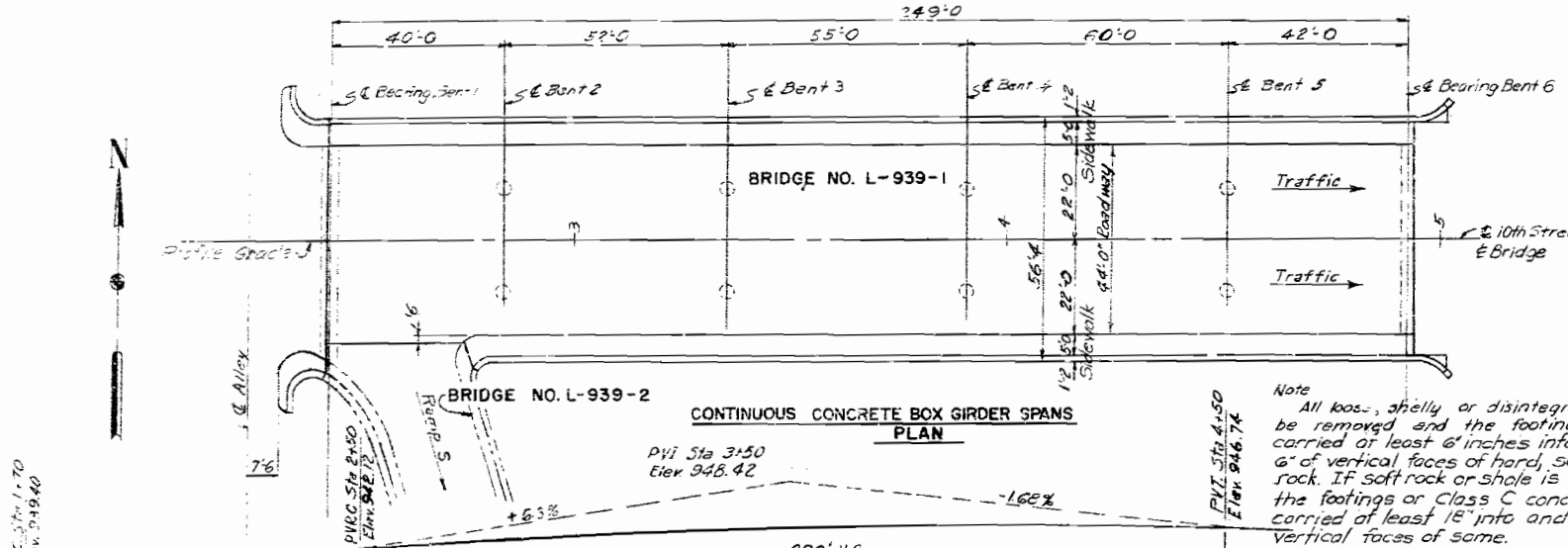
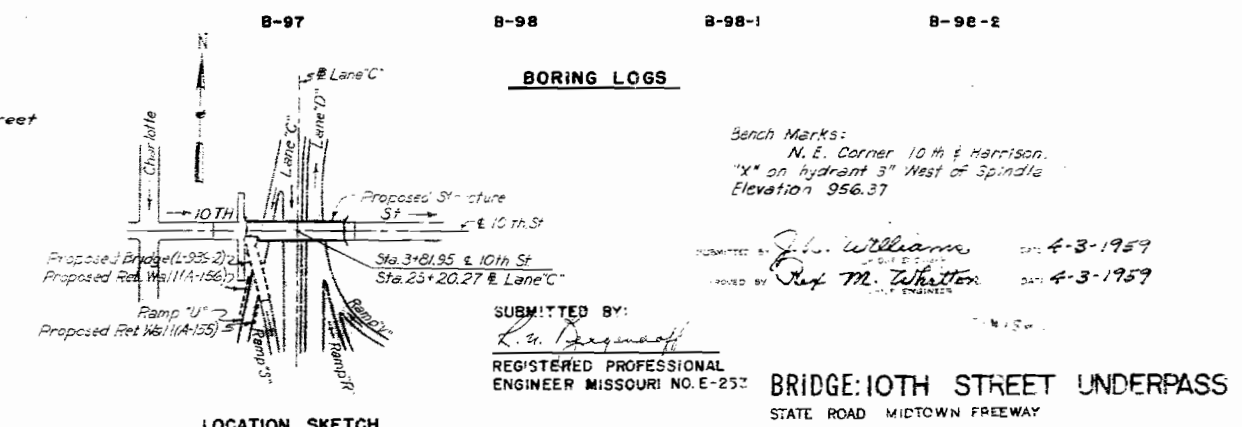
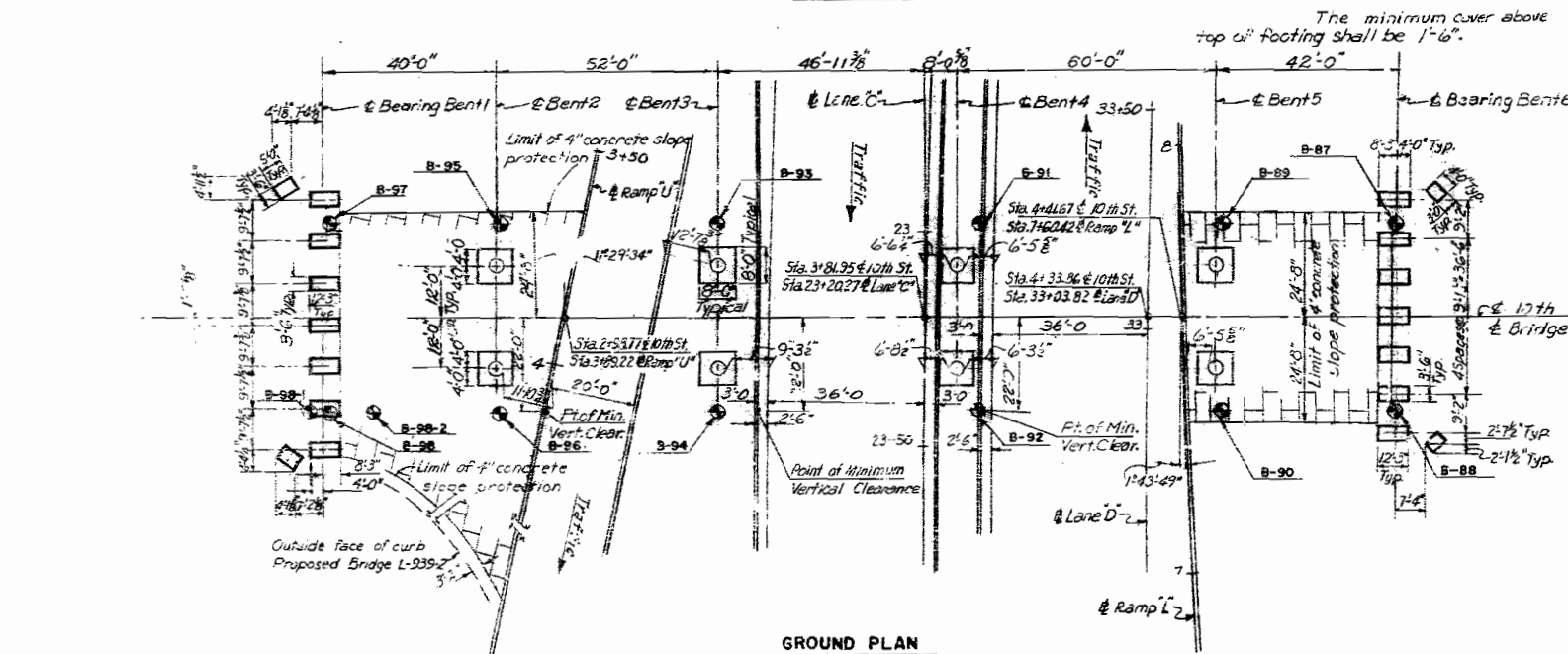
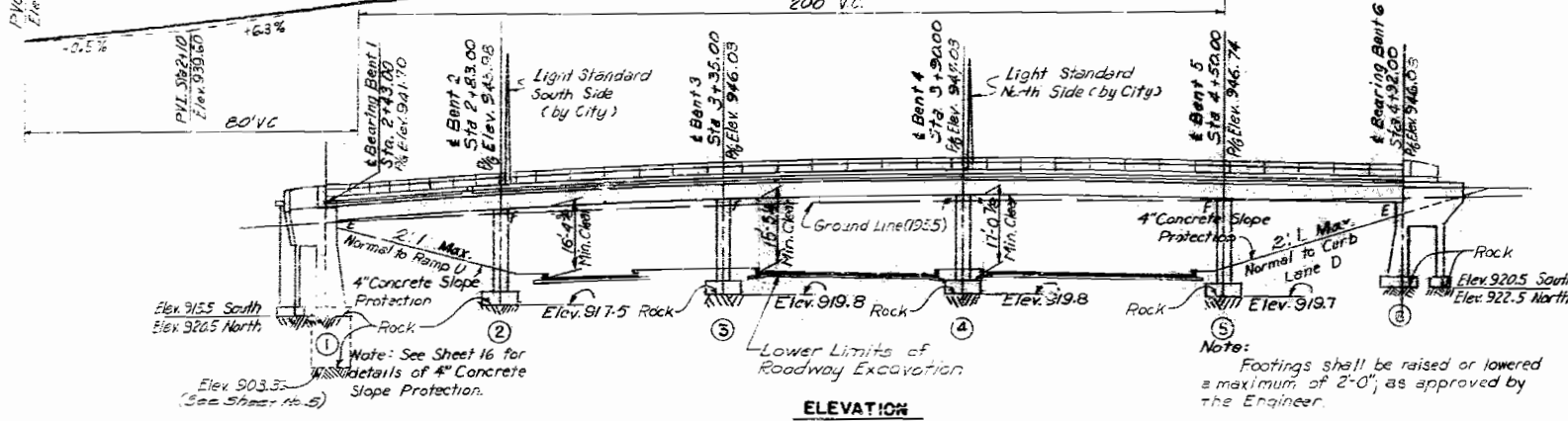


MISSOURI STATE HIGHWAY DEPARTMENT

5 MO 40  
4



940	Ground Elev. 943.8	Ground Elev. 943.7	Ground Elev. 942.6	Ground Elev. 942.0	Ground Elev. 941.5
930	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Dark Brown Clay	Brown Silty Clay
920	Top of Limestone Elev. 922.8	Top of Limestone Elev. 921.4	Top of Limestone Elev. 924.3	Top of Limestone Elev. 922.5	Top of Limestone Elev. 922.4
B-87      B-88      B-89      B-90      B-91					
940	Ground Elev. 941.1	Ground Elev. 941.0	Ground Elev. 940.8	Ground Elev. 940.7	Ground Elev. 940.6
930	Brown Silty Clay	Brick Fill	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
920	Top of Limestone Elev. 921.5	Top of Limestone Elev. 922.5	Top of Limestone Elev. 921.6	Top of Limestone Elev. 919.3	Top of Limestone Elev. 918.1
B-92      B-93      B-94      B-95      B-96					
940	Ground Elev. 940.4	Ground Elev. 940.4	Ground Elev. 940.4	Ground Elev. 940.4	
930	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	
920	Top of Limestone Elev. 920.9	Elev. 923.4	Brown Silty Clay	Elev. 918.4	Elev. 916.2
910	Glacial Clay	Elev. 923.4	Glacial Clay with Free Water	Elev. 912.4	
900	Top of Limestone Elev. 903.3		Top of Limestone Elev. 903.4		
B-97      B-98      B-98-1      B-98-2					



**BORING LOGS**

Bench Marks:  
N. E. Corner 10th & Harrison.  
"X" on hydrant 3" West of Spindle  
Elevation 956.37

SUBMITTED BY:  
K. S. Berginoff  
REGISTERED PROFESSIONAL ENGINEER MISSOURI NO. E-252

DATE: 4-3-1959

**BRIDGE: 10TH STREET UNDERPASS**  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(7) (RT I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

STD C-110R-7  
L-939-1

HOWARD, NEEDLES, TAYLOR & BERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY, MISSOURI  
NEW YORK, NEW YORK

MADE R.A. COE DATE 7-30-56 TRACED  
CHECKED R.S.G. DATE 8-1-56 SCALE

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

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MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJ. SECT. NO. 9 SEC.	SHEET TOTAL SHEETS
5 MO.	4
COUNTY	ROUTE
	MILE

GENERAL NOTES

For Specifications A.A.S.H.O., 1953 with Tentative Revision T 14 (54).

Construction Specifications: Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts, and Incident Structures, 1955.

Design Loading: H20-S16-44  
15 lbs. per square foot future wearing surface.

Concrete: Concrete Stress (Class "B" and "B-1")  $F_c = 4000$  psi  $F_c = 4000$  psi.  
Concrete for superstructure shall be Class "B-1" air entrained.  
Concrete for substructure shall be Class "B" air entrained. If the contractor desires, he may use Class "B-1" in lieu of Class "B" concrete in substructure with payment made on the basis of Class "B" concrete.  
All forms are to be removed from the interior of box girders.

Reinforcing Steel: Allowable stress 20,000 psi.  
All aplices 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.  
Dimension shown on plans from reinforcing steel to outside edge of concrete are all clear dimensions.  
All bending dimensions are from "out" to "out" or "center" to "center" of bar.

Fiber Conduit: Expansion sleeve is oversized fiber conduit, as provided by manufacturer, complete with rubber ring.

Joint Filler: Where joint filler is specified on the plans it shall conform with the requirements for Gray Rubber Compound Joints, as given in Section 65-22B of the Standard Specification.

Welding: Qualification for welding operators will be required.

Slope Protection: Not included in Bridge Quantities. See sheet 16 for details. See Road Plans for Quantities.

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 the disposition of utilities.

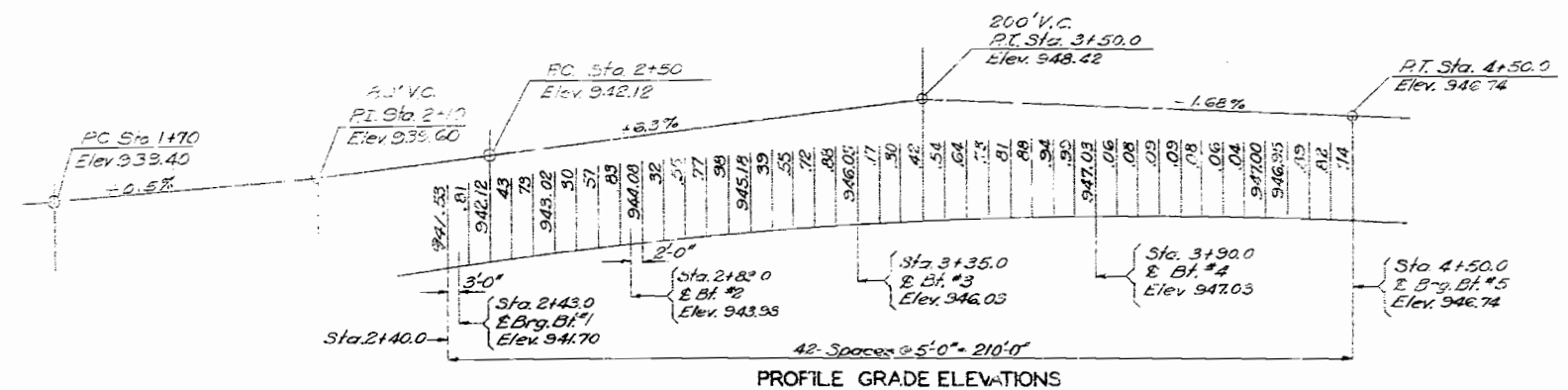
Deflection Joints: Deflection joints shall be placed in the parapet or sidewalk and parapet where shown on the plans. The surface of the joint shall be coated with paraffin and the reinforcing steel shall be stopped 2' clear of joint. No chamfer shall be placed on the sidewalk.

Estimated Quantities: Estimated quantity of Class "B" concrete substructure, includes all concrete in end bents (including wing walls and end posts) and footings of intermediate bents. All other concrete is included in estimated quantity of Class "B-1" superstructure.  
Joint filler, roofing felt, insulation pads and other incidental items shown on the plans shall be included in the price bid for other items.

Waterproofing: Superstructure deck to be waterproofed. See Special Provisions.

Shipping: Permits will be required for all truck loads over the legal length.

Painting: For painting see Special Provisions.



ESTIMATED QUANTITIES					
ITEM NO.	ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL
1-G	Class C Excavation for Structures	Cu. Yds.	119.0		119.0
16-C	Class C Concrete	Cu. Yds.	12.0		12.0
16-B	Class B Concrete	Cu. Yds.	330.4		330.4
16-B-1	Class B-1 Concrete	Cu. Yds.		938.3	938.3
17-B	Fabricated Structural Steel - Fabricated and Erected	Lbs.		9,600	9,600
17-B	Fabricated Structural Steel - Fabricated, not Erected	Lbs.		1940	1940
17A-A	Aluminum Alloy Handrail	Lin. Ft.		466	466
17-B	Fabricated Structural Steel (Bearings)	Lbs.		2,370	2,370
19-A	Reinforcing Steel	Lbs.	30,330	245,510	275,840
AOH	Lighting Conduit System	Lump Sum		1	1

Note: All excavation for bridge will be paid for as Class I Excavation. Estimated excavation for structures includes only amounts of excavation below Roadway Excavation.

This item includes the portion of the expansion joint on Ramp 3 of Bridge L-939-1 which will be fabricated with the portions of Tenth Street but will be erected with Bridge L-939-2 by the contractor who builds Bridge L-939-2.

GENERAL NOTES AND ESTIMATED QUANTITIES

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(7) (RT. I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENLOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK  
MADE J.S.H. DATE 7-8-56 TRACED G.S.L. DATE 2-1-57  
CHECKED R.S.B. DATE 12-29-56 SCALE

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

SHEET 2 OF 17

L-939-1

828

MISSOURI STATE HIGHWAY DEPARTMENT

Table with project details: STATE FEDERAL PROJECT NO. 8 SEC., COUNTY, SHEET NO. 42, TOTAL SHEETS.

Main table: PARTIAL BILL OF REINFORCING STEEL. Columns include NUMBER, SIZE, LENGTH, MARK, TYPE, DIMENSIONS (A, B, C, D). Sub-sections include BENT 1, BENTS 2, 3, 4, 5 SUBSTRUCTURE, BENTS 2, 3, 4, 5 SUPERSTRUCTURE, and BENT 6.

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Note: Prefix all bar marks for Bent 1 with "B1", example: B1-F601. Prefix all bar marks for Bents 2, 3, 4, 5 with "B2", example: B2-F701. Prefix all bar marks for Bent 6 with "B6", example: B6-F601. Prefix all bar marks for superstructure with "SU", example: SU-B501. For bending and cutting diagrams see sheet 4. \* Indicates these bars may bent in field.

BRIDGE: 10TH STREET UNDERPASS

STATE ROAD MIDTOWN FREEWAY KANSAS CITY, MO.

PROJECT NO. I-70-1(7)(RT. I-70) STA. 23+20.27 (LANE C)

JACKSON COUNTY

REINFORCING SCHEDULE

FINISHED

FINISHED

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

DATE 7-30-56 TRACED DATE 8-9-56 CHECKED TDD

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

SHEET 3 OF 17

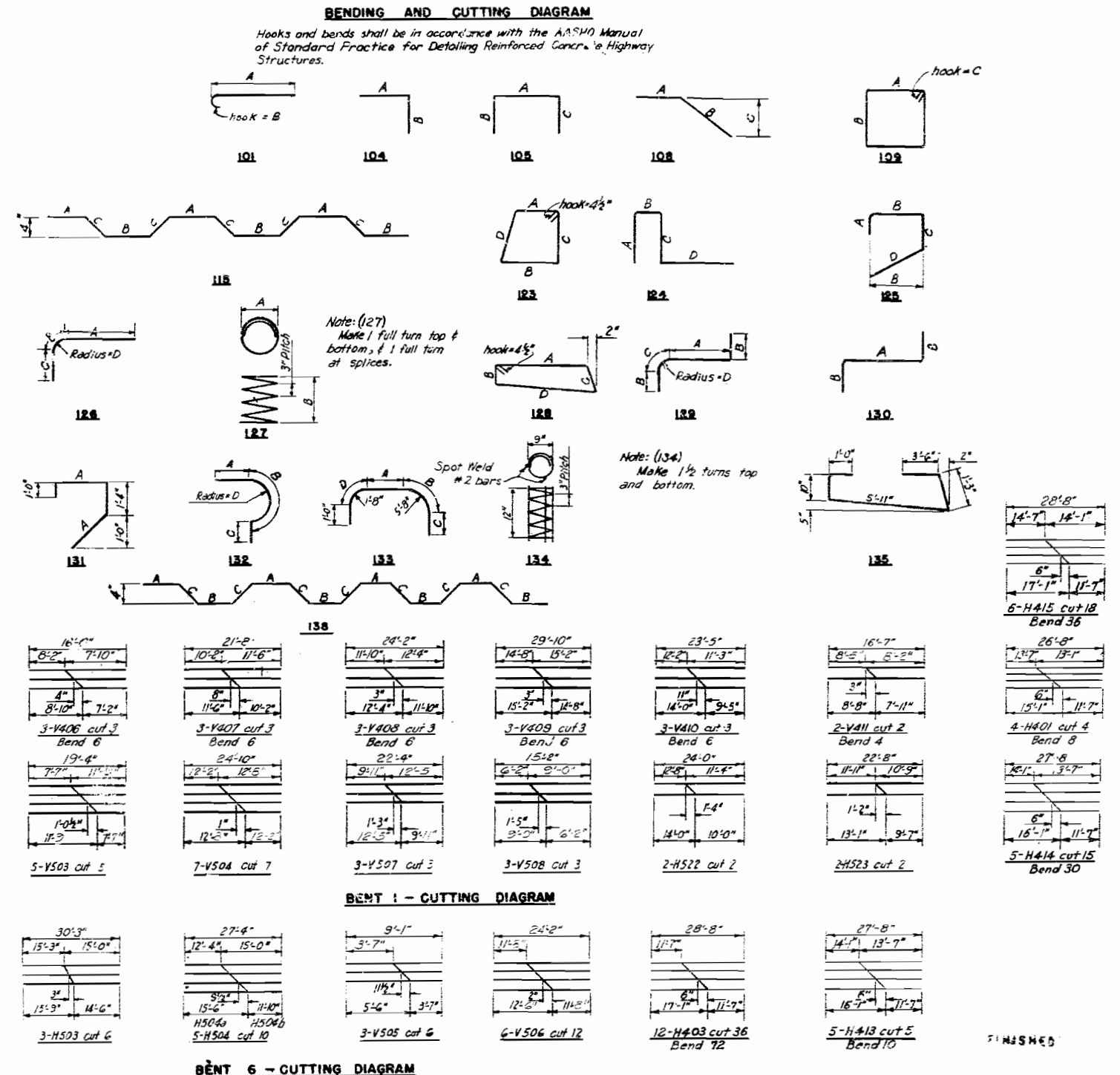
L-939-1

MISSOURI STATE HIGHWAY DEPARTMENT

STATE/FEDERAL PROJECT NO.	5 MO.	43
SHEET NO.	COUNTY	MONTE SUE
4		

PARTIAL BILL OF REINFORCING STEEL					DIMENSIONS				
NUMBER	SIZE	LENGTH	MARK	TYPE	A	B	C	D	
<b>SUPERSTRUCTURE (CONTINUED)</b>									
2	#4	6'-13"	P401	Str.					
2	#4	5'-10"	P402	Str.					
4	#4	34'-8"	P403	Str.					
12	#4	5'-8"	P404	Str.					
8	#4	38'-8"	P405	Str.					
12	#4	6'-2"	P406	Str.					
16	#4	6'-8"	P407	Str.					
8	#4	48'-8"	P408	Str.					
12	#4	7'-2"	P409	Str.					
16	#4	33'-2"	P410	Str.					
8	#4	36'-8"	P411	Str.					
4	#6	6'-2"	P601	Str.					
4	#6	7'-2"	P602	Str.					
4.38	#4	30'-2"	S401	Str.					
24	#4	33'-10"	S402	Str.					
12	#4	30'-10"	S403	Str.					
403	#4	14'-6"	S404	12R	5'-9"	10"	14-3"	5'-11"	
418	#4	7'-3"	S405	10R	11"	2'-2"	4-3"		
2	#4	15'-0"	S406	12R	4'-0"	10"	14-3"	6'-2"	
2	#4	16'-0"	S407	12R	6'-6"	10"	14-3"	6'-8"	
1	#4	12'-6"	S408	135					
12	#4	29'-10"	S409	Str.					
1	#4	27'-3"	S410	Str.					
1	#4	27'-0"	S411	Str.					
1	#4	26'-3"	S412	Str.					
1	#4	26'-2"	S413	Str.					
1	#4	25'-6"	S414	Str.					
24	#4	38'-8"	S415	Str.					
24	#4	32'-8"	S416	Str.					
24	#4	28'-5"	S417	Str.					
12	#4	37'-8"	S418	Str.					
56	#4	15'-4"	S419	Str.					
26	#5	27'-9"	S501	Str.					
444	#5	23'-6"	S502	Str.					
1	#5	33'-0"	S503	Str.					
1	#5	33'-5"	S504	Str.					
1	#5	32'-0"	S505	Str.					
186	#5	29'-7"	S506	13B	3'-5"	3'-3"	5'		
162	#5	32'-8"	S507	Str.					
56	#5	22'-1"	S508	115	3'-5"	3'-3"	5'		
56	#5	9'-0"	S509	Str.					
192	#5	25'-0"	S510	Str.					
252	#5	21'-9"	S511	Str.					
15	#5	9'-6"	S512	Str.					
12	#5	11'-8"	S513	Str.					
15	#5	2'-4"	S514	Str.					
552	#5	3'-4"	S515	104	1'-8"	1'-8"			
9	#5	26'-2"	S516	Str.					
9	#5	16'-9"	S517	Str.					
9	#5	24'-0"	S518	Str.					
1	#5	31'-5"	S519	Str.					
192	#5	25'-3"	S520	Str.					
8	#6	43'-6"	S601	Str.					
2	#6	53'-1"	S602	Str.					
144	#6	3'-0"	S603	125	5"	9"	11"	1'-5"	
4	#6	60'-0"	S604	Str.					
4	#6	51'-1"	S605	Str.					
4	#6	29'-1"	S606	Str.					
48	#6	18'-0"	S607	Str.					
4	#6	21'-2"	S608	Str.					
4	#6	12'-5"	S609	Str.					
2	#6	24'-0"	S610	Str.					
6	#6	44'-2"	S611	Str.					
2	#6	23'-0"	S612	Str.					
12	#6	19'-0"	S613	Str.					
2	#6	30'-0"	S614	Str.					
2	#6	54'-2"	S615	Str.					
4	#6	52'-8"	S616	Str.					
4	#6	33'-1"	S617	Str.					
6	#6	31'-1"	S618	Str.					
120	#6	4'-6"	S619	Str.					

