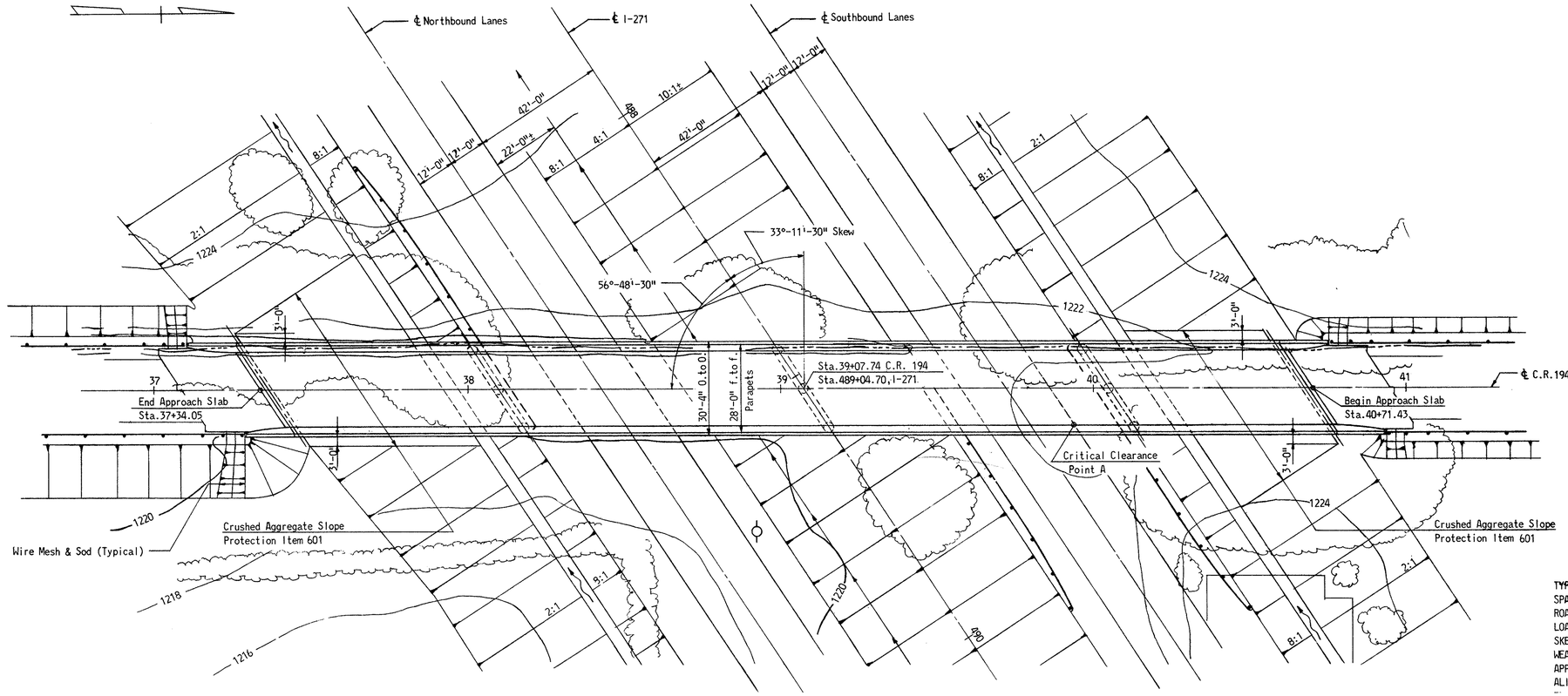
SUMMIT COUNTY
SUM-271-0.83

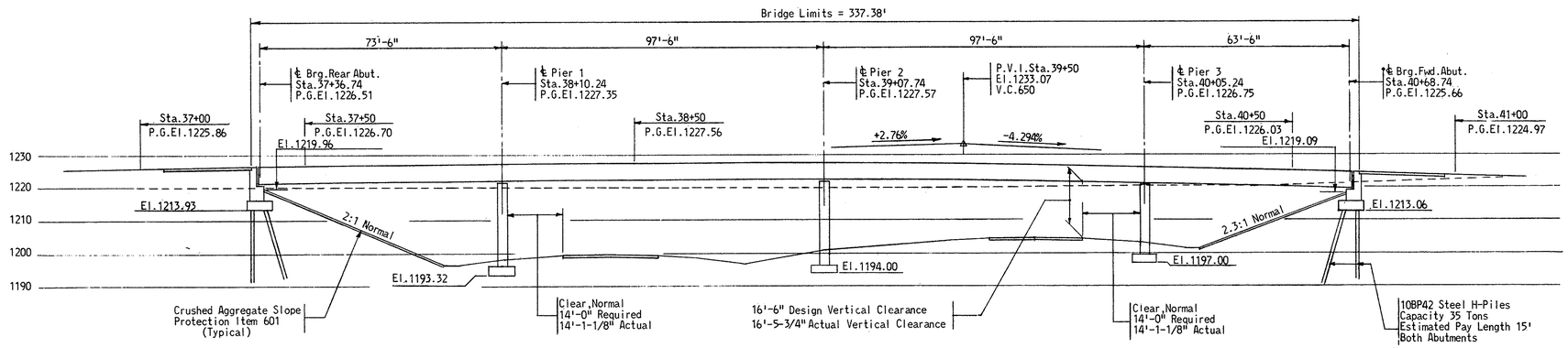
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(15)229	

165/196



PROPOSED STRUCTURE

TYPE: Continuous welded girders with reinforced concrete deck and substructure.
SPANS: 73'-6"; 97'-6"; 97'-6"; 63'-6".
ROADWAY: 24'-0" face to face of 2'-0" safety curbs.
LOAD FREQUENCY: C.F. = 130 (57).
SKEW: 33°-11'-30" (R.F.).
WEARING SURFACE: 1" Monolithic concrete.
APPROACH SLABS: AS-1-54 (25' Long).
ALIGNMENT: Tangent.



