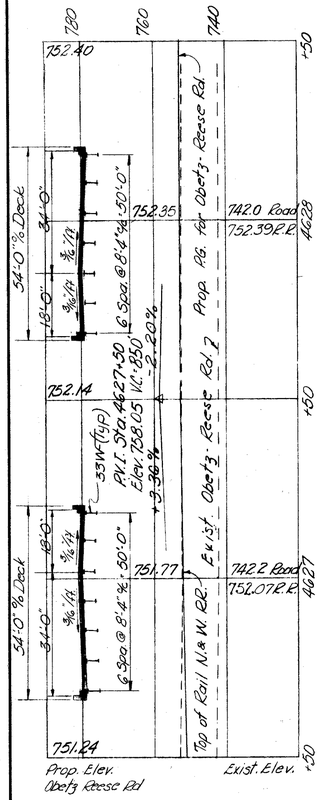
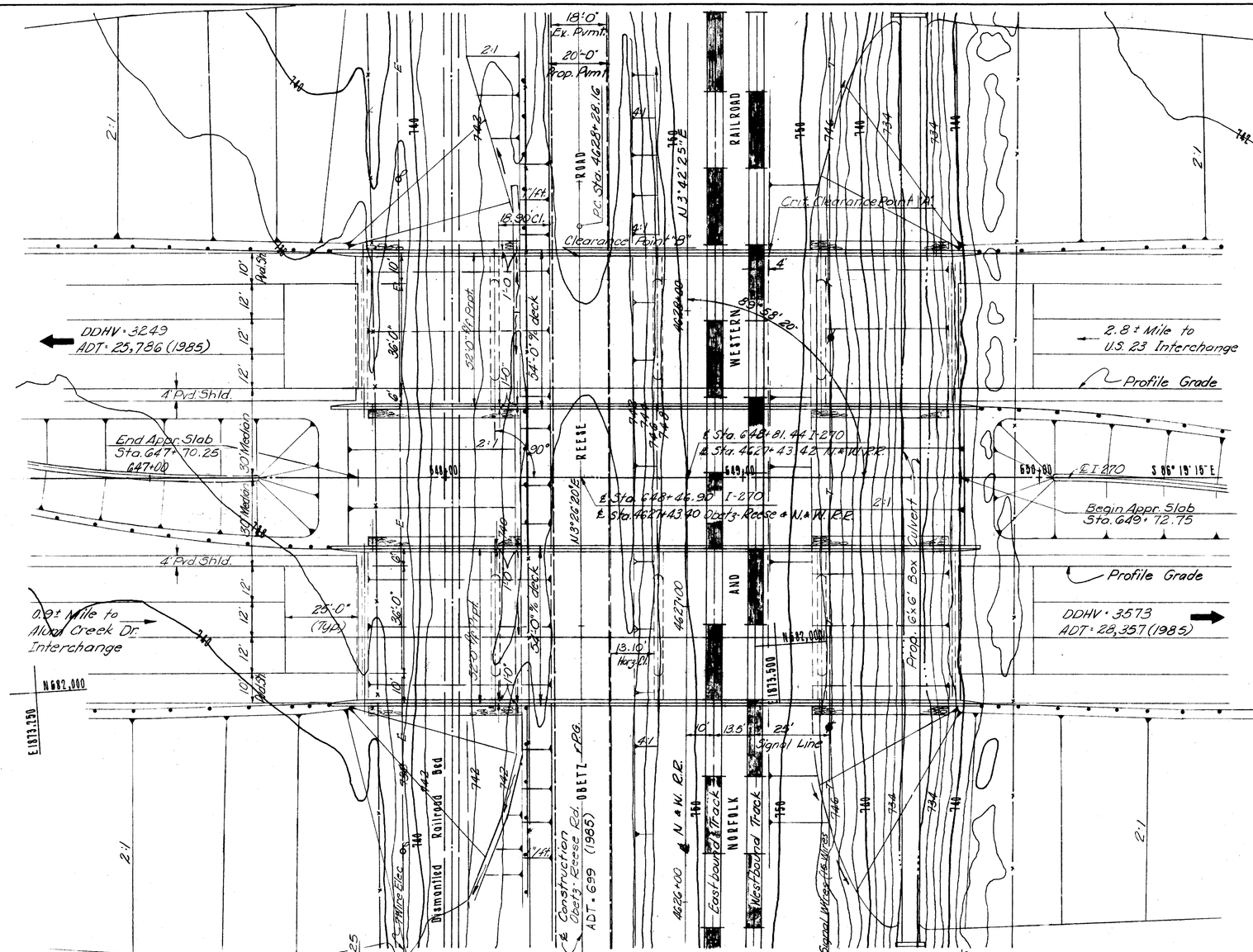
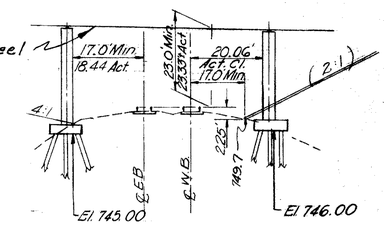
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

282/332

FRANKLIN COUNTY FRA-270-11.59 S.





