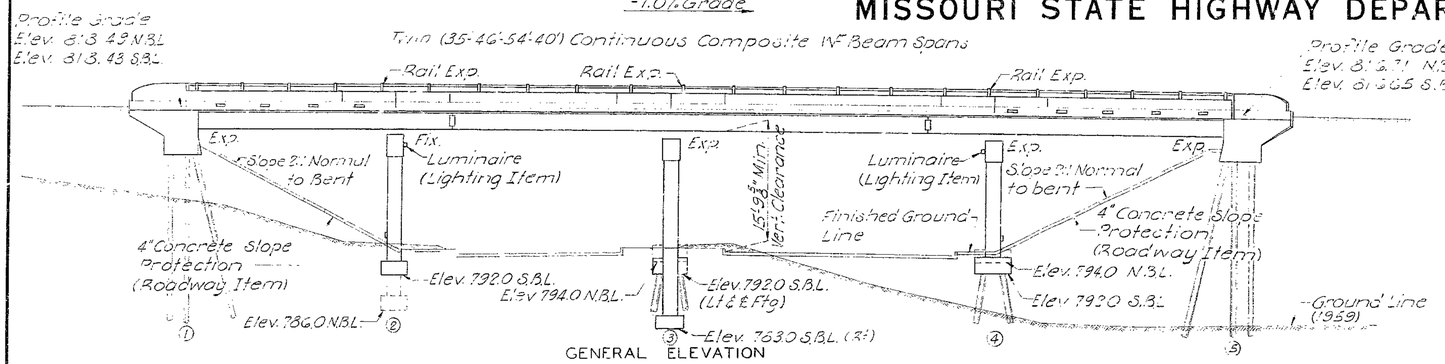
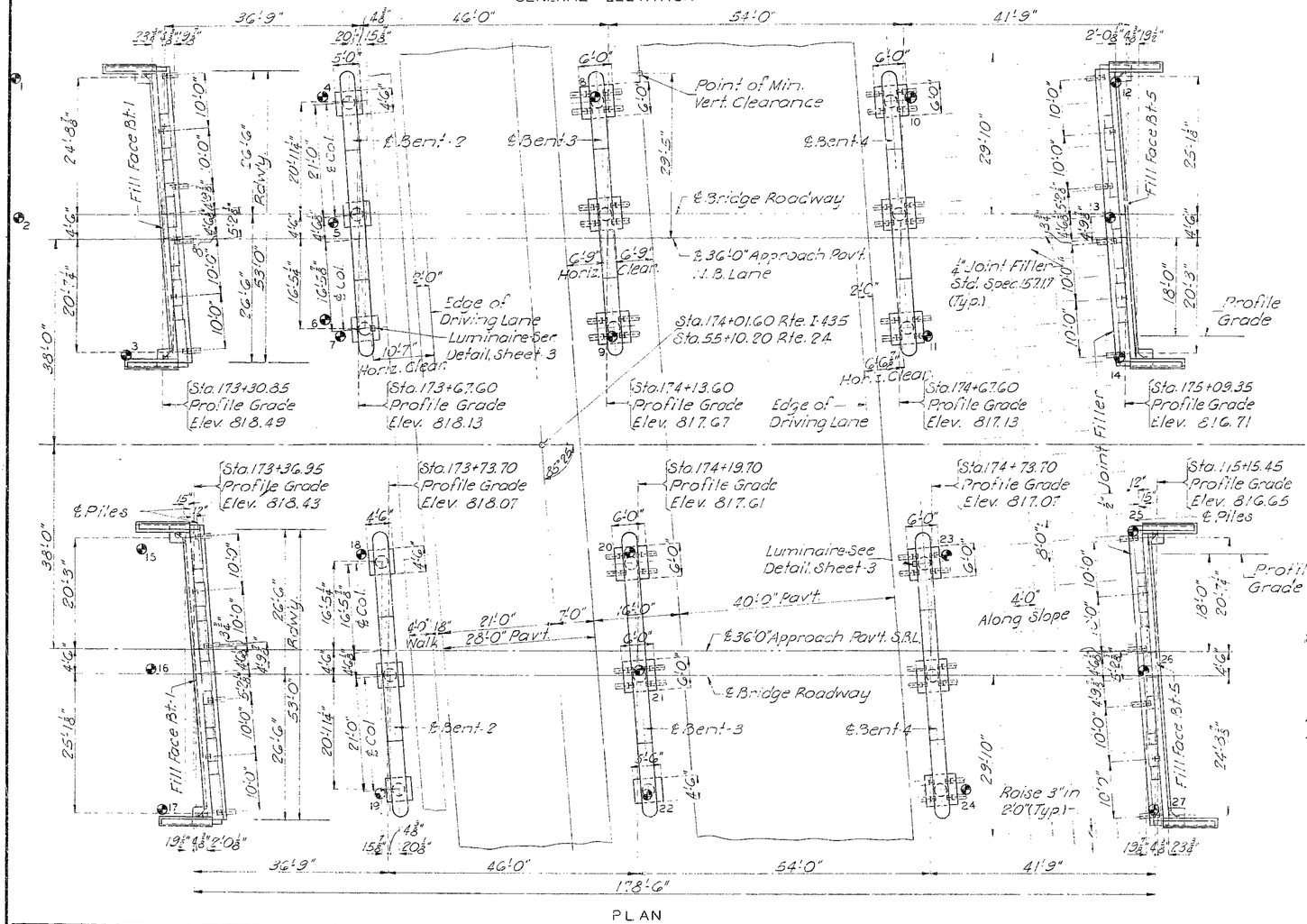
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	100	

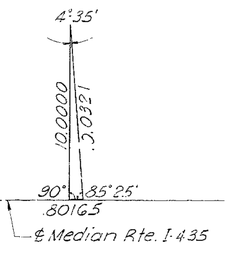


Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents No. 1 & 5 before steel piles are driven at End Bents.

Compacted roadway fill shall be placed of Bent 4 before steel piles are driven at Bent 4.



Note: For Pile and Footing Data see Sheet-3 of 11.



for Boring Data see Sheet-2 of 11.
Indicates location of Boring.

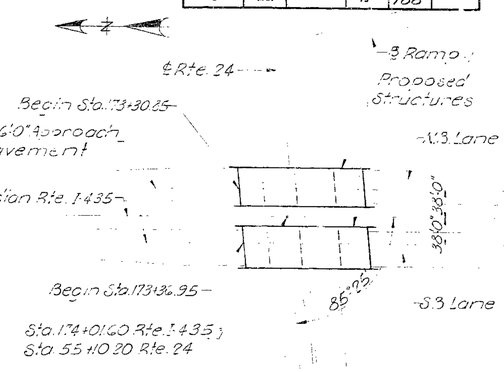
B.M. ℄12 - Elev. 802.02 - R.R. Spike in P.P. 175' Lt. Sta. 173+50.

SUBMITTED BY E. LYN CROWLEY

SIGNATURE E Lyn Crowley

REGISTERED PROFESSIONAL ENGINEER

SERIAL NUMBER E-5993



LOCATION SKETCH

GENERAL NOTES:

Design Specifications:
AASHO.-1965
Design Loading:
H.S 20-44
15#/sq. ft. Future Wearing Surface
Modified 24,000# Tandem Axle
Earth 120# Equivalent Fluid Pressure 30#.
Fatigue Loading: AWS D2.0-66 Formula 5b.
Design Unit Stresses:
Class B Concrete (Substructure) fc = 1,200 psi
Class B1 Concrete (Superstructure) fc = 1,600 psi
Reinforcing Steel fs = 20,000 psi
Structural Steel (A.S.T.M. A36-66) fs = 20,000 psi
Steel Pile (A.S.T.M. A36-66) fs = 9,000 psi
Superstructure deck to be surface sealed
Field connections, High Strength Bolts ⅞" ∅, holes 1⅛" ∅ except as noted.
Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.10.

A minimum vertical clearance of 14'0" from crown of existing lane and a minimum lateral clearance of 28'0" centered on existing lane shall be maintained during construction. (Each Lane)

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.	265	—	265
Steel Piles in Place (10')	Lin. Ft.	2664	—	2664
Class B Concrete	Cu.Yd.	356.2	—	356.2
Class B1 Concrete	Cu.Yd.	—	510.6	510.6
Reinforcing Steel	Lb.	57,235	158,355	215,590
Fabricated Structural Carbon Steel	Lb.	—	311,530	311,530
Painting	Ton	—	153.6	153.6
Bridge Rail (Single Tube Type)	Lin. Ft.	—	70.5	70.5
Conduit System (On Structure)	Lump Sum	1	—	1

Note: All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.

No payment for excavation will be allowed at End Bents 1 & 5.

Excav. for Bt 4 will be measured from the finished ground line.

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-435-1(61) (RTE. 1435) **STA.** 173+30.85 N.B. LANE 173+36.95 S.B. LANE

JACKSON **COUNTY**

SUBMITTED BY O.B. Gaultney BRIDGE ENGINEER DATE 1/26/68

APPROVED BY W. J. Snyder CHIEF ENGINEER DATE 1/26/68

STD. 54.00

A-1750

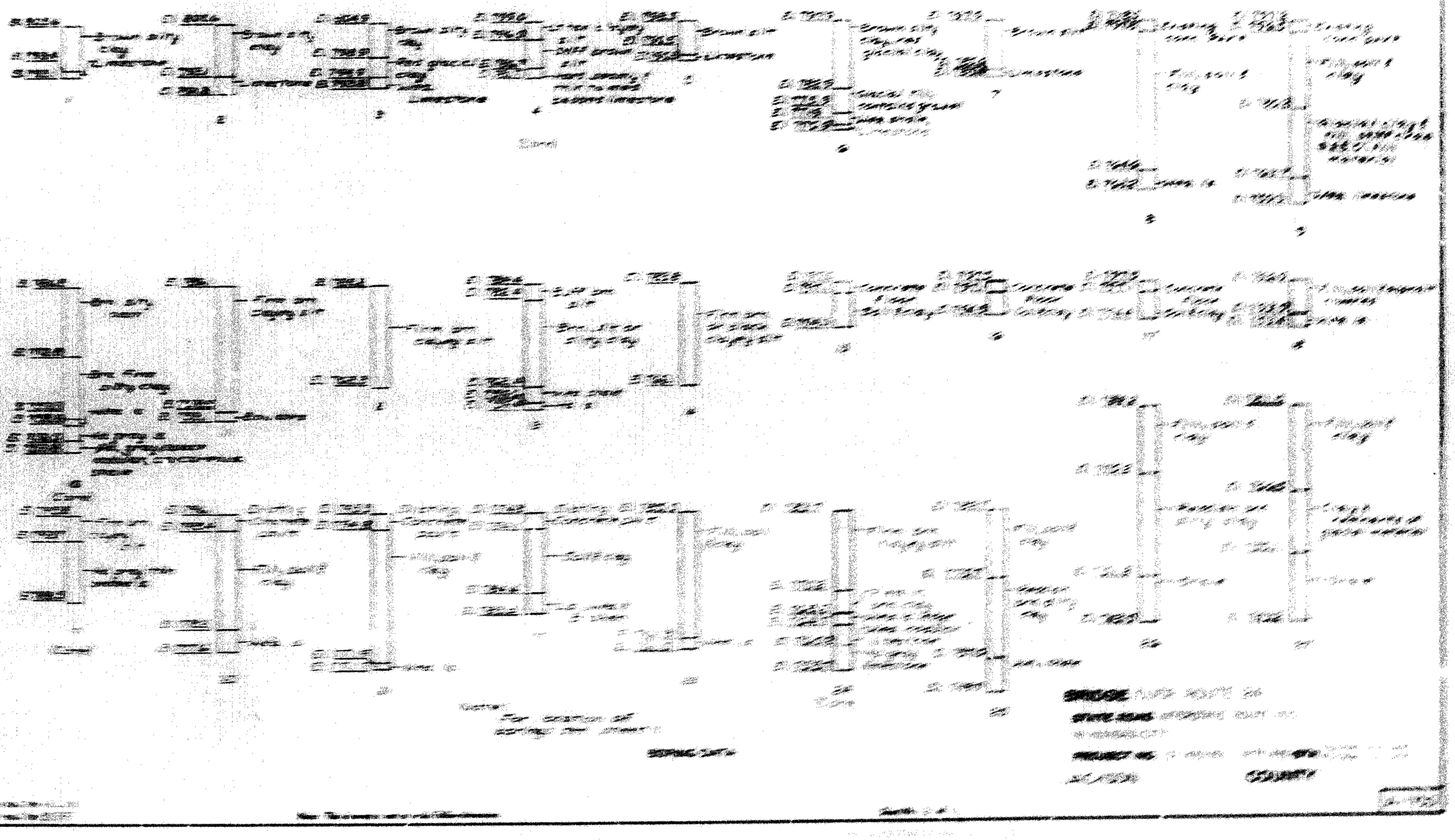
CROWLEY, WADE, MILSTEAD, INC.
ENGINEERS - ARCHITECTS
INDEPENDENCE, MISSOURI

Designed	R.F. OLAND 3/67	Checked	J.E. RIESENMEY 3/67
Detailed	H.H. [illegible] 3/67	Checked	J.E. RIESENMEY 3/67
Quantities	J.K. [illegible] 3/67	Checked	J.E. RIESENMEY 5/67

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

38

MISSOURI STATE HIGHWAY DEPARTMENT



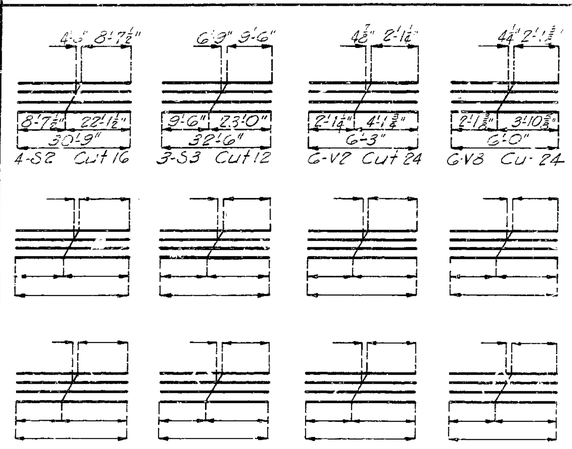
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	102	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION
SUPERSTRUCTURE (BOTH LANES)				
128	#5	3'-3"	C1	Curb
80	#5	3'-3"	C2	"
16	#6	9'-6"	C3	"
8	#6	3'-6"	C4	"
16	#5	23'-6"	C5	"
16	#5	27'-6"	C6	"
16	#6	21'-0"	C7	"
16	#5	9'-3"	R1	End Post
8	#5	6'-0"	R2	"
8	#5	6'-6"	R3	"
8	#5	7'-0"	R4	"
56	#5	7'-6"	R5	"
123	#5	3'-3"	R6	Parapet
36	#5	4'-3"	R7	"
16	#6	25'-6"	R8	"
16	#5	25'-9"	R9	"
32	#5	17'-6"	R10	"
16	#5	30'-3"	R11	"
96	#5	9'-6"	R12	"
3360	#5	28'-6"	S1	Slab
16	#5	30'-9"	S2	"
12	#6	32'-6"	S3	"
330	#4	16'-0"	S4	"
672	#4	30'-6"	S5	"
828	#5	30'-9"	S6	"
4	#4	28'-6"	S7	"
32	#6	6'-0"	H13	End Post
32	#5	6'-0"	D13	End Post
8	#5	6'-3"	D14	" "
8	#5	6'-9"	D15	" "

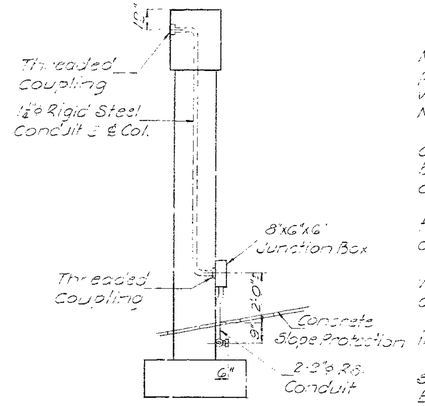
BENDING SKETCHES & CUTTING DIAGRAMS



NO.	SIZE	LENGTH	MARK	2 N.B.L.	2 S.B.L.	3 N.B.L.	3 S.B.L.	4 N.B.L.	4 S.B.L.	LOCATION
INTERMEDIATE BENTS										
162	#8	4'-3"	D1	27	27	27	27	27	27	Footing
36	#5	4'-0"	D2	15	15		6			"
18	#5	5'-9"	D3	18						"
15	#5	6'-3"	D4		15					"
7	#6	6'-3"	D5				7			"
88	#6	7'-0"	D6			24	16	24	24	"
16	#11	54'-0"	G1	2	2	2	2	2	2	Beam
12	#11	55'-9"	G2	2	2	2	2	2	2	"
24	#11	14'-0"	G3	4	4	4	4	4	4	"
48	#6	12'-0"	G4	8	8	8	3	8	8	"
84	#11	27'-9"	G5	14	14	14	14	14	14	"
48	#6	26'-0"	G6	8	8	8	8	8	8	"
48	#7	6'-3"	G7	8	8	8	3	8	8	"
303	#3	8'-0"	P1	69	51	48	57	39	45	Column
27	#8	25'-9"	P2	27						"
27	#8	16'-6"	P3			27				"
27	#8	16'-0"	P4					27		"
27	#8	19'-9"	P5		27					"
18	#8	18'-6"	P6				18			"
9	#8	28'-0"	P7				9			"
27	#8	18'-0"	P8						27	"
438	#5	12'-6"	U4	73	73	73	73	73	73	Beam
60	#4	3'-6"	U5	10	10	10	10	10	10	"
12	#4	3'-0"	U6	2	2	2	2	2	2	"
96	#2	19'-9"	W1	16	16	16	16	16	16	A.B. Wells
END BENTS				1 N.B.L.	1 S.B.L.			5 N.B.L.	5 S.B.L.	
8	#6	28'-6"	H1	4	4			—	—	Backwall
24	#4	28'-3"	H2	4	4			8	8	"
32	#8	56'-5"	H3	8	8			8	8	Beam
16	#6	28'-6"	H4	4	4			4	4	"
16	#6	9'-6"	H5	4	4			4	4	Wing
16	#6	8'-6"	H6	4	4			4	4	"
16	#6	5'-6"	H7	4	4			4	4	"
12	#6	6'-9"	H8	3	3			3	3	"
12	#6	6'-3"	H9	3	3			3	3	"
20	#7	12'-3"	H10	5	5			5	5	Beam
20	#7	12'-0"	H11	5	5			5	5	"
8	#6	28'-6"	H12	—	—			4	4	Backwall
8	#6	9'-9"	T1	4	4			—	—	Wing
8	#6	9'-9"	T2	—	—			4	4	"
216	#4	12'-6"	U1	54	54			54	54	Beam
88	#4	4'-0"	U2	22	22			22	22	"
16	#4	7'-6"	U3	4	4			4	4	"
212	#5	4'-0"	V1	106	106			—	—	Backwall
48	#4	6'-3"	V2	12	12			12	12	Wing
48	#4	6'-0"	V3	12	12			12	12	"
16	#6	7'-9"	V4	4	4			4	4	"
16	#4	4'-6"	V5	4	4			4	4	"
16	#6	2'-9"	V6	4	4			4	4	Beam
212	#5	5'-3"	V7	—	—			106	106	Backwall
48	#4	6'-0"	V8	12	12			12	12	Wing
64	#2	19'-9"	W1	16	16			16	16	A.B. Wells

Note: All dimensions are cut to out of bar.

Note: Hooks and bends shall be in accordance with the A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI-315-65). Two diameter bends shall not be used unless specified in bending diagrams.



DETAILS OF CONDUIT IN COLUMN

Note: for locations of columns to be provided with conduit see Table of variables Sheet No. 5 and Plan Sheet No. 1.

Cost of furnishing and placing conduit and junction boxes shall be included in contract unit price of conduit system on structures.

Wiring and fixtures for lighting to be furnished and installed by others.

Shift reinforcing steel in field where necessary to clear conduit and junction boxes.

For details of underdeck lighting and wiring see Electrical Plans.

All junction boxes shall be surface mounted and equal to O.Z. Elec. Mfg. Co. Type "YL" (Watertight)

PILE AND FOOTING DATA - N. B. LANE

	BENT NO.	1	2	3	4	5
BEARING PILE	Pile Type & Size	10BP42	—	10BP42	10BP42	10BP42
	Number	6	—	12	12	6
	Approximate Length Ft.	19	—	33	38	52
	Design Bearing Tons	31.8	—	41	42.2	33.1
	Hammer Energy Reqd. Ft. Lbs.	7,900	—	9,700	9,900	8,200
SPREAD FOOTINGS	Foundation Material	—	Rock	—	—	—
	Design Bearing Tons/Sq. Ft.	—	7.1	—	—	—

PILE AND FOOTING DATA - S. B. LANE

	BENT NO.	1	2	3	4	5
BEARING PILE	Pile Type & Size	10BP42	—	10BP42	10BP42	10BP42
	Number	8	—	8	12	8
	Approximate Length Ft.	19	—	17Lt. 23½	33	67
	Design Bearing Tons	31.8	—	41	41.6	33.1
	Hammer Energy Reqd. Ft. Lbs.	7,900	—	9,700	9,750	8,200
SPREAD FOOTINGS	Foundation Material	—	Rock	Rock-Rt	—	—
	Design Bearing Tons/Sq. Ft.	—	7.3	6.8	—	—

Note: Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).

All pile shall be driven to practical refusal.

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I- 435-1(61) (RTE. I435) **STA.** 173+30.85 N. B. LANE, 173+36.92 S. B. LANE

JACKSON **COUNTY**

A-1750

No. 90.3	Revised
June 1961	Dec. 1964

DETAILED MARCH 1967 BY C.B.

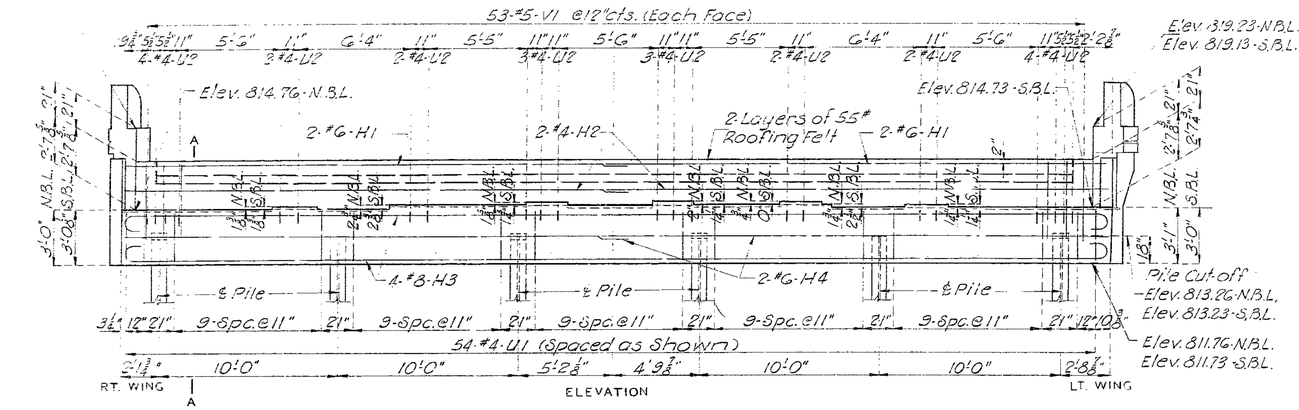
CHECKED MARCH 1967 BY J.E.R.

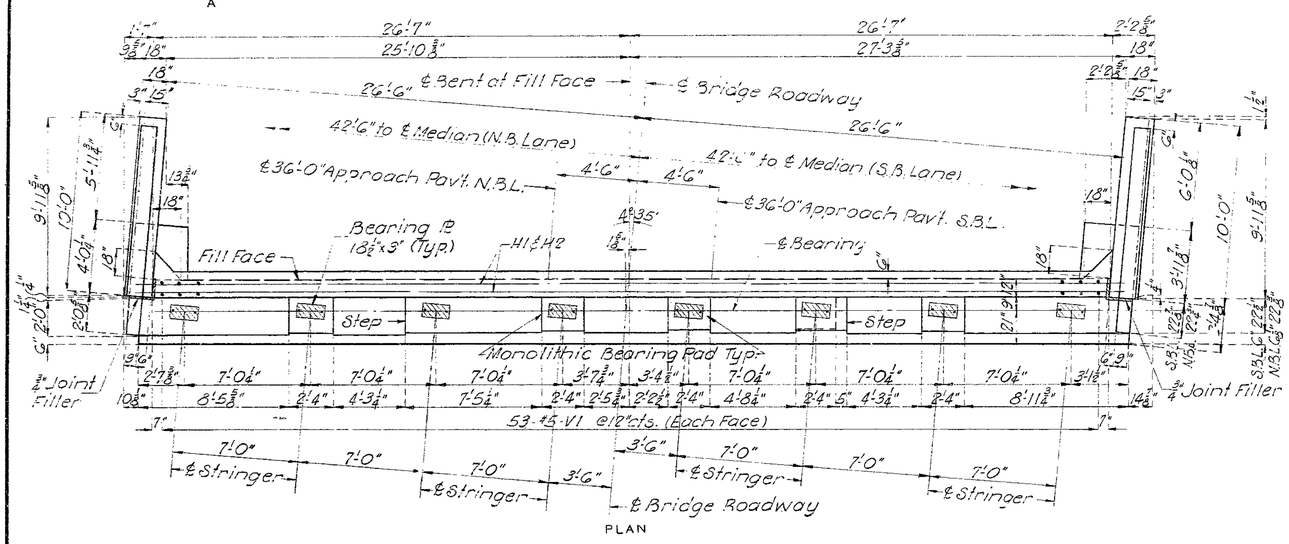
Note: This drawing is not to scale. Follow dimensions.

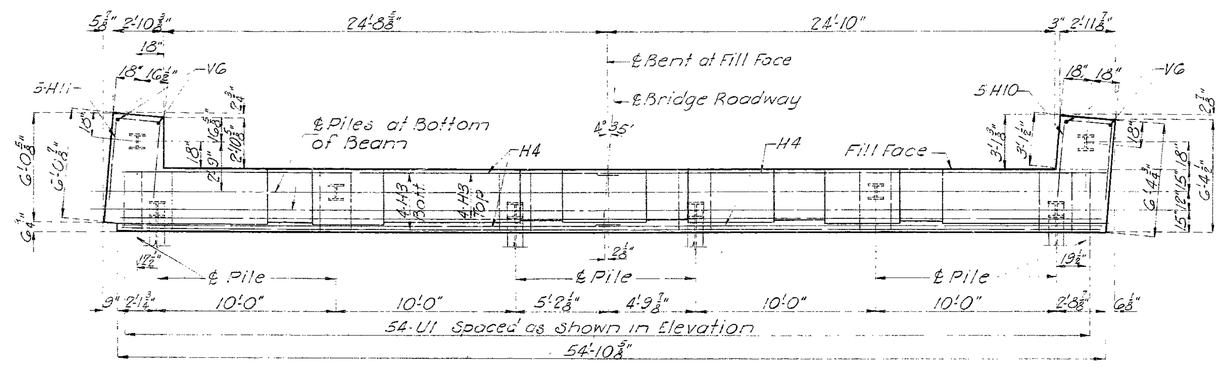
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	103	

Note For curb and end post details and reinforcing see Sheet No. 11.

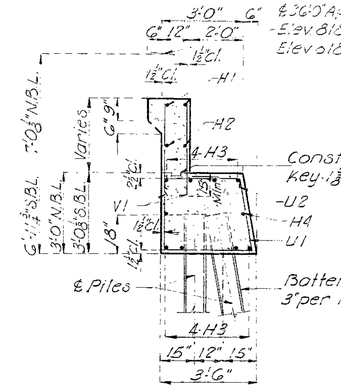




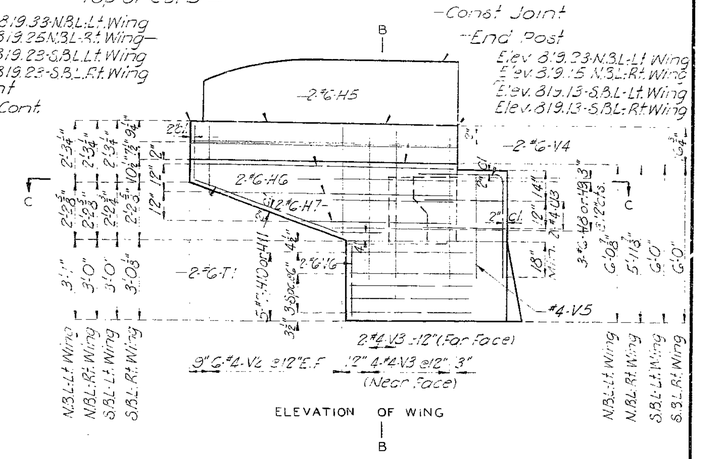


PLAN OF BEAM

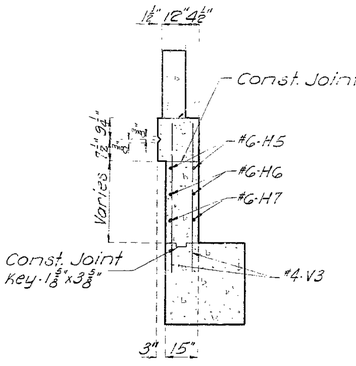
DETAILS OF END BENT NO. 1



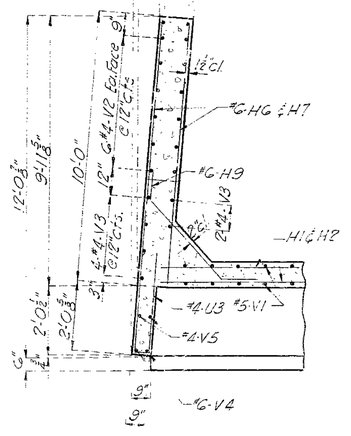
SECTION A-A



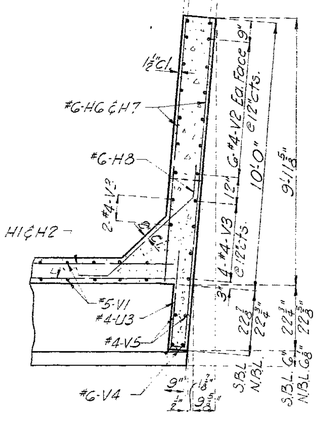
ELEVATION OF WING



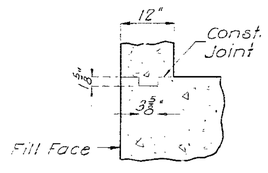
SECTION B-B



SECTION C-C (RT.)



SECTION C-C (LT.)



DETAIL OF KEYED CONST. JOINT

Note: Fill at end bent No.1 shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

H8 & H9 bars to be bent in field to slope of wings if necessary.

BRIDGE OVER ROUTE 24

STATE ROAD: INTERSTATE ROUTE 435 IN KANSAS CITY

PROJECT NO. I - 435-1(61) (RTE. I435) **STA.** 171+30.85 N.B. LANE 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

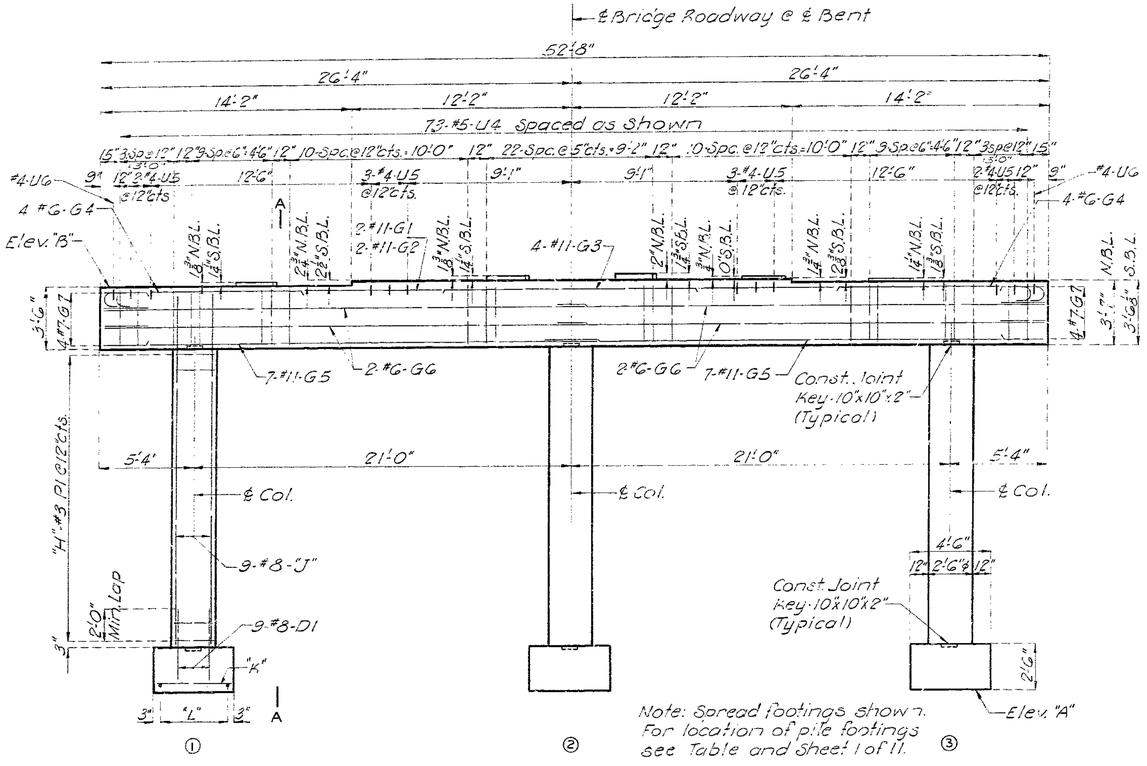
DETAILED MARCH 1967 BY M.H.S.

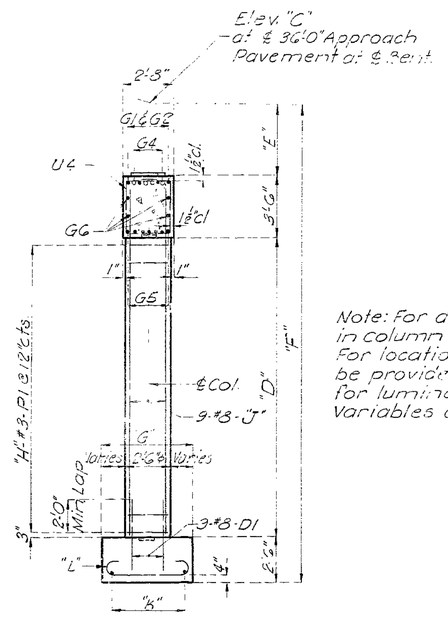
CHECKED MARCH 1967 BY J.E.R.

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

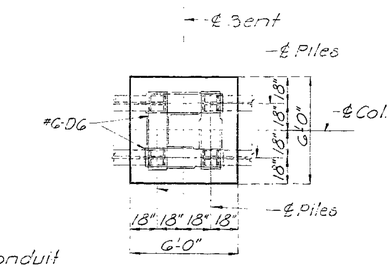
MISSOURI STATE HIGHWAY DEPARTMENT

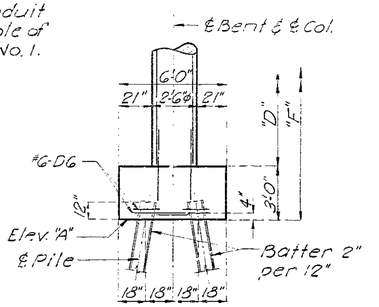
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	104	

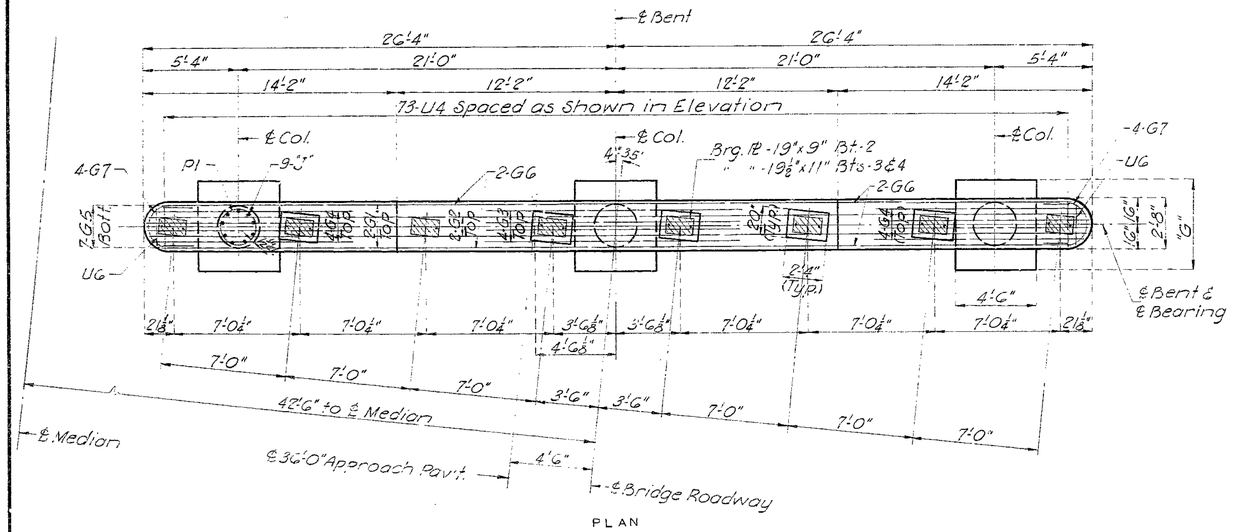




Note: For details of conduit in column see Sheet No. 3. For locations of columns to be provided with conduit for luminaires see Table of Variables and Sheet No. 1.







DETAILS OF INTERMEDIATE BENTS NO. 2, 3, & 4

TABLE OF VARIABLES

LANE	NORTH BOUND									SOUTH BOUND								
BENT	2			3			4			2			3			4		
COL.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
ELEV. "A"		786.0			794.0			794.0			792.0			792.0	783.0		792.0	
ELEV. "B"		814.66			813.87			813.34			814.63			813.84			813.31	
ELEV. "C"		818.41			817.95			817.41			818.35			817.89			817.35	
"D"		22'-7⅜"			13'-4½"			12'-10⅝"			16'-7⅝"			15'-4⅝"	24'-10⅝"		14'-3⅛"	
"E"		3'-9"			4'-0⅜"			4'-0⅜"			3'-8⅜"			4'-0⅜"			4'-0⅜"	
"F"		32'-4⅜"			23'-11⅝"			23'-4⅜"			26'-4¼"			25'-10⅛"	34'-10⅛"		25'-4¼"	
"G"		5'-0"			See Pile Footing			See Pile footing			4'-6"			See Pile Ftg.	5'-6"		See Pile Footing	
"H"		23			14			13			17			16	25		15	
"J"		P2			P3			P4			P5			P6	P7		P8	
"K"		5-#5-D2			—			—			5-#5-D2			—	6-#5-D2		—	
"L"		6-#5-D3			—			—			5-#5-D4			—	7-#6-D5		—	
*Conduit	X	—			—			—			—			—		X	—	

* Note: See Sheet No. 3 for details of conduit in columns.

Note: Details of bents are shown looking north for north bound lane and south for south bound lane.

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I- 435-1(61) (RTE.I435) **STA.** 173+30.85 N.B. LANE, 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 BY HHB

CHECKED MARCH 1967 BY JER.

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

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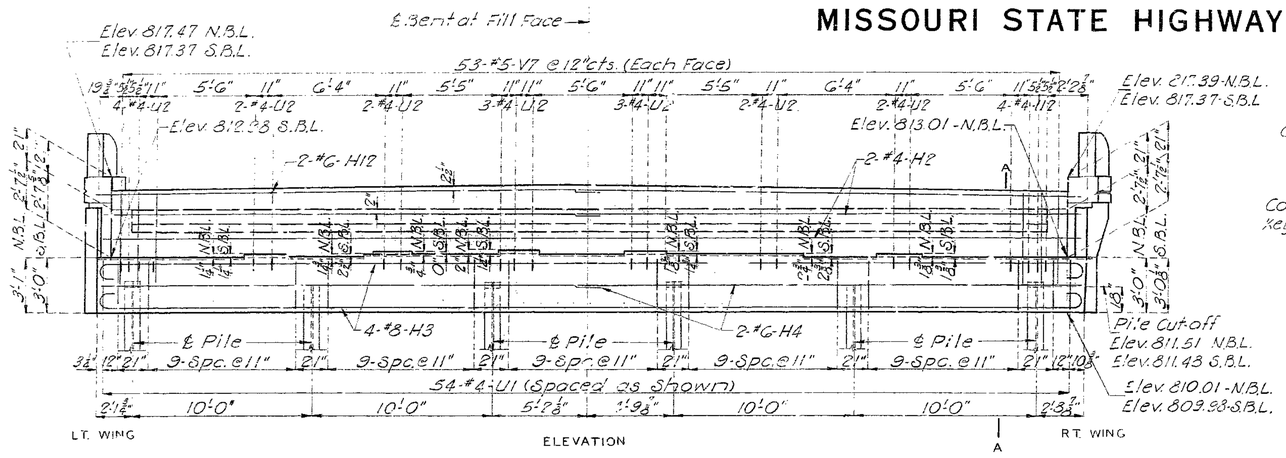
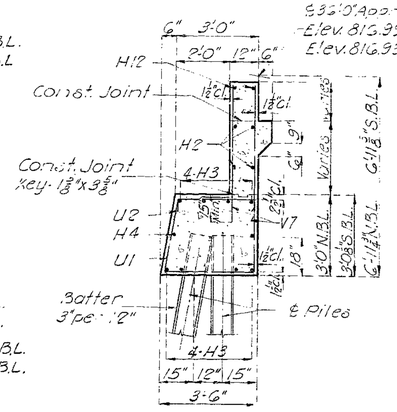
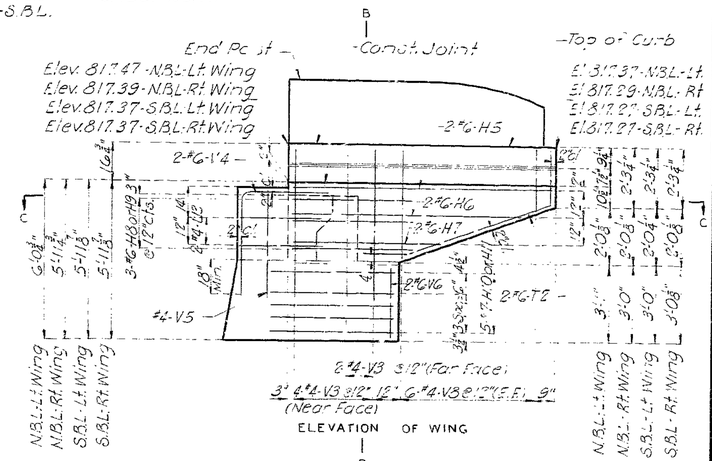
MISSOURI STATE HIGHWAY DEPARTMENT

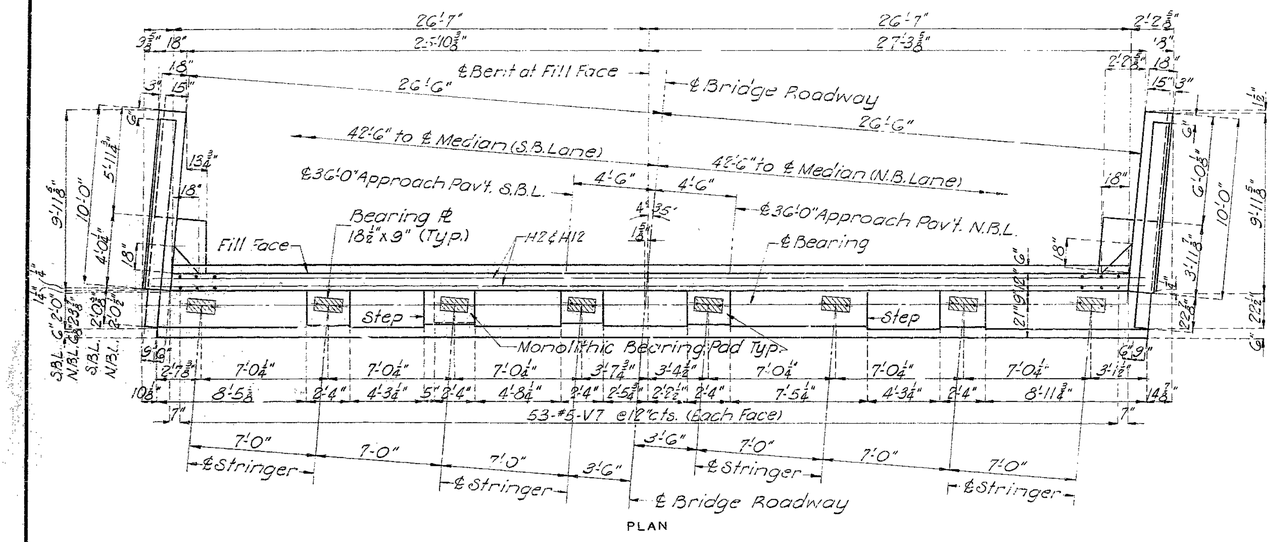
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	105	

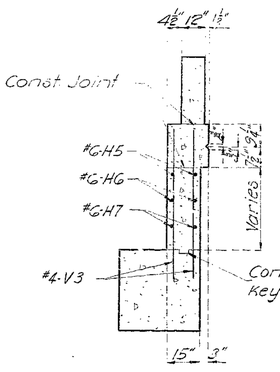
Note: For curb and end post details and reinforcing see Sheet No. 11.

