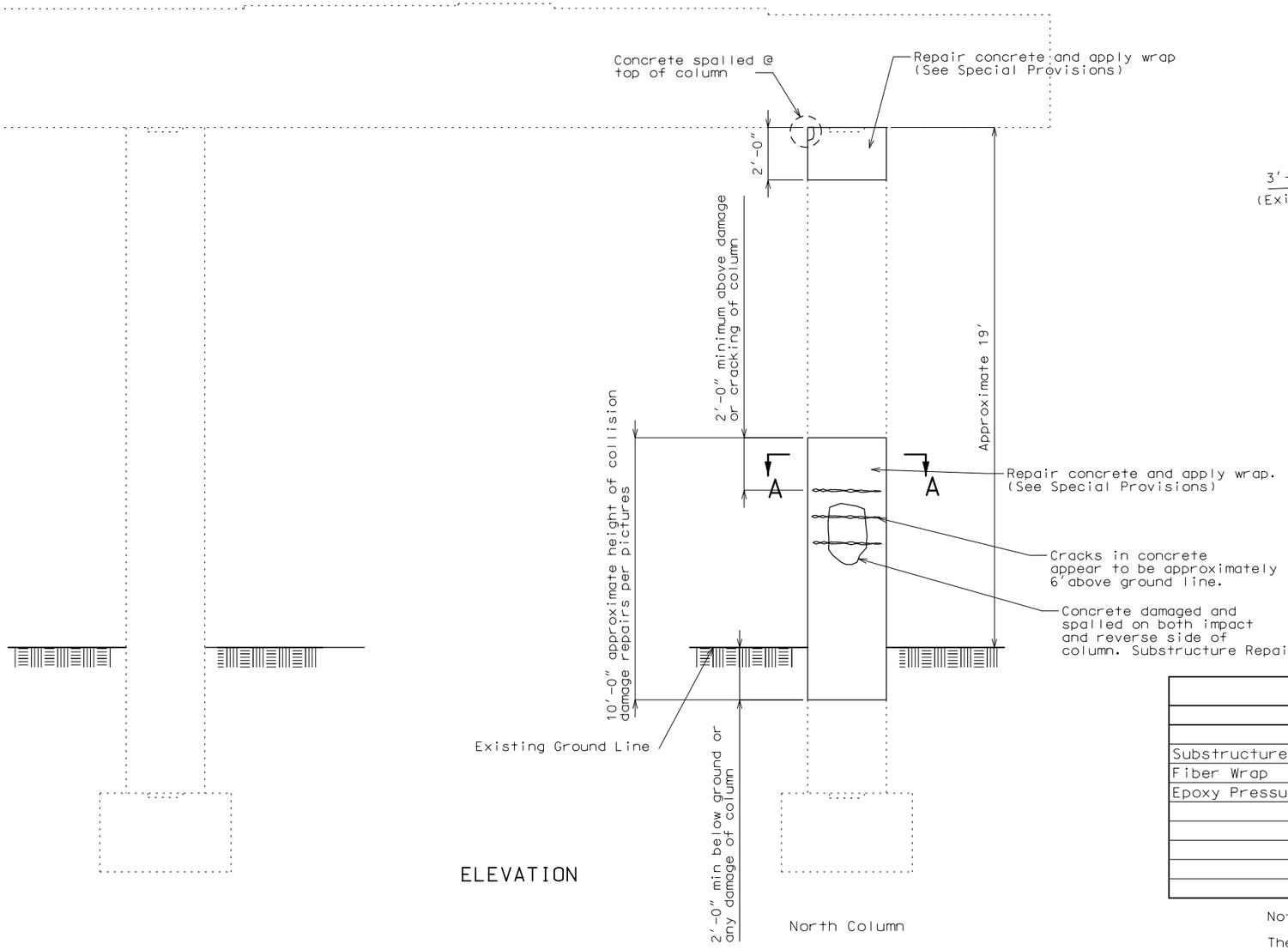
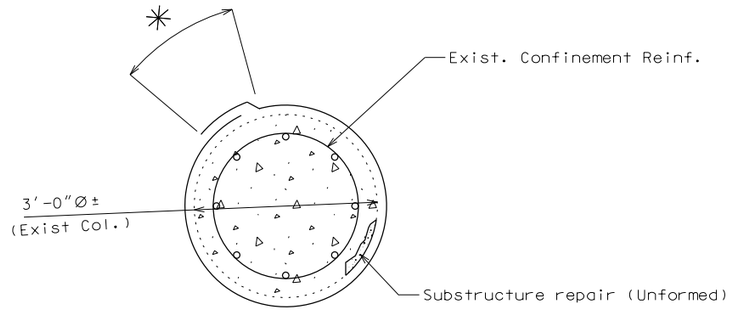
SEC/SUR 1 TWP 47N RGE 32W

COLLISION DAMAGE REPAIR – INT. BT. NO.4



ELEVATION



SECTION A-A

* Fiber wrap shall be overlapped per the manufacturer's recommendations.

As a minimum, fiber wrap shall provide for strength equivalent to confinement provided by existing steel.

Estimated Quantities

Item		Total
Substructure Repair (Unformed)	Sq. Ft.	12
Fiber Wrap	Sq. Ft.	115
Epoxy Pressure Injecting	Lin. Ft.	15

Notes:

The cost of all labor, equipment and material to apply the bonding agent and place repair concrete shall be considered covered by the contract unit price for Substructure Repair (Unformed).

The cost of all labor, equipment and material to apply the fiber wrap as shown shall be considered completely covered by the contract unit price for fiber wrap.

Cost of any required excavation for bridge repairs will be considered completely covered by the contract unit price for other items.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 5/13/2016

ROUTE 50 | STATE MO

DISTRICT BR | SHEET NO. 1

COUNTY JACKSON

JOB NO. K16C9370

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A24462

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REPAIR DETAILS OF INTERMEDIATE BENT NO.4

Detailed
Checked

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

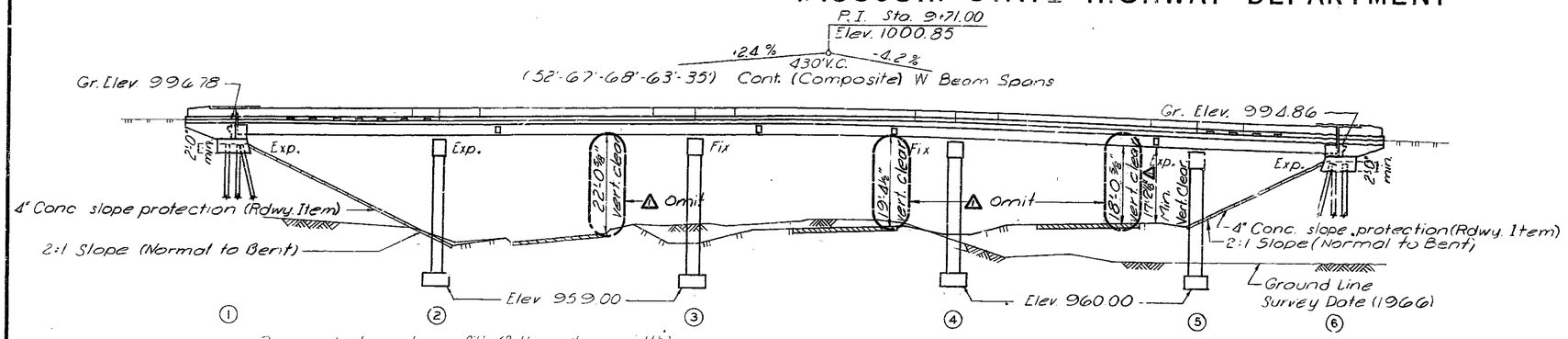
Sheet No. 1 of 1

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

B_A24462_K16C9370_Column_Repair.dgn 1:57:38 PM 5/13/2016

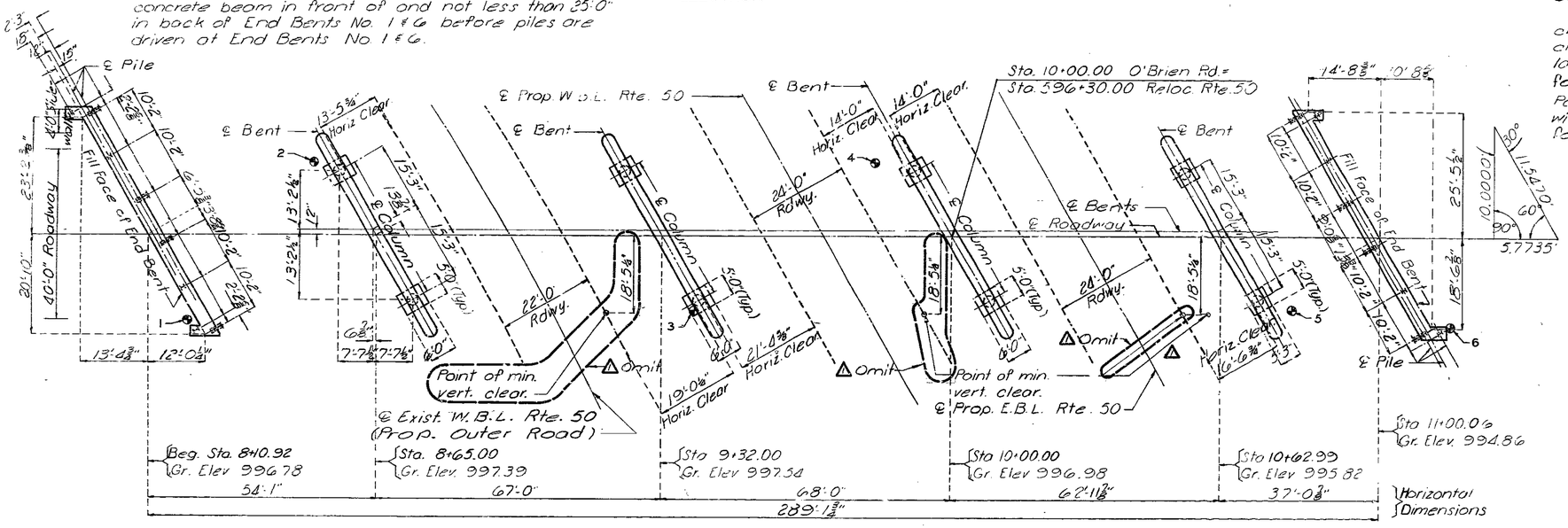
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD Dist. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	24	



ELEVATION

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 & 6 before piles are driven at End Bents No. 1 & 6.



PLAN

Note: For boring see sheet No. 2.
● Indicates location of boring.

PILE & FOOTING DATA

BENT NO.		1	2	3	4	5	6
BEARING PILE	Pile Type and Size	HP10x42					HP10x42
	Number	8					8
	Approximate Length Ft.	25					29
	Design Bearing Tons	22.0					22.0
	Hammer Energy reqd. Ft.Lbs.	7000					7000
SPREAD FOOTINGS	Foundation Material		Rock	Rock	Rock	Rock	
	Design Bearing Tons/Sq.Ft.		9.7	9.7	9.7	10.5	

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		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	200		200
Steel Piles in Place (10")	Lin. Ft.	432		432
Class B Concrete	Cu. Yd.	2460		2460
Class B1 Concrete	Cu. Yd.		371.5	371.5
Reinforcing Steel	Lb.	44,410	59,880	104,290
Reinforcing Steel (Epoxy Coated)	Lb.		47,040	47,040
Fabricated Structural Carbon Steel	Lb.		198,100	198,100
Painting	Tons		98.1	98.1
Bridge Rail (One Tube)	Lin. Ft.		583	583
Pedestrian Fence (72")	Lin Ft.		309	309
Steel Reinf. Elastomeric Exp. Jt. Seal (2")	Lin. Ft.		54	54

Note: All concrete and reinforcement in end posts, parapets, and curbs is included with superstructure quantities.
See Special Provisions for Epoxy coated reinforcing.

SEE PLANS SHEETS

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1973

Design Loading:
H20-44 15#/sq. ft. Future Wearing Surface
Earth 120 # Equivalent Fluid Pressure 30#
Fatigue Stress - Case I

Design Unit Stresses:
Class B Concrete (substructure) f_c = 1,200 psi
Class B1 Concrete (superstructure) f_c = 1,600 psi
Reinforcing Steel f_s = 20,000 psi
Structural Carbon Steel f_s = 20,000 ps.
Steel Pile f_b = 9,000 psi

Fabricated Steel:
Field connections, High Strength Bolts 3/4" ϕ, holes 13/16" ϕ except as noted.

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

Construction Clearance:
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 for Outer Rdwy.

Paint: System B or C by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System "B" shall be green.

For notch toughness requirements see Special Provisions.

B.M. Elev 1017.38 - 100d Spike in P.P. 112' Rt. Sta 579+90 Rte. 50. (USGS Datum)

BRIDGE: O'BRIEN ROAD UNDERPASS

STATE ROAD: RELOCATED ROUTE 50

ABOUT: NEAR UNITY VILLAGE

PROJECT NO. U-50-1 (3) **STA.** 596+30.00

JOB NO. 4-U-50-27A RTE. 50

JACKSON COUNTY

STD. 611.60
STD. 706.30
A:2446

DESIGNED May 1972
DETAILED FEB 1973
CHECKED July 1973

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

Sheet No. 1 of 16. △ Revised Nov 13, 1975

DATE 9/10/75

248

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	25	

Elev. 975.2
Brown clay.
Elev. 965.8
Limestone.
Elev. 965.6
Weathered shale.
Elev. 959.9
Dark gray medium bedded limestone weathered and hard.
Elev. 954.9

① (CORE)

Elev. 971.5
Soil, yellow brown, clay, soft.
Elev. 965.0
Shale, tan, weathered, soft.
Elev. 959.9
Limestone, refusal.

②

Elev. 973.8
Brown clay.
Elev. 960.8
Yellow gray shale, weathered, firm.
Elev. 959.8
Thick bedded light gray limestone, weathered and hard.
Elev. 957.6
Light gray thick bedded limestone with some shaley hard limestone bands.
Elev. 956.6
Medium bedded limestone with thin shale in bedding planes, weathered and hard (core structurally sound).
Elev. 954.8

③ (CORE)

Elev. 975.8
Fill, soil.
Elev. 964.8
Blue silty clay.
Elev. 962.8
Weathered shale.
Elev. 960.8
Light gray medium to thick bedded limestone.
Elev. 958.6
Light gray limestone with shaley limestone bands, hard.
Elev. 957.2
Medium bedded light gray limestone with shale in bedding planes, hard.
Elev. 955.8

④ (CORE)

Elev. 966.4
Black clay, wet.
Elev. 960.4
Limestone, hard.
Elev. 960.3

⑤

Elev. 967.1
Black clay.
Elev. 960.4
Thin to thick bedded limestone, weathered and hard.
Elev. 955.4

⑥ (CORE)

Note: For location of borings see Sheet No. 1 .

BORING DATA

249

DETAILED Dec 1972
CHECKED July 1973

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

JACKSON COUNTY

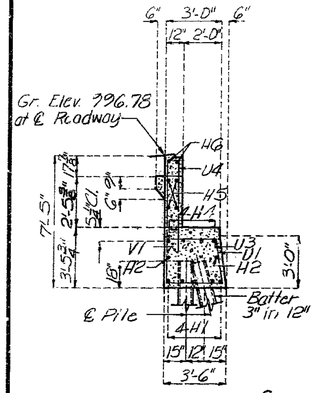
A-2446

FOR INFORMATION ONLY

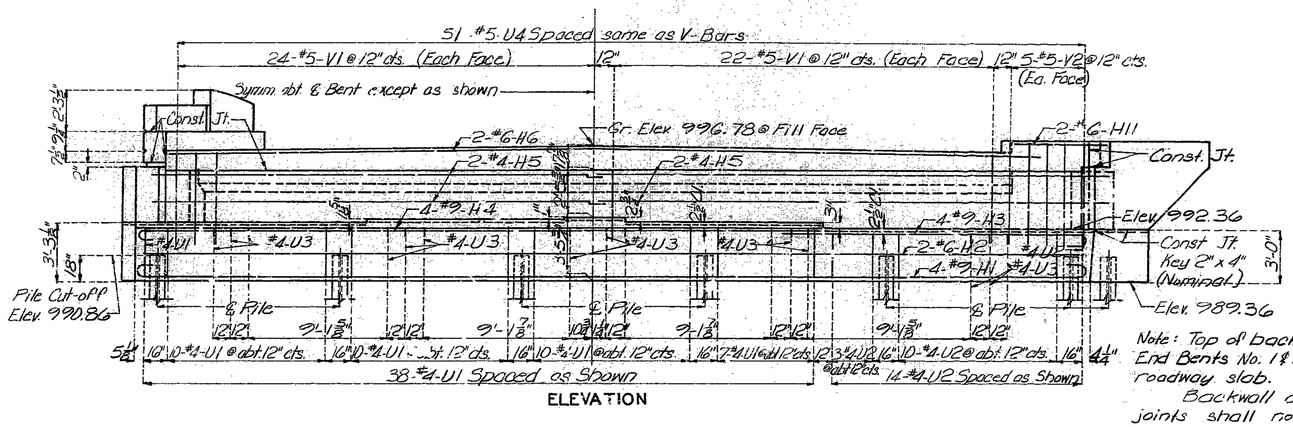
A24462, Sht. 4

MISSOURI STATE HIGHWAY DEPARTMENT

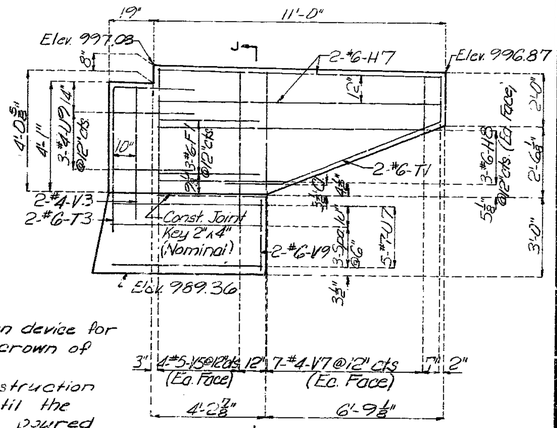
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	96	



SECTION AT ℄



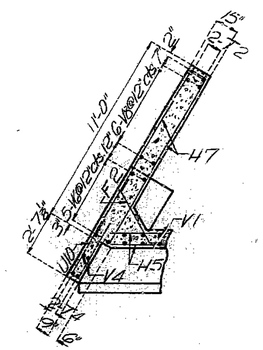
ELEVATION



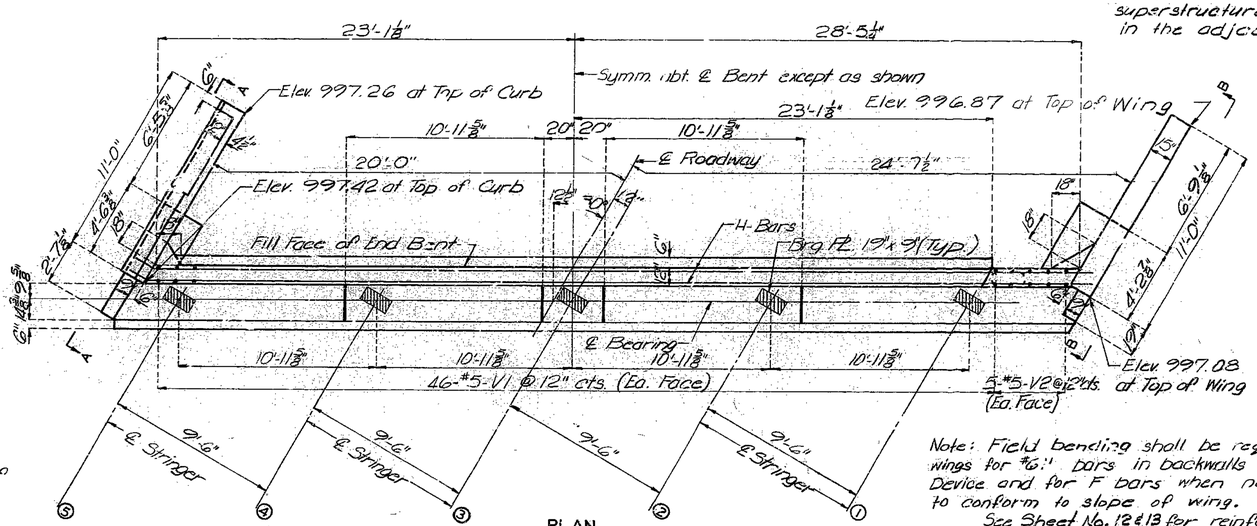
ELEVATION B-B

Note: Top of backwall and expansion device for End Bents No. 1 & 6 to conform to crown of roadway slab.

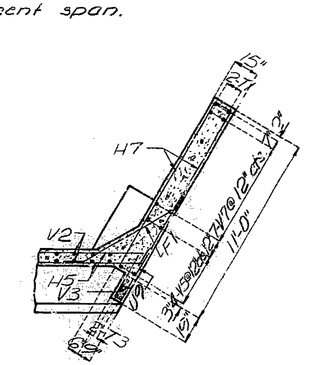
Backwall above upper construction joints shall not be poured until the superstructure slab has been poured in the adjacent span.



SECTION THRU WING



PLAN



SECTION THRU WING

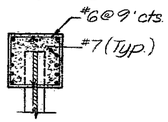
PART SECTION C-C

PART SECTION J-J

Note: Field bending shall be required at wings for #6 U bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.

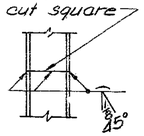
See Sheet No. 12 & 13 for reinforcement of end posts, parapets and curbs.

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

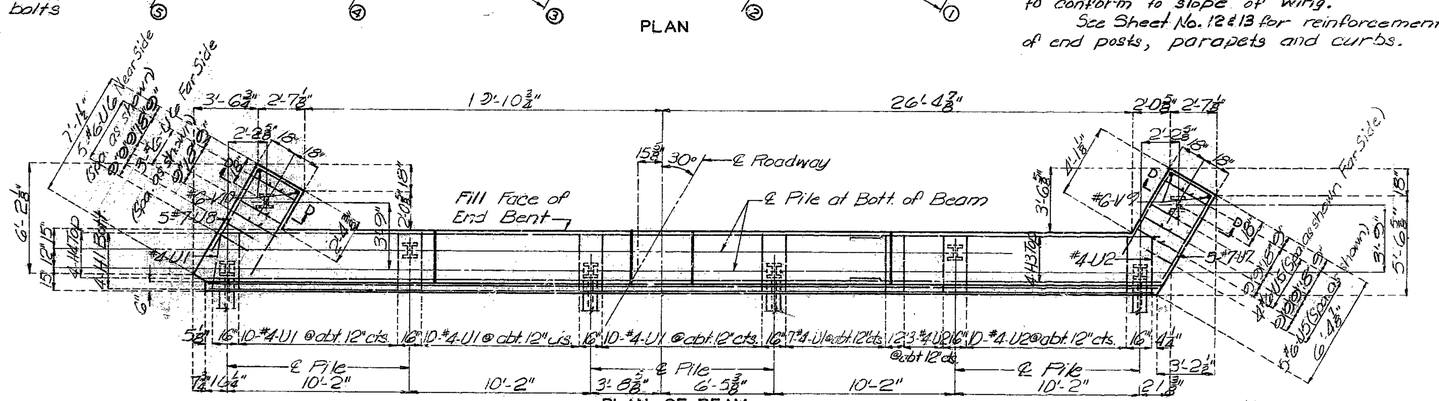


SECTION D-D

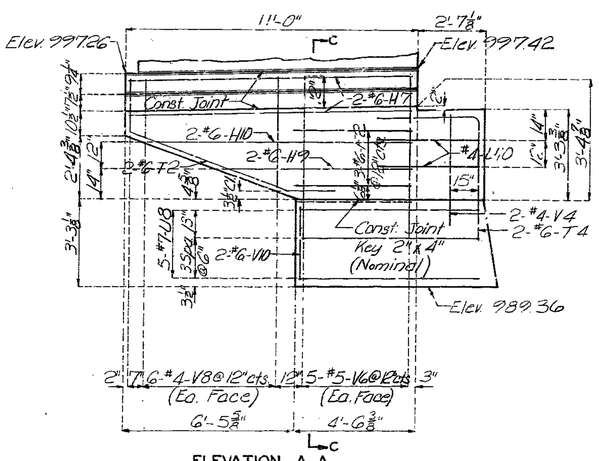
Butt splice (if required) Top of lower section to be cut square



STEEL PILE SPLICE



PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT)



ELEVATION A-A

DETAILED FEB. 1973

CHECKED July 1973

DETAILS OF END BENT NO. 1

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

Sheet No. 3 of 16.

