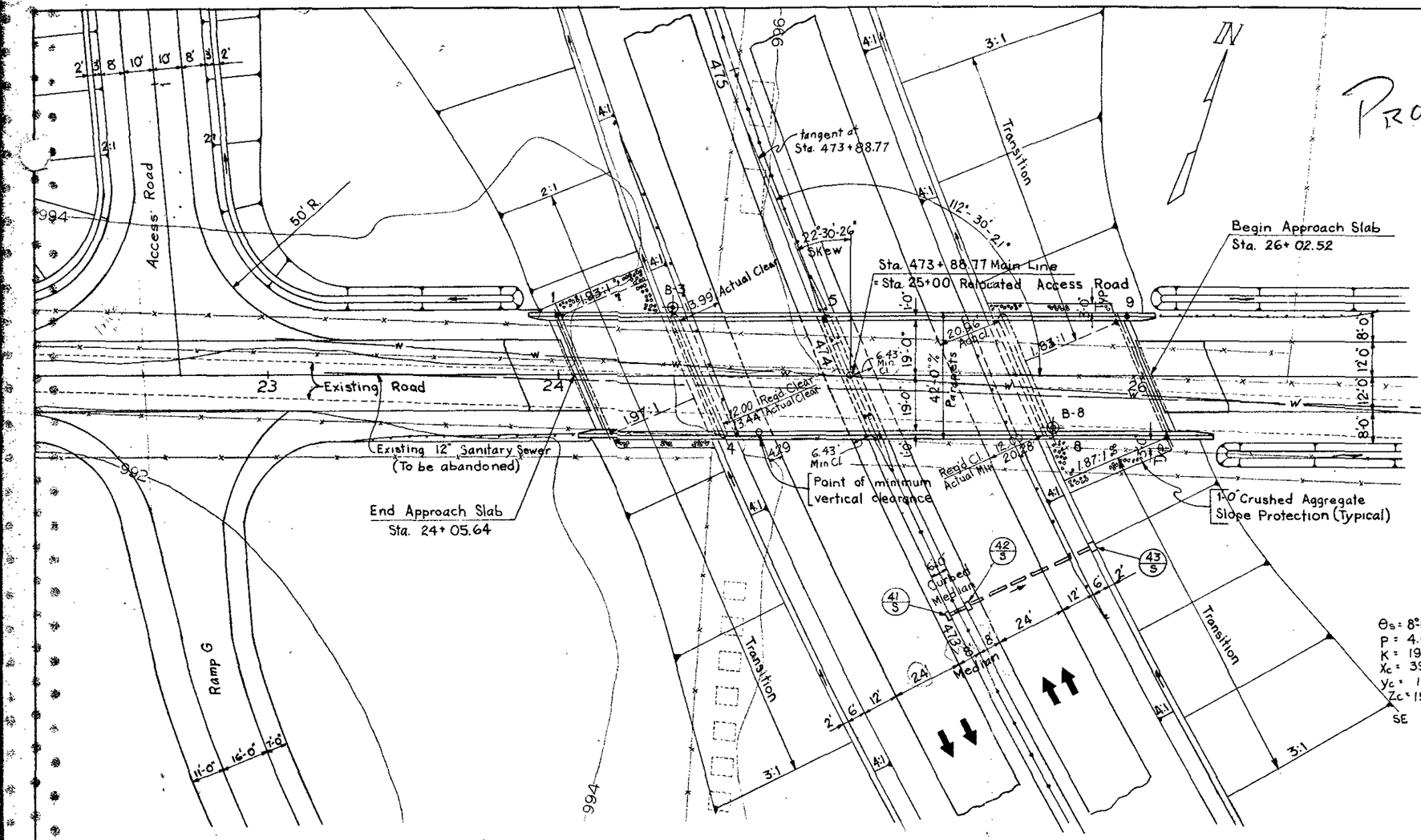
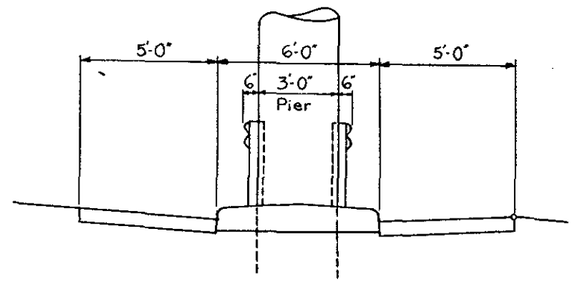
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

205

STARK COUNTY
STA-21-8.40

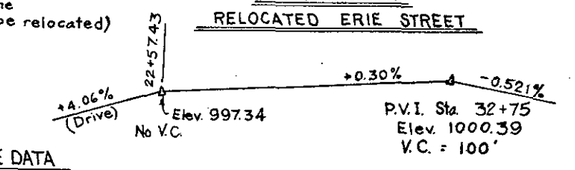
PROJ. 286(68)





GUARD RAIL TREATMENT AT CENTER PIER

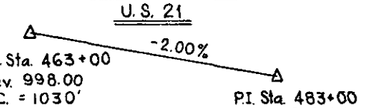
GRADE DATA
RELOCATED ERIE STREET



U.S R. 21 CURVE DATA

PI Sta 480 +18.02
Δ = 76°-19'-30" Rt
D = 4°-00'
R = 1432.39
Ls = 400
Θ_s = 8°00'-00"
P = 4.65
K = 199.87
X_c = 399.22
y_c = 18.59
Z_c = 1508.12
SE .083%
LT = 266.94
ST = 133.58
LC = 399.65
Ts = 1329.19
E_s = 394.98
Δ_c = 60°-19'-30"

GRADE DATA
U.S. 21

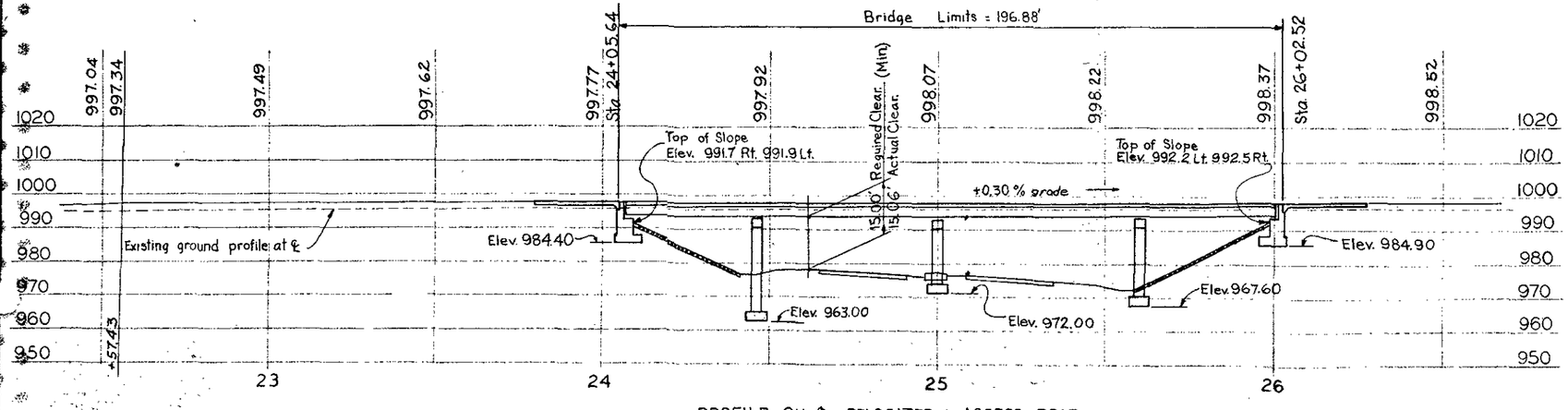


PROPOSED STRUCTURE

TYPE: Continuous steel beams with reinforced concrete deck and substructure.
SPANS: 41'-51'-59'-41' % Bearings
ROADWAY: 40'-0" % parapets including 1'-0" curbs.
LOAD FREQUENCY: CF = 400(57)
SKEW: 22°-30'-26" Right Forward
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-67 25' Long
ALIGNMENT: Tangent

LEGEND

● · Drive Rod Sounding
⊕ · Core Boring



PROFILE ON ℄ RELOCATED ACCESS ROAD

1980 A.D.T. = 1300

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

SITE PLAN 0898
BRIDGE NO STA-21-0915
RELOCATED ERIE STREET
OVER U.S. 21
Sta 473+88.77

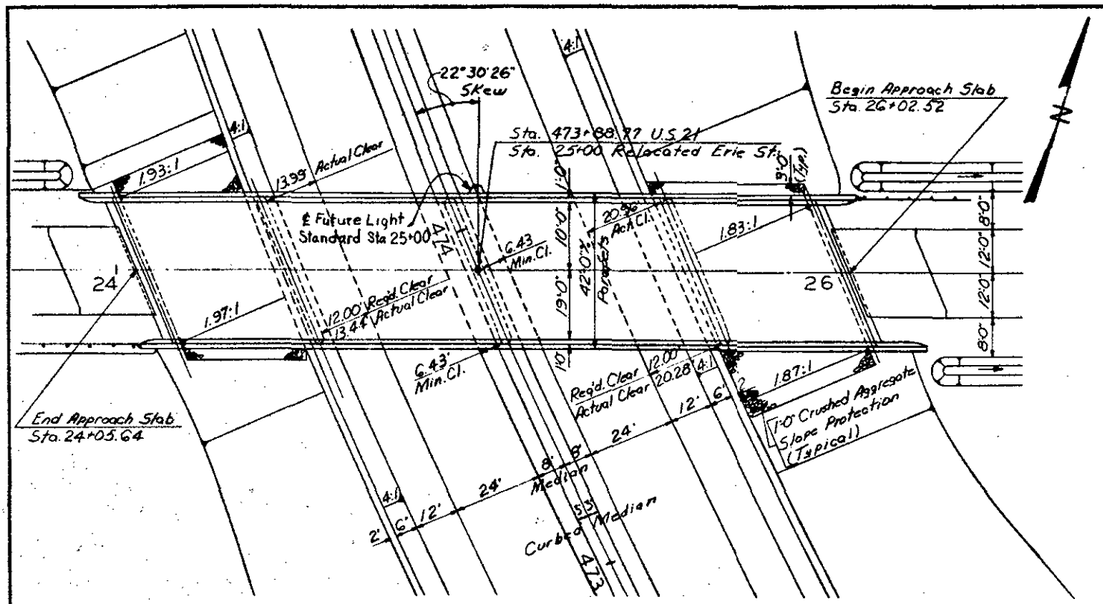
PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Aerial Survey	FWM	EAM	FWM	DWP	L.G.H. 9-5-67

