Missouri Department of Transportation
State Bridge Inspection Report

September 11, 2024
4:44:26PM

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 1778** **BRIDGE: A2094**

GENERAL STRUCTURE INFORMATION

ROUTE: MO58E	**# SPANS:** 4	**PLACE CODE:** 60752 RAYMORE CITY	
FEATURE: IS 49	**LANES ON:** 5	**LENGTH:** 275 FT 0 IN	
STATUS: P-POSTLOAD	**LANES UNDER:** 4	**MAXIMUM SPAN:** 84 FT 0 IN	
LOG MILE: 4.460	**COMPASS DIRECTION:** WEST to EAST	**APPROACH ROADWAY:** 75 FT 0 IN	
DETOUR: 22.00 MILES	**DIRECTION OF TRAFFIC:** 2-WAY TRAF	**CURB TO CURB:** 61 FT 8 IN	
NHS: NO	**FUNCTIONAL CLASS:** UR-MINOR ARTERIAL	**OUT TO OUT:** 77 FT 0 IN	
BUILT: 1968	**NBI OWNER:** MODOT	**AADT:** 35273	
REHAB: 1990	**NBI MAINTAINED:** MODOT	**AADT YEAR:** 2023	
LOCATION: S 7 T 46 R 32 W	**MAINTENANCE DISTRICT:** KC	**AADT TRUCK:** 4.1%	
LATITUDE: 38 48 47.95 (DMS)	**MAINTENANCE COUNTY:** CASS	**FUTURE AADT:** 65255	
LONGITUDE: 94 30 13.93 (DMS)	**SUB AREA:** 7C03	**FUTURE AADT YEAR:** 2043	

BRIDGE INSPECTION INFORMATION

DATE: 11/15/2023 **RESPONSIBILITY:** DISTRICT
FREQUENCY: 24 **CALCULATED INTERVAL**:** 24
TEAM LEADER: TIMOTHY HAZLETT **ELEMENT:** NO
INSPECTOR 2: JARED YOST **INSPECTOR 4:**
INSPECTOR 3:

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

GENERAL INSPECTION COMMENTS

FRACTURE CRITICAL INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

INDEPTH INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

FRACTURE CRITICAL INSPECTION COMMENTS

INDEPTH INSPECTION COMMENTS

SPECIAL INSPECTION INFORMATION

DATE: 03/24/2014 **RESPONSIBILITY:** BRIDGEDIV **CATEGORY:** QUALITY ASSURANCE
FREQUENCY: 999 **CALCULATED INTERVAL**:** **NBI:** NO
TEAM LEADER: **INSPECTOR 3:** RICHARD KINGERY **METHOD:**
INSPECTOR 2: PATRICK MARTENS **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

UNDERWATER INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

SPECIAL INSPECTION COMMENTS

UNDERWATER INSPECTION COMMENTS

OTHER SPECIAL INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

OTHER UNDERWATER INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 1778** **BRIDGE: A2094**

STRUCTURE POSTING

APPROVED CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:**
COMMENTS: (GRIMMA1, 12/24/2015)--LPL 12/23/2015 MODOT S-1

FIELD CATEGORY: S-C3 WEIGHT LIMIT 60 TONS.
Ton 1: 60 **Ton 2:** **Ton 3:** **PROBLEM:** **PROBLEM DIRECTION:**
COMMENTS:

GENERAL COMMENTS/MAJOR RATED ITEMS

GENERAL COMMENTS: (BOWDEJ1, 09/22/2008)--(53'-84'-84'-53') CONT COMP PL GDR SPANS (WIDENED)

[ITEM 58] DECK: 6-SATISFACTORY CONDITION
RATING : 05/18/2001
COMMENTS: (OTISL1, 11/14/2019)--MANY T CRACKS-SPALLS

[ITEM 59] SUPER: 6-SATISFACTORY CONDITION
RATING : 05/18/2001
COMMENTS: (OTISL1, 11/30/2017)--INITIAL SECTION LOSS AT ABUTS

[ITEM 60] SUB: 5-FAIR CONDITION
RATING : 11/30/2017
COMMENTS: (OTISL1, 11/23/2021)--HEAVY DETERIORATION @ WINGS (SW & NE CORNERS)
(OTISL1, 11/23/2021)--MAJOR CRK AND LEACHING- SPALLS AT TURN BACK WINGS WITH DEEP DELAMINATION. APPROACH SHIFTING

[ITEM 61] BANK/CHANNEL: N-NOT APPLIC NO WATRWAY
RATING : 05/18/2001
COMMENTS:

[ITEM 113] SCOUR: N-NOT APPLIC NOT WATERW
RATING : 05/18/2001
EVALUATION TYPE :
COMMENTS:

[ITEM 71] WATERWAY ADEQUACY: NOT APPLICABLE
RATING : 05/18/2001
COMMENTS:

[ITEM 72] APPRRDWY ALIGNMENT: 8-VERYGOOD
RATING : 05/18/2001
COMMENTS:

RAILING AND APPROACH PAVEMENT COMPONENTS AND RATINGS

[ITEM 36A] BRIDGE RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *05/18/2001* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
REINFORCED CONCRETE	SAFETY BARRIER CURB	BOTH	(OTISL1, 11/14/2019)--COLLISION DAMAGE TO NE APPROACH BARRIER

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
REBAR EXPOSED	RANDOM		FEW	
SPALLS	RANDOM		FEW	(DENNIB1, 04/19/2012)--SW AND NE CORNER
VERTICAL CRACKS	THROUGHOUT		FEW	

[ITEM 36B] TRANSITION RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *11/18/2015* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	THRIE BEAM TO W-BEAM	ALL	

[ITEM 36C] APPROACH RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *05/18/2001* ***COMMENTS:***

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 1778** **BRIDGE: A2094**

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	W-BEAM	ALL	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
COLLISION DAMAGE	THROUGHOUT		MINOR	(OTISL1, 11/23/2021)--NW SIDE
REINFORCED CONCRETE	SLOPED BARRIER CURB	ALL		

[ITEM 36D] RAIL END TREATMENT RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *11/18/2015* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	BREKAWAY SYSTEM	NORTHWEST	
GALVANIZED STEEL	BREKAWAY SYSTEM	SOUTHEAST	

APPROACH PAVEMENT: *Overall condition assigned for each approach pavemenet component is shown below.

MATERIAL	CONSTRUCTION	DIRECTION	CONDITION*	COMMENTS
ASPHALT	BITUMINOUS MAT	BOTH	FAIR	(OTISL1, 11/14/2019)--GOOD (OTISL1, 11/23/2021)--APPROACH SHIFTING

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
DETERIORATION	AT ABUTMENTS		MODERATE	

DRAINAGE, EXPANSION DEVICES, BANK/SLOPE, AND DECK PROTECTIVE COMPONENTS

DECK PROTECTIVE COMPONENTS:

SERIES TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	THICKNESS	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
MAIN SERIES-1	*WEARING SURFACE*	*PLAIN CONCRETE*	*MONOLITHIC*				*FAIR*
COMMENT:							
	DECK PROTECTION	*EPOXY POLYMER*	*COATED REBAR*				
COMMENT:							
	MEMBRANE	*NOTAPPLICABLE*	*NONE*				
COMMENT:							

DRAINAGE COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
DRAINAGE	*GALVANIZED STEEL*	*FLOOR DRAIN*		(OTISL1, 11/23/2021)--DEEP WATER STANDING AROUND BENTS 2 & 4

EXPANSION DEVICE COMPONENTS:

SUB UNIT-#	SUB LABEL	COMPONENT	MATERIAL	CONSTRUCTION	GAP	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION

COMMENT:

BANK/SLOPE PROTECTION COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
BANK PROTECTION	*PLAIN CONCRETE*	*PAVEDSLOPE*	*BOTH*	(OTISL1, 11/23/2021)--COLLAPSING SW SIDE

DECK COMPONENTS

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-1	*DECK*	*REINFORCED CONCRETE*	*CAST-IN-PLACE*	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DIAGONAL CRACKS	THROUGHOUT		MINOR		

DistrictAbbr = KC and Design_No = a2094 and County = CASS

EFFLORESCENCE	BOTTOM		FEW	
EFFLORESCENCE	THROUGHOUT		MINOR	
SPALLS	THROUGHOUT		FEW	
TRANSVERSE CRACKS	THROUGHOUT		MANY	
WEAR	WHEEL LINES		LIGHT	

MAIN SPANS-2 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EFFLORESCENCE	BOTTOM		FEW		
TRANSVERSE CRACKS	THROUGHOUT		MANY		
WEAR	WHEEL LINES		LIGHT		

MAIN SPANS-3 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EFFLORESCENCE	BOTTOM		FEW		
TRANSVERSE CRACKS	THROUGHOUT		MANY		
WEAR	WHEEL LINES		LIGHT		

MAIN SPANS-4 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DIAGONAL CRACKS	AT ABUTMENTS		RANDOM		
DIAGONAL CRACKS	THROUGHOUT		MINOR		
EFFLORESCENCE	BOTTOM		FEW		
EFFLORESCENCE	THROUGHOUT		MINOR		
SCALING	RANDOM		LIGHT		(YOSTJ1, 02/23/2024)--IN SIDEWALK
EFFLORESCENCE	THROUGHOUT		MINOR		
SCALING	RANDOM		LIGHT		(YOSTJ1, 02/23/2024)--IN SIDEWALK
TRANSVERSE CRACKS	THROUGHOUT		MANY		
WEAR	WHEEL LINES		LIGHT		

SUPERSTRUCTURE COMPONENTS

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
MAIN SERIES-1	*CONTINUOUS SPAN*	*STEEL*	*PLATE GIRDERS*		*(SNYDEJ2, 12/09/2004)--SPAN 4 ONE GIRDER HAS LIGHT CORROSION AT INTEGRAL INTERFACE (WERNEW1, 05/11/2011)--INITIAL SECTION LOSS AT ABUT 4, GDR 6*

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-1	COMPOSITE	53 FT 4 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
RUSTING	THROUGHOUT		MINOR		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-2	COMPOSITE	84 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-3	COMPOSITE	84 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-4	COMPOSITE	53 FT 4 IN	NO	(POPAM1, 05/23/2012)--ONE GIRDER HAS LIGHT CORROSION @ INTEGRAL INTERFACE INITIAL SECTION LOSS @ ABUT 4, GDR 6

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
SECTION LOSS	GDR6		MINOR		(MARTEP, 03/24/2014)--AT ABUTMENT ENCASEMENT
SECTION LOSS	GDR8		MINOR		(MARTEP, 03/24/2014)--AT ABUT ENCASEMENT

SUBSTRUCTURE COMPONENTS

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
ABUTMENT-1	RA-38 DEGREES	53 FT 7 IN	REINFORCED CONCRETE	INTEGRAL		(POPAM1, 05/23/2012)--LARGE SPALL, SOUTHWEST CORNER (OTISL1, 11/23/2021)--APPROACH SHIFTING

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BACKWALL	REINFORCED CONCRETE	CAST-IN-PLACE			
LEACHING	AT JOINTS		MINOR		
LEACHING	THROUGHOUT		MODERATE		
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
DETERIORATION	EDGE		MINOR		(YOSTJ1, 02/23/2024)--MINOR SECTION LOSS IN EXPOSED REBAR
VERTICAL CRACKS	THROUGHOUT		MODERATE		
PILING	STEEL	H-SHAPE			
TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
DELAMINATION	THROUGHOUT		LARGE		
DETERIORATION	RANDOM		MEDIUM		
EFFLORESCENCE	THROUGHOUT		MEDIUM		
SPALLS	THROUGHOUT		LARGE		
EXPANSION BEARING	ELASTOMERIC	LAMINATED NEOPRENE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-2	RA-38 DEGREES	49 FT 3 IN	REINFORCED CONCRETE	MULTIPLE COLUMN

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
DETERIORATION	COLUMN		MEDIUM		(YOSTJ1, 02/26/2024)--LARGE SPALLS WITH EXPOSED REBAR
FOOTING	REINFORCED CONCRETE	SPREAD			
FIXED BEARING	ELASTOMERIC	LAMIN NEOP/PTFE(ROTATI			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-3	RA-38 DEGREES	49 FT 3 IN	REINFORCED CONCRETE	MULTIPLE COLUMN

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
FOOTING	REINFORCED CONCRETE	SPREAD			
FIXED BEARING	ELASTOMERIC	LAMIN NEOP/PTFE(ROTATI			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-4 *RA-38 DEGREES* *49 FT 3 IN* *REINFORCED CONCRETE* *MULTIPLE COLUMN*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
COLUMN	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FOOTING	REINFORCED CONCRETE	H-PILE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FIXED BEARING	ELASTOMERIC	LAMIN NEOP/PTFE(ROTATI			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

ABUTMENT-5 *RA-38 DEGREES* *53 FT 7 IN* *REINFORCED CONCRETE* *INTEGRAL* *(REHAGM, 11/06/2003)--CRACKING AND LEACHING UNDER SOME GIRDERS*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BACKWALL	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
VERTICAL CRACKS	THROUGHOUT		FEW		
PILING	STEEL	H-SHAPE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DELAMINATION	THROUGHOUT		HEAVY		
EFFLORESCENCE	THROUGHOUT		MEDIUM		
REBAR EXPOSED	THROUGHOUT		MODERATE		
SPALLS	THROUGHOUT		LARGE		
EXPANSION BEARING	ELASTOMERIC	LAMINATED NEOPRENE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

OVER/UNDER ROUTES CLEARANCE INFORMATION

CLEARANCES OVER DECK

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 1778** **BRIDGE: A2094**

CLEARANCES UNDER BRIDGE

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
1	IS 49 S	2	1-WAY TRAF	13 FT 7 IN	18 FT 6 IN	4143

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
ACTUAL	16 FT 9 IN		04/17/2008	

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
2	IS 49 N	2	1-WAY TRAF	13 FT 7 IN	18 FT 6 IN	4144

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
ACTUAL	15 FT 3 IN		06/22/2017	

STRUCTURE PAINT INFORMATION

CONDITION: POOR **RUST AMOUNT :** 4=10% OF SURFACE RUSTED **STEEL TONS :** 205

ORIGINAL PAINT	CONTRACT REPAINT	DEPARTMENT REPAINT	
PAINT TYPE :	**PAINT TYPE :** C SYSTEM	**PAINT TYPE :**	**MANUFACTURE :**
NAME :	**NAME :** INORGANIC ZINC/VINYL	**NAME :**	**SURFACE PREP :**
PAINT COLOR :	**PAINT COLOR :** GRAY	**PAINT COLOR :**	
PAINT YEAR :	**PAINT YEAR :** 1999	**PAINT YEAR :**	
MILS :	**MILS :** 9	**MILS :**	

REQUESTED WORK ITEMS

GENERAL WORK COMMENTS:

RESPONSIBILITY	*LOCATION*	*ITEM*	*CATEGORY*	*PRIORITY*	*DATE*	*WORK ITEM COMMENT*
DISTRICT SPECIAL	ABUTMENT	SEAL JTS - RODS/HOT POUR	DECK	3	11/18/2021	
DISTRICT SPECIAL	BENT-COLUMN	REPAIR COLUMN OR SHAFT	SUBSTRUCTURE	3	11/18/2021	(OTISL1, 11/23/2021)--CREATE BETTER DRAINAGE AROUND COLUMNS @ BENTS 2 & 4
DISTRICT SPECIAL	ROADWAY SURFACE	SEAL DECK WITH IN DECK	DECK	3	01/05/2022	

UTILITY ATTACHMENTS

UTILITY	*OWNER*	*METHOD*	*MEASUREMENT TYPE*	*VALUE*	*NUMBER*	*UTILITY ATTACHMENT COMMENT*

PROGRAM NOTES INFORMATION

YEAR	PROJECT #	MONTH LET	YEAR LET	ITEMS	COMMENT

DistrictAbbr = KC and Design_No = a2094 and County = CASS

COMPUTER GENERATED RATINGS AND DEFICIENCY ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

Rated Item	Rating	Rating Date
[Item 67] Structure Evaluation Rating:	5-BETTER THAN MINIMUM	12/29/2017
[Item 68] Deck Geometry Rating:	4-MEETS MINIMUM TOLERABLE	2/10/2014
[Item 69] Underclearance:	4-MEETS MINIMUM TOLERABLE	12/15/2021
Sufficiency Rating:	65.0%	12/15/2021
Deficiency:	NOT DEFICIENT	5/18/2001
Funding Eligibility:		----
Estimated New Structure Length:		----
Estimated Structure Cost:		----
Estimated Total Project Cost:		----
Year of Cost Estimate:		----

NOTE: The above structure length and cost estimates are computer generated using algorithims in the TMS system. These algorthims are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.

ADVANCED SIGN INFORMATION

SIGN #	SIGN TYPE	PROBLEM	PROBLEM DIRECTION
1			

OUTFALL INSPECTION INFORMATION

 # OUTFALLS: **INSPECTOR:**
STATUS: **DATE:**
NOTES:

Missouri Department of Transportation
State Bridge Inspection Report

March 26, 2024
12:17:32PM

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32371** **BRIDGE: A7352**

GENERAL STRUCTURE INFORMATION

ROUTE: IS49N	**# SPANS:** 3	**PLACE CODE:** 04384 BELTON CITY	
FEATURE: CST 163RD ST	**LANES ON:** 2	**LENGTH:** 305 FT 0 IN	
STATUS: A-OPEN	**LANES UNDER:** 7	**MAXIMUM SPAN:** 139 FT 0 IN	
LOG MILE: 175.620	**COMPASS DIRECTION:** WEST to EAST	**APPROACH ROADWAY:** 38 FT 0 IN	
DETOUR: 1.00 MILES	**DIRECTION OF TRAFFIC:** 1-WAY TRAF	**CURB TO CURB:** 38 FT 0 IN	
NHS: YES	**FUNCTIONAL CLASS:** UR-INTERSTATE	**OUT TO OUT:** 40 FT 8 IN	
BUILT: 2008	**NBI OWNER:** MODOT	**AADT:** 30867	
REHAB:	**NBI MAINTAINED:** MODOT	**AADT YEAR:** 2023	
LOCATION: S 12 T 46 R 33 W	**MAINTENANCE DISTRICT:** KC	**AADT TRUCK:** 17.2%	
LATITUDE: 38 49 31.27 (DMS)	**MAINTENANCE COUNTY:** CASS	**FUTURE AADT:** 54017	
LONGITUDE: 94 31 13.73 (DMS)	**SUB AREA:** 7C03	**FUTURE AADT YEAR:** 2043	

BRIDGE INSPECTION INFORMATION

DATE: 11/15/2023 **RESPONSIBILITY:** DISTRICT
FREQUENCY: 24 **CALCULATED INTERVAL**:** 24
TEAM LEADER: TIMOTHY HAZLETT **ELEMENT:** YES
INSPECTOR 2: JARED YOST **INSPECTOR 4:**
INSPECTOR 3:

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

GENERAL INSPECTION COMMENTS

(HOLZBJ, 08/13/2008)--THE LETTING DATE OF 7/8/2008 HAS BEEN USED AS AN INITIAL DEFAULT INSPECTION DATE FOR NBI SUBMITTAL PURPOSES.

FRACTURE CRITICAL INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

FRACTURE CRITICAL INSPECTION COMMENTS

INDEPTH INSPECTION INFORMATION

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TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

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INDEPTH INSPECTION COMMENTS

SPECIAL INSPECTION INFORMATION

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** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

SPECIAL INSPECTION COMMENTS

UNDERWATER INSPECTION INFORMATION

DATE: **RESPONSIBILITY:** **CATEGORY:**
FREQUENCY: **CALCULATED INTERVAL**:** **NBI:**
TEAM LEADER: **INSPECTOR 3:** **METHOD:**
INSPECTOR 2: **INSPECTOR 4:**

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

UNDERWATER INSPECTION COMMENTS

OTHER SPECIAL INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

OTHER UNDERWATER INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

DistrictAbbr = KC and Design_No = a7352 and County = CASS

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32371** **BRIDGE: A7352**

STRUCTURE POSTING

APPROVED CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:**
COMMENTS:

FIELD CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:** **PROBLEM:** **PROBLEM DIRECTION:**
COMMENTS:

GENERAL COMMENTS/MAJOR RATED ITEMS

GENERAL COMMENTS: (OTISL1, 11/19/2015)--(83'-139'-83') CONT COMP PL GDR SPANS

[ITEM 58] DECK: 7-GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--T CRACKING WITH EFFL.
RATING : 12/05/2017

[ITEM 59] SUPER: 7-GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--FEW INSIGNIFICANT FINE CRACKS IN DIAPHS
RATING : 12/05/2017

[ITEM 60] SUB: 8-VERY GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--INSIGN. VERTICAL CRACKING IN END BENTS
RATING : 12/05/2017

[ITEM 61] BANK/CHANNEL: N-NOT APPLIC NO WATRWAY **COMMENTS:**
RATING : 06/09/2008

[ITEM 113] SCOUR: N-NOT APPLIC NOT WATERW **COMMENTS:**
RATING : 06/09/2008
EVALUATION TYPE :

[ITEM 71] WATERWAY ADEQUACY: NOT APPLICABLE **COMMENTS:**
RATING : 06/09/2008

[ITEM 72] APPRRDWY ALIGNMENT: 8-VERYGOOD **COMMENTS:**
RATING : 06/09/2008

RAILING AND APPROACH PAVEMENT COMPONENTS AND RATINGS

[ITEM 36A] BRIDGE RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *06/09/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
REINFORCED CONCRETE	SAFETY BARRIER CURB	BOTH	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
VERTICAL CRACKS	THROUGHOUT		FEW	

[ITEM 36B] TRANSITION RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *06/09/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	THRIE BEAM TO W-BEAM	BOTH-SOUTH	

[ITEM 36C] APPROACH RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *06/09/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	W-BEAM	BOTH-SOUTH	
GALVANIZED STEEL	W-BEAM	NORTHEAST	

[ITEM 36D] RAIL END TREATMENT RATING: MEETS CURRENT STANDARDS-1 *RATING :* 06/09/2008 *COMMENTS:*

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	BREKAWAY SYSTEM	BOTH-SOUTH	

APPROACH PAVEMENT: *Overall condition assigned for each approach pavemenet component is shown below.

MATERIAL	CONSTRUCTION	DIRECTION	CONDITION*	COMMENTS
REINFORCED CONCRETE	SLAB	BOTH	GOOD	(OTISL1, 12/05/2017)--OPEN JT. BRIDGE SLAB ROADWAY PAVEMENT LARGE 3" GAP

DRAINAGE, EXPANSION DEVICES, BANK/SLOPE, AND DECK PROTECTIVE COMPONENTS

DECK PROTECTIVE COMPONENTS:

SERIES TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	THICKNESS	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
MAIN SERIES-1	WEARING SURFACE	PLAIN CONCRETE	MONOLITHIC				
COMMENT:							
	DECK PROTECTION	EPOXY POLYMER	COATED REBAR				
COMMENT:							
	MEMBRANE	NOTAPPLICABLE	NONE				
COMMENT:							
	SECONDARY DECK PROTECTION	LIQUID SEALANT	INTERNALLY SEALED		2020	SILANE	
COMMENT:							

DRAINAGE COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
DRAINAGE	GEOTEXTILE FABRIC	VERTICAL DRAIN-END BENT		(OTISL1, 11/23/2021)--CAUSING EROSION UNDER SPAN 1
DRAINAGE	GALVANIZED STEEL	FLOOR DRAIN		

EXPANSION DEVICE COMPONENTS:

SUB UNIT-#	SUB LABEL	COMPONENT	MATERIAL	CONSTRUCTION	GAP	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
COMMENT:								

BANK/SLOPE PROTECTION COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS

DECK COMPONENTS

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-1	DECK	REINFORCED CONCRETE	CAST-IN-PLACE-P/C FORMS	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

EFFLORESCENCE	THROUGHOUT		MINOR	
TRANSVERSE CRACKS	THROUGHOUT		FEW	

MAIN SPANS-2 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE-P/C FORMS*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EFFLORESCENCE	THROUGHOUT		MINOR		
TRANSVERSE CRACKS	THROUGHOUT		FEW		

MAIN SPANS-3 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE-P/C FORMS*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EFFLORESCENCE	THROUGHOUT		MINOR		
TRANSVERSE CRACKS	THROUGHOUT		FEW		

SUPERSTRUCTURE COMPONENTS

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
MAIN SERIES-1	*CONTINUOUS SPAN*	*STEEL*	*PLATE GIRDERS*		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-1	COMPOSITE	83 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-2	COMPOSITE	139 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-3	COMPOSITE	83 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SUBSTRUCTURE COMPONENTS

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
ABUTMENT-1		*40 FT 8 IN*	*REINFORCED CONCRETE*	*INTEGRAL*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DIAPHRAGM	STEEL	OTHER			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
VERTICAL CRACKS	THROUGHOUT		FEW		
FIXED BEARING	ELASTOMERIC	LAMINATED NEOPRENE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
PILING	STEEL	H-SHAPE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

BENT-2 *38 FT 8 IN* *REINFORCED CONCRETE* *MULTIPLE COLUMN*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

COLUMN	REINFORCED CONCRETE	INTEGRAL CAST-IN-PLACE				
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***	
DIAPHRAGM	STEEL	OTHER				
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***	
FIXED BEARING	ELASTOMERIC	PLAIN NEOPRENE				
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***	
FOOTING	REINFORCED CONCRETE	SPREAD				
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***	

BENT-3 *38 FT 8 IN* *REINFORCED CONCRETE* *MULTIPLE COLUMN*

CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
ASSOCIATED COMPONENT	***MATERIAL***	***CONSTRUCTION***			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
COLUMN	REINFORCED CONCRETE	INTEGRAL CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
DIAPHRAGM	STEEL	OTHER			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
FIXED BEARING	ELASTOMERIC	PLAIN NEOPRENE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***

ABUTMENT-4 *40 FT 8 IN* *REINFORCED CONCRETE* *INTEGRAL*

CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
ASSOCIATED COMPONENT	***MATERIAL***	***CONSTRUCTION***			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
DIAPHRAGM	STEEL	OTHER			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
VERTICAL CRACKS	THROUGHOUT		FEW		
FIXED BEARING	ELASTOMERIC	LAMINATED NEOPRENE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
PILING	STEEL	H-SHAPE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***
TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	***LOCATION 1***	***LOCATION 2***	***SEVERITY***	***MEASUREMENT***	***COMMENT***

OVER/UNDER ROUTES CLEARANCE INFORMATION

CLEARANCES OVER DECK

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32371** **BRIDGE: A7352**

CLEARANCES UNDER BRIDGE

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
1	CST 163RD ST W	4	2-WAY TRAF	2 FT 0 IN	2 FT 0 IN	100106

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	17 FT 3 IN			

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
2	CST 163RD ST E	3	2-WAY TRAF	2 FT 0 IN	2 FT 0 IN	100107

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	17 FT 3 IN			

STRUCTURE PAINT INFORMATION

CONDITION: VERY GOOD **RUST AMOUNT :** 9=.03% OF SURFACE RUSTED **STEEL TONS :** 188

ORIGINAL PAINT	CONTRACT REPAINT	DEPARTMENT REPAINT	
PAINT TYPE : G SYSTEM	**PAINT TYPE :**	**PAINT TYPE :**	**MANUFACTURE :**
NAME : ZINC/EPOXY/ACRYLIC	**NAME :**	**NAME :**	**SURFACE PREP :**
PAINT COLOR : GRAY	**PAINT COLOR :**	**PAINT COLOR :**	
PAINT YEAR : 2009	**PAINT YEAR :**	**PAINT YEAR :**	
MILS :	**MILS :**	**MILS :**	

REQUESTED WORK ITEMS

GENERAL WORK COMMENTS:

RESPONSIBILITY	LOCATION	ITEM	CATEGORY	PRIORITY	DATE	WORK ITEM COMMENT
DISTRICT ROUTINE	APPROACH ROADWAY	SEAL JOINTS - HOT POUR	APPROACH	2	11/18/2021	
DISTRICT ROUTINE	SEE COMMENT	REPAIR EROSION	SLOPE	2	11/18/2021	(YOSTJ1, 02/27/2024)--ALL CORNERS UNDER APPROACH SLABS
DISTRICT SPECIAL	ROADWAY SURFACE	SEAL WITH SILANE	DECK	3	08/13/2026	

UTILITY ATTACHMENTS

UTILITY	OWNER	METHOD	MEASUREMENT TYPE	VALUE	NUMBER	UTILITY ATTACHMENT COMMENT

PROGRAM NOTES INFORMATION

YEAR	PROJECT #	MONTH LET	YEAR LET	ITEMS	COMMENT

COMPUTER GENERATED RATINGS AND DEFICIENCY ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

Rated Item	Rating	Rating Date
[Item 67] Structure Evaluation Rating:	7-BETTER THAN PRESENT MIN	12/29/2017
[Item 68] Deck Geometry Rating:	6-EQ TO PRESENT MIN CRITR	6/11/2008
[Item 69] Underclearance:	3-BASICALLY INTOL CORRECT	6/9/2008
Sufficiency Rating:	91.0%	2/26/2024
Deficiency:	FUNCTIONAL	3/14/2018
Funding Eligibility:		----
Estimated New Structure Length:		----
Estimated Structure Cost:		----
Estimated Total Project Cost:		----
Year of Cost Estimate:		----

NOTE: The above structure length and cost estimates are computer generated using algorithims in the TMS system. These algorthims are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.

ADVANCED SIGN INFORMATION

SIGN #	SIGN TYPE	PROBLEM	PROBLEM DIRECTION
1			

OUTFALL INSPECTION INFORMATION

 # OUTFALLS: **INSPECTOR:**

STATUS: **DATE:**

NOTES:

Missouri Department of Transportation
State Bridge Inspection Report

March 26, 2024
12:18:30PM

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32395** **BRIDGE: A7353**

GENERAL STRUCTURE INFORMATION

ROUTE:	IS49S	**# SPANS:**	3
FEATURE:	CST 163RD ST	**LANES ON:**	2
STATUS:	A-OPEN	**LANES UNDER:**	7
LOG MILE:	8.300	**COMPASS DIRECTION:**	WEST to EAST
DETOUR:	1.00 MILES	**DIRECTION OF TRAFFIC:**	1-WAY TRAF
NHS:	YES	**FUNCTIONAL CLASS:**	UR-INTERSTATE
BUILT:	2008	**NBI OWNER:**	MODOT
REHAB:		**NBI MAINTAINED:**	MODOT
LOCATION:	S 12 T 46 R 33 W	**MAINTENANCE DISTRICT:**	KC
LATITUDE:	38 49 30.78 (DMS)	**MAINTENANCE COUNTY:**	CASS
LONGITUDE:	94 31 14.34 (DMS)	**SUB AREA:**	7C03

PLACE CODE:	04384 BELTON CITY
LENGTH:	306 FT 0 IN
MAXIMUM SPAN:	139 FT 0 IN
APPROACH ROADWAY:	38 FT 0 IN
CURB TO CURB:	38 FT 0 IN
OUT TO OUT:	40 FT 8 IN
AADT:	44561
AADT YEAR:	2023
AADT TRUCK:	11.9%
FUTURE AADT:	77982
FUTURE AADT YEAR:	2043

BRIDGE INSPECTION INFORMATION

DATE:	11/15/2023	**RESPONSIBILITY:**	DISTRICT
FREQUENCY:	24	**CALCULATED INTERVAL**:**	24
TEAM LEADER:	TIMOTHY HAZLETT	**ELEMENT:**	YES
INSPECTOR 2:	JARED YOST	**INSPECTOR 4:**	
INSPECTOR 3:			

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

GENERAL INSPECTION COMMENTS

(HOLZBJ, 08/13/2008)--THE LETTING DATE OF 6/1/2008 HAS BEEN USED AS AN INITIAL DEFAULT INSPECTION DATE FOR NBI SUBMITTAL PURPOSES.

FRACTURE CRITICAL INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

FRACTURE CRITICAL INSPECTION COMMENTS

INDEPTH INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

INDEPTH INSPECTION COMMENTS

SPECIAL INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

SPECIAL INSPECTION COMMENTS

UNDERWATER INSPECTION INFORMATION

DATE:		**RESPONSIBILITY:**	**CATEGORY:**
FREQUENCY:		**CALCULATED INTERVAL**:**	**NBI:**
TEAM LEADER:		**INSPECTOR 3:**	**METHOD:**
INSPECTOR 2:		**INSPECTOR 4:**	

** When calculated interval exceeds the frequency, a justification comment per BIRM is required.

UNDERWATER INSPECTION COMMENTS

OTHER SPECIAL INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

OTHER UNDERWATER INSPECTIONS

DATE	FREQUENCY	CATEGORY	NBI	CALCULATED INTERVAL	RESPONSIBILITY	METHOD

DistrictAbbr = KC and Design_No = a7353 and County = CASS

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32395** **BRIDGE: A7353**

STRUCTURE POSTING

APPROVED CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:**
COMMENTS:

FIELD CATEGORY: S-1 NO POSTING REQUIRED
Ton 1: **Ton 2:** **Ton 3:** **PROBLEM:** **PROBLEM DIRECTION:**
COMMENTS:

GENERAL COMMENTS/MAJOR RATED ITEMS

GENERAL COMMENTS: (BOWDEJ1, 09/30/2008)--(83'-139'-83') CONT PL GDR SPANS (AWARDED 06/25/08 - CHECK ALL INFORMATION, UPDATE TMS)

[ITEM 58] DECK: 7-GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--T CRACKS IN OVERHANGS WITH EFFL.
RATING : 12/05/2017

[ITEM 59] SUPER: 7-GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--MINOR RUST WITH NO SECTION LOSS
RATING : 12/05/2017

[ITEM 60] SUB: 7-GOOD CONDITION **COMMENTS:** (OTISL1, 12/05/2017)--MINOR LEACHING THROUGH THE CONCRETE DIAP.
RATING : 12/05/2017

[ITEM 61] BANK/CHANNEL: N-NOT APPLIC NO WATRWAY **COMMENTS:**
RATING : 07/30/2008

[ITEM 113] SCOUR: N-NOT APPLIC NOT WATERW **COMMENTS:**
RATING : 07/30/2008
EVALUATION TYPE :

[ITEM 71] WATERWAY ADEQUACY: NOT APPLICABLE **COMMENTS:**
RATING : 07/30/2008

[ITEM 72] APPRRDWY ALIGNMENT: 8-VERYGOOD **COMMENTS:**
RATING : 07/30/2008

RAILING AND APPROACH PAVEMENT COMPONENTS AND RATINGS

[ITEM 36A] BRIDGE RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *07/30/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
REINFORCED CONCRETE	SAFETY BARRIER CURB	BOTH	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
VERTICAL CRACKS	RANDOM		FEW	

[ITEM 36B] TRANSITION RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *07/30/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	THRIE BEAM TO W-BEAM	BOTH-NORTH	

[ITEM 36C] APPROACH RAILING RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *07/30/2008* ***COMMENTS:***

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	W-BEAM	BOTH-NORTH	

[ITEM 36D] RAIL END TREATMENT RATING: *MEETS CURRENT STANDARDS-1* ***RATING :*** *07/30/2008* ***COMMENTS:***

DistrictAbbr = KC and Design_No = a7353 and County = CASS

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32395** **BRIDGE: A7353**

MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
GALVANIZED STEEL	BREKAWAY SYSTEM	BOTH-NORTH	

APPROACH PAVEMENT: *Overall condition assigned for each approach pavemenet component is shown below.

