

AM

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

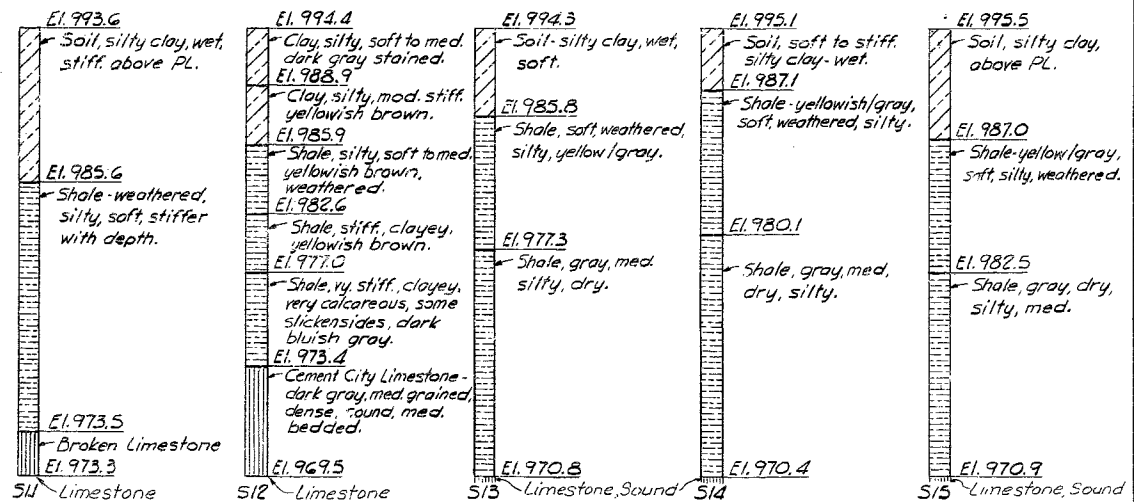
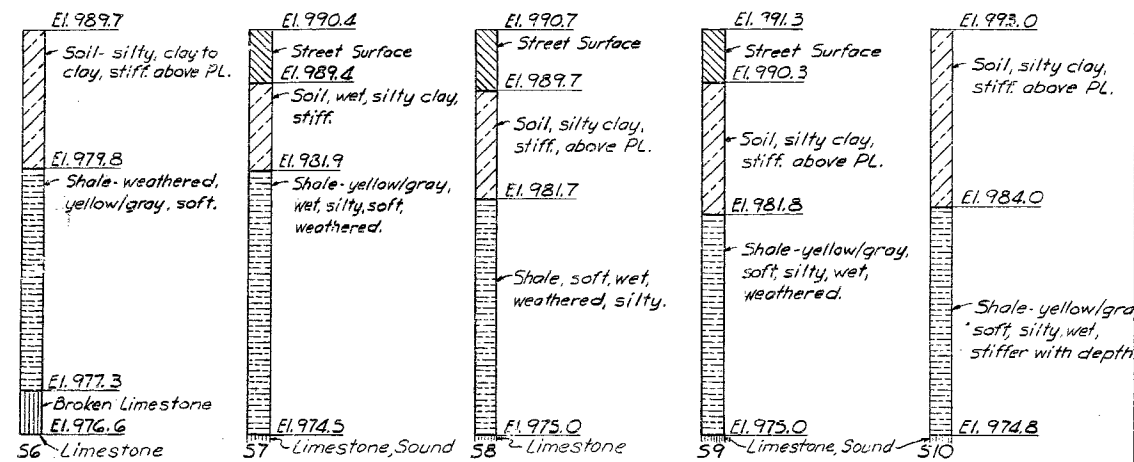
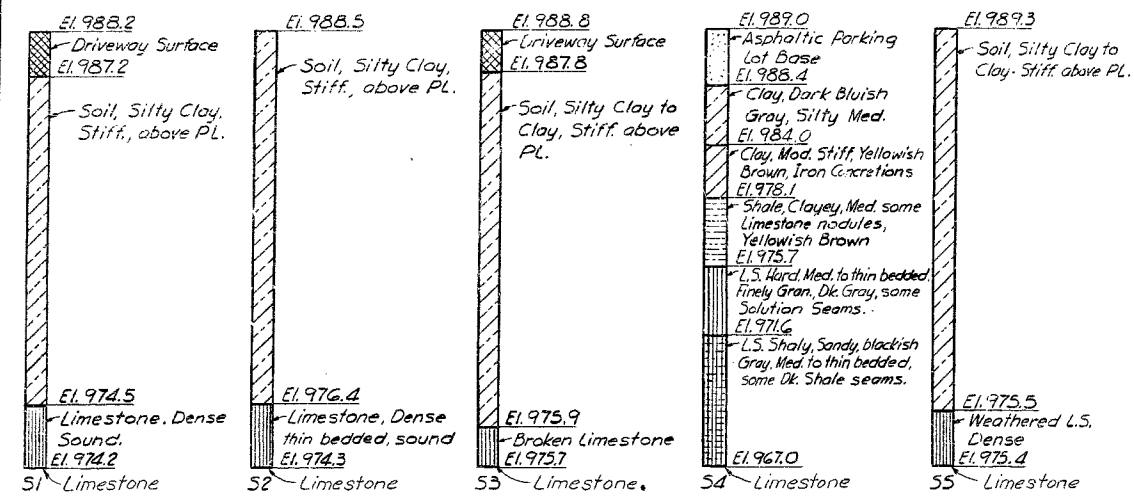


		PILE DATA							
Bent	Number	1E.B.	1W.B.	2	3	4	5E.B.	5W.	
Bearing	Pile type/size	10BPA2	10BPA2	-	-	-	10BPA2	10BPA2	
	Number	7	7	-	-	-	7	7	
Piles	Approx. length	27'	22'	-	-	-	32'	27'	
	Design brg. - Tons	26	26	-	-	-	27	27	
	Hammer energy req'd - Ft.lbs.	7,000	7,000	-	-	-	7,000	7,000	
Pedestal	Foundation material	-	-	Rock	Rock	Rock	-	-	
Piles	Design brg. - Tons/Sq.ft	-	-	18.G	22.1	21.5	-	-	

A-1608

MISSOURI STATE HIGHWAY DEPARTMENT

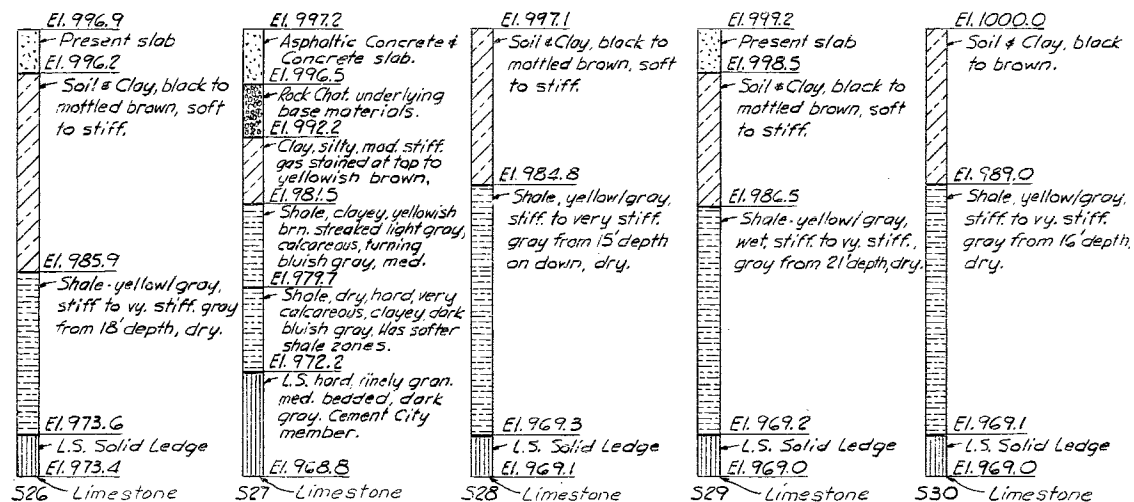
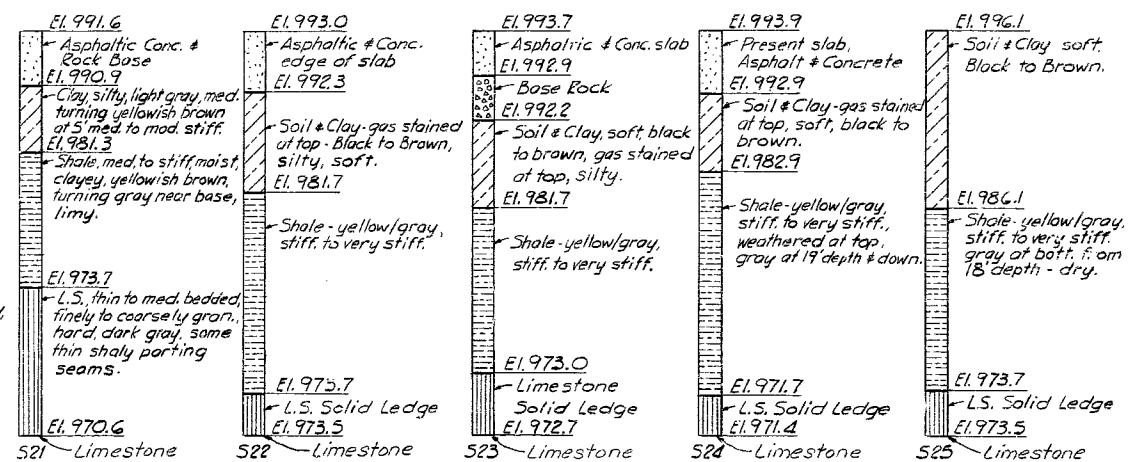
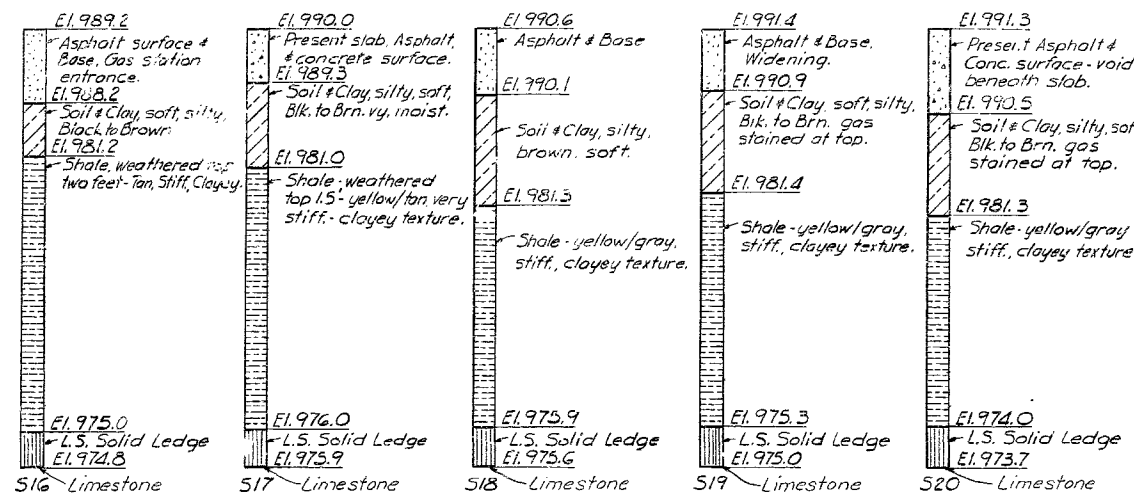
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	107	



LOG OF SOUNDINGS

ROWLAND ENGINEERING CO., CLAYTON, MO.
DETAILED JUNE 1956 BY G. MEYER
CHECKED JUNE 1956 BY J.A. WISE, JR.

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



LOG OF SOUNDINGS

Rev. July 7th, 1967
Rev. Jan. 24th, 1967

Sheet No. 2 of 11.

GENERAL NOTES

Design Specifications: AAS.H.O. "Standard Specifications for Highway Bridges", 1961 Edition, with Interims to date.
Live Load - 4.5SD-44 (Fatigue cycles $n=500,000$)
Future wearing surface - 15"/Sq. Ft. Earth 180 Lb./Sq. In. Fluid Pressure 30"
Structural Steel - (A.S.T.M. A36-63T) with an allowable stress of 20,000#/Sq. In.
Reinforcing Steel - Allowable stress = 20,000#/Sq. In.
Concrete in Superstructure: Class B1 with an allowable stress of 1,600#/Sq. In.
Concrete in Substructure and Pedestal Piles: Class B with an allowable stress of 1,200#/Sq. In. Class B1 may be used, but payment will be made on the basis of Class B.
Superstructure deck to be surface sealed. (See Special Provisions)

Field connections to be 3/4" High Strength Bolts and 1 1/8" holes, except as noted.
Where joint material is noted on the Plans, it shall conform to Standard Specification 57.2.4.
Shop Paint: None; Field Paint by Contractor, three coats in accordance with Standard Specification 55.4.10.
All dimensions to reinforcing bars are to 6 bar except where the clear distance from face of concrete is indicated.
A minimum vertical clearance of 13'6" from crown of existing lanes and a minimum lateral clearance of 8'-0" centered on existing lanes shall be maintained during construction.
Steel Pile (A.S.T.M. A36-63T) $f_b = 6,000$ psi.

Note: Holes S4, S12, S21 and S27 were made with a core drill. All other holes were made with a power auger. See Sheet No. 1 for location of soundings.

BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7) (RTE. 50) STA.

JACKSON

COUNTY

LOG OF SOUNDINGS & GENERAL NOTES

A-1608

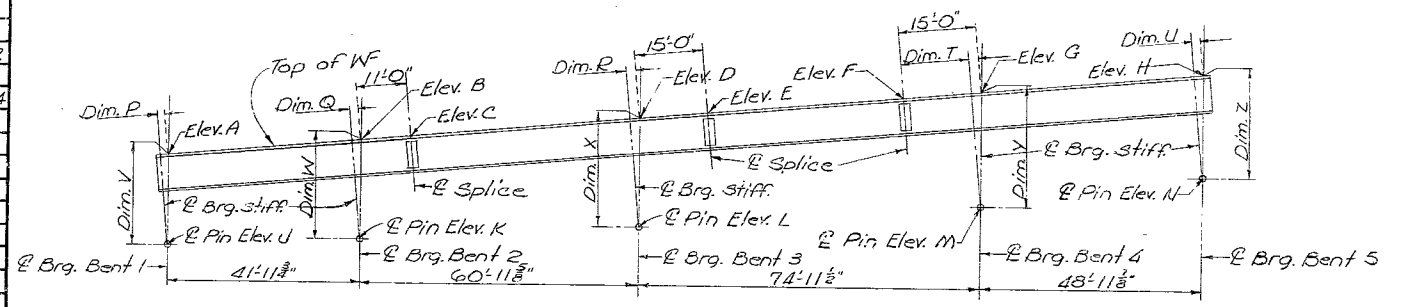
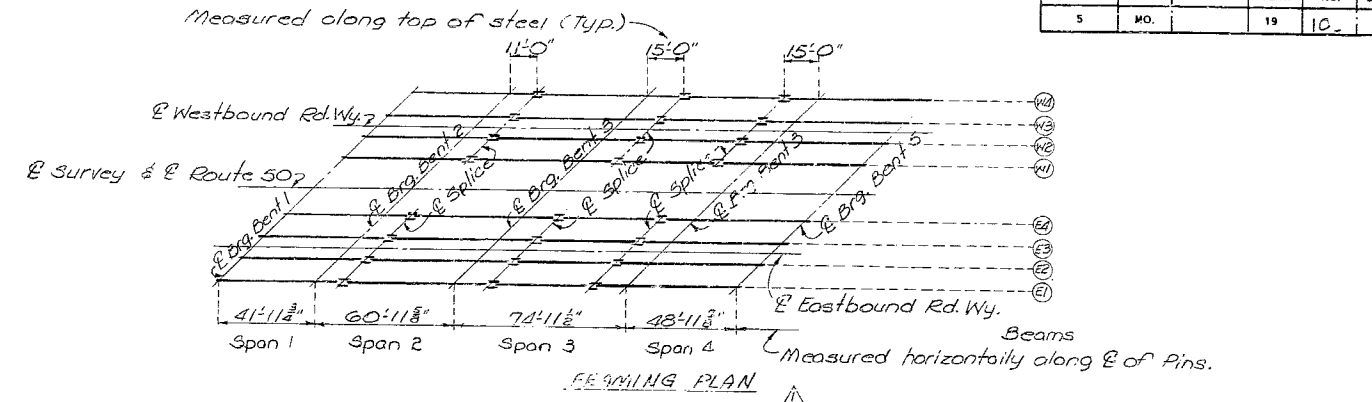
MISSOURI STATE HIGHWAY DEPARTMENT

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

COMPLETE BILL OF REINFORCING STEEL (FOR ONE (1) BRIDGE)

COMPLETE BILL OF REINFORCING STEEL (FOR ONE (1) BRIDGE)

NO.	SIZE	LENGTH	MARK	LOCATION	BENDING SKETCHES & CUTTING DIAGRAMS				NO.	SIZE	LENGTH	MARK	LOCATION
SUPERSTRUCTURE									END BENTS NO. 1 & 5 (Cont'd)				
790	#6	34'-6"	S1	T.&B. of Slab					10	#4	6'-4"	V7	Wingwalls-Sonly
280	#4	24'-9"	S2	Top of Slab					7	#4	7'-5"	V8	do
336	#5	30'-1"	S3	Bottom of Slab					10	#4	5'-0"	V9	Wingwalls-Only
102	#4	16'-0"	S4	Top of Slab					7	#4	7'-0"	V10	do
126	#6	34'-0"	S5	T.&B. of Slab					12	#4	6'-5"	V11	Wingwalls-Sonly
466	#5	3'-6"	C1	Curb					2	#6	9'-10"	T1	Wingwalls-Only
48	#5	9'-0"	C2	Parapet					2	#6	10'-6"	T2	do
16	#5	21'-9"	C3	do					2	#6	10'-10"	T3	do
16	#5	28'-9"	C4	do					2	#6	8'-2"	T4	Wingwalls-Sonly
8	#5	33'-0"	C5	do					2	#6	11'-2"	T5	do
16	#5	21'-0"	C6	do					2	#6	10'-9"	T6	do
466	#5	5'-3"	C7	Curb & Parapet					2	#6	8'-0"	T7	Wingwalls-Only
8	#5	31'-3"	C8	Curb					2	#6	10'-0"	T8	Wingwalls-Sonly
8	#5	28'-0"	C9	do					16	#2	19'-9"	W1	Anch. Bolt Wells
12	#5	25'-9"	C10	do									
8	#5	30'-6"	C11	do									
END BENTS NO. 1 & 5									INTERMEDIATE BENTS NO. 2, 3 & 4				
8	#6	23'-2"	H1	Backwall-145					24	#10	18'-5"	V12	Column-Bent 2
24	#4	24'-4"	H2	do					24	#10	18'-5"	V13	Column-Bent 3
24	#8	25'-5"	H3	Br. Seat-145					24	#10	19'-5"	V14	Column-Bent 4
8	#6	24'-0"	H4	do					15	#11	21'-7"	H14	Beam-2, 3 & 4
4	#8	26'-3"	H5	Br. Seat-Only					28	#11	17'-4"	H15	do
4	#8	24'-0"	H6	do					24	#6	20'-6"	H16	do
8	#6	12'-8"	H7	Wingwalls-145					58	#7	7'-6"	H17	do
16	#4	9'-5"	H8	do					29	#10	28'-0"	H18	do
16	#4	6'-1"	H9	do					15	#11	24'-7"	H19	do
3	#6	19'-4"	H10	Wingwalls-Only					24	#7	8'-0"	H20	do
3	#6	19'-0"	H11	do					62	#5	15'-1"	U11	Beam-2W.B. & 3E.B.
3	#6	19'-3"	H12	Wingwalls-Sonly					95	#5	14'-7"	U12	Beam-2, 3 & 4
3	#6	19'-1"	H13	do					29	#5	15'-3"	U13	Beam-2E.B.
									33	#5	14'-11"	U14	Beam-3W.B.
									33	#5	14'-9"	U15	Beam-4E.B.
									33	#5	14'-8"	U16	Beam-4W.B.
									10	#4	4'-6"	U17	Beam-2, 3 & 4
									6	#4	4'-0"	U18	do
									6	#4	3'-9"	U19	do
									48	#10	14'-4"	D1	Pedestal-2W.B. & 3E.B.
									24	#10	11'-4"	D2	Pedestal-2E.B.
									48	#10	17'-4"	D3	Pedestal-3W.B. & 4E.B.
									24	#10	15'-4"	D4	Pedestal-4E.B.
									348	#3	7'-10"	PI	Red. Col.-2, 3 & 4
									24	#2	19'-9"	W1	Anch. Bolt Wells



BEAM LAYOUT ELEVATIONS							
Elevs.	E1	E2	E3	E4	W1	W2	W3
A	1003.63	1003.76	1003.89	1004.01	1004.74	1004.85	1004.95
B	1004.87	1004.98	1005.08	1005.19	1005.87	1005.95	1006.04
C	1005.19	1005.30	1005.39	1005.50	1006.16	1006.24	1006.32
D	1006.51	1006.59	1006.67	1006.74	1007.35	1007.41	1007.46
E	1006.90	1006.97	1007.05	1007.10	1007.70	1007.75	1007.79
F	1007.94	1008.00	1008.05	1008.10	1008.64	1008.66	1008.69
G	1008.25	1008.30	1008.34	1008.38	1008.90	1008.92	1008.94
H	1009.25	1009.27	1009.29	1009.31	1009.76	1009.76	1009.76
U	1000.51	1000.64	1000.77	1000.89	1001.62	1001.73	1001.83
K	1001.75	1001.86	1001.96	1002.07	1002.75	1002.83	1002.92
L	1003.33	1003.41	1003.49	1003.56	1004.17	1004.23	1004.28
M	1005.08	1005.13	1005.17	1005.21	1005.73	1005.75	1005.77
N	1006.13	1006.15	1006.17	1006.19	1006.64	1006.64	1006.64

BEAM LAYOUT DIMENSIONS							
Dim.	E1	E2	E3	E4	W1	W2	W3
P	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
Q	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
R	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
T	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
U	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
V	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"
W	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"
X	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"
Y	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"
Z	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"	3'-1 1/2"

Note: All Elev's. & Dim's. shown are to top of WF Beams except as noted.

BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7) (RTE. 50) STA. 630+93.13 (W.B.L.)

JACKSON

COUNTY

COMPLETE BILL OF REINFORCING STEEL

A-1608

381

No. 20.3 Revised June 1961 Dec. 1964

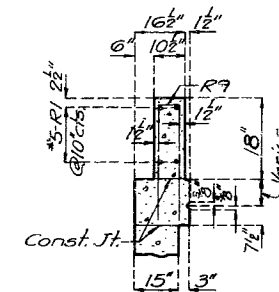
ROWLAND ENGINEERING CO., CLAYTON, MO.
 DETAILED JUNE 1966 BY J.A. WISE, JR.
 CHECKED JUNE 1966 BY G. MEYER

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

Revised July 7, 1967

Sheet No. 3 of 11

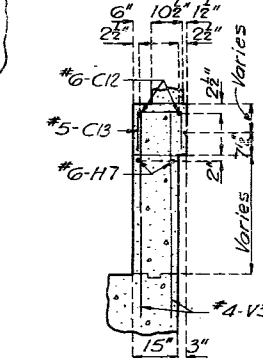
FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	109	



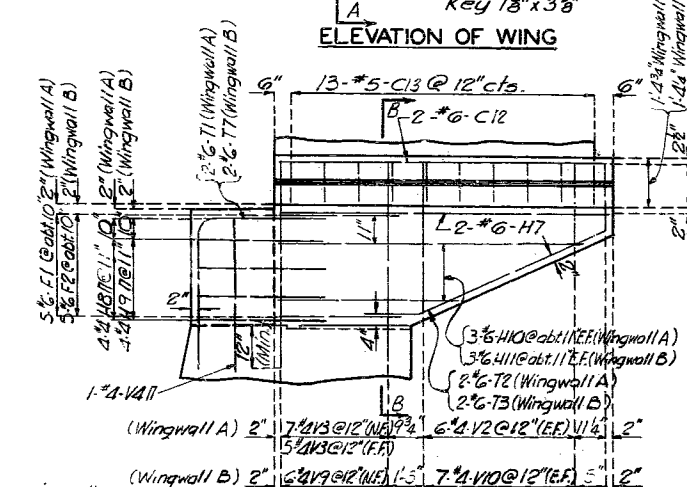
Hand-drawn technical drawing of a mechanical part, likely a propeller or wing section. The drawing includes the following dimensions and labels:

- Top Left Dimensions:**
 - 3'-0" Wing Wall A
 - 3'-6 3/4" Wing Wall B
 - 3'-9 1/8" Wing Wall A
 - 3'-9 1/4" Wing Wall B
- Internal Dimensions:**
 - 2" (horizontal distance between vertical lines)
 - 2'-5 1/2" (vertical distance)
 - Each Face
 - 10' 2 1/2" (vertical distance)
 - 2 1/2" (horizontal distance at the top right)
- Labels and Notes:**
 - A
 - 1'-5 3/8" BLY
 - R7 (radius)
 - Const. Joint (two locations)
 - Varies
 - Dim A 18" 11"

— Const. Joint



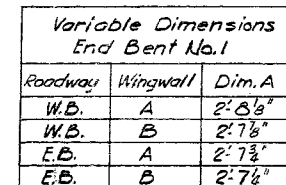
Note: All dimensions shown on wingwall elevations are measured along outside face of wingwall.



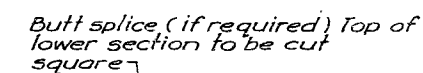
SECTION C-C

DETAILS OF END BENTS NO. 1 E.B. & NO. 1 W.B.

A-1608



Note: Fill at End Bent No. 1 shall not be carried above bottom of beam until adjacent superstructure span is in place.



18' 11"

7' 6"

5' 0"

1' 0"

4' 0"

3' 5pa. @ 16"

2' 5"

2' 3 3/4"

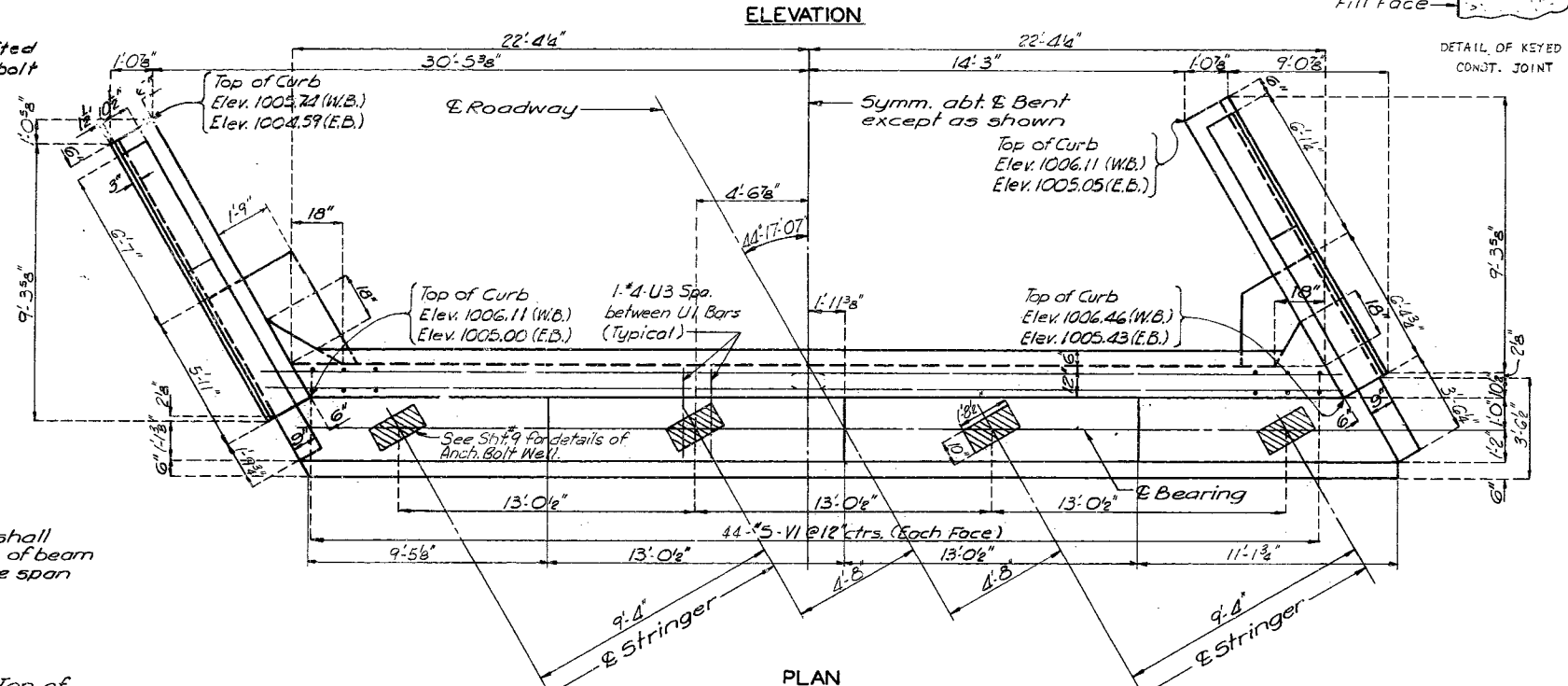
2' 0"

18' 11"

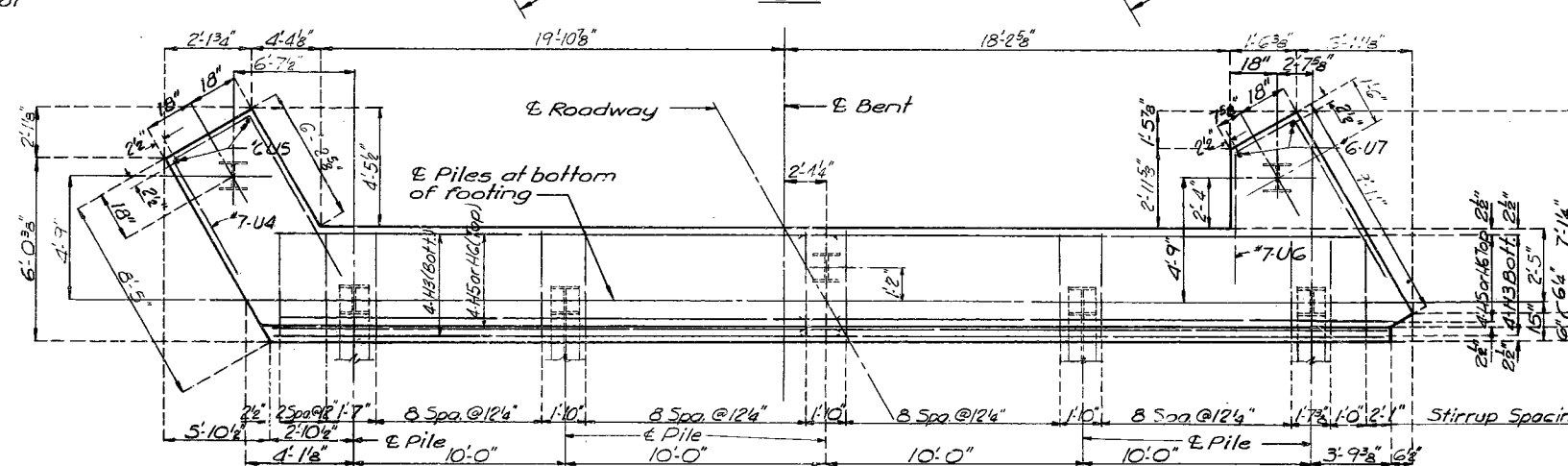
12' 6"

A-A

ROWLAND ENGINEERING CO.; CLAYTON, MO.
 DETAILED JUNE 1966 BY G. MEYER
 CHECKED JUNE 1966 BY J. A. WISE, JR.



PLAN



DETAILS OF END BENTS NO. 1E.B. & NO. 1W.B.

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

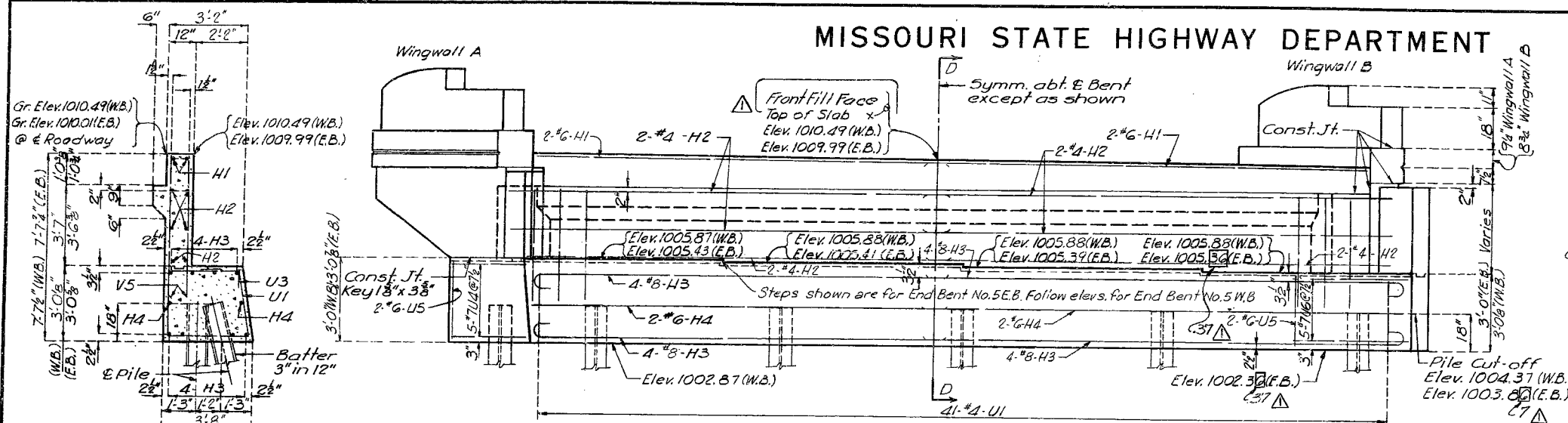
Note: End Bent No.1, Westbound, as shown
End Bent No.1, Eastbound same except as noted.

Δ Revised July 7, 1967 Sheet No. 4 of 11

NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

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



SECTION D-D

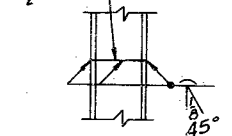
Note: Stirrups may be shifted slightly to clear anchor bolt holes.

Variable Dimensions End Bent No. 5		
Roadway	Wingwall	Dim. A
W.B.	A	3'-3"
W.B.	B	3'-3 1/2"
E.B.	A	3'-3 1/2"
E.B.	B	3'-4 1/2"

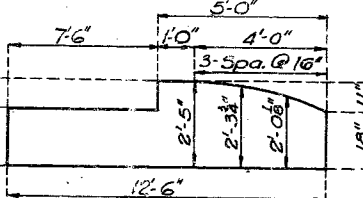
Notes:
W.B. = Westbound
E.B. = Eastbound
N.F. = Near Face
F.F. = Far Face
E.F. = Each Face

Note: Fill at End Bent No. 5 shall not be carried above bottom of beam until adjacent superstructure span is in place.

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

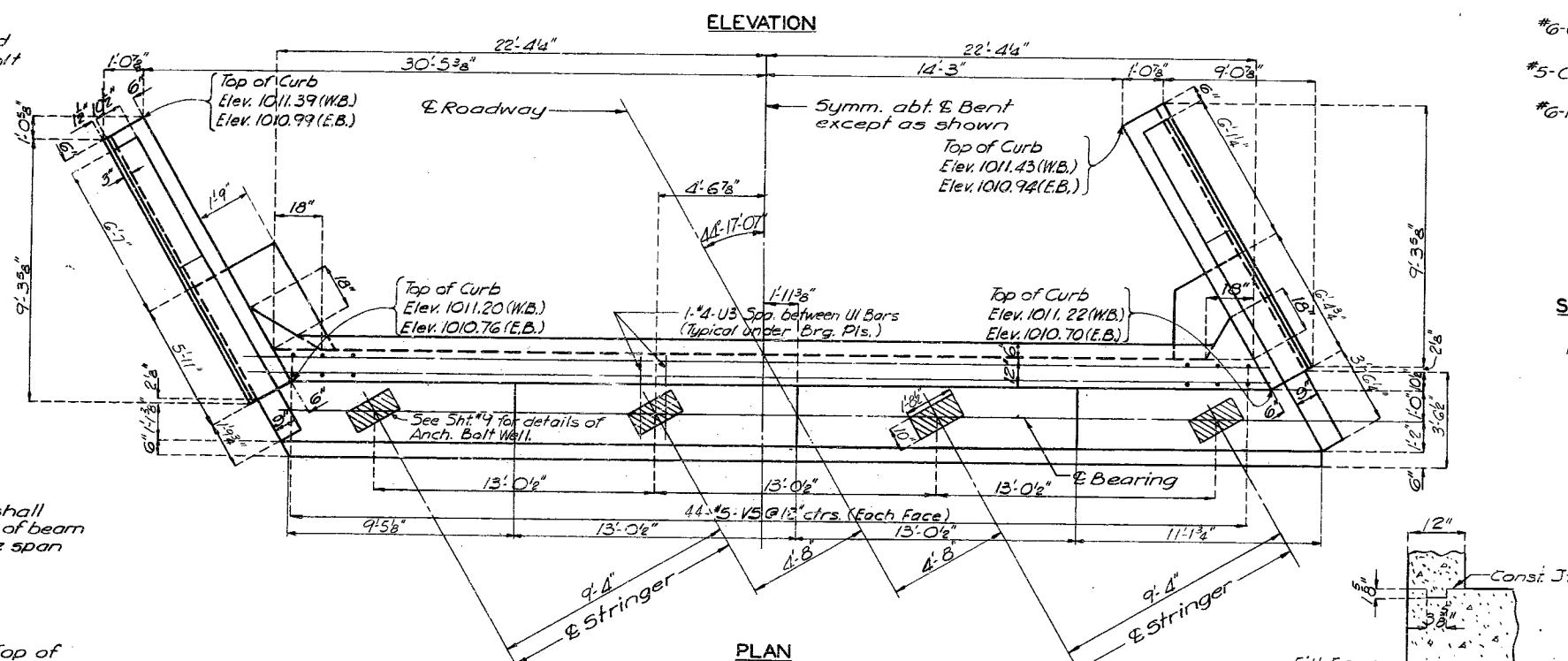


STEEL PILE SPLICE

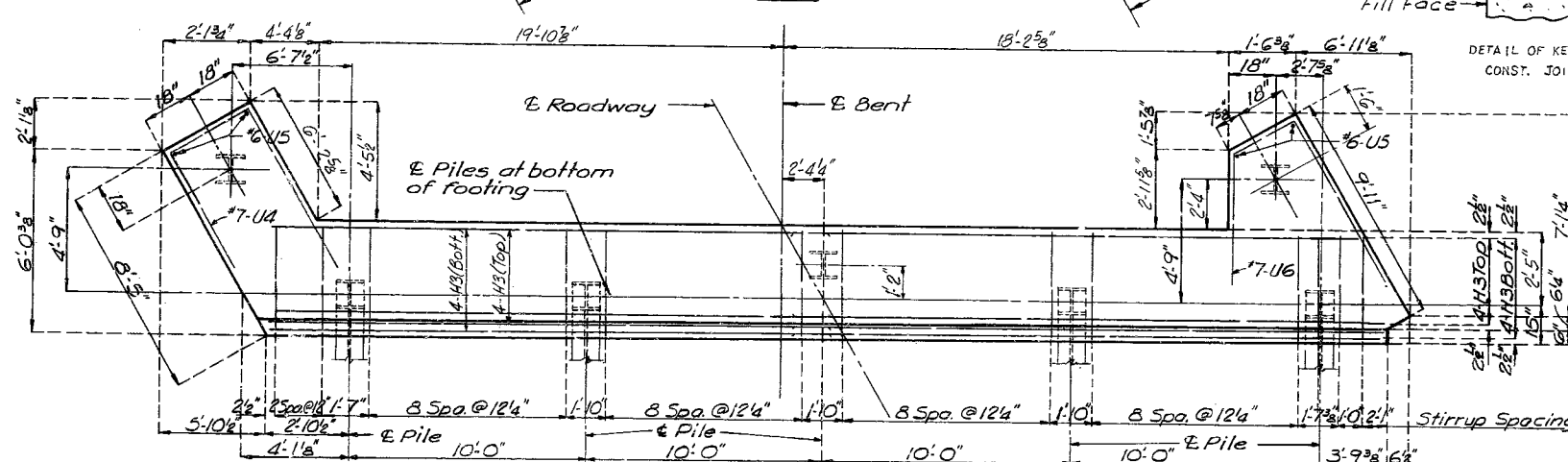


END POST ORDINATES

ROWLAND ENGINEERING CO., CLAYTON, MO.
DETAILED JUNE 1936 BY G. MEYER
CHECKED JUNE 1936 BY J.A. WISE, JR.



ELEVATION

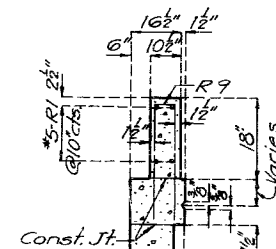


PLAN

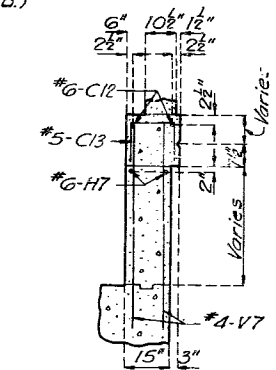
PLAN OF BEAM
DETAILS OF END BENTS NO. 5 E.B. & NO. 5 W.B.

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

Note: End Bent No. 5, Westbound as shown, End Bent No. 5, Eastbound same except as noted

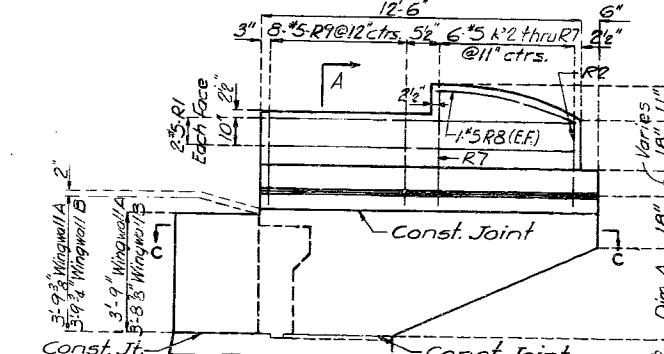


PART SECTION A-A

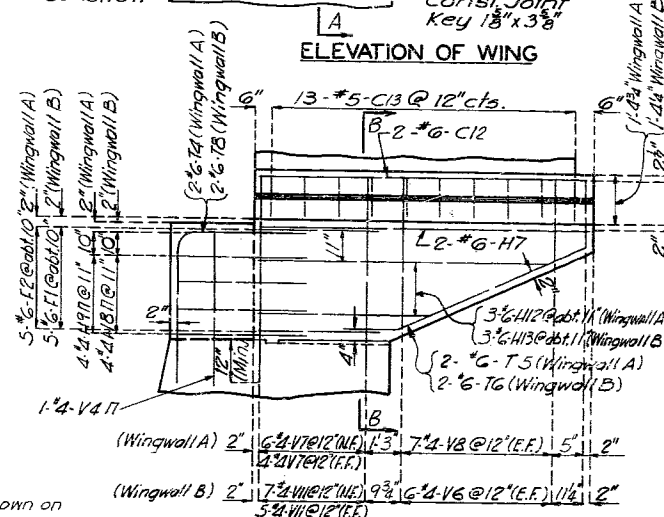


SECTION B-B

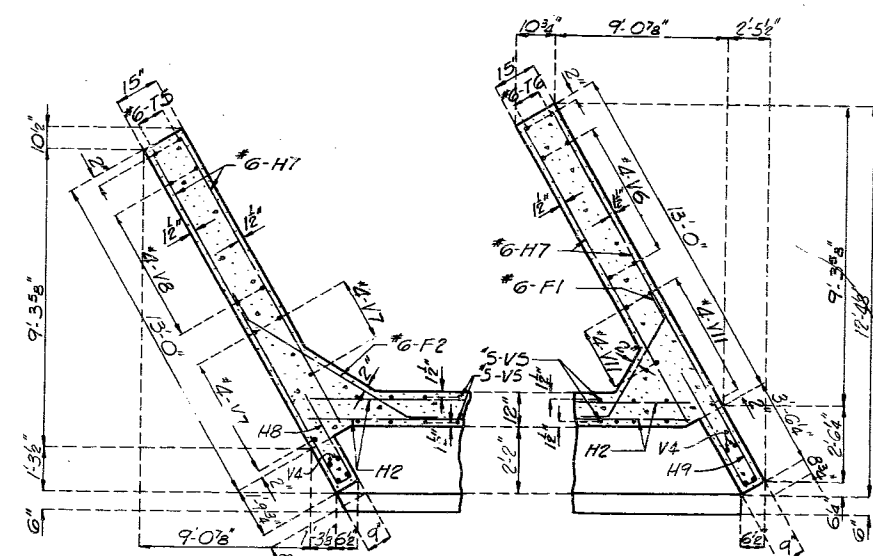
Note: All dimensions shown on wingwall elevations are measured along outside face of wingwall.



ELEVATION OF WING



PART ELEVATION OF WING



SECTION C-C

SECTION C-C

BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7) (RTE. 50) STA. 630+93 (W.B.L.)

JACKSON

COUNTY

DETAILS OF END BENTS NO. 5 E.B. & NO. 5 W.B.

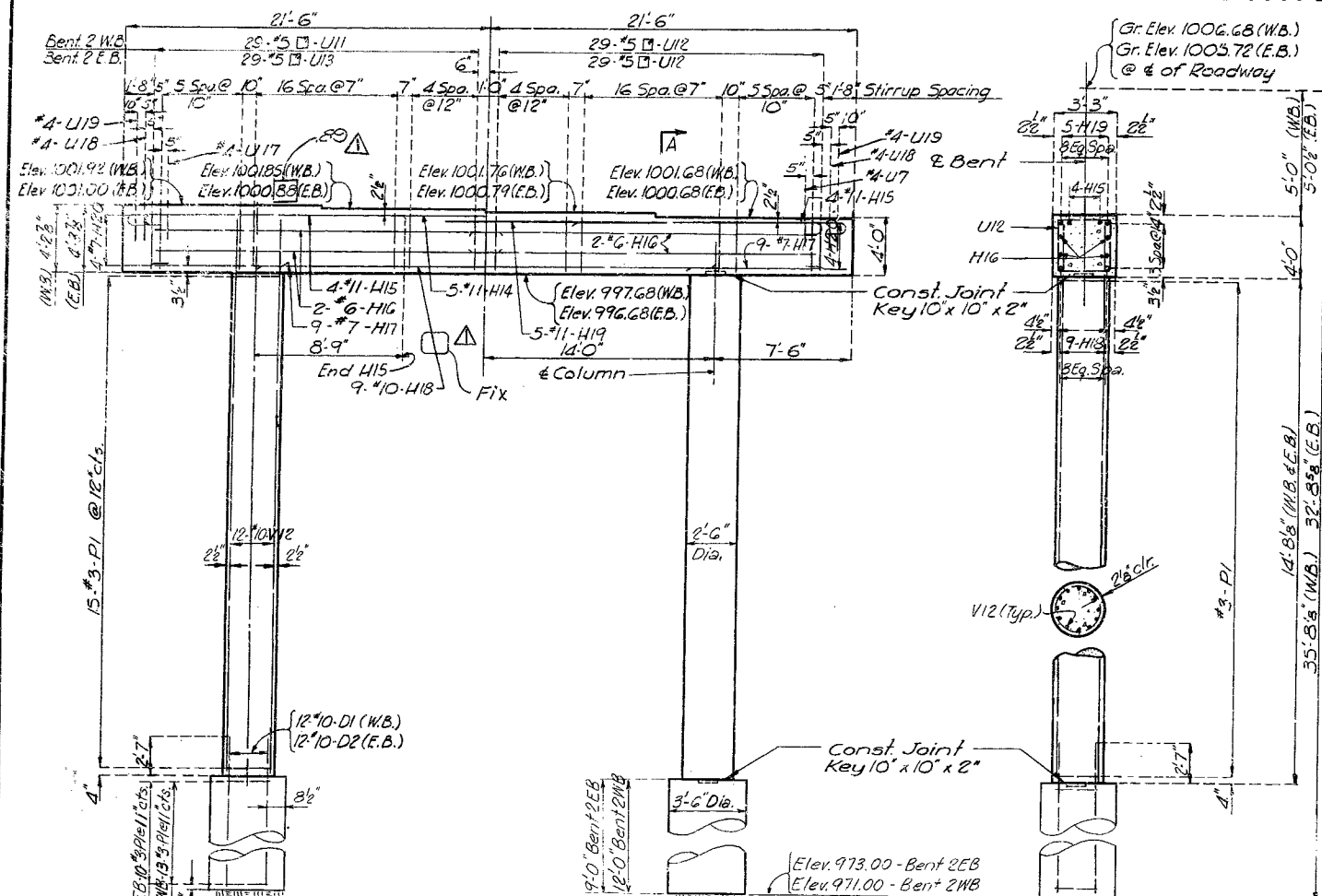
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Revised July 7, 1967 Sheet No. 5 of 11

NO CONSTRUCTION CHANGES

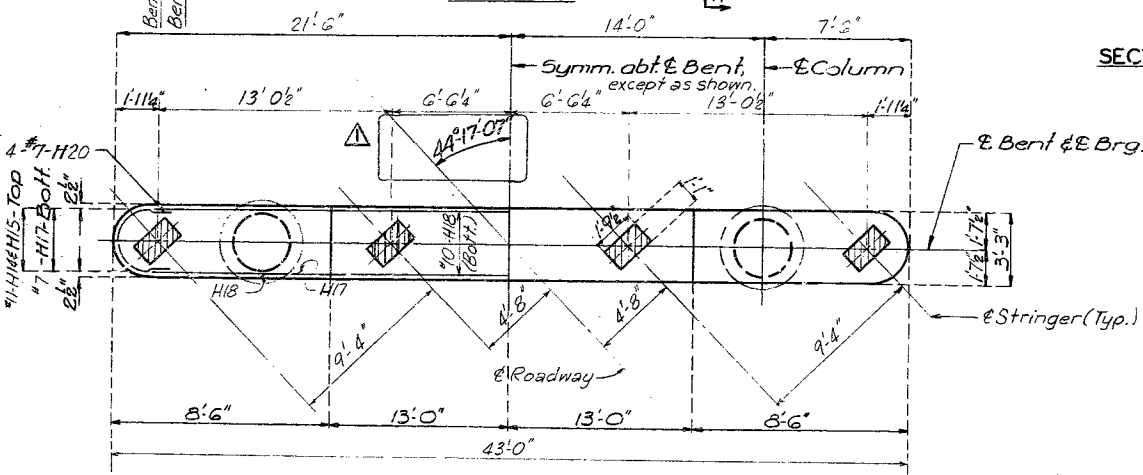
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	1	1



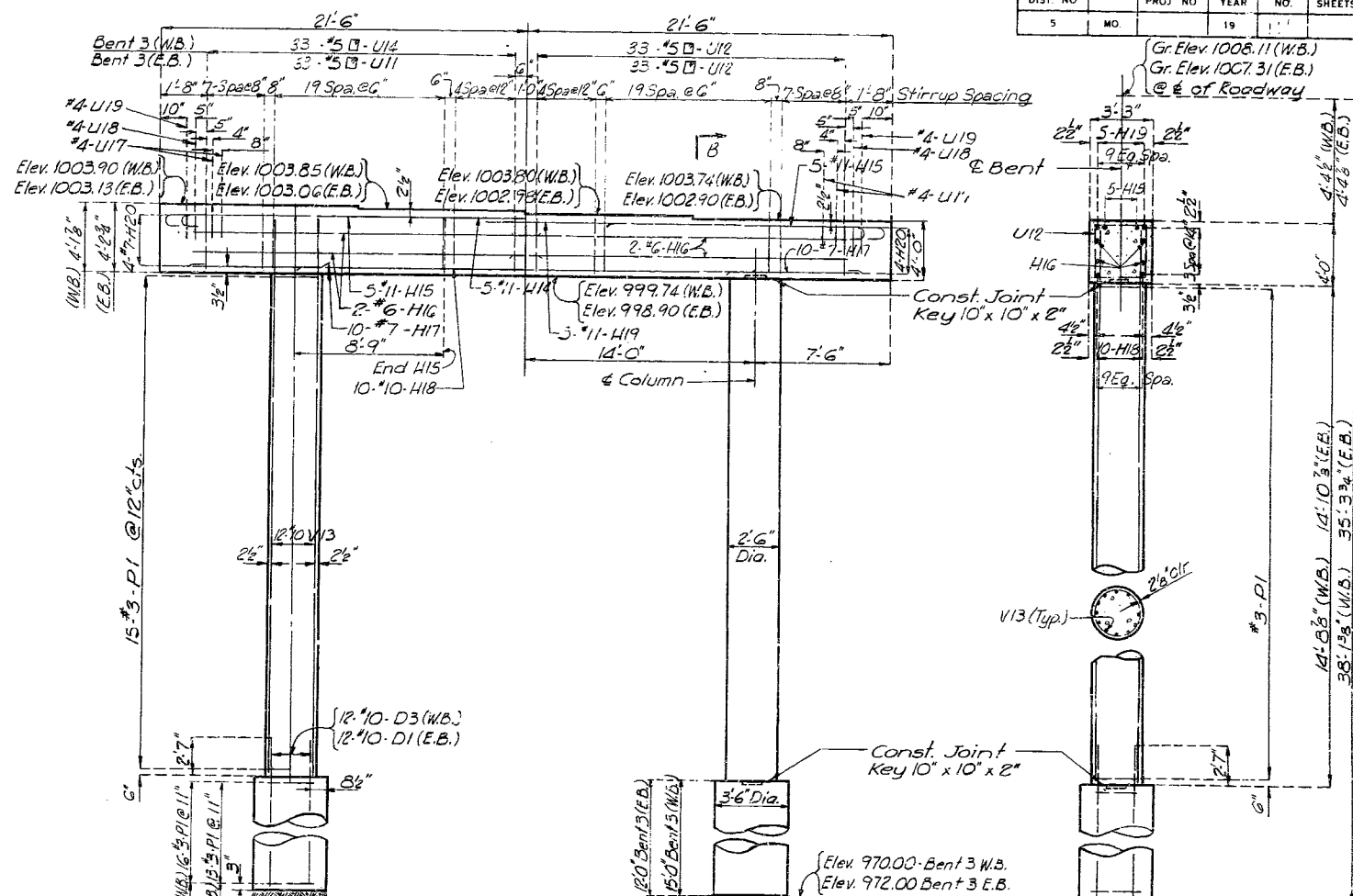
ELEVATION

SECTION A-A



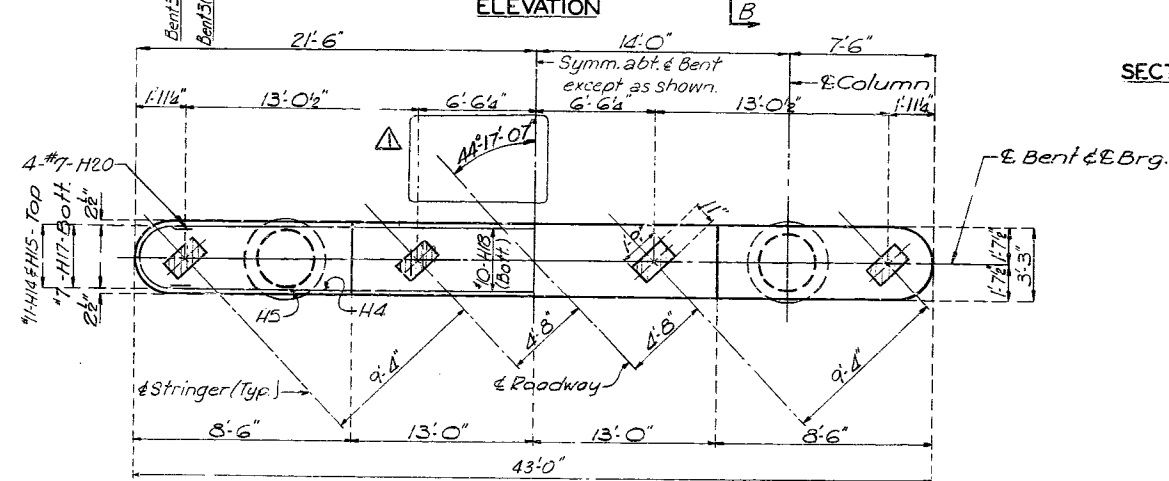
PLAN

DETAILS OF INTERMEDIATE BENTS NO. 2EB & 2WB



ELEVATION

SECTION B-B



PLAN

DETAILS OF INTERMEDIATE BENTS NO. 3EB & 3WB

BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(1) (RTE. 50) STA. 630+93.13 (W.B.L.) 630+42.2 (E.B.L.)

JACKSON

COUNTY

DETAILS OF INTERMEDIATE BENTS NO. 2EB, 2WB, 3EB & 3WB A-1608

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

Revised July 7, 1967

Sheet No. 6 of 11

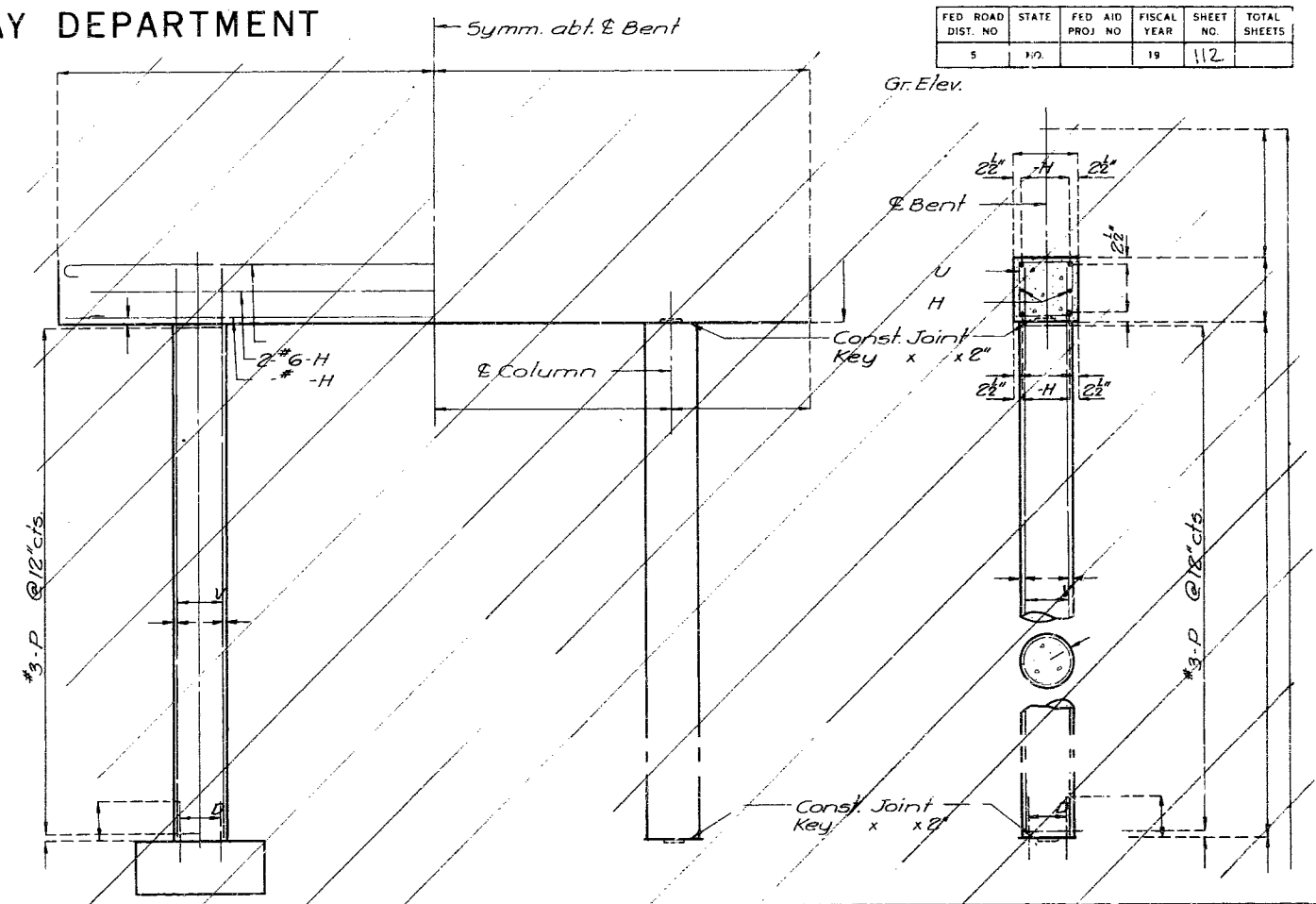
SEE FINAL PLANS BROWN LINES

No. 19.2 Revised Mar. 1964 Jan. 1965

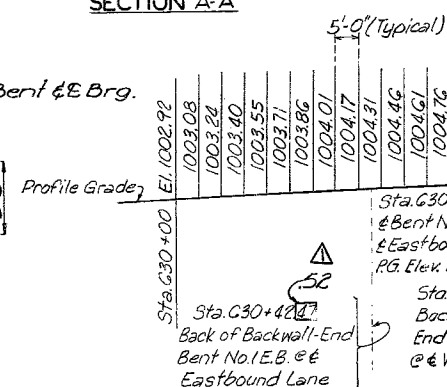
ROWLAND ENGINEERING CO., CLAYTON, MO.
DETAILED JUNE 1966 BY G. MEYER
CHECKED JUNE 1966 BY J. A. WISE, JR.

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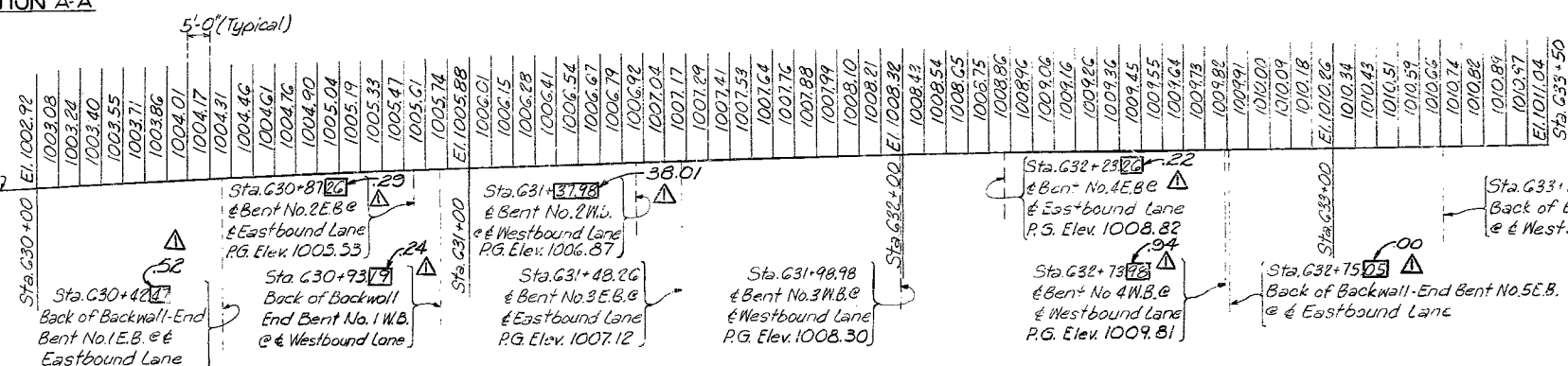
FED ROAD DIST. NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEET
5	MO.		19	112	



SECTION A-A



DETAILS OF INTERMEDIATE BENTS NO. 4 EB & 4WB



PROFILE GRADE ELEVATIONS
(5' Intervals from Sta. G30+00 to G33+50)

COUNTY

DETAILS OF INTERMEDIATE BENTS NO. 4E.B. & 4W.B.

A-1608

100

ROWLAND ENGINEERING CO.; CLAYTON, MO.
DETAILED JUNE 1966 BY G.MEYER
CHECKED JUNE 1966 BY J.A.WISE, JR.

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

⚠ Revised July 7, 1967

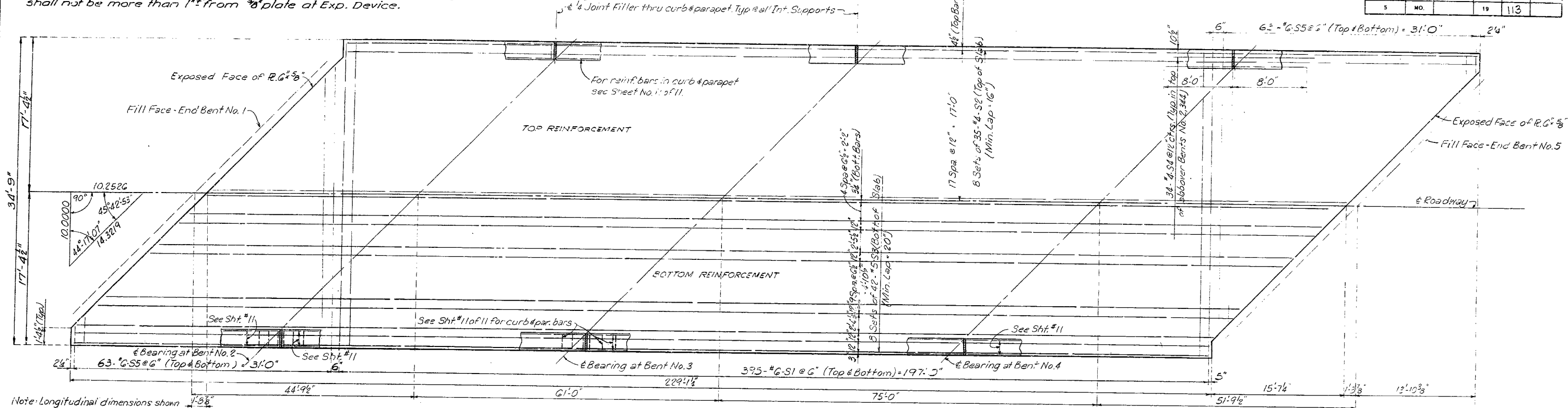
Sheet No. 7 of 11.

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	113	

Note: Longitudinal Reinforcing steel shall be placed so that ends shall not be more than 1" from 3/8" plate at Exp. Device.



PLAN OF SLAB SHOWING REINFORCEMENT
Westbound lane as shown; Eastbound lane same.

SEQUENCE OF POURS

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

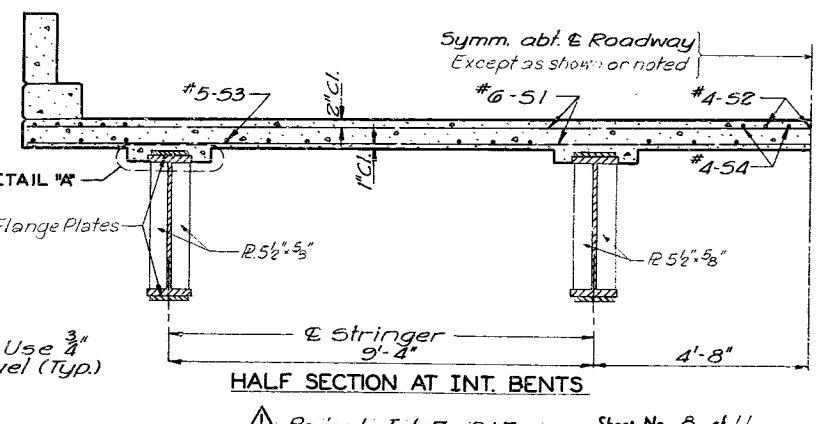
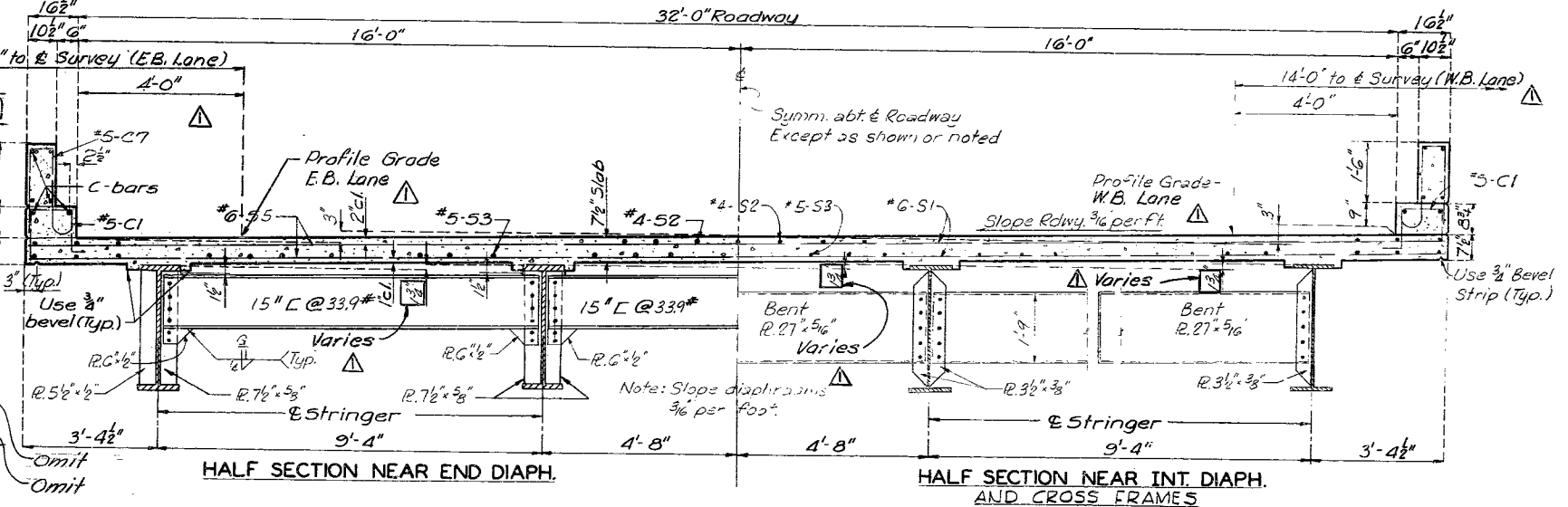
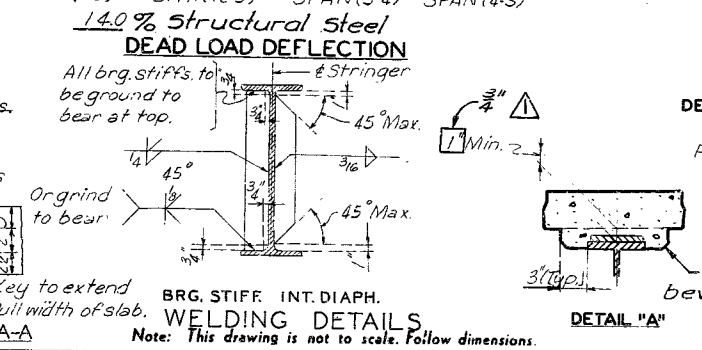
THEORETICAL SLAB HAUNCHING DIAGRAM

Haunch slab to the top of stringers by the dimensions shown. Dead load deflection is included in the haunches. The additional concrete (Flange flypl. splice plate excluded) is included in the Estimated Quantities.

Span	1-2	2-3	3-4	4-5
Span Length	42'-0"	61'-0"	75'-0"	49'-0"
Top Reinforcement	#6-S5@6"	#6-S5@6"	#6-S5@6"	#6-S5@6"
Bottom Reinforcement	#6-S5@6"	#6-S5@6"	#6-S5@6"	#6-S5@6"

SLAB POURING SEQUENCE

The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 30 cubic yards per hour unless he elects to use an approved retarder at his own expense to retard the set of the concrete to 25 hours in which case he may reduce his pouring and finishing rate to not less than 25 cubic yards per hour. The contractor shall observe the basic pouring sequence unless he can demonstrate to the engineer that he can pour and satisfactorily finish one of the longer alt. pours. Finishing machine loads will not be permitted on concrete less than 48 hours old.



Note: For details and reinforcement of curb and parapet not shown see sheet No. 11 of 11.

BRIDGE OVER THIRD STREET
STATE ROAD: ROUTE 50
IN LEE'S SUMMIT
PROJECT NO. U-UG-50-1(7) (RTE. 50) STA. G30+93.19 (W.B.L.) G30+42.41 (E.B.L.)
JACKSON COUNTY
CONCRETE SLAB DETAILS
A-1608

ROWLAND ENGINEERING CO.; CLAYTON, MO.
 DETAILED JUNE 1966 BY J.A. WISE, JR.
 CHECKED JUNE 1966 BY G. MEYER

Revised July 7, 1967 Sheet No. 8 of 11.

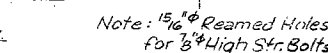
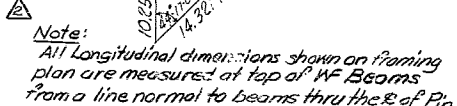
NO CONSTRUCTION CHANGES

386

No. 41.32.3A Revised Dec. 1964 Nov. 1965

100

Note:
For Top of Steel Elevations and Beam Layout see Sheet No. 3.

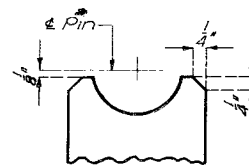


24 Δ_2
(W.B.L.)
(E.B.L.)
52 Δ_2

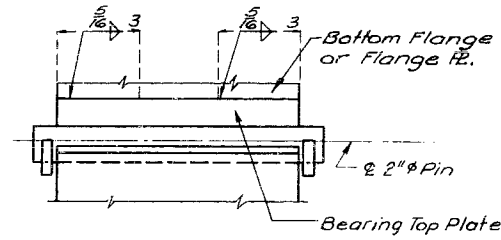
A-1608

MISSOURI STATE HIGHWAY DEPARTMENT

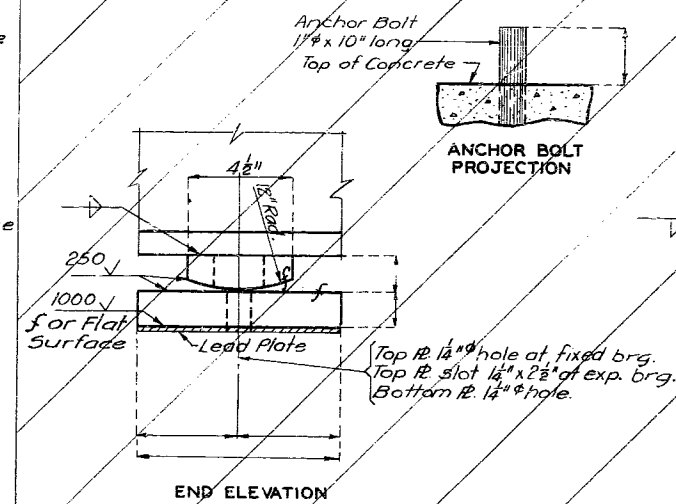
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	15	



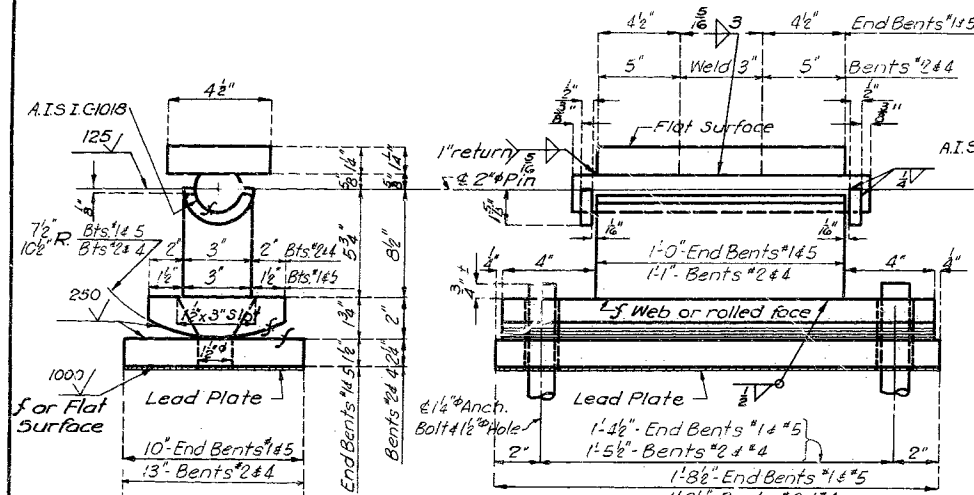
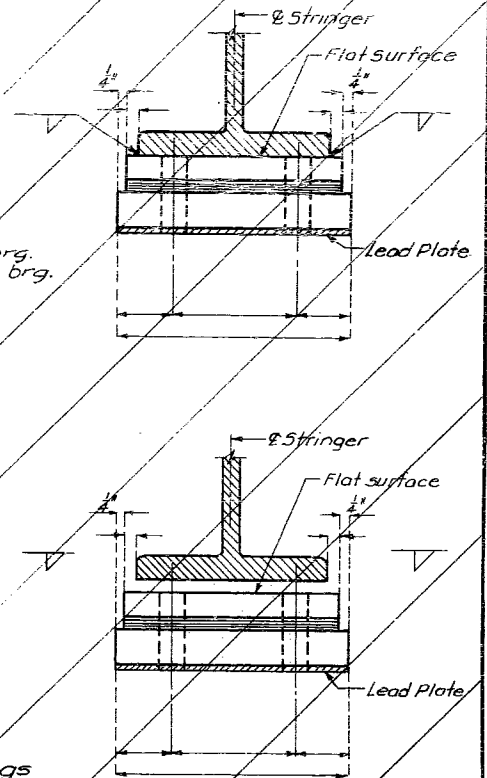
END VIEW OF WEB EXPANSION BEARING



WELDING DETAILS



END ELEVATION



Required: 8 Sets - End Bents No. 1 & 5 E.B.
8 Sets - End Bents No. 1 & 5 W.B.
8 Sets - Bents No. 2 & 4 E.B.
8 Sets - Bents No. 2 & 4 W.B.

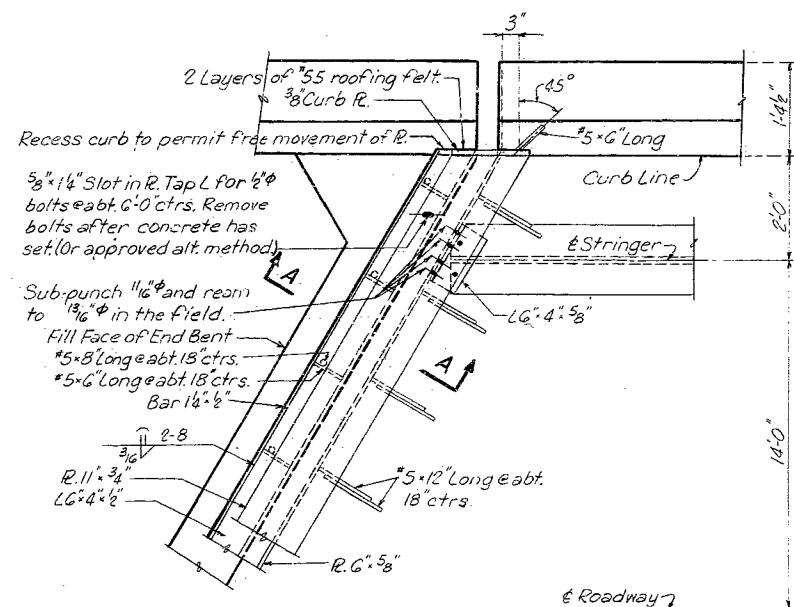
EXPANSION

TYPE "D" BEARINGS

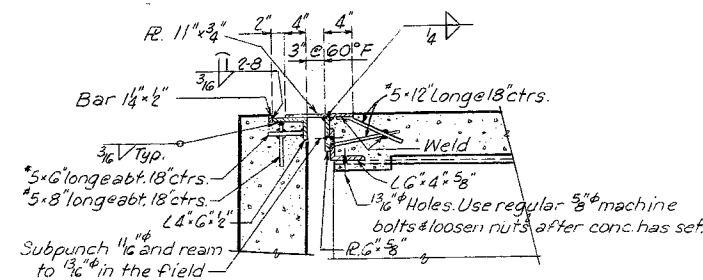
(Estimated Weight = 10,603 lbs.) - For both E.B. & W.B. Bridges

Required: 4 Sets - Bent 3 E.B.
4 Sets - Bent 3 W.B.

