

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

BEL-148-6.98 WAYNE TOWNSHIP BELMONT COUNTY

OHIO	1
FHWA REGION 5	24
BRF-25(11)	
BEL-148-6.98	
FEDERAL PROJECT	

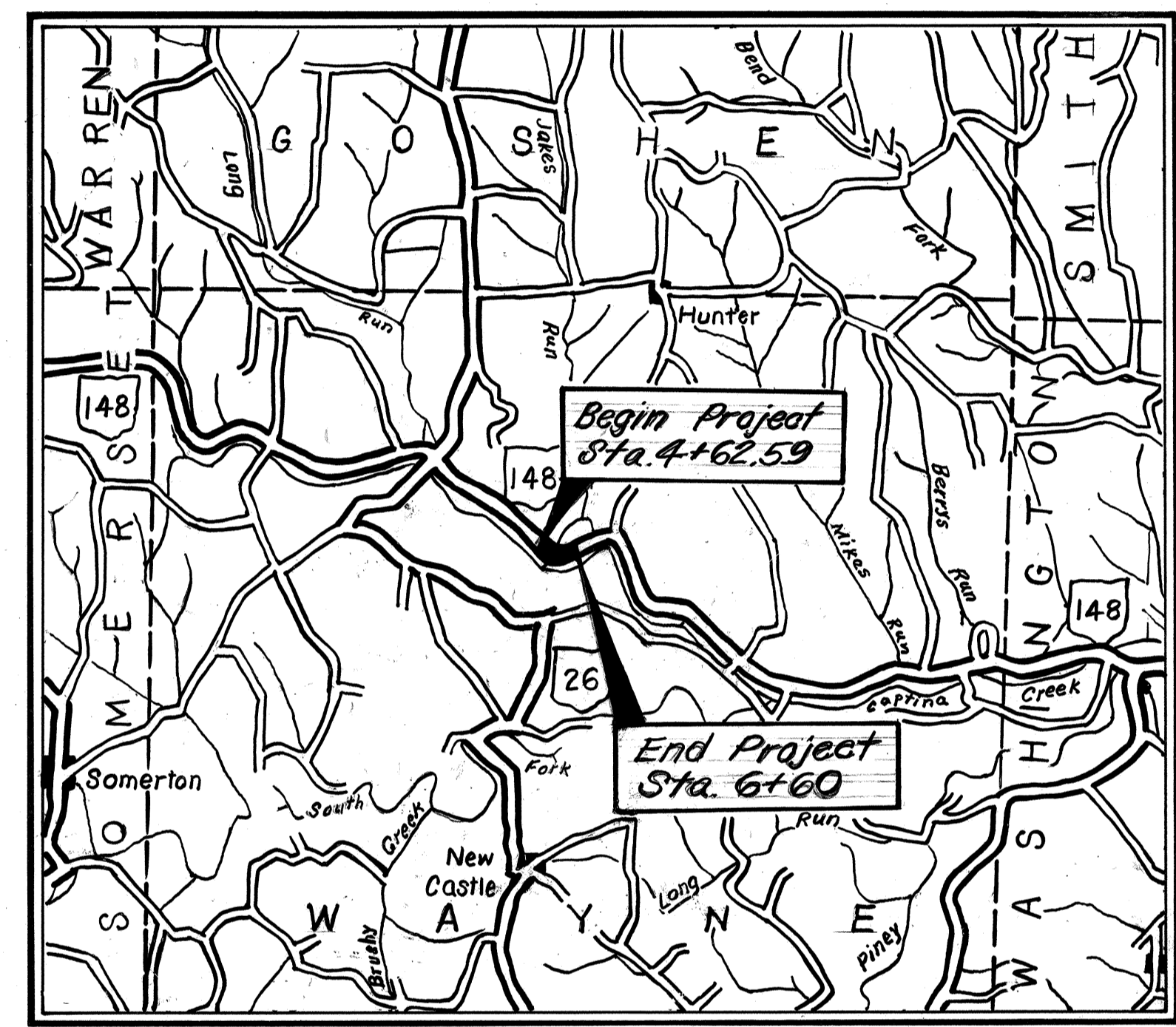
DESIGN DESIGNATION	
Current A.D.T. (1983)	1000
Design Year A.D.T. (2003)	1960
D.H.V.	314
D.	60%
F.	4%
V.	30 MPH

CONVENTIONAL SIGNS

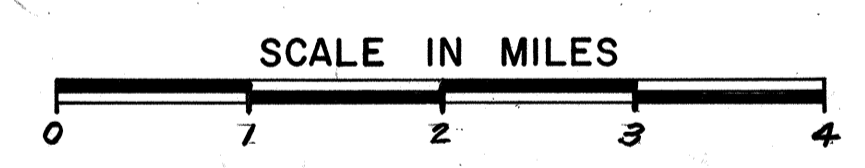
County Line	Limited Access (only)	LA
Township Line	Right of Way (only)	RW
Section Line	Limited Access & Right of Way	LA & RW
Corporation Line	Existing Right of Way	
Fence Line (existing)	Property Line (in existing fence)	
Center Line	Railroad	
Trees, Stumps (to be removed)	Guardrail (existing)	
Utility Poles: Telephone, Power, Light		

INDEX OF SHEETS

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Calculations & General Summary	8
Plan & Profile	9
Cross Sections	10 & 11
Structures Over 20' Span	12-23
Right of Way	24



LOCATION MAP



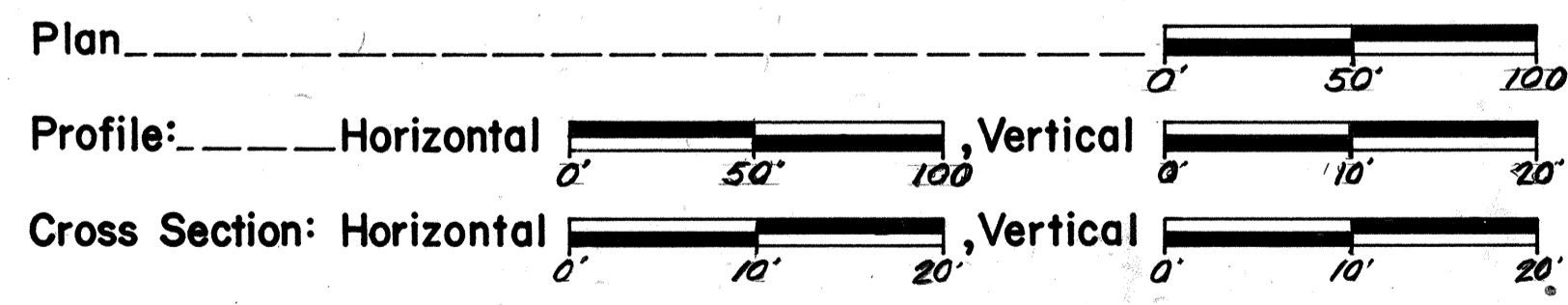
LINE DATA

Begin Project	Sta. 4+62.59
End Project	Sta. 6+60.00
Net Length of Project	Sta. 197.41 Lin. Ft. Or 0.037 Mi.
Begin Work	Sta. 3+50
End Work	Sta. 7+43
Net Length of Work	Sta. 393 Lin. Ft. Or 0.074 Mi.

UNDERGROUND UTILITIES
 48 HOURS
BEFORE YOU DIG
 Call 1-800-362-2764 (Toll free)
 OHIO UTILITIES PROTECTION SERVICE
 NON-MEMBERS
 MUST BE CALLED DIRECTLY

Portion to be improved: _____
 State & Federal Routes: _____
 Other Roads: _____

SCALES



SUPPLEMENTAL SPECIFICATIONS	
824	10-8-82
836	3-12-75
803	5-27-83
939	6-28-82

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS			
BP-5	7-16-81		
GR-1	2-5-82	AS-1-81	11-27-81
GR-2B	2-5-82	DBR-2-73	4-10-73
GR-3	2-5-82	TS-10D-1-82	11-15-82
GR-4	2-5-82		
GR-4A	2-5-82		
MC-3	6-1-73		
MC-9A	5-1-81		

Plan Prepared By:
 OHIO DEPARTMENT
 OF TRANSPORTATION
 DISTRICT II

Project: BEL-148-6.98
 Date of Letting: 19____, Contract No. _____
 LD0300 Rev. 1-1-81

SEAL

1983 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will *not* require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

MICROFILMED
NOV 15 1985

Approved: _____
 Date 12-22-83 District Deputy Director of Transportation

Approved: _____
 Date 2-10-84 Engineer, Bureau of Bridges and Structural Design

Approved: _____
 Date 3-22-84 Chief Engineer, Planning and Design

Approved: _____
 Date 3-22-84 Director, Department of Transportation

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

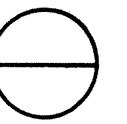
APPROVED: _____
 DIVISION ADMINISTRATOR DATE

SUBSURFACE INVESTIGATION BRIDGE N^o BEL-148-0699 OVER CAPTINA CREEK BELMONT COUNTY S.R.148

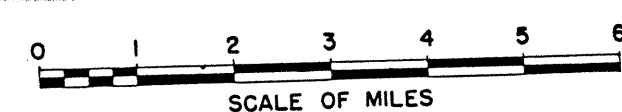
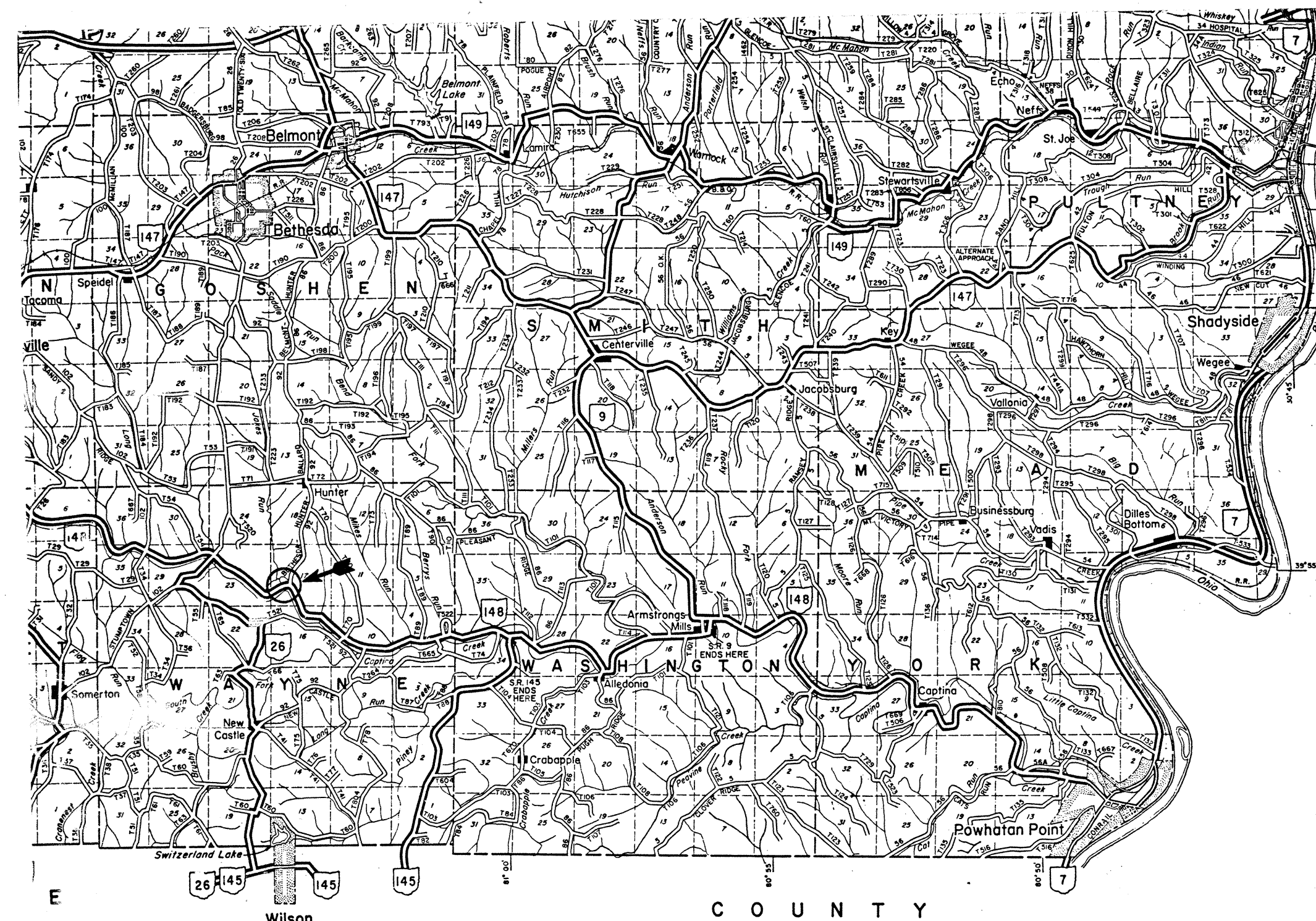
FHWA REGION	STATE	PROJECT
	OHIO	

1
3

SOIL PROFILE
BEL-148-6.98



FED. No. BRF-25(11)



Legend

ROADWAY SUBSURFACE INVESTIGATION

	GRAVEL		GRAVEL AND/OR STONE FRAGMENTS WITH SAND
	FINE SAND		COARSE AND FINE SAND
	GRAVEL OR STONE FRAGMENTS WITH SAND AND SILT		GRAVEL WITH SAND, SILT AND CLAY
	SANDY SILT		SILT
	SILT AND CLAY		SILTY CLAY
	ELASTIC CLAY		CLAY
	FINE TEXTURED PEAT		SEDIMENTARY PEAT
	RANDOM FILL		UNDERCLAY
	COAL		WEATHERED SHALE
	MUDSTONE		SHALE
	SANDSTONE		LIMESTONE
	VARIOUS OTHER MATERIALS		SOD &/OR TOPSOIL X = APPROX. DEPTH
			BERM MATERIAL
	AUGER BORING - PLAN VIEW		FREE WATER
	DRIVE SAMPLE AND/OR CORE BORING - PLAN VIEW		STATIC WATER LEVEL
	ELECTRICAL RESISTIVITY PROBE - PLAN VIEW		NUMBER OF BLOWS FOR "STANDARD PENETRATION" TEST X = NUMBER OF BLOWS FOR FIRST 6 INCHES Y = NUMBER OF BLOWS FOR SECOND 6 INCHES
	AUGER BORING PLOTTED TO VERTICAL SCALE ONLY - PROFILE		B INDICATES BROKEN ROCK INTERVAL
	DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY - PROFILE		ELECTRICAL RESISTIVITY PROBE - PROFILE
	WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT		INTERVAL OR RELATIVELY HIGH MOISTURE
	INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT		TTR TOP OF ROCK
		NOTE:	FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT E.G. 15

GENERAL INFORMATION

Present plans call for the existing structure, designated Bridge BEL-148-6.99, to be replaced. The new bridge will be constructed on the same location, with no changes in the elevation and alignment as the existing roadway and/or bridge.

Drilling Procedures

Test borings for this project were advanced with a truck mounted, CME-750 All-terrain, drilling rig using seven (7) inch hollow stem augers. Representative disturbed samples were collected using a standard 2 inch O.D. and 1 3/8 inch I.D. split spoon sampler driven into the soil by means of a 140 lb. hammer falling freely through a distance of 30 inches (standard penetration test: ASTM D-1586).

General Geology

The bridge site is located within the unglaciated portion of the Appalachian Plateau physiographic province. Bedrock in this area consists of sandstone and shale with occasional interbeds of coal, clay and limestone belonging to the Pennsylvanian Age Conemaugh and Monongahela formations. In the upland areas bedrock is overlain by a thin veneer of residual and colluvial soils, where as the soils found in the valley bottoms are alluvial and colluvial in origin, and tend to be somewhat thicker.

Subsurface Conditions

The test borings for this project encountered from one (1) foot up to 11 feet of alluvial soils underlain by sandstone and shale bedrock. The upper few feet of the rock was slightly to moderately weathered.

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NOV 15 1985

SUBSURFACE INVESTIGATION
BRIDGE N^o BEL-148-0699
OVER
CAPTINA CREEK, BELMONT Co. S. R. 148



R & R International, Inc.

GEOTECHNICAL ENGINEERS - GEOLOGISTS

1574 AKRON - PENINSULA ROAD
AKRON, OHIO 44313
(216) 929-4100

TYPICAL SECTION

QUANTITIES	
Calc. Date	Chkd Date
AL.F. 10/21/83	J.N.M. 10/26/83

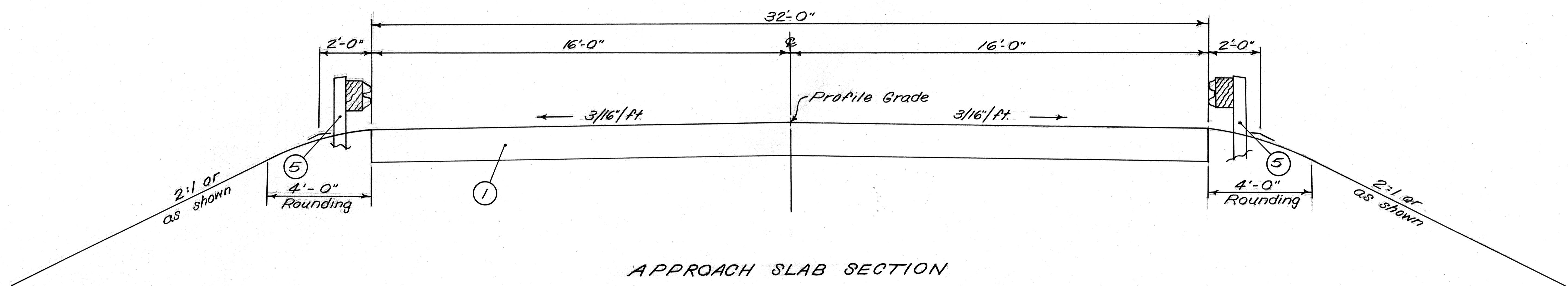
FHWA REGION	STATE	PROJECT
5	OHIO	

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24

BEL-148-6.98

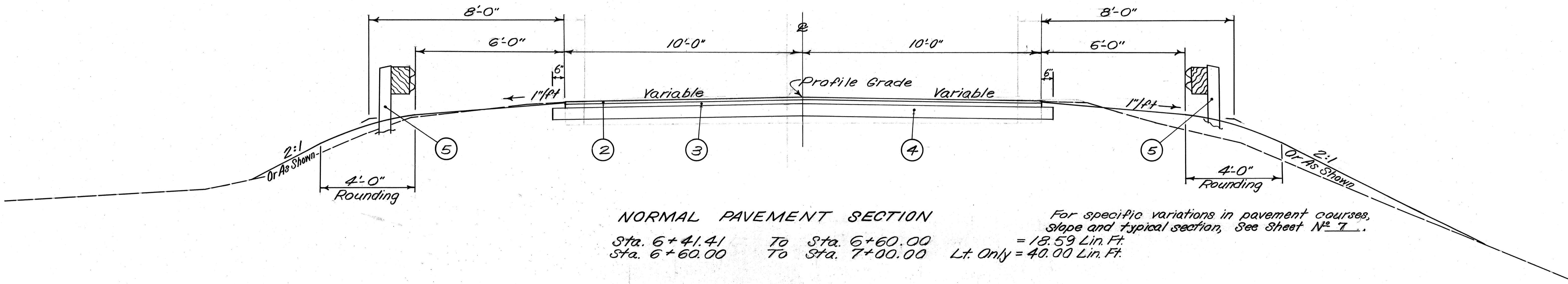
SCALE:

TYPE 404 ON 301



APPROACH SLAB SECTION

Sta. 4+62.59 To Sta. 4+87.59 = 25 Lin. Ft.
Sta. 6+16.41 To Sta. 6+41.41 = 25 Lin. Ft.



NORMAL PAVEMENT SECTION

Sta. 6+41.41 To Sta. 6+60.00 = 18.59 Lin. Ft.
Sta. 6+60.00 To Sta. 7+00.00 Lt. Only = 40.00 Lin. Ft.

For specific variations in pavement courses, slope and typical section, See Sheet N^o 7.

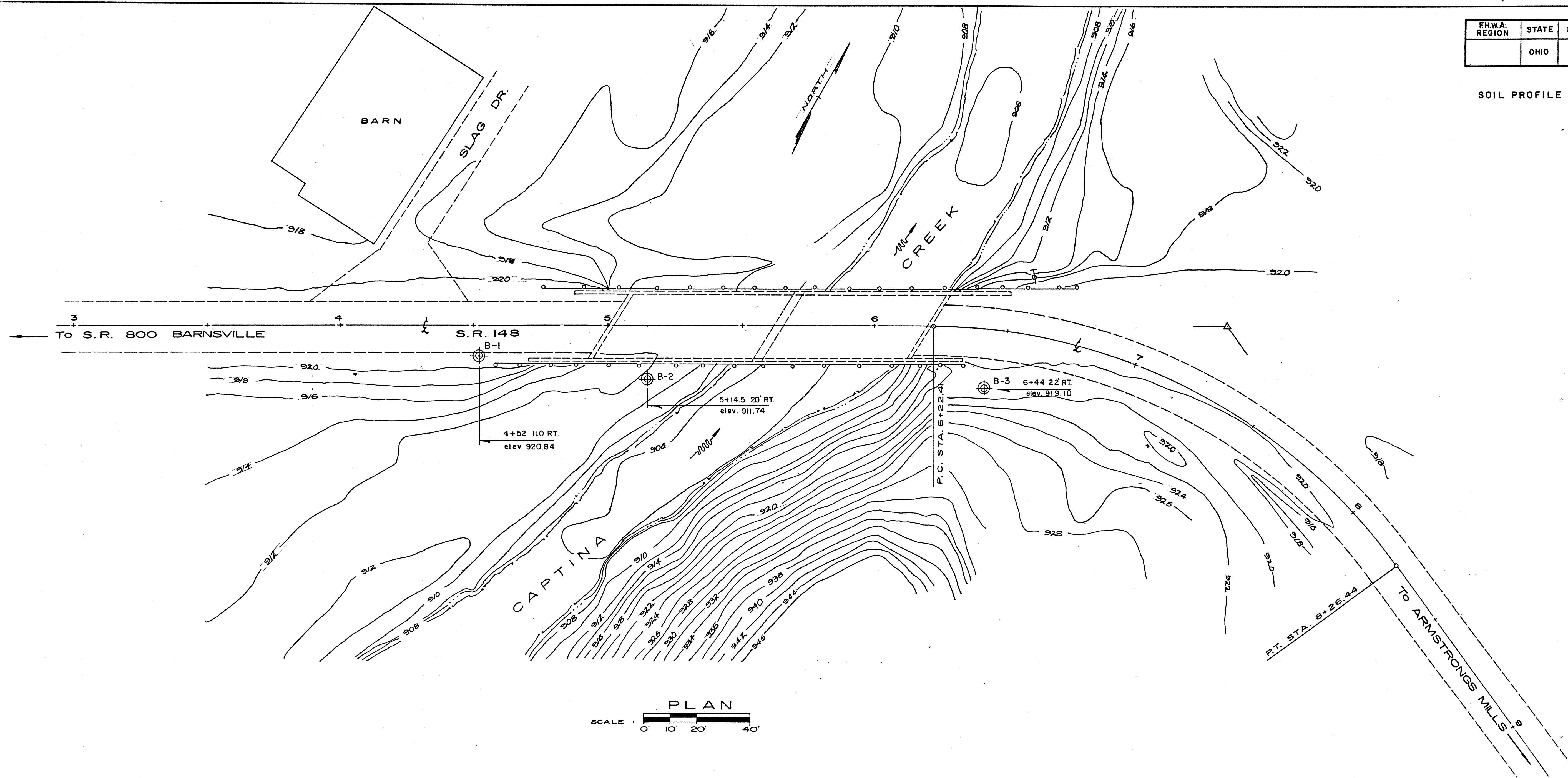
~KEY~

- ① — Item 611 - Reinforced Conc. Appr. Slabs (T=15")
- ② — Item 404 - 1 1/4" Asphalt Concrete, AC-20
- ③ — Item 402 - 1 3/4" Asphalt Concrete, AC-20
- ④ — Item 301 - 6" Bituminous Aggregate Base: AC-20, RT 11 or RT 12
- ⑤ — Item 606 - Guard Rail, Type 5

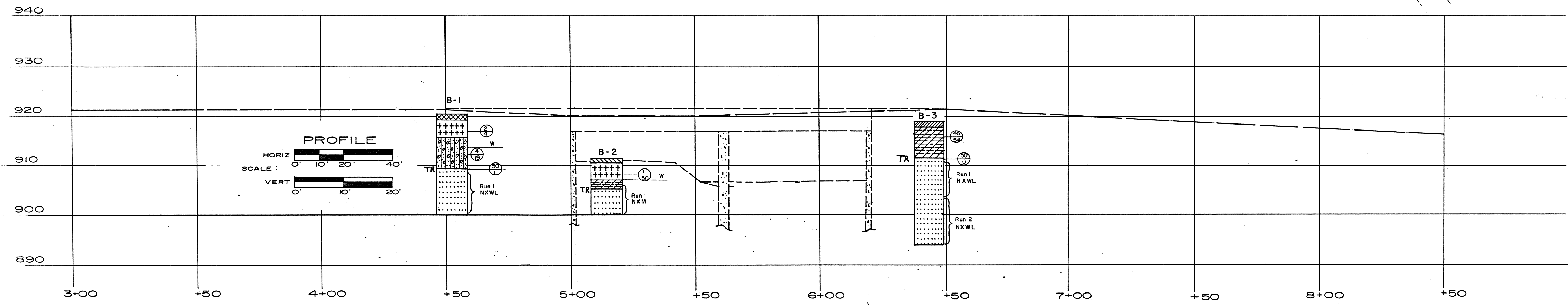
FHWA REGION	STATE	PROJECT NO.	FUNDS
	OHIO		

2
3

SOIL PROFILE BEL-148-6.98



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NOV 15 1985



GENERAL NOTES

QUANTITIES		FHWA REGION	STATE	PROJECT	
Calc. Date	Chkd. Date	5	OHIO		
J.N.M. 10/24/83	A.L.F. 10/27/83				

BEL - 148 - 6.98

FIELD OFFICE:
The Contractor shall provide a suitable field office having a minimum of 300 sq. ft. of floor space. Payment shall be at the lump sum price bid for Item 619, Field Office.

DATUM:
All elevations are based on U.S.G.S. Datum

SEEDING:
Quantities for seeding are calculated for the soil areas between the work limits, as shown on the cross sections.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS:
The rounded corners shown on the Typical Section, apply to all cross sections even though otherwise shown on these plans.

CLEARING AND GRUBBING:
Although there are no trees and/or stumps specifically marked for removal within the limits of this project, a lump sum quantity has been included in the General Summary for Item 201 Clearing and Grubbing. All provisions as set forth in the specifications under this item shall be followed and all costs shall be included in the lump sum price bid for Item 201 Clearing and Grubbing.

LOCATIONS OF GUARDRAIL:
The locations of guardrail runs, as shown in these plans are subject to adjustment prior to final acceptance. The Engineer shall be satisfied that all installations will afford maximum protection for traffic.

CONTINGENCY QUANTITIES:
The Contractor shall not order materials or perform work listed in the General Summary for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer. The actual work locations and quantities used at the Engineer's discretion shall be made a matter of record by incorporation into the final change order governing completion of this project.

ITEM 407 TACK COAT: The tack coat and cover aggregate operation shall be determined as per Spec. 407.05. Plan quantities indicate average application rates of 0.1 gallons per square yard of Tack Coat and 7 pounds per square yard of cover aggregate for estimating purposes only.

PERMANENT SIGNS AND PAVEMENT MARKING:
All necessary permanent signs and pavement marking will be furnished and installed by the Ohio Department of Transportation, District II.

ITEM 622 - TEMP PRECAST CONCRETE BARRIER, as per plan has been provided for Maintaining Traffic and is shown on Sheet N-5. The quantity shown is for one phase of Maintaining Traffic only. The Contractor shall utilize the same barrier in both phases of the reconstruction. Movement of the barrier between phases shall be accomplished in one (1) working day. Flagmen shall be utilized for protection of vehicular traffic until movement of the barrier is complete and traffic is maintained as per phase 2. All cost involved in moving and placing the barrier will be included in the unit price bid for Item 622 Temporary Precast Concrete Barrier as per plan.

UTILITIES NOTIFICATION:
At least two working days prior to commencing construction operations in an area which may involve underground utility facilities, the Contractor shall notify the Project Engineer, the registered utility protection service and the owners of each underground utility facility shown in the plans.

The owner of the underground utility facility shall, with in forty-eight hours, excluding Saturdays, Sundays and Legal Holidays, after notice is received, stake, mark or otherwise designate the location of the underground utility facilities in the construction area in such a manner as to indicate their course together with the approximate depth at which they were installed. The marking or locating shall be coordinated to stay approximately two days ahead of the planned construction.

In addition to the underground utilities listed below the Contractor shall notify, at least two working days before breaking ground, all public service corporations having wires, poles, conduit or other structures, which may be affected by the operation. He shall conduct his operations in such a manner to avoid damages to any and all utilities. Any and all work required for public or private utilities will be done by and at the expense of their respective owners, unless otherwise noted on these plans.

Following is a list of the owners of utilities known to be within the area of this project.

Ohio Bell Telephone Co.
150 E. Gay St, Col. Ohio, 43215
614-223 8262

UNDERGROUND UTILITIES:
The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by Section 153.64 O.R.C.

ITEM 614 - MAINTAINING TRAFFIC:
The Contractor shall maintain traffic at all times in accordance with the requirements of Item 614 by reconstructing the bridge in 2 Stages as shown on sheet 5. One way traffic shall be maintained by use of temporary signals as shown on sheet 6.

Shoulder areas used for maintaining traffic during Phase 1 and Phase 2 shall be surfaced with Item 615 Temporary Pavement Class B. All signs, drums, barricades, flagmen and lane closures shall be utilized in conformance with the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways current edition, latest revisions.

The following estimated quantities have been carried to the General Summary to be used as required for the purpose of Maintaining Traffic.

Item 410 Traffic Compacted Surface, Type A or B 10 Cu.Yd.
Item 615 Temporary Pavement, Class B 149 Sq.Yd.

Item 622 Temp. Precast Concrete Barrier, As Per Plan 340 Lin. Ft.

Payment for all of the above except Items 410, 615, and 622 shall be included in the price bid for Item 614 Maintaining Traffic.

CONSTRUCTION SEQUENCE:
Phase 1:
Before starting any bridge reconstruction which requires closing existing pavement to traffic, all signs, signals and temporary concrete barrier shown for phase 1 shall be furnished and erected by the Contractor.

During Phase 1:
1) The existing superstructure and substructure, as shown in the detail for phase 1, is to be removed.

2) The portions of the proposed substructure units outside the limits of the remaining structure are to be constructed.

3) The portion of the proposed superstructure shown in the detail for Phase 1 is to be constructed.

4) The portions of the approach slabs outside the area used for Maintaining Traffic are to be constructed.

Prior to placing the temporary pavement for Phase 2, all earthwork on the side used in Maintaining Traffic for Phase 2 shall be completed. All permanent guardrail and all temporary concrete barrier shown for phase 2 shall be furnished and erected by the Contractor prior to Maintaining Traffic as per Phase 2.

During Phase 2:
1) The remaining portions of the existing superstructure and substructure are to be removed.

2) The remaining portions of the proposed substructure units are to be constructed.

3) The remaining portion of the proposed superstructure is to be constructed.

4) The approach slabs are to be completed.

In addition all remaining earthwork is to be completed and all remaining permanent guardrail shall be furnished and erected by the Contractor prior to removing temporary concrete barrier, signs and signals.

ITEM 601 ROCK CHANNEL PROTECTION WITH FILTER:
Where this item is called for on the plans, the quantities shown are based on the dimensions of the rock only and do not include the volume of a 6" stone filter bed. The cost of the filter (either fabric or stone) shall be included in the unit price bid for Item 601 Rock Channel Protection with filter.