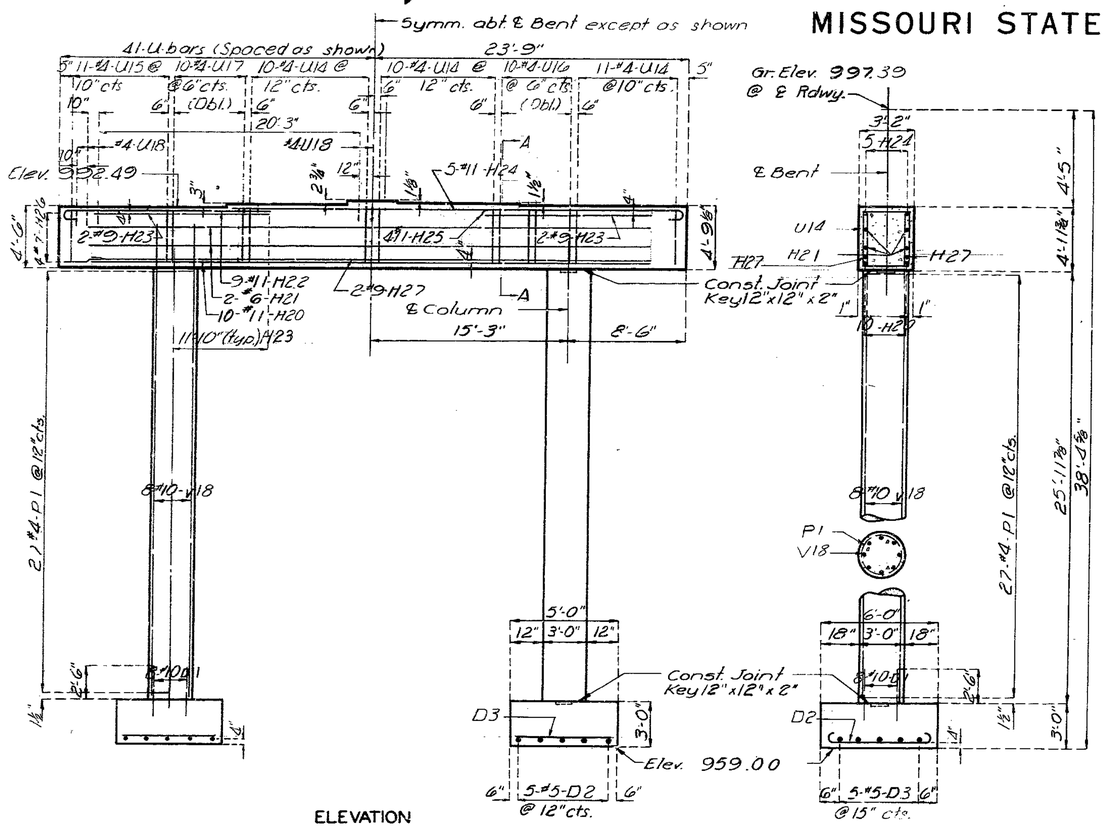
JACKSON COUNTY

A-2446

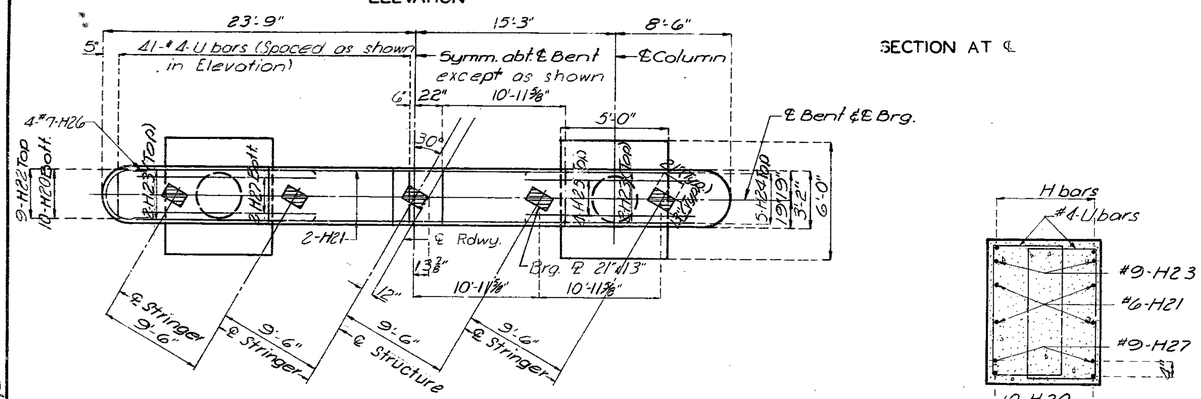
250

MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	97	

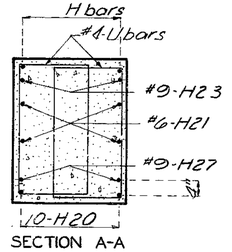


ELEVATION



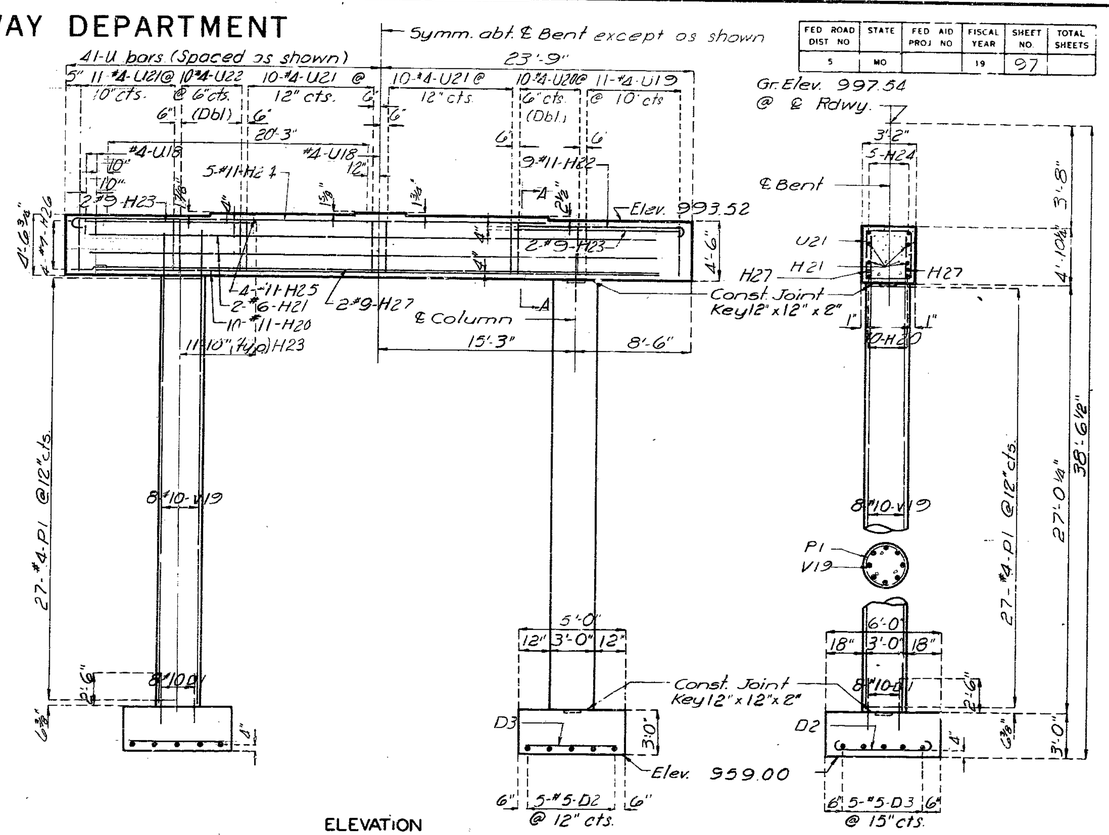
PLAN

DETAILS OF INTERMEDIATE BENT NO. 2.

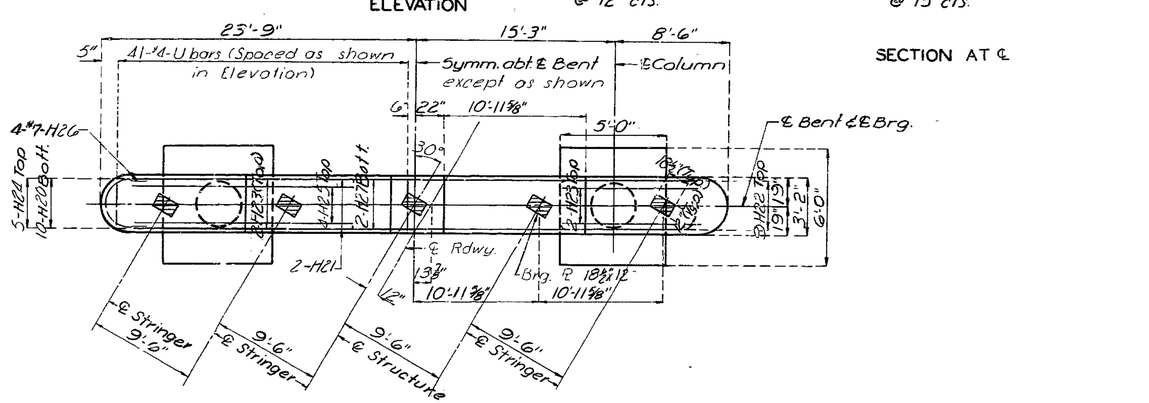


SECTION A-A
(Showing Double (Dbl.) U bars)

SECTION AT ℄



ELEVATION



PLAN

SECTION AT ℄

DETAILS OF INTERMEDIATE BENT NO. 3.

STD. 19.2 SEPT. 1962	REVISED APRIL 1971

DETAILED AUG 1972
CHECKED July 1973

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

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

Sheet No. 1 of 10

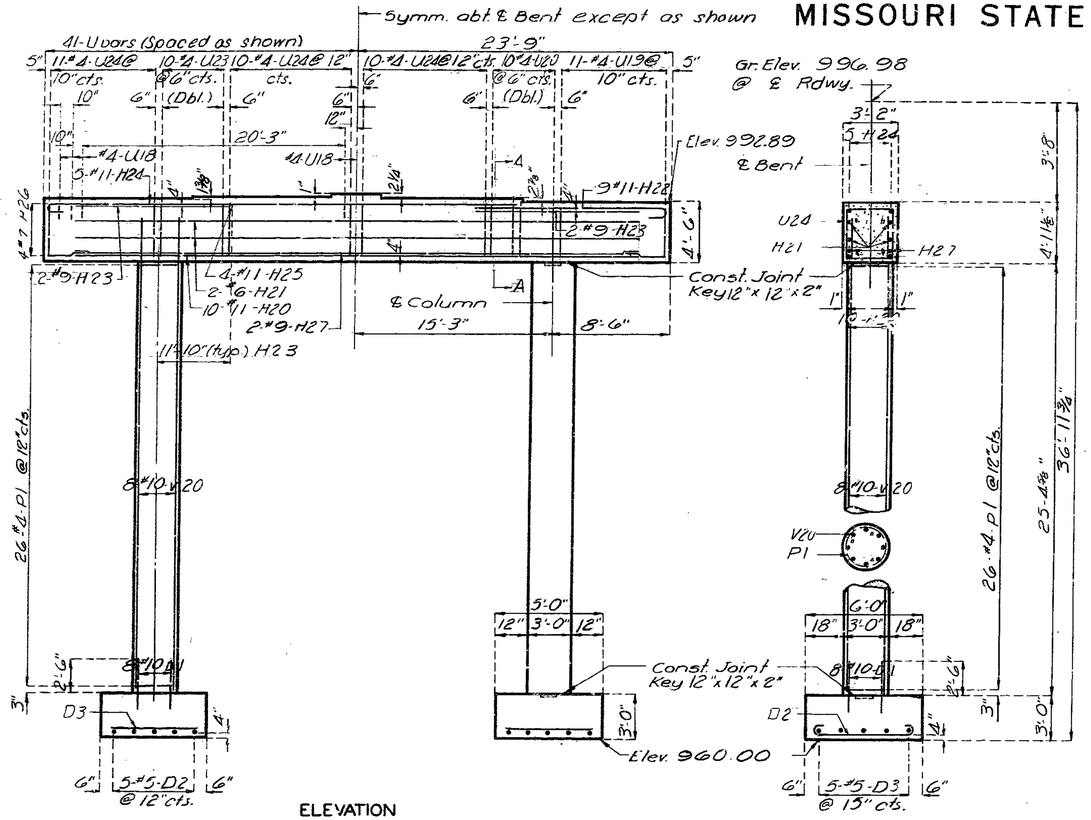
JACKSON COUNTY A-2446

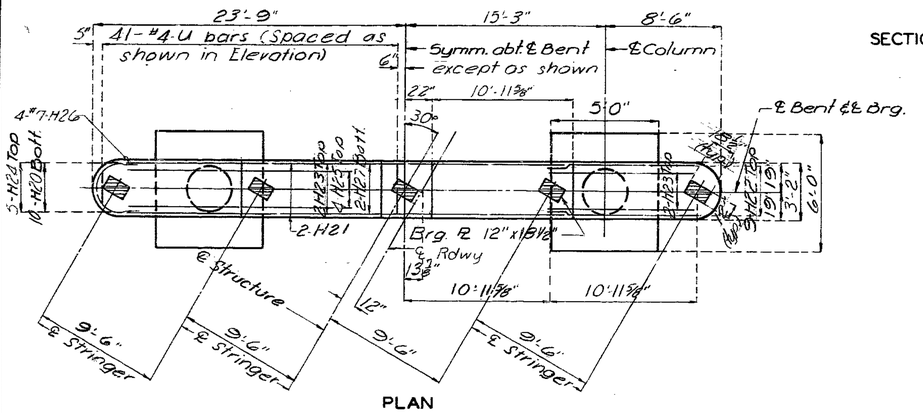
FOR INFORMATION ONLY

A24462, Sht. 6

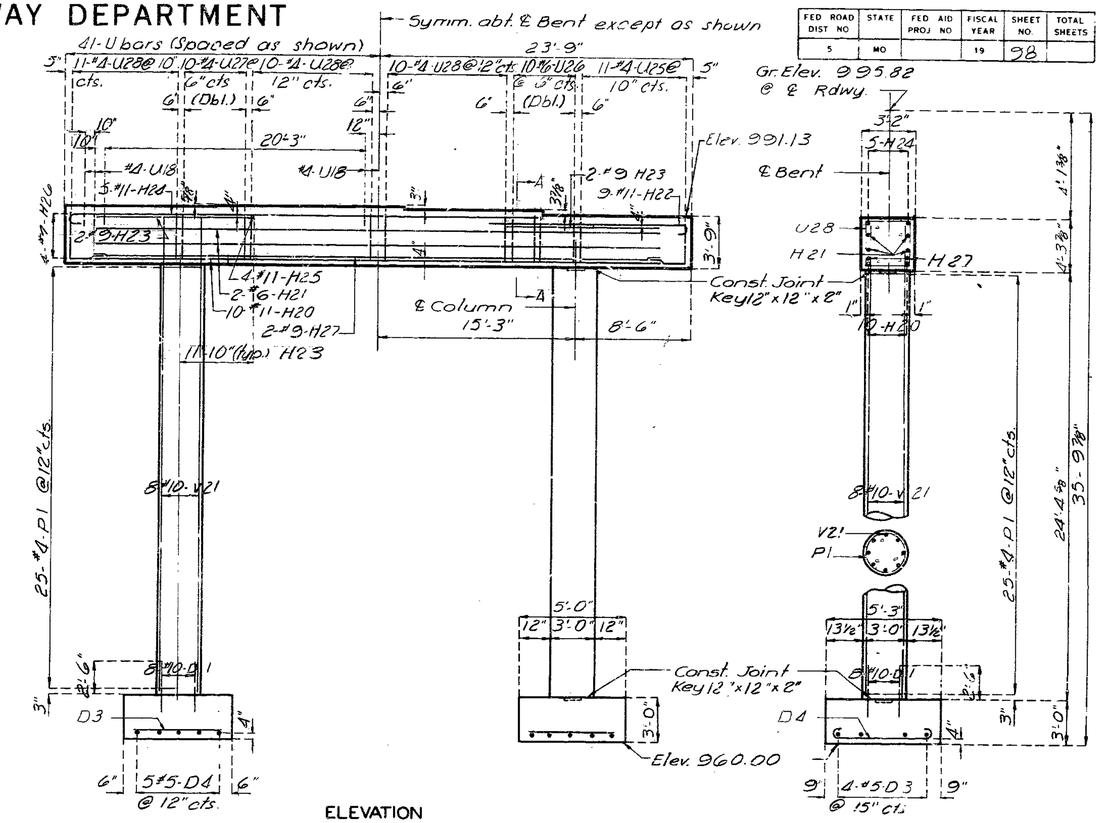
MISSOURI STATE HIGHWAY DEPARTMENT

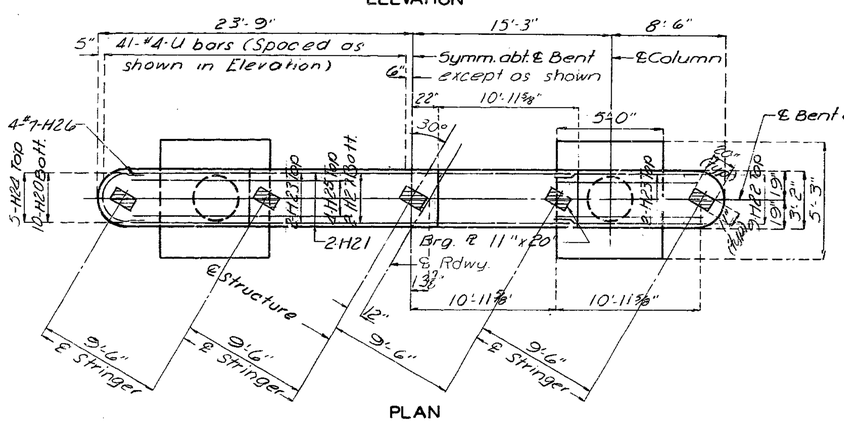
FED ROAD DIST NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	98	





DETAILS OF INTERMEDIATE BENT NO. 4





DETAILS OF INTERMEDIATE BENT NO. 5

Note: For Section A-A see sheet No. 4.

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

STD. 19.2 SEPT. 1962 | REVISED APRIL 1971

DETAILED SEPT. 1972
CHECKED July 1973

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

Sheet No. 5 of 16

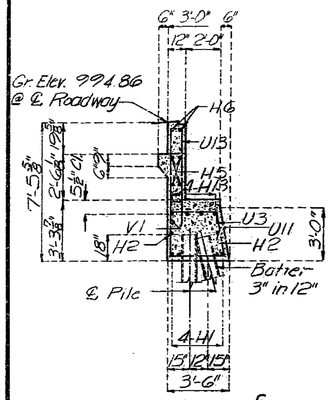
JACKSON COUNTY A-2446

FOR INFORMATION ONLY

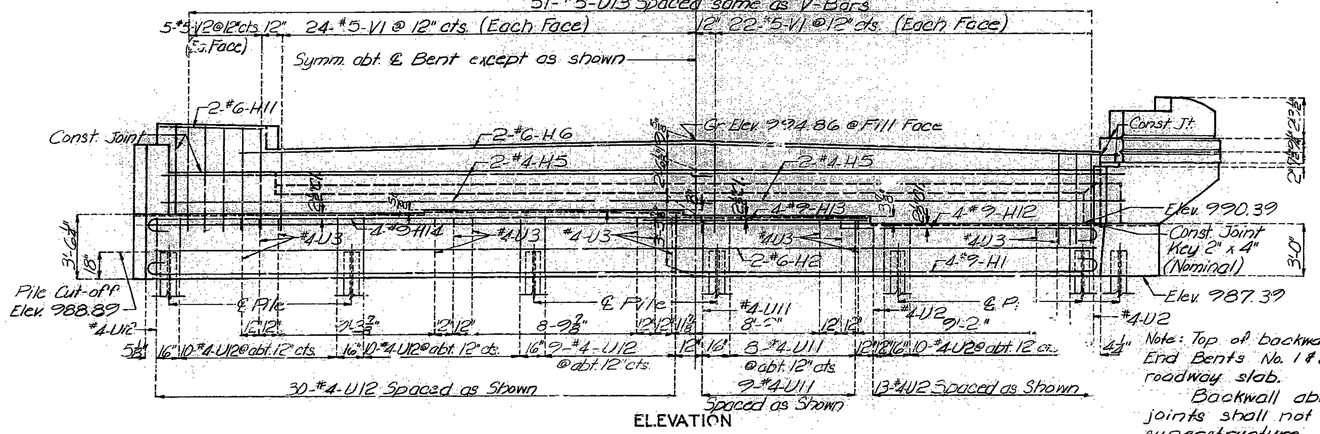
A24462, Sht. 7

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	99	



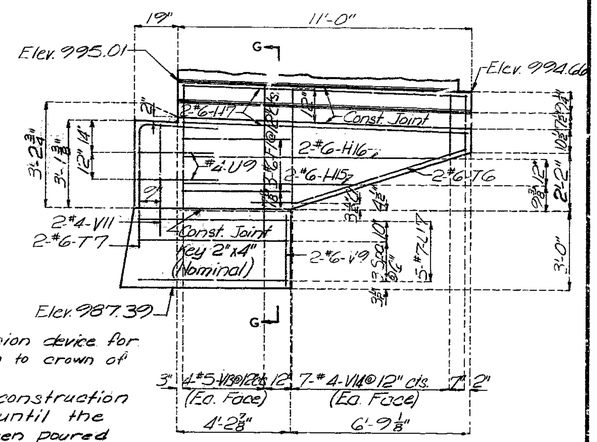
SECTION AT ℄



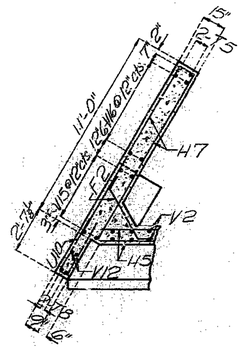
ELEVATION

Note: Top of backwall and expansion device for End Bents No. 1 & 6 to conform to crown of roadway slab.

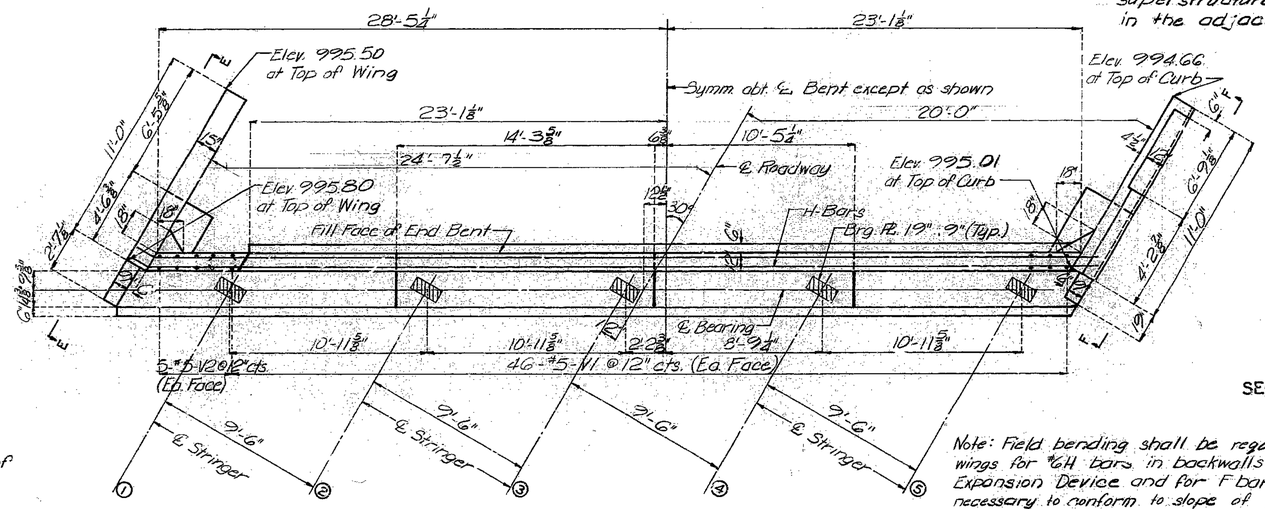
Backwall above upper construction joints shall not be poured until the superstructure slab has been poured in the adjacent span.



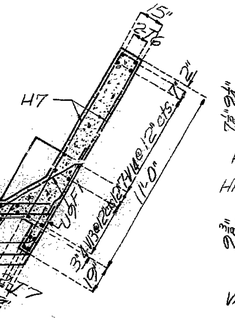
ELEVATION F-F



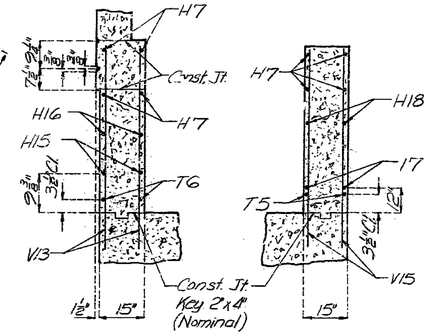
SECTION THRU WING



PLAN



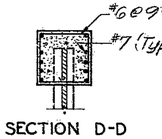
SECTION THRU WING



PART SECTION G-G

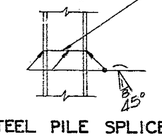
PART SECTION H-H

Note: All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least 1/2".



SECTION D-D

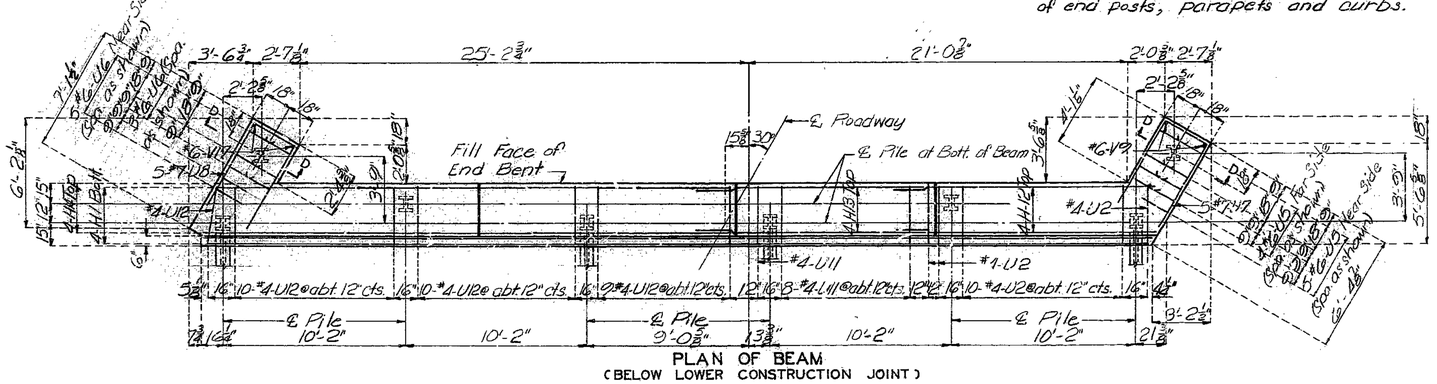
Butt splice (if required) Top of lower section to be cut square



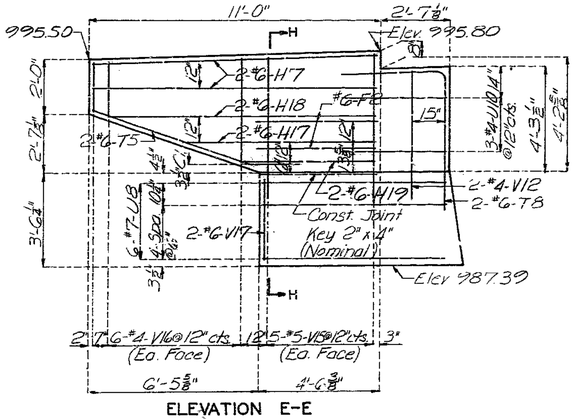
STEEL PILE SPLICE

Note: Field bending shall be required at wings for #6 H bars in backwalls with Expansion Device and for F bars when necessary to conform to slope of wing.

