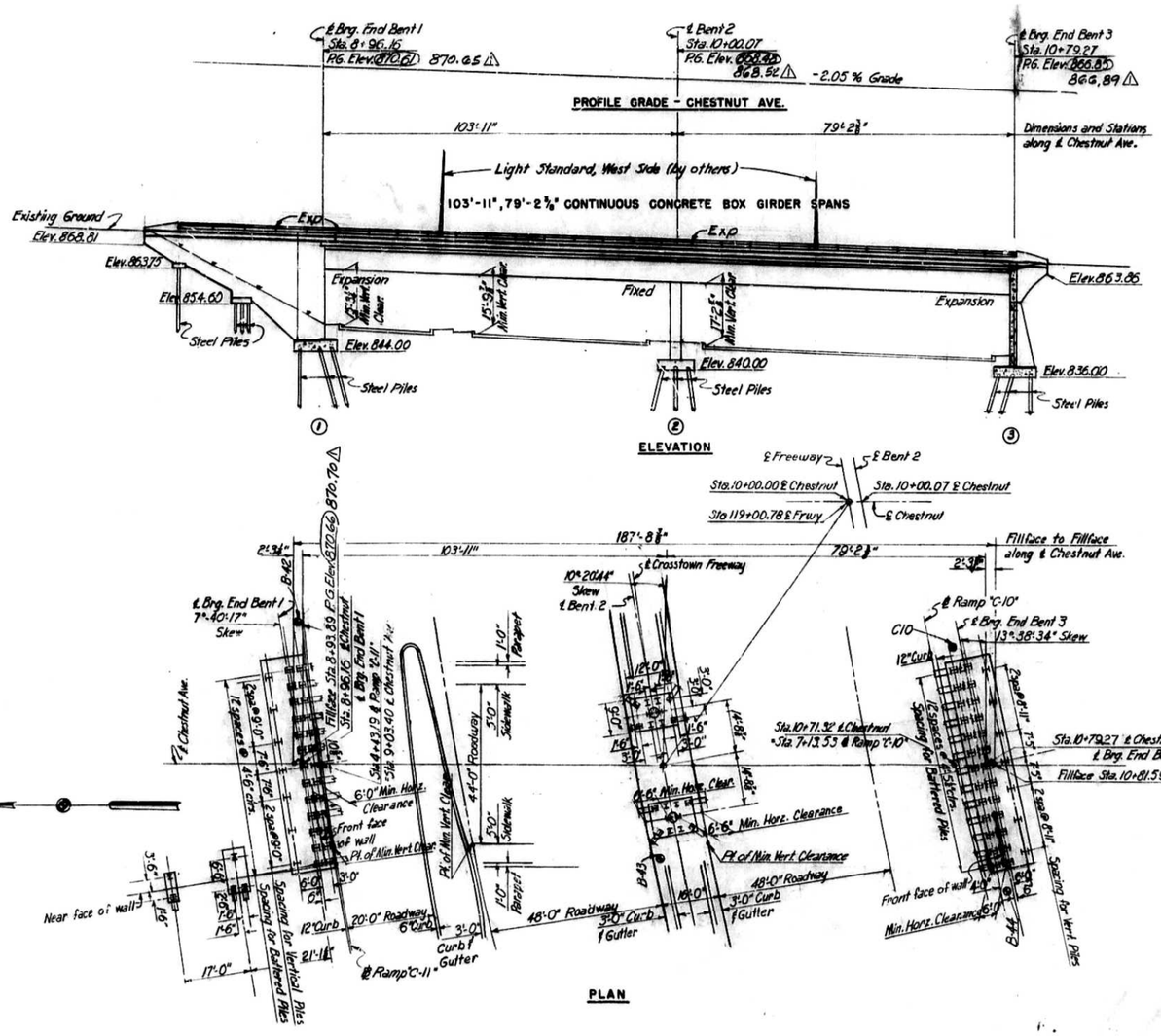
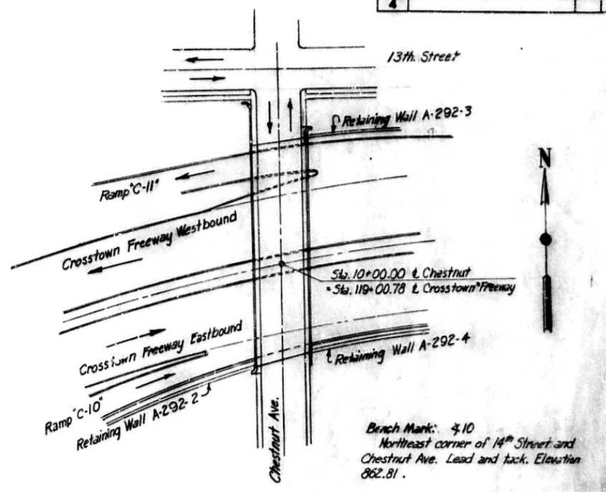
MISSOURI STATE HIGHWAY DEPARTMENT

DIST.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			41	
SUBT. NO.	COUNTY			SHEETS	REF.
4					





Bench Mark: 410
Northeast corner of 14th Street and Chestnut Ave. Lead and tack. Elevation 862.81.

LOCATION SKETCH

Note: Location of Boring Logs are noted thus: B-42 or C10 ⊕.
Elevation shown at top of Boring is top of ground.
Elevation shown at bottom of Boring is top of Limestone.

BORING LOGS

Notes:
Pile spacings and Footing dimensions for Column Footings are typical.
Piles in Bents 1 and 3 are 12 BP 53 battered 3" per foot where shown.
Piles in Bent 2 are 14 BP 73 battered 3" per foot where shown.

SUBMITTED BY: K. G. Bergendoff EINISHED
REGISTERED PROFESSIONAL ENGINEER MISSOURI NO. E-253

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY

EINISHED

SUBMITTED BY J. A. Williams, Bridge Engineer DATE 12-8-57 | STD C110 R7
APPROVED BY Chas. M. Whitton, Chief Engineer DATE 12-8-57 | A-292

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

MADE FBM DATE 7-11-58 | TRACED DATE
CHECKED NEW DATE 10-15-58 | SCALE

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

GENERAL PLAN AND ELEVATION
Rev. 3-8-60 SHEET 1 OF 18

420

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.				42
DIST. NO.	COUNTY			ROUTE	SEC.
4					

GENERAL NOTES

Design Specifications: AASHO 1957.

Design Loading: H20 - 15 #/sq. ft. future wearing surface.

Concrete: Concrete Stress: Class "B-1" fc = 1400 psi
Class "B" fc = 1200 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" for 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, except as indicated in Special Provisions for top slab.

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 reinforcing steel to outside edge of concrete are all clear dimensions.
All bending dimensions are from "out to out" of bars.

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.

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 rubber compound joints as given in Section 59-22B of the Standard Specifications.

Fiber Conduit: Expansion sleeves shall be required in fiber conduit at all expansion joints. Expansion sleeve shall be an oversized fiber conduit with rubber ring as provided by the manufacturer.

Piling: All piles shall conform with details and notes on Sheet No. 7.
All piles required for this structure will be furnished by the State. (See Special Provisions). 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 64 tons per pile for 14 BP 73 and 46 tons per pile for 12BP53. All piles shall be driven with a steam hammer. See Section 22-9C of Standard Specifications for required painting of steel piles.

Qualification of welding operators will be required.

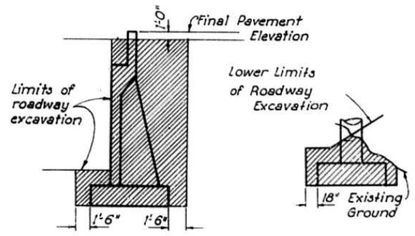
Painting: See Special Provisions.

421

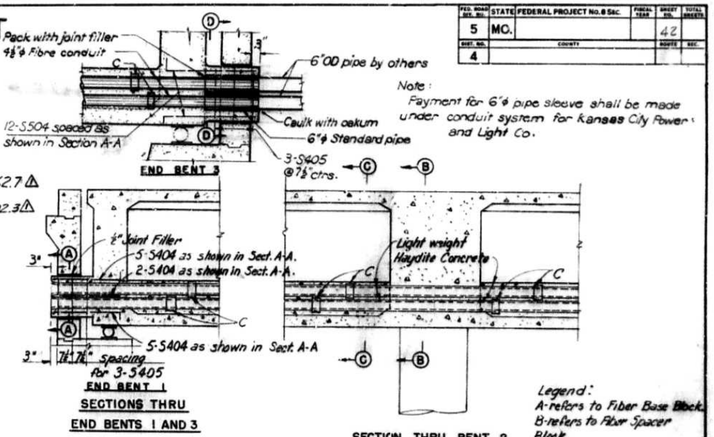
ESTIMATED QUANTITIES

ITEM NUMBER	ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL
1-G	Class 1 Excavation for Structures	Cu.Yd.	1505.		1505
16-B	Class "B" Concrete	Cu.Yd.	(438.2)	462.7 △	(438.2) 462.7 △
16-B-1	Class "B-1" Concrete	Cu.Yd.	△ 702.3	(493.2)	(493.2) 702.3 △
17-B	Fabricated Structural Steel	Lbs.		7030	7030
17-B	Fabricated Structural Steel Bearings	Lbs.		3430	3430
17 A-A	Aluminum Alloy Handrail	Lin.Ft.		406	406
19-A	Reinforcing Steel	Lbs.	63,160	218,070	281,230
22-DD	Steel Piles in Place (State furnished) 14 BP 73	Lin.Ft.	440		440
22-DD	Steel Piles in Place (State furnished) 12 BP 53	Lin.Ft.	1672		1672
40-W	Conduit System (Lighting)	L.S.			1
40-WW	Conduit System for Kansas City Power and Light Company	L.S.			1

Quantity Notes:
All excavation for bridge will be paid for as Class 1 Excavation for Structures. Sketches below show limits of excavation for pay purposes.

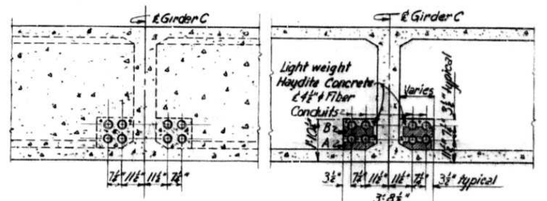


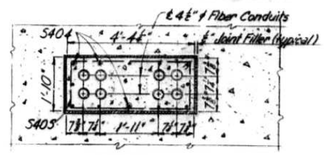
Estimated quantity of Class "B" concrete substructure, includes all concrete in end bents (including wing-walls and parapet) and intermediate bent footings only. All other concrete is included in estimated quantity of Class B-1 concrete superstructure.



Note:
Payment for 6'ϕ pipe sleeve shall be made under conduit system for Kansas City Power and Light Co.

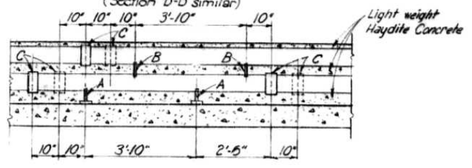
Legend:
A-refers to Fiber Base Block.
B-refers to Fiber Spacer Block.
C-refers to Dust Joints.





Note:
For location of Conduit System see sheet 9.

SECTION A-A
(Section D-D similar)



CONDUIT CONSTRUCTION DETAILS

BILL OF REINFORCING STEEL

	No.	Size	Length	Mark	Type	A	B	C
*	24	4	3'-9"	5404	104	3'-3"	6"	
*	6	4	12'-1"	5405	109	4'-1"	1'-7"	4½"

104 109

C-hook

* Included in lump sum bid for Kansas City Power and Light Conduit System and not included in Estimated Quantities and Bills of Reinforcing Steel.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. 1-70-I(12)(RT. 1-70) STA. 119+00.78
JACKSON COUNTY FINISHED

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

MADE JSH DATE 12-5-58 TRACED DATE
CHECKED WJPo DATE 12-8-58 SCALE

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

CONDUIT SYSTEM DETAILS AND GENERAL NOTES

SHEET 2 OF 15 Rev. 3-8-60 △

A-292

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			43	
SHT. NO. 4	COUNTY		ROUTE	SEC.	

SUBSTRUCTURE BILL OF REINFORCING STEEL

SUBSTRUCTURE — END BENT 1

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
47	#6	11'-6"	F601	Str.				
12		30'-0"	F602					
18		4'-6"	F603					
16		5'-8"	F604					
5		9'-0"	F605					
11		2'-8"	F606					
4		7'-8"	F607					
3		6'-0"	F608					
8		4'-0"	F609	Str.				
2		9'-1"	F610	107	1'-4"	7'-1"	8"	6'-6"
2	#6	5'-0"	F611	Str.				
52	#10	11'-6"	F1001	Str.				
20		58'-0"	F1002	Str.				
9		7'-7"	F1003	101	6'-2"	1'-5"		
9		12'-2"	F1004	101	10'-9"	1'-5"		
8		12'-2"	F1005	Str.				
7	#10	6'-11"	F1006	101	5'-6"	1'-5"		
2	#4	10'-6"	H401	Str.	*			
2		11'-2"	H402		*			
2		8'-4"	H403		*			
2		8'-10"	H404		*			
3		10'-3"	H405		*			
3		10'-11"	H406		*			
2		5'-2"	H407					
2		3'-7"	H408					
4		9'-4"	H409					
2		21'-10"	H410		*			
2		22'-2"	H411		*			
4		4'-4"	H412					
2		4'-9"	H413					
2		21'-10"	H414					
2		22'-2"	H415					
1		11'-8"	H416		*			
1	#4	12'-9"	H417	Str.	*			
7	#5	33'-0"	H501	Str.				
26		3'-7"	H502	104	1'-11"	1'-8"		
10		4'-0"	H503	105	8"	1'-8"	1'-8"	
6		10'-3"	H504	132	1'-8"	2'-11"	5'-8"	10"
4		5'-3"	H505	132	1'-8"	1'-8"	1'-11"	4"
16		6'-5"	H506	141	2'-2"	8"	1'-3"	2'-4"
7		12'-5"	H507	135	5'-8"	6'-9"	1'-0"	6'-8"
5		28'-8"	H508	Str.				
5		24'-8"	H509					
3		20'-4"	H510					
8		14'-0"	H511					
2	#5	18'-4"	H512	Str.				
2	#6	12'-6"	H601	Str.	*			
4		13'-2"	H602		*			
2		10'-3"	H603		*			
1		10'-9"	H604		*			
1		8'-0"	H605		*			
1		8'-4"	H606		*			
1		5'-9"	H607		*			
1		5'-11"	H608		*			
2		4'-0"	H609	Str.	*			
19		5'-4"	H610	105	8"	2'-4"	2'-4"	
15		29'-10"	H611	121	1'-2"	3'-11"+a_s+c_s	2'-0"	
1		11'-6"	H612	Str.	*			
1		12'-0"	H613		*			
2		42'-4"	H614		*			
5		32'-7"	H615					
1		39'-5"	H616		*			
1	#6	37'-4"	H617	Str.	*			

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
1	#6	34'-9"	H618	Str.	*			
2		30'-2"	H619			*		
1		7'-6"	H620		*			
1		4'-9"	H621		*			
5		52'-5"	H622					
5		39'-10"	H623					
8		17'-8"	H624					
6		11'-8"	H625					
14		13'-10"	H626					
1		9'-4"	H627		*			
1		10'-0"	H628		*			
2		19'-0"	H629					
2		13'-9"	H630	Str.				
4		28'-2"	H631	121	1'-2"	2'-4"+a_s+c_s	2'-0"	
1		12'-2"	H632	121	1'-2"	3'-6"	2'-0"	
1		10'-8"	H633	121	1'-2"	2'-9"	2'-0"	
1		9'-2"	H634	121	1'-2"	2'-0"	2'-0"	
12		8'-9"	H635	135	2'-0"	6'-9"	1'-0"	6'-8"
15		7'-5"	H636	103	1'-8"	5'-1"	8"	
10	#6	6'-0"	H637	Str.				
20	#8	56'-2"	H801	Str.				
15		55'-5"	H802	Str.				
4		15'-5"	H803	Str.				
2		18'-7"	H804	Str.				
3	#8	10'-6"	H805	106	1'-9½"	6'-6½"	1'-1"	7½"
4	#4	12'-8"	V401	Str.				
2		12'-1"	V402					
2		11'-5"	V403					
2		10'-9"	V404					
2		10'-0"	V405					
2		9'-3"	V406					
2		8'-5"	V407					
2		5'-5"	V408					
4		4'-3"	V409					
2		5'-3"	V410					
2		6'-0"	V411					
4		6'-6"	V412					
2		7'-1"	V413					
4		7'-6"	V414					
2		7'-11"	V415					
6		8'-3"	V416					
2		8'-6"	V417					
2		8'-10"	V418					
1		4'-9"	V419					
1		6'-2"	V420					
13		18'-3"	V421					
6		15'-1"	V422					
6		13'-4"	V423					
11		40'-2"	V424					
1		24'-10"	V425					
4		23'-1"	V426	Str.				
36	#4	6'-1"	V427	105	8"	3'-7"	1'-10"	
30	#5	12'-6"	V501	131	3'-5"	1'-9"	2'-4"	1'-3"
62		8'-7"	V502	Str.				
35		16'-2"	V503	Str.				
39		14'-8"	V504	Str.				
10		12'-6"	V505	105	2'-11"	7'-11"	1'-8"	
6		11'-4"	V506	105	8"	9'-0"	1'-8"	
4		10'-6"	V507	131	2'-5"	9"	2'-4"	1'-3"
4		15'-4"	V508	Str.				
2		8'-1"	V509	Str.				
6		5'-3"	V510	105	1'-11"	1'-8"	1'-8"	
9		5'-6"	V511	105	2'-2"	1'-8"	1'-8"	
2		12'-8"	V512	124	1'-8"	4'-9"	1'-4"	4'-11"
2		12'-3"	V513	124	1'-8"	4'-7"	1'-4"	4'-8"
2	#5	9'-10"	V514	124	1'-8"	3'-4⅝"	1'-4"	3'-5⅛"

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

BENT 2

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
52	#11	9'-6"	F1101	126	5'-9"	2'-9"	1'-0"	1'-9"
32	#11	11'-6"	F1102	Str.				
36	#11	8'-6"	F1103	Str.				

END BENT 3

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
20	#10	58'-5"	F1001	Str.				
78		12'-6"	F1002	Str.				
24		14'-1"	F1003	101	12'-8"	1'-5"		
24	#10	7'-5"	F1004	101	6'-0"	1'-5"		
14	#6	30'-2"	F601	Str.				
8		10'-0"	F602					
40		12'-6"	F603					
16	#6	4'-6"	F604	Str.				
9	#4	4'-4"	H401	105	1'-8"	1'-4"	1'-4"	
6		4'-7"	H402	105	1'-11"	1'-4"	1'-4"	
2		9'-4"	H403	Str.				
1		5'-2"	H404					
1		3'-7"	H405					
6		10'-3"	H406		*			
2		10'-11"	H407		*			
3		8'-4"	H408		*			
1		9'-0"	H409		*			
3		10'-6"	H410		*			
1		11'-2"	H411		*			
2	#4	5'-6"	H412	Str.				
7	#5	33'-8"	H501	Str.				
3		20'-0"	H502	Str.				
3		25'-2"	H503	Str.				
4		6'-4"	H504	132	1'-8"	1'-8"	3'-0"	8½"
10		10'-5"	H505	132	3'-0"	1'-8"	3'-1"	8½"
24		4'-0"	H506	105	8"	1'-8"	1'-8"	
24		3'-4"	H507	104	1'-8"	1'-8"		
10		5'-4"	H508	108	3'-8"	1'-8"	4⅝"	1'-7½"
5		20'-3"	H509	Str.				
2		18'-9"	H510	Str.				
8	#5	14'-6"	H511	Str.				
4	#6	4'-6"	H601	Str.	*			
3		4'-8"	H602		*			
1		5'-11"	H603		*			
3	#6	6'-10"	H604	Str.	*			
80	#5	18'-8"	V501	Str.				
35		12'-6"	V502	131	3'-5"	1'-9"	2'-4"	1'-3"
4		10'-6"	V503	131	2'-5"	9"	2'-4"	1'-3"
10		13'-5"	V504	105	3'-0"	8'-9"	1'-8"	
64		8'-6"	V505	Str.				
8		11'-2"	V506	105	1'-8"	8'-10"	8"	
2		3'-1"	V507	Str.				
1		12'-8"	V508	124	1'-8"	4'-9"	1'-4"	4'-11"
1		12'-3"	V509	124	1'-8"	4'-7"	1'-4"	4'-8"
1		9'-10"	V510	124	1'-8"	3'-4⅝"	1'-4"	3'-5⅛"
1		8'-1"	V511	124	1'-8"	2'-6"	1'-4"	2'-7"
1		6'-9"	V512	124	1'-8"	1'-10"	1'-4"	1'-11"
6	#5	3'-10"	V513	Str.				
8	#6	20'-0"	V601	Str.				
8	#6	15'-0"	V602	Str.				
24	#10	21'-9"	V1001	101	20'-4"	1'-5"		
25	#8	56'-3"	H801	Str.				
25		57'-3"	H802					
2		19'-0"	H803					
4	#8	15'-8"	H804	Str.				

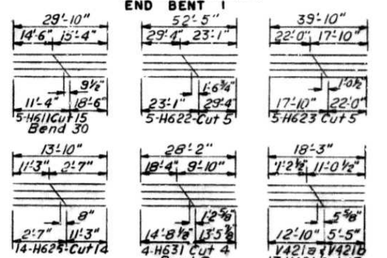
* Denotes Bend in Field

Note: Hooks and Bends shall be in accordance with the A.A.S.H.O. Manual of Standard Practice for detailing Reinforced Concrete Highway Structures.

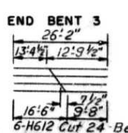
Prefix End Bent 1 bars with B1 and End Bent 3 Bars with B3. Example B1-F601

FINISHED

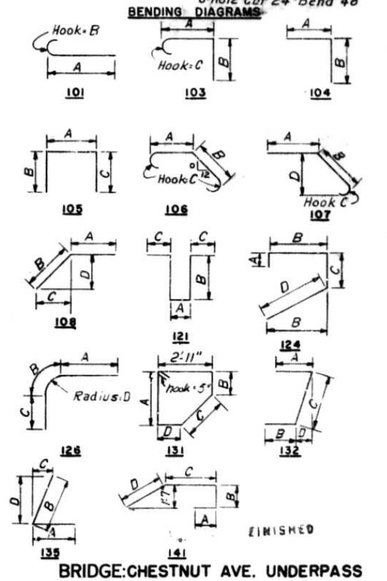
CUTTING DIAGRAMS — END BENT 1



END BENT 3



BENDING DIAGRAMS



BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD — CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-I(12)(RT. I-70) STA. 119 + 00.78

JACKSON COUNTY

FINISHED

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

MADE FDM DATE 10-26-58 | TRACED RBS DATE 10/27/58 | CHECKED WEW DATE 11-3-58 | SCALE

REINFORCING SCHEDULE SHEET 3 OF 15

A-292

422

NO CONSTRUCTION CHANGES

423

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT No. & Etc.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			44	
4					

MISSOURI STATE HIGHWAY DEPARTMENT

SUPERSTRUCTURE BILL OF REINFORCING STEEL

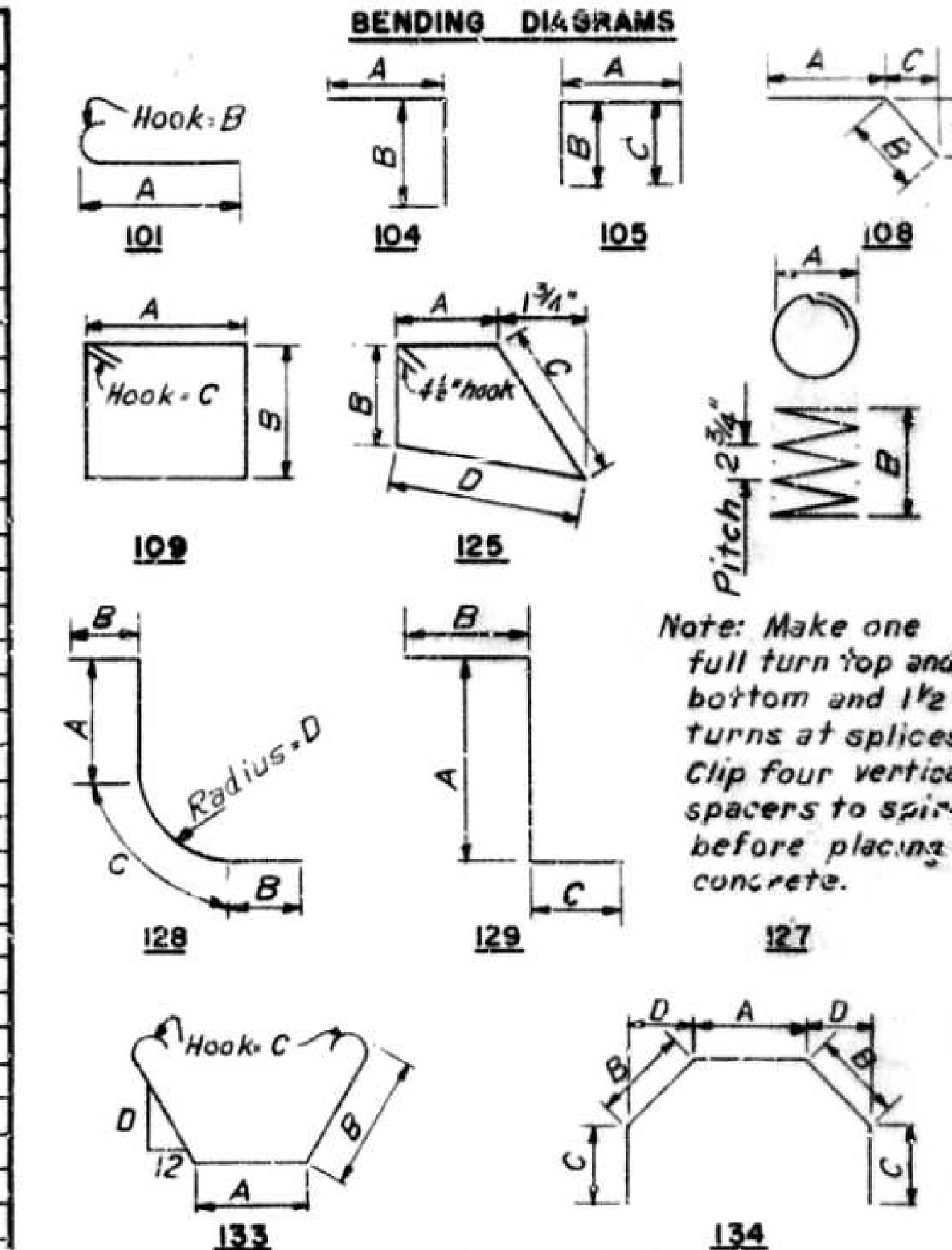
NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
SUPERSTRUCTURE								
2	#4	731'-6"	C401	127	2'-9"	19'-3"		
20	#9	10'-5"	C901	104	5'-6"	4'-11"		
52	#11	24'-4"	C1101	Str.				
70	#6	16'-9"	B601	109	2'-4"	5'-6½"	6"	
79		14'-6"	B602	109	1'-2½"	5'-6½"	6"	
16		17'-3"	B603	109	1'-2½"	6'-11"	6"	
24		26'-0"	B604	Str.				
8		20'-11"	B605					
8		20'-2"	B606					
8	#6	20'-5"	B607	Str.				
10	#11	44'-4"	B1101	Str.				
10		15'-9"	B1102					
14		10'-3"	B1103					
5		17'-3"	B1104					
6		29'-6"	B1105					
5	#11	23'-5"	B1106	Str.				
8	#4	4'-11"	D401	109	11"	1'-2"	4½"	
4		5'-7"	D402		11"	1'-6"	4½"	
64		5'-2"	D403		8½"	1'-6"	4½"	
64		4'-8"	D404		8½"	1'-3"	4½"	
64		4'-2"	D405		8½"	1'-0"	4½"	
32	#4	3'-10"	D406	109	8½"	10"	4½"	
4	#6	9'-8"	D601	134	3'-8"	2'-0"	1'-0"	1'-11"
48	#6	9'-6"	D602	108	4'-9"	4'-9"	4'-3"	2'-1"
32	#6	5'-6"	D603	101	4'-10"	8"		
110	#4	30'-0"	G401	Str.				
122		23'-8"	G402					
90		25'-0"	G403					
10		12'-6"	G404					
10		11'-10"	G405					
10		26'-0"	G406					
10		19'-0"	G407					
10		14'-4"	G408					
10		15'-5"	G409					
10		10'-0"	G410					
20		15'-0"	G411					
10		18'-4"	G412					
20		19'-9"	G413					
10		23'-4"	G414					
10		23'-6"	G415					
10		19'-2"	G416					
30		21'-4"	G417					
10		21'-6"	G418					
10		26'-6"	G419					
10	#4	25'-6"	G420	Str.				