Where the fabric filter option is used the fabric shall meet the requirements of supplemental specification 939 Type B.

The surface to receive the fabric shall be prepared to a relatively smooth surface free of obstruction and debris. The fabric shall be placed with the long dimension parallel to the direction of flow and shall be laid loosely but without wrinkles and creases. Where joints are necessary, strips shall be placed to provide a 12" minimum overlap with the upstream strip overlapping the downstream strip. Securing pins with washers shall be placed at 2' minimum intervals along joints and at 2' intervals elsewhere to prevent slippage of the fabric. The securing pins shall be 3/16" diameter of steel painted at one end and fabricated with a head to retain a steel washer having an outside diameter not less than 1-1/2". Pin lengths shall be greater than or equal to 18".

WATERING PERMANENT SEEDED AREAS:
The following estimated quantity is to be used as directed by the Engineer to promote growth and to care for the permanent seeded areas, as per 659.09.
659 Water 5-M-Gal.

EROSION CONTROL:
Item 601 is provided in the plans for erosion control. Rock of a stable nature will not be removed in order to place this item. The engineer shall check and non-perform quantities or adjust locations and quantities for these items where indicated by field conditions during construction.

BEL-148-6.98

B-1 STA 4+52, 11' RT Depth to water after 24 hrs.: 5.0'

ELEVATION	DESCRIPTION OF MATERIALS	SAMPLE			"BLOWS/5'	RECOV.	C.G. (%)	F.G. (%)	C.S. (%)	M.S. (%)	F.S. (%)	SILT (%)	CLAY (%)	L.L.	P.L.	P.I.	W.C.	SOIL CLASS
		NO.	DEPTH	TYPE														
920.0'	SURFACE ELEVATION: 920.84 Road base																	
915.0'	Medium stiff to very stiff brown to gray SILTY CLAY, little sand and shale fragments, moist	1	3.5	SS	2-2-4	1.0'	15.4	0.4	2.6	3.0	1.6	77.0*	28.2	18.9	9.3	16.7	A-4b	
910.0'		2	8.5	SS	2-4-19	1.0'	0.9	1.6	8.5	41.6	12.8	34.6*				16.4	A-2-4	
905.0'	Brown and gray moderately weathered to slightly weathered SANDSTONE	3	11.0	SS	50/.1	0.1'										11.5		
900.0'	TERMINATION DEPTH: ELE 899.34	RUN 1	11.5 to 21.5		NXWL CORE	10.0'												
895.0'																		

B-3 STA 6+44, 22' RT Depth to water after 24 hrs.:

ELEVATION	DESCRIPTION OF MATERIALS	SAMPLE			"BLOWS/5'	RECOV.	C.G. (%)	F.G. (%)	C.S. (%)	M.S. (%)	F.S. (%)	SILT (%)	CLAY (%)	L.L.	P.L.	P.I.	W.C.	SOIL CLASS
		NO.	DEPTH	TYPE														
920.0'	SURFACE ELEVATION: 919.10 Brown SILTY CLAY																	
915.0'	Gray weathered CLAY SHALE	1	3.5	SS	47-50/.3	0.7'								31.3	21.8	9.5	5.1	A-4b
910.0'		2	8.0	SS	50/.0	0.0'												
905.0'	Gray slightly weathered SANDSTONE	RUN 1	8.0 to 16.5'		NXWL CORE	8.5'												
900.0'		RUN 1	16.5 to 25.0'		NXWL CORE	8.5'												
895.0'	TERMINATION DEPTH: ELE 894.10																	

B-2 STA 5+14.5, 20' RT Depth to water after 24 hrs.: 2.0'

ELEVATION	DESCRIPTION OF MATERIALS	SAMPLE			"BLOWS/5'	RECOV.	C.G. (%)	F.G. (%)	C.S. (%)	M.S. (%)	F.S. (%)	SILT (%)	CLAY (%)	L.L.	P.L.	P.I.	W.C.	SOIL CLASS
		NO.	DEPTH	TYPE														
910.0'	SURFACE ELEVATION: 911.74 Topsoil Very soft brown SILT, little sand, trace clay, moist	1	3.5	SS	1-1-50/.2	1.1'												
905.0'	Gray highly weathered SHALE	RUN 1	5.5 to 11.0'		NXWL CORE	4.8'												
900.0'	Gray slightly weathered SANDSTONE																	
900.0'	TERMINATION DEPTH: ELE 900.74																	

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614 TEMPORARY PAVEMENT MARKINGS

NOTE B

BEL-148-6.98

GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, AND WHEN NECESSARY, REMOVE TEMPORARY RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITHIN THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION DURING THE REQUIRED SERVICE PERIOD TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISIBILITY AND/OR REFLECTIVITY AT NO ADDITIONAL COST TO THE STATE.

MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE OF PAINT, PAVEMENT MARKING TAPE OR REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE).

A. PAINT

PAINT SHALL COMPLY WITH 708.14 AND SHALL BE APPLIED IN ACCORDANCE WITH 621 EXCEPT AS MODIFIED HEREIN.

B. PAVEMENT MARKING TAPE

FLEXIBLE RETROREFLECTIVE PREFORMED PRESSURE SENSITIVE TAPE SHALL HAVE STRAIGHT EDGES AND BE FREE OF CRACKS. THE TAPE SHALL CONSIST OF PIGMENT AND FILLERS WITH SUFFICIENT BINDER AND PLASTICIZER TO RETAIN GLASS BEADS HAVING A REFRACTIVE INDEX MEETING THE MINIMUM REFLECTIVE INTENSITY STANDARD STATED IN THE MANUFACTURERS INFORMATION. THE TAPE SHALL BE FLEXOLITE "WET REFLECTIVE". 3M "SCOTCHLANE", OR AN APPROVED EQUAL.

THE GLASS BEADS SHALL BE DISTRIBUTED UNIFORMLY THROUGHOUT THE TAPE WITH SUFFICIENT SURFACE BEADS TO PROVIDE OPTIMUM REFLECTORIZATION AT ALL TIMES.

PAVEMENT MARKING TAPE SHALL COMPLY WITH THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL HAVE A PRECOATED ADHESIVE LAYER FOR PAVEMENT APPLICATION WITHOUT THE USE OF HEAT, SOLVENTS OR ADDITIONAL ADHESIVES. THE ADHESIVE SHALL BE SUFFICIENT TO RETAIN COMPLETE MARKINGS ON THE PAVEMENT SURFACE THROUGHOUT THE USEFUL LIFE OF THE MARKINGS.

IN ADDITION TO THE FOREGOING, ALL TEMPERATURE APPLICATION REQUIREMENTS AND OTHER APPLICABLE MANUFACTURER'S MATERIAL AND APPLICATION INSTRUCTIONS SHALL BE FOLLOWED.

WHEN APPROVED BY THE ENGINEER THE CONTRACTOR MAY USE REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE), IN LIEU OF THAT DESCRIBED ABOVE, TO FACILITATE REMOVAL OF MARKINGS.

C. REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE)

THE MARKING MATERIAL SHALL BE A MIXTURE OF POLYMERIC MATERIALS, PIGMENTS, REINFORCING MEDIUM TO FACILITATE REMOVAL, GLASS BEADS THROUGHOUT THE PIGMENTED PORTION, AND A RETROREFLECTIVE LAYER OF GLASS BEADS BONDED TO THE TOP SURFACE.

THE TAPE SHALL BE PRECOATED WITH A PRESSURE SENSITIVE ADHESIVE CAPABLE OF TEMPORARILY BONDING TO ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE PAVEMENT AT AN AMBIENT TEMPERATURE OF NOT LESS THAN 50° F AND RISING, AT A PAVEMENT TEMPERATURE OF NOT LESS THAN 50° F NOR MORE THAN 150° F, WITHOUT THE USE OF HEAT, SOLVENTS, AND ADDITIONAL ADHESIVES OR ACTIVATORS.

MATERIALS SHALL CONFORM TO THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL BE REMOVABLE FROM ASPHALT AND PORTLAND CEMENT CONCRETE INTACT OR IN LARGE PIECES AT TEMPERATURES ABOVE 40° F WITHOUT USE OF HEAT, SOLVENTS, GRINDING, OR SANDBLASTING. REMOVAL SHALL NOT RESULT IN DAMAGE TO, OR OBJECTIONABLE STAINING OF, THE PAVEMENT.

GLASS BEADS SHALL BE PROVIDED IN A PROPER SIZE, QUANTITY AND DISTRIBUTION TO ASSURE OPTIMUM RETROREFLECTIVITY AS THE FILM WEARS. THE FOLLOWING INITIAL AVERAGE REFLECTANCE VALUES AT 86.0° ENTRANCE ANGLE AS MEASURED IN ACCORDANCE WITH THE TESTING PROCEDURES OF FEDERAL TEST METHOD 370 SHALL BE CERTIFIED

	WHITE		YELLOW	
OBSERVATION ANGLE	0.2	0.5	0.2	0.5
SPECIFIC LUMINANCE	1770	1270	1310	810

(MCD/FT²)/FC

THE TAPE SHALL BE 3-M COMPANY'S "STAMARK, DETOUR GRADE (SERIES 5710, 5711, 6270, 6211)" OR AN APPROVED EQUAL.

THE CONTRACTOR SHALL FURNISH TO THE ENGINEER CERTIFICATION THAT THE MATERIAL SUPPLIED MEETS THE PROPERTIES SPECIFIED HEREIN.

LAYOUT

THE TEMPORARY MARKINGS SHALL BE ACCURATELY LAID OUT IN CONFORMANCE WITH 621.051 AND SHALL BE LOCATED IN A TRUE LINE ON THE CENTER LINE, LANE LINE, EDGE LINE, OR CHANNELIZING LINE WHERE PERMANENT MARKINGS WOULD LIE UNLESS OTHERWISE SPECIFIED IN THE PLANS.

PLACEMENT

TEMPORARY MARKINGS SHALL BE PLACED IN ACCORDANCE WITH LAYOUTS ON SHEETS _____ AND THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS ARE NO LONGER NEEDED, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134 AND NECESSARY PAVEMENT MARKINGS INSTALLED BEFORE THE FLOW OF TRAFFIC IS CHANGED TO THE NEXT PHASE OR RETURNED TO ITS NORMAL CHANNEL.

WHERE PERMANENT PAVEMENT MARKINGS ARE CALLED FOR IN THE PLANS, THE CONTRACTOR SHALL FURNISH AND PLACE THE PERMANENT MARKINGS WITHIN 30 CALENDAR DAYS FOLLOWING COMPLETION OF ALL SURFACE COURSES IN A SINGLE ROADWAY OR PRIOR TO THE END OF THE CONSTRUCTION SEASON, WHICHEVER COMES FIRST. PERMANENT MARKINGS SHALL NOT BE PLACED OVER ANY TAPE MARKINGS.

A. CLASS I MARKINGS

CLASS I MARKINGS SHALL BE AS DEFINED IN 621, EXCEPT AS FOLLOWS:

- 1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
- 2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
- 3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
- 4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

GORE MARKINGS SHALL CONSIST OF TWO CHANNELIZING LINES PLACED AT THE THEORETICAL OR TEMPORARY GORE OF RAMPS AND DIVERGING OR CONVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR SOLID 4-INCH LINES, 24 GALLONS PER MILE FOR SOLID 6-INCH LINES, 48 GALLONS PER MILE FOR SOLID 12-INCH LINES, AND 4 GALLONS PER MILE FOR 4-INCH DASHED LINES.

B. CLASS II MARKINGS

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

CHANNELIZING LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 20-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 50-FOOT BY 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR GORE MARKINGS, 0.8 GALLONS PER MILE FOR CHANNELIZING LINE, AND 0.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE.

CONFLICTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL EXISTING CONFLICTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. DASHED LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED, IN ACCORDANCE WITH 621.15.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF THE MARKINGS.

ITEM	UNIT	DESCRIPTION
614	MILES	TEMPORARY LANE LINES, CLASS _____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY CENTER LINES, CLASS <u>I</u> , 0.06 MILES (PAINT, TAPE OR TYPE R TAPE)
614	MILES/LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS _____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY EDGE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY GORE MARKING, CLASS II, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, 24 LIN. FT. (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY LANE ARROWS, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)

PERMANENT PAVEMENT MARKINGS SHALL BE INSTALLED BY ODOT. ODOT SHALL BE NOTIFIED AT LEAST 5 WORKING DAYS PRIOR TO OPENING THE ROAD TO ALLOW FOR SCHEDULING OF THE PAVEMENT MARKING INSTALLATION.

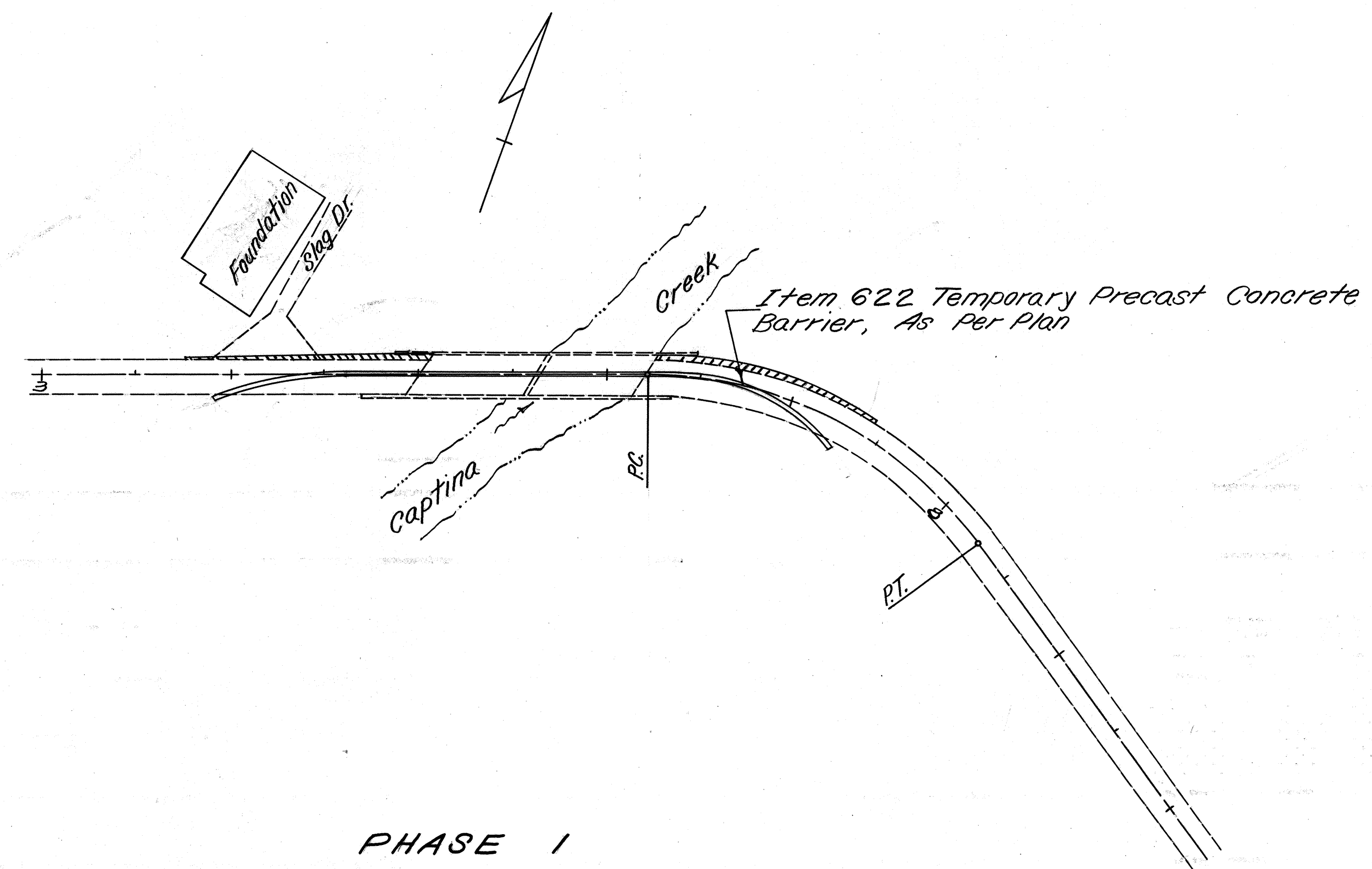
A QUANTITY OF 0.06 MILES OF TEMPORARY CENTER LINES, CLASS II IS CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

THE ROAD SHALL NOT BE OPENED TO TRAFFIC WITHOUT EITHER THE PERMANENT OR TEMPORARY PAVEMENT MARKINGS IN PLACE.

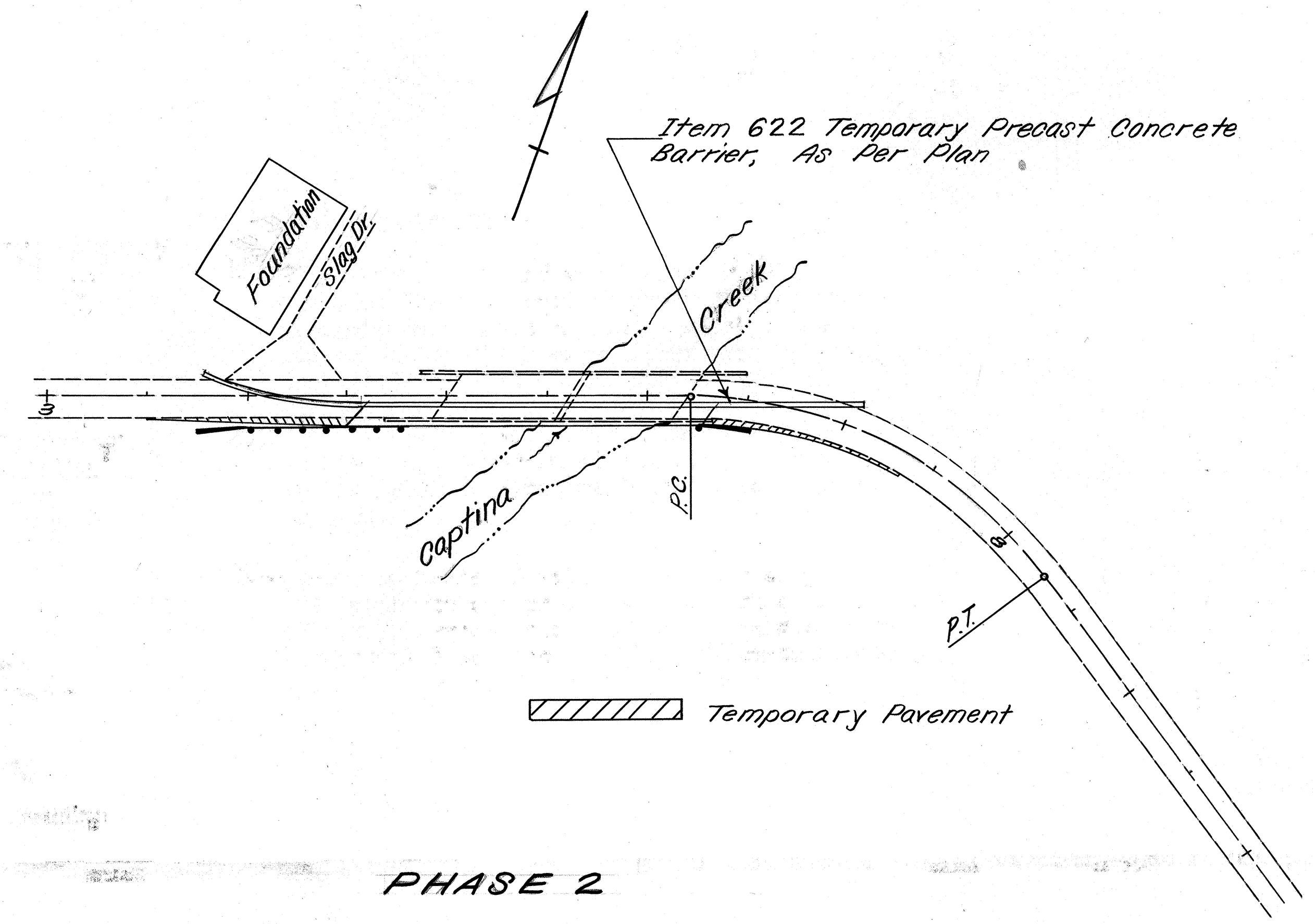
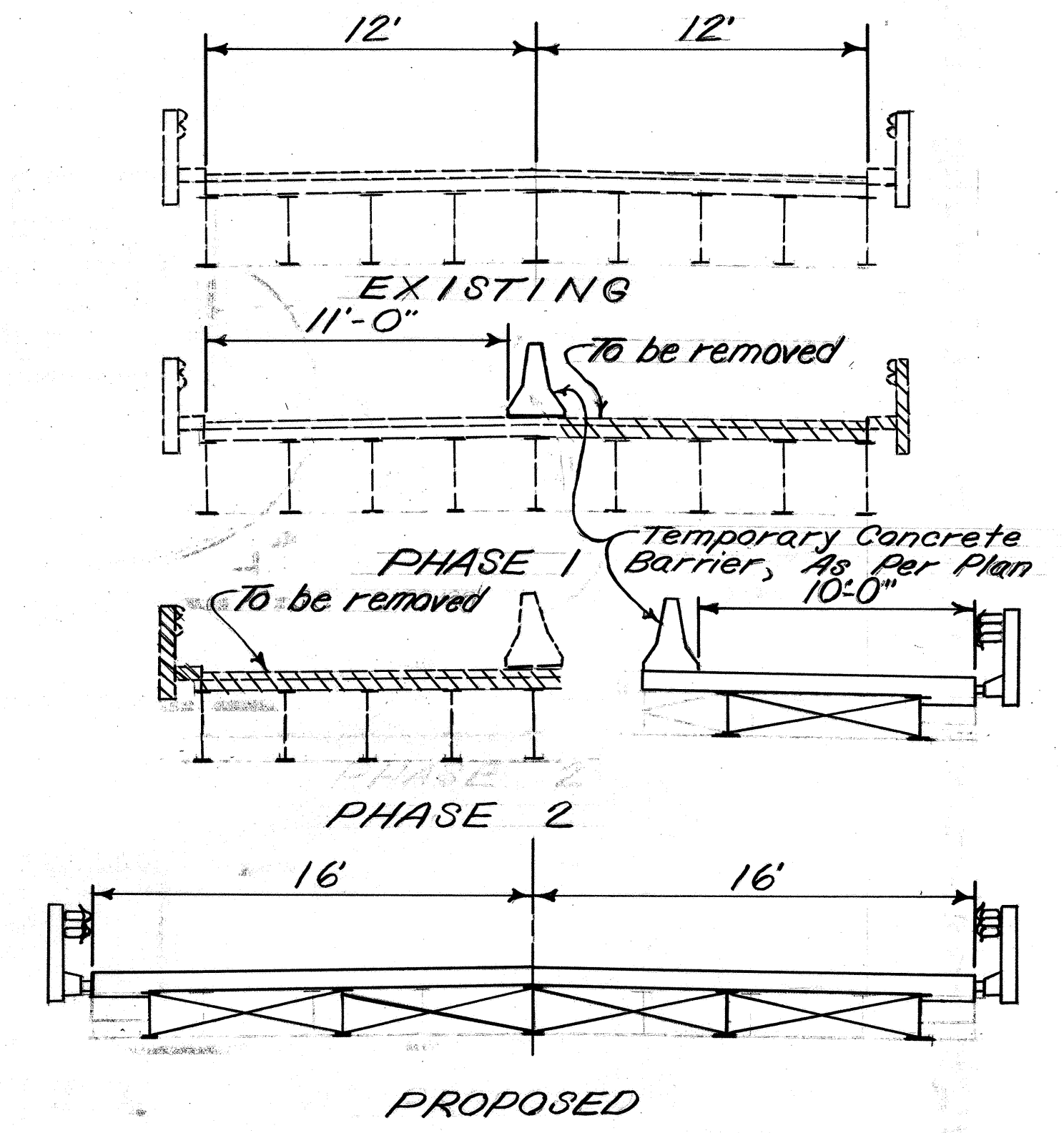
QUANTITIES		FHWA REGION	STATE	PROJECT
Calc. Date	Chkd. Date	5	OHIO	
A.L.F. 11/2/83	J.N.M. 11/7/83			

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PHASE 1



PHASE 2

614 MAINTAINING TRAFFIC
 The Contractor shall maintain local traffic to the residence drive at station 4+25 ± Lt. during Phase 2 using the shoulder area behind the precast temporary concrete barrier. The shoulder area used for maintaining traffic shall be surfaced with 410 aggregate.

The Contractor shall use the west bound lane of bridge BEL-148-699 for maintaining traffic during Phase 1.

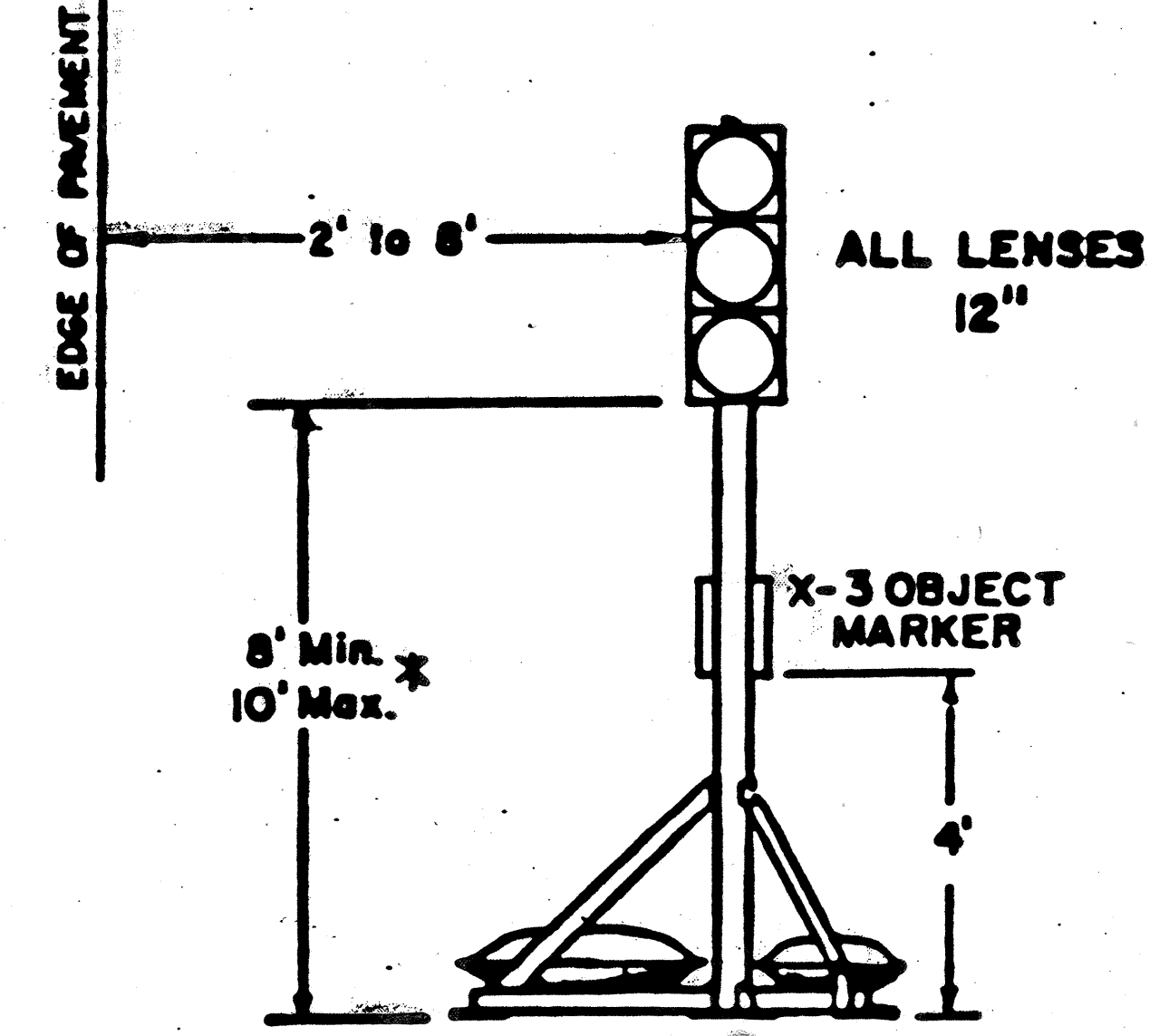
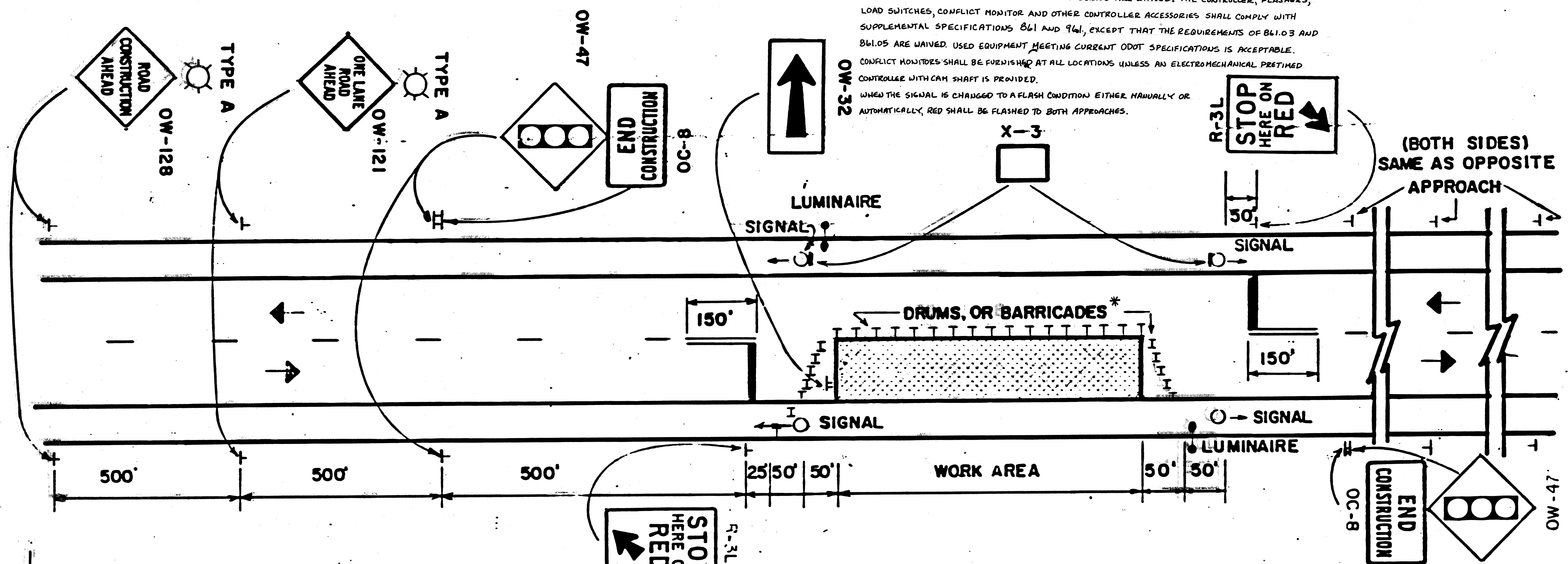
The following quantities have been carried to Sheet N° 3 for Maintaining Traffic.

- Item 622 Temp. Precast Concrete Barrier As Per Plan 340 Lin. Ft.
- Item 615 Temporary Pavement, Class B 149 Sq. Yd.
- Item 410 Traffic Compacted Surface, Type A or B 10 Cu. Yds.

For Maintenance of Traffic Details not shown See Sheets 3 & 6.

CALCULATIONS
 Item 615 Temporary Pavement Class B
 Sta. 3+75 To Sta. 5+07 Lt. 132' $(\frac{3+1}{2}) \div 9 = 29.33$ Sq. Yd.
 Sta. 6+26 To Sta. 7+43 Lt. 117' $(\frac{3+1}{2}) \div 9 = 26$ Sq. Yd.
 Sta. 3+50 To Sta. 4+51 Rt. 101' $(\frac{1+1}{2}) \div 9 = 44.89$ Sq. Yd.
 Sta. 6+29 To Sta. 7+38 Rt. 109' $(\frac{1+1}{2}) \div 9 = 48.44$ Sq. Yd.
TOTAL
 29.33 + 26 + 44.89 + 48.44 = 148.66 Sq. Yds. USE 149 Sq. Yds.