See Sheet No. 12 813 for reinforcement of end posts, parapets and curbs.



PLAN OF BEAM (BELOW LOWER CONSTRUCTION JOINT)



ELEVATION E-E

253

DETAILED FEB. 1973
CHECKED July 1973

DETAILS OF END BENT NO. 6

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

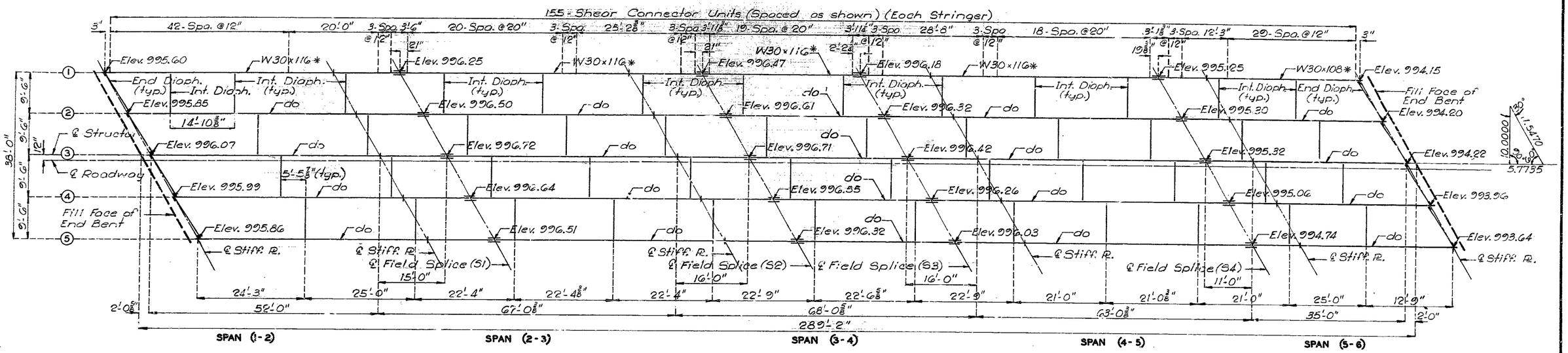
Sheet No. 6 of 16.

JACKSON COUNTY

A-2446

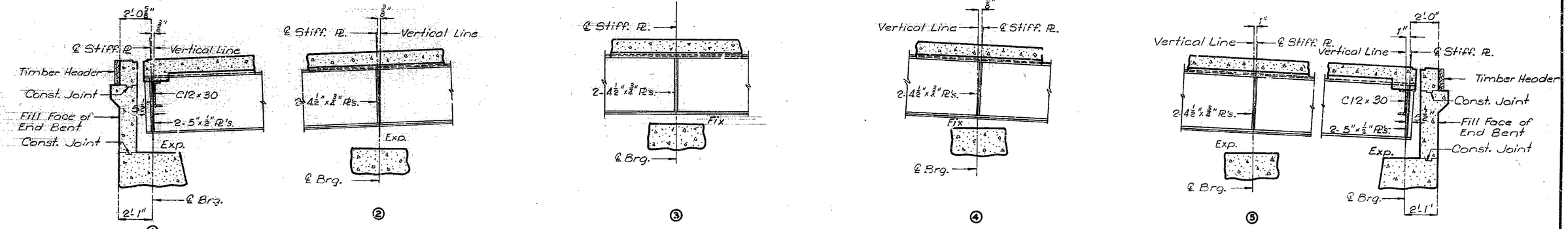
MISSOURI STATE HIGHWAY DEPARTMENT

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

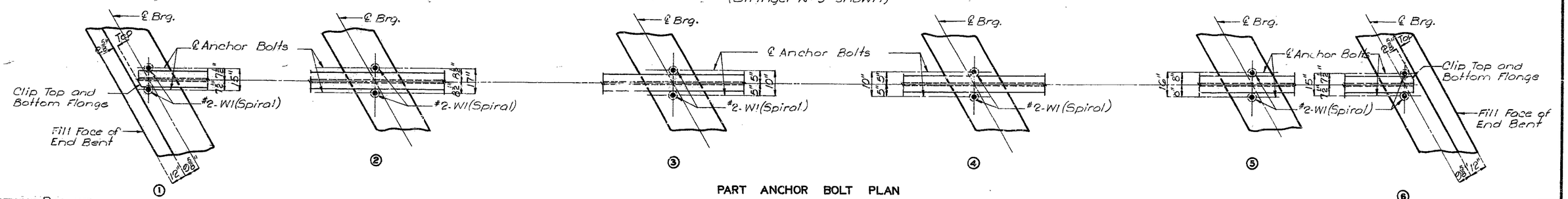


PLAN OF STRUCTURAL STEEL

Note: Longitudinal dimensions shown are taken parallel to grade at crown of roadway.
* Notch toughness required for all W beams.
Elevations shown are taken at bottom of top flange.



PART LONGITUDINAL SECTION
(Stringer № 3 shown)



PART ANCHOR BOLT PLAN

DETAILED Dec 1972
CHECKED July 1973

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

Sheet No. 7 of 16.

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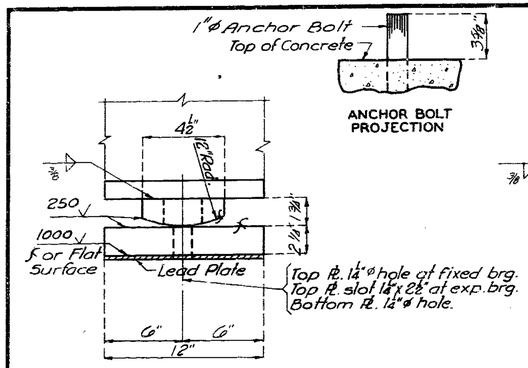
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	101	



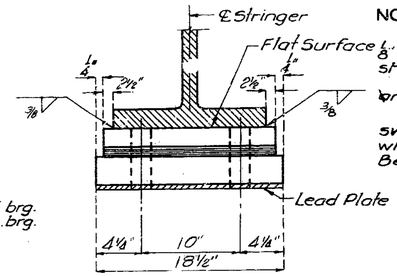
END ELEVATION

NOTES: TYPE "C" 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.

Anchor Bolts for Type "C" Bearings shall be 1"ø swedged bolts with no heads or nuts and shall extend 10" into concrete. Top of Anchor Bolts shall be set approximately ¼" below top of bearing.
"f" indicates machine finish surface.

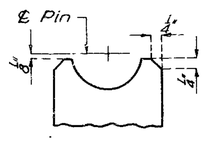
Required: 5 @ Bt. #3 Fixed
5 @ Bt. #4 Fixed



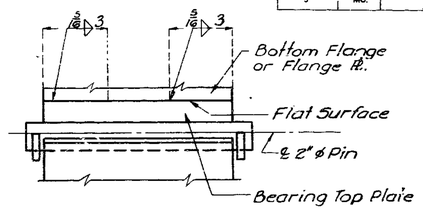
NOTES: TYPE "D" BEARINGS

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.

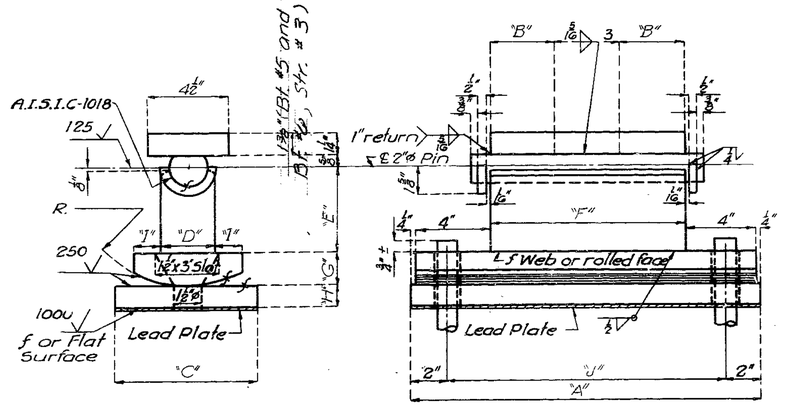
Anchor Bolts for Type "D" Bearings shall be 1¼"ø swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.
"f" indicates machine finish surface.



END VIEW OF WEB EXPANSION BEARING



WELDING DETAILS

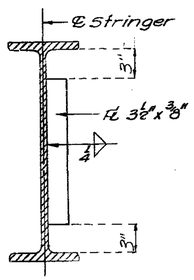


EXPANSION

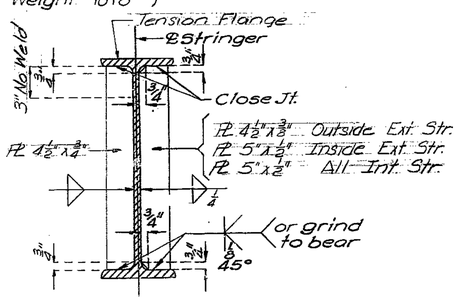
TYPE "D" BEARING DIMENSIONS											
	A	B	C	D	E	F	G	H	I	J	R
BENT NO. 1 & 6	19"	3¾"	9"	3"	4½"	10½"	2"	1⅛"	1½"	15"	6½"
BENT NO. 2	21"	4¾"	13"	4"	7"	12½"	2"	2½"	1½"	17"	9"
BENT NO. 5	20"	4½"	11"	3"	4½"	11½"	2"	2"	1⅝"	16"	6½"

Required: 5 @ Bt. #1
5 @ Bt. #2
5 @ Bt. #5
5 @ Bt. #6

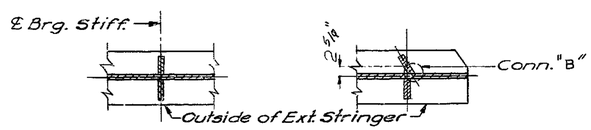
TYPE "C" BEARINGS
(Estimated Weight 1818 #)



INT. DIAPH.

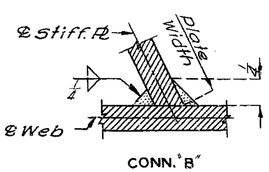


INT. BRG. STIFF. END BRG. STIFF.



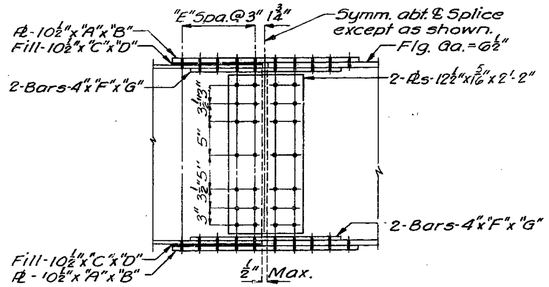
INT. BRG. STIFF. END BRG. STIFF. OR CONN. PL.

TYPICAL LOCATION DETAILS



CONN. "B"

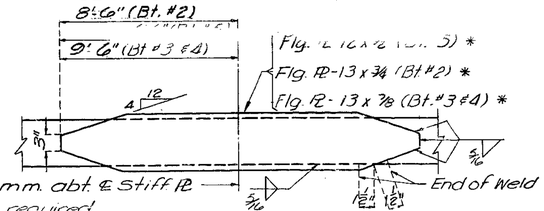
WELDING DETAILS



Note: 15/16" ø reamed holes for ⅞" high strength bolts.

SIZE OF BEAM	"A"	"B"	"C"	"D"	"E"	"F"	"G"
W30x116 to 116	5/8"	2'-6½"	—	—	4	½"	2'-6½"
W30x108 to 116	½"	2'-6½"	13 Ga.	15"	4	½"	2'-0½"

DETAIL OF 30" WF BEAM SPLICE

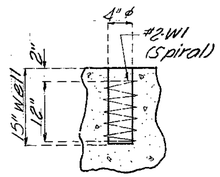


* Notch toughness required for all welded flange plates. See Special Provisions.

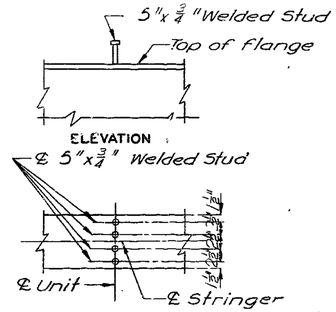
INT. BENTS NO. 2, 3, 4, & 5.

DETAILS OF FLANGE PLATES – TOP & BOTTOM FLANGE

TYPE "D" BEARINGS
(Estimated Weight 3870#)

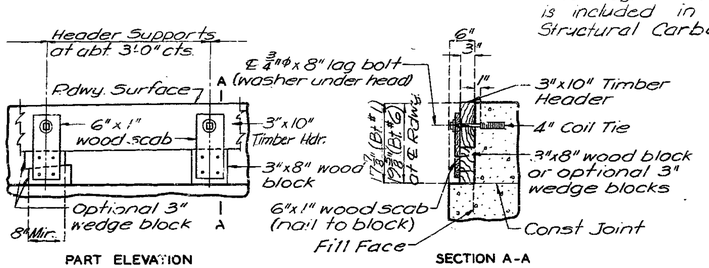


DETAIL OF ANCHOR BOLT WELL



DETAILS OF SHEAR CONNECTORS

Note: Weight of 2341 lbs. of shear connectors is included in weight of Fabricated Structural Carbon Steel.



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

DETAILS OF TIMBER HEADER AT END BENTS

SPS
REVISED
STD.

DETAILED JAN. 1973
CHECKED July 1973.

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

Sheet No. 8 of 16

JACKSON COUNTY

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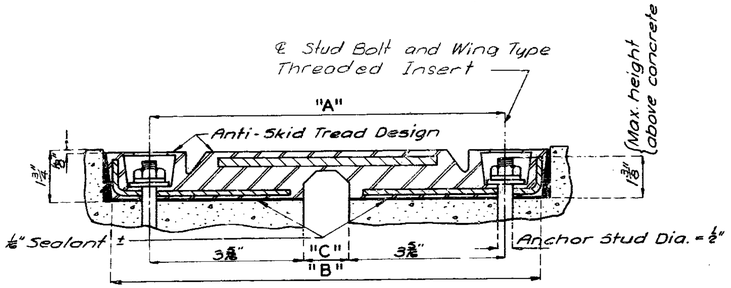
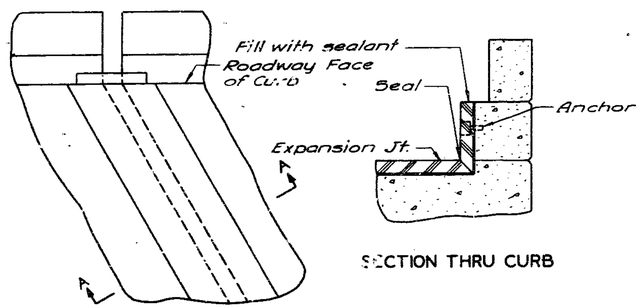
MISSOURI STATE HIGHWAY DEPARTMENT

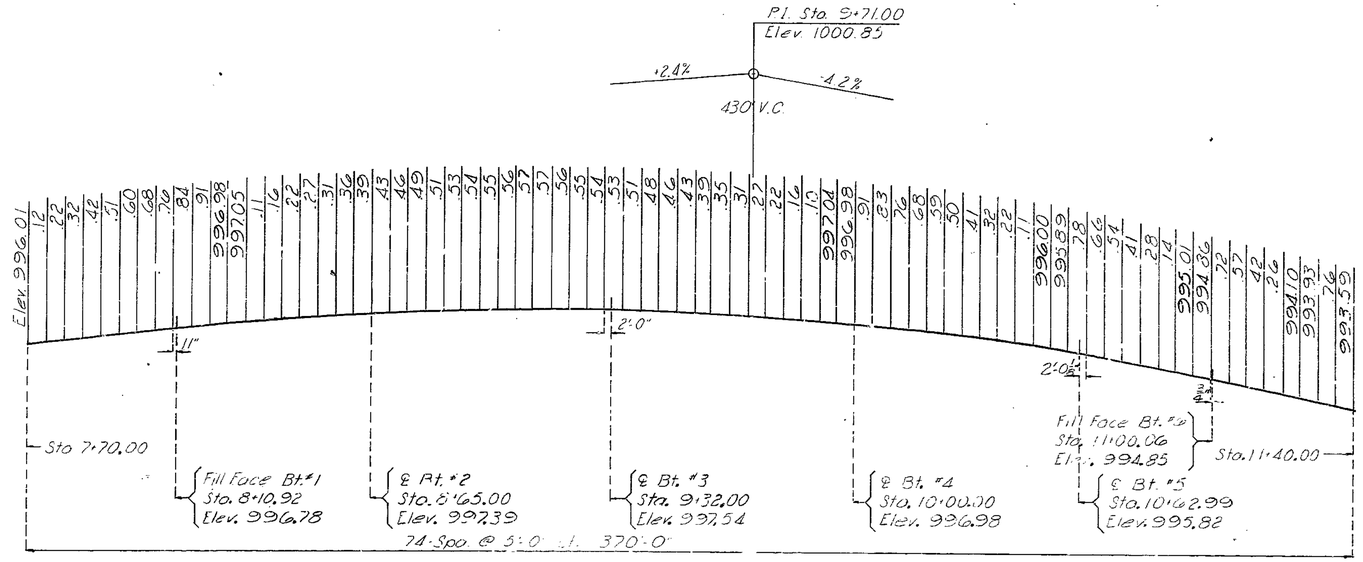
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	102	



SECTION A-A

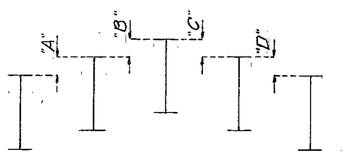


SECTION THRU CURB



PROFILE GRADE ELEVATIONS

Location	"A"	"B"	"C"	"D"
Bent No.1 to Splice (S1)	2⅜	2	1⅜	2¼
Splice (S1) to Splice (S2)	varies	varies	varies	varies
Splice (S2) to Splice (S3)	2¼	1¾	1⅜	2¼
Splice (S3) to Splice (S4)	varies	varies	varies	varies
Splice (S4) to Bent No.6	2⅛	1¾	1½	2¼



SECTION THRU STRINGERS
(Normal to ℄ Roadway)

TABLE OF VARIABLE DIMENSIONS			
TEMP. °F	DIM. "A"	DIM. "B"	DIM. "C" (MAX.)
110	7⅝"	9⅜"	1"
90	8"	9¾"	1⅛"
70	8⅜"	10"	1⅜"
60	8½"	10⅛"	1⅜"
50	8⅝"	10⅜"	2"
40	8¾"	10½"	2⅛"
30	9"	10⅝"	2⅜"
10	9⅛"	11"	2⅝"
-10	9⅜"	11⅛"	3"

Joint Seal for 2" movement

Note: Plan dimensions are based on installation at 60° F. Expansion joint width shall be adjusted during installation for compliance with the above table. See Special Provisions.

	Span (1-2)	Span (2-3)	Span (3-4)	Span (4-5)	Span (5-6)
Stringer #1	0"	5/16"	3/8"	3/16"	0"
Stringer #2	0"	3/8"	7/16"	3/16"	0"
Stringer #3	0"	5/16"	3/8"	3/16"	0"
Stringer #4	0"	3/8"	7/16"	3/16"	0"
Stringer #5	0"	5/16"	3/8"	3/16"	0"
℄ Brg. Stiff.	3/8 1/4 3/4 3/4	3/8 1/4 3/4 3/4	1/4 3/4 3/4 3/4	3/8 3/8 3/4 3/4	3/4 3/16 3/4 3/4
	S=52'-0"	S=67'-0"	S=68'-0"	S=63'-0"	S=35'-0"

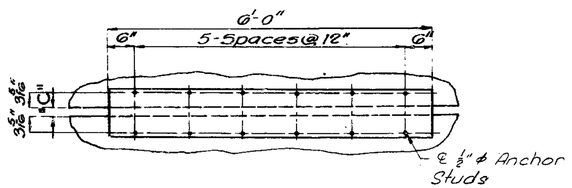
DEAD LOAD DEFLECTION

Note: 10 % of dead load deflection due to weight of Structural Steel

	Span (1-2)	Span (2-3)	Span (3-4)	Span (4-5)	Span (5-6)
Stringer #1	1⅜"	2⅝"	3⅜"	1⅜"	2⅜"
Stringer #2	1⅜"	2⅝"	3⅜"	1⅜"	2⅜"
Stringer #3	1⅜"	2⅝"	3⅜"	1⅜"	2⅜"
Stringer #4	1⅜"	2⅝"	3⅜"	1⅜"	2⅜"
Stringer #5	1⅜"	2⅝"	3⅜"	1⅜"	2⅜"
Bott. of Top Flange ℄ Brg. Stiff.	3/4 3/4 3/4 3/4	3/4 3/4 3/4 3/4	1/4 3/4 3/4 3/4	3/4 3/4 3/4 3/4	3/4 3/4 3/4 3/4
	S=52'-0"	S=67'-0"	S=68'-0"	S=63'-0"	S=35'-0"

Bott. of Slab

THEORETICAL SLAB HAUNCHING DIAGRAM



PART PLAN SHOWING TYPICAL LAYOUT FOR HOLE SPACING

Note: The expansion joint shall be set, anchored, bonded and sealed as recommended by the manufacturer and as set forth in the Special Provisions. Anchors shall be cast in place. Reinforcing steel shall be shifted as required to clear anchor studs.

Accurately locate the hole spacing for ½" studs on both sides of the expansion void at a distance of 3⅜" from the edge of the concrete and snap a chalk line on both sides of the expansion void. Layout transverse hole spacing along the chalk line in accordance with the shop drawings and the Typical Layout as shown on this sheet. Insure that the holes are directly opposite each other (square).

First section of expansion joint shall be installed starting at ℄ of roadway.

Tighten all nuts to 40 foot pounds. Retighten to 40 foot pounds 30 minutes after initial tightening.

Wire brush bolt cavity and coat with sealant. Fill cavity with sealant to a depth of ½" and push plug down to snap lock. Scrape off all excess sealant.

Payment for furnishing and installing the expansion joint, including anchor bolt assembly, shall be made under unit price bid per lineal foot of joint.

DETAILS OF STEEL REINFORCED ELASTOMERIC EXPANSION JOINT SEAL AT BENTS NO. 1 & 6.

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DETAILED JAN 1973
CHECKED July 1972

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

JACKSON COUNTY

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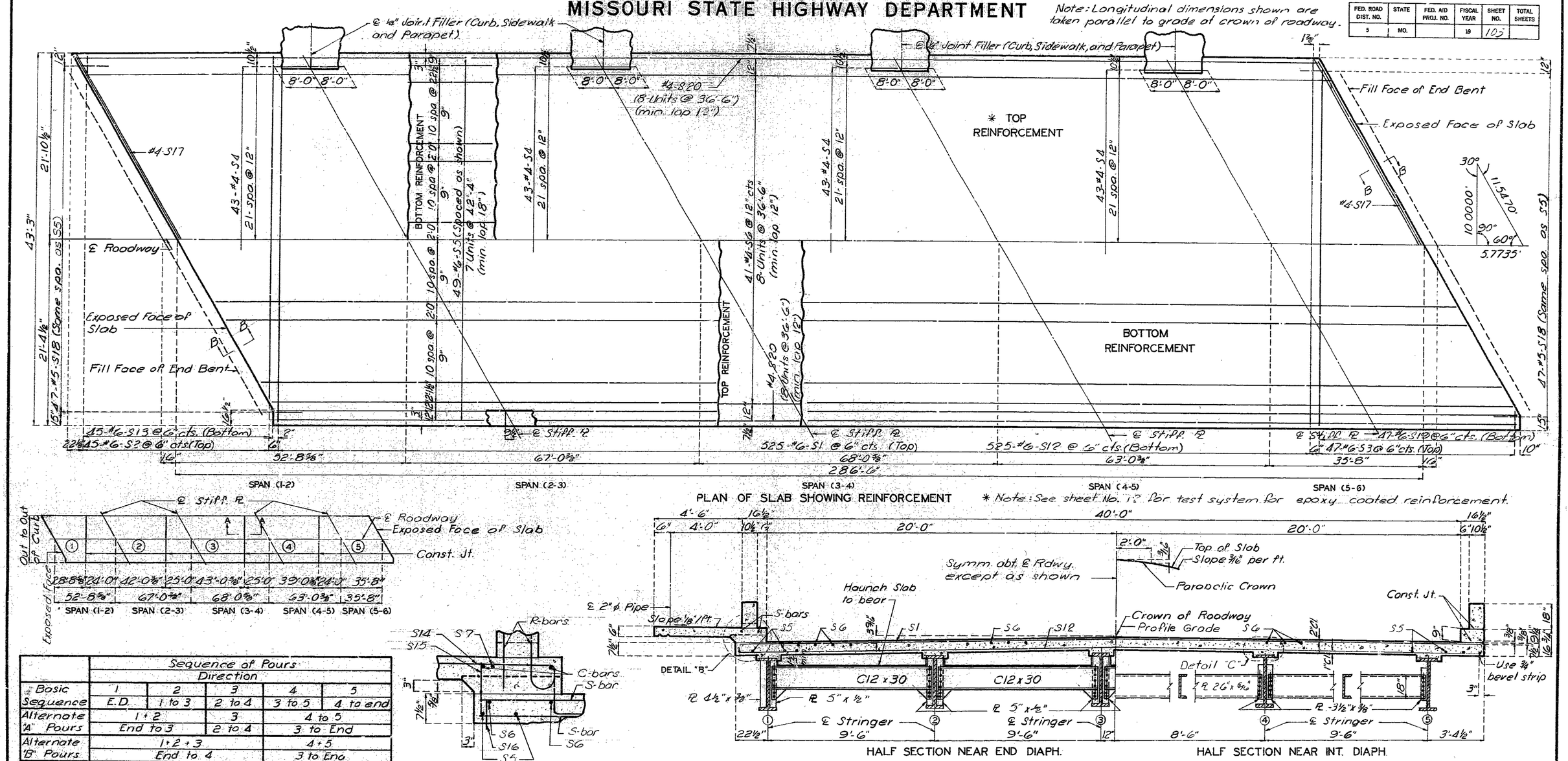
MISSOURI STATE HIGHWAY DEPARTMENT

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

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



PLAN OF SLAB SHOWING REINFORCEMENT

* Note: See sheet No. 12 for test system for epoxy coated reinforcement.