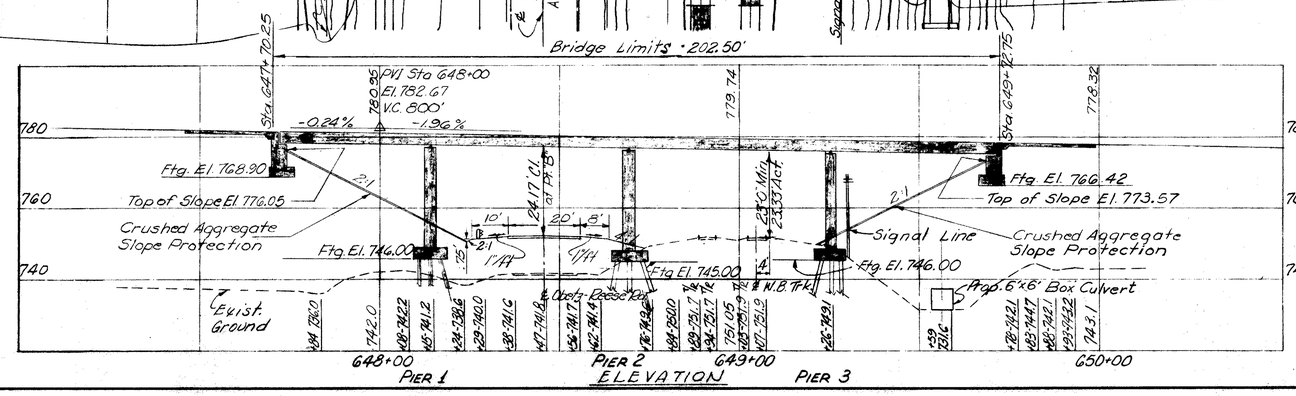


Rail Clearance Diagram

Daily Traffic Pattern
2- Passenger trains @ 78 mph
16- Freight trains @ 65 mph

PROPOSED STRUCTURE

TYPE: 4 Span Continuous Steel Beams with reinforced concrete deck and substructure.
SPANS: 44'-0", 55'-0", 55'-0", 44'-0" ℄ brgs.
ROADWAY: 2@52'-0" ft of parapets
LOAD FREQUENCY: CF = 2000 (57) Adequate for AASHO alternate loading.
SKEW: None
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLAB: AS-1-54 (25' long)
ALIGNMENT: Tangent



ELEVATION

PILING:- 12" reinforced cast-in-place concrete piles.
Estimated average pay length:
Pier 1 — (Left - 45 ft. / Right - 30 ft.)
Pier 2 — (Left - 20 ft. / Right - 25 ft.)
Pier 3 — (Left - 25 ft. / Right - 25 ft.)

B.M. 1 ℄ I-270 Sta. 641+70, 353' Lt. R.R. Spike root N. side 36" Hackberry
Elev. 738.843

B.M. 2 ℄ I-270 Sta 652+35, 270' Rt. R.R. Spike N. side 12" Elm
Elev. 745.149

DE LEUW, CATHER & BRILL
CONSULTING ENGINEERS
NEW YORK, N.Y. • COLUMBUS, OHIO • BUFFALO, N.Y.

SITE PLAN

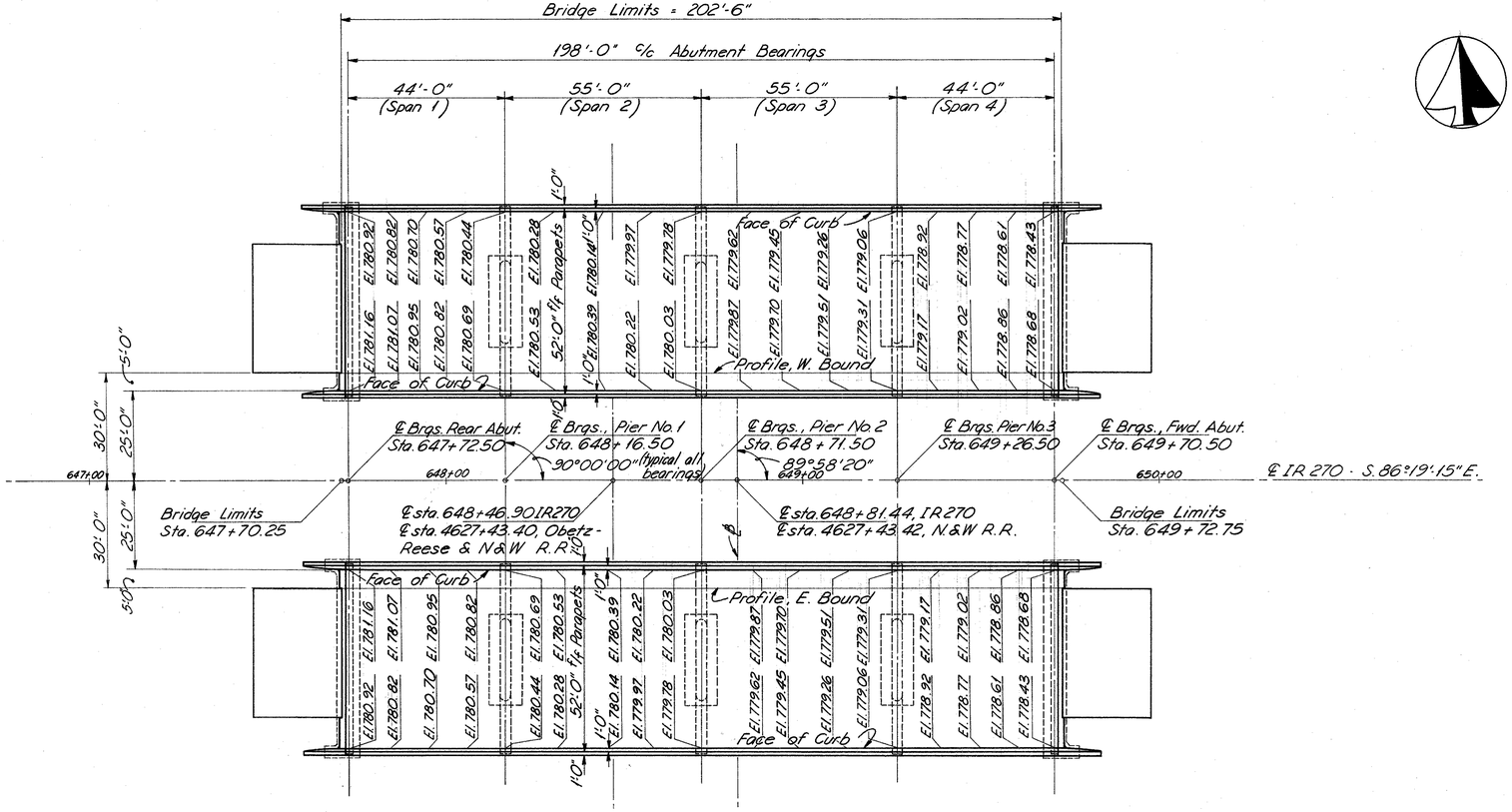
BRIDGE NO. FRA-270-1372S Lt. & Rt.
OVER OBETZ-Reese Rd. &
NORFOLK & WESTERN R.R.
FRANKLIN COUNTY
COLUMBUS OUTERBELT
649+70.25
STA. 649+12.75
SCALE 1" = 20'