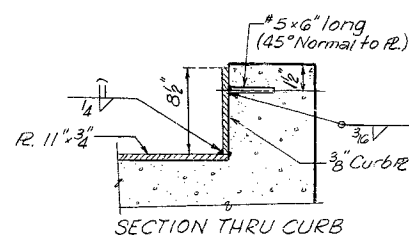
FIXED



PART PLAN AT END BENTS NO. 1 & 5



SECTION A-A



SECTION THRU CURB

DETAILS OF EXPANSION DEVICE

Note: Expansion Device shall be fabricated in one section and shall be bent to conform to roadway surface. No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown. Use 2 layers of 55# Roofing Felt between the sliding contact surface of curb plate and concrete backwall.

NOTES: TYPE "C" BEARINGS

Anchor Bolts for Type "C" Bearings shall be 1" ϕ swaged bolts, 10' long with no heads or nuts. Top of Anchor Bolts shall be set approximately 1/4" below top of bearing.

NOTES: TYPE "D" BEARINGS

Anchor Bolts for Type "D" Bearings shall be 1 1/4" ϕ swaged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings. Rockers and pedestals shall be machined after welding.

GENERAL NOTES:

Lead Plates under bearings shall be approximately 3/8" 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.

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

BRIDGE OVER THIRD STREET

STATE ROAD : ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(1) (RTE. 50) STA. 630+93.1 (W.B.L.) 630+42.1 (E.B.L.)

JACKSON

COUNTY

DETAILS OF BEARINGS AND EXPANSION DEVICE A-1608

ROWLAND ENGINEERING CO., CLAYTON, MO.
DETAILED JUNE 1966 BY J.A. WISE, JR.
CHECKED JUNE 1966 BY G. MEYER

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

Revised July 7, 1967

Sheet No. 10 of 11.

NO CONSTRUCTION CHANGES

388

No. 4.1 Revised Dec. 1961 Feb. 1965

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	116	

*All handrail posts shall be set normal to grade.
Aluminum tube handrail shall be bent to
conform to vertical and horizontal alignment
of parapet.*

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

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

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

All fillets $\frac{1}{4}$ " except as noted.

All drafts, 3° except as noted.

Pipe rail to be fabricated in two or three panel lengths unless otherwise approved.

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

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

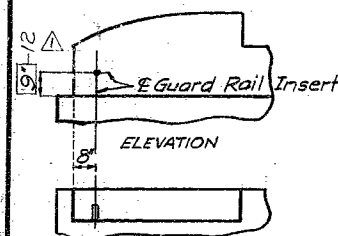
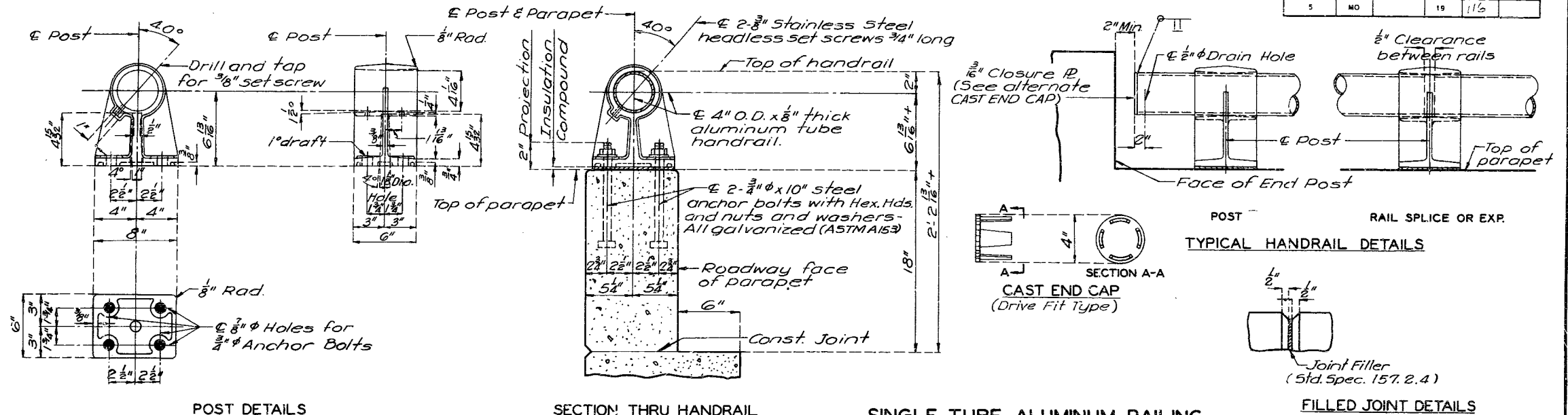
All exposed edges of end posts shall have $\frac{1}{2}$ " bevel. All exposed edges of curbs and parapets shall have $\frac{1}{2}$ " radius or $\frac{1}{8}$ " bevel.

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

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

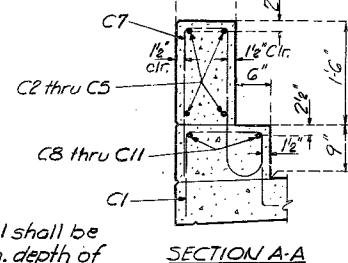
Concrete end posts to be vertical.

Stirrups may be shifted slightly to clear handrail post anchor bolts.

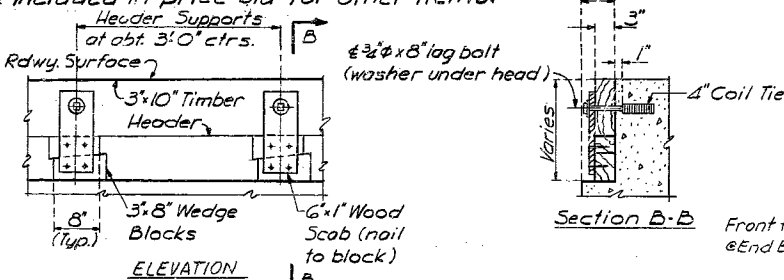


PLAN
TYPICAL-DETAILS
OF END POST

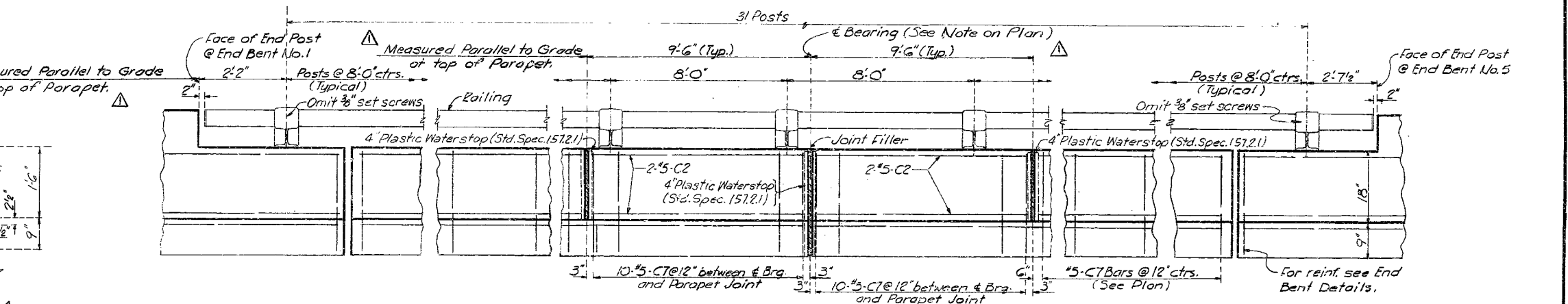
Note: Anchors for attaching guard rail shall be 3/4" threaded (Galv.) inserts having a Min. depth of 4" and filled with a plastic closing plug. Cost for furnishing and installing the insert and plug will be included in price bid for other items.



SECTION A-A

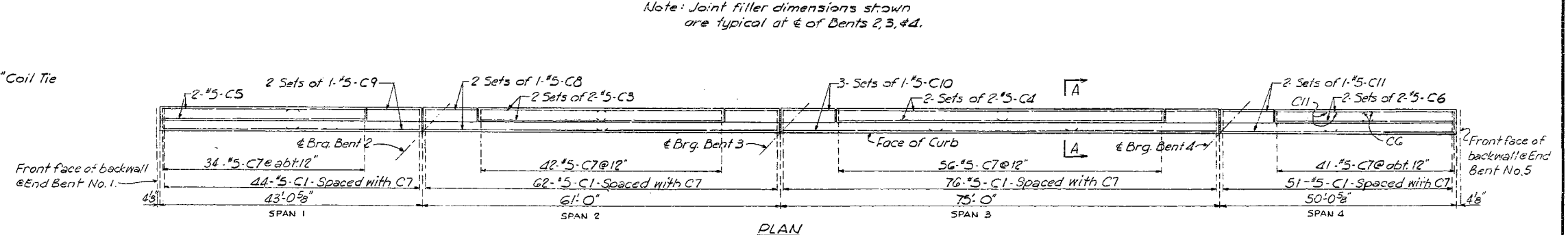


DETAILS OF TIMBER HEADER

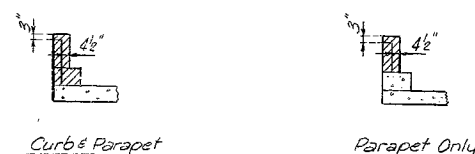


PARAPET & CURB ELEVATION
(EAST & WESTBOUND LANES)

Note: Joint filler dimensions shown are typical at E of Bents 2, 3, & 4.



PLAN



Curb & Parapet

Parapet Only

PLASTIC WATERSTOP DETAILS

Note: Plastic waterstop shall be placed in all parapet and curb filled joints on the low side of each roadway. Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

⚠ Revised July 7 1967 Sheet No. 11 of 11.

BRIDGE OVER THIRD STREET

STATE ROAD : ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7) (RTE.50)

JACKSON

COUNTY

HANDRAIL, CURB & PARAPET DETAILS

A-1608

ROWLAND ENGINEERING CO.; CLAYTON, MO.
DETAILED JUNE 1966 BY G. MEYER
CHECKED JUNE 1966 BY J. A. WISE, JR.

Note: This drawing is not to scale. Follow dimensions

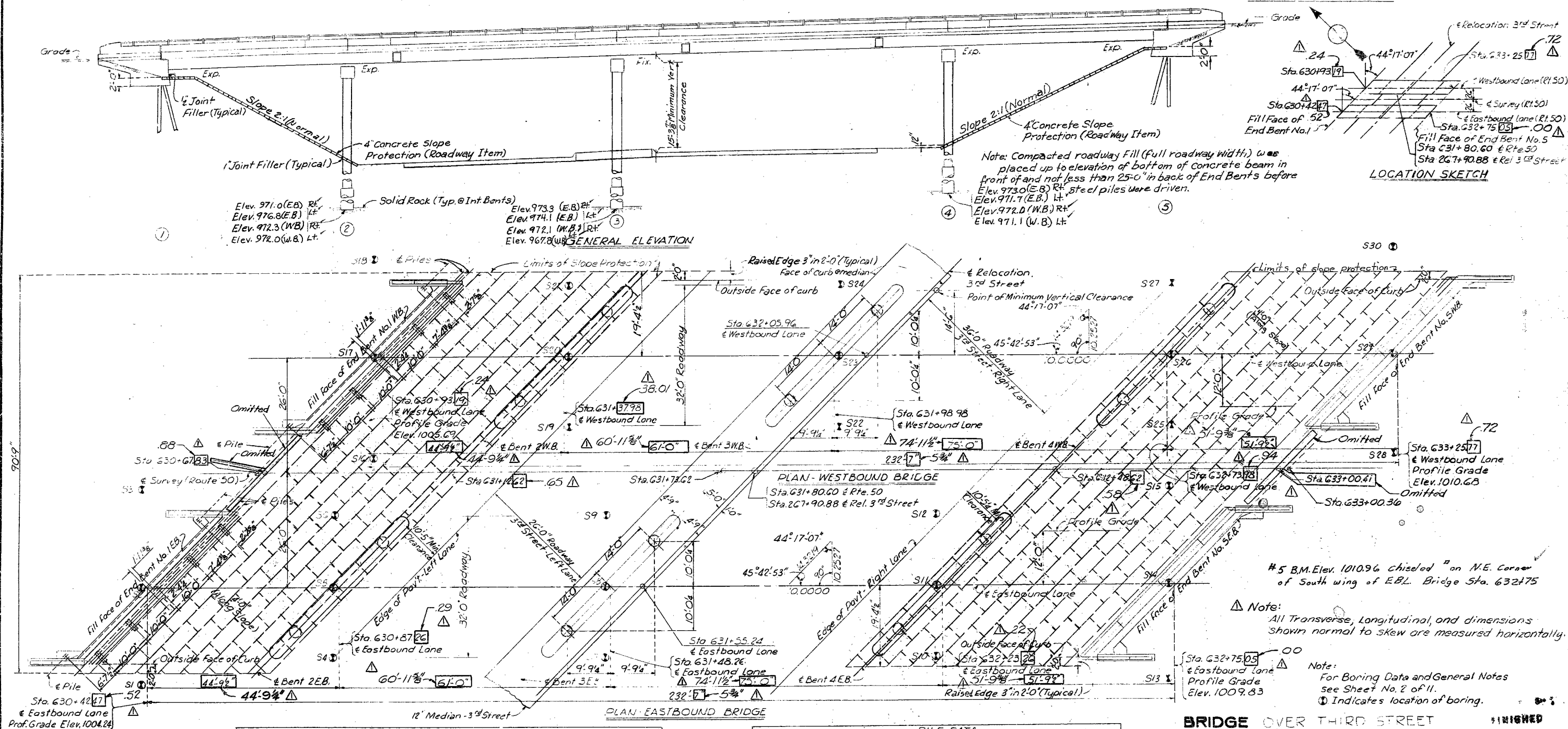
NO CONSTRUCTION CHANGES

000

P.I Sta. 635+95.8
Elev. 1027.36

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

FINAL PLANS



BRIDGE OVER THIRD STREET

步：因循守舊，不思改革。

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7)(RTE 50)ST

JACKSON

COUNTY

SUBMITTED BY: L. J. ... DATE: 12/14/66

APPROVED BY _____ DATE 12/14/66
CHIEF ENGINEER

GENERAL PLAN AND ELEVATION

STD.54.00

A-1608

ESTIMATED QUANTITIES FOR BOTH BRIDGES				
		Substructure	Superstructure	Total
Steel Piles in Place (10')	Lin. Ft.	744	-	744
Class B Concrete	Cu.Yds.	308.0	-	308.0
Class B Concrete	Cu.Yds.	-	466.6	466.6
Reinforcing Steel	Lbs.	67,120	143,520	210,640
Painting	Tons	-	160.6	160.6
Fabricated Structural Carbon Steel	qs.	-	324,980	324,980
Bridge Rail (Single Tube Type)	Lin. Ft.	-	478	478
Concrete Pedestal Piles (42" Dia.)	Lin. Ft.	137	-	137
Concrete Pedestal Piles (42" Dia.)	Lin. Ft.	90	-	90

Note: All concrete in end posts, parapets and curbs was included with superstructure quantities.
No payment for excavation was allowed at End Bents No 1E3, 1W8, 5E8 & 5W8.

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

PILE DATA									
Bent	Number	1E.B.	1W.B.	2	3	4	5E.B.	5W.	
Bearing	Pile type/size	Steel	10BPA2	10BPA2	-	-	10BPA2	10BPA2	
	Number		1	1	-	-	-	1	1
Piles	Approx. length		30'	25'	-	-	35'	30'	
	Design brg - Tons		26	26	-	-	27	27	
	Hammer energy req'd - Ft.lbs.		7,000	7,000	-	-	7,000	7,000	
Pedestal Piles	Foundation material		-	-	Rock	Rock	Rock	-	-
	Design brg - Tons/Sq.ft		-	-	18.G	22.1	21.5	-	-

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

All steel piles were driven to practical refusal.

Sheet No: 1A of 4

△ - Revised July 7, 1967

FINAL PLANS

Submitted by: John W. Rowland
Registered Professional Engineer
State of Missouri - No. E-8096
ROWLAND ENGINEERING CO., CLAYTON, MO.
DATED JUNE 1966 BY S.M.E.Y.
CHECKED JUNE 1966 BY J.A.WISE JR.

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

The diagram is a plan view of a bridge structure. It shows four spans labeled Span 1, Span 2, Span 3, and Span 4. The spans are separated by three bents labeled Bent 1, Bent 2, Bent 3, and Bent 4. The bridge is oriented along a north-south axis, with North indicated by an arrow pointing towards the top right. The bridge deck is shown with a central section and two side sections. The central section is labeled 'Measured along top of steel (Typ.)'. The side sections are labeled 'E Westbound Rd. W. 7' and 'E Eastbound Rd. W. 7'. The bridge is supported by piers, which are labeled 'Pier 1', 'Pier 2', 'Pier 3', and 'Pier 4'. The bridge is also shown with various structural details, including girders, bents, and spans. The diagram includes dimensions for the spans and bents, such as '41'-11 1/8"', '60'-11 1/8"', '74'-11 1/8"', and '18'-11 1/8"'. The diagram is titled 'FRAMING PLAN' and includes a note 'Measured horizontally along E of Pins.'.

Measured along top of steel (Typ.)

11'-0" 15'-0" 15'-0"

E Westbound Rd. W. 7'

E Survey & E Route 50?

Bent 1

E Br. Bent 2

E Br. Bent 3

E Br. Bent 4

E Br. Bent 5

Span 1

Span 2

Span 3

Span 4

41'-11 1/8"

60'-11 1/8"

74'-11 1/8"

18'-11 1/8"

E Eastbound Rd. W. 7'

Seams

Measured horizontally along E of Pins.

FRAMING PLAN

[illegible]

SEAM LAYOUT

Note: @ Brq. stiff. referred to at Bents #1 & 5 are those Brq. stiff. that are 90° in relation to the web of the WF only.

BEAM LAYOUT ELEVATIONS								
Elevs	Beams							
	E1	E2	E3	E4	W1	W2	W3	W4
A	1003.63	1003.76	1003.89	1004.01	1004.74	1004.85	1004.95	1005.00
B	1004.87	1004.98	1005.08	1005.19	1005.87	1005.95	1006.04	1006.11
C	1005.19	1005.30	1005.39	1005.50	1006.16	1006.24	1006.32	1006.38
D	1006.51	1006.59	1006.67	1006.74	1007.35	1007.41	1007.46	1007.51
E	1006.90	1006.97	1007.05	1007.10	1007.70	1007.75	1007.79	1007.84
F	1007.94	1008.00	1008.05	1008.10	1008.64	1008.66	1008.69	1008.72
G	1008.25	1008.30	1008.34	1008.38	1008.90	1008.92	1008.94	1008.96
H	1009.25	1009.27	1009.29	1009.31	1009.76	1009.76	1009.76	1009.75
U	1009.51	1009.64	1009.77	1009.89	1001.62	1001.73	1001.83	1001.93
K	1001.75	1001.86	1001.96	1002.07	1002.75	1002.83	1002.92	1002.99
L	1003.33	1003.41	1003.49	1003.56	1004.17	1004.23	1004.28	1004.33
M	1005.08	1005.13	1005.17	1005.21	1005.73	1005.75	1005.77	1005.78
N	1006.13	1006.15	1006.17	1006.19	1006.64	1006.64	1006.64	1006.65

[illegible]

Note: All Elevs. & Dim's. shown are to top of WF Beams except as noted.

1. 總行設於上海

COUNTY

COMPLETE BILL OF REINFORCING STEEL

A-1608

ROSLAND ENGINEERING CO., CLAYTON MO
DETAILED JUNE 1966 BY J.A. SECURE
CHECKED JUNE 1966 BY G. MEYER

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

⚠ Revised July 7, 1967

Sheet No. 3A of 4

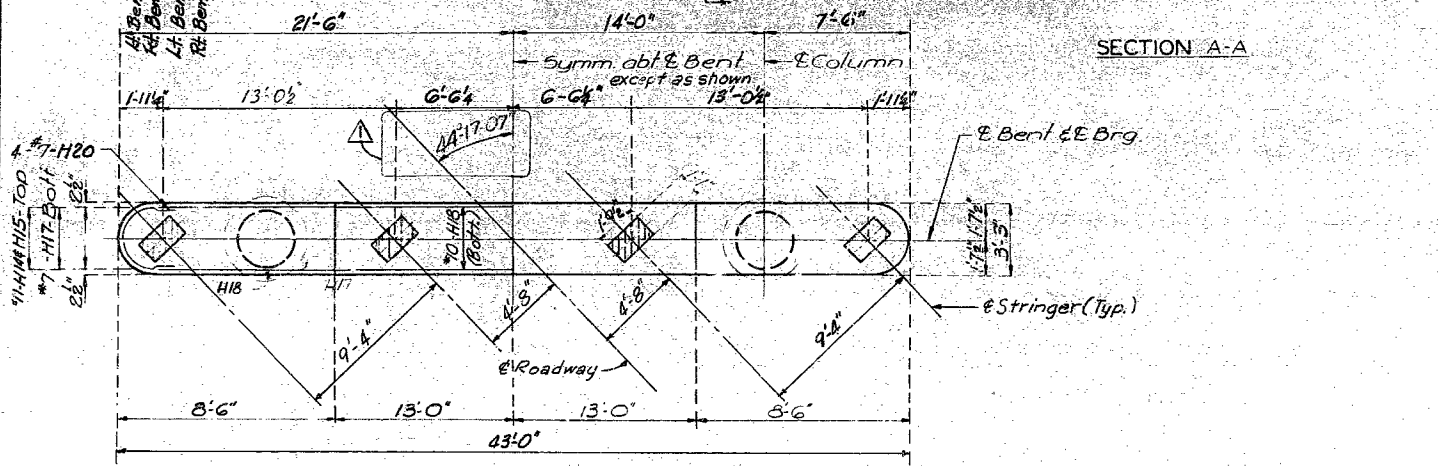
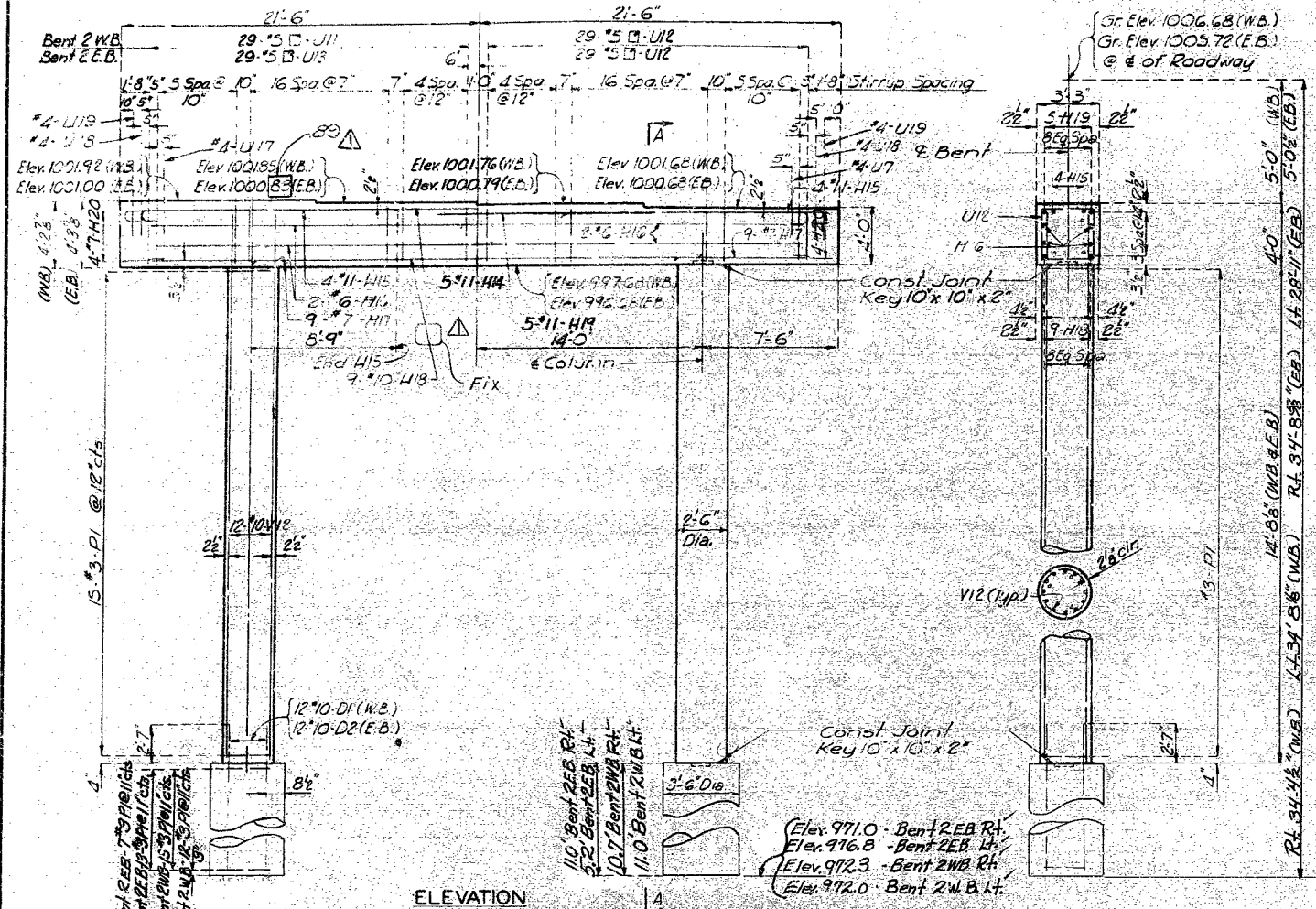
FINAL PLANS

DISNEY

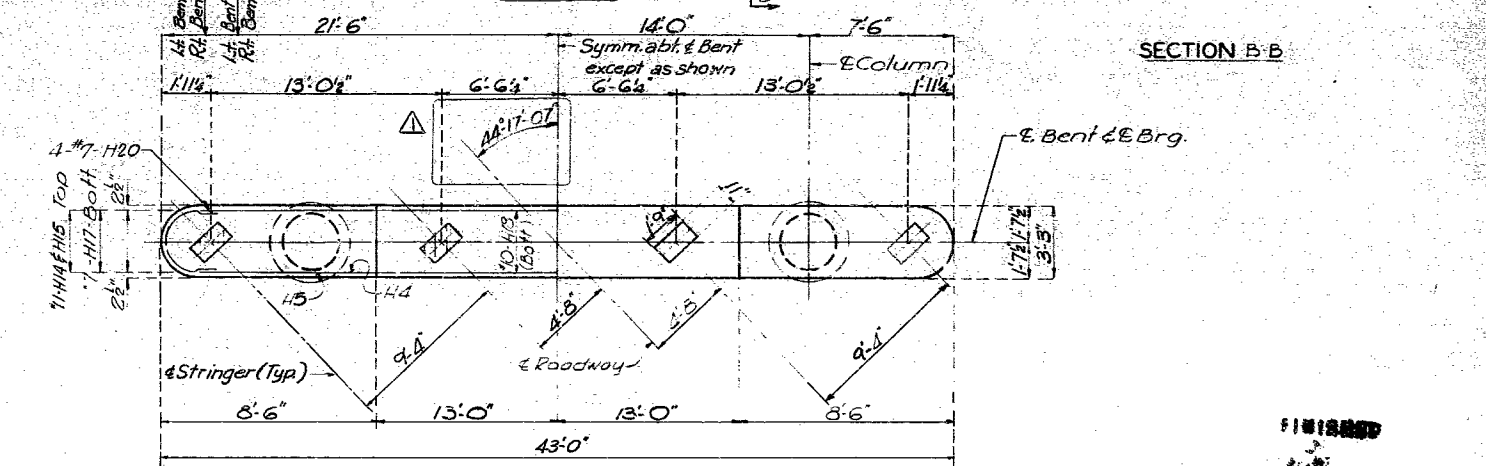
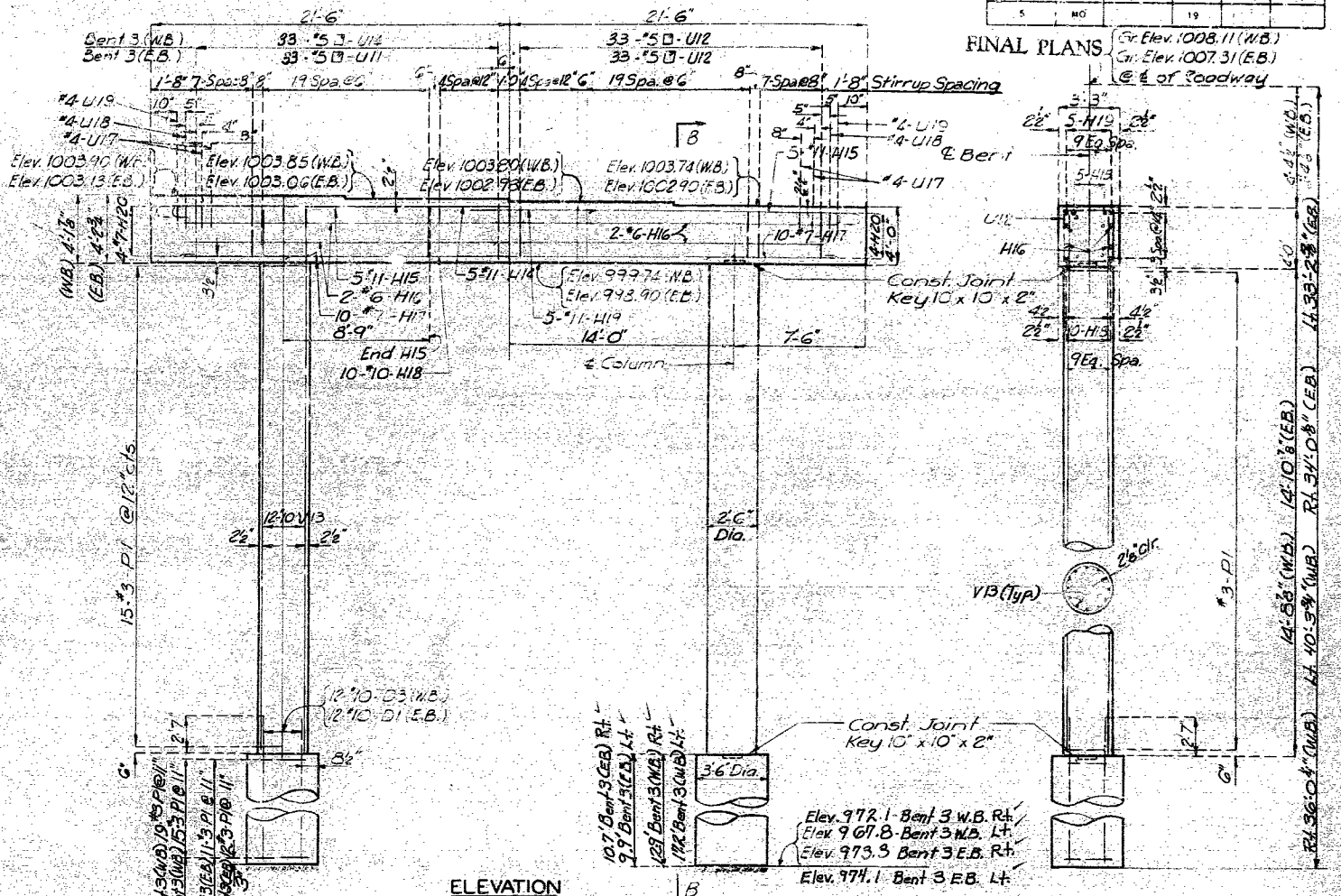
Sheet No. 3A of 4

MISSOURI STATE HIGHWAY DEPARTMENT

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



DETAILS OF INTERMEDIATE BENTS NO. 2EB & 2WB



DETAILS OF INTERMEDIATE BENTS NO. 3EB & 3WB

BRIDGE OVER THIRD STREET

STATE ROAD : ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. 10-UG-50-117 (R.T.S.) STA. 230+33.11 (WB) 230+42.11 (EB)

JACKSON

COUNTY

DETAILS OF INTERMEDIATE BENTS NO. 2EB & 2WB & 3EB & 3WB

ROWLAND ENGINEERING CO., CLAYTON, MO.
DETAILED JUNE 1966 BY G. MEYER
CHECKED JUNE 1966 BY J. A. WISE

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

Revised July 7, 1967

Sheet No. 6A of 4

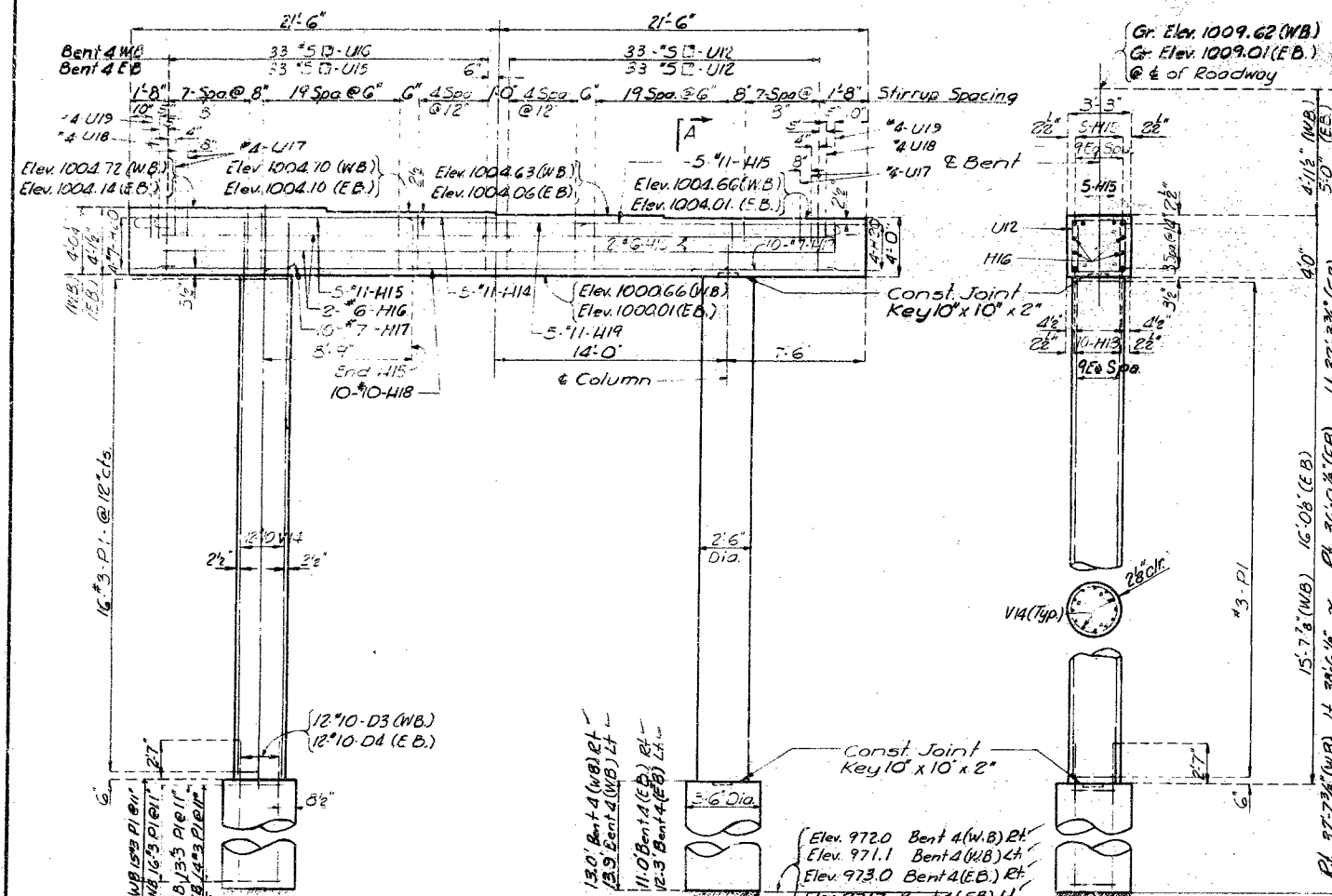
FINAL PLANS

FINISHED

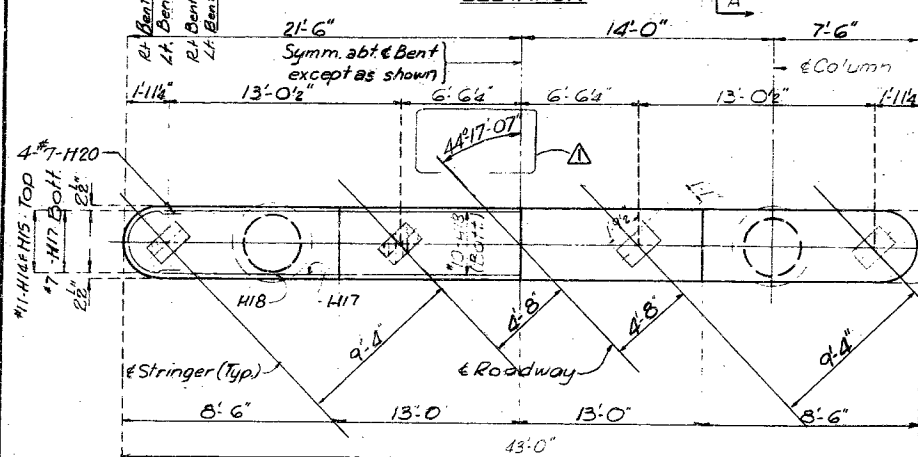
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEET
5	MO		19	112	

FINAL PLANS

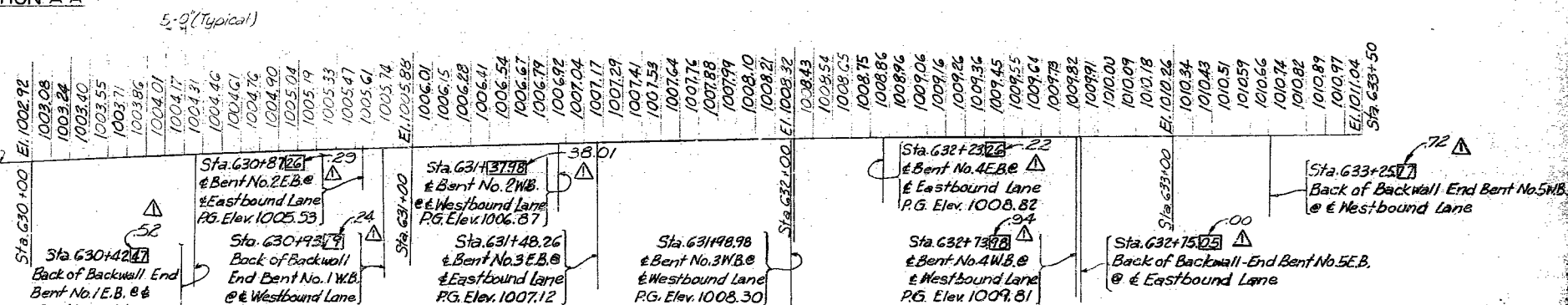


ELEVATION



PLAN

DETAILS OF INTERMEDIATE BENTS NO. 4 EB & 4 WB



PROFILE GRADE ELEVATIONS
(5' Intervals from Sta 630+00 to 633+50)

FINISHED

BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. U-UG-50-1(7) (RTE 50) STA. 630+93.9 (WB L)
340+42.0 (FB L)

JACKSON

COUNTY

DETAILS OF INTERMEDIATE BENTS NO. 4EB-4WB. A-1608

ROWLAND ENGINEERING CO., CLAYTON MO.

DETAILED JUNE 1966 BY G.MEYER

CHECKED JUNE 1966 BY J.A. NISE, JR.

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

⚠ Revised July 7, 1967.

Sheet No. 7A of 4

FINAL PLANS

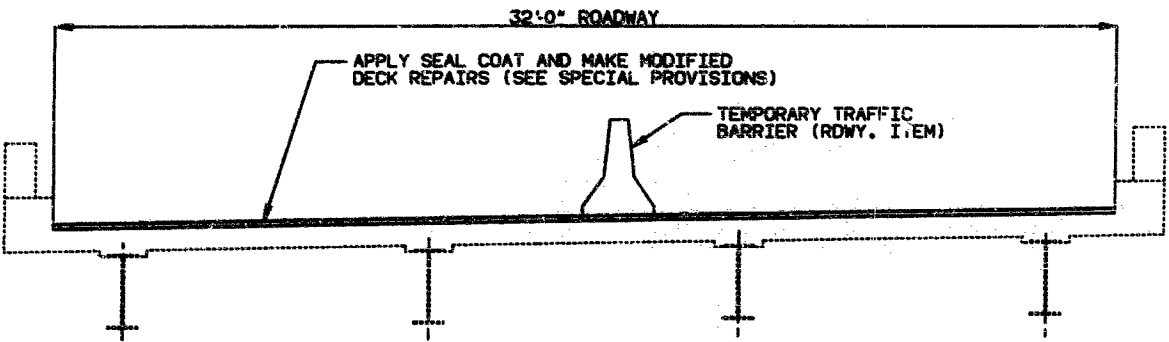
1998

A-1608

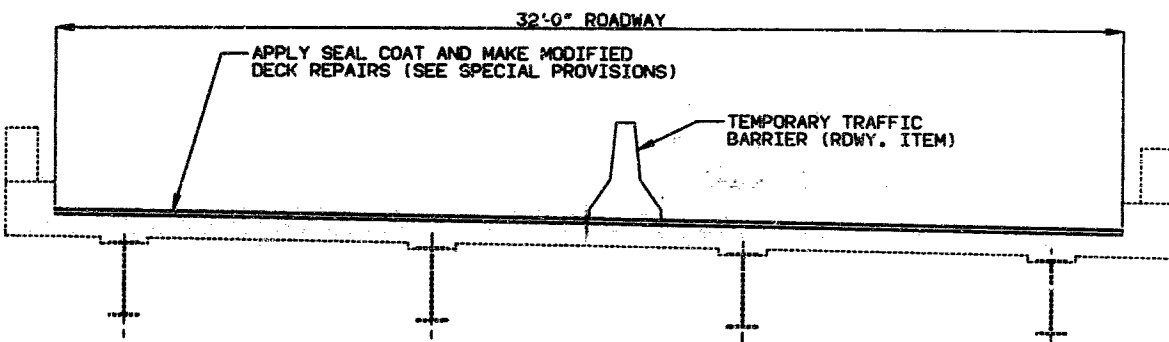
No. 19.2	Revised
Mar. 1964	Jan. 1965

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

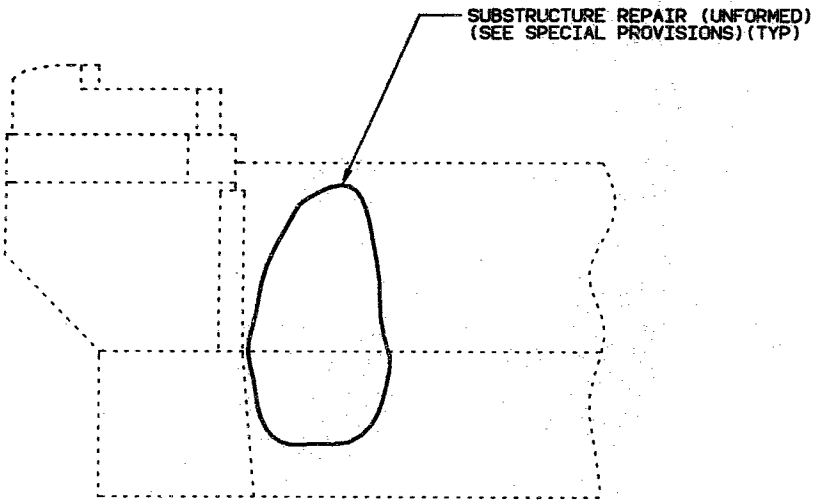
STATE	PROJ. NO.	SHEET NO.
MO.	F.A.F.-50-1(26)	1
SEC./SUR. 6&7 TWP. 47N RGE. 31W		



TYPICAL SECTION THRU SLAB (W.B.L.)



TYPICAL SECTION THRU SLAB (E.B.L.)



END BENT NO. 1 (W.B.L.)

DETAIL SHOWING SUBSTR. REPAIR AREAS

GENERAL NOTES:

OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATES NEW WORK.

ROADWAY SURFACING ADJACENT TO BRIDGE ENDS TO MATCH BRIDGE DECK SURFACE. MAINTAIN ONE-LANE OF TRAFFIC EACH DIRECTION ON STR. DURING CONST. (SEE RDWY. PLANS)

ESTIMATED QUANTITIES		
ITEM		TOTAL
POLYMER MODIFIED ASPH. (SEAL COAT)	GAL.	570
COVER AGGREGATE	TON	24
SUBSTRUCTURE REPAIR (UNFORMED)	SQ. FT.	36
MODIFIED DECK REPAIR	SQ. FT.	300

NOTE: POLYMER MODIFIED ASPHALT SHALL BE APPLIED AT A RATE OF 0.35 GALLON PER SQUARE YARD. (SEE SPECIAL PROVISIONS)
COVER AGGREGATE SHALL BE APPLIED AT A RATE OF 0.015 TONS PER SQUARE YARD. (SEE SPECIAL PROVISIONS)

REPAIRS TO BRIDGE OVER THIRD STREET

STATE ROAD: ROUTE 50

IN LEE'S SUMMIT

PROJECT NO. F.A.F.-50-1(26)

JOB NO. J4U0995

JACKSON

STA. 630+42.52 (E.B.L.)

630+93.24 (W.B.L.)

RTE. 50

COUNTY

STD.

STD.

A-1608R

DESIGNED AUG. 1991
DETAILED AUG. 1991
CHECKED OCT. 1991

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

SHEET NO. 1 OF 1.

DATE 12/30/91

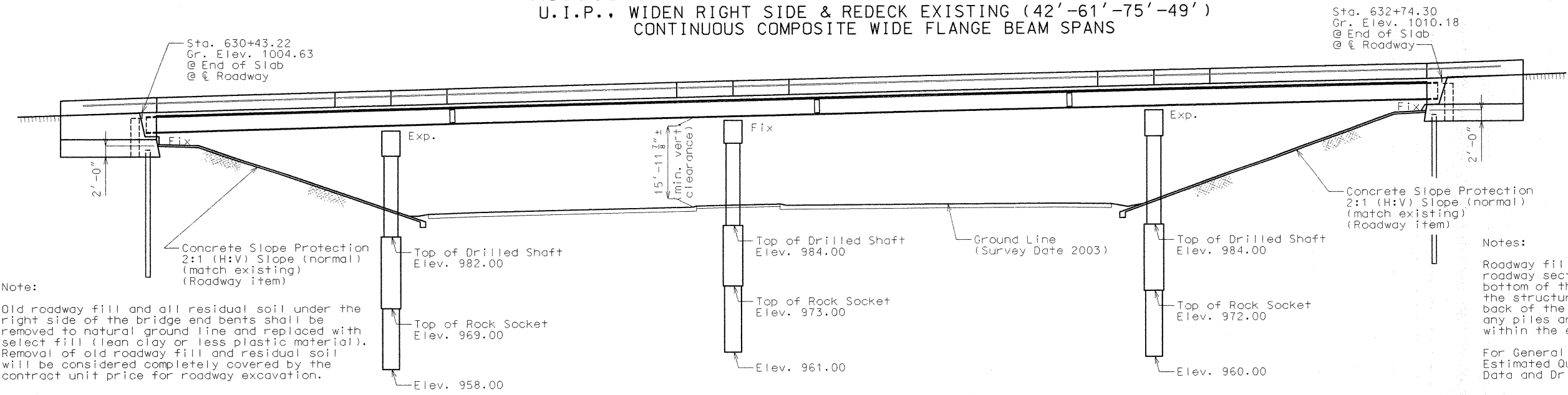
374

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

U.I.P., WIDEN RIGHT SIDE & REDECK EXISTING (42'-61'-75'-49')

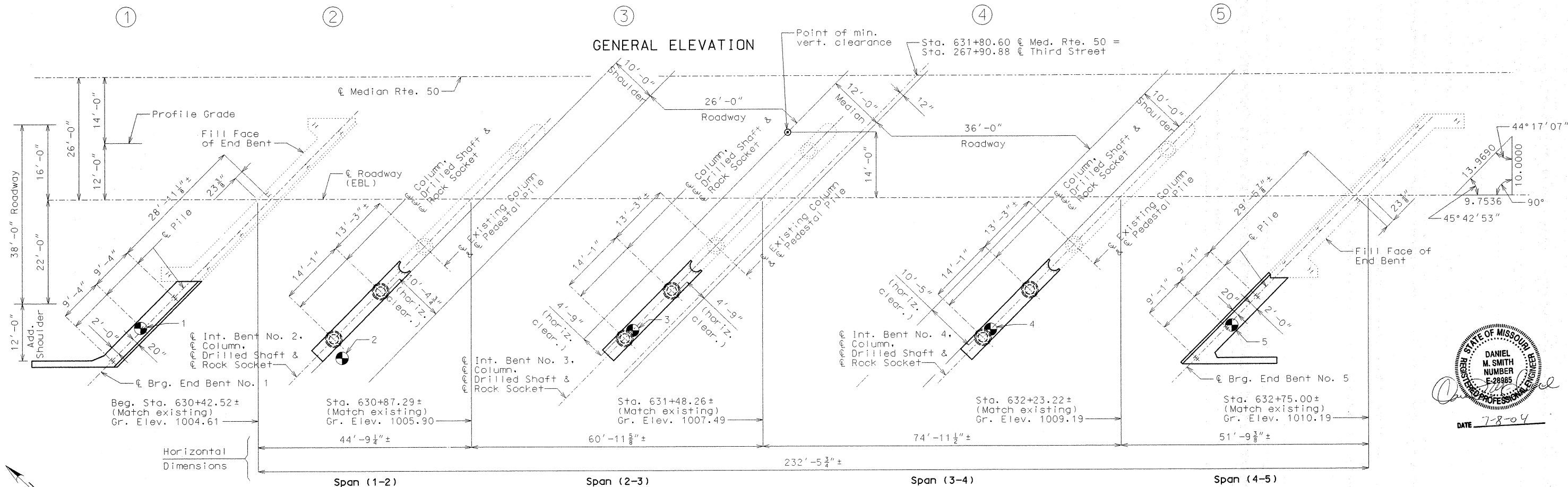
CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS

State	Proj. No.	Sheet No.
MO		21
SEC/SUR 6	TWP 47N	RGE 31W



Note:
Old roadway fill and all residual soil under the right side of the bridge end bents shall be removed to natural ground line and replaced with select fill (lean clay or less plastic material). Removal of old roadway fill and residual soil will be considered completely covered by the contract unit price for roadway excavation.

Notes:
Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.
For General Notes, Estimated Quantities, Estimated Quantities For Slab on Steel, Pile Data and Drilled Shaft Data, see sheet no. 2.



" " Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet(s) for this structure. Boring data for the numbered locations is shown on sheets no. 5 & 6. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, is available from the Project Contact upon written request as outlined in the Project Special Provisions. No greater significance or weight should be given to the boring data depicted on the plan sheets than is subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

CURVE DATA MEDIAN RTE. 50

P.I. = 637+32.81
Δ = 14°46'36" (Lt.)
D = 2°00'00"
T = 371.48'
L = 738.83'
R = 2864.79'

REPAIRS TO BRIDGE: RTE. 50 (EBL) OVER 3rd STREET

B.M. #504/92 ELEVATION 1011.02, CHISELED SOUTHEAST WING OF BRIDGE A-1608 ON EASTBOUND LANE OF ROUTE 50 OVER THIRD STREET. STA. 633+02.25, OFFSET 9.13 RIGHT

STATE ROAD FROM ROUTE 291 TO ROUTE I-470

ABOUT 1 MILE N.W. OF ROUTE 291

PROJECT NO. STA. 630+42.52±
(MATCH EXIST.)
JOB NO. J4U1042 RTE. 50 (EBL)

JACKSON COUNTY

STD. 609.00
STD. 611.60
STD. 617.20
STD. 706.35
A16082

Designed Mar. 2004
Detailed Apr. 2004
Checked May 2004

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

Sheet No. 1 of 38

Date: 07/08/04

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Estimated Quantities			
Item		Substr.	Superstr.
Class 1 Excavation	cu. yard	90	
* Removal of Existing Bridge Decks	sq. foot		7,961
Partial Removal of Substructure Concrete	lump sum		1
Bridge Approach Slab (Bridge)	sq. yard		284
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	66	
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	76	
Supplementary Television Camera Inspection	each	6	
Foundation Inspection Holes	linear foot	130	
Concrete Coring	linear foot	74	
Sonic Logging Testing	each	6	
Structural Steel Piles (10 in.)	linear foot	168	
Pile Point Reinforcement	each	6	
Class B Concrete (Substructure)	cu. yard	122.6	
Slab on Steel	sq. yard		1,352
** Safety Barrier Curb	linear foot		516
Substructure Repair (Unformed)	sq. foot	25	
Modified Deck Repair	sq. foot		500
Reinforcing Steel (Bridges)	pound	21,950	
Mechanical Bar Splices	each		1,017
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound		83,580
Existing Diaphragm Connections to Flange	lump sum		1
Slab Drain	each		6
Surface Preparation for Recoating Structural Steel	sq. foot		8,800
Field Application of Inorganic Zinc Primer	sq. foot		8,800
Intermediate Field Coat (System G) Gray	sq. foot		11,900
Finish Field Coat (System G) Gray	sq. foot		2,200
Non-Destructive Testing	linear foot		50
Laminated Neoprene Bearing Pad Assembly	each		6

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

* Includes removal and disposal of slab, curbs, end posts, rails and expansion devices.

** Safety barrier curb shall be cast-in-place option or slip-form option.

Pile Data		
Bent No.	1	5
Pile Type and Size	HP10 x 42	HP10 x 42
Number	3	3
Approximate Length	foot 24	32
Design Bearing	ton 51.3	51.3
Hammer Energy Required	foot-pound 11,800	11,800

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.

Manufactured pile point reinforcement shall be used on all piles in this structure.

All piles shall be driven to practical refusal.

Rock Socket Data			
Bent No.	2	3	4
Foundation Material	Rock	Rock	Rock
Number	2	2	2
Design Side Friction	tsf 2.5	2.5	2.5

PAY LENGTHS FOR EACH SHAFT & SOCKET		
	DRILLED SHAFT	ROCK SOCKET
Bent 2	12'	12'
Bent 3	10'	13'
Bent 4	11'	13'

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on one-half of the drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

GENERAL NOTES:
Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:
HS20 Modified (slab only)
HS20-44 (except for slab)
No Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case II

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets) f'c = 4,000 psi
Class B-1 Concrete (Safety Barrier Curb) f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50) fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36) fb = 9,000 psi fy = 36,000 psi

Fabricated Steel Connections:
Field connections shall be made with 3/4" diameter high strength bolts and 1 1/8" diameter holes, except as noted.

Joint Filler:
All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

At the option of the contractor, the intermediate and finish field coats may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

Existing Structural Steel Protective Coatings:
Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G or H)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for Surface Preparation for Recoating Structural Steel.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Field Application of Inorganic Zinc Primer. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

Estimated Quantities for Slab on Steel	
Item	Total
Class B-2 Concrete	cu. yard 365.1
Reinforcing Steel	pound 8,380
Reinforcing Steel (Epoxy Coated)	pound 130,950

The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Slab shall be cast-in-place. Precast prestressed panels are not permitted.

State	Proj. No.	Sheet No.
MO		02

GENERAL NOTES (CONT.):

Miscellaneous:
A minimum vertical clearance of 14'-9" from crown of existing lanes and a minimum lateral clearance of 28'-0" centered on existing left lane and 38'-0" centered on existing right lane shall be maintained during construction.

Traffic over structure to be maintained during construction. See Details Showing Staged Construction on sheets no. 3 & 4.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

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

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

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.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

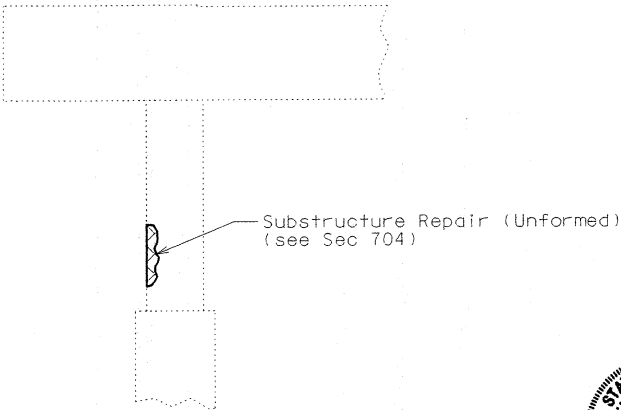
Resin Anchors:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure), Slab on Steel or Safety Barrier Curb.

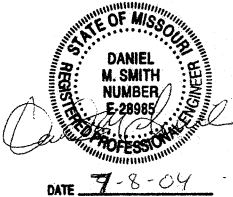
The "A" diameter resin anchor systems shall have a minimum ultimate pullout strength of "B" lbs. in concrete with f'c = 4,000 psi.

A "C" Grade 60 reinforcing bar "D" long shall be substituted for the "A" Ø threaded rod.

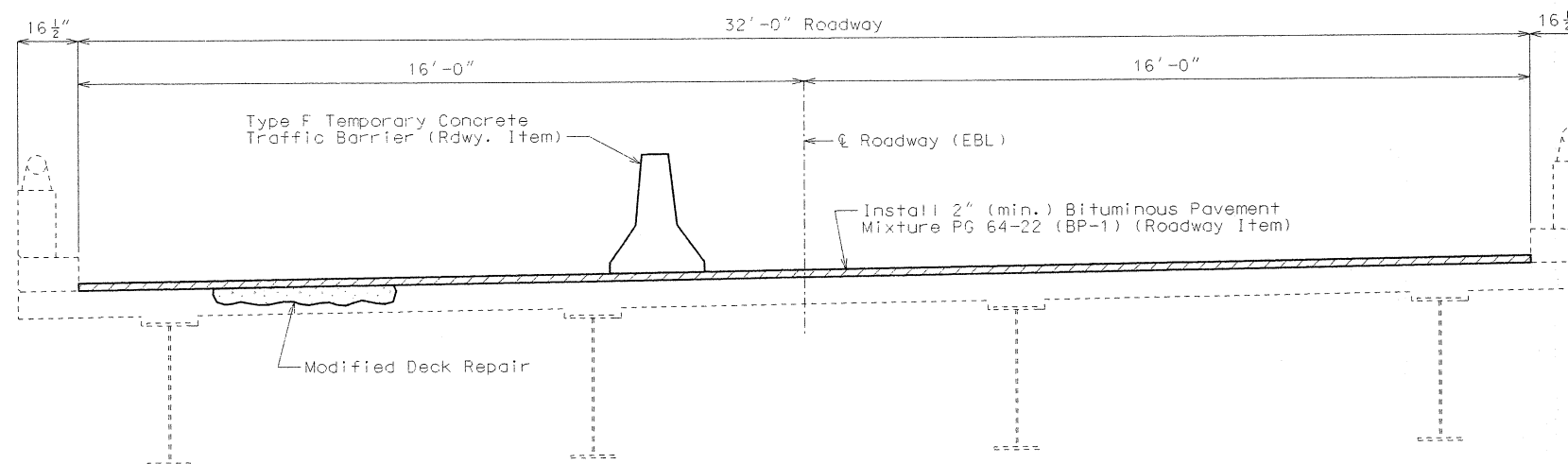
"A"	"B"	"C"	"D"
5/8"	15,500	E #5	2'-5"
3/4"	20,400	#6	3'-11"
1"	33,600	#8	6'-10"



PART ELEVATION OF INT. BENT SHOWING SUBSTRUCTURE REPAIR



State	Proj. No.	Sheet No.
MO		23



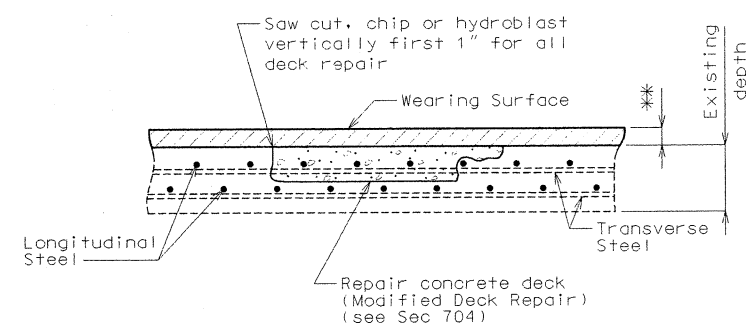
SECTION THRU EXISTING SLAB

Notes:

In order to maintain grade and a minimum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure. The cost of furnishing and installing the overlay will be considered completely covered in the contract unit price for roadway pavement, including all additional labor, materials or equipment for variations in thickness of overlay.

Roadway surfacing adjacent to bridge ends to match top of asphalt overlay (Roadway Item).

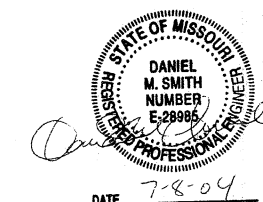
Maintain one lane of traffic on structure during construction (see Roadway Plans).



MODIFIED DECK REPAIR AREA

* 2" (min.) Bituminous Pavement Mixture PG 64-22 (BP-1) (Roadway Item)

DETAILS SHOWING TEMPORARY ASPHALT OVERLAY AND DECK REPAIR (PRIOR TO STAGED CONSTRUCTION)



Detailed Apr. 2004
Checked May 2004

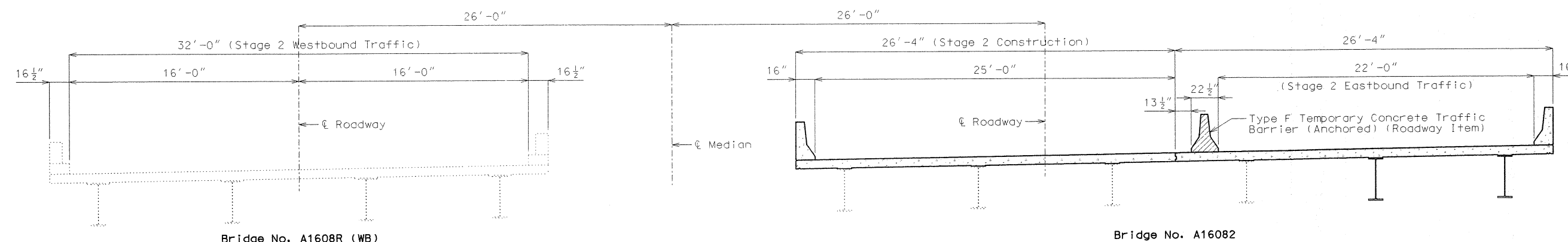
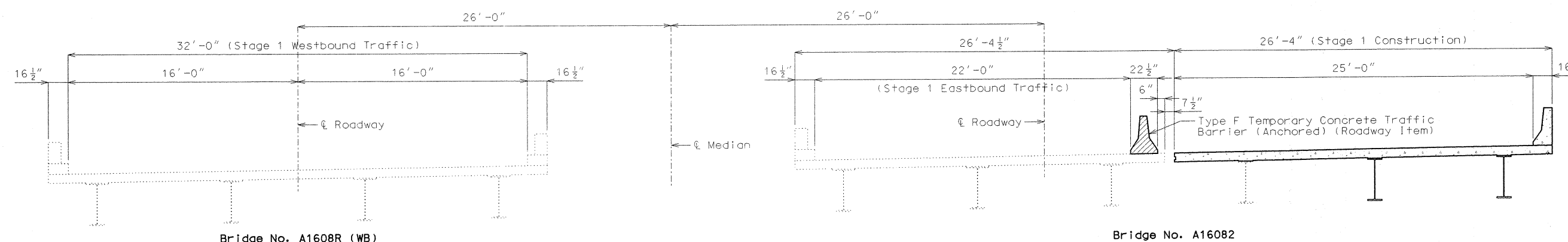
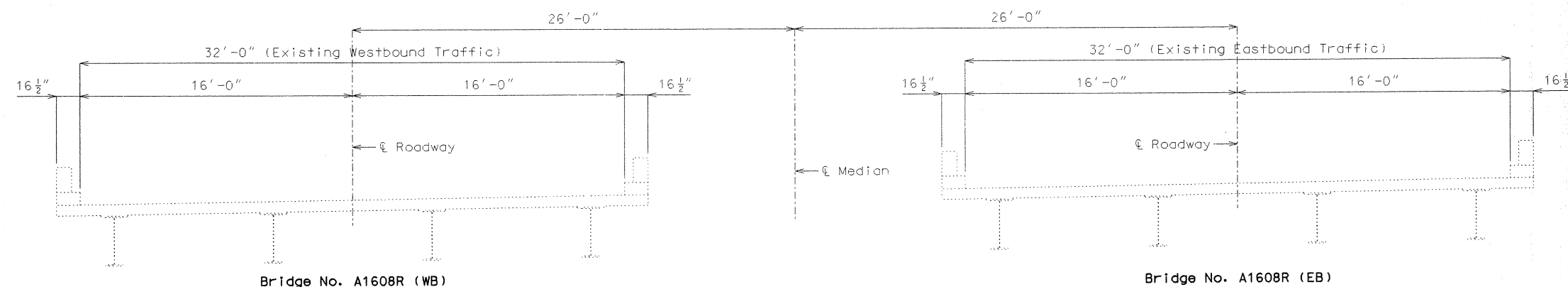
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2A of 38

JACKSON COUNTY A16082

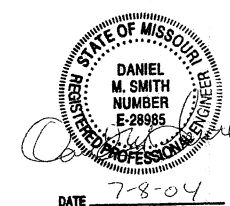
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State	Proj. No.	Sheet No.
MO		B4



DETAILS SHOWING STAGED CONSTRUCTION

Note: Method of attachment for the Type F Temporary Concrete Traffic Barrier shall be the Tie-Down Strap.



Detailed Apr. 2004
Checked May 2004

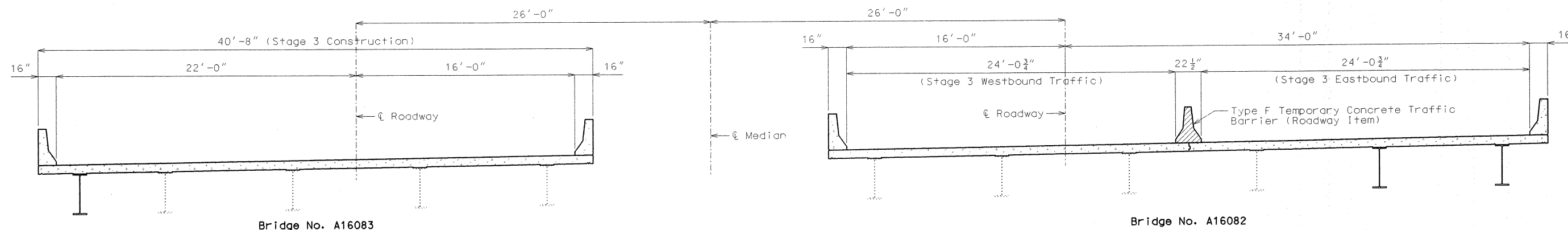
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Sheet No. 3 of 38

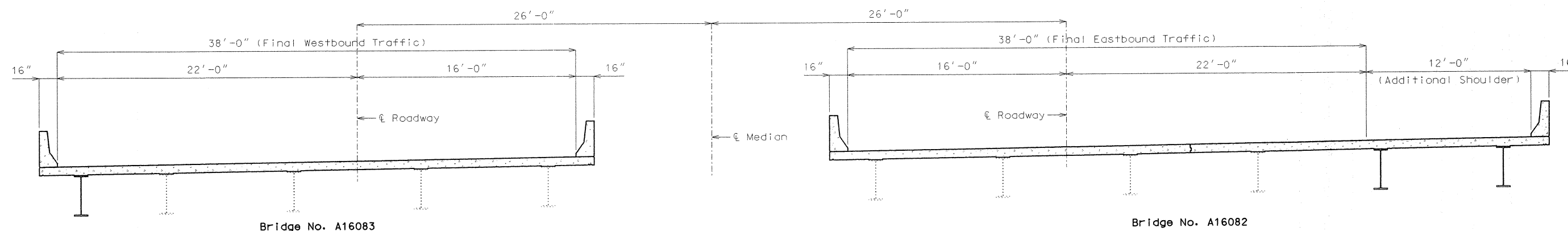
JACKSON COUNTY A16082

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State	Proj. No.	Sheet No.
MO		05

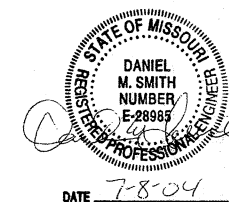


STAGE 3 CONSTRUCTION



FINAL CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION



DATE 7-8-04

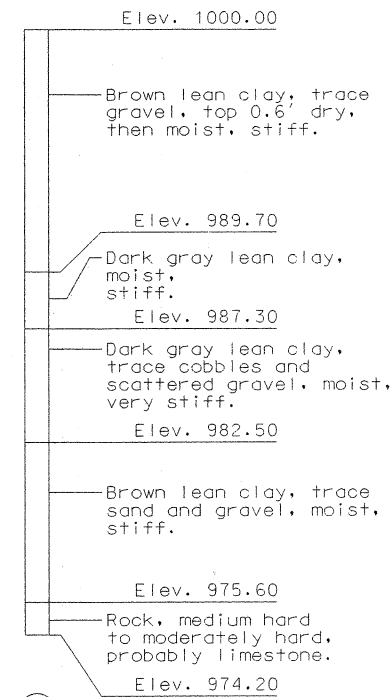
Detailed Apr. 2004
Checked May 2004

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

Sheet No. 4 of 38

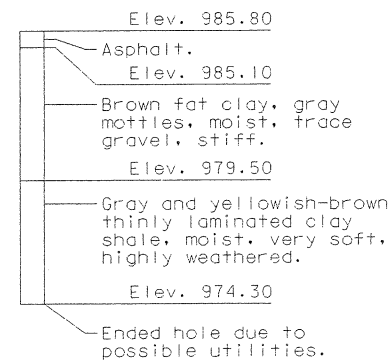
JACKSON COUNTY A16082

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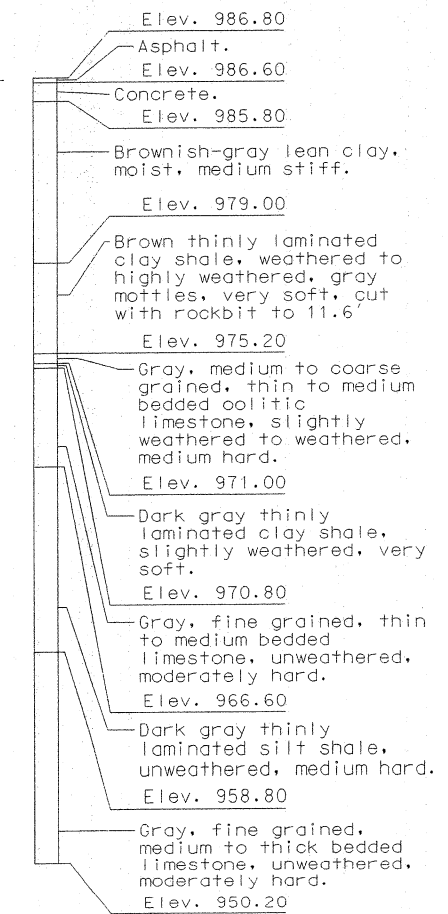
①

Standard Penetration Test		
Depth, ft.	SPT Blows/6"	Pocket Pen., tsf
5.0	2-2-4	1.75
10.0	2-4-5	4.20



②
(core)

Standard Penetration Test		
Depth, ft.	SPT Blows/6"	Pocket Pen., tsf
4.0	1-2-4	1.95
9.0	3-5-8	2.55



③
(core)

Note: For location of borings, see sheet no. 1.

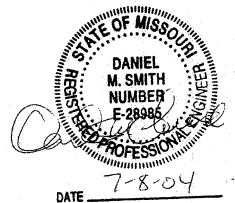
BORING DATA

Detailed Apr. 2004
Checked May 2004

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

Sheet No. 5 of 38

JACKSON COUNTY A16082



Standard Penetration Test
Depth, ft. SPT Pocket
 Blows/6" Pen., tsf

4.5 2-5-7 6.0

9.5 7-8-13 5.4

Elev. 986.30
Brown lean clay, dry, stiff.
Elev. 984.60
Yellowish-brown thinly laminated clay shale, moist, very soft, weathered.
Elev. 973.80
Gray, medium to thick bedded, coarse grained limestone, moderately hard, slightly weathered.
Elev. 968.20
Dark gray thinly laminated silt shale, unweathered, soft.
Elev. 968.00
Gray, fine grained, thin bedded limestone, unweathered, moderately hard.
Elev. 967.60
Black thinly laminated silt shale, unweathered, medium hard.
Elev. 967.40
Gray, thick bedded to massive, fine grained limestone, unweathered, moderately hard.
Elev. 963.90
Dark gray thinly laminated clay shale, unweathered, medium hard.
Elev. 956.90
Light gray, thin bedded, fine grained limestone, moderately hard, slightly weathered.
Elev. 946.60

④
(core)

Elev. 1003.00
Brown fat clay, gray mottles, trace sand, moist, stiff, (fill).
Elev. 997.50
Dark gray lean clay, trace sand, moist, stiff, (fill).
Elev. 991.00
Brown lean clay, trace sand, moist, very stiff, (natural ground).
Elev. 988.20
Yellow-brown clay shale, very soft, weathered.
Elev. 976.90
Gray clay shale, very soft, unweathered.
Elev. 970.80
Rock, moderately hard, probably limestone.
Elev. 970.30

⑤

Note: For location of borings, see sheet no. 1.

BORING DATA

Detailed Apr. 2004
Checked May 2004

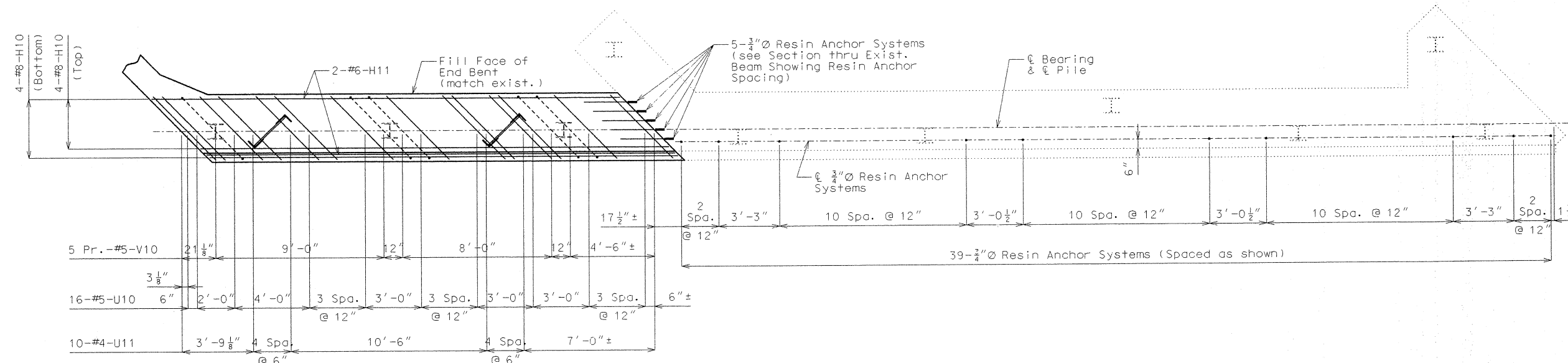
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 38

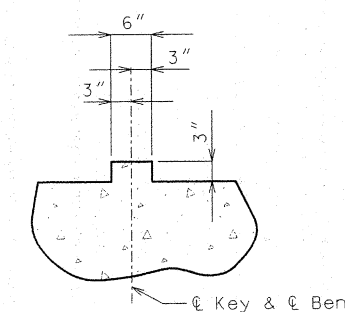
JACKSON COUNTY A16082

STATE OF MISSOURI
DANIEL M. SMITH
NUMBER E-28985
REGISTERED PROFESSIONAL ENGINEER
DATE 7-8-04

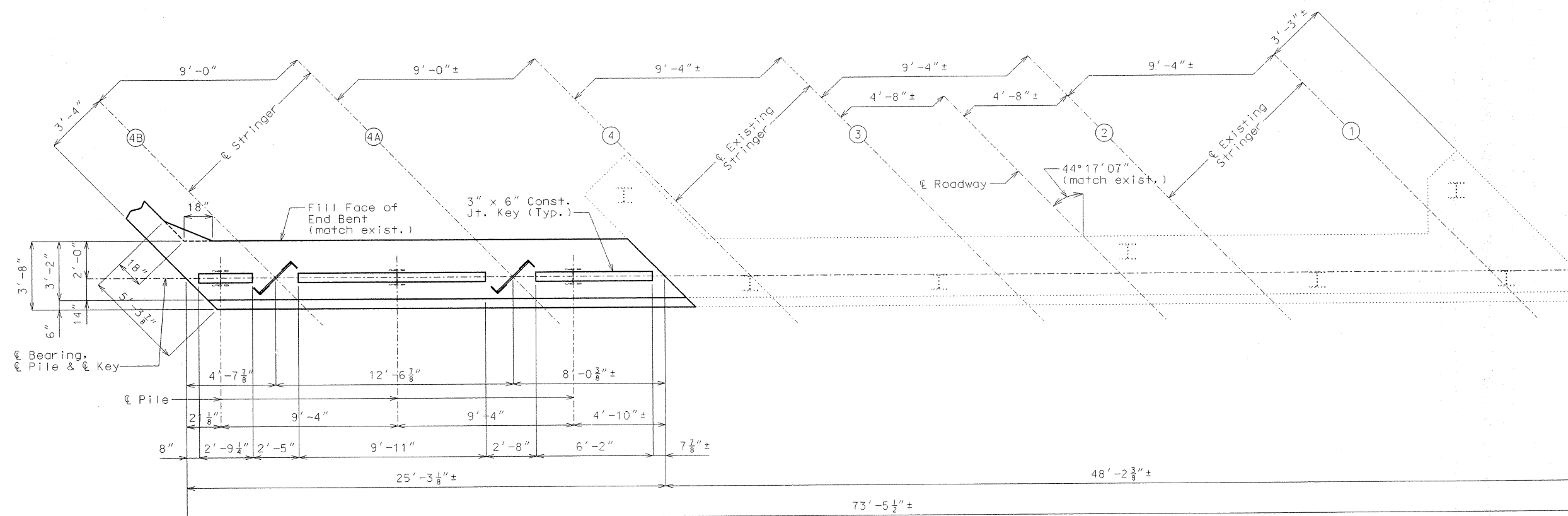
State	Proj. No.	Sheet No.
MO		26



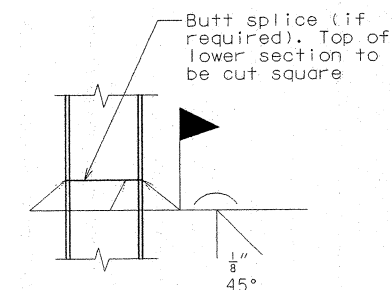
PLAN OF BEAM SHOWING REINFORCEMENT



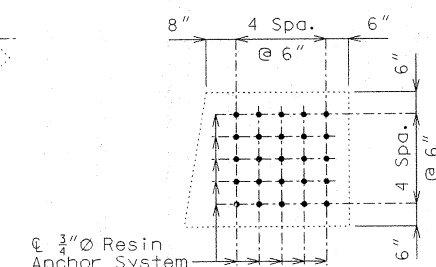
TYPICAL SECTION THRU KEY



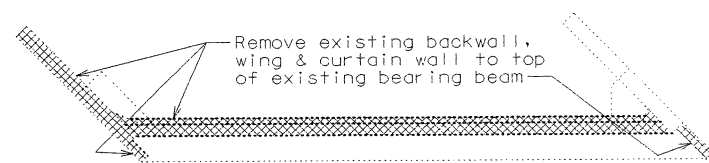
PLAN OF BEAM



STEEL PILE SPLICE



SECTION THRU EXIST. BEAM SHOWING RESIN ANCHOR SPACING



DETAILS OF CONCRETE REMOVAL @ END BENT NO. 1

Note: The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The cost of concrete removal shown above will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete per lump sum.

DETAILS OF END BENT NO. 1

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

Notes:

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1-1/2".

For details of End Bent No. 1 not shown, see sheets no. 8 & 9.

All U-bars and Pr. V-bars in end bent are to be placed parallel to Roadway.

Shift reinforcing steel to clear the angles of the stringer chairs by at least 1 1/2".

For details of stringer chairs, see sheet no. 9.