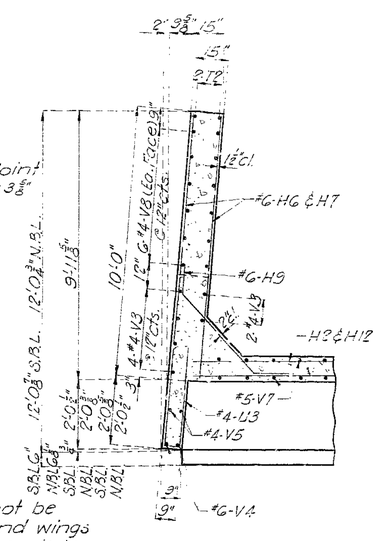


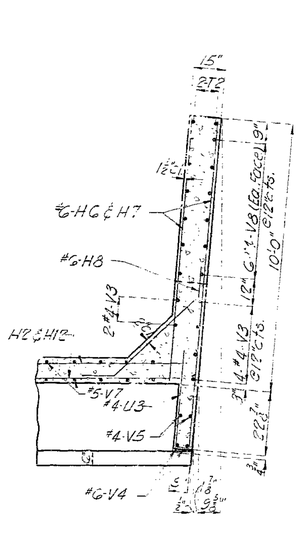


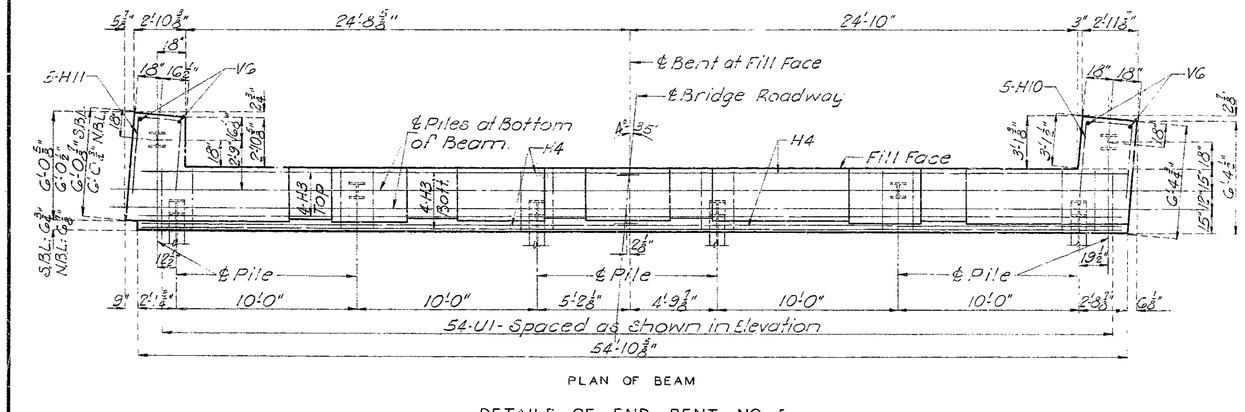












Note: Fill at end bent No.5 shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

Top of backwall and expansion device for end bent No.5 to conform to crown of roadway slab.

Backwall above upper construction joint bent No.5 shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.

For Detail of keyed construction joint see Sheet No. 4.

H12 bars in backwall and H8 & H9 bars in wing to be bent in field to slope of wings if necessary.

BRIDGE OVER ROUTE 24

STATE ROAD: INTERSTATE ROUTE 435 IN KANSAS CITY

PROJECT NO. I-435-1(61) (RTE 1435) **STA** 173+30.85 N.B. LANE, 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

DETAILS OF END BENT NO. 5

DETAILED MARCH 1967 **BY** H.H.B.

CHECKED MARCH 1967 **BY** J.E.R.

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

Sheet No. 6 of 7.

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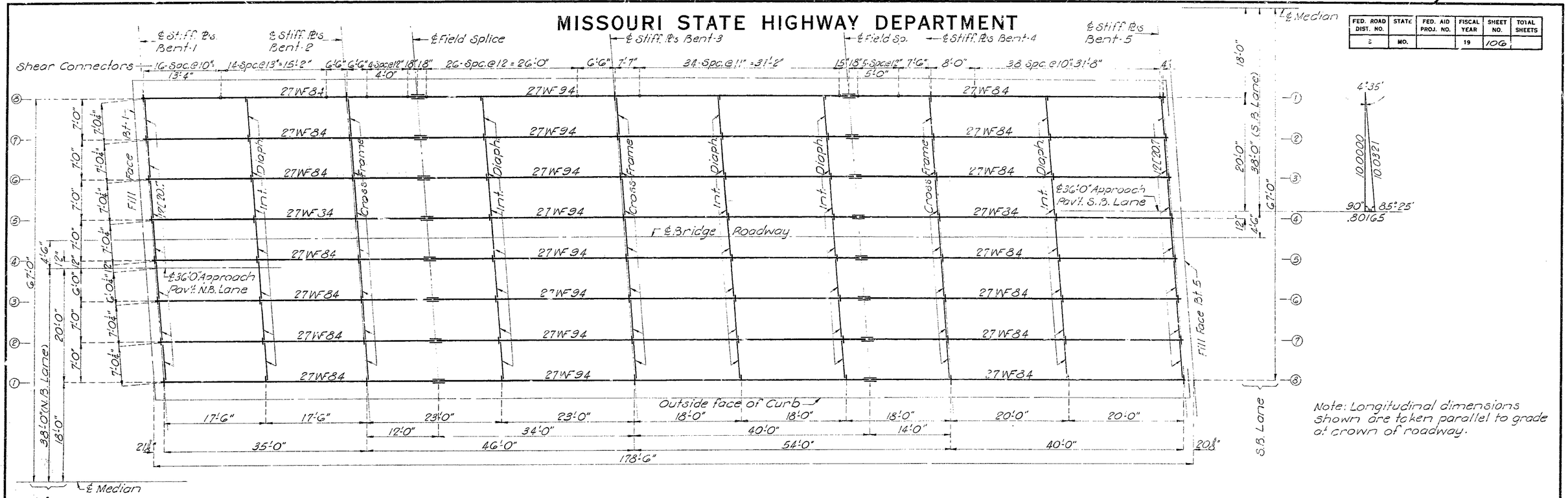
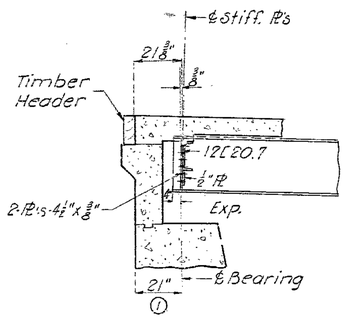
MISSOURI STATE HIGHWAY DEPARTMENT

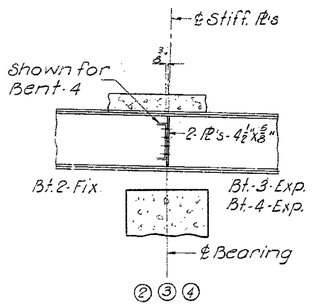
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	MO.		19	106	

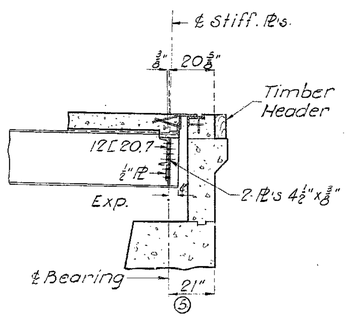


Note: Longitudinal dimensions shown are taken parallel to grade at crown of roadway.

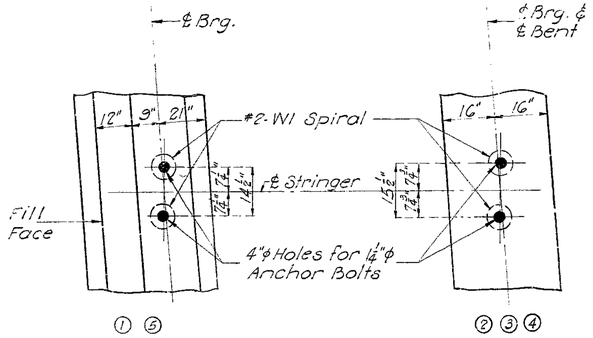
PLAN OF STRUCTURAL STEEL







PART LONGITUDINAL SECTION



PART ANCHOR BOLT PLAN

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-435-1(61) (RTE.1435) **STA.** 173+30.85 N.B. LANE, 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 **BY** H.H.B.

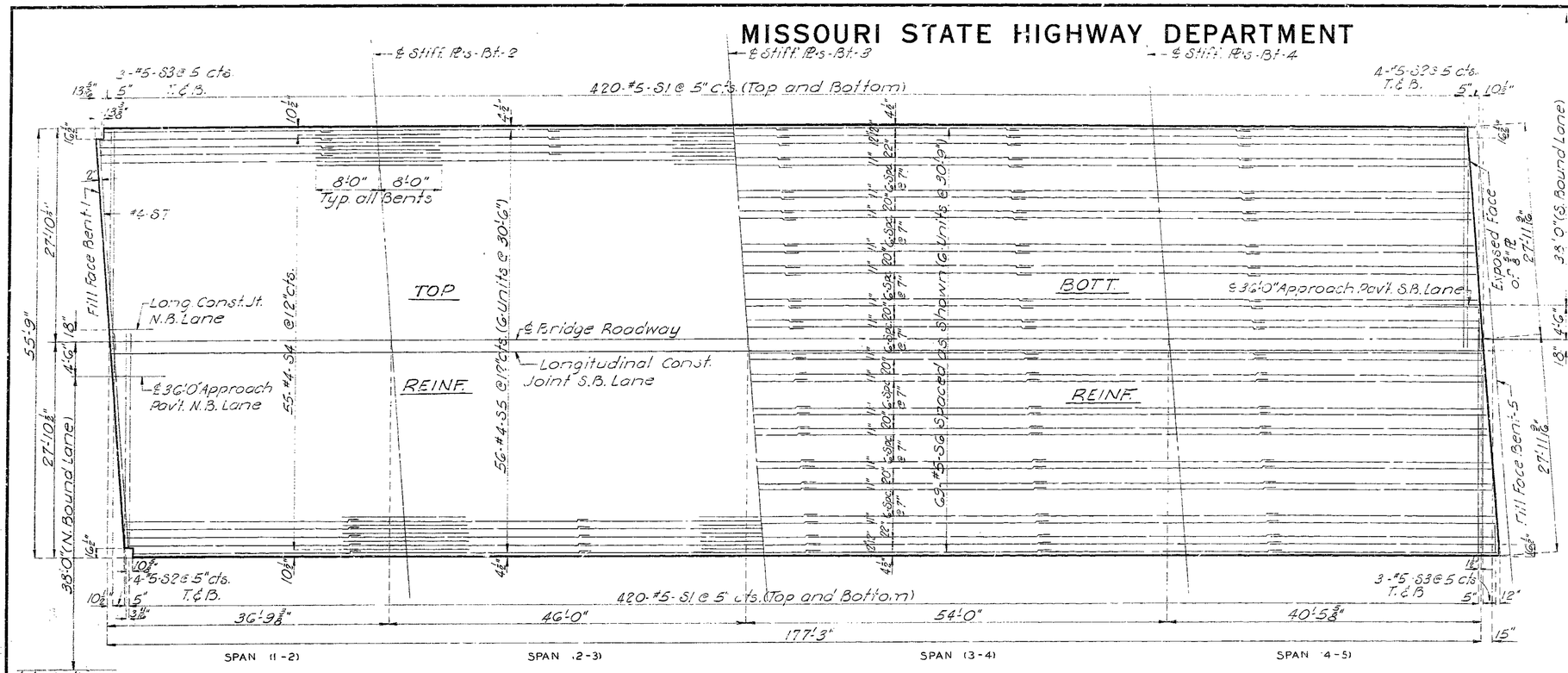
CHECKED MARCH 1967 **BY** J.E.R.

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

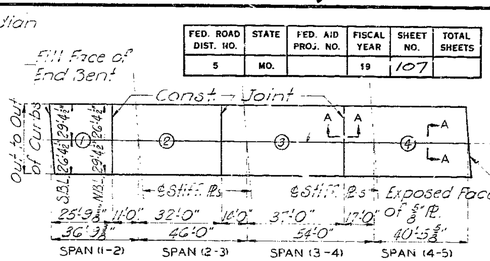
Sheet No. 7 **of** 11.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	107	



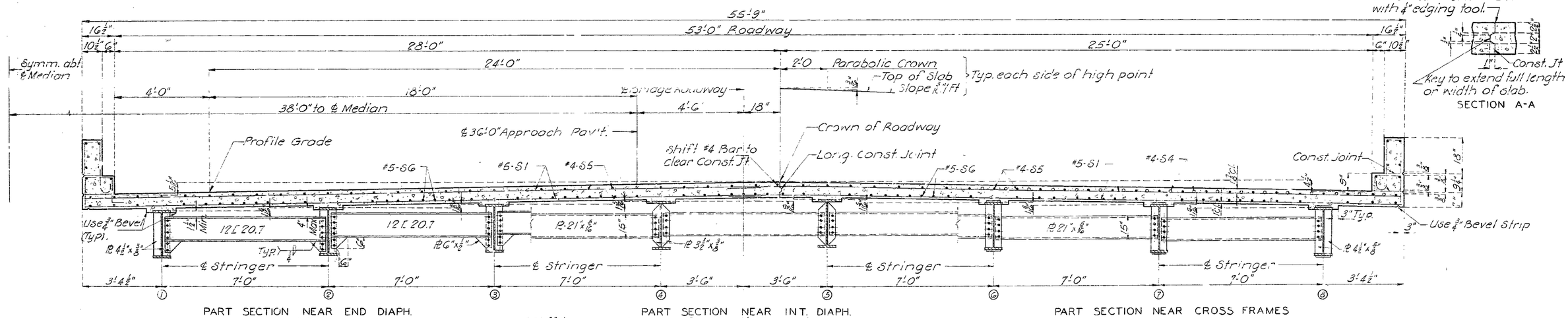
PLAN OF SLAB SHOWING REINFORCING STEEL



	Sequence of Pours Direction			
Basic Sequence	1 End to 2	2 1 to 3	3 2 to 4	4 3 to End
Alternate "A" Pours	1+2 End to 3		3 2 to 4	4 3 to End
Alternate "B" Pours	1+2 End to 3		3+4 2 to End	
Alternate "C" Pours	1+2+3+4 End to End			

SLAB POURING SEQUENCE

Note: The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 25 cubic yards per hour. He shall observe the basic pouring sequence, unless he can demonstrate to the engineer that he can pour and satisfactorily finish one of the longer alternate pours. Finishing machine loads will not be permitted on concrete less than 48 hours old.

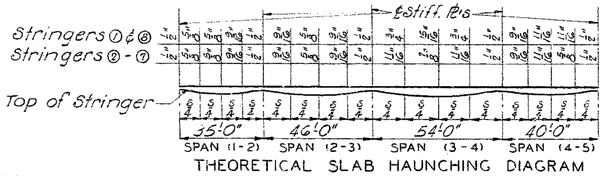


Finish each side of Joint with ¼" edging tool.

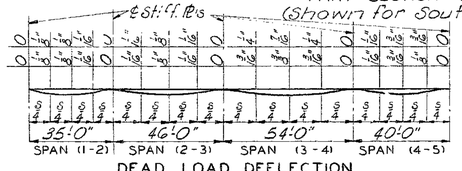
PART SECTION NEAR END DIAPH.

PART SECTION NEAR INT. DIAPH. (Shown for South Bound Lane)

PART SECTION NEAR CROSS FRAMES



THEORETICAL SLAB HAUNCHING DIAGRAM



DEAD LOAD DEFLECTION

13.5% Int. Strs. & 11% Ext. Strs. Structural Steel.

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

Note: Longitudinal dimensions are taken Parallel to grade at crown of roadway.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than 1" from ℄ plate at expansion device.

Min lap for #4 bar is 12", for #5 bar is 15" & for #6 bar is 18".

For details of curb, parapet and handrail not shown see Sheet No. 11 of 11.

Sheet No. 8 of 11.

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I - 435-1(61) (RTE. 1435) **STA.** 173+30.85 N. B. LANE, 173+36.95 S. B. LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 BY H.H.P.

CHECKED MARCH 1967 BY J.E.R.

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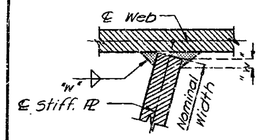
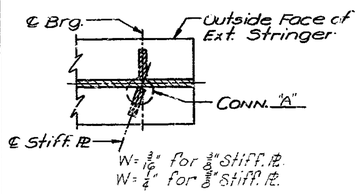
MISSOURI STATE HIGHWAY DEPARTMENT

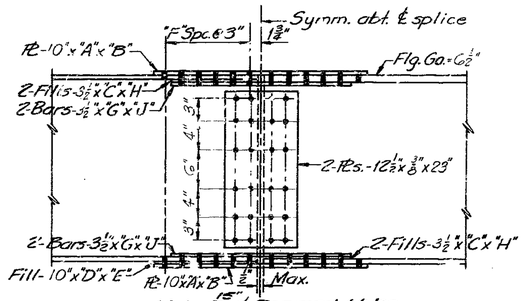
FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	108	



CONN. "A"



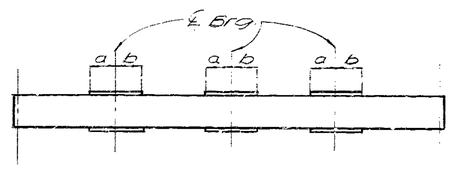
WELDING DETAILS



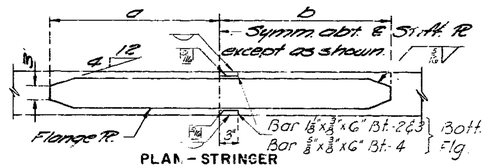
Note: 15/16" ϕ Reamed Holes For 7/8" High Strength Bolts

	"A"	"B"	"C"	"D"	"E"	"F" Spcs.	"G"	"J"	"H"
27WF 84 to 94	11/16"	20 1/2"	12 Ga.	9/16"	12"	3	1/2"	18 1/2"	9"

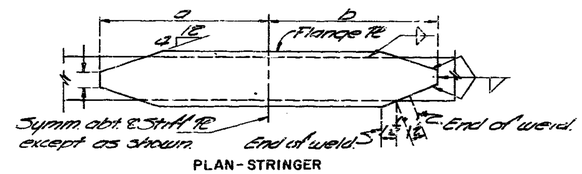
FIELD SPLICE DETAILS



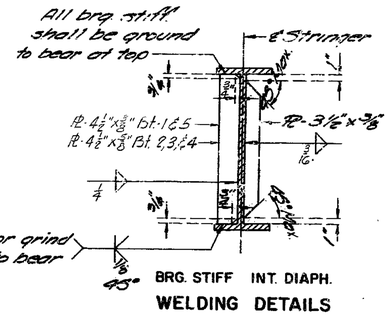
ELEVATION OF STRINGER



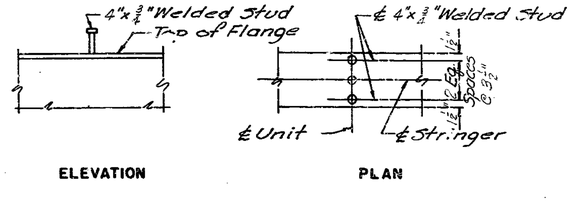
PLAN - STRINGER



PLAN - STRINGER



ANCHOR BOLT WELL DETAIL



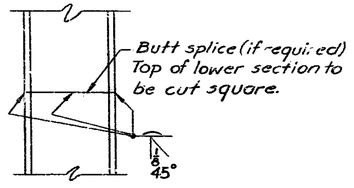
ELEVATION PLAN

BRG. STIFF INT. DIAPH. WELDING DETAILS

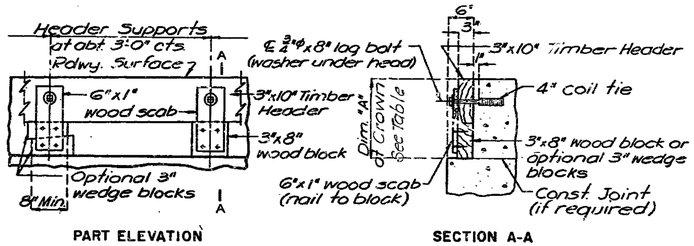
SHEAR CONNECTOR DETAILS

TABLE OF FLANGE PLATE DETAILS						
	INT. STRINGER			EXT. STRINGER		
BENT NO.	℄ SIZE	a	b	℄ SIZE	a	b
2	7"x 3/4"	3'0"	3'0"	7"x 3/4"	3'0"	3'0"
3	7"x 3/4"	6'0"	4'0"	7"x 3/4"	6'0"	4'0"
4	8"x 3/4"	5'0"	10'0"	8"x 3/4"	5'0"	10'0"

FLANGE PLATE DETAIL
WIDE FLANGE



DETAIL OF STEEL PILE SPLICE



PART ELEVATION SECTION A-A

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

DETAILS OF TIMBER HEADER

DIM. "A"			
BENT 1		BENT 5	
N.B.L.	S.B.L.	N.B.L.	S.B.L.
1'5"	1'4 7/8"	1'4 3/4"	1'4 5/8"

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I - 435-1(61) (RTE 1435) **STA.** 173+30.85 N B. LANE, 173+36.95 S B. LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 BY H.F.B.

CHECKED MARCH 1967 BY J.E.R.

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

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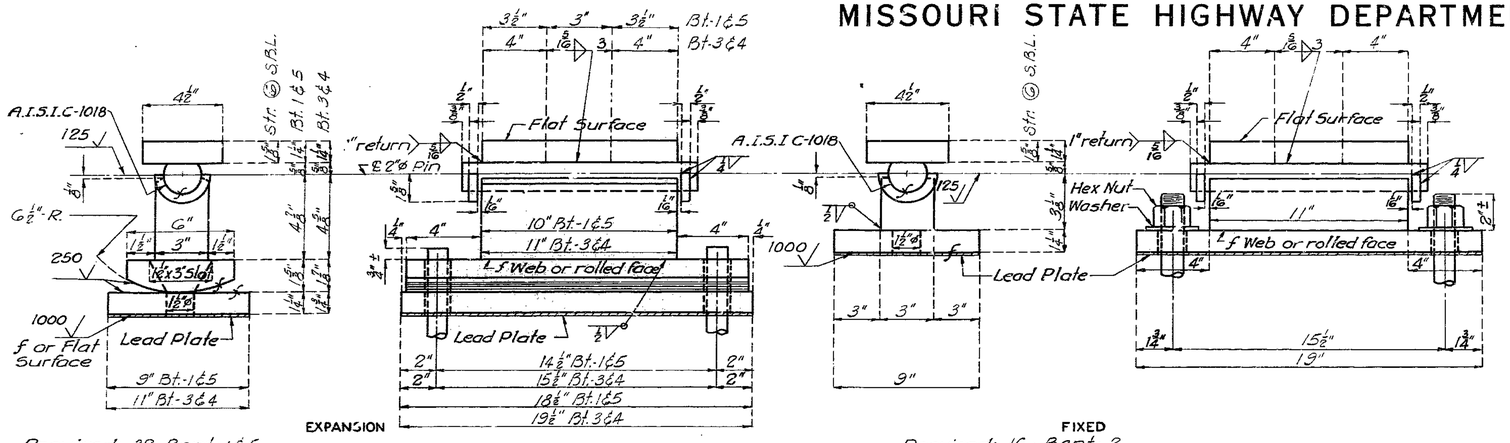
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	102	



NOTES: TYPE "D" BEARINGS

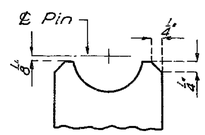
Lead plates under bearings shall be approximately ⅛" thickness and weigh 8#/ sq. ft. Cost of lead plates shall be included in price bid for other items.

"Estimated weight" does not include weight of anchor bolts.

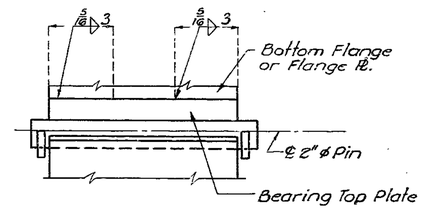
Rockers and pedestals shall be machined after welding.

Where flat surface is indicated, tolerance shall be .003 in/in in any direction.

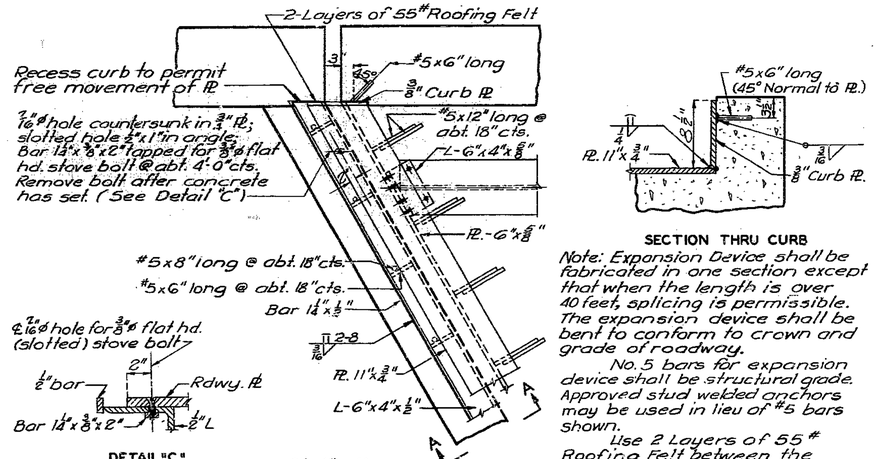
Anchor Bolts for Type "D" Bearings shall be 1¼"ø swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.



END VIEW OF WEB EXPANSION BEARING



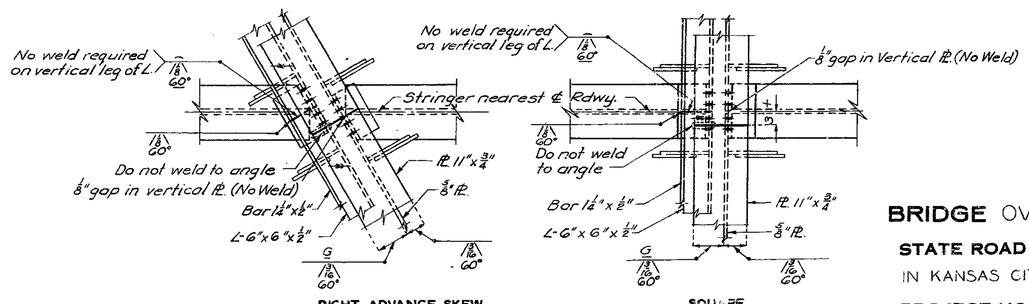
WELDING DETAILS



Note: Expansion Device shall be fabricated in one section except that when the length is over 40 feet, splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.

No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.

Use 2 Layers of 55# Roofing Felt between the sliding contact surface of curb plate and concrete backwall.



PERMISSIBLE FIELD SPLICE AT INT. BENT
(End Bent Similar)

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I - 435-1(61) (RTE I435) **STA.** 173+30.85 N B LANE, 173+36.95 S. B LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 BY H.H.B

CHECKED MARCH 1967 BY J. E. R.

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

Sheet No. 10 of 11.

GENERAL HANDRAIL NOTES:

All handrail posts shall be set normal to grade.

Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet.

Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.

All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.

The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.

All fillets 1/4" except as noted.

All drafts 3° except as noted.

Pipe rail to be fabricated in a minimum of 2 panel lengths.

Omit set screw on side adjacent to filled Joint in parapet and curb at all expansion posts.

Top of curbs and parapets to be built parallel to grade with curb and parapet Joints (except at end posts) normal to grade.

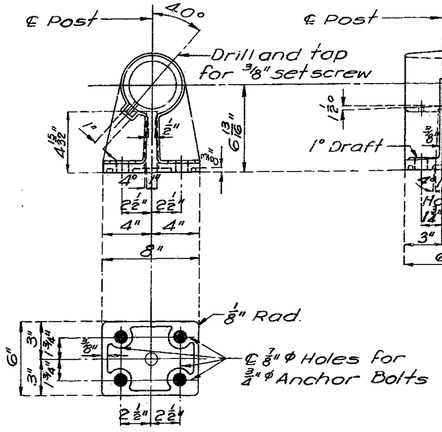
Concrete end posts to be vertical.

All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.

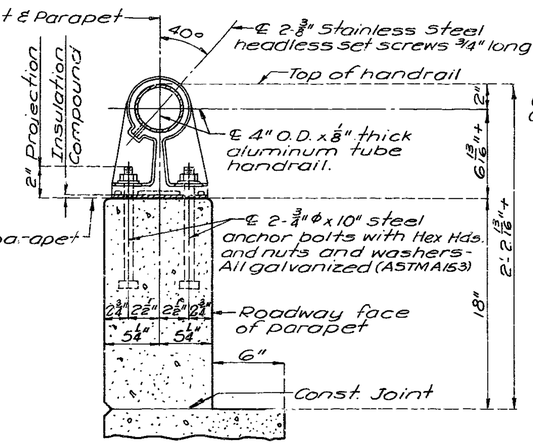
If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.

Integrally cast test coupons and a coat of clear lacquer specified in Std Spec. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.

MISSOURI STATE HIGHWAY DEPARTMENT



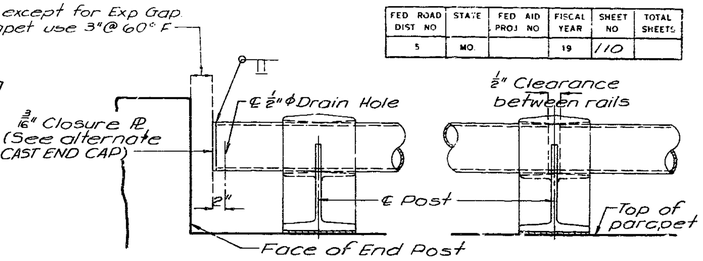
POST DETAILS



SECTION THRU HANDRAIL

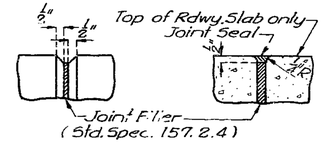
2" Min. except for Exp Gap in parapet use 3" @ 60° F

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	110	



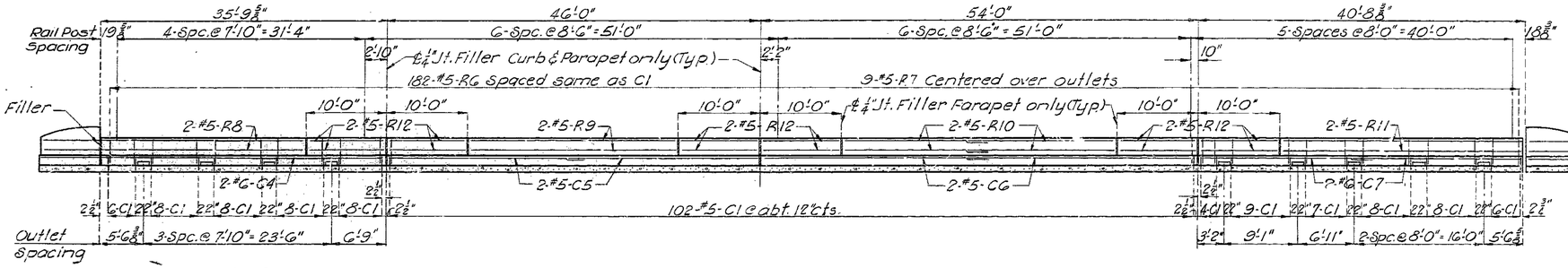
CAST END CAP
(Drive Fit Type)

TYPICAL HANDRAIL DETAILS



FILLED JOINT DETAILS

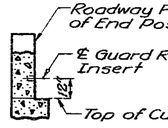
SINGLE TUBE ALUMINUM RAILING



SPAN (1-2) SPAN (2-3) SPAN (3-4) SPAN (4-5)

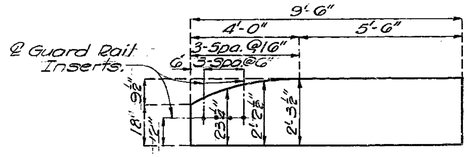
Note: Post spacing is at top of parapet. Outlet spacing is at top of slab.

SECTION NEAR LEFT CURB AND PARAPET
RIGHT CURB AND PARAPET SIMILAR



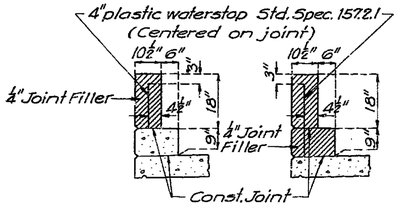
SECTION H-H

Note: Anchors for attaching guard rail shall be 3/4" threaded malleable iron (Galv.) inserts having a Min. depth of 3 1/2" and filled with a plastic closing plug. Cost for furnishing & installing inserts & plugs will be included in price bid for other items.



END POST ORDINATES

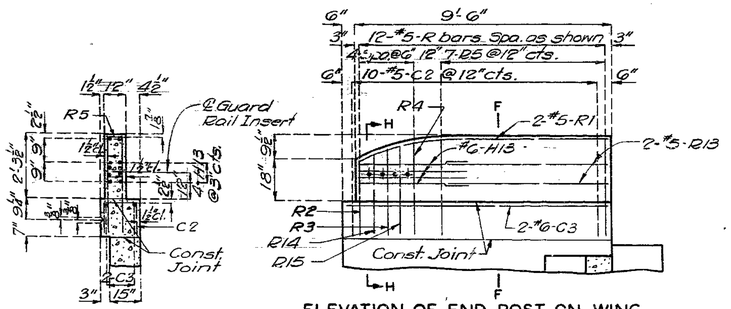
Note: For horizontal curb and parapet bars use minimum lap of 15" for #5 and 18" for #6.



Note: Plastic waterstop shall be placed in all parapet and curb filled joints (Except at end bents.)

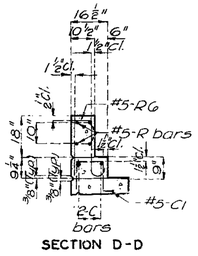
Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

DETAILS OF PLASTIC WATERSTOP



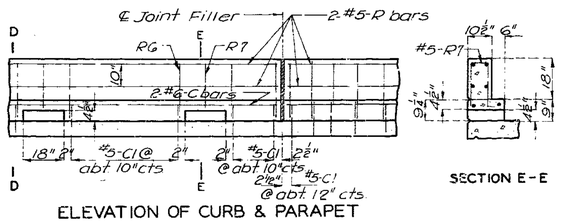
SECTION F-F

ELEVATION OF END POST ON WING



SECTION D-D

Note: When curb outlets are omitted space #5-C1 bars at abt. 12" cts.



ELEVATION OF CURB & PARAPET

SECTION E-E

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I- 435-1(61) RTE. I 435 **STA.** 173+30.85 N.B. LANE 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

STD. 15.2	REVISED
MAR. 1964	JAN. 1967

DETAILED MAY 1967 BY H.H.B.

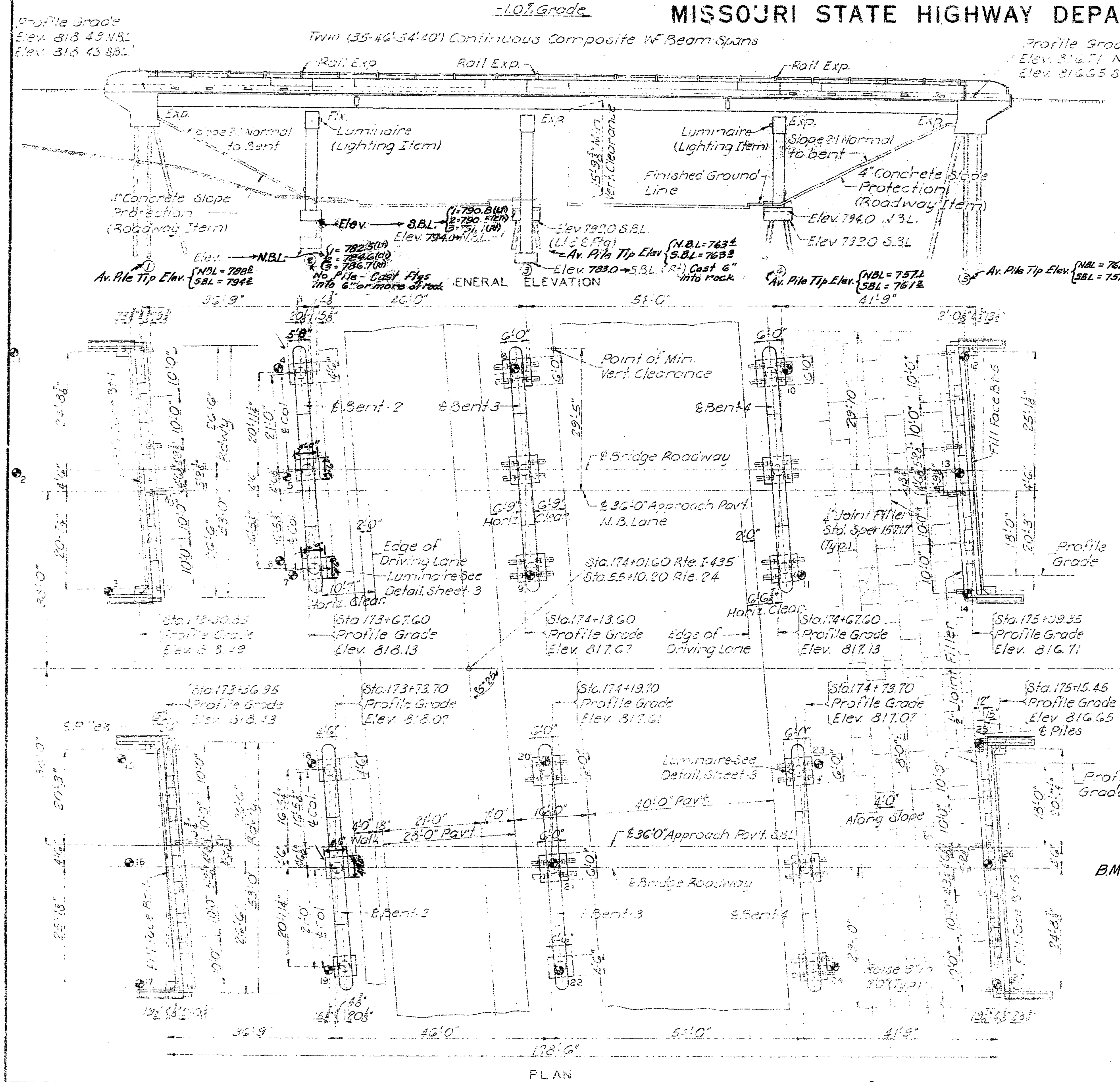
CHECKED MAY 1967 BY J.E.R.

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

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	100	

FINAL PLANS

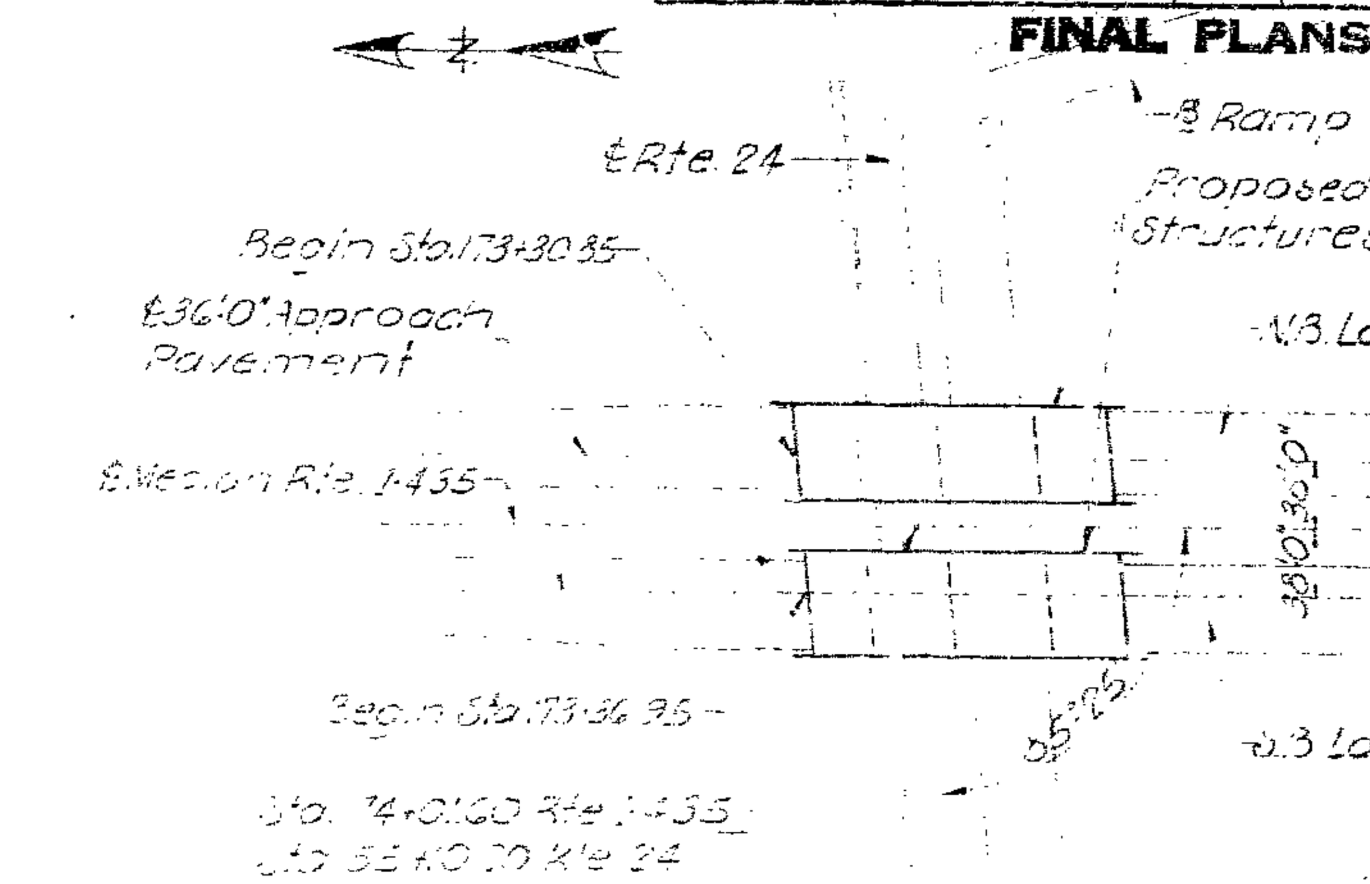


Note: Compacted roadway fill (full roadway width) **was** placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents No. 1 & 5 before steel piles driven at End Bents.
Compacted roadway fill placed at Bent 4 before steel piles **were** driven at Bent 4.

Note: For Pile and Footing Data see Sheet 3 of 11.

For Boring Data see Sheet 2 of 11.
⊕ Indicates location of Boring

B.M.'s – □ @ End of NW wing curb of SBB Abut. # 1, 70' Rt. Sta. 173+30 – Elev. = 819.22
□ @ End of S.W. wing curb of SBB Abut. # 4, 70' Rt. Sta. 175+28 – Elev. = 817.31



LOCATION SKETCH

GENERAL NOTES:
Design Specifications:
AASHO 1965
Design Loading:
HS20-44
Superstructure work **was** ...
Field connections, high strength bolts ...
Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.10.
A minimum vertical clearance of ... of existing lane and a minimum lateral clearance of 28'0" centered on existing lane **was** maintained during construction.

FINAL QUANTITIES				
ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation for Structures	Cu.Yd.	250.0	—	250.0
Steel Piles in Place (10")	Lin.Ft.	2672	—	2672
Class B Concrete	Cu.Yd.	358.5	—	358.5
Class B1 Concrete	Cu.Yd.	—	510.6	510.6
Reinforcing Steel	Lb.	57,705	158,435	216,140
Fabricated Structural Carbon Steel	Lb.	—	315,900	315,900
Painting	Ton	—	155.8	155.8
Bridge Rail (Single Tube Type)	Lin.Ft.	—	705	705
Conduit System on Structure	Lump Sum		—	1
CONTINGENTS				
507.01 Class 1 Excavation + 25%	Cu.Yd.	9.0		9.0
507.02 Foundation Test Holes	Ea.	44		44
507.03 Crevice Concrete	Cu.Yd.	0.5		0.5

SUBMITTED BY E. LYN CROWLEY
SIGNATURE E. Lyn Crowley
REGISTERED PROFESSIONAL ENGINEER
SERIAL NUMBER E-5993

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I-435-4(61) (RTE I-435) **STA.** 173+30.85 N. LANE, 173+36.95 S. LANE

JACKSON COUNTY

Note: All Concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
No payment for excavation was allowed at End Bents 1 & 5.
Exc. for Bt. 4 was measured from the finished ground line.

