

MICROFILMED  
DEC 23 1987

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-1103(20)	

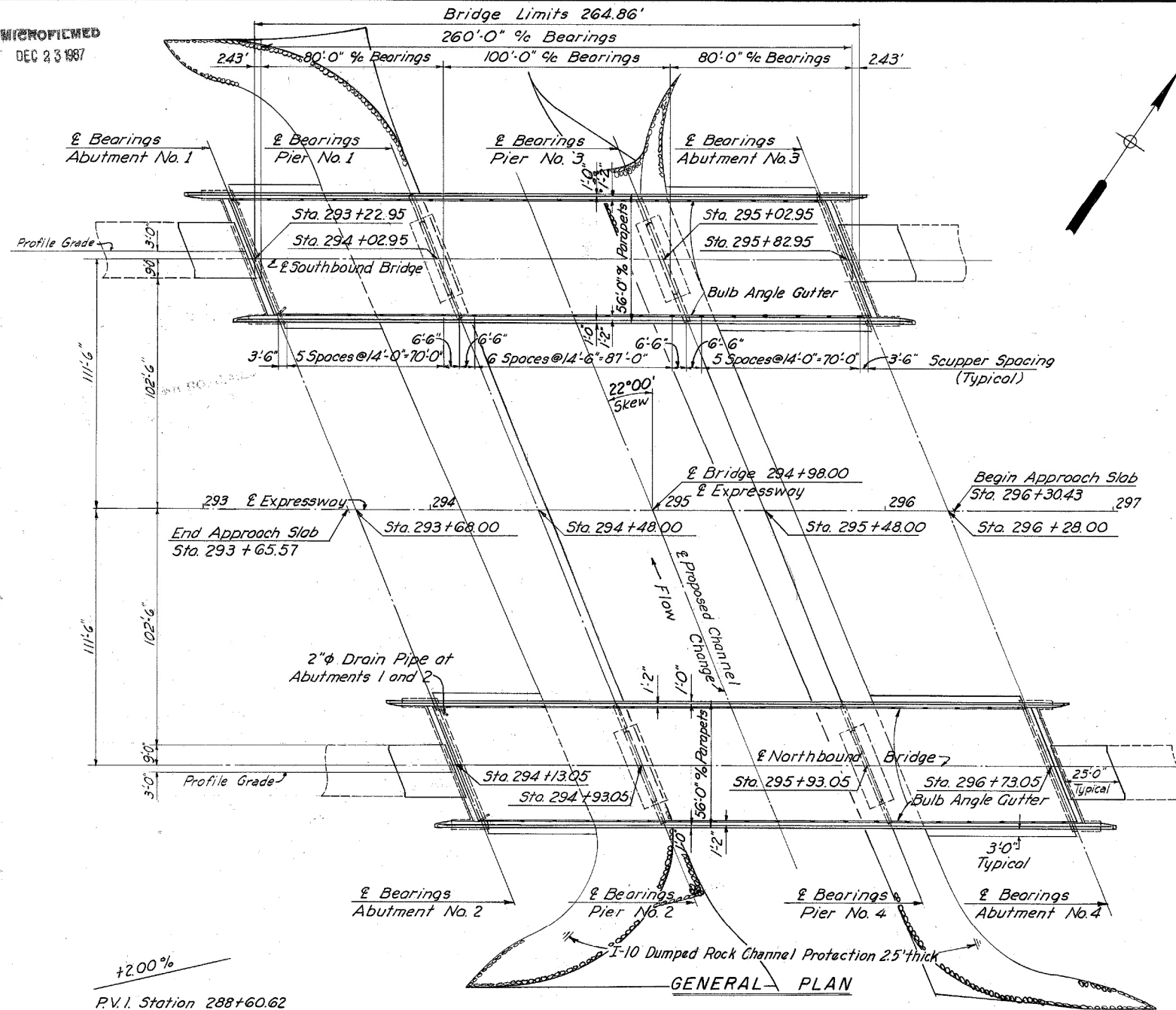
293  
333

LAKE COUNTY  
LAK-1-4.02

**GENERAL NOTES**

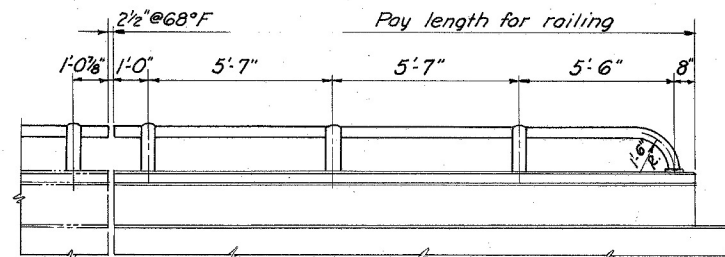
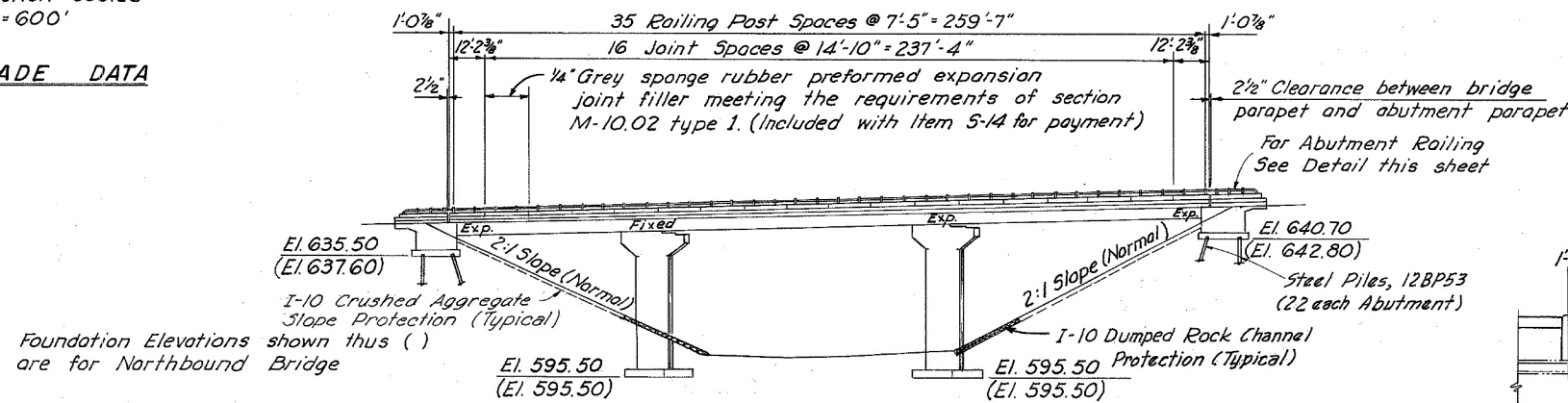
- REFERENCE shall be made to Standard Drawings CSB-2-56, Sheets 243 of 6, revised 2-2-53, RB-1-55 dated 2-2-53, AR-1-57, revised 2-2-53, and to Supplemental Specification I-127 revised 11-16-57.
- DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-53, revised 2-21-58.
- LOADING: C.F.=2,000 (57), Adequate for A.A.S.H.O. Alternate Loading.
- WELDING of structural steel shall be Class "A" except as otherwise shown. Any welds shown as field welds may, at the option of the Contractor, be made in shop.
- SLOPE PROTECTION shall be dumped rock channel protection meeting the requirements of Section I-10.06. The dumped rock channel protection shall extend from the toe of slope to Elevation 616.0 and across the slope area as shown on the General Plan and the Site Plan.
- EXCAVATION QUANTITY includes the removal of fill material between surface of proposed embankment and bottom of abutment. Backfill behind the abutments shall be made with material meeting the requirements of Sec. I-22 and shall be compacted in accordance with requirements for embankment compaction. Payment for the backfill shall be included with unclassified excavation.
- FOUNDATION BEARING PRESSURE: Footings are designed for a maximum bearing pressure of 4.5 tons per sq. ft. for the piers.

- PILES shall be driven with a hammer of not less than 11000 ft. lbs. per blow to firm contact with shale. If the length of penetration is approximately equal to the depth to shale according to bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 5-18.05 is not less than the following value for a pile hammer of the indicated energy rating:  
For Abutment Piles:  
4.5 tons per pile using a 11000 ft. lb. hammer.  
4.5 tons per pile using a 15000 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 4.5 tons per pile for the abutment piles.  
FOOTINGS shall extend a minimum of 3" into shale, or to the elevation shown, whichever is lower.