MATERIAL	CONSTRUCTION	DIRECTION	CONDITION*	COMMENTS
REINFORCED CONCRETE	SLAB	BOTH		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	COMMENT
SPALLS	THROUGHOUT		MINOR	(OTISL1, 12/05/2017)--OPEN JT. BRIDGE SLAB ROADWAY PAVEMTN LARGE 3" GAP

DRAINAGE, EXPANSION DEVICES, BANK/SLOPE, AND DECK PROTECTIVE COMPONENTS

DECK PROTECTIVE COMPONENTS:

SERIES TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	THICKNESS	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
MAIN SERIES-1	*WEARING SURFACE*	*PLAIN CONCRETE*	*MONOLITHIC*		*2008*		*GOOD*
COMMENT:							
	DECK PROTECTION	*EPOXY POLYMER*	*COATED REBAR*		*2008*		*GOOD*
COMMENT:							
	MEMBRANE	*NOTAPPLICABLE*	*NONE*		*2008*		*GOOD*
COMMENT:							
	SECONDARY DECK PROTECTION	*LIQUID SEALANT*	*INTERNALLY SEALED*		*2020*	*SILANE*	
COMMENT:							

DRAINAGE COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS
DRAINAGE	*GEOTEXTILE FABRIC*	*VERTICAL DRAIN-END BENT*		
DRAINAGE	*STEEL*	*FLOOR DRAIN*		

EXPANSION DEVICE COMPONENTS:

SUB UNIT-#	SUB LABEL	COMPONENT	MATERIAL	CONSTRUCTION	GAP	YEAR APPLIED	MANUFACTURE	OVERALL CONDITION
COMMENT:								

BANK/SLOPE PROTECTION COMPONENTS:

COMPONENT	MATERIAL	CONSTRUCTION	DIRECTION	COMMENTS

DECK COMPONENTS

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-1	*DECK*	*REINFORCED CONCRETE*	*CAST-IN-PLACE-P/C FORMS*	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REFLECTIVE CRACKS	THROUGHOUT		RANDOM		

SPAN TYPE-#	COMPONENT	MATERIAL	CONSTRUCTION	COMMENTS
MAIN SPANS-2	*DECK*	*REINFORCED CONCRETE*	*CAST-IN-PLACE-P/C FORMS*	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

EFFLORESCENCE	THROUGHOUT	FEW
REFLECTIVE CRACKS	THROUGHOUT	RANDOM
TRANSVERSE CRACKS	THROUGHOUT	FEW

MAIN SPANS-3 *DECK* *REINFORCED CONCRETE* *CAST-IN-PLACE-P/C FORMS*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
REFLECTIVE CRACKS	THROUGHOUT		RANDOM		

SUPERSTRUCTURE COMPONENTS

SERIES TYPE-#	SPAN TYPE	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
MAIN SERIES-1	*CONTINUOUS SPAN*	*STEEL*	*PLATE GIRDERS*		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-1	COMPOSITE	83 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
RUSTING	BOTTOM FLANGE		MINOR		

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-2	COMPOSITE	139 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SPAN	COMPOSITE INDICATOR	LENGTH	WEATHERING STEEL	COMMENTS
MAIN SPANS-3	COMPOSITE	83 FT 0 IN	NO	

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
RUSTING	BOTTOM FLANGE		MINOR		

SUBSTRUCTURE COMPONENTS

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
ABUTMENT-1		*40 FT 8 IN*	*REINFORCED CONCRETE*	*INTEGRAL*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
EFFLORESCENCE	THROUGHOUT		MINOR		
VERTICAL CRACKS	THROUGHOUT		MINOR		

DIAPHRAGM	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
LEACHING	THROUGHOUT		MINOR		
VERTICAL CRACKS	THROUGHOUT		MINOR		

FIXED BEARING	ELASTOMERIC	PLAIN NEOPRENE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

PILING	STEEL	H-SHAPE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

SUBSTRUCTURE	SKEW	LENGTH	MATERIAL	CONSTRUCTION	LABEL	COMMENTS
BENT-2		*38 FT 8 IN*	*REINFORCED CONCRETE*	*MULTIPLE COLUMN*		

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

ASSOCIATED COMPONENT	MATERIAL	CONSTRUCTION
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT

COLUMN	REINFORCED CONCRETE	INTEGRAL CAST-IN-PLACE

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
DIAPHRAGM	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FIXED BEARING	ELASTOMERIC	LAMINATED NEOPRENE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

BENT-3 *38 FT 8 IN* *REINFORCED CONCRETE* *MULTIPLE COLUMN*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
COLUMN	REINFORCED CONCRETE	INTEGRAL CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DIAPHRAGM	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FIXED BEARING	ELASTOMERIC	LAMINATED NEOPRENE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
FOOTING	REINFORCED CONCRETE	SPREAD			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

ABUTMENT-4 *40 FT 8 IN* *REINFORCED CONCRETE* *INTEGRAL*

CONDITION	LOCATION 1	LOCATION 2	SEVERITY	MEASUREMENT	COMMENT
ASSOCIATED COMPONENT	**MATERIAL**	**CONSTRUCTION**			
BEAM CAP	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
DIAPHRAGM	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
EFFLORESCENCE	THROUGHOUT		MINOR		
VERTICAL CRACKS	THROUGHOUT		MINOR		
FIXED BEARING	ELASTOMERIC	PLAIN NEOPRENE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
PILING	STEEL	H-SHAPE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**
TURNED BACK WINGS	REINFORCED CONCRETE	CAST-IN-PLACE			
CONDITION	**LOCATION 1**	**LOCATION 2**	**SEVERITY**	**MEASUREMENT**	**COMMENT**

OVER/UNDER ROUTES CLEARANCE INFORMATION

CLEARANCES OVER DECK

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT

Missouri Department of Transportation
State Bridge Inspection Report

COUNTY: CASS **DISTRICT: KC** **CLASS: STATBR** **FED-ID: 32395** **BRIDGE: A7353**

CLEARANCES UNDER BRIDGE

**NOTE: Vertical clearances for permitting purposes are taken as 2 inches less than the actual field measured clearance.

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
1	CST 163RD ST E	3	1-WAY TRAF	2 FT 0 IN	2 FT 0 IN	100168

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	16 FT 10 IN			

RECORD #	ROUTE	# LANES	DIRECTION OF TRAFFIC	RIGHT LATERAL CLEARANCE	LEFT LATERAL CLEARANCE	UR-ID
2	CST 163RD ST W	4	1-WAY TRAF	2 FT 0 IN	2 FT 0 IN	100169

VERTICAL CLEARANCE TYPE**	VALUE	DIRECTION	DATE	COMMENT
PLANNED	16 FT 10 IN			

STRUCTURE PAINT INFORMATION

CONDITION: VERY GOOD **RUST AMOUNT :** 9=.03% OF SURFACE RUSTED **STEEL TONS :** 188

ORIGINAL PAINT	CONTRACT REPAINT	DEPARTMENT REPAINT	
PAINT TYPE : G SYSTEM	**PAINT TYPE :**	**PAINT TYPE :**	**MANUFACTURE :**
NAME : ZINC/EPOXY/ACRYLIC	**NAME :**	**NAME :**	**SURFACE PREP :**
PAINT COLOR : GRAY	**PAINT COLOR :**	**PAINT COLOR :**	
PAINT YEAR : 2009	**PAINT YEAR :**	**PAINT YEAR :**	
MILS :	**MILS :**	**MILS :**	

REQUESTED WORK ITEMS

GENERAL WORK COMMENTS:

RESPONSIBILITY	LOCATION	ITEM	CATEGORY	PRIORITY	DATE	WORK ITEM COMMENT
DISTRICT ROUTINE	APPROACH ROADWAY	SEAL JOINTS - HOT POUR	APPROACH	2	11/18/2021	
DISTRICT ROUTINE	SEE COMMENT	REPAIR EROSION	SLOPE	2	11/18/2021	(YOSTJ1, 02/27/2024)--ALL 4 CORNERS UNDER APPROACH SLAB
DISTRICT SPECIAL	ROADWAY SURFACE	SEAL WITH SILANE	DECK	3	03/30/2026	

UTILITY ATTACHMENTS

UTILITY	OWNER	METHOD	MEASUREMENT TYPE	VALUE	NUMBER	UTILITY ATTACHMENT COMMENT

PROGRAM NOTES INFORMATION

YEAR	PROJECT #	MONTH LET	YEAR LET	ITEMS	COMMENT

DistrictAbbr = KC and Design_No = a7353 and County = CASS

COMPUTER GENERATED RATINGS AND DEFICIENCY ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

Rated Item	Rating	Rating Date
[Item 67] Structure Evaluation Rating:	7-BETTER THAN PRESENT MIN	12/29/2017
[Item 68] Deck Geometry Rating:	6-EQ TO PRESENT MIN CRITR	7/30/2008
[Item 69] Underclearance:	3-BASICALLY INTOL CORRECT	7/30/2008
Sufficiency Rating:	89.6%	2/26/2024
Deficiency:	FUNCTIONAL	3/14/2018
Funding Eligibility:		----
Estimated New Structure Length:		----
Estimated Structure Cost:		----
Estimated Total Project Cost:		----
Year of Cost Estimate:		----

NOTE: The above structure length and cost estimates are computer generated using algorithims in the TMS system. These algorthims are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.

ADVANCED SIGN INFORMATION

SIGN #	SIGN TYPE	PROBLEM	PROBLEM DIRECTION
1			

OUTFALL INSPECTION INFORMATION

 # OUTFALLS: **INSPECTOR:**

STATUS: **DATE:**

NOTES:

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY : CASS **BRIDGE :** A2094 2 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	1778
27	Year Built	1968
106	Year Reconstructed	1990
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	STATE HIGHWAY AGENCY
22	Structure Owner	STATE HIGHWAY AGENCY
33	Br. Median Code	NO MEDIAN
37	Historical Significance	NOT ELIGIBLE FOR NR OF HP
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	YES

ROUTE DESIGNATION INFORMATION

5A	Record Type	ROUTE CARRIED 'ON' STRUCT
5B	Route Signing Prefix	MO
5C	Designated Level of Service	MAINLINE
5D	Route Number	00058
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	MO 58 E
12	Base Hwy. Network	NO
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	16-URBAN MINOR ARTERIAL
28A	Lanes on Structure	05
100	STRAHNET Designation	RTE NOT A DEFENSE HWY
104	National Highway System	NOT ON NHS
105	Federal Lands Highway	NOT APPLICABLE
110	Designated Nat. Network	NO

STRUCTURE LOCATION INFORMATION

4	Place	RAYMORE CITY
	Code	60752
9	Location	S 7 T 46 N R 32 W
11	Milepoint	4.49 miles
16	Latitude	38 D 48 M 48 S
17	Longitude	94 D 30 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	35273
30	AADT Year	2023
102	Direction of Traffic	2-WAY TRAFFIC
109	AADT Truck Percent	4%
114	Future AADT	65255
115	Future AADT Year	2043

UNDERRECORD INFORMATION

6	Features Intersected	IS 49
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	04
54A	Vert. Clearance Ref.	HIGHWAY
54B	Vert. Clearance	15 Ft. 1 In.
55A	Rt. Lat Clear Ref.	HIGHWAY
55B	Rt. Lat Clearance	13 Ft. 5 In.
56	Left Lat Clearance	18 Ft. 4 In.
38	Navigation Control	N/A
39	Nav Vertical Clear	0 Ft. 0 In.
40	Nav Horizontal Clear	0 Ft. 0 In.
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	99 Ft. 99 In.
19	By pass Detour Length	21.88 miles
32	Approach Roadway Width	75 Ft. 2 In.
34	Skew	38.00 Degrees
35	Struct. Flared	NO
47	Total Horiz. Clear	75 Ft. 6 In.
48	Maximum Span Length	83 Ft. 12 In.
49	Structure Length	274 Ft. 11 In.
50A	Left Curb/Sidewalk Width	4 Ft. 11 In.
50B	Right Curb/Sidewalk Width	4 Ft. 11 In.
51	Curb to Curb Br. Width	61 Ft. 8 In.
52	Deck Width (Out-Out)	77 Ft. 1 In.
53	Vert.Clearance Over Deck	99 Ft. 99 In.

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY : CASS **BRIDGE :** A2094 2 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

LOAD RATING AND POSTING INFORMATION

31	Design Load	HS 20+MOD
41	Structure Status	POSTED FOR LOAD
63	Oper. Rating Meth.	LOAD FACTOR
64	Operating Rating	61 Tons.
65	Inventory Rating Meth	LOAD FACTOR
66	Inventory Rating	37 Tons.
70	Bridge Posting Code	=>LEGAL LOADS

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating	65.0 Percent
	Deficiency Rating	NOT DEFICIENT
	Funding Eligibility	
75A	Proposed Work	
75B	Work Done By	
76	New Struc Length	0 Ft. 0 In.
94	Struc Improve Cost	$ 0,000
95	Roadway Improve Cost	$ 0,000
96	Total Project Cost	$ 0,000
97	Year of Cost Estimates	0

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating	MEETS ACCEPTBLE STND
36B	Transition Rail App. Rating	MEETS ACCEPTBLE STND
36C	Approach Rail App. Rating	MEETS ACCEPTBLE STND
36D	Rail End Treat. App. Rating	MEETS ACCEPTBLE STND
67	Struc Eval App. Rating	5
68	Deck Geometry App. Rating	4
69	Underclearance App. Rating	4
71	Waterway Adeq. App. Rating	N
72	Approach Road App. Rating	8
113	Scour Assess App. Rating	N

APPROVED POSTING INFORMATION

Approved Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	4
44A	Appr Struc. Mat type	000
44B	Appr Struc. Cnstr. type	000
46	# of Approach Span	0
107	Deck Mat/Constr.	1 CONCRETE CIP
108A	Wear Surf Mat/Constr.	1 MONO CONCRETE
108B	Membrane Mat/Constr.	0 NONE
108C	Deck Protect Mat/Constr.	1 EPOXY

CONDITION RATING INFORMATION

58	Deck Cond. Rating	6
59	Superstructure Cond. Rating	6
60	Substructure Cond. Rating	5
61	Channel /Channel Protection Cond. Rating	N
62	Culvert Cond. Rating	N

INSPECTION INFORMATION

90	Gen. Insp Date	11 / 23	
91	Gen. Insp. Frequency	24	Months
92A	Frac. Critical Inspection	N	Months
93A	Frac. Critical Insp. Date		
92B	Underwater Inspection	N	Months
93B	Underwater Insp. Date		
92C	Special Inspection	N	Months
93C	Special Inspection Date		

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

FIELD POSTING INFORMATION

Field Posting Category S-C3

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign 60

General Text for Posting Sign

WEIGHT LIMIT 60 TONS.

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY : CASS **BRIDGE :** A2094 2 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 1 RTE THAT GOES 'UNDER' S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	1778
27	Year Built	1968
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	1 RTE THAT GOES 'UNDER' S	Code : A
5B	Route Signing Prefix	IS	
5C	Designated Level of Service	MAINLINE	
5D	Route Number	00049	
5E	Directional Suffix	NOT APPLICABLE	
7	Facility Carried	MO 58 E	
12	Base Hwy. Network		
13A	LRS Inventory Route No.		
13B	Subroute No.		
20	Toll Status	ON FREE ROAD	
26	Functional Classification	11-UR PRNCPL ARTERIAL-IS	
28A	Lanes on Structure	05	
100	STRAHNET Designation	ON A DEFENSE HWY	
104	National Highway System	ON NHS	
105	Federal Lands Highway		
110	Designated Nat. Network	YES	

STRUCTURE LOCATION INFORMATION

4	Place	RAYMORE CITY
	Code	60752
9	Location	S 7 T 46 N R 32 W
11	Milepoint	9.60 miles
16	Latitude	38 D 48 M 48 S
17	Longitude	94 D 30 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	41261
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	19%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	IS 49
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	02
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	16 Ft. 9 In.
19	By pass Detour Length	0.00 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	75 Ft. 6 In.
48	Maximum Span Length	83 Ft. 12 In.
49	Structure Length	274 Ft. 11 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY :	**CASS**	**BRIDGE :**	**A2094 2**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**1 RTE THAT GOES 'UNDER' S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY : CASS **BRIDGE :** A2094 2 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 2ND RTE THAT GOES 'UNDR'S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	1778
27	Year Built	1968
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	2ND RTE THAT GOES 'UNDR'S Code : B
5B	Route Signing Prefix	IS
5C	Designated Level of Service	MAINLINE
5D	Route Number	00049
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	MO 58 E
12	Base Hwy. Network	
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	11-UR PRNCPL ARTERIAL-IS
28A	Lanes on Structure	05
100	STRAHNET Designation	ON A DEFENSE HWY
104	National Highway System	ON NHS
105	Federal Lands Highway	
110	Designated Nat. Network	YES

STRUCTURE LOCATION INFORMATION

4	Place	RAYMORE CITY
	Code	60752
9	Location	S 7 T 46 N R 32 W
11	Milepoint	175.44 miles
16	Latitude	38 D 48 M 48 S
17	Longitude	94 D 30 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	25768
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	17%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	IS 49
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	02
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	15 Ft. 1 In.
19	By pass Detour Length	0.00 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	75 Ft. 6 In.
48	Maximum Span Length	83 Ft. 12 In.
49	Structure Length	274 Ft. 11 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:45:55am

COUNTY :	**CASS**	**BRIDGE :**	**A2094 2**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**2ND RTE THAT GOES 'UNDR'S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a2094 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:38am

COUNTY : CASS **BRIDGE :** A7352 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32371
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	STATE HIGHWAY AGENCY
22	Structure Owner	STATE HIGHWAY AGENCY
33	Br. Median Code	NO MEDIAN
37	Historical Significance	HISTORICAL SIGNIF UNKNWN
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	YES

ROUTE DESIGNATION INFORMATION

5A	Record Type	ROUTE CARRIED 'ON' STRUCT
5B	Route Signing Prefix	IS
5C	Designated Level of Service	MAINLINE
5D	Route Number	00049
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	IS 49 N
12	Base Hwy. Network	YES
13A	LRS Inventory Route No.	0001036008
13B	Subroute No.	00
20	Toll Status	ON FREE ROAD
26	Functional Classification	11-UR PRNCPL ARTERIAL-IS
28A	Lanes on Structure	02
100	STRAHNET Designation	ON A DEFENSE HWY
104	National Highway System	ON NHS
105	Federal Lands Highway	NOT APPLICABLE
110	Designated Nat. Network	YES

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	176.65 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	30867
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	17%
114	Future AADT	54017
115	Future AADT Year	2043

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	07
54A	Vert. Clearance Ref.	HIGHWAY
54B	Vert. Clearance	17 Ft. 3 In.
55A	Rt. Lat Clear Ref.	HIGHWAY
55B	Rt. Lat Clearance	1 Ft. 12 In.
56	Left Lat Clearance	1 Ft. 12 In.
38	Navigation Control	N/A
39	Nav Vertical Clear	0 Ft. 0 In.
40	Nav Horizontal Clear	0 Ft. 0 In.
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	99 Ft. 99 In.
19	By pass Detour Length	1.25 miles
32	Approach Roadway Width	38 Ft. 1 In.
34	Skew	0.00 Degrees
35	Struct. Flared	NO
47	Total Horiz. Clear	38 Ft. 1 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	305 Ft. 1 In.
50A	Left Curb/Sidewalk Width	0 Ft. 0 In.
50B	Right Curb/Sidewalk Width	0 Ft. 0 In.
51	Curb to Curb Br. Width	38 Ft. 1 In.
52	Deck Width (Out-Out)	40 Ft. 8 In.
53	Vert.Clearance Over Deck	99 Ft. 99 In.

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
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COUNTY : CASS **BRIDGE :** A7352 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

LOAD RATING AND POSTING INFORMATION

31	Design Load	HS 20+MOD
41	Structure Status	OPEN NO RESTRICTIONS
63	Oper. Rating Meth.	LOAD FACTOR
64	Operating Rating	83 Tons.
65	Inventory Rating Meth	LOAD FACTOR
66	Inventory Rating	51 Tons.
70	Bridge Posting Code	=>LEGAL LOADS

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating	91.0 Percent
	Deficiency Rating	FUNCTIONAL
	Funding Eligibility	
75A	Proposed Work	
75B	Work Done By	
76	New Struc Length	0 Ft. 0 In.
94	Struc Improve Cost	$ 0,000
95	Roadway Improve Cost	$ 0,000
96	Total Project Cost	$ 0,000
97	Year of Cost Estimates	0

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating	MEETS ACCEPTBLE STND
36B	Transition Rail App. Rating	MEETS ACCEPTBLE STND
36C	Approach Rail App. Rating	MEETS ACCEPTBLE STND
36D	Rail End Treat. App. Rating	MEETS ACCEPTBLE STND
67	Struc Eval App. Rating	7
68	Deck Geometry App. Rating	6
69	Underclearance App. Rating	3
71	Waterway Adeq. App. Rating	N
72	Approach Road App. Rating	8
113	Scour Assess App. Rating	N

APPROVED POSTING INFORMATION

Approved Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	3
44A	Appr Struc. Mat type	000
44B	Appr Struc. Cnstr. type	000
46	# of Approach Span	0
107	Deck Mat/Constr.	1 CONCRETE CIP
108A	Wear Surf Mat/Constr.	1 MONO CONCRETE
108B	Membrane Mat/Constr.	0 NONE
108C	Deck Protect Mat/Constr.	1 EPOXY

CONDITION RATING INFORMATION

58	Deck Cond. Rating	7
59	Superstructure Cond. Rating	7
60	Substructure Cond. Rating	8
61	Channel /Channel Protection Cond. Rating	N
62	Culvert Cond. Rating	N

INSPECTION INFORMATION

90	Gen. Insp Date	11 / 23	
91	Gen. Insp. Frequency	24	Months
92A	Frac. Critical Inspection	N	Months
93A	Frac. Critical Insp. Date		
92B	Underwater Inspection	N	Months
93B	Underwater Insp. Date		
92C	Special Inspection	N	Months
93C	Special Inspection Date		

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

FIELD POSTING INFORMATION

Field Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:38am

COUNTY : CASS **BRIDGE :** A7352 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 2ND RTE THAT GOES 'UNDR'S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32371
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	2ND RTE THAT GOES 'UNDR'S Code : B
5B	Route Signing Prefix	CST
5C	Designated Level of Service	MAINLINE
5D	Route Number	00000
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	IS 49 N
12	Base Hwy. Network	
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	16-URBAN MINOR ARTERIAL
28A	Lanes on Structure	02
100	STRAHNET Designation	RTE NOT A DEFENSE HWY
104	National Highway System	NOT ON NHS
105	Federal Lands Highway	
110	Designated Nat. Network	NO

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	0.42 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	14177
30	AADT Year	2023
102	Direction of Traffic	2-WAY TRAFFIC
109	AADT Truck Percent	5%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	03
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	17 Ft. 3 In.
19	By pass Detour Length	2.50 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	47 Ft. 11 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	305 Ft. 1 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:38am

COUNTY :	**CASS**	**BRIDGE :**	**A7352**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**2ND RTE THAT GOES 'UNDR'S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

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Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
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COUNTY : CASS **BRIDGE :** A7352 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 1 RTE THAT GOES 'UNDER' S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32371
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	1 RTE THAT GOES 'UNDER' S	Code : A
5B	Route Signing Prefix	CST	
5C	Designated Level of Service	MAINLINE	
5D	Route Number	00000	
5E	Directional Suffix	NOT APPLICABLE	
7	Facility Carried	IS 49 N	
12	Base Hwy. Network		
13A	LRS Inventory Route No.		
13B	Subroute No.		
20	Toll Status	ON FREE ROAD	
26	Functional Classification	16-URBAN MINOR ARTERIAL	
28A	Lanes on Structure	02	
100	STRAHNET Designation	RTE NOT A DEFENSE HWY	
104	National Highway System	NOT ON NHS	
105	Federal Lands Highway		
110	Designated Nat. Network	NO	

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	1.67 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	14177
30	AADT Year	2023
102	Direction of Traffic	2-WAY TRAFFIC
109	AADT Truck Percent	5%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	04
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	17 Ft. 3 In.
19	By pass Detour Length	2.50 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	36 Ft. 1 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	305 Ft. 1 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:38am

COUNTY :	**CASS**	**BRIDGE :**	**A7352**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**1 RTE THAT GOES 'UNDER' S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a7352 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:58am

COUNTY : CASS **BRIDGE :** A7353 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 2ND RTE THAT GOES 'UNDR'S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32395
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	2ND RTE THAT GOES 'UNDR'S Code : B
5B	Route Signing Prefix	CST
5C	Designated Level of Service	MAINLINE
5D	Route Number	00000
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	IS 49 S
12	Base Hwy. Network	
13A	LRS Inventory Route No.	
13B	Subroute No.	
20	Toll Status	ON FREE ROAD
26	Functional Classification	16-URBAN MINOR ARTERIAL
28A	Lanes on Structure	02
100	STRAHNET Designation	RTE NOT A DEFENSE HWY
104	National Highway System	NOT ON NHS
105	Federal Lands Highway	
110	Designated Nat. Network	NO

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	1.68 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	6688
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	5%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	04
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	16 Ft. 10 In.
19	By pass Detour Length	2.50 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	36 Ft. 1 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	306 Ft. 1 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
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September 12, 2024
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COUNTY :	**CASS**	**BRIDGE :**	**A7353**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**2ND RTE THAT GOES 'UNDR'S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
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COUNTY : CASS **BRIDGE :** A7353 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : 1 RTE THAT GOES 'UNDER' S **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32395
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	
22	Structure Owner	
33	Br. Median Code	
37	Historical Significance	
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	

ROUTE DESIGNATION INFORMATION

5A	Record Type	1 RTE THAT GOES 'UNDER' S	Code : A
5B	Route Signing Prefix	CST	
5C	Designated Level of Service	MAINLINE	
5D	Route Number	00000	
5E	Directional Suffix	NOT APPLICABLE	
7	Facility Carried	IS 49 S	
12	Base Hwy. Network		
13A	LRS Inventory Route No.		
13B	Subroute No.		
20	Toll Status	ON FREE ROAD	
26	Functional Classification	16-URBAN MINOR ARTERIAL	
28A	Lanes on Structure	02	
100	STRAHNET Designation	RTE NOT A DEFENSE HWY	
104	National Highway System	NOT ON NHS	
105	Federal Lands Highway		
110	Designated Nat. Network	NO	

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	0.41 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	7489
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	5%
114	Future AADT	
115	Future AADT Year	

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	03
54A	Vert. Clearance Ref.	
54B	Vert. Clearance	
55A	Rt. Lat Clear Ref.	
55B	Rt. Lat Clearance	
56	Left Lat Clearance	
38	Navigation Control	
39	Nav Vertical Clear	
40	Nav Horizontal Clear	
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	16 Ft. 10 In.
19	By pass Detour Length	2.50 miles
32	Approach Roadway Width	
34	Skew	
35	Struct. Flared	
47	Total Horiz. Clear	47 Ft. 11 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	306 Ft. 1 In.
50A	Left Curb/Sidewalk Width	
50B	Right Curb/Sidewalk Width	
51	Curb to Curb Br. Width	
52	Deck Width (Out-Out)	
53	Vert.Clearance Over Deck	

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:58am

COUNTY :	**CASS**	**BRIDGE :**	**A7353**	**REVIEW STATUS :**	**APPROVED**	**NBI STATUS :**	**T**
RECORD TYPE :	**1 RTE THAT GOES 'UNDER' S**			**RUN DATE :**	**8/29/2024**	**SUBMITTAL YEAR :**	**2024**

LOAD RATING AND POSTING INFORMATION

31	Design Load
41	Structure Status
63	Oper. Rating Meth.
64	Operating Rating
65	Inventory Rating Meth
66	Inventory Rating
70	Bridge Posting Code

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating
	Deficiency Rating
	Funding Eligibility
75A	Proposed Work
75B	Work Done By
76	New Struc Length
94	Struc Improve Cost
95	Roadway Improve Cost
96	Total Project Cost
97	Year of Cost Estimates

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating
36B	Transition Rail App. Rating
36C	Approach Rail App. Rating
36D	Rail End Treat. App. Rating
67	Struc Eval App. Rating
68	Deck Geometry App. Rating
69	Underclearance App. Rating
71	Waterway Adeq. App. Rating
72	Approach Road App. Rating
113	Scour Assess App. Rating

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	
44A	Appr Struc. Mat type	
44B	Appr Struc. Cnstr. type	
46	# of Approach Span	
107	Deck Mat/Constr.	
108A	Wear Surf Mat/Constr.	
108B	Membrane Mat/Constr.	
108C	Deck Protect Mat/Constr.	

CONDITION RATING INFORMATION

58	Deck Cond. Rating
59	Superstructure Cond. Rating
60	Substructure Cond. Rating
61	Channel /Channel Protection Cond. Rating
62	Culvert Cond. Rating

INSPECTION INFORMATION

90	Gen. Insp Date
91	Gen. Insp. Frequency
92A	Frac. Critical Inspection
93A	Frac. Critical Insp. Date
92B	Underwater Inspection
93B	Underwater Insp. Date
92C	Special Inspection
93C	Special Inspection Date

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

APPROVED POSTING INFORMATION

Approved Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

FIELD POSTING INFORMATION

Field Posting Category

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:58am

COUNTY : CASS **BRIDGE :** A7353 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

GENERAL STRUCTURE INFORMATION

1	State	MISSOURI
2	District	KC
3	County	CASS
8	Federal ID No.	32395
27	Year Built	2008
106	Year Reconstructed	0
42A	Type of Service On	HIGHWAY
21	Structure Maintenance	STATE HIGHWAY AGENCY
22	Structure Owner	STATE HIGHWAY AGENCY
33	Br. Median Code	NO MEDIAN
37	Historical Significance	HISTORICAL SIGNIF UNKNWN
101	Parallel Struc Desg	NONE EXISTS
103	Temporary Structure	NOT TEMPORARY
112	NBIS Bridge Length	YES

ROUTE DESIGNATION INFORMATION

5A	Record Type	ROUTE CARRIED 'ON' STRUCT
5B	Route Signing Prefix	IS
5C	Designated Level of Service	MAINLINE
5D	Route Number	00049
5E	Directional Suffix	NOT APPLICABLE
7	Facility Carried	IS 49 S
12	Base Hwy. Network	YES
13A	LRS Inventory Route No.	0001036007
13B	Subroute No.	00
20	Toll Status	ON FREE ROAD
26	Functional Classification	11-UR PRNCPL ARTERIAL-IS
28A	Lanes on Structure	02
100	STRAHNET Designation	ON A DEFENSE HWY
104	National Highway System	ON NHS
105	Federal Lands Highway	NOT APPLICABLE
110	Designated Nat. Network	YES

STRUCTURE LOCATION INFORMATION

4	Place	BELTON CITY
	Code	04384
9	Location	S 12 T 46 N R 33 W
11	Milepoint	8.35 miles
16	Latitude	38 D 49 M 31 S
17	Longitude	94 D 31 M 14 S

STRUCTURE TRAFFIC INFORMATION

29	AADT	44561
30	AADT Year	2023
102	Direction of Traffic	1-WAY TRAFFIC
109	AADT Truck Percent	12%
114	Future AADT	77982
115	Future AADT Year	2043

UNDERRECORD INFORMATION

6	Features Intersected	CST 163RD ST
42B	Type of Service Under	HIGHWAY
28B	Lanes Under Structure	07
54A	Vert. Clearance Ref.	HIGHWAY
54B	Vert. Clearance	16 Ft. 10 In.
55A	Rt. Lat Clear Ref.	HIGHWAY
55B	Rt. Lat Clearance	1 Ft. 12 In.
56	Left Lat Clearance	1 Ft. 12 In.
38	Navigation Control	N/A
39	Nav Vertical Clear	0 Ft. 0 In.
40	Nav Horizontal Clear	0 Ft. 0 In.
111	Nav. Pier Protection	
116	Nav. Cl. Vert. Clear	

STRUCTURE GEOMETRIC INFORMATION

10	Inventory Rte. Vert. Clear	99 Ft. 99 In.
19	By pass Detour Length	1.25 miles
32	Approach Roadway Width	38 Ft. 1 In.
34	Skew	0.00 Degrees
35	Struct. Flared	NO
47	Total Horiz. Clear	38 Ft. 1 In.
48	Maximum Span Length	139 Ft. 1 In.
49	Structure Length	306 Ft. 1 In.
50A	Left Curb/Sidewalk Width	0 Ft. 0 In.
50B	Right Curb/Sidewalk Width	0 Ft. 0 In.
51	Curb to Curb Br. Width	38 Ft. 1 In.
52	Deck Width (Out-Out)	40 Ft. 8 In.
53	Vert.Clearance Over Deck	99 Ft. 99 In.

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

Missouri Department of Transportation
Bridge Inventory and Inspection System
Structural Inventory & Appraisal Sheet

September 12, 2024
11:46:58am

COUNTY : CASS **BRIDGE :** A7353 **REVIEW STATUS :** APPROVED **NBI STATUS :** T
RECORD TYPE : ROUTE CARRIED 'ON' STRUCT **RUN DATE :** 8/29/2024 **SUBMITTAL YEAR :** 2024

LOAD RATING AND POSTING INFORMATION

31	Design Load	HS 20+MOD
41	Structure Status	OPEN NO RESTRICTIONS
63	Oper. Rating Meth.	LOAD FACTOR
64	Operating Rating	96 Tons.
65	Inventory Rating Meth	LOAD FACTOR
66	Inventory Rating	58 Tons.
70	Bridge Posting Code	=>LEGAL LOADS

PROPOSED IMPROVEMENT INFORMATION

	Sufficiency Rating	89.6 Percent
	Deficiency Rating	FUNCTIONAL
	Funding Eligibility	
75A	Proposed Work	
75B	Work Done By	
76	New Struc Length	0 Ft. 0 In.
94	Struc Improve Cost	$ 0,000
95	Roadway Improve Cost	$ 0,000
96	Total Project Cost	$ 0,000
97	Year of Cost Estimates	0

APPRAISAL RATING INFORMATION

36A	Br. Rail App. Rating	MEETS ACCEPTBLE STND
36B	Transition Rail App. Rating	MEETS ACCEPTBLE STND
36C	Approach Rail App. Rating	MEETS ACCEPTBLE STND
36D	Rail End Treat. App. Rating	MEETS ACCEPTBLE STND
67	Struc Eval App. Rating	7
68	Deck Geometry App. Rating	6
69	Underclearance App. Rating	3
71	Waterway Adeq. App. Rating	N
72	Approach Road App. Rating	8
113	Scour Assess App. Rating	N

APPROVED POSTING INFORMATION

Approved Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

MATERIAL/CONSTRUCTION INFORMATION

43A	Main Struc. Mat type	STEEL CONTINUOUS
43B	Main struc Constr. Type	STRINGER/MULTIBEAM - GRD
45	# of Main Spans	3
44A	Appr Struc. Mat type	000
44B	Appr Struc. Cnstr. type	000
46	# of Approach Span	0
107	Deck Mat/Constr.	1 CONCRETE CIP
108A	Wear Surf Mat/Constr.	1 MONO CONCRETE
108B	Membrane Mat/Constr.	0 NONE
108C	Deck Protect Mat/Constr.	1 EPOXY

CONDITION RATING INFORMATION

58	Deck Cond. Rating	7
59	Superstructure Cond. Rating	7
60	Substructure Cond. Rating	7
61	Channel /Channel Protection Cond. Rating	N
62	Culvert Cond. Rating	N

INSPECTION INFORMATION

90	Gen. Insp Date	11 / 23	
91	Gen. Insp. Frequency	24	Months
92A	Frac. Critical Inspection	N	Months
93A	Frac. Critical Insp. Date		
92B	Underwater Inspection	N	Months
93B	Underwater Insp. Date		
92C	Special Inspection	N	Months
93C	Special Inspection Date		

BORDER BRIDGE INFORMATION

98	Neighboring State Code
98B	Neighboring State % Respon
99	Neighboring State Struc. No.

FIELD POSTING INFORMATION

Field Posting Category S-1

Ton1 Ton2 Ton3

Tonnage Values for Posting Sign

General Text for Posting Sign

NO POSTING REQUIRED

DistrictAbbr = KC and Design_No = a7353 and County = CASS and Inventory_Appraisal_Submittal_Year = 2024

MEMORANDUM

Missouri Department of Transportation
Project Delivery
Southwest District

TO: Professional Services Committee

CC: Transportation Planning Director–tp
State Bridge Engineer-br

FROM: Steve Campbell
District Engineer

DATE: December 9, 2022

SUBJECT: Division Design
Route BU 65, Greene County
Job No. JSU0003
PSC Approval to Solicit Consultants

Project Description (physical description) - This project will provide for the operational and pedestrian improvements on 5 miles of Business Route 65 (Glenstone Avenue) in Greene County from Valley Water Mill Road to Route 60 (James River Freeway).