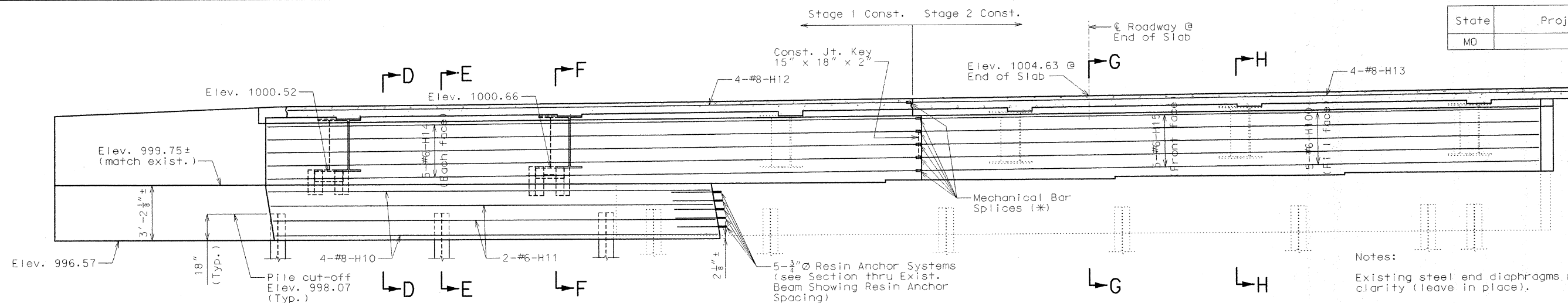
DATE 7-8-04

Detailed Apr. 2004
Checked May 2004

Sheet No. 7 of 38

JACKSON COUNTY A16082

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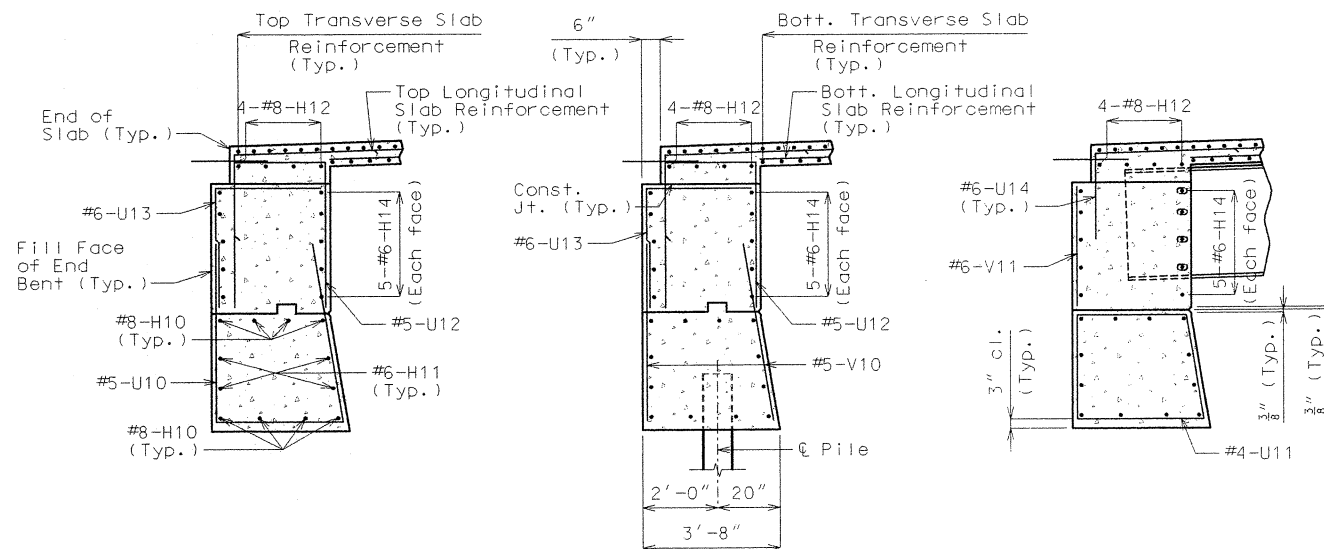
Notes:

Existing steel end diaphragms not shown for clarity (leave in place).

U-bars and resin anchor systems in diaphragm not shown for clarity.

SECTION NEAR END BENT

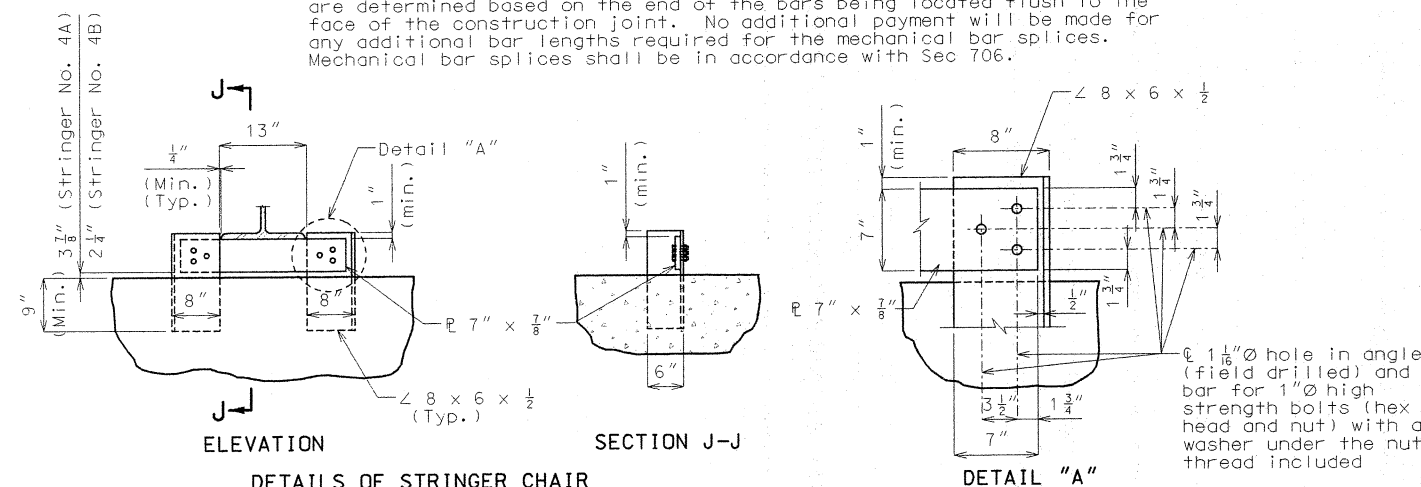
(*) The contractor shall use a mechanical bar splice for #8-H12 & #8-H13 and #6-H14 & #6-H15 or #6-H100 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706.



SECTION D-D

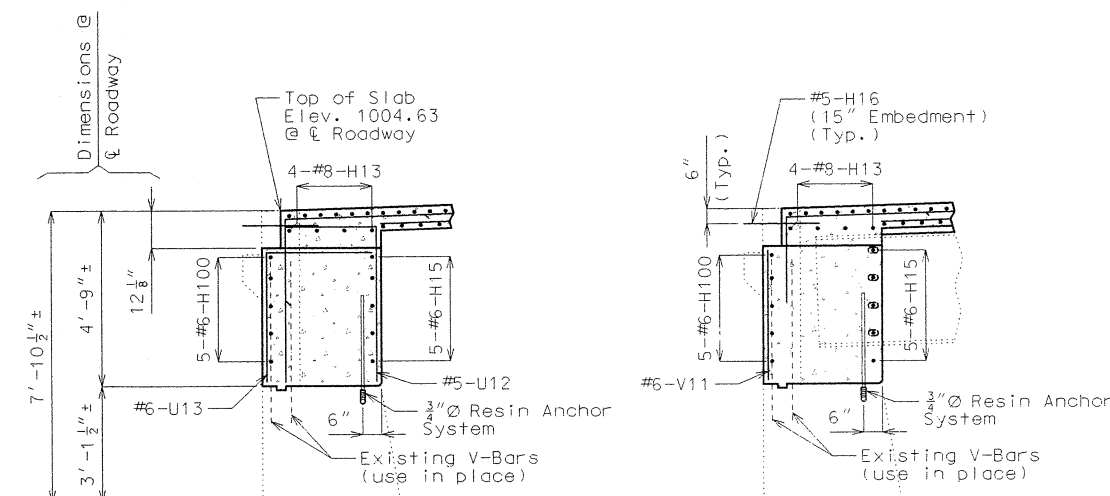
SECTION E-E

SECTION F-F



Note: For location of stringer chairs see sheet no. 7.

Note: Weight of 541 pound of all stringer chairs is included in the weight of Fabricated Structural Low Alloy Steel.



SECTION G-G

SECTION H-H

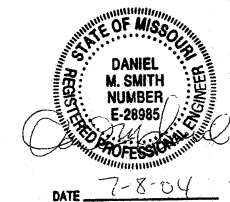
DETAILS OF END BENT NO. 1

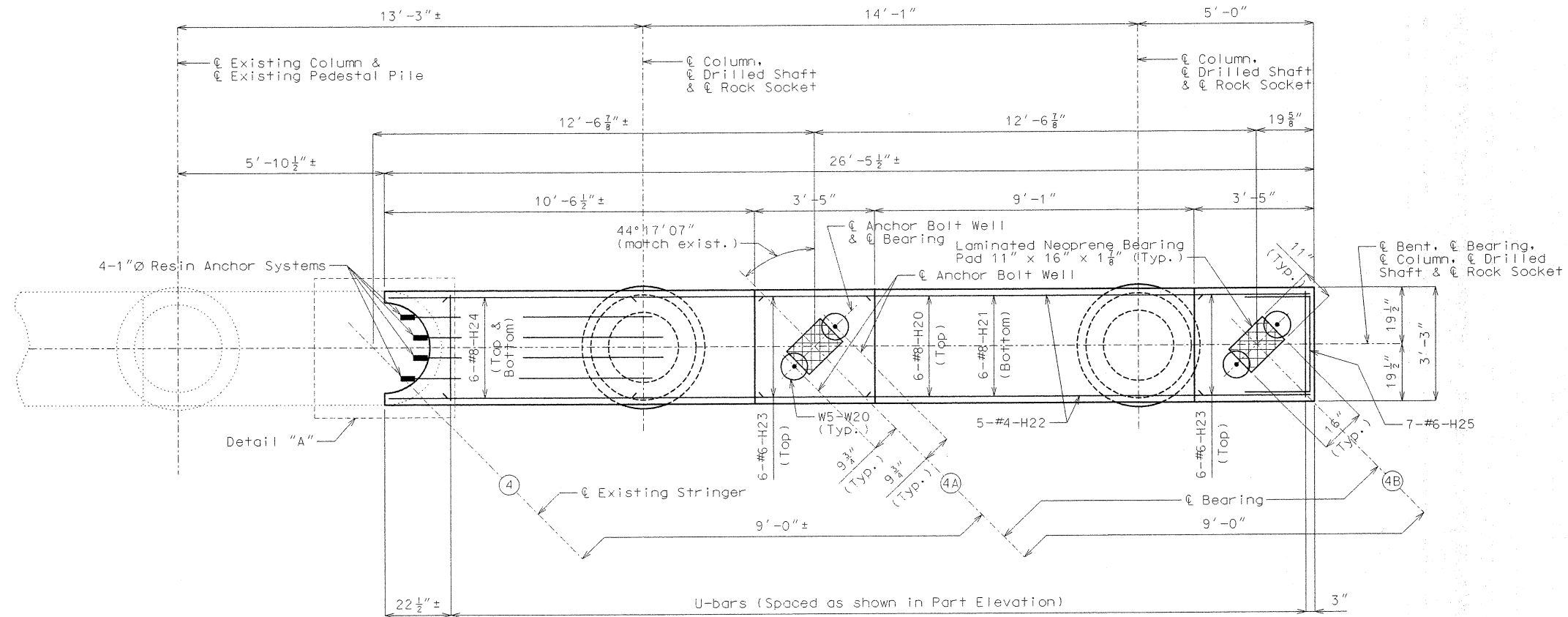
Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	45
Structural Steel Piles (10 in.)	linear foot	72
Pile Point Reinforcement	each	3
Class B Concrete (Substructure)	cu. yard	12.5

Note: These quantities are included in the Estimated Quantities Table on sheet no. 2.

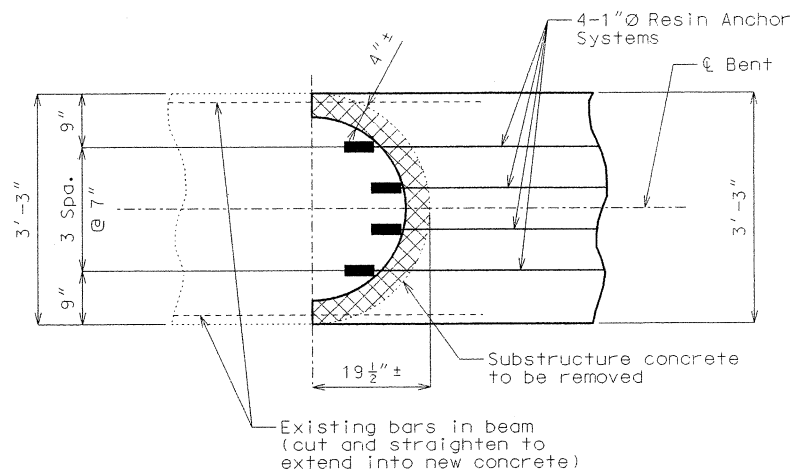
For details of End Bent No. 1 not shown, see sheets no. 7 & 8.

Cost of furnishing, fabricating and installing stringer chairs will be consider completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50.

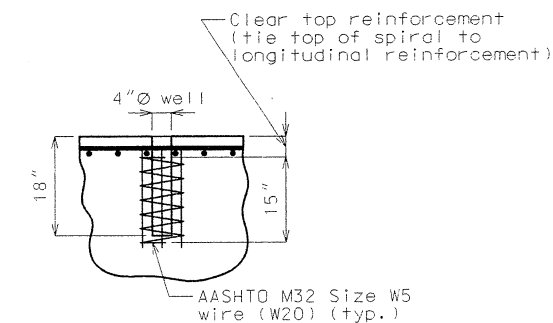




PART PLAN



DETAIL "A"



DETAIL OF ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	24
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	24
Supplementary Television Camera Inspection	each	2
Foundation Inspection Holes	linear foot	42
Concrete Coring	linear foot	25
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	32.9
Reinforcing Steel (Bridges)	pound	7,030

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 2 not shown, see sheet no. 10.

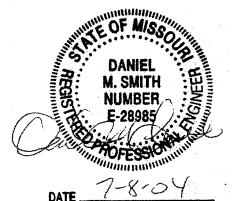
All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on one-half of the drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.



DETAILS OF INTERMEDIATE BENT NO. 2

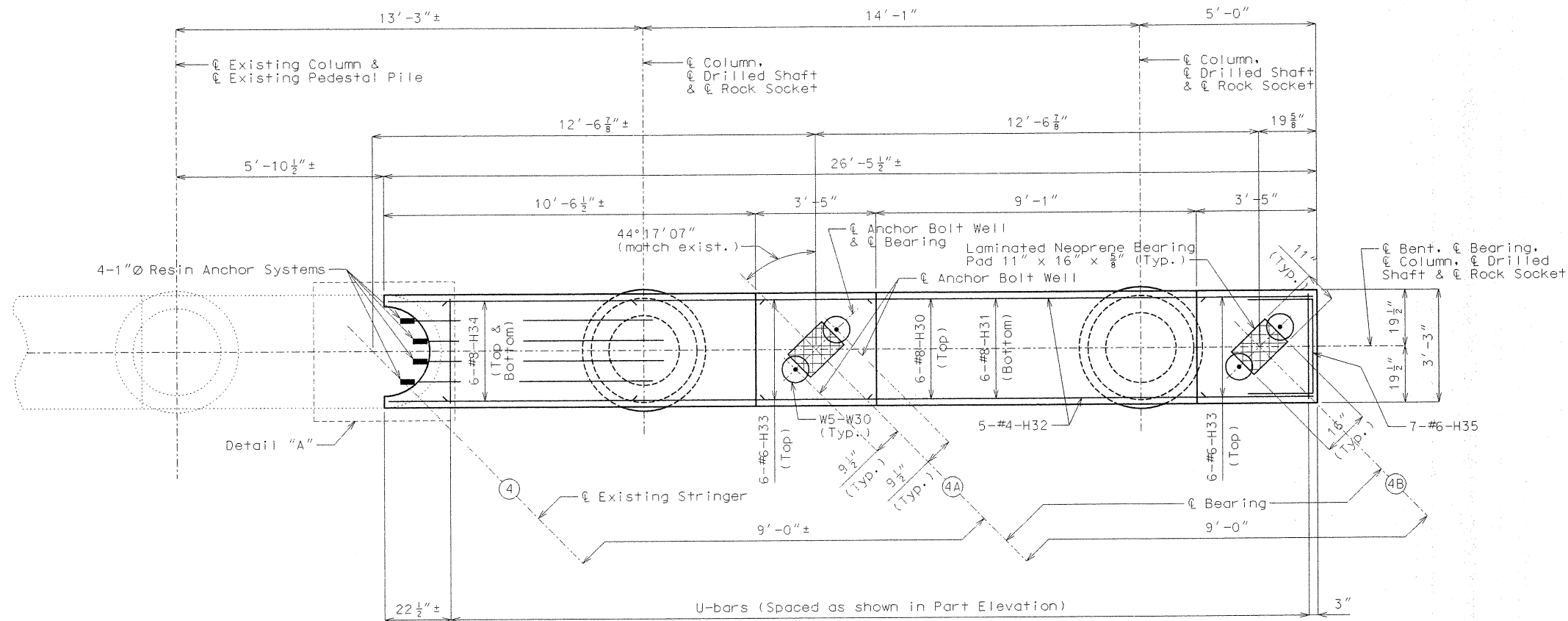
Detailed Apr. 2004
Checked May 2004

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

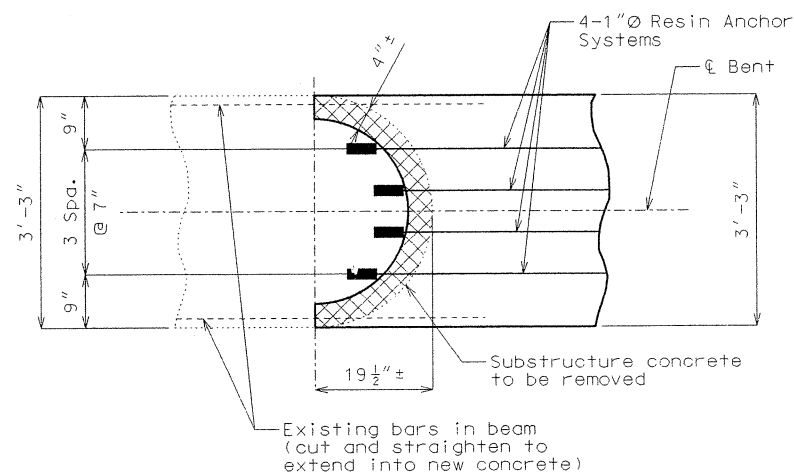
Sheet No. 11 of 38

JACKSON COUNTY A16082

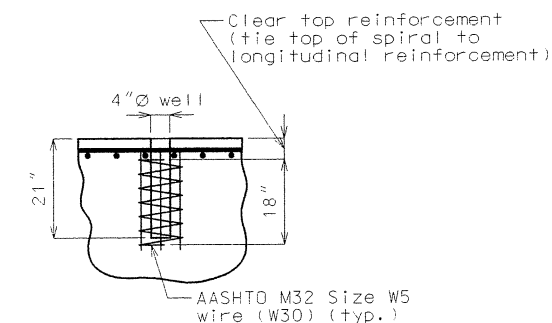
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PART PLAN



DETAIL "A"



DETAIL OF ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	20
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	26
Supplementary Television Camera Inspection	each	2
Foundation Inspection Holes	linear foot	44
Concrete Coring	linear foot	24
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	31.9
Reinforcing Steel (Bridges)	pound	7,360

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 3 not shown, see sheet no. 12.

All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on one-half of the drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.



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DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Apr. 2004
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Note: This drawing is not to scale. Follow dimensions.

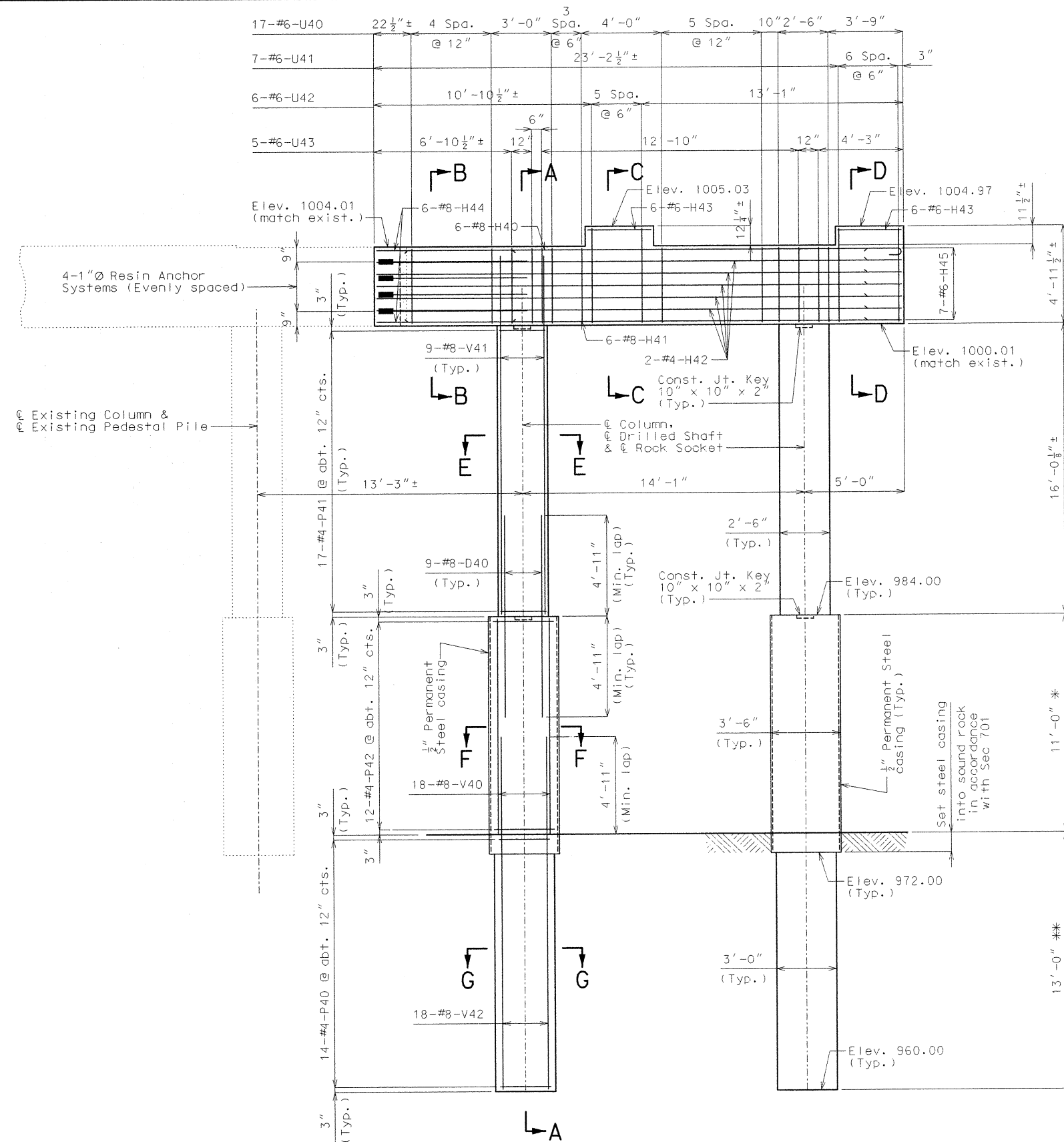
Sheet No. 13 of 38

JACKSON COUNTY A16082

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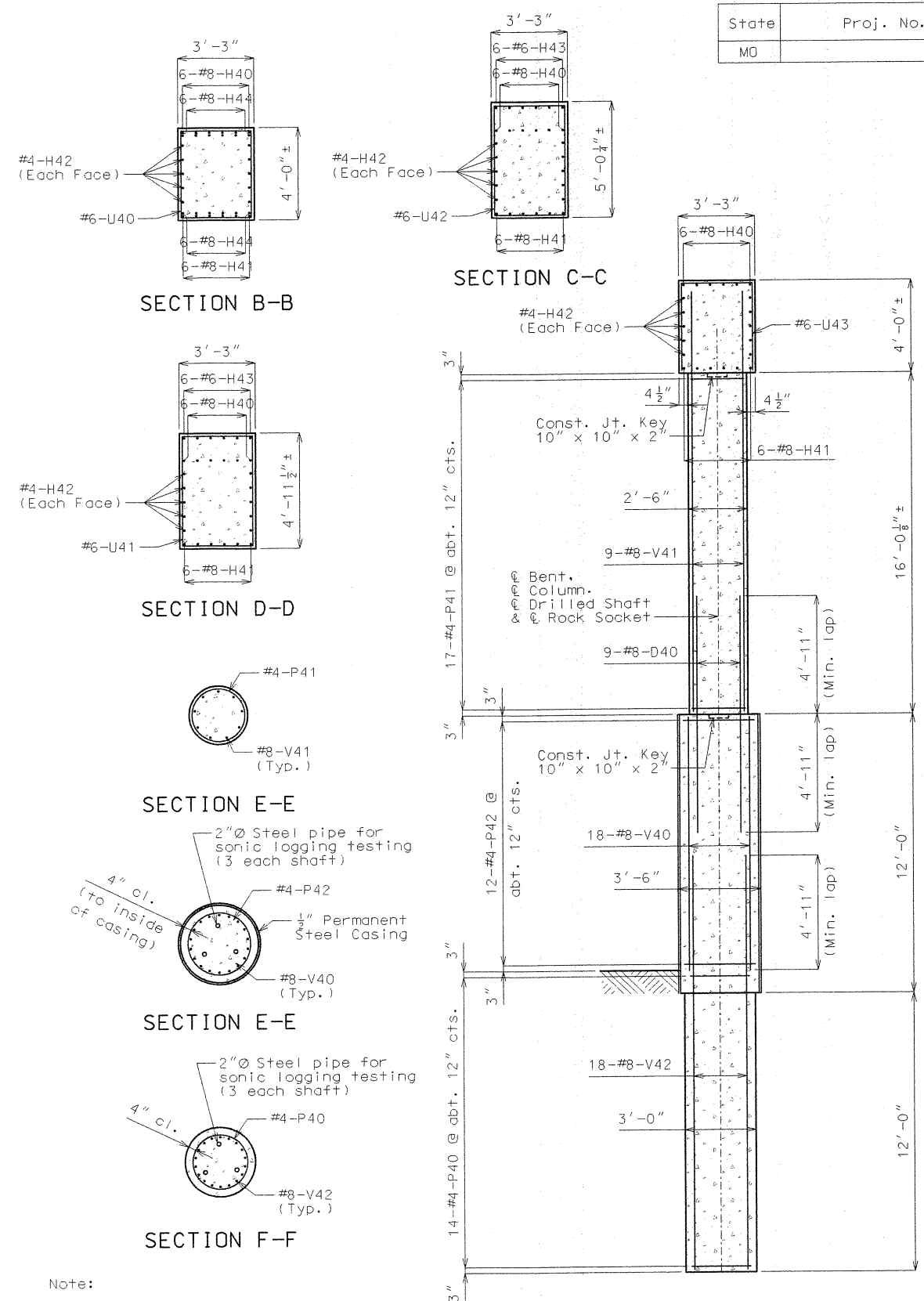
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State	Proj. No.	Sheet No.
MO		15



PART ELEVATION

DETAILS OF INTERMEDIATE BENT NO. 4



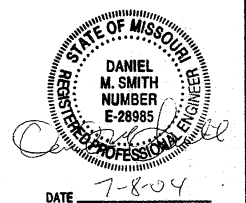
Note:

For details of Intermediate Bent No. 4 not shown, see sheet no. 15.

* Pay limits of Drilled Shafts (3 ft. 6 in. Dia.)

** Pay limits of Rock Sockets (3 ft. 0 in. Dia.)

SECTION A-A



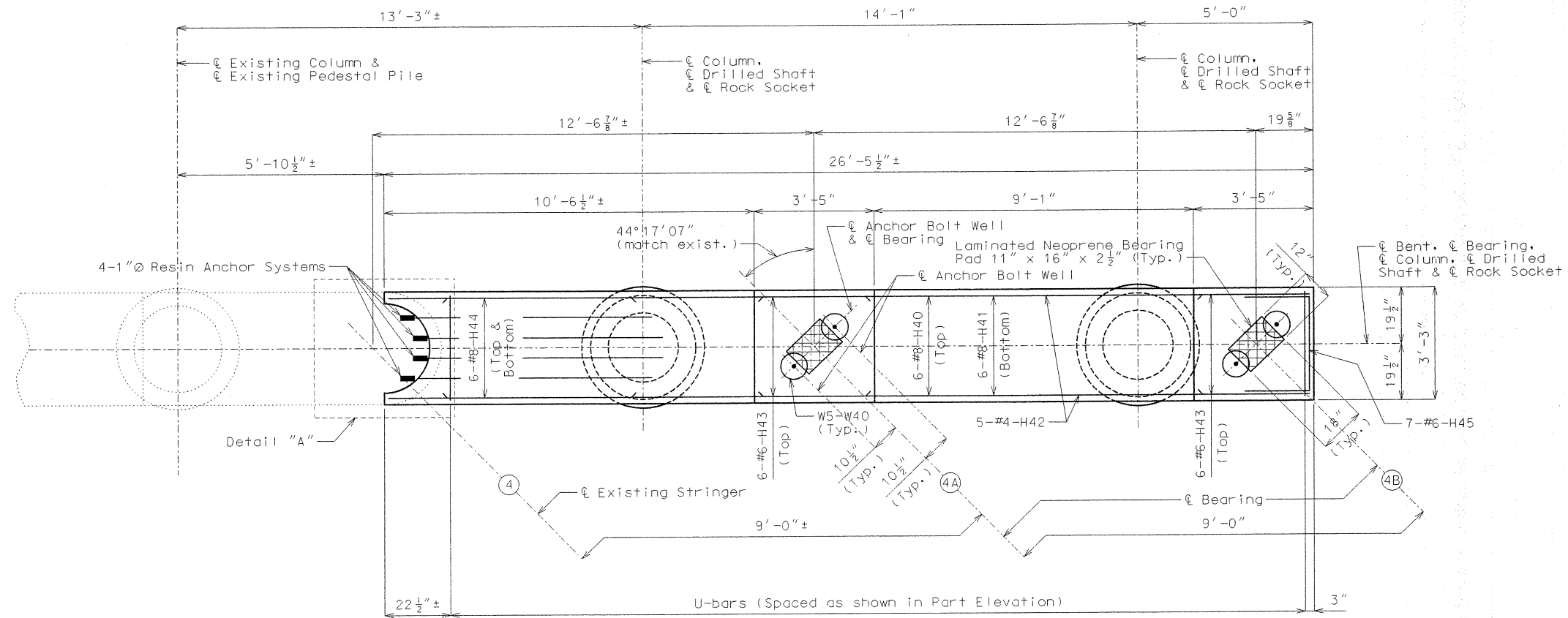
Detailed Apr. 2004
Checked May 2004

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

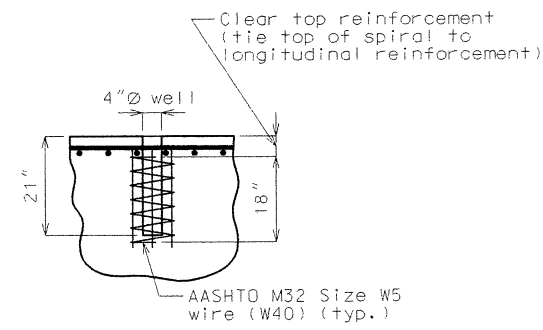
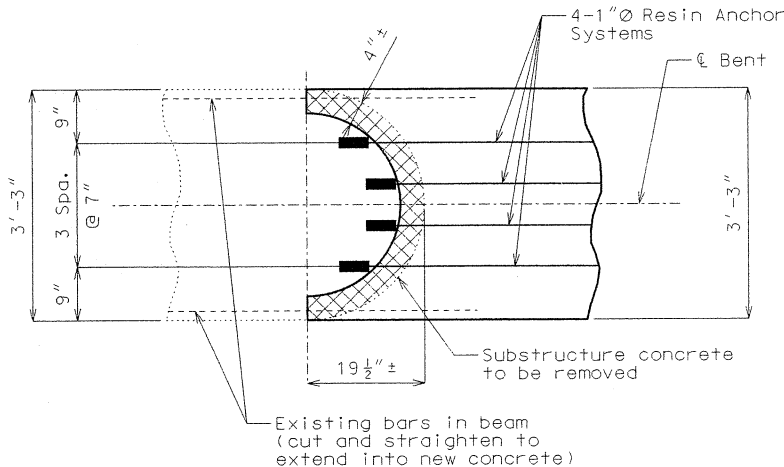
Sheet No. 14 of 38

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PART PLAN



Substructure Quantity Table for Bent No. 4		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	22
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	26
Supplementary Television Camera Inspection	each	2
Foundation Inspection Holes	linear foot	44
Concrete Coring	linear foot	25
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	33.3
Reinforcing Steel (Bridges)	pound	7,560

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 4 not shown, see sheet no. 14.

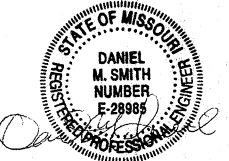
All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on one-half of the drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.



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DETAILS OF INTERMEDIATE BENT NO. 4

Detailed Apr. 2004
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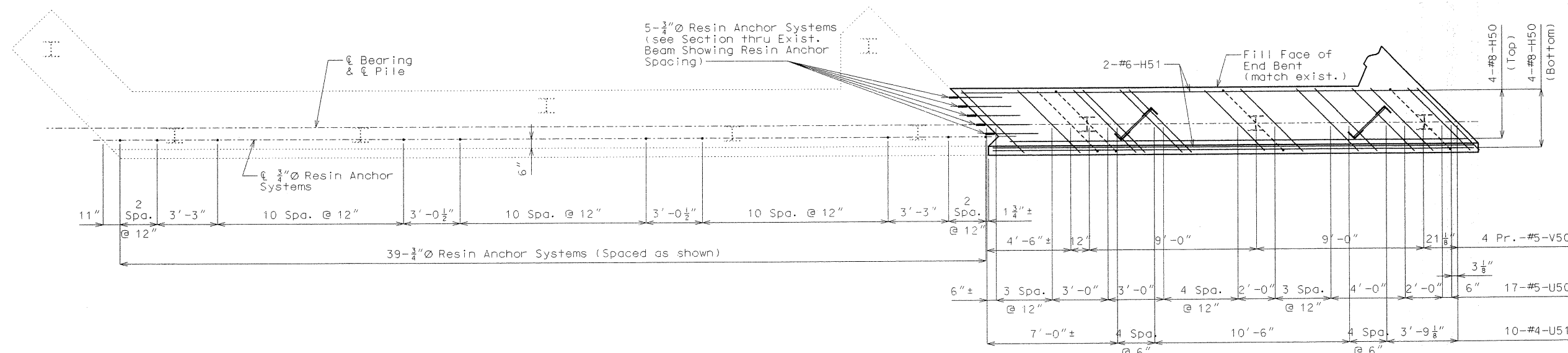
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 15 of 38

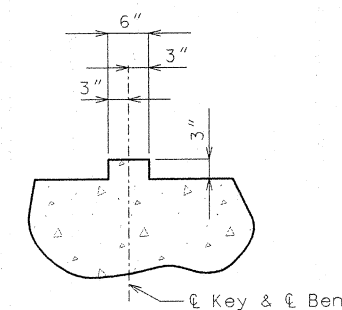
JACKSON COUNTY A16082

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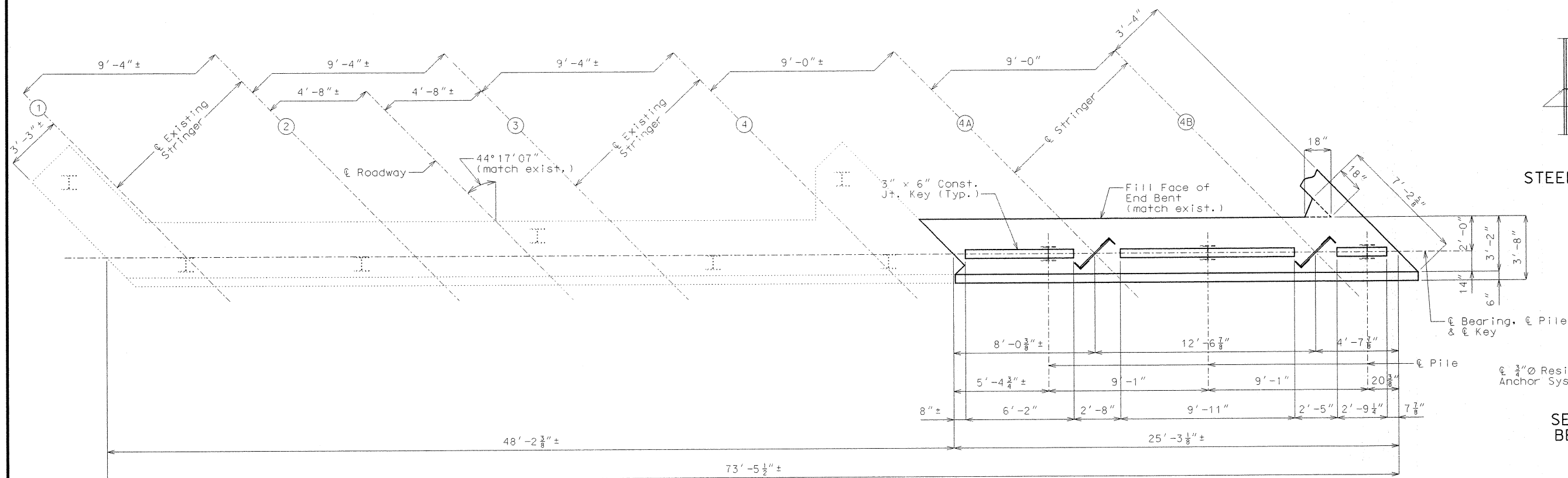
State	Proj. No.	Sheet No.
MO		17



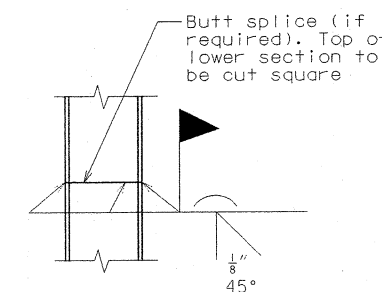
PLAN OF BEAM SHOWING REINFORCEMENT



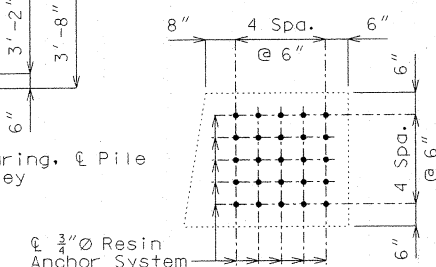
TYPICAL SECTION THRU KEY



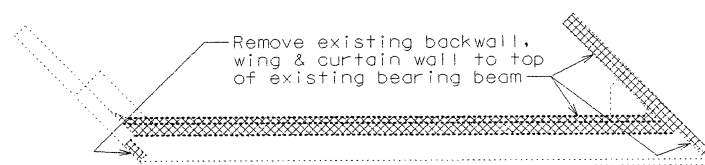
PLAN OF BEAM



STEEL PILE SPLICE



SECTION THRU EXIST. BEAM SHOWING RESIN ANCHOR SPACING



DETAILS OF CONCRETE REMOVAL @ END BENT NO. 5

Note: The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The cost of concrete removal shown above will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete per lump sum.

DETAILS OF END BENT NO. 5

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

Notes:

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

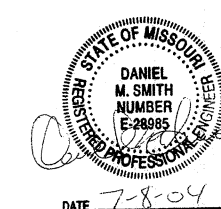
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1-1/2".

For details of End Bent No. 5 not shown, see sheets no. 17 & 18.

All U-bars and Pr. V-bars in end bent are to be placed parallel to & Roadway.

Shift reinforcing steel to clear the angles of the stringer chairs by at least 1 1/2".

For details of stringer chairs, see sheet no. 18.



DATE 7-8-04

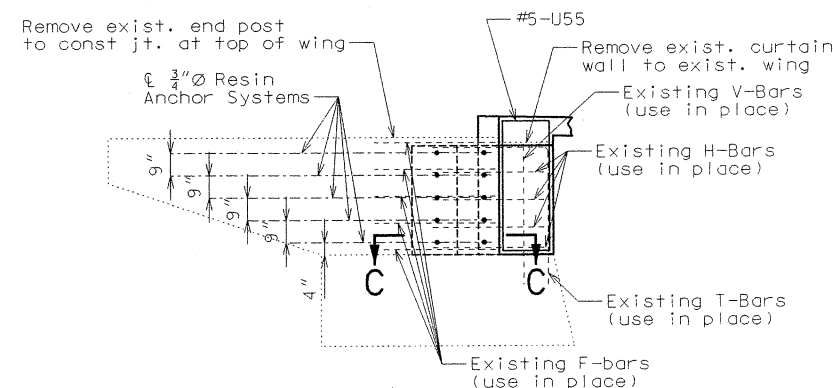
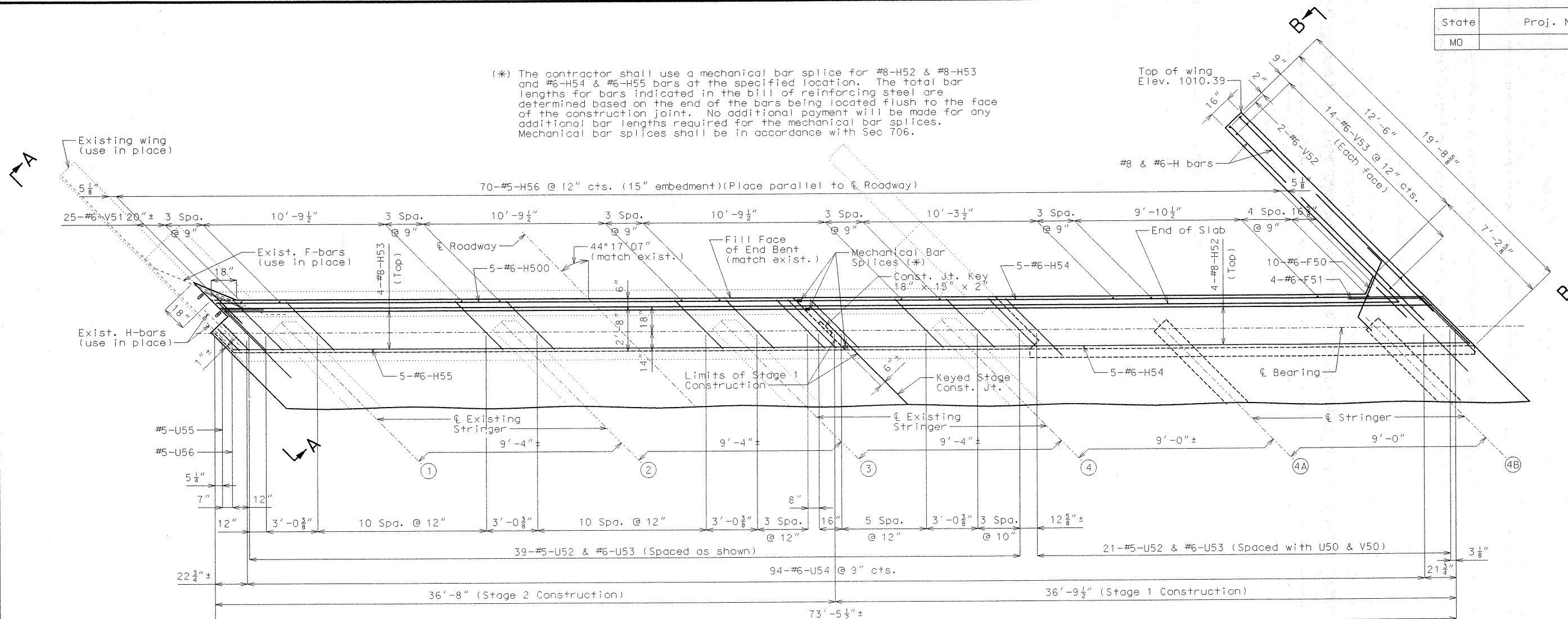
Detailed Apr. 2004
Checked May 2004

Sheet No. 16 of 38

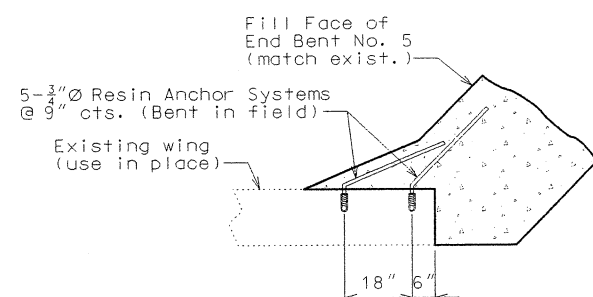
JACKSON COUNTY A16082

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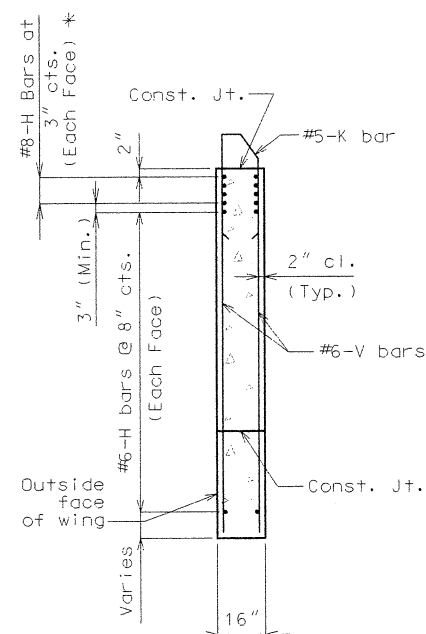
(*) The contractor shall use a mechanical bar splice for #8-H52 & #8-H53 and #6-H54 & #6-H55 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706.



ELEVATION A-A

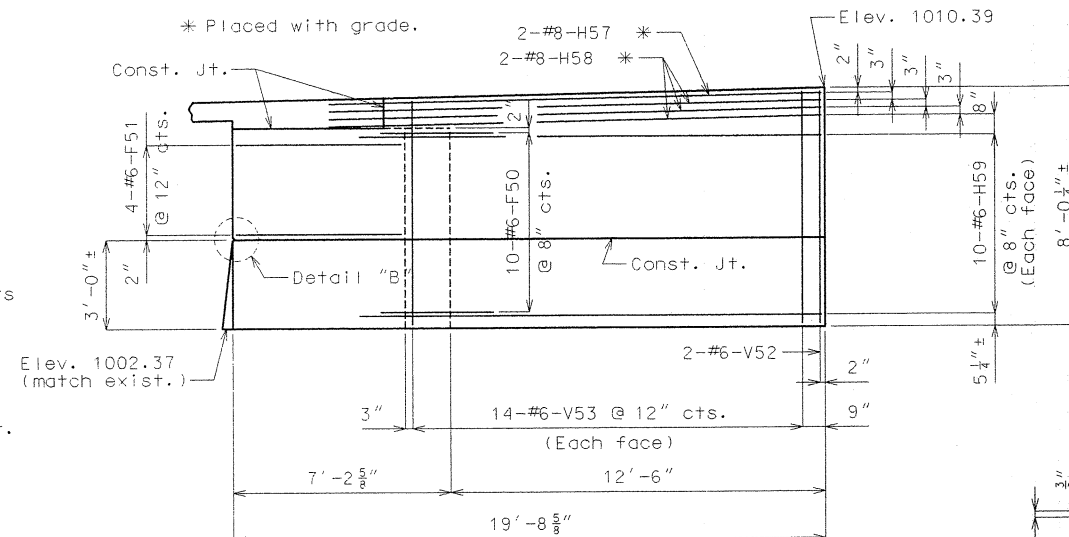


SECTION C-C

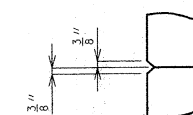


TYPICAL SECTION THRU NEW WING

PART PLAN



ELEVATION B-B



DETAIL "B"

Notes:

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.

For reinforcement of the safety barrier curb, see sheets no. 31 & 32.

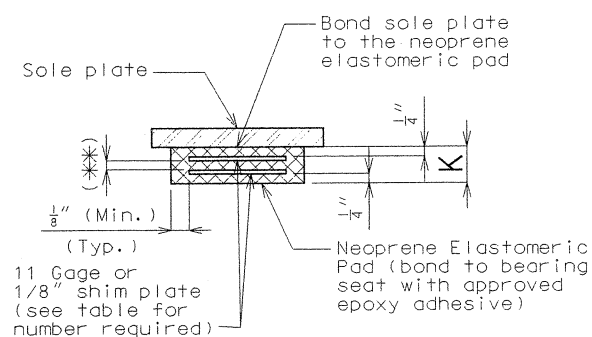
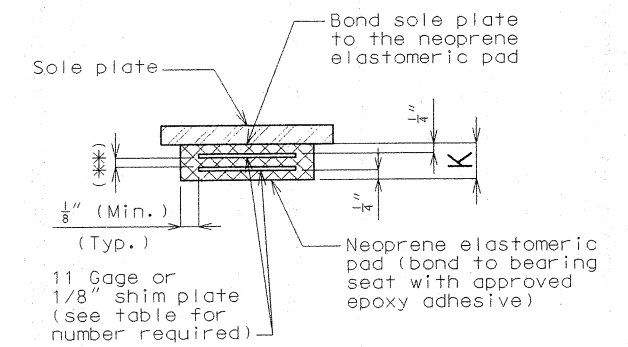
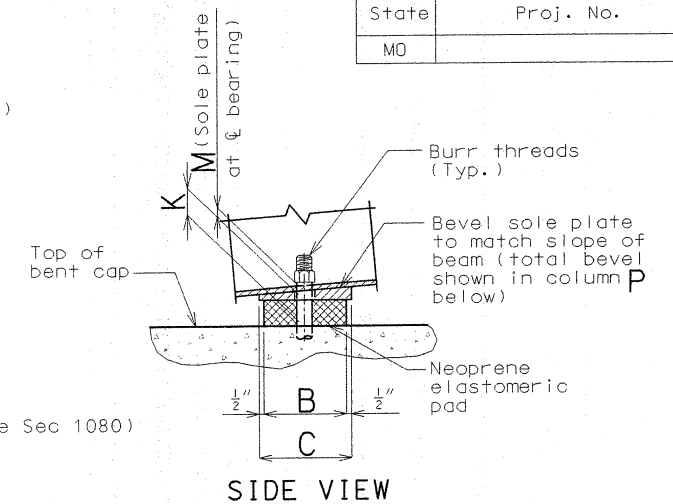
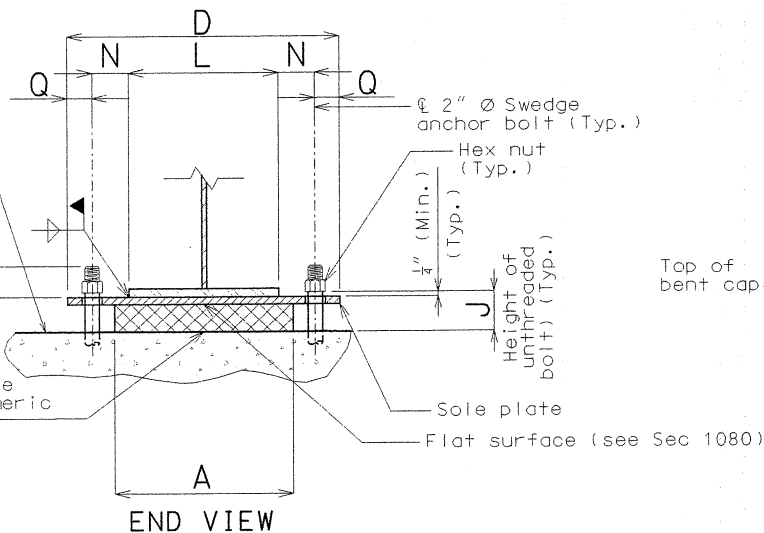
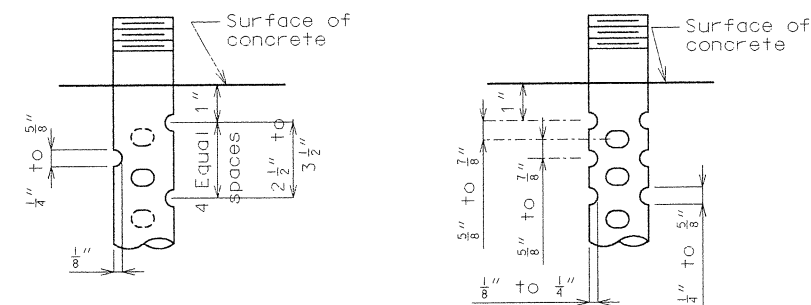
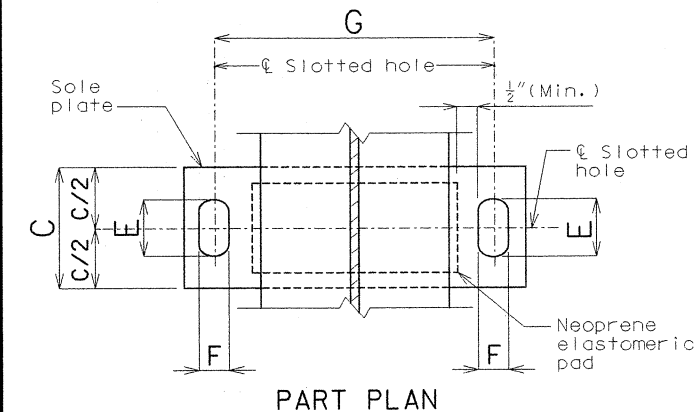
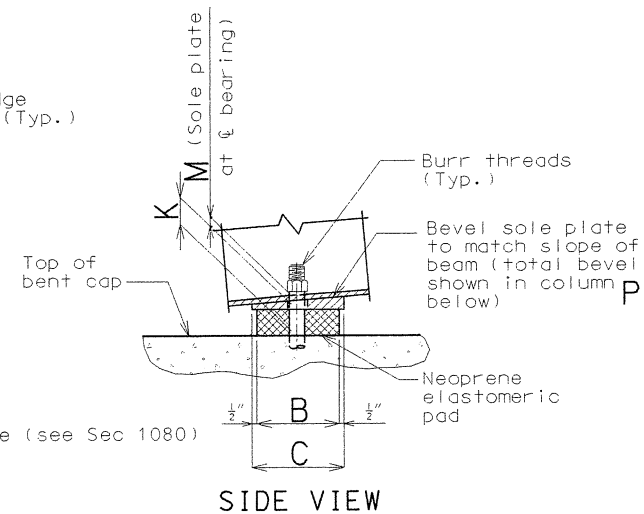
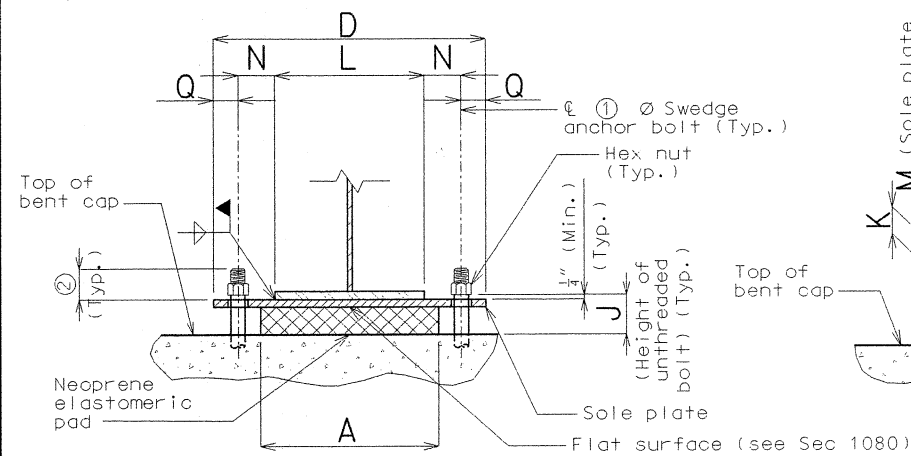
For details of End Bent No. 5 not shown, see sheets no. 16 & 18.

Bend #6-F50 bars in field to clear stringers.

For Approach Slab details, see sheet no. 34.



DATE 7-8-04



SWEDGE ANCHOR BOLT DETAILS

GENERAL NOTES:

Anchor bolts shall be ① $\varnothing$ ASTM A709 Grade 50W steel swaged bolts and shall extend ③ into the concrete with ASTM A194 - 2, 2H or ASTM A563 - C, C3, D, DH, DH3 heavy hexagon nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

EXPANSION BEARINGS																
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	16"	11"	12"	24"	3 1/2"	1 5/8"	19 1/2"	3 5/8"	1 7/8"	12"	1 1/2"	3 3/4"	3 3/8"	2 1/4"	3	2
4	18"	12"	13"	27"	4"	2 1/8"	21"	4 1/4"	2 1/2"	12"	1 1/2"	4 1/2"	3 3/8"	3"	4	2
(*) The required shim plate shall be placed between															TOTAL BEARINGS	4

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

- ① 1 $\frac{1}{2}$ " (Bent No. 2)
2" (Bents No. 3 & 4)
- ② 2 $\frac{1}{4}$ " (Bent No. 2)
2 $\frac{1}{2}$ " (Bent No. 4)
- ③ 15" (Bent No. 2)
18" (Bents No. 3 & 4)

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
3	16"	11"	12"	25"	2 1/8"	19"	2 3/8"	5/8"	12"	1 1/2"	3 1/2"	3 3/8"	3"	1	2

(*) The required shim plate shall be placed between layers of elastomer and bolted together to form

	TOTAL BEARINGS	2
--	----------------	---

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

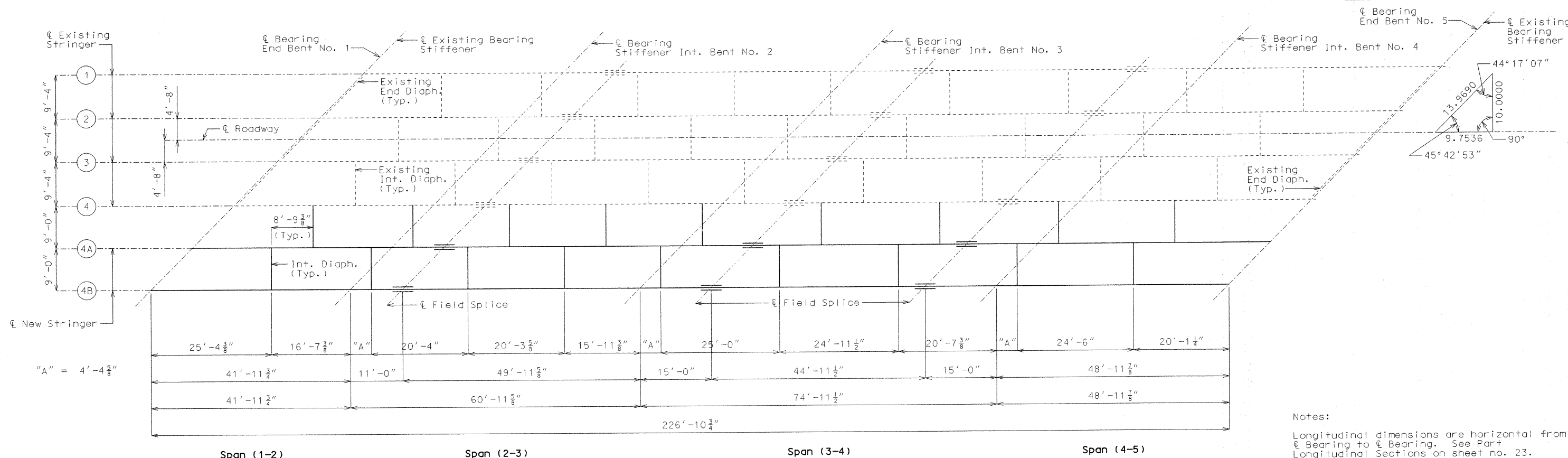
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 19 of 38

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PLAN OF STRUCTURAL STEEL

Notes:

Longitudinal dimensions are horizontal from C Bearing to C Bearing. See Part Longitudinal Sections on sheet no. 23.

All fabricated structural steel shall be ASTM A709 Grade 50.

For details of bolted field splices, see sheet no. 22.

For details of shear connectors, see sheet no. 23.

For details of intermediate diaphragms, see sheets no. 22 & 24.

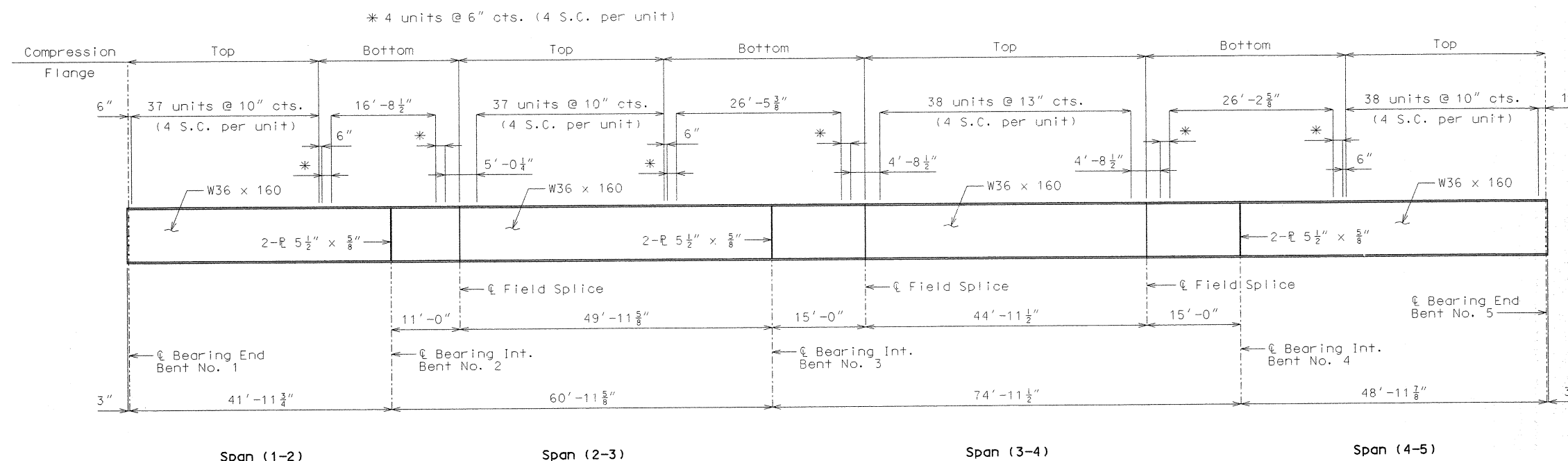
Stringers shall be fabricated to be in accordance with the camber diagram shown on sheet no. 21.

Notch toughness is required for all wide flange stringers.

For details of web holes at end bents, see sheet no. 23.

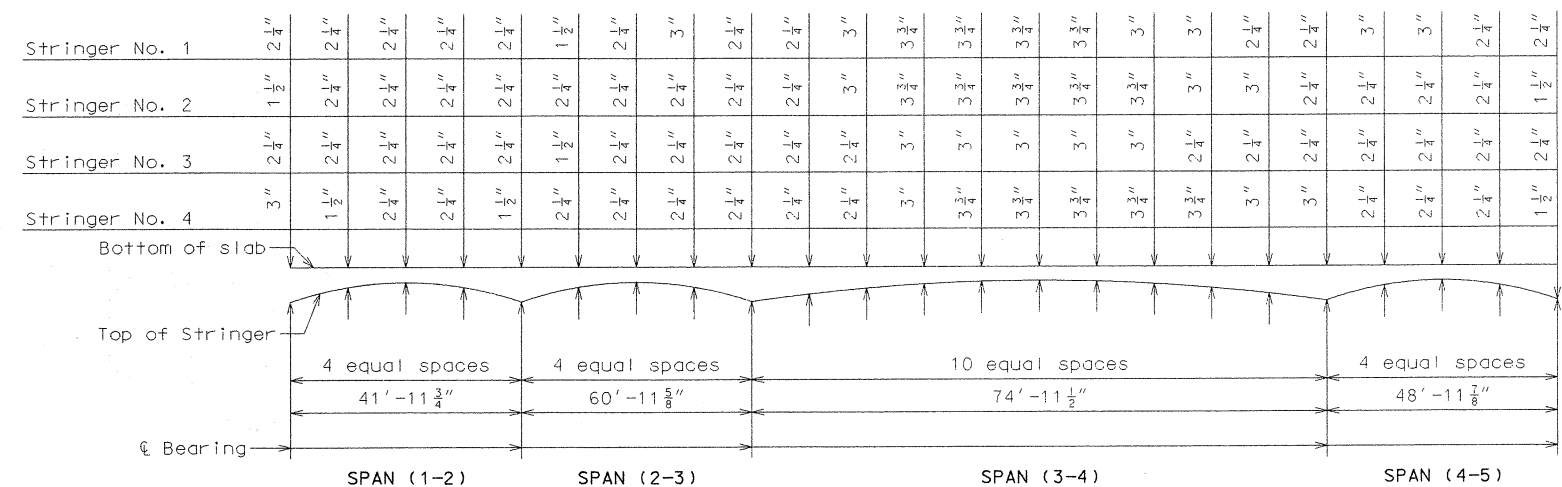
For location of slab drain attachment holes, see Slab Drain Details, sheet no. 24A.

Bolts on intermediate diaphragms and cross frames that connect stringers under different construction stage slab pours shall be installed snug tight, then tightened after both adjacent slab pours are completed.



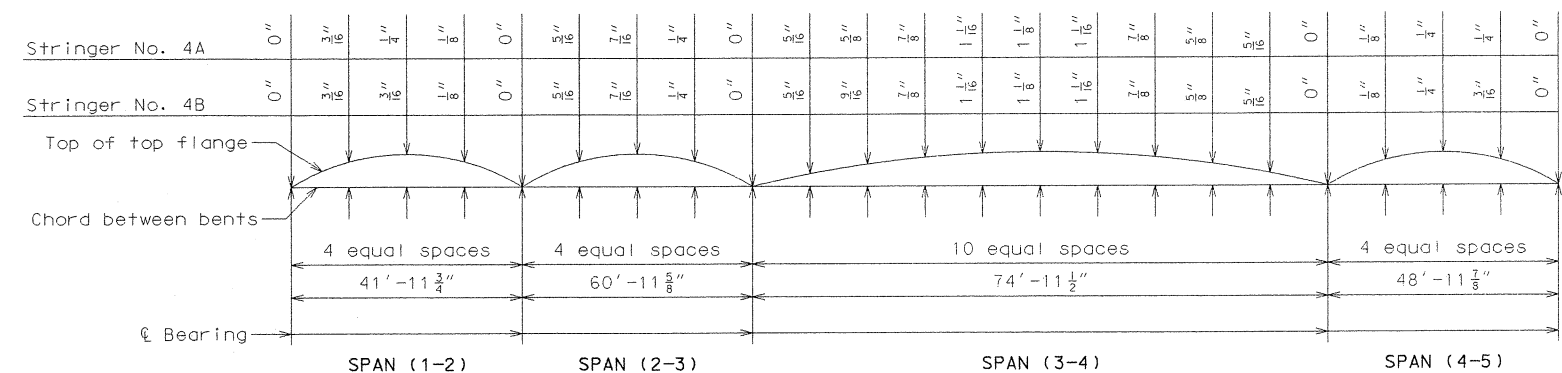
ELEVATION OF NEW STRINGERS

STATE OF MISSOURI
 REGISTERED PROFESSIONAL ENGINEER
 DANIEL M. SMITH
 NUMBER E-28985
 DATE 7-8-04



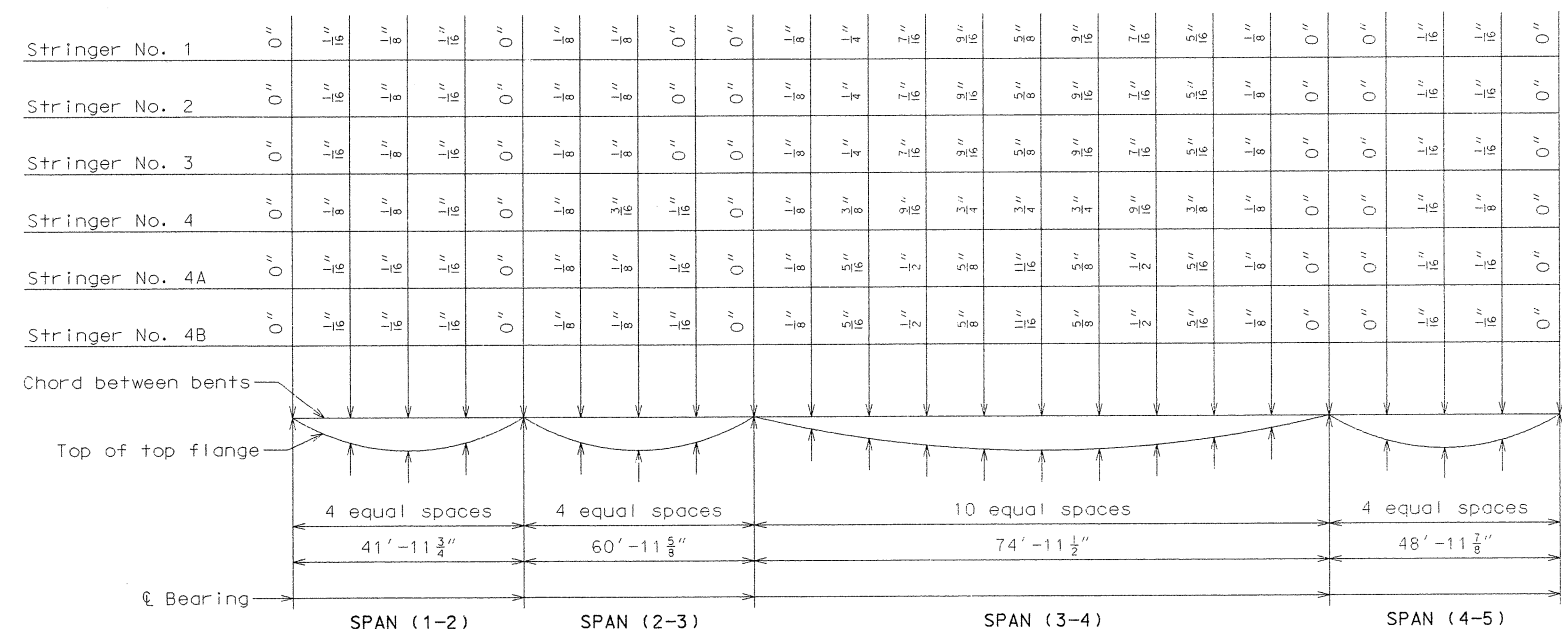
THEORETICAL HAUNCHING DIAGRAM FOR EXISTING STRINGERS

Note: If stringer elevations differ from those used to compute the theoretical slab haunches, it shall be necessary to adjust the slab haunches or raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching or grade adjustment.



CAMBER DIAGRAM FOR NEW STRINGERS

Note: Camber includes allowance for vertical curve and for dead load deflection due to concrete slab and structural steel.



DEAD LOAD DEFLECTION

Note: ①% of dead load deflection is due to the weight of structural steel.

Dead load deflection includes weight of structural steel and concrete slab.

- ① 17% for Stringer No. 1
- 15% for Stringer No. 2
- 18% for Stringer No. 3
- 14% for Stringer No. 4
- 19% for Stringers No. 4A & 4B

Detailed Apr. 2004
Checked May 2004

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

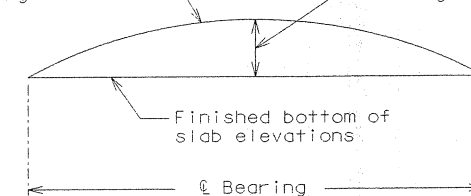
Theoretical Bottom of Slab Elevations at ℄ of Stringer (Prior to Forming for Slab) **

Span (1-2) (41'-11 $\frac{3}{4}$ " @ brg. - @ brg.)											
	@ brg.	.25	.50	.75	@ brg.						
Stringer No. 1	1004.25	1004.56	1004.86	1005.14	1005.43						
Stringer No. 2	1004.13	1004.44	1004.75	1005.04	1005.33						
Stringer No. 3	1004.00	1004.32	1004.63	1004.93	1005.22						
Stringer No. 4	1003.87	1004.20	1004.51	1004.81	1005.11						
Stringer No. 4A	1003.74	1004.07	1004.39	1004.70	1005.00						
Stringer No. 4B	1003.61	1003.94	1004.26	1004.58	1004.88						
Span (2-3) (60'-11 $\frac{5}{8}$ " @ brg. - @ brg.)											
	@ brg.	.25	.50	.75	@ brg.						
Stringer No. 1	1005.43	1005.84	1006.24	1006.61	1006.98						
Stringer No. 2	1005.33	1005.75	1006.15	1006.53	1006.90						
Stringer No. 3	1005.22	1005.65	1006.06	1006.44	1006.83						
Stringer No. 4	1005.11	1005.55	1005.96	1006.36	1006.74						
Stringer No. 4A	1005.00	1005.44	1005.86	1006.26	1006.66						
Stringer No. 4B	1004.88	1005.33	1005.76	1006.17	1006.57						
Span (3-4) (74'-11 $\frac{1}{2}$ " @ brg. - @ brg.)											
	@ brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	@ brg.
Stringer No. 1	1006.98	1007.16	1007.35	1007.53	1007.71	1007.88	1008.04	1008.19	1008.34	1008.48	1008.62
Stringer No. 2	1006.90	1007.09	1007.28	1007.47	1007.65	1007.82	1007.99	1008.14	1008.29	1008.44	1008.58
Stringer No. 3	1006.83	1007.02	1007.21	1007.40	1007.59	1007.76	1007.93	1008.09	1008.24	1008.39	1008.54
Stringer No. 4	1006.74	1006.94	1007.14	1007.34	1007.53	1007.71	1007.88	1008.04	1008.19	1008.34	1008.49
Stringer No. 4A	1006.66	1006.86	1007.06	1007.26	1007.45	1007.63	1007.81	1007.97	1008.13	1008.29	1008.44
Stringer No. 4B	1006.57	1006.78	1006.98	1007.18	1007.38	1007.56	1007.74	1007.91	1008.07	1008.23	1008.39
Span (4-5) (48'-11 $\frac{7}{8}$ " @ brg. - @ brg.)											
	@ brg.	.25	.50	.75	@ brg.						
Stringer No. 1	1008.62	1008.86	1009.10	1009.33	1009.54						
Stringer No. 2	1008.58	1008.83	1009.07	1009.31	1009.53						
Stringer No. 3	1008.54	1008.79	1009.04	1009.28	1009.51						
Stringer No. 4	1008.49	1008.75	1009.01	1009.25	1009.48						
Stringer No. 4A	1008.44	1008.71	1008.97	1009.22	1009.45						
Stringer No. 4B	1008.39	1008.66	1008.93	1009.18	1009.42						

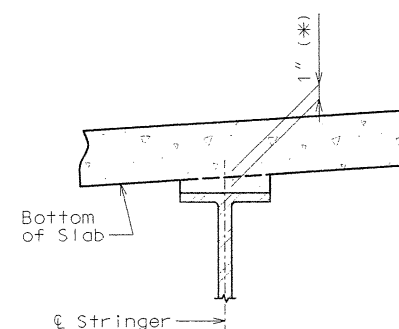
** Elevations are based on a constant slab thickness of 7 1/2" and include allowance for theoretical dead load deflections due to weight of slab.

Theoretical Bottom of Slab
Elevation at ℄ of Stringer
(Prior to Forming for Slab)

Deflections due to
weight of slab

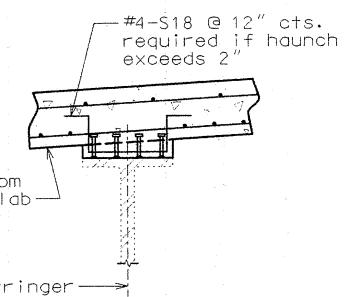


TYPICAL SLAB ELEVATIONS DIAGRAM



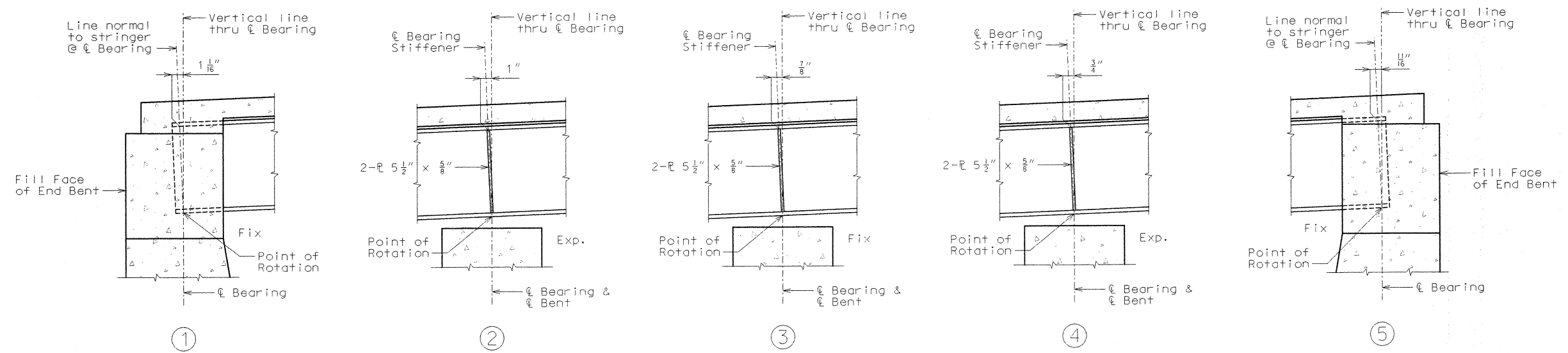
THEORETICAL SLAB HAUNCH
FOR NEW STRINGERS NO. 4A & 4B

(*) Dimension (bottom of slab to top of flange) may vary if stringer camber after erection differs from plan camber by more or less than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

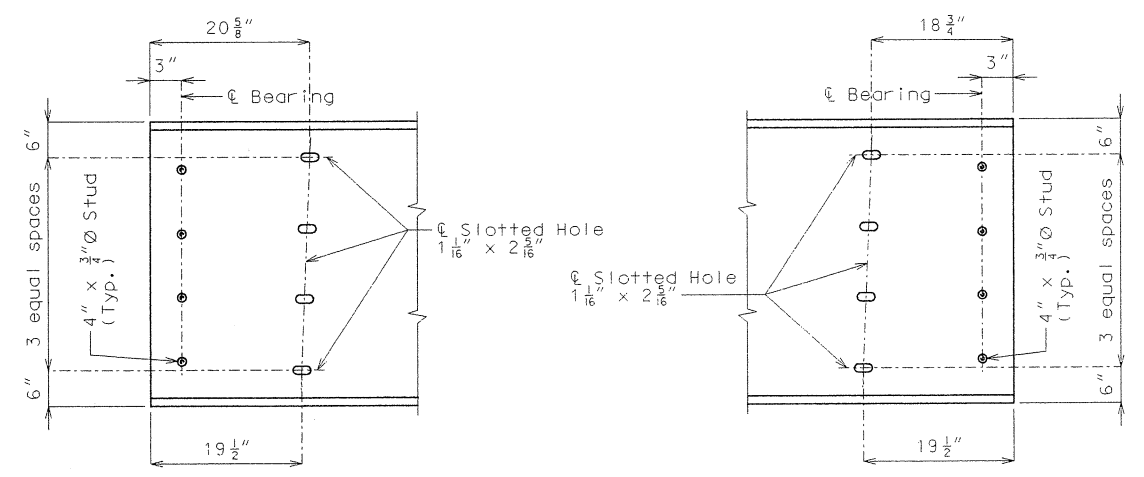


SECTION THRU HAUNCH
ON EXISTING STRINGERS

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
DANIEL M. SMITH
NUMBER E-28985
DATE 7-8-04



PART LONGITUDINAL SECTIONS (STRINGERS NO. 4A & 4B)

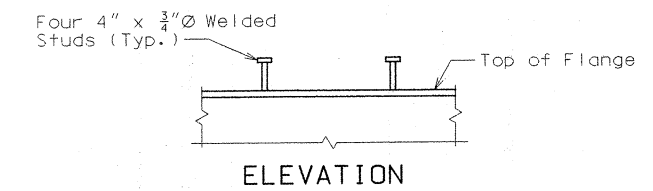


DETAIL OF WEB HOLES
AT END BENT NO. 1
(STRINGERS NO. 4A & 4B)

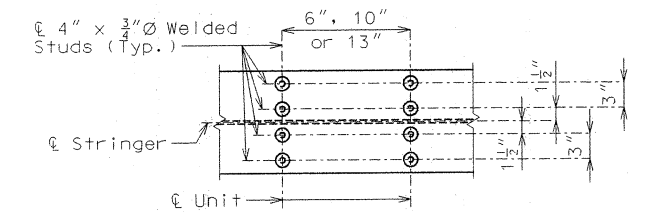
DETAIL OF WEB HOLES
AT END BENT NO. 5
(STRINGERS NO. 4A & 4B)

SECTION AT BEARING
AT END BENTS NO. 1 & 5
(STRINGERS NO. 4A & 4B)

Note: Weight of 4" x 3/4" studs at end bents is included in the weight of shear connectors.