ALL TRAFFIC SIGNALS AND EQUIPMENT USED IN THIS TRAFFIC SIGNAL INSTALLATION, SUCH AS A SIGNAL CABLE AND SIGNAL HEADS, SHALL BE IN CONFORMANCE WITH SPECIFICATIONS 632 AND 732. HOWEVER, THE PERFORMANCE TEST PROVISION NOTED IN SPECIFICATIONS 632.27, PARAGRAPH 6 AND THE WORKING DRAWING REQUIREMENTS OF 632.03 ARE WAIVED. THE CONTROLLER, FLASHERS, LOAD SWITCHES, CONFLICT MONITOR AND OTHER CONTROLLER ACCESSORIES SHALL COMPLY WITH SUPPLEMENTAL SPECIFICATIONS 861 AND 961, EXCEPT THAT THE REQUIREMENTS OF 861.03 AND 861.05 ARE WAIVED. USED EQUIPMENT MEETING CURRENT ODOT SPECIFICATIONS IS ACCEPTABLE. CONFLICT MONITORS SHALL BE FURNISHED AT ALL LOCATIONS UNLESS AN ELECTROMECHANICAL PRETIMED CONTROLLER WITH CAM SHAFT IS PROVIDED. WHEN THE SIGNAL IS CHANGED TO A FLASH CONDITION EITHER MANUALLY OR AUTOMATICALLY, RED SHALL BE FLASHED TO BOTH APPROACHES.



TYPICAL POLE SUPPORTED SIGNAL

*Above grade of roadway centerline

GENERAL NOTES:

1. The maximum length of work area for one way traffic signal control is determined by the capacity required to handle the peak hour demand. Practical maximum length is 400 feet. Signal timing shall be approved by the Engineer.
2. Signals shall be installed and operated in accordance with the requirements of Part 6 of the Ohio Manual of Uniform Traffic Control Devices.
- 3.* Drums or barricades shall be spaced at 50' to 60' center to center within the work area. Drums or barricades on the advance and return tapers shall be spaced at 10' center to center.

* Temporary precast concrete barrier shall be used where drums or barricades are shown. The taper lengths shall be as shown on sheet No. 5.

4. Adequate area illumination to clearly identify both ends of the work area at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to one signal for each direction of traffic as shown above. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.
5. Temporary no passing lines and 24" stop lines shall be installed and maintained where no passing lines are not already in place. Removable pavement markings may be used. Existing conflicting pavement markings between the work area and stop line shall be removed. After completion of the work, temporary markings shall be removed in accordance with 621.134.
6. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.

- 7.* Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.
8. The horizontal or vertical alignment of the roadway may require adjustments in the location of the advance warning signs (the distances shown for advance warning sign spacings are minimums). The vertical alignment of the roadway may require adjustments in the height of the signal heads within the range specified in the Typical Pole Supported Signal Detail.

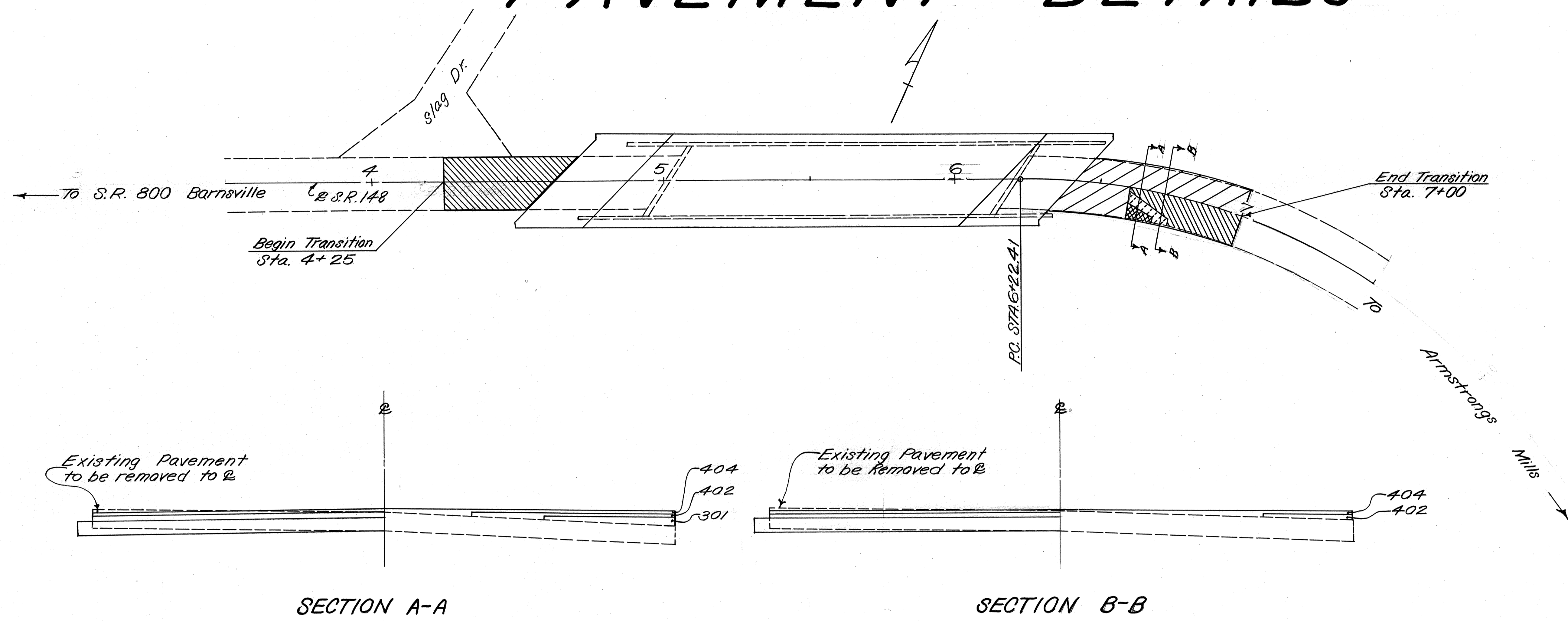
OHIO DEPARTMENT OF TRANSPORTATION	
SIGNALIZED CLOSING 1 LANE OF A 2 LANE HIGHWAY	DATE 2/82

PAVEMENT DETAILS

QUANTITIES		FHWA REGION	STATE	PROJECT
Calc. Date	Chkd. Date	5	OHIO	
MEK 10/31/83	J.N.M. 11/21/83			

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Lt Edge Elev.	Width	℄ Survey Station	Profile Elev. ℄ Pavement	Width	Rt Edge Elev.
Meet. Exist.	10'	4+25	921.27	10'	Meet. Exist.
921.04		4+40	921.28		921.19
921.10		4+50.59	921.30		921.18
921.15		4+62.59	921.31		921.15
920.97		6+41.36	921.13		920.97
921.04		6+51.46	921.12		920.86
921.16		6+60	921.11		920.70
921.44		6+75	921.09		920.23
Meet. Exist.	10'	7+00	921.07	10'	Meet. Exist.

For Quantities & Calculations See Sheet N^o 8.

KEY:

- Full Depth Pavement ~ See Typical Section Sheet N^o 2
- Crown Correction Using 301 & 402 surfaced with 404 (See Section A-A)
- Crown Correction Using 402 surfaced with 404 (See Section B-B)
- 404 Surface Course

CALCULATIONS & GENERAL SUMMARY

QUANTITIES	
Calc. Date	Chkd. Date
J.N.M. 11/7/83	A.L.F. 11/10/83

FHWA REGION	STATE	PROJECT
5	OHIO	

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Item 404 ASPHALT CONCRETE

Sta. 4+25 To Sta. 4+62.59
 $37.59' \times 20' \times \left(\frac{1\frac{1}{2}'' \text{ Ave.}}{12} \div 27\right) = 3.5 \text{ Cu. Yds.}$

Sta. 6+41.36 To Sta. 7+00
 $58.64' \times 20' \times \left(\frac{1\frac{1}{2}''}{12}\right) \div 27 = 4.5 \text{ Cu. Yds.}$
 Total Item 404 8.0 Cu. Yds.
 USE 8 Cu. Yds.

Item 402 ASPHALT CONCRETE

Sta. 6+41.36 To Sta. 6+60
 $18.64' \times 20' \times \left(\frac{1\frac{3}{4}''}{12}\right) \div 27 = 2.0 \text{ Cu. Yds.}$

Sta. 6+60 Lt. To Sta. 7+00 Lt.
 $40' \times 10' \times \left(\frac{1\frac{3}{4}''}{12}\right) \div 27 = 2.2 \text{ Cu. Yds.}$

Sta. 6+60 Rt. To Sta. 6+75 Rt.
 $\left(\frac{2'' \text{ Ave.}}{12} \text{ Thick}\right) \times \text{Plan. Area } 79 \text{ m}^2 \div 27 = 0.5 \text{ Cu. Yds.}$
 Total Item 402 4.7 Cu. Yds.
 USE 5 Cu. Yds.

Item 301 BITUMINOUS AGGREGATE BASE

Sta. 6+60 Rt. To Sta. 6+75 Rt.
 $\left(\frac{3'' \text{ Ave.}}{12} \text{ Thick}\right) \times \text{Plan. Area } 40.68 \text{ m}^2 \div 27 = 0.4 \text{ Cu. Yds.}$

Sta. 6+60 Lt. To Sta. 7+00 Lt.
 $(40') (10.5') \times \left(\frac{3''}{12}\right) \div 27 = 7.8 \text{ Cu. Yds.}$

Sta. 6+41.36 To Sta. 6+60
 $18.64' \times 21' \times \left(\frac{3''}{12}\right) \div 27 = 7.2 \text{ Cu. Yds.}$
 Total Item 301 15.4 Cu. Yds.
 USE 16 Cu. Yds.

Item 407 Tack Coat

Sta. 4+25 To Sta. 4+62.59
 $(37.59) \times 20' \div 9 = 83.5 \text{ Sq. Yds.}$

Sta. 6+60 Rt. To Sta. 7+00 Rt.
 $(40') \times 10' \div 9 = 4.4 \text{ Sq. Yds.}$
 $127.9 \text{ Sq. Yds.} \times 0.1 = 12.79 \text{ Sq. Yds.}$
 12.8 Gals.
 USE 13 Gals.

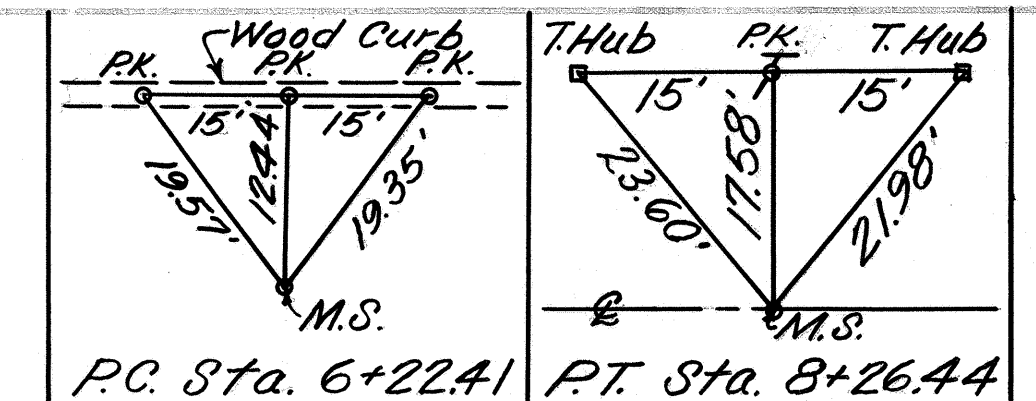
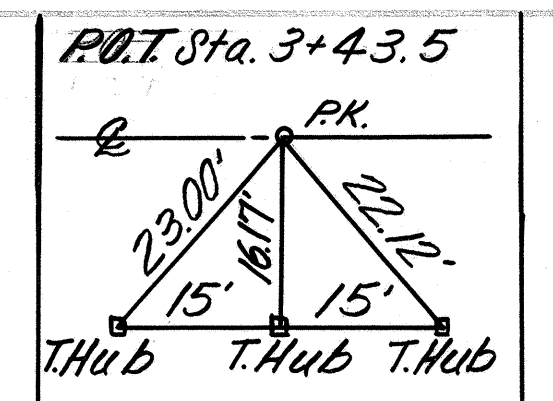
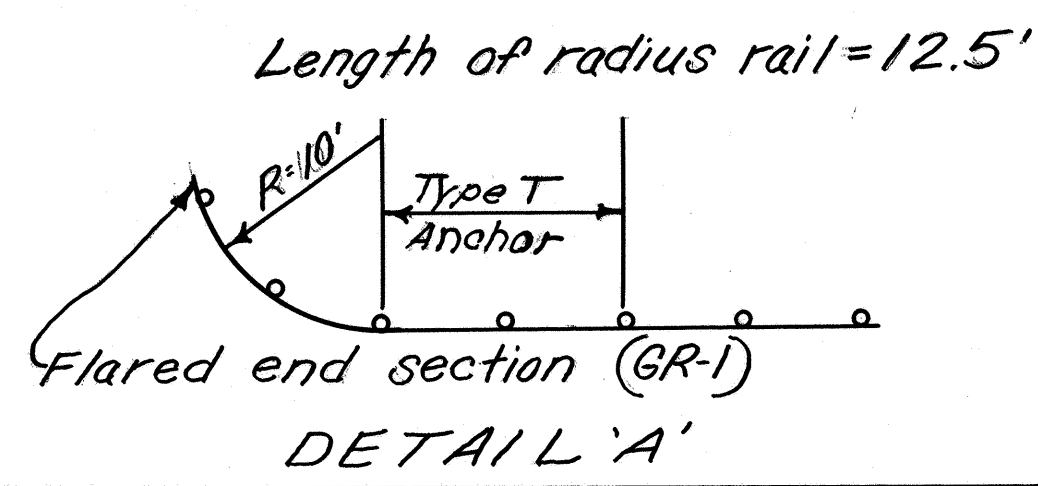
COVER AGGREGATE
 $127.9 \text{ Sq. Yds.} \times 7 \div 2000 = 0.45 \text{ Tons}$
 USE 1 Ton

ITEM 203 - EARTHWORK				
ITEM 659 - SEEDING				
Sheet No.	Station	Excavation Cu. Yds.	Embankment Cu. Yds.	Seeding Sq. Yds.
10	3+50 to 5+20	76	158	436
11	6+00 to 7+50	103	167	309
TOTAL		179	325	745

Item 659 COMMERCIAL FERTILIZER
 From Seeding 745 Sq. Yd. $\times 9 \div 1000 \times 20 \div 2000 = 0.07 \text{ Tons}$
 Item 659 AGRICULTURAL LIMING
 From Seeding 745 Sq. Yd. $\times 9 \div 1000 \times 100 \div 2000 = 0.34 \text{ Tons}$

GENERAL SUMMARY									
Sheet Number					Item	Quantity	Unit	DESCRIPTION	
3	4	8	9						
ROADWAY									
Lump					201	Lump		Clearing and Grubbing	
					202	139	Lin. Ft.	Guardrail Removed	
				179	203	17.9	Cu. Yds.	Excavation not including Embankment Construction	
				325	203	325	Cu. Yd.	Embankment	
				264	203	264	Sq. Yd.	Subgrade Compaction	
10					410	10	Cu. Yd.	Traffic Compacted Surface, Type A or B	
				217.36	606	217.36	Lin. Ft.	Guardrail, Type 5	
				3	606	3	Each	Anchor Assembly, Standard Type A	
				1	606	1	Each	Anchor Assembly, Standard Type T as per plan	
				4	606	4	Each	Bridge Terminal Assembly, Standard Type B	
340					622	34.0	Lin. Ft.	Temporary Precast Concrete Barrier, As Per Plan	
149					615	149	Sq. Yd.	Temporary Pavement, Class B	
					614	0.06	MILES	TEMPORARY CENTER LINES, CLASS I	
					614	0.06	Miles	Temporary Center Lines, Class II	
					614	24	Lin. Ft.	TEMPORARY STOP LINES, CLASS I	
PAVEMENT									
				8	404	8	Cu. Yd.	Asphalt Concrete, AC-20	
				5	402	5	Cu. Yd.	Asphalt Concrete, AC-20	
				16	301	16	Cu. Yds.	Bituminous Aggregate Base: AC-20, RT-11 or RT-12	
				13	407	13	Gals.	Tack Coat	
				1	407	1	Tons.	Cover Aggregate	
				178	611	178	Sq. Yd.	Reinforced Concrete Approach Slab (T=15")	
EROSION CONTROL									
				98	601	98	Cu. Yd.	Rock Channel Protection, Type B Without Filter	
				11	601	11	Cu. Yd.	Rock Channel Protection, Type C With Filter	
				745	659	745	Sq. Yd.	Seeding and Mulching	
5					659	5	M-Gals	Water	
				0.07	659	0.07	Ton	Commercial Fertilizer	
				0.34	659	0.34	Ton	Agricultural Liming	
For Bridge Quantities See Sheet No. 14.									
Lump					614	Lump	Lump	Maintaining Traffic	
Lump					619	Lump	Lump	Field Office	
					623	Lump	Lump	Construction Layout Stakes	
					624	Lump	Lump	Mobilization	
For Bridge Quantities See Sheet No. 14.									

QUANTITIES
 Calc. by: J.N.M. Chkd. by: M.E.V.
 Date: 11/8/83 Date: 11/10/83



ANCHOR ASSEMBLY, STANDARD TYPE T, AS PER PLAN

The Type "T" Anchor Assembly shall be located in the last panel of mainline (straight) rail as shown in Detail "A." The flared end section of the Type "T" Anchor Assembly shall be placed on the last piece of the radius rail.

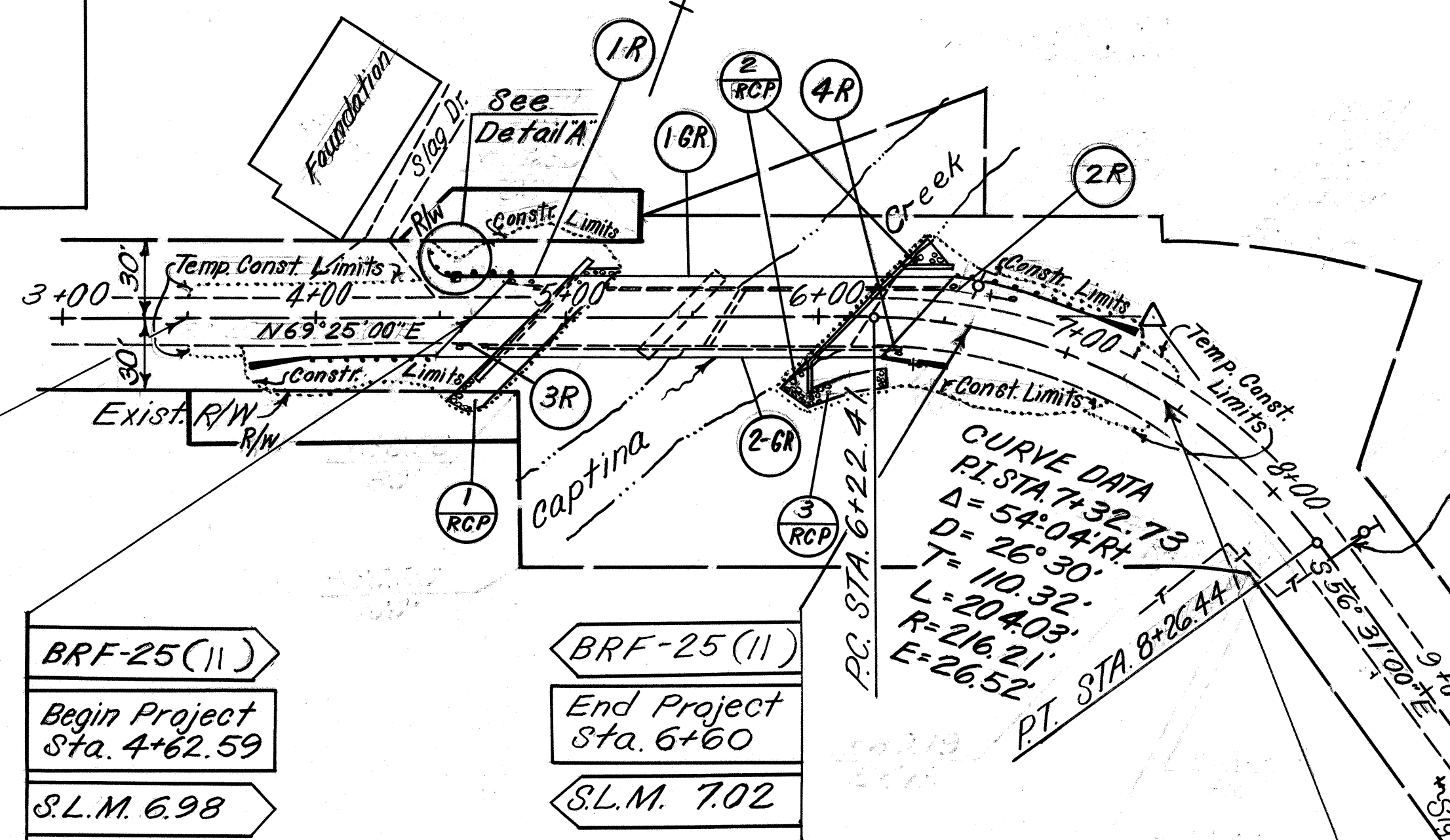
Payment for the above shall be included in the unit bid price for Anchor Assembly, Standard Type T, as per plan.

EXISTING STRUCTURE DATA

Type: Steel Beam with Timber Deck
 Span: 2 @ 60'
 Roadway: 24'
 Skew: 35° Left Forward
 Wearing Surface: Asphalt Concrete
 Approach Slabs: None to be removed

PROPOSED STRUCTURE

Type: Continuous Composite A588 Steel Beam with Reinforced Concrete Deck and Substructure
 Spans: 56'-0" 70'-0" c/c Bearings
 Roadway: 32'-0" F/E Guardrail and 9/6 Deck
 Skew: 45°-00'-00" Left Forward
 Loading: HS 20-44 (Case II) and the Alternate Military Loading
 Approach Slab: AS-1-81 (25' Long)
 Alignment: Tangent



- ① RCP Item 601 Rock Channel Protection, Type B, without Filter Rear Abutment 80'x10'x2.5' ÷ 27 = 74 C.Y.
- ② RCP Item 601 Rock Channel Protection, Type B, without Filter Forward Abutment (255 plan area) x 2.5' ÷ 27 = 23.6 C.Y. USE 24 C.Y.
- ③ RCP Item 601 Rock Channel Protection, Type C, with Filter 32'x6'x1.5' ÷ 27 = 10.6 C.Y. USE 11 C.Y.

GUARD RAIL

Ref. N°	STATION		Side	Type 5	Bridge Terminal Assembly Type B	Anchor Assembly Type A	Anchor Assembly Type T	Guardrail Removed
	From	To						
1-R	4+44.26	7+20.62	Lt.	*121.18	2	1	1	
2-R	3+75.30	6+50.30	Rt.	*96.18	2	2		
1-R	4+75	5+08	Lt.					33'
2-R	6+25	6+75	Lt.					50'
3-R	4+57	4+94	Rt.					37'
4-R	6+15	6+34	Rt.					19'
TOTAL				217.36	4	3	1	139'

* Deduct For Bridge Rail = 128.82'

APPROACH SLABS

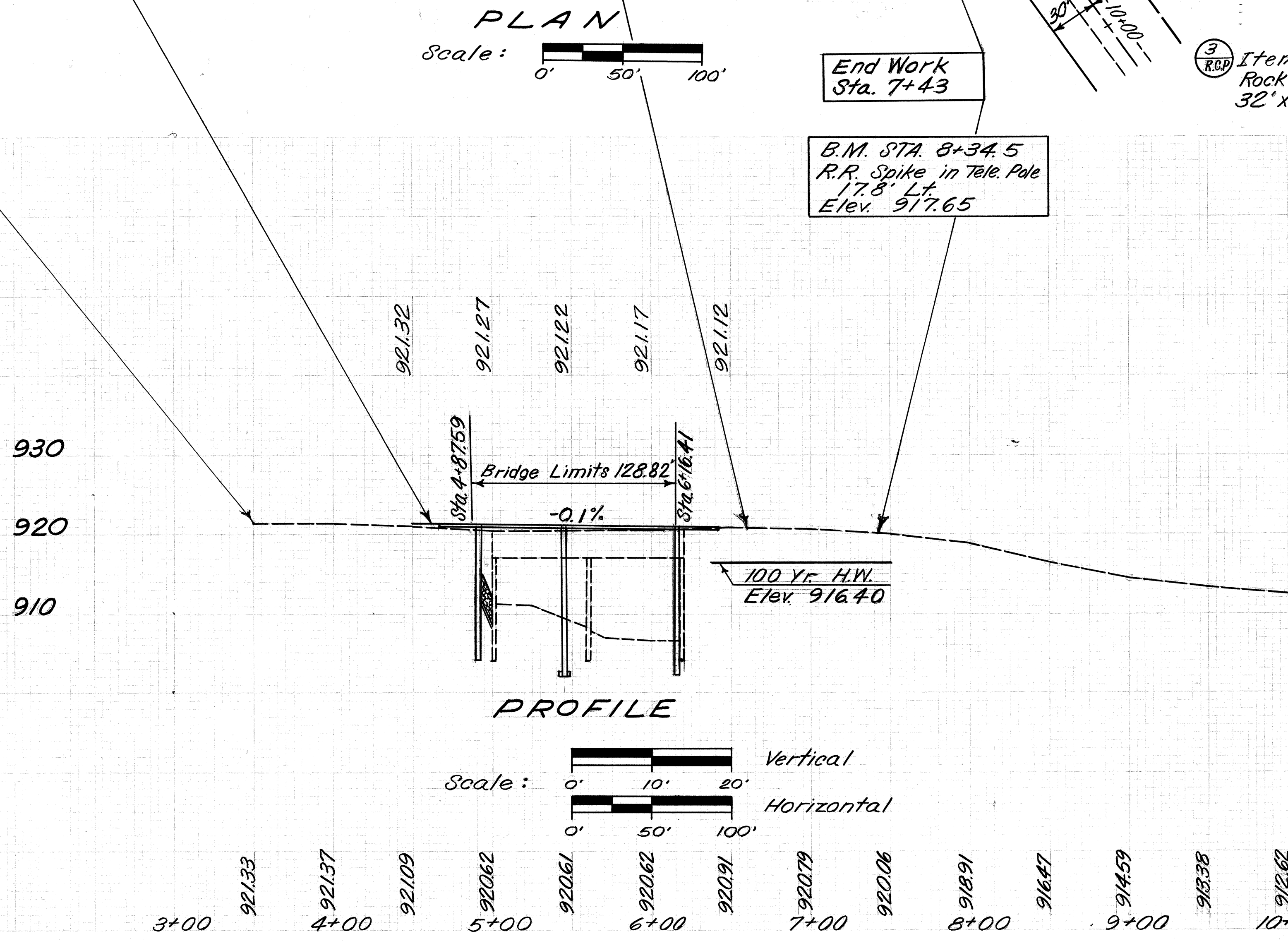
STATION	Calculations	Item 611 Rein. Conc. Appr. Slabs T=15"
From To		Sq. Yds.
4+62.59 4+87.59	25x32 ÷ 9	88.89
6+16.41 6+41.41	25x32 ÷ 9	88.89
TOTAL		177.78
	USE	178

SUBGRADE COMPACTION

STATION	Calculations	Item 203 Subgrade Compaction
From To		Sq. Yds.
6+41.36 6+60	1864'x20 ÷ 9	41.4
6+60 7+00	40' x 10' ÷ 9	44.4
	From Appr. Slabs	178
TOTAL		263.8
	USE	264

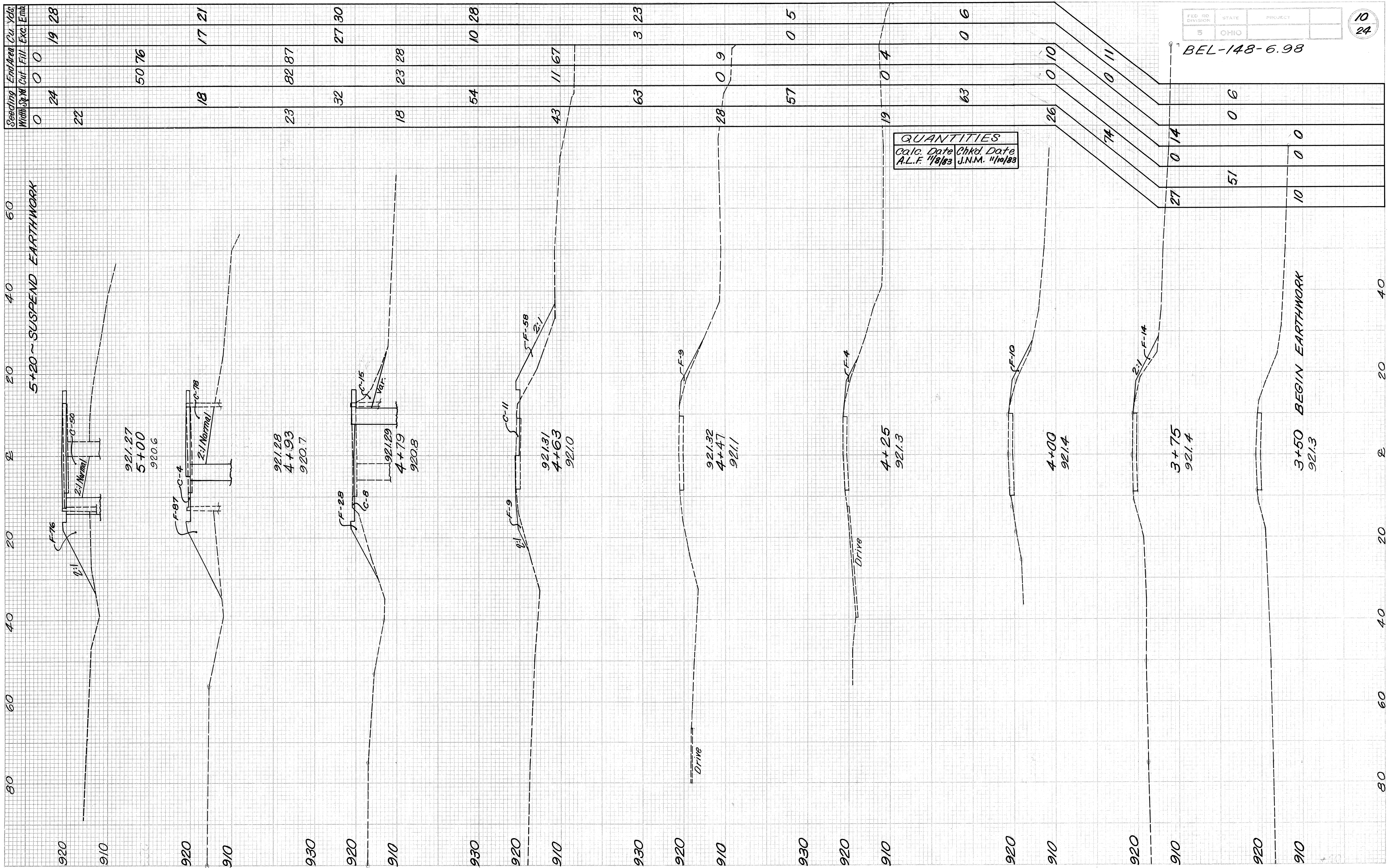
Quantities Carried to Sheet N° 8.