MoDOT previously contracted with Garver, LLC for consultant design services on J8S3160 for Business Route 65 and Loop 44. Garver developed a prioritized list of safety and operational improvements through the completion of a Traffic Operation and Safety Study. A portion of the recommended improvements were selected from this list based on the available budget. Supplemental agreements with Garver were executed to provide consultant design services from preliminary design through final design and for right of way acquisition services for the selected improvements. J8S3160 was let in the November, 2022 letting, and awarded in December, 2022.

During the planning partner process for the development of the most recent STIP, it was determined that Business Route 65 and Loop 44 is a high priority route and additional operational and pedestrian improvements are recommended. Project JSU0003 was added to the STIP to provide additional improvements on the corridor. These additional improvements were selected based on the J8S3160 Traffic Safety and Operational Study.

To expedite the design, and to utilize the knowledge, prior completed preliminary engineering and data that Garver has of the corridor, the Southwest District is seeking to waive the re-advertisement for design services, and use a Modified Selection process to execute an agreement with Garver, LLC to provide the design services for JSU0003 as an extension of J8S3160.

Fiscal Year project to be awarded: 2024
Amount of estimated construction cost: $3,021,000
State or Federal Assistance PE Contract: Federal

Amount of PE approved in STIP (attach STIP or Amendment Page and SIMS project summary or project budgeting page): $1,037,000
Amount of PE in TIP (attach TIP Page for all MPO projects), Budget Cap: $1,807,000
Planning Study for more-than-TCOS improvement: ☐ yes ☒ no

If yes, the district confirms the following criteria have been met:

1. District has demonstrated that its asset management goals can be met over the next ten years: ☐ yes ☐ no

and

2. District has the financial ability to fund, or has written commitment from another entity to fund the construction of a significant portion, or more, of any improvement resulting from the study within ten years of the initiation of the study: ☐ yes ☐ no

and

3. The region has prioritized the study along with roadway and bridge improvements and is willing to fund the study with STIP right of way and construction funds or funding from others: ☐ yes ☐ no

or

4. The cost of the study is funded by another entity, with minimal MoDOT funding involvement for oversight and guidance: ☐ yes ☐ no

Funding Request:

MoDOT's commitment for the consultant services costs only

Cost Share/Cost Participation Agreement: ☐ yes ☒ no

If yes: Entity(ies) and financial commitment:
Name: _____ $_____
Name: _____ $_____

Federal Earmark: ☐ yes ☒ no
If yes: Federal Earmark No. and amount: _____

Estimate of DBC commitment for each FY:
FY2023 $375,000 FY2024 $475,000 FY2025 $50,000 FY2026 $50,000

Please check one funding source:

☒ DBC
☐ Operating Budget
☐ Special Funds
☐ ITS
☐ Other (*Name Funding Source*)

Scope of Services - The consultant will provide professional, technical and other personnel, equipment, material, and all other things necessary for preparing the preliminary design, utility coordination, surveying, Section 106, Right of Way plans, Right of Way acquisition, and Final PS&E plans and documents. These services were previously identified in the original solicitation for design services. This contract will include the following services (Check all that apply):

- ☐ Photogrammetry
- ☒ Surveying
- ☐ Bridge Design
- ☒ Roadway Design
- ☐ Geotechnical
- ☐ Environmental
- ☒ Historic Preservation
- ☐ A large amount of public involvement by the consultant; presentation required
- ☐ Interviews will be conducted with consultant for selection process; required for EA, EIS, MIS, projects
- ☒ Utility Coordination
- ☐ Construction Inspection
- ☒ Right of Way Acquisition

DBE Requirements - This contract will have a DBE goal of 10%.

Period of Service - The consultant will complete the scope of services within 1,087 calendar days from the issuance of the notice to proceed inclusive of necessary review time.

Cost - Total estimated cost for these services $950,000 (*estimated contract ceiling*).

Selection Process:
- ☐ Standard Solicitation
- ☒ Modified Solicitation
- ☐ Interviews
- ☐ Presentations

Selection Schedule:

Solicitation response date	N/A
Notification of shortlist date	N/A
Date of interviews or presentations	N/A
Date of selection	December 16, 2022
Execution of Contract by date	January 20, 2023

Incentives and Disincentive used on this contract:
- ☐ Dis/Incentive for ROW Plans being late
- ☐ Dis/Incentive for PS&E being late
- ☐ Dis/Incentive for Programming Estimate inaccuracies

****

Division Liaisons involved in project review:

Design Liaison Engineer Randall Glaser

Bridge Structural Engineer N/A

Division Approval (Traffic, Environmental, etc) N/A

****

Professional Services Committee Approval

	Agree	Disagree	Signature	Date
Transportation Planning Director				
State Bridge Engineer				
State Traffic and Highway Safety Engineer (if applicable)				

****

☐ Interviews are required for this project

APPROVED: _____ Date: _____

Chair, Professional Services Committee

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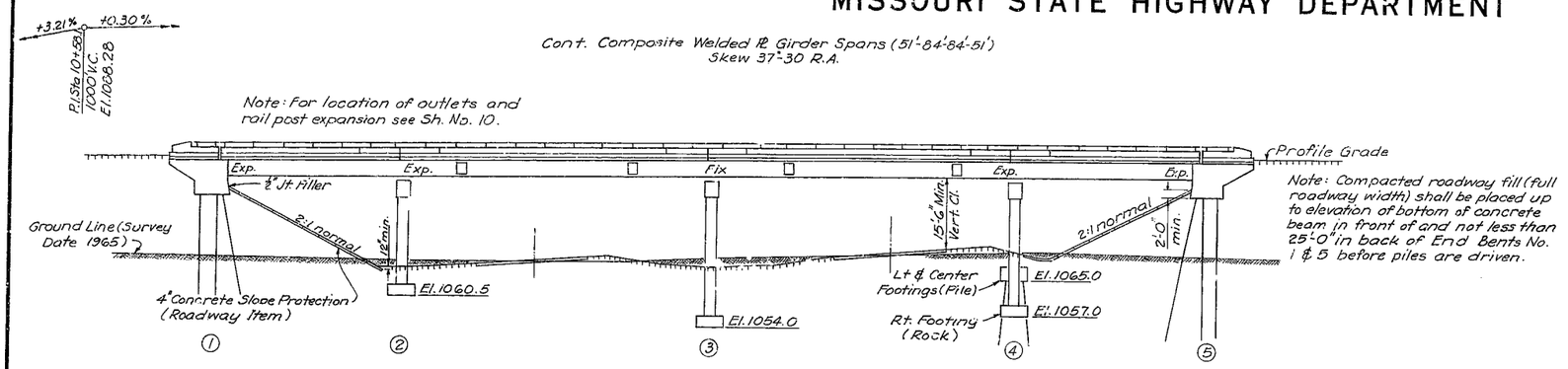
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	12.4	

Cont. Composite Welded I Girder Spans (51'-84'-84'-51')
Skew 37°-30 R.A.



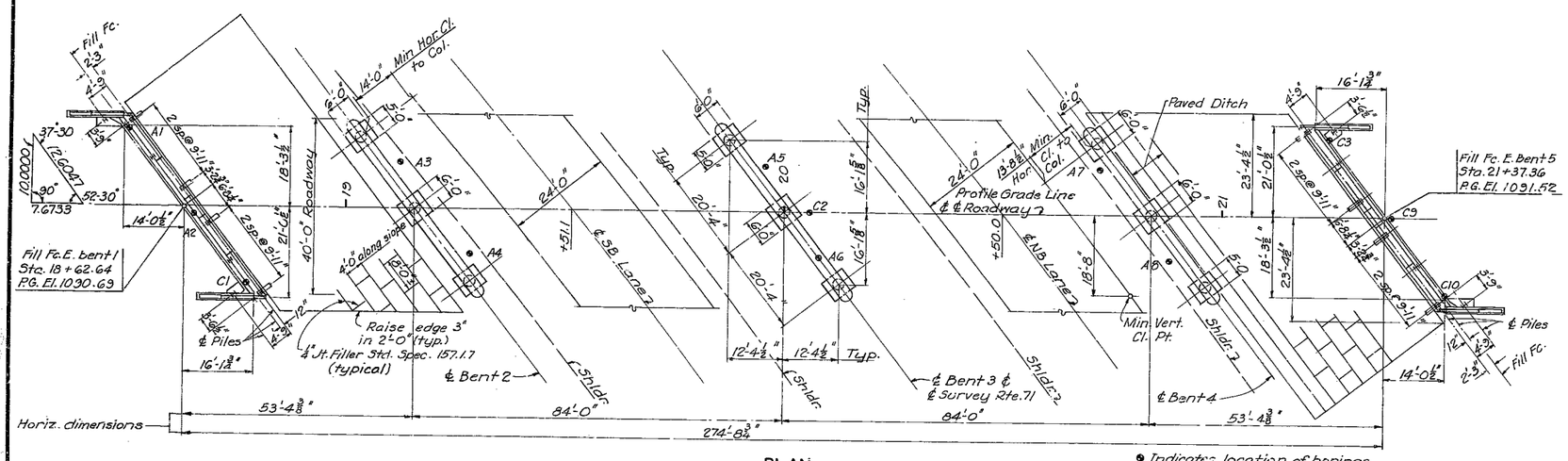
Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents No. 1 & 5 before piles are driven.

GENERAL ELEVATION

FOOTING AND PILE DATA						
	Bent No.	1	2	3	4	5
Spread Footings	Foundation Material		Rock	Rock	*Rock	
	Design Bearing Tons/Sq. Ft.		8	8	8	
Bearing Pile	Pile Type and Size	10BP42			*10BP42	10BP42
	Number	8			8	8
	Approximate Length Ft.	26			14	32
	Design Bearing Tons	34.9			53	34.9
	Hammer Energy required Ft. Lbs.	8700			12,500	8700

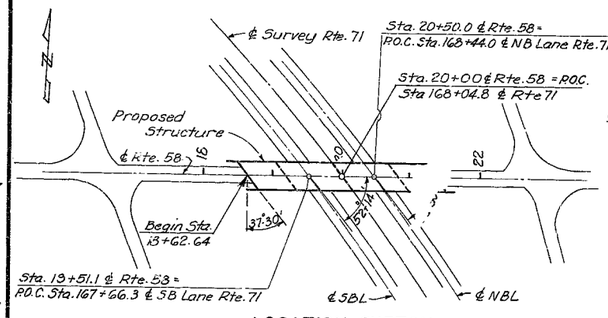
* Rt. footing, # Lt. & Center footing.

Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/W when the weight of the ram (W) is less than the weight of the pile (w). All pile shall be driven to practical refusal.



PLAN

● Indicates location of borings For Boring Data see Sh. No. 2.



LOCATION SKETCH

Curve Data:

NB Lane
P.I. Sta. 169+84.4
Δ = 12°-26'-38" Rt.
D = 2°-02.9'
T = 305.0'
L = 607.5'
R = 2797.3'
S.E. = 0.05'/ft.

SB Lane
P.I. Sta. 166+64.6
Δ = 23°-04' Rt.
D = 2°-00'
T = 584.6'
L = 1153.3'
R = 2865.0'
S.E. = 0.06'/ft.

ESTIMATED QUANTITIES					
Items		Substr.	Superstr.	Totals	
Class 1 Excavation	Cu. Yd	215		215	
Steel Piles in Place (10")	Lin. Ft.	576		576	
Class B Concrete	Cu. Yd	202.4		202.4	
Class B1 Concrete	Cu. Yd.		330.4	330.4	
Reinforcing Steel	Lb.	31,790	108,360	140,150	
Painting	Ton		104.0	104.0	
Fabricated Structural Carbon Steel	Lb.		209,570	209,570	
Bridge Rail (Single tube)	Lin. Ft.		574	574	

No payment for excavation will be allowed at End Bents No. 1 & 5. All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.

GENERAL NOTES

Design Specifications: AASHO - 1965

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

Design Unit Stresses:

Class B Concrete (Substructure)	fc = 1,200 psi
Class B1 Concrete (Superstructure)	fc = 1,600 psi
Reinforcing Steel	fs = 20,000 psi
Structural Steel (ASTM A36-66)	fs = 20,000 psi
Steel Pile (ASTM A36-66)	fb = 9,000 psi

Superstructure deck to be surface sealed.
Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.10.
Field connections, High Strength Bolts 3/4" ø, holes 13/16" ø except as noted.
Details of welded joints shown are for manual arc welding except as noted.
The minimum size of fillet welds shall be in accordance with AWS D2.0-66, Article 217(b) except the minimum size fillet weld connecting parts carrying primary stress shall be 1/4".
An opening of 13'-6" high x 30'-0" wide shall be maintained during construction for each lane.

B.M. #13 - □ S.W. Cor. Hdwl. 41' Rt. Sta. 163+47 - El. 1061.87 (Desc. from ℄ Exist. Pvmt & Stamped Sta.)
B.M. #14 - R.R. Spike, So. Root 18" Elm 300' Lt. Sta. 182+37 - El. 1100.05 (Desc. from ℄ Median)

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

DESIGNED JAN. 1968 BY H&C
DETAILED JAN. 1968 BY JER
CHECKED FEB. 1968 BY FJD

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

STATE OF MISSOURI · F. M. CORTELYOU, JR. · NUMBER E-4155 · REGISTERED PROFESSIONAL ENGINEER

Sheet No. 1 of 10.

SUBMITTED BY W R Causey BRIDGE ENGINEER DATE 3/20/68
APPROVED BY M J Spindler CHIEF ENGINEER DATE 3/20/68

STD. 54.00
A-2094

157

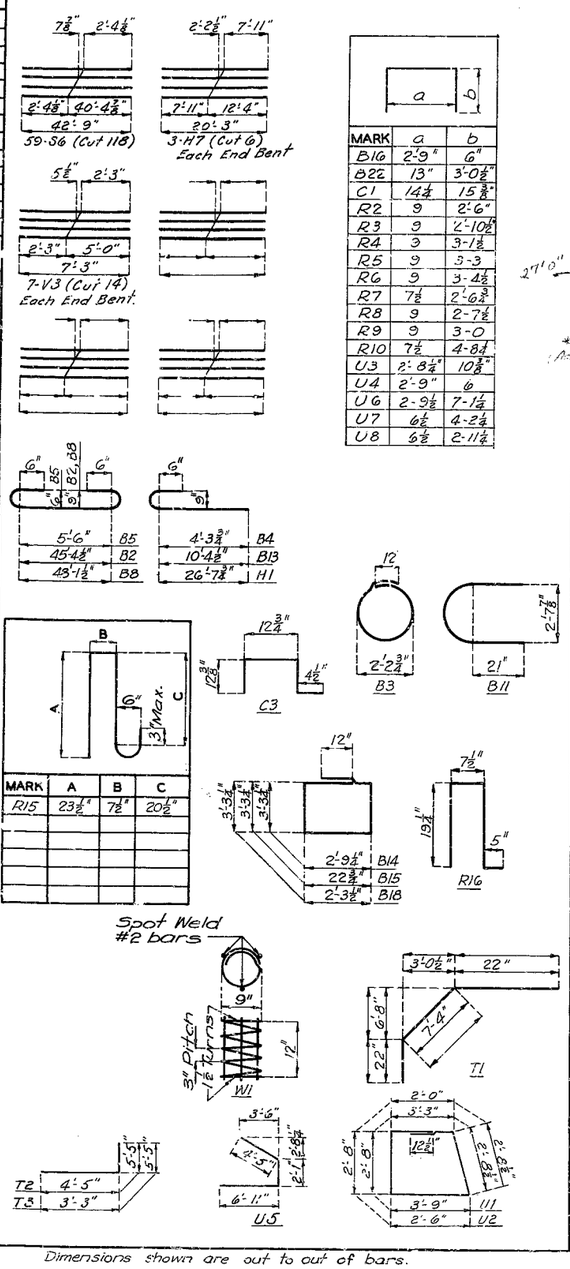
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	125	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION
END BENTS 1 & 5				
Quantities for One (2 Req'd.)				
4	6	5'-5"	F1	Fillet
4	6	8'-6	F2	do.
16	8	28'-1	H1	Beam
4	6	26'-9	H2	do.
3	1	3'-2	H3	do.
12	4	26'-9	H4	Backwall
4	6	27'-1	H5	do.
4	6	13'-11	H6	Wing
6	6	20'-3	H7	do.
4	6	11'-0	T1	Wing
2	6	9'-10	T2	Curt. wall
2	6	8'-8	T3	do.
51	4	13'-5	U1	Beam
1	4	10'-11	U2	do.
7	4	4'-5	U3	do.
12	4	3'-9	U4	do.
5	7	13'-5	U5	do.
5	7	17'-0	U6	do.
4	4	8'-11	U7	Curt. wall
4	4	6'-5	U8	do.
4	6	2'-8	V1	Beam
100	5	6'-3	V2	Backwall
14	4	7'-3	V3	Wing
24	4	6'-3	V4	do.
4	4	5'-0	V5	Curt. wall
10	2	19'-9	W1	A. bolt, well
BENTS 2, 3 & 4.				
Quantities for One (3 Req'd.)				
2	10	48'-9"	B2	Cap
2	10	51'-6"	B8	do.
4	6	24'-3	B9	do.
4	11	46'-3	B10	do.
6	7	7'-8	B11	do.
3	10	46'-3	B12	do.
6	10	12'-1	B13	do.
40	4	13'-1	B14	do.
20	4	11'-4	B15	do.
13	4	3'-9	B16	do.
3	10	13'-4	B17	do.
2	4	12'-2	B18	do.
4	10	5'-9	B23	do.
10	2	19'-9	W1	A. bolt well.
Variable Bent 2.				
57	3	8'-0"	B3	Column
18 (27)	8	21'-0"	B19	do.
32	5	8'-1	B5	Footing
12	5	4'-6	B6	do.
11	5	5'-6	B7	do.
27	8	4'-0	B24	do.
9 (11)	8	8'-0	B3	Lt. Col.
9	8	27'-5½	B19	Lt. Col.
Variable Bent 3.				
48	10	28'-3"	B1	Column
78	3	8'-0	B3	do.
48	10	6'-0	B4	Footing
32	5	8'-1	B5	do.
12	5	4'-6	B6	do.
11	5	5'-6	B7	do.
Variable Bent 4.				
57 (53)	3	8'-0"	B3	Column
18	8	16'-9"	B20	do.
9	8	25'-0"	B21	do.
10	5	8'-1	B5	Footing
6	5	4'-6	B6	do.
16	6	7'-2	B22	do.
27	8	4'-0	B24	do.
9 (11)2	3	8'-2"	B3	Lt. Col.
SUPERSTRUCTURE				
60	5	3'-6	C1	Curb
8	6	13'-0	C2	do.
564	5	3'-6	C3	do.
16	6	26'-6	C4	do.
24	5	29'-0	C5	do.
387	4	30'-0	S1	Slab
43	4	10'-6	S2	do.
414	6	30'-0	S3	do.
46	6	14'-9	S4	do.
964	6	42'-6	S5	do.
118	6	42'-9	S6	do.
126	4	16'-0	S7	do.
8	5	4'-8	R1	End Post
4	5	5'-9	R2	do.
4	5	6'-6	R3	do.
4	5	7'-0	R4	do.
4	5	7'-3	R5	do.
8	5	7'-6	R6	do.
32	5	5'-9	R7	Parapet
4	5	6'-0	R8	do.
4	5	6'-9	R9	do.
16	6	10'-0	R10	do.
16	5	9'-0	R11	do.
48	5	10'-4	R12	do.
32	5	21'-3	R13	do.
32	5	32'-0	R14	do.
564	5	5'-3	R15	do.
28	5	4'-3	R16	do.

BENDING SKETCHES & CUTTING DIAGRAMS



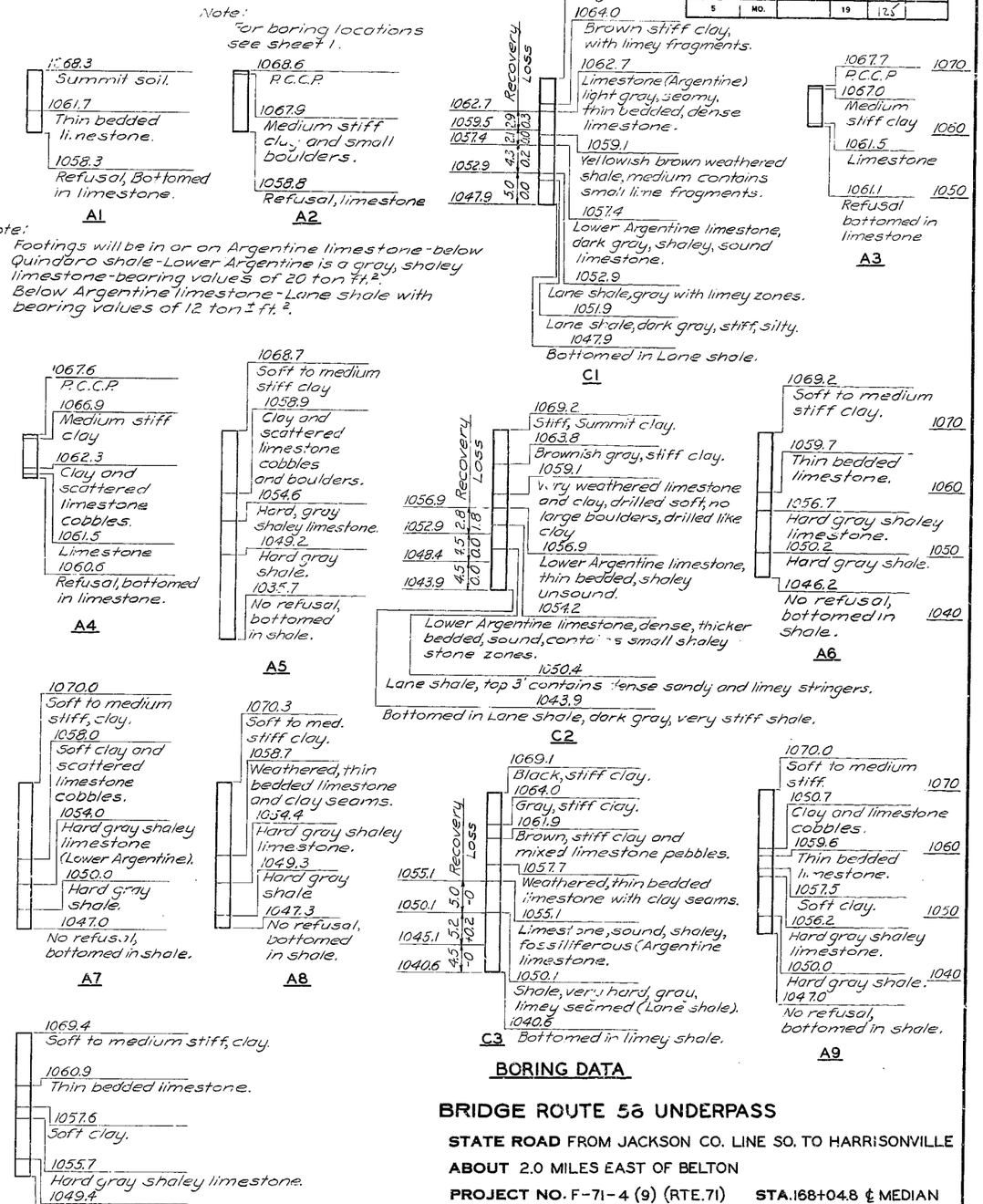
MARK	A	B	C
R15	23½"	7½"	20½"

MARK	a	b
B16	2'-9"	6"
B22	13"	3'-0½"
C1	14½"	15⅜"
R2	9	2'-6"
R3	9	1'-10⅝"
R4	9	3-1½
R5	9	3-3
R6	9	3-4½
R7	7⅛	2'-0⅜"
R8	9	2-7½
R9	9	3-0
R10	7⅛	4-8¼
U3	2'-8¼"	10⅜"
U4	2'-9"	6
U6	2-9½	7-1¼
U7	6½	4-2¼
U8	6½	2-11¼

Dimensions shown are out to out of bars.

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

Note: For boring locations see sheet 1.



BORING DATA

BRIDGE ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

No. 30.3	Revised
June 1961	Dec 1964

DETAILED Feb. 1968 BY DHL

CHECKED Feb. 1968 BY FJD

Sheet No. 2 of 10.

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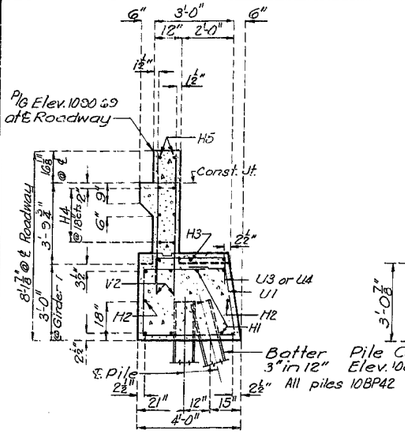
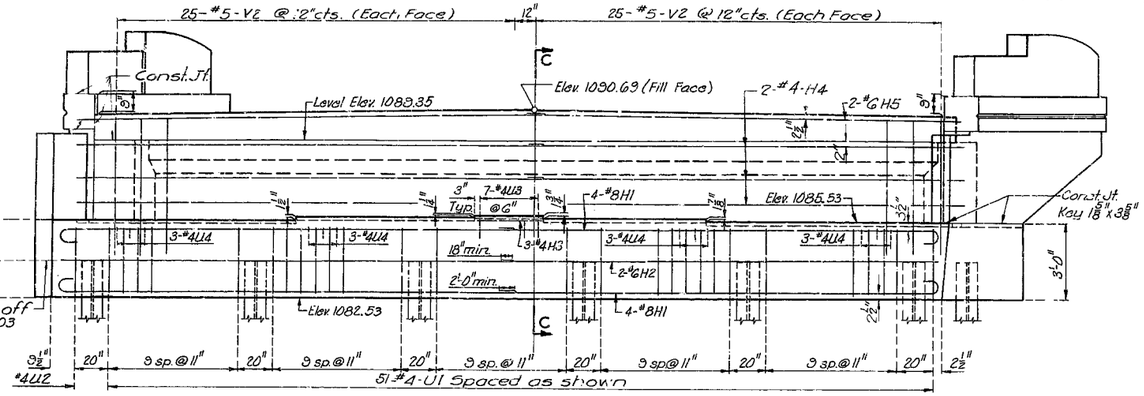
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	130	

Note: #6-H5 bars in backwall with Exp. device and #6 bars in wing to be bent in field.
See handrail sheet for reinforcement of end posts, parapets and curbs.

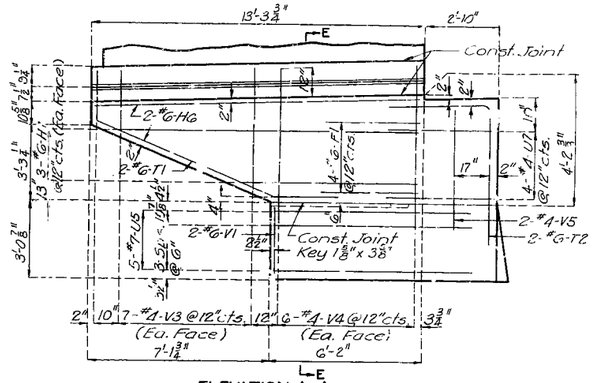


SECTION C-C

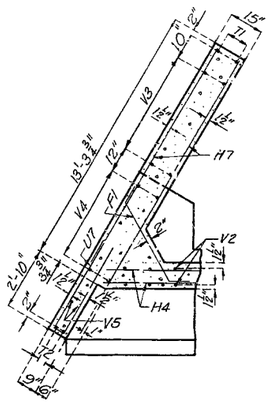


ELEVATION

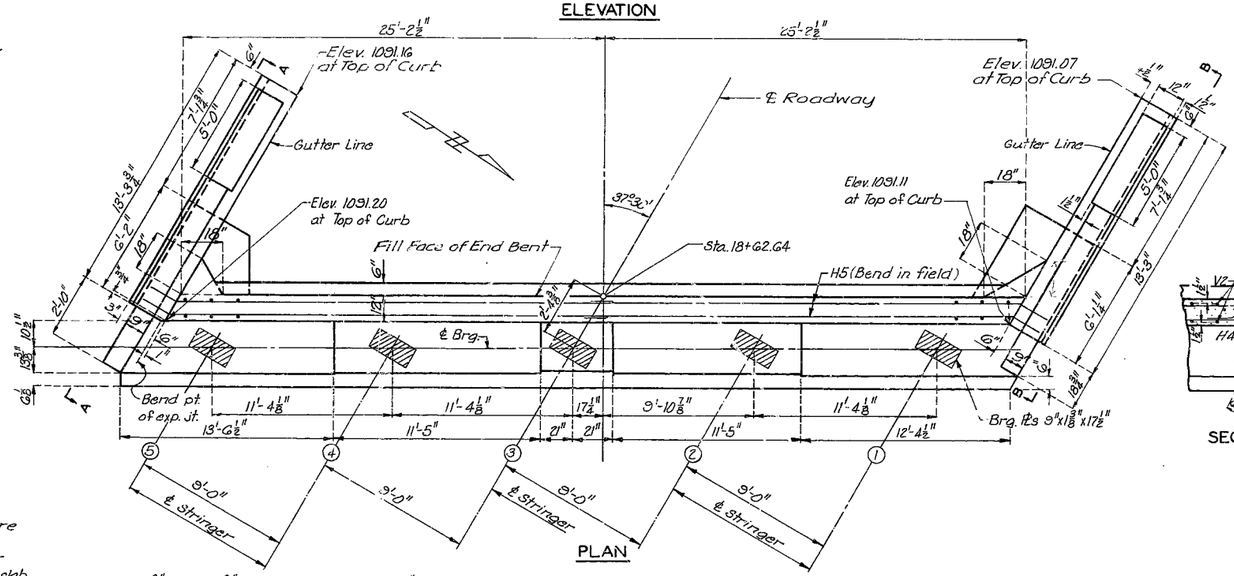
Note: #6-H5 bars in backwall with Exp. device and #6 bars in wing to be bent in field.
See handrail sheet for reinforcement of end posts, parapets and curbs.



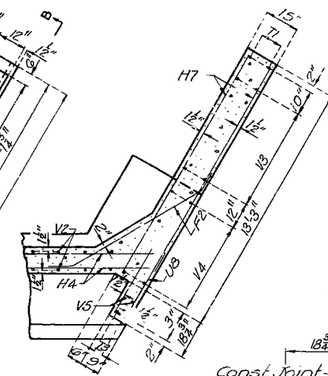
ELEVATION A-A



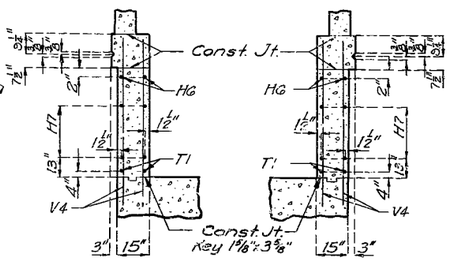
SECTION THRU WING



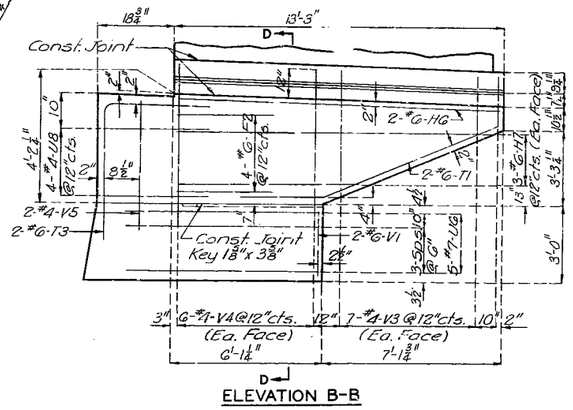
PLAN



SECTION THRU WING



PART SECTION D-D PART SECTION E-E

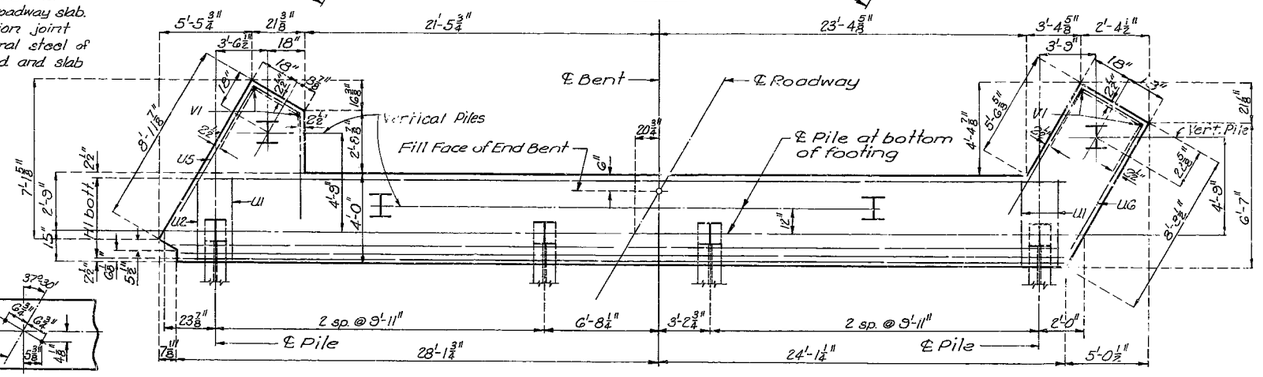


ELEVATION B-B

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

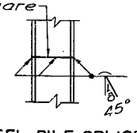
Top of backwall and expansion device for End Bent 1 to conform to crown of roadway slab.

Backwall above upper construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.

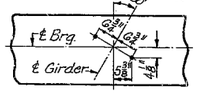


PLAN OF BEAM

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



STEEL PILE SPLICE



ANCHOR BOLT LAYOUT

For details of anchor bolt wall see Sh. 4.