\* Indicates these bars may be bent in field



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HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI  
 MADE G.C.F. DATE 7-31-56  
 CHECKED TDD DATE 7-9-56

NOTE: This drawing is not to scale. Follow dimensions

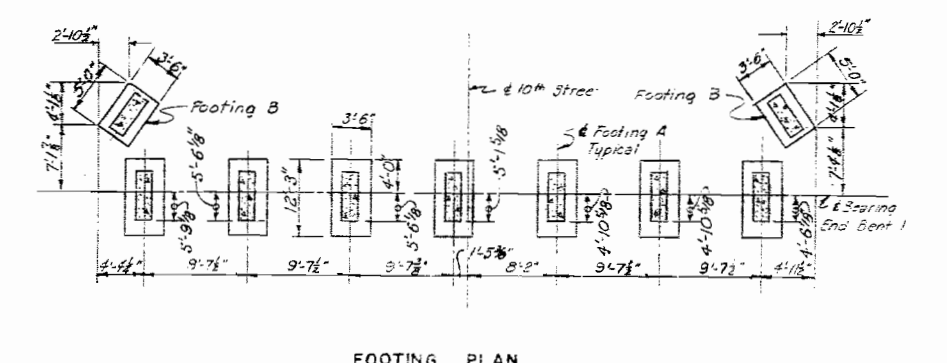
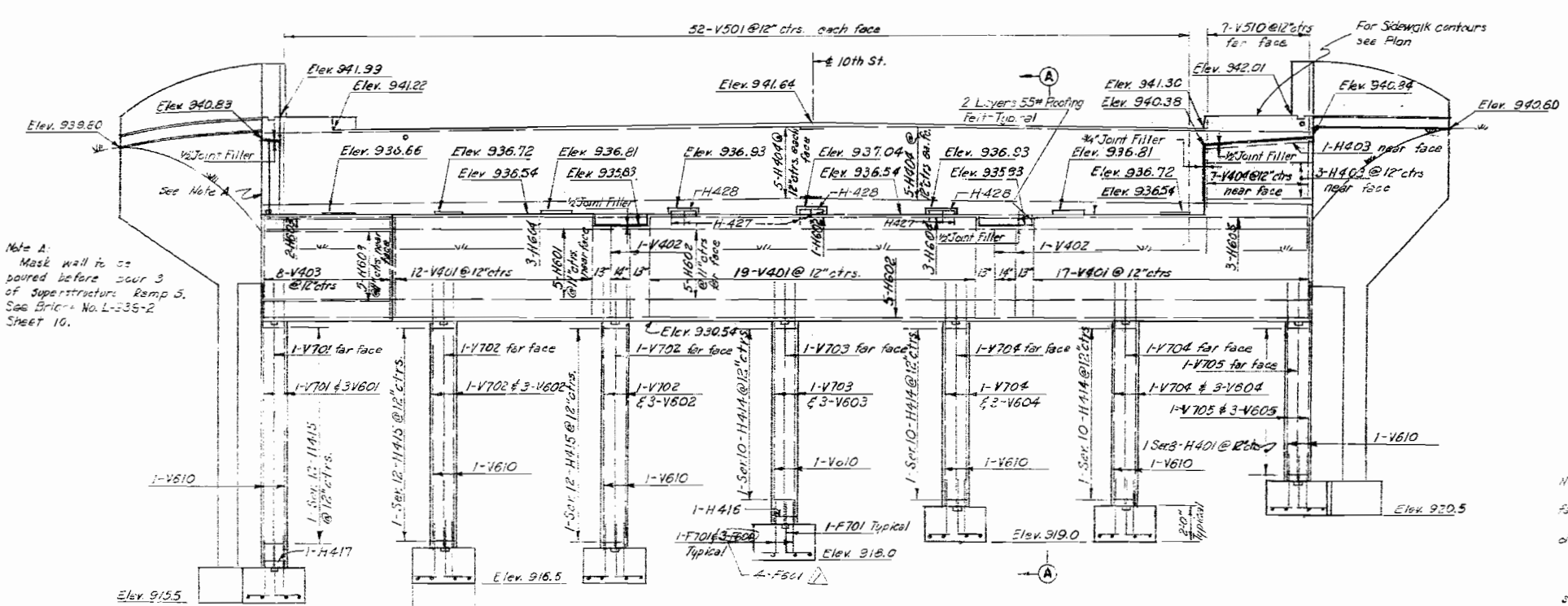
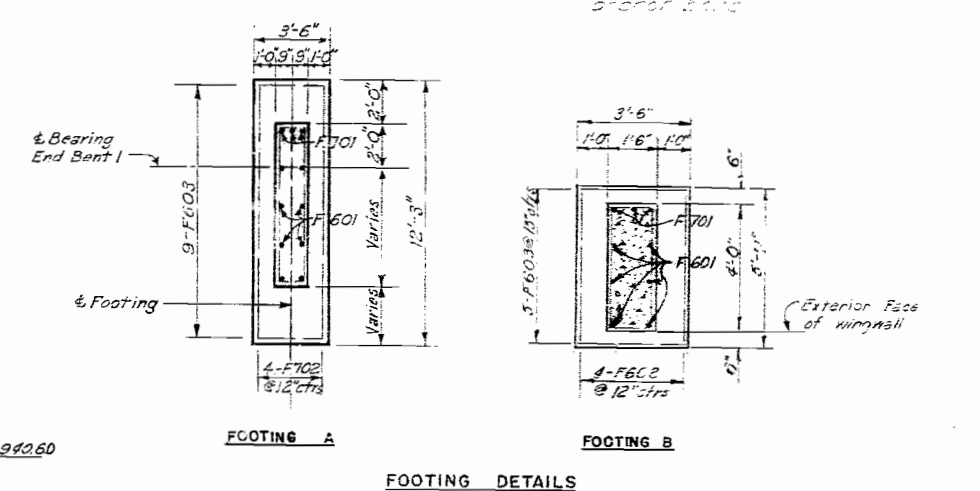
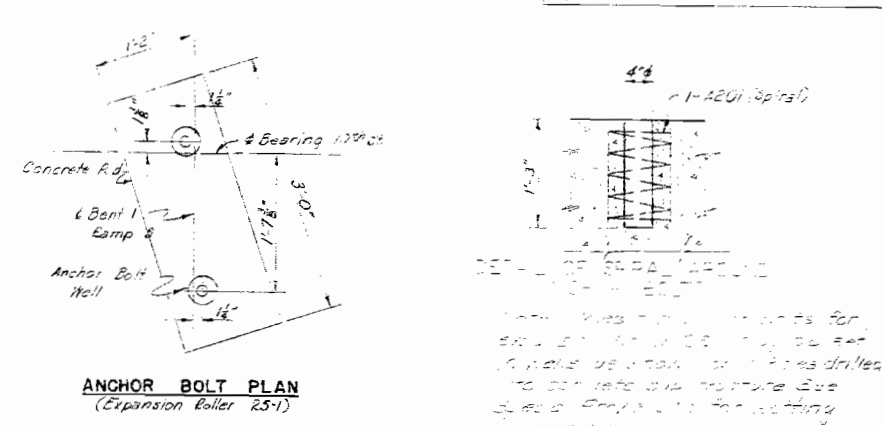
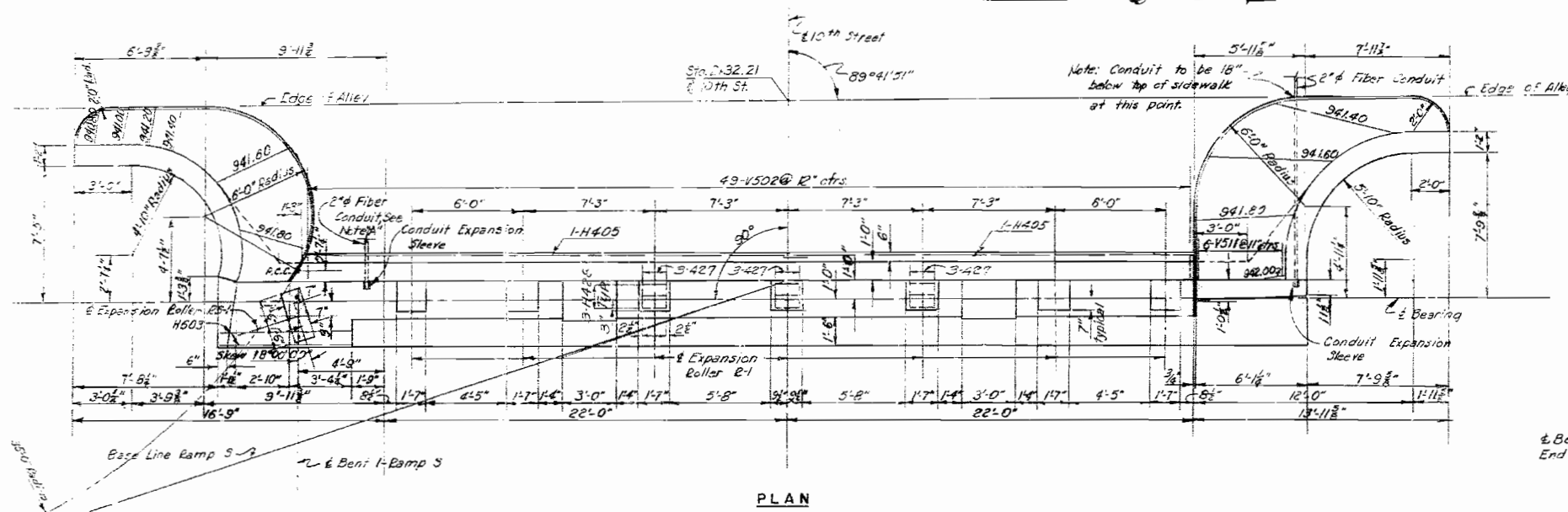
BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-1(7) (RT I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY  
 SHEET 4 OF 17  
 L-939-1

MISSOURI STATE HIGHWAY DEPARTMENT

PROJECT NO.	STATE FEDERAL PROJECT No. & Loc.	SHEET NO.	TOTAL SHEETS
5 MO.		34	
CITY	COUNTY	DISTRICT	SEC.
4			

Note A:  
 Terminate 2" Fiber conduit at 2'x3' unpaved area on other side of Alley.

Note: Conduit to be 18" below top of sidewalk at this point.



Notes:  
 Elevations on backwall are at front face of backwall.  
 For Section A-A and Wingwall and sidewalk details see sheet 6.  
 For Expansion joint details see sheet 17.  
 For Concrete and post detail see sheet 15.  
 Where elevations or dimensions are shown to surfaces which are to receive joint filler, these elevations or dimensions are to the concrete.

Fill with Casso Concrete. See Special Provisions.

Bottom of pocket in rock

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

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

MADE REC DATE 7-11-56 TRACED DATE  
 CHECKED JSH DATE 8-6-56 SCALE

END BENT I

SHEET 5 OF 17

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-1(7)(RT I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

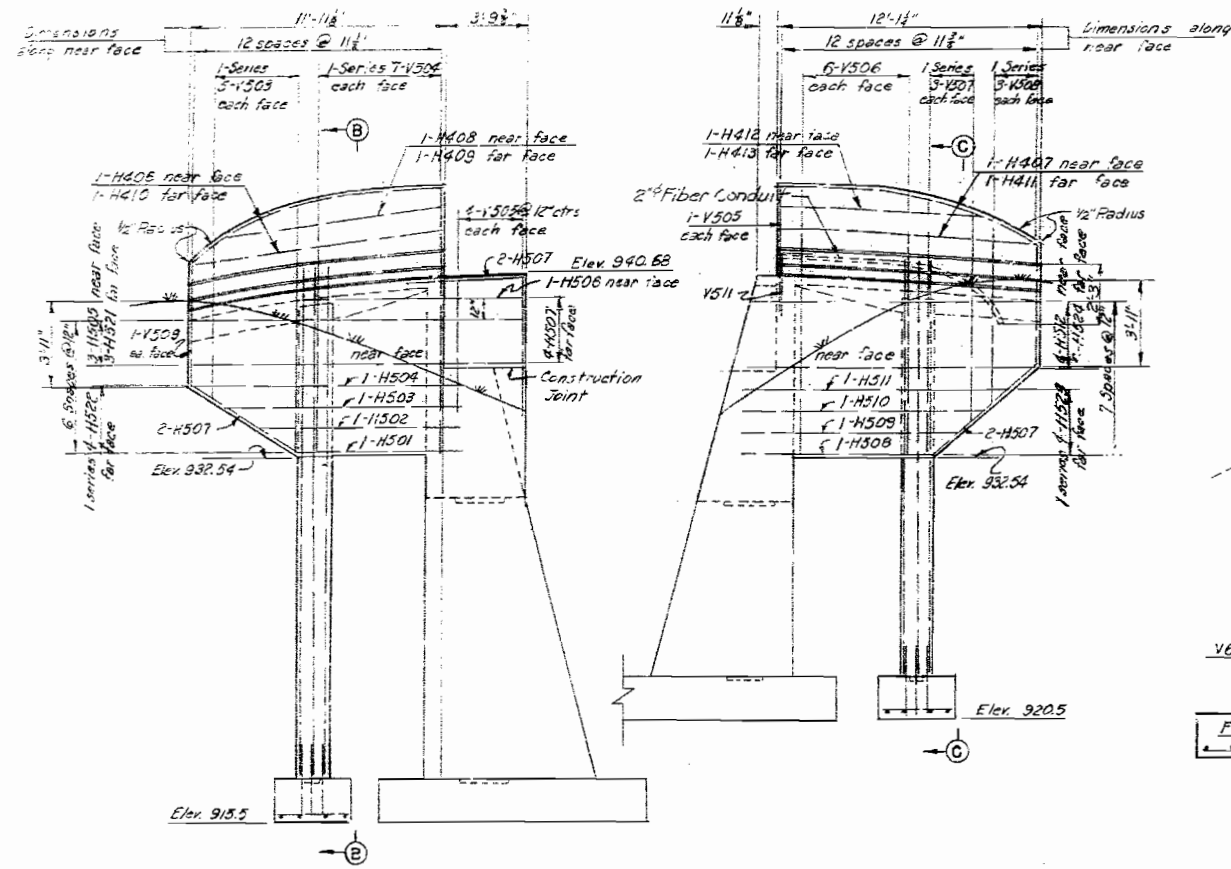
SEE FINAL PLANS BROWN LINES

L-939-1

331

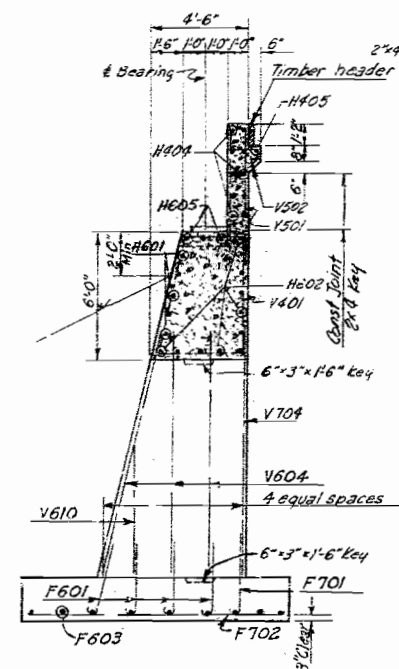
MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT NO. 8	SEC.	SHEET NO.	TOTAL SHEETS
5 MC		4	
DIST. NO.	COUNTY	STATE	SEC.
4			

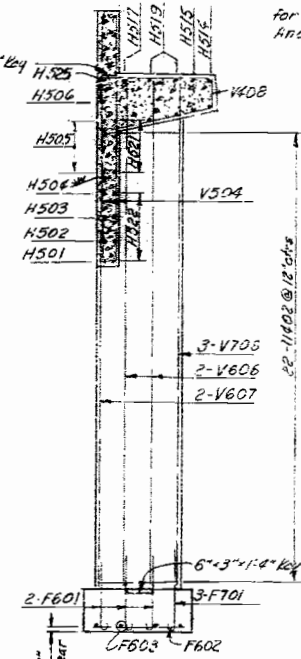


DEVELOPED ELEVATION SOUTH WINGWALL

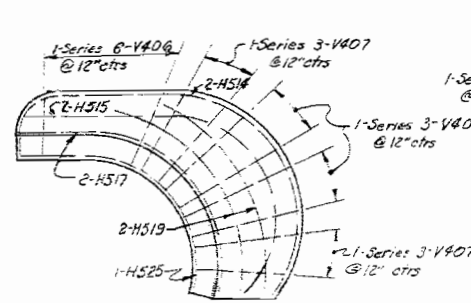
DEVELOPED ELEVATION NORTH WINGWALL



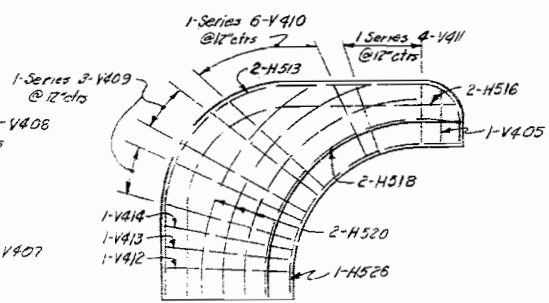
SECTION A-A See Sheet 5



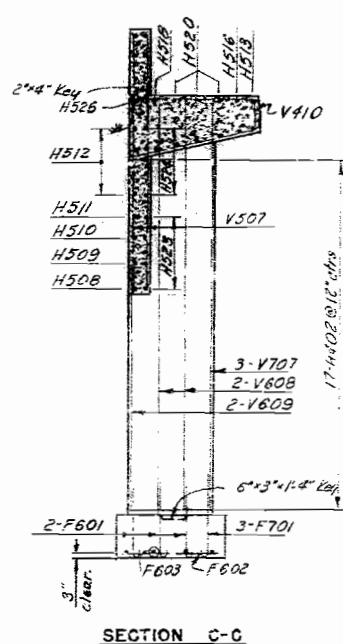
SECTION B-B



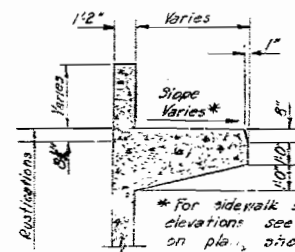
SOUTH SIDEWALK



NORTH SIDEWALK

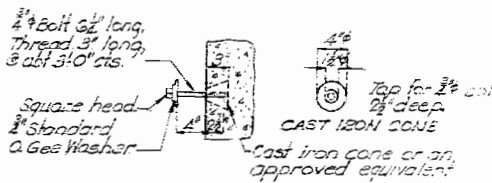
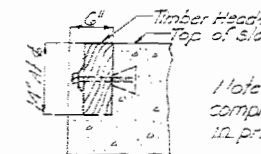


SECTION C-C

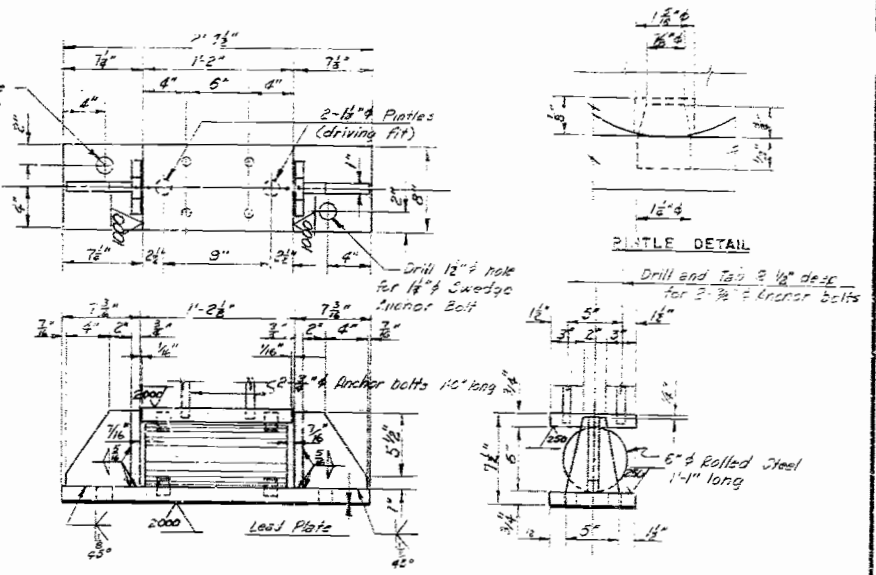


SECTION THRU SIDEWALK AND END POST

Note: For rustication detail see sheet 8.



DETAILS OF TIMBER HEADER



EXPANSION ROLLER RS-1

Number Required - 1

Notes (Expansion Roller RS-1)  
 Top and bottom plates to be U.S.S. T-1 Alloy or equivalent.  
 Material for pintles and rollers shall be cold finished carbon steel  
 AISI-C1045 or C1042 (Turned and polished) E6015 or E6016 welding electrodes  
 shall be used. Paint: Shop: One coat red lead except top surface  
 of top plate, bottom surface of bottom plate and anchor bolts.  
 Anchors and end brackets to be structural carbon steel.  
 Bottom plate anchor bolts shall be 1/4\" swedge  
 bolts with hex. nuts and shall extend 12\" into  
 concrete.  
 Spaces between anchor bolts and plate shall be  
 filled with an approved metallic filler, such as  
 babbitt poured in place before setting nuts.  
 Lead plate under bottom plate shall be  
 approximately 1/8\" thick and weigh 8\"/sq. ft.  
 Cost of lead plate and babbitt material shall  
 be included in price bid for other items.  
 Surfaces marked  $\lambda$  to be finished to finish  
 shown (A.S.A. B4C.1-55).

Note:  
 For location of Section A-A see sheet 5  
 Use 2\" clear cover on all reinforcing unless  
 otherwise shown.