CROWLEY, WADE, MILSTEAD, INC.
ENGINEERS - ARCHITECTS
INDEPENDENCE, MISSOURI

Designed F.D. FOLAND 3/67
Detailed H.H. BUNTEN 3/67
Quantities J.K. ZEIK

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

Sheet No. 1A of 2

STD. 54.00

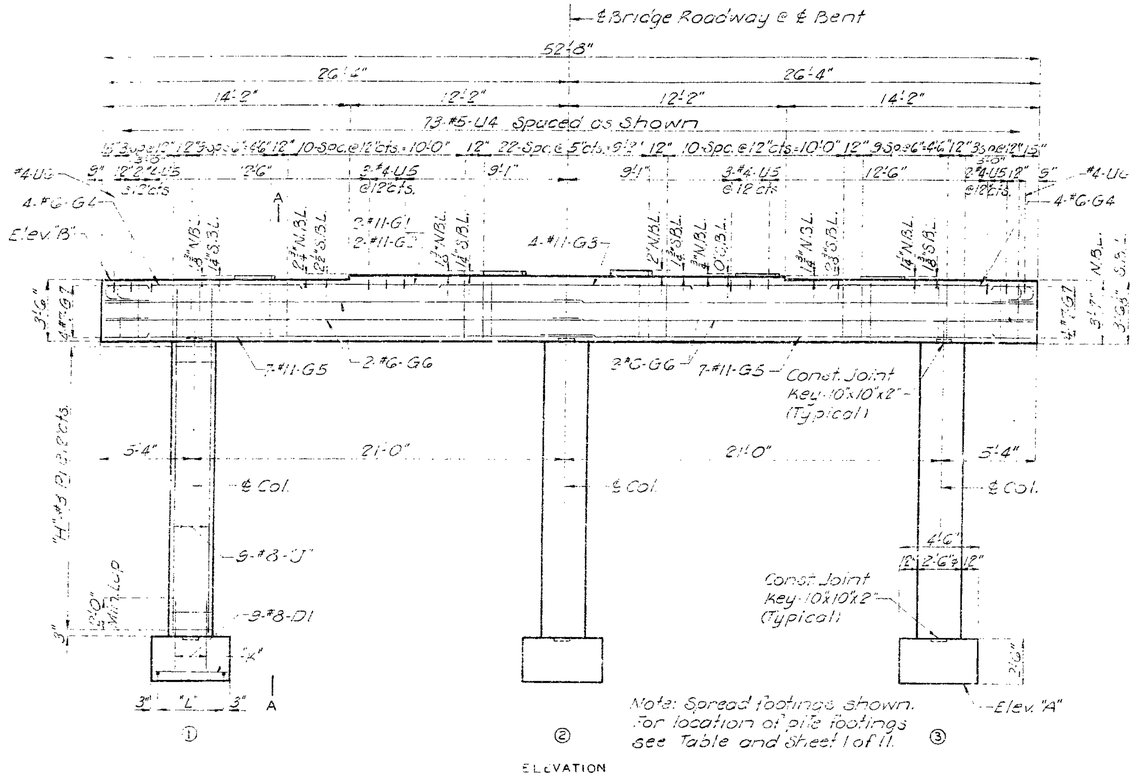
A-1750

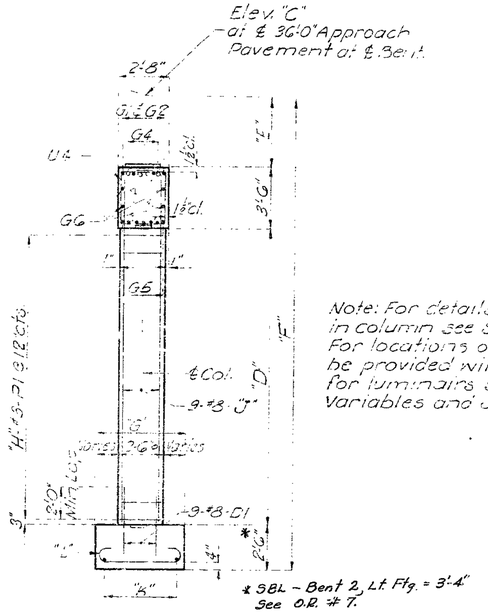
FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

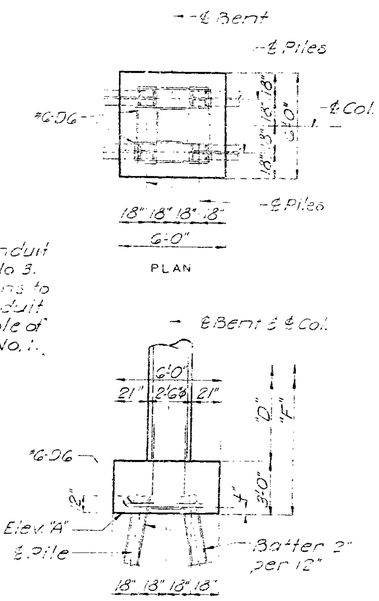
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	104	

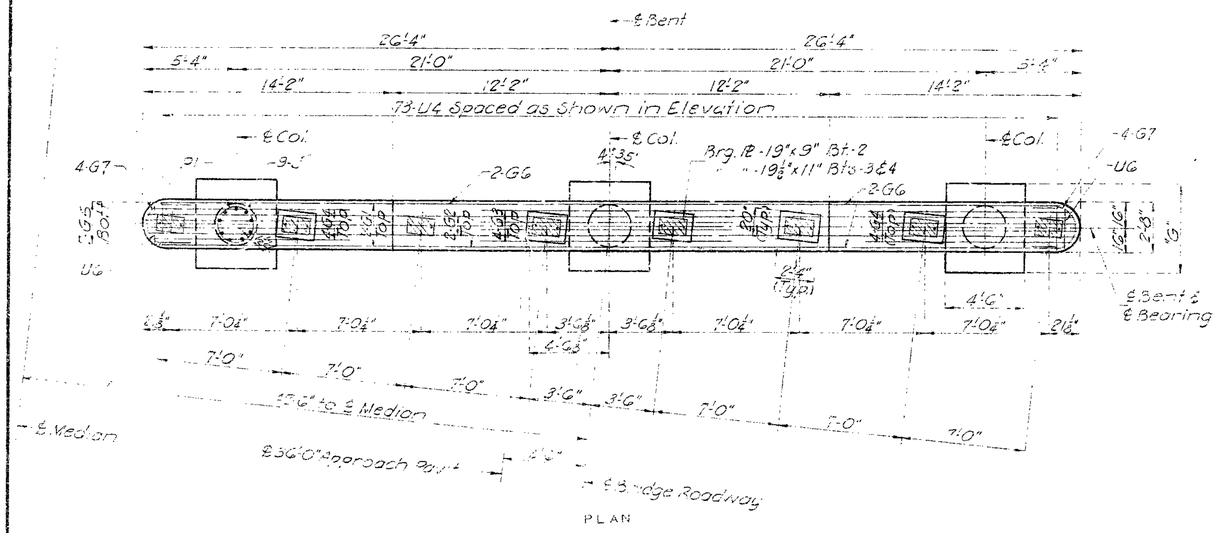
FINAL PLANS





Note: For details of conduit in column see Sheet No. 3. For locations of columns to be provided with conduit for luminaires see Table of Variables and Sheet No. 1.





DETAILS OF INTERMEDIATE BENTS NO 2, 3, & 4

TABLE OF VARIABLES																				
LANE	NORTH BOUND									SOUTH BOUND										
BENT	2			3			4			2			3			4				
COL	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
ELEV A	782.5	784.6	786.7		794.0			794.0		790.8	790.5	791.1		792.0	763.0		792.0			
ELEV B	814.60 ✓				813.87 ✓			813.32 ✓		814.63				813.66 ✓			813.31 ✓			
ELEV C	813.41				817.98 ✓			817.41 ✓		813.35				817.89			817.35			
D	26.16	24.06	21.96		19.37			12.84		17.83	17.30	17.53		5'-8" ✓	24'10⅜"		14'-3"			
E		3'-5"			4'-0⅜"			4'-5⅛"			3'-3⅜"			3'-10⅜"			4'-2⅝"			
F	35.91	33.81	31.71		23.95			23.41		27.55	27.85	27.25		25'-10⅜" ✓	34'-10⅜" ✓		35'-2⅜" ✓			
G	5'-8"	5'-0"	5'-0"		See Pile Footing			See Pile Footing		4'-6"	4'-10"	4'-6"		See Pile Ftg.	5'-6" ✓		See Pile Footing			
H		23			14			13			17			6 ✓	35 ✓		15			
J		P2			P3			P4			P5			P6	37 ✓		P8			
K		5-#5-D2			—			—			5-#5-D2			—	6-#5-D2		—			
L	12-#5-D3	6-#5-D3	6-#5-D3		—			—			5-#6-D4			—	7-#6-D3		—			
*Conduit	X				—			—			—			—	—		—		X	

* Note: See Sheet No. 3 for details of conduit in columns.

Note: Details of bents are shown looking north for north bound lane and south for south bound lane.

BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. I- 435-1(61) (RTE 1435) **STA.** 173+30.85 N.B. LANE 173+36.95 S.B. LANE

JACKSON **COUNTY**

A-1750

DETAILED MARCH 1967 BY H.R.S.

CHECKED MARCH 1967 BY J.E.R.

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

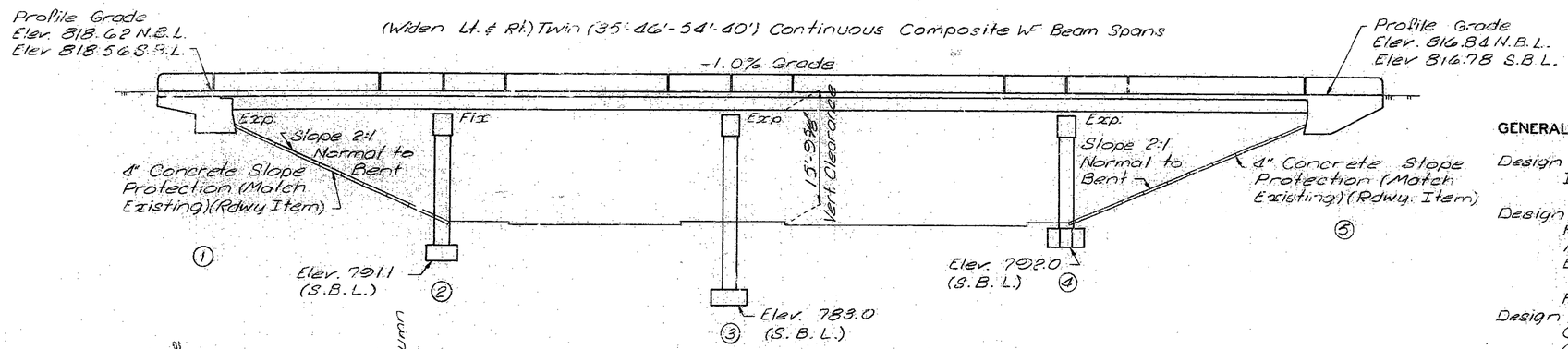
Sheet No. 5 Aof 2

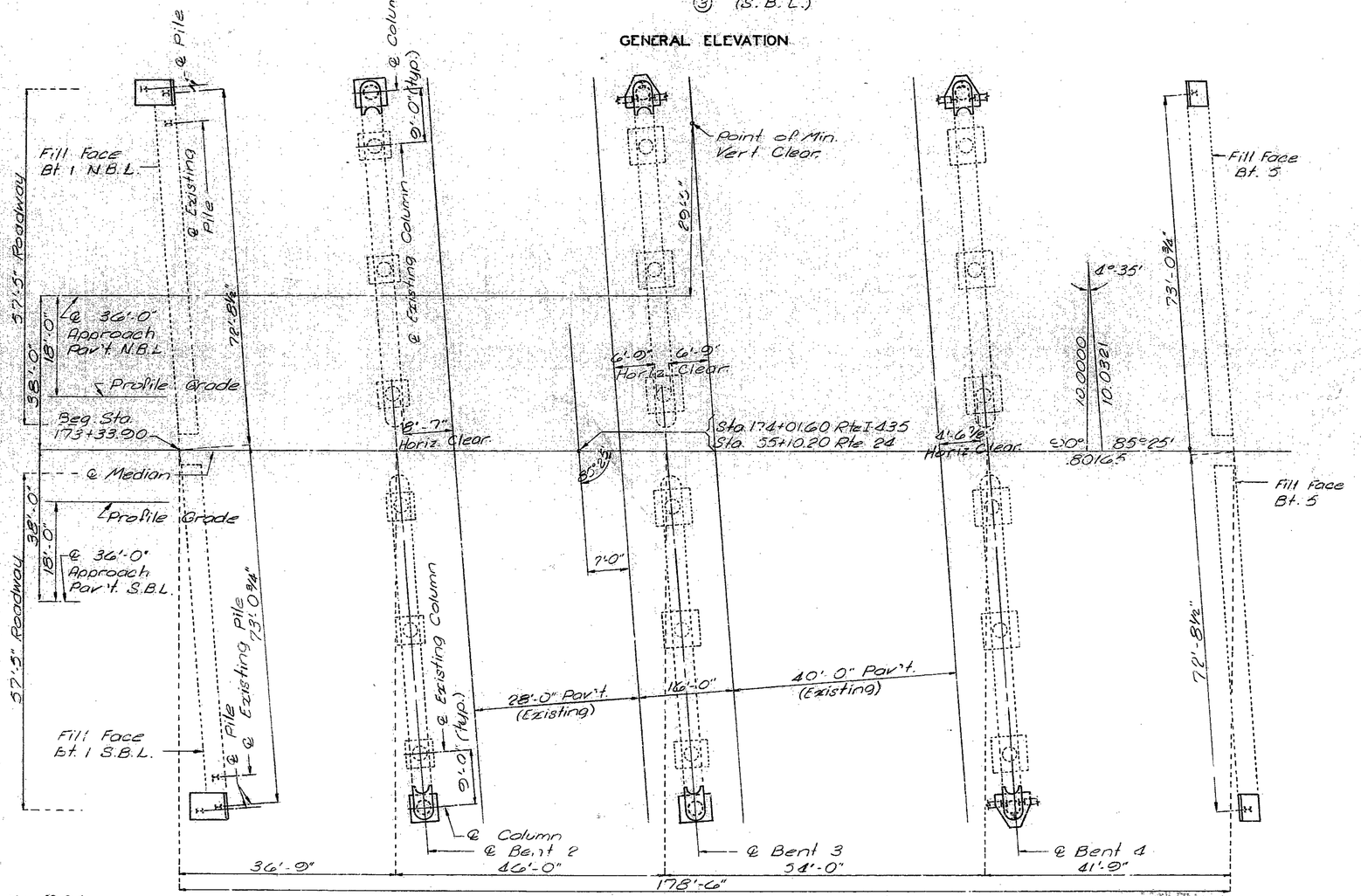
FINAL PLANS

AF 33910A

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	36
SEC./SUR. 31	TWP. 50 N RGE. 32 W	





GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. 1977 and Interims thru 1982

Design Loading:
HS20-44 No Future Wearing Surface
Modified 24,000 # Tandem Axle
Earth 120 #/cu ft., Equivalent Fluid Pressure 30 #/cu. ft.
Fatigue Stress - Case I

Design Unit Stresses:
Class B Concrete (Substructure) f'_c = 1200 psi
Class B1 Concrete (Superstructure) f'_c = 1600 psi

Reinforcing Steel (Grade 60) f_s = 24,000 psi
Structural Carbon Steel f_s = 20,000
Steel Pile f_b = 9,000 psi

Field Connections: Field connections, High Strength Bolts ¾" ϕ, holes 13/16" ϕ except as noted. Turn of Nut Method of tensioning High Strength Bolts will be permitted.

Jt. Filler: All joint filler shall meet the requirement of Std. Spec. 1057.2.4 except as noted.

Reinforcing Steel: Minimum clearance to reinforcing steel shall be 1½" unless otherwise shown.

Construction Clearance: A minimum vertical clearance of 13'-0", from crown of existing lanes and a minimum lateral clearance of 28'-0", centered on existing lanes, shall be maintained during construction.

Traffic: Traffic over structure to be maintained during construction.

All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Continued on Sheet 2.

B.M. Elev. 817.31 @ S.W. Wing End of Curb 70' Rt. Sta. 175+28 Route I-435.

REPAIR TO
BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435
IN KANSAS CITY

PROJECT NO. STA. 173+33.9
JOB NO. 4-I 435-443 RTE. I-435
JACKSON COUNTY

DATE FEBRUARY 28, 1985

STD. 611.60
STD. 706.35
A-1750R

DESIGNED Nov 1984
DETAILED Feb 1985
CHECKED Feb 1985

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

Sheet No. 1 of 25

324

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	37

PILE AND FOOTING DATA

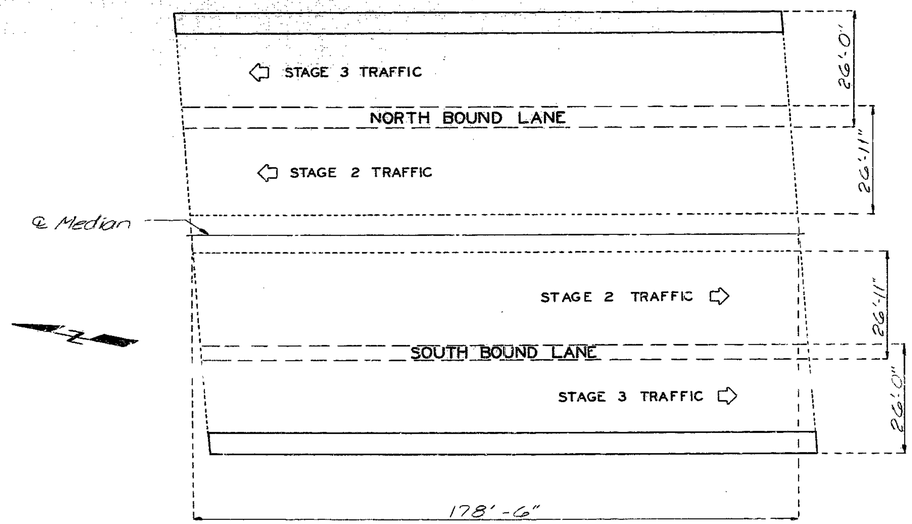
	BENT NO.	NORTH BOUND LANE 1	2	3	4	5	SOUTH BOUND LANE 1	2	3	4	5
BEARING PILE	Pile Type and Size	HP10x42		HP10x42	HP10x42	HP10x42	HP10x42			HP10x42	HP10x42
	Number	2		3	3	1	2			3	1
	Approximate Length Ft.	19		33	38	52	19			33	67
	Design Bearing Tons	16		18	18	32	16			18	32
	Hammer Energy Reqd. Ft.Lbs	7000		7000	7000	7000	7000			7000	8200
SPREAD FOOTING	Foundation Material		Rock					Rock	Rock		
	Design Bearing Tons/sq.ft.		2.6					2.5	2.8		

Minimum energy requirement of hammer based on plan length and design bearing value of piles.
All pile shall be driven to practical refusal.

ESTIMATED QUANTITIES

ITEM		N.B.L. SUBSTR.	N.B.L. SUPERSTR.	S.B.L. SUBSTR.	S.B.L. SUPERSTR.	TOTAL
Special Work	Lump Sum					1
Class 1 Excavation	Cu. Yd.	65		60		125
Structural Steel Pile (10")	Lin. Ft.	303		204		507
Class B Concrete	Cu. Yd.	305		311		616
Class B1 Concrete	Cu. Yd.		439		439	878
Safety Barrier Curb	Lin. Ft.		196		196	392
Reinforcing Steel (Grade 60)	Lbs.	3730	8175	4000	3175	24 080
Mechanical Bar Splices	Each		8		8	16
Fabricated Structural Carbon Steel	Lbs		18590		18590	37180
Slab Drains	Each		6		6	12
Repairing Concrete Deck (Half Scale)	Sq. Ft.		1861		1861	3722
Full Depth Deck Repair	Sq. Ft.		279		279	558
Paint System B (Exist. & New Steel)	Lump Sum					1
Latex Concrete Wearing Surface	Sq. Yd.		1139		1139	2278
Cathodic Protection System	Lump Sum					1

A mechanical bar splice shall consist of one DB-SAE bar and one DI bar, each 2'-10" long and shall be paid for at the contract unit price, per each, for Mechanical Bar Splices.



PLAN OF SLAB

DETAIL OF TRAFFIC STAGES

GENERAL NOTES CON'T.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars.

All concrete and reinforcement in End Bent 5 (except pile cap beam) is included with Superstructure Quantities.

Paint: System B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System B shall be green. Areas to be encased in End Bent Concrete shall be painted one coat of System C primer and scratched or damaged surfaces are to be touched up in field before concrete is poured.

Contractor shall verify all dimensions in field before ordering new steel.

325

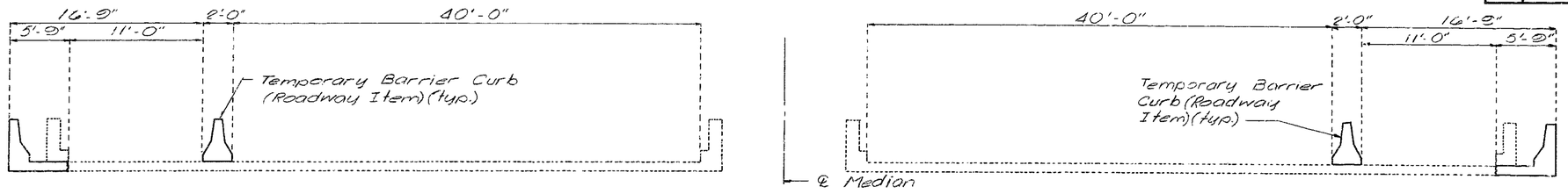
DETAILED Feb 1985
CHECKED Feb 1985

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

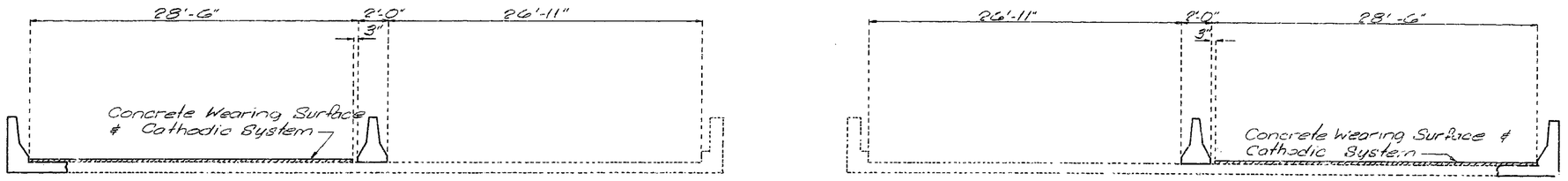
SEE FINAL PLANS

AF 339108

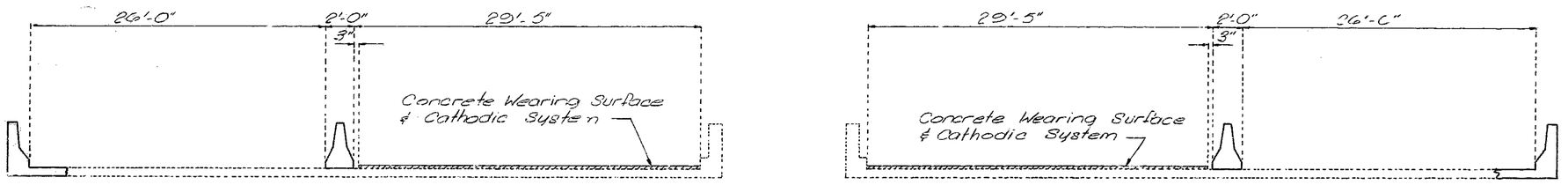
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	38



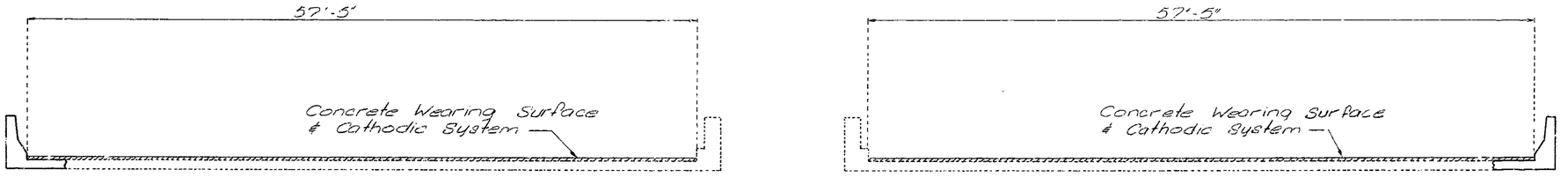
STAGE 1 CONSTRUCTION
(WIDENING)



STAGE 2 CONSTRUCTION



STAGE 3 CONSTRUCTION



(NORTH BOUND LANE)

(SOUTH BOUND LANE)

FINAL STAGE

DETAILS OF CONSTRUCTION STAGES

326

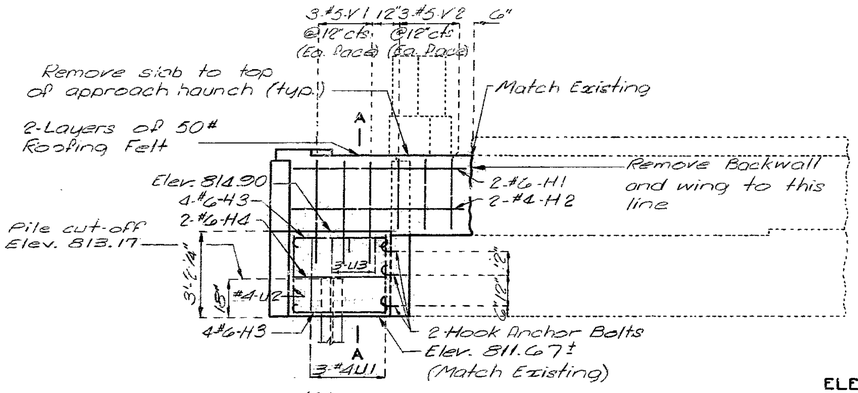
DETAILED Feb. 1985
CHECKED Feb 1985

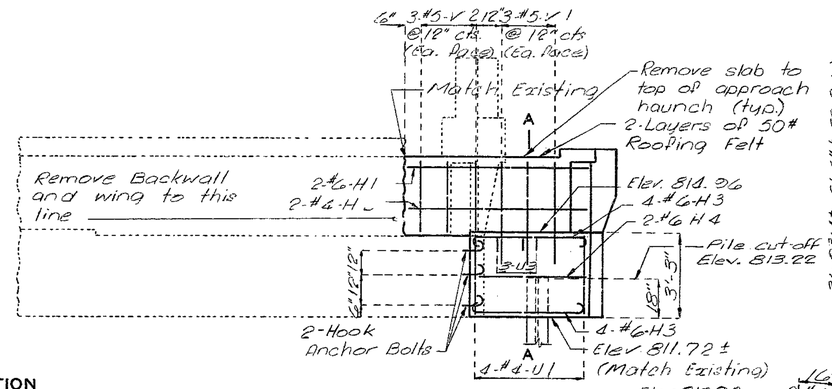
Note: This drawing is not to scale. Follow dimensions.

JACKSON COUNTY

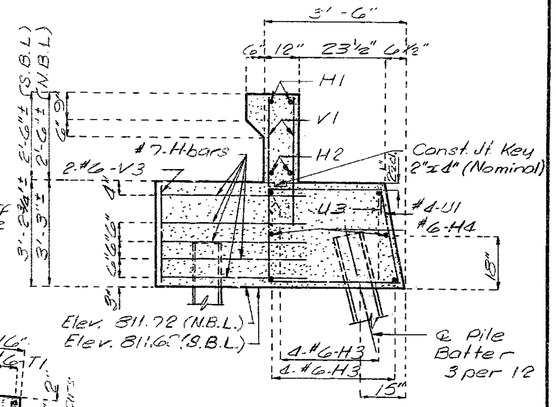
A-1750R

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1 (148)	39

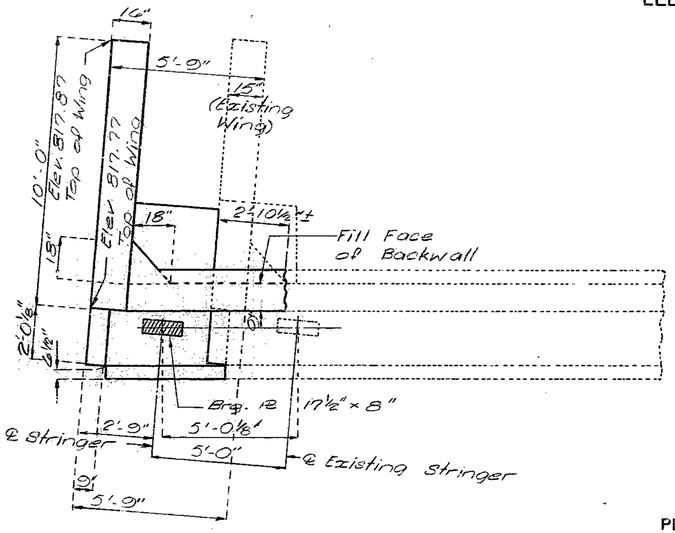




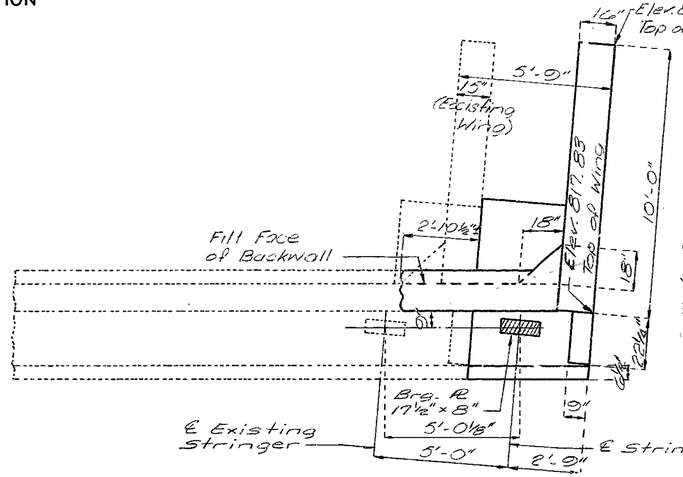
ELEVATION

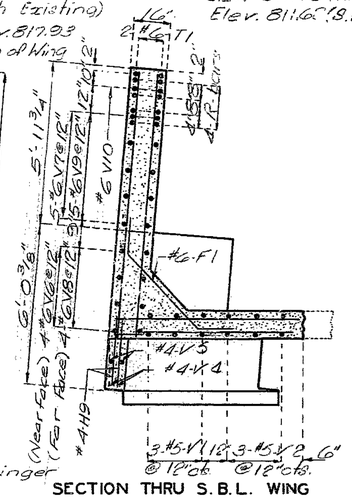


SECTION A-A

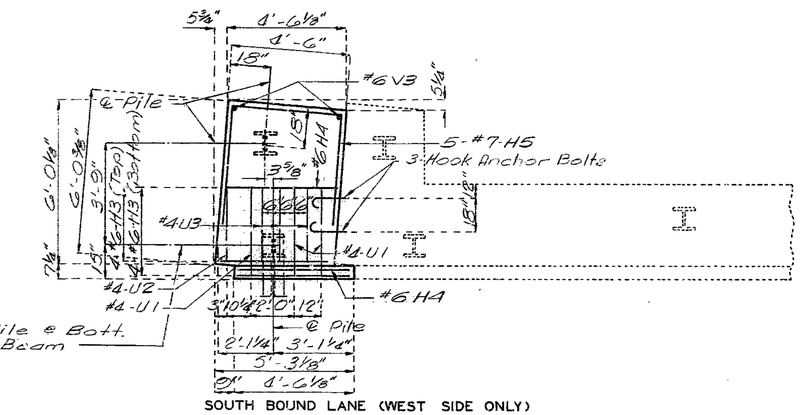


PLAN

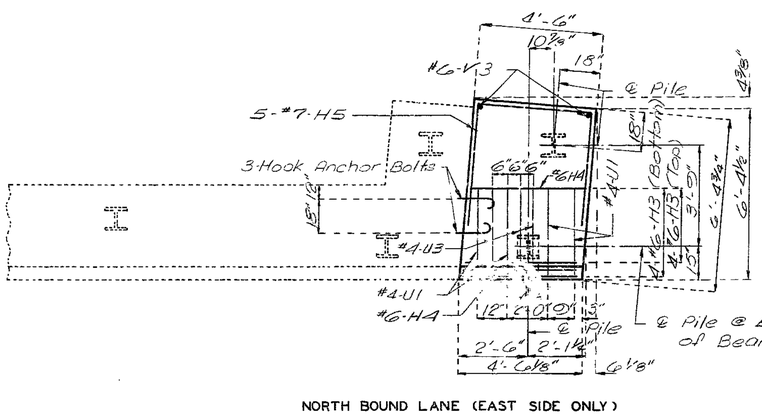




SECTION THRU S.B.L. WING

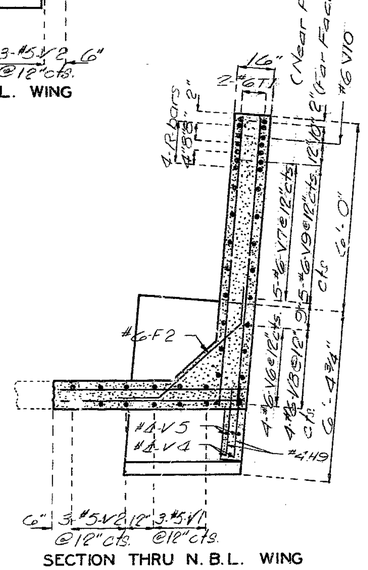


SOUTH BOUND LANE (WEST SIDE ONLY)



NORTH BOUND LANE (EAST SIDE ONLY)

PLAN OF BEAM



SECTION THRU N.B.L. WING

DETAILS OF END BENT 1

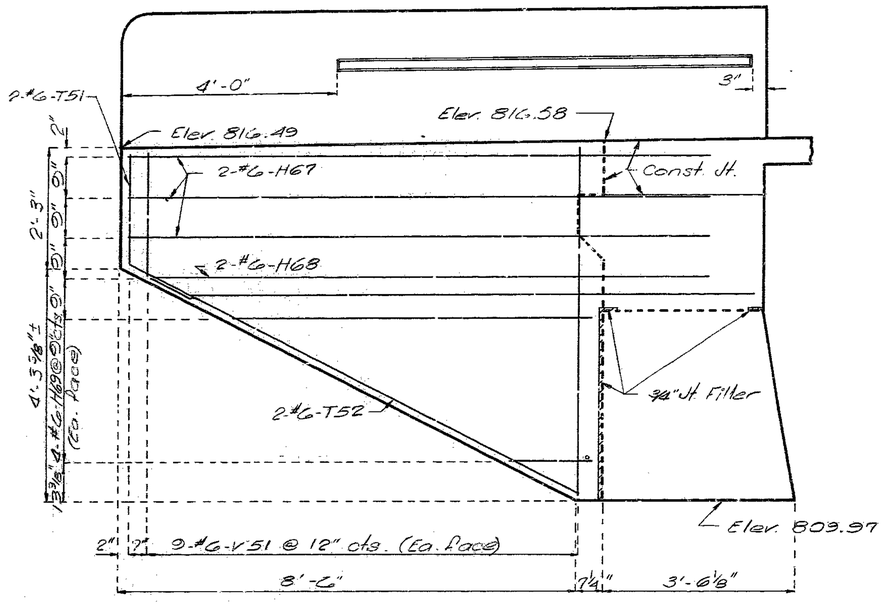
Note: For details of Hook Anchor Bolt, see sheet No. 9.
For wing elevations see sheet No. 5.

327

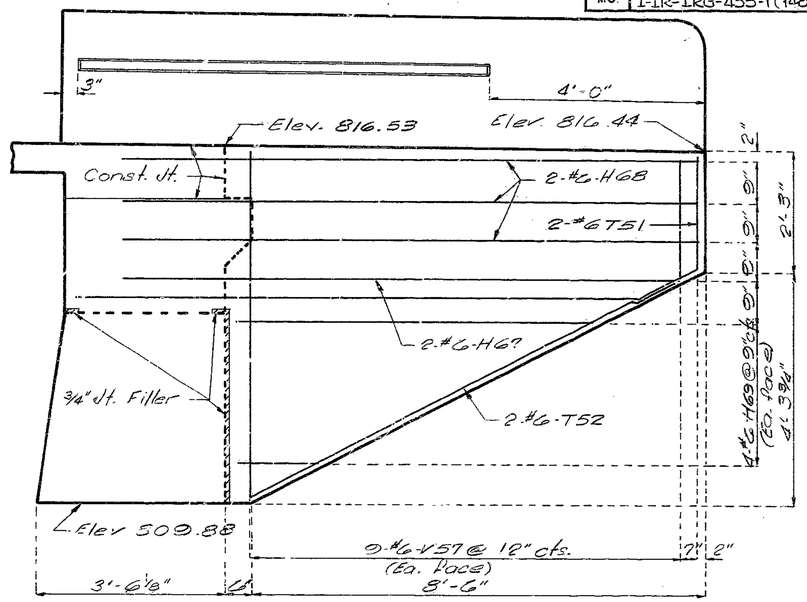
DETAILED Jan 1985
CHECKED Feb. 1985

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

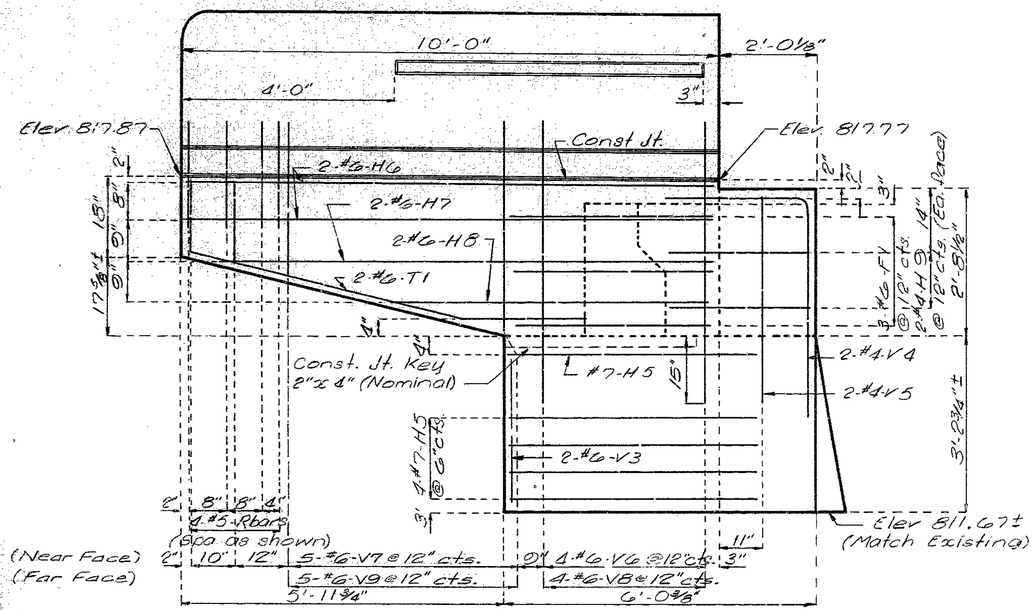
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	40



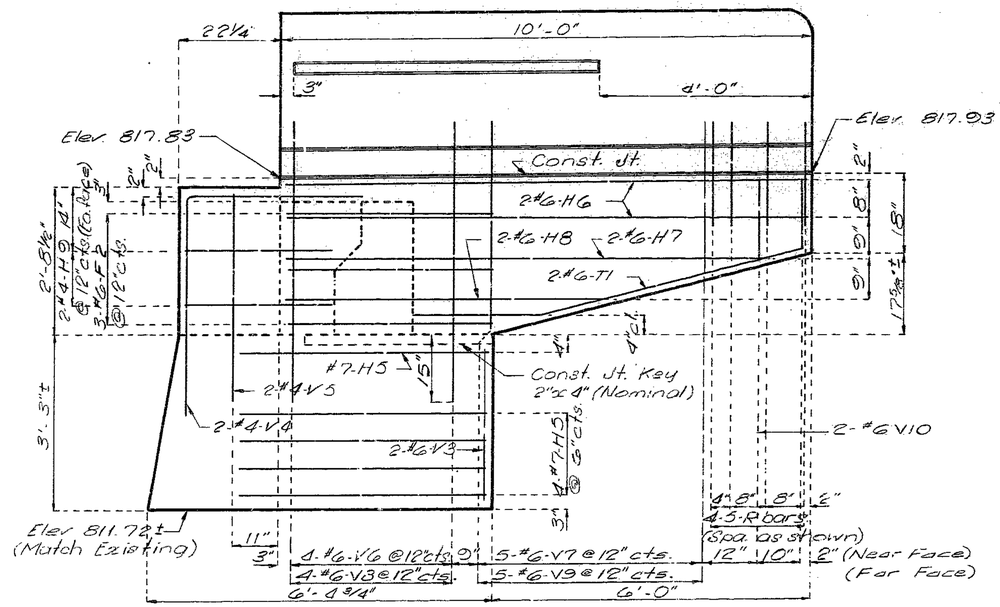
ELEVATION OF LEFT WING (END BENT 5 NORTH BOUND LANE)



ELEVATION OF RIGHT WING (END BENT 5 SOUTH BOUND LANE)



ELEVATION OF WEST WING (END BENT 1 SOUTH BOUND LANE)



ELEVATION OF EAST WING (END BENT 1 NORTH BOUND LANE)

329

DETAILED Jan 19 85
CHECKED Feb 19 85

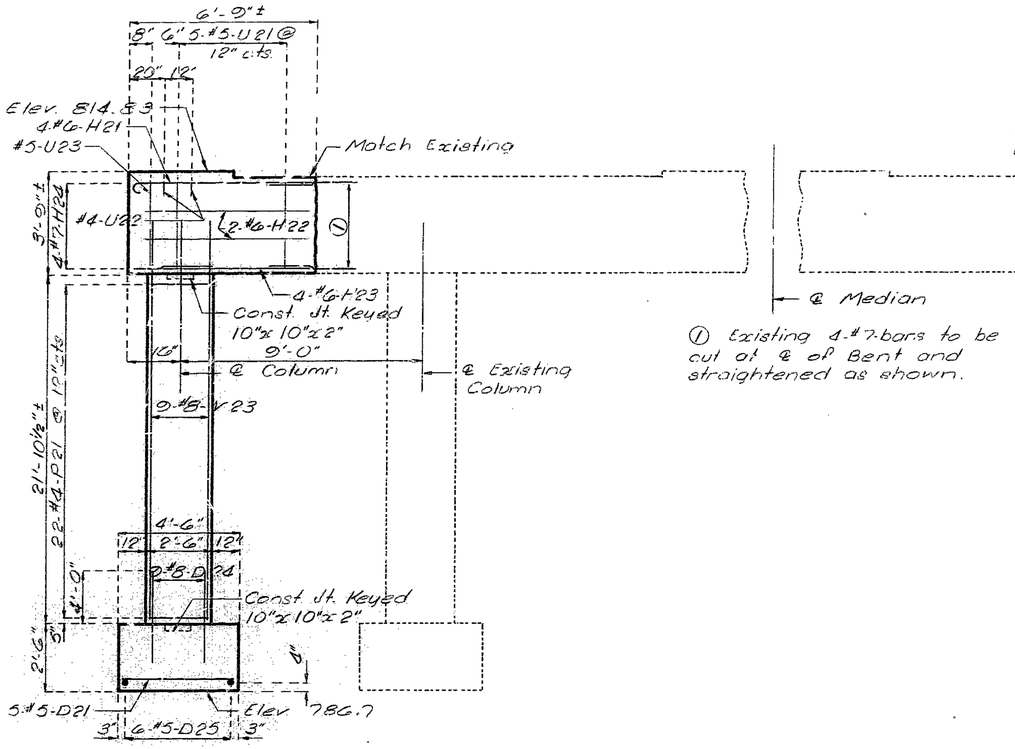
Note: This drawing is not to scale. Follow dimensions.

SECTIONAL PLANS
Sheet No. 5 of 25.