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 NOV 15 1985



BEL-148-6.98

QUANTITIES	
Calc. Date	Chkd. Date
A.L.F. 11/8/83	J.N.M. 11/10/83



Seeding	End Area	Exc. Emb.	Exc. Emb.
0	0	0	0
22	0	0	19 28
18	50 76	0	17 21
23	82 87	0	27 30
32	23 28	0	10 28
18	54	0	3 23
43	11 67	0	0 5
63	28	0	0 4
57	0 9	0	0 6
19	63	0	0 10
26	74	0	0 11
27	0 14	0	0 0
51	10	0	0 0

STA. 3+50 TO STA. 5+20

BEL-148-6.98
9 miles West of Armstrongs Mills

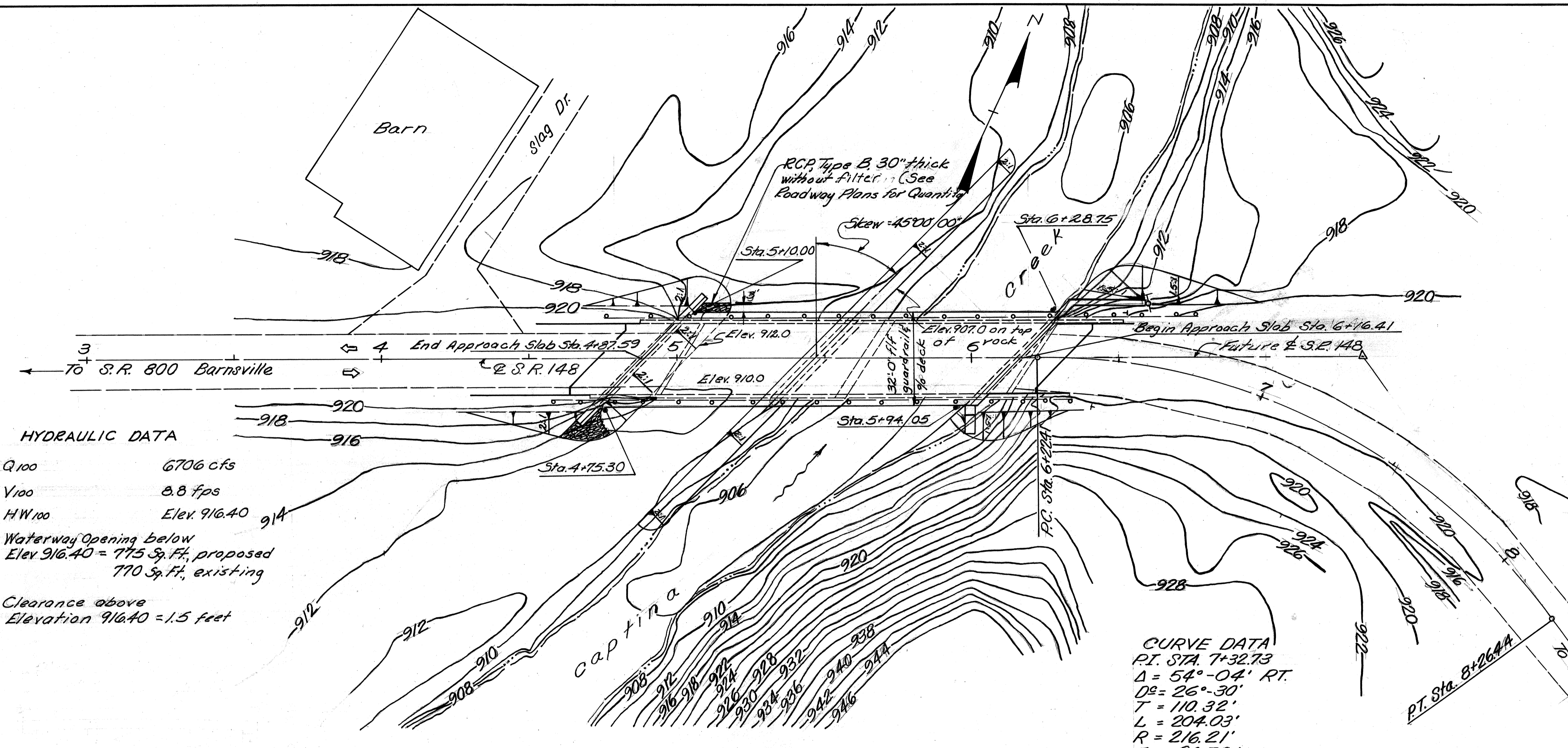
EXISTING STRUCTURE DATA
Type - Steel Beam with Timber Deck
Span - 2 @ 60'
Roadway - 24'
Skew - 35° Lt. Fwd.
Wearing Surface - Asphalt Concrete
Approach Slabs - None

PROPOSED STRUCTURE
TYPE: Continuous, composite A588 steel beam with reinforced concrete deck and substructure
SPANS: 56'-0", 70'-0" along E.S.E. 148
ROADWAY: 32'-0" ff guardrail and 9% deck.
LOADING: HS-20-44 (Case II) and the Alt. Mil. Ldg.
DECK PROTECTION METHOD: Epoxy coated reinforcing steel, top mat only.
SKEW: 45° 00' - 00" Left Forward.
ALIGNMENT: Tangent
SUPERELEVATION: None
APPROACH SLABS: AS-1-B1 (25' long)

DRAINAGE AREA 25.46 SQ. MI.

TRAFFIC DATA
Current ADT (1983) 1000 vpd
Design Year ADT (2003) 1960 vpd
DHY 314 vpd
Percentage Trucks 4%

CURVE DATA
P.I. STA. 7+32.73
Δ = 54° - 04' RT.
Ds = 26° - 30'
T = 110.32'
L = 204.03'
R = 216.21'
E = 26.52'

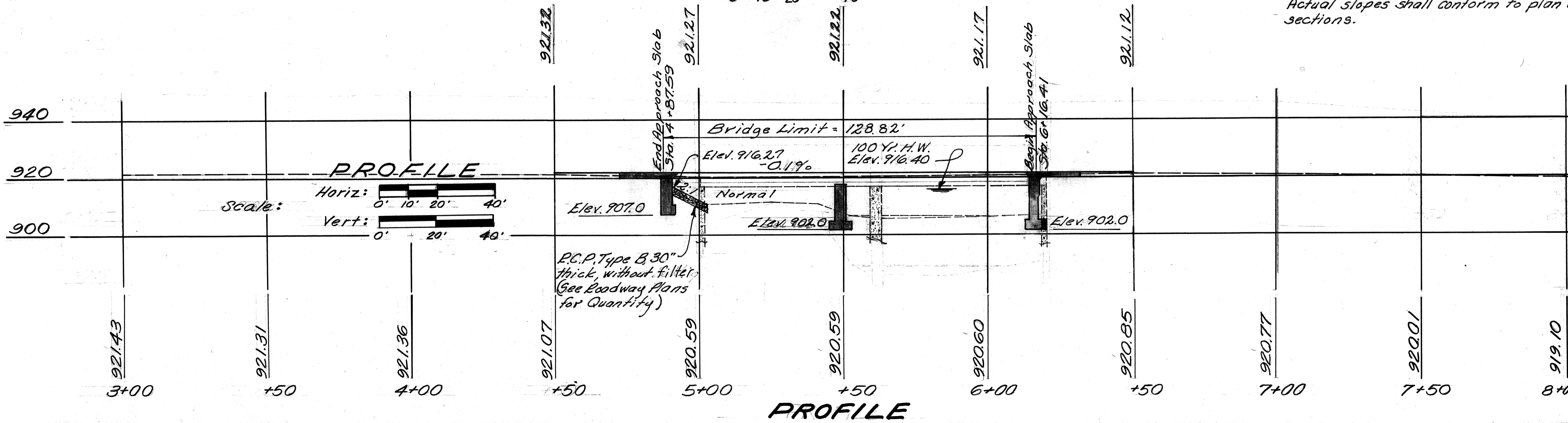


HYDRAULIC DATA
Q₁₀₀ 6706 cfs
V₁₀₀ 8.8 fps
HW₁₀₀ Elev. 916.40
Waterway Opening below Elev. 916.40 = 775 Sp. Ft., proposed
770 Sp. Ft., existing
Clearance above Elevation 916.40 = 1.5 feet

EARTHWORK limits shown are approximate. Actual slopes shall conform to plan cross-sections.

MICROFILMED
NOV 15 1985

PLAN
Scale: 1" = 40'



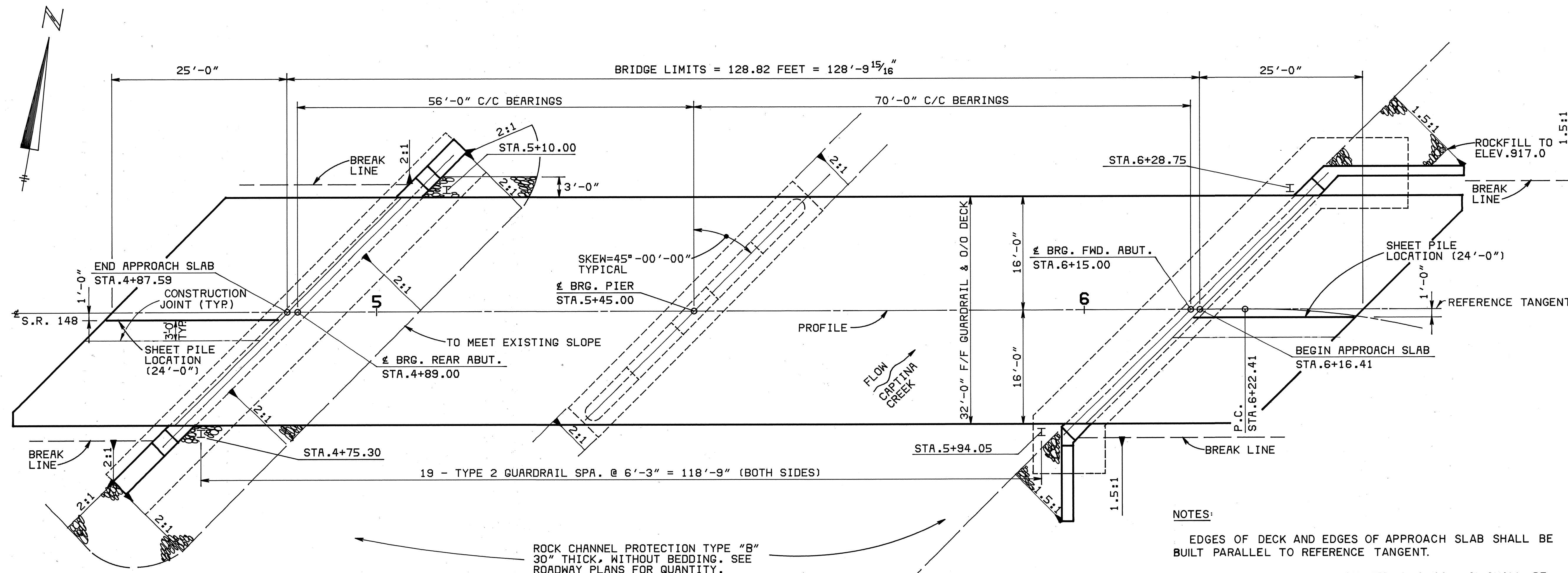
PROFILE
Scale: Horiz: 1" = 40', Vert: 1" = 20'

ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WEIRTON

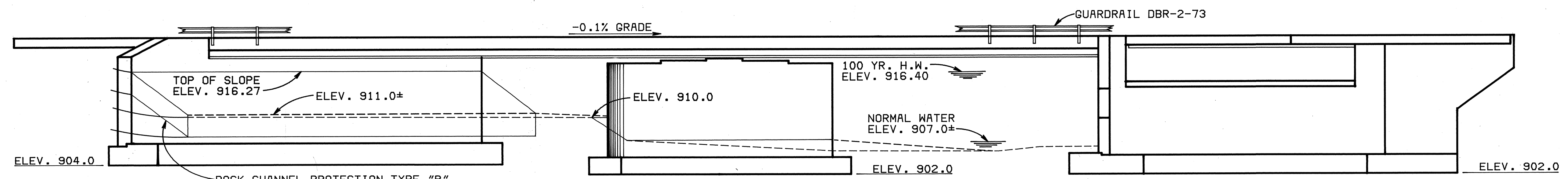
SITE PLAN
BRIDGE N° BEL-148-0699
OVER
CAPTINA CREEK
BELMONT COUNTY S.R. 148
STA. 4+87.59 TO
STA. 6+16.41
SCALE: 1" = 20'

EXIST TOPO		PROPOSED WORK			
Survey	Drawn	Design	Drawn	Check	Review
Dist. II	Dist. II	K.H.W.	K.H.W.	T.E.U.	J.E.V.

BELMONT COUNTY
BEL-148-6.98



GENERAL PLAN



REAR ABUTMENT

PIER

FORWARD ABUTMENT

ELEVATION

PROPOSED STRUCTURE

TYPE: CONTINUOUS, COMPOSITE, A588 STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 56'-0", 70'-0" C/C BEARINGS ALONG ± S.R. 148

ROADWAY: 32'-0" F/F GUARDRAIL AND O/O DECK

LOADING: HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING

DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL, TOP MAT ONLY.

SKREW: 45°-00'-00" LEFT FORWARD

ALIGNMENT: TANGENT

SUPERELEVATION: NONE

APPROACH SLABS: AS-1-81 (25' LONG)

EXISTING STRUCTURE DATA

TYPE: STEEL BEAM WITH TIMBER DECK

SPAN: 2 @ 60'

ROADWAY: 24'

SKREW: 35° LEFT FORWARD

WEARING SURFACE: ASPHALT CONCRETE

APPROACH SLABS: NONE

HYDRAULIC DATA

DRAINAGE AREA	25.46 SQ. MI.
Q ₁₀₀	6706 C.F.S.
V ₁₀₀	8.8 F.P.S.
HW ₁₀₀	ELEV. 916.40
WATERWAY OPENING BELOW	
ELEV. 916.40	
PROPOSED	775 SQ. FT.
EXISTING	770 SQ. FT.
CLEARANCE ABOVE	
ELEV. 916.40	1.5 FT.

CURVE DATA

P.I.	STA. 7+32.73
Δ	54°-04'-00" RT.
Dc	26°-30'-00"
T	110.32'
L	204.03'
R	216.21'
E	26.52'

TRAFFIC DATA

CURRENT ADT (1980)	1000 V.P.D.
DESIGN YEAR ADT (2000)	1960 V.P.D.
DHV	314 V.P.H.
PERCENTAGE TRUCKS	4%

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ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WHEELING

GENERAL PLAN AND ELEVATION

BRIDGE NO. BEL-148-0699

S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA. 4+87.59 TO STA. 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

B248007A

BELMONT COUNTY
BEL-148-6.98

STANDARD DRAWING REFERENCES

DESCRIPTION	DWG. NO.	SHT.	DATE
APPROACH SLABS	AS-1-81	1-3	11-27-81
DEEP BEAM BRIDGE GUARDRAIL	DBR-2-73		4-10-73
STEEL STRINGER STRUCTURES ON FLEXIBLE ABUTMENTS	TS-ICD-1-82	3-5	11-15-82

SUPPLEMENTAL SPECIFICATION REFERENCES

DESCRIPTION	NO.	DATE
EPOXY COATED REINFORCING STEEL	824	10-08-82
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	03-12-75

DESIGN SPECIFICATIONS
THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1977, INCLUDING THE 1978, 1979, 1980, 1981, AND 1982 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA
DESIGN LOADING - HS20-44 CASE II, AND THE ALTERNATE MILITARY LOADING

DESIGN STRESSES
CONCRETE CLASS S - UNIT STRESS 1500 P.S.I. (SUPER-STRUCTURE).
CONCRETE CLASS C - UNIT STRESS 1333 P.S.I. (SUB-STRUCTURE).
REINFORCING STEEL ASTM A615, A616 OR A617.
GRADE 60 - UNIT STRESS 24,000 P.S.I.
STRUCTURAL STEEL ASTM A588 - UNIT STRESS 27,000 P.S.I.

DECK PROTECTION METHOD
EPOXY COATED REINFORCING STEEL, TOP MAT ONLY.
SILANE DECK TREATMENT
MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE ONE (1) INCH THICK.

EMBANKMENT CONSTRUCTION
THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION SHALL THEN BE MADE FOR THE ABUTMENTS AND THE PIER.

FOUNDATION BEARING PRESSURE
ABUTMENT AND WINGWALL FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 3 TONS PER SQ. FT.

PIER FOOTING, AS DESIGNED, PRODUCES A MAXIMUM BEARING PRESSURE OF 3.4 TONS PER SQ. FT.

FOOTINGS
REAR ABUTMENT FOOTING SHALL EXTEND A MINIMUM OF SIX (6) INCHES INTO THE SANDSTONE BEDROCK OR TO THE PLAN ELEVATION SHOWN, WHICHEVER IS LOWER.

FORWARD ABUTMENT FOOTING SHALL BE PLACED IN SANDSTONE BEDROCK AT THE ELEVATION SHOWN.

CONSTRUCTION SEQUENCE:

- STAGE I
- DISMANTLE SOUTH PORTION OF EXISTING BRIDGE. THE SOUTH PORTION IS DEFINED AS BEING ONE (1) FOOT RIGHT (LOOKING UPSTATION) OF THE CENTERLINE S.R. 148. THE REAR ABUTMENT PORTION SHALL BE REMOVED TO ELEVATION 908.0. THE PIER AND FORWARD ABUTMENT PORTION SHALL BE ENTIRELY REMOVED. HOLES FROM REMOVAL OF PILE ENCASEMENT CONCRETE SHALL BE FILLED WITH CONCRETE FOR STAGE II CONSTRUCTION.
 - INSTALL SHEET PILING AT THE LOCATIONS SHOWN ON THE GENERAL PLAN. SOME MODIFICATION WILL BE NECESSARY FOR STAGE II CONSTRUCTION.
 - PRECAST CONCRETE BARRIER SHALL BE INSTALLED ON SOUTH SIDE OF REMAINING EXISTING BRIDGE. ROUTE TRAFFIC (SINGLE LANE ONLY) OVER EXISTING BRIDGE.
 - CONSTRUCT THE SOUTH PORTION OF THE PIER AND ABUTMENTS AS SPECIFIED ON THE CORRESPONDING DETAIL SHEETS.
 - CONSTRUCT THE SOUTH PORTION OF THE SUPERSTRUCTURE AS SPECIFIED ON THE DETAIL SHEETS. INSTALL THE TEMPORARY PRECAST CONCRETE BARRIER AS PER PLAN.
 - ROUTE TRAFFIC (SINGLE LANE ONLY) OVER THE COMPLETED SOUTH PORTION OF THE NEW BRIDGE.

- STAGE II
- CAREFULLY DISMANTLE THE REMAINING NORTH PORTION OF THE EXISTING BRIDGE TO THE LIMITS DEFINED IN STAGE I-A.
 - CONSTRUCT THE REMAINING NORTH PORTION OF THE PIER AND ABUTMENTS.
 - CONSTRUCT THE REMAINING NORTH PORTION OF THE SUPER-STRUCTURE AND REMOVE THE TEMPORARY PRECAST CONCRETE BARRIER.
 - OPEN THE COMPLETED BRIDGE TO TWO-WAY TRAFFIC.

UTILITY LINES
ALL EXPENSE INVOLVED IN RELOCATING AND INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

STEEL SHEET PILING LEFT IN PLACE SHALL HAVE A MINIMUM SECTION MODULUS OF 5 CUBIC INCHES PER FOOT OF WALL.

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTS	WINGS	PIER	SUPER	GENERAL
202	LUMP	SUM	STRUCTURE REMOVED					LUMP
503	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING					LUMP
503	635	C.Y.	UNCLASSIFIED EXCAVATION	600		35		
503	137	C.Y.	ROCK EXCAVATION	97		40		
504	720	S.F.	STEEL SHEET PILING LEFT IN PLACE (MINIMUM SECTION MODULUS OF 5 INCHES CUBED PER FOOT OF WALL)					720
505	LUMP	SUM	PILE DRIVING EQUIPMENT MOBILIZATION					LUMP
509	36565	LB	REINFORCING STEEL, GRADE 60	15361	1467	4134	15603	
511	152	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE				152	
511	146	C.Y.	CLASS C CONCRETE, FOOTINGS	121		25		
511	52	C.Y.	CLASS C CONCRETE, PIER ABOVE FOOTING			52		
511	122	C.Y.	CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS	102	20			
513	93300	LB	STRUCTURAL STEEL (AISC CATEGORY I)				93300	
513	1380	EA	WELDED STUD SHEAR CONNECTORS				1380	
516	5	EA	LAMINATED ELASTOMERIC BEARINGS (12" X 16" X 1/2" ELASTOMERIC PAD WITH 13" X 17" X 1-1/2" STEEL LOAD PLATE), GRADE 50			5		
516	116	L.F.	PVC WATERSTOP, AS PER PLAN				116	
516	102	S.F.	1 INCH PREFORMED EXPANSION JOINT FILLER	102				
516	100	S.F.	1/2 INCH PREFORMED EXPANSION JOINT FILLER	100				
517	257.64	L.F.	RAILING (DEEP BEAM WITH TUBULAR BACK-UP, TYPE 2 STEEL POSTS AND BOLTS)				257.64	
518	98	C.Y.	POROUS BACKFILL	98				
518	70	L.F.	6 INCH PERFORATED, HELICAL CSP, 707.01	70				
518	20	L.F.	6 INCH NON-PERFORATED, HELICAL CSP, INCLUDING SPECIALS, 707.01	20				
601	3	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION					3
622	190.00	L.F.	TEMPORARY CONCRETE BARRIER, AS PER PLAN				128.82	61.18
824	19261	LB	EPOXY COATED REINFORCING STEEL, GRADE 60	141	74		19046	
SPEC	92	S.Y.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE).				92	

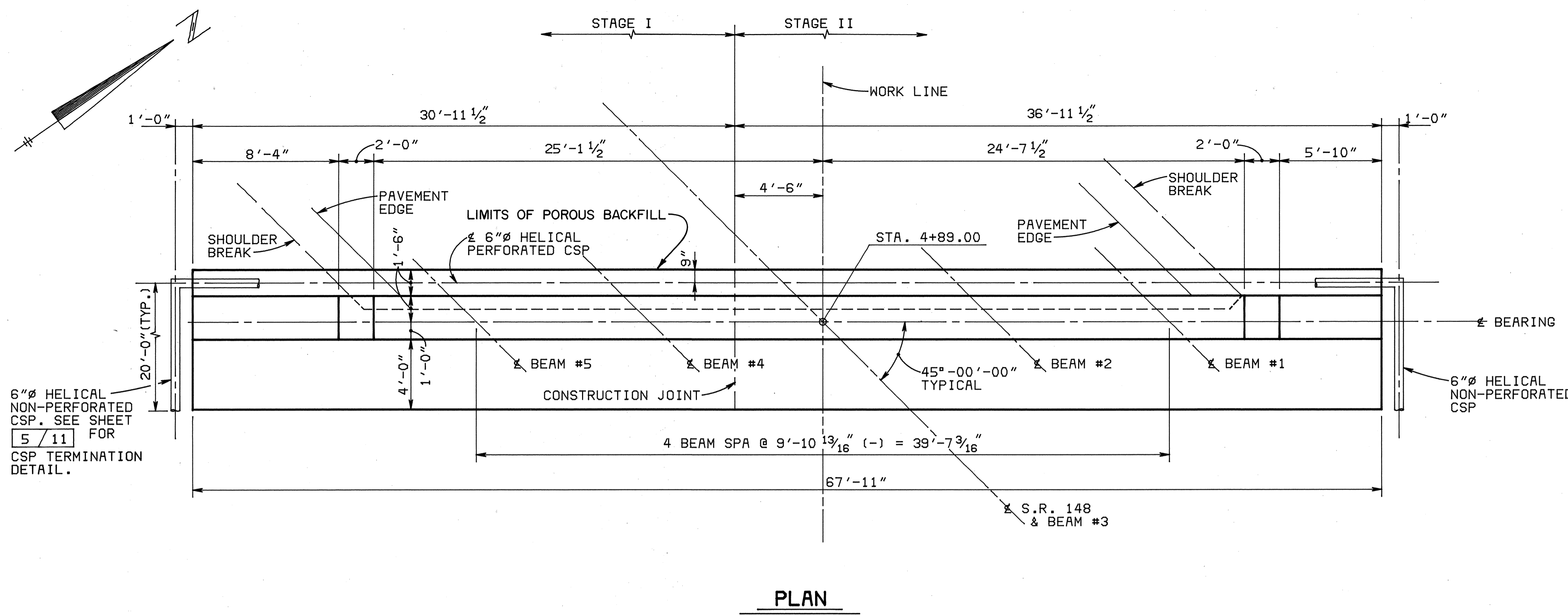
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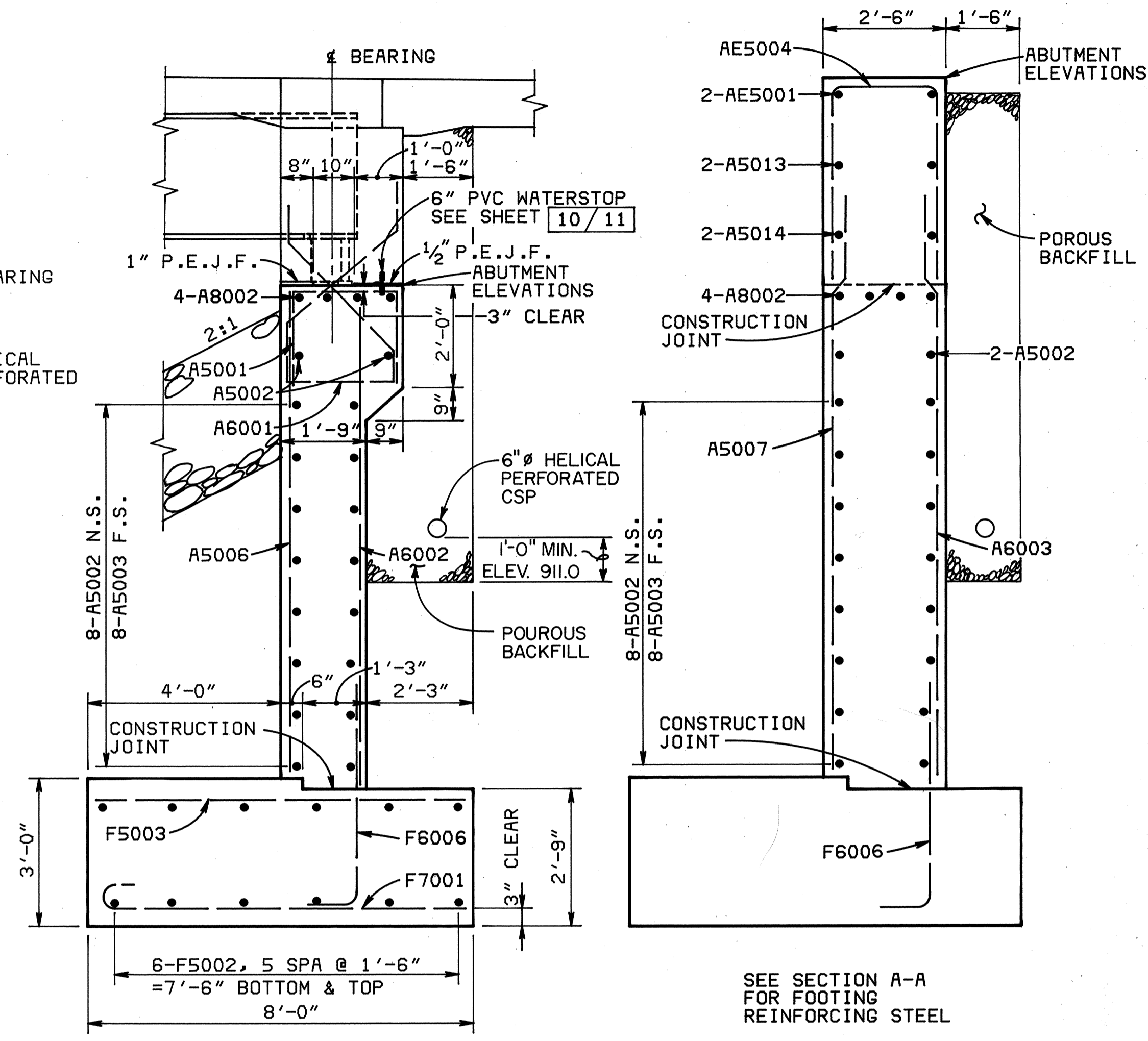
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ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON						
GENERAL NOTES AND ESTIMATED QUANTITIES						
BRIDGE NO. BEL-148-0699 S.R. 148 OVER CAPTINA CREEK						
BELMONT COUNTY					STA. 4+87.59 TO STA. 6+16.41	
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU 10-6-83	JEV	12-19-83	

BELMONT COUNTY
BEL-148-6.98



PLAN

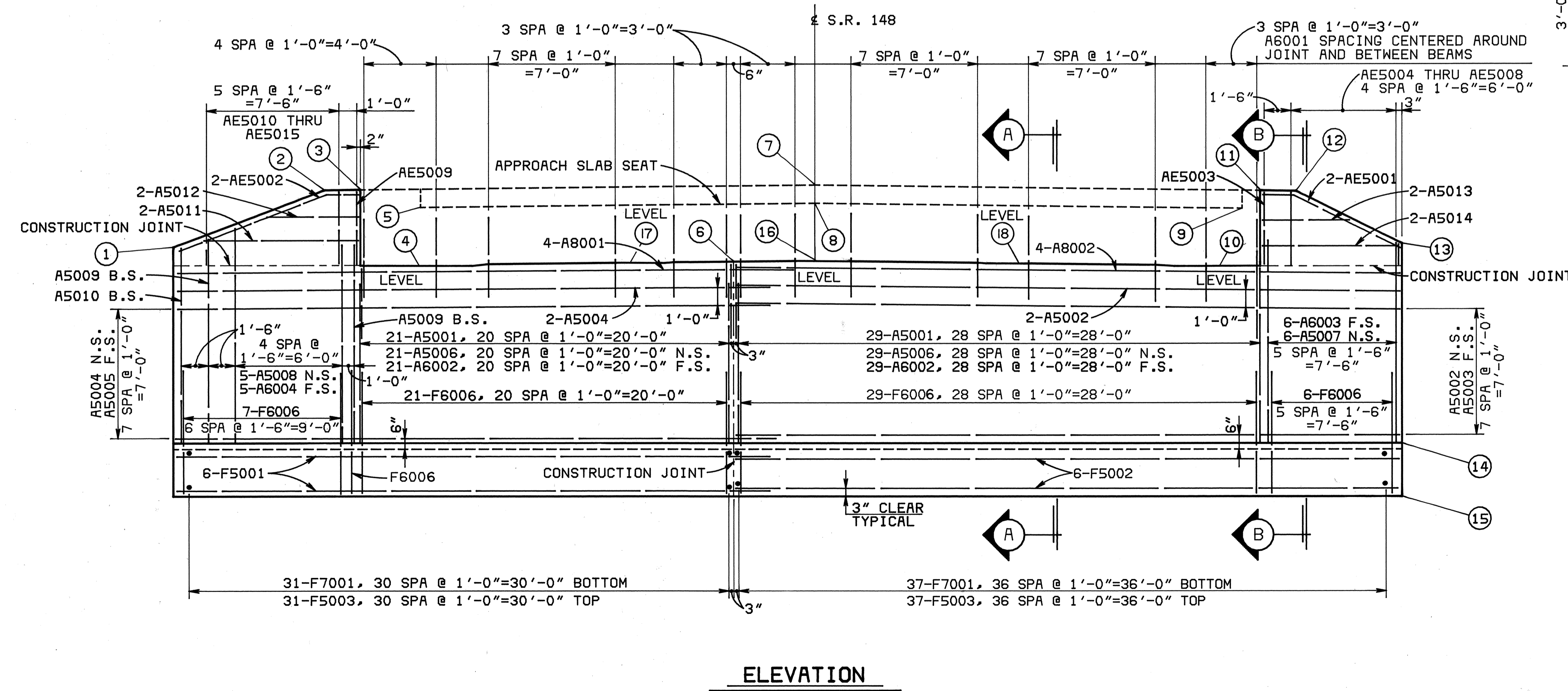


SECTION A-A

SUPERSTRUCTURE REINFORCING STEEL NOT SHOWN

SECTION B-B

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NOV 15 1985



ELEVATION

ABUTMENT ELEVATIONS

POINT	ELEVATION
1	918.02
2	920.99
3	921.02
4	916.80
5	919.80
6	916.95
7	921.28
8	920.03
9	919.76
10	916.77
11	920.98
12	920.95
13	918.04
14	907.00
15	904.00
16	917.01
17	916.90
18	916.89

LEGEND

N.S. MEANS NEAR SIDE
F.S. MEANS FAR SIDE
B.S. MEANS BOTH SIDES
P.E.J.F. MEANS PREFORMED EXPANSION JOINT FILLER

CONCRETE WING WALLS ABOVE SEATS SHALL NOT BE PLACED UNTIL THE STRUCTURAL STEEL HAS BEEN ERECTED AND THE BARS WHICH ARE TO BE THREADED THROUGH THE BEAM WEBS HAVE BEEN PLACED. SEE SHEET 10/11 FOR DETAILS.