+2.00%  
P.V.I. Station 288+60.62  
Elevation 639.26  
V.C. = 600'

**GRADE DATA**



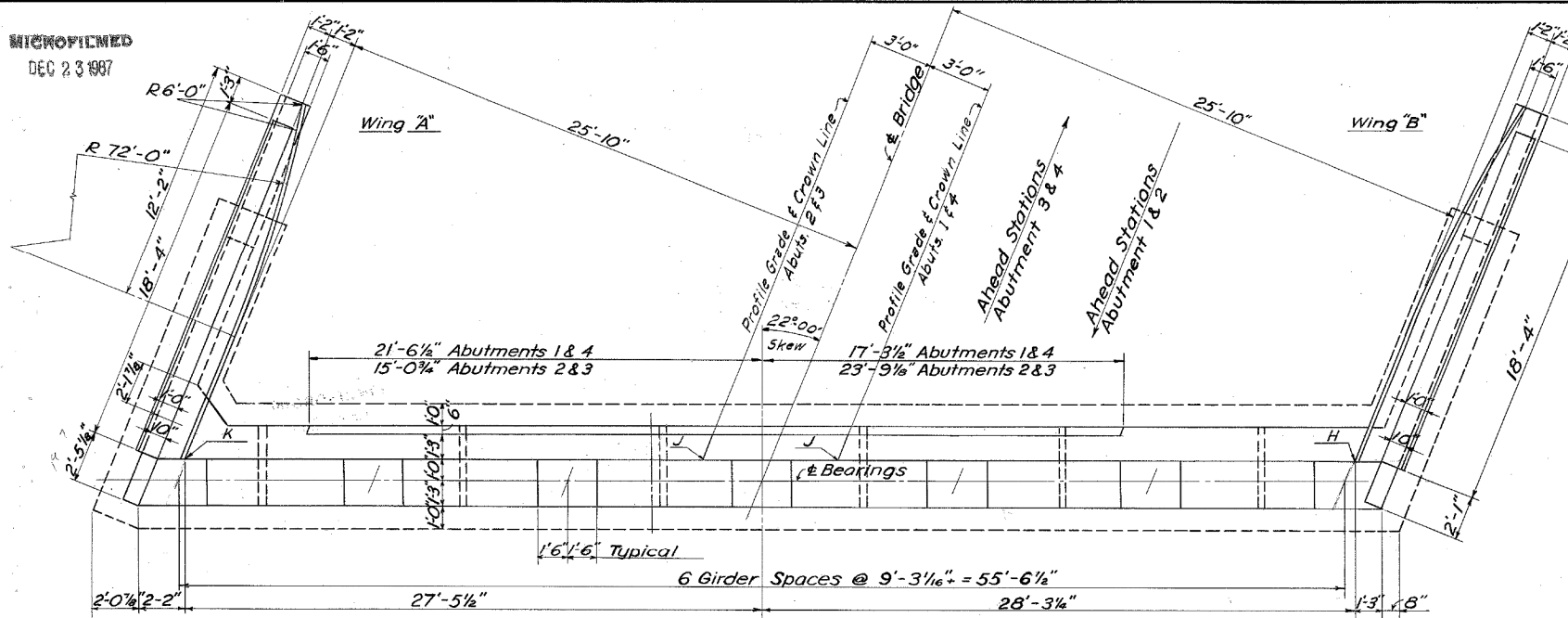
MICHAEL BAKER, JR., CONSULTING ENGINEERS  
ROCHESTER, PENNSYLVANIA

**GENERAL PLAN & ELEVATION**  
BRIDGE NO. LAK-1-0541  
OVER EAST BRANCH CHAGRIN RIVER

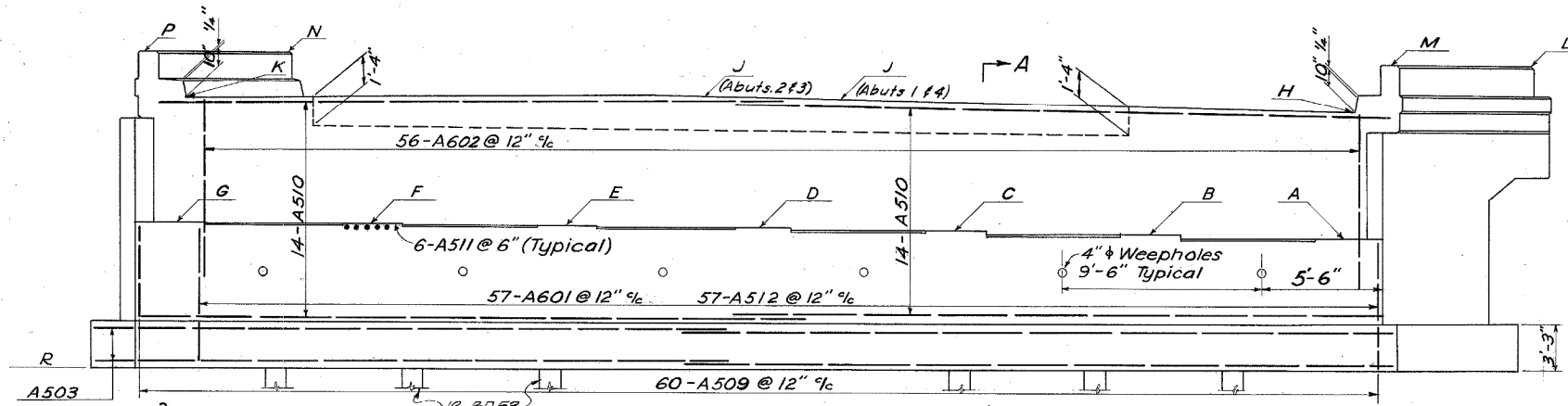
LAKE COUNTY					STA. 294+98.00
Designed	Drawn	Traced	Checked	Reviewed - Date	Revised
A.A.	P.W.	P.W., I.N.	D.W.S.	K.A. 11-57	

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DEC 23 1987

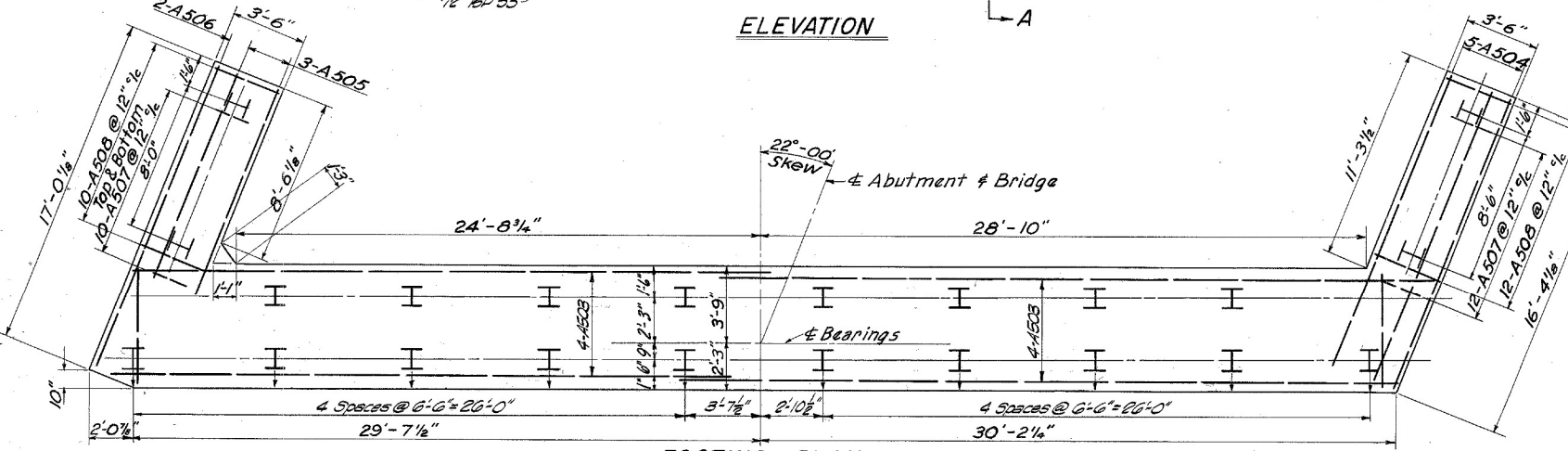
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS	294 333
2	OHIO	I-103(20)		
LAKE COUNTY LAK-I-4.02				