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-1(7) (R.E.I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

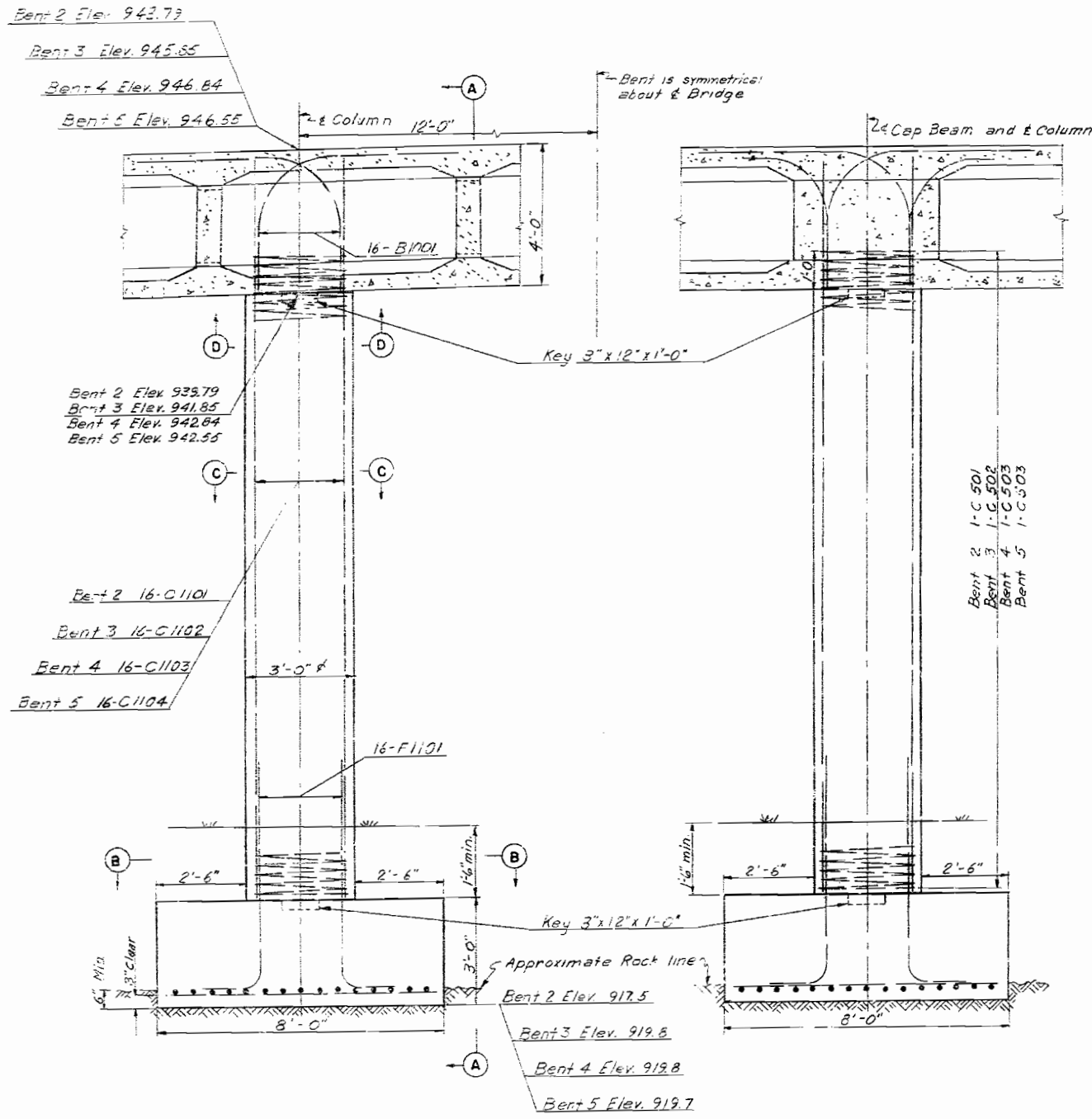
332

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE IN U.S.A. DATE 2-12-36 TRACED DATE \_\_\_\_\_  
 CHECKED ASH DATE 8-6-36 SCALE \_\_\_\_\_

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

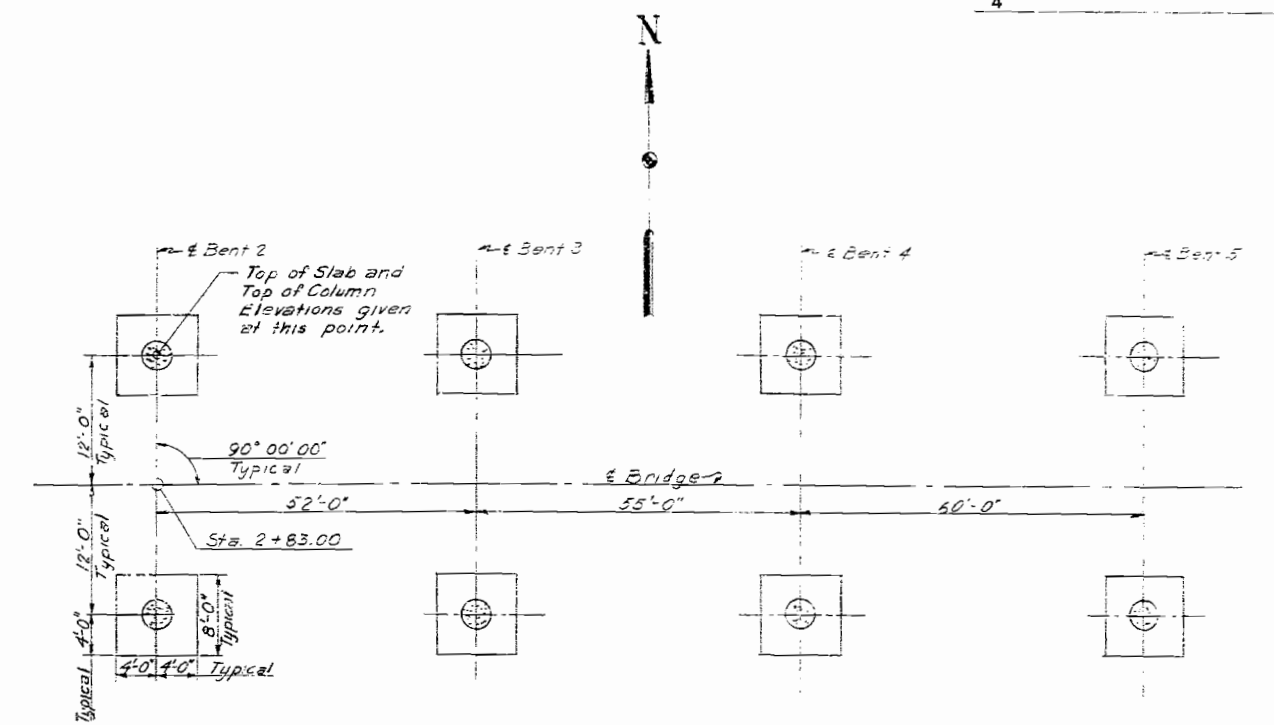
MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT No. 6 Sec.	PAGE: SHEET TOTAL
5 MO.	4
DATE: 7-15-56	SCALE:

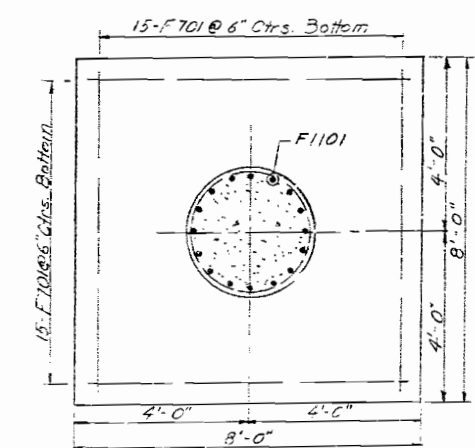


ELEVATION BENTS 2,3,4, AND 5

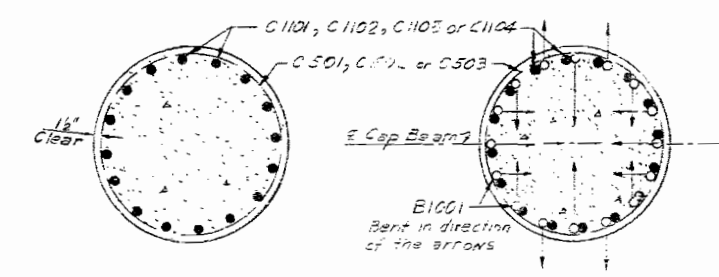
SECTION A-A



FOOTING PLAN



SECTION B-B



SECTION C-C

SECTION D-D

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

BENTS 2,3,4, AND 5

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(7) (RT. I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

SHEET 7 OF 17

L-939-1

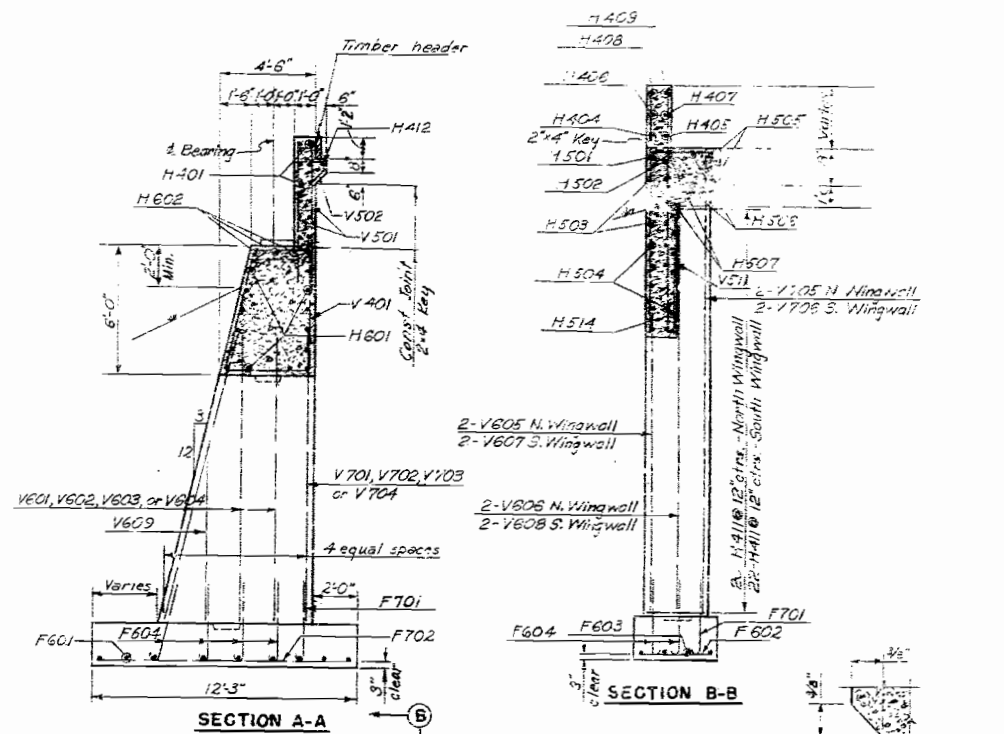
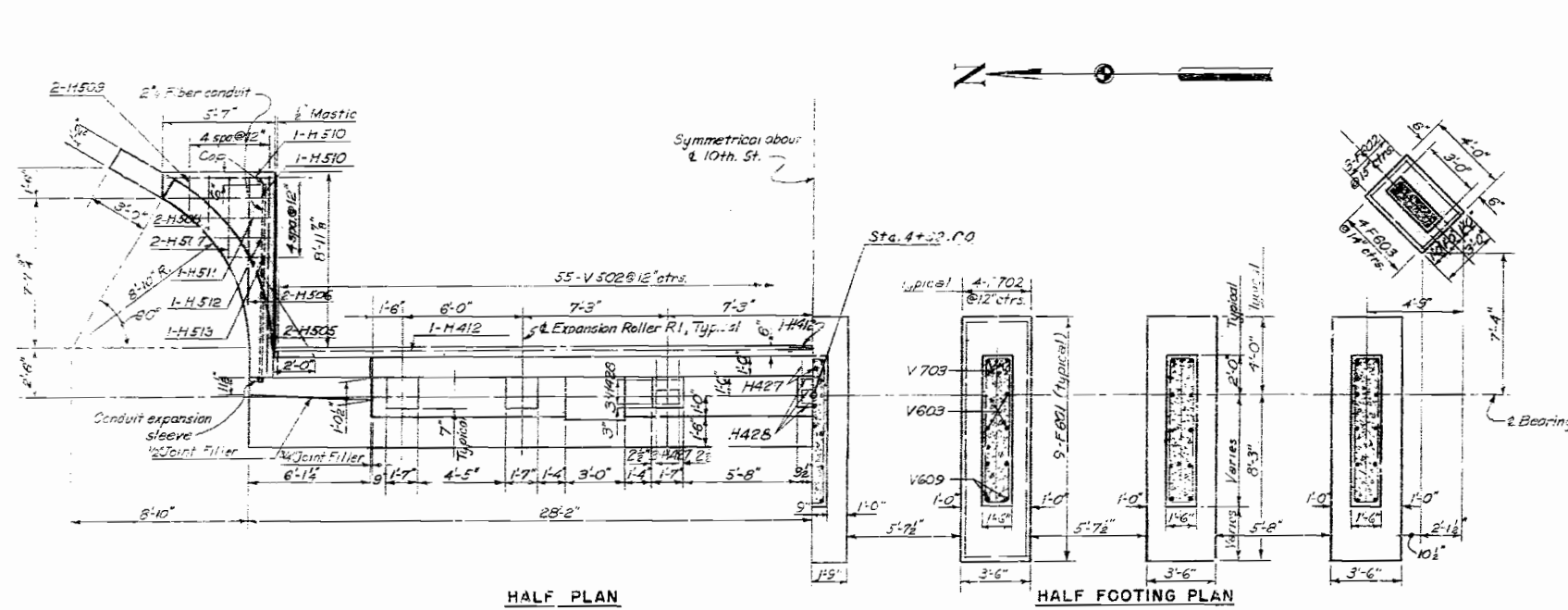
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NOTE: This drawing is not to scale. Follow dimensions.

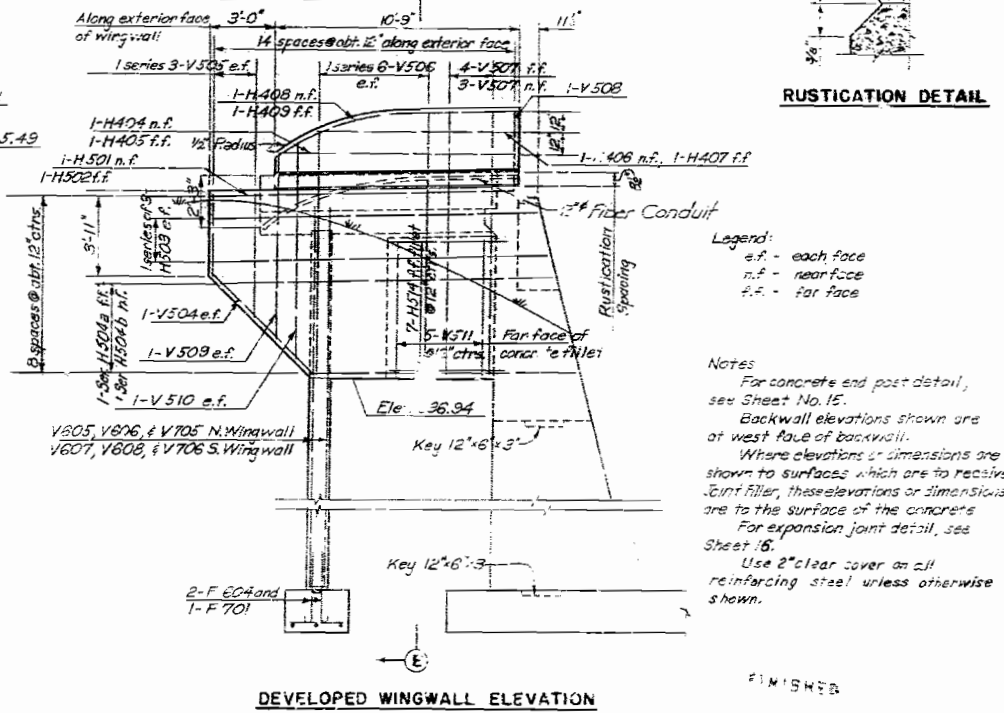
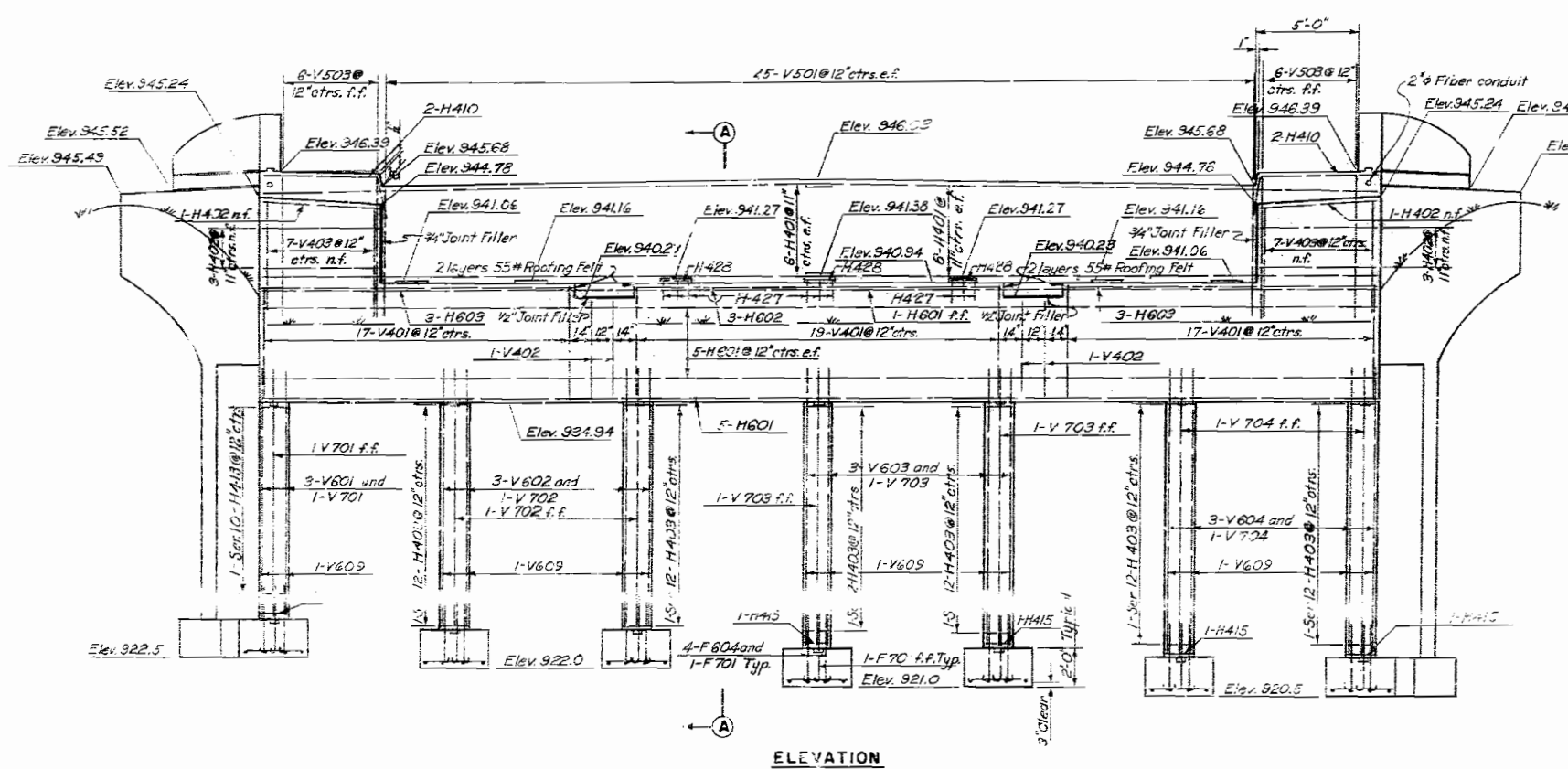
SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT NO. B SEC.	POSTED	DATE	TOTAL SHEETS
5 MO.			
SHEET NO.	DATE	ROUTE	SEC.
4			



RUSTICATION DETAIL



**BRIDGE: 10TH STREET UNDERPASS**  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-(17)RT-I-70 STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

234

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE: PHH DATE: 7-9-56 TRACED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED: RSG DATE: 7-16-56 SCALE: \_\_\_\_\_

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

END BENT 6

SHEET 8 OF 17

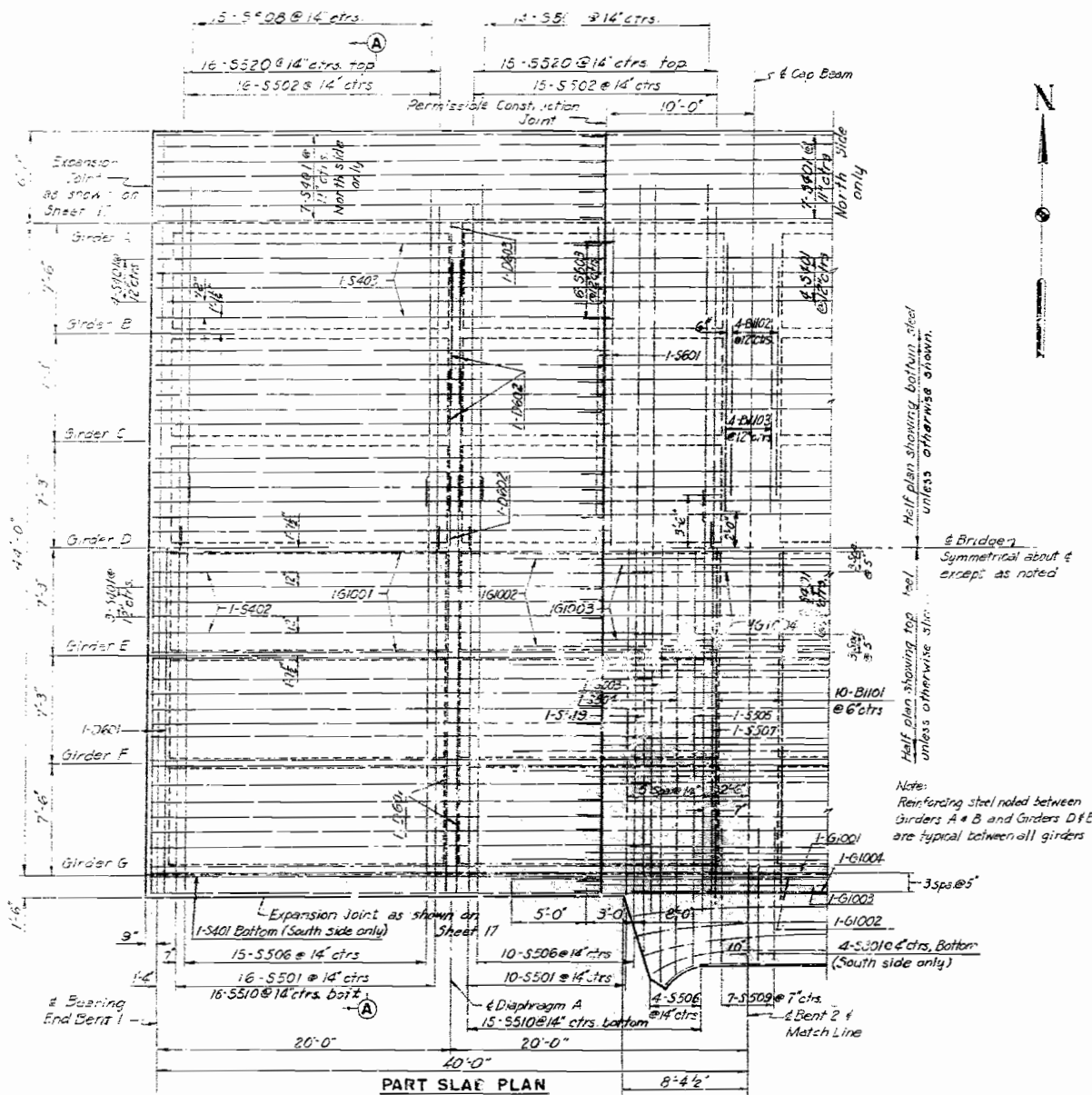
L-939-1

SEE FINAL PLANS BROWN LINES

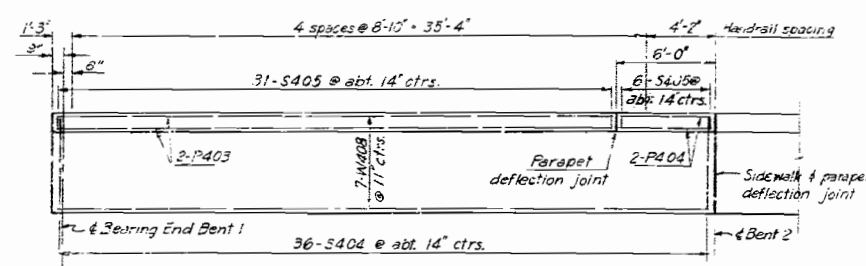


MISSOURI STATE HIGHWAY DEPARTMENT

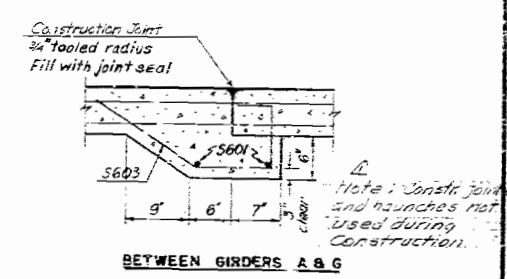
STATE	FEDERAL PROJECT No. 8	SHEET No.	TOTAL SHEETS
MO		48	
4			