DETAILED JAN. 1968 BY R.A.S.
CHECKED Feb. 1968 BY M.R.H

STD. 12.2	REVISED
APRIL 1965	FEB. 1967

DETAILS OF END BENT NO. 1

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

Sheet No. 3 of 10

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-7I-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

A-2094

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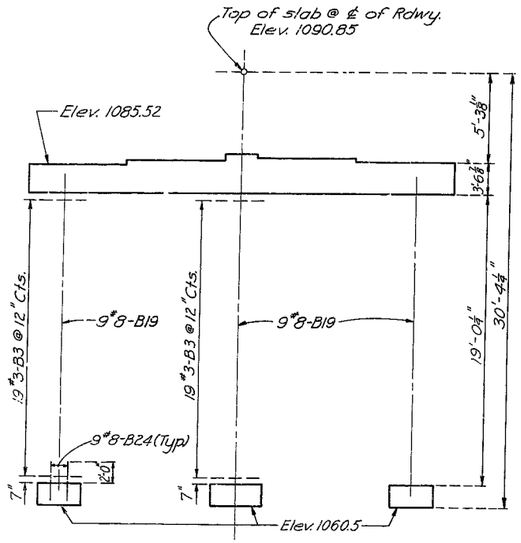
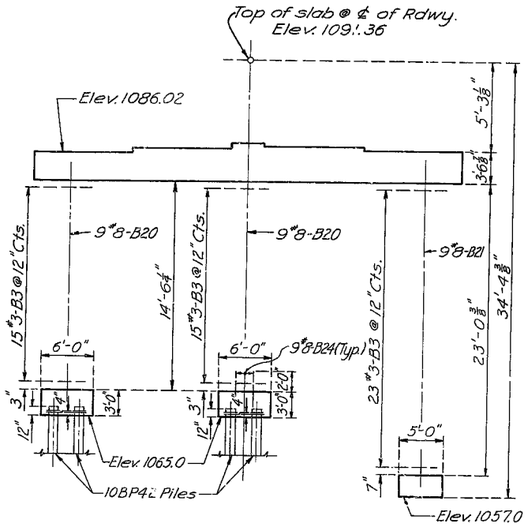
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	127	



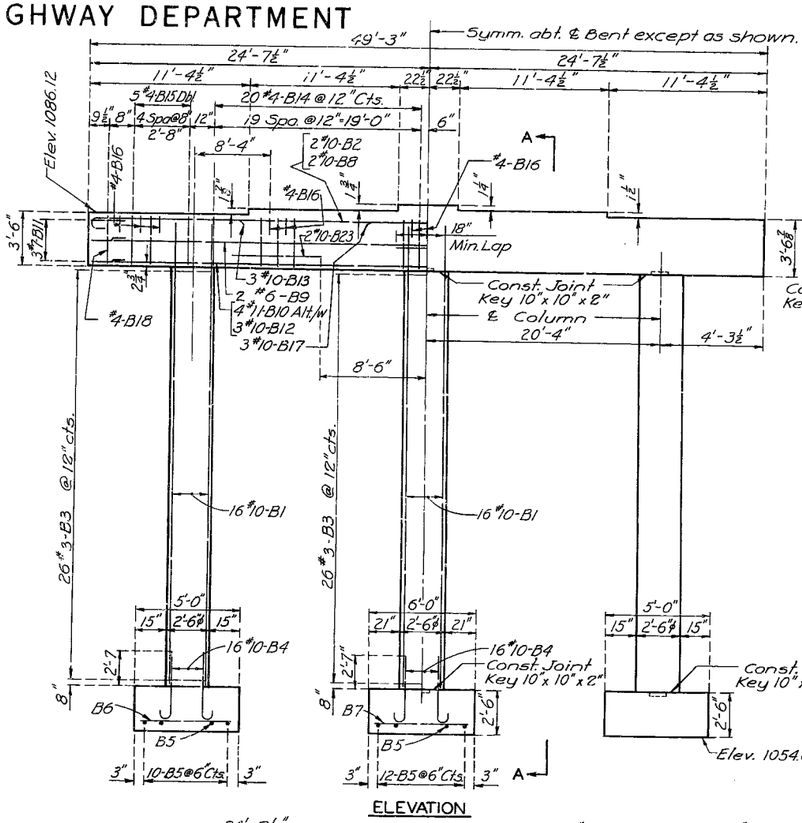
INTERMEDIATE BENT NO. 2



INTERMEDIATE BENT NO. 4

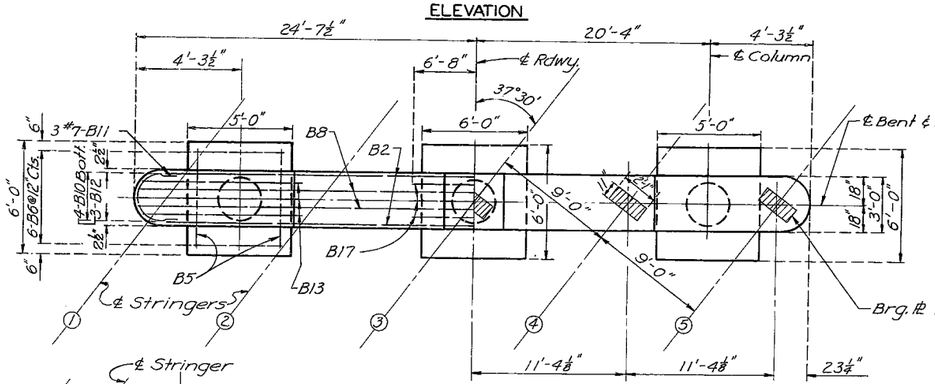
Note:
Details, dimensions, and reinforcing not shown are same as Bent 3.

Note:
Piles battered 2" in 12".



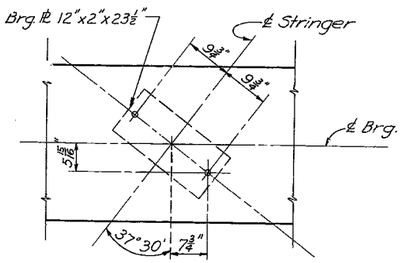
ELEVATION

SECTION A-A

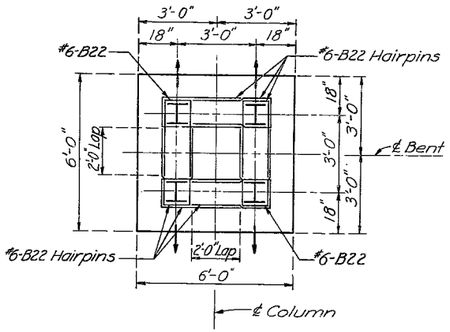


PLAN

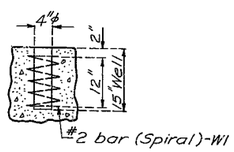
DETAILS OF INTERMEDIATE BENT NO. 3



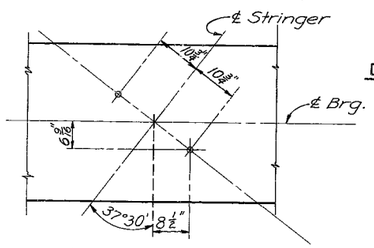
ANCHOR BOLT LAYOUT
BENTS 2 & 4



FOOTING PLAN



DETAIL OF ANCHOR BOLT WELLS



ANCHOR BOLT LAYOUT
BENT 3

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

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No.	Revised
19.5	Jan 1965

DETAILED Jan. 1968 BY R.T.W.
CHECKED Feb. 1968 BY WBH

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

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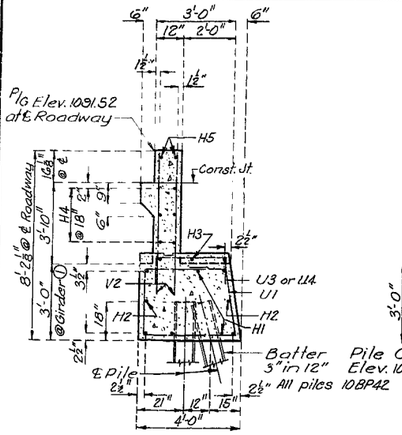
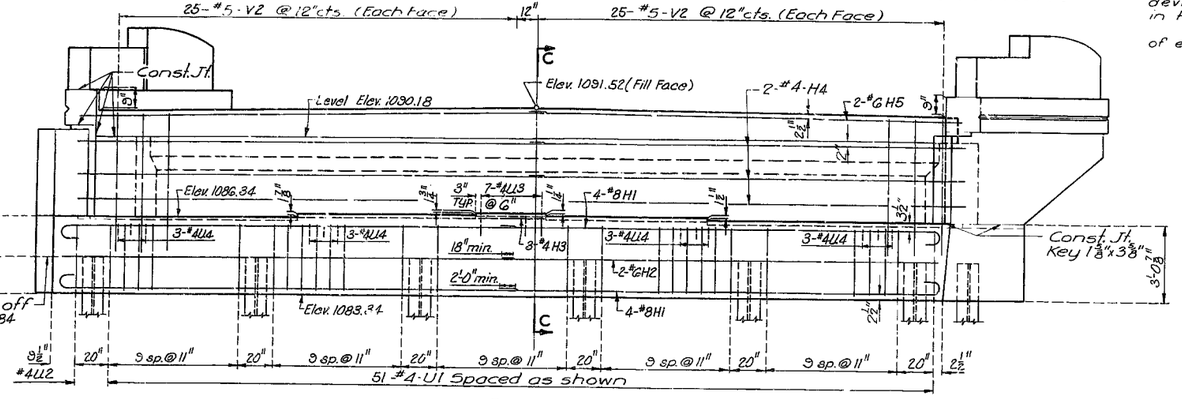
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19	124	

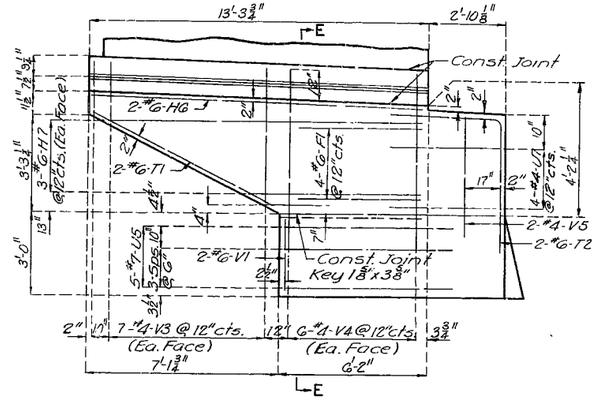
Note: #6-H5 bars in backwall with Exp. device and Fl#2 bars in wing to be bent in field.
See handrail sheet for reinforcement of end posts, parapets and curbs.

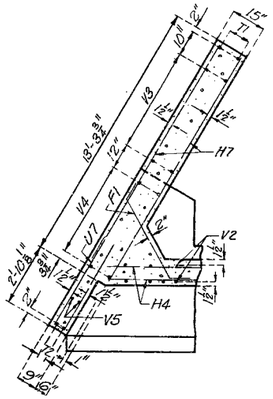


SECTION C-C

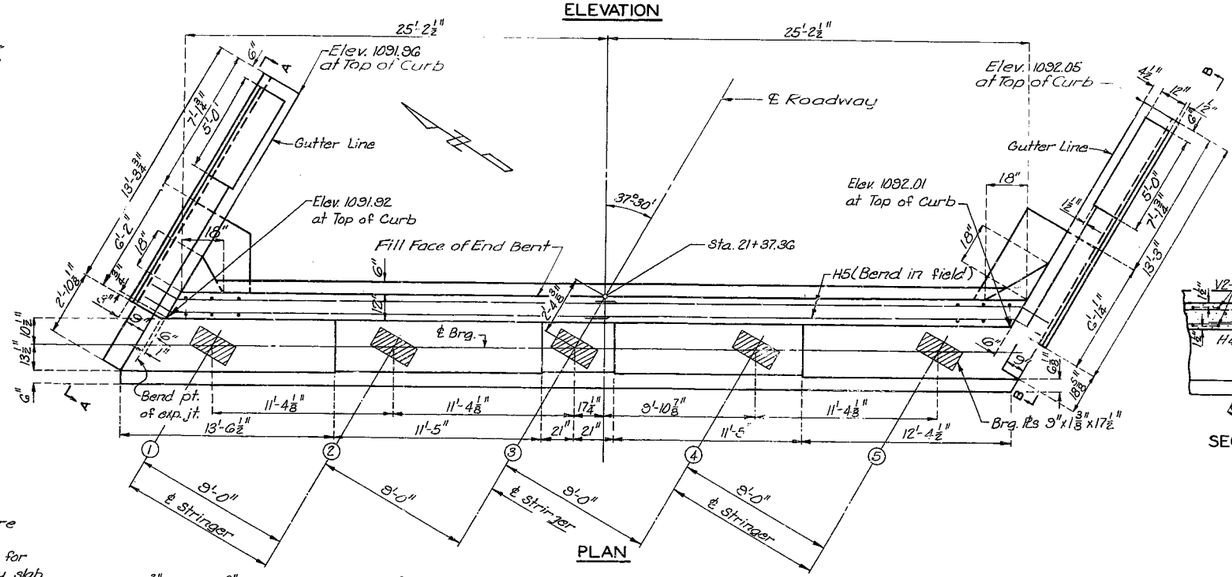


ELEVATION





SECTION THRU WING

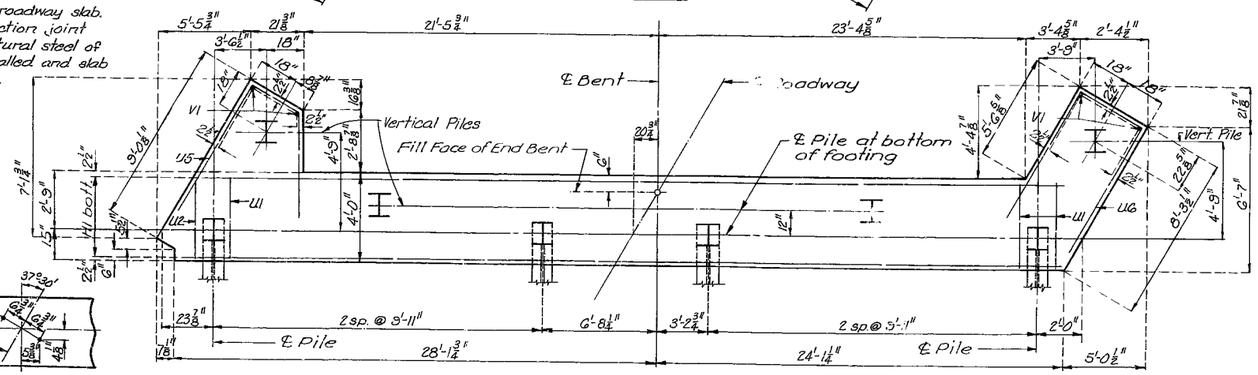


PLAN

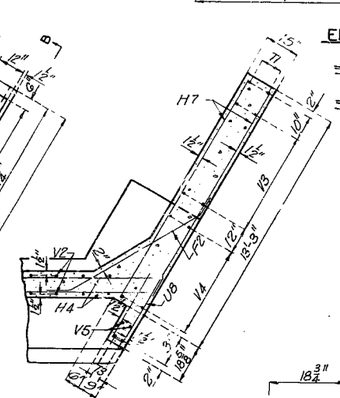
Note: Fill at end bent No. 5 shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

Top of backwall and expansion device for End Bent 5 to conform to crown of roadway slab.

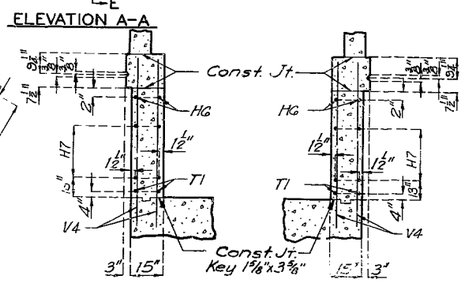
Backwall above upper construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.



PLAN OF BEAM

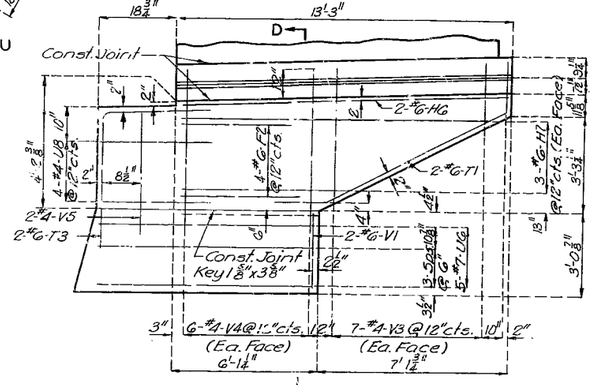


SECTION THRU WING



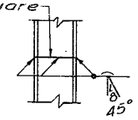
PART SECTION D-D

PART SECTION E-E



ELEVATION B-B

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



STEEL PILE SPLICE

ANCHOR BOLT LAYOUT

For details of anchor bolt well see Sh. 4.

STD. 12.2	REVISED
APRIL 1965	FEB. 1967

DETAILED JAN. 1968 BY R.A.S.
CHECKED Feb. 1968 BY M.R.H

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

DETAILS OF END BENT NO. 5

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

Sheet No. 5 of 10.

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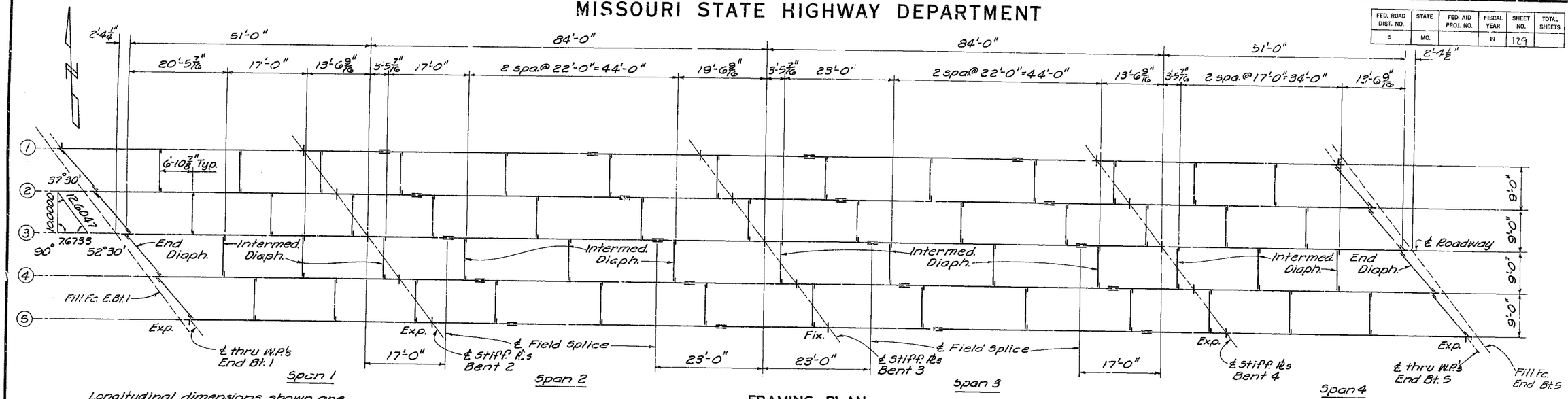
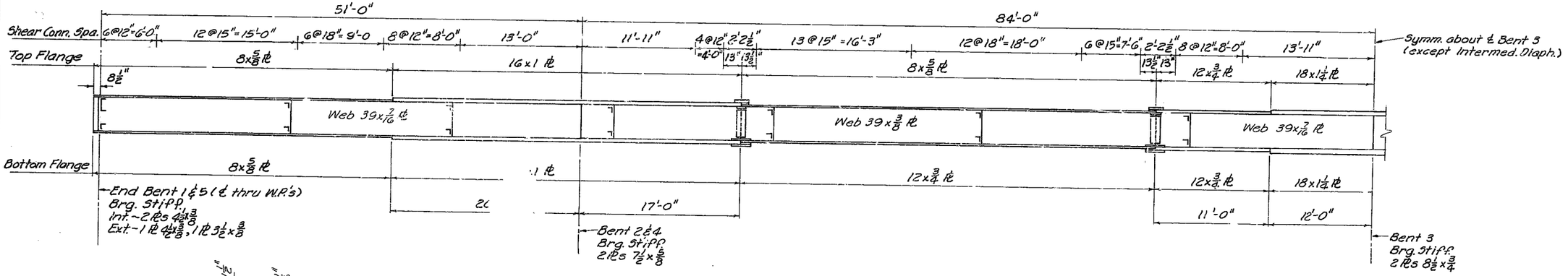
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	129	



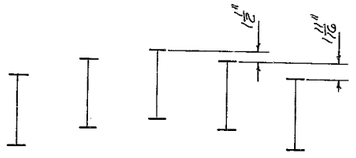
Longitudinal dimensions shown are parallel to profile grade.

FRAMING PLAN



GIRDER ELEVATION

Girder (1) shown
All conn. Pls 3½" x ⅜"



SECTION THRU STRINGERS

Dimensions are from top of web to top of web. Section is normal to ℄ of roadway.

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BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

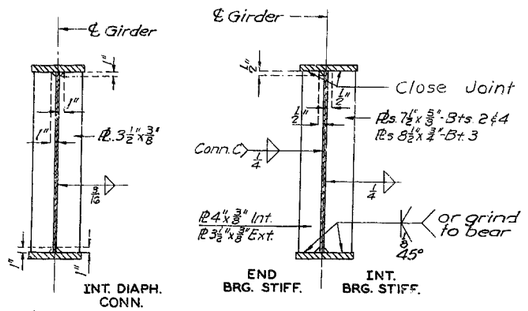
DETAILED Jan. 1968 BY WBH
CHECKED Feb. 1968 BY FJD

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

A-2094

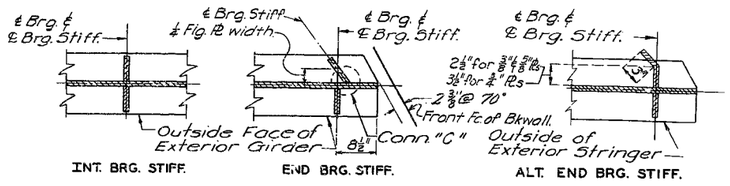
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	13-D	

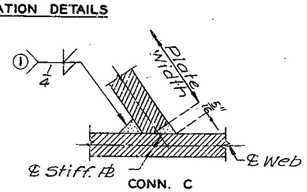


Note: Intermediate Diaphragm plates shall be fitted to form a close joint (½") top and bottom.

STIFFENER DETAILS
GIRDER SPANS

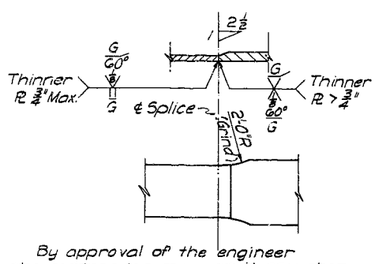


TYPICAL LOCATION DETAILS



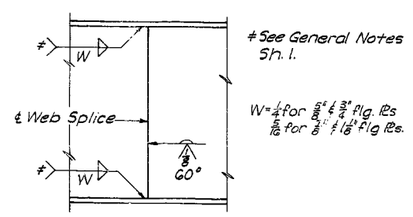
① Groove weld penetration = "¼" min. Only welding processes having good penetration will be permitted on groove welds.

WELDING DETAILS



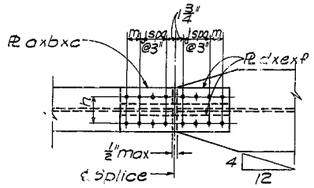
By approval of the engineer the contractor may omit any shop flange splice, if desired, by extending the heavier flange plate and providing approved modifications of details at field flange splices and elsewhere as required. Payweight in any case will be based on material shown on design plans.

SHOP FLANGE SPLICE

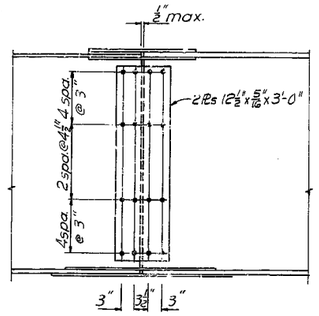


SHOP WEB SPLICE AND GIRDER WELDING

Note: Shop welded web splices may be fabricated by the contractor when detailed on the shop drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.



SHEAR CONNECTORS



Flange	a	b	c	d	e	f	h	j		m	Total no. of holes in each PL One as PL	Total no. of holes in each PL One ins PL	Fill PL
8"x⅝"	8"	⅝"	12½"	3"	⅝"	12½"	5"	1		3"	12	4	6"x9½"x½", 8"x9½"x⅜"
12"x¾"	12"	¾"	2'-6½"	5"	½"	2'-6½"	7"	3		3"	20	10	12"x 15"x½"

Field Splices: Use ⅞" high strength bolts with 15/16" ϕ reamed holes.

FIELD SPLICES

Radiographic Inspection

The following welds will be subject to radiographic inspection.

Shop: All butt welded flange plates, and shop web splices at hangers. At least ¼ of each web splice beginning at a point of maximum tension.

Field: None.

Magnetic Particle Inspection

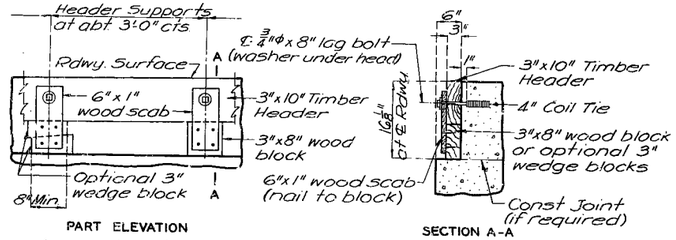
The following welds will be subject to inspection by the magnetic particle procedure.

Shop: At least 10% of each size and type of fillet welds, web to flanges and bearing stiffeners, and bearing devices

The tests shall be located at random in the members so as to be typical for each size and type of weld.

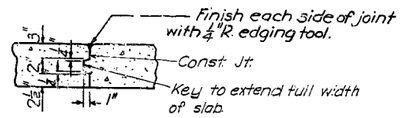
This test procedure may also be used for examination of weld passes and miscellaneous welds not specifically set out, at the discretion of the engineer.

Field: None.

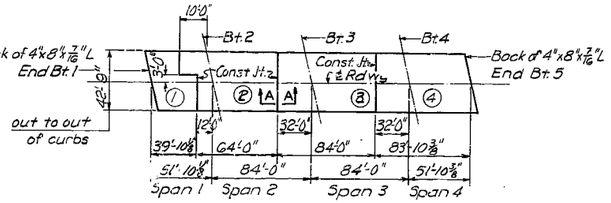


Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER



SECTION A-A



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

Note:

The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 42 cubic yards per hour unless he elects to use an approved retarder at his own expense to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 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 alternate pours. Finishing machine loads will not be permitted on concrete less than 48 hours old.

SLAB POURING SEQUENCE

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

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DETAILED Jan. 1968 BY K.K.D.

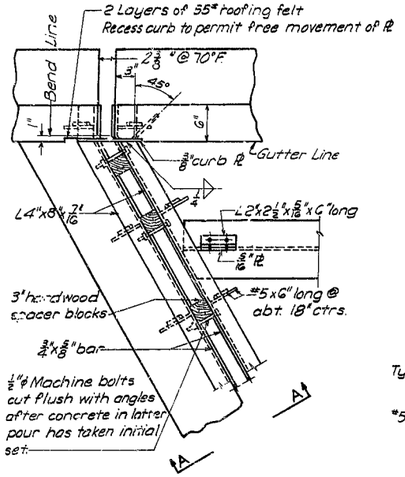
CHECKED Feb. 1968 BY F.J.D

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

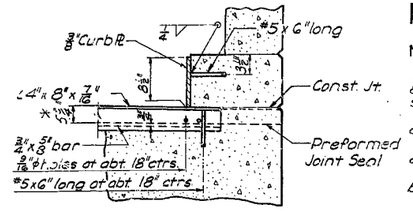
A-2094

MISSOURI STATE HIGHWAY DEPARTMENT

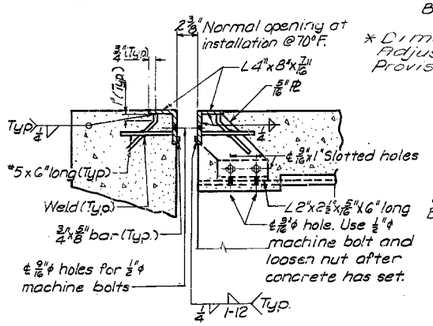
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	131	



PART PLAN



SECTION THRU CURB



SECTION A-A

Note:
Normal opening at installation shall be increased ⅛" for each 10° below 70° and decreased ⅛" for each 10° above 70°.

Type I Joint Seal 4" wide x 4 23/32" high.

Note:
Expansion device shall be fabricated in one section except that when the length is over 50', splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.

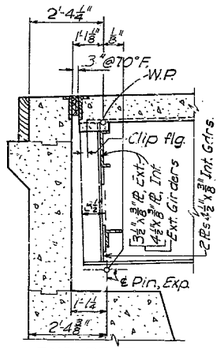
No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.

Payment for furnishing and placing structural steel of expansion device shall be made under price bid for Fabricated Structural Carbon Steel.

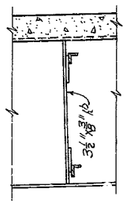
Payment for furnishing and placing preformed joint sealer shall be made under price bid for other items. See Special Provisions.

EXPANSION DEVICE

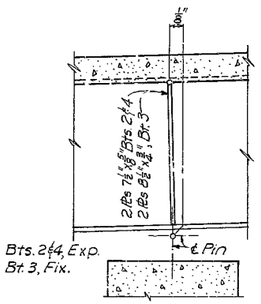
End Bents No 1 & 5



END BENT 1

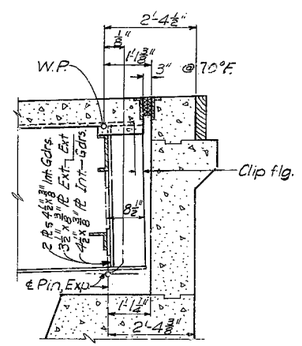


INTERMED. DIAPH.



BENTS 2,3 & 4

PART LONGITUDINAL SECTION



END BENT 5

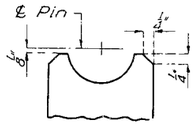
NOTES: TYPE "D" BEARINGS

Lead plates under bearings shall be approximately ⅛" thickness and weigh 8#/sq. ft. Cost of lead plates shall be included in price bid for other items. "Estimated weight" does not include weight of anchor bolts.

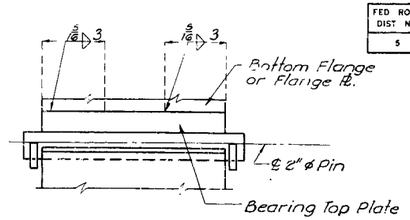
Rockers and pedestals shall be machined after welding.

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

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

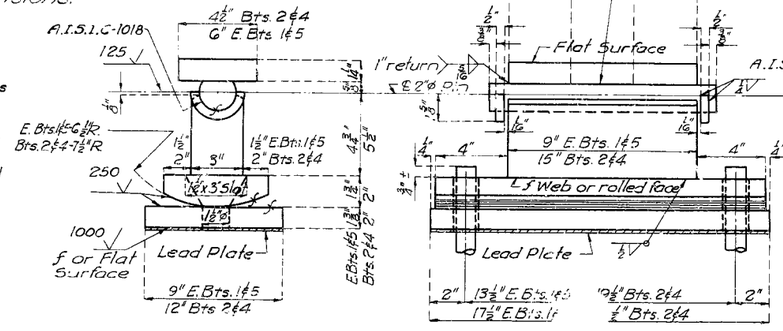


END VIEW OF WEB EXPANSION BEARING



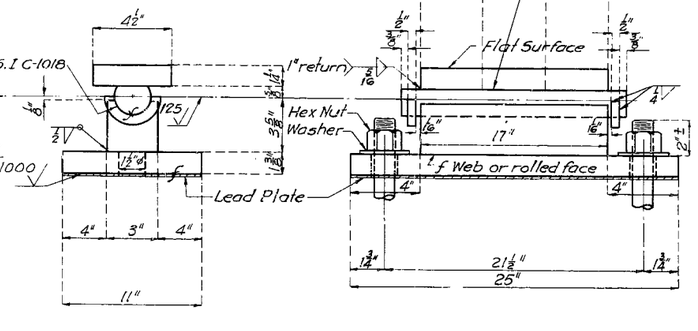
WELDING DETAILS

* Dimensions shown are for (Type I) seals. Adjust bar for other types. See Special Provisions.



EXPANSION

Required: 5, E. Bt 1
5, Bt. 2
5, Bt. 4
5, E. Bt 5

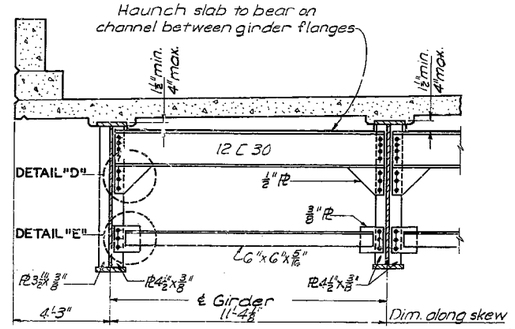


FIXED

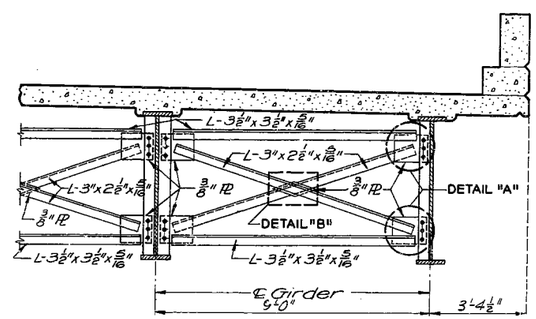
Required: 5, Bt. 3

TYPE "D" BEARINGS

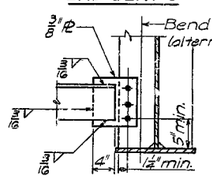
(Estimated Weight 5940#)



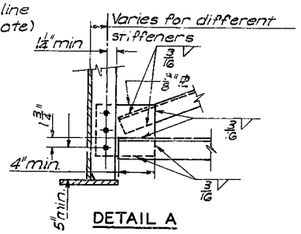
PART SECTION SHOWING END DIAPHRAGMS



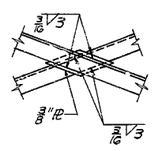
HALF SECTION SHOWING INT. DIAPHRAGMS



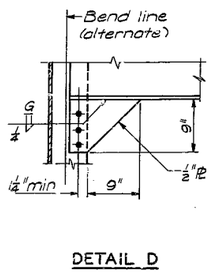
DETAIL E



DETAIL A



DETAIL B



DETAIL D

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

DETAILED Jan. 1968 BY K.K.O.

CHECKED Feb. 1968 BY A.J.D.

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

Sheet No. 8 of 10.

A-2094

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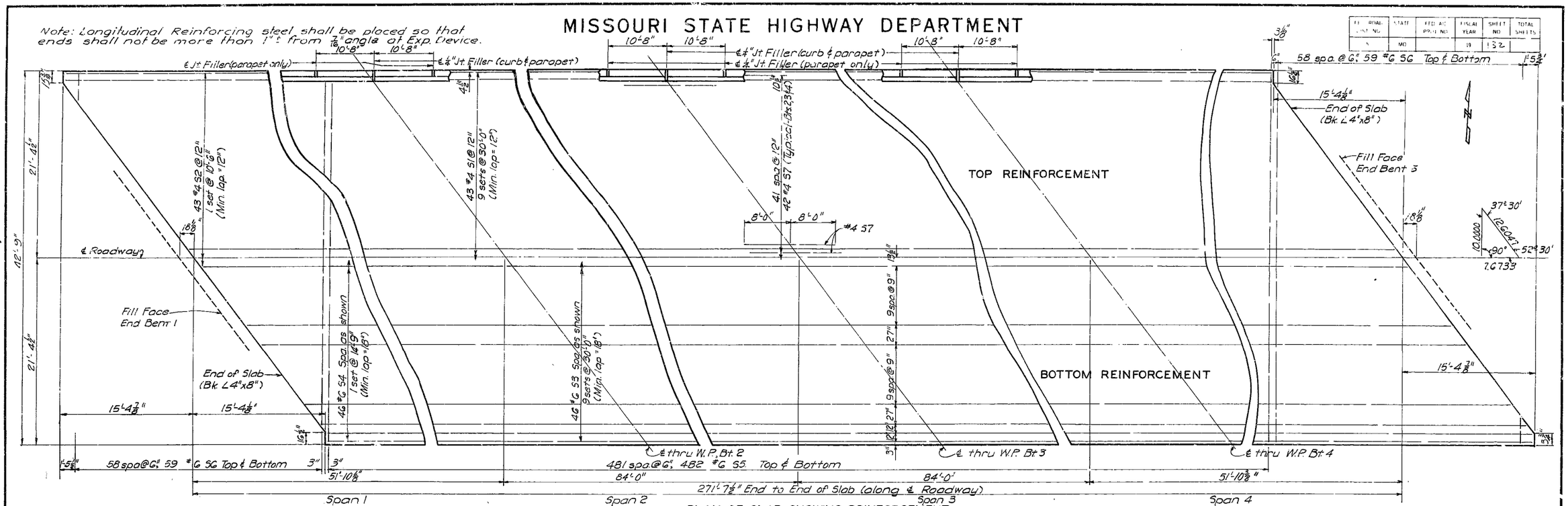
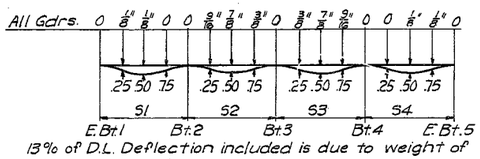
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD PROJ. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
S	MO		19	132	

Note: Longitudinal Reinforcing steel shall be placed so that ends shall not be more than 1" ± from 3/16" angle at Exp. Device.

