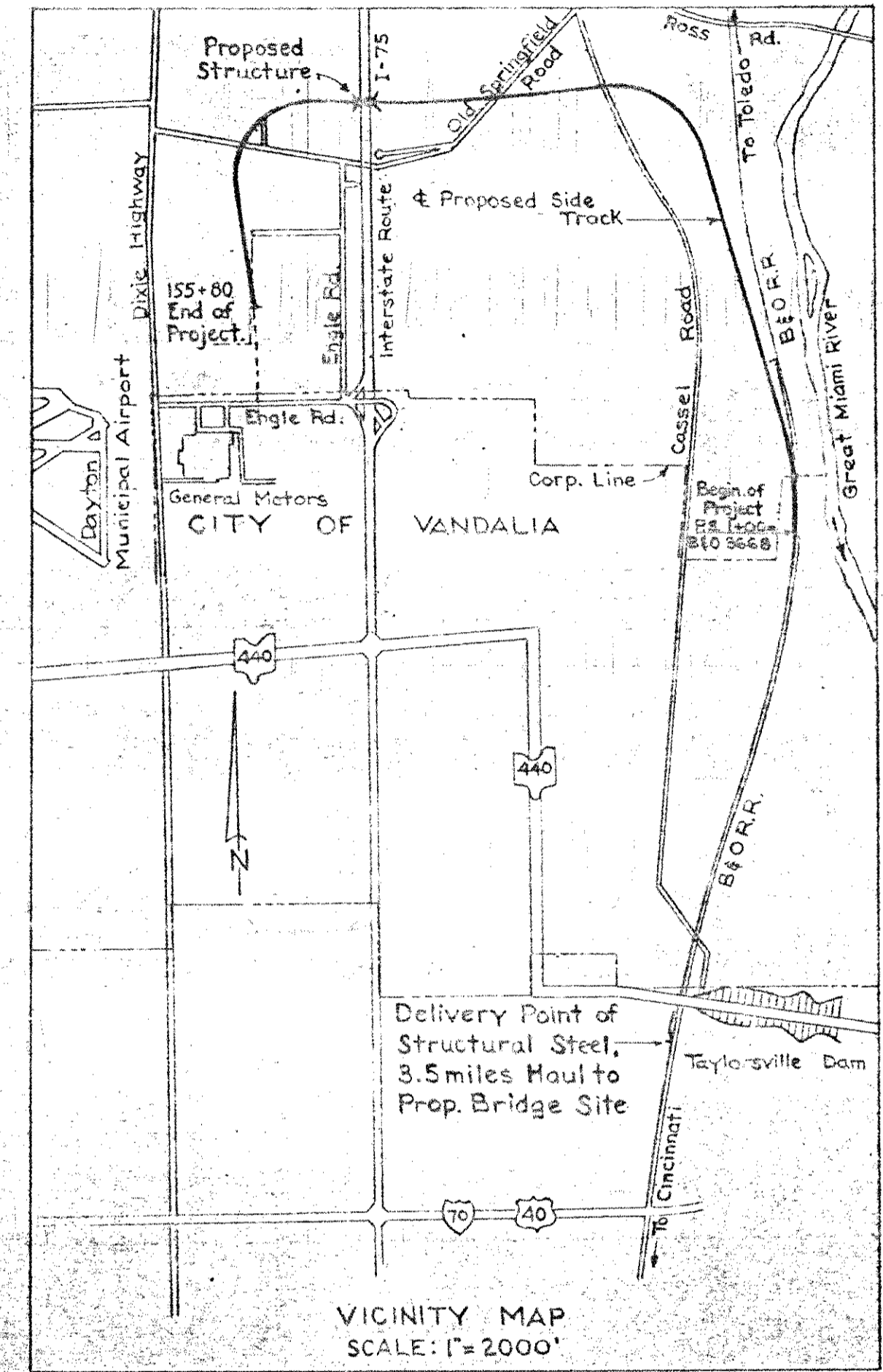
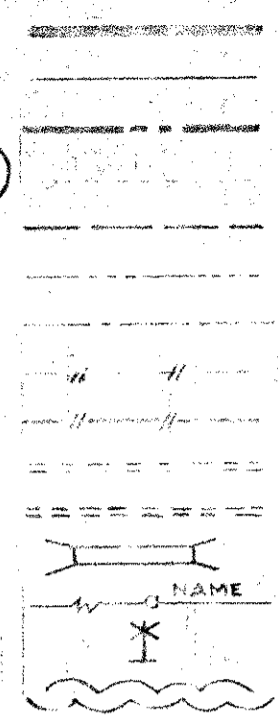


MOT-75-23.71
CSX Railroad

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO.
PROPOSED SIDE TRACK
TO
GENERAL MOTORS PLANT

- CONVENTIONAL SIGNS
- PROPOSED SIDE TRACK
 - B&O R.R. MAIN & PASSING TRACK
 - PROPERTY LINE - B&O R.R. CO.
 - PROPERTY LINE (Other than B&O)
 - SECTION LINE
 - CORPORATION LINE
 - CENTER-LINE ROAD
 - FENCE LINE (Existing)
 - FENCE LINE (Proposed)
 - CULVERTS (Existing)
 - CULVERTS (Proposed)
 - BRIDGE (Proposed)
 - POLE LINE
 - CROSSING SIGN (R.R.)
 - TREES



LINE DATA

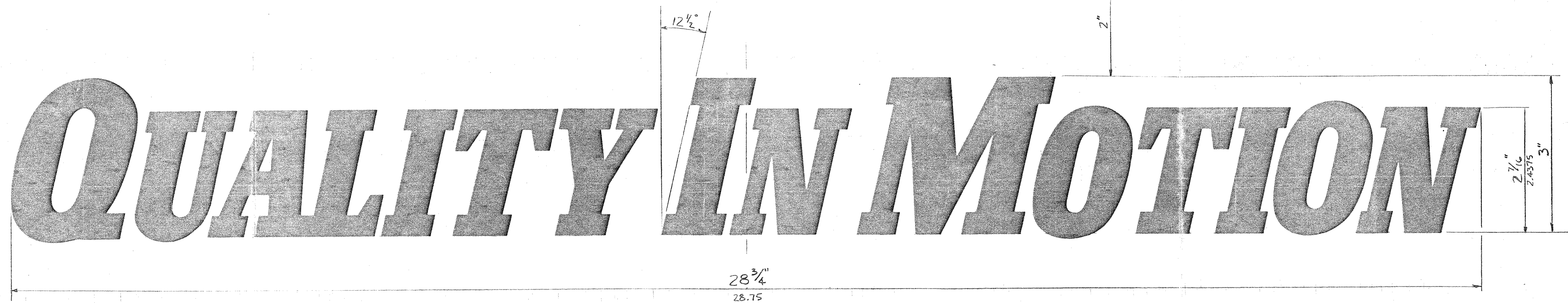
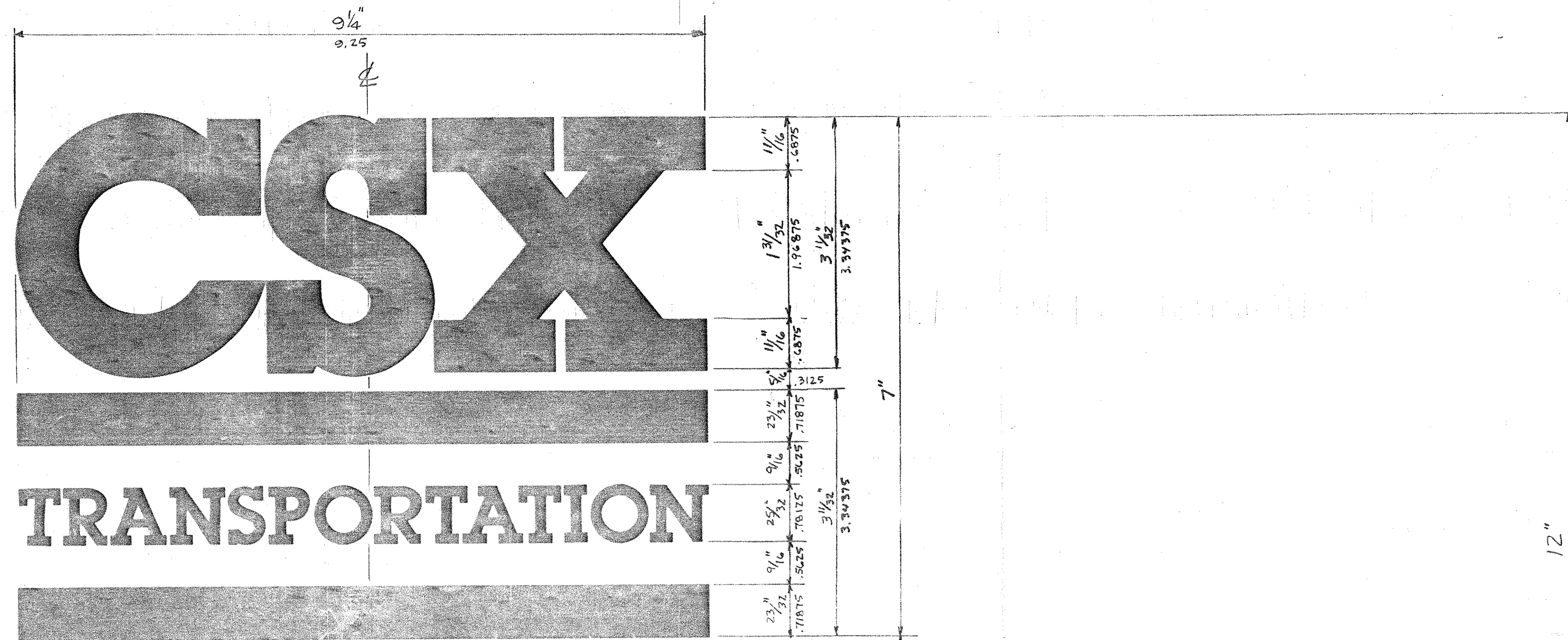
BEGIN WORK B & O R.R. Sta. 3666+89.5
 BEGIN PROJECT "KG" Sta. 1+00 = B & O R.R. Sta. 3668+00
 LINE EQUATION 22+58.11 (Back) = 22+56.46 (Ahead)
 END OF PROJECT "K6" Sta. 155+80
 END OF WORK "K6" Sta. 155+80
 NET LENGTH OF PROJECT 1440.65 Ft.
 NET LENGTH OF WORK 14551.15 Ft.

INDEX	
SHEET TITLE	SHEET NO.
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GRADE CROSSINGS	14
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CROSS SECTIONS	35 - 92

APPROVED:
J. T. Colhoun
CHIEF ENGINEER

PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI OHIO
NEW YORK N.Y.

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
PROPOSED SIDE TRACK TO
GENERAL MOTORS PLANT
TITLE SHEET
SCALE: AS NOTED DECEMBER 1965
OFFICE OF CHIEF ENGINEER
BALTIMORE, MD.
DWG. NO. 39003-1



DIMENSIONS SHOWN ARE ACTUAL SIZE.
 FOR APPLICATION TO _____ ALL DIMENSIONS TO BE
 UPSCALED _____ TIMES.
 LETTERING COLOR TO BE PMS 541 BLUE. WHERE BACKGROUND COLOR
 IS OTHER THAN WHITE, GRAY OR ALUMINUM, A MEDIUM GRAY BACKGROUND
 14" X 32" (UPSCALED AS ABOVE) SHALL BE PROVIDED.

		RAIL TRANSPORT GROUP	
		ENGINEERING DEPARTMENT	
REVISIONS	CSX Logo FOR APPLICATION TO STRUCTURES		
DIVISION:	SUBDIVISION:		
SCALE: Full Size	VAL. SEC.	DRAWING NO.	
DATE: 2-22-89			
DRAWN: RVE			
CHECKED:		SHEET	OF
FILE:			

SPECIFICATIONS AND GENERAL NOTES

BENCH MARKS

- B.M. NO. 1 R.R. SPIKE IN BASE OF TELEGRAPH POLE, MARKED G226, EAST SIDE OF B & O R.R. OPPOSITE STA. 3667 + 15 ± (SEE SHEET 4, BOOK NO. 65A-2) ELEV. 824.19
- B.M. NO. 2 R.R. SPIKE IN BASE OF TELEGRAPH POLE, MARKED G230, EAST SIDE OF B & O R.R. OPPOSITE STA. 3672 + 75 ELEV. 822.80
- B.M. NO. 3 CHERRY SQUARE, S.W. CORNER CONCRETE HEAD WALL, W. END OF 18" C.M.P. CULVERT UNDER R.R. STA. 19 + 40 ±, 40' RT. ELEV. 821.29
- B.M. NO. 4 R.R. SPIKE IN W. SIDE OF 15" TREE, 0.5' ABOVE GROUND, STA. 25 + 25 ±, 50' ± EAST RT) ELEV. 827.08
- B.M. NO. 5 H & W IN BASE OF 15" TREE, STA. 37 + 00 ±, 35' RT ELEV. 843.12
- B.M. NO. 6 R.R. SPIKE AT BASE OF ELEC. POLE NO. 262626, SOUTH SIDE OF SEC. LINE FENCE, & STATION C.L. 47 + 00 ±, 53' RT ELEV. 876.36
- B.M. NO. 7 SPIKE & WASHER IN BASE OF 24" TREE, NORTH SIDE, STA. 55 + 50 ±, 40' RT OF C.L. ELEV. 898.95
- B.M. NO. 8 SPIKE IN 10" TREE 1.5' ABOVE GROUND. TREE IS ON W. SIDE OF CASSEL ROAD 230' ± SOUTH OF INTERSECTION OF CASSEL ROAD & C.L.R.R. ELEV. 910.63
- B.M. NO. 9 TOP N.E. CORNER CONCRETE PORCH SLAB ENTRANCE TO 1 STY. BRICK RESIDENCE, WEST SIDE OLD SPRINGFIELD ROAD & C.L. R.R. STA. 90 + 00 ELEV. 915.62
- B.M. NO. 10 TOP CONC. MONUMENT ON WEST R/W LINE OF I-75 OPPOSITE C.L. STA. 472 + 00 I-75 ELEV. 939.68
- B.M. NO. 11 TOP S.W. CORNER BOTTOM CONC. PORCH STEP ENTRANCE TO 1 STY. ALUMINUM SIDING RESIDENCE, 10' EAST C.L. STA. 121 + 58 ELEV. 950.17
- B.M. NO. 12 N.W. CORNER BOTTOM PORCH STEP #4190 OLD SPRINGFIELD ROAD ELEV. 967.98
- B.M. NO. 13 N.E. CORNER CONC. PORCH SLAB, FRONT ENTRANCE TO 1 STY. STUCCO RESIDENCE #4238 STROBRIDGE ROAD ELEV. 967.73
- B.M. NO. 14 R.R. SPIKE IN W. SIDE 18" CEDAR TREE, 0.5' ABOVE GROUND, STA. 148 + 35, 5' ± LT. ELEV. 978.55
- B.M. NO. 15 U.S.C. & G.S. "VANDALIA" AZIMUTH MARK, S. SIDE OF ENGEL ROAD, 15' ± S. OF C.L. MAC. PAVEMENT, 500' ± E. OF OLD U.S. RT. 25 ELEV. 985.55

CONFORMITY WITH PLANS AND SPECIFICATIONS

ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL BE IN STRICT CONFORMITY WITH THE LINES, GRADES, CROSS SECTIONS, DIMENSIONS AND MATERIAL REQUIREMENTS SHOWN ON THE PLANS OR INDICATED IN THE FOLLOWING SPECIFICATIONS:

THE BALTIMORE AND OHIO RAILROAD COMPANY ENGINEERING DEPARTMENT STANDARD SPECIFICATIONS FOR:
 FORMATION OF RAILROAD ROADWAY JULY 1, 1955
 EXCAVATION FOR STRUCTURES-DRY-WET-ROCK-BACKFILLING-POROUS MATERIAL- DRAIN PIPES JULY 1, 1955
 CONCRETE PLAIN AND REINFORCED JULY 1, 1955
 ASSEMBLY OF STRUCTURAL JOINTS USING HIGH-STRENGTH STEEL BOLTS OCT. 1, 1965
 FIELD PAINTING OF STRUCTURAL STEEL MARCH 1, 1963
 HIGHWAY GRADE CROSSING-SOLID BOLTED TIMBER FEBRUARY 14, 1962
 DRAWING NUMBER 38539

AMERICAN RAILWAY ENGINEERING ASSOCIATION ENGINEERING DIVISION, AAR
 SPECIFICATIONS FOR CORRUGATED METAL CULVERTS, SECTION 1-4 (1963)
 SPECIFICATIONS FOR CORRUGATED STRUCTURAL PLATE PIPE, PIPE-ARCHES AND ARCHES, SECTION 1-4 (1962)
 SPECIFICATIONS FOR BITUMINOUS COATED CORRUGATED METAL PIPE AND ARCHES, SECTION 1-4 (1962)
 INSTALLATION OF PIPE CULVERTS, SECTION 1-4 (1962)

ALL WORK WITHIN THE RIGHT-OF-WAY LINES OF INTERSTATE ROUTE 75 (I-75) WILL BE CONTROLLED BY THE STATE OF OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS DATED JANUARY 1, 1965 AND CURRENT ISSUES OF THE STATE OF OHIO DEPARTMENT OF HIGHWAYS STANDARD DRAWINGS. COPIES OF THESE DOCUMENTS CAN BE OBTAINED FROM THE STATE OF OHIO DEPARTMENT OF HIGHWAYS OFFICE OF CONTRACT SALES.

BUILDINGS REMOVED

BUILDINGS AND APPURTENANCES DESIGNATED FOR REMOVAL SHALL NOT BE DISTURBED UNTIL THE CONTRACTOR HAS SECURED APPROVAL OF THE ENGINEER TO PROCEED. AS SOON AS SUCH APPROVAL HAS BEEN GIVEN, THE CONTRACTOR SHALL SCHEDULE AND PERFORM THE REMOVALS, UNDER THE DIRECTION OF THE ENGINEER, IN A MANNER THAT WILL ACCOMMODATE UTILITY REARRANGEMENTS AS EARLY IN THE CONTRACT PERIOD AS PRACTICABLE.

UNLESS OTHERWISE DIRECTED, FOUNDATIONS, FLOORS, TANKS, AND BASEMENT, PIT, WELL AND CISTERN WALLS SHALL BE REMOVED TO A MINIMUM OF ONE FOOT BELOW THE GRADE OF THE SURROUNDING AREA.

TANKS SHALL BE COMPLETELY REMOVED AND BASEMENTS SHALL BE CLEARED OF ALL DEBRIS, APPLI- ANCES, WOOD OR METAL PARTITIONS, WOOD FLOORS, ETC., SO THAT ONLY MASONRY WALLS AND CONCRETE BASEMENT FLOORS REMAIN. ALL FLOOR SLABS, UNDER WHICH A PIT, WELL, CISTERN OR TANK EXISTS SHALL BE BROKEN AND REMOVED. BASEMENT FLOORS WHICH ARE LEFT IN PLACE SHALL BE BROKEN AND ALL DRAINS THAT ARE NOT REMOVED SHALL BE SEALED WITH MASONRY OR WITH PRE- CAST CLAY OR CONCRETE STOPPERS.

UNLESS OTHERWISE SPECIFIED, ALL MATERIAL EXCEPT THAT BELONGING TO A PUBLIC OR PRIVATE UTILITY COMPANY SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE OWNERS OF WATER, ELECTRIC, OR GAS METERS WHEN THE METERS ARE READY FOR REMOVAL, AND SHALL BE RESPONSIBLE FOR DISCONNECTING ALL UTILITIES IN COMPLIANCE WITH LOCAL RE- QUIREMENTS.

AS SOON AS REMOVAL WORK HAS BEEN OTHERWISE COMPLETED AND APPROVED BY THE ENGINEER, FILLING SHALL BE PERFORMED AS DESCRIBED IN THE STANDARD SPECIFICATIONS FOR FORMATION OF RAILROAD ROADWAY. THE FINAL GRADE OF BACKFILL IN AREAS OUTSIDE THE PRISM OF CONSTRUCTION SHALL BE SUCH AS TO PRESENT A NEAT, WELL DRAINED APPEARANCE, AND TO PREVENT WATER FROM DRAINING UNNECESSARILY ONTO ADJACENT PROPERTIES.

PAYMENT FOR ALL OF THE ABOVE WILL BE MADE AT THE LUMP SUM PRICE FOR BUILDINGS REMOVED STATED IN THE CONSTRUCTION CONTRACT, AND SHALL CONSTITUTE FULL PAYMENT FOR ALL LABOR, MATERIALS, USE OF EQUIPMENT AND OTHER WORK OR EXPENSE TO COMPLETE THIS ITEM.

FIELD TILES

ALL FARM TILES WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UN- OBSTRUCTED OUTLETS AS DIRECTED BY THE ENGINEER. EXISTING COLLECTORS WHICH ARE AT AN ELEVATION LOWER THAN THE PROPOSED DITCHES AND WHICH CROSS THE ROADBED SHALL BE RE- PLACED WITHIN THE CONSTRUCTION LIMITS BY BITUMINOUS COATED CORRUGATED METAL PIPE OF THE SAME SIZE AS, OR NEXT LARGER SIZE THAN, THE EXISTING PIPE. EXISTING COLLECTORS WHICH ARE ENCOUNTERED AT ELEVATIONS HIGHER THAN THE PROPOSED DITCHES SHALL BE OUT- LETTED TO THE DITCH. THE OPTIMUM OUTLET ELEVATION SHALL BE, WHERE POSSIBLE, ONE FOOT ABOVE THE FLOW LINE OF THE DITCH.

THE FOLLOWING ESTIMATED QUANTITIES OF PIPE HAVE BEEN INCLUDED IN THE SUMMARY OF QUANTITIES FOR THE WORK NOTED ABOVE:

200'	6"	BITUMINOUS COATED CMP	1 1/2" GAGE
200'	8"	"	"
200'	10"	"	"
200'	12"	"	"

SEEDING AND MULCHING

ALL AREAS WITHIN THE RIGHT-OF-WAY OF I-75 THAT ARE DISTURBED BY THE PROPOSED CON- STRUCTION SHALL BE FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH ITEM 659, SEEDING AND MULCHING, OF THE STATE OF OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS.

PAYMENT FOR THIS WORK WILL BE AT THE LUMP SUM PRICE FOR SEEDING AND MULCHING STATED IN THE CONSTRUCTION CONTRACT AND SHALL CONSTITUTE FULL PAYMENT FOR ALL LABOR, MATERIALS, USE OF EQUIPMENT AND OTHER WORK OR EXPENSE NECESSARY TO COMPLETE THIS ITEM.

FIELD OFFICE

THE EXISTING 1-STORY BRICK RESIDENCE NEAR OLD SPRINGFIELD ROAD OPPOSITE STA. 90 + 00 SHALL BE PRESERVED BY THE CONTRACTOR FOR THE USE OF THE ENGINEER THROUGHOUT THE LIFE OF THE CONTRACT. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN WATER, ELECTRICITY AND HEAT FOR THE USE OF THE B & O PERSONNEL.

WHEN THE WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL REMOVE THE BUILDING FROM THE SITE.

COST OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE VARIOUS CONTRACT ITEMS.

EROSION CONTROL

DUMPED ROCK CHANNEL PROTECTION

ROCK FOR CHANNEL PROTECTION SHALL BE REASONABLY WELL GRADED FROM THE MINIMUM SIZE STONE PERMITTED, WEIGHING APPROXIMATELY 25 POUNDS TO THE MAXIMUM SIZE STONE PERMITTED, WEIGHING APPROXIMATELY 150 POUNDS. NEITHER THE BREADTH NOR THE THICKNESS OF ANY PIECE OF STONE SHALL BE LESS THAN ONE-THIRD THE LENGTH.

REASONABLE CARE SHALL BE EXERCISED IN PLACING THE ROCK TO ASSURE THAT THE FINISHED SURFACE OF THE PROTECTED CHANNEL WILL CONFORM TO THE CROSS SECTIONS REQUIRED BY THE PLANS.

DUMPED ROCK CHANNEL PROTECTION WILL BE MEASURED BY THE CUBIC YARD COMPLETED IN PLACE AND ACCEPTED BY THE ENGINEER. PAYMENT WILL BE MADE AT THE UNIT PRICE PER CUBIC YARD DUMPED ROCK CHANNEL PROTECTION STATED IN THE CONSTRUCTION CONTRACT, AND SHALL CONSTITUTE FULL PAYMENT FOR ALL LABOR, MATERIALS, USE OF EQUIPMENT AND OTHER WORK OR EXPENSE TO COMPLETE THIS ITEM.

CONCRETE GUTTERS, SPILLWAYS

CONCRETE GUTTERS AND SPILLWAYS SHALL BE CONSTRUCTED USING CLASS C CONCRETE AS DEFINED IN THE STANDARD SPECIFICATIONS FOR CONCRETE PLAIN AND REINFORCED NOTED ABOVE.

CONCRETE GUTTERS AND SPILLWAYS SHALL HAVE IMPRESSED CONTRACTION JOINTS SPACED AT INTERVALS OF 10 FEET. CONCRETE CUT-OFF WALLS SHALL BE CONSTRUCTED AT EACH END OF EACH RUN OF GUTTERS AND SPILLWAYS EXCEPT WHERE THE WORK CONNECTS TO A HEADWALL. THE COST OF CUT-OFF WALLS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM.

CONCRETE GUTTERS OR SPILLWAYS WILL BE MEASURED BY THE LINEAR FOOT COMPLETED IN PLACE AND ACCEPTED BY THE ENGINEER. PAYMENT WILL BE MADE AT THE UNIT PRICE PER LINEAR FOOT OF CONCRETE GUTTER OR SPILLWAY STATED IN THE CONSTRUCTION CONTRACT, AND SHALL CONSTITUTE FULL PAYMENT FOR ALL LABOR, MATERIALS, USE OF EQUIPMENT AND OTHER WORK OR EXPENSE TO COMPLETE THIS ITEM.

THE ABOVE DESCRIBED ITEMS ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE THESE ITEMS. THE ENGINEER SHALL CHECK AND MAY NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

INTERCEPTOR OR TOP OF CUT DITCHES, WHERE CALLED FOR IN THE PLANS, SHALL BE CONSTRUCTED AT THE BEGINNING OF THE GRADING OPERATION AND ANY EROSION PROTECTION PROVIDED BY THE PLANS SHALL BE PLACED IMMEDIATELY.

EROSION PROTECTION, WHERE CALLED FOR IN THE PLAN, SHALL BE PLACED IMMEDIATELY AFTER THE INSTALLATION OF THE PIPE OR STRUCTURE.

INSTALLATION OF DRAINAGE STRUCTURES

ALL CULVERTS WITH FILL COVER OF MORE THAN 25 FEET SHALL BE FIELD STRUTTED IN ACCORDANCE WITH THE AFOREMENTIONED SPECIFICATIONS OF THE AMERICAN RAILWAY ENGINEERING ASSOCIATION.

CORRUGATED METAL PIPE TO BE GALVANIZED, BITUMINOUS COATED AND SHOP PAVED. PIPE 12" DIAMETER AND OVER TO BE ELONGATED 5% IN VERTICAL AXIS IN SHOP.

STRUCTURAL PLATE PIPE TO BE GALVANIZED AND BITUMINOUS COATED IN SHOP AND TO BE FABRICATED TO PROVIDE 5% ELLIPTICAL ELONGATION IN VERTICAL AXIS.

GRADE CROSSINGS

SHALL BE CONSTRUCTED BY RAILROAD. (DRAINS TO BE INSTALLED BY CONTRACTOR; ROAD SURFACE TO BE RESTORED ON TEMPORARY BASIS. PERMANENT PAVING TO BE PLACED BY RAILROAD WHEN CROSSINGS ARE INSTALLED.)

GUARD RAIL FLARES

WHERE PROPOSED GUARD RAIL FLARES ARE CONSTRUCTED OF RAIL ELEMENTS WHICH HAVE NOT BEEN FABRICATED EXACTLY TO FIT THE CURVATURE SHOWN ON THE PLANS, THE TWO END POSTS OF EACH FLARED SECTION SHALL BE ENCASED IN A MINIMUM SIX INCH (6") THICKNESS OF STATE OF OHIO CLASS 2 CONCRETE FOR THE FULL DEPTH OF THE POST BELOW THE GROUND LINE. PAYMENT FOR ENCASEMENT, IF REQUIRED, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE GUARD RAIL.

MAINTENANCE OF TRAFFIC

THE CONTRACTOR SHALL NOTIFY THE MONTGOMERY COUNTY ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO INITIATING ANY WORK NECESSARY TO CONSTRUCT THE AT-GRADE CROSSINGS WITH OLD SPRINGFIELD ROAD AND CASSEL ROAD OF HIS CONTEMPLATED STARTING DATE IN ORDER THAT THE COUNTY ENGINEER MAY ARRANGE AND SET UP DETOUR ROUTES FOR THE ABOVE MENTIONED ROADS.

THE CONTRACTOR SHALL ERECT AND MAINTAIN LIGHTED BARRICADES ADJACENT TO THE PROPOSED CROSSINGS AND AT OTHER LOCATIONS AS DIRECTED BY THE COUNTY ENGINEER FOR THE FULL TIME NECESSARY THAT THE PARTICULAR ROAD IS CLOSED. THE AFORESAID LIGHTS AND BARRICADES SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

PROVISIONS FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC ON I-75 ARE DETAILED ON SHEETS 12 AND 13 - DRAWING NOS. 39007-1 AND 39007-2 RESPECTIVELY, OF THE PLANS.

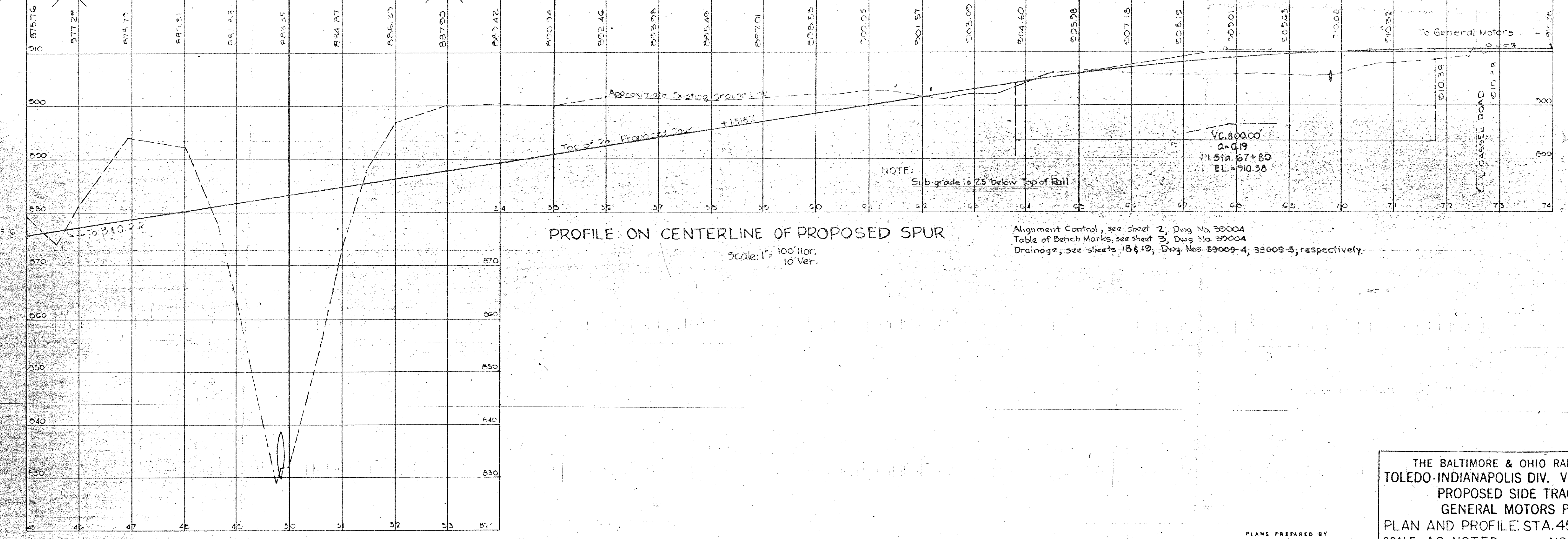
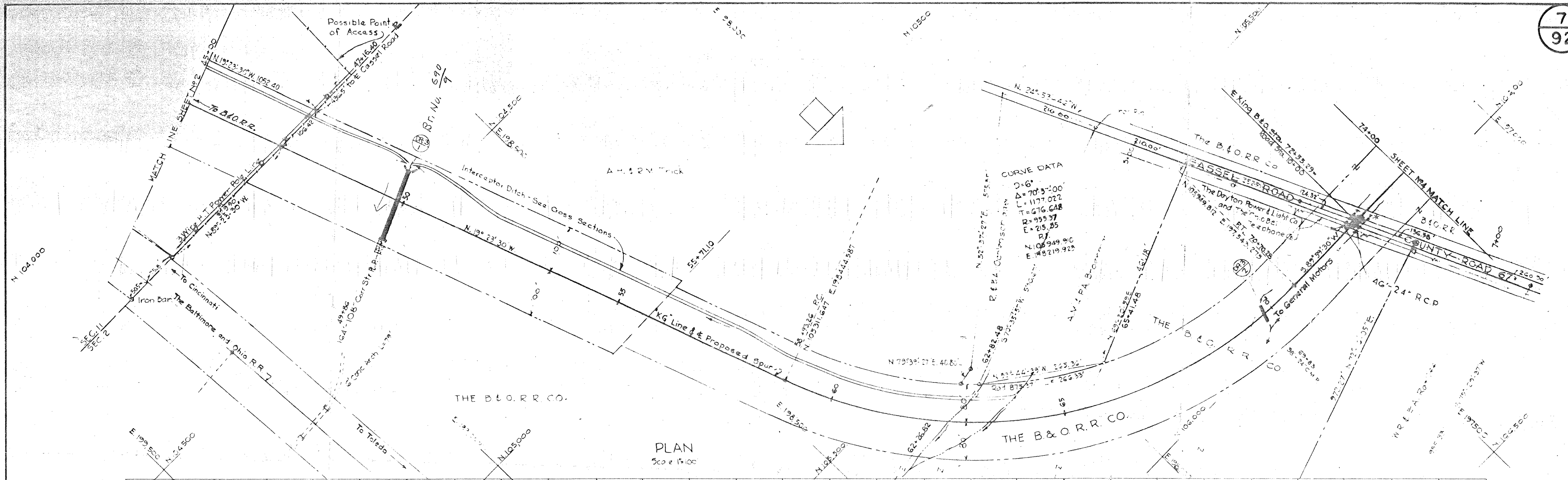
STRUCTURAL STEEL

STRUCTURAL STEEL SHALL BE FURNISHED BY THE RAILROAD, THE CONTRACTOR SHALL ERECT THE STRUCTURAL STEEL.

BENCHING

IN DEEP RAVINES, LONGITUDINAL BENCHING MAY BE REQUIRED BY THE ENGINEER IN ADDITION TO BENCHING REQUIRED BY THE SPECIFICATIONS.

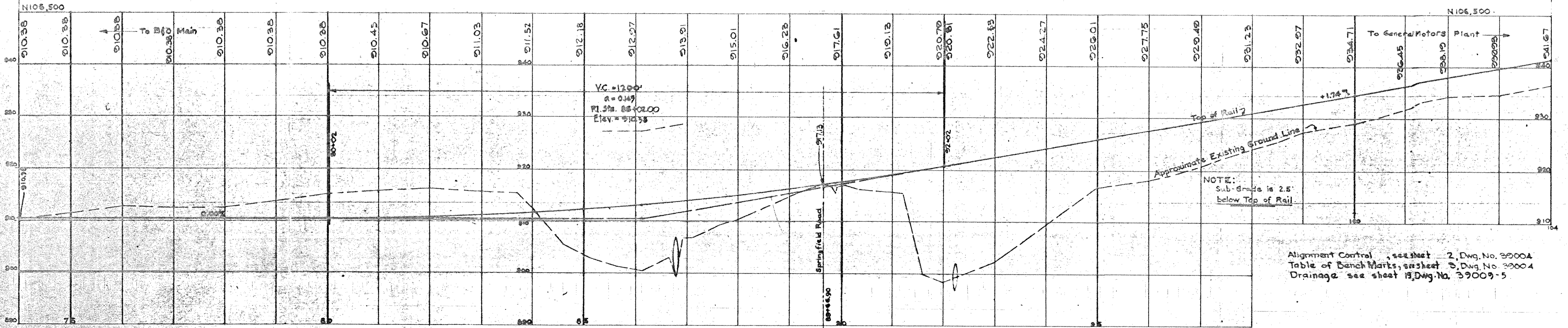
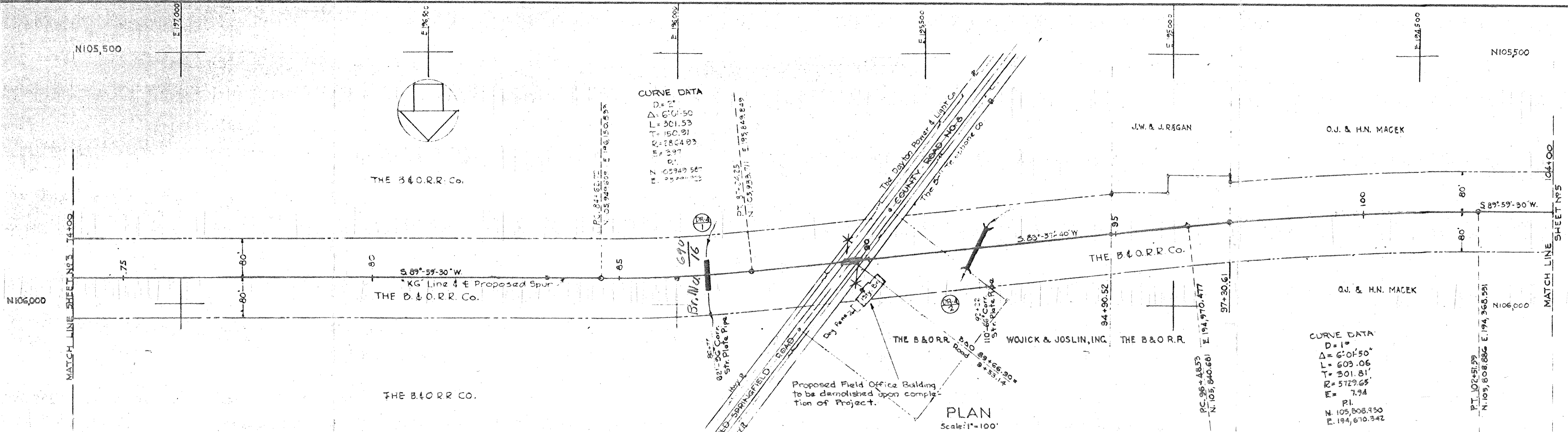
THE BALTIMORE & OHIO RAILROAD CO.
 TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
 PROPOSED SIDE TRACK TO
 GENERAL MOTORS PLANT
 BENCH MARKS AND GENERAL NOTES.
 SCALE: NONE NOVEMBER 1965
 OFFICE OF CHIEF ENGINEER
 BALTIMORE, MD.
 DWG. NO. 39004-2



Alignment Control, see sheet 2, Dwg. No. 39004
 Table of Bench Marks, see sheet 3, Dwg. No. 39004
 Drainage, see sheets 18 & 19, Dwg. Nos. 39009-4, 39009-5, respectively.

THE BALTIMORE & OHIO RAILROAD CO.
 TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
 PROPOSED SIDE TRACK TO
 GENERAL MOTORS PLANT
 PLAN AND PROFILE: STA. 45 TO STA. 74
 SCALE: AS NOTED NOVEMBER 1965
 OFFICE OF CHIEF ENGINEER
 BALTIMORE MD.
 DWG. NO. 39006-3

PLANS PREPARED BY
 KING & ZAVARIS
 CONSULTING ENGINEERS
 CINCINNATI NEW YORK
 OHIO N.Y.