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
329	#5	7'-9"	G501	105	5'-9"	1'-0"	1'-0"	
329	#5	7'-9"	G502	129	5'-9"	1'-0"	1'-0"	
1614	#5	8'-0"	G503	128	5'-3"	1'-0"	9"	6"
80	#6	4'-3"	G601	Str.				
14	#8	46'-0"	G801	Str.				
151	#11	60'-0"	G1101	Str.				
42		50'-0"	G1102					
28		40'-0"	G1103					
28		29'-0"	G1104					
28		18'-0"	G1105					
14		45'-0"	G1106					
4		37'-5"	G1107					
6		38'-5"	G1108					
4		39'-2"	G1109					
2		54'-0"	G1110					
2		53'-7"	G1111					
2		53'-2"	G1112					
2		52'-8"	G1113					
2		52'-3"	G1114					
2		51'-10"	G1115					
2		51'-5"	G1116					
17		41'-0"	G1117					
14		38'-0"	G1118					
5		12'-11"	G1119					
5		13'-8"	G1120					
5		14'-6"	G1121					
5		15'-3"	G1122					
5		16'-1"	G1123					
5		16'-10"	G1124					
5		17'-8"	S1125					
28		16'-8"	G1126					
4		26'-1"	G1127					
8		26'-10"	G1128					
4		27'-2"	G1129					
4		27'-6"	G1130					
8		28'-5"	G1131					
10	#11	22'-8"	G1132	Str.				
316	#4	6'-2"	P401	109	8"	2'-0½"	4½"	
40		30'-0"	P402	Str.				
4		8'-4"	P403					
16		9'-8"	P404					
4		10'-0"	P405					
4		8'-10"	P406	Str.				
4		7'-2"	P407	109	1'-2"	2'-0½"	4½"	
8		4'-9"	P408	133	1'-0"	1'-4½"	6"	12"
4	#4	15'-3"	P409	Str.				
77	#4	30'-0"	S401	Str.				
7	#4	15'-10"	S402	Str.				
14	#4	20'-3"	S403	Str.				
75	#5	40'-0"	S501	Str.				
26		35'-0"	S502					
18		30'-0"	S503					
379		25'-0"	S504					
12	#5	20'-0"	S505	Str.				

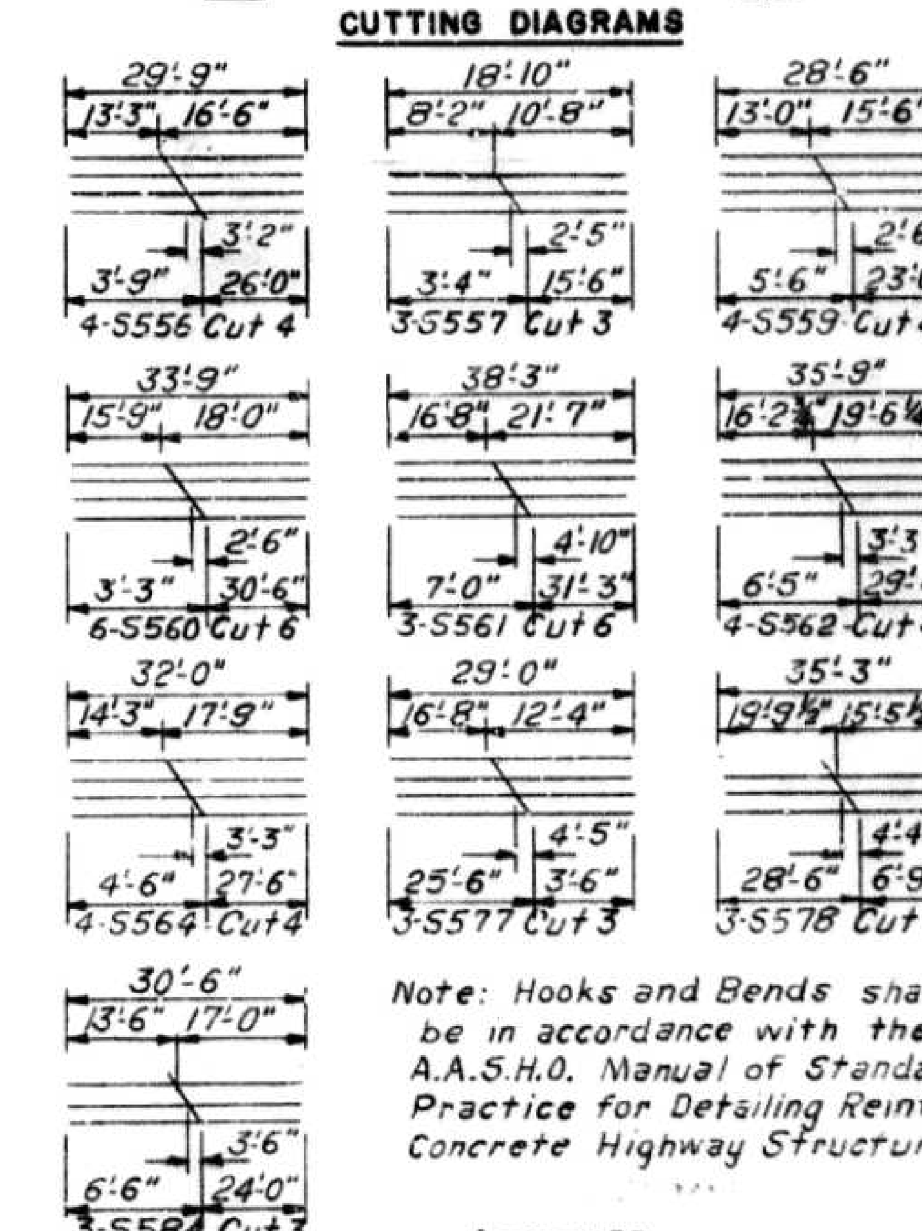
NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
6	#5	26'-2"	S506	Str.				
5		26'-6"	S507					
8		26'-11"	S508					
4		27'-4"	S509					
5		27'-10"	S510					
3		28'-3"	S511					
279		31'-0"	S512					
2		31'-6"	S513					
2		32'-1"	S514					
2		32'-10"	S515					
143		32'-4"	S516					
5		33'-8"	S517					
2		27'-7"	S518					
2		28'-8"	S519					
2		28'-10"	S520					
4		29'-8"	S521					
2		33'-4"	S522					
1		25'-4"	S523					
2		17'-0"	S524					
2		34'-4"	S525					
3		34'-7"	S526					
3		3'-4"	S527					
6		35'-6"	S528					
2		5'-3"	S529					
3		18'-9"	S530					
2		38'-0"	S531					
5		38'-9"	S532					
2		39'-2"	S533					
2		39'-5"	S534					
1		22'-6"	S535					
1		6'-9"	S536					
7		25'-9"	S537					
2		35'-9"	S538					
4		36'-7"	S539					
1		37'-3"	S540					
2		36'-11"	S541					
1		37'-9"	S542					
1		38'-3"	S543					
141		29'-6"	S544					
139		22'-2"	S545					
286		16'-8"	S546					
2		18'-0"	S547					
1		11'-2"	S548					
2		21'-2"	S549					
1		14'-8"	S550					
10		8'-1"	S551					
1		6'-1"	S552					
1		9'-5"	S553					
4		12'-9"	S554					
1		16'-0"	S555					
4		29'-9"	S556					
3		18'-10"	S557					
1		7'-6"	S558					
4		28'-6"	S559					
6		33'-9"	S560					
6		38'-3"	S561					
4		35'-9"	S562					
1		30'-5"	S563					
4		32'-0"	S564					
1		21'-7"	S565					
4		15'-3"	S566					
2		11'-9"	S567					
3		8'-6"	S568					
1		9'-0"	S569					
2		12'-3"	S570					
3		6'-3"	S571					
2		14'-6"	S572					
2		13'-3"	S573					
1		10'-4"	S574					
1		21'-8"	S575					
15		7'-9"	S576					
3	#5	29'-0"	S577	Str.				

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
3	#5	35'-3"	S578	Str.				
3		23'-0"	S579					
2		10'-4"	S580					
3		4'-3"	S581					
195		20'-4"	S582					
7		9'-8"	S583					
3		30'-6"	S584					
2	#5	25'-3"	S585	Str.				
12	#6	30'-6"	S601	Str.				
10		27'-2"	S602					
2		27'-10"	S603					
4		28'-9"	S604					
33		40'-0"	S605					
26		50'-0"	S606					
6		43'-0"	S607					
3		17'-1"	S608					
1		18'-1"	S609					
3		15'-5"	S610					
4		15'-0"	S611					
1		29'-10"	S612					
1		40'-8"	S613					
1		40'-0"	S614					
2		14'-4"	S615					
1		29'-7"	S616					
5		14'-0"	S617					
1		25'-7"	S618					
2		4'-4"	S620					
1		15'-11"	S621					
1		28'-11"	S622					
1		35'-9"	S623					
3		27'-6"	S624					
3		26'-9"	S625					
2		25'-0"	S626					
2		24'-7"	S627					
10		26'-2"	S628					
1		33'-11"	S629					
2		23'-9"	S630					
2		25'-11"	S631					
4		19'-9"	S632					
2		20'-0"	S633					
2		20'-10"	S634					
16	#6	5'-3"	S635	Str.				
8	#8	9'-0"	S801	Str.				
320	#4	14'-1"	W401	125	5'-7"	9½"	1'-2½"	5'-9"
70		30'-0"	W402	Str.				
7		21'-1"	W403					
7		18'-2"	W404					
7		19'-8"	W405					
7	#4	25'-1"	W406	Str.				

BENDING DIAGRAMS



CUTTING DIAGRAMS



Note: Hooks and Bends shall be in accordance with the A.A.S.H.O. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78

JACKSON COUNTY

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

MADE LJR	DATE 9-11-58	TRACED RBS	DATE 10/30/58
CHECKED JJN	DATE 9-17-58	SCALE	

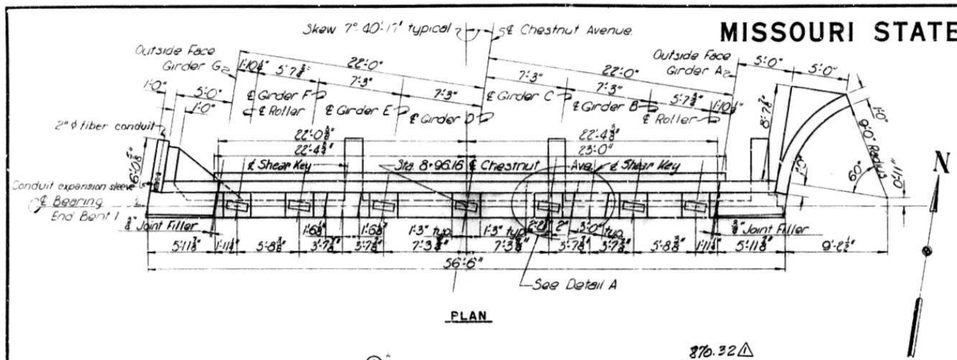
NOTE: This drawing is not to scale. Follow dimensions.

FINISHED **REINFORCING SCHEDULE** SHEET 4 OF 15 FINISHED A-292

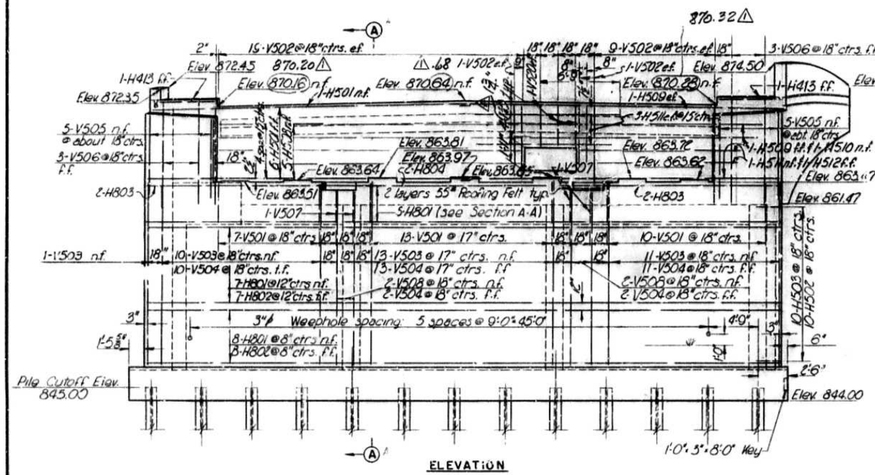
NO CONSTRUCTION CHANGES

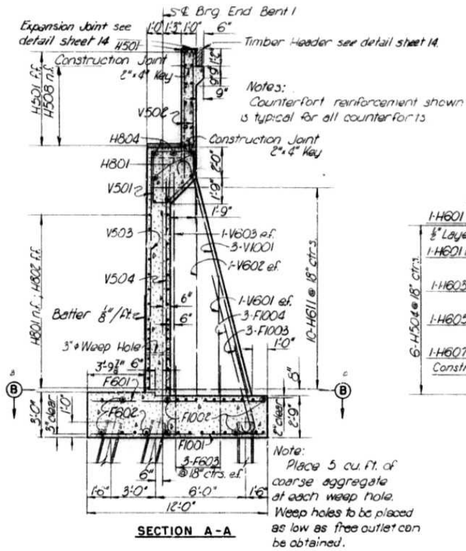
MISSOURI STATE HIGHWAY DEPARTMENT

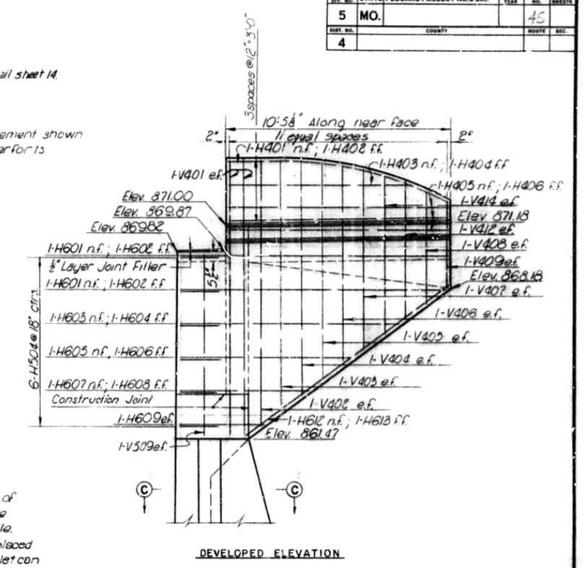
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			45	
DIST. NO.	COUNTY		ROUTE	SEC.	
4					

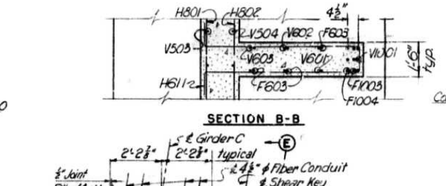


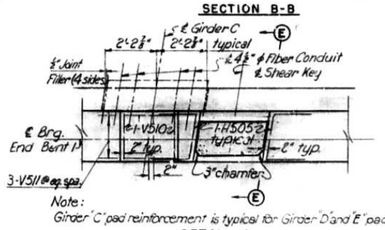
PLAN

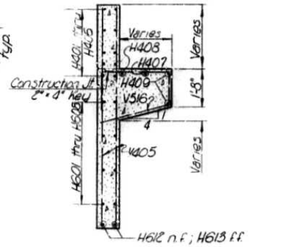


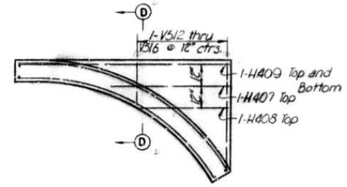


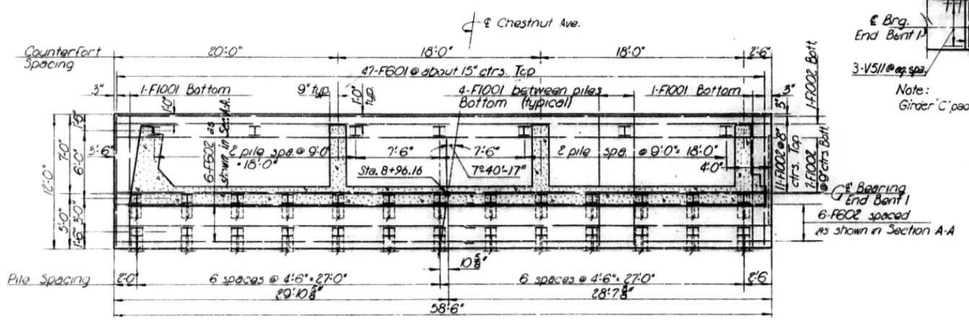


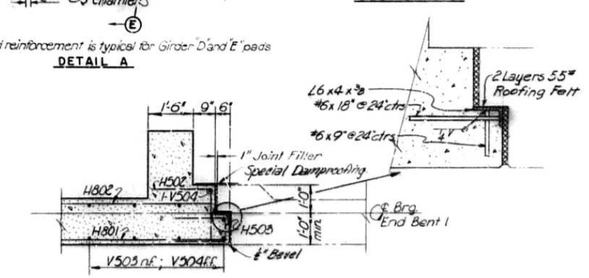












Notes:
1. Piles shall be battered 3"/ft. where shown.
2. All piles are 12 BP 53.
3. Elevations and dimensions shown to surfaces to receive joint filler are to the face of concrete.
4. Unless noted otherwise all reinforcing is 2" clear.
5. For expansion roller details see sheet 14.
6. For rustication detail see sheet 6.
7. For reinforcement schedule see sheet 3.
8. For pile spike detail see sheet 7.
9. Provide 5 Cu. Ft. coarse aggregate at each weep hole.
10. For 4½" ϕ Fiber Conduit System details see sheet 2.
11. For Concrete End Post ordinates see sheet 6.

f. refers to far face.
e. refers to each face.
n. refers to near face.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78

JACKSON COUNTY

FINISHED

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

MADE JRS DATE 6-30-38 TRACED DATE
CHECKED VEW DATE 9-10-38 SCALE

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

END BENT 1 SHEET 5 OF 15

Rev. 3-8-60 △

A-292

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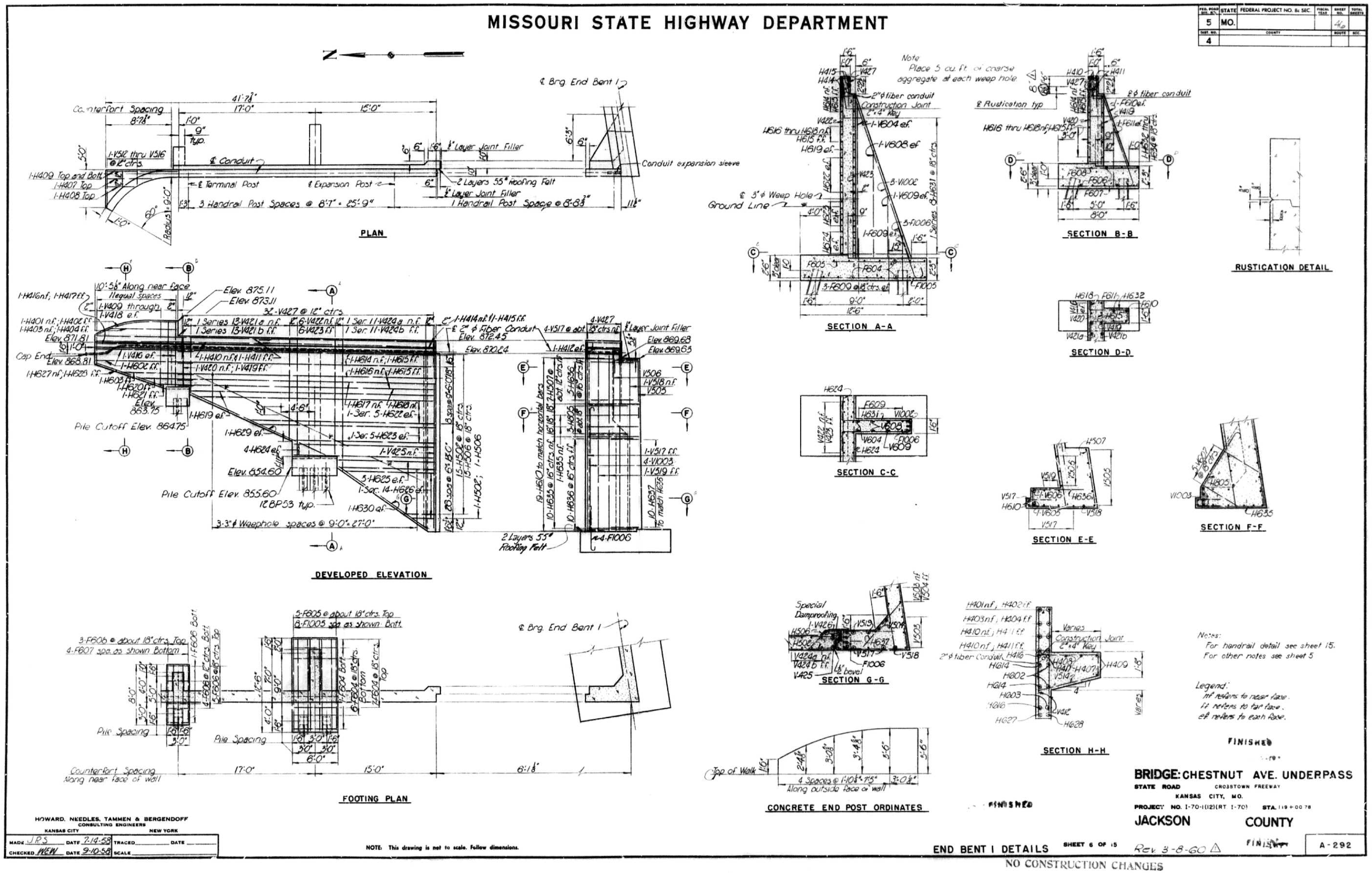
NO CONSTRUCTION CHANGES


MISSOURI STATE HIGHWAY DEPARTMENT
FED. ROAD DIV. NO. 5 | STATE MO. | FEDERAL PROJECT NO. & SEC. | FISCAL YEAR | SHEET NO. 46 | TOTAL SHEETS
DIST. NO. 4 | COUNTY | ROUTE | SEC.
PLAN
DEVELOPED ELEVATION
FOOTING PLAN
SECTION A-A
SECTION B-B
RUSTICATION DETAIL
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
CONCRETE END POST ORDINATES
Note
Place 5 cu. ft. of coarse aggregate at each weep hole.
Notes:
For handrail detail see sheet 15.
For other notes see sheet 5
Legend:
nf refers to near face.
f.f. refers to far face.
ef refers to each face.
FINISHED
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK
MADE JRS DATE 7-14-58 TRACED DATE
CHECKED WEW DATE 9-10-58 SCALE
NOTE: This drawing is not to scale. Follow dimensions.
BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY
END BENT I DETAILS SHEET 6 OF 15
Rev. 3-8-60
A-292
NO CONSTRUCTION CHANGES

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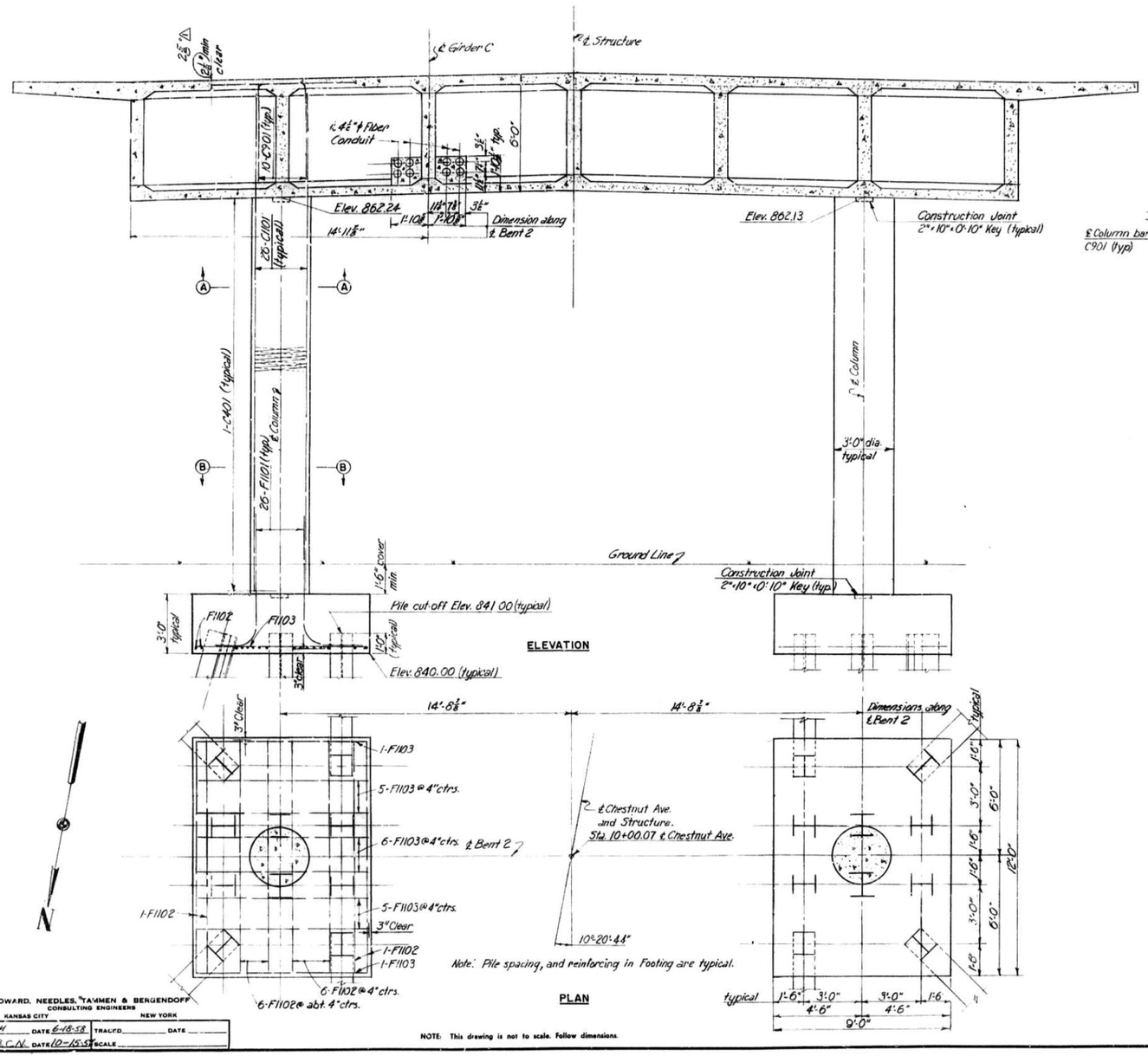
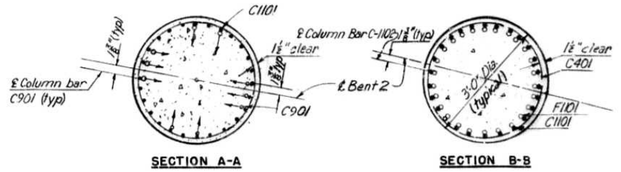
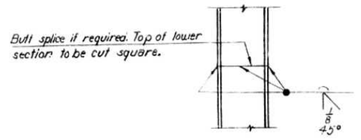
MISSOURI STATE HIGHWAY DEPARTMENT

FED. HIGHWAY SER. NO.	STATE	FEDERAL PROJECT No. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			47	
CONT. NO. 4	COUNTY			ROUTE	SEC.