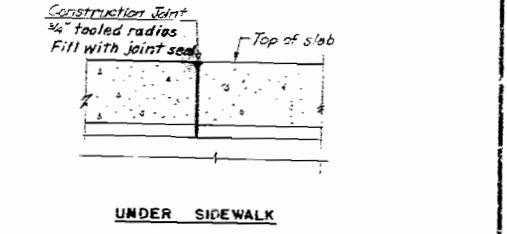
PART SLAB PLAN



PART NORTH SIDEWALK AND PARAPET PLAN

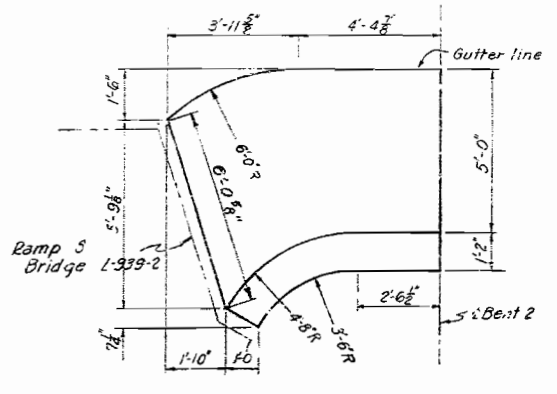


BETWEEN GIRDERS A & G

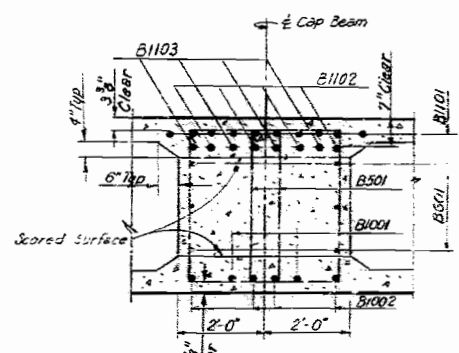


UNDER SIDEWALK

TOP SLAB CONSTRUCTION JOINT DETAILS

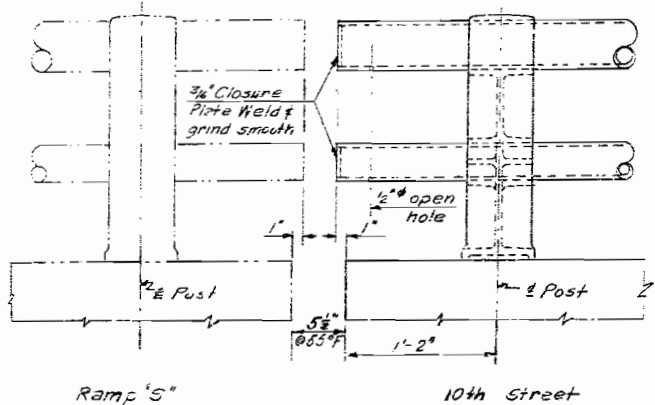


SOUTH SIDEWALK AND PARAPET DIMENSIONS

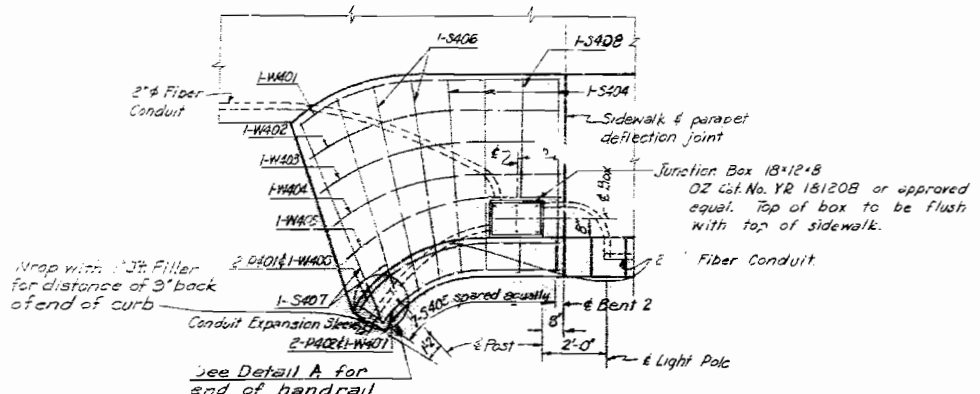


SECTION THRU CAP BEAM

Showing cap beam reinforcing steel. Typical all cap beams.



DETAIL A



PART SOUTH SIDEWALK AND PARAPET PLAN

Notes:  
 For section A-A see sheet 15.  
 For additional details of Diaphragm A see section D-D sheet 15 and Access Hole Detail sheet 19.  
 For pouring sequence see section D-D sheet 15.  
 For Handrail end Light Pole anchor bolt setting detail, see sheet 16.

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-1(C) (RT-170) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

SHEET 9 OF 17

CONSTRUCTION...

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

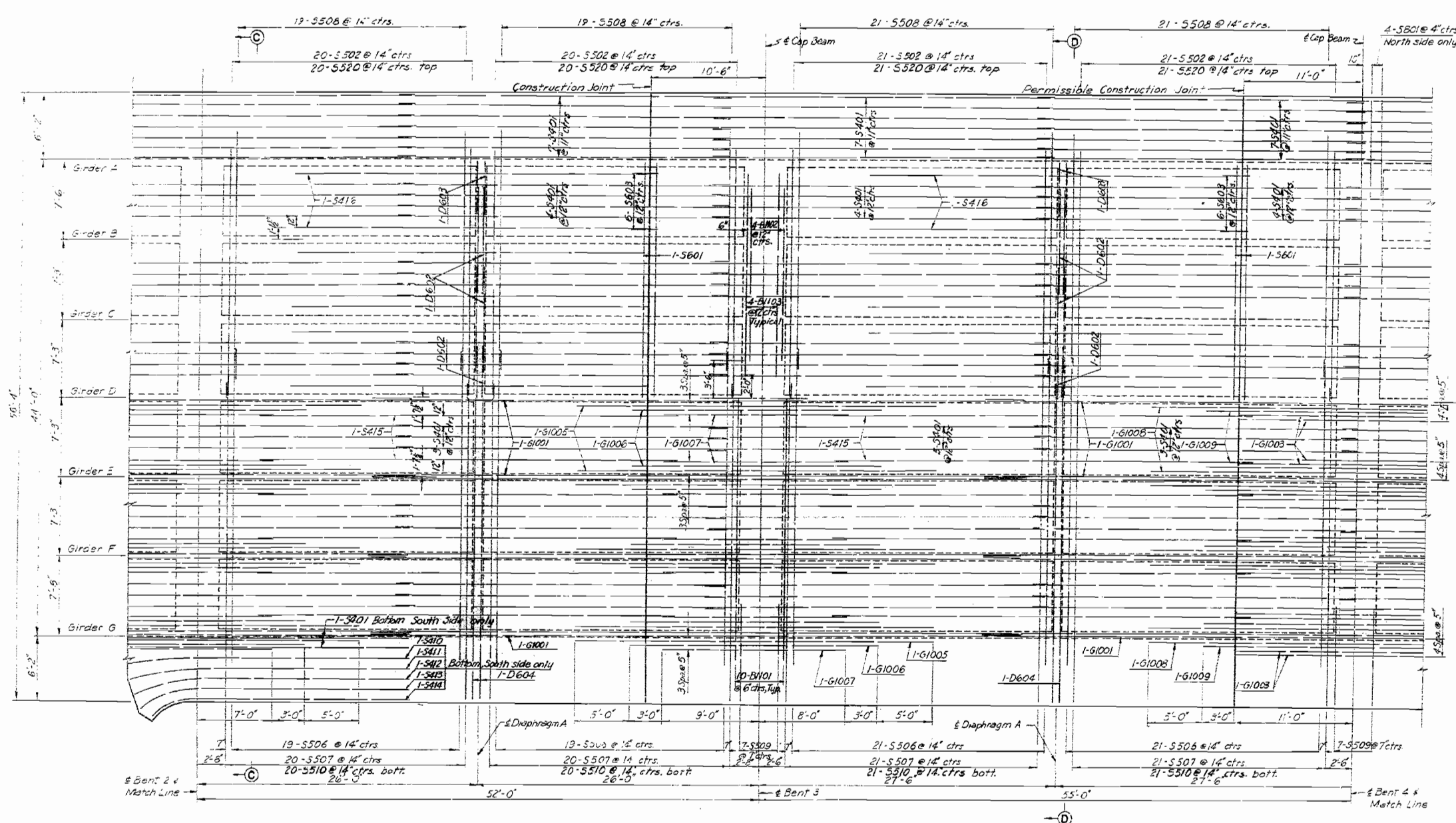
HOWARD, NEEDLES, TAMMEN & BERGEN, OFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE A.D. DATE 6-5-56 TRACED DATE  
 CHECKED T.D.D. DATE 7-17-56

252

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MO				44	
SHEET NO.		COUNTY	ROUTE		
4		JACKSON	1-70		



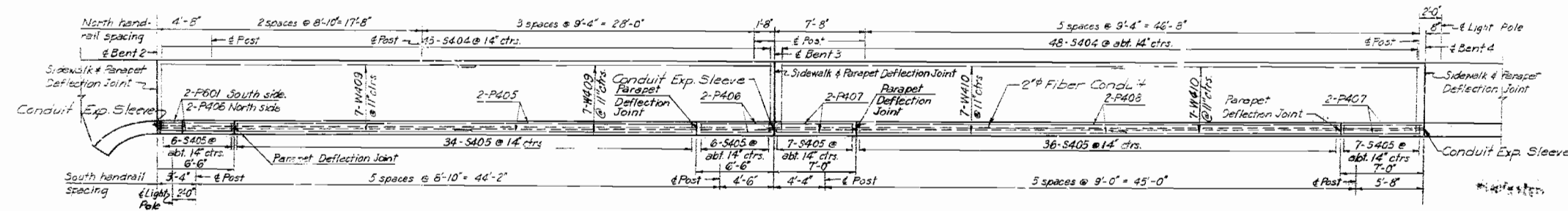
Half plan showing top steel unless otherwise shown

Half plan showing bottom steel unless otherwise shown

Bridge 7  
Symmetrical about centerline except as noted

Notes:  
Reinforcing steel noted between Girders A & B and Girders D & E are typical between all girders. For Sections C-C & D-D see sheet 15.  
For additional details of Diaphragm A see section D-D sheet 15 and Access Hole Detail sheet 14.  
For Top Slab Construction Joint Details see sheet 9.  
Cap Beam Steel for Bent 4 is similar to Bent 3. For Section Thru Cap Beam see sheet 9.  
For Handrail and Light Pole anchor bolt setting detail see sheet 14.  
For Pouring sequence see section DD sheet 15.

PART SLAB PLAN



PART SIDEWALK AND PARAPET PLAN

South sidewalk and parapet shown  
North sidewalk and parapet similar by opposite hand except as noted

TOP SLAB PLAN

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(17)(RT. I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

236

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

MADE A.D.N. DATE 6-6-56 TRACED DATE  
CHECKED T.D.D. DATE 7-17-56 SCALE

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

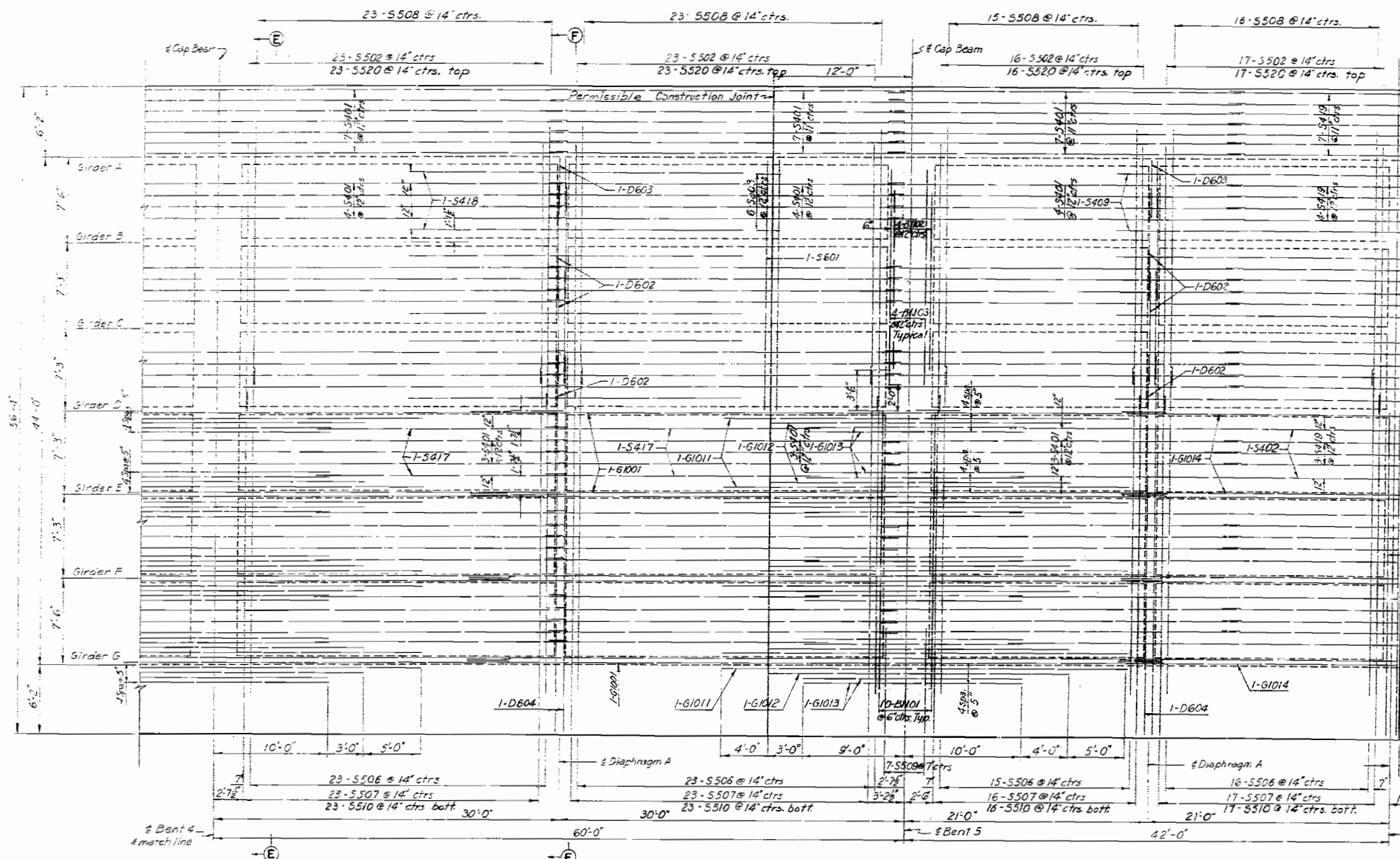
SHEET 10 OF 17

L-939-1

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT No. 8	SEC.	DATE	SHEET	TOTAL SHEETS
MO				5	15
4					



Expansion Joint as shown on sheet 16

Half plan showing bottom steel unless otherwise shown

Half plan showing top steel unless otherwise shown

Bridge Symmetrical about E except as noted

Notes:

Reinforcing steel noted between Girders A & B and Girders D & E are typical between all girders for Sections E-E and F-F see sheet 15.

For additional details of Diaphragm A see section D-D sheet 15 and Access note Detail sheet 14.

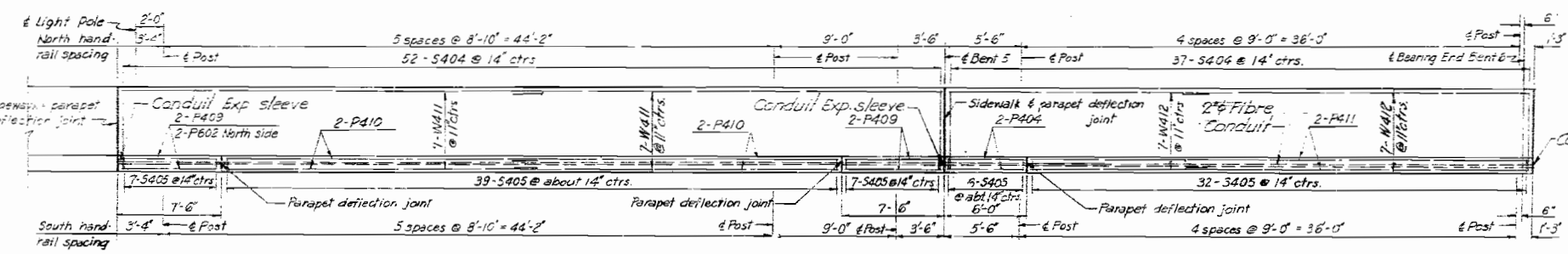
For Top Slab Construction Joint Details see sheet 9.

For Section Thru Cap Beam see sheet 9.

For Handrail and Light Pole anchor bolt setting detail see sheet 16.

For pouring sequence see Section D-D sheet 15.

PART SLAB PLAN



PART SIDEWALK AND PARAPET PLAN

South sidewalk and parapet shown.  
North sidewalk and parapet similar by opposite hand except as noted

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. E-70-1(7)(RT 1-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

TOP SLAB PLAN

SHEET 11 OF 17

L-939-i

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

MADE BY: J.D.H. DATE: 6-7-56 TRACED BY: DATE: \_\_\_\_\_  
CHECKED BY: T.O.D. DATE: 7-17-56 SCALE: \_\_\_\_\_

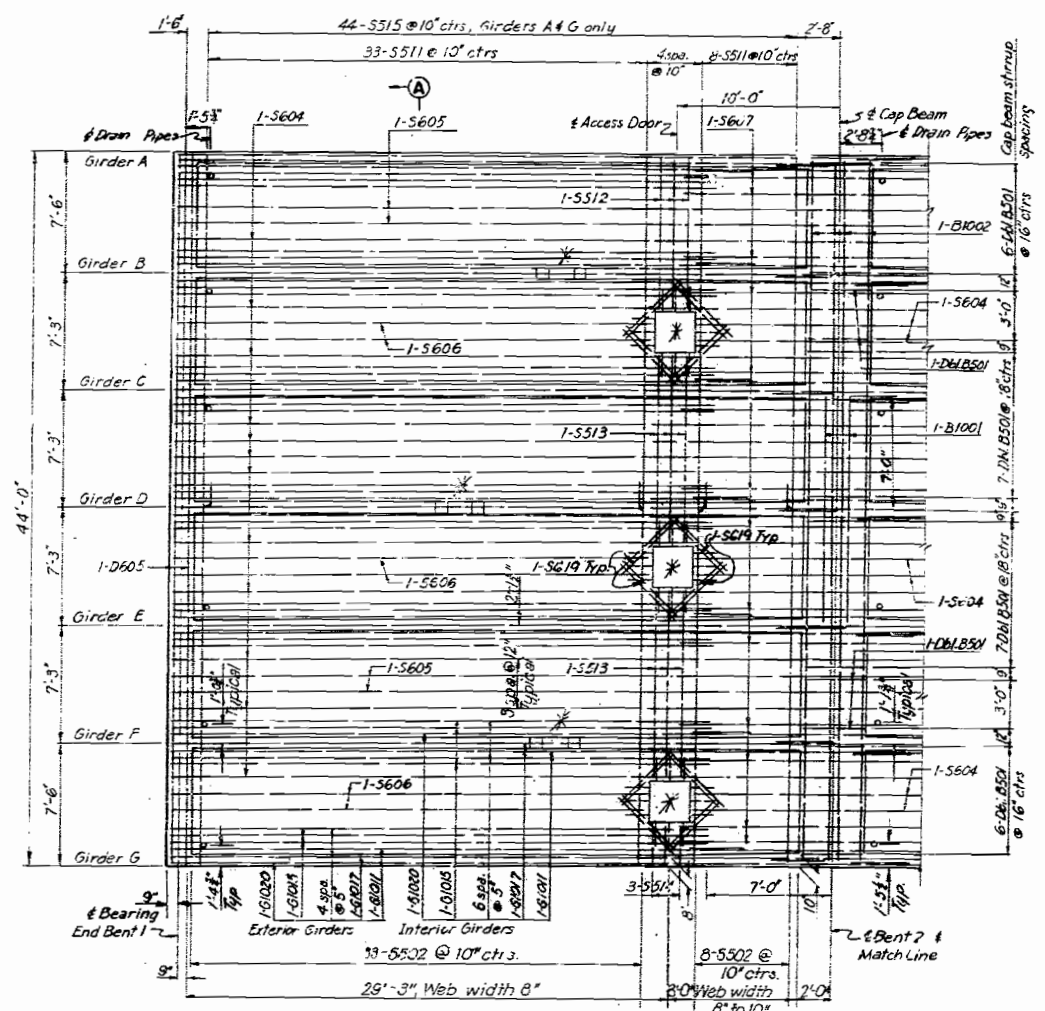
Note: This drawing is not to scale. Follow dimensions.

NO CONSTRUCTION LINES

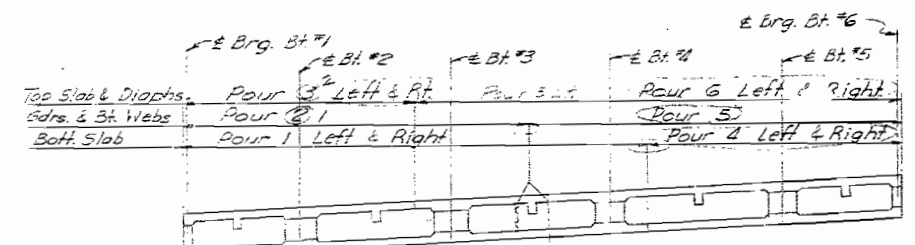
337

MISSOURI STATE HIGHWAY DEPARTMENT

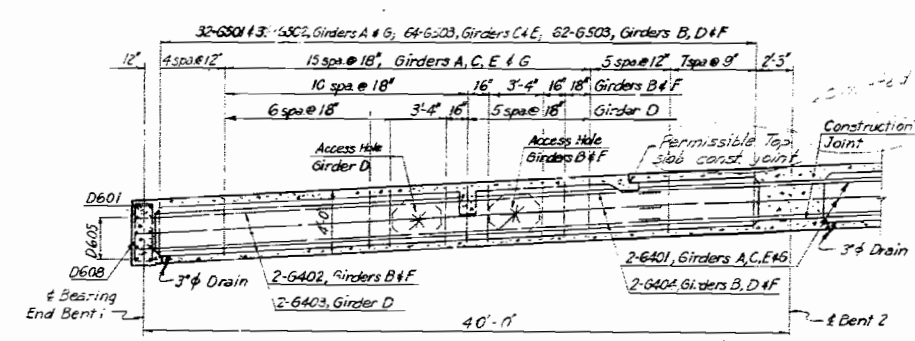
STATE FEDERAL PROJECT NO. & SEC. DIST. SHEET NO. 5 MO 4



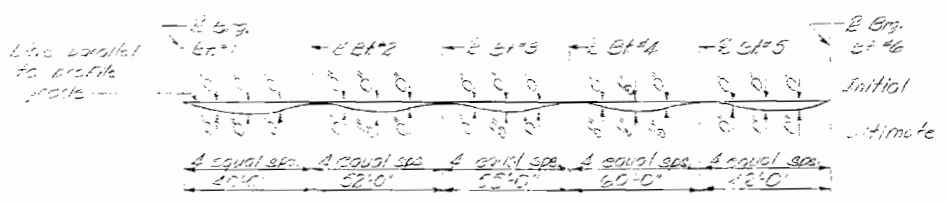
PART SLAB PLAN



ELEVATION POURING SEQUENCE



GIRDER ELEVATION



CAMBER DIAGRAM

Notes:  
Girder web widths shown on Part Slab Plan are typical for all g. ctrs.  
For Section A-A see sheet 15.  
For Access Hole Detail see sheet 14.  
For Access Door and Drainage details see sheet 16.  
For additional steel in cap beam see Section EE sheet 15. For section thru cap beam see sheet 9.

Note: Stirrup spacing is for all girders unless noted.