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.M.	V.N.	V.L.F.	[illegible]	MM WER 8-16-66		

FED ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

283
332

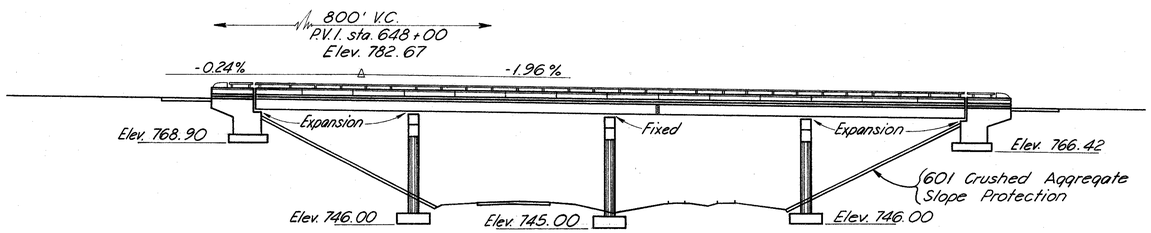
FRANKLIN COUNTY
FRA-270-11.59 S.



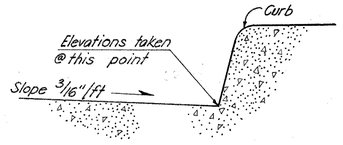
GENERAL PLAN

Note: Elevations shown on plan are face of curb elevations before deck concrete is placed. See detail below. Elevations are taken at the quarter points of each span.

Note: For approach slab details see Standard Drawing AS-1-54.



GENERAL ELEVATION



ELEVATION POINT DETAIL

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

GENERAL PLAN
BR. NO. FRA-270-1372 S. L & R
IR 270 OVER OBETZ REESE R.D. AND NORFOLK & WESTERN R.R.

FRANKLIN COUNTY — 647+70.25 STA. 649+72.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
RWJ	D.W.		KED	WCR 3-16-66	

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

284
332

FRANKLIN COUNTY
FRA-270-11.59 S.

BR. No. FRA-270-1372 S. L & R ESTIMATED QUANTITIES (both bridges)

Item	Total	Unit	Description	Super.	Abut.	Piers	Gen.
503	Lump	Sum	Cofferdams, cribs & sheeting				Lump
503	1030	Cu. Yd.	Unclassified excavation		570	460	
505	Lump	Sum	First test pile				Lump
506	Lump	Sum	First test pile load				Lump
506	1	each	Subsequent pile test load				1
507	3060	lin. ft.	Steel piles, 12BP53			3060	
			12" cast-in-place reinforced concrete piles				
509	301,507	lbs.	Reinforcing Steel	205,212	18,284	78,011	
511	640	cu. yd.	Class "C" concrete, superstructure	640			
511	538	cu. yd.	Class "C" concrete, piers above footings			538	
511	277	cu. yd.	Class "E" concrete, abutments above footings		277		
511	273	cu. yd.	Class "E" concrete, footings		119	154	
513	462,000	lbs.	Structural Steel	462,000			
514	462,000	lbs.	Field painting of structural steel	462,000			
517	893.33	lin. ft.	Bridge Railing, Type 1	800.00	93.33		
518	107	cu. yd.	Porous backfill		107		
518	184	lin. ft.	6" perforated helical C.M.P. 707.06 incl. specials		184		
518	192	lin. ft.	6" helical C.M.P. 707.06 non-perforated		192		
518	30	each	Scuppers, including supports	30			
601	1,450	Sq. Yd.	Crushed aggregate slope protection.				1,450
808	640	Units	Water-reducing, set-retarding admixture	640			
825	2695	Sq. Yd.	Concrete Surface Treatment	2597	98		
828	200	lin. ft.	Joint Sealer (end dam)	200			

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

REFERENCE shall be made to Standard Drawings:
SD-1-65 dated 11-8-65, sh. 1, 2&3

BR-1-65, sht. 1, revised 11-24-65.
AS-1-54, revised 8-10-65
and to Supplemental Specifications 808 dated 2-7-66, 811 dated 3-29-65, 825 dated 4-22-65 and 828 dated 3-21-66.

DESIGN DATA:
Design Loading - CF 2000 (57)
Concrete Class "C" basic unit stress 1333 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 or Hard Grade. Basic unit stress 20,000 psi.

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

ALIGNING RAILROAD TRACKS: After the Contractor has completed all excavation and backfill adjacent to the railroad tracks in compliance with Sec. 503.04 and 503.09 of the Construction and Material Specifications, subject to the Supervision of the Railroad Company, nothing in Sec. 503.04, 503.09 or 108.04 of the Specifications shall be construed to hold the Contractor liable for aligning and resurfacing the railroad tracks.

CONSTRUCTION CLEARANCE of 20'-0" vertically above the top of the railroad rails and 8'-0" horizontally from the center of tracks shall be maintained at all times.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

UTILITY LINES: All expense involved in relocating 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 will be held to a minimum.

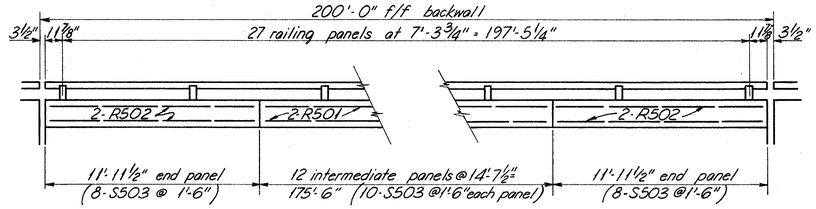
PROCEDURE: The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the sub-grade for a distance of 200 feet back of the abutments after which excavation shall be made for piers 1&3. After a 90 day waiting period excavation shall be made for the abutments. Obetz-Reese Road embankment shall be in place before the excavation is made for Piers 1 and 2

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

PILES shall be driven to a minimum bearing capacity of 47 tons per pile for the piers.

FOUNDATION BEARING PRESSURE: Abutment footings are designed for a maximum bearing pressure of 2.0 tons per sq. ft.