J.E. GREINER CO.
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

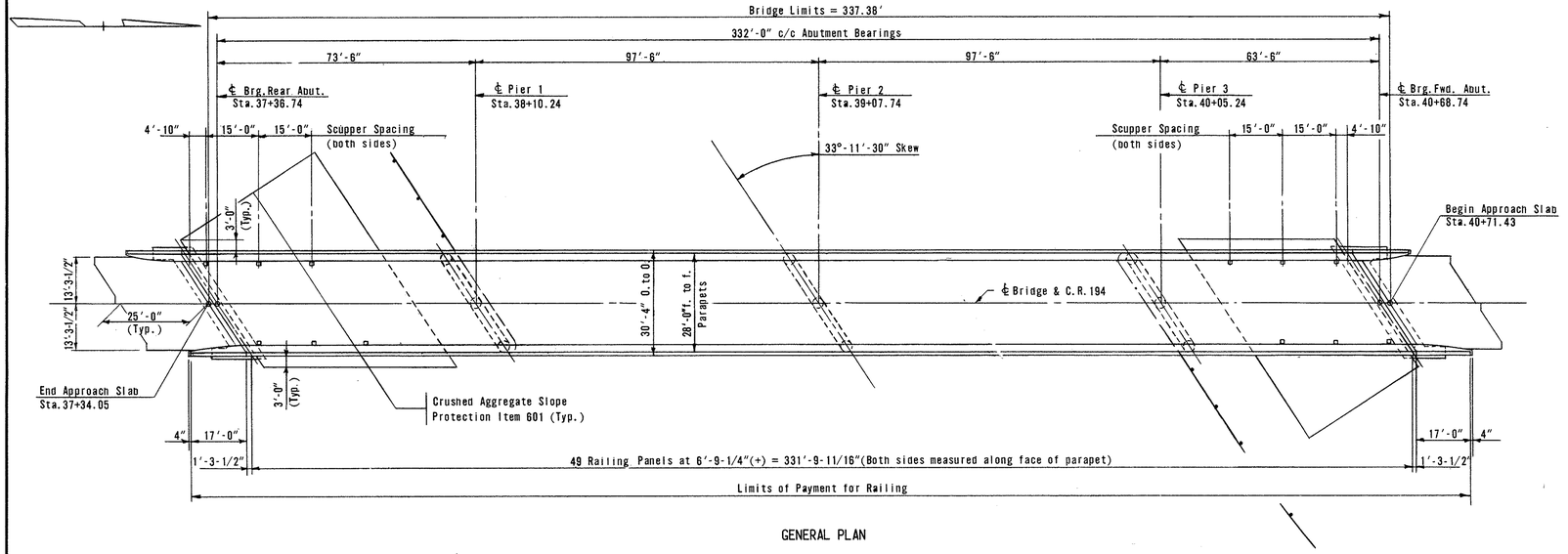
SITE PLAN

BRIDGE NO. SUM-271-0152
INTERSTATE HIGHWAY #271 UNDER
SUMMIT COUNTY ROAD NO. 194

SUMMIT CO. **STA. 489+04.70**

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
HENRY	AIR SURVEYS CORP.	SHERMAN	WALTER	GREIMANN	MUDD

04693



GENERAL 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. 2
REFERENCE should be made to:
Standard Drawing FSB-1-62, revised 1-15-63, and AS-1-54, revised 8-10-65
" " SD-1-65, dated 11-8-65
" " BR-1-65, Type 1, Sheet 1, Rev. 11-24-65

Supplemental Specifications:
808, dated 2-7-66 825 dated 4-22-65
811, dated 3-29-65 828 dated 3-21-66

ALL PIER FOOTINGS shall extend a minimum of 3" into undisturbed rock or to the elevation shown, whichever is lower.

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 of rock according to the bridge foundation investigation report, the firm contact shall be considered as attained when the capacity according to the formula in Sec. 507.05 is not less than the following value for a pile hammer of the indicated energy rating:

For the abutment piles:

35 tons per pile using an 11,000 ft. lb. hammer
35 tons per pile using a 15,000 ft. lb. hammer

If the energy rating of the hammer is between the ratings as shown above, the required formula capacity shall be determined by interpolation.

The design load is 35 tons per pile for the abutment piles.

ESTIMATED QUANTITIES

Item	Total	Unit	DESCRIPTION	Super.	Abuts.	Piers	General		
503	273	Cu.Yds.	Unclassified excavation		235	38			
511	327	Cu.Yds.	Class "C" concrete, superstructure	327					
511	91	Cu.Yds.	Class "C" concrete, piers above footings			91			
511	95	Cu.Yds.	Class "E" concrete, abutments above footings		95				
511	121	Cu.Yds.	Class "E" concrete, footings		67	54			
509	123,617	Lbs.	Reinforcing Steel	79,751	12,943	30,923			
513	296,700	Lbs.	Structural Steel	296,700					
514	296,700	Lbs.	Field painting of structural steel	296,700					
517	736.78	Lin.Ft.	Railing(Type 1 aluminum rail and supports and concrete parapet)	668.78	68.00				
503	117	Cu.Yds.	Rock excavation			117			
505	Lump	Sum	First test pile						
507	491	Lin.Ft.	Steel piles, 10 BP 42						
518	59	Lin.Ft.	6" Helical perforated CMP, 707.06 including specials		59				
518	54	Lin.Ft.	6" Helical CMP, 707.06 non-perforated		54				
518	12	Each	Scuppers, including supports	12					
518	29	Cu.Yds.	Porous backfill		29				
808	327	Units	Water-reducing, set-retarding admixture	327					
601	581	Sq.Yds.	Crushed aggregate slope protection				581		
825	1300	Sq.Yds.	Concrete Surface Treatment						
825	58	Lin.Ft.	Joint sealer (end dam)						