POROUS BACKFILL SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE ENDS OF THE WING WALLS. SEE SECTIONS A-A AND B-B FOR THICKNESSES.

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COLUMBUS, CLEVELAND, WHEELING

REAR ABUTMENT DETAILS

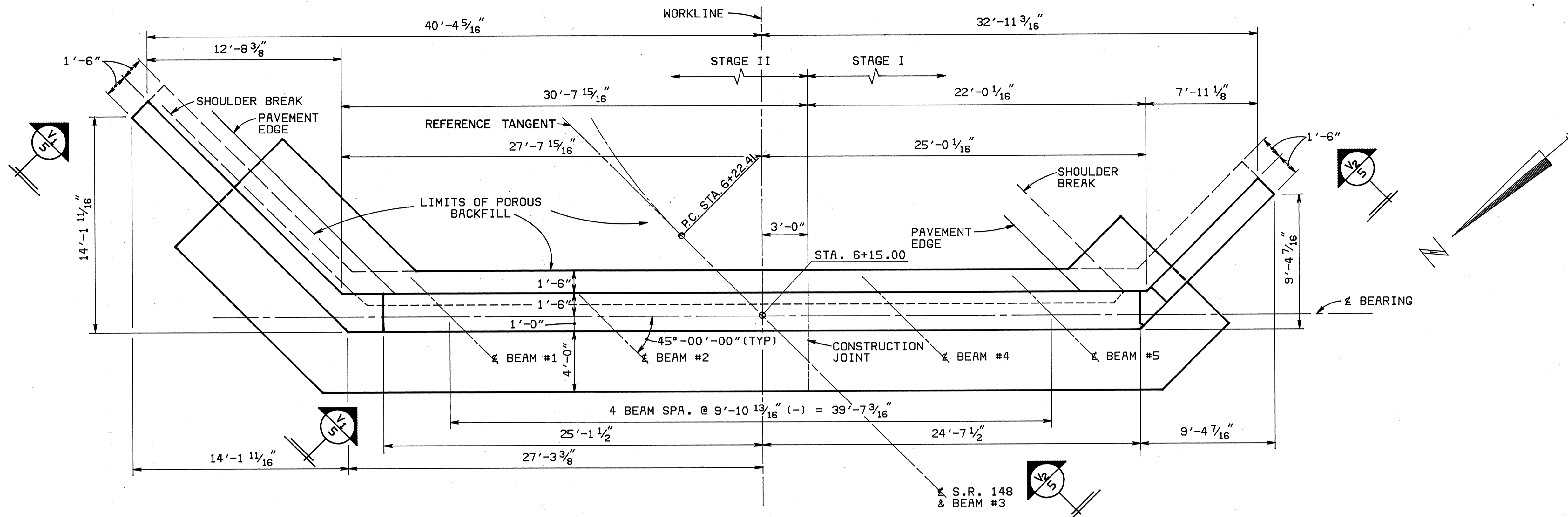
BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA 4+87.59 TO STA 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

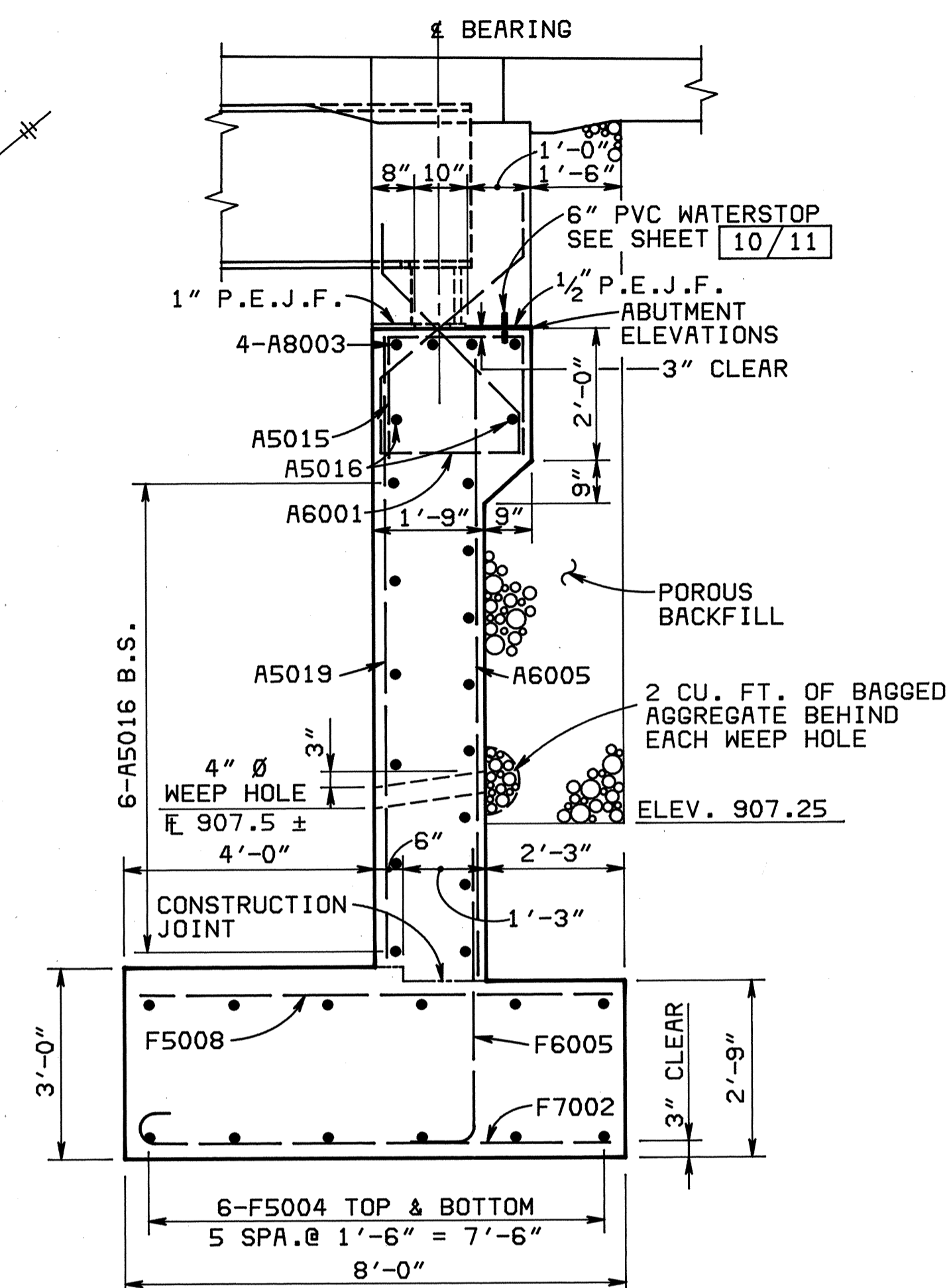
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**BELMONT COUNTY
BEL-148-6.98**



PLAN

FOR FOOTING DIMENSIONS SEE SHEET 5/11



SECTION A-A

SUPERSTRUCTURE REINFORCING STEEL NOT SHOWN

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NOV 15 1985

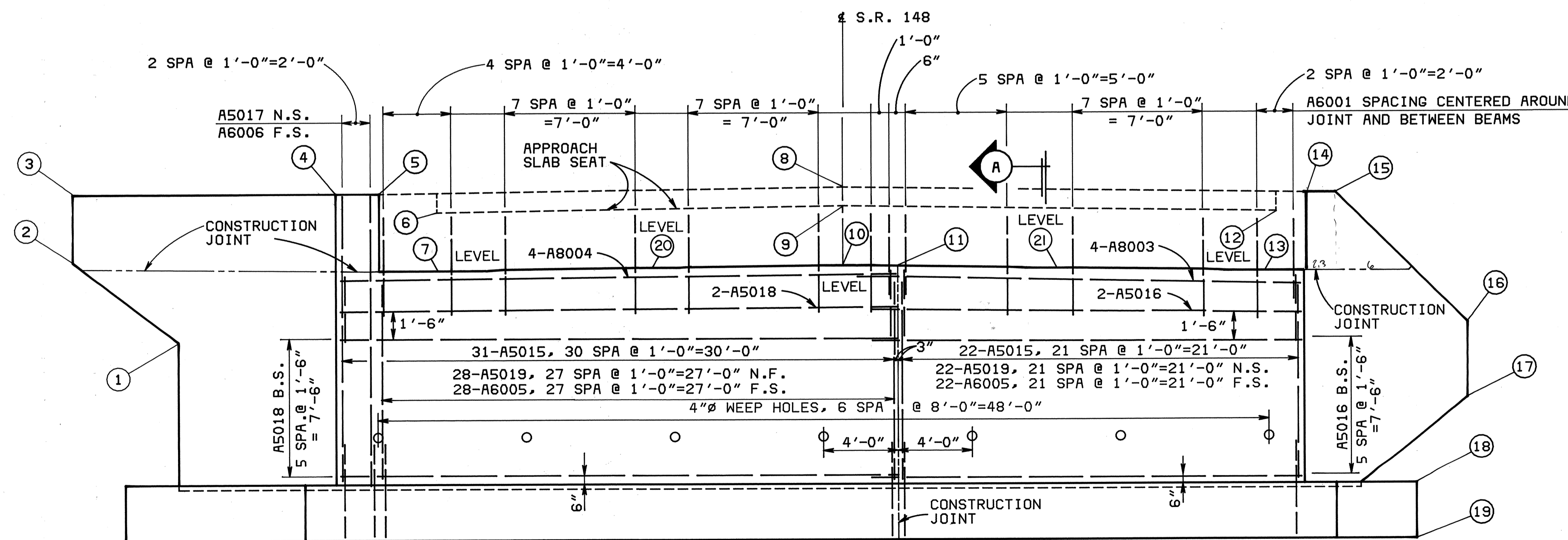
LEGEND

N.S. MEANS NEAR SIDE
F.S. MEANS FAR SIDE
B.S. MEANS BOTH SIDES
P.E.J.F. MEANS PREFORMED EXPANSION JOINT FILLER

FOR WINGWALL DETAILS AND REINFORCING, SEE SHEET 5/11

CONCRETE WING WALLS ABOVE SEATS SHALL NOT BE PLACED UNTIL THE STRUCTURAL STEEL HAS BEEN ERECTED AND THE BARS WHICH ARE TO BE THREADED THROUGH THE BEAM WEBS HAVE BEEN PLACED. SEE SHEET 10/11 FOR DETAILS.

POINT	ELEVATION
1	912.81
2	916.81
3	920.81
4	920.83
5	920.85
6	919.63
7	916.65
8	921.15
9	919.90
10	916.88
11	916.82
12	919.67
13	916.67
14	920.89
15	920.89
16	913.20
17	909.20
18	905.00
19	902.00
20	916.76
21	916.78



ELEVATION

FOR FOOTING REINFORCING STEEL SEE SECTION A-A AND SHEET 5/11

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COLUMBUS, CLEVELAND, WHEELING

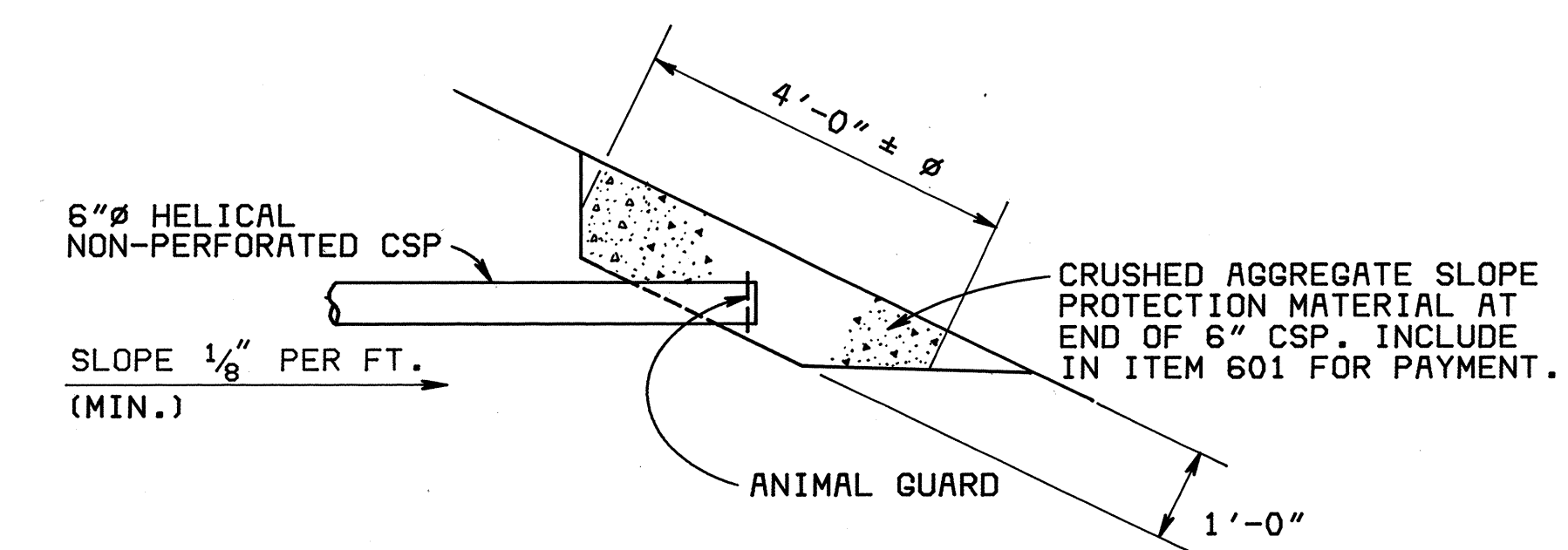
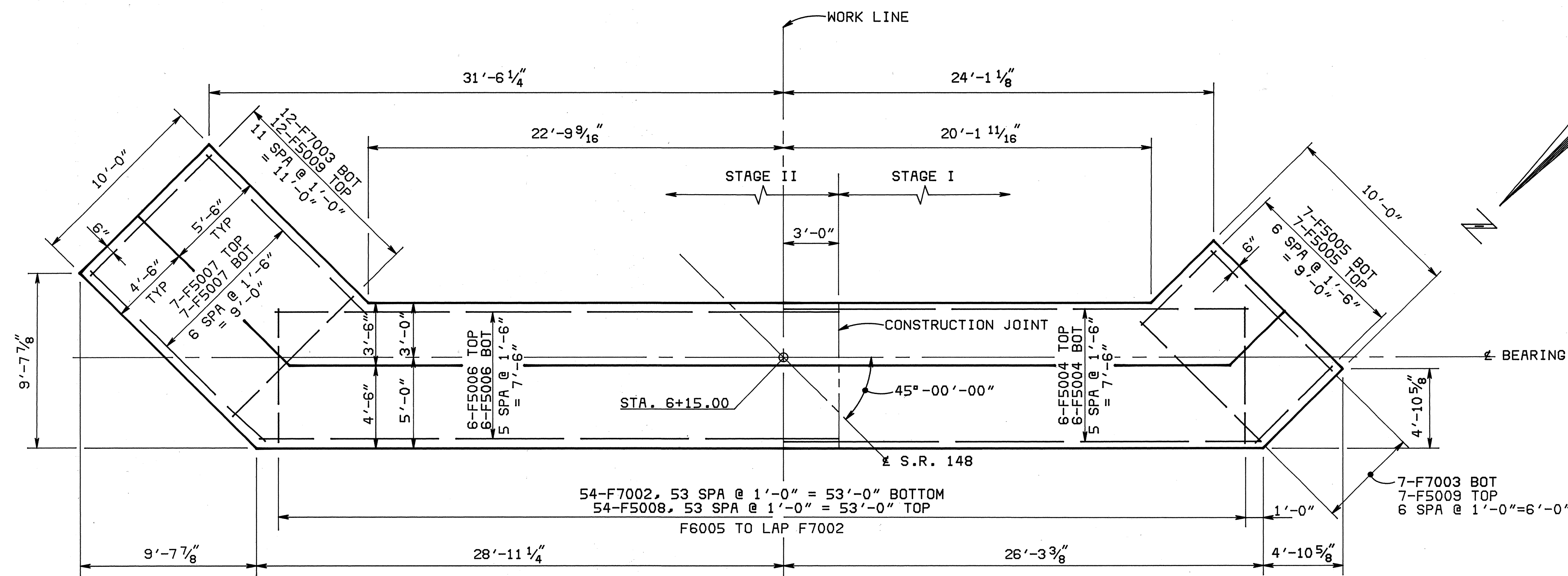
FORWARD ABUTMENT DETAILS

BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

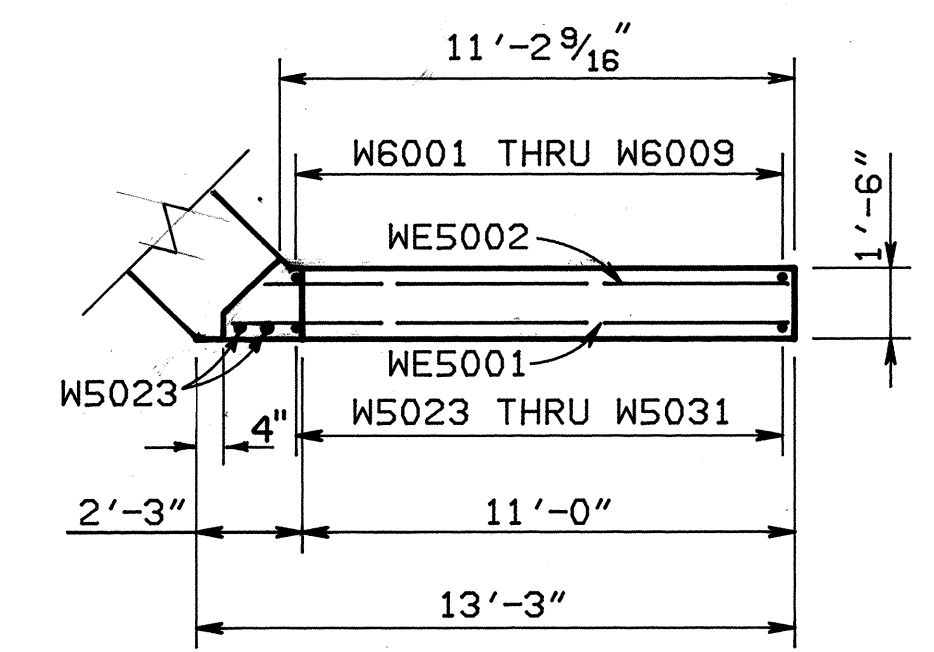
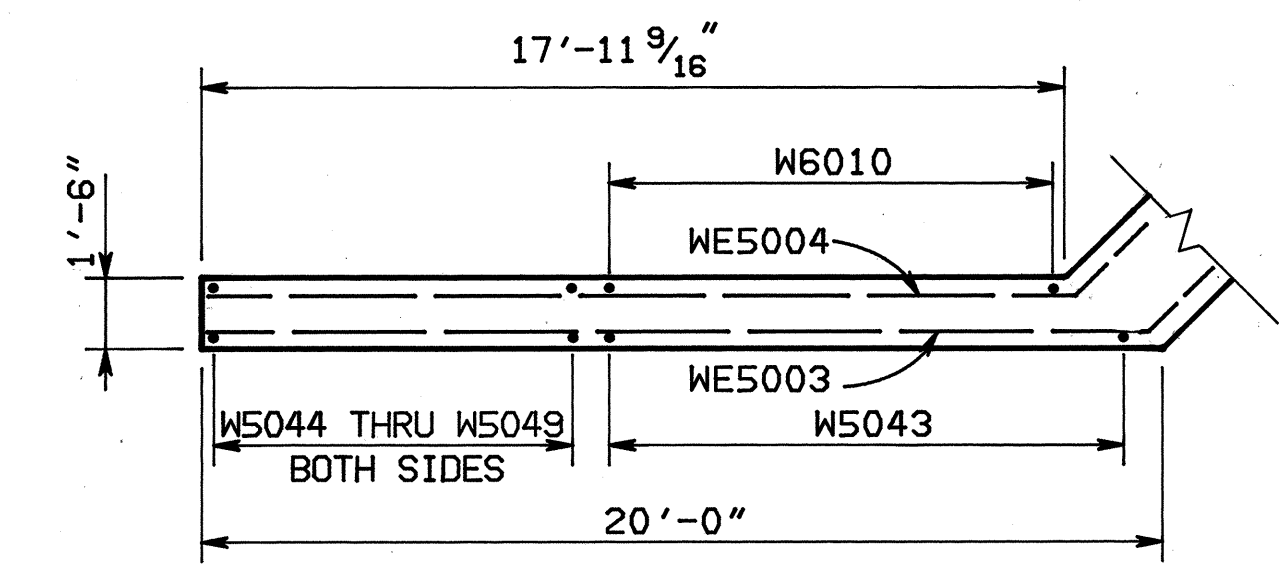
BELMONT COUNTY STA 4+87.59 TO STA 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

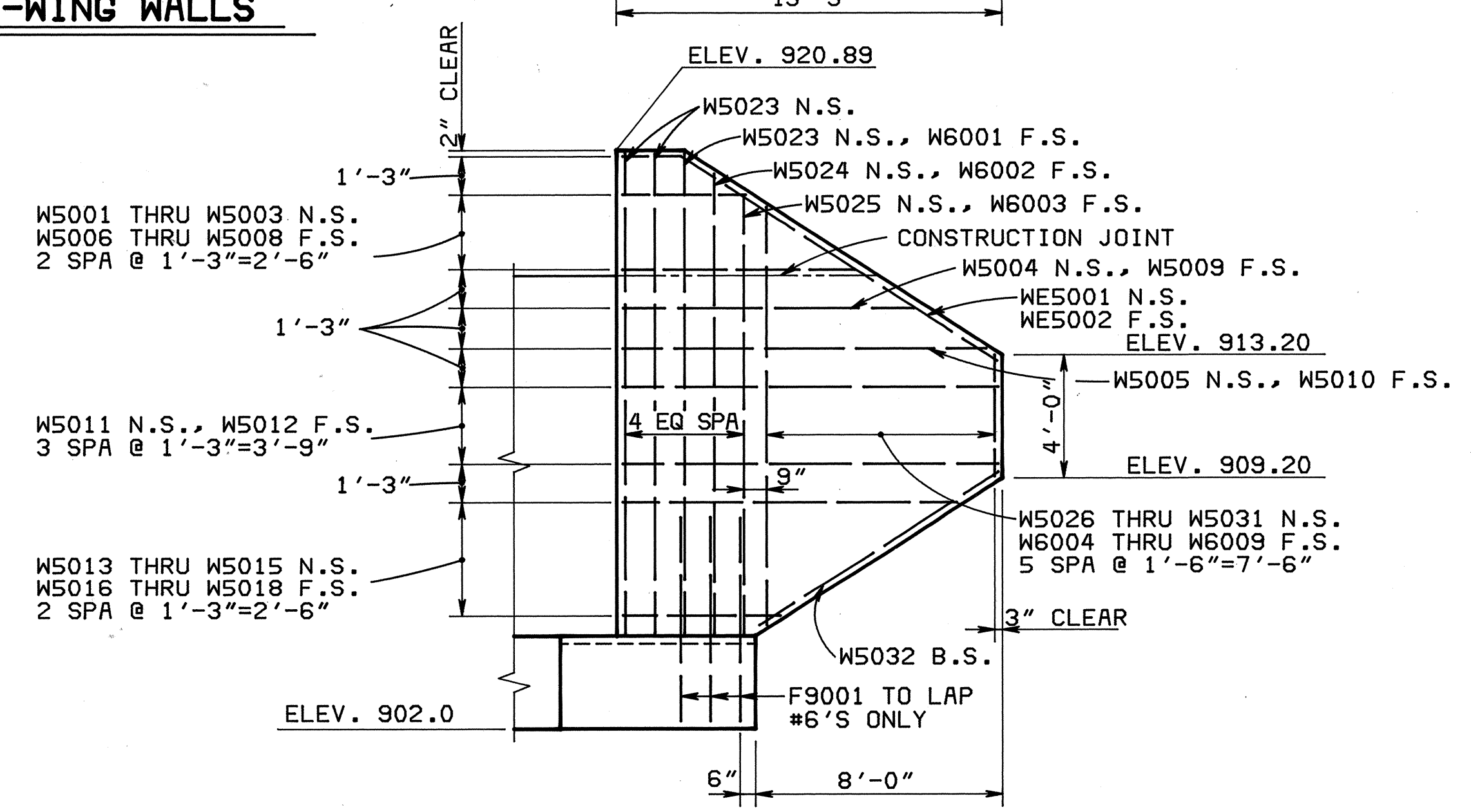
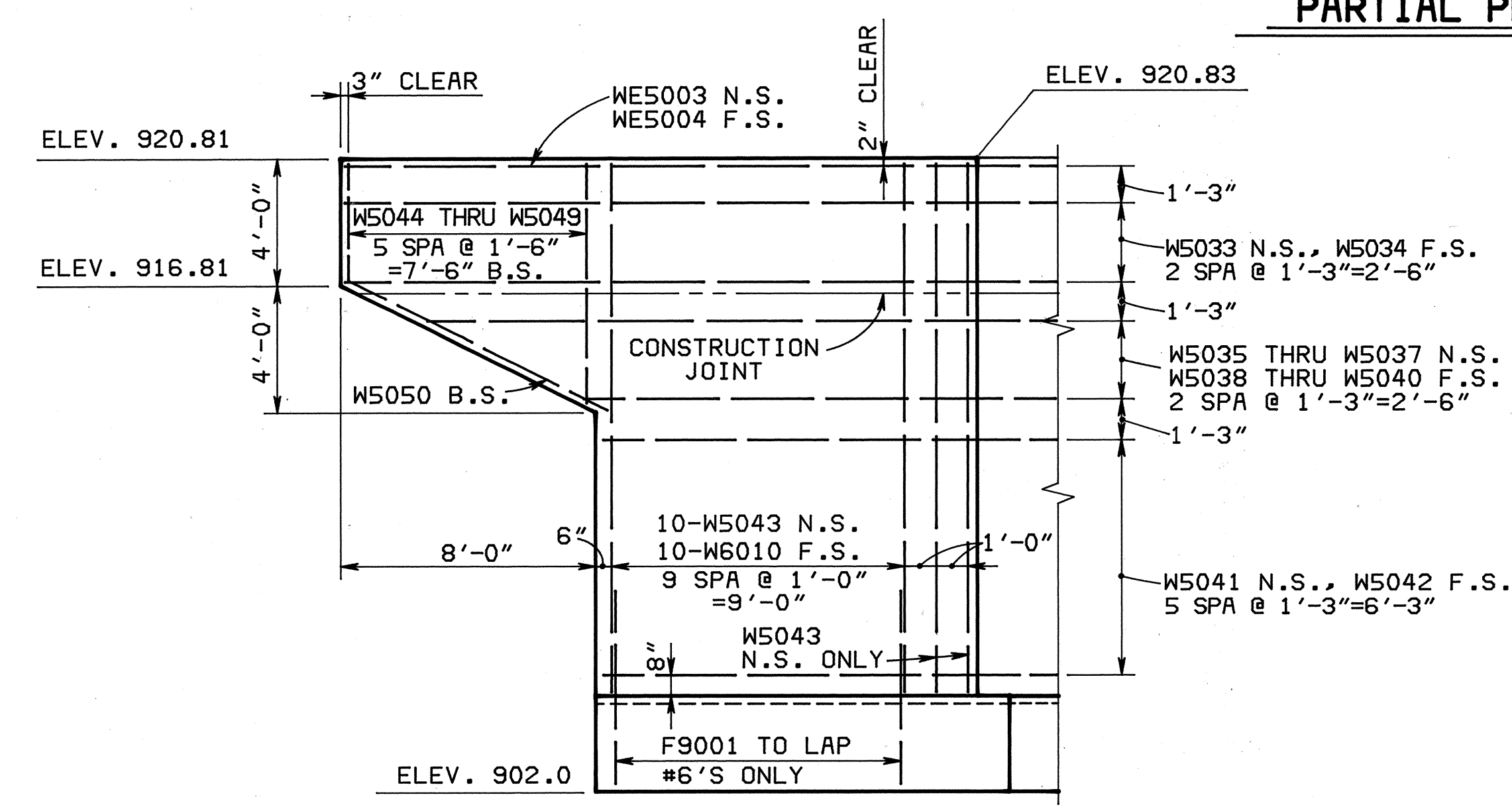
BELMONT COUNTY
BEL-148-6.98



FOOTING PLAN



PARTIAL PLAN-WING WALLS



SEE FOOTING PLAN FOR REMAINING FOOTING REINFORCING STEEL

SEE FOOTING PLAN FOR REMAINING FOOTING REINFORCING STEEL

VIEW V1-V1

VIEW V2-V2

FOR LOCATION OF VIEWS V1-V1 AND V2-V2 SEE SHEET 4/11

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COLUMBUS, CLEVELAND, WHEELING