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



For additional details see BR-1-65, Sht. 1.

RAILING & PARAPET DETAILS

3/7

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

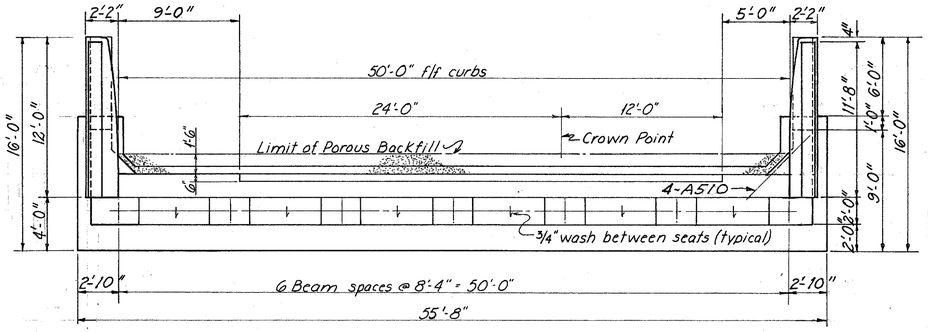
ESTIMATED QUANTITIES & GENERAL NOTES
RAILING DETAILS
BR. NO. FRA-270-1372 S. L & R
IR 270 OVER OBETZ REESE RD.
AND NORFOLK & WESTERN R.R.
FRANKLIN COUNTY STA. 647+70.25 649+72.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
DWJ	D.W.		KED	WeR 3-16-66	11-22-66

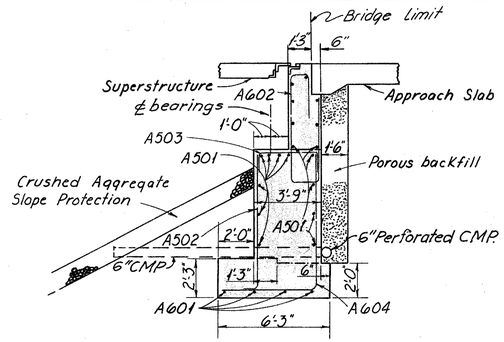
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

285
332

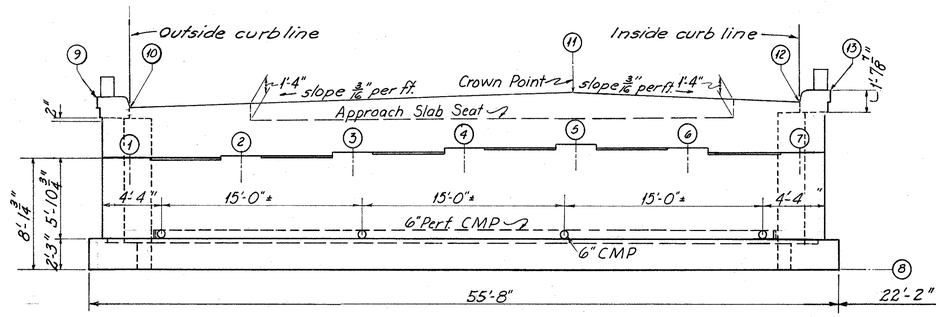
FRANKLIN COUNTY
FRA - 270 - 11.59 S

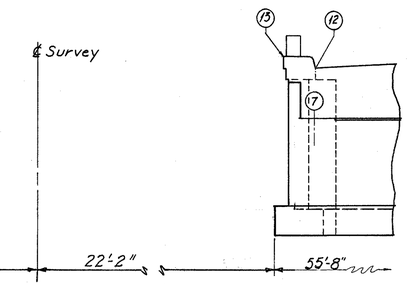


PLAN VIEW ~ TYPICAL



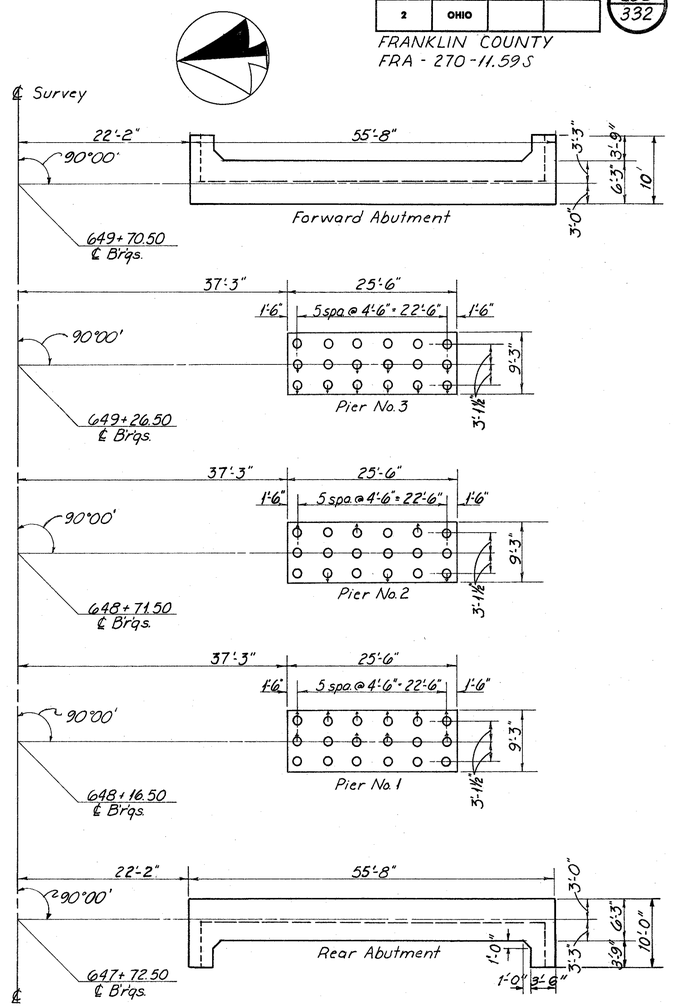
SECTION "A"