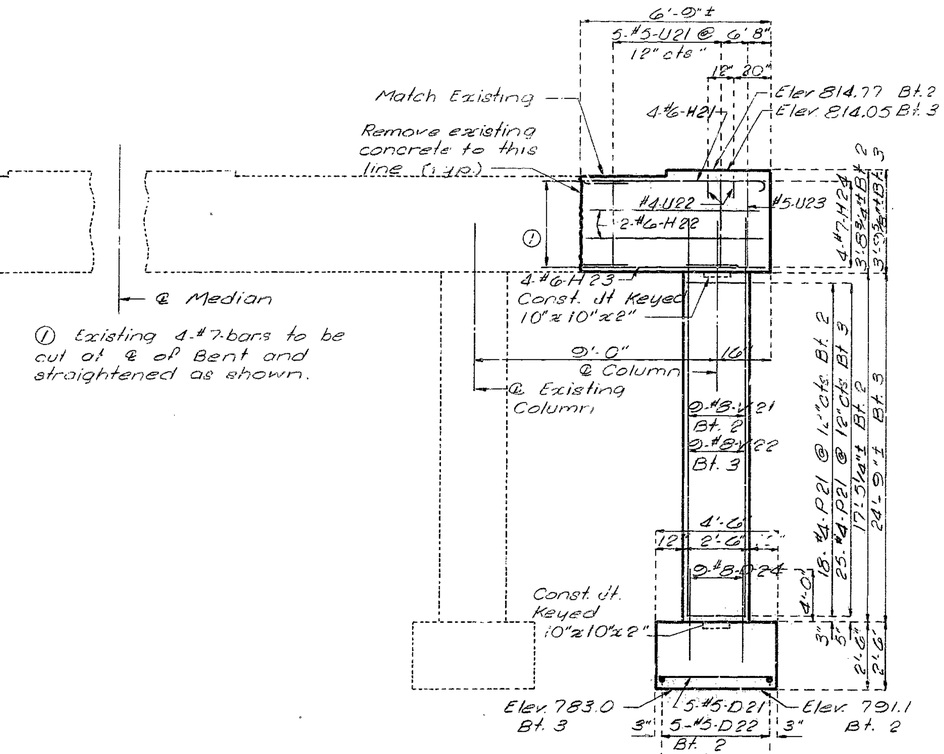
JACKSON COUNTY

A-1750R

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1 (1&B)	41

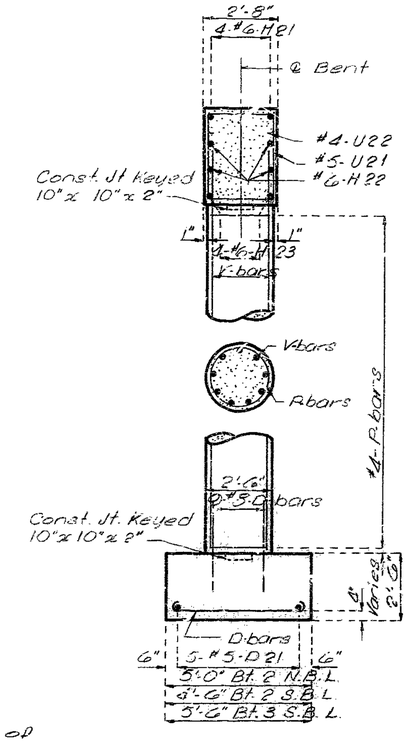


ELEVATION

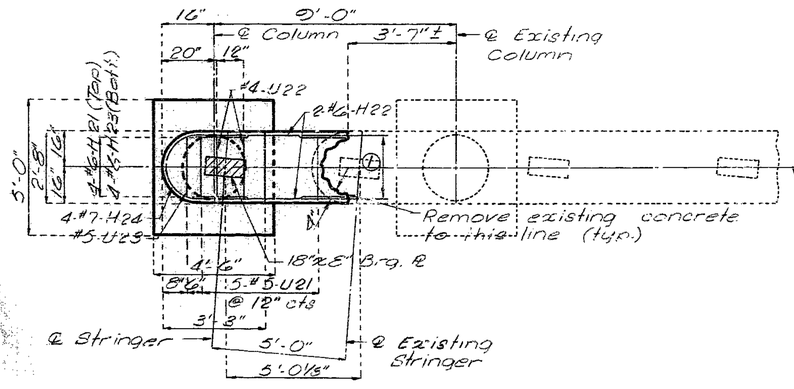


ELEVATION

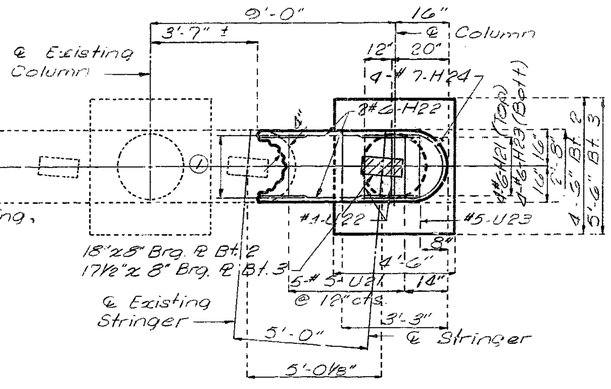
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".



TYPICAL SECTION NEAR NEW COLUMN



PLAN



PLAN

Note: For location of Anchor Bolt Wells, see sheet No. 13.
For detail of Anchor Bolt Well, see sheet No. 9.

329

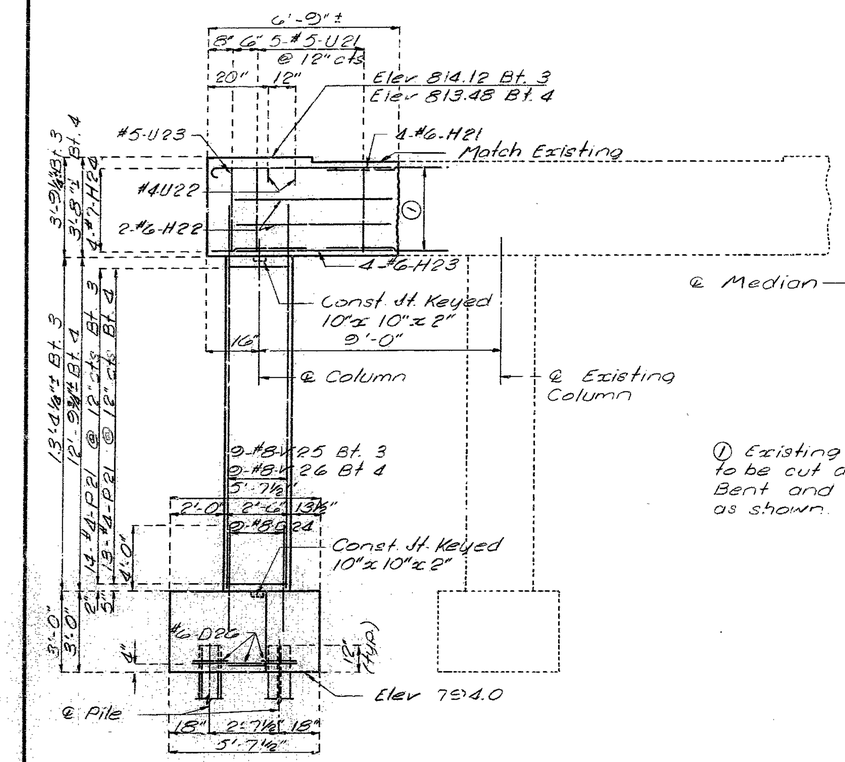
DETAILED Jan. 1955
CHECKED Feb 1985

DETAILS OF N. B. L. INTERMEDIATE BENT NO. 2

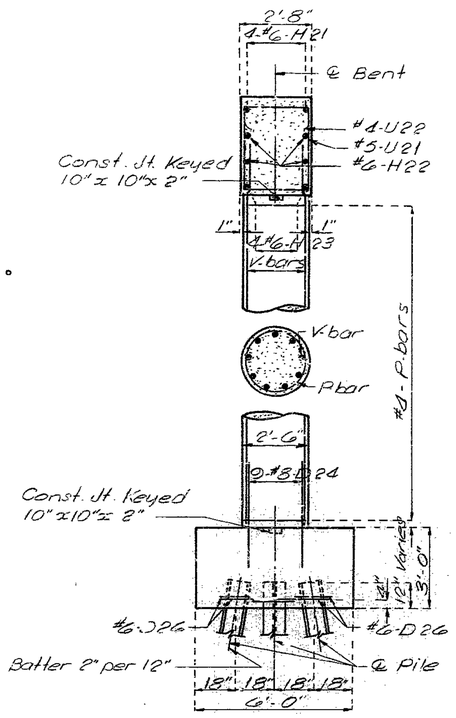
DETAILS OF S. B. L. INTERMEDIATE BENTS NO. 2 & 3

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

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	42

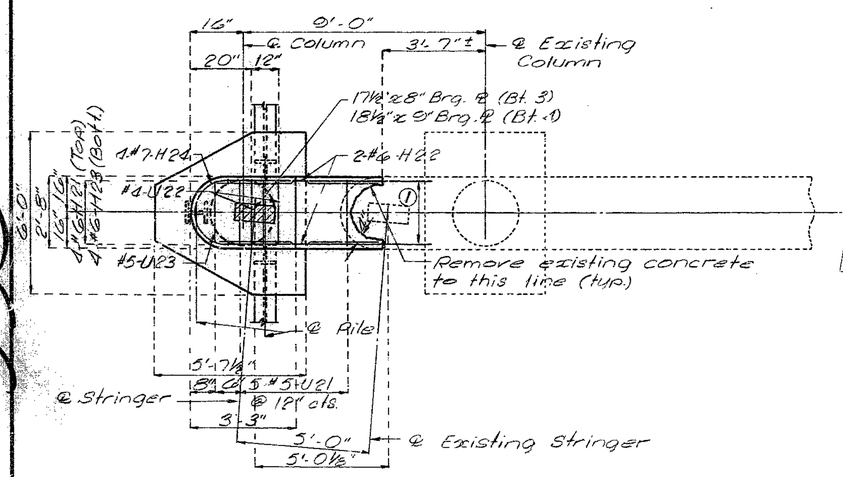


① Existing 4-#7 bars to be cut at ℄ of Bent and straightened as shown.



TYPICAL SECTION NEAR NEW COLUMN

ELEVATION

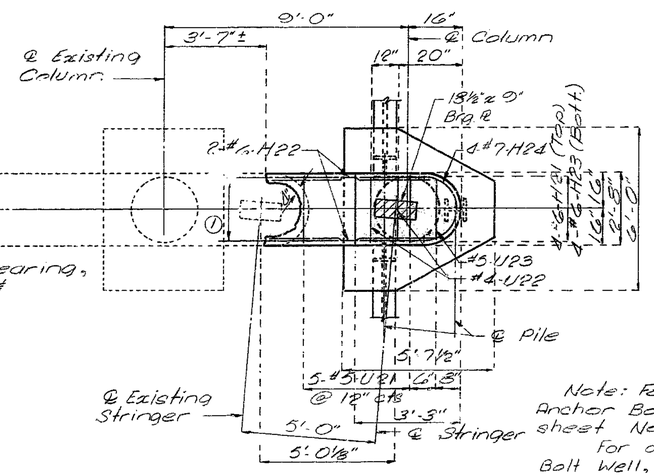


PLAN

DETAILS OF NBL INTERMEDIATE BENTS NO. 3 & 4

℄ Bent, ℄ Bearing, ℄ Column & ℄ Footing

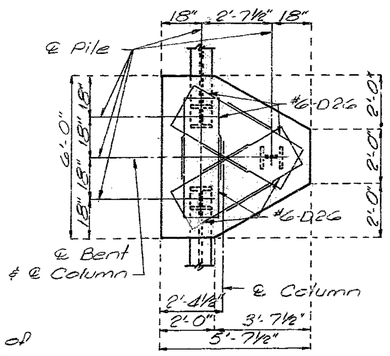
ELEVATION



PLAN

DETAILS OF S.B.L. INTERMEDIATE BENT NO. 4

Note: For location of Anchor Bolt Wells, see sheet No. 13. For detail of Anchor Bolt Well, see sheet No. 9.



PLAN OF FOOTING SHOWING REINFORCEMENT

DETAILED Jan 1985
CHECKED Feb 1985

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

Sheet No. 7 of 25.

JACKSON COUNTY

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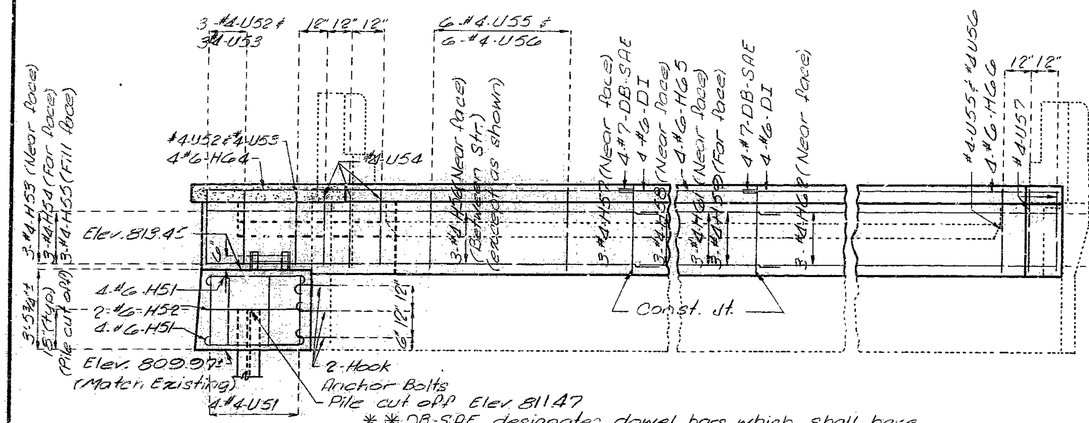
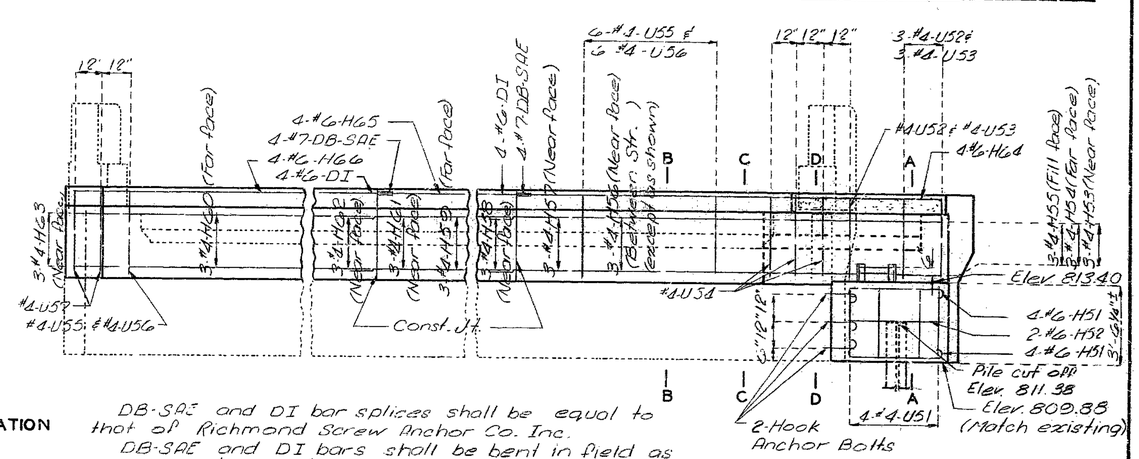
STATE	PROJ. NO.	SHEET NO
MO.	I-IR-IRG-435-1(148)	43



**DB-SAE designates dowel bars which shall have mechanical splices at the ends adjacent to the next pour

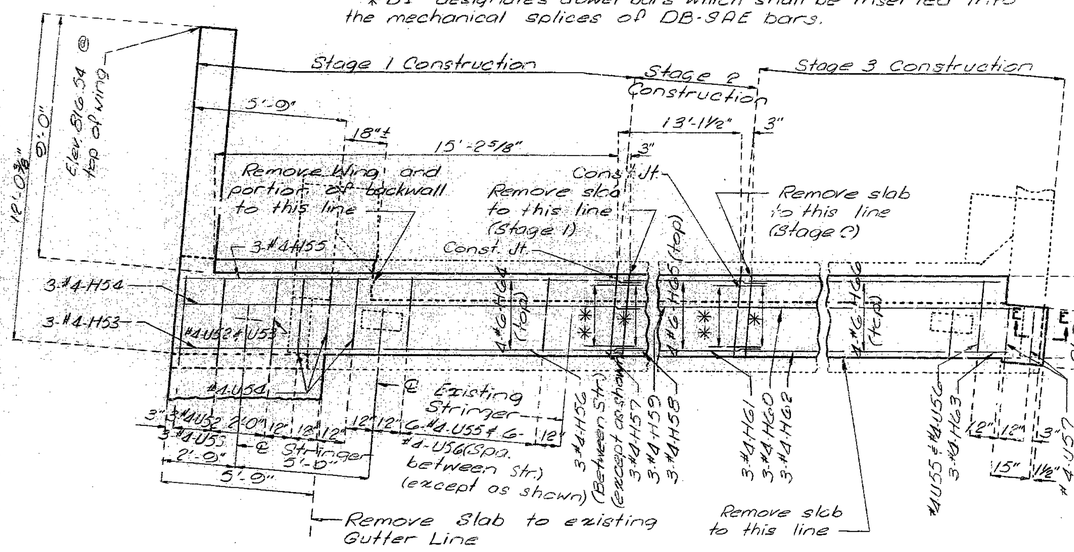
*DI designates dowel bars which shall be inserted into the mechanical splices of DB-SAE bars.

ELEVATION

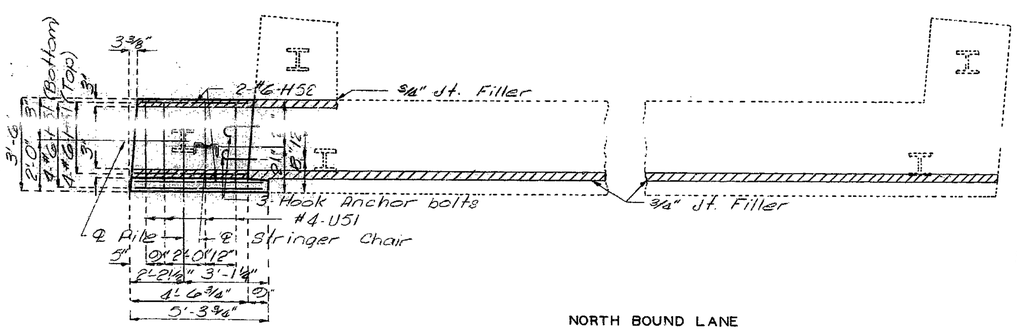


DB-SAE and DI bar splices shall be equal to that of Richmond Screw Anchor Co. Inc.

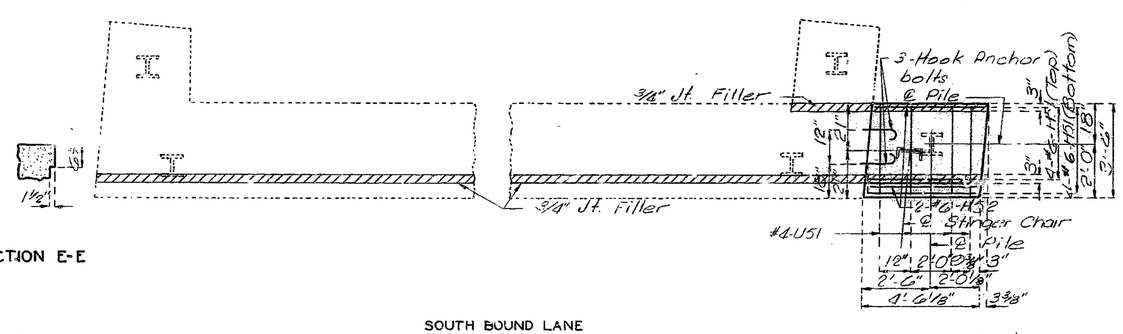
DB-SAE and DI bars shall be bent in field as required to maintain a minimum concrete cover of 1½".



PLAN



NORTH BOUND LANE



SOUTH BOUND LANE

SECTION E-E

PLAN OF BEAM

DETAILS OF END BENT 5

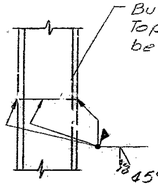
Note : For details of Hook Anchor Bolt, see sheet No. 9.

DETAILED Jan 1985

CHECKED Feb 1985

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

STATE	PROJ. NO.	SHEET NO
MO.	I-IR-IRG-435-1(148)	44



DETAIL OF STEEL PILE SPLICE

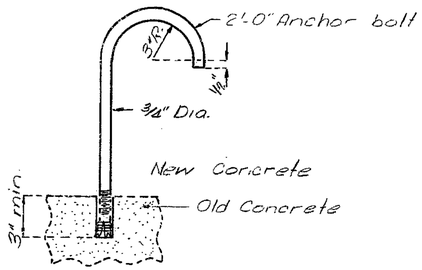
Note: Anchors shall be of the self drilling expansion type, made of case hardened and drawn carburized steel with self-cutting annular broaching grooves.

Cost of furnishing and installing hook anchor bolt assemblies shall be included in contract unit price per concrete.

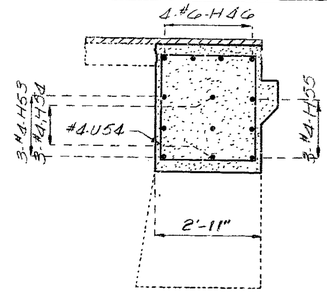
Note: At the option of the contractor one of the following anchor systems may be substituted for the self drilling expansion system noted on the plans:

1. Hilti HVA Adhesive Anchors
2. Molly Parabond Capsule Anchors
3. U.S.E. Diamond Capsule Anchors
4. Keligroutin Resin Bonding Anchors

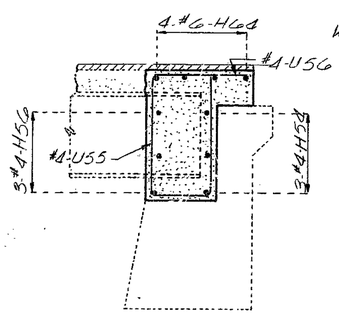
These Anchor Systems shall be installed according to the manufacturer's specifications, except that an epoxy coated ¾" ϕ, Grade 60 reinforcing bar 2'-6" long shall be substituted for the threaded rod stud and if the Keligroutin Resin Bonding Anchor System is used the minimum embedment in old concrete shall be 8"



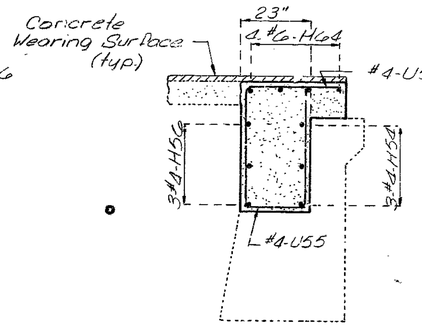
HOOK ANCHOR BOLT DETAIL



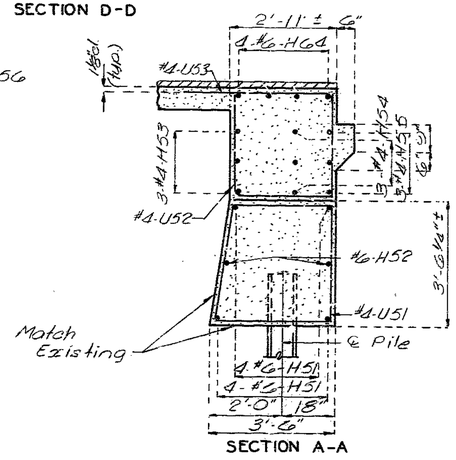
SECTION D-D



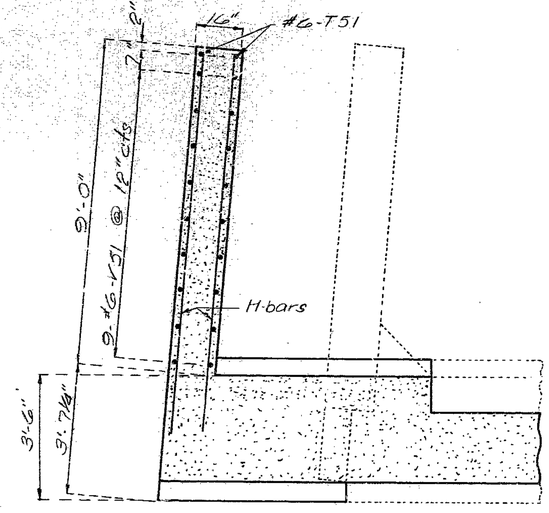
SECTION C-C



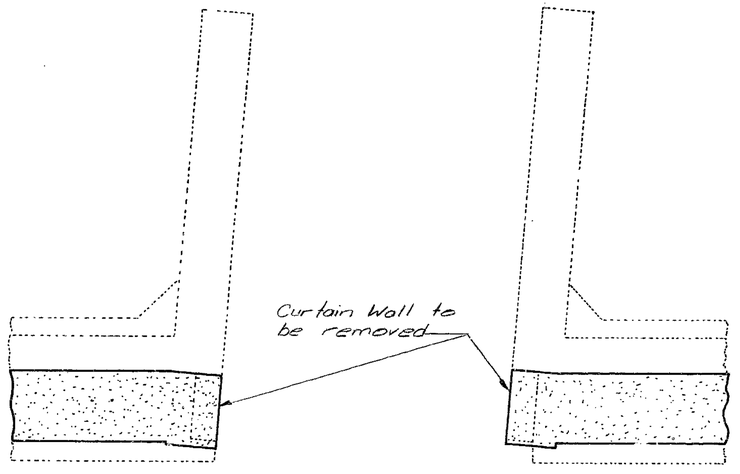
SECTION B-B

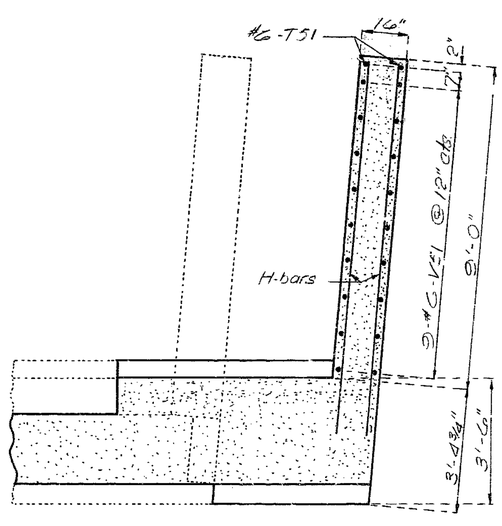


SECTION A-A



SECTION THRU WING BENT 5 (NORTH BOUND LANE)





SECTION THRU WING BENT 5 (SOUTH BOUND LANE)

337

DETAILED Jan 1985
CHECKED Feb 1985

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

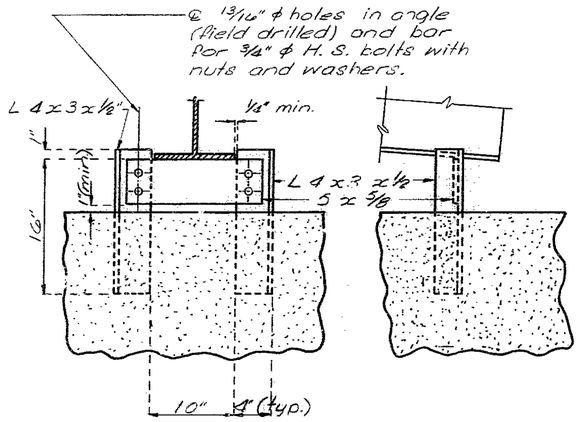
SEE FINAL PLANS

Sheet No. 9 *of* 25.

JACKSON COUNTY

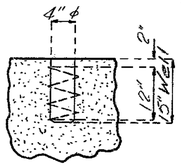
A-1750R

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	45



FRONT ELEVATION END ELEVATION

DETAILS OF SUPPORT CHAIR



ANCHOR BOLT WELL DETAIL

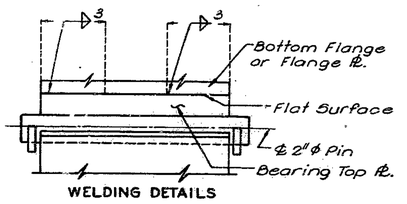
NOTES: TYPE "D" BEARINGS

ANCHOR BOLTS FOR TYPE "D" BEARINGS SHALL BE 1-1/4"Ø SWEDGED BOLTS AND SHALL EXTEND 12" INTO CONCRETE, WITH HEXAGON NUTS AND PLAIN WASHERS FOR FIXED BEARINGS, NO NUTS FOR EXPANSION BEARINGS.

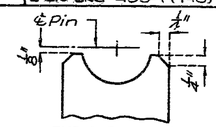
"ESTIMATED WEIGHT" DOES NOT INCLUDE WEIGHT OF ANCHOR BOLTS.

" ℱ " INDICATES MACHINE FINISH SURFACE.

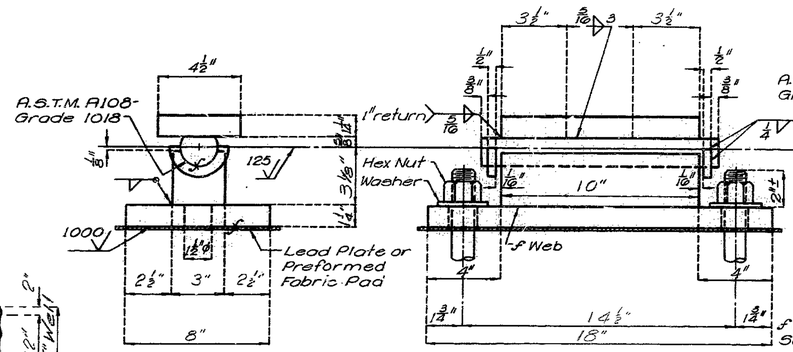
SHOP DRAWINGS ARE NOT REQUIRED FOR LEAD PLATES AND OR PREFORMED FABRIC PADS.



WELDING DETAILS

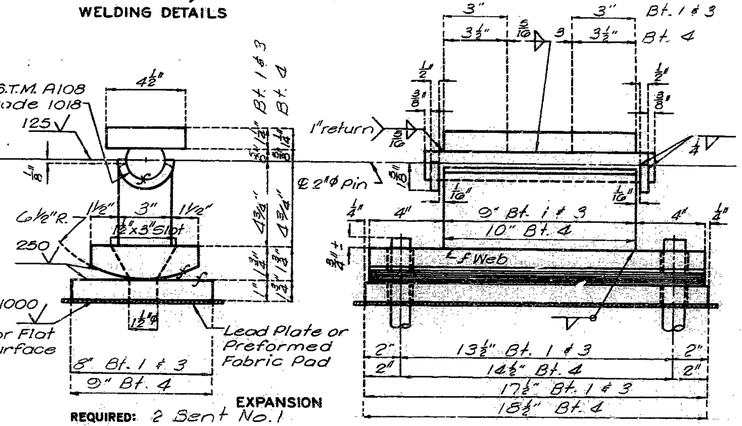


END VIEW OF WEB EXPANSION BEARING



FIXED

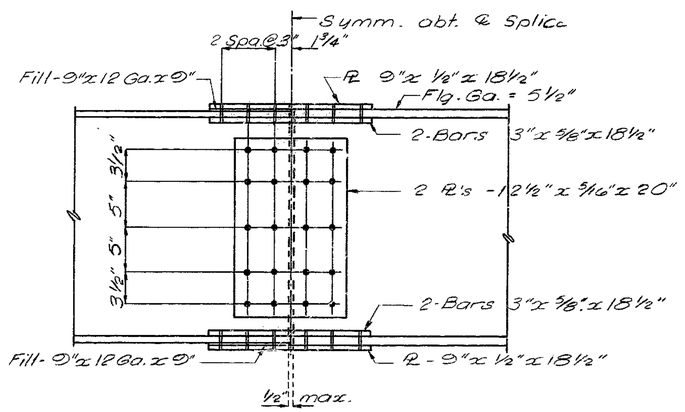
REQUIRED: 2 Bent No. 2



EXPANSION

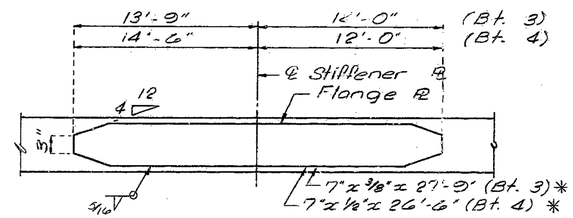
REQUIRED: 2 Bent No.1
2 Bent No.3
2 Bent No.4

TYPE "D" BEARINGS
(ESTIMATED WEIGHT 1104)

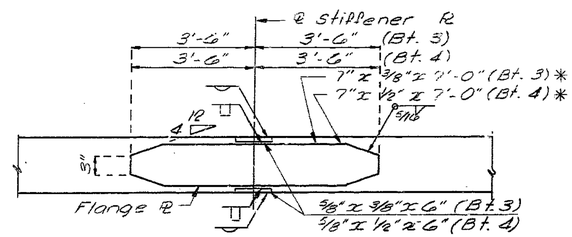


FIELD SPLICE DETAILS

Note : 13/16" ϕ reamed holes for 7/8" ϕ high strengh bolts.



TOP FLANGE PLAN



BOTTOM FLANGE PLAN

FLANGE PLATE DETAIL

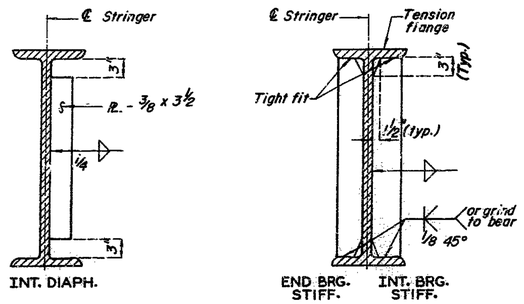
* Notch Toughness required for all welded flange plates.

STD.	D.B.	REVISED
FEB. 1965		OCT. 1977

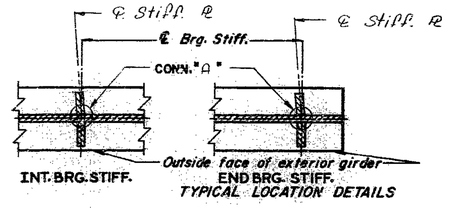
DETAILED Jan 1985
CHECKED Feb 1985

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

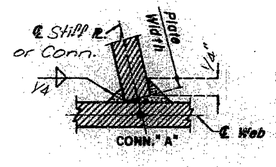
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	46



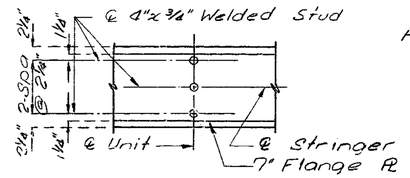
WELDING DETAILS



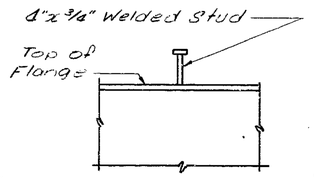
TYPICAL LOCATION DETAILS



WELDING DETAILS



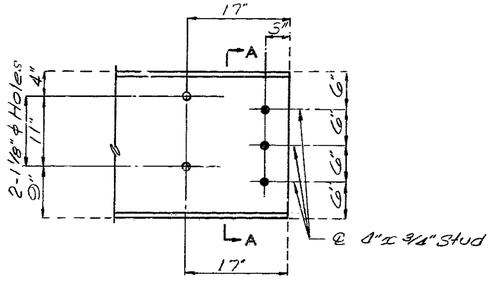
PLAN OF STUD CONN.



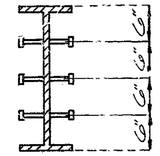
ELEVATION

DETAILS OF SHEAR CONNECTORS

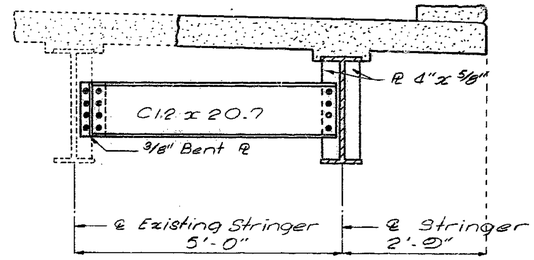
Note: Weight of 502 lbs. of Shear Connectors is included in weight of Fabricated Structural Carbon Steel.



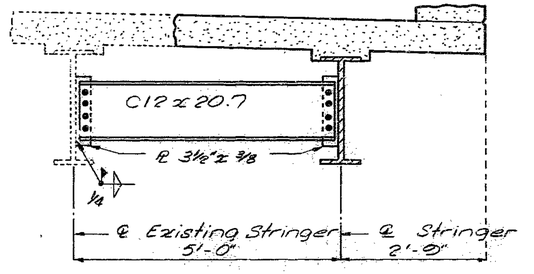
WEB HOLE DETAIL AT END BENT 5



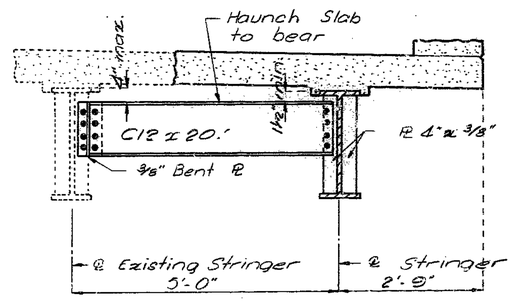
SECTION A-A



PART SECTION NEAR CROSS FRAME



PART SECTION NEAR INT. DIAPH.



PART SECTION SHOWING END DIAPHRAGMS

33

DETAILED Feb 1985
CHECKED Feb 1985

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

STATE	PROJ NO.	SHEET NO.
MO.	I-IR-IRG-435-1 (148)	47

GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE, PIECE "A" = 8-3/4" x 4-3/4", PIECE "B" = 8" x 4".

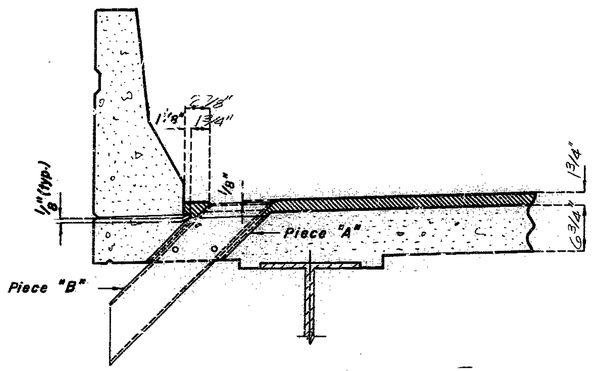
PIECE "A" SHALL BE CAST IN THE CONCRETE. PRIOR TO PLACEMENT OF WEARING SURFACE PIECE "B" SHALL BE INSERTED IN PIECE "A".

LOCATE PIECE "A" IN SLAB BY DIMENSIONS SHOWN IN PART ELEVATION.

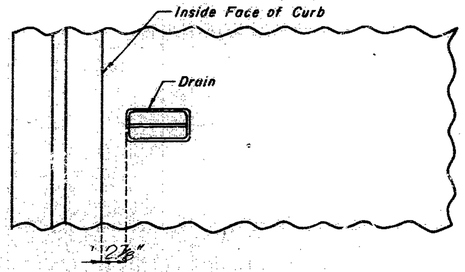
SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

PIECES "A" AND "B" SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

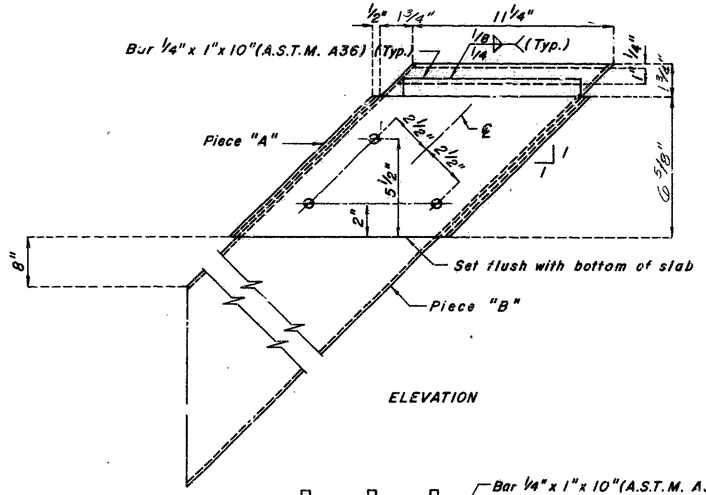
SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.



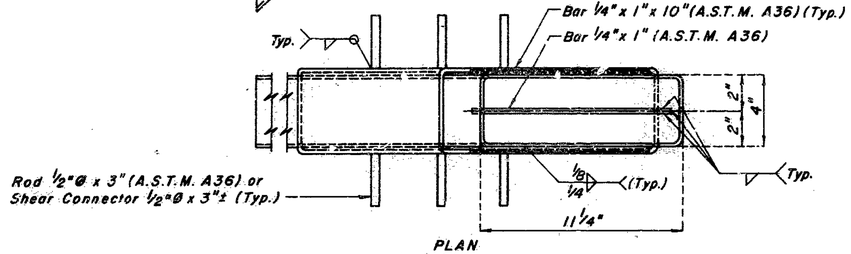
PART ELEVATION OF SLAB



PART PLAN OF SLAB



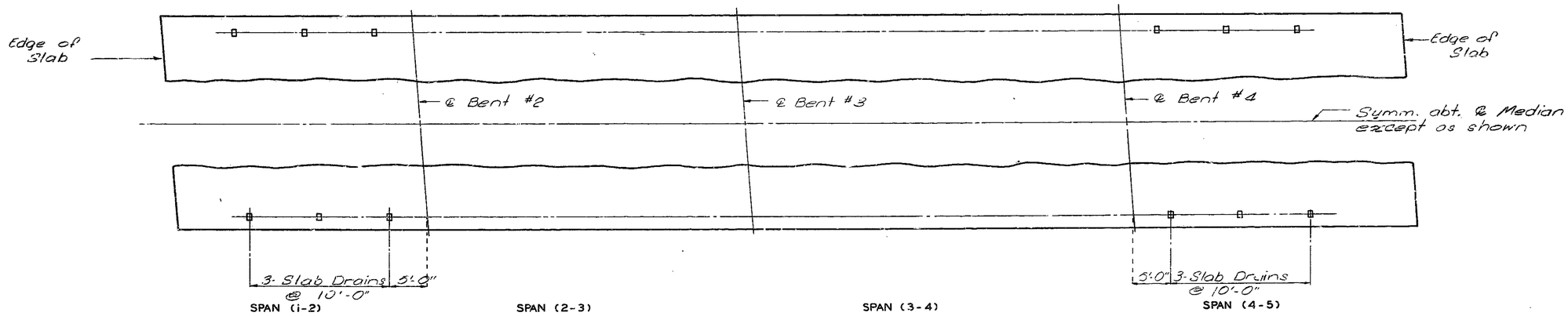
ELEVATION



PLAN

SLAB DRAIN DETAILS

Note: If the contractor elects to hand finish the slab, a single piece drain will be permitted and plans will be available upon request.



PART PLAN OF SLAB SHOWING SLAB DRAINS

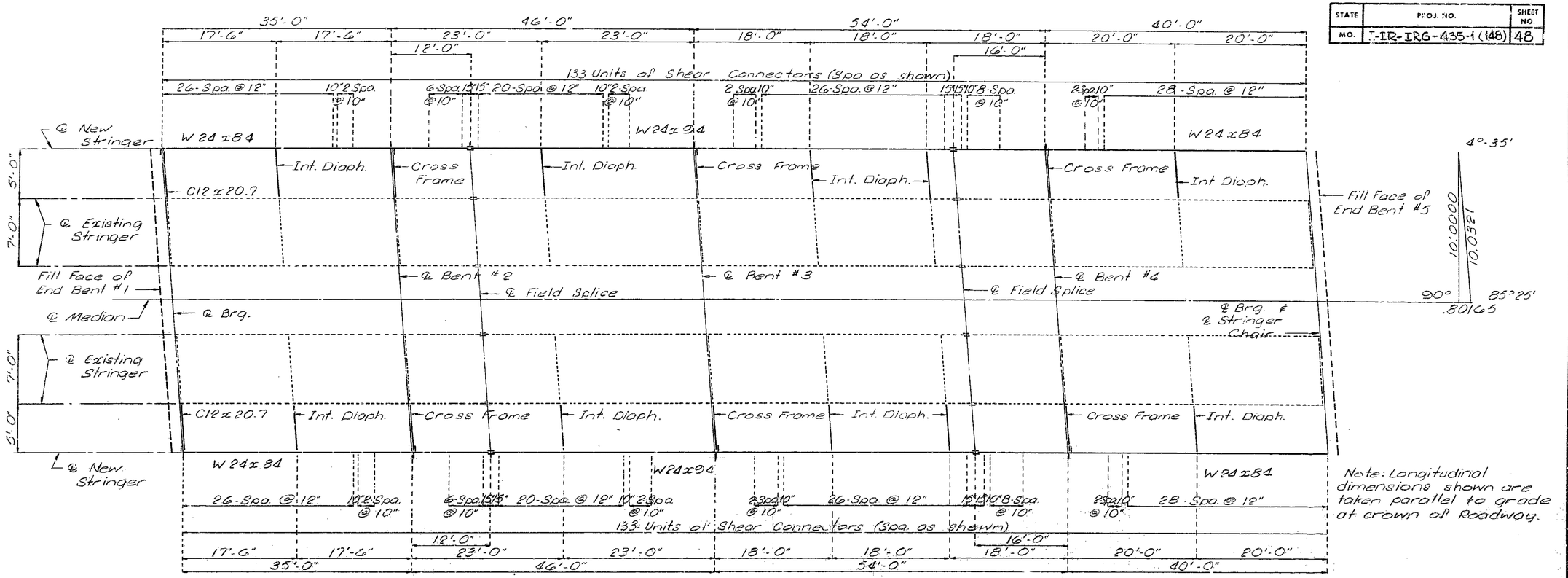
335

STD. S. C.-W.S	REVISED
FEB. 1975	SEPT. 1979

DETAILED Jan 1985
CHECKED Feb 1985

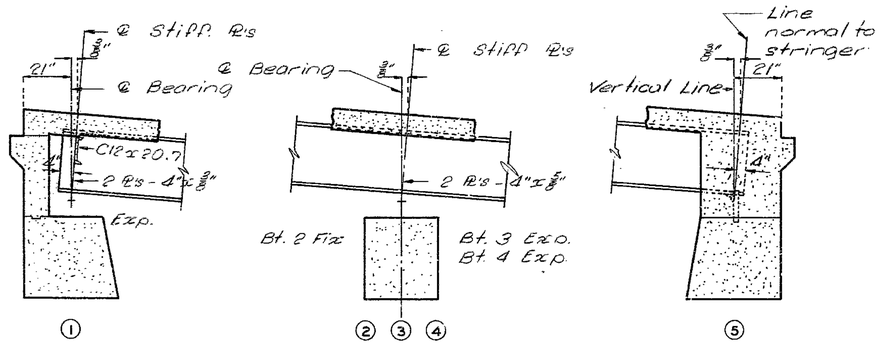
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ. NO.	SHEET NO.
MO.	T-IR-IRG-435-1(148)	48

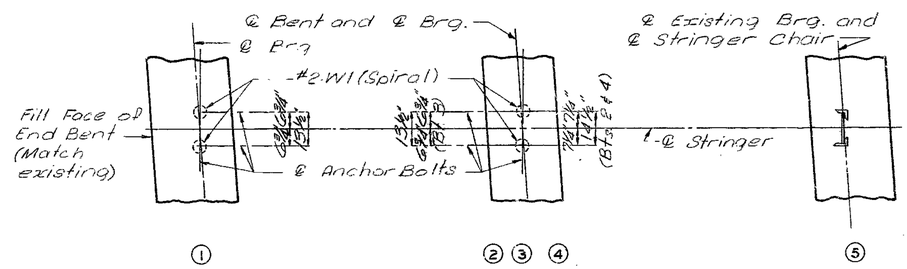


PLAN OF STRUCTURAL STEEL

Notes: Fabricated Structural Steel shall be 436 except as noted.
Notch toughness required for all WF Beams.