ELEVATION

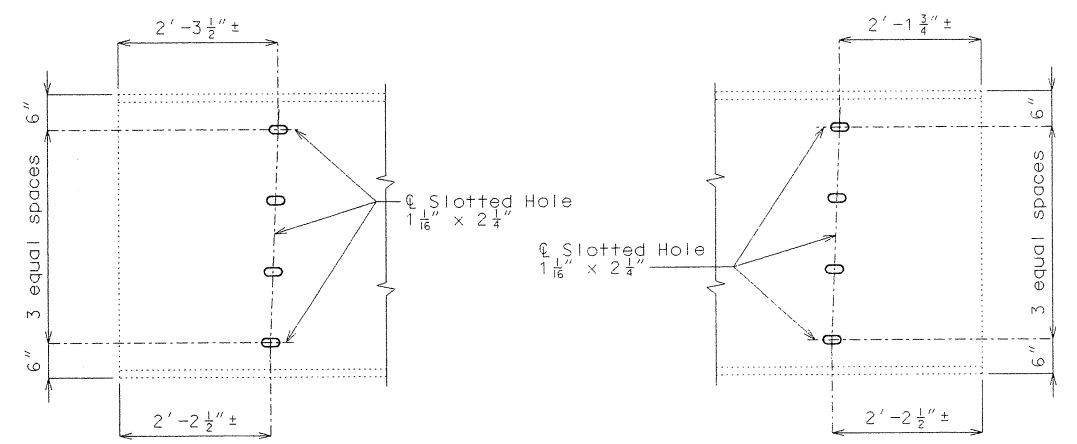


PLAN OF SHEAR CONN. (4 PER UNIT)

Note: Weight of 902 pounds of all shear connectors is included in the weight of Fabricated Structural Low Alloy Steel.

Shear connectors shall be in accordance with Sec 1037.

DETAILS OF SHEAR CONNECTORS

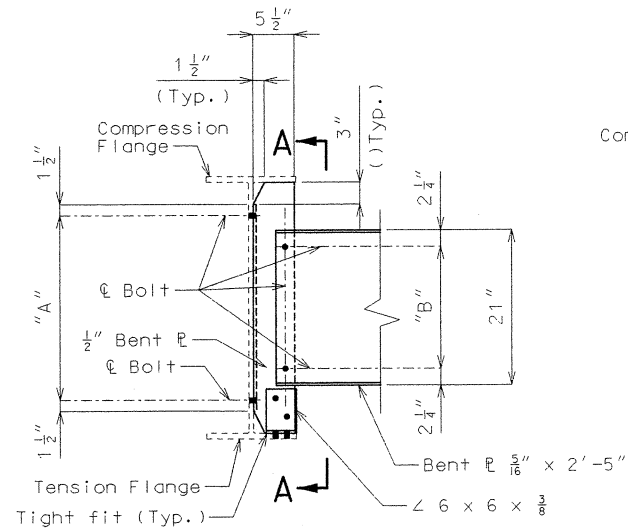


DETAIL OF WEB HOLES
AT END BENT NO. 1
(EXIST. STRINGERS)

DETAIL OF WEB HOLES
AT END BENT NO. 5
(EXIST. STRINGERS)

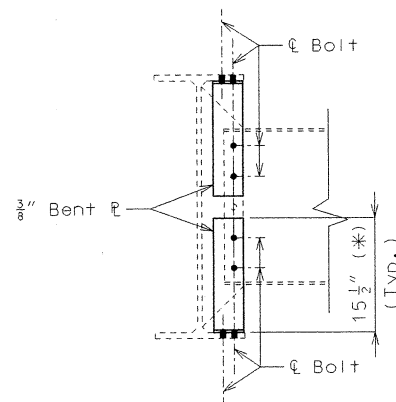
Note: Cost of field drilling holes in existing stringers will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel.

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
DANIEL M. SMITH
NUMBER E-28985
DATE 7-8-04



"A" Nine $\frac{13}{16}$ " $\varnothing$ holes for $\frac{3}{4}$ " $\varnothing$ high strength bolts (equally spaced)
 "B" Five $\frac{13}{16}$ " $\varnothing$ holes for $\frac{3}{4}$ " $\varnothing$ high strength bolts (equally spaced)

PART SECTION SHOWING NEW
 INTERMEDIATE DIAPHRAGM CONNECTION
 TO EXISTING STRINGER
 BOTTOM FLANGE IN TENSION



Notes:

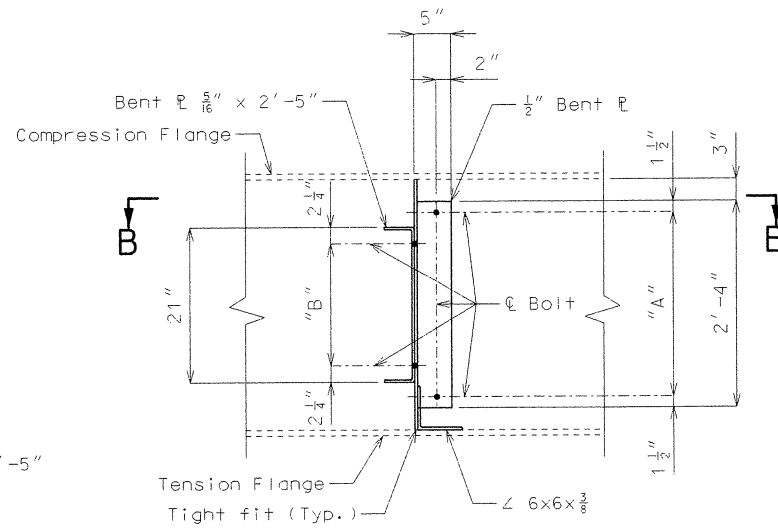
Remove existing bolts in intermediate diaphragm as shown to connect $\frac{3}{8}$ " bent PL.

Field drill $\frac{13}{16}$ " $\varnothing$ holes through $\frac{3}{8}$ " bent PL to match holes in existing intermediate diaphragm connection plate.

Use $\frac{3}{4}$ " $\varnothing$ high strength bolts to connect bent plate to existing intermediate diaphragm connection plate.

(*) Field verify plate length before ordering new steel.

PART SECTION THRU EXISTING STRINGER
 SHOWING CONNECTION PLATES AT ALL EXISTING
 INTERMEDIATE DIAPHRAGMS



SECTION A-A

Notes:

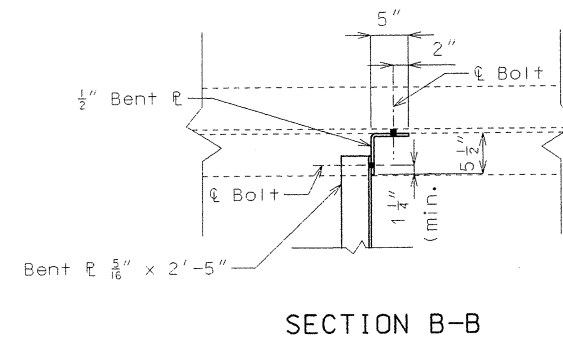
Fabricated structural steel shall be ASTM A709 Grade 50.

Field drill $\frac{13}{16}$ " $\varnothing$ holes through existing stringer to match holes in $\frac{1}{2}$ " bent PL and $\angle 6 \times 6 \times \frac{3}{8}$.

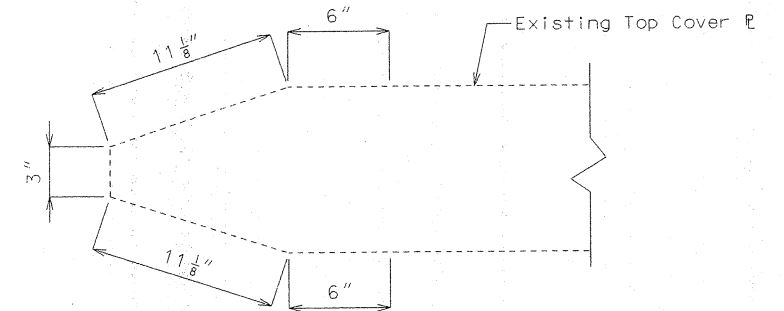
Use $\frac{3}{4}$ " $\varnothing$ high strength bolts to connect $\frac{1}{2}$ " bent PL and $\angle 6 \times 6 \times \frac{3}{8}$ to existing stringer.

For details of $\angle 6 \times 6 \times \frac{3}{8}$, see sheet no. 22.

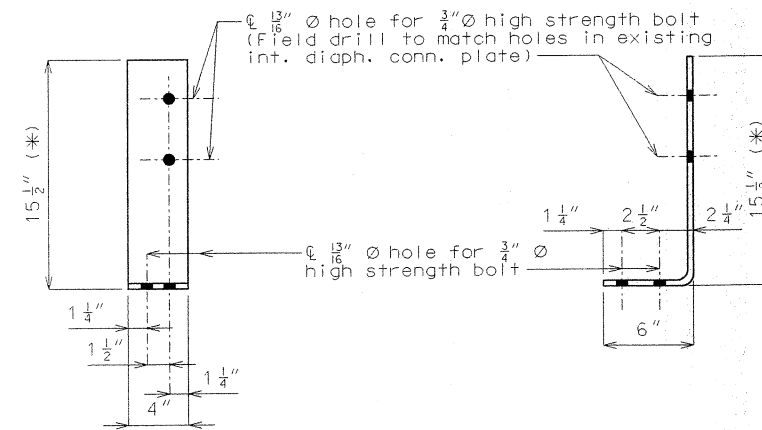
The cost of fabricating and installing connections of new intermediate diaphragms to existing stringer will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel.



SECTION B-B

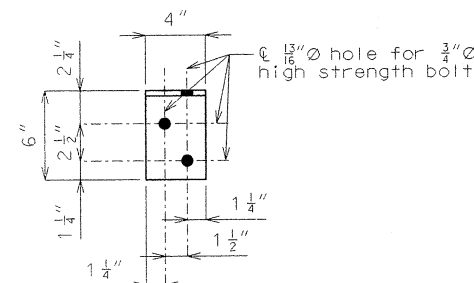


DETAIL SHOWING LIMITS OF NON-DESTRUCTIVE
 TESTING ON EXISTING TOP COVER PL'S AT
 INT. BENTS 3 & 4



ELEVATION

SIDE VIEW



PLAN

DETAILS OF $\frac{3}{8}$ " BENT PLATE

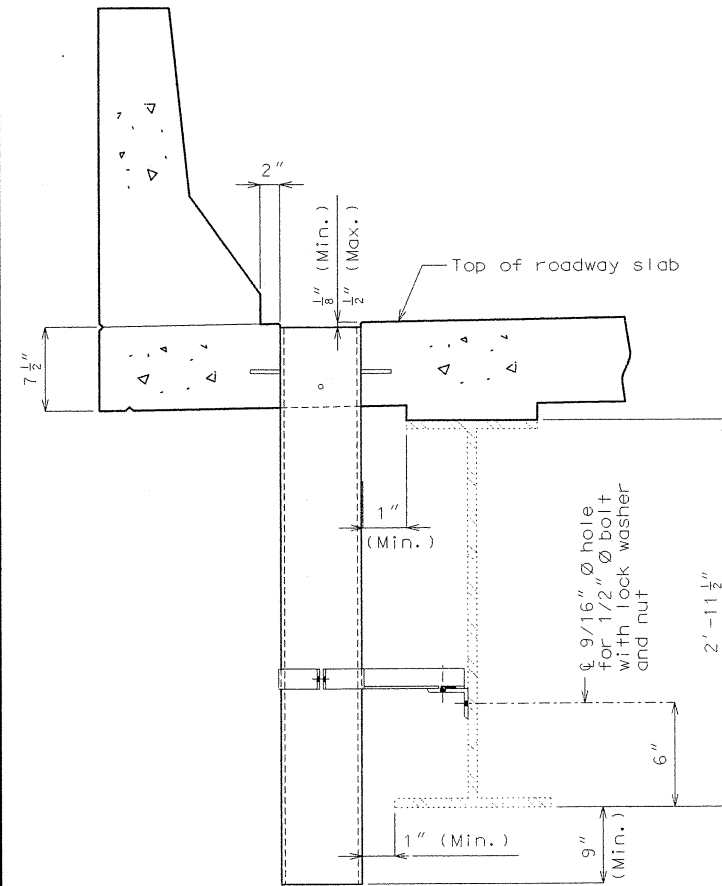
Notes:

The two $\frac{3}{4}$ " $\varnothing$ high strength bolts that connect the $\frac{3}{8}$ " bent PL to the top flange shall be placed so the nut is on the inside of the flange toward the web.

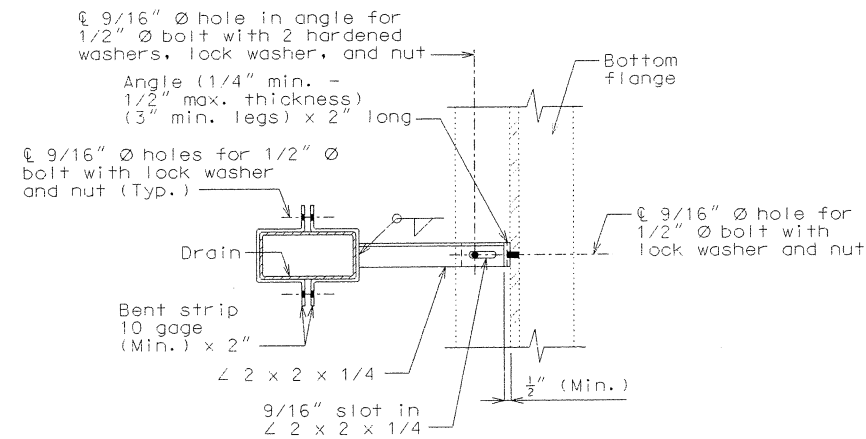
The cost of fabricating and installing connections of existing diaphragms to flanges will be considered completely covered by the contract unit price for Existing Diaphragm Connections to Flange.

Remove existing shear connectors as necessary to facilitate installation of bent connection plates to top flanges. Cost of removing existing shear connectors will be considered incidental to other pay items.

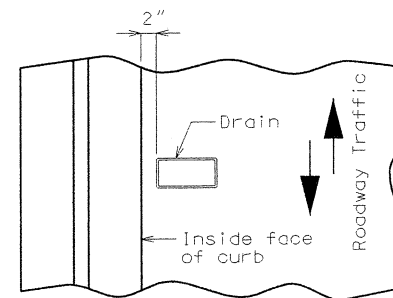
State	Proj. No.	Sheet No.
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PART SECTION NEAR DRAIN



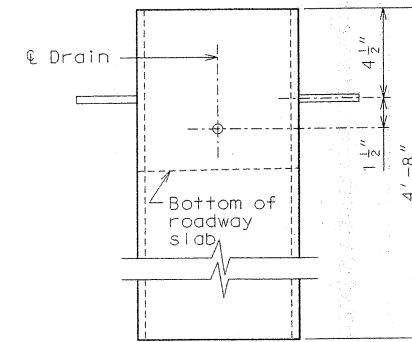
PART SECTION SHOWING BRACKET ASSEMBLY



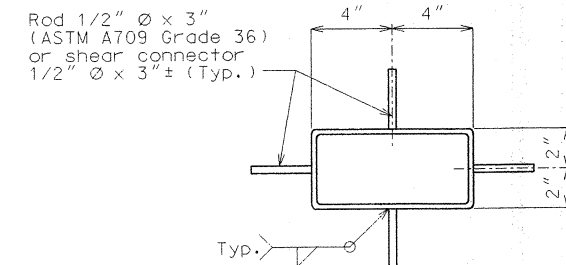
PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY

SLAB DRAIN DETAILS

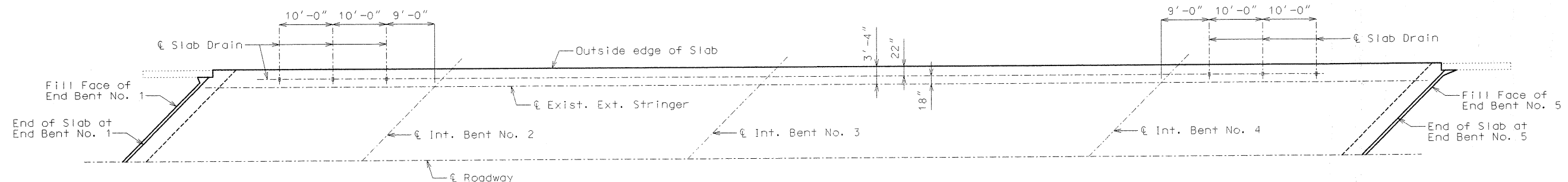


ELEVATION OF DRAIN



PLAN OF DRAIN

NOTE:
Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.
Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.
Outside dimensions of drains are 8" x 4".
Locate drains in slab by dimensions shown in Part Section Near Drain.
Shift reinforcing steel in field where necessary to clear drains.
The drains and bracket assembly shall be galvanized in accordance with ASTM A123.
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.
Shop drawings will not be required for the slab drains and the bracket assembly.
The bolt hole for the bracket assembly attachment shall be field drilled.



PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS (LEFT SIDE ONLY)

Note: Longitudinal dimensions are horizontal along existing exterior stringer.

Shift slab drain locations the minimum extent necessary to allow for field drilling hole in web of existing stringer for bracket assembly attachment.

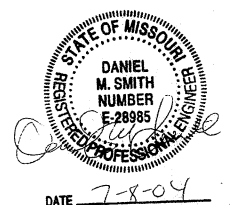
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 24A of 38

JACKSON

COUNTY

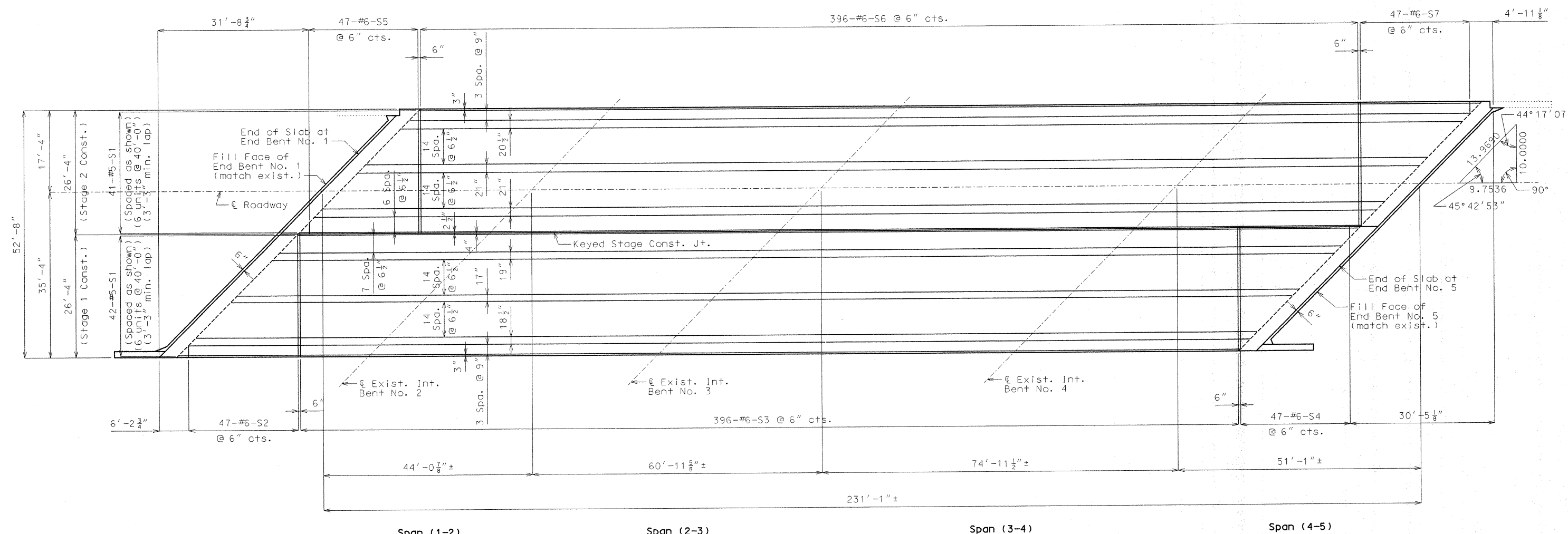
A16082



Detailed Apr. 2004
Checked May 2004

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MO		B27



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Note: Longitudinal slab dimensions are measured horizontally.

For Plan of Slab Showing Top Reinforcement, see sheet no. 26.

For Theoretical Slab Haunching Diagram & Theoretical Bottom of Slab Elevations, see sheet no. 21.

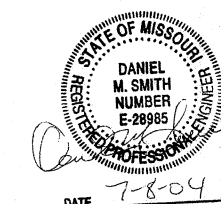
For Section Thru Slab & Slab Pouring Sequence, see sheet no. 27.

For details and reinforcement of Safety Barrier Curbs, see sheets no. 28 thru 33.

For Details Showing Staged Construction, see sheets no. 3 & 4.

For details and location of slab drains, see sheet no. 24A.

SLAB DETAILS



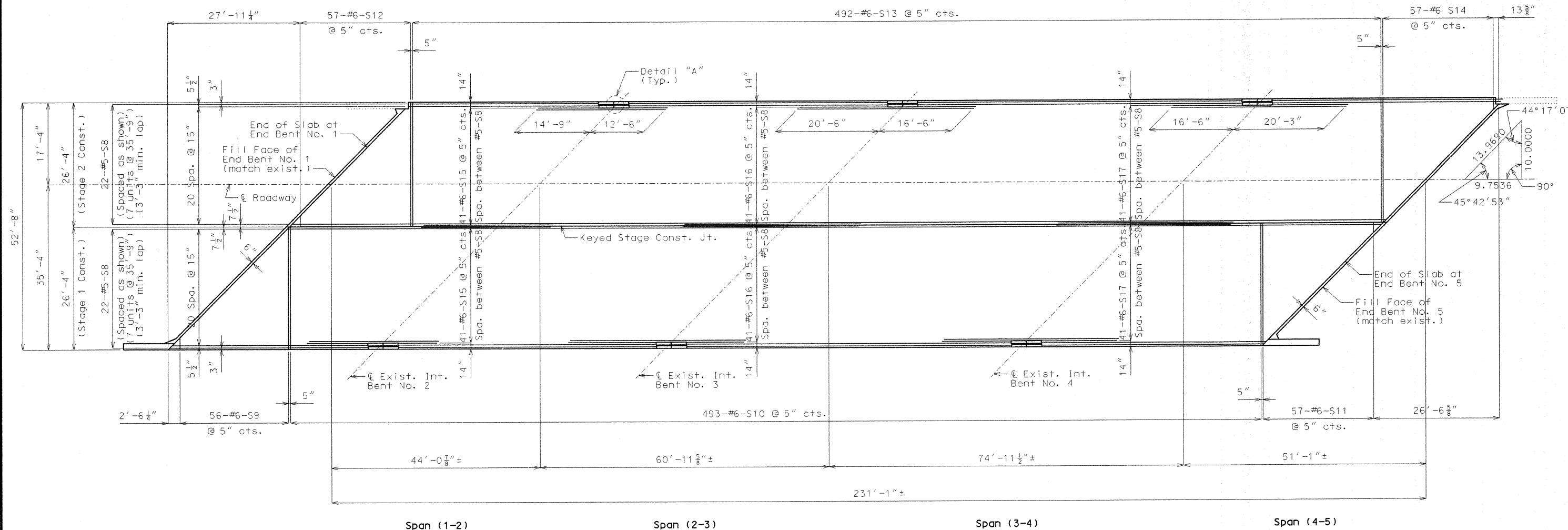
Detailed Apr. 2004
Checked May 2004

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

Sheet No. 25 of 38

JACKSON COUNTY A16082

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PLAN OF SLAB SHOWING TOP REINFORCEMENT

Note: Longitudinal slab dimensions are measured horizontally.

For Plan of Slab Showing Bottom Reinforcement, see sheet no. 25.

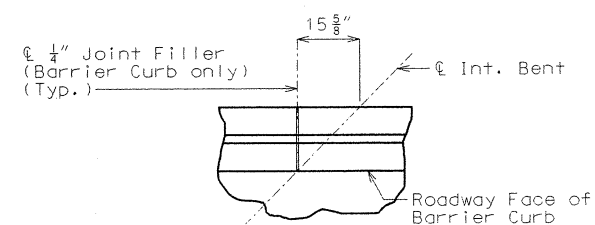
For Theoretical Slab Haunching Diagram & Theoretical Bottom of Slab Elevations, see sheet no. 21.

For Section Thru Slab & Slab Pouring Sequence, see sheet no. 27.

For details and reinforcement of Safety Barrier Curbs, see sheets no. 28 thru 33.

For Details Showing Staged Construction, see sheets no. 3 & 4.

For details and location of slab drains, see sheet no. 24A.



DETAIL "A"

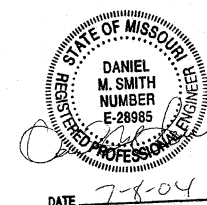
SLAB DETAILS

Detailed Apr. 2004
Checked May 2004

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

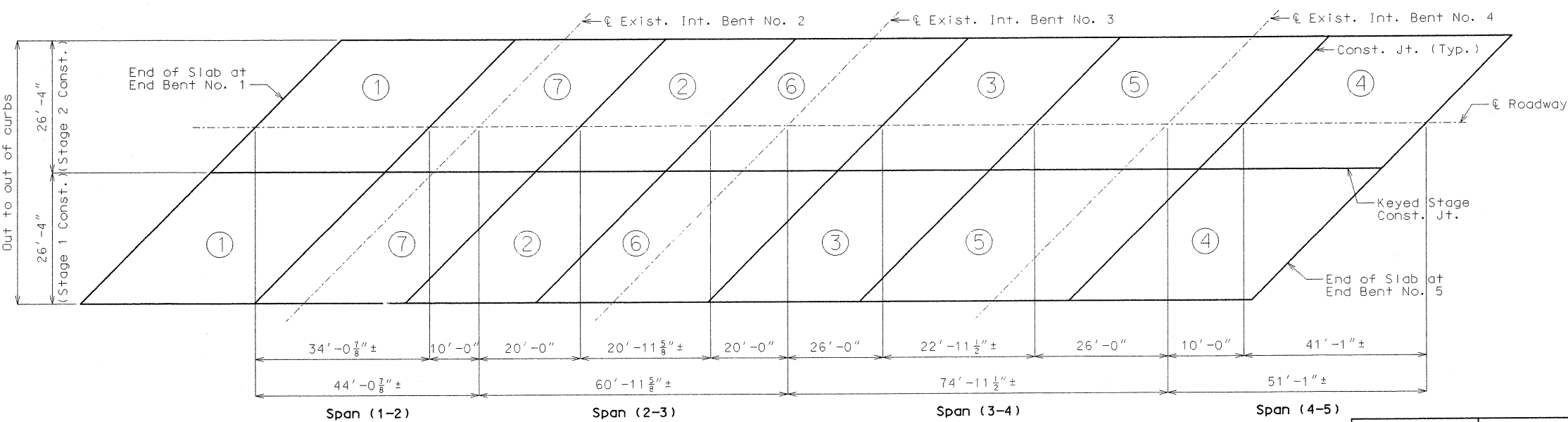
Sheet No. 26 of 38

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DATE 7-8-04

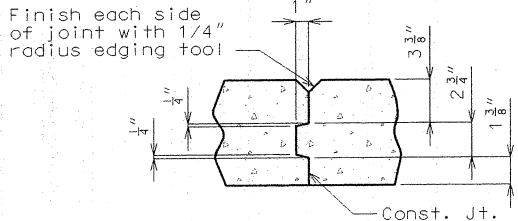
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SLAB POURING SEQUENCE

Note: Longitudinal dimensions are horizontal.

(*) The contractor shall use a mechanical bar splice for #6-S3 or #6-S4 & #6-S5 or #6-S6 and #6-S10 or #6-S11 & #6-S12 or #6-S13 bars at the specified location. The total bar lengths for bars indicated in the bill of reinforcing steel are determined based on the end of the bars being located flush to the face of the construction joint. No additional payment will be made for any additional bar lengths required for the mechanical bar splices. Mechanical bar splices shall be in accordance with Sec 706.

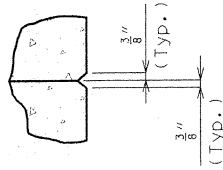
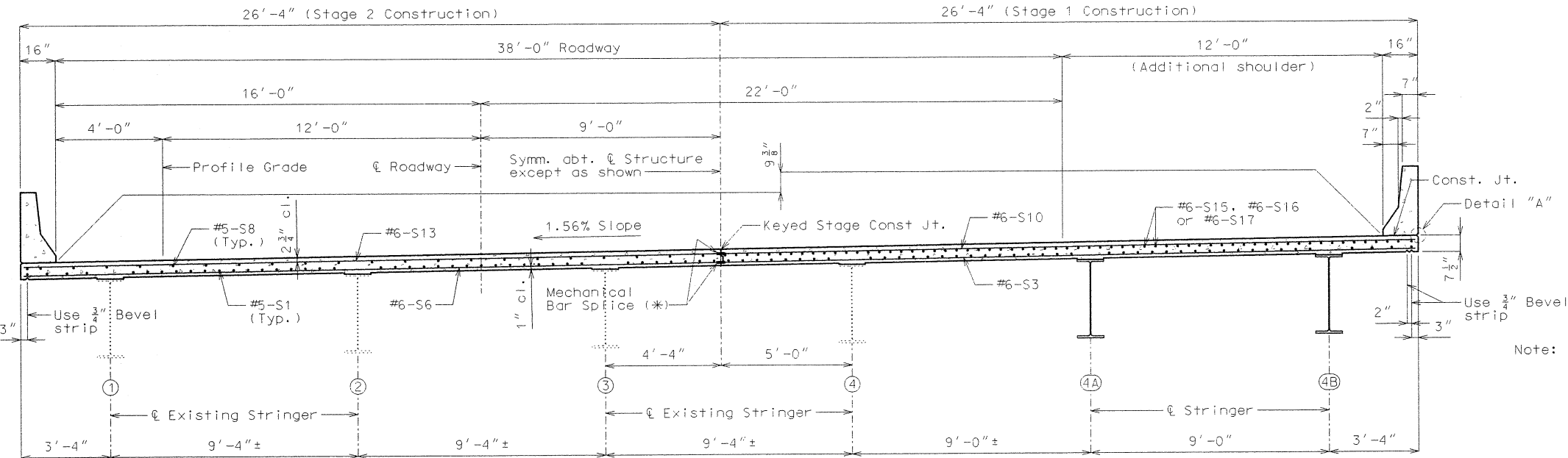


SLAB CONSTRUCTION JOINT DETAIL

	Sequence of Pours							Min. rate of pour cu. yds./hr.		
	Direction							With retarder	No retarder	
Basic sequence	1	2	3	4	5	6	7	25	25	
	Either direction									
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.										
Alternate "A" pours	1		7 + 2		6 + 3		5 + 4		25	25
	End to 7		1 to 6		2 to 5		3 to end			
Alternate "B" pours	1 + 7 + 2		6 + 3			5 + 4			25	25
	End to 6		2 to 5			3 to end				
Alternate "C" pours	1 + 7 + 2			6 + 3 + 5 + 4				25	25	
	End to 6			2 to end						
Alternate "D" pours	1 + 7 + 2 + 6 + 3 + 5 + 4							25	25	
	End to end									

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE



DETAIL "A"

Note: For Details Showing Staged Construction, see sheets no. 3 & 4.

For Theoretical Bottom of Slab Elevations & Theoretical Slab Haunching Diagram, see sheet no. 21.

For Plan of Slab Showing Bottom Reinforcement, see sheet no. 25.

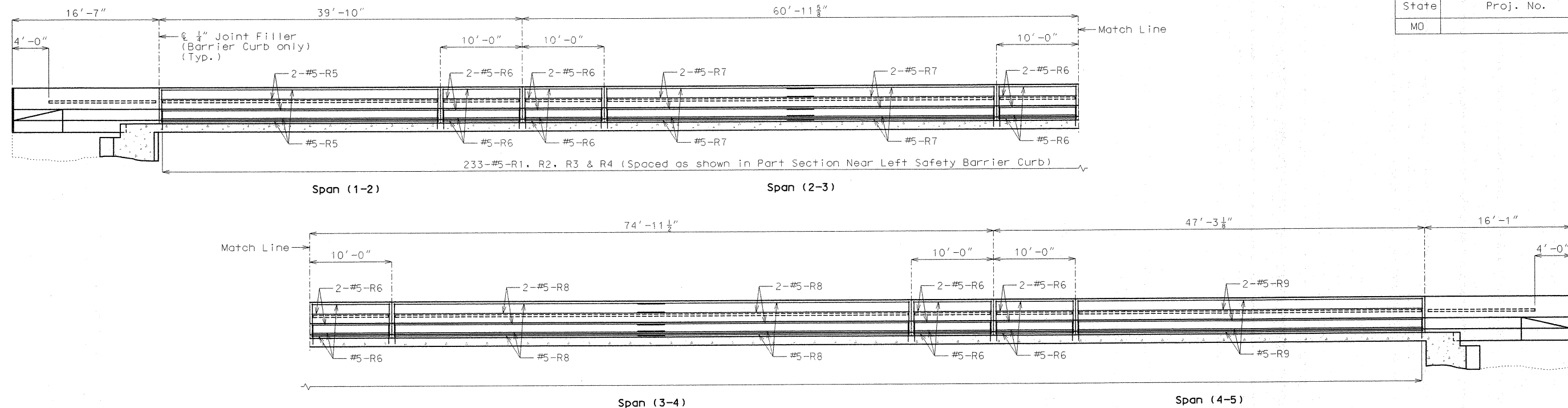
For Plan of Slab Showing Top Reinforcement, see sheet no. 26.

For details of Safety Barrier Curbs not shown, see sheets no. 28 thru 33.



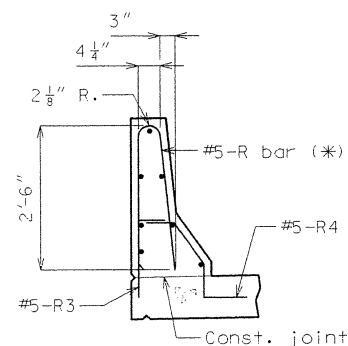
DATE 7-8-04

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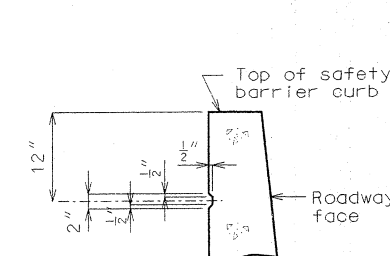
SECTION NEAR LEFT SAFETY BARRIER CURB

Note: Longitudinal dimensions are horizontal.

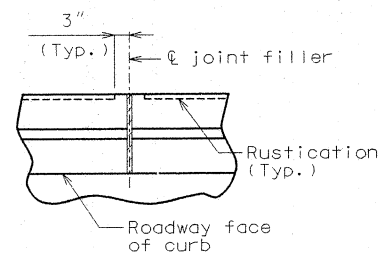


R-BAR PERMISSIBLE ALTERNATE SHAPE

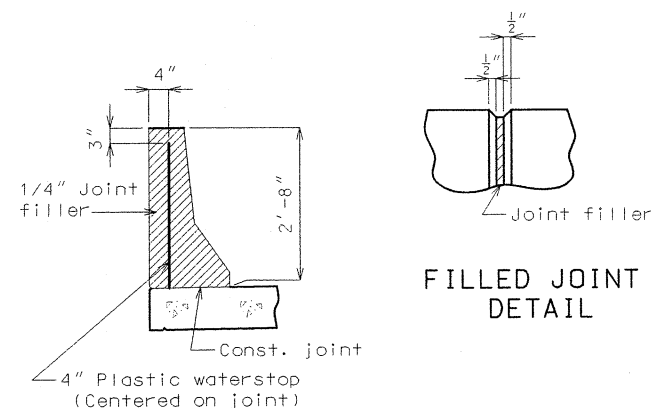
(*) The R1 and R2 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION SHOWING RUSTICATION DETAILS



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



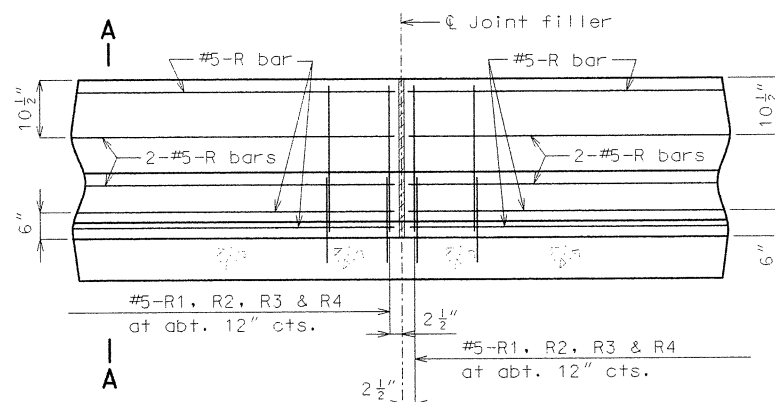
FILLED JOINT DETAIL

DETAILS OF PLASTIC WATERSTOP

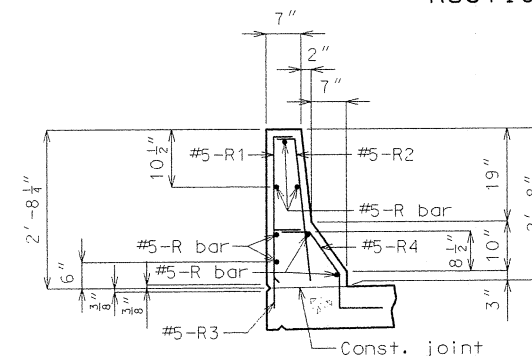
Notes:

Plastic waterstop shall be placed in all safety barrier curb filled joints, except structures with superelevation, use on all lower safety barrier curb joints only.

Cost of plastic waterstop, complete-in-place, will be considered completely covered by the contract unit price for Safety Barrier Curb.



PART SECTION NEAR LEFT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



PART SECTION A-A

Notes:

Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 2.28 sq. ft.

Notes:

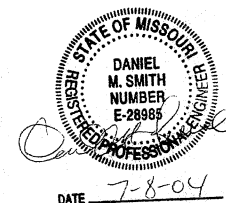
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2" radius or a 3/8" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

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



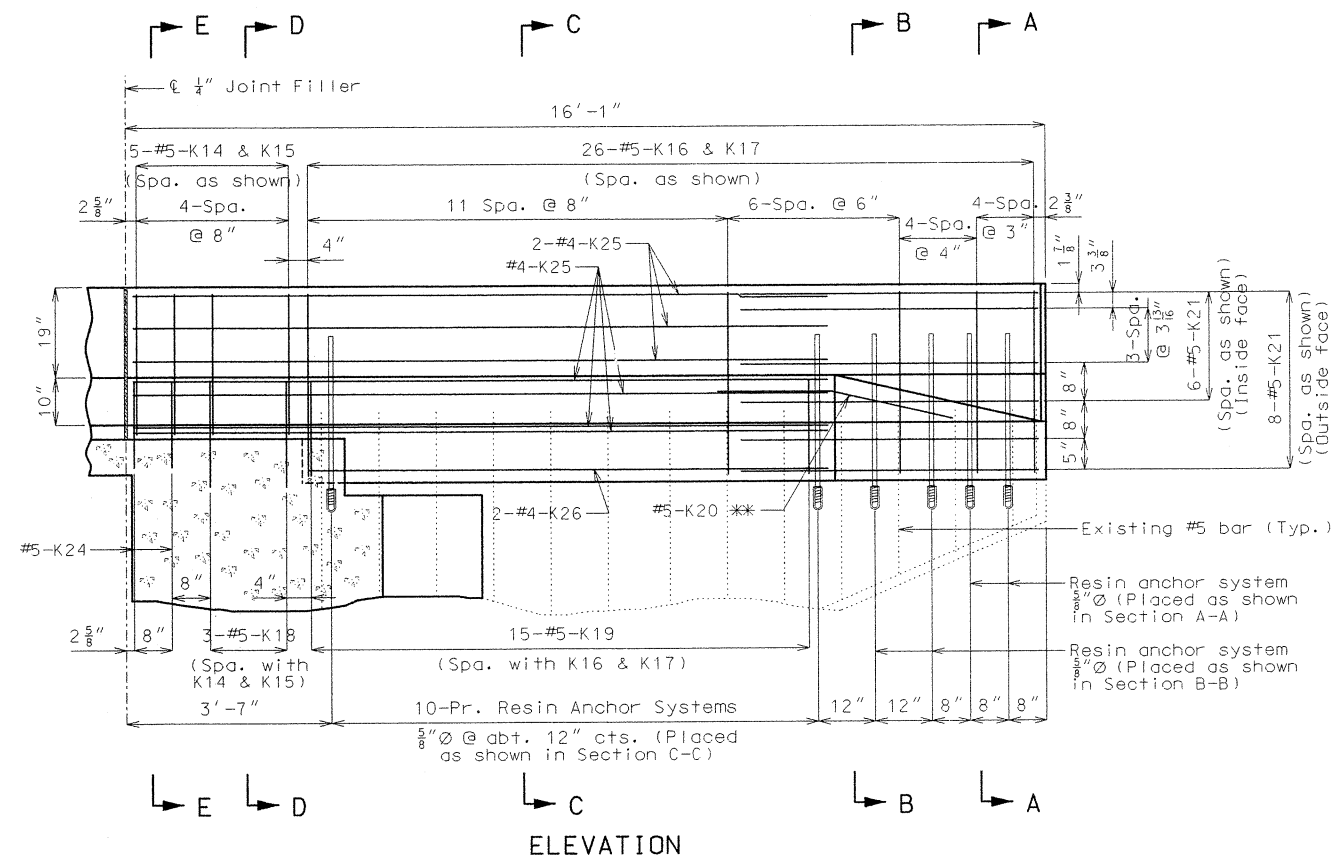
JACKSON COUNTY A16082

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

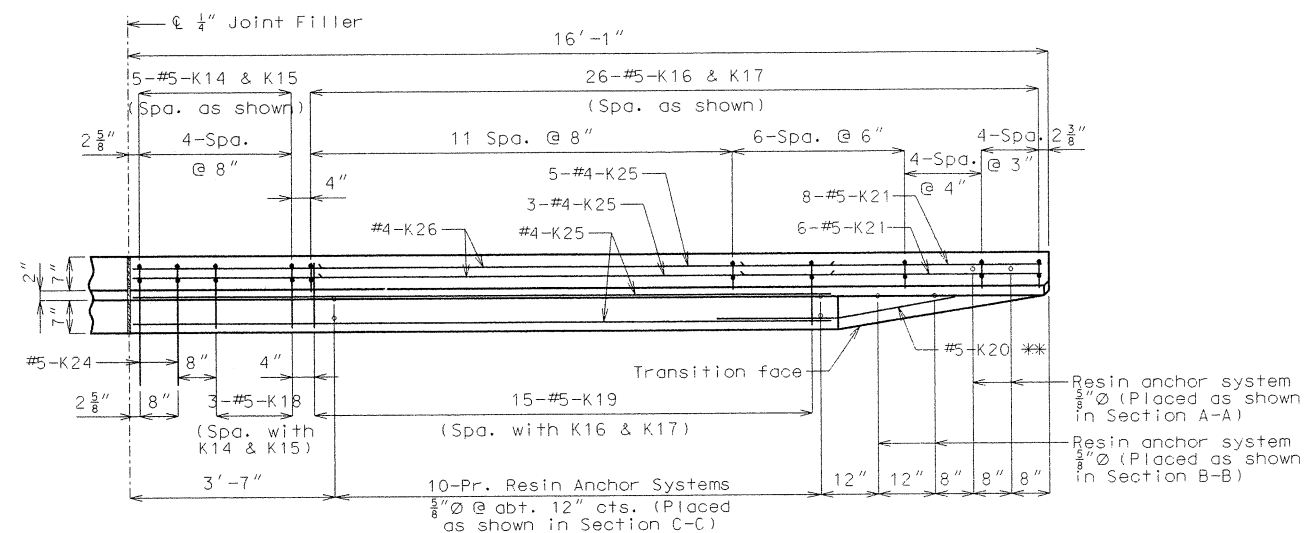
Sheet No. 28 of 38

Detailed Apr. 2004
Checked May 2004

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MO		233



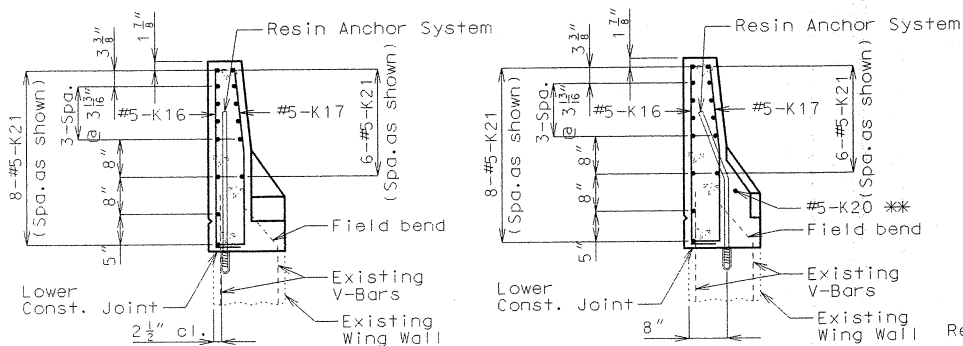
ELEVATION



PLAN

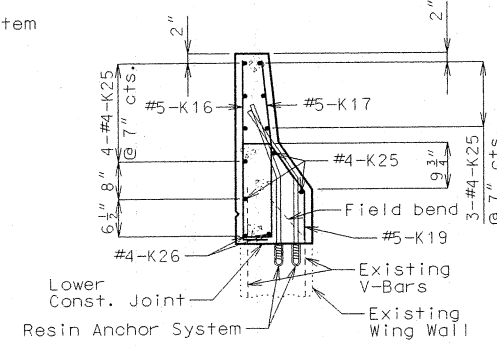
(Existing wing wall and reinforcement not shown for clarity.)

** Fit bar to follow transition face of curb.

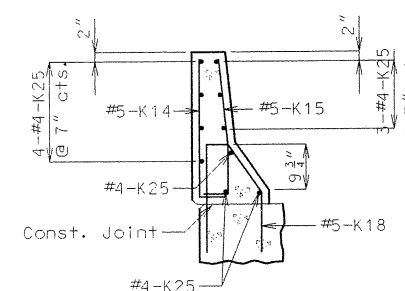


SECTION A-A

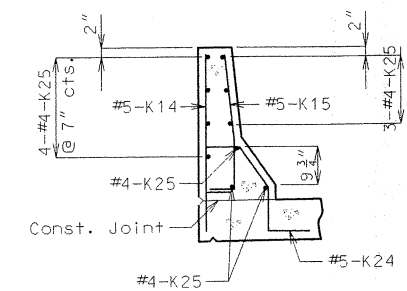
SECTION B-B



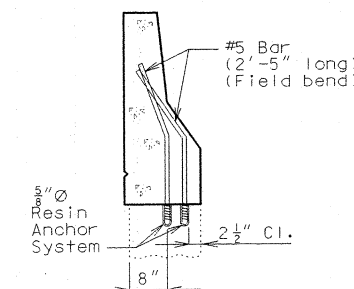
SECTION C-C



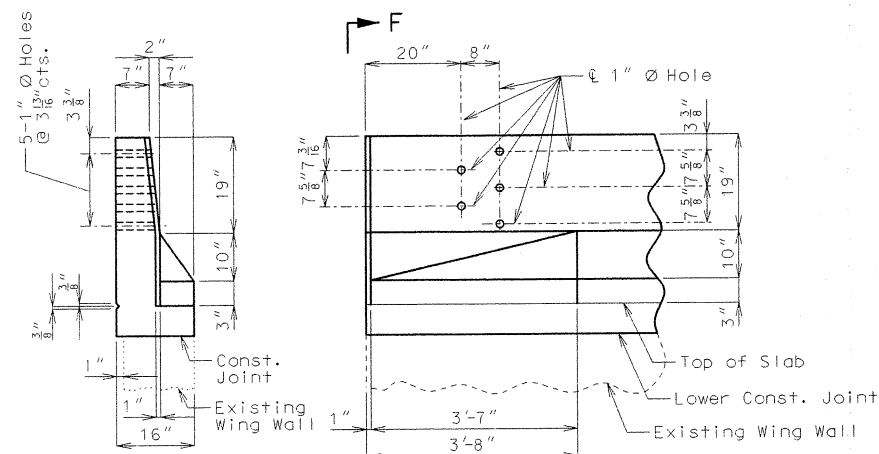
SECTION D-D



SECTION E-E

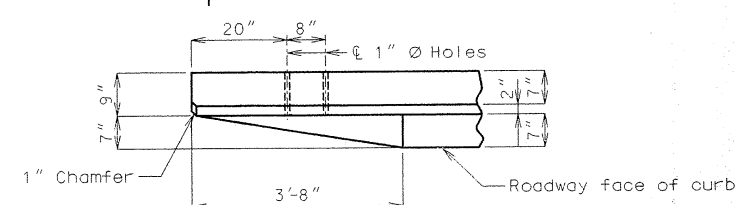


ANCHOR SYSTEMS AT SECTION C-C



PART ELEVATION F-F

PART ELEVATION



PART PLAN

DETAILS OF GUARD RAIL ATTACHMENT

The top two K21 or K25 bars shall be kept with position close to those shown in Sections A-A thru E-E.

K14-K15 & K16-K17 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K14 & K15 and K16 & K17 bar combinations may be furnished as one bar as shown, at the contractor's option.

NOTE: Use a minimum lap of 2'-0" between K21 and K25 or K26 bars.

DETAILS OF LEFT SAFETY BARRIER CURB AT END BENT NO. 5

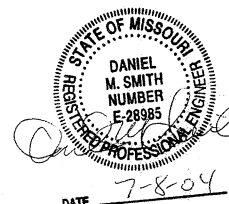
Detailed Apr. 2004
Checked May 2004

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

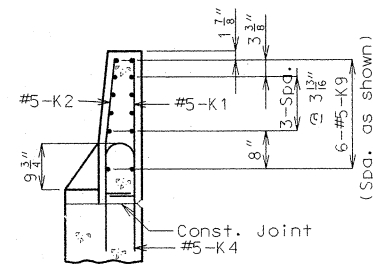
Sheet No. 31 of 38

JACKSON COUNTY

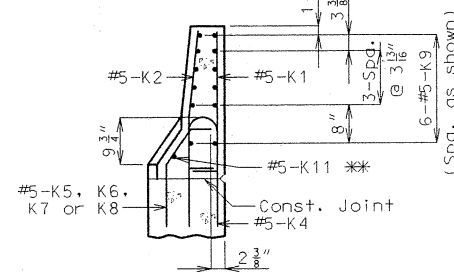
A16082



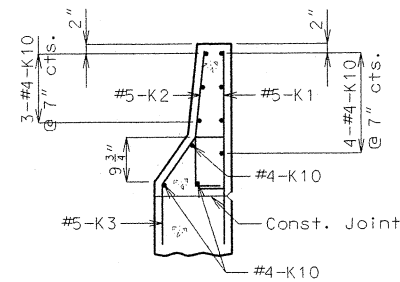
t:\br-proj\sidebm\j4u1042\A16082\A16082_031.dgn 12:59:22 PM 07/08/2004



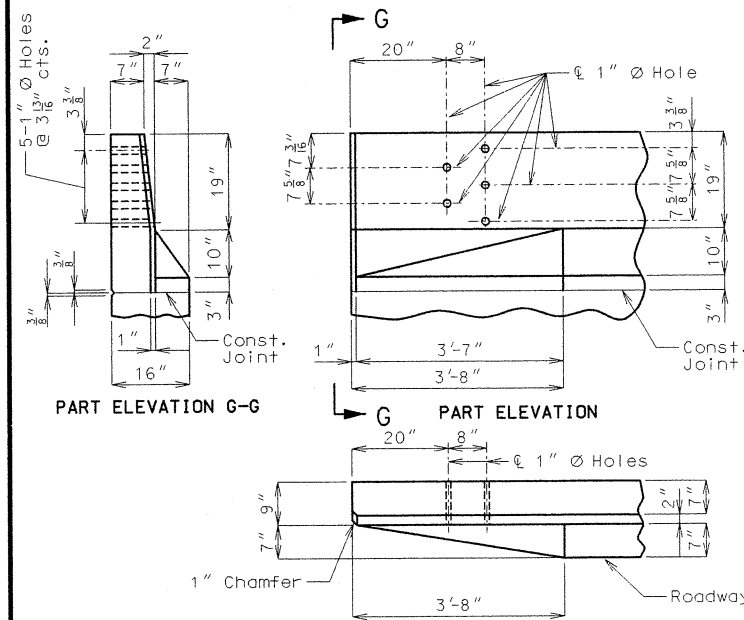
SECTION A-A



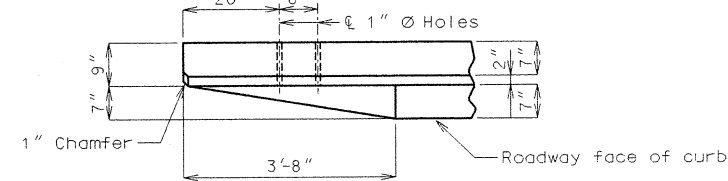
SECTION B-B



SECTION C-C

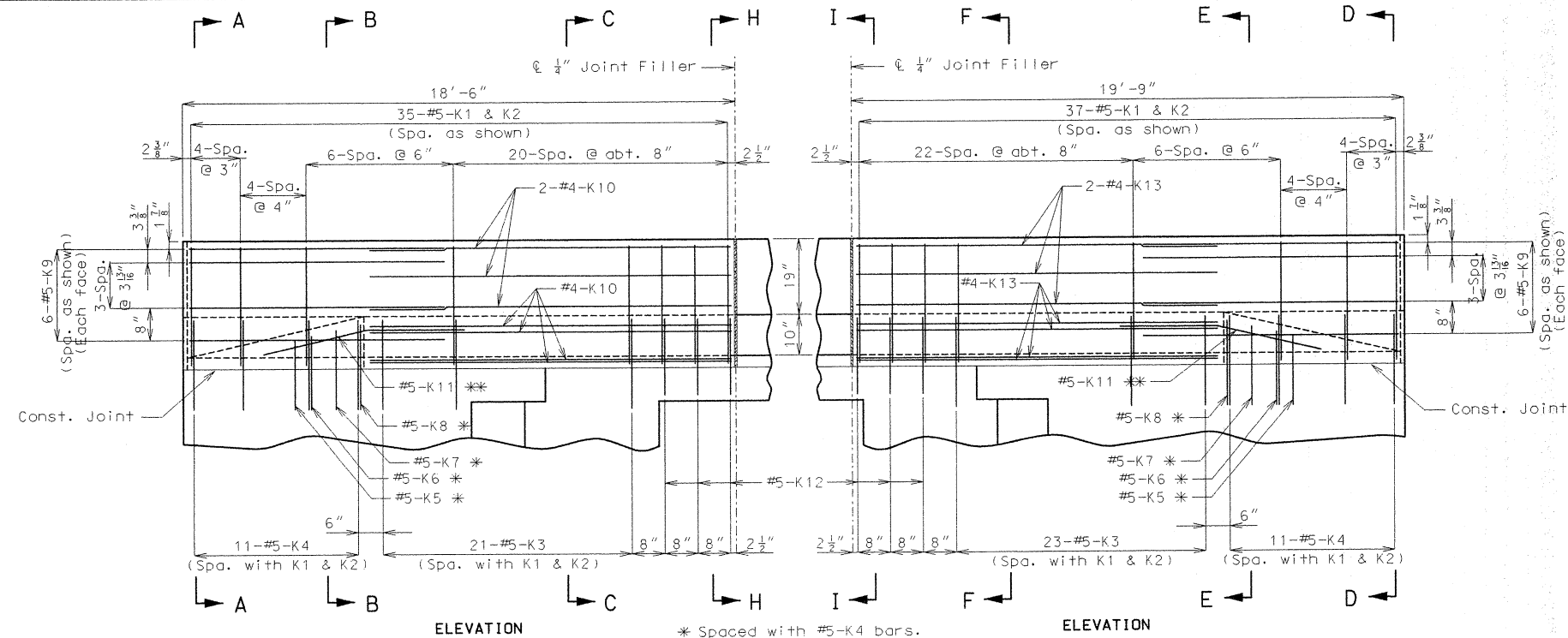


PART ELEVATION G-G



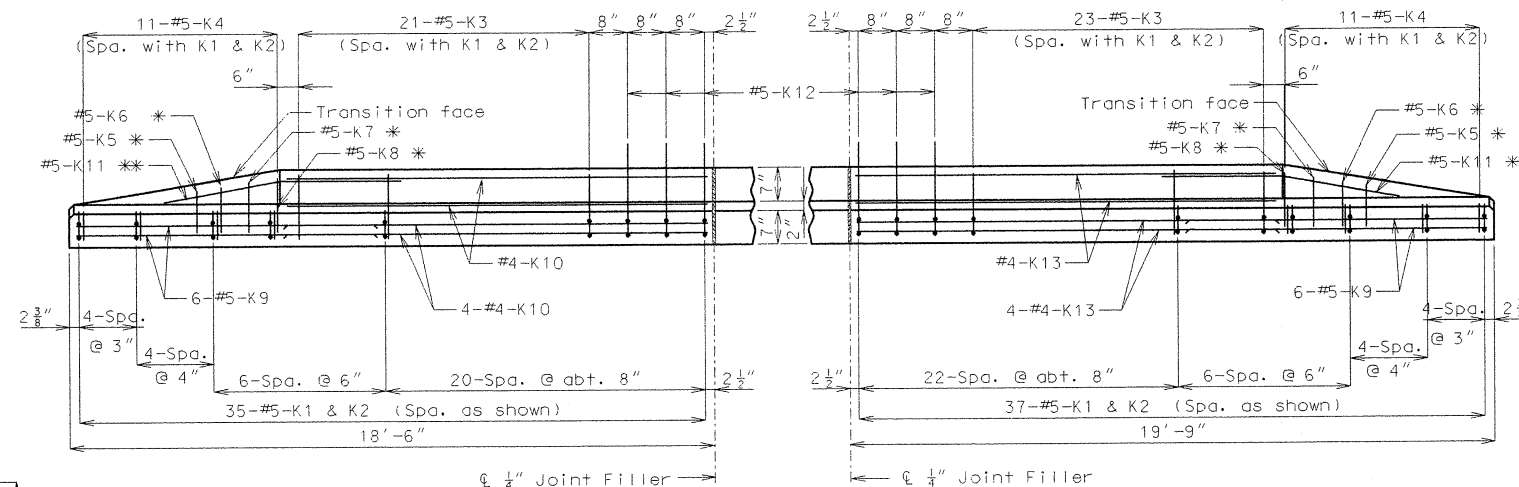
PART PLAN

DETAILS OF GUARD RAIL ATTACHMENT



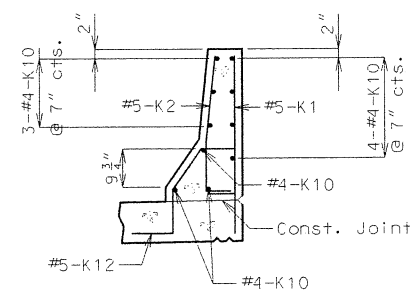
* Spaced with #5-K4 bars.

** Fit bar to follow transition face of curb.

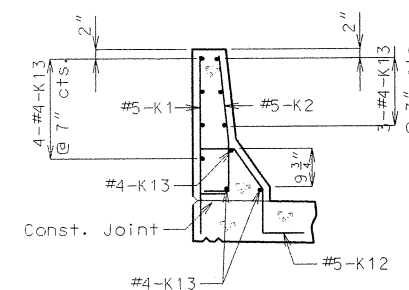


PLAN

PLAN

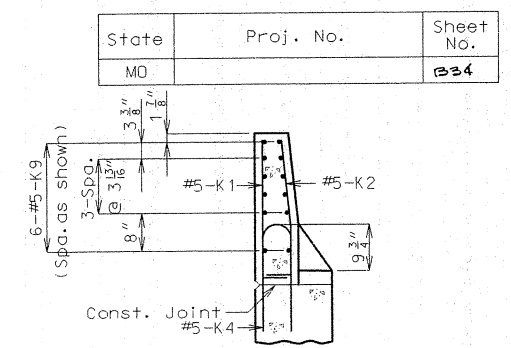


SECTION H-H

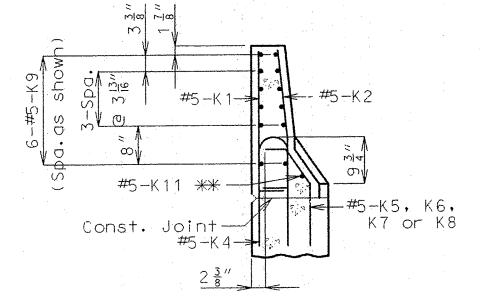


SECTION I-I

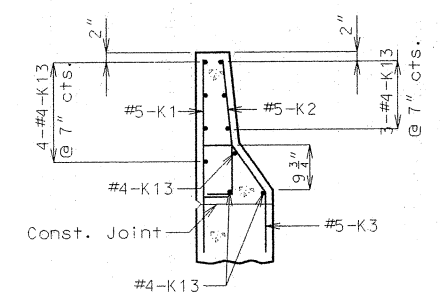
NOTE: Use a minimum lap of 2'-0" between K9 and K10 or K13 bars.



SECTION D-D

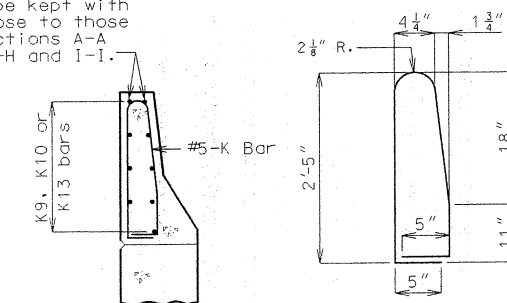


SECTION E-E



SECTION F-F

The top two K9, K10 or K13 bars shall be kept with position close to those shown in Sections A-A thru F-F, H-H and I-I.



(K3 or K4 thru K8 bars not shown for clarity)

K1-K2 BAR PERMISSIBLE
ALTERNATE SHAPE (***)

(***) The K1 and K2 bar combination may be furnished as one bar as shown, at the contractor's option.

A circular professional engineer seal for the State of Missouri. The outer ring contains the text "STATE OF MISSOURI" at the top and "REGISTERED PROFESSIONAL ENGINEER" at the bottom, separated by dots. The center of the seal contains the text "DANIEL M. SMITH", "NUMBER", and "E-28985". A handwritten signature is scrawled across the bottom half of the seal.

DATE 7-8-04

DETAILS OF RIGHT SAFETY BARRIER CURB AT END BENTS

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

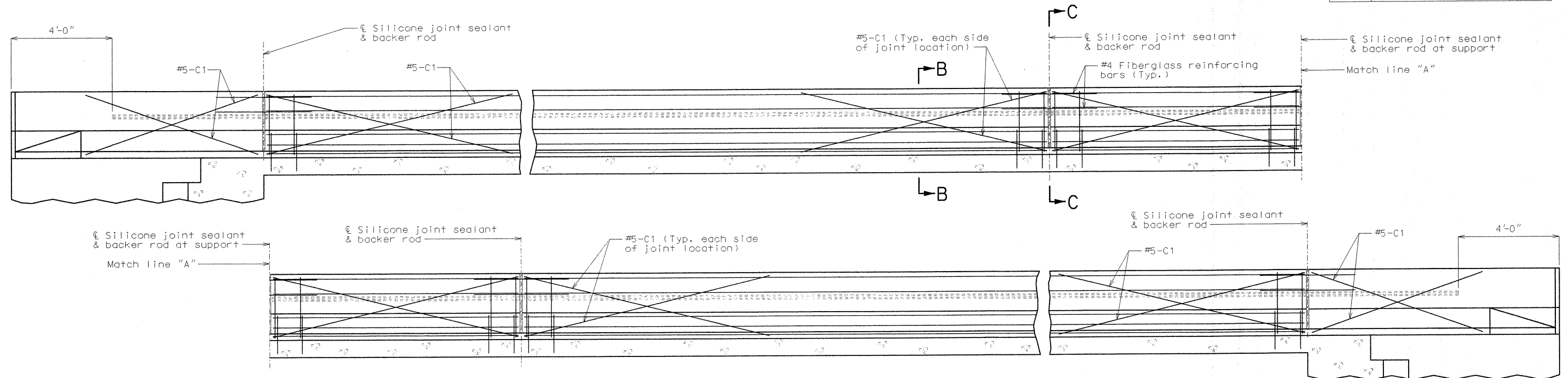
Sheet No. 32 of 38

JACKSON COUNTY

A16082

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State	Proj. No.	Sheet No.
MO		B 35



TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

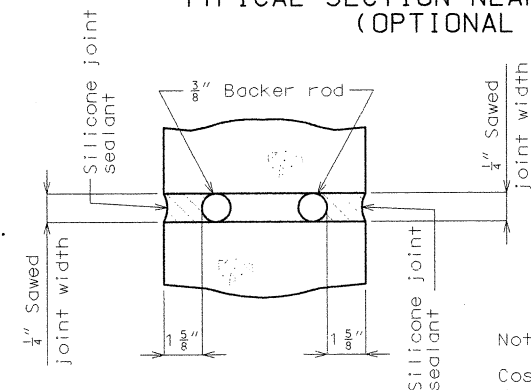
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Scale prevention treatment will not be permitted.



SECTION A-A

Notes:

Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

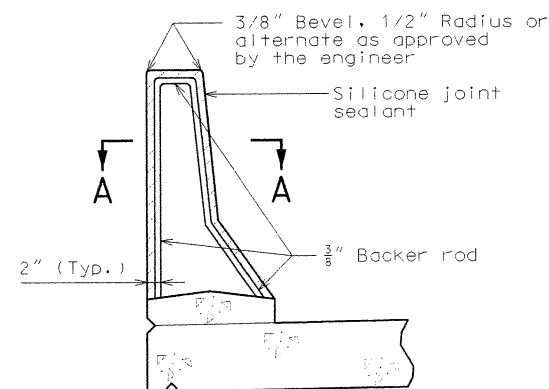
Plastic waterstop shall not be used with slip-form option.

C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

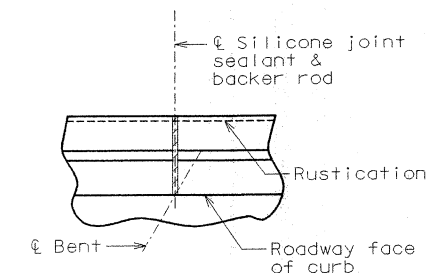
For Slip-Form option, all sides of the safety barrier curb shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Note:

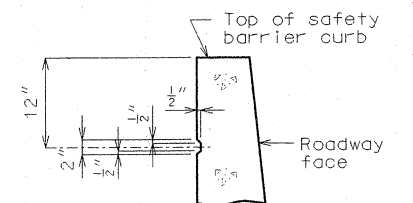
Cost of silicone joint sealant and backer rod complete-in-place will be considered completely covered by the contract unit price for Safety Barrier Curb.



SECTION THRU JOINT



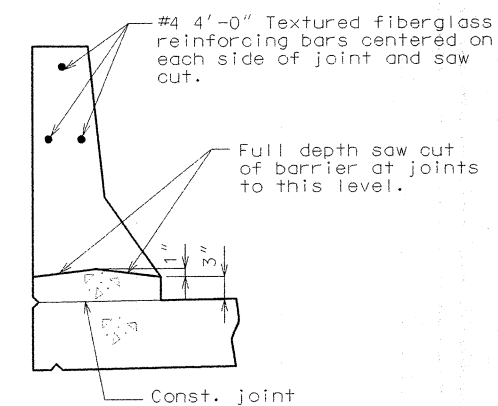
PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



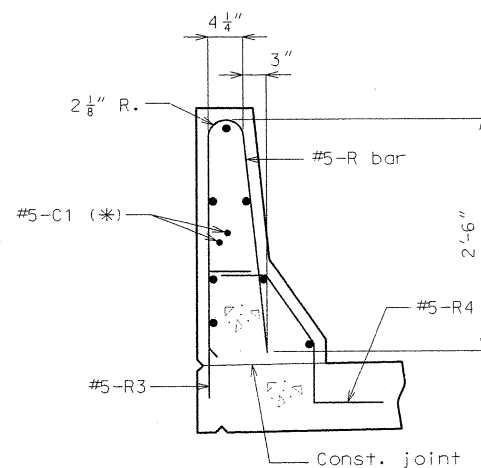
PART SECTION SHOWING
RUSTICATION DETAILS

RUSTICATION DETAIL

(Use on highway grade separation only)



PART SECTION C-C



PART SECTION B-B

Notes:

(*) Each side of joint location.

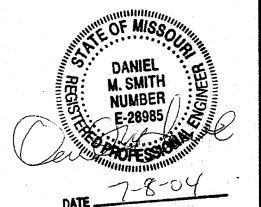
OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Left barrier curb shown, right barrier curb similar.)

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

Sheet No. 33 of 38

JACKSON COUNTY A16082



Detailed Apr. 2004
Checked May 2004

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State	Proj. No.	Sheet No.
MO		236

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 (f'c = 4,000 psi).

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 60,000 psi.

Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 2'-2", respectively.

Mechanical bar splices will be in accordance with Sec 706.

(*) Seal joint between vertical face of approach slab and wing with "Silicone Joint Sealant for Saw Cut and formed Joints" in accordance with Sec 717.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures. Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered under by the contract unit price for Bridge Approach Slab (Bridge), per square yard.

For Concrete Approach Pavement details, see roadway plans.

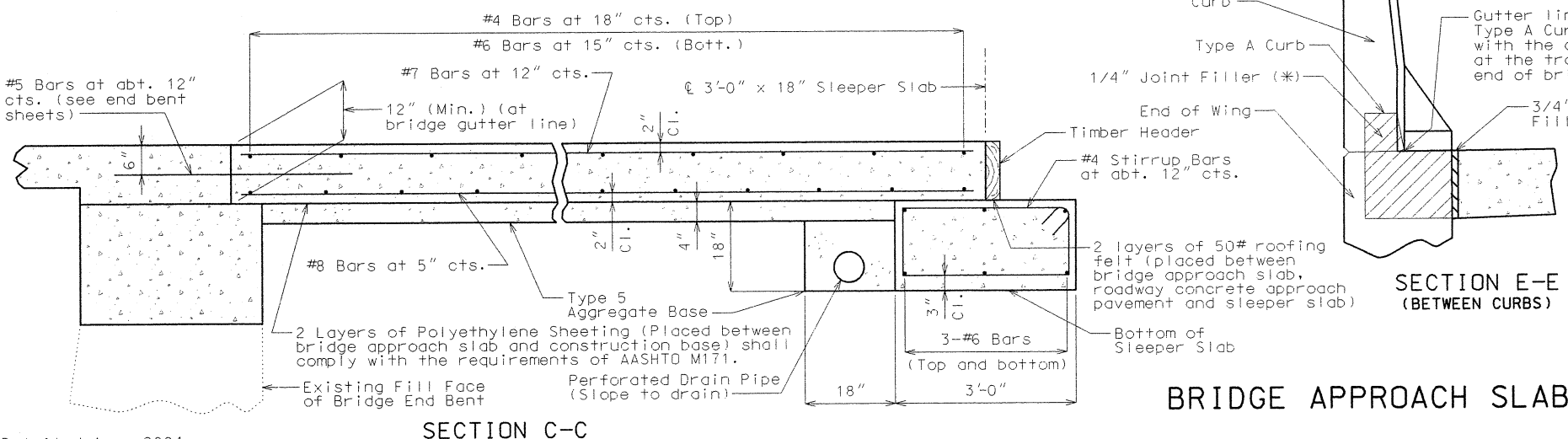
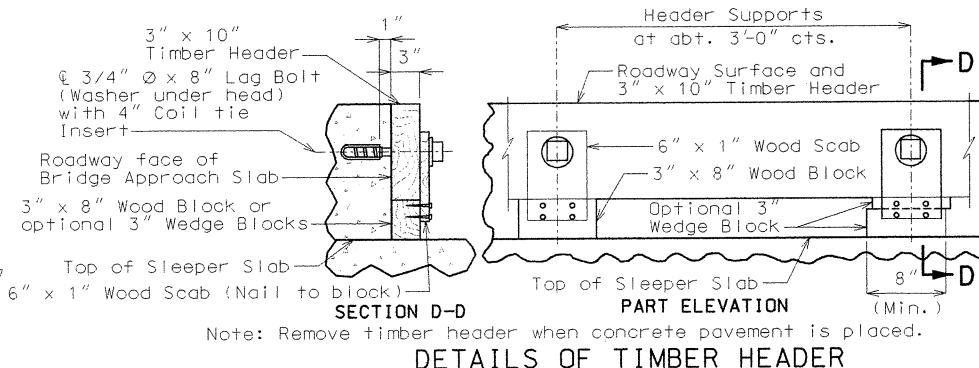
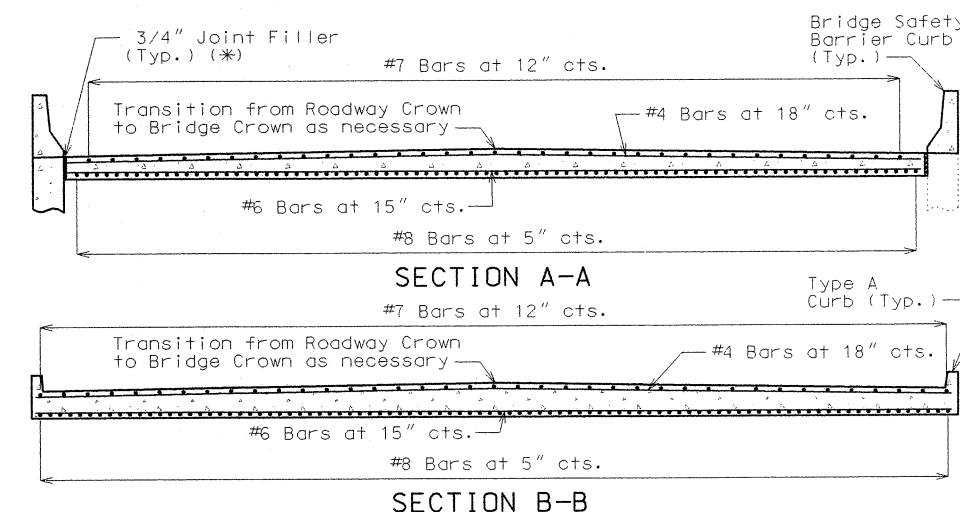
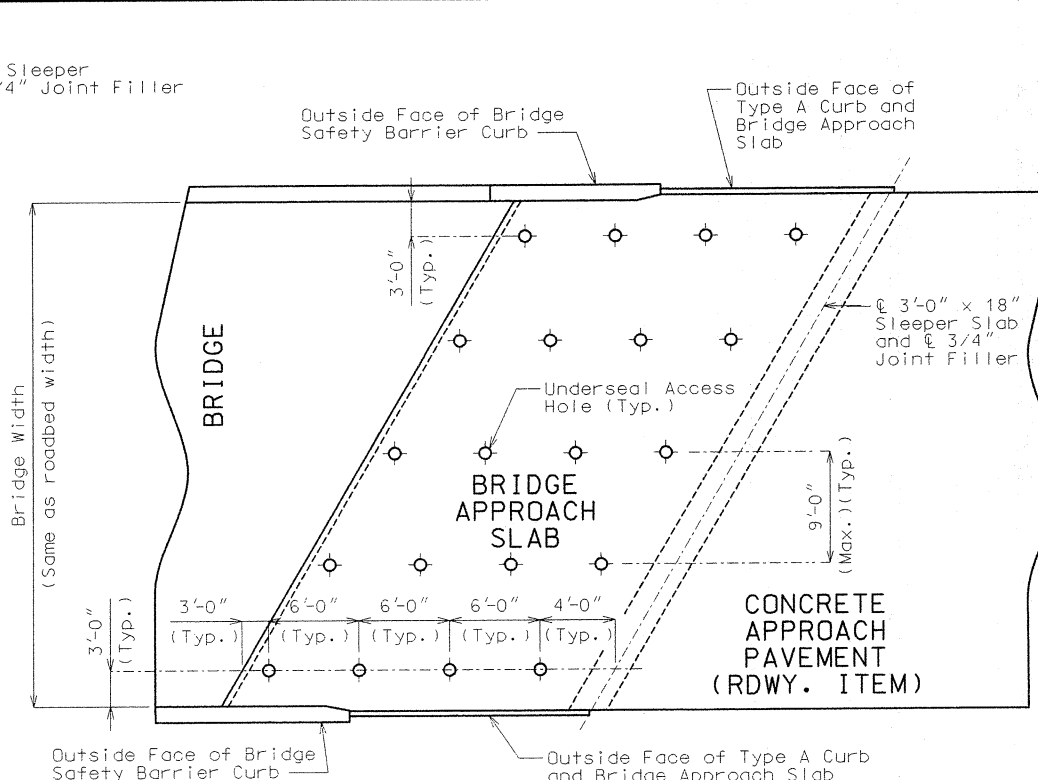
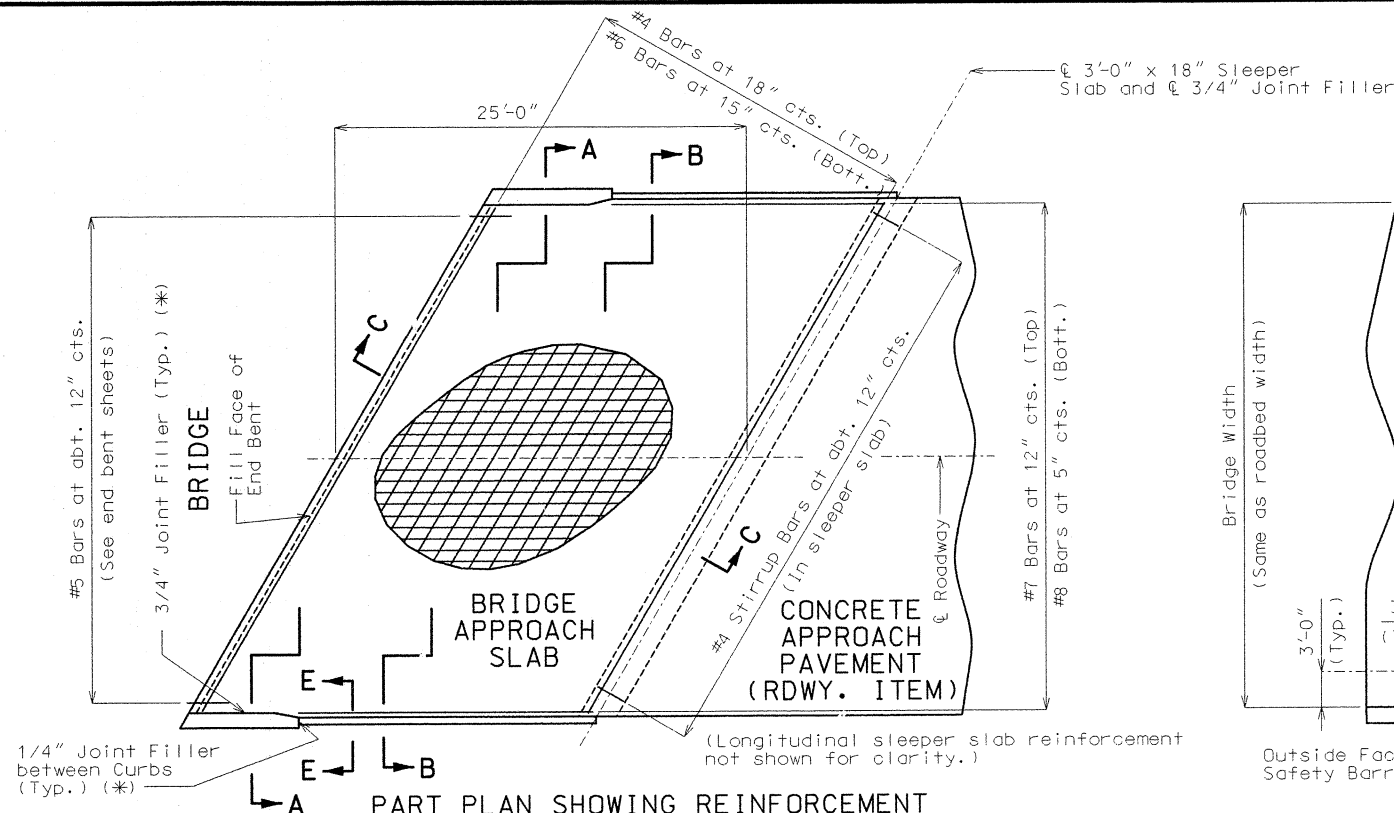
See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of roadway surface.