PILE SPLICE DETAIL

Notes:
All piles in Bent 2 are 14BP73.
Arrows on dowel bars in Section A-A designate the direction bars are to be placed.
Batter piles 3:1 ft. where shown.
For Reinforcing Schedule see sheets 3 of 2.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-1(12)(RT. I-70) STA 119+00.78

JACKSON COUNTY

FINISHED

BENT 2

SHEET 7 OF 15

Rev. 3-8-60 ⚠

A-292

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

MADE JBH DATE 6-18-58 TRACED DATE
CHECKED B.C.N. DATE 10-15-58 SCALE

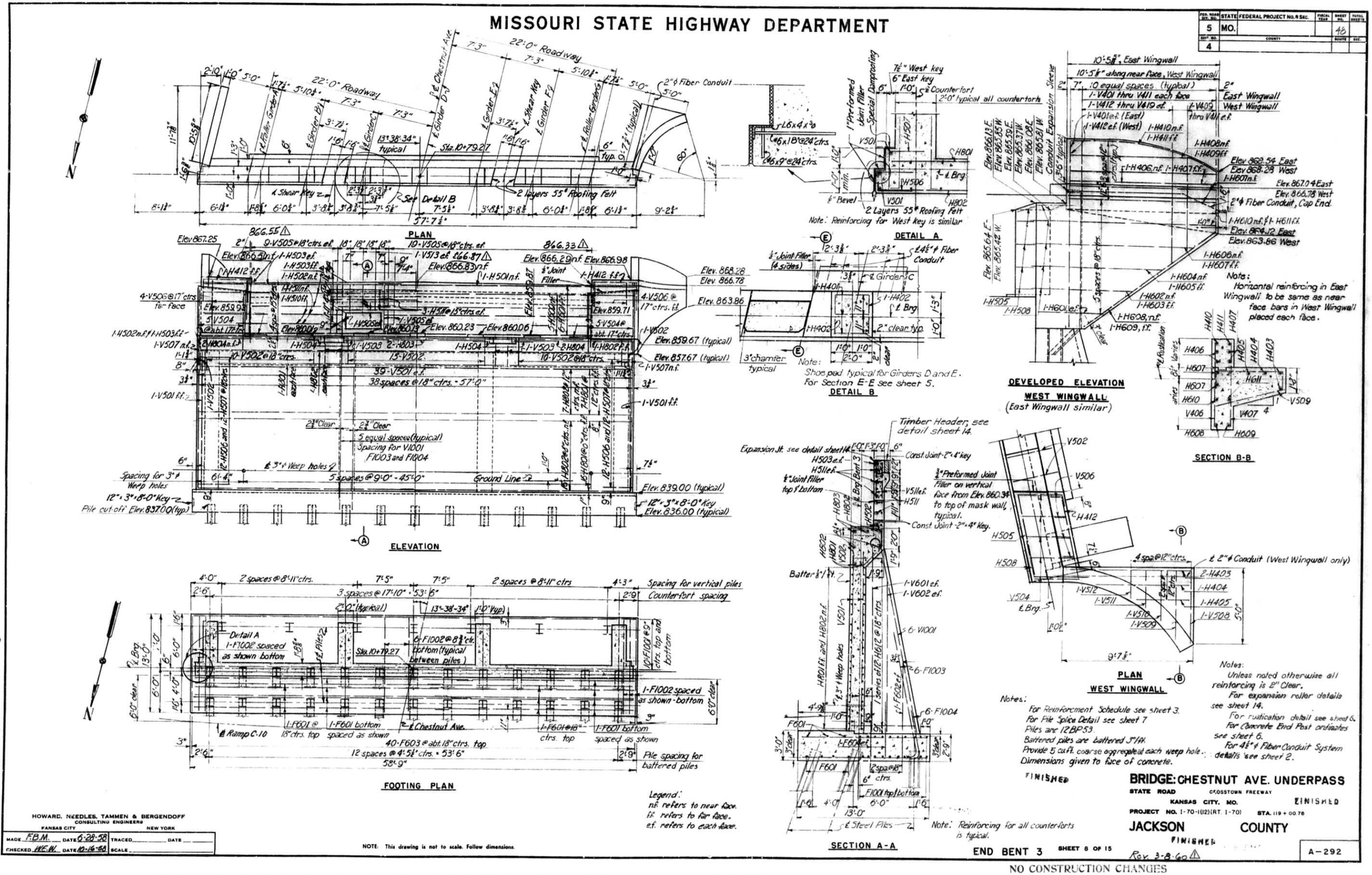
NOTE: This drawing is not to scale. Follow dimensions.

426

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			16	
DIST. NO. 4	COUNTY			ROUTE	SEC.



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

MADE F.B.M. DATE 6-28-58 TRACED DATE
CHECKED W.E.N. DATE 10-16-58 SCALE

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

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD CK/OSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(102)(RT. 1-70) STA. 119 + 00.78

JACKSON COUNTY

FINISHED
Rev. 3-8-60 ⚠

END BENT 3 SHEET 8 OF 15

A-292

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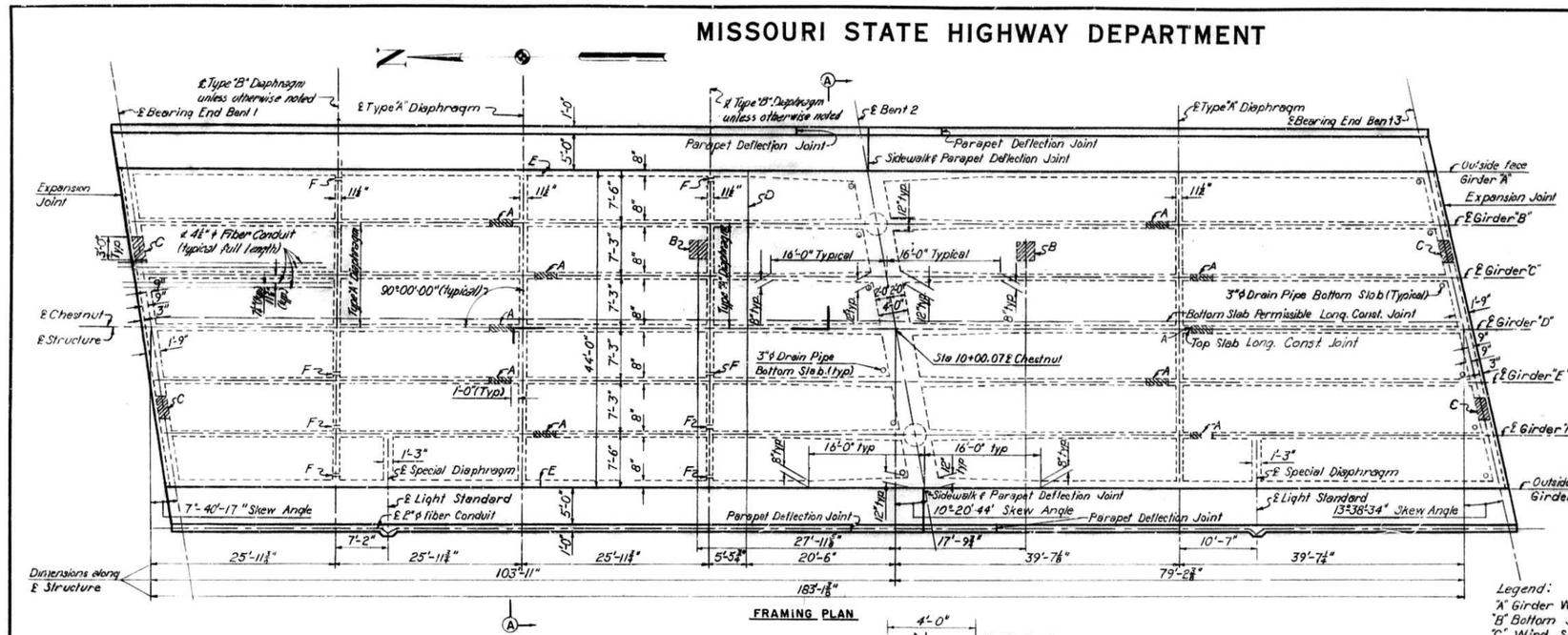
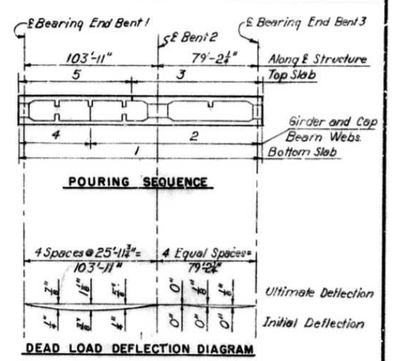
NO CONSTRUCTION CHANGES

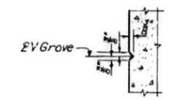
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			49	
DIST. NO. 4	COUNTY		ROUTE	SEC.	



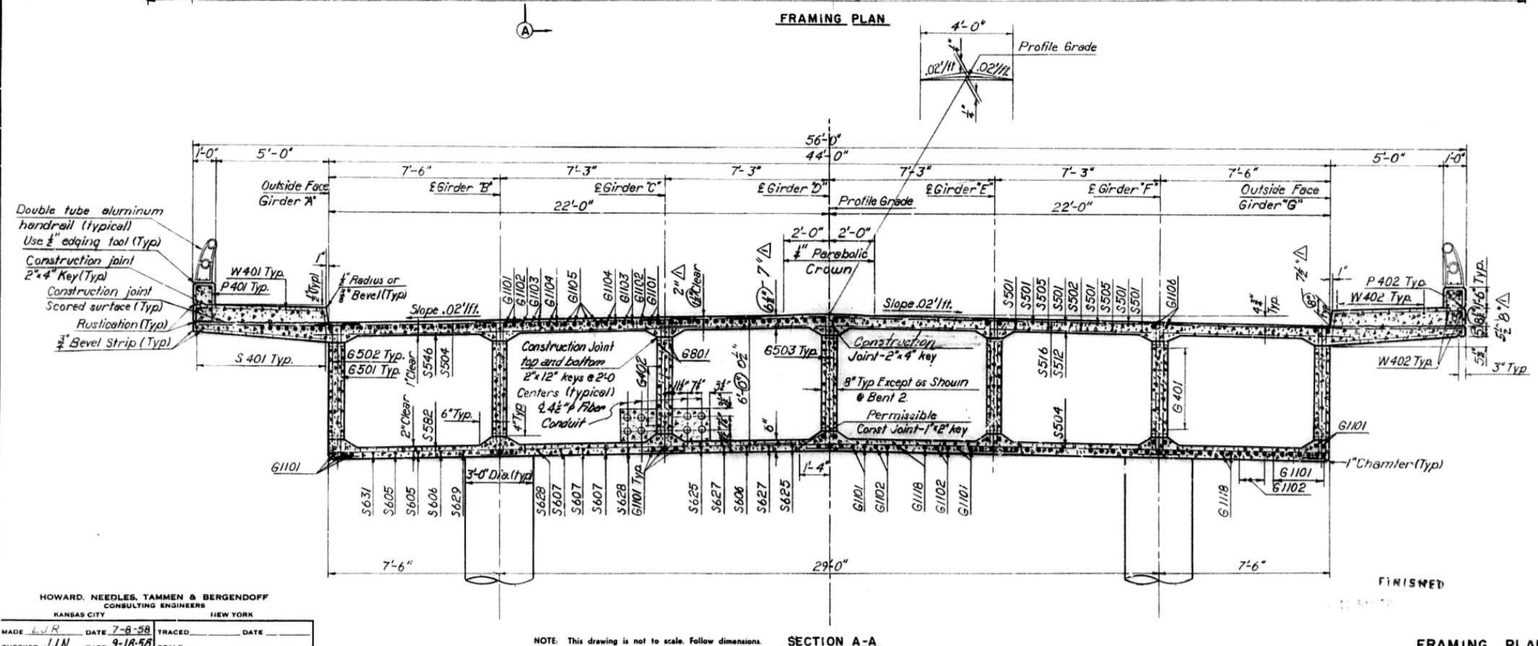


Note:
Forms shall be constructed for ultimate deflection.



NOTES:

For 4½" ϕ Fiber Conduit Sp'cen details see sheet 2.
For reinforcing see sheets 10 thru 13.
For expansion joint details see sheet 14.
For superstructure details see sheet 13.
For handrail detail see sheet 15.
For bottom slab drain details see sheet 14.
For miscellaneous details see sheet 14.



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

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

MADE LWR DATE 7-8-58 TRACED ____ DATE ____
CHECKED JJN DATE 9-18-58 SCALE ____

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY

FINISHED

FRAMING PLAN SHEET 9 OF 15

Rev. 3-8-60 △

A-292

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NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

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

Note:
Girder bars shown in girder A are typical for all girders unless noted otherwise.

SLAB REINFORCING

GIRDER REINFORCING

TRANSVERSE REINFORCING

TOP SLAB REINFORCING SHEET 10 OF 15

DETAIL A

Notes:
For framing plan and cross-section see sheet 9.
For curb reinforcing to be placed with top reinforcing see sheet 13.

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

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

MADE L.J.P. DATE 7-8-58 TRACED DATE
CHECKED J.J.N. DATE 9-10-58 SCALE

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119 + 00.78
JACKSON COUNTY

FINISHED

Rev. 3-8-60 △

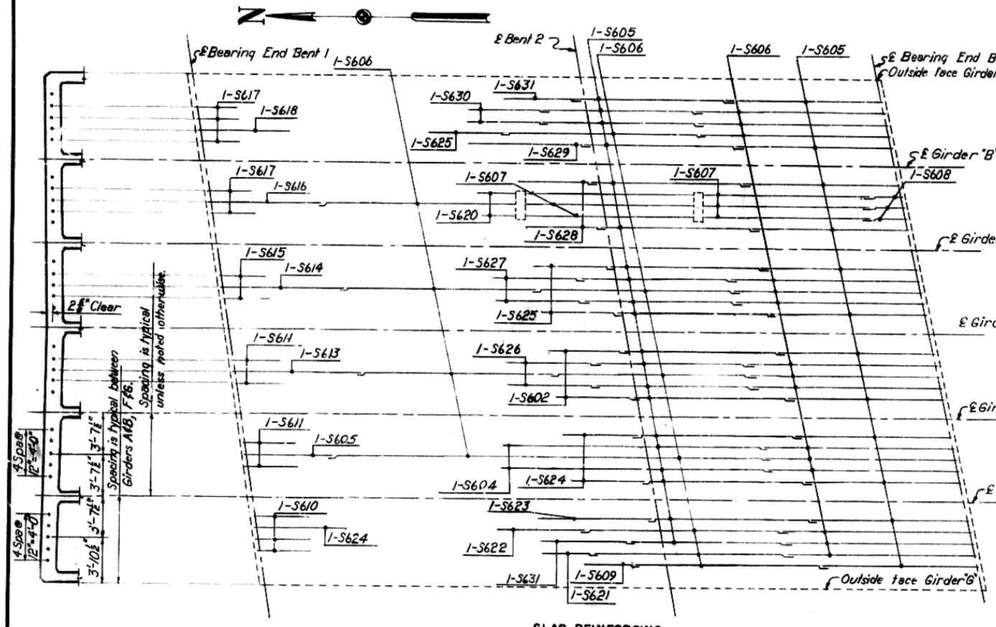
A-292

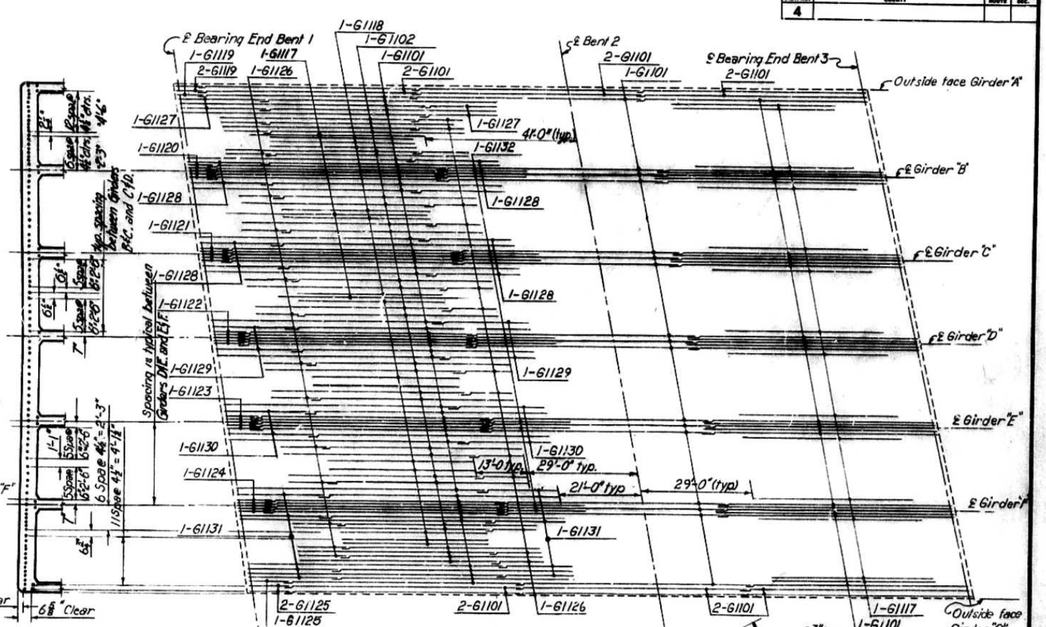
429

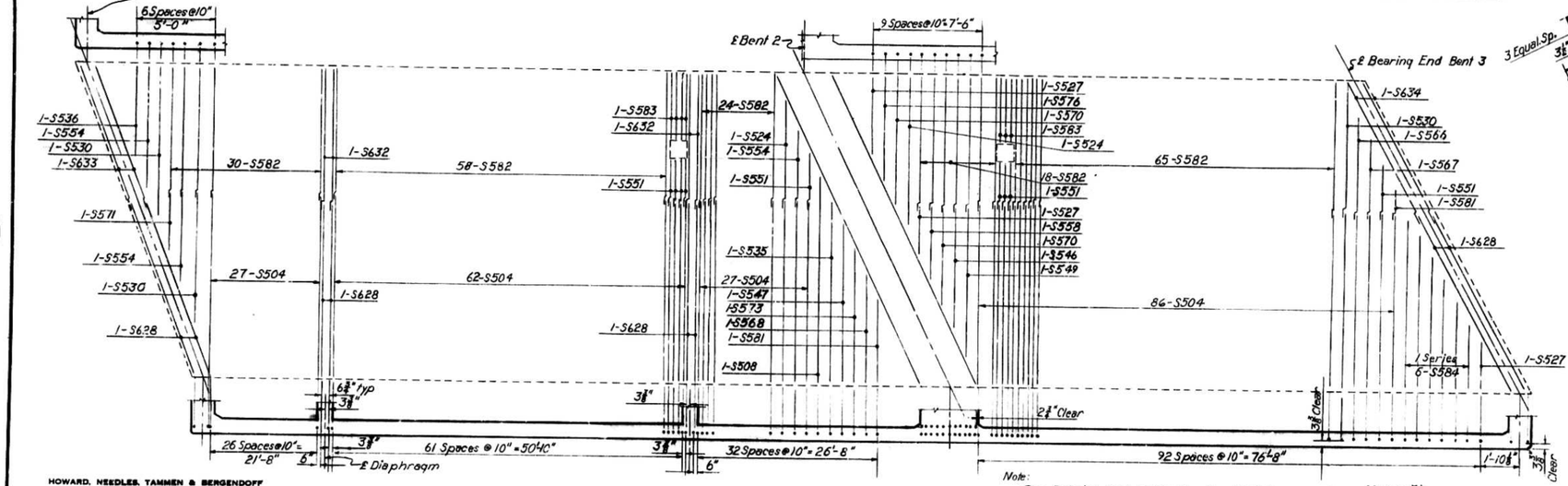
NO CONSTRUCTION CHANGES

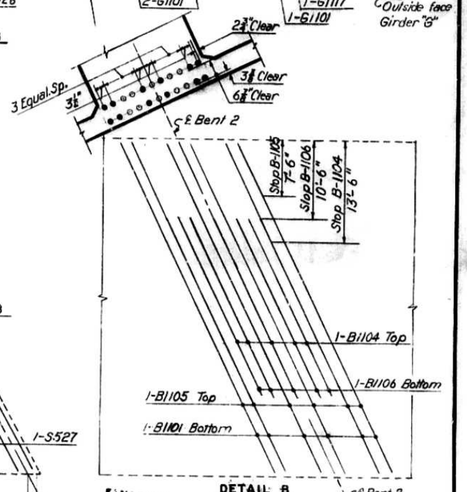
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			51	
DIST. NO.	COUNTY			ROUTE	SEC.
4					









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

MADE L.J.R. DATE 7-8-58 TRACED _____ DATE _____
CHECKED J.J.N. DATE 9-18-58 SCALE _____

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

BOTTOM SLAB REINFORCING SHEET 11 OF 15

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY
FINISHED

A-292

430

MISSOURI STATE HIGHWAY DEPARTMENT

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

℄ Bearing End Bent 1 — ℄ Bent 2 — ℄ Bearing End Bent 3

Access Door Girders B,D&E — Access Door Girders C&F

Girder "A" - 102'-10½", Girder "B" - 103'-2⅝", Girder "C" - 103'-6⅝", Girder "D" 103'-11"
Girder "E" - 104'-3⅜", Girder "F" - 104'-7⅞", Girder "G" - 104'-11½"

Access Door Girders B&E — Access Door Girders C,D&F

Girder A - 77'-10¾", Girder B" - 78'-3⅜" Girder "C" 78'-9⅛" Girder "D" 79'-2⅝"
Girder "E" - 79'-7⅛", Girder "F" 80'-0⅝", Girder "G" 80'-6"

1'-4½"	#10-G417 16 Spa @ 9" = 12'-0"	#10-G401 38 Spa @ 18" = 57'-0"	#10-G401	22 Spa. @ 9" ctrs. = 16'-6"	#8-G402 21 spa. @ 8" ctrs. = 14'-0"	2'-2½" 2'-2½"	#2-G801 #8-G402 31 Spa @ 9" = 23'-3"	#10-G403 34 Spaces @ 18" = 51'-0"	#10-G404	1'-4½"
GIRDER A										Longitudinal Girder Reinforcing Stirrup Spacing - 164-G501 & 164-G502
1'-2"	#10-G417 16 Spa @ 9" = 12'-0"	#10-G401 24 Spa @ 18" = 36'-0"	#10-G406 3'-5"	12 Spaces @ 18" = 18'-0"	#8-G402 22 spa. @ 9" ctrs. 16'-6"	21 spa. @ 8" ctrs. = 14'-0"	2'-2½" 2'-2½" #2-G801 #8-G402 31 Spa @ 9" = 23'-3"	#10-G407 8 Spa @ 18" = 12'-0" 3'-10"	#10-G403 24 Spa @ 18" = 36'-0"	#10-G408 1'-1⅞"
GIRDER B										Longitudinal Girder Reinforcing Stirrup Spacing - 324-G503
1'-2"	#10-G419 17 Spa @ 9" = 12'-9"	#10-G401 27 Spaces @ 18" = 40'-6"	3'-7"	#10-G418 9 Spa @ 18" = 13'-6"	#8-G402 21 spa. @ 8" ctrs. = 14'-0"	2'-2½" 2'-2½"	#2-G801 #8-G402 31 Spa @ 9" = 23'-3"	#10-G402 11 Spaces @ 18" = 16'-6" 3'-10"	#10-G403 21 Spaces @ 18" = 31'-6"	#10-G410 1'-5⅜"
GIRDER C										Longitudinal Girder Reinforcing Stirrup Spacing - 324 - G503
1'-2"	#10-G416 16 Spa @ 9" = 12'-0" 12"	#10-G401 22 Spaces @ 18" = 33'-0"	3'-6"	#10-G401 14 Spaces @ 18" = 21'-0"	#8-G402 40 Spaces @ 9" = 30'-0"	2'-3" 2'-3"	#2-G801 #8-G402 31 Spaces @ 9" = 23'-3"	#10-G417 10 Spa @ 18" = 15'-0" 4'-0"	#10-G403 21 Spa @ 18" = 31'-6"	#10-G405 2 Spa @ 12" 2'-0" 1'-2⅜"
GIRDER D										Longitudinal Girder Reinforcing Stirrup Spacing - 322 - G503
1'-2"	#10-G412 16 Spa @ 9" = 12'-0"	#10-G401 22 Spa @ 18" = 33'-0"	3'-6"	#10-G401 15 Spaces @ 18" = 22'-6"	#8-G402 40 Spaces @ 9" = 30'-0"	2'-2½" 2'-2½"	#2-G801 #8-G402 30 Spa @ 9" = 22'-6"	#10-G411 6 Spa @ 18" 9'-0" 4'-2"	#10-G403 27 Spa @ 18" = 40'-6"	#10-G413 1'-5⅜"
GIRDER F										Longitudinal Girder Reinforcing Stirrup Spacing - 320 - G503
1'-0⅝"	#10-G414 17 Spa @ 9" = 12'9"	#10-G401 25 Spa @ 18" = 37'-6"	3'-4"	#10-G420 12 Spa @ 18" = 18'-0"	#8-G402 40 Spaces @ 9" = 30'-0"	2'-1½" 2'-3⅜"	#2-G801 #8-G402 30 Spaces @ 9" = 22'-6"	#10-G413 9 Spaces @ 18" 13'-6" 3'-4"	#10-G403 25 Spaces @ 18" = 37'-6"	#10-G409 1'-2⅝"
GIRDER F										Longitudinal Girder Reinforcing Stirrup Spacing - 324-G503
1'-4⅝"	#10-G415 16 Spa @ 9" = 12'-0"	#10-G401 39 Spa. @ 18" = 58'-6"	#10-G401		#8-G402 41 Spa @ 9" = 30'-9" 26'-0" (typical)	2'-2½" 2'-2½"	#2-G801 #8-G402 31 Spa. @ 9" = 23'-3"	#10-G403 36 Spaces @ 18" = 54'-0"	#10-G411	1'-1"
GIRDER G										Longitudinal Girder Reinforcing Stirrup Spacing - 165-G501 & 165-G502

GIRDER WEB REINFORCING

End Bent 1 / End Bent 3 — #8-B606 / #8-B605 — #8-B604 — Longitudinal Web Reinforcing

4-B603@10" Ctrs. — 4-B603@10" ctrs

3" — 10-B602@12" ctrs = 9'-0" — 19-B602@12" ctrs. = 19'-0" — 10-B602@12" ctrs = 9'-0" — 3" Stirrup Spacing End Bent 1

4-B603@10" Ctrs — 4-B603@10" ctrs

5" — 10-B602@12" ctrs = 9'-0" — 20-B602@12" ctrs. = 19'-0" — 10-B602@12" ctrs = 9'-0" — 5" Stirrup Spacing End Bent 3

44'-4⅝" — Dimensions along ℄ Bearing End Bent 1

45'-3⅜" — Dimensions along ℄ Bearing End Bent 3

BENT 1 AND 3 WEB REINFORCING

Bent 2 — #8-B607 — #8-B604 — Longitudinal Web Reinforcing

7½" — 4 Spaces @ 5'-0" = 20'-0" — 6" — 9 Spa @ 18" = 13'-6" — 4 Spaces @ 5'-0" = 20'-0" — 7½" — Stirrup Spacing 70-B601

44'-8" — Dimensions along ℄ Bent 2

BENT 2 WEB REINFORCING

B1103 Top / B1102 Bottom — ℄ Bent 2 — B1101 Top

Const. Joint (Scored Surface) — 2" Clear — B 601 — Const. Joint (Scored Surface) — 6" typ. — B1105 Top

B1104 Top / B1101 Bottom — B1106 Bottom

SECTION A-A

Construction Joint 2"x12" Key @ 24" Centers — ℄ Bent S601 — 2" Clear — B602 — S628 — B603 — Construction Joint 2"x12" Key @ 24" Centers

SECTION B-B

6801 / 6502 / 6501 — 6402 — 6801 / 6503 — 6402 — Construction Joint typical top and Bottom

SECTION D-D

Notes:
For location of Girder Web Construction Joints see sheet 9. For detail see sheet 13.
For 4½" ϕ Fiber Conduit System details see sheet 2.
For additional reinforcing of Girder Web excess holes, see sheet 13.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS

STATE ROAD — CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. 1-70-1(12)(RT. 1-70) STA. 119+00 76

JACKSON COUNTY

FINISHED

Rev 3-8-60 ⚠

WEB REINFORCING SHEET 12 OF 15

A-292

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

MADE JJR DATE 7-15-58 TRACED ____ DATE ____
CHECKED JJN DAY 9-18-58 SCALE ____

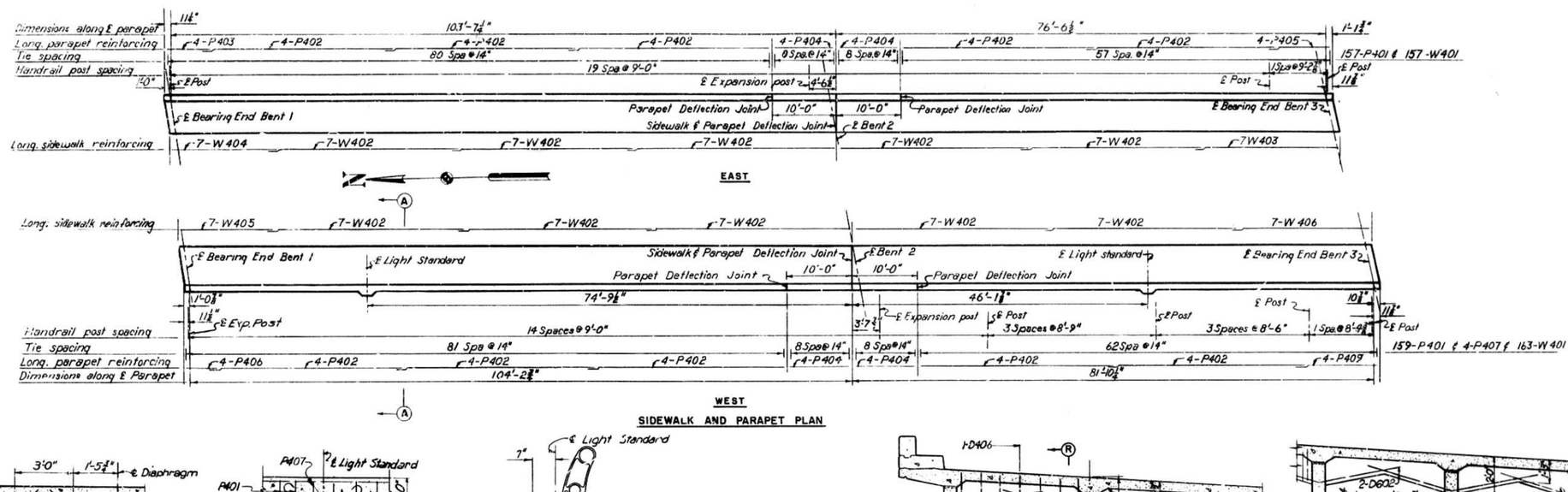
NOTE: This drawing is not to scale. Follow dimensions.