PLAN



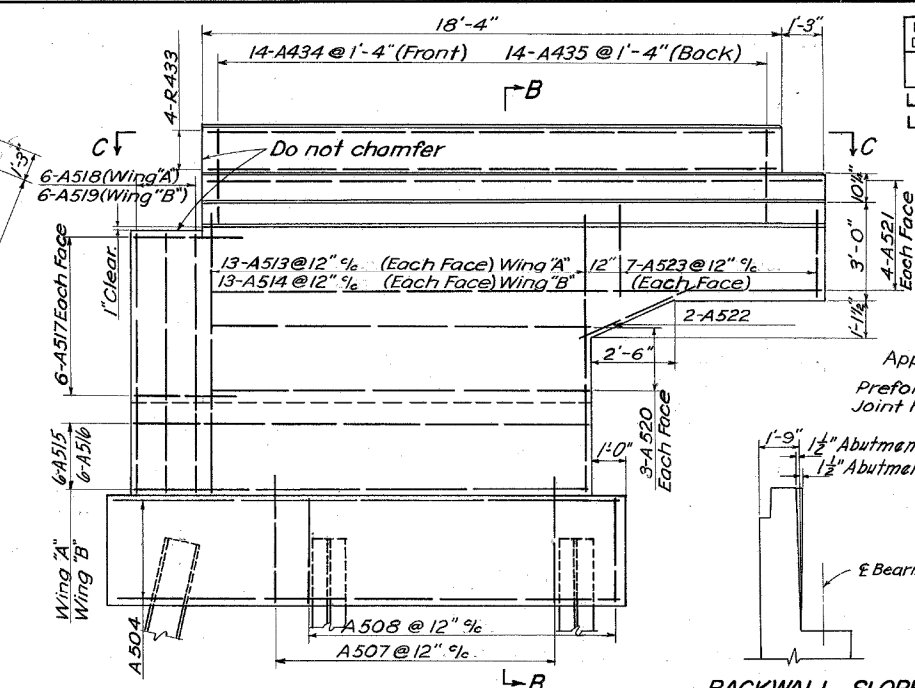
ELEVATION



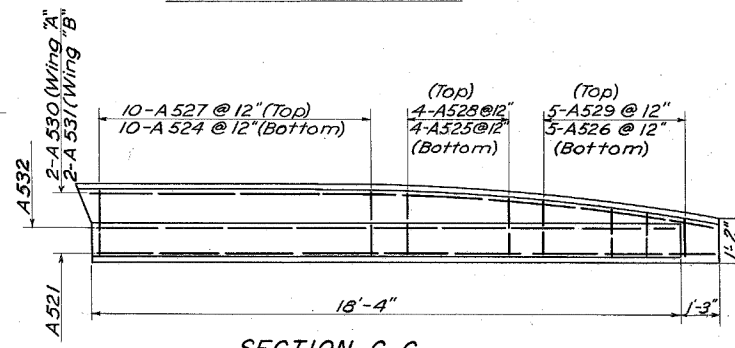
FOOTING PLAN

Location	T A B L E O F E L E V A T I O N S															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	
Abutment 1	641.51	641.72	641.92	642.03	641.97	641.90	641.83	647.92	648.47	648.24	649.89	650.26	650.23	650.60	635.50	
Abutment 2	643.22	643.43	643.63	643.84	643.86	643.80	643.73	649.62	650.31	650.14	651.59	651.96	652.13	652.50	637.20	
Abutment 3	647.03	647.10	647.77	647.13	647.12	646.92	646.71	653.48	653.71	653.16	656.21	655.84	655.87	655.50	640.70	
Abutment 4	648.93	649.00	649.06	649.04	648.83	648.63	648.42	655.38	655.53	654.87	658.11	657.74	657.58	657.21	642.40	

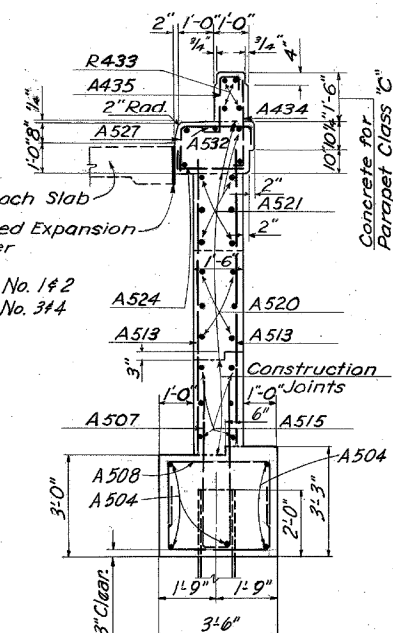
Note: All piles in front row are battered 3:12 in the direction indicated.



WINGWALL ELEVATION



SECTION C-C

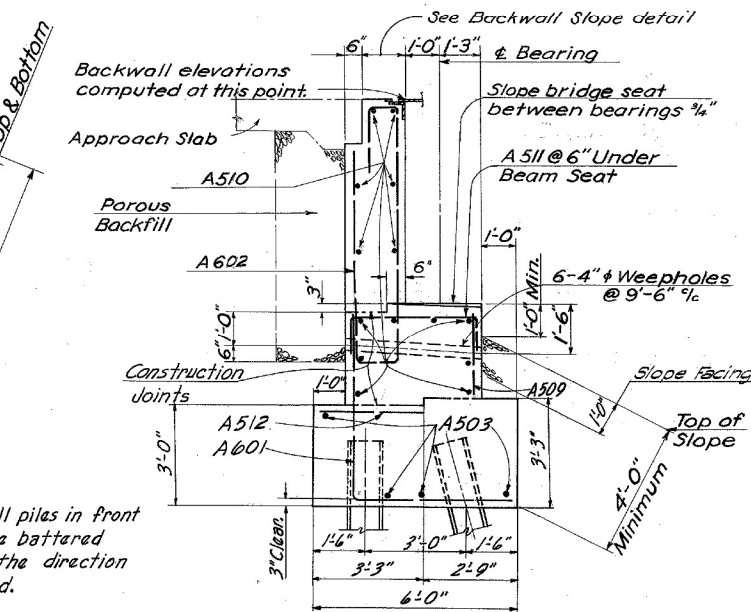


SECTION B-B

NOTES:

- Porous backfill 2 feet thick full length of abutment shall extend up to the underside of the approach slab.
- Clearance of reinforcing steel from face of concrete shall be 2" unless otherwise shown.
- Concrete above bridge seat construction joint shall not be placed until after the steel work is erected, but before placing the deck slab.
- Steel end dam shall be used as a template for the top of the backwall.
- Procedure: The embankment shall be placed and compacted to subgrade elevation, after which excavation shall be made for the abutments.
- All abutment concrete shall be Class "E".
- All parapet concrete shall be Class "C".
- All piles to be 12BP53 and shall be driven to a bearing capacity as given in the General Notes on the "General Plan & Elevation" sheet.

Railing not shown. See "General Plan and Elevation" sheet for railing post spacing. For Guard Rail Detail see Superstructure sheet.