PART LONGITUDINAL SECTION



PART ANCHOR BOLTS & STRINGER CHAIR PLAN

336

DETAILED Jan 1985
CHECKED Feb 1985

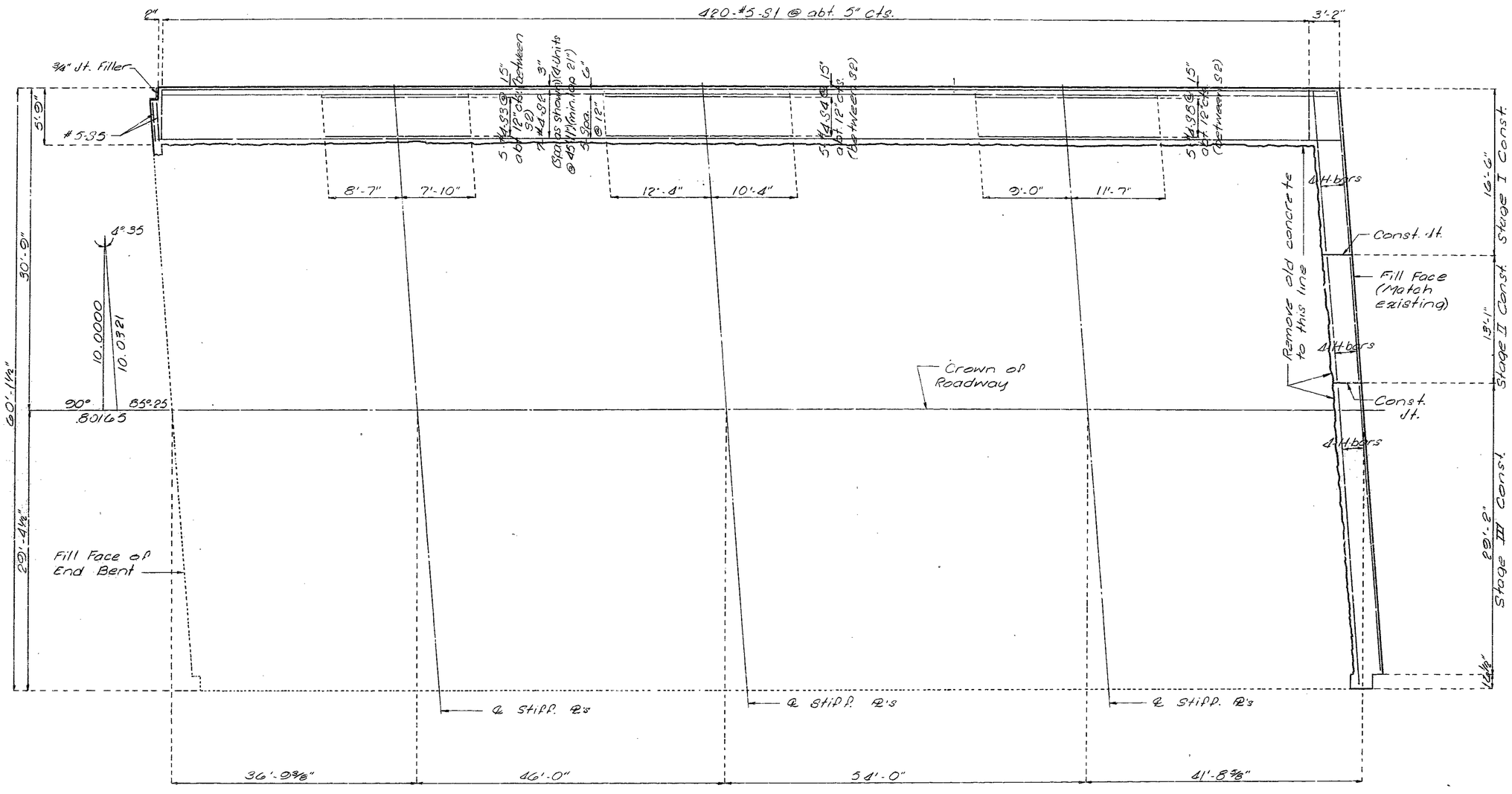
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 13 of 25 .

JACKSON COUNTY

A-1750R

STATE	PROJ NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	49

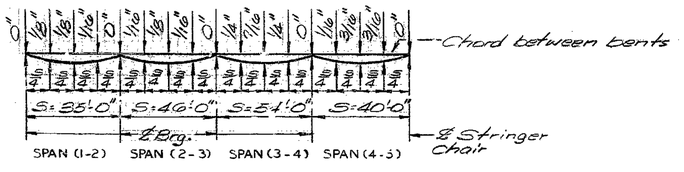


PLAN OF SLAB SHOWING TOP REINFORCEMENT (NORTH BOUND LANE)

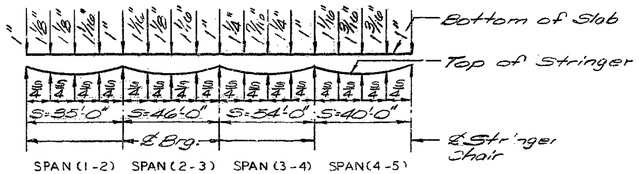
(SOUTH BOUND LANE SIMILAR BY ROTATION)

Note: Longitudinal dimensions are taken Parallel to grade at crown of roadway.

Note: 13% of Dead Load Deflection due to weight of Structural Steel.



DEAD LOAD DEFLECTION

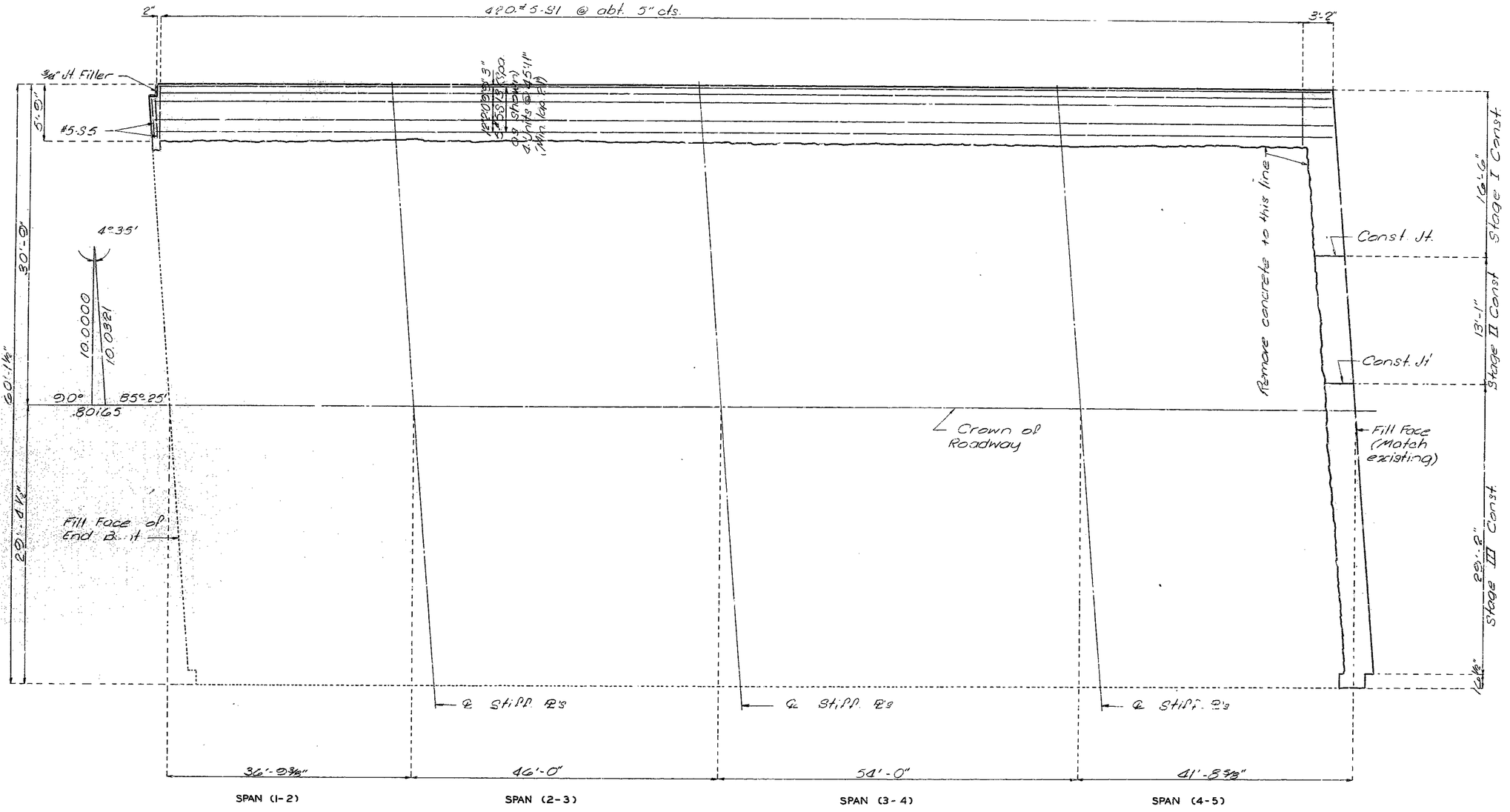


THEORETICAL SLAB HAUNCHING DIAGRAM

DETAILED Jan 1985
CHECKED Feb 1985

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

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	50



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT (NORTH BOUND LANE)
(SOUTH BOUND LANE SIMILAR BY ROTATION)

Note: Longitudinal dimensions are taken parallel to grade of crown of roadway.

330

DETAILED Jan 1985
CHECKED Feb 1985

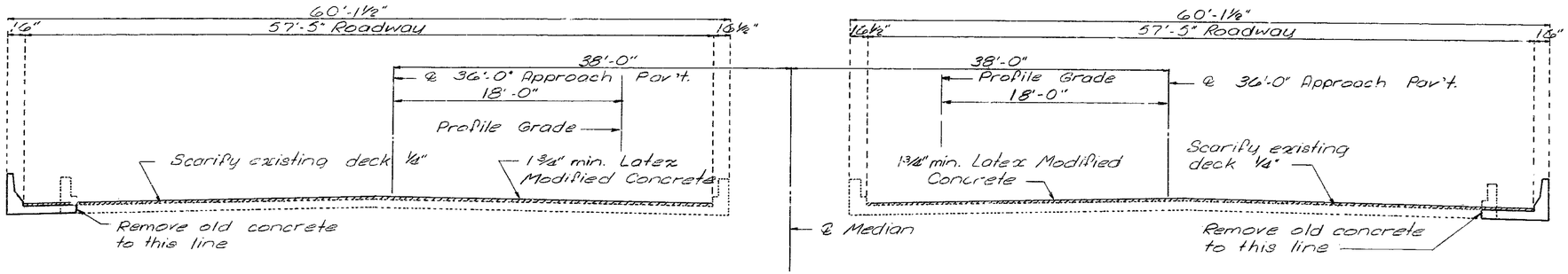
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 15 of 25.

JACKSON COUNTY

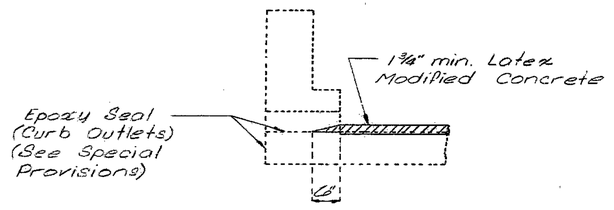
A-1750R

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1 (148)	51

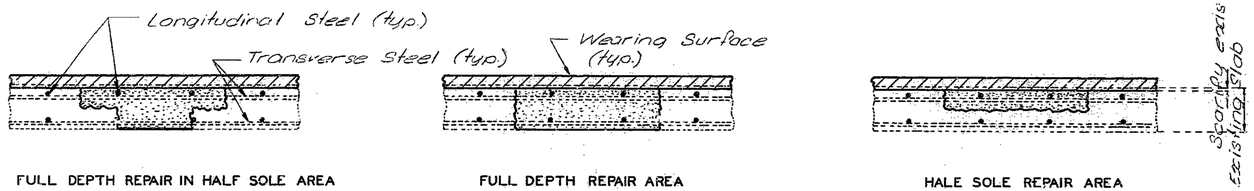


SECTION THRU NORTH BOUND LANE SLAB

SECTION THRU SOUTH BOUND LANE SLAB



TYPICAL SECTION AT EXISTING CURB SHOWING OUTLETS



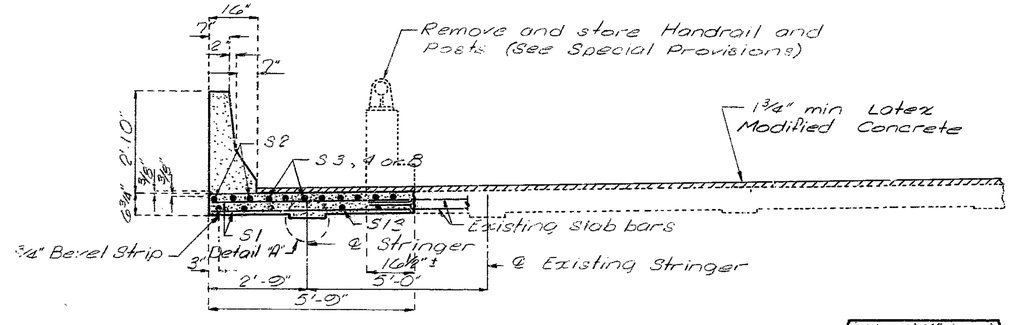
FULL DEPTH REPAIR IN HALF SOLE AREA

FULL DEPTH REPAIR AREA

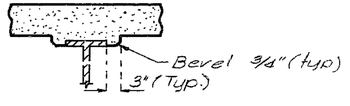
HALE SOLE REPAIR AREA

TYPICAL SECTIONS THRU EXISTING SLAB SHOWING REPAIR AREA
(See Special Provisions)

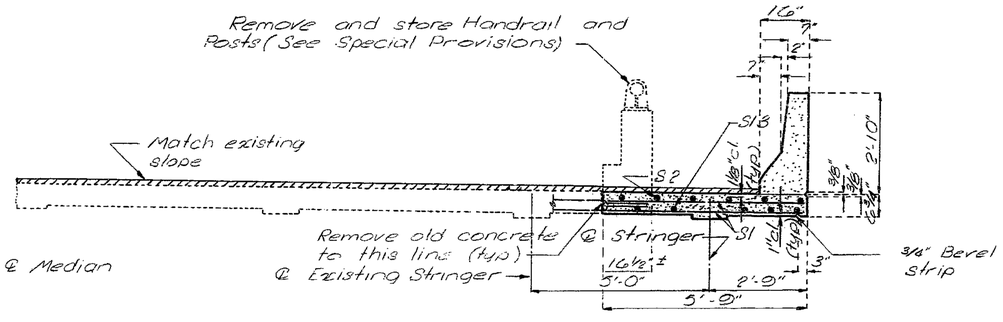
Note: Machine finishing of slab will not be required. The slab shall be finished in accordance with the Special Provision for Latex Modified Concrete Wearing Surface.



PART SECTION NEAR INT. BENT (N. B. L. SHOWN)



DETAIL "A"



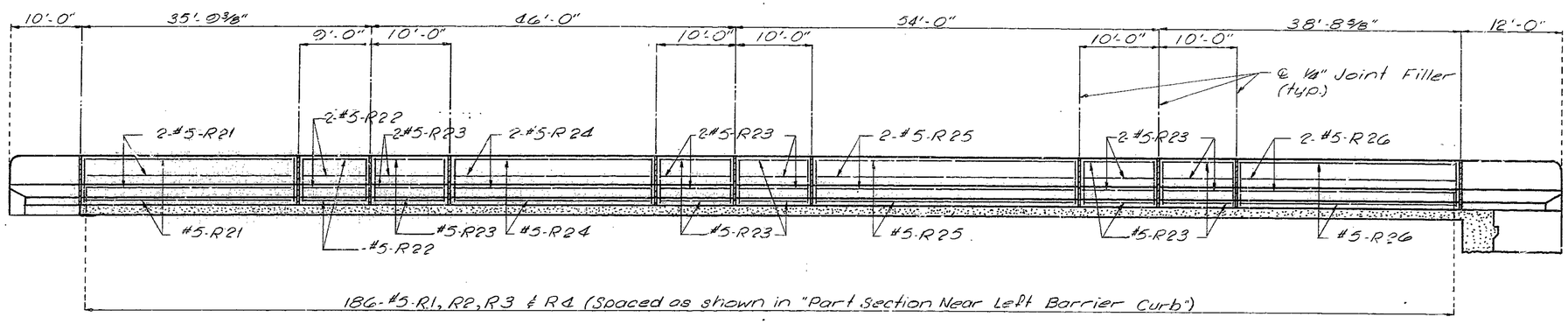
PART SECTION NEAR ℄ SPAN (S. B. L. SHOWN)

9
33

DETAILED Feb 1985
CHECKED Feb 1985

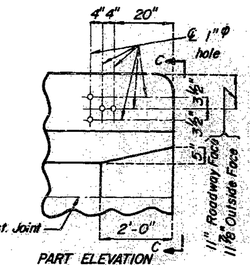
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ NO	SHEET NO.
MO.	I-IR-IRG-435-1(148)	52



SECTION NEAR BARRIER CURB

Note: Longitudinal dimensions are along top of slab, parallel to grade.



PART ELEVATION

NOTES:

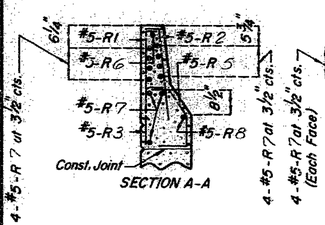
Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of barrier curb shall have ½" radius or ⅜" bevel unless otherwise noted.

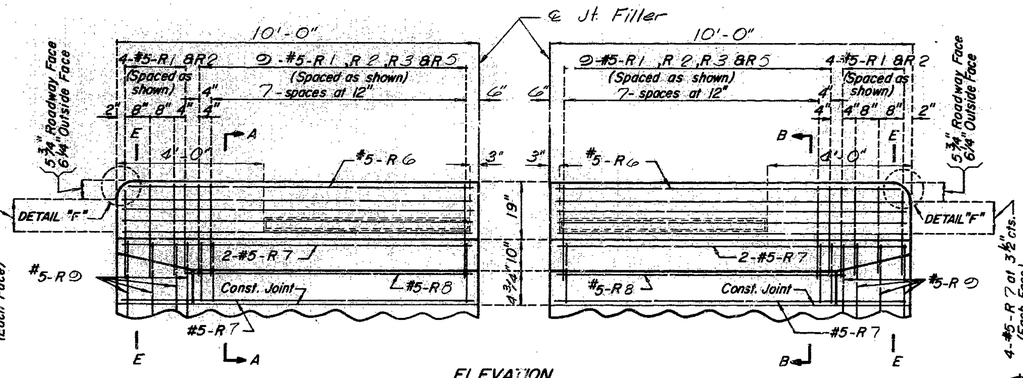
When the barrier curb is bid by linear feet, the contract unit price shall include the cost of all concrete and reinforcement, complete in place.

Concrete in the safety barrier curb shall be Class B1.

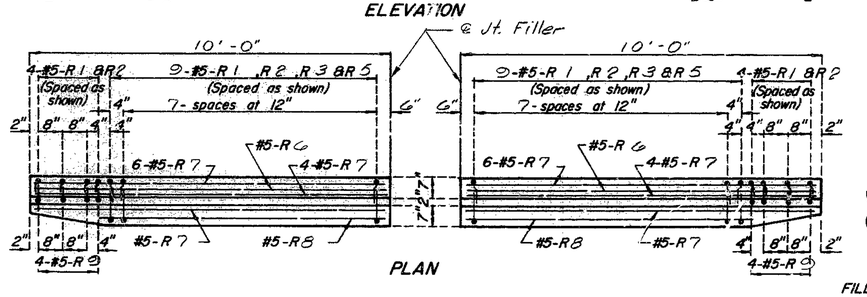
Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.



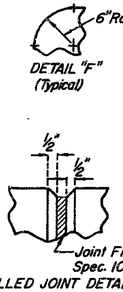
SECTION A-A



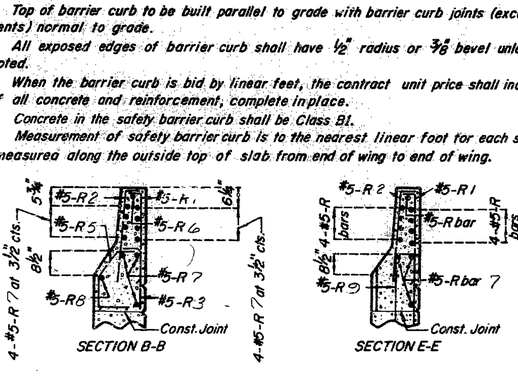
ELEVATION



PLAN

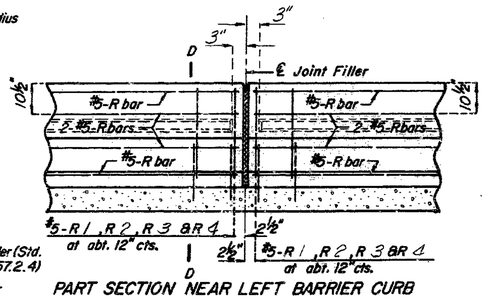


FILLED JOINT DETAIL

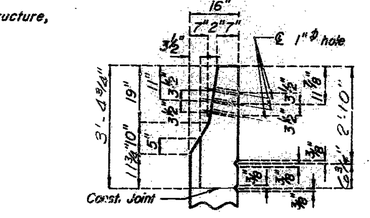


SECTION B-B

SECTION E-E

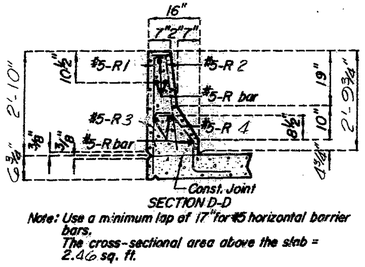


PART SECTION NEAR LEFT BARRIER CURB



ELEVATION C-C

DETAILS OF GUARD RAIL ATTACHMENT



SECTION D-D

Note: Use a minimum lap of 17" for #5 horizontal barrier bars.
The cross-sectional area above the slab = 2.46 sq. ft.

340

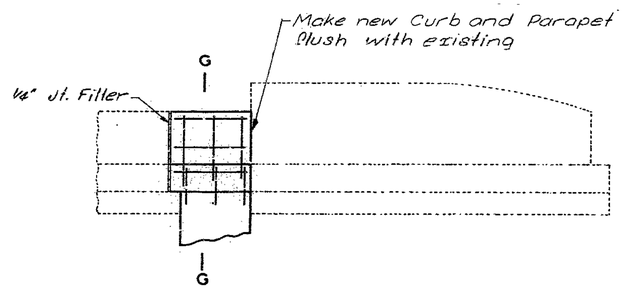
REVISED	JUNE 1984
AUG. 1978	
SPS 127(N)	

DETAILED Jan 1985
CHECKED Feb 1985

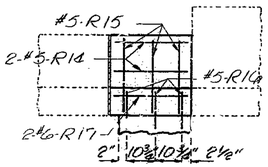
DETAILS OF BARRIER CURB AT END BENT 1

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

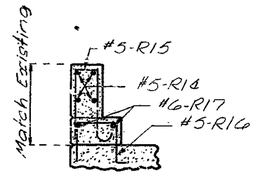
STATE	PROJ NO	SHEET NO.
MO	I-IR-IRG-435-1(148)	53



ELEVATION

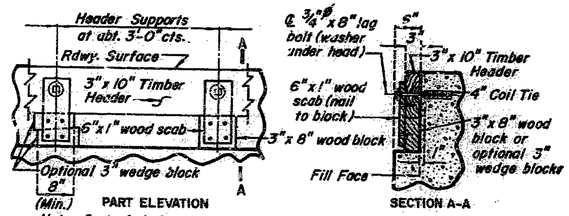


PART SECTION NEAR INSIDE EXISTING CURB & PARAPET



SECTION G-G

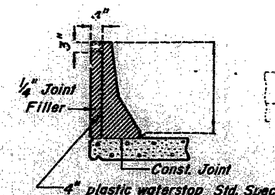
Note: Cost of concrete and reinforcement, complete in place, for replacing existing curb and parapet shall be included in the contract unit price, per linear foot, for Safety Barrier Curb



PART ELEVATION SECTION A-A

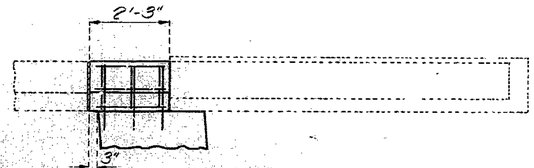
Note: Cost of timber headers complete in place to be included in contract unit price for concrete.

DETAILS OF TIMBER HEADER AT END BENTS



Note: Plastic waterstop shall be placed in all safety barrier curb filled joints. Cost of plastic waterstop complete in place to be included in contract unit price for safety barrier curb.

DETAILS OF PLASTIC WATERSTOP



PLAN

DETAILS OF CURB & PARAPET AT END BENT 5

NOTES:

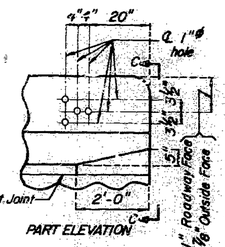
Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of barrier curb shall have ½" radius or ⅜" bevel unless otherwise noted.

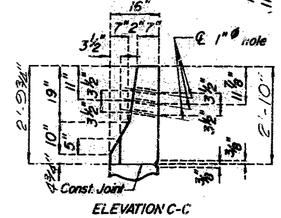
When the barrier curb is bid by linear feet, the contract unit price shall include the cost of all concrete and reinforcement, complete in place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

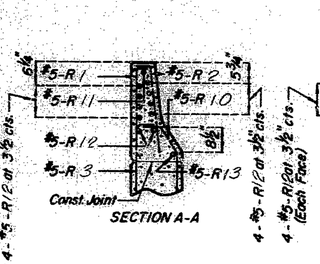


PART ELEVATION

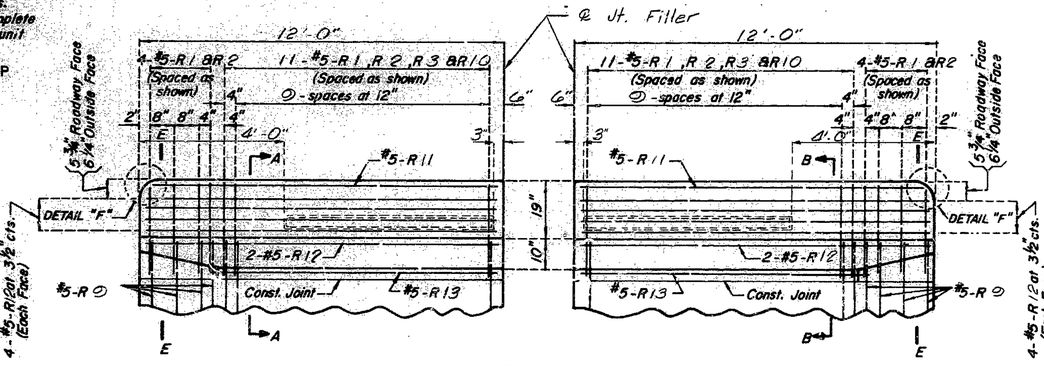


ELEVATION C-C

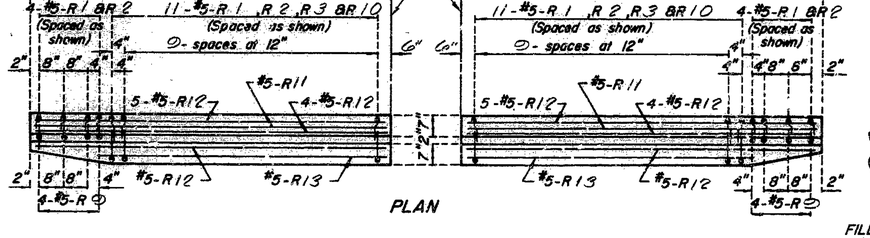
DETAILS OF GUARD RAIL ATTACHMENT



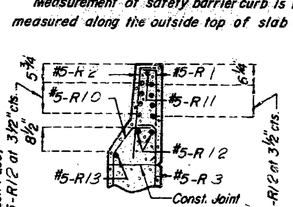
SECTION A-A



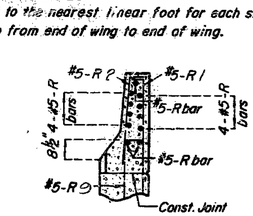
ELEVATION



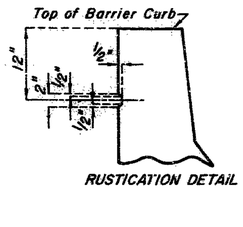
PLAN



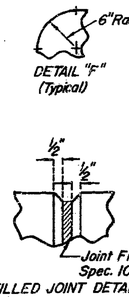
SECTION B-B



SECTION E-E



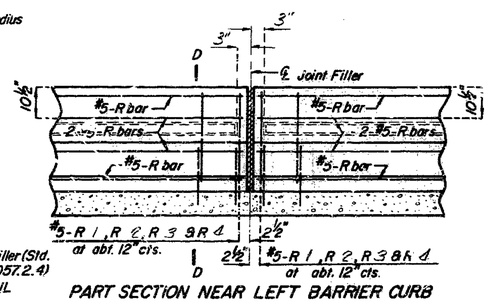
RUSTICATION DETAIL



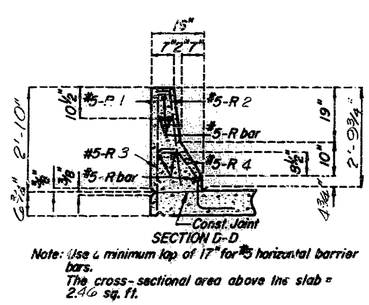
DETAIL "F" (Typical)

Joint Filler (Std. Spec. 1057.2.4)

FILLED JOINT DETAIL



PART SECTION NEAR LEFT BARRIER CURB



SECTION C-D

Note: Use a minimum lap of 17" for #5 horizontal barrier bars.
The cross-sectional area above the slab = 2.46 sq. ft.

DETAILS OF BARRIER CURB AT END BENT 5

341

SPS 1.7.9 (ST)	REVISED
OCT. 1984	

DETAILED Jan 1985
CHECKED Feb 1985

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

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.IN.	ACTUAL LENGTH FT.IN.	WEIGHT LBS.
			END BENT 1 NBL																							
3		6F2	WING		15		X			14.	125	4	9.000	14.	125	9.	500	10.	500	9.	500	10.	509	7 1	7 0	32
2		6H1	BACKWALL		20		X			7	1.000													7 1	7 1	21
2		3H2	BACKWALL		20		X			7	1.000													7 1	7 1	9
8		6H3	BEAM		18		X			4	3.000													5 7	5 7	67
2		6H4	BEAM		20		X			4	3.000													4 3	4 3	13
5		7H5	BEAM		10	S	X					5	0.000	4	3.000									14 3	13 11	142
4		6H6	WING		20		X			9	9.000													9 9	9 9	59
2		6H7	WING		20		X			9	0.000													9 0	9 0	27
2		6H8	WING		20		X			6	1.000													6 1	6 1	18
4		4H9	CURTAIN WALL		20		X			2	7.000													2 7	2 7	7
2		6T1	WING		25	S	X			16.	000	5	0.625	2	5.000					14.	000	4	11.000	8 10	8 8	26
4		4U1	BEAM		13	S	X			2	8.500	2	11.625	3	3.000	2	11.000							12 7	12 4	33
3		4U3	BEAM		10	S	X					6.	000	2	8.500									3 9	3 7	7
6		5V1	BACKWALL		20		X			3	8.000													3 8	3 8	23
6		5V2	BACKWALL		20		X			2	3.000													2 3	2 3	14
2		6V3	BEAM		20		X			3	0.000													3 0	3 0	9
2		4V4	CURTAIN WALL		19		X			4	1.000	3	0.000											7 1	7 0	9
2		4V5	CURTAIN WALL		20		X			3	11.000													3 11	3 11	5
4		6V6	WING		20		X			5	2.000													5 2	5 2	31
5		6V7	WING		20		X	V	1	2	11.000													2 11	2 11	
			INCR = 2.750 IN							3	10.000													3 10	3 10	25
4		6V8	WING		17		X			5	0.000													5 8	5 8	34
5		6V9	WING		17		X	V	1	2	9.000													3 3	3 5	
			INCR = 2.750 IN							3	8.000													4 4	4 4	29
2		6V10	WING		20		X			18.	000													19	18	5
2		2W1	BEAM		22		X			12.	000	9.	125											19 9	19 9	7
			END BENT 1 SBL																							
3		6F1	WING		15		X			14.	125	4	5.000	14.	125	10.	500	9.	500	10.	500	9.	500	6 9	6 8	30
2		6H1	BACKWALL		20		X			7	1.000													7 1	7 1	21
2		4H2	BACKWALL		20		X			7	1.000													7 1	7 1	9
8		6H3	BEAM		18		X			4	3.000													5 7	5 7	67
2		6H4	BEAM		20		X			4	3.000													4 3	4 3	13
5		7H5	BEAM		10	S	X					5	0.000	4	3.000									14 3	13 11	142
4		6H6	WING		20		X			9	9.000													9 9	9 9	59
2		6H7	WING		20		X			9	0.000													9 0	9 0	27
2		6H8	WING		20		X			6	1.000													6 1	6 1	18
4		4H9	CURTAIN WALL		20		X			2	7.000													2 7	2 7	7
2		6T1	WING		25	S	X			16.	000	5	0.625	2	5.000					14.	000	4	11.000	8 10	8 8	26
3		4U1	BEAM		13	S	X			2	8.500	2	11.625	3	3.000	2	11.000							12 7	12 4	25
3		4U3	BEAM		10	S	X					6.	000	2	8.500									3 9	3 7	7
1		4U2	BEAM		13	S	X			2	8.500	2	11.000	2	6.500	2	11.000							12 0	11 9	8
6		5V1	BACKWALL		20		X			3	8.000													3 8	3 8	23
6		5V2	BACKWALL		20		X			2	3.000													2 3	2 3	14
2		6V3	BEAM		20		X			3	0.000													3 0	3 0	9
2		4V4	CURTAIN WALL		19		X			4	1.000	3	0.000											7 1	7 0	9
2		4V5	CURTAIN WALL		20		X			3	11.000													3 11	3 11	5
4		6V6	WING		20		X			5	2.000													5 2	5 2	31
5		6V7	WING		20		X	V	1	2	11.000													2 11	2 11	
			INCR = 2.750 IN							3	10.000													3 10	3 10	25
4		6V8	WING		17		X			5	0.000													5 8	5 8	34

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.IN.	ACTUAL LENGTH FT.IN.	WEIGHT LBS.
5		6V9	WING		17		X	V	1	2	9.000															
			INCR = 2.750 IN							3	8.000													4 4	4 4	29
2		6V10	WING		20		X			18.	000													18	18	5
2		2W1	BEAM		22		X			12.	000	9.	125											19 9	19 9	7
			INT BENT 2 NBL																							
5		5D21	FOOTING		20		X			4	3.000													4 3	4 3	22
9		8D24	FOOTING		20		X			6	2.000													6 2	6 2	148
6		5D25	FOOTING		18		X			4	9.000													5 11	5 11	37
4		6H21	BEAM		17		X			5	0.000													5 8	5 8	34
4		6H22	BEAM		20		X			5	3.000													5 3	5 3	32
4		6H23	BEAM		20		X			5	0.000													5 0	5 0	30
4		7H24	BEAM		7		X			4	0.000	2	5.000											9 3	9 3	76
22		4P21	COLUMN		16		X			2	3.000													7 11	7 11	116
5		5U21	BEAM		13	S	X			2	5.000	3	3.000	2	5.000	3	3.000							12 3	11 11	62
2		4U22	BEAM		10	S	X					6.	000	2	5.000									3 5	3 3	4
1		5U23	BEAM		13	S	X			2	0.000	3	3.000	2	0.000	3	3.000							11 5	11 1	12
9		8V23	COLUMN		20		X			23	9.000													23 9	23 9	571
2		2W1	BEAM		22		X			12.	000	9.	125											19 9	19 9	7
			INT BENT 3 NBL																							
9		8D24	FOOTING		20		X			6	2.000													6 2	6 2	148
6		6D26	FOOTING		10		X					3	3.000	20.	000									8 2	7 10	71
4		6H21	BEAM		17		X			5	0.000													5 8	5 8	34
4		6H22	BEAM		20		X			5	3.000													5 3	5 3	32
4		6H23	BEAM		20		X			5	0.000													5 0	5 0	30
4		7H24	BEAM		7		X			4	0.000	2	5.000											9 3	9 3	76
14		4P21	COLUMN		16		X			2	3.000													7 11	7 11	74
5		5U21	BEAM		13	S	X			2	5.000	3	3.000	2	5.000	3	3.000							12 3	11 11	62
2		4U22	BEAM		10	S	X					6.	000	2	5.000									3 5	3 3	4
1		5U23	BEAM		13	S	X			2	0.000	3	3.000	2	0.000	3	3.000							11 5	11 1	12
9		8V25	COLUMN		20		X			15	3.000													15 3	15 3	366
2		2W1	BEAM		22		X			12.	000	9.	125											19 9	19 9	7
			INT BENT 4 NBL																							
9		8D24	FOOTING		20		X			6	2.000													6 2	6 2	148
6		6D26	FOOTING		10		X					3	3.000	20.	000									8 2	7 10	71
4		6H21	BEAM		17		X			5	0.000													5 8	5 8	34
4		6H22	BEAM		20		X			5	3.000													5 3	5 3	32
4		6H23	BEAM		20		X			5	0.000													5 0	5 0	30
4		7H24	BEAM		7		X			4	0.000	2	5.000											9 3	9 3	76

STATE MO | PROJ NO I-IR-IRG-435-1(148), 54 | SHEET NO

SHAPE 6 SHAPE 7 SHAPE 8 SHAPE 9

SHAPE 10 SHAPE 11 SHAPE 12 SHAPE 13

SHAPE 14 SHAPE 15

SHAPE 16 SHAPE 17 SHAPE 18 SHAPE 20 SHAPE 19

SHAPE 21 SHAPE 22 SHAPE 23

SHAPE 24 SHAPE 25 SHAPE 26

SHAPE 27 SHAPE 28 SHAPE 29

SHAPE 30 SHAPE 31 SHAPE 32

SHAPE 33

BENDING DIAGRAMS

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.
Note: This drawing is not to scale. Follow dimensions.

SIZE OF 180° HOOKS (GRADE 40 KSI)
D = 5d FOR #3 THRU # 11
D = 10d FOR #14 AND # 18

SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)
D = 6d FOR #3 THRU #8
D = 8d FOR #9, #10 AND #11
D = 10d FOR #14 AND #18

END HOOK DIMENSIONS					
BAR SIZE	180° HOOKS				90° HOOKS
	GRADE 40		GRADE 60		ALL GRADES
	A OR G	J	A OR G	J	A OR G
#3	5"	2-3/4"	5"	3"	6"
#4	6"	3-1/2"	6"	4"	8"
#5	7"	4-1/2"	7"	5"	10"
#6	8"	5-1/4"	8"	6"	12"
#7	9"	6-1/4"	10"	7"	14"
#8	10"	7"	11"	8"	16"
#9	12"	8"	15"	11-1/4"	19"
#10	13"	9"	17"	12-3/4"	22"
#11	14"	10"	19"	14-1/4"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"

Sheet No. 19 of 25.