STA-21-0898

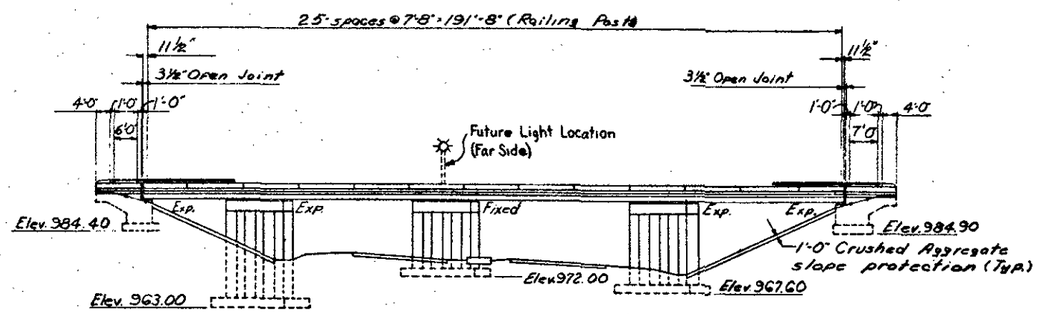
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
5	OHIO		

206

STARK COUNTY
STA. 21-8.40



PLAN



ELEVATION

GENERAL NOTES

- DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57 together with current revisions thereof.
- REFERENCE: shall be made to Standard Drawings AS-1-67 revised 1-11-68 RB-1-55 revised 2-2-59, BR-1-65 revised 11-24-65, SD-1-65 dated 11-8-65, and to Supplemental Specifications 808 dated 1-13-67, 811 dated 1-1-67, 825 dated 12-19-67, 828 dated 1-1-67, 832 dated 5-25-67 and 931 dated 5-25-67.
- FOUNDATION BEARING PRESSURE: Pier footings are designed for a maximum bearing pressure of 2.0 tons per square foot. Abutment footings are designed for a maximum bearing pressure of 1.6 tons per square foot.
- 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.
- DESIGN LOADING: C. F. = 400 (57)

Concrete, Class 'C' - Basic unit stress, 1,333 p.s.i.
Concrete, Class 'E' - Basic unit stress, 1,133 p.s.i.
Structural Steel - A.S.T.M. A36 basic unit stress 20,000 p.s.i.
Reinforcing Steel - A.S.T.M. A15, A16, A-160, Deformed, Intermediate or hard grade. Basic unit stress 20,000 p.s.i. Except spiral reinforcement may be plain. Structural grade with basic unit stress of 18,000 p.s.i.

WELDING of secondary stress carrying members is shown thus: S
PAINTING of structural steel shall be in accordance with Supplemental Specification 832.
WELDED ATTACHMENTS: No attachments shall be made by welding to the top flanges of the beams within a distance of 0.10 of the span length on either side of the interior supports. Welding for attachments to the top flanges at other parts of the spans shall be kept at least 2" from edge of flange.

ESTIMATED QUANTITIES — Rural

Item	Total	Unit	Description	Superstr.	Abuts.	Piers	General
503	Lump Sum	L.S.	Cofferdams, cribs & sheeting				Lump Sum
503	674	Cu. Yds.	Unclassified excavation		300	374	
509	110,204	Lbs.	Reinforcing steel	73,923	9,856	26,425	
511	244	Cu. Yds.	Class 'C' concrete, superstructure	244			
511	108	Cu. Yds.	Class 'C' concrete, pier caps and columns			108	
511	90	Cu. Yds.	Class 'E' concrete, pier footings			90	
511	182	Cu. Yds.	Class 'E' concrete, abutments		182		
513	175,700	Lbs.	Structural steel	175,700			
832	175,700	Lbs.	Field painting of structural steel	175,700			
517	441.17	Lin. Ft.	Bridge Railing Type 1	387.17	54		
518	46	Cu. Yds.	Porous backfill		46		
518	10	Each	Scuppers including supports	10			
518	70	Lin. Ft.	6" perforated helical C.M.P. including specials 707.06		70		
518	71	Lin. Ft.	6" non-perforated helical CMP 707.06		71		
601	534	Sq. Yds.	Crushed aggregate slope protection		534		
625			Electric lighting system (partial) See Sheet 195 for lighting quantities & description				
808	244	Units	Water-reducing set-retarding admixture	244			
825	1049	Sq. Yds.	Concrete Surface treatment	1002	47		
828	83	Lin. Ft.	Joint sealer (end dam)	83			

Estimated Quantities: Computed by JCH 3-6-67
Checked by DWP 3-9-67

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

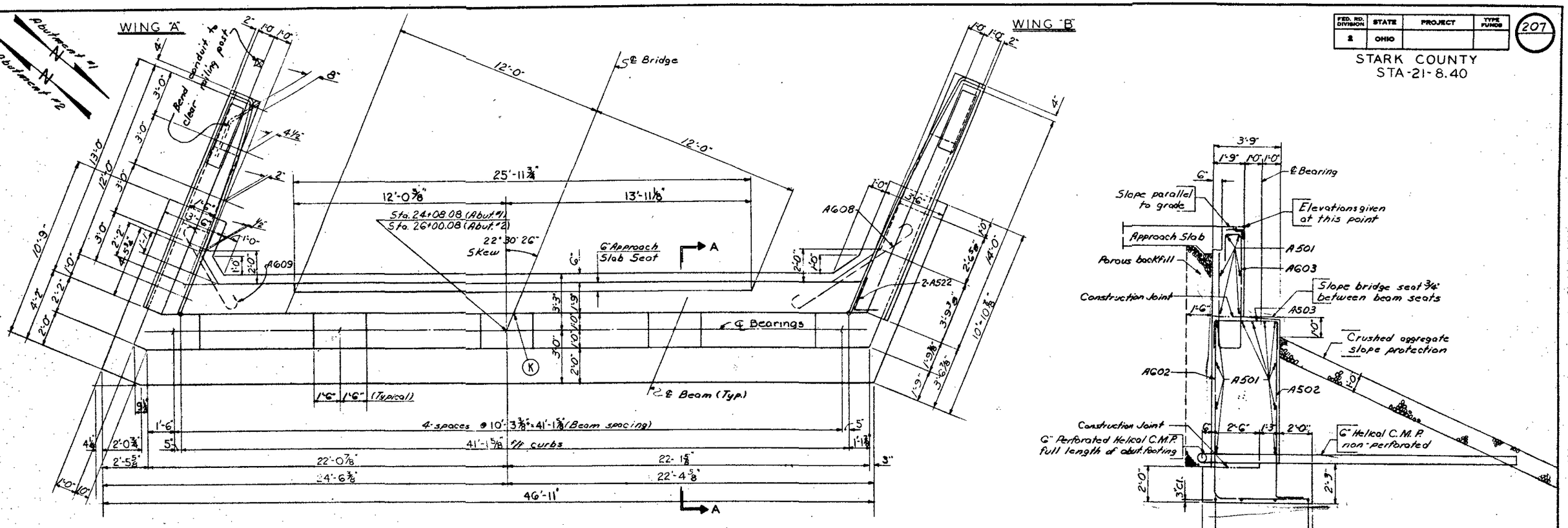
GENERAL PLAN & ELEVATION
NOTES, ESTIMATED QUANTITIES
BRIDGE NO. STA. 21-0915
RELOCATED ERIE STREET
OVER U.S. 21
STA. 473+88.80

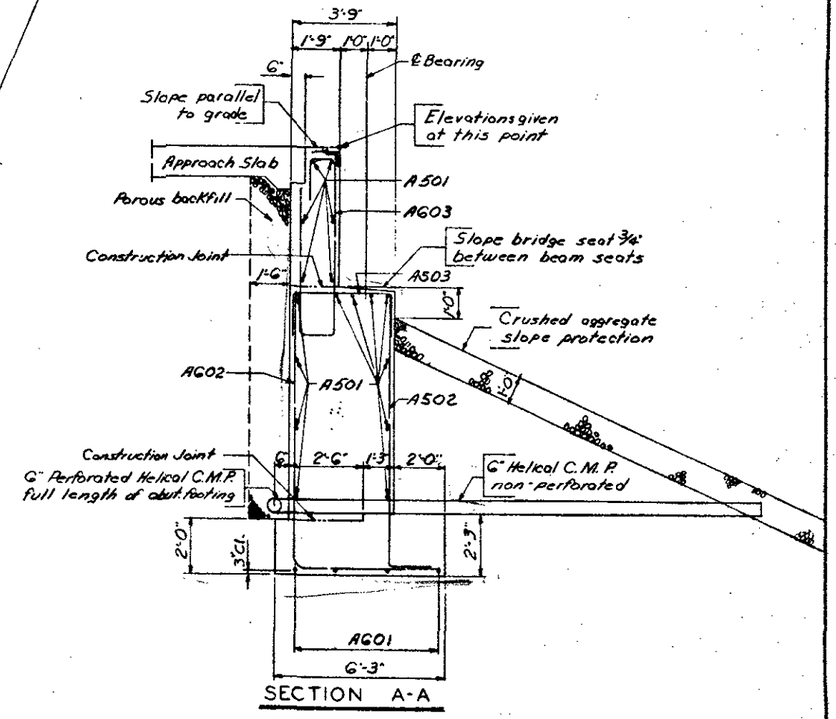
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
DWP JCH	RJP		DWP	L.G.H. 9-5-67	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