SUMMIT COUNTY
SUM-271-0.83

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(15)229	

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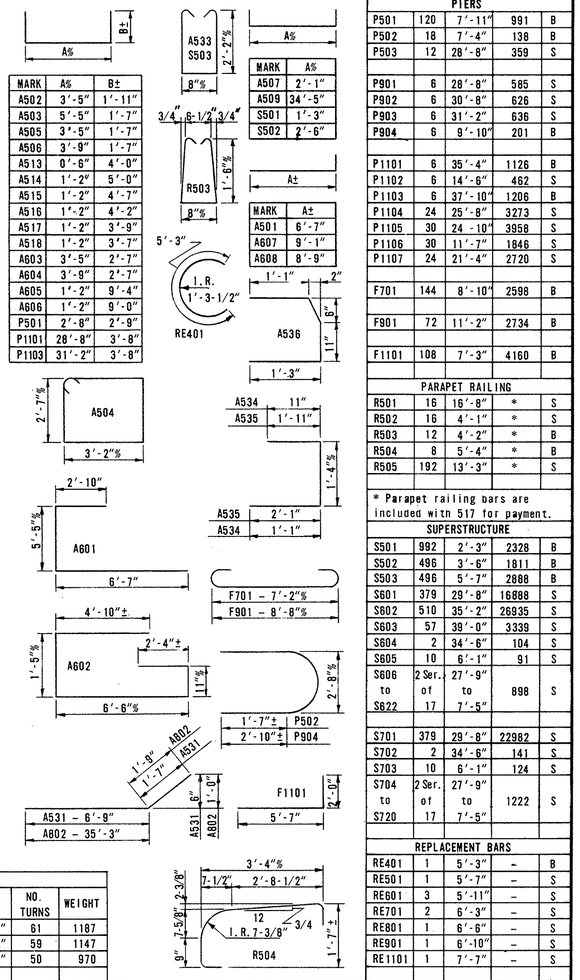
REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	SHP.
ABUTMENTS				
A501	52	7'-1"	384	B
A502	50	7'-0"	365	B
A503	52	8'-4"	452	B
A504	36	11'-11"	447	B
A505	2	6'-4"	13	B
A506	2	6'-8"	14	B
A507	48	3'-1"	154	B
A508	6	35'-0"	219	S
A509	20	35'-5"	739	B
A510	20	33'-10"	706	S
A511	20	5'-3"	110	S
A512	94	5'-7"	547	S
A513	12	8'-3"	103	B
A514	4	10'-11"	46	B
A515	4	10'-1"	42	B
A516	4	9'-3"	39	B
A517	4	8'-5"	35	B
A518	16	8'-1"	135	B
A519	10	11'-4"	118	S
A520	10	7'-2"	75	S
A521	10	10'-10"	113	S
A522	10	9'-1"	95	S
A523	2	14'-3"	30	S
A524	2	10'-1"	21	S
A525	2	14'-0"	29	S
A526	2	12'-3"	26	S
A527	4	19'-4"	81	S
A528	4	15'-2"	63	S
A529	4	18'-10"	79	S
A530	4	17'-1"	71	S
A531	8	8'-4"	71	B
A532	16	4'-0"	67	S
A533	48	5'-7"	280	B
A534	16	3'-1"	51	B
A535	34	5'-1"	180	B
A536	50	3'-5"	178	B
⊕ A537	16	16'-10"	281	S
A538	8	14'-6"	121	S
A601	50	14'-3"	1070	B
A602	66	15'-5"	1575	B
A603	2	8'-3"	25	B
A604	2	8'-7"	26	B
A605	16	19'-6"	469	B
A606	26	18'-10"	735	B
A607	16	9'-9"	234	B
A608	6	9'-5"	85	B
A801	10	37'-5"	999	S
A802	4	37'-0"	395	B
A803	16	10'-6"	449	S
A804	4	14'-8"	157	S
A805	4	13'-6"	144	S

BENDING DIAGRAMS



SPIRAL BARS						
MARK	NO.	CORE DIA % SPIRAL	LENGTH	PITCH	NO. TURNS	WEIGHT
SP401	3	32"	21'-11"	4-1/2"	61	1187
SP402	3	32"	21'-1"	4-1/2"	59	1147
SP403	3	32"	17'-7"	4-1/2"	50	970

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 other respects conform to Item 509 1-1/2 closed coils shall be provided at the ends of each spiral unit. Four steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. 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 lb.per lin.ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.
BAR SIZE is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used indicate the bar size number. For example, A701 is a No. 7 size bar and P1002 is a No. 10 size bar.
⊕ Cost of field bending and cutting to be included with Item 509 for payment.

MARK	NO.	LENGTH	WEIGHT	SHP.
PIERS				
P501	120	7'-11"	991	B
P502	18	7'-4"	138	B
P503	12	28'-8"	359	S
P901	6	28'-8"	585	S
P902	6	30'-8"	626	S
P903	6	31'-2"	636	S
P904	6	9'-10"	201	B
P1101	6	35'-4"	1126	B
P1102	6	14'-6"	462	S
P1103	6	37'-10"	1206	B
P1104	24	25'-8"	3273	S
P1105	30	24 -10"	3958	S
P1106	30	11'-7"	1846	S
P1107	24	21'-4"	2720	S
F701	144	8'-10"	2598	B
F901	72	11'-2"	2734	B
F1101	108	7'-3"	4160	B
PARAPET RAILING				
R501	16	16'-8"	*	S
R502	16	4'-1"	*	S
R503	12	4'-2"	*	B
R504	8	5'-4"	*	B
R505	192	13'-3"	*	S
* Parapet railing bars are included with 517 for payment.				
SUPERSTRUCTURE				
S501	992	2'-3"	2328	B
S502	496	3'-6"	1811	B
S503	496	5'-7"	2888	B
S601	379	29'-8"	16888	S
S602	510	35'-2"	26935	S
S603	57	39'-0"	3339	S
S604	2	34'-6"	104	S
S605	10	6'-1"	91	S
S606 to S622	2 Ser. of 17	27'-9" to 7'-5"	898	S
S701	379	29'-8"	22982	S
S702	2	34'-6"	141	S
S703	10	6'-1"	124	S
S704 to S720	2 Ser. of 17	27'-9" to 7'-5"	1222	S
REPLACEMENT BARS				
RE401	1	5'-3"	-	B
RE501	1	5'-7"	-	S
RE601	3	5'-11"	-	S
RE701	2	6'-3"	-	S
RE801	1	6'-6"	-	S
RE901	1	6'-10"	-	S
RE1101	1	7'-7"	-	S

Design Loading - CF-130(57)
Concrete Class "C" - basic unit stress 1333 p.s.i.
Concrete Class "E" - basic unit stress 1133 p.s.i.
Structural Steel - ASTM A36 - basic unit stress 20,000 p.s.i.

Reinforcing Steel - ASTM A15, A16, A160, 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.

J.E GREINER COMPANY
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

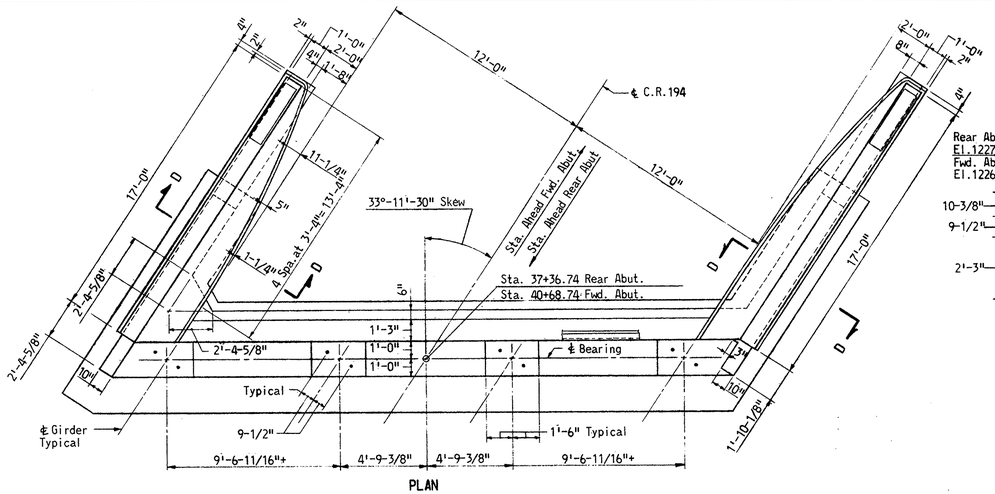
GENERAL PLAN AND ELEVATION, NOTES, ESTIMATED QUANTITIES AND REINFORCING STEEL LIST
BRIDGE NO. SUM-271-0152
I.R. 271 UNDER SUMMIT CO. RD. NO. 194
SUMMIT CO. STA. 489+04.70