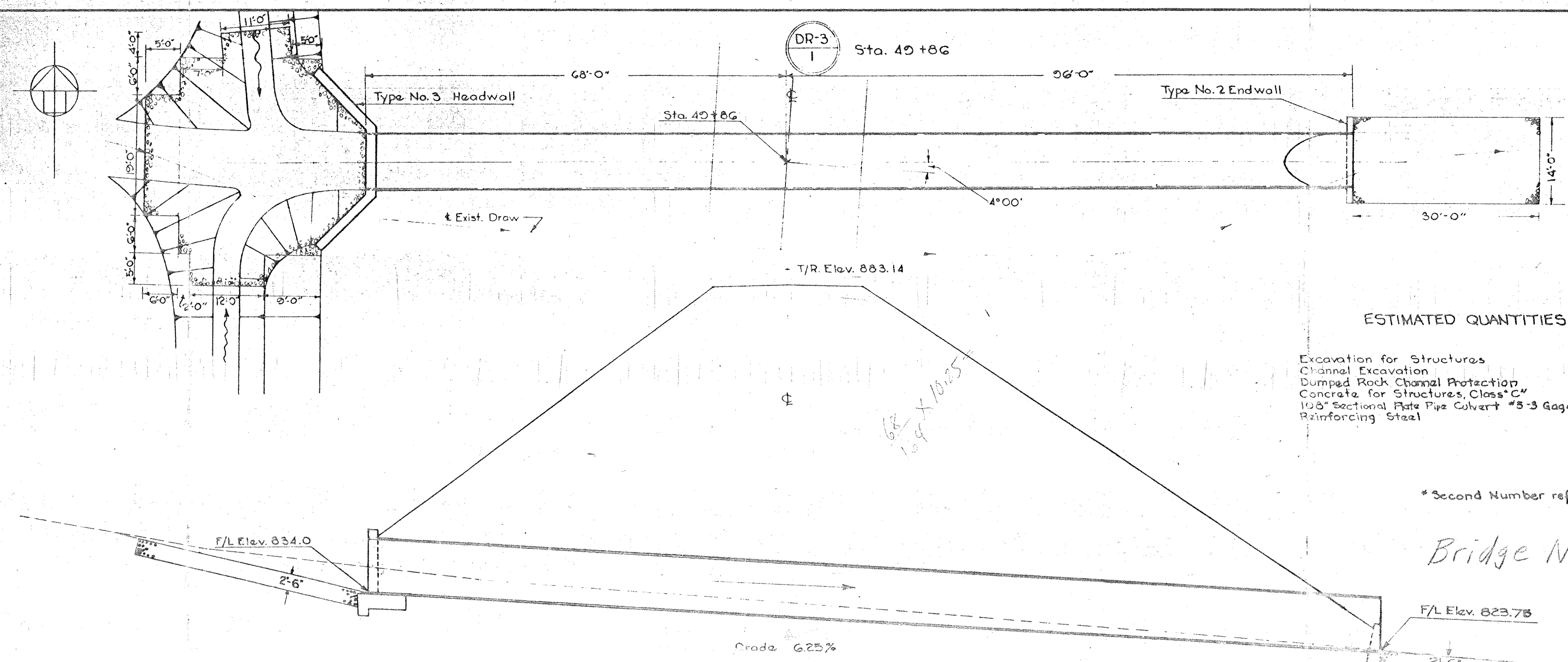


PROFILE ON CENTERLINE OF PROPOSED SPUR
Scale: 1"=100' Horizontal
1"=10' Vertical

Alignment Control, see sheet 2, Dwg. No. 3900A
Table of Bench Marks, see sheet 3, Dwg. No. 3900A
Drainage see sheet 13, Dwg. No. 39009-5

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
PROPOSED SIDE TRACK TO
GENERAL MOTORS PLANT
PLAN AND PROFILE: STA. 74 TO STA. 104
SCALE: AS NOTED NOVEMBER 1965
OFFICE OF CHIEF ENGINEER
BALTIMORE, MD.
DWG. NO. 39006-4

PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI NEW YORK
OHIO N.Y.

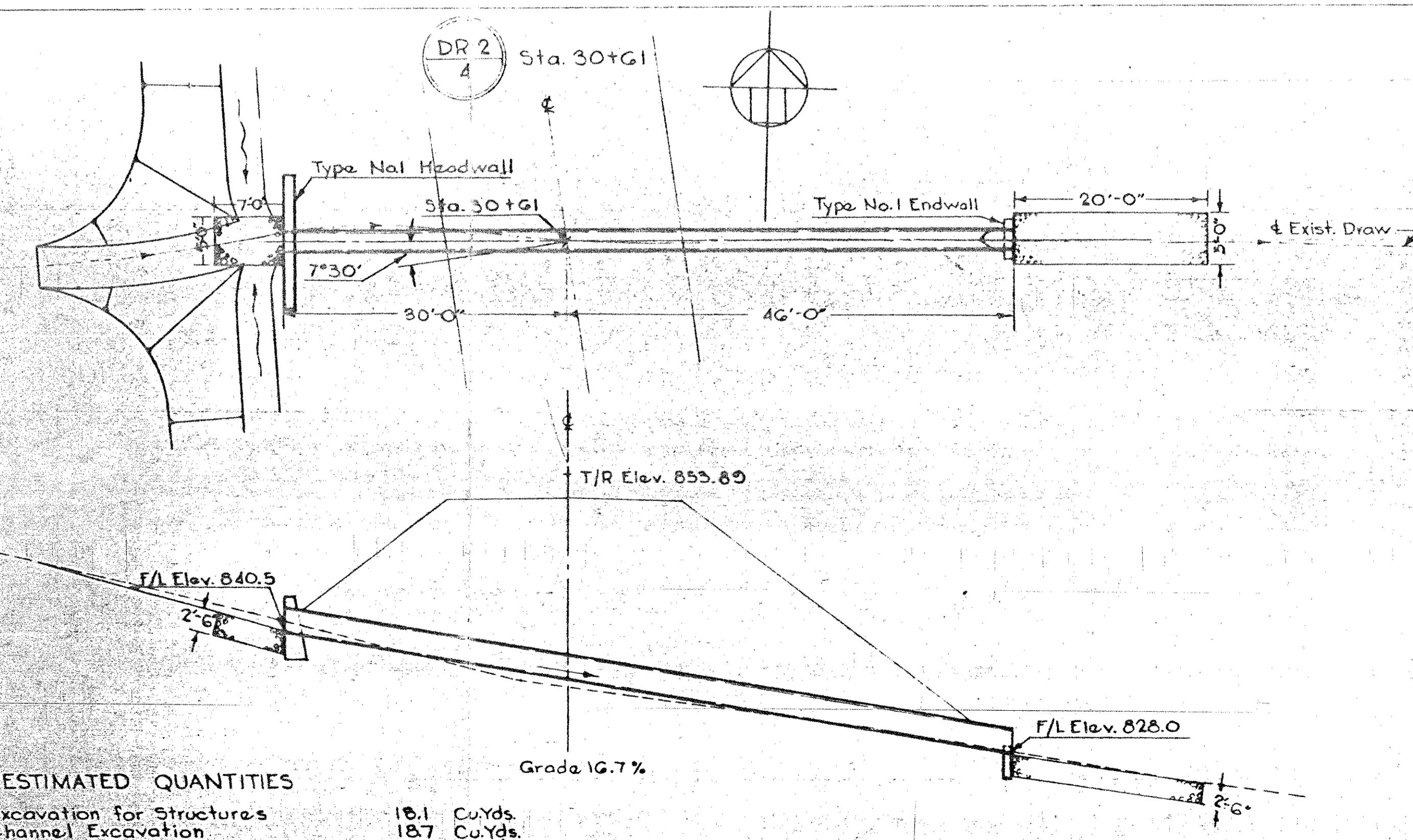


ESTIMATED QUANTITIES

Excavation for Structures	264.4	Cu.Yds.
Channel Excavation	235.1	Cu.Yds.
Dumped Rock Channel Protection	147.1	Cu.Yds.
Concrete for Structures, Class "C"	55.3	Cu.Yds.
10" Sectional Plate Pipe Culvert #5-3 Gage*	164.0	Lin.Ft.
Reinforcing Steel	5340.0	Lbs.

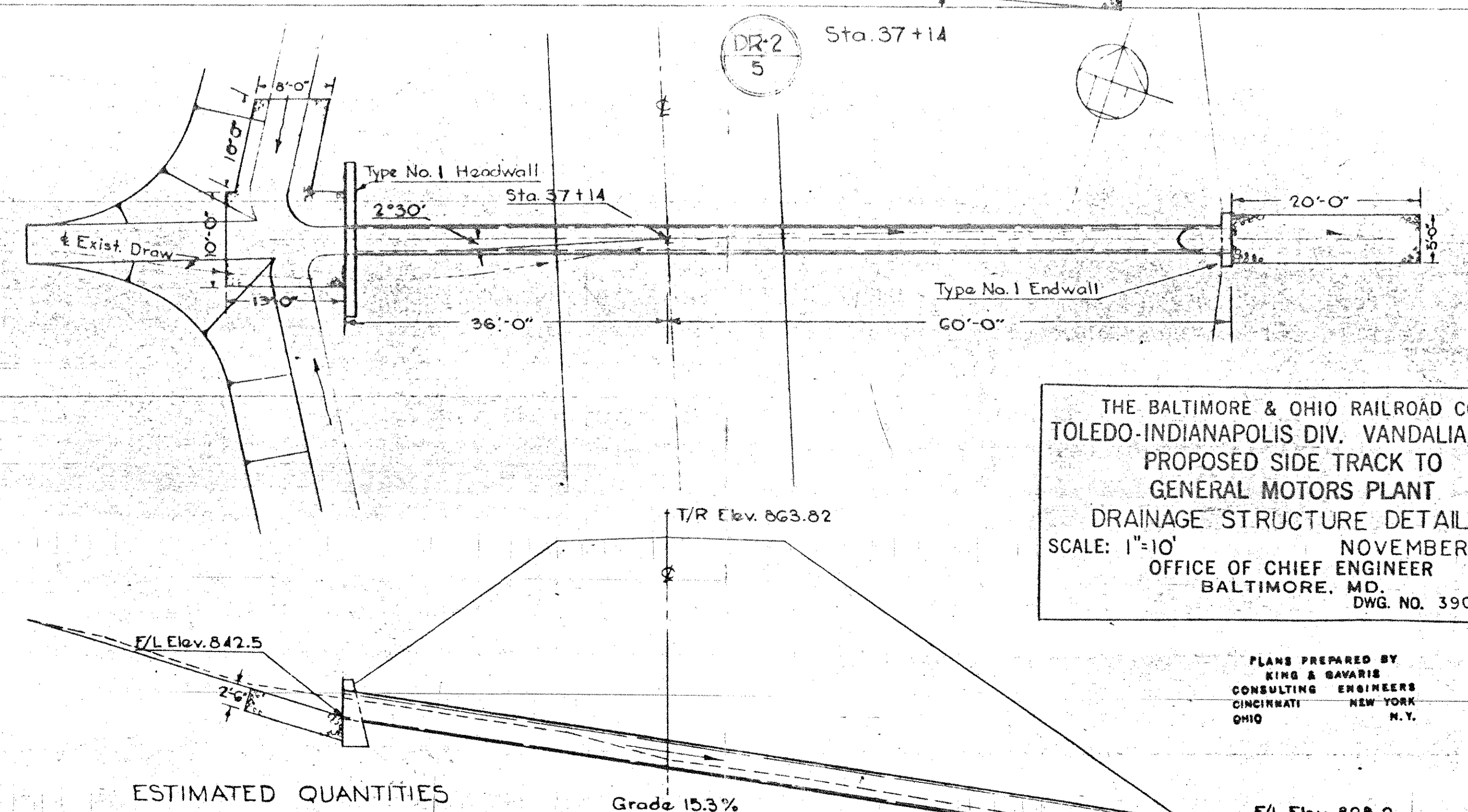
* Second Number refers to gage of bottom plates.

Bridge No. $\frac{690}{9}$



ESTIMATED QUANTITIES

Excavation for Structures	18.1	Cu.Yds.
Channel Excavation	18.7	Cu.Yds.
Dumped Rock Channel Protection	12.5	Cu.Yds.
Concrete for Structures, Class "C"	5.3	Cu.Yds.
30" C.M. Pipe Culvert #12 Gage	76.0	Lin.Ft.
Reinforcing Steel	92.0	Lbs.

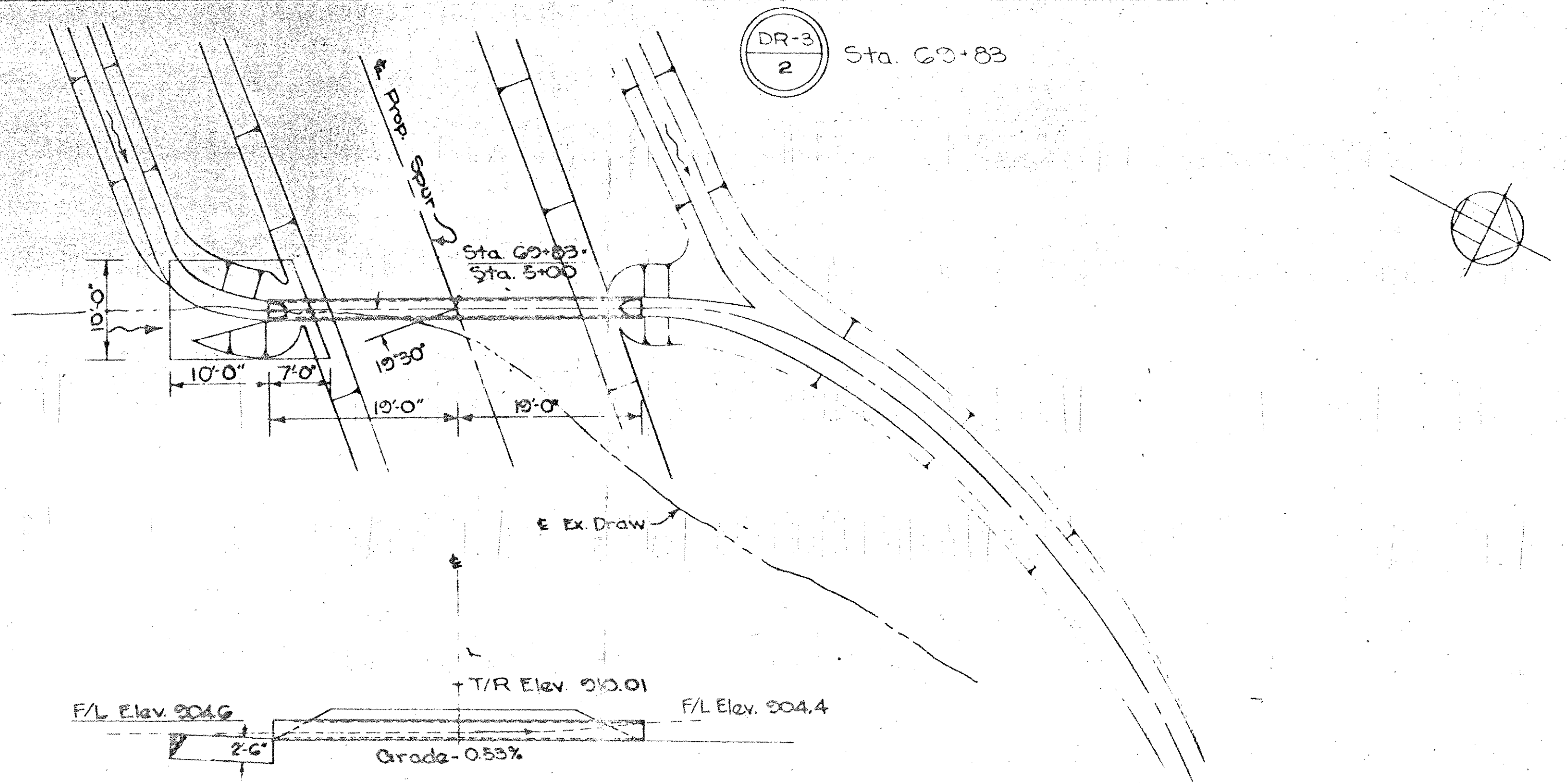


ESTIMATED QUANTITIES

Excavation for Structures	53.0	Cu.Yds.
Channel Excavation	36.0	Cu.Yds.
Dumped Rock Channel Protection	27.7	Cu.Yds.
Concrete for Structures, Class "C"	7.1	Cu.Yds.
36" C.M. Pipe Culvert #10 Gage	96.0	Lin.Ft.
Reinforcing Steel	105.0	Lbs.

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
PROPOSED SIDE TRACK TO
GENERAL MOTORS PLANT
DRAINAGE STRUCTURE DETAILS
SCALE: 1"=10' NOVEMBER 1965
OFFICE OF CHIEF ENGINEER
BALTIMORE, MD.
DWG. NO. 39009-4

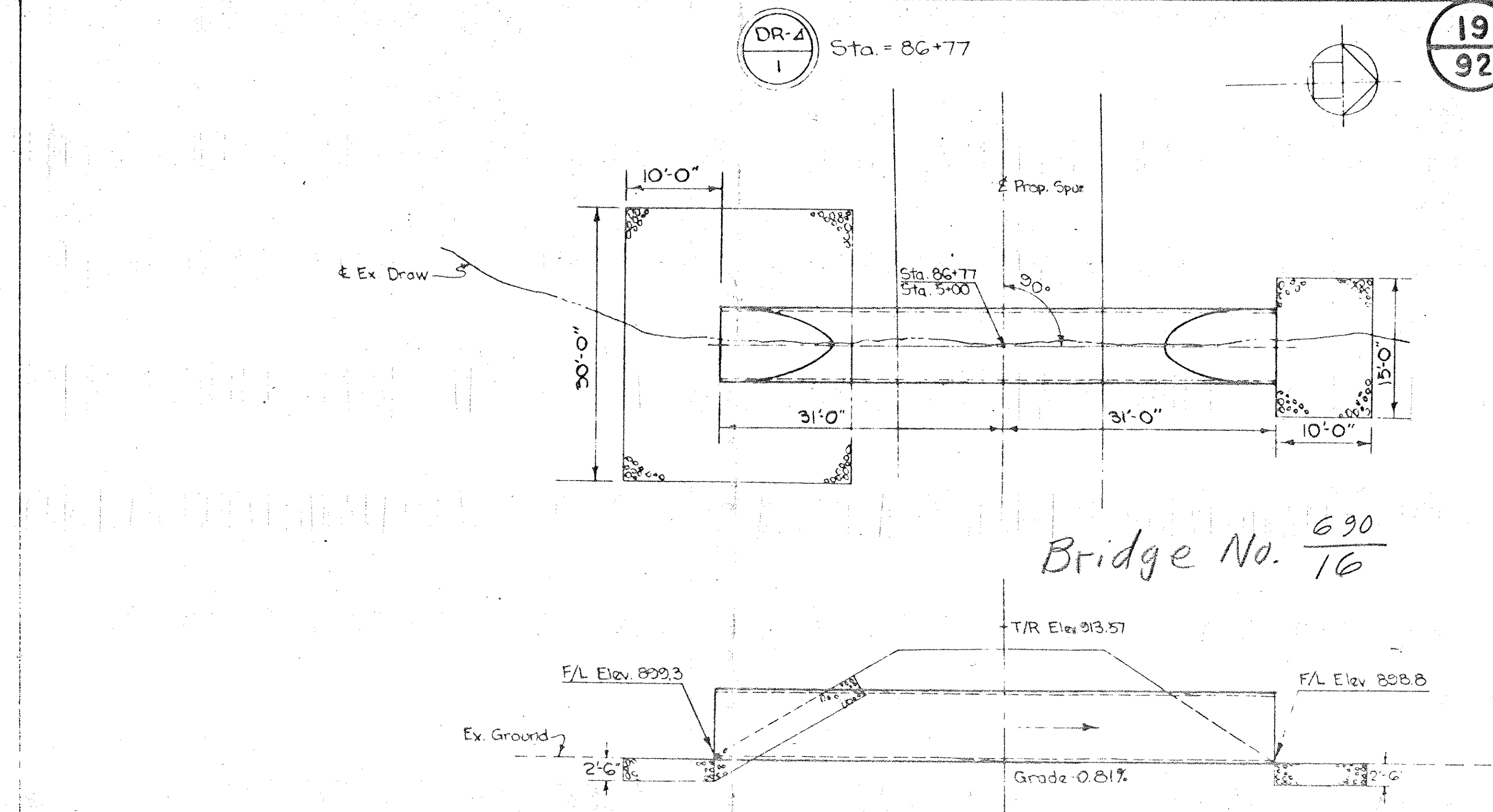
PLANS PREPARED BY
KING & SAVARIS
CONSULTING ENGINEERS
CINCINNATI OHIO NEW YORK N.Y.



DR-3
2 Sta. 69+83

ESTIMATED QUANTITIES

Excavation for Structures	37 Cu. Yds.
Channel Excavation	32.1 Cu. Yds.
Dumped Rock Channel Protection	139 Cu. Yds.
24" C.M. Pipe Culvert #12 Gage	500 Lin. Ft.



DR-4
1 Sta. 86+77

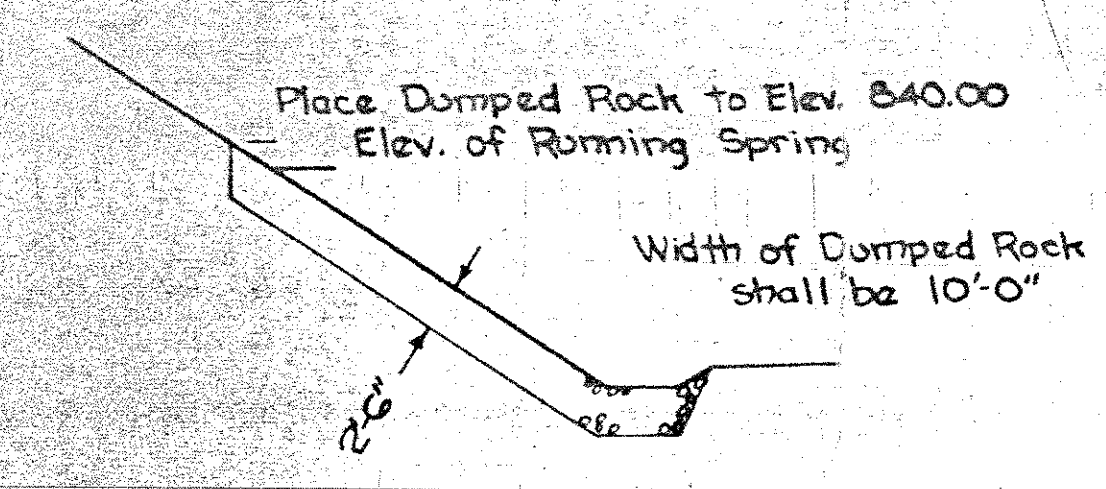
Bridge No. $\frac{690}{16}$

ESTIMATED QUANTITIES

Excavation for Structures	920 Cu. Yds.
Channel Excavation	250 Cu. Yds.
Dumped Rock Channel Protection	750 Cu. Yds.
36" Corr. Str. Plate Pipe #7-5 Gage*	620 Lin. Ft.

SLOPE & CHANNEL PROTECTION @ SPRINGS

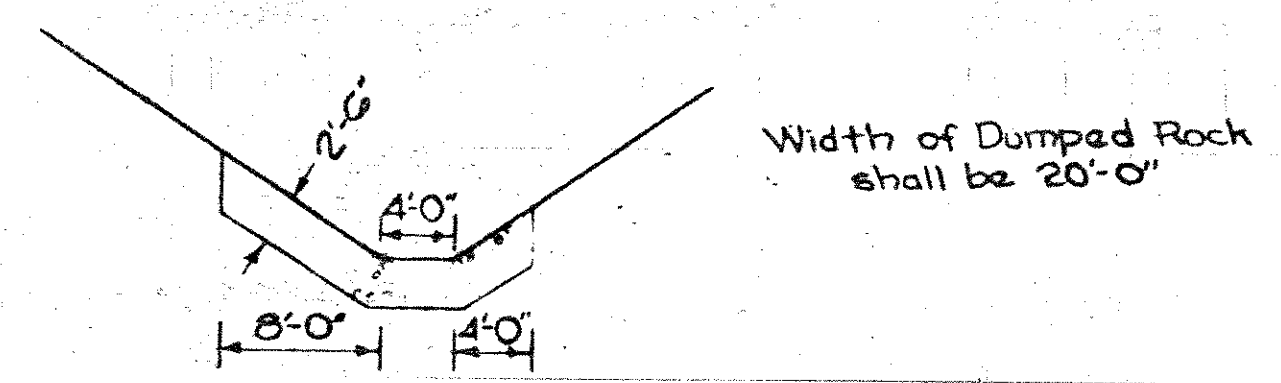
Dump Rock for channel & slope protection shall be placed in ditch & on side slopes for specified width to intercept spring flow.



SPRING @ 15+11 ±

ESTIMATED QUANTITIES

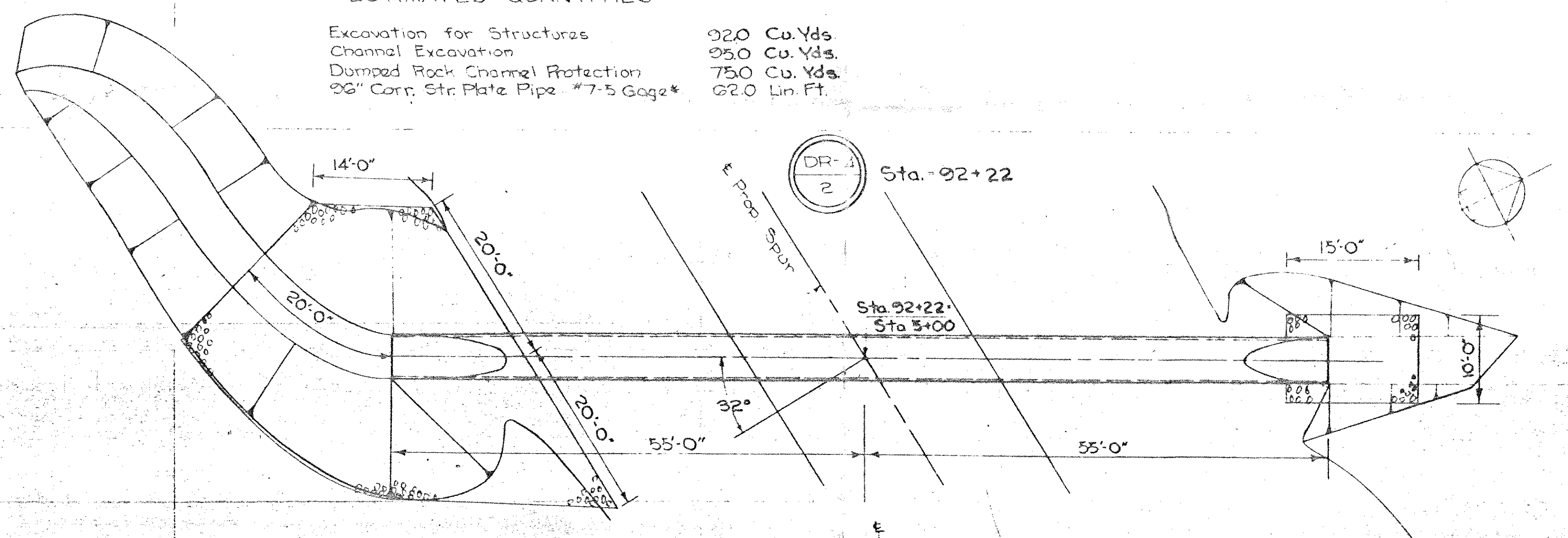
Dumped Rock Channel Protection	269 Cu. Yds.
Channel Excavation	26.9 Cu. Yds.



SPRING @ 29+50 ±

ESTIMATED QUANTITIES

Dumped Rock Channel Protection	33.4 Cu. Yds.
Channel Excavation	33.4 Cu. Yds.



DR-4
2 Sta. 92+22

*Second Number refers to gage of bottom plates

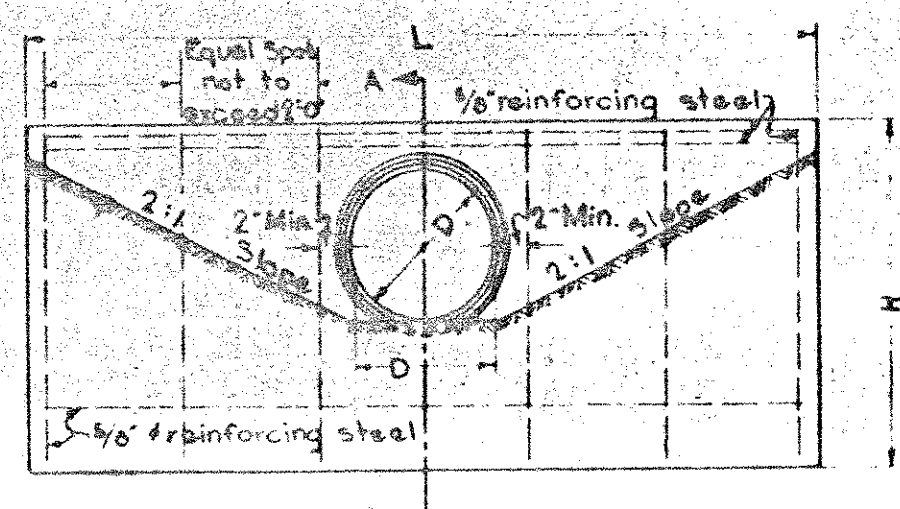
ESTIMATED QUANTITIES

Excavation for Structures	840 Cu. Yds.
Channel Excavation	4030 Cu. Yds.
Dumped Rock Channel Protection	1220 Cu. Yds.
66" Corr. Str. Plate Pipe #10-8 Gage 1100 Lin. Ft.	

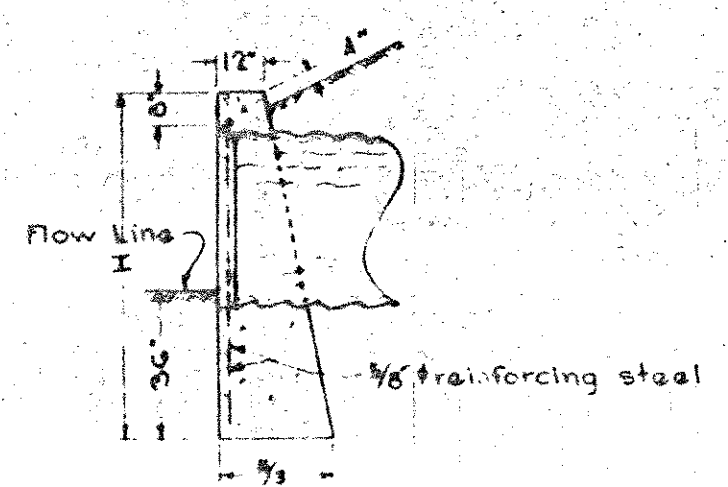
PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI NEW YORK
OHIO N.Y.

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
PROPOSED SIDE TRACK TO
GENERAL MOTORS PLANT
DRAINAGE STRUCTURE DETAILS
SCALE: 1"=10' NOVEMBER 1965
OFFICE OF CHIEF ENGINEER
BALTIMORE, MD.
DWG. NO. 39009-5

TYPE NO. 1 HEADWALL

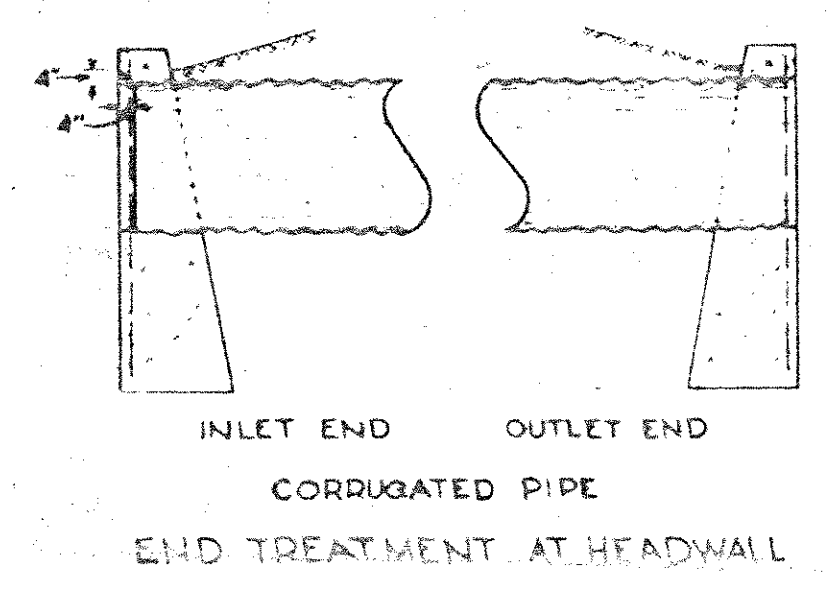


ELEVATION



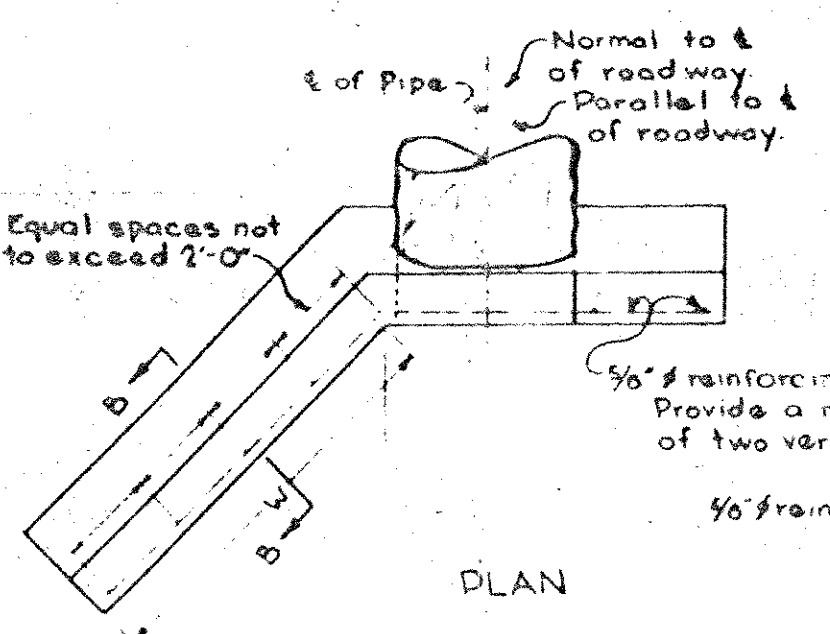
SECTION A-A

DIAMETER	DIMENSIONS		QUANTITIES ONE HEADWALL	
	H	L	CONCRETE CU. YDS.	REINFORCING STEEL LBS.
24"	5'-11"	11'-0"	3.3	60
30"	6'-5"	13'-8"	4.7	92
36"	7'-0"	16'-4"	6.5	105

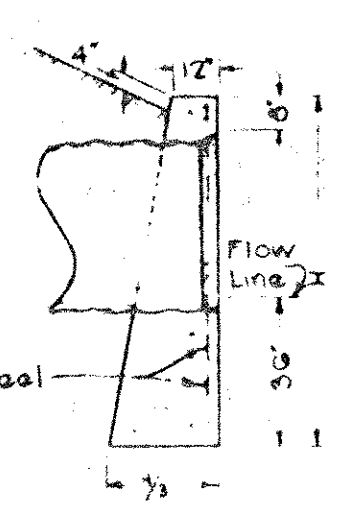


INLET END
OUTLET END
CORRUGATED PIPE
END TREATMENT AT HEADWALL

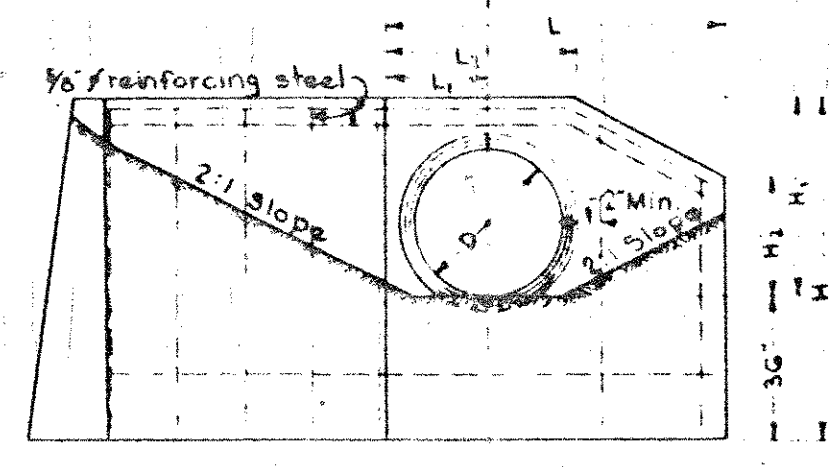
TYPE NO. 2 HEADWALL



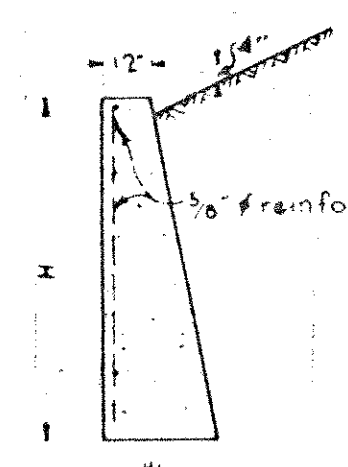
PLAN



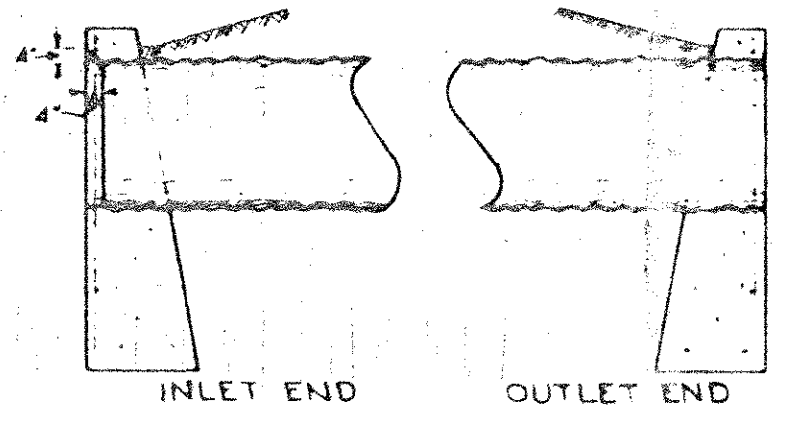
SECTION A-A



ELEVATION



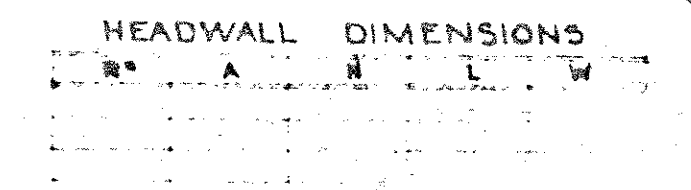
SECTION B-B



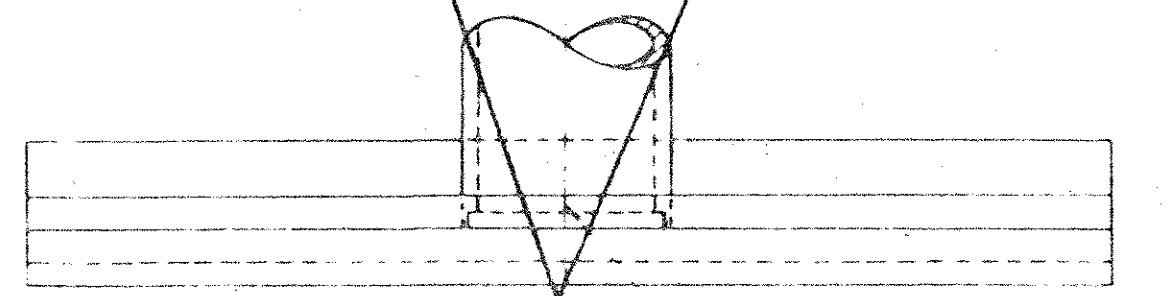
INLET END
OUTLET END
CORRUGATED PIPE
END TREATMENT AT HEADWALL

$\phi = 15^\circ$
 For L, L₁, L₂, W, Z, H, H₁, H₂ See Table
 For S, S₁, S₂, A, A₁, A₂, B, B₁, B₂, C, C₁, C₂, D, D₁, D₂, E, E₁, E₂, F, F₁, F₂, G, G₁, G₂, H, H₁, H₂, I, I₁, I₂, J, J₁, J₂, K, K₁, K₂, L, L₁, L₂, M, M₁, M₂, N, N₁, N₂, O, O₁, O₂, P, P₁, P₂, Q, Q₁, Q₂, R, R₁, R₂, S, S₁, S₂, T, T₁, T₂, U, U₁, U₂, V, V₁, V₂, W, W₁, W₂, X, X₁, X₂, Y, Y₁, Y₂, Z, Z₁, Z₂