SECTION A-A

MICHAEL BAKER, JR., CONSULTING ENGINEERS  
ROCHESTER, PENNSYLVANIA

**ABUTMENT DETAILS**  
BRIDGE NO. LAK-I-0541  
OVER EAST BRANCH CHAGRIN RIVER

LAKE COUNTY STA. 294+98.00

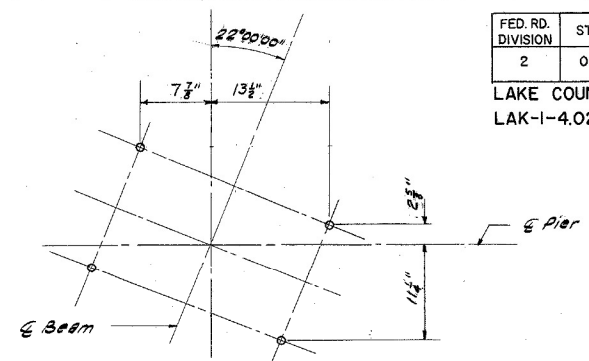
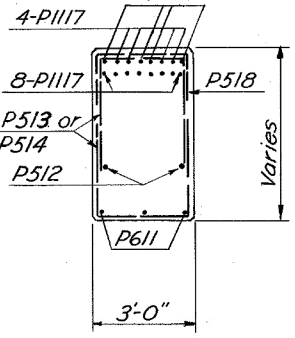
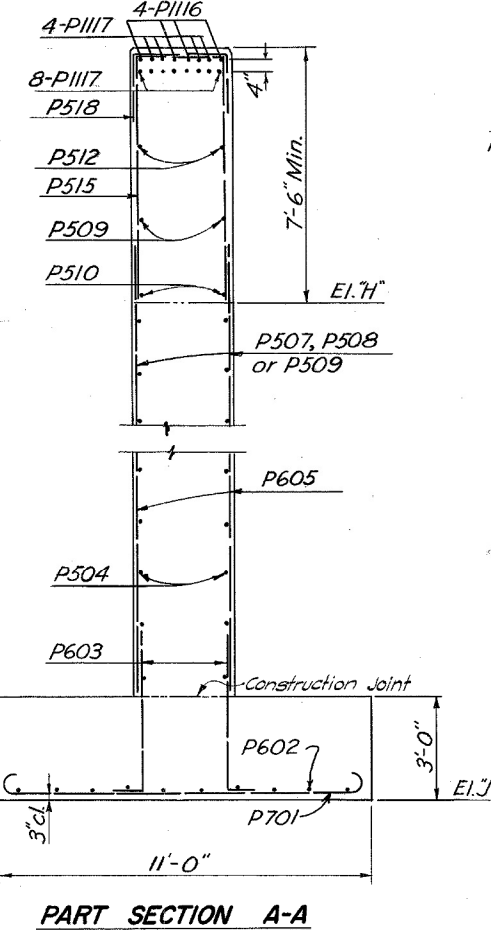
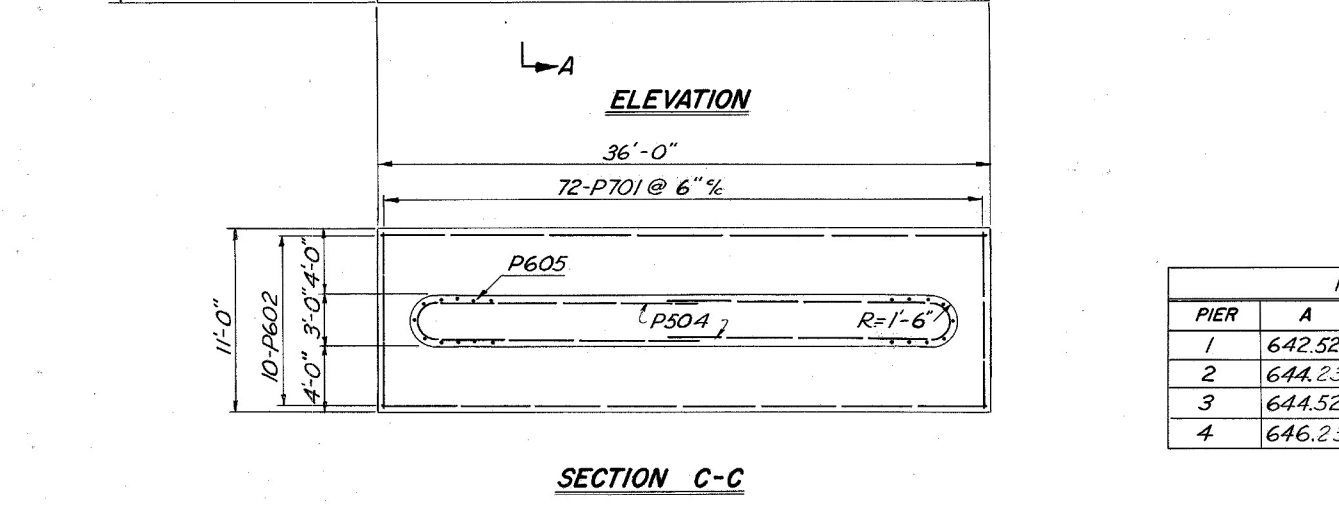
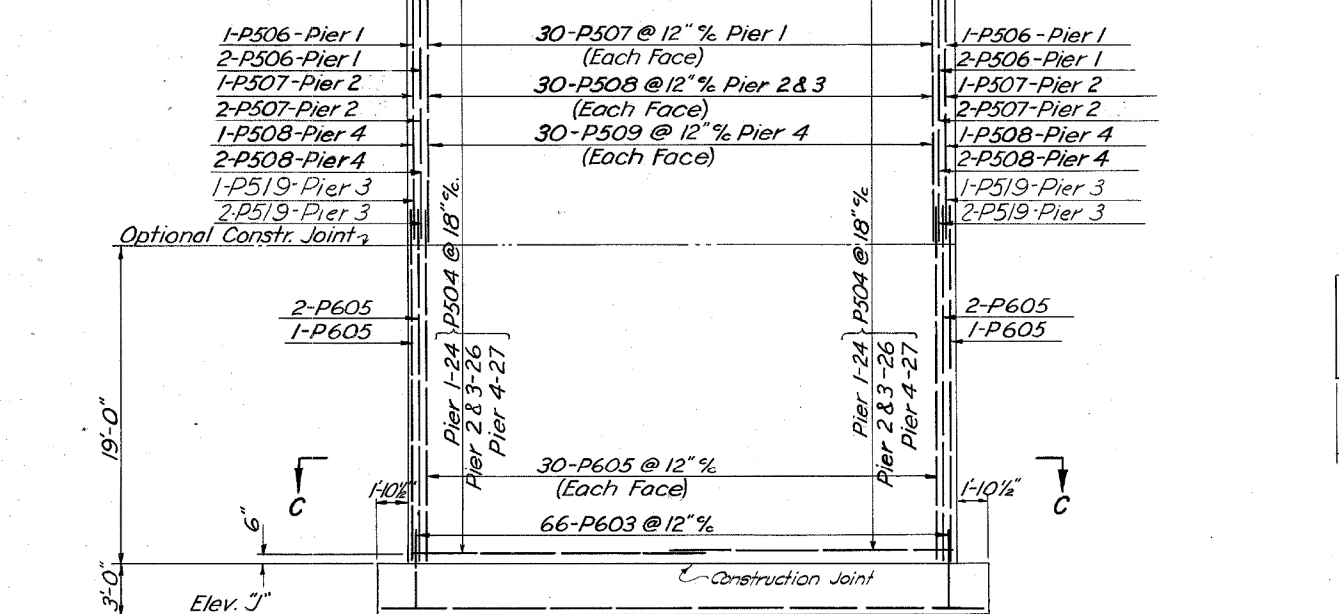
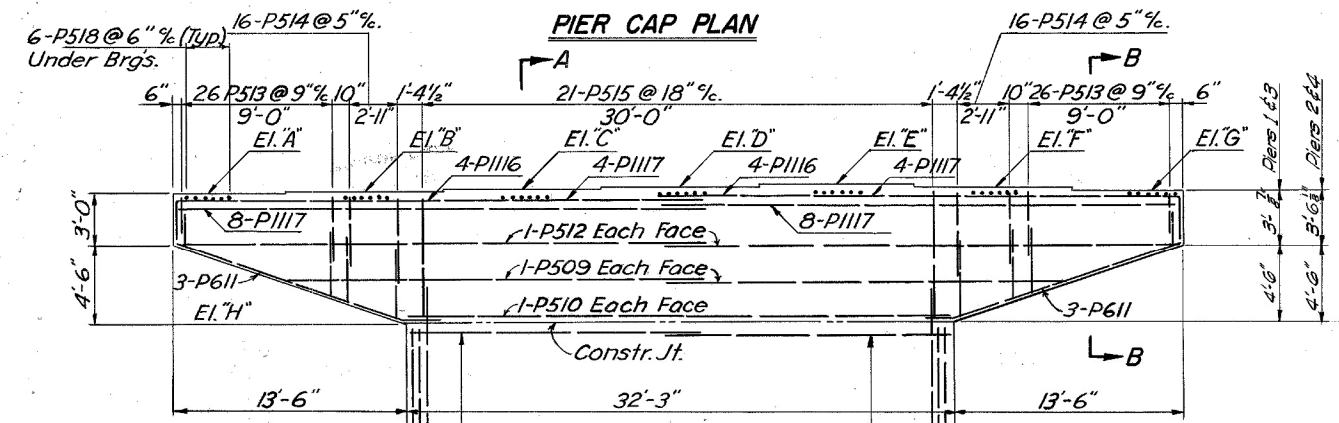
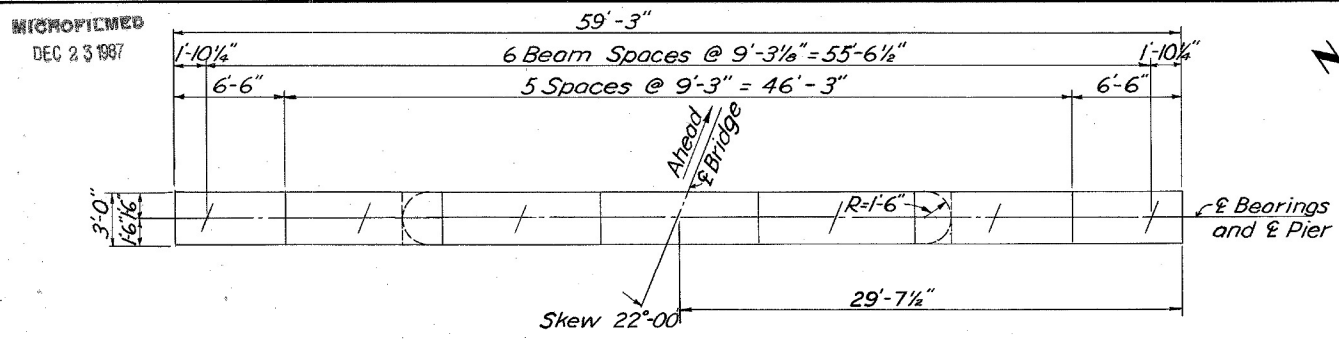
Designed	Drawn	Traced	Checked	Reviewed-Date	Revised
C.S.A.	R.W.	F.E.H.	J.C.B.Jr.	K.A. 11-57	

