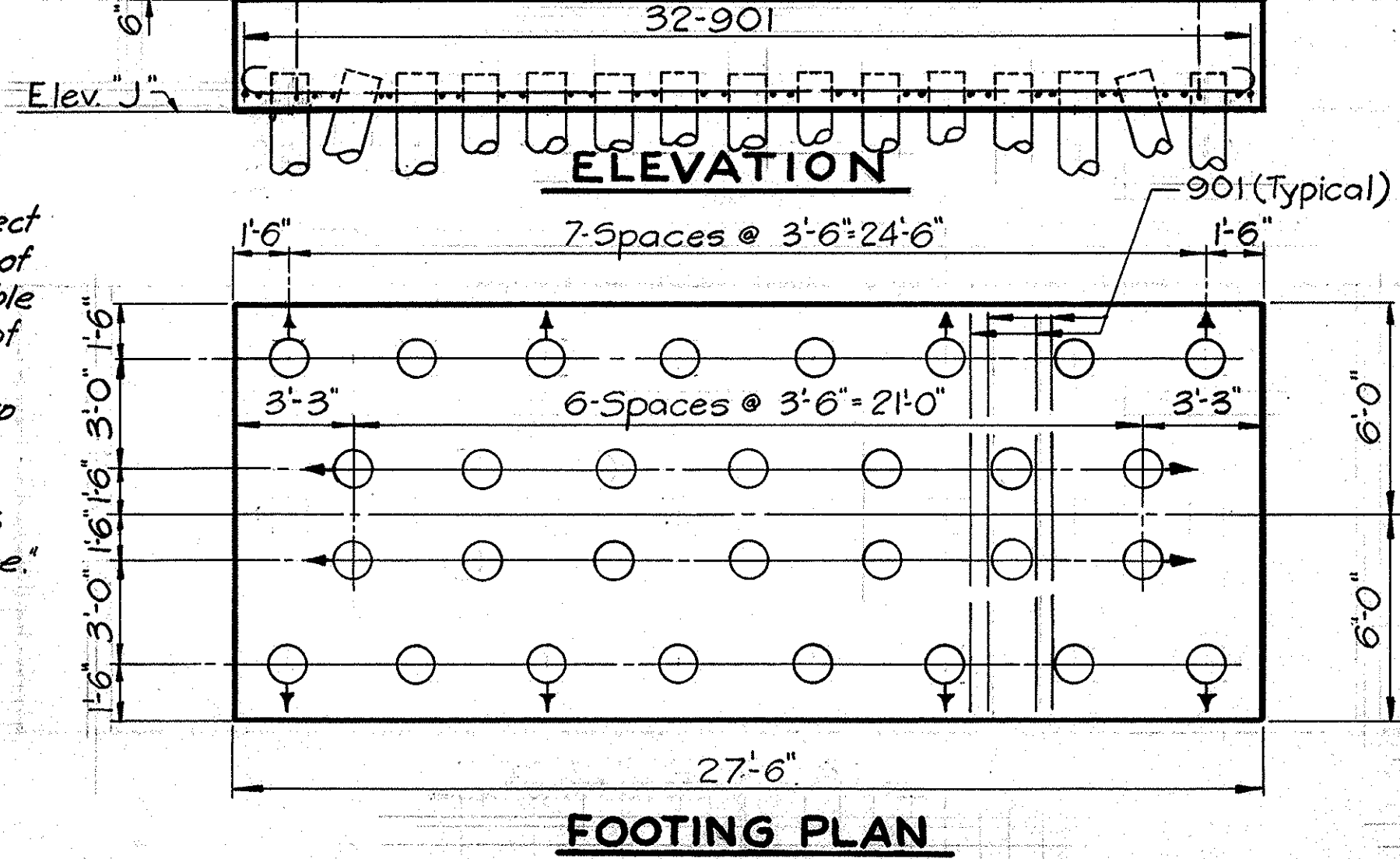
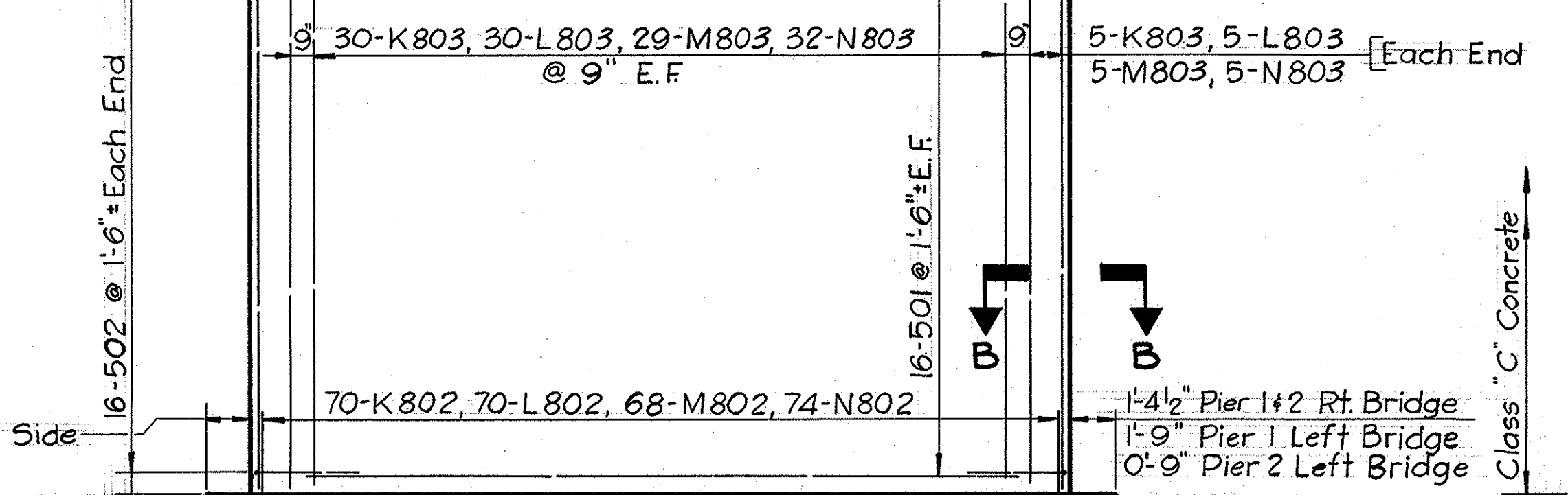
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MAHONING COUNTY**