TYPE NO. 4 HEADWALL

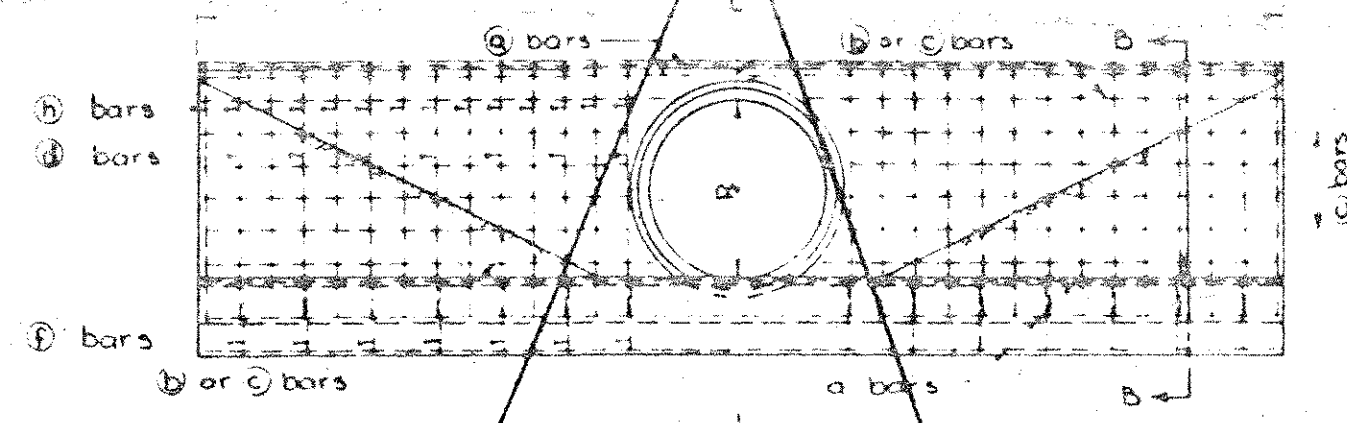


REINFORCING STEEL LIST & ESTIMATED QUANTITIES
 Provide Symbol No Length Weight



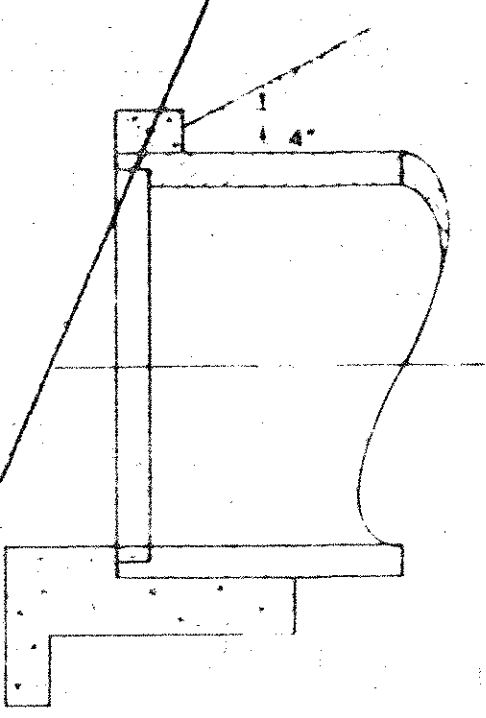
PLAN

Optional Construction Joint

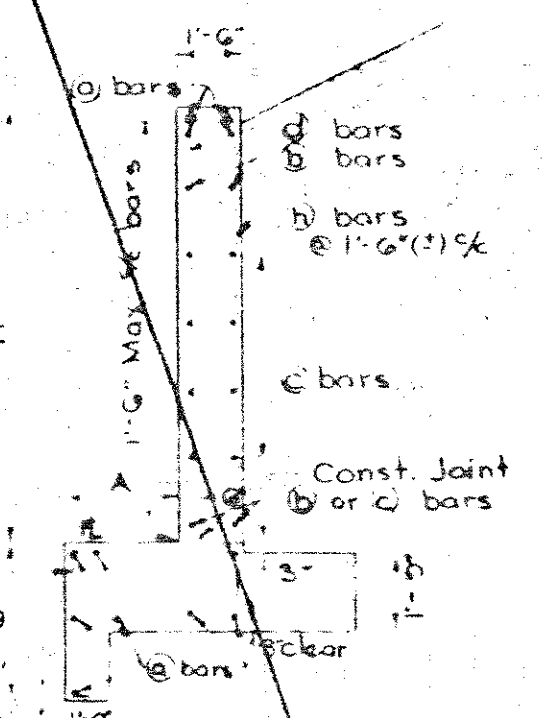


ELEVATION

NON PERFORM



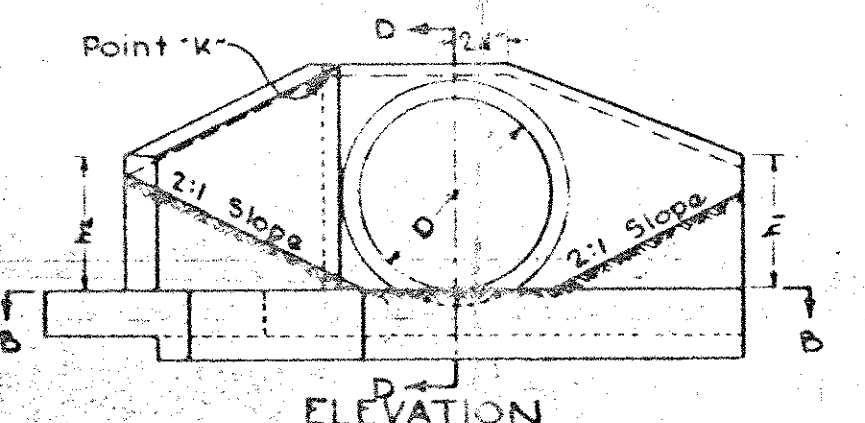
SECTION A-A



SECTION B-B

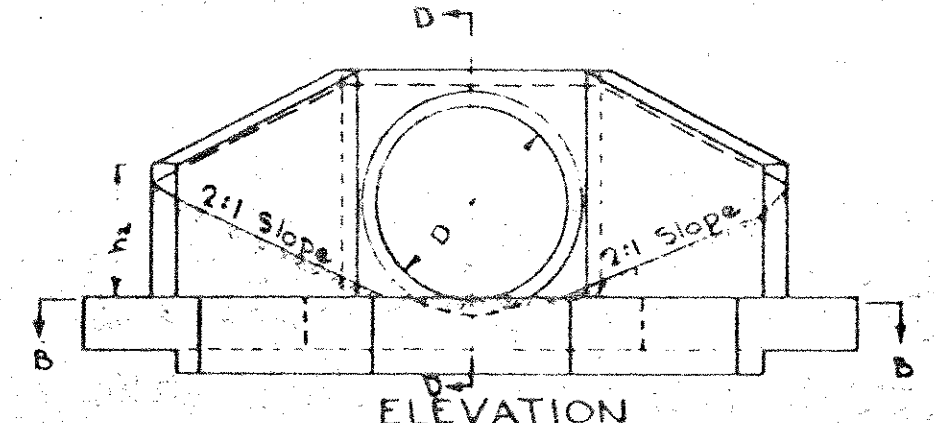
TYPE NO. 3 HEADWALL

TYPE 3 B

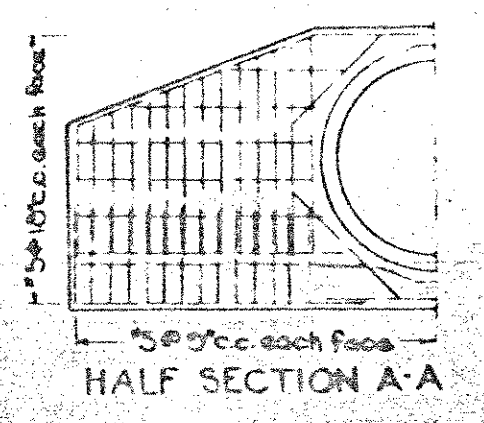


ELEVATION

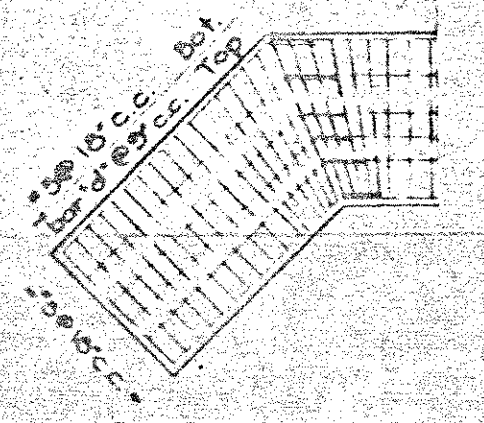
TYPE 3 A



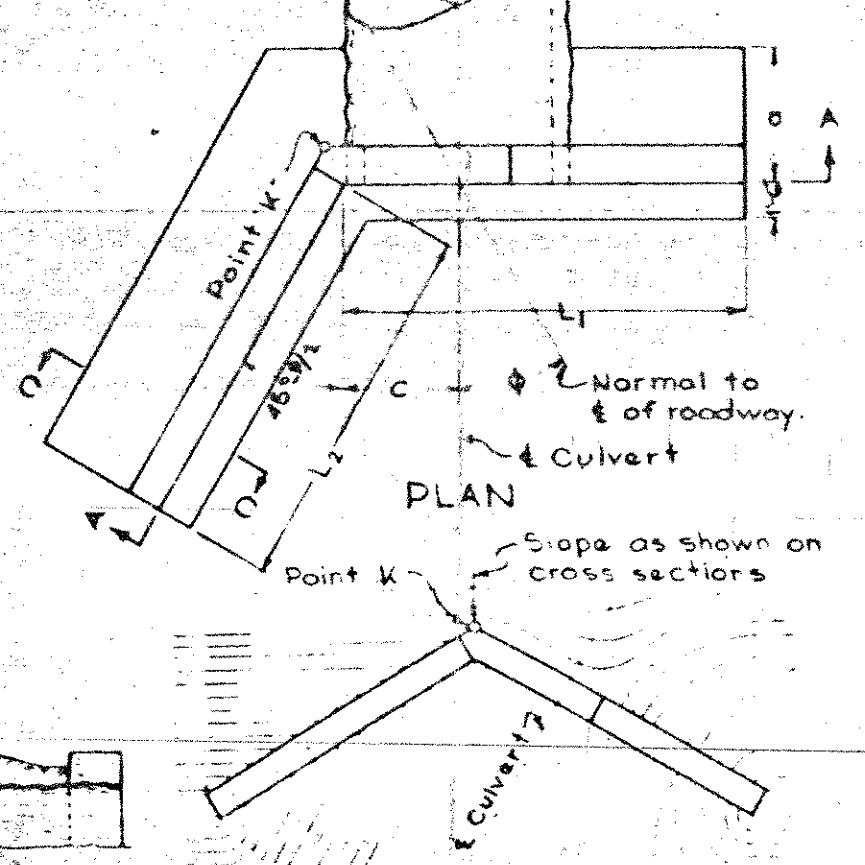
ELEVATION



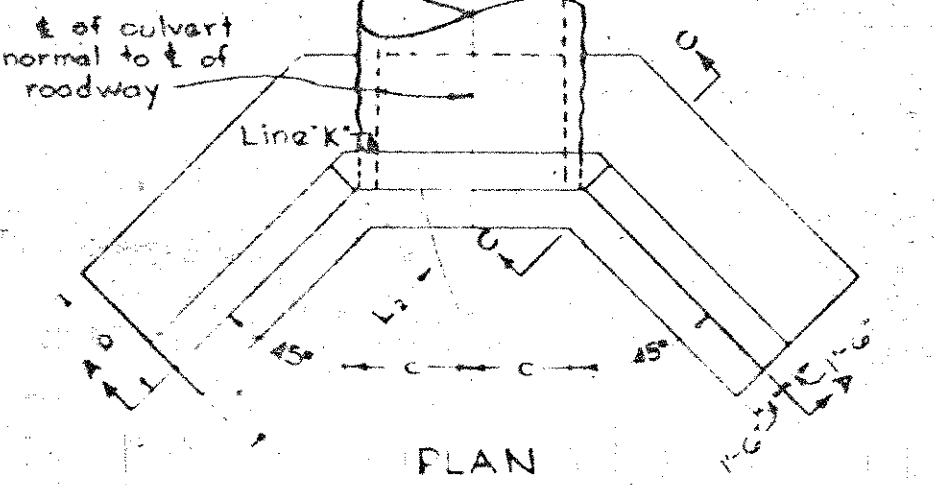
HALF SECTION A-A



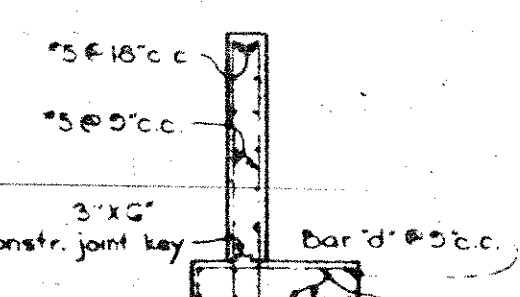
HALF SECTION B-B



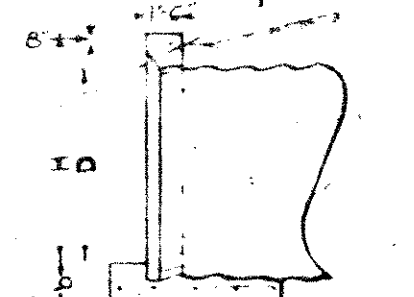
PLAN



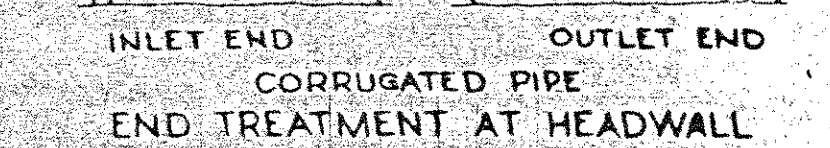
PLAN



SECTION C-C



SECTION D-D

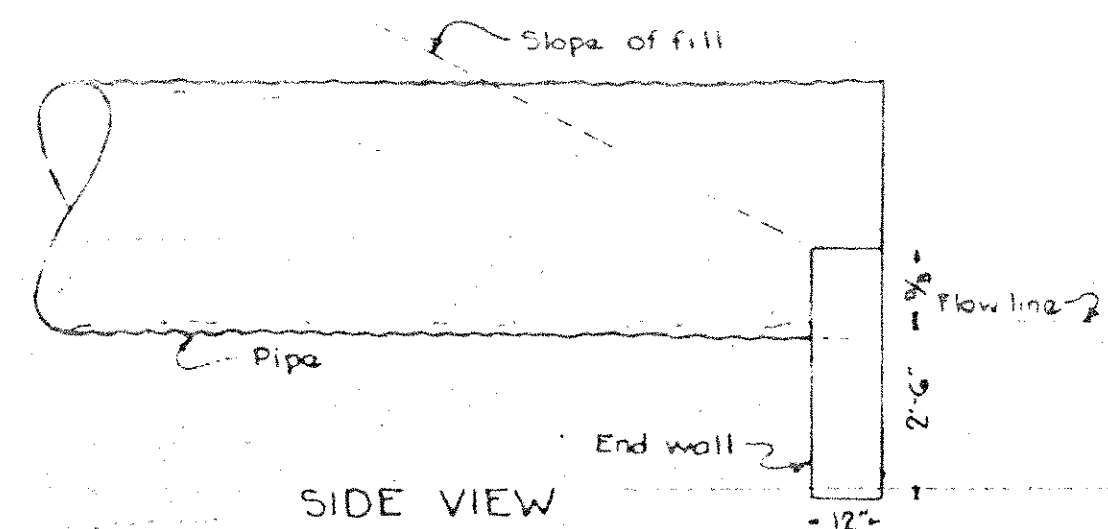


INLET END
OUTLET END
CORRUGATED PIPE
END TREATMENT AT HEADWALL

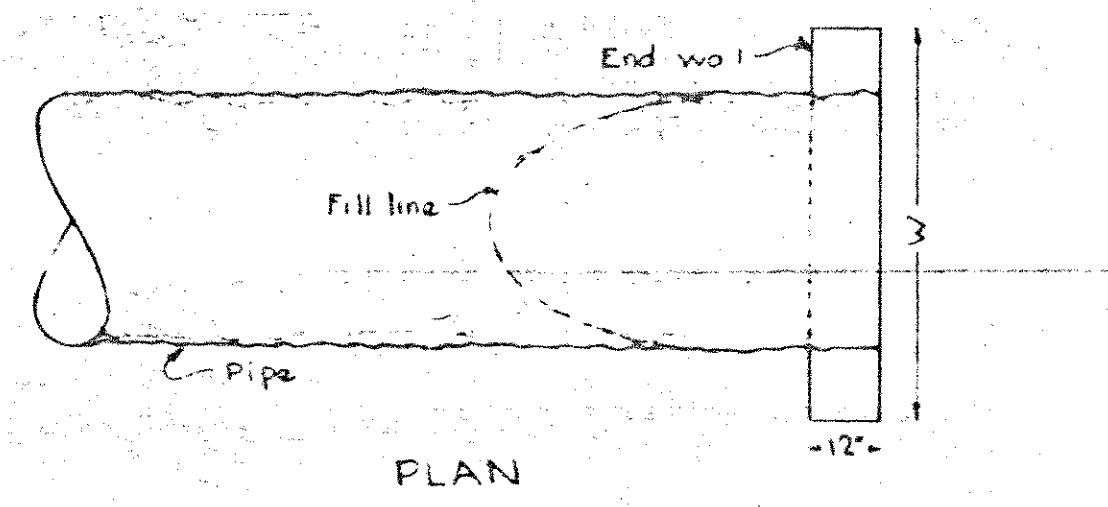
GRADING PLAN

Pipe Dia	H	a	b	c	Bar d	$\phi = 0^\circ$				$\phi = 15^\circ$				$\phi = 30^\circ$			
						L ₁	L ₂	h ₁	h ₂	L ₁	L ₂	h ₁	h ₂	L ₁	L ₂	h ₁	h ₂
42"	4'-11"	3'-3"	1'-6"	2'-6"	#5	8'-0"	4'-0"	3'-8"	3'-2"	7'-1"	8'-0"	4'-0"	3'-3"	3'-6"	3'-1"	8'-8"	4'-0"
48"	5'-5"	3'-6"	1'-8"	2'-9"	#5	8'-0"	4'-0"	3'-8"	3'-2"	7'-1"	8'-0"	4'-0"	3'-3"	3'-6"	3'-1"	8'-8"	4'-0"
66"	7'-1"	4'-3"	1'-7"	3'-6"	#7	6'-8"	4'-2"	3'-6"	3'-0"	6'-8"	4'-2"	3'-6"	3'-0"	3'-6"	3'-1"	8'-8"	4'-0"
105"	10'-10"	6'-0"	2'-10"	5'-3"	#8	12'-0"	6'-6"	5'-3"	4'-6"	12'-0"	6'-6"	5'-3"	4'-6"	5'-3"	4'-6"	12'-0"	6'-6"

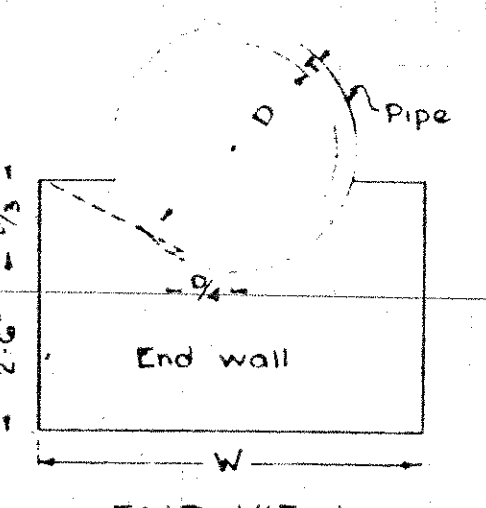
TYPE NO. 1 END WALL



SIDE VIEW



PLAN

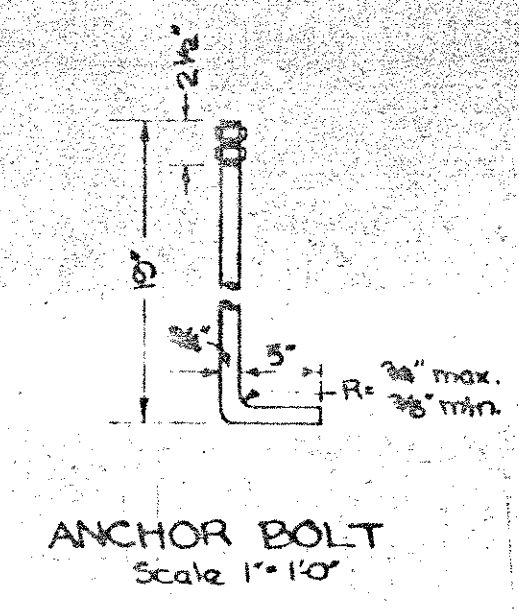


END VIEW

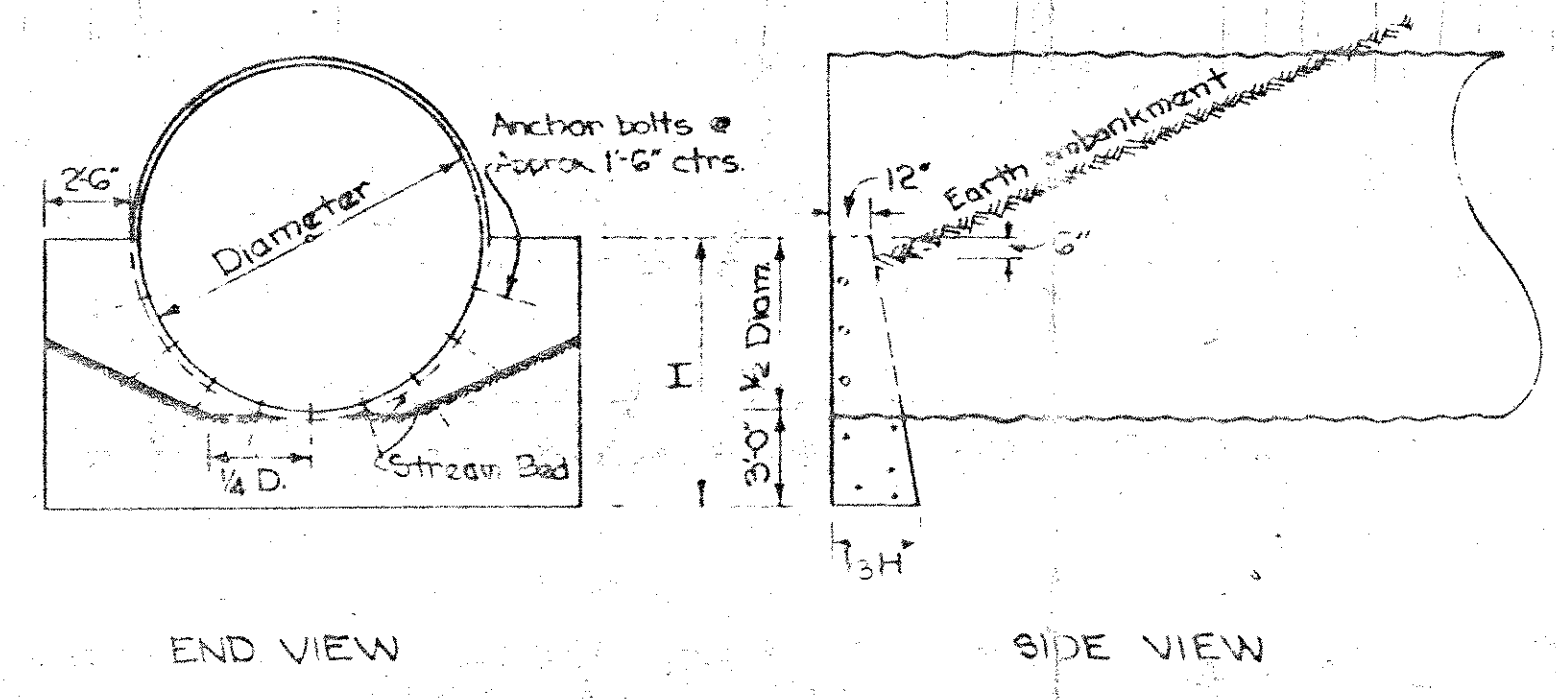
PIPE DIAMETER	WIDTH	CONCRETE CU. YD.
24"	4'-0"	.41
30"	4'-0"	.51
36"	5'-0"	.80

THE BALTIMORE & OHIO RAILROAD CO.
 TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
 PROPOSED SIDE TRACK TO
 GENERAL MOTORS PLANT
 DRAINAGE DETAILS
 SCALE: AS NOTED NOVEMBER 1965
 OFFICE OF CHIEF ENGINEER
 BALTIMORE, MD.
 DWG. NO. 39009-8

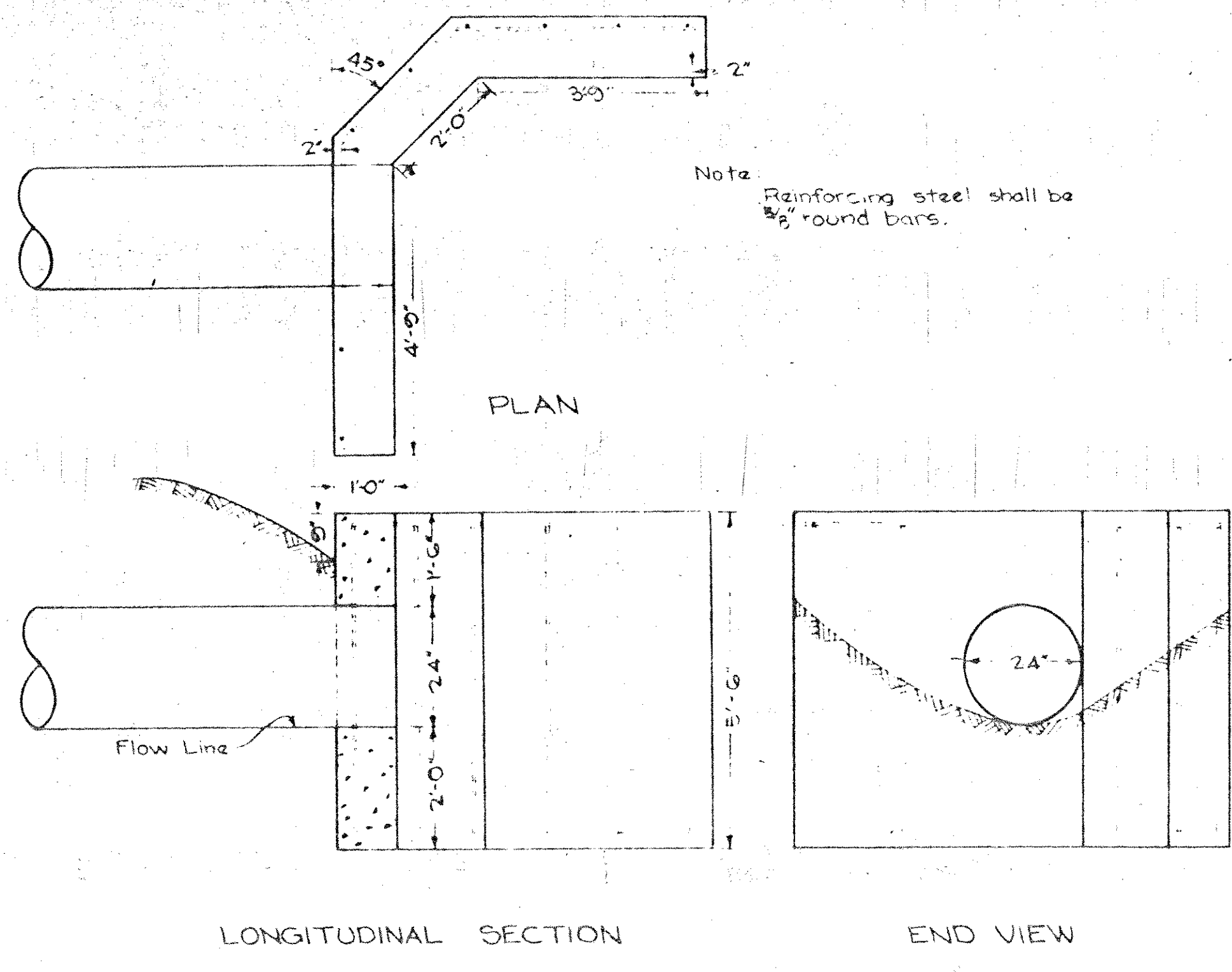
PLANS PREPARED BY
 KING & SAVARIS
 CONSULTING ENGINEERS
 CINCINNATI NEW YORK
 OHIO N.Y.



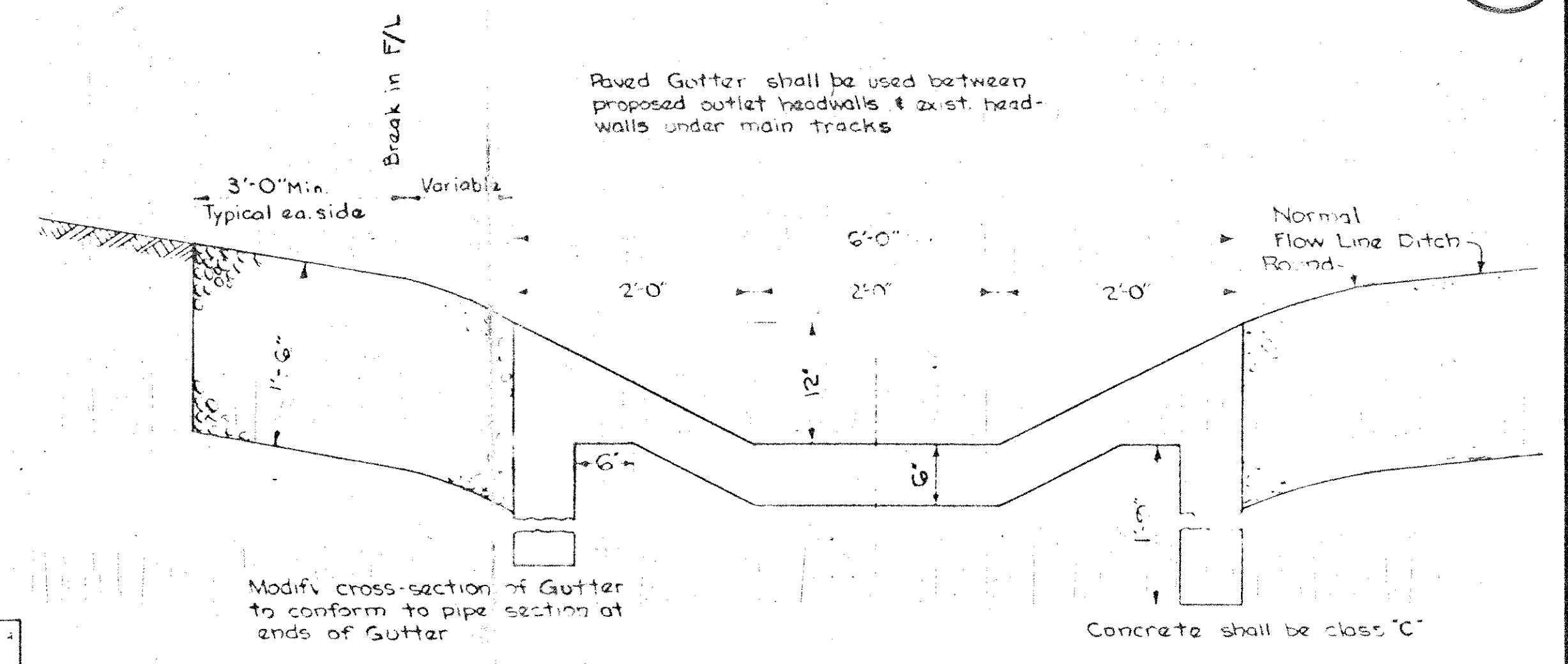
ANCHOR BOLTS @ approximately 1'-6" ctrs. shall be provided to anchor the ends of culvert. Bolts and nuts to be hot dipped galvanized with threads chased to give Class 2 fit. Included with corrugated plate culvert for payment.



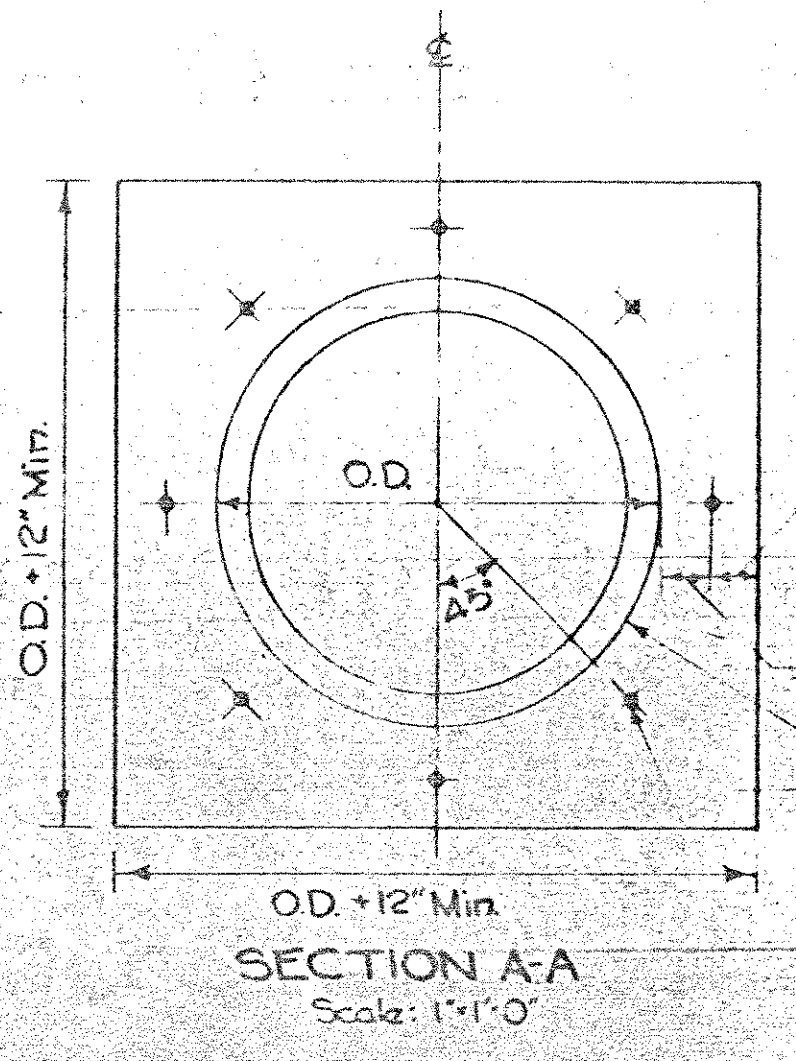
TYPE NO. 2 ENDWALL
Scale 1" = 5'-0"



TYPE NO. 5 HEADWALL
Scale 1" = 2'-0"

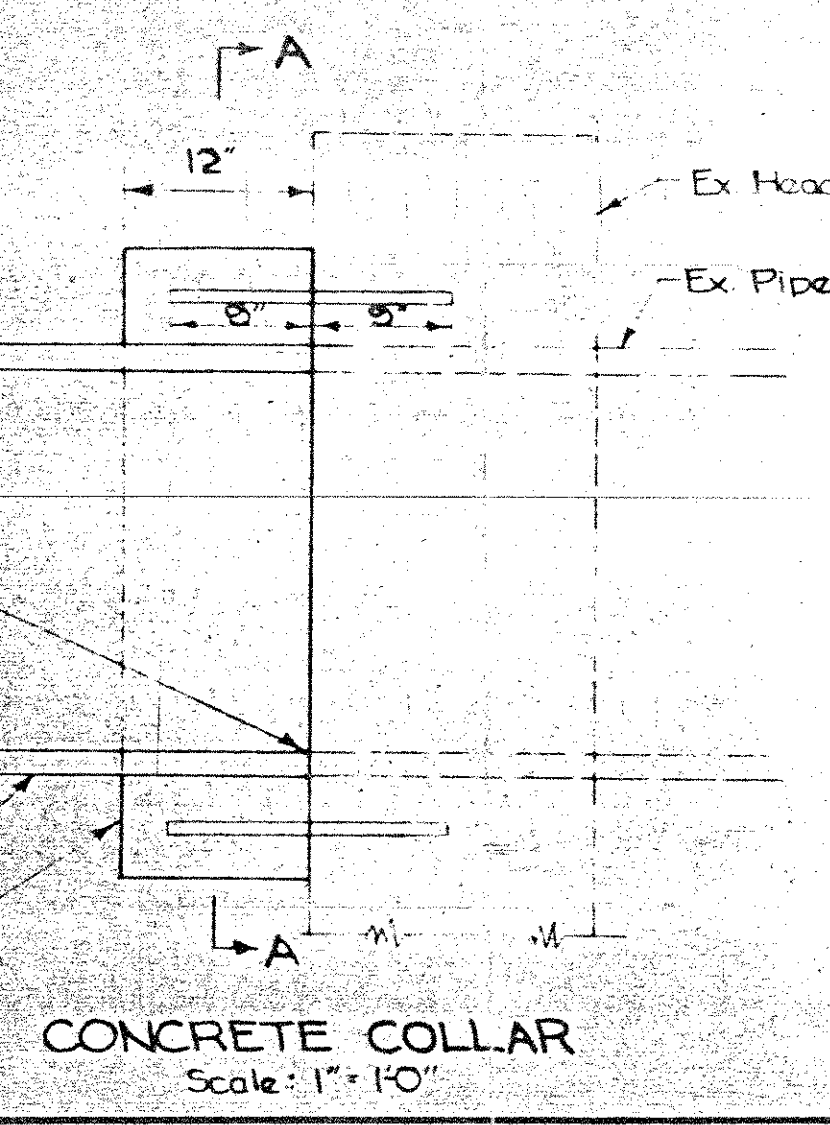


PAVED GUTTER SECTION
Scale 1" = 10'-0"

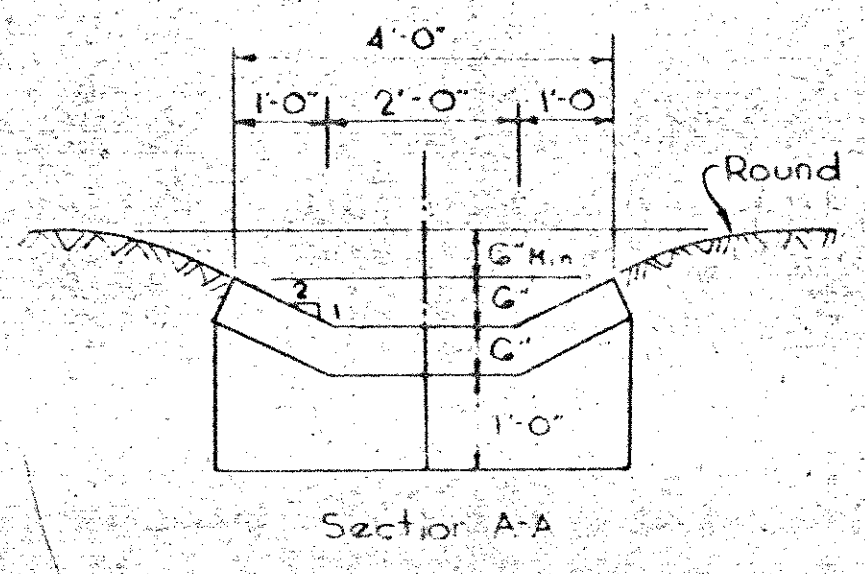


Note: Concrete shall be Class 'C'. Concrete Collar included in Concrete for Structures Quantity. Payment for Dowels shall be included in Bid Price per CY of Concrete for Structures. Dowels shall be grouted into ex headwall.