BOTTOM SLAB PLAN

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-117(RT.I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK  
MADE A.D.N. DATE 6-13-56 TRACED DATE  
CHECKED T.D.D. DATE 8-3-56 SCALE

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

SHEET 12 OF 17

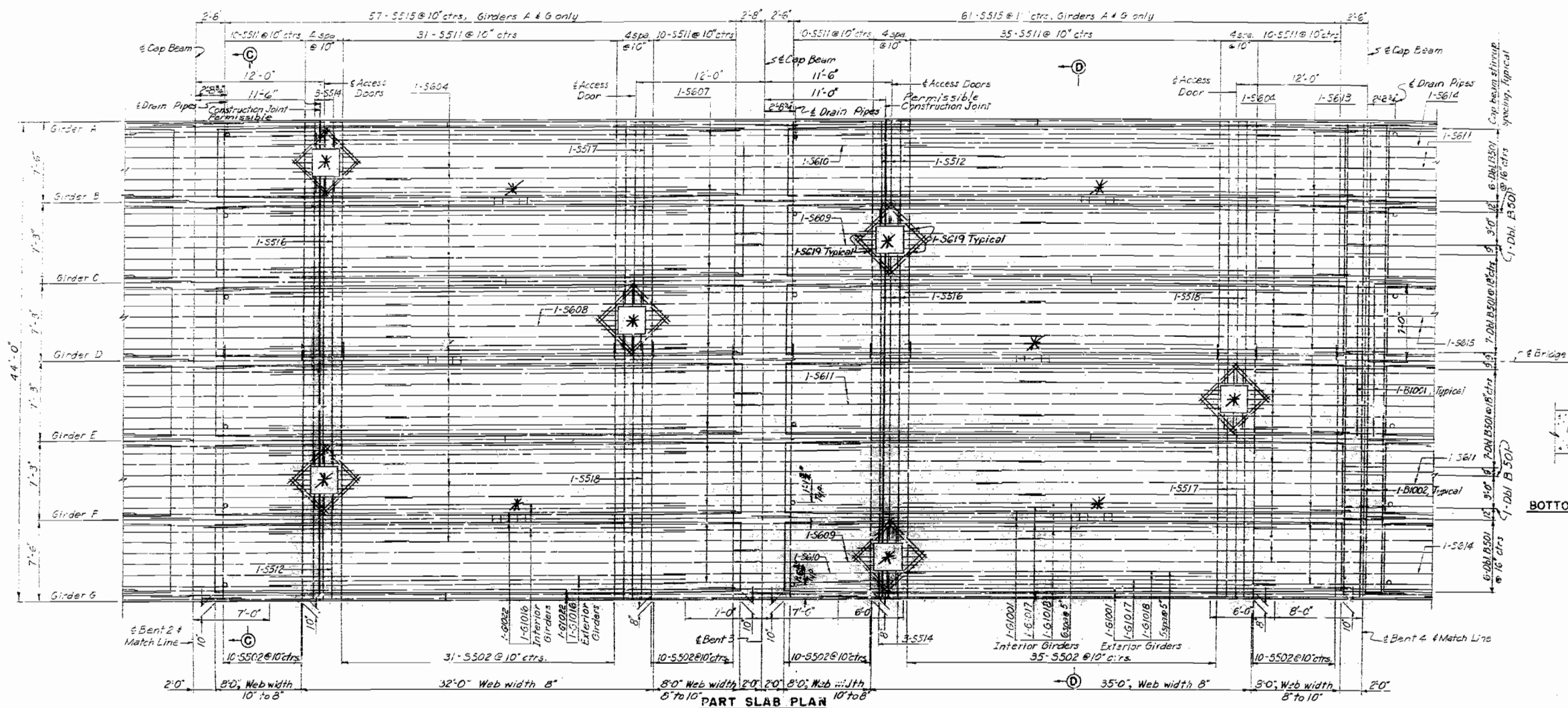
L-939-1

338

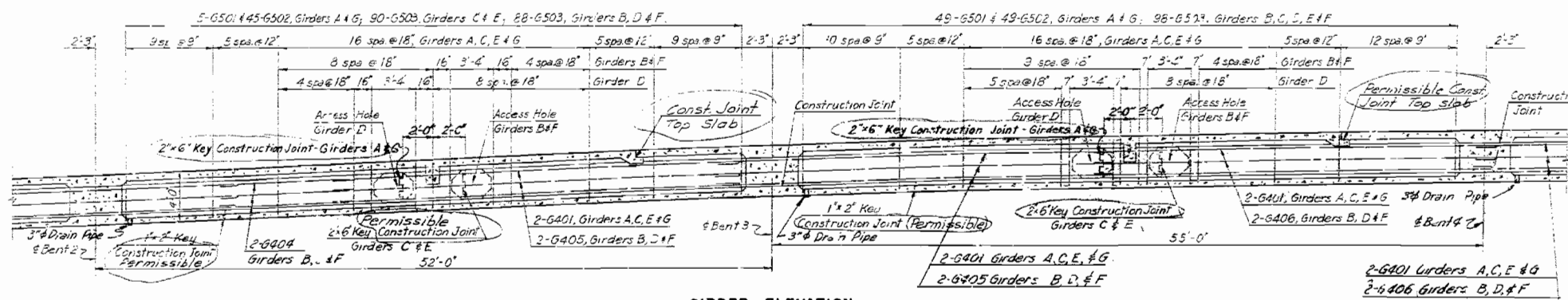
CONSTRUCTION CHANGES NOTE

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
5	MO		52	
DIST. NO.	COUNTY	ROUTE	POST MILE	SECTION
4	JACKSON			



BOTTOM SLAB CONSTRUCTION JOINT DETAIL



Notes:

- Shrinkage coating is for all girders unless noted.
- For sections C-C & D-D, see sheet 15.
- For access hole details see sheet 14.
- For access door and drainage details see sheet 16.
- For all steel in cap beam see section E-E sheet 15. For section thru cap beam see sheet 9.
- Cap beam steel for Bent 3 is similar to Bent 4.
- Girder web widths shown are typical for all girders.

BOTTOM SLAB PLAN

**BRIDGE: 10TH STREET UNDERPASS**  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-170(RT. I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

339

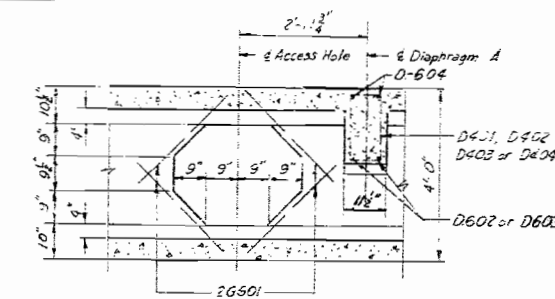
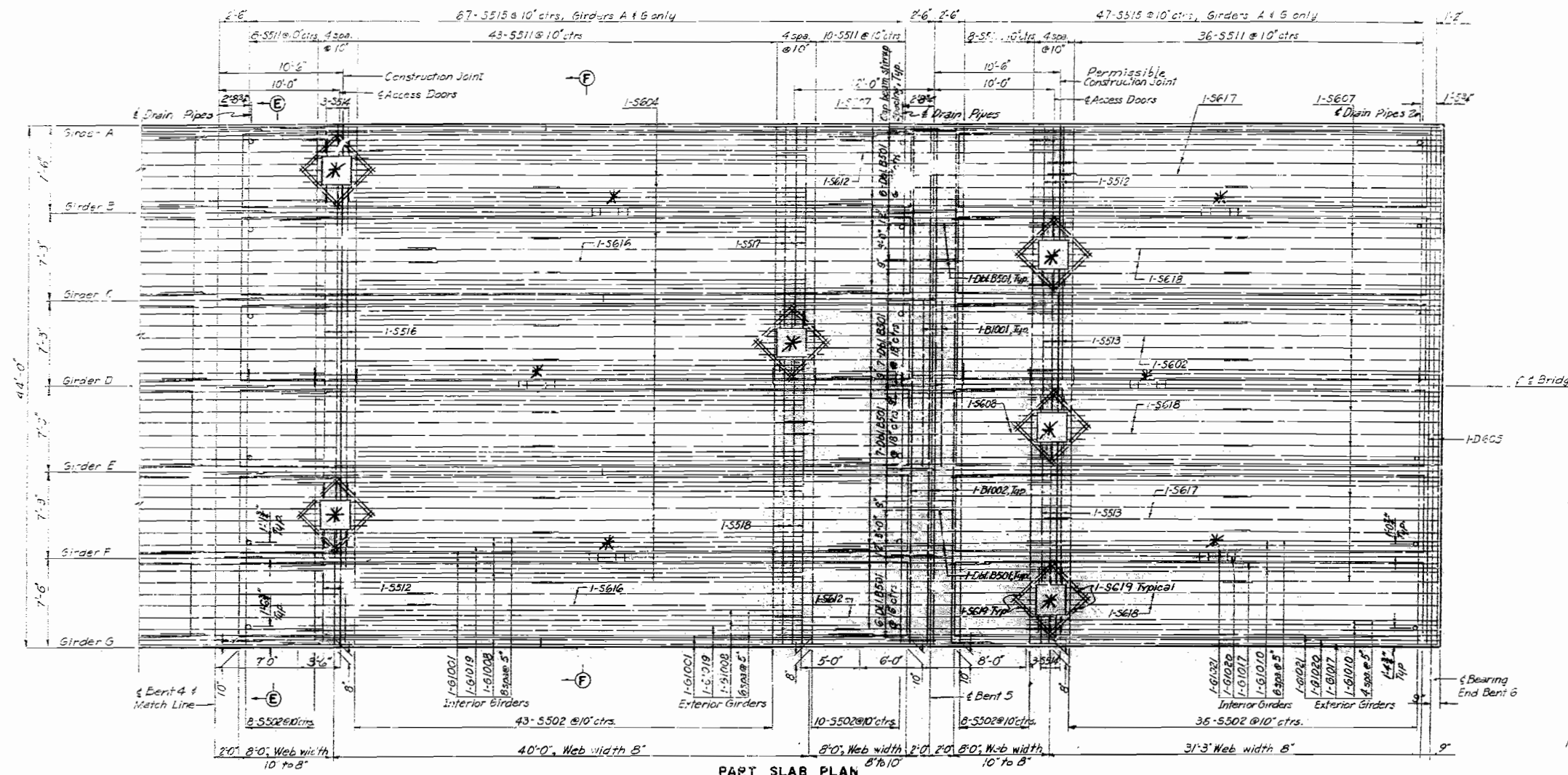
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI  
 MADE A.J.N. DATE 8-14-58 TRACED DATE  
 CHECKED J.D.D. DATE 7-7-58 SCALE

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

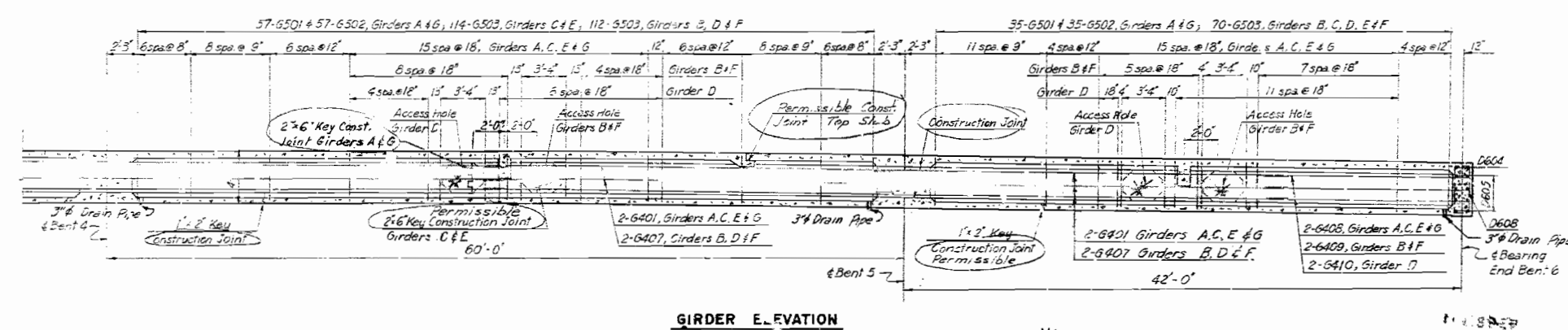
\* CONSTRUCTION CHANGES NOTED HEREON

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT No. 8 Sec. 153  
5 MO  
4



Notes:  
Stirrup spacing is for all girders unless noted.  
For sections E-E & F-F see sheet 15.  
For bottom slab construction joint see sheet 13.  
For access door and drainage details see sheet 16.  
For additional steel in cap beam see section E-E sheet 15. For section thru Cap beam see sheet 9.  
For additional and diaphragm details see sections A-A and B-B sheet 15.  
Girder web plates shown are typical for all girders.



\* Access doors and holes omitted during construction.

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. E-70-1(7)(RC I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

340

I. OWARD, NEEDLES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY NEW YORK  
MADE FOR DATE 6-15-56  
CHECKED TDD DATE 7-17-56 SCALE

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

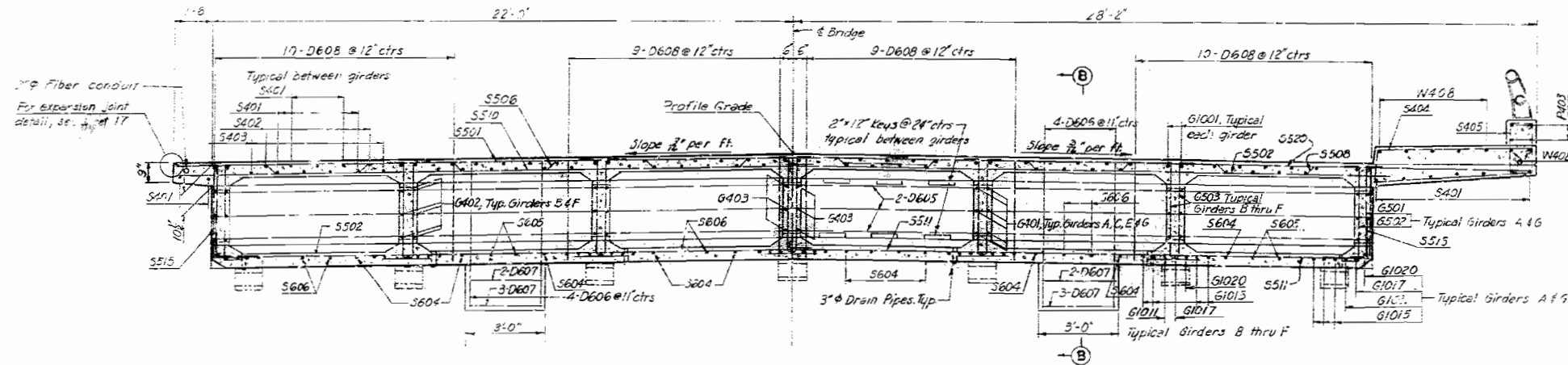
\* CONSTRUCTION CHANGES NOTED HEREON

SHEET 14 OF 17

L-939-1

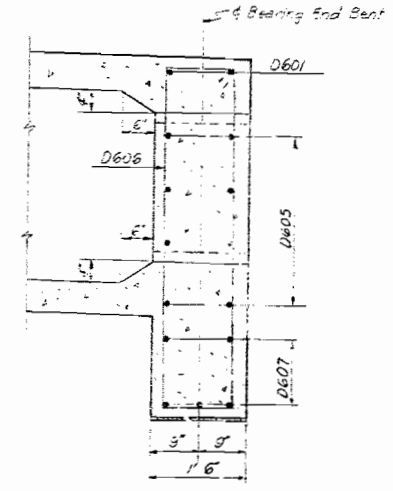
MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.	TOTAL SHEETS
MO		54	54
4			

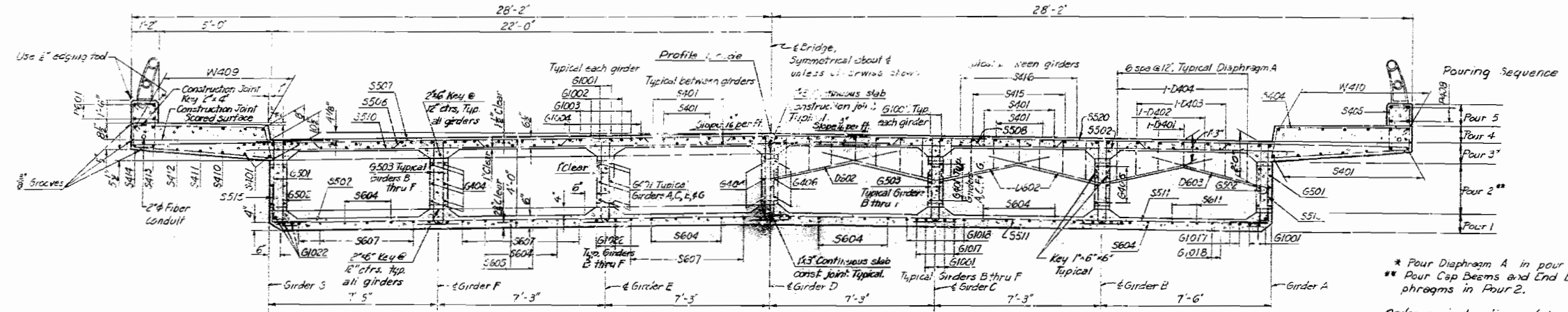


**SECTION A-A**  
Showing End Diaphragm of Bent 1

Note: Right half of Section A-A, symmetrical about  $\epsilon$  bridge, shows End diaphragm reinforcing and typical spacing of Slab and girder steel for End Diaphragm Bent 6.



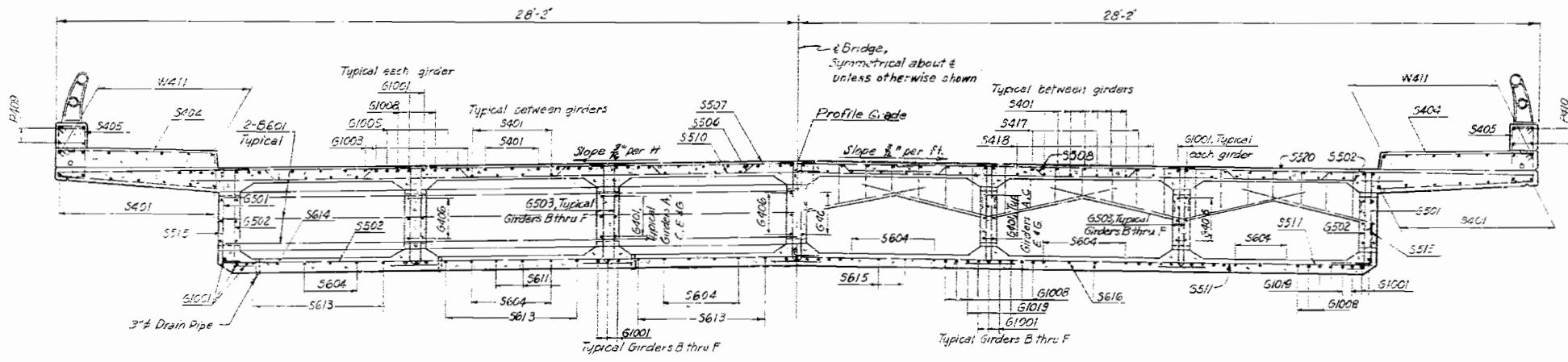
**SECTION B-B**



**HALF SECTION C-C**      **HALF SECTION D-D**  
Showing Diaphragm A.

\* Pour Diaphragm A in pour 3.  
\*\* Pour Cap Beams and End Diaphragms in Pour 2.  
Order and direction of longitudinal pours is from West to East

Notes:  
Dimensions shown in half section C-C are typical for all sections unless otherwise shown.  
For locations of cross sections see sheets 9 thru 14, top and bottom slab plans.  
Pouring Sequence as marked on half section D-D is typical for all sections.  
For section thru diaphragm A see access note detail sheet 14.  
See "Rustication Detail," sheet 8, for 3/8" grooves.



**HALF SECTION E-E**      **HALF SECTION F-F**  
Showing cap beam.

341

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

MADE A.D.N.      DATE 6-7-56      TRACED      DATE  
CHECKED T.D.D.      DATE 7-17-56      SCALE

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

CROSS SECTIONS

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(7)(RT.I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

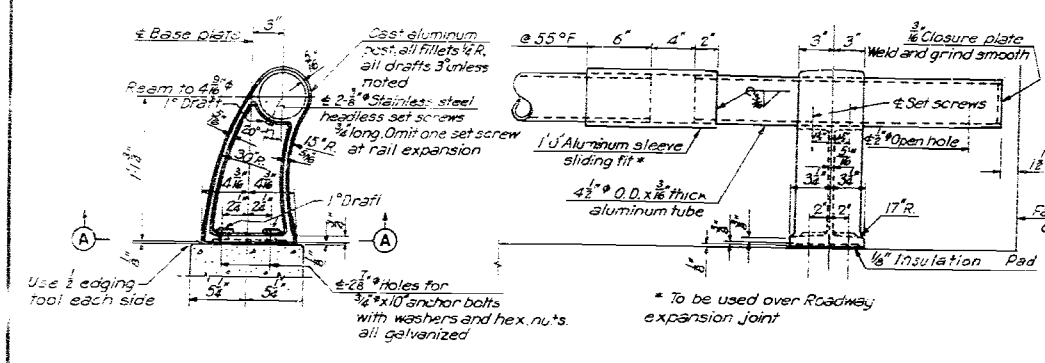
SHEET 15 OF 17

L-939-1

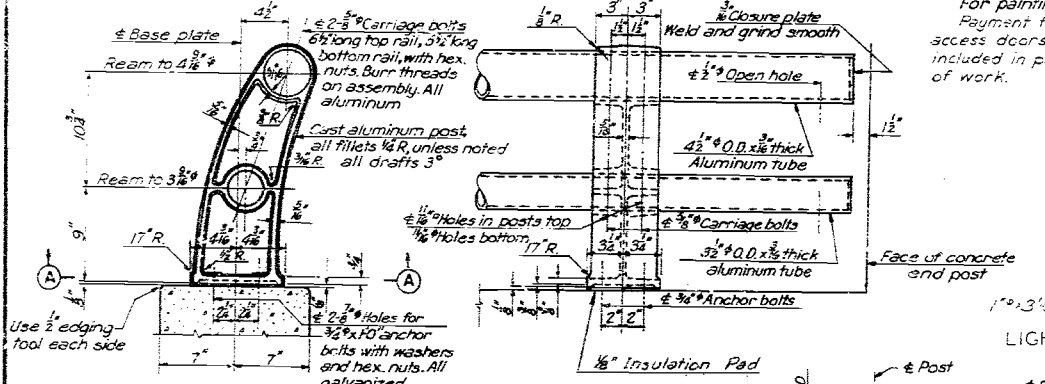
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

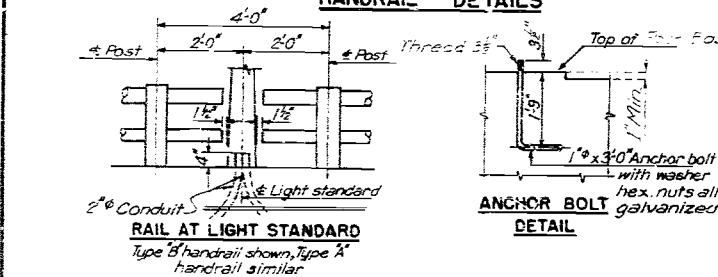
STATE FEDERAL PROJECT NO. 8 SEC. 1941  
5 MO. COUNTY PROJECT SEC.



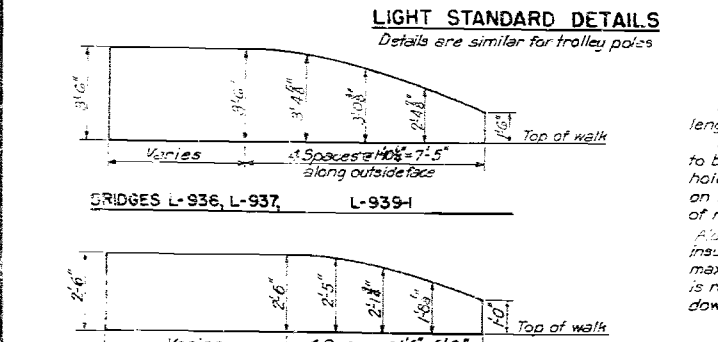
TYPE "A" HANDRAIL BRIDGES L-934, L-935, L-936, L-937, L-939-1 & L-939-2



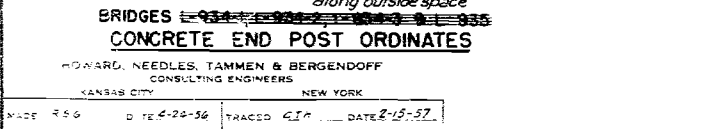
TYPE "B" HANDRAIL BRIDGES L-936, L-937, L-936, L-939-1 & L-939-2



RAIL AT LIGHT STANDARD Type B handrail shown, Type A handrail similar



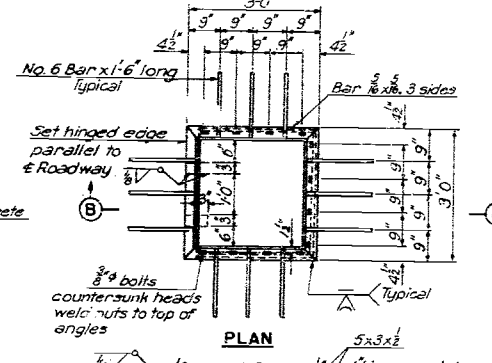
LIGHT STANDARD DETAILS Details are similar for trolley poles



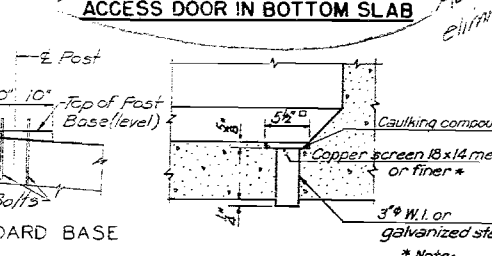
BRIDGES L-934, L-935, L-936, L-937, L-939-1 & L-939-2 CONCRETE END POST ORDINATES

ACCESS DOOR NOTES

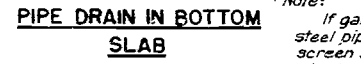
Unit to be assembled and in place while slab is being poured. Bottom surface of door to be flush with bottom of slab. For painting see special provisions. Payment for furnishing and installing access doors and frames shall be included in price bid for other items of work.