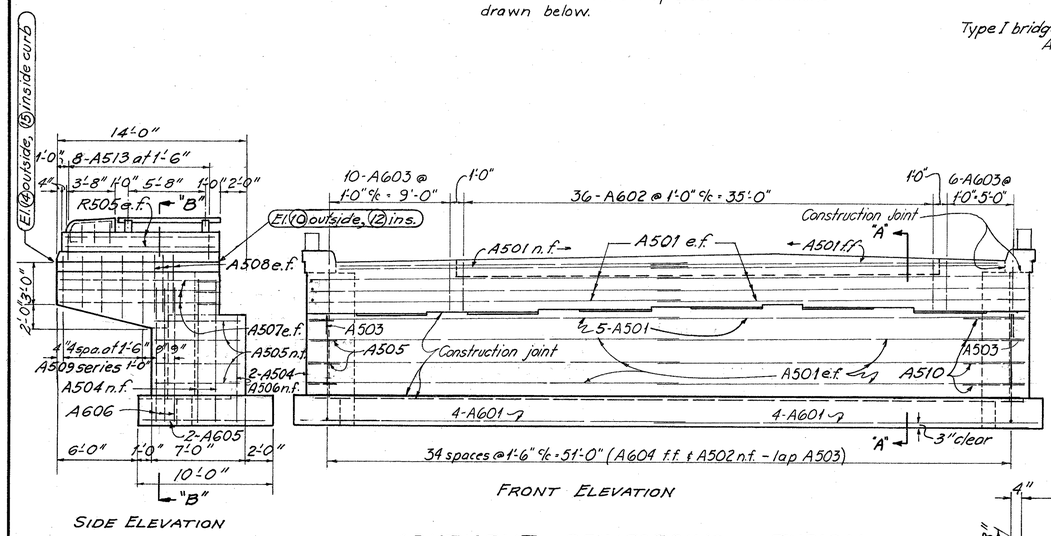


ELEVATION ~ TYPICAL

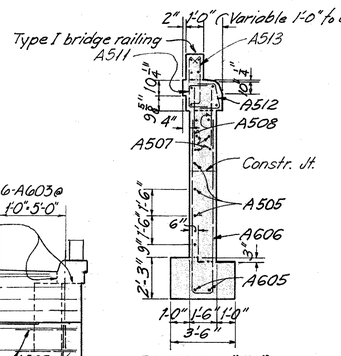
Rear Abutment - Right Bridge Shown. All others similar. For reinforcing steel see elevations drawn below.



Rear Abutment - Left Bridge



ABUTMENT REINFORCING ~ TYPICAL



SECTION "B"

PIER PILES : Pier piles shall be driven to a minimum bearing capacity of 47 tons per pile.

FOUNDATION BEARING PRESSURE : Abutment footings are designed for a maximum bearing pressure of 2.0 tons per sq. ft.

POROUS BACKFILL : Porous backfill, 1'-6" thick, full length of the abutment shall extend up to the underside of the approach slab or to the finished ground surface.

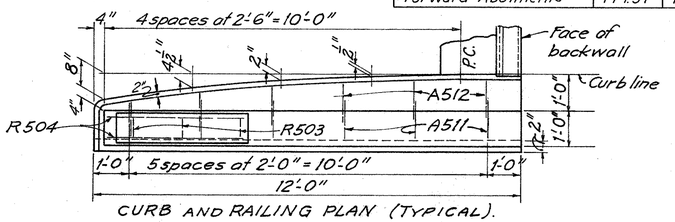
LEGEND : n.f. = near face
f.f. = far face
e.f. = each face

PILING LAYOUT AND FOOTING LOCATION

Right Bridge shown, Left Bridge opposite hand. All piles shall be 12 inch cast-in-place concrete piles. Batter all piles shown with an arrow 1:4 in the direction of the arrow. All other piles shall be vertical.

TABLE OF ELEVATIONS													
Elevation	1	2	3	4	5	6	7	8	9	10	11	12	13
Rear Abutments	777.05	777.18	777.31	777.44	777.56	777.43	777.30	768.90	781.78	780.93	781.44	781.18	782.03
Forward Abutments	774.57	774.70	774.83	774.96	775.08	774.95	774.82	766.42	779.27	778.42	778.93	778.67	779.52

Elevation	14	15
Rear	781.05	781.30
Forward	778.25	778.50



CURB AND RAILING PLAN (TYPICAL).

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

ABUTMENT DETAILS AND PILING LAYOUT
BRIDGE NO. FRA-270-1372S Lt. & Rt.
IR 270 OVER OBETZ-REESE ROAD AND NORFOLK & WESTERN R.R.
FRANKLIN COUNTY
STA. 647+70.25
STA. 649+72.75

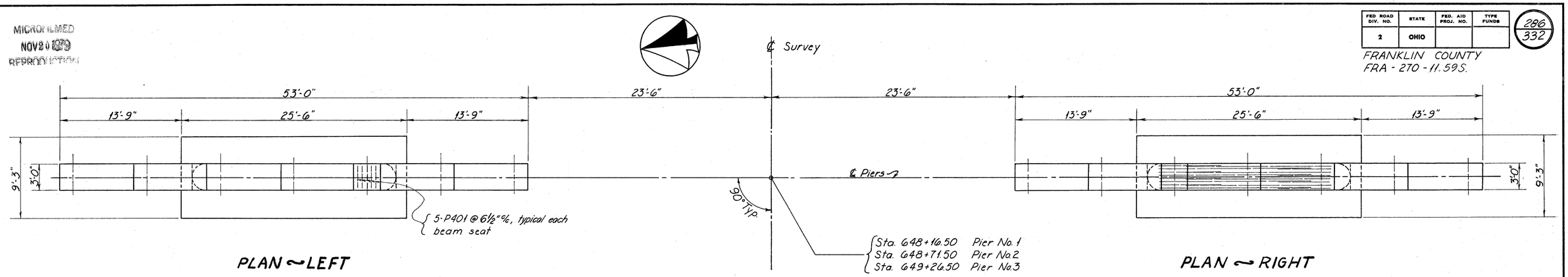
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
			KED	WER 3-16-66	