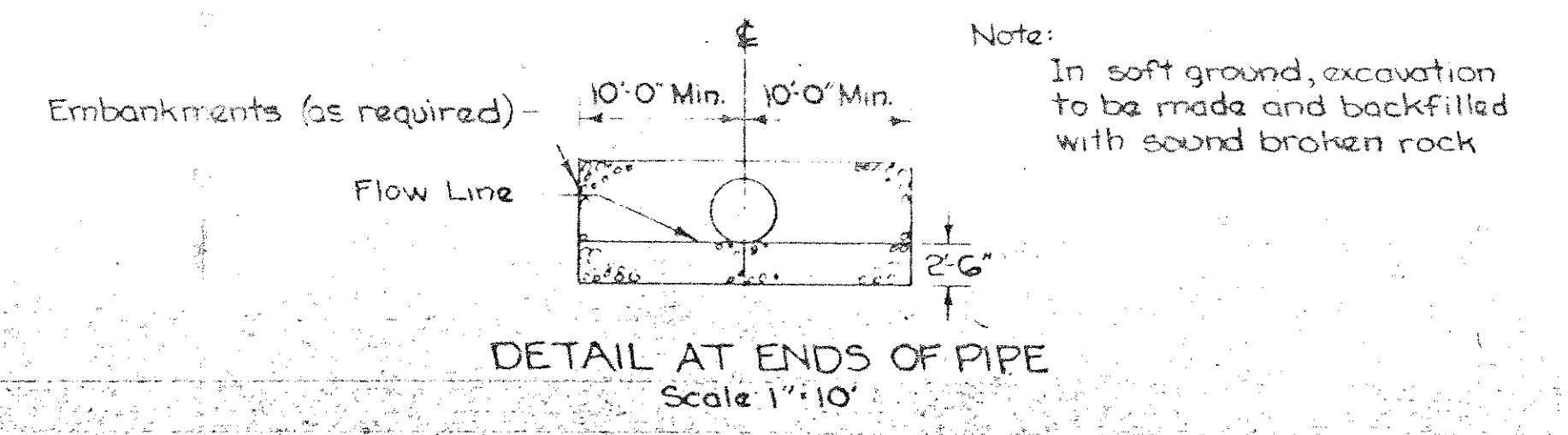
3" Min. (Typical)
3" Min. (Typical) Prop. Culvert Pipe
Dowels



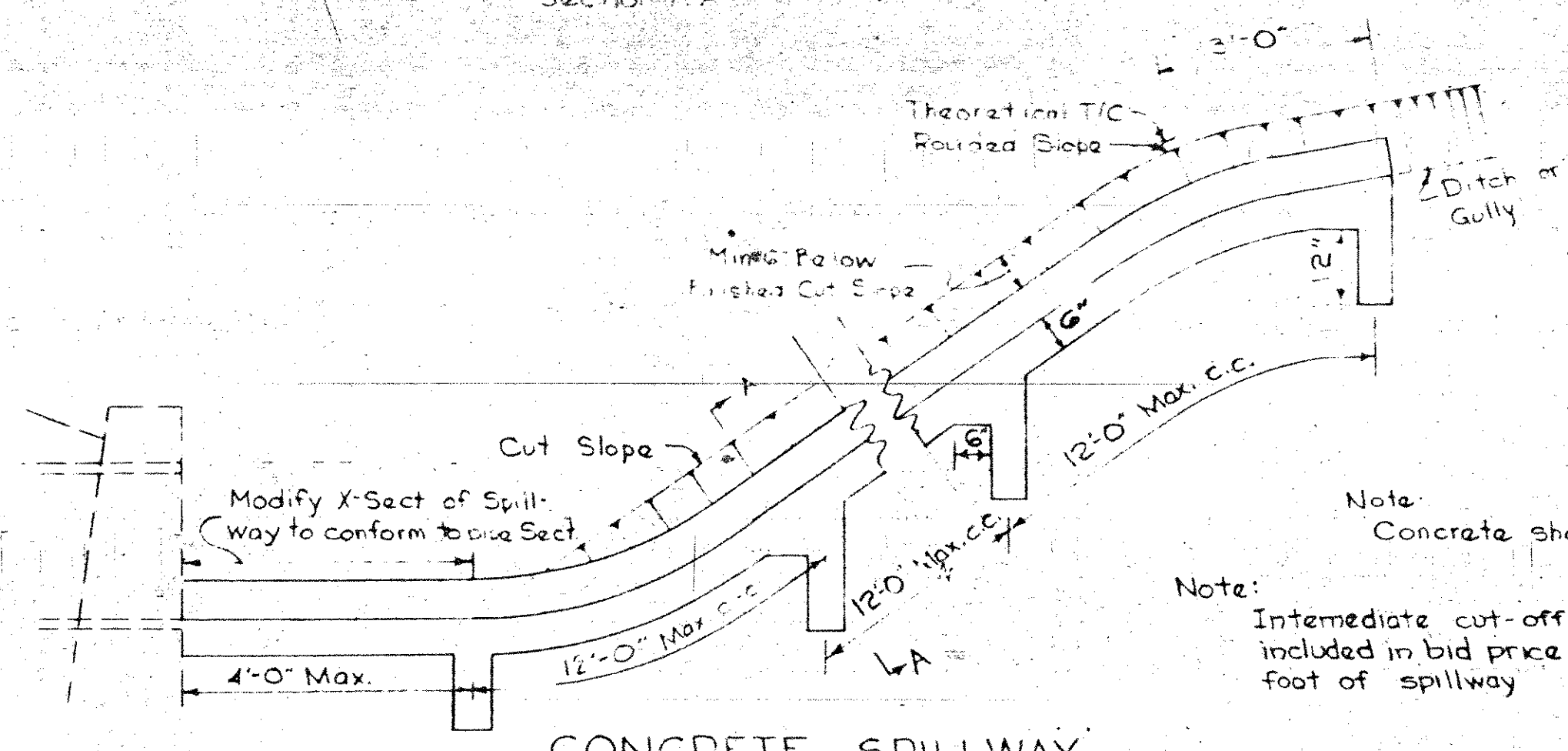
CONCRETE COLLAR
Scale 1" = 1'-0"



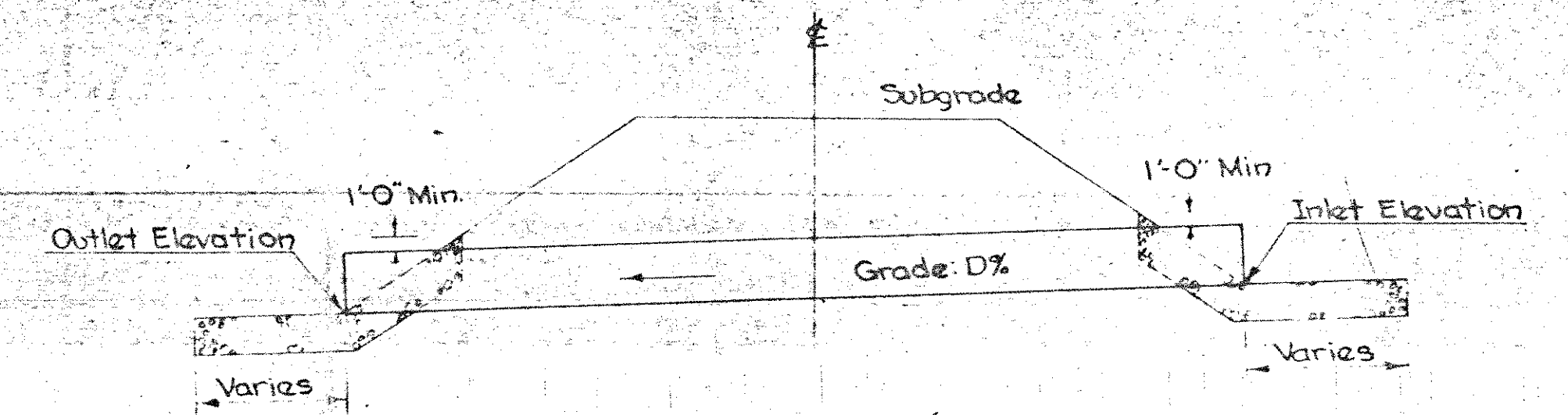
CONCRETE SPILLWAY
Scale 1" = 2'-0"



DETAIL AT ENDS OF PIPE
Scale 1" = 10'-0"



Note: Intermediate cut-off walls shall be included in bid price per lineal foot of spillway.

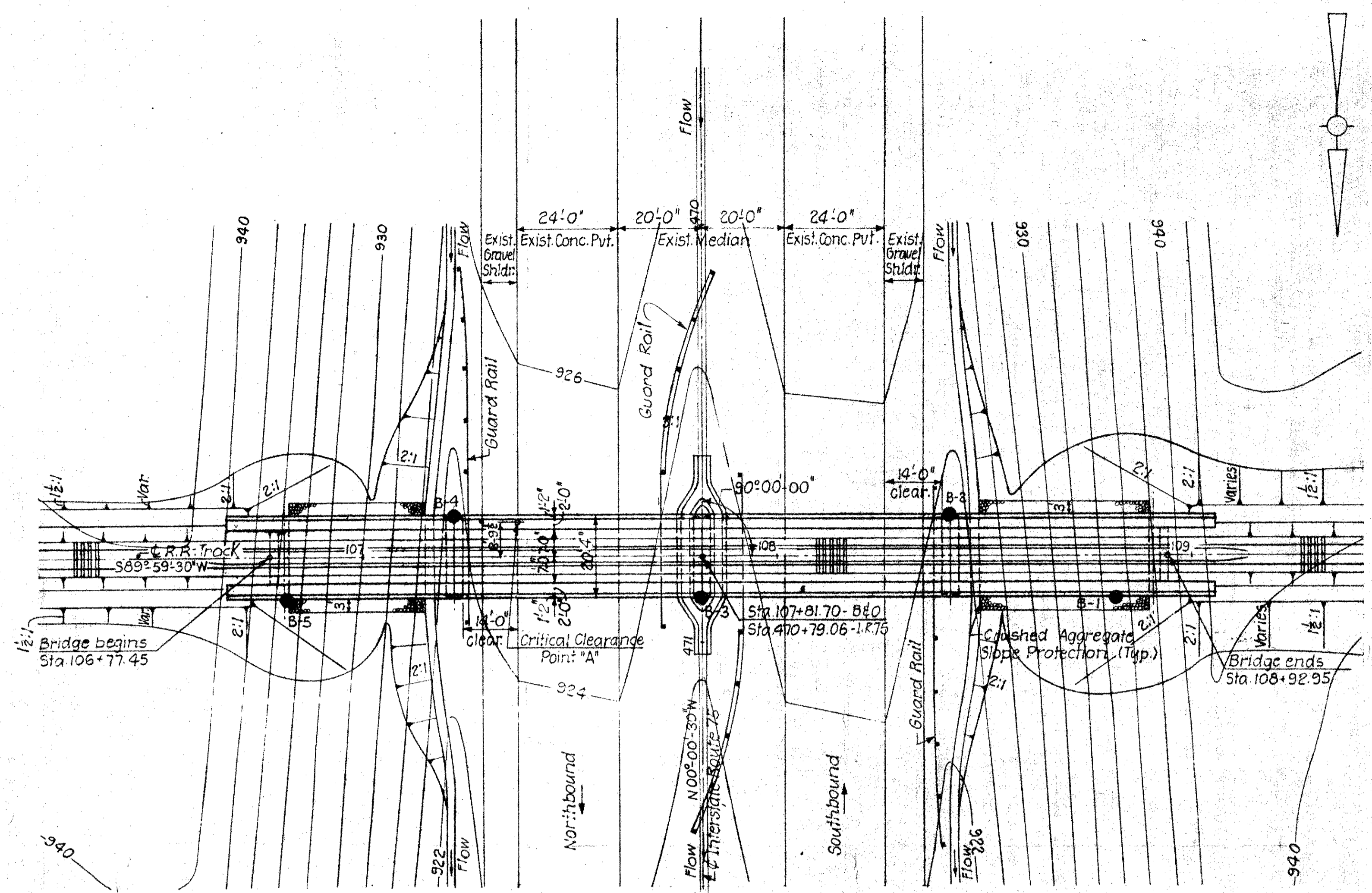


TYPICAL SECTION NORMAL TO TRACK
Scale 1" = 10'-0"

DUMPED ROCK CHANNEL PROTECTION DETAIL

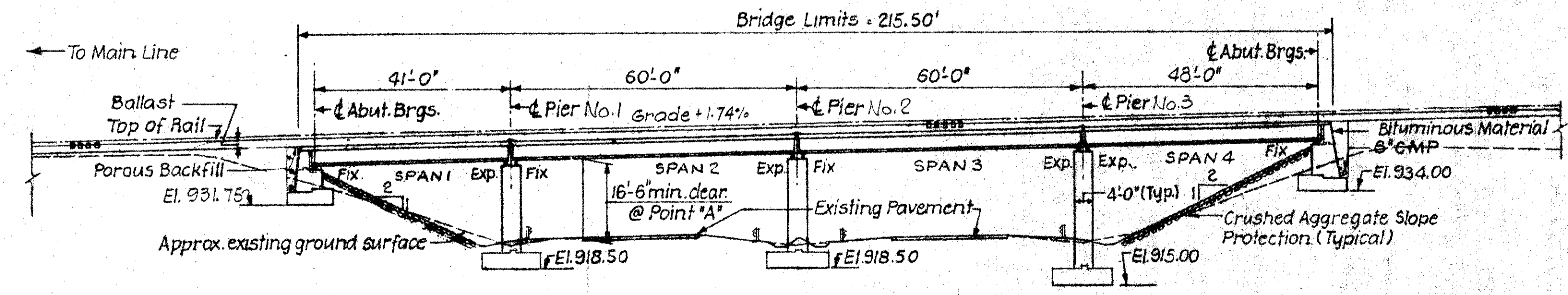
PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI OHIO NEW YORK N.Y.

THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. VANDALIA, OHIO
PROPOSED SIDE TRACK TO
GENERAL MOTORS PLANT
DRAINAGE DETAILS
SCALE: AS NOTED NOVEMBER 1965
OFFICE OF CHIEF ENGINEER
BALTIMORE, MD.
DWG. NO. 39009-9

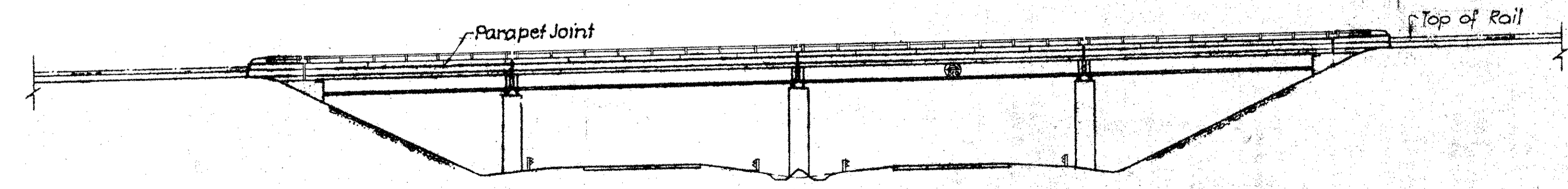


● B1 to B5 - indicates location of borings.

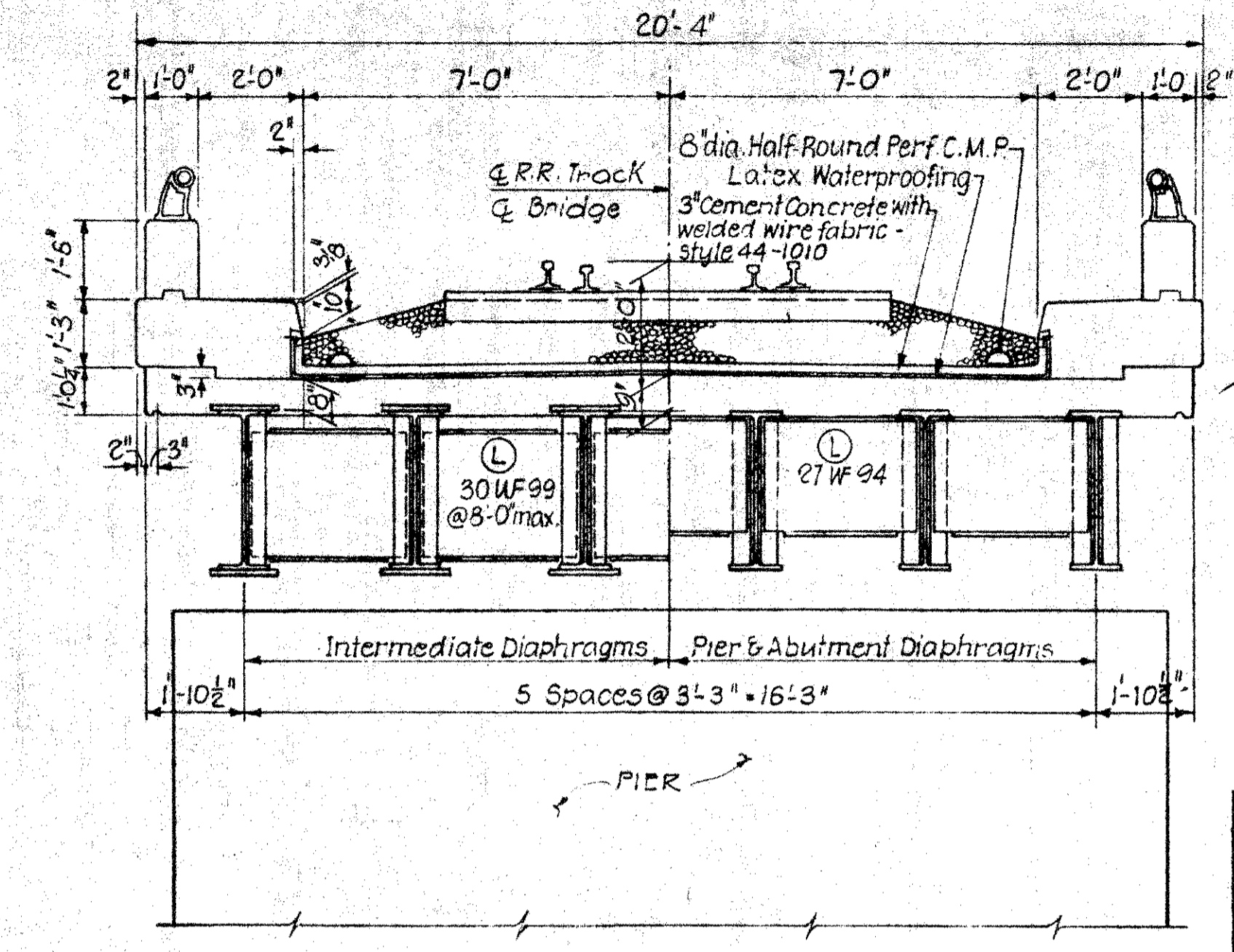
PLAN



LONGITUDINAL SECTION



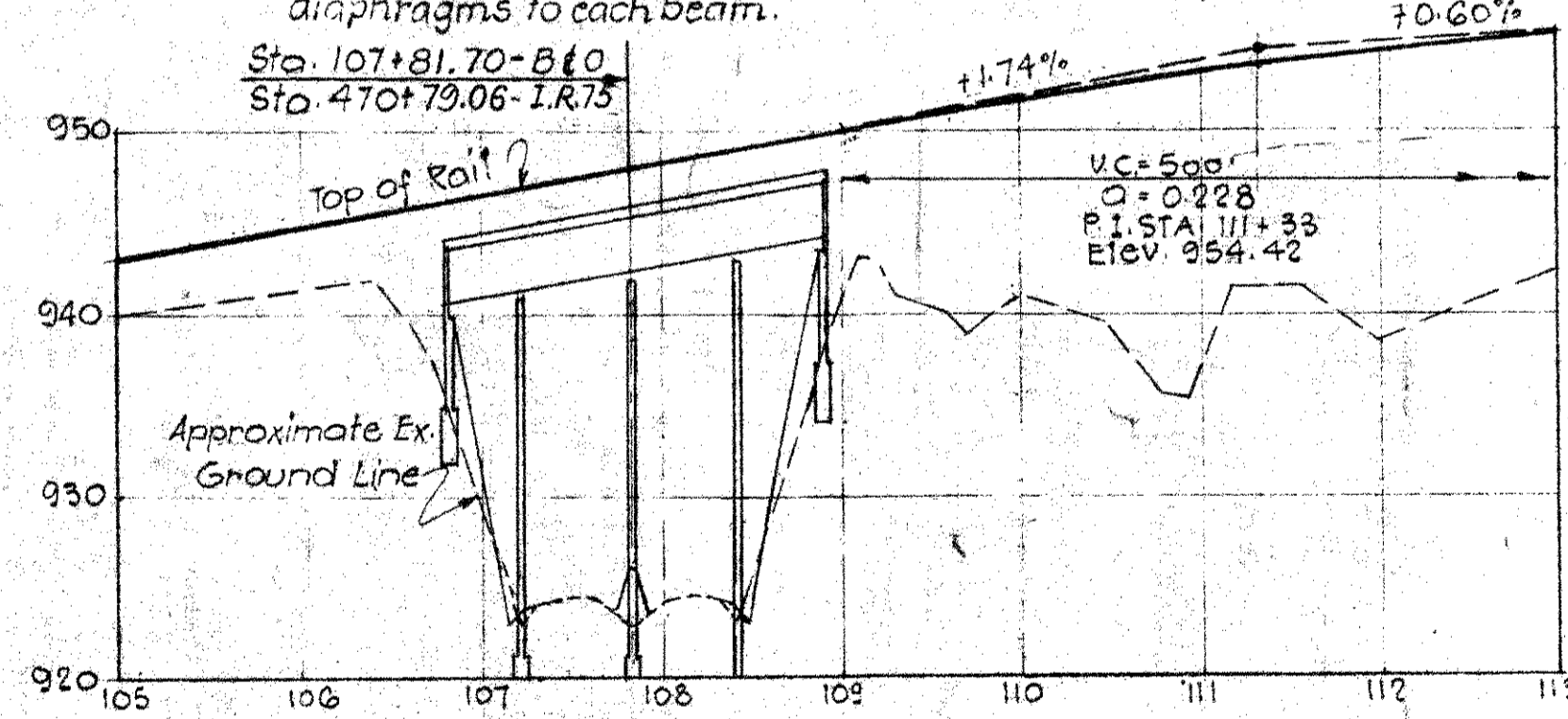
ELEVATION
Scale: 1" = 20'



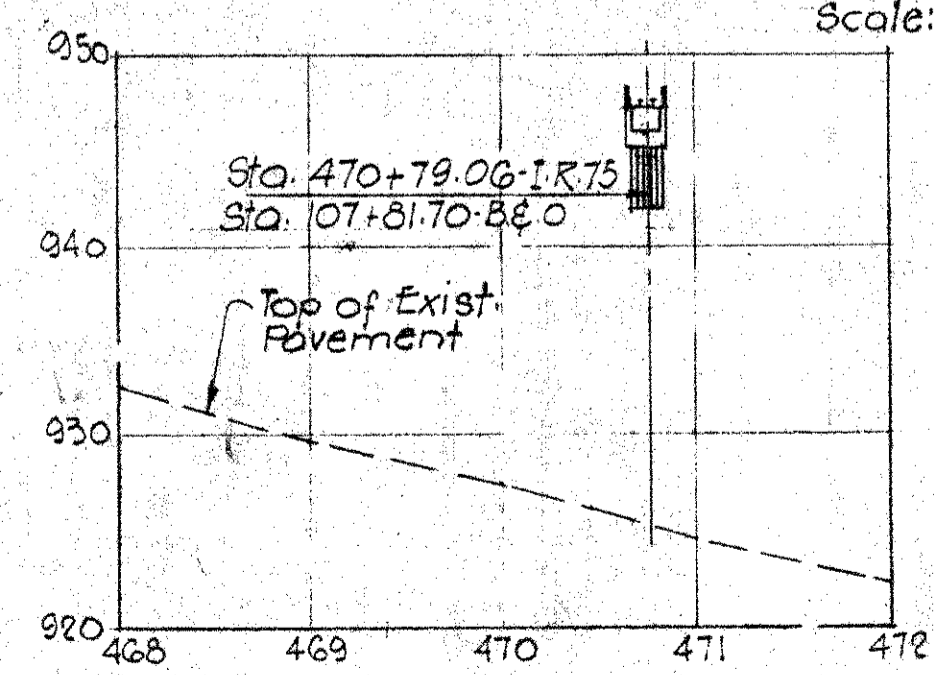
SECTION THROUGH BRIDGE
Scale: 3/8" = 1'-0"

Longitudinal Beams:
SPAN 1 - 36 WF 194, no cover fl's
SPAN 2 & 3 - 36 WF 194, top & bot. fl. 16" x 1 1/4"
SPAN 4 - 36 WF 245, no cover fl's

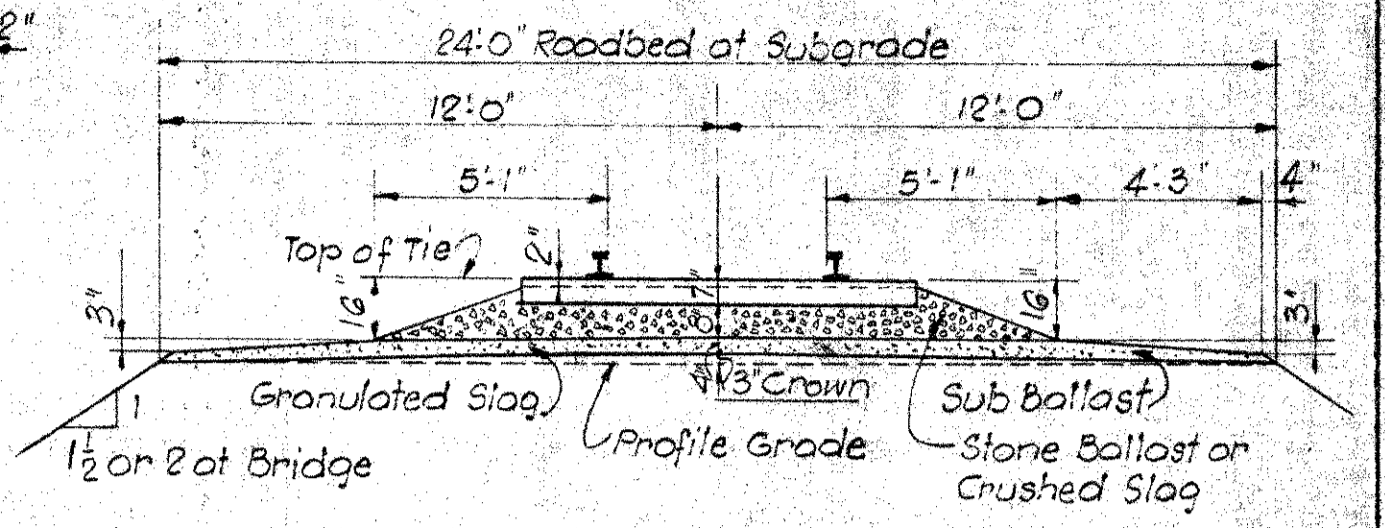
Diaphragms marked (L) to be shipped loose and bolted in field using High Strength Steel Bolts. Use double angles to connect diaphragms to each beam.



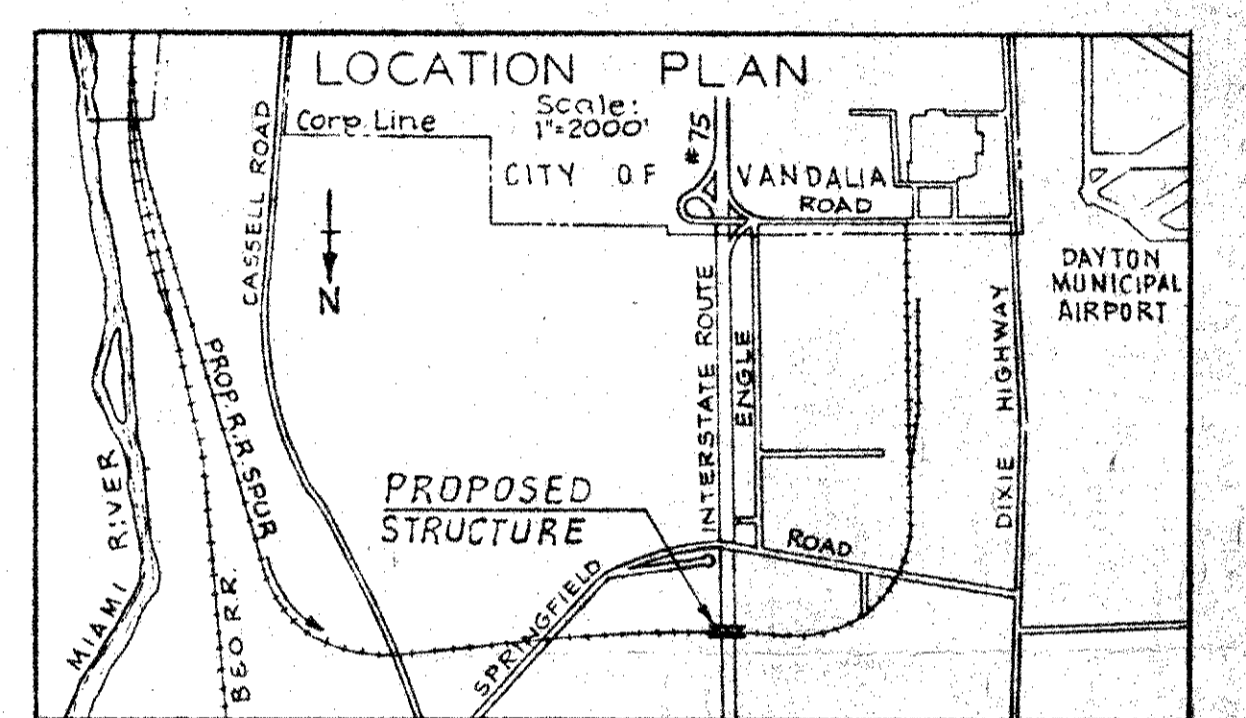
PROPOSED RAILROAD SPUR PROFILE
Scale: Horiz. 1" = 100', Vert. 1" = 10'



EXIST. INT. ROUTE 75 PROFILE
Scale: Horiz. 1" = 100', Vert. 1" = 10'



RAILROAD SECTION AT BRIDGE
Scale: 1/4" = 1'-0"



LOCATION PLAN
Scale: 1" = 2000'

DESIGNED BY:	V.S.
DRAWN BY:	P.A.M.
CHECKED BY:	V.J.L.

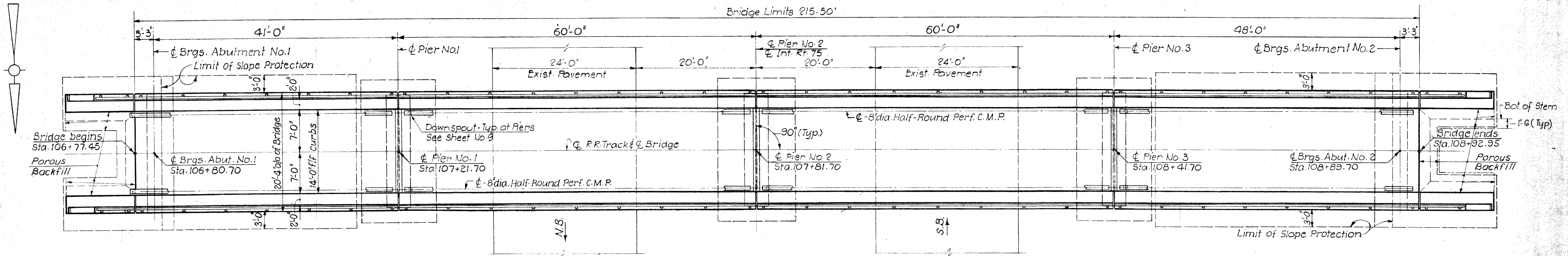
APPROVED:
[Signature]
ENGINEER OF STRUCTURES

PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI NEW YORK
OHIO N.Y.

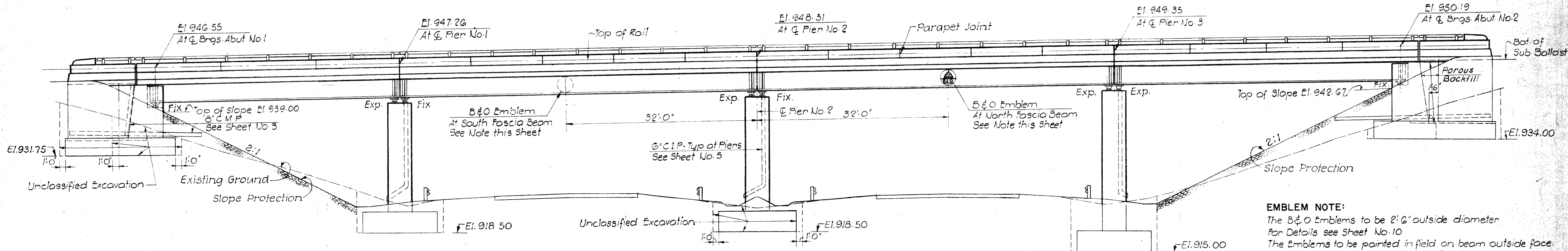
THE BALTIMORE & OHIO RAILROAD
THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. SIDING TO G.M. PLANT
BRIDGE NO. 690/20 VANDALIA, OHIO

SITE PLAN
SCALE: AS SHOWN NOV. 15, 1965
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.

DRAWING NO. 43350 SHEET 1 OF 11



PLAN
Scale: 1/8" = 1'-0"



ELEVATION
Scale: 1/8" = 1'-0"

EMBLEM NOTE:
The B & O Emblems to be 2'-6" outside diameter for Details see Sheet No. 10
The Emblems to be painted in field on beam outside face. Work to be included under Field Painting of Structural Steel Item.

ESTIMATED QUANTITIES						
ITEM	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUT.	PIERS GEN.
503	487	C.Y.	Unclassified Excavation		211	276
509	49,795	Lb.	Reinforcing Steel	23,120	9,875	16,800
511	194	C.Y.	Class "C" Concrete	194		
511	539	C.Y.	Class "E" Concrete		244	295
	348	S.Y.	3" Cement Concrete for Waterproofing Protection	348		
	377	S.Y.	Latex Waterproofing	377		
512	83	S.Y.	Bituminous Material-Type A Waterproofing			83
513	453.00	Lb.	Structural Steel	453.00		
514	453.00	Lb.	Field Painting of Structural Steel	453.00		
517	477	L.F.	Rolling-Alum. Rail & Supports, Conc. Parapet	431	46	
	419	L.F.	8" Half-Round Perf. Cor. Metal Pipe	419		
518	35	L.F.	8" Pipe Downspout, Wrought Iron, Incl. Supports	35		
518	55	C.Y.	Porous Backfill		55	
601	240	S.Y.	Crushed Aggregate Slope Protection			240
603	47	L.F.	8" Pipe Underdrain, Nonperf. Cor. Metal Pipe		47	
605	56	L.F.	8" Pipe Underdrain, Perf. Cor. Metal Pipe		56	

Note: Rails, Ties & Ballast not included in this estimate.

GENERAL NOTES:
DESIGN SPECIFICATIONS
Design of this structure is in accordance with the American Railway Engineering Association Specifications for Steel Railway Bridges for Fixed Spans Not Exceeding 400 Feet in Length, dated 1965.
Live Load - Cooper E 72 with impact allowance for diesel locomotives.

CONSTRUCTION AND MATERIAL
Construction and Material Specifications of the State of Ohio, Department of Highways, dated January 1, 1965, except that the A.R.E.A. Specifications shall be govern wherever applicable.

ALLOWABLE STRESSES
Class "C" Concrete:
Ultimate compressive strength (n=8) $f_c = 4000$ p.s.i.
Extreme fiber in compression $f_c = 1800$ p.s.i.
Class "E" Concrete:
Ultimate compressive strength (n=10) $f_c = 3400$ p.s.i.
Extreme fiber in compression $f_c = 1530$ p.s.i.
Structural Steel: Tension $f_c = 20,000$ p.s.i.
Reinforcing Steel: Tension $f_c = 20,000$ p.s.i.

MATERIALS
Except as otherwise specified in A.R.E.A. Specifications Structural Steel shall conform with ASTM designation

A 3G Rivet Steel ASTM designation A141, High Strength Steel Bolts ASTM designation A325.
Reinforcing steel shall be intermediate grade billet steel ASTM designation A15, deformation ASTM designation 305. Concrete for Superstructure shall be Class "C" for Abutments and Piers Class "E". Cement Concrete for Protection of Waterproofing shall meet the requirements of AREA Specifications for Waterproofing Part 2, Chapter 29.

CONCRETE SURFACE FINISH
Exposed edges of concrete to be chamfered 3/4", unless otherwise noted. Exposed concrete surfaces of piers and abutments, wingwalls except bridge seats shall have a "Rubbed Finish" in accordance with requirements of Construction and Material Specifications Sec. 511.16.

DAMP-PROOFING
Bituminous Material shall be applied to the back of all abutments and wingwalls above top of footings, where fill is in contact with the walls.