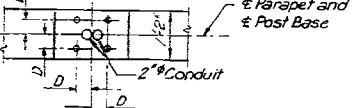
ACCESS DOOR IN BOTTOM SLAB



LIGHT STANDARD BASE



PIPE DRAIN IN BOTTOM SLAB

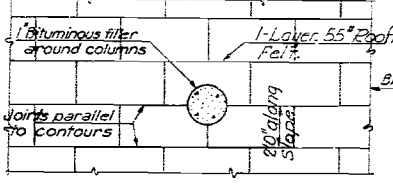


ANCHOR BOLT SETTING PLAN Dimension 'D': Dimension 'D' equals 3 7/8" on Bridge L-938. Dimension 'D' equals 3" on Bridges L-934-1, L-934-2, L-934-3, L-935, L-936, L-937, L-939-1 and L-939-2. Note: Cost of furnishing and placing anchor bolts shall be included in price bid for other items.

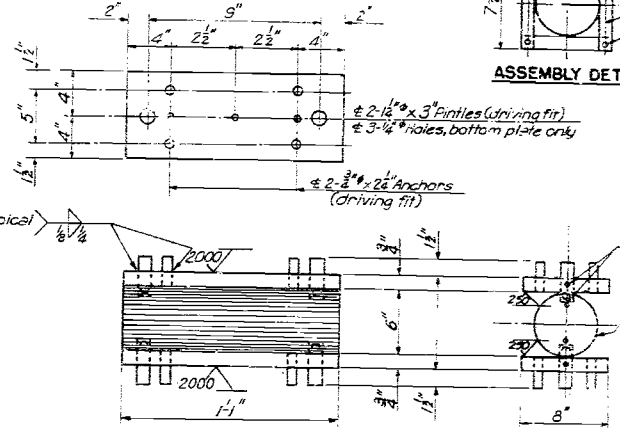
HANDRAIL NOTES

All handrail posts shall be set normal to grade. Rails to be fabricated in two or three panel lengths. Bolt holes in rails at intermediate posts of sections to be 1/8" x 1" slotted holes. At expansion posts bolt holes in rails to be 1/8" x 1 1/2" slotted holes, centered on bolts at 55°F. Provide 1/2" clearance between ends of rails at 55°F. Aluminum washer shims between post base and insulation pad may be used for adjusting rail alignment, maximum thickness 3/8". Where more tilting of the post is required, concrete bearing area shall be ground down.

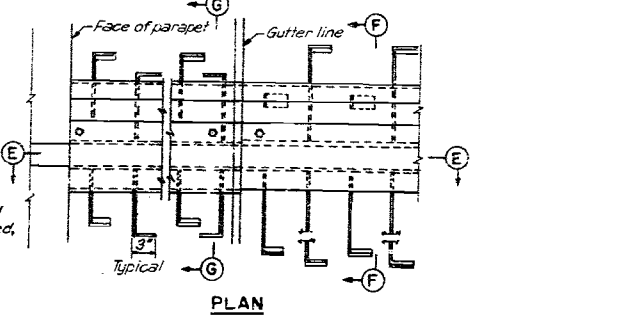
SLOPE PROTECTION UNDER ENDS OF SUPERSTRUCTURE



Note: Provide 1/2" bituminous filler at curbs, walks and abutments.



EXPANSION ROLLER R-1



EXPANSION JOINT (AT BENT 6)

Note: Approved stud anchors may be substituted for anchors shown. For painting see special provisions.

MISCELLANEOUS DETAILS

POURING SEQUENCE OF EXPANSION JOINT IS NOTED AT (A). ORDER OF POUR IS FROM A TO D.

BRIDGE: 10TH STREET UNDERPASS STATE ROAD MIDTOWN FREEWAY KANSAS CITY, MO. PROJECT NO. I-70-1171(RT-1-70) STA. 23+20.27 (LANE C) JACKSON COUNTY

SHEET 16 OF 17

L-939-1

CONSTRUCTION CHANGES NOTED HEREON

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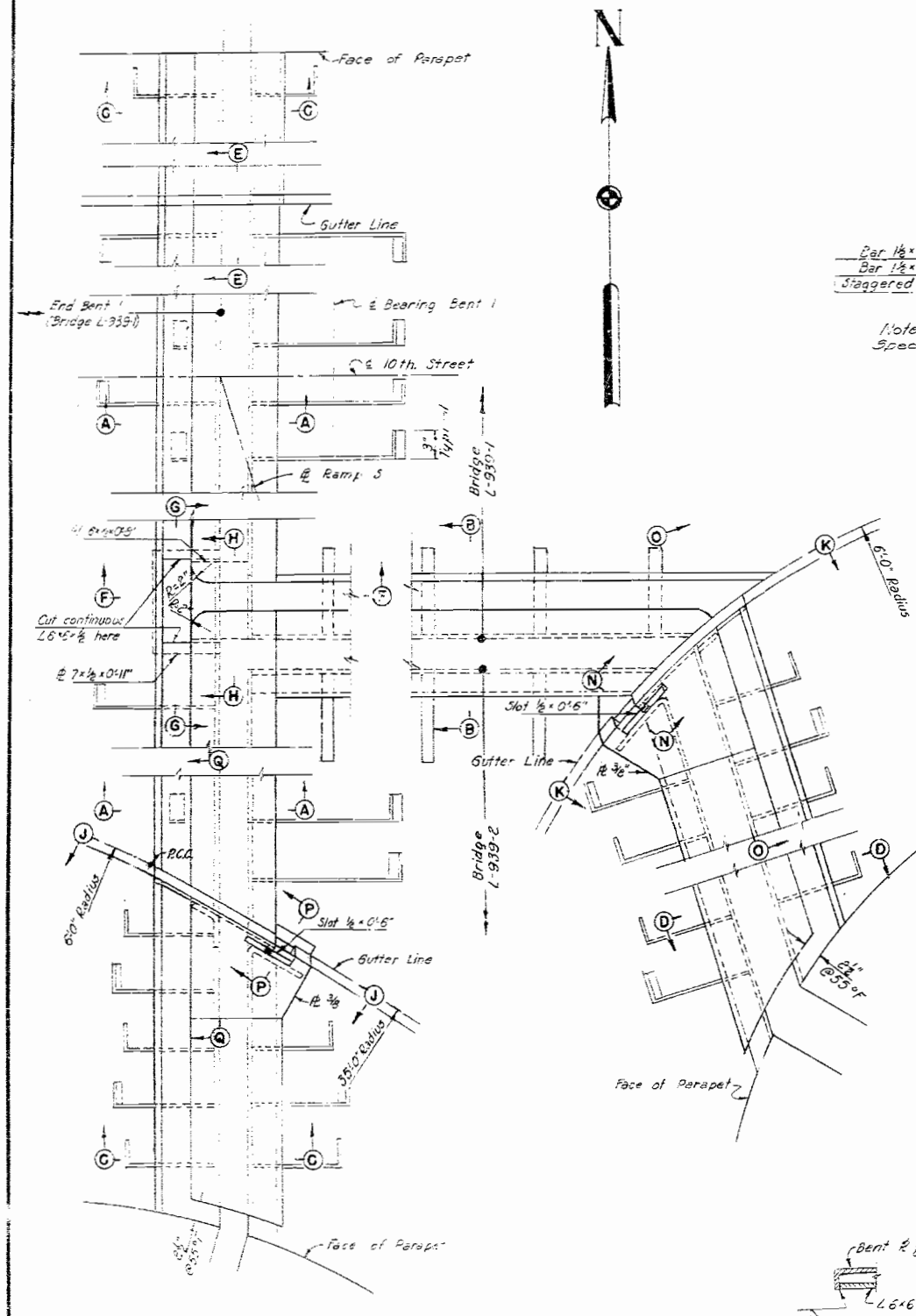
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY NEW YORK MADE 959 D 12-6-36 TRACED CIP DATE 8-13-37 CHECKED FGD DATE 8-7-36 SCALE

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

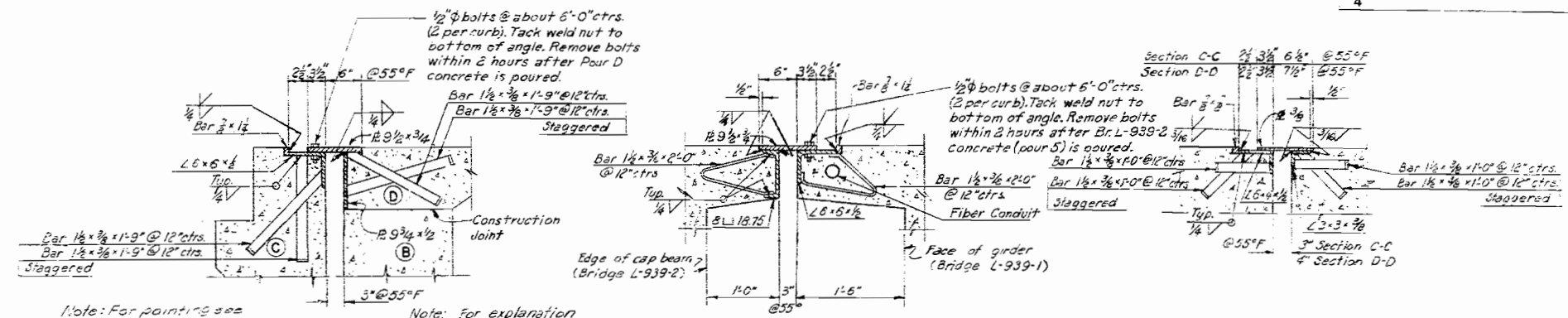


MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT NO. 8	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MO.				5	50
SHEET NO.	COUNTY	ROUTE	SEC.		
4					



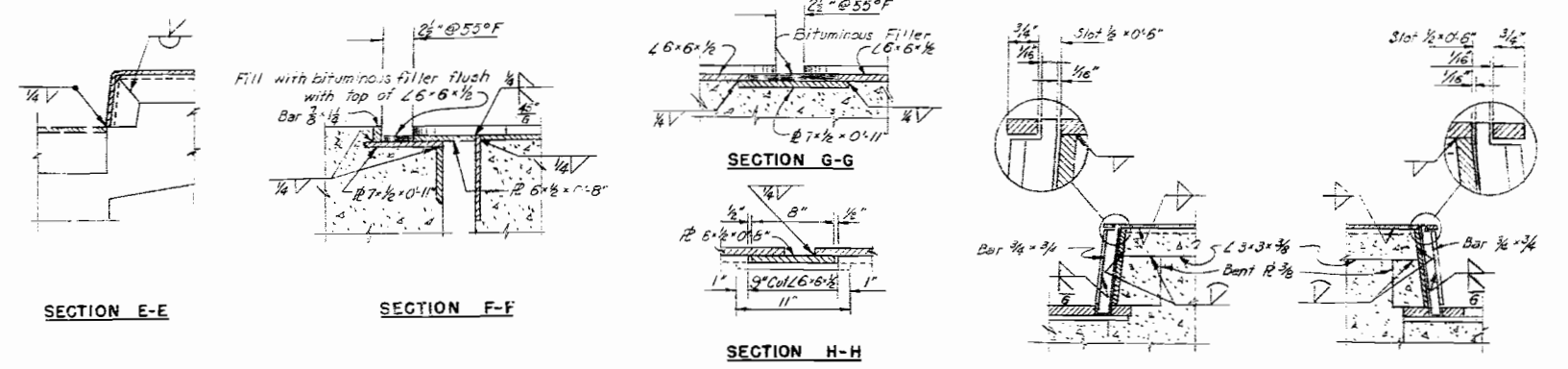
PLAN



SECTION A-A

SECTION B-B

SECTIONS C-C AND D-D

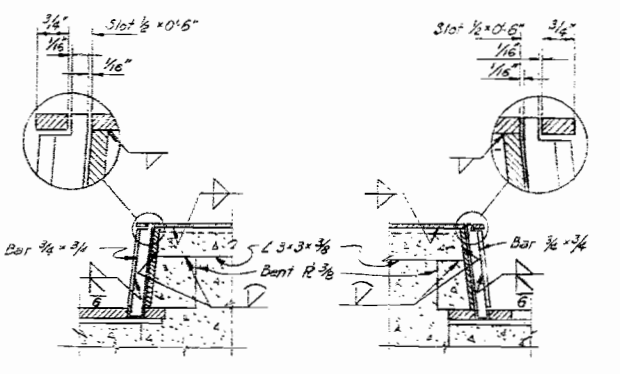


SECTION E-E

SECTION F-F

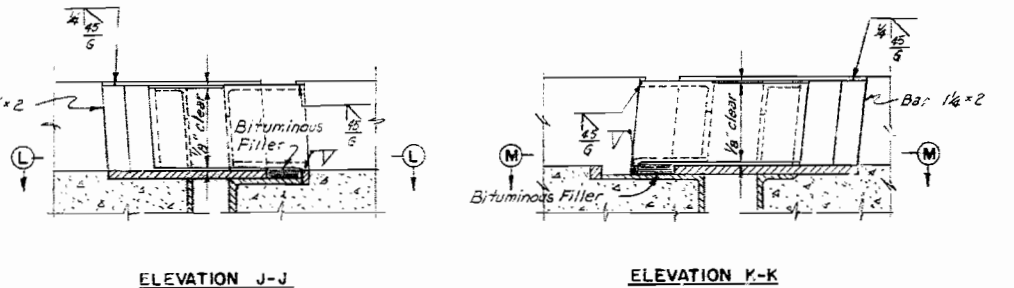
SECTION G-G

SECTION H-H



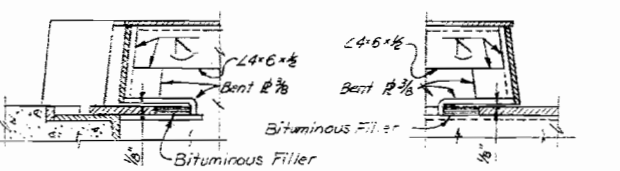
SECTION N-N

SECTION P-P



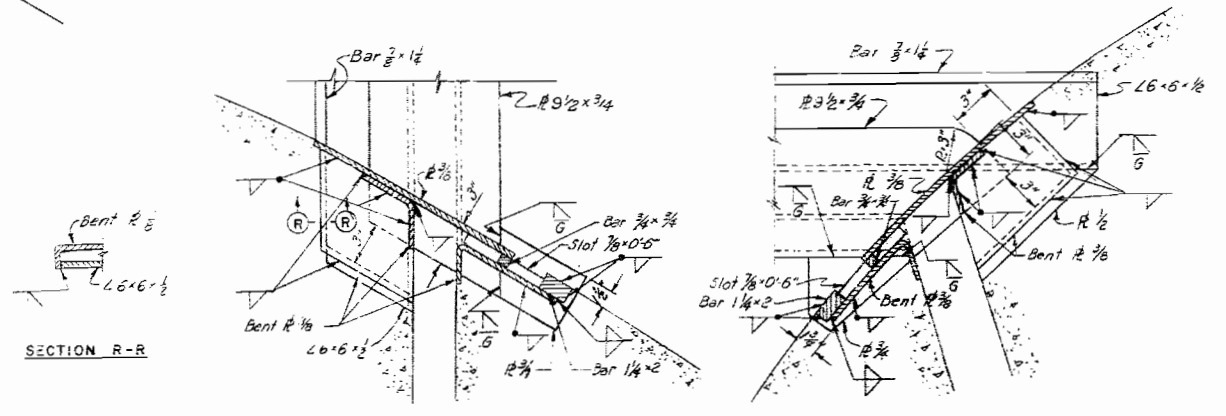
ELEVATION J-J

ELEVATION K-K



SECTION O-O

SECTION Q-Q



SECTION L-L

SECTION M-M

SECTION R-R

Notes:  
 All filler welds are 3/16" unless noted otherwise.  
 Dimensions shown in Sections L-L and M-M are given for a temperature of 55°F. Bar 3/4" x 3/4" are centered in 6" slots @ 55°F.  
 Portions of Expansion Joint on Ramp S Bridge (L-939-2) are to be fabricated with portions of Joint on 10th Street Bridge, however they will be erected by contractor building Ramp S Bridge.  
 Approved stud anchors may be substituted for anchors shown.

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD 10th Street  
 KANSAS CITY, MO.  
 PROJECT NO. 23+20.27 (LANE C)  
 JACKSON COUNTY

EXPANSION JOINT AT BENT I AND RAMP S

SHEET 17 OF 17

L-939-1

NO CONSTRUCTION CHANGES

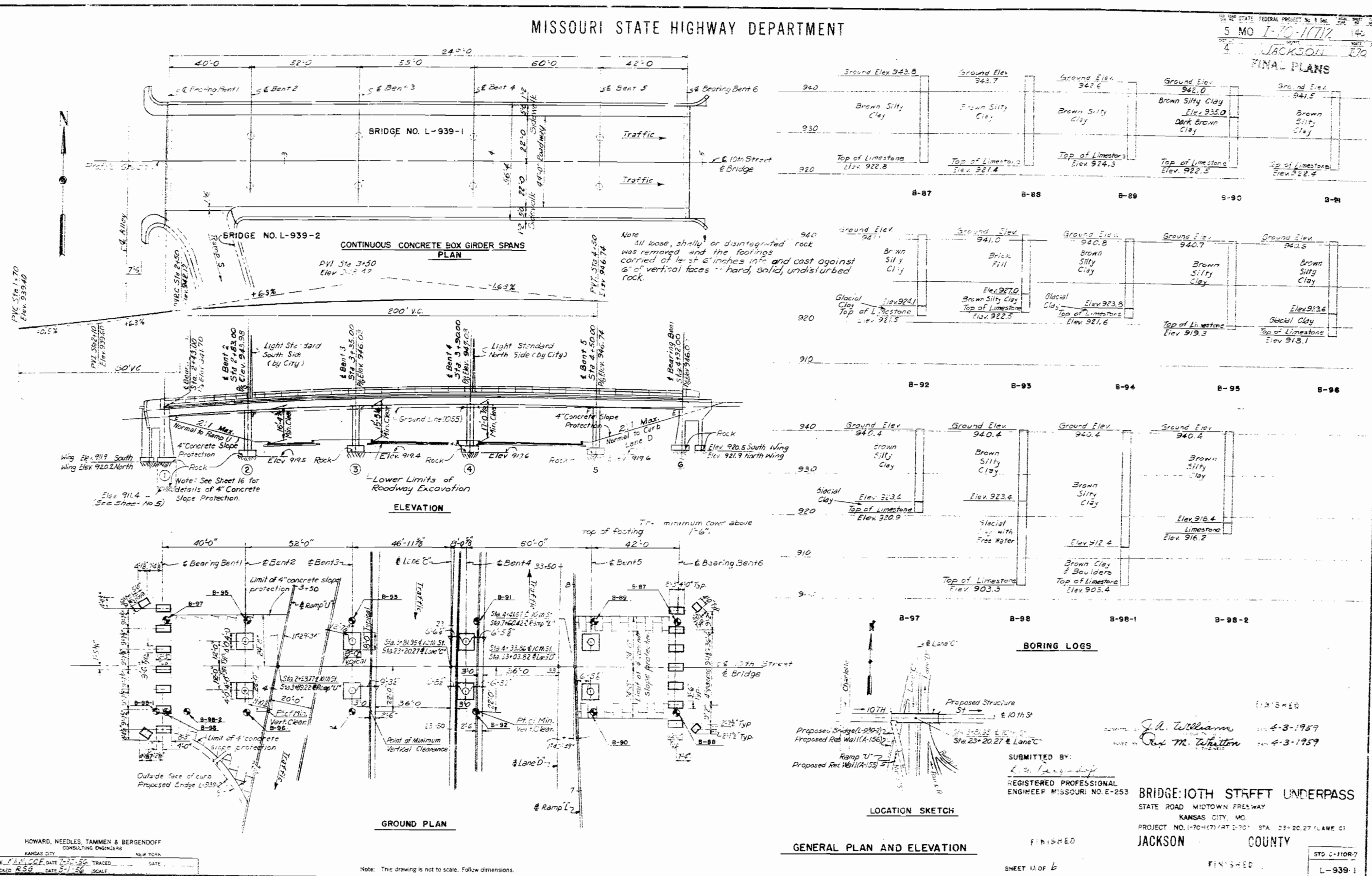
343

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE: W.P.G. DATE: 7-17-56 TRACED: DATE: \_\_\_\_\_  
 CHECKED: R.S.G. DATE: 7-26-56 SCALE: \_\_\_\_\_

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

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT No. 8 Sec. 140  
5 MO I-70-1171  
4 JACKSON E70  
FINAL PLANS



Note: All loose, shelly or disintegrated rock was removed and the footings carried at least 6 inches into and cast against 6" of vertical faces -- hard, solid, undisturbed rock.

Note: See Sheet 16 for details of 4" Concrete Slope Protection. (See Sheet No 5)

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SUBMITTED BY:  
J. H. Williams  
REGISTERED PROFESSIONAL ENGINEER MISSOURI NO. E-253  
DATE: 4-3-1959

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1171 (AT I-70) STA. 23+20.27 (LANE C)

JACKSON COUNTY

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

MADE BY: R.S.G. DATE: 7-20-56 TRACED BY: DATE: CHECKED: R.S.G. DATE: 3-1-56 SCALE:

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

GENERAL PLAN AND ELEVATION

FINISHED

SHEET 1 OF 6

FINISHED

FINAL PLANS

STD. C-110R-7  
L-939-1

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT NO. B22  
 5 MO. 7-70-1772 14  
 JACKSON COUNTY I-70

GENERAL NOTES

Design Specifications A.A.S.H.O., 1953 with Tentative Revision T.14 (54)

Construction Specifications Missouri Standard Specifications for State Roads, Materials, Bridges, Culverts, and incidental Structures, 1955.

Design Loading: H20-S16-44  
 15 lbs per square foot future wearing surface.

Concrete: Concrete Stress (Class "B" and "B-1") 1400 psi (fc=4000 psi)  
 Concrete for superstructure Class "B-1" air entrained  
 Concrete for substructure Class "B-1" air entrained. If the contractor desires, he may use Class "B-1" in lieu of Class "B" concrete in substructure with payment made on the basis of Class "B" concrete.  
 All forms are not removed from the interior of box girders.  
 Stay-in-place forms for top deck permitted to remain in place.

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.  
 Dimension shown on plans from reinforcing steel to outside edge of concrete are all clear dimensions.  
 All bending dimensions are from "out" to "out" of bars except diameter dimensions on spirals which are from "center" to "center" of bar.

Fiber Conduit: Expansion sleeve is oversized fiber conduit, as provided by manufacturer, complete with rubber ring.

Joint Filler: Where joint filler is specified on the plans it shall conform with the requirements for Gray Rubber Compound Joints as given in Section 59-22B of the Standard Specification.

Welding: Qualification for welding operators required

Slope Protection: Not included in Bridge Quantities. See sheet 16 for details. See Road Plans for Quantities

Utilities: All utilities, unless shown otherwise removed or re-located by others. The contractor will notify the owner of the utilities of his work schedule sufficiently in advance to allow time for the disposition of utilities

Deflection Joints: Deflection joints placed in the parapet or sidewalk and parapet where shown on the plans. The surface of the joint coated with paraffin and the reinforcing steel stopped 2" clear of joint. No chamfer placed on the sidewalk.