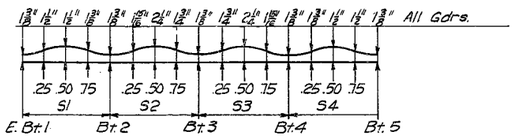


PLAN OF SLAB SHOWING REINFORCEMENT

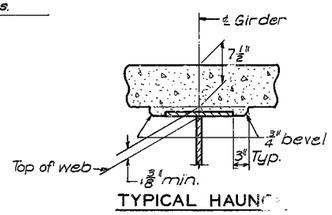


13% of D.L. Deflection included is due to weight of structural steel.

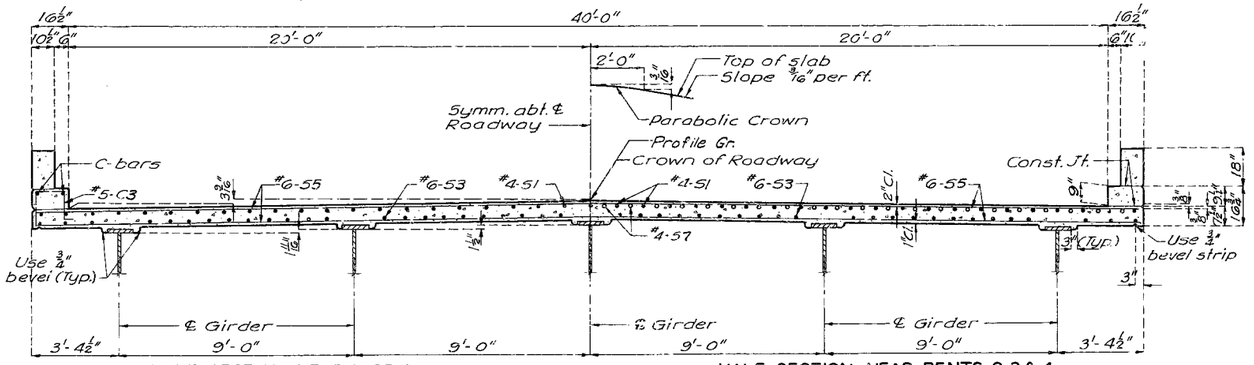
DEAD LOAD DEFLECTION DIAGRAM



THEORETICAL SLAB HAUNCHING DIAGRAM

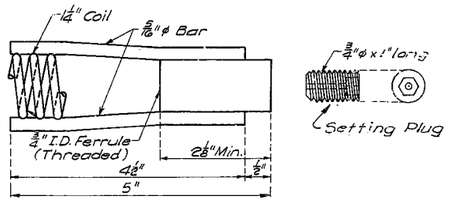


TYPICAL HAUNCH



HALF SECTION NEAR ℄ SPAN

HALF SECTION NEAR BENTS 2,3 & 4



DETAIL OF GUARD RAIL INSERT

Note: For details and reinforcement of curb and parapet not shown see sheet No. 10 of 10.

BRIDGE ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

A-2094

165

REVISED	
STD. 42.40.5	AUG. 1967

DETAILED JAN. 1968 BY KKD

CHECKED Feb. 1968 BY HJD

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

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	133	

GENERAL HANDRAIL NOTES:

All handrail posts shall be set normal to grade.

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

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

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

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

All fillets 1/4" except as noted.

All drafts 3° except as noted.

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

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

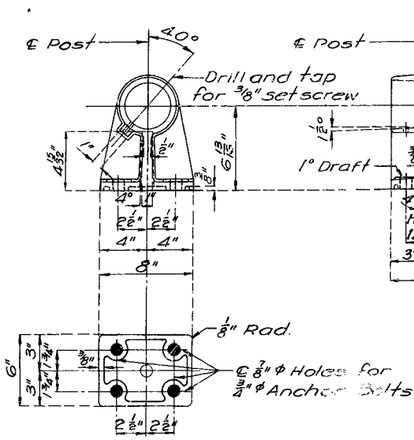
Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade.

Concrete end posts to be vertical.

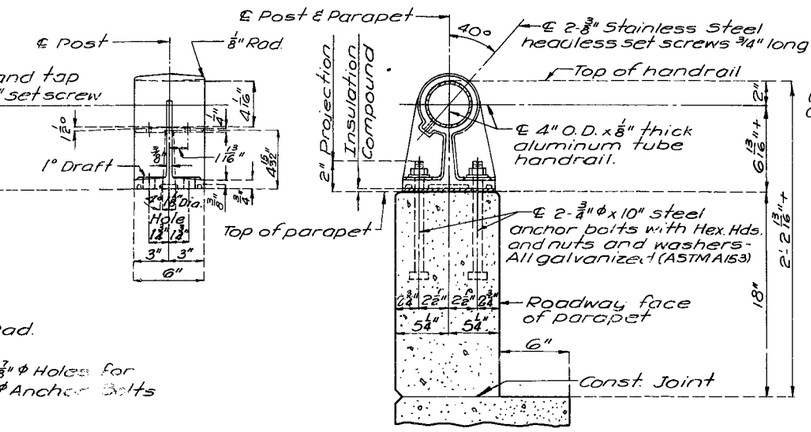
All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.

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

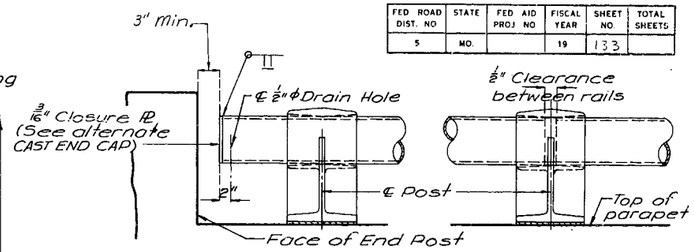
Integrally cast test coupons and a coat of clear lacquer specified in Std. Spec. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.



POST DETAILS



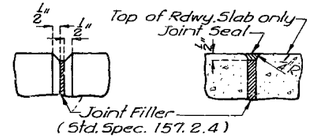
SECTION THRU HANDRAIL



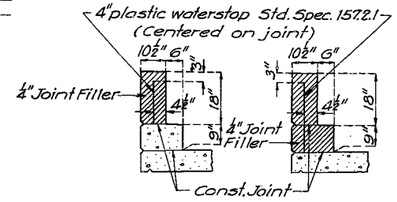
CAST END CAP
(Drive Fit Type)

POST RAIL SPLICE OR EXP.

TYPICAL HANDRAIL DETAILS



FILLED JOINT DETAILS

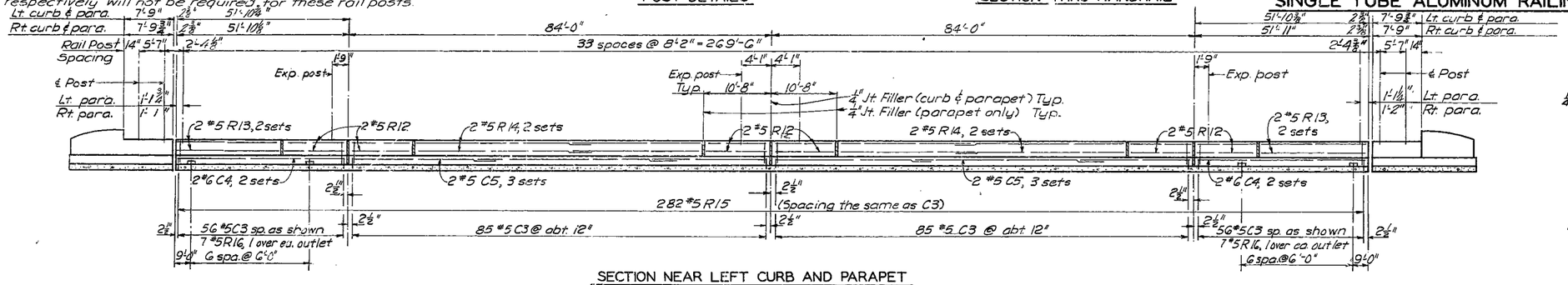


Note: Plastic waterstop shall be placed in all parapet and curb filled joints except at end bents.

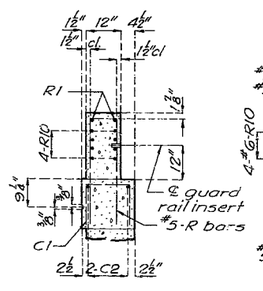
Cost of plastic waterstop complete in place to be included in unit price bid for concrete.

DETAILS OF PLASTIC WATERSTOP

SINGLE TUBE ALUMINUM RAILING



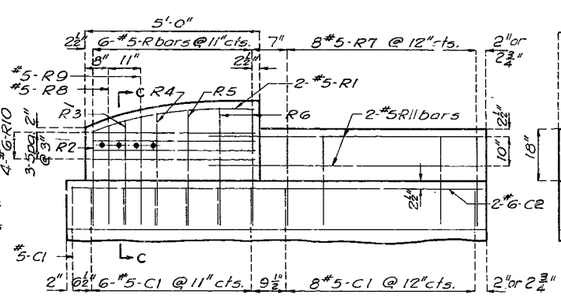
SECTION NEAR LEFT CURB AND PARAPET

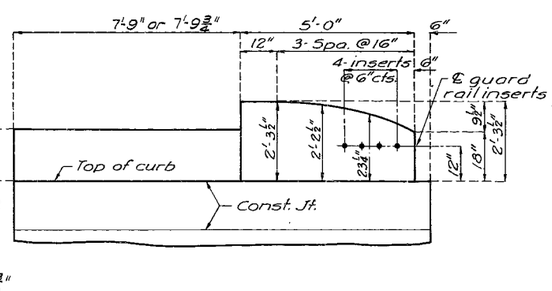


SECTION C-C

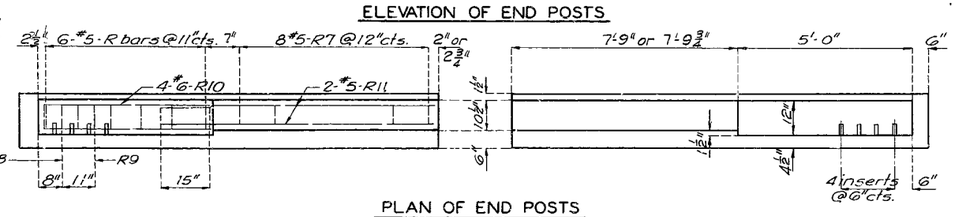
Note: Guard rail inserts with ferrule and setting plug shall be galvanized and cast in the concrete. The inserts shall have a tensile strength of 20,000 lbs. in 3000 psi concrete. Setting plugs shall remain in place until guard rail is attached. Payment for furnishing and installing guard rail inserts shall be included in price bid for other items.

For details of guard rail insert see Sh. 9.

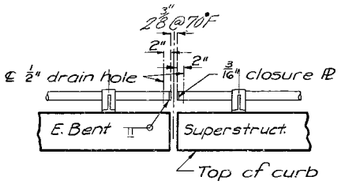




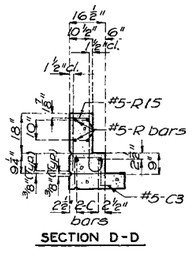
ELEVATION OF END POSTS



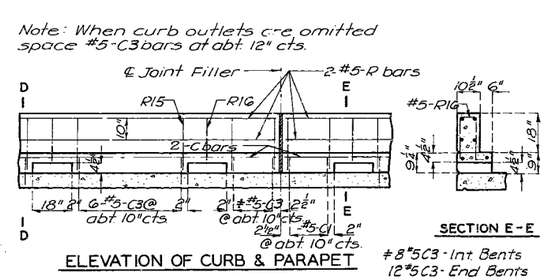
PLAN OF END POSTS



PART RAIL ELEVATION AT EXP. GAP



Note: When curb outlets are omitted space #5-C3 bars at abt. 12" cts.



ELEVATION OF CURB & PARAPET

#8 #5C3 - Int. Bents
12 #5C3 - End Bents

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

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

A-2094

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STD. 15.2	REVISED
MAR. 1964	JAN. 1967

DETAILED JAN. 1968 BY KKD

CHECKED FEB. 1968 BY FJD

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

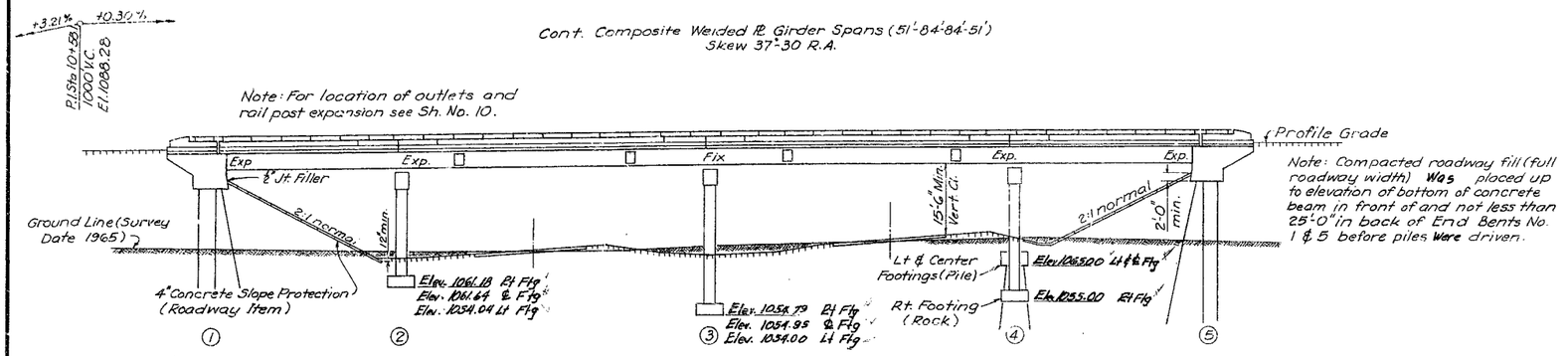
Sheet No. 10 of 10.

MISSOURI STATE HIGHWAY DEPARTMENT

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	12A	

Cont. Composite Welded PR Girder Spans (51'-84'-84'-51')
Skew 37°-30' R.A.



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

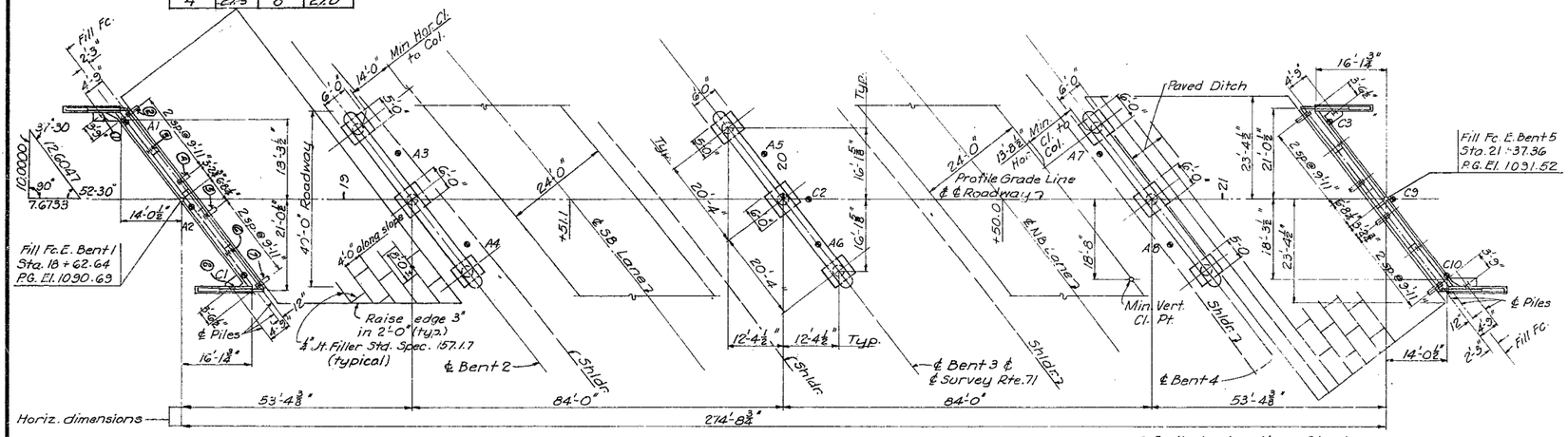
GENERAL ELEVATION

FOOTING AND PILE DATA						
	Bent No.	1	2	3	4	5
Spread Footings	Foundation Material		Rock	Rock	*Rock	
	Design Bearing Tons/Sq. Ft.		8	8	8	
Bearing Pile	Pile Type and Size	10BP42			*10BP42	10BP42
	Number	8			8	8
	Approximate Length Ft.	See Note 4			12'	29'
	Design Bearing Tons	34.9			53	34.9
	Hammer Energy required Ft. Lbs.	8700			12,500	8700

* Rt. footing, * Lt. & Center footing.

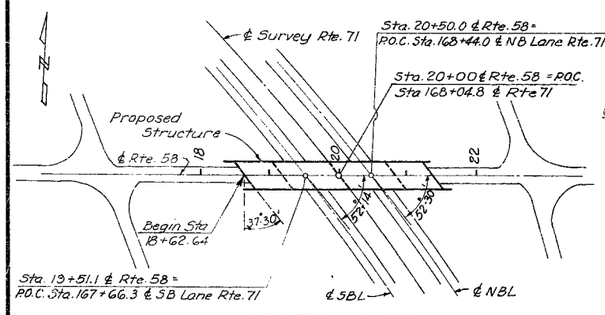
Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)2W when the weight of the ram (W) is less than the weight of the pile (w).
All pile **were** driven to practical refusal.

Pile Length Bent # 1			
Pile No	Length	Pile No	Length
1	23.0	5	28.0
2	28.5	6	27.5
3	22.5	7	22.0
4	27.5	8	27.0



PLAN

● Indicates location of borings For Boring Data see Sh. No. 2.



LOCATION SKETCH

Curve Data:

NB Lane
P.I. Sta. 169+84.4
Δ = 12°-26'-38" Rt.
D = 2°-02.9'
T = 305.0'
L = 607.5'
R = 2797.3'
S.E. = 0.05'/ft.

SB Lane
P.I. Sta. 166+64.6
Δ = 23°-04' Rt.
D = 2°-00'
T = 584.6'
L = 1153.3'
R = 2865.0'
S.E. = 0.06'/ft.

QUANTITIES					
Items		Substr.	Superstr.	Totals	
Class 1 Excavation	Cu. Yd.	204.0*		204.0	*
Steel Piles in Place (10")	Lin. Ft.	532*		532	*
Class B Concrete	Cu. Yd.	203.3*		203.3	*
Class B1 Concrete	Cu. Yd.		330.4*	330.4	*
Reinforcing Steel	Lb.	32,150*	108360*	140510	*
Painting	Tons		104.1*	104.1	*
Fabricated Structural Carbon Steel	Lb.		209,540*	209,540	*
Bridge Rail (Single tube)	Lin. Ft.		573*	573	*
Test Holes (Contingent Item)	Lin. Ft.	36*		36	*
Class 1 Excavation (Below Plan Contingent)	Cu. Yd.	22.0*		22.0	*
Crevice Concrete (Contingent Item)	Cu. Yd.	4.0*		4.0	*

All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
No payment for excavation was allowed at End Bents No 1 & 5

GENERAL NOTES

Design Specifications: AASHO - 1965

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

Design Unit Stresses:

Class B Concrete (Substructure)	fc = 1,200 psi
Class B1 Concrete (Superstructure)	fc = 1,600 psi
Reinforcing Steel	fs = 20,000 psi
Structural Steel (ASTM A36-66)	fs = 20,000 psi
Steel Pile (ASTM A36-66)	fb = 9,000 psi

Superstructure deck **Was** surface sealed.
Paint: Shop, none; Field, by contractor in accordance with Std. Spec. 55.4.10.
Field connections, High Strength Bolts ¾" ϕ, holes 1⅜" ϕ except as noted.
Details of welded joints shown are for manual arc welding except as noted.
The minimum size of fillet welds **Was** in accordance with AWS D2.0-66, Article 217(b) except the minimum size fillet weld connecting parts carrying primary stress ¼".
An opening of 13'-6" high × 30'-0" wide **Was** maintained during construction for each lane.

B.M. □ on Rt. Edge Pavement N.B.L. 26' Lt. Sta. 168+00 Elev. 1069.98
B.M. □ on N.E. Wing Bridge Elev. 1092.03

BRIDGE: ROUTE 58 UNDERPASS
STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN
CASS COUNTY

F. M. CORTELYOU, JR. NUMBER E-4155 REGISTERED PROFESSIONAL ENGINEER — STATE OF MISSOURI

SUBMITTED BY _____ BRIDGE ENGINEER DATE _____
APPROVED BY _____ CHIEF ENGINEER DATE _____

STD. 54.00
A-2094

DESIGNED JAN. 1968 BY H&C
DETAILED JAN. 1968 BY JER
CHECKED FEB 1968 BY FJD

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

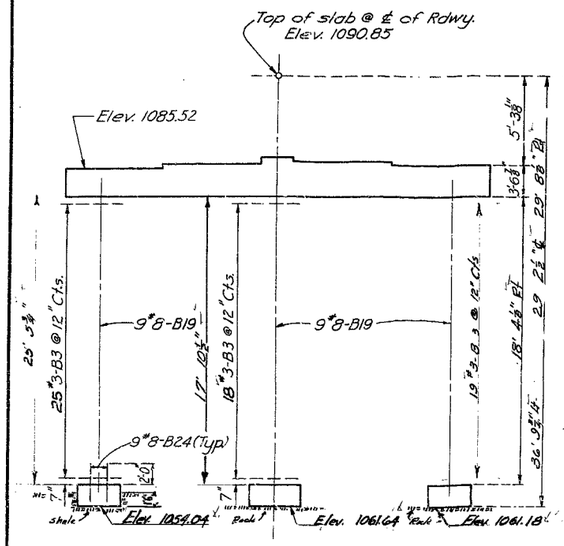
Sheet No. 1A of 2

FINAL PLANS

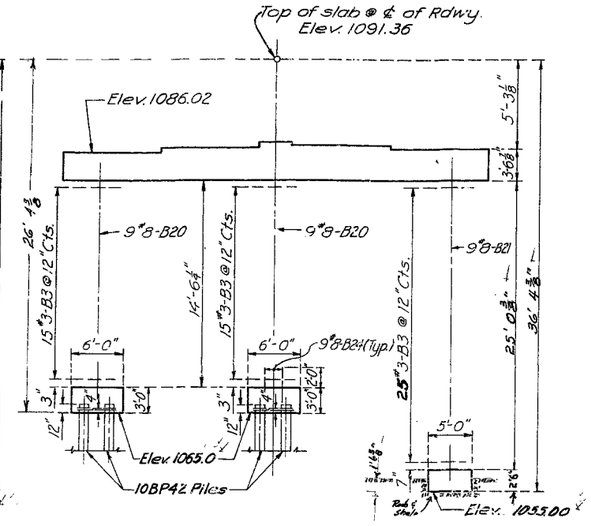
197

MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
3	MO		19	127	



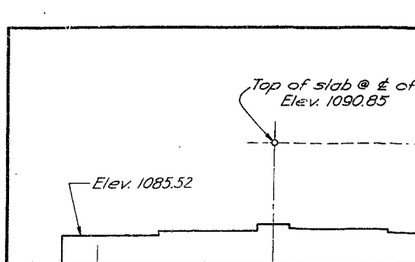
INTERMEDIATE BENT NO. 2



INTERMEDIATE BENT NO. 4

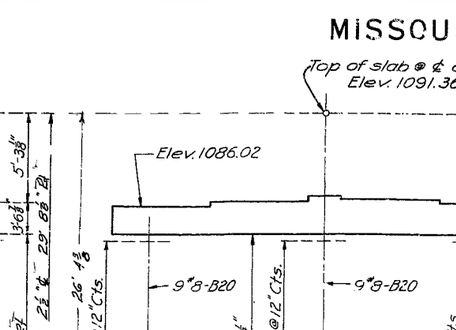
Note:
Details, dimensions, and reinforcing not shown are same as Bent 3.

Note:
Piles battered 2" in 12".

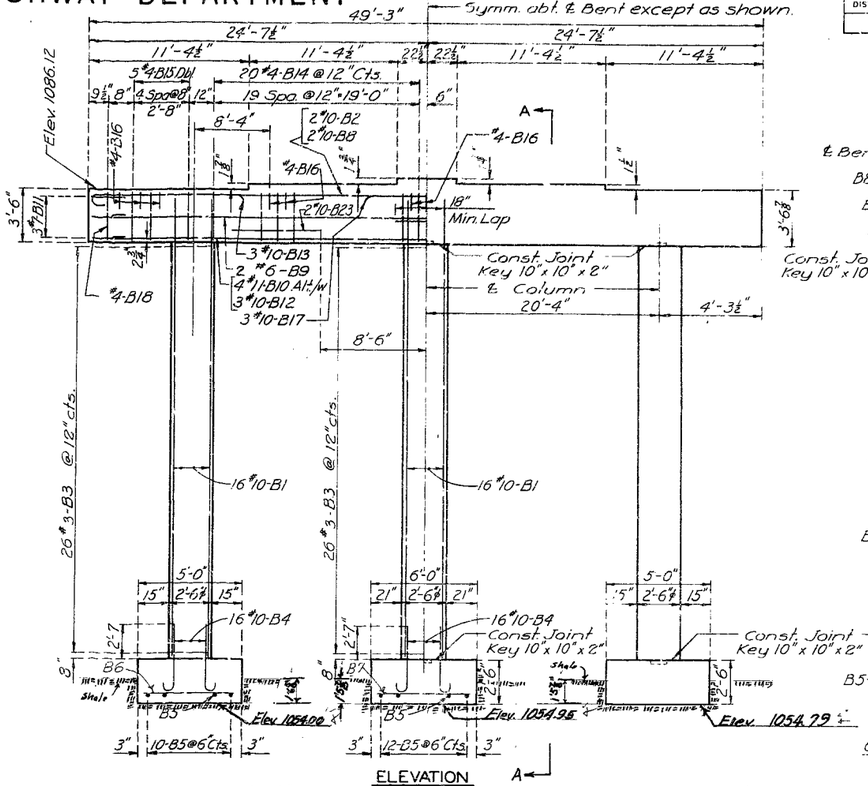


ANCHOR BOLT LAYOUT
BENTS 2 & 4

DETAIL OF ANCHOR BOLT WELLS



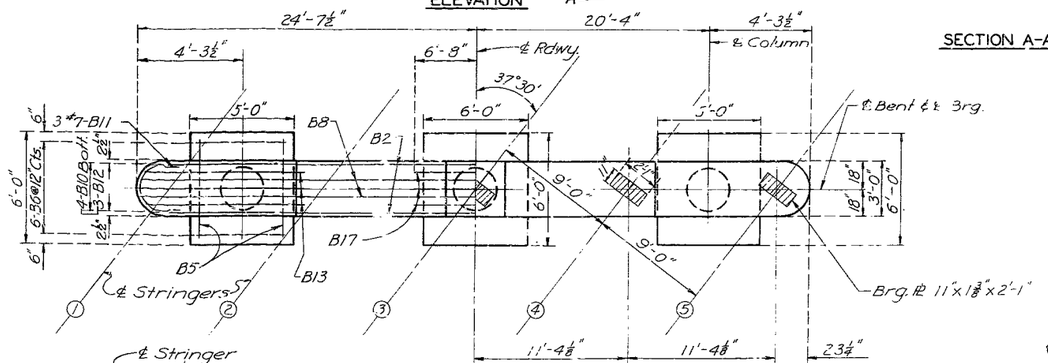
FOOTING PLAN



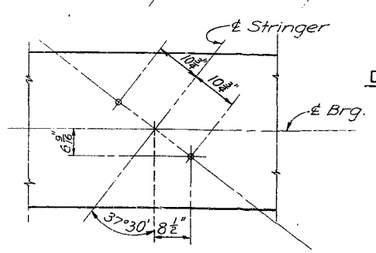
ELEVATION

A

SECTION A-A



PLAN
DETAILS OF INTERMEDIATE BENT NO. 3



ANCHOR BOLT LAYOUT
BENT 3

FINISHED

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN
CASS COUNTY

A-2094

168

No.	Revised	Jan. 1966
19.5		

DETAILED Jan. 1968 BY R.T.W.
CHECKED Feb. 1968 BY W.B.H

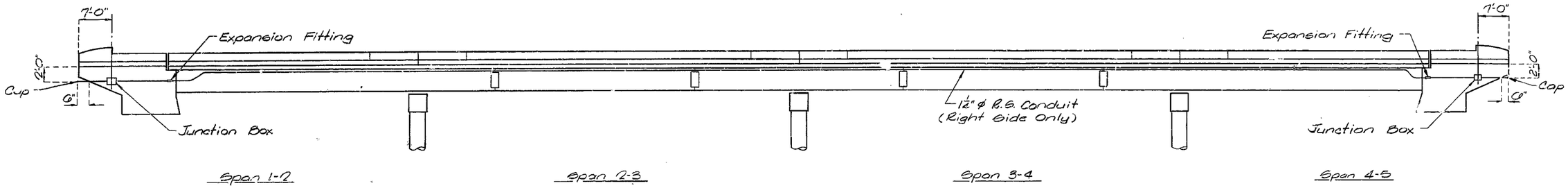
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4A of 2

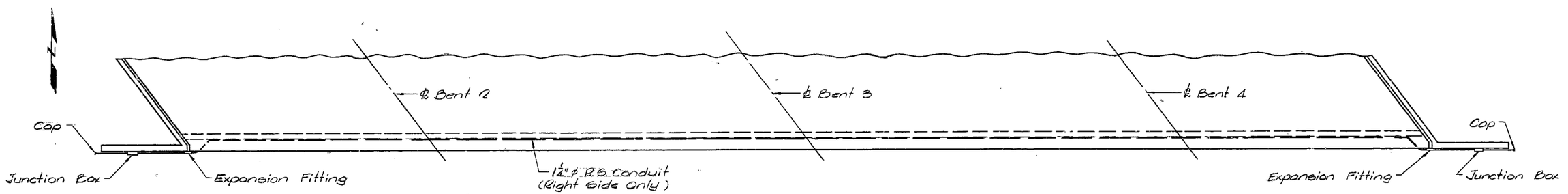
FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

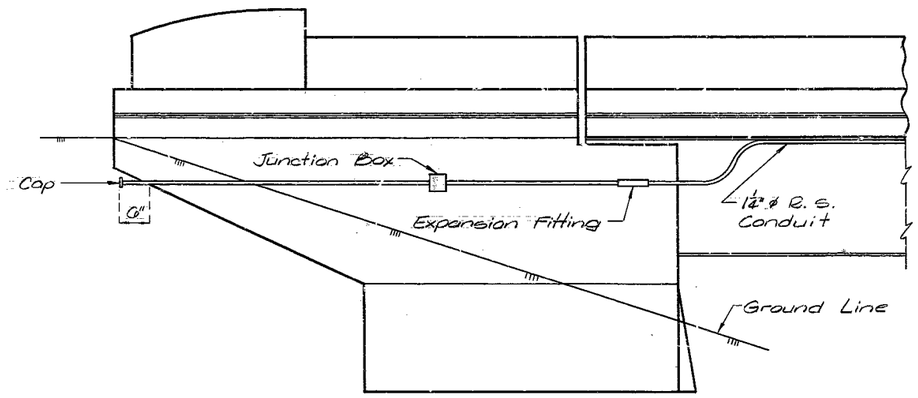
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		



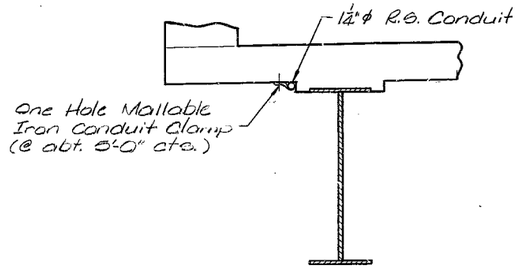
Elevation



Part Plan



Typical Elevation of Wing



Part Section Showing
Conduit Attachment

General Notes:

All 1¼" conduit shall be rigid steel (galvanized) as shown, complete with all necessary couplings, nipples, elbows and clamps.

Junction boxes shall be 8"×6"×4". They shall be the O.Z. Gedney Co. Type 'YH' or equivalent.

Galvanized expansion fittings shall provide a minimum movement in either direction of ¾" at End Bents 1 and 5. Expansion fittings shall be equal to O.Z. Gedney Co. Type 'DX' with approved bonding jumper.

Conduit shall be secured to concrete with clamps at about 8' centers.

DETAILED Nov., 1980
CHECKED Nov. 1980

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

Sheet No. 1 of 1.