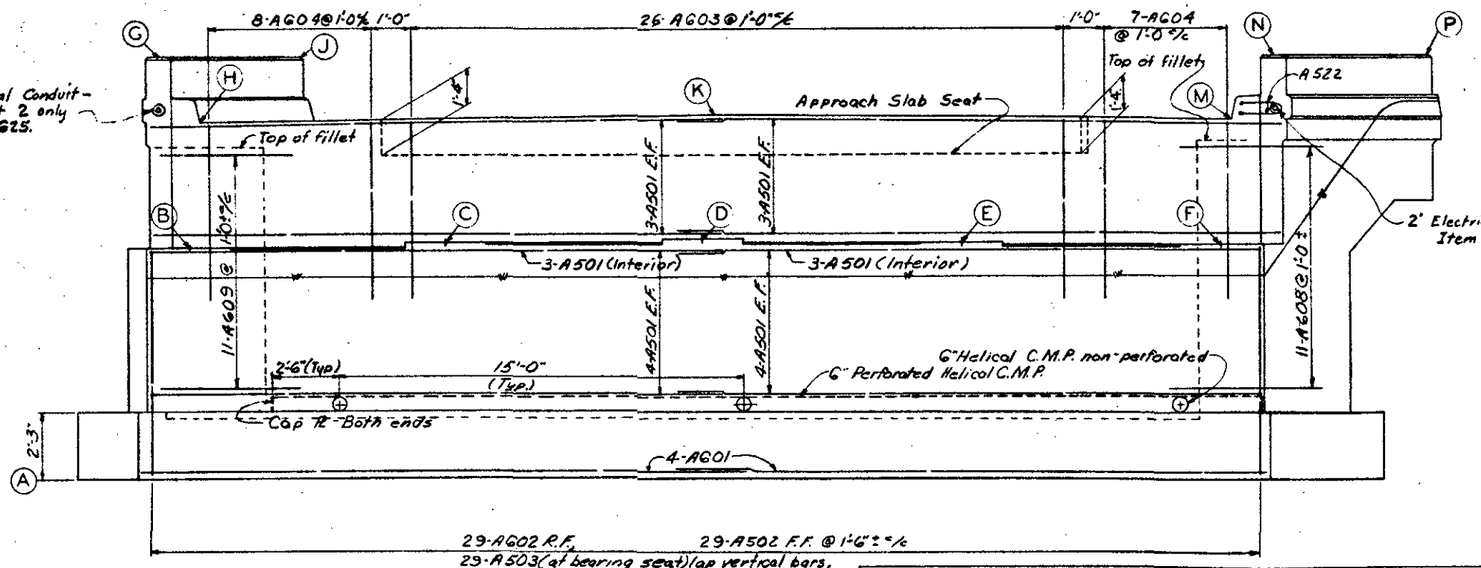
207

STARK COUNTY
STA-21-8.40





SECTION A-A



ELEVATION

LOCATION	A	B	C	D	E	F	G	H	J	K	M	N	P
Abutment #1	984.40	992.94	993.07	993.21	993.05	992.89	999.86	997.51	999.82	997.79	997.47	999.82	999.78
Abutment #2	984.90	993.45	993.61	993.77	993.63	993.50	1000.40	998.05	1000.44	998.37	998.10	1000.45	1000.49

NOTES:

- For Wingwall Elevations see sheet # 201
- All Concrete to be Class "E" except parapets

LEGEND:

R.F. = Rear Face
F.F. = Front Face
E.F. = Each Face

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

ABUTMENTS
BRIDGE NO. STA. 21-0915
RELOCATED ERIE STREET
OVER U.S. 21

STA. 473+88.77

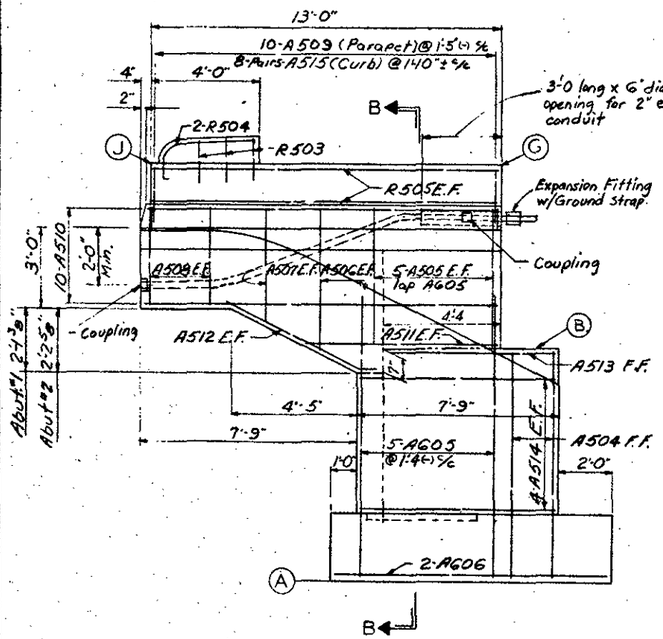
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	R.J.P.		DWP	L.G.H. 9-5-67	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

208

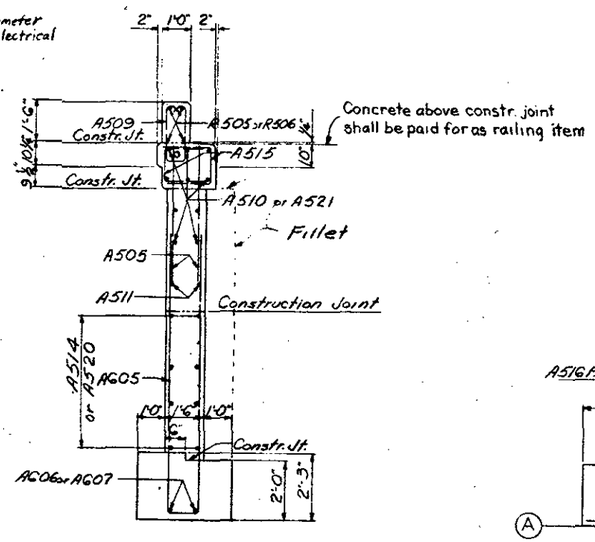
STARK COUNTY
STA-21-8.40

LEGEND:
R.F. = Rear Face
F.F. = Front Face
E.F. = Each Face

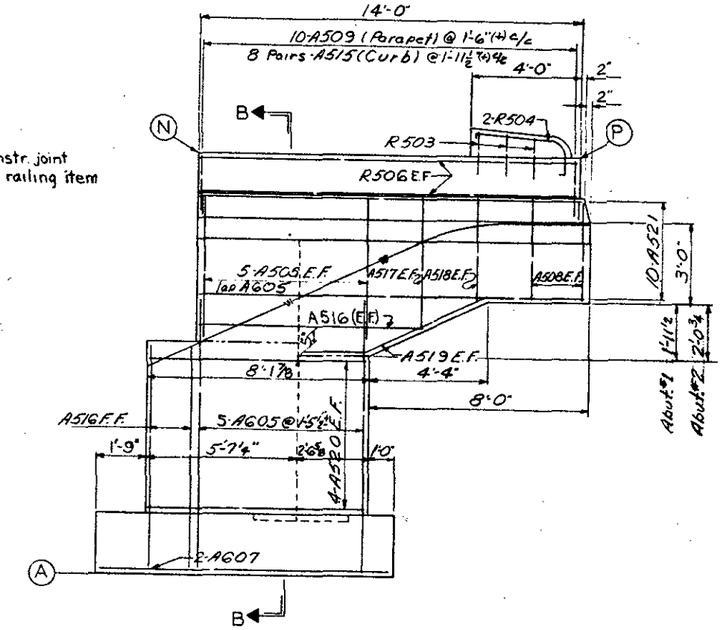


ELEVATION WING 'A'

Conduit as shown for Abutment 2 only.

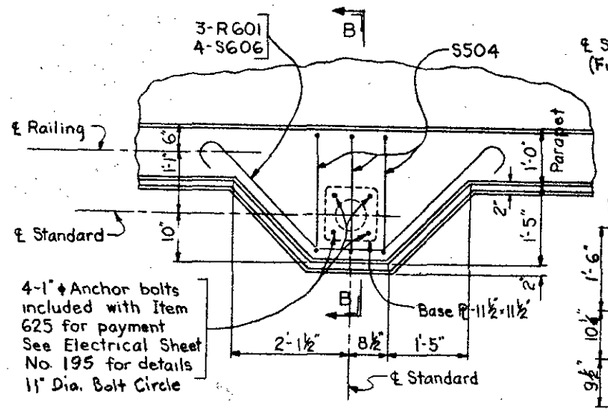


SECTION B-B

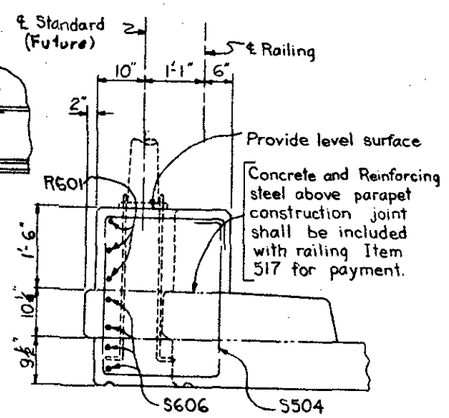


ELEVATION WING 'B'

Provide conduit as shown on Wing 'A' at Abutment 1 only.



