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LINE DATA

BEGIN WORK AND PROJECT _____ STA. 3+43.60
 END WORK AND PROJECT _____ STA. 6+76.10
 LENGTH OF WORK _____ 332.50 LIN. FT. or 0.062 Mi.

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 APR 20 1974
 REPRODUCTION

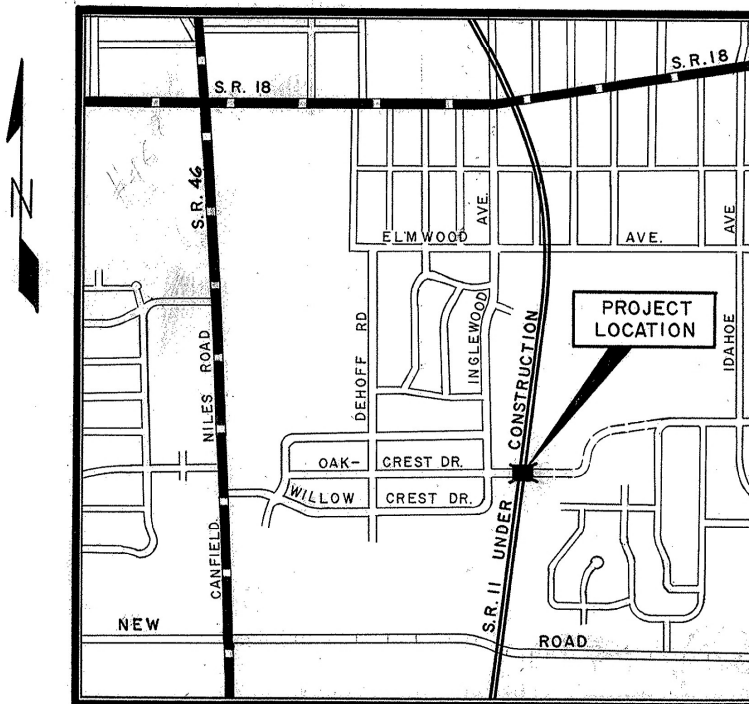
Prepared and Recommended by
 MOSURE & FOK
 Consulting Engineers
 Youngstown, Ohio

FILE NO.	MAHONING COUNTY MAH-11-1360
	SEC. MAH-11-13.60
	DATE OF LETTING _____ 196____
	CONTRACT NO. _____

STATE OF OHIO DEPARTMENT OF HIGHWAYS

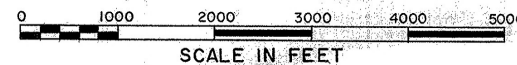
BRIDGE NO. MAH-11-1360 UNDER OAKCREST DRIVE

MAHONING COUNTY
 AUSTINTOWN TOWNSHIP



Delivery Point West Austinton Ave. Haul 2.5 Mi. Erie R.R.

— LOCATION MAP —



PORTION TO BE IMPROVED
 STATE HIGHWAYS
 COUNTY ROADS



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STANDARD DRAWINGS				SUPPLEMENTAL SPECIFICATIONS	
SD-1-65	11-8-65	BR-1-65	11-24-65	808	1-13-67
Sheet 1, 2 & 3		Sheet 2 of 2		811	1-1-67
		MC-3	5-1-66	825	1-1-67
AS-1-54	8-10-65	GR-2A	1-1-67	828	1-1-67
		GR-6	6-1-65		
RB-1-55	2-2-59	GR-1	1-1-67		
		BP-3	1-10-67		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	STATE	

1/10

MICROFILMED
 MAY 16 1965

MAHONING COUNTY
 MAH.-11-1360
 CANNISTER
 282

WE, THE COMMISSIONERS OF MAHONING COUNTY, IN FORMAL SESSION HEREBY APPROVE THESE PLANS AND CERTIFY THAT THE NECESSARY RIGHT OF WAY IS AVAILABLE. WE AGREE TO MAINTAIN THE PROJECT IN A MANNER SATISFACTORY TO THE DIRECTOR OF HIGHWAYS, STATE OF OHIO, OR HIS DULY AUTHORIZED REPRESENTATIVES AND WILL MAKE AMPLE PROVISION EACH YEAR FOR SUCH MAINTENANCE.
 DONE UNDER AUTHORITY OF SECTIONS 5535.01 AND 5555.02 ET SEQ. OF THE REVISE CODE OF OHIO.

BOARD OF COMMISSIONERS

MAHONING COUNTY

DATE

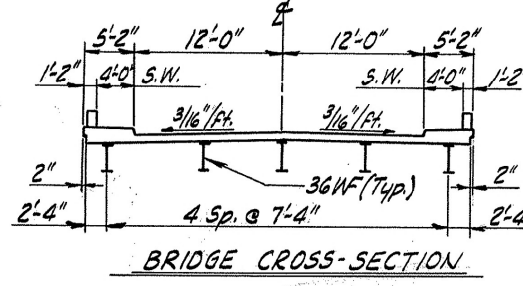
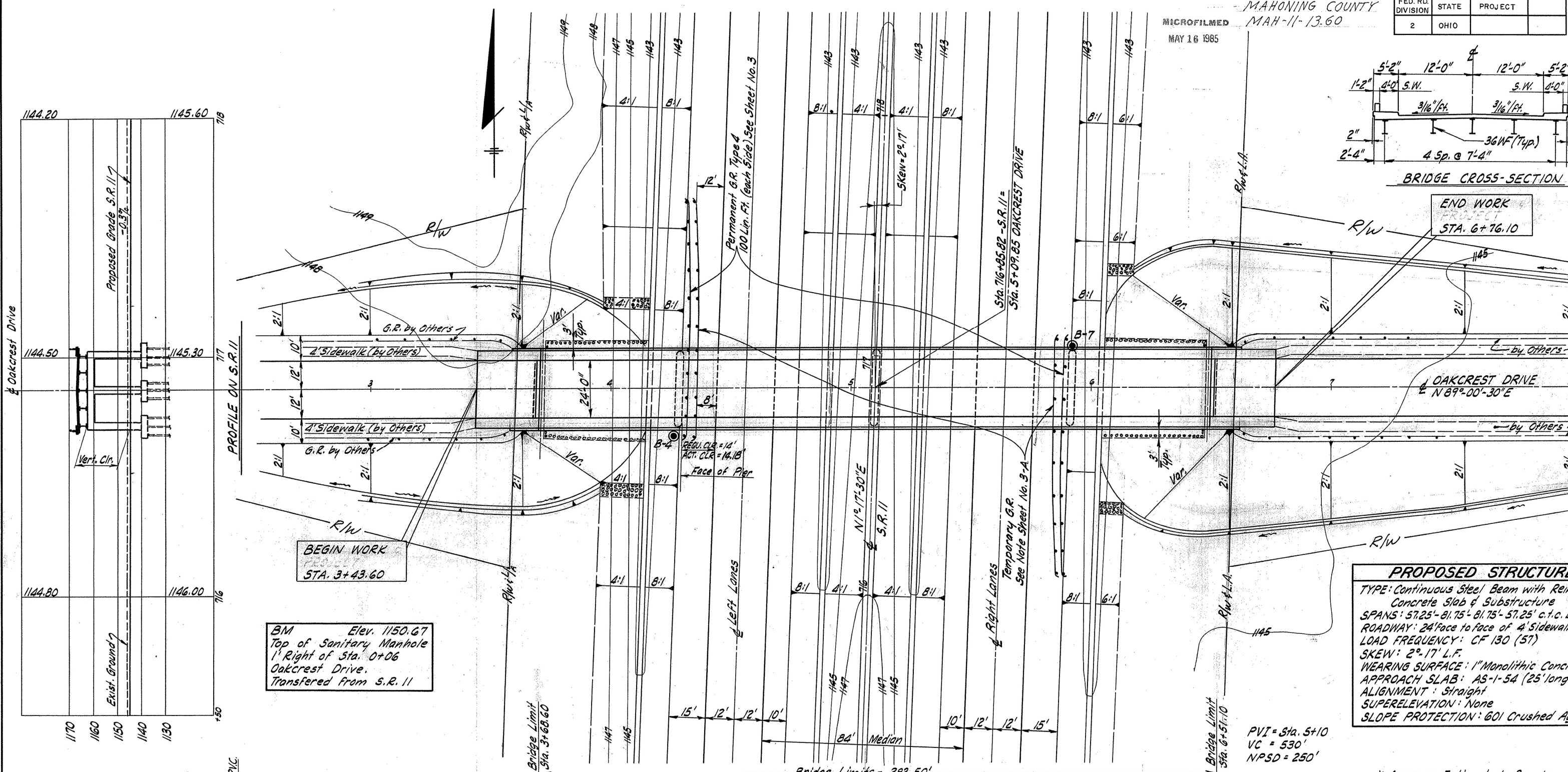
John Blenko _____ DATE *June 5th - 67*
Thomas J. Barrett _____ DATE *June 5th - 67*
George J. Lindner _____ DATE *June 5th - 67*

1967 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF HIGHWAYS, IN FORCE ON DATE OF CONTRACT, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT. THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE COUNTY OF MAHONING.
 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 THE PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED _____
 DATE *June 3, 1967* MAHONING COUNTY ENGINEER
 APPROVED _____
 DATE *6-12-67* DIVISION DEPUTY DIRECTOR
 APPROVED _____
 DATE *8-7-67* DEPUTY DIRECTOR OF PLANNING & PROGRAMMING
 APPROVED _____
 DATE *8-2-67* ENGINEER OF BRIDGES
 APPROVED _____
 DATE *8-2-67* ENGINEER OF LOCATION & DESIGN
 APPROVED _____
 DATE *8-2-67* DEPUTY DIRECTOR OF DESIGN & CONSTRUCTION
 APPROVED _____
 DATE *8-2-67* FIRST ASSISTANT DIRECTOR
 APPROVED _____
 DATE *8-2-67* DIRECTOR OF HIGHWAYS

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

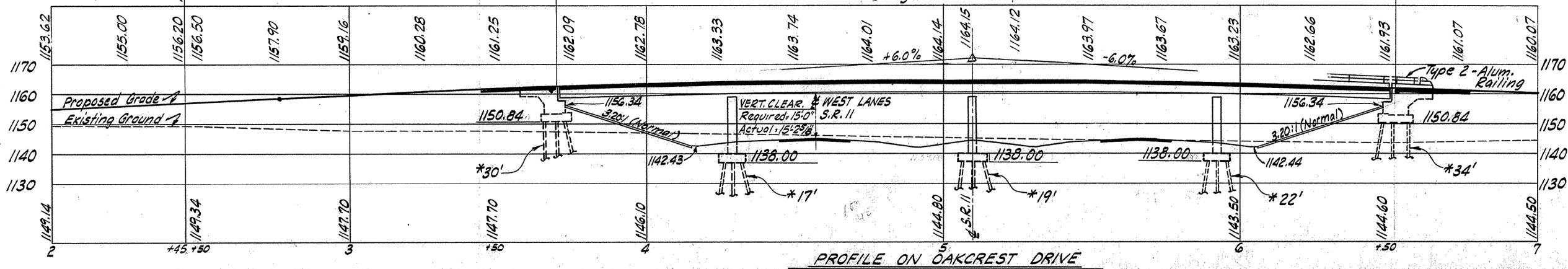


PROPOSED STRUCTURE
 TYPE: Continuous Steel Beam with Reinforced Concrete Slab & Substructure
 SPANS: 57.25'-81.75'-81.75'-57.25' c.t.c. Bearing
 ROADWAY: 24' face to face of 4' Sidewalks
 LOAD FREQUENCY: CF 130 (57)
 SKEW: 2° 17' L.F.
 WEARING SURFACE: 1" Monolithic Concrete
 APPROACH SLAB: AS-1-54 (25' long)
 ALIGNMENT: Straight
 SUPERELEVATION: None
 SLOPE PROTECTION: 601 Crushed Aggregate

PVI = Sta. 5+10
 VC = 530'
 NPSD = 250'

* Average Estimated Pay Length Piles (10 BP 42)

● Boring Locations



STATE OF OHIO
 DEPARTMENT OF HIGHWAYS
 BUREAU OF BRIDGES
 MASURE & FOK
 CONSULTING ENGINEERS
 YOUNGSTOWN, OHIO

SITE PLAN
 BRIDGE NO. MAH-11-1360
 UNDER OAKCREST DR.