MICROFILMED  
DEC 23 1997

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-1103(20)	

LAKE COUNTY  
LAK-1-4.02

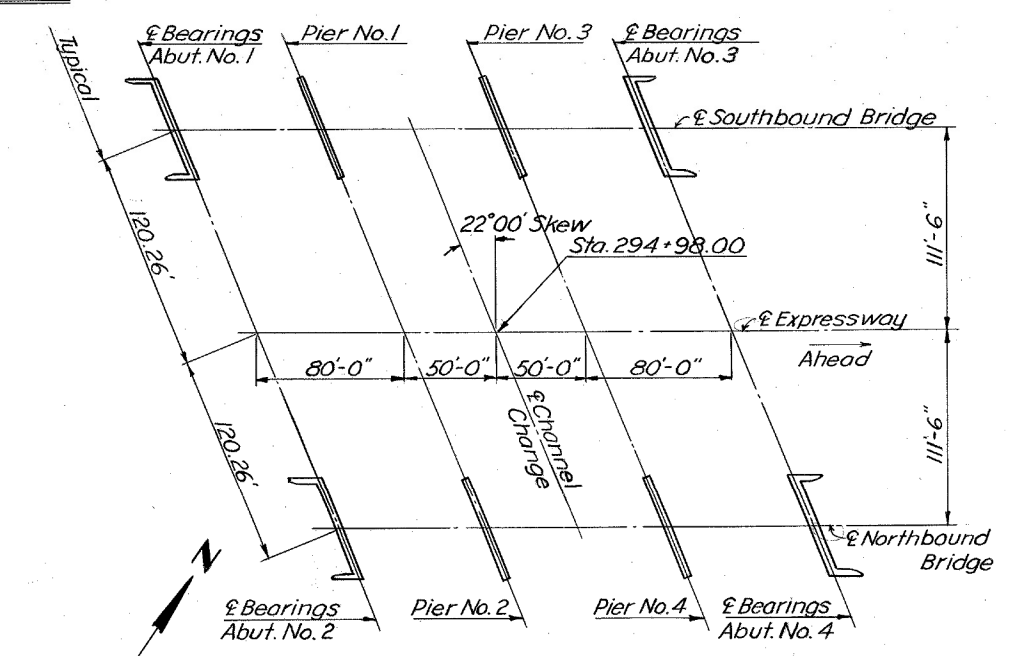
295  
333



ANCHOR BOLT LAYOUT  
(For Piers No. 1 and No. 2 Only)

- NOTES:
- Clearance of reinforcing steel from face of concrete shall be 2" unless otherwise shown.
  - Special care shall be taken in placing reinforcing steel in the bridge seat so that it will not interfere with the drilling of anchor bar holes at Piers 1 and 2.
  - Design foundation pressure is 4.5 tons per sq. ft.

SECTION B-B



SUBSTRUCTURES LAYOUT SKETCH

PIER	PIER									
	A	B	C	D	E	F	G	H	J	
1	642.52	642.72	642.93	643.04	642.98	642.91	642.84	635.02	595.50	
2	644.23	644.43	644.64	644.84	644.87	644.81	644.74	636.73	595.50	
3	644.52	644.72	644.93	645.04	644.98	644.91	644.84	637.02	595.50	
4	646.23	646.43	646.64	646.84	646.87	646.81	646.74	638.73	595.50	

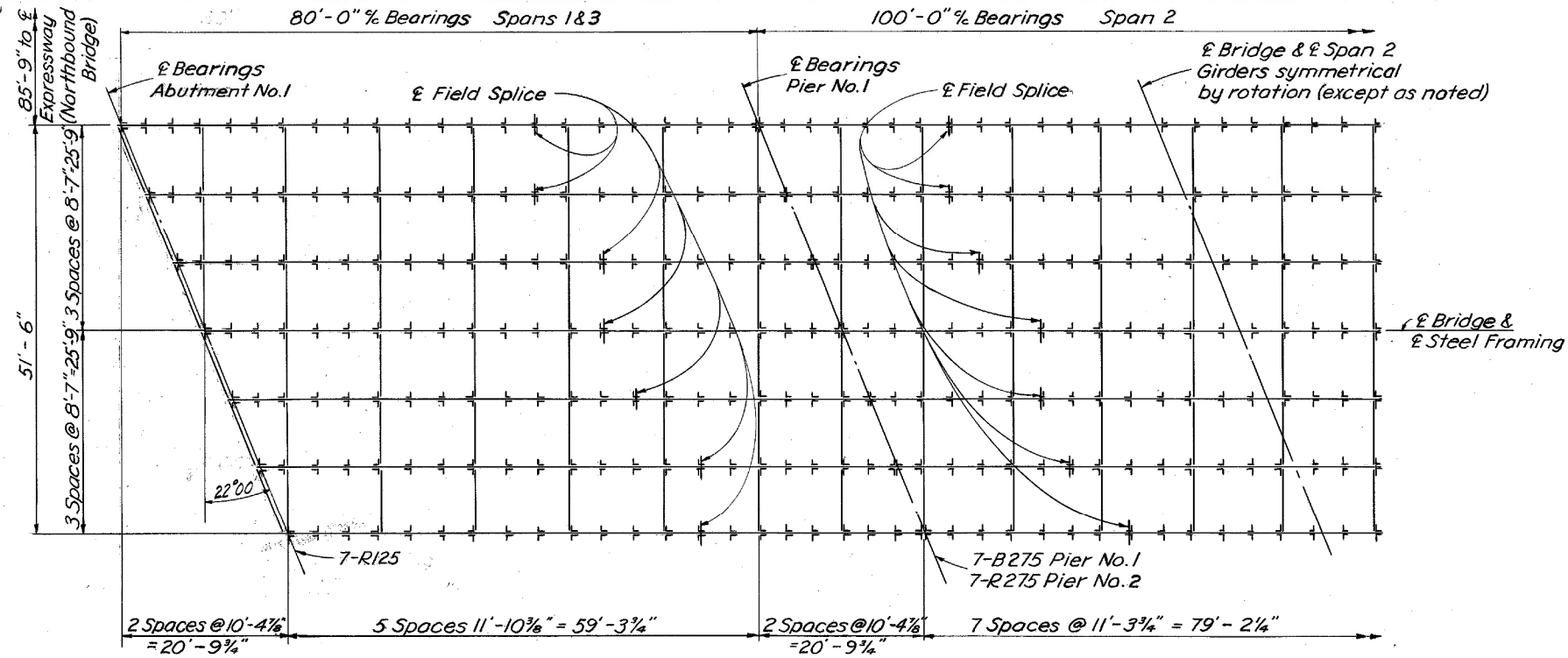
MICHAEL BAKER, JR., CONSULTING ENGINEERS  
ROCHESTER, PENNSYLVANIA

**PIERS**  
BRIDGE NO. LAK-1-054I  
OVER EAST BRANCH CHAGRIN RIVER

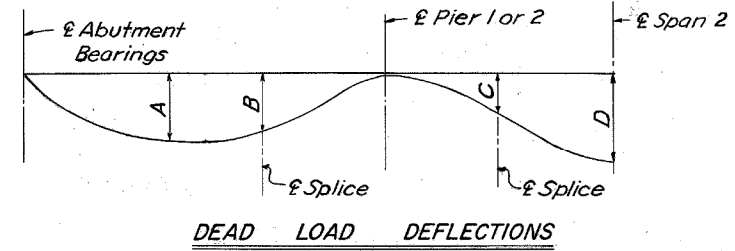
LAKE COUNTY STA. 294+98.00

Designed	Drawn	Traced	Checked	Reviewed - Date	Revised
D.W.S.	R.W.	F.E.H.	C.S.A.	KA 11-57	