	Sequence of Pours Direction				
Basic Sequence	1 E.D.	2 1 to 3	3 2 to 4	4 3 to 5	5 4 to end
Alternate "A" Pours	1 + 2 End to 3		3 2 to 4	4 to 5 3 to End	
Alternate "B" Pours	1 + 2 + 3 End to 4			4 + 5 3 to End	
Alternate "C" Pours	1 + 2 + 3 + 4 + 5 End to End				

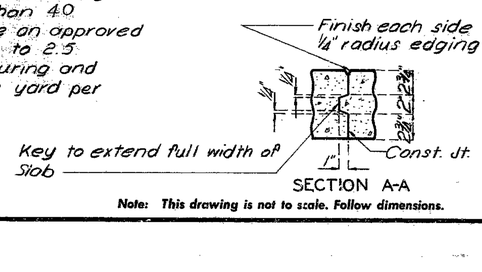
SLAB POURING SEQUENCE

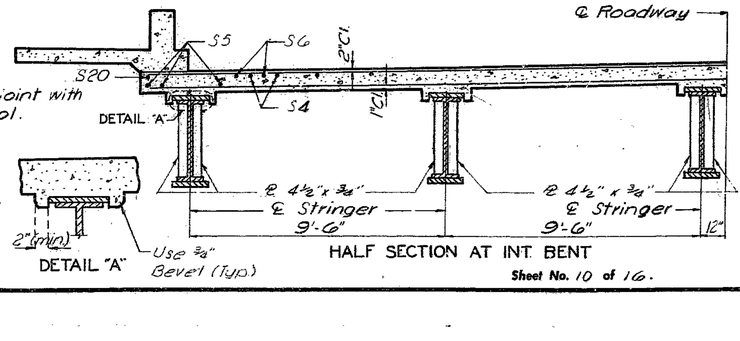
Note: The contractor shall pour and satisfactorily finish the slab pours at a rate of not less than 40 cubic yards per hour unless he elects to use an approved retarder to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 30 cubic yard per hour.

DETAIL "B"

HALF SECTION NEAR END DIAPH.

HALF SECTION NEAR INT. DIAPH.

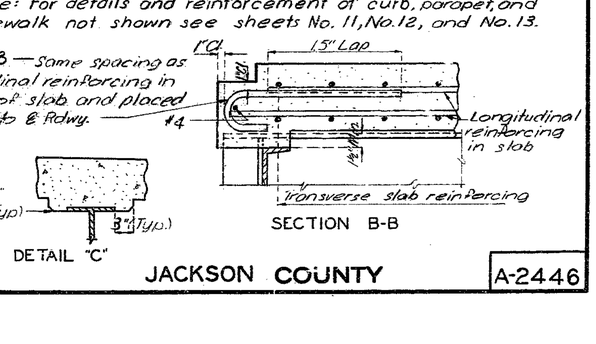




DETAIL "A"

HALF SECTION AT INT. BENT

Note: For details and reinforcement of curb, paropet, and sidewalk not shown see sheets No. 11, No. 12, and No. 13.



DETAILED SEPT. 1972
CHECKED July 1973

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

Sheet No. 10 of 16.

JACKSON COUNTY

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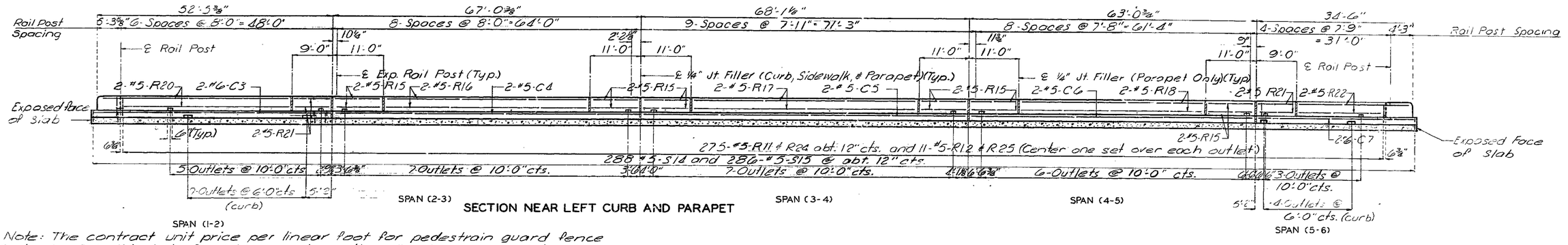
Note: Pedestrian guard fence (chain link type) shall be in accordance with section 1043 of the Std. Spec. except all fabric shall have top and bottom edges knuckled.
All rail posts shall be vertical. Grout of ½" minimum thickness shall be placed under floor plates to provide for vertical alignment of rail posts
Measurement of pedestrain guard fence shall be taken parallel to grade through the centerline of posts.

MISSOURI STATE HIGHWAY DEPARTMENT

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

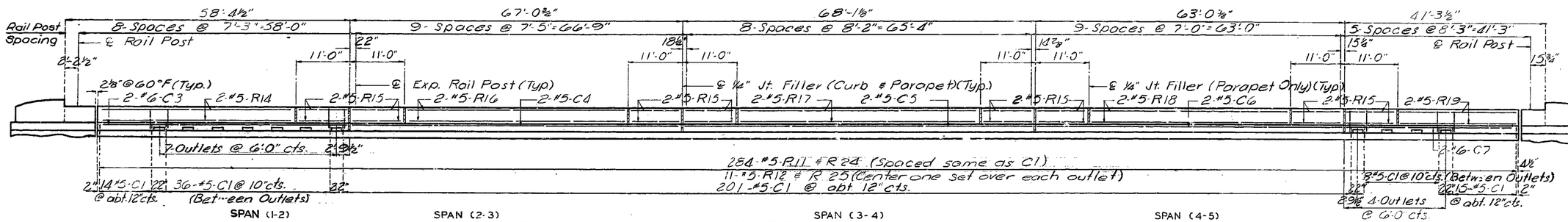


SECTION NEAR LEFT CURB AND PARAPET

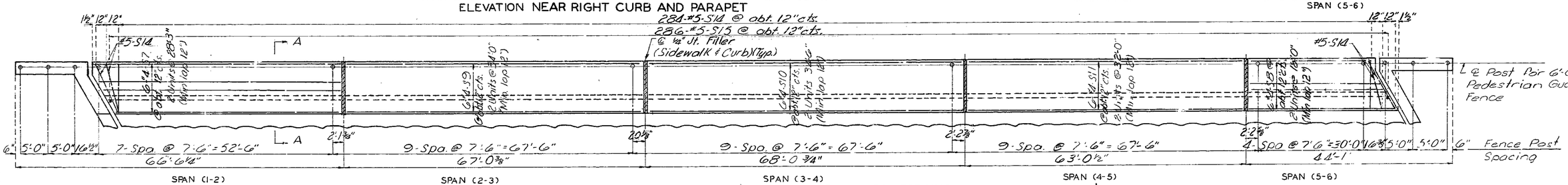
Note: The contract unit price per linear foot for pedestrain guard fence (galvanized) shall include furnishing and erecting the fence complete with ½"ϕ U-bolt assembly, hex nuts and washers.

Note: Longitudinal dimensions shown are parallel to grade at top of parapet.

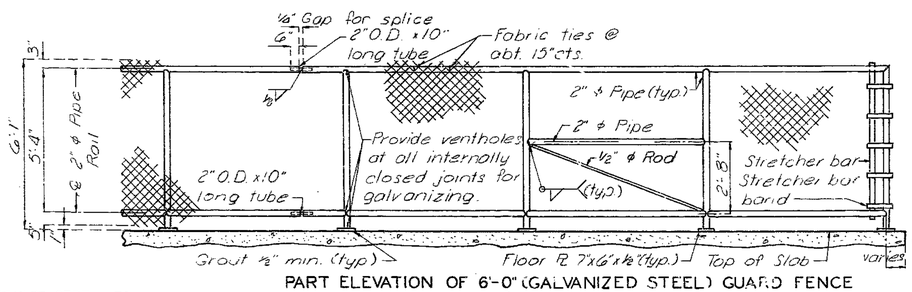
Note: For reinforcement of End Posts, see sheets No. 12 & No. 13.



ELEVATION NEAR RIGHT CURB AND PARAPET

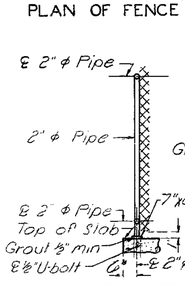


PLAN OF FENCE POSTS & SIDEWALK REINFORCING

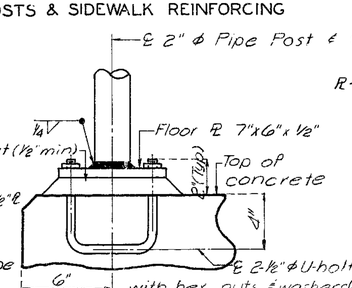


PART ELEVATION OF 6'-0" (GALVANIZED STEEL) GUARD FENCE

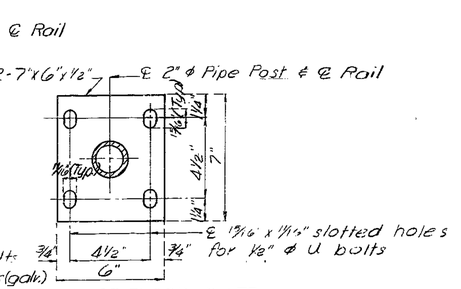
Note: See sheet No. 13 for details of fence at Exp. Device Gap



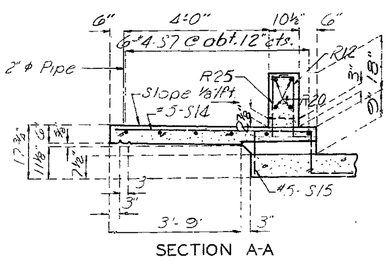
SECTION THRU FENCE



RAIL POST CONNECTION TYP



PLAN OF FLOOR PLATE



SECTION A-A

DETAILED SEPT. 1972
CHECKED July 1973

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

Sheet No. 11 of 16.

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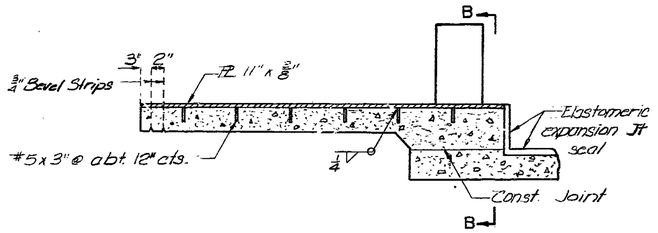
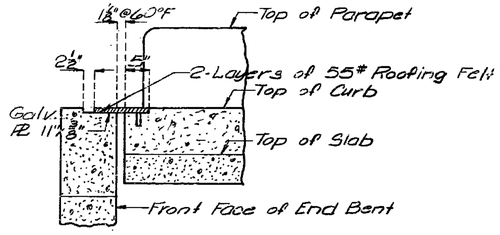
MISSOURI STATE HIGHWAY DEPARTMENT

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

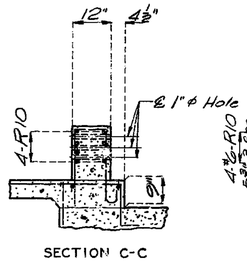


SECTION THRU SIDEWALK SHOWING EXPANSION PLATE NEAR BT. NO. 1 & 6

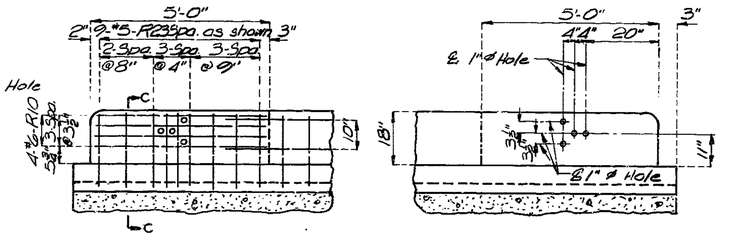
Note: Cost of furnishing, placing and galvanizing the ⅜" sidewalk plate shall be included in the price bid for Fab. Struct. Carbon Steel.



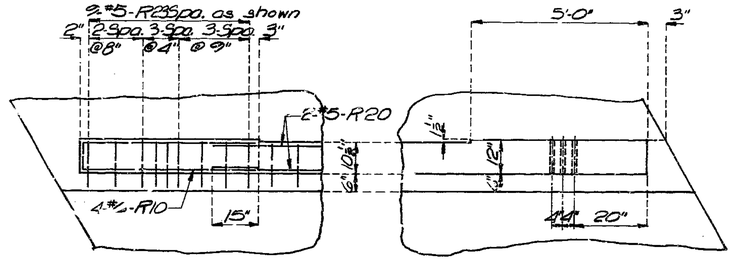
SECTION B-B



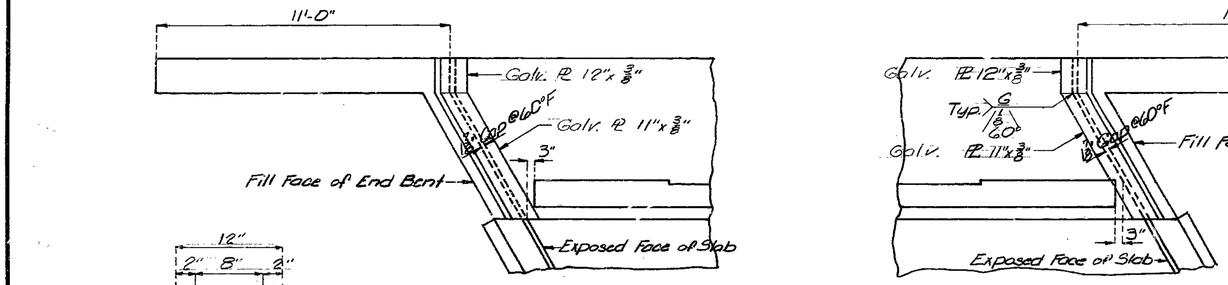
SECTION C-C



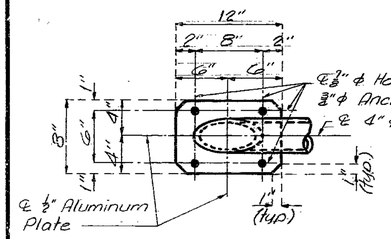
ELEVATION OF END POSTS (LEFT SIDE OF BRIDGE)



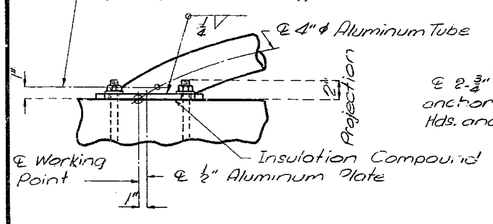
PLAN OF END POSTS (LEFT SIDE OF BRIDGE)



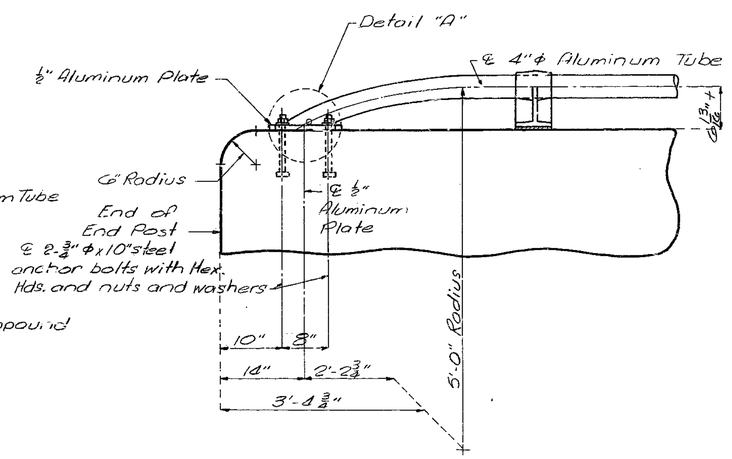
PART PLAN OF SIDEWALK AT END BENTS



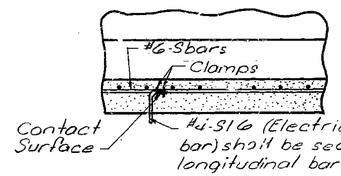
RAIL PLATE DETAILS



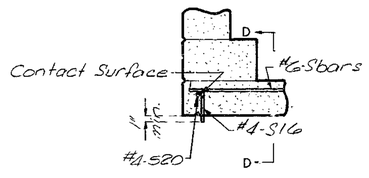
DETAIL "A"



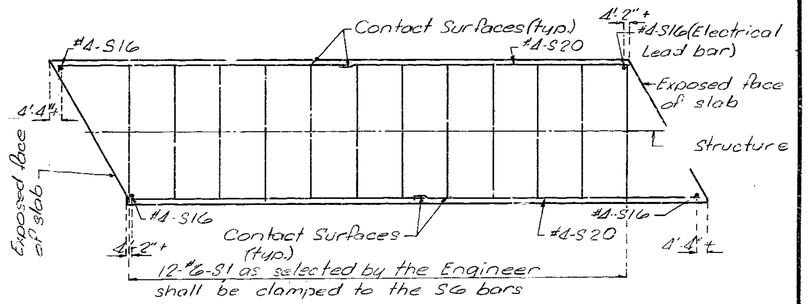
PART BRIDGE RAIL ELEVATION



SECTION D-D



DETAIL OF ELECTRICAL LEAD BARS



PLAN OF SLAB LOCATING BARS FOR TEST SYSTEM
(TOP OF SLAB)
(SEE SPECIAL PROVISIONS)

Note: Concrete shall not be placed until the test system has been checked by the engineer. See Special Provisions.

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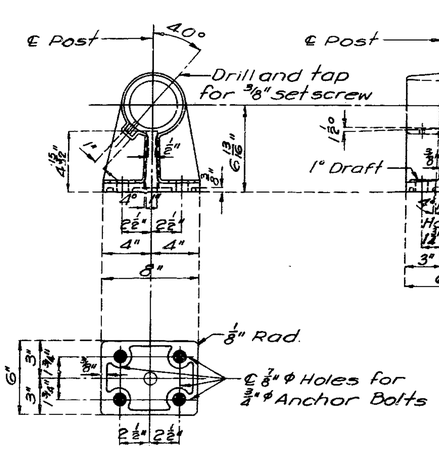
MISSOURI STATE HIGHWAY DEPARTMENT

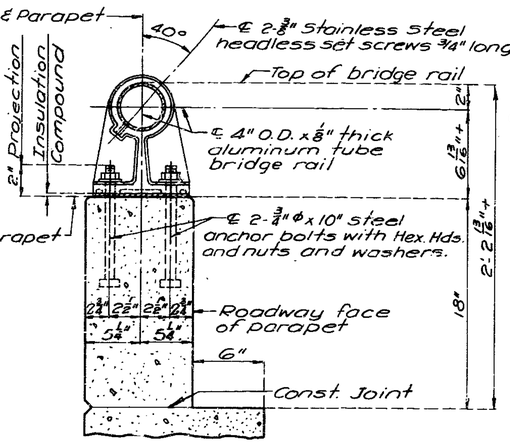
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	10	

GENERAL BRIDGE RAIL NOTES:

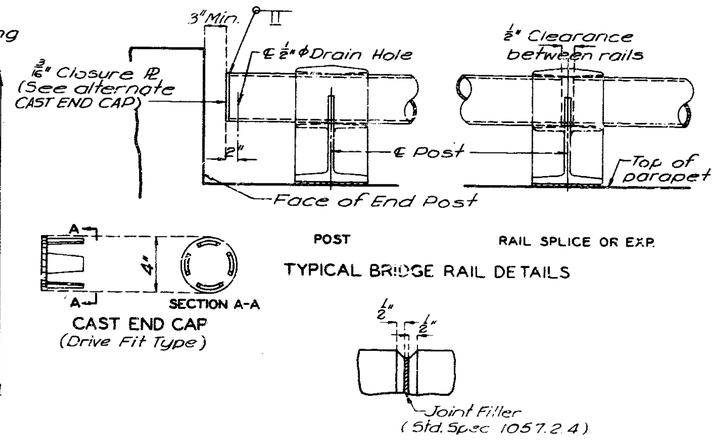
All bridge rail posts shall be set normal to grade.
Aluminum tube bridge rail shall be bent to conform to vertical and horizontal alignment of parapet.
Aluminum washer shims between top of parapet and post base may be used for adjusting bridge rail alignment. Maximum thickness of shims to be ⅜". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.
All parts of bridge rail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.
All fillets ¼" except as noted.
All drafts 3° except as noted.
Omit set screw in side of rail posts adjacent to filled joints in curb and parapet at rail expansion points. Omit set screw in each side of rail post on end bents except where a gap is shown in rail over an expansion device.
Top of curbs and parapet to be built parallel to grade with curb and parapet joints (except at end bents) normal to grade.
Concrete end posts to be vertical.
All exposed edges of end posts shall have ½" bevel. All exposed edges of curbs and parapets shall have ½" radius or ⅜" bevel unless otherwise noted.



POST DETAILS



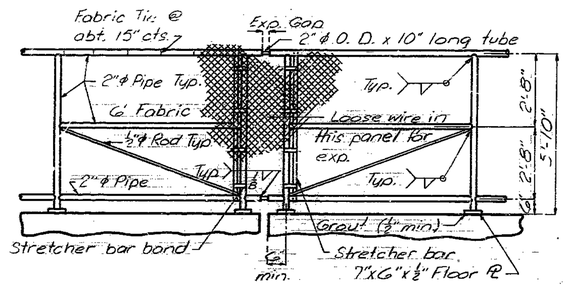
SECTION THRU BRIDGE RAIL



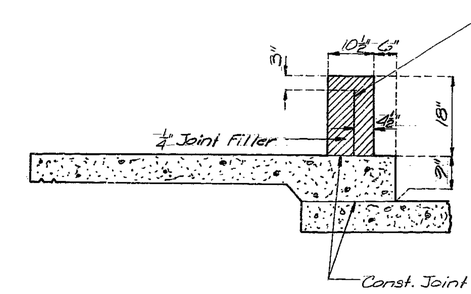
TYPICAL BRIDGE RAIL DETAILS

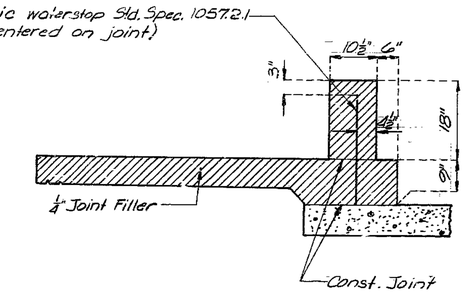
ONE TUBE ALUMINUM RAILING

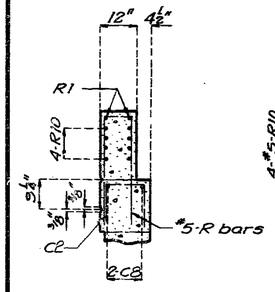
FILLED JOINT DETAILS



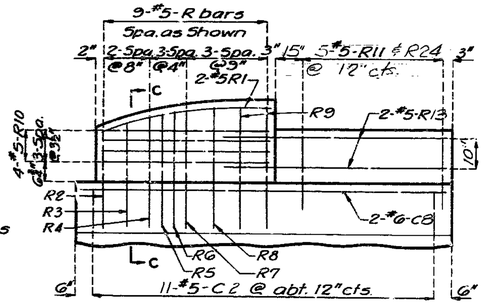
DETAILS AT EXP. DEVICE GAP



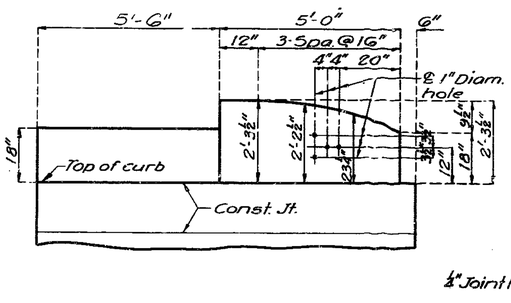


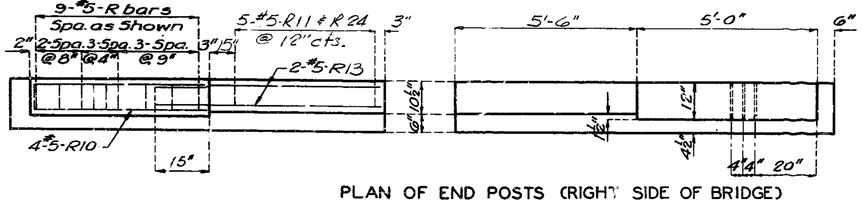


SECTION C-C

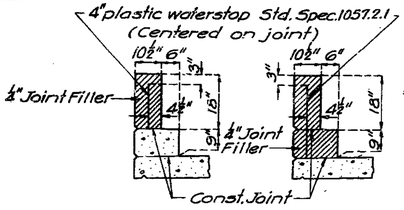


ELEVATION OF END POSTS (RIGHT SIDE OF BRIDGE)

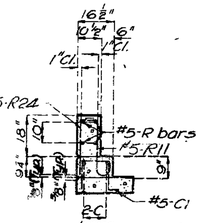




PLAN OF END POSTS (RIGHT SIDE OF BRIDGE)

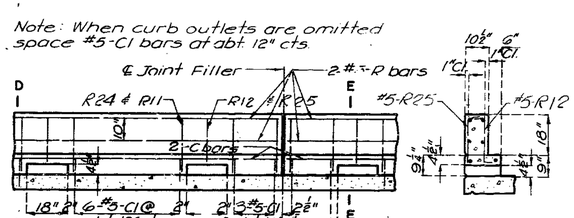


Note: Plastic waterstop shall be placed in all parapet and curb filled joints, except at end bents.
Cost of plastic waterstop complete in place to be included in unit price bid for concrete.



