

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	STATE

1  
54

DEF - 281 - 0.00

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY FROM STA. 314+22.35 TO STA. 344+63.07 BY ACTION OF THE DIRECTOR OF HIGHWAYS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE REVISED CODE OF OHIO.

1967 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF HIGHWAYS, 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 STATE OF OHIO.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE PART TIME CLOSING OF DOMERSVILLE ROAD (TEMPORARY U.S. 24) AS NOTED ON SHEET 2, DURING WHICH TIME DETOURS WILL BE PROVIDED AS SHOWN HEREON. PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED  
DATE 9-13-67

*Thomas R. Brown*  
DIVISION DEPUTY DIRECTOR

APPROVED  
DATE 9-15-67

*C. H. Goff*  
ENGINEER OF BRIDGES

APPROVED  
DATE 9-15-67

*R. E. Butler*  
ENGINEER OF LOCATION & DESIGN

APPROVED  
DATE 9-15-67

*R. E. Shultz*  
DEPUTY DIRECTOR OF DESIGN & CONSTRUCTION

APPROVED  
DATE 9-21-67

*T. H. Brown*  
DEPUTY DIRECTOR OF RIGHT-OF-WAY

APPROVED  
DATE 9-22-67

*Thomas W. Mapp*  
DEPUTY DIRECTOR OF PLANNING & PROGRAMMING

APPROVED  
DATE 9-22-67

*E. W. Wilson*  
FIRST ASSISTANT DIRECTOR

APPROVED  
DATE 9-22-67

*P. E. Meschter*  
DIRECTOR OF HIGHWAYS

Sheet 29 - Rev. 9-10-70

*G.P.V.*  
Revised As-Plaid

DEF - 281 - 0.00  
RICHLAND TOWNSHIP  
DEFIANCE COUNTY

CONVENTIONAL SIGNS

SECTION LINE	----
CENTER LINE	----
CORPORATION LINE	----
PROPERTY LINE	----
FENCE LINE	-x-x-x-x-x-
TOWNSHIP LINE	----
LIMITED ACCESS HIGHWAY	==== LA
RIGHT-OF-WAY ONLY	==== R/W
EXISTING RIGHT-OF-WAY	----
GUARD RAIL	..... NEW
RAILROADS	====
POLE LINES	o TELEPHONE o POWER
DRAINAGE LINES	----- NEW ----- EXIST.
TREES AND STUMPS	o o o o
TREES AND STUMPS REMOVED	x x

INDEX OF SHEETS

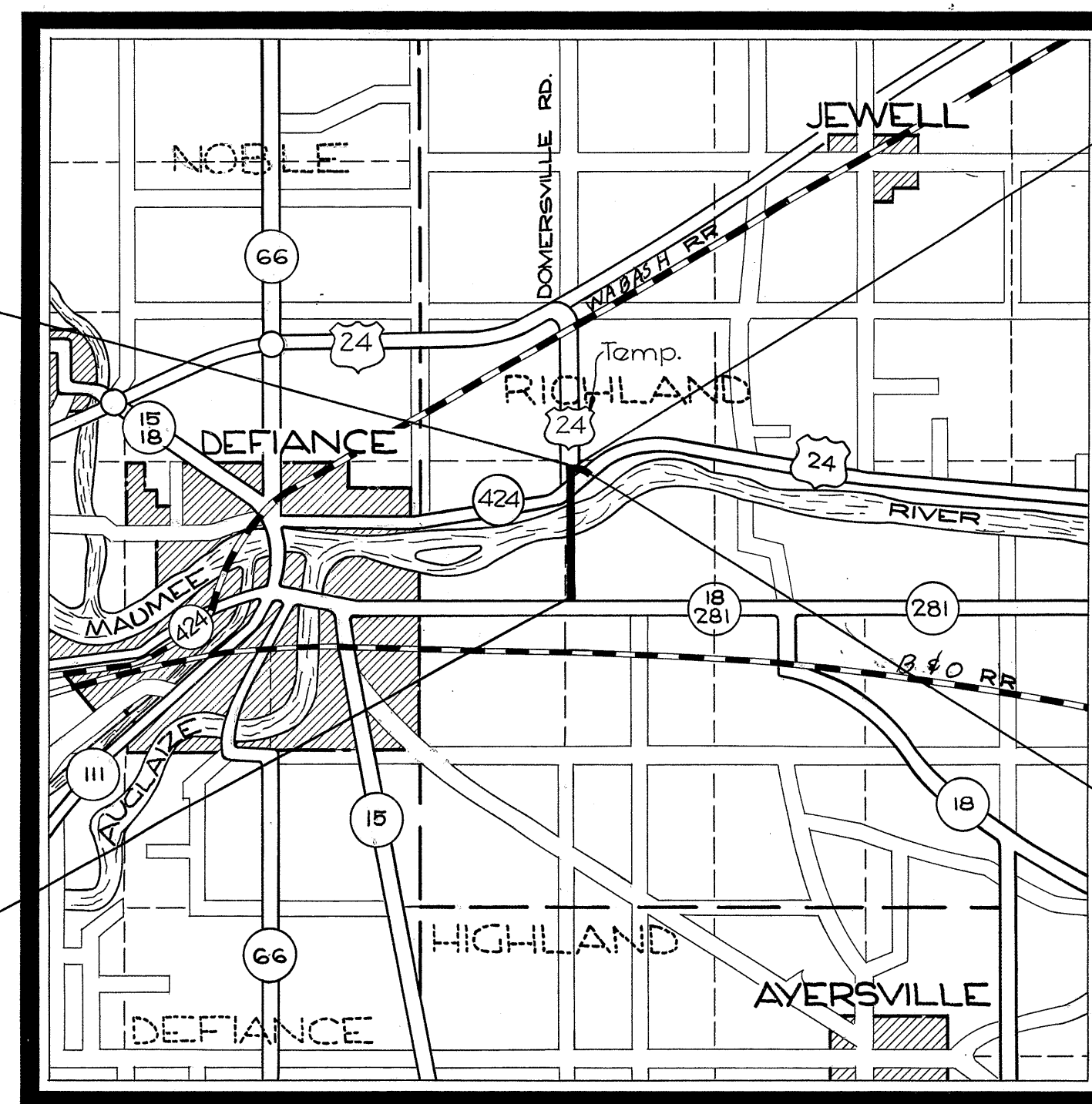
TITLE SHEET	1
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LINE DATA

<u>CONNECTOR ROAD</u>	
BEGIN PROJECT STA.	G + 79.08
END PROJECT STA.	0 + 18.00
NO ADDITIONS OR DEDUCTIONS	
NET LENGTH	= 661.08 LIN. FT.
<u>S.R. 281 (RELOCATED)</u>	
BEGIN PROJECT, STA.	298 + 43.00
END PROJECT, STA.	344 + 52.07
NO ADDITIONS OR DEDUCTIONS	
NET LENGTH	= 4609.07 LIN. FT.
TOTAL NET LENGTH PROJECT	= 5270.15 LIN. FT. or 0.998 MILES
APPROACH STA. 290 + 75	= 768.00 LIN. FT.
TO STA. 298 + 43	= 5270.15 LIN. FT.
FROM ABOVE	= 5270.15 LIN. FT.
NET LENGTH WORK	= 6038.15 LIN. FT. or 1.143 MILES

STANDARD CONSTRUCTION DRAWINGS

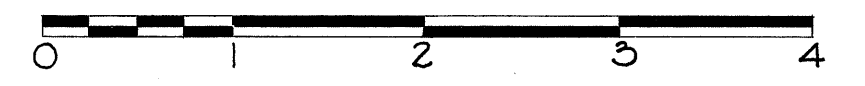
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BP-5	6-1-65	MC-5	6-1-65	SD-1-65 (Sh. 142)	11-8-65		
BP-6	6-1-65	MC-7	3-1-66	AS-1-54	8-10-65		
F-1	6-1-65						
F-3	10-1-66						
F-5	10-1-66						
GR-1	1-1-67						
GR-2A	1-1-67						
HW-E	6-1-65						
L-1	6-1-65						
MC-1	6-1-65						
MC-3	5-1-66						



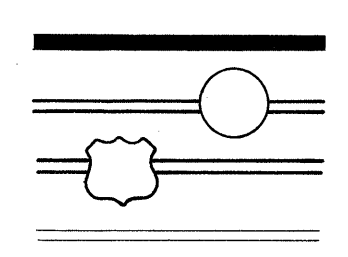
DELIVERY POINT: Defiance B & O R.R. AVERAGE HAUL: 2.0 Miles

LOCATION MAP

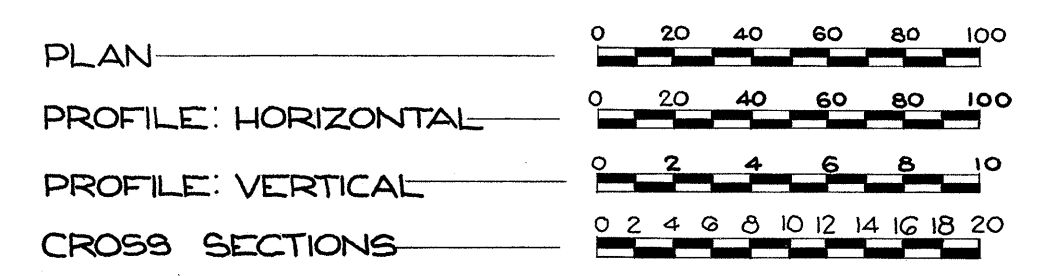
SCALE OF MILES



PORTION TO BE IMPROVED  
STATE ROADS  
FEDERAL ROADS  
OTHER ROADS

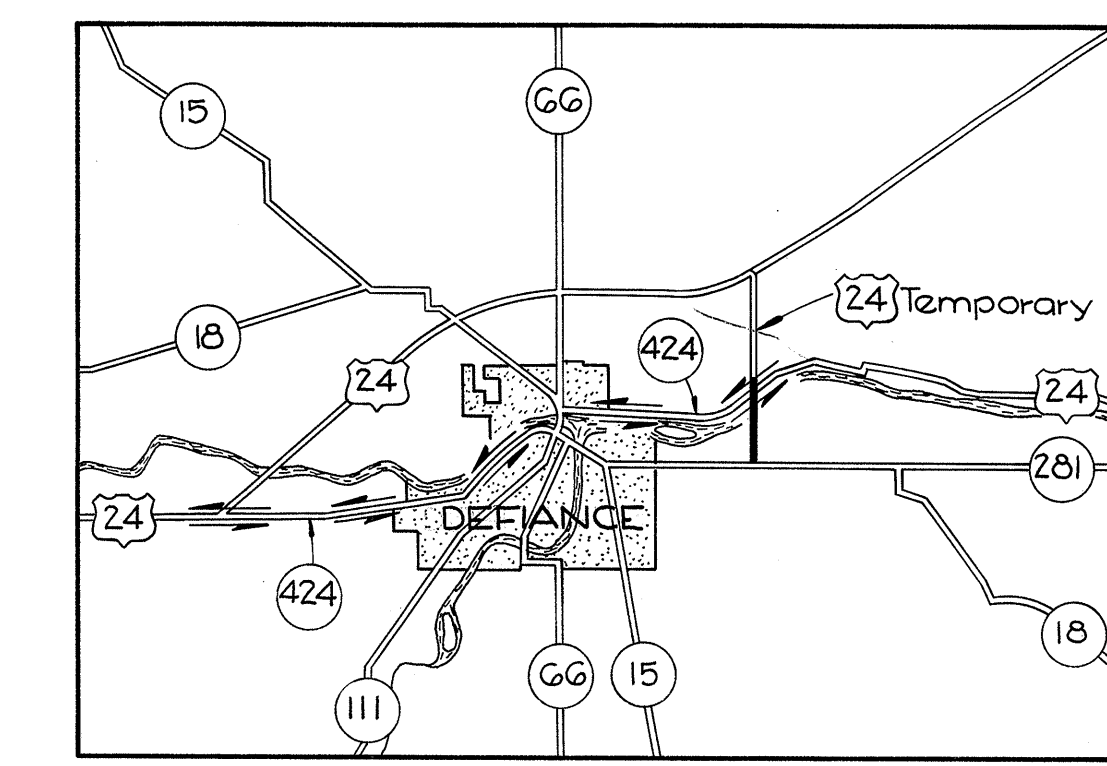


SCALE



SPECIFICATION NO.	DATE	SPECIFICATION NO.	DATE
808	1-13-67		
811	1-1-67		
825	1-1-67		
828	1-1-67		
832	5-25-67		
931	5-25-67		

PLANS PREPARED BY  
CHARLES L. BARBER & ASSOCIATES, INC.  
CONSULTING ENGINEERS TOLEDO, OHIO  
*Charles L. Barber*  
DATE



DETOUR MAP

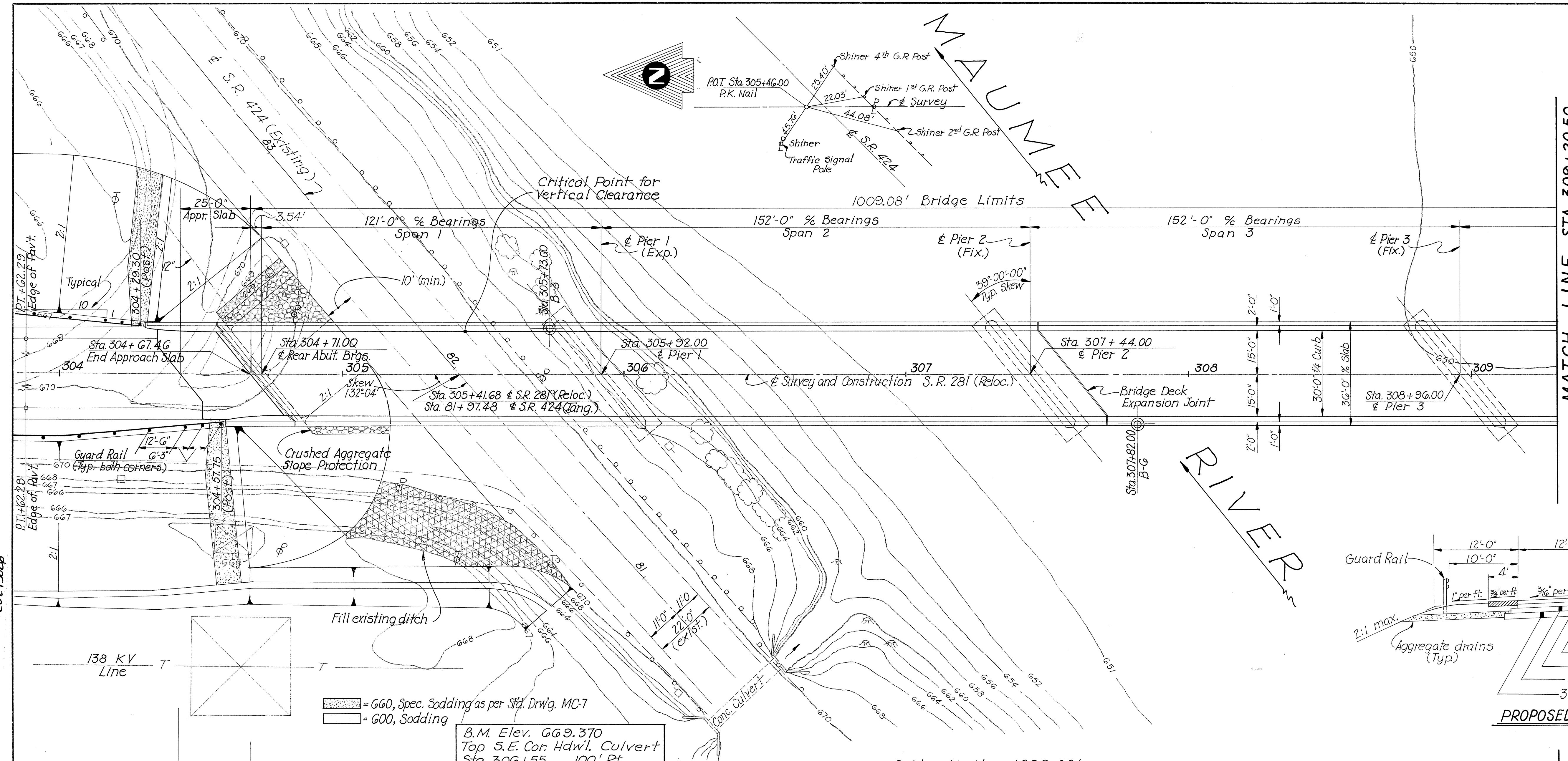
SCALE OF MILES



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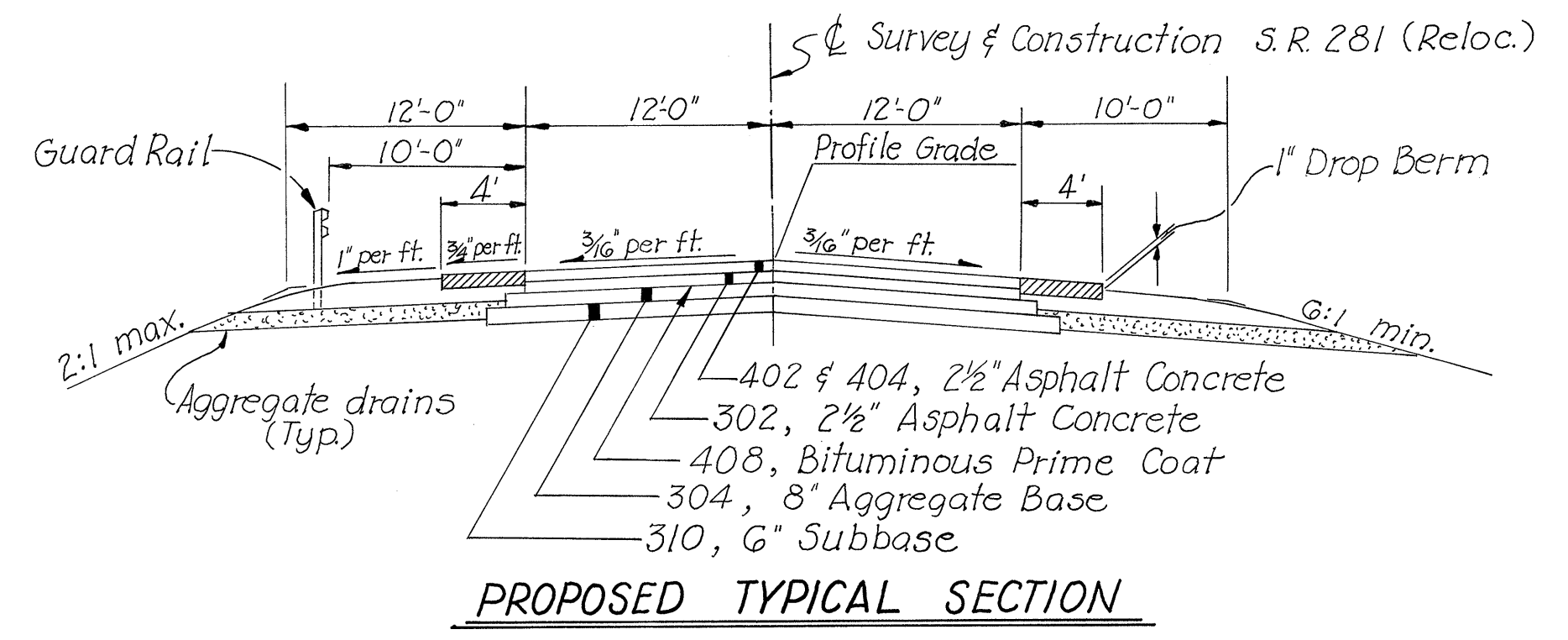
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	DATE OF LETTING	19
	CONTRACT NO.	



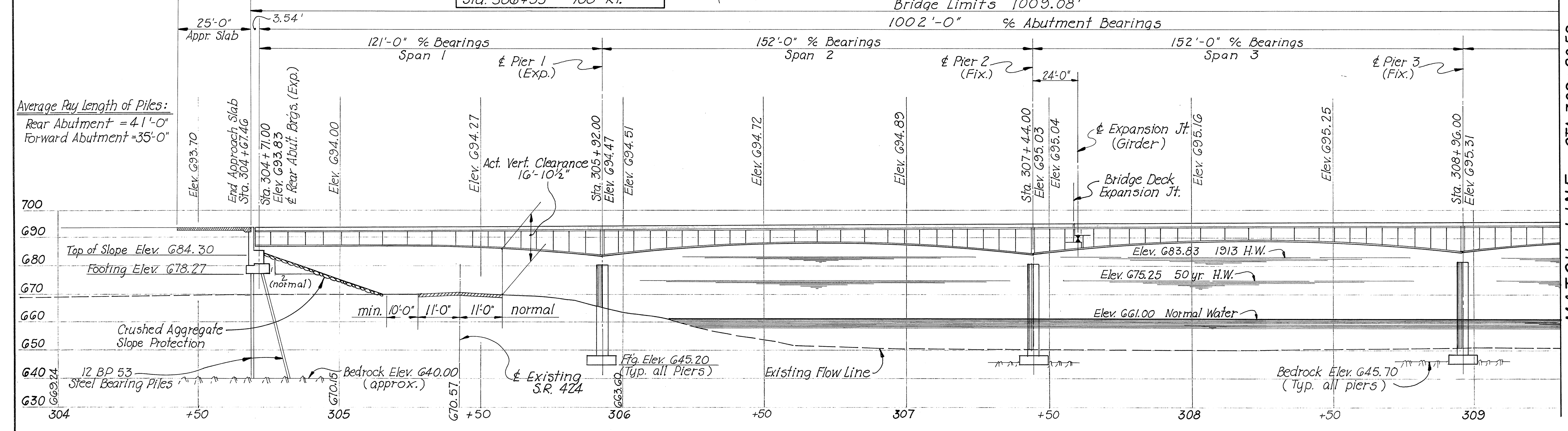


MATCH LINE STA. 309+20.50

**BORING LEGEND**  
 = Drive Sample Borings



**PROPOSED TYPICAL SECTION**



MATCH LINE STA. 309+20.50

**PROPOSED STRUCTURE**  
 TYPE: A seven span, continuous haunched girder with reinforced concrete deck and substructures.  
 SPANS: 121'-0", 5 Spans @ 152'-0" and 121'-0"  
 ROADWAY: 30'-0"  $\frac{1}{4}$  of 2'-0" safety curbs.  
 LOAD FREQUENCY: CF - 400 (57)  
 SKEW: 39°-00'-00" R.F.  
 WEARING SURFACE: 1" Monolithic Concrete  
 APPROACH SLABS: 25'-0" Long  
 ALIGNMENT: Tangent  
 DRAINAGE AREA: 5538 Square Miles

CHARLES L. BARBER & ASSOCIATES INC.  
 ENGINEERS  
 TOLEDO, OHIO

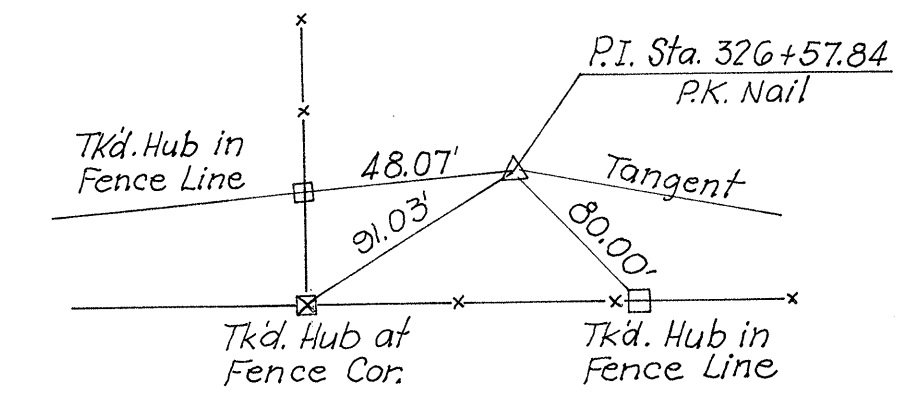
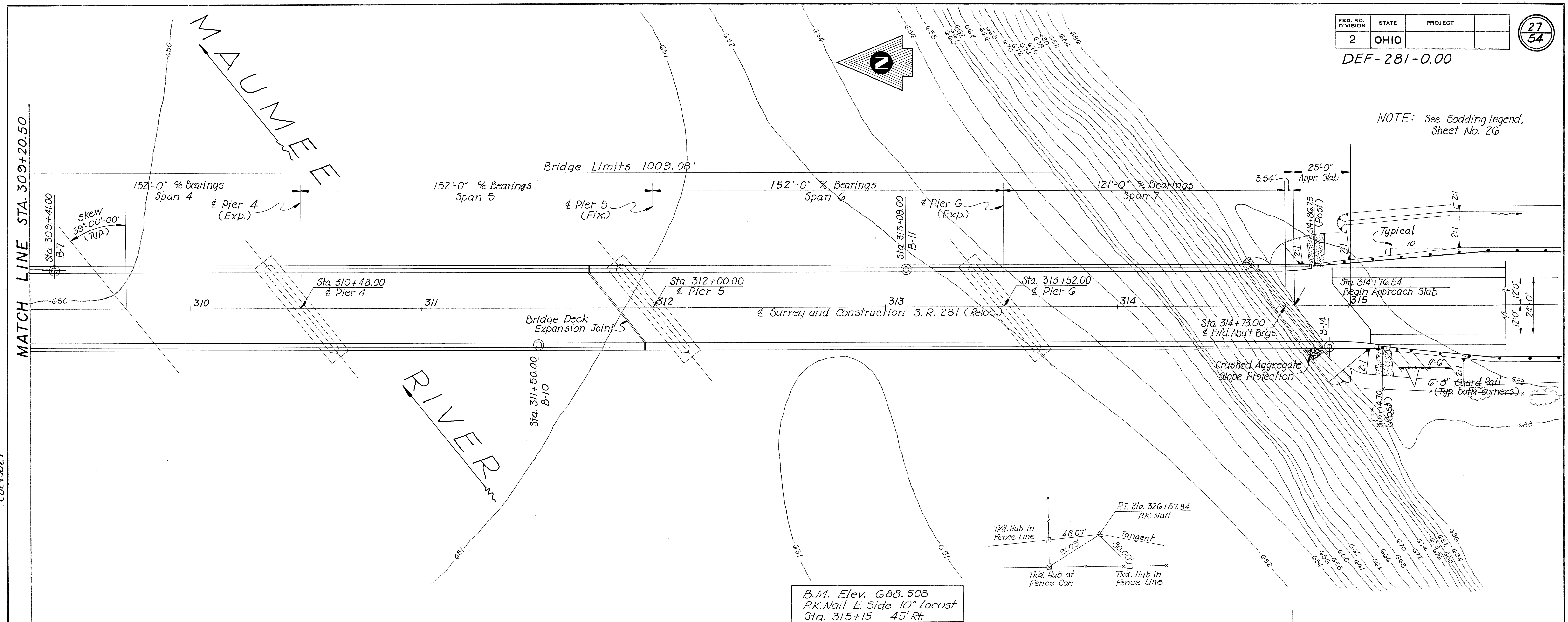
**SITE PLAN - PART I**  
 BRIDGE NO. DEF. 281-0 000  
 S.R. 281 (RELOC.) OVER MAUMEE RIVER  
 DEFIANCE CO. STA. 304+67.46-314+76.54

PRESENT SURVEYED	TOPOGRAPHY DRAWN	PROPOSED WORK DESIGNED	WORK DRAWN	CHECKED	REVIEWED
AERIAL	ABRAMS	W.P.D.	W.B.D.	K.R.R.	J.C.P.

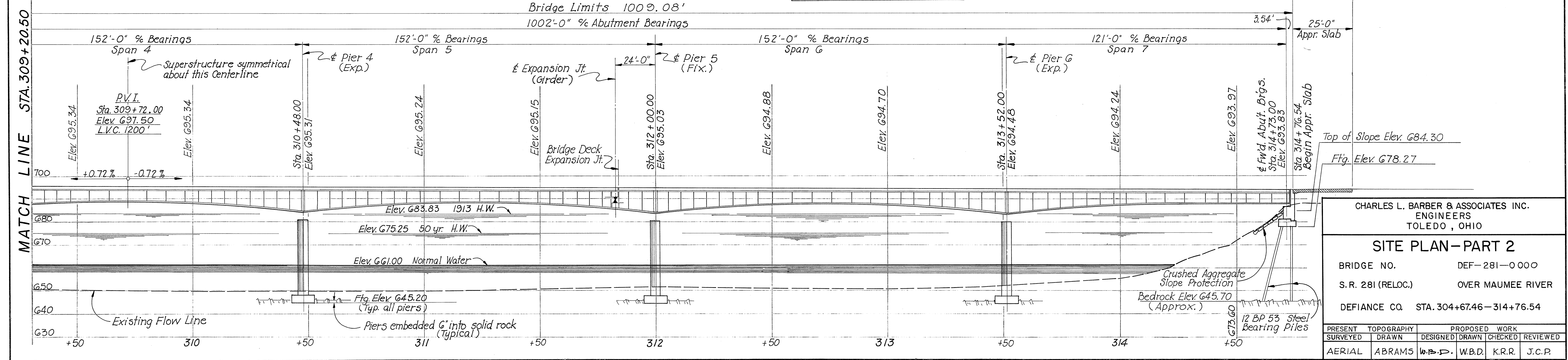
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NOTE: See Soding Legend, Sheet No. 26



B.M. Elev. 688.508  
P.K. Nail E. Side 10" Locust  
Sta. 315+15 45' Rt.



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ENGINEERS  
TOLEDO, OHIO

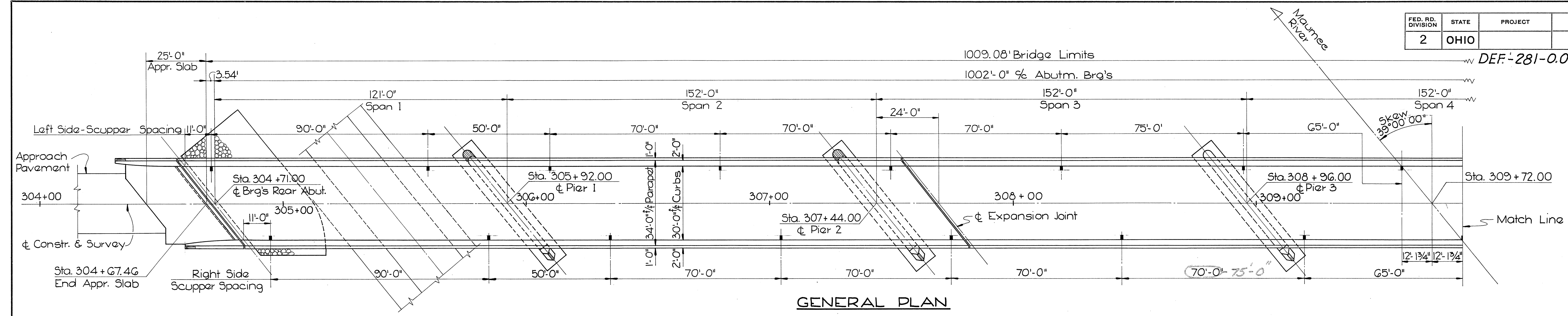
**SITE PLAN - PART 2**

BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEFIANCE CO. STA. 304+67.46 - 314+76.54

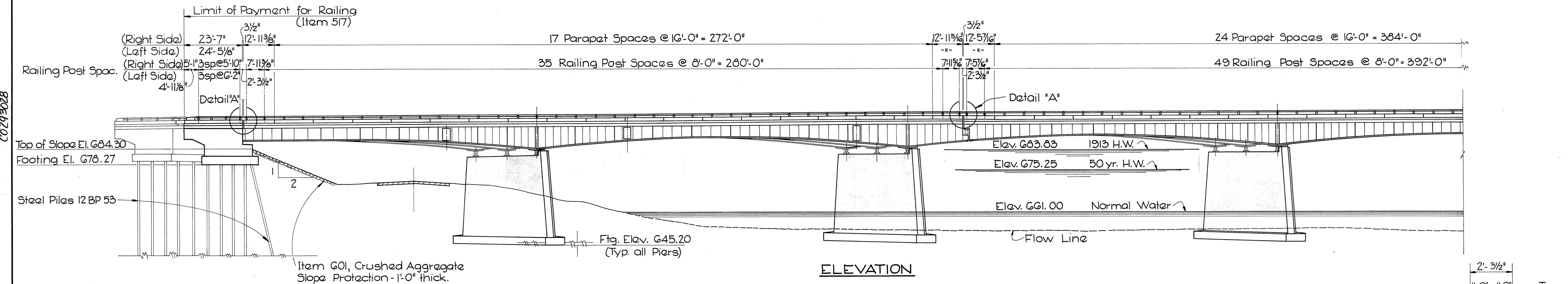
PRESENT SURVEYED	TOPOGRAPHY DRAWN	PROPOSED WORK DESIGNED	WORK DRAWN	CHECKED	REVIEWED
	ABRAMS	W.B.D.	W.B.D.	K.R.R.	J.C.P.

C0193027

DEF - 281-0.00



GENERAL PLAN



ELEVATION

**GENERAL NOTES**

**DESIGN SPECIFICATION**  
This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated Sept. 1, 1957, together with current revisions thereof.

**DESIGN DATA**

Design Loading	CF 400 (1957)
Concrete, Class "C"	Basic Unit Stress 1,333 p.s.i.
Concrete, Class "E"	Basic Unit Stress 1,133 p.s.i.
Structural Steel	ASTM A36 Basic Unit Stress 20,000 p.s.i.
Reinforcing Steel	Intermediate or hard grade. Basic Unit Stress 20,000 p.s.i.

**STRUCTURAL HIGH STRENGTH STEEL**  
Bridge Shoes shall conform to the ASTM designation A-441.

**Physical Properties**

Thickness	3/4" and under	over 3/4" to 1 1/2"	over 1 1/2" to 4"
Yield Point (p.s.i.)	50,000	43,000	42,000
Tensile Strength (p.s.i.)	70,000	67,000	63,000
Elongation in 8" (min.%)	18%	19%	19%

**REFERENCE** shall be made to Standard Drawings BR-1-G5, revised 11-24-G5, SD-1-G5 Sheets 1 & 2 dated 11-8-G5, and to Supplemental Specifications 808 dated 1-13-G7, 811 dated 1-1-G7, 825 dated 1-1-G7, 828 dated 1-1-G7, 832 dated 5-25-G7 and 931 dated 5-25-G7.

**PAINTING** of structural steel shall be in accordance with Supplemental Specification 832.

**FIELD** welds where shown in Curb Plate Details and Scupper Details on Std. Dwg. SD-1-G5 Sheet 2 of 3, are secondary welds.

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

**EXCAVATION QUANTITY**  
Includes the removal of fill material required for the construction of the abutments.

**FOUNDATION BEARING PRESSURE**  
Pier 1 footing is designed for a maximum bearing pressure of 3.5 tons per Sq. Ft. Piers 2, 3, 4, 5 & 6 footings are designed for a maximum bearing pressure of 6.0 tons per Sq. Ft.

**CONCRETE**  
Superstructure & piers above footings are Class "C" concrete. Pier footings and all of abutments are Class "E" concrete.

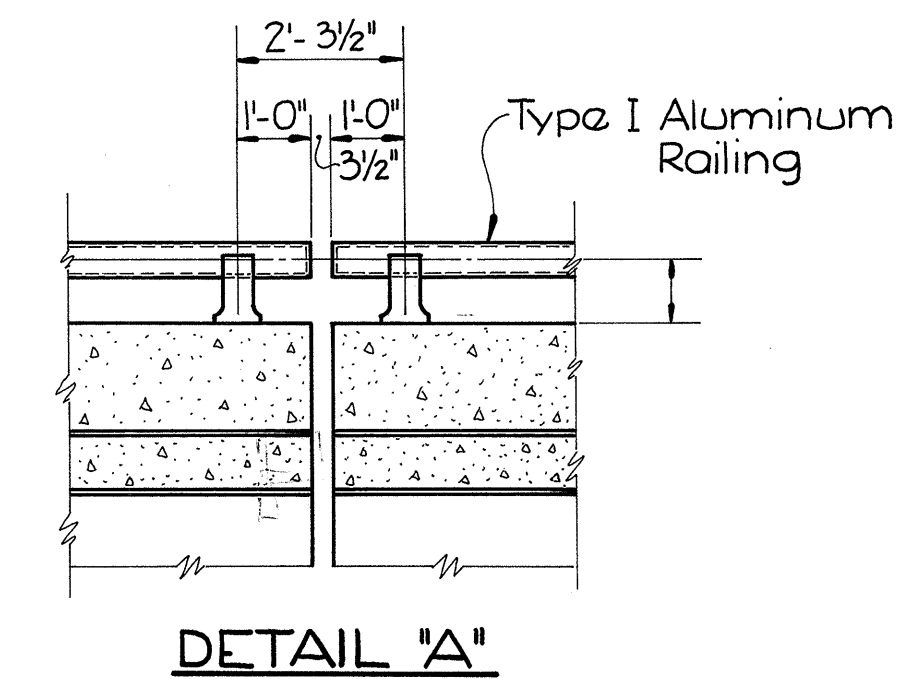
**UTILITY LINES**  
All expense involved in relocating (installing) the affected utility lines shall be borne by the owners. The contractor and owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

**MAINTENANCE AND PROTECTION OF TRAFFIC**  
Two lanes of traffic with a minimum horizontal width of 22'-0" shall be maintained on S.R. 424 at all times. A minimum vertical clearance of 14'-6" shall be provided at all times.

**ERECTION PROCEDURE**  
The contractor must submit to the Director, for approval three prints of his proposed erection procedure of the plate girders.

**PILES**  
Piles shall be driven with a hammer of not less than 11,000 ft. lbs. per blow to firm contact with rock. If the length of penetration is approximately equal to the depth to 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 rating:  
Rear and Forward Abutments - 50 tons using 11,000 ft. lbs. or 15,000 ft. lbs. hammer.

The Design Load is 50 tons per pile.