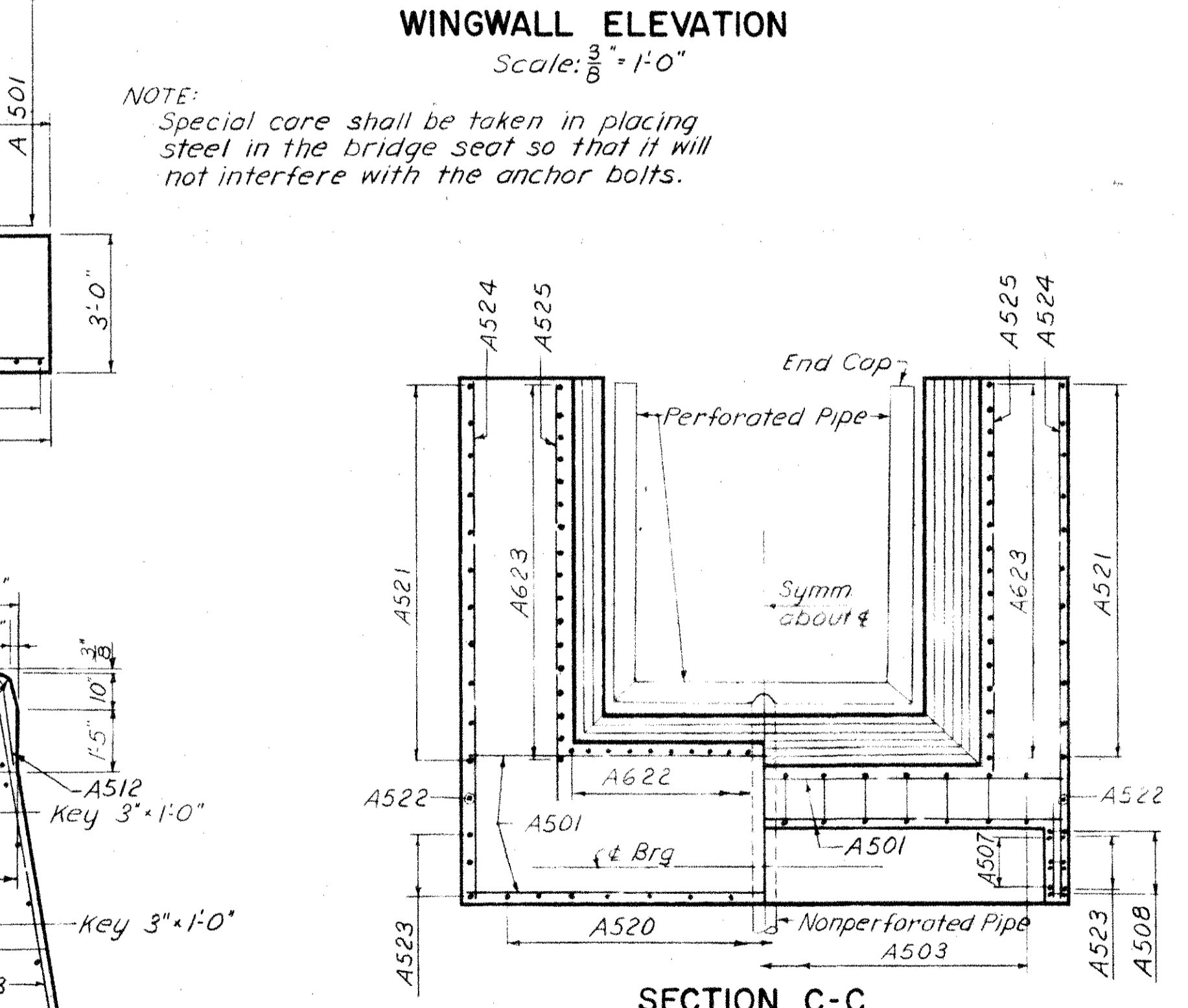
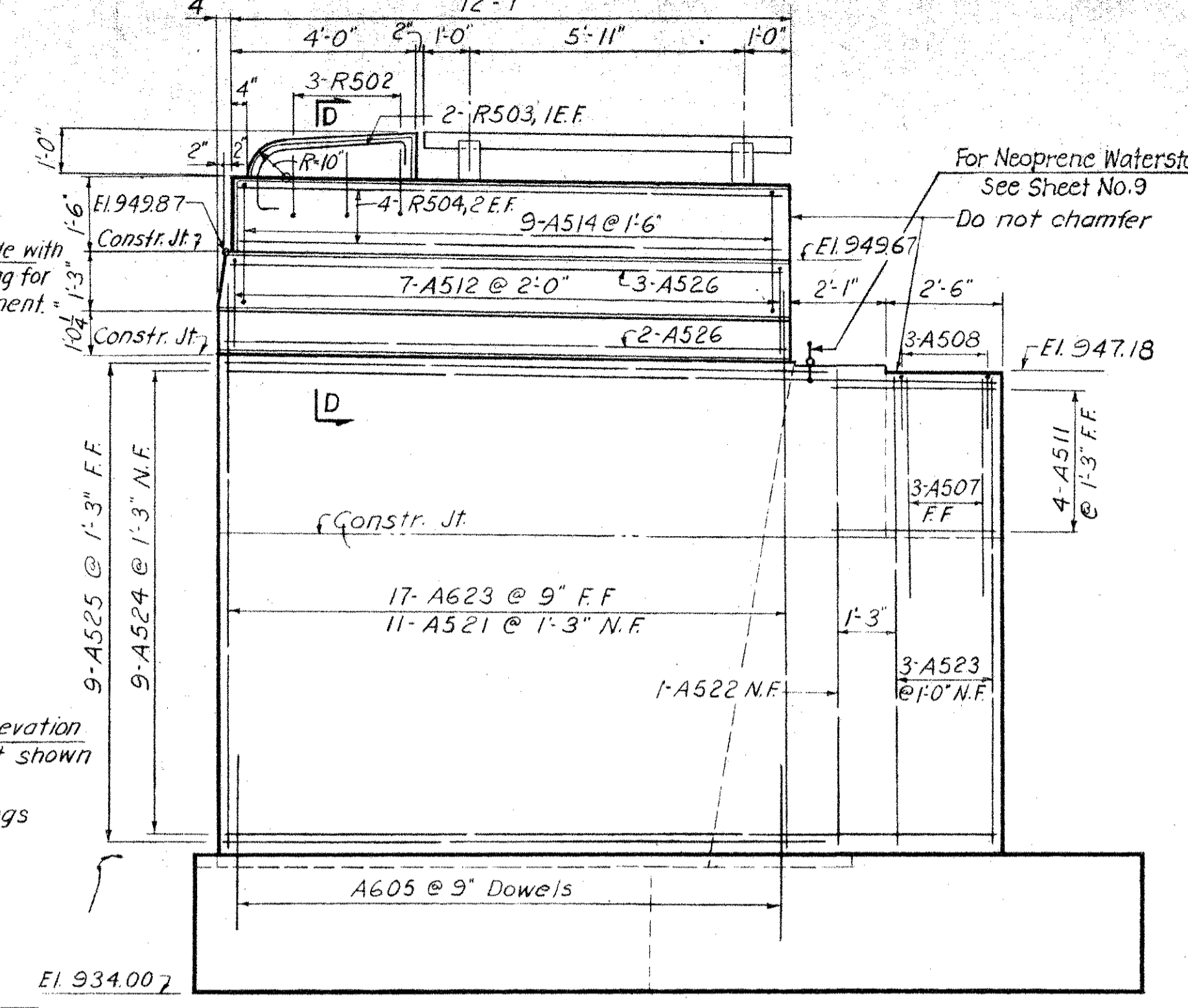
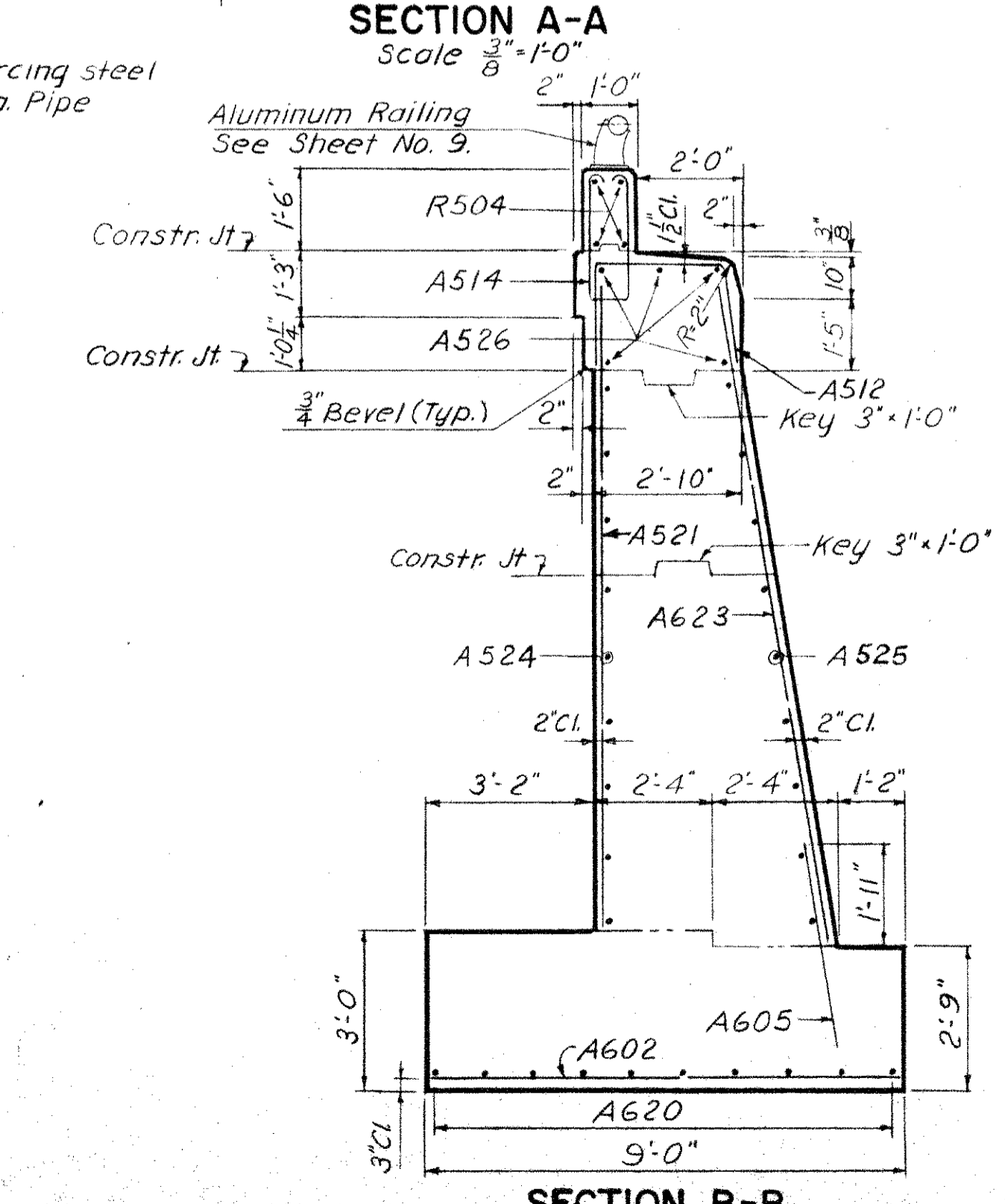
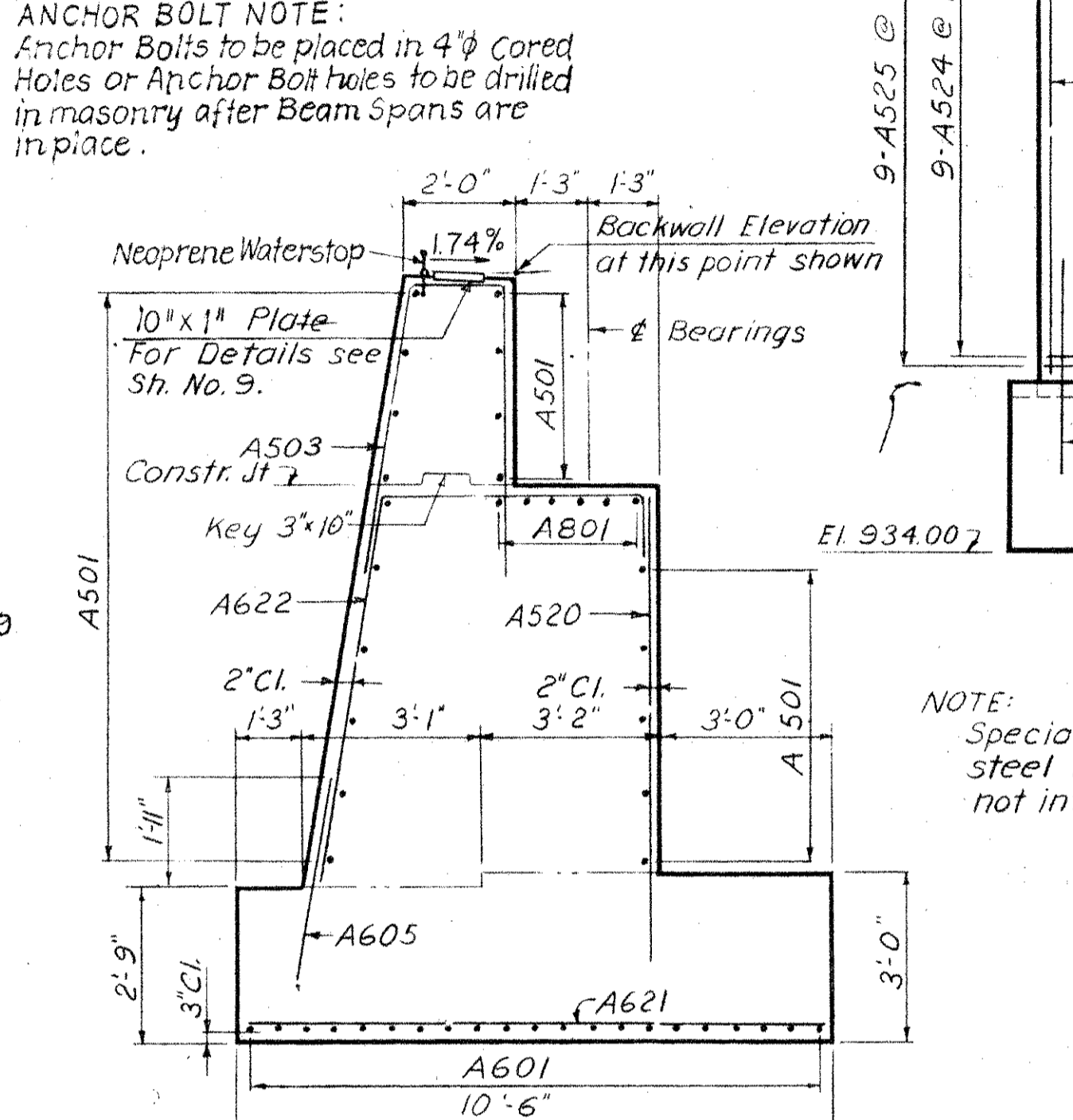
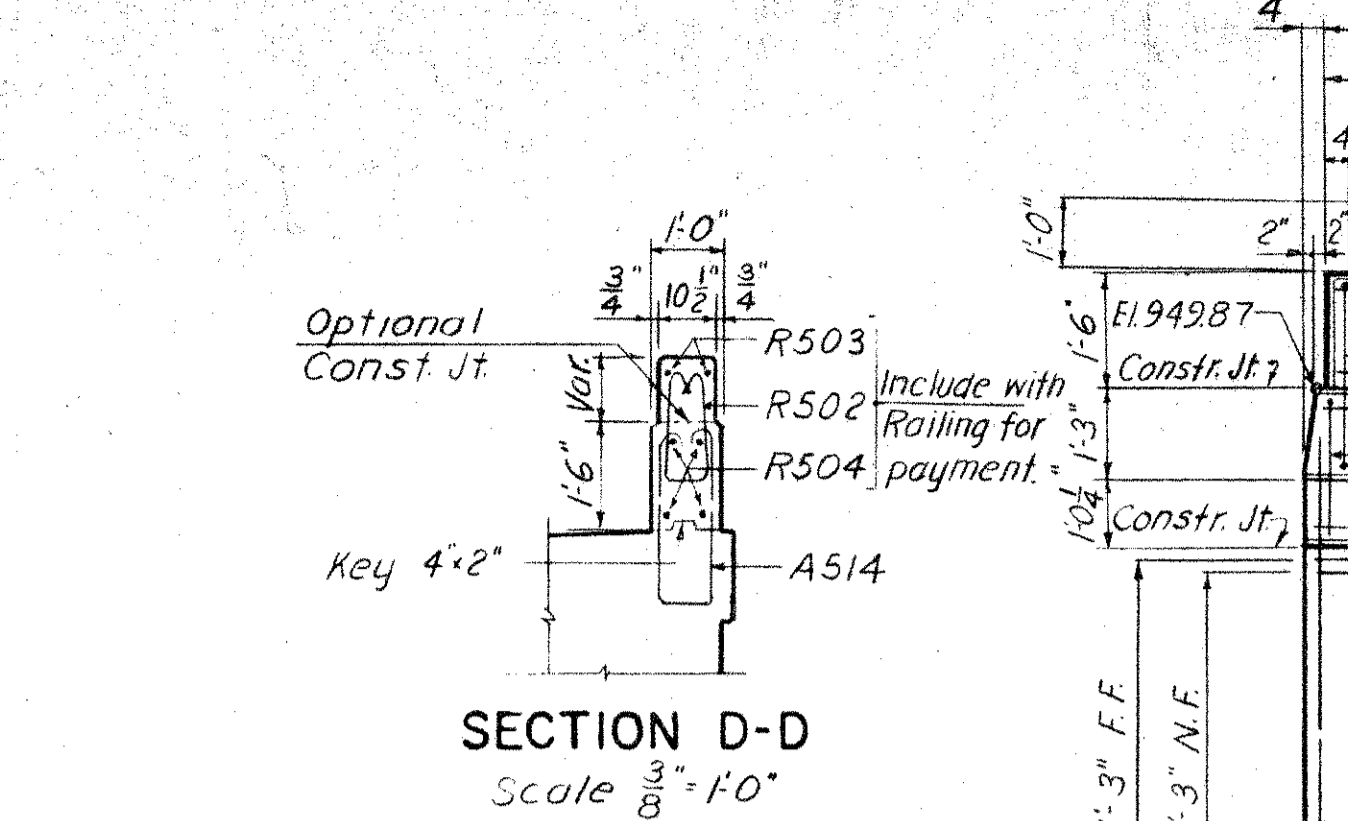
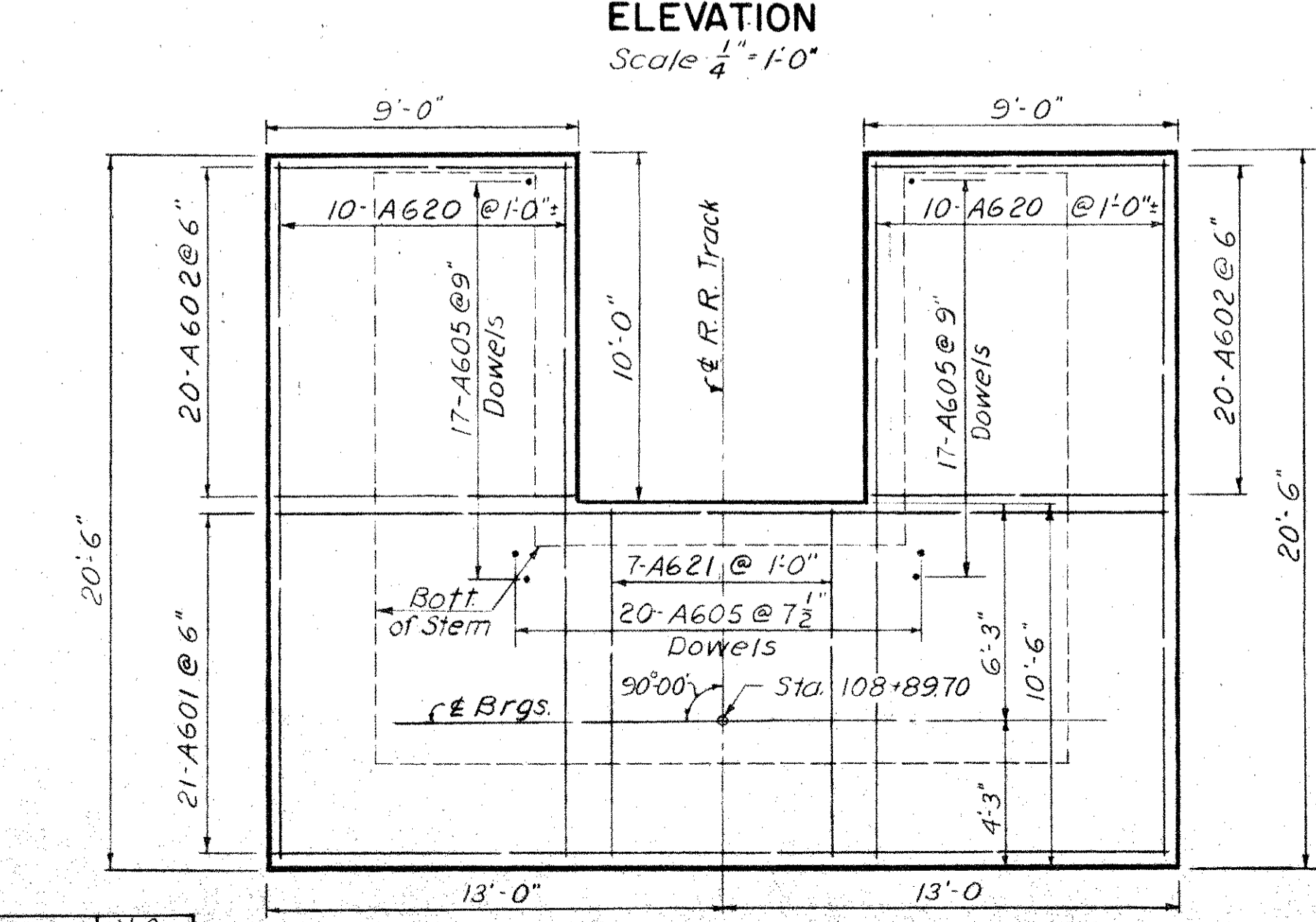
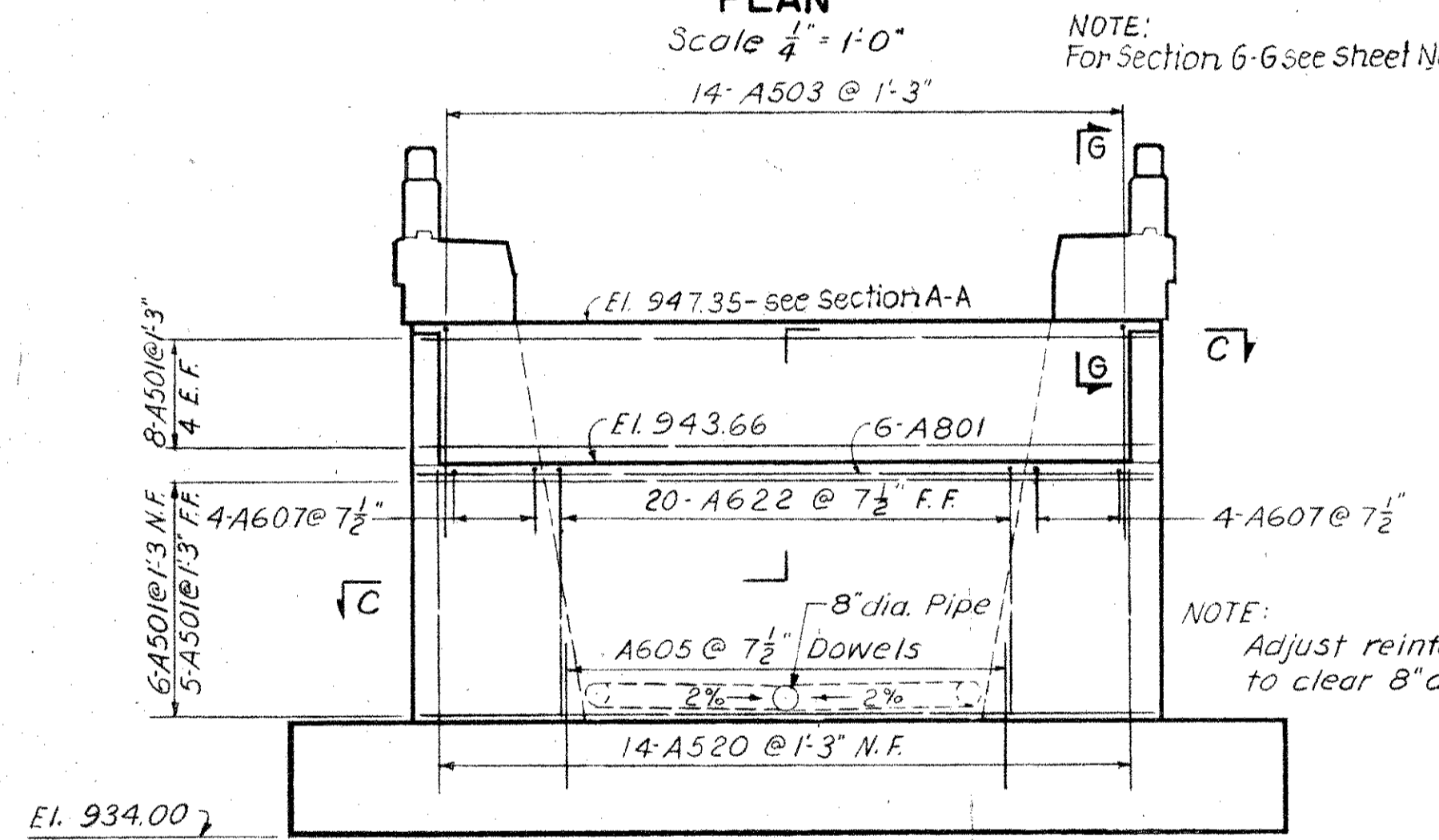
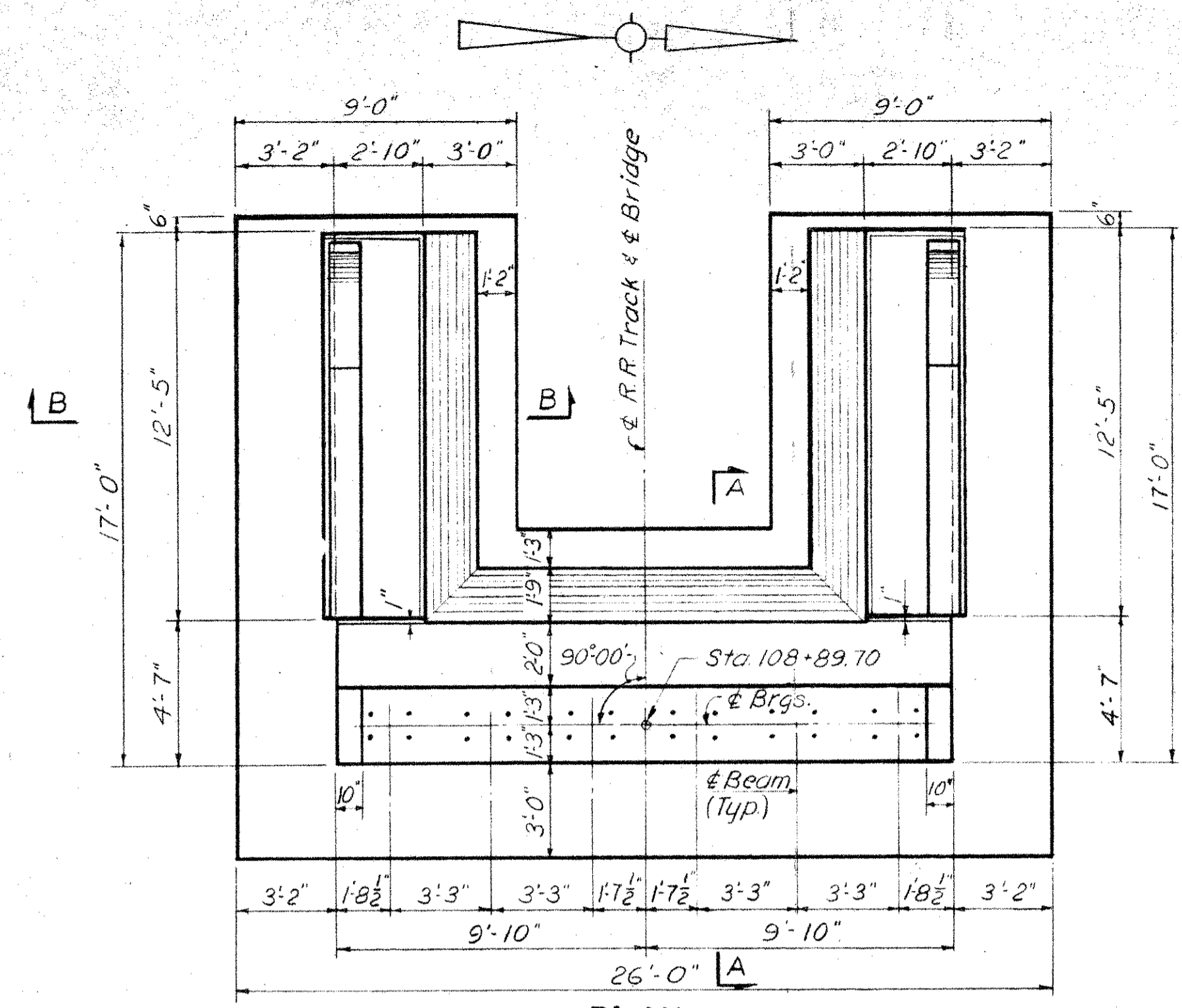
WELDING
All welding shall comply with the current Specifications for "Welded Highway and Railway Bridges" of the American Welding Society.

FOUNDATION PRESSURE
For design purposes the allowable pressure at pier footings does not exceed 3.0 tons per sq. ft. and at abutment footings does not exceed 2.0 tons per sq. ft.

DESIGNED BY: V.S.
DRAWN BY: P.A.M.
CHECKED BY: V.J.L.

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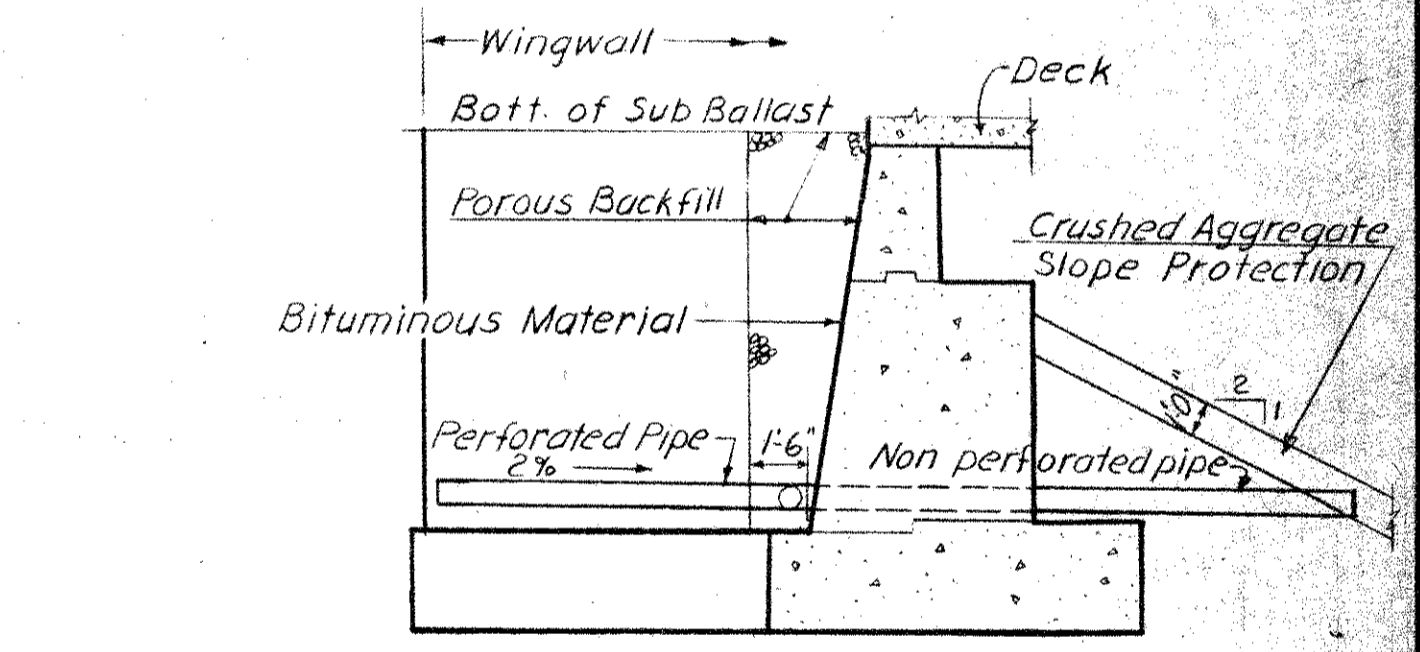
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TOLEDO - INDIANAPOLIS DIV. SIDING TOG.M. PLANT
BRIDGE NO. 690/20 VANDALIA, OHIO
GENERAL PLAN
SCALE: AS SHOWN NOV. 15, 1965
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.
DRAWING NO. 43351 SHEET 2 OF 11



REINFORCING STEEL LIST

MARK	SIZE	NUMBER	TYPE	LENGTH
A501	#5	19	Str.	19'-4"
A503	#5	14	Bent	12'-2"
A507	#5	6	Str.	4'-9"
A508	#5	6	Bent	2'-6"
A511	#5	8	Str.	3'-6"
A512	#5	14	Bent	6'-4"
A514	#5	18	"	6'-8"
A520	#5	14	Str.	8'-0"
A521	#5	22	"	12'-0"
A522	#5	2	"	10'-2"
A523	#5	6	"	10'-0"
A524	#5	18	"	16'-8"
A525	#5	18	"	13'-6"
A526	#5	10	"	11'-9"
A601	#6	21	Str.	25'-6"
A602	#6	40	"	8'-6"
A605	#6	54	"	3'-9"
A607	#6	8	Bent	5'-9"
A620	#6	20	Str.	20'-0"
A621	#6	7	"	10'-0"
A622	#6	20	Bent	12'-6"
A623	#6	34	Str.	12'-6"
A801	#8	6	Str.	19'-4"
R502	#5	6	Bent	4'-2"
R503	#5	4	"	5'-4"
R504	#5	8	Str.	11'-9"

Dimensions are out to out of bars.



- NOTES:
- Designations used are as follows: N.F. - Near Face, F.F. - Far Face, E.F. - Each Face.
 - For Fixed Bearing see Sheet No. 7.
 - For Railing and add. Details at top of backfill see Sheet No. 9.
 - For Anchor Bolt see Sheet No. 3.
 - For Unclassified Excavation Payment Lines see Sheet No. 2.

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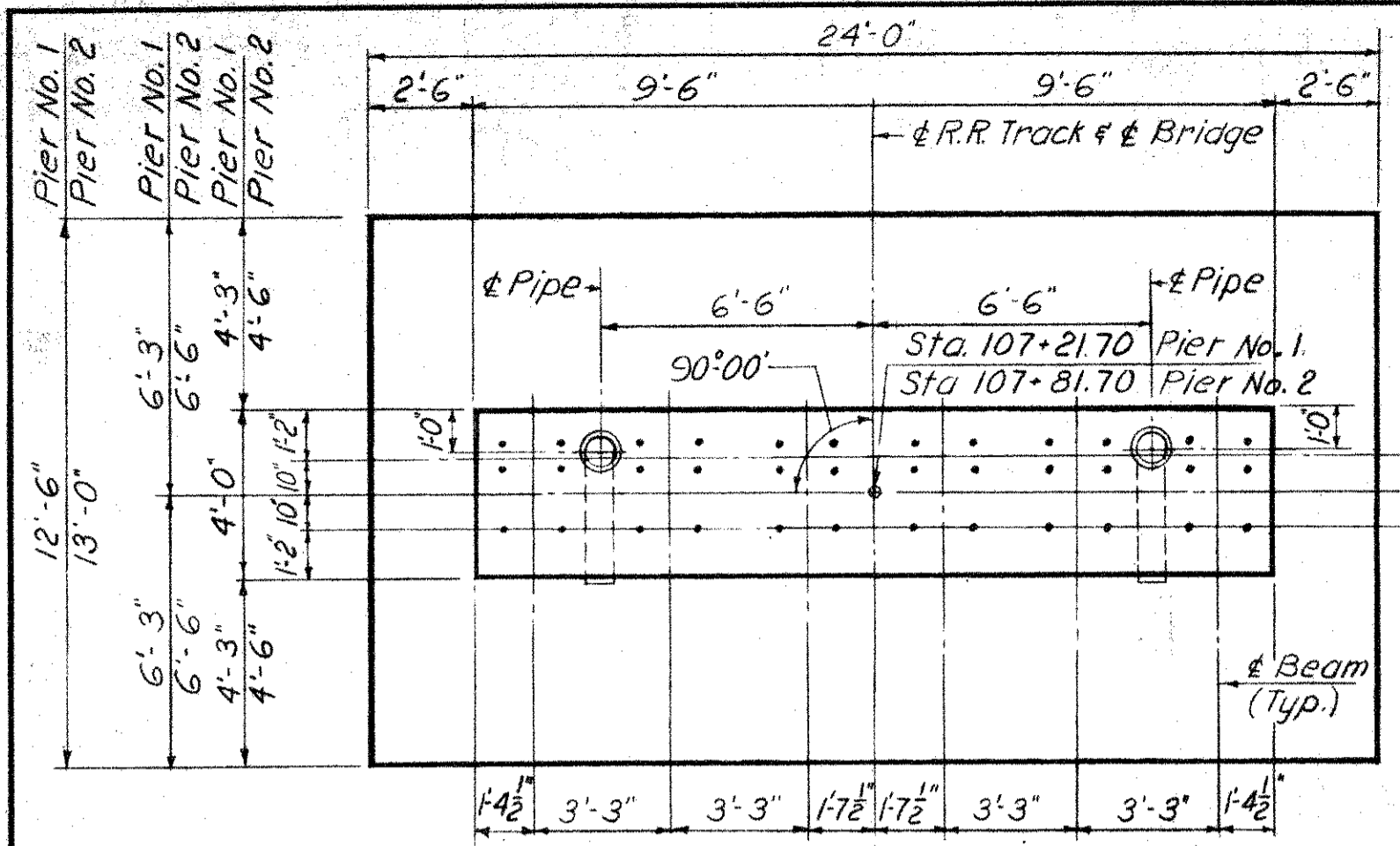
ABUTMENT NO. 2

SCALE: AS SHOWN NOV. 15, 1965
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BALTIMORE, MD.

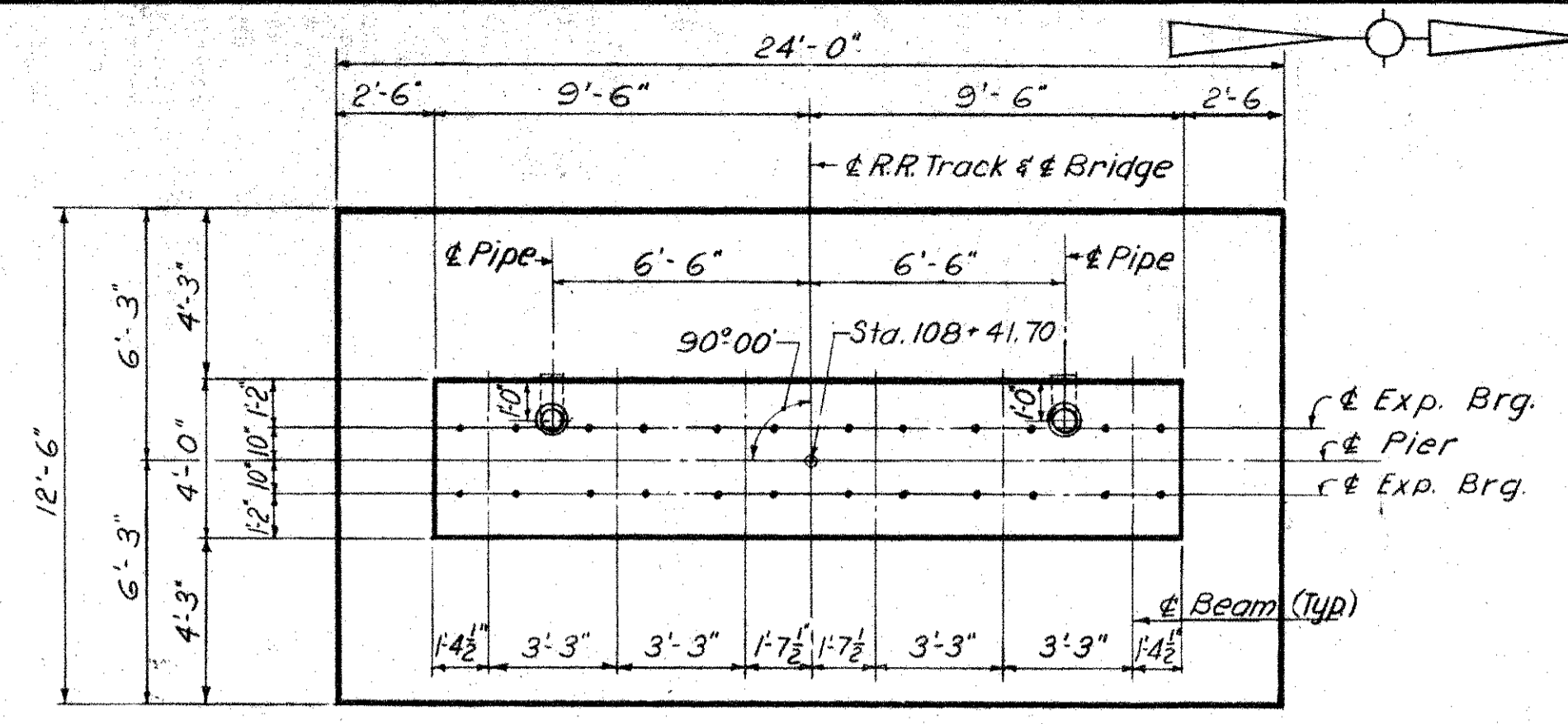
DRAWING NO. 43353 SHEET 4 OF 11

DESIGNED BY: V.S.
DRAWN BY: S.C.
CHECKED BY: V.J.L.