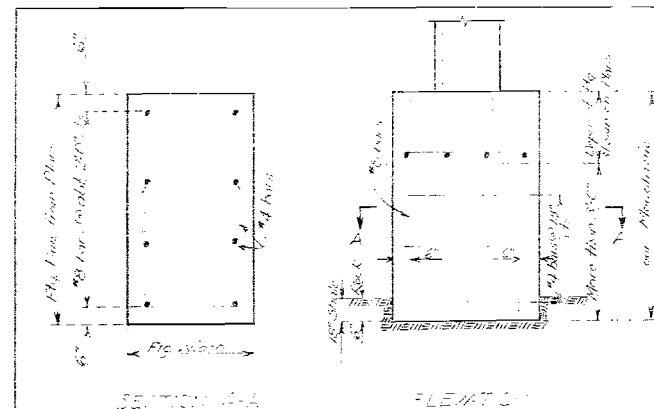
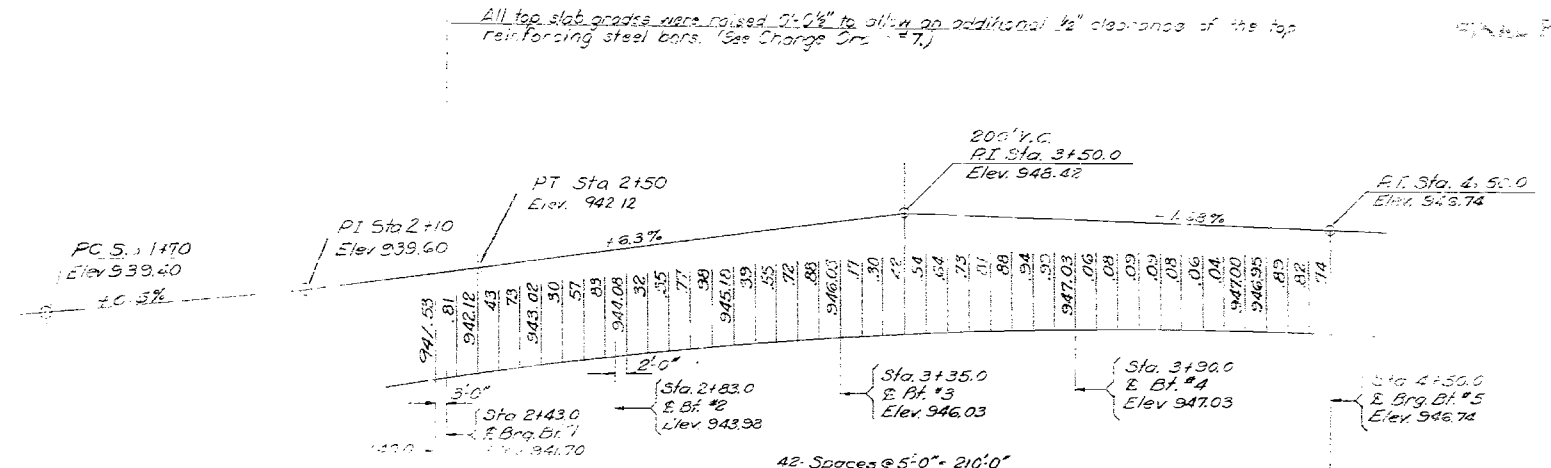
Quantities: Quantity of Class "B" concrete substructure, includes all abutments, end bents (including wingwalls and end posts) and wings of intermediate bents. All other concrete is included in the quantity of Class "B-1" superstructure.  
 Joint filler, roofing felt, insulation pads and other incidental items shown on the plans included in the price bid for other items.

Waterproofing: Superstructure deck waterproofed. See Special Provisions.

Shipping: Permits were required for all truck loads over the legal length

Painting: For painting see Special Provisions.

All top slab grades were raised 2.0% to allow an additional 1/2" clearance of the top reinforcing steel bars. (See Change Order #7.)



Note: All footing of bridge No. L-939-1 and No. L-939-2 shall be Class "B" concrete and when total depth of reinforced footings is more than 3'-0" greater than depth shown on original plans the footings shall be reinforced as shown on this sheet.  
 If Contractor desires to eliminate forming for that portion of footings above top of rock or pile, and if the material is suitable, the excavation may be carried to near rings for footings and concrete cast against mass of excavation.

REVISED FOOTINGS  
 BRIDGE L-939-1  
 Project No. 7-70-1772  
 JACKSON COUNTY

Note: All excavation for bridge paid for as Class I Excavation for Structures  
 Quantities of Class I Excavation for Structures includes only amount of excavation below Roadway Excavation.

PROFILE GRADE ELEVATIONS

		QUANTITIES			
ITEM NO.	ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL
1-G	Class I Excavation for Structures	Cu Yds.	1277.0		1277.0
	Class I Excavation 1+ 25%	Cu Yds.	81.5		81.5
16-C	Class C Concrete	Cu Yds.	0		0
	Test Holes	Lin. Ft.	141		141
16-B	Class B Concrete	Cu Yds.	373.2		373.2
16-B-1	Class B-1 Concrete	Cu Yds.		897.0	897.0
	Stay-in-Place Forms for Class B-1 Cona. (Superstr.)	Cu Yds.		897.0	897.0
17-B	Fabricated Structural Steel - Fabricated and Erected	Lbs.		8870	8870
	Refabricate Exp. Devices	L.S.		1	1
17-B	Fabricated Structural Steel - Fabricated, not Erected	Lbs.		1970	1970
	Eliminate Access Doors	Each		15	15
17A-A	Aluminum Alloy Handrail	Lin. Ft.		466	466
17-B	Fabricated Structural Steel (Bearings)	Lbs.		2350	2350
19-A	Reinforcing Steel	Lbs.	31720	244230	275950
40-W	Lighting Conduit System	Lump Sum			

This item includes the portion of the expansion joint on Ramp St. Bridge L-839-2 fabricated with the portions of Tenth Street but erected with Bridge L-939-2 by the contractor who built Bridge L-839-2.

GENERAL NOTES AND QUANTITIES

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD MIDTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. 7-70-1772 (RT I-70) STA. 23+20.27 - LANE C1  
 JACKSON COUNTY

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HOWARD, NEEL, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI  
 MADE BY SH DATE 7-9-56 TRACED BY SL DATE 2-11-57  
 CHECKED BY S G DATE 12-22-56 SCALE

NOTE: This drawing is not to scale. Follow dimensions

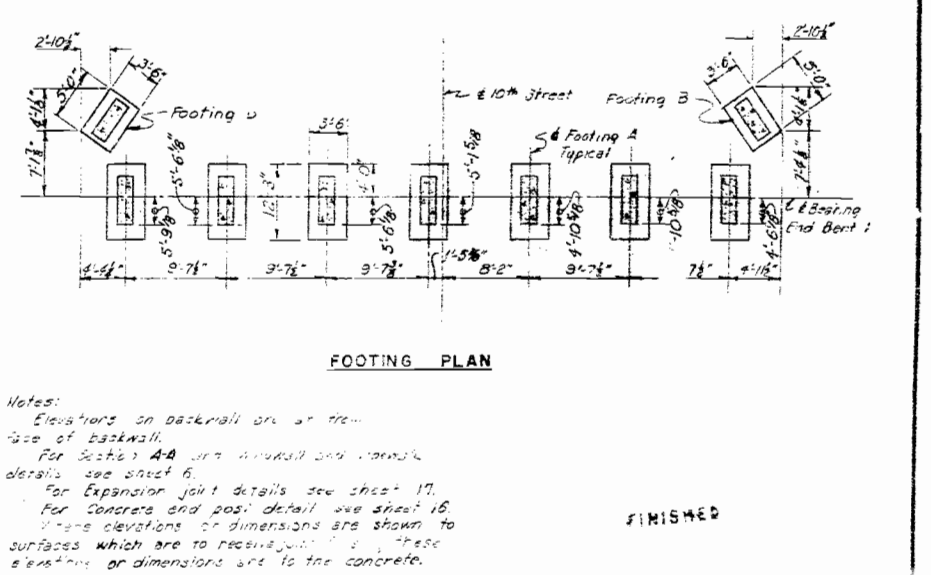
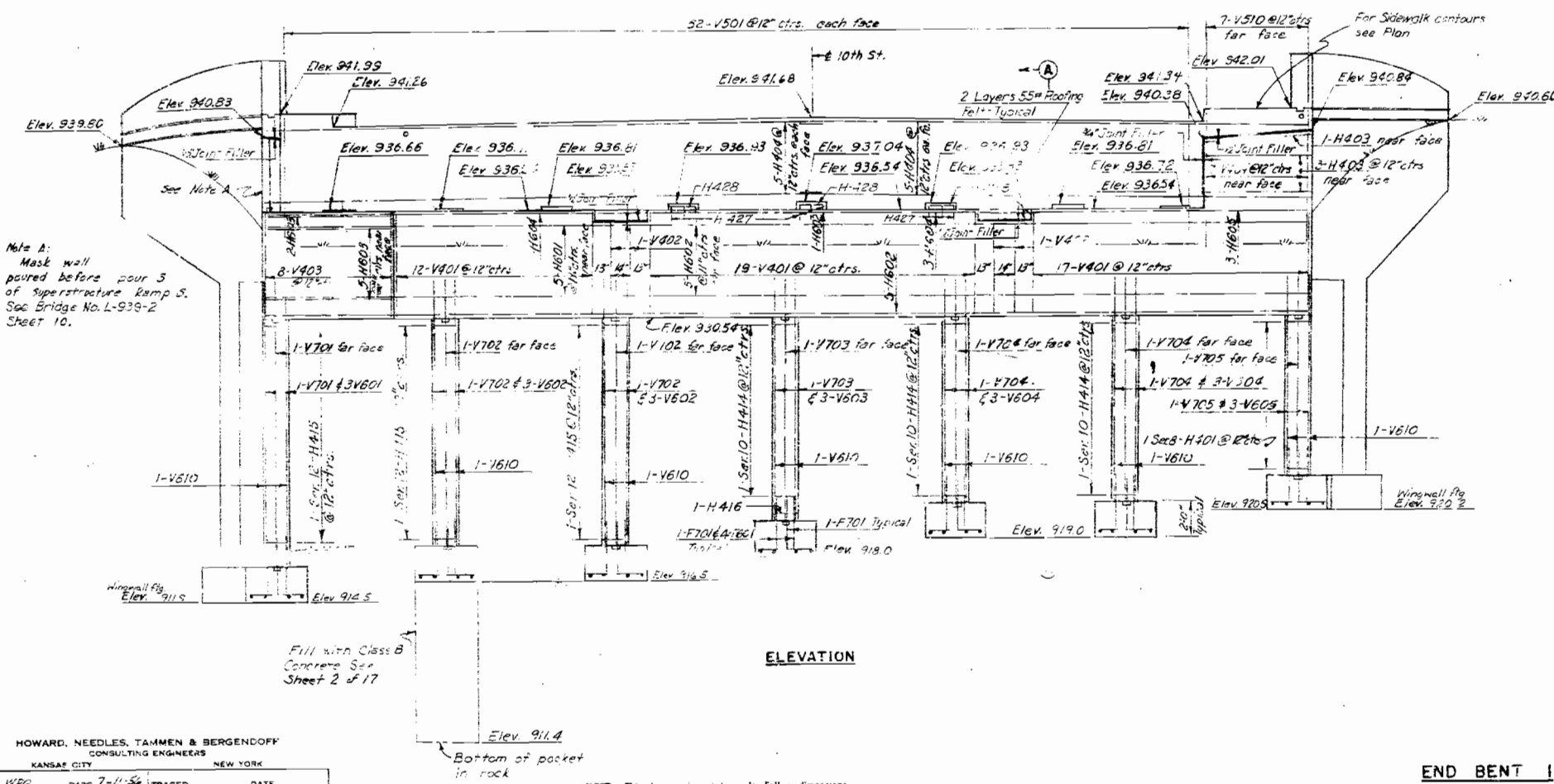
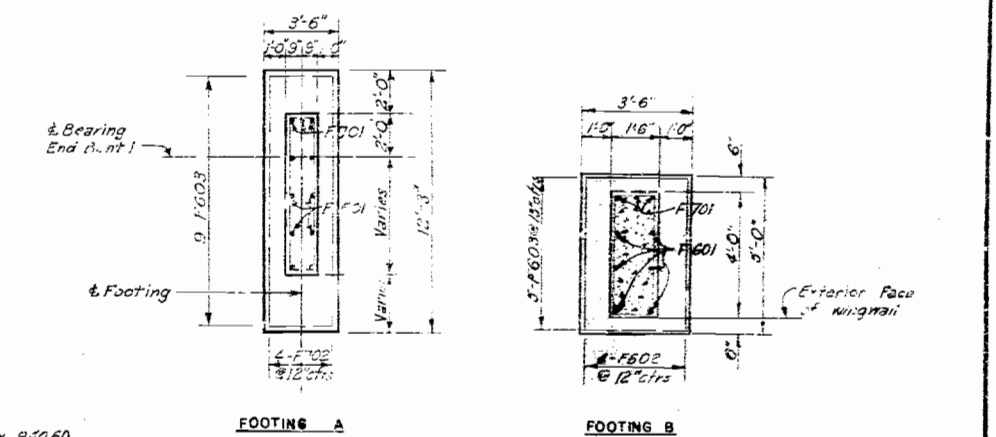
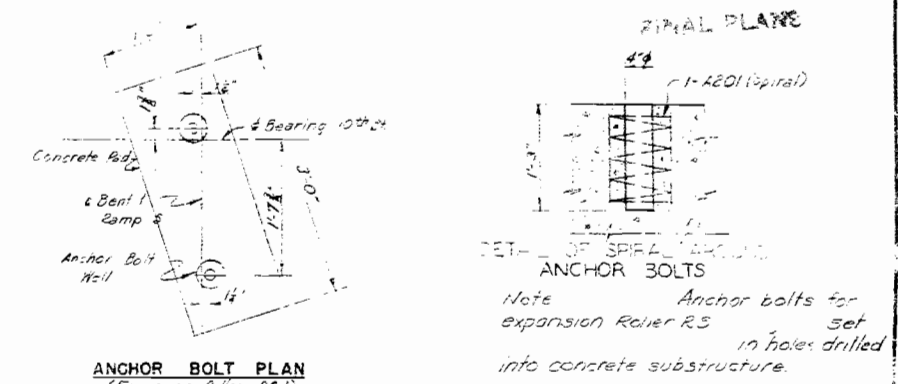
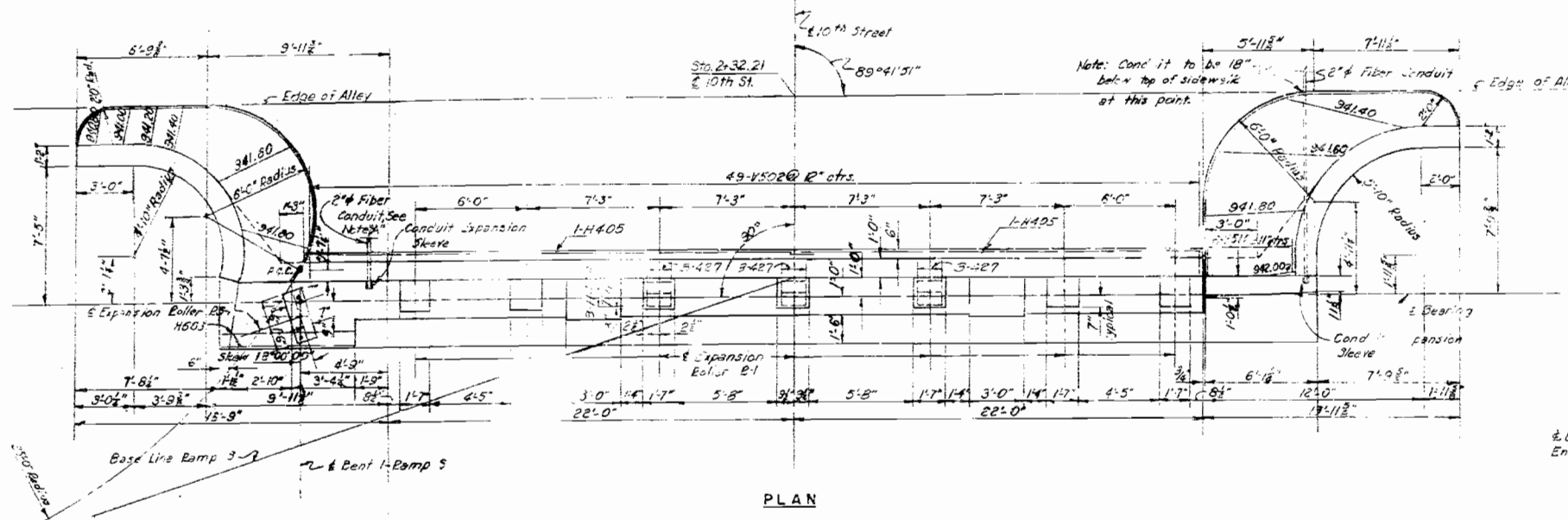
SHEET 24 of 2

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT No. 8 Sec.	DATE	SCALE
5 MO.	I-70 (RT I-70)	144	
4	JACKSON	170	

Note A:  
 Terminate 2" Fiber conduit  
 at 2'x3' unpaved area on other  
 side of Alley.



Notes:  
 Elevations on backwall are at the  
 face of backwall.  
 For Section A-B see backwall and column  
 details see sheet 6.  
 For Expansion joint details see sheet 17.  
 For concrete and post detail see sheet 16.  
 Where elevations or dimensions are shown to  
 surfaces which are to receive joint, these  
 elevations or dimensions are to the concrete.

FINISHED

FINISHED

BRIDGE: 10TH STREET UNDERPASS  
 STATE ROAD W/D/TOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-1(7)(RT I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

END BENT 1

SHEET 5 OF 4

L-939-1

FINAL PLANS

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

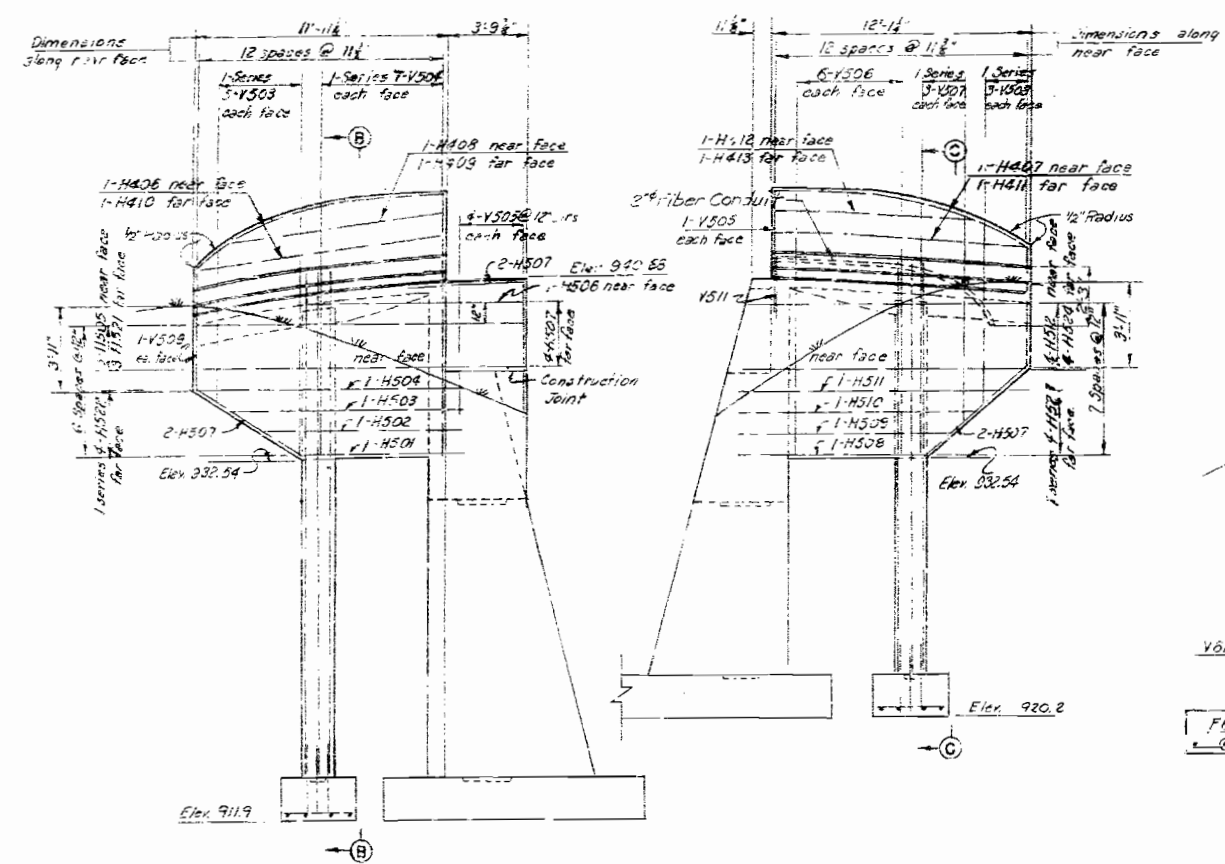
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK

MADE HPC DATE 7-11-56 TRACED DATE  
 CHECKED JSH DATE 8-6-56 SCALE

340

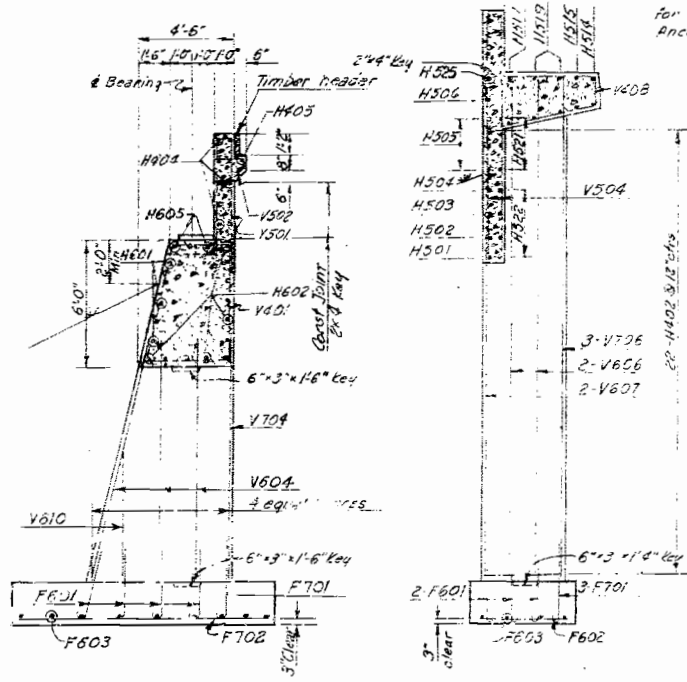
MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT NO. 8 SEC.	PIECE NO.	TOTAL SHEETS
5 MO. 1-70-1712	16	16
SHEET NO.	COUNTY	STATE SEC.
4 JACKSON	270	



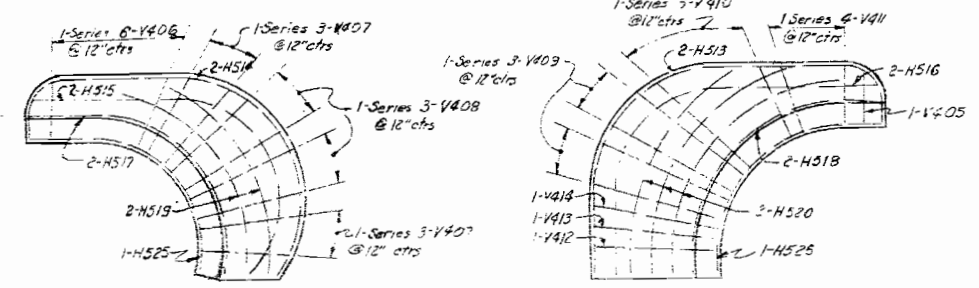
DEVELOPED ELEVATION SOUTH WINGWALL

DEVELOPED ELEVATION NORTH WINGWALL



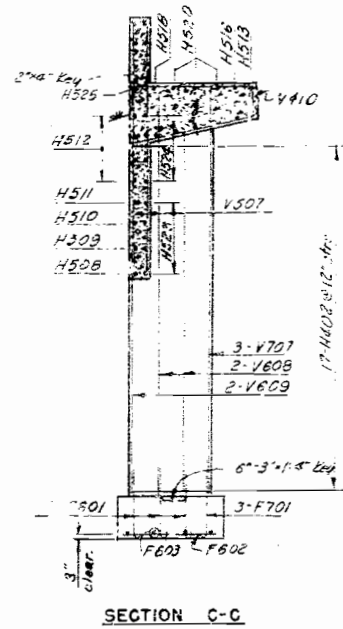
SECTION A-A See Sheet 5

SECTION B-B

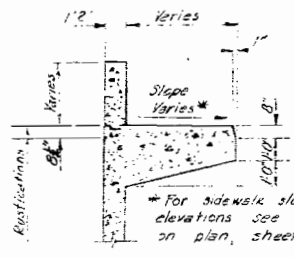


SOUTH SIDEWALK

NORTH SIDEWALK

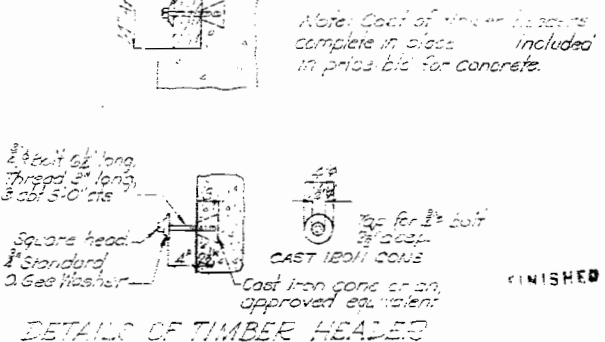


SECTION C-C



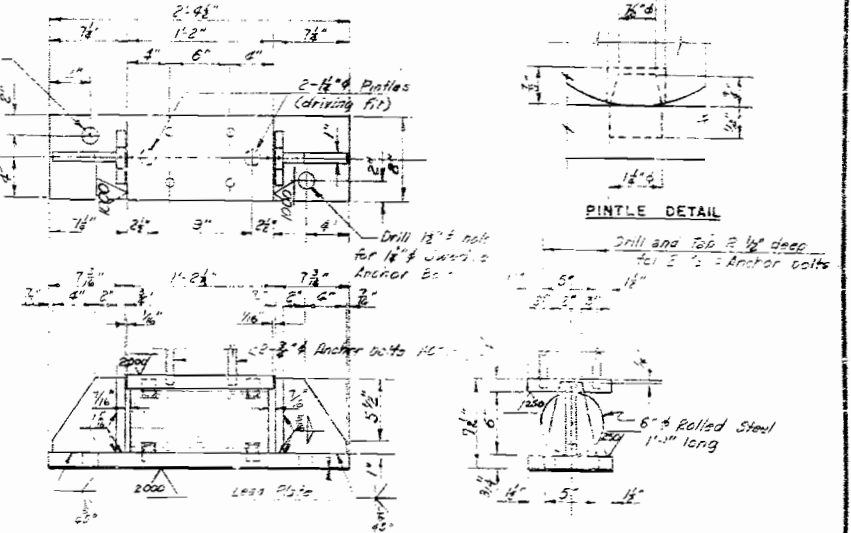
SECTION THRU SIDEWALK AND END POST

Note: For rustication detail see sheet 8.