No changes



**HALF PLAN — STEEL FRAMING**  
(Northbound bridge shown, Southbound bridge similar)

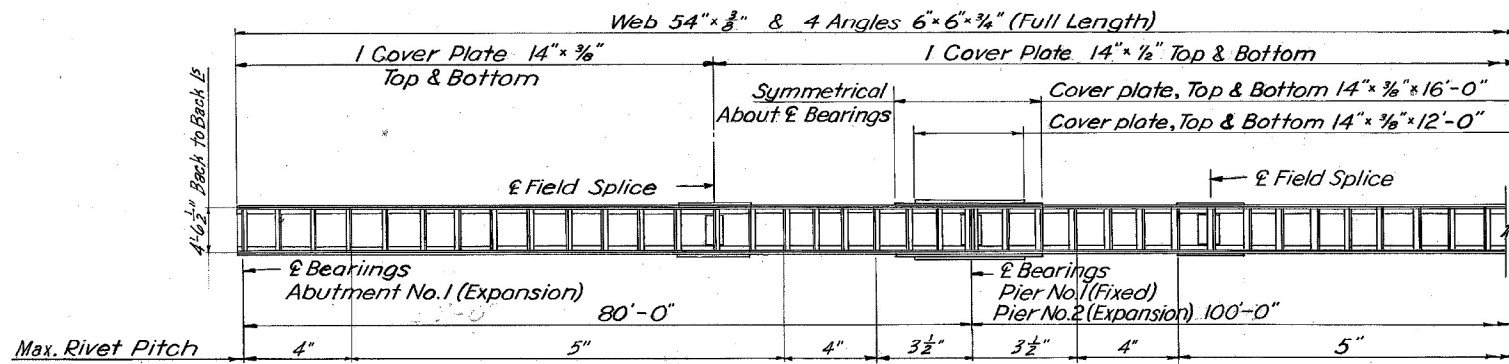


	Interior Girders				Exterior Girders			
	End Span	Mid Span	End Span	Mid Span	End Span	Mid Span	End Span	Mid Span
Deflection due to weight of steel	1/8"	1/16"	1/16"	1/8"	1/8"	1/16"	1/16"	1/8"
Deflection due to remaining dead load	1/2"	3/16"	1/4"	1/2"	3/16"	3/16"	1/4"	3/16"
Sum of deflections	5/8"	1/4"	5/16"	5/8"	1/2"	5/16"	5/8"	5/8"

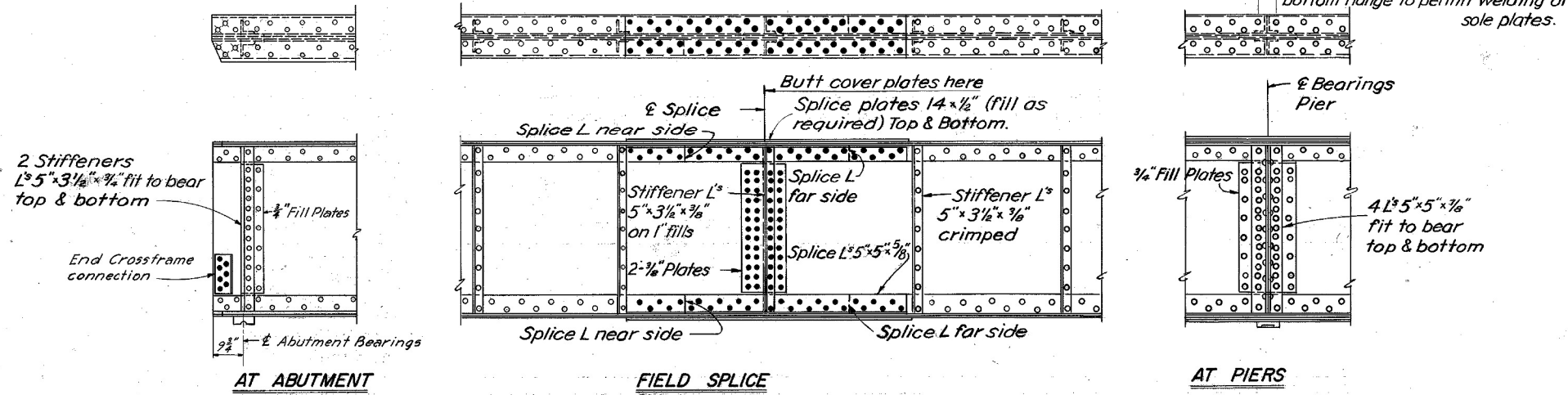
NOTE: Girders to be cambered at splice points to compensate for dead load deflections.

**NOTES**

- All dimensions are horizontal.
- All intermediate stiffeners are L<sup>s</sup> 5" x 3 1/2" x 3/8" crimped, except at splice points.
- All rivets - 7/8" φ.
- All intermediate crossframes - L<sup>s</sup> 3" x 3" x 5/16".
- All end crossframes - L<sup>s</sup> 4" x 4" x 3/16".
- All stiffeners shall be normal to the girder.
- Refer to Standard Drawing RB-1-55, revised 2-2-59 for details of Rockers and Bolsters.
- For additional details, see SUPERSTRUCTURE DETAIL sheet.
- The requirement of 5-7.14 for metallic filling of openings at crimped stiffeners shall not apply. Prior to the assembly of a girder the web plate, the flange angle and the stiffener angle at the location of the crimp in the stiffener shall be given a coat of paint.



**HALF ELEVATION OF GIRDER**  
Exterior or Interior



MICHAEL BAKER, JR., CONSULTING ENGINEERS  
ROCHESTER, PENNSYLVANIA

**STEEL FRAMING**  
BRIDGE NO. LAK-1-054I  
OVER EAST BRANCH CHAGRIN RIVER

LAKE COUNTY STA. 294+98.00

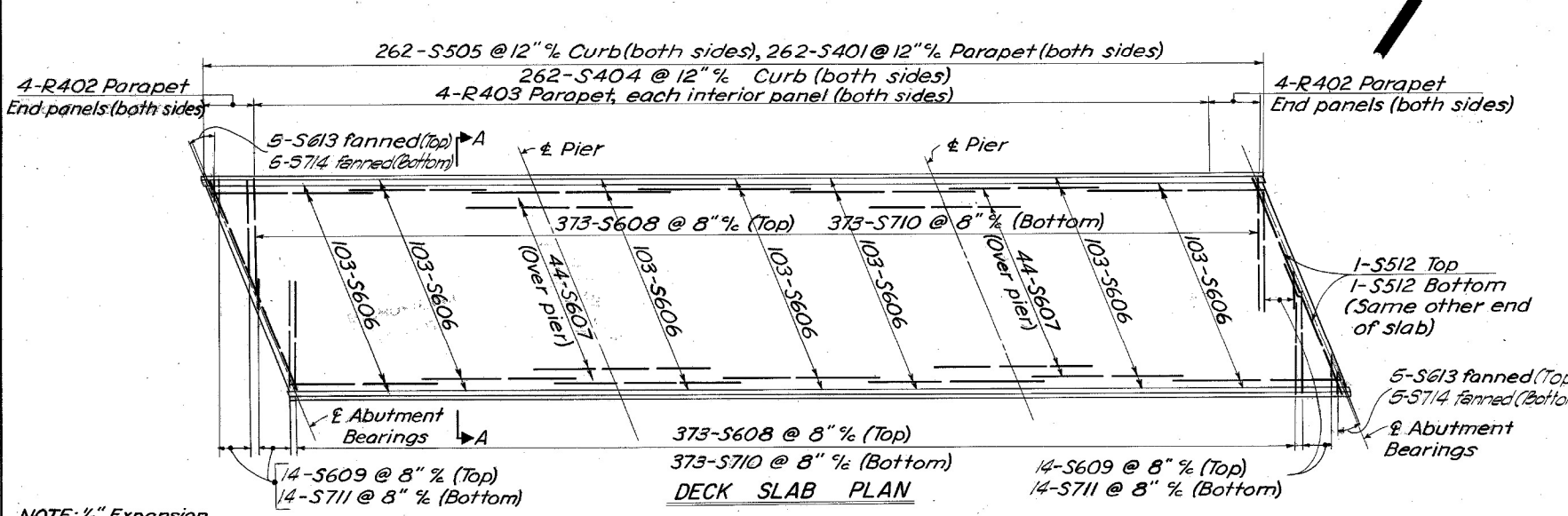
Designed	Drawn	Traced	Checked	Reviewed - Date	Revised
A.A.	WHJr.	FEH. R.W.	J.C.B.Jr.	K.C. 11-57	