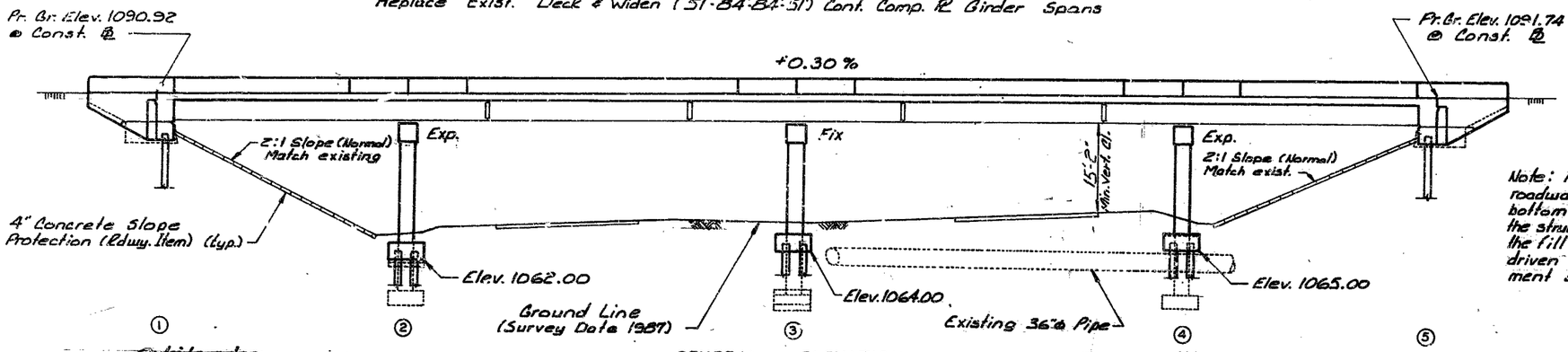
CASS **COUNTY**

A-2094A

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

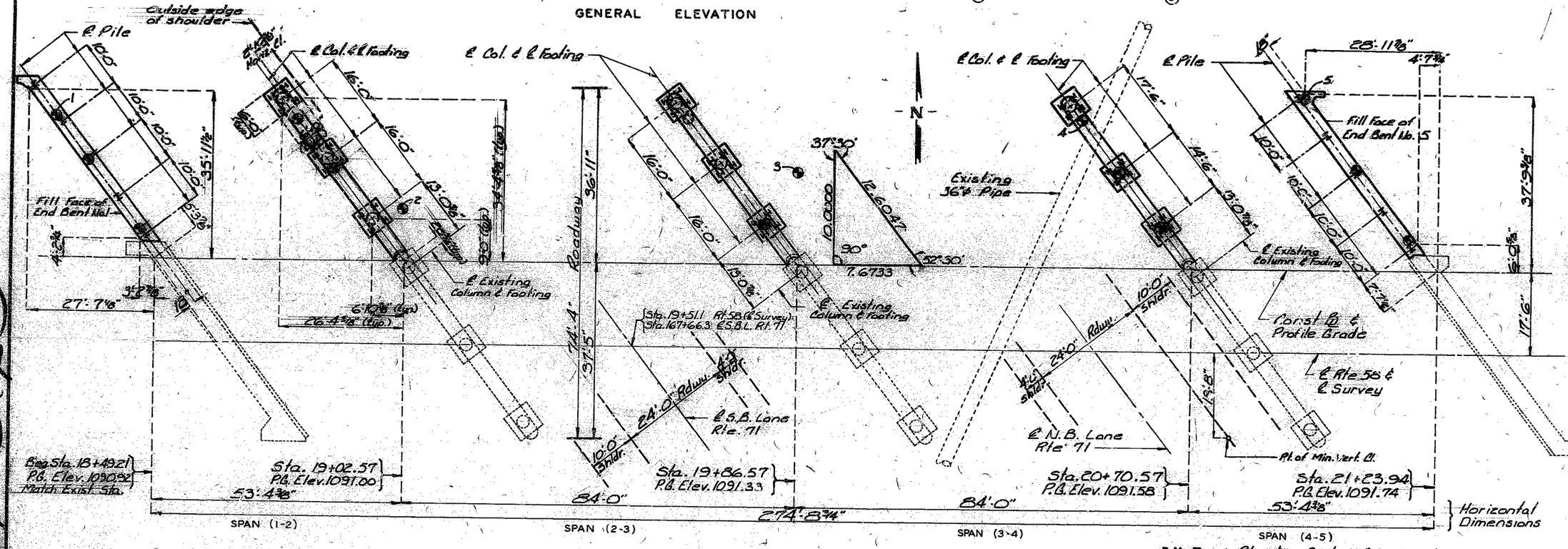
STATE	PROJ. NO.	SHEET NO.
MO.		77
SEC./SUR. 7 & 18	TWP. 46N	RGE. 32W

Replace Exist. Deck & Widen (51'-84'-84'-51') Cont. Comp. PC Girder Spans



GENERAL ELEVATION

Note: 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' in back of the fill face of the End Bents before piles are driven for any Bents falling within the embankment section.



PLAN

● Indicates location of borings. Boring data for all locations is available upon request from the District Office. Boring data for numbered locations is detailed on sheet No. 3.
Note: For General Notes, Estimated Quantities, and Pile Data see sheet No. 2.

B.M. □ on Rt. edge Pavt. N.B.L. 26' Lt. Sta. 168+00 (Rte 71) Elev. 1069.79

BRIDGE ROUTE 58 OVER ROUTE 71

STATE ROAD FROM JACKSON CO. LINE TO HARRISONVILLE NEAR BELTON

PROJECT NO. **STA.** 168+04.8 (℄ SURVEY)

JOB NO. 4-U-71-737 **RTE.** 71

CASS **COUNTY**

DATE 9/29/89

STD. 611.60
STD. 706.35
A-2094R

DESIGNED MAY 1989
DETAILED JULY 1989
CHECKED July 1989

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

SEE FINAL PLANS

Sheet No. 1 of 24

STATE	PROJ. NO.	SHEET NO.
MO.		73

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN. FT.		574	574
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1	1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.		11612	11612
CLASS 1 EXCAVATION	CU. YD.	140		140
STRUCTURAL STEEL PILE (10 IN.)	LIN. FT.	690		690
PRE-BORE FOR PILING	LIN. FT.	240		240
CLASS B CONCRETE (SUBSTR.)	CU. YD.	154.3		154.3
CLASS B-2 CONCRETE (SUPERSTRUCTURE ON STEEL)	CU. YD.		659.0	659.0
SAFETY BARRIER CURB	LIN. FT.		598	598
LAMINATED NEOPRENE BEARING PAD (STEEL STRUCTURE)	EACH		18	18
REINFORCING STEEL (BRIDGES)	POUND	14680	7260	21940
REINFORCING STEEL (EPOXY COATED)	POUND		171,560	171,560
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDER)	POUND		180,000	180,000
FABRICATED STRUCTURAL LOW ALLOY STEEL(PLATE GIRDER) A-572	POUND		20,410	20,410
SLAB DRAINS	EACH		20	20
PAINTING (EXISTING AND NEW STEEL)(SYSTEM C) GREEN *	LUMP SUM		1	1

NOTE:
ALL CONCRETE ABOVE LOWER CONSTRUCTION JOINT IN END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
ALL REINFORCEMENT IN THE END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
* APPROXIMATELY 98.9 TONS OF NEW STEEL AND 104.1 TONS OF EXISTING STEEL SHALL BE PAINTED (SEE SPECIAL PROVISIONS).

EXISTING RAIL TO BE REMOVED AND STORED AT M.H.T.D. LOT LOCATED APPROXIMATELY $\frac{1}{2}$ MILE SOUTH OF RT. 58 ON WEST OUTER ROADWAY.

PILE DATA

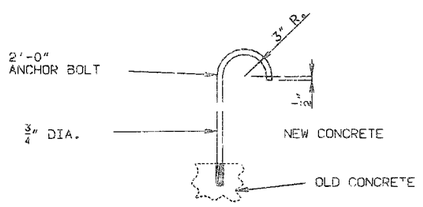
BENT NO.		1	2	3	4	5
PILE TYPE AND SIZE		HP10×42	HP10×42	HP10×42	HP10×42	HP10×42
NUMBER		5	12	12	12	5
APPROXIMATE LENGTH	FT.	27	11	11	13	27
DESIGN BEARING	TONS	41	41	48	42	41
HAMMER ENERGY REQUIRED	FT. LBS.	9200	9200	10800	9400	9200

MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH AND DESIGN BEARING VALUE OF PILES.

ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

PREBORE FOR PILES AT BENTS 2 AND 3 TO ELEVATIONS 1052.0 AND 1054.0 RESPECTIVELY.

NOTE: A MINIMUM VERTICAL CLEARANCE OF 14'9" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'0" CENTERED ON EACH EXISTING LANE SHALL BE MAINTAINED DURING CONSTRUCTION.



HOOK ANCHOR BOLT DETAIL

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989
LOAD FACTOR DESIGN.

DESIGN LOADING:
HS20-44
35#/SQ.FT. FUTURE WEARING SURFACE
MODIFIED 24,000# TANDEM AXLE
EARTH 120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS-CASE II

DESIGN UNIT STRESS:
CLASS B CONCRETE (SUBSTRUCTURE) f'c=3,000 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 CARBON STEEL fy=36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A-572) GRADE 50 fy= 50,000 PSI
STEEL PILE fb=9,000 PSI

FABRICATED STEEL CONNECTION:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS $\frac{3}{4}$"Ø,HOLES $\frac{13}{16}$"Ø EXCEPT AS NOTED.
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

TRAFFIC:
TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. SEE STAGE CONSTRUCTION SEQUENCE.

JOINT FILLER:
ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4, EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE $1\frac{1}{2}$" . UNLESS OTHERWISE SHOWN.

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

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, UNLES OTHERWISE NOTED.

ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST $\frac{1}{2}$".

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712.12.

AREAS TO BE ENCASED IN END BENT CONCRETE SHALL BE PAINTED ONE COAT OF SYSTEM C PRIMER AND SCRATCHED OR DAMAGED SURFACES ARE TO BE TOUCHED UP IN THE FIELD BEFORE CONCRETE IS POURED.

NOTE: ANCHORS SHALL BE OF THE SELF-DRILLING EXPANSION TYPE, MADE OF CASE-HARDENED AND DRAWN CARBURIZED STEEL, WITH SELF-CUTTING ANNULAR BROACHING GROOVES.

COST OF FURNISHING AND INSTALLING HOOK ANCHOR BOLT ASSEMBLIES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR CONCRETE.

AT THE OPTION OF THE CONTRACTOR, ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS MAY BE SUBSTITUTED FOR THE CONE EXPANSION TYPE CONCRETE ANCHORS NOTED ON THE PLANS.

THESE ANCHORS SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS AND THAT AN EPOXY COATED #6 GRADE 60 REINFORCING 3'-0" LONG SHALL BE SUBSTITUTED FOR THE 3/4"Ø THREADED ROD STUD.

DETAILED JULY 1989
CHECKED AUG 1989

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

CASS COUNTY A-2094R

STATE	PROJ NO	SHEET NO
MO		79

Standard Penetration Test

Depth	Blows/6"	PP(tsf)
5'	4-9-12	3.5
10'	3-5-6	
17.8'	15-85 5"	3.5-4.0
20'		9+
22'		9+
23.3	100 in 3"	

Elev. 1073.30

Black clay, moderately dry, stiff (Fill material).

Elev. 1066.80

Brown clay, moderately dry, moderately stiff.

Elev. 1061.00

Tan gravelly clay with shaley limestone and coarse sandy shale stringers throughout.

Elev. 1055.50

Gray & tan coarse, sandy shale with some shaley limestone stringers.

Elev. 1050.90

Gray shale, dry, thinly laminated.

Elev. 1046.70

① (CORE)

Elev. 1067.00

Asphalt and base rock.

Elev. 1066.00

Brown clay with scattered cobbles.

Elev. 1061.00

Tan shaley limestone.

Elev. 1059.90

Light brown clayey, weathered shale, wet and moderately stiff.

Elev. 1053.80

Gray course, sandy shale with some calcareous shale stringers.

Elev. 1051.60

Gray shale, hard, thinly laminated.

Elev. 1045.80

② (CORE)

Elev. 1068.30

Black clay.

Elev. 1061.20

Brown clay.

Elev. 1059.00

Limestone stringer, soft weathered shale underneath.

Elev. 1053.80

Gray shale with shaley limestone and limestone stringers throughout.

Elev. 1048.00

Gray shale, dry, thinly laminated.

Elev. 1043.80

③ (CORE)

Standard Penetration Test

Depth	Blows/6"	P.P.(tsf)
17'		9+
18'		5.0-9+
19'		9+
20'		5.0
21'		4.0-9+
22'		2.0-9+
23'		2.0-4.0
24'		9+
25'		9+
26'		9+

Elev. 1070.60

Brown and black clay (fill material).

Elev. 1065.80

Black clay, moderately dry, stiff.

Elev. 1058.90

Gray clay, wet, moderately soft.

Elev. 1054.90

Gray shale with shaley limestone and course sandy shale stringers.

Elev. 1049.10

Gray shale, dry, very stiff

Elev. 1044.40

④ (CORE)

Standard Penetration Test

Depth	Blows/6"	P.P.(tsf)
5'	4-9-9	1.0-2.0
10'	2-3-6	1.0-1.5
15'	2-2-7	1.0
20.7'	100 in 5"	5.5
25.6'	100 in 6"	9+

Elev. 1072.90

Black clay, moderately dry, stiff (Fill material).

Elev. 1065.40

Black and brown mottled clay, moderately wet, soft to stiff (Fill material).

Elev. 1061.10

Light brown, clay, wet, soft.

Elev. 1055.90

Rust brown shale with shaley limestone stringers.

Elev. 1053.90

Tan shaley limestone with coarse sandy shale stringers.

Elev. 1052.20

Gray shale, dry, thinly laminated.

Elev. 1041.90

⑤ (CORE)

BORING DATA

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

4-13-94

DETAILED JULY 1989
CHECKED July 1989

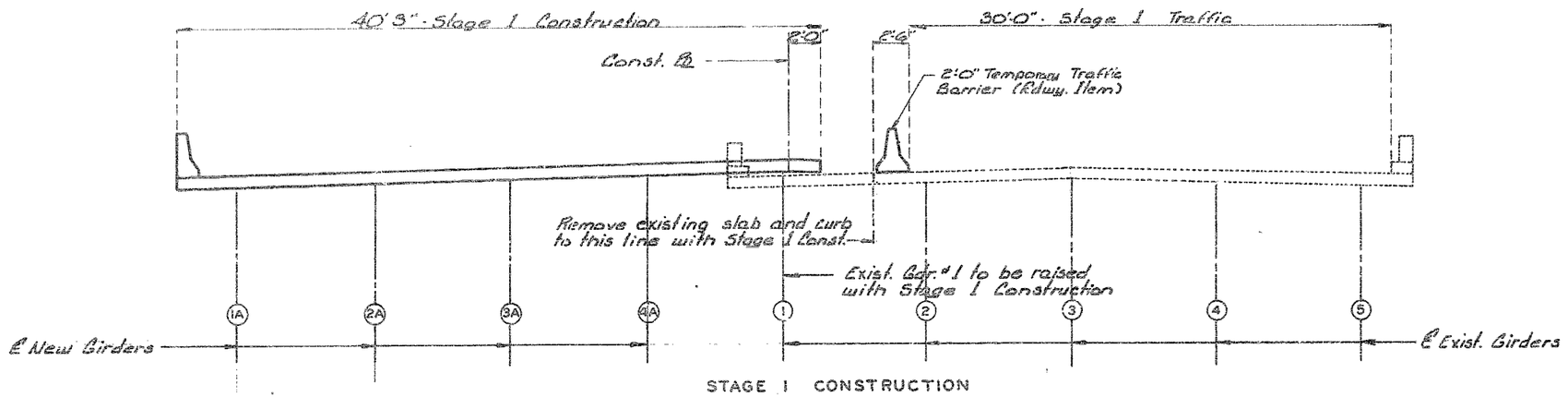
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 24

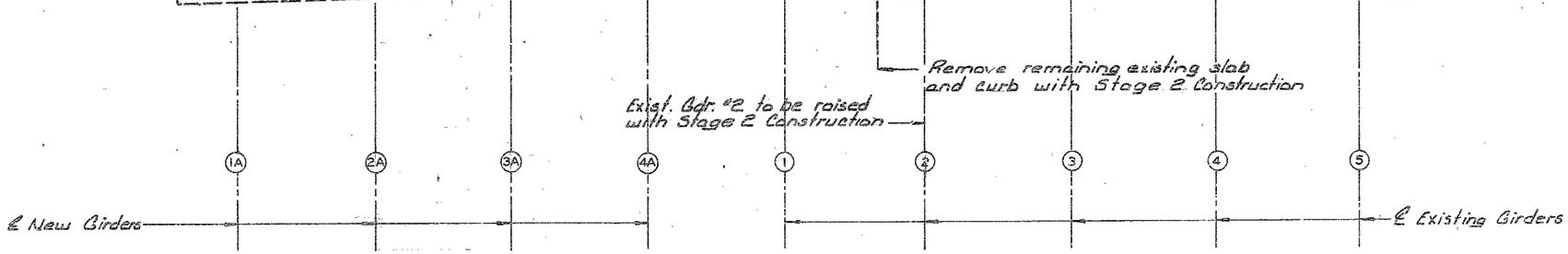
CASS COUNTY

A-2094 R

STATE	PROJ. NO	SHEET NO
MO.		80



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

DETAILED June 1989
CHECKED July 1989

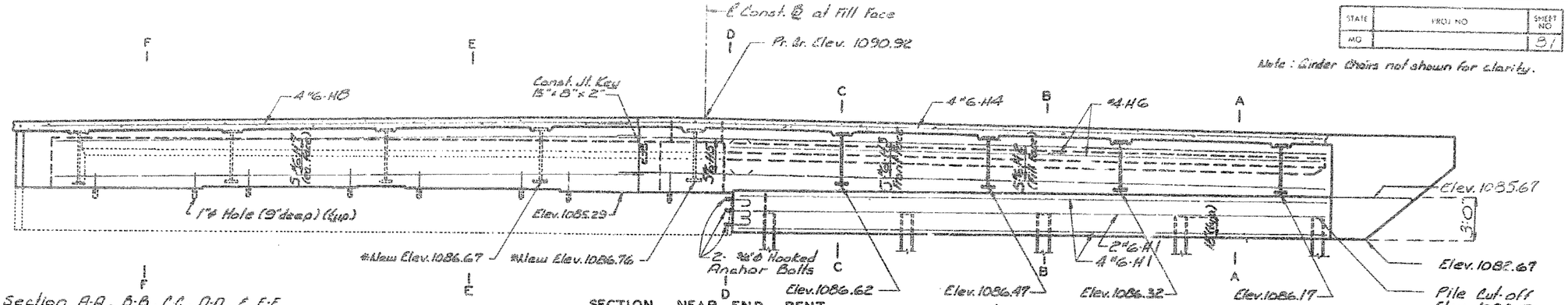
Note: This drawing is not to scale. Follow dimensions.

CASS COUNTY

A-2094R

STATE	PROJ. NO.	SHEET NO.
MO.		37

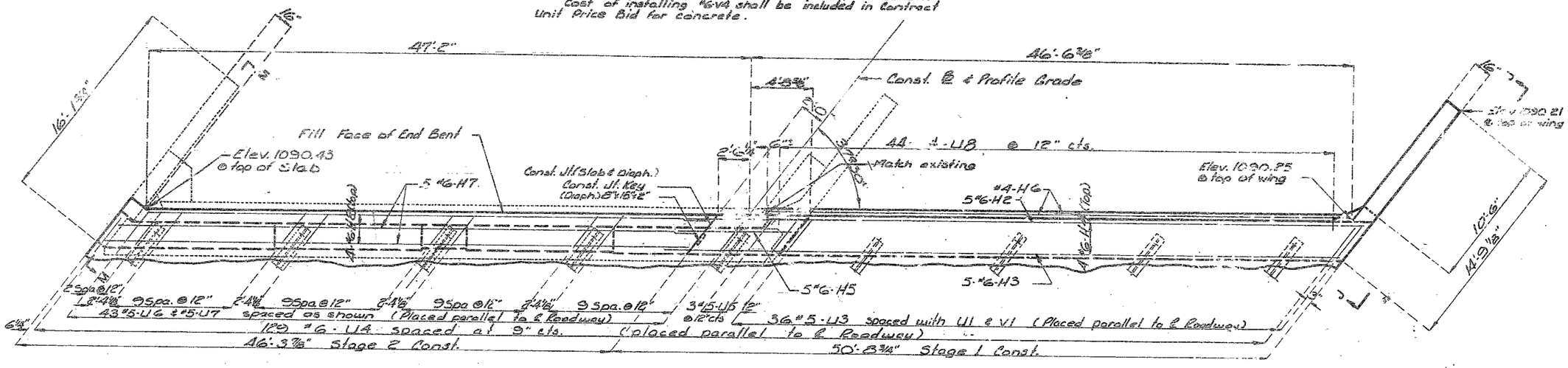
Note : Girder Chairs not shown for clarity.



SECTION NEAR END BENT

Note: For Section A-A, B-B, C-C, D-D, & E-E see sheet No. 6
For Steel Pile Splice detail see sheet No. 10.

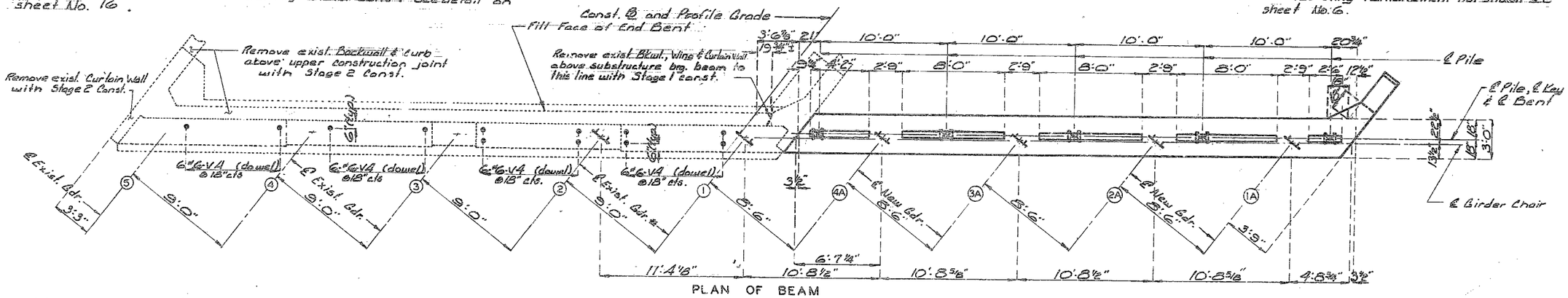
Note: The #6-V4 bars shall be set in drilled holes and grouted in accordance with Spec. 1066 of Standard Specification. Cost of installing #6V4 shall be included in Contract Unit Price Bid for concrete.



PART PLAN

* Existing Girders No. 1 & No. 2 to be raised and Bearings replaced with Stringer chairs, welded to existing anchor bolts. See detail on sheet No. 16.

Note : For Elev. J-J & Section M-M see sheet No. 6.
For Wing reinforcement not shown see sheet No. 6.



PLAN OF BEAM

DETAILS OF END BENT NO. 1

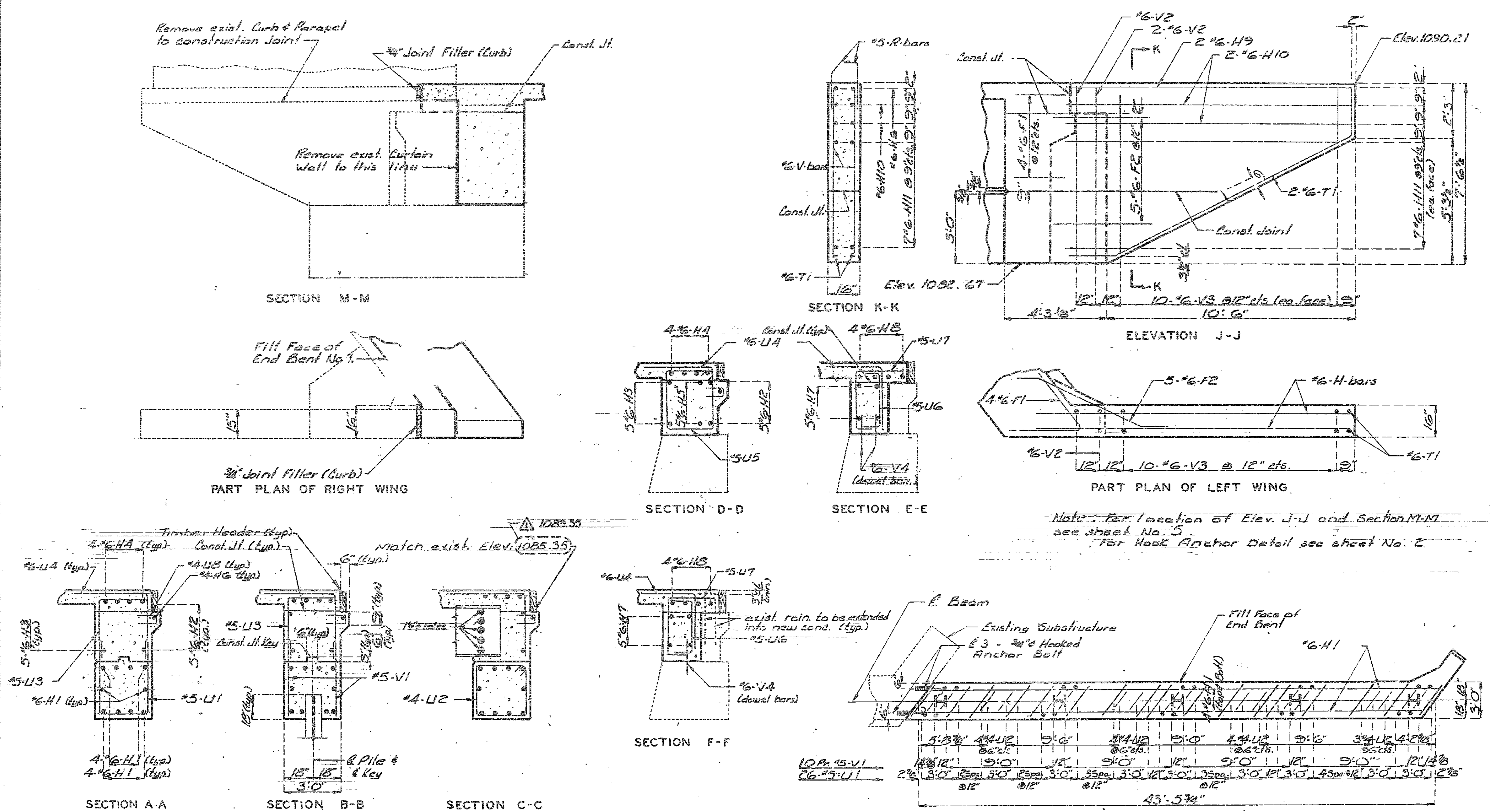
DETAILED July 1989
CHECKED July 1989

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

CASS COUNTY A-2094R

STATE	PROJ NO	SHEET NO
MO.		82

Note: Safety Barrier Curb not shown for clarity. For details of Safety Barrier not shown see sheet No. 21 & 22.



Note: For location of Elev. J-J and Section M-M see sheet No. 5. For Hook Anchor Detail see sheet No. 2.

Note: For location of Sections A-A, B-B, C-C, D-D & E-E see sheet No. 5. For Detail of Timber Header see sheet No. 21.

DETAILS OF END BENT NO. 1

DETAILED June 1989
CHECKED July 1989

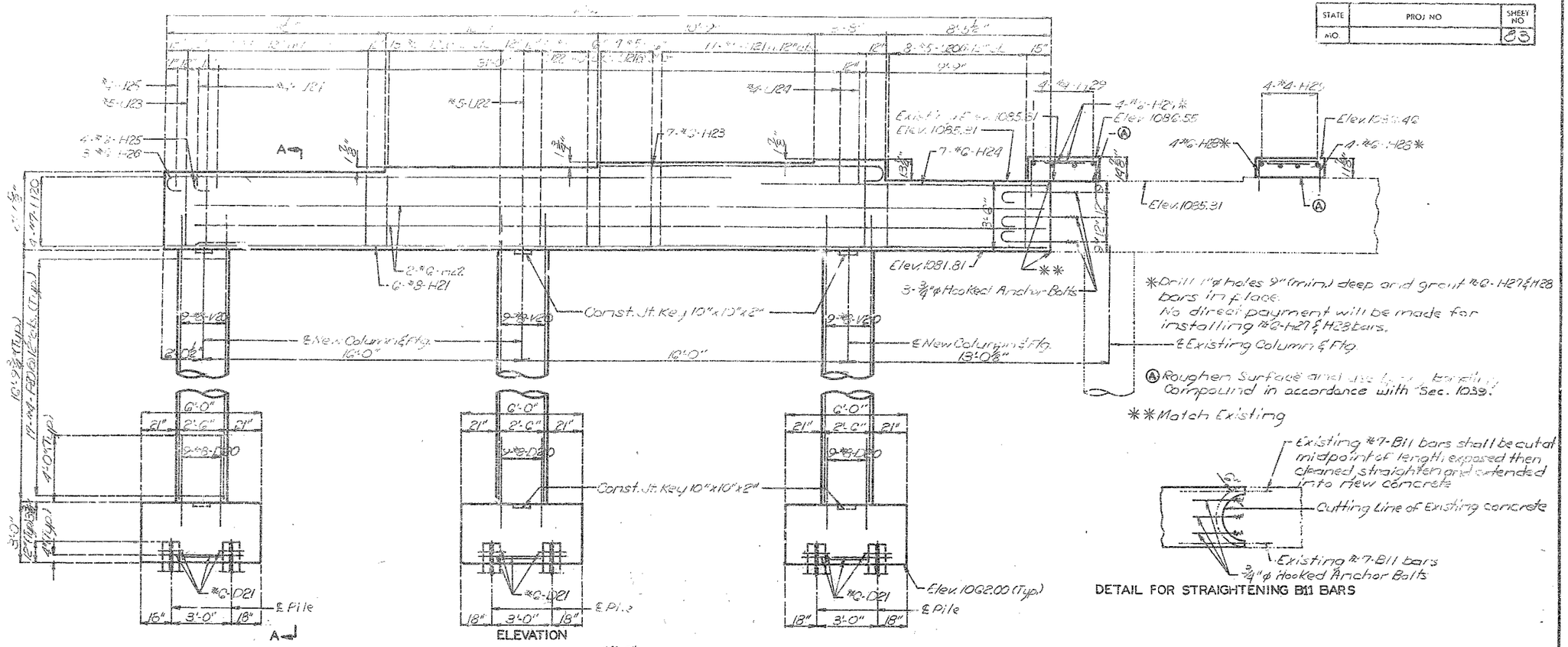
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 24 Revised 1/17/89

CASS COUNTY

A-2094R

STATE	PROJ NO	SHEET NO
MO.		23



Note: Contractor shall drill holes and install anchor bolts at girder #1, #2 in accordance with Std. Spec. 711.6.
For details of hooked anchor bolts see sheet No. 2.
For details of Section A-A see sheet No. 10.
For details of anchor bolt well see sheet No. 13

DETAILS OF INTERMEDIATE BENT NO. 2

DETAILED JUNE 1989
CHECKED JULY 1989

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

Sheet No. 7 of 24

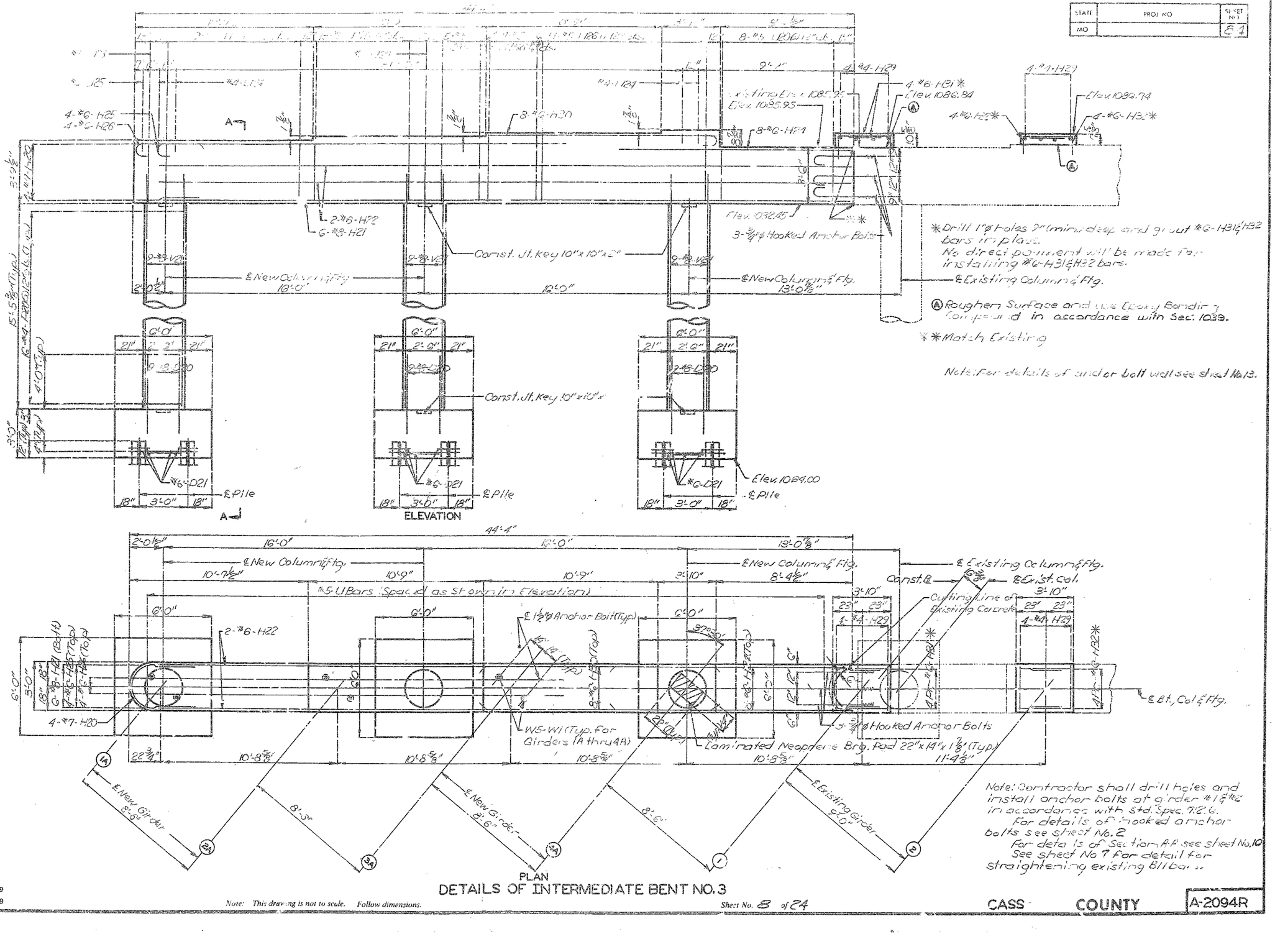
CASS COUNTY

A-2094R

QUALITY REPRO

47-24

STATE	PROJ NO	SHEET NO
MO		8



*Drill 1"ø holes 2" min. deep and grout #6-H31 & H32 bars in place. No direct payment will be made for installing #6-H31 & H32 bars.

℄ Existing Column ℄ Ftg.

Ⓐ Roughen Surface and use Epoxy Bonding Compound in accordance with Sec. 1039.

**Match Existing

Note: For details of anchor bolt wall see sheet No. 13.

Note: Contractor shall drill holes and install anchor bolts at girder #1 & #2 in accordance with Std. Spec. 7.12.6.
For details of hooked anchor bolts see sheet No. 2
For details of Section A-A see sheet No. 10
See sheet No. 7 for detail for straightening existing Bill bars.