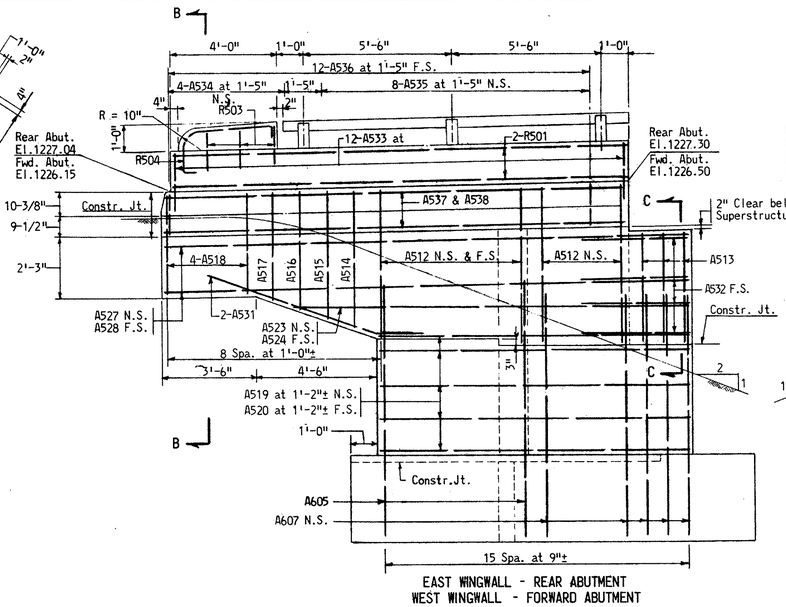
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SHERMAN	WALTER	WALTER	PAHL	MUDD	4-15-66	

SUMMIT COUNTY
SUM-271-0.83

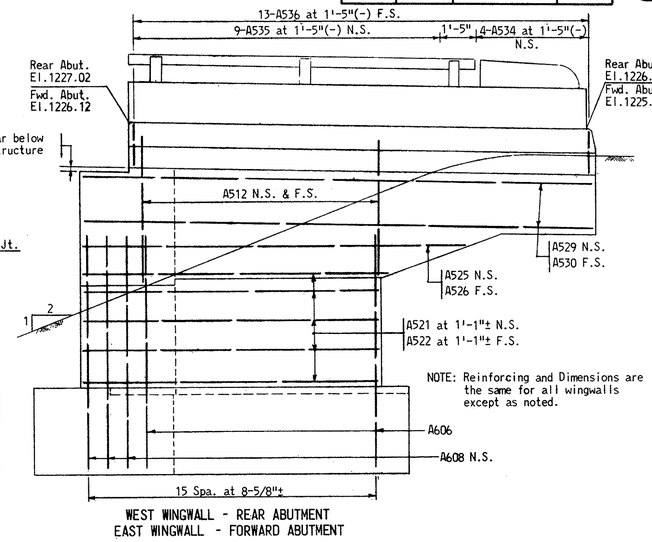
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(15)229	

167
196



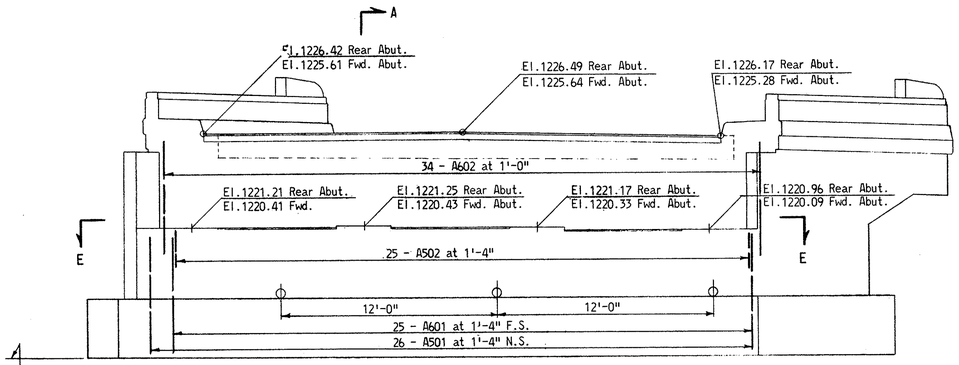


EAST WINGWALL - REAR ABUTMENT
WEST WINGWALL - FORWARD ABUTMENT

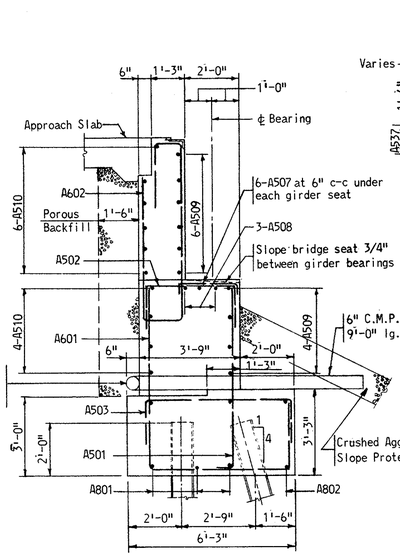


WEST WINGWALL - REAR ABUTMENT
EAST WINGWALL - FORWARD ABUTMENT

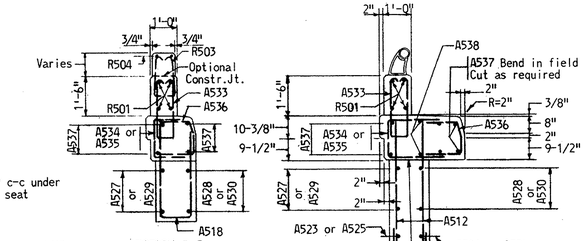
NOTE: Reinforcing and Dimensions are the same for all wingwalls except as noted.