4/7

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

286
332

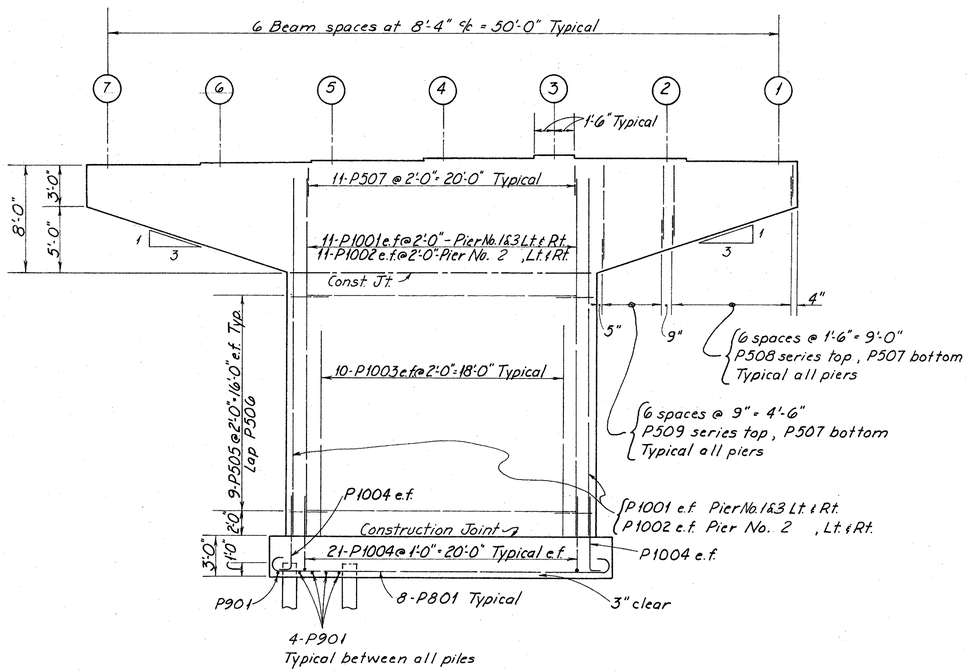
FRANKLIN COUNTY
FRA - 270 - 11.59S.



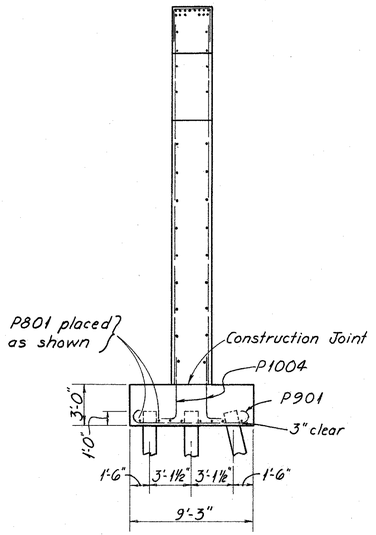
PLAN ~ LEFT

PLAN ~ RIGHT

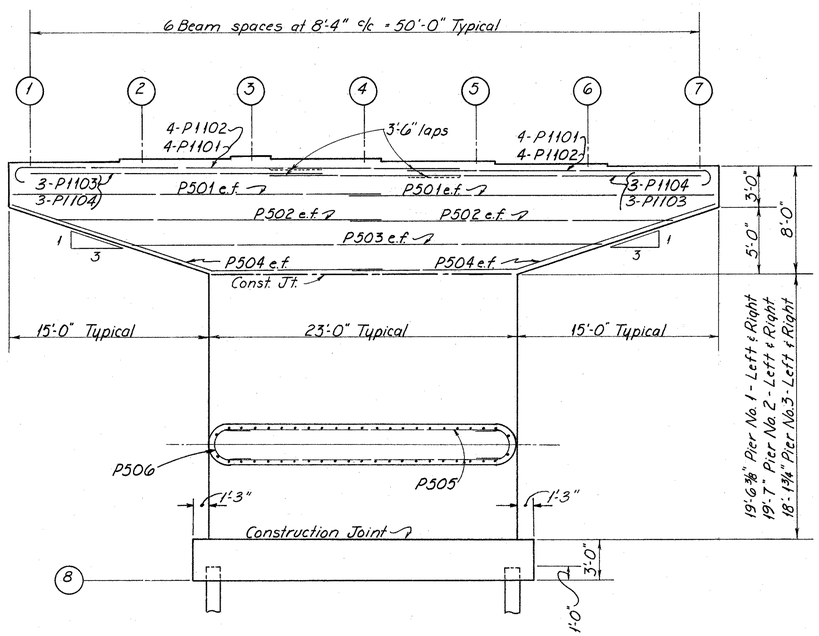
BRIDGE SEAT REINFORCING : Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of anchor bar holes.



ELEVATION ~ LEFT



END VIEW



ELEVATION ~ RIGHT

NOTE : See Sheet No. 285 for piling layout.

TABLE OF ELEVATIONS

Elevation	1	2	3	4	5	6	7	8
Pier No. 1 - Left & Right	776.78	776.91	777.04	776.92	776.79	776.66	776.53	746.00
Pier No. 2 - Left & Right	775.83	775.96	776.09	775.97	775.84	775.71	775.58	745.00
Pier No. 3 - Left & Right	775.40	775.53	775.66	775.54	775.41	775.28	775.15	746.00

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

5/7

PIER DETAILS
BRIDGE NO. FRA.-270-1372S L. & R.
IR 270 OVER OBETZ - REESE ROAD
AND NORFOLK & WESTERN R. R.