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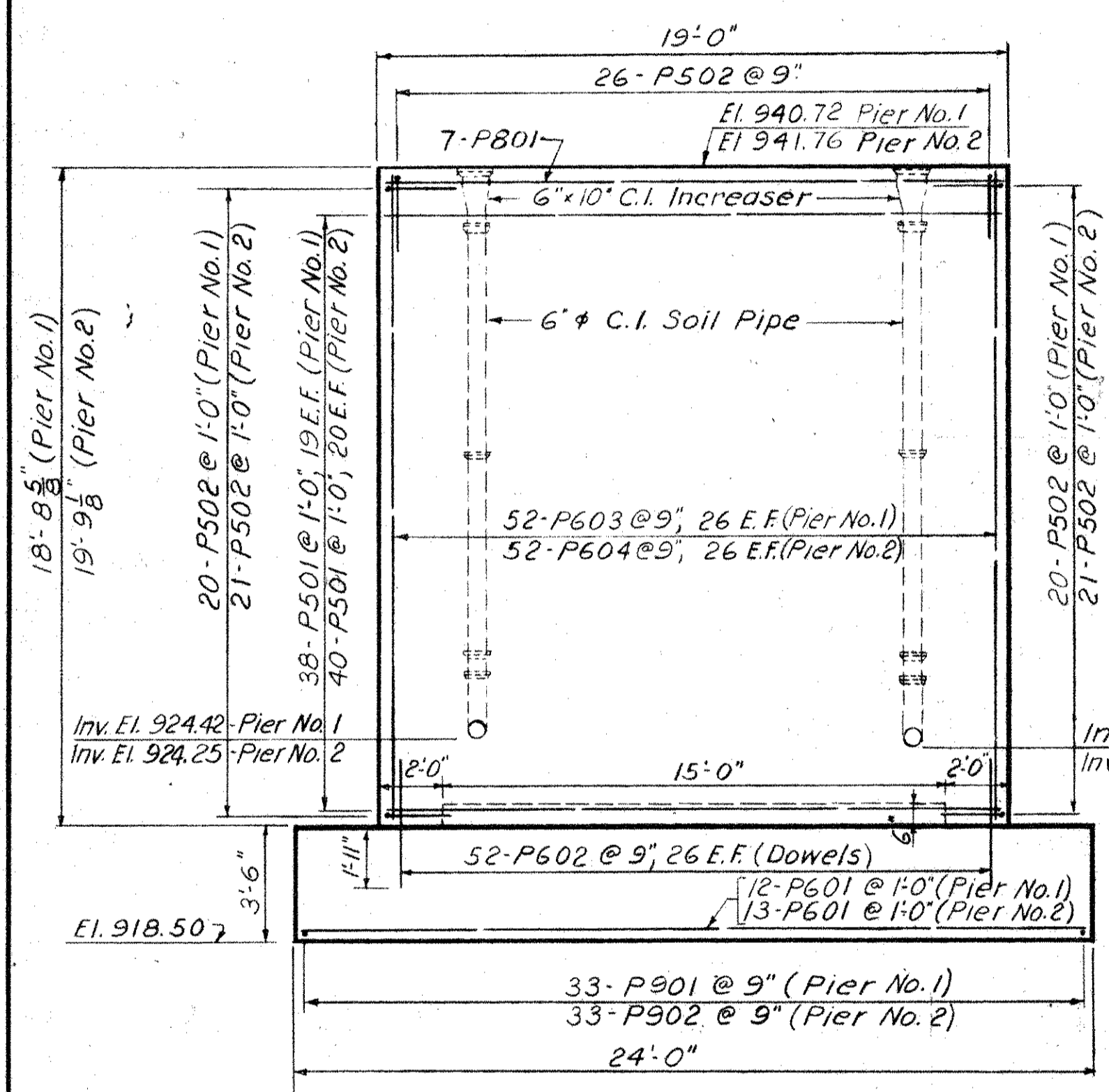


PLAN - PIERS NO. 1 & 2
Scale 1/4" = 1'-0"

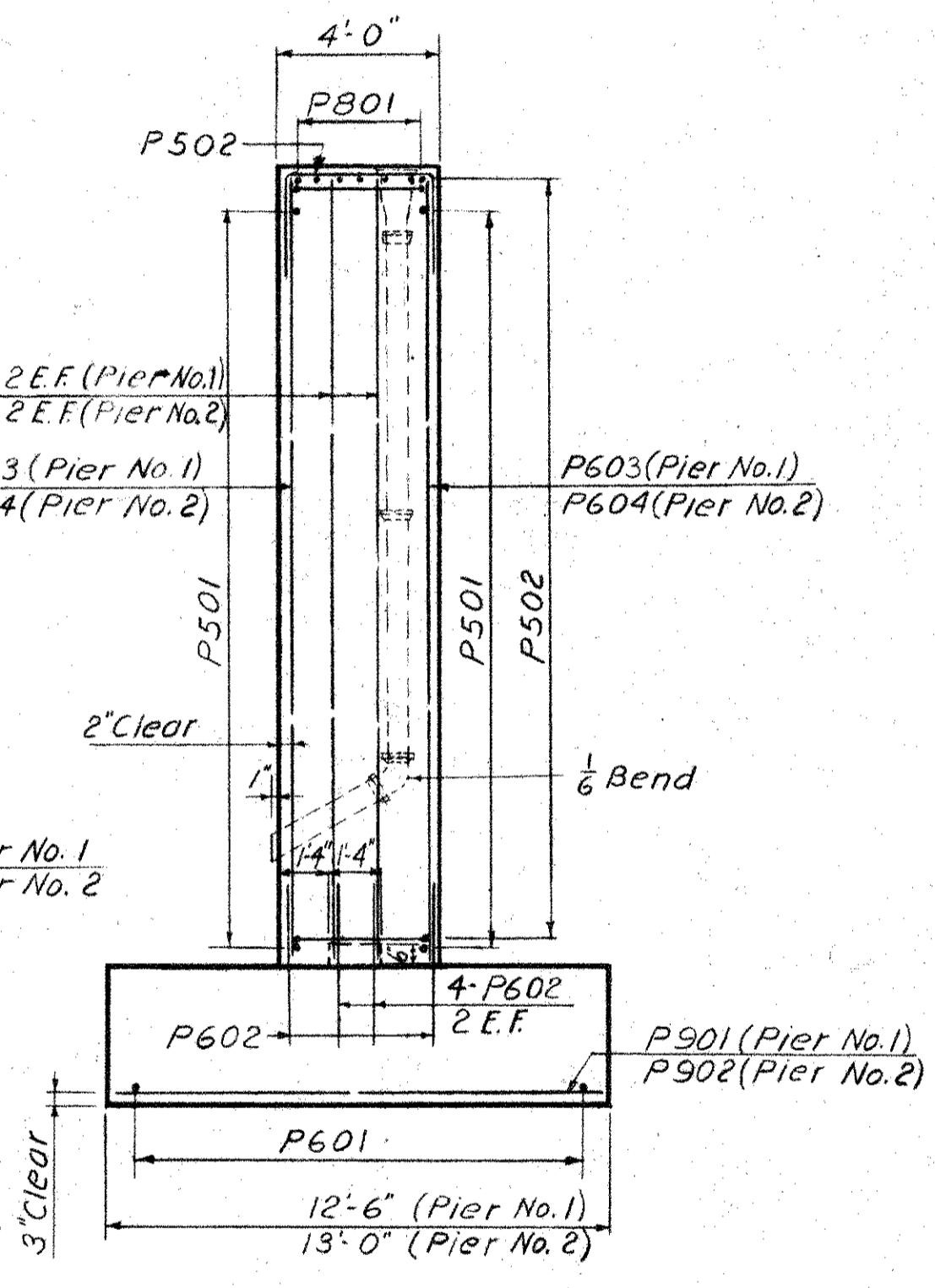


PLAN - PIER NO. 3
Scale 1/4" = 1'-0"

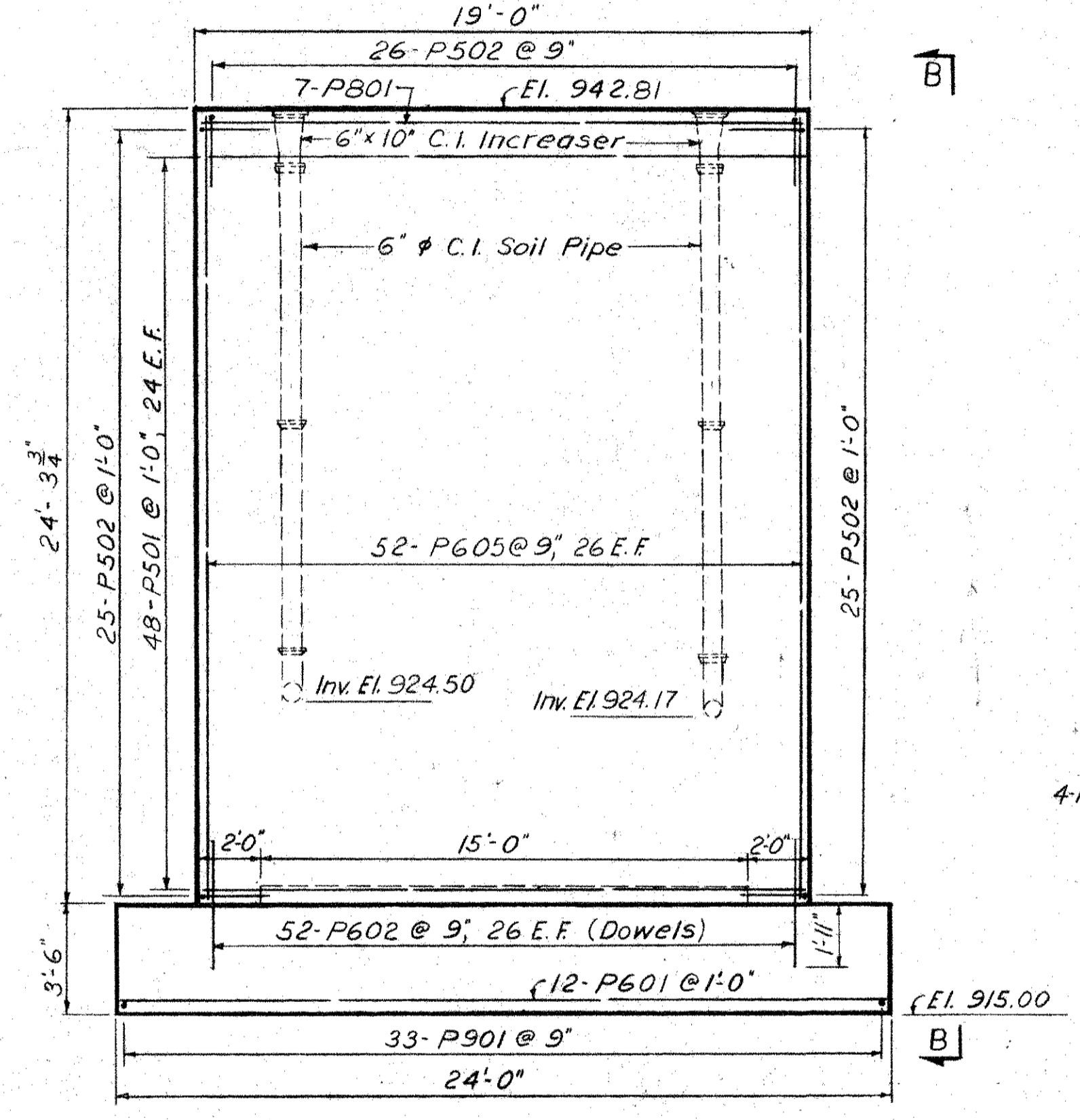
NOTE:
Special care shall be taken in placing steel on the top of Pier so that it will not interfere with the anchor bolts. Bend top bars as necessary to clear drainage pipes.



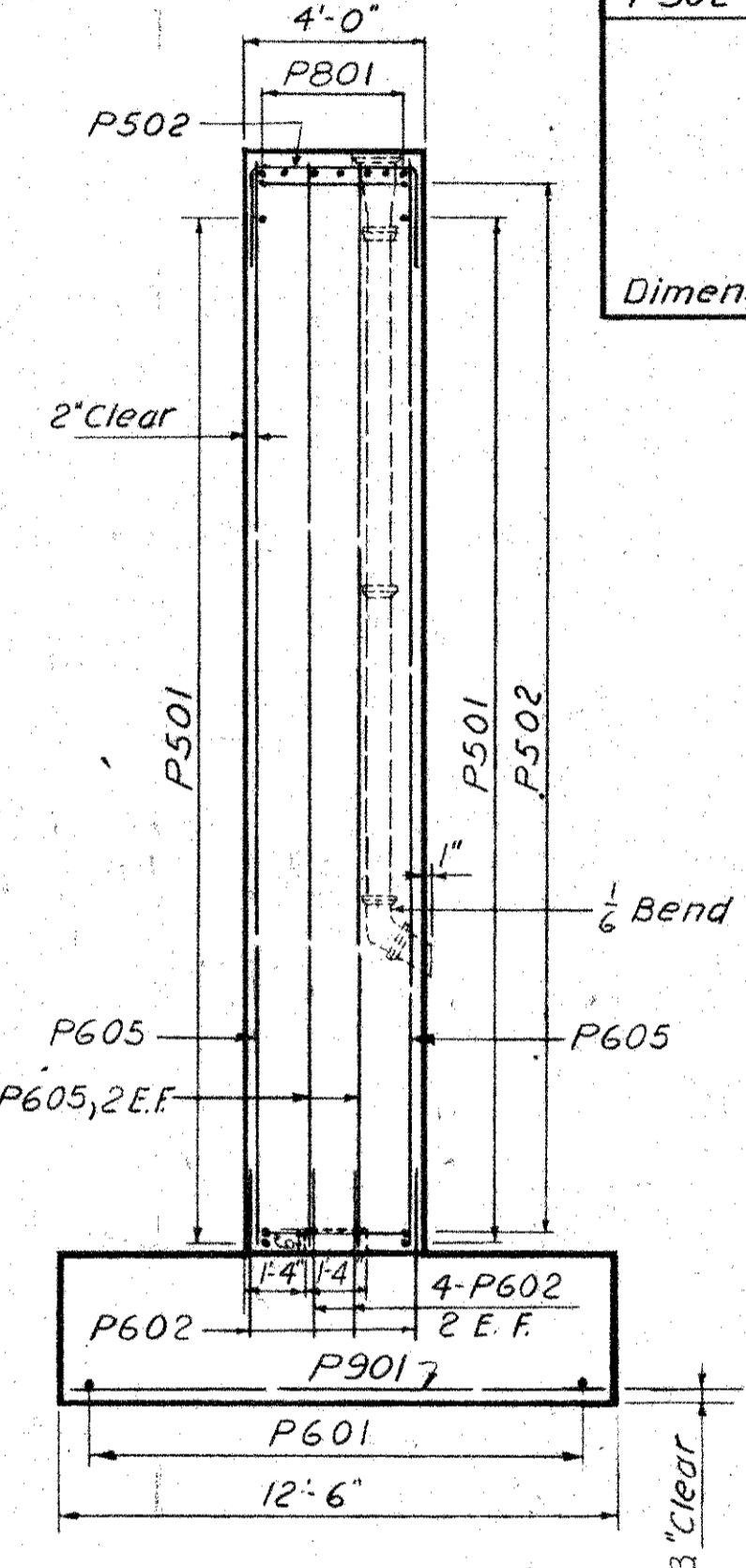
ELEVATION - PIERS 1 & 2
Scale 1/4" = 1'-0"



END VIEW A-A
Scale 1/4" = 1'-0"



ELEVATION - PIER 3
Scale 1/4" = 1'-0"



END VIEW B-B
Scale 1/4" = 1'-0"

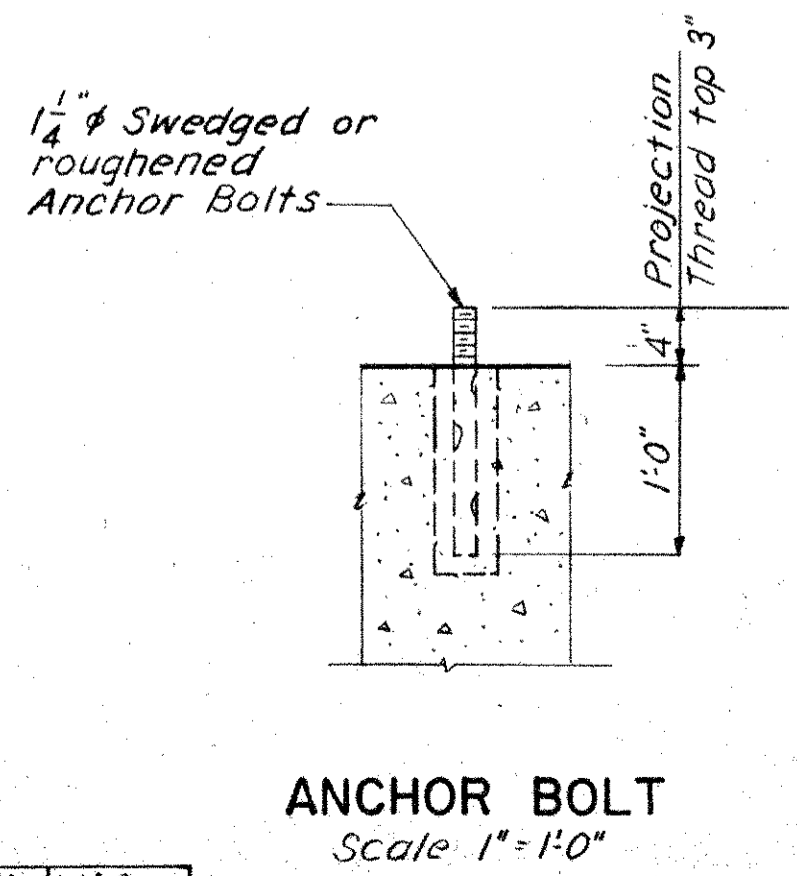
MARK	SIZE	NUMBER			TYPE	LENGTH	
		Pier No. 1	Pier No. 2	Pier No. 3			Total
P501	*5	38	40	48	126	Str.	18'-8"
P502	*5	66	68	76	210	Bent	7'-10"
P601	*6	12	13	12	37	Str.	23'-6"
P602	†	56	56	56	168	"	3'-10"
P603	†	56			56	"	18'-5"
P604	†	56			56	"	19'-6"
P605	*6			56	56	"	24'-0"
P801	*8	7	7	7	21	Str.	18'-8"
P901	*9	33		33	66	Str.	12'-0"
P902	*9		33	33	33	Str.	12'-6"

Dimensions are out to out of bars.

NOTE:
C.I. Soil Pipe to be paid for under Concrete Item.

PIERS - QUANTITIES		
DESCRIPTION	UNIT	QUANTITY
Unclassified Excavation	C.Y.	276
Reinforced Steel	Lb.	16,800
Class E Concrete	C.Y.	295

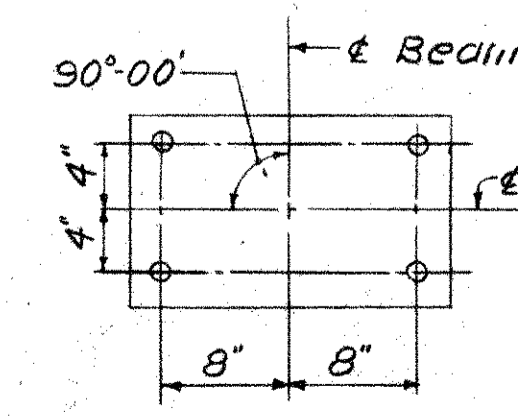
NOTES:
1. Designation E.F. - Each Face.
2. For Fixed and Expansion Bearings see Sheet No. 7.
3. For C.I. Soil Pipe connection with Superstructure see Sh. No. 9.
4. For Unclassified Excavation Lines see Sheet No. 2.



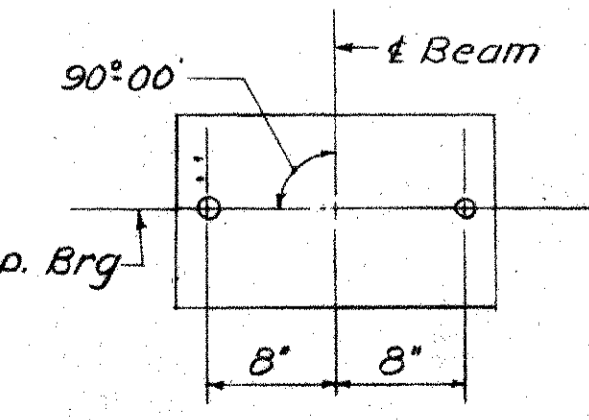
ANCHOR BOLT
Scale 1" = 1'-0"

Note:
Anchor bolts with nuts and washers to be paid for under Structural Steel Item.

ANCHOR BOLT NOTE:
Anchor Bolts to be placed in 4" Cored Holes or Anchor Bolt holes to be drilled in masonry after Beam Spans are in place.



FIXED BEARING



EXPANSION BEARING

ANCHOR BOLT LAYOUT
Scale 1" = 1'-0"

DESIGNED BY: V.S.
DRAWN BY: S.C.
CHECKED BY: V.J.L.

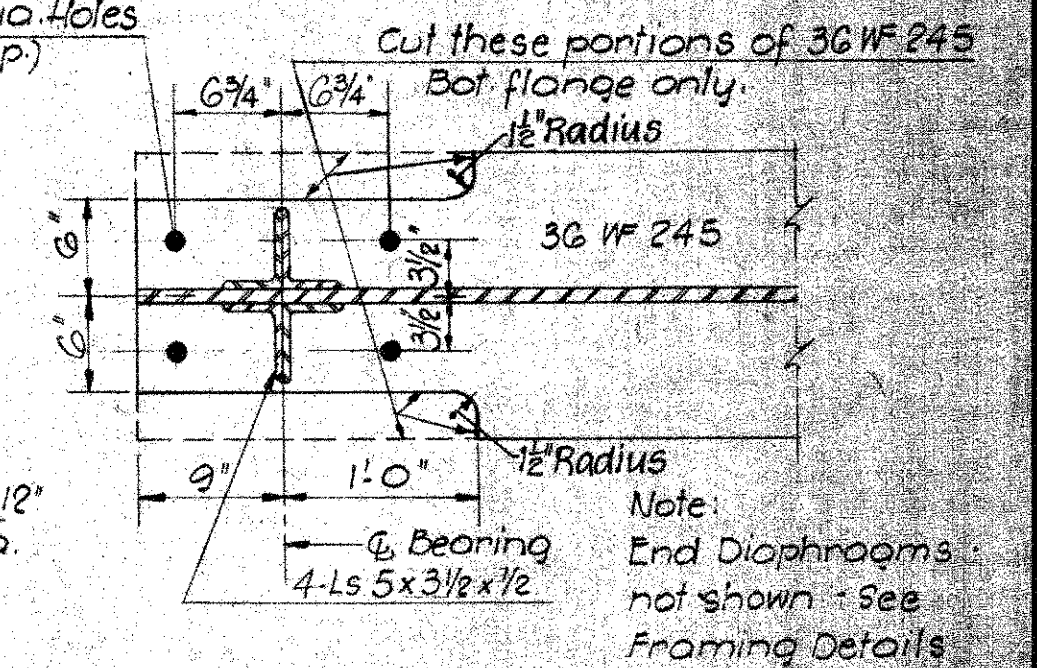
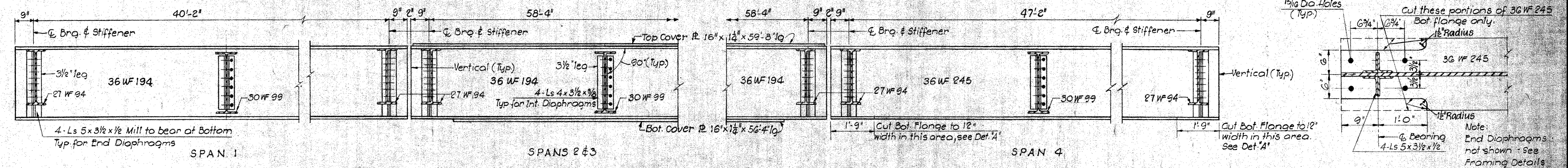
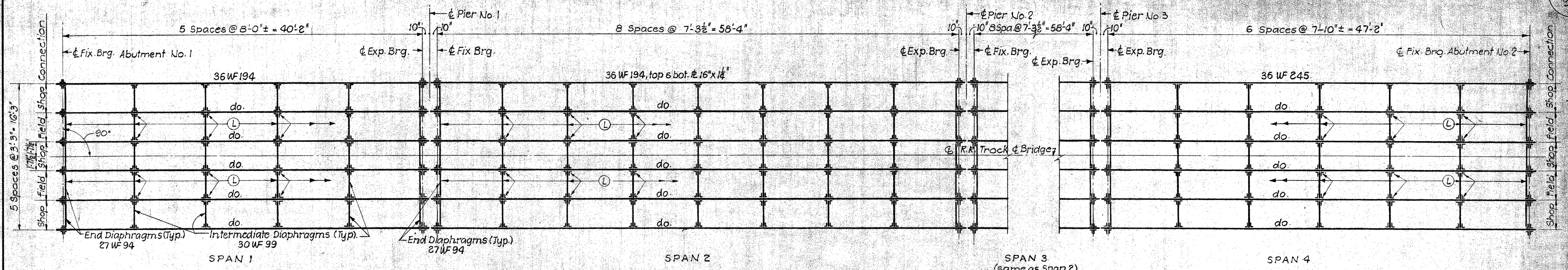
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BRIDGE NO. 690/20 VANDALIA, OHIO

PIERS

SCALE: AS SHOWN NOV. 15, 1965
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.

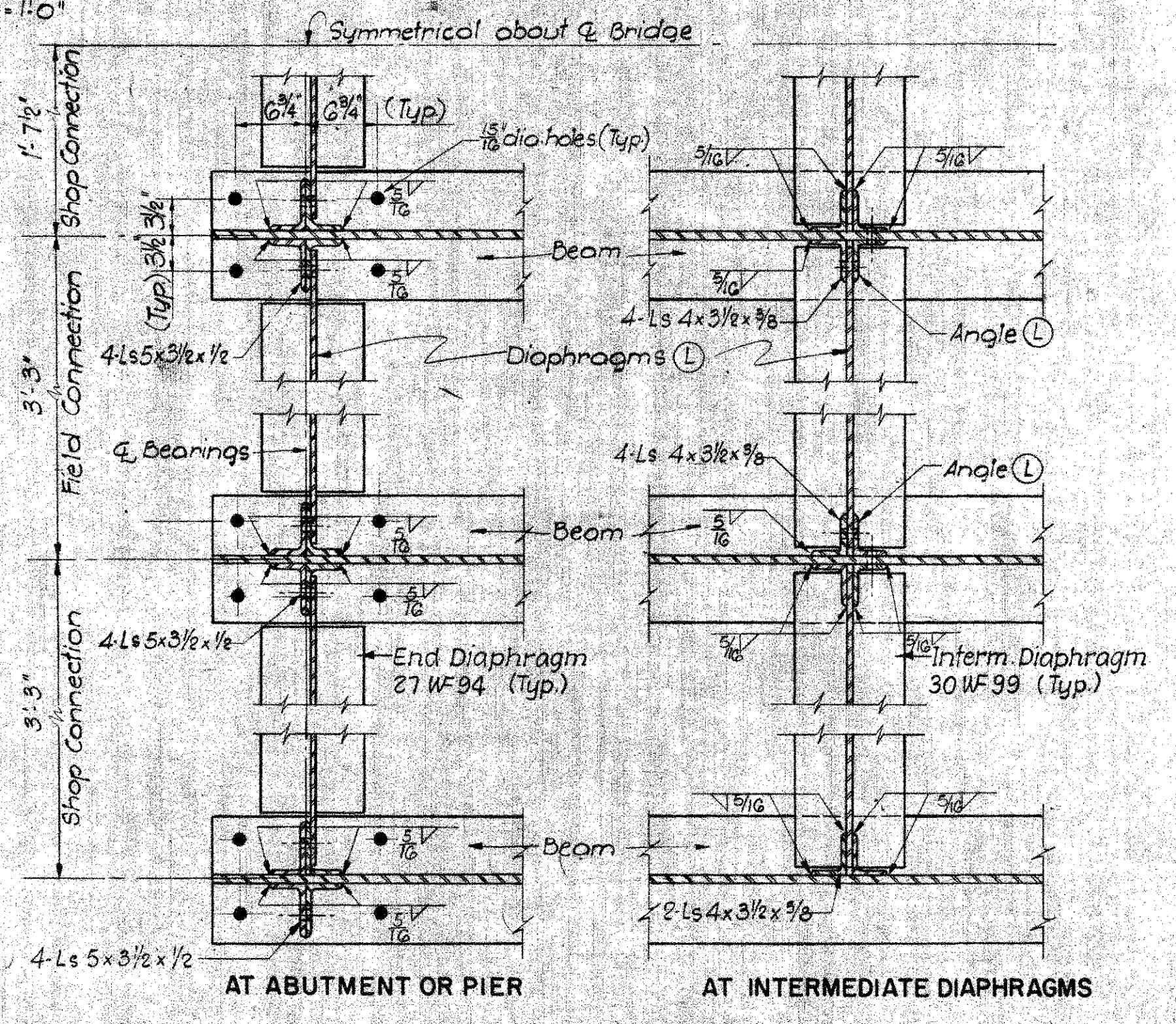
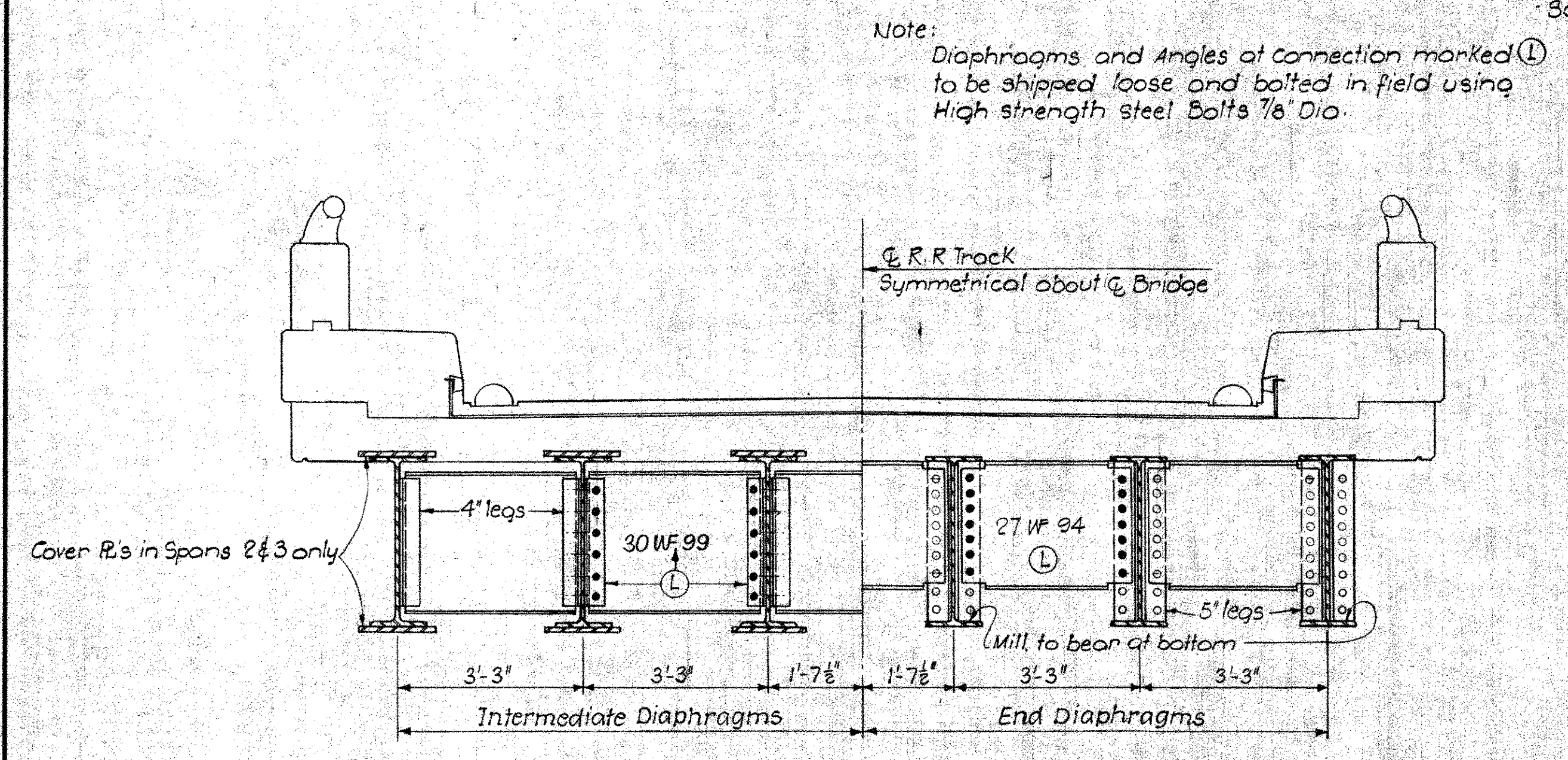
DRAWING NO. 43354 SHEET 5 OF 11



STEEL FRAMING QUANTITIES

DESCRIPTION	UNIT	QUANTITY
Structural Steel	lb.	453,100
Field Painting for Structural Steel	lb.	453,100

- NOTES:**
- Except as otherwise specified in AREA Specifications Structural Steel shall conform with ASTM designation A36, Rivet Steel ASTM designation A141, High strength Steel Bolts ASTM designation A325.
 - All High Strength Steel Bolts and Rivets to be 7/8" dia. For field connection High Strength Steel Bolts shall be used.
 - All subpunching and reaming shall comply with current AREA Specifications.
 - For Bearing & Cover R. Details see Sheet No. 7.



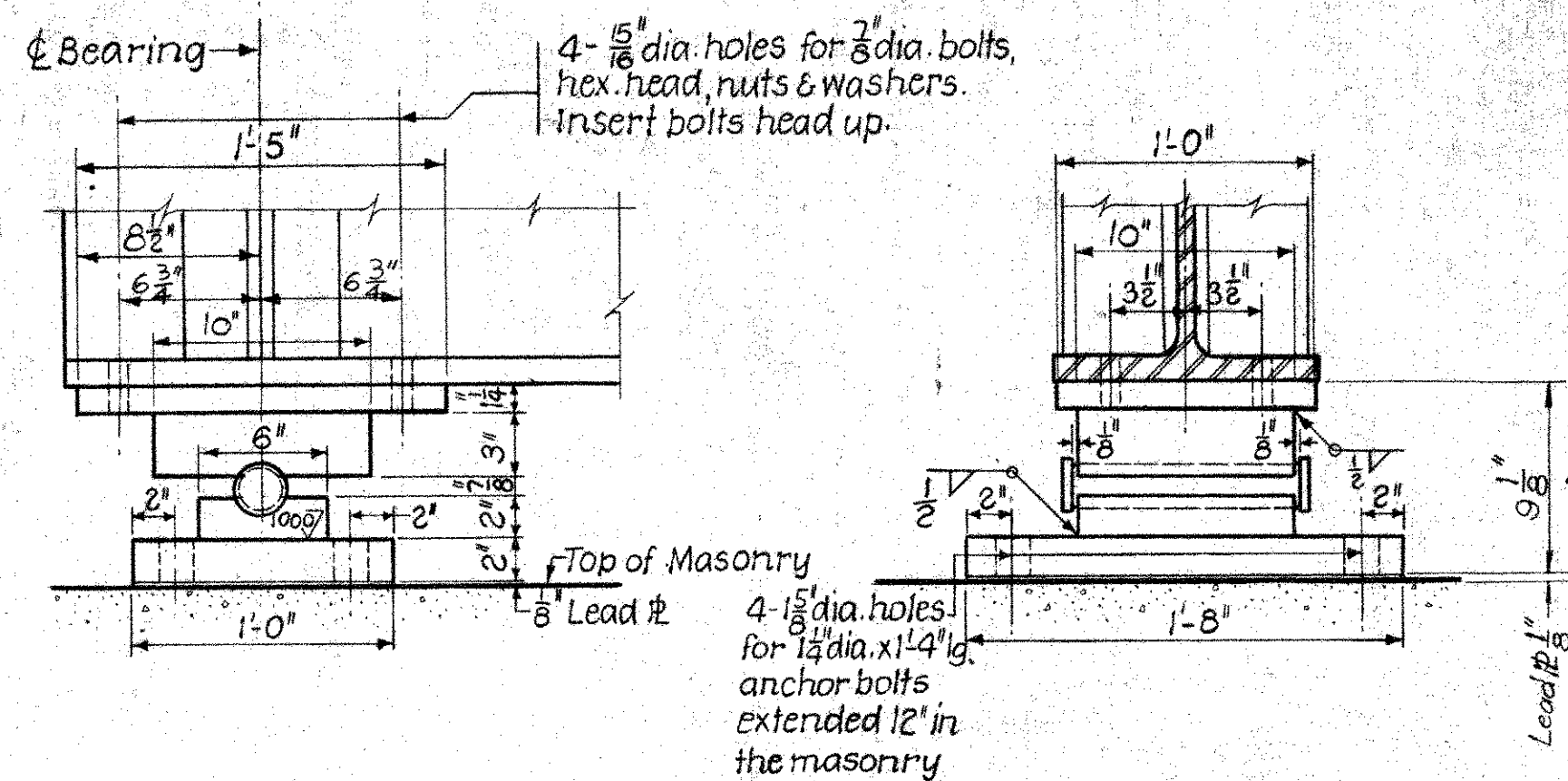
DESIGNED BY: V.S.
DRAWN BY: P.A.M.
CHECKED BY: V.J.L.

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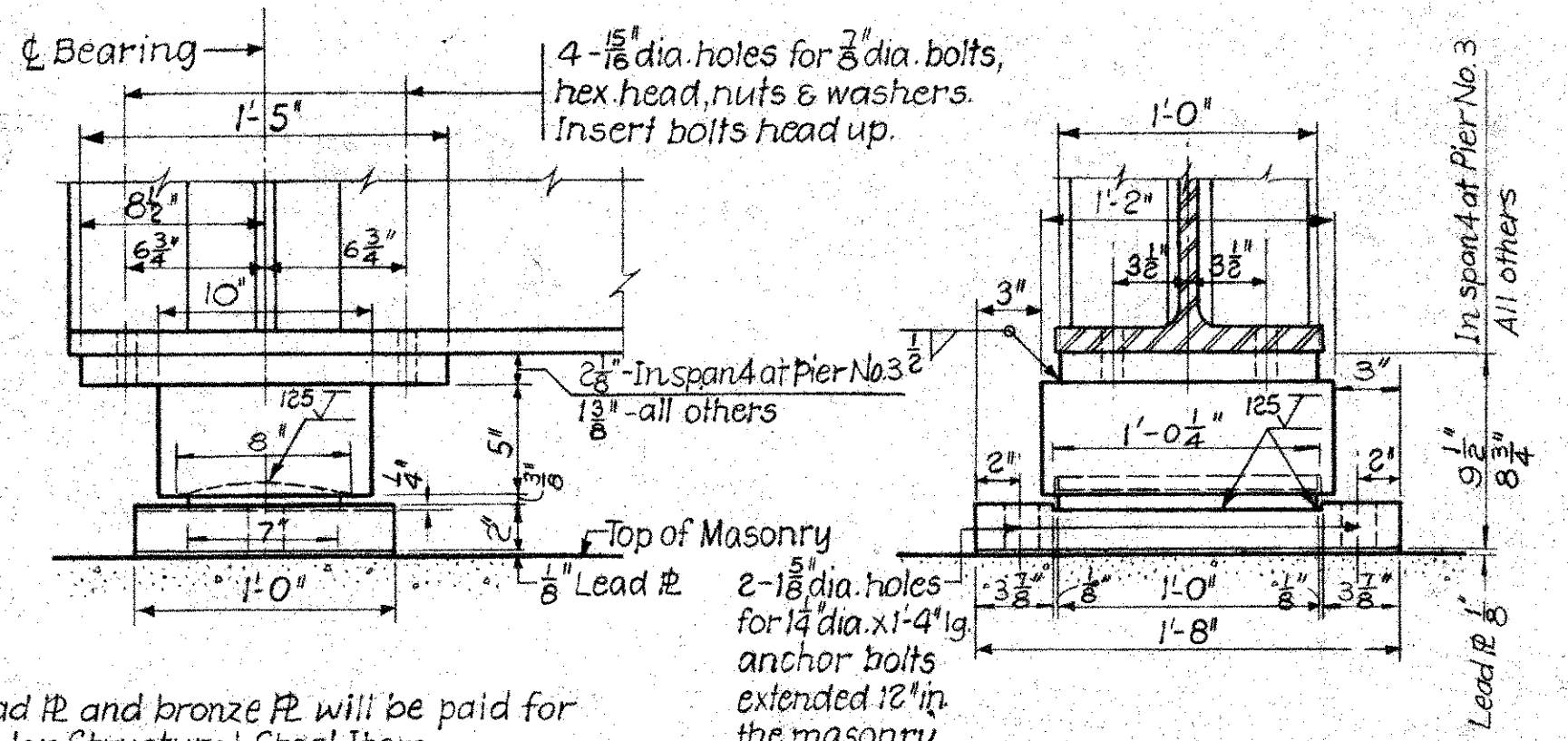
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SIDING TO G.M. PLANT VANDALIA, OHIO

STEEL FRAMING PLAN & DETAILS
SCALE: AS SHOWN
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.
NOV. 15, 1965

DRAWING NO. 43355 SHEET 6 OF 11

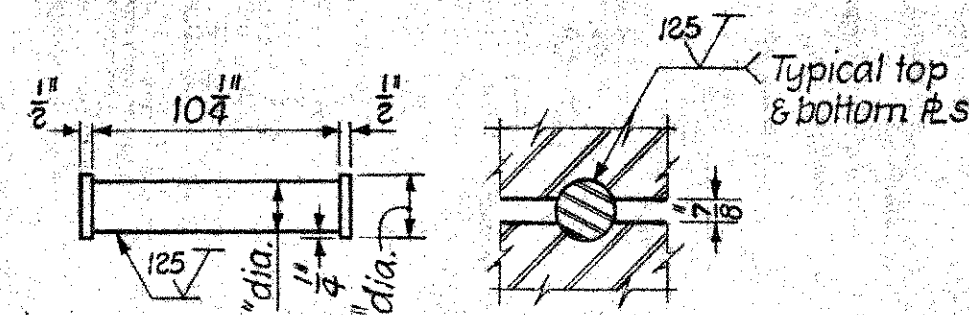


FIXED BEARING
Scale: $1\frac{1}{2}$ " = 1'-0"

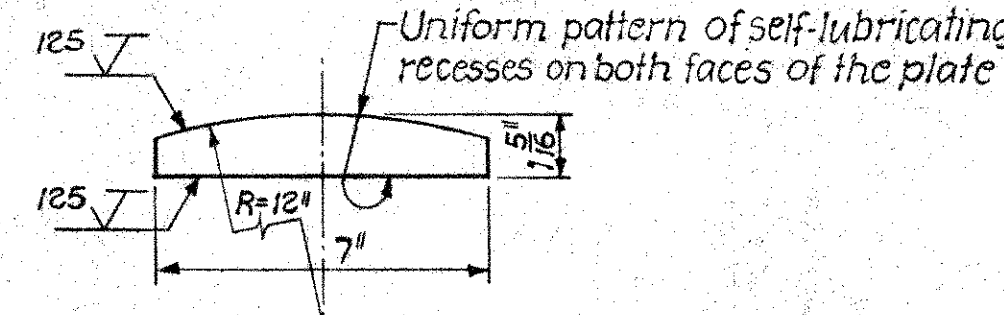


EXPANSION BEARING
Scale: $1\frac{1}{2}$ " = 1'-0"

Note: Lead $\frac{1}{8}$ " and bronze $\frac{1}{8}$ " will be paid for under Structural Steel Item



BEARING PIN DETAIL
Scale: $1\frac{1}{2}$ " = 1'-0"



SELF-LUBRICATING BRONZE PLATE DETAIL
Scale: 3" = 1'-0"

BEARING NOTES:

Cast phosphor bronze shall conform to ASTM Designation B 22, Alloy A and shall have an allowable unit stress of 2000 psi in compression.