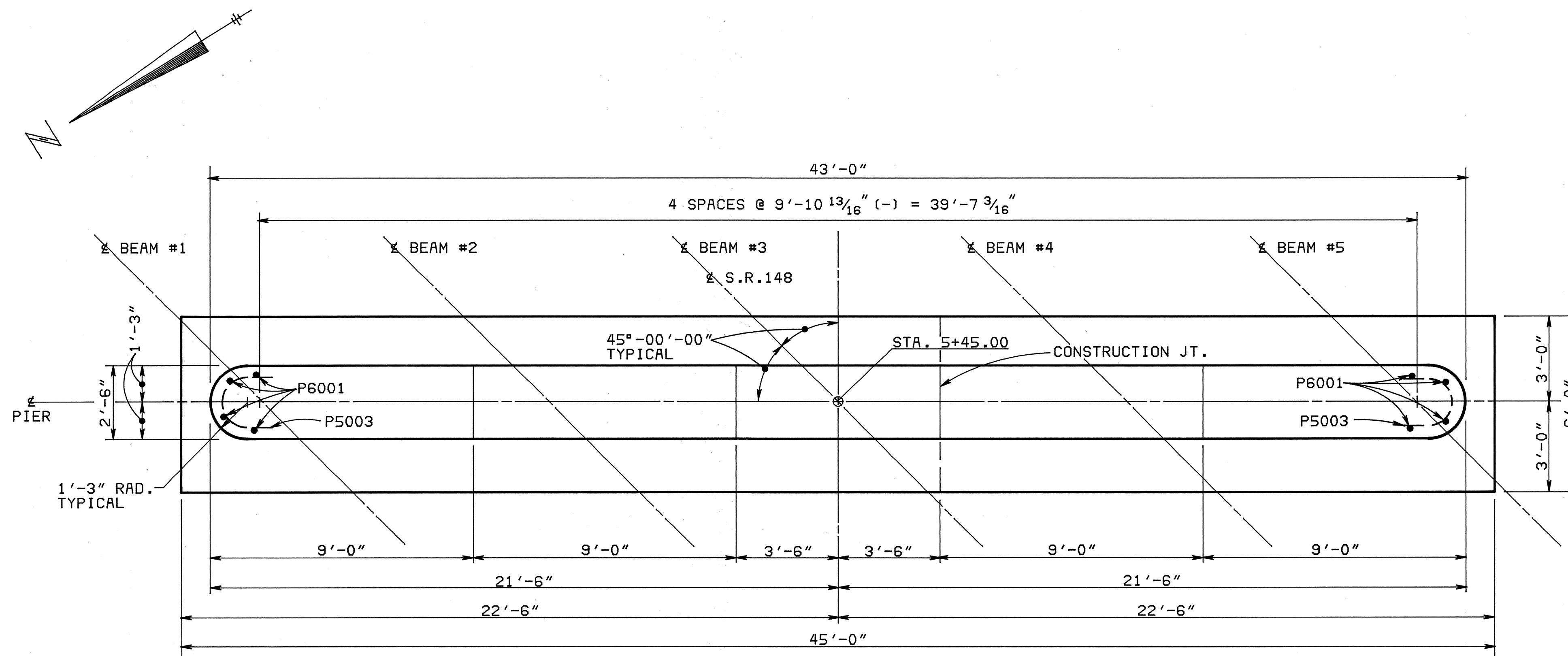
FORWARD ABUTMENT DETAILS

BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

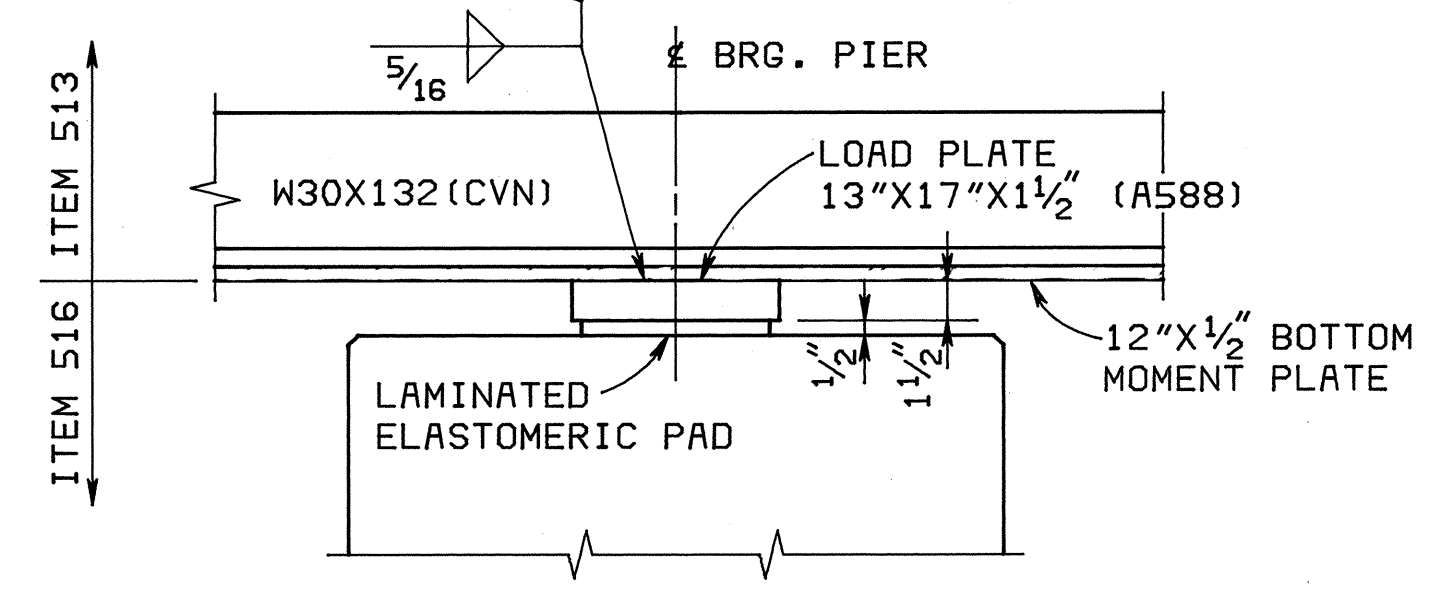
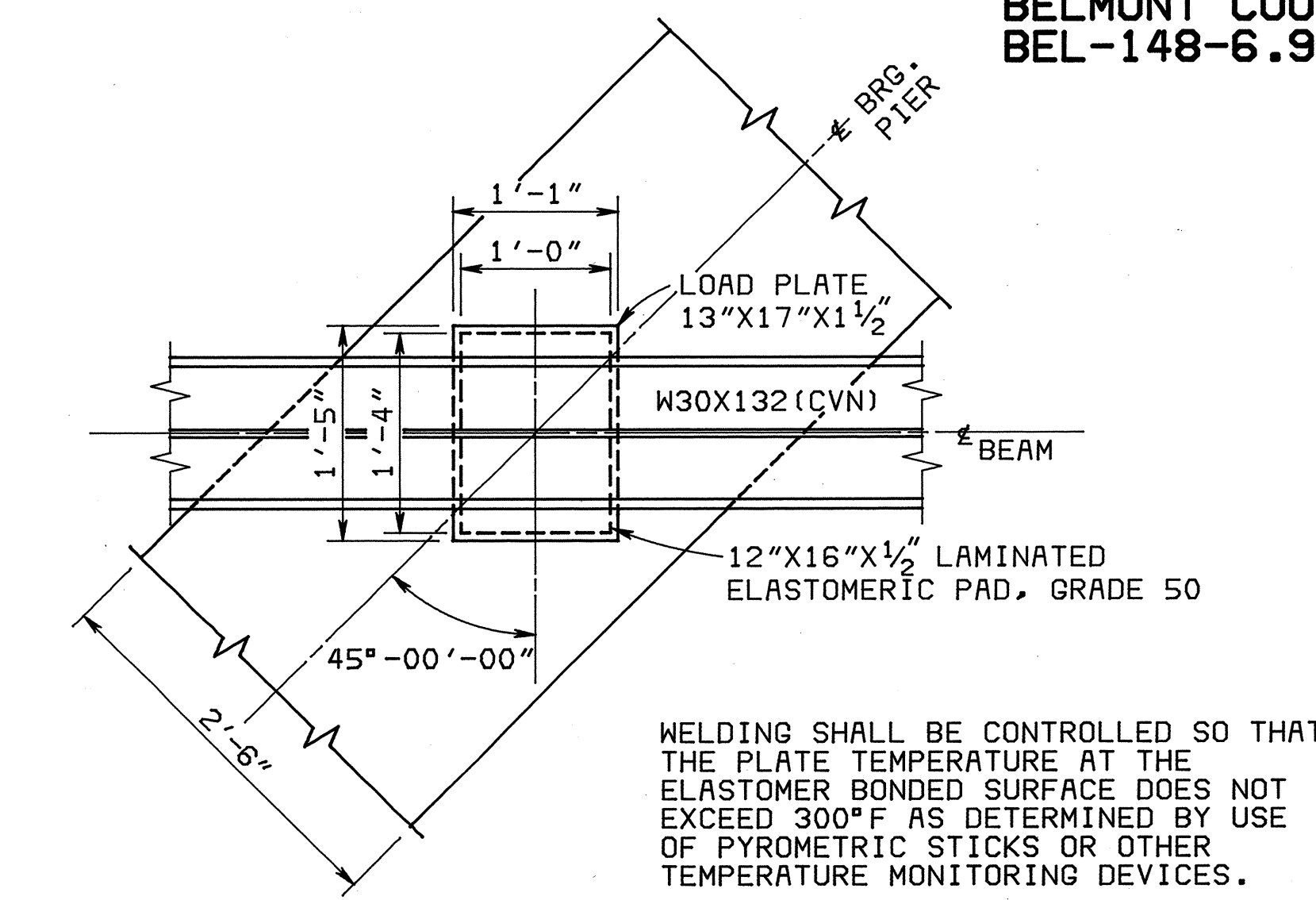
BELMONT COUNTY STA 4+87.59 TO STA 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
KHW			TEU	JEV	12-19-83	

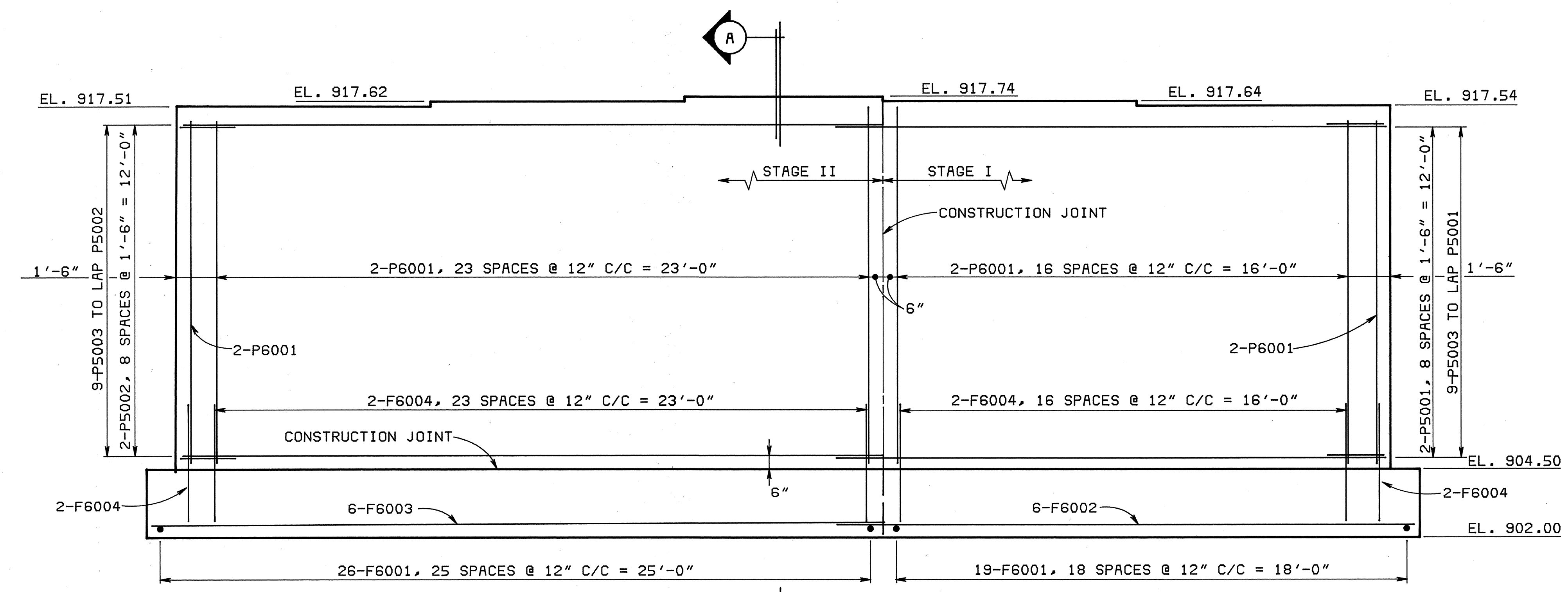
BELMONT COUNTY
BEL-148-6.98



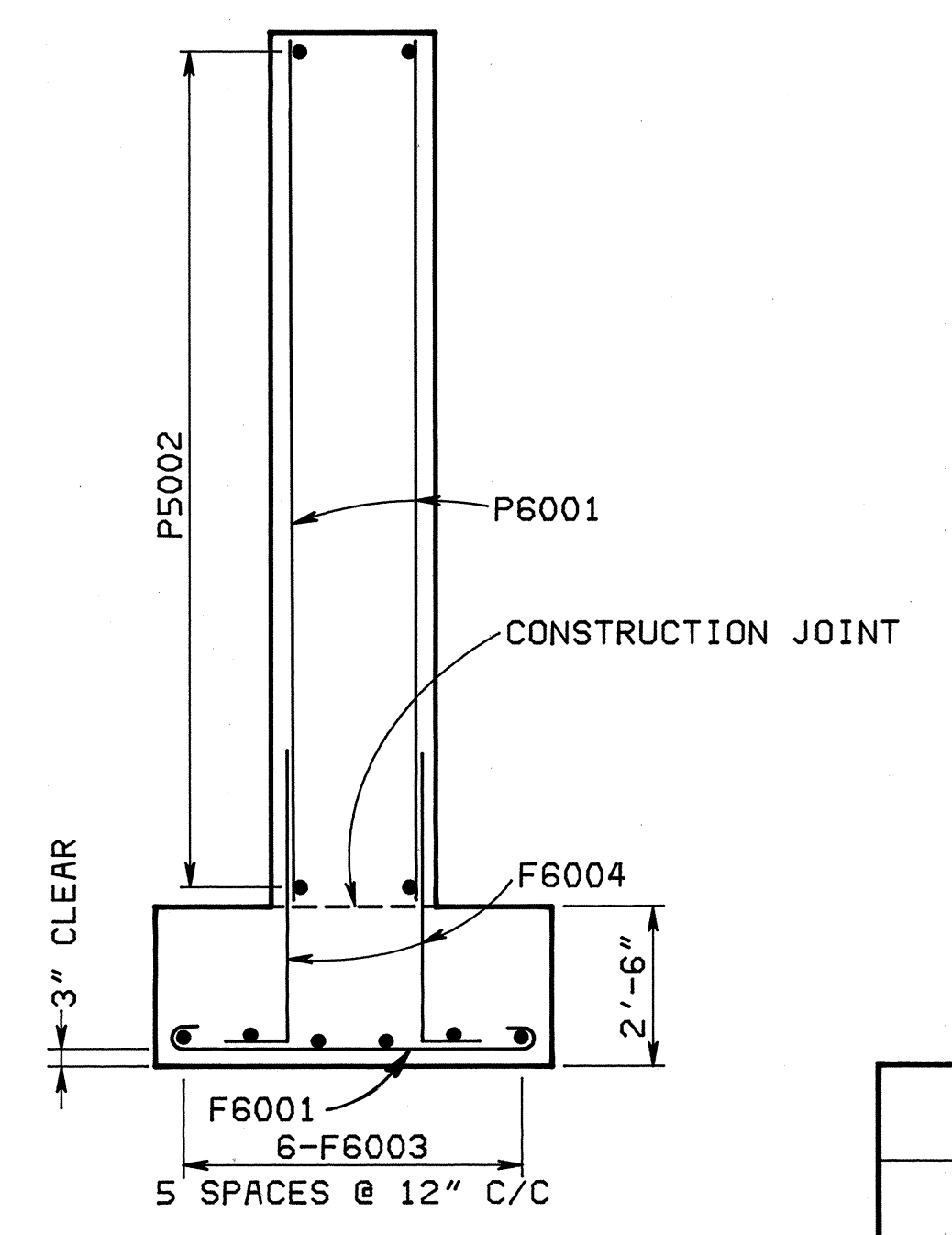
PLAN



PIER BEARING DETAILS



ELEVATION



SECTION A-A

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COLUMBUS, CLEVELAND, WHEELING

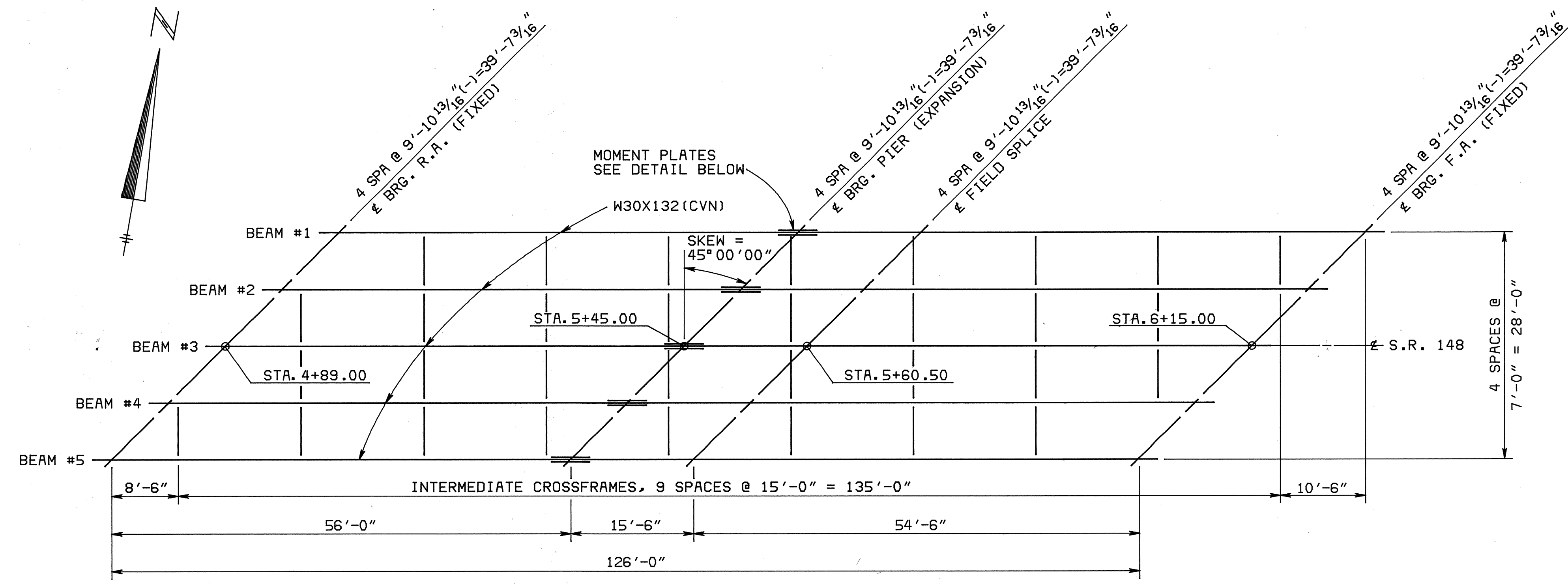
PIER DETAILS

BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA. 4+87.59 TO
STA. 6+16.41

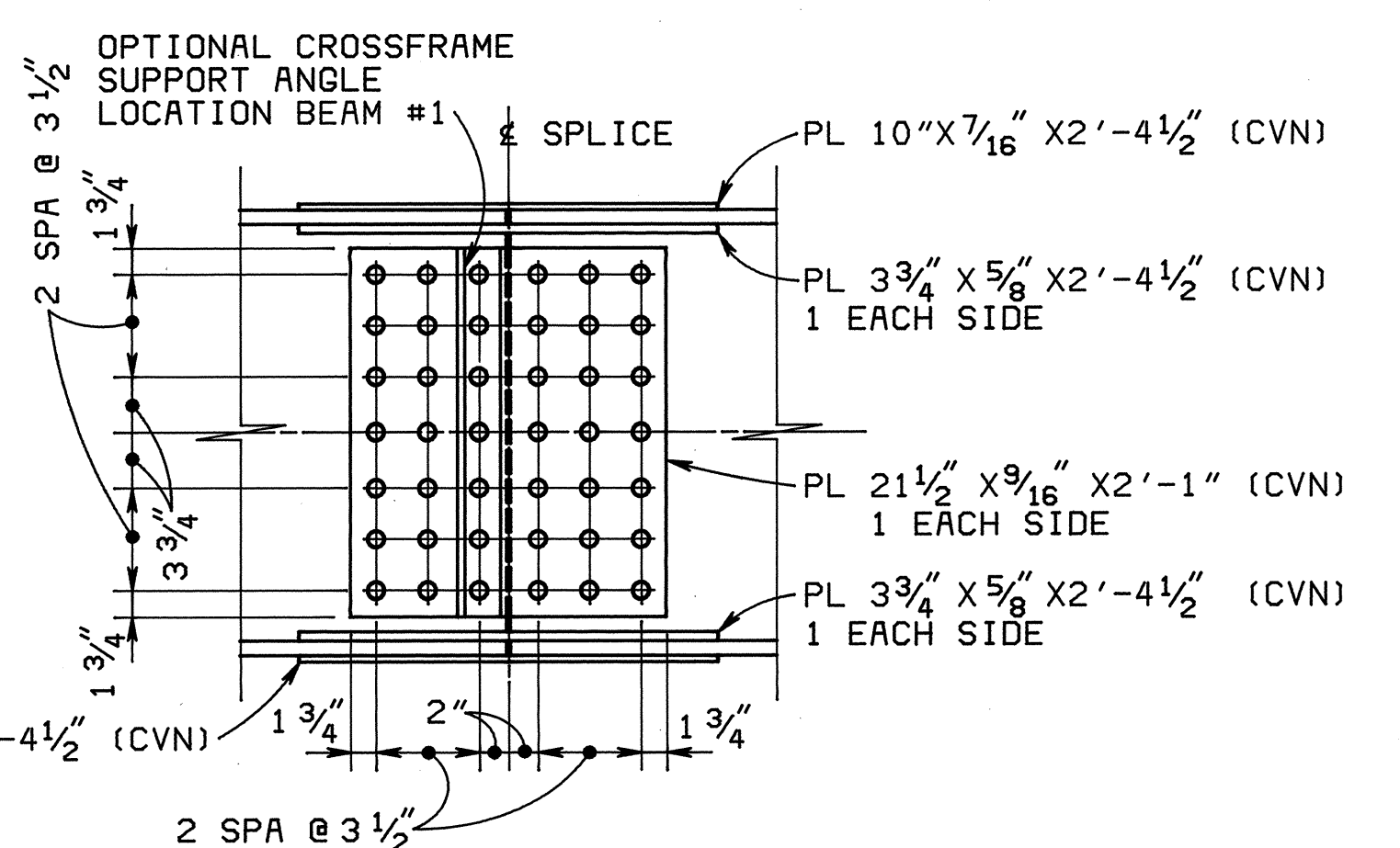
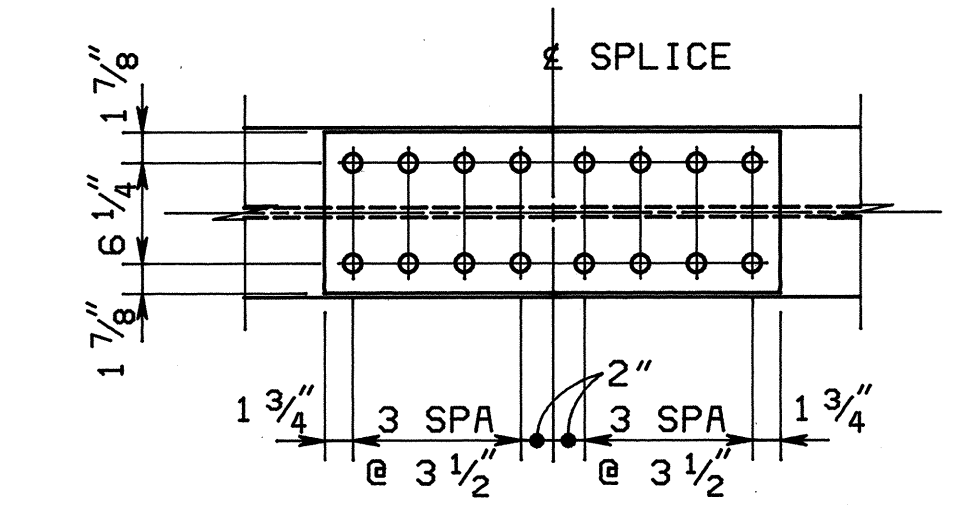
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KHW			TEU	JEV	12-19-85	

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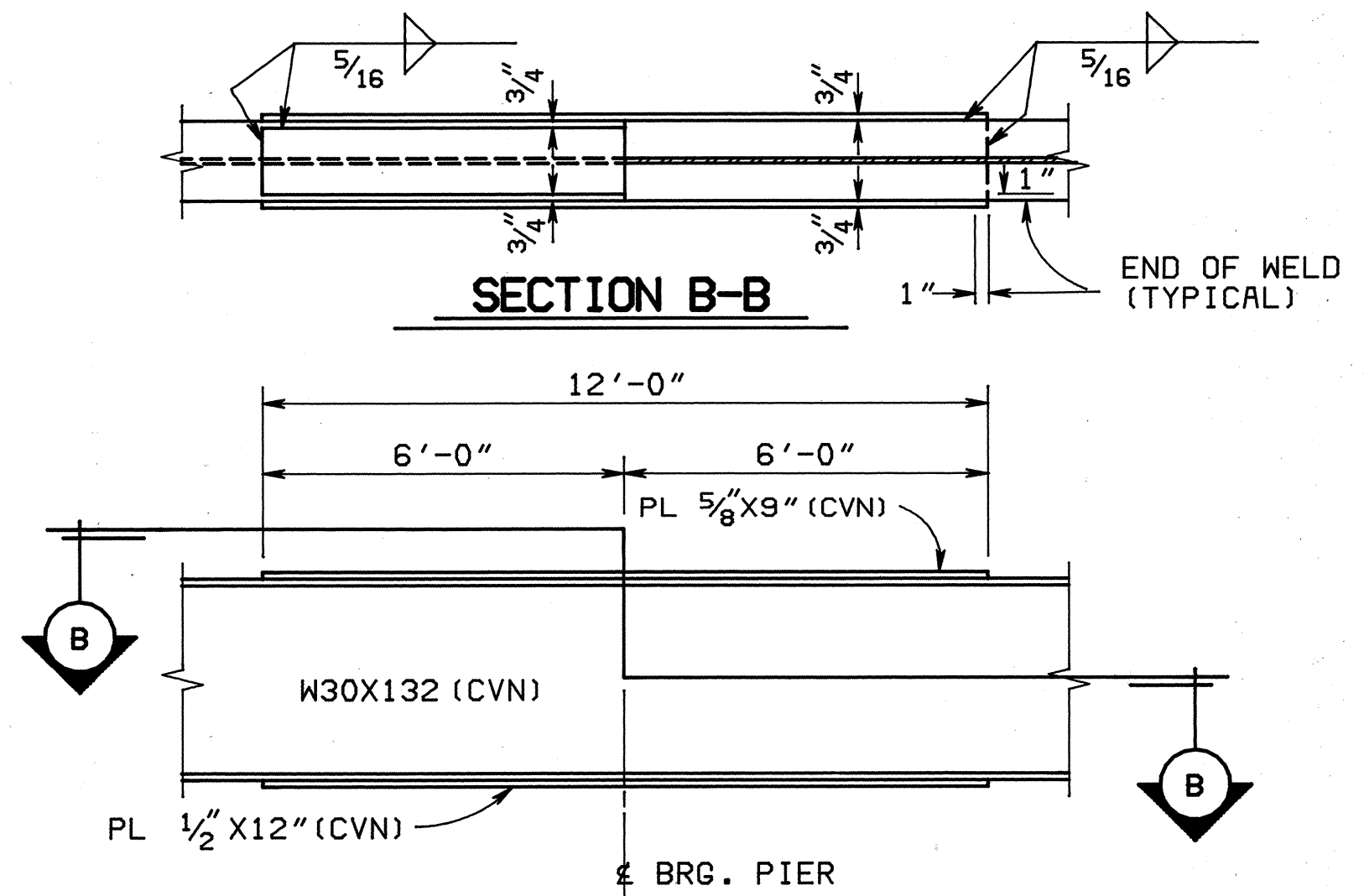


FRAMING PLAN

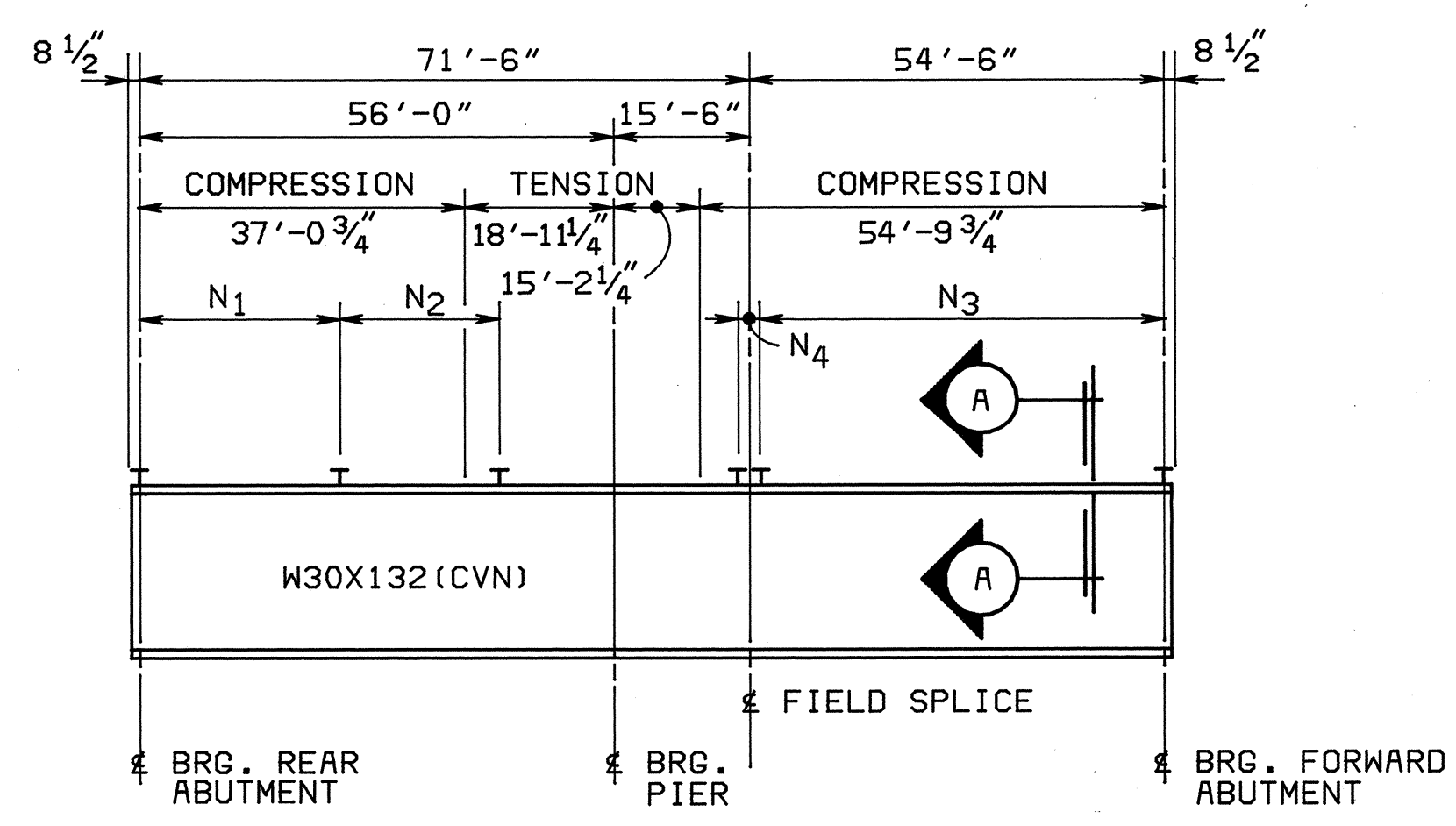
NOTES:
 STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE A588 STEEL.
 HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER, A325, TYPE 3, UNLESS OTHERWISE NOTED.
 CHARPY V-NOTCH: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.02 OF CMS.
 SHEAR CONNECTOR LOCATION MAY BE ADJUSTED BY A MAXIMUM OF 1 1/2" TO AVOID CONFLICTS WITH HIGH STRENGTH BOLTS AND EDGES OF FIELD SPLICE PLATES.
 A588 STEEL IS TO BE LEFT UNPAINTED. SEE CMS 513.221 FOR CLEANING REQUIREMENTS.
 WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.