MAHONING COUNTY
 SEC. MAH-11-13.60
 STA. 716+85.82
 Date: 10-14-66

SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
A.V.	O.X.M.	T.F.M.	O.X.M.	T.F.	J.V.


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MAY 16 1985

MAHONING COUNTY
MAH-11-13.60

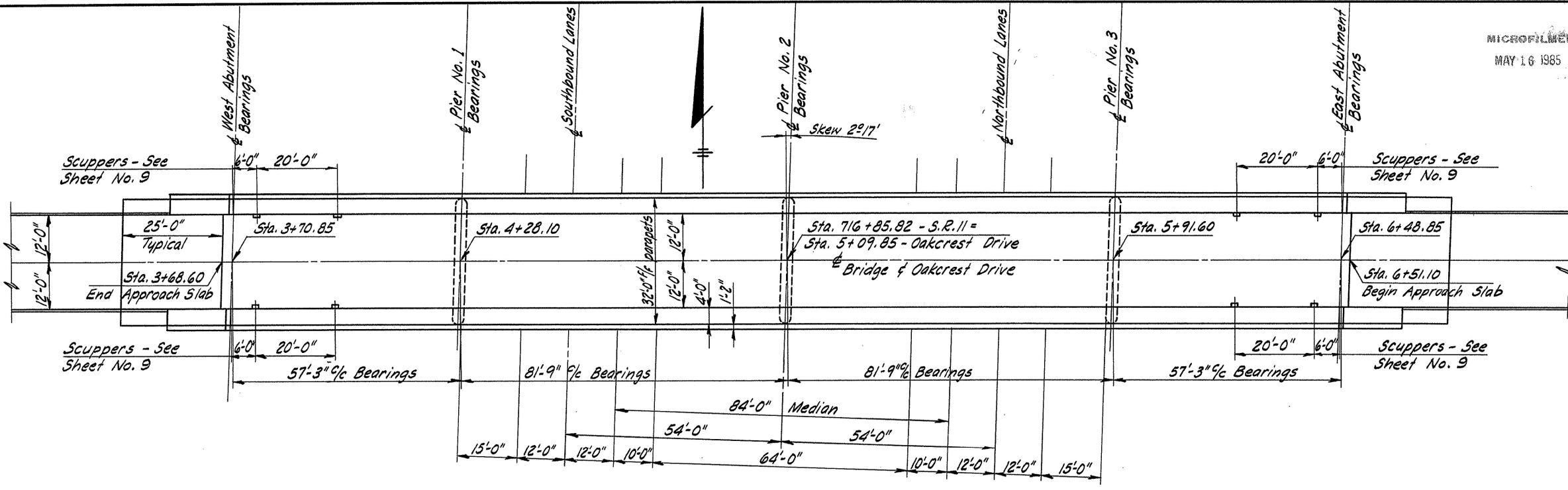
FED. RD. DIV.	STATE	PROJECT
2	OHIO	

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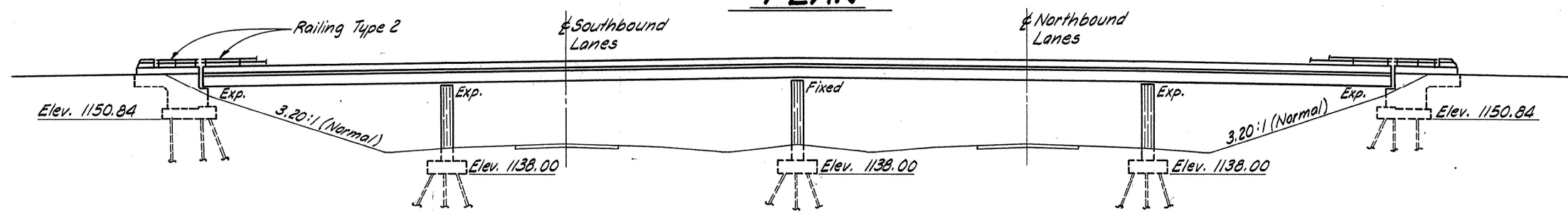
GENERAL NOTES

- DESIGN LOADING - CF 130 (57)
Concrete Class "C" - basic unit stress 1,333 psi
Concrete Class "E" - basic unit stress 1,133 psi
Structural Steel - ASTM-A36 - basic unit stress 20,000 psi
Reinforcing Steel - ASTM-A15, A16, A160, deformed intermediate hard grade. Basic unit stress 20,000 psi, except, spiral reinforcement may be plain, structural grade with basic unit stress of 18,000 psi.
- Reference shall be made to Standard Drawings:
SD-1-65 dated 11-8-65 Sheets 1 of 3, 2 of 3 and 3 of 3 ~
AS-1-54 revised 8-10-65 ~ RB-1-55 revised 2-2-59 ~
BR-1-65 revised 11-24-65 Sheet 2 of 2 ~
- Supplemental Specifications:
808 dated 1-13-67 ~ 825 dated 1-1-67 ~
811 dated 1-1-67 ~ 828 dated 1-1-67 ~
- DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures of the State of Ohio, Department of Highways, dated 9-1-57" together with current revisions thereof.
- Welding of secondary stress members is shown thus: 
- The concrete bridge deck shall be finished by the use of a finishing machine.
- Piles shall be driven to firm contact with rock. If the length of penetration is approximately equal to the depth of rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating:
For the Abutment Piles -
43 Tons per pile using an 11,000 ft-lb hammer
36 Tons per pile using a 15,000 ft-lb hammer or greater
For the Pier Piles -
50 Tons per pile using an 11,000 ft-lb hammer
43 Tons per pile using a 15,000 ft-lb hammer or greater
If the energy rating of the hammer is between the ratings as shown above, the required formula capacity shall be determined by interpolation. The design load is 35 Tons per Pile for the Abutment and Pier Piles.

GENERAL NOTES CONTINUED ON SHEET NO. 3-A



PLAN



ELEVATION

ESTIMATED QUANTITIES ~ BRIDGE

ITEM	TOTAL	UNIT	DESCRIPTION	SUPERSTR.	ABUTS.	PIERS	GENERAL	AS BUILT
503	523	Cu. Yds.	Unclassified Excavation		281	242		
511	317	Cu. Yds.	Class "C" Concrete, Superstructure	317				
511	71	Cu. Yds.	Class "C" Concrete, Piers above Footings			71		
511	80	Cu. Yds.	Class "E" Concrete, Abutments above Footings		80			
511	142	Cu. Yds.	Class "E" Concrete, Abutment and Pier Footings		61	81		
509	119,676	Lbs.	Reinforcing Steel	80,331	11,928	27,417		
513	250,900	Lbs.	Structural Steel	250,900				
514	250,900	Lbs.	Field Painting of Structural Steel	250,900				
517	595.51	Lin. Ft.	Bridge Railing, Type 2	558.84	36.67			
505	Lump	Sum	First Test Pile				Lump	
507	2404	Lin. Ft.	Steel Piles - 10BP 42		884	1520		
518	22	Cu. Yds.	Porous Backfill		22			
518	8	Each	Scuppers, including supports	8				
518	52	Lin. Ft.	6" Perforated Helical C.M.P., Sec. 707.06, including Specials		52			
518	54	Lin. Ft.	6" Non-Perforated Helical C.M.P. - Sec. 707.06, incl. Specials		54			
601	393	Sq. Yds.	Crushed Aggregate Slope Protection				393	
825	1266	Sq. Yds.	Concrete Surface Treatment	1200	66			
828	48	Lin. Ft.	Joint Sealer		48			
808	317	Units	Water reducing, set-retarding admixture	317				

Estimated Quantities checked by: N.C. - dated 3-13-1967

ESTIMATED QUANTITIES ~ ROADWAY

ITEM	TOTAL	UNIT	DESCRIPTION	GENERAL	AS BUILT
	Lump	Lump	Field Office	Lump	
	Lump	Lump	Construction Layout Stakes	Lump	
310	3	Cu. Yds.	Subbase	3	
608	192	Sq. Ft.	Concrete Walk, 4"	192	
611	136	Sq. Yds.	Reinforced Concrete Approach Slabs (T=13")	136	
614	Lump	Lump	Maintaining Traffic	Lump	
606	200	Lin. Ft.	Guard Rail, Type 4 (See Sht. #2 for location)	200	

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES
MOSURE & FOK
CONSULTING ENGINEERS
YOUNGSTOWN, OHIO

GENERAL PLAN & ELEVATION
BRIDGE NO. MAH-11-1360
UNDER OAKCREST DRIVE

MAHONING COUNTY
SEC. MAH-11-13.60
STA. 716+85.82
Date: 3-15-67

SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.X.M.	3-9-67	J.P.P.

FED. RD. DIV.	STATE	PROJECT	
2	OHIO		

3-A
10

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MAY 16 1985

MAHONING COUNTY
MAH-11-1360

GENERAL NOTES CONTINUED FROM SHEET NO. 3

MAINTAINING TRAFFIC (Cont.)

FIELD OFFICE:

The Contractor shall, in addition to the requirements of 105.152, provide a suitable Field Office having a minimum of 150 Sq. Ft. of floor space. The Contractor shall have a telephone installed and maintained in this Field Office during the construction of this project. The Contractor shall also provide and maintain sanitary provisions as per 107.06. All the above is included in the Lump Sum Price Bid for Field Office.

CONSTRUCTION LAYOUT STAKES:

See Note in Proposal describing the work included in this Lump Sum pay item.

MAINTAINING TRAFFIC

OAKCREST DRIVE

The Contractor shall, in addition to the General Requirements of Sec. 107.10, on this project perform the following:

Provide, Erect and Maintain Lights, Signs and Barricades on Oakcrest Dr. at approximately 200' East of the intersection with Inglewood Ave.

Payment for providing, erecting, maintaining and removing barricades, gates, lights, signs and sign supports shall be included in Lump Sum Price Bid for "Item 614, Maintaining Traffic".

S.R. 11 (UNDER CONSTRUCTION)

Two Way Traffic shall be maintained on S.R. 11 under Oakcrest Drive during the construction of the Structure MAH-11-1360 and Approaches.

The Contractor on this project shall cooperate with the Contractor on S.R. 11 project in accordance with Sec. 105.07, so as not to unduly inconvenience his operations.

All Areas within the S.R. 11 Right-of-Way Limits, that are disturbed during the construction of the Structure MAH-11-1360 shall be restored to their original condition at the time construction was initiated.