NOTE:
BARS ARE DESIGNATED THUS:
K - Pier 1 Right
L - Pier 2 Right
M - Pier 1 Left
N - Pier 2 Left
All bars without prefix are for all piers.

LEGEND:
E.F. = Each Face Same as Right Side
⊙ = Battered Piles

NOTES:
• Super-Structure Ground-A No. 1/8 AWG 7 strand soft annealed bare copper cable shall be encased in the outside of pier No. 2 left and right bridge. Connect (by Exothermic weld process) lower end of cable to metal shell of piles. Extend cable (in one continuous length) through top of pier with lead of sufficient length to exothermic weld upper end of cable to outside beam of super-structure.
• Payment for electrical grounds is included in the lump sum bid for 5-25 "Electrical Lighting System Complete."



NOTES:
• Special care shall be taken in placing reinforcing steel in the bridge seat so that it will not interfere with the drilling of anchor rod holes.
• Battered piles 1 in 4 as shown on the FOOTING PLAN.
• All piles to be 12" Cast-in-place Reinforced Concrete Piles.

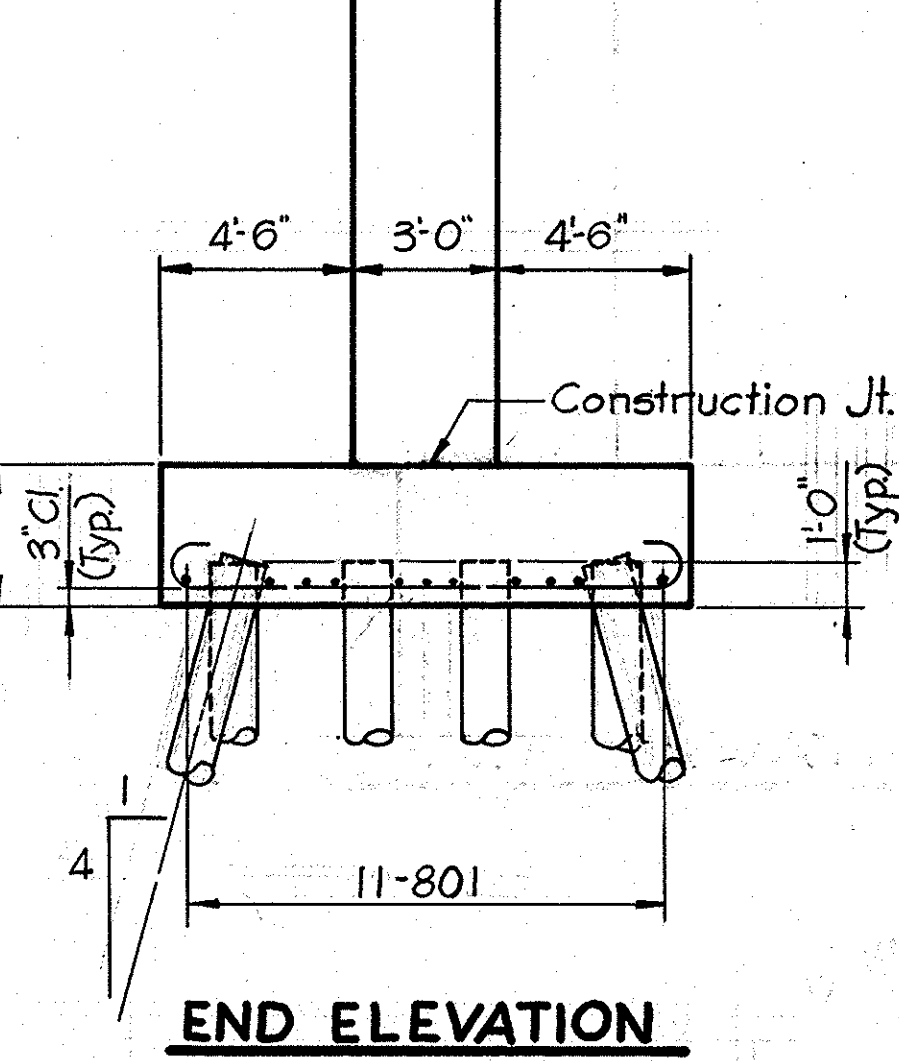
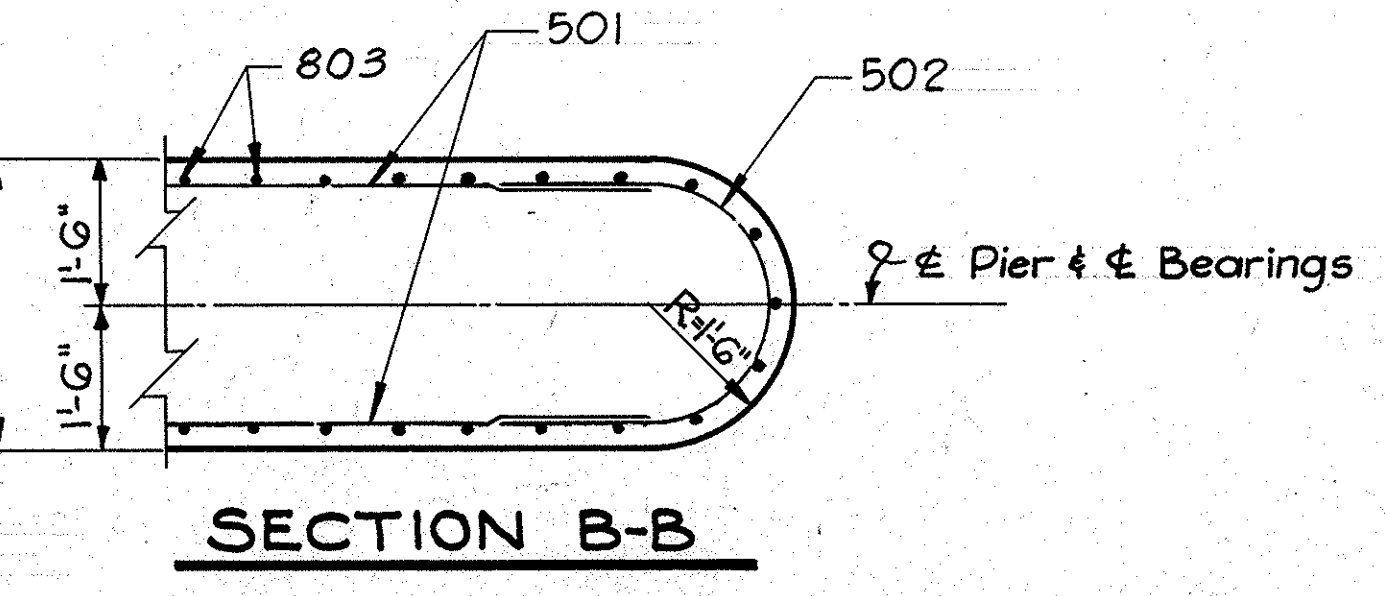