SECTION D-D

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



SECTION E-E

ELEVATION OF CURB & PARAPET

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

DETAILS OF PLASTIC WATERSTOP

260

DETAILED JAN. 1973
CHECKED July 1973

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

Sheet No. 13 of 16.

JACKSON COUNTY

A-2446

FOR INFORMATION ONLY **A24462, Sht. 15**

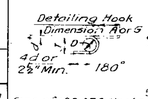
MISSOURI STATE HIGHWAY DEPARTMENT

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

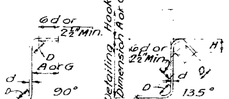
COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EA.	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.
			END BENT NO 1															
3	6	F1	WING	15		X			12.125	6 0.000	12.125	6.000	10.500	6.000	10.500	8 0	8 0	36
3	6	F2	WING	15		X			12.125	3 7.000	12.125	10.500	4.000	10.500	6.000	5 7	5 6	25
4	9	H1	BEAM	18		X			53 2.000							53 2	55 2	750
2	6	H2	BEAM	20		X			53 2.000							53 2	53 2	160
4	9	H3	BEAM	17		X			49 4.500							20 5	20 5	278
4	9	H4	BEAM	17		X			37 3.875							38 4	38 4	521
8	4	H5	BACKWALL	20		X			27 4.000							27 4	27 4	146
2	6	H6	BACKWALL	20		X			51 1.000							51 1	51 1	153
8	6	H7	WING	20		X			10 9.000							10 9	10 9	129
6	5	H8	WING	20		X	V	2	4 10.000							4 10	4 10	
			INCR. = 32.000 IN.						10 1.500							10 2	10 2	68
2	6	H9	WING	20		X			7 2.500							7 3	7 3	22
2	6	H10	WING	20		X			9 10.000							9 10	9 10	30
2	6	H11	SIDEWALK	20		X			4 10.000							4 10	4 10	15
2	6	T1	WING	25		X			21.000	6 9.250	23.000			2 8.000	6 2.750	10 5	10 4	51
2	6	T2	WING	25		X			2 0.500	6 4.125	2 0.000			2 6.500	5 9.750	10 5	10 4	31
2	6	T3	WING	19		X			5 8.000	2 11.000						8 7	8 5	25
2	6	T4	WING	19		X			4 10.000	3 11.000						8 9	8 7	26
38	4	U1	BEAM	13	S	X			2 9.000	2 11.500	3 3.000	2 11.000				12 8	12 4	313
14	4	U2	BEAM	13	S	X			2 9.000	2 8.500	3 3.000	2 8.000				12 2	11 10	111
15	4	U3	BEAM	10		X				6.000	2 9.000					3 9	3 7	36
51	5	U4	BACKWALL	10		X				2 5.000	9.000					5 7	5 4	284
9	6	U5	BEAM	10		X				20.000	2 9.000					6 1	5 9	78
8	6	U6	BEAM	10		X				20.000	3 0.000					6 4	6 0	72
5	7	U7	BEAM	11		X				5 7.000	2 9.000	4 0.000				12 4	12 0	123
5	7	U8	BEAM	11		X				6 0.000	2 9.000	4 4.000				13 1	12 9	130
3	4	U9	WING	10		X				2 11.000	6.000					6 4	6 2	12
2	4	U10	WING	10		X				3 11.000	6.000					8 4	8 2	11
92	5	V1	BACKWALL	20		X			5 7.000							5 7	5 7	536
10	5	V2	BACKWALL	20		X			6 1.000							6 1	6 1	63
2	4	V3	WING	20		X			5 0.000							5 0	5 0	7
2	4	V4	WING	20		X			4 2.000							4 2	4 2	6
8	5	V5	WING	20		X			5 10.000							5 10	5 10	49
10	5	V6	[illegible]													5 5	5 5	56
14	4	V7	WING	20		X	V	2	2 0.000							2 0	2 0	
			INCR. = 4.000 IN.						4 0.000							4 0	4 0	28
12	4	V8	WING	20		X	V	2	2 0.000							2 0	2 0	
			INCR. = 5.375 IN.						4 3.000							4 3	4 3	25
2	6	V9	BEAM	20		X			2 9.000							2 9	2 9	8
2	6	V10	BEAM	20		X			3 0.000							3 0	3 0	9
10	2	W1	A B WELLS	22		X			12.000	9.125						19 9	19 9	33
			INTERMEDIATE BENT NO. 2															
16	10	D1	FOOTING	20		X			5 0.000							5 0	5 0	344
10	5	D2	FOOTING	18		X			5 0.000							6 2	6 2	64
10	5	D3	FOOTING	20		X			4 6.000							4 6	4 6	47
10	11	H20	BEAM	20		X			44 4.000							44 4	44 4	2355
4	6	H21	BEAM	20		X			44 4.000							44 4	44 4	266
9	11	H22	BEAM	17		X			13 7.000							14 9	14 9	705
4	9	H23	BEAM	20		X			18 10.000							18 10	18 10	256
5	11	H24	BEAM	17		X			36 3.000							37 5	37 5	994
4	11	H25	BEAM	17		X			13 7.000							14 9	14 9	313
8	7	H25	BEAM	7		X			3 4.000	2 11.000						8 3	8 3	135
2	9	H27	BEAM	20		X			44 4.000							44 4	44 4	301
54	4	P1	COLUMN	16		X			2 9.000							9 6	9 6	343
31	4	U14	BEAM	13	S	X			2 11.000	4 6.000	2 11.000	4 6.000				15 7	15 4	318
11	4	U15	BEAM	13	S	X			2 11.000	4 3.000	2 11.000	4 3.000				15 1	14 10	109
20	4	U16	BEAM	13	S	X			23.333	4 6.000	23.333	4 6.000				13 8	13 5	179
20	4	U17	BEAM	13	S	X			23.333	4 1.000	23.333	4 1.000				12 10	12 7	168
9	4	U18	BEAM	10		X				6.000	2 11.000					3 11	3 9	23
16	10	V18	COLUMN	20		X			28 7.500							28 8	28 8	1974
10	2	W1	BEAM	22		X			12.000	9.125						19 9	19 9	33
			INTERMEDIATE BENT NO 3															
16	10	D1	FOOTING	20		X			5 0.000							5 0	5 0	344
10	5	D2	FOOTING	18		X			5 0.000							6 2	6 2	64
10	5	D3	FOOTING	20		X			4 6.000							4 6	4 6	47
10	11	H20	BEAM	20		X			44 4.000							44 4	44 4	2355
4	6	H21	BEAM	20		X			44 4.000							44 4	44 4	266
9	11	H22	BEAM	17		X			13 7.000							14 9	14 9	705
4	9	H23	BEAM	20		X			18 10.000							18 10	18 10	256
5	11	H24	BEAM	17		X			36 3.000							37 5	37 5	994
4	11	H25	BEAM	17		X			13 7.000							14 9	14 9	313
8	7	H26	BEAM	7		X			3 4.000	2 11.000						8 3	8 3	135
2	9	H27	BEAM	20		X			44 4.000							44 4	44 4	301
54	4	P1	COLUMN	16		X			2 9.000							9 6	9 6	343
9	4	U18	BEAM	10		X				6.000	2 11.000					3 11	3 9	23
11	4	U19	BEAM	13	S	X			2 11.000	4 3.000	2 11.000	4 3.000				15 1	14 10	109
20	4	U20	BEAM	13	S	X			23.333	4 3.000	23.333	4 3.000				13 2	12 11	173
31	4	U21	BEAM	13	S	X			2 11.000	4 5.500	2 11.000	4 5.500				15 6	15 3	316
20	4	U22	BEAM	13	S	X			23.333	4 5.500	23.333	4 5.500				13 7	13 4	178
16	10	V19	COLUMN	20		X			29 6.000							29 6	29 6	2031
10	2	W1	BEAM	22		X			12.000	9.125						19 9	19 9	33
			INTERMEDIATE BENT NO. 4															
16	10	D1	FOOTING	20		X			5 0.000							5 0	5 0	344
10	5	D2	FOOTING	18		X			5 0.000							6 2	6 2	64

STANDARD HOOKS



STIRRUP HOOKS



STIRRUPS

BAR SIZE	END HOOK DIMENSIONS 180° HOOKS GRADE 40 A or G	180° HOOKS GRADE 40 J	90° HOOKS ALL GRADES A or G
#3	5"	2¾"	6"
#4	6"	3½"	8"
#5	7"	4½"	10"
#6	8"	5½"	12"
#7	9"	6½"	14"
#8	10"	7"	16"
#9	12"	8"	19"
#10	13"	9"	22"
#11	14"	10"	2'-0"
#14	2'-2"	20½"	2'-7"
#18	2'-11"	2'-3"	3'-5"

BAR SIZE	D (in.)	STIRRUP HOOK DIMENSIONS GRADES 40-50-60 Ksi 90° HOOK A or G	135° HOOK A or G	135° HOOK APPROX. H
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	3"	6½"	6½"	4½"

Note: Unless otherwise noted diameter D is the same for all bends and hooks on a bar.

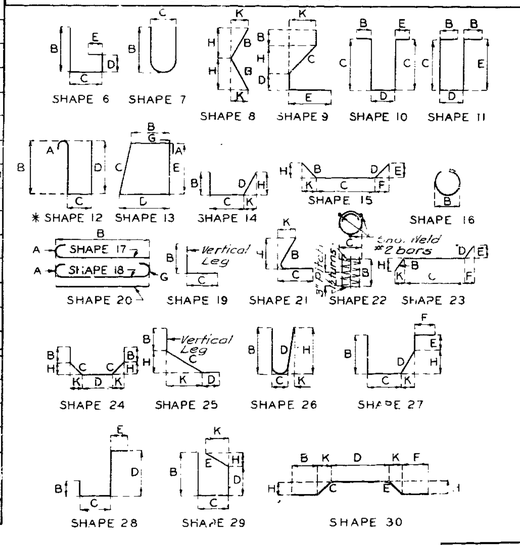
Note: All Standard Hooks and Bends other than 180 DEG. to be bent with same procedure as for 90 DEG. Standard Hooks.

Note: Hooks and bends shall be in accordance with the procedures as shown on this sheet. Nominal Lengths are based on out to out dimensions shown in bending diagrams and are listed for Fabricators use. Payweights are based on Actual Lengths.

S~ stirrup.
X~ bar is included in substructure quantities.
Length ~ Total lengths are measured along centerline bar to the nearest inch.
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.

* All hooks and bends for shape No. 12 (only) are based on D = 5d.

BENDING DIAGRAMS



DETAILED AUG 1973
CHECKED Aug 1973

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

Sheet No. 14 of 16.

JACKSON COUNTY A-2446

STD 90.7 JULY 1969 REVISED JULY 1973

MISSOURI STATE HIGHWAY DEPARTMENT

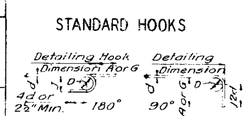
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	108	

COMPLETE BILL OF REINFORCING STEEL

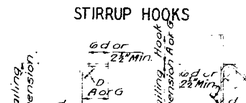
NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EA.	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
10		1D3	FOOTING	20		X			4 6.000							4 6	4 6	47
10	11	H20	BEAM	20		X			44 4.000							44 4	44 4	2355
4	6	H21	BEAM	20		X			44 4.000							44 4	44 4	266
9	11	H22	BEAM	17		X			13 7.000							14 9	14 9	705
4	9	H23	BEAM	20		X			18 10.000							18 10	18 10	256
5	11	H24	BEAM	17		X			36 3.000							37 5	37 5	994
4	11	H25	BEAM	17		X			13 7.000							14 9	14 9	313
8	7	H26	BEAM	7		X			3 4.000	2 11.000						8 3	8 3	135
2	9	H27	BEAM	20		X			44 4.000							44 4	44 4	301
52	4	P1	COLUMN	16		X			2 9.000							9 6	9 6	330
9	4	U18	BEAM	10		X				6.000	2 11.000					3 11	3 9	23
11	4	U19	BEAM	13	S	X			2 11.000	4 3.000	2 11.000	4 3.000				15 1	14 10	109
20	4	U20	BEAM	13	S	X			23.333	4 3.000	23.333	4 3.000				13 2	12 11	173
20	4	U23	BEAM	13	S	X			23.333	4 5.000	23.333	4 5.000				13 6	13 3	177
31	4	U24	BEAM	13	S	X			2 11.000	4 5.000	2 11.000	4 5.000				15 5	15 2	314
16	10	V20	COLUMN	20		X			27 9.000							27 9	27 9	1911
10	2	W1	BEAM	22		X			12.000	9.125						19 9	19 9	33
			INTERMEDIATE BENT															
			NO. 5															
16	10	D1	FOOTING	20		X			5 0.000							5 0	5 0	344
8	5	D3	FOOTING	20		X			4 6.000							4 6	4 6	38
10	5	D4	FOOTING	18		X			3 9.000							4 11	4 11	51
10	11	H20	BEAM	20		X			44 4.000							44 4	44 4	2355
4	6	H21	BEAM	20		X			44 4.000							44 4	44 4	266
9	11	H22	BEAM	17		X			13 7.000							14 9	14 9	705
4	9	H23	BEAM	20		X			18 10.000							18 10	18 10	256
5	11	H24	BEAM	17		X			36 3.000							37 5	37 5	994
4	11	H25	BEAM	17		X			13 7.000							14 9	14 9	313
8	7	H26	BEAM	7		X			3 4.000	2 11.000						8 3	8 3	135
2	9	H27	BEAM	20		X			44 4.000							44 4	44 4	301
50	4	P1	COLUMN	16		X			2 9.000							9 6	9 6	317
9	4	U18	BEAM	10		X				6.000	2 11.000					3 11	3 9	23
11	4	U25	BEAM	13	S	X			2 11.000	3 6.000	2 11.000	3 6.000				13 7	13 4	98
20	4	U26	BEAM	13	S	X			23.333	3 6.000	23.333	3 6.000				11 8	11 5	153
20	4	U27	BEAM	13	S	X			23.333	3 9.875	23.333	3 9.875				12 3	12 0	160
31	4	U28	BEAM	13	S	X			2 11.000	3 9.875	2 11.000	3 9.875				14 3	14 0	290
16	10	V21	COLUMN	20		X			26 8.000							26 8	25 8	1836
10	2	W1	BEAM	22		X			12.000	9.125						19 9	19 9	33
			END BENT NO 6															
3	6	F1	WING	15		X			12.125	6 0.000	12.125	6.000	10.500	6.000	10.500	8 0	8 0	36
2	6	F2	WING	15		X			12.125	3 7.000	12.125	10.500	6.000	10.500	6.000	5 7	5 6	17

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EA.	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	9	H1	BEAM	18		X			53 2.000							55 2	55 2	750
2	6	H2	BEAM	20		X			53 2.000							53 2	53 2	160
8	4	H5	BACKWALL	20		X			27 4.000							27 4	27 4	148
2	6	H6	BACKWALL	20		X			51 1.000							51 1	51 1	153
4	6	H7	WING	20		X			10 9.000							10 9	10 9	129
2	6	H11	SIDEWALK	20		X			4 10.000							4 10	4 10	15
4	9	H12	BEAM	17		X			16 4.000							17 4	17 4	225
4	9	H13	BEAM	20		X			13 1.000							13 1	13 1	178
4	9	H14	BEAM	17		X			29 11.000							30 11	30 11	420
2	6	H15	WING	20		X			6 1.000							6 1	6 1	18
2	6	H16	WING	20		X			9 3.000							9 3	9 3	28
2	6	H17	WING	20		X			7 9.000							7 9	7 9	23
2	6	H18	WING	20		X			10 2.000							10 2	10 2	31
2	6	H19	WING	20		X			5 3.000							5 3	5 3	16
2	6	T5	WING	23		X			22.500	6 4.750	23.000			2 5.000	5 11.000	10 2	10 1	30
2	6	T6	WING	25		X			2 0.500	23 2.875	2 0.000			6 1.500	22 5.000	27 3	27 2	82
2	6	T7	WING	19		X			4 8.000	2 11.000						7 7	7 5	22
2	6	T8	WING	19		X			5 8.000	3 11.000						9 7	9 5	28
13	4	U2	BEAM	13	S	X			2 9.000	2 8.500	3 3.000	2 8.000				12 2	11 10	103
14	4	U3	BEAM	10		X				6.000	2 9.000					3 9	3 7	34
9	6	U5	BEAM	10		X				20.000	2 9.000					6 1	5 9	78
8	6	U6	BEAM	10		X				20.000	3 0.000					6 4	6 0	72
5	7	U7	BEAM	11		X				5 7.000	2 9.000	4 0.000				12 4	12 0	123
5	7	U8	BEAM	11		X				6 0.000	2 9.000	4 4.000				13 1	12 9	130
2	4	U9	WING	10		X				2 11.000	6.000					6 4	6 2	8
3	4	U10	WING	10		X				3 11.000	.000					8 4	8 2	16
9	4	U11	BEAM	13	S	X			2 9.000	3 1.375	3 3.000	3 0.875				12 11	12 8	76
30	4	U12	BEAM	13	S	X			2 9.000	3 4.500	3 3.000	3 4.000				13 6	13 2	264
51	5	U13	BACKWALL	10		X				2 7.000	9.000					5 11	5 8	301
92	5	V1	BACKWALL	20		X			5 7.000							5 7	5 7	536
10	5	V2	BACKWALL	20		X			6 1.000							6 1	6 1	63
2	6	V9	BEAM	20		X			2 9.000							2 9	2 9	8
2	4	V11	WING	20		X			4 0.000							4 0	4 0	5
2	4	V12	WING	20		X			5 2.000							5 2	5 2	7
8	5	V13	WING	20		X			5 2.000							5 2	5 2	43
14	4	V14	WING	20		X	V	2	2 2.000							2 2	2 2	
			INCR. = 3.875 IN.						4 1.000							4 1	4 1	29
10	5	V15	WING	20		X			5 9.000							5 9	5 9	60
12	4	V16	WING	20		X	V	2	2 1.000							2 1	2 1	
			INCR. = 5.250 IN.						4 3.000							4 3	4 3	25
2	6	V17	BEAM	20		X			3 3.000							3 3	3 3	10
10	2	W1	A B WELLS	22		X			12.000	9.125						19 9	19 9	33
			SUPERSRUCTURE															
272	5	C1	CURB	10						12.750	13.500	6.000				3 9	3 5	969
22	5	C2	CURB	10						13.250	13.500					3 4	3 1	71
4	6	C3	CURB	20					53 10.000							53 10	53 10	323
4	5	C4	CURB	20					66 9.000							66 9	66 9	278
4	5	C5	CURB	20					67 11.000							67 11	67 11	283

STANDARD HOOKS



STIRRUP HOOKS



STIRRUPS

BAR SIZE	END HOOK DIMENSIONS 180° HOOKS GRADE 40 A or G	180° HOOKS GRADE 40 J	90° HOOKS ALL GRADES A or G
#3	5"	2¾"	6"
#4	6"	3½"	8"
#5	7"	4½"	10"
#6	8"	5½"	12"
#7	9"	6½"	14"
#8	10"	7"	16"
#9	12"	8"	19"
#10	13"	9"	22"
#11	14"	10"	2'-0"
#14	2'-2"	20½"	2'-7"
#18	2'-11"	2'-3"	3'-5"

BAR SIZE	D (IN.)	STIRRUP HOOK DIMENSIONS GRADES 40-50-60 Ksi 90° HOOK HOOK A or G	135° HOOK HOOK A or G	135° HOOK APPROX. H
#3	½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	3"	6½"	6½"	4½"

Note: Unless otherwise noted diameter, D is the same for all bends and hooks on a bar.

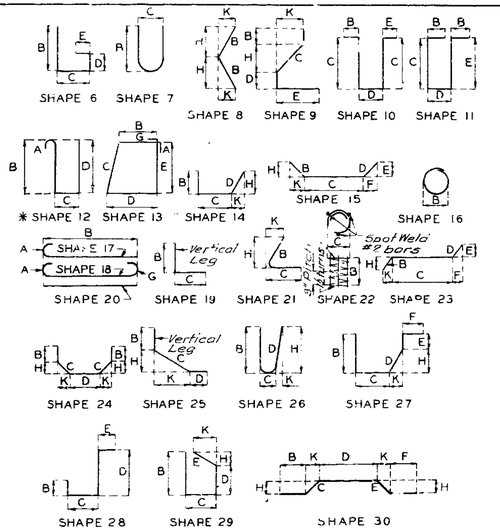
Note: All Standard Hooks and Bends other than 180 DEG. to be bent with same procedure as for 90 DEG. Standard Hooks.

Note: Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal Lengths are based on out to out dimensions shown in bending diagrams and are listed for Fabricators use.
Payweights are based on Actual Lengths.

S~ stirrup.
X~ bar is included in substructure quantities.
Length~ Total lengths are measured along centerline bar to the nearest inch.
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.

* All hooks and bends for shape No. 12 (only) are based on D=5d.

BENDING DIAGRAMS



DETAILED AUG 1973
CHECKED Aug 1973

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

Sheet No. 15 of 16.

JACKSON COUNTY

A-2446

STD 907 JULY 1969 REVISED JULY 1973

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FOR INFORMATION ONLY

A24462, Sht. 17

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	16	

COMPLETE BILL OF REINFORCING STEEL

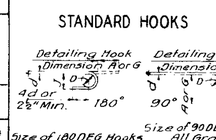
NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EA.	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
4	5	C6	CURB	20					62 9.000							62 9	62 9	262
4	6	C7	CURB	20					36 10.000							36 10	36 10	221
4	6	C8	CURB	20					10 9.000							10 9	10 9	64
*	5	R1	END POST	20					4 9.000							4 9	4 9	20
2	5	R2	END POST	10						2 8.125	9.000					6 1	5 10	12
2	5	R3	END POST	10						2 10.500	0.900					5 10	5 7	12
2	5	R4	END POST	10						3 1.000	9.000					6 11	6 8	14
2	5	R5	END POST	10						3 2.000	9.000					7 1	6 10	14
2	5	R6	END POST	10						3 2.750	9.000					7 3	7 0	15
2	5	R7	END POST	10						3 3.375	9.000					7 4	7 1	15
2	5	R8	END POST	10						3 4.250	9.000					7 6	7 3	15
4	5	R9	END POST	10						3 4.625	9.000					7 6	7 3	30
16	5	R10	END POST	10						4 9.000	7.750					10 2	9 11	106
589	5	R11	PARAPET	12					2 0.375	7.000						3 2	3 1	1830
22	5	R12	PARAPET	18						6.000	19.000	6.000				2 7	2 4	54
8	5	R13	PARAPET	20					6 9.000							6 9	6 9	56
4	5	R14	PARAPET	20					41 7.000							41 7	41 7	174
56	5	R15	PARAPET	20					10 9.000							10 9	10 9	628
8	5	R16	PARAPET	20					44 9.000							44 9	44 9	373
8	5	R17	PARAPET	20					45 11.000							45 11	45 11	383
8	5	R18	PARAPET	20					40 9.000							40 9	40 9	340
4	5	R19	PARAPET	20					24 3.000							24 3	24 3	101
4	5	R20	PARAPET	20					39 8.000							39 8	39 8	166
8	5	R21	PARAPET	20					8 9.000							8 9	8 9	73
4	5	R22	PARAPET	20					21 9.000							21 9	21 9	91
18	5	R23	PARAPET	12					2 0.375	10.000						5 6	5 4	100
* 527	6	S1	SLAB	20					43 0.000							43 0	43 0	34037
* 45	6	S2	SLAB	20			V	1	2 10.000							2 10	2 10	
			INCR. = 10.375 IN.						40 11.000							40 11	40 11	1478
* 47	6	S3	SLAB	20			V	1	2 5.000							2 5	2 5	
			INCR. = 10.375 IN.						42 3.000							42 3	42 3	1576
* 172	4	S4	SLAB	20					16 0.000							16 0	16 0	1838
343	4	S5	SLAB	20					42 4.000							42 4	42 4	9700
* 330	4	S6	SLAB	20					36 6.000							36 6	36 6	8046
12	4	S7	SIDEWALK	20					28 3.000							28 3	28 3	226
12	6	S8	SIDEWALK	20					18 0.000							18 0	18 0	144
12	4	S9	SIDEWALK	20					34 0.000							34 0	34 0	273
12	4	S10	SIDEWALK	20					34 6.000							34 6	34 6	277
12	4	S11	SIDEWALK	20					32 0.000							32 0	32 0	257
525	6	S12	SLAB	20					43 0.000							43 0	43 0	33908
45	6	S13	SLAB	20			V	1	2 10.000							2 10	2 10	
			INCR. = 10.375 IN.						40 11.000							40 11	40 11	1478
288	5	S14	SIDEWALK	23					5 8.000	14.000	15.000	15.000	0.010	4 8.000	0.010	8 1	7 10	2353
286	5	S15	SIDEWALK	20					15.000							15	15	373
4	4	S16	SLAB	19					8.500	6.000						15	14	3
* 2	4	S17	SLAB	20					46 9.250							46 9	46 9	62
94	5	S18	SLAB	17					22.000							2 5	2 5	237
47	6	S19	SLAB	20			V	1	2 5.000							2 5	2 5	
			INCR. = 10.375 IN.						42 3.000							42 3	42 3	1576

NO. REQD.	MARK NO. SIZE	MARK NO. MARK	LOCATION	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EA.	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.
569	5	R24	PARAPET	19					2 0.375	7.000						2 7	2 6	1484
22	5	R25	PARAPET	19					19.000	6.000						2 1	2 0	46
16	4	S20	SLAB	20					36 6.000							36 6	36 6	390

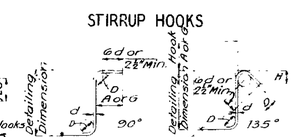
* Bars to be coated with Epoxy.
Two S1, and S16 bars are included for testing purposes.