DETAILS OF TIMBER HEADERS

END BENT I DETAILS



PINTLE DETAIL

EXPANSION ROLLER RS-1

Notes (Expansion Roller RS-1)  
 Number Required:  
 Top and bottom plates to be U.S.S. T-1 Alloy or equivalent.  
 Material for pintles and rollers Cold finished carbon steel  
 AISI-C1045 or C1042 (Turned and polished) E6015 or E6016 welding electrodes  
 used. Paint: Shop: One coat red lead except top surface.  
 On top of the bottom surfaces of bottom plate and anchor bolts.  
 Anchors and end brackets to be structural carbon steel.  
 Bottom plate anchor bolts are 1/2" swedge  
 bolts with hex nuts and extend 12" into  
 concrete.  
 Spaces between anchor bolts and plate  
 filled with an approved metallic filler, such as  
 babbitt poured in place before setting nuts.  
 Lead plate under bottom plate  
 approximately 3" thick and weigh 5#/sq.ft.  
 Cost of lead plate and babbitt material  
 included in price bid for other items.  
 Surfaces marked  $\Delta$  finished to fitness  
 shown (A.S.A. B46.1-55).

Note:  
 For location of Section A-A see sheet 5  
 2" clear cover on all reinforcing unless  
 otherwise shown.

BRIDGE 10TH STREET UNDERPASS  
 STATE ROAD MILTOWN FREEWAY  
 KANSAS CITY, MO.  
 PROJECT NO. I-70-(7) (RT I-70) STA. 23+20.27 (LANE C)  
 JACKSON COUNTY

SHEET 64 OF 66

FINAL PLANS

L-939-1

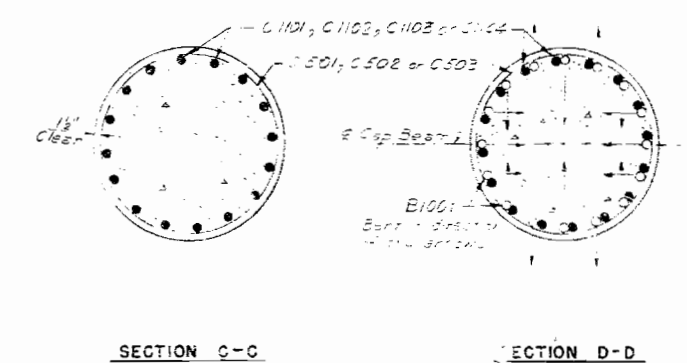
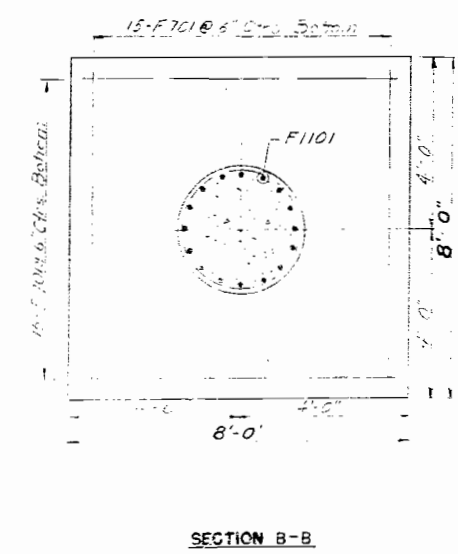
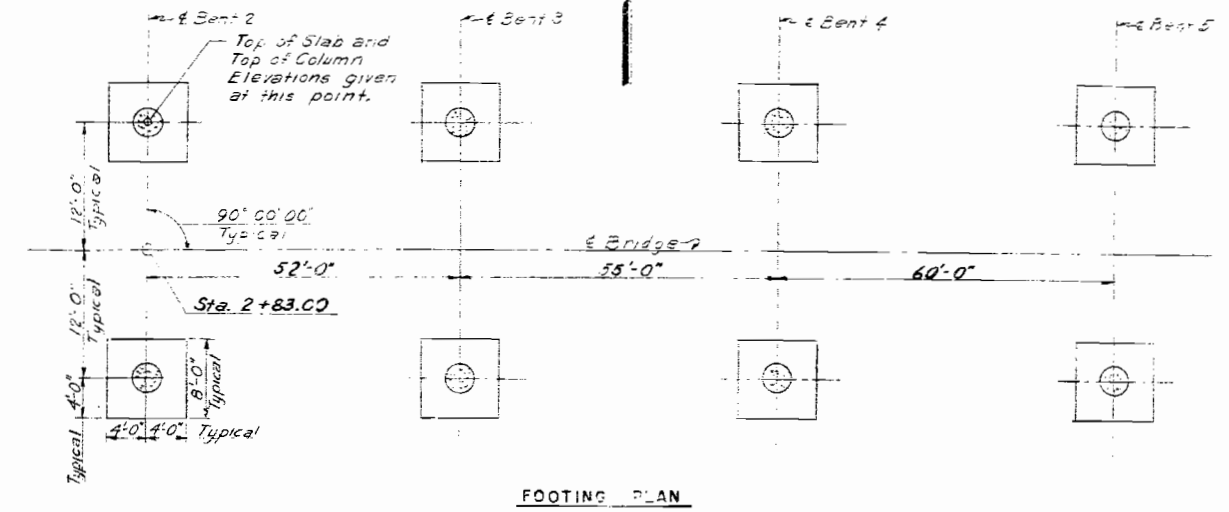
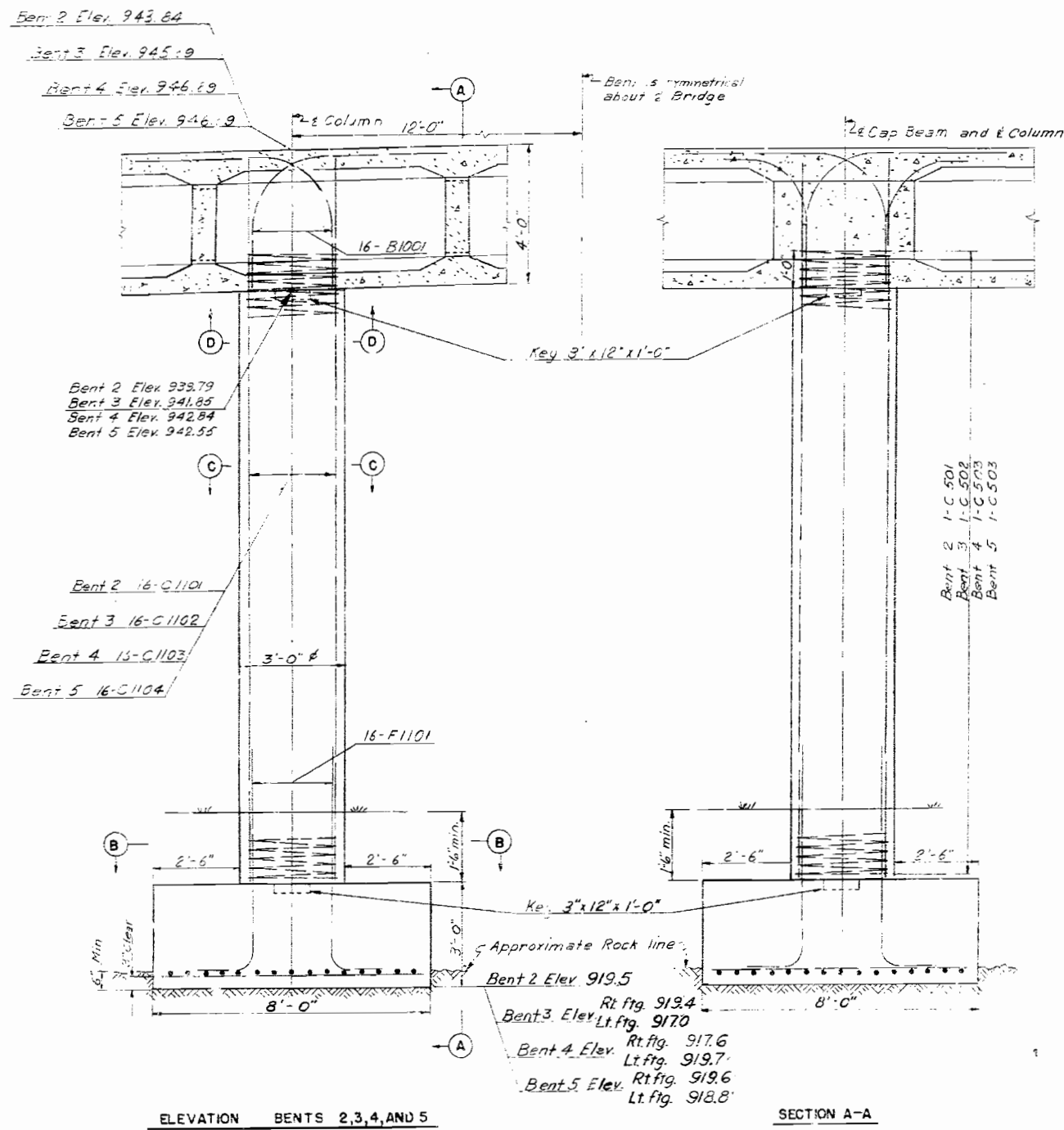
347

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY NEW YORK  
 MADE: WPD DATE: 7-12-56 TRACED: DATE: CHECKED: JSH DATE: 3-5-56 SCALE:

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

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT No. 850	SHEET TOTAL
5 MO T-70-1712	45
4 JACKSON	570



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

MADE TDD DATE 9-27-55 TRACED DATE  
CHECKED RSG DATE 7-16-56 SCALE

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

FINISHED BENTS 2,3,4, AND 5

SHEET 74 OF 6

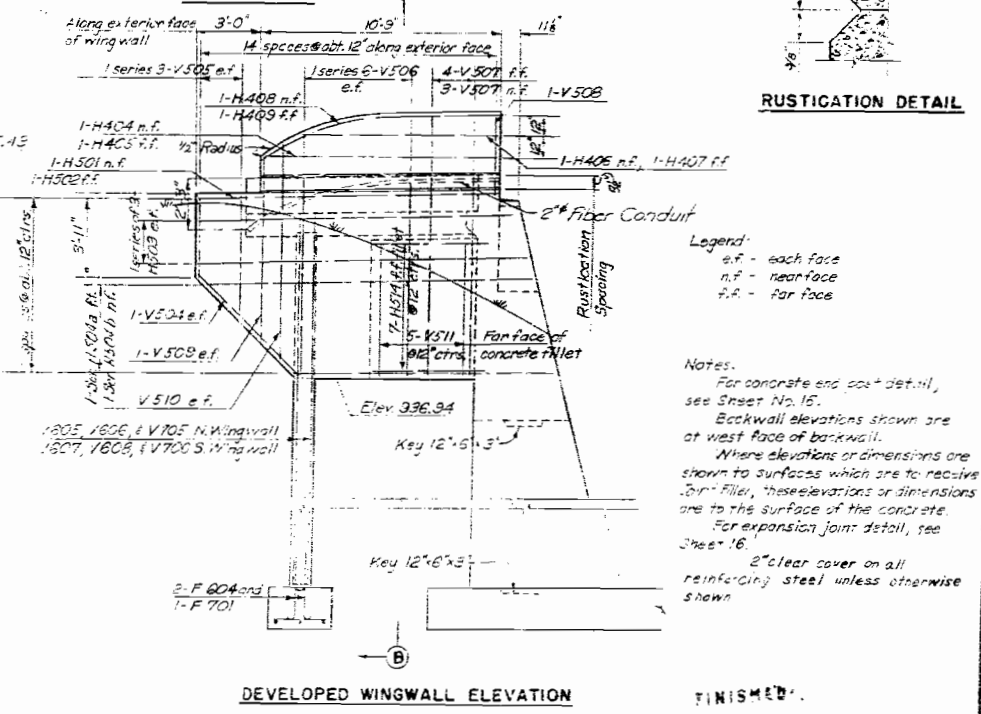
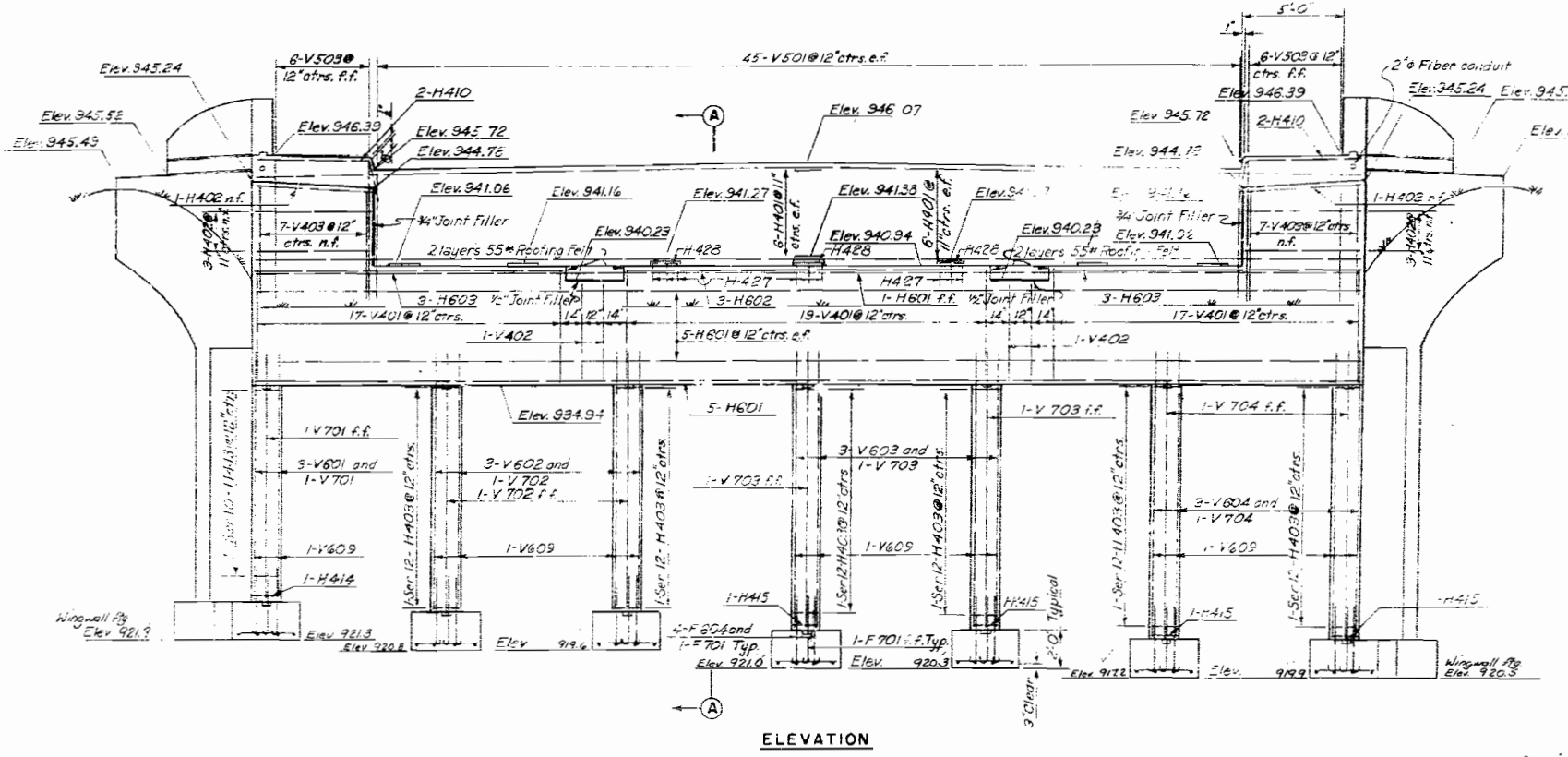
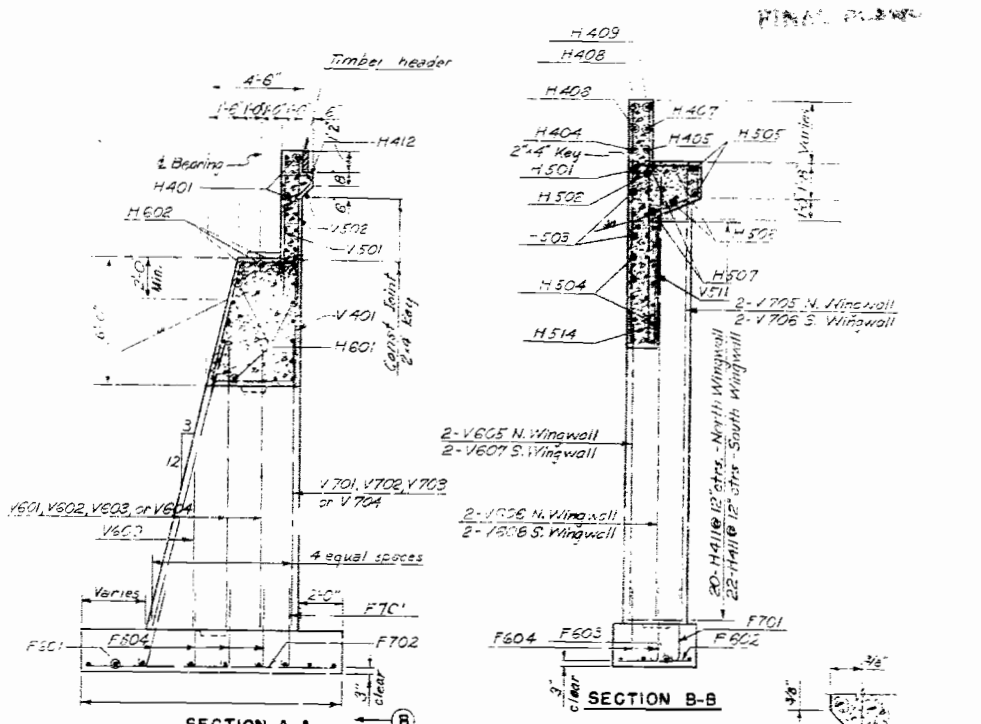
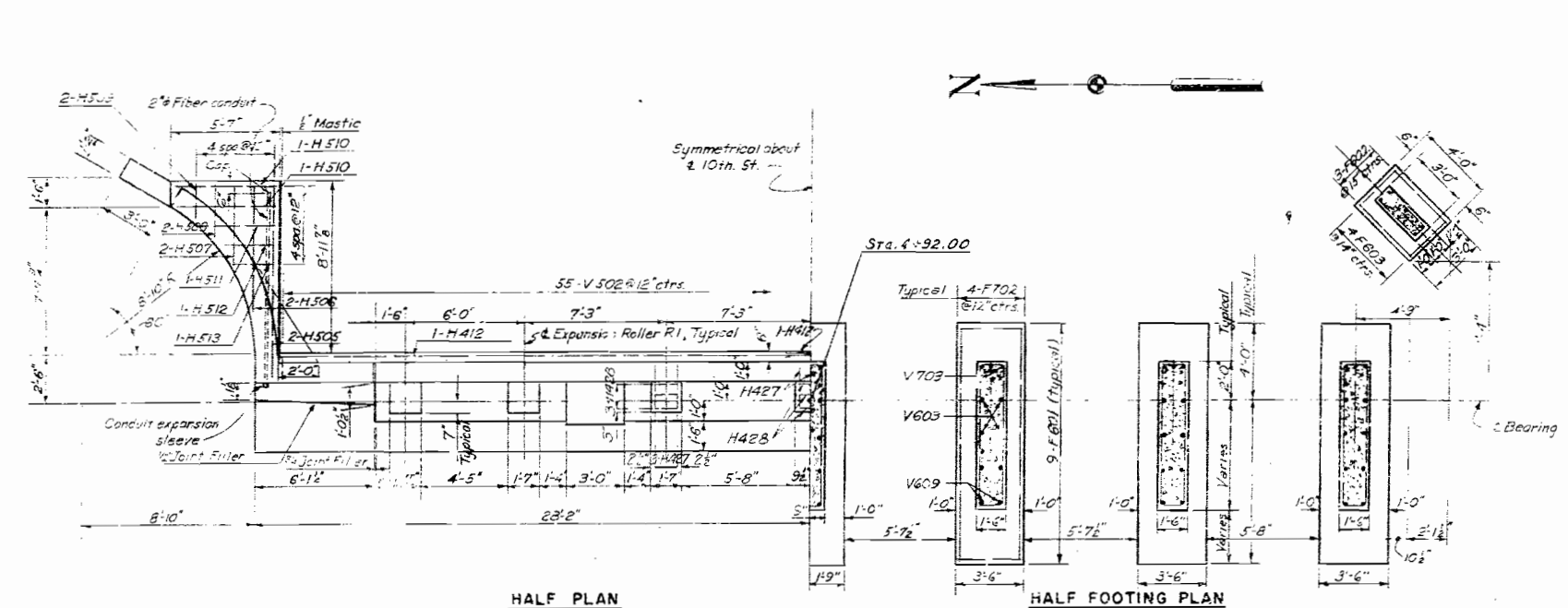
BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1(17) (RT. I-70) STA. 23+20.27 (LANE C)  
JACKSON COUNTY

L-939-1

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

STATE FEDERAL PROJECT NO. 8510  
5 MO. I-70-1712  
4 JACKSON CO. MO. STA. 23+20.27



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Legend:  
e.f. - each face  
n.f. - near face  
f.f. - far face

Notes:  
For concrete end cast detail, see Sheet No. 15.  
Backwall elevations shown are at west face of backwall.  
Where elevations or dimensions are shown to surfaces which are to receive 3/8" filler, these elevations or dimensions are to the surface of the concrete.  
For expansion joint detail, see Sheet 16.  
2" clear cover on all reinforcing steel unless otherwise shown.

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

MADE BY RJC DATE 7-9-56 TRACED BY DATE  
CHECKED RJC DATE 7-16-56 SCALE

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

END BENT 6

SHEET 8 OF 6

FINISHED

L-939-1

FINAL PLANS

BRIDGE: 10TH STREET UNDERPASS  
STATE ROAD MIDTOWN FREEWAY  
KANSAS CITY, MO.  
PROJECT NO. I-70-1712 (RT I-70) STA. 23+20.27 (LINE C)  
JACKSON COUNTY