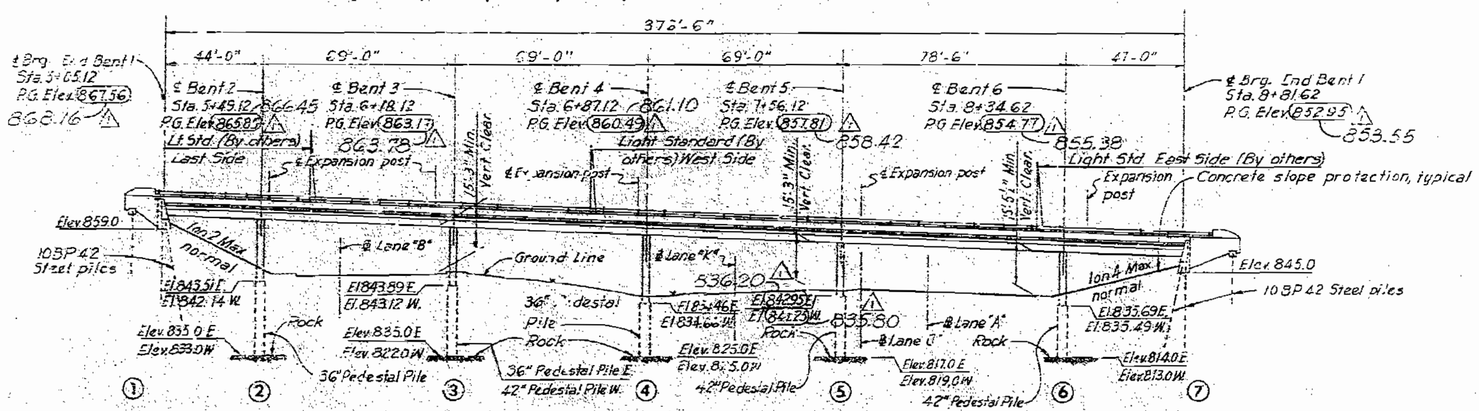
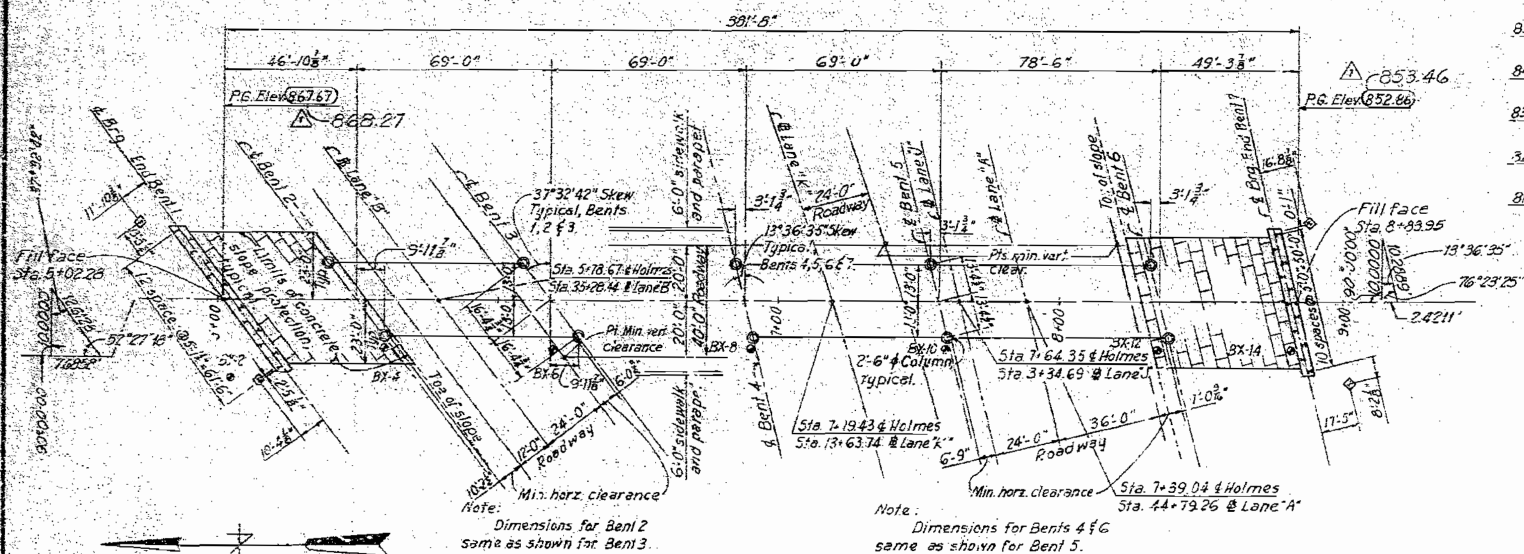
MISSOURI STATE HIGHWAY DEPARTMENT

PROFILE GRADE

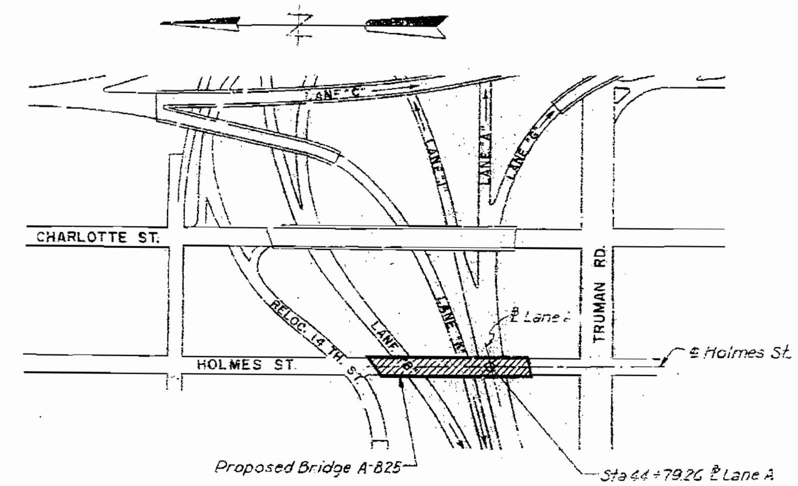
44'-0", 69'-0", 69'-0", 69'-0", 78'-6", 47'-0" CONTINUOUS BOX GIRDER SPANS



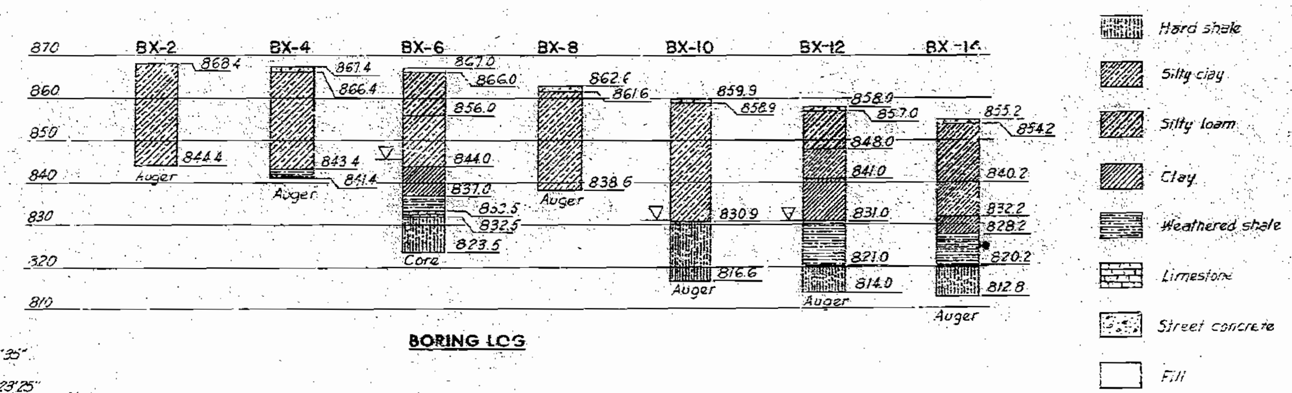
ELEVATION



PLAN



LOCATION SKETCH



BORING LOG

BORING LEGEND

Notes:
Boring log locations are noted thus: BX-2
Elevation shown at top of boring is top of ground.
Bottom elevations of borings BX-2, BX-4, BX-6, BX-12 and BX-14, are top of limestone refusal, and borings BX-6 and BX-10 are bottom in shale.
▽ indicates water level.
E. denotes East Column and W. denotes West Column.
Concrete slope protection is to be included under roadway contract. For details see sheet 14.

Bench Mark:
BM #6 - "X" Cut on S. bolt top of hydrant N.W. corner Truman Road and Charlotte Street. Elev. 856.19

FOR INFORMATION ONLY

SUBMITTED BY: [signature]
REGISTERED PROFESSIONAL ENGINEER
MISSOURI NO. E - 253

BRIDGE: HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT I-35) STA. 44+79.26 ℄ LANE A

JACKSON COUNTY

SUBMITTED BY [signature] DATE 8-21-61 BRIDGE ENGINEER
APPROVED BY [signature] DATE 8-21-61 CHIEF ENGINEER

STD 54.00
A-825

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE G.A. DATE 7-8-60
CHECKED E.D.B. DATE 11-10-60

NOTE: This drawing is not to scale. Follow dimensions.

△ Revised 11-6-61

GENERAL PLAN AND ELEVATION

SHEET 1 OF 14

251

GENERAL NOTES

DESIGN SPECIFICATIONS:

A.A.S.H.O. 1957 with tentative revisions for 1958 and 1959.

DESIGN LOADING

H20-44. 15 lbs. per sq. ft. future wearing surface.

CONCRETE

Concrete Stress - Class B 1 fc = 1,600 psi.
Class B fc = 1,200 psi.
Concrete for superstructure shall be Class B 1 air-entrained. Concrete for pedestal piles and substructure shall be Class B air-entrained.

REINFORCING STEEL

Allowable stress = 20,000 psi. All splices in reinforcing steel shall be 32 bar diameters.

Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

Dimensions shown on the plans from the reinforcing steel to outside edge of concrete are all clear dimensions.

All bending dimensions are from "out to out" of bars.

SEALING OF DECKS:

Superstructure deck to be surfaced sealed. See Special Provisions.

UTILITIES:

All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor will notify the Owner of the utilities of his work schedule sufficiently in advance to allow time for disposition of utilities.

SHIPPING:

Permits must be obtained for all truck loads over legal length.

JOINT FILLER

Where joint filler is specified on the plans, it shall conform with the requirements for Gray Sponge Rubber Compound Joints as given in Section 137.2.4 of the Standard Specifications.

METAL CONDUITS:

Expansion fittings shall be required in metal conduit at all expansion joints. Expansion fittings shall be O.Z. Electrical Manufacturing Company Type AX125 with AJ bonding jumper or equal.

PILING

All piles shall conform with details and notes on Sheet No. 14.

All piles shall be driven to or into solid rock, boulders, shale, or cemented gravel, or to not less than full length authorized, and to sustain a load of at least 37 tons per pile for 10 BP 42.

All piles shall be driven with a power hammer. See Section 52.4.7 of Standard Specifications for required painting of steel piles.

WELDING:

Qualifications of welding operators will be required.

EXCAVATION TO ROCK

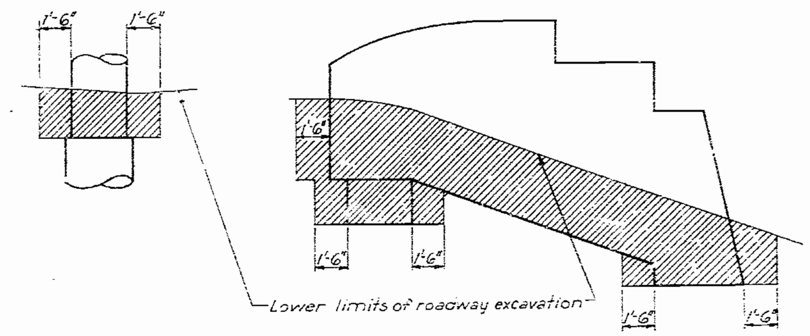
All loose, shelly or disintegrated rock shall be removed and footings or pedestal piles placed on hard, solid, undisturbed rock. If soft rock or shale is encountered the pedestal piles shall be carried at least 18" into and cast against vertical faces of same. In no case shall the pedestal piles be placed higher than elevations shown.
The maximum ultimate presumptive bearing value of 10 tons/sq. ft. was used in design of 42"φ pedestal piles on rock, and 50 tons/sq. ft. was used in design of 36"φ pedestal piles on rock.

ESTIMATED QUANTITIES

ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL
Class 1 Excavation for Structure	Cu. Yd.	190		190
36"φ Pedestal Pile	Lin. Ft.	45.7		45.7
42"φ Pedestal Pile	Lin. Ft.	113.5 (101.3 △1)		113.5
Steel Piles in Place (10BP42)	Lin. Ft.	541		541
Steel Pile Cut-Offs (10BP42)	Lin. Ft.	84		84
Class B Concrete (Substructure)	Cu. Yd.	120.1 (121 △1)		120.1
Class B 1 Concrete	Cu. Yd.		1,162.1	1,162.1
Reinforcing Steel	Lbs.	24,150 (△1 24,820)	457,920	482,070
Fabricated Structural Steel Bearings	Lbs.		2,130	2,130
Bridge Rail (Two Tube Type)	Lin. Ft.		785	785
Conduit System (On Structure)	L. Sum			1

Revised values noted beside table: 458,890 △2; 456,[illegible] △2; △1 482,740; 482,340 △2; 483,710 △3

All excavation shall be paid for as Class 1 Excavation for Structures. Sketches below show limits of excavation for pay purposes.



All concrete and reinforcement of intermediate bents above top of pedestal piles are included in superstructure quantities.
Reinforcement in pedestal piles is included in substructure quantities.
Estimated quantity of Class B Concrete (substructure) includes all concrete in end bents. All other concrete, except for pedestal piles, is included in estimated quantity of Class B 1 Concrete.

The estimated quantities shown on plans for piles are based on the following lengths: 20' at end bent 1 and 23' at end bent 7. These lengths are approximate only. Proper lengths to give required bearing and/or penetration will be authorized by the Engineer.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE LL DATE 1-12-61 TRACED ___ DATE ___
CHECKED EDB DATE 1-24-61 SCALE

NOTE: This drawing is not to scale. Follow dimensions.

△3 Revised 10-15-62
△2 Revised 9-14-62
△1 Revised 11-6-61

GENERAL NOTES

BRIDGE . HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LANE A

JACKSON COUNTY

SHEET 2 OF 14

A-825

252

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
5	MO.		35	
DIST. NO. 4	COUNTY			

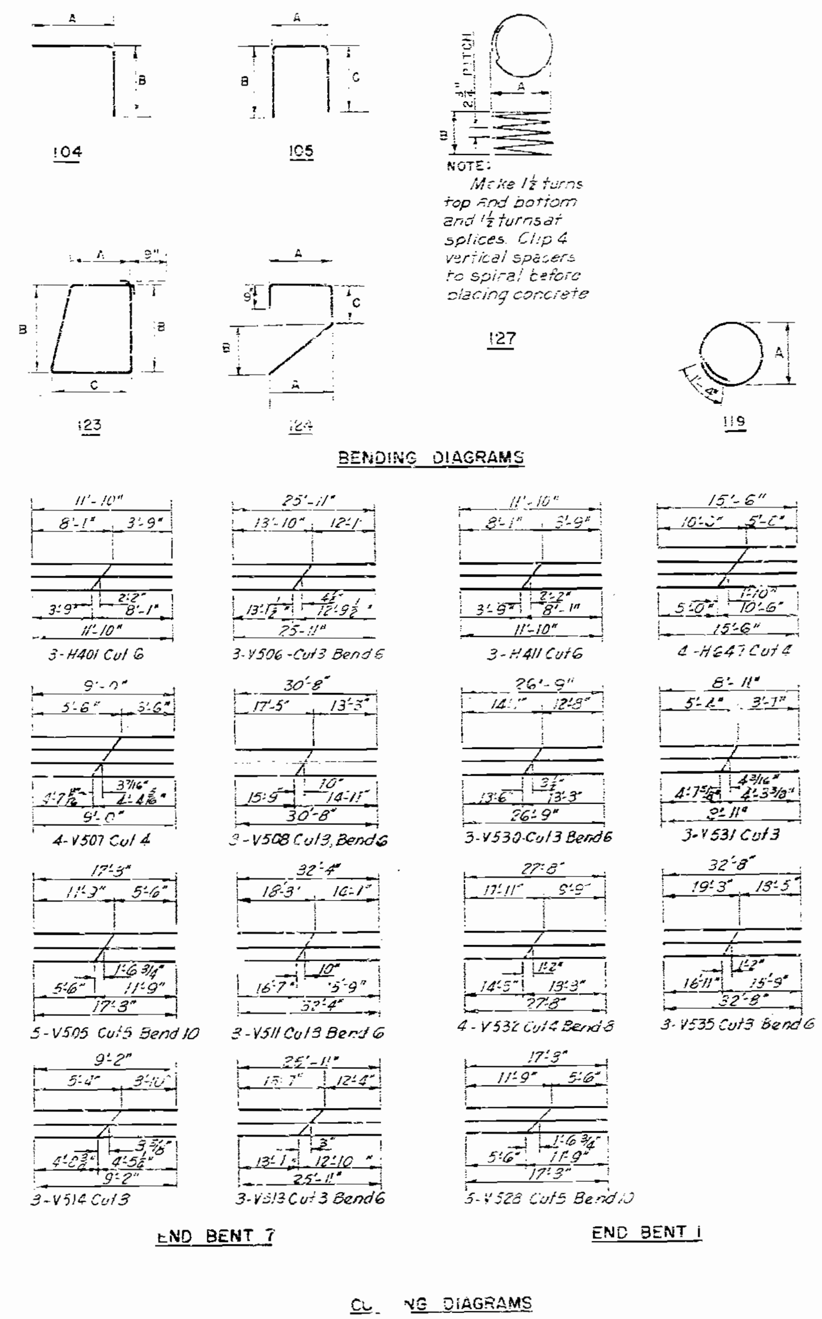
BILL OF REINFORCEMENT

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		SUBSTRUCTURE END BENT 1				
16	F511	3'-5"	Str			
16	F611	2'-6"	Str.			
6	H411	11'-10"	Str.			
2	H412	10'-5"	Str. *			
2	H413	11'-2"	Str. *			
2	H414	8'-8"	Str. *			
2	H415	9'-3"	Str. *			
3	H416	15'-8"	Str. *			
3	H417	16'-3"	Str. *			
3	H418	10'-3"	Str. *			
3	H419	10'-11"	Str. *			
35	H511	3'-6"	104	2'-6"	1'-0"	
32	H638	33'-6"	Str.			
4	H639	21'-4"	Str.			
2	H640	18'-10"	Str.			
1	H641	12'-2"	Str. *			
1	H642	12'-10"	Str. *			
4	H643	6'-0"	Str.			
6	H644	6'-1"	Str.			
3	H645	19'-4"	Str. *			
3	H646	20'-6"	Str. *			
4	H647	15'-6"	Str.			
1	H648	17'-9"	Str. *			
1	H649	19'-6"	Str. *			
3	H650	13'-6"	Str. *			
3	H651	14'-2"	Str. *			
2	H652	9'-3"	Str.			
2	H653	7'-2"	Str.			
2	H654	5'-6"	Str.			
42	V525	15'-5"	123	2'-10½"	3'-7"	3'-10½"
2	V526	13'-11"	123	3'-1½"	2'-8½"	3'-10½"
72	V527	5'-6"	Str.			
5	V528	17'-3"	124	1'-8" to 4'-9"	5" to 1'-2"	1'-4"
18	V529	5'-8"	Str.			
3	V530	26'-9"	105	7"	7'-1" to 8'-6"	5'-0"
3	V531	8'-11"	Str.			
4	V532	27'-8"	105	7"	4'-7" to 8'-8"	4'-7" to 8'-8"
1	V533	10'-7"	105	7"	5'-0"	5'-0"
2	V534	8'-0"	Str.			
3	V535	32'-8"	105	7"	6'-5" to 9'-4"	6'-5" to 9'-4"
1	V536	11'-7"	105	7"	5'-6"	5'-6"
2	V537	7'-6"	Str.			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		BENT 2				
(19) 12	F424	8'-3	119	2'-3"		
16	F1123	(13'-1) 8'	Str.			
16	F1124	(12'-5) 11'-2"	Str.			
		BENT 3				
(13) 35	F433	8'-3"	119	2'-3"		
18	F434	10'-7"	119	3'-0"		
8	F1131	17'-1"	Str.			
16	F1133	36'-10" (12'-10")	Str.			
16	F1134	11'-11"	Str.			
		BENT 4				
(20) 36	F444	8'-3	119	2'-3"		
(24)	F1144	13'-7	Str.			
12	F-1144	25'-7"	"	(East)		
12	F-1144	26'-2"	"	(West)		
		BENT 5				
8	F453	8'-3"	119	2'-3"		
△ 28 (41)	F455	10'-7"	119	3'-0"		
8	F1151	△ 15'-3" (22'-0")	Str			
8	F1152	(18'-3") △ 12'-10"	Str.			
32	F1154	11'-11"	Str.			
		BENT 6				
8	F463	8'-3"	119	2'-3"		
37	F465	10'-7"	119	3'-0"		
8	F1161	17'-8"	Str.			
8	F1162	18'-6"	Str.			
32	F1164	11'-11	Str.			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		END BENT 7				
16	F501	3'-5"	Str			
16	F601	2'-6"	Str.			
6	H401	11'-10"	Str.			
2	H402	10'-5"	Str. *			
2	H403	11'-2"	Str. *			
2	H404	8'-8"	Str. *			
2	H405	9'-3"	Str. *			
3	H406	19'-0"	Str. *			
3	H407	19'-6"	Str. *			
3	H408	17'-9"	Str. *			
3	H409	17'-6"	Str. *			
35	H501	3'-6"	104	2'-6"	1'-0"	
32	H601	27'-6"	Str.			
2	H602	17'-8"	Str.			
4	H603	14'-3"	Str.			
1	H604	18'-7"	Str. *			
1	H605	18'-0"	Str. *			
4	H606	4'-9"	Str.			
6	H607	4'-10"	Str.			
4	H608	21'-3"	Str. *			
4	H609	21'-11"	Str. *			
2	H610	15'-3"	Str.			
2	H611	10'-6"	Str.			
2	H612	5'-9"	Str.			
1	H613	19'-7"	Str. *			
1	H614	20'-2"	Str. *			
4	H615	6'-0"	Str. *			
4	H616	19'-9"	Str. *			
4	H617	20'-7"	Str. *			
2	H618	15'-3"	Str.			
2	H619	10'-5"	Str.			
2	H620	5'-6"	Str			
35	V501	15'-5"	123	2'-10½"	3'-7"	3'-10½"
2	V502	13'-11"	123	3'-1½"	2'-8½"	3'-10½"
18	V503	5'-6"	Str.			
60	V504	5'-2"	Str.			
5	V505	17'-3"	124	1'-8" to 4'-9"	5" to 1'-2"	1'-4"
3	V506	25'-11"	105	7"	6'-9" to 8'-6"	4'-9"
4	V507	9'-0"	Str.			
3	V508	30'-8"	105	7"	6'-4" to 8'-5"	6'-4" to 8'-5"
1	V509	10'-7"	105	7"	5'-0"	5'-0"
4	V510	7'-4"	Str.			
3	V511	32'-4"	105	7"	6'-9" to 8'-10"	6'-9" to 8'-10"
1	V512	11'-5"	105	7"	5'-5"	5'-5"
3	V513	25'-11"	105	7"	7'-2" to 8'-5"	4'-7"
3	V514	9'-2"	Str.			
1	V515	11'-9"	105	7"	5'-7"	5'-7"
1	V516	12'-7	105	7"	6'-0"	6'-0"

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		SUPERSTRUCTURE BENTS 2, 3, 4, 5 AND 6 – CAP BEAM				
16	B921	9'-1"	104	5'-4"	3'-9"	
16	B931	9'-1"	104	5'-4"	3'-9"	
16	B941	9'-1"	104	5'-4"	3'-9"	
16	B951	9'-1"	104	5'-4"	3'-9"	
16	B961	9'-1"	104	5'-4"	3'-9"	
		BENTS 2, 3, 4, 5 AND 6 – COLUMNS				
1	C421	625'-3"	127	2'-3"	20'-0"	
1	C422	643'-5"	127	2'-3"	20'-7"	
2	C431	532'-8"	127	2'-3"	16'-11"	
1	C441	729'-1"	127	2'-3"	23'-5"	
1	C442	715'-9"	127	2'-3"	23'-0"	
1	C451	(391'-0") 595'-11" △	127	2'-3"	(12'-3") – 19'-2" △	
1	C452	(435'-2") 598'-5" △	127	2'-3"	(13'-8") – 19'-1" △	
2	C461	518'-9"	127	2'-3"	16'-5"	
32	C1122	22'-8"	Str.			
32	C1132	19'-6"				
12	C1142	26'-0"				
12	C1143	25'-8"				
16	C1152	(14'-11") – 21'-8" △				
16	C1153	(16'-4") – 21'-3" △				
32	C1162	19'-3"	Str.			