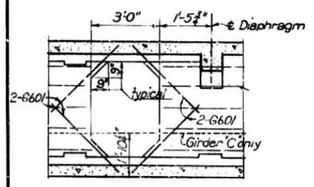
431

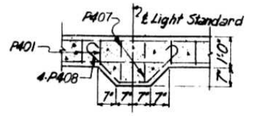
NO CONSTRUCTION CHANGES

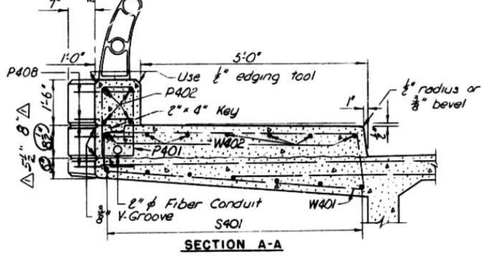
MISSOURI STATE HIGHWAY DEPARTMENT

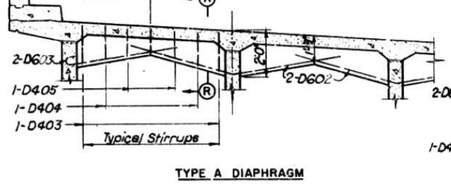
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			53	
DIST. NO.	COUNTY			SHEET	DESC
4					

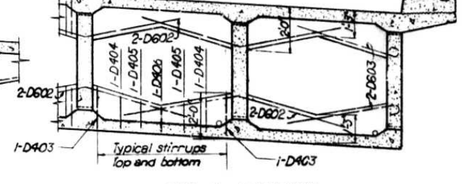


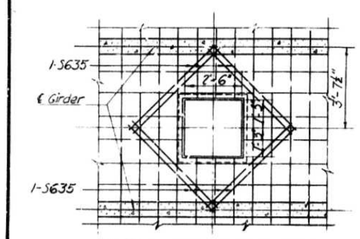


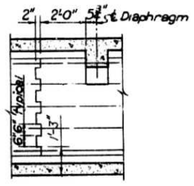


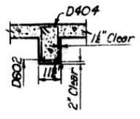


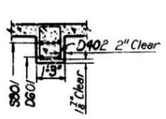


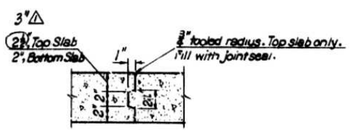


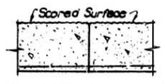


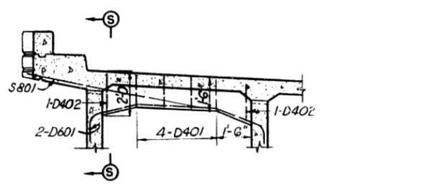


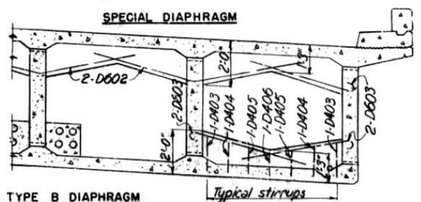












Notes
For details of handrail see Sheet 15.
For details of light standard, deflection joints and additional details of access door see Sheet 14.
For location of Type A and Type B diaphragms, see Framing Plan, Sheet 9.
For reinforcing Schedule see Sheet 4.
For continuation of handrail at End Bent 1 see sheet 6.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RY. I-70) STA. 119+00.78
JACKSON COUNTY
FINISHED

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK
MADE JJR DATE 9-22-58 TRACED DATE
CHECKED JJN DATE 9-23-58 SCALE

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

SUPERSTRUCTURE DETAILS

SHEET 13 OF 15

Rev 3-8-60△

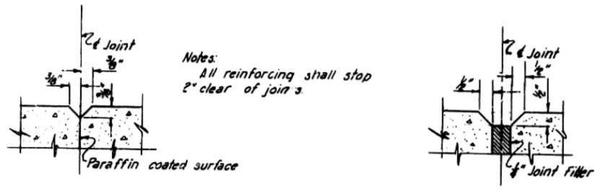
A-292

4232

NO CONSTRUCTION CHANGES

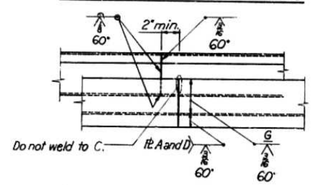
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			54	
DIST. NO.	COUNTY		ROUTE	SEC.	
4					

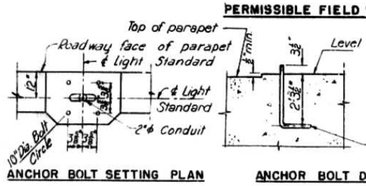


Notes:
All reinforcing shall stop 2" clear of joint s.

DEFLECTION JOINT DETAILS



PERMISSIBLE FIELD SPLICE

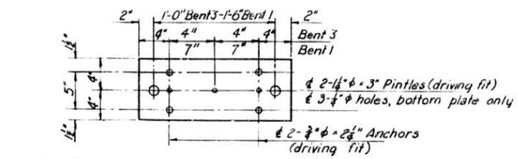


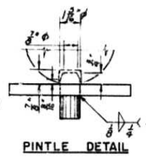
ANCHOR BOLT SETTING PLAN

ANCHOR BOLT DETAIL

LIGHT STANDARD DETAILS

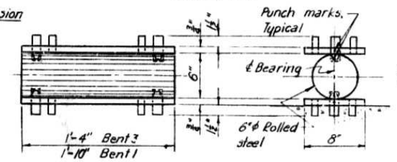
Note:
Cost of furnishing and placing anchor bolts shall be included in price bid for other items of work.

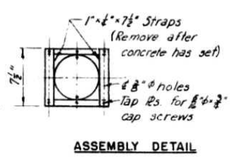




PINTLE DETAIL

Number of Expansion Rollers Required
Bent 1 - 7
Bent 3 - 7

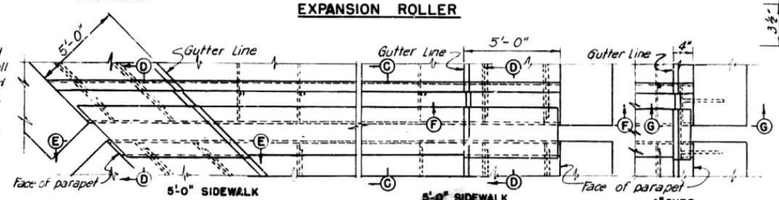




ASSEMBLY DETAIL

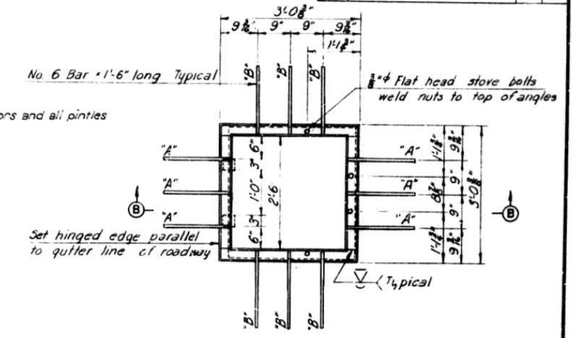
Notes:
Top and bottom plates to be U.S.S. T-1 Alloy or equivalent. Materials for pintles and rollers shall be cold finished carbon steel A.I.S.I.-C1042 or C1045 (turned and polished)
All bearing plates shall be straightened to plane surfaces.
E6013 or E6016 welding electrodes shall be used.
Paint: Shop: 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.

EXPANSION ROLLER

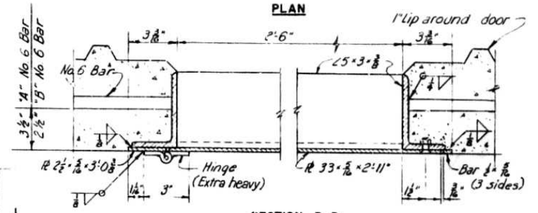


PART PLAN - JOINT SKEWED

PART PLAN - JOINT NORMAL



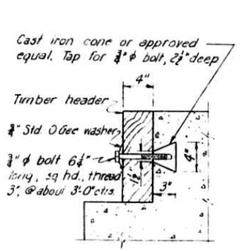
PLAN



SECTION B-B

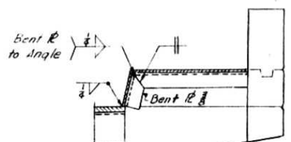
Notes.
Access Doors to be assembled and in place while slab is being poured.
Bottom surface of door to be flush with bottom of slab.
For painting see special provisions.
Payment for furnishing and installing access doors and frames shall be made and considered fully covered under price bid for Fabricated Structural Steel.

ACCESS DOOR IN BOTTOM SLAB

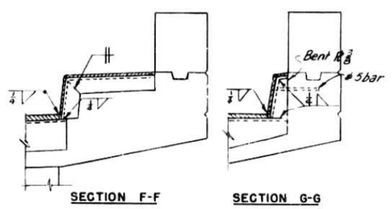


Note:
Cost of timber headers, complete in place, to be included in price bid for concrete.

TIMBER HEADER DETAIL

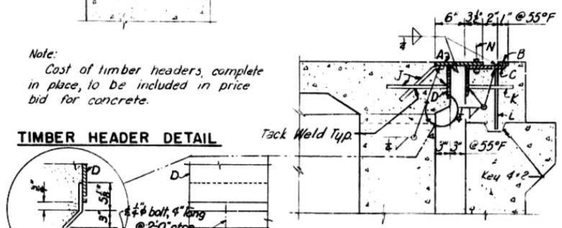


SECTION E-E



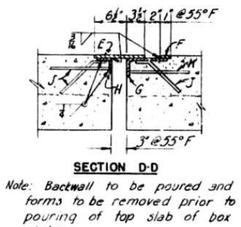
SECTION F-F

SECTION G-G



SECTION C-C

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



SECTION D-D

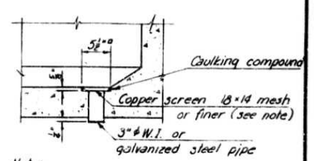
Note: Backwall to be poured and forms to be removed prior to pouring of top slab of box girder.

EXPANSION JOINT

A - R 9½"x⅜
B - Bar 1"x⅜
C - L 6"x6"x½
D - R 6"x½
J - #5 bar 1'-0" long @ 12" ctrs.
K - #5 bar 9" long @ 12" ctrs.
L - #5 bar 1'-0" long @ 12" ctrs.
To be of structural grade
E - R 10"x⅜
F - R 1"x⅜
G - L 6"x4"x½
H - L 3"x3"x⅜

N - ½"℄ bolts @ 6'-0" ctrs (2 per 1'-6" curb). Tack weld nut to bottom of angle. Remove bolts with in two hours after top slab is poured

Note: For painting see special provisions.
Approved stud welded anchors may be used in lieu of #5 bars shown.
Expansion device shall be bent to conform to crown of roadway.



Notes.
If galvanized steel pipe is used, 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.

FINISHED

PIPE DRAIN IN BOTTOM SLAB

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO. FINISHED
PROJECT NO. I-70-1(12)(RT. 1-70) STA. 119+00.78
JACKSON COUNTY

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

MADE WPO	DATE 11-1-57	TRACED	DATE
CHECKED JHH	DATE 12-1-57	SCALE	

MISCELLANEOUS DETAILS SHEET 14 OF 15 FINISHED

A - 292

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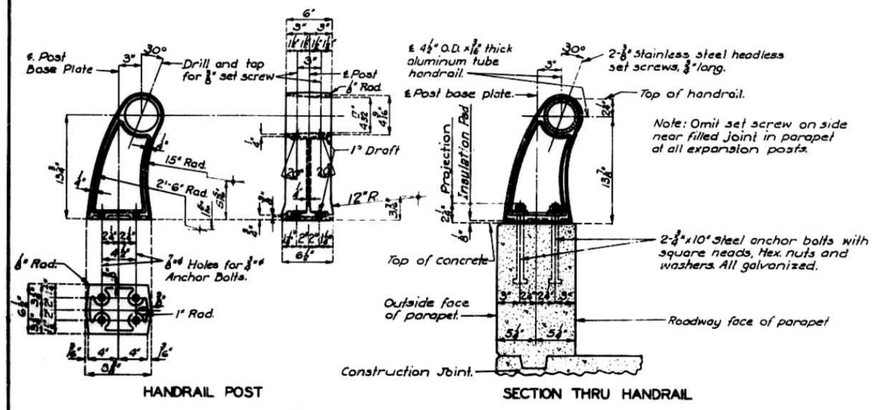
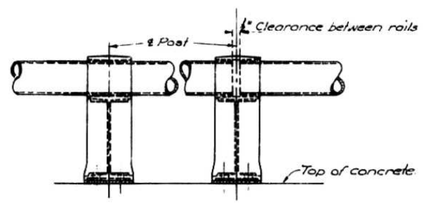
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE FEDERAL PROJECT No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		55	
DIST. NO.	COUNTY		ROUTE	SEC.
4				

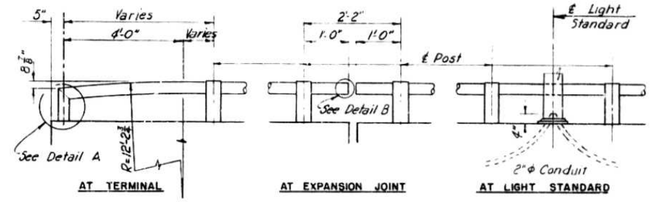


SINGLE TUBE ALUMINUM RAILING

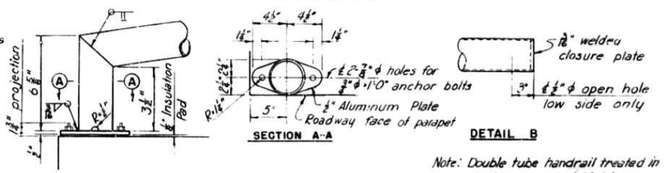


TYPICAL HANDRAIL DETAILS

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 insulation pad and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be ⅛". 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 "Aluminum Alloy Handrail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulation pads.
All fillets ½" except as noted.
All draft 3° except as noted.
Rails to be fabricated in two or three panel lengths unless otherwise approved.
Omit set screw on side near filled joint in parapet at expansion posts.

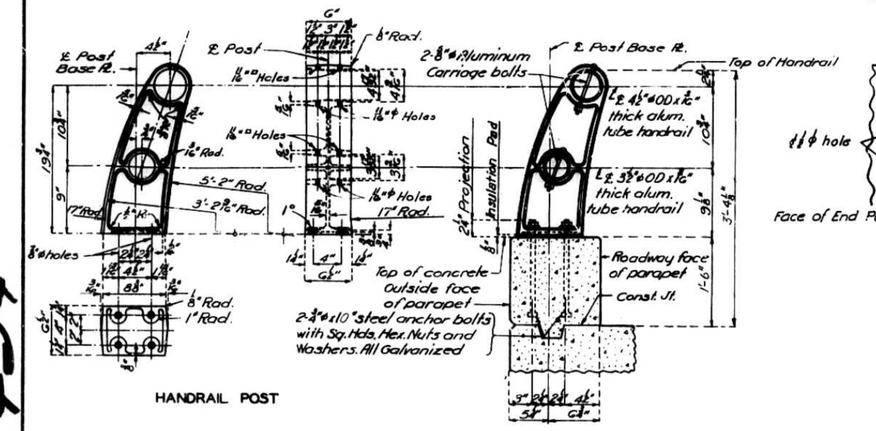


HANDRAIL ELEVATION



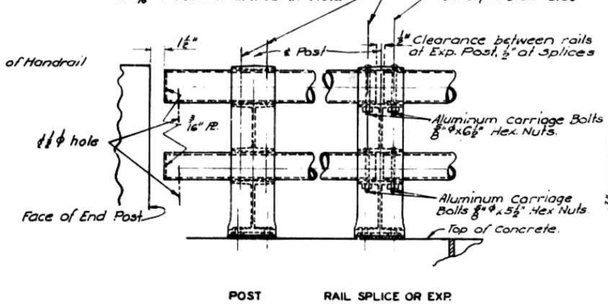
Note: Double tube handrail treated in similar manner at Light Standards and Expansion Joints.

HANDRAIL DETAILS



Note: Two tube Alcoa Post No. 2006, Kaiser Post No. 22054 or engraved equiv. using ⅜" stainless steel set screws may be substituted for post shown above requiring ⅝" aluminum carriage bolts.

DOUBLE TUBE ALUMINUM RAILING



TYPICAL HANDRAIL DETAILS

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA 119+00.78
JACKSON COUNTY

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

MADE WPC	DATE 11-1-54	TRACED	DATE
CHECKED JJD	DATE 12-1-54	SCALE	

FINISHED

STANDARD HANDRAIL DETAILS

SHEET 15 OF 15

FINISHED

A - 292

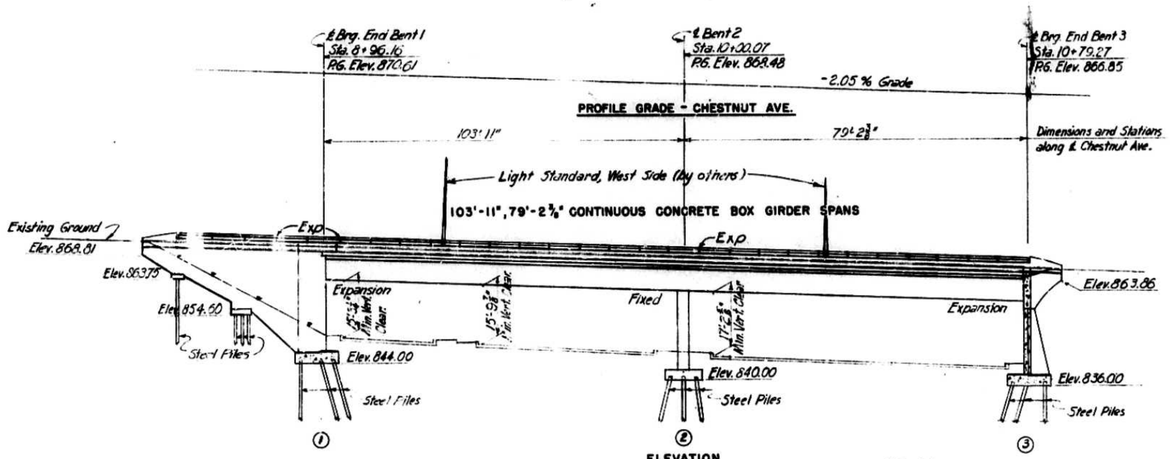
NO CONSTRUCTION CHANGES

434

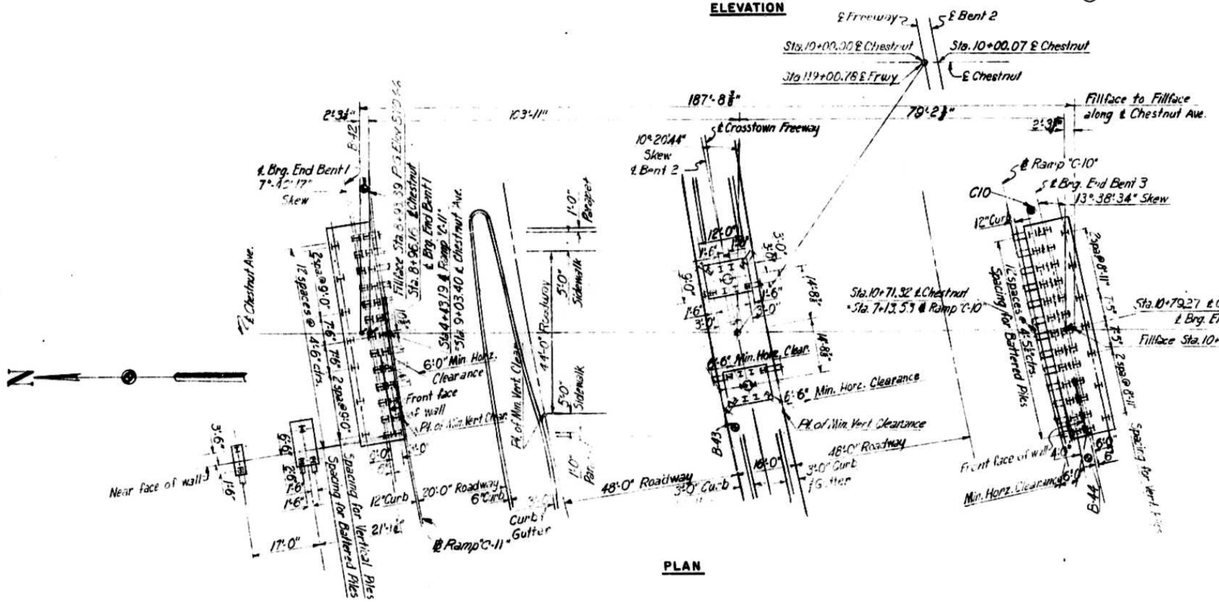
MISSOURI STATE HIGHWAY DEPARTMENT

5	MO.	I-70-1(12)3	41	
4	JACKSON		5.10	

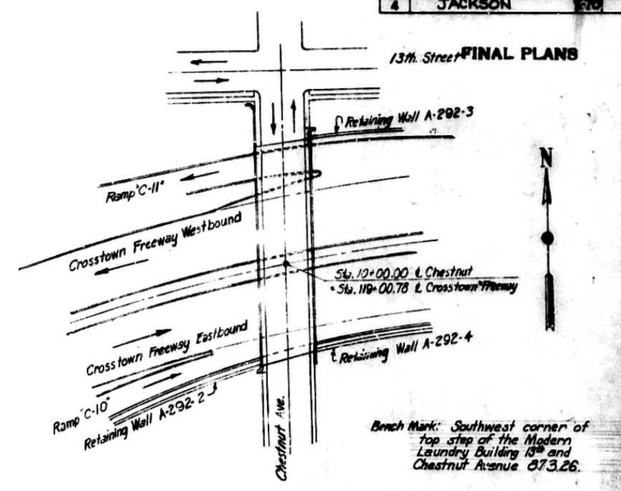
FINAL PLANS



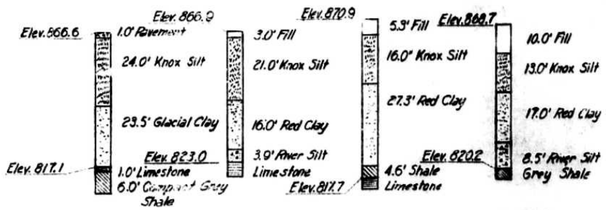
ELEVATION



PLAN



LOCATION SKETCH



Note: Location of Boring logs are noted thus: B-42 or C10 ⊕.
Elevation shown at top of Boring is top of ground.
Elevation shown at bottom of Boring is top of Limestone.

BORING LOGS

Notes:
Pile spacings and Footing dimensions for Column Footings are typical.
Piles in Bents 1 and 3 are 12 BP 53 battered 3" per foot where shown
Piles in Bents 2 are 14 BP 73 battered 3" per foot where shown.

SUBMITTED BY: R. A. Bergendoff FINISHED
REGISTERED PROFESSIONAL ENGINEER MISSOURI NO. E-253

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY FINISHED
SUBMITTED BY J. A. Williams DATE 12-8-57 STD C110 R7
APPROVED BY [illegible] DATE 12-9-57 A-292

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

MADE FBM DATE 7-11-58 TRACED DATE
CHECKED MEW DATE 10-15-58 SCALE

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

FINISHED

GENERAL PLAN AND ELEVATION

SHEET 1A OF 2

435

FINAL PLANS

GENERAL NOTES

Design Specifications: AASHO 1957.

Design Loading: H20 15 #/sq. ft. future wearing surface.

Concrete: Concrete Stress: Class "B-1" fc = 1400 psi
Class "B" fc = 1200 psi
Concrete for superstructure was Class "B-1" air entrained. Concrete for substructure was Class "B" air entrained. If the contractor desires, he may use Class "B-1" in lieu of Class "B" for concrete in substructure with payment made on the basis of Class "B" concrete.
All forms were removed from the interior of box girders, except as indicated in Special Provisions for top slab.

Reinforcing Steel: Allowable stress 20,000 psi. All splices in reinforcing steel are 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 reinforcing steel to outside edge of concrete are all clear dimensions.
All bending dimensions are from "out to out" of bars.

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

Shipping: Permits were obtained for 71 truck loads over legal length.

Joint Filler: Where joint filler is specified on the plans it did conform with the requirements for gray rubber compound joints as given in Section 59-22B of the Standard Specifications.

Fiber Conduit: Expansion sleeves were required in fiber conduit at all expansion joints. Expansion sleeve were an oversized fiber conduit with rubber ring as provided by the manufacturer.