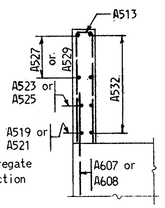
ELEVATION



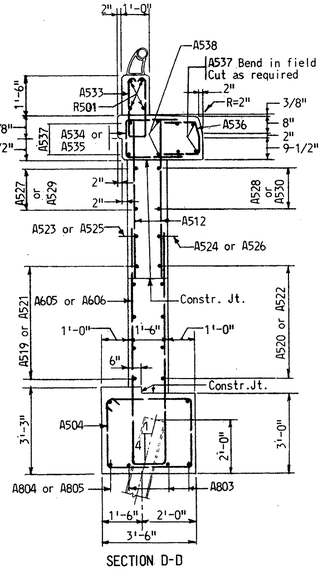
SECTION A-A



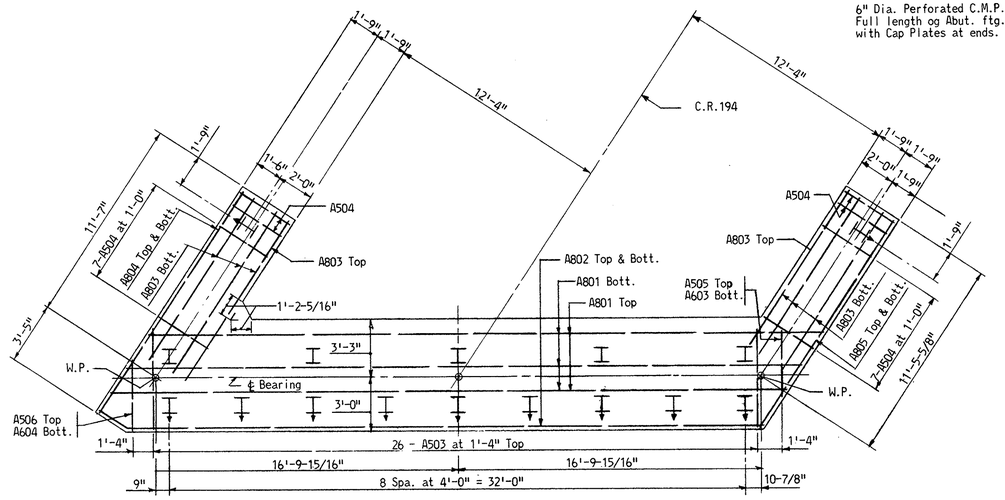
SECTION B-B



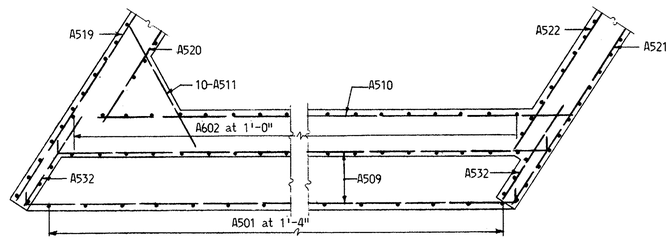
SECTION C-C



SECTION D-D



FOOTING PLAN



SECTION E-E

CLEARANCE of reinforcing steel from face of concrete shall be 3" in bottom of footing, 1-1/2" in parapet and safety curb and 2" elsewhere.

POROUS BACKFILL shall extend upward to the approach slab and to the surface of the earth shoulders and outward to the wingwalls. Excavation therefore, in excess of that required for the construction of the abutment, shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.

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

CONCRETE shall be Class E.

LEGEND:
N.S. - Near Side
F.S. - Far Side

For details of roadway end finish see Standard Drawing SD-1-65.

J.E GREINER COMPANY
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

ABUTMENT DETAILS
BRIDGE NO. SUM-271-0152
I.R. 271 UNDER SUMMIT CO. RD. NO. 194

SUMMIT CO. STA. 489+04.70

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GREIMANN	GREIMANN	GREIMANN	SHERMAN	MUDD	4-15-66	

Rev. Jan. 23, 1967

SUMMIT COUNTY
SUM-271-0.83

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(15)229	

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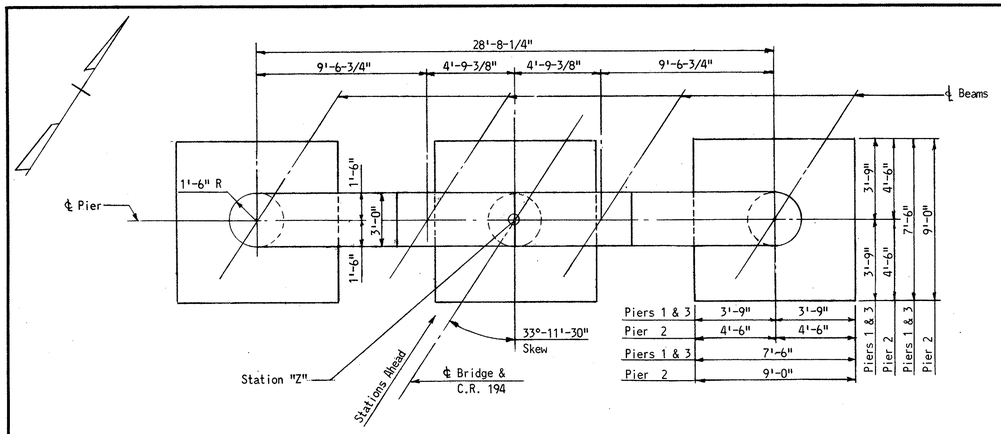
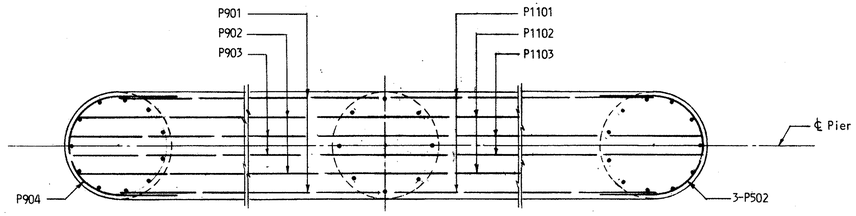
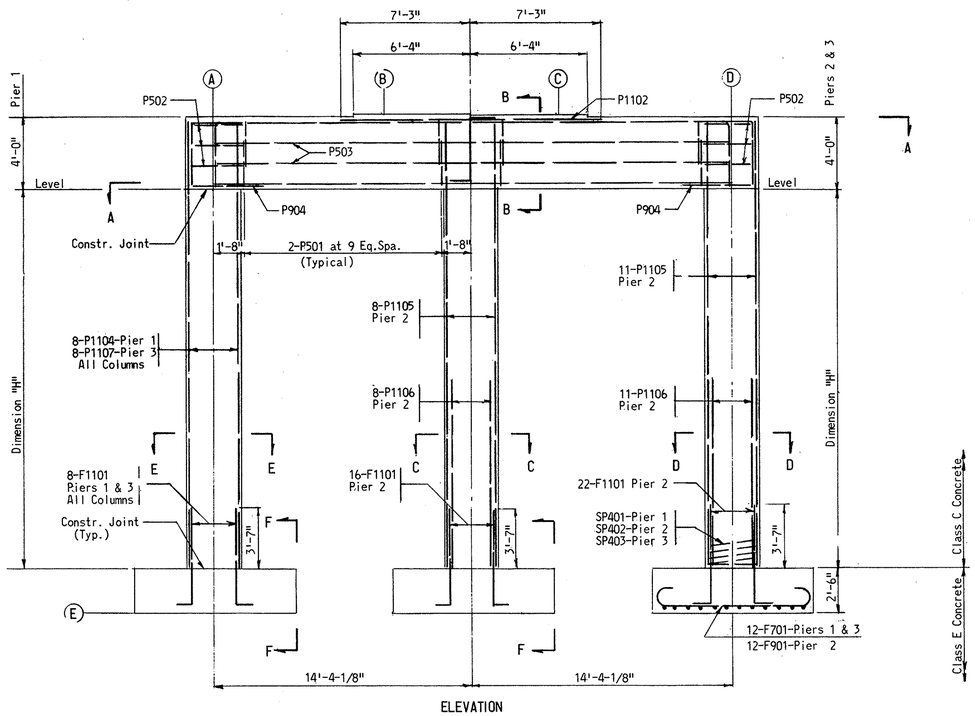
196