Notes:
* Indicates these bars are to be bent in the field.
Hooks and bends shall be in accordance with the ACI manual of standard practice for detailing reinforced concrete structures. (ACI-315-57).

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LANE A
JACKSON COUNTY

REINFORCING SCHEDULE

SHEET 3 OF 14

A-825

△ Revised 11-6-61

Note: This drawing is not to scale. Follow dimensions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE FDB-GA-LDL DATE 7-22-60 TRACED ____ DATE ____
CHECKED DER-BLC DATE 9-27-60 SCALE

SEE FINAL ... S BROWN-LINES

253

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.				56
DIST. NO.	COUNTY			ROUTE	SEC.
4					

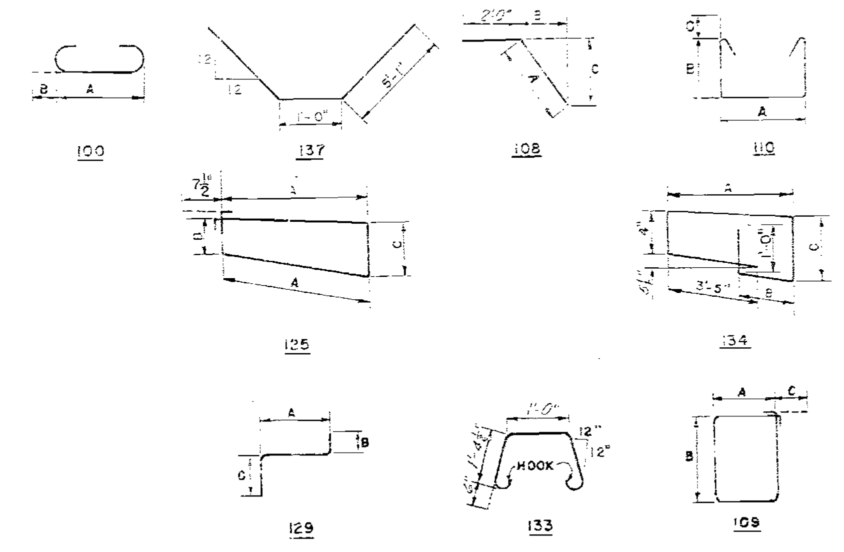
BILL OF REINFORCEMENT

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C
SUPERSTRUCTURE						
BOX GIRDER						
8	B601	26'-4"	Str.			
8	B602	28'-4"	Str.			
12	B603	21'-5"	Str.			
12	B604	23'-5"	Str.			
312	B605	9'-8"	110	3'-3"	2'-7½"	7"
396	B606	9'-1"	110	2'-8"	2'-7½"	7"
12	B1101	54'-8"	Str.			
14, 23	B1102	20'-0"	Str.			
20, 2[illegible]	B1103	10'-0"	Str.			
18	B1104	44'-8"	Str.			
(14) 23	B1105	18'-0"	Str.			
(8) 16	B1106	15'-6"	Str.			
12	B1107	52'-8"	Str.			
16	B1108	32'-10"	Str.			
46	B1109	26'-10"	Str.			
8	B1110	17'-10"	Str.			
8	B1111	12'-10"	Str.			
18	B1112	42'-8"	Str.			
10	B1113	20'-2"	Str.			
4	B1114	13'-0"	Str.			
4	B1115	6'-10"	Str.			
△1 14 — (10)	B1116	20'-10"	Str.			
Out △1 — (4)	B1117	11'-10"	Str.			
4	B1118	11'-0"	Str.			
4	B1119	16'-0"	Str.			
4	B1120	22'-0"	Str.			
144	D501	7'-3"	109	5"	2'-5½"	9"
12	D502	8'-5"	109	1'-0"	2'-5½"	9"
12	D601	26'-4"	Str.			
12	D602	28'-4"	Str.			
16	D603	21'-5"	Str.			
16	D604	23'-5"	Str.			
46	D605	9'-11"	109	1'-5½"	2'-7½"	10½"
8	D606	12'-7"	109	1'-5½"	3'-11½"	10½"
40	D607	13'-6"	109	3'-3"	2'-7½"	10½"
8	D608	12'-1"	109	1'-2½"	3'-11½"	10½"
4	D609	23'-2"	Str.			
4	D610	25'-2"	Str.			
12	D611	8'-7"	100	7'-3"	8"	
6	D501	10'-0"	108	8'-0"	7'-11½"	9¾"
214	G401	25'-0"	Str.			
2	G402	10'-0"	Str.			
2	G403	6'-4"	Str.			
2	G404	26'-4"	Str.			
2	G405	22'-8"	Str.			
2	G406	19'-0"	Str.			
2	G407	15'-4"	Str.			
2	G408	11'-8"	Str.			
1022	G501	4'-8"	129	2'-7½"	5"	1'-7½"
6132	G502	5'-11"	129	2'-7½"	1'-8"	1'-7½"
84	G801	60'-0"	Str.			
2	G802	44'-8"	Str.			
2	G803	41'-0"	Str.			
2	G804	37'-4"	Str.			
2	G805	33'-8"	Str.			
2	G806	30'-0"	Str.			
2	G807	26'-4"	Str.			
2	G808	22'-4"	Str.			

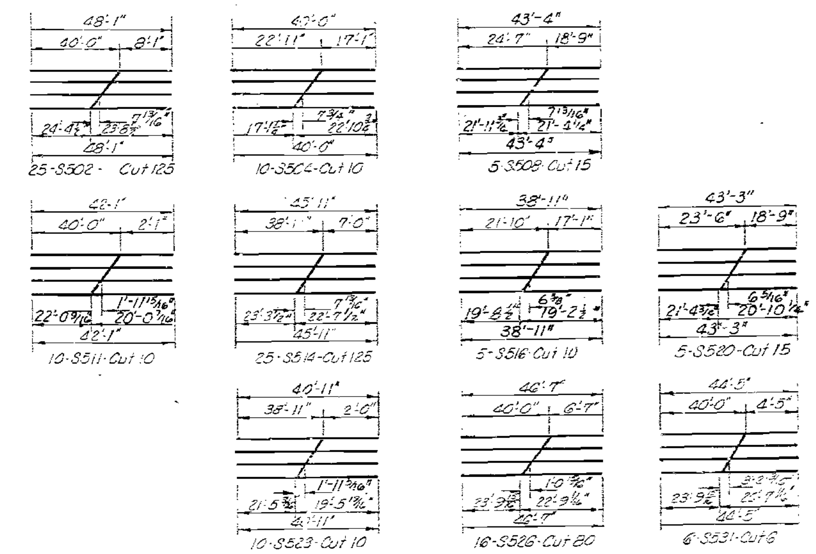
NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C
214	G1101	60'-0"	Str.			
24	G1102	40'-0"				
48	G1103	32'-0"				
56	G1104	26'-0"				
56	G1105	22'-0"				
56	G1106	18'-0"				
76	G1107	14'-0"				
36	G1108	36'-0"				
40	G1109	30'-0"				
14	G1110	25'-0"				
14	G1111	19'-0"				
22	G1112	42'-0"				
11	G1113	38'-0"				
2	G1114	53'-8"				
2	G1115	50'-0"				
2	G1116	46'-4"				
2	G1117	42'-8"				
2	G1118	39'-0"				
2	G1119	35'-4"				
2	G1120	31'-8"				
14	G1121	49'-0"				
14	G1122	43'-0"				
14	G1123	33'-0"				
28	G1124	26'-[illegible]				
17	G1125	47'-0"				
14	G1126	41'-0"				
14	G1127	54'-6"				
14	G1128	48'-6"				
14	G1129	40'-6"				
14	G1130	30'-6"				
4	G1131	52'-0"				
5	G1132	48'-0"				
1	G1133	52'-4"				
1	G1134	37'-7"				
1	G1135	47'-6"				
1	G1136	53'-3"				
1	G1137	34'-0"				
1	G1138	44'-0"				
1	G1139	50'-0"				
1	G1140	48'-8"				
1	G1141	42'-6"				
1	G1142	32'-3"				
6	G1143	23'-0"				
14	G1144	29'-9"				
3	G1145	50'-8"				
3	G1146	32'-4"				
3	G1147	43'-4				
3	G1148	39'-8"				
4	G1149	28'-6				
14	G1150	32'-9"	Str.			
△2 98	S401	15'-11"	Str.			
708 — (672)	S402	30'-0"				
29 — (24) △2	S403	5'-10"				
12	S404	18'-9"				
18	S405	10'-10"				
13	S406	11'-9"				
24	S407	14'-10"				
13	S408	6'-0"				
11	S409	12'-2"				
△2 25	S410	18'-7"				
30 — (29)	S411	24'-9"				
24 — (27) △2	S412	28'-9"				
13	S413	3'-10"				
13	S414	7'-10"				
9 — (10) △2	S415	3'-0"				
2	S416	6'-2"				
5	S417	25'-0"				
2	S418	19'-11"				
9	S419	23'-3"				
1	S420	10'-0"				
△2 2	S421	14'-0"				
5 — (4)	S422	16'-1"				
4	S423	19'-4"				
2	S424	21'-7"				
3	S425	25'-5"				
15	S426	29'-2"				
2	S427	4'-2"				
16	S428	9'-11"				
2	S429	(8'-5") — 16'-6" △2				
2	S430	7'-1"				
2	S431	27'-5"				
2	S432	19'-0"				
△2 14 — (8)	S433	[illegible]'-11"	Str.			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C
4	S434	10'-6"	Str.			
16	S435	16'-9"				
△2 13	S436	20'-9"				
25 — (24)	S437	11'-8"				
12	S438	21'-1"				
20	S439	27'-2"				
1	S440	25'-7"				
13	S441	22'-9"				
9	S442	17'-2"				
1	S443	13'-8"				
2	S444	6'-4"				
2	S445	27'-10"				
1	S446	14'-6"				
1	S447	(14'-2") — 21'-0" △2				
1	S448	18'-2"				
1	S449	(21'-8") — 28'-1" △2				
1	S450	22'-3"				
△2 1	S451	13'-2"				
1 — (2)	S452	17'-9"				
1	S453	7'-11"				
2	S454	6'-11"				
1	S455	24'-0"				
15	S456	12'-10"				
3	S457	20'-6"				
3	S458	4'-0"				
1	S459	26'-6"				
29	S460	9'-2"				
8	S461	15'-0"				
2	S462	6'-6"				
1	S463	20'-2"				
2	S464	13'-6"	Str.			
90	S501	7'-5"	Str.			
125	S502	48'-1"				
190	S503	23'-7"				
10	S504	40'-0"				
366	S505	24'-3"				
1	S506	21'-6"				
1	S507	19'-5"				
15	S508	43'-4"				
181	S509	25'-3"				
1	S510	4'-5"				
10	S511	42'-1"				
366	S512	25'-11"				
60	S513	6'-4"				
125	S514	45'-11"				
190	S515	22'-6"				
10	S516	38'-11"				
366	S517	23'-2"				
1	S518	20'-5"				
1	S519	18'-4"				
15	S520	43'-3"				
181	S521	24'-2"				
213	S522	24'-1"				
10	S523	40'-11"				
366	S524	24'-10"				
23	S525	5'-6"				
80	S526	46'-7"				
99	S527	20'-0"				
213	S528	20'-6"				
3	S529	22'-7"				
98	S530	23'-8"				
6	S531	44'-5"	Str.			
7	S601	27'-4"	Str.			
2	S602	24'-1"				
9	S603	22'-4"				
7	S604	29'-4"				
2	S605	26'-1"				
9	S606	24'-4"				
6	S607	26'-4"				
6	S608	28'-4"				
2	S609	23'-1"				
2	S610	25'-1"				
8	S611	21'-4"				
8	S612	23'-4"	Str.			
83	S622	50'-0"	Str.			
5	S623	29'-0"	Str.			
12	S624	16'-6"	Str.			
8	S625	37'-0"	Str.			
3	S626	23'-6"	Str.			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C
2	S627	35'-6"	Str.			
8	S628	21'-0"				
1	S629	26'-6"				
2	S630	33'-0"				
3	S631	40'-6"				
5	S632	30'-0"				
5	S633	38'-0"				
5	S634	43'-0"				
1	S635	15'-6"				
2	S636	24'-0"				
10	S637	31'-0"				
1	S638	40'-0"				
1	S639	27'-0"				
6	S640	28'-0"				
4	S641	42'-0"				
11	S642	34'-0"				
10	S643	47'-0"				
6	S644	26'-0"				
2	S645	30'-3"				
4	S646	36'-0"				
2	S647	25'-0"				
1	S648	14'-0"				
1	S649	10'-6"				
1	S650	8'-0"				
1	S651	7'-0"				
1	S652	4'-6"				
1	S653	41'-0"	Str.			
SIDEWALK AND PARAPET						
4	P401	11'-6"	Str.			
16	P402	30'-0"				
32	P403	26'-5"				
12	P404	21'-8"				
16	P405	29'-10"				
8	P406	14'-4"				
16	P407	5'-10"				
24	P408	9'-10				
32	P409	8'-7"				
8	P410	21'-4"				
8	P411	6'-10"	Str.			
787	P412	6'-1"	109	8"	1'-9"	7½"
4	P413	12'-6"	Str.			
9	P414	4'-9"	133			
6	P415	8'-1"	109	1'-2"	2'-3"	7½"
3	P416	11'-2"	137			
32	W401	30'-0"	Str.			
96	W402	23'-9"				
24	W403	28'-4"				
48	W404	26'-11"				
16	W405	28'-3"				
2	W406	17'-6"				
2	W407	16'-8"				
1	W408	15'-10"				
1	W409	15'-0"				
2	W410	14'-2"	Str.			
1	W411	7'-9"	125	2'-9½"	4"	7"
1	W412	11'-4"	13[illegible]	3'-10"	1'-7"	1'-2"
763	W413	14'-10"	134	5'-7"	3'-3"	1'-3"
4	W414	18'-6"	Str.			
1	W415	19'-4"				
1	W416	20'-2"				
1	W417	21'-0"				
1	W418	21'-10"	Str.			
1	W419	8'-1"	125	2'-3"	1'-1"	1'-3"
1	W420	10'-2"	125	3'-4	1'-0"	1'-3"
2	W421	20'-3"	Str.			
2	W422	20'-7"	Str.			
2	W423	20'-5"	Str.			
1	W424	20'-9"	Str.			
1	W425	20'-11"				
1	W426	21'-1"				
1	W427	21'-3"				
1	W428	19'-5"				
1	W429	19'-7"				
1	W430	19'-9"				
1	W431	19'-11"				
2	W432	20'-1"	Str.			
1	W433	8'-9"	125	2'-7"	1'-1"	1'-3"
1	W434	7'-8"	125	2'-9"	4"	7"



BENDING DIAGRAMS



CUTTING DIAGRAMS

Note:
Hooks and bends shall be in accordance with the ACI manual of standard practice for detailing reinforced concrete structures. (ACI 315-57)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE WZD-EDB	DATE 10-28-60	TRACED	DATE
CHECKED EDB-LDL	DATE 12-19-60	SCALE	

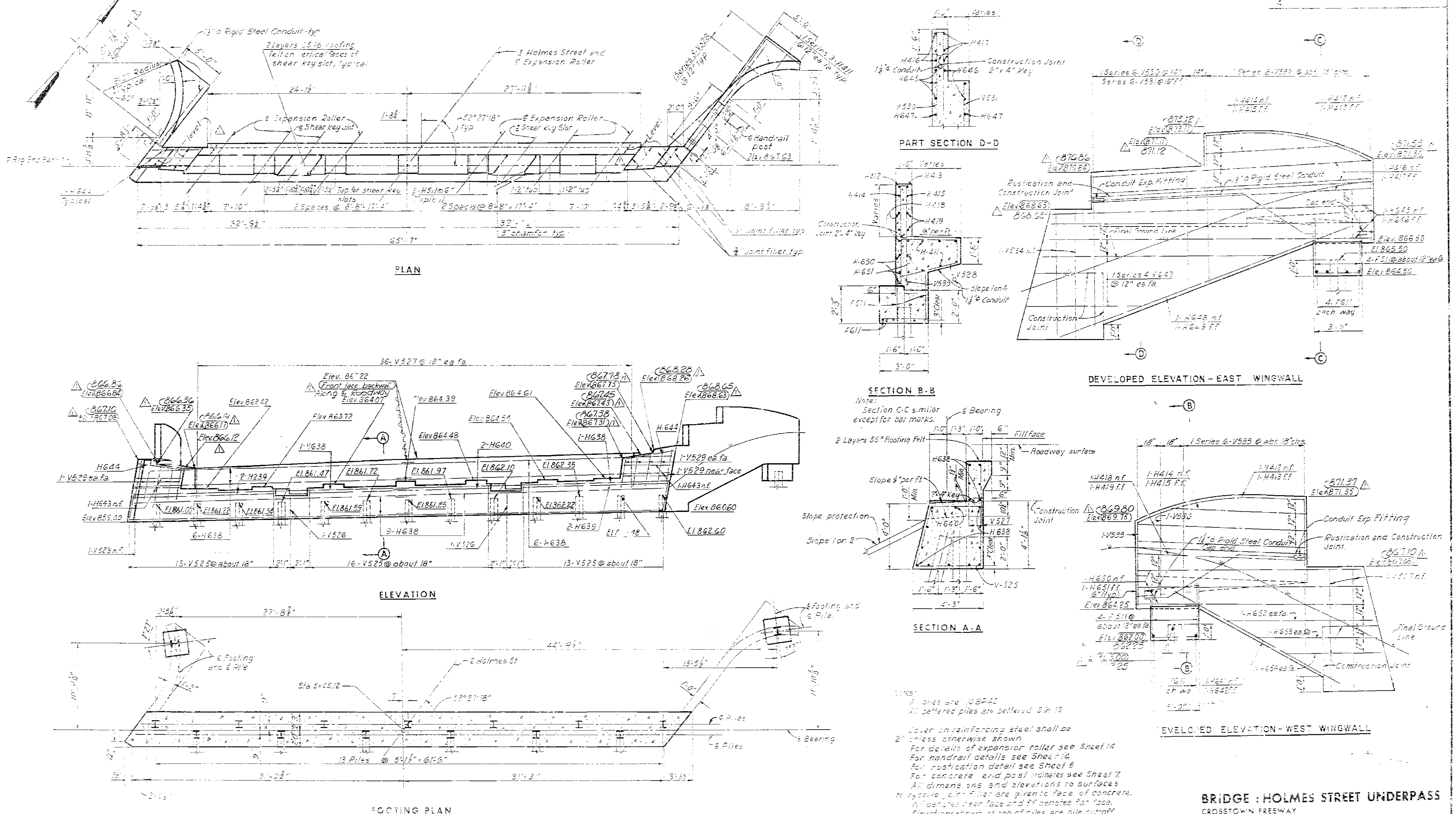
Note: This drawing is not to scale. Follow dimensions.

△2 Rev. 10-12-62
△1 Rev. 3-14-62
REINFORCING SCHEDULE

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LANE A
JACKSON COUNTY
SHEET 4 OF 14
A-825

254

MISSOURI STATE HIGHWAY DEPARTMENT



Notes:
Piles are 10 BP42
All battered piles are battered 3 in 12

Cover on reinforcing steel shall be 2" unless otherwise shown
For details of expansion roller see Sheet 14
For handrail details see Sheet 14
For rustication detail see Sheet 8
For concrete end post ordinates see Sheet 7
All dimensions and elevations to surfaces to receive joint filler are given to face of concrete.
n.f. denotes near face and f.f. denotes far face.
Elevations shown at top of piles are pile cutoff elevations

END BENT I

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE B.A. DATE 7-27-60 TRACED ____ DATE ____
CHECKED BLC DATE 3-25-60 SCALE ____

NOTE: This drawing is not to scale. Follow dimensions.