At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

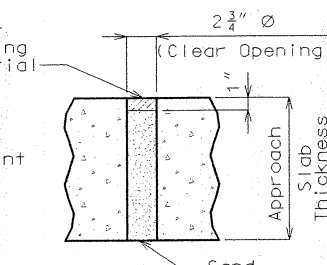
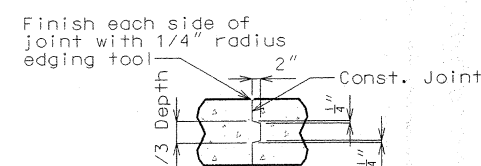
When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired in accordance with Sec 710.

Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.



TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



BRIDGE APPROACH SLAB

CONST. JOINT DETAIL (IF REQUIRED)

TYPICAL UNDERSEAL ACCESS HOLE DETAIL

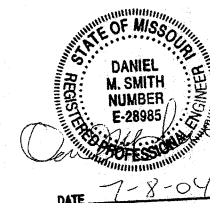
Detailed Apr. 2004
Checked May 2004

SECTION C-C

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

Sheet No. 34 of 38

JACKSON COUNTY A16082



BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
									B		C		D		E					F		H	
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.		FT.	IN.	FT.	IN.
		SUBSTRUCTURE																					
		INT BT NO 2																					
18	8 D20	SHAFT		20		X			9	10.000								9	10	9	10	473	
6	8 H20	BEAM		17		X			24	7.000								25	6	25	6	409	
6	8 H21	BEAM		20		X			24	7.000								24	7	24	7	394	
10	4 H22	BEAM		20		X			26	2.000								26	2	26	2	175	
12	6 H23	BEAM		20		X			3	2.000								3	2	3	2	57	
12	8 H24	BEAM		20		X			7	2.000								7	2	7	2	230	
7	6 H25	BEAM		10	S	X				22.000	2	11.000						6	7	6	3	66	
26	4 P20	SOCKET		16		X			2	4.000								8	2	8	2	142	
32	4 P21	COLUMN		16		X			2	3.000								7	11	7	11	169	
26	4 P22	SHAFT		16		X			2	9.000								9	6	9	6	165	
15	4 U20	BEAM		13	S	X			3	0.000	3	9.000	3	0.000	3	9.000		14	3	14	0	140	
7	4 U21	BEAM		13	S	X			3	0.000	4	7.125	3	0.000	4	7.125		15	11	15	8	73	
6	4 U22	BEAM		13	S	X			3	0.000	4	8.375	3	0.000	4	8.375		16	2	15	11	64	
4	4 U23	BEAM		10	S	X				3	9.000	3	0.000					10	6	10	4	28	
36	8 V20	SHAFT		20		X			16	0.000								16	0	16	0	1538	
18	8 V21	COLUMN		20		X			18	1.000								18	1	18	1	869	
36	8 V22	SOCKET		20		X			21	0.000								21	0	21	0	2019	
4	W5 W20	BEAM		22		X			15.000	9.125								23	0	23	0	15	
		INT BT NO 3																					
18	8 D30	SHAFT		20		X			9	10.000								9	10	9	10	473	
6	8 H30	BEAM		17		X			24	7.000								25	6	25	6	409	
6	8 H31	BEAM		20		X			24	7.000								24	7	24	7	394	
10	4 H32	BEAM		20		X			26	2.000								26	2	26	2	175	
12	6 H33	BEAM		20		X			3	2.000								3	2	3	2	57	
12	8 H34	BEAM		20		X			7	2.000								7	2	7	2	230	
7	6 H35	BEAM		10	S	X				22.000	2	10.500						6	7	6	3	66	
28	4 P30	SOCKET		16		X			2	4.000								8	2	8	2	153	
32	4 P31	COLUMN		16		X			2	3.000								7	11	7	11	169	
22	4 P32	SHAFT		16		X			2	9.000								9	6	9	6	140	
17	6 U30	BEAM		13	S	X			3	0.000	3	9.000	3	0.000	3	9.000		14	10	14	4	366	
7	6 U31	BEAM		13	S	X			3	0.000	4	1.875	3	0.000	4	1.875		15	8	15	2	159	
6	6 U32	BEAM		13	S	X			3	0.000	4	3.000	3	0.000	4	3.000		15	10	15	4	138	
5	6 U33	BEAM		10	S	X				3	9.000	3	0.000					10	6	10	2	76	
36	8 V30	SHAFT		20		X			14	0.000								14	0	14	0	1346	
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36	8 V32	SOCKET		20		X			22	0.000								22	0	22	0	2115	
4	W5 W30	BEAM		22		X			18.000	9.125								26	1	26	1	17	
		INT BT NO 4																					
18	8 D40	SHAFT		20		X			9	10.000								9	10	9	10	473	

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
										B		C		D		E					F		H	
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.		FT.	IN.	FT.	IN.
	6	8 H40	BEAM		17	X				24	7.000							25	6	25	6	409		
	6	8 H41	BEAM		20	X				24	7.000							24	7	24	7	394		
	10	4 H42	BEAM		20	X				26	2.000							26	2	26	2	175		
	12	6 H43	BEAM		20	X				3	2.000							3	2	3	2	57		
	12	8 H44	BEAM		20	X				7	2.000							7	2	7	2	230		
	7	6 H45	BEAM		10	S	X				22.000	2	10.500					6	7	6	3	66		
	28	4 P40	SOCKET		16	X				2	4.000							8	2	8	2	153		
	34	4 P41	COLUMN		16	X				2	3.000							7	11	7	11	180		
	24	4 P42	SHAFT		16	X				2	9.000							9	6	9	6	152		
	17	6 U40	BEAM		13	S	X			3	0.000	3	9.000	3	0.000	3	9.000	14	10	14	4	366		
	7	6 U41	BEAM		13	S	X			3	0.000	4	8.500	3	0.000	4	8.500	16	9	16	3	171		
	6	6 U42	BEAM		13	S	X			3	0.000	4	9.250	3	0.000	4	9.250	16	11	16	5	148		
	5	6 U43	BEAM		10	S	X				3	9.000	3	0.000				10	6	10	2	76		
	36	8 V40	SHAFT		20	X				15	0.000							15	0	15	0	1442		
	18	8 V41	COLUMN		20	X				19	5.000							19	5	19	5	933		
	36	8 V42	SOCKET		20	X				22	0.000							22	0	22	0	2115		
	4	W5 W40	BEAM		22	X				18.000	9.125							26	1	26	1	17		
			SUPERSTR.																					
			END BT NO 1																					
	10	6 F10	WING BRACE		23	S				14.000	8	7.625	14.000	5.500	12.875	5.500	12.875	11	0	10	11	164		
	4	6 F11	DIAPHRAGM		21	S				3	11.875	7	8.000			2	10.250	2	9.375	11	8	66		
	8	8 H10	BEAM		20					25	0.000							25	0	25	0	534		
	4	6 H11	BEAM		20					25	0.000							25	0	25	0	150		
	4	8 H12	SLAB	E	20					36	7.000							36	7	36	7	391		
	4	8 H13	SLAB	E	20					35	9.000							35	9	35	9	382		
	10	6 H14	DIAPHRAGM		20					37	2.000							37	2	37	2	558		
	5	6 H15	DIAPHRAGM		20					35	0.000							35	0	35	0	263		
	70	5 H16	DIAPHRAGM	E	20					2	6.000							2	6	2	6	183		
	* 4	8 H17	WING	E	20					16	5.000							16	5	16	5	175		
	6	8 H18	WING		20					16	5.000							16	5	16	5	263		
	20	6 H19	WING		20					15	5.000							15	5	15	5	463		
	5	6 H100	DIAPHRAGM		20					34	0.000							34	0	34	0	255		
	16	5 U10	BEAM		32	S				4	10.000	4	9.250	4	11.375		4	10.000	12.625	14	7	239		
	10	4 U11	BEAM		13	S				4	0.000	2	10.875	4	9.250	2	9.625			15	3	100		
	60	5 U12	DIAPHRAGM	E	10	S					3	8.000	3	4.500				10	9	10	6	657		
	60	6 U13	DIAPHRAGM		19	S				3	6.000	4	0.875					7	7	7	5	668		
	94	6 U14	DIAPHRAGM	E	19	S				3	1.000	5	10.000					8	11	8	9	1235		
	2	5 U15	DIAPHRAGM	E	13	S				3	2.000	4	1.000	3	2.000	4	1.000	15	5	15	1	31		
	10	5 V10	BEAM		20					4	10.000							4	10	4	10	50		
	25	6 V11	DIAPHRAGM		20					3	6.000							3	6	3	6	131		
	2	6 V12	WING		20					6	11.000							6	11	6	11	21		
	28	6 V13	WING		20		V	2		6	11.000							6	11	6	11			
			INCREMENT =							7	3.000							7	3	7	3	298		
			0.250 INCH																					
								</																

BILL OF REINFORCING STEEL

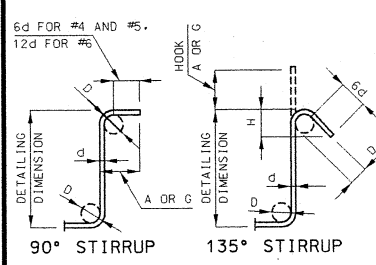
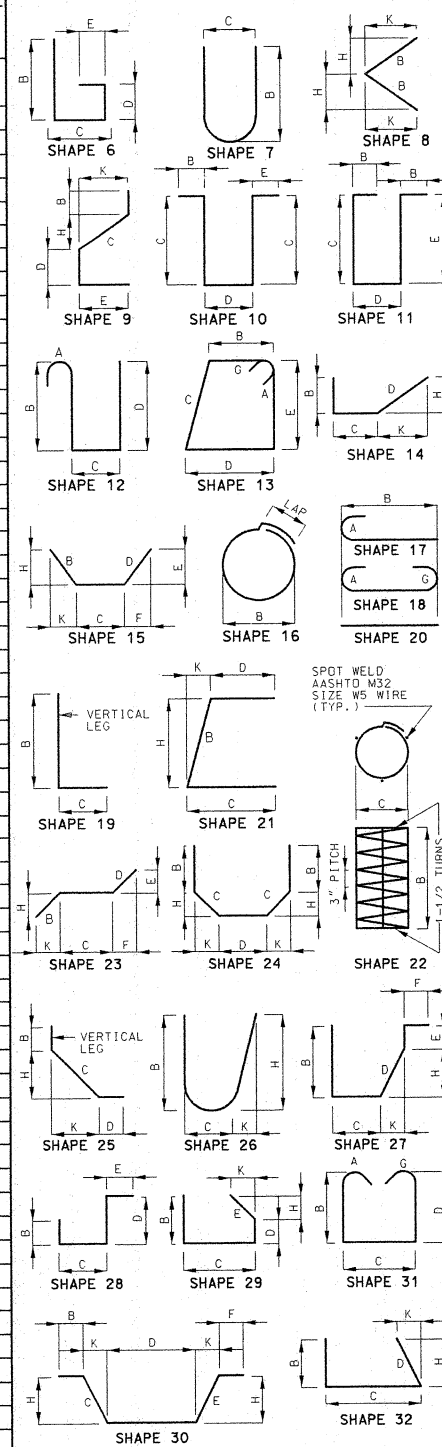
NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B		C		D		E		F		H				
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
57	6 S12	SLAB	E 20				V	1	26	0.000									26	0	26	0	
		INCREMENT = 5.125 INCH							2	1.000									2	1	2	1	1202
492	6 S13	SLAB	E 20						26	2.000									26	2	26	2	19337
57	6 S14	SLAB	E 20				V	1	26	2.000									26	2	26	2	
		INCREMENT = 5.125 INCH							2	3.000									2	3	2	3	1216
82	6 S15	SLAB	E 20						27	3.000									27	3	27	3	3356
82	6 S16	SLAB	E 20						37	0.000									37	0	37	0	4557
82	6 S17	SLAB	E 20						36	9.000									36	9	36	9	4526
915	4 S18	SLAB	E 10						6.000	6.500	9.000	6.000							2	10	2	5	1477
		BARRIER CURB																					
72	5 K1	BARRIER CURB	E 19	S					2	5.000	5.125								2	10	2	9	207
72	5 K2	BARRIER CURB	E 14	S					5.125	11.125	18.000			2.000	17.875				2	10	2	9	207
44	5 K3	BARRIER CURB	E 27	S					2	5.875	5.125	12.000	20.000		9.875	6.875			5	7	5	5	249
22	5 K4	BARRIER CURB	E 7	S					2	5.875	6.000								5	2	5	2	119
2	5 K5	BARRIER CURB	E 25	S					20.000	6.750	4.375			5.500	4.000				2	7	2	6	5
2	5 K6	BARRIER CURB	E 25	S					20.000	7.875	4.375			6.500	4.500				2	8	2	8	6
2	5 K7	BARRIER CURB	E 25	S					20.000	9.625	4.375			7.875	5.500				2	10	2	9	6
2	5 K8	BARRIER CURB	E 25	S					20.000	11.250	4.375			9.250	6.500				3	0	2	11	6
24	5 K9	BARRIER CURB	E 20						5	7.000									5	7	5	7	140
* 12	4 K10	BARRIER CURB	E 20						14	8.000									14	8	14	8	118
2	5 K11	BARRIER CURB	E 8						2	2.125				2	2.000	2.375			4	4	4	4	9
6	5 K12	BARRIER CURB	E 27	S					16.000	5.125	12.000	6.125	12.000	9.875	6.875				4	3	4	0	25
10	4 K13	BARRIER CURB	E 20						15	11.000									15	11	15	11	106
10	5 K14	BARRIER CURB	E 19	S					2	5.000	5.125								2	10	2	9	29
10	5 K15	BARRIER CURB	E 14	S					5.125	11.125	18.000			2.000	17.875				2	10	2	9	29
52	5 K16	BARRIER CURB	E 19	S					3	0.500	5.125								3	6	3	4	181
52	5 K17	BARRIER CURB	E 14	S					5.125	18.500	18.000			2.000	17.875				3	6	3	4	181
7	5 K18	BARRIER CURB	E 27	S					2	5.875	3.625	12.000	20.000		9.875	6.875			5	6	5	4	39
30	5 K19	BARRIER CURB	E 27	S					18.750	5.125	12.000	8.875		9.875	6.875				3	9	3	7	112
2	5 K20	BARRIER CURB	E 8						2	2.125				2	2.000	2.375			4	4	4	4	9
28	5 K21	BARRIER CURB	E 20						5	7.000									5	7	5	7	163
10	4 K22	BARRIER CURB	E 20						12	9.000									12	9	12	9	85
2	4 K23	BARRIER CURB	E 20						8	5.000									8	5	8	5	11
3	5 K24	BARRIER CURB	E 27	S					16.000	5.125	12.000	6.125	12.000	9.875	6.875				4	3	4	0	13
10	4 K25	BARRIER CURB	E 20						12	3.000									12	3	12	3	82
2	4 K26	BARRIER CURB	E 20						9	1.000									9	1	9	1	12
465	5 R1	BARRIER CURB	E 19	S					2	6.000	3.500								2	10	2	8	1293
465	5 R2	BARRIER CURB	E 15	S					2	6.125	3.500			2	6.000	3.000			2	10	2	9	1334
465	5 R3	BARRIER CURB	E 19	S					16.000	6.000									0	22	0	21	849
465	5 R4	BARRIER CURB	E 27	S						6.000	11.250	6.000	12.000	9.250	6.375				2	11	2	9	1334
7	5 R5	BARRIER CURB	E 20						29	7.000									29	7	29	7	216
84	5 R6	BARRIER CURB	E 20						9	9.000									9	9	9	9	854
28	5 R7	BARRIER CURB	E 20						21	10.000									21	10	21	10	638
28	5 R8	BARRIER CURB	E 20						28	10.000									28	10	28	10	842
7	5 R9	BARRIER CURB	E 20						37	0.000									37	0	37	0	270
7	5 R10	BARRIER CURB	E 20						30	0.000									30	0	30	0	219
7	5 R11	BARRIER CURB	E 20						35	9.000									35	9	35	9	261
64	5 C1	SLIP FORM	E 20						10	0.000									10	0	10	0	668

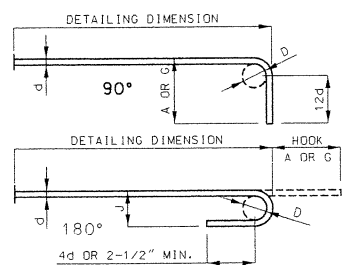
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State	Proj. No.	Sheet No.
MO		B39



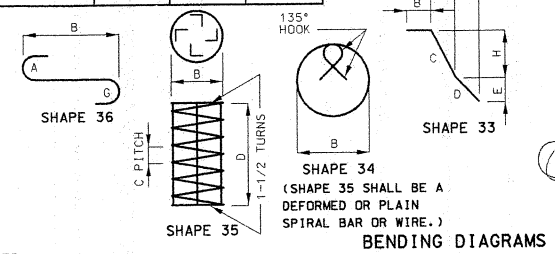
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		H O A O R G	H O A O R G	APPROX. H
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	12"	8"	4-1/2"

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



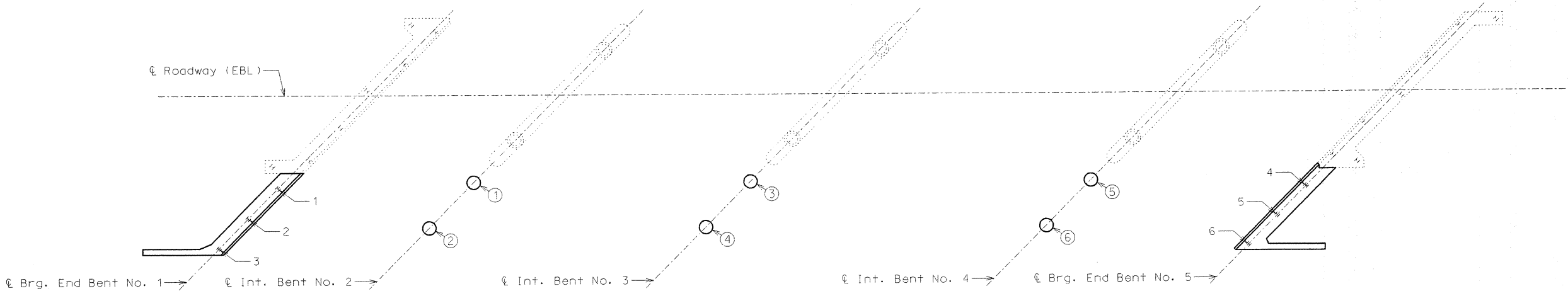
END HOOK DIMENSIONS					
BAR SIZE	D (IN.)	ALL GRADES			
		180° HOOKS		90° HOOKS	
		A OR G	J	A OR G	J
#3	2-1/4"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3-3/4"	7"	5"	10"	
#6	4-1/2"	8"	6"	12"	
#7	5-1/4"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9-1/2"	15"	11-3/4"	19"	
#10	10-3/4"	17"	13-1/4"	22"	
#11	12"	19"	14-3/4"	2'-0"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

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH THE SAME
PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE FOR
DETAILING REINFORCED CONCRETE STRUCTURES, STIRRUP AND TIE DIMENSIONS.
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. E4. = NUMBER OF BARS OF EACH LENGTH.
ALL DIMENSIONS ARE OUT TO OUT.
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANCHOR OR CHANNEL SPIRALS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED
ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.



STATE OF MISSOURI
 REGISTERED PROFESSIONAL ENGINEER
 DANIEL
 M. SMITH
 NUMBER
 E-28985
 DATE 7-8-04

STATE	PROJ. NO.	SHEET NO.
MO.		240



PART PLAN SHOWING
PILE NUMBERING AND DRILLED SHAFT
NUMBERING FOR RECORDING
"AS BUILT PILE" DATA AND
"AS BUILT DRILLED SHAFT" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent No. 1
1			
2			
3			
			End Bent No. 5
4			
5			
6			

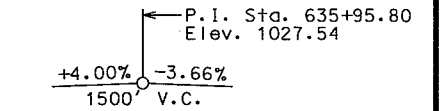
"AS BUILT DRILLED SHAFT" DATA			
SHAFT NO.	BOTTOM OF DRILLED SHAFT (ELEV.)	BOTTOM OF ROCK SOCKET (ELEV.)	REMARKS
			Int. Bent No. 2
1			
2			
			Int. Bent No. 3
3			
4			
			Int. Bent No. 4
5			
6			

NOTE: INDICATE IN REMARKS COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY
MoDOT CONSTRUCTION PERSONNEL.

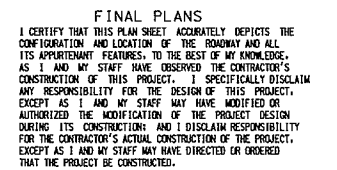


State	Proj. No.	Sheet No.
MO		BI
SEC/SUR 6	TWP 47N	RGE 31W



FINAL PLANS

For General Notes, Estimated Quantities,
Estimated Quantities For Slab on Steel, Pile
Data and Drilled Shaft Data, see sheet no. 2.



A16082

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FINAL Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	95		95
* Removal of Existing Bridge Decks	sq. foot		7,961	7,961
Partial Removal of Substructure Concrete	lump sum			1
Bridge Approach Slab (Bridge)	sq. yard		284	284
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	66		66
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	76		76
Supplementary Television Camera Inspection	each	6		6
Foundation Inspection Holes	linear foot	136		136
Concrete Coring	linear foot	29		29
Sonic Logging Testing	each	6		6
Structural Steel Piles (10 in.)	linear foot	164		164
Pile Point Reinforcement	each	6		6
Class B Concrete (Substructure)	cu. yard	79.8		79.8
Slab on Steel	sq. yard		1,352	1,352
* Safety Barrier Curb	linear foot		516	516
Substructure Repair (Unformed)	sq. foot	24		24
Modified Deck Repair	sq. foot		611	611
Reinforcing Steel (Bridges)	pound	21,950		21,950
Mechanical Bar Splices	each		1,017	1,017
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound		83,842	83,842
Existing Diaphragm Connections to Flange	lump sum			1
Slab Drain	each		6	6
Surface Preparation for Recoating Structural Steel	sq. foot		8,800	8,800
Field Application of Inorganic Zinc Primer	sq. foot		8,800	8,800
Intermediate Field Coat (System G) Gray	sq. foot		11,900	11,900
Finish Field Coat (System G) Gray	sq. foot		2,200	2,200
Non-Destructive Testing	linear foot		50	50
Laminated Neoprene Bearing Pad Assembly	each		6	6

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

* Includes removal and disposal of slab, curbs, end posts, rails and expansion devices.

** Safety barrier curb shall be cast-in-place option or slip-form option.

Pile Data			
Bent No.	1	5	
Pile Type and Size	HP10 x 42	HP10 x 42	
Number	3	3	
Approximate Length	foot	24	32
Design Bearing	ton	51.3	51.3
Hammer Energy Required	foot-pound	11,800	11,800

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.

Manufactured pile point reinforcement shall be used on all piles in this structure.

All piles shall be driven to practical refusal.

Rock Socket Data				
Bent No.	2	3	4	
Foundation Material	Rock	Rock	Rock	
Number	2	2	2	
Design Side Friction	tsf	2.5	2.5	2.5

PAY LENGTHS FOR EACH SHAFT & SOCKET		
Bent	DRILLED SHAFT	ROCK SOCKET
Bent 2	12' ✓	12' ✓
Bent 3	10' ✓	13' ✓
Bent 4	11' ✓	13' ✓

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on one-half of the drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:
HS20 Modified (slab only)
HS20-44 (except for slab)
No Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case II

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets) f'c = 4,000 psi
Class B-1 Concrete (Safety Barrier Curb) f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50) fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36) fb = 9,000 psi fy = 36,000 psi

Fabricated Steel Connections:
Field connections shall be made with 3/4" diameter high strength bolts and 1/2" diameter holes, except as noted.

Joint Filler:
All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

At the option of the contractor, the intermediate and finish field coats may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

Existing Structural Steel Protective Coatings:
Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G or H)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for Surface Preparation for Recoating Structural Steel.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Field Application of Inorganic Zinc Primer. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	365.1
Reinforcing Steel	pound	8,380
Reinforcing Steel (Epoxy Coated)	pound	130,950

The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Slab shall be cast-in-place. Precast prestressed panels are not permitted.

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GENERAL NOTES (CONT.):

Miscellaneous:
A minimum vertical clearance of 14'-9" from crown of existing lanes and a minimum lateral clearance of 28'-0" centered on existing left lane and 38'-0" centered on existing right lane shall be maintained during construction.

Traffic over structure to be maintained during construction. See Details Showing Staged Construction on sheets no. 3 & 4.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

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

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

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.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

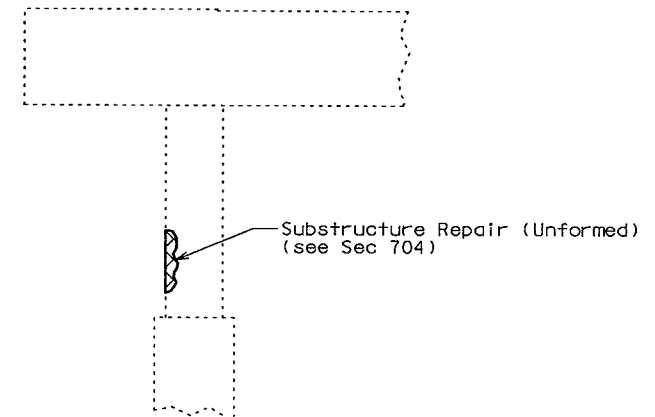
Resin Anchors:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure), Slab on Steel or Safety Barrier Curb.

The "A" diameter resin anchor systems shall have a minimum ultimate pullout strength of "B" lbs. in concrete with f'c = 4,000 psi.

A "C" Grade 60 reinforcing bar "D" long shall be substituted for the "A" Ø threaded rod.

"A"	"B"	"C"	"D"
5/8"	15,500	E #5	2'-5"
3/4"	20,400	#6	3'-11"
1"	33,600	#8	6'-10"



PART ELEVATION OF INT. BENT SHOWING SUBSTRUCTURE REPAIR

1 REVISED 10/13/04

JACKSON COUNTY A16082

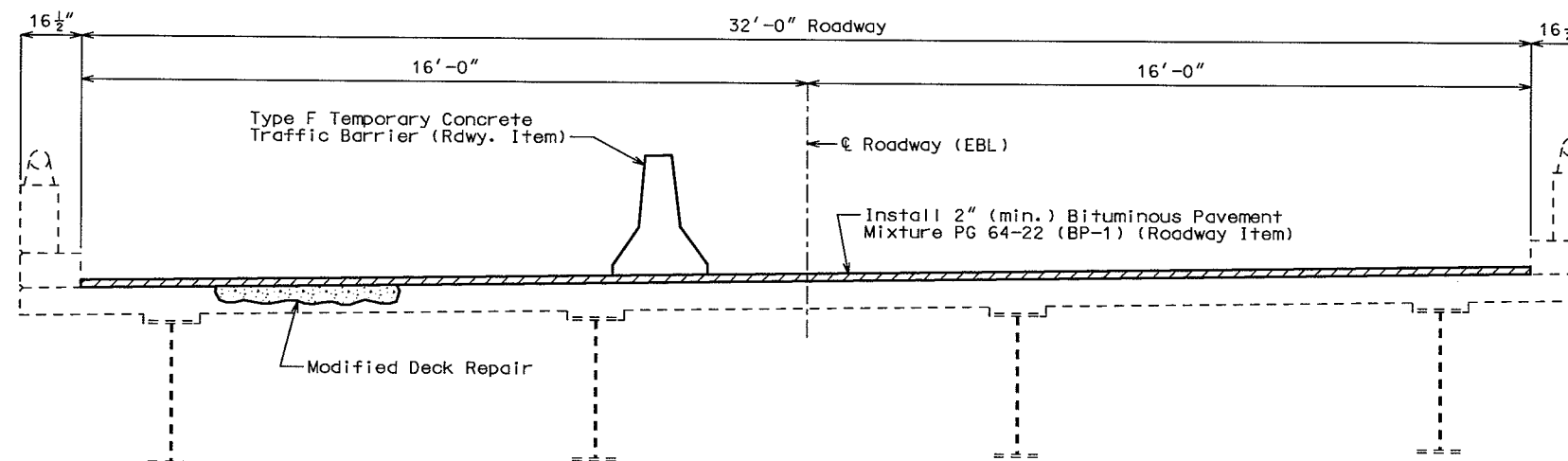
Detailed Apr. 2004
Checked May 2004

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

Sheet No. 2 of 38

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FINAL PLANS



SECTION THRU EXISTING SLAB

Notes:

In order to maintain grade and a minimum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure. The cost of furnishing and installing the overlay will be considered completely covered in the contract unit price for roadway pavement, including all additional labor, materials or equipment for variations in thickness of overlay.

Roadway surfacing adjacent to bridge ends to match top of asphalt overlay (Roadway Item).

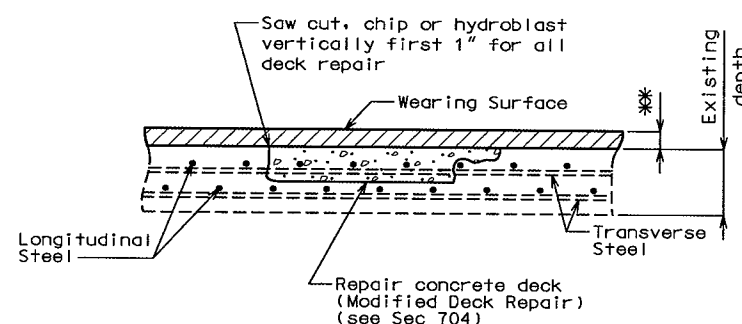
Maintain one lane of traffic on structure during construction (see Roadway Plans).

FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE

DATE



MODIFIED DECK REPAIR AREA

** 2" (min.) Bituminous Pavement Mixture PG 64-22 (BP-1) (Roadway Item)

DETAILS SHOWING TEMPORARY ASPHALT OVERLAY AND DECK REPAIR (PRIOR TO STAGED CONSTRUCTION)

Detailed Apr. 2004
Checked May 2004

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

Sheet No. 2A of 38

JACKSON COUNTY **A16082**

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REV.

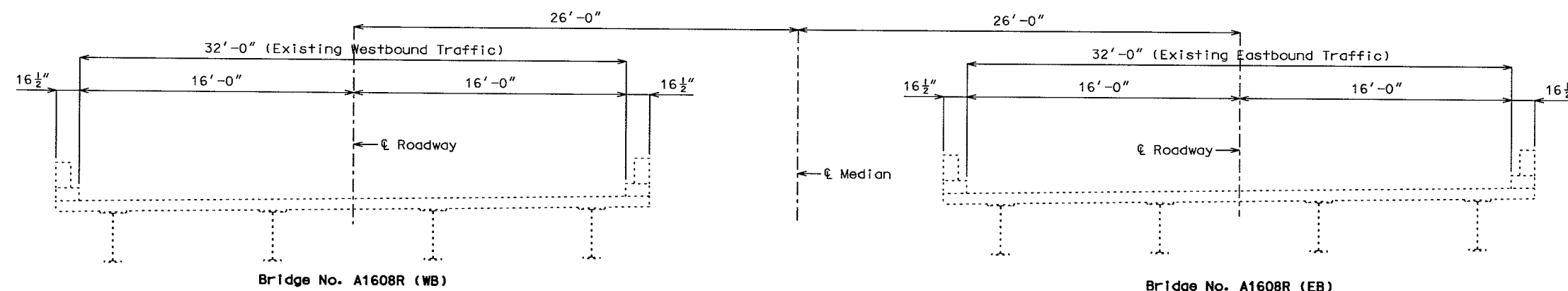
State	Proj. No.	Sheet No.
MO		84

FINAL PLANS

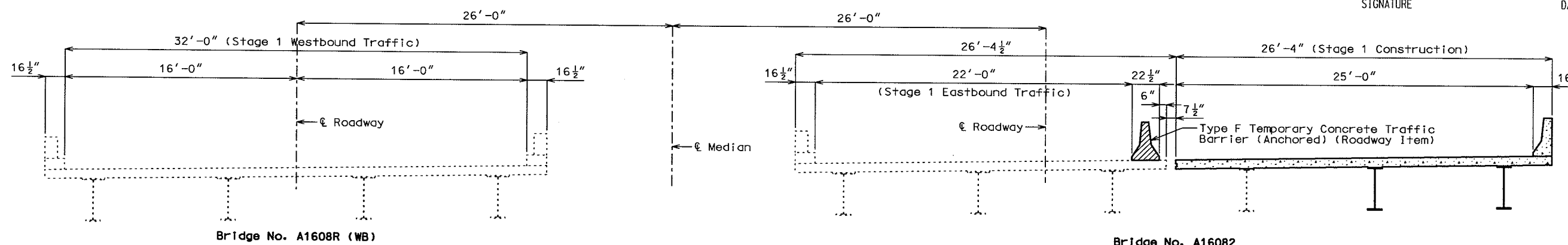
FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

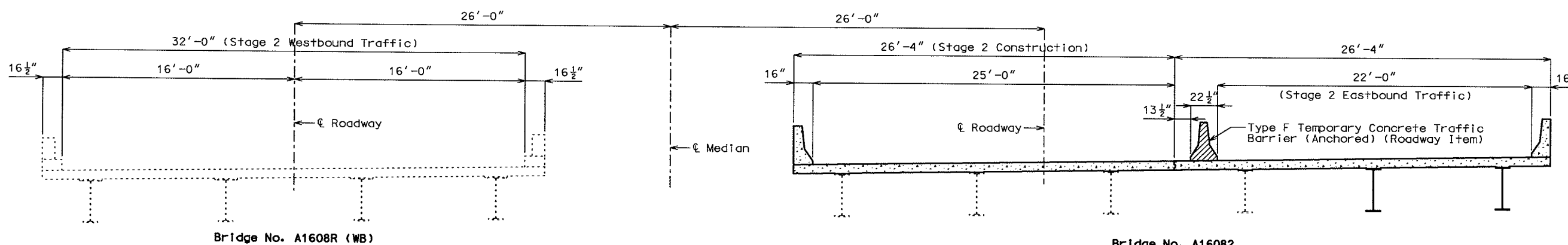
SIGNATURE _____ DATE _____



SECTION THRU EXISTING SLABS



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

Note: Method of attachment for the Type F Temporary Concrete Traffic Barrier shall be the Tie-Down Strap.

Detailed Apr. 2004
Checked May 2004

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

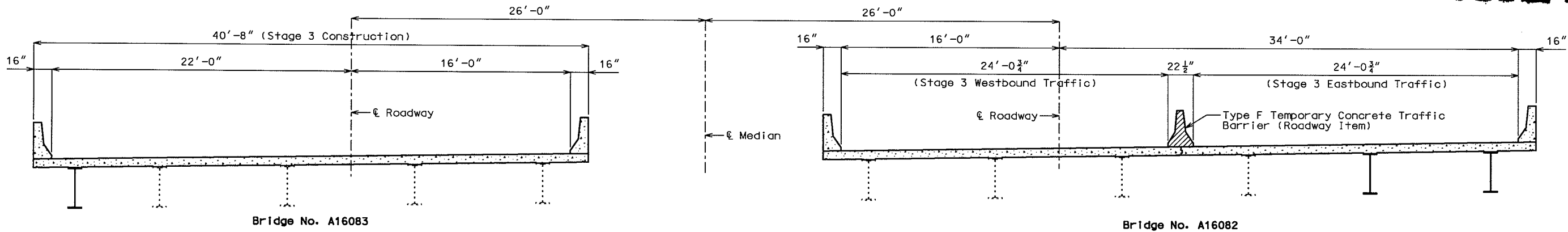
Sheet No. 3 of 38

JACKSON COUNTY A16082

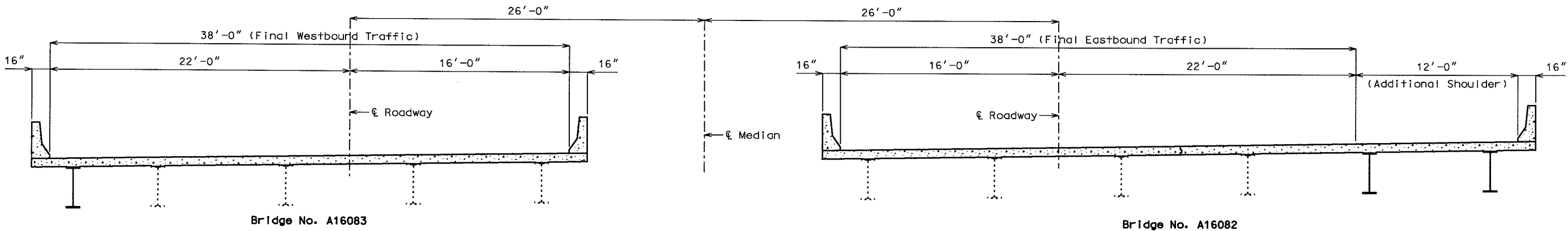
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REV.

FINAL PLANS



STAGE 3 CONSTRUCTION



FINAL CONSTRUCTION

FINAL PLANS

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SIGNATURE _____ DATE _____

DETAILS SHOWING STAGED CONSTRUCTION

Detailed Apr. 2004
Checked May 2004

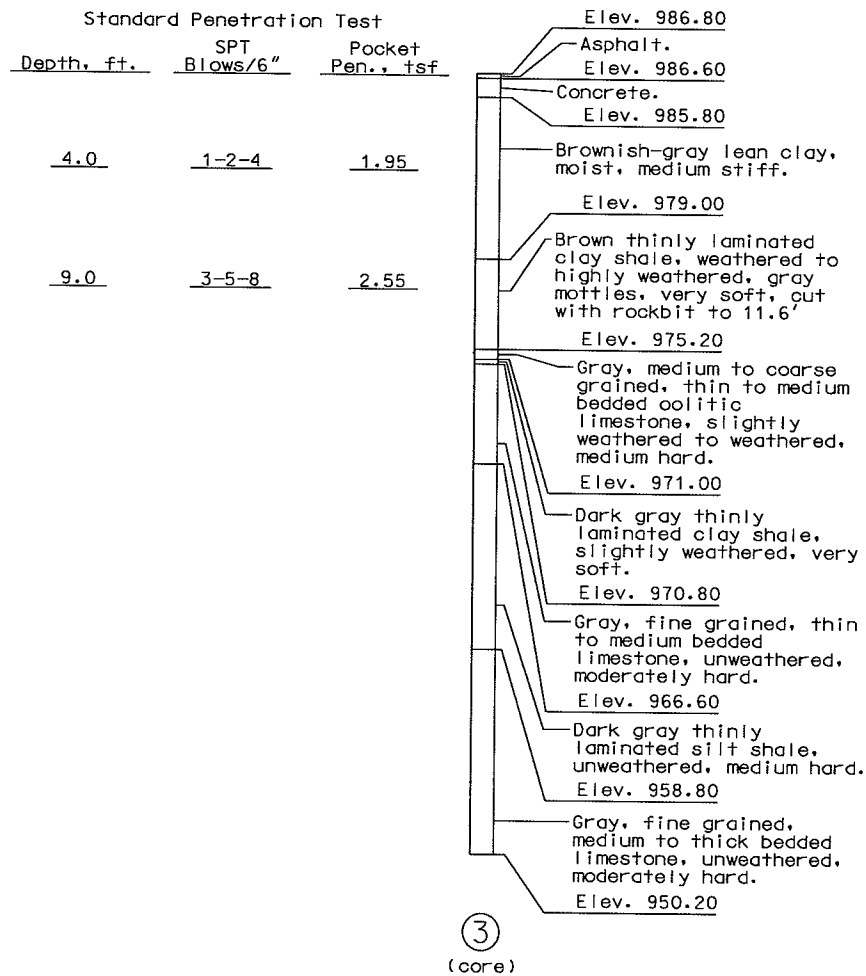
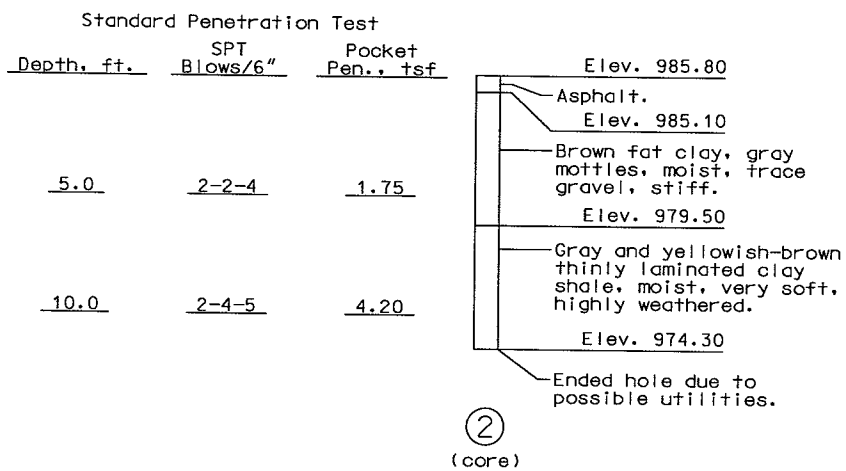
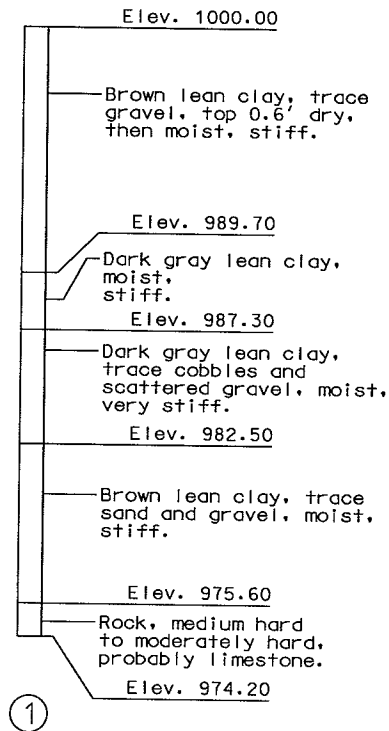
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Sheet No. 4 of 38

JACKSON COUNTY **A16082**

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FINAL PLANS



FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____

Note: For location of borings, see sheet no. 1.

BORING DATA

Detailed Apr. 2004
Checked May 2004

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

Sheet No. 5 of 38

JACKSON COUNTY A16082

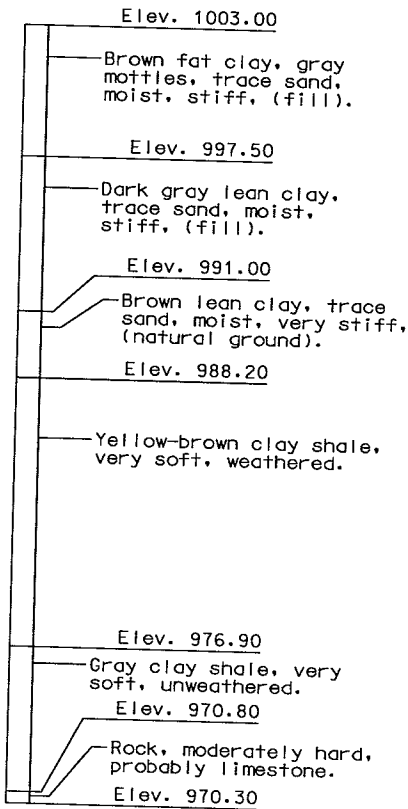
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FINAL PLANS

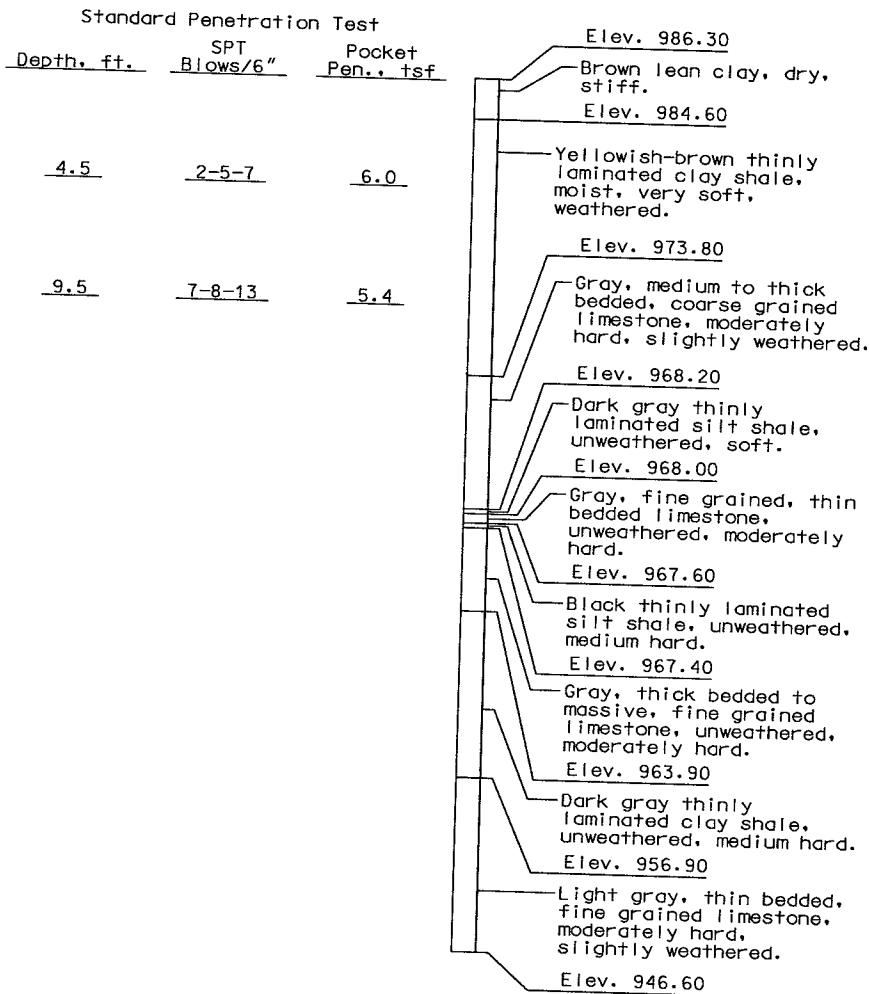
FINAL PLANS

I CERTIFY THAT THIS PLAN SHEET ACCURATELY DEPICTS THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL ITS APPURTENANT FEATURES, TO THE BEST OF MY KNOWLEDGE, AS I AND MY STAFF HAVE OBSERVED THE CONTRACTOR'S CONSTRUCTION OF THIS PROJECT. I SPECIFICALLY DISCLAIM ANY RESPONSIBILITY FOR THE DESIGN OF THIS PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE MODIFIED OR AUTHORIZED THE MODIFICATION OF THE PROJECT DESIGN DURING ITS CONSTRUCTION; AND I DISCLAIM RESPONSIBILITY FOR THE CONTRACTOR'S ACTUAL CONSTRUCTION OF THE PROJECT, EXCEPT AS I AND MY STAFF MAY HAVE DIRECTED OR ORDERED THAT THE PROJECT BE CONSTRUCTED.

SIGNATURE _____ DATE _____



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④
(core)

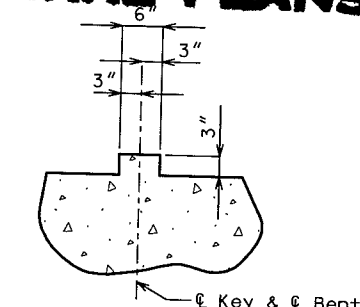
Note: For location of borings, see sheet no. 1.

BORING DATA

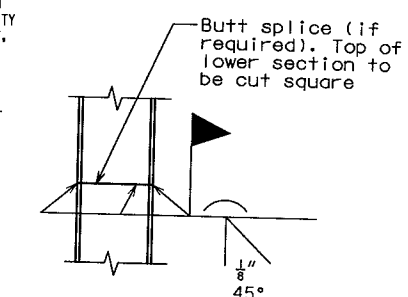
Note: This drawing is not to scale. Follow dimensions.

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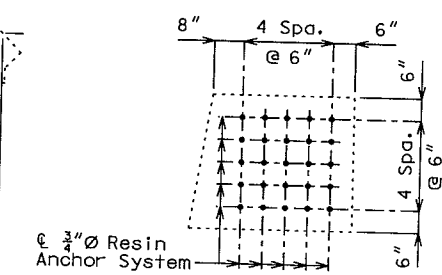
FINAL PLANS



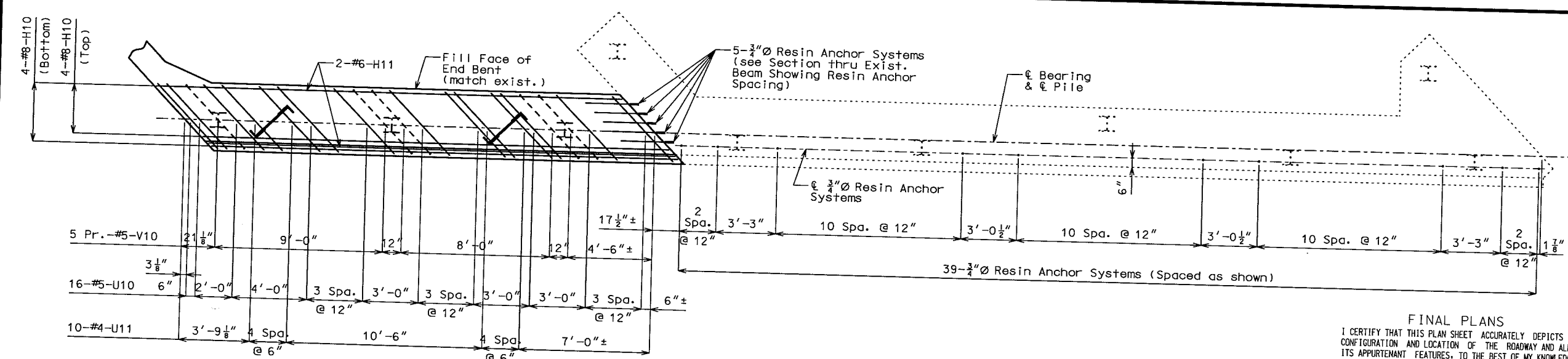
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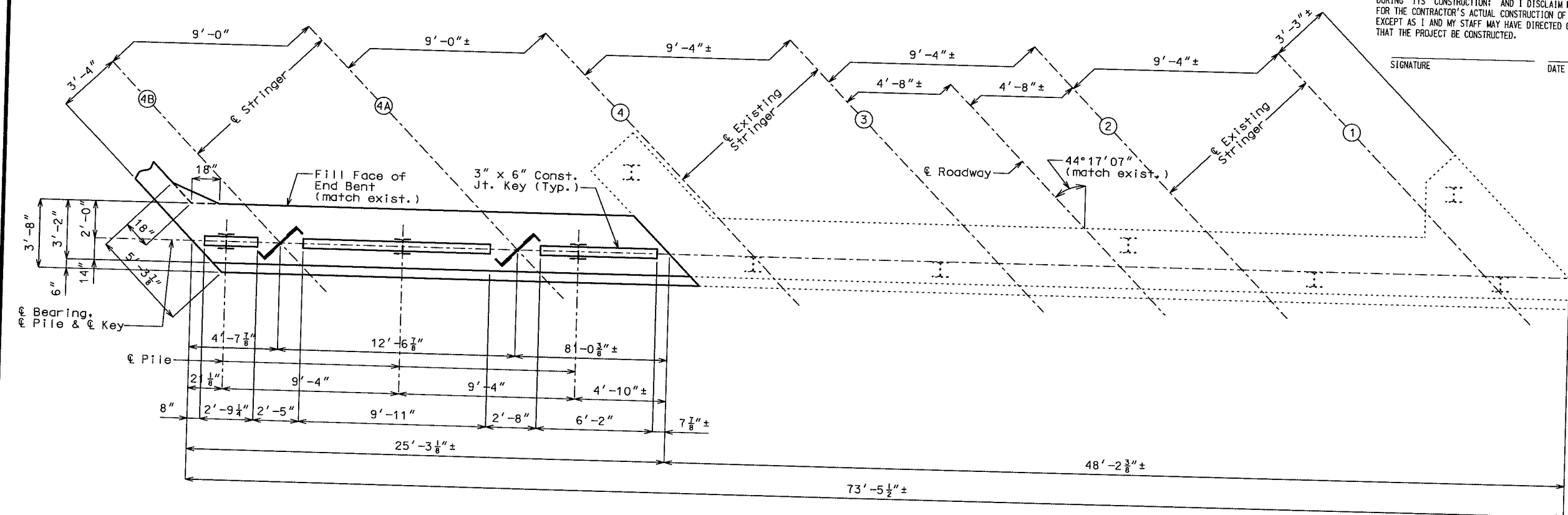
STEEL PILE SPLICE



SECTION THRU EXIST. BEAM SHOWING RESIN ANCHOR SPACING



PLAN OF BEAM SHOWING REINFORCEMENT



PLAN OF BEAM

DETAILS OF CONCRETE REMOVAL @ END BENT NO. 1

Note: The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The cost of concrete removal shown above will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete per lump sum.

Detailed Apr. 2004
Checked May 2004

DETAILS OF END BENT NO. 1

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

- Notes:
- All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
 - All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1-1/2".
 - For details of End Bent No. 1 not shown, see sheets no. 8 & 9.
 - All U-bars and Pr. V-bars in end bent are to be placed parallel to Roadway.
 - Shift reinforcing steel to clear the angles of the stringer chairs by at least 1 1/2".
 - For details of stringer chairs, see sheet no. 9.

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Estimated Quantities			
Item		Substr.	Superstr.
Class 1 Excavation	cu. yard	65	
* Removal of Existing Bridge Decks	sq. foot		7,961
Partial Removal of Substructure Concrete	lump sum		1
Bridge Approach Slab (Bridge)	sq. yard		217
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	39	
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	36	
Supplementary Television Camera Inspection	each	3	
Foundation Inspection Holes	linear foot	63	
Concrete Coring	linear foot	78	
Sonic Logging Testing	each	3	
Structural Steel Piles (10 in.)	linear foot	104	
Pile Point Reinforcement	each	4	
Class B Concrete (Substructure)	cu. yard	59.2	
Slab on Steel	sq. yard		1,044
** Safety Barrier Curb	linear foot		516
Substructure Repair (Unformed)	sq. foot	15	
Modified Deck Repair	sq. foot		500
Reinforcing Steel (Bridges)	pound	10,720	
Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound		36,500
Existing Diaphragm Connections to Flange	lump sum		1
Slab Drain	each		6
Surface Preparation for Recoating Structural Steel	sq. foot		8,800
Field Application of Inorganic Zinc Primer	sq. foot		8,800
Intermediate Field Coat (System G) Gray	sq. foot		9,800
Finish Field Coat (System G) Gray	sq. foot		2,200
Non-Destructive Testing	linear foot		50
Laminated Neoprene Bearing Pad Assembly	each		3

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

- * Includes removal and disposal of slab, curbs, end posts, rails and expansion devices.
- ** Safety barrier curb shall be cast-in-place option or slip-form option.

Pile Data		
Bent No.	1	5
Pile Type and Size	HP10 x 42	HP10 x 42
Number	2	2
Approximate Length	foot 25	27
Design Bearing	ton 35.1	35.1
Hammer Energy Required	foot-pound 8,000	8,000

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.

Manufactured pile point reinforcement shall be used on all piles in this structure.

All piles shall be driven to practical refusal.

Rock Socket Data			
Bent No.	2	3	4
Foundation Material	Rock	Rock	Rock
Number	1	1	1
Design Side Friction	tsf 2.5	2.5	2.5

PAY LENGTHS FOR EACH SHAFT & SOCKET		
	DRILLED SHAFT	ROCK SOCKET
Bent 2	13'	12'
Bent 3	13'	12'
Bent 4	13'	12'

An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on all drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:
HS20 Modified (slab only)
HS20-44 (except for slab)
No Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case II

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets) f'c = 4,000 psi
Class B-1 Concrete (Safety Barrier Curb) f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50) fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36) fb = 9,000 psi fy = 36,000 psi

Fabricated Steel Connections:
Field connections shall be made with 3/4" diameter high strength bolts and 1/2" diameter holes, except as noted.

Joint Filler:
All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

At the option of the contractor, the intermediate and finish field coats may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.

Existing Structural Steel Protective Coatings:
Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Recoating of Structural Steel (System G or H)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for Surface Preparation for Recoating Structural Steel.

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for the Field Application of Inorganic Zinc Primer. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G) Gray. The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G) Gray.

Estimated Quantities for Slab on Steel	
Item	Total
Class B-2 Concrete	cu. yard 282.2
Reinforcing Steel	pound 6,180
Reinforcing Steel (Epoxy Coated)	pound 101,180

The table of Estimated Quantities for Slab on Steel represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Slab shall be cast-in-place. Precast prestressed panels are not permitted.

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MO		42

GENERAL NOTES (CONT.):

Miscellaneous:
A minimum vertical clearance of 14'-9" from crown of existing lanes and a minimum lateral clearance of 28'-0" centered on existing left lane and 38'-0" centered on existing right lane shall be maintained during construction.

Traffic over structure to be maintained during construction. See Details Showing Staged Construction on sheets no. 3 & 4.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

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

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

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.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

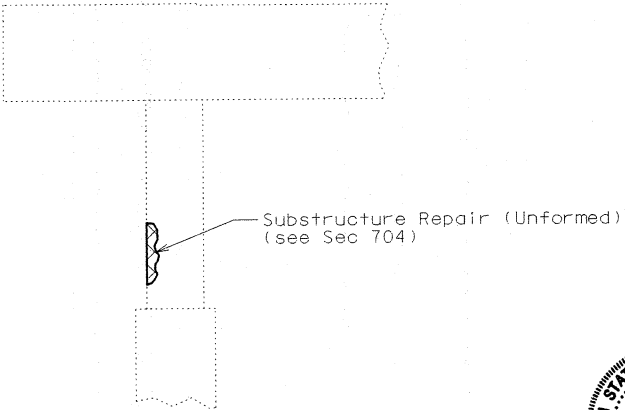
Resin Anchors:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure), Slab on Steel or Safety Barrier Curb.

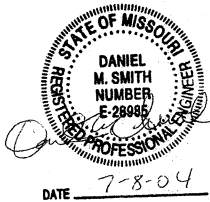
The "A" diameter resin anchor systems shall have a minimum ultimate pullout strength of "B" lbs. in concrete with f'c = 4,000 psi.

A "C" Grade 60 reinforcing bar "D" long shall be substituted for the "A" Ø threaded rod.

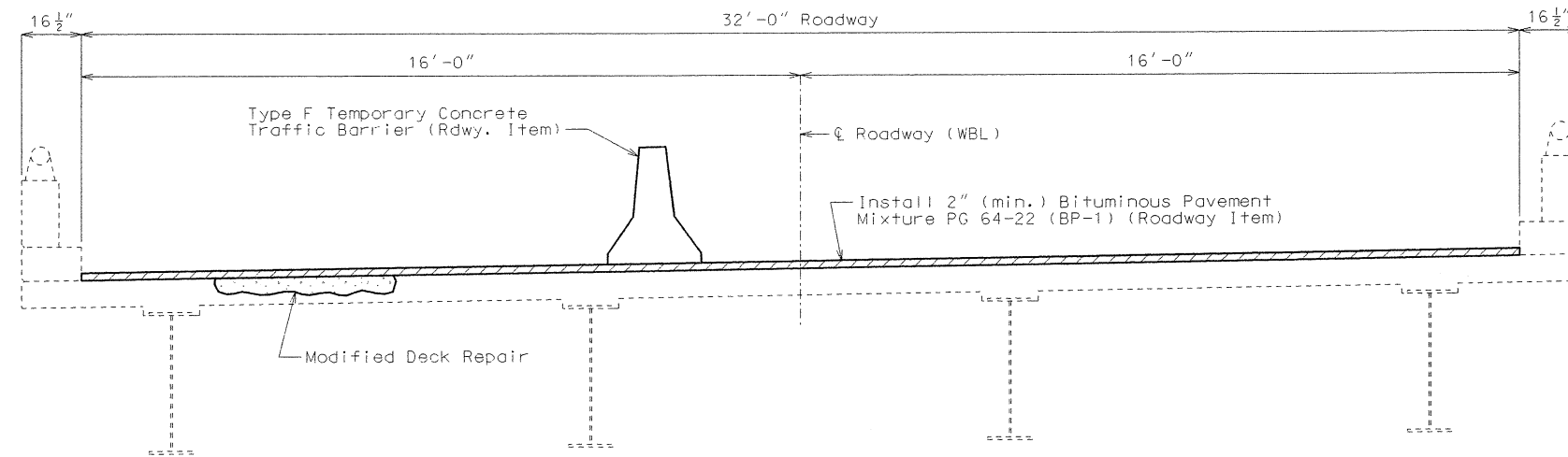
"A"	"B"	"C"	"D"
5/8"	15,500	E #5	2'-5"
3/4"	20,400	#6	3'-11"
1"	33,600	#8	6'-10"



PART ELEVATION OF INT. BENT
SHOWING SUBSTRUCTURE REPAIR



State	Proj. No.	Sheet No.
MO		243



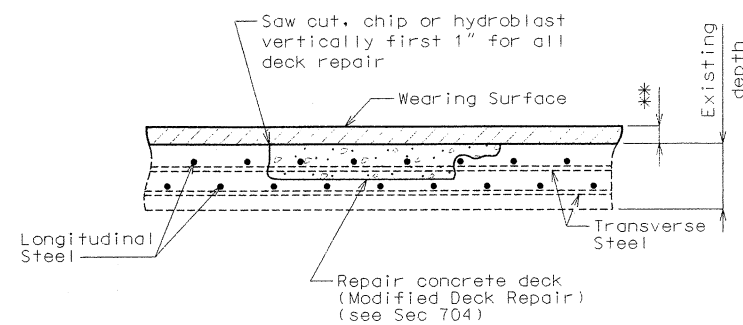
SECTION THRU EXISTING SLAB

Notes:

In order to maintain grade and a minimum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure. The cost of furnishing and installing the overlay will be considered completely covered in the contract unit price for roadway pavement, including all additional labor, materials or equipment for variations in thickness of overlay.

Roadway surfacing adjacent to bridge ends to match top of asphalt overlay (Roadway Item).

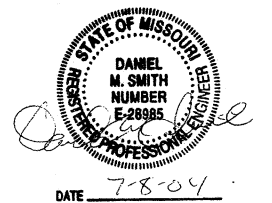
Maintain one lane of traffic on structure during construction (see Roadway Plans).



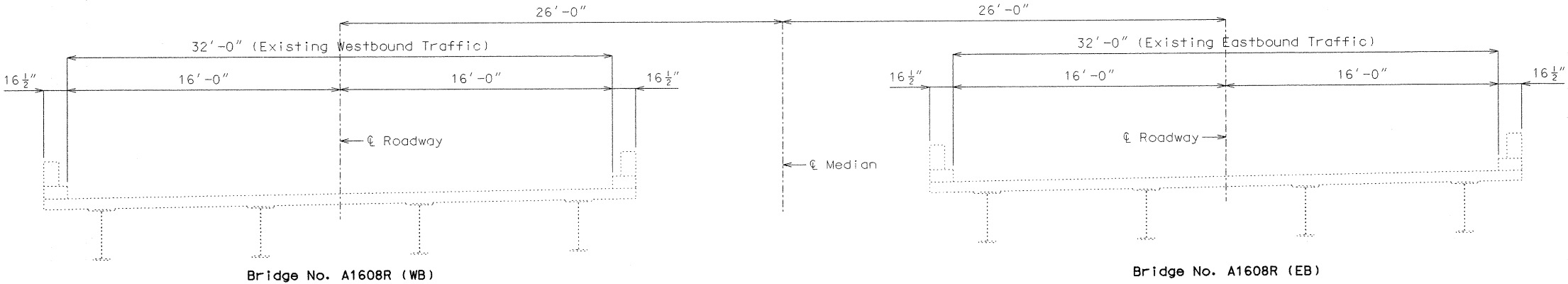
MODIFIED DECK REPAIR AREA

** 2" (min.) Bituminous Pavement
Mixture PG 64-22 (BP-1)
(Roadway Item)

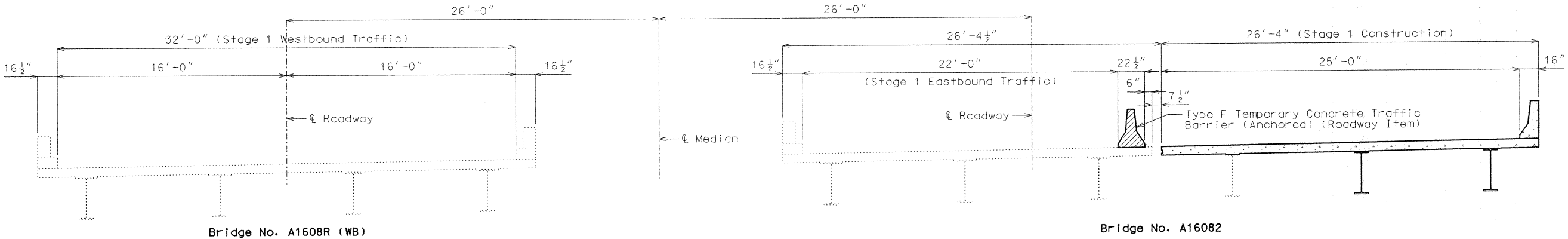
DETAILS SHOWING TEMPORARY ASPHALT OVERLAY AND DECK REPAIR (PRIOR TO STAGED CONSTRUCTION)



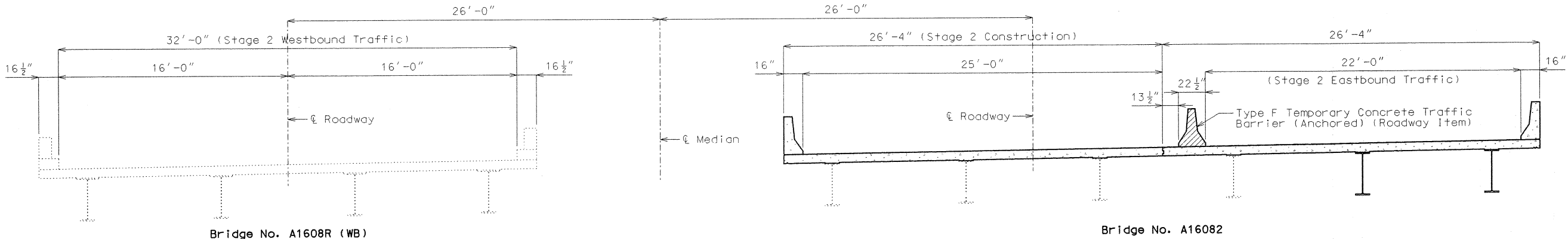
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SECTION THRU EXISTING SLABS



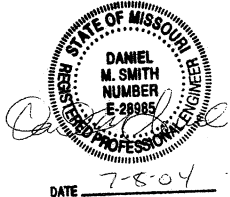
STAGE 1 CONSTRUCTION



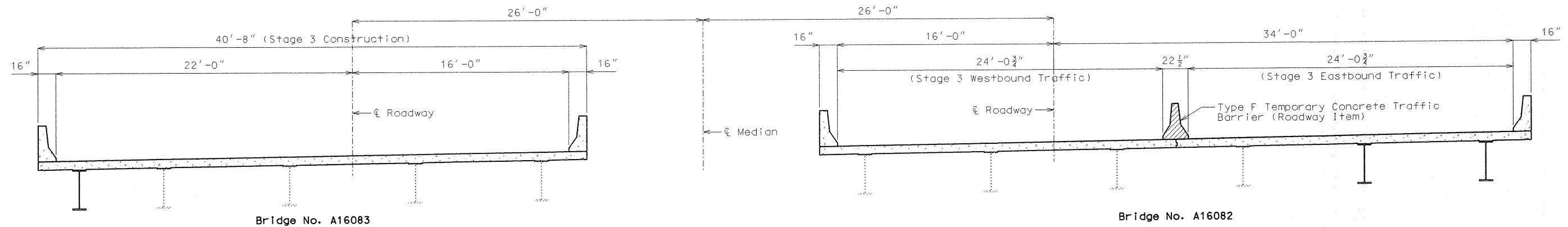
STAGE 2 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

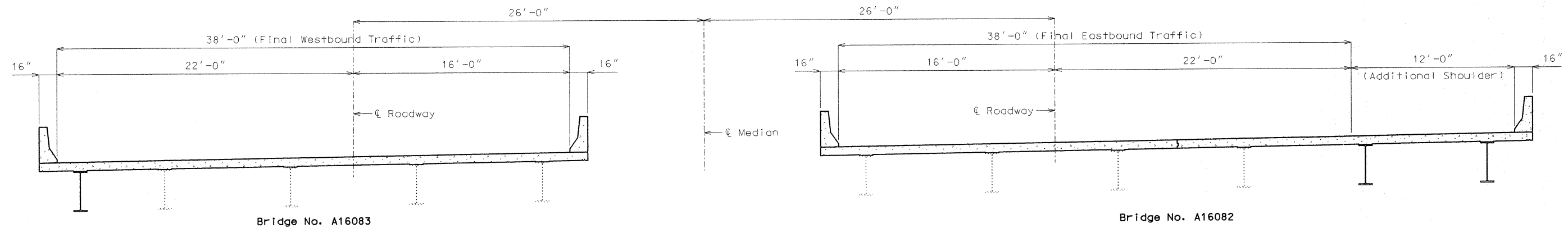
Note: Method of attachment for the Type F Temporary Concrete Traffic Barrier shall be the Tie-Down Strap.



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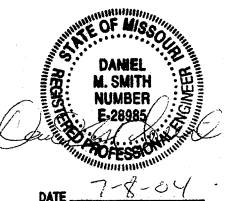


STAGE 3 CONSTRUCTION



FINAL CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION



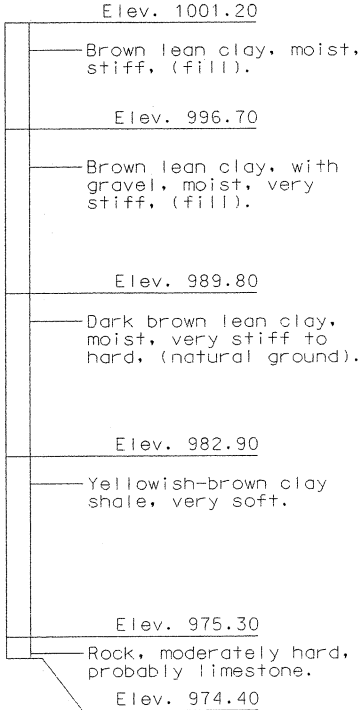
Detailed Apr. 2004
Checked May 2004

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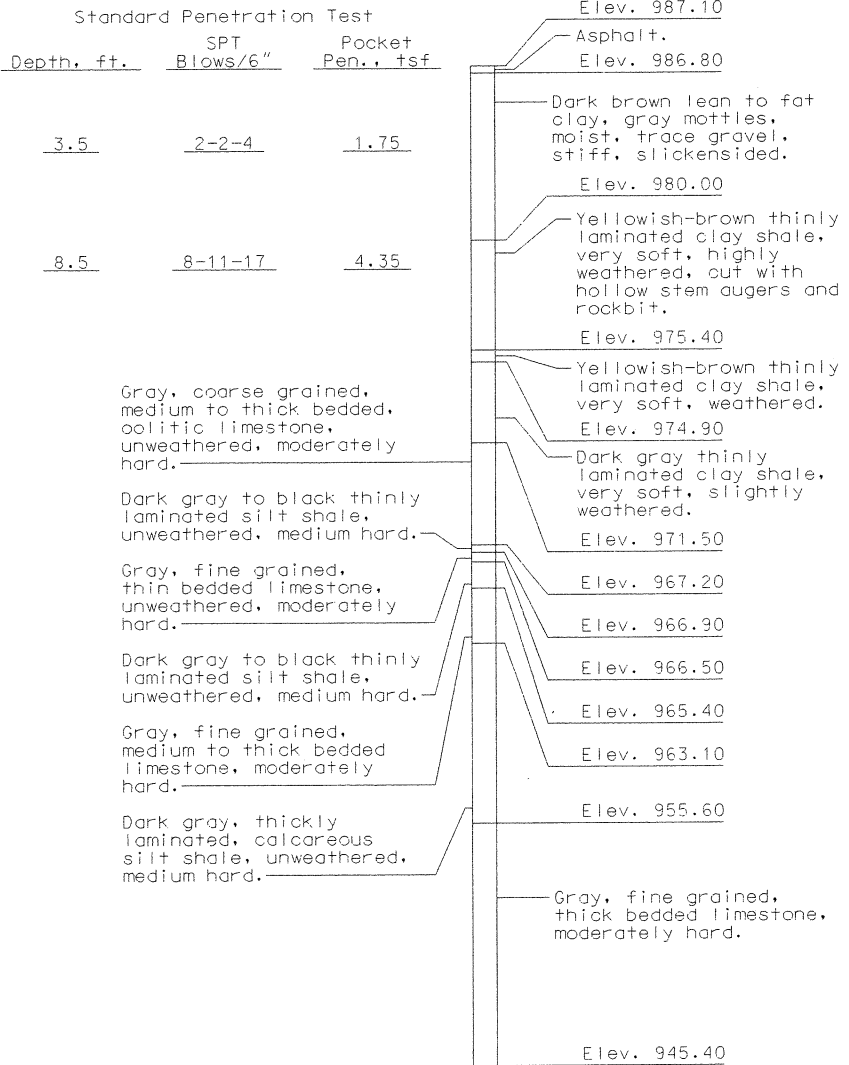
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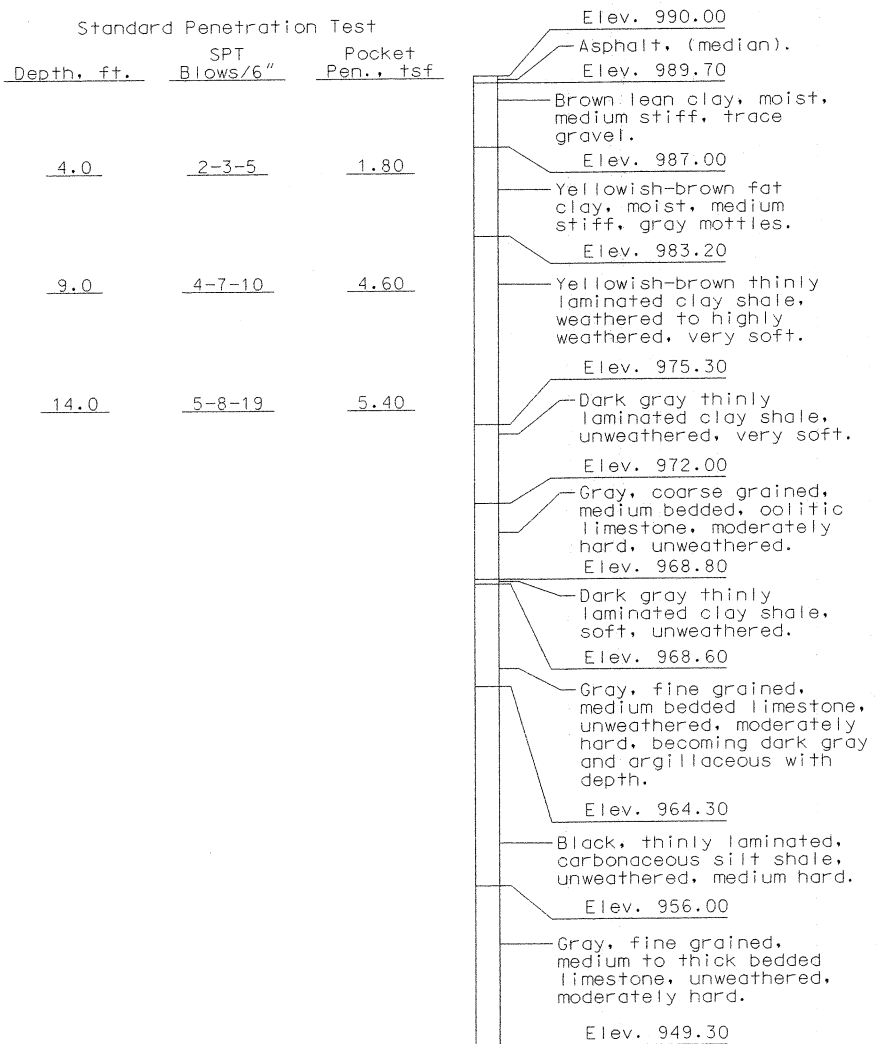
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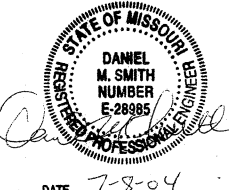
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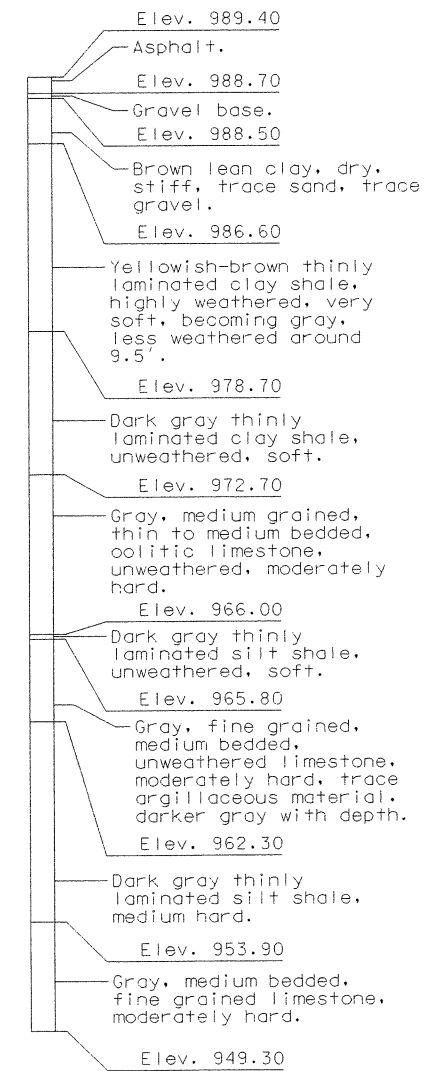
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Note: For location of borings, see sheet no. 1.