Piling: All piles did conform with details and notes on Sheet No. 7. All piles required for this structure were furnished by the State. (See Special Provisions). All piles were 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 64 tons per pile for 14 BP 73 and 46 tons per pile for 12BP53. All piles were driven with a steam hammer. See Section 22-9C of Standard Specifications for required painting of steel piles.

Qualification of welding operators was required.

Painting: See Special Provisions.

436

MISSOURI STATE HIGHWAY DEPARTMENT

STATE	FEDERAL PROJECT No. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5 MO.	I-70-1(12)3		42	
DIST. NO. 4	COUNTY JACKSON		SHEET NO. I-70	SEC.

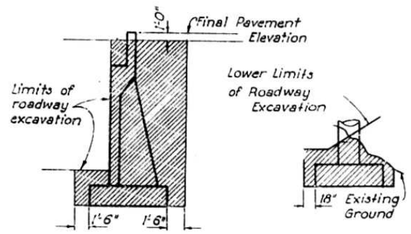
FINAL PLANS

Note: Payment for 6"ϕ pipe sleeve was made under conduit system for Kansas City Power and Light Co.

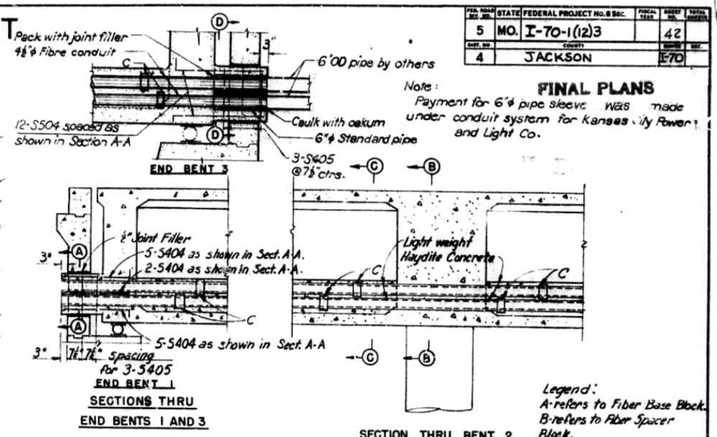
QUANTITIES

ITEM NUMBER	ITEM	UNIT	SUB-STRUCTURE	SUPER-STRUCTURE	TOTAL
1-G	Class 1 Excavation for Structures	Cu.Yd.	1,478		1,478
16-B	Class "B" Concrete	Cu.Yd.	461.3		461.3
16-B-1	Class "B-1" Concrete	Cu.Yd.	704.2		704.2
17-B	Fabricated Structural Steel	Lbs.		7,000	7,000
17-B	Fabricated Structural Steel Bearings	Lbs.		3,090	3090
17-A-A	Aluminum Alloy Handrail	Lin.Ft.		406	406
19-A	Reinforcing Steel	Lbs.	63,160	218,070	281,230
22-DD	Steel Piles in Place (State furnished) 14 BP 73	Lin.Ft.	448		448
22-DD	Steel Piles in Place (State furnished) 12 BP 53	Lin.Ft.	1,601		1,601
40-W	Conduit System (Lighting)	L.S.			1
40-WW	Conduit System for Kansas City Power and Light Company	L.S.			1

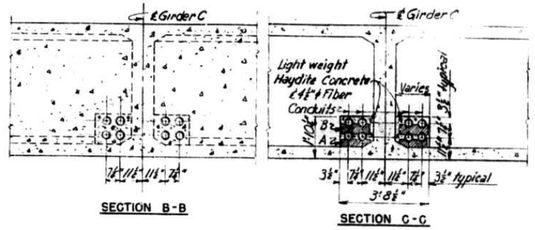
Quantity Notes:
All excavation for bridge was paid for as Class 1 Excavation for Structures. Sketches below show limits of excavation for pay purposes.

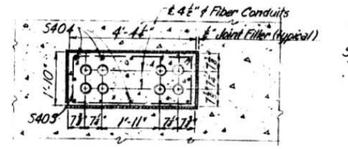


Estimated quantity of Class "B" concrete substructure, includes all concrete in end bents (including wing-walls and parapet) and intermediate bent footings only. All other concrete is included in estimated quantity of Class B-1 concrete superstructure.



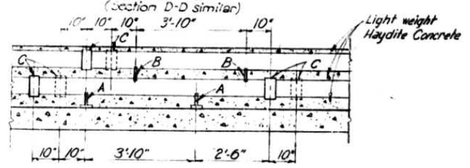
Legend:
A-refers to Fiber Base Block.
B-refers to Fiber Spacer Block.
C-refers to Duct Joints.





Note: For location of Conduit System see sheet 9.

SECTION A-A
(Section D-D similar)



CONDUIT CONSTRUCTION DETAILS

FINISHED

BILL OF REINFORCING STEEL

	No.	Size	Length	Mark	Type	A	B	C
*	24	4	3'-9"	S404	104	3'-3"	6"	
*	6	4	12'-1"	S405	109	4'-1"	1'-7"	4½"

C-hook: 104, 109

* Included in lump sum bid for Kansas City Power and Light Conduit System and not included in Estimated Quantities and Bills of Reinforcing Steel.

FINISHED

BRIDGE: CHESTNUT AVE. UNDERPASS
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+00.78
JACKSON COUNTY

FINISHED

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

MADE JSH DATE 12-5-58 | TRACED DATE
CHECKED WJ DATE 12-8-58 | SCALE

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

CONDUIT SYSTEM DETAILS AND GENERAL NOTES

SHEET 2A OF 2

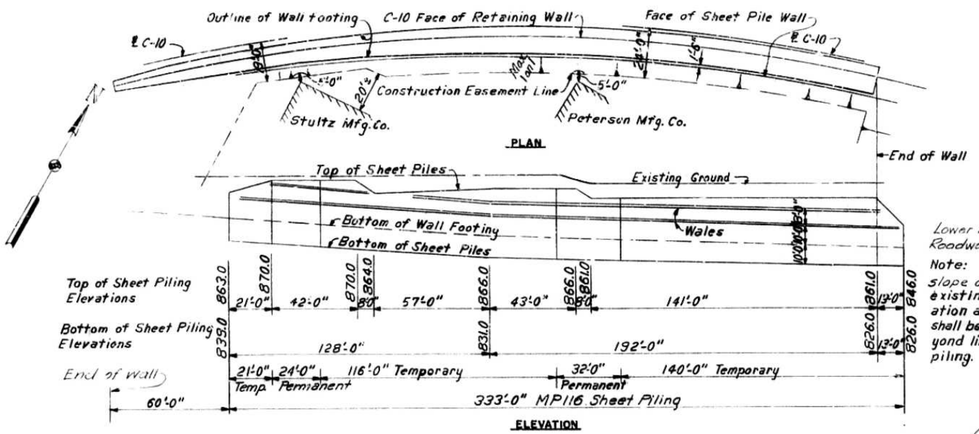
A-292

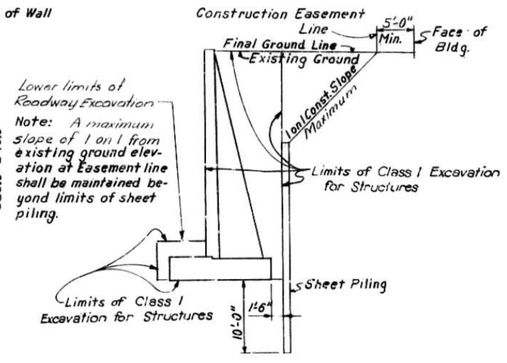
FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

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

Notes:
All dimensions are given along Ramp C-10 face of wall.
Top of Sheet Pile Elevations shown are minimum elevations.
Permanent Sheet Piles shall be cut-off 2'0" below final grade line.
The contractor shall carry out his construction operation in such a manner as to prevent any displacement of the soil upon which the building is founded and will be held responsible for any damage to the building resulting from his operations.





GENERAL NOTES

Design Specifications: AASHO 1957

Concrete: All concrete to be Class B air-entrained. fc = 1200 p.s.i. (fc = 3000 p.s.i.)

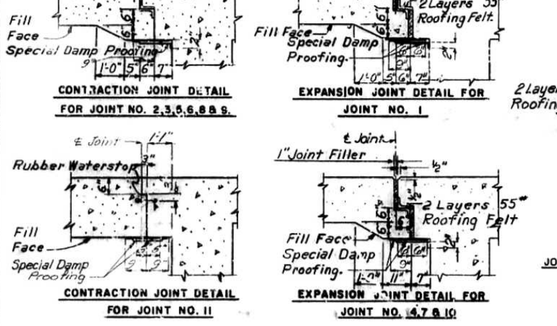
Reinforcing Steel: Allowable Stress 20,000 p.s.i. All splices in reinforcing steel shall be 32 bar diameters.
Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.
Dimensions shown on the plans from reinforcing steel to outside edge of concrete are all clear dimensions.
All bending dimensions are from "out-to-out" of bars.
Hooks and bends shall be in accordance with the AASHO Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

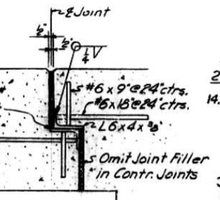
Joint Filler: Where Joint filler is specified on plans it shall conform to the requirements for Grey Rubber Compound as in Section 59-22B of the Standard Specifications.

Piling: All piles (12BP53) shall conform with details and notes on Sheet No. 2. All piles required for this structure will be furnished by the State. (See Special provisions). 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 47 tons per pile 12BP53. All piles shall be driven with a steam hammer. See Section 22-9C of the Standard Specifications for required painting of steel piles.

Qualification of welding operators will be required.

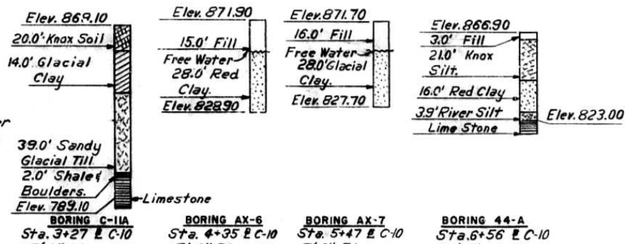
Rubber Waterstop: Rubber waterstop to be 6" Flat Dumbbell Type as furnished by Servicised Products Corp or an approved equivalent. Field splice shall be vulcanized, made in cemented sleeve sections, or cemented lap joints made with an approved high strength cement.





Note:
Rubber Waterstop to extend from top of footing to 6" below top of retaining wall
Cost of Waterstop to be included in unit price bid for concrete.

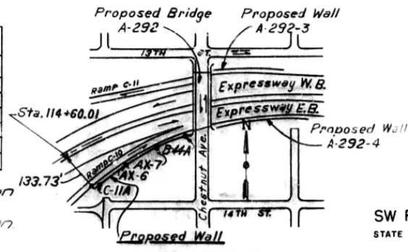
Note: Special Dampproofing to extend from top of footing to a point 6" below finished ground line.



ESTIMATED QUANTITIES

Item No.	Item	Unit	Total
1-G	Class I Excavation for Structures	Cu. Yds.	3855
16-B	Class B Concrete	Cu. Yds.	1102.2
19-A	Reinforcing Steel	Lbs.	147,320
23-DD	Steel piles in place 12BP53 (State Furn.)	Lin. ft.	568.4
38-A	Steel Sheet Piles (Permanent)	Sq. ft.	1870
38-A	Steel Sheet Piles (Temporary)	L. S.	1

Note: Estimated quantity of Class I Excavation for Structures includes only amount of excavation below limits of Roadway Excavation



FINISHED

SW RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 114+60.01 133.73' RT.

JACKSON COUNTY FINISHED

SUBMITTED BY J. C. Williams BRIDGE ENGINEER DATE 12-8-1959
APPROVED BY Roy M. Walter CHIEF ENGINEER DATE 12-8-1959

A-292-2

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

MADE RBS DATE 9/15/58 TRACED DATE
CHECKED KAW DATE 9-17-58 SCALE

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

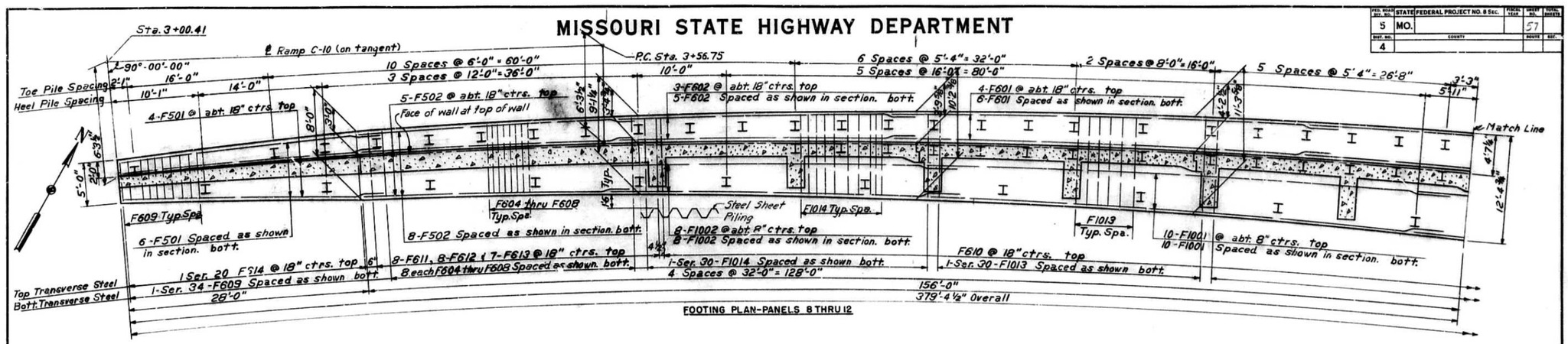
SHEET 1 OF 5

437

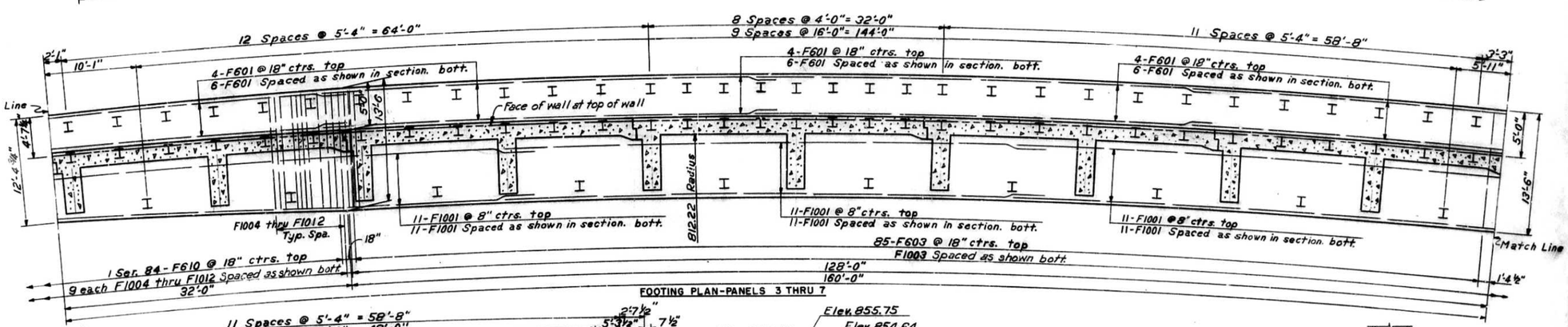
SEE FINAL PLANS BROWN-LINES.

MISSOURI STATE HIGHWAY DEPARTMENT

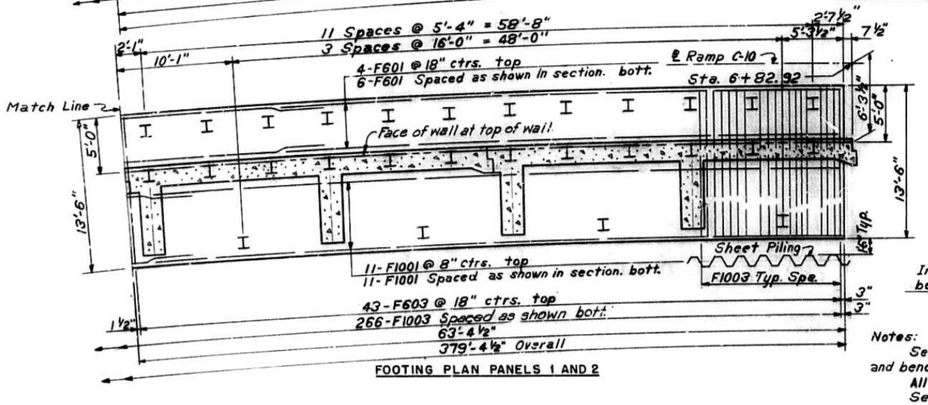
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. B Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			57	
DIST. NO.	COUNTY			ROUTE	SEC.
4					



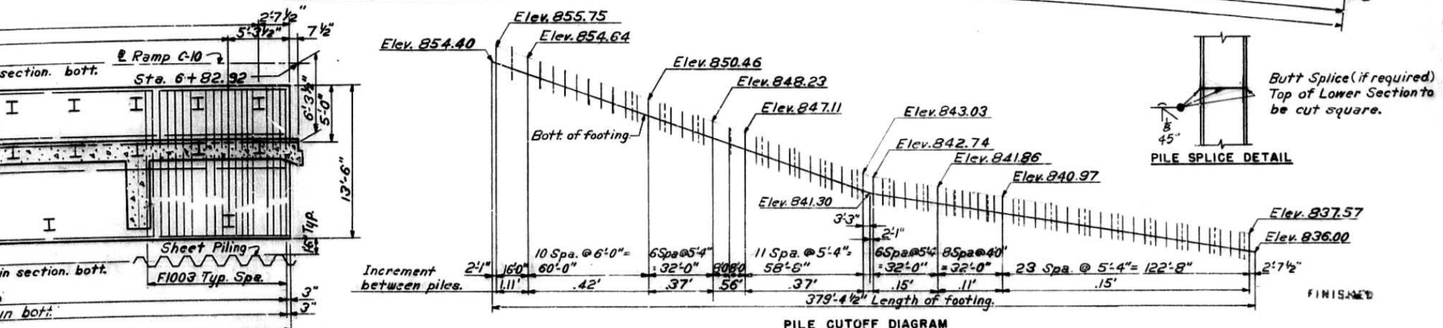
FOOTING PLAN-PANELS 8 THRU 12



FOOTING PLAN-PANELS 3 THRU 7



FOOTING PLAN PANELS 1 AND 2



PILE CUTOFF DIAGRAM

PILE SPLICE DETAIL

Notes:
See Sheet 5 for bill of reinforcing steel, cutting diagrams and bending diagrams.
All piles to be 12BP53.
See Sheet 3 and 4 for elevation of wall and typical cross section.
All dimensions are given along face of wall at top of wall.

Note:
Pile cut-off elevations are given for piles indicated by solid lines. Piles indicated by dashed lines shall be cut off at elevation of next higher pile.

FINISHED

SW RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(112)(RT. I-70) STA. 114+60.01 133.73' RT.
JACKSON COUNTY
FINISHED

SHEET 2 OF 5

A-292-2

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

MADE PBS DATE 9/18/58 TRACED _____ DATE _____
CHECKED KAN DATE 9-17-58 SCALE _____

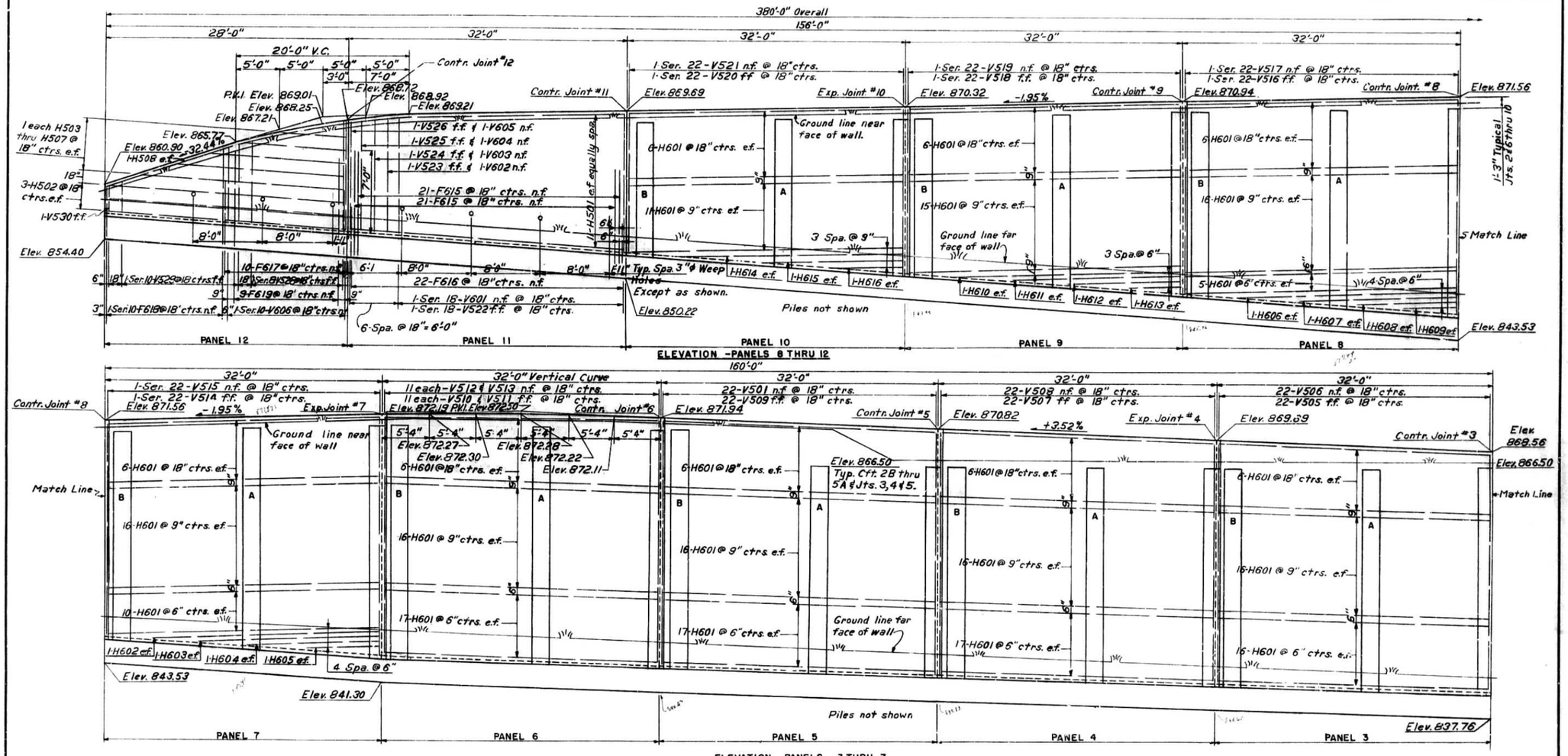
NOTE: This drawing is not to scale. Follow dimensions.

438

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			53	
DIST. NO. 4	COUNTY			ROUTE	SEC.



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

Notes:
See Sheet 4 for elevation of Panels 1 and 2.
See Sheet 5 for bill of reinforcing steel, cutting & bending diagrams.
See Sheet 4 for typical cross sections, Joint reinforcing and counterfort reinforcing.
See Sheet 2 for footing plan.
See Sheet 1 for Joint details.
All dimensions are given along face of wall at top of wall.
Weep holes will be placed as low as free outlet can be obtained

FINISHED

SW RETAINING WALL AT CHESTNUT AVE.

STATE ROAD CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-1(12)(RT. I-70) STA. 114+60.01 133.73' RT.

JACKSON COUNTY

FINISHED

SHEET 3 OF 5

A-292-2

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

MADE P.B.S. DATE 8/26/58 TRACED DATE
CHECKED LAW DATE 9-17-58 SCALE

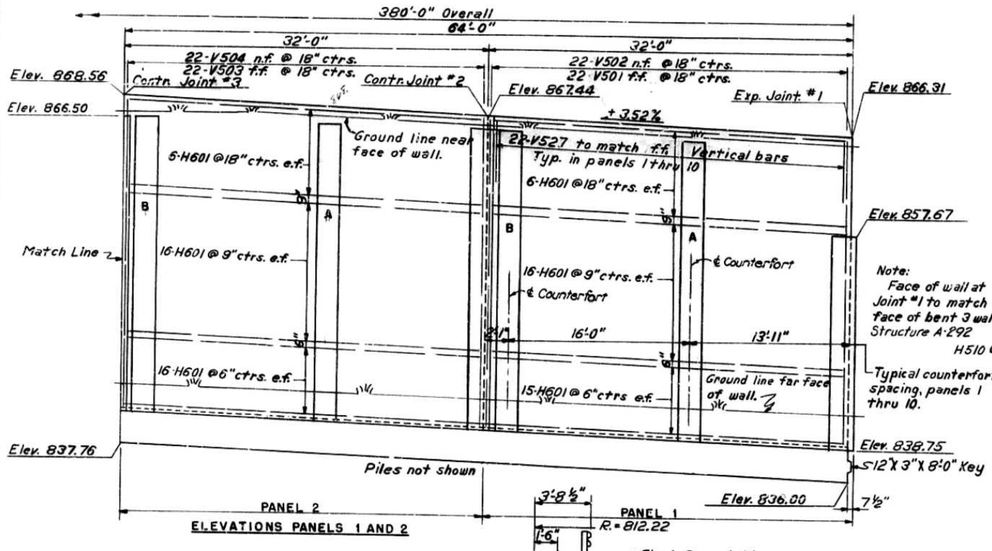
NOTE: This drawing is not to scale. Follow dimensions.

NO CONSTRUCTION CHANGES

439

MISSOURI STATE HIGHWAY DEPARTMENT

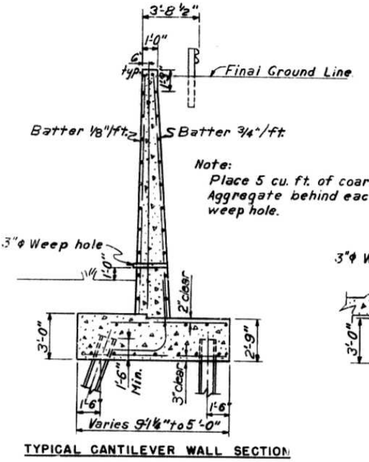
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & Sec.	PROJECT YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			59	
DIST. NO.	COUNTY			STATE	SEC.
4					



ELEVATIONS PANELS 1 AND 2

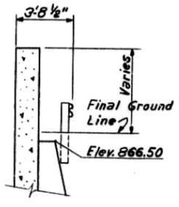
TYPICAL COUNTERFORT WALL SECTION

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

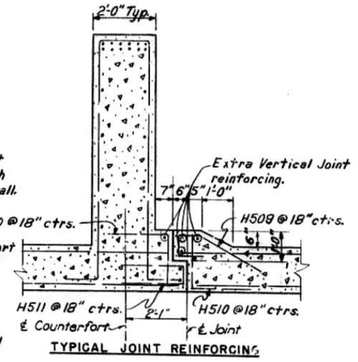


Note:
Place 5 cu. ft. of coarse Aggregate behind each weep hole.