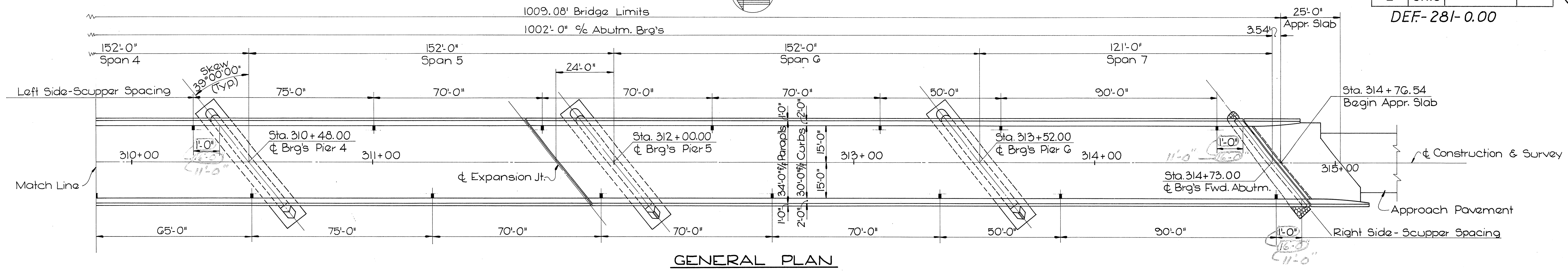


DETAIL "A"

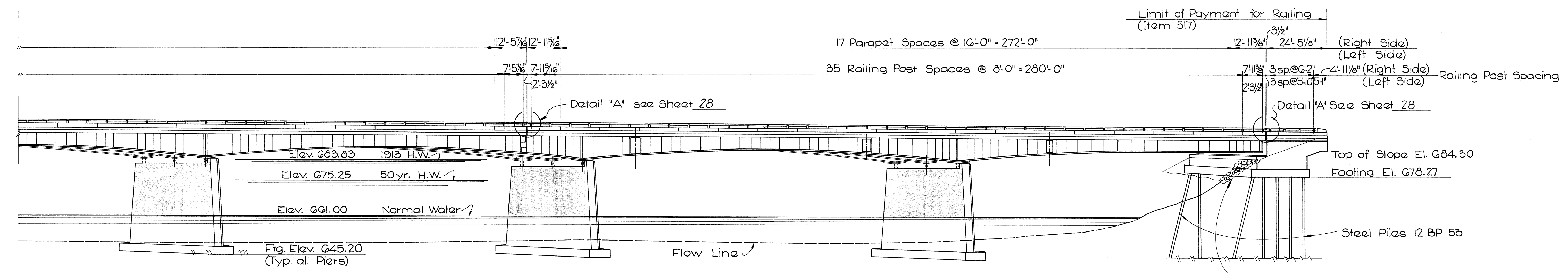
CHARLES L. BARBER & ASSOCIATES INC. ENGINEERS TOLEDO / OHIO					
<b>GENERAL PLAN - PART I</b>					
BRIDGE NO.			DEF - 281-0000		
S.R. 281			OVER MAUMEE RIVER		
DEF. CO.			STA. 304 + 67.46 - 314 + 76.54		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
W.B.D.	E.W.K.	MAT.	K.R.R.	J.C.P.	5-3-68



DEF-281-0.00



GENERAL PLAN



ELEVATION

ESTIMATED QUANTITIES

ITEM	GRAND TOTAL	UNIT	DESCRIPTION	SUPER	ABUTS.	PIERS	GEN'L	AS BUILT	ITEM	GRAND TOTAL	UNIT	DESCRIPTION	SUPER	ABUTS.	PIERS	GEN'L	AS BUILT
503	1,779	Cu. Yd.	Unclassified Excavation		445	1,334		1,397	513	2,606,362	Lbs.	Structural Steel (A-36)	2,596,357		10,005		
503	70	Cu. Yd.	Rock Excavation			70		92	517	2,107.73	Lin. Ft.	Bridge Railing, Type 1, incl. Conc. Parapet	2,107.73				
503		Lump Sum	Cofferdams, Cribbs and Sheeting				Lump		518	76	Lin. Ft.	6" Perforated Helical C.M.P. 707.0G (incl. specials)		76			
505		Lump Sum	First Test Pile				Lump		518	76	Lin. Ft.	6" Non-Perforated Helical C.M.P. 707.0G		76			
506		Lump Sum	First Pile Test Load				Lump		518	51	Cu. Yd.	Porous Backfill		51			
506	1	Each	Subsequent Pile Test Load						518	30	Each	Scuppers, Type 2, incl. supports	30				
507	1,840	Lin. Ft.	Steel H Piles (12 BP 53)		1,840			1,257	601	326	Sq. Yd.	Crushed Aggregate Slope Protection		326			
509	557,171	Lbs.	Rainforcing Steel	311,442	19,892	225,837			808	1,208	Units	Water Reducing, Set-Retarding Admixture	1,208				
511	1,208	Cu. Yd.	Class "C" Concrete - Superstructure	1,208					825	5,849	Sq. Yd.	Concrete Surface Treatment	5,726	123			
511	1,606	Cu. Yd.	Class "C" Concrete - Piers above Footing			1,606			828	156	Lin. Ft.	Joint Sealer	78	78			
511	287	Cu. Yd.	Class "E" Concrete - Abutments		287				832	2,684,097	Lbs.	Field Painting of Structural Steel (incl. Brg's)	2,674,092		10,005		
511	404	Cu. Yd.	Class "E" Concrete - Pier Footings			404											
513	77,735	Lbs.	High Strength Steel (A441) - Bearings	77,735													

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ENGINEERS  
TOLEDO, OHIO

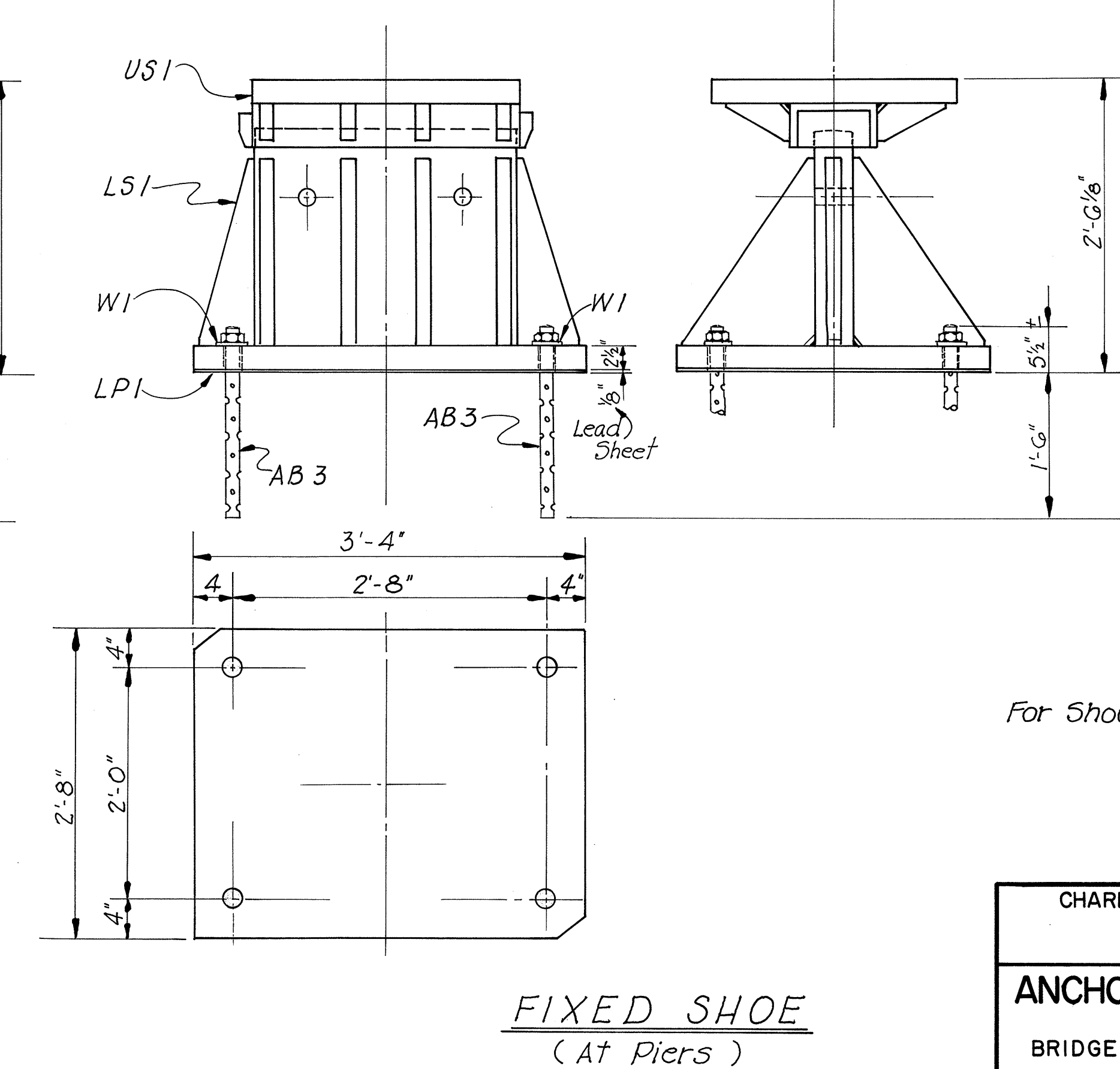
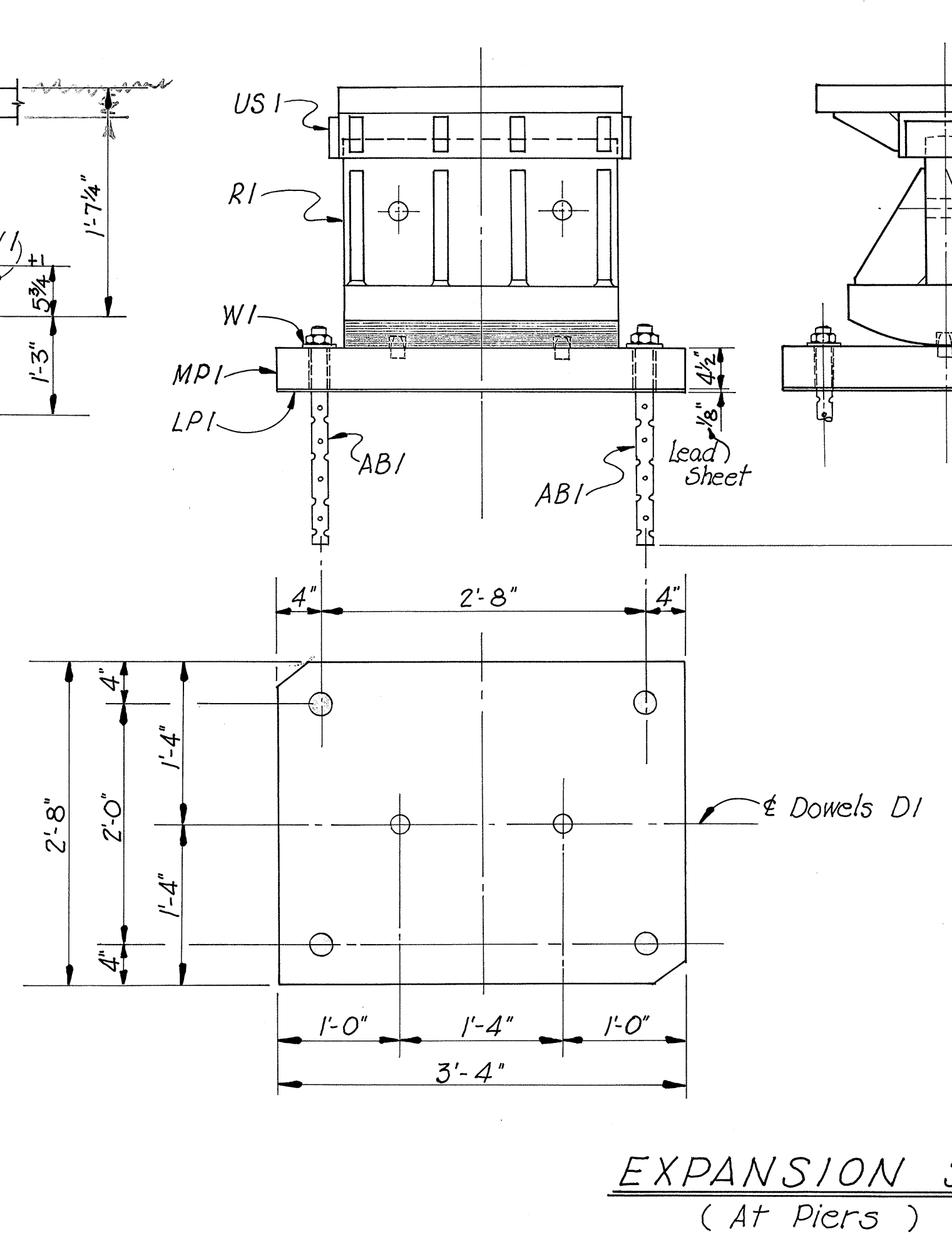
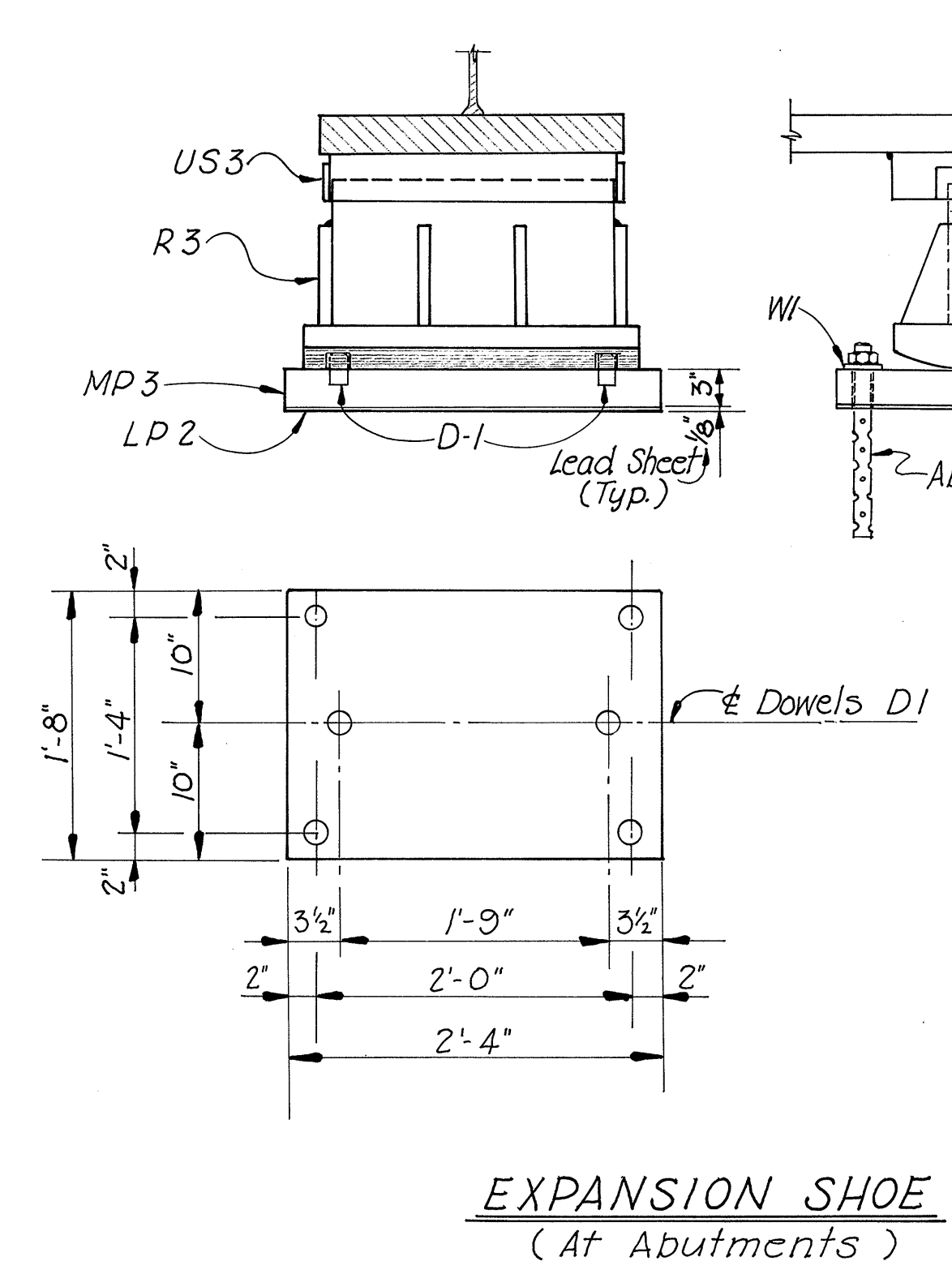
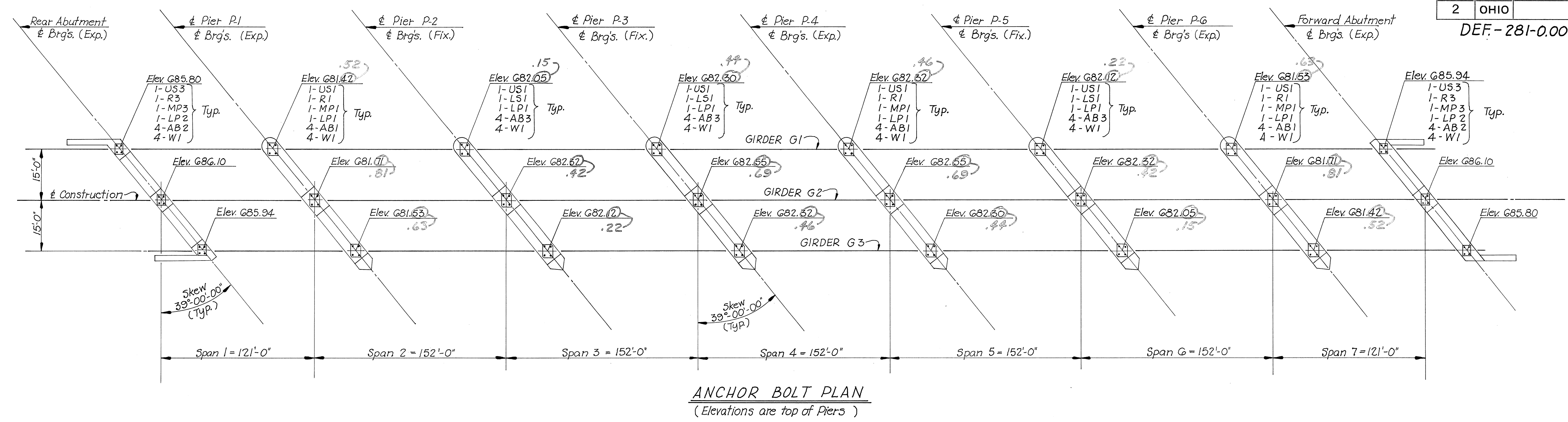
GENERAL PLAN - PART 2  
BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC) OVER MAUMEE RIVER  
DEF. CO. STA. 304+67.4G-314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	E.W.K.	M.A.T.	E.L.P.	J.C.P.		3-23-68 3-3-68

Revised As-Print 7-16-71



DEF-281-0.00

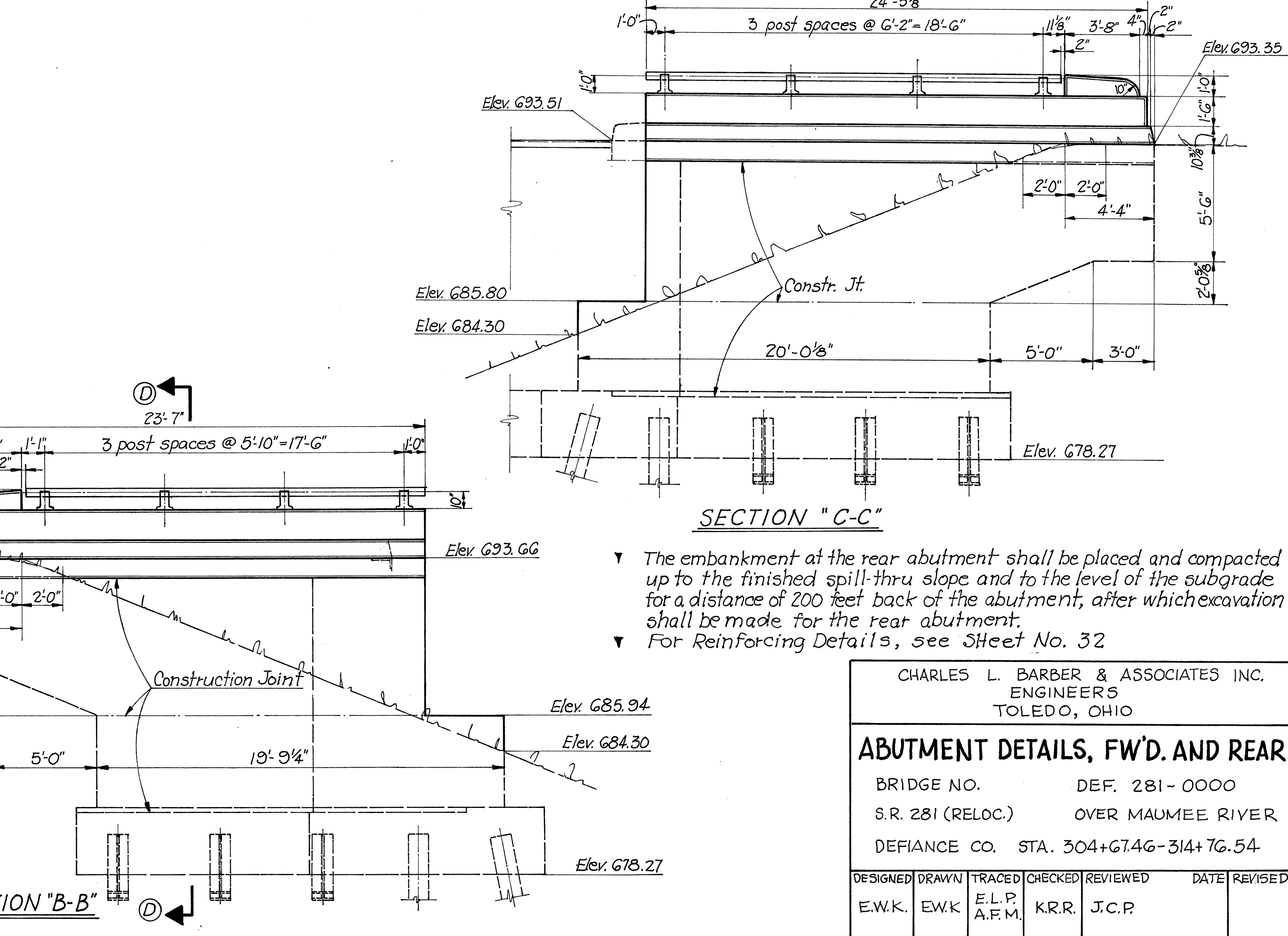
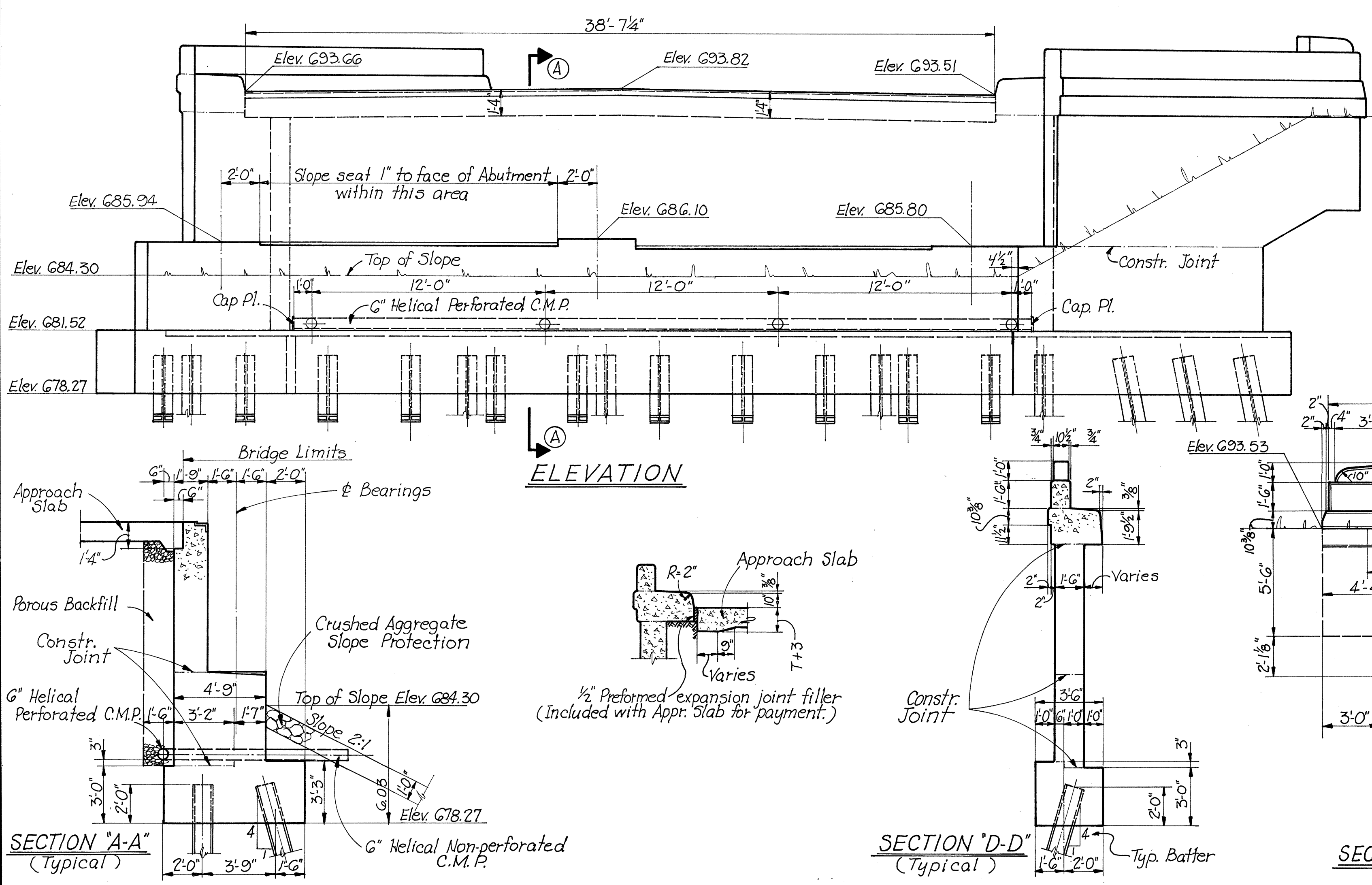
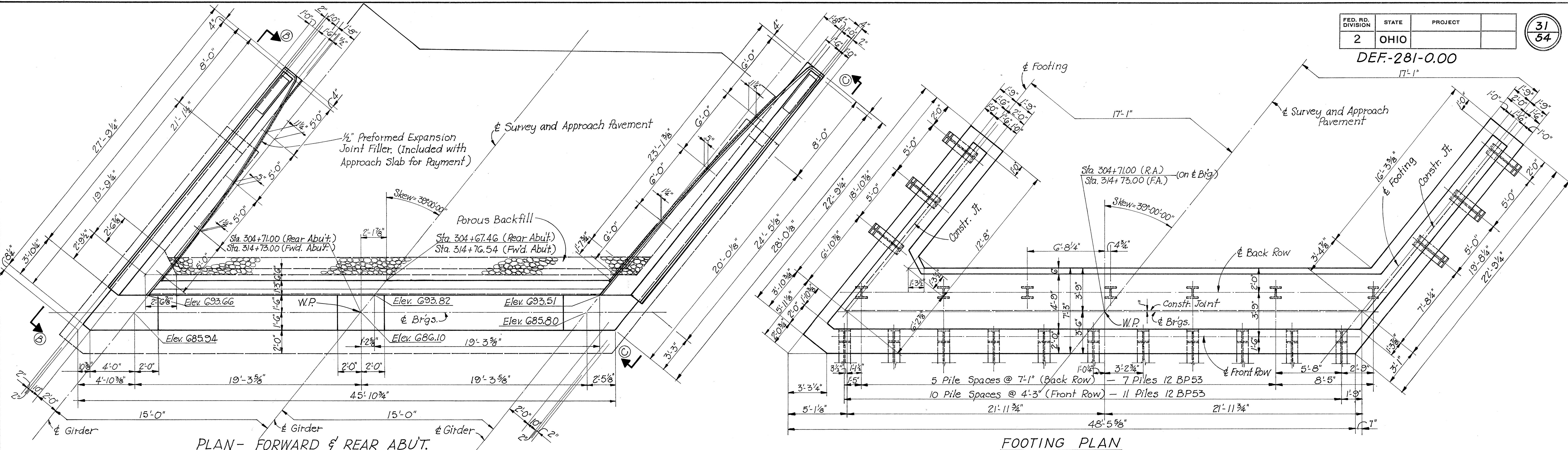


For Shoe Details, see Sheet Nos 37 & 38

CHARLES L. BARBER & ASSOCIATES INC. ENGINEERS TOLEDO, OHIO					
<b>ANCHOR BOLT &amp; BEARING PLAN</b>					
BRIDGE NO. DEF-281-0000			S.R. 281 (RELOC.) OVER MAUMEE RIVER		
DEF. CO.			STA. 304+67.46-314+76.54		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
W.B.D.	E.W.K.	A.F.M.	K.R.R.	J.C.P.	1-26-68 5-3-68

2009303





▽ The embankment at the rear abutment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutment, after which excavation shall be made for the rear abutment.  
 ▽ For Reinforcing Details, see Sheet No. 32

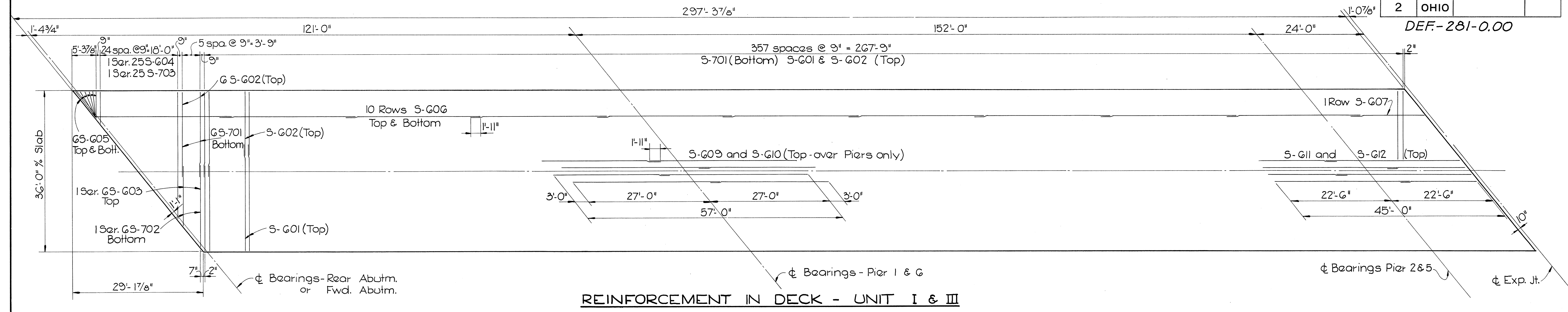
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<b>ABUTMENT DETAILS, FW'D. AND REAR</b>				
BRIDGE NO.	DEF. 281-0000			
S.R. 281 (RELOC.)	OVER MAUMEE RIVER			
DEFIANCE CO.	STA. 304+67.46-314+76.54			
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
E.W.K.	EWK	E.L.P. A.F.M.	K.R.R.	J.C.P.
DATE	REVISED			

C0203031

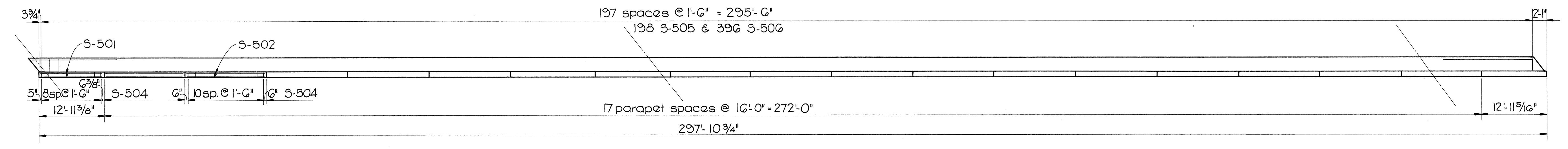




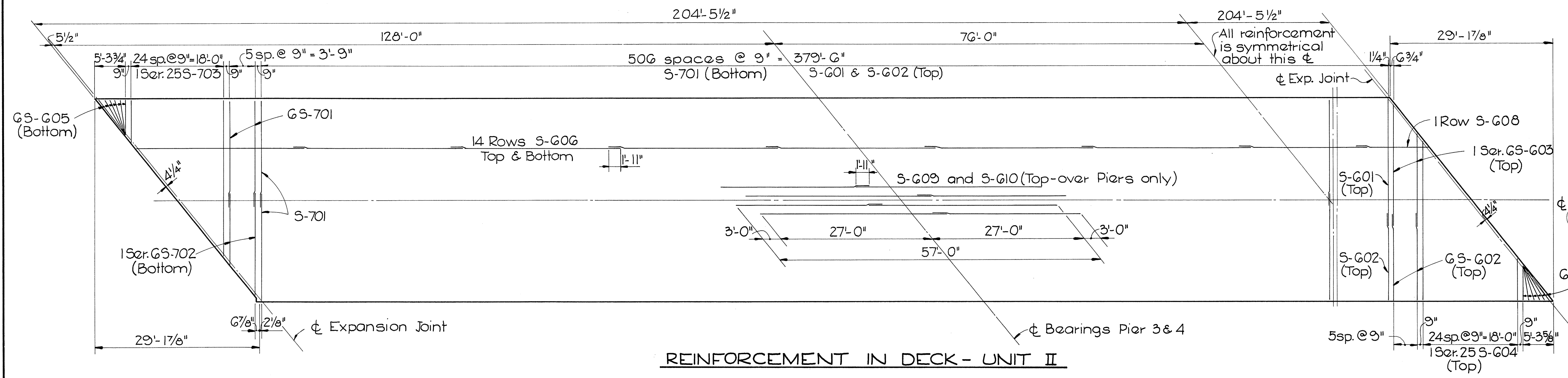




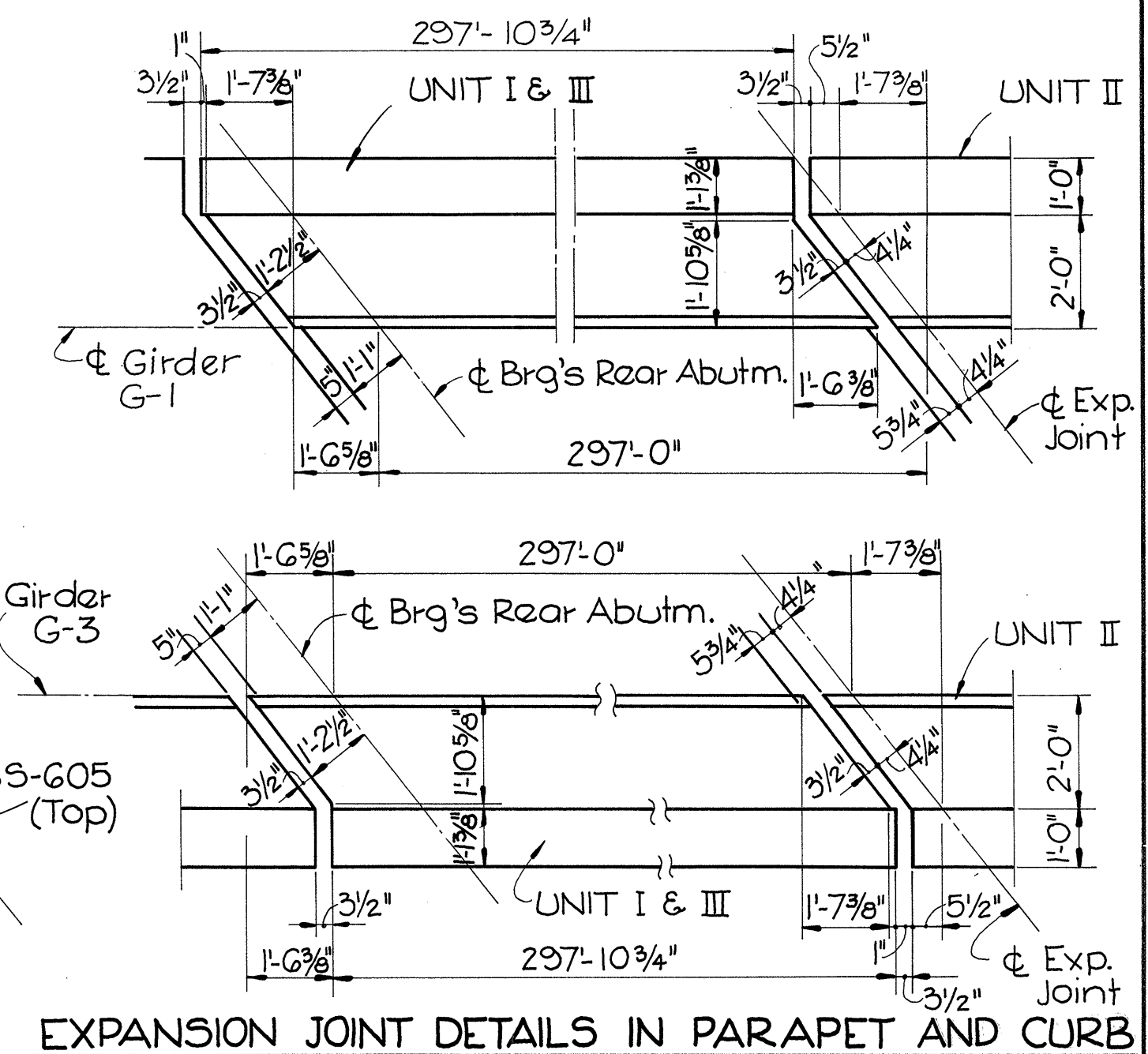
**REINFORCEMENT IN DECK - UNIT I & III**



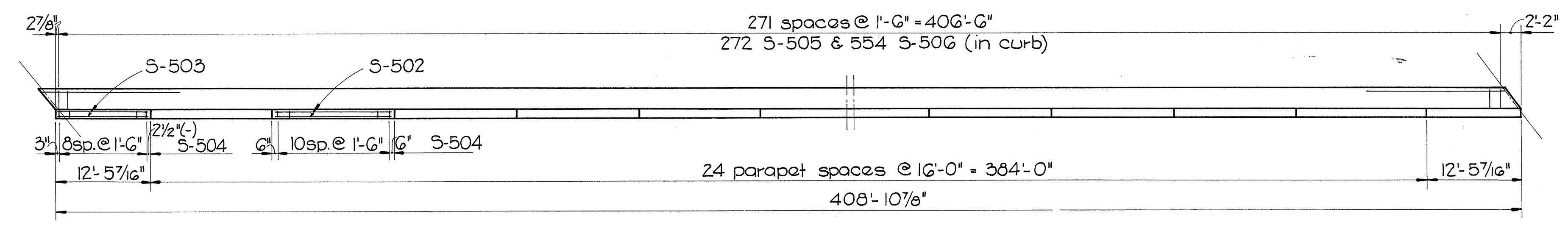
**REINFORCEMENT IN PARAPET AND CURB - UNIT I & III**



**REINFORCEMENT IN DECK - UNIT II**



**EXPANSION JOINT DETAILS IN PARAPET AND CURB**



**REINFORCEMENT IN PARAPET AND CURB - UNIT II**

For Reinforcing Schedule, see Sheet No. 35  
For Transverse Section thru deck slab, see Sheet No. 36

CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO / OHIO

**SUPERSTRUCTURE DETAILS**

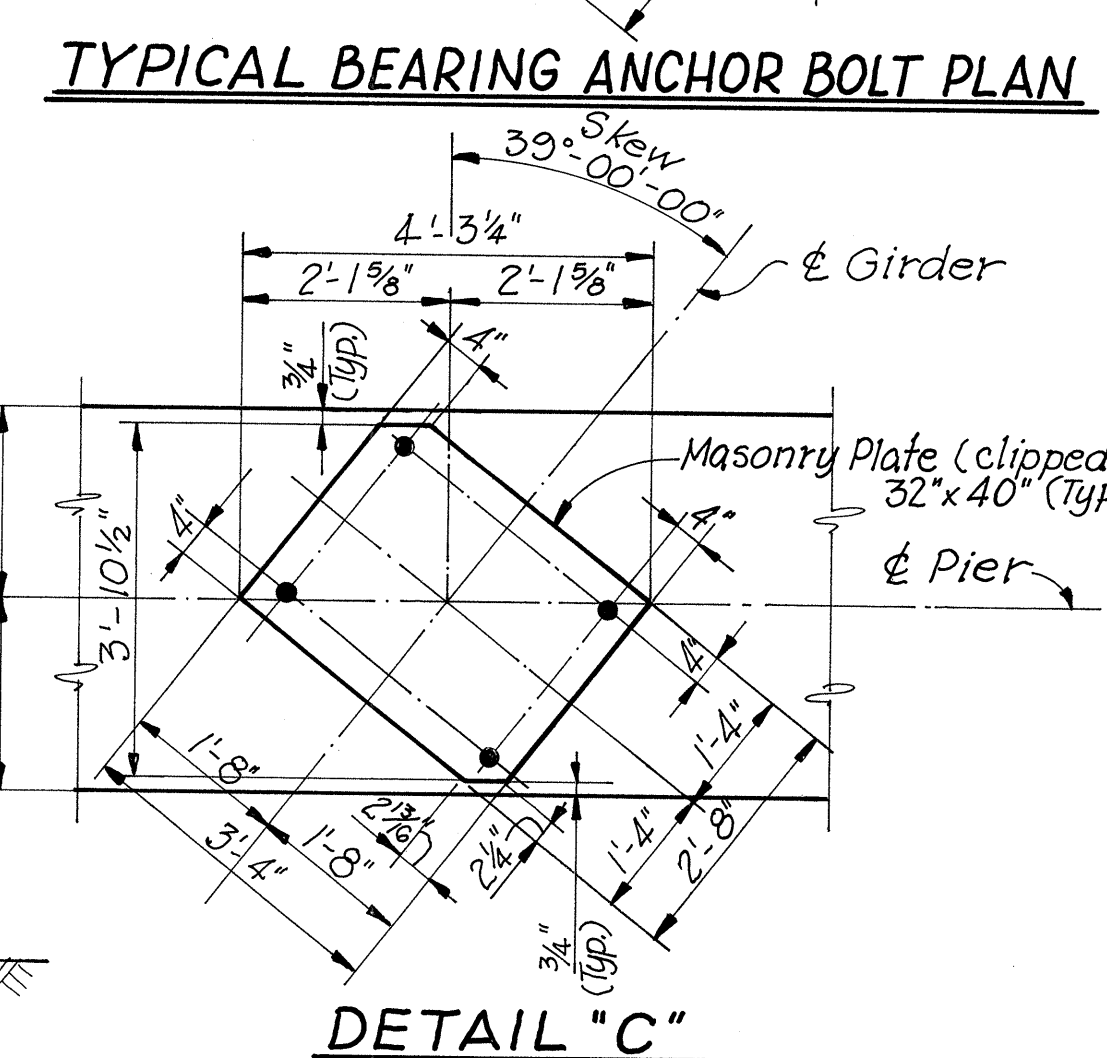
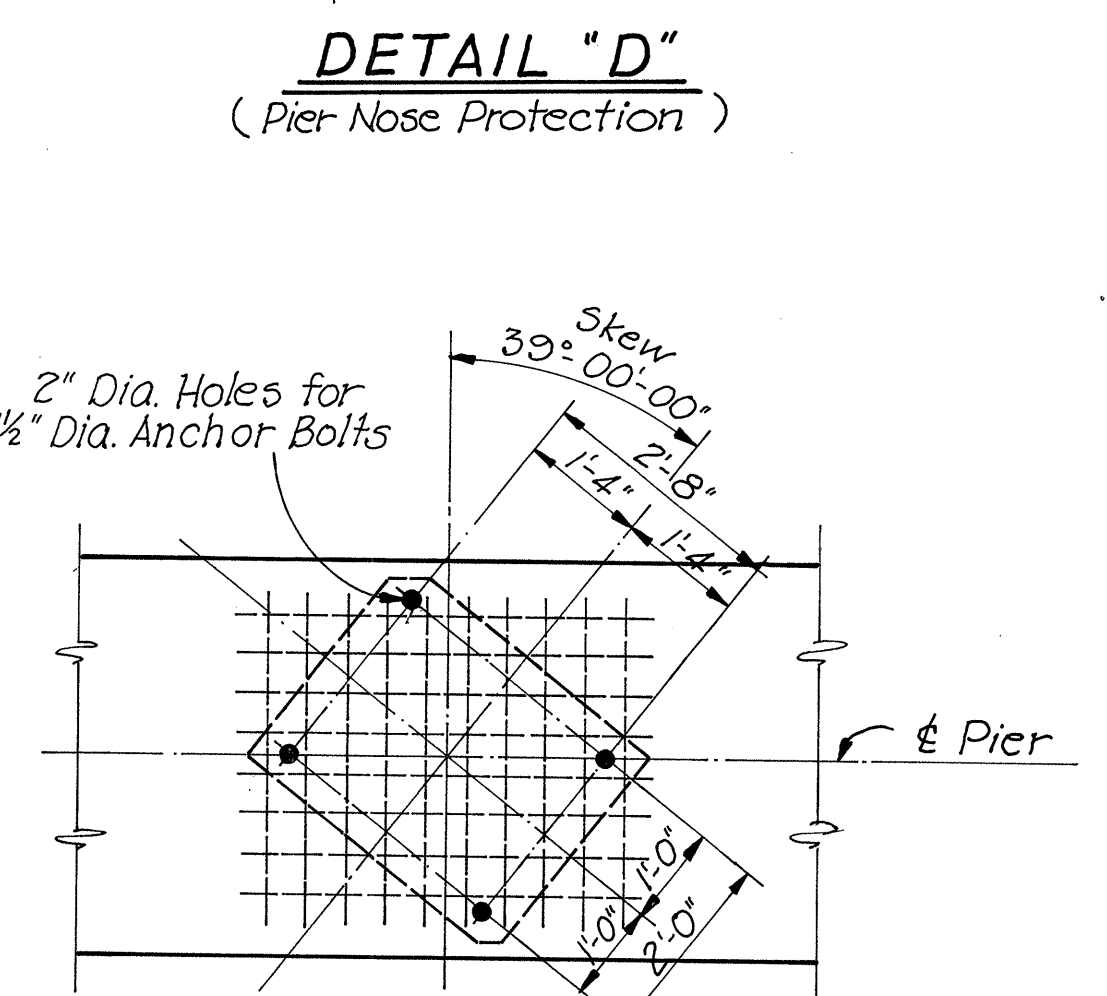
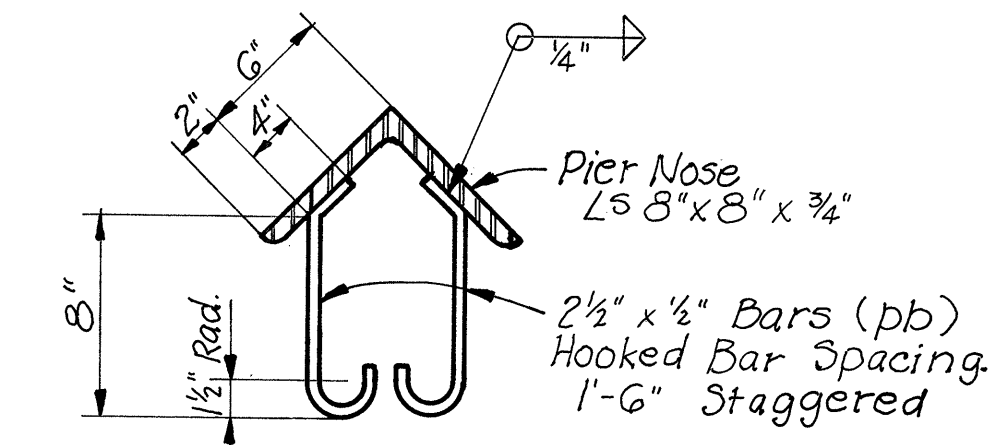
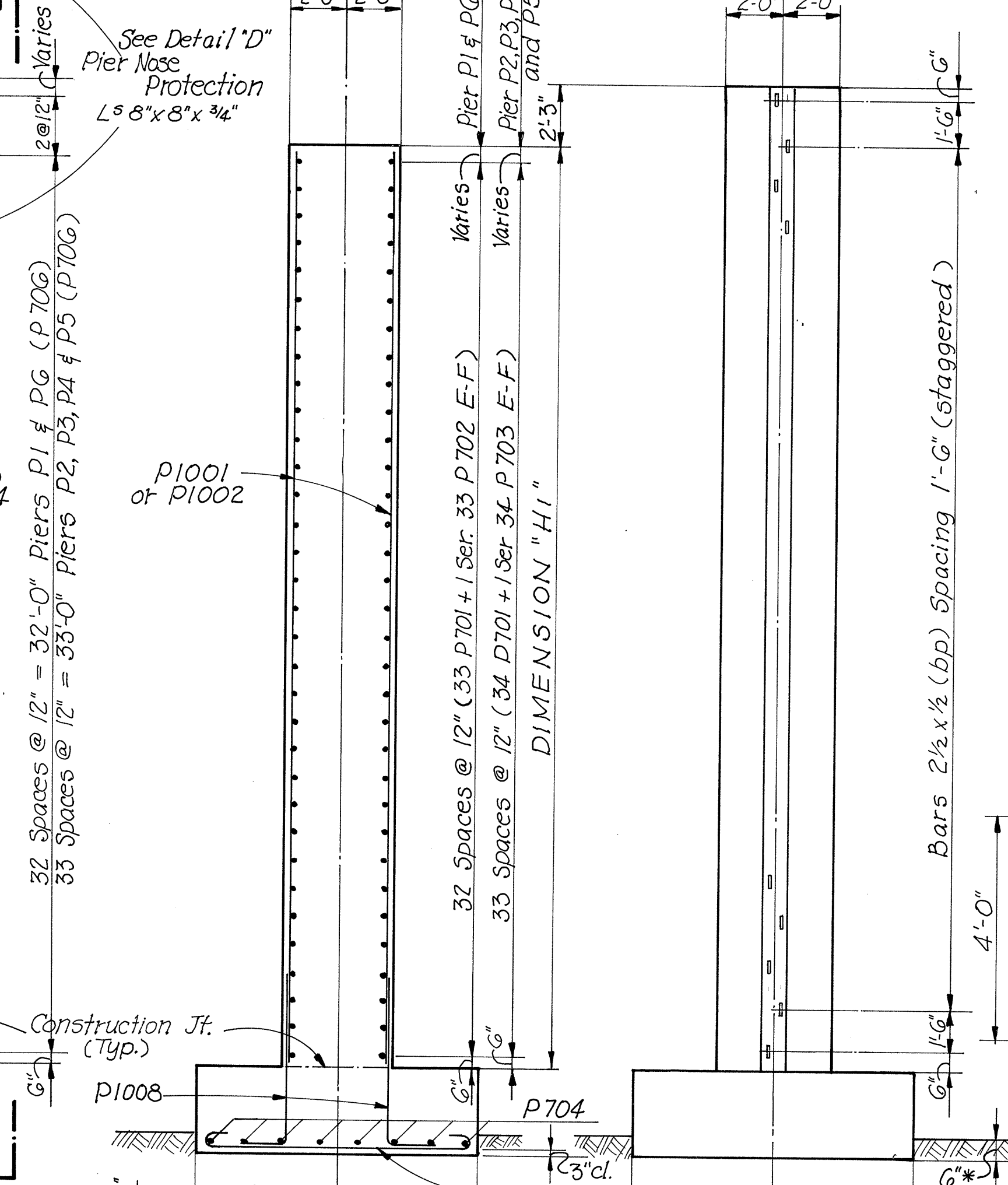
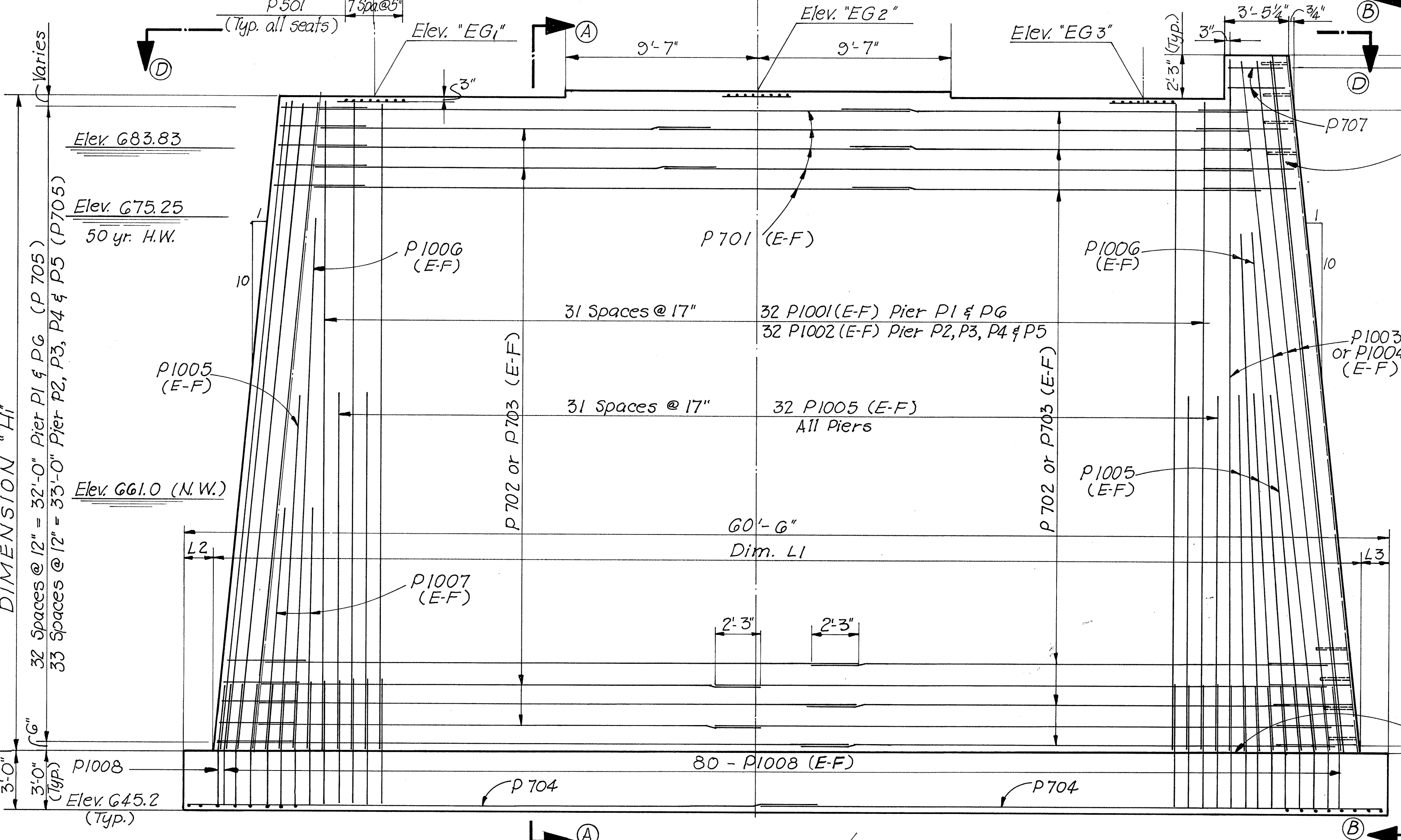
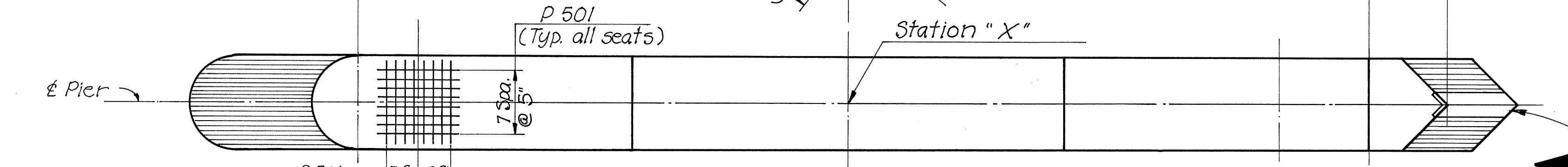
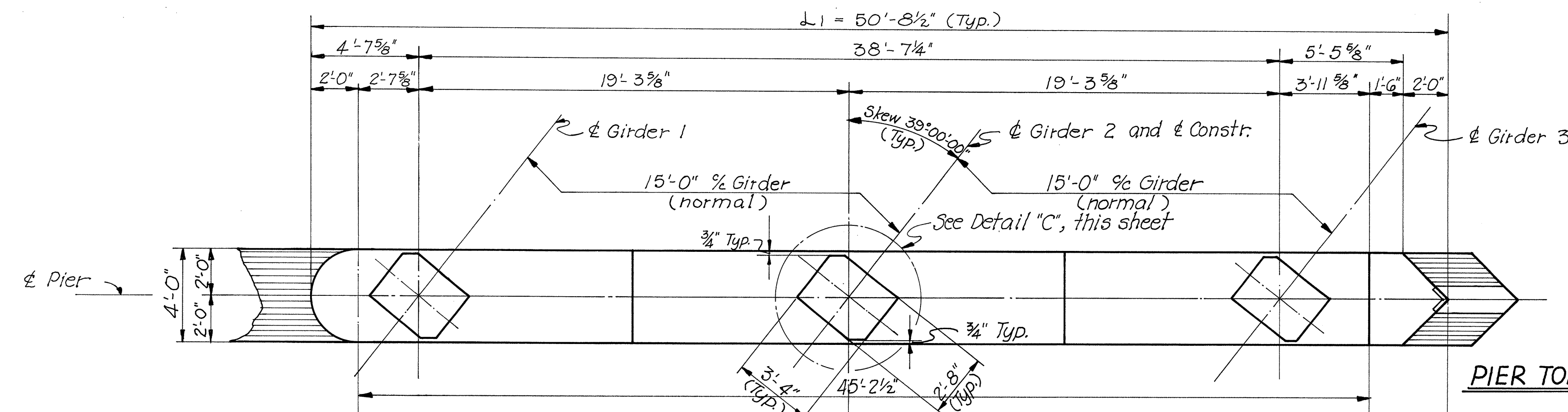
BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+67.46 - 314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
EWK	EWK	MAT	K.R.R.	J.C.P.		

C0293035

DEF. - 281-0.00

SEAT ELEVATION	P1 (Exp)	P2 (Fix)	P3 (Fix)	P4 (Exp)	P5 (Fix)	P6 (Exp)
STA. "X" (Pier)	305+92.00	307+44.00	308+96.00	310+48.00	312+00.00	313+52.00
"EG1"	681.42	682.05	682.30	682.32	682.12	681.53
"EG2"	681.71	682.32	682.55	682.55	682.32	681.71
"EG3"	681.53	682.12	682.32	682.30	682.05	681.42
DIM. "H1"	33'-2 1/8"	33'-10 3/8"	34'-1 3/8"	34'-1 3/8"	33'-11"	33'-4"
DIM. "L1"	57'-4 3/8"	57'-5 3/8"	57'-6 3/8"	57'-6 3/8"	57'-5 3/8"	57'-4 3/8"
DIM. "L2"	1'-6 3/8"	1'-6 3/8"	1'-5 3/8"	1'-5 3/8"	1'-6"	1'-6 3/4"
DIM. "L3"	1'-6 3/4"	1'-6"	1'-5 3/4"	1'-5 3/8"	1'-6 3/8"	1'-6 3/8"
"EG1"	681.52	682.15	682.44	682.46	682.22	681.63
"EG2"	681.81	682.42	682.69	682.69	682.42	681.81
"EG3"	681.63	682.22	682.46	682.44	682.15	681.52
DIM. "H1"	33'-3 1/8"	33'-11 1/8"	34'-2 1/8"	34'-3 1/8"	34'-0 1/4"	33'-5 1/4"



**NOTES:**

- ▼ Pier nose protection is included with Structural Steel (Item 513) for Payment.
- ▼ 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 the anchor bolt holes.
- ▼ The footing for Pier 1 shall be located at Elev. G45.20.
- ▼ The footing for Piers 2, 3, 4, 5 of G shall extend a minimum of 6 inches into undisturbed rock or to the elevation shown, whichever is lower.
- ▼ For Reinforcement Schedule, see Sheet No. 35

CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO, OHIO

**PIER DETAILS**

BRIDGE NO. DEF. 281-0000  
S. R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+G74G-314+7G.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	EWK.	E.L.P. A.F.M.	K.R.R.	J.C.P.	5-17-68	5-3-68

20293034



# REINFORCEMENT SCHEDULE

MARK	No.	LENGTH	SHAPE	SER. INCR.	WEIGHT
<b>(one) SUPERSTRUCTURE</b>					
S-501	32	12'-7"	Str.		***
S-502	464	15'-8"	Str.		***
S-503	16	12'-2"	Str.		***
S-504	1,384	5'-7"	Bent		8,060
S-505	1,336	3'-6"	Bent		4,877
S-506	2,672	2'-4"	Bent		6,503
S-601	1,223	22'-7"	Str.		41,484
S-602	1,259	15'-0"	Str.		28,365
S-603	6 Ser. 6	17'-2 5/8" to 21'-10 1/4"	Str.	11/8"	1,056
S-604	6 Ser. 25	7'-1 3/4" to 29'-4 3/4"	Str.	11/8"	4,116
S-605	72	6'-3"	Str.		676
S-606	2,142	30'-0"	Str.		96,519
S-607	126	17'-4"	Str.		3,280
S-608	63	15'-6"	Str.		1,467
S-609	96	33'-0"	Str.		4,758
S-610	96	25'-11"	Str.		3,737
S-611	48	30'-0"	Str.		2,163
S-612	48	16'-11"	Str.		1,220
S-701	2,482	19'-0"	Str.		96,391
S-702	6 Ser. 6	13'-6 5/8" to 18'-2 1/4"	Str.	11/8"	1,168
S-703	6 Ser. 25	7'-1 3/4" to 29'-4 3/4"	Str.	11/8"	5,602
TOTAL = 311,442					
<b>ABUTMENTS (Two)</b>					
A-401	24	2'-6"	Str.		40
A-402	30	2'-0"	Str.		40
A-501	48	23'-7"	Str.		1,181
A-502	12	22'-0"	Str.		275
A-503	6	16'-0"	Str.		100
A-504	8	14'-6"	Str.		121
A-505	8	24'-5"	Str.		204
A-506	8	18'-6"	Str.		154
A-507	16	19'-8"	Str.		328
A-508	8	10'-0"	Str.		83
A-509	8	23'-3"	Str.		***
A-510	4	23'-5"	Str.		98
A-511	4	26'-0"	Str.		108
A-512	8	24'-1"	Str.		***
A-513	4	24'-4"	Str.		102
A-514	100	8'-4"	Str.		869
A-515	8 Ser. 3	6'-6" to 7'-8"	Str.	7"	177
A-516	12	5'-11"	Str.		74
A-517	8	4'-3"	Str.		35
A-518	8	25'-9"	Bent		215
A-519	2	19'-11"	Bent		42
A-520	8	21'-7"	Bent		180
A-521	8	26'-2"	Bent		218
A-522	36	24'-8"	Bent		926

MARK	No.	LENGTH	SHAPE	SER. INCR.	WEIGHT
A-523	12	7'-2"	Bent		90
A-524	8	7'-2"	Bent		60
A-525	8	5'-4"	Bent		***
A-526	12	4'-2"	Bent		***
A-527	70	5'-7"	Bent		408
A-528	4	5'-4"	Bent		22
A-529	4	5'-10"	Bent		24
A-530	2	6'-3"	Bent		13
A-531	2	6'-4"	Bent		13
A-532	2	6'-7"	Bent		14
A-533	2	6'-9"	Bent		14
A-534	2	6'-10"	Bent		14
A-535	4	7'-1"	Bent		30
A-536	4	7'-4"	Bent		31
A-537	4	7'-8"	Bent		32
A-538	4	7'-11"	Bent		33
A-539	4	8'-1"	Bent		34
A-540	4	8'-4"	Bent		35
A-541	4	8'-5"	Bent		35
A-542	6	8'-6"	Bent		53
A-543	4	8'-7"	Bent		36
A-544	8	8'-8"	Bent		72
A-545	2	9'-0"	Bent		19
A-546	2	4'-4"	Bent		9
A-547	66	12'-0"	Bent		826
A-548	60	9'-2"	Bent		574
A-549	4	8'-10"	Bent		37
A-550	2	7'-9"	Bent		16
A-551	4	7'-0"	Bent		29
A-552	62	7'-2"	Bent		463
A-553	74	8'-0"	Bent		617
A-601	84	22'-10"	Bent		2,881
A-603	46	19'-10"	Bent		1,370
A-604	6	10'-4"	Bent		93
A-605	60	15'-8"	Bent		1,412
A-606	2	14'-3"	Bent		43
A-801	18	22'-3"	Str.		1,069
A-802	6	20'-0"	Str.		320
A-1001	28	25'-8"	Str.		3,092
A-1002	4	22'-7"	Str.		389
TOTAL = 19,892					

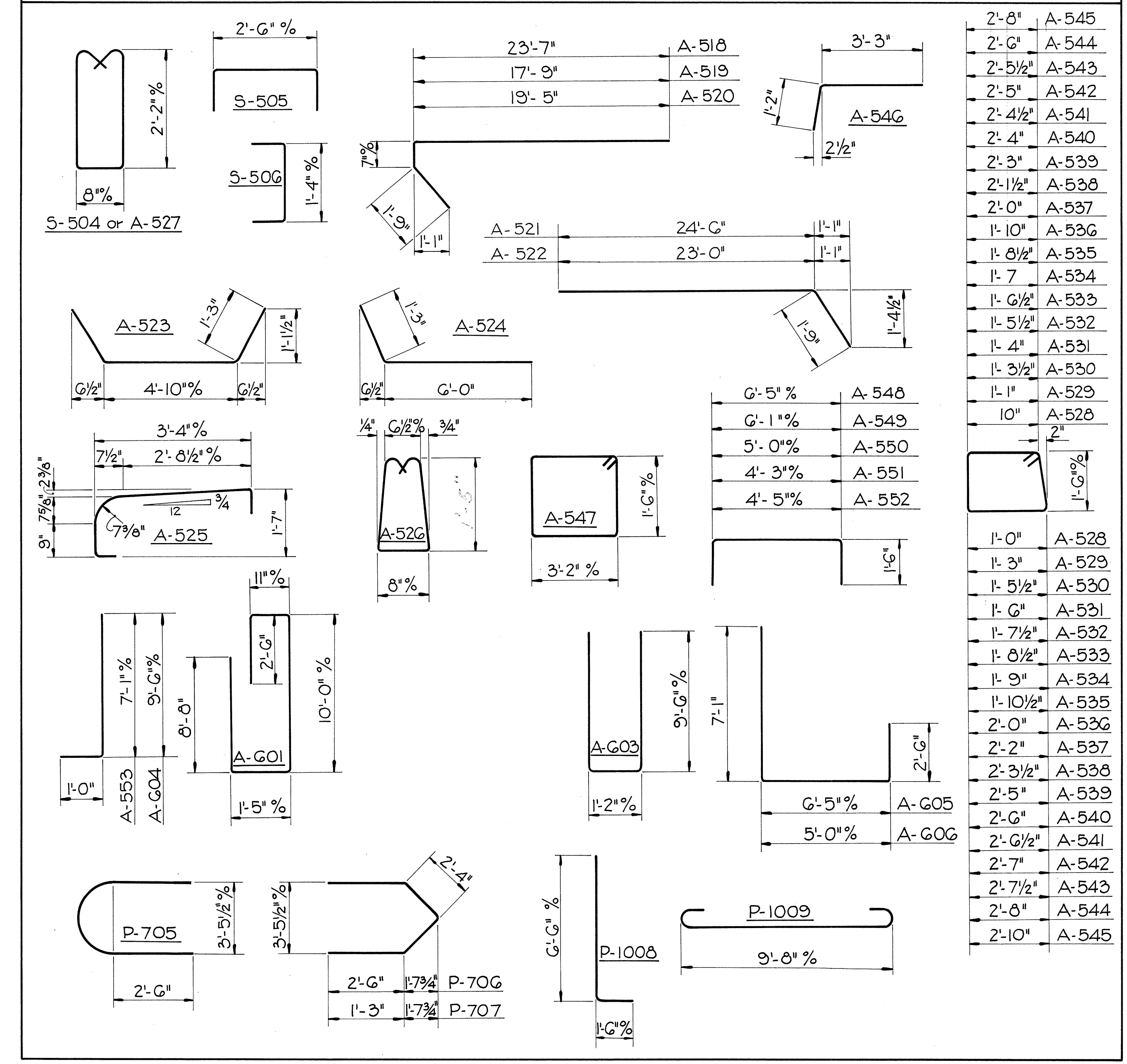
MARK	No.	LENGTH	SHAPE	SER. INCR.	WEIGHT
<b>PIERS (six)</b>					
P-501	288	3'-6"	Str.		1,051
P-701	404	30'-0"	Str.		24,773
P-702	45 Ser. 33	19'-1" to 25'-9"	Str.	2 1/2"	6,048
P-703	85 Ser. 34	19'-0 1/2" to 25'-11"	Str.	2 1/2"	12,498
P-704	96	31'-3"	Str.		6,132
P-705	202	10'-4"	Bent		4,266
P-706	202	9'-4"	Bent		3,854
P-707	12	6'-10"	Bent		168
P-1001	142	32'-11"	Str.		20,113
P-1002	284	33'-8"	Str.		41,142
P-1003	16	35'-2"	Str.		2,421
P-1004	32	35'-11"	Str.		4,946
P-1005	432	18'-0"	Str.		33,460
P-1006	36	26'-0"	Str.		4,028
P-1007	24	12'-6"	Str.		1,291
P-1008	966	7'-9"	Bent		32,214
P-1009	510	12'-6"	Bent		27,432
TOTAL = 225,837					

MARK	No.	LENGTH	SHAPE
RE-401	1	5'-3"	Str.
RE-501	2	5'-7"	Str.
RE-601	10	5'-11"	Str.
RE-701	9	6'-2"	Str.
RE-801	1	6'-6"	Str.
RE-1001	9	7'-2"	Str.

\*\*\* S 501, S 502, S 503, A 509, A 512, A 525 and A 526 bars are included with the Railing for payment. (Item 517)

Bar Size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four digits are used, indicate the bar size number. For example A700 is a No.7 size bar, and A1014 is a No.10 size.

# BENDING DIAGRAM



2'-8"	A-545
2'-6"	A-544
2'-5 1/2"	A-543
2'-5"	A-542
2'-4 1/2"	A-541
2'-4"	A-540
2'-3"	A-539
2'-1 1/2"	A-538
2'-0"	A-537
1'-10"	A-536
1'-8 1/2"	A-535
1'-7"	A-534
1'-6 1/2"	A-533
1'-5 1/2"	A-532
1'-4"	A-531
1'-3 1/2"	A-530
1'-1"	A-529
10"	A-528
1'-0"	A-528
1'-3"	A-529
1'-5 1/2"	A-530
1'-6"	A-531
1'-7 1/2"	A-532
1'-8 1/2"	A-533
1'-9"	A-534
1'-10 1/2"	A-535
2'-0"	A-536
2'-2"	A-537
2'-3 1/2"	A-538
2'-5"	A-539
2'-6"	A-540
2'-6 1/2"	A-541
2'-7"	A-542
2'-7 1/2"	A-543
2'-8"	A-544
2'-10"	A-545

CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERING  
TOLEDO/OHIO

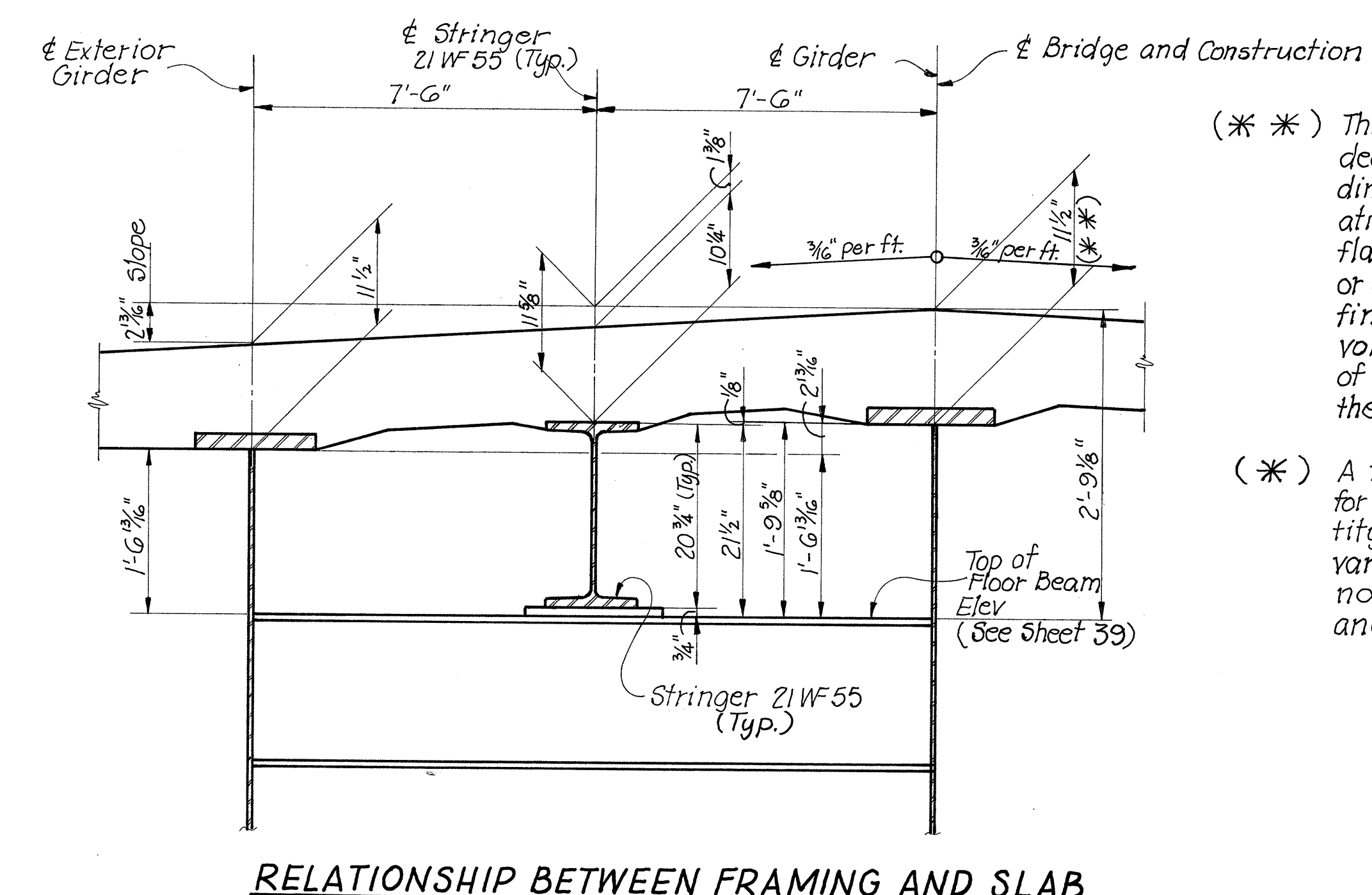
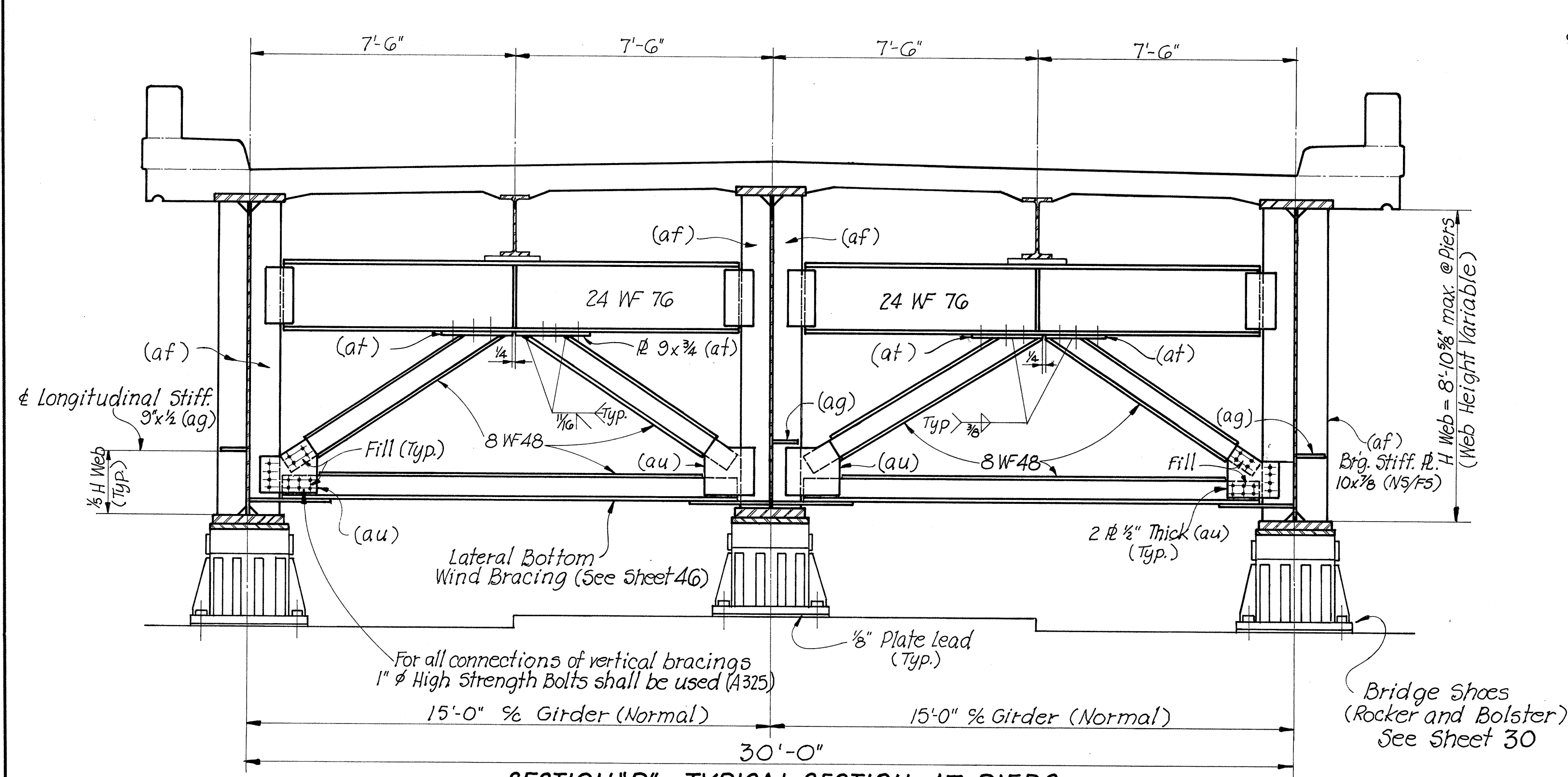
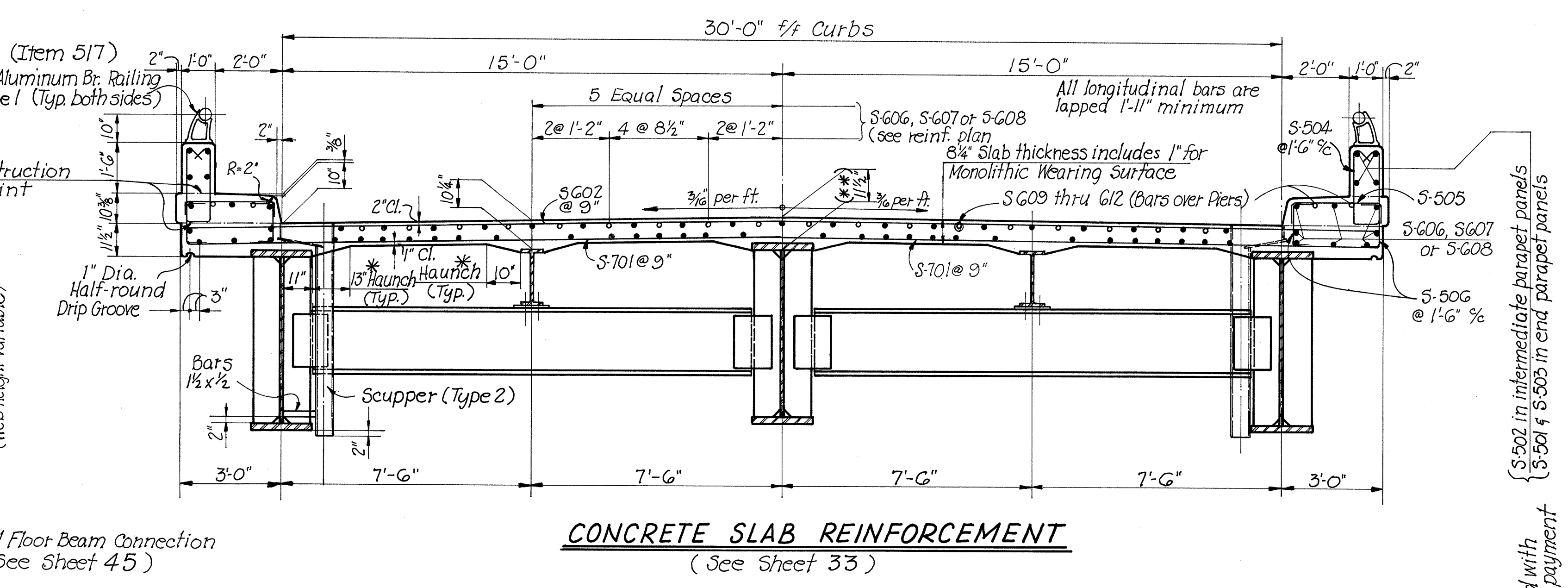
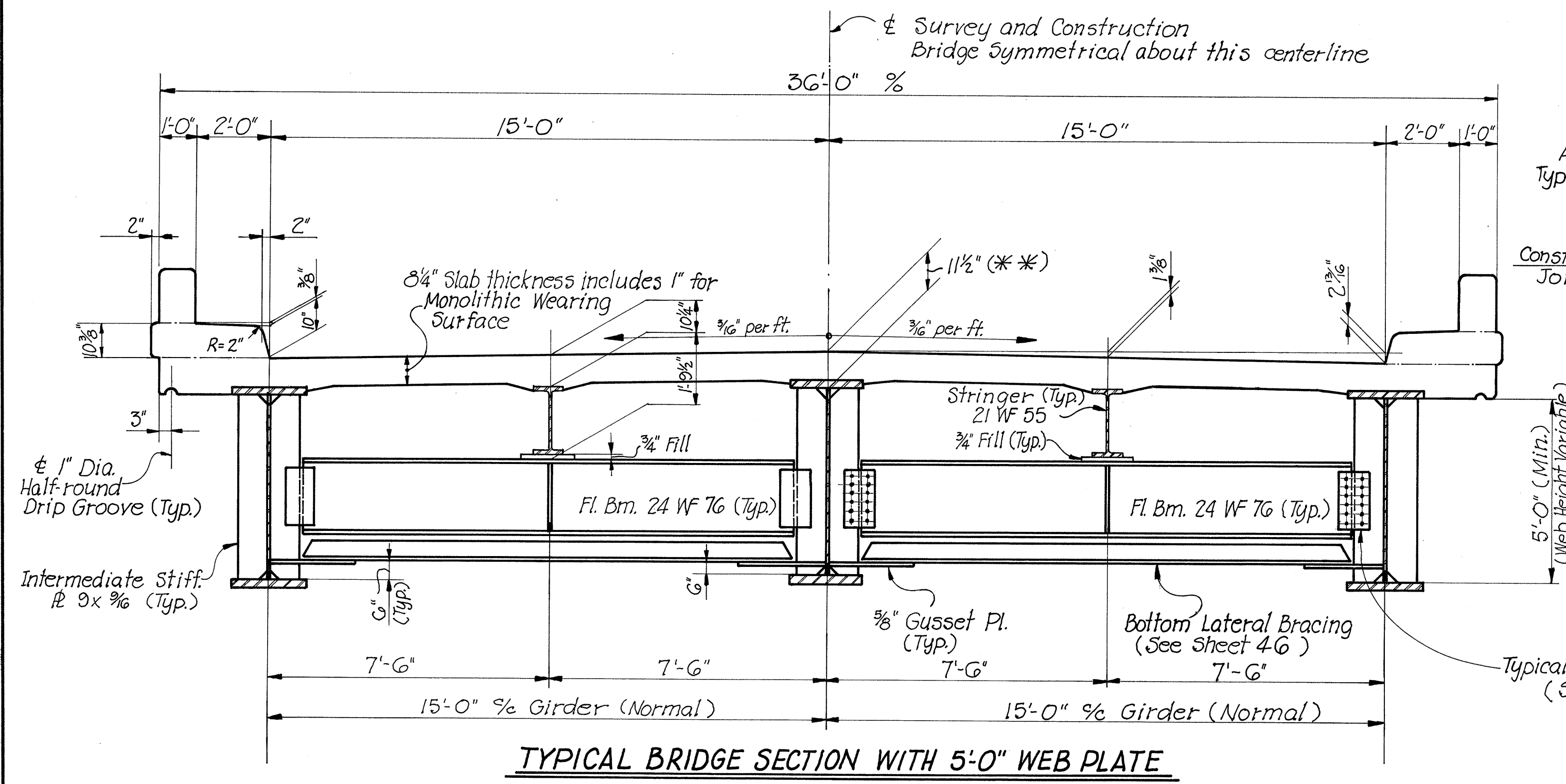
**REINFORCEMENT SCHEDULE & BENDING DIAGRAM**

BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC) OVER MAUMEE RIVER  
DEFIANCE CO. STA.304+67.46-314+76.54

DESIGNER	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
E.W.K.	E.W.K.	M.A.T.	K.R.R.	J.C.P.	8/23/68

20290305





(\*\*) This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension less flange thickness, even though deviation from it may be necessary because the top flange of the Girder may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per Section 511.19 of the Construction and Material Specifications of the State of Ohio.