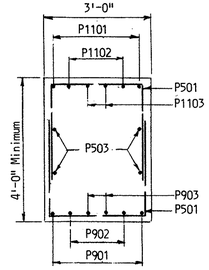
PLAN



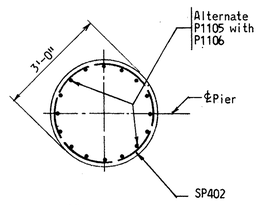
SECTION A-A



ELEVATION

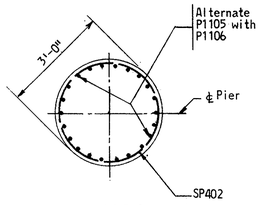


SECTION B-B

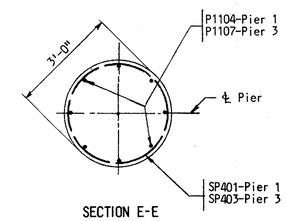


SECTION C-C
INTERIOR COLUMN

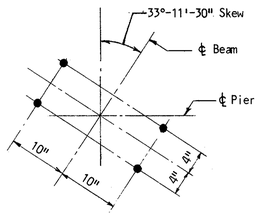
PIER 2



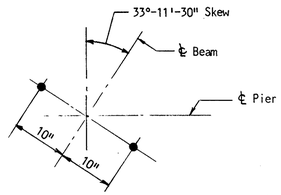
SECTION D-D
EXTERIOR COLUMNS



SECTION E-E
ALL COLUMNS
PIERS 1 & 3

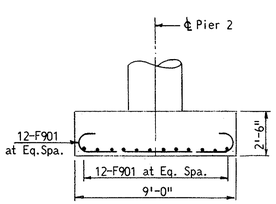


LOCATION OF ANCHOR RODS
FIXED BEARINGS F-250
PIER 2

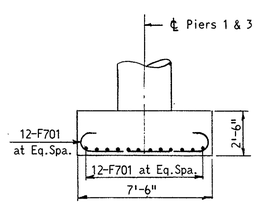


LOCATION OF ANCHOR RODS
EXPANSION BEARINGS E-250
PIERS 1 & 3

	STATION Z	ELEVATIONS A	B	C	D	E	DIMENSION H
PIER 1	38+10.24	1221.75	1221.92	1221.96	1221.87	1193.32	21'-11-3/16"
PIER 2	39+07.74	1221.71	1221.82	1221.81	1221.66	1194.00	21'-1-3/4"
PIER 3	40+05.24	1221.32	1221.38	1221.31	1221.11	1197.00	17'-7-5/16"



SECTION F-F
PIER 2



SECTION F-F
PIERS 1 & 3

PIER NOTES

FOUNDATION BEARING PRESSURE: Pier Footings are designed for a maximum bearing pressure of 5 Tons per Sq.Ft.

CLEARANCE of reinforcing steel from face of concrete shall be 3" in bottom of footings and 2" elsewhere.

For details of Fixed and Sliding Bearings see Std. Dwg. No.FSB-1-62.

CONCRETE shall be Class E in Footings and Class C above Footings.

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

J.E GREINER COMPANY
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

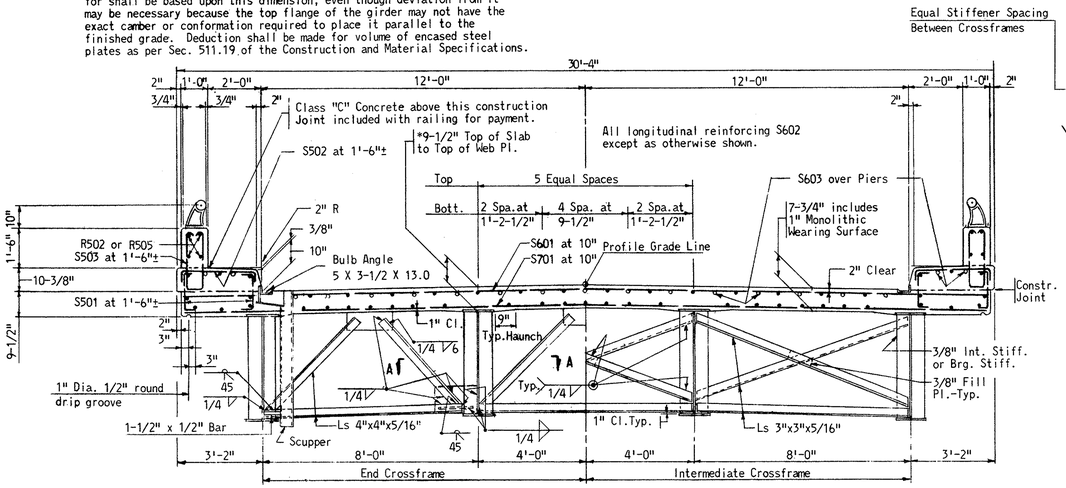
PIER DETAILS

BRIDGE NO. SUM-271-0152
I.R. 271 UNDER SUMMIT CO. RD. NO. 194

SUMMIT CO. **STA. 489+04.70**

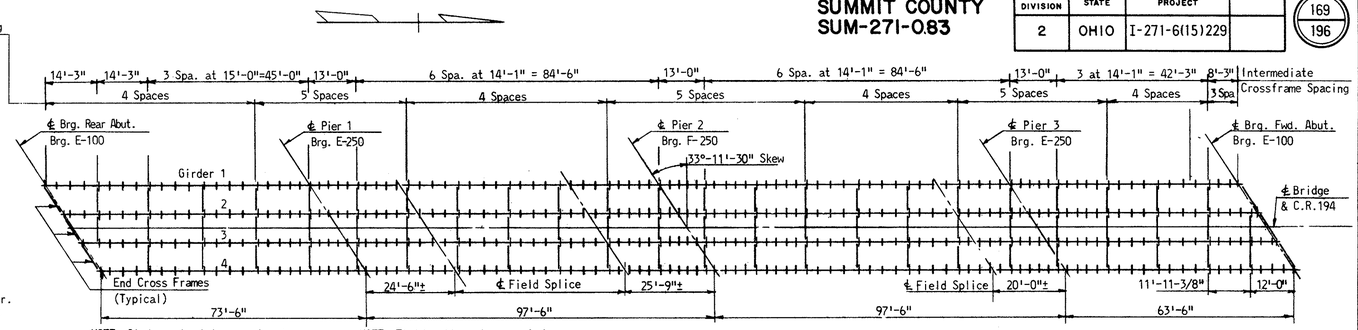
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RYNA-RZEWSKI	RYNA-RZEWSKI	RYNA-RZEWSKI	PAHL	MUDD	4-15-66	

This is the nominal dimension. The quantity of deck concrete to be paid for shall be based upon this dimension, 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 Sec. 511.19 of the Construction and Material Specifications.