DETAIL OF PARAPET AT LIGHT STANDARD



SECTION-B-B

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

WING DETAILS
BRIDGE NO. STA.-21-0915
RELOCATED ERIE STREET
OVER U.S. 21

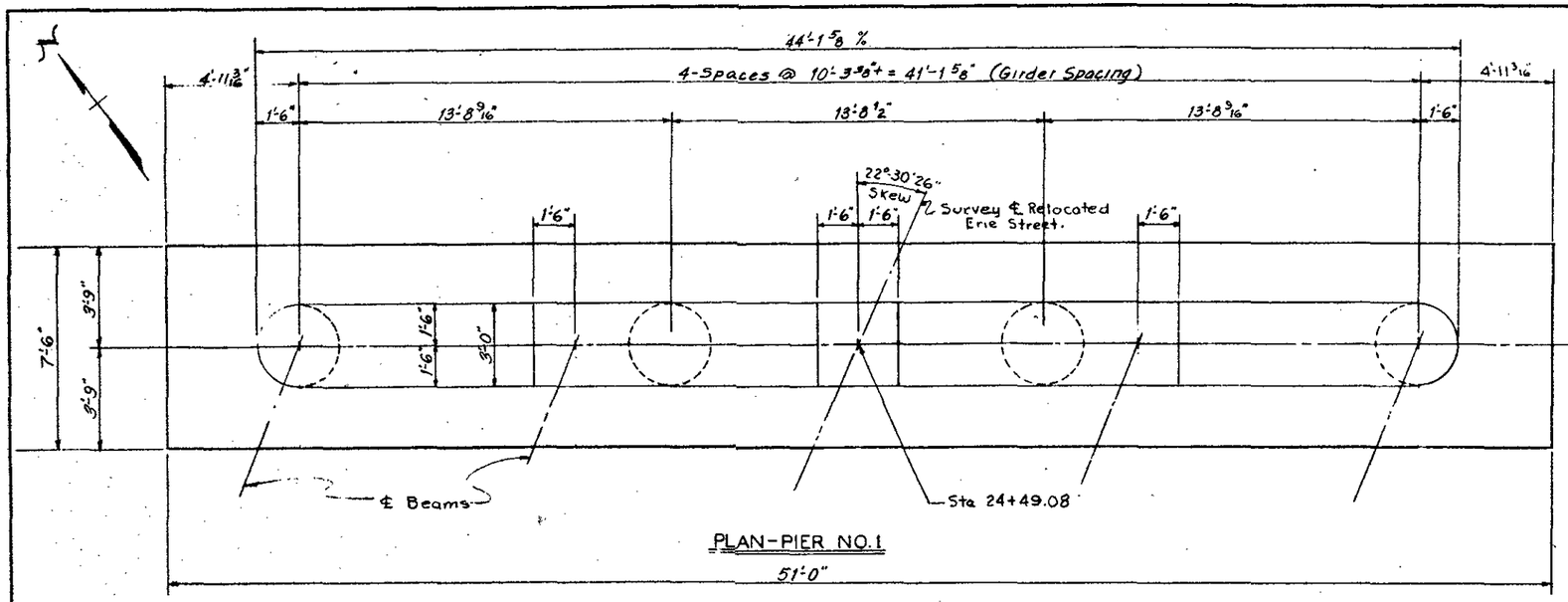
STA. 473+88.77

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	RJP		DWP	L.G.H. 9-5-67	

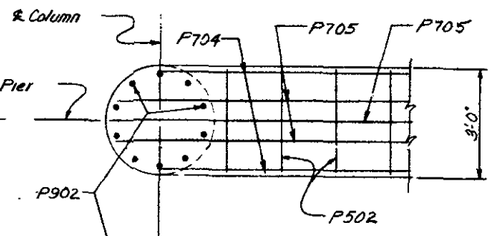
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