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

STANDARD HOOKS



STIRRUP HOOKS



STIRRUPS

BAR SIZE	END HOOK DIMENSIONS 180° HOOKS GRADE 40 A or G	J	90° HOOKS ALL GRADES A or G
#3	5"	2¾"	6"
#4	6"	3¾"	8"
#5	7"	4¾"	10"
#6	8"	5¾"	12"
#7	9"	6¾"	14"
#8	10"	7"	16"
#9	12"	8"	19"
#10	13"	9"	22"
#11	14"	10"	2'-0"
#14	2'-2"	20½"	2'-7"
#18	2'-11"	2'-3"	3'-5"

BAR SIZE	D (In.)	STIRRUP HOOK DIMENSIONS GRADES 40-50-60 Ksi 90° HOOK HOOK A or G	135° HOOK HOOK A or G	135° HOOK APPROX. H
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	3"	6½"	6½"	4½"

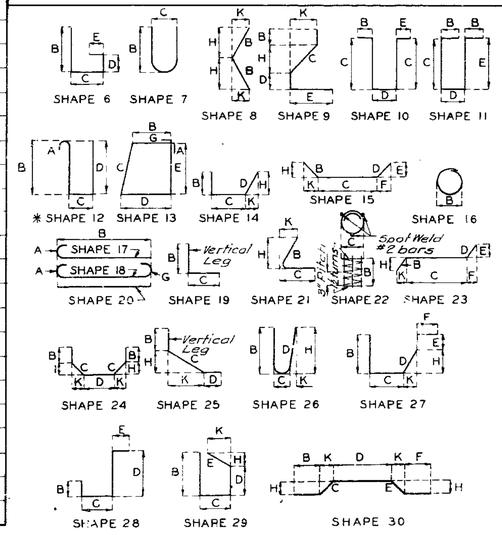
Note: Unless otherwise noted diameter D is the same for all bends and hooks on a bar.

Note: All Standard Hooks and Bends other than 180 DEG. to be bent with same procedure as for 90 DEG. Standard Hooks.

Note: Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal Lengths are based on out to out dimensions shown in bending diagrams and are listed for Fabricators use.
Payweights are based on Actual Lengths.
S~ stirrup.
X~ bar is included in substructure quantities.
Length~ Total lengths are measured along centerline bar to the nearest inch.
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.

* All hooks and bends for shape No. 12 (only) are based on D = 5d.

BENDING DIAGRAMS



DETAILED AUG 1973
CHECKED Aug 1973

Sheet No. 16 of 16.

JACKSON COUNTY A-2446

STD. 90.7 JULY 1969 REVISED JULY 1973

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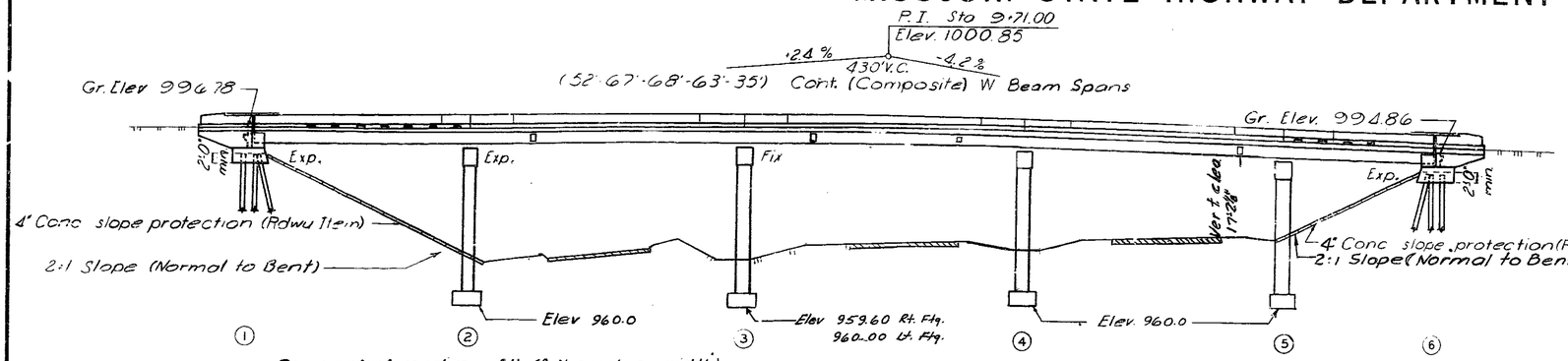
MISSOURI STATE HIGHWAY DEPARTMENT

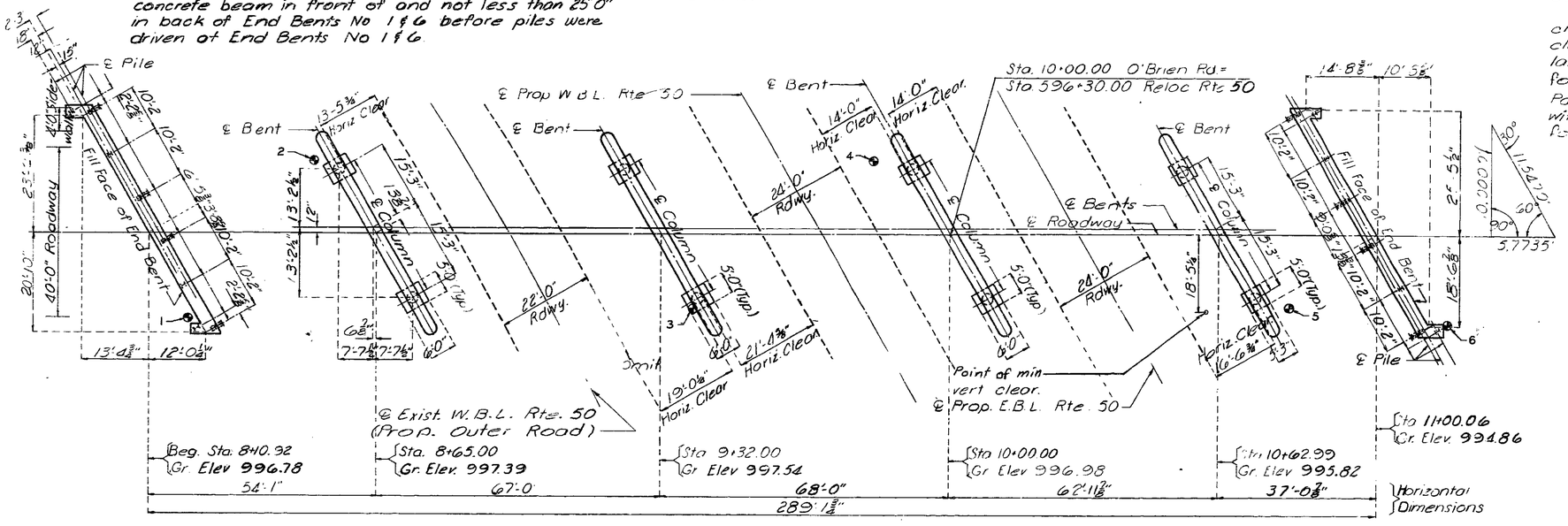
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	94	

FINAL PLANS



ELEVATION

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 & 6 before piles were driven at End Bents No 1 & 6.



PLAN

Note: For boring see sheet No. 2.
● Indicates location of boring.

PILE & FOOTING DATA

	BENT NO.	1	2	3	4	5	6
BEARING PILE	Pile Type and Size	HP10x42					HP10x42
	Number	8					8
	Approximate Length Ft.	30 to 31'					28 to 31'
	Design Bearing Tons	22.0					22.0
	Hammer Energy reqd. Ft. Lbs.	7000					7000
SPREAD FOOTINGS	Foundation Material		Rock	Rock	Rock	Rock	
	Design Bearing Tons/Sq. Ft.		9.7	9.7	9.7	10.5	

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

QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	Cu. Yd.	200.0		200.0
Steel Piles in Place (10")	Lin. Ft.	475		475
Class B Concrete	Cu. Yd.	245.1		245.1
Class B1 Concrete	Cu. Yd.		371.5	371.5
Reinforcing Steel	Lb.	44410	71820	116230
Reinforcing Steel (Epoxy Coated)	Lb.		47220	47220
Fabricated Structural Carbon Steel	Lb.		219070	219070
Painting	Tons		108.4	108.4
Bridge Rail (One Tube)	Lin. Ft.		583	583
Pedestrian Fence (72")	Lin Ft.		309	309
Steel Reinf. Elastomeric Exp. Jt. Seal (2")	Lin. Ft.		94	94
Test Holes (Contingent Item)	Lin. Ft.	32		32
Handling Reinforcing Steel (Contingent Item)	F.A.		723.71	723.71

Note: All concrete and reinforcement in end posts, parapets, and curbs was included with superstructure quantities.
See Special Provisions for Epoxy coated reinforcing.

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O. - 1973

Design Loading:
H20-44 15#/sq. ft. Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress - Case I

Design Unit Stresses:
Class B Concrete (substructure) f_c = 1,200 psi
Class B1 Concrete (superstructure) f_c = 1,600 psi
Reinforcing Steel f_s = 20,000 psi
Structural Carbon Steel f_s = 20,000 psi
Steel Pile f_b = 9,000 psi

Fabricated Steel:
Field connections, High Strength Bolts ¾" ϕ, holes 13/16" ϕ except as noted.

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

Construction Clearance:
A minimum vertical clearance of 14'0" from crown of existing lane and a minimum lateral clearance of 28'0" centered on existing lane was maintained during construction for Outer Rdwy.

Paint: System B or C by contractor in accordance with Std. Spec. 712.12. Color of the final field coat for System "B" was green.

For notch toughness requirements see Special Provisions.

B.M. Elev. 995.51 P.K. nail end of Lt. wing Bt #6 (west)

BRIDGE: O'BRIEN ROAD UNDERPASS

STATE ROAD: RELOCATED ROUTE 50

ABOUT: NEAR UNITY VILLAGE

PROJECT NO. U-50-1 (9) **STA.** 596+30.00

JOB NO. 4-U-50-27A RTE. 50

JACKSON COUNTY

STD. 611.60
STD. 706.30M
A-2446

DESIGNED May 1972
DETAILED FEB 1973
CHECKED July 1973

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

Sheet No. 1A of 16. ⚠ Revised Nov. 13, 1975 DATE 9/10/75

264

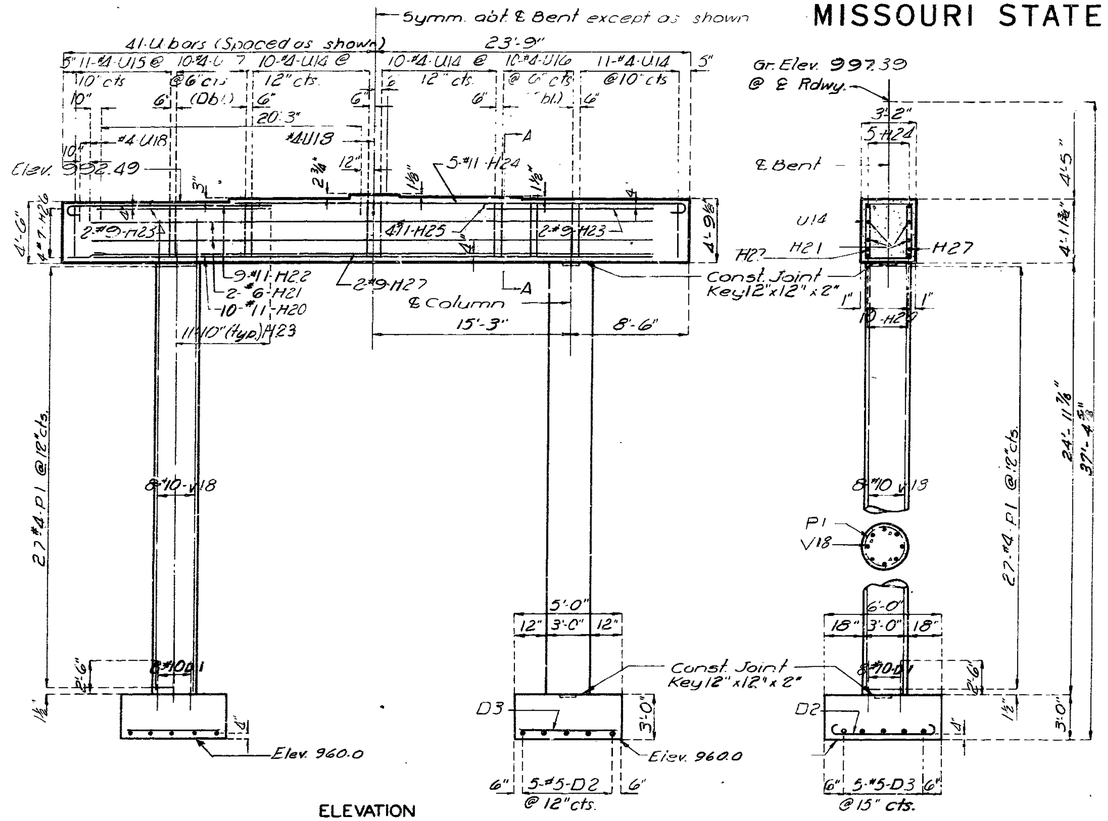
FOR INFORMATION ONLY

A24462, Sht. 19

MISSOURI STATE HIGHWAY DEPARTMENT

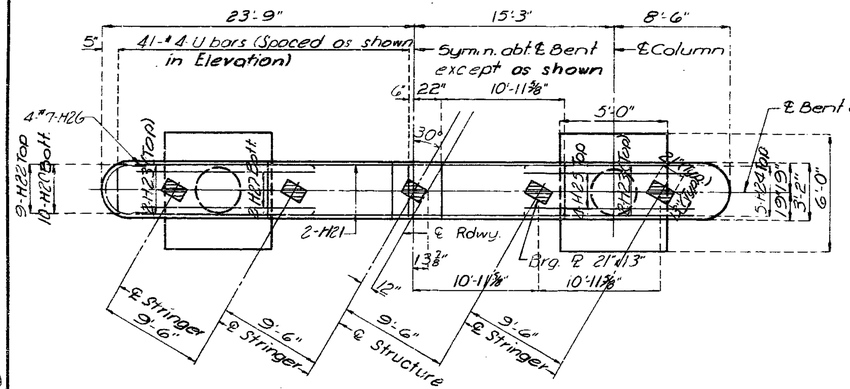
FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	97	

FINAL PLANS

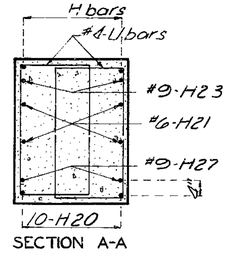


ELEVATION

SECTION AT ℄



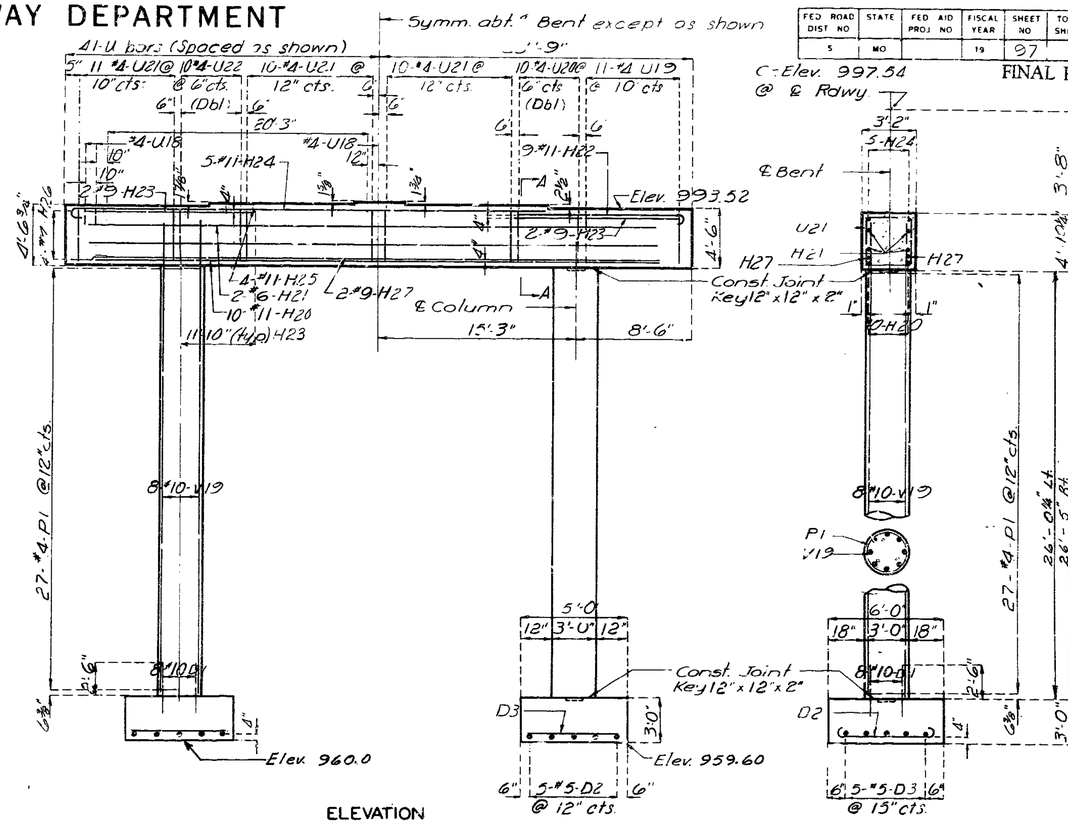
PLAN



SECTION A-A

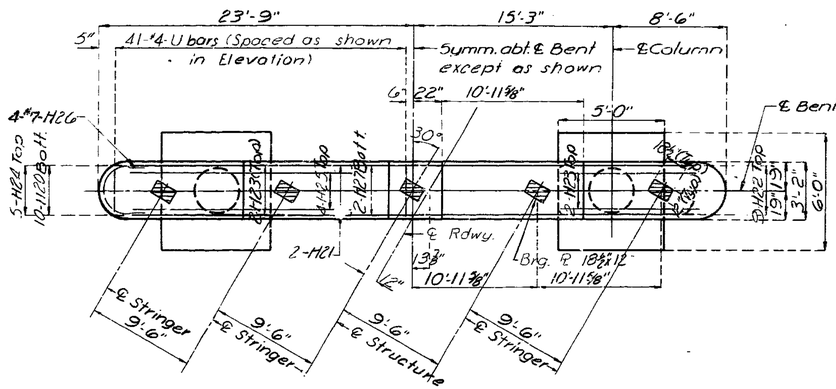
(Showing Double (Dbl.) U bars)

DETAILS OF INTERMEDIATE BENT NO. 2.



ELEVATION

SECTION AT ℄



PLAN

DETAILS OF INTERMEDIATE BENT NO. 3.

STD. 13.2	REVISED
SEPT. 1962	APRIL 1971

DETAILED AUG 1972

CHECKED July 1973

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

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

Sheet No. 4A of 16

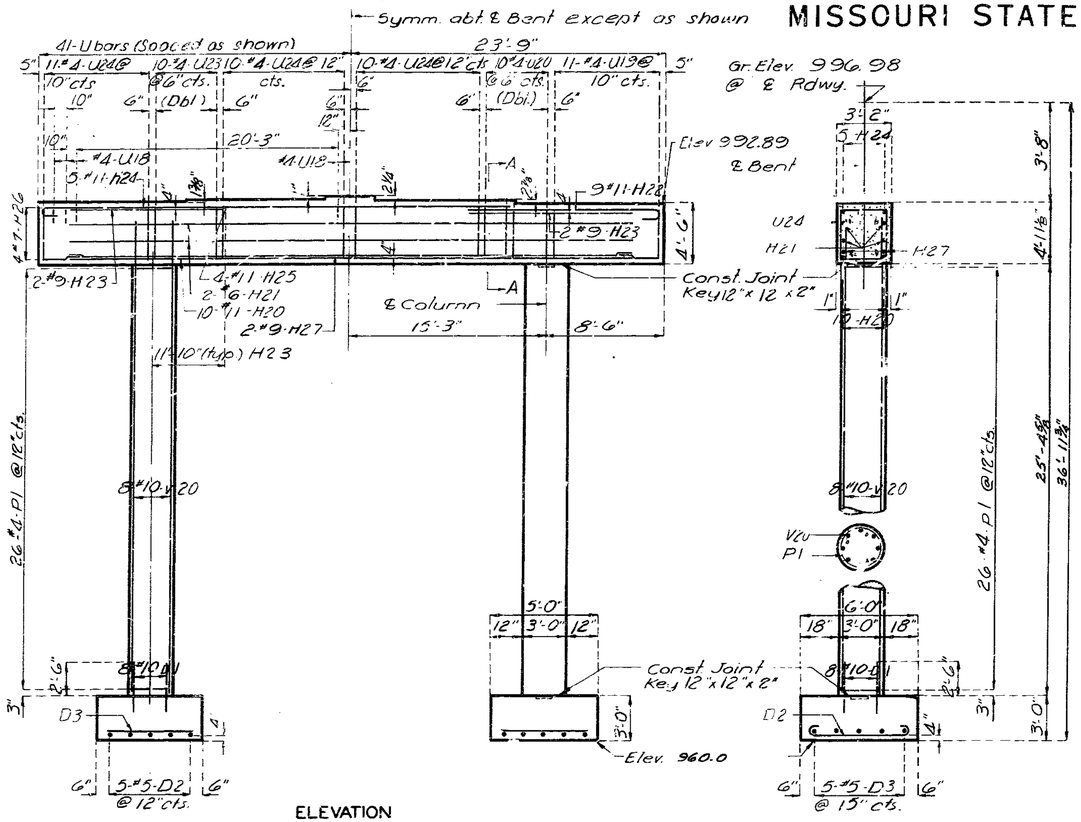
JACKSON COUNTY

A-2446

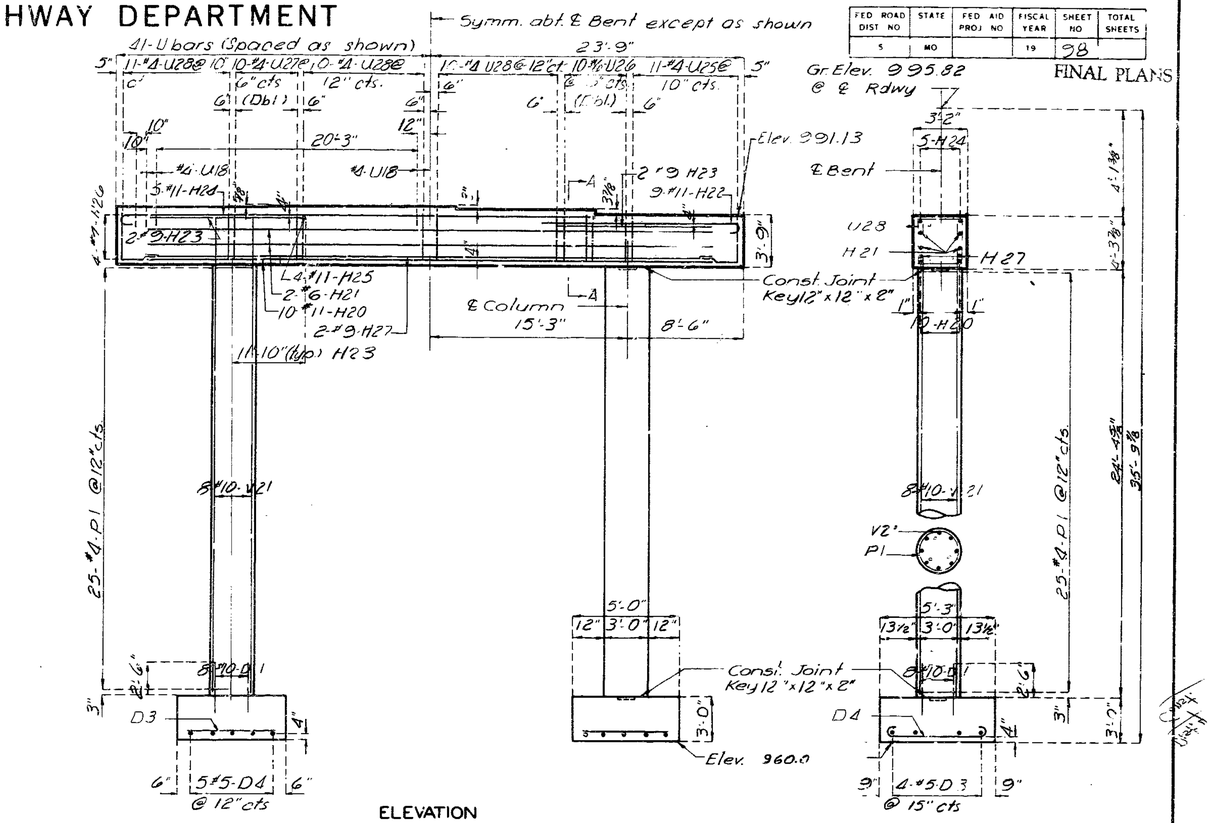
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	98	

FINAL PLANS



DETAILS OF INTERMEDIATE BENT NO. 4



DETAILS OF INTERMEDIATE BENT NO. 5

Note: For Section A-A see sheet No. 4.