BOLTED FIELD SPLICE



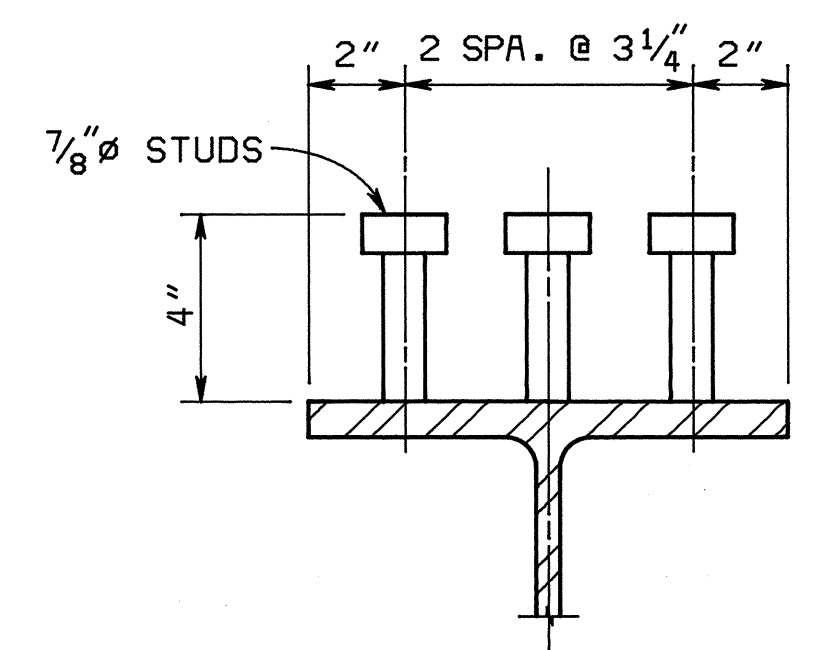
MOMENT PLATE DETAILS



BEAM & SHEAR CONNECTOR ELEVATION

TYPICAL ALL BEAMS

SHEAR CONNECTOR ROW SPACING	
N1	19 ROWS @ 15" C/C
N2	27 ROWS @ 7 1/2" C/C
N3	45 ROWS @ 15" C/C
N4	3 ROWS @ 8" C/C

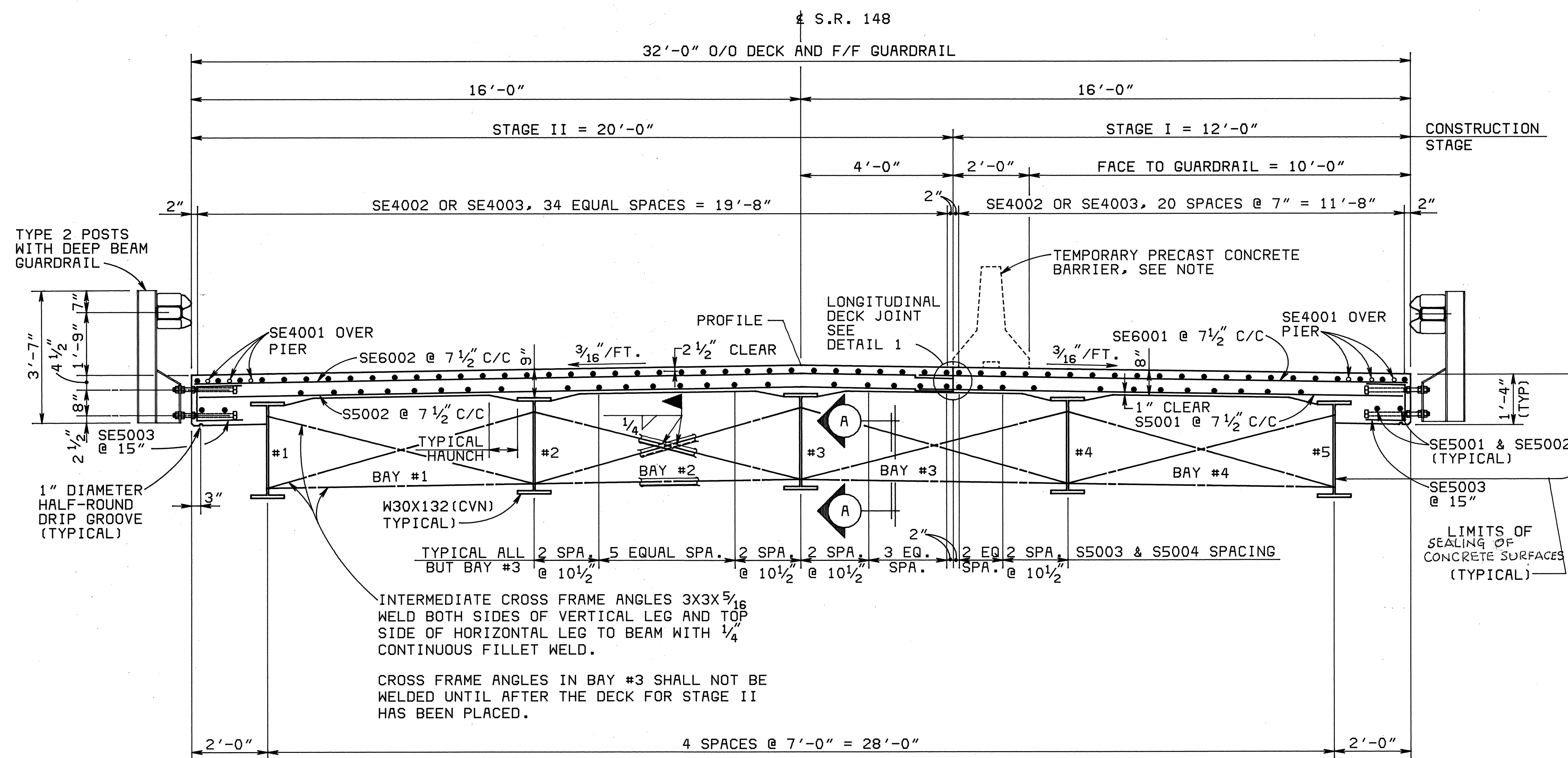


SECTION A-A SHEAR CONNECTOR SPACING

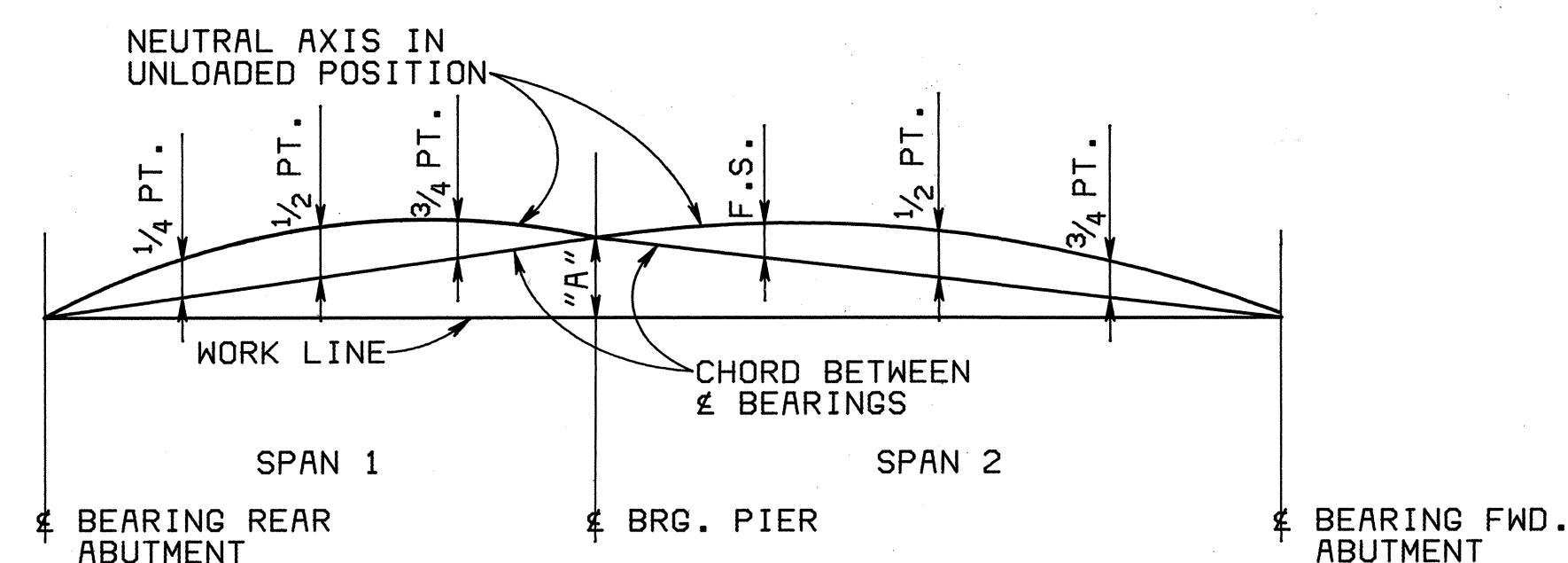
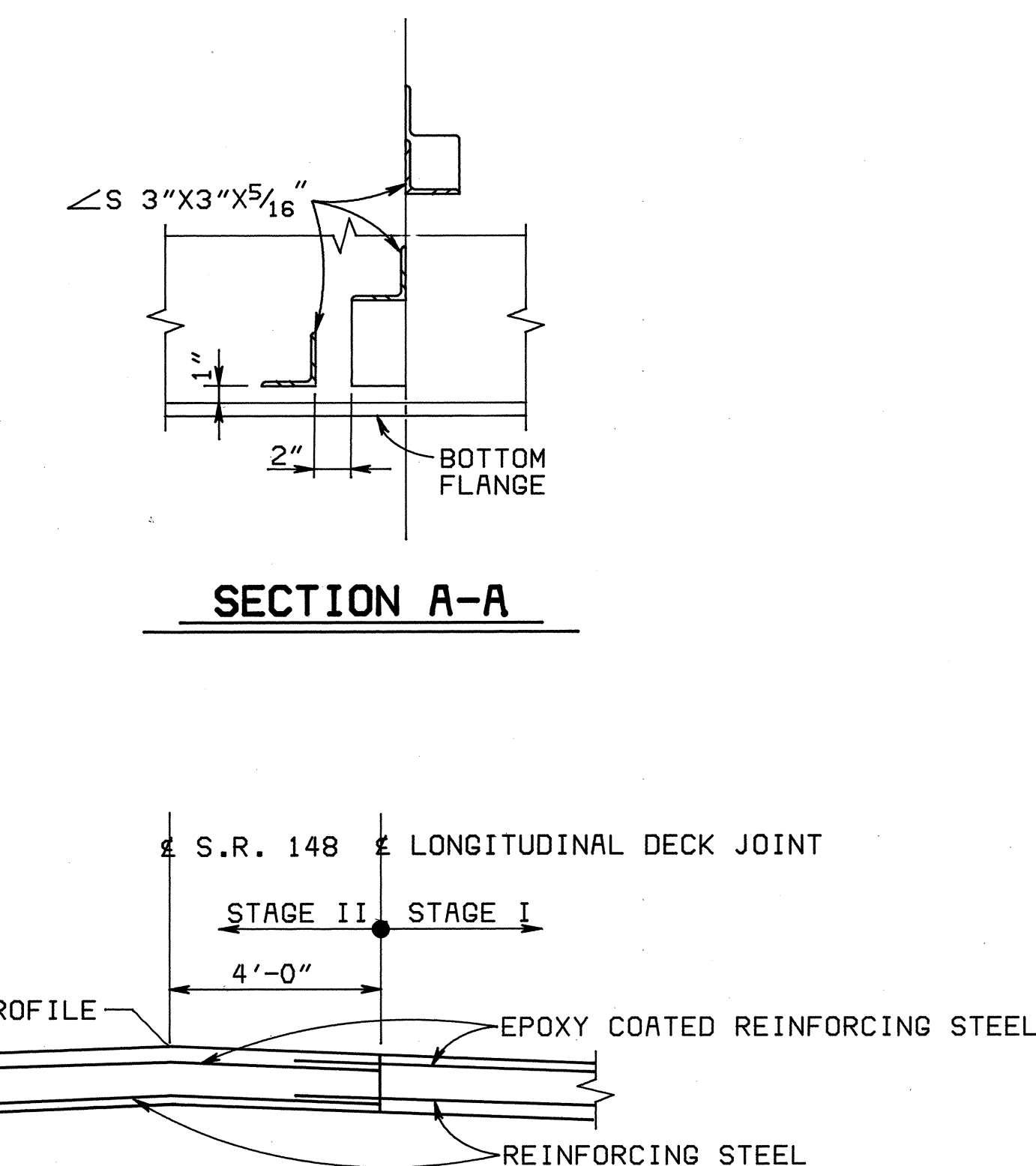
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NOV 15 1985

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WHEELING						
SUPERSTRUCTURE DETAILS						
BRIDGE NO. BEL-148-0699 S.R. 148 OVER CAPTINA CREEK						
BELMONT COUNTY				STA. 4+87.59 TO STA. 6+16.41		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

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TRANSVERSE SECTION



CAMBER AND BLOCKING DIAGRAM

LOCATION	SPAN 1			SPAN 2		
	1/4 PT.	1/2 PT.	3/4 PT.	F.S.	1/2 PT.	3/4 PT.
DEFL. DUE TO WEIGHT OF STEEL	1/16	1/16	0	1/8	1/4	3/16
DEFL. DUE TO REMAINING DEAD LOAD	3/16	1/8	0	1/2	1 1/16	7/8
REQUIRED SHOP CAMBER	1/4	3/16	0	5/8	1 5/16	1 1/16

DIMENSION "A" = 0 FOR ALL BEAMS

NOTES:

DECK SLAB DEPTH: THE DISTANCE SHOWN FROM TOP OF DECK SLAB TO THE TOP OF STEEL BEAM IS THE DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE.

A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 1:4 FOR A HAUNCH LESS THAN 9" WIDTH.

REQUIRED LAP LENGTHS:
SE4002 AND SE4003 = 1'-3"
SE5001 AND SE5002 = 1'-7"
S5003 AND S5004 = 1'-7"

SEE SHEET 2/11 FOR CONSTRUCTION SEQUENCE NOTE.

TEMPORARY PRECAST CONCRETE BARRIER IS TO BE FURNISHED, INSTALLED, REMOVED AND STORED BY THE CONTRACTOR. BARRIER, AS PER STANDARD CONSTRUCTION DRAWING MC-9A, SHALL NOT BE ATTACHED TO THE DECK AND IS INCLUDED IN ITEM 622 FOR PAYMENT.

NOV 15 1985

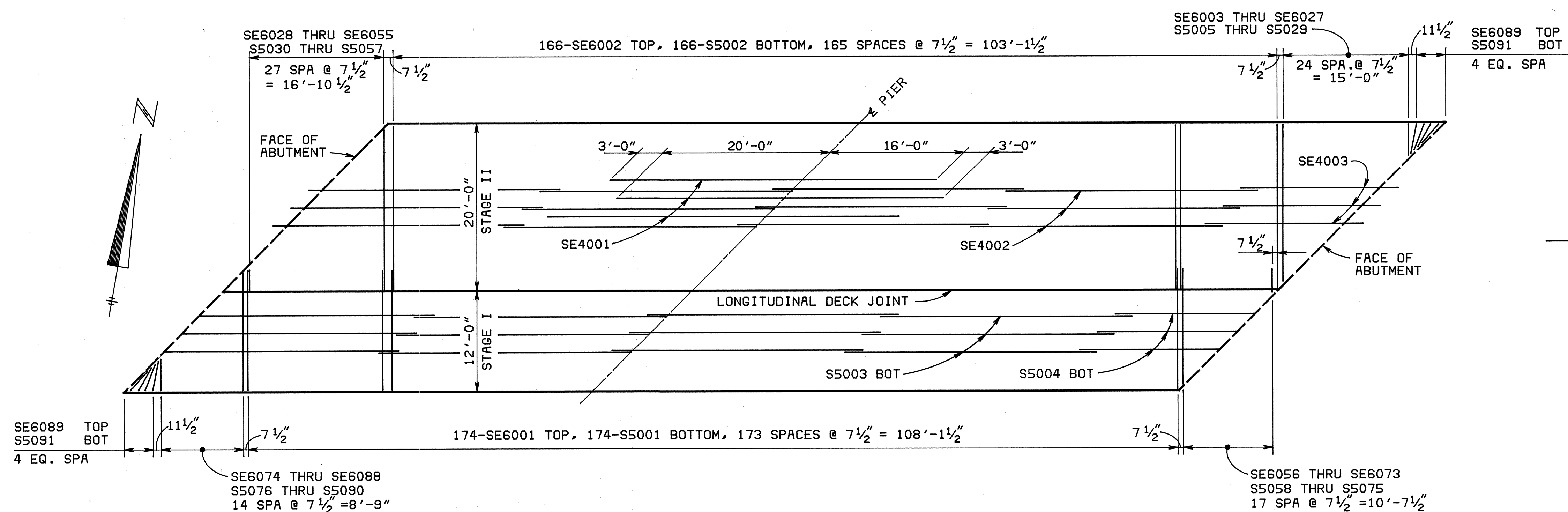
ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WHEELING

SUPERSTRUCTURE DETAILS

BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

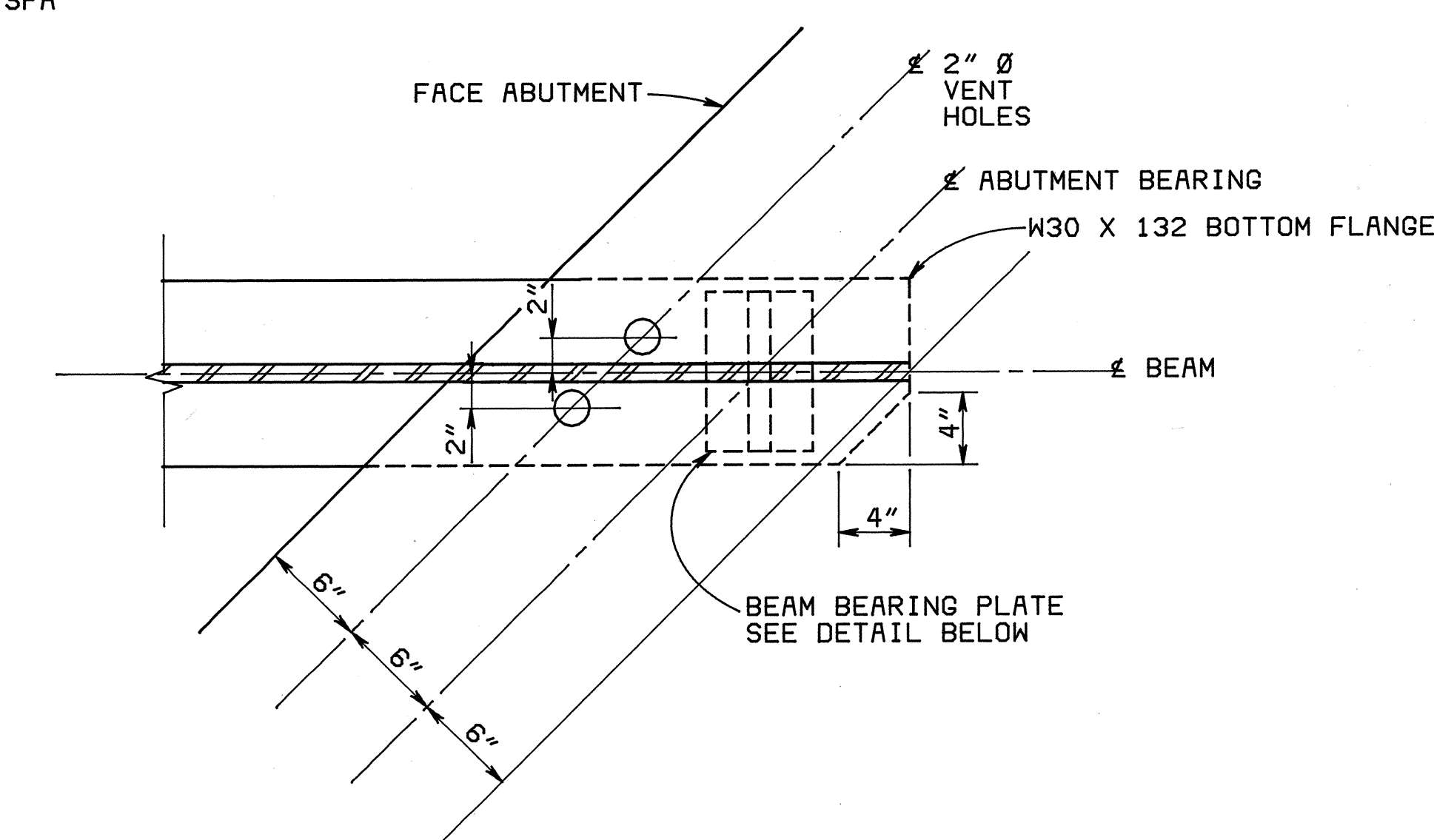
BELMONT COUNTY STA. 4+87.59 TO STA. 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-85	

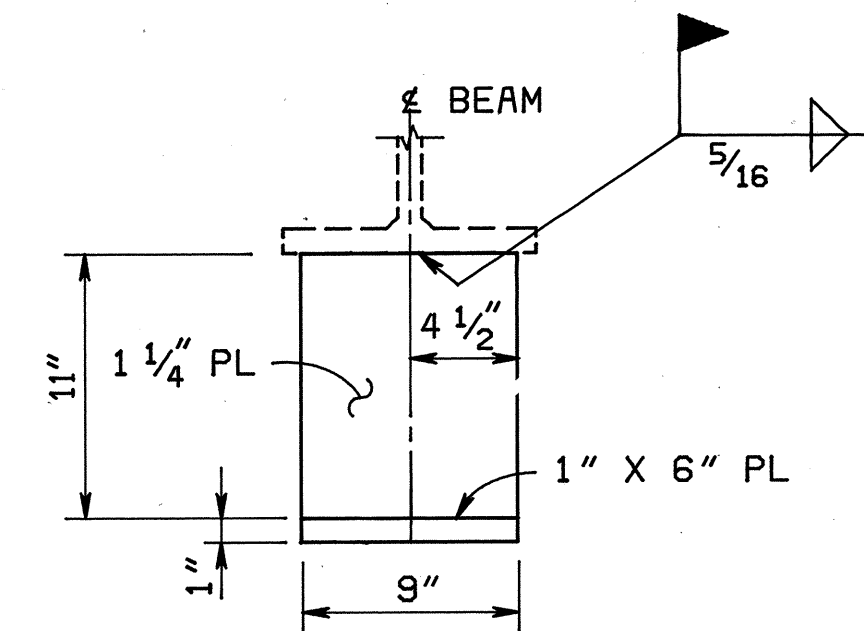


DECK REINFORCING STEEL PLAN

FOR ADDITIONAL DETAILS
SEE TRANSVERSE SECTION, SEE 8/11

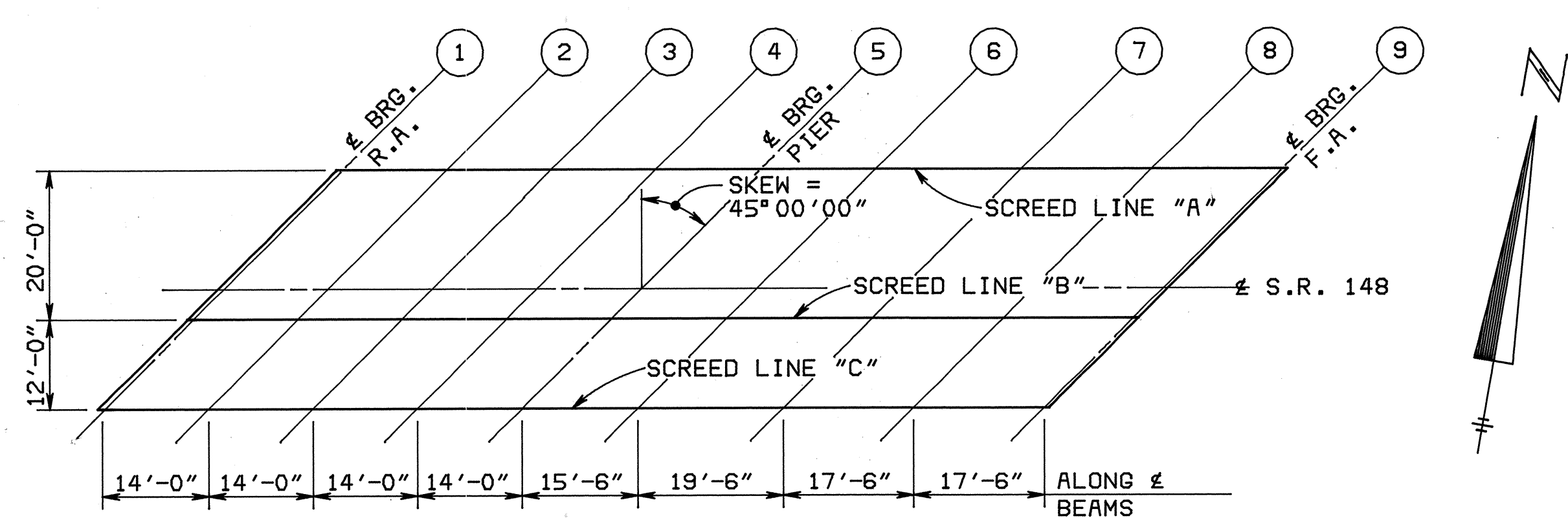


SECTION E-E
FOR LOCATION SEE SHEET 10/11



BEAM BEARING PLATE
TYPICAL ALL BEAMS

NOTE:
FOR BEARING DETAILS AT PIER SEE SHEET 6/11



SCREED PLAN

SCREED ELEVATIONS			
	"A"	"B"	"C"
1	921.02	921.22	921.05
2	921.02	921.22	921.05
3	921.00	921.21	921.03
4	920.97	921.18	921.01
5	920.96	921.17	920.99
6	920.98	921.19	921.02
7	921.01	921.22	921.04
8	920.98	921.19	921.01
9	920.89	921.10	920.92

MICROFILMED
NOV 15 1985

9/11

ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WHEELING

SUPERSTRUCTURE DETAILS

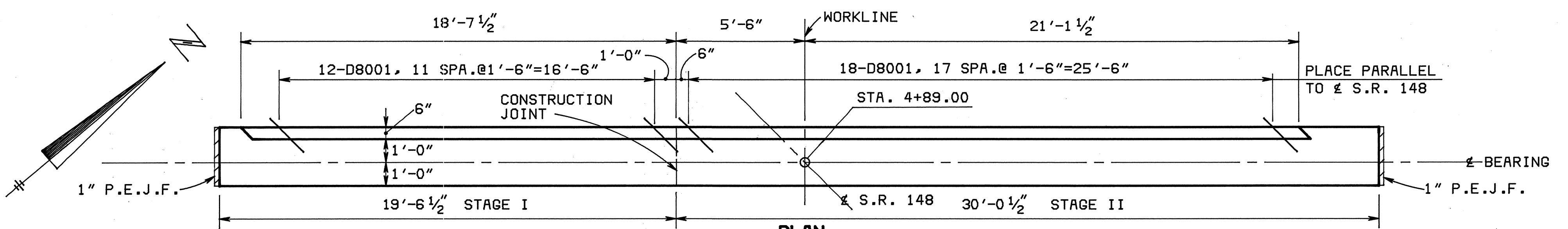
BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA. 4+87.59 TO STA. 6+16.41

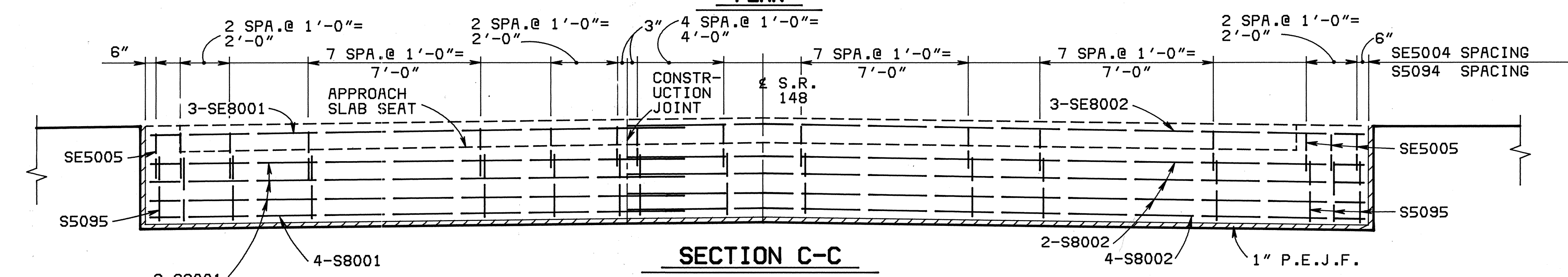
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	11-19-85	

**BELMONT COUNTY
BEL-148-6.98**

LIMIT OF DECK REINFORCING
EXCEPT SE4002 AND SE4003 BARS

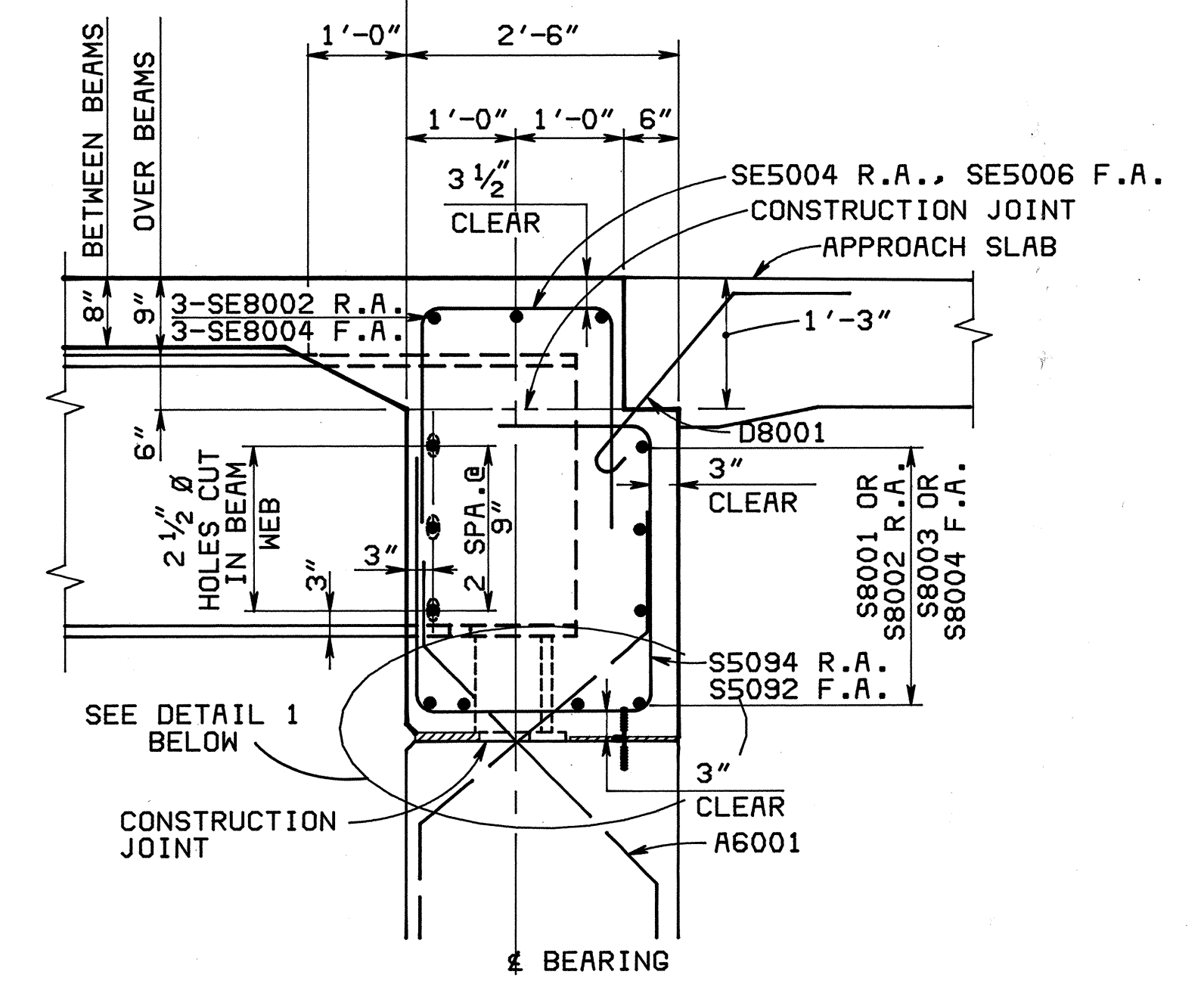


PLAN

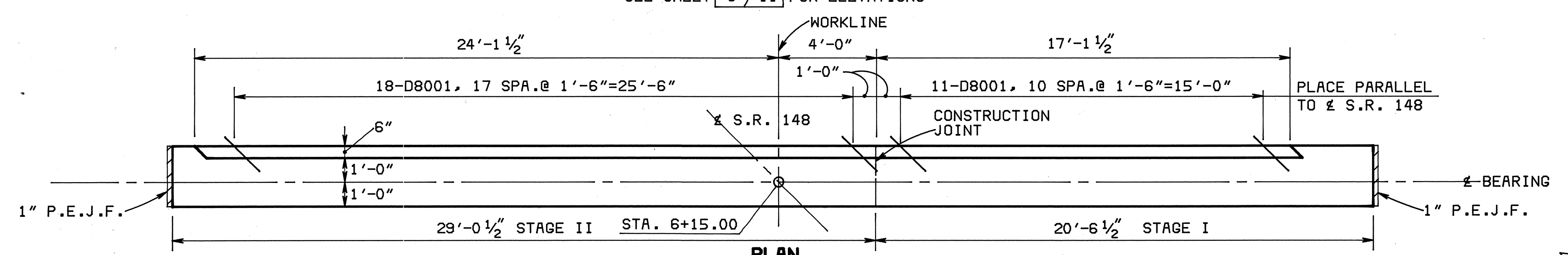


SECTION C-C

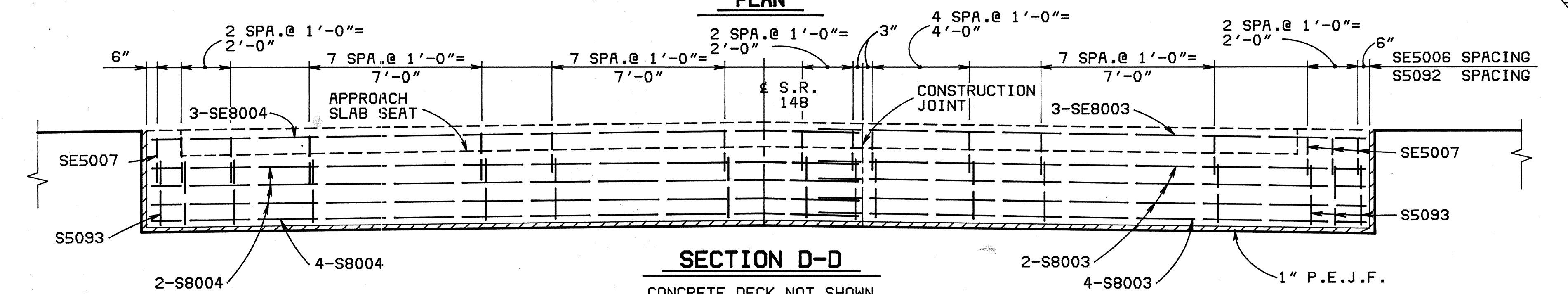
CONCRETE DECK NOT SHOWN
SEE SHEET 3/11 FOR ELEVATIONS