209

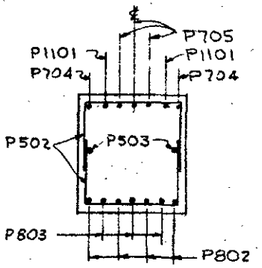
STARK COUNTY
STA. 21-8.40



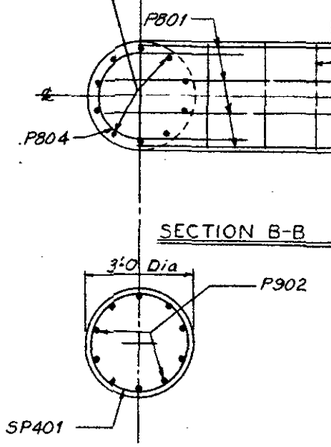
PLAN-PIER NO.1

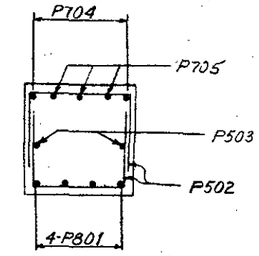


PLAN A-A

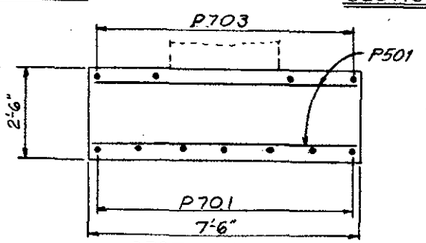


SECTION F-F

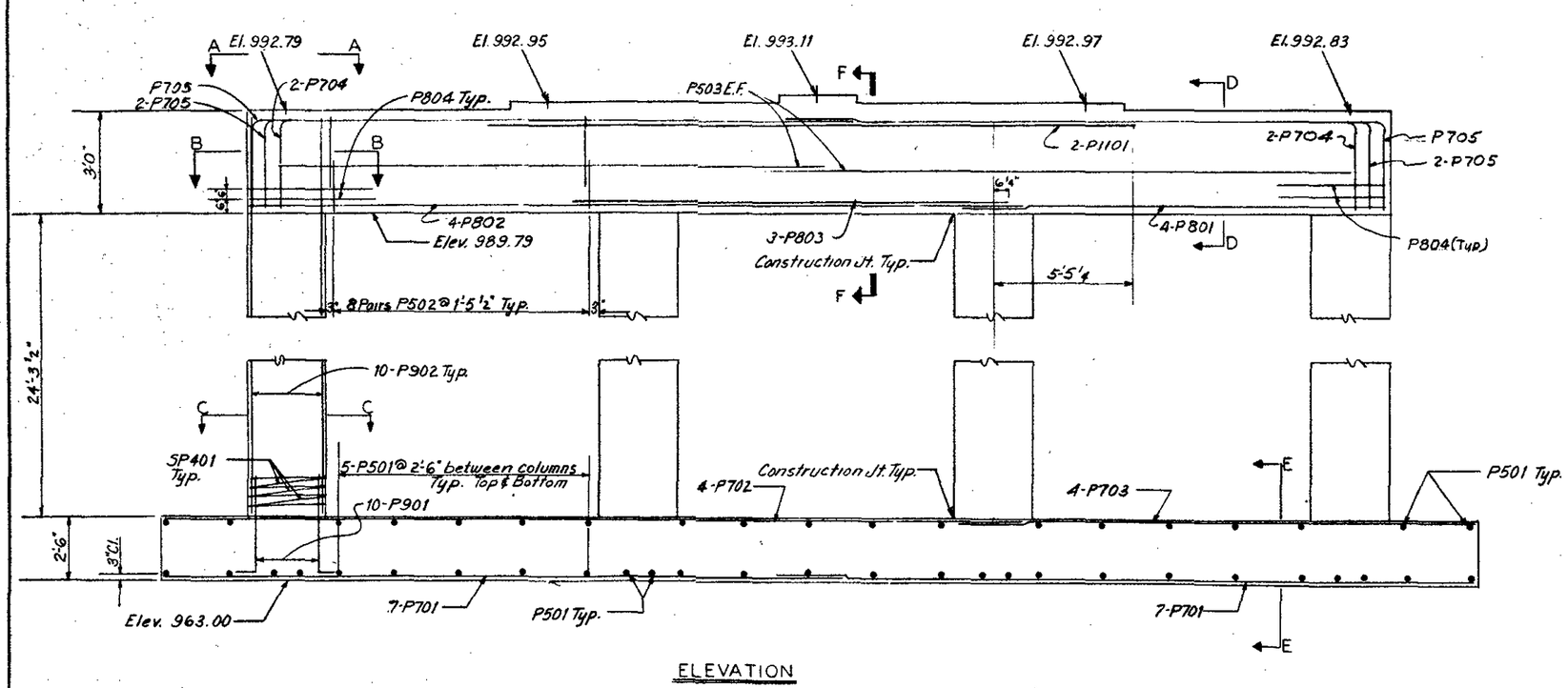




SECTION D-D



SECTION E-E



ELEVATION

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

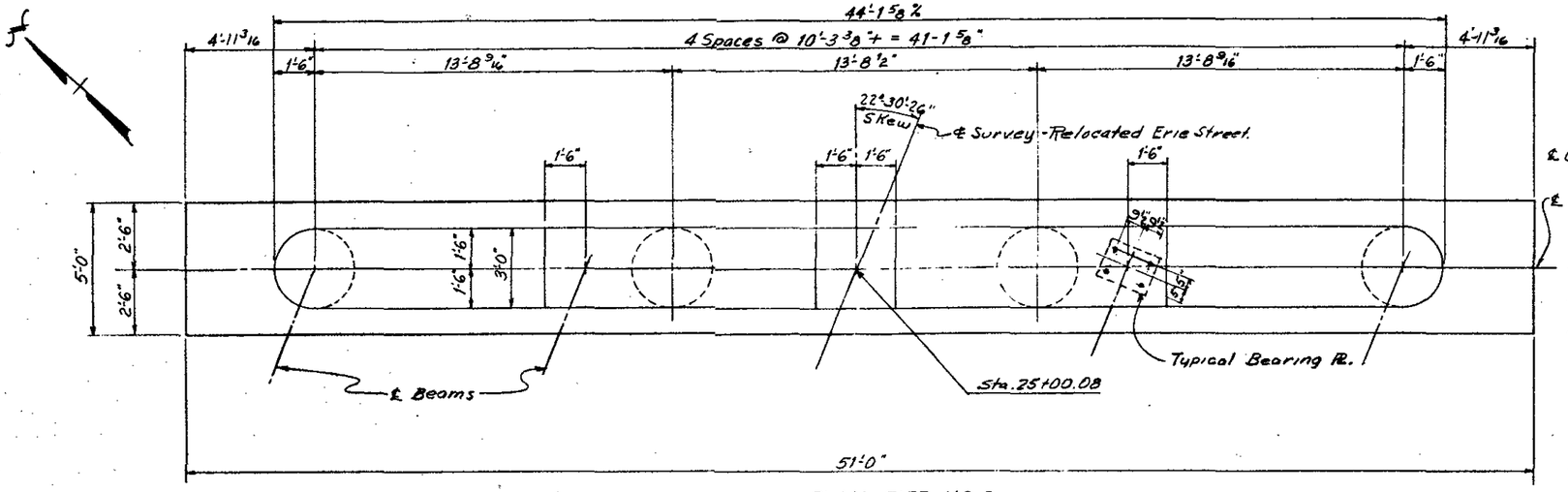
PIER 1
BRIDGE NO. STA-21-0915
UNDER RELOCATED ERIE ST.
Sta. 473+88.77

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
JCH DWP	F.H.O.		DWP	L.G.H. 9-5-67	

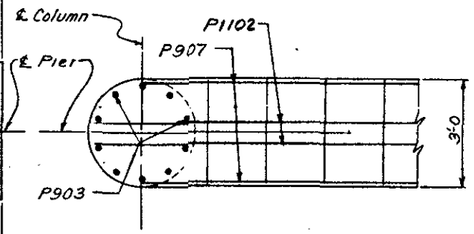
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

210

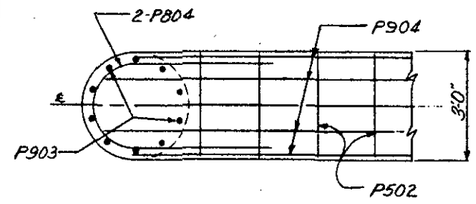
STARK COUNTY
STA. 21-8.40



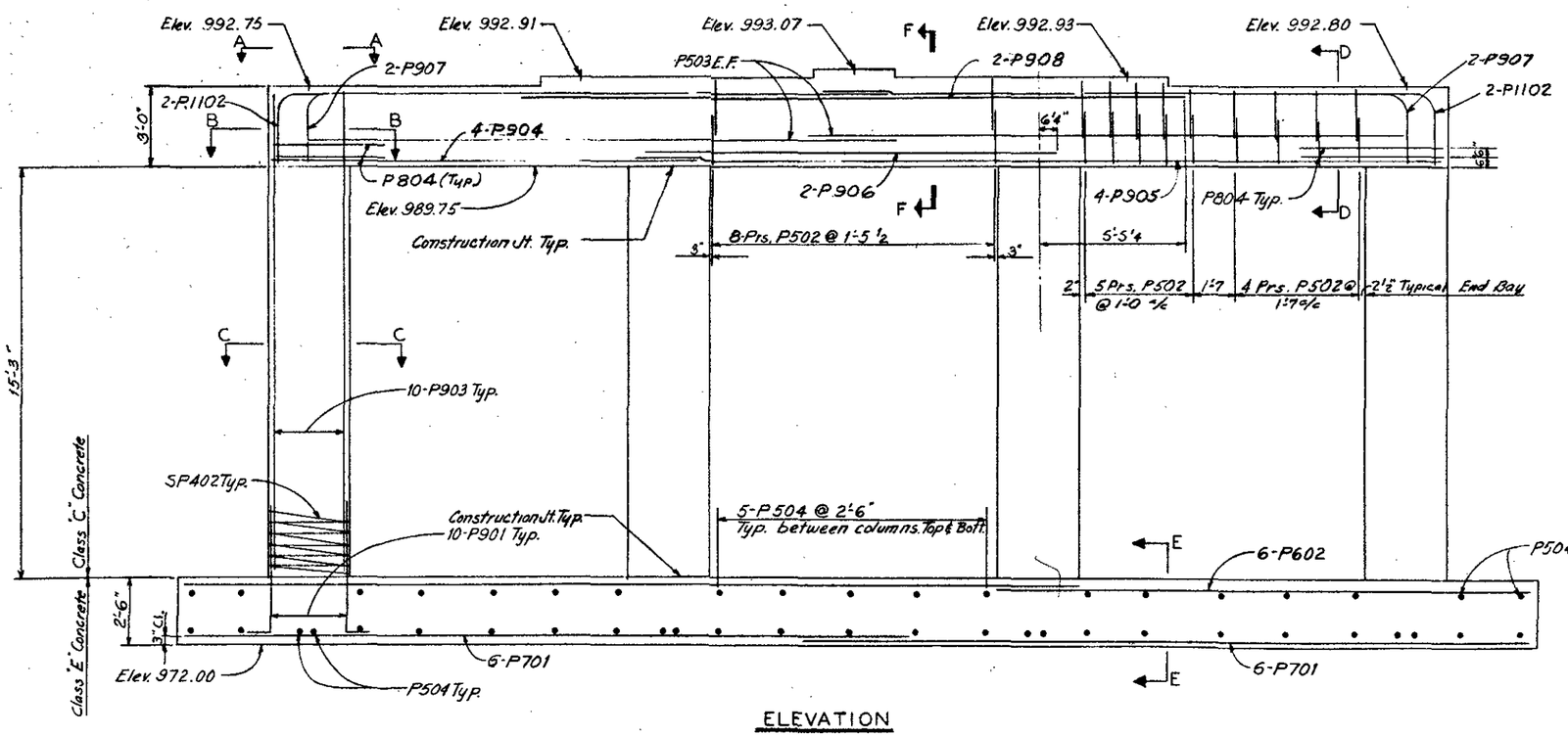
PLAN PIER NO. 2



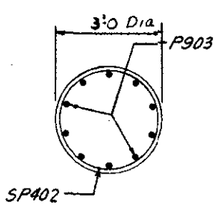
PLAN A-A



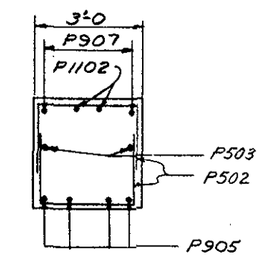
SECTION B-B



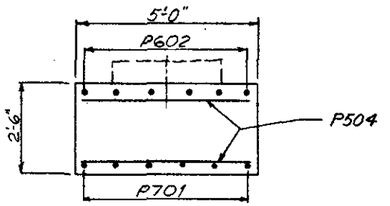
ELEVATION



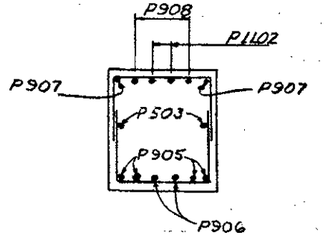
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

NOTE:
Extreme care shall be taken in placing pier cap reinforcing bars to avoid interference with beam bearings anchor bars.

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

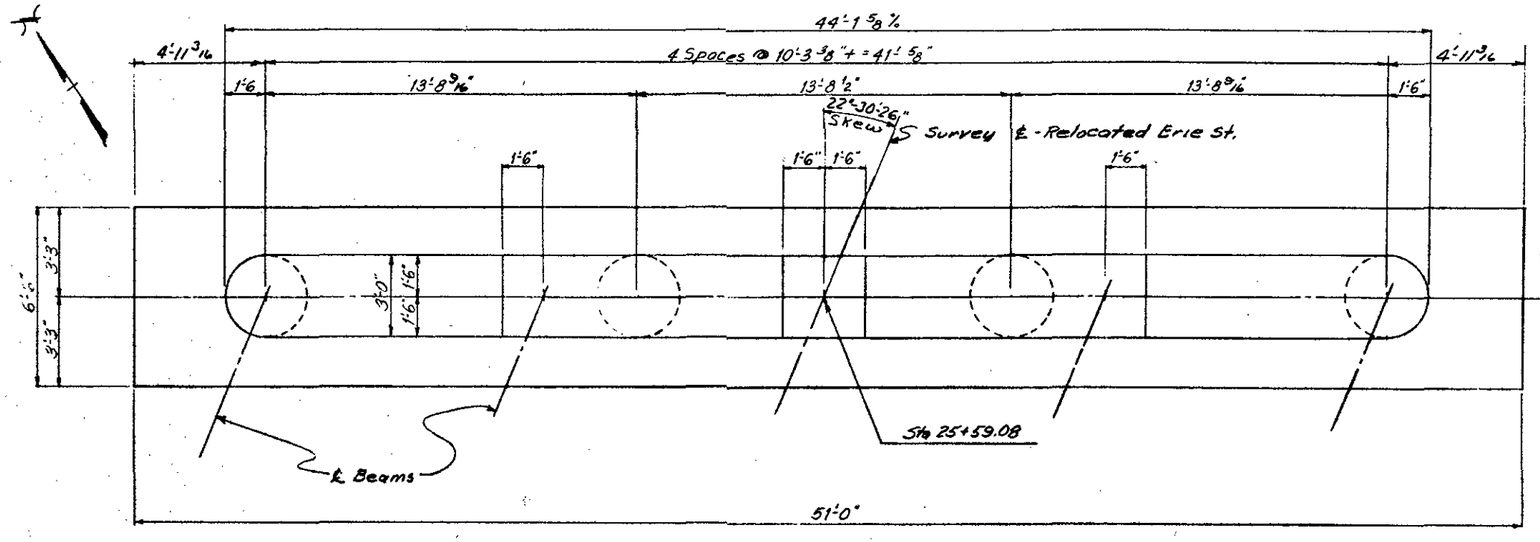
PIER NO. 2
BRIDGE NO. STA-21-0915
UNDER RELOCATED ERIE ST.
Sta. 473+88.80