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

STD. 13.2	REVISED
SEPT. 1962	APRIL 1971

DETAILED SEPT. 1972
CHECKED July 1973

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

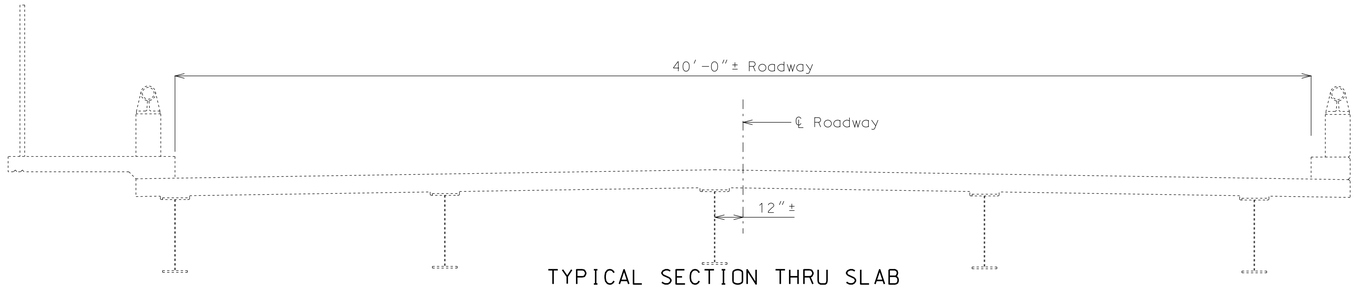
Sheet No. 5A of 16

JACKSON COUNTY A-2446

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P. AND REHABILITATE EXISTING (52'-67'-68'-63'-35') CONTINUOUS COMPOSITE WIDE FLANGE SPANS (SKEW 30° R.A.)

SEC/SUR 1 TWP 47N RGE 32W



TYPICAL SECTION THRU SLAB

GENERAL NOTES:

Design Specifications:

2002 - AASHTO LFD (17th Edition) Standard Specifications
Bridge Deck Rating = 6

Design Loading:

H20-44 (1973 & New Construction)

Design Unit Stresses:

Class B-1 Concrete (Slab, Curb & Parapet)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

Expansion Joints:

The concrete for slab, curb and parapet replacement shall be Class B-1.

Payment for backwall and slab concrete, complete-in-place, for expansion joint replacement will be considered completely covered by the contract unit price for Class B-1 concrete per cu. yard.

Payment for furnishing and installing slab reinforcing steel and backwall reinforcing steel, complete-in-place, for expansion joint replacement will be considered completely covered by the contract unit price for Reinforcing Steel (Bridges).

Concrete Protective Coatings:

Protective coating for concrete bents and piers (Urethane) shall be applied as shown on plans and in accordance with Sec 711.

Exsiting Bearings Protective Coatings:

Protective Coating: Existing bearings at End Bent No. 1 & 6 with System G in accordance with Sec 1081.

The cost of cleaning and coating of existing bearings shall be considered completely covered by the contract unit price for Cleaning and Coating Existing Bearing per each.

Miscellaneous:

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, unless otherwise noted.

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

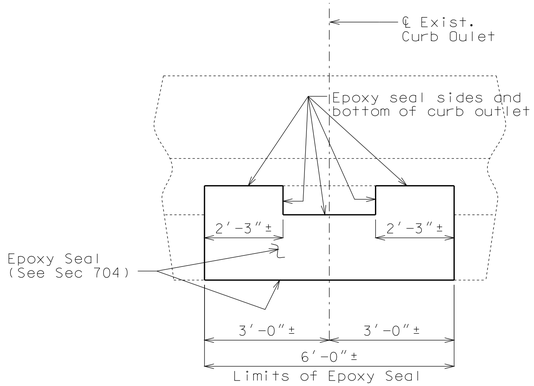
Contractor shall verify all dimensions in field before ordering new material.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

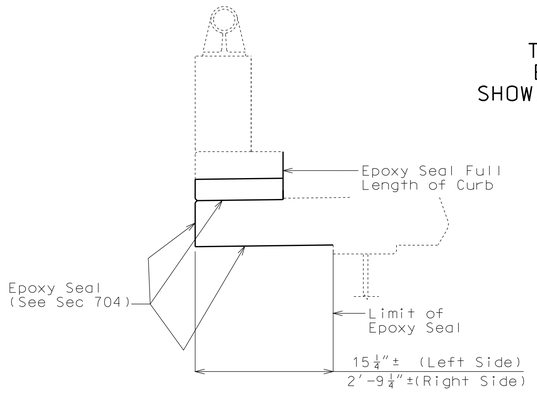
The existing skid plates on the sidewalk shall be reinstalled with ⅜"Ø diameter counter sunk cone expansion anchors and they shall have a minimum ultimate pullout strength of 3900 lbs. in concrete with f'c= 4,000 psi.

Traffic Handling:

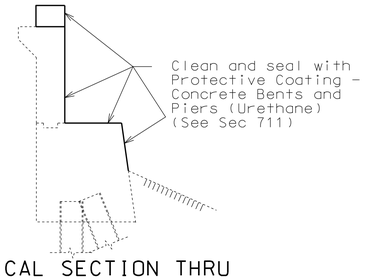
Bridge A24461 will be closed to traffic during construction. See Roadway Plans for Traffic Control.



TYPICAL ELEVATION OF EXISTING CURB OUTLET SHOWING LIMITS OF EPOXY SEAL

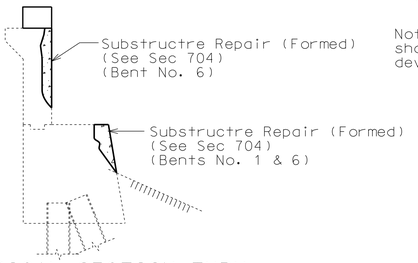


TYPICAL SECTION THRU CURB OUTLET SHOWING LIMITS OF EPOXY SEAL



TYPICAL SECTION THRU END BENTS NO. 1 & 6 SHOWING PROTECTIVE COATING

Note: Cleaning and coating of existing bearings shall be done prior to installation of expansion device and new concrete.



TYPICAL SECTION THRU END BENTS NO. 1 & 6 SHOWING SUBSTRUCTURE REPAIR

Estimated Quantities

Item		Total
Removal of Existing Expansion Joints & Adjacent Concrete	linear foot	92
Remove and Replace Curb & Parapet	linear foot	18
Class B-1 Concrete	cu. yard	11.2
Substructure Repair (Formed)	sq. foot	30
Clean and Epoxy Seal	sq. foot	452
Reinforcing Steel (Bridges)	pound	940
Protective Coating - Concrete Bents & Piers (Urethane)	lump sum	1
Cleaning and Coating Existing Bearings	each	10
Strip Seal Expansion Joint System	linear foot	92

REPAIRS TO BRIDGE: O'BRIEN RD. OVER RTE. 50

STATE ROAD FROM RTE. 7 TO RTE. 291
ABOUT 0.5 MILE SOUTHEAST OF RTE. 291
STA. 596+30.00±(MATCH EXISTING)

STD. 606.22
STD. 706.35

Detailed Nov. 2013
Checked Dec. 2013

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

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER PE-28132
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

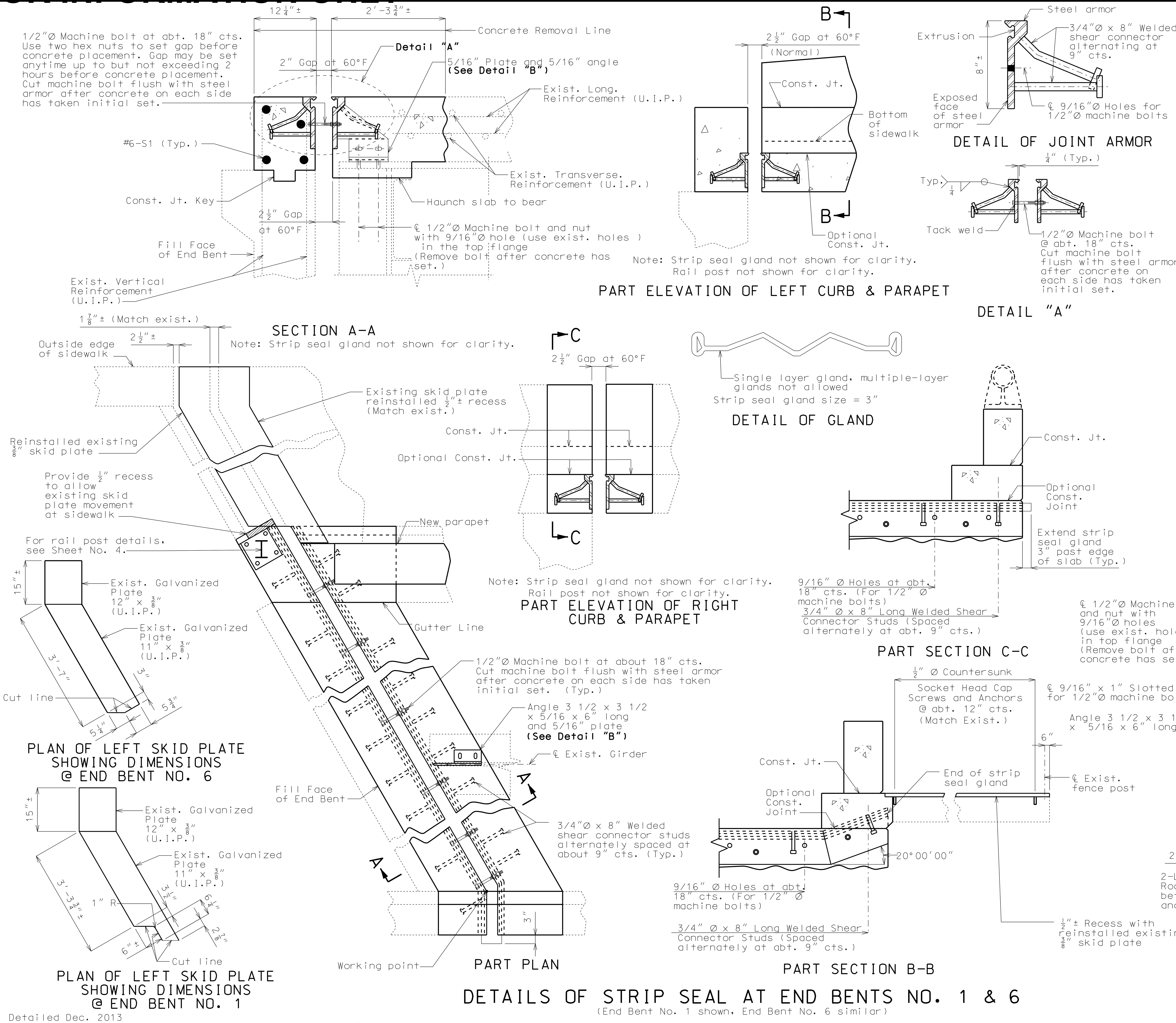
DATE PREPARED 1/16/2014
ROUTE 50 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY JACKSON
JOB NO. J4P2191
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A24461

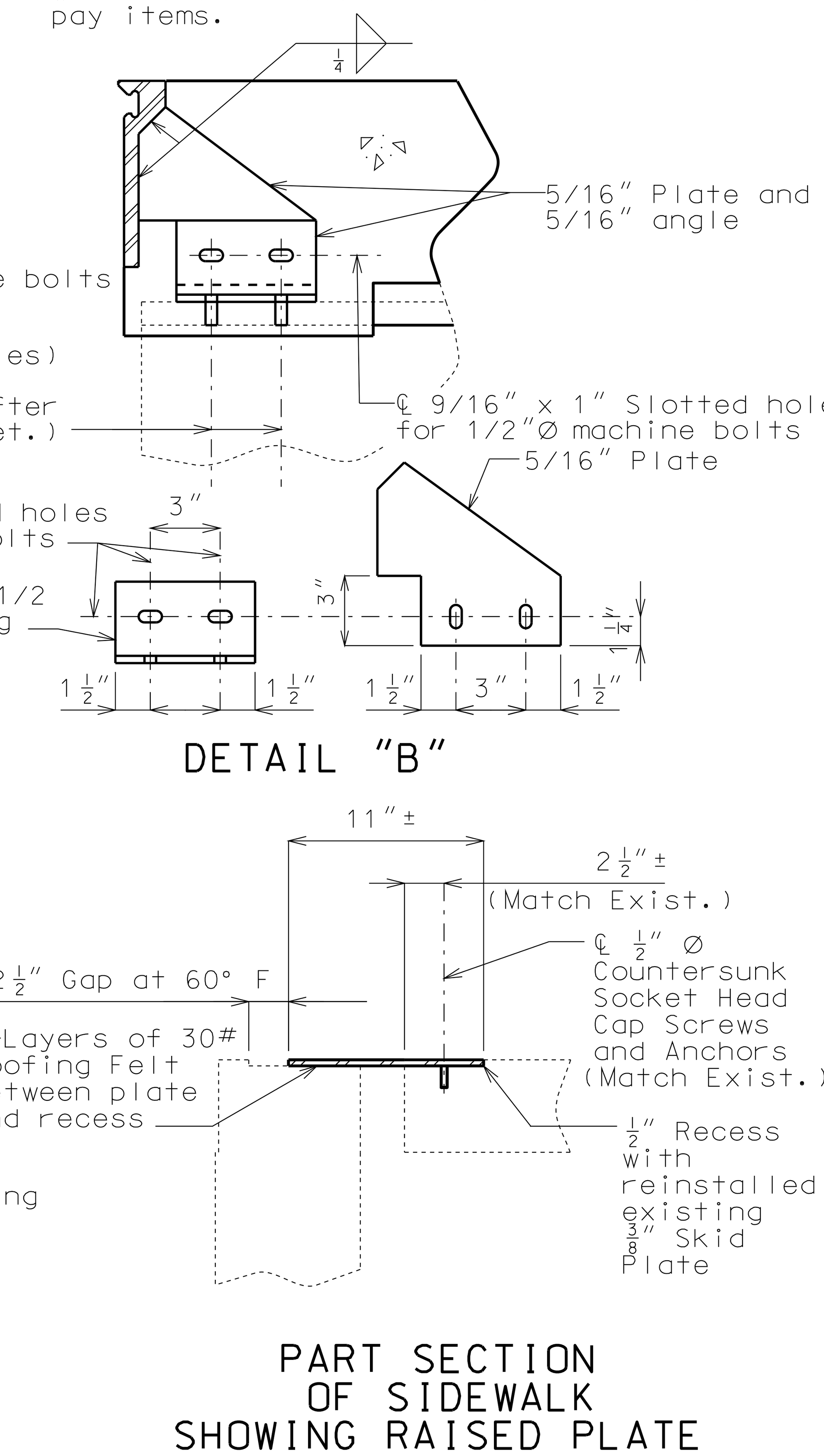
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.





GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for stage construction and where the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/8" for each 10° fall or rise in temperature at installation.

New longitudinal reinforcing steel shall be placed and existing longitudinal reinforcing steel shall be cut/bent so that ends shall not be more than ±1" from vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

For details of post and plate for bridge anchor section, see Sheet No. 4.

Cost of fabricating and reinstalling existing skid plates with 3/8"Ø cone expansion anchors will be considered incidental to other pay items.

DETAILS OF STRIP SEAL AT END BENTS NO. 1 & 6

(End Bent No. 1 shown, End Bent No. 6 similar)

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

Detailed Dec. 2013
Checked Dec. 2013

STATE OF MISSOURI — DEAN DAVID FRANKE — NUMBER PE-28132 — PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

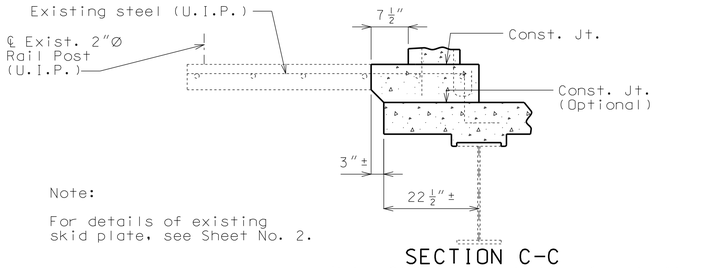
DATE PREPARED	1/16/2014
ROUTE	50
STATE	MO
DISTRICT	BR
SHEET NO.	2
COUNTY	JACKSON
JOB NO.	J4P2191
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A24461

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

MoDOT

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED

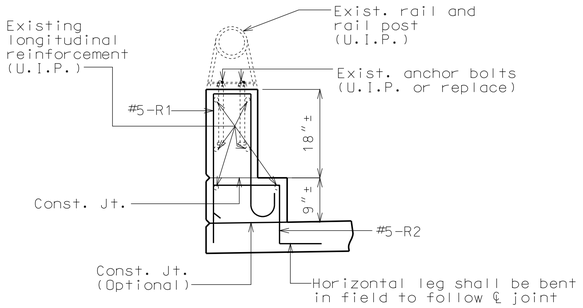


Note:

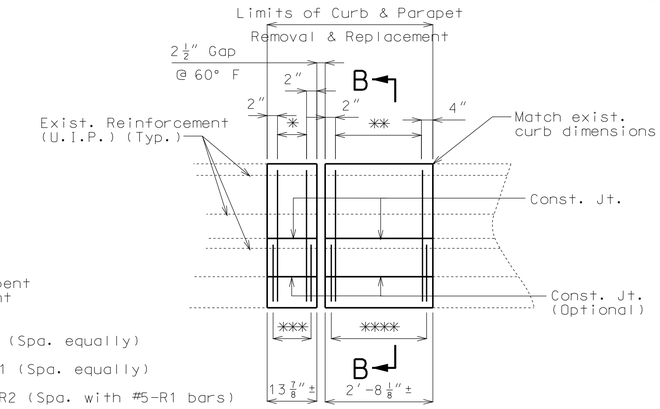
For details of existing skid plate, see Sheet No. 2.

SECTION C-C

Note: Slab steel not shown for clarity.



SECTION B-B



✳ 2-#5-R1 (Spa. equally)

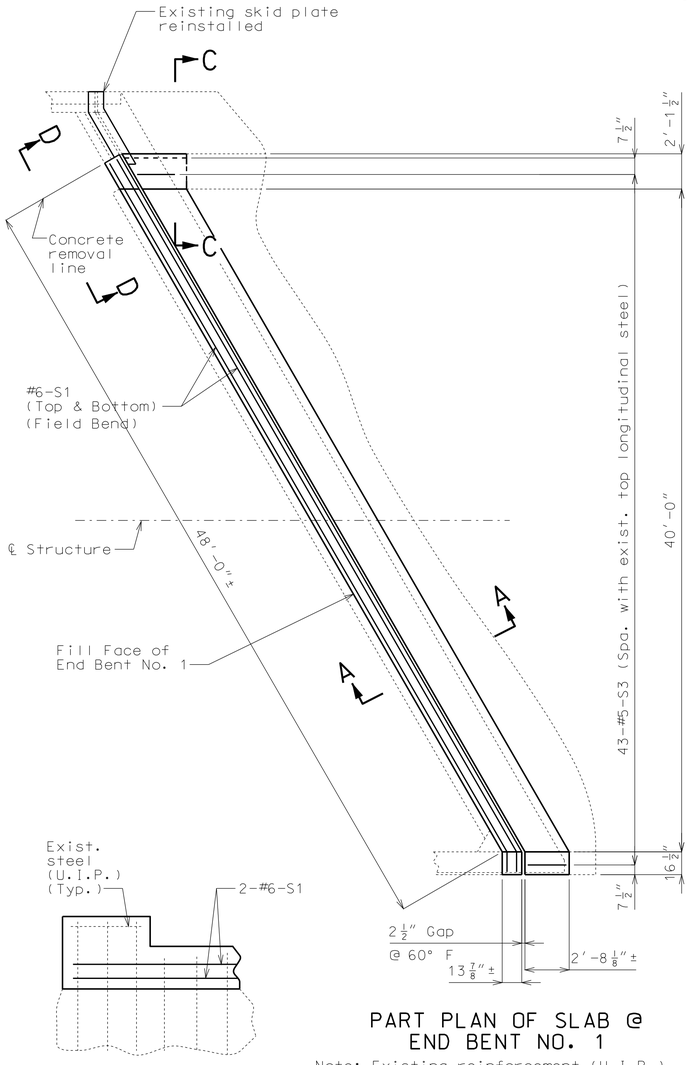
✳✳ 3-#5-R1 (Spa. equally)

✳✳✳ 2-#5-R2 (Spa. with #5-R1 bars)

✳✳✳✳ 3-#5-R2 (Spa. with #5-R1 bars)

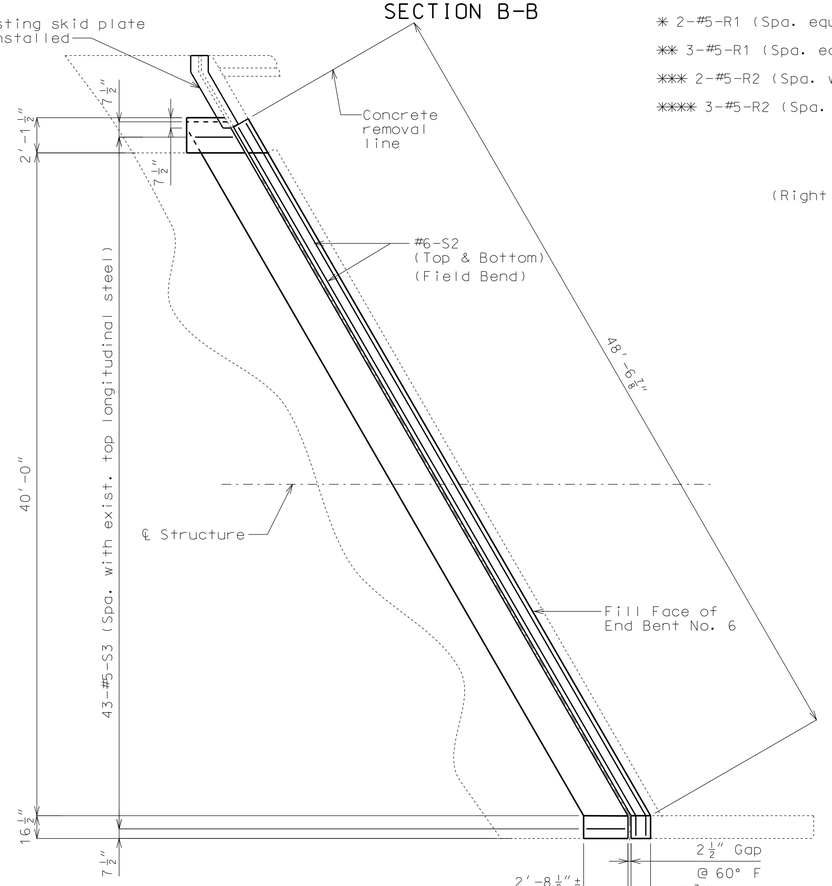
PART ELEVATION RIGHT SIDE SHOWING CURB & PARAPET REINFORCEMENT

(Right side End Bent No. 1 shown, right side End Bent No. 6 similar)



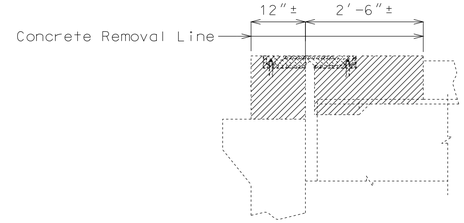
PART PLAN OF SLAB @ END BENT NO. 1

Note: Existing reinforcement (U.I.P.) not shown for clarity.



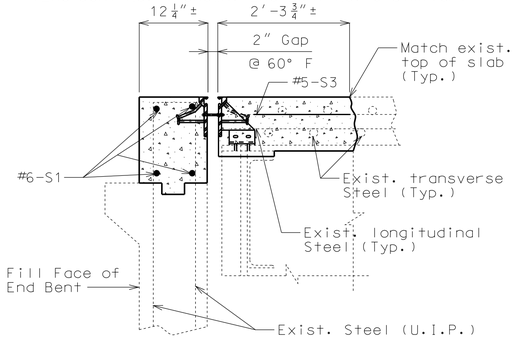
PART PLAN OF SLAB @ END BENT NO. 6

Note: Existing reinforcement (U.I.P.) not shown for clarity.



PART SECTION THRU END BENT SHOWING REMOVAL

(End bent No. 1 shown, End Bent No. 6 similar)



SECTION A-A

(End bent No. 1 shown, End Bent No. 6 similar)

PART ELEVATION D-D SHOWING REINFORCEMENT

(End Bent No. 1 shown, End Bent No. 6 similar)

Notes:

Remove existing stirrups within limits of curb & parapet removal.

All exposed edges of new curb & parapet shall match existing curb & parapet.

Payment for curb removal and all new concrete and reinforcement for curb & parapet, complete-in-place, will be considered completely covered by the contract unit price for Remove and Replace Curb & Parapet per linear foot.

Existing rail posts located within limits of curb and parapet removal shall be reattached to the new curb. Contractor may clean and reuse existing anchor bolts as approved by the engineer or replace the anchor bolts in-kind. Cost of rail post reattachement will be considered completely covered by the contract unit price for Class B-1 Concrete.