△ Revised 1-29-61

BRIDGE: HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO

PROJECT NO. I-35-1 (23) (RT. I-35) STA. 44-79.26 ℄ LANE A

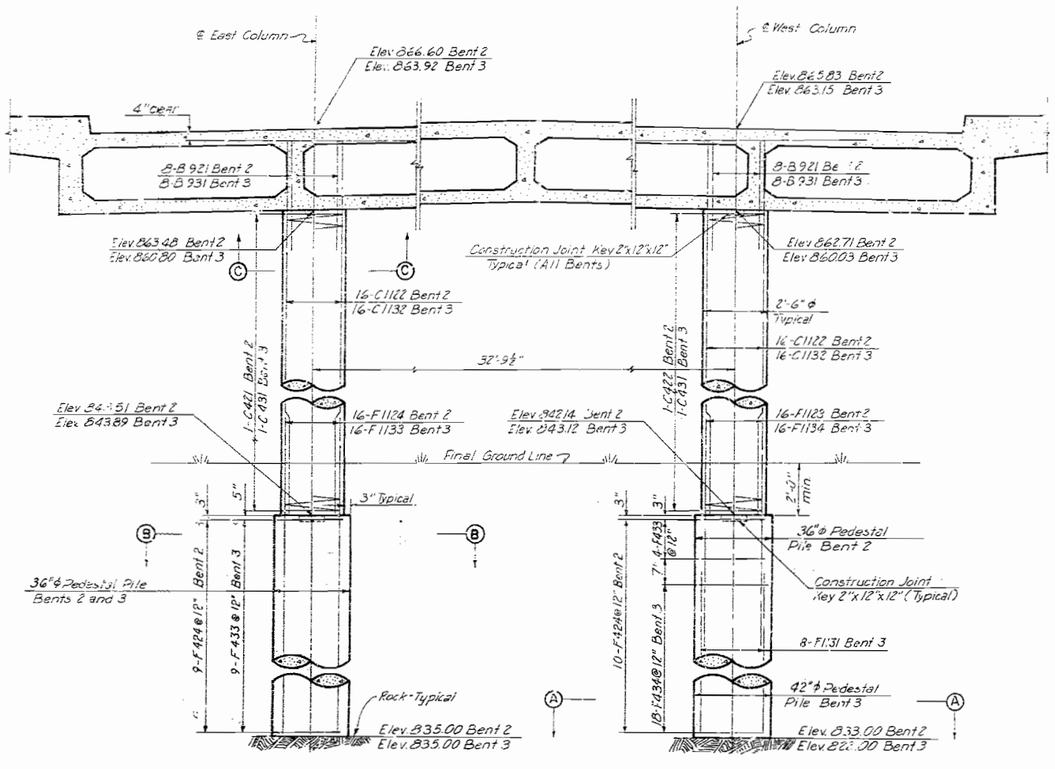
JACKSON COUNTY

SHEET 5 OF 14

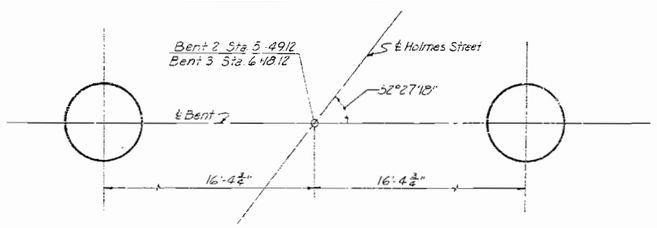
A-825

MISSOURI STATE HIGHWAY DEPARTMENT

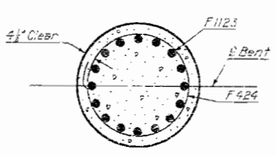
STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5 MO.			52	
DIST. NO.	COUNTY		ROUTE NO.	
4				



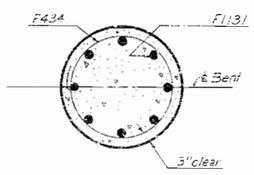
ELEVATION BENTS 2 AND 3



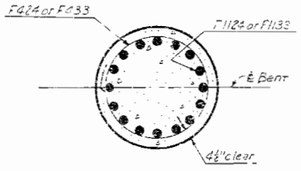
FOOTING PLAN BENTS 2 AND 3



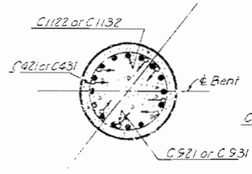
SECTION A-A
Bent 2



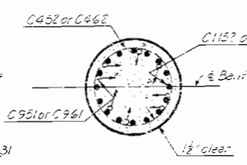
SECTION A-A
Bent 3



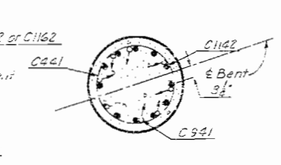
SECTION B-B



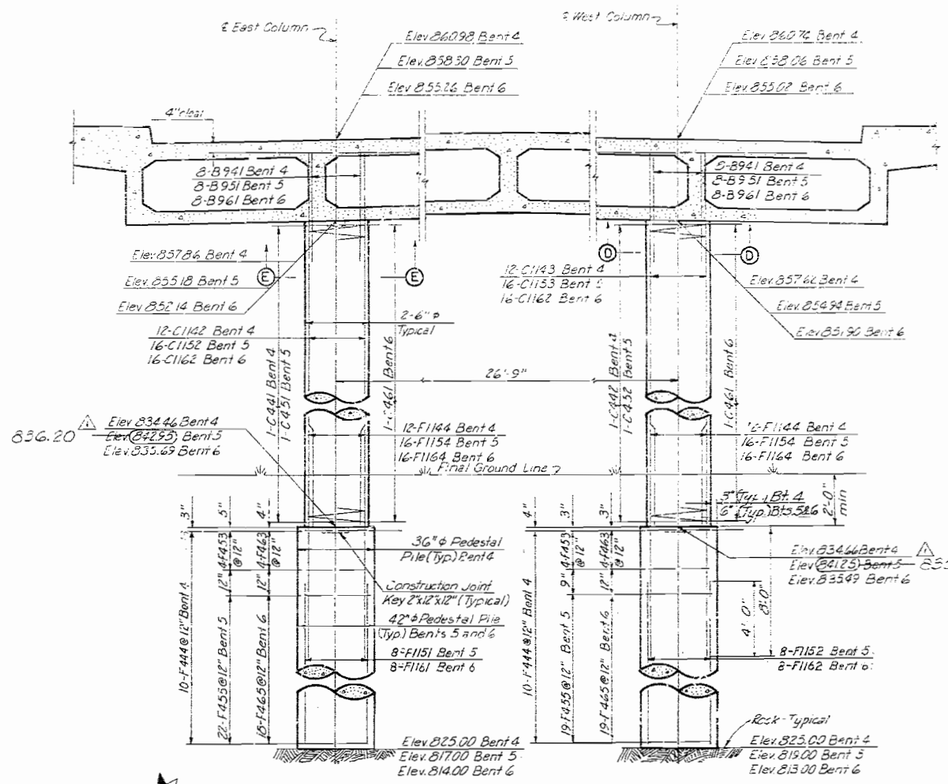
SECTION C-C



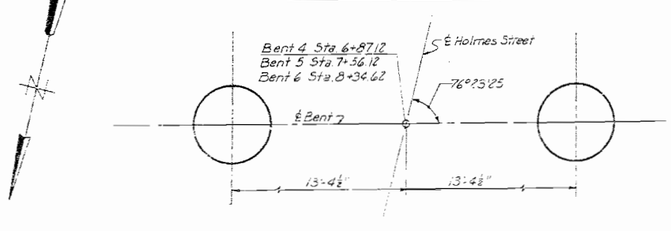
SECTION D-D
Section D-D thru Bents 3 and 6 shown.



SECTION E-E
Section E-E thru Bent 4 shown



ELEVATION BENTS 4,5 AND 6



FOOTING PLAN BENTS 4,5 AND 6

Notes
Arrows shown in sections C-C, D-D and E-E indicates alignment of bars in cap beam.

Elevations shown are at ℄ columns

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE LDL DATE 3-20-60 TRACED DATE
CHECKED DEP DATE 10-27-60 SCALE

NOTE: This drawing is not to scale. Follow dimensions.

⚠ Revised 11-6-61

BENTS 2,3,4,5 AND 6

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO

PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LANE A

JACKSON COUNTY

SHEET 6 OF 14

A-825

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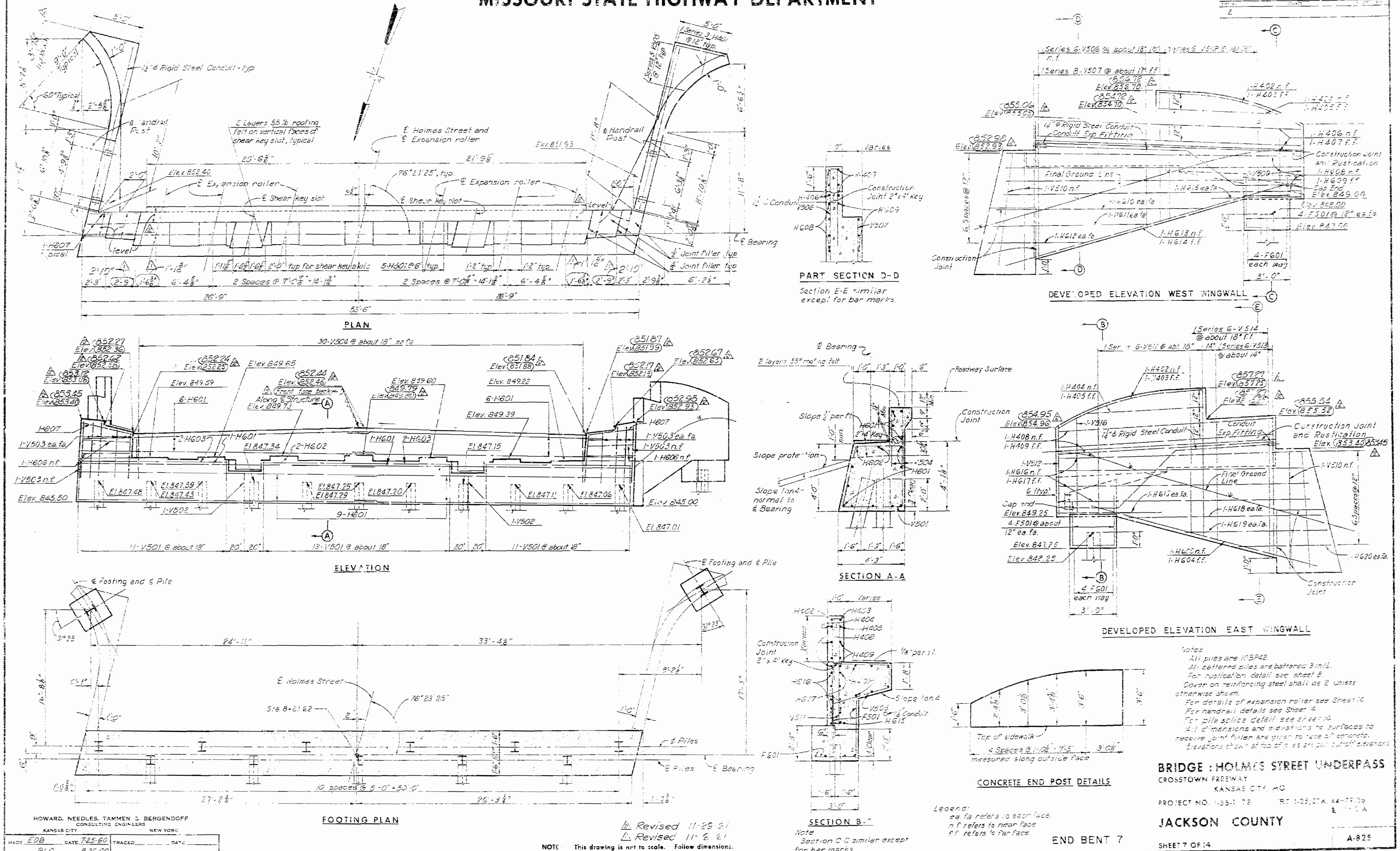
MISSOURI STATE HIGHWAY DEPARTMENT



Notes
All piles are 10BP42.
All battered piles are battered 3 in 12.
For rustication detail see Sheet 8.
Cover on reinforcing steel shall be 2" unless otherwise shown.
For details of expansion roller see Sheet 14.
For handrail details see Sheet 12.
For pile splice detail see Sheet 14.
All dimensions and elevations are to surfaces to receive joint filler are given to face of concrete.
Elevations shown at top of piles are pile cutoff elevations.

Legend:
ea. fa. refers to each face.
n.f. refers to near face.
f.f. refers to far face.

Revised 11-29-61
Revised 11-6-61

NOTE: This drawing is not to scale. Follow dimensions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE EDB DATE 7-25-60 TRACED DATE
CHECKED BLC DATE 8-29-60 SCALE

END BENT 7

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (78)

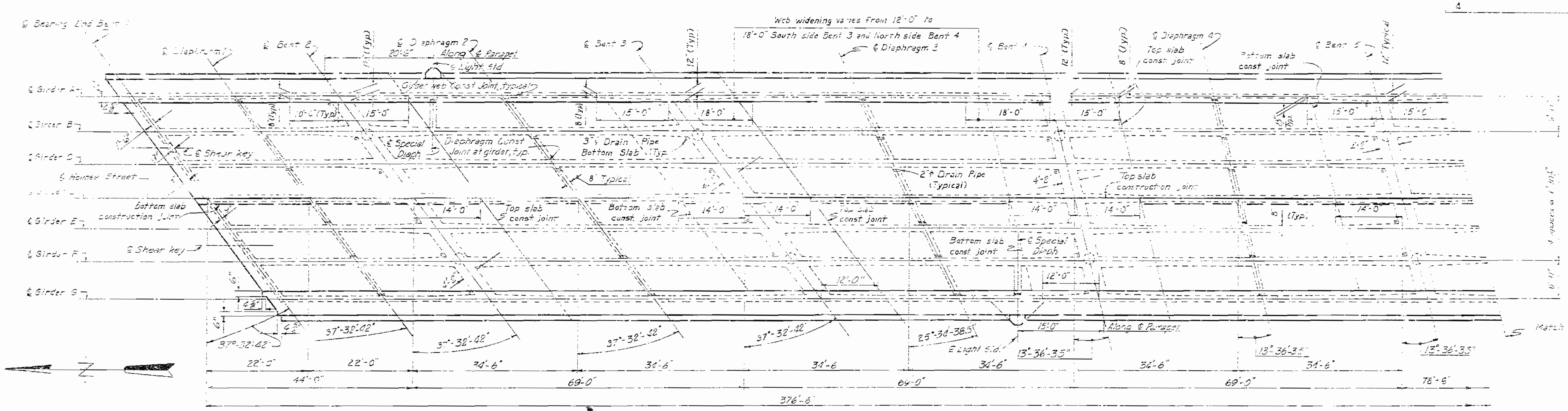
JACKSON COUNTY

SHEET 7 OF 14

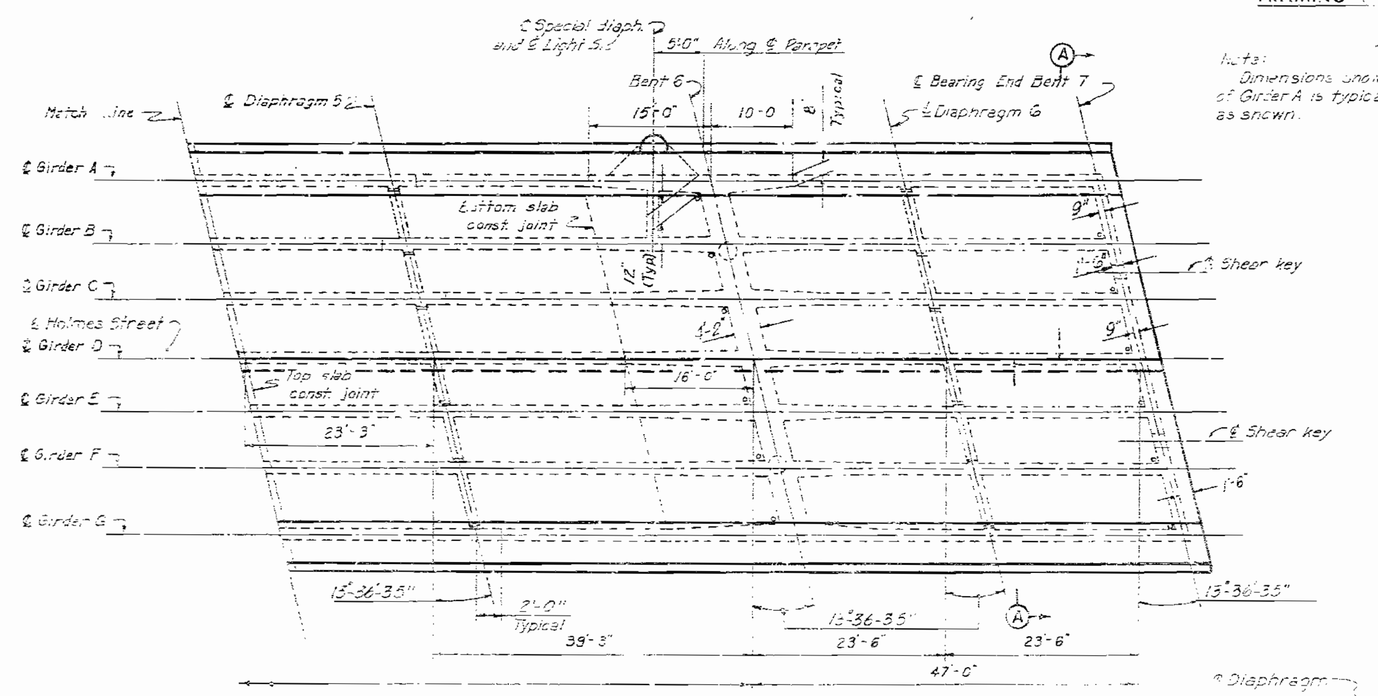
A-825

257

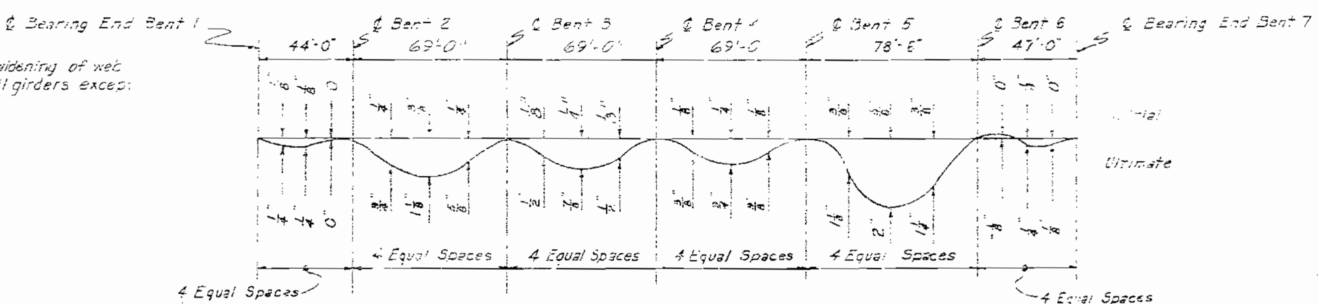
MISSOURI STATE HIGHWAY DEPARTMENT



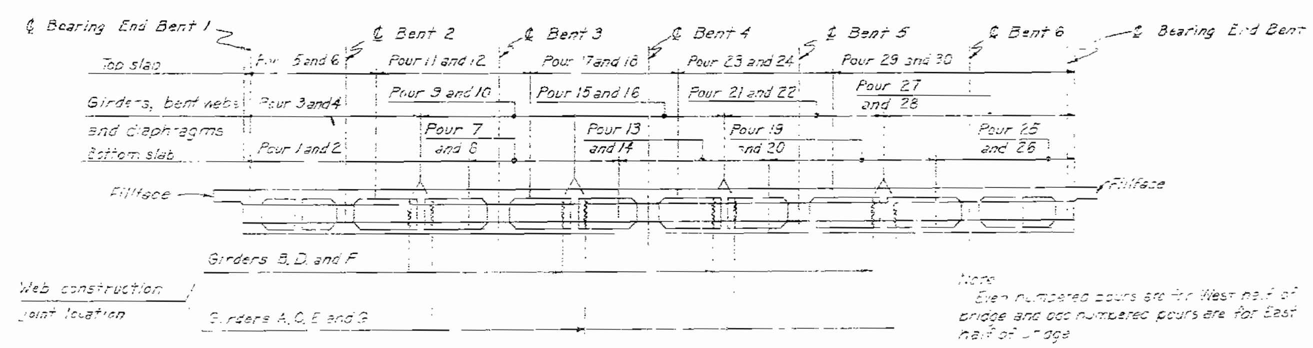
FRAMING PLAN



Note:
Dimensions shown for widening of web of Girder A is typical for all girders except as shown.

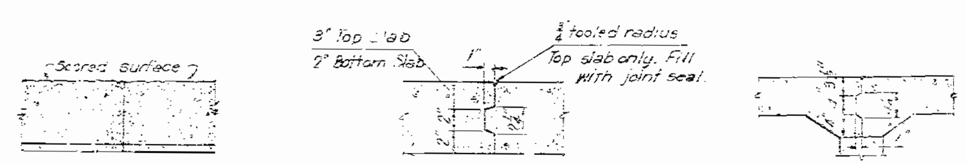


DEAD LOAD DEFLECTION DIAGRAM



Note:
Even numbered pours are for West half of bridge and odd numbered pours are for East half of bridge.