NOTES:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E - EPOXY COATED REINFORCEMENT.
S - STIRRUP.
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

STD. 90.8 REVISED MAY 1984
MAY 1974

DETAILED Feb 1985
CHECKED Feb 1985

JACKSON COUNTY

A-1750R

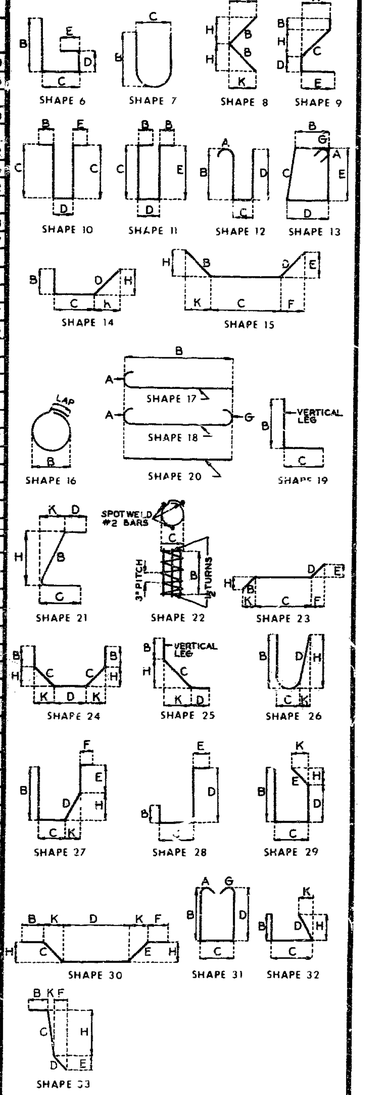
COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
13	4P21	COLUMN		16		X			2 3.000							7 11	7 11	69
5	5U21	BEAM		13	S	X			2 5.000	3 3.000	2 5.000	3 3.000				12 3	11 11	62
2	4U22	BEAM		10	S	X				6.000	2 5.000					3 5	3 3	4
1	5U23	BEAM		13	S	X			2 0.000	3 3.000	2 0.000	3 3.000				11 5	11 1	12
9	8V26	COLUMN		20		X			14 8.000							14 8	14 8	352
2	2W1	BEAM		22		X			12.000	9.125						19 9	19 9	7
		INT BENT 2 SBL																
5	5D21	FOOTING		20		X			4 3.000							4 3	4 3	22
5	5D22	FOOTING		18		X			4 3.000							5 5	5 5	28
9	8D24	FOOTING		20		X			6 2.000							6 2	6 2	148
4	6H21	BEAM		17		X			5 0.000							5 8	5 8	34
4	6H22	BEAM		20		X			5 3.000							5 3	5 3	32
4	6H23	BEAM		20		X			5 0.000							5 0	5 0	30
4	7H24	BEAM		7		X			4 0.000	2 5.000						9 3	9 3	76
18	4P21	COLUMN		16		X			2 3.000							7 11	7 11	95
5	5U21	BEAM		13	S	X			2 5.000	3 3.000	2 5.000	3 3.000				12 3	11 11	62
2	4U22	BEAM		10	S	X				6.000	2 5.000					3 5	3 3	4
1	5U23	BEAM		13	S	X			2 0.000	3 3.000	2 0.000	3 3.000				11 5	11 1	12
9	8V21	COLUMN		20		X			19 4.000							19 4	19 4	465
2	2W1	BEAM		22		X			12.000	9.125						19 9	19 9	7
		INT BENT 3 SBL																
5	5D21	FOOTING		20		X			4 3.000							4 3	4 3	22
7	6D23	FOOTING		18		X			5 3.000							6 7	6 7	69
9	8D24	FOOTING		20		X			6 2.000							6 2	6 2	148
4	6H21	BEAM		17		X			5 0.000							5 8	5 8	34
4	6H22	BEAM		20		X			5 3.000							5 3	5 3	32
4	6H23	BEAM		20		X			5 0.000							5 0	5 0	30
4	7H24	BEAM		7		X			4 0.000	2 5.000						9 3	9 3	76
25	4P21	COLUMN		16		X			2 3.000							7 11	7 11	132
5	5U21	BEAM		13	S	X			2 5.000	3 3.000	2 5.000	3 3.000				12 3	11 11	62
2	4U22	BEAM		10	S	X				6.000	2 5.000					3 5	3 3	4
1	5U23	BEAM		13	S	X			2 0.000	3 3.000	2 0.000	3 3.000				11 5	11 1	12
9	8V22	COLUMN		20		X			26 8.000							26 8	26 8	641
2	2W1	BEAM		22		X			12.000	9.125						19 9	19 9	7
		INT BENT 4 SBL																
9	8D24	FOOTING		20		X			6 2.000							6 [illegible]		148
6	6D26	FOOTING		10		X				3 3.000	20.000					8 2	7 10	71
4	6H21	BEAM		17		X			5 0.000							5 8	5 8	34
4	6H22	BEAM		20		X			5 3.000							5 3	5 3	32

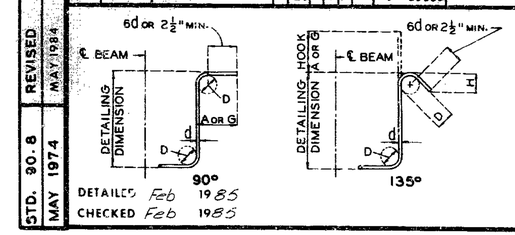
COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
4	6H23	BEAM		20		X			5 0.000							5 0	5 0	30
4	7H24	BEAM		7		X			4 0.000	2 5.000						9 3	9 3	76
15	4P21	COLUMN		16		X			2 3.000							7 11	7 11	79
5	5U21	BEAM		13	S	X			2 5.000	3 3.000	2 5.000	3 3.000				12 3	11 11	62
2	4U22	BEAM		10	S	X				6.000	2 5.000					3 5	3 3	4
1	5U23	BEAM		13	S	X			2 0.000	3 3.000	2 0.000	3 3.000				11 5	11 1	12
9	8V24	COLUMN		20		X			16 7.000							16 7	16 7	398
2	2W1	BEAM		22		X			12.000	9.125						19 9	19 9	7
		END BENT 5 NBL																
8	6H51	BEAM		18		X			4 3.000							5 7	5 7	67
2	6H52	BEAM		20		X			4 3.000							4 3	4 3	13
4	4U51	BEAM		13	S	X			2 8.000	3 3.625	3 3.000	3 3.000				13 3	12 11	35
		END BENT 5 SBL																
8	6H51	BEAM		18		X			4 3.000							5 7	5 7	67
2	6H52	BEAM		20		X			4 3.000							4 3	4 3	13
4	4U51	BEAM		13	S	X			2 8.000	3 3.625	3 3.000	3 3.000				13 3	12 11	35
		SUPERSTRUCTURE																
		END BENT 5 NBL																
3	4H53	DIAPH		20					7 [illegible].000							7 5	7 5	15
3	4H54	DIAPH		20					18 0.000							18 0	18 0	36
3	4H55	DIAPH		20					6 11.000							6 11	6 11	14
15	4H56	DIAPH		20					6 7.000							6 7	6 7	66
3	4H57	DIAPH		20					3 5.000							3 5	3 5	7
3	4H58	DIAPH		20					4 11.000							4 11	4 11	10
3	4H59	DIAPH		20					14 11.000							14 11	14 11	30
3	4H60	DIAPH		20					30 1.000							30 1	30 1	60
3	4H61	DIAPH		20					2 6.000							2 6	2 6	5
3	4H62	DIAPH		20					5 10.000							5 10	5 10	12
3	4H63	DIAPH		20					3 0.000							3 0	3 0	6
4	6H64	SLAB		20					16 3.000							16 3	16 3	96
4	6H65	SLAB		20					12 10.000							12 10	12 10	77
4	6H66	SLAB		20					29 2.000							29 2	29 2	175
6	6H67	WING		20					11 0.000							11 0	11 0	99
2	6H68	WING		20					10 4.000							10 4	10 4	31
8	6H69	WING		20			V	2	6 8.000							6 8	6 8	
		INCR = 16.625 IN							2 6.000							2 6	2 6	55
2	6T51	WING		25					2 1.000	16.500	9 2.000				7.000	15.000	12 8	12 6	31
2	6T52	WING		20					9 1.000								9 1	9 1	27
3	4U52	DIAPH		19					2 10.000	2 8.000							5 6	5 5	33
3	4U53	DIAPH		19					2 10.000	4 7.000							7 5	7 4	15
3	4U54	DIAPH		13	S				2 8.000	2 10.000	2 8.000	2 10.000					11 9	11 6	23
43	4U55	DIAPH		19					2 10.000	20.000							4 [illegible]	4 5	127
43	4U56	DIAPH		19					2 10.000	2 8.000							5 6	5 5	156
2	4U57	DIAPH		13	S				20.000	2 10.000	20.000	2 10.000					9 9	9 6	13
18	[illegible]	WING							[illegible].000								2 3	2 3	
		INCR = 6.125 IN							6 4.000								6 4	6 4	116

STATE	PROJ NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	55



BENDING DIAGRAMS



DETAILED Feb 1985
CHECKED Feb 1985

STD. 30.8 MAY 1974	REVISED MAY 1984

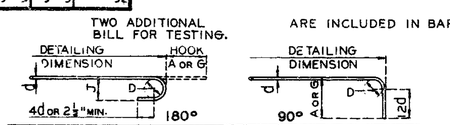
STIRRUP HOOK DIMENSIONS

BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
GRADES 40-50-60 KSI				
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

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

TWO ADDITIONAL BILL FOR TESTING. ARE INCLUDED IN BAR



SIZE OF 180° HOOKS (GRADE 40 KSI)
D = 5d FOR #3 THRU #11
D = 10d FOR #14 AND #18

SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)
D = 6d FOR #3 THRU #8
D = 8d FOR #9, #10 AND #11
D = 10d FOR #14 AND #18

END HOOK DIMENSIONS

BAR SIZE	180° HOOKS GRADE 40 A OR G	180° HOOKS GRADE 40 J	180° HOOKS GRADE 60 A OR G	180° HOOKS GRADE 60 J	90° HOOKS ALL GRADES A OR G
#3	5"	2-3/4"	5"	3"	6"
#4	6"	3-1/2"	6"	4"	8"
#5	7"	4-1/2"	7"	5"	10"
#6	8"	5-1/4"	8"	6"	12"
#7	9"	6-1/4"	10"	7"	14"
#8	10"	[illegible]	11"	8"	16"
#9	12"	8"	15"	11-1/4"	19"
#10	13"	9"	17"	12-3/4"	22"
#11	14"	10"	19"	14-1/4"	21-0"
#14	21-2"	20-1/2"	21-2"	20-1/2"	21-7"

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E - EPOXY COATED REINFORCEMENT.
S - STIRRUP.
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOR INFORMATION ONLY

A17504&A17505, Sht. 48

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 5 SBL																									
3	4H53		DIAPH		20					7	5.000													7	5	7	5	15
3	4H54		DIAPH		20					18	0.000													18	0	18	0	36
3	4H55		DIAPH		20					6	11.000													6	11	6	11	14
15	4H56		DIAPH		20					6	7.000													6	7	6	7	66
3	4H57		DIAPH		20					3	5.000													3	5	3	5	7
3	4H58		DIAPH		20					4	11.000													4	11	4	11	10
3	4H59		DIAPH		20					14	11.000													14	11	14	11	30
3	4H60		DIAPH		20					30	1.000													30	1	30	1	60
3	4H61		DIAPH		20					2	6.000													2	6	2	6	5
3	4H62		DIAPH		20					5	10.000													5	10	5	10	12
3	4H63		DIAPH		20					3	0.000													3	0	3	0	6
4	6H64		SLAB		20					16	3.000													16	3	16	3	98
4	6H65		SLAB		20					12	10.000													12	10	12	10	77
4	6H66		SLAB		20					29	2.000													29	2	29	2	175
6	6H67		WING		20					11	0.000													11	0	11	0	99
2	6H68		WING		20					10	4.000													10	4	10	4	31
8	6H69		WING		20			V	2	2	6.000													2	6	2	6	
			INCR = 16.625 IN							6	8.000													6	8	6	8	55
2	6T51		WING		25					2	3.000	16	6.500	9	2.000						7.000	15	0.000	12	8	12	6	38
2	6T52		WING		20					9	1.000													9	1	9	1	27
3	4U52		DIAPH		19					2	10.000	2	6.000											5	6	5	5	11
3	4U53		DIAPH		19					2	10.000	4	7.000											7	5	7	4	15
3	4U54		DIAPH		13	S				2	8.000	2	10.000	2	8.000	2	10.000							11	9	11	6	23
43	4U55		DIAPH		19					2	10.000		20.000											4	6	4	5	127
43	4U56		DIAPH		19					2	10.000	2	8.000											5	6	5	5	156
2	4U57		DIAPH		13	S					20.000	2	10.000		20.000	2	10.000							9	9	9	6	13
18	6V51		WING		20			V	2	2	3.000													2	3	2	3	
			INCR = 6.125 IN							6	4.000													6	4	6	4	116
			SLAB NBL																									
840	5S1		TOP & BOTT SLAB		20					5	6.000													5	6	5	6	4819
28	4S2		TOP SLAB		20					45	11.000													45	11	45	11	859
5	4S3		TOP SLAB		20					16	5.000													16	5	16	5	55
5	4S4		TOP SLAB		20					22	8.000													22	8	22	8	76
4	5S5		TOP & BOTT SLAB		20					4	2.000													4	2	4	2	17
5	4S8		TOP SLAB		20					20	7.000													20	7	20	7	69
20	5S13		BOTT SLAB		20					45	11.000													45	11	45	11	958
			SLAB SBL																									
840	5S1		TOP & BOTT SLAB		20					5	6.000													5	6	5	6	4819
28	4S2		TOP SLAB		20					45	11.000													45	11	45	11	859
5	4S3		TOP SLAB		20					16	5.000													16	5	16	5	55
5	4S4		TOP SLAB		20					22	8.000													22	8	22	8	76
4	5S5		TOP & BOTT SLAB		20					4	2.000													4	2	4	2	17
5	4S8		TOP SLAB		20					20	7.000													20	7	20	7	69
20	5S13		BOTT SLAB		20					45	11.000													45	11	45	11	958
			R																									
			BARRIER CURB																									
428	5R1		BARRIER CURB	E	19	S				2	6.000	3	500											2	10	2	8	1190
428	5R2		BARRIER CURB	E	19	S				2	6.125	3	500							2	6.000	3	000	2	10	2	9	1228
412	5R3		BARRIER CURB	E	19	S					18.750	6	000											2	1	2	0	859
372	5R4		BARRIER CURB	E	27	S						6	000	11	625	8	750	12	000	9	125	6	375	3	2	3	0	1164
13	5R5		BARRIER CURB	E	27	S					12.000	8	750	11	125	6	000			6	375	9	125	3	2	3	0	56
2	5R6		BARRIER CURB	E	20					9	6.000													9	6	9	6	20
22	5R7		BARRIER CURB	E	20					9	9.000													9	9	9	9	224

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	F FT.	F IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
2	5R8		BARRIER CURB	E	20					8	0.000													8	0	8	0	17
16	5R9		BARRIER CURB	E	10	S						2	2.000	6	000									4	10	4	8	78
22	5R10		BARRIER CURB	E	27	S						2	2.000	11	125	6	000			6	375	9	125	3	7	3	6	80
2	5R11		BARRIER CURB	E	20					11	6.000													11	6	11	6	24
20	5R12		BARRIER CURB	E	20					11	9.000													11	9	11	9	245
2	5R13		BARRIER CURB	E	20					10	0.000													10	0	10	0	21
8	5R14		CURB & PARAPET	E	20					2	0.000													2	0	2	0	17
6	5R15		CURB & PARAPET	E	12	S				2	0.000	7	500	2	0.000									5	3	5	0	31
6	5R16		CURB & PARAPET	E	10	S					6.375	12	625	13	375									3	9	3	5	21
4	5R17		CURB & PARAPET	E	20					2	0.000													2	0	2	0	12
12	5R21		BARRIER CURB	E	20					26	6.000													26	6	26	6	332
12	5R22		BARRIER CURB	E	20					8	9.500													8	9	8	9	110
62	5R23		BARRIER CURB	E	20					9	9.000													9	9	9	9	930
12	5R24		BARRIER CURB	E	20					25	9.000													25	9	25	9	322
12	5R25		BARRIER CURB	E	20					33	9.000													33	9	33	9	422
12	5R26		BARRIER CURB	E	20					28	5.000													28	5	28	5	356
			END OF BAR LIST																									

STATE	PROJ NO	SHEET NO
MO	I-IR-IRG-435-1(148)	56

SHAPE 6 · SHAPE 7 · SHAPE 8 · SHAPE 9

SHAPE 10 · SHAPE 11 · SHAPE 12 · SHAPE 13

SHAPE 14 · SHAPE 15

SHAPE 16 · SHAPE 17 · SHAPE 18 · SHAPE 20 · SHAPE 19

SHAPE 21 · SHAPE 22 · SHAPE 23

SHAPE 24 · SHAPE 25 · SHAPE 26

SHAPE 27 · SHAPE 28 · SHAPE 29

SHAPE 30 · SHAPE 31 · SHAPE 32

SHAPE 33

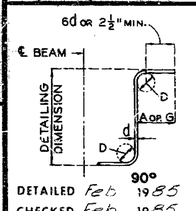
BENDING DIAGRAMS

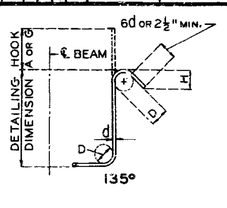
344

STD. 60.8	REVISED	MAY 1964
MAY 1974		

DETAILED Feb 1985

CHECKED Feb 1985



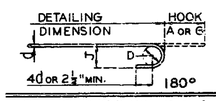


STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#3	1-1/2"	4"	4"	2-1/2"
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	8"	7"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

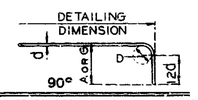
Note: This drawing is not to scale. Follow dimensions.

Note: Two additional R23, are included in bar bill for testing.



SIZE OF 180° HOOKS (GRADE 40 KSI)

D = 5d FOR #3 THRU #11
D = 10d FOR #14 AND #18



SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)

D = 6d FOR #3 THRU #8
D = 8d FOR #9, #10 AND #11
D = 10d FOR #14 AND #18

ENG. HOOK DIMENSIONS					
BAR SIZE	180° HOOKS				90° HOOKS
	GRADE 40		GRADE 60		ALL GRADES
	A OR G	J	A OR G	J	A OR G
#3	5"	2-3/4"	5"	3"	6"
#4	6"	3-1/2"	6"	4"	8"
#5	7"	4-1/2"	7"	5"	10"
#6	8"	5-1/4"	8"	6"	12"
#7	9"	6-1/4"	10"	7"	14"
#8	10"	7"	11"	8"	16"
#9	12"	8"	15"	11-1/4"	19"
#10	13"	9"	17"	12-3/4"	22"
#11	14"	10"	19"	14-1/4"	2'-0"
#14	2'-2"	20-1/2"	2'-2"	20-1/2"	2'-7"

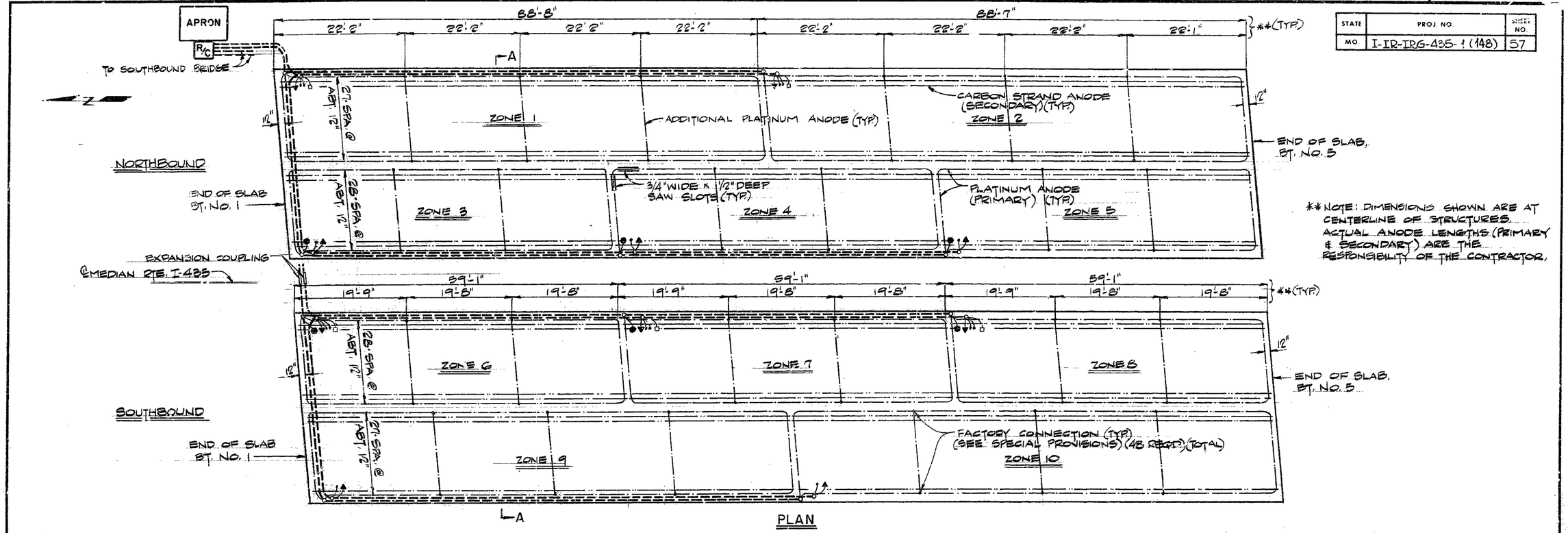
NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E - EPOXY COATED REINFORCEMENT.
S - STIRRUP.
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

JACKSON COUNTY

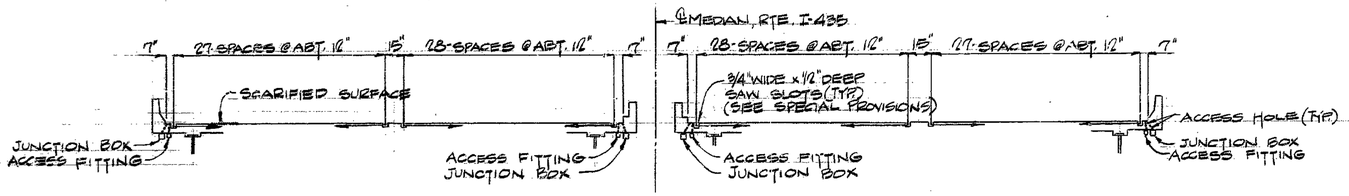
A-175CR

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	57

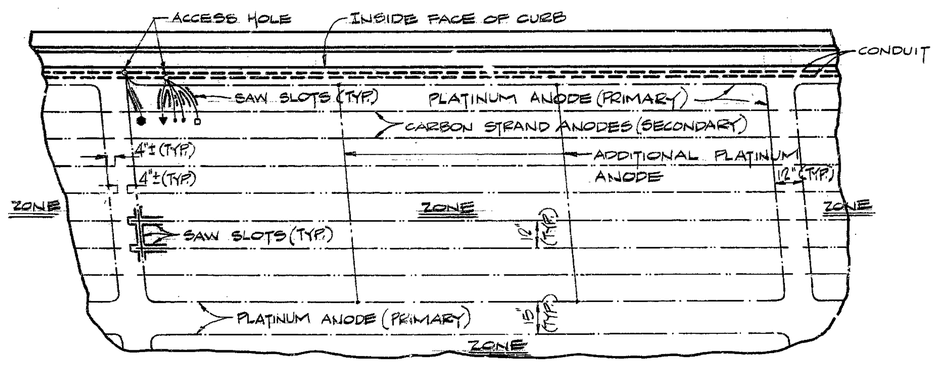


PLAN

** NOTE: DIMENSIONS SHOWN ARE AT CENTERLINE OF STRUCTURES. ACTUAL ANODE LENGTHS (PRIMARY & SECONDARY) ARE THE RESPONSIBILITY OF THE CONTRACTOR.



SECTION A-A



TYPICAL ZONE LAYOUT EXCEPT AS NOTED

NOTE: The anode leads and system negative return leads shall be routed in the same conduit. The reference cell, reference cell ground leads, rebar probe and probe ground leads shall be routed in the same conduit.

Reference cells are to be placed between anodes.

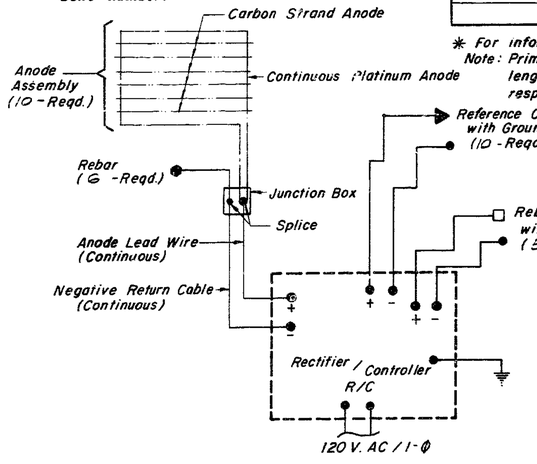
Reference cell ground shall be welded to top rebar within one foot of reference cell.

All zones are similar with varying widths (see Section A-A).

Anode assembly number must match zone number.

ESTIMATED QUANTITIES *		
ITEM	UNIT	QUANTITY
Primary Anodes	Lin. Ft.	2600
Secondary Anode Strands	Lin. Ft.	18,870
Reference Cells	Each	10
Rebar Probes	Each	5
Thermite Welds	Each	57
Conduit 2"ϕ P.V.C.	Lin. Ft.	1980

* For information only.
Note: Primary anodes, secondary anode strands and conduit lengths are approximate. Actual lengths are the responsibility of the contractor.



PARTIAL SCHEMATIC

DENOTATIONS

- Platinum Anode
- Carbon Strand Anode
- System Negatives Connection
- Reference Cell
- Rebar Probe (Corrosometer)
- Grounds
- Conduit

Note: Primary and secondary anode strands shall be placed as shown with a placement tolerance of plus or minus three inches.

CATHODIC PROTECTION SYSTEM

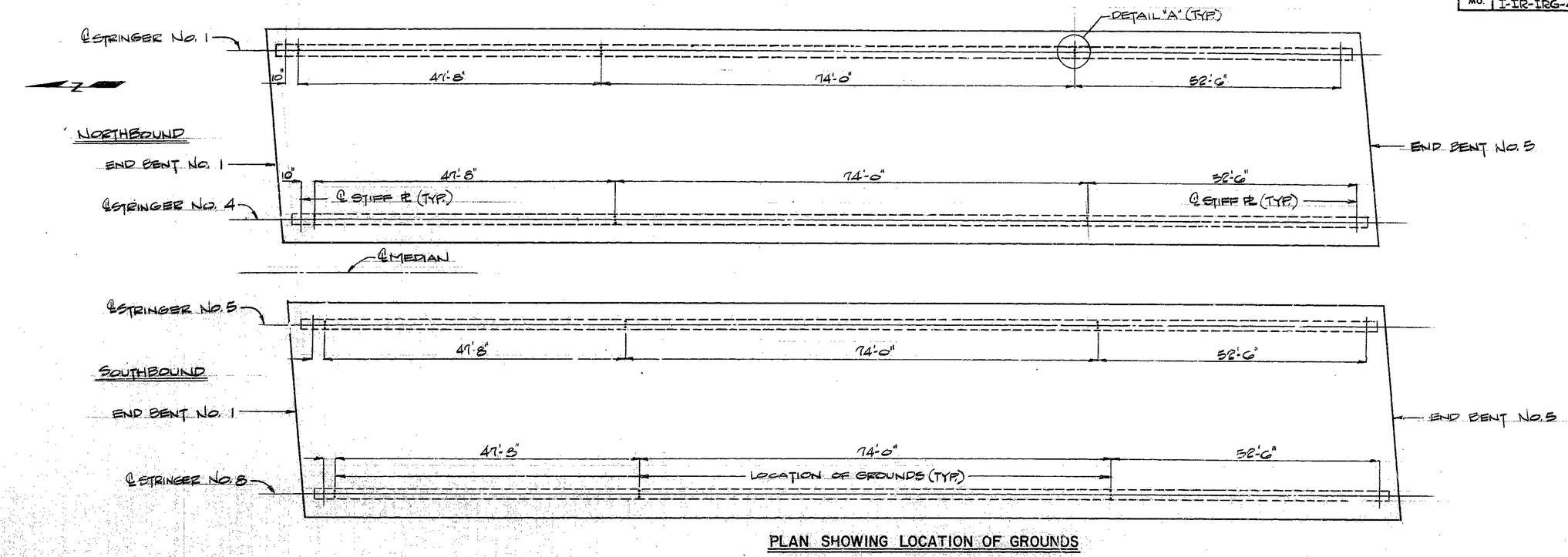
JACKSON COUNTY

A-1750R

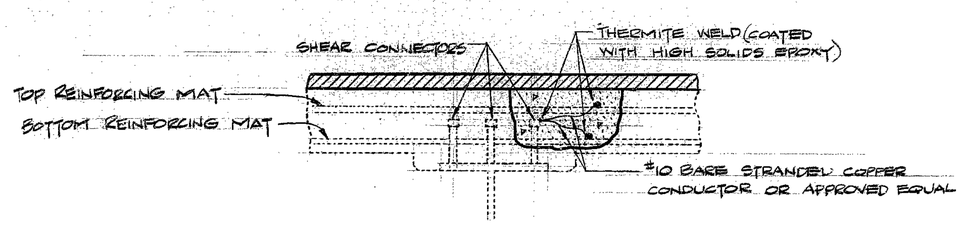
DETAILED JAN. 1985
CHECKED JAN. 1985

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

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	58



PLAN SHOWING LOCATION OF GROUNDS



DETAIL "A"

NOTE: GROUNDING LOCATIONS MAY BE SHIFTED A MAXIMUM OF 5'-0" LONGITUDINALLY TO COINCIDE WITH A DECK REPAIR AREA.

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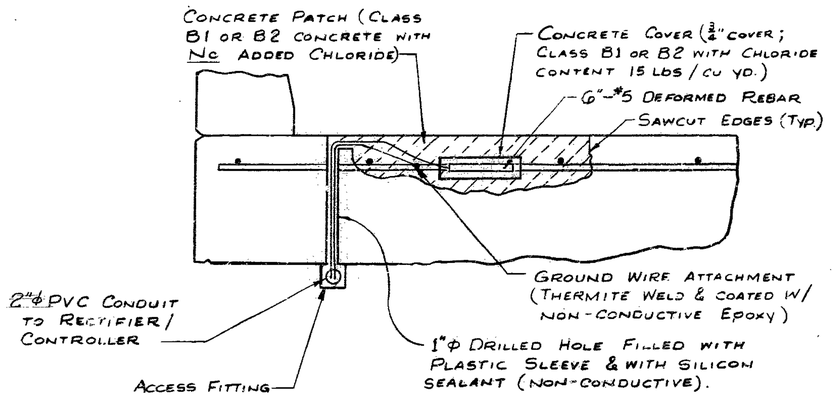
DETAILED JAN. 1985
CHECKED JAN. 1985

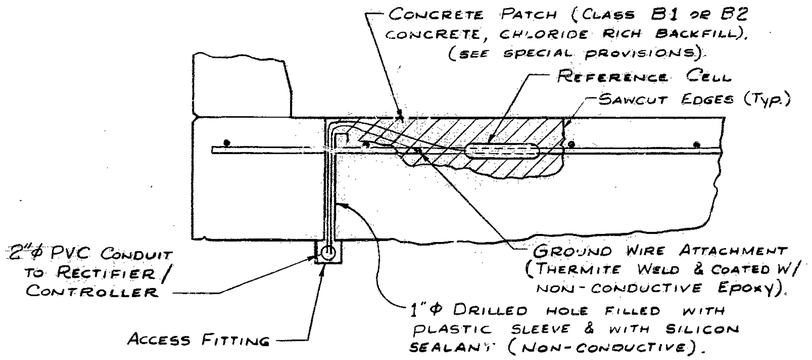
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ NO	SHEET NO.
MO	I-IR-IRG-435-1(148)	59

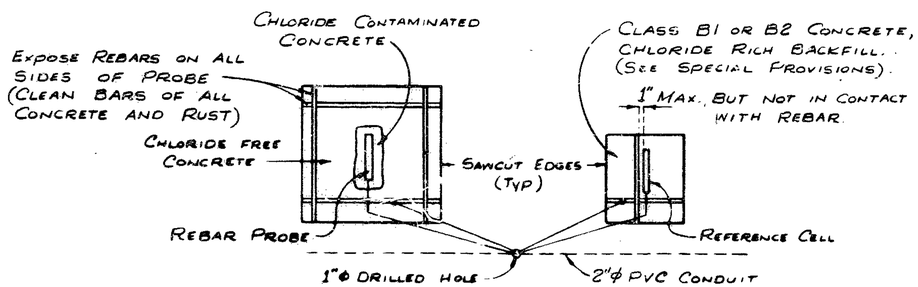


REBAR PROBE DETAILS

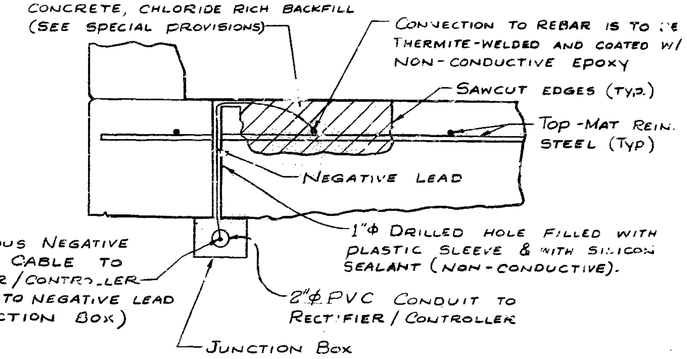
Note: The Reference Cell shall be placed in the excavated area within 1" but not in direct contact of Top-Mat Reinforcing Steel.



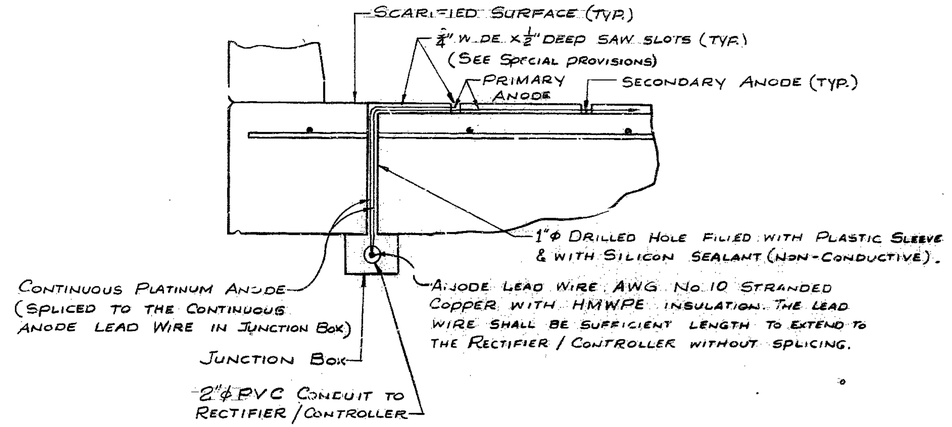
REFERENCE CELL DETAILS



PLAN OF REBAR PROBE AND REFERENCE CELL



SYSTEM NEGATIVES CONNECTION DETAIL



PRIMARY ANODE TO ANODE LEAD WIRE DETAIL

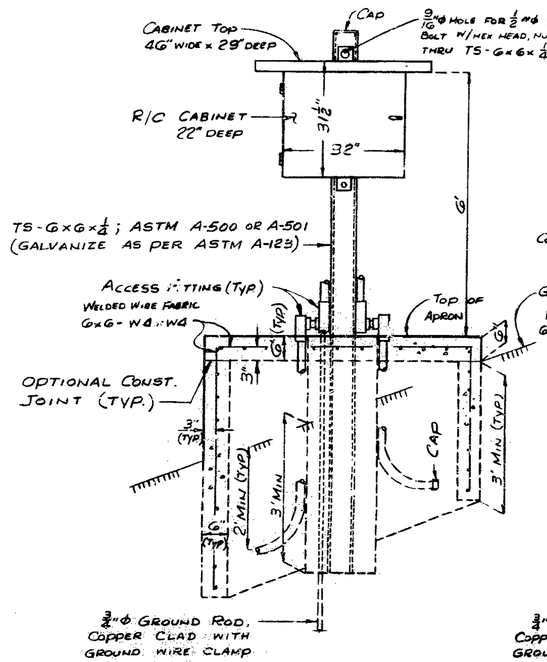
Note: All concrete removal shall be initiated by sow cutting the first ½".

Notes: Conduit shall be schedule 40 Heavy Wall PVC (Polyvinyl Chloride Plastic). Each section of conduit shall bear the Underwriters Laboratories, Inc. (UL) label.
Conduit shall be secured to concrete with clamps at abt. 5'-0" cts.
Weepholes shall be provided at appropriate locations to drain any moisture in the conduit lines.
The location and direction of conduit may be shifted to meet field conditions as approved by the engineer.
Use expansion couplings and access fittings where appropriate.
The junction boxes shall be PVC molded, surface mounted, size 6"x 6"x 4". They shall be equal to "Carlon" Electrical Construction Products or "Triangle" Conduit & Cable Co. Inc. The conduit terminations and cover shall be of water tight construction.

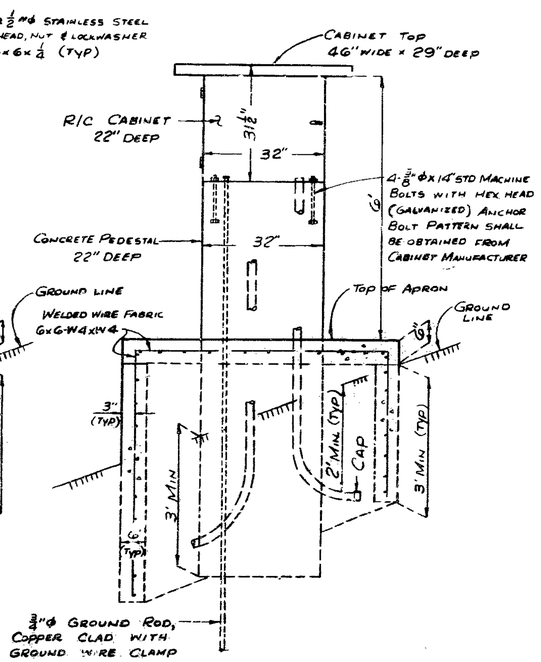
DETAILED FEB. 1985
CHECKED FEB. 1985

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

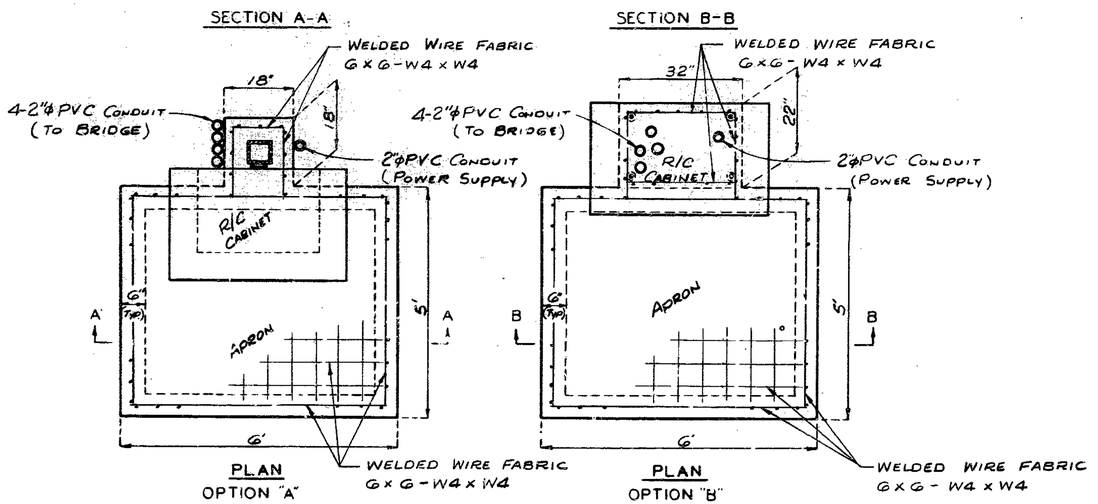
STATE	PROJ NO.	SHEET NO.
MO	I-IR-IRG-433-1(148)	60

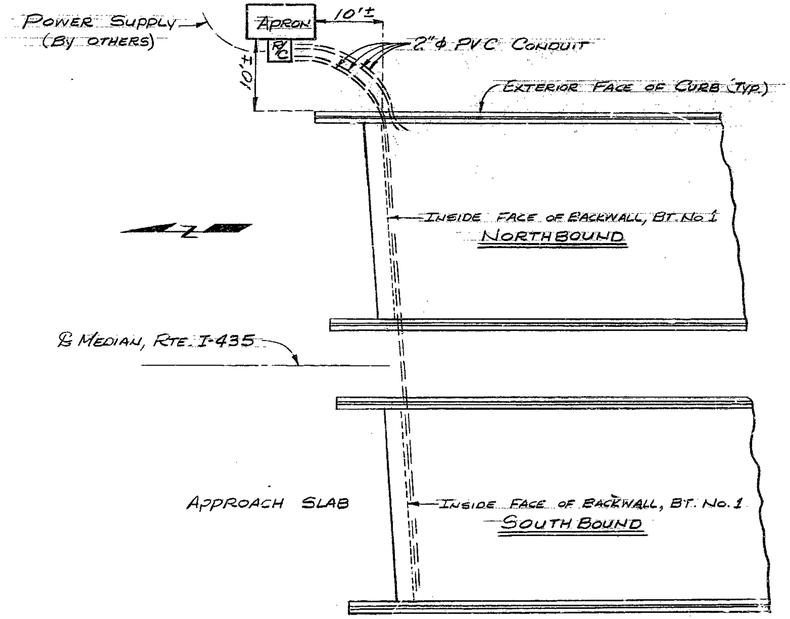


SECTION A-A



SECTION B-B





PLAN LOCATION OF RECTIFIER / CONTROLLER

348

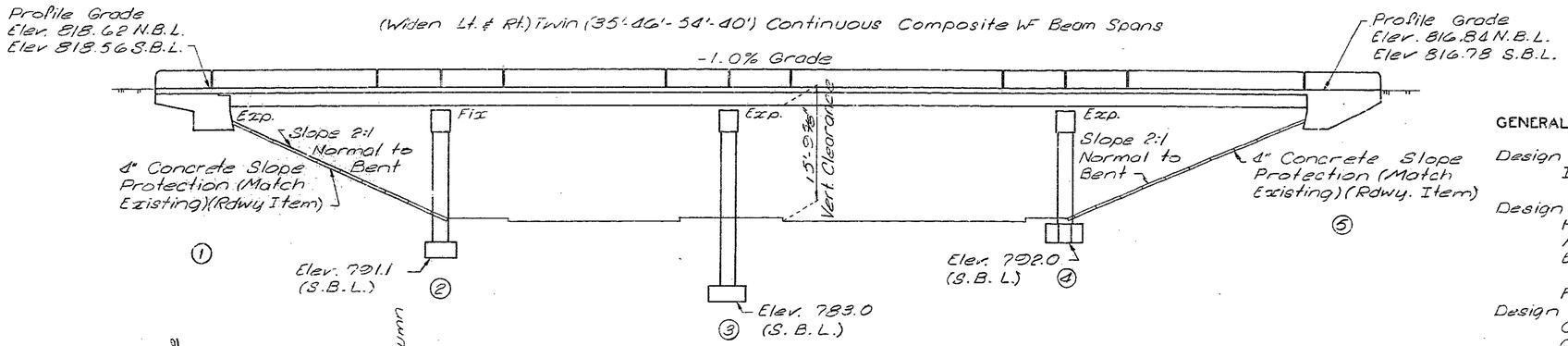
Note: The 3/4"ϕ ground rods shall be sufficient length to extend a minimum of 10'-0" below bottom of concrete pedestal.
Ground wire shall be No. 6 AWG minimum.
Knockouts or drilled holes shall be provided in cabinets for all conduit. Locations of such are the responsibility of the contractor and cabinet manufacturer.

DETAILED FEB. 1985
CHECKED FEB. 1985

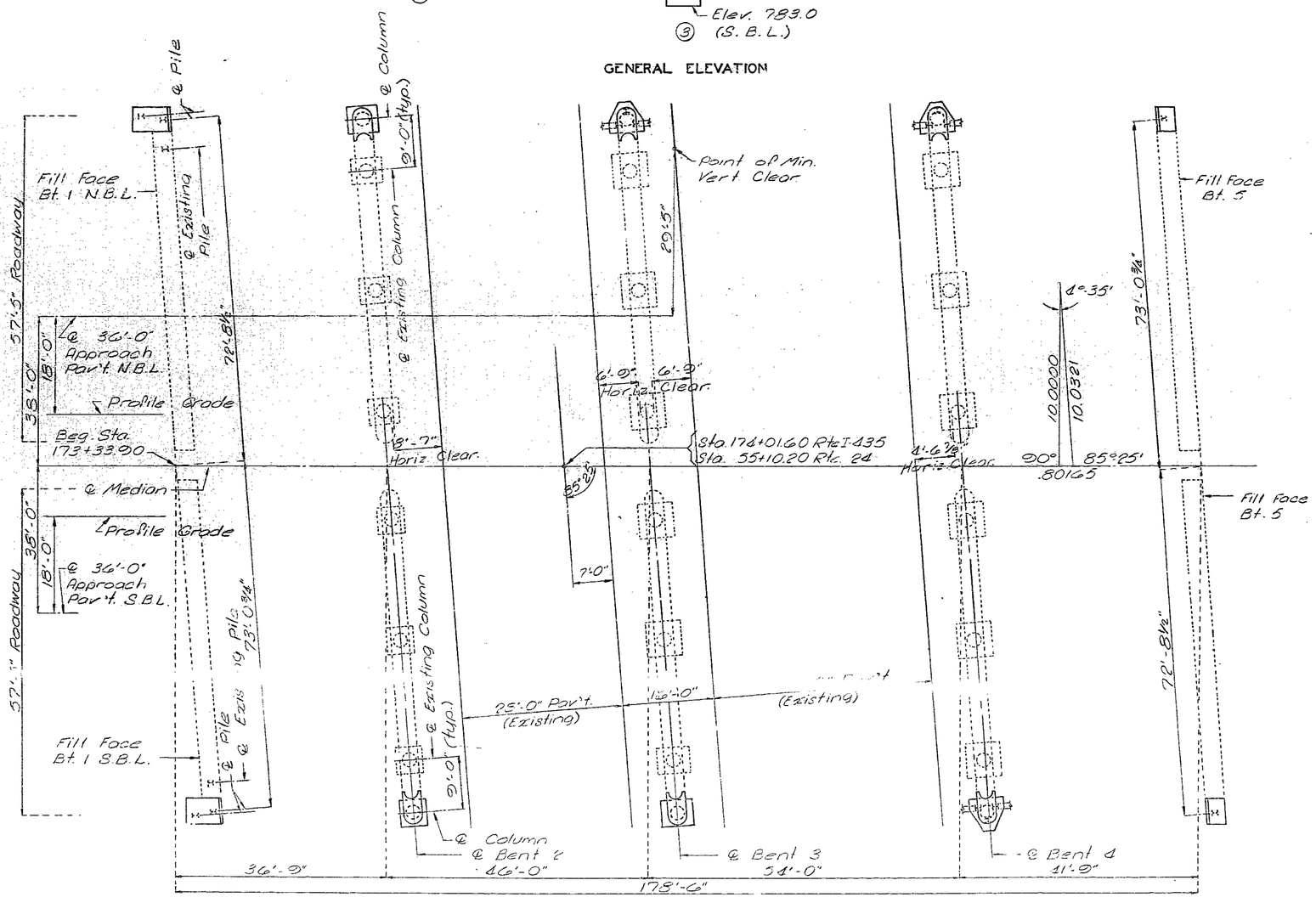
Note: This drawing is not to scale. Follow dimensions.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	~~36~~ 27
SEC./SUR. 31	TWP. 50 N	RGE. 32 W



GENERAL ELEVATION



PLAN

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. 1977 and Interims thru 1982

Design Loading:
HS20-44 No Future Wearing Surface
Modified 24,000 # Tandem Axle
Earth 120 #/cu. ft., Equivalent Fluid Pressure 30 #/cu. ft.
Fatigue Stress - Case I

Design Unit Stresses:
Class B Concrete (Substructure) fc = 1200 psi
Class B1 Concrete (Superstructure) fc = 1600 psi

Reinforcing Steel (Grade 60) fs = 24,000 psi
Structural Carbon Steel fs = 20,000
Steel Pile fb = 9,000 p.s.i

Field Connections: Field connections, High Strength Bolts ¾" ϕ, holes 13/16" ϕ except as noted. Turn of Nut Method of tensioning High Strength Bolts will be permitted.

Jt. Filler: All joint filler shall meet the requirement of Std. Spec. 1057.2.4 except as noted.
Reinforcing Steel: Minimum clearance to reinforcing steel shall be 1½" unless otherwise shown.
Construction Clearance: A minimum vertical clearance of 15'-0", from crown of existing lanes and a minimum lateral clearance of 28'-0", centered on existing lanes, shall be maintained during construction.
Traffic: Traffic over structure to be maintained during construction.
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Continued on Sheet 2.