TABLE OF BEAM ANGLES

Location	Dimension	A	B	C	D	E	F	G
Pier 1 & 2 Left	4 L	65°35'53"	65°50'11"	66°04'27"	66°18'45"	66°33'07"	66°47'32"	67°02'00"
Pier 1 & 2 Right	4 L	67°02'00"	67°02'00"	67°02'00"	67°02'00"	67°02'00"	67°02'00"	67°02'00"

TABLE OF ELEVATIONS

Location	A	B	C	D	E	F	G	H	J
Pier 1 Right	962.14	962.29	962.44	962.38	962.28	962.19	962.09	952.09	926.00
Pier 2 Right	961.25	961.40	961.55	961.49	961.39	961.30	961.20	951.20	926.00
Pier 1 Left	961.65	961.80	961.95	962.10	962.22	962.12	962.03	951.65	924.00
Pier 2 Left	960.72	960.88	961.04	961.19	961.33	961.23	961.14	950.72	925.50



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PIERS
BRIDGE NO. MAH-18-1688 L. & R.
OVER ERIE - LACKAWANNA R.R.

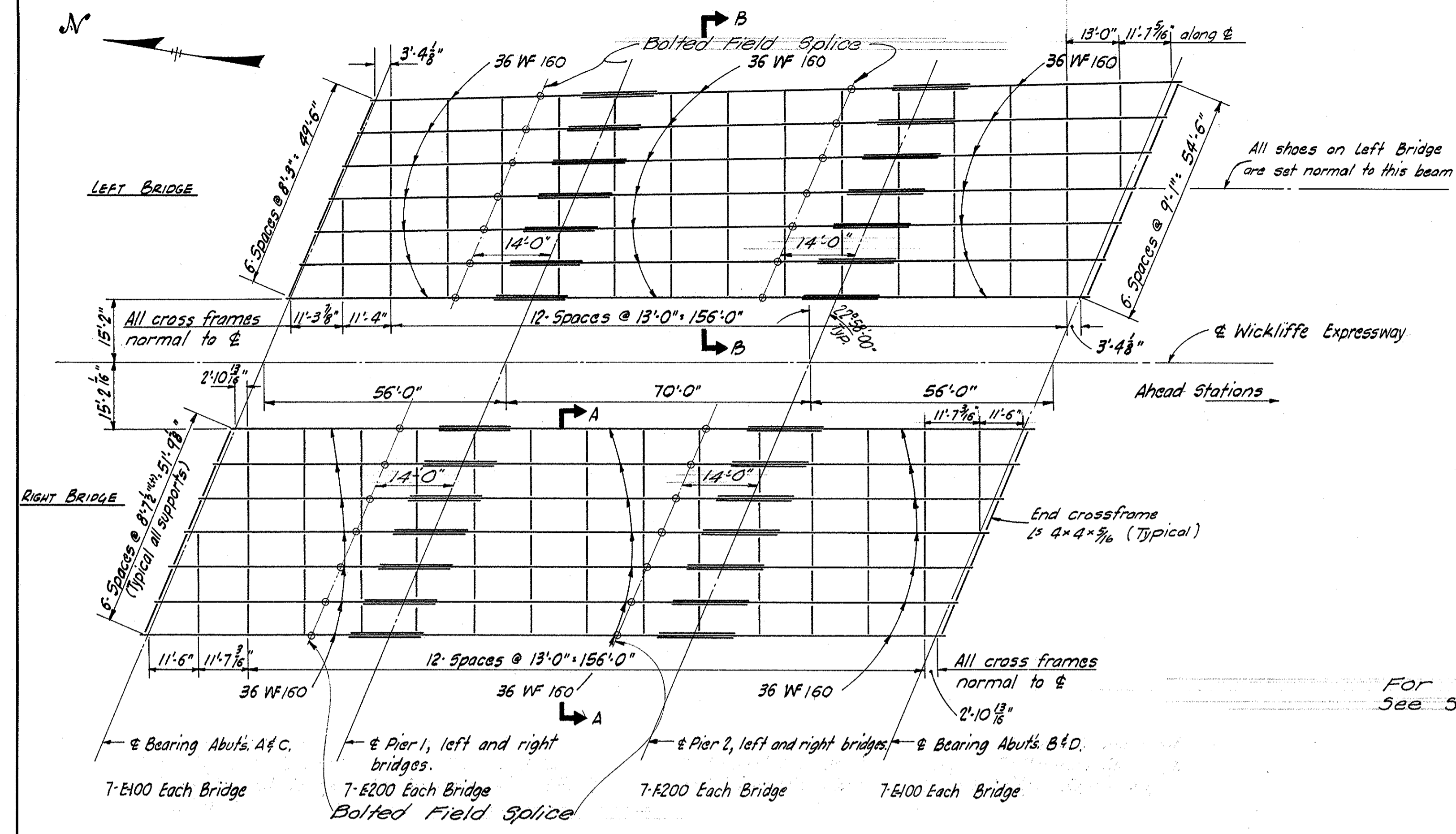
MAHONING COUNTY
STA. 590 + 22.57
STA. 592 + 09.46