POURING SEQUENCE

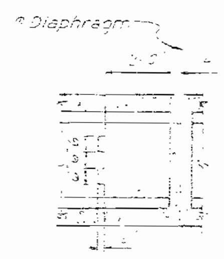


UNDER CURB

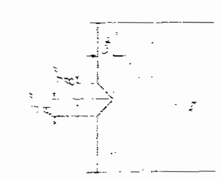
TRANSVERSE

LONGITUDINAL

CONSTRUCTION JOINTS



GIRDER WEB



RUSTICATION DETAIL

Notes:
For longitudinal top slab steel see Sheet 9.
For longitudinal bottom slab steel see Sheet 10.
For transverse top slab, bent and end diaphragm steel see Sheet 11.
For transverse bottom slab and girder web steel see Sheet 12.
For sidewalk and parapet steel see Sheet 13.
Forms shall be constructed for ultimate deflections.
For Section A-A see Sheet 12.

NOTE: This drawing is not to scale. Follow dimensions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE RVS DATE 6/15/60 TRACED ___ DATE ___
CHECKED [illegible] DATE [illegible] SCALE ___

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) RTE. I-35 STA. [illegible] 79.26 ℄ LANE A

JACKSON COUNTY

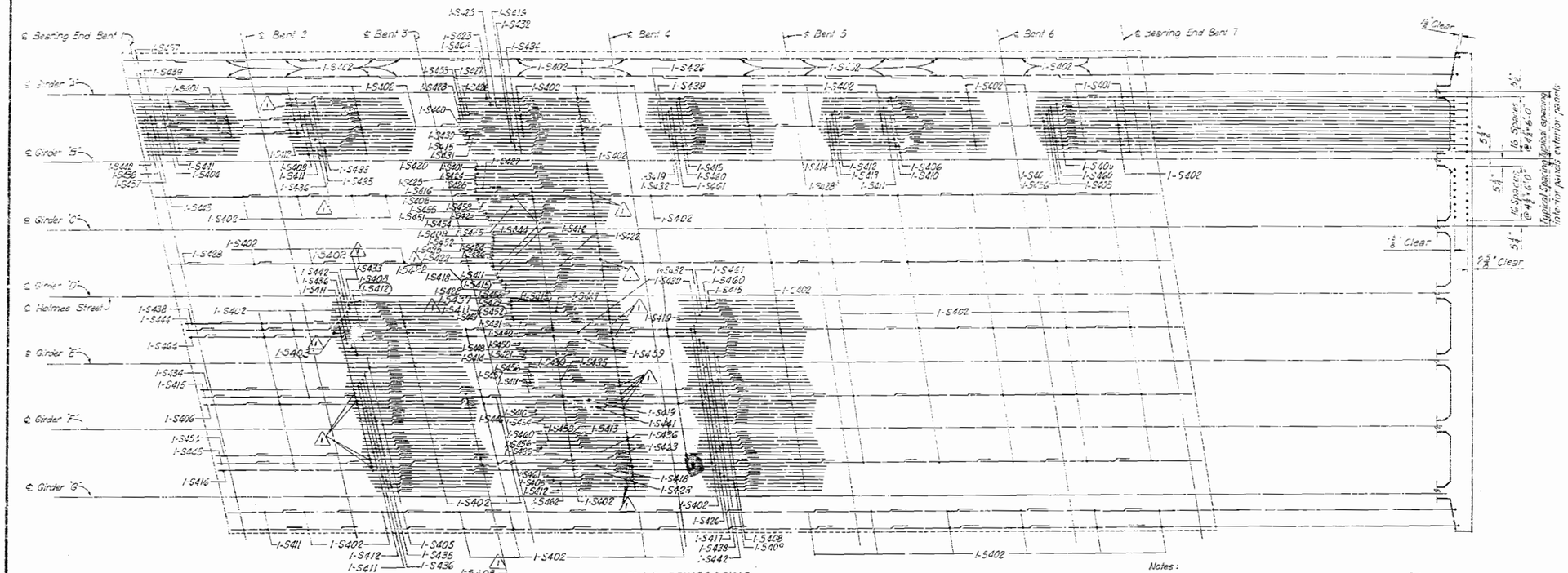
FRAMING PLAN

SHEET 8 OF 14

A-825

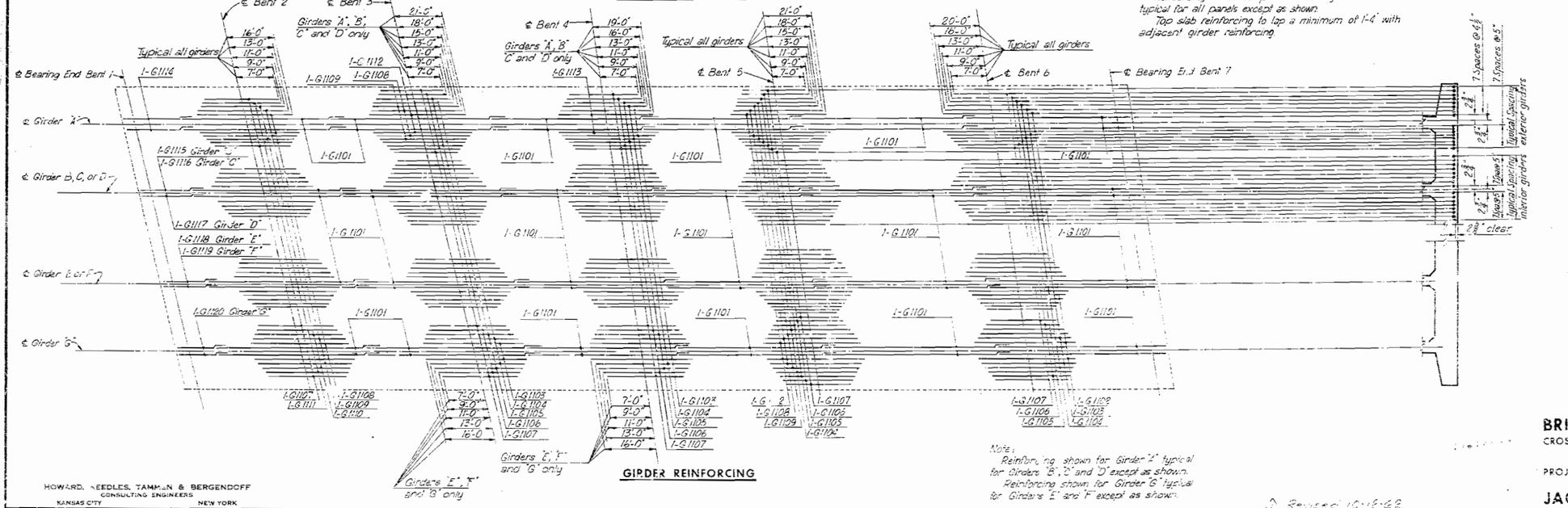
MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
5	MO.		
DISTRICT	COUNTY		
4			



SLAB REINFORCING

Notes:
Reinforcing shown for panel between girders 'A' and 'B' typical for all panels except as shown.
Top slab reinforcing to lap a minimum of 1'-4" with adjacent girder reinforcing.



GIRDER REINFORCING

Note:
For sidewalk reinforcing to be placed with top slab reinforcing, see sheet 13.

Note:
Reinforcing shown for Girder 'A' typical for Girders 'B', 'C' and 'D' except as shown.
Reinforcing shown for Girder 'G' typical for Girders 'E' and 'F' except as shown.

△ Revised 10-16-62

TOP SLAB LONGITUDINAL REINFORCEMENT

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE H.Z.C. DATE 7-19-62 TRACED _____ DATE _____
CHECKED EDB DATE 6-14-60 SCALE _____

NOTE: This drawing is not to scale. Follow dimensions.

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.

PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+19.26 ℄ LANE A

JACKSON COUNTY

SHEET 9 OF 14

A-825

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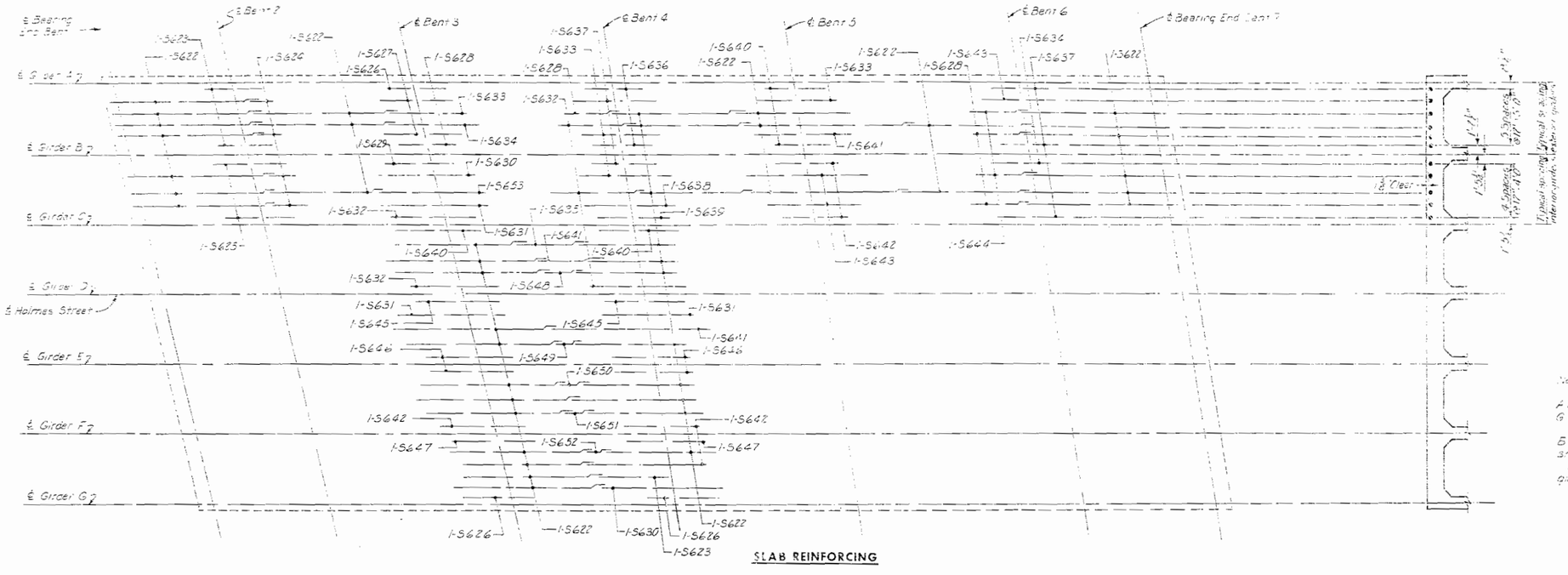
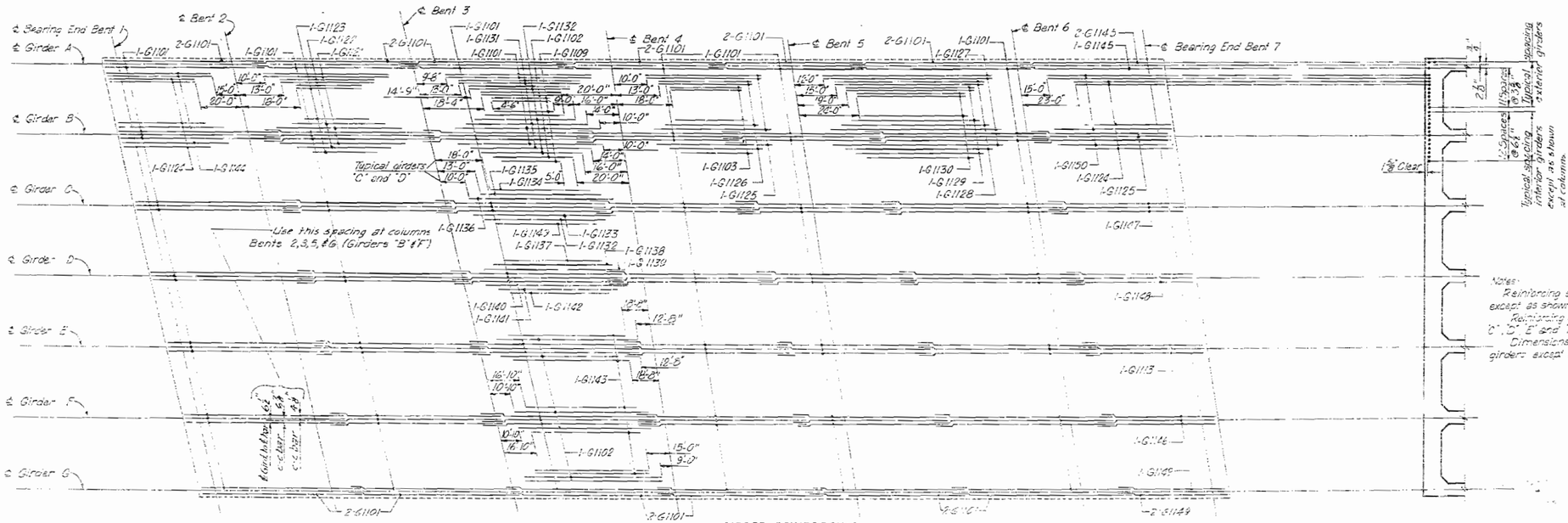
MISSOURI STATE HIGHWAY DEPARTMENT



SLAB REINFORCING



GIRDER REINFORCING

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE W.Z.D.	DATE 7-24-62	MAGER	DATE
CHECKED E.D.S.	DATE 10-28-62	SCALE	

NOTE: This drawing is not to scale. Follow dimensions.

BOTTOM SLAB LONGITUDINAL REINFORCEMENT

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LINE A

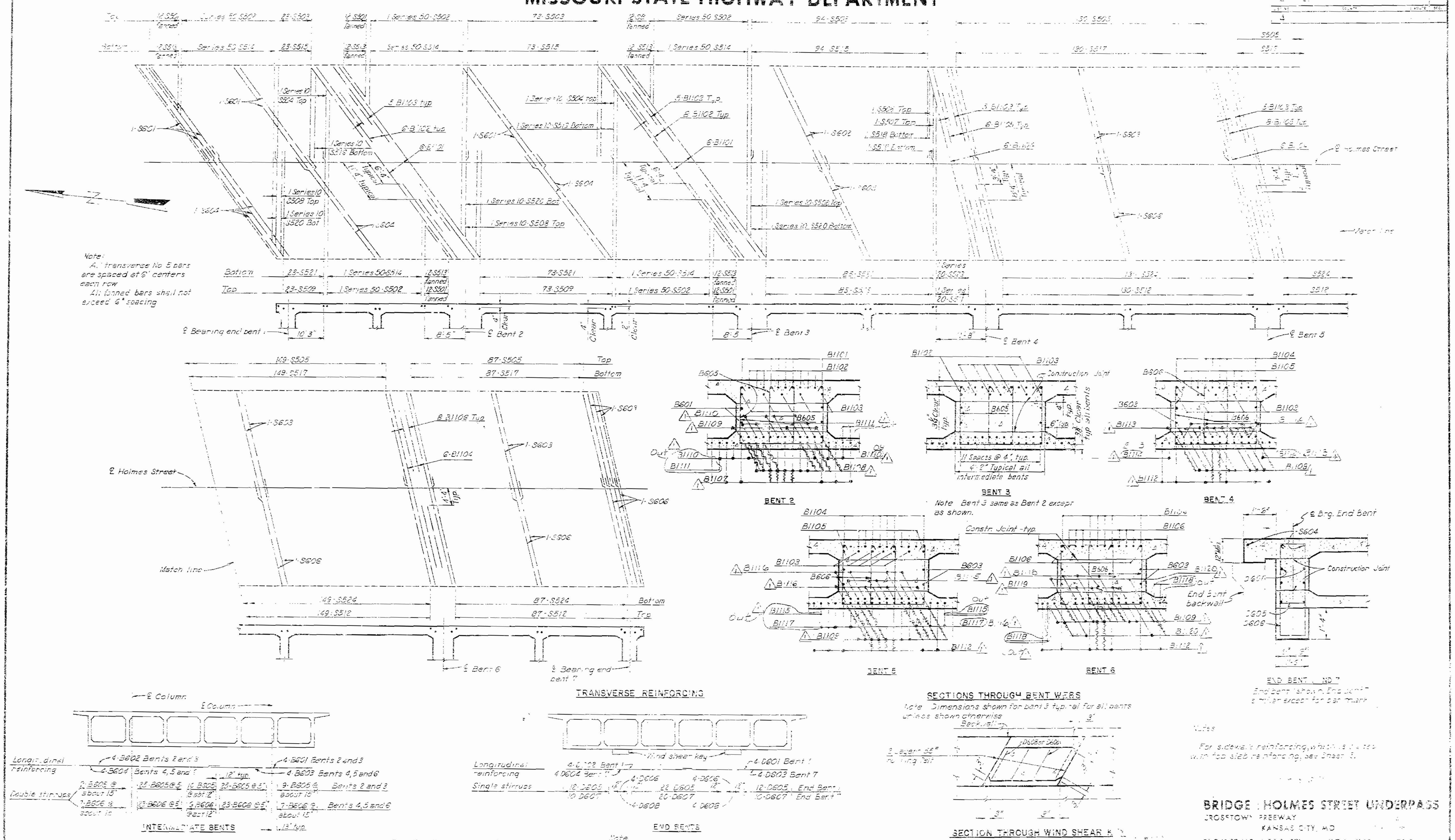
JACKSON COUNTY

SHEET 10 OF 14

A-E .5

260

MISSOURI STATE HIGHWAY DEPARTMENT



Notes

For sidewalk reinforcing, which is detailed with top slab reinforcing, see Sheet 3.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

Made E.D.B. Date 8-5-62 — Checked L.B.L. Date 12-5-62

NOTE: This drawing is not to scale. Follow dimensions.

TOP SLAB TRANSVERSE, BENT AND END DIAPHRAGM WEB REINFORC.

BRIDGE: HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO

PROJECT NO. I-35-1 (22) — (RT. I-35) STA. 44+77.23 ℄ LANE 4

JACKSON COUNTY

SHEET 11 OF 14 — A-825

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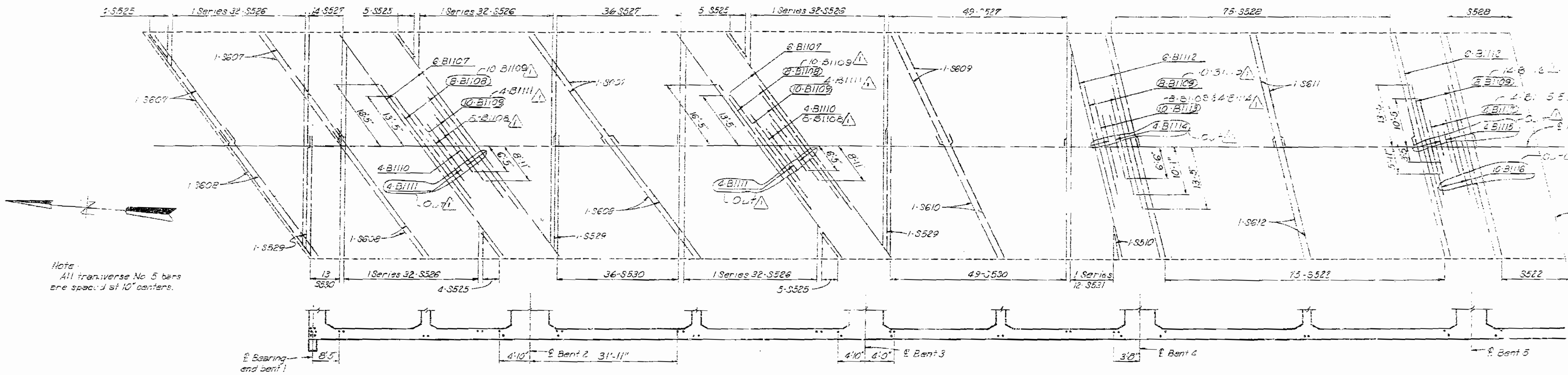
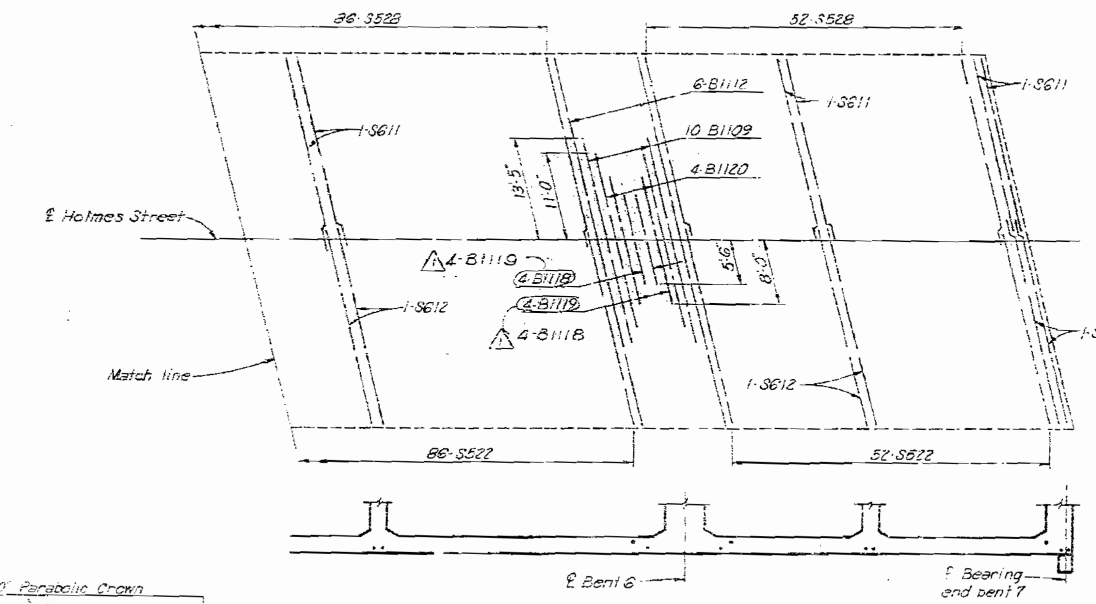
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.				
DIST. NO.		COUNTY		ROUTE	SEC.
4					



Note:
All transverse No. 5 bars are spaced at 10" centers.