(\*) A typical haunch width of 13" for girders and 10" for stringers shall be used for computing the quantity of concrete. However, the haunch width may vary from these provided that the slope shall be not more than 1:4 for haunches less than 13" and 10" respectively.

**NOTES**

Vertical Bracing as shown in Section "P" shall be provided (at Piers only) at these Floor Beam Designations:

Unit I: 8, 9 and 10; 18, 19 and 20 and corresponding places Unit III.

Unit II: 28, 29, 30 / 38, 39, 40.

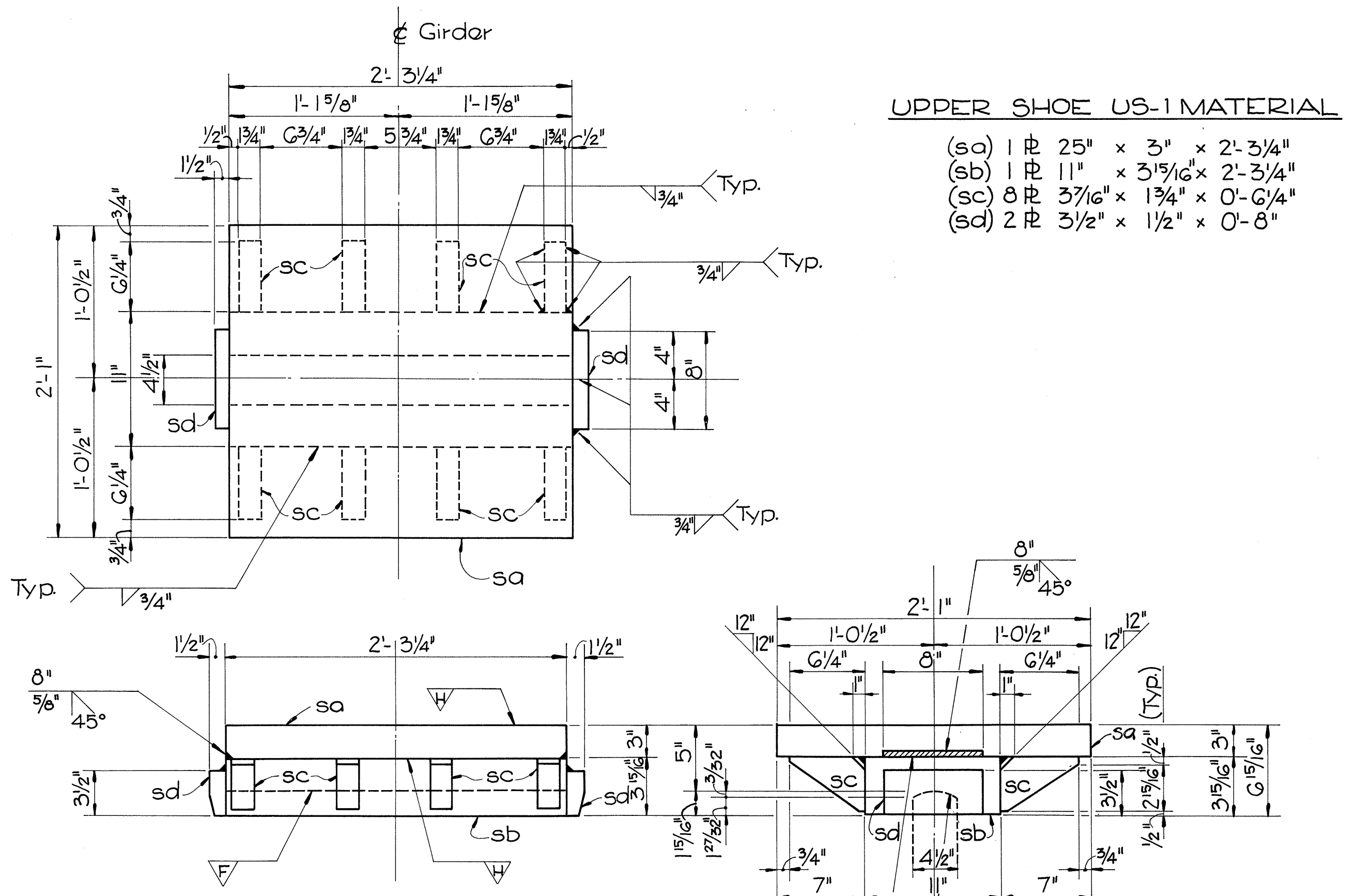
The locations are indicated as "Vertical Bracing" on Sheet No. 4G.

CHARLES L. BARBER & ASSOCIATES INC. ENGINEERS TOLEDO, OHIO						
<b>TYPICAL CROSS-SECTION</b>						
BRIDGE NO.		DEF-281-0000				
S. R.		281 (RELOC.) OVER MAUMEE RIVER				
DEF. CO.		STA. 304+67.46-314+76.54				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	WBD	E.L.P. A.F.M.	K.R.R.	J.C.P.		

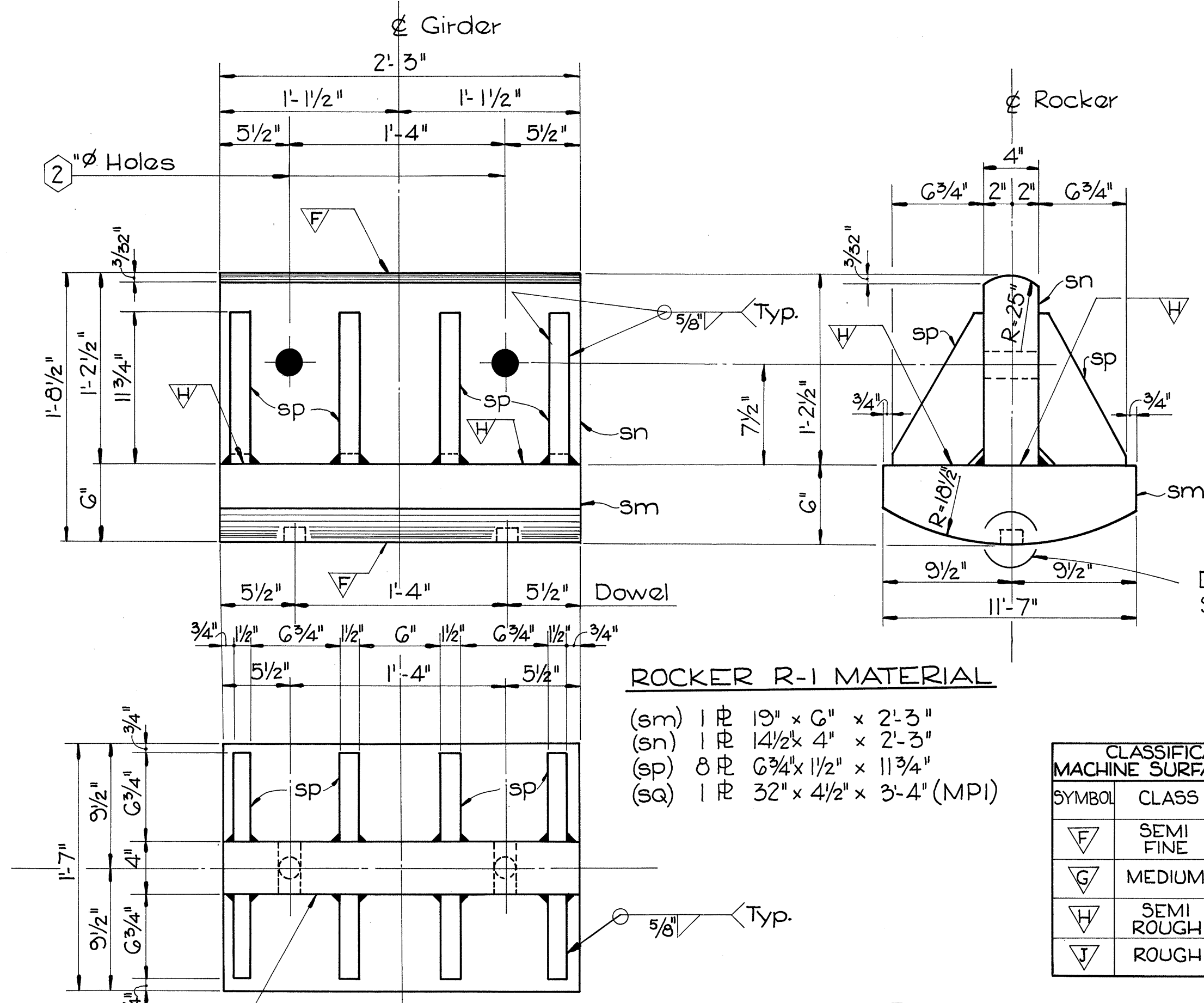
COZ 93036

S-502 in intermediate parapet panels  
S-501 & S-505 in end parapet panels  
included with railing for payment

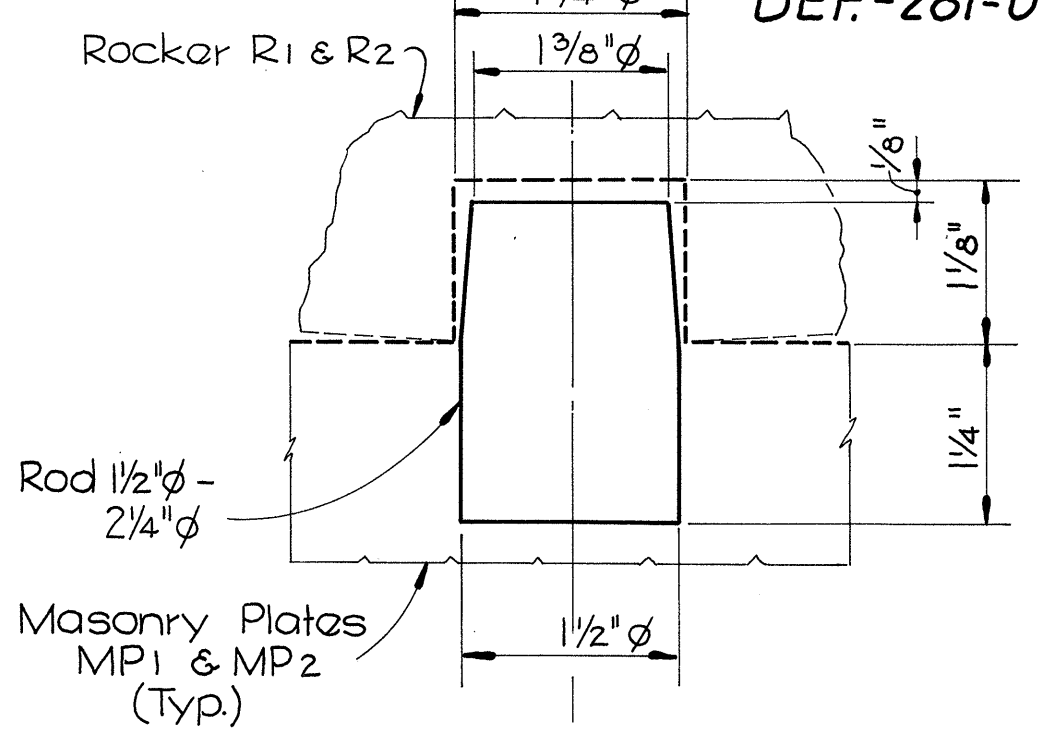




**UPPER SHOE US-1**  
Field weld to girder with 3/8" fillet welds.



**ROCKER R-1**



**DETAIL 'A'**  
**DOWEL - D1**

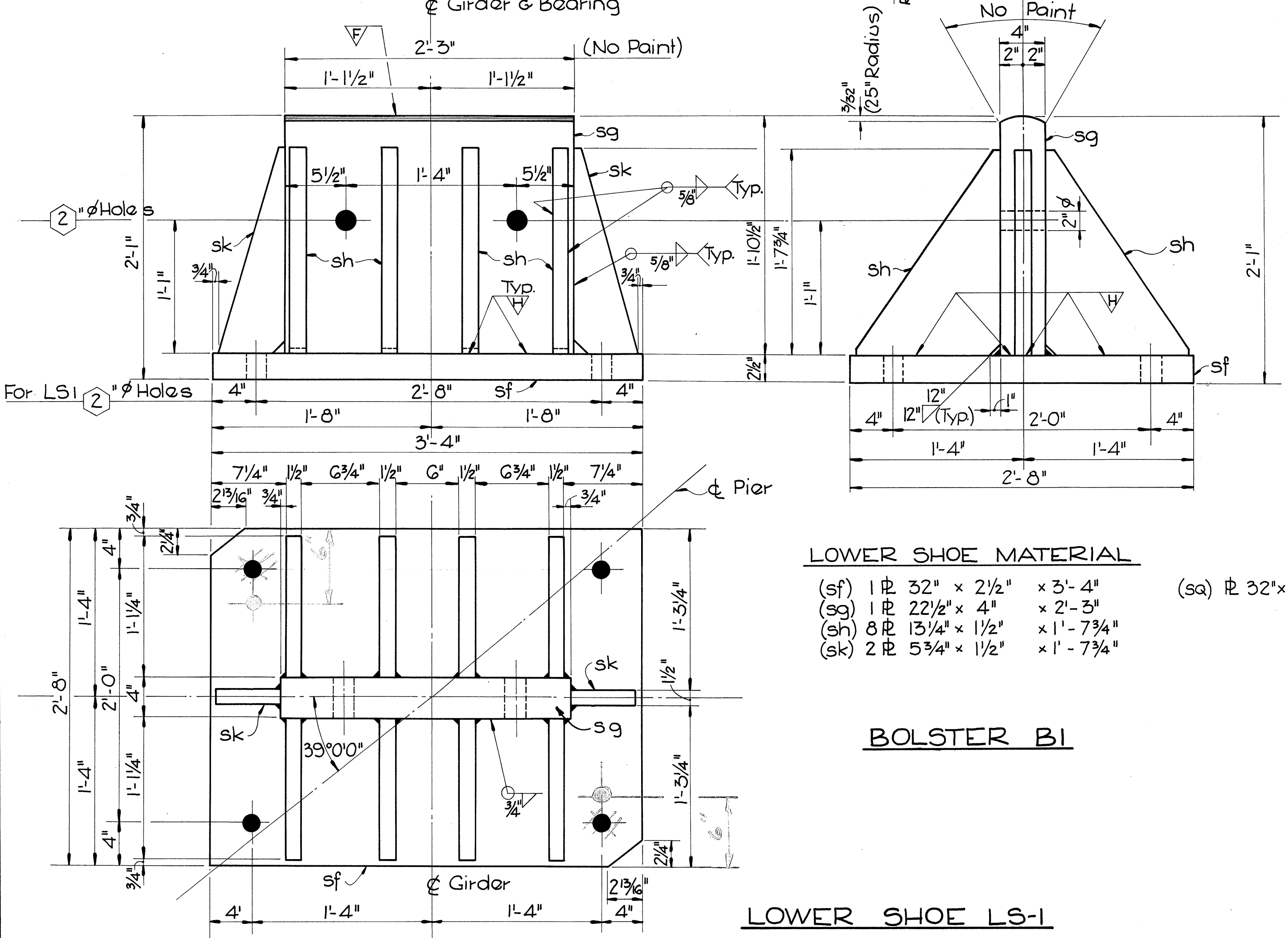
CLASSIFICATION OF MACHINE SURFACE FINISHES

SYMBOL	CLASS	AVERAGE ROUGHNESS
F	SEMI FINE	25
G	MEDIUM	250
H	SEMI ROUGH	500
J	ROUGH	1000

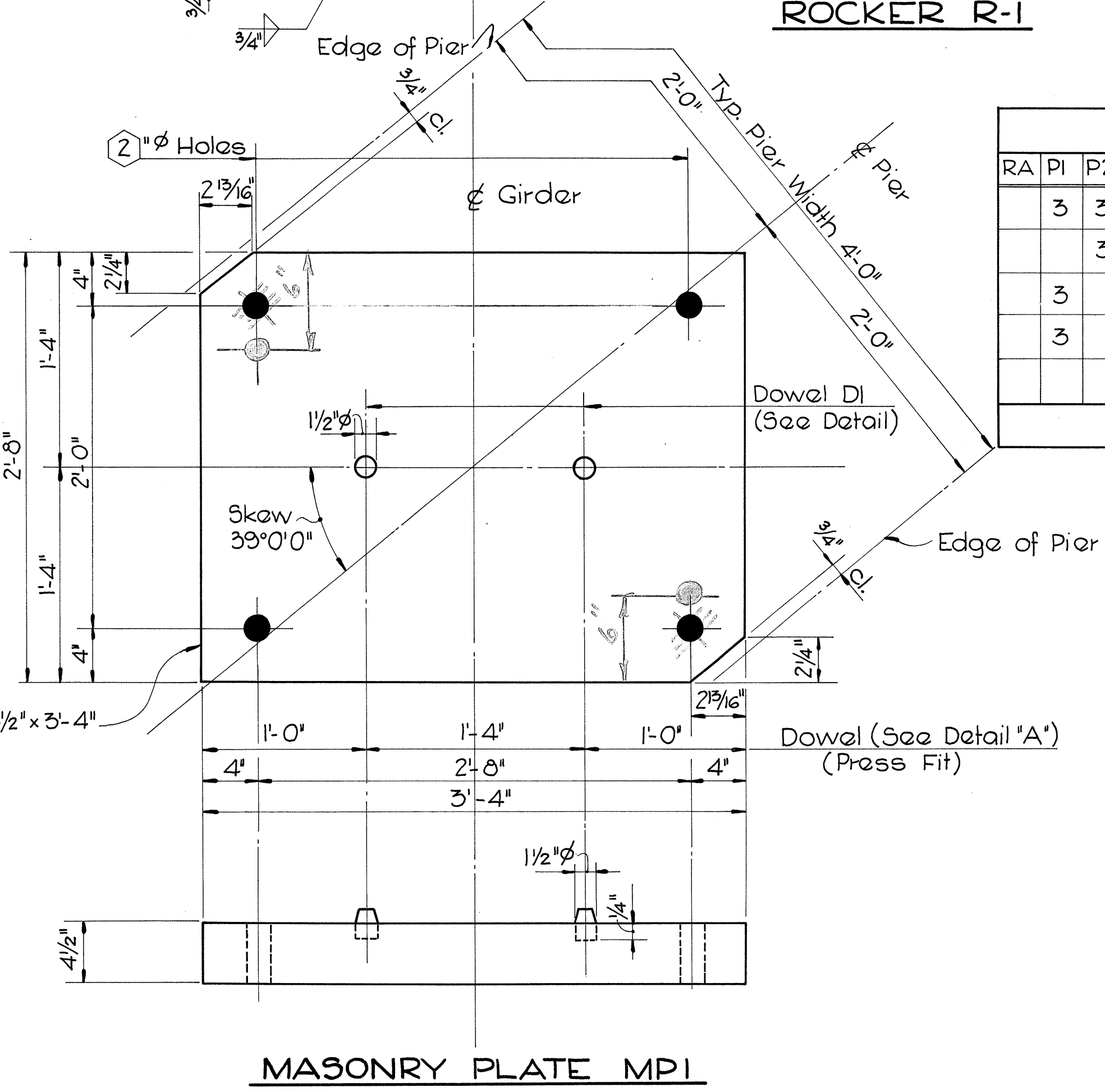
**MATERIALS LIST**

RA	PI	P2	P3	P4	P5	PG	FA	NO.	DESCRIPTION	MARK	NOTES
	3	3	3	3	3			18	Upper Shoe	US1	Shop Weld to Grd.
		3	3		3			9	Lower Shoe	LS1	
	3			3		3		9	Rocker	R1	
	3			3				9	Masonry PL	MPI	

A-441 STEEL



**LOWER SHOE LS-1**



**MASONRY PLATE MPI**

For Anchor Bolt and Bearing Plan, see Sheet No. 30

CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO / OHIO

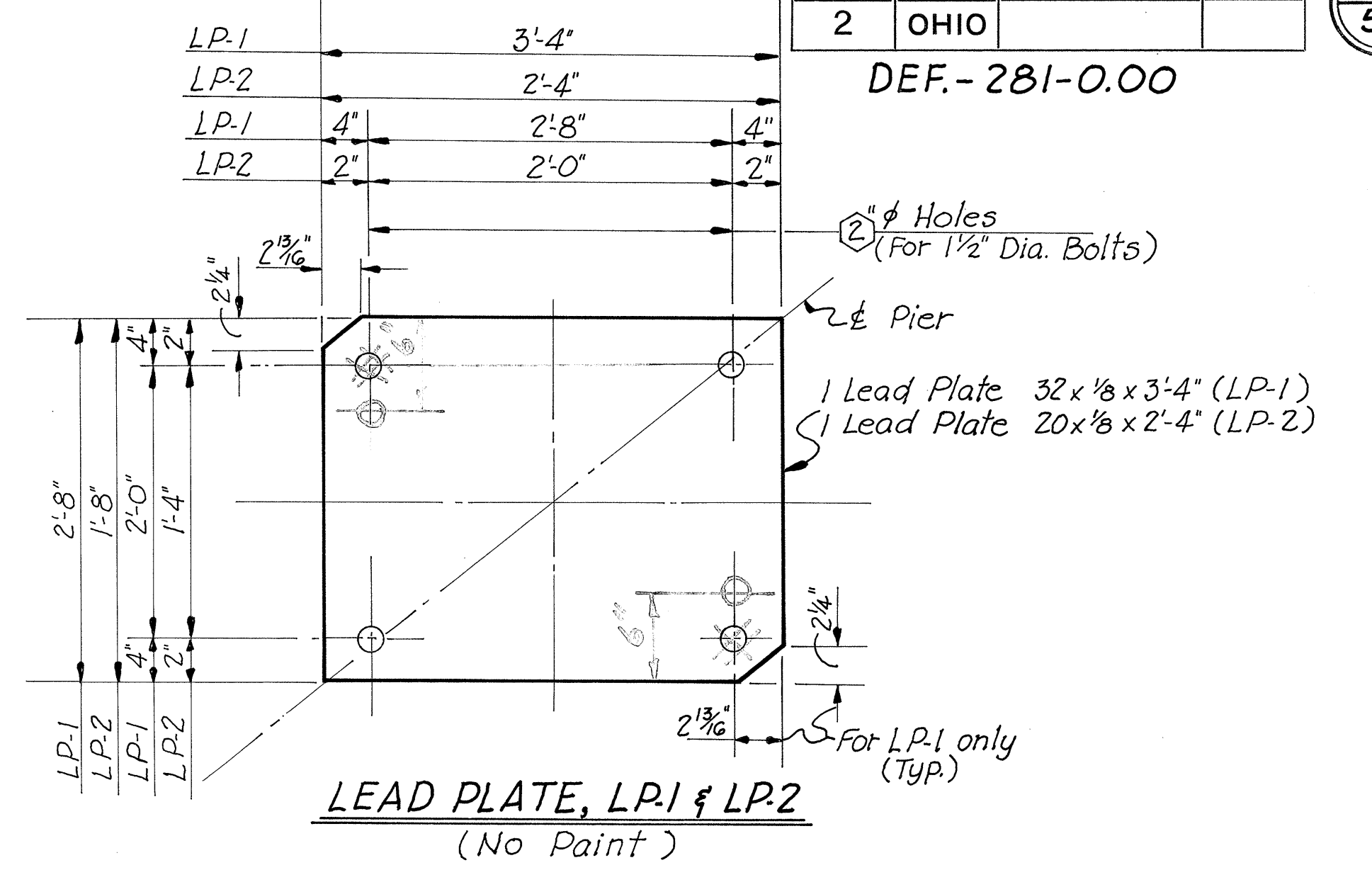
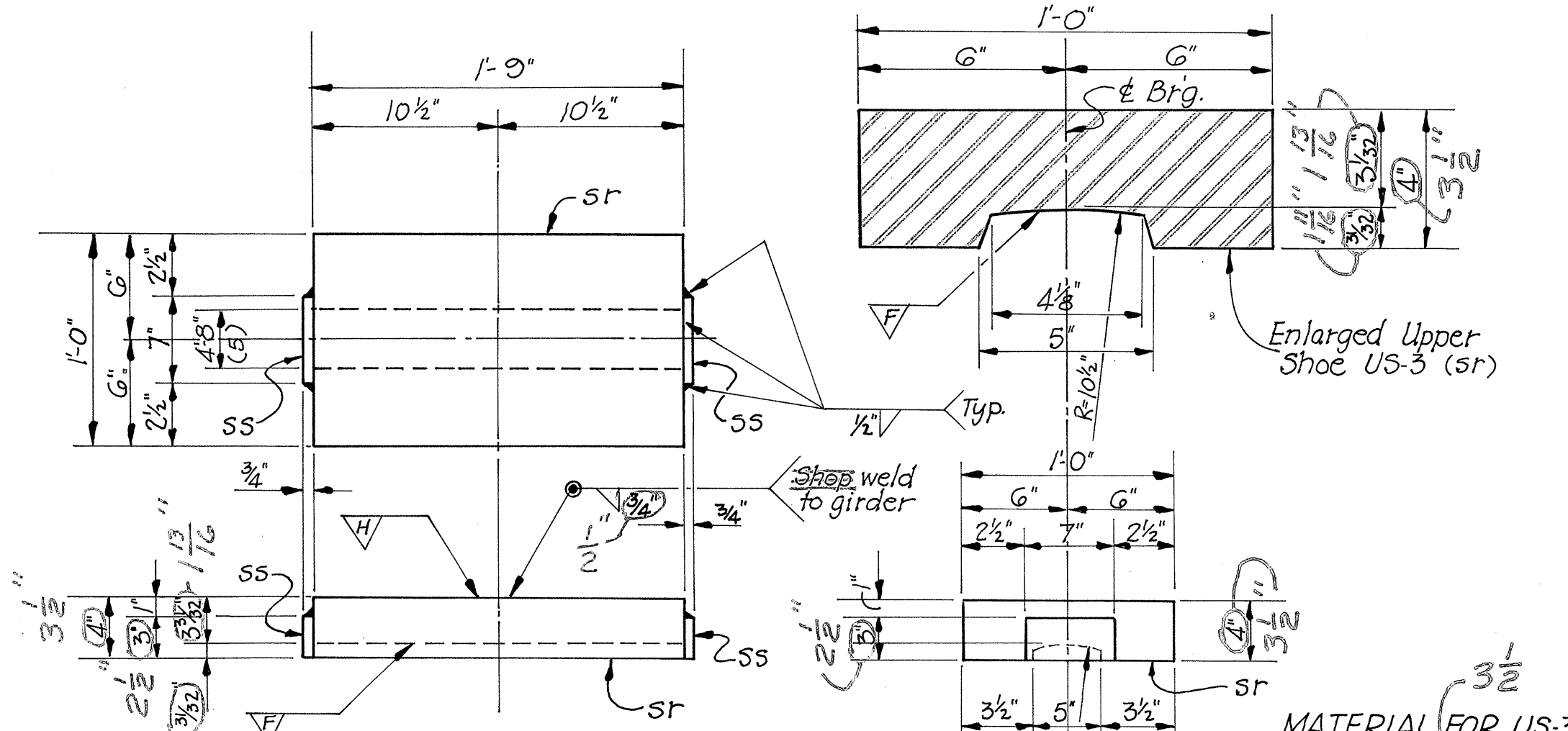
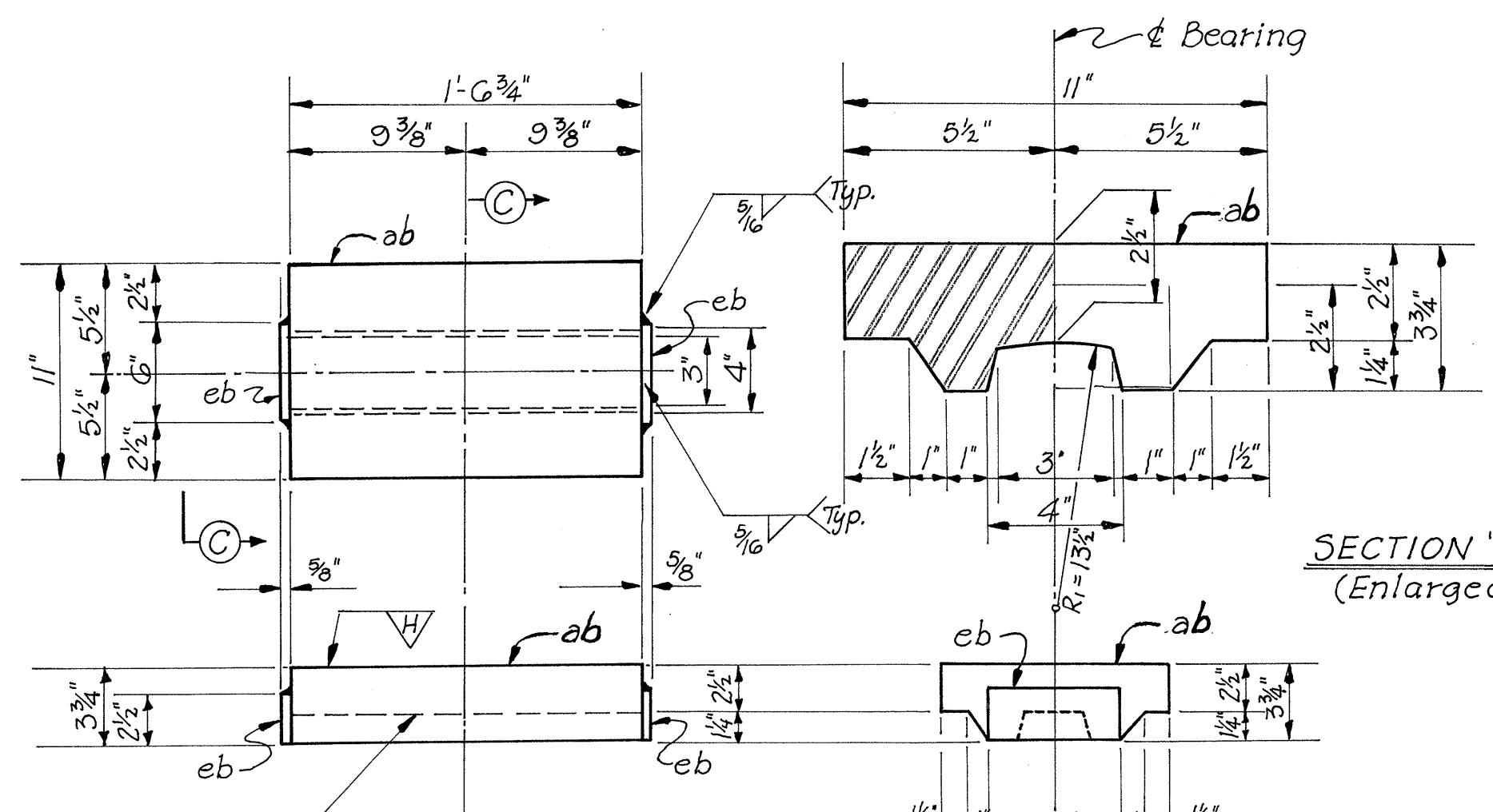
**BRIDGE SHOES - PART I**

BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+ G7.4G-314+ 76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	M.A.T.	E.L.P.	J.C.P.		1-26-68 5-3-68

C0293037

DEF.-281-0.00



**UPPER SHOE US-2**  
(Field Weld to Girder with 3/8" Fillet Welds)

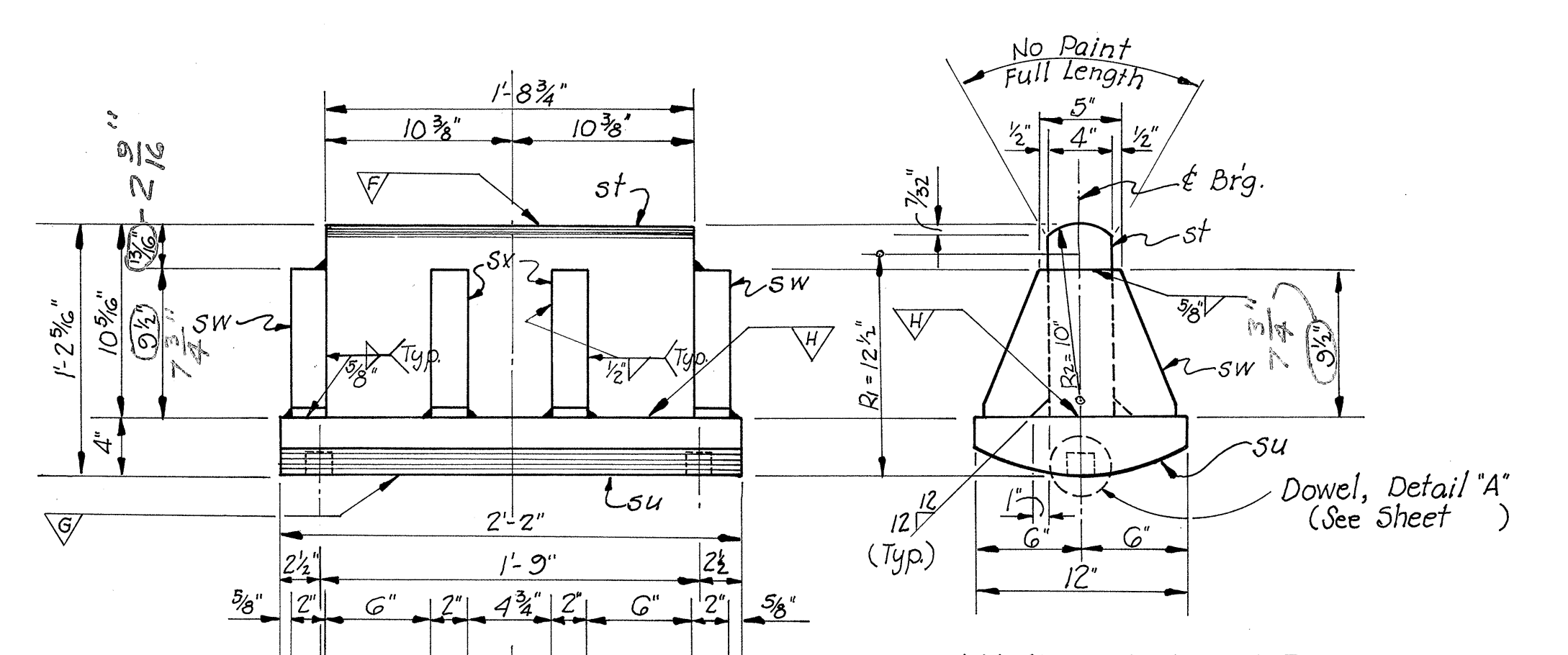
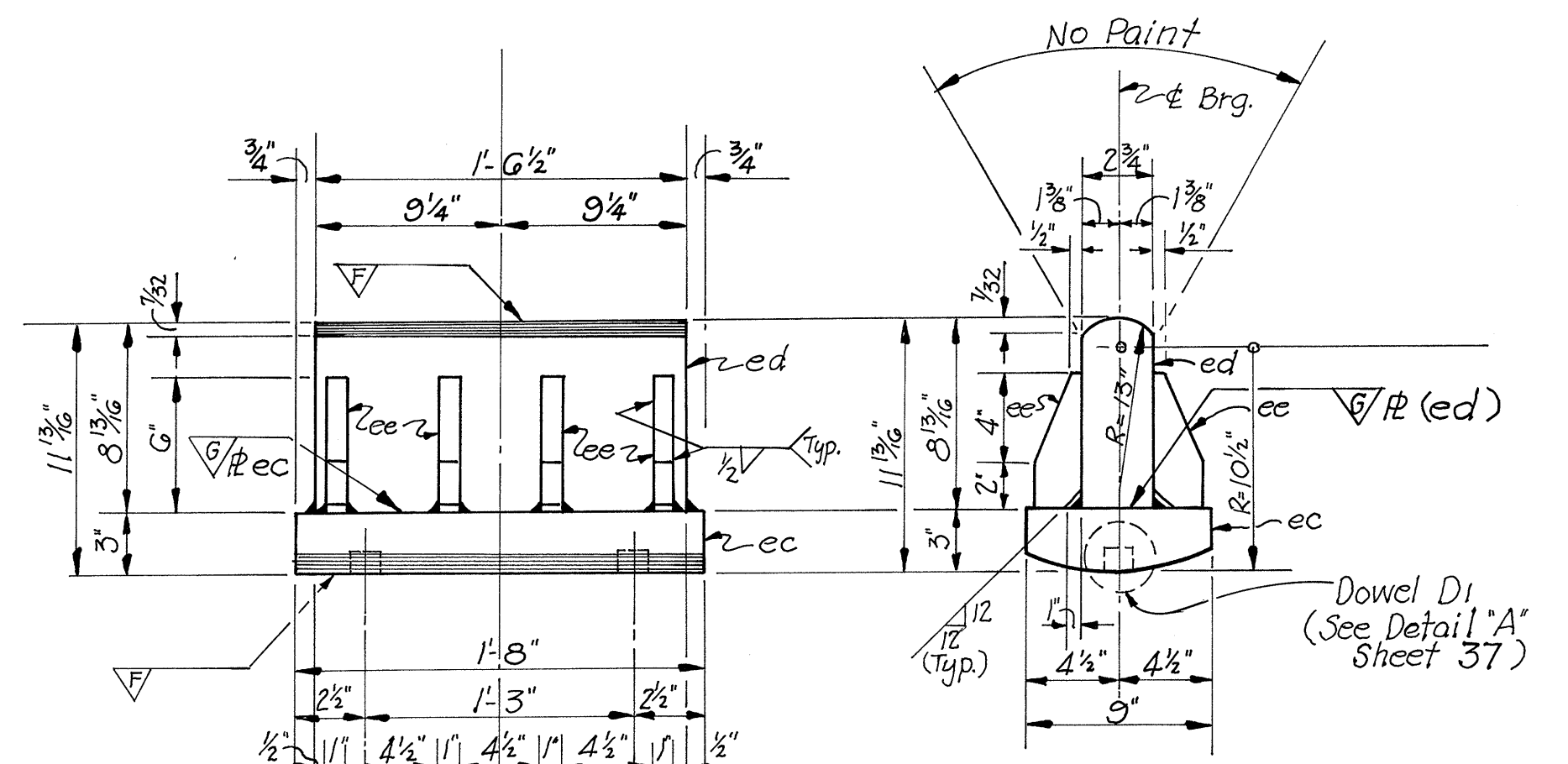
**UPPER SHOE-US-3**  
(Field Weld to Girder with 3/8" weld)

**LEAD PLATE, LP-1 & LP-2**  
(No Paint)

SECTION "C-C"  
(Enlarged)