TYPICAL CANTILEVER WALL SECTION



TYPICAL CROSS-SECTION FOR COUNTERFORTS 2B THRU 5A



TYPICAL JOINT REINFORCING

TABULATION OF JOINT REINFORCING

Joint No.	Vert. Bars	H509	H510	H511
1	3-V531	13	13	13
2	4-V504	18	18	36
3	4-V506	18	18	36
4	4-V532	19	19	38
5	4-V533	19	19	38
6	4-V512	19	19	38
7	4-V513	19	19	38
8	4-V534	17	17	34
9	4-V535	15	15	30
10	4-V536	13	13	26

TABULATION OF COUNTERFORT REINFORCING

Panel	Counterfort	A	B	C	D	E	F
1	A	6-C1001	6-F1016	1-Ser. 16-C601 & 1-C602	1 each C613 thru C615	4-F620	6-F1015
1	B	6-C1002	↑	↑	1 each C616, C617 & C615	↑	↑
2	A	6-C1003			1 each C618 thru C620		
2	B	6-C1004			1 each C621, C622 & C620		
3	A	6-C1020			1 each C623 thru C625		
3	B	6-C1006			1 each C626, C627 & C625		
4	A	6-C1007		↓	1 each C628, C627 & C629		
4	B	6-C1008		1-Ser. 16-C601 & 1-C602	1 each C630, C631 & C629		
5	A	6-C1009		1-Ser. 16-C601	1 each C632 thru C634		
5	B	6-C1010		1-Ser. 18-C603	1 each C635, C636 & C634		
6	A	6-C1011		1-Ser. 18-C603	1 each C635, 636 & C629		
6	B	6-C1005		1-Ser. 16-C601 & 1-C602	1 each C626, C624 & C629		
7	A	6-C1012	↓	1-Ser. 16-C604	1 each C637 thru C639		↓
7	B	6-C1013	6-F1016	1-Ser. 16-C605 & 1-C602	1 each C640 thru C642		6-F1015
8	A	5-C1014	5-F1017	1-Ser. 14-C606	1 each C643 thru C645		5-F1015
8	B	5-C1015	5-F1017	1-Ser. 14-C607	1 each C646 & C647		5-F1015
9	A	4-C1016	4-F1018	1-Ser. 12-C608 & 1-C609	1 each C648 & C649		4-F1015
9	B	4-C1017	4-F1018	1-Ser. 12-C610	1 each C650 & C651		4-F1015
10	A	3-C1018	3-F1019	1-Ser. 10-C611 & 1-C609	1 each C652 & C653	↓	3-F1015
10	B	3-C1019	3-F1019	1-Ser. 10-C612	1 each C654 & C655	4-F620	3-F1015

Notes:
See Sheet 3 for elevation of panels 3 thru 12.
See Sheet 2 for footing plan.
See Sheet 5 for bill of reinforcing steel, cutting diagrams and bending diagrams.
See Sheet 1 for Joint details.
All dimensions are given along face of wall at top of wall.
Piles shown battered to be battered 4"/ft.

FINISHED

FINISHED

FINISHED

SW RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. 1-70) STA. 114+60.01 133.73' RT.
JACKSON COUNTY

SHEET 4 OF 5

A-292-2

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

MADE R.B.S. DATE 9/2/58 TRACED DATE
CHECKED K.A.W. DATE 9-17-58 SCALE

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

440

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO.	STATE/FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		60	
DIST. NO. 4	COUNTY		ROUTE	SEC

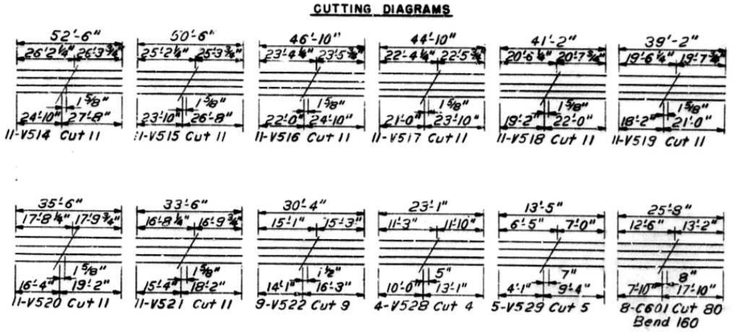
BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
13	#5	29'-6"	F501	Str.				
14	#5	31'-8"	F502	Str.				
22	#5	31'-8"	H501	Str.				
6		27'-8"	H502					
2		23'-6"	H503					
2		19'-9"	H504					
2		15'-9"	H505					
2		12'-0"	H506					
2		7'-3"	H507					
2		28'-3"	H508	Str.				
170		5'-7"	H509	141	1'-3"	8"	8"	3'-0"
170		3'-4"	H510	104	1'-8"	1'-8"		
327	#5	5'-0"	H511	105	8"	2'-2"	2'-2"	
44	#5	27'-2"	V501	Str.				
22		26'-2"	V502					
22		27'-5"	V503					
26		26'-5"	V504					
22		27'-8"	V505					
26		26'-8"	V506					
22		27'-11"	V507					
22		26'-11"	V508					
22		26'-2"	V509					
11		28'-4"	V510					
11		27'-9"	V511					
15		27'-4"	V512					
15		26'-9"	V513					
11		52'-6"	V514					
11		50'-6"	V515					
11		46'-10"	V516					
11		44'-10"	V517					
11		41'-2"	V518					
11		39'-2"	V519					
11		35'-6"	V520					
11		33'-6"	V521					
9		30'-4"	V522					
1		13'-10"	V523					
1		13'-7"	V524					
1		13'-4"	V525					
1		13'-1"	V526	Str.				
220		5'-11"	V527	105	11"	3'-4"	1'-8"	
4		23'-1"	V528	Str.				
5		13'-5"	V529					
1		3'-6"	V530					
3		18'-9"	V531					
4		26'-10"	V532					
4		27'-1"	V533					
4		23'-10"	V534					
4		21'-0"	V535					
4	#5	18'-2"	V536	Str.				
80	#6	25'-8"	C601	121	1'-8"	Varies	1'-0"	
10		7'-2"	C602		1'-8"	1'-9"	1'-0"	
18		24'-4"	C603		1'-8"	Varies	1'-0"	
8		24'-4"	C604		1'-8"	Varies	1'-0"	
7		24'-4"	C605		1'-8"	Varies	1'-0"	
7		23'-0"	C606		1'-8"	Varies	1'-0"	
7		21'-7"	C607		1'-8"	Varies	1'-0"	
6		21'-11"	C608		1'-8"	Varies	1'-0"	
2		6'-9"	C609		1'-8"	1'-6½"	1'-0"	
6		20'-3"	C610		1'-9"	Varies	1'-0"	
5		20'-5"	C611		1'-8"	Varies	1'-0"	
5	#6	19'-1"	C612	121	1'-8"	Varies	1'-0"	

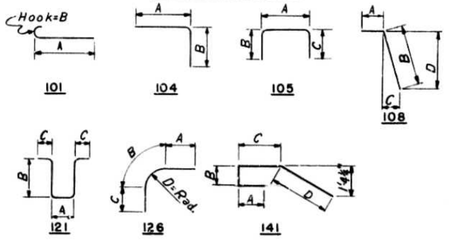
NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
2	#6	22'-11"	C613	Str.				
2		16'-4"	C614					
4		9'-9"	C615					
2		23'-1"	C616					
2		16'-5"	C617					
2		23'-2"	C618					
2		16'-6"	C619					
4		9'-10"	C620					
2		23'-3"	C621					
2		16'-7"	C622					
2		23'-4"	C623					
4		16'-8"	C624					
4		9'-11"	C625					
4		23'-6"	C626					
4		16'-9"	C627					
2		23'-7"	C628					
8		10'-0"	C629					
2		23'-8"	C630					
2		16'-10"	C631					
2		23'-5"	C632					
2		16'-11"	C633					
4		10'-1"	C634					
4		23'-10"	C635					
4		17'-0"	C636					
2		22'-1"	C637					
2		15'-4"	C638					
2		8'-7"	C639					
2		20'-8"	C640					
2		13'-10"	C641					
2		7'-0"	C642					
2		19'-2"	C643					
2		12'-4"	C644					
2		5'-6"	C645					
2		17'-9"	C646					
2		10'-8"	C647					
2		16'-3"	C648					
2		10'-4"	C649					
2		14'-10"	C650					
2		7'-9"	C651					
2		13'-4"	C652					
2		6'-3"	C653					
2		11'-10"	C654					
2	#6	4'-8"	C655	Str.				
60	#6	50'-0"	F601	Str.				
8		32'-11"	F602					
128		13'-0"	F603					
8		3'-0"	F604					
8		8'-9"	F605					
8		6'-6"	F606					
8		8'-3"	F607					
8		8'-0"	F608					
17		12'-0"	F609					
42		21'-6"	F610					
8		6'-3"	F611					
8		6'-0"	F612					
7		5'-9"	F613					
10		9'-6"	F614	Str.				
42		12'-4"	F615	126	8'-9"	1'-7"	2'-0"	1'-0"
22		7'-1"	F616	126	3'-6"	1'-7	2'-0"	1'-0"
10		7'-6"	F617	126	3'-11"	1'-7"	2'-0	1'-0"
5		22'-9"	F618	126	Varies	1'-7"	2'-0"	1'-0"
9		11'-4"	F619	126	7'-9"	1'-7"	2'-0"	1'-0"
138	#6	4'-6"	F620	Str.				
650	#6	31'-7"	H601	Str.				

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
2	#6	29'-9"	H602	Str.				
2		22'-7"	H603					
2		15'-5"	H604					
2		8'-3"	H605					
2		24'-8"	H606					
2		17'-6"	H607					
2		10'-4"	H608					
2		3'-3"	H609					
2		26'-11"	H610					
2		19'-8"	H611					
2		12'-6"	H612					
2		5'-4"	H613					
2		28'-11"	H614					
2		18'-2"	H615					
2	#6	7'-5"	H616	Str.				
9	#6	30'-11"	V601	Str.				
1		14'-1"	V602					
1		13'-10"	V603					
1		13'-7"	V604					
1		13'-4"	V605					
5	#6	22'-3"	V606	Str.				
108	#10	60'-0"	F1001	Str.				
16		39'-2"	F1002					
266		13'-0"	F1003					
9		12'-9"	F1004					
9		12'-6"	F1005					
9		12'-3"	F1006					
9		12'-0"	F1007					
9		11'-9"	F1008					
9		11'-6"	F1009					
9		11'-3"	F1010					
9		11'-0"	F1011					
9		10'-10"	F1012					
15		20'-6"	F1013					
15		18'-2"	F1014	Str.				
108		7'-7"	F1015	101	6'-2"	1'-5"		
84		16'-4"	F1016		14'-11"	1'-5"		
10		15'-3"	F1017		13'-10"	1'-5"		
8		14'-3"	F1018		12'-10"	1'-5"		
6	#10	12'-4"	F1019	101	10'-11"	1'-5"		
6	#10	28'-1"	C1001	108	1'-2"	26'-11"	6'-0"	26'-3"
6		28'-2"	C1002		1'-2"	27'-0"	6'-0"	26'-4"
6		28'-4"	C1003		1'-2"	27'-2"	6'-0"	26'-6"
6		27'-11"	C1004		1'-6"	26'-5"	5'-8"	25'-10"
6		28'-7"	C1005		1'-2"	27'-5"	6'-0"	26'-9"
6		27'-3"	C1006		1'-8"	25'-7"	5'-6"	25'-0"
6		26'-10"	C1007		1'-9"	25'-1"	5'-5"	24'-6"
6		26'-6"	C1008		1'-11"	24'-7"	5'-3"	24'-1"
6		26'-2"	C1009		2'-0"	24'-2"	5'-2"	23'-8"
6		29'-1"	C1010		1'-2"	27'-11"	6'-0"	27'-4"
6		29'-0"	C1011			27'-10"	6'-0"	27'-3"
6		27'-2"	C1012			26'-0"	5'-8½"	25'-5"
6		25'-9"	C1013			24'-7"	5'-4"	24'-0"
5		24'-3"	C1014			23'-1"	5'-0"	22'-7"
5		22'-10"	C1015			21'-8"	4'-7½"	21'-2"
4		21'-4"	C1016			20'-2"	4'-3½"	19'-9"
4		19'-11"	C1017			18'-9"	3'-11½"	18'-4"
3		18'-5"	C1018			17'-3"	3'-7"	16'-11"
3		16'-11"	C1019		1'-2"	15'-9"	3'-3"	15'-5"
6	#10	27'-4	C1020	108	1'-4"	26'-0"	5'-8"	25'-5"

CUTTING DIAGRAMS



BENDING DIAGRAMS



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

MADE R.B.S. DATE 3/1958 TRACED DATE
CHECKED KAW DATE 9-17-58 SCALE

NOTE This drawing is not to scale Follow dimensions

FINISHED

SW RETAINING WALL AT CHESTNUT AVE

STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 114+60.01 133.73' RT.
JACKSON COUNTY

FINISHED

SHEET 5 OF 5

A-292-2

441

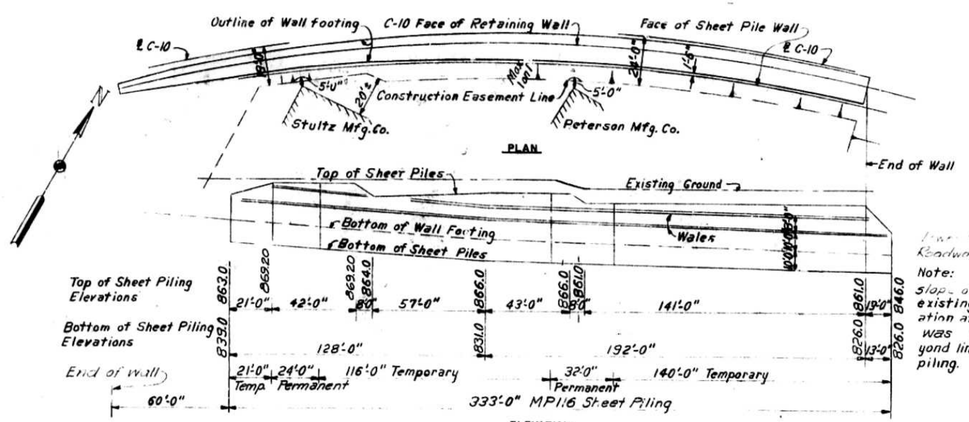
NO CONSTRUCTION CHANGES

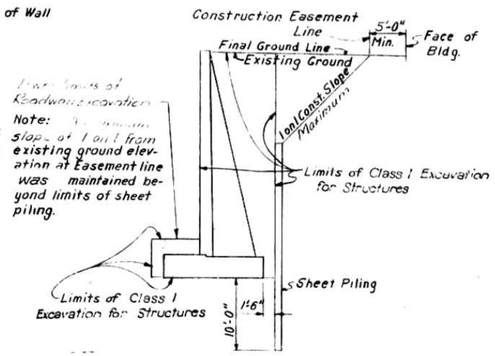
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-70-1(12)3		56	
DIST. NO.	COUNTY			ROUTE	SEC.
4	JACKSON			I-70	

FINAL PLANS

Notes:
All dimensions are given along Ramp C-10 face of wall.
Top of Sheet Pile Elevations shown are minimum elevations.
Permanent Sheet Piles were cut-off 2'0" below final grade line.
The contractor carried out his construction operation in such a manner as to prevent any displacement of the soil upon which the building is founded and was held responsible for any damage to the building resulting from his operations.





GENERAL NOTES

Design Specifications: AASHO 1957

Concrete: All concrete was Class B air-entrained. fc = 1200 p.s.i. (f'c = 3000 p.s.i.)

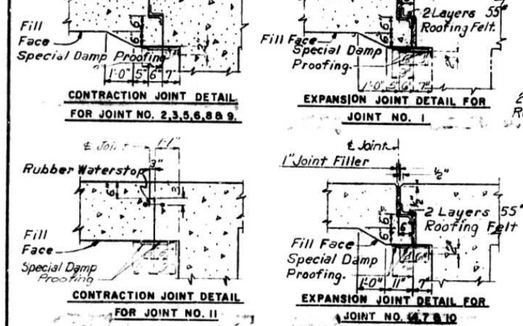
Reinforcing Steel: Allowable Stress 20,000 p.s.i. All splices in reinforcing steel are 32 bar diameters.
Bar sizes are designated on the plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar.
Dimensions shown on the plans from reinforcing steel to outside edge of concrete are all clear dimensions.
All bending dimensions are from "out-to-out" of bars.
Hooks and bends were in accordance with the AASHO Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

Joint Filler: Where Joint filler is specified on plans it did conform to the requirements for Gray Rubber Compound as in Section 59-22B of the Standard Specifications.

Piling: All piles(12BP53) conform with details and notes on Sheet No. 2. All piles required for this structure were furnished by the State. (See Special provisions). All piles were driven to or into solid rock, boulders, shale or cemented gravel, or to not less than full length authorized, and to sustain load of at least 47 tons per pile 12BP53. All piles were driven with a steam hammer. See Section 22-9C of the Standard Specifications for required painting of steel piles.

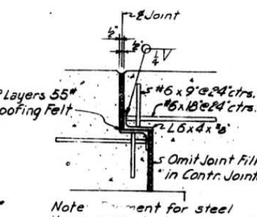
Qualification of welding operators required.

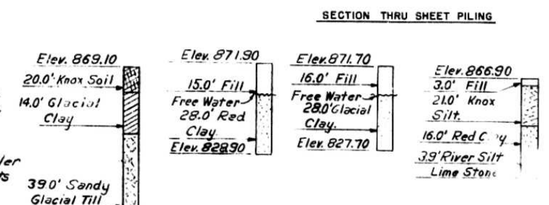
Rubber Waterstop: Rubber waterstop was 6" Flat Dumbbell Type as furnished by Servicised Products Corp. or an approved equivalent. Field splice were vulcanized, made in prefabricated sleeve sections, or connected top joints made with an approved high strength cement.



Note:
Rubber Waterstop extends from top of footing to 6" below top of retaining wall.
Cost of Waterstop was included in unit price bid for concrete.

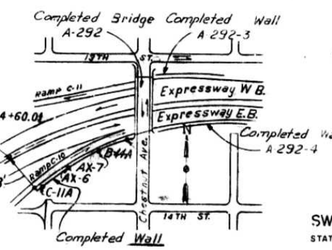
Note: Special Damp proofing extends from top of footing to a point 6" below finished ground line.





QUANTITIES			
Item No.	Item	Unit	Total
1-G	Class 1 Excavation for Structures	Cu. Yds.	3783.5
16-B	Class B Concrete	Cu. Yds.	1120.8
19-A	Reinforcing Steel	Lbs.	147,320
22-DD	Steel piles in place 12BP53 (State Furn.)	Lin. ft.	4,446
38-A	Steel Sheet Piles (Permanent)	Sq. ft.	1,845
38-A	Steel Sheet Piles (Temporary)	L.S.	1

Note: Estimated quantity of Class 1 Excavation for Structures includes only amount of excavation below limits of Roadway Excavation



Bench Mark: Top of north bolt of fire hydrant at northeast corner of Peterson Manufacturing Building 867.84

FINISHED

SW RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT I-70) STA 114+60.01 133.73' Rt.

JACKSON COUNTY

SUBMITTED BY J. O. McWilliams BRIDGE ENGINEER DATE 12-8-1959
APPROVED BY Paul W. Wagner CHIEF ENGINEER DATE 12-8-1959

FINISHED

A-292-2

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

MADE RBS DATE 9/15/58 TRACED DATE
CHECKED KAW DATE 9-17-58 SCALE

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

SHEET 1A OF 1

FINISHED

FINAL PLANS

492

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD SEC. NO.	STATE	FEDERAL PROJECT NO. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			61	
SUST. NO. 4	COUNTY		ROUTE	ELEC.	

BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
(40)	#5	33'-4"	F501	Str.				
214	#5	4'-0"	F502	Str.				
10	#5	3'-4"	H501	104	1'-8"	1'-8"		
10	#5	6'-7"	H502	141	1'-9"	0'-8"	3'-9"	3'-6"
62	#5	31'-8"	H503	Str.				
5	#5	22'-9"	V501	Str.				
5		21'-8"	V502	Str.				
9		31'-7"	V503	Str.				
1		8'-6"	V504	Str.				
1		8'-4"	V505	Str.				
26		5'-2"	V506	103	6½"	2'-11"	1'-8½"	
3		14'-3"	V507	Str.				
11		8'-2"	V508					
12		7'-11"	V509					
11		7'-9"	V510					
12		7'-6"	V511					
12		7'-4"	V512					
11		7'-1"	V513					
11		6'-10"	V514					
11		6'-8"	V515					
11		6'-5"	V516					
11		6'-3"	V517					
1		9'-11"	V518					
9	#5	29'-5"	V519	Str.				
1	#6	13'-9"	C601	121	1'-2"	5'-3½"	1'-0"	
5		19'-2"	C602			Varies		
1		8'-8"	C603			2'-9"		
1		8'-0"	C604			2'-5"		
1		7'-4"	C605			2'-1"		
1		6'-8"	C606			1'-9"		
1		6'-0"	C607	121	1'-2"	1'-5"	1'-0"	
2		13'-0"	C608	Str.				
2	#6	6'-10"	C609	Str.				
3	#6	16'-11"	F601	Str.				
5		13'-11"	F602					
3		5'-8"	F603					
5		11'-3"	F604					
10		16'-8"	F605					
6		37'-0"	F606					
1		24'-7"	F607					
11		11'-0"	F608					
11		10'-9"	F609					
11		10'-7"	F610					
11		10'-4"	F611					
11		10'-2"	F612					
11		9'-11"	F613					
11		9'-9"	F614					
11		9'-6"	F615					
11		9'-4"	F616					
11		9'-1"	F617					
4	#6	4'-6"	F618	Str.				
* 6	#6	21'-9"	H601	Str.				
1		34'-3"	H602					
1		9'-2"	H603					
3		27'-9"	H604					
11		52'-3"	H605					
16		37'-8"	H606					
1		36'-0"	H607					
14	#6	37'-5"	H1608	Str.				

NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
3	#8	11'-6"	F801	Str.				
6		11'-0"	F802					
2		10'-2"	F803					
2		9'-9"	F804					
3		9'-1"	F805	Str.				
3		12'-4"	F806	107	10'-1"	0'-3"	1'-2"	1'-1"
2	#8	10'-5"	F807	Str.				
3	#10	18'-3"	C1001	108	1'-2"	17'-1	16'-7"	4'-1"
1	#10	10'-4"	F1001	Str.				
1		6'-5"	F1002					
2		8'-8"	F1003					
1		12'-8"	F1004	Str.				
3		7'-4"	F1005	101	5'-11	1'-5"		
2		32'-8"	F1006	Str.				
4		37'-1"	F1007	Str.				
4		37'-8"	F1008	108	5'-9"	31'-11"	4'-0"	31'-8"
1		21'-1"	F1009	Str.				
1		14'-11"	F1010					
1		19'-7"	F1011					
2		24'-2"	F1012					
2		28'-9"	F1013					
2	#10	33'-5"	F1014	Str.				

* Bend in field

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

MADE CNB DATE 10-1-58 TRACED ____ DATE ____
CHECKED KAW DATE 10-10-58 SCALE ____

CUTTING DIAGRAMS

31'-7" → 16'-1" + 15'-6"
22'-1" + 9'-6" + 9"
9-V503 Cut 9

29'-5" → 15'-0" + 14'-5"
21'-0" + 8'-5" + 9"
9-V519 Cut 9

19'-2" → 10'-0" + 9'-2"
13'-0" + 6'-2" + 9"
5-C602 Cut 5

16'-11" → 8'-7" + 8'-4"
8'-11" + 8'-0" + 2"
3-F601 Cut 3

13'-11" → 7'-1" + 6'-10"
7'-9" + 6'-2" + 2"
3-F602 Cut 5

16'-8" → 8'-5¾" + 8'-2¾"
10'-11" + 5'-9" + 3¾"
10-F605 Cut 10

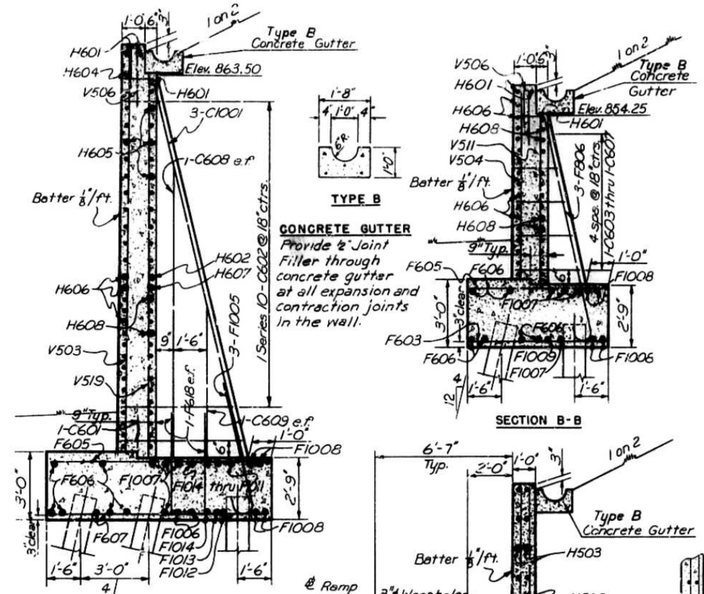
27'-9" → 12'-4" + 15'-5"
18'-4" + 9'-5" + 3'-0"
H604 a H604 b
3-H604 Cut 3

52'-3" → 19'-10" + 32'-5"
35'-3" + 17'-0" + 1'-6½"
H605 a H605 b
11-H605 Cut 11

BENDING DIAGRAMS

Hook B, A → 101
104
105
Hook D, B, C, A → 107
108
121
141

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



GENERAL NOTES

DESIGN SPECIFICATIONS, - AASHO 1957

CONCRETE: All concrete to be Class B air-entrained fc-1200 p.s.i. (fc'-3000 p.s.i.)

REINFORCING STEEL: Allowable Stress 20,000 p.s.i. 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 reinforcing steel to outside edge of concrete are all clear dimensions.

All bending dimensions are from out-to-out of bars. Hooks and bends shall be in accordance with the AASHO Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

JOINT FILLER: Where Joint Filler is specified on Plans it shall conform to the requirements for Gray Rubber Compound as in Section 59-22B of the Standard Specifications.

PILING: All piles shall conform to details and notes on this sheet. All piles required for this structure will be furnished by the State (See Special Provisions). All piles shall be driven to or into solid rock, boulder, shale or cemented gravel, or to not less than full length authorized and to sustain a load of at least 47 tons per pile for 12BP53. All piles shall be driven with a steam hammer. See Section 22-9c of Standard Specifications for required painting of steel piles.

ESTIMATED QUANTITIES

ITEM No.	ITEM	UNIT	TOTAL
1-G	Class 1 Excavation	Cu.Yd.	(200) 625
16-B	Class B Concrete	Cu.Yd.	(175.0) 205.0
19-A	Reinforcing Steel	lbs.	(15,660) 15,660
22-DD	Steel Piles in Place (12BP53) Furn.	Lin.Ft.	297
25-D	Concrete Gutter	Lin.Ft.	200
	(Steel Piles in Place (12BP53) Furn.	Lin.Ft.	470)

Note: Estimated quantity of Class 1 Excavation includes only amount of excavation below limits of Roadway Excavation.

Revised 2-23-61

FINISHED

RETAINING WALL AT CHESTNUT AVE.

STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+44.51 100.37' LEFT

JACKSON COUNTY FINISHED

SUBMITTED BY J. A. Williams BRIDGE ENGINEER DATE 12-8-1959
APPROVED BY [signature] CHIEF ENGINEER DATE 12-8-1959

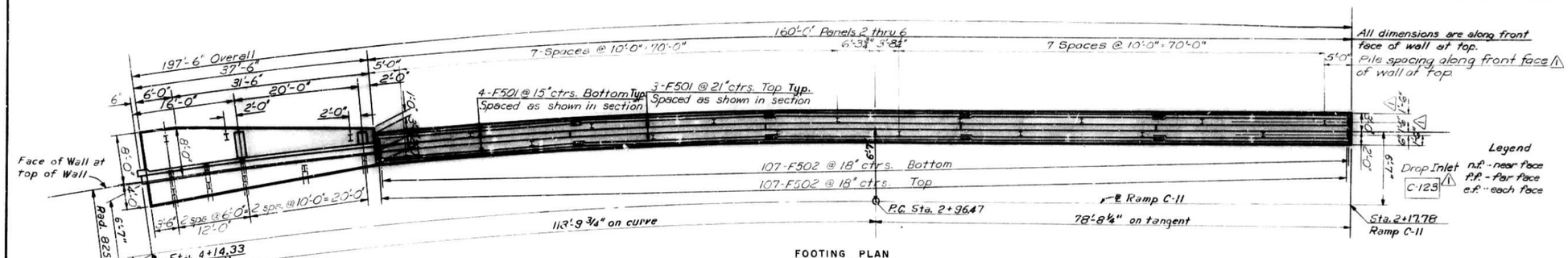
SHEET 1 OF 2

A-292-3

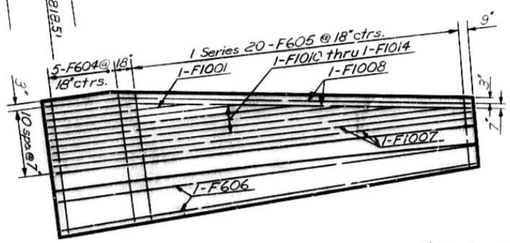
SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

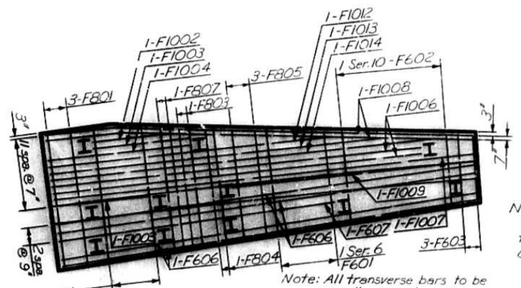
FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & Sec.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			42	
DIST. NO. 4	COUNTY			ROUTE	SEC.