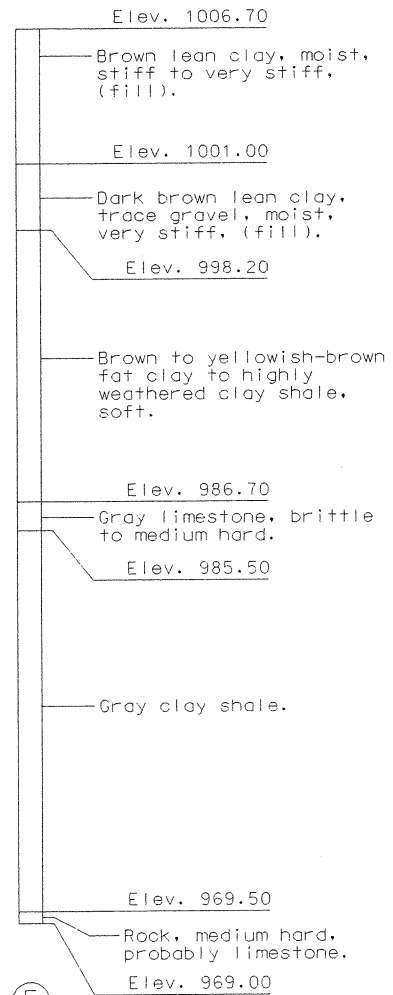
BORING DATA



Standard Penetration Test		
Depth, ft.	SPT Blows/6"	Pocket Pen., tsf
4.0	2-3-7	2.25
9.0	8-16-22	>9.0



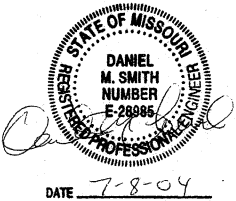
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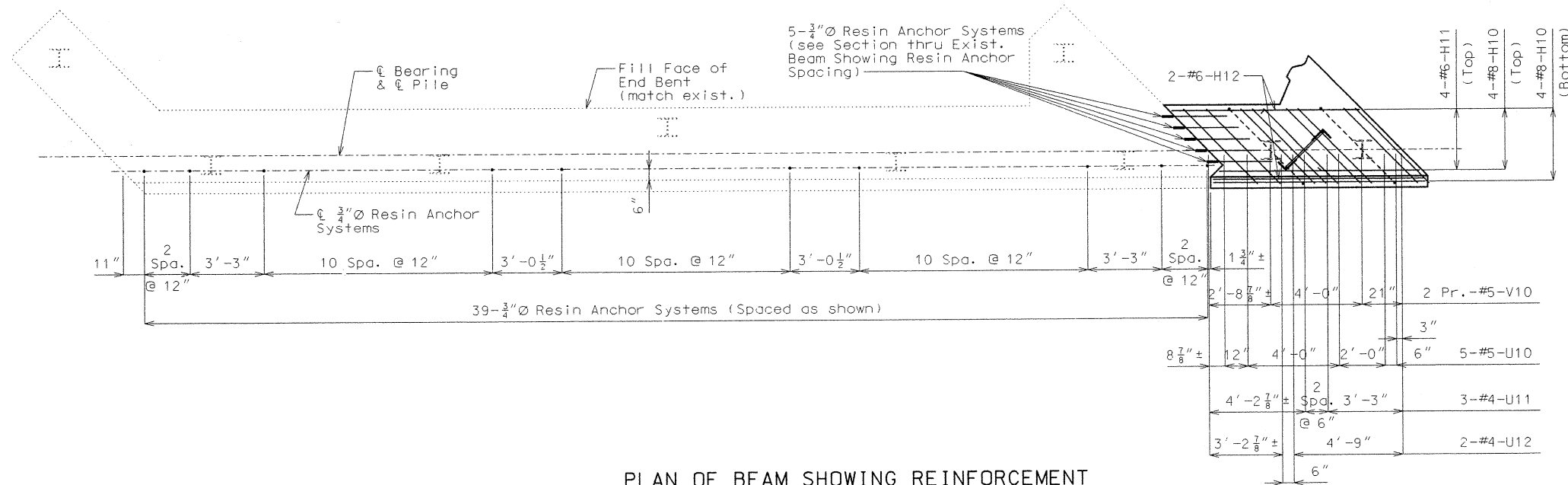
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Note: For location of borings, see sheet no. 1.

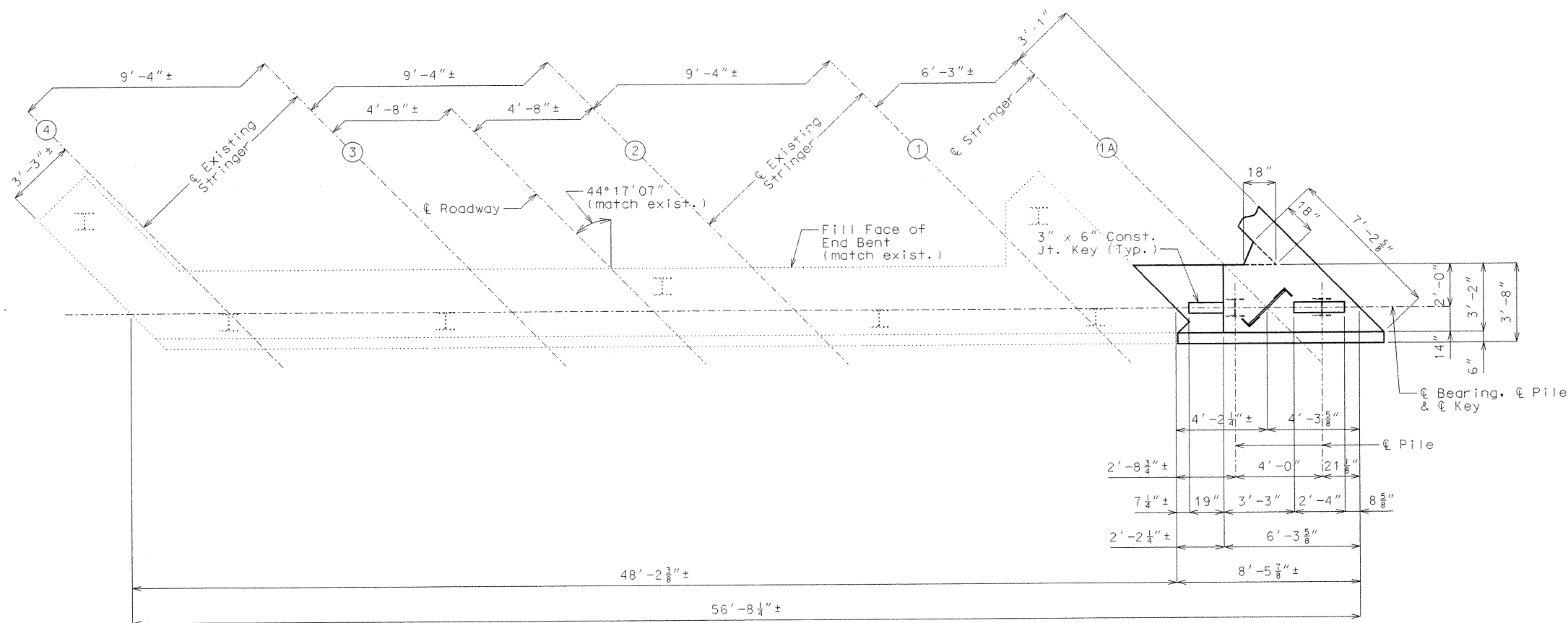
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MO		048



PLAN OF BEAM SHOWING REINFORCEMENT



PLAN OF BEAM

DETAILS OF CONCRETE REMOVAL @ END BENT NO. 1

Note: The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The cost of concrete removal shown above will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete per lump sum.

DETAILS OF END BENT NO. 1

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

Notes:

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

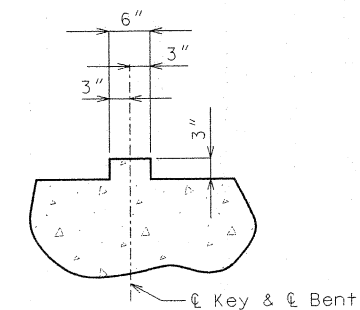
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1-1/2".

For details of End Bent No. 1 not shown, see sheets no. 8 & 9.

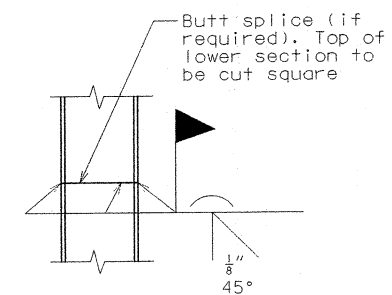
All U-bars and Pr. V-bars in end bent are to be placed parallel to & Roadway.

Shift reinforcing steel to clear the angles of the stringer chairs by at least 1 1/2".

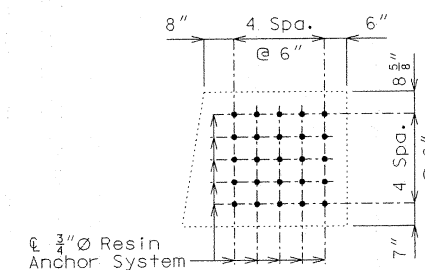
For details of stringer chairs, see sheet no. 9.



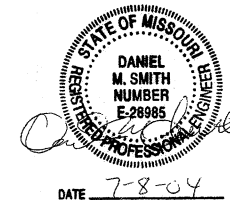
TYPICAL SECTION THRU KEY



STEEL PILE SPLICE



SECTION THRU EXIST. BEAM SHOWING RESIN ANCHOR SPACING



DATE 7-8-04

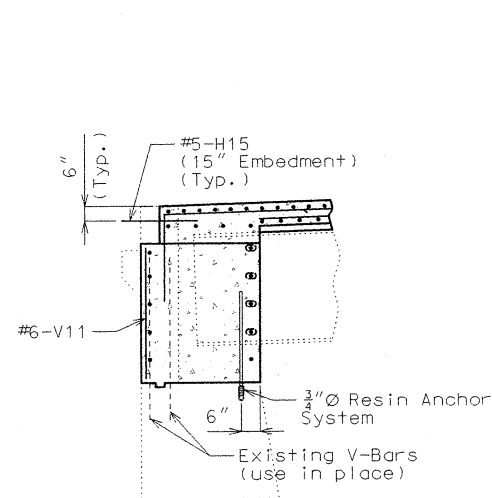
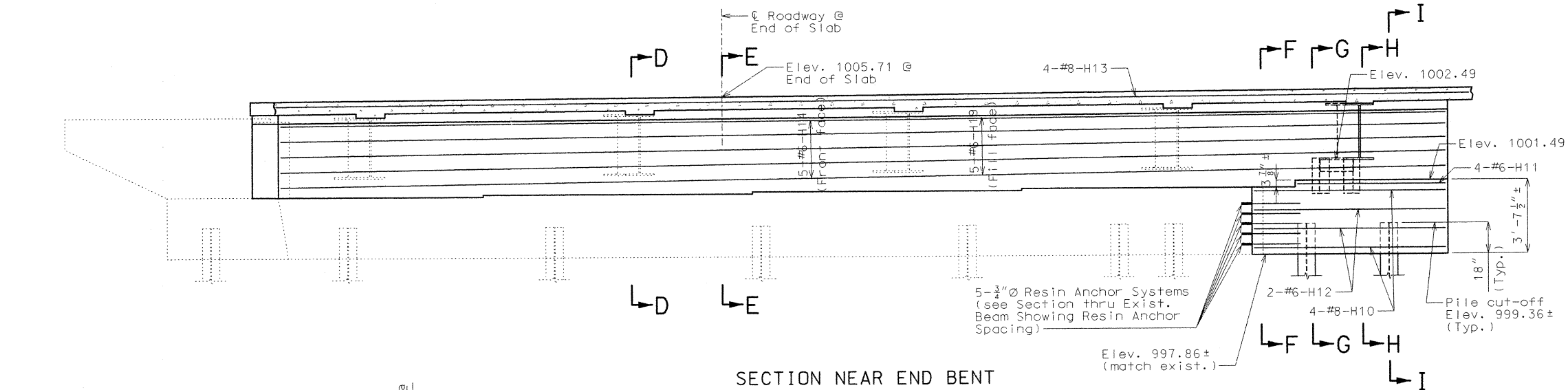
Detailed Apr. 2004
Checked May 2004

Sheet No. 7 of 38

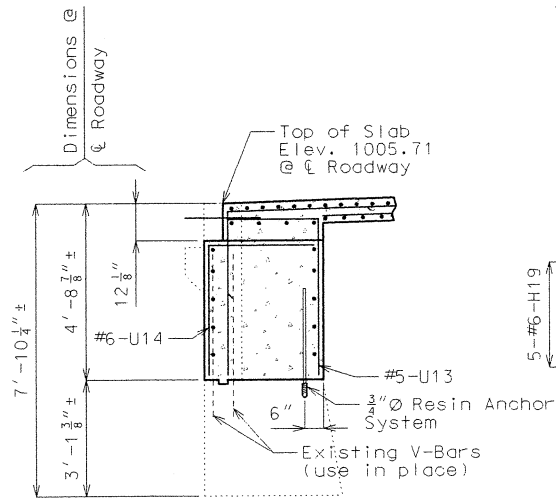
JACKSON COUNTY A16083

T:\br-proj\gabell\j4u1042\A16083\A16083-007.dgn 02:58:04 PM 07/07/2004

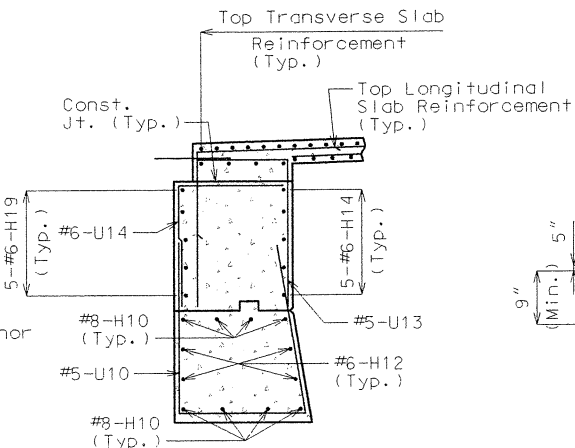
Notes:
Existing steel end diaphragms not shown for clarity (leave in place).
U-bars and resin anchor systems in diaphragm not shown for clarity.



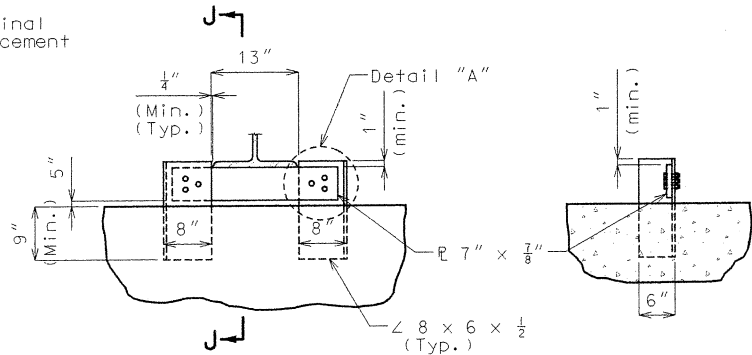
SECTION D-D



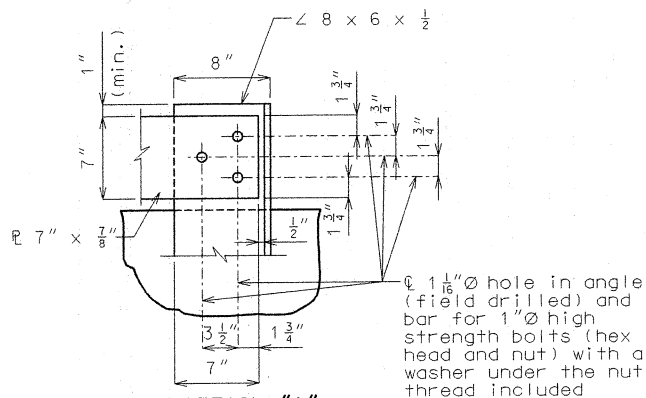
SECTION E-E



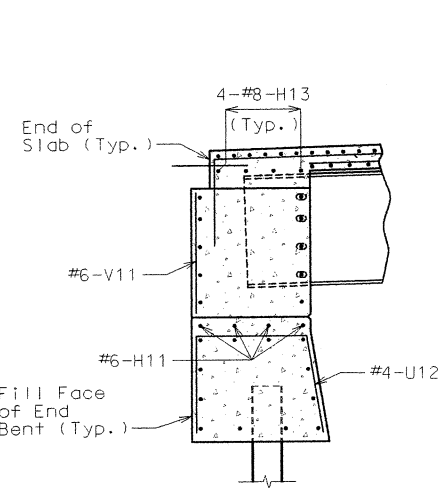
SECTION F-F



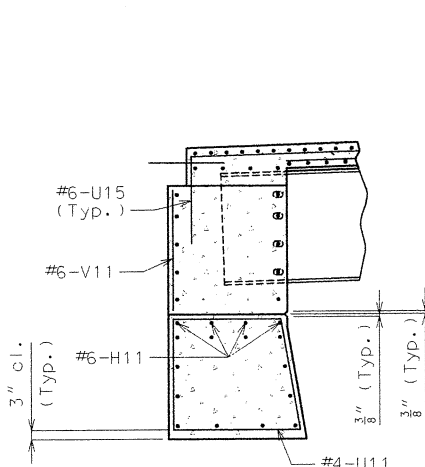
DETAILS OF STRINGER CHAIR AT END BENTS



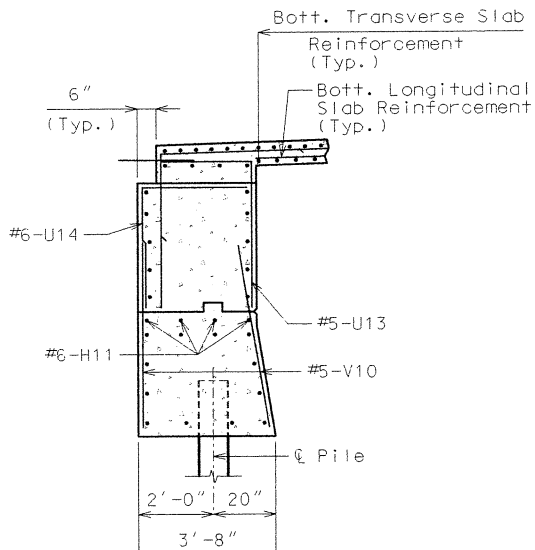
Note: Weight of 279 pound of all stringer chairs is included in the weight of Fabricated Structural Low Alloy Steel.



SECTION G-G



SECTION H-H



SECTION I-I

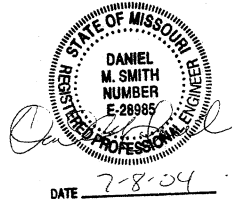
DETAILS OF END BENT NO. 1

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	35
Structural Steel Piles (10 in.)	linear foot	50
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	6.3

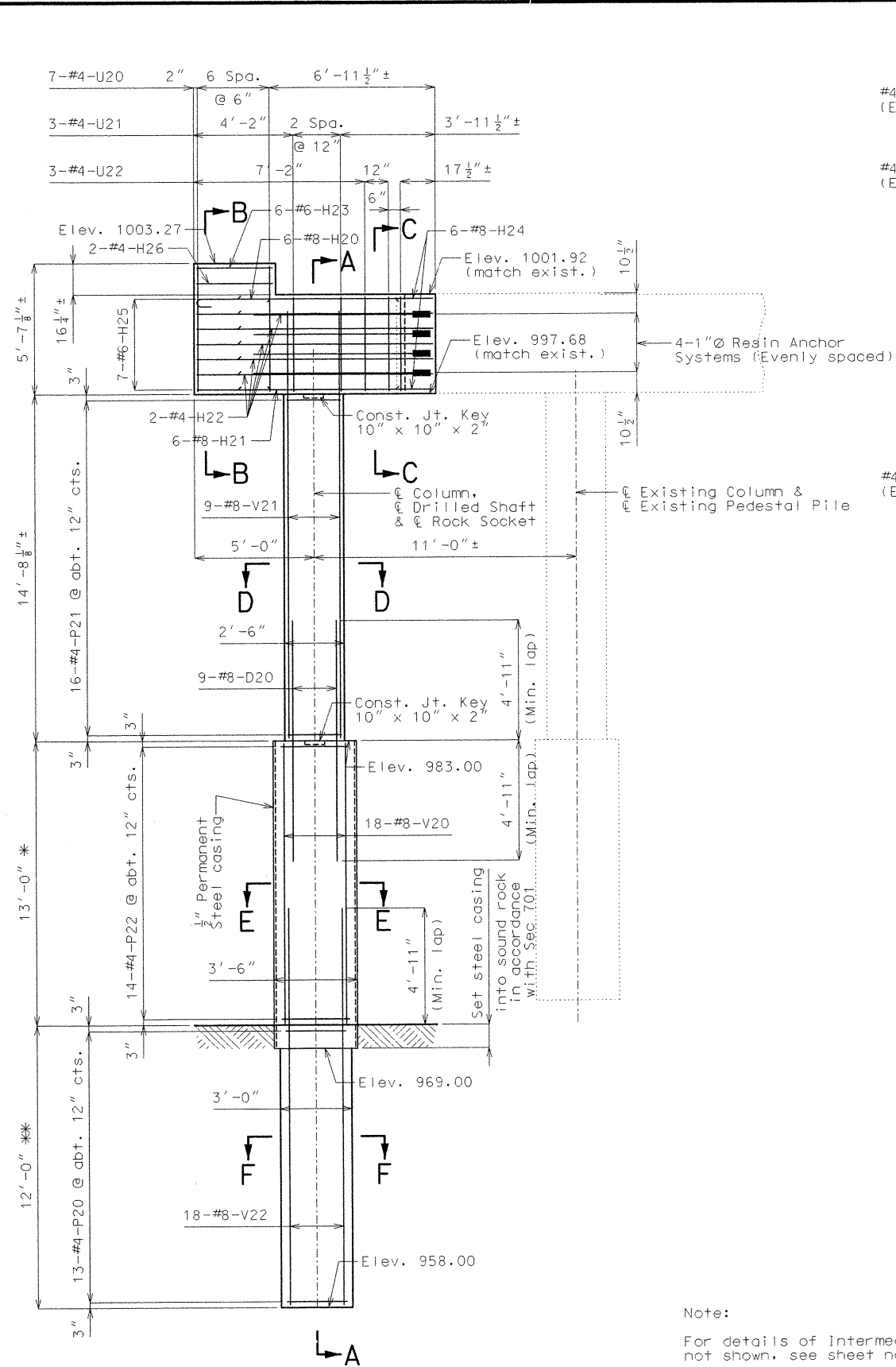
Note: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of End Bent No. 1 not shown, see sheets no. 7 & 8.

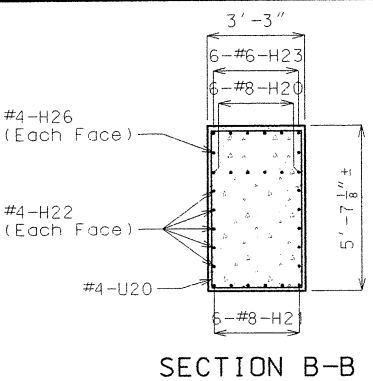
Cost of furnishing, fabricating and installing stringer chairs will be consider completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50.



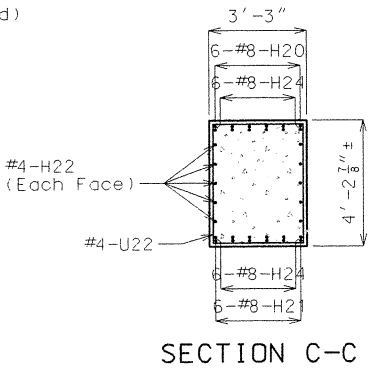
State	Proj. No.	Sheet No.
MO		BS1



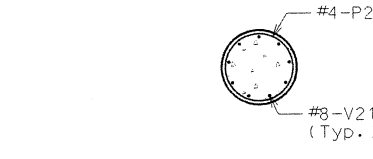
PART ELEVATION



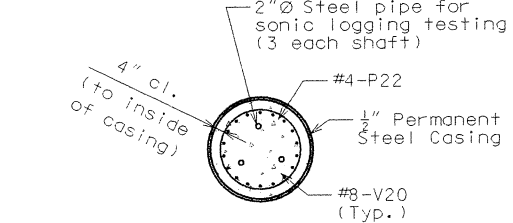
SECTION B-B



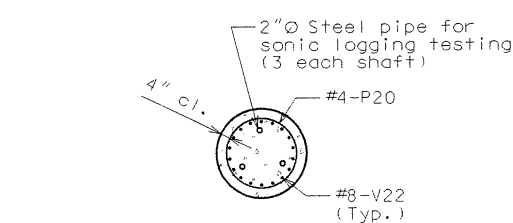
SECTION C-C



SECTION D-D

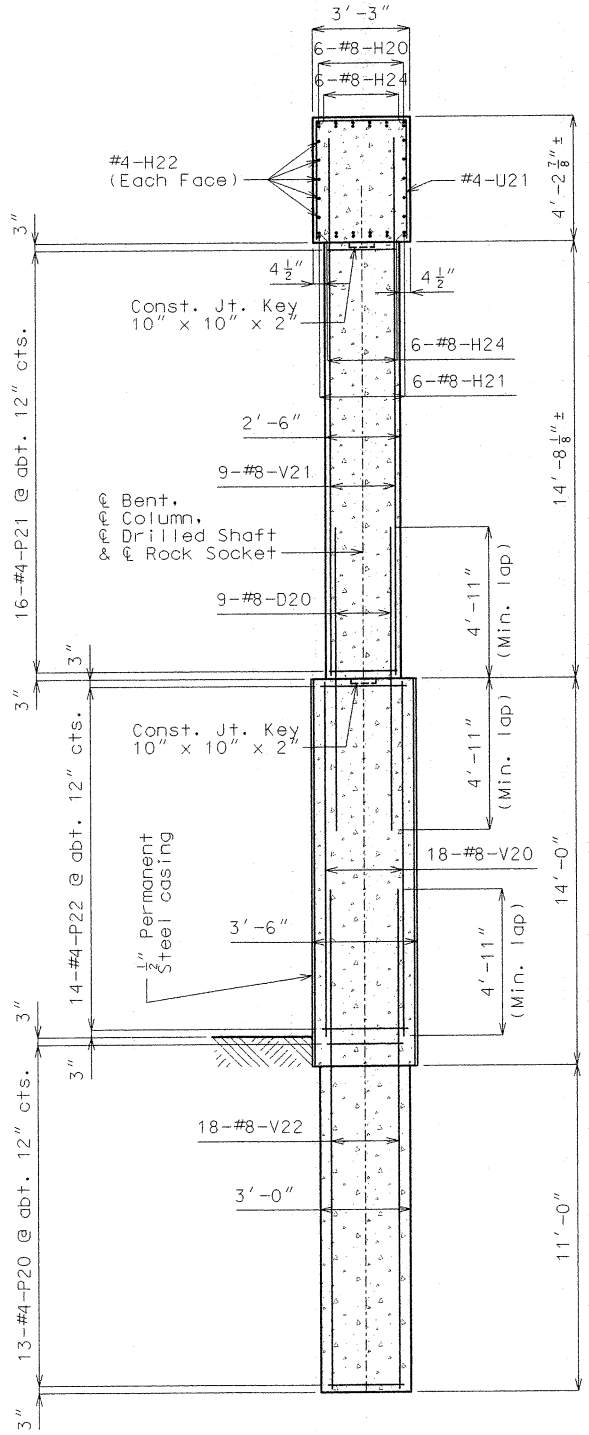


SECTION E-E



SECTION F-F

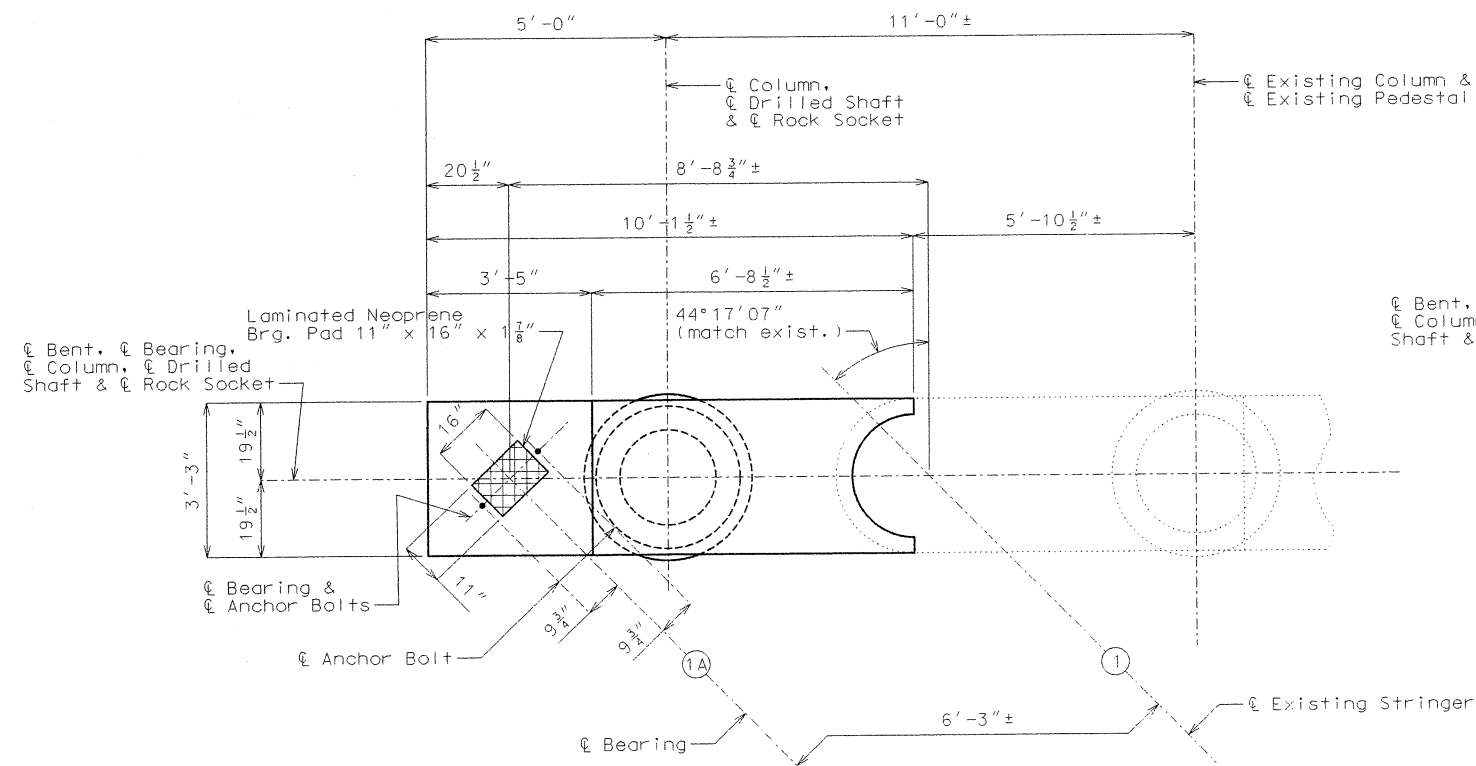
Note:
For details of Intermediate Bent No. 2
not shown, see sheet no. 11.
* Pay Limits of Drilled Shafts (3 ft. 6 in. Dia.)
** Pay Limits of Rock Sockets (3 ft. 0 in. Dia.)



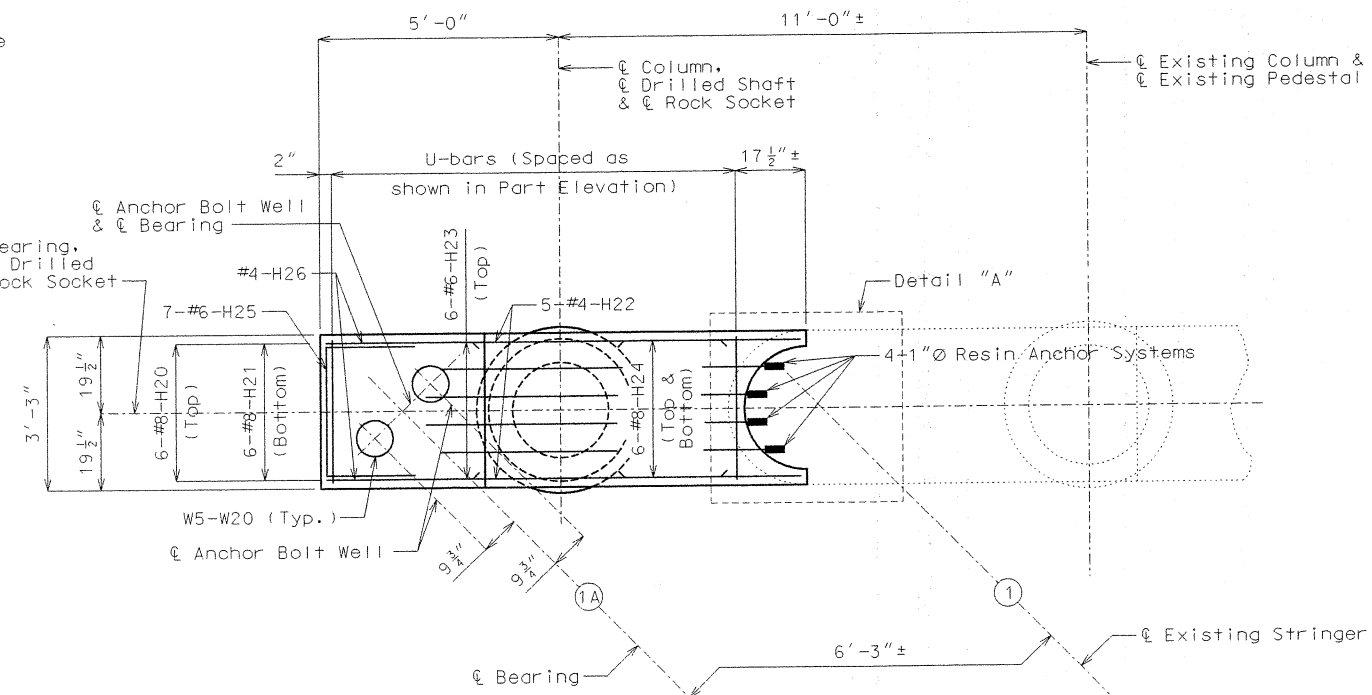
SECTION A-A

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
DANIEL M. SMITH
NUMBER E-28985
DATE 7-8-04

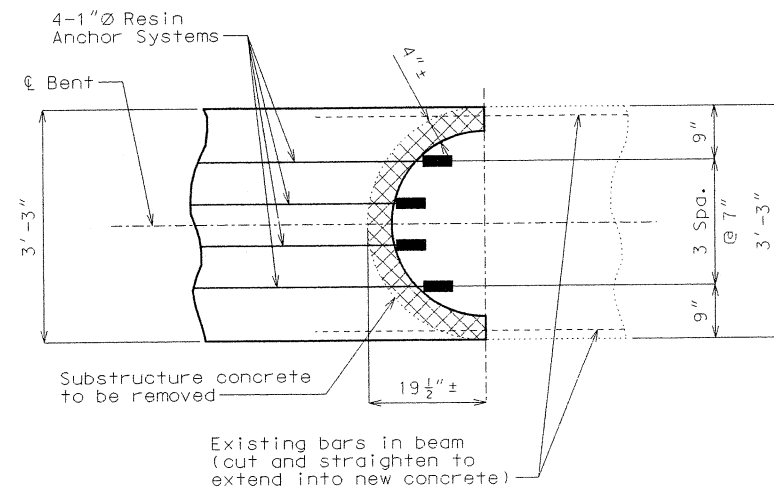
DETAILS OF INTERMEDIATE BENT NO. 2



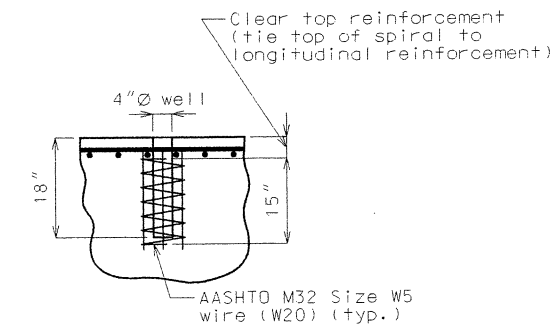
PART PLAN



PART PLAN SHOWING REINFORCEMENT



DETAIL "A"



DETAIL OF
ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	13
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	12
Supplementary Television Camera Inspection	each	1
Foundation Inspection Holes	linear foot	21
Concrete Coring	linear foot	26
Sonic Logging Testing	each	1
Class B Concrete (Substructure)	cu. yard	15.8
Reinforcing Steel (Bridges)	pound	3,570

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 2 not shown, see sheet no. 10.

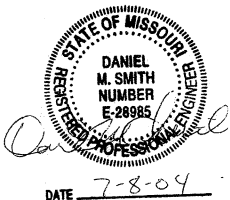
All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

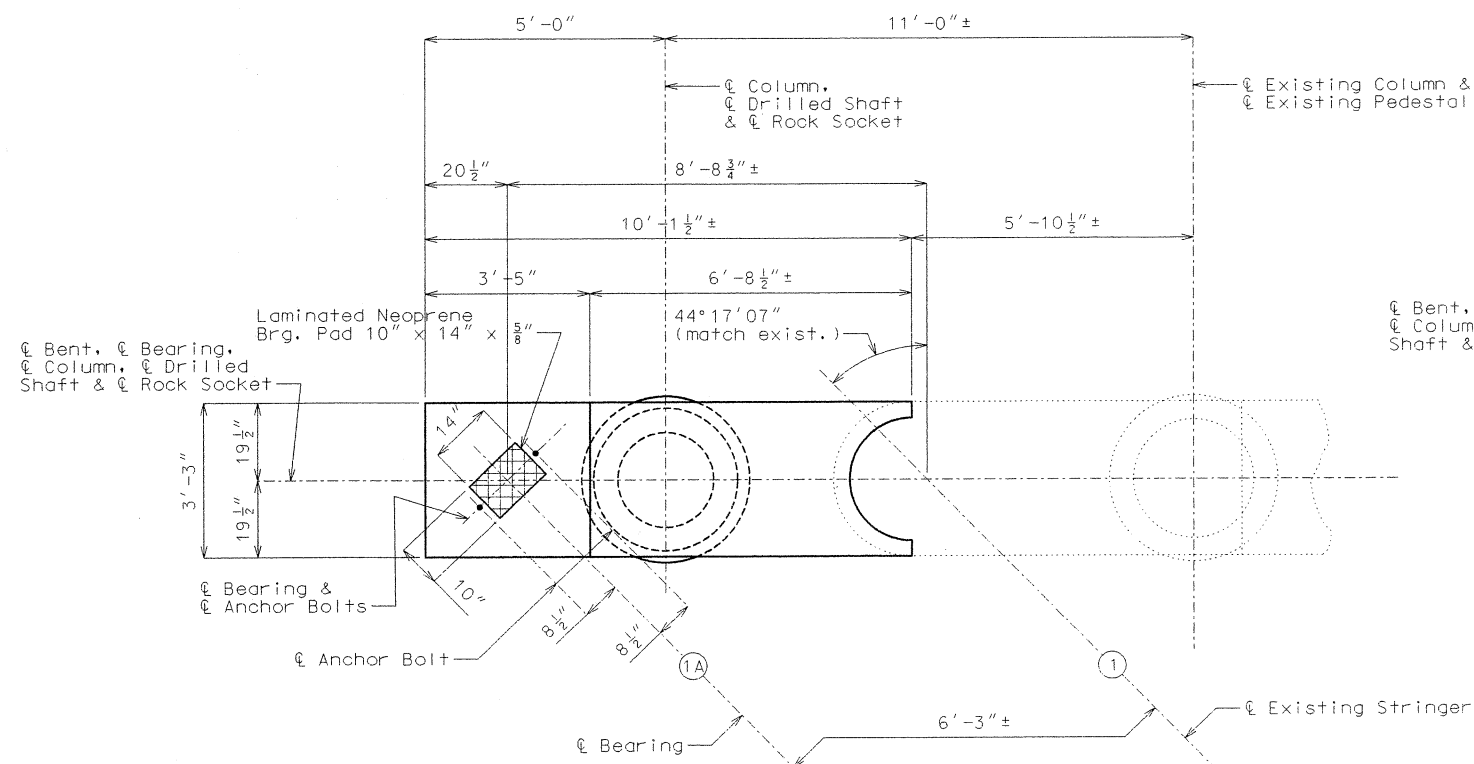
An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on all drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

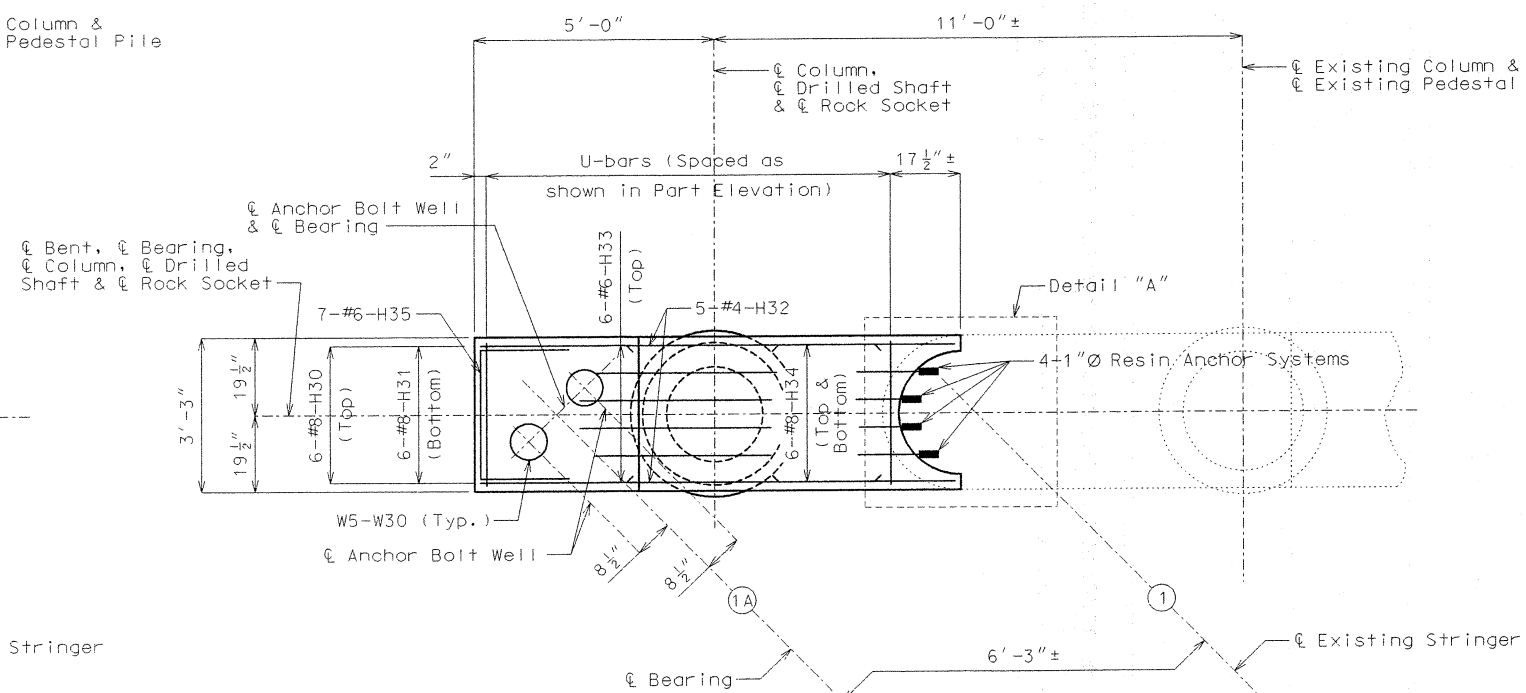


DATE 7-8-04

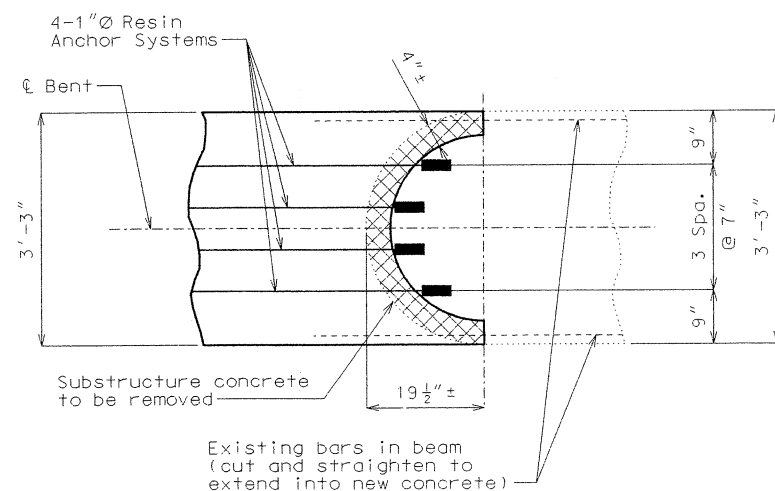
DETAILS OF INTERMEDIATE BENT NO. 2



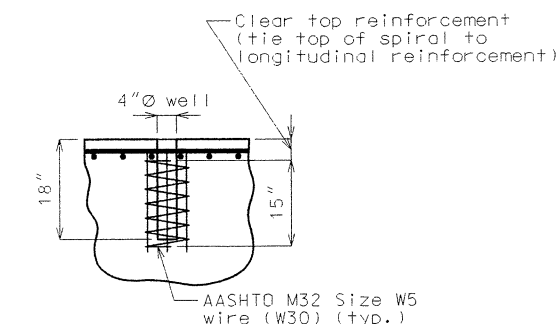
PART PLAN



PART PLAN SHOWING REINFORCEMENT



DETAIL "A"



DETAIL OF ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	13
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	12
Supplementary Television Camera Inspection	each	1
Foundation Inspection Holes	linear foot	21
Concrete Coring	linear foot	26
Sonic Logging Testing	each	1
Class B Concrete (Substructure)	cu. yard	15.6
Reinforcing Steel (Bridges)	pound	3,560

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 3 not shown, see sheet no. 12.

All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

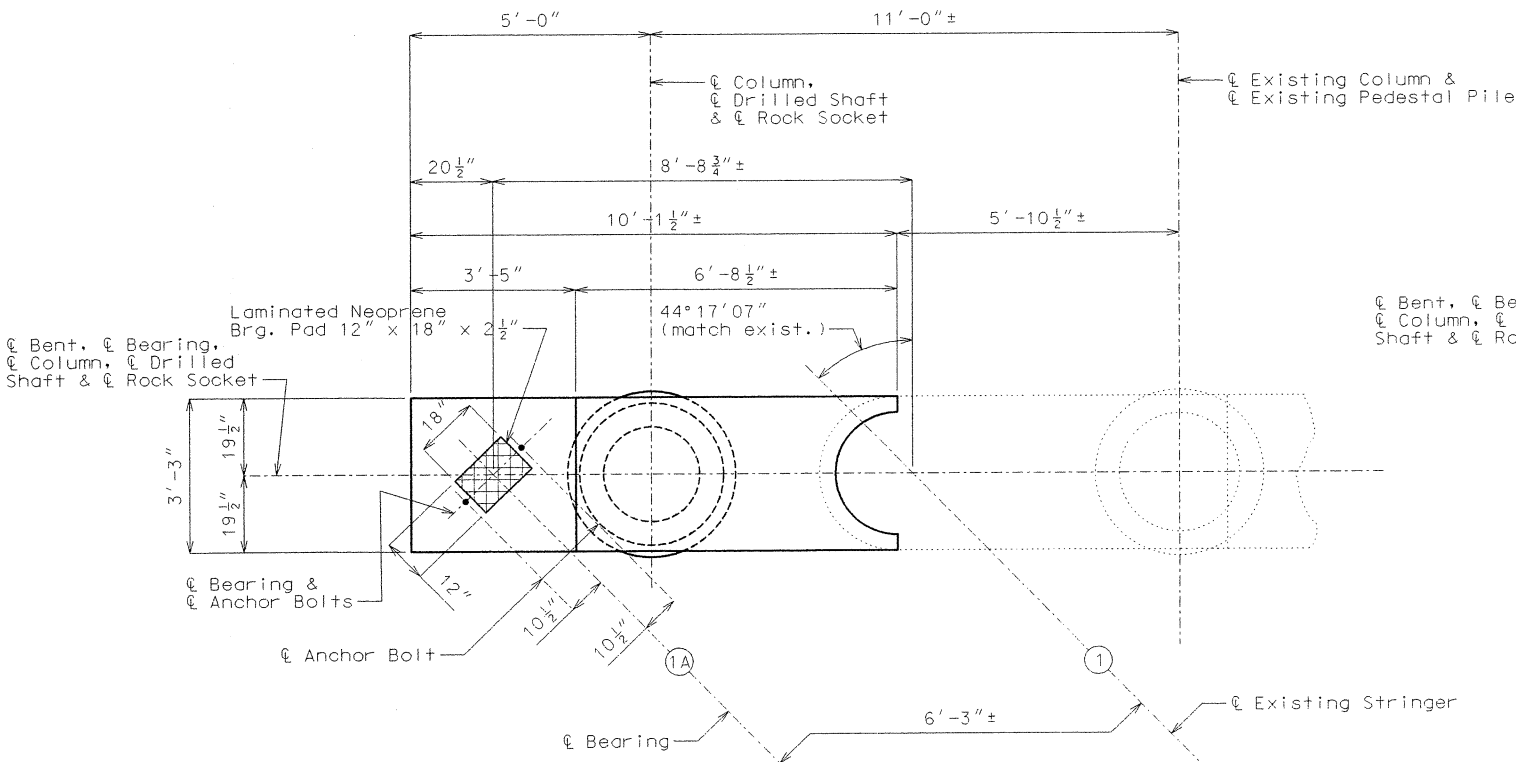
An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on all drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

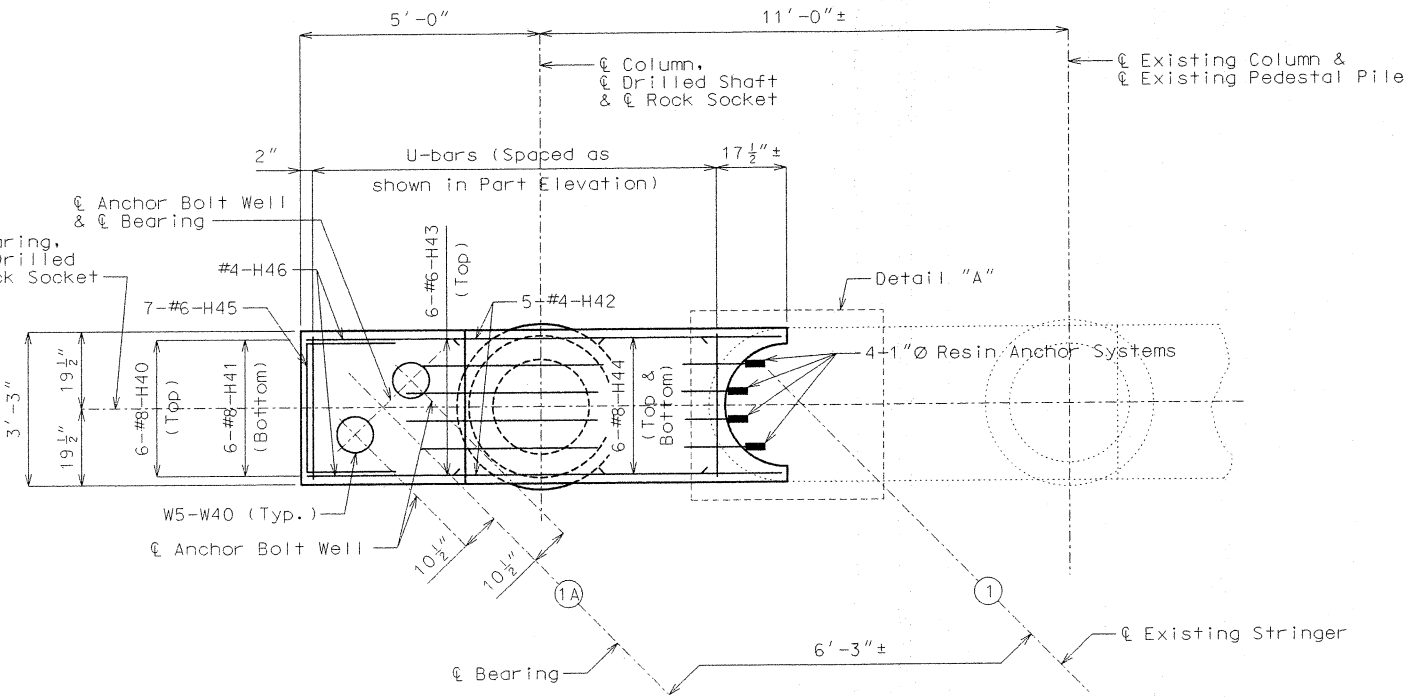


DATE 7-8-04

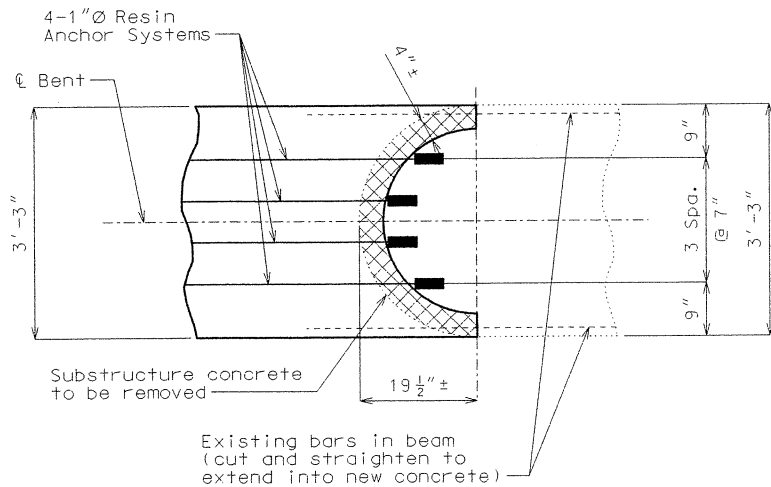
DETAILS OF INTERMEDIATE BENT NO. 3



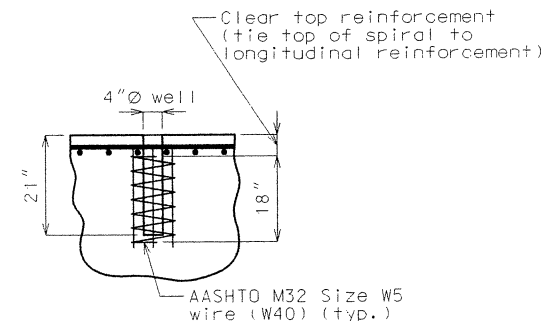
PART PLAN



PART PLAN SHOWING REINFORCEMENT



DETAIL "A"



DETAIL OF ANCHOR BOLT WELLS

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	13
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	12
Supplementary Television Camera Inspection	each	1
Foundation Inspection Holes	linear foot	21
Concrete Coring	linear foot	26
Sonic Logging Testing	each	1
Class B Concrete (Substructure)	cu. yard	15.8
Reinforcing Steel (Bridges)	pound	3,590

Notes: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of Intermediate Bent No. 4 not shown, see sheet no. 14.

All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".

For details of Laminated Neoprene Bearing Pad, see sheet no. 19.

All reinforcement in drilled shafts and rock sockets is included in Substructure Quantities.

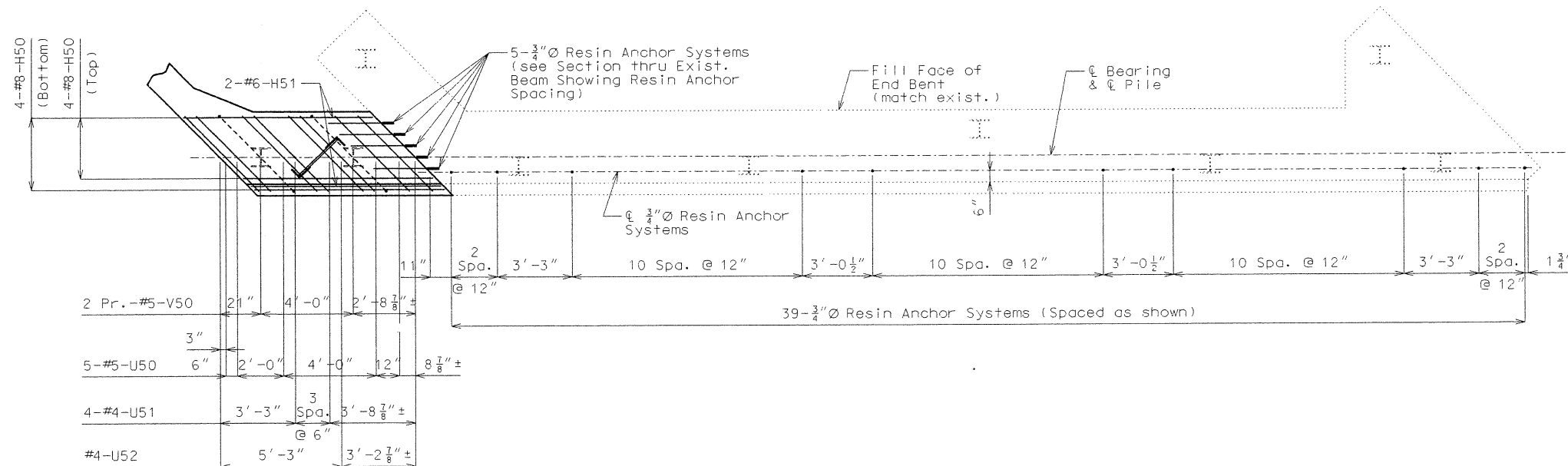
An additional 4 feet has been added to V-bar lengths for possible change in drilled shaft or rock socket depth. This excess length shall be cut-off or included in the reinforcement lap if not required.

Concrete coring shall be performed on all drilled shafts of each bent in accordance with Sec 701. Sonic logging testing shall be performed on all drilled shafts and rock sockets.

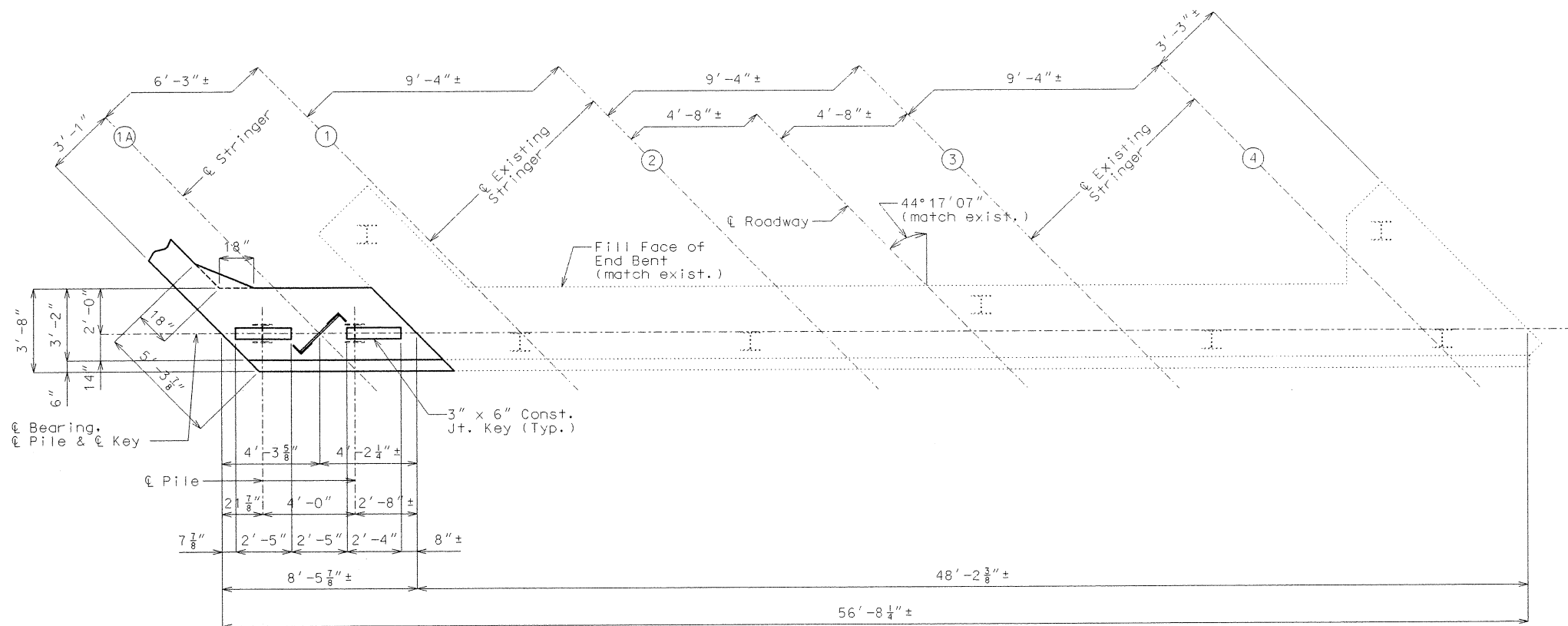
STATE OF MISSOURI
DANIEL M. SMITH
NUMBER E-28985
PROFESSIONAL ENGINEER
DATE 7-8-04

DETAILS OF INTERMEDIATE BENT NO. 4

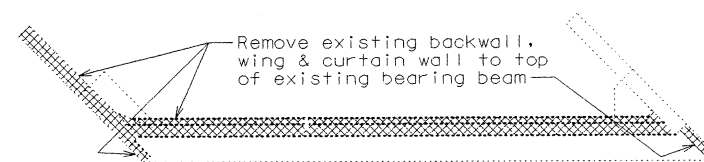
State	Proj. No.	Sheet No.
MO		B57



PLAN OF BEAM SHOWING REINFORCEMENT



PLAN OF BEAM



DETAILS OF CONCRETE REMOVAL @ END BENT NO. 5

Note: The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The cost of concrete removal shown above will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete per lump sum.

DETAILS OF END BENT NO. 5

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

Notes:

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

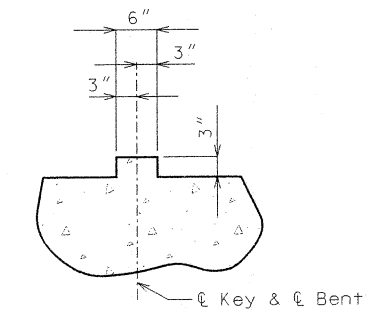
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1-1/2".

For details of End Bent No. 5 not shown, see sheets no. 17 & 18.

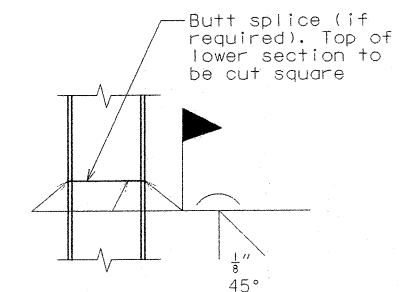
All U-bars and Pr. V-bars in end bent are to be placed parallel to & Roadway.

Shift reinforcing steel to clear the angles of the stringer chairs by at least 1 1/2".

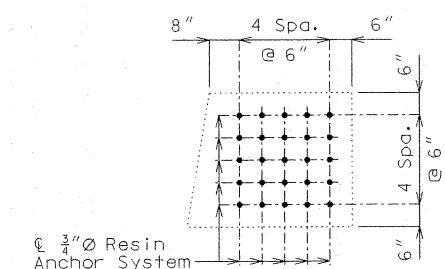
For details of stringer chairs, see sheet no. 18.



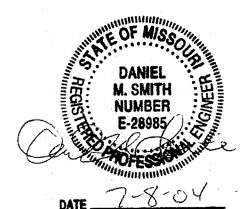
TYPICAL SECTION THRU KEY



STEEL PILE SPLICE



SECTION THRU EXIST. BEAM SHOWING RESIN ANCHOR SPACING



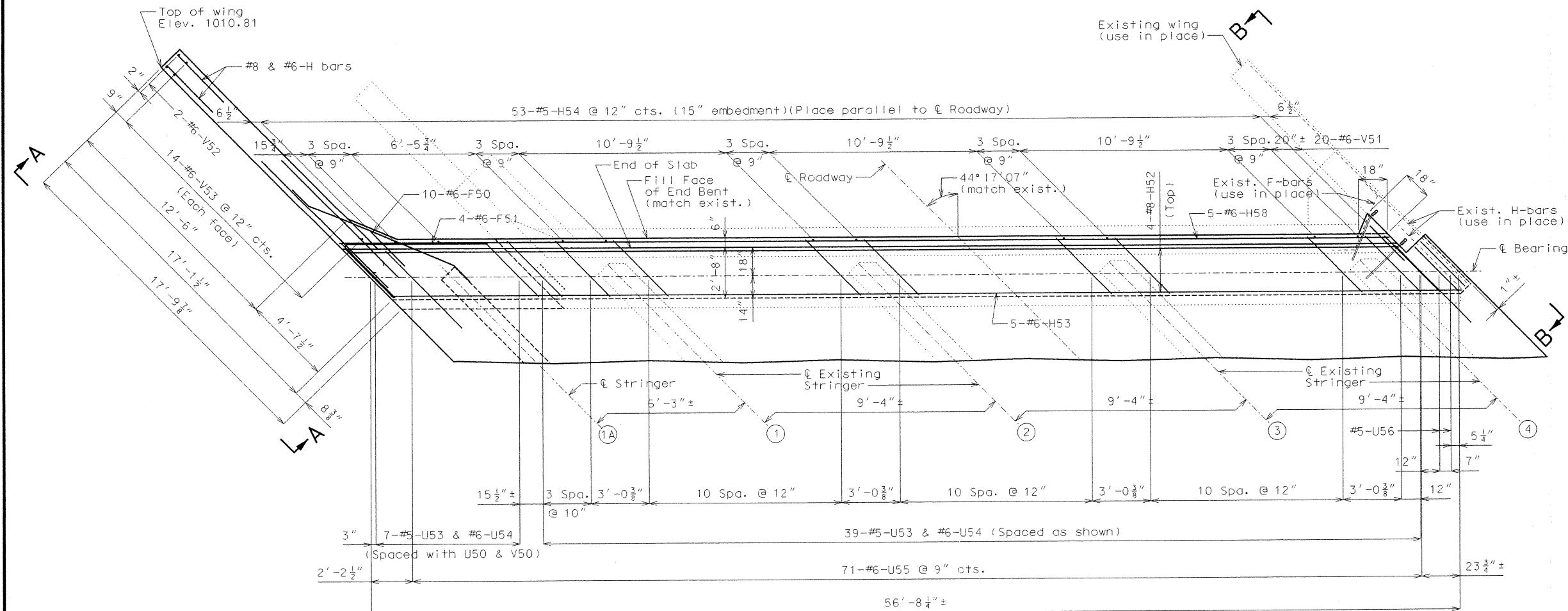
Detailed Apr. 2004
Checked May 2004

Sheet No. 16 of 38

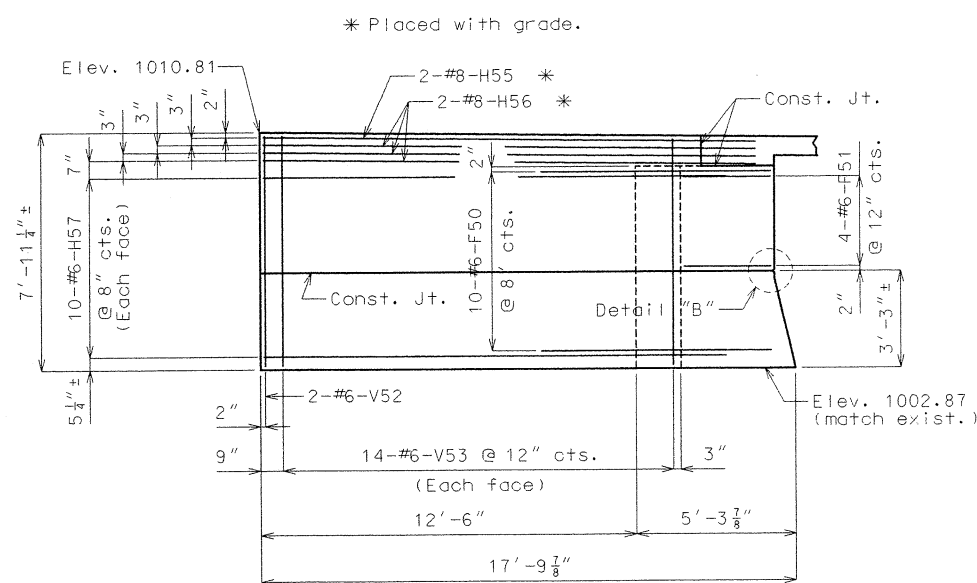
JACKSON COUNTY A16083

T:\br-proj\gabelr\j4u1042\ai6083\ai6083_016.dgn 02:58:27 PM 07/07/2004

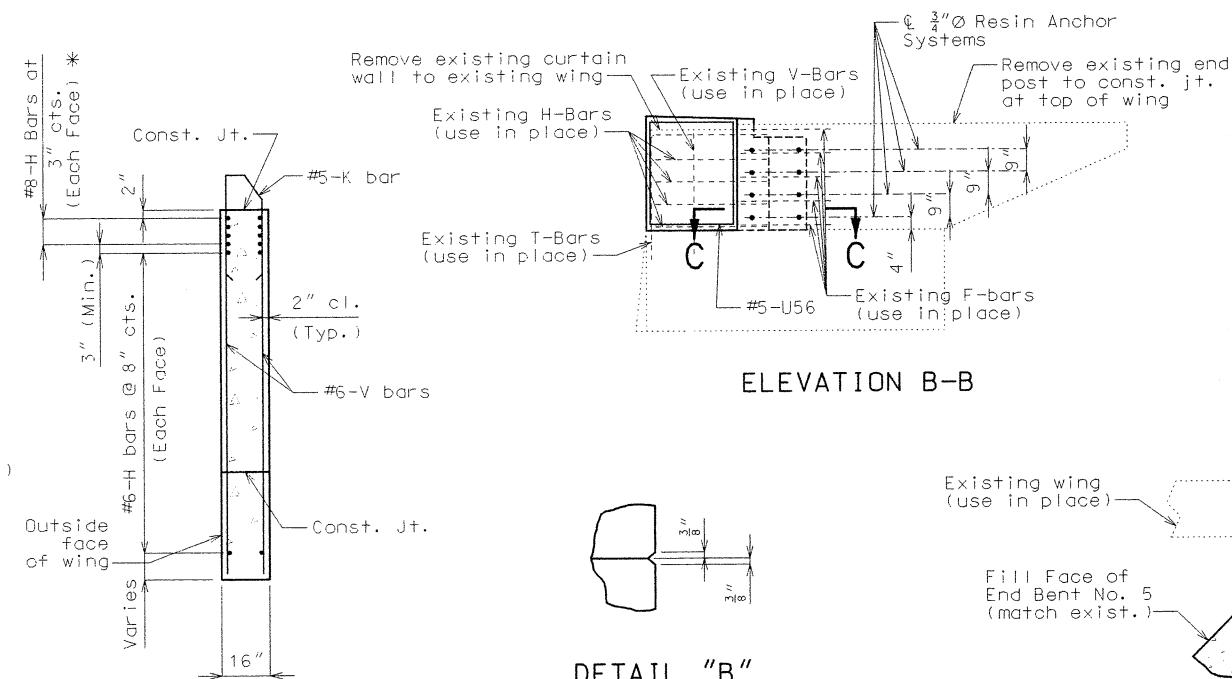
State	Proj. No.	Sheet No.
MO		058



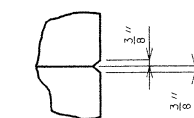
PART PLAN



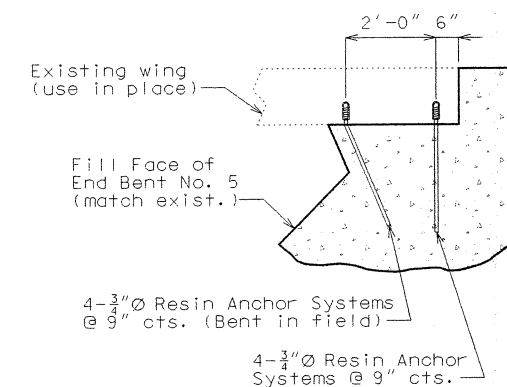
ELEVATION A-A



ELEVATION B-B



DETAIL "B"



SECTION C-C

Notes:

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

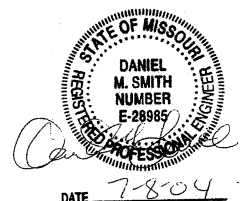
Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.

For reinforcement of the safety barrier curb, see sheets no. 30 & 32.

For details of End Bent No. 5 not shown, see sheets no. 16 & 18.

Bend #6-F50 bars in field to clear stringers.

For Approach Slab details, see sheet no. 34.



DATE 7-8-04

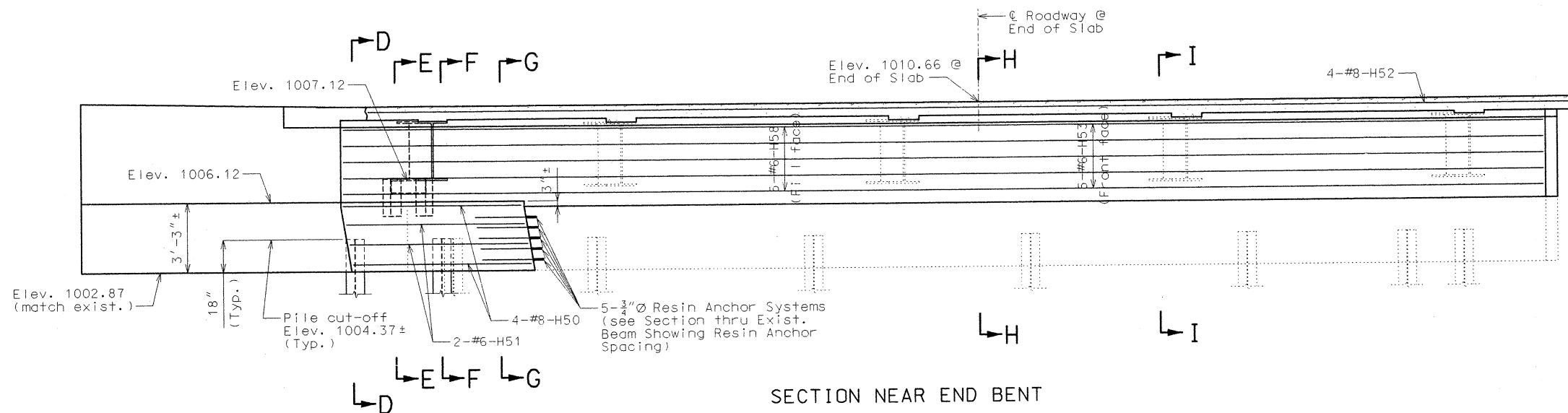
Detailed Apr. 2004
Checked May 2004

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

Sheet No. 17 of 38

JACKSON COUNTY A16083

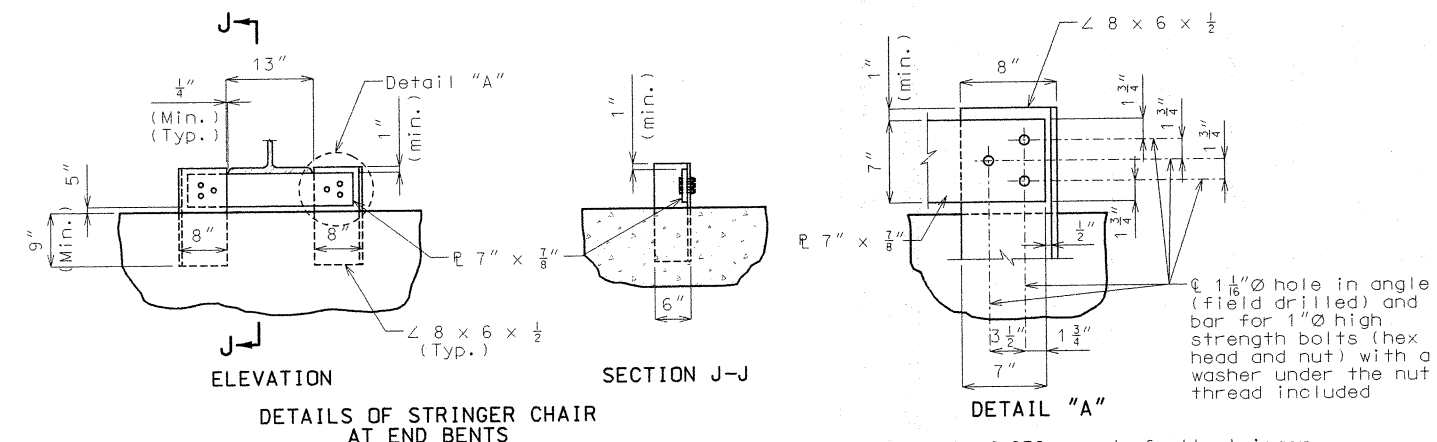
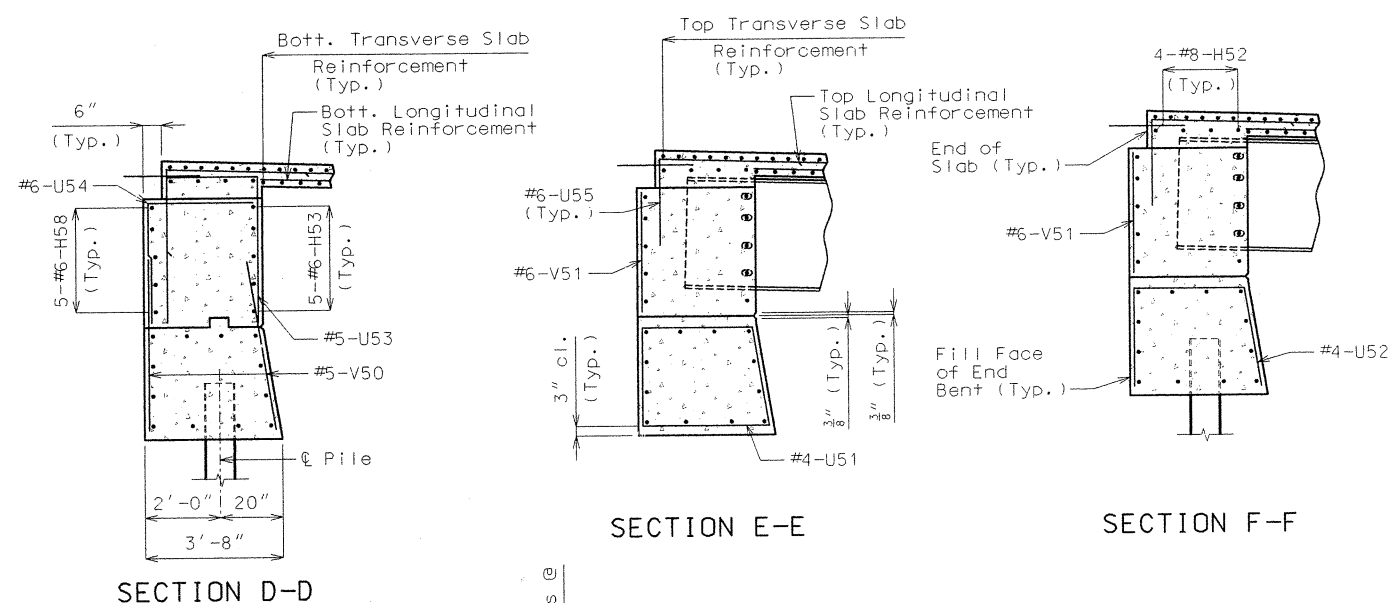
T:\br-proj\qabelr1\j4u1042\q16083\q16083_017.dgn 02:58:30 PM 07/07/2004



Notes:

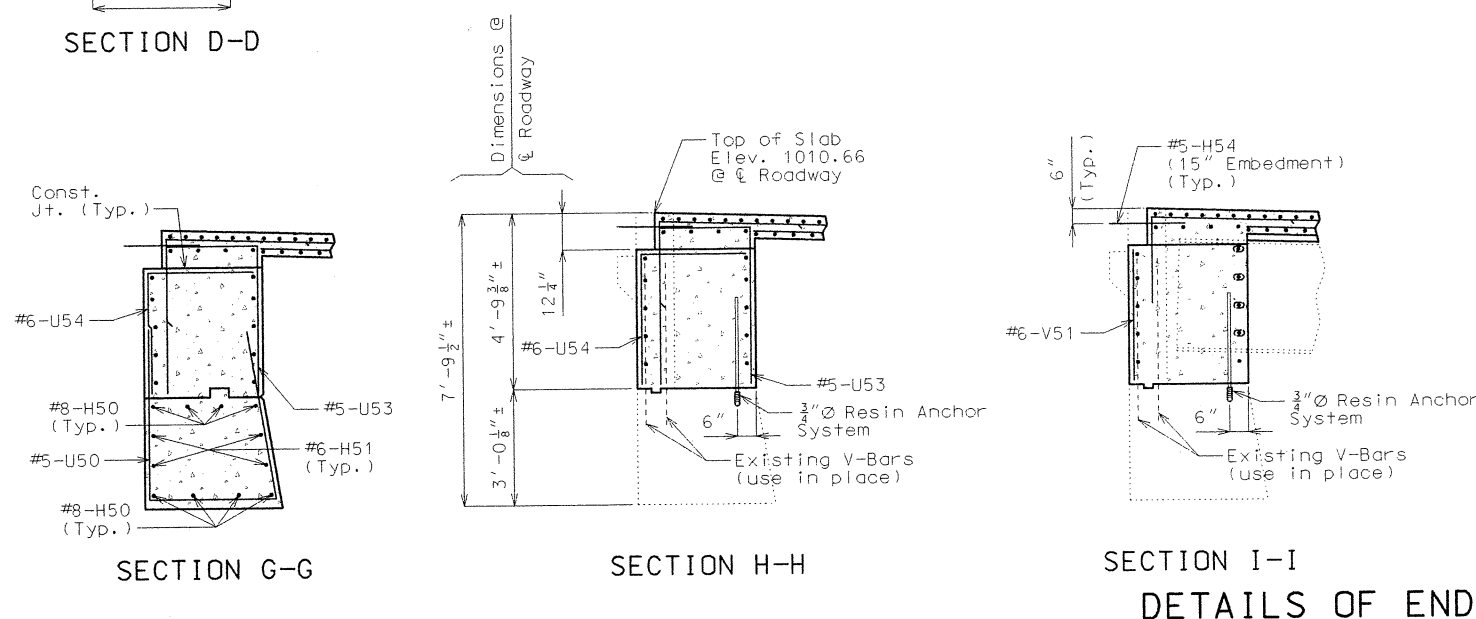
Existing steel end diaphragms not shown for clarity (leave in place).