Detailed Dec. 2013
Checked Dec. 2013

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

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER PE-28132
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/16/2014

ROUTE	STATE
50	MO
DISTRICT	SHEET NO.
BR	3

COUNTY: JACKSON

JOB NO.: J4P2191

CONTRACT ID.:

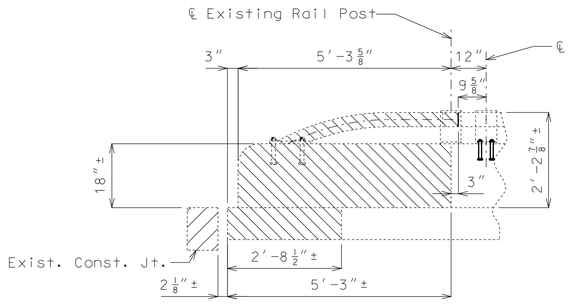
PROJECT NO.:

BRIDGE NO.: A24461

DESCRIPTION	DATE

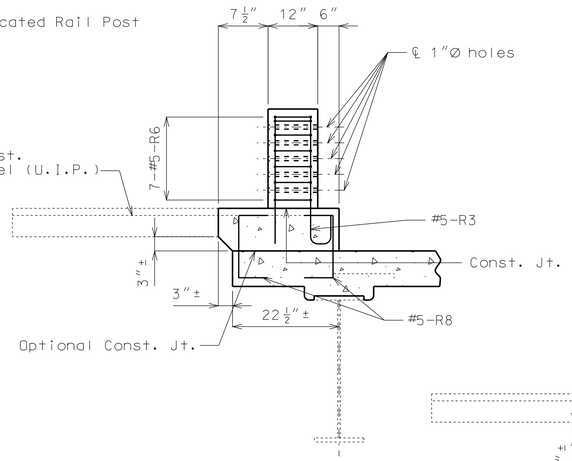
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

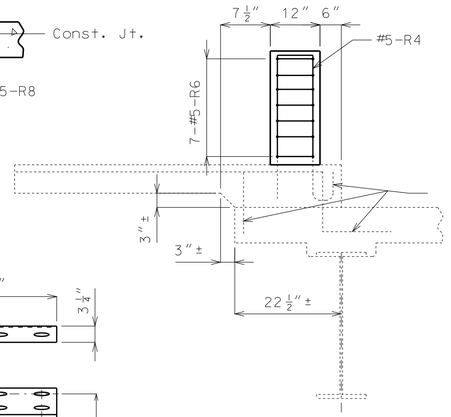


PART ELEVATION OF LEFT CURB & PARAPET SHOWING REMOVAL

Note: Existing rail post anchor bolts shall be cut off flush.



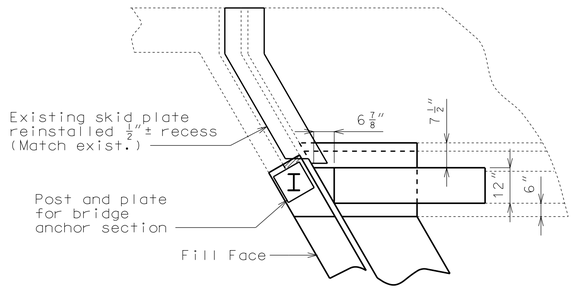
SECTION B-B



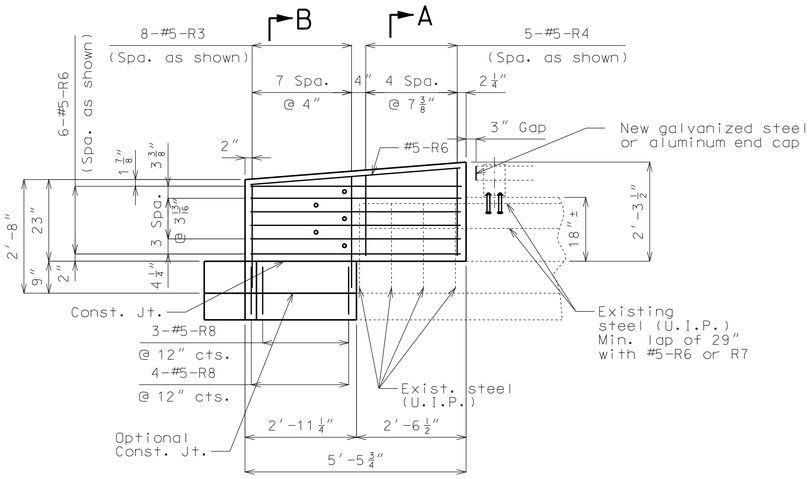
SECTION A-A

Note:

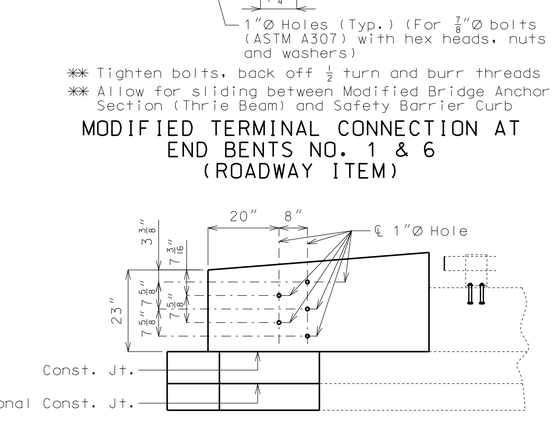
For details of existing 3/8" skid plate at End Bent No. 1, see Sheet No. 2.



PART PLAN OF LEFT CURB & PARAPET AT END BENT NO. 1



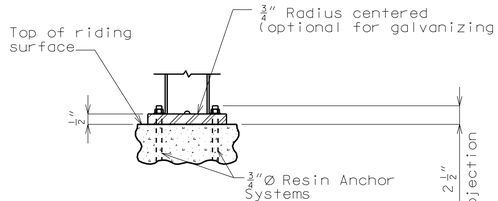
PART ELEVATION OF LEFT CURB & PARAPET SHOWING REINFORCEMENT AND DIMENSIONS



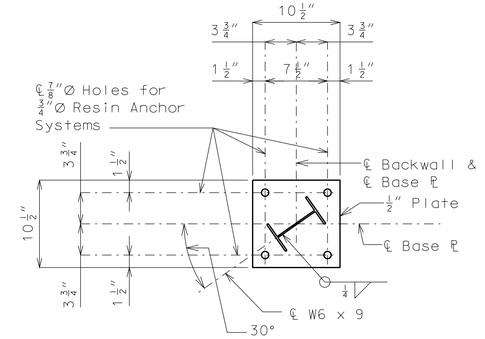
** Tighten bolts, back off 1/2 turn and burr threads

** Allow for sliding between Modified Bridge Anchor Section (Thrie Beam) and Safety Barrier Curb

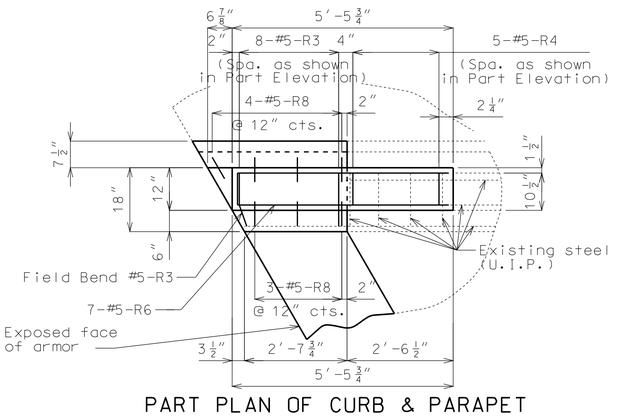
MODIFIED TERMINAL CONNECTION AT END BENTS NO. 1 & 6 (ROADWAY ITEM)



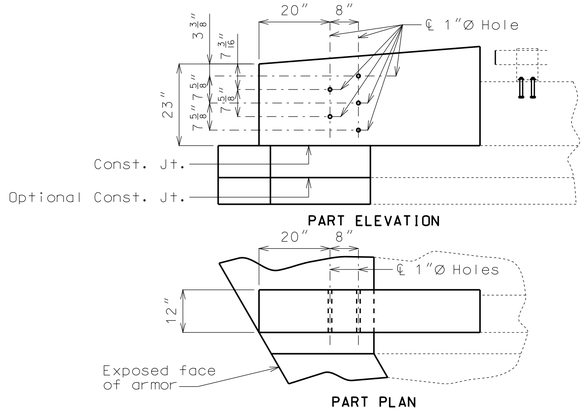
PART ELEVATION OF POST



DETAIL OF BASE PLATE



PART PLAN OF CURB & PARAPET SHOWING REINFORCEMENT AND DIMENSIONS



DETAIL OF GUARD RAIL ATTACHMENT

Notes:

Fabricated structural steel shall be ASTM A709 Grade 36.

For protective coating and material requirements, see Sec 1040.

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

Cost of furnishing and installing the resin anchor system, complete-in-place, will be considered completely covered by the contract unit price for the Bridge Anchor Section (Roadway Item).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

Modified terminal connection and base plate with post will be considered completely covered by the contract unit price for the Bridge Anchor Section (Roadway Item).

DETAILS SHOWING REMOVAL AND REPLACEMENT OF LEFT CURB & PARAPET @ END BENT NO. 1

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER PE-28132
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/16/2014

ROUTE	STATE
50	MO
DISTRICT	SHEET NO.
BR	4

COUNTY JACKSON

JOB NO. J4P2191

CONTRACT ID.

PROJECT NO.

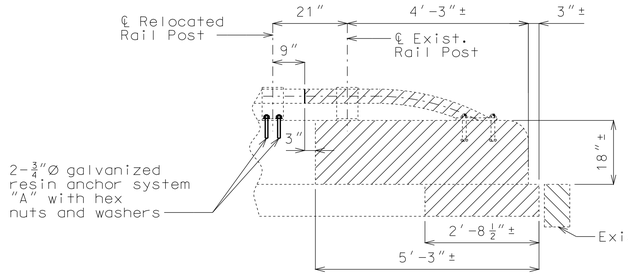
BRIDGE NO. A24461

DESCRIPTION	DATE

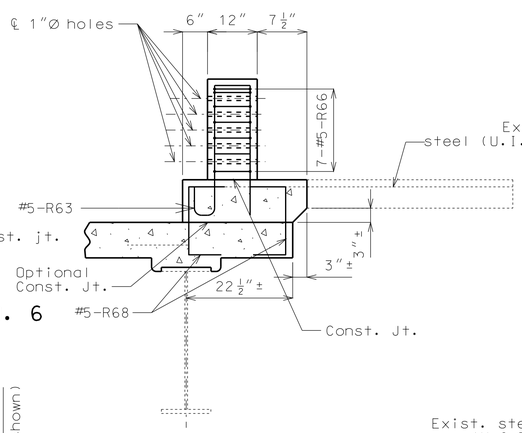
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

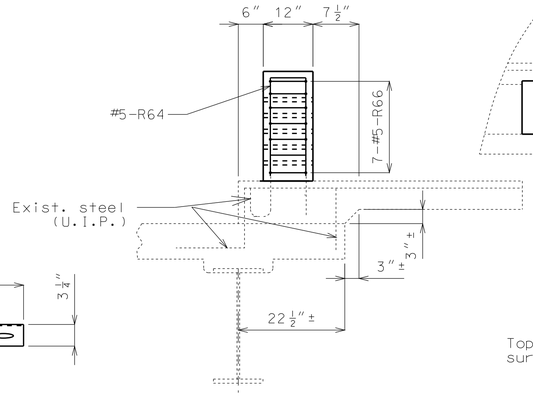
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



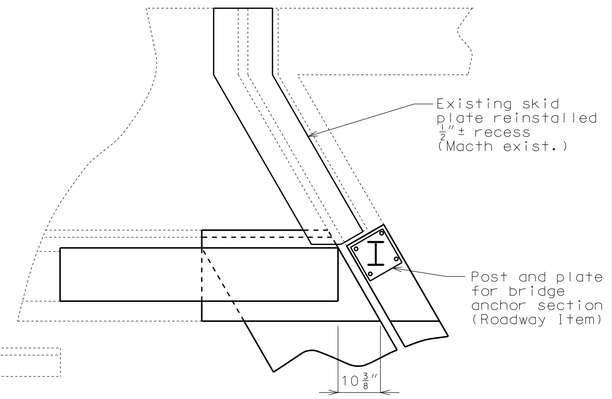
PART ELEVATION OF LEFT CURB & PARAPET SHOWING REMOVAL @ END BENT NO. 6



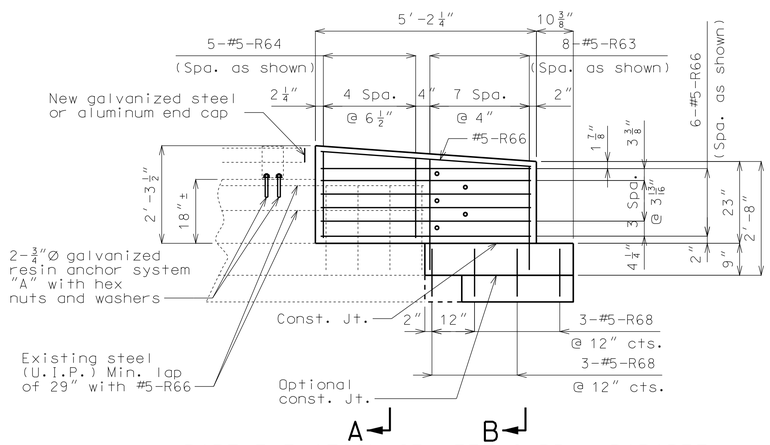
SECTION B-B



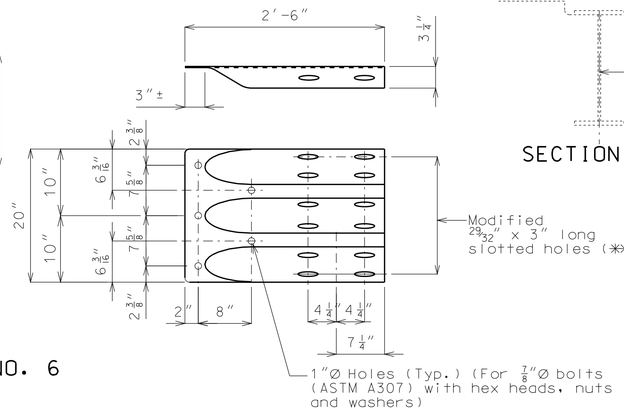
SECTION A-A



PART PLAN OF CURB & PARAPET AT END BENT NO. 6



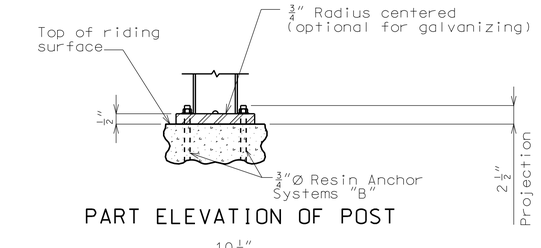
PART ELEVATION OF LEFT CURB & PARAPET SHOWING REINFORCEMENT AND DIMENSIONS @ END BENT NO. 6



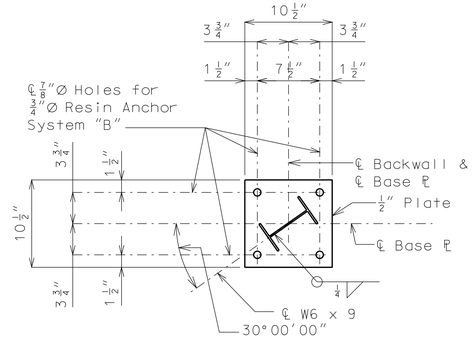
✻✻ Tighten bolts, back off ½ turn and burr threads

✻✻ Allow for sliding between Modified Bridge Anchor Section (Thrie Beam) and Safety Barrier Curb

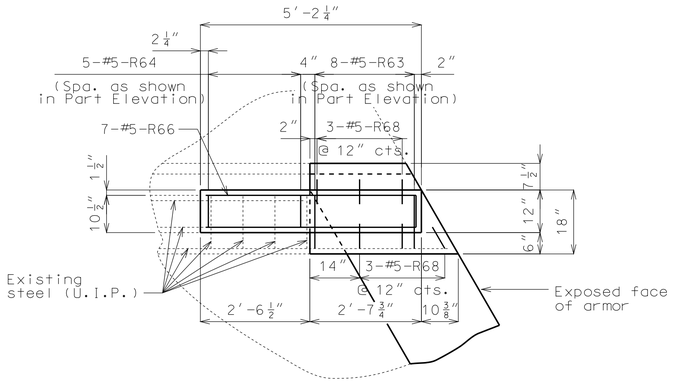
MODIFIED TERMINAL CONNECTION AT END BENTS NO. 1 & 6 (ROADWAY ITEM)



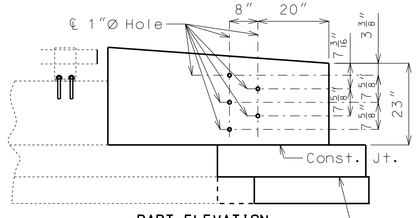
PART ELEVATION OF POST



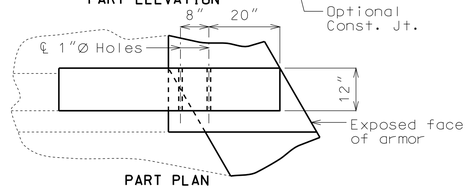
DETAIL OF BASE PLATE



PART PLAN OF CURB & PARAPET SHOWING REINFORCEMENT AND DIMENSIONS



PART ELEVATION



PART PLAN

DETAIL OF GUARD RAIL ATTACHMENT

Note:

Modified terminal connection and base plate with post will be considered completely covered by the contract unit price for the Bridge Anchor Section (Roadway Item).

Notes:

Fabricated structural steel shall be ASTM A709 Grade 36.

For protective coating and material requirements, see Sec 1040.

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

Cost of furnishing and installing the resin anchor system "A", complete-in-place, will be considered completely covered by the contract unit price for the Remove and Replace Curb & Parapet.

Cost of furnishing and installing the resin anchor system "B", complete-in-place, will be considered completely covered by the contract unit price for the Bridge Anchor Section (Roadway Item).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5″.

DETAILS SHOWING REMOVAL AND REPLACEMENT OF LEFT CURB & PARAPET @ END BENT NO. 6

Detailed Dec. 2013
Checked Dec. 2013

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

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER PE-28132
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
1/16/2014	
ROUTE	STATE
50	MO
DISTRICT	SHEET NO.
BR	5
COUNTY	
JACKSON	
JOB NO.	
J4P2191	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A24461	

DESCRIPTION	DATE

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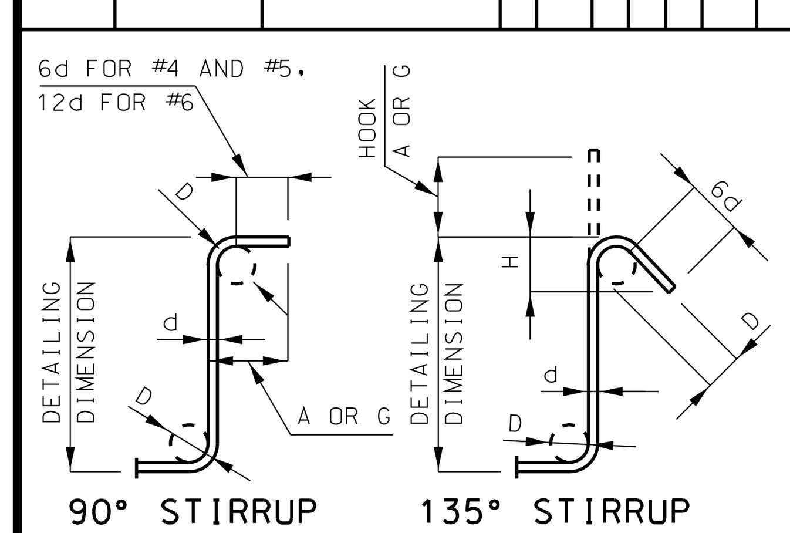
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

BILL OF REINFORCING STEEL

NO. REQ'D.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SLAB																		
6	6	S1	SLAB		20					49 1.000							49	1	49	1	442
4	6	S2	SLAB		20					49 8.000							49	8	49	8	298
86	5	S3	SLAB		20					2 3.000							2	3	2	3	202
			CURB/PARAPET																		
10	5	R1	CURB/PARAPET		12					2 0.000	7.000	2 0.000					5	2	4	11	51
10	5	R2	CURB/PARAPET		10	S					12.750	13.500	12.000				4	3	3	11	41
8	5	R3	CURB/PARAPET		12			V	1	2 5.000	9.000	2 5.000					6	2	5	11	
			INCREMENT =							2 7.000	9.000	2 7.000					6	6	6	3	51
			0.625 INCH																		
5	5	R4	CURB/PARAPET		10	S		V	1		23.000	9.000					4	7	4	5	
			INCREMENT =								2 0.000	9.000					4	9	4	7	23
			0.500 INCH																		
7	5	R6	CURB/PARAPET		10	S					4 11.000	7.750					10	6	10	3	75
7	5	R8	CURB/PARAPET		10	S					7.000	12.500					2	3	2	0	15
8	5	R63	CURB/PARAPET		12			V	1	2 5.000	9.000	2 5.000					6	2	5	11	
			INCREMENT =							2 7.000	9.000	2 7.000					6	6	6	3	51
			0.625 INCH																		
5	5	R64	CURB/PARAPET		10	S		V	1		23.000	9.000					4	7	4	5	
			INCREMENT =								2 0.000	9.000					4	9	4	7	23
			0.500 INCH																		
7	5	R66	CURB/PARAPET		10	S					5 2.000	7.750					11	0	10	9	78
6	5	R68	CURB/PARAPET		10	S					7.000	12.500					2	3	2	0	13
			TOTALS																		
	5																				623
	6																				740
			TOTAL																		1363
			TOTAL	E																	0
			Slab on Girder																		
	5																				623
	6																				740
			TOTAL																		1363

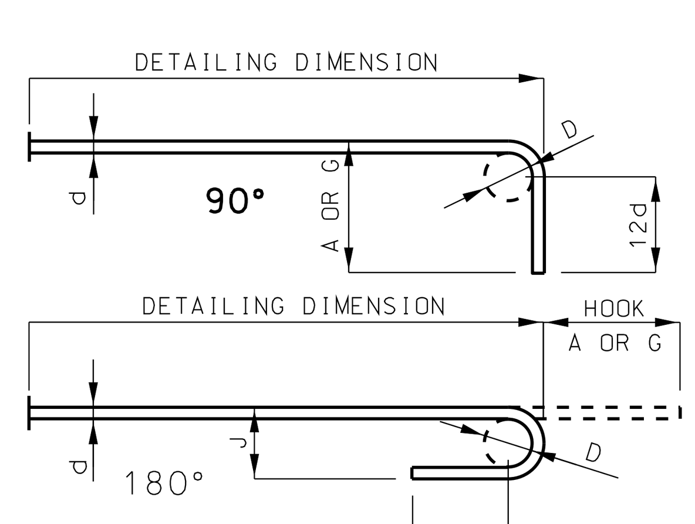
BILL OF REINFORCING STEEL

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



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
#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"

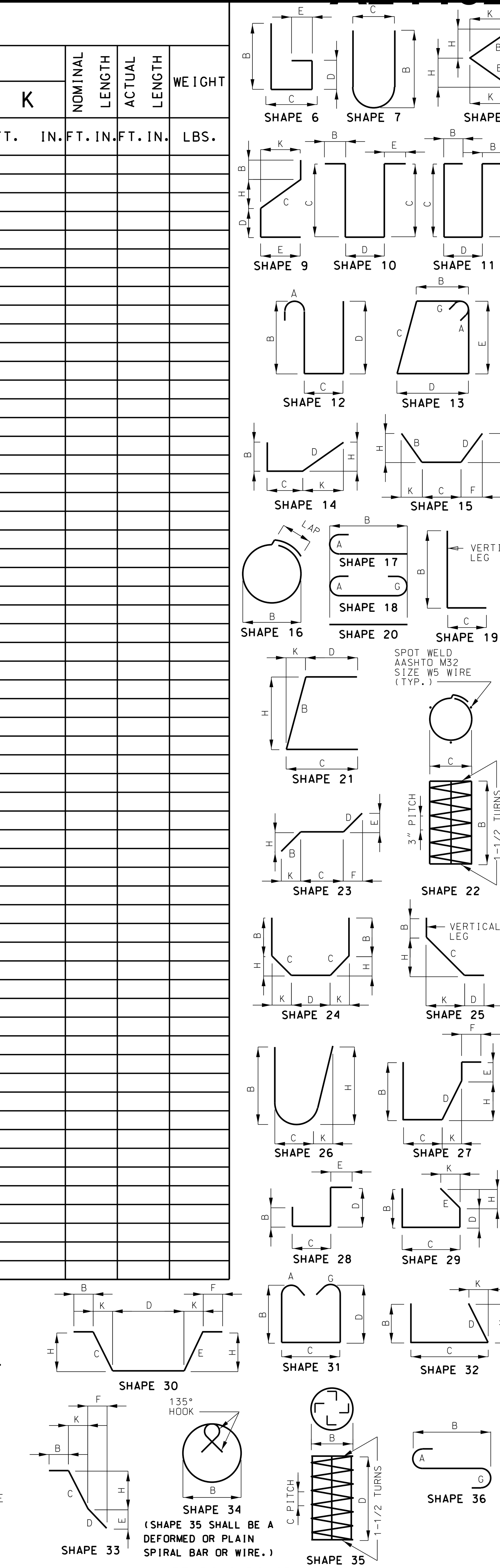
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS		90° HOOKS
		A OR G	J	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 #6-S1 ARE INCLUDED IN THE BAR BILL FOR TESTING.

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD 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.
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.



BENDING DIAGRAMS

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER PE-28132
PROFESSIONAL ENGINEER

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DATE PREPARED	
1/16/2014	
ROUTE 50	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY JACKSON	
JOB NO. J4P2191	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A24461	

DESCRIPTION

DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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MoDOT

Detailed Dec. 2013
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