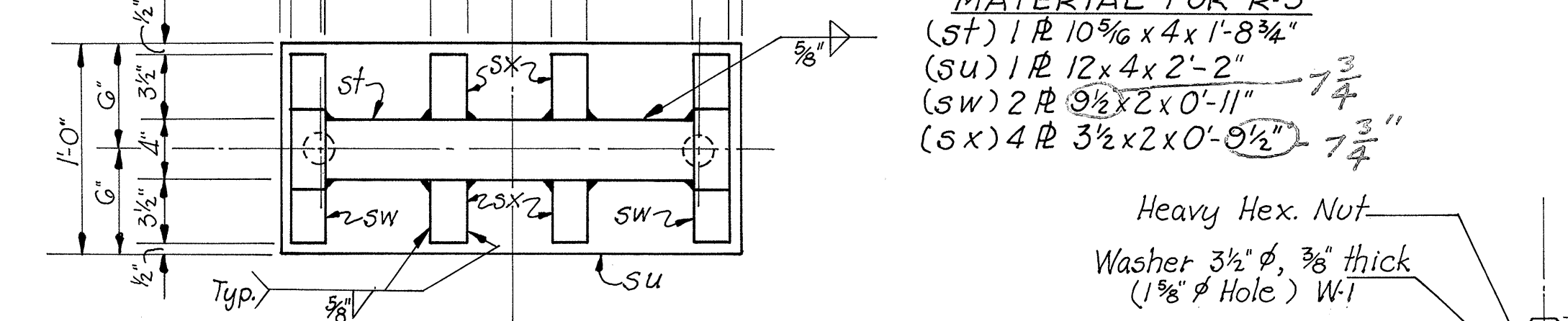
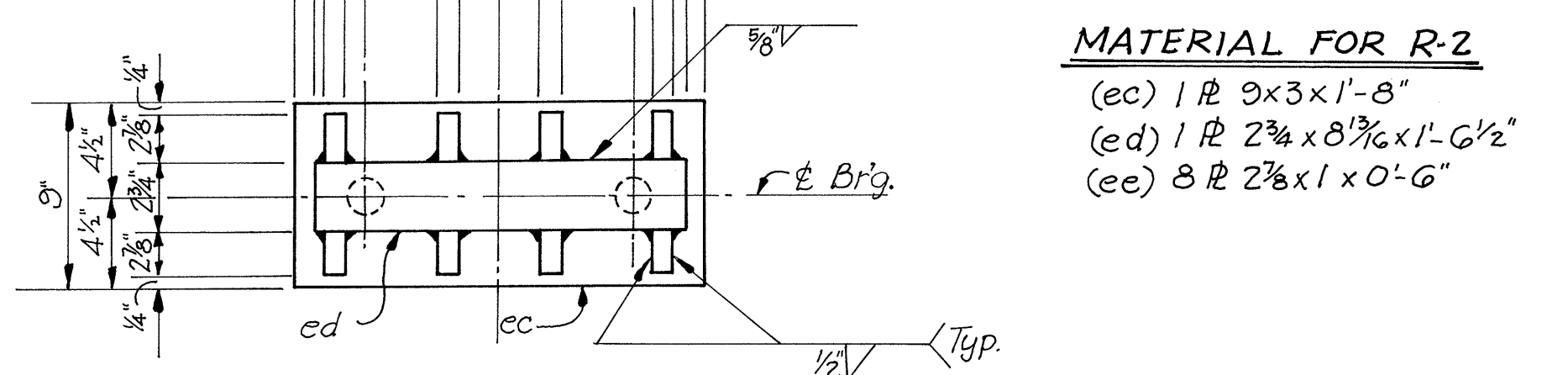
MATERIAL FOR US-2  
(ab) 11" x 3 3/4" x 1'-6 3/4"  
(eb) 2 PL 2 1/2" x 3/8" x 0'-6"

MATERIAL FOR US-3  
(sr) 1 PL 12" x 4" x 1'-9"  
(ss) 2 PL 3" x 3/4" x 0'-7"



MATERIALS LIST													
RA	PI	P2	REJ	P3	P4	FEJ	P5	PG	FA	NO	DESCRIPTION	MARK	NOTES
			3			3				6	UPPER SHOE	US-2	
3									3	6	UPPER SHOE	US-3	
			3			3				6	ROCKER	R-2	
3									3	6	ROCKER	R-3	
			3			3				6	SOLE PLATE	MP-2	
3									3	6	MASONRY PL.	MP-3	

A-441 STEEL  
(REJ/FEJ) Rear/ Forward Expansion Joint

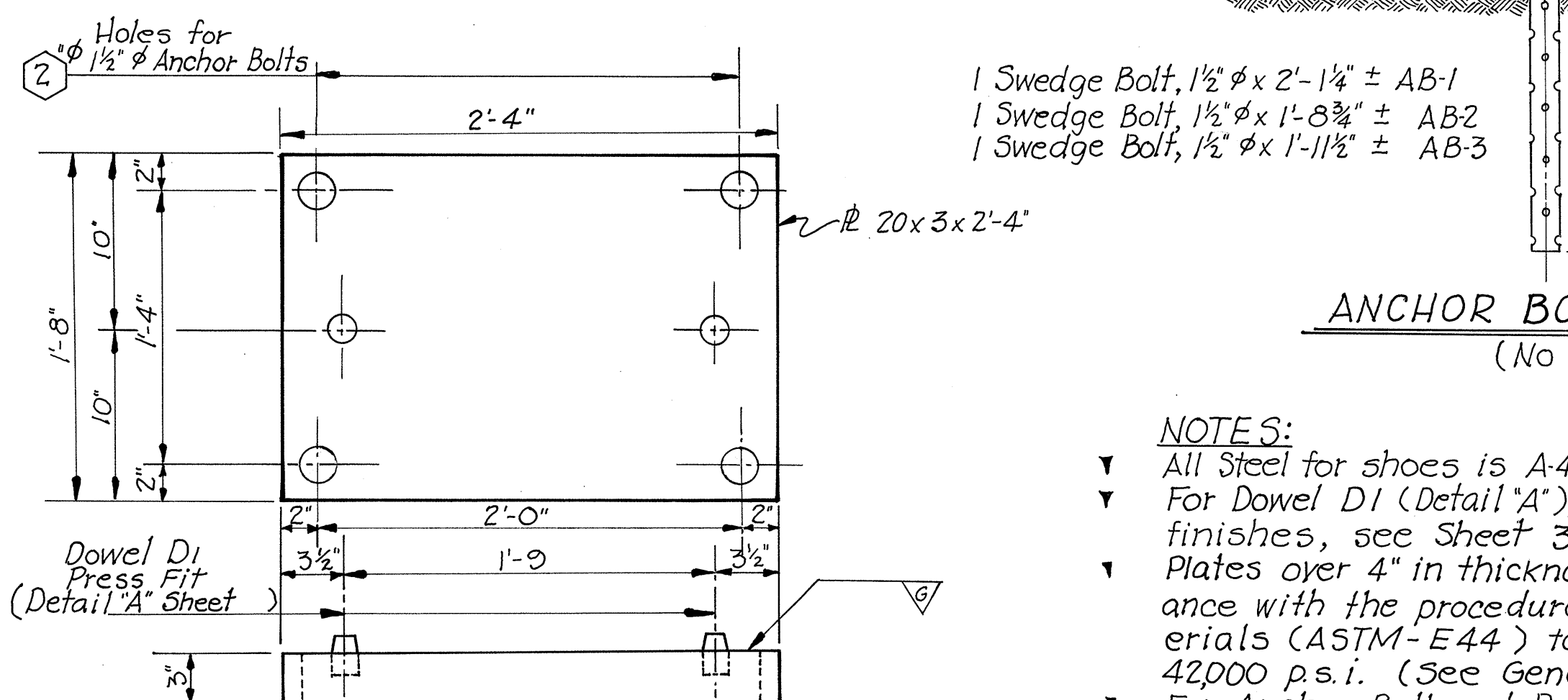
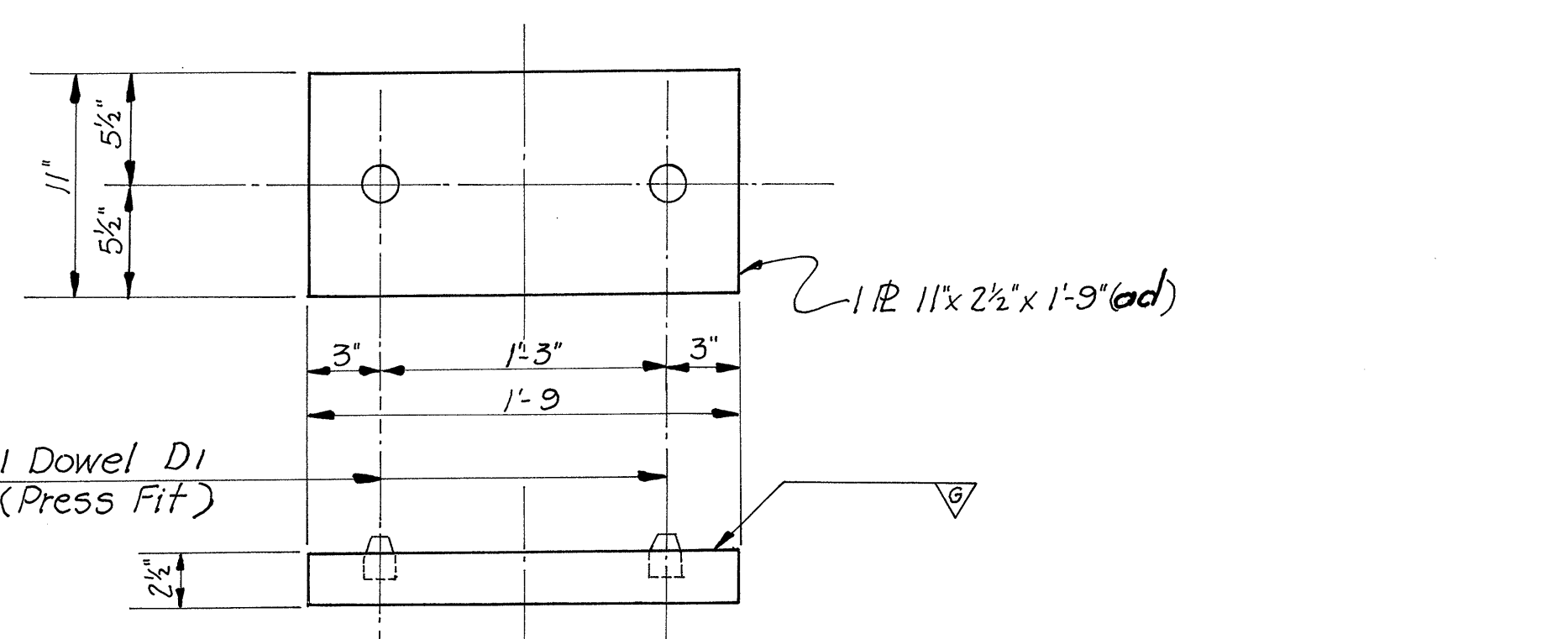


**ROCKER - R-2**  
(Expansion Jt.)

**ROCKER R-3**

MATERIAL FOR R-2  
(ec) 1 PL 9" x 3" x 1'-8"  
(ed) 1 PL 2 3/4" x 8 3/8" x 1'-6 1/2"  
(ee) 8 PL 2 1/2" x 1" x 0'-6"

MATERIAL FOR R-3  
(st) 1 PL 10 5/8" x 4" x 1'-8 3/4"  
(su) 1 PL 12" x 4" x 2'-2"  
(sw) 2 PL 9 1/2" x 2" x 0'-11"  
(sx) 4 PL 3 1/2" x 2" x 0'-9 1/2"



MATERIALS LIST													
RA	PI	P2	REJ	P3	P4	FEJ	P5	PG	FA	NO	DESCRIPTION	MARK	NOTES
	3	3		3	3			3	3	18	Lead Plate	LP-1	
3									3	6	Lead Plate	LP-2	
	12				12				12	36	Swedge Bolt	AB-1	
	12								12	24	" "	AB-2	
	12		12			12			12	36	" "	AB-3	
12	12	12		12	12		12	12	12	36	Washer	W-1	

**SOLE PLATE-MP-2**  
(Field Weld to Girder with 3/8" Fillet Welds)

**MASONRY PLATE MP-3**

**NOTES:**

- All Steel for shoes is A-441 Steel.
- For Dowel D1 (Detail 'A'), Classification of Machine Surface finishes, see Sheet 37.
- Plates over 4" in thickness shall be heat-treated in accordance with the procedures relating to heat treatment of materials (ASTM-E44) to provide a minimum yield point of 42,000 p.s.i. (See General Notes)
- For Anchor Bolt and Bearing Plan, see Sheet No. 30

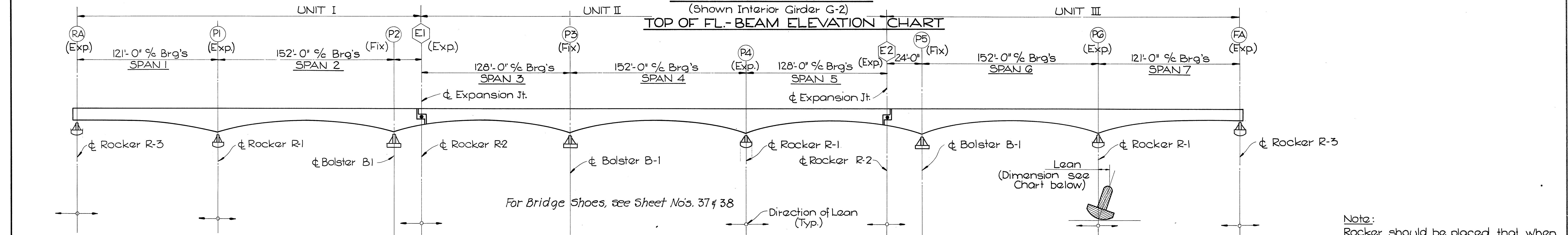
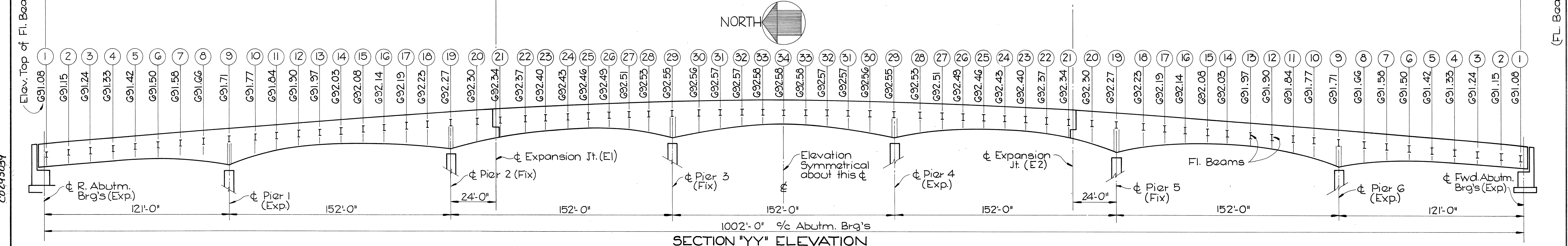
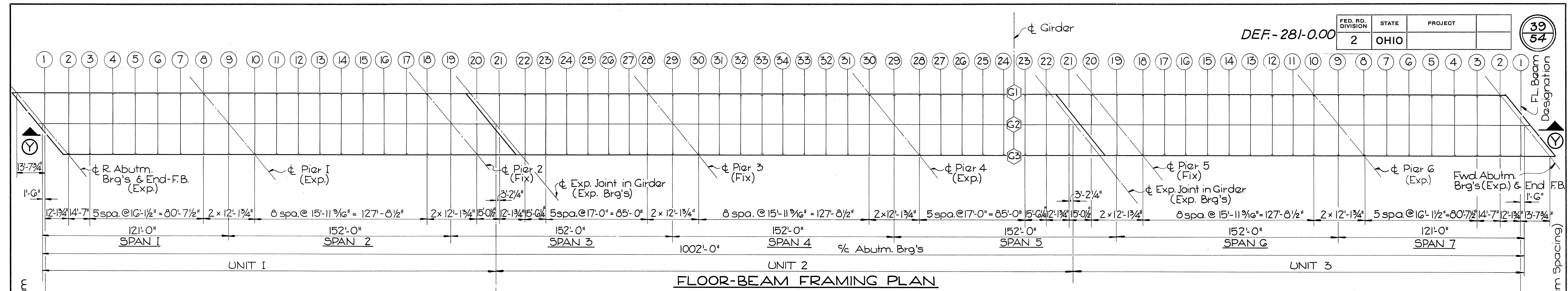
CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO, OHIO

**BRIDGE SHOES-PART II**

BRIDGE NO. DEF. 281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEFIANCE CO. STA. 304+67.46-314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	AF.M.	E.L.P.	J.C.P.		





For Bridge Shoes, see Sheet Nos. 37 & 38

DEGREES IN FAHRENHEIT (F°)	UNIT I				UNIT II				UNIT III				DEGREES IN FAHRENHEIT (F°)	
	1/16"	1/8"	3/16"	1/4"	1/8"	3/16"	1/4"	1/2"	3/16"	1/4"	3/8"	1/2"		
+100°	1/16"				3/8"				7/16"				1/16"	+100°
+90°	5/8"				5/16"				5/16"				5/8"	+90°
+80°	7/16"				3/16"				1/4"				7/16"	+80°
+70°	3/16"				1/8"				1/8"				3/16"	+70°
+60°	0				0				0				0	+60°
+50°	3/16"				1/8"				1/8"				3/16"	+50°
+40°	7/16"				3/16"				1/4"				7/16"	+40°
+30°	5/8"				5/16"				5/16"				5/8"	+30°
+20°	1/16"				3/8"				7/16"				1/16"	+20°
+10°	1"				3/16"				3/16"				1"	+10°
0°	1 3/16"				5/8"				5/8"				1 3/16"	0°
-10°	1 3/8"				3/4"				3/4"				1 3/8"	-10°
-20°	1 3/16"				3/4"				7/8"				1 3/16"	-20°

Note:  
 Rocker should be placed that when Bridge is completed, the Rocker will stand in a vertical position at 60° F (Lean = Zero)

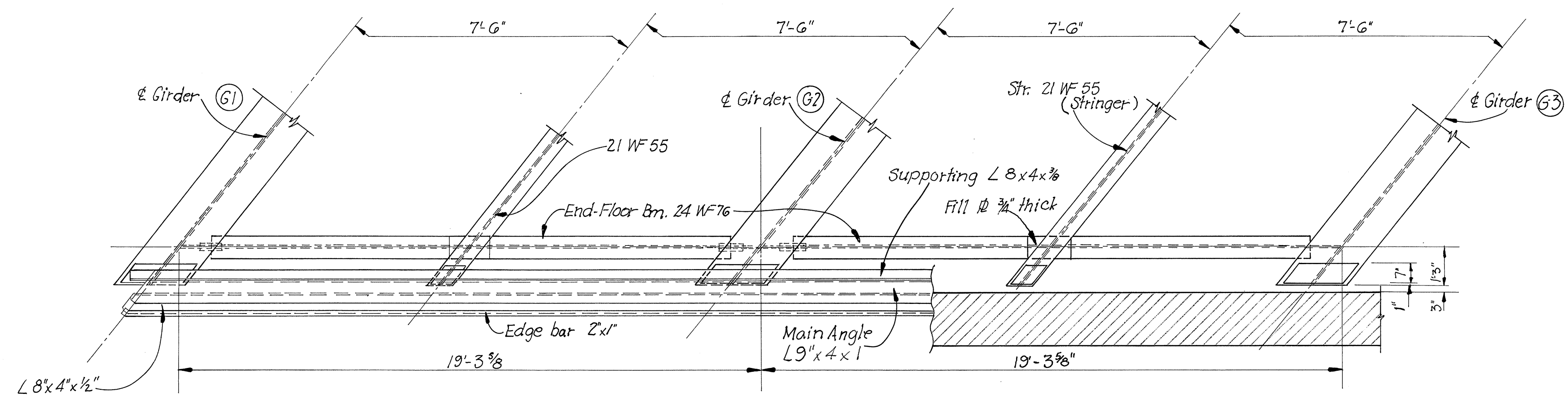
CHARLES L. BARBER & ASSOCIATES INC.  
 ENGINEERS  
 TOLEDO, OHIO

**FLOOR BEAM FRAMING PLAN AND  
 ROCKER LEAN CHART**

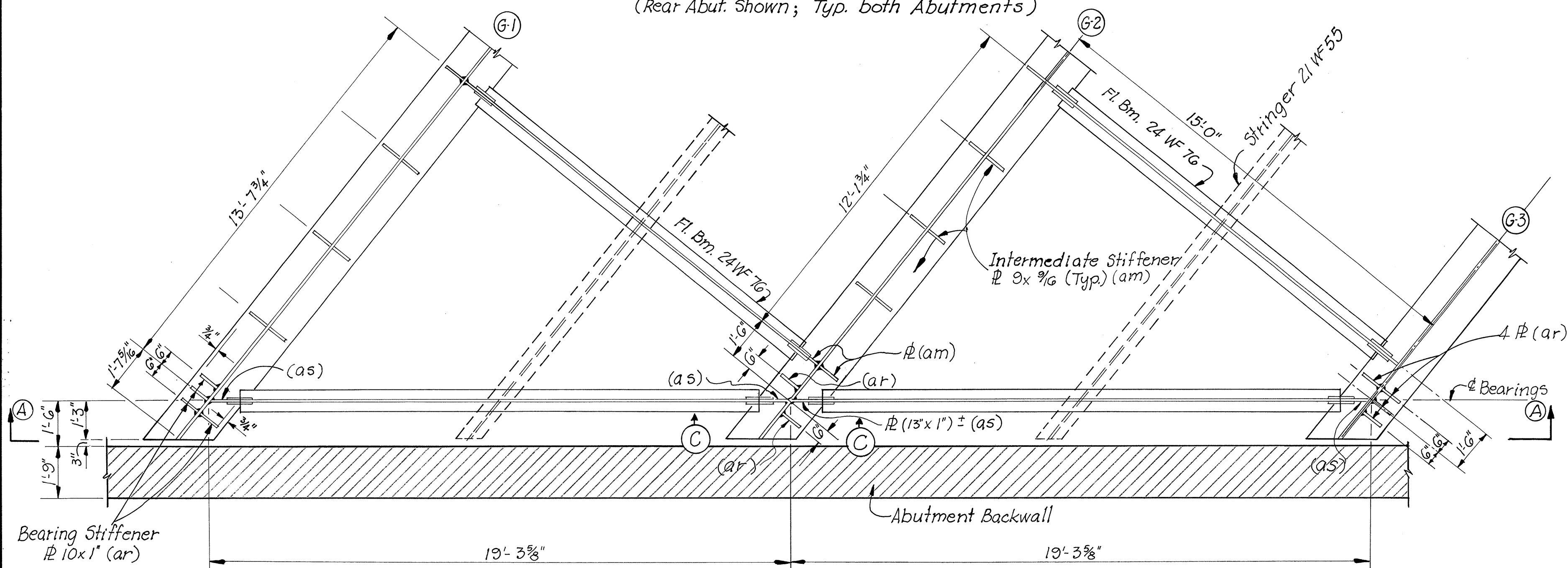
BRIDGE NO. DEF-281-0000  
 S.R. 201 (RELOC) OVER MAUMEE RIVER  
 DEF. CO. STA. 304+67.46-314+76.54

**ROCKER LEAN CHART DUE TO TEMPERATURE**

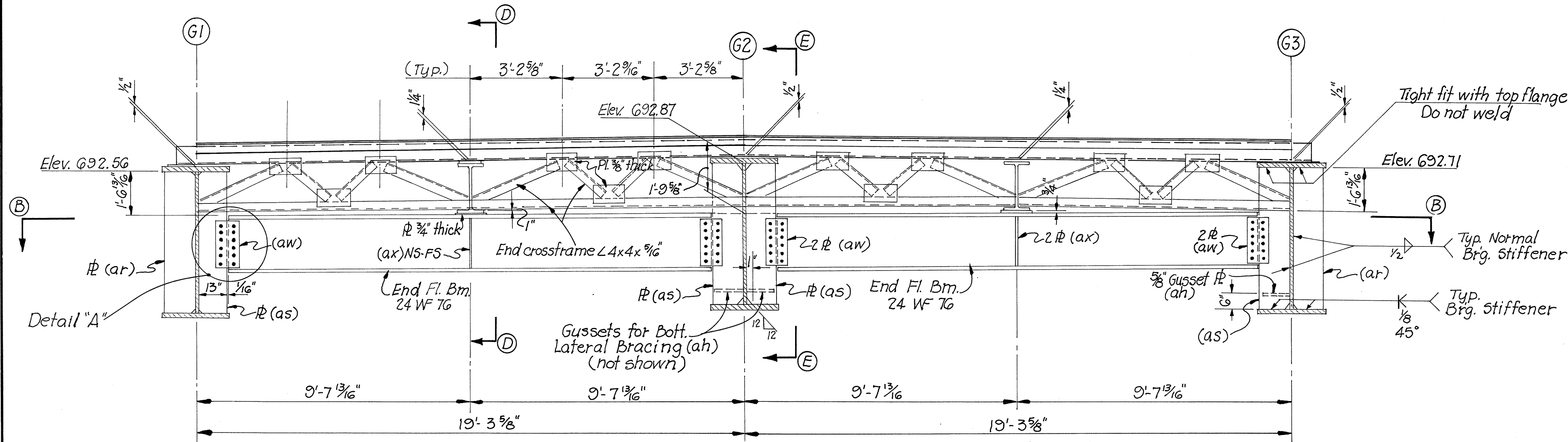
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	M.A.T.	K.R.R.	J.C.P.		



**END DAM - PLAN**  
(Rear Abut. Shown; Typ. both Abutments)

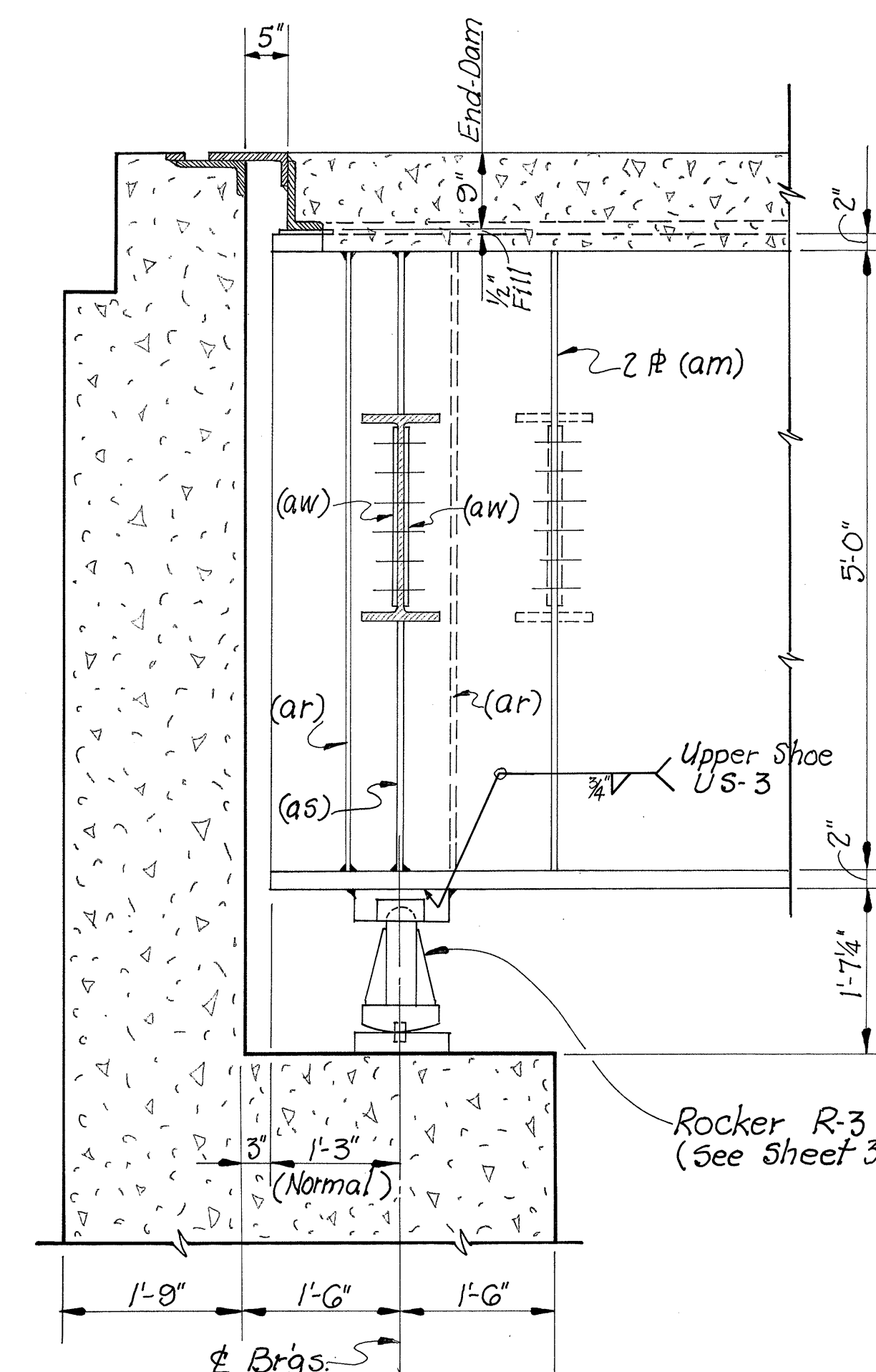


**SECTION "B-B"**

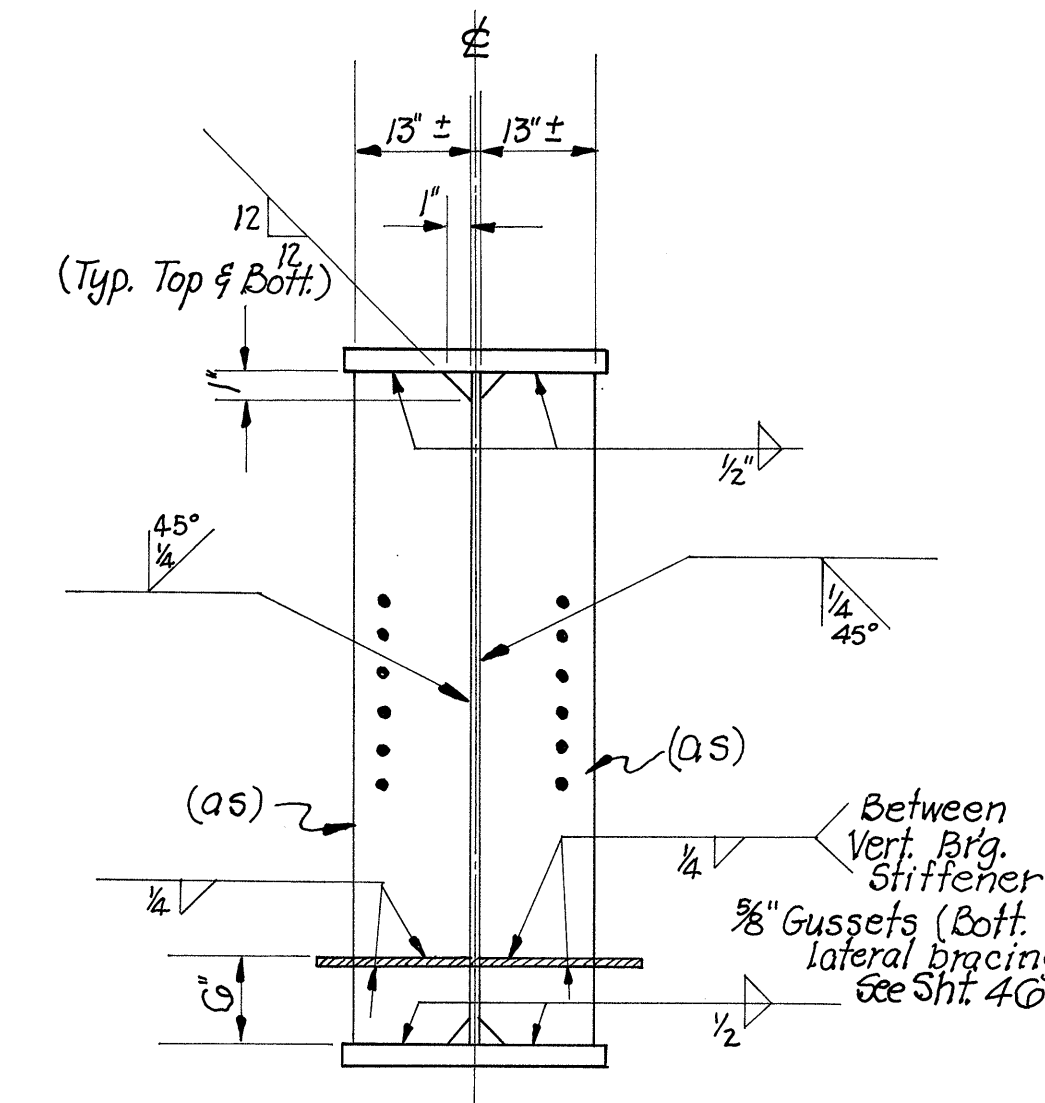


**SECTION "A-A"**

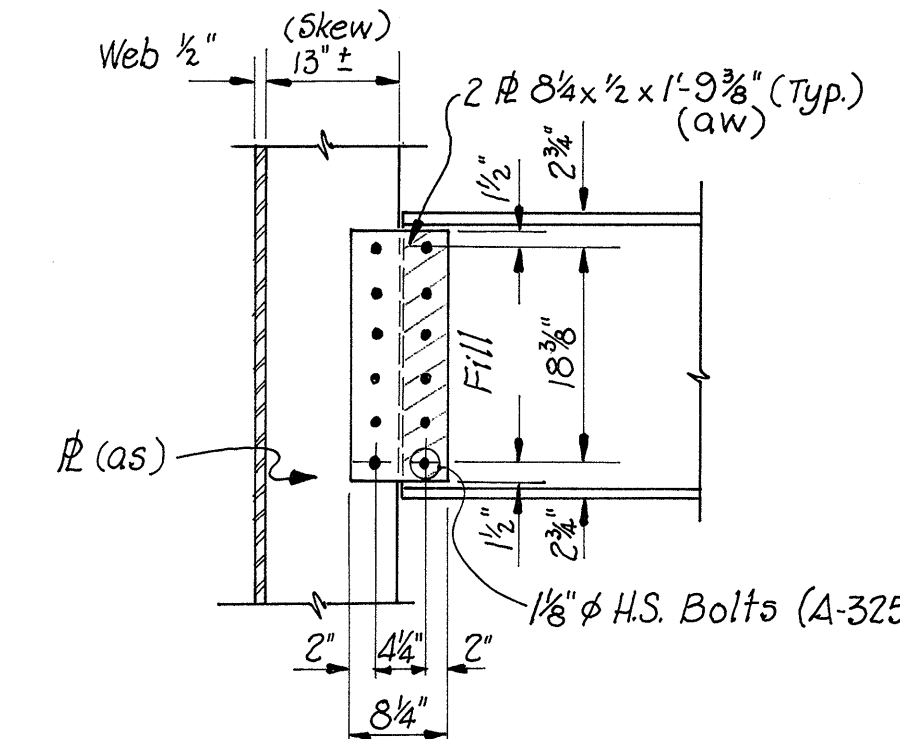
NOTE  
Detailing End-Crossframes, refer to  
Std. Dwg. SD-1-65, dated 11-8-65.



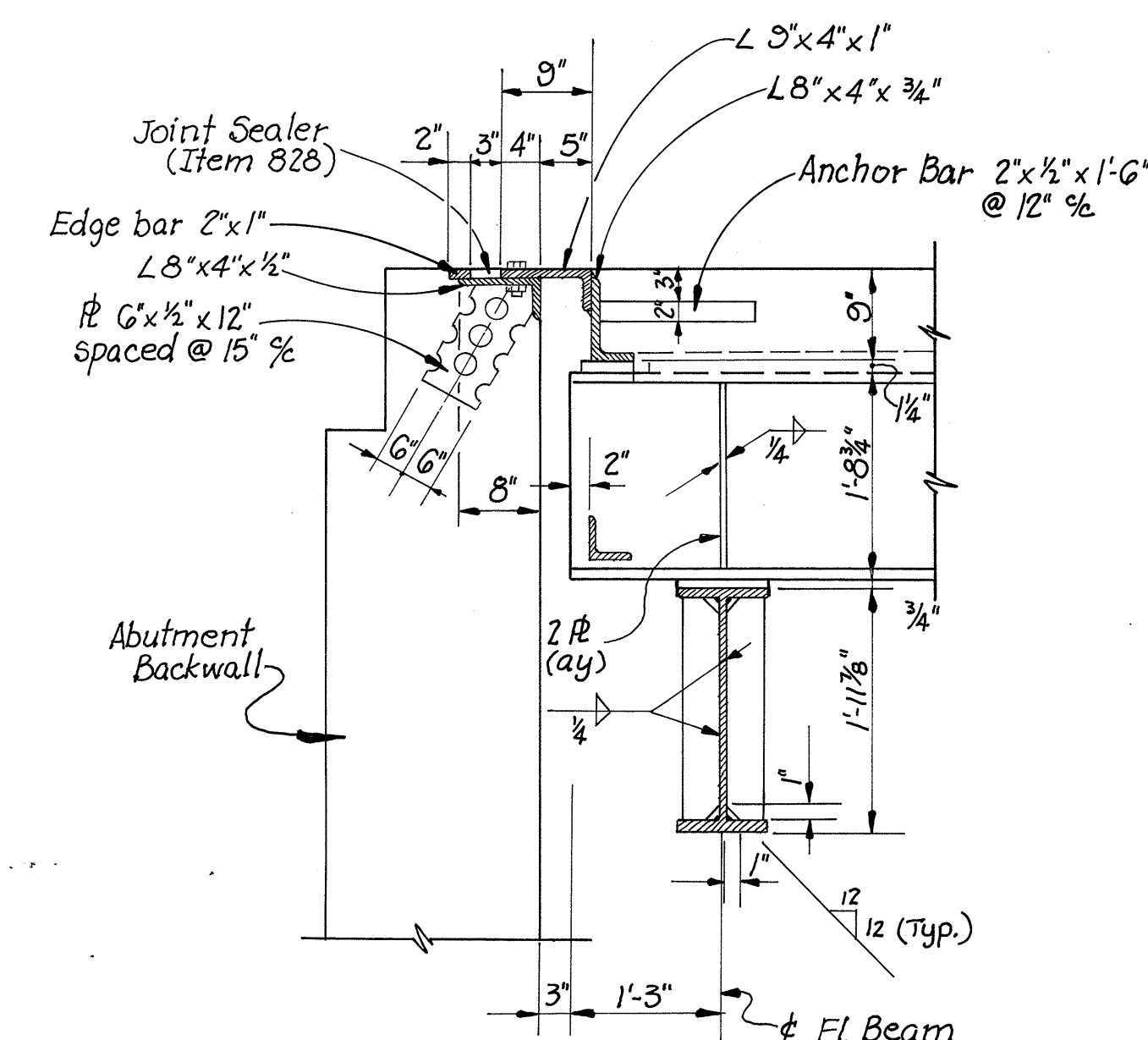
**SECTION "E-E"**



**SECTION "C-C"**  
(In Section "B-B")



**DETAIL "A"**

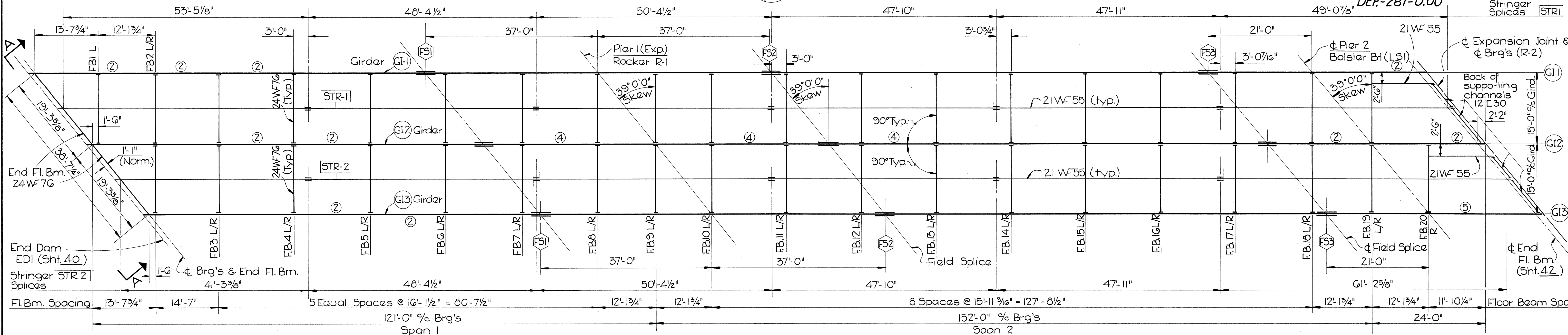


**SECTION "D-D"**

(For End-Dam Detail and Welding, refer to  
Std. Dwg. SD-1-65, sht. 1, Dated 11-8-65)

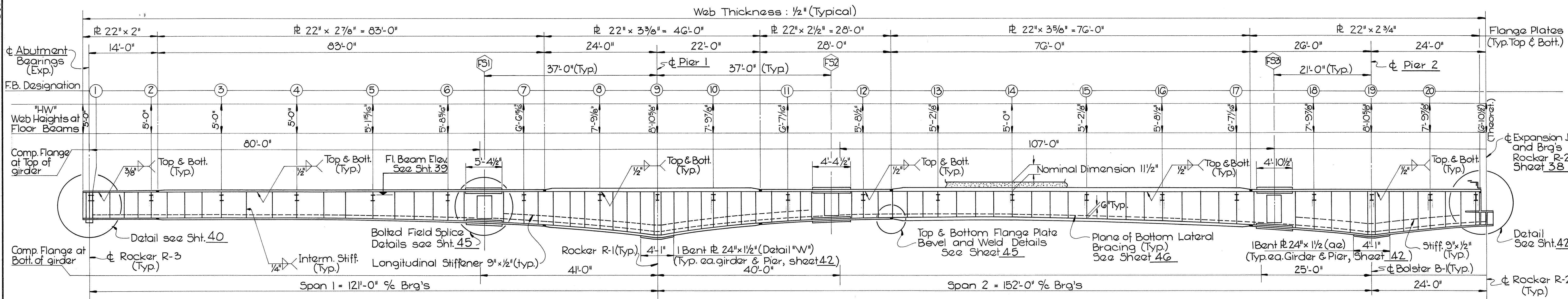
CHARLES L. BARBER & ASSOCIATES INC. ENGINEERS TOLEDO, OHIO						
<b>ABUTMENT END DAM AND STRINGER DETAILS</b>						
BRIDGE NO.		DEF. - 281-0000				
S. R.		281 (RELOC.) OVER MAUMEE RIVER				
DEF. CO.		STA. 304+67.46 - 314+76.54				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.W.K.	E.W.K.	A.F.M.	K.R.R.	W.B.D.		