U-bars and resin anchor systems in diaphragm not shown for clarity.



Note: For location of stringer chairs see sheet no. 7.

Note: Weight of 279 pound of all stringer chairs is included in the weight of Fabricated Structural Low Alloy Steel.

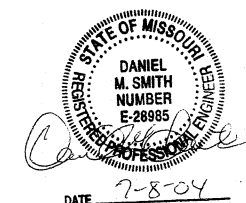


Substructure Quantity Table for Bent No. 5		
Item		Quantity
Class 1 Excavation	cu. yard	30
Structural Steel Piles (10 in.)	linear foot	54
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	5.7

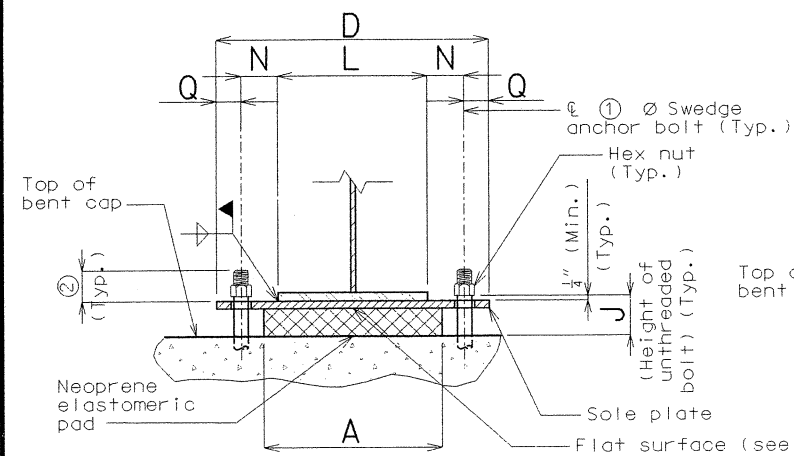
Note: These quantities are included in the Estimated Quantities Table on sheet no. 2.

For details of End Bent No. 5 not shown, see sheets no. 16 & 17.

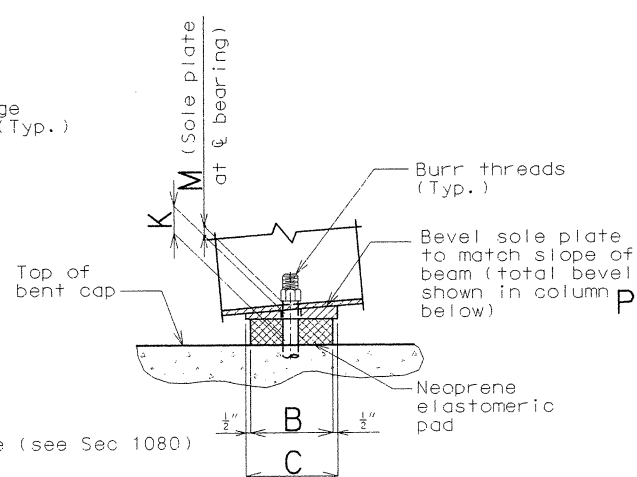
Cost of furnishing, fabricating and installing stringer chairs will be consider completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50.



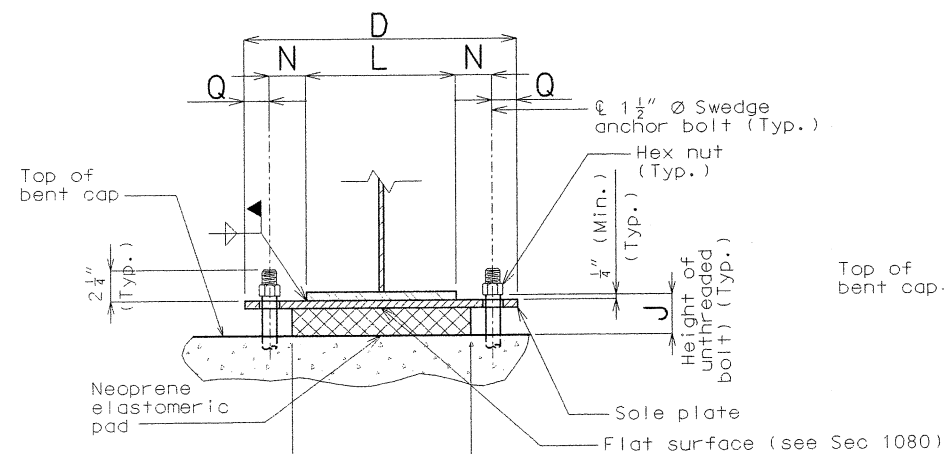
DATE 7-8-04



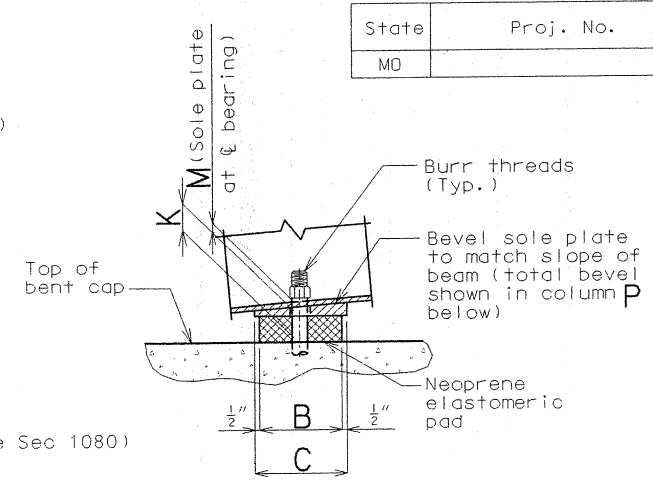
END VIEW



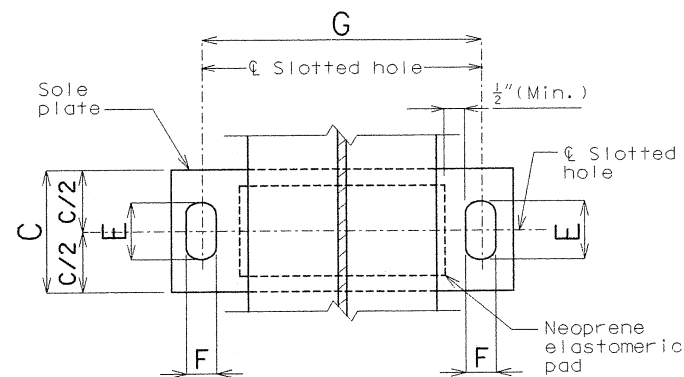
SIDE VIEW



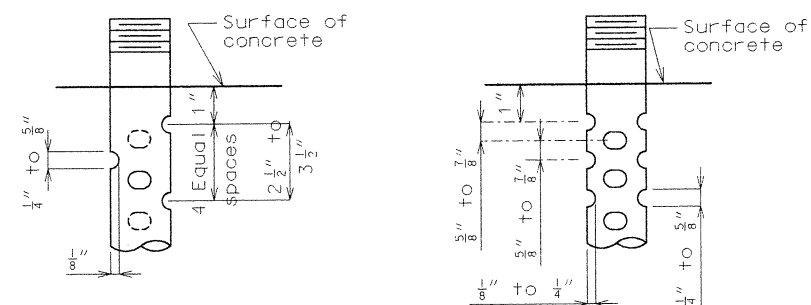
END VIEW



SIDE VIEW



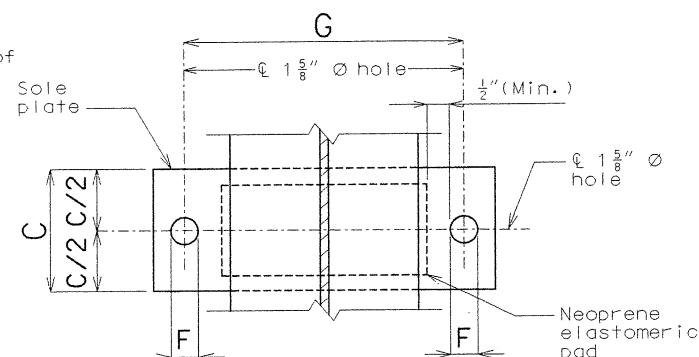
PART PLAN



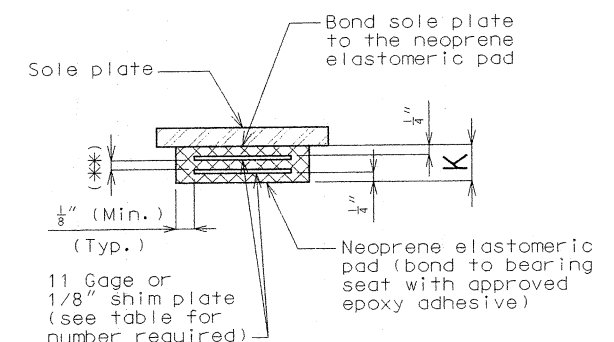
DETAIL OF 3/4" Ø THRU
2-1/2" Ø ANCHOR BOLTS

OPTIONAL DETAIL OF 1-3/8" Ø
THRU 2-1/2" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

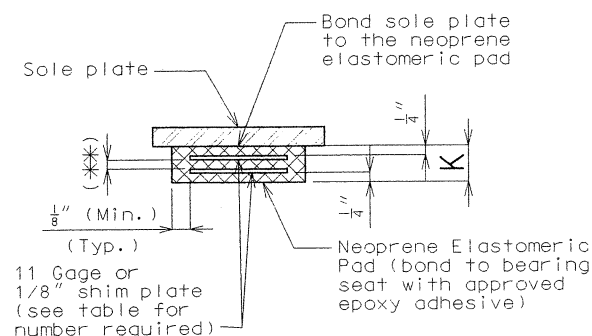


PART PLAN



(**) Layers of 1/2" elastomer alternating with 11 gage or 1/8" shim plate

NEOPRENE ELASTOMERIC PAD



NEOPRENE ELASTOMERIC PAD

GENERAL NOTES:

Anchor bolts shall be ① $\varnothing$ ASTM A709 Grade 50W steel swaged bolts and shall extend ③ into the concrete with ASTM A194 - 2, 2H or ASTM A563 - C, C3, D, DH, DH3 heavy hexagon nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

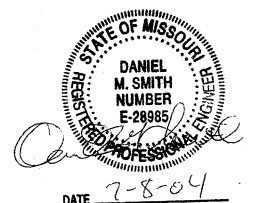
EXPANSION BEARINGS																
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	16"	11"	12"	24"	3 1/2"	1 5/8"	19 1/2"	3 3/8"	1 7/8"	1 1/2"	1 1/2"	4"	3 8/8"	2 1/4"	3	1
4	18"	12"	13"	27"	4"	2 1/8"	21"	4 1/4"	2 1/2"	1 1/2"	1 1/2"	4 3/4"	1 1/4"	3"	4	1
(*) The required shim plate shall be placed between															TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

- ① $1\frac{1}{2}''$ (Bents No. 2 & 3)
 $2''$ (Bent No. 4)
- ② $2\frac{1}{4}''$ (Bent No. 2)
 $2\frac{1}{2}''$ (Bent No. 4)
- ③ $15''$ (Bents No. 2 & 3)
 $18''$ (Bent No. 4)

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
3	14"	10"	11"	2 1/2"	1 5/8"	17"	2 3/8"	5 5/8"	11 1/2"	1 1/2"	2 3/4"	4"	2 1/4"	1	1
(*) The required shim plate shall be placed between the two halves of the bearing and bolted together to form a single unit.														TOTAL BEARINGS	1

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.



DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

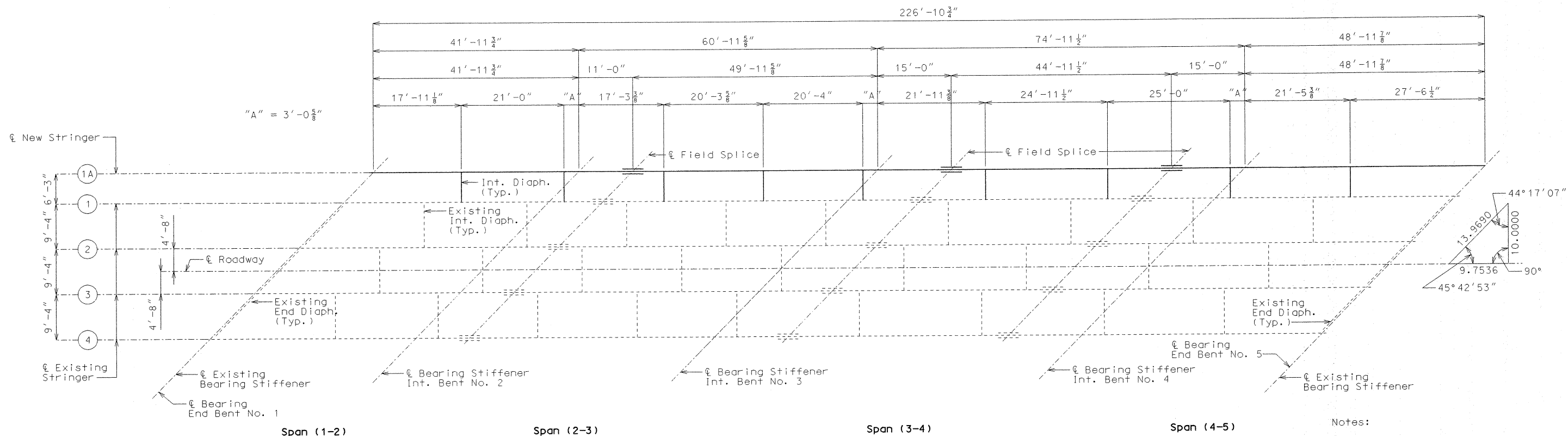
Detailed	Apr. 2004
Checked	May 2004

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

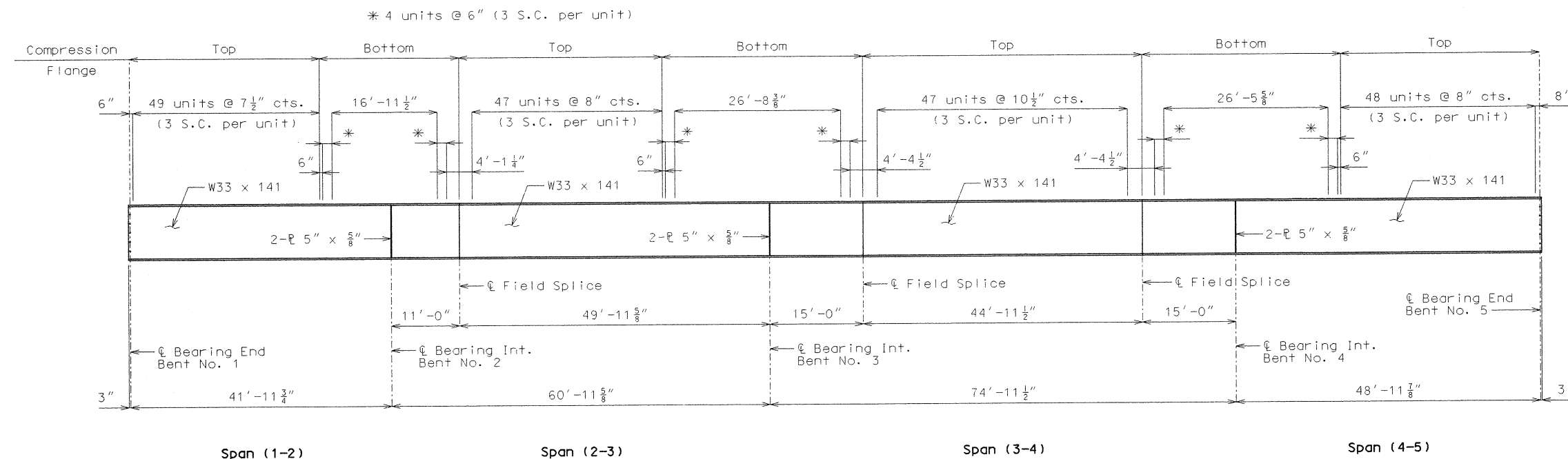
Sheet No. 19 of 38

JACKSON COUNTY A16083

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PLAN OF STRUCTURAL STEEL



ELEVATION OF NEW STRINGER

Notes:

Longitudinal dimensions are horizontal from ℓ Bearing to ℓ Bearing. See Part Longitudinal Sections on sheet no. 23.

All fabricated structural steel shall be ASTM A709 Grade 50.

For details of bolted field splices, see sheet no. 22.

For details of shear connectors, see sheet no. 23.

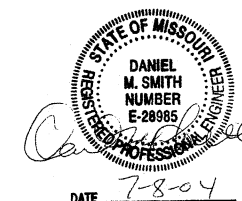
For details of intermediate diaphragms, see sheets no. 22 & 24.

Stringers shall be fabricated to be in accordance with the camber diagram shown on sheet no. 21.

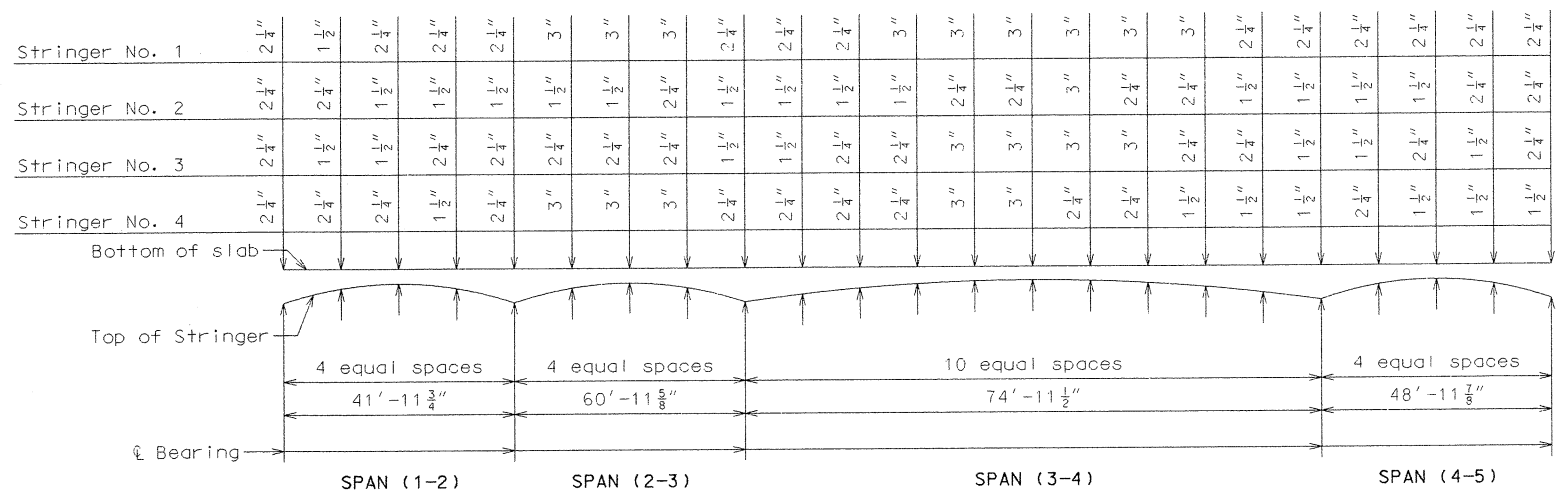
Notch toughness is required for all wide flange stringers.

For details of web holes at end bents, see sheet no. 23.

For location of slab drain attachment holes, see Slab Drain Details, sheet no. 24A.

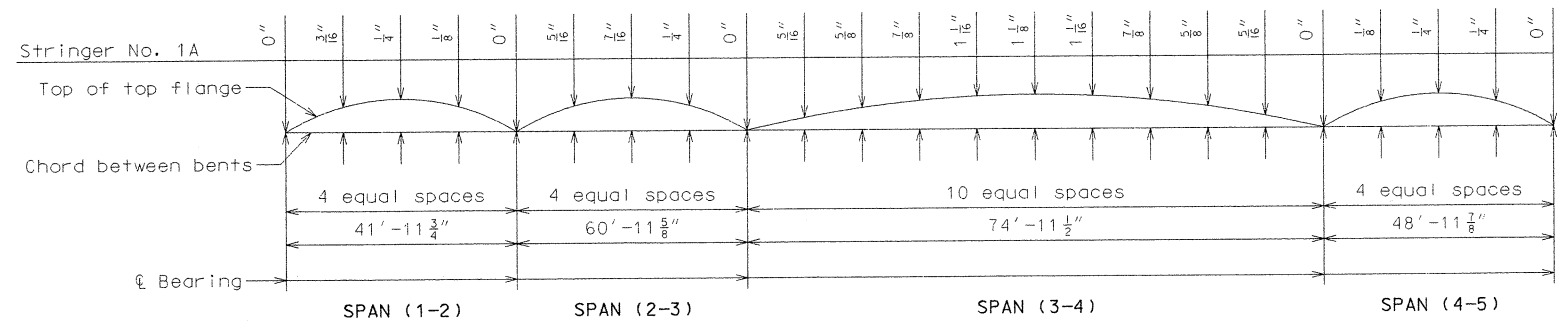


DATE 7-8-04



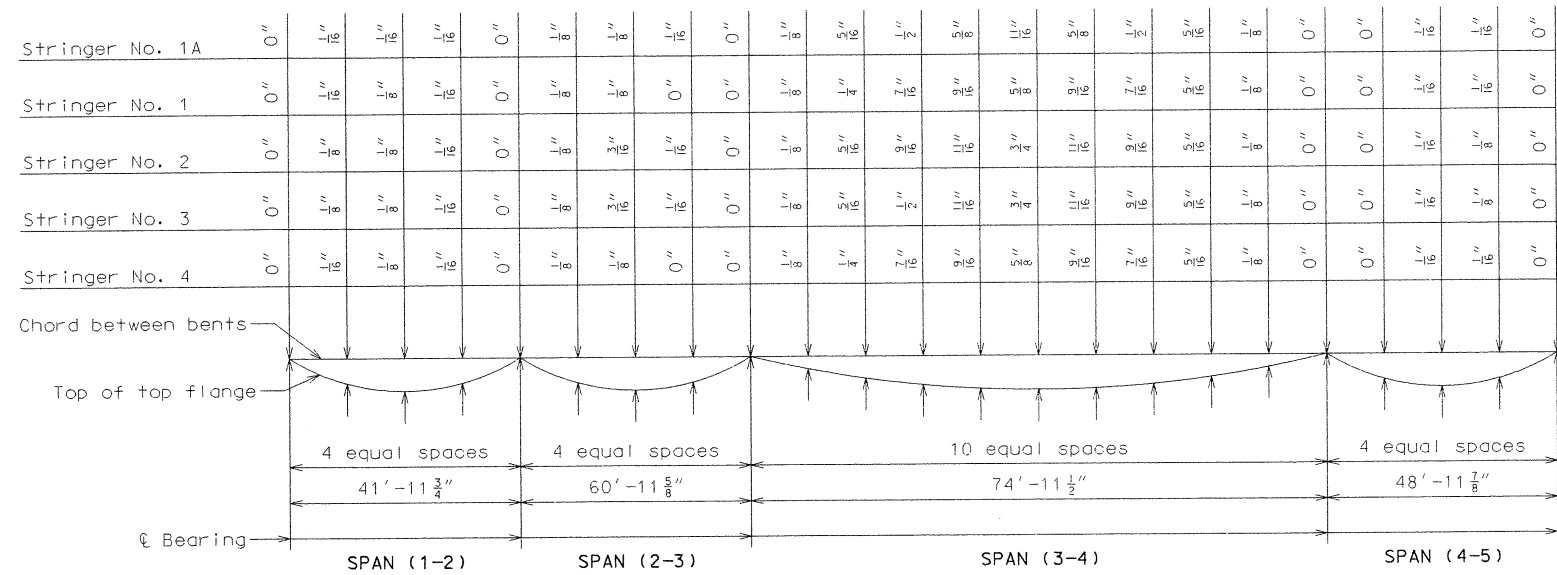
THEORETICAL HAUNCHING DIAGRAM FOR EXISTING STRINGERS

Note: If stringer elevations differ from those used to compute the theoretical slab haunches, it shall be necessary to adjust the slab haunches or raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching or grade adjustment.



CAMBER DIAGRAM FOR NEW STRINGER

Note: Camber includes allowance for vertical curve and for dead load deflection due to concrete slab and structural steel.



DEAD LOAD DEFLECTION

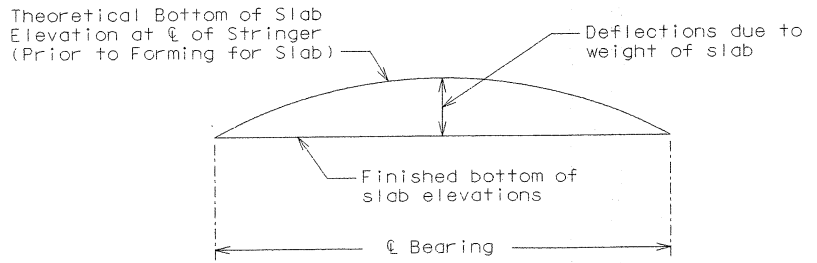
Note: (1) % of dead load deflection is due to the weight of structural steel.
Dead load deflection includes weight of structural steel and concrete slab.

- 21% for Stringer No. 1A
- 18% for Stringer No. 1
- 15% for Stringer No. 2
- 15% for Stringer No. 3
- 17% for Stringer No. 4

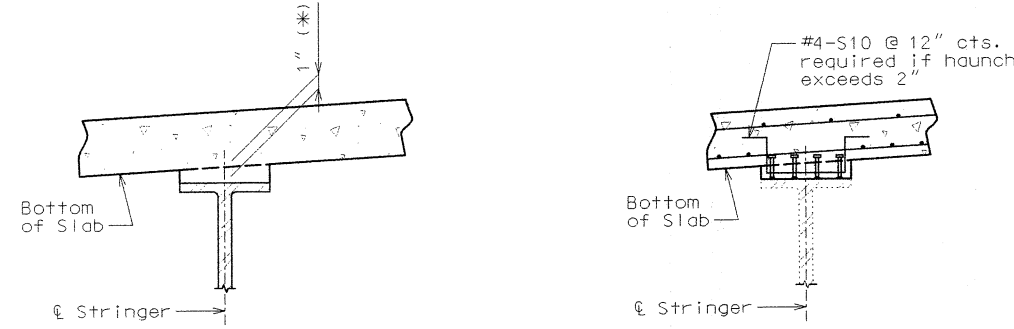
Note: This drawing is not to scale. Follow dimensions.

Theoretical Bottom of Slab Elevations at E of Stringer (Prior to Forming for Slab) **											
	Span (1-2) (41'-11 $\frac{3}{4}$ " E brg. - E brg.)										
	E brg.	.25	.50	.75	E brg.						
Stringer No. 1A	1005.35	1005.63	1005.89	1006.15	1006.41						
Stringer No. 1	1005.29	1005.57	1005.84	1006.10	1006.36						
Stringer No. 2	1005.19	1005.48	1005.75	1006.02	1006.28						
Stringer No. 3	1005.09	1005.38	1005.66	1005.93	1006.19						
Stringer No. 4	1004.98	1005.28	1005.56	1005.84	1006.11						
	Span (2-3) (60'-11 $\frac{5}{8}$ " E brg. - E brg.)										
	E brg.	.25	.50	.75	E brg.						
Stringer No. 1A	1006.41	1006.77	1007.13	1007.46	1007.78						
Stringer No. 1	1006.36	1006.73	1007.09	1007.42	1007.75						
Stringer No. 2	1006.28	1006.66	1007.02	1007.36	1007.70						
Stringer No. 3	1006.19	1006.58	1006.95	1007.30	1007.64						
Stringer No. 4	1006.11	1006.50	1006.88	1007.23	1007.58						
	Span (3-4) (74'-11 $\frac{1}{2}$ " E brg. - E brg.)										
	E brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	E brg.
Stringer No. 1A	1007.78	1007.94	1008.11	1008.27	1008.43	1008.57	1008.71	1008.84	1008.96	1009.08	1009.21
Stringer No. 1	1007.75	1007.91	1008.08	1008.24	1008.40	1008.55	1008.69	1008.82	1008.95	1009.07	1009.20
Stringer No. 2	1007.70	1007.87	1008.04	1008.21	1008.37	1008.53	1008.67	1008.80	1008.93	1009.06	1009.18
Stringer No. 3	1007.64	1007.82	1007.99	1008.17	1008.33	1008.49	1008.64	1008.77	1008.91	1009.03	1009.16
Stringer No. 4	1007.58	1007.76	1007.94	1008.11	1008.28	1008.44	1008.59	1008.73	1008.87	1009.00	1009.14
	Span (4-5) (48'-11 $\frac{7}{8}$ " E brg. - E brg.)										
	E brg.	.25	.50	.75	E brg.						
Stringer No. 1A	1009.21	1009.41	1009.61	1009.81	1009.98						
Stringer No. 1	1009.20	1009.41	1009.61	1009.81	1009.99						
Stringer No. 2	1009.18	1009.40	1009.61	1009.81	1010.00						
Stringer No. 3	1009.16	1009.38	1009.60	1009.81	1010.00						
Stringer No. 4	1009.14	1009.37	1009.59	1009.80	1010.00						

** Elevations are based on a constant slab thickness of 7 1/2" and include allowance for theoretical dead load deflections due to weight of slab.



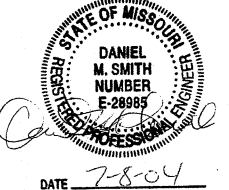
TYPICAL SLAB ELEVATIONS DIAGRAM



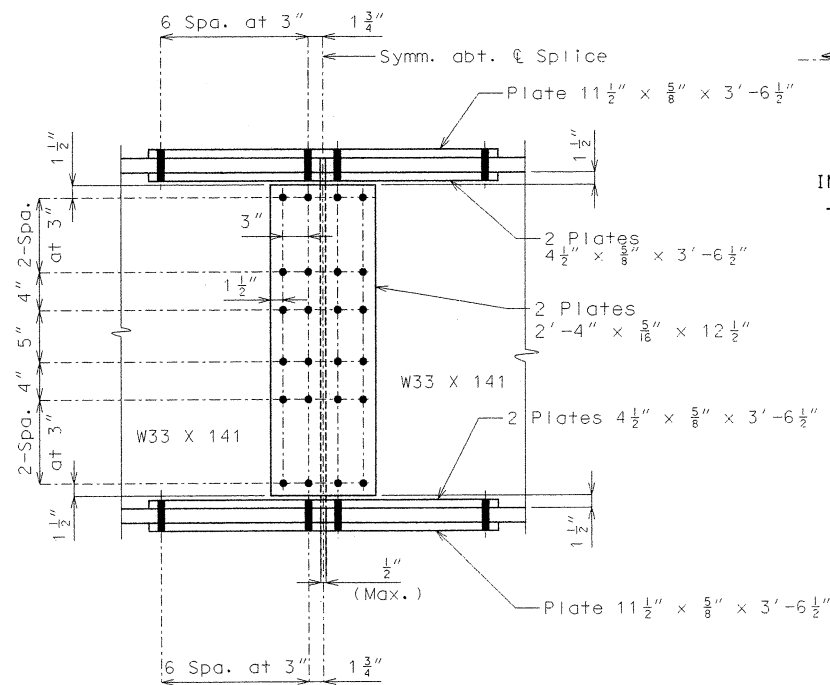
THEORETICAL SLAB HAUNCH FOR NEW STRINGER NO. 1A

(*) Dimension (bottom of slab to top of flange) may vary if stringer camber after erection differs from plan camber by more or less than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

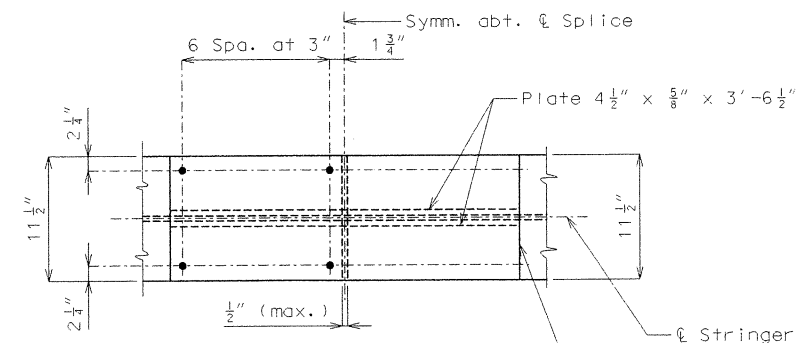
SECTION THRU HAUNCH ON EXISTING STRINGERS



State	Proj. No.	Sheet No.
MO		243



DETAIL OF BOLTED FIELD SPLICE

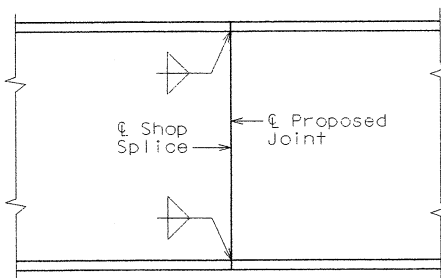


PLAN OF FLANGE
(TOP & BOTTOM)

Notes:

The flange and web splice plates shall be subject to notch toughness requirements, when notch toughness is required for flanges on both sides of splice.

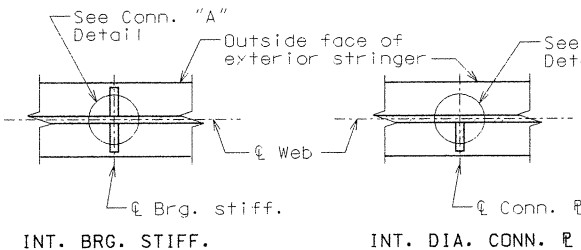
Use $\frac{1}{8}$ " ϕ high strength bolts with $\frac{15}{16}$ " ϕ holes.



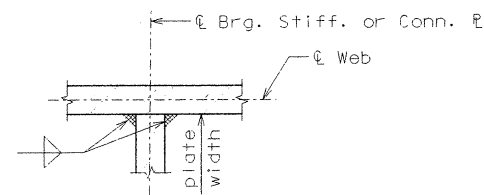
WELDED SHOP SPLICE

Note:

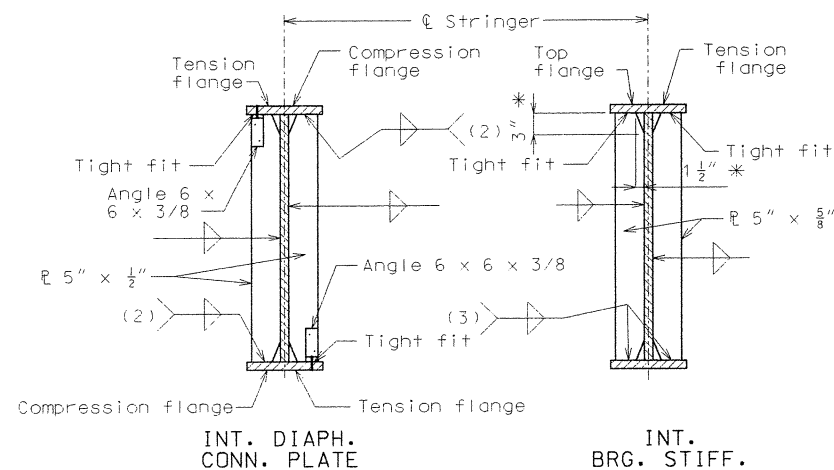
Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



TYPICAL LOCATION DETAILS



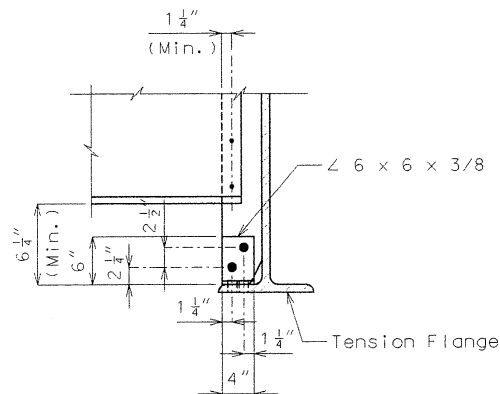
WELDING DETAILS



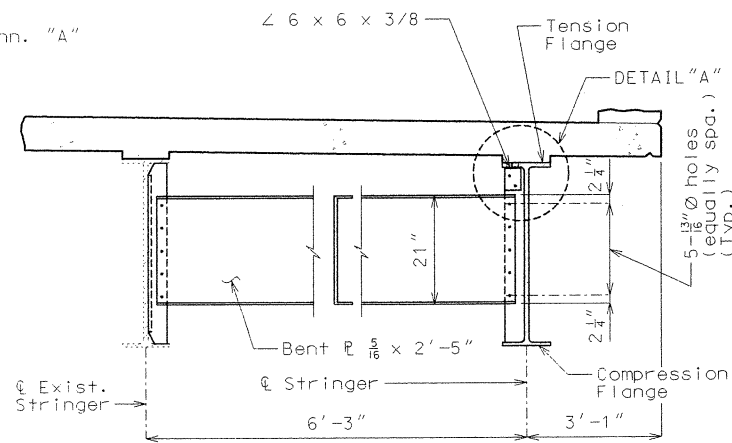
- (2) Weld to compression flange as located on elevation of stringer.
(3) Grind or mill to bear.

* Typical for all int. diaph. conn. pl. and brg. stiff.

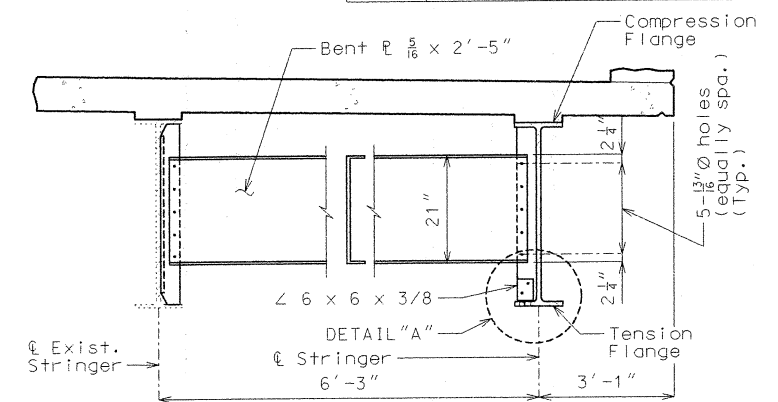
WELDING DETAILS FOR STRINGER NO. 1A



DETAIL "A"



TYPICAL PART SECTION SHOWING
NEW INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

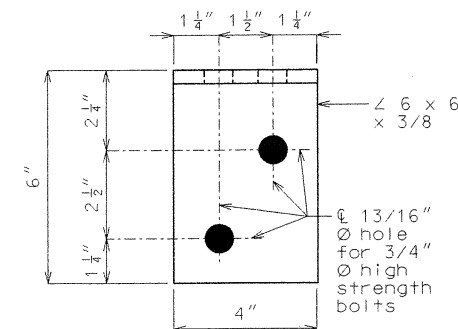


TYPICAL PART SECTION SHOWING
NEW INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

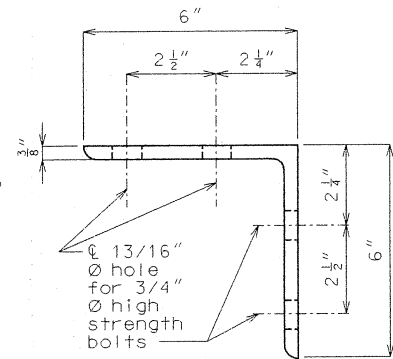
Notes:

For details of intermediate diaphragm connection to existing stringers, see sheet no. 24.

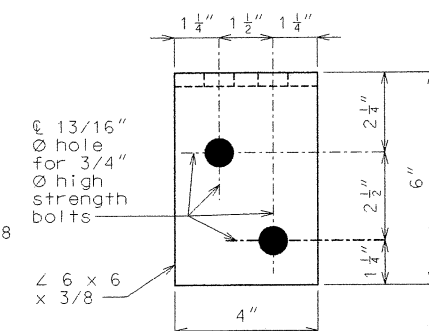
At the contractor's option, holes in the diaphragm plate of non-slab bearing diaphragms may be made $\frac{3}{16}$ " larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the stringer diaphragm connection plate or transverse web stiffener shall be standard size.



ELEVATION



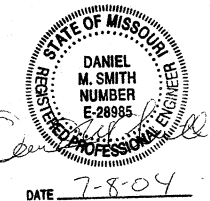
SIDE VIEW



PLAN

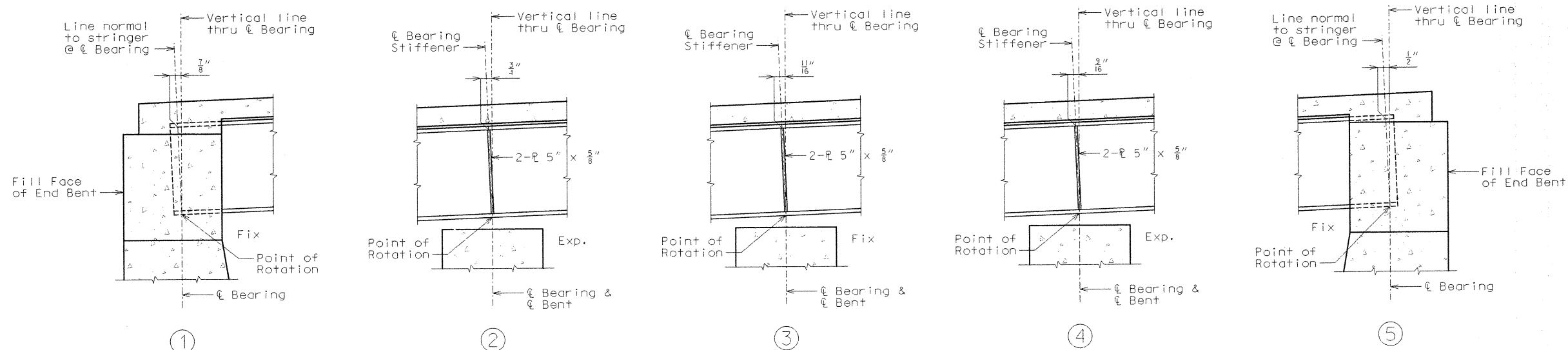
DETAIL OF FLANGE CONNECTION ANGLE

Note: The two $\frac{3}{4}$ " ϕ high strength bolts that connect the 6 x 6 x $\frac{3}{8}$ " angle to the top flange shall be placed so the nut is on the inside of flange toward the web.

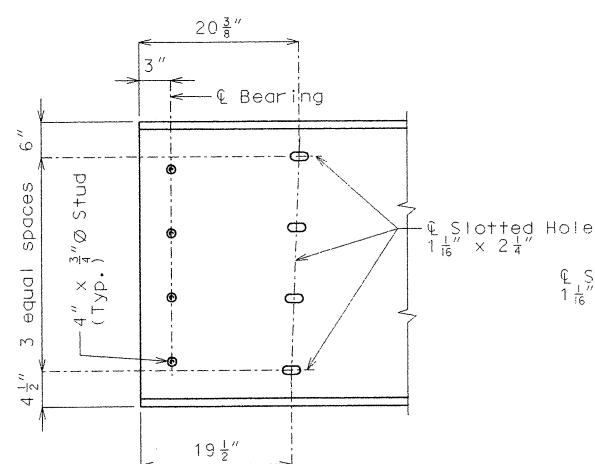


DATE 7-8-04

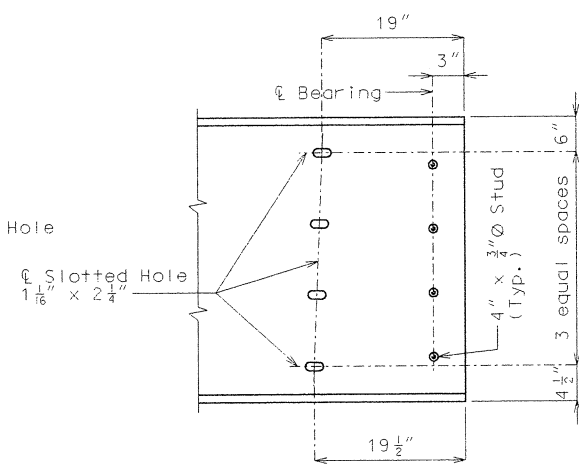
State	Proj. No.	Sheet No.
MO		264



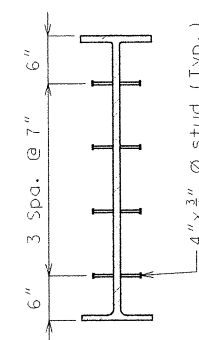
PART LONGITUDINAL SECTIONS (STRINGER NO. 1A)



DETAIL OF WEB HOLES
AT END BENT NO. 1
(STRINGER NO. 1A)

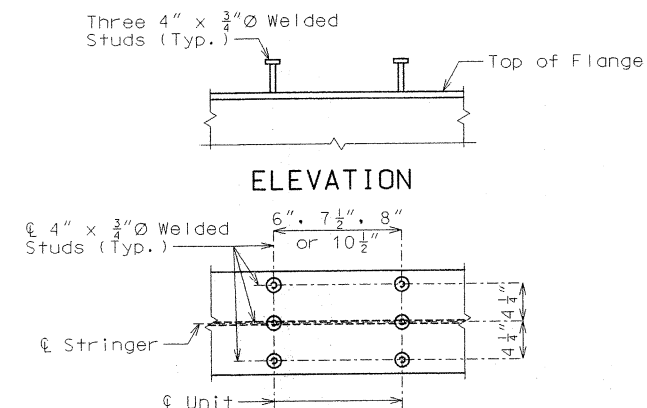


DETAIL OF WEB HOLES
AT END BENT NO. 5
(STRINGER NO. 1A)



SECTION AT BEARING
AT END BENTS NO. 1 & 5
(STRINGER 1A)

Note: Weight of 4" x 3/4" studs at end bents is included in the weight of shear connectors.

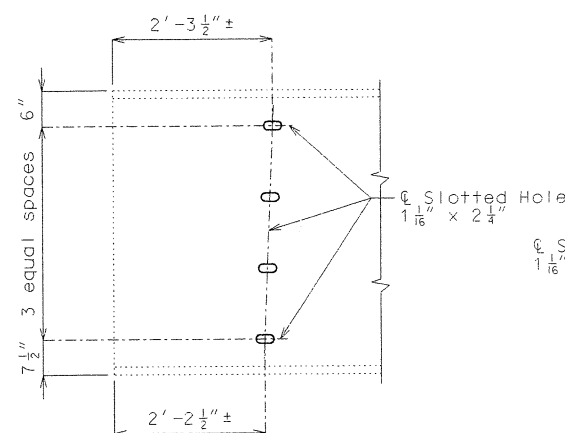


PLAN OF SHEAR CONN. (3 PER UNIT)

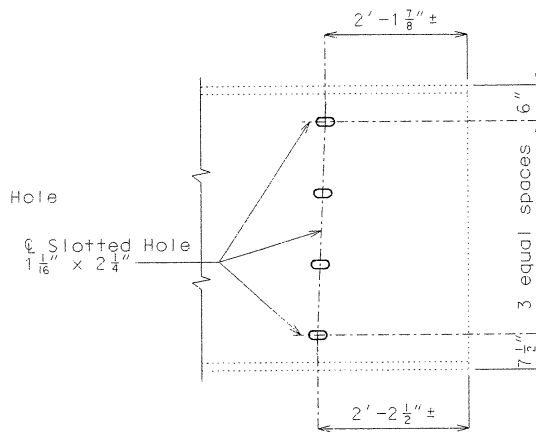
Note: Weight of 416 pounds of all shear connectors is included in the weight of Fabricated Structural Low Alloy Steel.

Shear connectors shall be in accordance with Sec 1037.

DETAILS OF SHEAR CONNECTORS

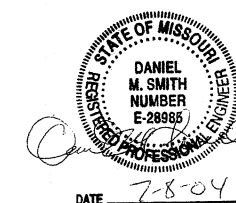


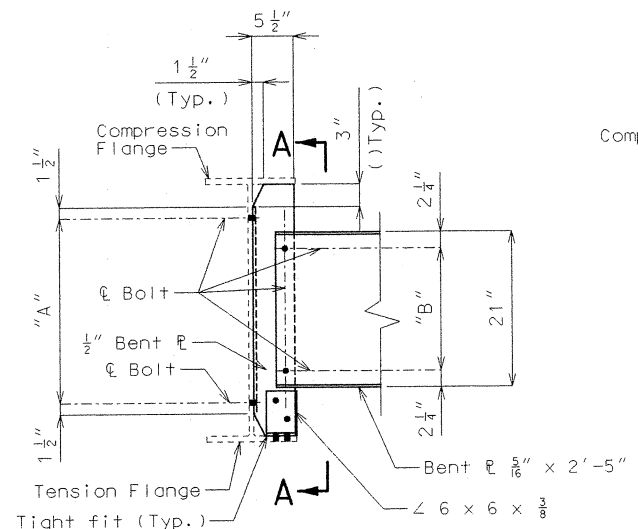
DETAIL OF WEB HOLES
AT END BENT NO. 1
(EXIST. STRINGERS)



DETAIL OF WEB HOLES
AT END BENT NO. 5
(EXIST. STRINGERS)

Note: Cost of field drilling holes in existing stringers will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel.

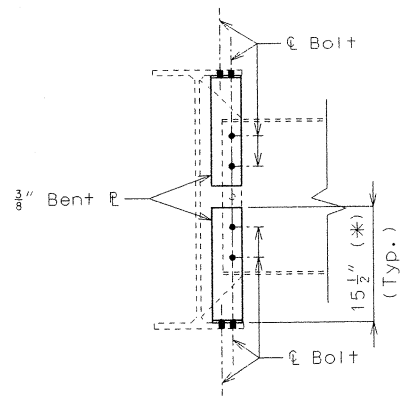




"A" Nine $\frac{13}{16}$ " $\varnothing$ holes for $\frac{3}{4}$ " $\varnothing$ high strength bolts (equally spaced)

"B" Five $\frac{13}{16}$ " $\varnothing$ holes for $\frac{3}{4}$ " $\varnothing$ high strength bolts (equally spaced)

PART SECTION SHOWING NEW INTERMEDIATE DIAPHRAGM CONNECTION TO EXISTING STRINGER BOTTOM FLANGE IN TENSION



Notes:

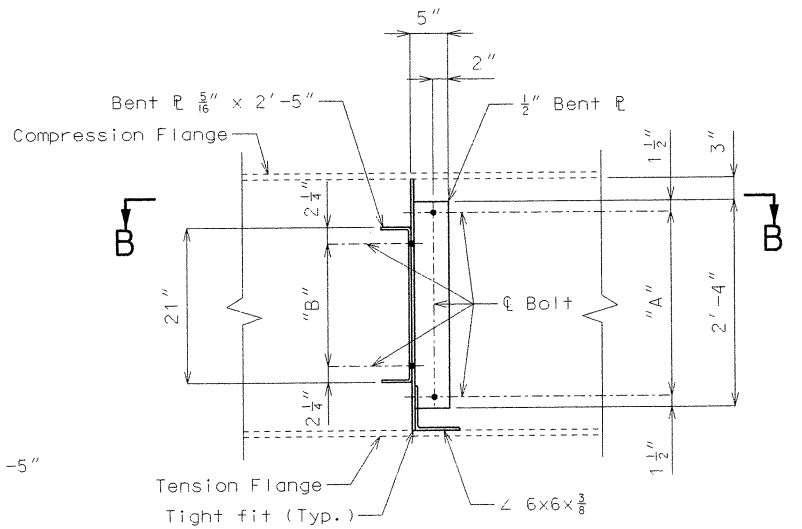
Remove existing bolts in intermediate diaphragm as shown to connect $\frac{3}{8}$ " bent PL.

Field drill $\frac{13}{16}$ " $\varnothing$ holes through $\frac{3}{8}$ " Bent PL to match holes in existing intermediate diaphragm connection plate.

Use $\frac{3}{4}$ " $\varnothing$ high strength bolts to connect bent plate to existing intermediate diaphragm connection plate.

(*) Field verify plate length before ordering new steel.

PART SECTION THRU EXISTING STRINGER SHOWING CONNECTION PLATES AT ALL EXISTING INTERMEDIATE DIAPHRAGMS



SECTION A-A

Notes:

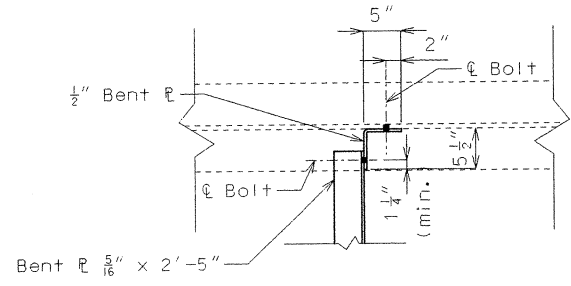
Fabricated structural steel shall be ASTM A709 Grade 50.

Field drill $\frac{13}{16}$ " $\varnothing$ holes through existing stringer to match holes in $\frac{1}{2}$ " Bent PL and $\angle 6 \times 6 \times \frac{3}{8}$.

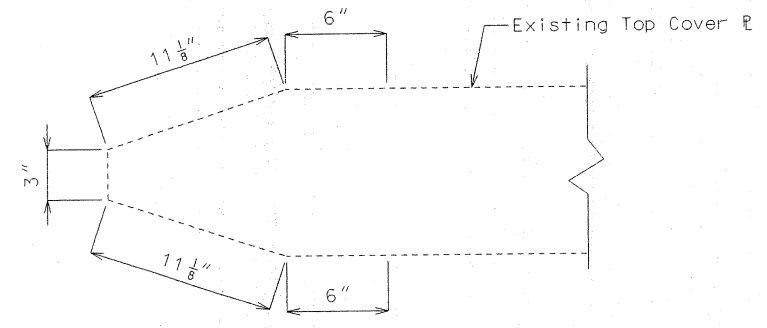
Use $\frac{3}{4}$ " $\varnothing$ high strength bolts to connect $\frac{1}{2}$ " Bent PL and $\angle 6 \times 6 \times \frac{3}{8}$ to existing stringer.

For details of $\angle 6 \times 6 \times \frac{3}{8}$, see sheet no. 22.

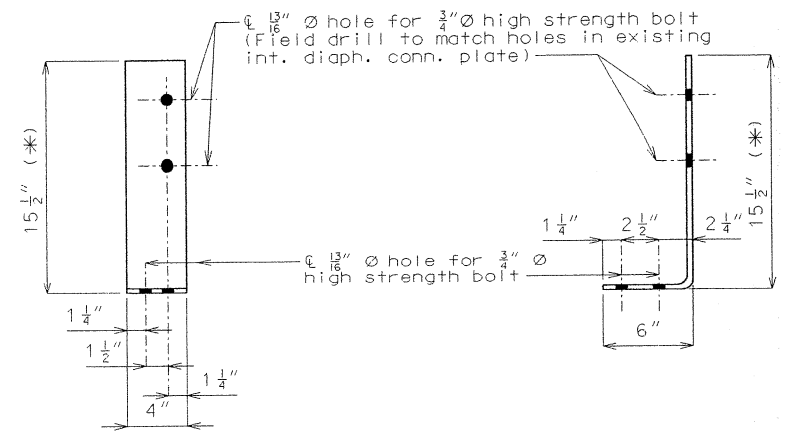
The cost of fabricating and installing connections of new intermediate diaphragms to existing stringer will be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel.



SECTION B-B

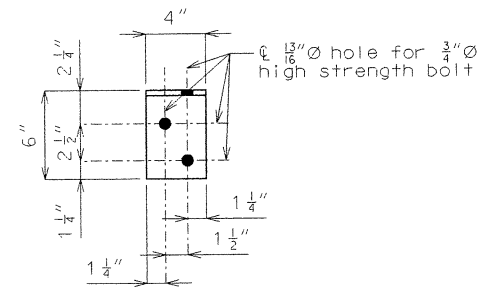


DETAIL SHOWING LIMITS OF NON-DESTRUCTIVE TESTING ON EXISTING TOP COVER PLATES AT INT. BENTS 3 & 4



ELEVATION

SIDE VIEW



PLAN

DETAILS OF $\frac{3}{8}$ " BENT PLATE

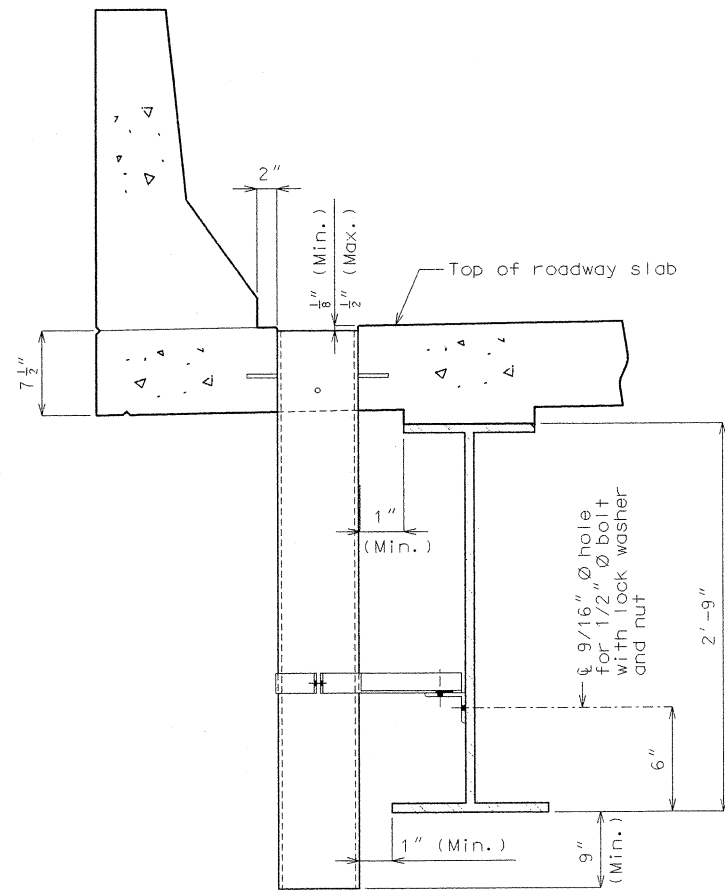
Notes:

The two $\frac{3}{4}$ " $\varnothing$ high strength bolts that connect the $\frac{3}{8}$ " Bent PL to the top flange shall be placed so the nut is on the inside of the flange toward the web.

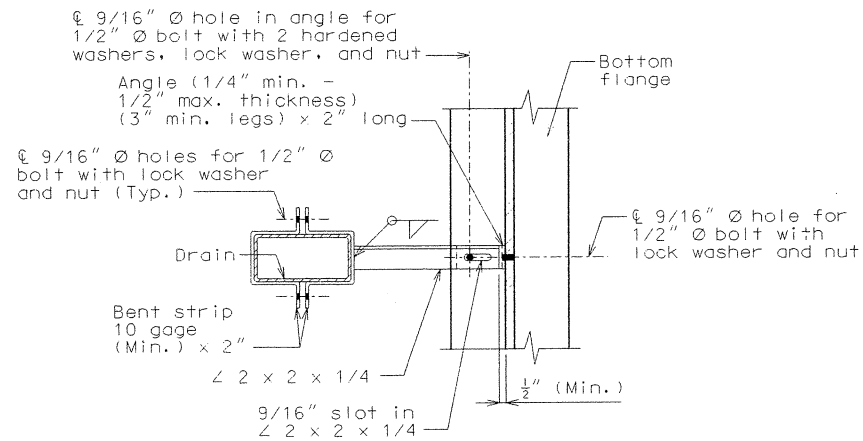
The cost of fabricating and installing connections of existing diaphragms to flanges will be considered completely covered by the contract unit price for Existing Diaphragm Connections to Flange.

Remove existing shear connectors as necessary to facilitate installation of bent connection plates to top flanges. Cost of removing existing shear connectors will be considered incidental to other pay items.

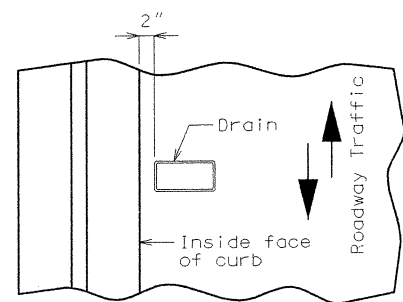
STATE OF MISSOURI
DANIEL M. SMITH
NUMBER E-28995
PROFESSIONAL ENGINEER
DATE 7-8-04



PART SECTION NEAR DRAIN



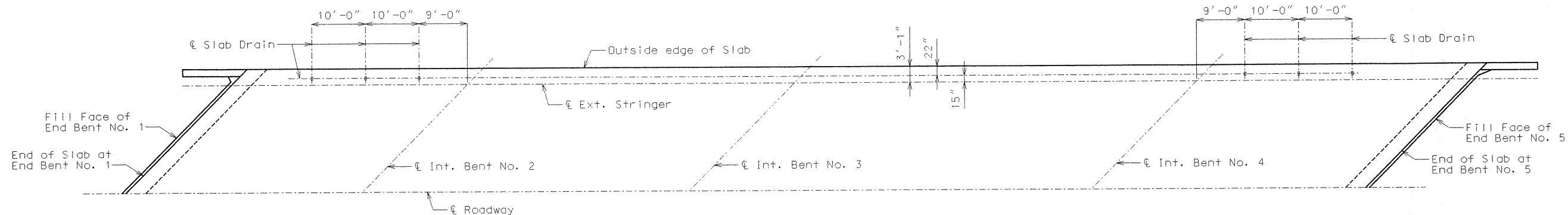
PART SECTION SHOWING BRACKET ASSEMBLY



PART PLAN OF SLAB AT DRAIN

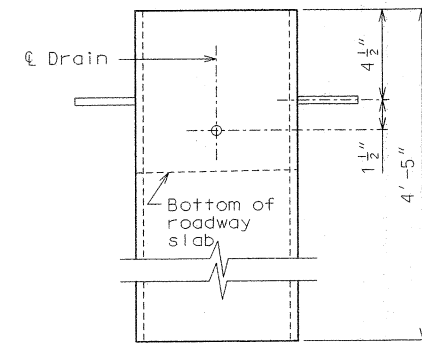
DETAILS OF DRAINS TRANSVERSE TO ROADWAY

SLAB DRAIN DETAILS



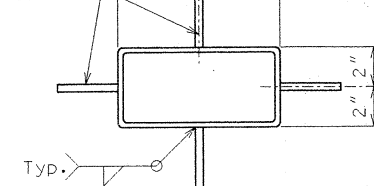
PART PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS (LEFT SIDE ONLY)

Note: Longitudinal dimensions are horizontal along exterior stringer.



ELEVATION OF DRAIN

Rod 1/2" $\varnothing$ x 3" (ASTM A709 Grade 36) or shear connector 1/2" $\varnothing$ x 3" (Typ.)



PLAN OF DRAIN

NOTE:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Outside dimensions of drains are 8" x 4".

Locate drains in slab by dimensions shown in Part Section Near Drain.

Shift reinforcing steel in field where necessary to clear drains.

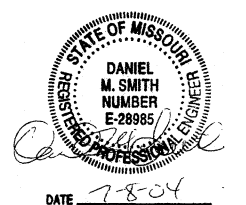
The drains and bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

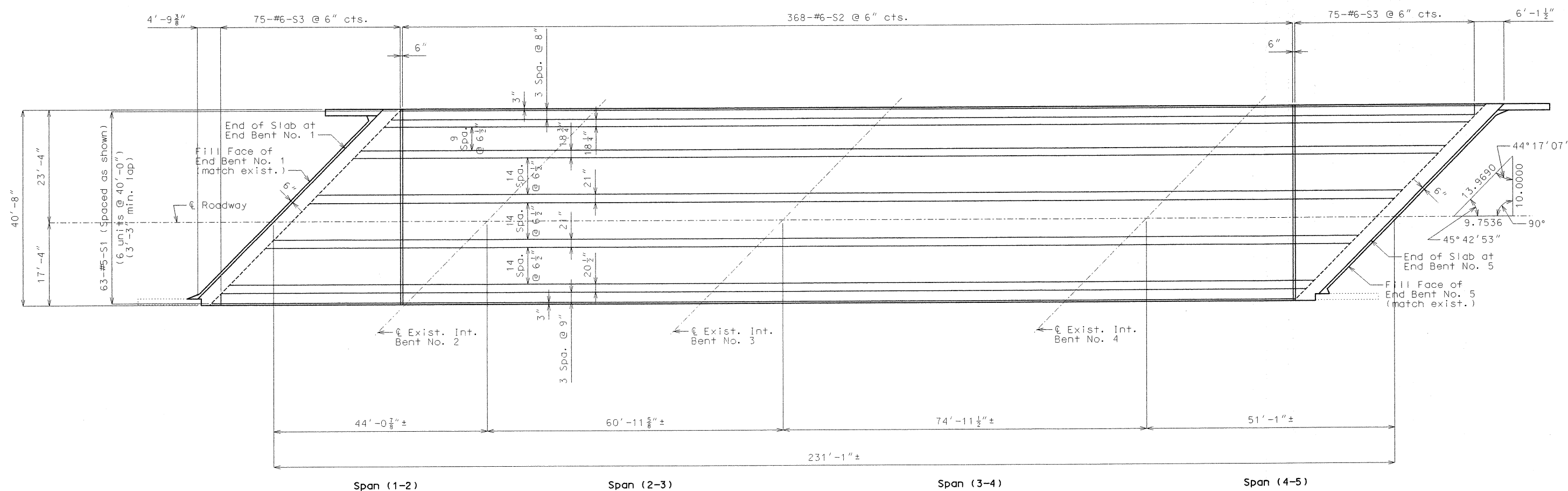
Shop drawings will not be required for the slab drains and the bracket assembly.

The bolt hole for the bracket assembly attachment shall be located on the stringer shop drawings.

State	Proj. No.	Sheet No.
MO		24A



State	Proj. No.	Sheet No.
MO		267



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Note: Longitudinal slab dimensions are measured horizontally.

For Plan of Slab Showing Top Reinforcement, see sheet no. 26.

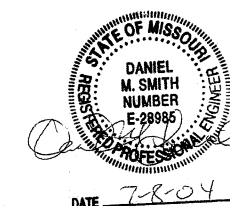
For Theoretical Slab Haunching Diagram & Theoretical Bottom of Slab Elevations, see sheet no. 21.

For Section Thru Slab & Slab Pouring Sequence, see sheet no. 27.

For details and reinforcement of Safety Barrier Curbs, see sheets no. 28 thru 33.

For details and location of slab drains, see sheet no. 24A.

SLAB DETAILS



Detailed Apr. 2004
Checked May 2004

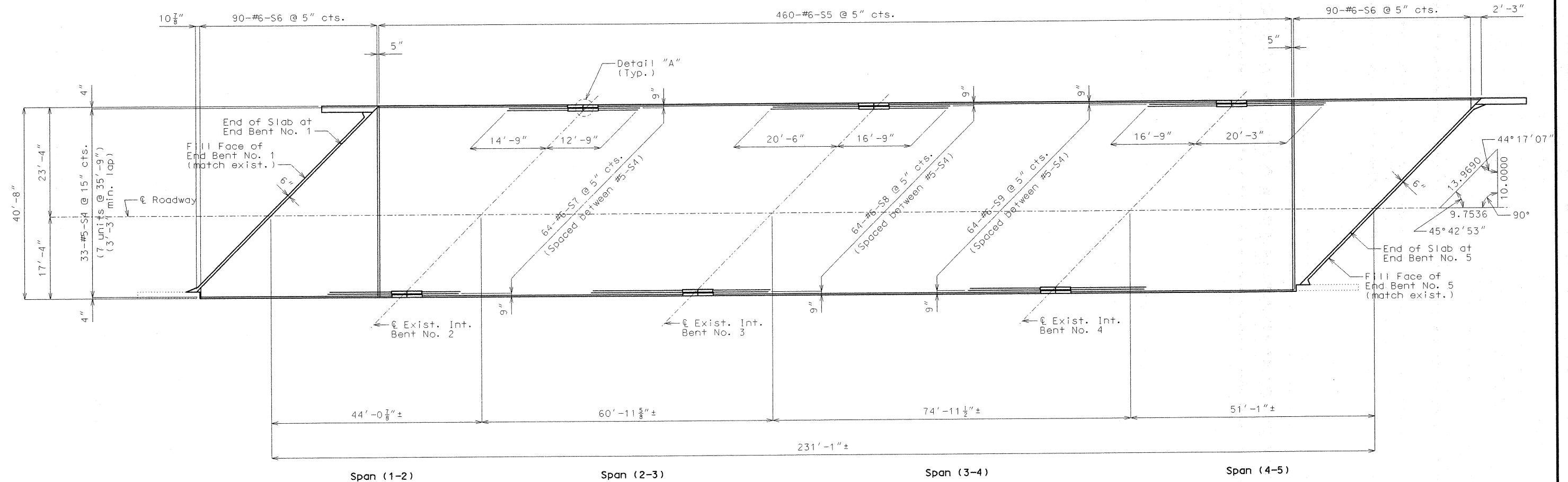
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 25 of 38

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MO		26B



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Note: Longitudinal slab dimensions are measured horizontally.

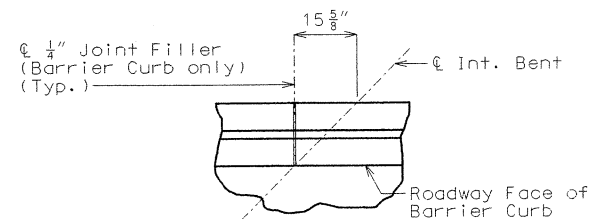
For Plan of Slab Showing Bottom Reinforcement, see sheet no. 25.

For Theoretical Slab Haunching Diagram & Theoretical Bottom of Slab Elevations, see sheet no. 21.

For Section Thru Slab & Slab Pouring Sequence, see sheet no. 27.

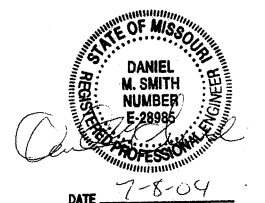
For details and reinforcement of Safety Barrier Curbs, see sheets no. 28 thru 33.

For details and location of slab drains, see sheet no. 24A.

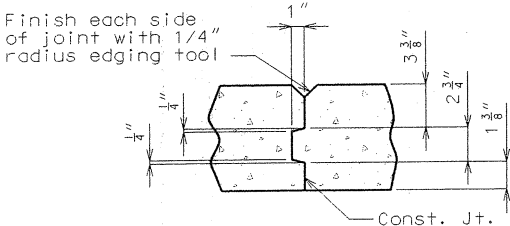
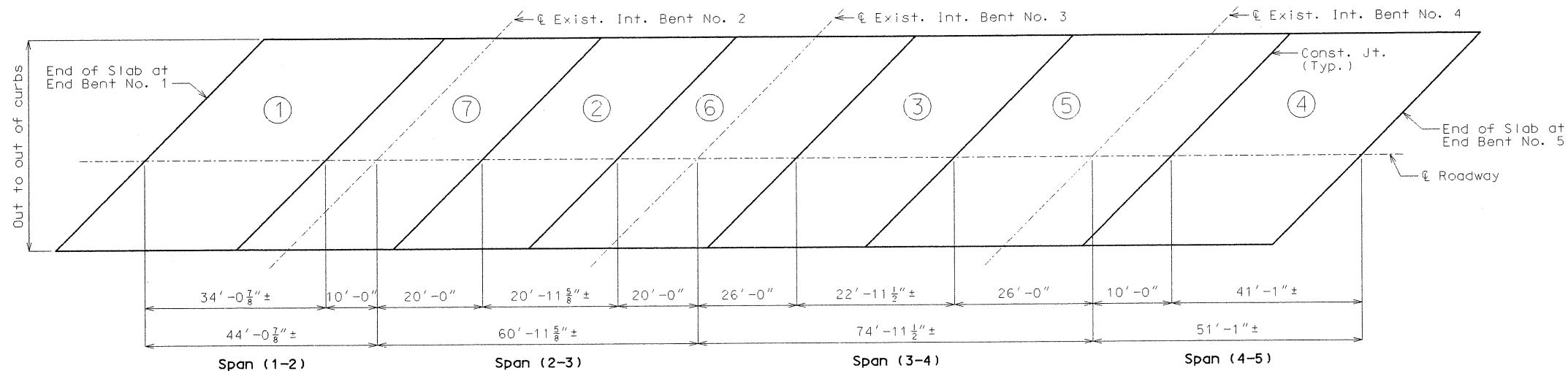


DETAIL "A"

SLAB DETAILS



DATE 7-8-04



SLAB CONSTRUCTION JOINT DETAIL

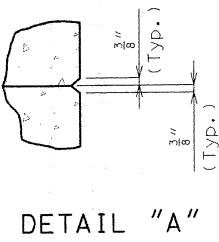
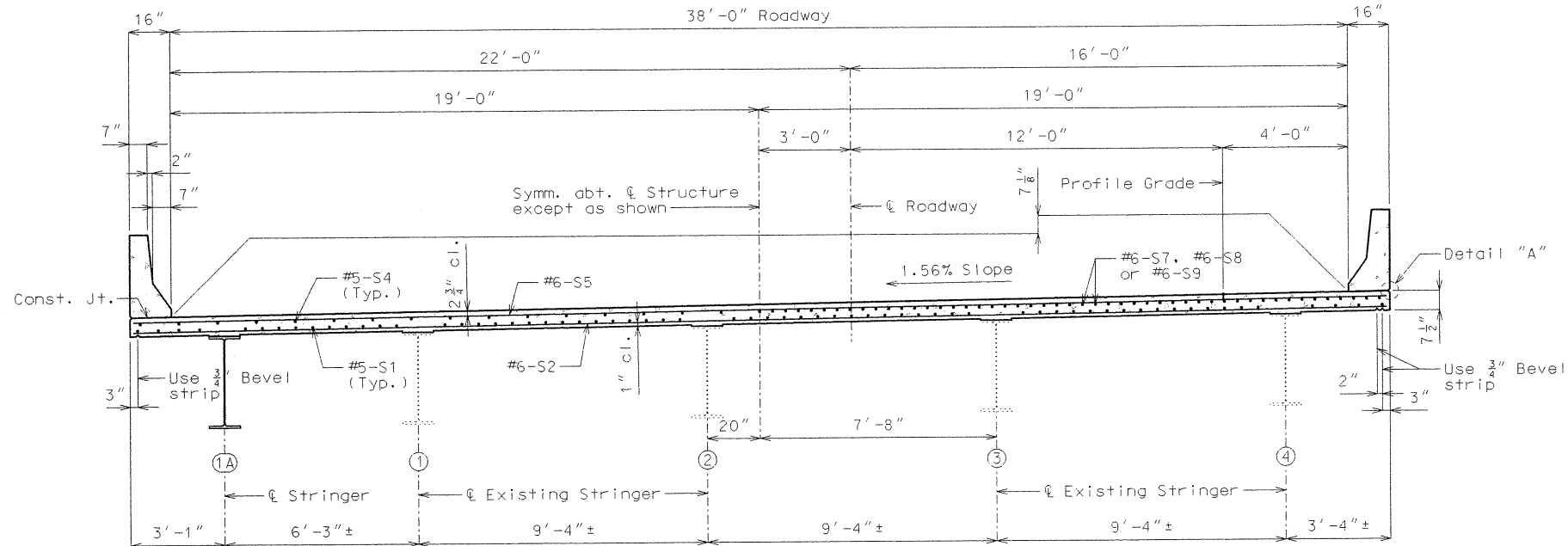
SLAB POURING SEQUENCE

Note: Longitudinal dimensions are horizontal.

	Sequence of Pours							Min. rate of pour cu. yds./hr.		
	Direction							With retarder	No retarder	
Basic sequence	1	2	3	4	5	6	7	25	25	
	Either direction									
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.										
Alternate "A" pours	1	7 + 2		6 + 3		5 + 4		25	36	
	End to 7		1 to 6		2 to 5		3 to end			
Alternate "B" pours	1 + 7 + 2		6 + 3			5 + 4			25	36
	End to 6		2 to 5			3 to end				
Alternate "C" pours	1 + 7 + 2			6 + 3 + 5 + 4					25	36
	End to 6			2 to end						
Alternate "D" pours	1 + 7 + 2 + 6 + 3 + 5 + 4							25	36	
	End to end									

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE



DETAIL "A"

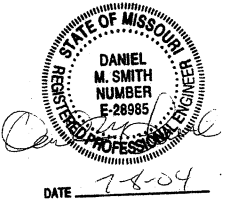
Note: For Details Showing Staged Construction, see sheets no. 3 & 4.

For Theoretical Bottom of Slab Elevations & Theoretical Slab Haunching Diagram, see sheet no. 21.

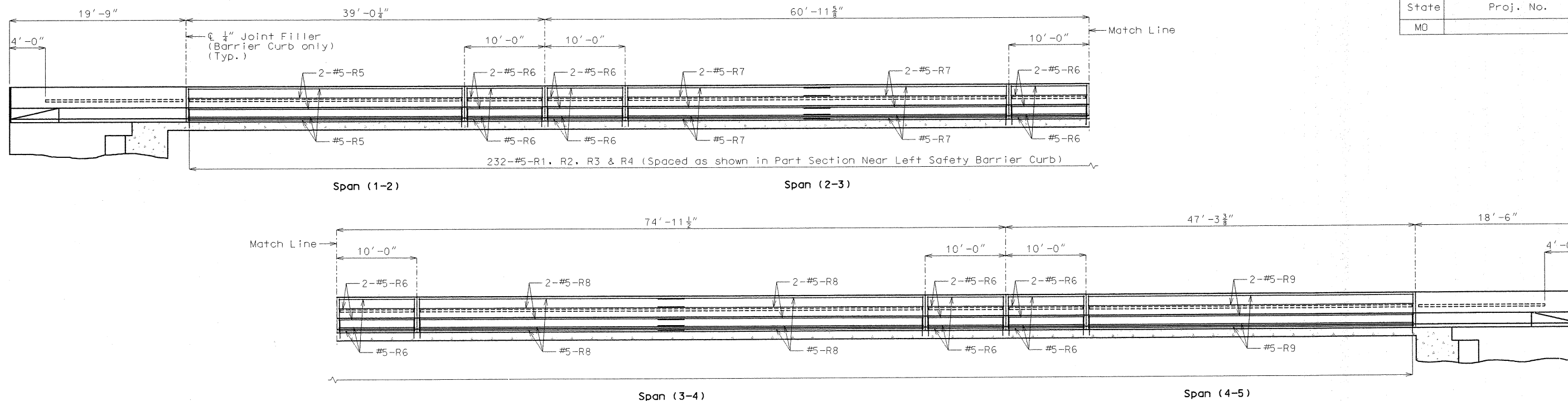
For Plan of Slab Showing Bottom Reinforcement, see sheet no. 25.

For Plan of Slab Showing Top Reinforcement, see sheet no. 26.

For details of Safety Barrier Curbs not shown, see sheets no. 28 thru 33.