DETAILS OF INTERMEDIATE BENT NO. 3

DETAILED JUNE 1989
CHECKED JULY 1989

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

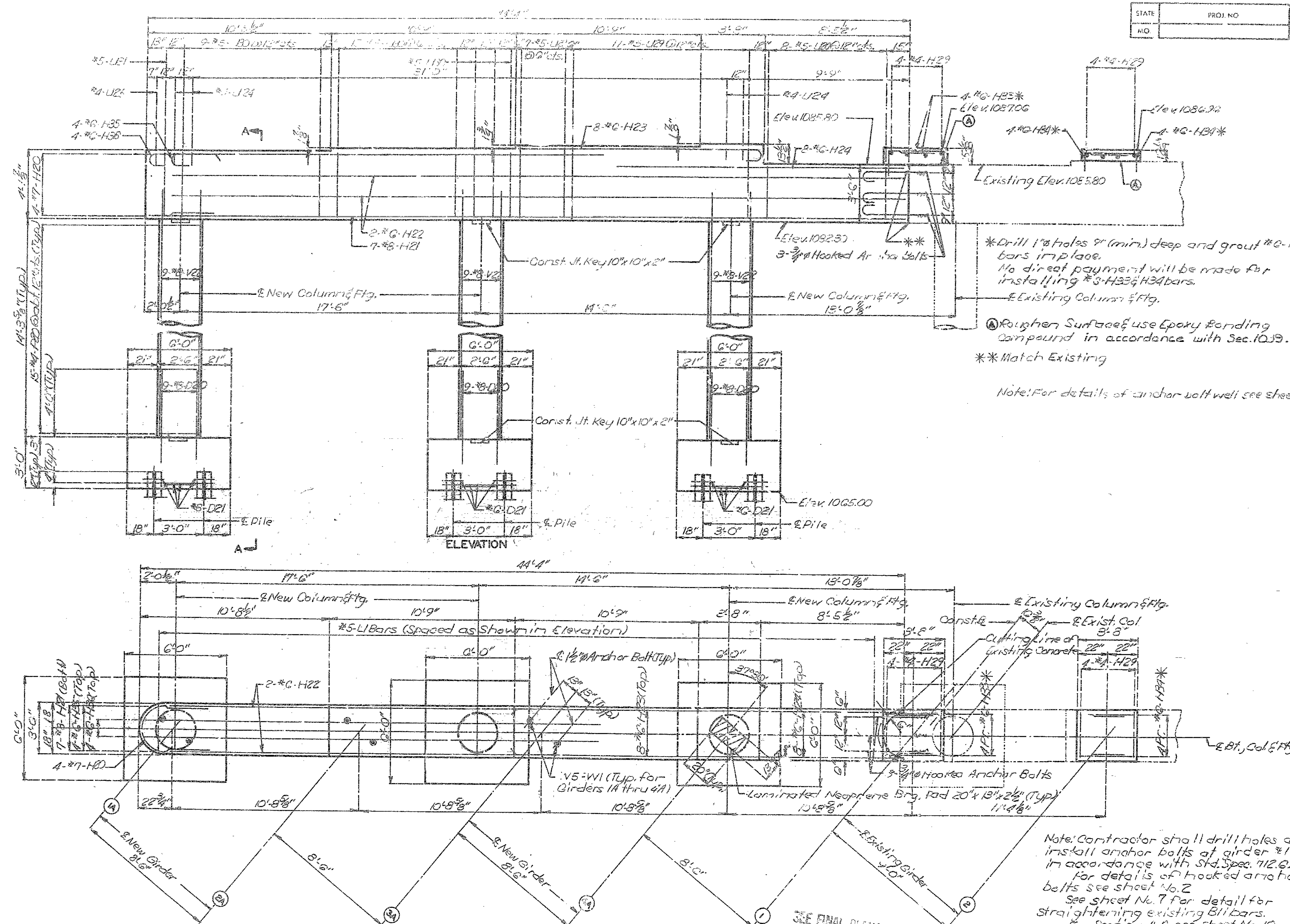
Sheet No. 8 of 24

CASS COUNTY

A-2094R

498 281

STATE	PROJ. NO	SHEET NO
MO.		85



✱Drill 1"φ holes 9" (min.) deep and grout #6-H33 & H34 bars in place.
No direct payment will be made for installing #6-H33 & H34 bars.

Ⓐ Roughen Surface & use Epoxy Bonding Compound in accordance with Sec. 1039.

✱✱ Match Existing

Note: For details of anchor bolt well see sheet No. 13.

Note: Contractor shall drill holes and install anchor bolts at girder #1 & #2 in accordance with Std. Spec. 712.6.
For details of hooked anchor bolts see sheet No. 2.
See sheet No. 7 for detail for straightening existing B1 bars.
For Section A-A see sheet No. 10.

DETAILED JUNE 1989
CHECKED JULY 1989

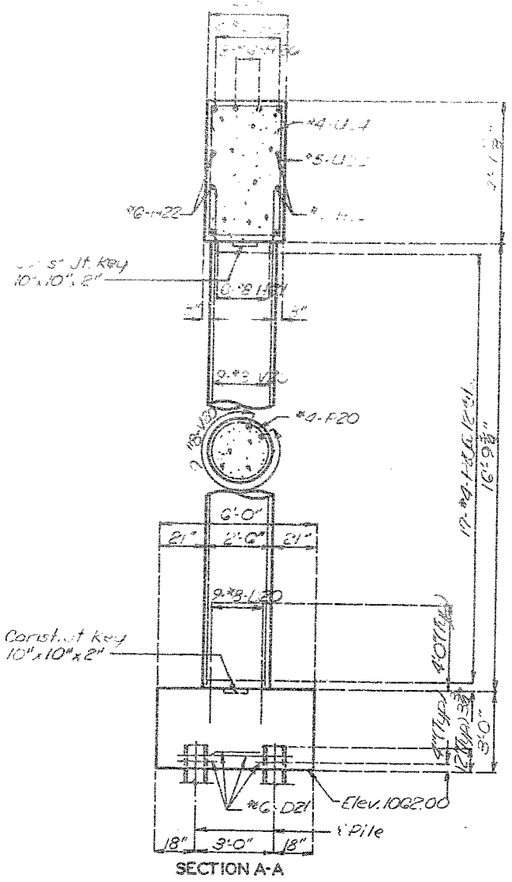
Note: This drawing is not to scale. Follow dimensions.

DETAILS OF INTERMEDIATE BENT NO. 4

Sheet No. 9 of 24

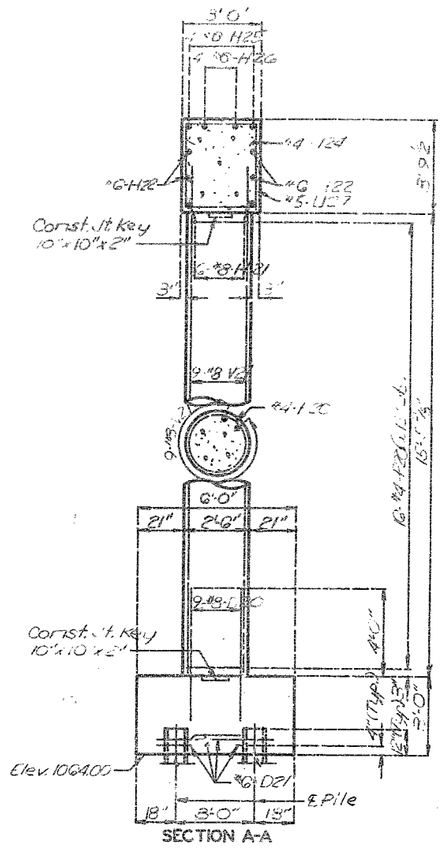
CASS COUNTY | A-2094R

STATE	PROJ NO	SHEET NO
MO		86



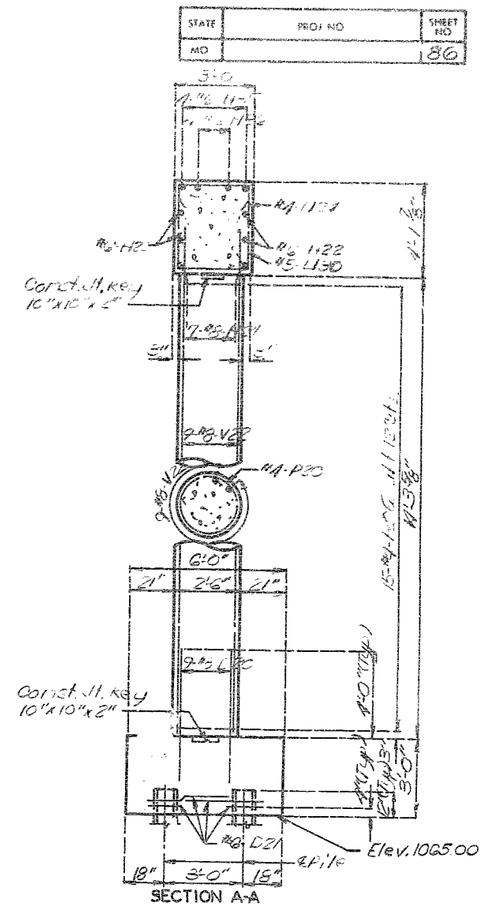
SECTION A-A

DETAILS OF INTERMEDIATE BENT NO.2



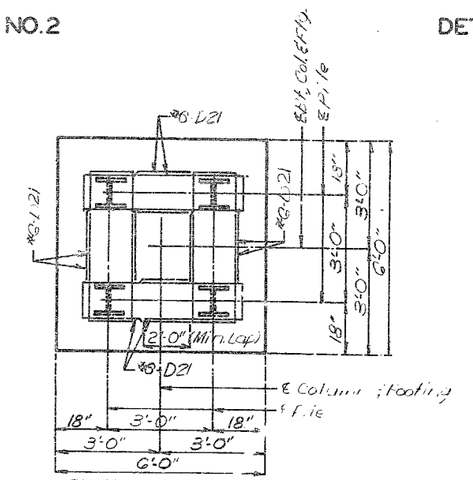
SECTION A-A

DETAILS OF INTERMEDIATE BENT NO. 3

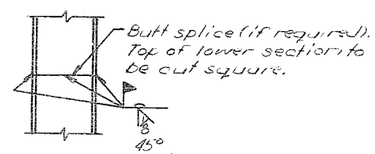


SECTION A-A

DETAILS OF INTERMEDIATE BENT NO. 4



PLAN OF FOOTING
SHOWING REINFORCEMENT
AT BENTS NO. 2, 3 & 4



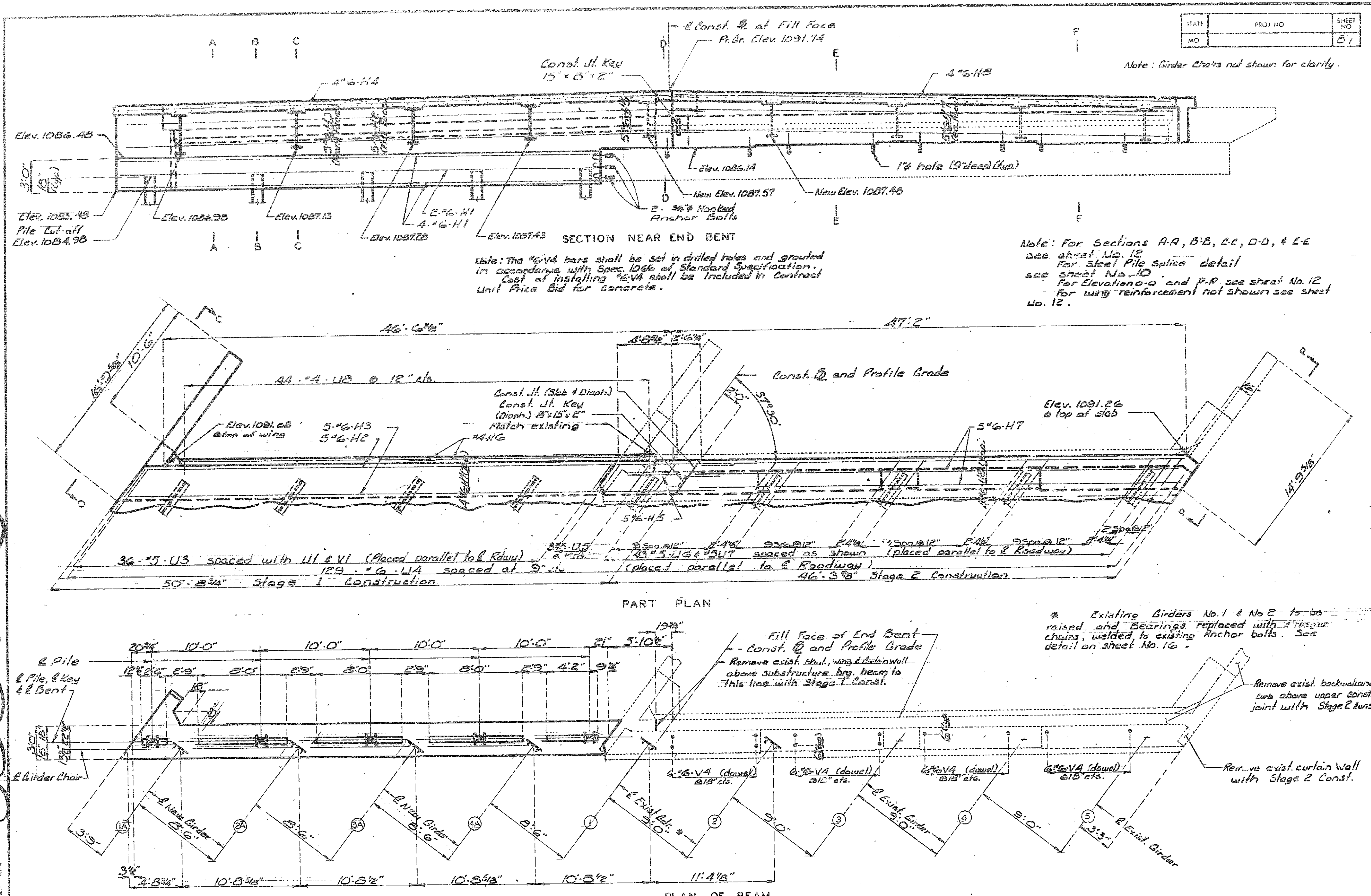
DETAIL OF STEEL PILE SPLICE

594-329

DETAILED SEPT. 1989
CHECKED SEPT. 1989

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

CASS COUNTY A-2094R


STATE | PROJ NO | SHEET NO
MO | | 81
Note : Girder Chairs not shown for clarity.
℄ Const. ℄ at Fill Face
Pr. Gr. Elev. 1091.74
Const. Jt. Key 15" x 8" x 2"
4-#6-H4
4-#6-H8
Elev. 1086.48
Elev. 1083.48
Pile Cut-off Elev. 1084.98
Elev. 1086.98
Elev. 1087.13
2-#6-H1
4-#6-H1
Elev. 1087.28
Elev. 1087.43
2-3/4"⌀ Hooked Anchor Bolts
New Elev. 1087.57
Elev. 1086.14
New Elev. 1087.48
1"⌀ hole (9" deep) (Typ.)
SECTION NEAR END BENT
Note: The #6-V4 bars shall be set in drilled holes and grouted in accordance with Spec. 1066 of Standard Specification. Cost of installing #6-V4 shall be included in Contract Unit Price Bid for concrete.
Note: For Sections A-A, B-B, C-C, D-D, & E-E see sheet No. 12. For Steel Pile Splice detail see sheet No. 10. For Elevation O-O and P-P see sheet No. 12. For wing reinforcement not shown see sheet No. 12.
46'-6 3/8"
47'-2"
44-#4-U8 @ 12" cts.
16'-5 3/8"
10'-6"
Const. ℄ and Profile Grade
Const. Jt. (Slab & Diaph.)
Const. Jt. Key (Diaph.) 8"x15"x2"
Match existing
Elev. 1091.08 @ top of wing
5-#6-H3
5-#6-H2
#4-H6
5-#6-H7
Elev. 1091.26 @ top of slab
57°30'
14'-9 5/8"
5-#6-H5
36-#5-U3 spaced with U1 & V1 (Placed parallel to ℄ Rdwy)
43-#5-U6 & #5U7 spaced as shown (placed parallel to ℄ Roadway)
129-#6-U4 spaced at 9" cts. (placed parallel to ℄ Roadway)
50'-8 3/4" Stage 1 Construction
46'-3 7/8" Stage 2 Construction
PART PLAN
* Existing Girders No. 1 & No. 2 to be raised and Bearings replaced with stringer chairs, welded to existing Anchor bolts. See detail on sheet No. 16.
℄ Pile
℄ Pile, ℄ Key & ℄ Bent
℄ Girder Chair
10'-0"
10'-0"
10'-0"
10'-0"
5'-10 1/4"
19 3/4"
Fill Face of End Bent - Const. ℄ and Profile Grade
Remove exist. bkwl., wing & Curtain wall above substructure brg. beam to this line with Stage 1 Const.
Remove exist. backwall and curb above upper Const. joint with Stage 2 Const.
Remove exist. curtain Wall with Stage 2 Const.
6-#6-V4 (dowel) @ 18" cts.
℄ New Girder
℄ Exist. Gdr. *
℄ Exist. Girder
8'-6"
9'-0"
3'-3"
3'-9"
10'-8 5/8"
10'-8 1/2"
11'-4 1/8"
PLAN OF BEAM

DETAIL OF END BENT NO. 5

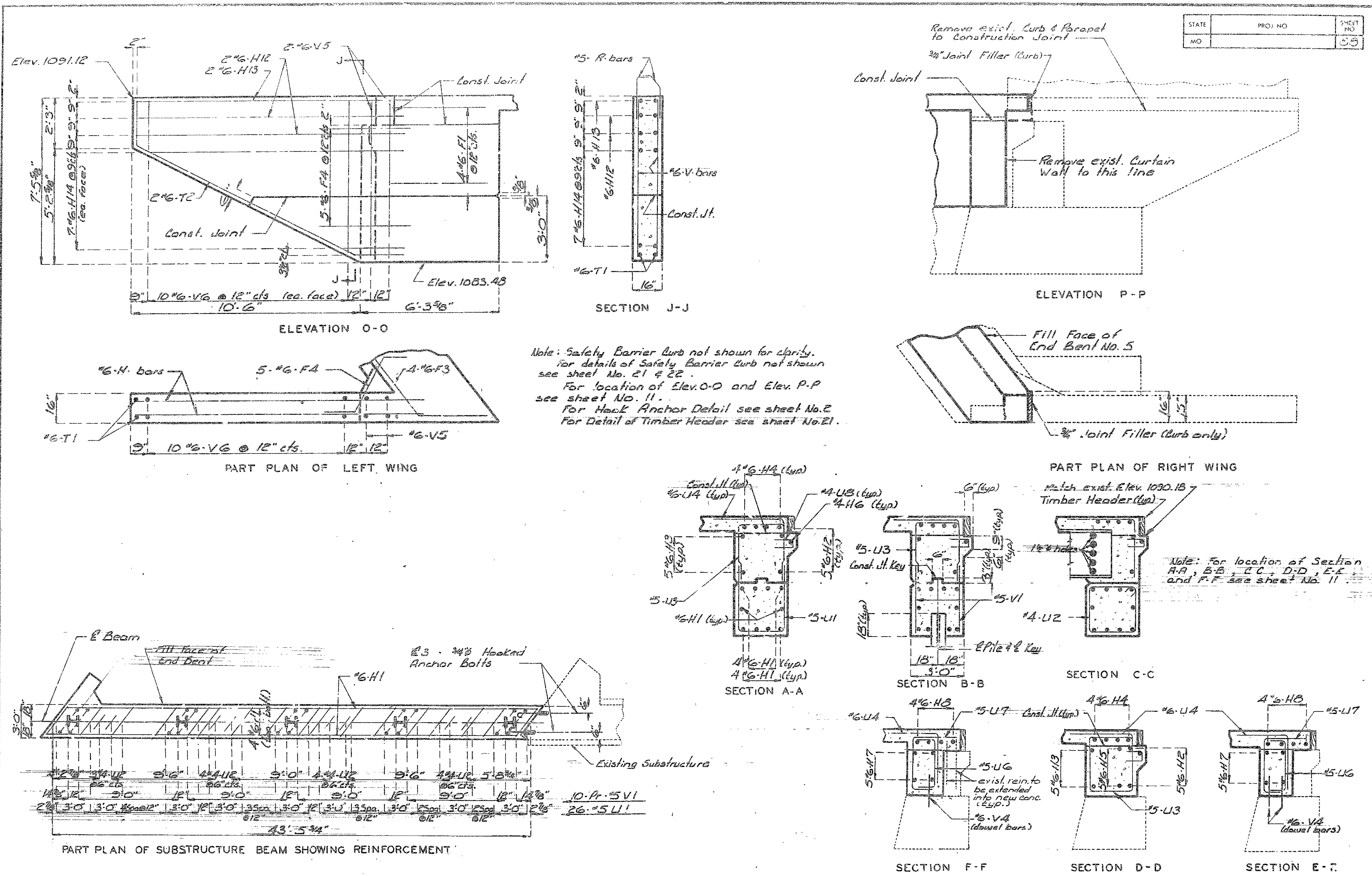
DETAILED June 1989
CHECKED July 1989

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

Sheet No. 11 of 24

CASS COUNTY

A-2094R


STATE
PROJ NO
SHEET NO
MO
55
ELEVATION O-O
Elev. 1091.12
Elev. 1083.48
Const. Joint
10 #6-V6 @ 12" cts (ea. face)
10'-6"
6'-3 5/8"
SECTION J-J
#5- R-bars
#6-V-bars
Const. Jt.
#6-T1
16"
ELEVATION P-P
Remove exist. Curb & Parapet to Construction Joint
3/4" Joint Filler (Curb)
Const. Joint
Remove exist. Curtain Wall to this line
PART PLAN OF LEFT WING
#6-H- bars
5-#6-F4
4-#6-F3
#6-T1
#6-V5
10 #6-V6 @ 12" cts.
Note: Safety Barrier Curb not shown for clarity.
For details of Safety Barrier Curb not shown see sheet No. 21 & 22.
For location of Elev. O-O and Elev. P-P see sheet No. 11.
For Hook Anchor Detail see sheet No. 2
For Detail of Timber Header see sheet No. 21.
Fill Face of End Bent No. 5
3/4" Joint Filler (Curb only)
PART PLAN OF RIGHT WING
SECTION A-A
SECTION B-B
SECTION C-C
Match exist. Elev. 1090.18
Timber Header (typ.)
Note: For location of Section A-A, B-B, C-C, D-D, E-E, and F-F see sheet No. 11.
℄ Beam
Fill Face of End Bent
℄ 3 - 3/4" Ø Hooked Anchor Bolts
#6-H1
Existing Substructure
10-Pr-#5 V1
26-#5 U1
43'-5 3/4"
PART PLAN OF SUBSTRUCTURE BEAM SHOWING REINFORCEMENT
SECTION F-F
SECTION D-D
SECTION E-E
exist. rein. to be extended into new conc. (typ.)
#6-V4 (dowel bars)

DETAILS OF END BENT NO. 5

DETAILED June 1989
CHECKED July 1989

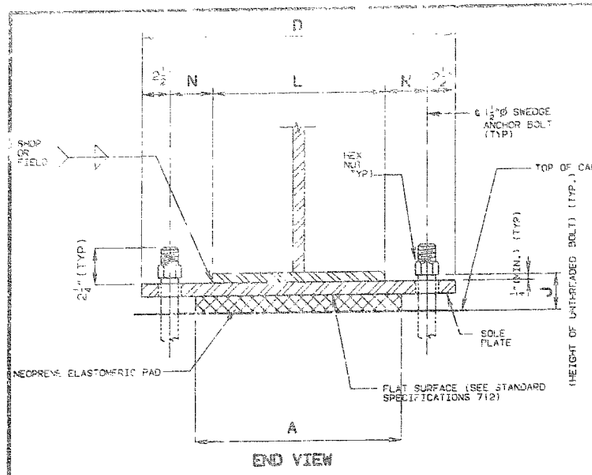
Note: This drawing is not to scale. Follow dimensions.

Sheet No 12 of 24

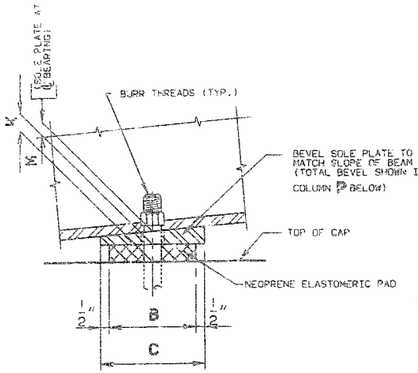
CASS COUNTY

A-2094R

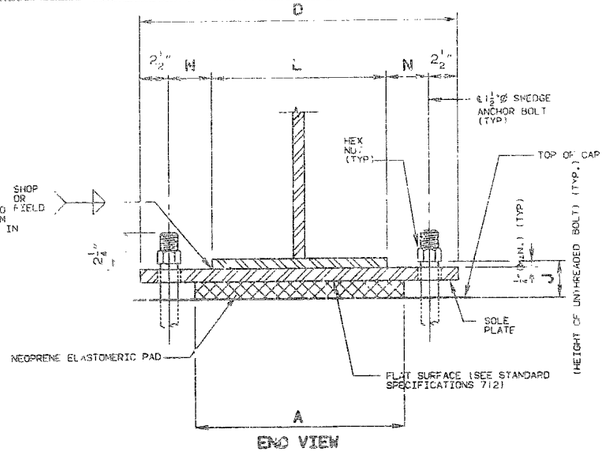
STATE	PROJ. NO.	SHEET NO.
MO.		13 OF 24



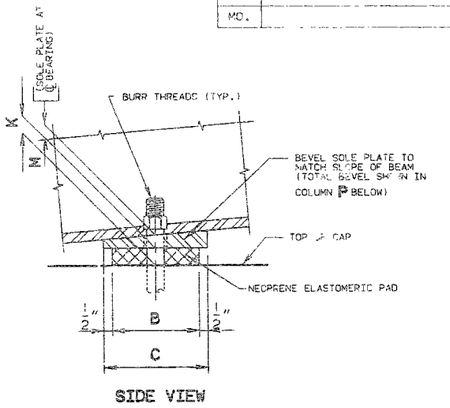
END VIEW



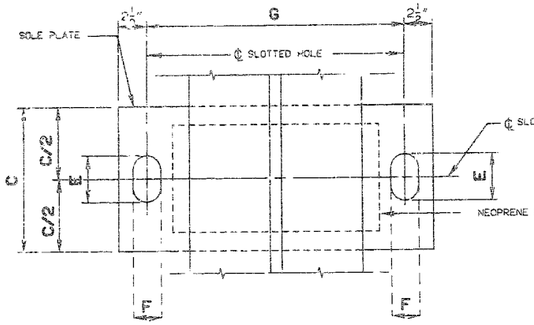
SIDE VIEW



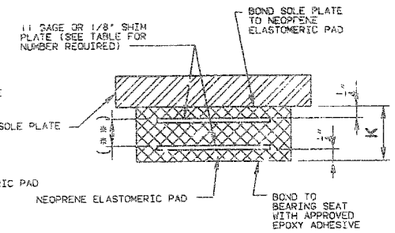
END VIEW



SIDE VIEW

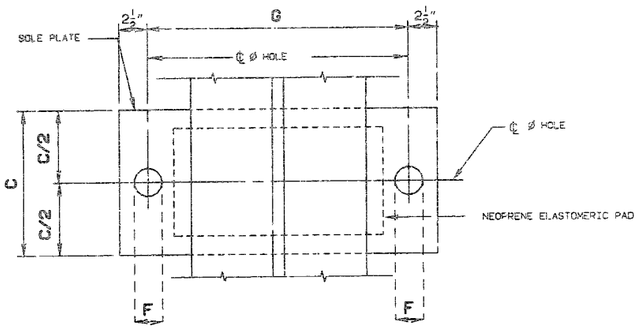


PART PLAN VIEW

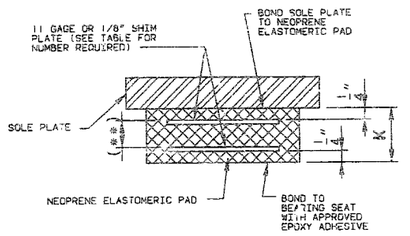


NEOPRENE ELASTOMERIC PAD

(**) LAYERS OF 1/2" ELASTOMERIC ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE.



PART PLAN VIEW



NEOPRENE ELASTOMERIC PAD

(**) LAYERS OF 1/2" ELASTOMERIC ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE.

NOTE: THE LOCATION OF ANCHOR BOLTS IN RELATION TO THE SLOTTED HOLES IN THE SOLE PLATE SHALL CORRESPOND WITH THE TEMPERATURE AT THE TIME OF ERECTION, AT 60°F THE SLOTTED HOLES SHOULD CENTER ON THE ANCHOR BOLTS.

EXPANSION BEARINGS

NUMBER REQUIRED = 6 AT INT. BENT NO. 2
6 AT INT. BENT NO. 4

NOTE: EXISTING GIRDER NO. ① AND ② SHALL BE PLACED ON NEW LAMINATED NEOPRENE BEARINGS.

EXPANSION BEARINGS

BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES(*)
2 & 4	20"	13"	14"	2'-7"	4½"	⅝"	2'-2"	4¼"	2½"	16"	1½"	5"	-	4

(*) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMERIC AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

GENERAL NOTES:

ANCHORS BOLTS SHALL BE 1½"Ø AT IN BENT NO. 2,3, &4, A-588 STEEL SWEDGED BOLTS AND SHALL EXTEND ③ INTO CONCRETE AT INT. BENTS NO. 2,3, &4 WITH A194-2, 2H OR 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 SOLE PLATE, ANCHOR BOLTS AND HEAVY HEXAGON NUTS SHALL BE PAINTED WITH 2 COATS (5 MILS MIN.) OF INORGANIC ZINC. WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY.

WEIGHT OF THE ANCHOR BOLTS AND HEAVY HEXAGON NUTS FOR BEARINGS SHALL BE INCLUDED IN THE WEIGHT OF FABRICATED STRUCTURAL STEEL.

NEOPRENE ELASTOMERIC PADS SHALL BE 60 DUROMETER.

THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE GIRDERS.

STRUCTURAL STEEL FOR SOLE PLATE SHALL BE A-36

PAYMENT FOR THE SOLE PLATE WILL BE INCLUED IN THE COST OF THE BEARING ASSEMBLY, SEE SPECIAL PROVISIONS.

THE ACCEPTED QUANTITY OF ELASTOMERIC BEARING ASSEMBLIES COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES), EACH.

③ 15" FOR GIRDER LINES 1A THRU 4A.
EXTEND ANCHOR BOLTS 9" INTO EXISTING CONCRETE AT GDR. LINE NO. 1 & 2.

FIXED BEARINGS

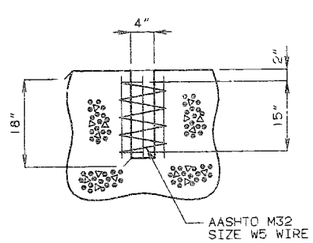
NUMBER REQUIRED = 6 AT INT. BENT NO. 3

NOTE: EXISTING GIRDER NO. ① AND ② SHALL BE PLACED ON NEW LAMINATED NEOPRENE BEARINGS.

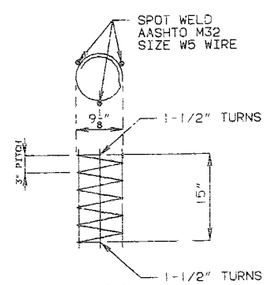
FIXED BEARINGS

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES(*)
3	22"	14"	15"	2'-9"	1⅝"	2'-4"	3⅝"	1⅞"	18"	1½"	5"	-	3

(*) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMERIC AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT

DETAILS OF LAMINATED NEOPRENE BEARING (STEEL STRUCTURES)

DETAILED JULY 1989
CHECKED JULY 1989

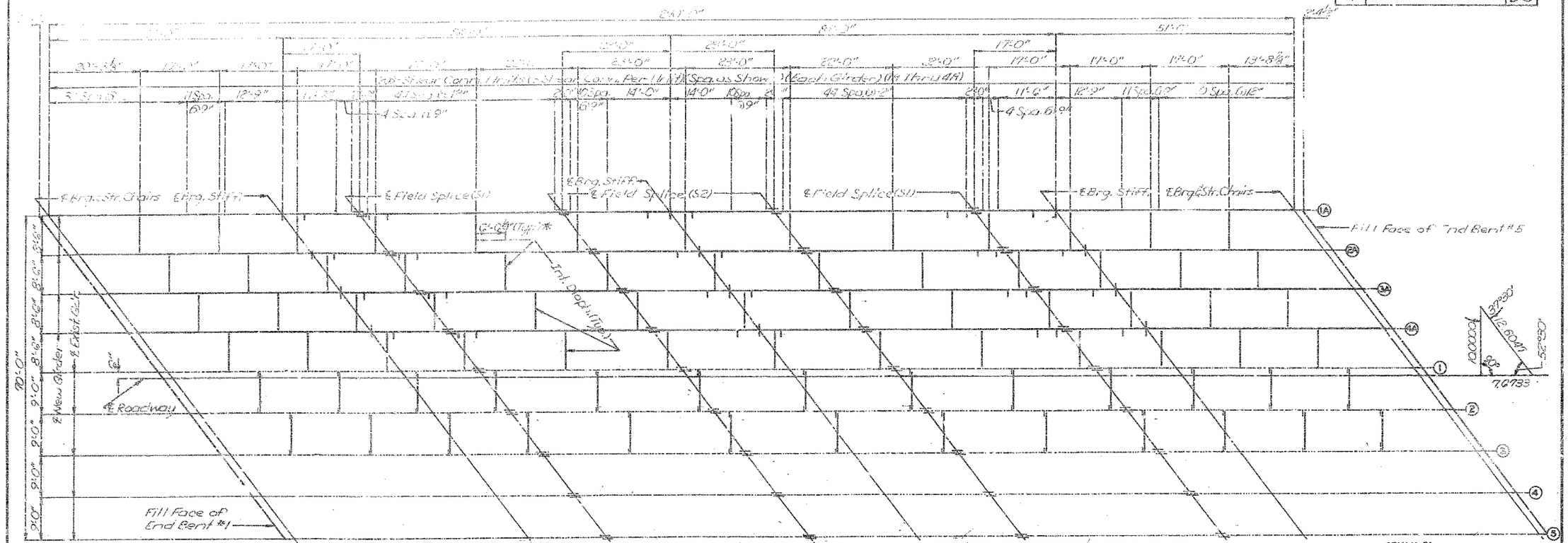
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 13 OF 24

CASS COUNTY

A-2094R

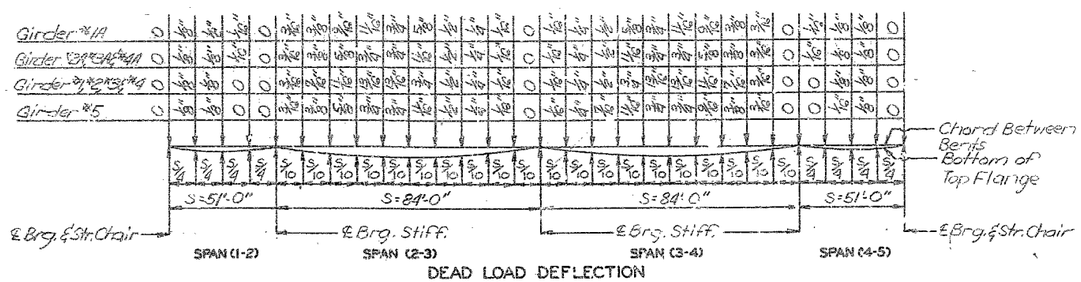
STATE	PROJ NO	SHEET NO
MO		90



PLAN OF STRUCTURAL STEEL

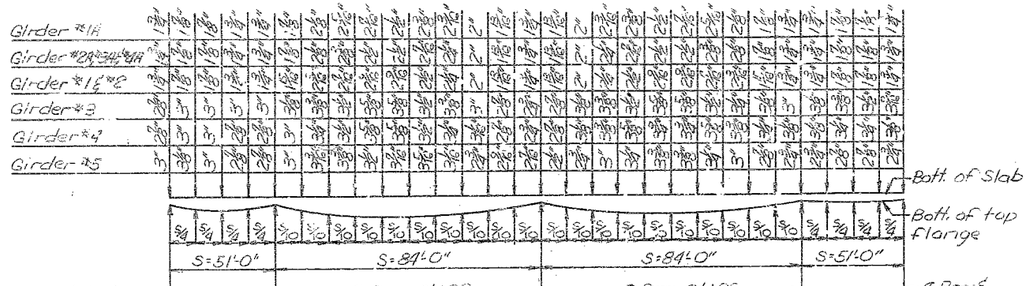
*Girders 1A Thru 4A

Note: For details of shear connectors, see sheet No. 16.
For details of field splices, see sheet No. 16.
Longitudinal dimensions are horizontal.
Replace existing diaphragms with new diaphragms from girder No. 1 to 2 and from No. 2 to 3 For details of diaphragms see sheet No. 19.



DEAD LOAD DEFLECTION

Note: 12 % of dead load deflection is due to the weight of structural steel.