Designed	Drawn	Traced	Checked	Reviewed	Date	Revised
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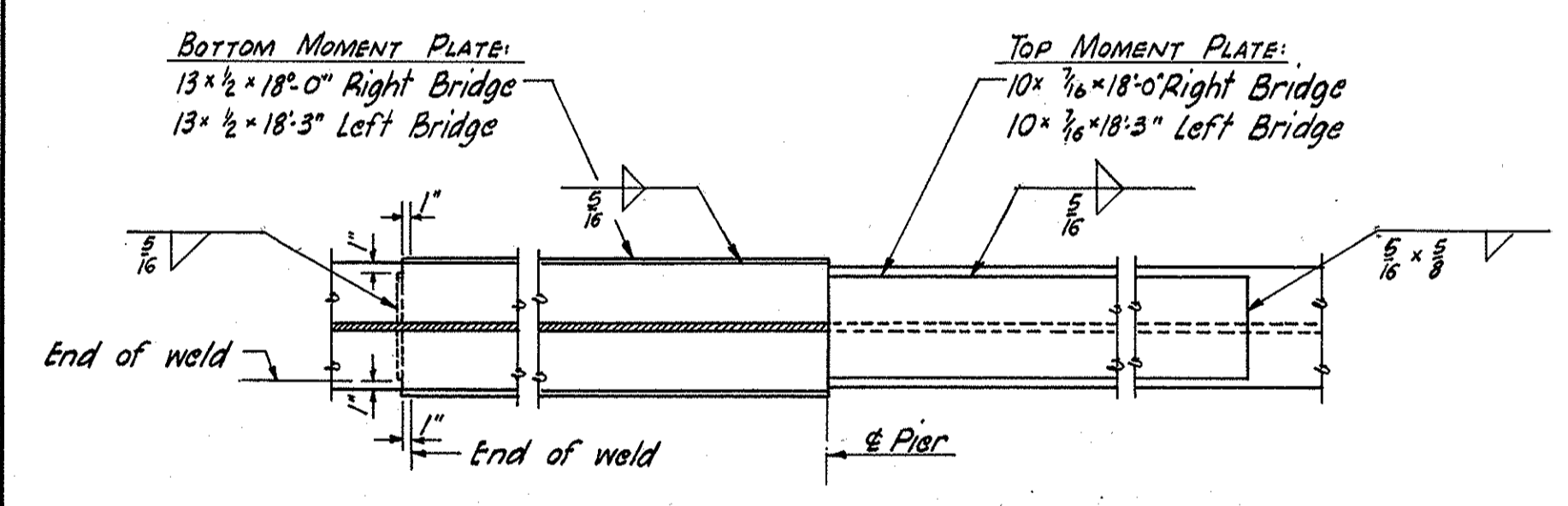
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DEFLECTION & CAMBER			
LOCATION	SPAN 1	SPAN 2	SPAN 3
Deflection due to weight of steel	1/16"	1/16"	1/16"
Deflection due to remaining Dead Load	1/4"	3/8"	1/4"
Convexity required for vertical curve	0"	0"	0"
Sum of deflections and convexity	5/16"	7/16"	5/16"
Required Camber	0"	0"	0"