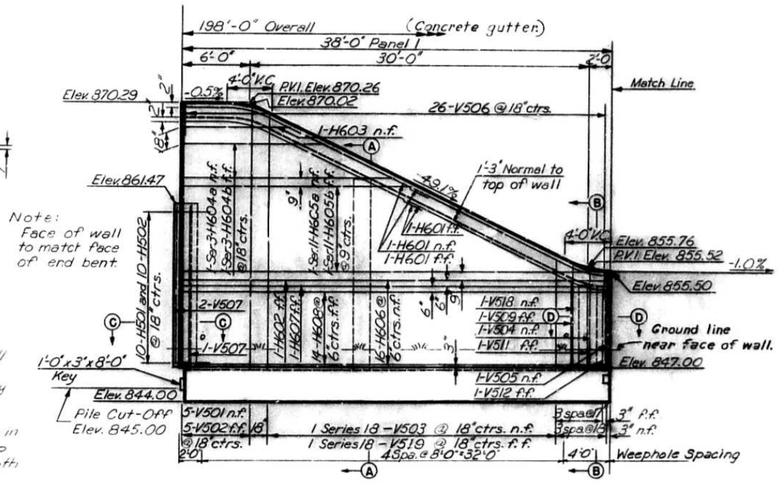
FOOTING PLAN



TOP REINFORCING OF FOOTING PANEL I



BOTTOM REINFORCING OF FOOTING PANEL I

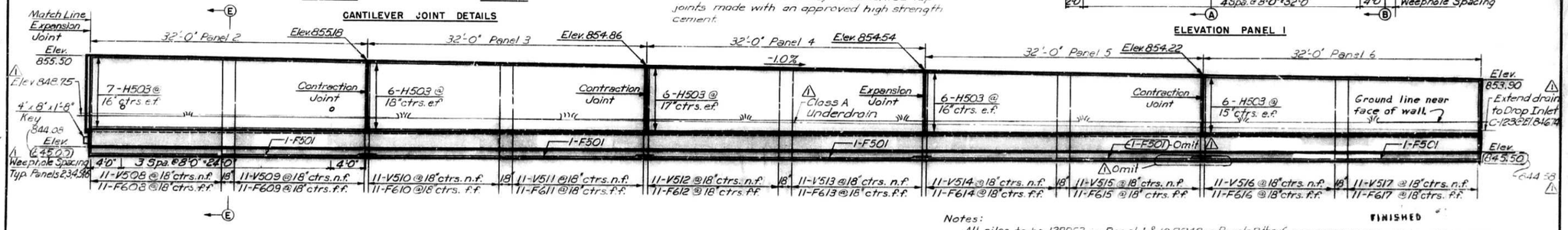


ELEVATION PANEL I

Note: Special Dampproofing to extend from top of footing, to a point 6" below top of gutter.
Rubber Waterstop to extend from bottom of wall to a point 6" below top of wall. Cost of Waterstop to be included in price bid for concrete.

GANTILEVER JOINT DETAILS

Note: Rubber Waterstop to be 6" Flat Dumbbell Type at Contraction Joints and 6" Hollow Bulb Type at Expansion Joints as furnished by Servicised Products Corp or an approved equivalent.
Field splice shall be vulcanized, made in cemented sleeve sections, or cemented lap joints made with an approved high strength cement.



ELEVATION PANELS 2 THRU 6

Notes:
All piles to be 12BP53 in Panel 1 & 10BP42 in Panels 2 thru 6
All piles shown battered to be battered 4 in 12
See Sheet 1 for Bill of Reinforcing Steel, Bending Diagrams, Cutting Diagrams, and Sections A-A, B-B, C-C, D-D, E-E.

FINISHED

Revised 2-23-61

SHEET 2 OF 2

NE RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. 1-70) STA. 119+44.51 100.37' LEFT
JACKSON COUNTY

FINISHED

A-292-3

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK
MADE C.N.B. DATE 8-21-59 TRACED DATE
CHECKED KAW DATE 10-1-59 SCALE

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

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & Sec.	PROJ. YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-70-1(123		41	
DIST. NO.	COUNTY			SHEET NO.	SEC.
4	JACKSON			I-70	

FINAL PLANS

BILL OF REINFORCING STEEL

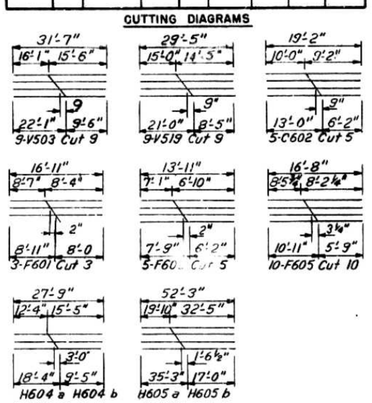
NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
35	#5	33'-4"	F501	Str.				
214	#5	4'-0"	F502	Str.				
10	#5	3'-6"	H501	104	1'-8"	1'-8"		
10	#5	6'-7"	H502	141	1'-9"	0'-8"	0'-9"	3'-4"
62	#5	31'-8"	H503	Str.				
5	#5	22'-9"	V501	Str.				
5		21'-8"	V502	Str.				
9		31'-7"	V503	Str.				
1		8'-6"	V504	Str.				
1		8'-4"	V505	Str.				
26		5'-2"	V506	105	6½"	2'-11"	1'-8½"	
3		14'-3"	V507	Str.				
11		8'-2"	V508					
12		7'-11"	V509					
11		7'-9"	V510					
12		7'-6"	V511					
12		7'-4"	V512					
11		7'-1"	V513					
11		6'-10"	V514					
11		6'-8"	V515					
11		6'-5"	V516					
11		6'-3"	V517					
1		8'-11"	V518					
9	#5	29'-5"	V519	Str.				
1	#6	13'-9"	C601	121	1'-2"	5'-3½"	1'-0"	
5		19'-2"	C602			Varies		
1		8'-8"	C603			2'-9"		
1		8'-0"	C604			2'-5"		
1		7'-4"	C605			2'-1"		
1		6'-8"	C606			1'-9"		
1		6'-0"	C607	121	1'-2"	1'-5"	1'-0"	
2		13'-0"	C608	Str.				
2	#6	6'-10"	C609	Str.				
3	#6	16'-11"	F601	Str.				
5		13'-11"	F602					
3		5'-8"	F603					
5		11'-3"	F604					
10		16'-8"	F605					
6		37'-0"	F606					
1		24'-7"	F607					
11		11'-0"	F608					
11		10'-9"	F609					
11		10'-7"	F610					
11		10'-4"	F611					
11		10'-2"	F612					
11		9'-11"	F613					
11		9'-9"	F614					
11		9'-6"	F615					
11		9'-4"	F616					
11		9'-1"	F617					
4	#6	4'-6"	F618	Str.				
* 6	#6	21'-9"	H601	Str.				
1		34'-9"	H602					
1		9'-2"	H603					
3		27'-9"	H604					
11		52'-3"	H605					
16		37'-8"	H606					
1		36'-0"	H607					
14	#6	37'-5"	H608	Str.				
3	#8	11'-6"	F801	Str.				
6		11'-0"	F802					
2		10'-2"	F803					
2		9'-9"	F804					
3		9'-1"	F805	Str.				
3		12'-4"	F806	107	10'-1"	0'-3"	1'-2"	1'-1"
2	#8	10'-5"	F807	Str.				
3	#10	18'-3"	C1001	108	1'-2"	17'-1	16'-7"	4'-1"
1	#10	10'-4"	F1001	Str.				
1		6'-5"	F1002					
2		8'-8"	F1003					
1		12'-8"	F1004	Str.				
3		7'-4"	F1005	101	5'-11"	1'-5"		
2		32'-8"	F1006	Str.				
4		37'-1"	F1007	Str.				
4		37'-8"	F1008	108	5'-9"	31'-11"	4'-0"	31'-8"
1		21'-1"	F1009	Str.				
1		14'-11"	F1010					
1		19'-7"	F1011					
2		24'-2"	F1012					
2		28'-9"	F1013					
2	#10	33'-5"	F1014	Str.				

* Bend in field

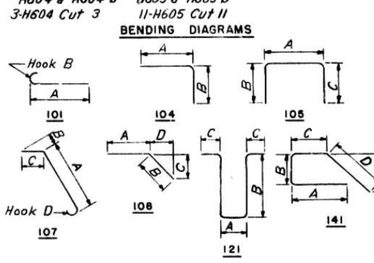
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY I NEW YORK

MADE C.N.B. DATE 10-1-58 TRACED ____ DATE ____
CHECKED K.A.W. DATE 10-10-58 SCALE

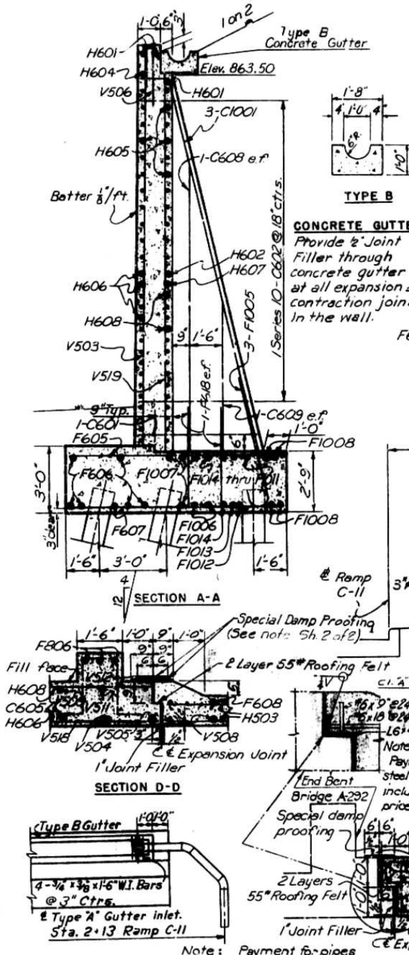
CUTTING DIAGRAMS



BENDING DIAGRAMS



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



GENERAL NOTES

DESIGN SPECIFICATIONS: - AASHO 1957

CONCRETE: All concrete Class B air entrained f'c=1200 p.s.i. (f'c=3000 p.s.i.)

REINFORCING STEEL: Allowable Stress 20,000 p.s.i. 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.

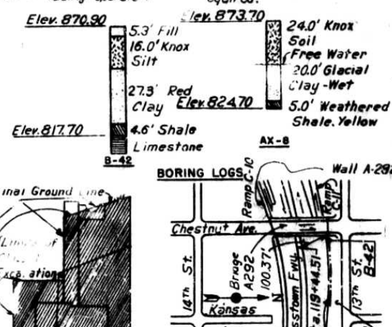
Dimensions shown on the plans from reinforcing steel to outside edge of concrete are all clear dimensions.

All bending dimensions are from out-to-out of bars. Hooks and bends in accordance with the AASHO Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

JOINT FILLER: Where Joint Filler is specified on Plans it conform to the requirements for Gray Rubber Compound as in Section 59-22 B of the Standard Specifications.

PILING: All piles conform to details and notes on this sheet. All piles required for this structure furnished by the State (See Special Provisions). All piles driven to or into solid rock, boulder, shale or cemented gravel, or to not less than full length authorized and to sustain a load of at least 47 tons per pile for 12BP53. All piles to be driven with a steam hammer. See Section 22-9c of Standard Specifications for required painting of steel piles.

Qualification of welding operators required.



BORING LOGS

Bench Mark: P.K. nail on top of retaining wall at Joint 2 Retaining Wall A-292-3 855.52.

QUANTITIES

ITEM NO	ITEM	UNIT	TOTAL
1-G	Class I Excavation	Cu.Yd.	646.5
16-B	Class B Concrete	Cu.Yd.	205
19-A	Reinforcing Steel	lbs.	45,660
22-DD	Steel Piles in Place (12BP53) 50'-0" Pcs.	Lin.Ft.	297
25-D	Concrete Gutter	Lin.Ft.	200
	Steel Piles in Place (10BP42) 50'-0" Pcs.	Lin.Ft.	417
	Porous Backfill	Cu.Yd.	125.5

Note: Estimated quantity of Class I Excavation includes only amount of excavation below limits of Roadway Excavation

FINISHED

SHEET 1 OF 1

FINISHED

NE RETAINING WALL AT CHESTNUT AVE.

STATE ROAD CROSSTOWN FREEWAY

KANSAS CITY, MO.

PROJECT NO. I-70-1(112)(RT. I-70) STA. 119+44.51 100.37' LEFT

JACKSON COUNTY FINISHED

SUBMITTED BY J. C. McCall BRIDGE ENGINEER DATE 12-8-1959

APPROVED BY Geo. M. Watts CHIEF ENGINEER DATE 12-8-1959

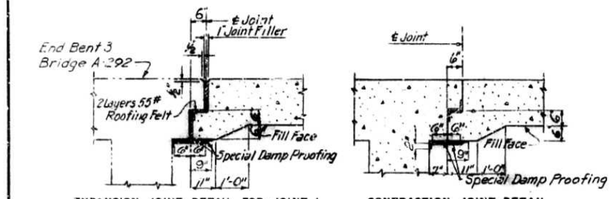
A-292-3

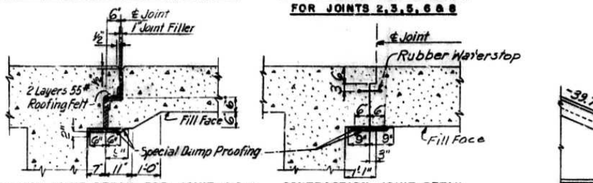
445

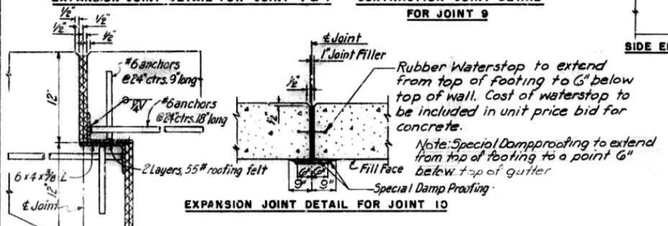
FINAL PLANS

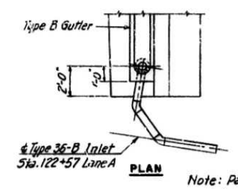
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			63	
DIST. NO.	COUNTY			TOTAL	SEC.
4					

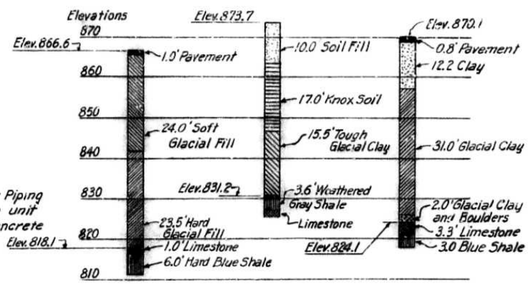


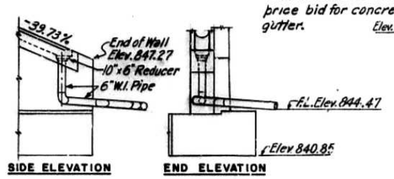




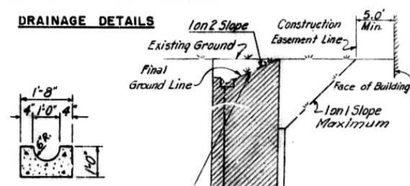


Note: Payment for Piping to be included in unit price bid for concrete gutter.





DRAINAGE DETAILS

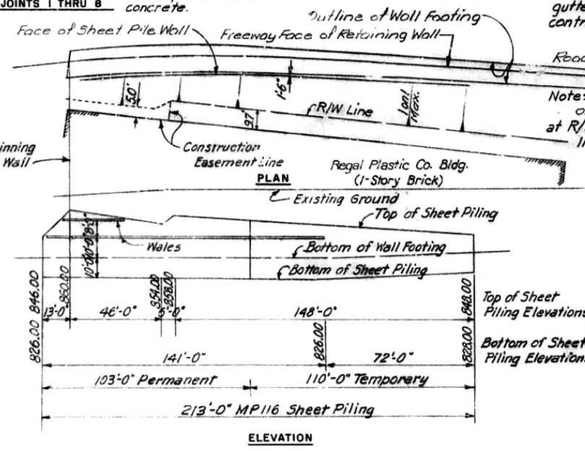


Note: A Maximum slope of 1 on 1 from existing ground at R/W Line shall be maintained beyond limits of sheet piling.

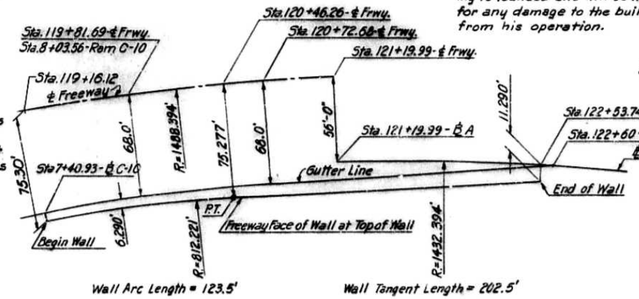
ESTIMATED QUANTITIES			
ITEM NO.	ITEM	UNIT	TOTAL
1-G	Class 1 Excavation	Cu.Yd.	2840
16-B	Class B Concrete	Cu.Yd.	8585
19-A	Reinforcing Steel	lbs.	110440
22DD	Steel Piles in Place (12BP53)	Lin.Ft.	2074
25-D	Concrete Gutter	Lin.Ft.	295
38-A	Sheet Piling, Permanent	Sq.Ft.	3130
38-A	Sheet Piling, Temporary	L.S.	1

Note: Estimated quantity of Class 1 Excavation includes only amount of excavation below Limits of Roadway Excavation.

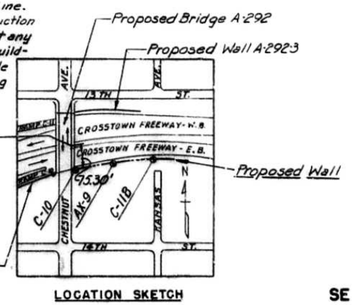
SHEET PILING NOTES: All dimensions are given along Ramp C-10 face of Wall.
Top of Sheet Piling Elevations shown are Minimum Elevations. Permanent Sheet Piles shall be cut off two feet (2'-0") below Final Grade Line. The Contractor shall carry out his construction operation in such a manner as to prevent any displacement of the soil upon which the building is founded and will be held responsible for any damage to the building resulting from his operation.



SHEET PILING DETAILS



GEOMETRIC LAYOUT



GENERAL NOTES

DESIGN SPECIFICATIONS, - AASHO 1957

CONCRETE: All concrete to be Class B air-entrained f'_c=1200 p.s.i. (f'_c=3000 p.s.i.)

REINFORCING STEEL: Allowable Stress 20,000 p.s.i. 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 reinforcing steel to outside edge of concrete are all clear dimensions.
All bending dimensions are from out to out of bars. Hooks and bends shall be in accordance with the AASHO Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures.

JOINT FILLER: Where Joint Filler is specified on Plans it shall conform to the requirements for Gray Rubber Compound as in Section 55-22B of the Standard Specifications.

PILING: All piles (12BP53) shall conform to details and notes on Sheet No. 3. All piles required for this structure will be furnished by the State (See Special Provisions). All piles shall be driven to or into solid rock, boulder, shale or cemented gravel, or to not less than full length authorized and to sustain a load of at least 47 tons per pile for 12BP53. All piles shall be driven with a steam hammer. See Section 22-9c of Standard Specifications for required painting of steel piles.

Qualification of welding operators will be required.

RUBBER WATERSTOP: Rubber waterstop to be 6" Flat Dumbbell Type at Joint No. 9 and 6" Hollow Bulb Type at Joint No. 10 as furnished by Servicised Products Corp. or an approved equivalent. Field splice shall be vulconized, made in cemented sleeve sections, or cemented lap joints made with an approved high strength cement.

FINISHED

SE RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+16.12 75.30' RT.
JACKSON COUNTY FINISHED

SUBMITTED BY J. A. Williams BRIDGE ENGINEER DATE 12-8-1959
APPROVED BY Geo. M. Wilson CHIEF ENGINEER DATE 12-8-1959

A-292-4

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

MADE HFS DATE 9-19-58 TRACED DATE
CHECKED C.L.W. DATE 9-25-58 SCALE

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

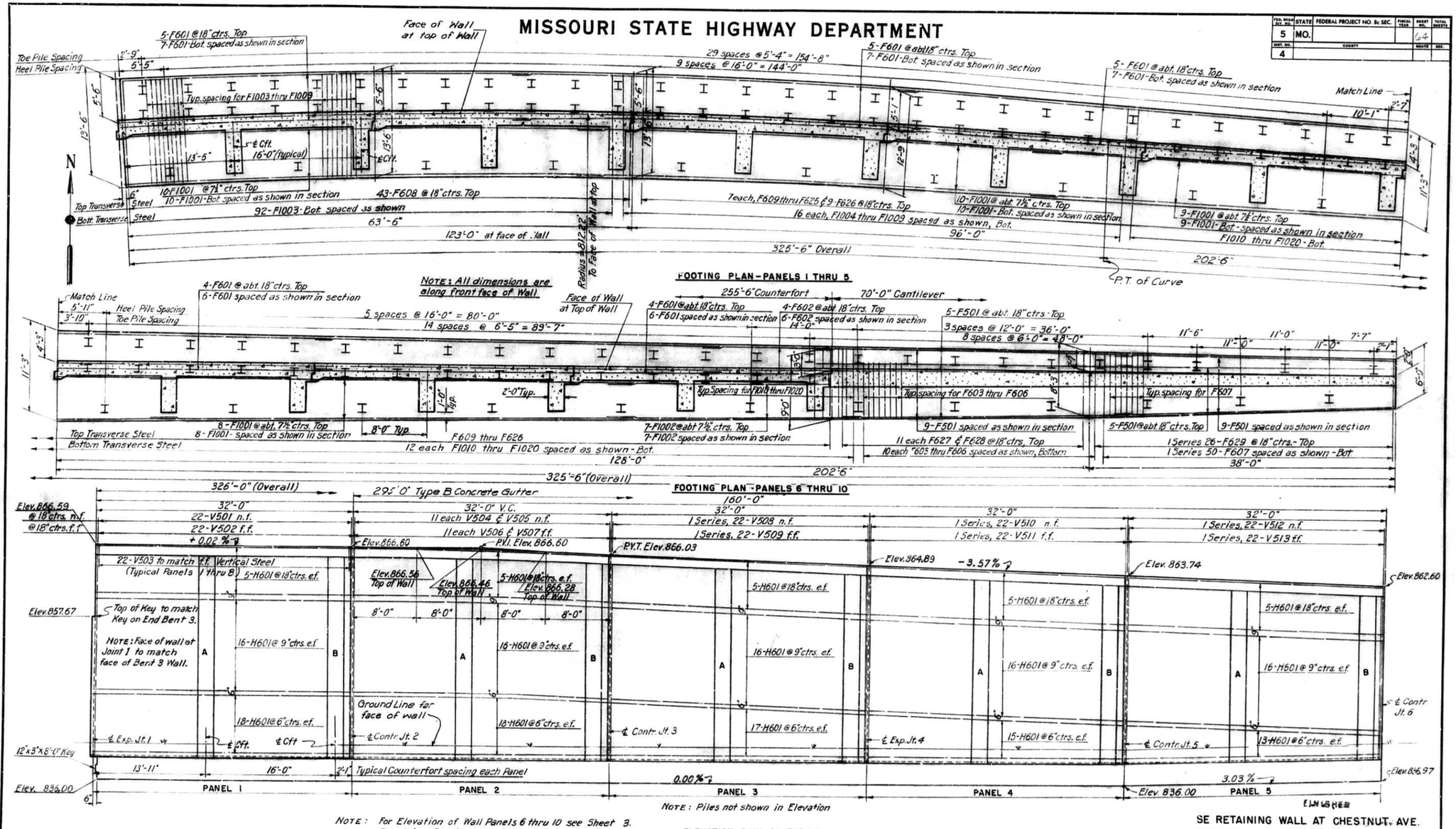
SHEET 1 OF 4

496

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

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



NOTE: Piles not shown in Elevation

ELEVATION--PANELS 1 THRU 5

NOTE: For Elevation of Wall Panels 6 thru 10 see Sheet 3.
For Joint Details see Sheet 1.
For Bar List, Bending and Cutting Diagrams see Sheet 4.
For Typical Cross Section, Countertort and Joint Steel see Sheet 3.