TRANSVERSE REINFORCING

No. 8 longitudinal reinforcing	Girder A	2-G802	12-G801
	Girder B	2-G803	12-G801
	Girder C	2-G804	12-G801
	Girder D	2-G805	12-G801
	Girder E	2-G806	12-G801
	Girder F	2-G807	12-G801
	Girder G	2-G808	12-G801
No. 4 Longitudinal reinforcing	Girder A	2-G402	32-G401
	Girder B	2-G403	32-G401
	Girder C	2-G404	30-G401
	Girder D	2-G405	30-G401
	Girder E	2-G406	30-G401
	Girder F	2-G407	30-G401
	Girder G	2-G408	30-G401

Stirrup spacing: 9" 15" 7½" 5½" 7½" 15" 7½" 5½" 7½" 15" 7½" 5½" 7½" 15" 7½" 5½" 7½" 15" 7½" 5½" 7½" 15" 9"

No. 5 Double Stirrup spacing — No. of spaces:

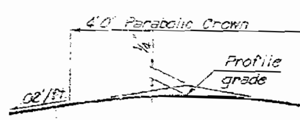
																													Total number of spaces
Girder A-G501-G502	8	13	24	11	19	23	15	23	19	19	22	24	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	519
Girder B G502	8	13	24	11	19	23	15	23	19	19	23	21	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	516
Girder C G502	8	13	24	11	19	23	15	23	19	19	23	18	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	513
Girder D G502	8	13	24	11	19	23	15	23	19	19	23	15	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	510
Girder E G502	8	13	24	11	19	23	15	23	19	19	23	12	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	507
Girder F G502	8	13	24	11	19	23	15	23	19	19	23	9	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	504
Girder G-G501-G502	8	13	24	11	19	23	15	23	19	19	23	6	23	19	19	2[illegible]	15	23	19	19	23	15	23	19	11	24	15	8	501

℄ Bearing end bent 1 — ℄ Bent 2 — ℄ Bent 3 — ℄ Bent 4 — ℄ Bent 5 — ℄ Bent 6 — ℄ Bearing end bent 7

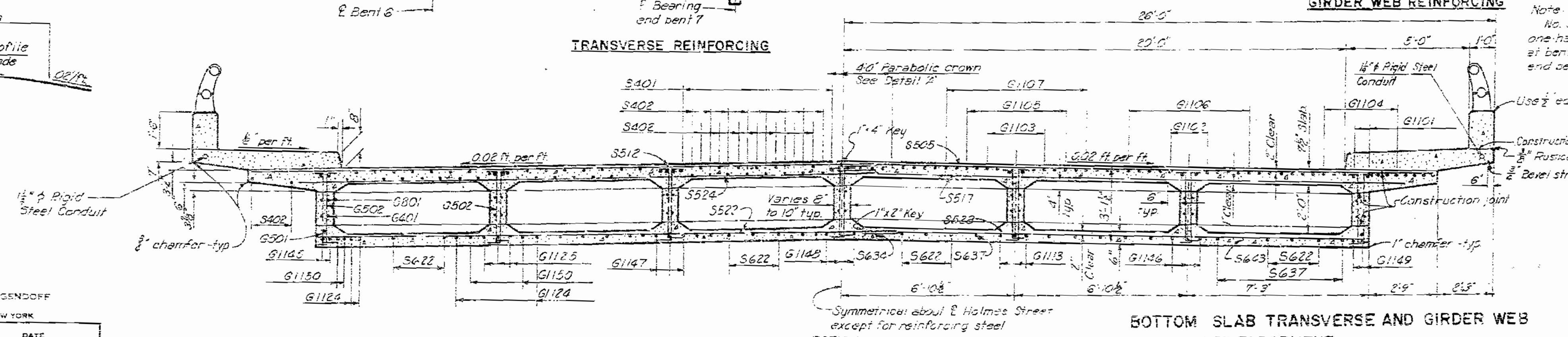
GIRDER WEB REINFORCING

Note:
No. 5 double stirrup spacing begins one-half space from face of bent webs at bents 2 thru 6, and at ℄ bearing at end bents 1 and 7.

Note:
For location of Section A-A see sheet 8.
For reinforcing steel in sidewalks and parapets see Sheet 13.
For handrail details see Sheet 14.



DETAIL 'A'



SECTION A-A

BOTTOM SLAB TRANSVERSE AND GIRDER WEB REINFORCEMENT

△ Rev 9-14-62

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE EDB	DATE 8-11-60	TRACED	DATE
CHECKED LDL	DATE 12-12-60	SCALE	

NOTE: This drawing is not to scale. Follow dimensions.

BRIDGE: HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO

PROJECT NO. I-35-1 (22) (RT I-35) STA. 44+79.26 ℄ LANE A

JACKSON COUNTY

SHEET 12 OF 14

A-825

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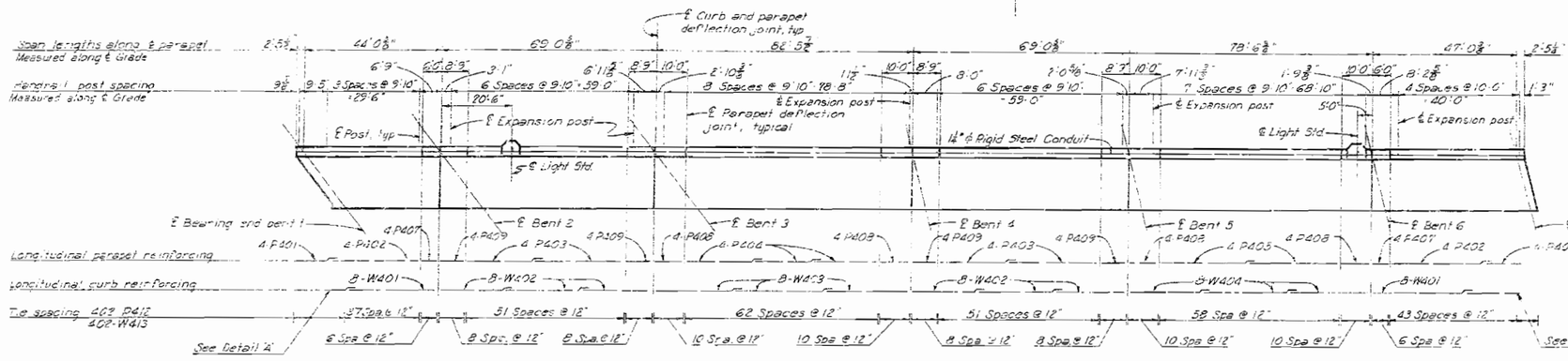
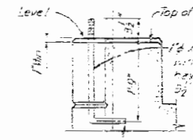
MISSOURI STATE HIGHWAY DEPARTMENT

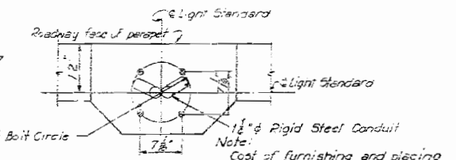
STATE | FEDERAL PROJECT NO. | SHEET NO. | TOTAL SHEETS
MO. | | 4 |



Notes:
For continuation of handrail spacing on end spans 1 and 7 see Sheets 5 and 7.
For handrail details see Sheet 14.

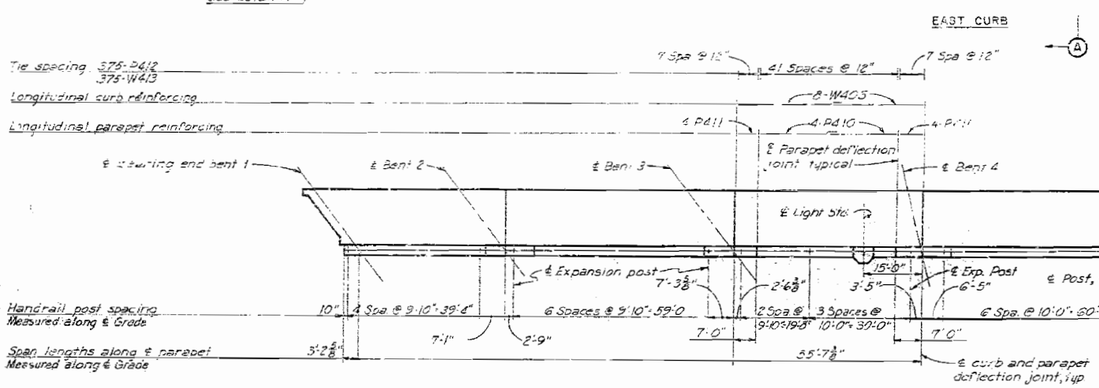


ANCHOR BOLT DETAIL



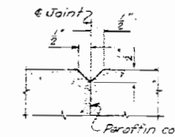
Note:
Cost of furnishing and placing anchor bolts shall be included in price bid for other items of work.

ANCHOR BOLT SETTING PLAN

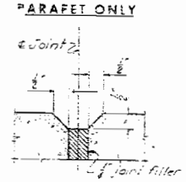


Note:
Details of west curb for spans 1, 2, 4, 5 and 6 are the same as east curb unless otherwise shown.

CURB REINFORCING

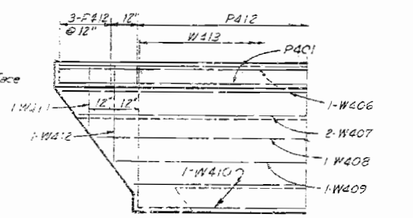


PARAPET ONLY

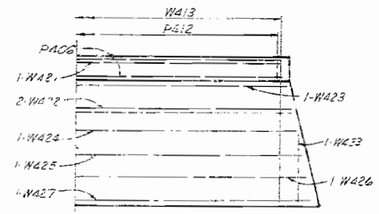


AT CURB AND PARAPET DEFLECTION JOINT DETAILS

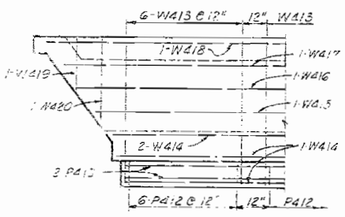
Note:
reinforcing shall stop 2" clear of joints.



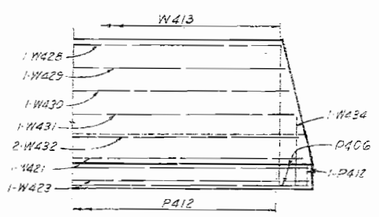
DETAIL A - EAST CURB



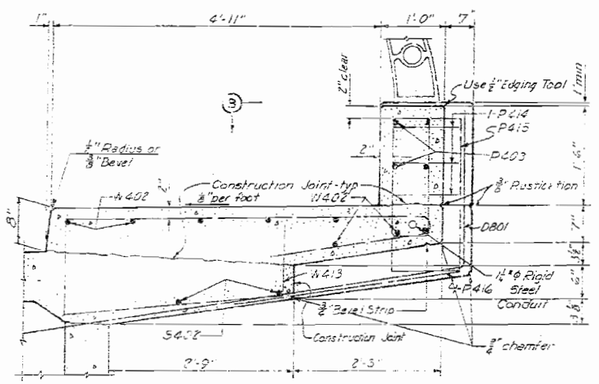
DETAIL B - EAST CURB



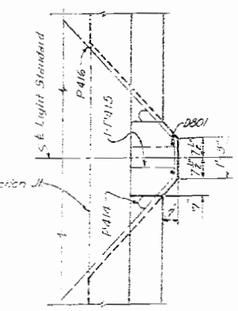
DETAIL A - WEST CURB



DETAIL B - WEST CURB



SECTION A-A



VIEW B-B

FOR INFORMATION ONLY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE EDB DATE 11-17-60 TRACED DATE
CHECKED LDL DATE 12-19-60 SCALE

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) RT. I-35 STA. 444+79.26 ℄ LANE A

JACKSON COUNTY

SIDEWALK AND PARAPET DETAILS

SHEET 13 OF 14

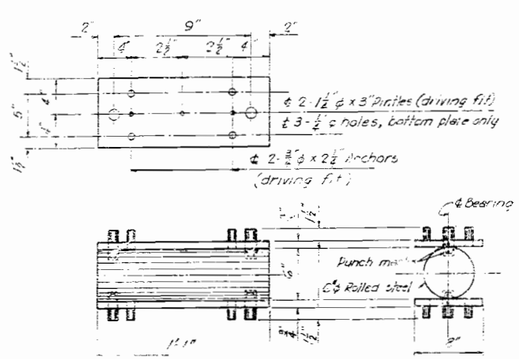
A-825

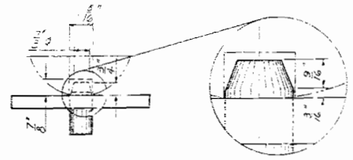
NOTE: This drawing is not to scale. Follow dimensions.

2 9 3

MISSOURI STATE HIGHWAY DEPARTMENT

ST.	FISCAL YEAR	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
MO.				

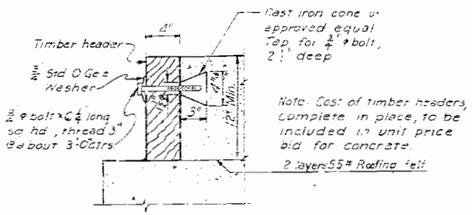




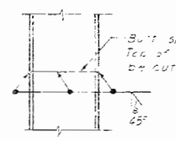
Note:
Top and bottom plates to be U55 T-1 Alloy or equivalent. Materials for pintles and rollers shall be cold finished carbon steel (A151 - C1042 or C1045 (turned and polished).
All bearing plates shall be straightened to plane surfaces.
E 6015 or E 6016 welding electrodes shall be used.
Paint: Shop: One coat red lead except top surface of top plate and bottom surface of bottom plate.
Field: All exposed surfaces first coat brown, second coat aluminum.

No. Expansion Rollers Req'd:
End Bent 1 - 7
End Bent 7 - 7

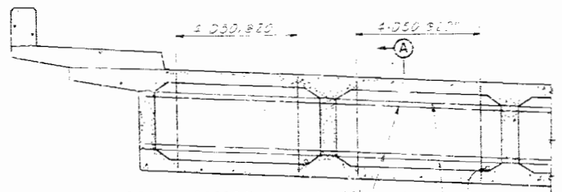
EXPANSION ROLLER



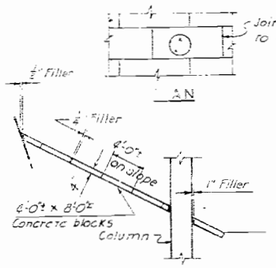
TIMBER HEADER DETAIL



PILE SPLICE DETAIL

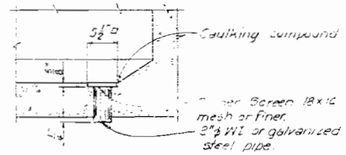


DIAPHRAGM DETAILS



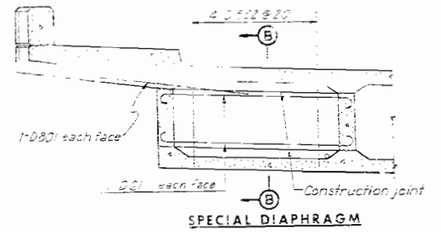
Note:
See Section 157.1.7 of Standard Specifications for filler.

SLOPE PROTECTION

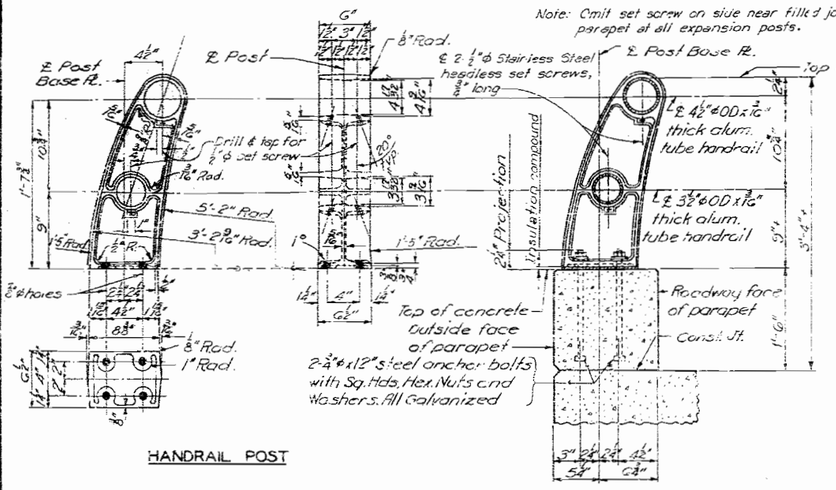


Note:
If galvanized steel pipe is used, the screen shall be aluminum.
Cost of furnishing and placing pipe, screen, and caulking compound shall be included in price bid for other items of work.

BOTTOM SLAB DRAIN



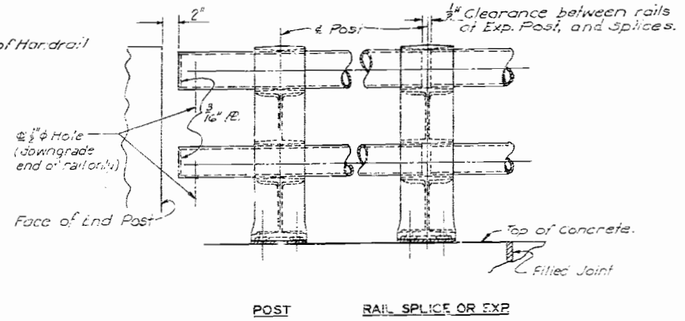
SPECIAL DIAPHRAGM



Note: Omit set screw on side near filled joint in parapet at all expansion posts.

HANDRAIL POST **SECTION THRU HANDRAIL**

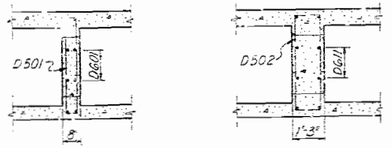
DOUBLE TUBE ALUMINUM RAILING



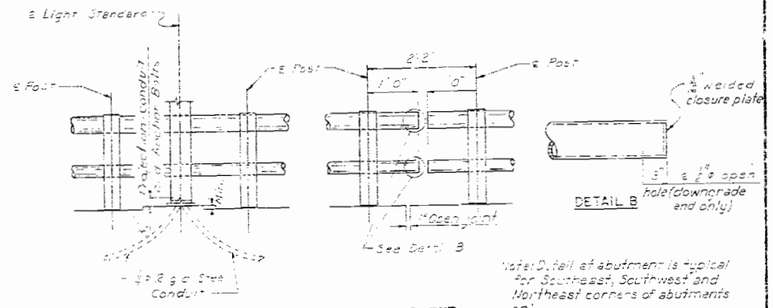
POST **RAIL SPLICE OR EXP**

TYPICAL HANDRAIL DETAILS

Note: All handrail posts shall be set normal to grade.
Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet.
Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be ¼". Where more fitting of post is required for proper alignment, concrete bearing areas shall be ground down.
All parts of handrail except anchor bolts, nuts, washers and set screws are to be of aluminum material.
The contract unit price per linear foot of Bridge Rail shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.
All fillets ¾" except as noted.
All draft 3° except as noted.
Rails to be fabricated in two or more panel lengths unless otherwise approved.
For handrail post spacing see sheet 13.



SECTION A-A **SECTION B-B**



AT STANDARD **AT ABUTMENT**

Note: Detail at abutment is typical for Southeast, Southwest and Northeast corners of abutments only.

TREATMENT OF HANDRAIL

2042

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE LL	DATE 12-15-60	TRACED	DATE
CHECKED EDB	DATE 12-16-60	SCALE	

NOTE: This drawing is not to scale. Follow dimensions.