B.M. Elev 817.31 o S.W Wing End of Curb 7.0' Rt Sta. 175+23 Route I-435.

REPAIR TO BRIDGE OVER ROUTE 24

STATE ROAD INTERSTATE ROUTE 435

IN KANSAS CITY

PROJECT NO. STA. 173+33.9

JOB NO. J-I 435-443 RTE. I-435

JACKSON COUNTY

DATE FEBRUARY 25, 1985

STD. 611.60
STD. 706.35
A-1750R

DESIGNED Nov 1984
DETAILED Feb 1985
CHECKED Feb 1985

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

Sheet No. 1A of 25

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	37 28

PILE AND FOOTING DATA

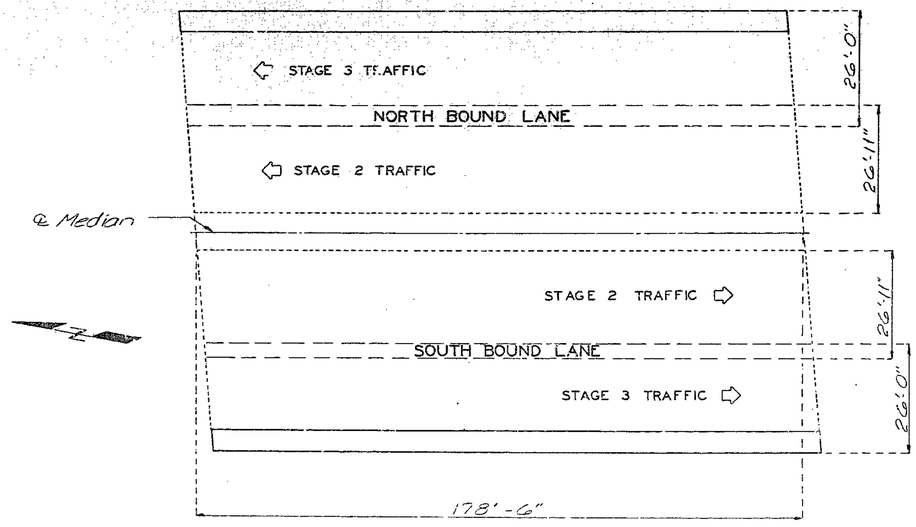
	BENT NO.	NORTH BOUND LANE 1	2	3	4	5	SOUTH BOUND LANE 1	2	3	4	5
BEARING PILE	Pile Type and Size	HP10x42		HP10x42	HP10x42	HP10x42	HP10x42			HP10x42	HP10x42
	Number	2		3	3	1	2			3	1
	Approximate Length Ft.	22'		30'	35'	47'	19'			30'	62'
	Design Bearing Tons	16		18	18	32	16			18	32
	Hammer Energy Reqd. Ft.Lbs	7000		7000	7000	7000	7000			7000	8200
SPREAD FOOTING	Foundation Material		Rock					Rock	Rock		
	Design Bearing Tons/sq.ft.		2.6					2.5	2.8		

Minimum energy requirement of hammer based on plan length and design bearing value of piles. All pile shall be driven to practical refusal.

ESTIMATED QUANTITIES

ITEM		N.B.L. SUBSTR.	N.B.L. SUPERSTR.	S.B.L. SUBSTR.	S.B.L. SUPERSTR.	TOTAL
Special Work	Lump Sum					1
Class 1 Excavation	Cu. Yd.	51.1		90.9		142
Structural Steel Pile (10")	Lin. Ft.	286		168		476
Class B Concrete	Cu. Yd.	30.9		32.0		62.9
Class B1 Concrete	Cu. Yd.		439		439	878
Safety Barrier Curb	Lin. Ft.		196		196	392
Reinforcing Steel (Grade 60)	Lbs.	3970	8175	4260	8175	24580
Mechanical Bar Splices	Each		8		8	16
Fabricated Structural Carbon Steel	Lbs.		18570		18570	37140
Slab Drains	Each		6		6	12
Repairing Concrete Deck (Hollow Sole)	Sq. Ft.		1925		1461	3386
Full Depth Deck Repair	Sq. Ft.		43		155	198
Paint System B (Exist. & New Steel)	Lump Sum					1
Latex Concrete Wearing Surface	Sq. Yd.		1139		1139	2278
Cathodic Protection System	Lump Sum					1

A mechanical bar splice shall consist of one DB-SAE bar and one DI bar, each 2'-10" long and shall be paid for at the contract unit price, per each, for Mechanical Bar Splices.



PLAN OF SLAB

DETAIL C TRAFFIC STAGES

GENERAL NOTES CON'T.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars.

All concrete and reinforcement in End Bent 5 (except pile cap beam) is included with Superstructure Quantities.

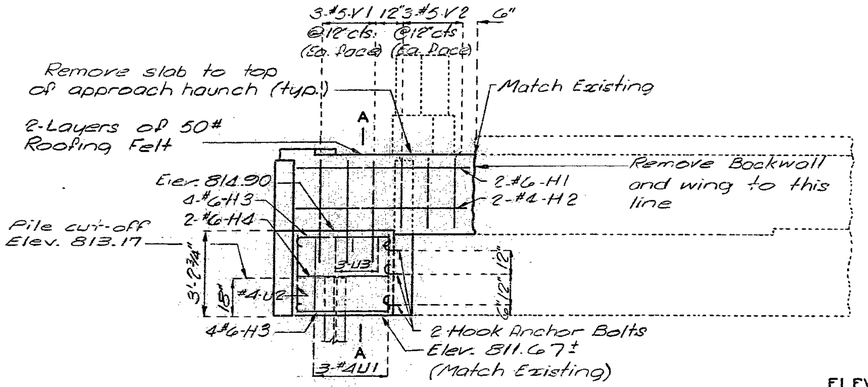
Paint: System B by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System B shall be green. Areas to be encased in End Bent Concrete shall be painted one coat of System C primer and scratched or damaged surfaces are to be touched up in field before concrete is poured.

Contractor shall verify all dimensions in field before ordering new steel.

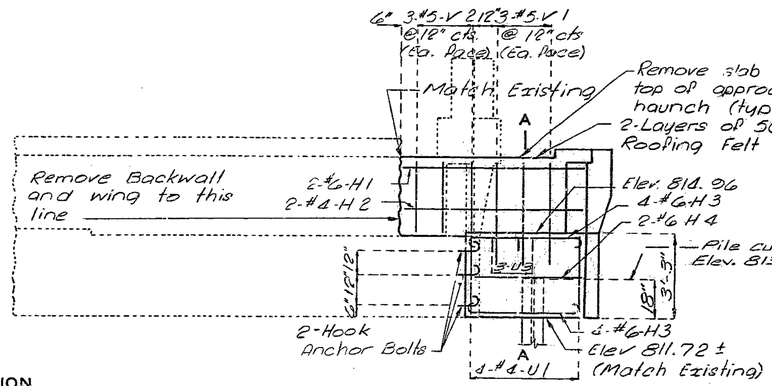
DETAILED Feb 1995
CHECKED Feb 1995

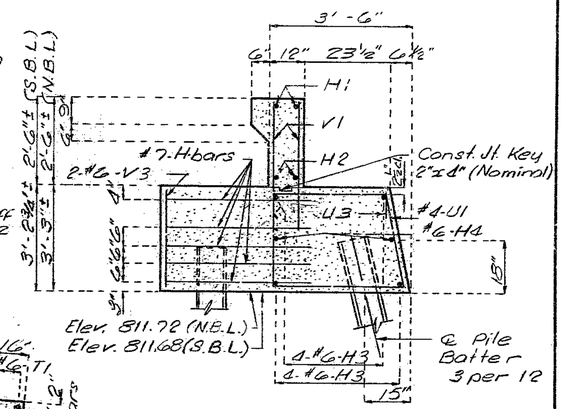
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	~~39~~ 30

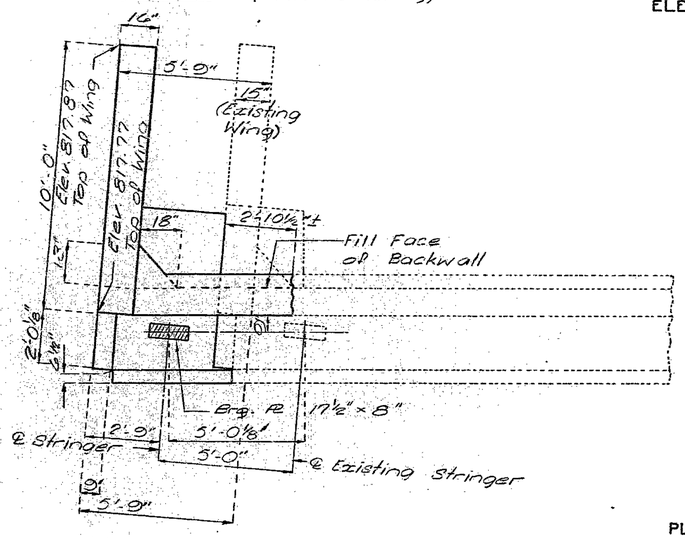


ELEVATION

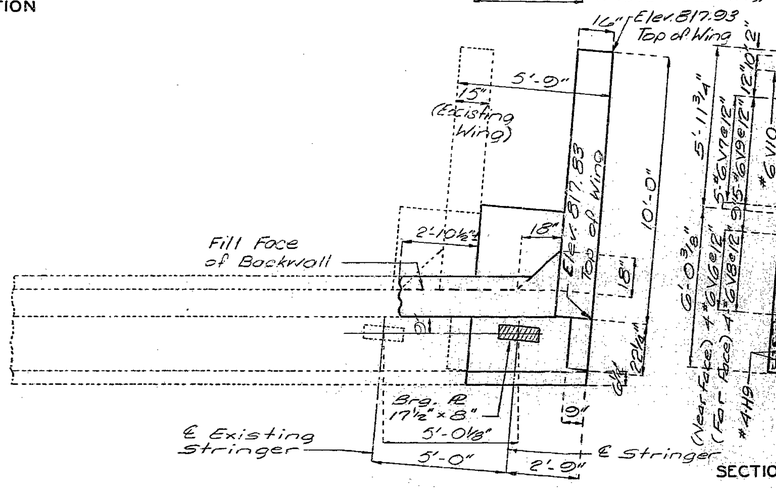


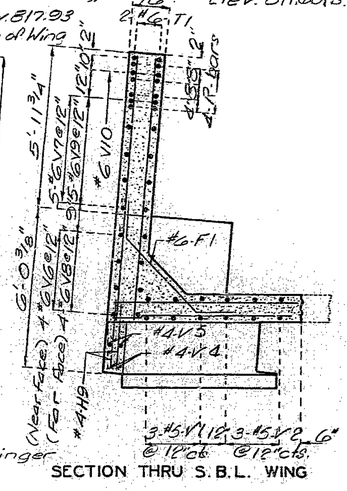


SECTION A-A

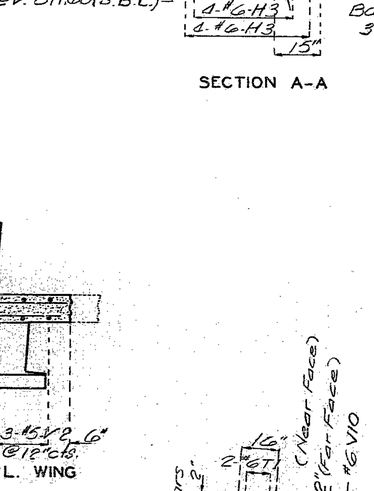


PLAN

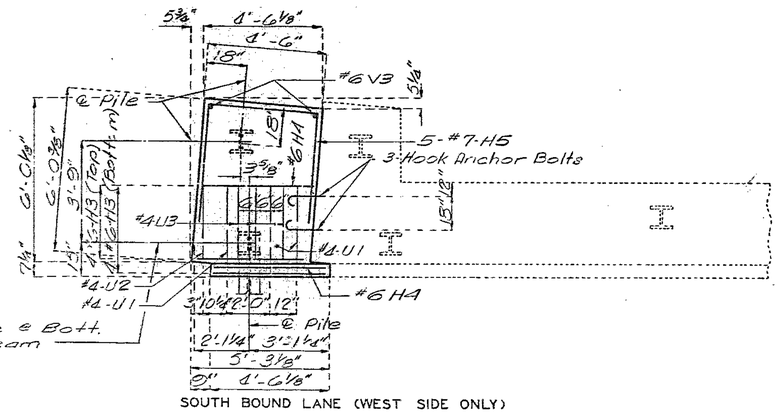




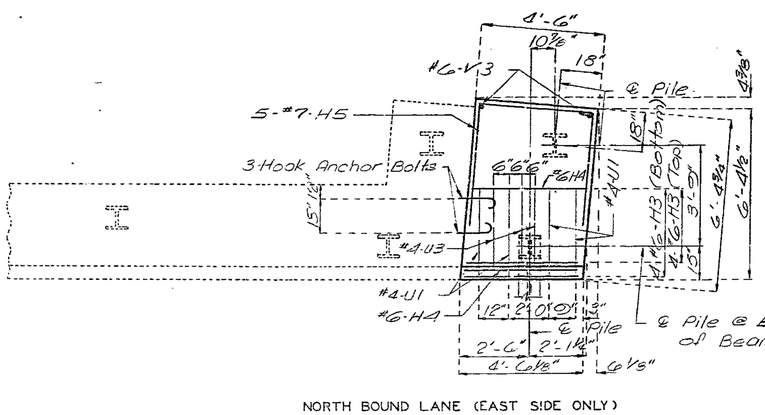
SECTION THRU S.B.L. WING



SECTION THRU N.B.L. WING



SOUTH BOUND LANE (WEST SIDE ONLY)



NORTH BOUND LANE (EAST SIDE ONLY)

PLAN OF BEAM

DETAILS OF END BENT 1

Note: For details of Hook Anchor Bolt, see sheet No. 9.
For wing elevations see sheet No. 5.

DETAILED Jan 1985
CHECKED Feb. 1985

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

Sheet No. 4A of 25.

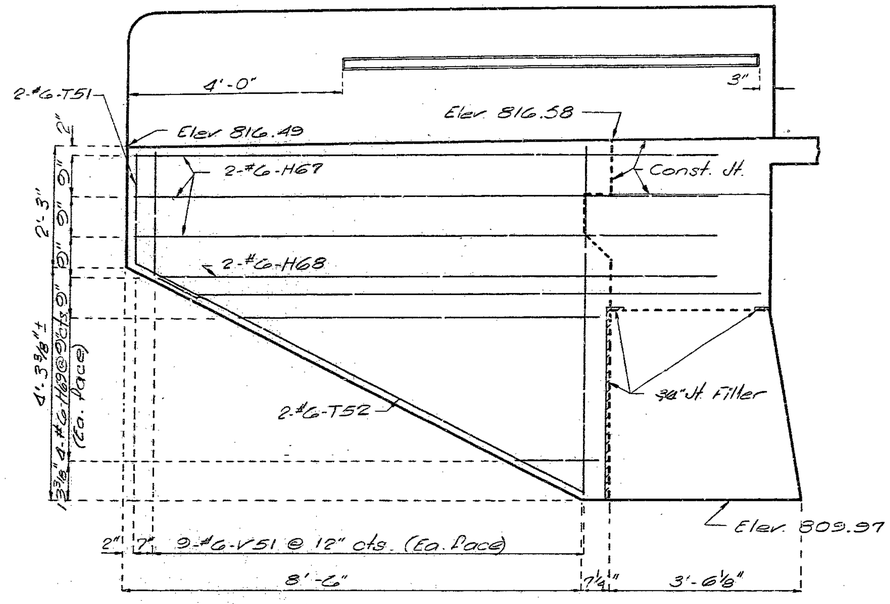
JACKSON COUNTY

A-1750R

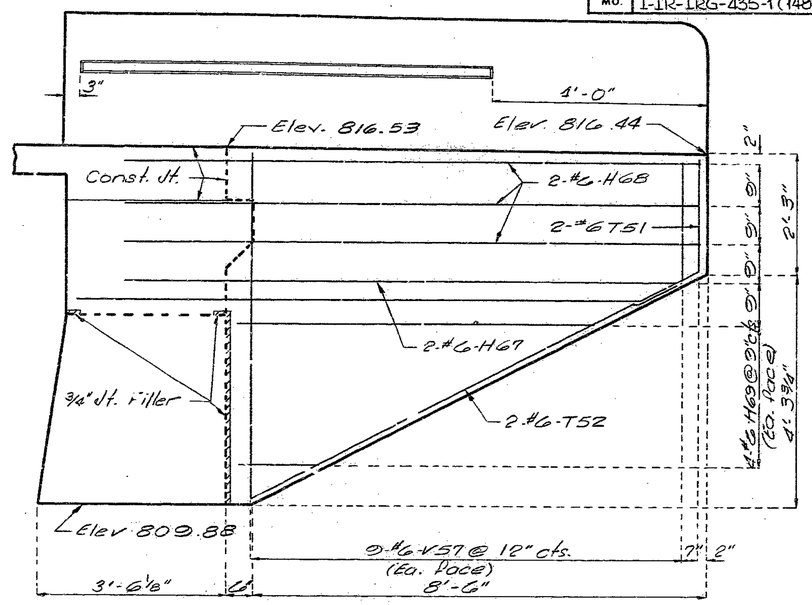
351

FINAL PLANS

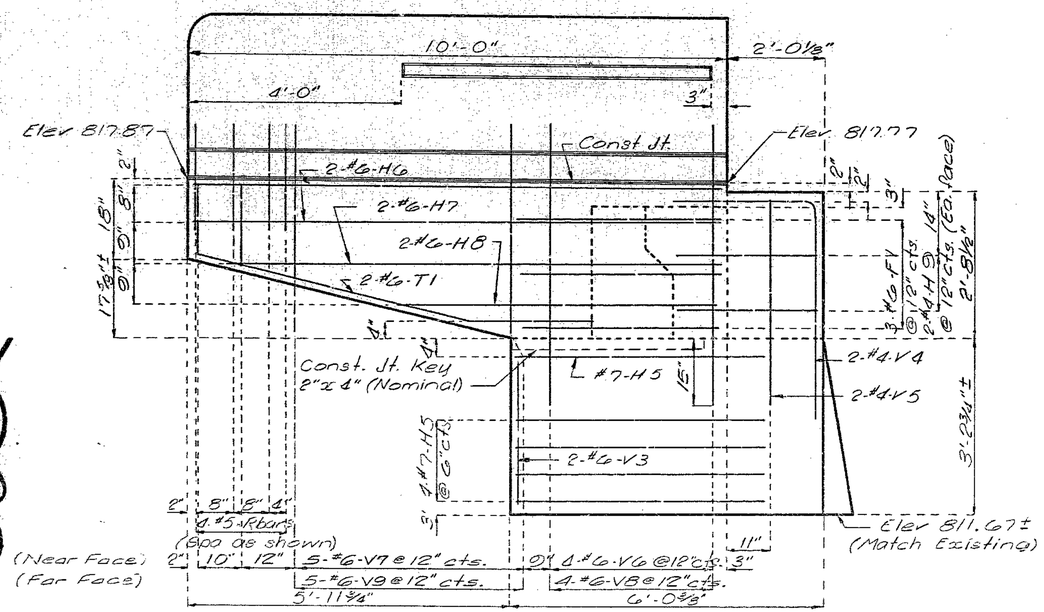
STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRG-435-1(148)	~~40~~ 31



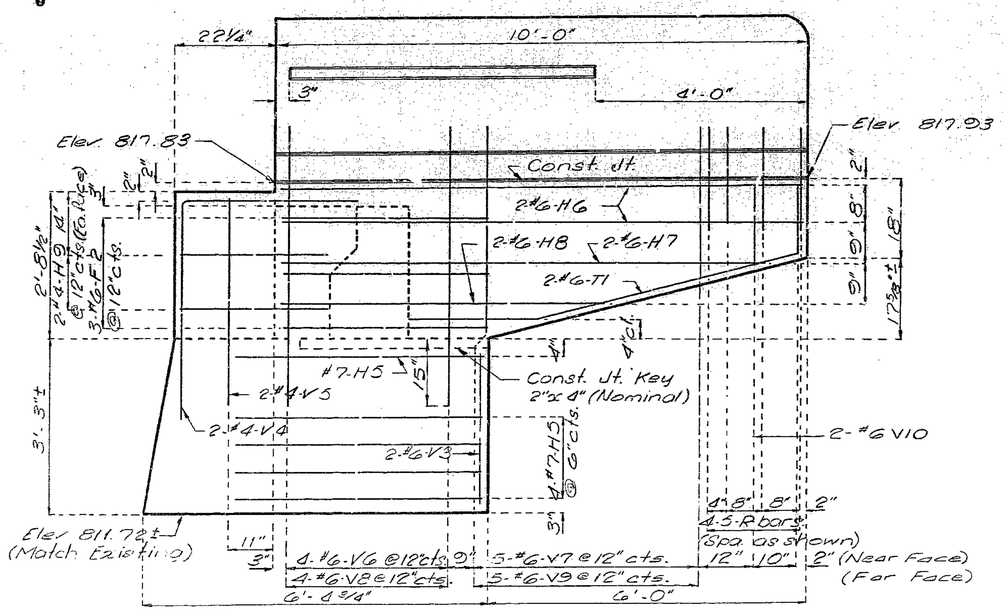
ELEVATION OF LEFT WING (END BENT 5 NORTH BOUND LANE)



ELEVATION OF RIGHT WING (END BENT 5 SOUTH BOUND LANE)



ELEVATION OF WEST WING (END BENT 1 SOUTH BOUND LANE)



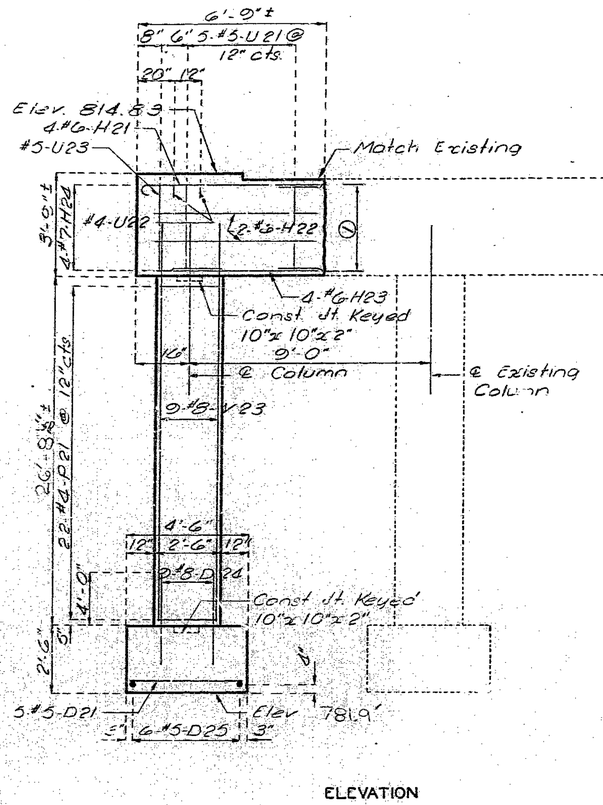
ELEVATION OF EAST WING (END BENT 1 NORTH BOUND LANE)

352

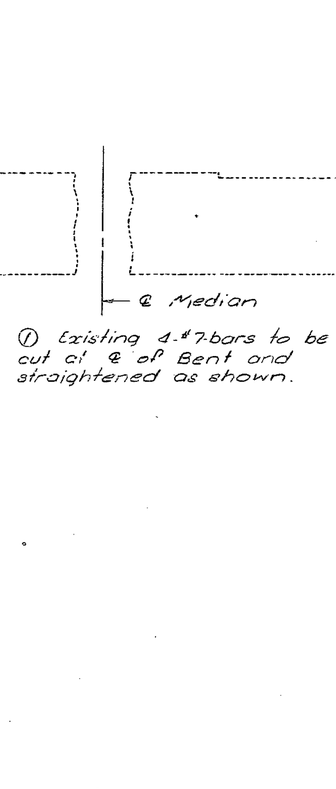
DETAILED Jan 19 85
CHECKED Feb 19 85

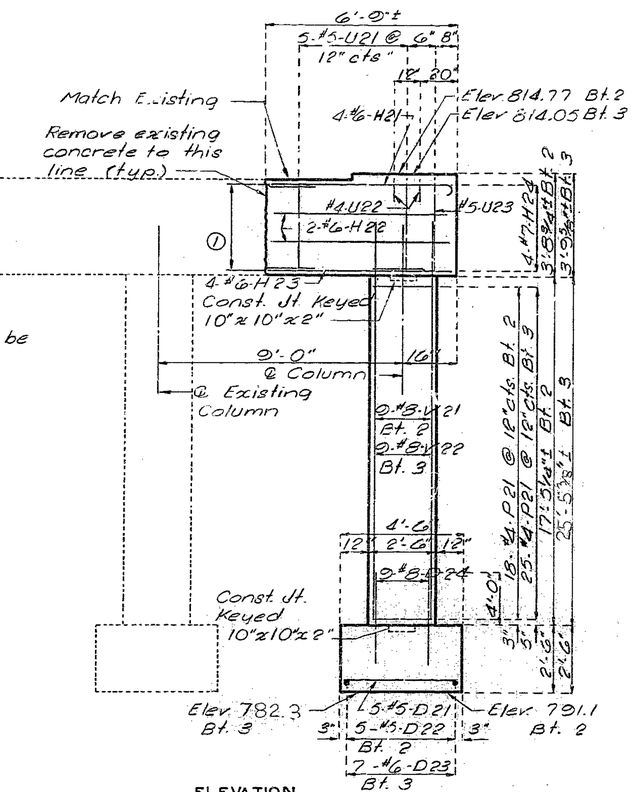
Note: This drawing is not to scale. Follow dimensions.

STATE	PROJ. NO.	SHEET NO.
MO.	I-IR-IRC-435-1(148)	~~41~~ 32



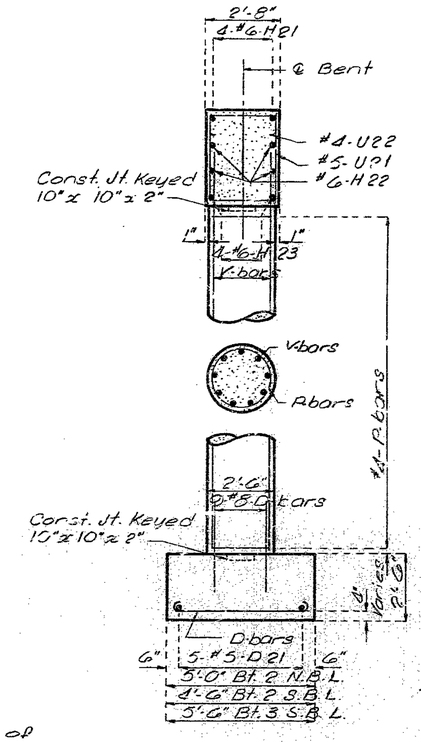
ELEVATION



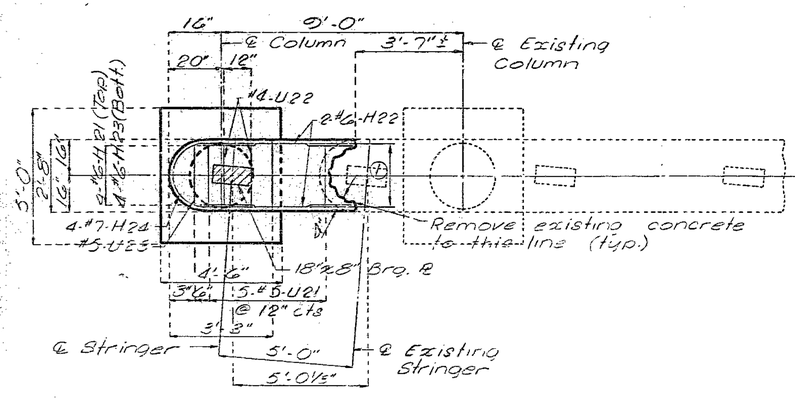


ELEVATION

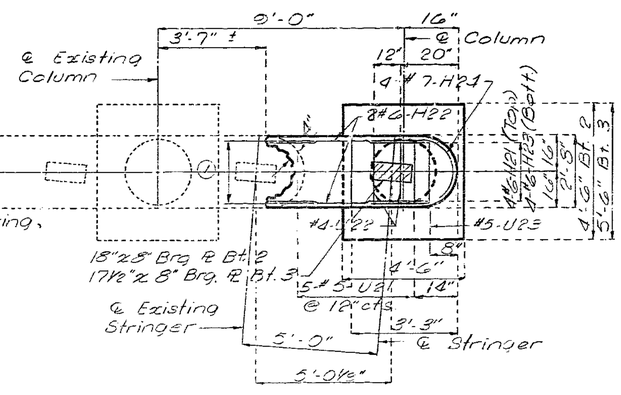
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least ½".



TYPICAL SECTION NEAR NEW COLUMN



PLAN



PLAN

℄ Bent, ℄ Bearing, ℄ Column & ℄ Footing

DETAILS OF N. B. L. INTERMEDIATE BENT NO. 2

DETAILS OF S. B. L. INTERMEDIATE BENTS NO. 2 & 3

Note: For location of Anchor Bolt Wells, see sheet No. 13.
For detail of Anchor Bolt Well, see sheet No. 9.

DETAILED Jan. 1985
CHECKED Feb 1985

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

Sheet No. 6A of 25.

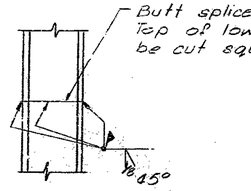
JACKSON COUNTY

A-1750R

FOR INFORMATION ONLY

FINAL PLANS

STATE	PROJ. NO.	SHEET NO
MO.	I-IR-IRG-435-1(148)	~~44~~ 35



DETAIL OF STEEL PILE SPLICE

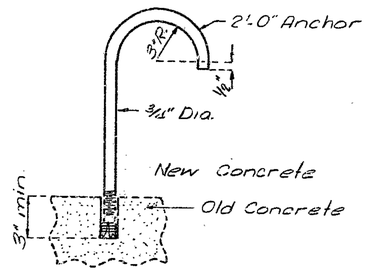
Note: Anchors shall be of the self drilling expansion type, made of case hardened and drawn carburized steel with self-cutting annular broaching grooves.

Cost of furnishing and installing hook anchor bolt assemblies shall be included in contract unit price for concrete.

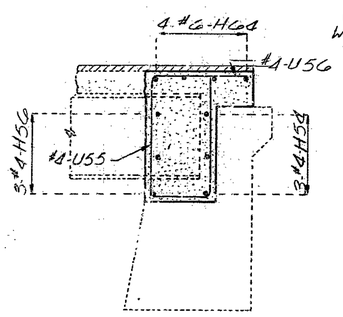
Note: At the option of the contractor one of the following anchor systems may be substituted for the self drilling expansion system noted on the plans:

1. Hilti HVA Adhesive Anchors
2. Molly Parabond Capsule Anchors
3. U.S.E. Diamond Capsule Anchors
4. Keligroutin Resin Bonding Anchors

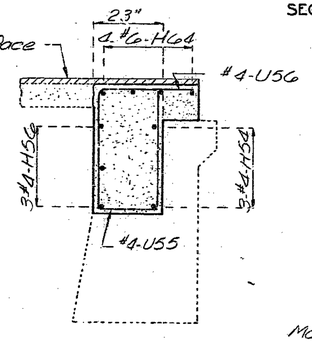
These Anchor Systems shall be installed according to the manufacturer's specifications, except that an epoxy coated ¾" ϕ, Grade 60 reinforcing bar 2'-6" long shall be substituted for the threaded rod stud and if the Keligroutin Resin Bonding Anchor System is used the minimum embedment in old concrete shall be 8"



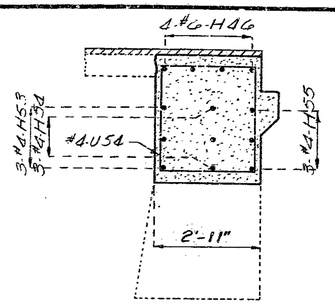
HOOK ANCHOR BOLT DETAIL



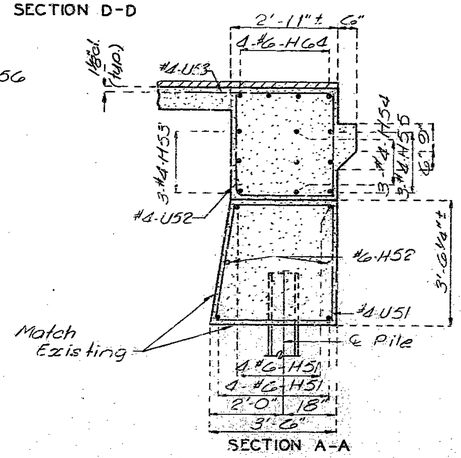
SECTION C-C



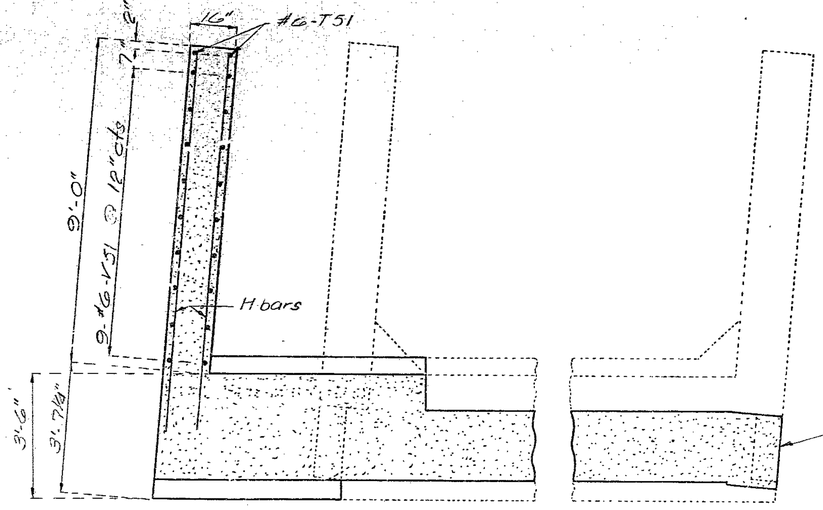
SECTION B-B



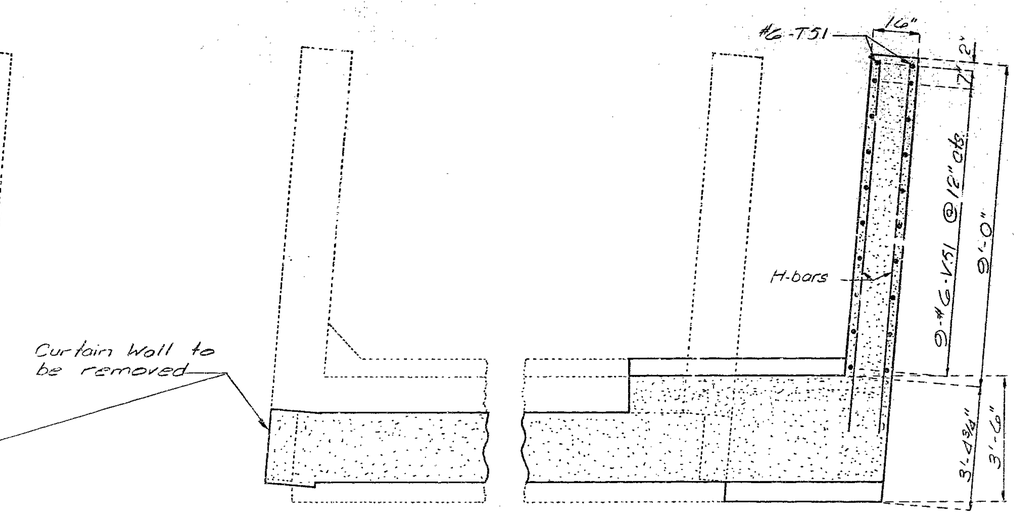
SECTION D-D



SECTION A-A



SECTION THRU WING BENT 5 (NORTH BOUND LANE)



SECTION THRU WING BENT 5 (SOUTH BOUND LANE)

354

DETAILED Jan 1985
CHECKED Feb 1985

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

Sheet No. 9A *of* 25.

JACKSON COUNTY

A-1750R

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

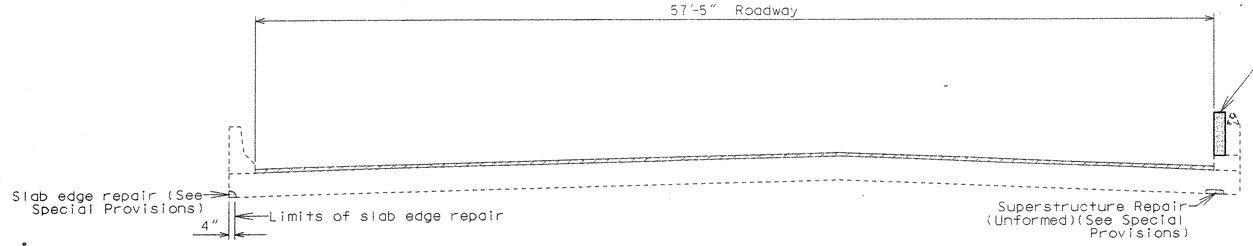
Final Plans

I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed.

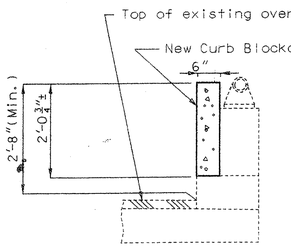
Signature

Date 1-10-02

STATE	PROJ. NO.	SHEET NO.
MO.		B1
SEC./SUR. 7 TWP. 49N RGE. 32W		

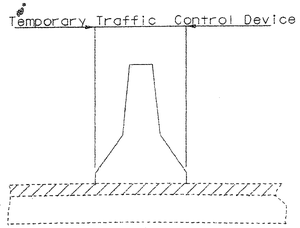


SECTION THRU EXISTING SLAB (NORTHBOUND ROADWAY)



TYPICAL SECTION
THRU CURB BLOCKOUT

2'-0" Temporary Traffic Control Device (Roadway item)



DETAIL OF TEMPORARY
TRAFFIC BARRIER

FINAL QUANTITIES		
ITEM		TOTAL
Substructure Repair (Unformed)	Sq. Ft.	31 ✓
Superstructure Repair (Unformed)	Sq. Ft.	93 ✓
Curb Blockout	Lin. Ft.	197 ✓
Slab Edge Repair (Bridges)	Lin. Ft.	67 ✓

STATE OF MISSOURI MARK A. STOCK NUMBER PE-023267 REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI KURT E. GRIBBLE NUMBER E-23576 REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

GENERAL NOTES:

DESIGN SPECIFICATIONS:
A.A.S.H.T.O.-1996 and Interim 1998

DESIGN UNIT STRESSES:
Class B1 Concrete (Curb Blockout) f'c=4,000 psi
Reinforcing Steel (Grade 60) fy=60,000

JOINT FILLER:
All joint filler shall meet the requirements of Std. Spec. 1057.2.4 of the Missouri Standard Specifications except as noted.

REINFORCING STEEL:
Minimum clearance to reinforcing steel shall be 1½".

OLD WORK:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

VERIFY DIMENSIONS:
Contractor shall verify dimensions in field before ordering new material.

NOTES:
Bars bonded in old concrete not removed were cleanly stripped and embedded into new concrete where possible. If length is available, old bars were extended into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

The contractor used one of the resin anchor systems listed in the job special provisions for the curb blockout. These anchor systems were installed according to the manufacturer's specifications, except as modified by the job special provisions and that an epoxy coated #5 grade 60 reinforcing bar as shown shall be substituted for the ⅝" threaded rod.

Cost of furnishing and installing the anchor systems complete in place were included in the price bid per linear foot of curb blockout.

The ⅝" diameter resin anchor systems have a minimum ultimate pullout strength of 15,500 in concrete with f'c= 4,000 psi See special provisions.

NOTES FOR CURB BLOCKOUT:
Concrete in curb blockout was Class B1. Measurement of curb blockout is to the nearest linear foot measured at the gutter line from end of wing to end of wing.
All exposed edges of curb blockout have ½" radius or ⅝" bevel unless otherwise shown.
Payment for concrete and reinforcing steel in curb blockout complete in place was included in the contract unit price for the curb blockout per linear foot.
Cost of any concrete end post and curb removal considered completely covered in the contract unit price for the curb blockout per linear foot.
Minimumm lap for R-bar reinforcement to be 34".
Adjust Resin Anchors in the field if necessary. to miss curb outlets.
All reinforcement was epoxy coated.

EXISTING LATEX CONCRETE OVERLAY:
Any damage to the existing latex concrete overlay was repaired or replaced as directed by the engineer. No direct payment was made for any replacement or repairs to the latex concrete overlay.

TRAFFIC HANDLING:
See roadway plans for traffic control during construction.

REPAIRS TO: BRIDGE OVER ROUTE 24

STATE ROAD: INTERSTATE ROUTE 435 N.B.L.
IN KANSAS CITY
PROJECT NO. FAI-435-1(269) ID. 001215-401 STA. 173+33.90± ℄ Median (MATCH EXIST.)
JOB NO. J411333 RTE. I-435
JACKSON COUNTY
DATE 9/7/00

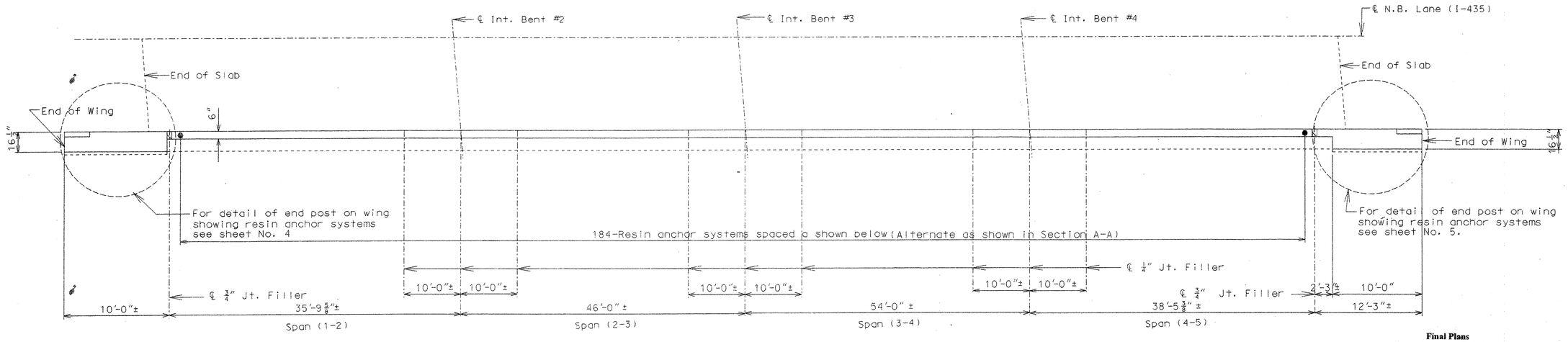
A17502

DESIGNED APR. 1999
DETAILED NOV. 1999
CHECKED NOV. 1999

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

STATE	PROJ. NO. FAI-435-1(269)	SHEET NO.
MO.	IO. 001215-401	B2

JOB NO. J4I1333



Note: Longitudinal dimensions shown are dimensions taken along along top of slab parallel to grade.
Match existing curb joints.

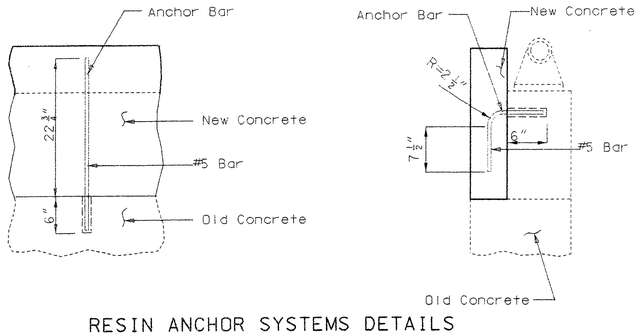
PLAN OF CURB BLOCKOUT SHOWING RESIN ANCHOR SPACING

Final Plans

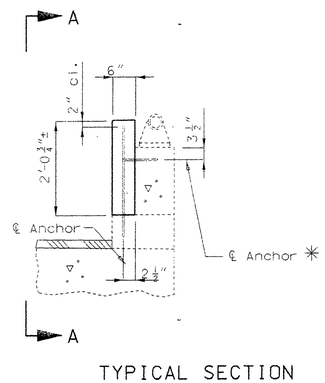
I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed. .

Signature

1-10-03
Date

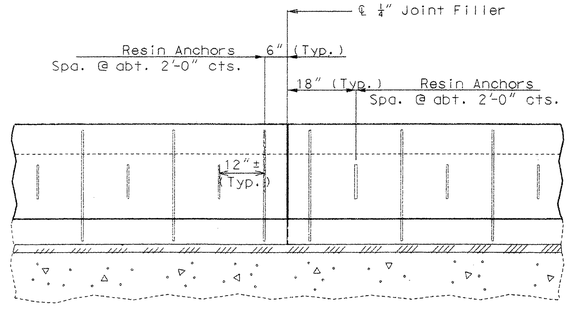


RESIN ANCHOR SYSTEMS DETAILS



TYPICAL SECTION
THRU CURB

✳Shift resin anchors to clear existing steel anchor bolts for tube rail.