The lubricant shall be of the solid type and shall consist of graphite, metallic substances having lubricating properties and a lubricating binder.

The recesses for the lubricant shall consist either (1) of annular rings with or without central circular recess with a depth at least equal to the width of the ring or diameter of hole or (2) of circular recesses approximately $\frac{1}{16}$ " in diameter and $\frac{3}{16}$ " to $\frac{1}{4}$ " deep.

Bearing surfaces of the bronze bearing plates and opposing steel plates shall be machine finished to the surface roughness shown on this drawing. The lay of the tool marks shall be in the direction of motion. All machine surfaces shall be flat within 0.005 inch per inch of length and width.

The total area of recesses for the lubricant shall comprise not less than 25% nor more than 35% of the total bearing area of the plate.

Steel: Plates and anchor bolts shall conform to ASTM Designation A 36, and pins to ASTM A-108

STRESS COMPUTATION

SPAN 1 40'-2" c. to c. bearings

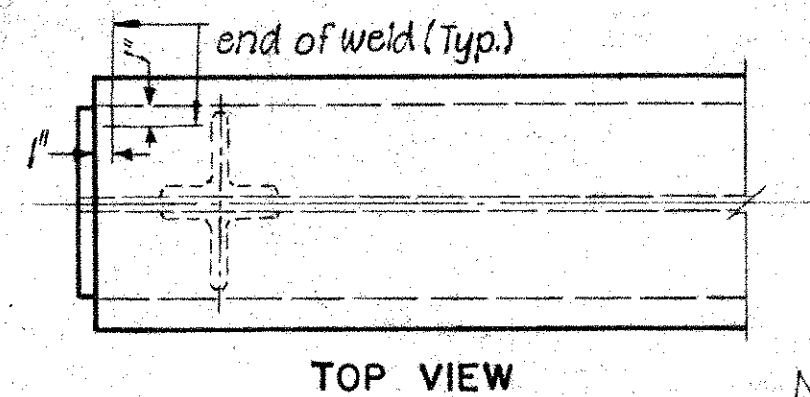
Max. Bending Moment		Max. End Shear	
Dead Load	266,000	Dead Load	27,000
Live Load	560,000	Live Load	63,000
Impact	263,000	Impact	30,000
	1,089,000 lbs. ft.		120,000 lbs.
Req'd. Section Modulus	$\frac{1,089,000 \times 12}{20,000} = 653 \text{ in}^3$	End stiffeners	4 L 5 x $3\frac{1}{2}$ x $\frac{1}{2}$
Beam 36 WF 194		Bearing Masonry	$\frac{1}{2} \times 20" = 240 \text{ in}^2$ - see Spans 2 & 3
Section Modulus	663.6 in ³	Jacking (Dead Load)	$\frac{194,000 \text{ lbs} - \text{total reaction}}{2} = 97,000 \text{ lbs per jack}$
Max. Dead Load Deflection	$\frac{1}{4}$ "		

SPANS 2 & 3 58'-4" c. to c. bearings

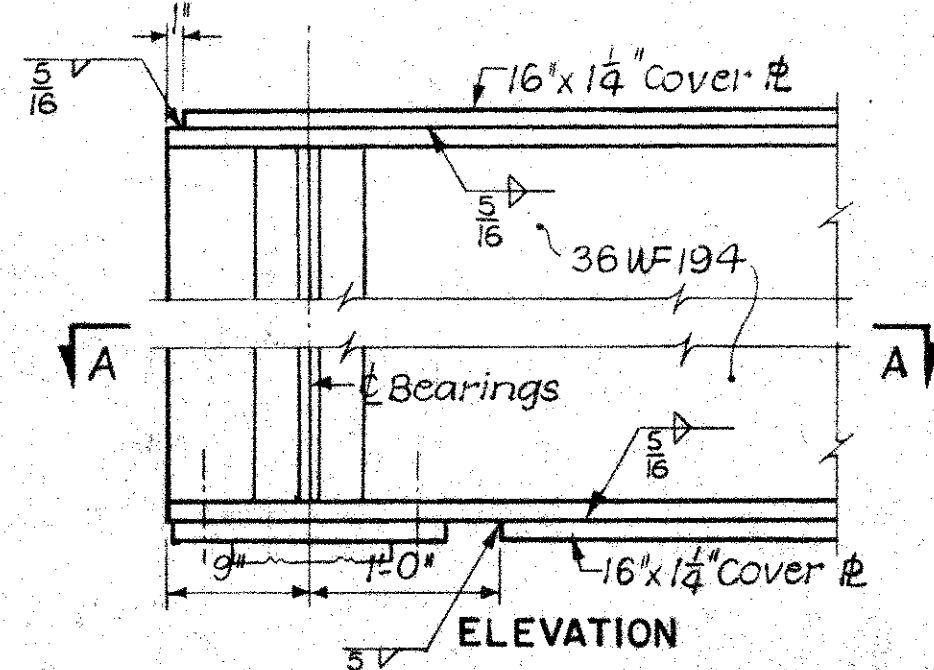
Max. Bending Moment		Max. End Shear	
Dead Load	625,000	Dead Load	43,000
Live Load	1,046,000	Live Load	85,000
Impact	457,000	Impact	37,000
	2,128,000 lbs. ft.		165,000 lbs.
Req'd. Section Modulus	$\frac{2,128,000 \times 12}{20,000} = 1277 \text{ in}^3$	End stiffeners	4 L 5 x $3\frac{1}{2}$ x $\frac{1}{2}$
Beam 36 WF 194 with Top & Bot. Cover $\frac{1}{4}$ "		Bearing Masonry Area req'd.	$\frac{165,000}{850} = 194 \text{ in}^2$
Section Modulus	1351.0 in ³ - gross section	Bearing Masonry	$\frac{1}{2} \times 20" = 240 \text{ in}^2$
	1337.9 in ³ - net section	Jacking (Dead Load)	$\frac{274,000 \text{ lbs} - \text{total reaction}}{2} = 137,000 \text{ lbs per jack}$
Max. Dead Load Deflection	$\frac{1}{2}$ "		

SPAN 4 47'-2" c. to c. bearings

Max. Bending Moment		Max. End Shear	
Dead Load	379,000	Dead Load	32,000
Live Load	718,000	Live Load	71,000
Impact	329,000	Impact	32,000
	1,426,000 lbs. ft.		135,000 lbs.
Req'd. Section Modulus	$\frac{1,426,000 \times 12}{20,000} = 856 \text{ in}^3$	End stiffeners	4 L 5 x $3\frac{1}{2}$ x $\frac{1}{2}$
Beam 36 WF 245		Bearing Masonry	$\frac{1}{2} \times 20" = 240 \text{ in}^2$ - see spans 2 & 3
Section Modulus	892.5 in ³ - gross section	Jacking (Dead Load)	$\frac{232,000 \text{ lbs} - \text{total reaction}}{2} = 116,000 \text{ lbs per jack}$
	877.7 in ³ - net section		
Max. Dead Load Deflection	$\frac{3}{8}$ "		



TOP VIEW Note: End diaphragm and connections not shown.



SECTION A-A
COVER PLATE DETAILS
Scale: 1" = 1'-0"

DESIGNED BY: V.S.
DRAWN BY: P.A.M.
CHECKED BY: W.J.L.

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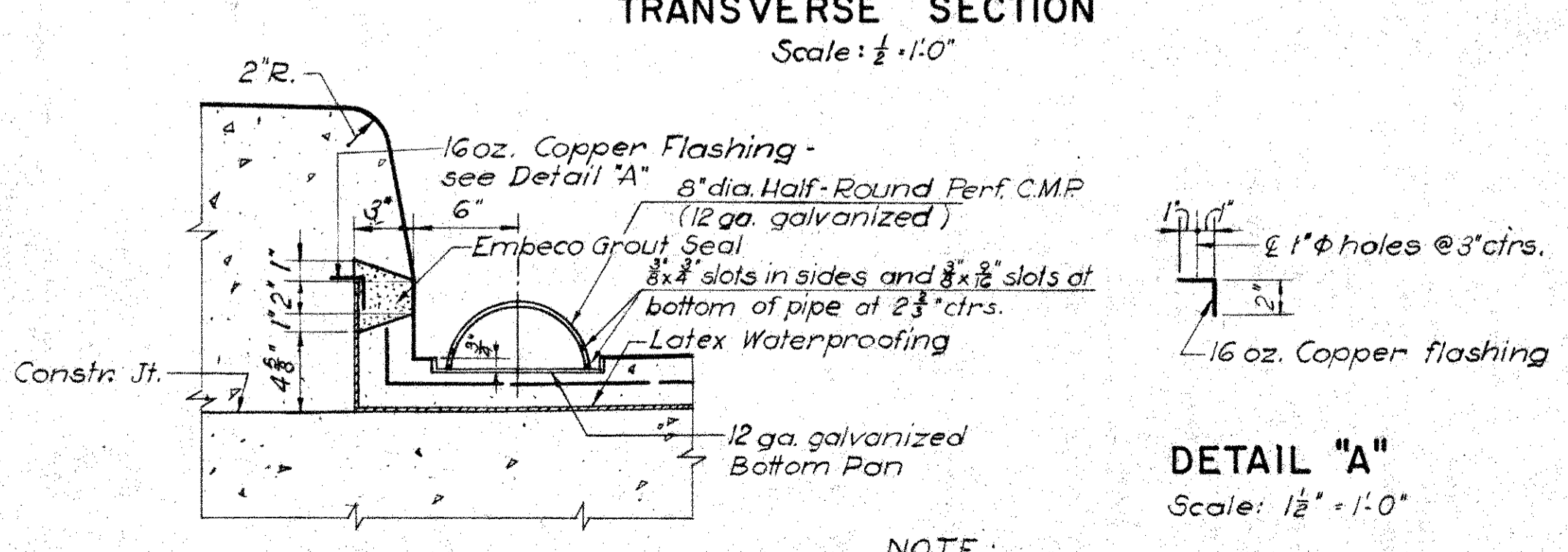
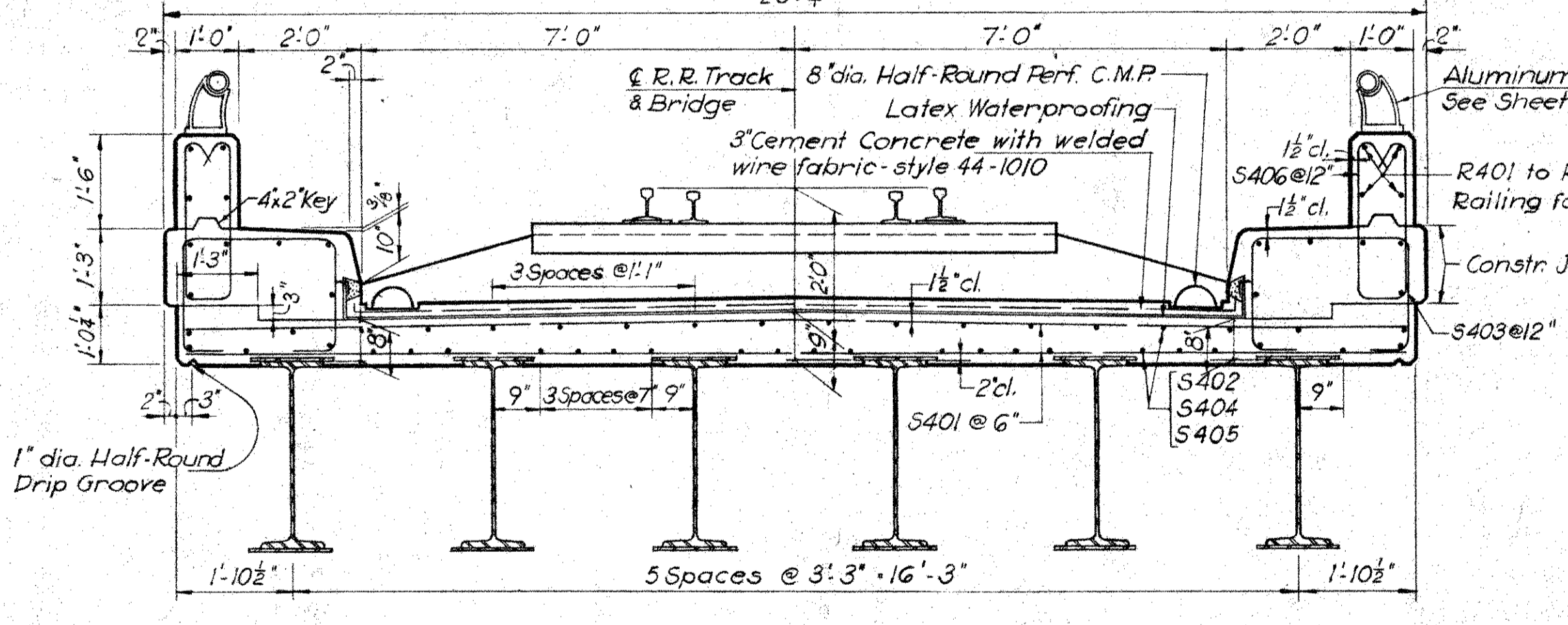
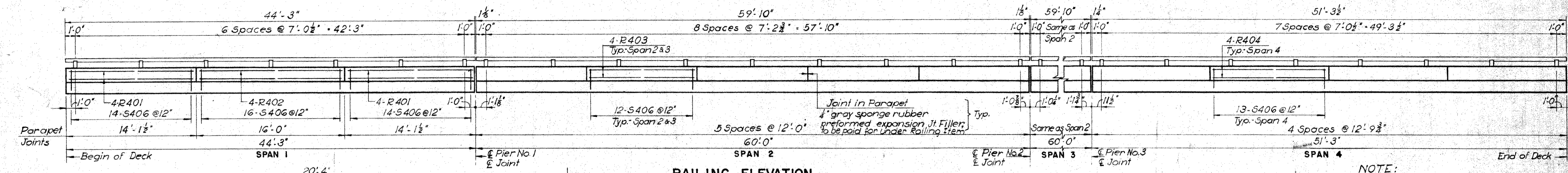
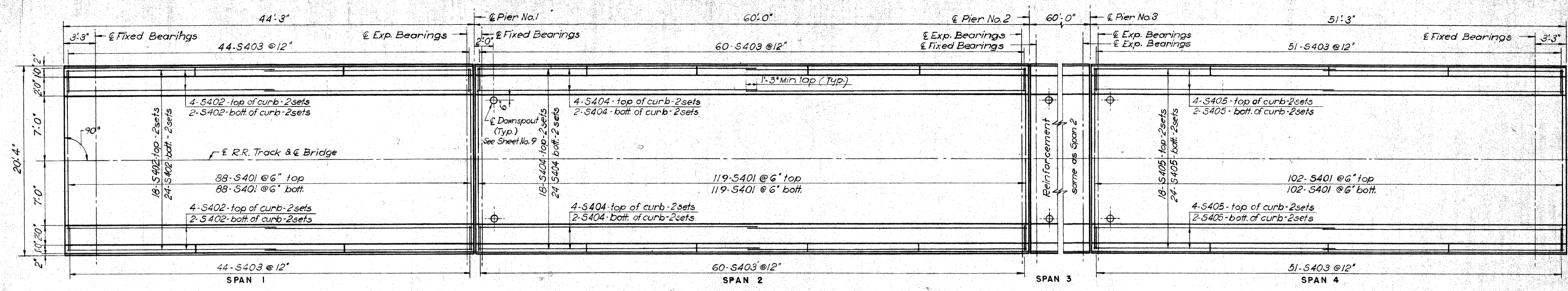
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BRIDGE NO. 690 / 20 VANDALIA, OHIO

STEEL FRAMING DETAILS

SCALE: AS SHOWN NOV. 15, 1965
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DRAWING NO. 43356 SHEET 7 OF 11



REINFORCING STEEL LIST

MARK	SIZE	NO.	TYPE	LENGTH	BENDING DIAGRAM
S401	# 4	856	Straight	19'-8"	<p>S403 S406</p> <p>Dimensions are cut to out of Bars</p>
S402	# 4	108	do	22'-7"	
S403	# 4	430	Bent	7'-4"	
S404	# 4	216	Straight	30'-6"	
S405	# 4	108	do	26'-1"	
S406	# 4	432	Bent	6'-5"	
R401	# 4	16	Straight	13'-9"	
R402	# 4	8	do	15'-8"	
R403	# 4	80	do	11'-8"	
R404	# 4	32	do	12'-5"	

DECK SLAB QUANTITIES

DESCRIPTION	UNIT	QUANTITY
Reinforcing Steel	Lb	23,120
Class "C" Concrete	C.Y.	194
Latex Waterproofing	S.Y.	383
Railing (Alum. Rail & Supports, Parapet)	L.F.	431
8" dia. Half-Round Perf. Corr. Metal Pipe	L.F.	419
8" Pipe Downspout, Wrought Iron, incl. Supports	L.F.	35
3" Cement Concrete for Waterproofing Protection	S.Y.	348

NOTE:
For add. Superstructure Details see Sheet No. 9

DESIGNED BY: V.S.
DRAWN BY: T.M.
CHECKED BY: V.C.L.

Scale: $\frac{1}{2}'' = 1'-0''$

NOTE:
Copper Flashing & Embeco Grout Seal to be included in the price bid for Concrete Item.
Welded wire fabric to be paid for under Cement-Concrete for Waterproof Protection Item.

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BRIDGE NO. 690/20 VANDALIA, OHIO

DECK SLAB & DETAILS
SCALE: AS SHOWN NOV. 15, 1965
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.

DRAWING NO. 43357 SHEET 8 OF 11



DIMENSIONS

	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"
A	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"
B	3/8"	7/8"	1 1/8"	1 7/8"	1 3/4"	2 1/4"	2 1/2"
C	3/8"	15/16"	1 1/4"	1 11/16"	1 7/8"	2 1/2"	3 1/8"
D	1/2"	11/16"	15/16"	1 1/8"	1 3/8"	1 7/8"	2 3/8"
E	3 1/4"	4 7/8"	6 3/8"	8 3/8"	9 3/4"	1'-1 1/8"	1'-4 1/4"
F	1/2"	11/16"	15/16"	1 1/8"	1 3/8"	1 7/8"	2 3/8"
G	5"	9 1/16"	1'-0 1/16"	1'-3 1/8"	1'-6 1/8"	2'-0 1/8"	2'-6 3/8"
H	2 1/4"	4 3/8"	5 3/8"	6 13/16"	8 1/4"	11"	1'-1 1/4"
J	2 1/4"	3 3/4"	5"	6 1/4"	7 1/2"	10"	1'-0 1/4"
K	2 1/4"	3 3/8"	4 1/2"	5 5/8"	6 3/4"	9"	11 1/4"
L	1 13/16"	2 3/8"	3 3/8"	4 9/16"	5 1/2"	7 1/4"	9 1/8"
M	2 3/8"	3 3/8"	5 1/8"	6 7/16"	7 3/4"	10 1/4"	1'-0 1/4"
N	1/4"	3/8"	1/2"	11/16"	3/4"	1"	1 1/4"
P	3/8"	15/16"	1 1/4"	1 11/16"	1 3/4"	2 1/4"	2 7/8"
Q	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
R	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
S	3/8"	5/16"	3/4"	1 1/16"	1 1/8"	1 1/2"	1 7/8"
T	3 1/4"	8 3/8"	11 1/2"	12 3/8"	1'-5 1/4"	1'-11"	2'-4 3/4"
U	4 1/2"	7 3/8"	9 1/2"	11 7/8"	1'-2 1/4"	1'-7"	1'-11 1/4"
V	4 1/4"	6 3/8"	8 1/2"	10 5/8"	1'-0 3/4"	1'-5"	1'-9 1/4"
W	1 1/2"	5 1/4"	7"	8 3/4"	10 1/2"	1'-2"	1'-5 1/8"
X	1 1/8"	1 11/16"	2 1/4"	2 13/16"	3 3/8"	4 1/2"	5 3/8"
Y	3/4"	1 1/8"	1 1/2"	1 13/16"	2 1/4"	3"	3 3/4"

GENERAL NOTES.
 THE EMBLEM SHOWN IS 1'-6" OUTSIDE DIAMETER.
 THE DIMENSIONS FOR OTHER DIAMETERS ARE SHOWN
 IN THE TABLE.
 FOR LOCATION OF EMBLEMS SEE SHEET NO.2

THE CAPITOL DOME, B&O INSCRIPTION
 AND THE FRAMING CIRCLE ARE TO BE BLUE OF AN
 APPROVED SHADE. THE FIELD SHALL BE WHITE.

DESIGNED BY: V.S.
 DRAWN BY: C.B.
 CHECKED BY: V.J.L.

PLANS PREPARED BY
 KING & GAVRIS
 CONSULTING ENGINEERS
 CINCINNATI OHIO NEW YORK N.Y.

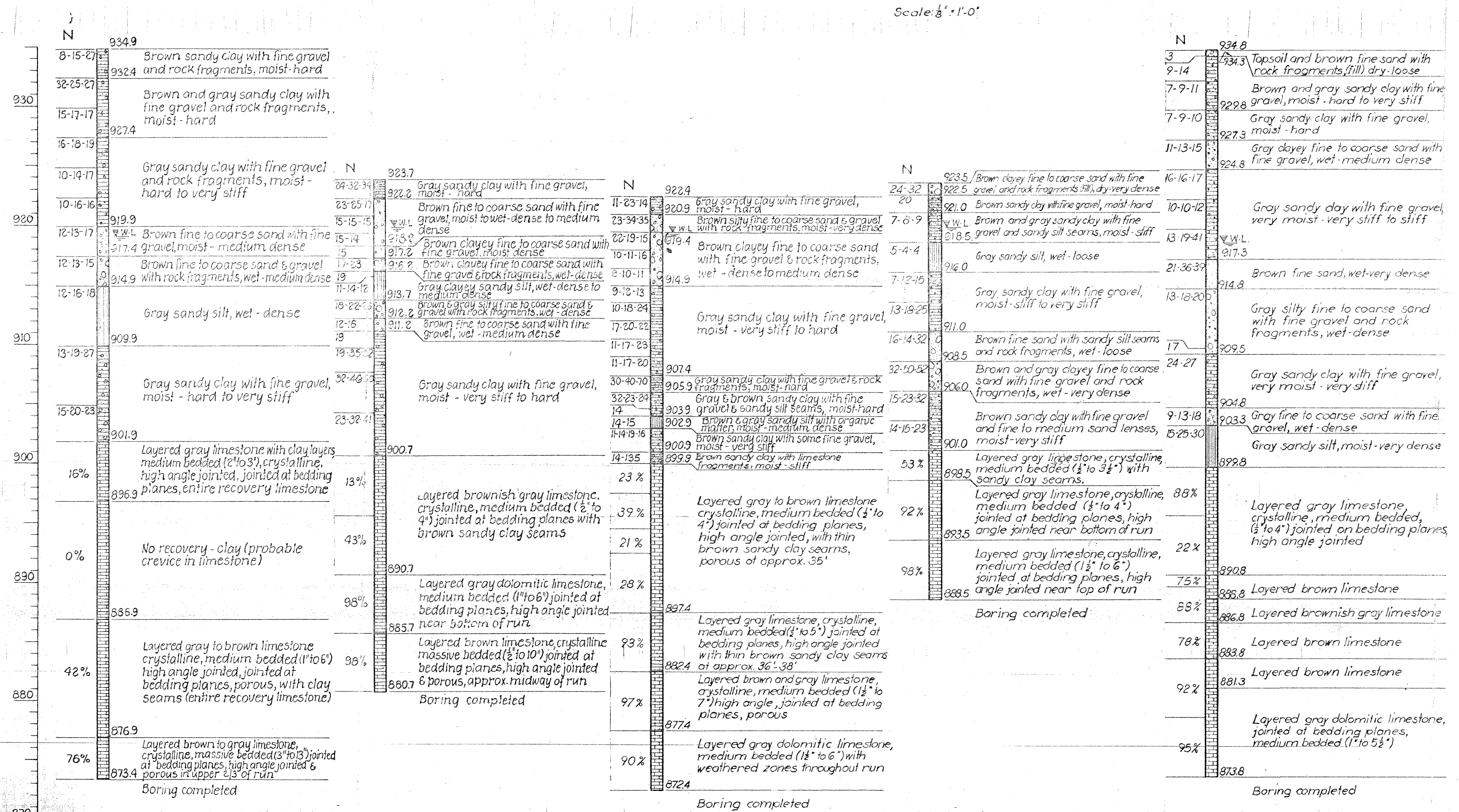
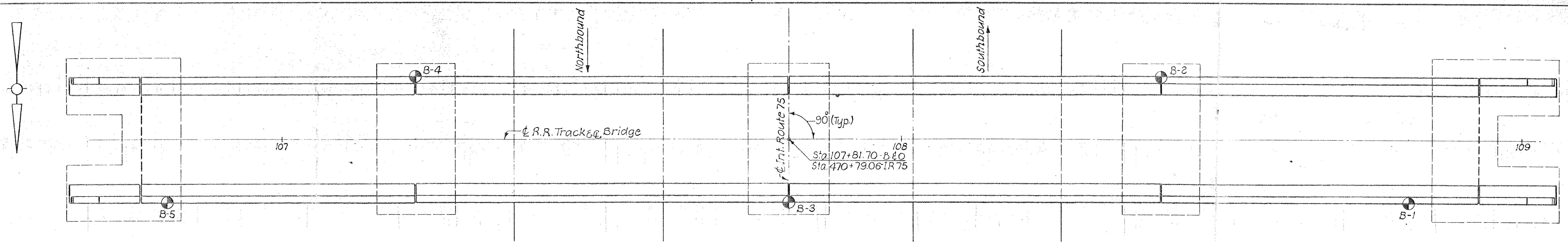
THE BALTIMORE & OHIO RAILROAD
 THE BALTIMORE & OHIO RAILROAD CO.

TOLEDO-INDIANAPOLIS DIV. SIDING TO G.M. PLANT
 BRIDGE NO. 690/20 VANDALIA, OHIO

EMBLEM

SCALE: FULL SIZE NOV. 15, 1965
 OFFICE OF ENGINEER OF STRUCTURES
 BALTIMORE, MD.

DRAWING NO. 43359 SHEET 10 OF 11



NOTES:
1. W.L. - Water Level in bore hole
2. "N" - Indicates number of blows required to drive 2" O.D. split spoon 6", using 140 lb. hammer weight falling 30", or % of core recovery by using NXM core barrel.

DESIGNED BY: V.S.
DRAWN BY: P.A.M.
CHECKED BY: V.J.L.

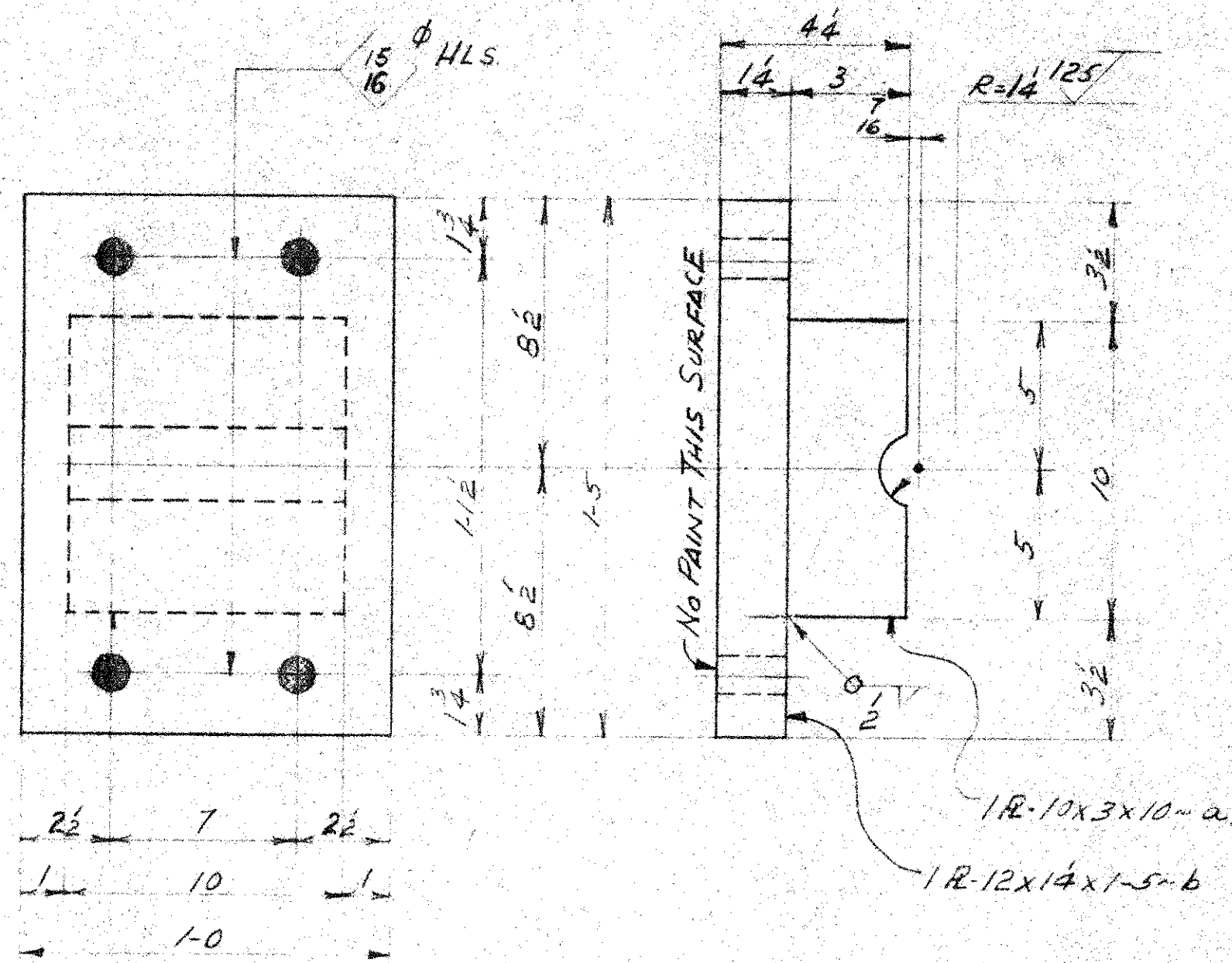
Scale: 1" = 5'-0"

PLANS PREPARED BY
KING & GAVARIS
CONSULTING ENGINEERS
CINCINNATI NEW YORK
OHIO N.Y.

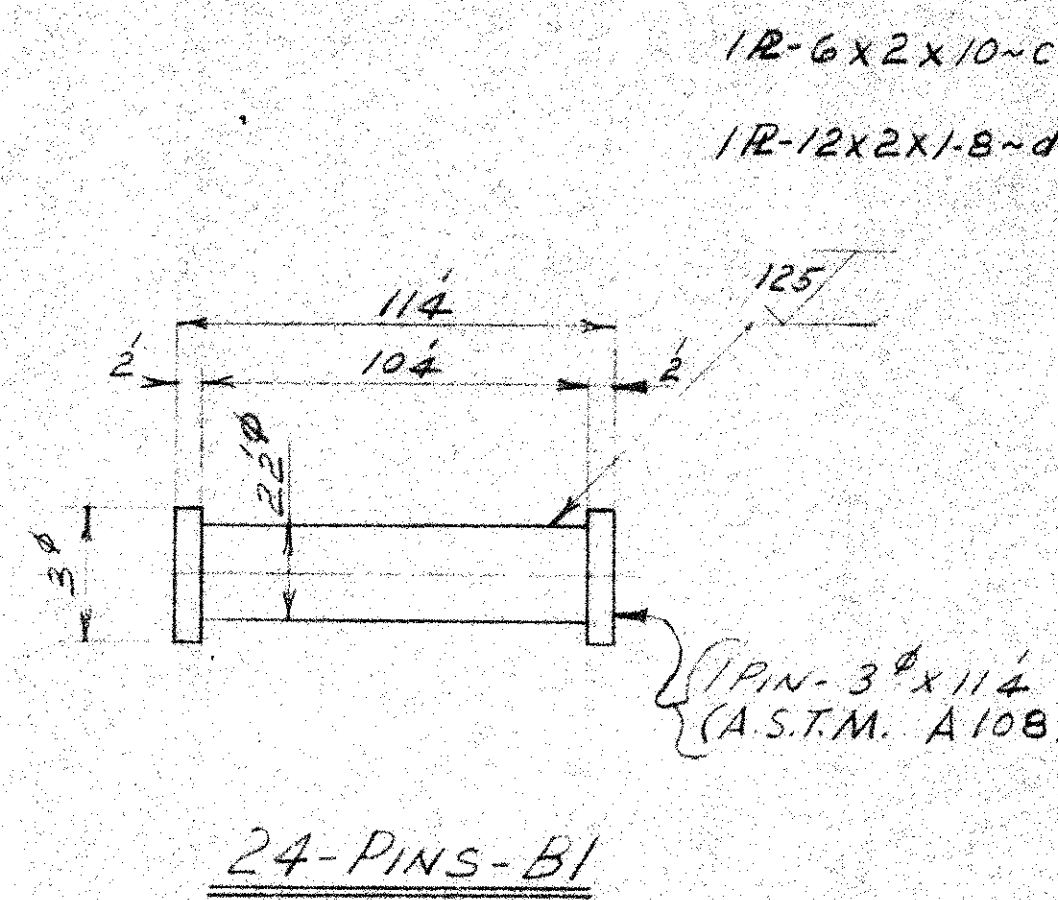
THE BALTIMORE & OHIO RAILROAD
THE BALTIMORE & OHIO RAILROAD CO.
TOLEDO-INDIANAPOLIS DIV. SIDING TO G.M. PLANT
BRIDGE NO. 690/20 VANDALIA, OHIO

BORINGS
SCALE: AS SHOWN NOV. 15, 1965
OFFICE OF ENGINEER OF STRUCTURES
BALTIMORE, MD.