S.R. 11 (OPENED TO THRU TRAFFIC)

Two Way Traffic and the Four Lanes of Pavement shall be maintained on S.R. 11 during the construction of Structure MAH-11-1360 and Approaches.

Temporary Post mounted Guard Rail shall be erected where shown on the plans for protection of the traveling Public and Workers.

Guard Rail and Posts shall be in accordance with Standard Drawings G.R.-2A and G.R.-1 and Item 606 of the Specifications, except used rail elements in good condition, accepted by the Engineer may be used in lieu of new rail elements.

A 15' Vertical Clearance over S.R. 11 shall be maintained at all times. When all work on the structure is complete, the Temporary Guard Rail will be removed and paved berms restored to their original condition. During the reconstruction of the paved berms, traffic may be restricted to one lane at reduced speed for a minimum period of time. The median area disturbed on S.R. 11 will be graded to existing conditions before construction began and seeded.

PARKING RESTRICTIONS~S.R. 11

Workmen shall not use paved shoulders or the median area at any time for parking of their vehicles.

TRANSPORTING MATERIALS AND PERSONNEL~S.R. 11

The transporting of excavated material across existing S.R. 11 will not be permitted.

The crossing of S.R. 11 by construction personnel shall be accomplished by utilizing the existing S.R. 18 Interchange. (Mahoning Ave.)

STRUCTURAL STEEL ERECTION~S.R. 11

During the erection of structural steel, the Contractor will be permitted to temporarily close both lanes of one directional traffic for the period necessary to place one 36" I-beam in the initial position on the piers. Both lanes shall then be reopened to clear the traffic before placing the next beam. This procedure shall be adhered to in the placing of all structural steel. The maximum duration for temporary closing of both lanes shall be held to thirty (30) minutes at any one time.

* and secure by drift pins required by the "Field Assembly" note on 5D-1-65.

TRAFFIC CONTROL AND CONSTRUCTION OPERATIONS~S.R. 11

When work is to be performed adjacent to the existing pavement, the Contractor will provide cones or barrels (spaced in accordance with the Ohio Manual of Uniform Traffic Control Devices) for the protection of the traveling public. During this period, traffic will be reduced to one (1) fourteen foot lane by the method "Closing one lane on a four lane divided highway". All four lanes shall be open on all holidays and week ends. The Contractor shall also arrange his operations to avoid an open trench along the travelled pavement edge on all holidays and week ends. The entire operation shall be as directed by the Engineer.

ALTERNATE METHODS MAINTAINING TRAFFIC

If the Contractor so elects, he may submit alternate methods for maintaining traffic, provided the intent of the above provisions is followed and no additional inconvenience to the traveling public results therefrom. No alternate plan shall be placed into effect until approval has been granted in writing, by the Director of Highways.

TEMPORARY GUARD RAIL~S.R. 11

The Contractor, in addition to Sec. 615.04 of the Specifications, shall furnish, erect and subsequently remove Temporary Guard Rail, Steel Beam Std. Type (deep) Guard Rail for protection of the traveling public and work area adjacent to S.R. 11. The guard rail shall be post or barrel mounted, erect per Std. Drawing G.R.-2A (See Sheet No. 2) at locations shown plans, a minimum of 8 feet from the edge of traveled pavement. Barrel mounted guard rail shall be constructed using drums half filled with sand and painted a bright yellow. Guard rail elements shall be firmly bolted a minimum of 27" from the top of rail to the pavement grade. The ends of each run shall be flared so that the terminal drum will be located approximately 12' from the edge of the pavement. Construction will be similar to the flared ends shown on Standard Drawing G.R.-6. Good Quality used guard rail, approved by the Engineer, may be used for this purpose in lieu of new rail elements. (See note in proposal)

PERMANENT GUARD RAIL

The paved berms shall be restored to their original condition after the construction of the permanent guard rail.

PAYMENT

Payment for all the above shall be included in the Lump Sum Bid for "Item 614, Maintaining Traffic."

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
MOSURE & FOX CONSULTING ENGINEERS YOUNGSTOWN, OHIO					
GENERAL NOTES					
BRIDGE N ^o MAH-11-1360 UNDER OAKCREST DRIVE					
MAHONING COUNTY					
SEC. MAH-11-1360				STA. 716+85.82	
Date: 6-1-67					
SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.K.M.	T.F.	J.M.

DEFLECTION AND CAMBER (INCHES)

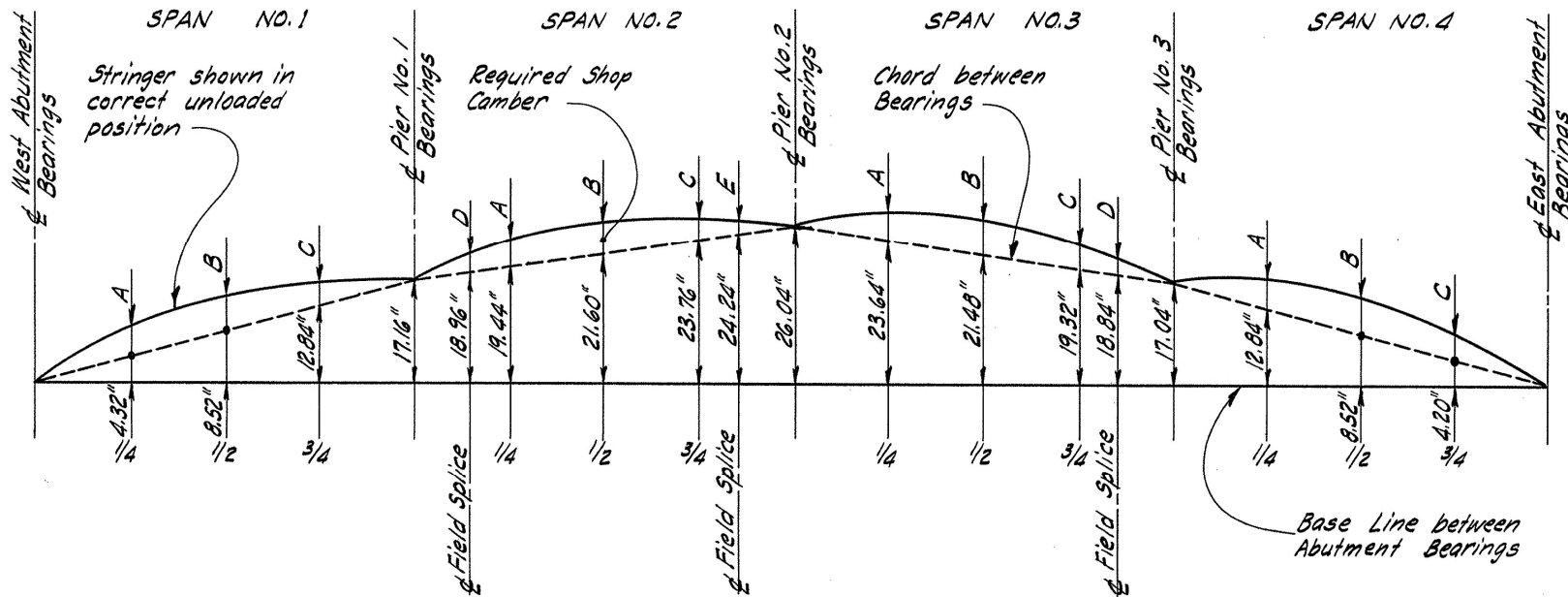
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FED. RD. DIV.	STATE	PROJECT
2	OHIO	

5
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MAHONING COUNTY
MAH-11-13.60

	E. W. Abut.	SPAN NO. 1			Pier No. 1	SPAN NO. 2				Pier No. 2	SPAN NO. 3				Pier No. 3	SPAN NO. 4				E. Abut.
		1/4 Pt. A	1/2 Pt. B	3/4 Pt. C		Splice Pt. D	1/4 Pt. A	1/2 Pt. B	3/4 Pt. C		Splice Pt. E	1/4 Pt. A	1/2 Pt. B	3/4 Pt. C		Splice Pt. D	1/4 Pt. A	1/2 Pt. B	3/4 Pt. C	
INTERIOR BEAMS																				
Deflection due to weight of steel	0	0.061	0.068	0.026	0	0.080	0.105	0.170	0.096	0.071	0	0.096	0.170	0.105	0.080	0	0.026	0.068	0.061	0
Deflection due to remaining dead load	0	0.276	0.305	0.115	0	0.360	0.476	0.768	0.433	0.320	0	0.433	0.768	0.476	0.360	0	0.115	0.305	0.276	0
Adjustment required for vertical curve	0	0.84	1.20	0.84	0	1.20	1.44	2.16	1.68	1.44	0	1.68	2.28	1.56	1.32	0	0.84	1.20	0.96	0
Required shop camber	0	1.177	1.573	0.981	0	1.640	2.021	3.098	2.209	1.831	0	2.209	3.218	2.141	1.760	0	0.981	1.573	1.297	0
FACIA BEAMS																				
Deflection due to weight of steel	0	0.060	0.067	0.025	0	0.079	0.104	0.168	0.095	0.070	0	0.095	0.168	0.104	0.079	0	0.025	0.067	0.060	0
Deflection due to remaining dead load	0	0.332	0.367	0.139	0	0.433	0.572	0.923	0.520	0.385	0	0.520	0.923	0.572	0.433	0	0.139	0.367	0.332	0
Adjustment required for vertical curve	0	0.84	1.20	0.84	0	1.20	1.44	2.16	1.68	1.44	0	1.68	2.28	1.56	1.32	0	0.84	1.20	0.96	0
Required shop camber	0	1.232	1.634	1.004	0	1.712	2.116	3.251	2.295	1.895	0	2.295	3.371	2.236	1.832	0	1.004	1.634	1.352	0



DEFLECTION & CAMBER LAYOUT DIAGRAM
No Scale (inches)

DECK ELEVATIONS

LOCATION	STATION	NORTH & SOUTH SIDE AT FACE OF CURB COMMON ELEVATIONS ***		
		Elev. Face of Curb	D.L. Deflec.	**
West Abut.	3+70.85	1161.77	+ 0	= 1161.77
1/4	3+85.16	1162.20	+ 0.028	= 1162.228
1/2	3+99.47	1162.58	+ 0.031	= 1162.611
3/4	4+13.79	1162.91	+ 0.012	= 1162.922
Pier No. 1	4+28.10	1163.20	+ 0	= 1163.20
1/4	4+48.54	1163.53	+ 0.048	= 1163.578
1/2	4+68.97	1163.77	+ 0.077	= 1163.847
3/4	4+89.41	1163.91	+ 0.043	= 1163.953
Pier No. 2	5+09.85	1163.96	+ 0	= 1163.96
1/4	5+30.29	1163.91	+ 0.043	= 1163.953
1/2	5+50.72	1163.78	+ 0.077	= 1163.857
3/4	5+71.16	1163.54	+ 0.048	= 1163.588
Pier No. 3	5+91.60	1163.20	+ 0	= 1163.20
1/4	6+05.91	1162.92	+ 0.012	= 1162.932
1/2	6+20.22	1162.59	+ 0.031	= 1162.621
3/4	6+34.54	1162.21	+ 0.028	= 1162.238
East Abut.	6+48.85	1161.78	+ 0	= 1161.78

** Elevations are top of slab and include allowance for dead load deflection of concrete.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