Section 'A-A' and End-Dam EDI  
Detail see Sht. 40

0293041



**STRUCTURAL NOTES FOR ALL UNITS**

1. Framing Plan for Unit III is similar to the Framing of Unit I-
2. For bottom Lateral Wind-Bracing, not shown on the Framing Plans, refer to sheet 46.
3. For continuity of Stringer (STR 1 and STR 2)- 21WF 55 place splices as per detail on sheet 45 at location indicated on the Framing Plans.
4. For Bridge Shoes, Rocker and Bolster see sheets 37 & 38.

5. For typical Bevel-and Welding Details of Girder Flanges see sheet 45.
6. All intermediate Stiffeners are 9"x 3/8" plates of variable length. They shall be used in pairs on all exterior and interior Girders, and shall be welded to the Web-Plate. No Stiffener, intermediate or bearing stiffener, shall be welded to the tension flange of the Girder. For region of compr. flange at top or bottom of Girder see Girder elevations.

7. Longitudinal Stiffener- 9"x 1/2" plates (typ). They shall be placed at 1/5 of the web height, measured from the toe of the compr. edge of the web plate. Stiffener shall be shop-welded to the web and to all transverse stiffeners and in general shall follow the curve of the hunch of the Girder.
8. For Deflection and Camber Diagram see sheet 47.
9. Spacing of intermediate Stiffener. All intermediate Stiffener are in pairs (N.S./F.S) and are set perpendicular to the web. The

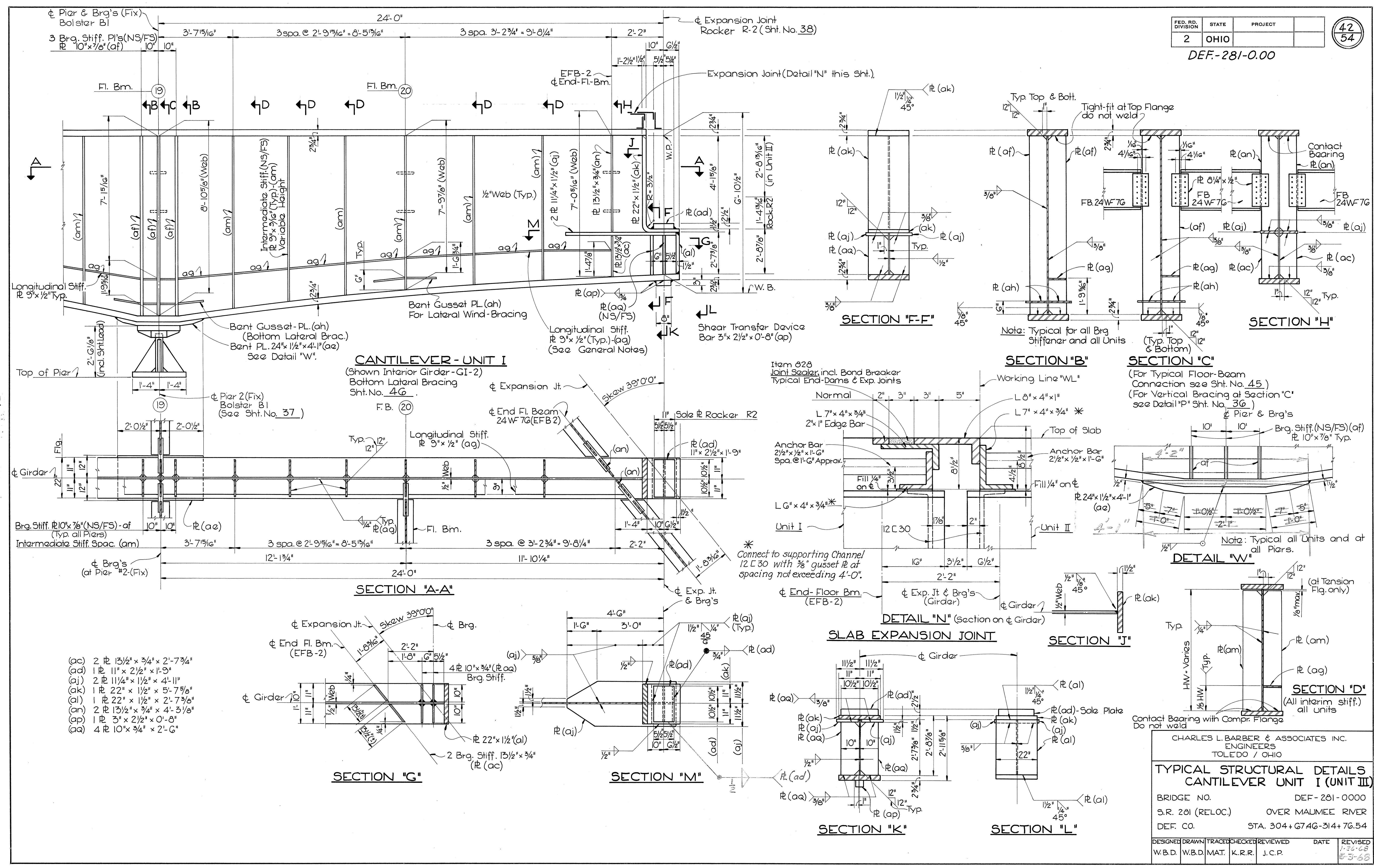
number of these Stiffeners in ea. panel between floor beams is in general 3 (three) unless otherwise shown on the plans by a circled number, and are equally spaced. In panels with bolted field splices (FS) the first stiffener shall be placed immediately beyond the flange splice plates at a permissible distance from the adjacent Stiffener. Slight deviations are permitted for purpose of detailing.

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TOLEDO/OHIO

**FRAMING PLAN-UNIT I (UNIT III)**  
BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC) OVER MAUMEE RIVER  
DEF. CO. STA. 304+67.46-314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	M.A.T.	K.R.R.	J.C.P.		





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ENGINEERS  
TOLEDO / OHIO

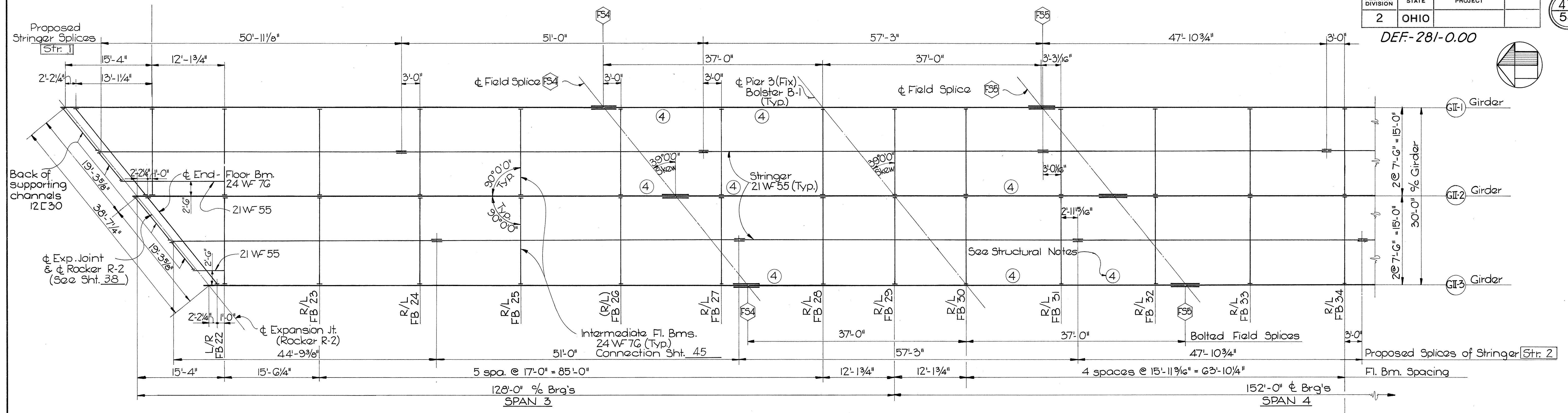
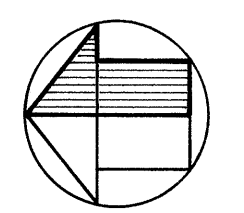
**TYPICAL STRUCTURAL DETAILS  
CANTILEVER UNIT I (UNIT III)**

BRIDGE NO. DEF-281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+G74G-314+76.54

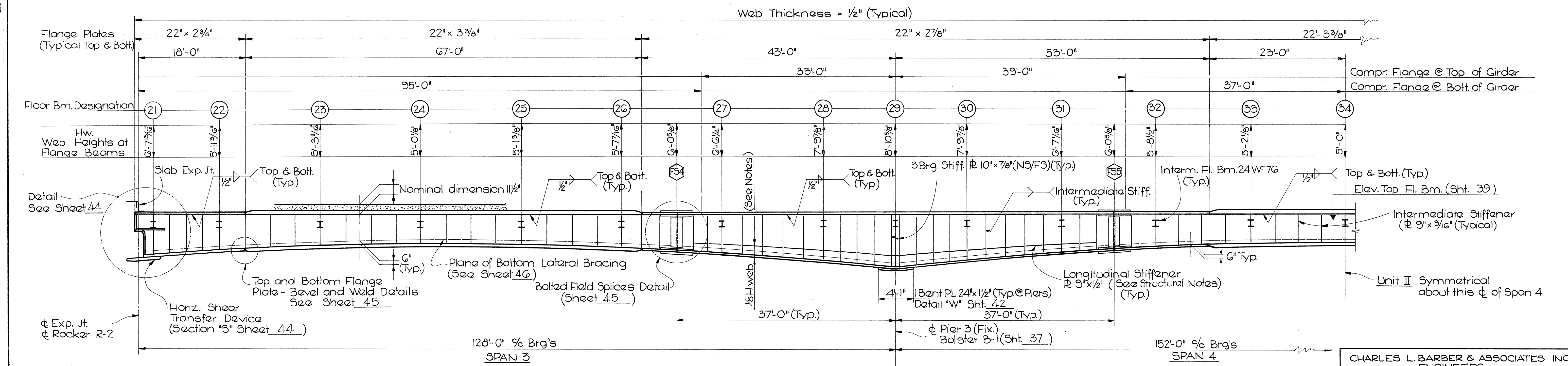
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	MAT.	K.R.R.	J.C.P.		1-26-68 5-3-68



DEF-281-0.00



**FRAMING PLAN**  
(Bottom Lateral Bracing not shown)  
See Sheet 46



**HALF ELEVATION OF GIRDER GI-2**

For Structural Notes  
See Sheet No. 41

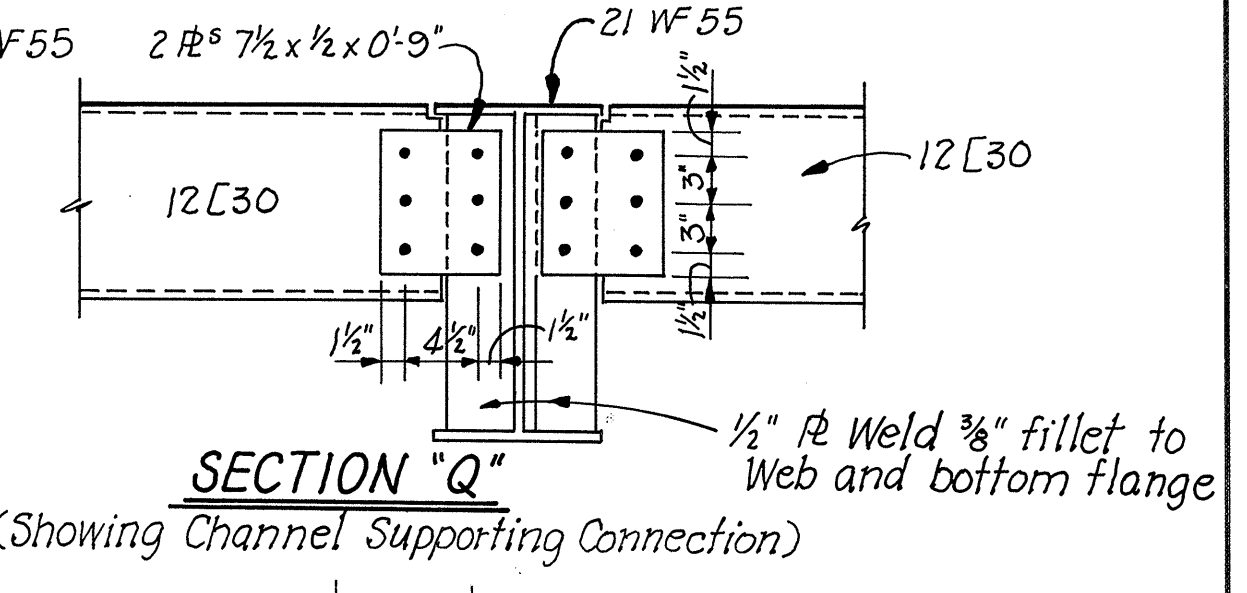
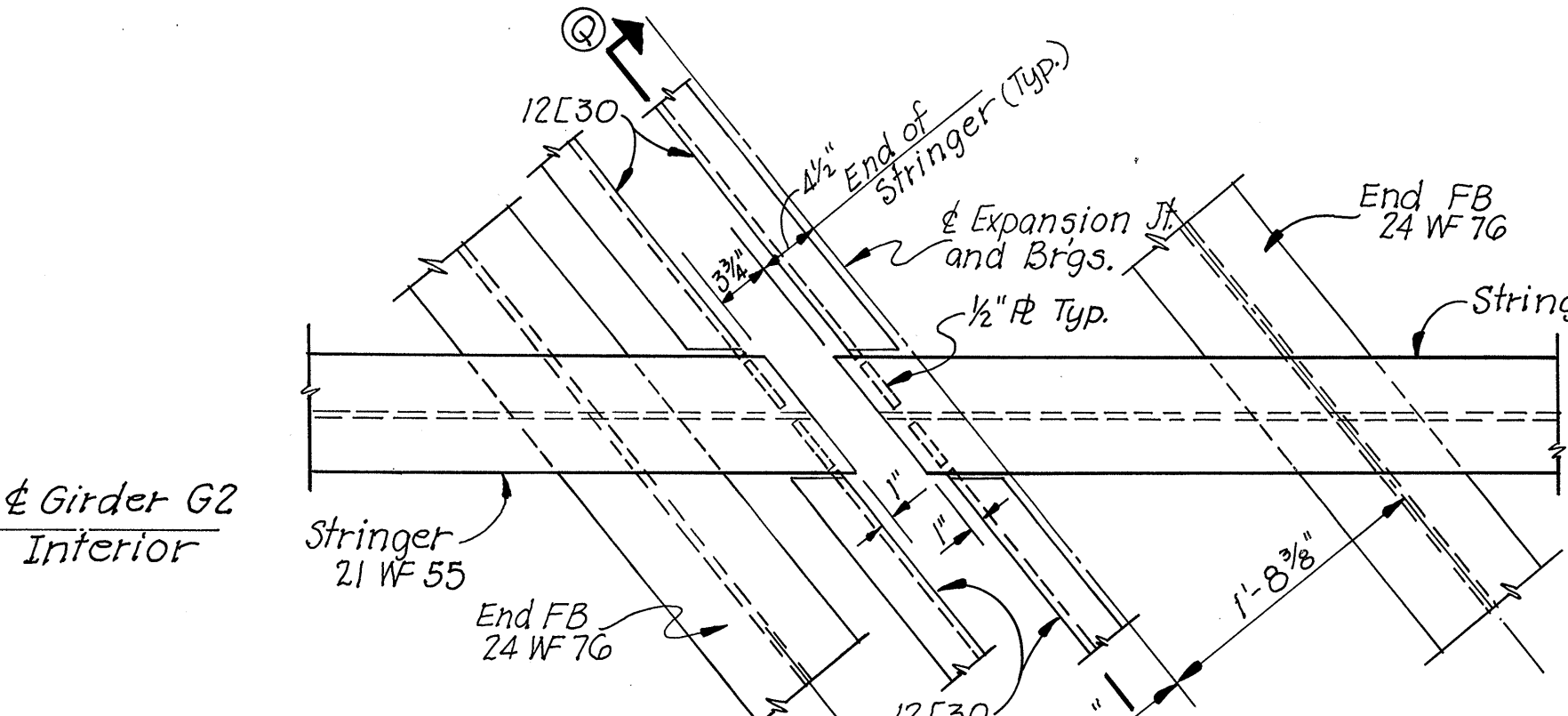
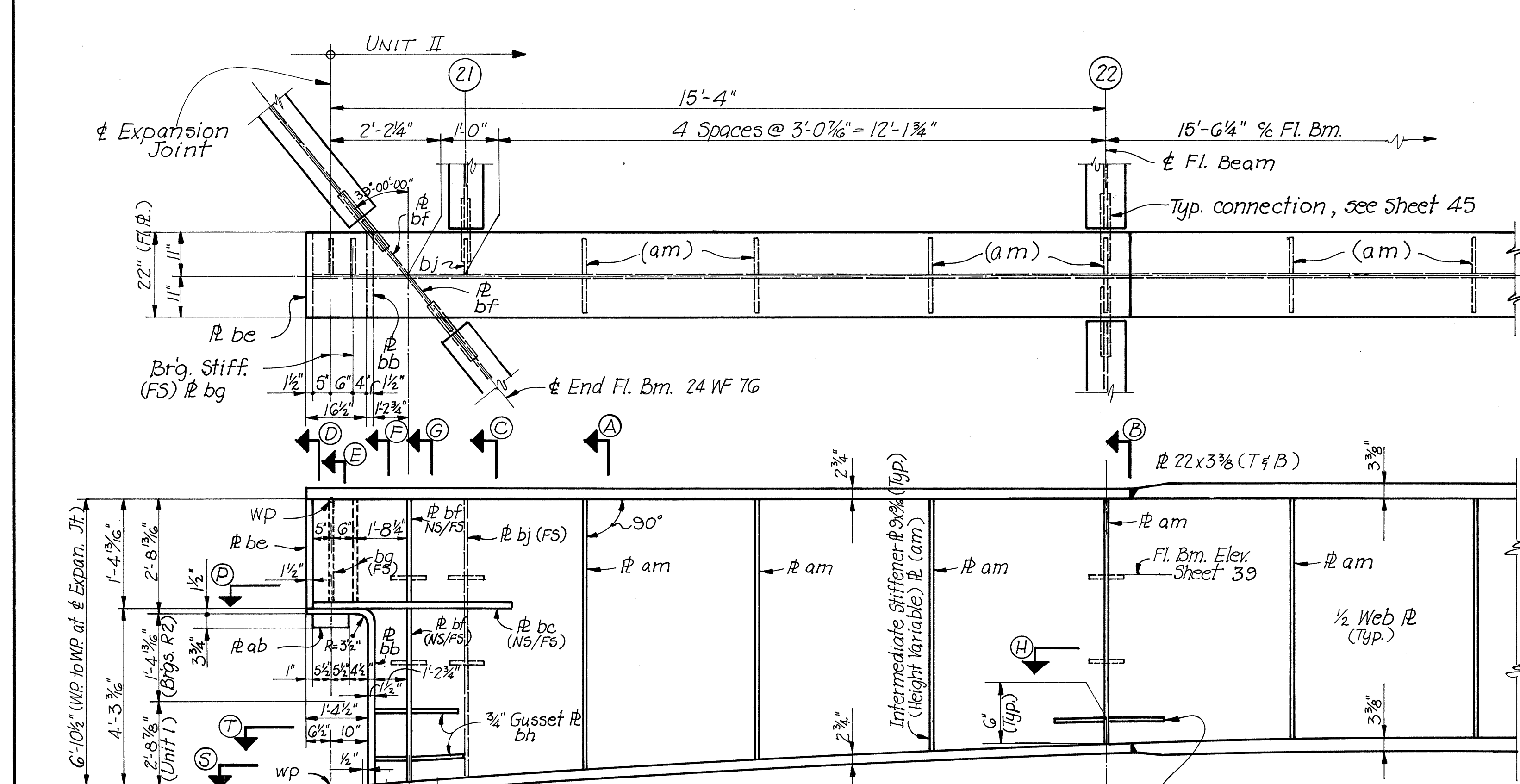
CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO, OHIO

**FRAMING PLAN - UNIT II**  
BRIDGE NO. DEF-281-0000  
S.R. 281(RELOC) OVER MAUMEE RIVER  
DEF. CO. STA. 304+G7.4G-314+76.54

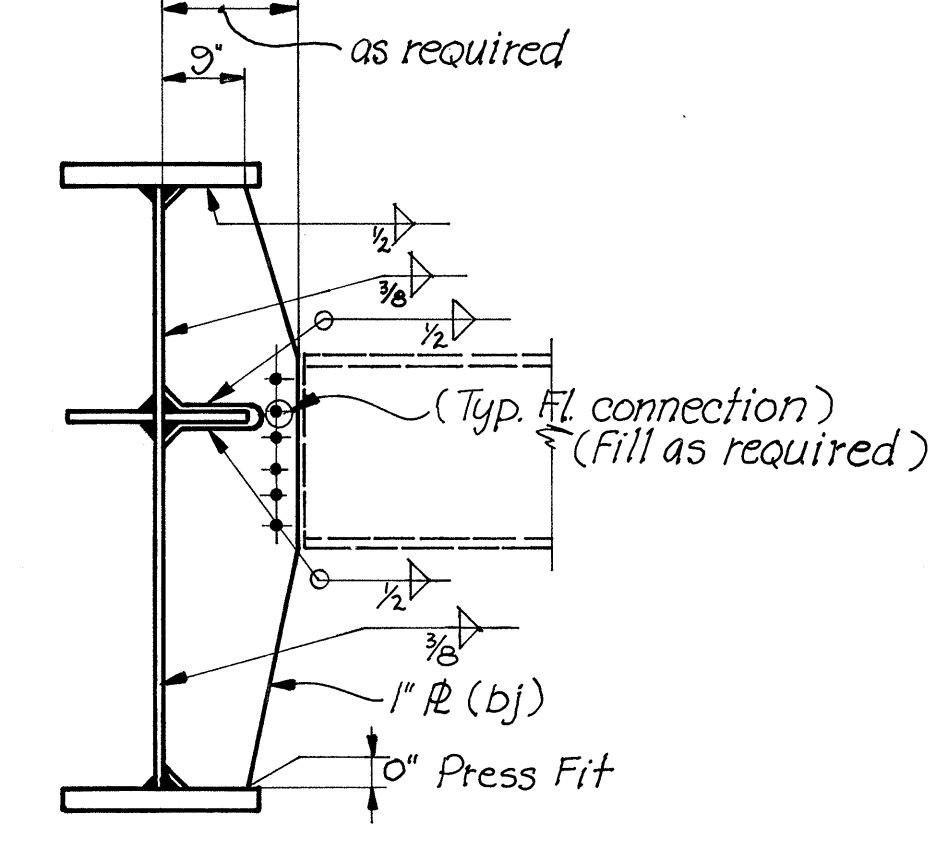
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	E.W.K.	M.A.T.	K.R.R.	J.C.P.		

Co 293043

DEF-281-0.00

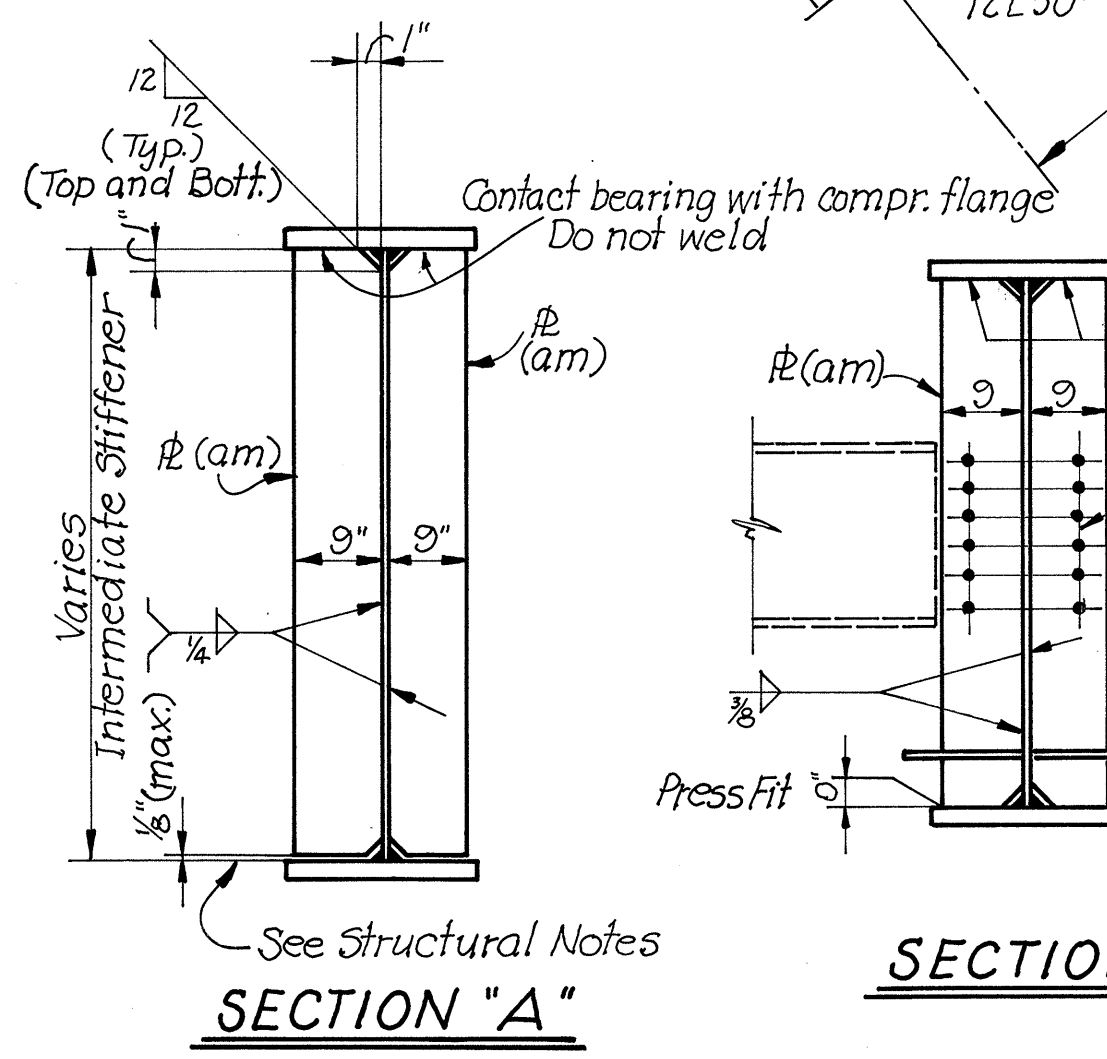


**SECTION "Q"**  
(Showing Channel Supporting Connection)

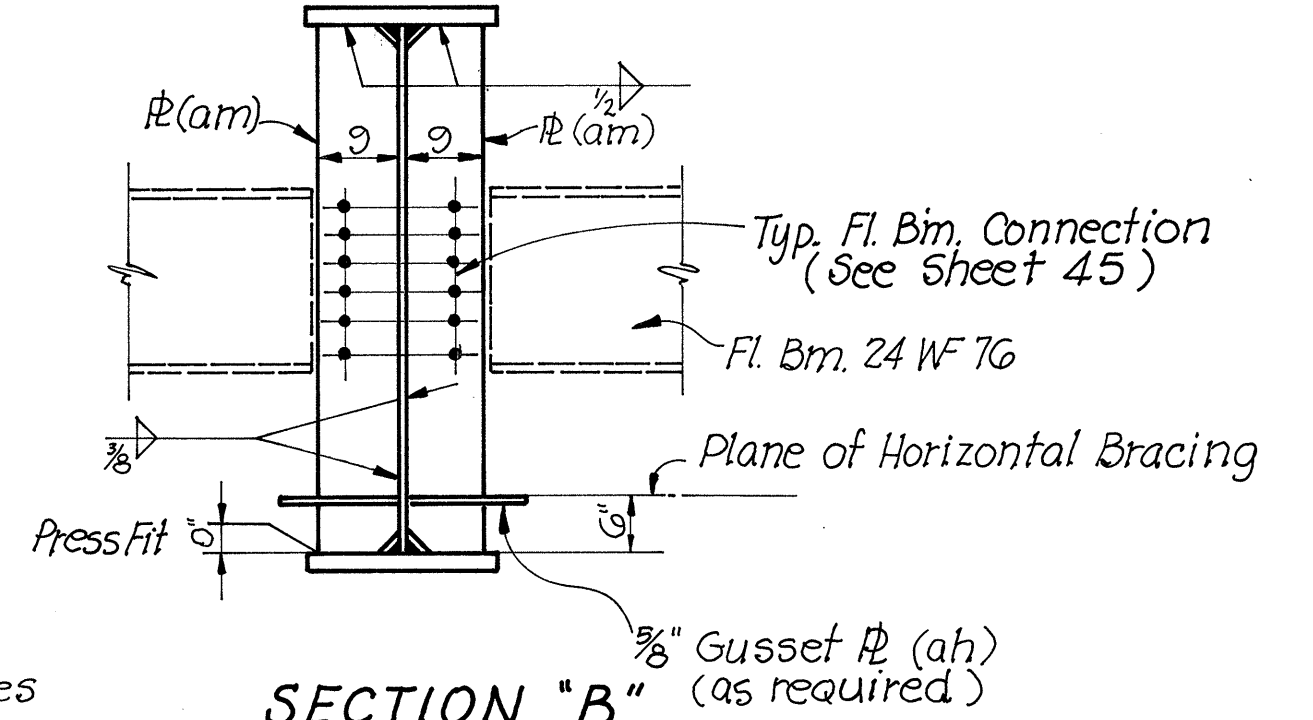


**SECTION "C"**

**CONNECTION**  
**SUPPORTING CHANNEL TO STRINGER**

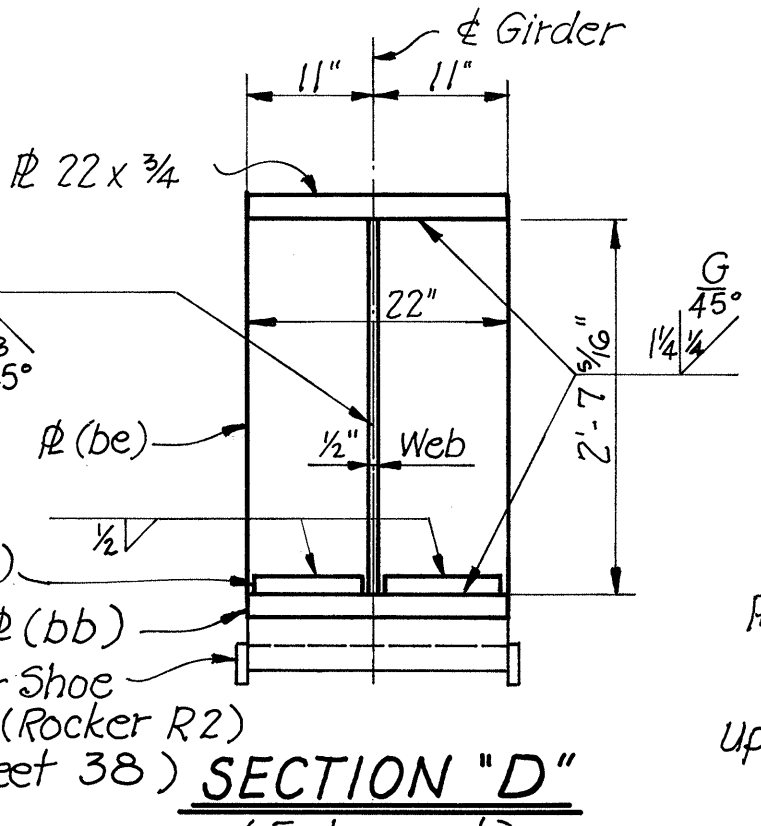


**SECTION "A"**

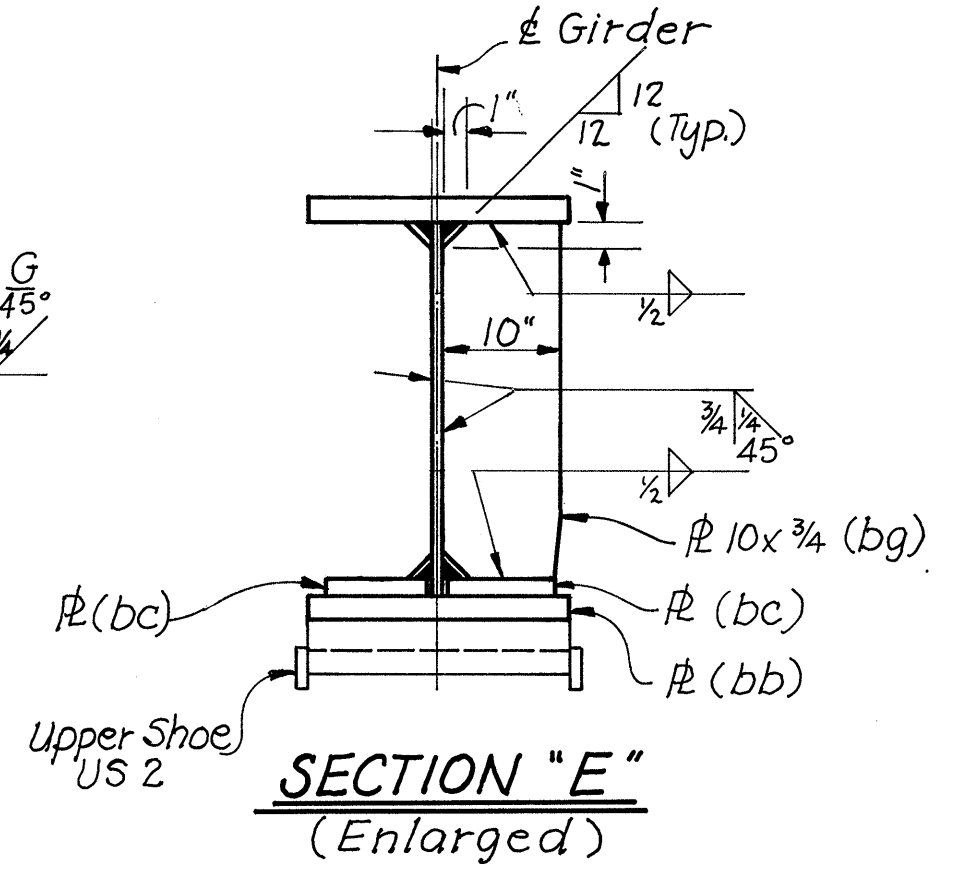


**SECTION "B"**

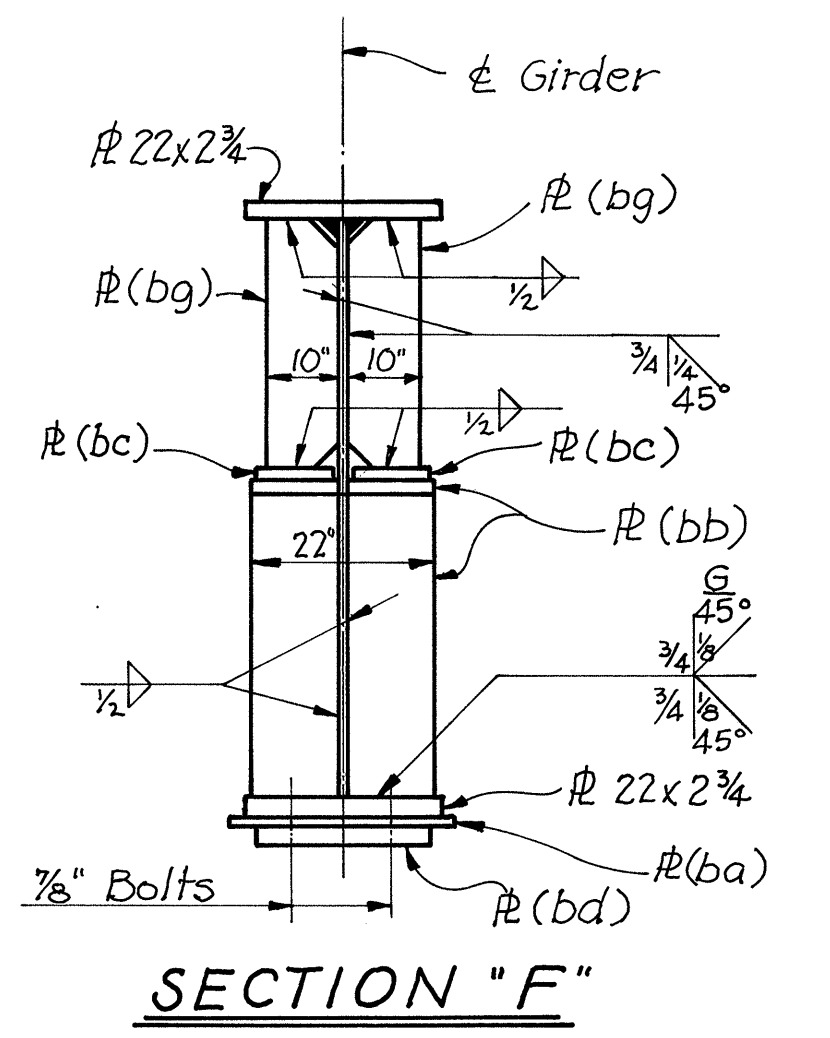
**CONNECTION**  
**SUPPORTING CHANNEL TO GIRDER**



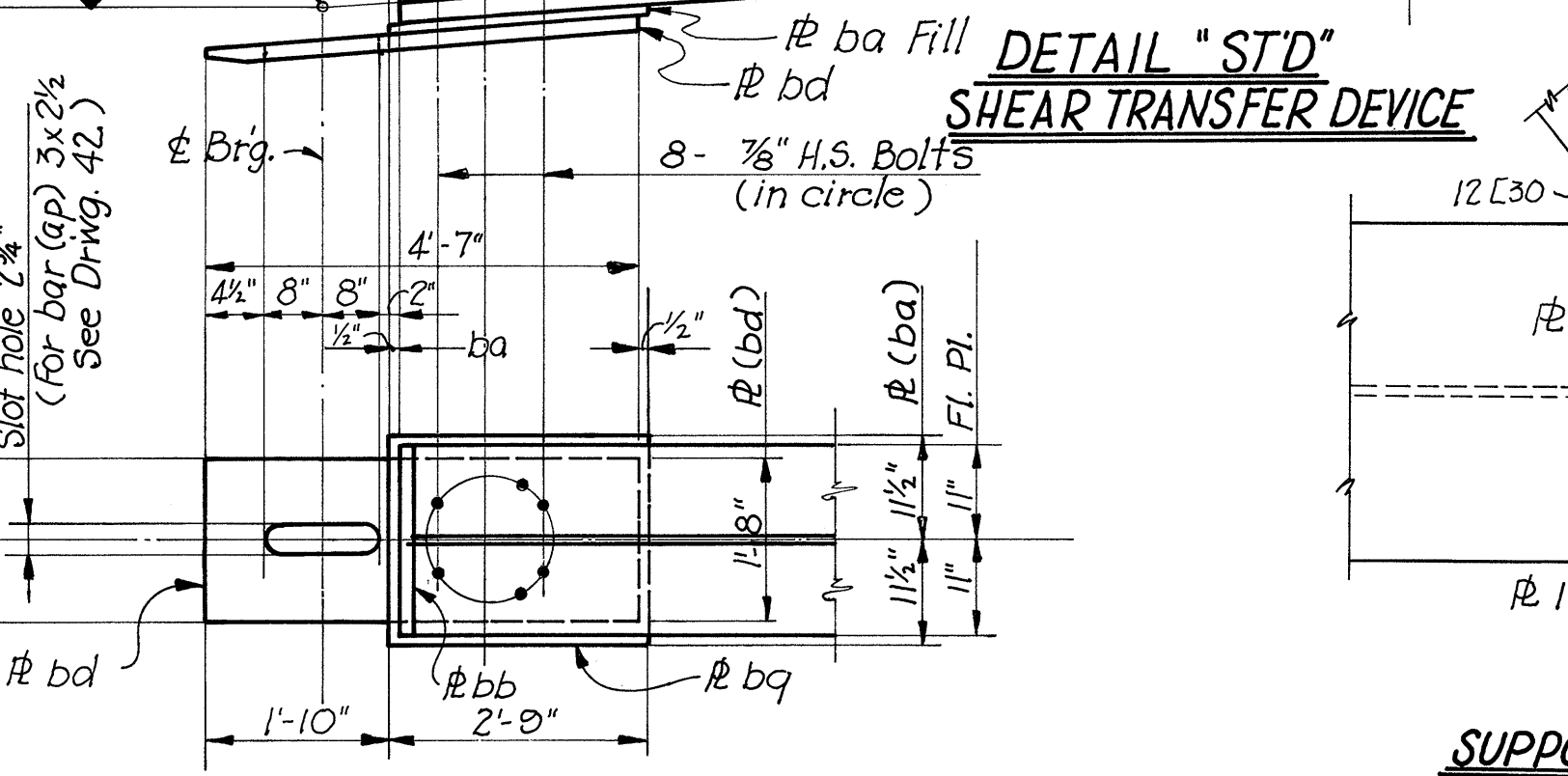
**SECTION "D"**  
(Enlarged)