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26 ℄ LINE A
JACKSON COUNTY

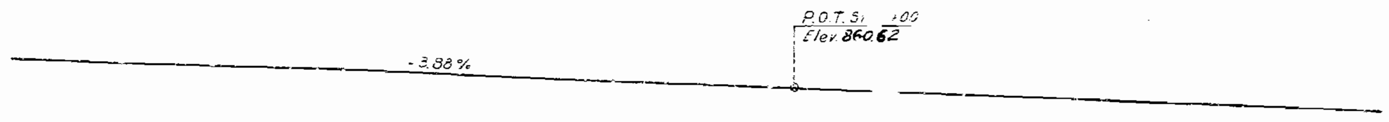
MISCELLANEOUS DETAILS

SHEET 14 OF 16

A-825

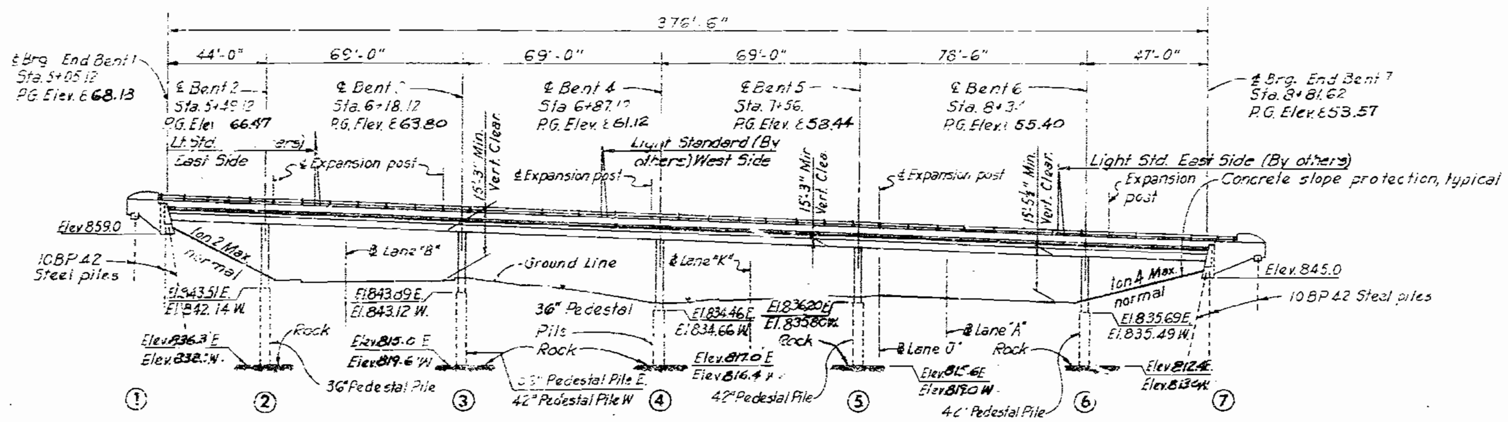
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-35-1(22)2			
DIST. NO.		COUNTY			
4		JACKSON			

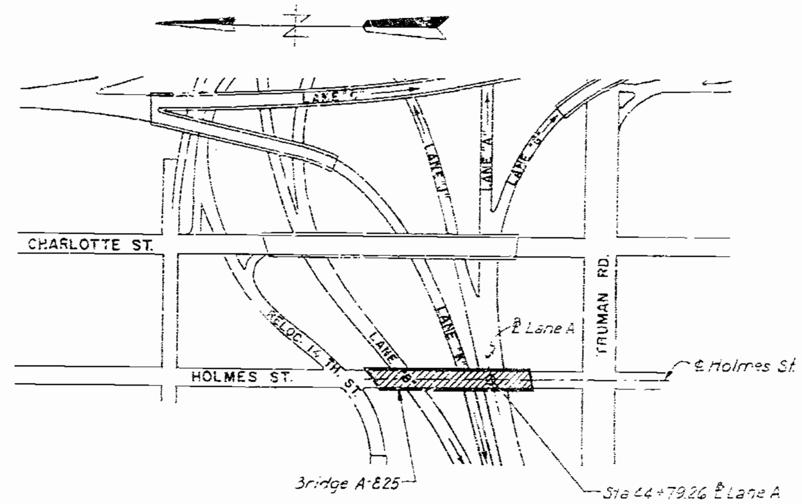


PROFILE GRADE

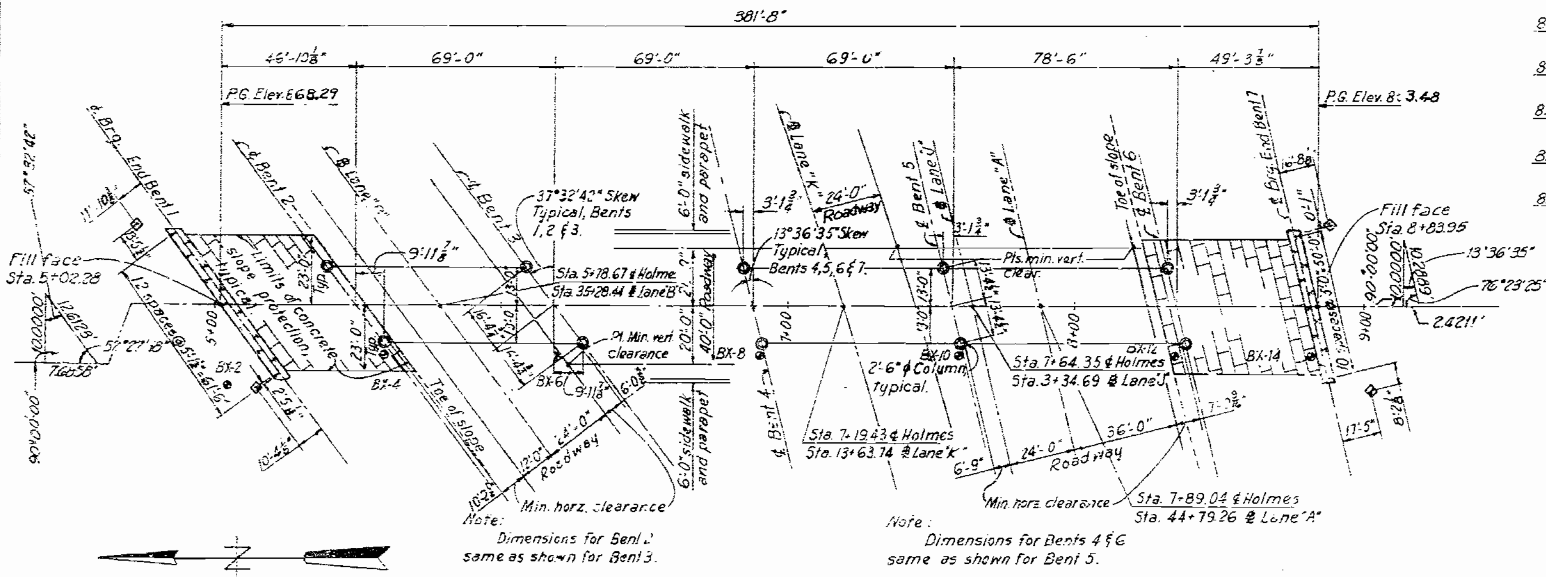
44'-0"; 69'-0"; 69'-0"; 69'-0"; 78'-6"; 47'-0" CONTINUOUS BOX GIRDER SPANS



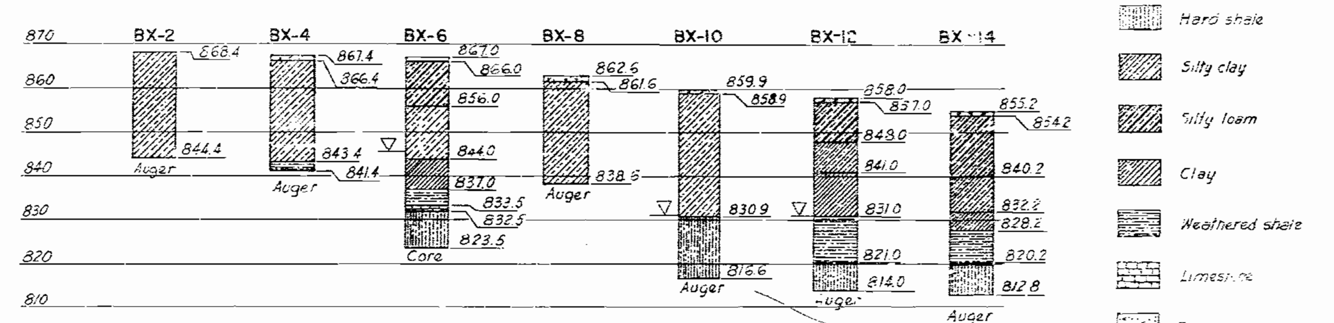
ELEVATION



LOCATION SKETCH



PLAN



BORING LOG

Notes:
Boring log locations are noted thus: BX-2
Elevation shown at top of boring is top of ground.
Bottom elevations of borings BX-2, BX-4, BX-8, BX-12 and BX-14, are top of limestone refusal, and borings BX-6 and BX-10 are bottom in shale.
▽ indicates water level.
E. denotes East Column and W. denotes West Column.
Concrete slope protection included under roadway contract. For details see sheet 14.
Bench Mark:
BM Northeast corner of Northwest wingwall sidewalk fillet Bent #1 Bridge A-825 Elev. 868.29.

BORING LEGEND

- Hard shale
- Silty clay
- Silty loam
- Clay
- Weathered shale
- Limestone
- Street concrete
- Fill

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE G.A. DATE 7-8-60 TRACED ____ DATE ____
CHECKED E.D.B. DATE 11-10-60 SCALE

NOTE: This drawing is not to scale. Follow dimensions.

GENERAL PLAN AND ELEVATION

SUBMITTED BY:
REGISTERED PROFESSIONAL ENGINEER
MISSOURI NO. E - 253

BRIDGE: HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO
PROJECT NO. I-35-1(24)
JACKSON COUNTY
SUBMITTED BY ____ BRIDGE ENGINEER
APPROVED BY ____ CHIEF ENGINEER
STD 54.00
A-825

FINISHED

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-35-1(22)2		54	
DIST. NO.		COUNTY		ROUTE	STA.
4		JACKSON		I-35	

FINAL PLANS

GENERAL NOTES

DESIGN SPECIFICATION:

A.A.S.H.O. 1957 with tentative revisions for 1958 and 1959.

DESIGN LOADING

H20-44. 15 lbs. per sq. ft. future wearing surface.

CONCRETE

Concrete Stress - Class B 1 fc = 1,600 psi.
Class B fc = 1,200 psi.
Concrete for superstructure Class B 1 air-entrained. Concrete for pedestal piles and substructure Class B air-entrained.

REINFORCING STEEL

Allowable stress = 20,000 psi. All splices in reinforcing steel 32 bar diameters.

Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.

Dimensions shown on the plans from the reinforcing steel to outside edge of concrete are all clear dimensions.

All bending dimensions are from out to out of bars.

SEALING OF DECKS:

Superstructure deck surfaced sealed. See Special Provisions.

UTILITIES:

All utilities, unless shown otherwise, removed or relocated by others. The Contractor will notify the Owner of the utilities of his work schedule sufficiently in advance to allow time for disconnecting utilities.

SHIPPING:

Permits obtained for all truck loads over legal length.

JOINT FILLER

Where joint filler is specified on the plans, it conform with the requirements for Gray Sponge Rubber Compound Joints as given in Section 157.2.4 of the Standard Specifications.

METAL CONDUITS:

Expansion fittings required in metal conduit at all expansion joints. Expansion fittings O.Z. Electrical Manufacturing Company Type AX125 with AJ bonding jumper or equal.

PILING

All piles conform with details and notes on Sheet No. 14.

All piles driven to or into solid rock, boulders, shale, or cemented gravel, or to not less than full length authorized, and to sustain a load of at least 37 tons per pile for 10 BP 42.

All piles driven with a power hammer. See Section 52.4.7 of Standard Specifications for required painting of steel piles.

WELDING:

Qualifications of welding operators required.

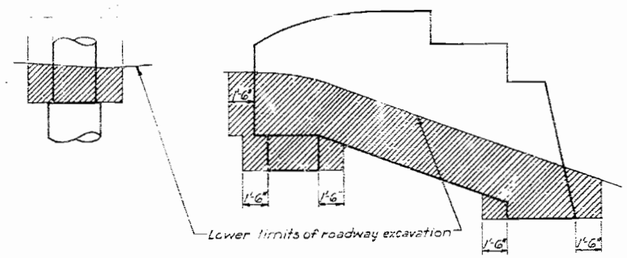
EXCAVATION TO ROCK

All loose, shelly or disintegrated rock removed and footings or pedestal piles placed on hard, solid, undisturbed rock. If soft rock or shale is encountered the pedestal piles carried at least 12" into and cast against vertical faces of same. In no case shall the pedestal piles be placed higher than elevations shown. The maximum ultimate presumptive bearing value of 10 tons/sq. ft. was used in design of 42"ϕ pedestal piles on rock, and 50 tons/sq. ft was used in design of 36"ϕ pedestal piles on rock.

QUANTITIES

ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL	
Class 1 Excavation for Structure	Cu.Yd.	192		192	
36"ϕ Pedestal Pile	Lin.Ft.	75.9		75.9	
42"ϕ Pedestal Pile	Lin.Ft.	106.7		106.7	
Steel Piles in Place (10BP42)	Lin.Ft.	664		664	
Steel Pile Cut-Offs (10BP42)	Lin.Ft.	9		9	
Class B Concrete (Substructure)	Cu.Yd.	121		121	
Class B 1 Concrete	Cu.Yd		1164.3	1164.3	
Reinforcing Steel	Lbs.	28,050	463,440	491,490	
Fabricated Structural Steel Bearings	Lbs.		2130	2130	
Bridge Rail (Two Tube Type)	Lin.Ft.		785	785	
Conduit System (On Structure)	L. Sum			1	
15% Added Cement	Cu.Yd	96		96	Contingent
Drilled Test Holes	Lin.Ft.	76		76	Contingent

All excavation paid for as Class 1 Excavation for Structures. Sketches below show limits of excavation for pay purposes.



All concrete and reinforcement of intermediate bents above top of pedestal piles are included in superstructure quantities.
Reinforcement in pedestal piles included in substructure quantities.
Estimated quantity of Class B Concrete (substructure) includes all concrete in end bents. All other concrete, except for pedestal piles, is included in estimated quantity of Class B 1 Concrete.

The estimated quantities shown on plans for piles are based on the following lengths: 20'at end bent 1 and 25'at end bent 7. These lengths are approximate only. Proper lengths to give required bearing and/or penetration authorized by the Engineer.

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BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.26
℄ LANE A
JACKSON COUNTY

A-825

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE LL	DATE 1-12-61	TRACED	DATE
CHECKED ECB	DATE 1-24-61	SCALE	

NOTE: This drawing is not to scale. Follow dimensions.

GENERAL NOTES

FINAL PLANS

266

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FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			55	
4					

MISSOURI STATE HIGHWAY DEPARTMENT

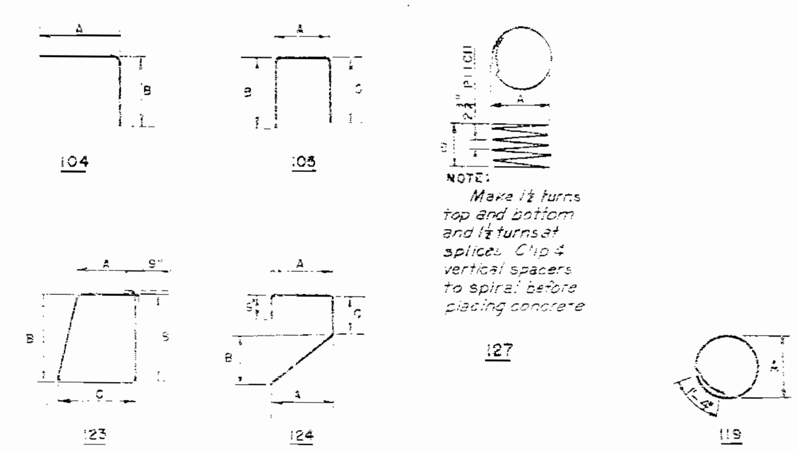
BILL OF REINFORCEMENT

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		SUBSTRUCTURE END BENT 1				
16	F511	3'-5"	Str			
16	F611	2'-6"	Str			
6	H411	11'-10"	Str.			
2	H412	10'-5"	Str. *			
2	H413	11'-2"	Str. *			
2	H414	8'-8"	Str. *			
2	H415	9'-3"	Str. *			
3	H416	[illegible]-8"	Str. *			
3	H417	16'-3"	Str. *			
3	H418	10'-3"	Str. *			
3	H419	10'-11"	Str. *			
35	H511	3'-6"	104	2'-6"	1'-0"	
32	H638	33'-6"	Str			
[illegible]	H639	21'-4"	Str			
2	H640	18'-10"	Str.			
1	H641	12'-2"	Str. *			
1	H642	12'-10"	Str. *			
4	H643	6'-0"	Str.			
6	H644	6'-1"	Str.			
3	H645	19'-4"	Str. *			
3	H646	20'-6"	Str. *			
4	H647	15'-6"	Str.			
1	H648	17'-9"	Str. *			
1	H649	19'-6"	Str. *			
3	H650	19'-6"	Str. *			
3	H651	14'-2"	Str. *			
2	H652	9'-3"	Str.			
2	H653	7'-2"	Str.			
2	H654	5'-6"	Str.			
42	V525	15'-5"	123	2'-10½"	3'-7"	3'-10½"
2	V526	13'-11"	123	3'-1½"	2'-8½"	3'-10½"
72	V527	5'-6"	Str			
5	V528	17'-3"	124	1'-8" to 4'-9"	5" to 1'-2"	1'-4"
16	V529	5'-6"	Str			
3	V530	26'-9"	105	7"	7'-1" to 8'-6"	5'-0"
3	V531	8'-11"	Str			
4	V532	27'-8"	105	7"	4'-7" to 8'-8"	4'-7" to 8'-8"
[illegible]	V533	13'-7"	105	7"	5'-0"	5'-0"
2	V534	8'-0"	Str			
3	V535	32'-8"	105	7"	6'-5" to 9'-4"	6'-5" to 9'-4"
1	V536	11'-7"	105	7"	5'-6"	5'-6"
2	V537	7'-6"	Str			

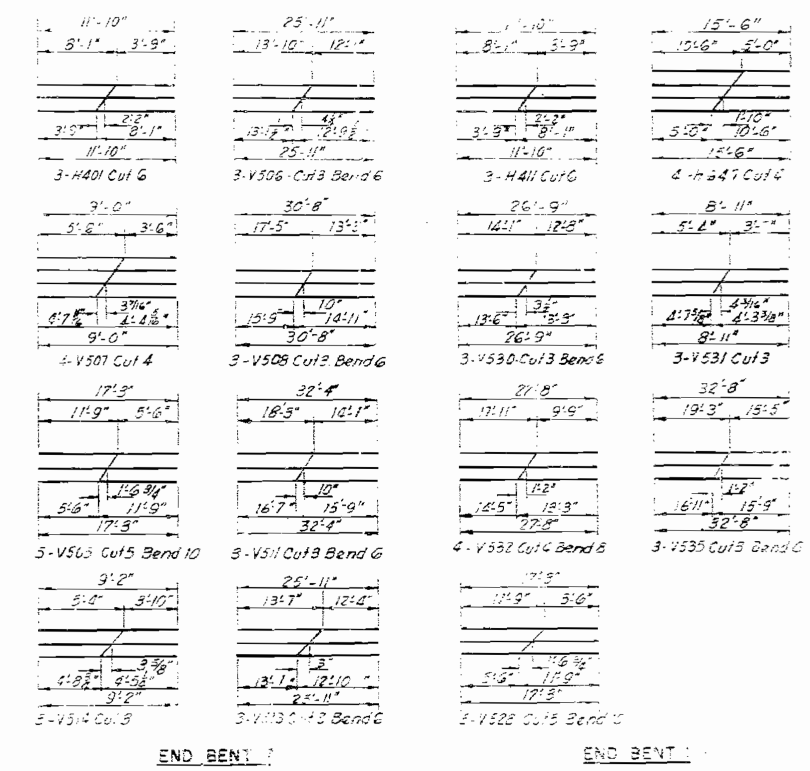
NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		BENT 2				
72	F424	8'-3	119	2'-3"		
16	F1123	6'-6"	Str.			
16	F1124	11'-2"	Str.			
		BENT 3				
35	F433	8'-3"	119	2'-3"		
13	F434	10'-7"	119	3'-0"		
8	F1131	17'-1"	Str.			
16	F1133	33'-10"	Str			
16	F1134	11'-11"	Str			
		BENT 4				
36	F444	8'-3	119	2'-3"		
			Str.			
12	[illegible]	[illegible]	"	(East)		
12	F1144	26'-2"	"	(West)		
		BENT 5				
[illegible]	F453	8'-3"	119	2'-3"		
28	F455	10'-7"	119	3'-0"		
8	F1151	15'-3"	Str			
8	F1153	12'-10"	Str			
32	F1154	11'-11"	Str			
		BENT 6				
	F463	8'-3"	119	2'-3"		
3[illegible]	F465	10'-7"	119	3'-0"		
8	F1161	17'-8"	Str.			
8	F1162	18'-6"	Str.			
32	F1164	11'-11	Str			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		END BENT 7				
16	F501	3'-5"	Str			
16	F601	2'-6"	Str			
6	H401	11'-10"	Str.			
2	H402	10'-5"	Str *			
2	H403	11'-2"	Str *			
2	H404	8'-8"	Str *			
2	H405	9'-3"	Str *			
3	H406	[illegible]	Str. *			
3	H407	[illegible]-6"	Str *			
3	H408	[illegible]	Str *			
3	H409	17'-[illegible]	Str *			
35	H501	3'-6"	104	2'-6"	1'-0"	
32	H601	27'-6"	Str			
2	H602	17'-8"	Str			
4	H603	14'-3"	Str			
	H604	18'-7"	Str. *			
1	H605	18'-0"	Str. *			
4	H606	4'-9"	Str			
6	H607	4'-10"	Str			
4	H608	21'-3"	Str *			
4	H609	21'-11"	Str. *			
2	H610	15'-3"	Str			
2	H611	10'-6"	Str.			
2	H612	5'-9"	Str.			
1	H613	19'-7"	Str. *			
1	H614	20'-3"	Str. *			
4	H615	[illegible]	Str. *			
4	H616	[illegible]	Str. *			
4	H617	20'-[illegible]	Str. *			
2	H618	15'-3"	Str.			
2	H619	10'-5"	Str.			
2	H620	5'-6"	Str.			
35	V501	15'-5"	123	2'-10½"	3'-7"	3'-10½"
2	V502	13'-11"	123	3'-1½"	2'-8½"	3'-10½"
18	V503	5'-6"	Str			
60	V504	3'-2"	Str			
5	V505	17'-3"	124	1'-8" to 4'-9"	5" to 1'-2"	1'-4"
3	V506	25'-11"	105	7"	6'-9" to 8'-6"	4'-9"
3	V507	9'-0"	Str			
3	V508	30'-8"	105	7"	6'-4" to 8'-5"	6'-4" to 8'-5"
1	V509	10'-7"	105	7"	5'-0"	5'-0"
4	V510	7'-4"	Str			
3	V511	32'-4"	105	7"	6'-9" to 8'-10"	6'-9" to 8'-10"
1	V512	11'-5"	105	7"	5'-5"	5'-5"
3	V513	25'-11"	105	7"	7'-2" to 8'-5"	4'-7"
3	V514	9'-2"	Str.			
1	V515	11'-9"	105	7"	5'-7"	5'-7"
1	V516	12'-7	105	7"	6'-0"	6'-0"

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		SUPERSTRUCTURE BENTS 2, 3, 4, 5 AND 6 – CAP BEAM				
16	B921	9'-1"	104	5'-4"	3'-9"	
16	B931	9'-1"	104	5'-4"	3'-9"	
16	B941	9'-1"	104	5'-4"	3'-9"	
16	B951	9'-1"	104	5'-4"	3'-9"	
16	B961	9'-1"	104	5'-4"	3'-9"	
		BENTS 2, 3, 4, 5 AND 6 – COLUMNS				
1	C421	625'-3"	127	2'-3"	20'-0"	
1	C422	643'-5"	127	2'-3"	20'-7"	
2	C431	532'-8"	127	2'-3"	16'-11"	
1	C441	729'-1"	127	2'-3"	23'-5"	
1	C442	[illegible]	127	2'-3"	23'-0"	
[illegible]	C451	595'-11"	[illegible]	2'-3"	19'-0"	
1	C45[illegible]	593'-5"	127	2'-3"	19'-1"	
2	[illegible]	518'-9"	127	2'-3"	[illegible]-5"	
32	C1122	22'-8"	Str			
32	C1132	19'-6"	"			
12	C1142	26'-0"				
12	C1143	[illegible]				
16	C1152	21'-8				
16	C1153	21'-9"	"			
32	C1162	19'-5	Str			



BENDING DIAGRAMS



CUTTING DIAGRAMS

Notes
* Indicates these bars are to be bent in the field.
Hooks and bends shall be in accordance with the ACI manual of standard practice for detailing reinforced concrete structures. (ACI 315-57)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE	508-GA LDL	DATE	7-22-60	TRACED		DATE	
CHECKED	DER-BLL	DATE	9-27-60	SCALE			

Note: This drawing is not to scale. Follow dimensions.