LEGEND
n.f. = near face
f.f. = far face
e.f. = each face

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK
MADE H.T.S. DATE 8-1-58 TRACED H.T.S. DATE 8-20-58
CHECKED C.L.W. DATE 9-26-58 SCALE

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

SE RETAINING WALL AT CHESTNUT AVE.
STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO
PROJECT NO I-70-1(121)(RT I-70) STA 119+16.12 75.30' RT
JACKSON COUNTY

SHEET 2 OF 4

A 292-4

NO CONSTRUCTION CHANGES

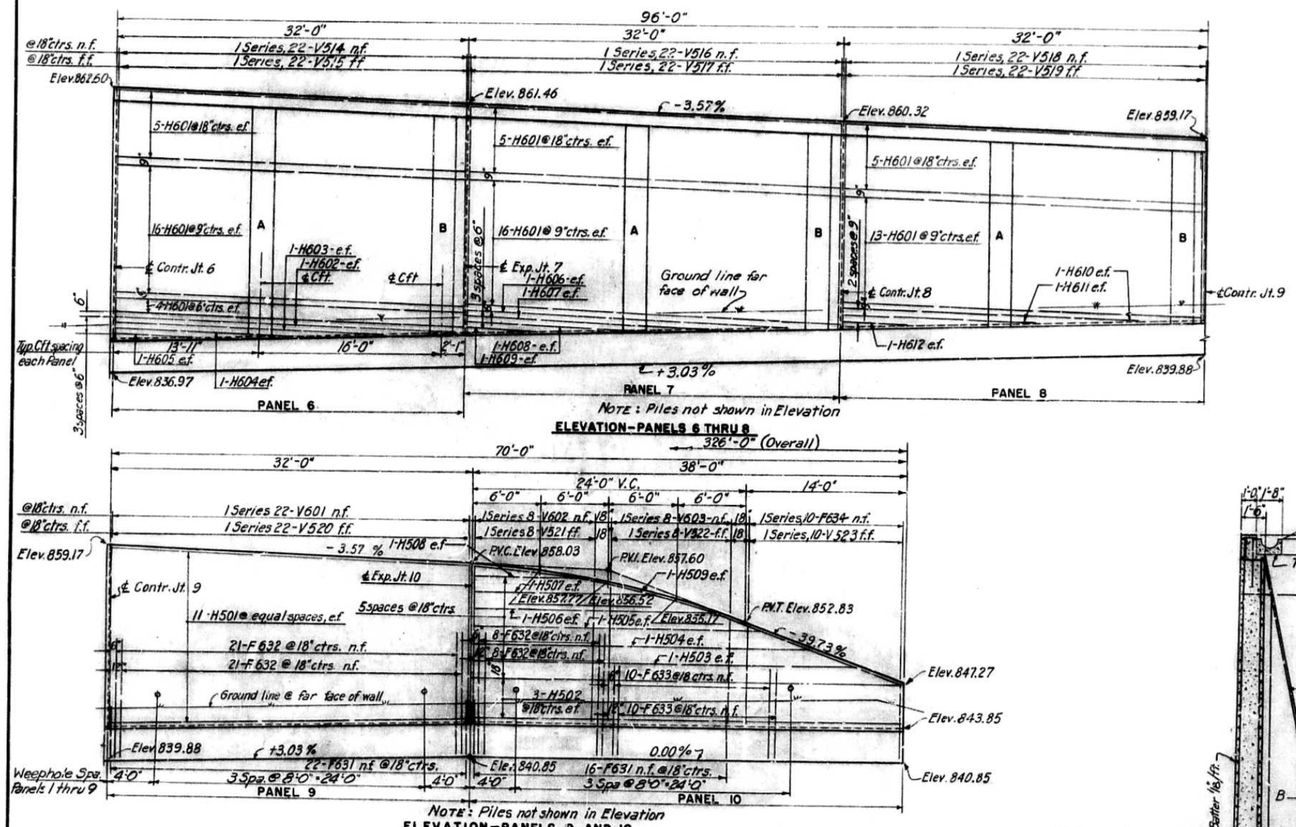
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			65	
DIST. NO.	COUNTY		ROUTE	SEC.	
4					

TABULATION OF COUNTERFORT REINFORCING

PANEL NO.	COUNTERFORT	A	B	C	D *	E	F
1	A	6-C1001	6-F1022	1 Ser. 16-C601 E 1-C602	1-C618, 1-C619 E 1-C620	3-F630	6-F1021
1	B	6-C1001	6-F1022	1 Ser. 16-C601 E 1-C602	1-C618, 1-C619 E 1-C620	3-F630	6-F1021
2	A	6-C1002	6-F1022	1 Ser. 16-C601 E 1-C602	1-C621, 1-C619 E 1-C620	3-F630	6-F1021
2	B	6-C1003	6-F1022	1 Ser. 16-C601 E 1-C602	1-C622, 1-C623 E 1-C624	3-F630	6-F1021
3	A	6-C1004	6-F1022	1 Ser. 16-C603	1-C625, 1-C626 E 1-C627	3-F630	6-F1021
3	B	6-C1005	6-F1022	1 Ser. 16-C604	1-C628, 1-C629 E 1-C630	3-F630	6-F1021
4	A	6-C1006	6-F1022	1 Ser. 16-C605	1-C631, 1-C632 E 1-C633	3-F630	6-F1021
4	B	6-C1007	6-F1022	1 Ser. 14-C605 E 1-C607	1-C634, 1-C635 E 1-C636	3-F630	6-F1021
5	A	5-C1008	5-F1023	1 Ser. 14-C608	1-C637, 1-C638 E 1-C639	3-F630	5-F1021
5	B	5-C1009	5-F1023	1 Ser. 14-C609	1-C640 E 1-C641	3-F630	5-F1021
6	A	5-C1010	5-F1023	1 Ser. 10-C610 E 1-C611	1-C642 E 1-C643	3-F630	4-F1021
6	B	5-C1011	5-F1023	1 Ser. 12-C612	1-C644 E 1-C645	2-F630	5-F1021
7	A	4-C1012	4-F1024	1 Ser. 12-C613	1-C646 E 1-C647	2-F630	4-F1021
7	B	4-C1013	4-F1024	1 Ser. 10-C614 E 1-C615	1-C648 E 1-C649	2-F630	4-F1021
8	A	4-C1014	4-F1024	1 Ser. 10-C611	1-C650 E 1-C651	2-F630	4-F1021
8	B	4-C1015	4-F1024	1 Ser. 10-C617	1-C652 E 1-C653	2-F630	4-F1021

* Double all C Bars in D

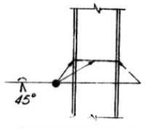


NOTE: Piles not shown in Elevation

ELEVATION—PANELS 6 THRU 8

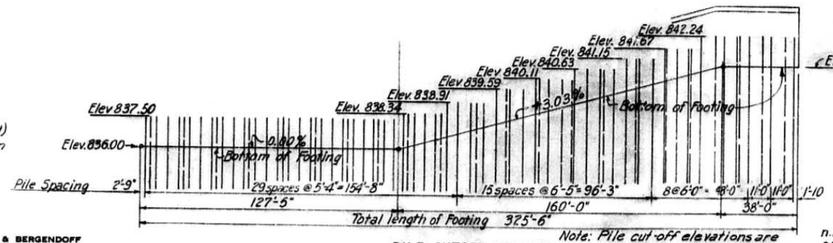
NOTE: Piles not shown in Elevation

ELEVATION—PANELS 9 AND 10



PILE SPLICE DETAIL

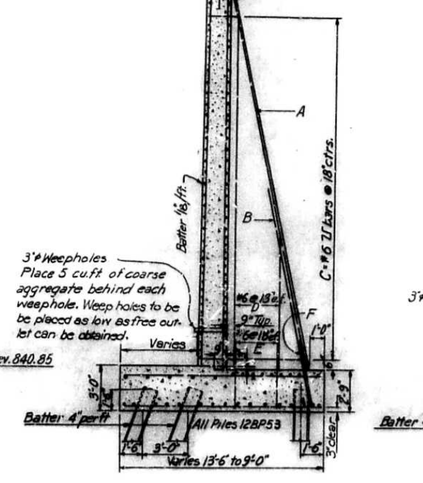
Butt Splice (If required)
Top of Lower Section to be cut square



PILE CUTOFF DIAGRAM

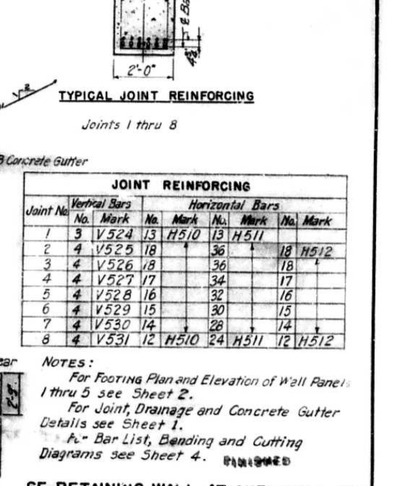
Note: Pile cut-off elevations are given for piles indicated by solid lines. Piles indicated by dashed lines shall be cut off at elevation of next higher pile.

LEGEND
n.f. = near face
f.f. = far face
e.f. = each face



3" ϕ Weepholes
Place 5 cu.ft. of coarse aggregate behind each weephole. Weep holes to be placed as low as free outlet can be obtained.

TYPICAL COUNTERFORT SECTION



TYPICAL CANTILEVER SECTION

FINISHED

TYPICAL JOINT REINFORCING

Joints 1 thru 8

JOINT REINFORCING

Joint No.	Vertical Bars No.	Vertical Bars Mark	Horizontal Bars No.	Horizontal Bars Mark	Horizontal Bars No.	Horizontal Bars Mark	Horizontal Bars No.	Horizontal Bars Mark
1	3	V524	13	H510	13	H511		
2	4	V525	18	↑	36	↑	18	H512
3	4	V526	18		36		18	↓
4	4	V527	17		34		17	
5	4	V528	16		32		16	
6	4	V529	15		30		15	
7	4	V530	14		28		14	
8	4	V531	12	H510	24	H511	12	H512

NOTES:
For FOOTING Plan and Elevation of Wall Panels 1 thru 5 see Sheet 2.
For Joint, Drainage and Concrete Gutter Details see Sheet 1.
For Bar List, Bending and Cutting Diagrams see Sheet 4.

FINISHED

SE RETAINING WALL AT CHESTNUT AVE.

STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(121)(RT I-70) STA. 119+16.12 75.30' RT.
JACKSON COUNTY

FINISHED

SHEET 3 OF 4

A-292-4

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

MADE H.T.S. DATE 8-1-58 TRACED ____ DATE ____
CHECKED C.L.W. DATE 9-26-58 SCALE ____

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

448

✱ CONSTRUCTION CHANGES NOTED HEREON

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIV. NO. 7 | STATE FEDERAL PROJECT No. B-Sec 5 | FISCAL YEAR | SHEET NO. | TOTAL SHEETS 26
DIST. NO. 4 | COUNTY MO. | ROUTE | SEC.

BILL OF REINFORCING STEEL

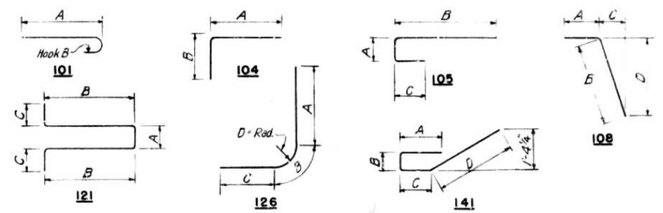
NO.	SIZE	LENGTH	MARK	TYPE	DIMENSIONS A	B	C	D
28	5	35'-7"	F501	Str.				
22	5	31'-8"	H501	Str.				
6		37'-8"	H502					
2		33'-10"	H503					
2		30'-0"	H504					
2		26'-2"	H505					
2		22'-4"	H506					
2		18'-6"	H507					
2		13'-0"	H508					
2		38'-11"	H509	Str.				
123		5'-7"	H510	141	1'-3"	8"	8"	3'-0"
233		3'-4"	H511	104	1'-8"	1'-8"		
110	5	5'-0"	H512	105	8"	2'-2"	2'-2"	
22	5	26'-5"	V501	Str.				
22		27'-5"	V502	Str.				
176		5'-6"	V503	105	6"	3'-4"	1'-8"	
11		26'-2"	V504	Str.				
11		25'-10"	V505					
11		27'-2"	V506					
11		26'-10"	V507					
11		50'-6"	V508					
11		52'-6"	V509					
11		48'-3"	V510					
11		50'-3"	V511					
11		45'-0"	V512					
11		47'-0"	V513					
11		40'-9"	V514					
11		42'-9"	V515					
11		36'-7"	V516					
11		38'-7"	V517					
11		32'-4"	V518					
11		34'-4"	V519					
11		30'-1"	V520					
4		26'-6"	V521					
4		21'-2"	V522					
5		12'-0"	V523					
3		18'-9"	V524					
4		26'-5"	V525					
4		25'-10"	V526					
4		24'-8"	V527					
4		23'-7"	V528					
4		21'-5"	V529					
4		19'-4"	V530					
4	5	17'-3"	V531	Str.				
32	6	24'-3"	C601	121	1'-8"	Varies	1'-0"	
4		6'-10"	C602		1'-8"	1'-7"	1'-0"	
8		23'-7"	C603		1'-8"	Varies	1'-0"	
8		22'-11"	C604		1'-8"	Varies	1'-0"	
8		22'-3"	C605		1'-8"	Varies	1'-0"	
7		22'-10"	C606		1'-8"	Varies	1'-0"	
1		6'-9"	C607		1'-8"	1'-6½"	1'-0"	
7		22'-2"	C608		1'-8"	Varies	1'-0"	
7		21'-6"	C609		1'-8"	Varies	1'-0"	
6		22'-1"	C610		1'-8"	Varies	1'-0"	
1		7'-0"	C611		1'-8"	1'-8"	1'-0"	
6		22'-2"	C612		1'-8"	Varies	1'-0"	
6		20'-7"	C613		1'-8"	Varies	1'-0"	
5		21'-0"	C614		1'-8"	Varies	1'-0"	
1		6'-10"	C615	121	1'-8"	1'-7"	1'-0"	
5	6	20'-4"	C616	121	1'-8"	Varies	1'-0"	
5		19'-6"	C617	121	1'-8"	Varies	1'-0"	
4 *		22'-9"	C618	Str.				
6		15'-6"	C619					
6		8'-3"	C620					
2		22'-8"	C621					
2		22'-4"	C622					
2		15'-3"	C623					
2		8'-1"	C624					
2		21'-9"	C625					
2		14'-8"	C626					
2		7'-6"	C627					
2		21'-2"	C628					
2		13'-11"	C629					
2		6'-9"	C630					
2		20'-7"	C631					
2		13'-3"	C632					
2		6'-0"	C633					
2		19'-11"	C634					
2		12'-7"	C635					
2		5'-3"	C636					
2		19'-0"	C637					
2		11'-8"	C638					
2		4'-5"	C639					
2		18'-0"	C640					
2		10'-9"	C641					
2		17'-0"	C642					
2		9'-10"	C643					
2		15'-11"	C644					
2		8'-11"	C645					
2		14'-11"	C646					
2		8'-0"	C647					
2		13'-11"	C648					
2		7'-1"	C649					
2		12'-11"	C650					
2		6'-3"	C651					
2		11'-11"	C652					
2	6	5'-5"	C653	Str.				
56	6	50'-0"	F601	Str.				
10		15'-11"	F602					
10		8'-3"	F603					
10		8'-1"	F604					
10		7'-11"	F605					
10		7'-9"	F606					
25		13'-1"	F607					
43		13'-0"	F608					
7		12'-9"	F609					
7		12'-6"	F610					
7		12'-3"	F611					
7		12'-0"	F612					
7		11'-9"	F613					
7		11'-6"	F614					
7		11'-3"	F615					
7		11'-0"	F616					
7		10'-9"	F617					
7		10'-6"	F618					
7		10'-3"	F619					
7		10'-0"	F620					
7		9'-9"	F621					
7		9'-6"	F622					
7		9'-3"	F623					
7		9'-0"	F624					
7		8'-9"	F625					
9		8'-6"	F626					
11		6'-7"	F627					
11		6'-5"	F628					
13		11'-6"	F629					
86	6	4'-9"	F630	Str.				
38	6	7'-2"	F631	126	3'-7"	1'-7"	2'-0"	1'-0"
58		13'-1"	F632		9'-8"	1'-7"	2'-0"	1'-0"
20		10'-1"	F633		6'-6"	1'-7"	2'-0"	1'-0"
5	6	22'-9"	F634	126	Varies	1'-7"	2'-0"	1'-0"
500	6	31'-8"	H601	Str.				
2		29'-7"	H602					
2		22'-0"	H603					
2		14'-5"	H604					
2		6'-10"	H605					
2		28'-2"	H606					
2		20'-7"	H607					
2		13'-0"	H608					
2		5'-5"	H609					
2		26'-1"	H610					
2		14'-9"	H611					
2	6	3'-5"	H612	Str.				
11	6	30'-7"	V301	Str.				
4	6	27'-0"	V602	Str.				
4	6	21'-8"	V603	Str.				
12	10	28'-2"	C1001	108	1'-2"	27'-0"	5'-6"	26'-5"
6		28'-0"	C1002		1'-2"	26'-10"	5'-6"	26'-5"
6		27'-8"	C1003		1'-2"	26'-5"	5'-6"	25'-11"
6		27'-0"	C1004		1'-2"	25'-10"	5'-4"	25'-4"
6		26'-5"	C1005		1'-2"	25'-3"	5'-2"	24'-9"
6		25'-11"	C1006		1'-2"	24'-9"	5'-0"	24'-3"
6		25'-4"	C1007		1'-2"	24'-2"	4'-10"	23'-8"
5		24'-4"	C1008		1'-2"	23'-2"	4'-8"	22'-8"
6		23'-2"	C1009		1'-2"	22'-0"	4'-6"	21'-7"
5		22'-1"	C1010		1'-2"	20'-11"	4'-4"	20'-6"
5		21'-1"	C1011		1'-2"	19'-11"	4'-2"	19'-6"
4		20'-0"	C1012		1'-2"	18'-10"	4'-0"	18'-5"
4		18'-11"	C1013		1'-2"	17'-9"	3'-10"	17'-4"
4		17'-11"	C1014		1'-2"	16'-9"	3'-8"	16'-4"
4	10	16'-10"	C1015	108	1'-2"	15'-8"	3'-6"	15'-3"
74	10	60'-0	F1001	Str.				
14		31'-11"	F1002					
92		13'-0"	F1003					
16		12'-9"	F1004					
16		12'-6"	F1005					
16		12'-3"	F1006					
16		12'-0"	F1007					
16		11'-9"	F1008					
16		11'-6"	F1009					
12		11'-3"	F1010					
12		11'-0"	F1011					
12		10'-9"	F1012					
12		10'-6"	F1013					
12		10'-2"	F1014					
12		9'-11"	F1015					
12		9'-8"	F1016					
12		9'-4"	F1017					
12		9'-1"	F1018					
12		8'-10"	F1019					
12		8'-6"	F1020	Str.				
84		7'-7"	F1021	101	6'-2"	1'-5"		
48		16'-6"	F1022		15'-1"	1'-5"		
20		15'-6"	F1023		14'-1"	1'-5"		
16	10	14'-6"	F1024	101	13'-1"	1'-5"		

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

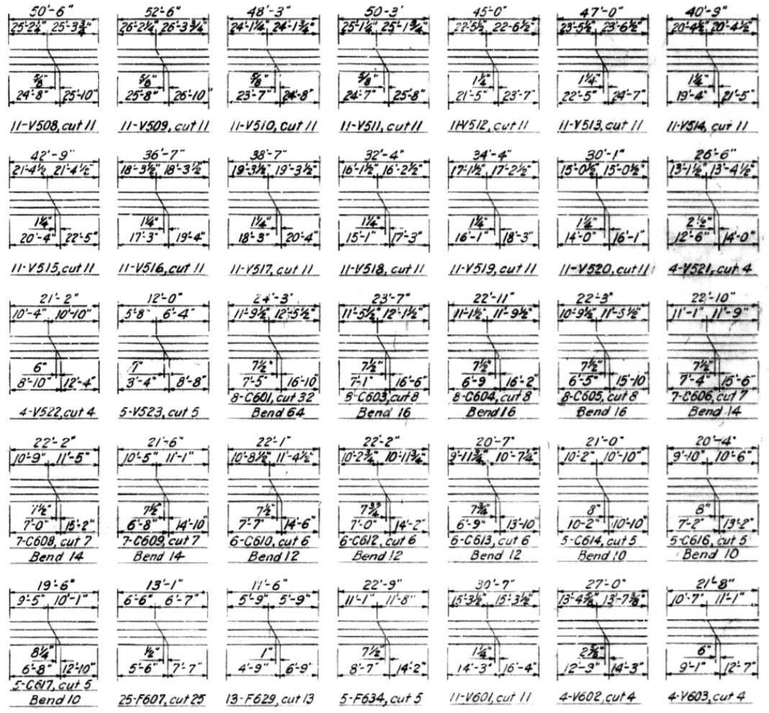
MADE H F S DATE 9-18-38 | TRACED H F S DATE 3-20-38
CHECKED C L H DATE 9-23-38 | SCALE

NOTE This drawing is not to scale. Follow dimensions

BENDING DIAGRAMS



CUTTING DIAGRAMS



FINISHED

FINISHED

FINISHED

SE RETAINING WALL AT CHESTNUT, AVE.

STATE ROAD CROSSTOWN FREEWAY
KANSAS CITY, MO.
PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+16.12 75.30' RT.
JACKSON COUNTY

SHEET 4 OF 4

A-292-4

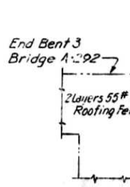
* CONSTRUCTION CHANGES NOTED HEREON

4-9

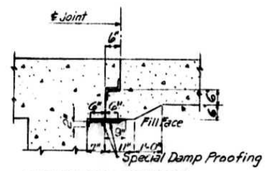
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD SEC. NO.	STATE	FEDERAL PROJECT NO. & SEC.	PHOTO YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-70-1(12)3		63	
DIST. NO.	COUNTY			ROUTE	SEC.
4	JACKSON			I-70	

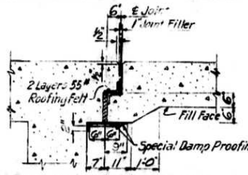
End Bent 3
Bridge A-292



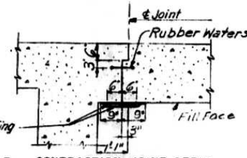
EXPANSION JOINT DETAIL FOR JOINT 1



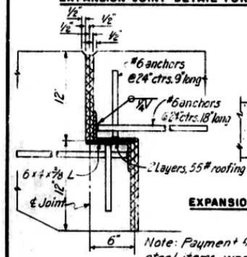
CONTRACTION JOINT DETAIL FOR JOINTS 2, 3, 5, 6 & 8



EXPANSION JOINT DETAIL FOR JOINT 4 & 7

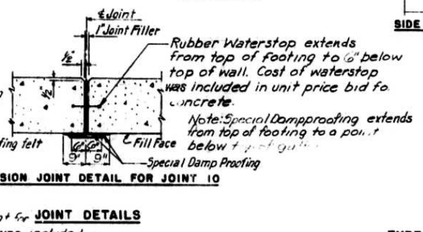


CONTRACTION JOINT DETAIL FOR JOINT 9

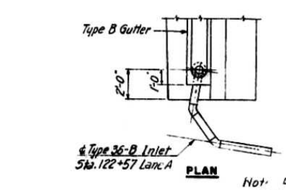


Note: Payment for JOINT DETAILS steel items was included in unit price bid for concrete.

JOINT DETAIL FOR JOINTS 1 THRU 8

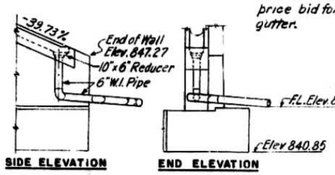


EXPANSION JOINT DETAIL FOR JOINT 10

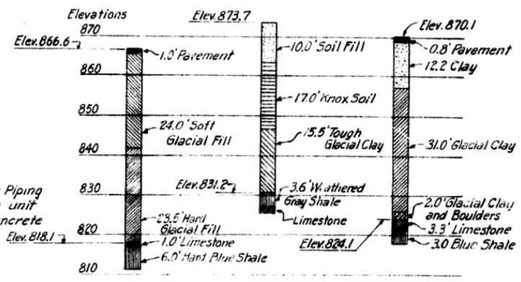


PLAN

Note: Payment for Piping was included in unit price bid for concrete gutter.



SIDE ELEVATION — END ELEVATION



BORINGS

GENERAL NOTES — FINAL PLANS

DESIGN SPECIFICATIONS, - AASHO 1957

CONCRETE: All concrete is Class B air-entrained f'c = 1200 psi. (f'c = 3000 p.s.i.)

REINFORCING STEEL: Allowable stress 20,000 p.s.i. All splices in reinforcing steel were 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 reinforcing steel to outside edge of concrete are all clear dimensions.

All bending dimensions are from out to out of bars. Hooks and bends were in accordance with the AASHO Manual of Stanuard Practice for Detailing Reinforced Concrete Highway Structures.

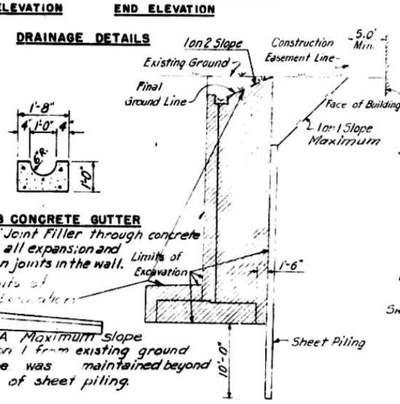
JOINT FILLER: Where Joint Filler is specified on Plans it did conform to the requirements for Gray Rubber Compound as in Section 59-22B of the Standard Specifications.

PILING: All piles (12BP53) conform to details and notes on Sheet No. 3. All piles required for this structure furnished by the State (See Special Provisions). All piles were driven to or into solid rock, boulder, shale or cemented gravel, or to not less than full length authorized and to sustain a load of at least 47 tons per pile for 12BP53. All piles were driven with a steam hammer. See Section 22-9c of Standard Specifications for required painting of steel piles.

Qualification of welding operators was required.

RUBBER WATERSTOP: Rubber waterstop is 6" Flat Dumbbell Type at Joint No. 9 and 6" Hollow Bulb Type at Joint No. 10 as furnished by Servicised Products Corp. or an approved equivalent. Field splice were vulcanized, made in cemented sleeve sections, or cemented lap joints made with an approved high strength cement.

DRAINAGE DETAILS



TYPE B CONCRETE GUTTER

Provide ½" Joint Filler through concrete gutter at all expansion and contraction joints in the wall.

Note: A Maximum slope of 1 on 1 from existing ground at R/W Line was maintained beyond limits of sheet piling.

SECTION THRU SHEET PILING

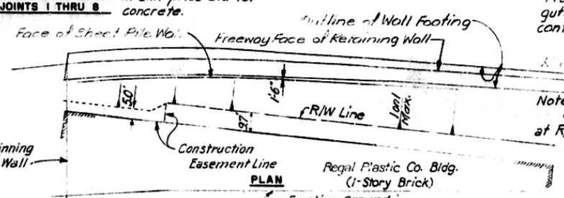
QUANTITIES

ITEM NO	ITEM	UNIT	TOTAL
1-G	Class 1 Excavation	Cu.Yd.	2891.5
16-B	Class B Concrete	Cu.Yd.	858.5
19-A	Reinforcing Steel	lbs.	111,260
2200	Steel Piles in Place (12BP53) 53 lbs./Lin.	Lin.Ft.	2670
25-D	Concrete Gutter	Lin.Ft.	327
38-A	Sheet Piling, Permanent	Sq. Ft.	3407
38-A	Sheet Piling, Temporary	L.S.	1

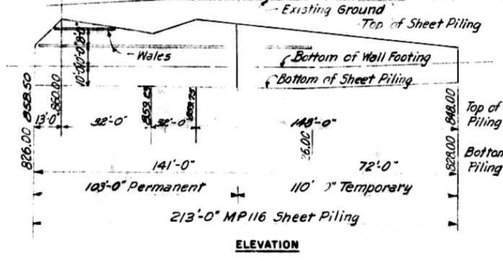
Note: Estimated quantity of Class 1 Excavation includes only amount of excavation below Limits of Roadway Excavation.

SHEET PILING NOTES: All dimensions are given along Rdwy. C-10 Face of Wall.

Top of Sheet Piling Elevations shown are Minimum Elevations. Permanent Sheet Piles cut off two feet (2'-0") below Final Grade Line. The Contractor carried out his construction operation in such a manner as to prevent any displacement of the soil upon which the building is founded and was held responsible for any damage to the building resulting from his operation.

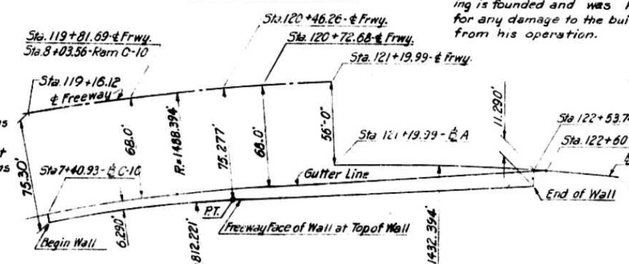


PLAN

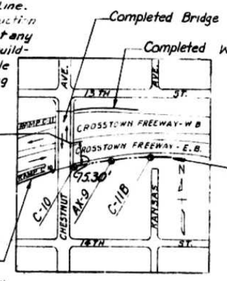


ELEVATION

SHEET PILING DETAILS



GEOMETRIC LAYOUT



LOCATION SKETCH

Completed Wall A-292-2

Bench Mark: P.K. nail in top of wall at joint number 2 retaining Wall A-292-3 855.52

FINISHED

FINISHED

SE RETAINING WALL AT CHESTNUT AVE

STATE ROAD CROSSTOWN FREEWAY FINISHED

KANSAS CITY, MO.

PROJECT NO. I-70-1(12)(RT. I-70) STA. 119+16.12 75.30' RT.

JACKSON COUNTY

SUBMITTED BY J. A. Williams BRIDGE ENGINEER DATE 12-5-1958

APPROVED BY Geo. M. Watts CHIEF ENGINEER DATE 12-5-1958

A-292-4

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

MADE HFS DATE 9-19-58 TRACED DATE

CHECKED CLH DATE 9-25-58 SCALE

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

SHEET 1 OF 1

FINAL PLANS

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