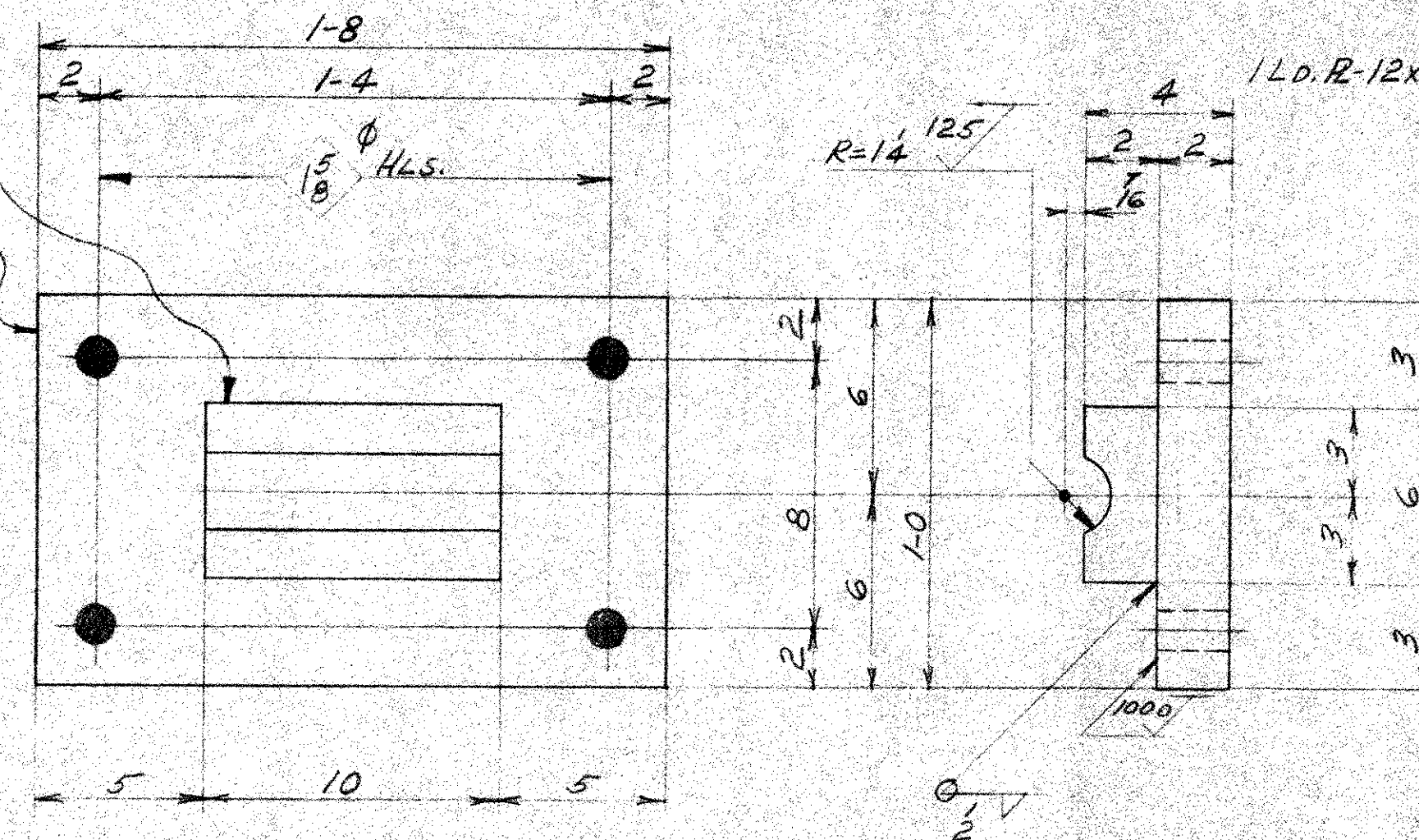
DRAWING NO. 43360 SHEET II OF II



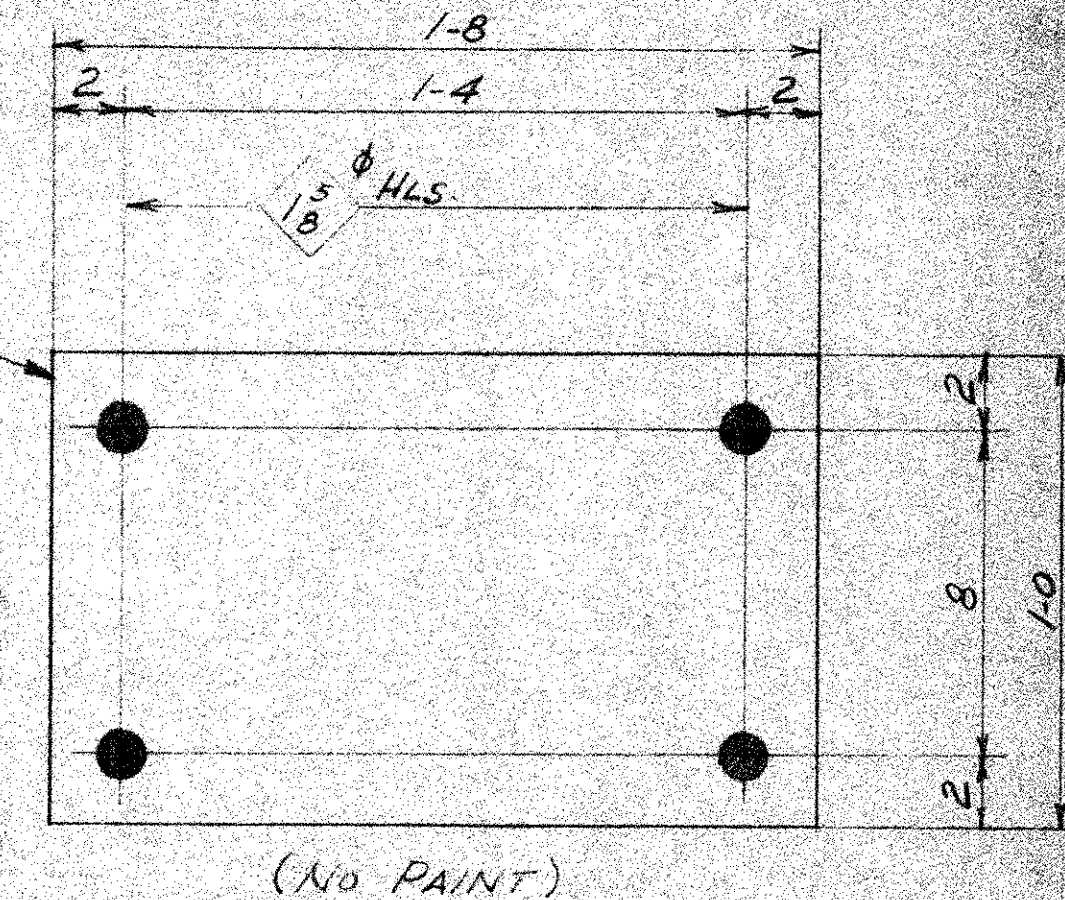
24-SOLE RS-A1



24-PINS-B1

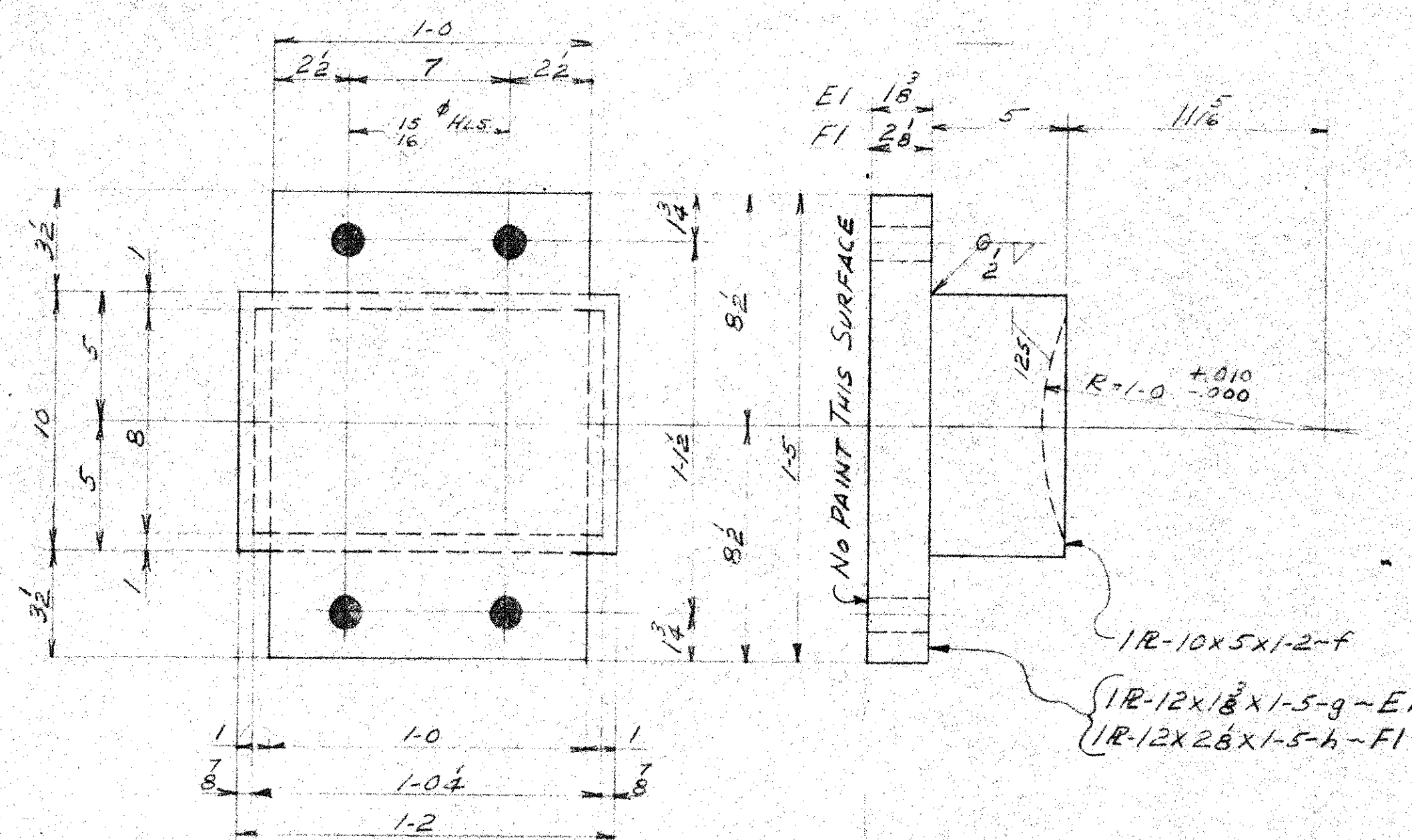


24-MASONRY RS-C1

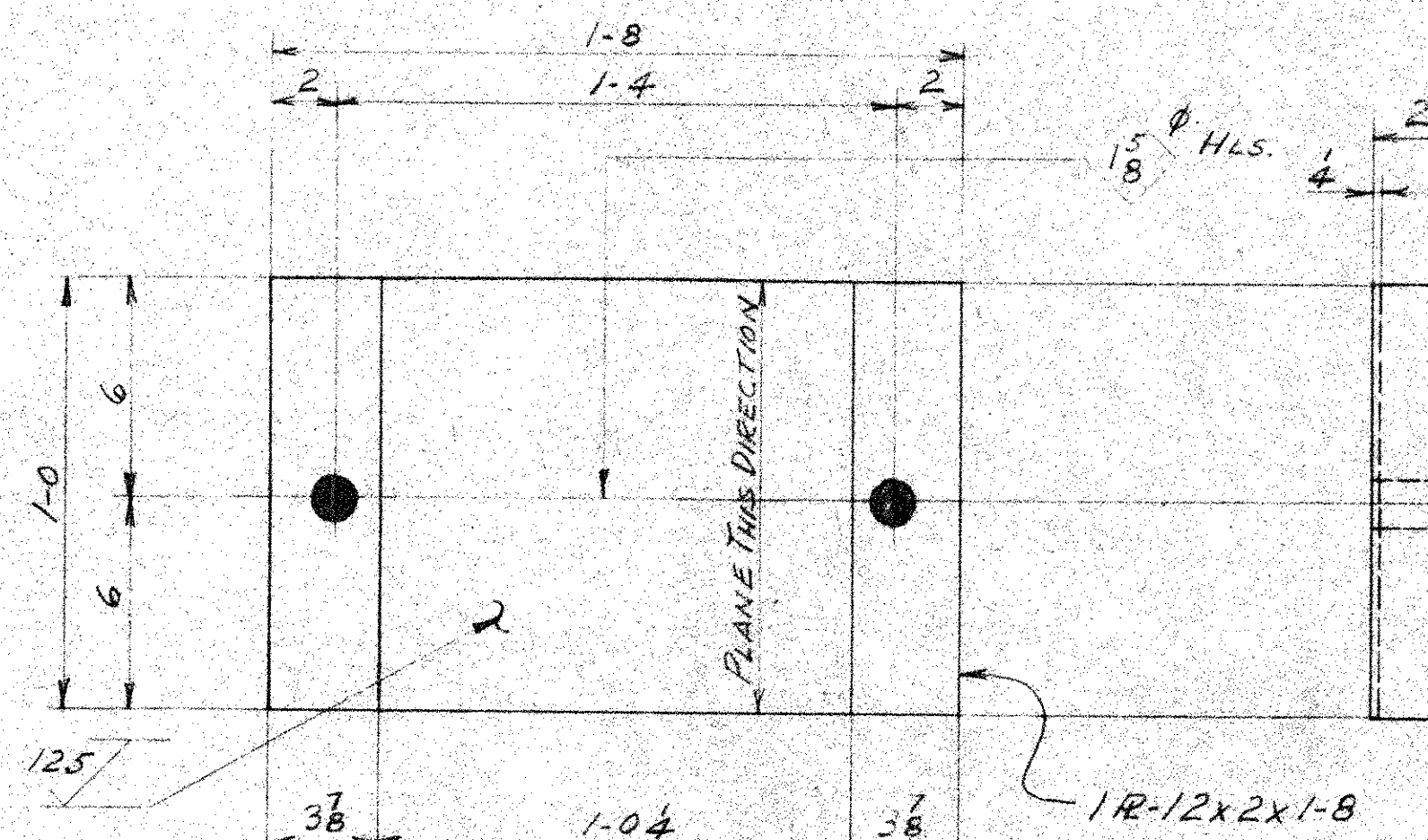


24-LEAD RS-D1

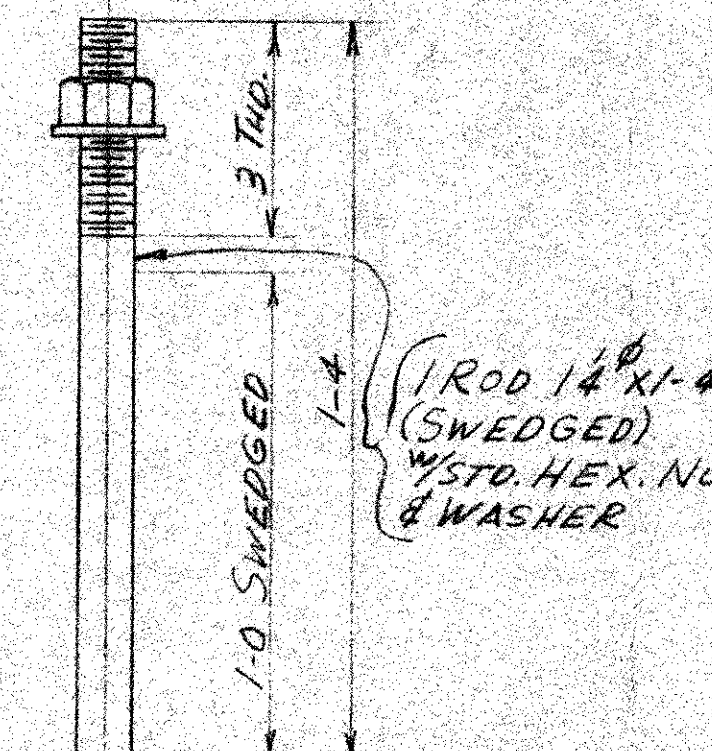
FIXED BEARINGS



18-SOLE RS-E1
6-SOLE RS-F1



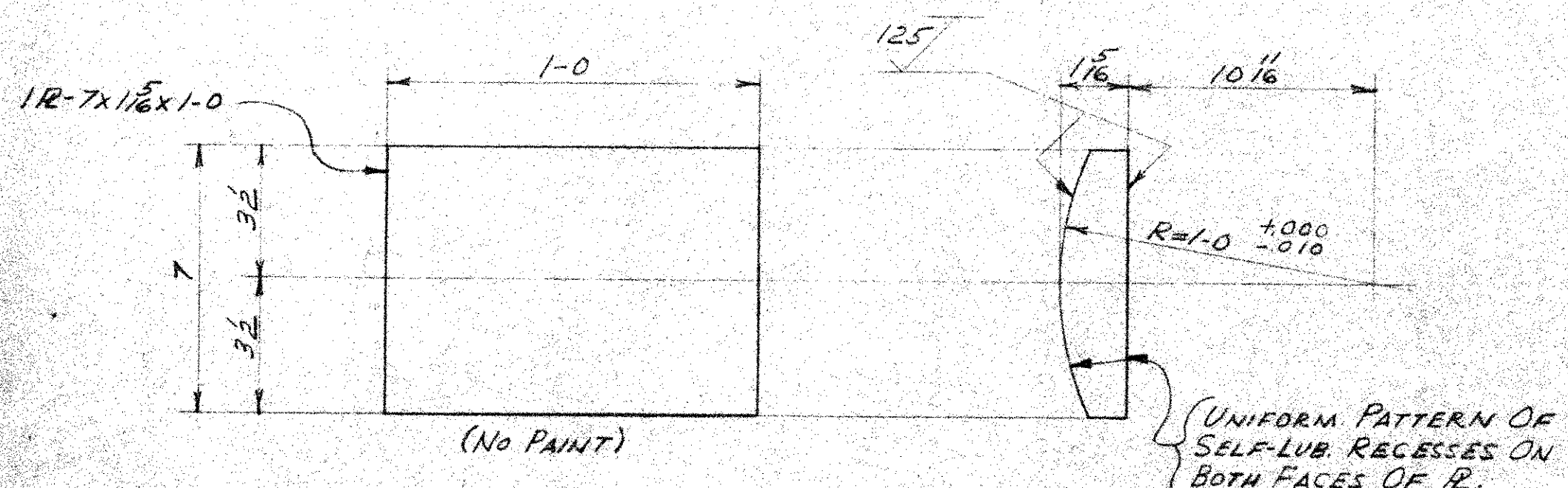
24-MASONRY RS-H1



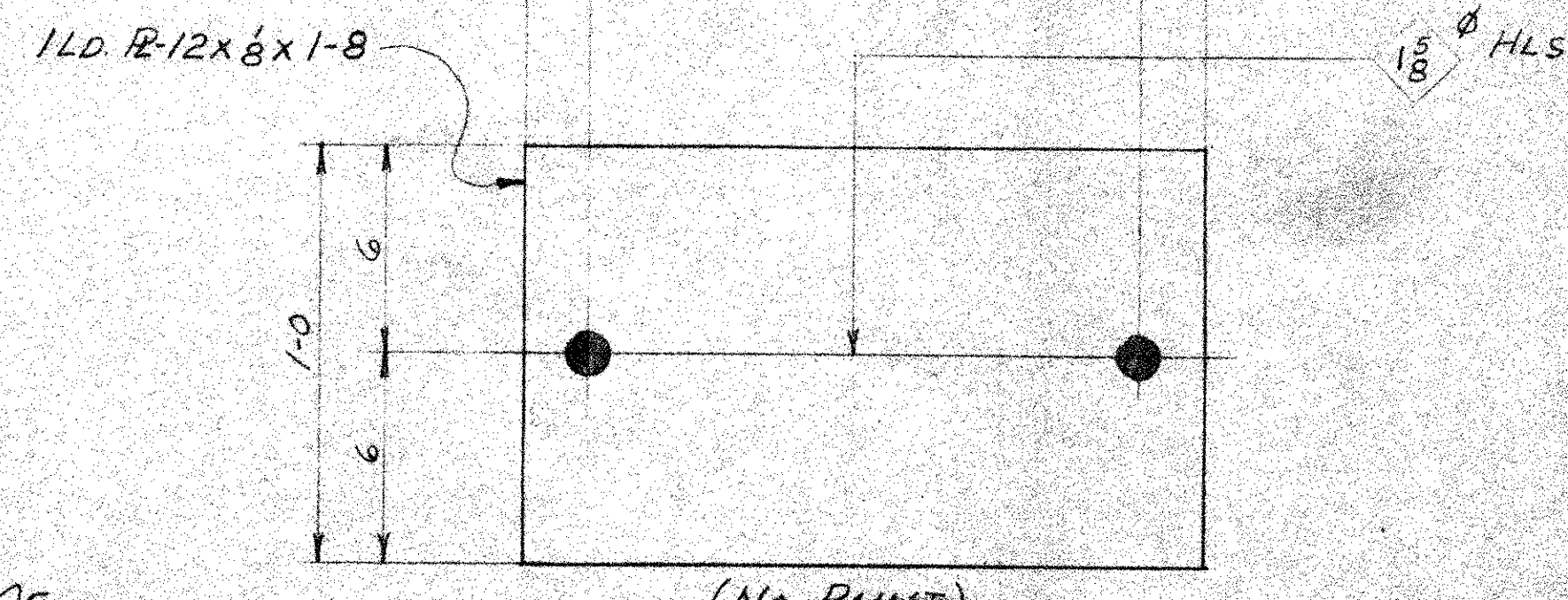
144-ANCH. BOLTS-ABI

BEARING NOTES

CAST PHOSPHOR BRONZE SHALL CONFORM TO A.S.T.M. DESIGNATION B22, ALLOY A AND SHALL HAVE AN ALLOWABLE UNIT STRESS OF 2000 PSI IN COMPRESSION. THE LUBRICANT SHALL BE OF THE SOLID TYPE AND SHALL CONSIST OF GRAPHITE, METALLIC SUBSTANCES HAVING LUBRICATING PROPERTIES AND A LUBRICATING BINDER. THE RECESSES FOR THE LUBRICANT SHALL CONSIST EITHER (1) OF ANNULAR RING WITH OR WITHOUT CENTRAL CIRCULAR RECESS WITH A DEPTH AT LEAST EQUAL TO THE WIDTH OF THE RING OR DIAMETER OF HOLE OR (2) OF CIRCULAR RECESSES APPX. 1/8" IN DIAMETER AND 1/8" TO 1/4" DEEP. BEARING SURFACES OF THE BRONZE BEARING PLATES AND OPPOSING STEEL PLATES SHALL BE MACHINE FINISHED TO THE SURFACE ROUGHNESS SHOWN ON THIS DRAWING. THE LAY OF THE TOOL MARKS SHALL BE IN THE DIRECTION OF MOTION. ALL MACHINE SURFACES SHALL BE FLAT WITHIN 0.005 INCH PER INCH OF LENGTH AND WIDTH. THE TOTAL AREA OF RECESSES FOR THE LUBRICANT SHALL COMPRISE NOT LESS THAN 25% NOR MORE THAN 35% OF THE TOTAL BEARING AREA OF THE PLATE. STEEL PLATES AND ANCHOR BOLTS SHALL CONFORM TO A.S.T.M. DESIGNATION A36, AND PINS TO A.S.T.M. A-108



24-SELF-LUB. RS-G1

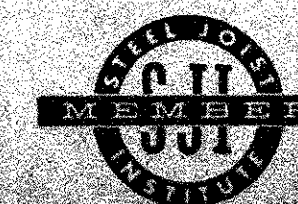


24-LEAD RS-J1

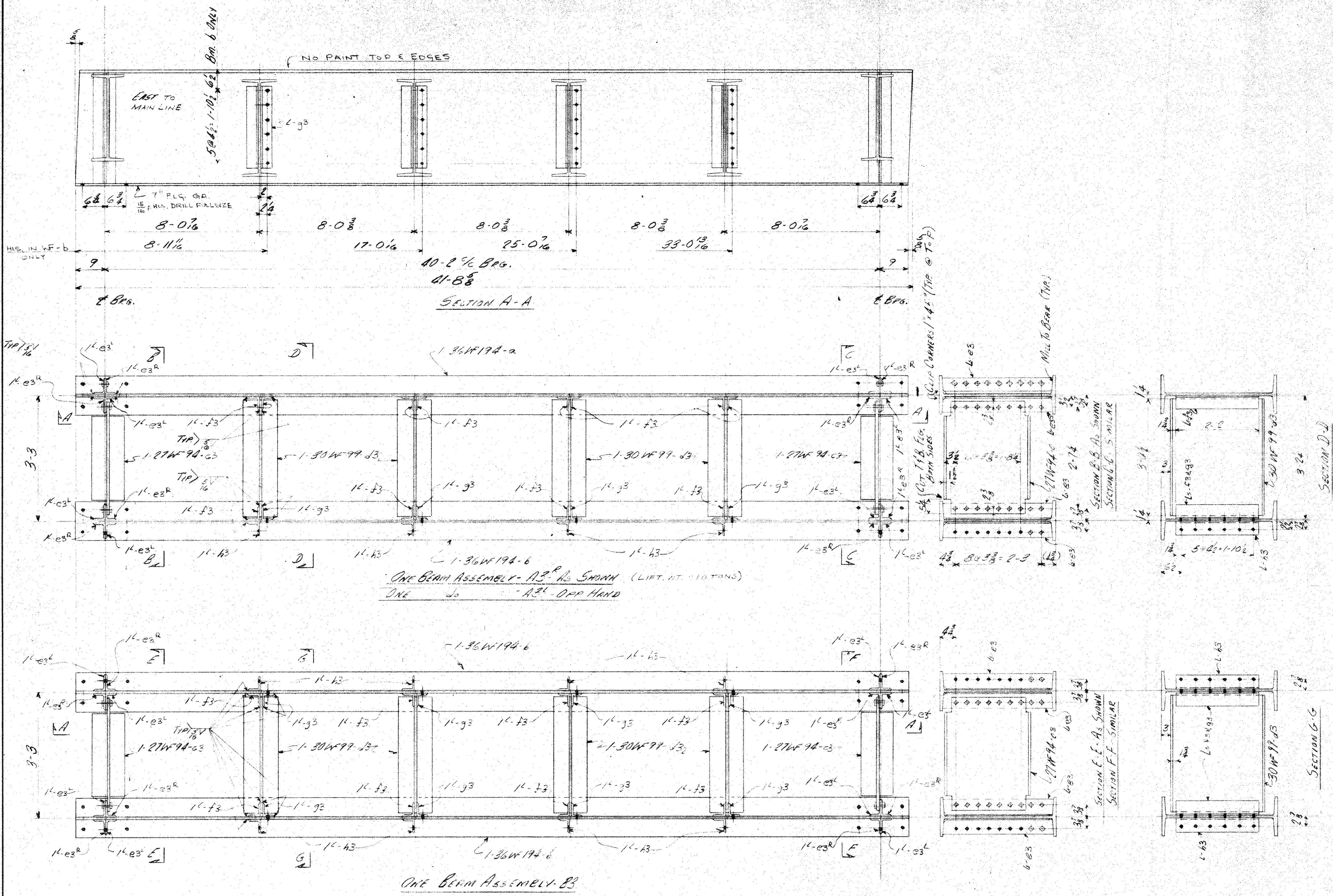
EXPANSION BEARINGS

SEE SH. 2 FOR BILL OF MATERIAL

REVISIONS	AMT.	DATE	PRINTS ISSUED	USE	BUILDERS STRUCTURAL STEEL CORPORATION
	2	2-16-66	FOR BIDS		2912 E. 34TH STREET CLEVELAND 19, OHIO
	6	3-30-66	APP		JOB NAME B. & O. R.R. BRIDGE No. 690/20
	6	3-18-66	SHOP		LOCATION VANDALIA, OHIO
	3	1	K & P		CONTRACTOR
	4	1	R & O		ARCHITECT KING & GAVARIS
	1	1	B & C		BEARING DETAILS
	1	4-27	CLASH DIST.		
					DETAILED E.C.S. DATE 2-16-66 CONTRACT NO.
					CHECKED RFT 2-17-66
					ONE SHOP COAT RED LEAD PAINT PER D.S. H. SPEC. M.S. 16. IN. N.Y. C-2350-94
					NO PAINT WITHIN 3" OF 1/2" H.S. DRAWING NO.
					HOLES AS NOTED



a-b-c-d-e-f-g-h-k-m-n-p-s-t-w-aa-ab-ac



BILL OF MATERIAL										DATE ISSUED				
LINE NO.	NO. OF PIECES	MARK	MATERIAL	LENGTH FT.	IN.	REMARKS	WEIGHT	C	L	P	F	Y	S	
ONE BEAM ASSEMBLY - A-B														
1	ONE	DO	AS ²											
2	2	a	30W194	41	8 3/8	(1/2)	16187							
3	2	b	do	41	9 3/8	(1/2)	16187							
4	4	c3	27W94	3	0	(1/2)	1125							
5	3	d3	30W99	3	0	(1/2)	2409							
6	16	e3	L 5 x 3 1/2	2	10 1/2	(1/2) (MIE)	621							
7	16	e3	do	2	10 1/2	(1/2)	621							
8	28	f3	L 2 x 2 1/2	2	2	(1/2)	473							
9	8	g3	do	2	2	(1/2)	153							
10	8	h3	do	2	2	(1/2)	153							
11	60		3/8" Dia. Bars	0	28	WELDS & PAINT	65							
12	56		do	0	3	do	65							
ONE BEAM ASSEMBLY - B-B														
20	2	b					16187							
21	2	c3					564							
22	4	d3					1205							
23	3	e3					311							
24	3	e3					1							
25	3	f3					153							
26	3	g3					153							
27	3	h3					153							
28	16	3/8" Dia. Bars	0	28	WELDS & PAINT	17								
29	28	do	0	3	do	32								
ONE BEAM ASSEMBLY - C-C														
34			5/16 F.W @ 3/16	440	4		158							
TOTAL WT 5733														

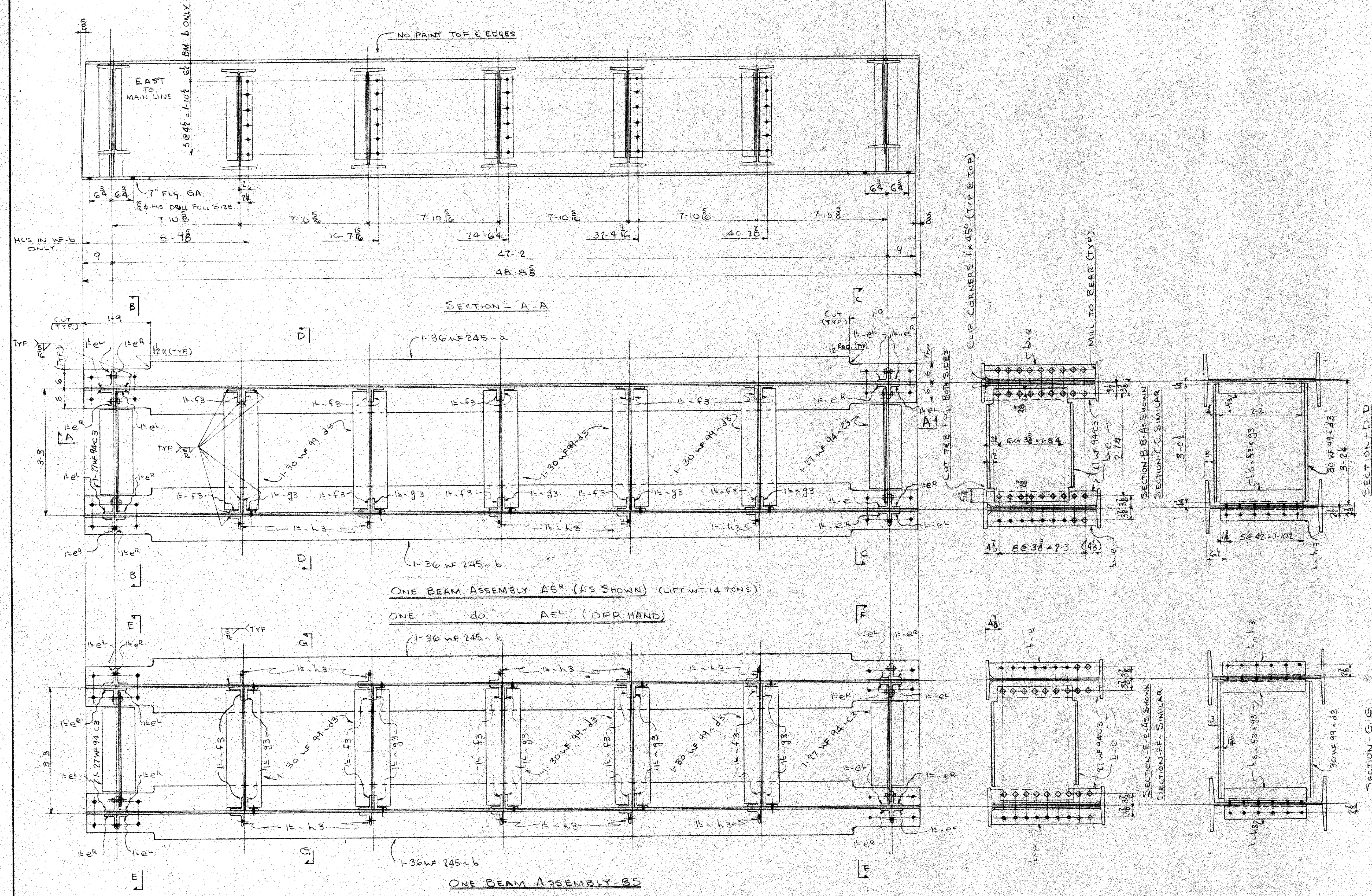
GENERAL NOTE:
 THIS DRAWING TO BE USED IN PLACING MATERIAL SOLD UNDER THIS CONTRACT ONLY.
 CONTRACTOR TO CHECK ALL DIMENSIONS AT JOB AS BUILDERS STRUCTURAL STEEL CORPORATION ASSUMES NO RESPONSIBILITY FOR GENERAL BUILDING DIMENSIONS.
 THIS DRAWING IS TO BE CONSIDERED AS "PRELIMINARY NOT FOR CONSTRUCTION" UNTIL SIGNED BY BUILDERS STRUCTURAL STEEL CORPORATION.

SEE GEN. NOTES ON SHT E1

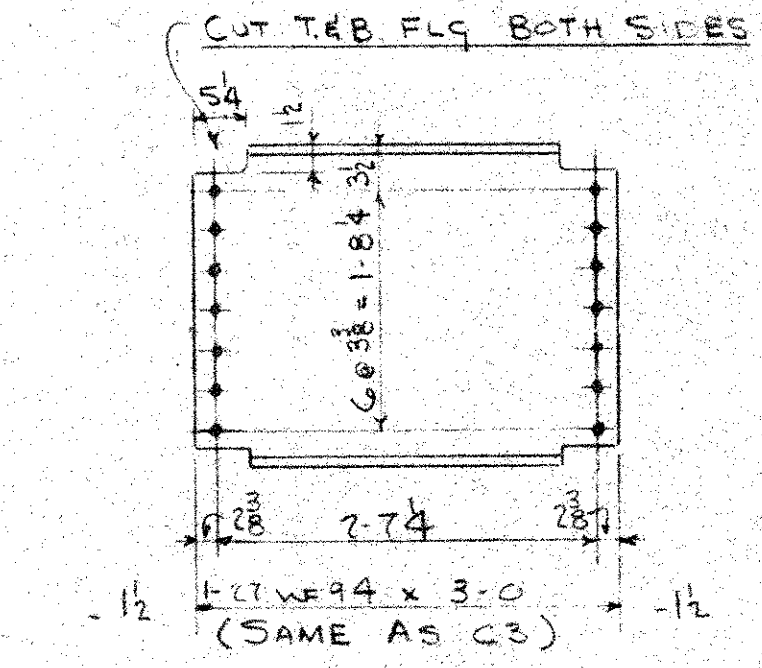
REVISIONS				PRINTS ISSUED				BUILDERS STRUCTURAL STEEL CORPORATION	
NO.	DATE	BY	USE	NO.	DATE	BY	USE	2912 E. 34TH STREET	CLEVELAND 15, OHIO
				60	3-23	AVP	REL. FOR CONSTRUCTION		
				61	3-18	AVP	RELEASED FOR CONSTRUCTION		
				62	5	EGO			
				63	1	EGO			
				64	4-17	AVP			
				65	4-27	AVP			

JOB NAME	B. & O. R.R. BRIDGE NO 690/80
LOCATION	VANDALIA, OHIO
CONTRACTOR	
ARCHITECT	KING & GAVRIS
DETAILS OF BEAM ASSEMBLIES (SPAN 1)	
DATE	2-18-66
CONTRACT NO.	C-2350-85
DRAWING NO.	3

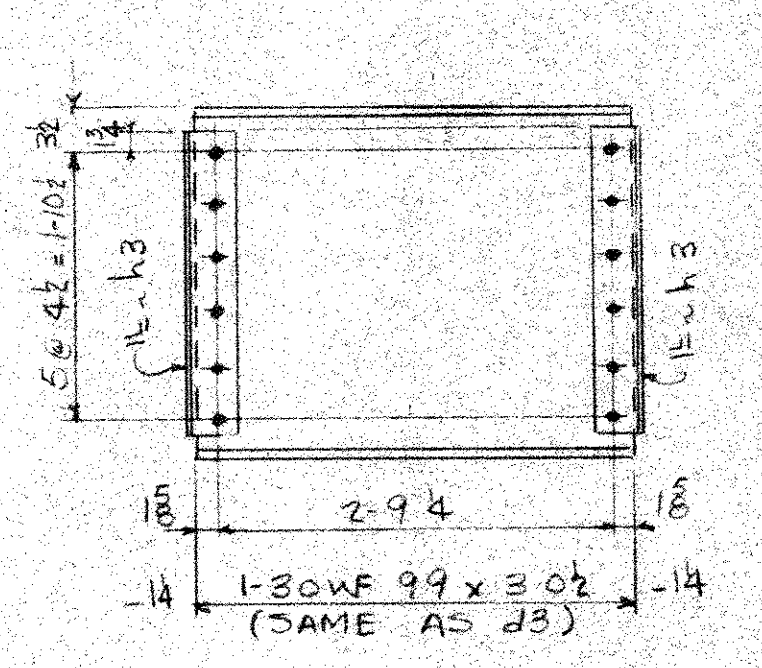




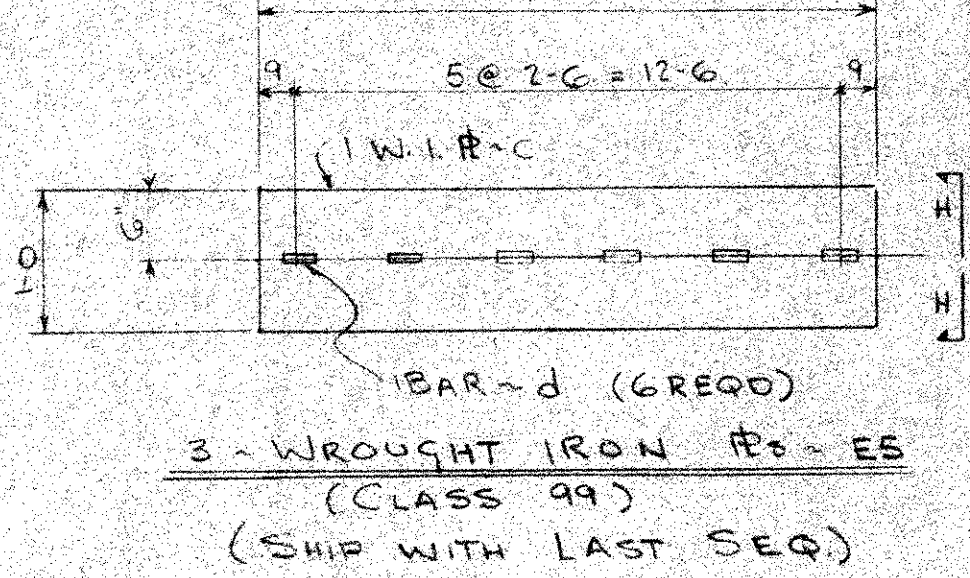
BILL OF MATERIAL										DATE ISSUED		
LINE NO.	MARK	MATERIAL	LENGTH FT.	IN.	REMARKS	WEIGHT	C	L	P	F	Y	S
1		ONE BEAM ASSEMBLY	45	R								
2		ONE BEAM ASSEMBLY	45	F								
3	2	a	36 WF 245	48	8 1/2 (1/2)	23,372						
4	2	b	36 WF 245	48	8 1/2 (1/2)	23,372						
5	4	C3	27 WF 94	3	0 (1/4)	1,123						
6	10	d3	30 WF 99	3	0 1/2 (1/8)	3,511						
7	16	e ^R	4x3 1/2 x 2	2	9 3/4 (1/2)(MIE)	612						
8	16	e ^L				612						
9	30	f3	4x3 1/2 x 3/8	2	2 (1/3)	392						
10	10	g3	do	2	2 (1/3)	197						
11	10	h3	do	2	2 (1/3)	197						
12	60	8 # HS BOLTS	0	2 1/2	W/ NUTS & WASH.	65						
13	56	do	0	3	do	65						
14												
15												
16												
17												
18		ONE BEAM ASSEMBLY-B5										
19	2	b				23,372						
20	7	C3				524						
21	5	d3				1,506						
22	8	e ^R				306						
23	8	e ^L				306						
24	10	f3				197						
25	10	g3				197						
26	10	h3				197						
27	10	h3				197						
28	16	8 # HS BOLTS	0	2 1/2	W/ NUTS & WASH.	17						
29	28	do	0	3	do	32						
30												
31												
32												
33												
34		16 END DIAPHRAGMS - C5										
35	16	27 WF 94	3	0 (1/4)		4,512						
36												
37												
38												
39		46 INTERMEDIATE DIAPHRAGMS - D5										
40												
41	46	d3	30 WF 99	3	0 1/2 (1/8)	13,852						
42	92	h3				1814						
43												
44												
45												
46		3 WROUGHT IRON IBS										
47	3	c	W.I.P. 12x2	14	0	349						
48	18	d	BAR 1x1	0	3	15						
49												
50												
51												
52												
53												
54												
55												
56	72	3 # STE BOLTS	0	3 3/4	W/ HEX. NUT & STD WASH.	89						
57	96	3 # do	0	4	do	123						
58	24	3 # do	0	4 1/4	do	34						
59												
60												
61	552	8 # HS. BOLTS	0	2 1/2	W/ HEX. NUT & WASHER	617						
62	176	8 # do	0	3	do	910						
63												
64												
65												
66		1/2 F.W. 3/8	490	L		176						
67		3/8 F.W. 1/2	7	F		1						
68												
69												
70												



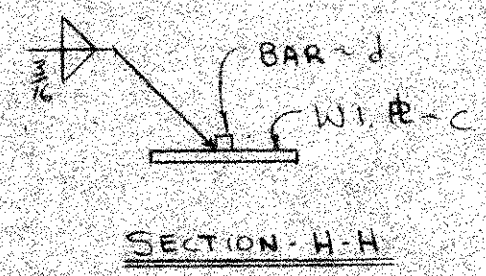
16 - END DIAPHRAGM - C5 (4 EACH SPAN)



46 - INTERMEDIATE DIAPHRAGMS - D5



3 - WROUGHT IRON #3 - E5 (CLASS 99) (SHIP WITH LAST SEQ.)



SECTION H-H

SEE GEN. NOTES ON SHEET E1



PRINTS ISSUED				BUILDERS STRUCTURAL STEEL CORPORATION	
REV.	DATE	USE	DATE	USE	2012 E. 34th STREET CLEVELAND 15, OHIO
0	2-2	APP			
1	3-18	SHOP			
2	4-1	E.F.O			
3	4-1	E.F.O			
4	4-20	REVISION			
5	4-27	CLOSURE			

JOB NAME	B. & O. R.R. BRIDGE No. 690/70	CONTRACT NO.	C-2350-85
LOCATION	WANDALIA, OHIO	DRAWING NO.	5
ARCHITECT	KING & GAVARIS		
CONTRACTOR	BEAM ASSEMBLY DETAILS FOR SPAN - 4		
	LOOSE DIAPH. & W.I.P. DETAILS		
DETAILED JDS	DATE 2-26-66		
CHECKED BY	RELEASED FOR CONSTRUCTION		
	PAIN. ONE SHOP COAT RED LEAD PER SPEC. W/IN 3" OF		
	NO PAINT WITHIN 3" OF		
OPEN HOLES			
	HOLES 3/8 REAMED UNLESS NOTED		