PART SECTION A-A

STATE OF MISSOURI
MARK A. SPECHT
NUMBER E-22267
REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

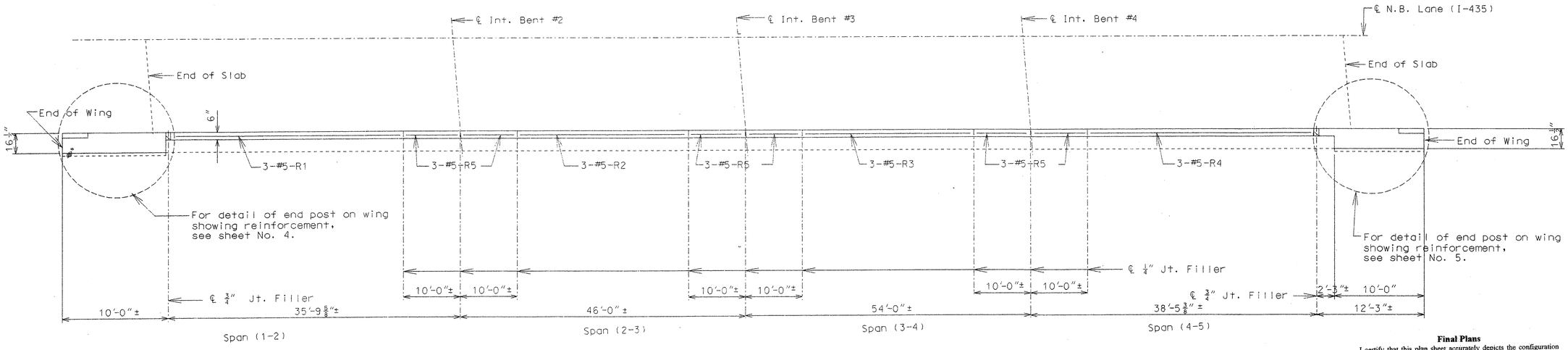
DATE 9-5-00

DETAILED APR. 1999
CHECKED NOV. 1999

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

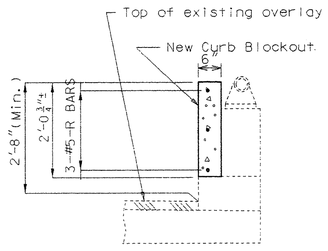
STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269) ID. 001215-401	83

JOB NO. J4I1333

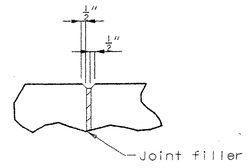


PLAN OF CURB BLOCKOUT SHOWING REINFORCEMENT

Note: Longitudinal dimensions shown are dimensions taken along along top of slab parallel to grade.
Match existing curb joints.



TYPICAL SECTION
THRU CURB BLOCKOUT



FILLED JOINT DETAIL

Final Plans

I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed.

M. L. A Stk
Signature

1-10-02
Date

STATE OF MISSOURI
MARK A STOCK
NUMBER 2007
REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

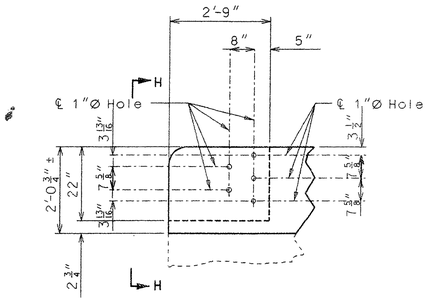
DATE 9-5-00

DETAILED APR. 1999
CHECKED NOV. 1999

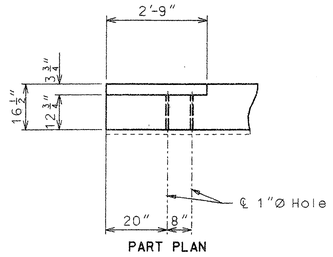
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

JACKSON COUNTY A17502

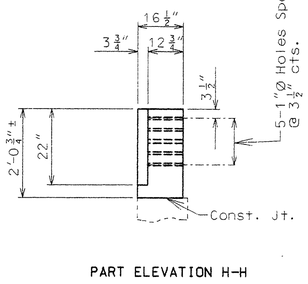
STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269)	
	I.D. 001215-401	64
	JOB NO. J4I1333	



PART ELEVATION

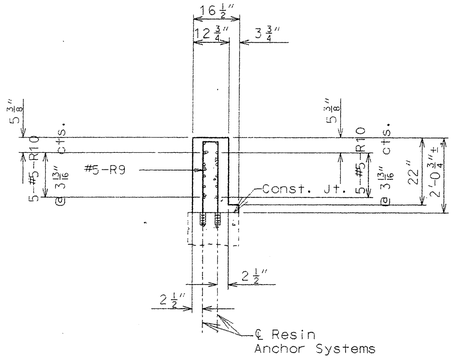


PART PLAN

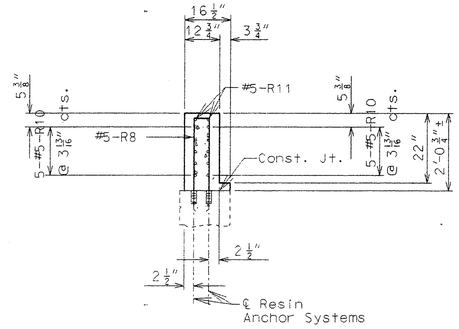


PART ELEVATION H-H

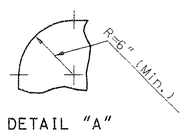
DETAILS OF GUARD RAIL ATTACHMENT



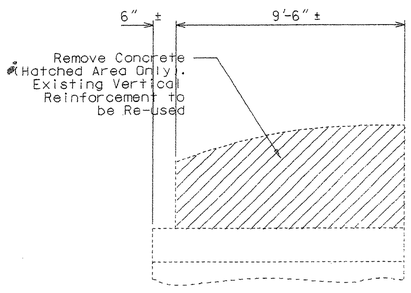
SECTION E-E



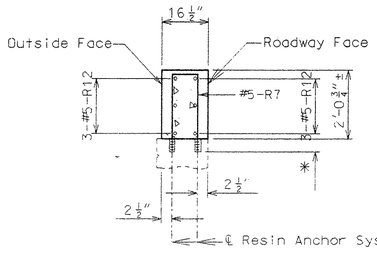
SECTION F-F



DETAIL "A"

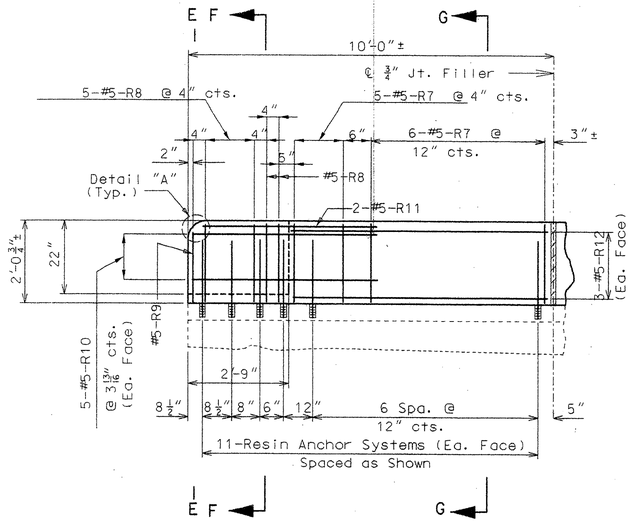


ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL

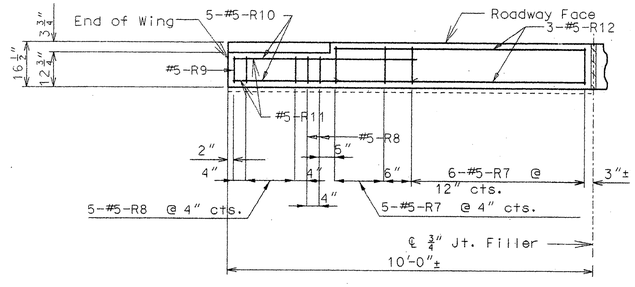


SECTION G-G

*6" embedment length



ELEVATION OF NEW END POST ON WING



PLAN OF NEW END POST ON WING

Note: Resin anchors not shown in plan for clarity.

Final Plans

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Signature

1-10-02
Date

STATE OF MISSOURI
MARK A. SIEVERS
NUMBER 2006
PROFESSIONAL ENGINEER

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

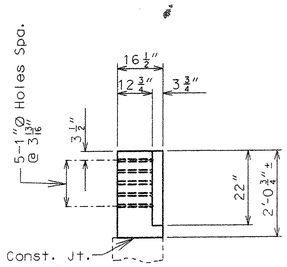
DETAILED APR. 1999
CHECKED NOV. 1999

DETAILS OF BLOCKOUT ON WING AT END BENT NO. 1

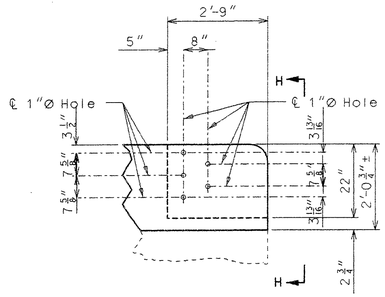
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269)	
	ID. 001215-401	B5

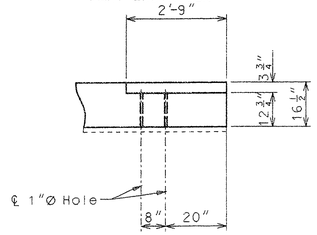
JOB NO. J4I1333



PART ELEVATION H-H

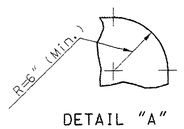


PART ELEVATION

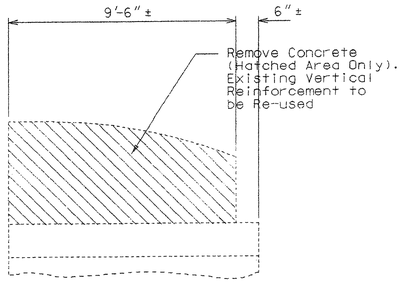


PART PLAN

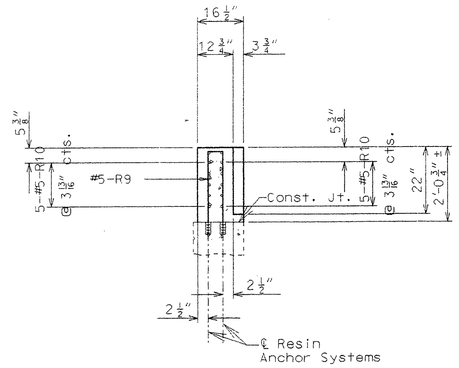
DETAILS OF GUARD RAIL ATTACHMENT



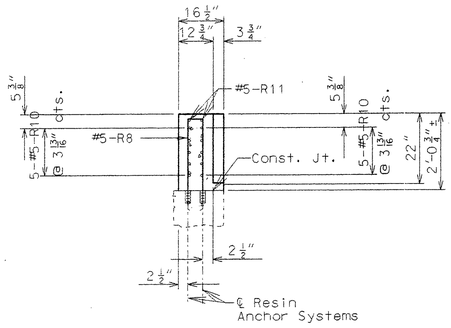
DETAIL "A"



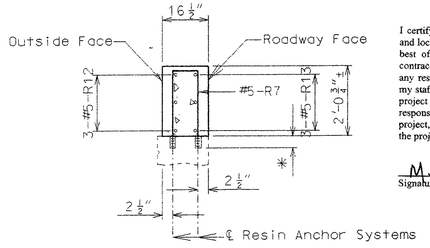
ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL



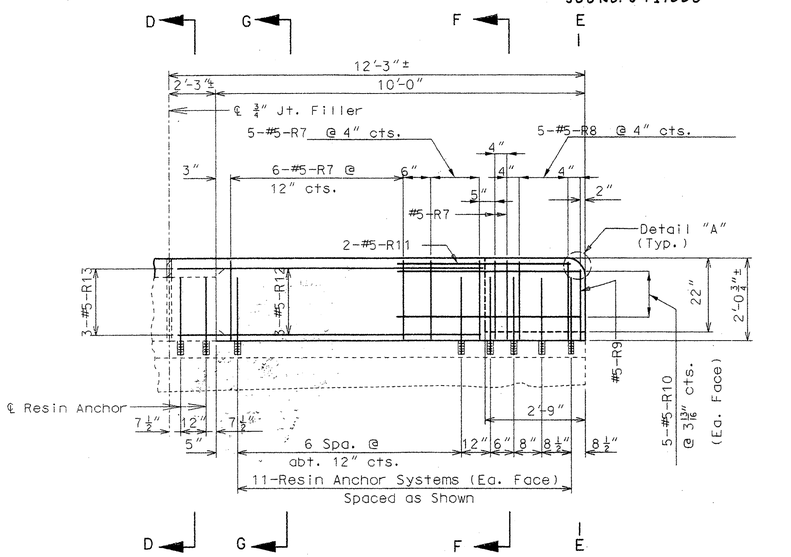
SECTION E-E



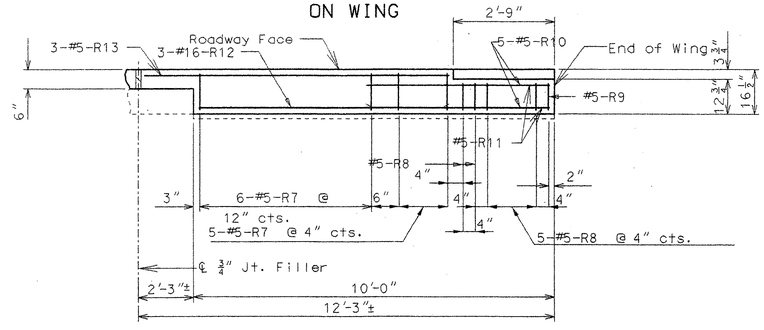
SECTION F-F



SECTION G-G



ELEVATION OF NEW END POST ON WING



PLAN OF NEW END POST ON WING

Note: Resin anchors not shown in plan for clarity.

Final Plans

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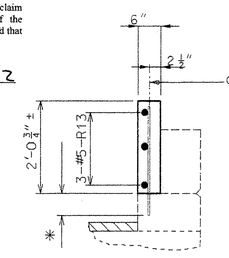
Signature

1-10-02
Date



SECTION D-D

* 6" embedment length

STATE OF MISSOURI
A. STOCK
NUMBER
E-N 023207
REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

DETAILS OF BLOCKOUT ON WING AT END BENT NO. 5

DETAILED APR. 1999
CHECKED NOV. 1999

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 5 OF 6.

JACKSON COUNTY

A17502

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
3	5	R1	BLOCKOUT	E	20					25	6.000													25	6	25	6	80
3	5	R2	BLOCKOUT	E	20					25	9.000													25	9	25	9	81
3	5	R3	BLOCKOUT	E	20					33	9.000													33	9	33	9	106
3	5	R4	BLOCKOUT	E	20					28	2.000													28	2	28	2	88
20	5	R5	BLOCKOUT	E	20					9	9.000													9	9	9	9	203
22	5	R7	BLOCKOUT	E	10	S						21.500		13.250										4	8	4	6	103
14	5	R8	BLOCKOUT	E	10	S						21.500		9.625										4	5	4	2	61
2	5	R9	BLOCKOUT	E	10	S						17.125		9.625										3	8	3	5	7
20	5	R10	BLOCKOUT	E	20					5	0.000													5	0	5	0	104
4	5	R11	BLOCKOUT	E	20					4	6.000													4	6	4	6	19
9	5	R12	BLOCKOUT	E	20					7	0.000													7	0	7	0	66
3	5	R13	BLOCKOUT	E	20					9	3.000													9	3	9	3	29

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.

Final Plans

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Signature

1-10-02
Date

STATE OF MISSOURI
MARK A. STUCK
NUMBER E-17025
REGISTERED PROFESSIONAL ENGINEER

State	Proj. No.	Sheet No.
MO	FAI-435-1(269)	B6
	ID. 001215-401	
	JOB NO. J411333	

SHAPE 6

SHAPE 7

SHAPE 8

SHAPE 9

SHAPE 10

SHAPE 11

SHAPE 12

SHAPE 13

SHAPE 14

SHAPE 15

SHAPE 16

SHAPE 17

SHAPE 18

SHAPE 20

SHAPE 19

SHAPE 21

SPOT WELD AASHTO M32 SIZE W5 WIRE (TYP.)

SHAPE 23

SHAPE 24

SHAPE 22

SHAPE 25

SHAPE 26

SHAPE 27

SHAPE 28

SHAPE 29

SHAPE 31

SHAPE 30

SHAPE 32

SHAPE 36

SHAPE 35

SHAPE 34
(SHAPE 35 SHALL BE A SMOOTH BAR OR WIRE.)

SHAPE 33

BENDING DIAGRAMS

6d FOR #4 AND #5, 12d FOR #6

90° STIRRUP

135° STIRRUP

DETAILED Nov. 1999
CHECKED Nov. 1999

STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	135° HOOK APPROX. H
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	12"	8"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

DETAILING DIMENSION

90°

180°

4d OR 2-1/2" MIN.

END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	ALL GRADES 180° HOOKS J	ALL GRADES 90° HOOKS A OR G
#3	2-1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3-3/4"	7"	5"	10"
#6	4-1/2"	8"	6"	12"
#7	5-1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9-1/2"	15"	11-3/4"	19"
#10	10-3/4"	17"	13-1/4"	22"
#11	12"	19"	14-3/4"	2'-0"
#14	18-1/4"	2'-3"	21-3/4"	2'-7"

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

TWO ADDITIONAL #5-R5 ARE INCLUDED IN THE BAR BILL FOR TESTING.

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH THE SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE (NEAREST INCH).
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

SHEET NO. 6 OF 6.

JACKSON COUNTY

A17502

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

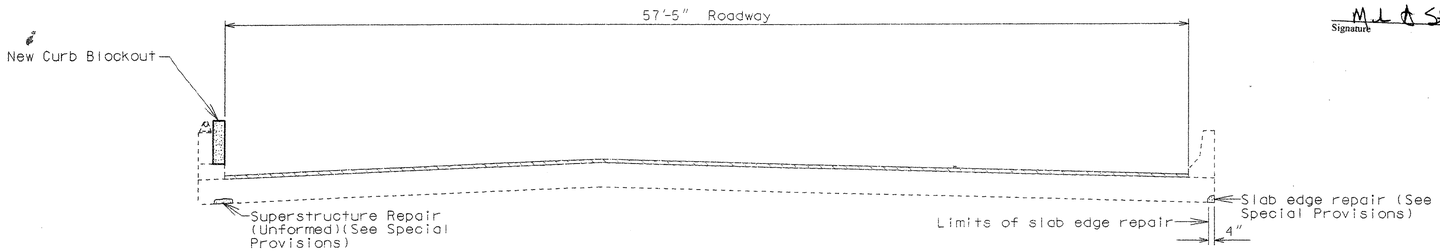
Final Plans

I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed. .

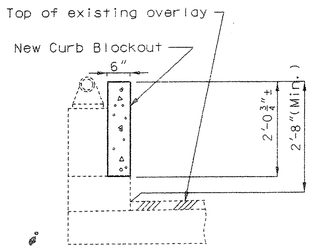
Signature M. L. A. Stock

Date 1-18-02

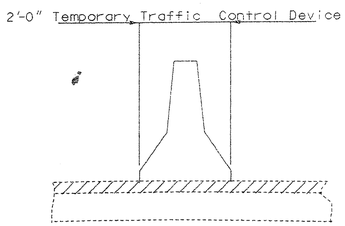
STATE	PROJ. NO.	SHEET NO.
MO.		B7
SEC./SUR. 7 TWP. 49N RGE. 32E		



SECTION THRU EXISTING SLAB (SOUTHBOUND ROADWAY)



TYPICAL SECTION
THRU CURB BLOCKOUT



DETAIL OF TEMPORARY
TRAFFIC BARRIER

GENERAL NOTES:

DESIGN SPECIFICATIONS:
A.A.S.H.T.O.-1996 and Interim 1998

DESIGN UNIT STRESSES:
Class B1 Concrete (Curb Blockout) f'c=4,000 psi
Reinforcing Steel (Grade 60) fy=60,000 psi

JOINT FILLER:
All joint filler shall meet the requirements of Std. Spec. 1057.2.4 of the Missouri Standard Specifications except as noted.

REINFORCING STEEL:
Minimum clearance to reinforcing steel shall be 1½".

OLD WORK:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

VERIFY DIMENSIONS:
Contractor shall verify dimensions in field before ordering new material.

NOTES:
Bars bonded in old concrete not removed were cleanly stripped and embedded into new concrete where possible. If length is available, old bars were extended into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

The contractor used one of the resin anchor systems listed in the job special provisions for the curb blockout. These anchor systems were installed according to the manufacturer's specifications, except as modified by the job special provisions and that an epoxy coated #5 grade 60 reinforcing bar as shown shall be substituted for the ⅝" threaded rod.

Cost of furnishing and installing the anchor systems complete in place were included in the price bid per linear foot of curb blockout.

The ⅝" diameter resin anchor systems have a minimum ultimate pullout strength of 15,500 in concrete with f'c= 4,000 psi See special provisions.

NOTES FOR CURB BLOCKOUT:
Concrete in curb blockout was Class B1. Measurement of curb blockout is to the nearest linear foot measured at the gutter line from end of wing to end of wing.
All exposed edges of curb blockout have ½" radius or ⅜" bevel unless otherwise shown.
Payment for concrete and reinforcing steel in curb blockout complete in place was included in the contract unit price for the curb blockout per linear foot.
Cost of any concrete end post and curb removal was considered completely covered in the contract unit price for the curb blockout per linear foot.
Minimumm lap for R-bar reinforcement to be 3'-1".
Adjust Resin Anchors in the field if necessary, to miss curb outlets.
All reinforcement shall be epoxy coated.

EXISTING LATEX CONCRETE OVERLAY:
Any damage to the existing latex concrete overlay was repaired or replaced as directed by the engineer. No direct payment was made for any replacement or repairs to the latex concrete overlay.

TRAFFIC HANDLING:
See roadway plans for traffic control during construction.

FINAL QUANTITIES		
ITEM		TOTAL
Substructure Repair (Unformed)	Sq. Ft.	19
Superstructure Repair (Unformed)	Sq. Ft.	81
Curb Blockout	Lin. Ft.	197
Slab Edge Repair (Bridges)	Lin. Ft.	56

DESIGNED APR. 1999
DETAILED APR. 1999
CHECKED APR. 1999

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 1 OF 6.

DATE 9-5-00

REPAIRS TO: BRIDGE OVER ROUTE 24

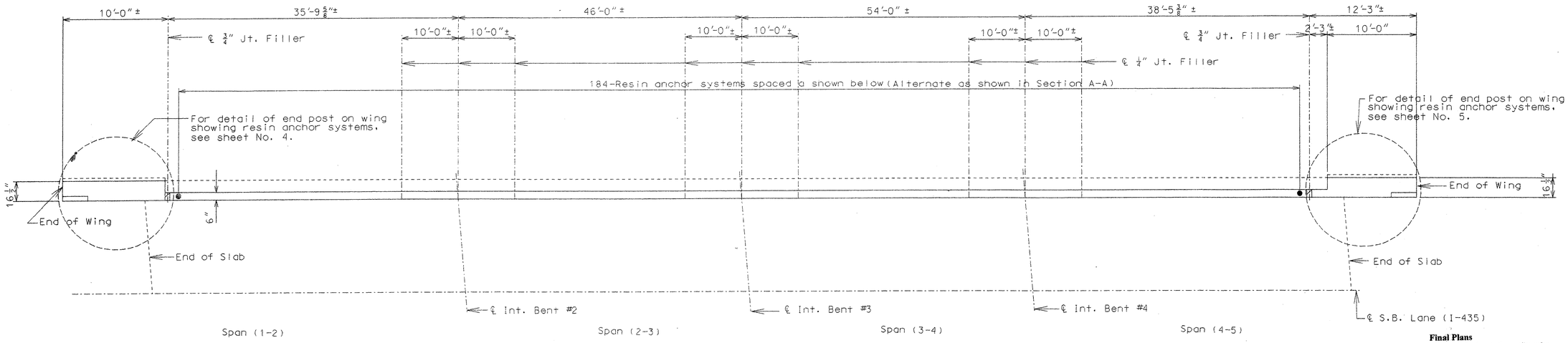
STATE ROAD: INTERSTATE ROUTE 435 S.B.L.
IN KANSAS CITY
PROJECT NO. FAI-435-1(269) ID. 001215-401
JOB NO. J4I1333
STA. 173+33.90 ℄ MEDIAN (MATCH EXIST.)
RTE. I-435
JACKSON COUNTY
DATE 9/7/00

A17503

1

STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269) ID. 001215-401	88

JOB NO. J4I1333



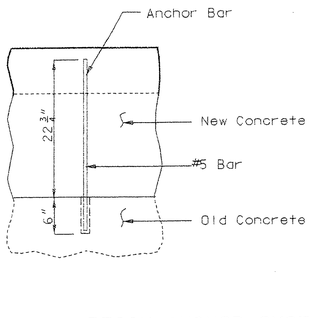
Note: Longitudinal dimensions shown are dimensions taken along along top of slab parallel to grade.
Match existing curb joints.

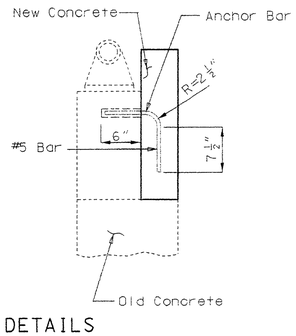
PLAN OF CURB BLOCKOUT SHOWING RESIN ANCHOR SPACING

Final Plans

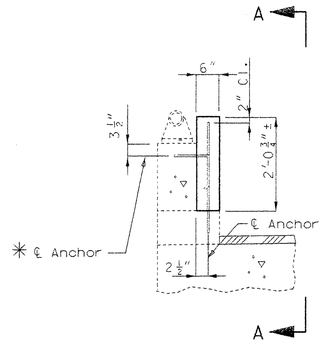
I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed.

Signature 1-10-02 Date



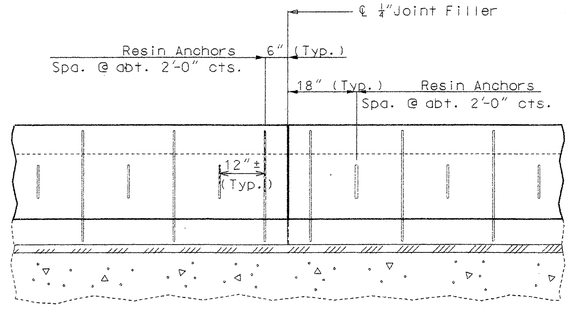


RESIN ANCHOR SYSTEMS DETAILS



TYPICAL SECTION THRU CURB

✳Shift resin anchors to clear existing steel anchor bolts for tube rail.



PART SECTION A-A

STATE OF MISSOURI MARK A. STUCK ENGINEER REGISTERED PROFESSIONAL

STATE OF MISSOURI KURT E. GRIBBLE NUMBER E-23578 REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

DETAILED APR. 1999
CHECKED NOV. 1999

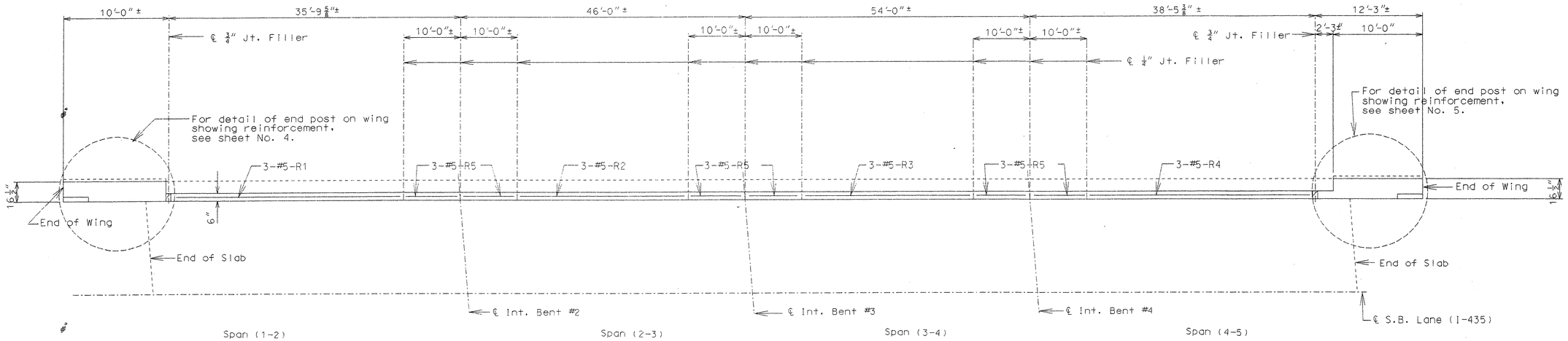
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

JACKSON COUNTY

A17503

STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269) ID. 001215-401	89

JOB NO. J4I1333



Note: Longitudinal dimensions shown are dimensions taken along along top of slab parallel to grade.
Match existing curb joints.

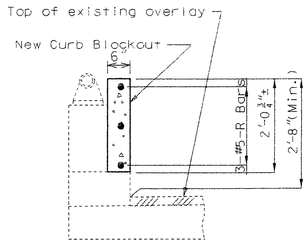
PLAN OF CURB BLOCKOUT SHOWING REINFORCEMENT

Final Plans

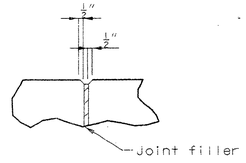
I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed.

Signature

1-10-02
Date



TYPICAL SECTION
THRU CURB BLOCKOUT



FILLED JOINT DETAIL

STATE OF MISSOURI
MARK A. STOCK
NUMBER E-23267
REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER
DATE 9-5-00

DETAILED APR. 1999
CHECKED NOV. 1999

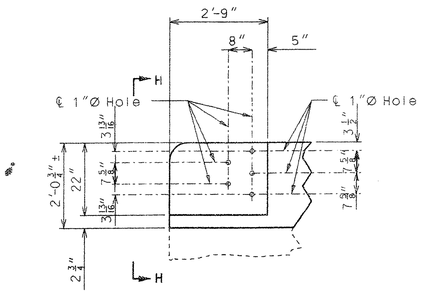
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

JACKSON COUNTY

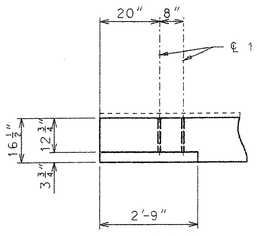
A17503

STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269) ID. 001215-401	B10

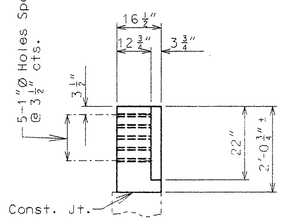
JOB NO. J4I1333



PART ELEVATION

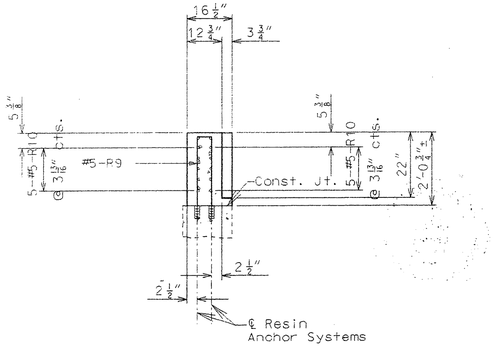


PART PLAN

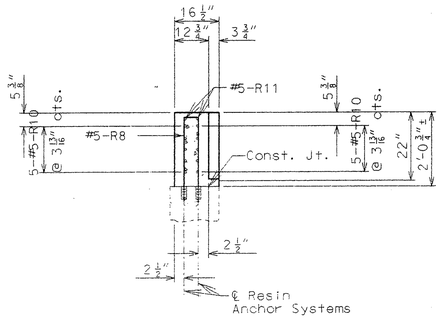


PART ELEVATION H-H

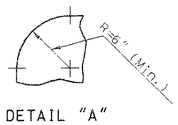
DETAILS OF GUARD RAIL ATTACHMENT



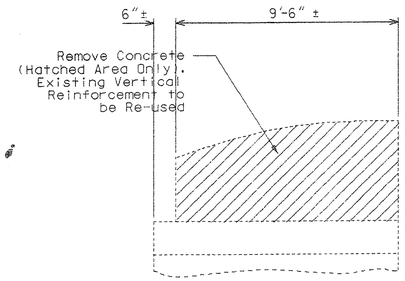
SECTION E-E



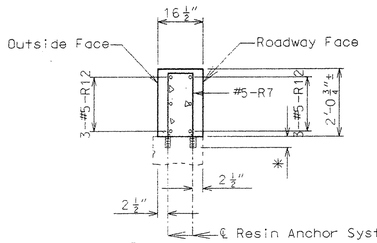
SECTION F-F



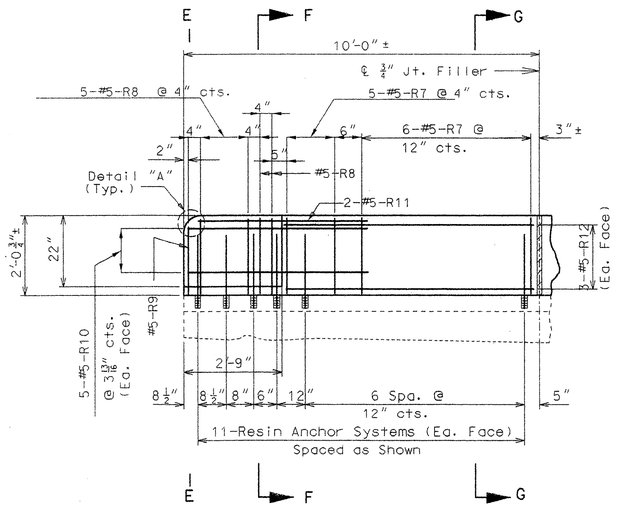
DETAIL "A"



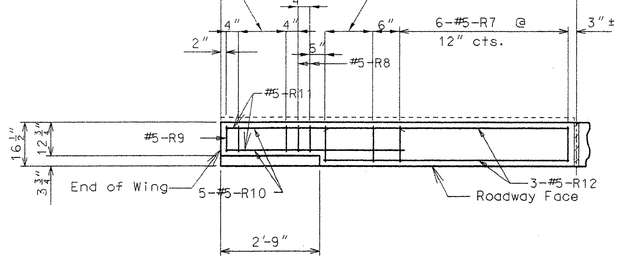
ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL



SECTION G-G



ELEVATION OF NEW END POST ON WING



PLAN OF NEW END POST ON WING

Note: Resin anchors not shown in plan for clarity.

Final Plans

I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed. .

Signature

1-10-02
Date

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

STATE OF MISSOURI
MARK A. STOCK
NUMBER E-23267
REGISTERED PROFESSIONAL ENGINEER

* 6" embedment length

DETAILS OF BLOCKOUT ON WING AT END BENT NO. 1

DETAILED APR. 1999
CHECKED NOV. 1999

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 6.

JACKSON COUNTY

A17503

Final Plans

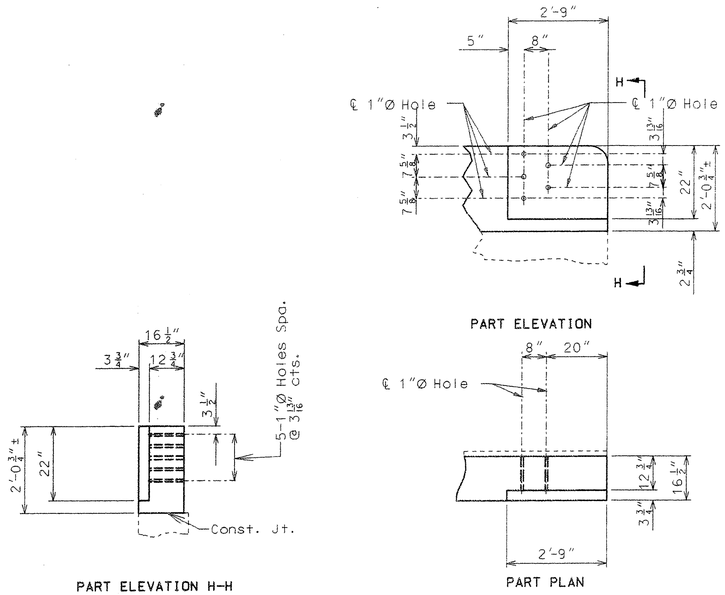
I certify that this plan sheet accurately depicts the configuration and location of the roadway and all its appurtenant features, to the best of my knowledge, as I and my staff have observed the contractor's construction of this project. I specifically disclaim any responsibility for the design of this project, except as I and my staff may have modified or authorized the modification of the project design during its construction; and I disclaim responsibility for the contractor's actual construction of the project, except as I and my staff may have directed or ordered that the project be constructed. .

Signature

1-10-02
Date

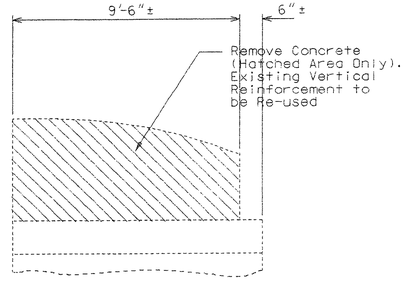
STATE	PROJ. NO.	SHEET NO.
MO.	FAI-435-1(269)	
	I.D. 001215-401	B11

JOB NO. J4I1333

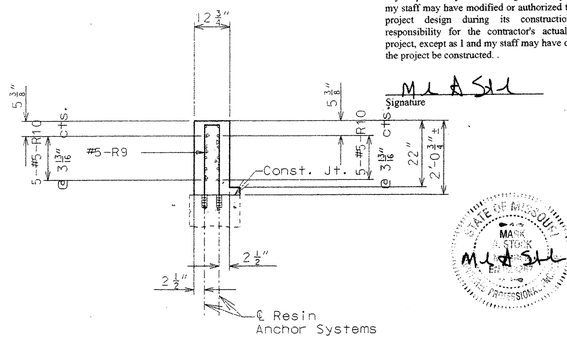


DETAILS OF GUARD RAIL ATTACHMENT

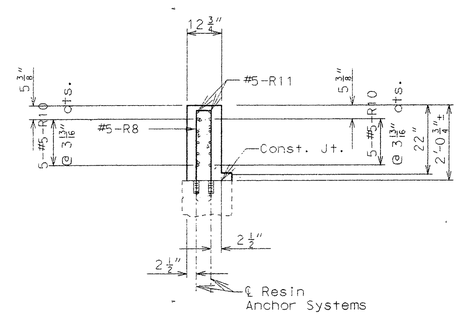
DETAIL "A"



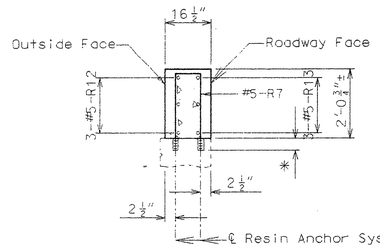
ELEVATION OF EXISTING END POST SHOWING CONCRETE REMOVAL



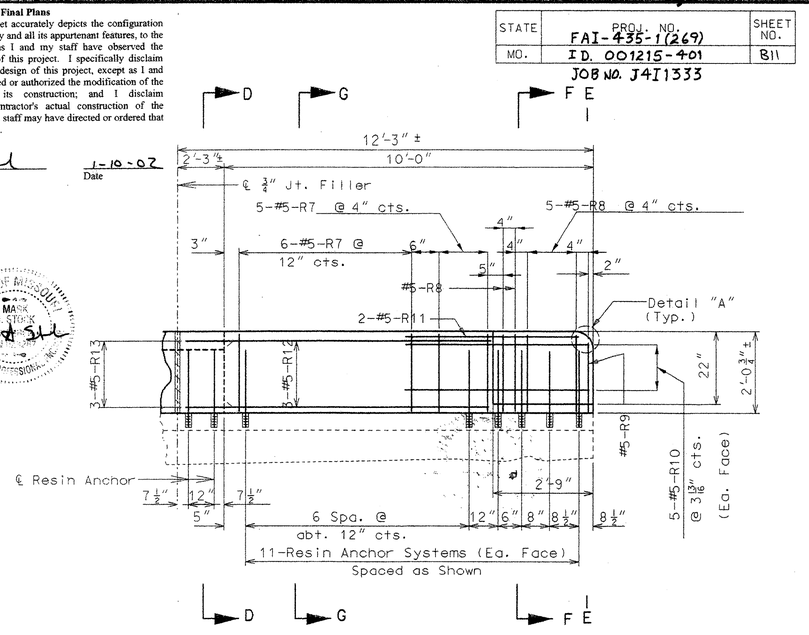
SECTION E-E



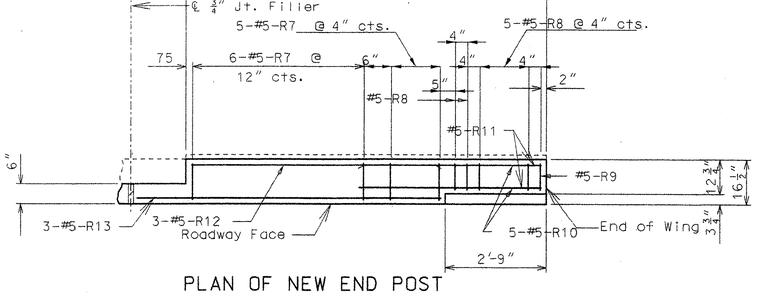
SECTION F-F



SECTION G-G



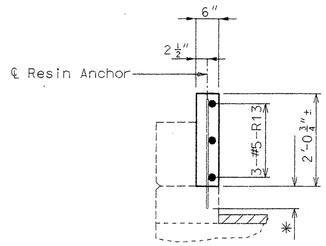
ELEVATION OF NEW END POST ON WING



PLAN OF NEW END POST ON WING

Note: Resin anchors not shown in plan view for clarity.

* 6" embedment length



SECTION D-D

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23578
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

DETAILED APR. 1999
CHECKED NOV. 1999

DETAILS OF BLOCKOUT ON WING AT END BENT NO. 5

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 5 OF 6.

JACKSON COUNTY

A17503

FOR INFORMATION ONLY

A17504&A17505, Sht. 70

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
3	5	R1	BLOCKOUT	E	20					25	6.000													25	6	25	6	80
3	5	R2	BLOCKOUT	E	20					25	9.000													25	9	25	9	81
3	5	R3	BLOCKOUT	E	20					33	9.000													33	9	33	9	106
3	5	R4	BLOCKOUT	E	20					28	2.000													28	2	28	2	88
20	5	R5	BLOCKOUT	E	20					9	9.000													9	9	9	9	203
22	5	R7	BLOCKOUT	E	10	S						21	6	13	3									4	8	4	6	103
14	5	R8	BLOCKOUT	E	10	S						21	6	9	7									4	5	4	2	61
2	5	R9	BLOCKOUT	E	10	S						17	1	9	7									3	8	3	5	7
20	5	R10	BLOCKOUT	E	20					5	0.000													5	0	5	0	104
4	5	R11	BLOCKOUT	E	20					4	6.000													4	6	4	6	19
9	5	R12	BLOCKOUT	E	20					7	0.000													7	0	7	0	66
3	5	R13	BLOCKOUT	E	20					9	3.000													9	3	9	3	29

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B	C	D	E	F	H	K	NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
										FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	LBS.

Final Plans

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Signature

1-10-03
Date

STATE OF MISSOURI
MARK A. STUCK
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

State	Proj. No.	Sheet No.
MO	FAI-435-1(269) ID. 001215-401 JOB NO. J4I1333	B12

SHAPE 6

SHAPE 7

SHAPE 8

SHAPE 9

SHAPE 10

SHAPE 11

SHAPE 12

SHAPE 13

SHAPE 14

SHAPE 15

SHAPE 16

SHAPE 17

SHAPE 18

SHAPE 20

SHAPE 19

SHAPE 21

SPOT WELD AASHTO M32 SIZE W5 WIRE (TYP.)

SHAPE 23

SHAPE 24

SHAPE 22

SHAPE 25

SHAPE 26

SHAPE 27

SHAPE 28

SHAPE 29

SHAPE 31

SHAPE 30

SHAPE 32

SHAPE 36

SHAPE 35

SHAPE 34

SHAPE 33

(SHAPE 35 SHALL BE A SMOOTH BAR OR WIRE.)

BENDING DIAGRAMS

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER

DATE 9-5-00

6d FOR #4 AND #5.
12d FOR #6

90° STIRRUP

135° STIRRUP

DETAILED Nov. 1999
CHECKED Nov. 1999

STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	12"	8"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

DETAILING DIMENSION

90°

12d

180°

4d OR 2-1/2" MIN.

END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2-1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3-3/4"	7"	5"	10"
#6	4-1/2"	8"	6"	12"
#7	5-1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9-1/2"	15"	11-3/4"	19"
#10	10-3/4"	17"	13-1/4"	22"
#11	12"	19"	14-3/4"	2'-0"
#14	18-1/4"	2'-3"	21-3/4"	2'-7"

TWO ADDITIONAL #5-R5 ARE INCLUDED IN THE BAR BILL FOR TESTING.

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH THE SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE (NEAREST INCH).
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 6 OF 6.

JACKSON COUNTY

A17503

6