Δ Revised [illegible]

REINFORCING SCHEDULE

BRIDGE HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. [illegible] (22) (RT. I-35, STA. 44+79.26 ℄ LANE A FINISHED)
JACKSON COUNTY
SHEET 3
A-825

FINAL PLANS

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.		SHEET NO.	TOTAL SHEETS
5	MO.	I-35-1(22)2		[illegible]	
DIST. NO.		COUNTY		ROUTE	SEC.
4		JACKSON		I-35	

MISSOURI STATE HIGHWAY DEPARTMENT

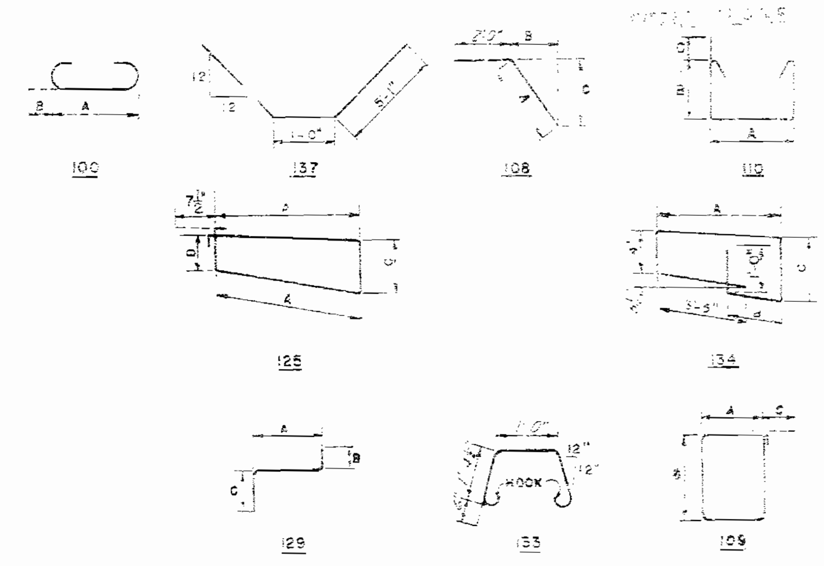
BILL OF REINFORCEMENT

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
		SUPERSTRUCTURE BOX GIRDER				
8	B601	26'-4"	Str			
8	B602	25'-4"	Str			
12	B603	27'-5"	Str			
12	B604	23'-5"	Str			
312	B605	9'-8"	110	3'-3"	2'-7½"	7"
396	B606	9'-1"	110	2'-8"	2'-7½"	7"
12	B1101	54'-8"	Str			
28	B1102	20'-0"	Str			
40	B1103	[illegible]	Str			
18	B1104	44'-6"	Str			
28	B1105	18'-0"	Str			
16	B1106	15'-6"	Str			
12	B1107	52'-8"	Str			
16	B1108	32'-10"	Str			
46	B1109	26'-10"	Str			
8	B1110	17'-10"	Str			
8	B1111	12'-10"	Str			
18	B1112	42'-6"	Str			
10	B1113	20'-2"	Str			
4	B1114	13'-0"	Str			
4	B1115	6'-10"	Str			
14	B1116	20'-10"	Str			
4	B1118	11'-0"	Str			
4	B1119	16'-0"	Str			
4	B1120	22'-0"	Str			
144	D501	7'-3"	109	5"	2'-5½"	9"
12	D502	8'-5"	109	1'-0"	2'-5½"	9"
12	D601	26'-4"	Str			
12	D602	[illegible]	Str			
16	D603	[illegible]	Str			
16	D604	23'-5"	Str			
46	D605	9'-1"	109	1'-5½"	2'-7½"	[illegible]
8	D606	12'-7"	109	1'-5½"	3'-1½"	[illegible]
40	D607	9'-5"	109	1'-2½"	2'-7[illegible]	[illegible]
8	D608	12'-1"	109	1'-2½"	3'-1½"	[illegible]
4	D609	23'-2"	Str			
4	D610	25'-2"	Str			
12	D611	8'-7"	100	7'-3"	8"	
6	D801	10'-0"	108	8'-0"	7'-11½"	9½"
214	G401	25'-0"	Str			
2	G402	10'-0"	Str			
2	G403	6'-4"	Str			
2	G404	26'-4"	Str			
2	G405	22'-8"	Str			
2	G406	19'-0"	Str			
2	G407	15'-4"	Str			
2	G408	11'-8"	Str			
[illegible]	G501	[illegible]	129	[illegible]	5"	[illegible]
[illegible]	G502	5'-[illegible]	129	2'-7½"	[illegible]	7½"
84	G801	60'-0"	Str			
2	G802	44'-8"	Str			
2	G803	41'-0"	Str			
2	G804	37'-4"	Str			
2	G805	33'-8"	Str			
2	G806	30'-0"	Str			
2	G807	26'-4"	Str			
2	G808	22'-4"	Str			

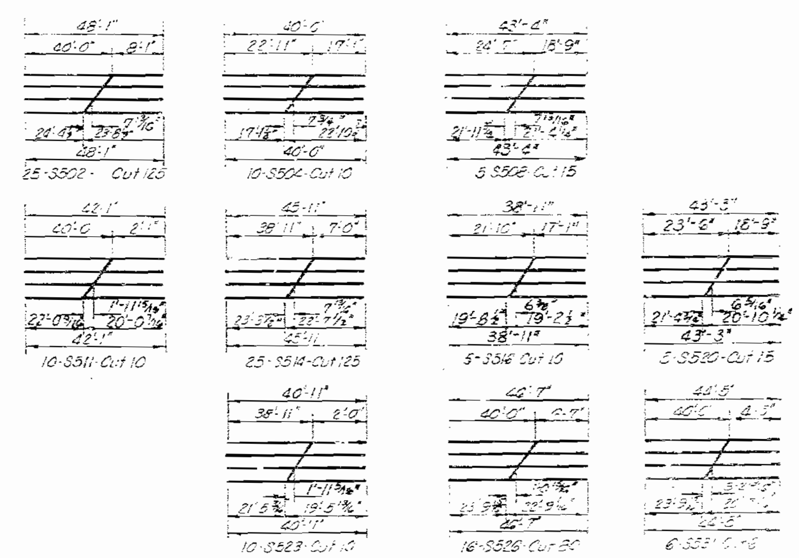
NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
214	G1101	60'-0"	Str			
[illegible]	G1102	40'-0"				
[illegible]	G1103	32'-0"				
[illegible]	G1104	26'-0"				
56	G1105	[illegible]				
56	G1106	[illegible]				
70	G1107	[illegible]				
36	G1108	[illegible]				
40	G1109	[illegible]-0"				
14	G1110	25'-0"				
14	G1111	19'-0"				
22	G1112	42'-0"				
11	G1113	38'-0"				
2	G1114	53'-8"				
2	G1115	50'-0"				
[illegible]	G1116	46'-4"				
2	G1117	42'-8"				
2	G1118	39'-0"				
2	G1119	35'-4"				
2	G1120	31'-8"				
14	G1121	49'-0"				
14	G1122	[illegible]				
14	G1123	[illegible]				
28	G1124	[illegible]				
17	G1125	43'-0"				
14	G1126	41'-0"				
14	G1127	54'-6"				
14	G1128	48'-6"				
[illegible]	G1129	40'-6"				
	G1130	30'-6"				
[illegible]	G1131	52'-0"				
[illegible]	[illegible]	48'-0"				
[illegible]	[illegible]	[illegible]				
[illegible]	G1134	37'-7"				
1	G1135	47'-6"				
1	G1136	53'-3"				
1	G1137	34'-0"				
1	G1138	44'-0"				
1	G1139	50'-0"				
1	G1140	48'-8"				
1	G1141	42'-6"				
[illegible]	G1142	32'-3"				
[illegible]	[illegible]	28'-0"				
4	[illegible]	29'-[illegible]				
3	G1145	[illegible]				
3	G1146	[illegible]				
3	G1147	43'-4"				
3	G1148	[illegible]-8"				
4	G1149	28'-8"				
14	G1150	32'-9"	Str.			
98	S401	15'-11"	Str.			
708	S402	30'-0"				
29	S403	5'-10"				
12	S404	18'-9"				
18	S405	10'-10"				
13	S406	11'-9"				
24	S407	14'-10"				
13	S408	6'-0"				
[illegible]	S409	12'-2"				
25	S410	18'-7"				
[illegible]	S411	26'-9"				
24	S412	28'-9"				
[illegible]	S413	3'-10"				
[illegible]	S414	7'-10"				
9	S415	3'-0"				
[illegible]	S416	6'-2"				
5	S417	25'-0"				
2	S418	19'-1"				
9	S419	23'-3"				
1	S420	10'-0"				
2	S421	14'-0"				
5	S422	16'-1"				
4	S423	19'-4"				
2	S424	21'-[illegible]				
3	S425	25'-5"				
15	S426	29'-2"				
2	S427	4'-2"				
16	S428	9'-[illegible]				
2	S429	16'-8"				
2	S430	7'-[illegible]				
[illegible]	S431	27'-5"				
9	S432	19'-0"				
14	S433	11'-11"	Str			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
4	S434	10'-6"	Str			
16	S435	16'-9"				
13	S436	20'-9"				
25	S437	11'-8"				
[illegible]	S438	21'-1"				
7[illegible]	S439	27'-2"				
1	S440	25'-7"				
13	S441	22'-9"				
9	S442	17'-2"				
1	S443	17'-8"				
2	S444	6'-4"				
2	S445	27'-10"				
1	S446	14'-6"				
1	S447	21'-0"				
1	S448	[illegible]'-2"				
1	S449	25'-1"				
1	S450	22'-[illegible]				
	S451	13'-2"				
1	S452	17'-9"				
[illegible]	S453	7'-11"				
2	S454	6'-11"				
1	S455	24'-0"				
15	S456	12'-10"				
3	S457	20'-6"				
3	S458	4'-0"				
1	S459	26'-6"				
29	S460	9'-2"				
8	S461	15'-0"				
2	S462	6'-6"				
1	S463	20'-2"				
2	S464	13'-6"	Str.			
60	S501	7'-5"	Str.			
125	S502	48'-1"				
190	S503	23'-7"				
10	S504	40'-0"				
366	S505	24'-3"				
1	S506	21'-6"				
1	S507	19'-5"				
15	S508	43'-4"				
181	S509	25'-3"				
1	S510	4'-5"				
10	S511	42'-1"				
366	S512	25'-11"				
60	S513	6'-4"				
125	S514	45'-11"				
190	S515	22'-6"				
10	S516	38'-11"				
366	S517	23'-2"				
1	S518	20'-5"				
1	S519	18'-4"				
15	S520	43'-3"				
181	S521	24'-2"				
213	S522	24'-1"				
10	S523	40'-11"				
366	S524	24'-10"				
23	S525	5'-8"				
80	S526	46'-7"				
99	S527	20'-0"				
213	S528	20'-[illegible]				
[illegible]	S529	22'-7"				
38	S530	23'-5"				
6	S531	44'-5"	Str.			
[illegible]	S601	27'-4"	Str			
[illegible]	S602	24'-1"				
9	S603	22'-4"				
7	S604	29'-4"				
2	S605	26'-1"				
9	S606	24'-4"				
6	S607	26'-4"				
6	S608	28'-4"				
2	S609	23'-1"				
2	S610	25'-1"				
3	S611	21'-4"				
2	S612	23'-4"	Str			
63	S622	50'-0"	Str.			
3	S623	29'-0"	Str			
12	S624	15'-6"	Str			
6	S625	37'-0"	Str			
3	S626	23'-6"	Str			

NO.	MARK	LENGTH	SHAPE	DIMENSIONS A	B	C
2	S627	35'-6"	Str.			
8	S628	21'-0"				
1	S629	26'-6"				
2	S630	33'-0"				
3	S631	40'-6"				
5	S632	30'-0"				
5	S633	38'-0"				
5	S634	43'-0"				
1	S635	15'-6"				
2	S636	24'-0"				
10	S637	31'-0"				
1	S638	40'-0"				
1	S639	27'-0"				
6	S640	28'-0"				
4	S641	42'-0"				
11	S642	34'-0"				
10	S643	47'-0"				
6	S644	23'-0"				
2	S645	30'-3"				
4	S646	36'-0"				
2	S647	25'-0"				
1	S648	4'-0"				
1	S649	10'-6"				
1	S650	3'-0"				
1	S651	7'-0"				
1	S652	4'-6"				
1	S653	41'-0"	Str.			
		SIDEWALK AND PARAPET				
4	P401	11'-6"	Str			
16	P402	30'-0"				
32	P403	26'-5"				
12	P404	21'-8"				
16	P405	29'-10"				
8	P406	[illegible]'-4"				
16	P407	[illegible]				
24	P408	9'-10"				
32	P409	8'-7"				
8	P410	21'-4"				
8	P411	6'-10"	Str			
787	P412	6'-1"	109	8"	1'-9"	7½"
4	P413	12'-6"	Str			
9	P414	4'-9"	133			
6	P415	8'-1"	109	1'-2"	2'-3"	7½"
3	P416	11'-2"	137			
32	W401	30'-0"	Str.			
96	W402	23'-9"				
24	W403	28'-4"				
48	W404	26'-11"				
16	W405	28'-3"				
2	W406	17'-6"				
2	W407	16'-6"				
1	W408	15'-10"				
1	W409	5'-0"				
2	W410	14'-2"	Str			
1	W411	7'-9"	125	2'-9½"	4"	
1	W412	11'-4"	134	3'-10"	1'-7"	2"
783	W413	14'-10"	134	5'-7"	[illegible]	1'-3"
4	W414	13'-6"	Str			
[illegible]	W415	19'-4"				
[illegible]	W416	20'-2"				
1	W417	21'-0"				
1	W418	21'-10"	Str			
[illegible]	W419	8'-1"	125	2'-3"	1'-1"	[illegible]-3"
1	W420	10'-2"	125	3'-4	1'-0"	1'-3"
2	W421	20'-3"	Str			
2	W422	20'-7"	Str			
2	W423	20'-5"	Str			
1	W424	20'-9"	Str			
1	W425	20'-11"				
1	W426	[illegible]				
[illegible]	W427	[illegible]				
1	W428	9'-5"				
	W429	13'-7"				
	W430	[illegible]				
[illegible]	W431	9'-[illegible]				
2	W432	[illegible]	Str			
[illegible]	W433	8'-9"	125	2'-7"	1'-1"	[illegible]-3"
[illegible]	W434	7'-8"	125	2'-9"	4"	7"



BENDING DIAGRAMS



CUTTING DIAGRAMS

Note:
Hooks and bends in accordance with the ACI manual of standard practice for detailing reinforced concrete structures. (ACI 315-57)

Note: This drawing is not to scale. Follow dimensions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

MADE WLD-EDB	DATE 10-28-60	TRACED	DATE
CHECKED EEB-LDL	DATE 12-19-60	SCALE	

REINFORCING SCHEDULE

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-35-1(22) (RT. I-35) STA. 44+79.26 ℄ LANE A

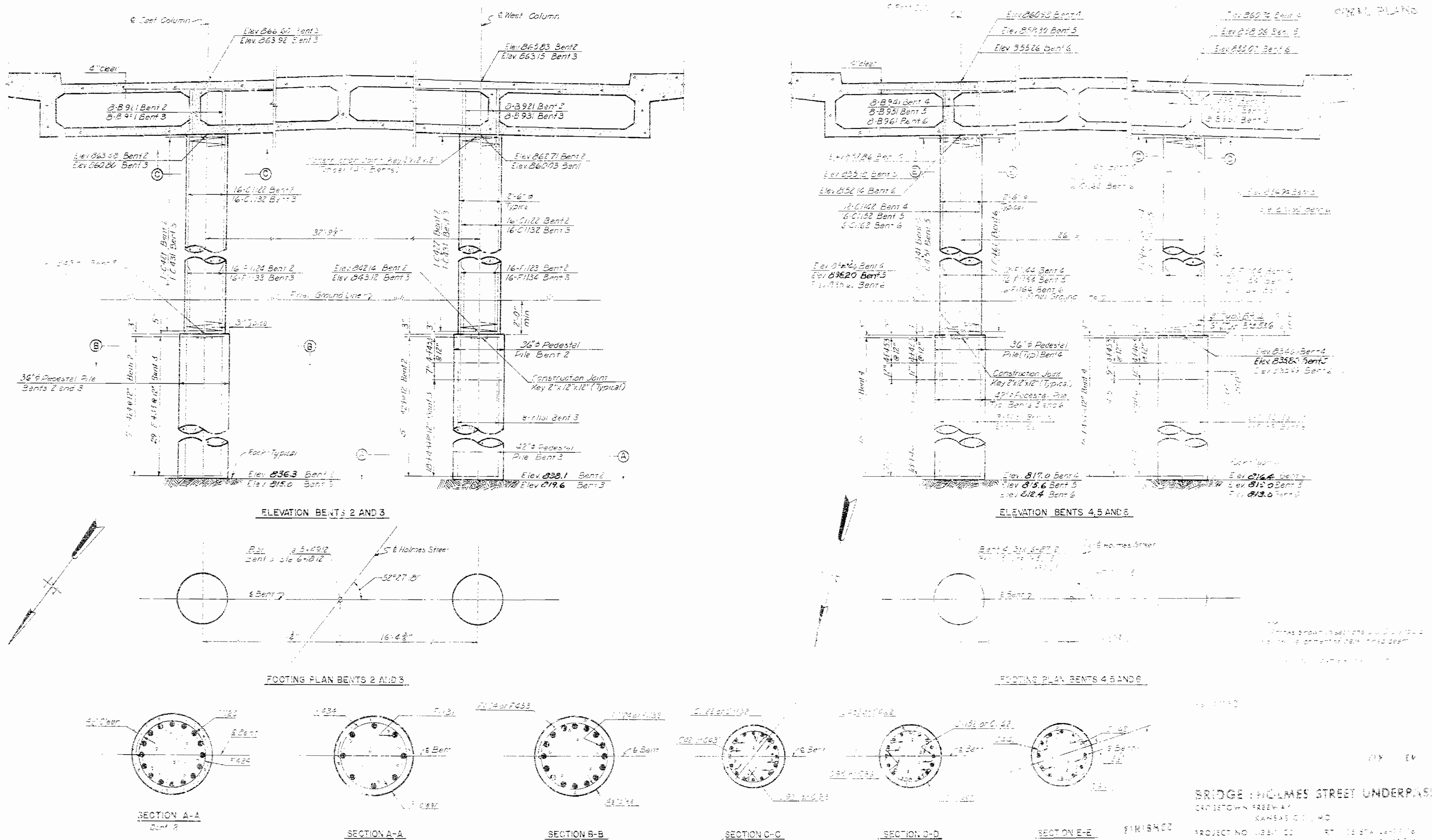
JACKSON COUNTY

SHEET 4 - [illegible]

A-825

268

MISSOURI STATE HIGHWAY DEPARTMENT



269

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

NOTE: This drawing is not to scale. Follow dimensions.

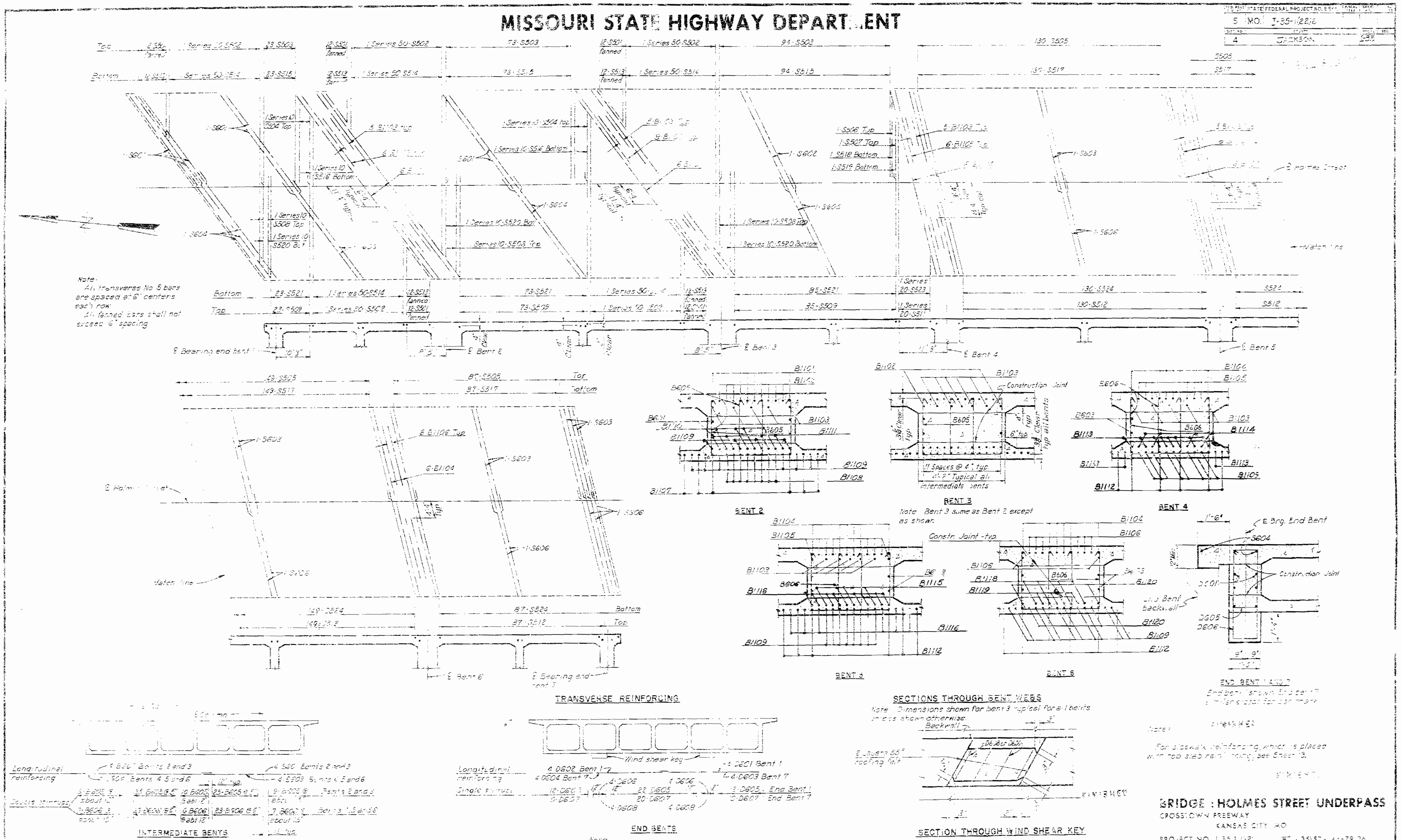
BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO.