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
JCH DWP	F.O.		DWP	L.G.H. 9-5-67	

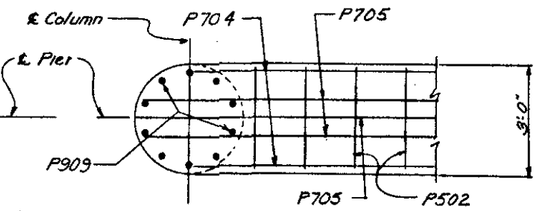
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

211

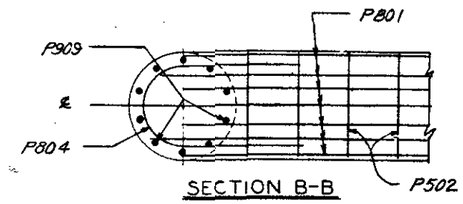
STARK COUNTY
STA. 21-8.40



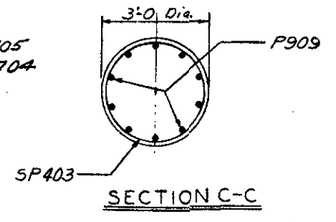
PLAN-PIER NO. 3



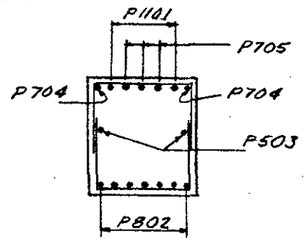
PLAN A-A



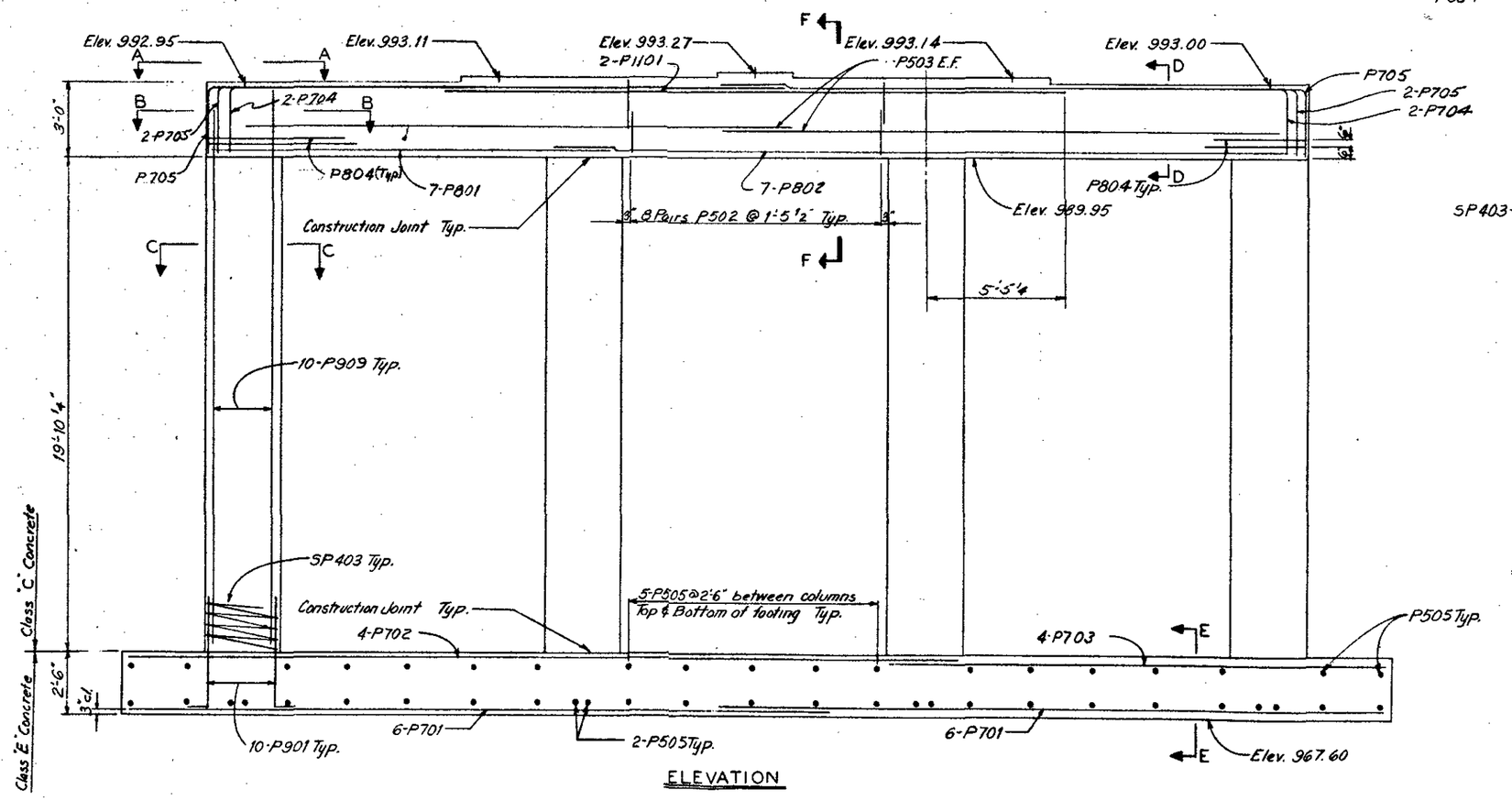
SECTION B-B



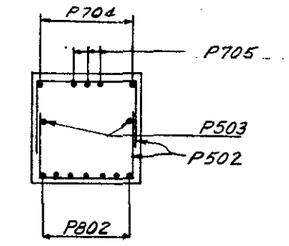
SECTION C-C



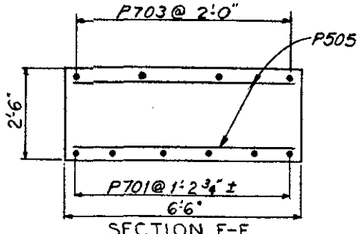
SECTION F-F



ELEVATION



SECTION D-D



SECTION E-E

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

PIER 3

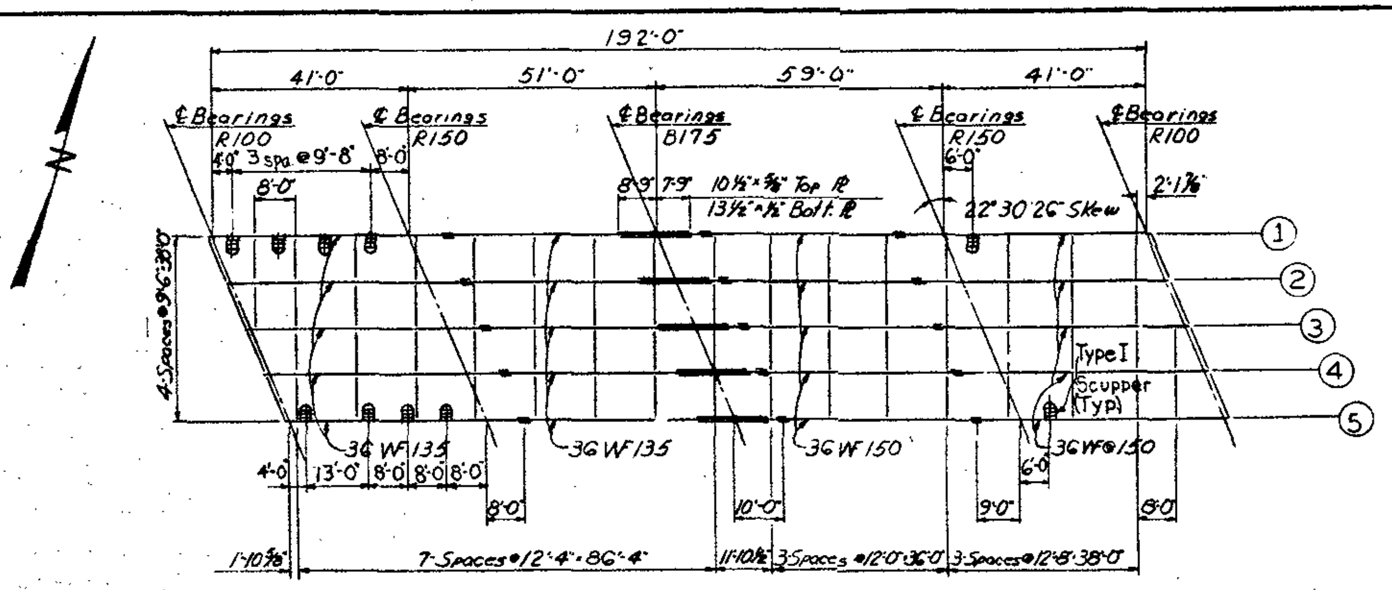
BRIDGE NO. STA.-21-0915
UNDER RELOCATED ERIE ST.
Sta. 473 + 88.77