MOSURE & FOK
CONSULTING ENGINEERS
YOUNGSTOWN, OHIO

DEFLECTION & CAMBER, DECK
ELEVATIONS
BRIDGE N^o MAH-11-1360
UNDER OAKCREST DRIVE
MAHONING COUNTY
SEC. MAH-11-13.60

STA. 716+85.82
Date: 3-15-67

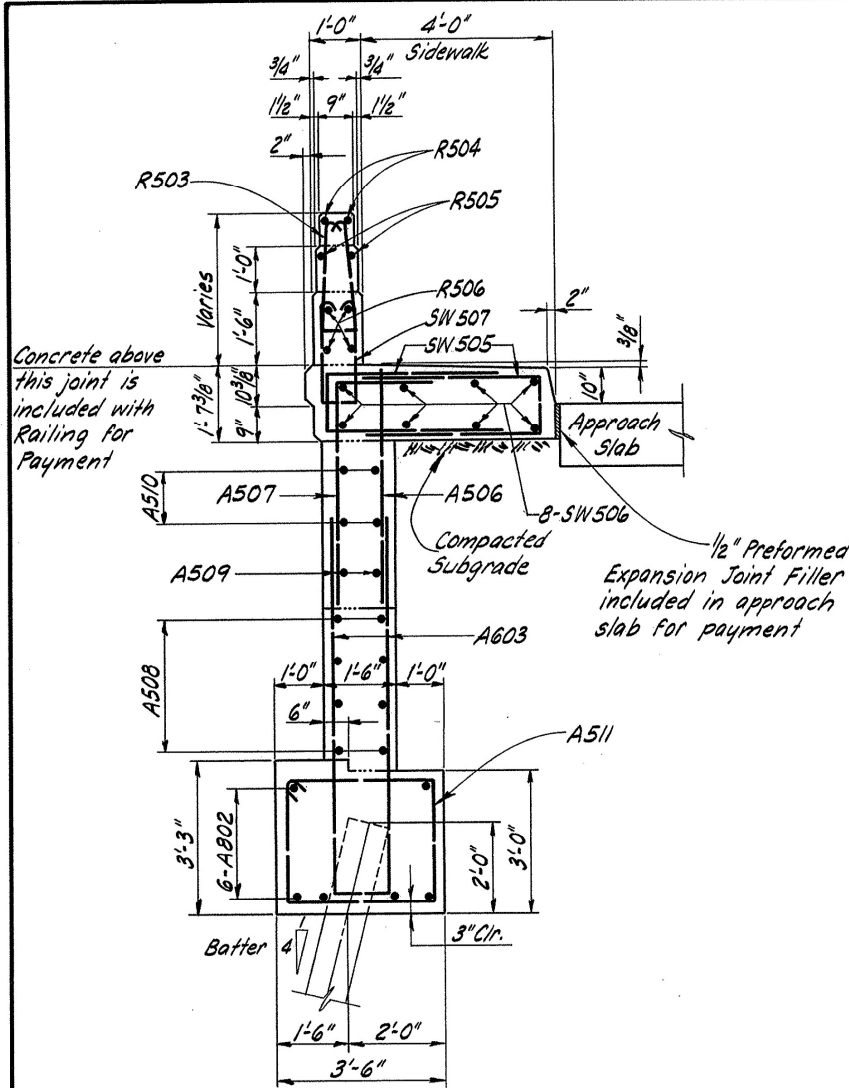
SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.X.M.	T.F.	J.M.

FED. RD. DIV.	STATE	PROJECT
2	OHIO	

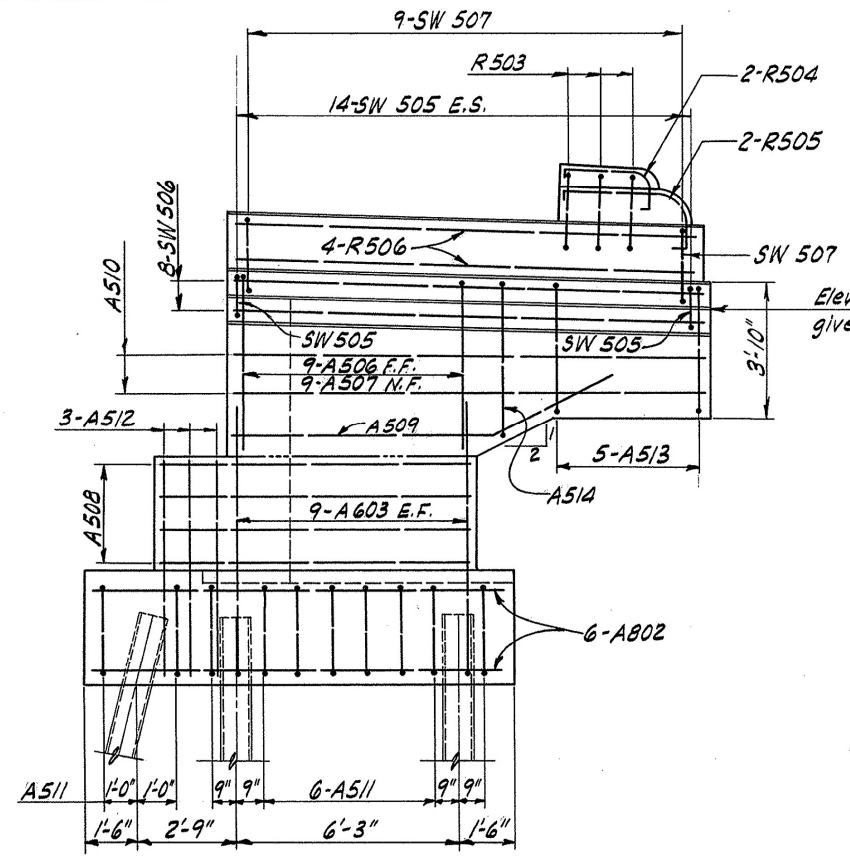
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MAHONING COUNTY
MAH-11-13.60

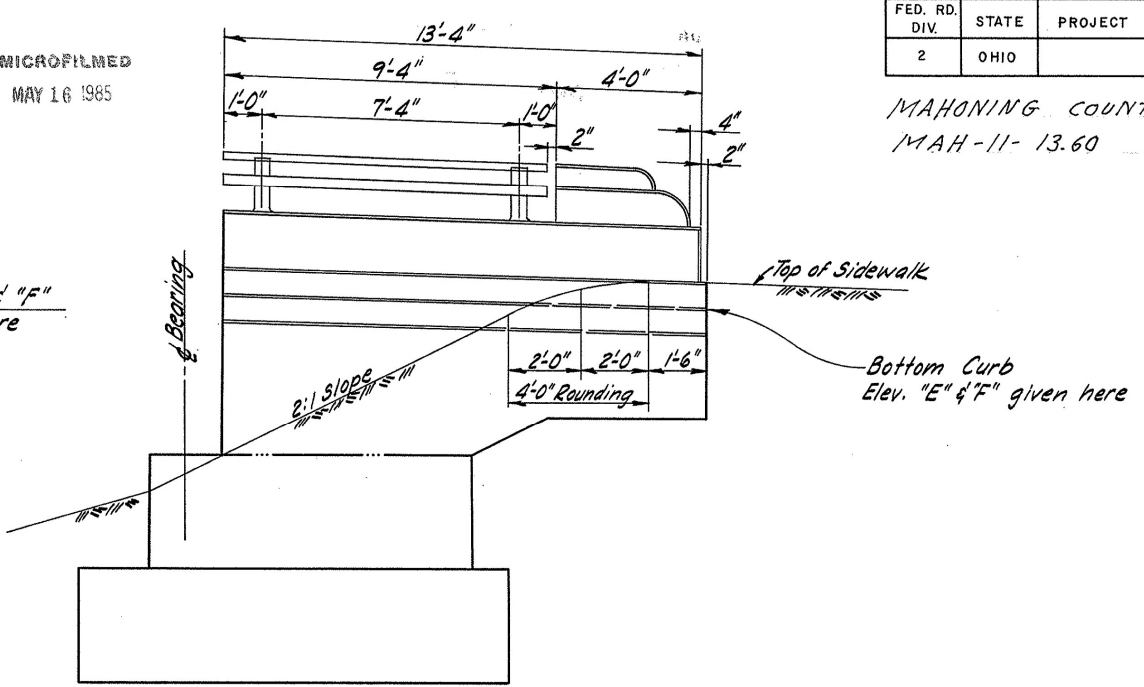
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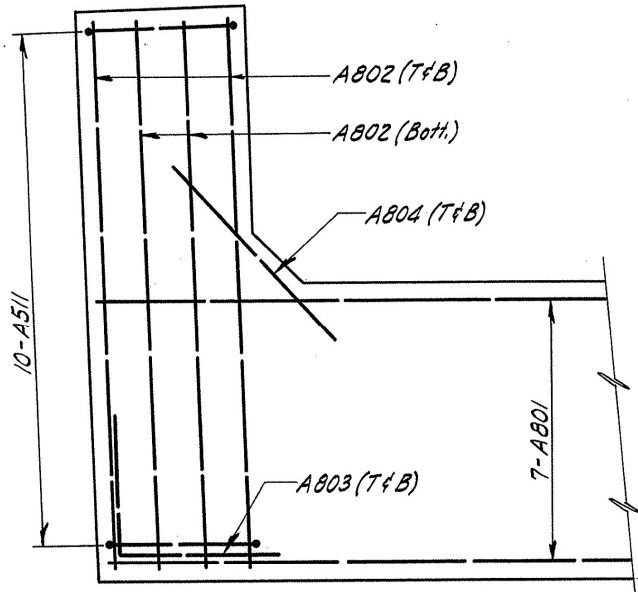
SECTION C-C
Showing Railing End Posts