A typical haunch width of 9" shall be used for computing quantity of concrete. However, the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

TRANSVERSE SECTION

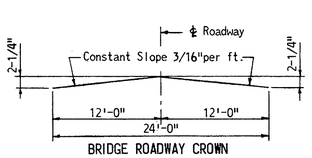


NOTE: Girder web plates may be shop spliced as required by lengths of plates obtainable. Location of shop splices shall be submitted to the Director for approval.

NOTE: Field splices in any girder shall be moved to clear intermediate crossframes and/or stiffeners.

STEEL FRAMING PLAN

All full penetration welds shall back-gouged and welded after welding far side. Butt welds on beam and girder flange and web plates shall be ground flush, the finish grinding being parallel to the direction of streets.



BRIDGE ROADWAY CROWN

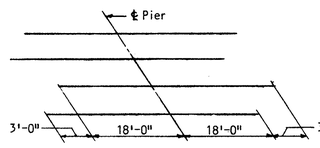
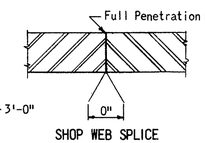
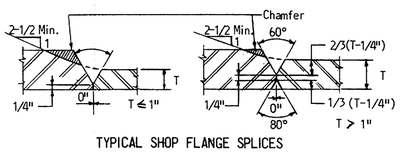


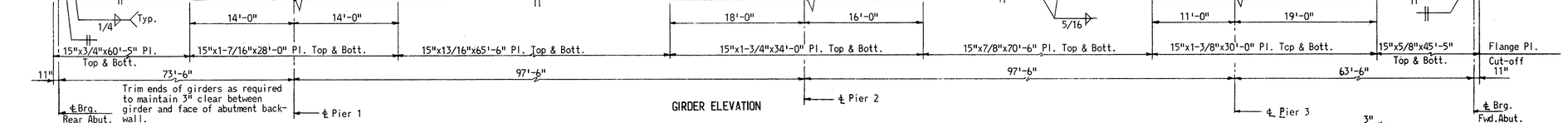
DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS



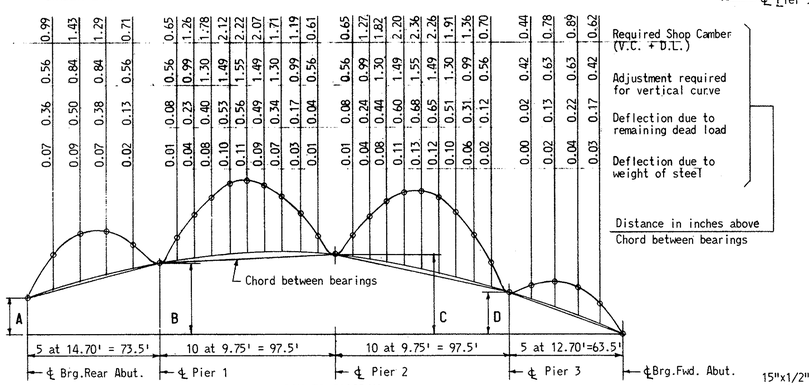
SHOP WEB SPLICE



TYPICAL SHOP FLANGE SPLICES



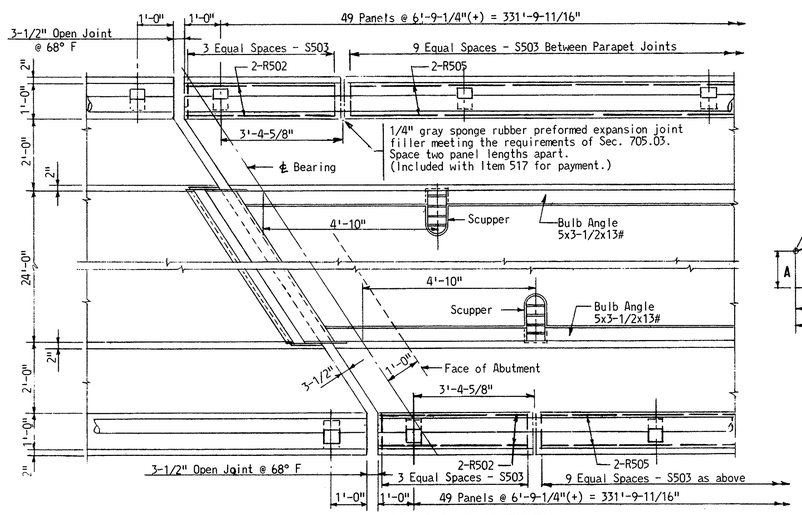
GIRDER ELEVATION



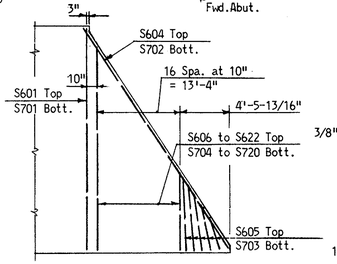
CAMBER DIAGRAM

	A	B	C	D
Girder 1	6.73	17.61	21.19	12.39
Girder 2	8.99	19.37	22.29	12.82
Girder 3	11.26	21.14	23.39	13.26
Girder 4	13.52	22.90	24.48	13.69

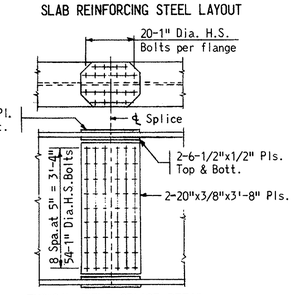
Above dimension in inches



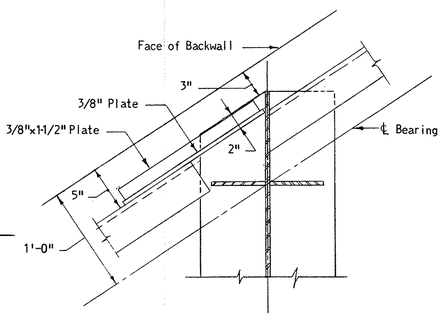
PART PLAN AT ABUTMENTS



SLAB REINFORCING STEEL LAYOUT



TYPICAL FIELD SPLICE DETAIL



SECTION A-A

SUPERSTRUCTURE NOTES

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

For details of roadway end-finish, beam cutoff at backwall, and welded butt joint in end finish angles at centerline of roadway, see Standard Drawing SD-1-65

For details of scuppers, curb plates, and gutter supports, see Standard Drawing SD-1-65

For details of fixed and sliding bearings see Standard Drawing FSB-1-62.