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
JC H DWP	F.H.O.		DWP	L.G.H. 9-5-67	

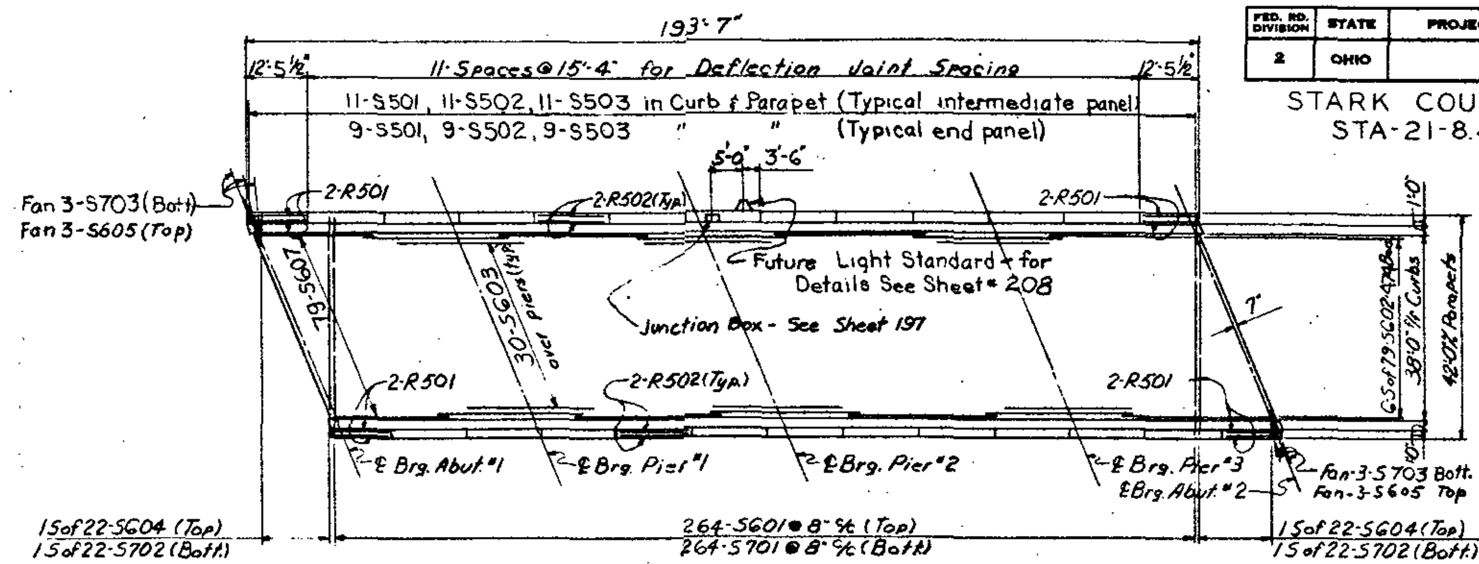
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

212

STARK COUNTY
STA-21-8.40

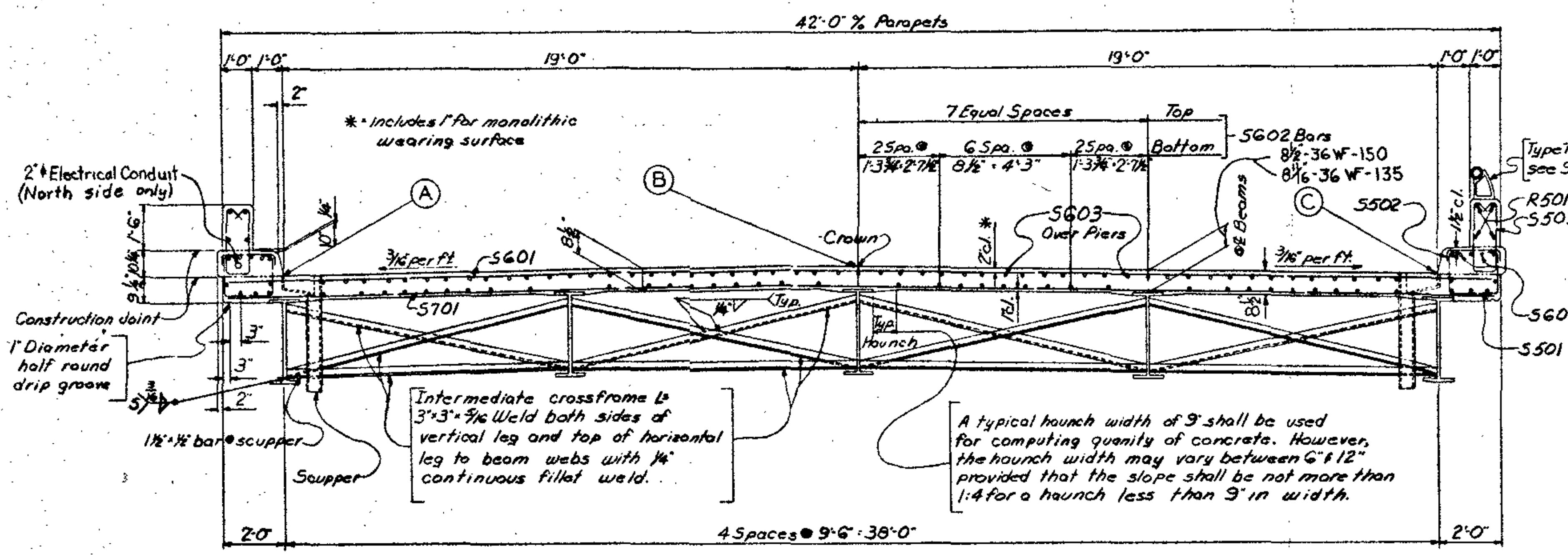


FRAMING PLAN

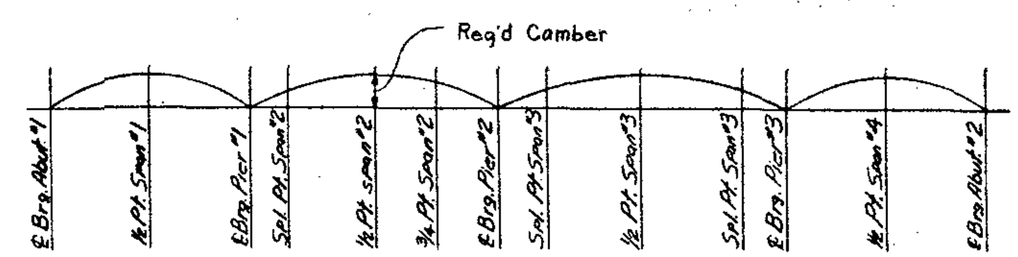


DECK REINFORCING PLAN

LOCATION	LEFT CURB "A" STA.	LEFT CURB "A" CONST.	LEFT CURB "A" FINAL	CROWN "B" STA.	CROWN "B" CONST.	CROWN "B" FINAL	RIGHT CURB "C" STA.	RIGHT CURB "C" CONST.	RIGHT CURB "C" FINAL
℄ Brg. Abutment #1	24+00.21	997.47	997.47	24+08.08	997.79	997.79	24+15.95	997.52	997.52
½ Pt. Span #1	24+20.71	997.54	997.53	24+28.58	997.86	997.85	24+36.45	997.59	997.58
℄ Brg. Pier #1	24+41.21	997.59	997.59	24+49.08	997.91	997.91	24+56.95	997.64	997.64
½ Pt. Span #2	24+66.71	997.68	997.67	24+79.58	998.00	997.99	24+82.45	997.73	997.72
℄ Brg. Pier #2	24+92.21	997.75	997.75	25+00.08	998.07	998.07	25+07.95	997.79	997.79
½ Pt. Span #3	25+21.71	997.86	997.84	25+29.58	998.19	998.16	25+37.45	997.90	997.88
℄ Brg. Pier #3	25+51.21	997.92	997.92	25+59.08	998.24	998.24	25+66.95	997.97	997.97
½ Pt. Span #4	25+71.71	998.00	997.99	25+79.58	998.32	998.31	25+87.45	998.04	998.03
℄ Brg. Abutment #2	25+92.21	998.05	998.05	26+00.08	998.37	998.37	26+07.95	998.09	998.09