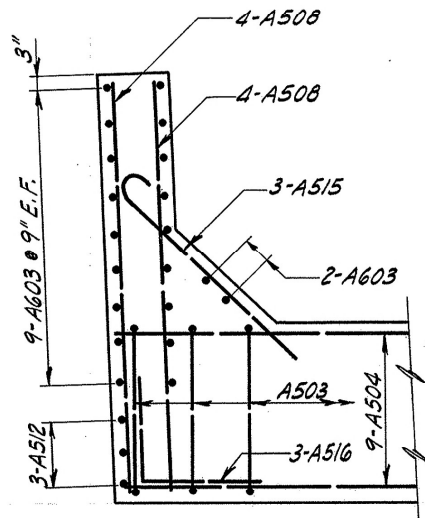
SECTION B-B



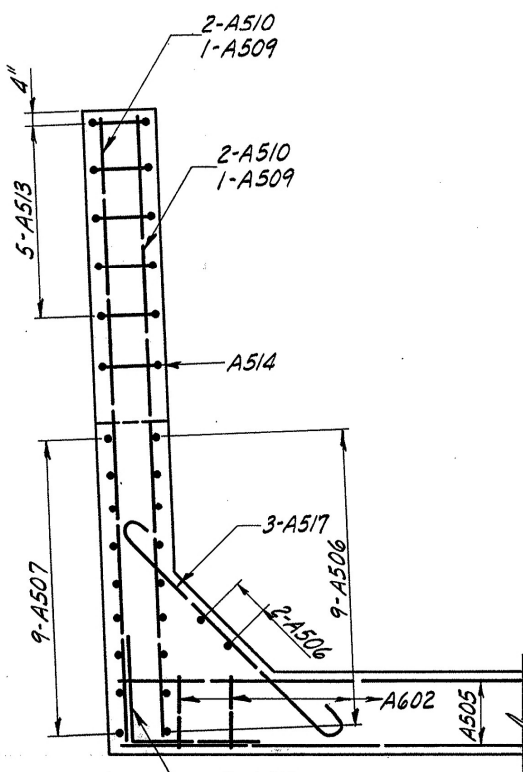
WINGWALL ELEVATION



SECTION D-D
Typical at other corners



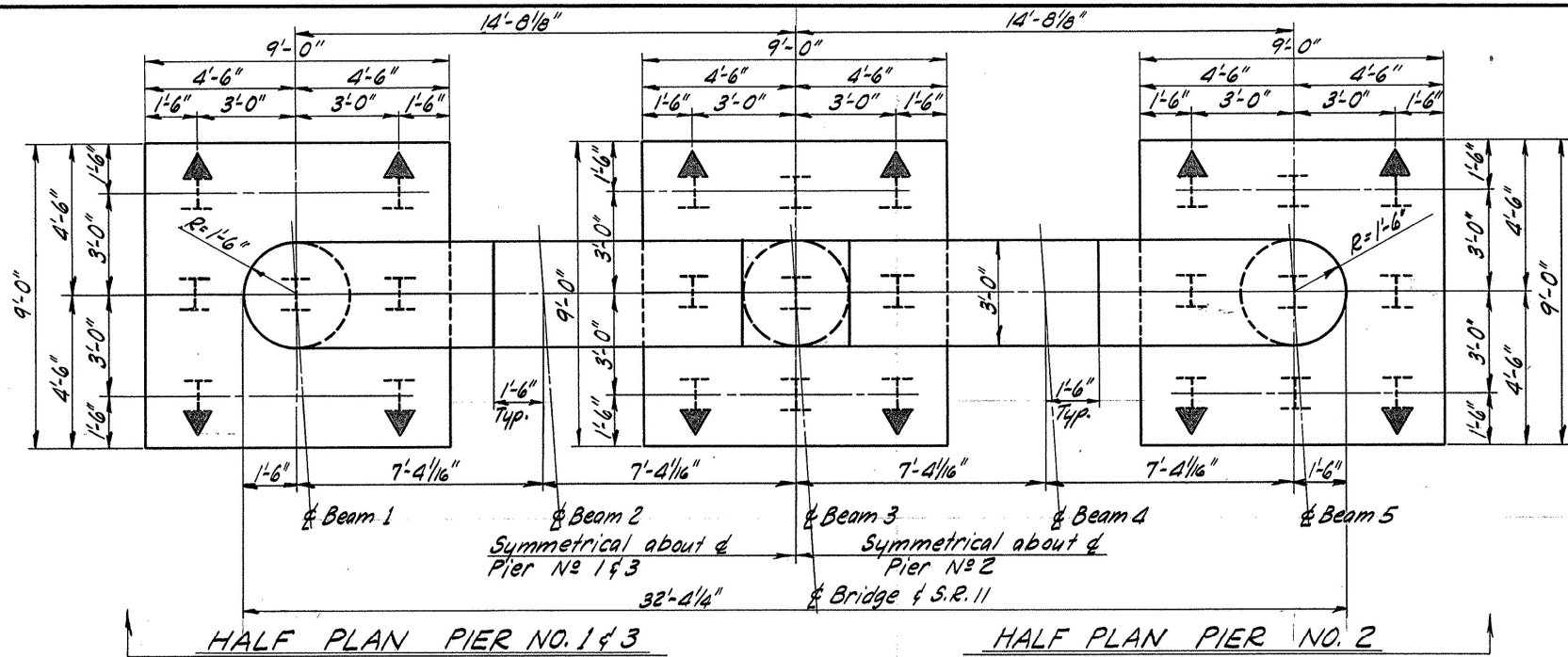
SECTION E-E
Typical at other corners



SECTION F-F
Typical at other corners

• Work this Sheet with Sheet No. 6

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
MOSURE & FOK CONSULTING ENGINEERS YOUNGSTOWN, OHIO					
ABUTMENT DETAILS					
BRIDGE NO MAH-11-1360 UNDER OAKCREST DRIVE					
MAHONING COUNTY SEC. MAH-11-13.60				STA. 716+85.82 Date: 3-15-67	
SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.X.M.	T.F.	J.M.

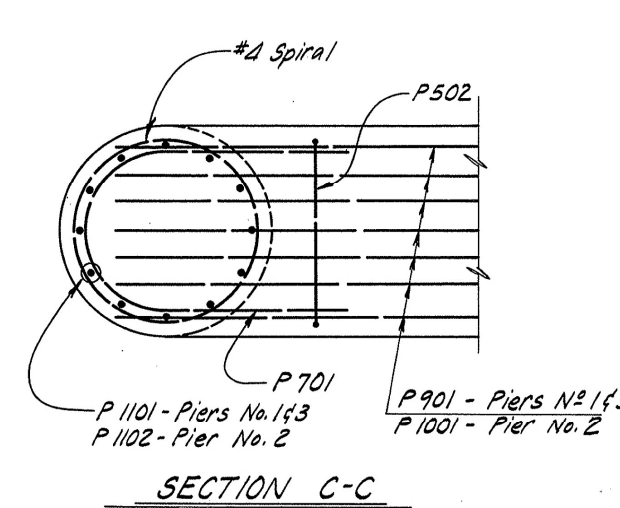
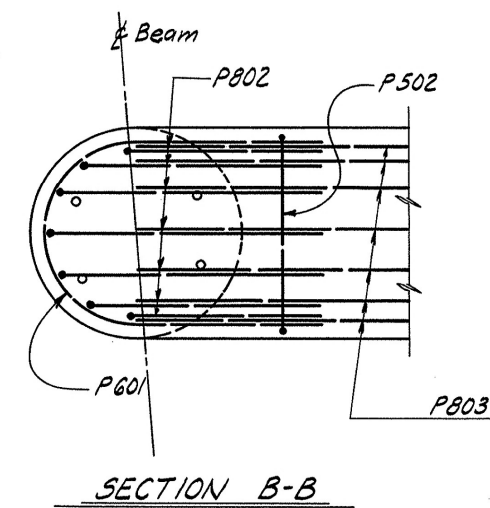


PIERS	B1	B2	B3	B4	B5	F
N ^o 1	1158.33	1158.40	1158.51	1158.40	1158.31	1138.00
N ^o 2	1158.96	1159.04	1159.15	1159.04	1158.96	1138.00
N ^o 3	1158.32	1158.40	1158.52	1158.41	1158.34	1138.00

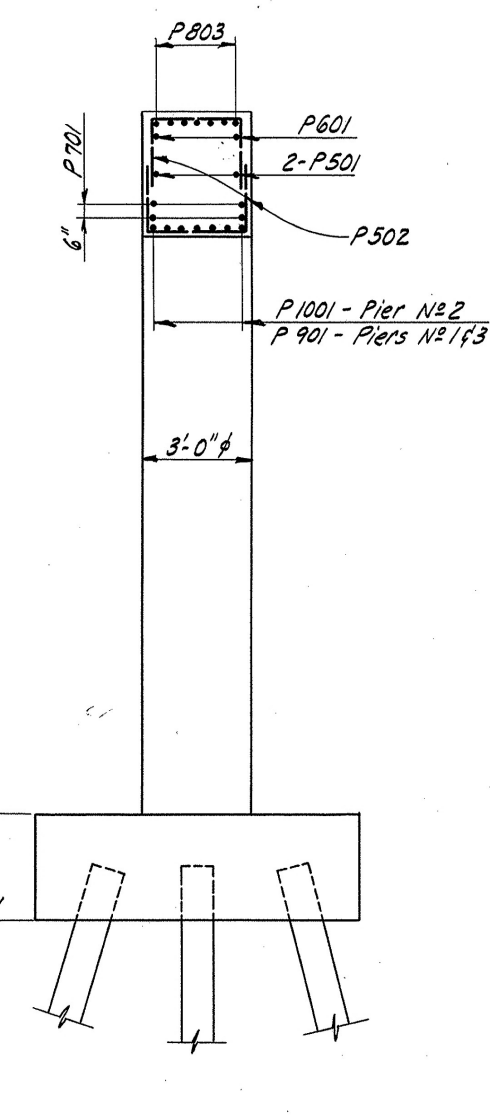
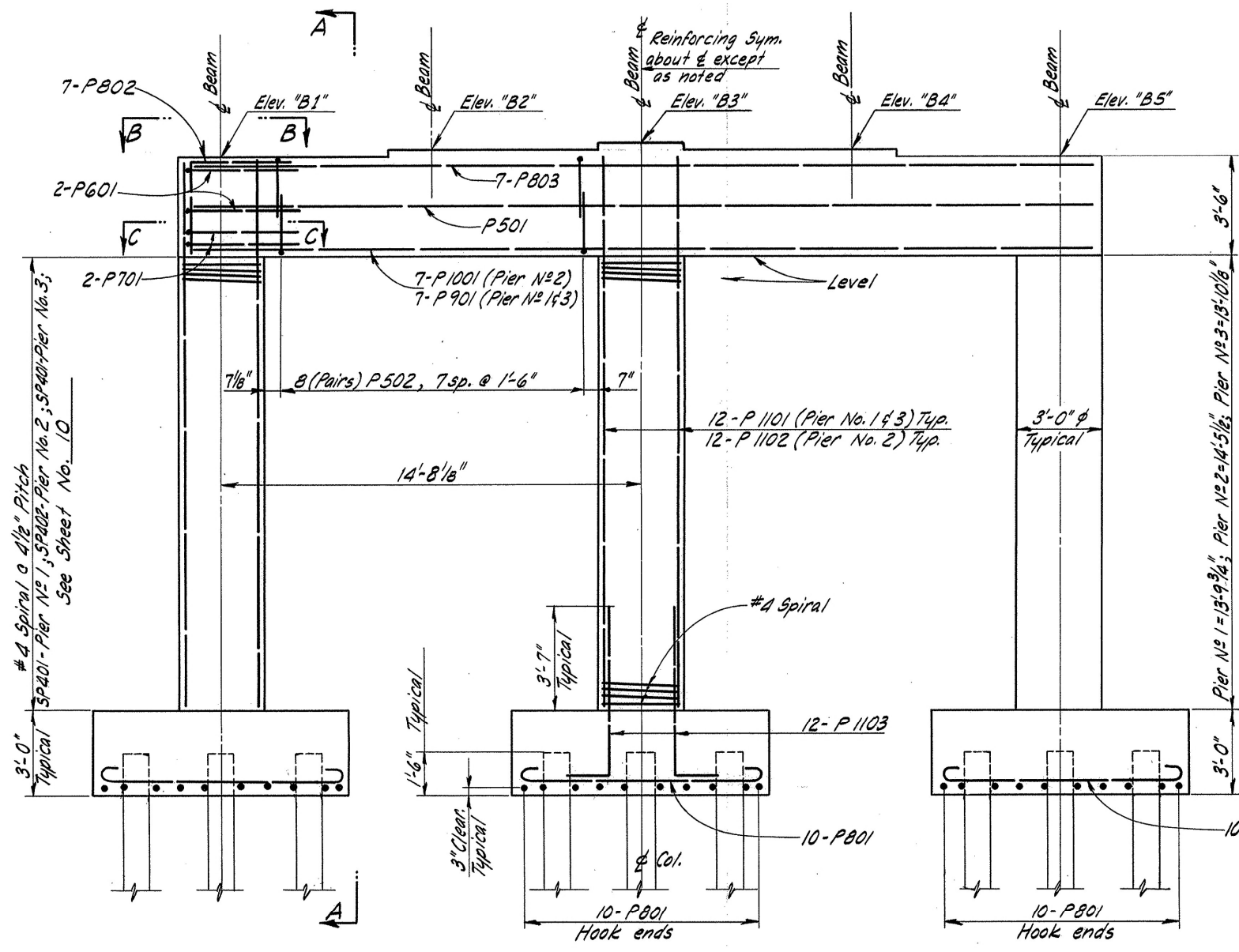
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FED. RD. DIV.	STATE	PROJECT
2	OHIO	

MAHONING COUNTY
MAH-11-13.60



- Concrete shall be Class "C", except for footings where it shall be Class "E".
- All Piles 10 BP 42, ∇ indicates pile shall be battered 1:4 in the direction shown.
- Bridge Seat Reinforcing, special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of anchor bar holes, on Pier N^o2 only.



STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES
MOSURE & FOK
CONSULTING ENGINEERS
YOUNGSTOWN, OHIO

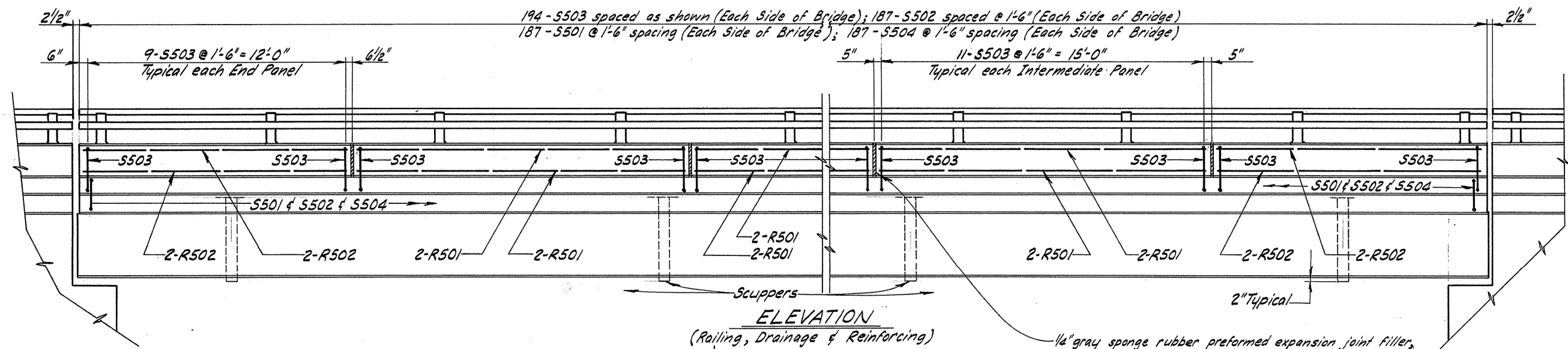
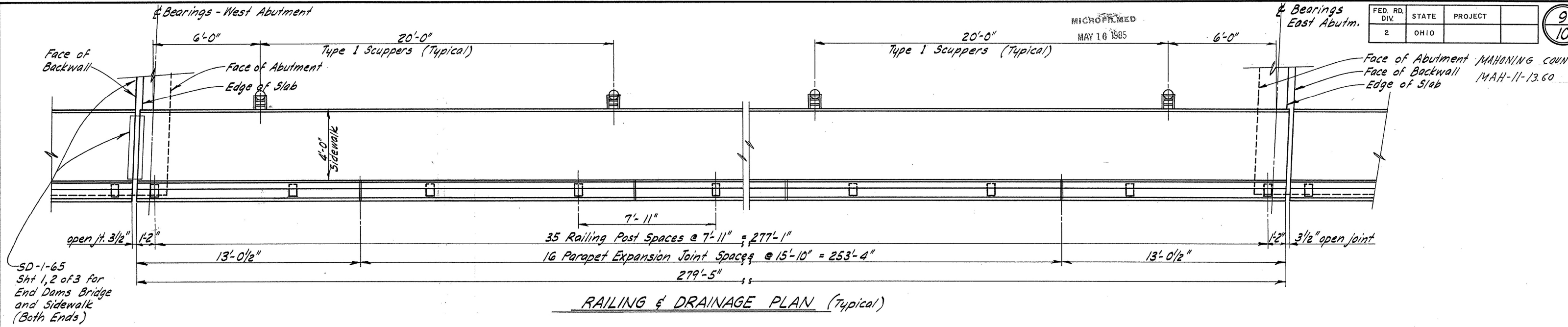
PIER DETAILS
BRIDGE N^o MAH-11-1360
UNDER OAKCREST DRIVE

MAHONING COUNTY
SEC. MAH-11-13.60
STA. 716+85.82
Date: 3-15-67

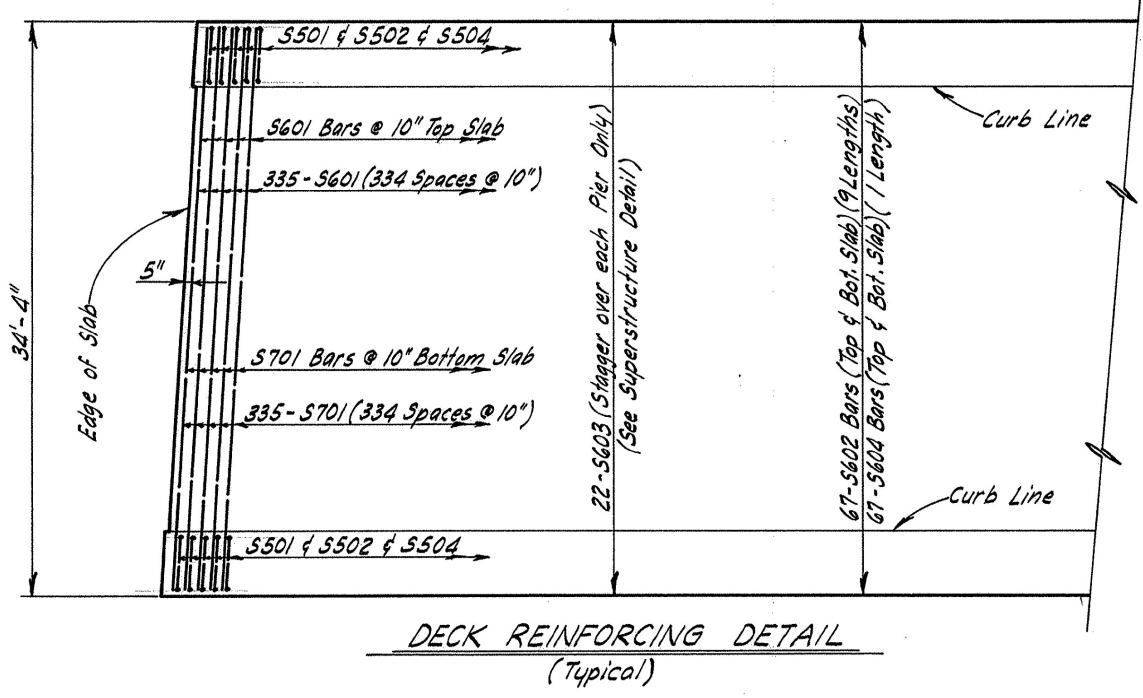
SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.K.M.	T.F.	J.M.

FED. RD. DIV.	STATE	PROJECT
2	OHIO	

9
10



1/4" gray sponge rubber preformed expansion joint filler, (Sec. 705.03, AASHTO M-153), spaced two railing panel lengths apart. (Included with Item 517 for payment.)



STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
MOSURE & FOK CONSULTING ENGINEERS YOUNGSTOWN, OHIO					
RAILING, DRAINAGE & DECK REINFORCING PLAN					
BRIDGE N ^o MAH-11-1360 UNDER OAKCREST DRIVE MAHONING COUNTY					
SEC. MAH-11-13.60			STA. 716+85.82 Date: 3-15-67		
SURVEY	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
		T.F.M.	O.X.M.	T.F.	J.M.

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE GENTLY ROLLING PORTION OF THE GLACIATED ALLEGHENY PLATEAU REGION, ON A RELATIVELY FLAT GROUND MORaine WHERE MODERATELY DEEP GLACIAL DRIFT OVERLIES SHALE BEDROCK, OF PENNSYLVANIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS, MADE BETWEEN NOVEMBER 30 AND DECEMBER 7, 1966, AND FIVE DRIVE ROD PENETRATION TESTS, MADE ON NOVEMBER 15 AND 16, 1966.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED THAT BEDROCK SURFACE, ENCOUNTERED AT 22 AND 26-FOOT DEPTHS, ELEVATIONS 1121 AND 1116 FEET, IS OVERLAIN BY MEDIUM-DENSE TO DENSE SANDY AND GRAVELLY SILTS. THE BORINGS WERE TERMINATED AT 35 AND 40-FOOT DEPTHS, ELEVATIONS 1108 AND 1102 FEET.

ROD SOUNDINGS MET GRADUAL INCREASE IN RESISTANCE TO PENETRATION WITH INCREASE IN DEPTH AND ENCOUNTERED ABRUPT REFUSAL AND NEAR-REFUSAL TO PENETRATION AT 14 TO 24-FOOT DEPTHS, ELEVATIONS 1130 TO 1120 FEET, CONSIDERED TO BE ON OR SLIGHTLY BELOW WEATHERED BEDROCK SURFACE, AS REVEALED BY THE BORINGS, EXCEPT ROD SOUNDINGS NUMBERS 8 AND 9 WHICH ARE CONSIDERED TO HAVE TERMINATED IN DENSE SILTS.

ON THE BASIS OF TESTS, BEDROCK SURFACE IS CONSIDERED TO SLOPE DOWNWARD FROM THE REAR PORTION OF THE STRUCTURE SITE, ELEVATION 1121 FEET, TO FORWARD PORTION OF THE STRUCTURE SITE, ELEVATION 1116 FEET.

FREE WATER WAS ENCOUNTERED IN THE ROD SOUNDING HOLES BETWEEN ELEVATIONS 1139 AND 1136 FEET.

- Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- Top of Rock

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders

LEGEND

- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
X = Number of Blows for First 6 inches.
Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
Resistance "R" < 10,000 lbs.
Resistance "R" > 10,000 lbs.
- Indicates Final Measurement of Penetration, in Inches.
- Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

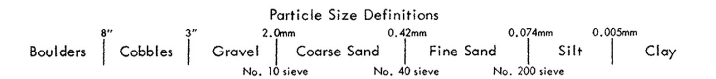
Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.