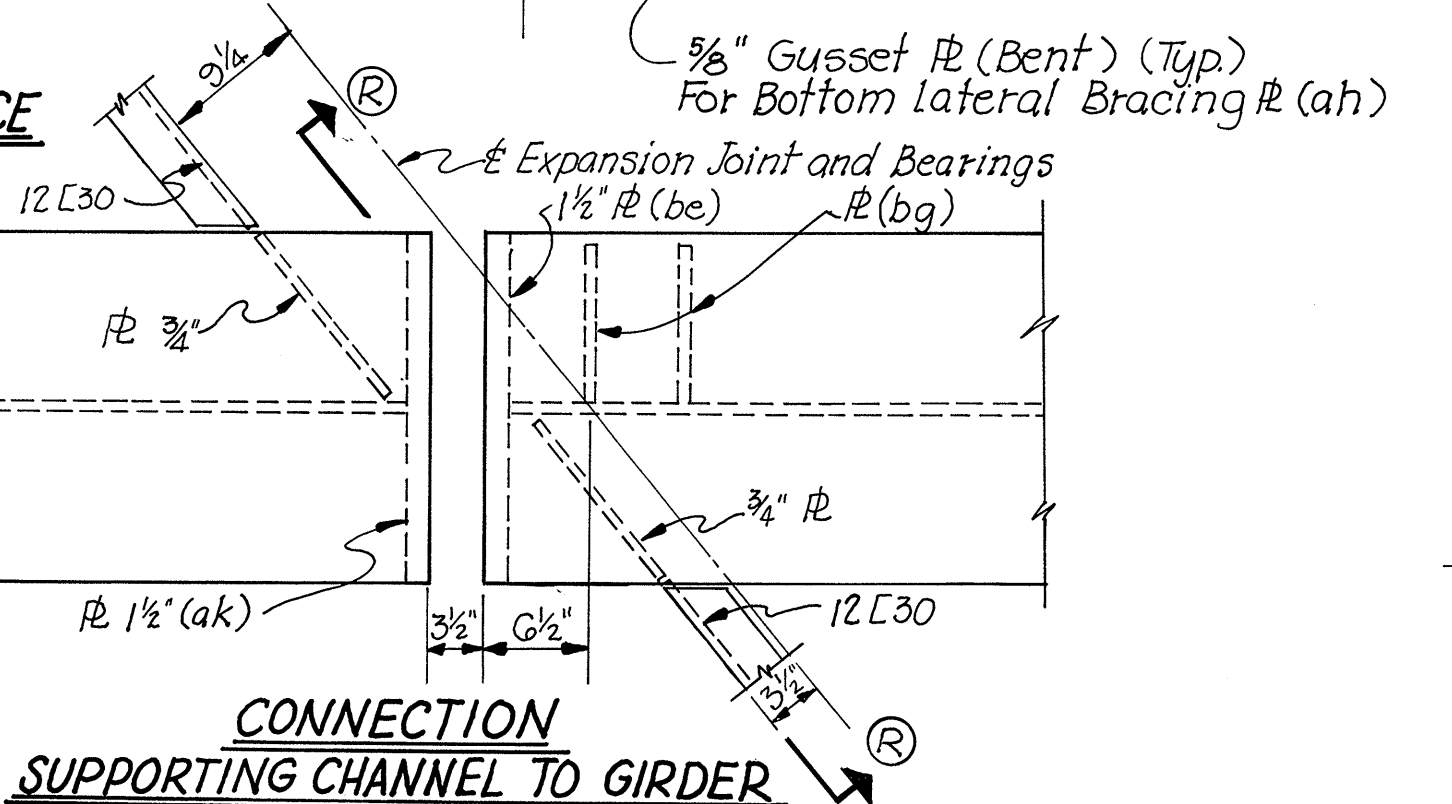
**SECTION "E"**  
(Enlarged)



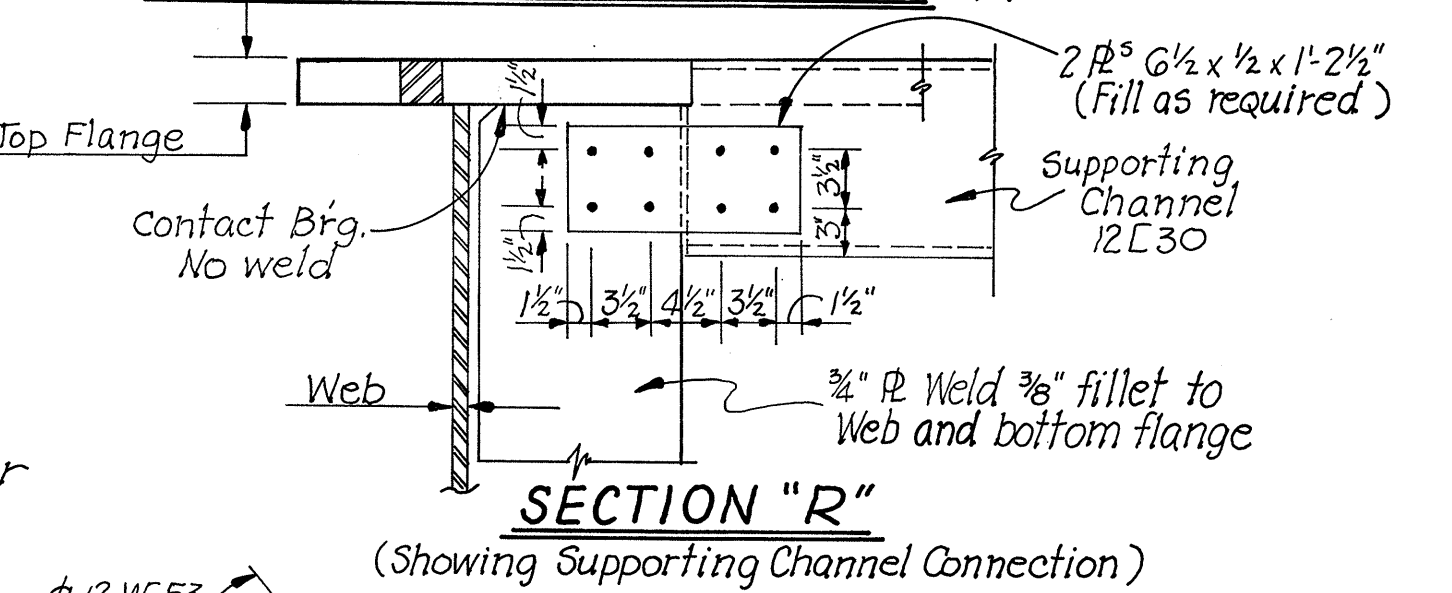
**SECTION "F"**



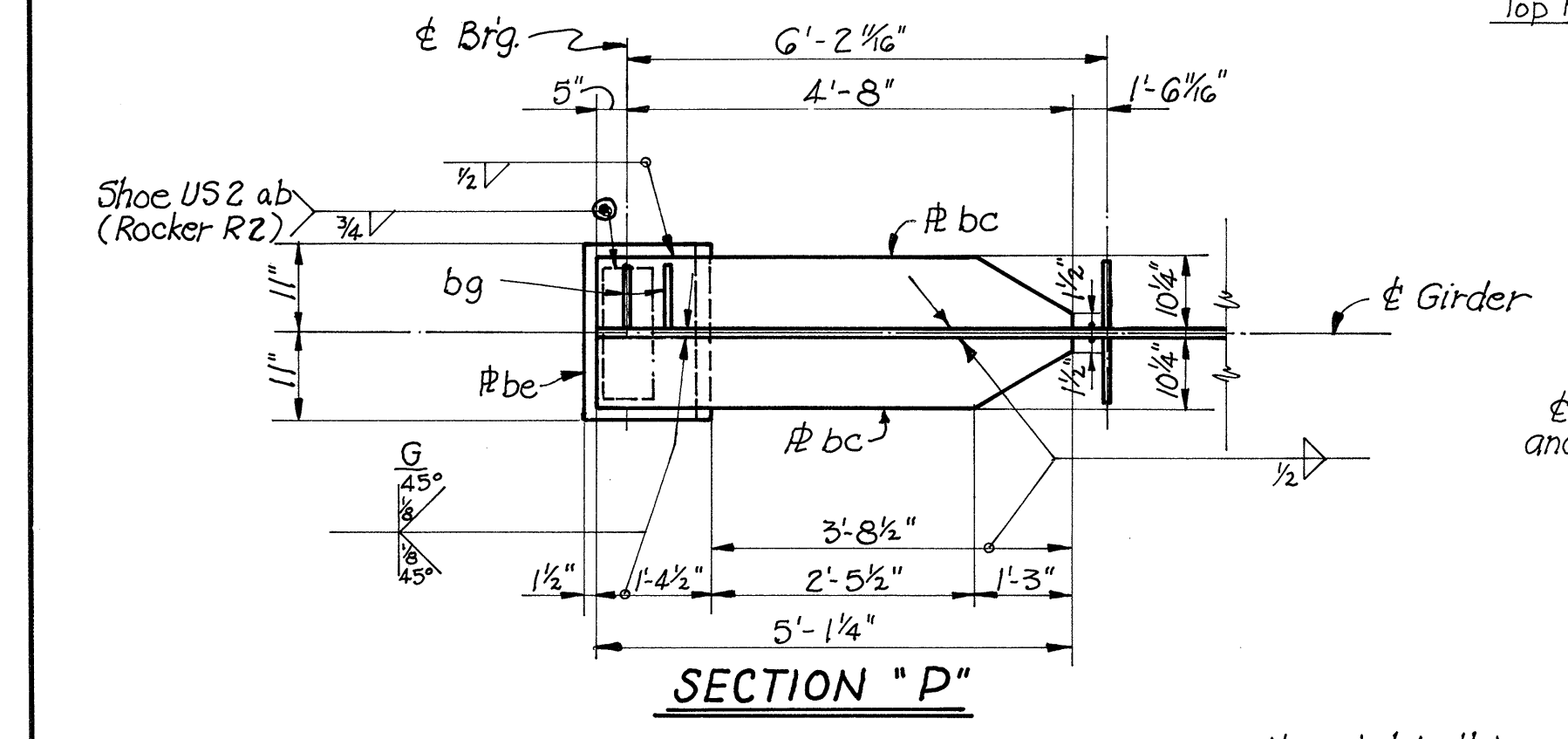
**SECTION "S"**



**CONNECTION**  
**SUPPORTING CHANNEL TO GIRDER**

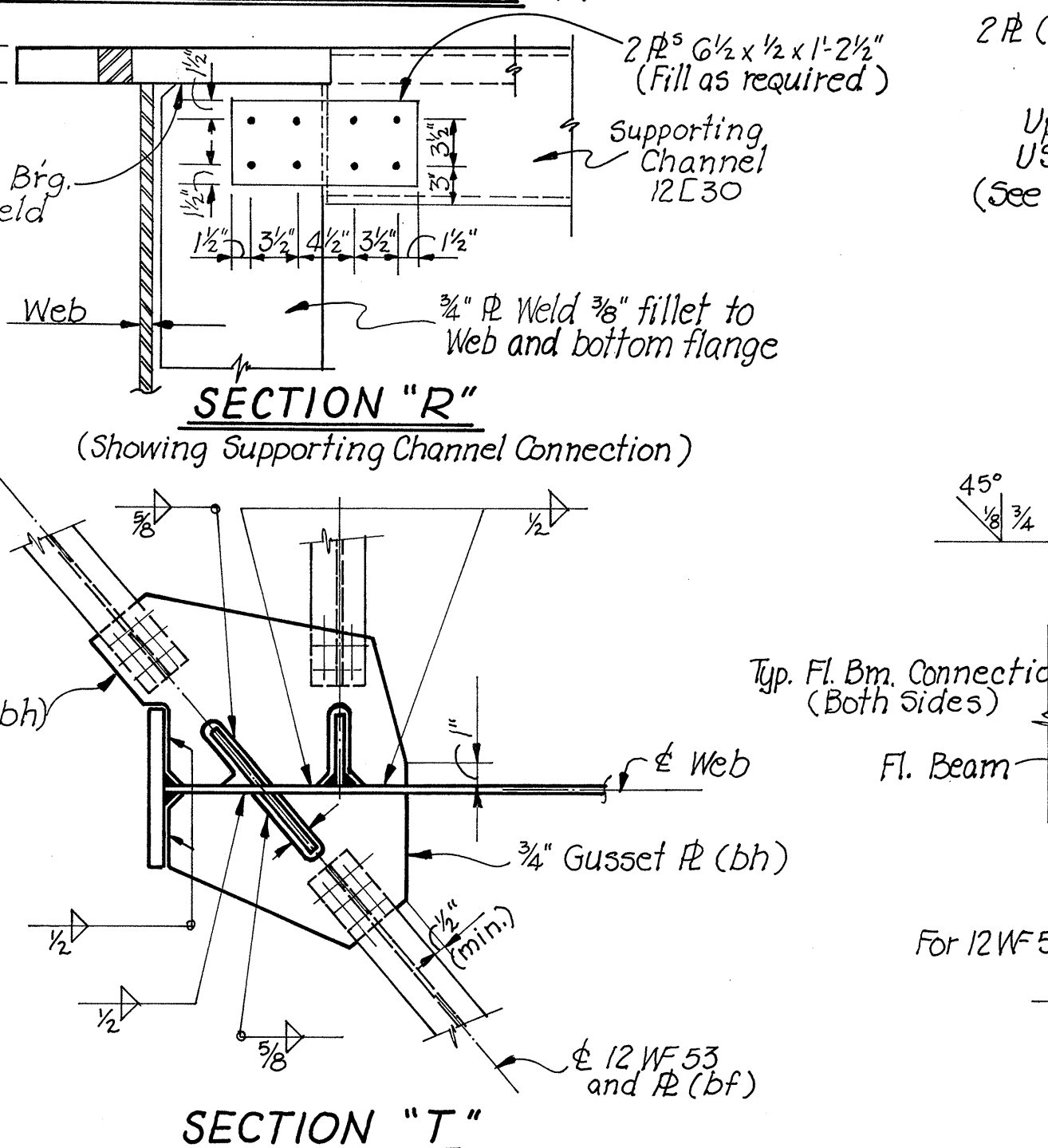


**SECTION "R"**  
(Showing Supporting Channel Connection)

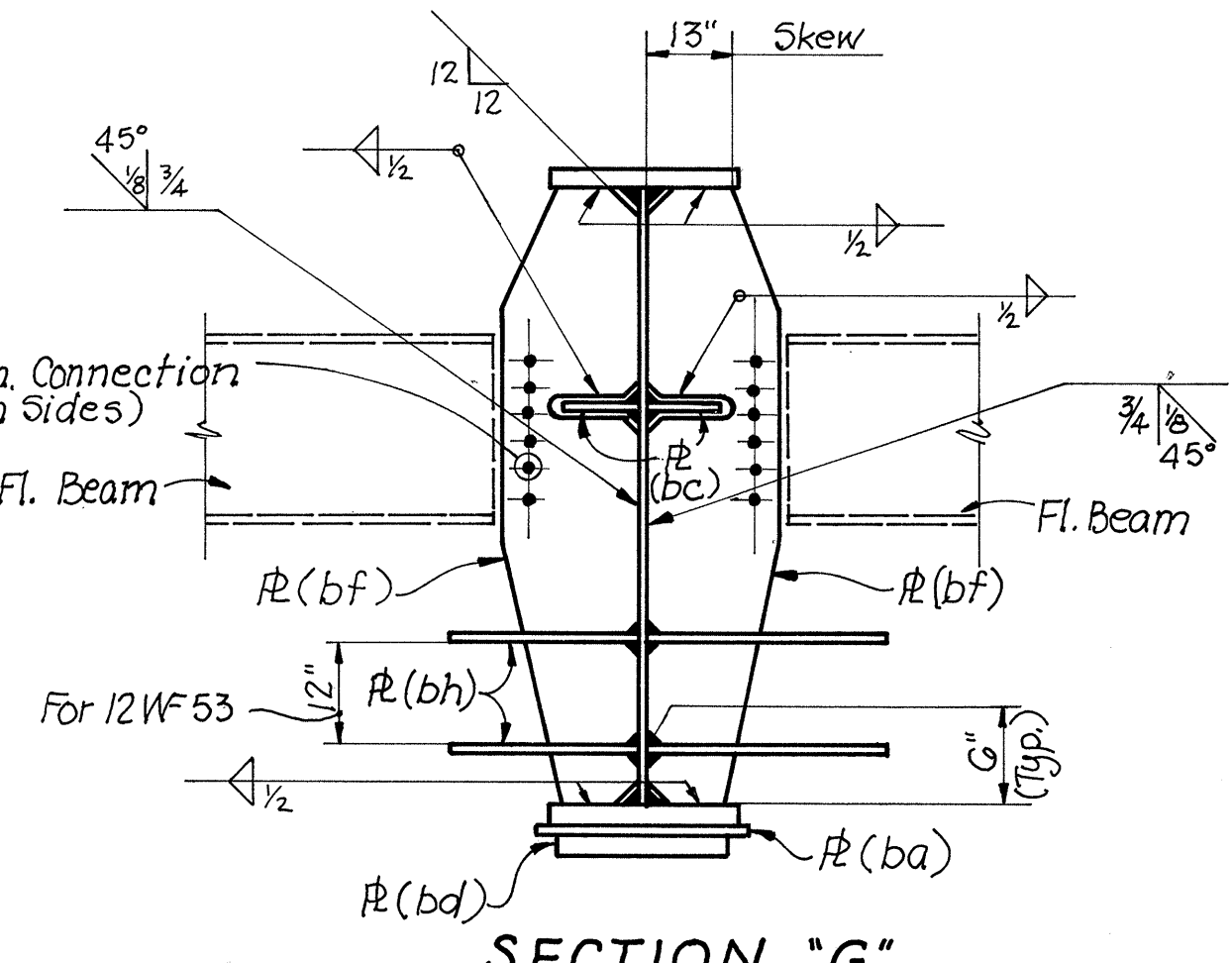


**SECTION "P"**

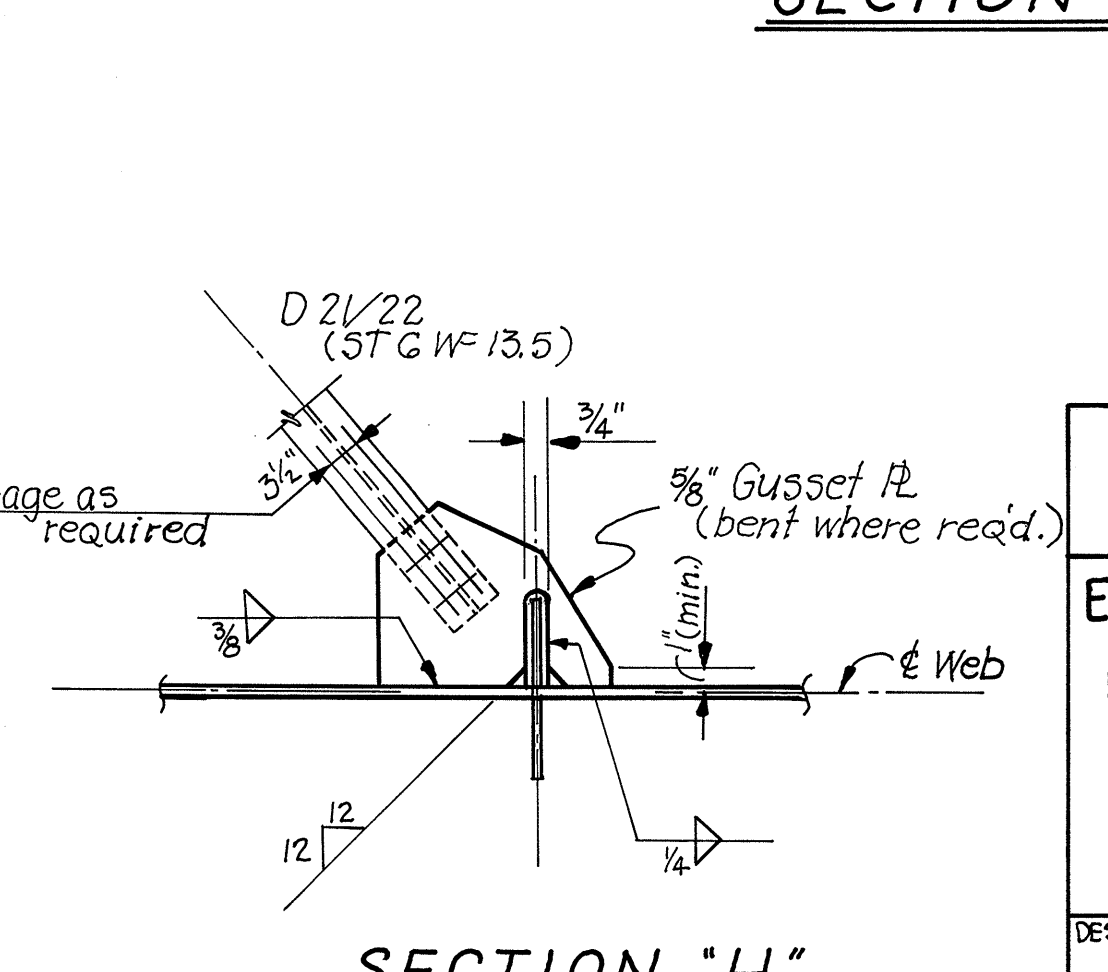
**SECTION "Q"**



**SECTION "T"**



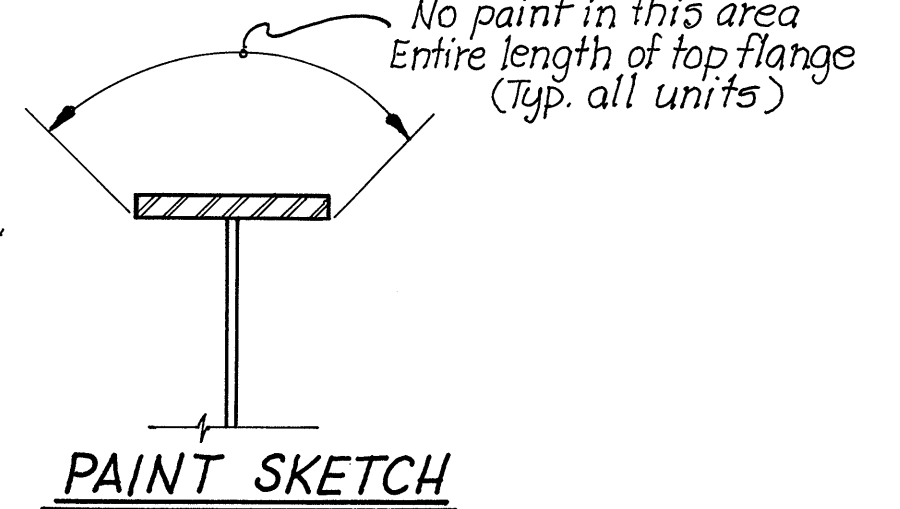
**SECTION "G"**



**SECTION "H"**  
(See Detail 2, Sheet 46)

**EXPANSION JOINT MATERIAL**

1 R (ba) 23' x 3/4" x 2'-9"	R (ab) 11' x 3 3/4" x 1'-6 3/4"
1 R (bd) 20' x 2" x 4'-7"	(See Rocker 2)
1 R (bb) 22' x 1 1/2" x 5'-10"	4 R (bg) 10' x 3/4" x 2'-5 3/4"
2 R (bc) 10 1/4" x 1 1/2" x 5'-1 1/4"	2 R (bf) 18' x 3/4" x 6'-8 3/4"
1 R (be) 22' x 1 1/2" x 2'-7 3/4"	1 R (bj) 14' x 1" x 6'-7 3/4"



**PAINT SKETCH**

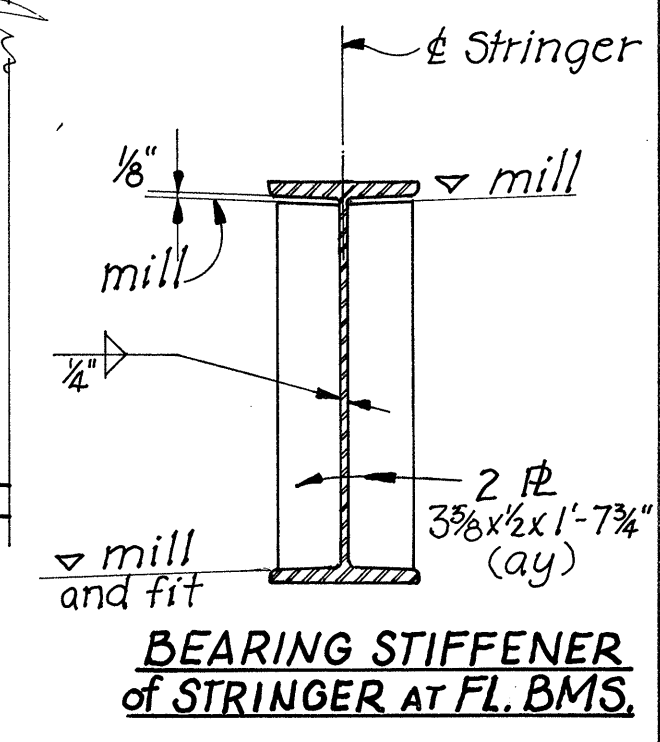
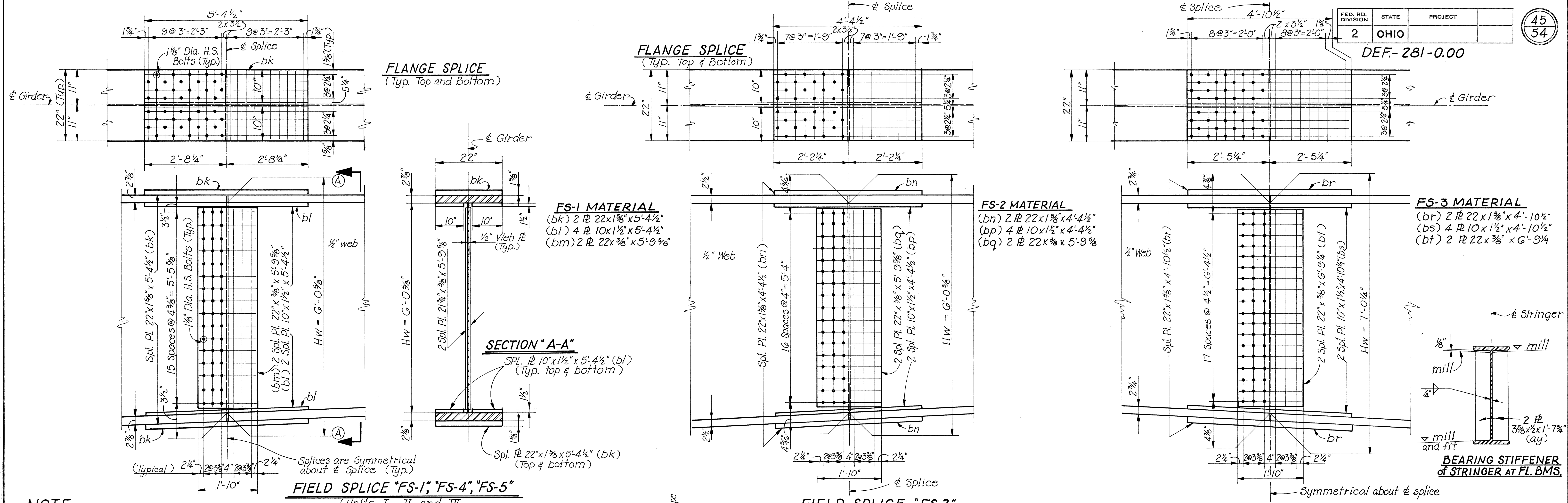
CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO, OHIO

**EXPANSION JOINT DETAILS - UNIT II**

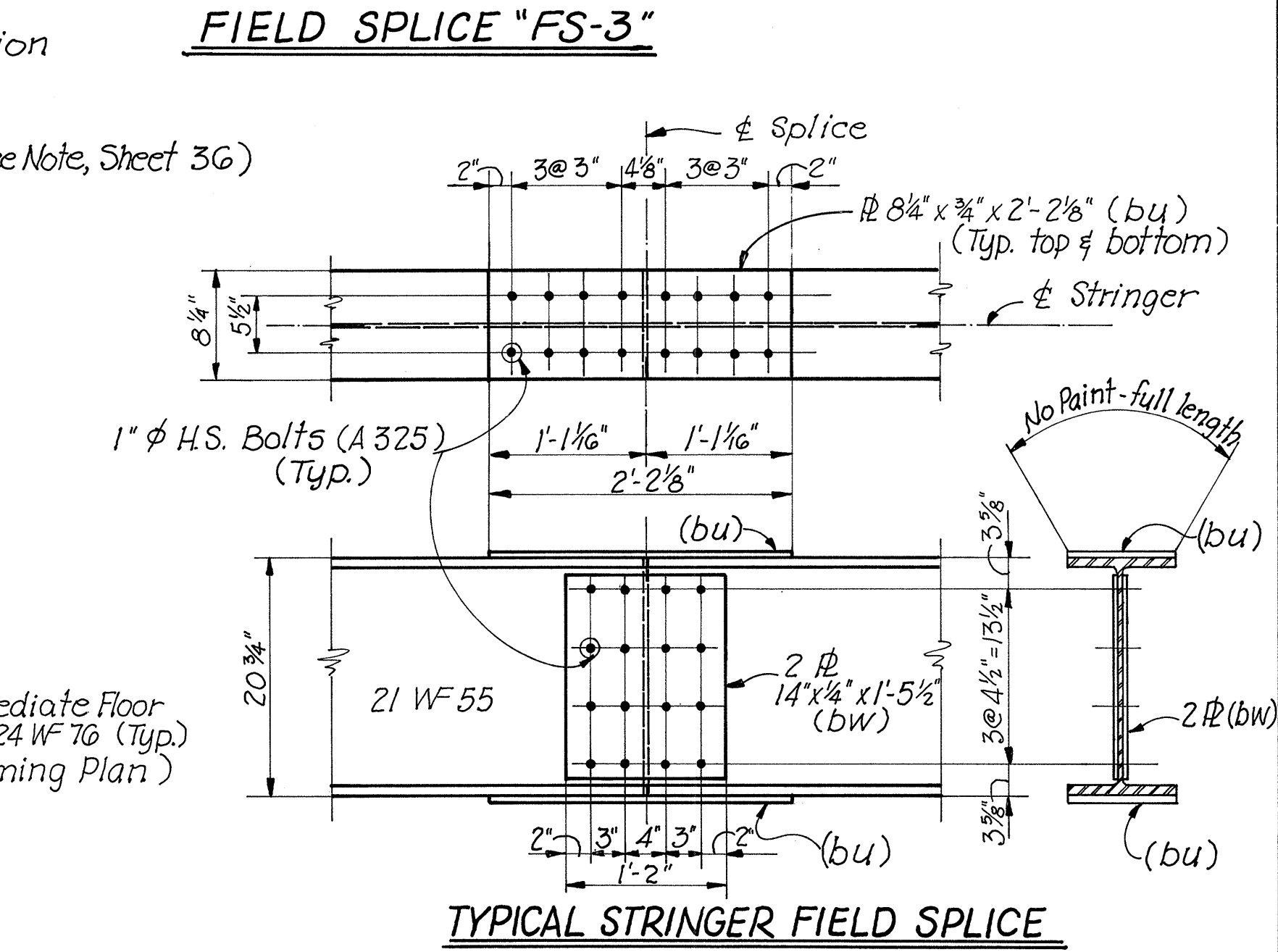
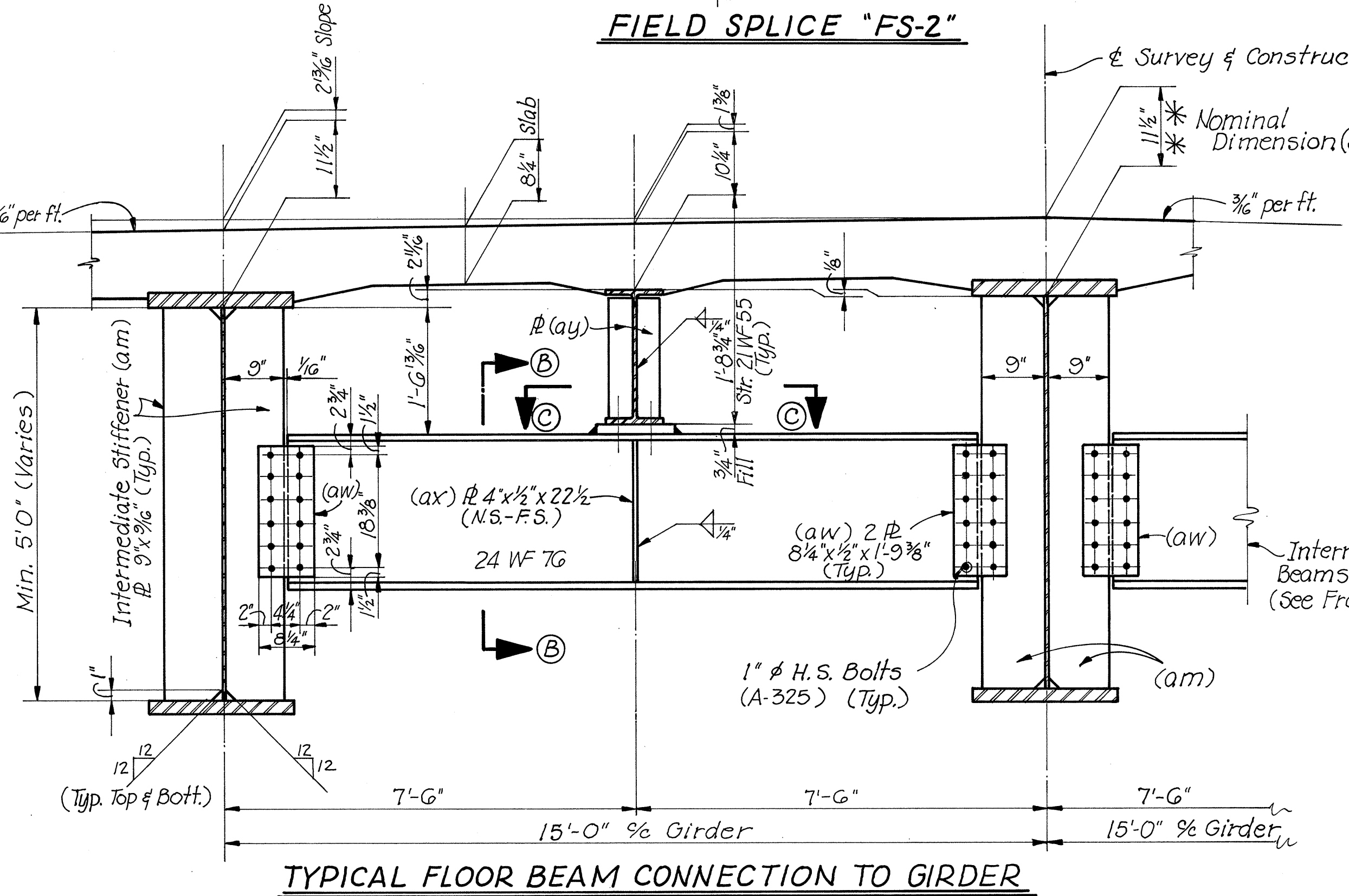
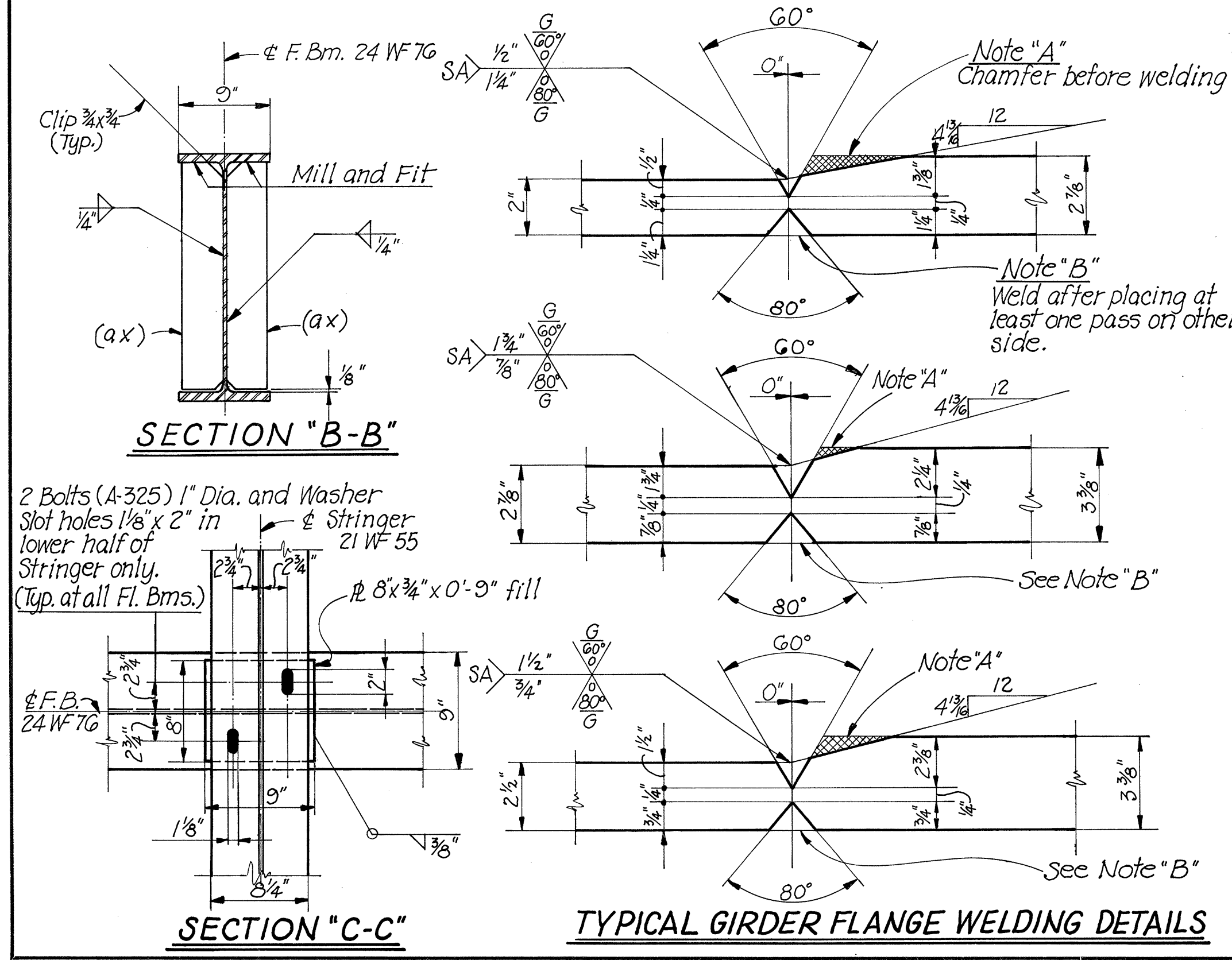
BRIDGE NO. DEF - 281-0000  
S. R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+67.46-314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	E.L.P.	K.R.R.	J.C.P.		





**NOTE**  
 All Field Splices, designated (FS) in Girder, should be made with 1/8" High Strength Bolts according to specification A-325. Bolts shall be placed with their heads on the outside for Exterior Girder Web Splices and on the bottom of all Bottom Flange Splices.