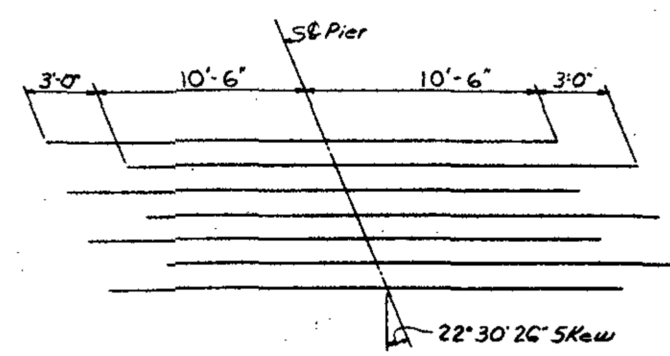
TYPICAL SECTION



CAMBER DIAGRAM

DEFLECTION AND CAMBER

Description \ Location	Exterior Beams: ½ Pt. Sp. Span #1	Exterior Beams: Splice Pt. Span #2	Exterior Beams: ½ Pt. Span #2	Exterior Beams: ¾ Pt. Span #2	Exterior Beams: Splice Pt. Span #3	Exterior Beams: ½ Pt. Span #3	Exterior Beams: Splice Pt. Span #3	Exterior Beams: ½ Pt. Span #4	Interior Beams: ½ Pt. Span #1	Interior Beams: Splice Pt. Span #2	Interior Beams: ½ Pt. Span #2	Interior Beams: ¾ Pt. Span #2	Interior Beams: Splice Pt. Span #3	Interior Beams: ½ Pt. Span #3	Interior Beams: Splice Pt. Span #3	Interior Beams: ½ Pt. Span #4
Deflection due to weight of steel	1/16	0	0	0	0	1/16	0	0	1/16	0	0	0	0	1/16	0	0
Deflection due to remaining dead load	1/16	0	1/16	0	1/16	3/16	1/16	1/16	1/8	0	1/8	0	1/8	1/4	1/8	1/16
Convexity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Required Camber	1/8	0	1/16	0	1/16	1/4	1/16	1/16	3/16	0	1/8	0	1/8	5/16	1/8	1/16



STAGGER OF S603 BARS OVER PIERS

Note
See Standard Drawing RB-1-55 for bearing details
See Standard Drawing SD-1-65 for end dams, end crossframes, scupper details and beam splices.
Furnish fill plates and beam splices as req'd.

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

SUPERSTRUCTURE
BRIDGE NO. STA-21-0915
RELOCATED ERIE STREET
OVER U.S. 21

STA. 473+88.77

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	R.J.P.		DWP JCH	L.G.H. 9-5-67	

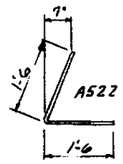
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

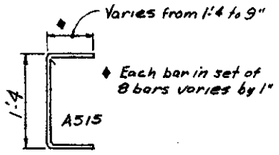
213

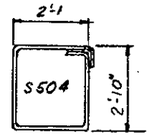
STARK COUNTY
STA. 21 - 8.40

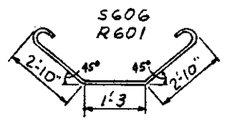
Mark	No.	Length	Weight	Shp
SUPERSTRUCTURE				
S701	264	41'-8	22,484	S
S702	2S322	38'-11⅛ & 5'-7	2,091	S
S703	6	3'-0	37	S
S601	264	41'-8	16,522	S
S602	474	30'-0	21,358	S
S603	90	24'-0	3,244	S
S604	2S322	38'-11⅛ & 5'-7	1,470	S
S605	6	3'-0"	27	S
S606	4	8'-3	50	B
S607	79	24'-8	2,327	S
S501	278	4'-11	1,426	B
S502	278	2'-6	725	B
S503	278	5'-7	1,619	B
S504	3	10'-5	33	B
R501	16	12'-2	*	S
R502	88	15'-0	*	S
R601	3	8'-3	*	B
ABUTMENTS 1 & 2				
A601	16	24'-5	587	S
A602	58	19'-3	1,154	B
A603	52	15'-7	1,217	B
A604	30	14'-1	635	B
A605	40	20'-8	1,242	B
A606	4	10'-3	62	S
A607	4	10'-8	64	S
A608	22	9'-10"	325	B
A609	22	7'-0	231	B
A501	68	23'-1	1,637	S
A502	58	8'-6	514	B
A503	58	6'-4	383	B
A504	4	8'-0	33	S
A505	40	5'-2	216	S
A506	4	5'-1	21	S
A507	4	4'-1	17	S
A508	16	3'-5	57	S
A509	40	5'-7	233	B
A510	20	12'-10	268	S
A511	4	6'-4	26	S
A512	4	6'-7	27	B
A513	2	6'-2	13	S
A514	16	7'-2	120	S
A515	8 Sets of 8	3'-9 to 2'-7	211	B
A516	8	8'-1	67	S
A517	4	4'-6	19	S
A518	4	3'-6	15	S
A519	4	7'-5	31	B
A520	16	7'-10	131	S
A521	20	13'-10	289	S
A522	4	2'-11	12	B
R503	12	4'-2	*	B
R504	8	5'-4	*	B
R505	8	12'-8	*	S
R506	8	13'-8	*	S
PIERS				
P1101	4	24'-7	522	S
P1102	4	25'-8	545	B
P901	120	5'-9	2,346	B
P902	40	26'-10	3,649	S
P903	40	17'-9	2,414	S
P904	4	16'-6	224	S
P905	4	30'-10	408	S
P906	2	14'-9	100	S
P907	4	24'-1	328	B
P908	2	24'-7	167	S
P909	40	22'-4	3,037	S
P801	11	16'-6	485	S
P802	11	30'-2	886	S

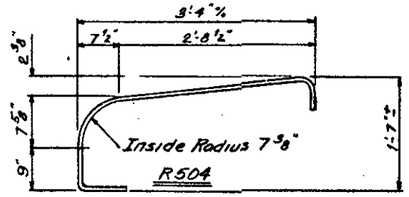
Mark	No.	Length	Weight	Shp
P803	3	14'-9	118	S
P804	12	8'-7	275	B
P701	38	26'-5	2052	S
P702	8	33'-2	542	S
P703	8	19'-6	319	S
P704	8	24'-0	392	B
P705	12	25'-2	617	B
P601	6	33'-1	298	S
P602	6	19'-5	175	S
P501	46	7'-2	344	S
P502	148	6'-9	1042	B
P503	12	21'-5	268	S
P504	46	4'-8	224	S
P505	46	6'-2	296	S

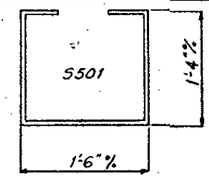


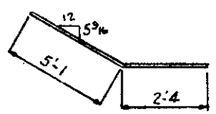


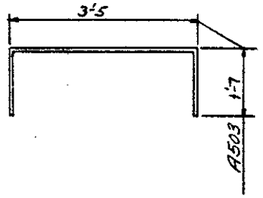


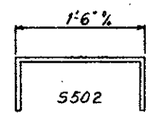


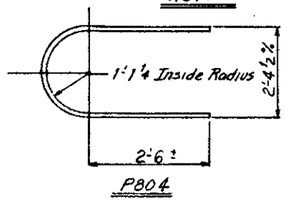


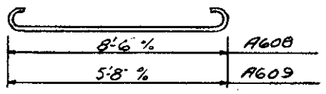


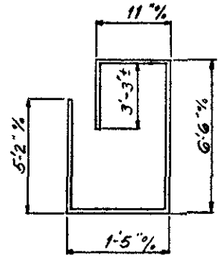


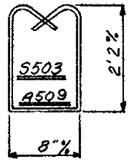


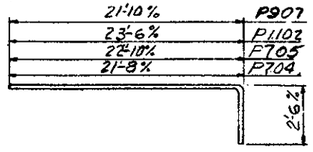


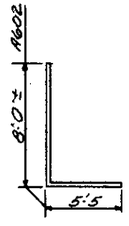


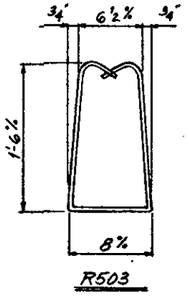


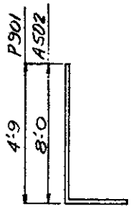


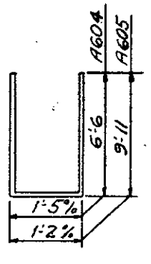


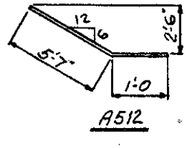


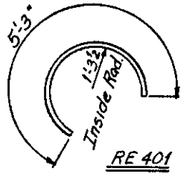












REPLACEMENT BARS				
Mark	No.	Length	Weight	Shp
RE1101	1	8'-7"		S
RE 901	1	7'-10"		S
RE801	1	7'-6"		S
RE701	2	7'-2"		S
RE601	3	6'-11"		S
RE501	1	6'-7"		S
RE401	1	6'-3"		B

SPIRAL REINFORCING						
Mark	No.	Core Dia.	Length	No. Turns	Pitch	Weight
SP401	4	32" ⅝	24'-3½	68	4½	1,765
SP402	4	32" ⅝	15'-3	44	4½	1,137
SP403	4	32" ⅝	19'-10¼	56	4½	1,450

NOTES:

- Bar size is indicated in the bar mark. The first digit where three digits are used, indicate the bar size number. For example, S601 is a number 6 size bar. The first two digits where four digits are used indicate the bar size number. For example, P1101 is a number 11 size bar.
- Spiral Reinforcing Bars: The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to the bottom of the pier cap.
  The "No. of Turns" shown is the length divided by the pitch, plus 3 turns (total number of closed coils) expressed as the nearest whole number. Spiral reinforcing bars shall not have deformations but shall in all other respects conform to Item 509.
  1½ closed coils shall be provided at the ends of each spiral unit. Four steel channels, tees, or angle spacers weighing approximately 0.68 lbs. per lineal foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil.
  The number of pounds of these spacers based on 0.68 lbs. per lineal foot will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

* Included with Item 517 Bridge Railing for payment.

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

REINFORCING STEEL LIST

BRIDGE NO. STA-21-0915
UNDER RELOCATED ERIE ST.
Sta. 473 + 88.77

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
JCH DWP	F.O.		DWP JCH	L.G.H. 9-5-67	