LOG OF BORING

Date Started 11-30-66 Sampler Type SS Dia. 1 3/8" Water Elev. _____
 Date Completed 12-1-66 Casing Length 19' Dia. 3 1/2" Surface Elev. 1143.5'
 Boring No. B-4 Station & Offset 4+28, 16' Rt. (Rear Pier)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.				
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
1143.5	0																	
	2																	
	4																	
1138.5	6	9/12			Brown Sandy Gravelly Silt and Boulders	1	34	6	12	21	27	28	10	17			A-4a	
1136.0	8	13/22			Brown Sandy Gravelly Silt	2	30	6	14	24	26	27	9	12			A-4a	
1133.5	10	11/12			Gray Sandy Gravelly Silt	3	34	10	13	23	20	23	6	12			A-4a	
1131.0	14	13/17			Gray Sandy Gravelly Silt	4	25	7	16	29	23	22	6	12			A-4a	
1128.5	16	12/14			Gray Sandy Gravelly Silt	5	33	7	13	27	20	22	6	13			A-4a	
1126.0	18	17/19			Gray Sandy Silt	6	7	4	22	46	21	NP	NP	16			A-4a	
1123.5	20	11/13			Gray Sandy Gravelly Silt	7	30	9	13	23	25	21	4	12			A-4a	
1121.0	22				TOP OF ROCK													
	24		1.4	0.1														
	26				Shale, gray, firm, slightly arenaceous in upper 8', argillaceous and carbonaceous in remainder, badly broken, and jointed, with scattered 0.2' intervals of argillaceous sandstone. Core Loss 6%.													
	28		4.5	0.5														
	30																	
	32																	
	34		5.0	0.0														
1108.5					BOTTOM OF BORING													

LOG OF BORING

Date Started 12-5-66 Sampler Type SS Dia. 1 3/8" Water Elev. _____
 Date Completed 12-7-66 Casing Length 26' Dia. 3 1/2" Surface Elev. 1142.5'
 Boring No. B-7 Station & Offset 5+92, 16' Lt. (Forward Pier)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.				
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
1142.5	0																	
	2																	
	4																	
1137.5	6	12/20			Brown Sandy Silt	1	0	12	18	48	22	25	8	20			A-4a	
1135.0	8	20/30			Brown Sandy Silt	2	0	8	19	33	40	20	2	15			A-4a	
1132.5	10	12/17			Gray Sandy Silt	3	0	13	18	31	38	23	7	14			A-4a	
1130.0	14	15/22			Gray Silt	4	0	5	12	42	41	23	5	20			A-4a	
1127.5	16	30/39			Gray Silt	5	0	2	12	62	24	NP	NP	16			A-4b	
1125.0	18	27/35			Gray Silt	6	0	1	2	61	36	NP	NP	29			A-4b	
1122.5	20	8/9			Gray Silt	7	0	1	1	71	27	NP	NP	26			A-4b	
1120.0	24	10/10			Gray Silt	8	0	0	1	76	23	NP	NP	23			A-4b	
1117.5																		
1116.5	26	21/45			Gray Sandy Silt with Stone Fragments	9	25	6	13	37	19	NP	NP	11			A-4a	
	28				TOP OF ROCK													
	30		1.3	2.7														
	32				Shale, gray, generally firm, non-fissile, with thick clay seams above 30.0' depth, arenaceous with fine-grained sandstone laminae, badly broken and jointed. Core Loss 2%.*													
	34		4.3	0.7														
	36																	
	38		5.0	0.0														
1102.5	40				BOTTOM OF BORING													

*High Core Loss due to mechanical difficulties between 26.0' and 30.0'.

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of any plans governing construction of the project.

**OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY**
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

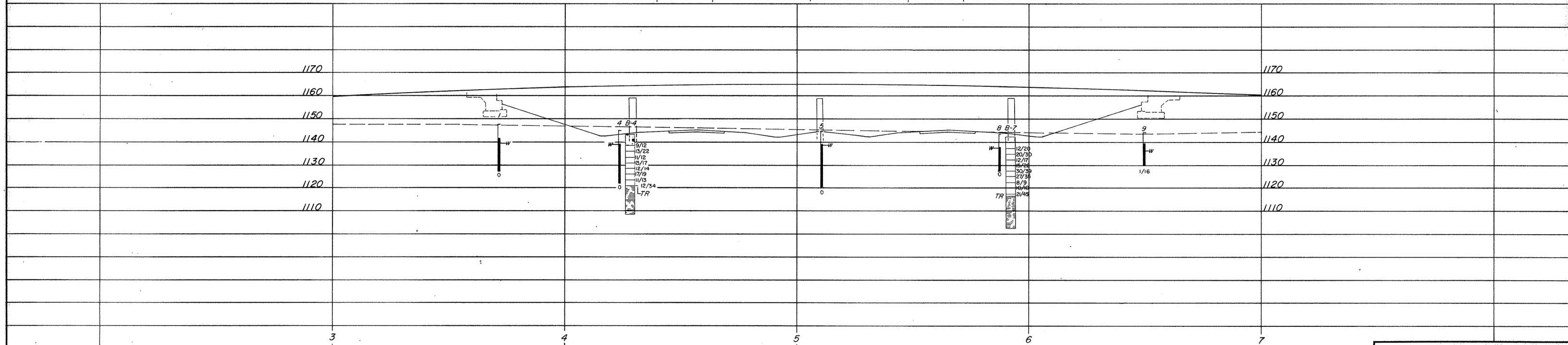
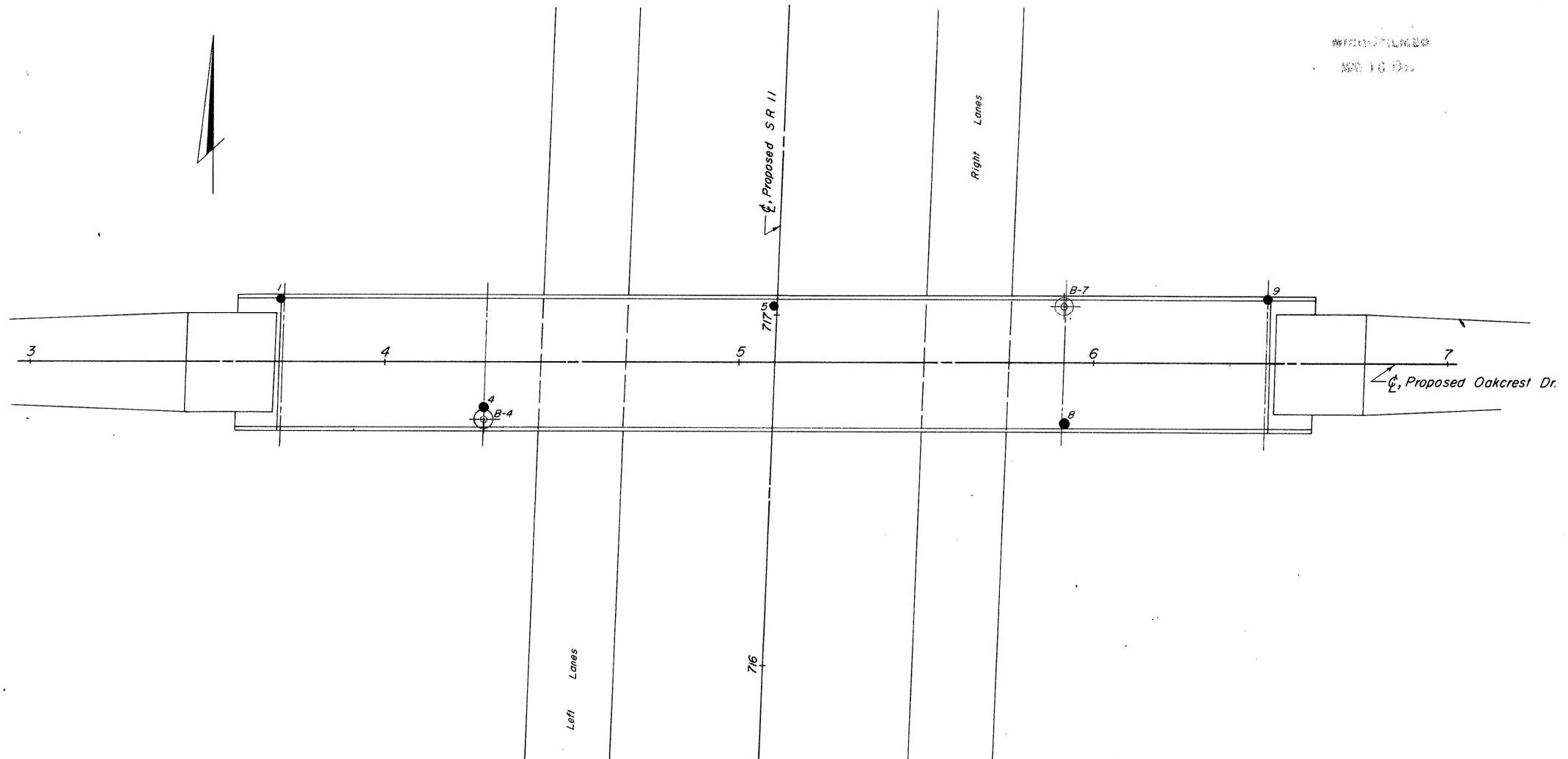
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. MAH-11-1327
UNDER OAKCREST DR.
SEC. MAH-11-8.70