Sheet 5 of 7

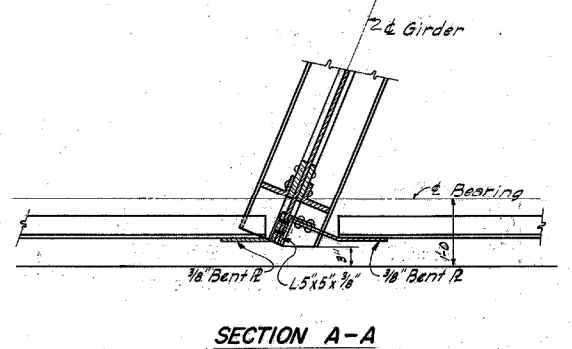
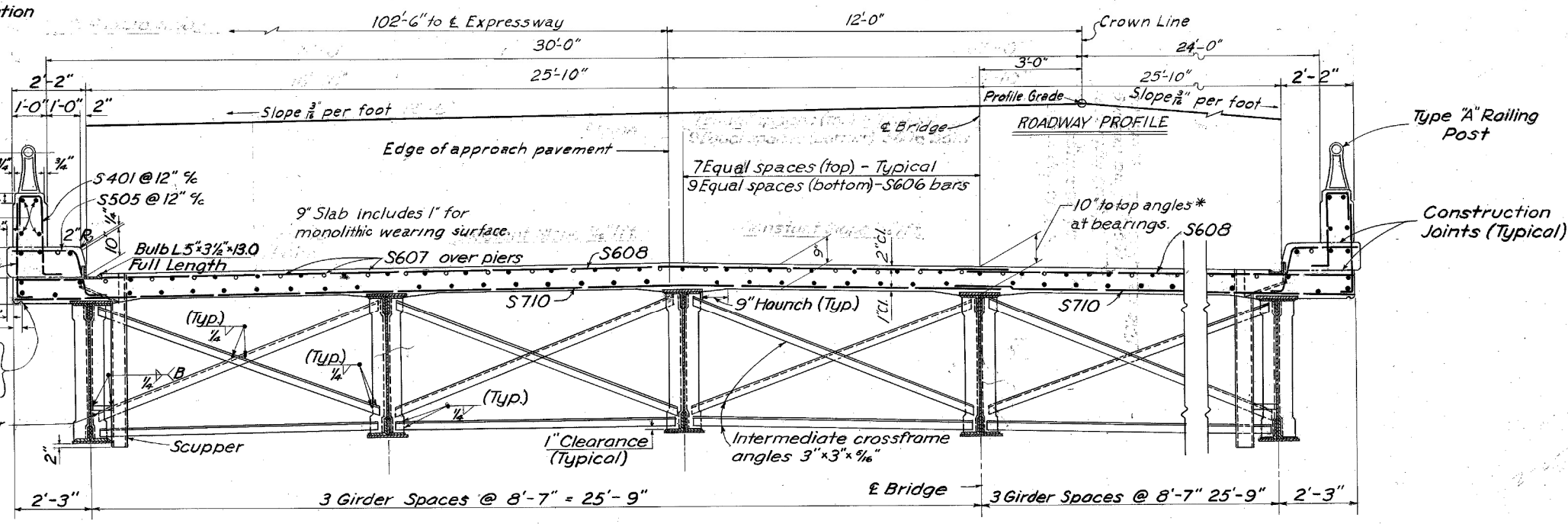
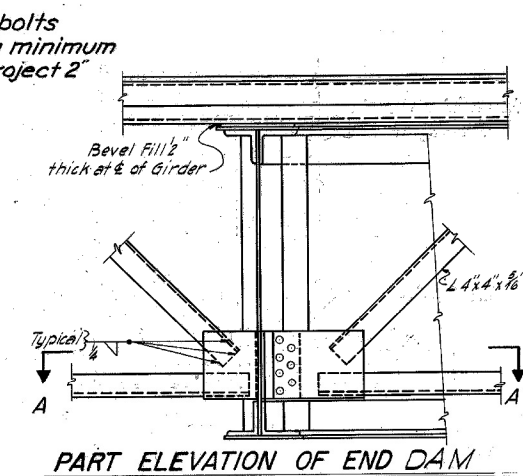
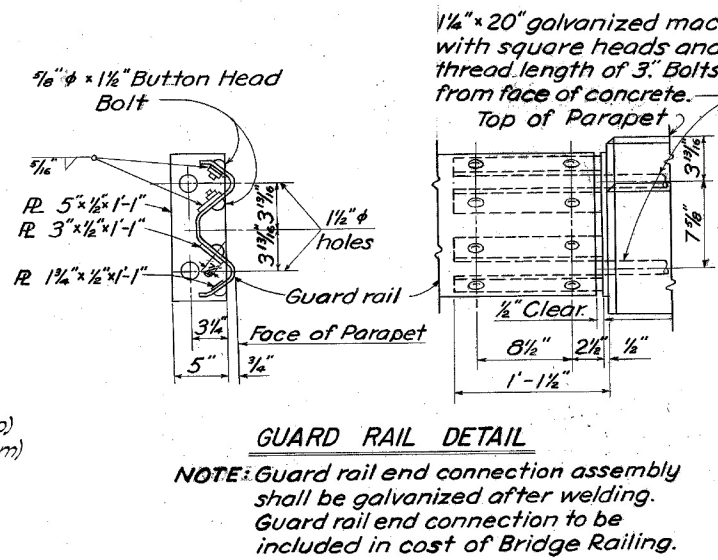
No Changes

MICROFILMED  
DEC 23 1987

FED. RD DIVISION	STATE	PROJECT	TYPE FUNDS	297 333
2	OHIO	I-1103 (20)		
LAKE COUNTY LAK-I-4.02				



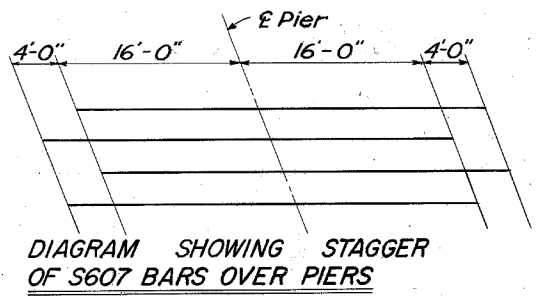
NOTE:  $\frac{1}{4}$ " Expansion joint in parapet. See General Plan & Elevation for spacing.



**DECK PLACING PROCEDURE**

In placing the deck concrete, construction joints will be permitted, parallel to the transverse reinforcing steel and near the middle of any span. Because of the flow of curing water from the surface of previously-placed deck concrete, the sequence of pours shall be upgrade, starting at the lowest end (or ends) on an inclined grade or vertical curve (or at an intermediate low point for a sagged vertical curve).

\* This is the nominal 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 configuration required to place it parallel to the finished grade.

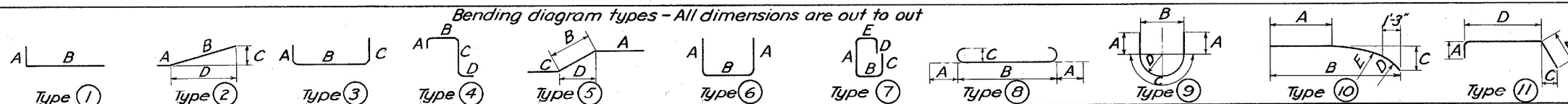


- NOTES**
- Refer to standard drawing CSB-2-56, sheets 2 & 3 of 6, revised 2-2-59, for details of End Dam, Gutters, Scuppers, Curb Plates and Pipe Drains.
  - Refer to standard drawing AR-1-57, revised 2-2-59, for Aluminum Railing (Type A) and concrete parapet details.
  - Concrete and reinforcing steel above parapet construction joints included with railing for payment.
  - Concrete shall be class "C".
  - See General Plan for spacing of scuppers and railing.