SECTION A-A

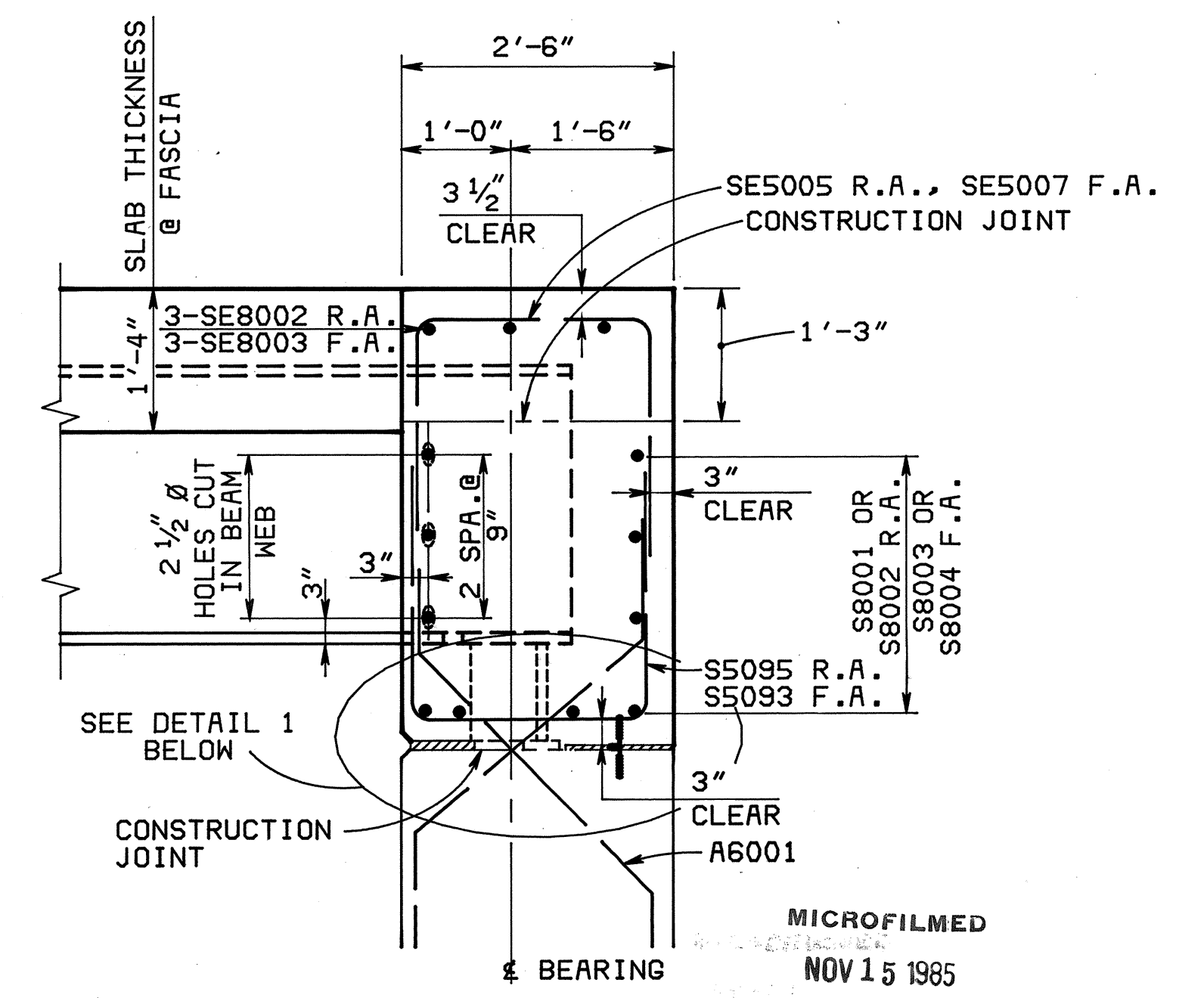


PLAN



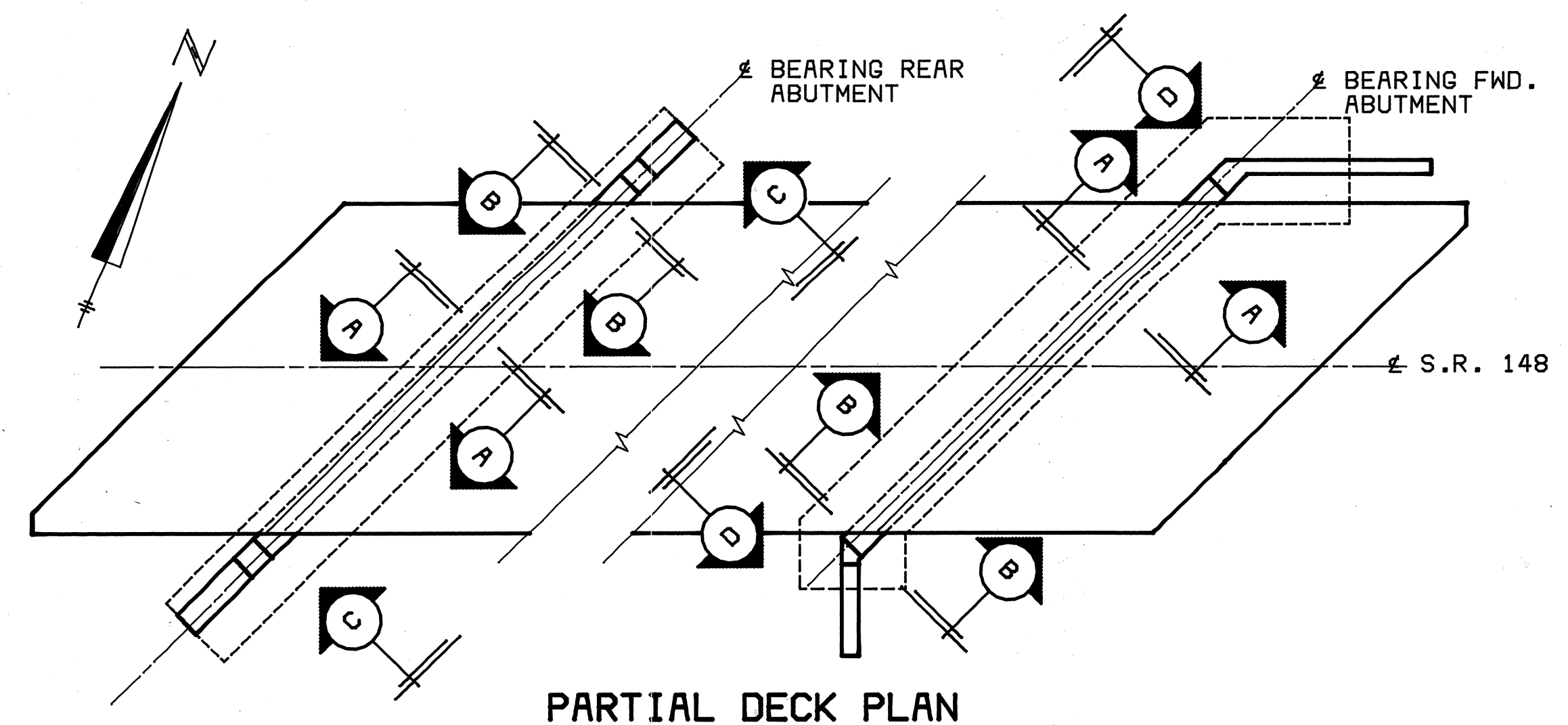
SECTION D-D

CONCRETE DECK NOT SHOWN
SEE SHEET 4/11 FOR ELEVATIONS



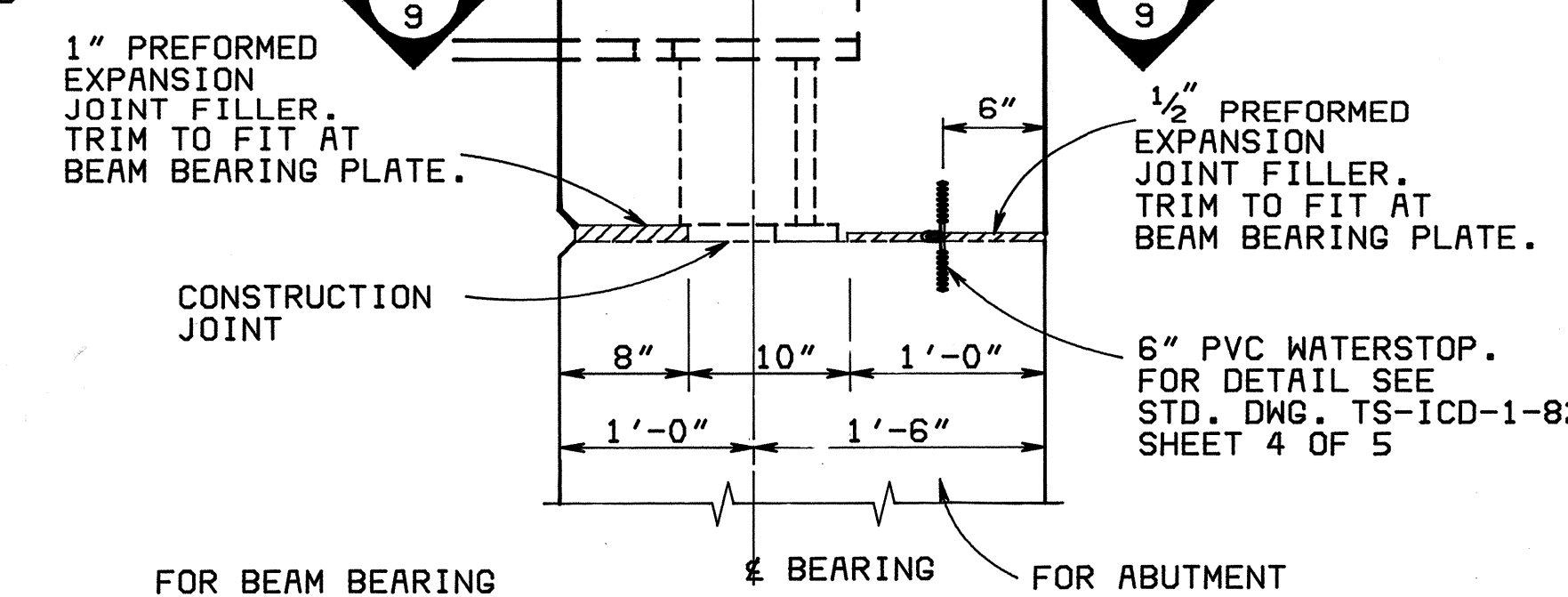
SECTION B-B

MICROFILMED
NOV 15 1985



PARTIAL DECK PLAN

FOR SUPERSTRUCTURE REINFORCING STEEL, SEE SECTIONS A-A AND B-B



DETAIL 1

FOR BEAM BEARING PLATE DETAIL SEE SHEET 9/11

FOR ABUTMENT REINFORCING STEEL SEE SHEET 3/11 OR 4/11

ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WHEELING

SUPERSTRUCTURE DETAILS
BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA. 4+87.59 TO STA. 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

BELMONT COUNTY
BEL-148-6.98

NOTES

1. INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.

BAR SIZE DESIGNATION

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

A BAR MARK WITH THE PREFIX 'E' INDICATES THAT REINFORCING STEEL SHALL BE EPOXY COATED.

MICROFILMED
NOV 15 1985

ALDEN E. STILSON & ASSOCIATES
CONSULTING ENGINEERING AND ARCHITECTURE
COLUMBUS, CLEVELAND, WEIRTON

REINFORCING STEEL LIST

BRIDGE NO. BEL-148-0699
S.R. 148 OVER CAPTINA CREEK

BELMONT COUNTY STA. 4+87.59 TO STA. 6+16.41

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
KHW			TEU	JEV	12-19-83	

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER CONTINUED										
P 6001	86	12-10	1658	ST						
P 5001	18	18- 4	344	ST						
P 5002	18	23- 9	446	ST						
P 5003	18	6- 2	116	7	1- 7	1- 7	0-11			
EPOXY COATED SUPERSTRUCTURE RE-STEEL										
SE 8001	3	21-11	176	ST						
SE 8002	3	29-11	240	ST						
SE 8003	3	22-11	184	ST						
SE 8004	3	28-11	232	ST						
SE 6001	174	13-10	3615	ST						
SE 6002	166	19-10	4945	ST						
SE 6003	1	19- 7		ST						1
THRU			454		VARY LENGTH BY		0- 7	1/ 2		
SE 6027	1	4- 7		ST						1
SE 6028	1	19- 5		ST						1
THRU			463		VARY LENGTH BY		0- 7	1/ 2		
SE 6055	1	2- 7		ST						1
SE 6056	1	13- 5		ST						1
THRU			219		VARY LENGTH BY		0- 7	1/ 2		
SE 6073		2- 9		ST						1
SE 6074	1	13- 2		ST						1
THRU			198		VARY LENGTH BY		0- 7	1/ 2		
SE 6088	1	4- 5		ST						1
SE 6089	8	4- 3	51	ST						
SE 5001	16	30- 0	501	ST						
SE 5002	4	9- 6	40	ST						
SE 5003	199	3- 8	761	1		1- 6	0-11	1- 6		
SE 5004	35	6-11	252	1		2- 9	1- 8	2- 9		
SE 5005	4	7- 4	31	1		2- 9	2- 1	2- 9		
SE 5006	35	6-11	252	1		2- 9	1- 8	2- 9		
SE 5007	4	7- 4	31	1		2- 9	2- 1	2- 9		
SE 4001	54	39- 0	1407	ST						
SE 4002	224	30- 0	4489	ST						
SE 4003	56	13- 6	505	ST						
SUPERSTRUCTURE										
S 8001	10	21-11	585	ST						
S 8002	10	29-11	799	ST						
S 8003	10	22-11	612	ST						
S 8004	10	28-11	772	ST						
S 5001	174	13- 5	2435	ST						
S 5002	166	19-10	3434	ST						
S 5003	132	30- 0	4130	ST						
S 5004	33	9- 6	327	ST						
S 5005	1	19- 7		ST						1
THRU			315		VARY LENGTH BY		0- 7	1/ 2		
S 5029	1	4- 7		ST						1
S 5030	1	19- 5		ST						1
THRU			321		VARY LENGTH BY		0- 7	1/ 2		
S 5057	1	2- 7		ST						1
S 5058	1	13- 0		ST						1
THRU			144		VARY LENGTH BY		0- 7	1/ 2		
S 5075	1	2- 4		ST						1
S 5076	1	13- 2		ST						1
THRU			138		VARY LENGTH BY		0- 7	1/ 2		
S 5090	1	4- 5		ST						1
S 5091	8	4- 3	35	ST						
S 5092	35	8- 5	307	2		2- 9	2- 1	2- 6	1- 6	
S 5093	4	7- 4	31	1		2- 9	2- 1	2- 9		
S 5094	35	8- 5	307	2		2- 9	2- 1	2- 6	1- 6	
S 5095	4	7- 4	31	1		2- 9	2- 1	2- 9		
D 8001	59	5- 7	880	21	3- 2	1- 0	1- 0			

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
REAR ABUTMENT EPOXY COATED RE-STEEL										
AE 5001	2	8- 1	17	12	1-10	5- 7		2-11		
AE 5002	2	10- 5	22	12	1-10	8- 1		3- 0		
AE 5003	1	9-10	10	1		4- 0	2- 1	4- 0		
AE 5004	1	9-10		1		4- 0	2- 1	4- 0		1
THRU			36		VARY LENGTH BY			1- 6		
					VARY DIM. B BY			0- 9		
					VARY DIM. D BY			0- 9		
AE 5008	1	3-10		1		1- 0	2- 1	1- 0		
AE 5009	1	9-10	10	1		4- 0	2- 1	4- 0		
AE 5010	1	9-10		1		4- 0	2- 1	4- 0		1
THRU			46		VARY LENGTH BY			1- 0		
					VARY DIM. B BY			0- 6		
					VARY DIM. D BY			0- 6		
AE 5015		4-10		1		1- 6	2- 1	1- 6		1
REAR ABUTMENT										
F 7001	68	8- 4	1158	11	7- 6					
F 6006	64	5- 7	537	1	1- 3	4- 6				
F 5001	12	32- 4	405	ST						
F 5002	12	36- 9	460	ST						
F 5003	68	7- 6	532	ST						
A 8001	4	33- 3	355	ST						
A 8002	4	36- 9	392	ST						
A 6001	41	10- 9	662	20	0-10	1- 9	2- 7	0- 5	2- 2	
A 6002	50	9- 6	713	ST						
A 6003	6	11- 0	99	ST						
A 6004	5	11- 0	83	ST						
A 5001	50	5- 4	278	1		1- 9	2- 1	1- 9		
A 5002	10	36- 9	383	ST						
A 5003	8	37- 2	310	12	28- 8	0- 9	7- 6	0- 9		
A 5004	10	32- 4	337	ST						
A 5005	8	32- 7	272	12	10- 0	0- 9	21- 7	0- 9		
A 5006	50	9- 6	495	ST						
A 5007	6	11- 0	69	ST						
A 5008	5	11- 0	57	ST						
A 5009	4	11- 0	46	ST						
A 5010	2	11- 0	23	ST						
A 5011	2	9- 8	20	ST						
A 5012	2	6- 0	13	ST						
A 5013	2	4-10	10	ST						
A 5014	2	7- 6	16	ST						
FORWARD ABUTMENT										
F 9001	13	8- 9	387	1	1- 6	7- 6				
F 7002	54	8- 4	920	11	7- 6					
F 7003	19	10- 4	401	11	9- 6					
F 6005	50	5- 7	419	1	1- 3	4- 6				
F 5004	12	24-10	311	ST						
F 5005	14	6- 6	95	ST						
F 5006	12	31-10	398	ST						
F 5007	14	13- 2	192	ST						
F 5008	54	7- 6	422	ST						
F 5009	19	9- 6	188	ST						
A 8003	4	23-11	255	ST						
A 8004	4	27-11	298	ST						
A 6001	41	10- 9	662	20	0-10	1- 9	2- 7	0- 5	2- 2	
A 6005	53	11- 3	896	ST						
A 6006	3	15-11	72	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
FORWARD ABUTMENT CONTINUED										
A 5015	53	5- 4	295	1		1- 9	2- 1	1- 9		
A 5016	14	23- 0	336	ST						
A 5017	3	15- 8	49	ST						
A 5018	14	30- 2	440	ST						
A 5019	50	11- 6	600	ST						
EPOXY COATED WINGWALL RE-STEEL										
WE 5001	1	15-1	16	12	1- 8	11- 0		7- 8		
WE 5002	1	13-11	15	12	0- 6	11- 0		7- 8		
WE 5003	1	21- 6	22	12	19- 6	1- 5		1- 5		
WE 5004	1	20- 1	21	12	18- 1	1- 5		1- 5		
WINGWALLS										
W 6001	1	15-11	24	ST						
W 6002	1	15- 3	23</							

BELMONT COUNTY, OHIO WAYNE TOWNSHIP SEC. 17, T-6-N, R-5-W

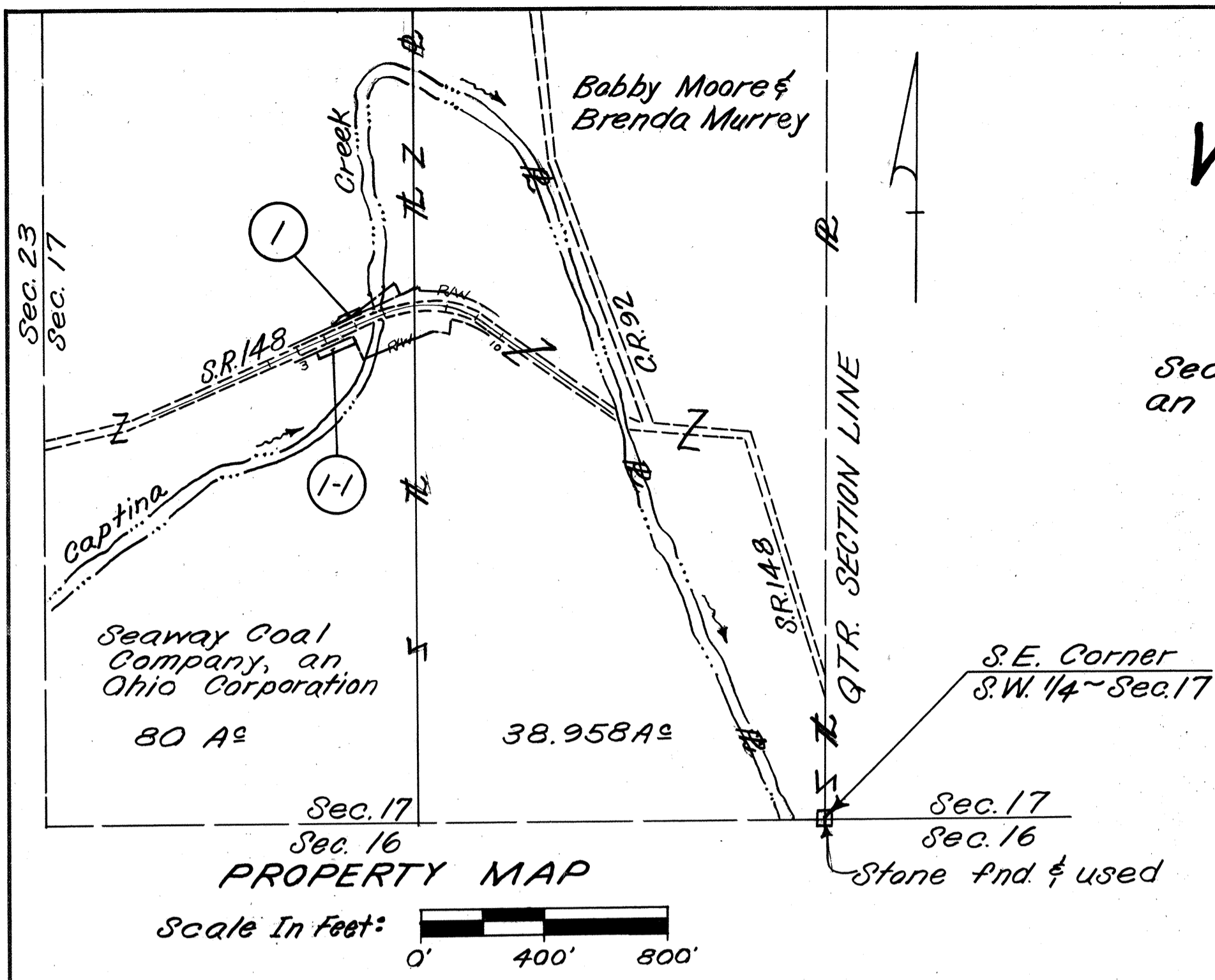
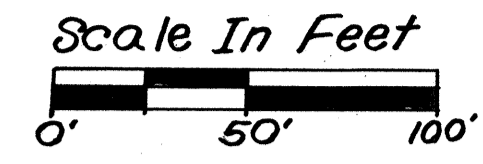
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DATE: 4/16/83
CH'D BY: JNM
DATE: 11/20/83

FWHA REGION	STATE	STATE PROJECT NO.
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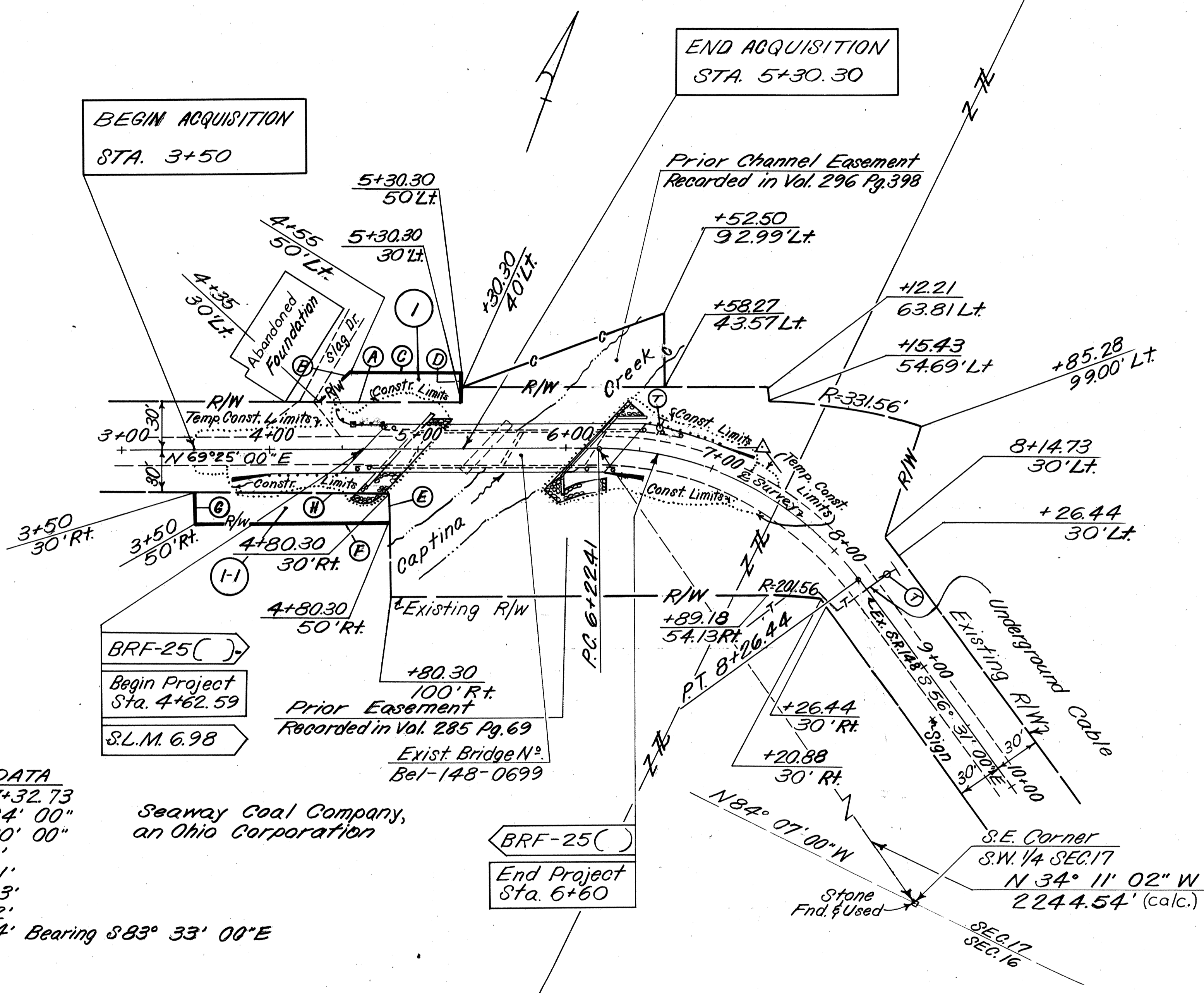
24
24

BEL-148-6.98
RIGHT OF WAY PLAN

1
1



Seaway Coal Company,
an Ohio Corporation



*Note:
Due to the extensive contiguous ownership of the property of Seaway Coal Company, an Ohio Corporation, only the affected parcel (80.00 A± Tract) should be considered for appraisal purposes.

TL - Indicates Tract Line

Utility & Identifier	Owner
Telephone (T)	Ohio Bell Telephone Company 150 East Gay Street Columbus, Ohio 43215 Phone (614) 223-8262

CURVE DATA
P.I. Sta. 7+32.73
A = 54° 04' 00"
D = 26° 30' 00"
T = 110.32'
R = 216.21'
L = 204.03'
E = 26.52'
L.C. = 196.54' Bearing S 83° 33' 00" E

Seaway Coal Company,
an Ohio Corporation

PARCEL 1	
Course	Bearing & Distance
A	S 69° 25' 00" W ~ 95.30'
B	N 24° 25' 00" E ~ 28.28'
C	N 69° 25' 00" E ~ 75.30'
D	S 20° 35' 00" E ~ 20.00'

PARCEL 1-1	
Course	Bearing & Distance
E	S 20° 35' 00" E ~ 20.00'
F	S 69° 25' 00" W ~ 130.30'
G	N 20° 35' 00" W ~ 20.00'
H	N 69° 25' 00" E ~ 130.30'

NOTE:
Record Area After Outsales Minus Total P.R.O. Minus Net Take Equals Net Residue.

DATE	COMPLETION	DATE 12-6-83

TOTAL NUMBER OF _____
 1 OWNERSHIPS
 0 TOTAL TAKES
 0 OWNERSHIPS WITH STRUCTURES INVOLVED
 0 OWNERSHIPS WITH "P" ITEMS

SUMMARY OF ADDITIONAL RIGHT OF WAY

PARCEL	OWNER	SHEET NO.	OWNERS RECORD		RECORD AREA	TOTAL P.R.O.	GROSS TAKE	PRO. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE		TYPE FUND	REMARKS AND PERSONALTY	AS ACQUIRED	
			BOOK	PAGE							LEFT	RIGHT			BOOK	PAGE
1	Seaway Coal Company, an Ohio Corporation	1	516	548	* 80 A±	2.61 A±	0.039 A±	0	0.039 A±	—	35.231 A±	42.060 A±	State	*Area of the First Tract of recorded Deed		
1-1	Seaway Coal Company, an Ohio Corporation	1					0.060 A±	0	0.060 A±	—			State			