CHECKED BY L.N.L. REVIEWED BY R.D.R. DATE 12/23

APPROVED
MAY 16 1960

MAH-II-13.60

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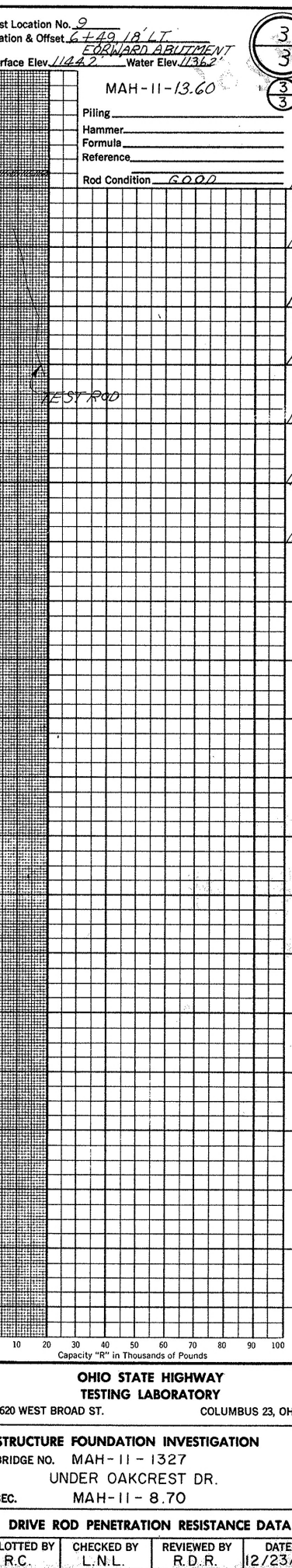
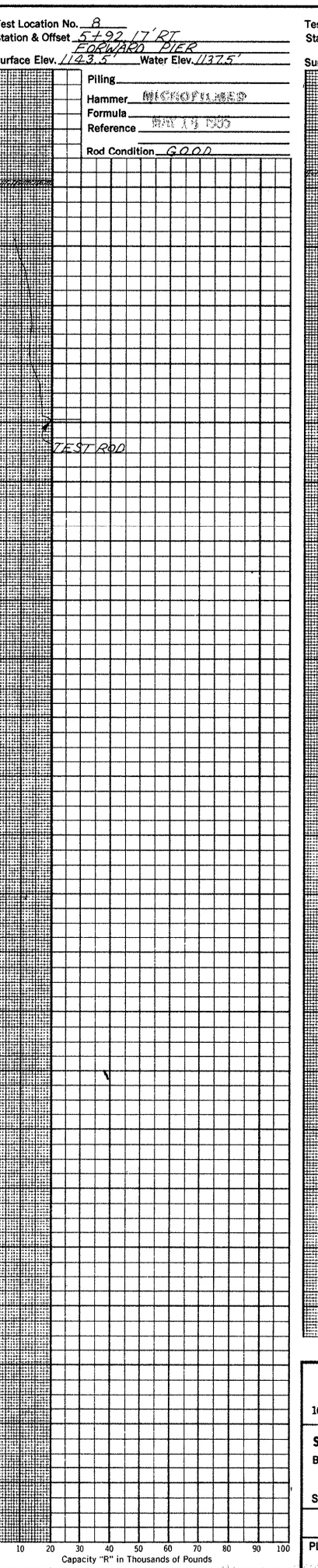
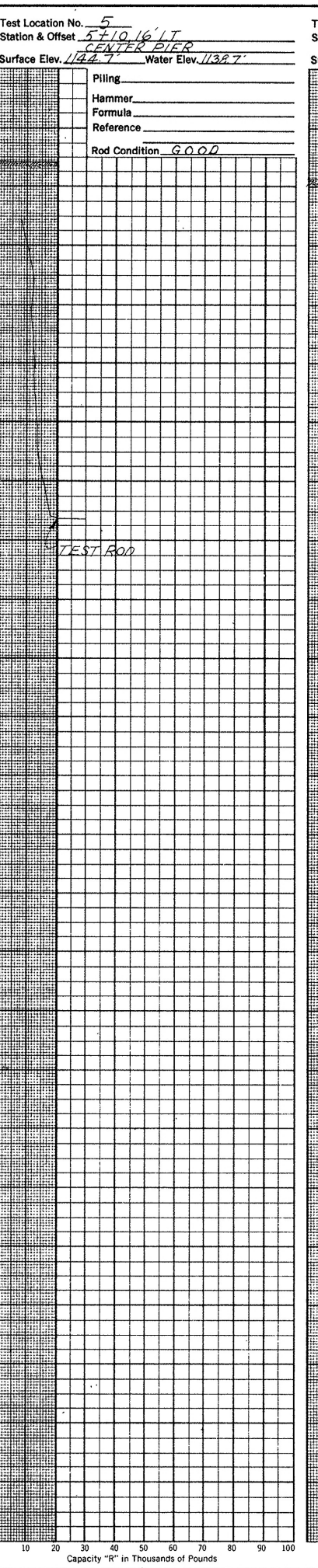
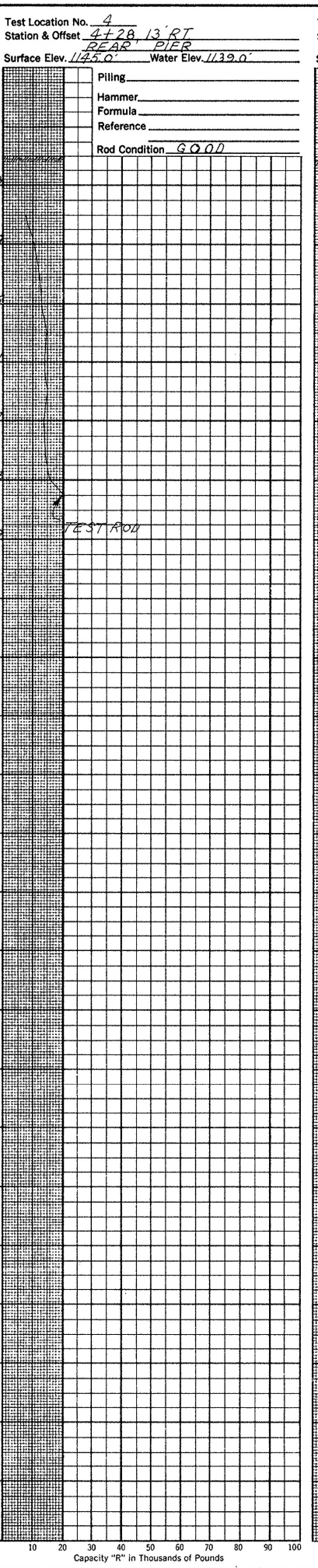
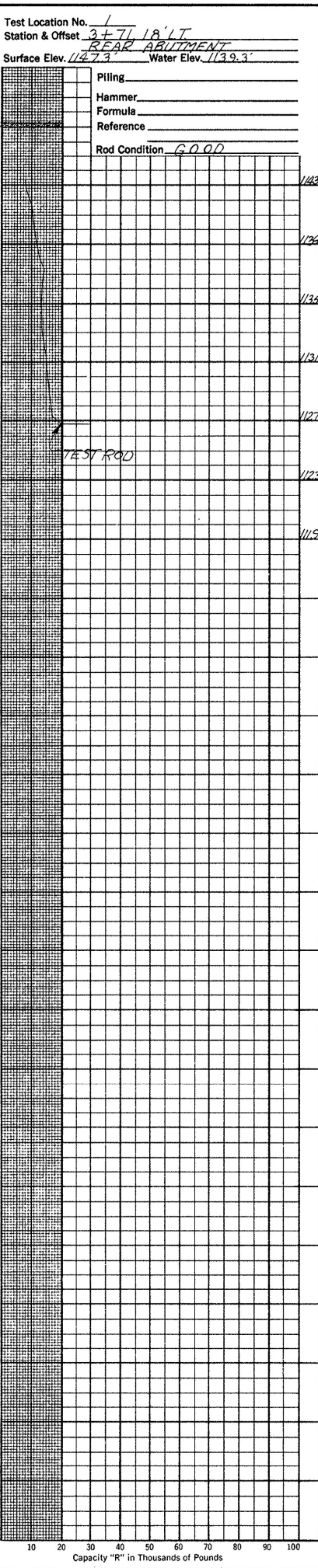
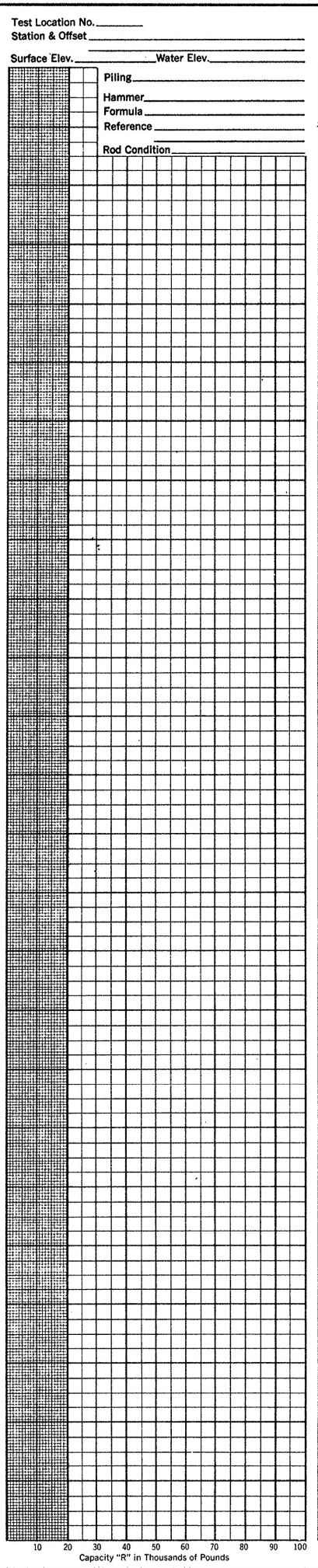
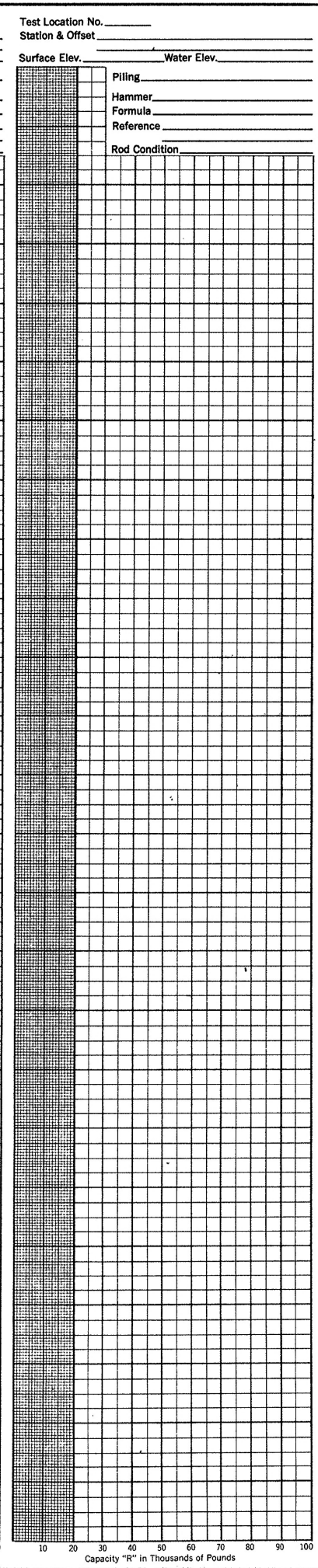
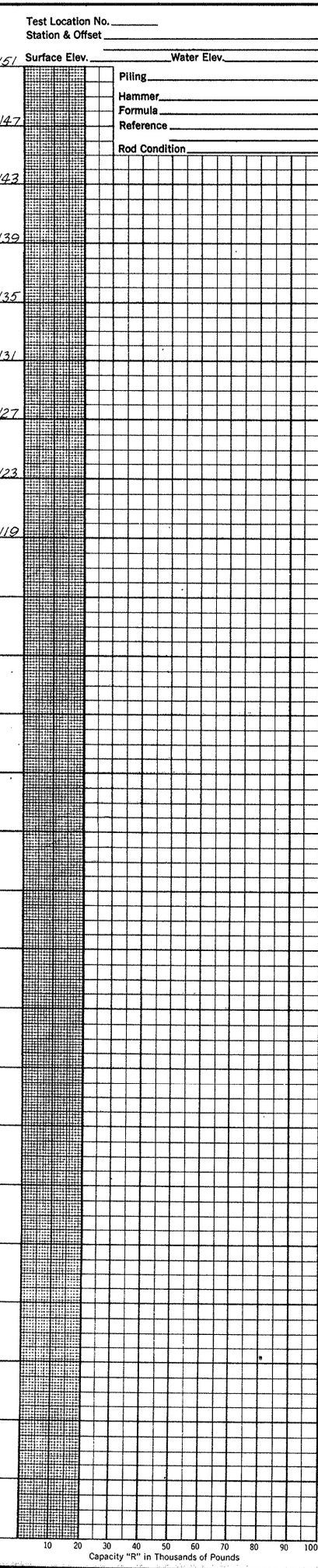
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. MAH-II-1327
UNDER OAKCREST DR.
SEC. MAH-II-8.70

PLAN AND PROFILE

DRAWN BY R.L.D.	CHECKED BY L.N.L.	REVIEWED BY R.D.R.	DATE 12/23/59
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SCALE: 1" = 20'



OHIO STATE HIGHWAY TESTING LABORATORY
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STRUCTURE FOUNDATION INVESTIGATION
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DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY R.C. CHECKED BY L.N.L. REVIEWED BY R.D.R. DATE 12/23

3
3
3