MICHAEL BAKER, JR., CONSULTING ENGINEERS ROCHESTER, PENNSYLVANIA				
<b>SUPERSTRUCTURE</b>				
BRIDGE NO. LAK-I-054I OVER EAST BRANCH CHAGRIN RIVER				
LAKE COUNTY				STA. 294+98.00
Designed	Drawn	Traced	Checked	Reviewed-Date
A.A.	WH Jr.	FEH	DW.S.	KC 11-57

REINFORCING STEEL BAR SCHEDULE

Bending diagram types - All dimensions are out to out



PIERS										
MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	WEIGHT
P701	288	7	12'-2"	B	10"	10'-6"	7			7164
P602	40	6	35'-6"	Str.						2133
P603	264	6	5'-6"	1	10"	4'-8"				2181
P504	206	5	35'-0"	9	15'-5"	2'-8"	4'-2"	1'-4"		7520
P605	264	6	21'-0"	Str.						8327
P506	6	5	17'-2"	Str.						107
P507	66	5	18'-11"	Str.						1302
P508	126	5	20'-11"	Str.						2749
P509	76	5	23'-2"	Str.						1837
P510	8	5	31'-11"	Str.						266
P611	24	6	15'-9"	2	1'-9"	14'-0"	4'-5"	13'-4"		568
P512	16	5	30'-6"	Str.						509
P513	16 Sets of 13	5	7'-5" to 10'-7"	6	2'-5"	2'-8"				1952
P514	16 Sets of 8	5	10'-1" to 11'-9"	6	2'-3"	2'-8"				1513
P515	84	5	17'-7"	6	7'-7"	2'-8"				1540
P1116	16	11	34'-0"	1	2'-8"	31'-4"				2890
P1117	48	11	31'-4"	Str.						7990
P518	168	5	5'-8"	6	1'-6"	2'-8"				994
P519	6	5	19'-2"	Str.						120
Total Weight 51,662										

MARK	TOTAL	SIZE	LENGTH	PITCH	NO. of TURN	CORE DIA.	WEIGHT
None Required							

ABUTMENTS										
MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	WEIGHT
A601	228	6	9'-8"	1	4'-6"	5'-3"				3339
A602	224	6	21'-6"	7	8'-10"	1'-5"	7'-6"	2'-10"	11"	7233
A503	32	5	31'-9"	Str.						1060
A504	20	5	15'-8"	Str.						327
A505	12	5	11'-0"	Str.						138
A506	8	5	16'-6"	Str.						138
A507	88	5	12'-9"	6	5'-11"	1'-2"				1170
A508	176	5	7'-1"	6	2'-2"	3'-0"				1300
A509	240	5	2'-6"	Str.						626
A510	112	5	30'-9"	Str.						3592
A511	168	5	6'-8"	6	1'-6"	3'-8"				1169
A512	228	5	3'-0"	Str.						713
A513	52	5	9'-11"	Str.						538
A514	52	5	9'-3"	Str.						502
A515	24	5	14'-6"	Str.						363
A516	24	5	14'-2"	Str.						355
A517	96	5	4'-0"	Str.						400
A518	24	5	8'-1"	Str.						202
A519	24	5	7'-8"	Str.						192
A520	24	5	12'-3"	Str.						307
A521	32	5	19'-3"	Str.						642
A522	16	5	3'-9"	Str.						63
A523	112	5	2'-6"	Str.						292
A524	80	5	2'-3"	1	6"	1'-9"				188
A525	8 Sets of 4	5	14'-0" to 2'-1"	1	6"	B=1'-4" to 1'-7"				67
A526	8 Sets of 5	5	1'-4" to 1'-10"	1	6"	B=10" to 1'-4"				66
A527	80	5	3'-4"	11	6"	1'-2"	2"	1'-8"		278
A528	8 Sets of 4	5	3'-0" to 3'-3"	11	6"	1'-2"	2"	1'-8"		106
A529	8 Sets of 5	5	2'-6" to 3'-0"	11	6"	1'-2"	2"	1'-8"		115
A530	8	5	18'-10"	10	6'-11"	8'-10"	1'-0"		72R	157
A531	8	5	19'-6"	10	5'-4"	19'-6"	1'-0"		72R	163
A532	8	5	18'-0"	Str.						150
R433	32	4	18'-0"	Str.	Included with railing for payment					
A434	112	4	3'-0"	1	5"	2'-7"				224
A435	112	4	3'-9"	4	1'-0"	8"	1'-8"	5"		280
Total Weight 26,455										

SUPERSTRUCTURE										
MARK	TOTAL	SIZE	LENGTH	TYPE	A	B	C	D	E	WEIGHT
S401	1048	4	4'-6"	4	1'-2"	8"	2'-2"	6"		3150
R402	32	4	12'-1"	Str.	Included with railing for payment.					
R403	256	4	14'-6"	Str.						
S404	1048	4	3'-0"	1	5"	2'-7"				2100
S505	1048	5	3'-5"	5	1'-7"	6"	1'-4"	6"		3738
S606	1442	6	39'-0"	Str.						84469
S607	176	6	36'-0"	Str.						9517
S608	1492	6	28'-10"	Str.						64615
S609	112	6	8'-6" to 30'-2"	Str.	Each Varies by 1'-8"					3252
S710	1492	7	29'-0"	Str.						88440
S711	112	7	8'-6" to 30'-2"	Str.	Each Varies by 1'-8"					4426
S512	16	5	30'-10"	Str.						515
S613	20	6	7'-0"	Str.						210
S714	20	7	7'-0"	Str.						286
Total Weight 264,718										

ESTIMATED QUANTITIES							
ITEM	TOTAL	UNIT	DESCRIPTION	SUPERSTR	ABUTS.	PIERS	GENERAL
E-2	1540	Cu.Yd.	Unclassified Excavation		660	950	
E-2	Lump Sum		Cofferdams, Cribs & Sheeting				Lump Sum
E-3	2,200	Cu.Yd.	Channel Excavation				2,200
S-1	906	Cu.Yd.	Class "C" Concrete, Superstructure	906			
S-1	723	Cu.Yd.	Class "C" Concrete, Piers above footings			723	
S-1	299	Cu.Yd.	Class "E" Concrete, Abutments above footings		299		
S-1	381	Cu.Yd.	Class "E" Concrete, Footings		205	176	
S-4	342,855	Lbs.	Reinforcing Steel	264,718	26,455	51,662	
S-7	1,197,600	Lbs.	Structural Steel	1,197,600			
S-8	1,197,600	Lbs.	Field Painting of Structural Steel	1,197,600			
S-14	1,194	Lin.Ft.	Railing (Aluminum Rail & Supports, Concrete Parapet)				1,194
S-29	117	Cu.Yd.	Porous Backfill		117		
I-10	1,836	Sq.Yd.	Crushed Aggregate Slope Protection				1,836
I-10	2,400	Cu.Yd.	Dumped Rock Channel Protection				2,400
S-16	Lump Sum		First Test Pile				Lump Sum
S18	3,740	Lin.Ft.	Steel Piles, 12 BP 53		3,740		
I-127	4	Ez.	Bridge Delineators				4

REPLACEMENT BARS					
MARK	NO.	SIZE	LENGTH	TYPE	WEIGHT
RE 401	1	4	5'-3"	Str.	
RE 501	2	5	5'-7"	Str.	
RE 601	10	6	5'-11"	Str.	
RE 701	6	7	6'-3"	Str.	
RE 1101	2	11	7'-6"	Str.	

**REPLACEMENT BARS**  
If reinforcing bars are fabricated from stock which has been previously tested and approved by the Ohio Highway Testing Laboratory, test samples as provided in section S-4.02 need not be furnished and replacement bars will not be required.

**BAR SIZE**  
Bar size is indicated in the bar mark. The first digit where three digits are used, and first two digits where four are used, indicate the bar size number. For example A401 is a no. 4 size bar and A114 is a no. 11 size bar.

MICHAEL BAKER, JR., CONSULTING ENGINEERS  
ROCHESTER, PENNSYLVANIA

**REINFORCING STEEL LIST & ESTIMATED QUANTITIES**  
BRIDGE NO. LAK-1-0541  
OVER EAST BRANCH CHAGRIN RIVER  
LAKE COUNTY STA. 294+ 98.00

Designed	Drawn	Traced	Checked	Reviewed - Date	Revised
A.A. D.W.S.	P.W.	F.E.H.	D.W.S. C.S.A.	K.O. 11-57	