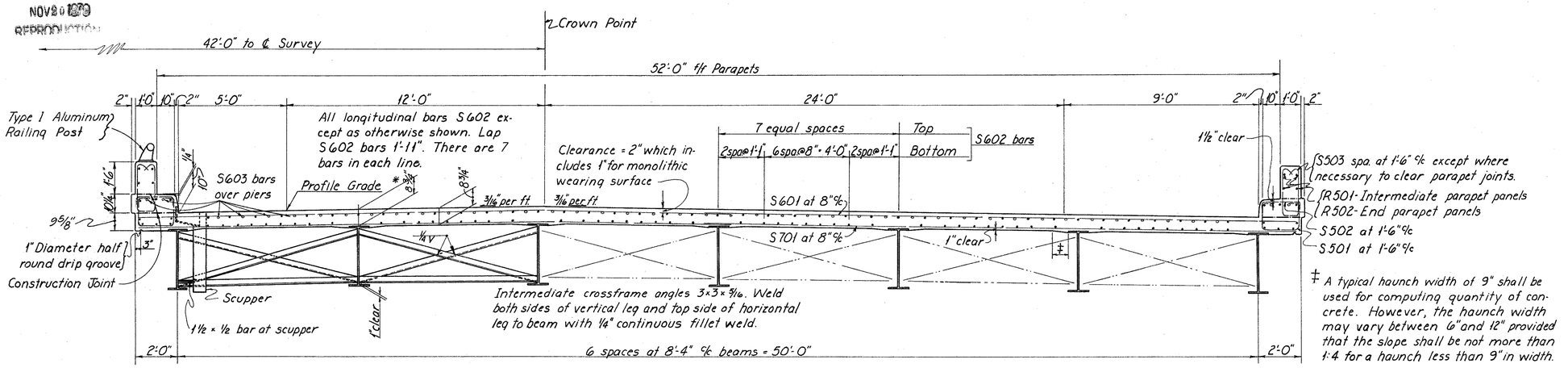
FRANKLIN COUNTY STA. 647+70.25
649+72.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
DWJ	DWJ		KED	WCR 3-16-66	

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

287
332

FRANKLIN COUNTY
FRA - 270 - 11.59 S.



- HALF TRANSVERSE SECTION -

(Right structure shown,
Left structure opposite hand.)

‡ A typical 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" in width.

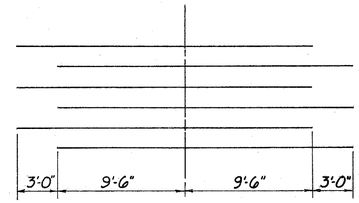


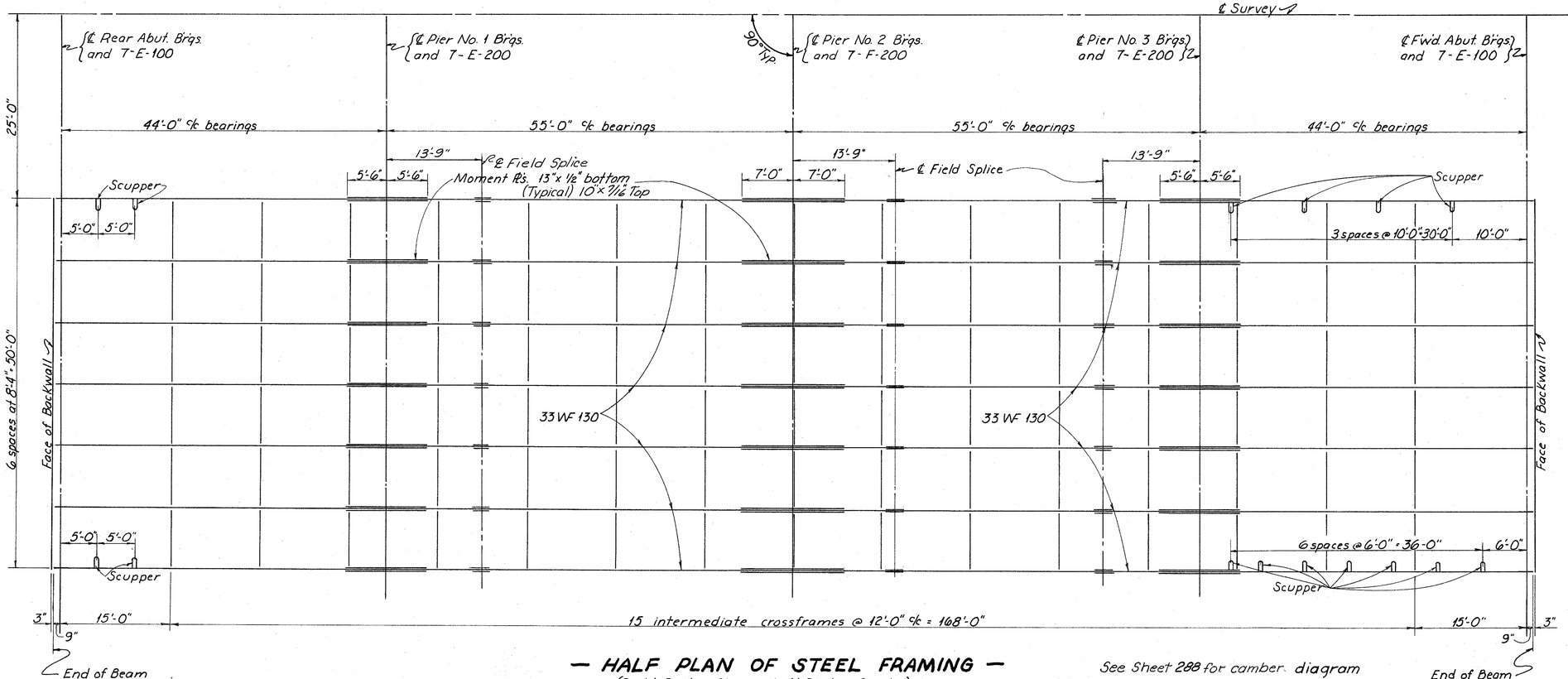
DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS

RAILING shall be aluminum with concrete parapet, Type "1", Standard Drawing BR-1-65, Sh. 1.

CONCRETE shall be class "C" f_c = 1333 psi.

MACHINE FINISH: The concrete bridge deck shall be finished by the use of a finishing machine.

SLAB THICKNESS shown includes 1" for monolithic wearing surface.



- HALF PLAN OF STEEL FRAMING -

(Right Bridge Shown, Left Bridge Similar)

See Sheet 288 for camber diagram

* This is a nomial 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.

WELDING
Any welds shown as field welds may, at the option of the Contractor, be made in the shop.