For details of aluminum railing see Standard Drawing BR-1-65, Type 1.

For Scupper spacing see Sheet No. 166.

REINFORCING STEEL shall be 1-1/2' clear of surfaces in parapets and safety curbs. Place transverse reinforcing normal to center line of roadway.

PROCEDURE: The Contractor shall submit to the Director, for approval, 3 prints showing his proposed erection procedure.

J.E GREINER COMPANY
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

SUPERSTRUCTURE DETAILS

BRIDGE NO. SUM-271-0152
I.R.*271 UNDER SUMMIT CO. RD. NO. 194

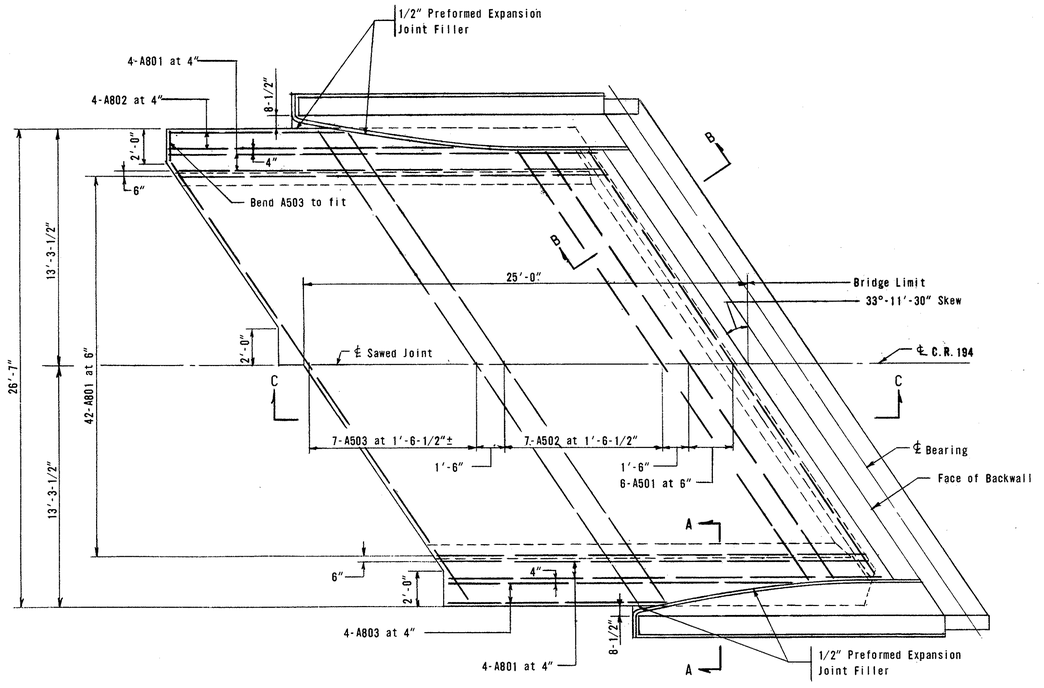
SUMMIT CO. STA. 489+04.70

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
POLDEMANN	ALKEMA	ALKEMA	SHERMAN	MUDD	4-15-66	

SUMMIT COUNTY
SUM-271-0.83

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(15)229	

170
196



REINFORCING STEEL LIST				
MARK	NO.	LENGTH	WEIGHT	SHP.
A801	100	25'-7"	6831	B
A802	2 Series of 4 Bars 1'-6" Incr.	9'-9" to 14'-3"	256	S
A803	2 Series of 4 Bars 1'-6" Incr.	12'-3" to 16'-9"	310	S
A501	12	28'-0"	350	S
A502	2 Series of 7 Bars 6" Incr.	28'-1" to 31'-1"	432	S
A503	14	31'-2"	462	S

A801 — 24'-6"

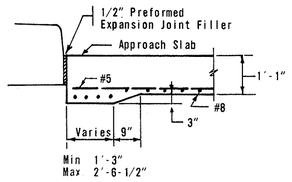
Quantities are for 2 Approach Slabs.

NOTES:
1/2" Preformed Expansion Joint Filler shall be included in Item 611 "Reinforced Concrete Approach Slab" for payment.

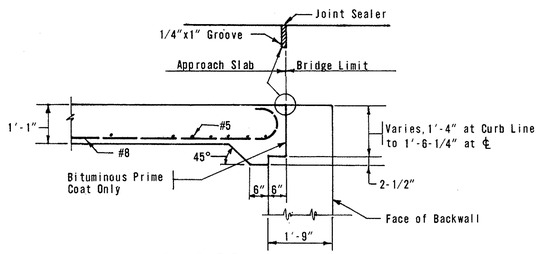
Bar Size is indicated in the Bar Mark. The first digit indicates the Bar Size Number. For example: A801 is a No. 8 Bar Size.

Work this sheet with Standard Drawing No. AS-1-54

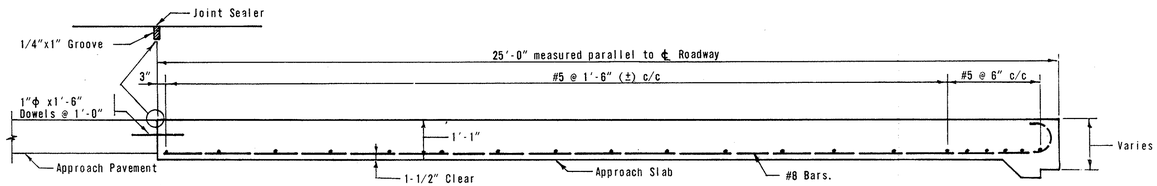
Concrete in Approach Slabs shall be Class C.



SECTION A-A



SECTION B-B



SECTION C-C

J.E GREINER COMPANY
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

APPROACH SLAB DETAILS
BRIDGE NO. SUM-271-0152
I.R. 271 UNDER SUMMIT CO. RD. NO. 194

SUMMIT CO. **STA. 489+04.70**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RYNA-RZEWSKI	RYNA-RZEWSKI	RYNA-RZEWSKI	GREIMAN	MUDD	4-15-66	