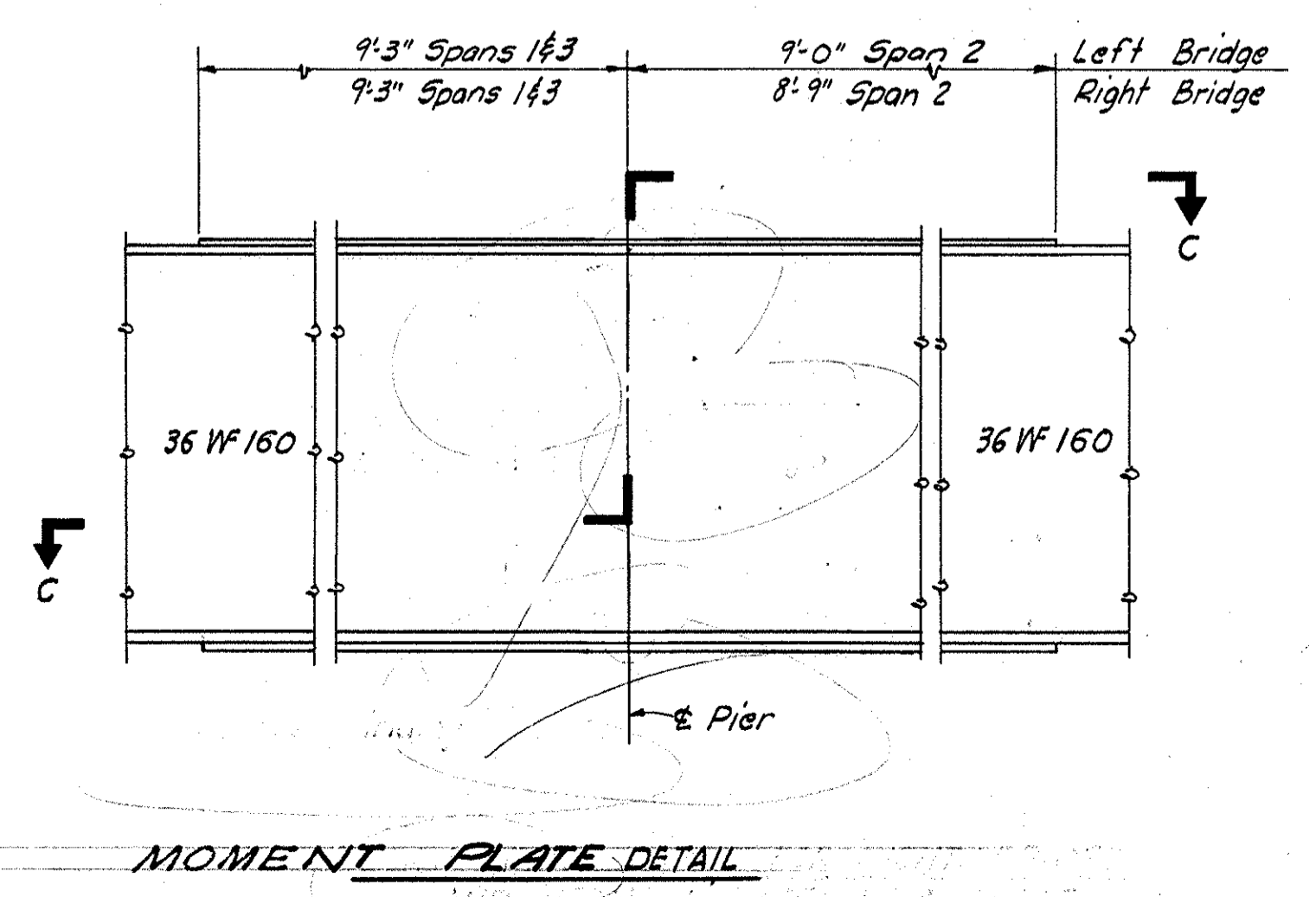
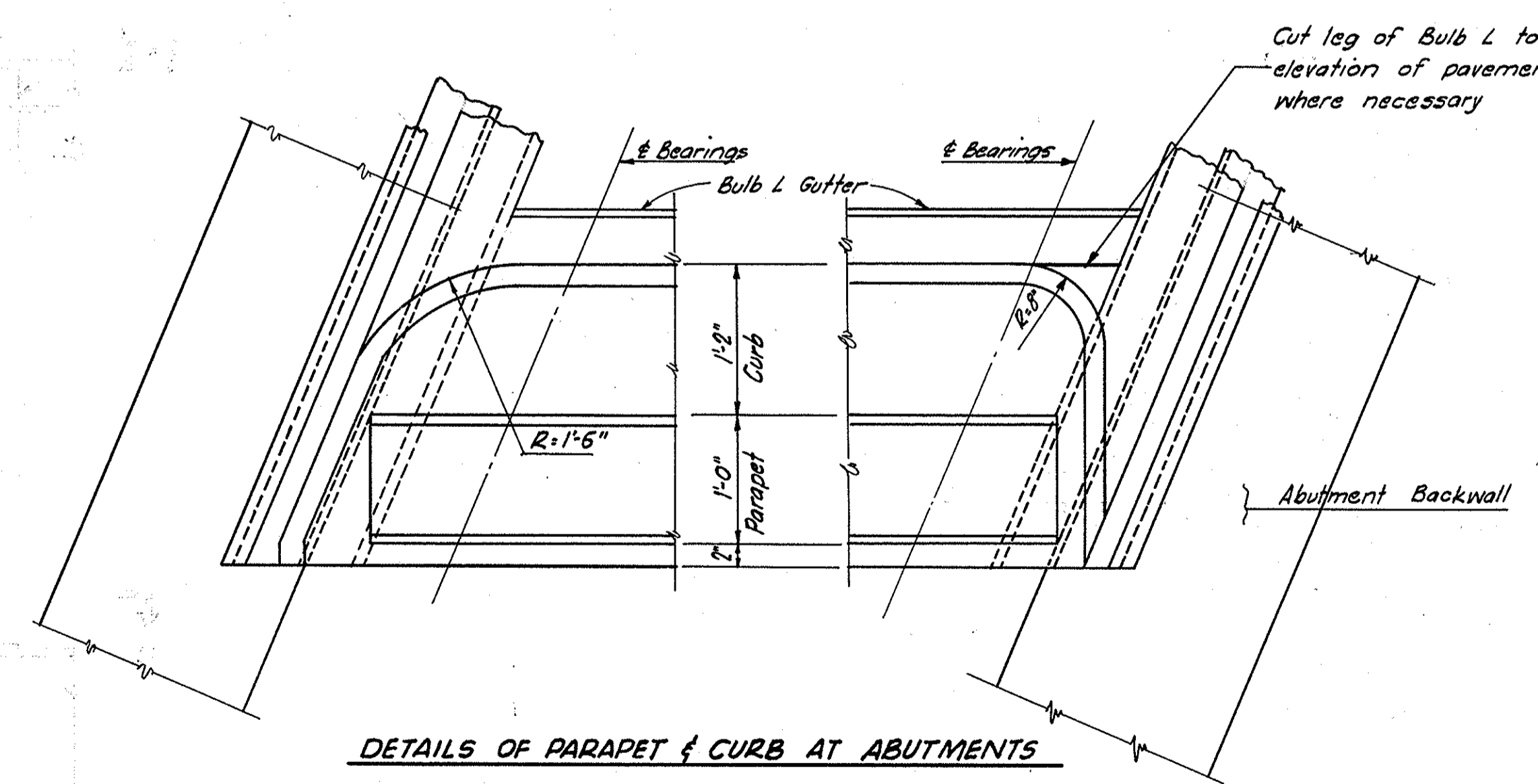
Place any natural camber up.



For BOLTED FIELD SPLICES DETAILS See Standard Drawing 3D-2-64



NOTE: See other Superstructure Detail Sheet for Sections A-A & B-B.



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SUPERSTRUCTURE DETAILS
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