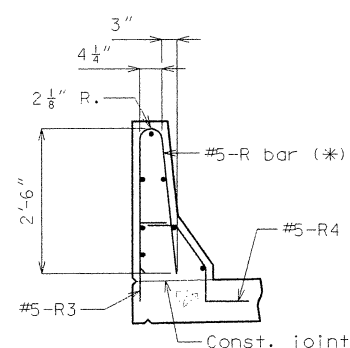


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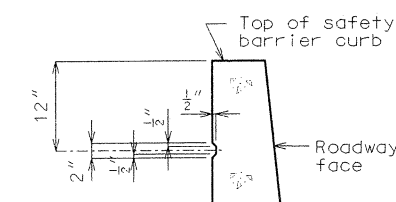
SECTION NEAR LEFT SAFETY BARRIER CURB

Note: Longitudinal dimensions are horizontal.

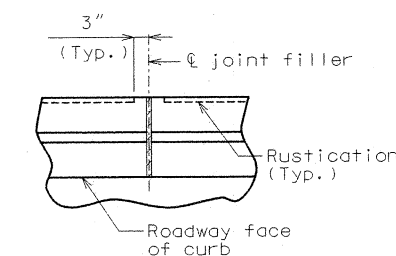


R-BAR PERMISSIBLE ALTERNATE SHAPE

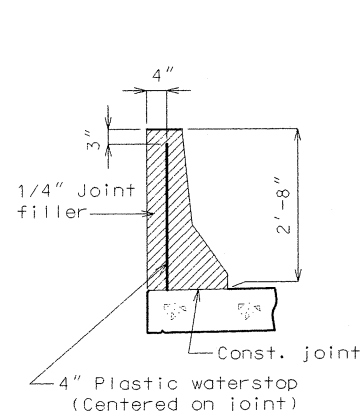
(*) The R1 and R2 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)



PART SECTION SHOWING RUSTICATION DETAILS



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

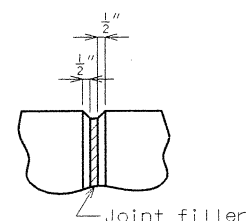


DETAILS OF PLASTIC WATERSTOP

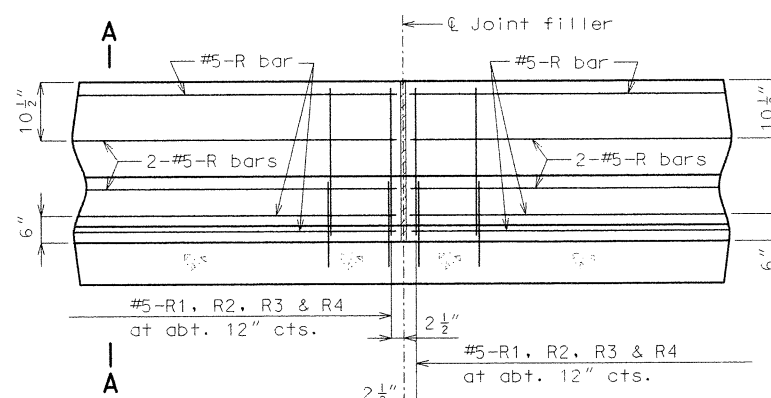
Notes:

Plastic waterstop shall be placed in all safety barrier curb filled joints, except structures with superelevation, use on all lower safety barrier curb joints only.

Cost of plastic waterstop, complete-in-place, will be considered completely covered by the contract unit price for Safety Barrier Curb.

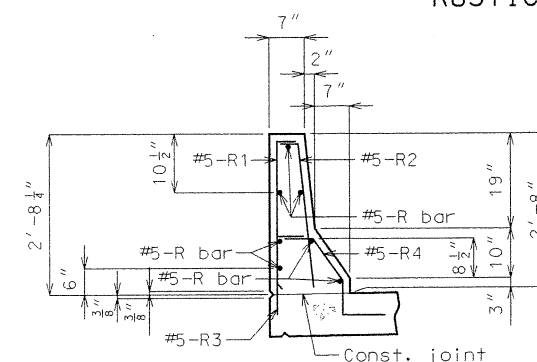


FILLED JOINT DETAIL



PART SECTION NEAR LEFT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

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



PART SECTION A-A

Notes:

Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 2.28 sq. ft.

Notes:

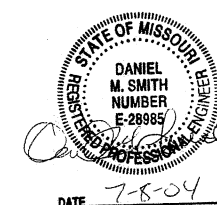
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2" radius or a 3/8" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

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

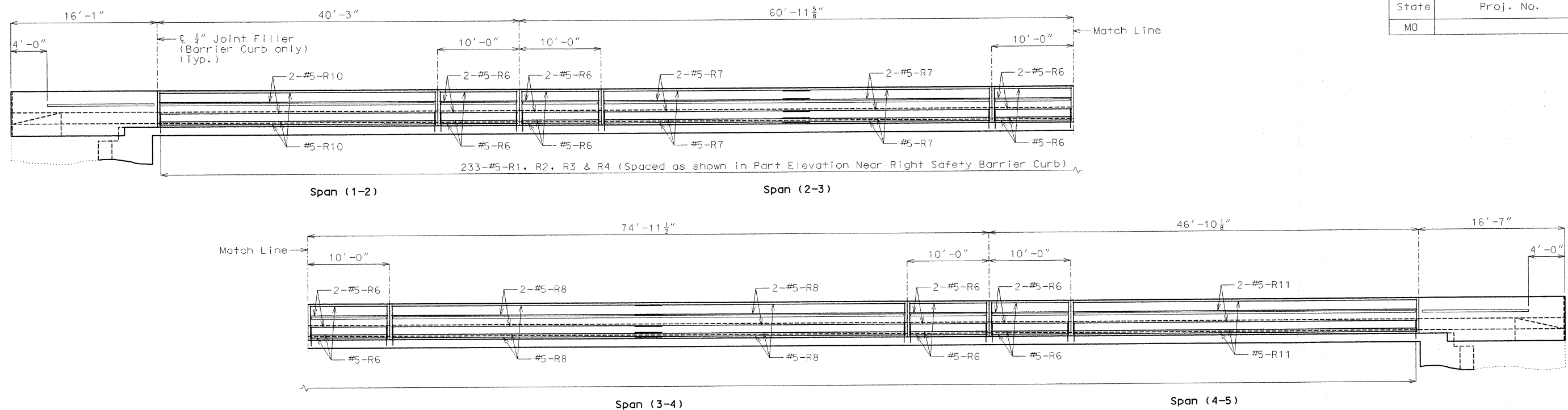


DATE 7-8-04

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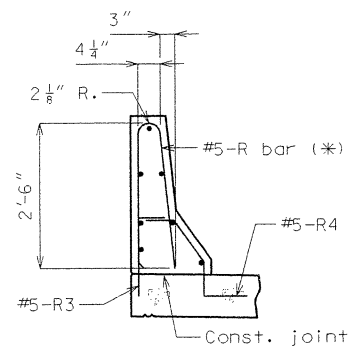
Sheet No. 28 of 38

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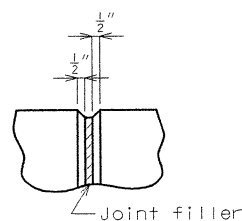
ELEVATION NEAR RIGHT SAFETY BARRIER CURB

Note: Longitudinal dimensions are horizontal.

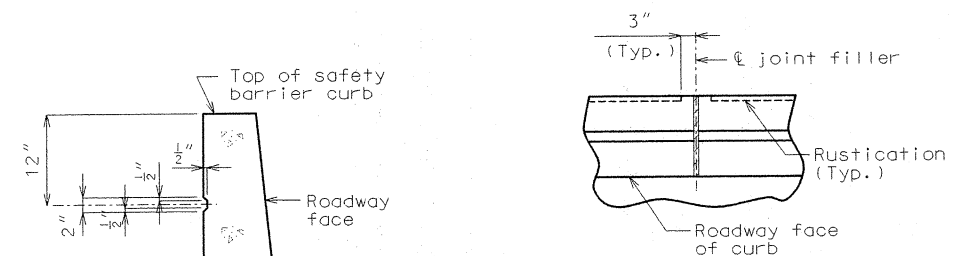


R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R1 and R2 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

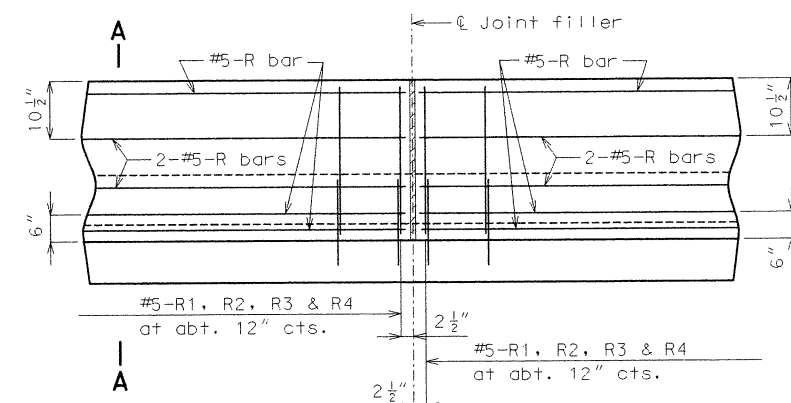


FILLED JOINT DETAIL

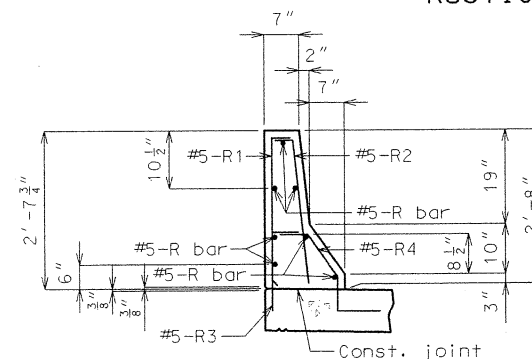


PART SECTION SHOWING RUSTICATION DETAILS

PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART ELEVATION NEAR RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



PART SECTION A-A

Notes:

Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 2.24 sq. ft.

Notes:

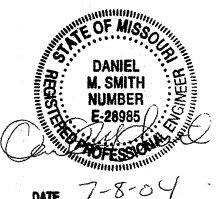
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2" radius or a 3/8" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

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



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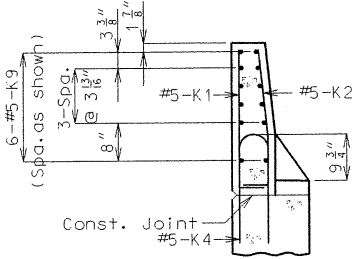
Note: This drawing is not to scale. Follow dimensions.

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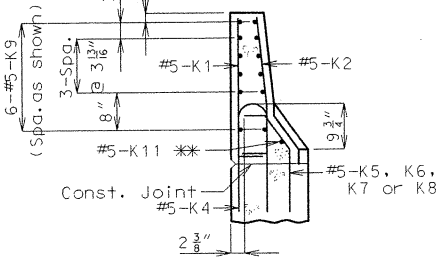
Detailed Apr. 2004
Checked May 2004

T:\br-proj\gobair\4u1042\16083\16083_029.dgn 02:58:56 PM 07/07/2004

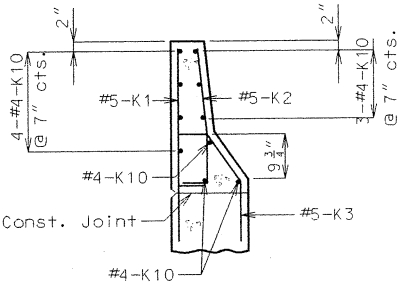
State	Proj. No.	Sheet No.
MO		A12



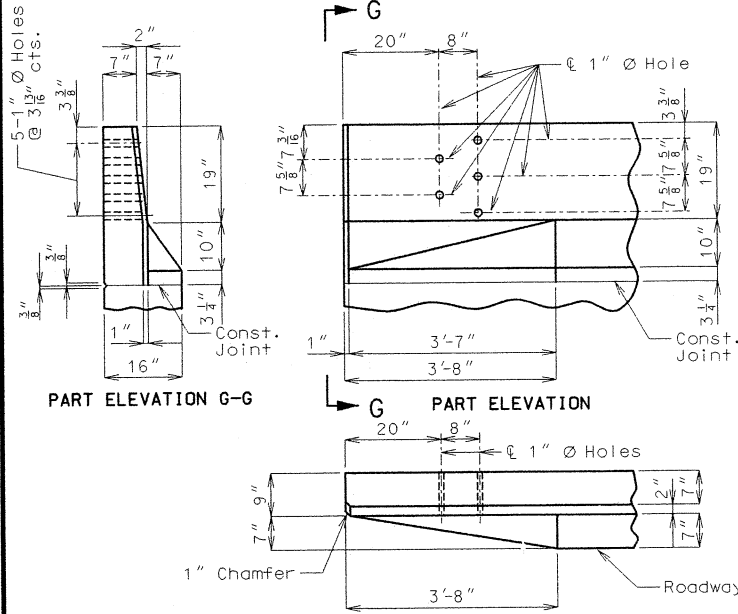
SECTION A-A



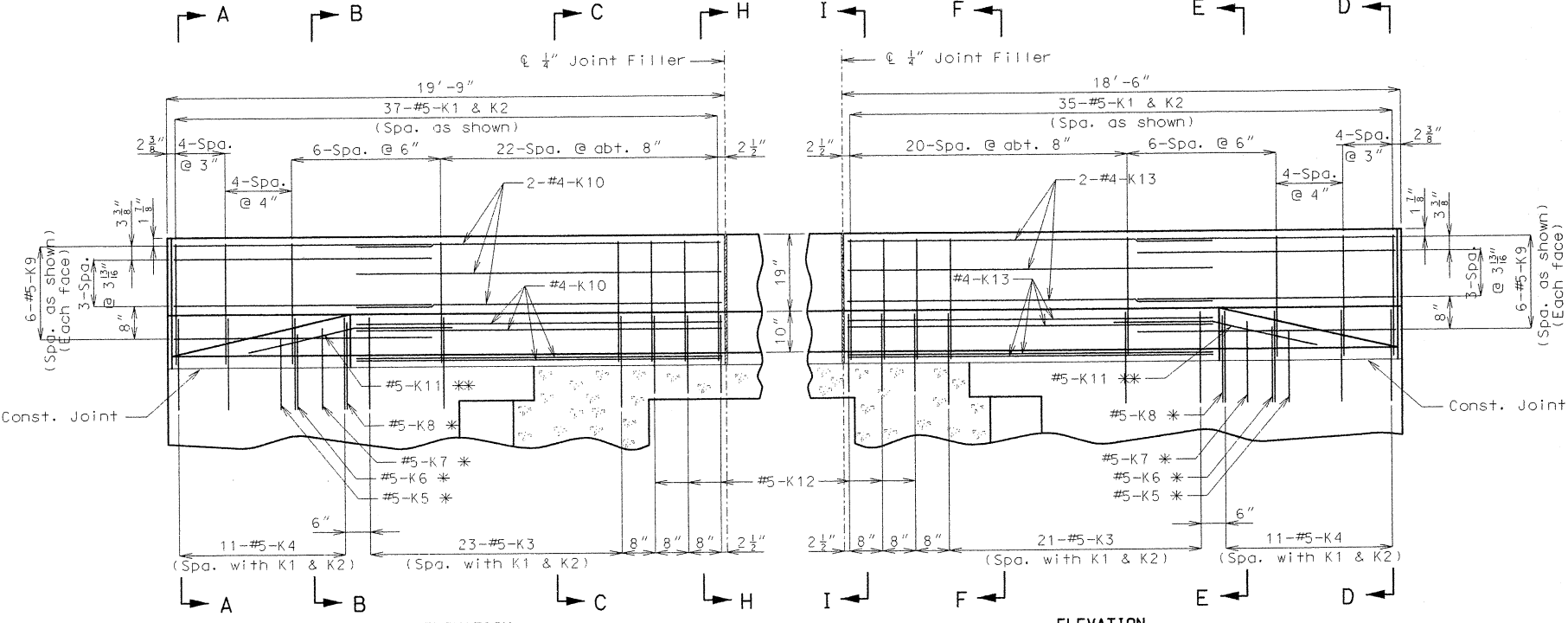
SECTION B-B



SECTION C-C

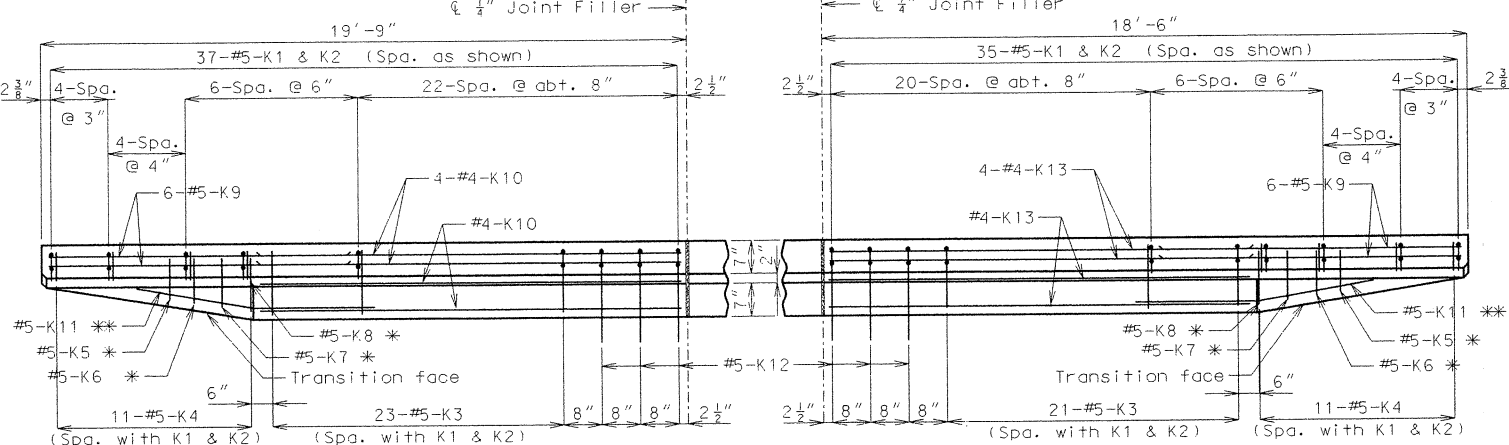


DETAILS OF GUARD RAIL ATTACHMENT



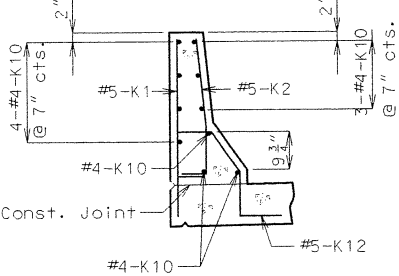
ELEVATION

ELEVATION

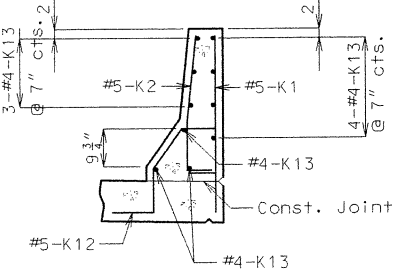


PLAN

PLAN



SECTION H-H



SECTION I-I

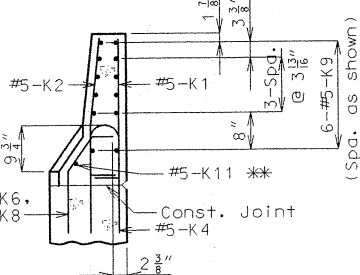
NOTE: Use a minimum lap of 2'-0" between K9 and K10 or K13 bars.

DETAILS OF LEFT SAFETY BARRIER CURB AT END BENTS

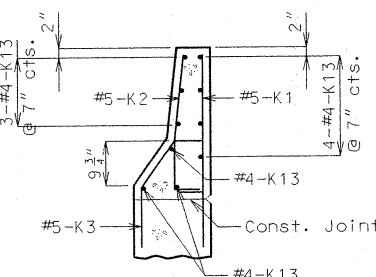
Note: This drawing is not to scale. Follow dimensions.

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SECTION D-D

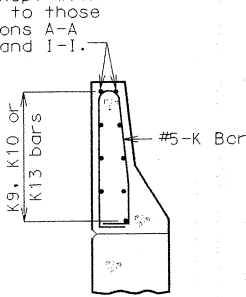


SECTION E-E



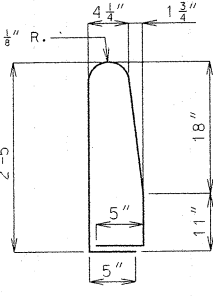
SECTION F-F

The top two K9, K10 or K13 bars shall be kept with position close to those shown in Sections A-A thru F-F, H-H and I-I.

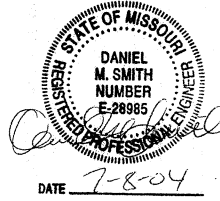


K1-K2 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K1 and K2 bar combination may be furnished as one bar as shown, at the contractor's option.



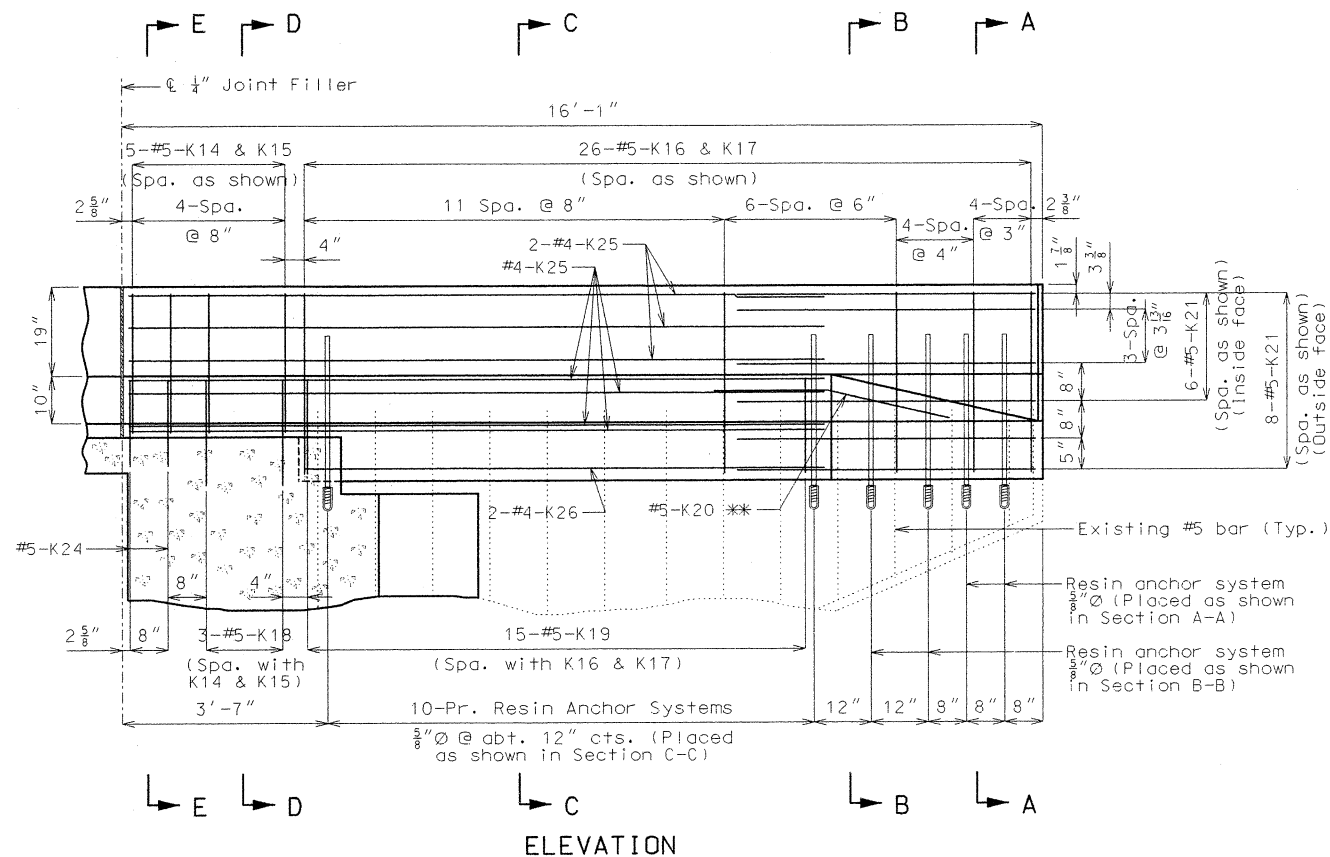
(K3 or K4 thru K8 bars not shown for clarity)



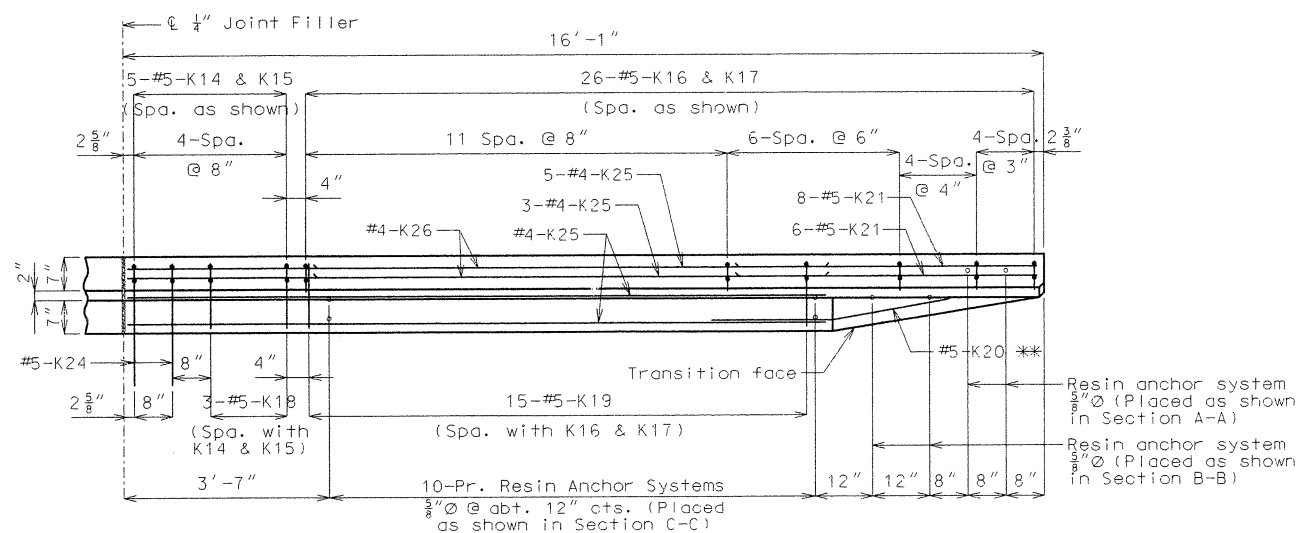
JACKSON COUNTY

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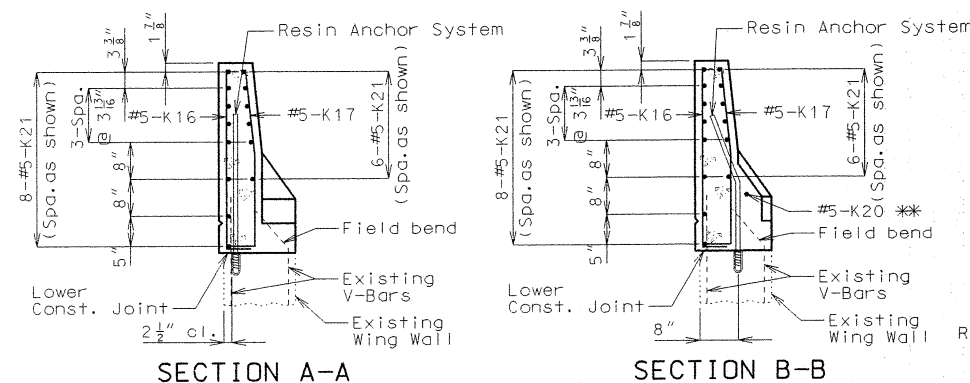
ELEVATION



PLAN

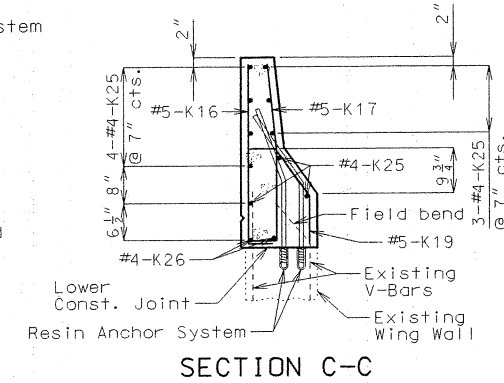
(Existing wing wall and reinforcement not shown for clarity.)

** Fit bar to follow transition face of curb.

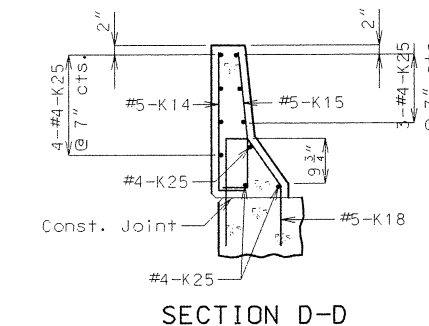


SECTION A-A

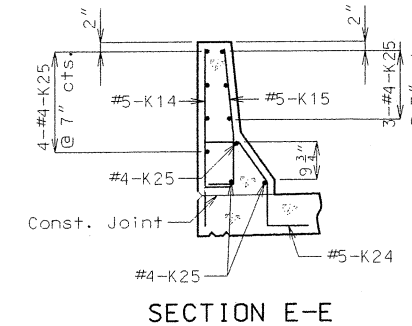
SECTION B-B



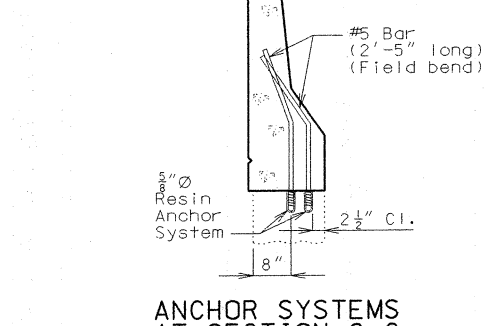
SECTION C-C



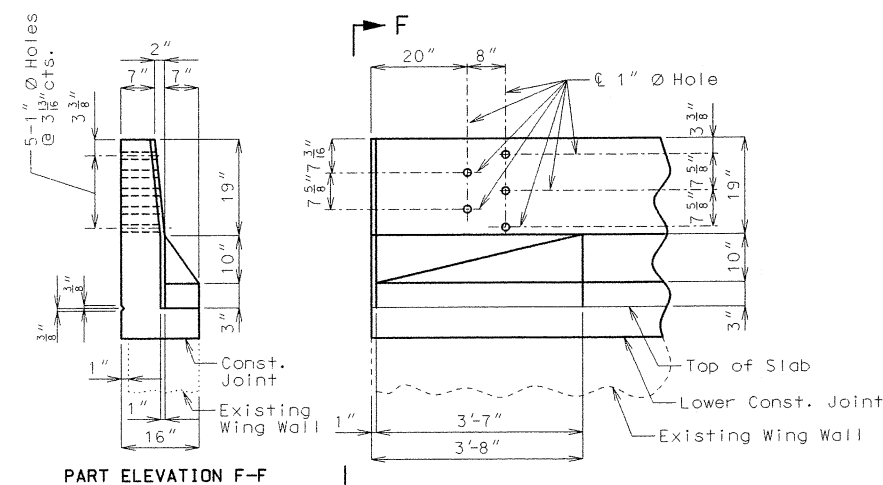
SECTION D-D



SECTION E-E

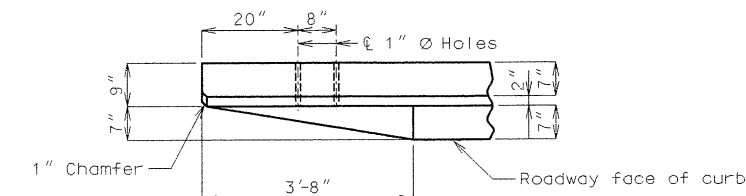


ANCHOR SYSTEMS AT SECTION C-C



PART ELEVATION F-F

PART ELEVATION



PART PLAN

DETAILS OF GUARD RAIL ATTACHMENT

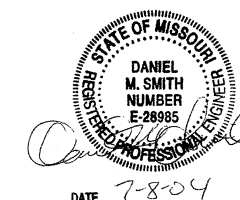
NOTE: Use a minimum lap of 2'-0" between K21 and K25 or K26 bars.

DETAILS OF RIGHT SAFETY BARRIER CURB AT END BENT NO. 1

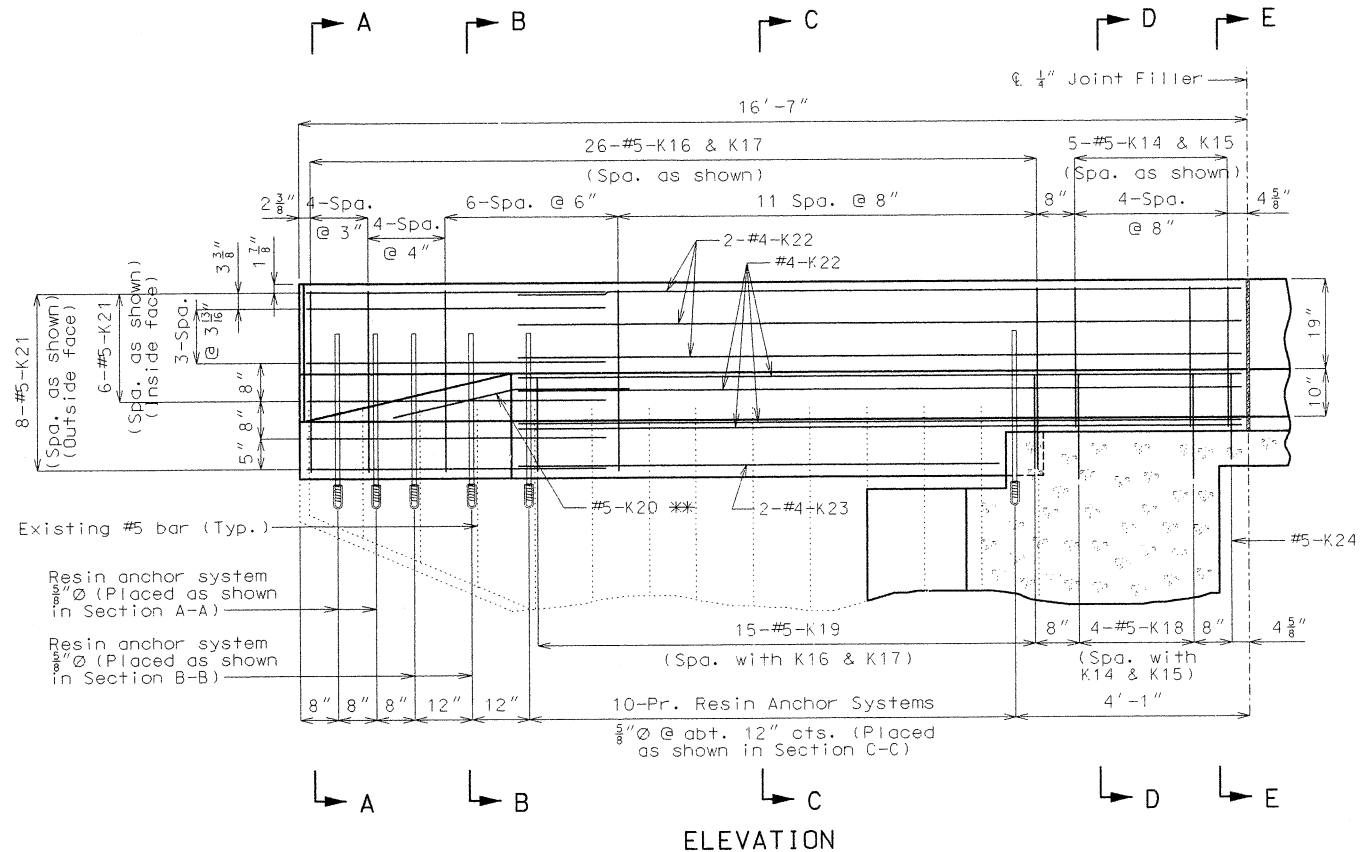
The top two K21 or K25 bars shall be kept with position close to those shown in Sections A-A thru E-E.

K14-K15 & K16-K17 BAR PERMISSIBLE ALTERNATE SHAPE (***)

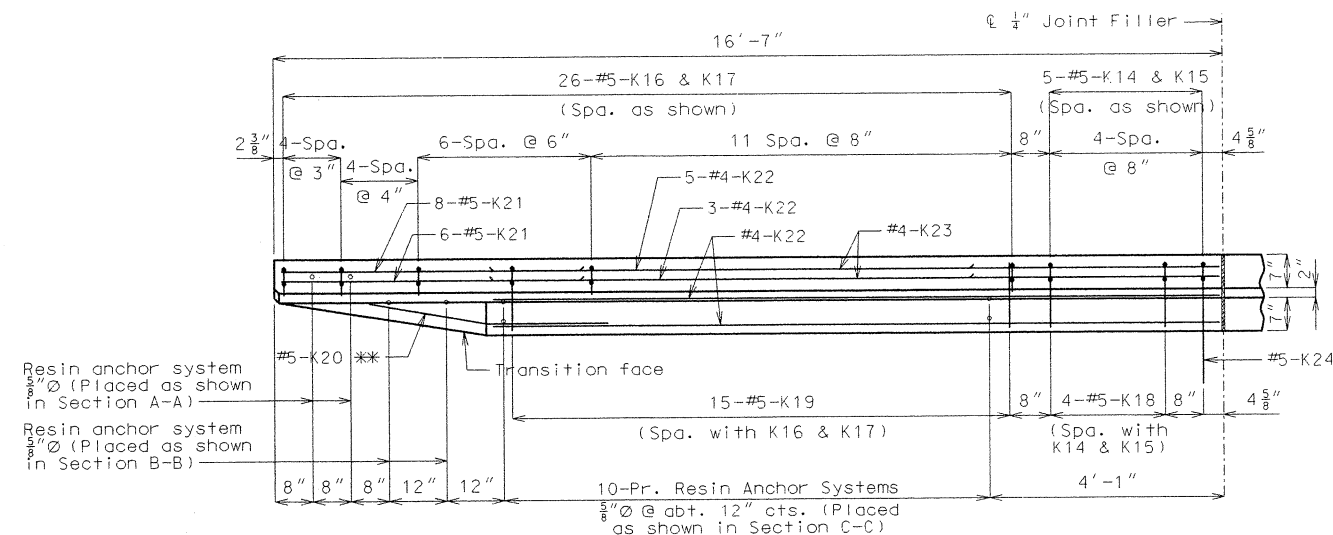
(***) The K14 & K15 and K16 & K17 bar combinations may be furnished as one bar as shown, at the contractor's option.



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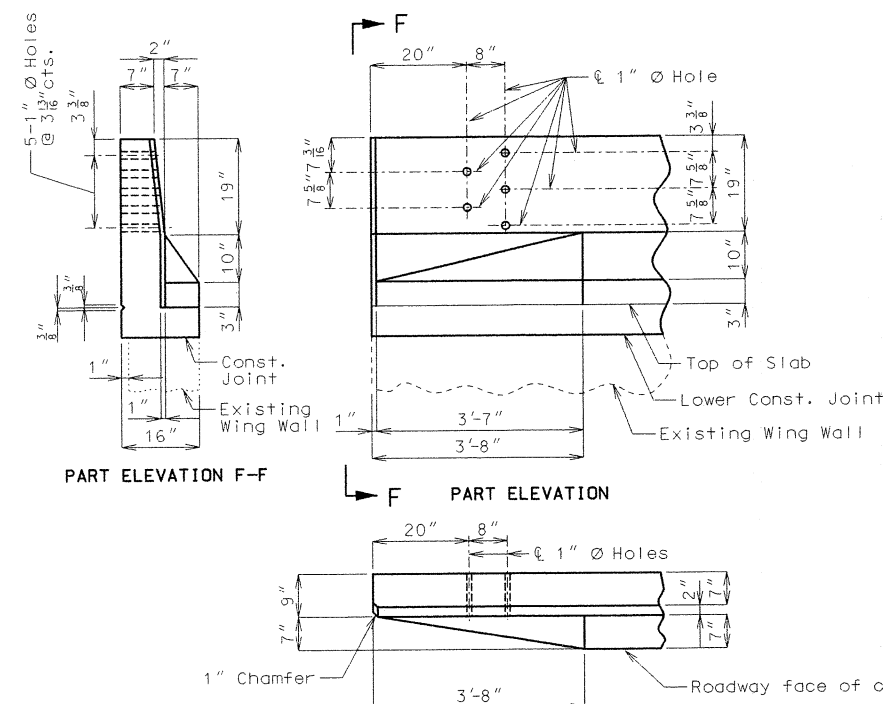
ELEVATION



PLAN

(Existing wing wall and reinforcement not shown for clarity.)

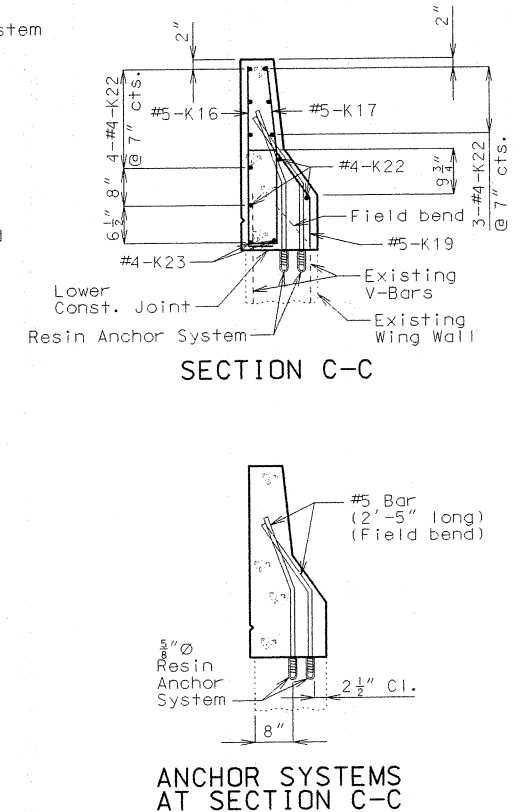
* Fit bar to follow transition face of curb.



DETAILS OF GUARD RAIL ATTACHMENT

NOTE: Use a minimum lap of 2'-0" between K21 and K22 or K23 bars.

DETAILS OF RIGHT SAFETY BARRIER CURB AT END BENT NO. 5

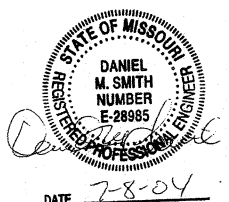


ANCHOR SYSTEMS AT SECTION C-C

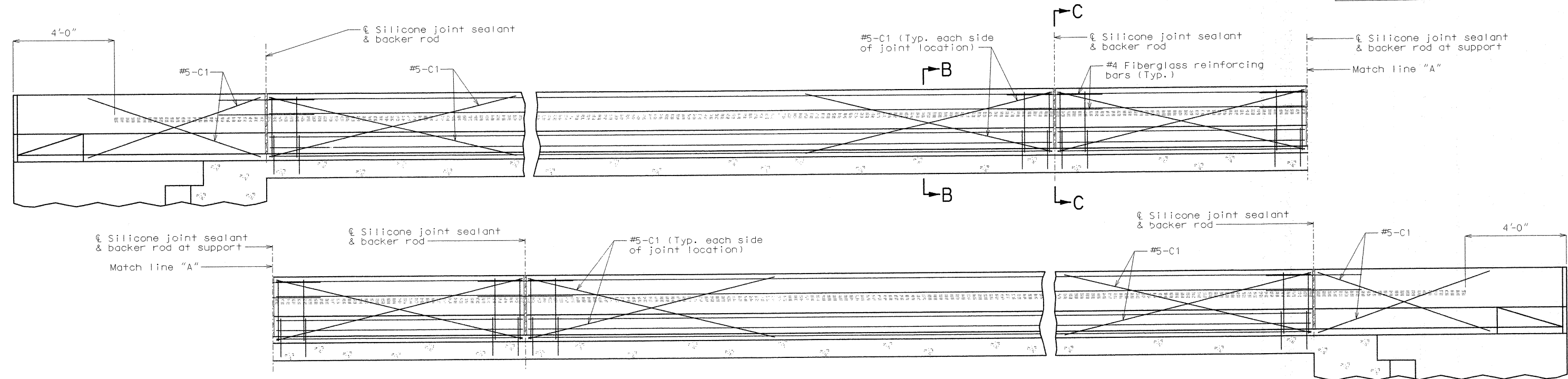
The top two K21 or K22 bars shall be kept with position close to those shown in Sections A-A thru E-E.

K14-K15 & K16-K17 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K14 & K15 and K16 & K17 bar combinations may be furnished as one bar as shown, at the contractor's option.



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TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

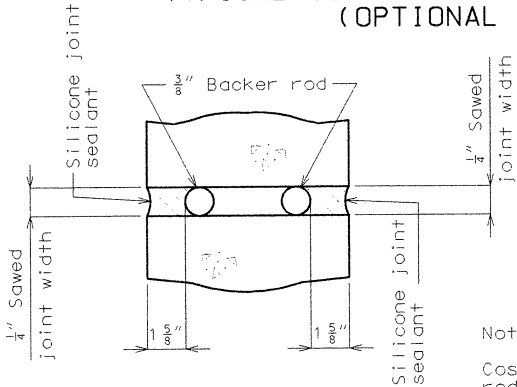
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Scale prevention treatment will not be permitted.



SECTION A-A

Notes:

Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

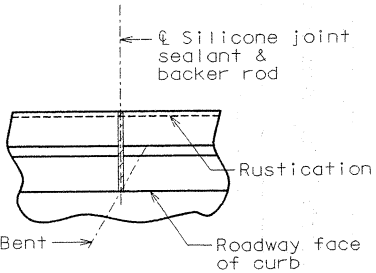
Plastic waterstop shall not be used with slip-form option.

C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

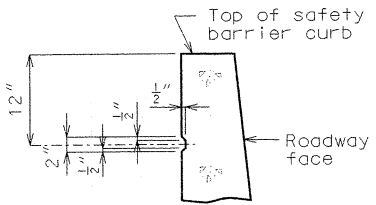
For Slip-Form option, all sides of the safety barrier curb shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Note:

Cost of silicone joint sealant and backer rod complete-in-place will be considered completely covered by the contract unit price for Safety Barrier Curb.

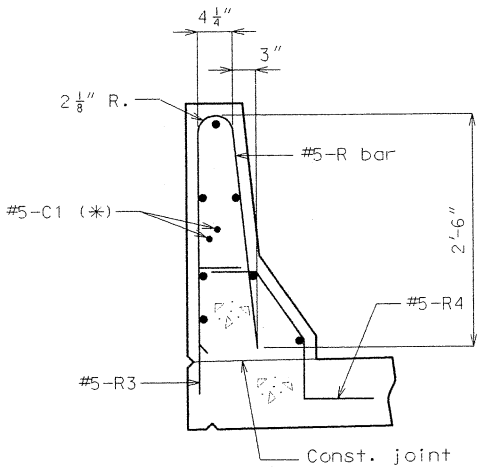


PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



PART SECTION SHOWING
RUSTICATION DETAILS

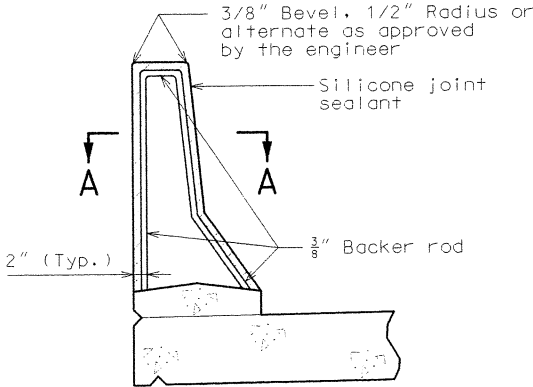
RUSTICATION DETAIL
(Use on highway grade separation only)



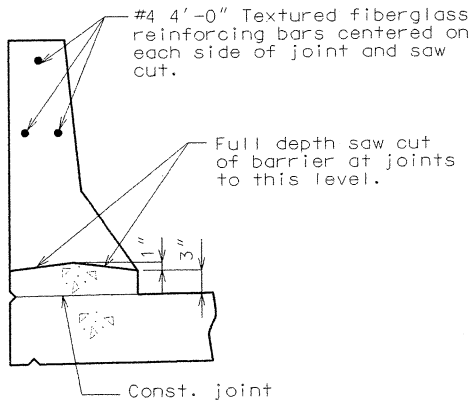
PART SECTION B-B

Note:

(*) Each side of joint location.



SECTION THRU JOINT



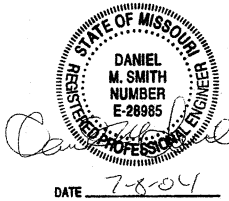
PART SECTION C-C

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB
(Left barrier curb shown, right barrier curb similar.)

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

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MO		216

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 (f'c = 4,000 psi).

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 60,000 psi.

Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 2'-2", respectively.

Mechanical bar splices will be in accordance with Sec 706.

(*) Seal joint between vertical face of approach slab and wing with "Silicone Joint Sealant for Saw Cut and Formed Joints" in accordance with Sec 717.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered under by the contract unit price for Bridge Approach Slab (Bridge), per square yard.

For Concrete Approach Pavement details, see roadway plans.

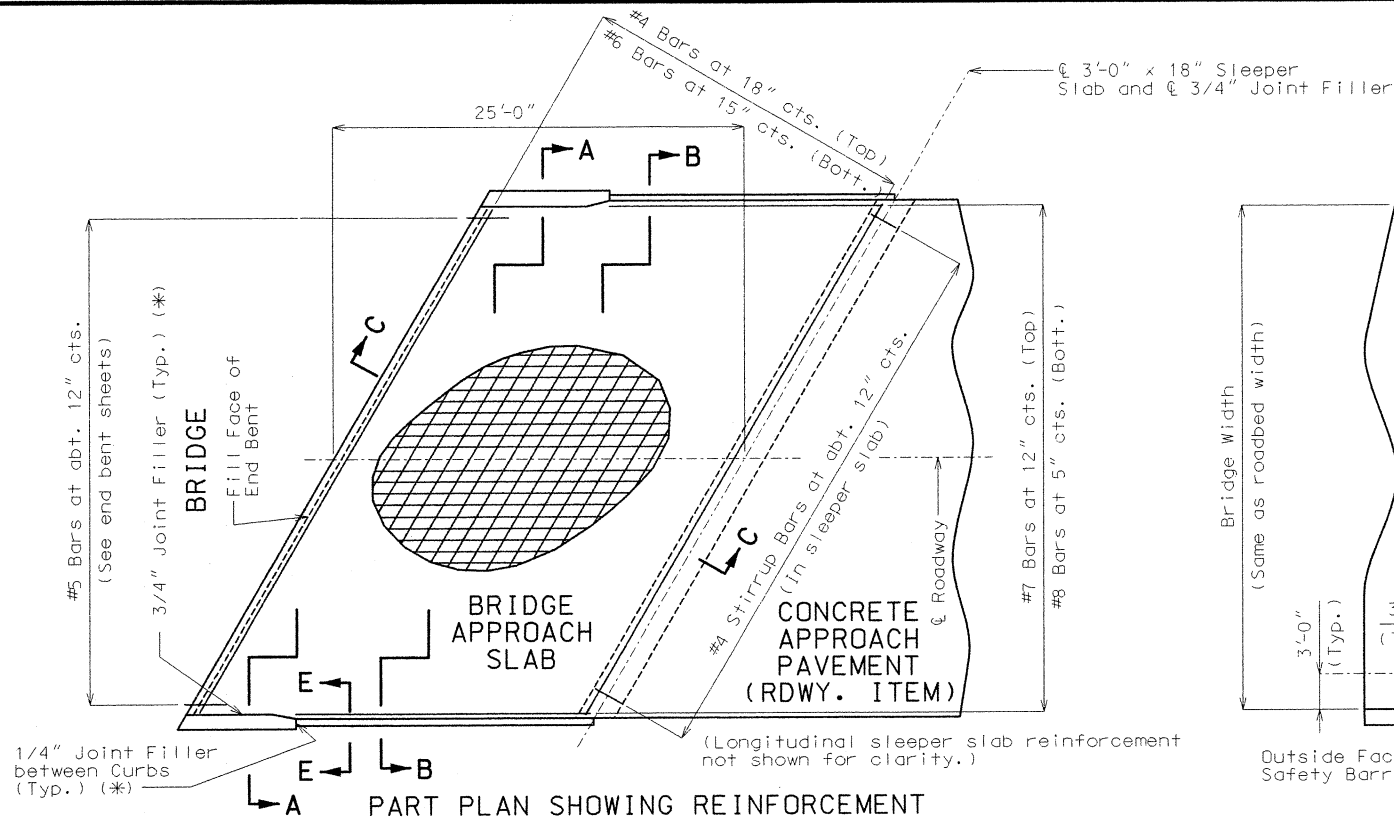
See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of roadway surface.

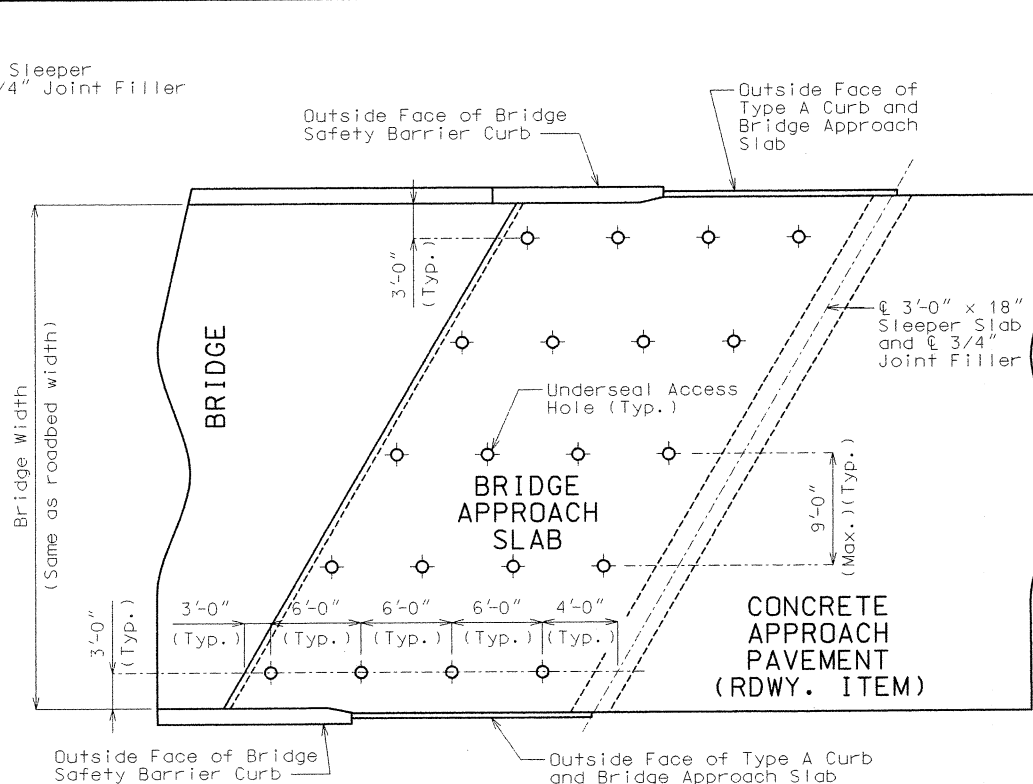
At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired in accordance with Sec 710.

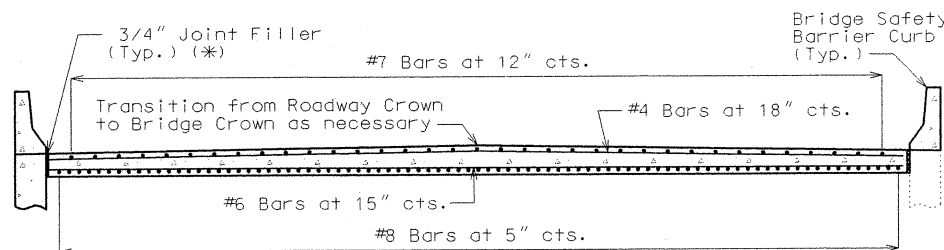
Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.



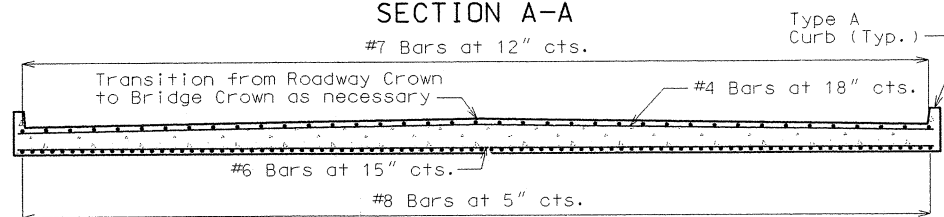
PART PLAN SHOWING REINFORCEMENT



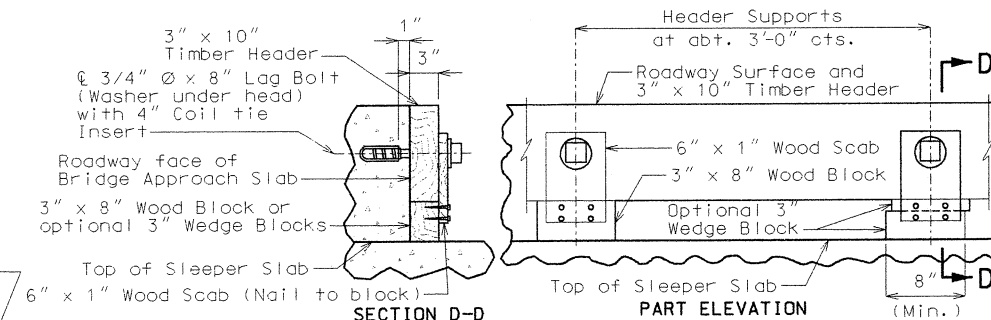
PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



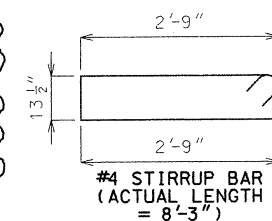
SECTION A-A



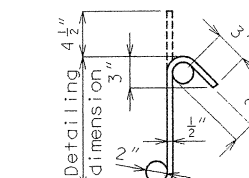
SECTION B-B



DETAILS OF TIMBER HEADER

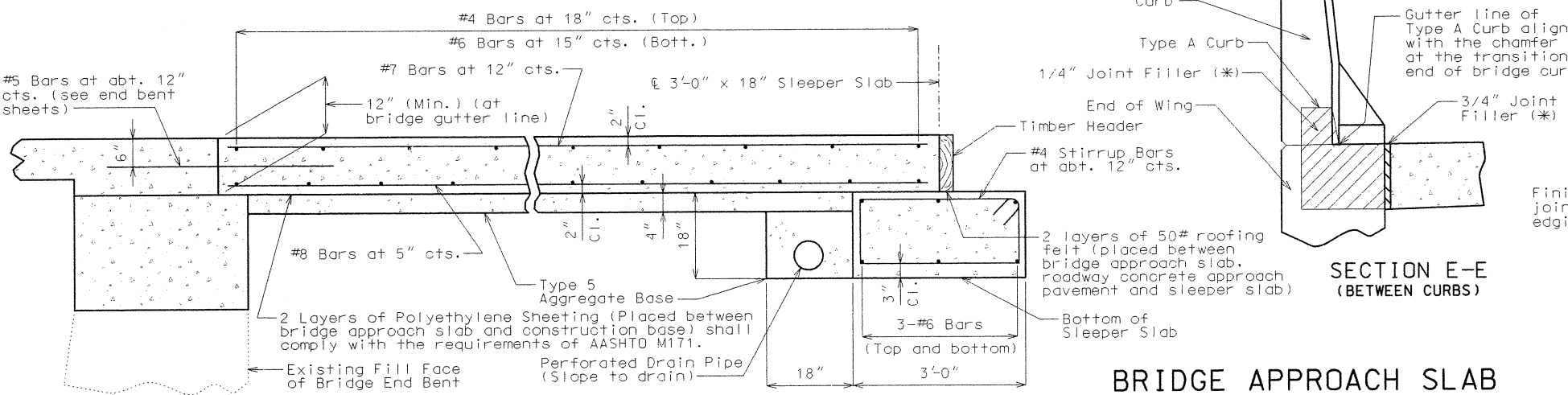


#4 STIRRUP BAR (ACTUAL LENGTH = 8'-3")



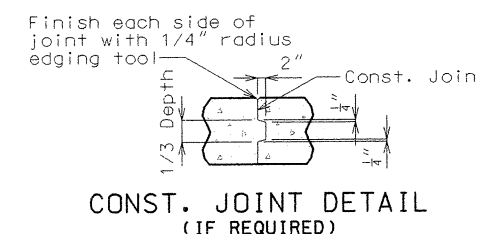
TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).

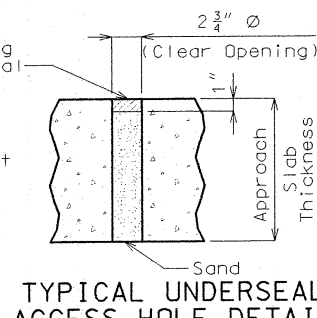


SECTION C-C

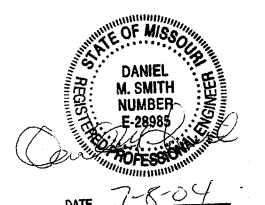
BRIDGE APPROACH SLAB



CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



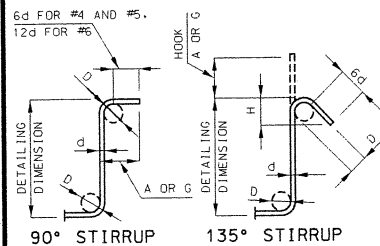
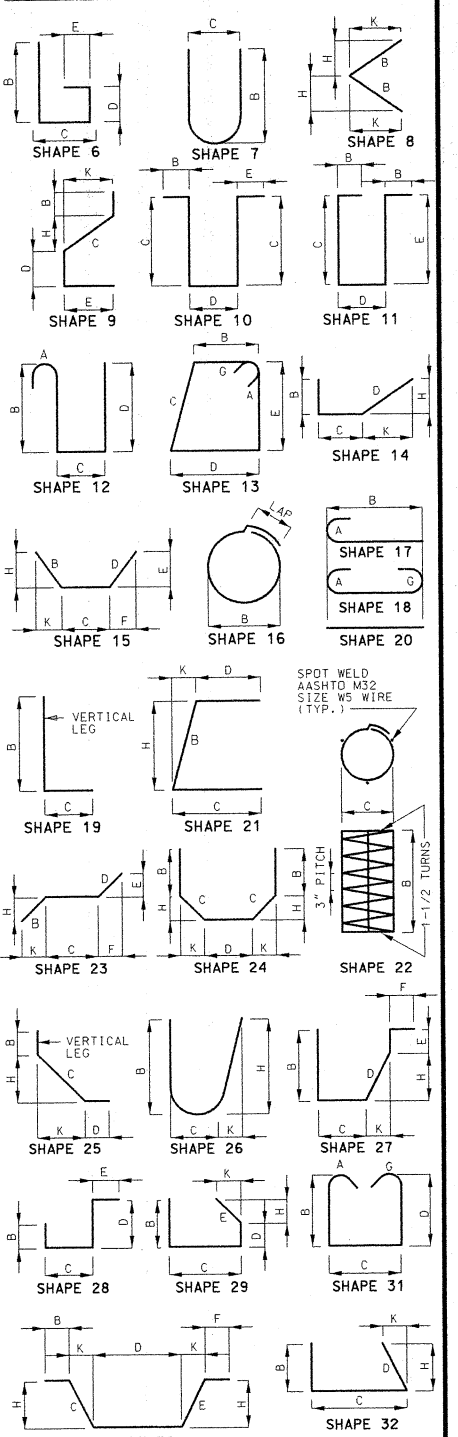
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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BILL OF REINFORCING STEEL

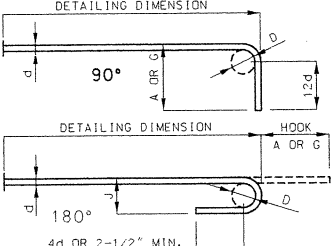
NO.	REQ'D.	D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
											B	C	D	E	F	H	K						
											FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
6	8	H40	BEAM		17		X				8	7.000						9	6	9	6	152	
6	8	H41	BEAM		20		X				8	7.000						8	7	8	7	138	
10	4	H42	BEAM		20		X				9	10.000						9	10	9	10	66	
6	6	H43	BEAM		20		X				3	2.000						3	2	3	2	29	
12	8	H44	BEAM		20		X				7	2.000						7	2	7	2	230	
7	6	H45	BEAM		10	S	X						22.000	2	11.000			6	7	6	3	66	
2	4	H46	BEAM		20		X				3	2.000						3	2	3	2	4	
13	4	P40	SOCKET		16		X				2	4.000						8	2	8	2	71	
17	4	P41	COLUMN		16		X				2	3.000						7	11	7	11	90	
14	4	P42	SHAFT		16		X				2	9.000						9	6	9	6	89	
7	4	U40	BEAM		13	S	X				3	0.000	5	1.250	3	0.000	5	1.250	17	0	16	9	78
3	4	U41	BEAM		10	S	X					3	9.750	3	0.000			10	8	10	6	21	
3	4	U42	BEAM		13	S	X				3	0.000	3	9.750	3	0.000	3	9.750	14	5	14	2	28
18	8	V40	SHAFT		20		X				17	0.000						17	0	17	0	817	
9	8	V41	COLUMN		20		X				19	2.000						19	2	19	2	461	
18	8	V42	SOCKET		20		X				21	0.000						21	0	21	0	1009	
2	W5	W40	BEAM		22		X				18.000	9.125						26	1	26	1	9	

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STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° 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	J
#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"	9"	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"	

BILL OF REINFORCING STEEL																				
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
									B	C	D	E	F	H	K					
									FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.
		END BT NO 5																		
10	6 F50	WING BRACE		23	S				14.000	8 7.625	14.000	5.500	12.875	5.500	12.875	11 0	10 11	164		
4	6 F51	DIAPHRAGM		21	S				3 11.875	7 8.000				2 10.250	2 9.375	11 8	11 0	66		
8	8 H50	BEAM		20					8 2.000							8 2	8 2	174		
4	6 H51	BEAM		20					8 2.000							8 2	8 2	49		
4	8 H52	SLAB	E	20					56 4.000							56 4	56 4	602		
5	6 H53	DIAPHRAGM		20					56 4.000							56 4	56 4	423		
53	5 H54	DIAPHRAGM	E	20					2 6.000							2 6	2 6	138		
2	8 H55	WING	E	20					16 5.000							16 5	16 5	88		
6	8 H56	WING		20					16 5.000							16 5	16 5	263		
20	6 H57	WING		20					15 5.000							15 5	15 5	463		
5	6 H58	DIAPHRAGM		20					54 5.000							54 5	54 5	409		
5	5 U50	BEAM		32	S				5 2.000	4 9.250	5 3.500			5 2.000	13.625	15 3	15 0	78		
4	4 U51	BEAM		13	S				4 1.750	2 11.250	4 9.250	2 10.500				15 6	15 3	41		
1	4 U52	BEAM		14	S				2 10.500	4 1.750	2 11.375			2 10.500	8.000	10 0	9 10	7		
46	5 U53	DIAPHRAGM	E	10	S				3 8.000	3 4.500						10 9	10 6	504		
46	6 U54	DIAPHRAGM		19	S				3 6.000	4 0.875						7 7	7 5	512		
71	6 U55	DIAPHRAGM	E	19	S				3 1.000	5 10.000						8 11	8 9	933		
2	5 U56	DIAPHRAGM	E	13	S				3 2.000	4 1.000	3 2.000	4 1.000				15 5	15 1	31		
4	5 V50	BEAM		20					5 2.000							5 2	5 2	22		
20	6 V51	DIAPHRAGM		20					3 6.000							3 6	3 6	105		
2	6 V52	WING		20					7 8.000							7 8	7 8	23		
28	6 V53	WING		20		V	2		7 8.000							7 8	7 8			
		INCREMENT =							7 6.000							7 6	7 6	319		
		0.125 INCH																		
		SLAB																		
378	5 S1	SLAB	E	20					40 0.000							40 0	40 0	15770		
368	6 S2	SLAB	E	20					40 5.000							40 5	40 5	22340		
150	6 S3	SLAB	E	20		V	2		40 1.000							40 1	40 1			
		INCREMENT =							2 2.000							2 2	2 2	4759		
		6.125 INCH																		
*233	5 S4	SLAB	E	20					35 9.000							35 9	35 9	8688		
460	6 S5	SLAB	E	20					40 5.000							40 5	40 5	27925		
180	6 S6	SLAB	E	20		V	2		40 0.000							40 0	40 0			
		INCREMENT =							2 0.000							2 0	2 0	5678		
		5.125 INCH																		
*66	6 S7	SLAB	E	20					27 6.000							27 6	27 6	2726		
64	6 S8	SLAB	E	20					37 3.000							37 3	37 3	3581		
64	6 S9	SLAB	E	20					37 0.000							37 0	37 0	3557		
915	4 S10	SLAB	E	10					6.000	6.500	9.000	6.000				2 10	2 5	1477		
		BARRIER CURB																		
72	5 K1	BARRIER CURB	E	19	S				2 5.000	5.125						2 10	2 9	207		
72	5 K2	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875	2 10	2 9	207		
44	5 K3	BARRIER CURB	E	27	S				2 5.875	5.125	12.000	20.000		9.875	6.875	5 7	5 5	249		
22	5 K4	BARRIER CURB	E	7					2 5.875	6.000						5 2	5 2	119		
2	5 K5	BARRIER CURB	E	25	S				20.000	6.750	4.375			5.500	4.000	2 7	2 6	5		
2	5 K6	BARRIER CURB	E	25	S				20.000	7.875	4.375			6.500	4.500	2 8	2 8	6		
2	5 K7	BARRIER CURB	E	25	S				20.000	9.625	4.375			7.875	5.500	2 10	2 9	6		
2	5 K8	BARRIER CURB	E	25	S				20.000	11.250	4.375			9.250	6.500	3 0	2 11	6		

BILL OF REINFORCING STEEL																				
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
									B	C	D	E	F	H	K					
									FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.
24	5 K9	BARRIER CURB	E	20					5 7.000								5 7	5 7	140	
* 10	4 K10	BARRIER CURB	E	20					15 11.000								15 11	15 11	106	
2	5 K11	BARRIER CURB	E	8					2 2.125					2 2.000	2.375		4 4	4 4	9	
6	5 K12	BARRIER CURB	E	27	S				16.000	5.125	12.000	6.125	12.000	9.875	6.875		4 3	4 0	25	
12	4 K13	BARRIER CURB	E	20					14 8.000								14 8	14 8	118	
10	5 K14	BARRIER CURB	E	19	S				2 5.000	5.125							2 10	2 9	29	
10	5 K15	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875		2 10	2 9	29	
52	5 K16	BARRIER CURB	E	19	S				3 0.500	5.125							3 6	3 4	181	
52	5 K17	BARRIER CURB	E	14	S				5.125	18.500	18.000			2.000	17.875		3 6	3 4	181	
7	5 K18	BARRIER CURB	E	27	S				2 5.875	3.625	12.000	20.000		9.875	6.875		5 6	5 4	39	
30	5 K19	BARRIER CURB	E	27	S				18.750	5.125	12.000	8.875		9.875	6.875		3 9	3 7	112	
2	5 K20	BARRIER CURB	E	8					2 2.125					2 2.000	2.375		4 4	4 4	9	
28	5 K21	BARRIER CURB	E	20					5 7.000								5 7	5 7	163	
10	4 K22	BARRIER CURB	E	20					12 9.000								12 9	12 9	85	
2	4 K23	BARRIER CURB	E	20					8 5.000								8 5	8 5	11	
3	5 K24	BARRIER CURB	E	27	S				16.000	5.125	12.000	6.125	12.000	9.875	6.875		4 3	4 0	13	
10	4 K25	BARRIER CURB	E	20					12 3.000								12 3	12 3	82	
2	4 K26	BARRIER CURB	E	20					9 1.000								9 1	9 1	12	
465	5 R1	BARRIER CURB	E	19	S				2 6.000	3.500							2 10	2 8	1293	
465	5 R2	BARRIER CURB	E	15	S				2 6.125	3.500				2 6.000	3.000		2 10	2 9	1334	
465	5 R3	BARRIER CURB	E	19	S				16.000	6.000							0 22	0 21	849	
465	5 R4	BARRIER CURB	E	27	S					6.000	11.250	6.000	12.000	9.250	6.375		2 11	2 9	1334	
7	5 R5	BARRIER CURB	E	20					28 9.000								28 9	28 9	210	
84	5 R6	BARRIER CURB	E	20					9 9.000								9 9	9 9	854	
28	5 R7	BARRIER CURB	E	20					21 10.000								21 10	21 10	638	
28	5 R8	BARRIER CURB	E	20					28 10.000								28 10	28 10	842	
7	5 R9	BARRIER CURB	E	20					37 0.000								37 0	37 0	270	
7	5 R10	BARRIER CURB	E	20					30 0.000								30 0	30 0	219	
7	5 R11	BARRIER CURB	E	20					36 7.000								36 7	36 7	267	
64	5 C1	SLIP FORM	E	20					10 0.000								10 0	10 0	668	
		TOTALS																		
4																			1422	
4			E																1891	
5																			205	
5			E																36313	
6																			5295	
6			E																72432	
8																			9963	
8			E																1467	
W5																			25	
		TOTAL																	16910	
		TOTAL	E																112103	
		Slab on																		
		Girder																		
4																			93	
4			E																1477	
5																			205	
5			E																25800	
6																			5010	
6			E																72432	
8																			874	
8			E																1467	

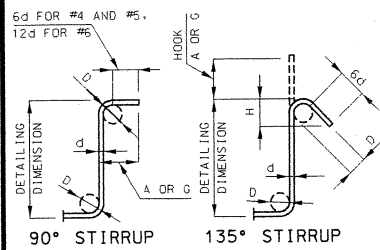
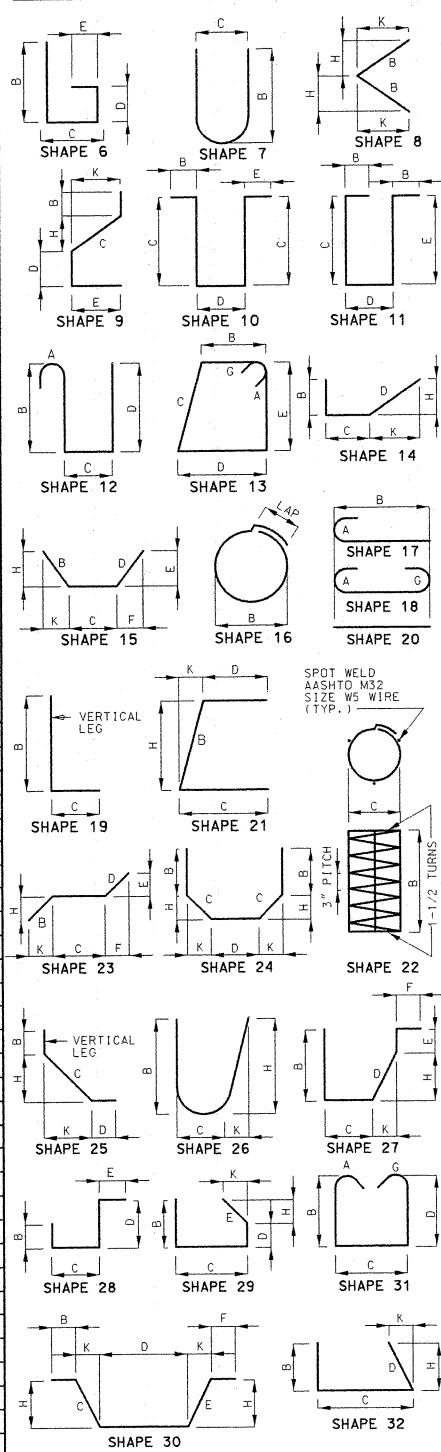
BILL OF REINFORCING STEEL

[illegible]

BILL OF REINFORCING STEEL

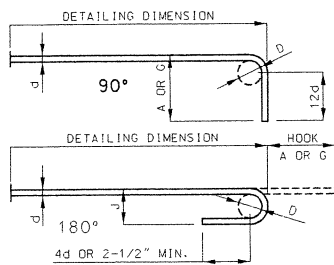
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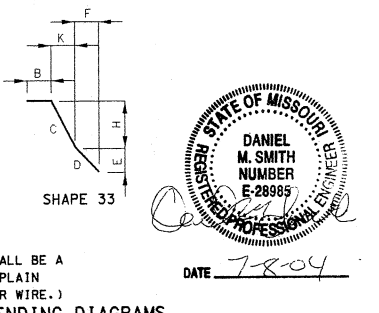
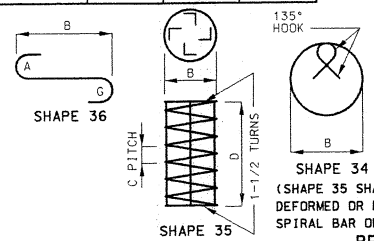
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	APPROX. H
		HOOK A OR G	HOOK A OR G	
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	12"	8"	4-1/2"

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	A	A OR G
#3	2-1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3-3/4"	7"	5"	10"
#6	4-1/2"	8"	6"	12"
#7	5-1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9-1/2"	15"	11-3/4"	19"
#10	10-3/4"	17"	13-1/4"	22"
#11	12"	19"	14-3/4"	2'-0"
#14	18-1/4"	2'-3"	21-3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH THE SAME
PROCEDURE AS FOR 90 DEG. STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE FOR
DETAILING REINFORCED CONCRETE STRUCTURES, STIRRUP AND TIE DIMENSIONS.
= 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.
ALL DIMENSIONS ARE OUT TO OUT.
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PWTWEIGHTS ARE BASED ON ACTUAL LENGTHS.
OUTER 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) = F_y 60,000 PSI.



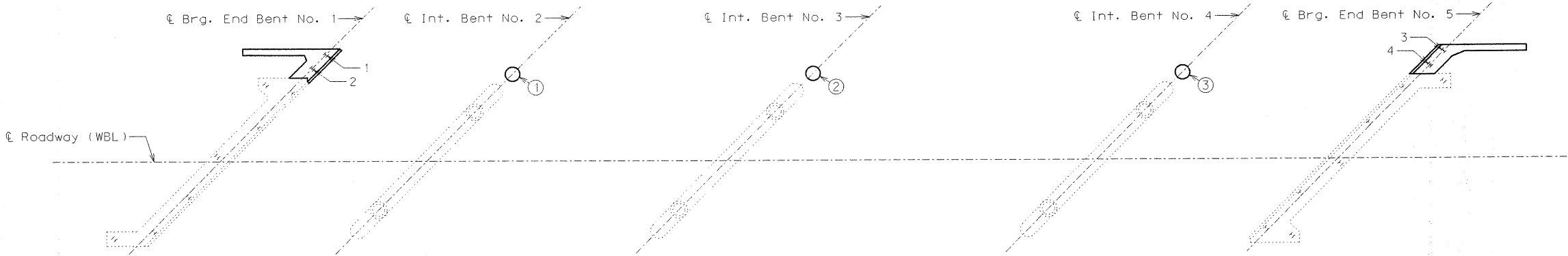
BENDING DIAGRAMS

JACKSON

COUNTY

A16083

STATE	PROJ. NO.	SHEET NO.
MO.		280



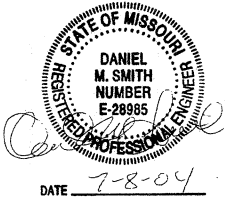
PART PLAN SHOWING
PILE NUMBERING AND DRILLED SHAFT
NUMBERING FOR RECORDING
"AS BUILT PILE" DATA AND
"AS BUILT DRILLED SHAFT" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent No. 1
1			
2			
			End Bent No. 5
3			
4			

"AS BUILT DRILLED SHAFT" DATA			
SHAFT NO.	BOTTOM OF DRILLED SHAFT (ELEV.)	BOTTOM OF ROCK SOCKET (ELEV.)	REMARKS
			Int. Bent No. 2
1			
			Int. Bent No. 3
2			
			Int. Bent No. 4
3			

NOTE: INDICATE IN REMARKS COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY
MODOT CONSTRUCTION PERSONNEL.



DATE 7-8-04