FOR DETAILS OF :	SEE STD. DWG.
Bolted Beam Splice	SD - 1 - 65 sh 3
End Dam & End Crossframes	SD - 1 - 65, sh. 1
Scuppers, Type 1	SD - 1 - 65, sh. 2
Curb Plates	SD - 1 - 65, sh. 2
Bearings	FSB - 1 - 62
Railing & Parapet	BR - 1 - 65, Sh. 1.
Moment Plates	SD-1 - 65, sh. 2

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

SUPERSTRUCTURE DETAILS
BRIDGE NO. FRA-270-1372 S Lt. & Rt.
IR 270 OVER OBETZ-REESE ROAD
AND NORFOLK & WESTERN R. R.
FRANKLIN COUNTY STA. 647+70.25 649+72.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
			KEO	WER 3-16-66	

6/7

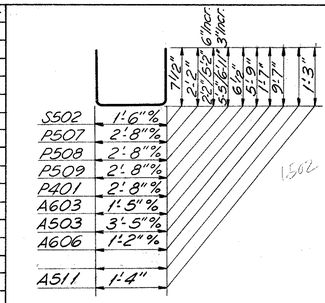
FED ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

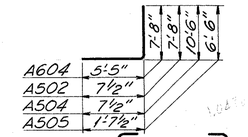
288
332

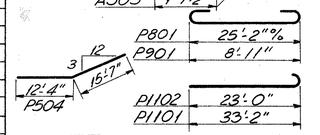
FRANKLIN COUNTY
FRA-270-11.59S.

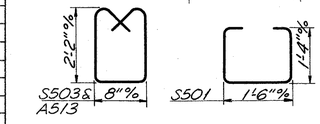
BR.No.FRA-270-13.75S. Lt.&Rt. REINFORCING STEEL LIST (both bridges)

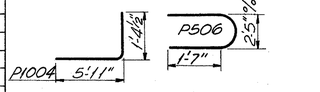
Mark	No	Length	Weight	Shape	Incr.
Superstructure					
S701	1196	28'-0"	68,449	S	
S601	1196	27'-11"	50,149	S	
S602	1554	30'-3"	70,607	S	
S603	264	22'-0"	8,724	S	
S501	532	4'-11"	2,728	B	
S502	532	2'-6"	1,387	B	
S503	544	5'-7"	3,168	B	
Piers					
P1101	48	34'-9"	8,862	B	
P1102	48	24'-7"	6,269	B	
P1103	36	21'-6"	4,112	S	
P1104	36	32'-0"	6,121	S	
P1001	104	27'-0"	12,083	S	
P1002	52	25'-8"	5743	S	
P1003	120	15'-9"	8,133	S	
P1004	276	7'-0"	8,313	B	
P901	132	11'-5"	5,124	B	
P801	48	27'-4"	3,503	B	
P501	24	27'-2"	680	S	
P502	24	24'-3"	607	S	
P503	12	35'-0"	438	S	
P504	24	27'-10"	697	B	
P505	108	20'-0"	2,253	S	
P506	108	7'-0"	789	B	
P507	234	6'-9"	1647	B	
P508	~~12 sets~~ 7	~~6'-9"~~ 12'-9"	854	B	12"
P509	~~12 sets~~ 7	~~13'-3"~~ 16'-3"	1292	B	6"
P401	210	3'-6"	491	B	

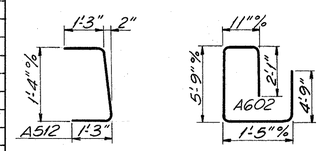










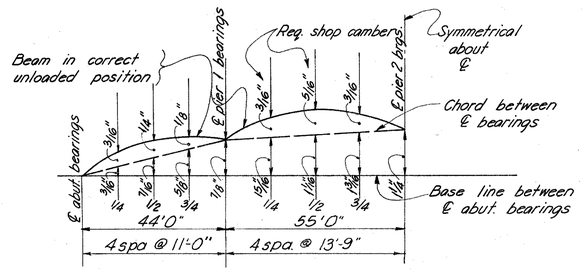


*See Std. Drawing BR-1-65 for details

Mark	No	Length	Weight	Shape	Incr.
Abutments					
A601	32	28'-8"	1378	S	
A602	144	14'-3"	3,082	B	
A603	64	12'-7"	1,210	B	
A604	140	12'-11"	2,716	B	
A605	16	9'-6"	228	S	
A606	24	20'-0"	721	B	
A501	152	27'-6"	4,360	S	
A502	140	8'-2"	1193	B	
A503	140	6'-4"	925	B	
A504	16	11'-0"	185	B	
A505	32	8'-0"	267	B	
A506	8	7'-8"	64	S	
A507	48	11'-8"	584	S	
A508	48	4'-6"	225	S	
A509	~~8 Sets~~ 5	~~5'-2"~~ 3'-6"	181	S	5"
A510	32	7'-0"	234	S	
A511	48	3'-7"	179	B	
A512	48	3'-7"	179	B	
A513	64	5'-7"	373	B	
Railing					
R501	192	14'-3"	To be included with railing for payment	S	
R502	32	11'-7"		S	
R503	24	4'-2"		B*	
R504	16	5'-4"		B*	
R505	32	11'-4"		S	
Replacement Bars					
RE1101	2	7'-6"		S	
RE1001	2	7'-2"		S	
RE901	1	6'-10"		S	
RE801	1	6'-6"		S	
RE701	4	6'-2"		S	
RE601	7	5'-11"		S	
RE501	2	5'-7"		S	
RE401	1	5'-3"		S	

DEFLECTION & CAMBER TABLE (in inches)

Description	SPAN 1			SPAN 2		
	1/4	1/2	3/4	1/4	1/2	3/4
Deflection due to weight of steel	.022	.026	.012	.021	.034	.019
Deflection due to remaining dead load	.133	.155	.071	.124	.199	.113
Adjustment required for vertical curve	.047	.062	.047	.073	.098	.073
Sum	.202	.243	.130	.218	.331	.205
Required shop camber	3/16"	1/4"	1/8"	3/16"	5/16"	3/16"



LAYOUT DIAGRAM

BURGESS & NIPLE LIMITED — CONSULTING ENGINEERS
COLUMBUS 12, OHIO

REINFORCING STEEL LIST
BR. NO. FRA-270-13.72 S L&R
IR 270 OVER OBETZ REESE R.D.
AND NORFOLK & WESTERN R.R.

647+70.25
FRANKLIN COUNTY STA. 649+72.75

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
AWJ	D.W.		KED	WER 3-16-66	

7/7