**STRINGER SPICE MATERIAL**  
 (bu) 2 Pl. 8 3/4" x 3/4" x 2'-2 1/2"  
 (bw) 2 Pl. 14" x 1/4" x 1'-5 1/2"

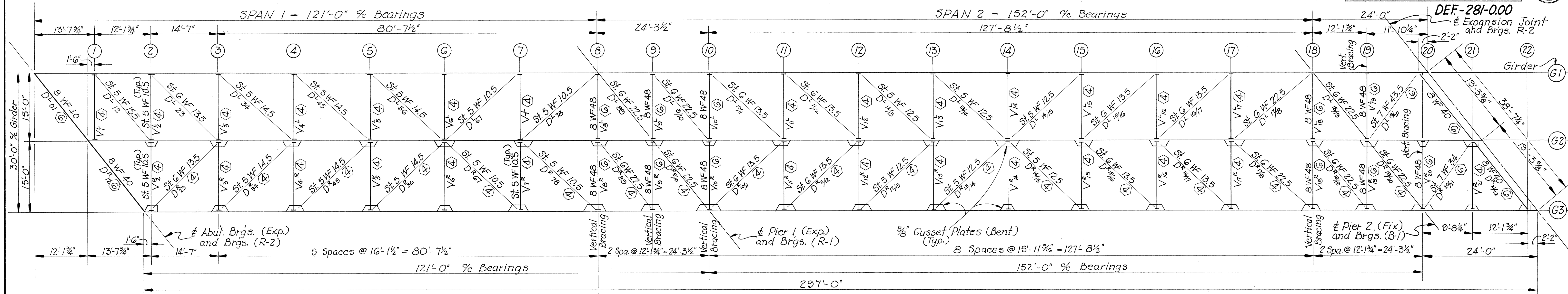
CHARLES L. BARBER & ASSOCIATES INC.  
 ENGINEERS  
 TOLEDO, OHIO

**FIELD SPLICES, FLOOR BEAMS AND STRINGER DETAILS**

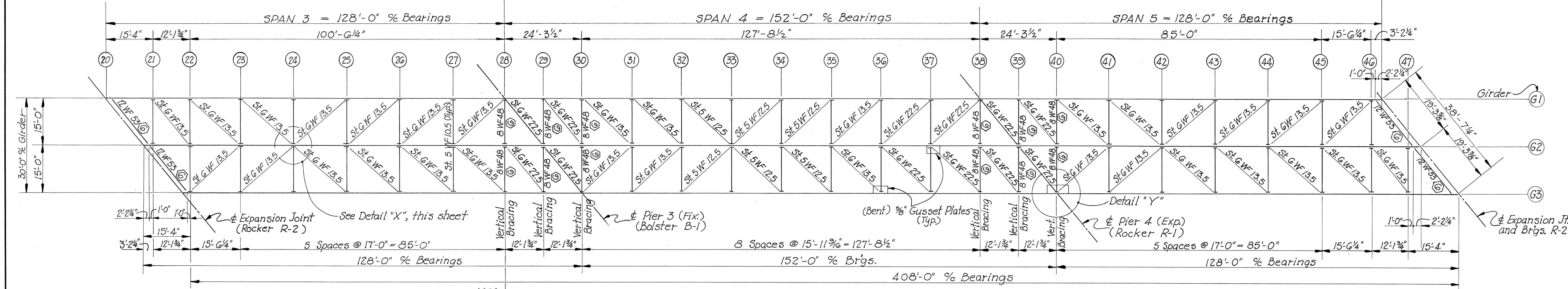
BRIDGE NO. DEF-281-0000  
 S.R. 281 (RELOC.) OVER MAUMEE RIVER  
 DEF. CO. STA. 304+G7.4G-314+7G.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	E.L.P. A.F.M.	K.R.R.	J.C.P.		

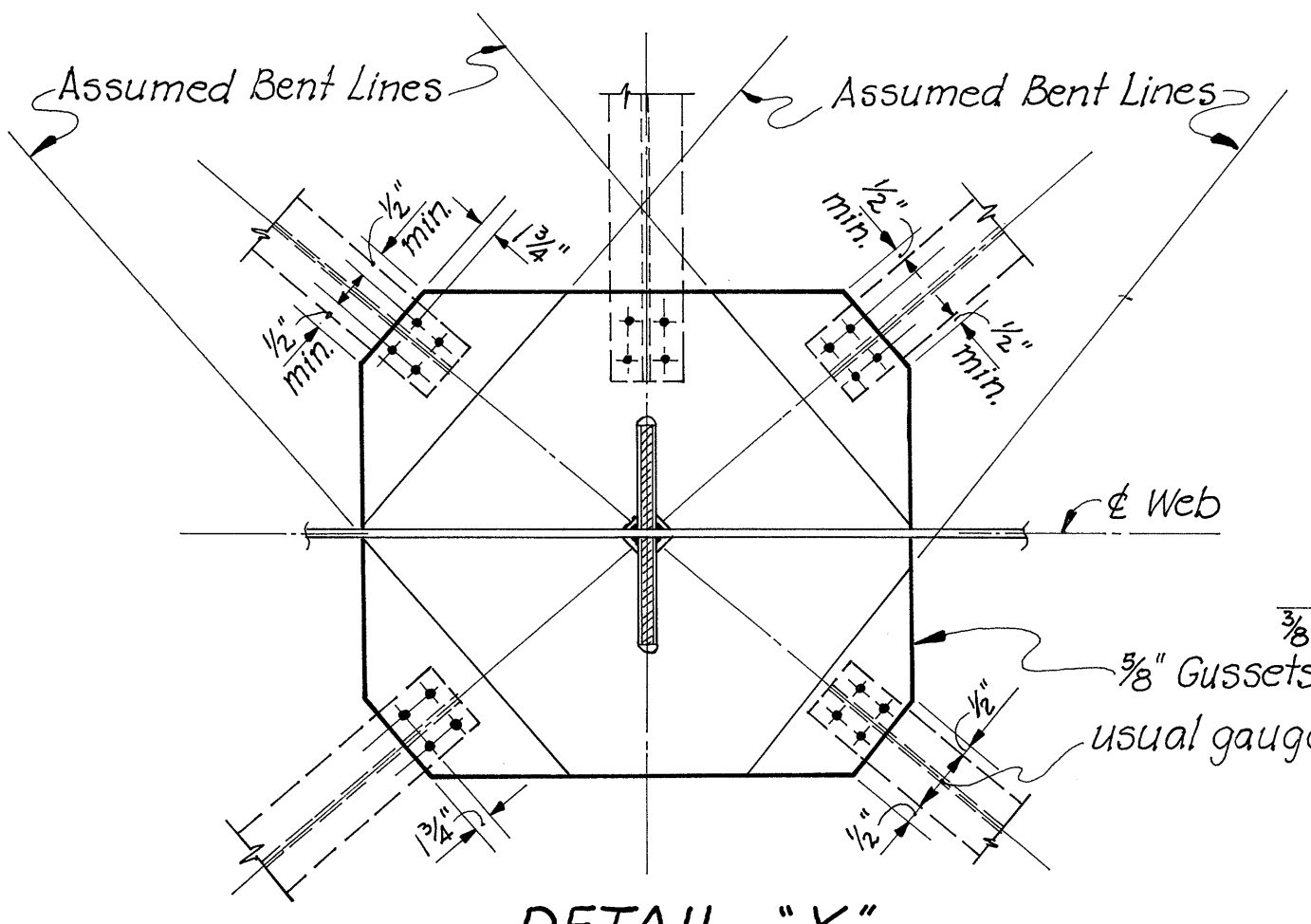




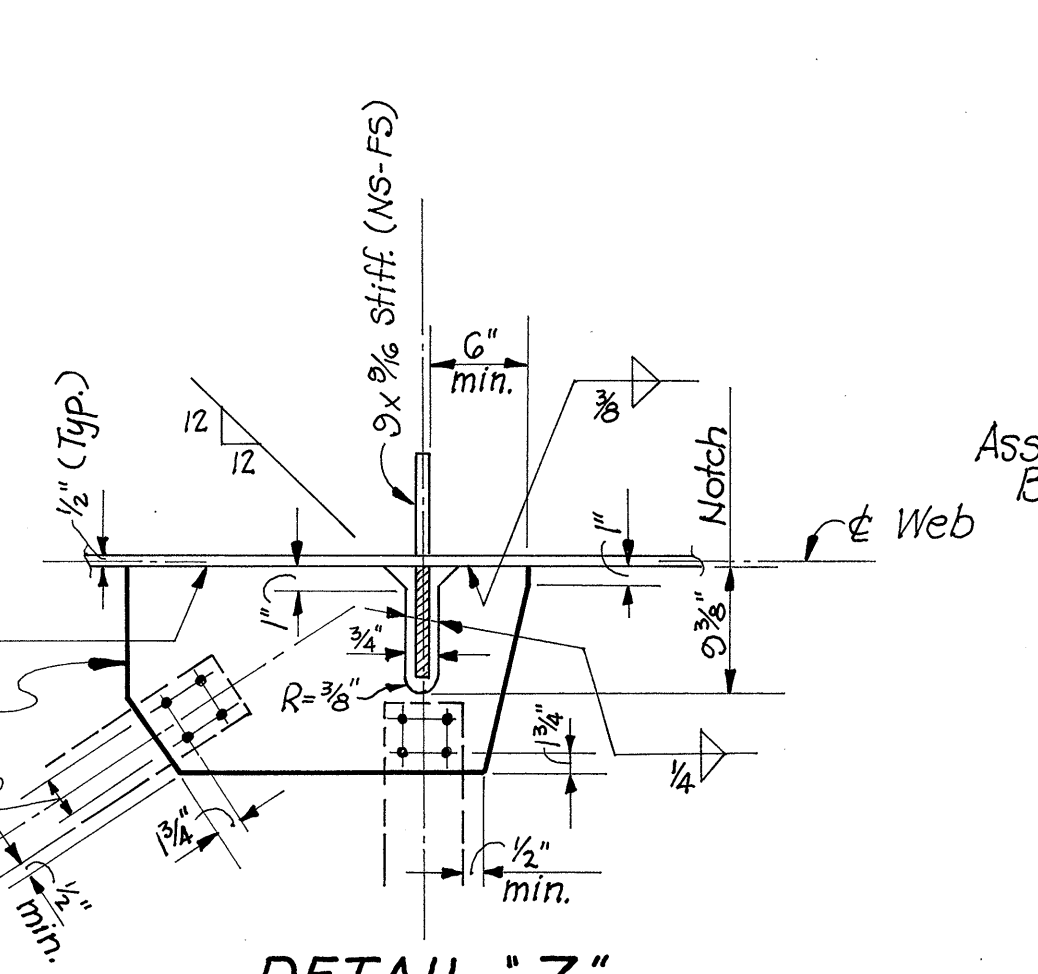
**BOTTOM LATERAL BRACING  
UNIT I (III)**



**BOTTOM LATERAL BRACING  
UNIT II**

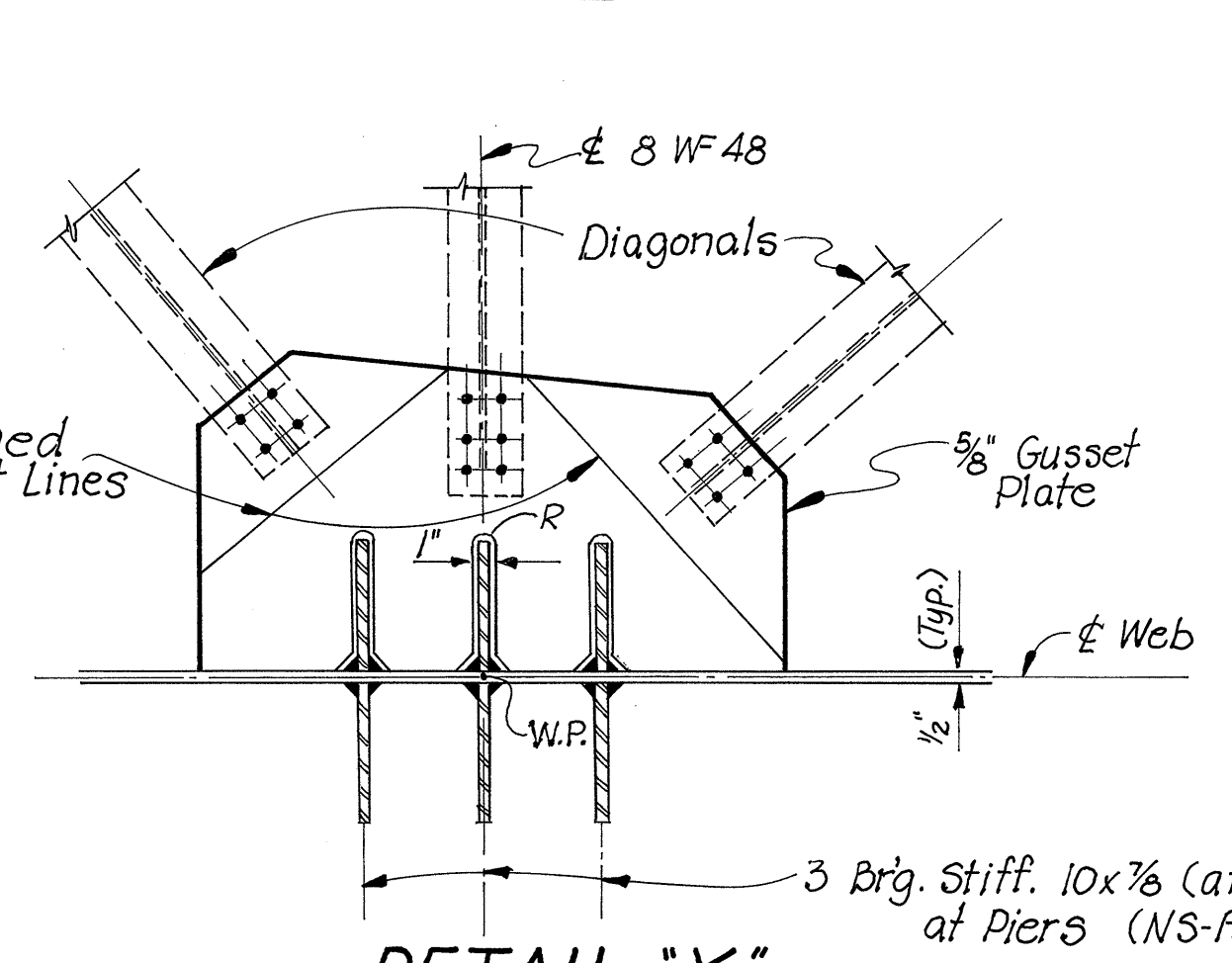


**DETAIL "X"**



**DETAIL "Z"**

Sketch Showing typ. cuts, Edge distances and welding of Gusset Plates.



**DETAIL "Y"**

**NOTES**

- ▶ The number shown in this symbol  $\odot$  indicates the number of 1" Dia. H.S. bolts to be used for connections of Bracing members each side.
- ▶ All Gusset Plates are 3/8" thick and bent as required. Keep plate sizes to a minimum.
- ▶ All members of the Bottom Lateral Bracing (Diagonals and Laterals) shall be connected with 4 (Four) 1"  $\phi$  H.S. Bolts except otherwise noted on plans.
- ▶ All Laterals are St. 5 WF 10.5 except otherwise noted.

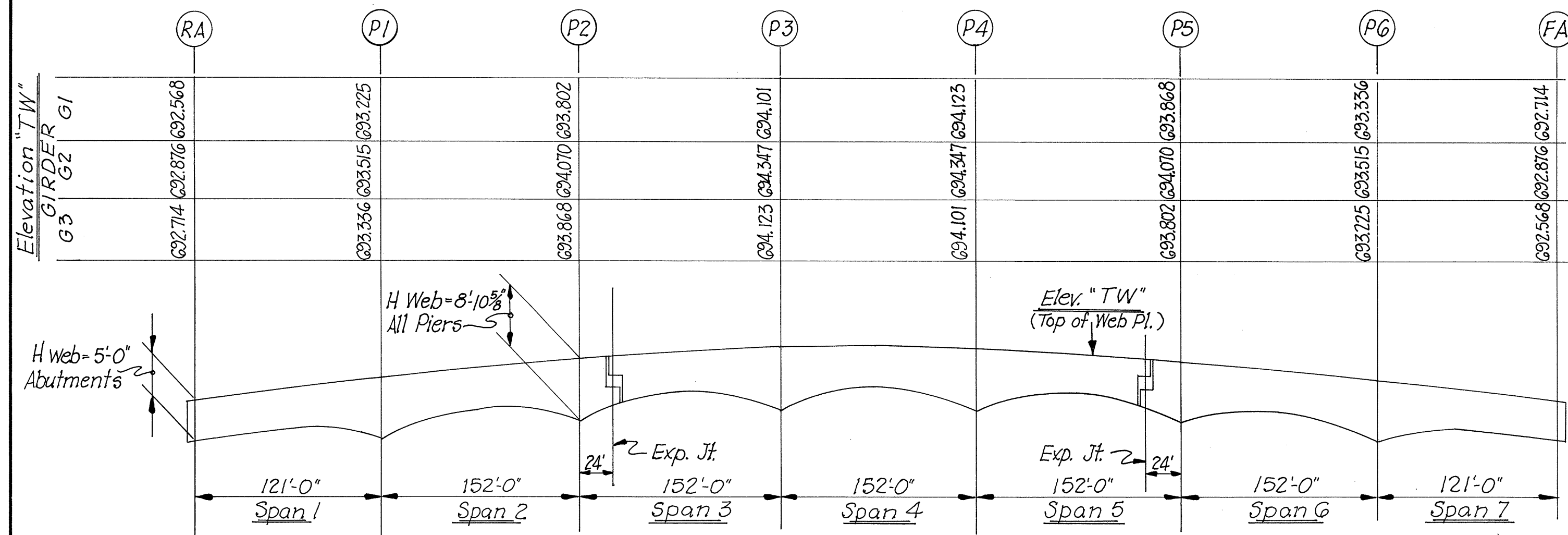
CHARLES L. BARBER & ASSOCIATES INC.  
ENGINEERS  
TOLEDO, OHIO

**BOTTOM LATERAL WIND BRACING**  
BRIDGE NO. DEF - 281-0000  
S.R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+G7.4G-314+7G.54

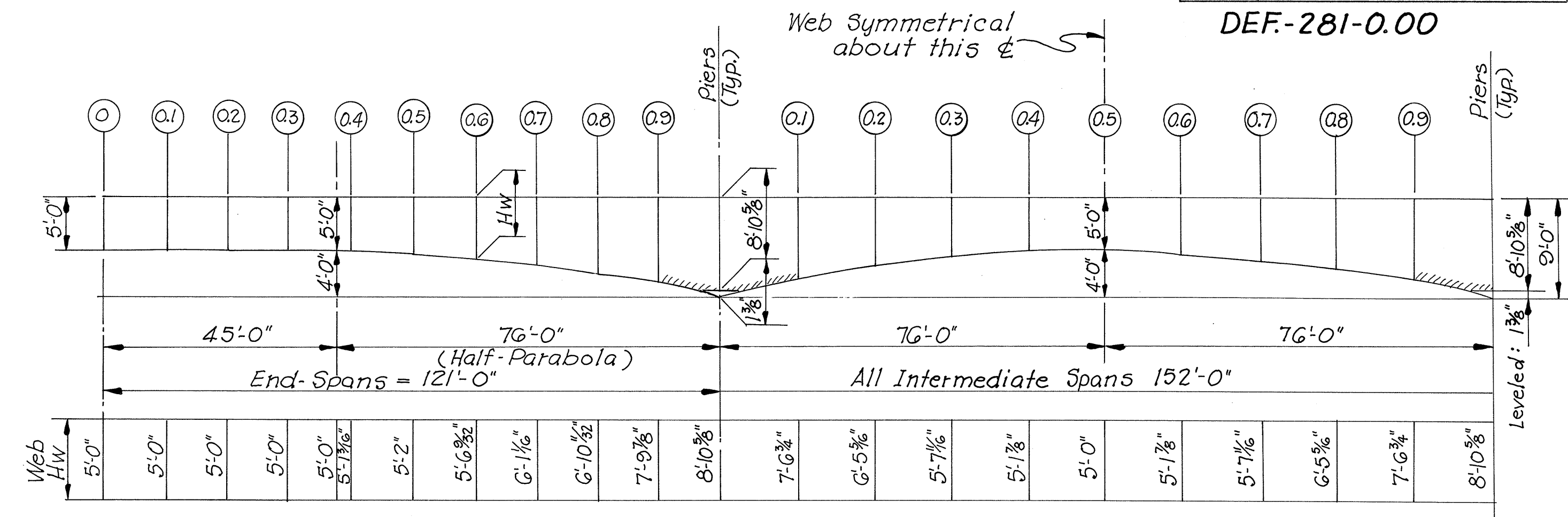
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	A.F.M.	K.R.R.	J.C.P.		

C0293046

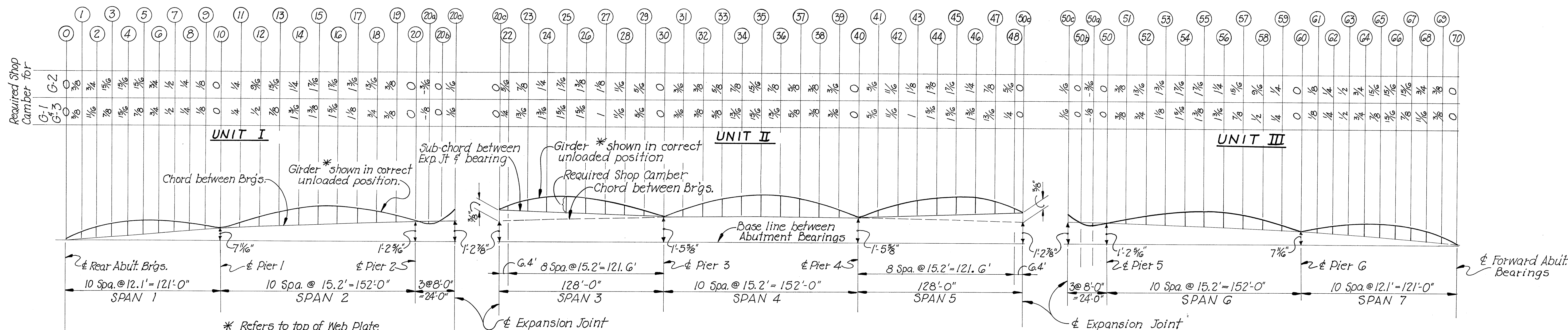




**TOP OF WEB ELEVATIONS AT BEARINGS**



**TYPICAL WEB PLATE GEOMETRY**  
And Web-Plate Heights - given for tenth-points of Spans



**CAMBER DIAGRAM**  
(Top of Web Plate)

\* Refers to top of Web Plate.

		UNITS I & III																							
		⊙	1	2	3	4	5	6	7	8	9	⊙	11	12	13	14	15	16	17	18	19	⊙	20 a	20 b	20 c
Deflection due to Steel Weight		0	3/32	3/16	1/4	1/4	7/32	3/32	3/32	1/32	0	0	1/32	3/32	3/16	9/32	1/32	1/32	3/32	3/16	1/16	0	-3/32	-1/16	-1/16
Deflection due to Remaining D.L.		0	3/16	5/16	13/32	7/16	3/8	9/32	9/32	1/32	0	0	1/32	5/32	1/32	1/2	13/32	9/16	15/32	5/16	1/8	0	-1/8	-1/8	-3/32
Deflection due to Total D.L. Σ ΔDL =		0	9/32	1/2	21/32	11/16	19/32	7/16	1/4	1/16	0	0	3/32	1/4	17/32	25/32	15/16	29/32	3/4	1/2	3/16	0	-7/32	-3/16	-5/32
Convexity Required for Vertical Curve		0	3/32	5/32	7/32	1/4	9/32	1/4	3/32	3/32	0	5/32	1/4	11/32	13/32	7/16	13/32	1/2	11/32	1/4	5/32	0	3/32	5/32	7/32
Sum of Deflection and Convexity		0	3/8	21/32	7/8	15/16	7/8	11/16	15/32	7/32	3/32	0	7/32	1/2	1/8	13/16	13/8	1/16	13/32	3/4	1/32	0	-1/8	1/32	1/16
Camber Required *		0	3/8	1/16	7/8	15/16	7/8	3/4	1/2	1/4	1/8	0	1/4	1/2	7/8	13/8	13/8	1/16	13/8	3/4	3/8	0	-1/8	0	1/16

		UNIT II														
		20 c	22	23	24	25	26	27	28	29	⊙	31	32	33	34	35
Deflection due to Steel Weight		0	1/16	7/32	11/32	3/8	11/32	9/32	5/32	1/16	0	0	1/32	3/32	5/32	3/16
Deflection due to Remaining D.L.		0	1/8	13/32	19/32	11/16	3/8	15/32	9/32	3/32	0	0	1/16	3/16	1/4	5/16
Deflection due to Total D.L. Σ ΔDL =		0	3/16	5/8	15/16	11/16	3/32	9/8	7/16	7/32	0	0	3/32	9/32	13/32	1/2
Convexity Required for Vertical Curve		7/32	9/32	11/32	13/32	9/32	13/32	11/32	9/32	5/32	0	5/32	1/4	11/32	13/32	13/32
Sum of Deflection and Convexity		7/32	15/32	31/32	11/32	11/32	13/8	13/32	23/32	5/16	0	5/32	11/32	9/8	13/16	29/32
Camber Required *		1/4	1/2	1	13/8	11/2	13/8	13/8	3/4	3/16	0	3/16	3/8	5/8	13/16	15/16

Reference Portion of Spans 3 & 5 within UNIT II  
In the adjoining table, the convexity for the vertical curve and camber are given relative to the chord between bearings.

In the Camber Diagram above, the camber required are given relative to the sub-chord between the Expansion Joint and Pier Bearing.

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TOLEDO, OHIO

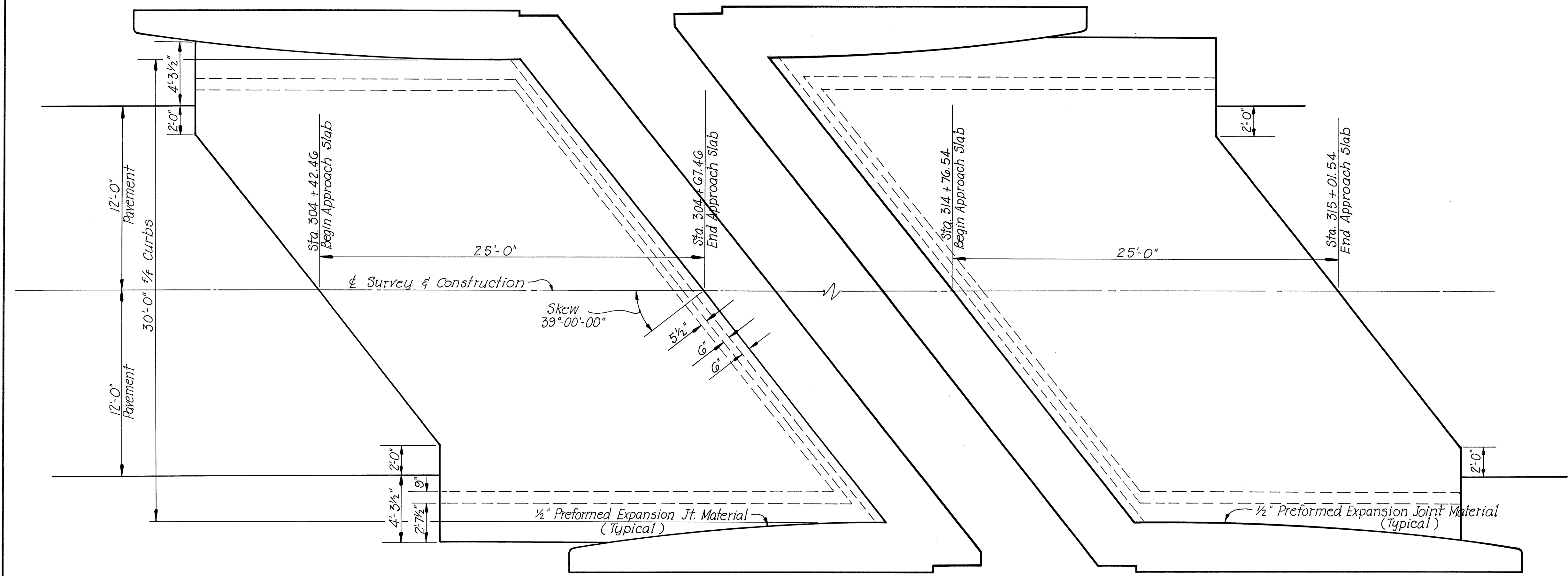
**DEFLECTION AND CAMBER & WEB HEIGHTS**

BRIDGE NO. DEF - 281 - 0000  
S. R. 281 (RELOC.) OVER MAUMEE RIVER  
DEF. CO. STA. 304+G7.4G-314+7G.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
W.B.D.	W.B.D.	A.F.M.	E.W.K.	J.C.P.		



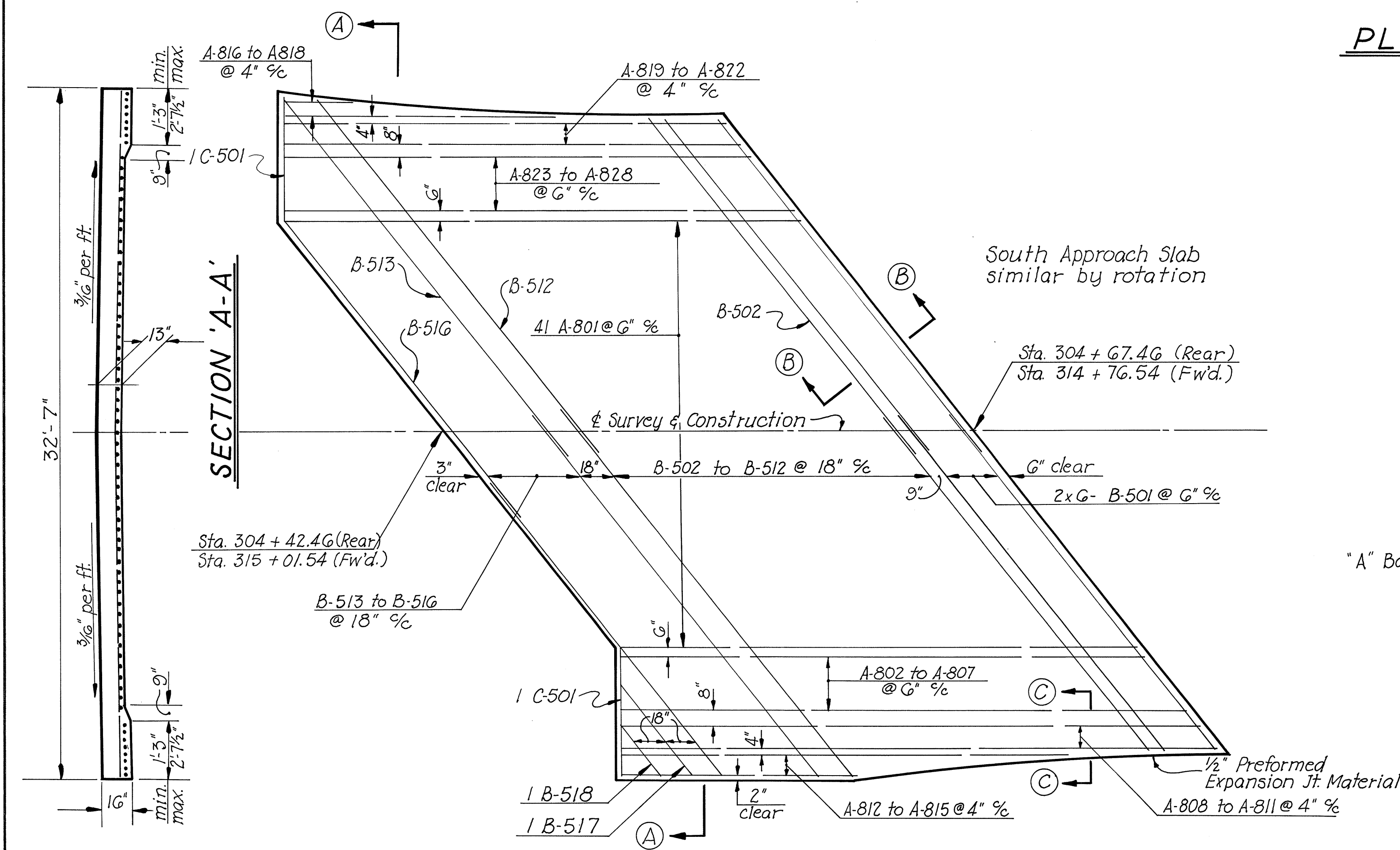
DEF-281-0.00



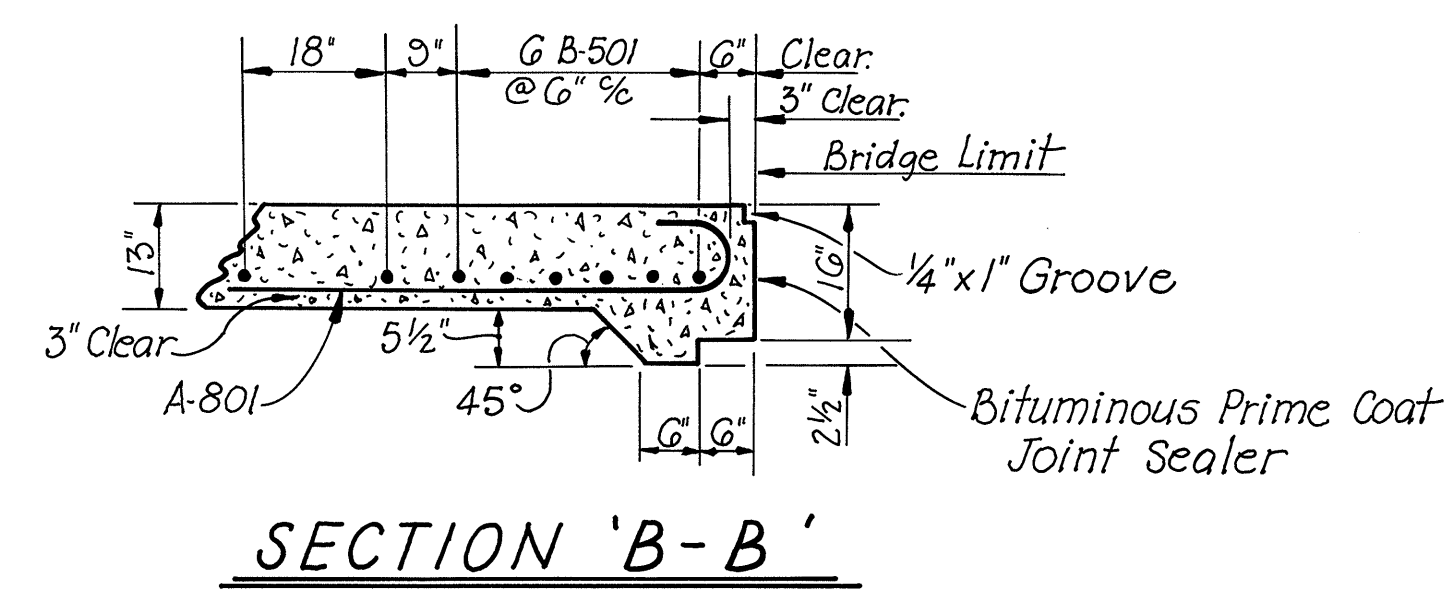
PLAN

REINFORCING STEEL							
MARK	SHAPE	NO.	LENGTH	MARK	SHAPE	NO.	LENGTH
A801	Bent	82	25'-7"	A826	Bent	2	24'-6"
A802	Bent	2	26'-0"	A827	Bent	2	24'-10"
A803	Bent	2	26'-5"	A828	Bent	2	25'-3"
A804	Bent	2	26'-10"				
A805	Bent	2	27'-2"	B501	Str.	24	19'-10"
A806	Bent	2	27'-7"	B502	Str.	4	19'-11"
A807	Bent	2	28'-0"	B503	Str.	4	19'-11"
A808	Bent	2	28'-7"	B504	Str.	4	20'-0"
A809	Bent	2	28'-10"	B505	Str.	4	20'-1"
A810	Bent	2	29'-1"	B506	Str.	4	20'-3"
A811	Bent	2	29'-4"	B507	Str.	4	20'-4"
A812	Str.	2	20'-6"	B508	Str.	4	20'-6"
A813	Str.	2	16'-7"	B509	Str.	4	20'-8"
A814	Str.	2	13'-3"	B510	Str.	4	20'-11"
A815	Str.	2	10'-11"	B511	Str.	4	21'-1"
A816	Str.	2	2'-9"	B512	Str.	4	21'-3"
A817	Str.	2	6'-5"	B513	Str.	4	20'-1"
A818	Str.	2	12'-6"	B514	Str.	4	18'-11"
A819	Bent	2	22'-0"	B515	Str.	4	17'-7"
A820	Bent	2	22'-3"	B516	Str.	4	17'-6"
A821	Bent	2	22'-6"	B517	Str.	2	5'-6"
A822	Bent	2	22'-8"	B518	Str.	2	3'-0"
A823	Bent	2	23'-4"				
A824	Bent	2	23'-8"	C501	Str.	4	6'-1"
A825	Bent	2	24'-1"				

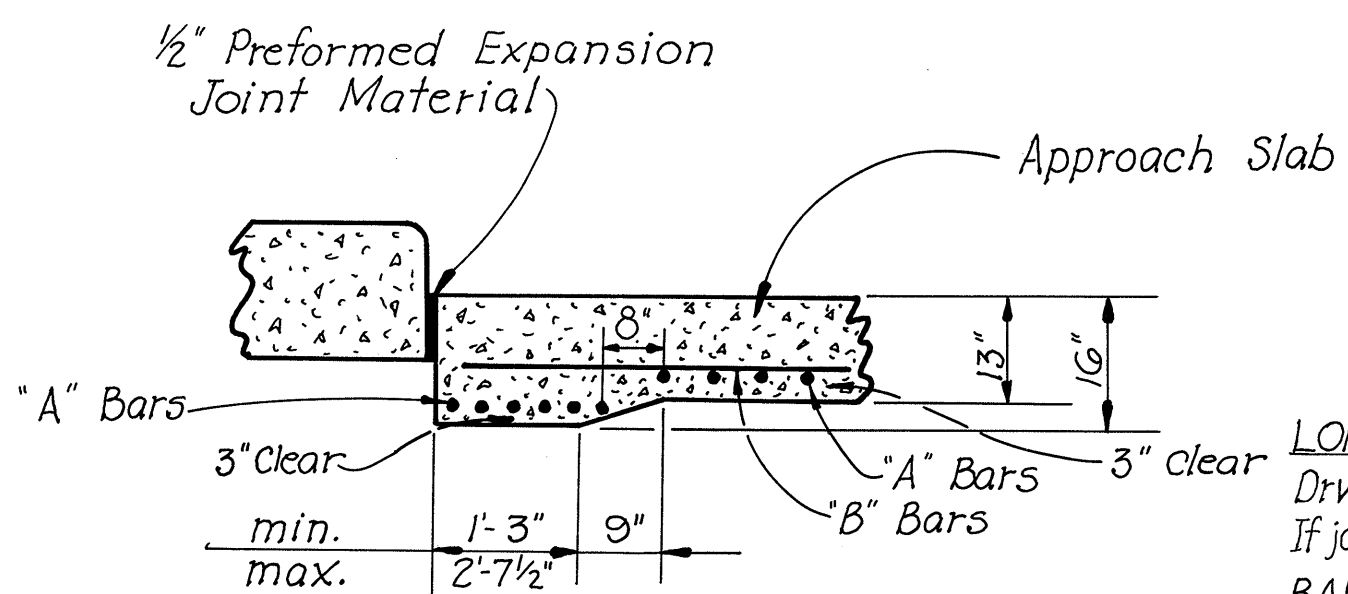
BENDING DIAGRAM			
MARK	LENGTH	MARK	LENGTH
A-801	24'-6"	A-819	20'-11"
A-802	24'-11"	A-820	21'-2"
A-803	25'-4"	A-821	21'-5"
A-804	25'-9"	A-822	21'-7"
A-805	26'-1"	A-823	22'-3"
A-806	26'-6"	A-824	22'-7"
A-807	26'-11"	A-825	23'-0"
A-808	27'-6"	A-826	23'-5"
A-809	27'-9"	A-827	23'-9"
A-810	28'-0"	A-828	24'-2"
A-811	28'-3"		



APPROACH SLAB REINFORCEMENT



SECTION 'B-B'



SECTION 'C-C'

**LONGITUDINAL JOINTS:** in accordance with Std. Constr. Drwg. No. BP3 shall be provided at edges of traffic lane elements. If joints are sawed, the depth of the sawed groove shall be 3".

**BAR SIZE:** The bar size is indicated in the bar mark. The first digit where three digits are used, indicates the bar size number. Example: A801 is a No. 8 size bar.

**EXPANSION JOINTS:** 1/2" Preformed expansion jt. filler shall be included with the approach slabs for payment.

**CONCRETE:** Concrete shall be Class "C".

**CROWN** shall conform to the rate of crown of the approach pavement and the bridge deck.

STATION TO STATION	SOUTH APPROACH SLAB	NORTH APPROACH SLAB	TOTAL
304+42.46 to 304+67.46	88	—	88
314+76.54 to 315+01.54	—	88	88
TOTAL SQUARE YARDS			176

CHARLES L. BARBER & ASSOCIATES, INC.  
ENGINEERS  
TOLEDO, OHIO

**APPROACH SLABS**

BRIDGE NO. DEF-281-0000  
S. R. 281 (RELOC.) OVER THE MAUMEE RIVER  
DEFIANCE CO. STA. 304+67.46 — 314+76.54

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.M.	R.M.	A.F.M.	K.R.R.	J.C.P.		

Co 03048