JACKSON COUNTY

BENTS 2,3,4,5 AND 6

FINAL PLANS

MISSOURI STATE HIGHWAY DEPART..ENT



For sidewalk reinforcing, which is placed with top slab reinforcing, see Sheet 13.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

NOTE: This drawing is not to scale. Follow dimensions.

TOP SLAB TRANSVERSE, BENT AND END DIAPHRAGM WEB REINFORCEMENT

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO
PROJECT NO. I-35-1 (22) (RT. I-35) STA. 44+79.36 £ LANE 4

JACKSON COUNTY

SHEET 11A OF 7

A-225

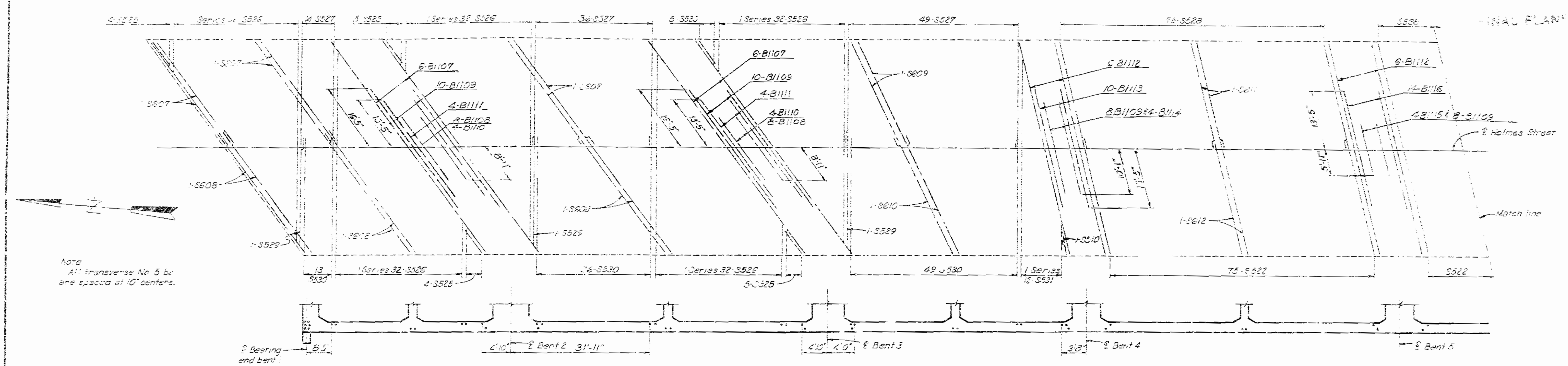
FINAL PLANS

220

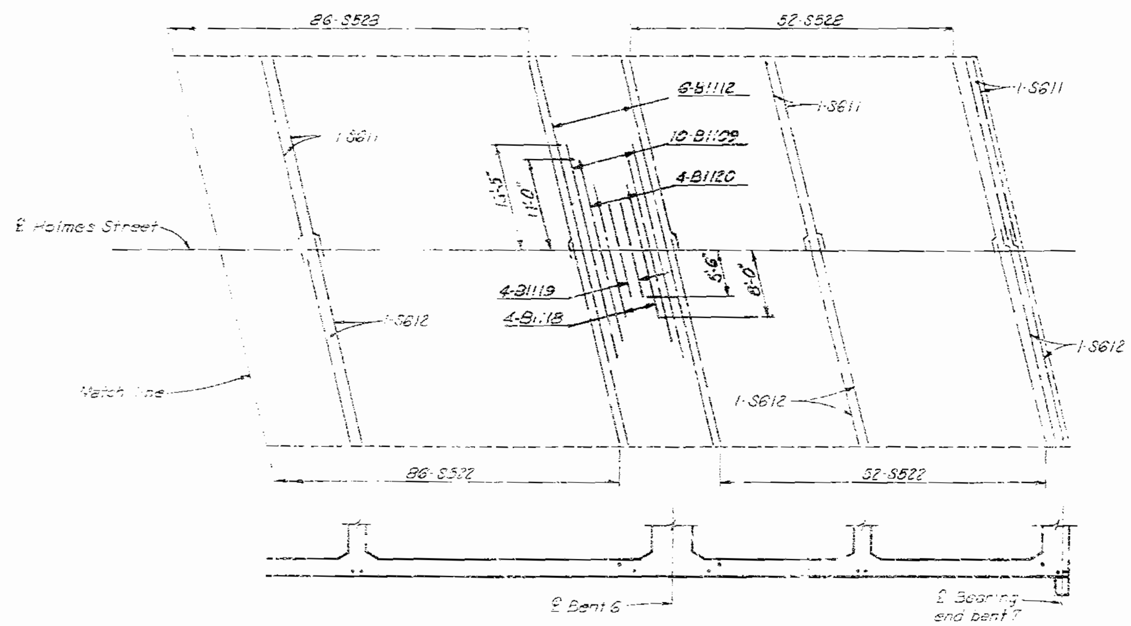
MISSOURI STATE HIGHWAY DEPARTMENT

Dist.	State	Federal Project No. & Sec.
5	MO.	I-35-1(22)2
4		JACKSON

FINAL PLANS



Note
All transverse No. 5 bars are spaced at 10" centers.



TRANSVERSE REINFORCING

No. 8 Longitudinal reinforcing	Girder A	2-G802	12-G801
	Girder B	2-G803	12-G301
	Girder C	2-G804	12-G801
	Girder D	2-G805	12-G801
	Girder E	2-G806	12-G801
	Girder F	2-G807	12-G801
	Girder G	2-G808	12-G801
No. 4 Longitudinal reinforcing	Girder A	2-G402	32-G401
	Girder B	2-G403	32-G401
	Girder C	2-G404	30-G401
	Girder D	2-G405	30-G401
	Girder E	2-G406	30-G401
	Girder F	2-G407	30-G401
	Girder G	2-G408	30-G401

Stirrup spacing: 9" | 15" | 7½" | 5½" | 7½" | 15" | 7½" | 5½" | 7½" | 15" | 7½" | 5½" | 7½" | 15" | 7½" | 5½" | 7½" | 15" | 7½" | 5½" | 7½" | 15" | 9"

No. 5 Double Stirrup spacing — No. of spaces:

																												Total number of spaces
Girder A-G501 G502	8	13	24	11	19	23	15	23	19	19	23	24	23	19	19	[illegible]	15	23	19	19	23	15	23	19	11	24	15	8	519
Girder B G502	8	13	24	11	19	23	15	23	19	19	23	21	23	19	19	[illegible]	15	23	19	19	23	15	23	19	11	24	15	8	516
Girder C G502	8	13	24	11	19	23	15	23	[illegible]	19	23	18	23	19	19	[illegible]	[illegible]	23	19	19	23	15	23	19	11	24	15	8	513
Girder D G502	8	13	24	11	19	23	15	23	19	19	23	15	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	510
Girder E G502	8	13	24	11	19	23	15	23	19	19	23	12	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	507
Girder F G502	8	13	24	11	19	23	15	23	19	19	23	9	23	19	19	23	15	23	19	19	23	15	23	19	11	24	15	8	504
Girder G G501-G502	8	13	24	11	19	23	15	[illegible]	[illegible]	19	23	6	23	19	19	[illegible]	15	23	19	19	23	5	23	19	11	24	15	8	501

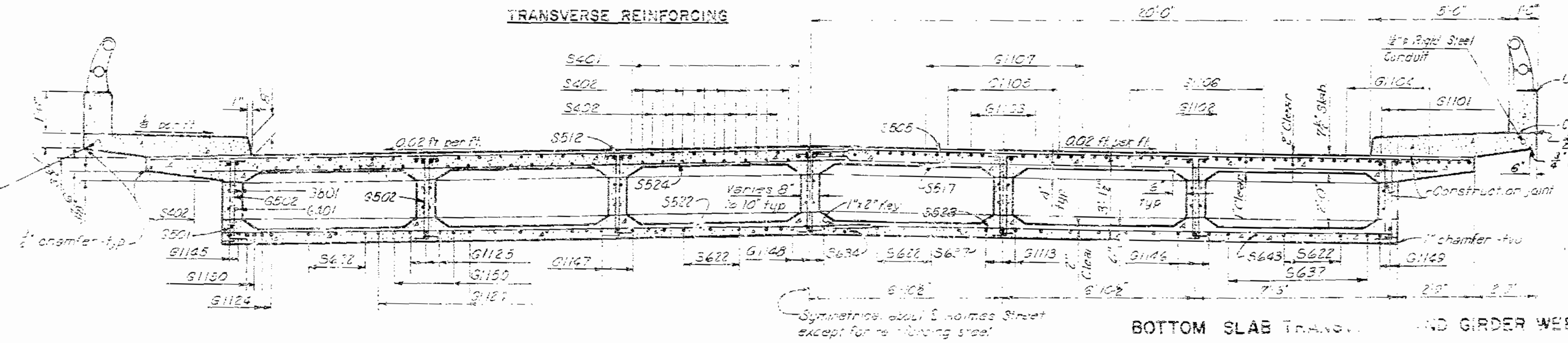
℄ Bearing end bent 1 — ℄ Bent 2 — ℄ Bent 3 — ℄ Bent 4 — ℄ Bent 5 — ℄ Bent 6 — ℄ Bearing end bent 7

GIRDER WEB REINFORCING

Note:
No. 5 double stirrup spacing begins one-half space from face of bent webs at bents 2 thru 6, and at ℄ bearing at end bents 1 and 7.

Note:
For location of Section A-A see sheet 8.

For reinforcing steel in sidewalks and parapets see Sheet 13.
For handrail details see Sheet 14.



SECTION A-A

BOTTOM SLAB TRANSVERSE AND GIRDER WEB REINFORCEMENT

NOTE: This drawing is not to scale. Follow dimensions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY — NEW YORK

Made EDB	Date 8-11-60	Traced	Date
Checked DL	Date 12-12-60	Scale	

FINISHED

BRIDGE : HOLMES STREET UNDERPASS
CROSSTOWN FREEWAY
KANSAS CITY, MO
PROJECT NO. I-35-1 (22) — (RT. I-35) STA. 44+79.26 ℄ LANE A

JACKSON COUNTY

SHEET 12A of 17

A-825

FINAL PLANS

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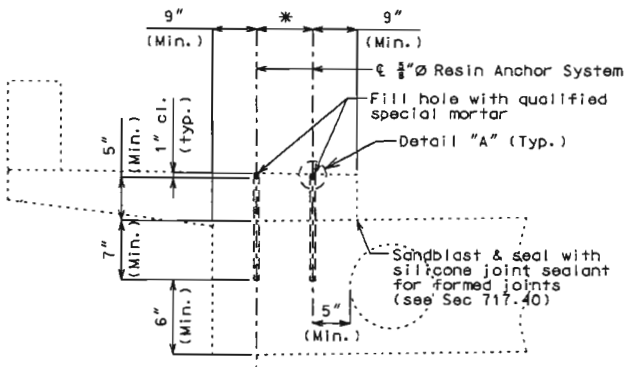
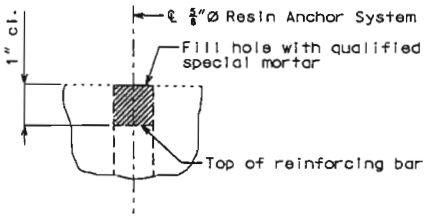
Job No.	Bridge No	New Bridge No.	County	Feature Intersected	Facility Carried
J4S1999	A0655	A06551	BUCHANAN	AGENCY RD S	US 36
J4S1999	A0657	A06571	BUCHANAN	33RD ST S	US 36
J4S1999	A0704	A07041	BUCHANAN	22ND ST S	US 36
J4S1999	A1666	A16662	CLAY	53RD TER E	IS 435
J4S1999	A0622	A06222	JACKSON	US 40 E	CST MANCHESTER TRFY
J4S1999	A0807	A08072	JACKSON	CHARLOTTE ST S	IS 35, RP IS35N TO IS70E
J4S1999	A0825	A08251	JACKSON	HOLMES ST S	IS 35, RP US71N TO IS35S
J4S1999	A1117	A11173	JACKSON	BROADWAY S	IS 35, IS 670, RP IS29S,
J4S1999	A1122	A11224	JACKSON	14TH ST E	IS 29, RP IS29S TO IS35N
J4S1999	A1360	A13602	JACKSON	67TH ST E	IS 435
J4S1999	A1712	A17122	JACKSON	WILSON AVE E	IS 435
J4S1999	L0102	L01021	JACKSON	BLUE RIDGE BLVD S	MO 78
J4S1999	L0971	L09714	JACKSON	PITTMAN RD S	IS 70
J4S1999	L0977	L09771	JACKSON	PHELPS RD	IS 70
J4S1999	A0321	A03211	JOHNSON	HOLDEN ST S	US 50

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

ROUTE	STATE	DISTRICT	SHEET NO.
	MO	BR	
JOB NO. J4S1999			
CONTRACT ID			
PROJECT NO.			
COUNTY VARIES			

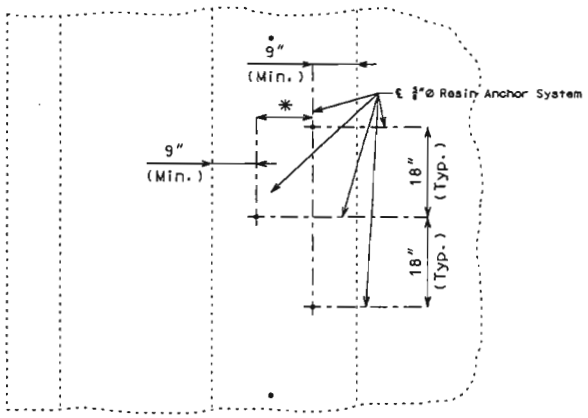


PART SECTION SHOWING RESIN ANCHORS



DETAIL "A"

Estimated Quantities			
Item		Estimated Quantities	Final Quantities
Resin Anchor System (Slab Bridges)	each	1,383	
Silicone Joint Sealant	linear foot	2,069	



PART PLAN SHOWING RESIN ANCHORS

* This dimension may be reduced to 0" to avoid rebar and voids in the slab.

GENERAL NOTES:

See Roadway Plans for traffic control.

Temporary weight shall be placed on the sidewalk in line with the resin anchors. This temporary weight shall be sufficient to balance the cantilevered sidewalk. It shall remain in place until the epoxy bonding agent is cured.

Resin Anchors:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for Resin Anchor System (Slab Bridges) including the qualified special mortar to cap the resin anchor.

The minimum ultimate pullout strength shall be in accordance with Sec 1039 with f'c = 4,000 psi.

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the ⅝"Ø threaded rod stud.

The epoxy bonding agent shall extend the full length of reinforcing bar.

The Silicone Joint Sealant will be measured to the nearest linear foot. Silicone Joint Sealant, including all materials, equipment, labor and any other incidental work necessary to complete this work, will be paid for at the contract unit price for Silicone Joint Sealant.

CANTILEVER SIDEWALK RETROFIT FOR SLAB BRIDGES

Detailed Mar. 2007
Checked Mar. 2007

Note: This drawing is not to scale. Follow dimensions.

VARIES REV.

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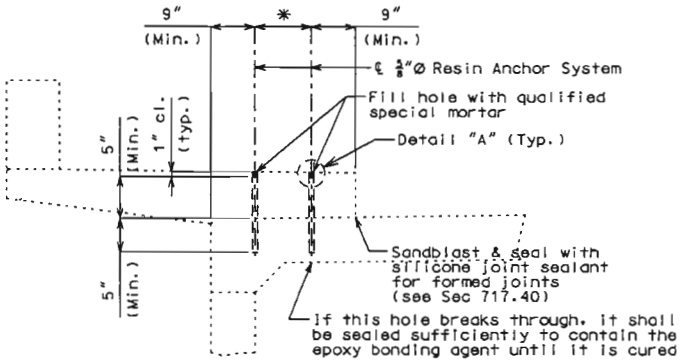
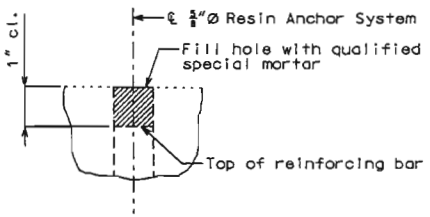
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

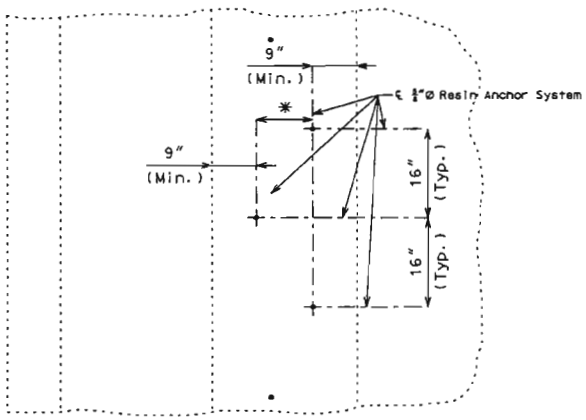
ROUTE	STATE	DISTRICT	SHEET NO.
	MO	BR	
JOB NO. J4S1999			
CONTRACT ID			
PROJECT NO.			
COUNTY VARIES			



PART SECTION SHOWING RESIN ANCHORS



DETAIL "A"



PART PLAN SHOWING RESIN ANCHORS

* This dimension may be reduced to 0" to avoid rebar and voids in the slab.

Estimated Quantities			
Item		Estimated Quantities	Final Quantities
Resin Anchor System (Box Girder Bridges)	each	3,434	
Silicone Joint Sealant	linear foot	4,576	

GENERAL NOTES:

See Roadway Plans for traffic control.

Temporary weight shall be placed on the sidewalk in line with the resin anchors. This temporary weight shall be sufficient to balance the cantilevered sidewalk. It shall remain in place until the epoxy bonding agent is cured.

Resin Anchors:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for Resin Anchor System (Box Girder Bridges) including the qualified special mortar to cap the resin anchor.

The minimum ultimate pullout strength shall be in accordance with Sec 1039 with f'c = 4,000 psi.

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the ⅜"Ø threaded rod stud.

The epoxy bonding agent shall extend the full length of reinforcing bar.

The Silicone Joint Sealant will be measured to the nearest linear foot. Silicone Joint Sealant, including all materials, equipment, labor and any other incidental work necessary to complete this work, will be paid for at the contract unit price for Silicone Joint Sealant.

CANTILEVER SIDEWALK RETROFIT FOR BOX GIRDER BRIDGES

Detailed Mar. 2007
Checked Mar. 2007

Note: This drawing is not to scale. Follow dimensions.

VARIES REV.

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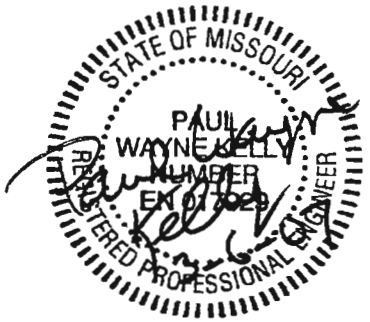
DIST 4 SLAB STRUCTURES WITH SIDEWALKS
FOR CONTRACT
(Total 7)

Bridge No	County	Feature Intersected	Facility Carried	Bridge Length Ft.	Comment	Resin Anchor System (Slab Bridges)	Silicone Joint Sealant Lin. Ft.
A0495	CLAY	MO 152 E	IS 35	235	Sidewalk on one side only	157	235
A1666	CLAY	53RD TER E	IS 435	224	Sidewalk on one side only	150	224
A0622	JACKSON	US 40 E	CST MANCHESTER TRFY	151		202	302
A1360	JACKSON	67TH ST E	IS 435	243	Conduit	324	486
L0102	JACKSON	BLUE RIDGE BLVD S	MO 78	155	Sidewalk on one side only	104	155
L0971	JACKSON	PITTMAN RD S	IS 70	209	Sidewalk on one side only	140	209
A0321	JOHNSON	HOLDEN ST S	US 50	229		306	458
					SubTotal	**1,383**	**2,069**



DIST 4 AND DIST 1 BOX GIRDERS WITH SIDEWALKS
FOR CONTRACT
(Total 8)

Bridge No	County	Feature Intersected	Facility Carried	Bridge Length Ft.	Comment	Resin Anchor System (Box Girder Bridges)	Silicone Joint Sealant Lin. Ft.
A0655	BUCHANAN	AGENCY RD S	US 36	175	Located in District 1	263	350
A0657	BUCHANAN	33RD ST S	US 36	169	Located in District 1	254	338
A0704	BUCHANAN	22ND ST S	US 36	86	Located in District 1	129	172
A0807	JACKSON	CHARLOTTE ST S	IS 35, RP IS35N TO IS70E	581		872	1162
A0825	JACKSON	HOLMES ST S	IS 35, RP US71N TO IS35S	382		573	764
A1122	JACKSON	14TH ST E	IS 29, RP IS29S TO IS35N	404		606	808
A1117	JACKSON	BROADWAY S	IS 35, IS 670, RP IS29S,	366		549	732
A1712	JACKSON	WILSON AVE E	IS 435	250	Sidewalk on one side only	188	250
					SubTotal	**3,434**	**4,576**

STATE OF MISSOURI
WAYNE KELLY
NUMBER
PE-2009017929
REGISTERED PROFESSIONAL ENGINEER