THEORETICAL SLAB HAUNCHING DIAGRAM
(C.I.P. OPTION)

DETAILED JUNE 1989
CHECKED JULY 1989

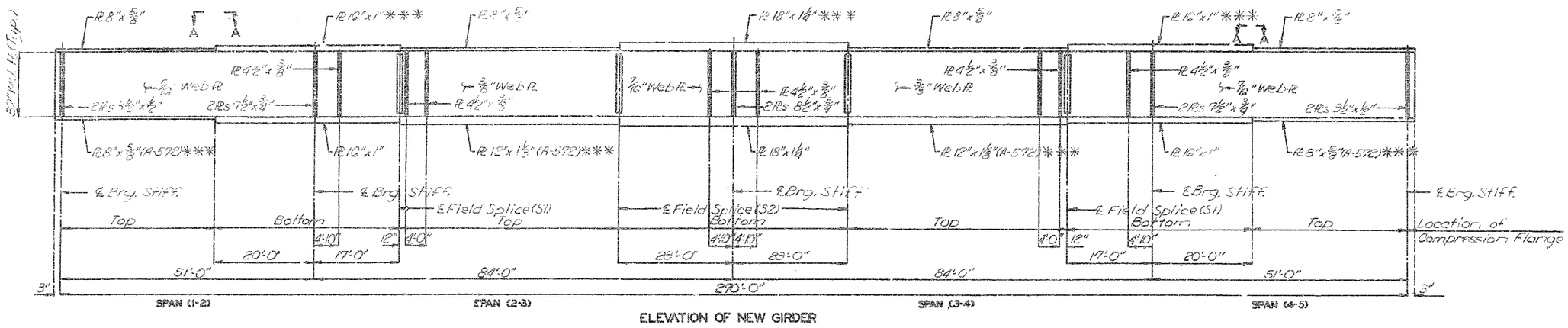
Note: This drawing is not to scale. Follow dimensions.

CASS COUNTY

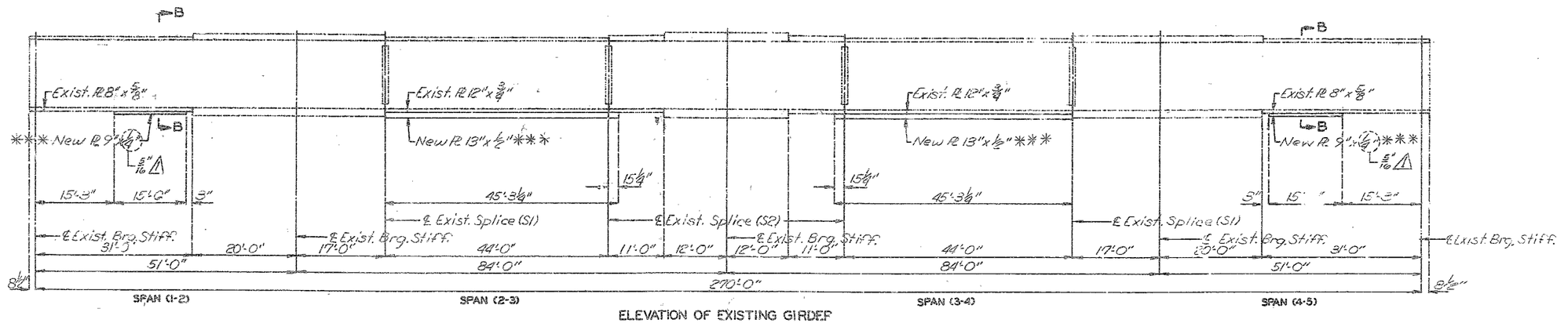
A-2094R

QUALITY REPRO

STATE	PROJ NO	SHEET NO
MO		9 /



ELEVATION OF NEW GIRDER



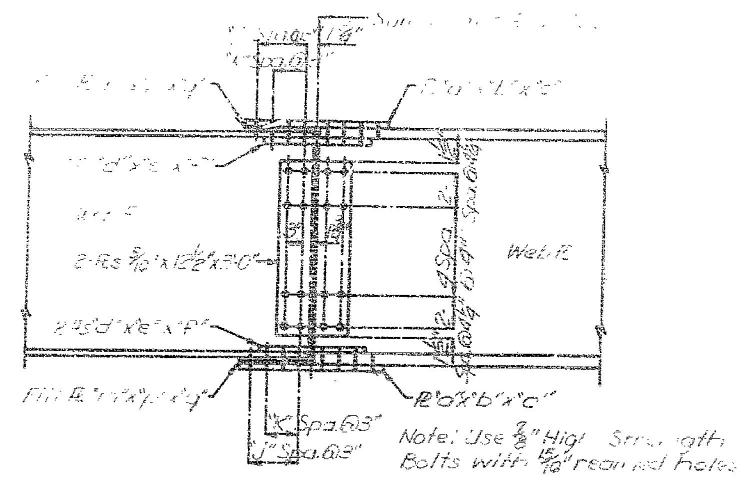
ELEVATION OF EXISTING GIRDER

Note: All web plates shall be subject to notch toughness requirements.
Fabricated structural carbon steel shall be A36 except as noted.
Longitudinal dimensions shown are parallel to grade.
*** Indicates Flange Plates subject to notch toughness requirements.
For Section B-B see sheet No. 16.
For Plan A-A see sheet No. 16.

DETAILED JUNE 1989
CHECKED JULY 1989

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

Sheet No. 15 of 24 ⚠ Revised 1/2/90 CASS COUNTY A-2094R

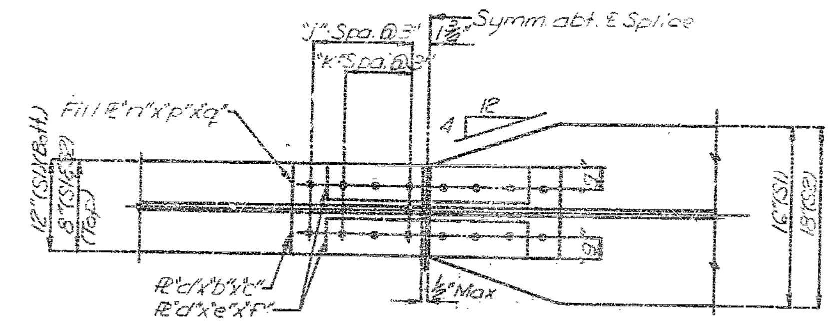


Note: Use 7/8" High Strength Bolts with 15/16" reamed holes.

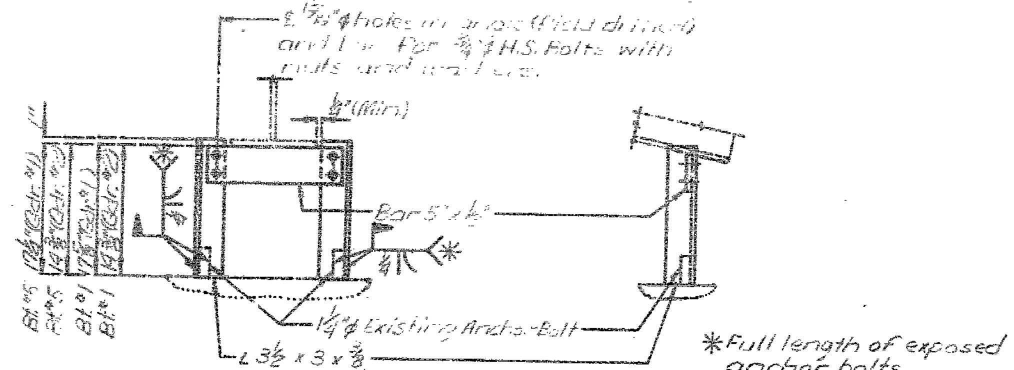
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
S1-Top	8"	3/8"	12½"	5"	3/8"	12½"	1½"	1	1	8"	3/8"	6"
S2-Bott	12"	11/16"	3'-0¾"	5"	11/16"	3'-0¾"	2½"	6	5	12"	5/8"	21"
S2-Top	8"	3/8"	12½"	5"	3/8"	12½"	1½"	1	1	8"	5/8"	6"
S1-Bott	12"	½"	4'-0¾"	1"	½"	4'-0¾"	2½"	7	1	12"	½"	2'-0"

TABLE OF DIMENSIONS - FIELD SPLICE

△3 3'-0¾" △3 3'-0¾" △5 △5 △10"



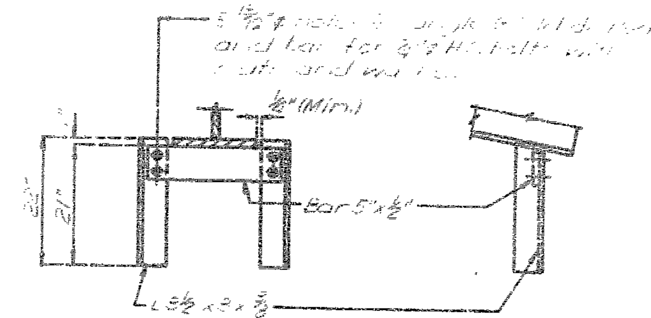
TOP & BOTT. S1 & S2



*Full length of exposed anchor bolts

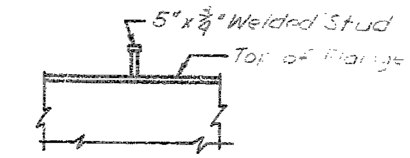
PART FRONT ELEVATION — PART END ELEVATION

DETAILS OF SUPPORT CHAIR (EXISTING GIRDER NO. 1&2)

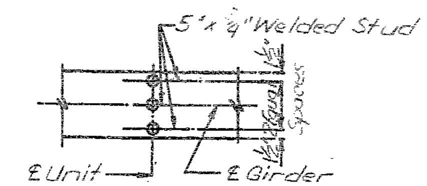


PART FRONT ELEVATION — PART END ELEVATION

DETAILS OF SUPPORT CHAIR (GIRDER 1A THRU 4A)



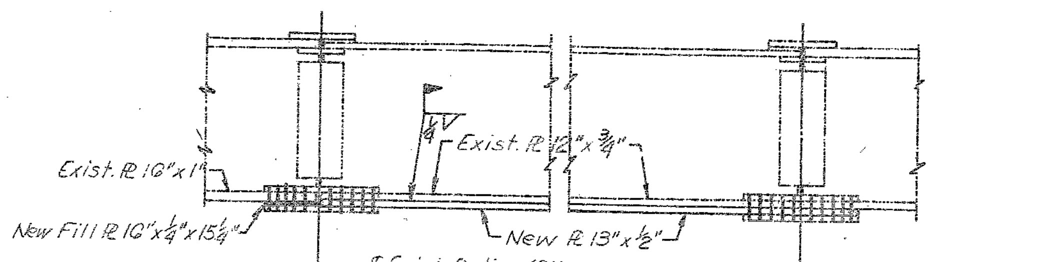
ELEVATION



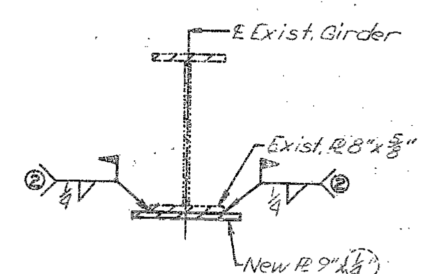
PLAN OF STUD CONN.

DETAILS OF SHEAR CONNECTORS

Note: Weight of 1866# of shear connectors is included in weight of Fabricated Structural Carbon Steel.



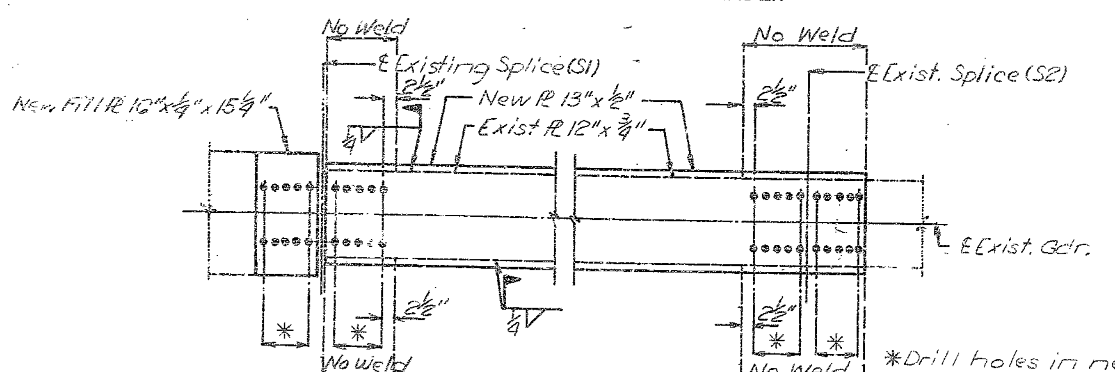
PART ELEVATION OF EXISTING GIRDER



②Weld Full length of 5/16" New Plate. (Except as shown in Part Plan)

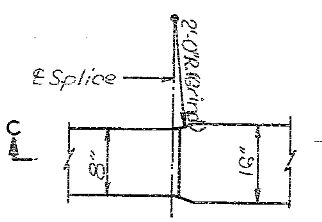
SECTION B-B

Note: For location of Section B-B see sheet No. 15.



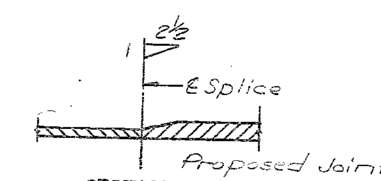
*Drill holes in new plate to match existing plate. (Shop or Field)

PART PLAN OF EXISTING GIRDER SHOWING BOTTOM FLANGE



PLAN A-A (TOP & BOTT. FLANGE)
2'-0" RADIUS TRANSITION

Note: For location of Plan A-A see sheet No. 15.



SECTION C-C

DETAILED JUNE 1989
CHECKED JULY 1989

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

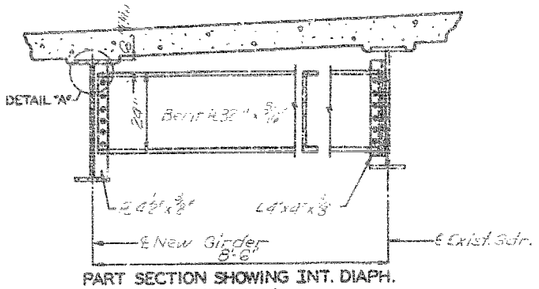
Sheet No. 16 of 24

△2 Revised 1/19/90
△1 Revised 1/2/90

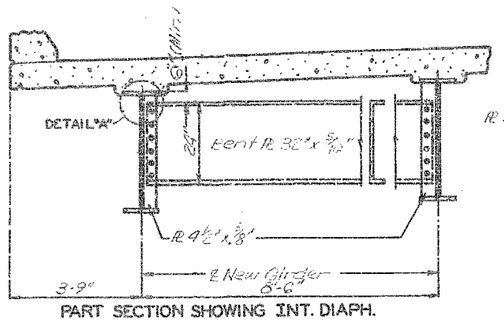
CASS COUNTY

A-2094R

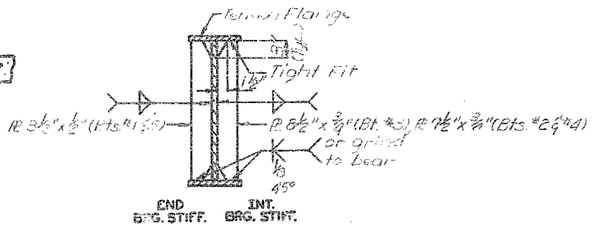
STATE	PROJ NO	SHEET NO
MO		23

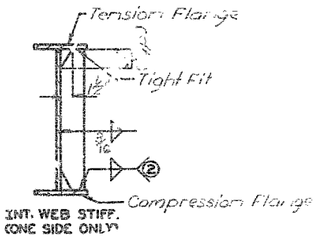


PART SECTION SHOWING INT. DIAPH.
(BETWEEN 4A & 1)

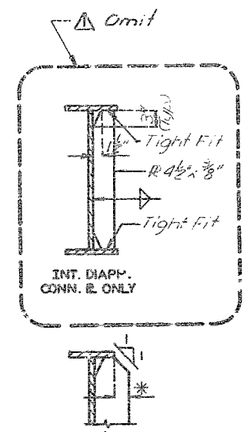


PART SECTION SHOWING INT. DIAPH.
(BETWEEN 1A, 2A, 3A & 4A)

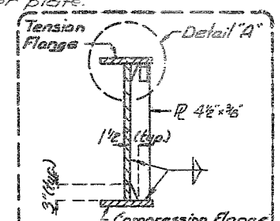




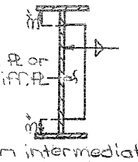
② Weld to compression flange as located on the Elevation of Girder.



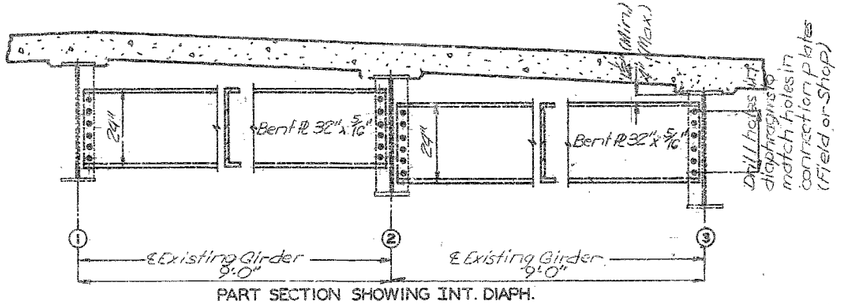
* When dimension exceeds ½", bevel stiffener plate.



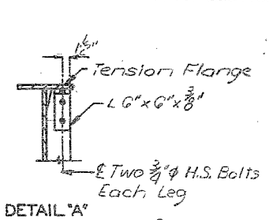
WELDING DETAILS



Note: When intermediate diaphragm connection plates or web stiffener plates interfere with flanges splice plates and bolts, clip connection or stiffener plates as shown.

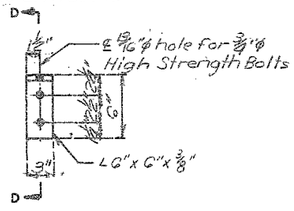


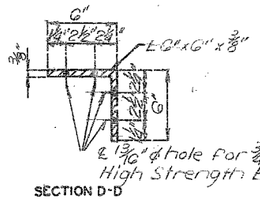
PART SECTION SHOWING INT. DIAPH.



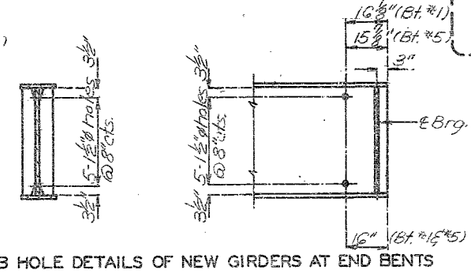
DETAIL "A"

Note: Use angle 6"x6"x⅜" only in top or bottom flanges in tension.

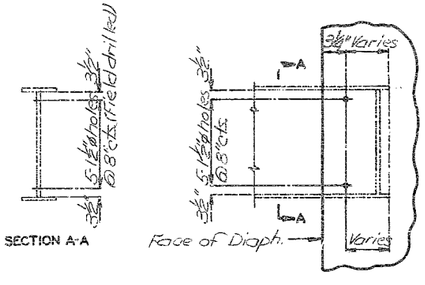




SECTION D-D



WEB HOLE DETAILS OF NEW GIRDERS AT END BENTS



WEB HOLE DETAILS AT END BENTS
(EXISTING GIRDER)

S87-25

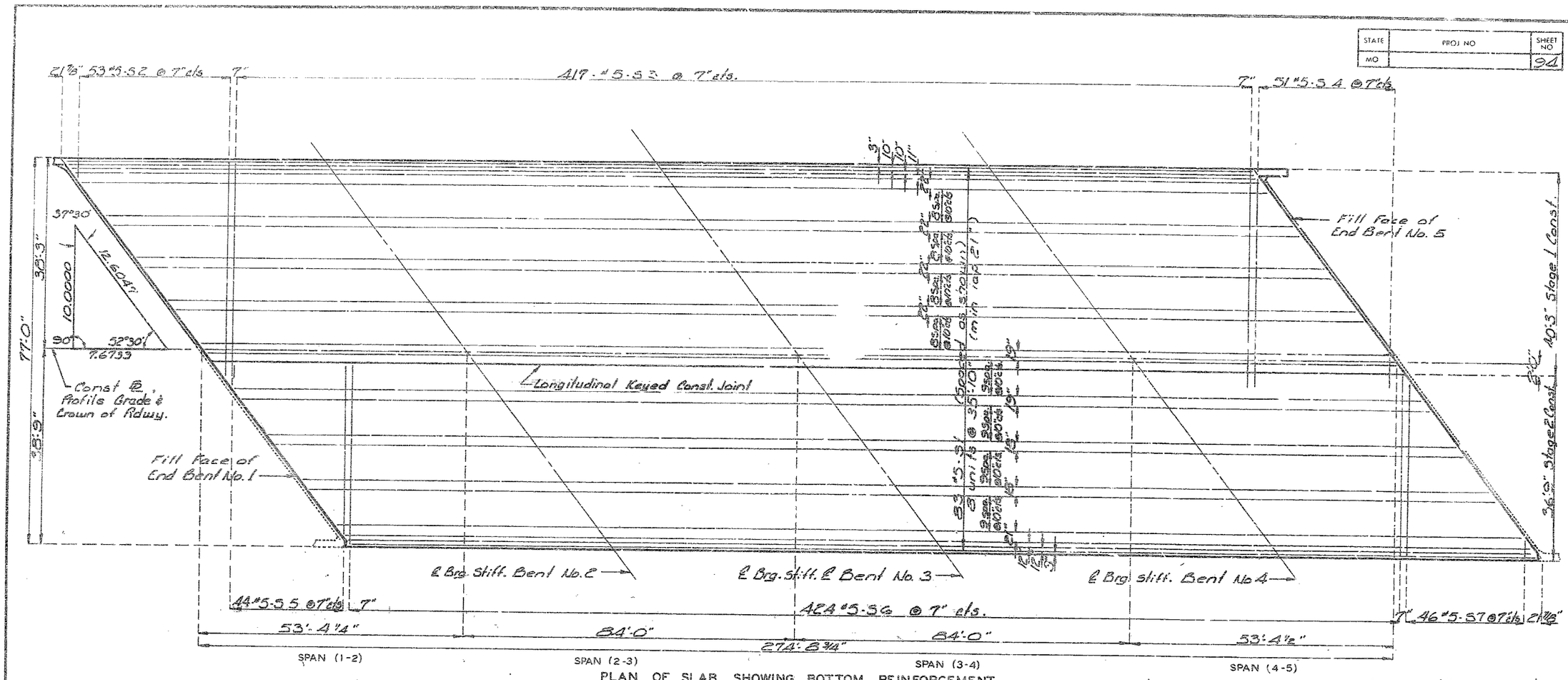
DETAILED JUNE 1989
CHECKED JULY 1989

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

SEE FINAL PLANS

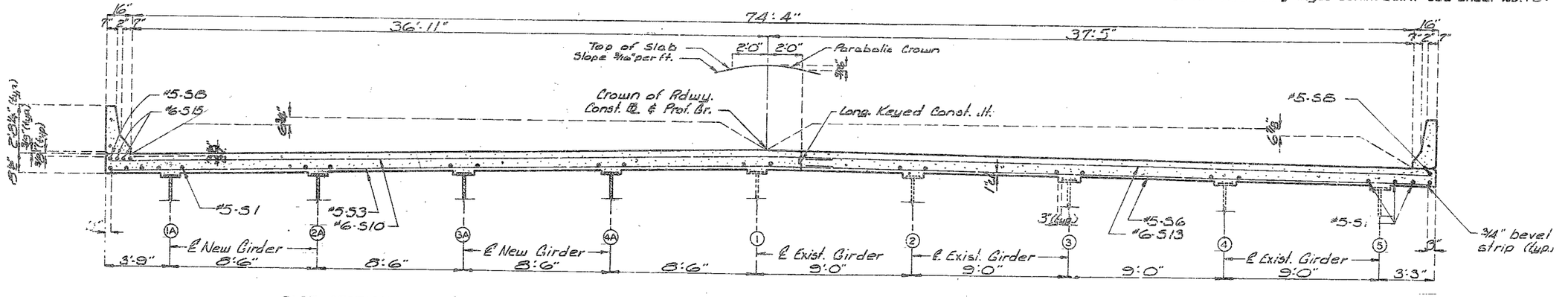
Sheet No. 17 of 24 ⚠ Revised 1/17/89 CASS COUNTY A-2094R

STATE	PROJ NO	SHEET NO
MO		94



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Note: Long. Dim. shown are parallel to grade at top of slab.
For Details of Long. Keyed Const. Joint see sheet No. 19.



PART SECTION NEAR ℄ SPANS

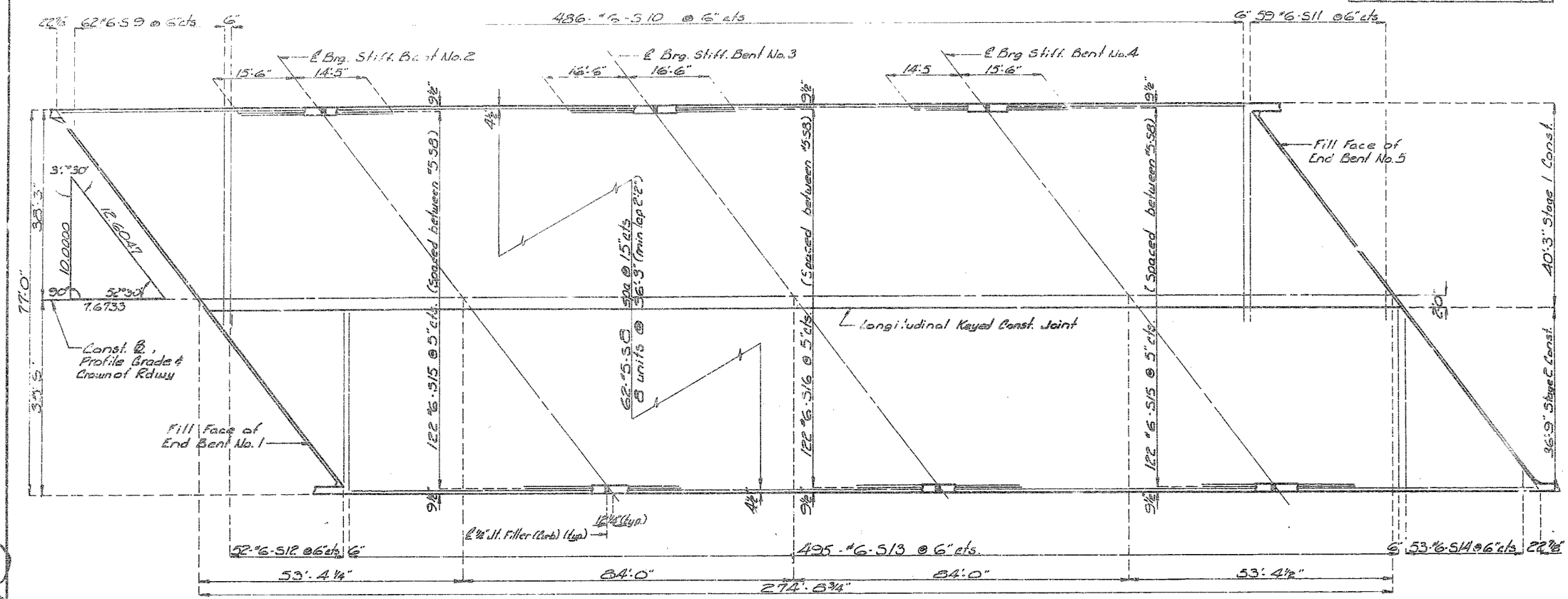
PART SECTION NEAR INT. BENT

DETAILED June 1989
CHECKED July 1989

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

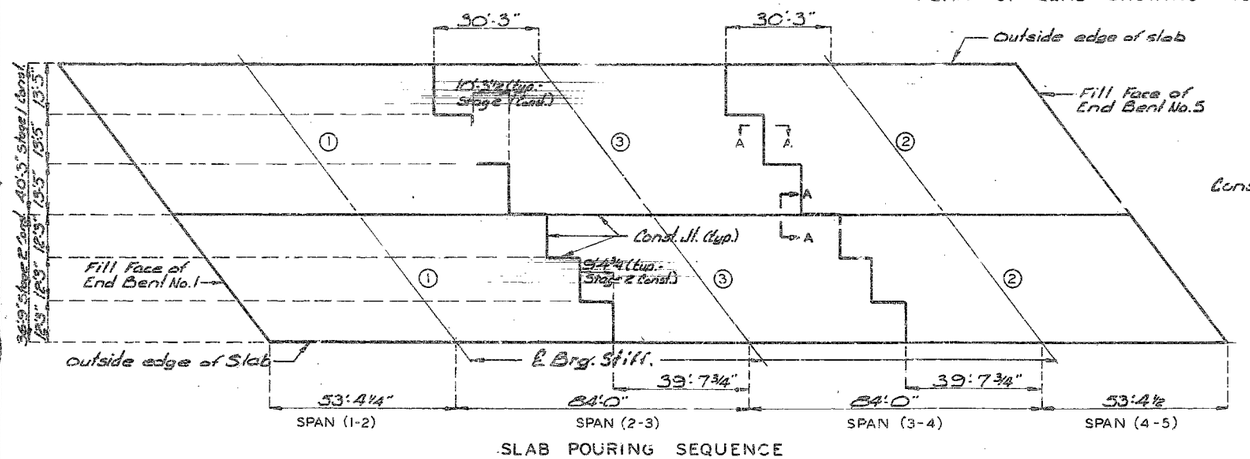
CASS COUNTY A-2094R

STATE	PROJ NO	SHEET NO
MO		95

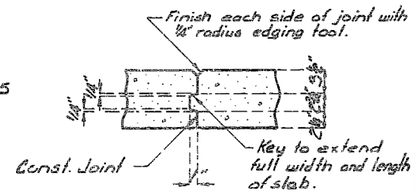


PLAN OF SLAB SHOWING TOP REINFORCEMENT

Note: Long. Dim. shown are parallel to grade at top of slab.



SLAB POURING SEQUENCE



SECTION A-A

	SEQUENCE OF POURS			MIN RATE OF POUR CU. YDS./ HR	
	DIRECTION			WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	25	25
	EITHER DIRECTION				
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with section 703.3.2.4 of Missouri Standard Specifications.					
ALTERNATE "A" POURS	1		3 + 2	27	44
	END TO 3		1 TO END		
ALTERNATE "B" POURS	1 + 3 + 2				
	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 conc. to 6.5 hours.

DETAILED June 1989
CHECKED Aug. 1989

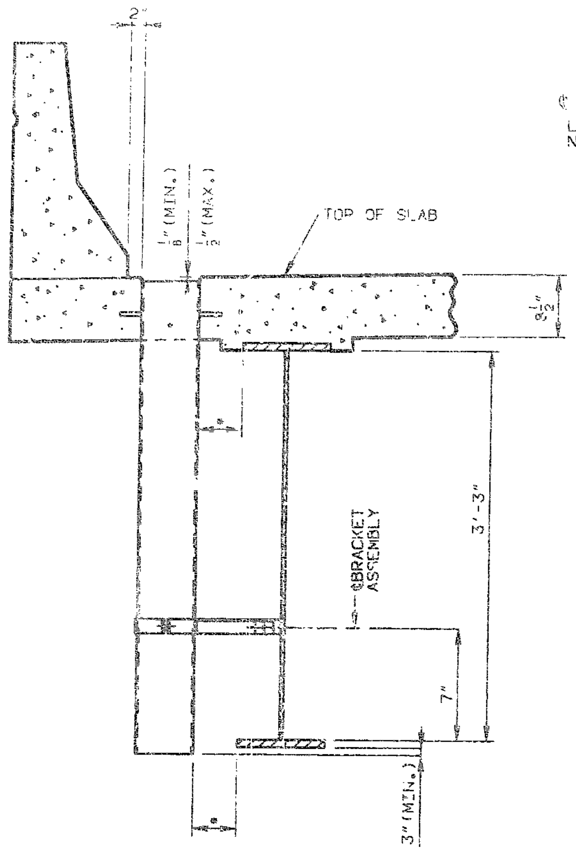
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 19 of 34

CASS COUNTY

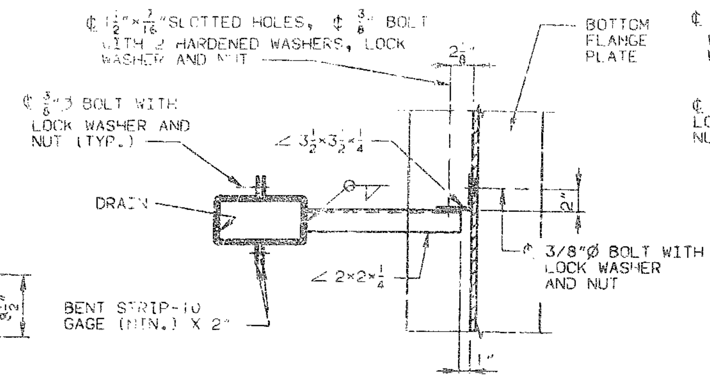
A-2094R

STATE	PROJ. NO.	SHEET NO.
MO.		96

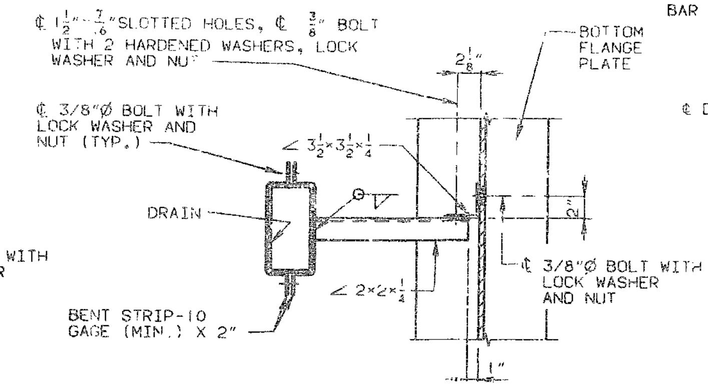


PART ELEVATION OF SLAB AT DRAIN

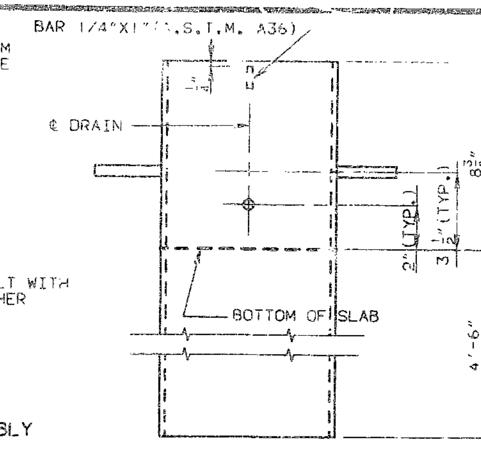
(*) IF DIMENSION IS LESS THAN 1", DRAINS SHALL BE PLACED PARALLEL TO ROADWAY, OTHERWISE PLACE DRAINS TRANSVERSE TO ROADWAY.



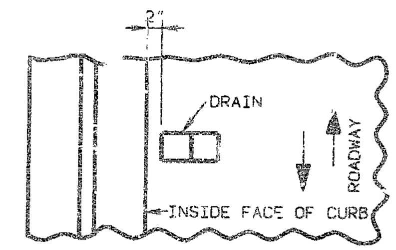
PART PLAN SHOWING BRACKET ASSEMBLY



PART PL JWING BRACKET ASSEMBLY

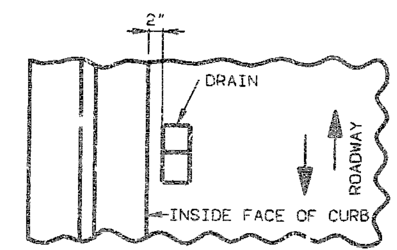


ELEVATION OF DRAIN



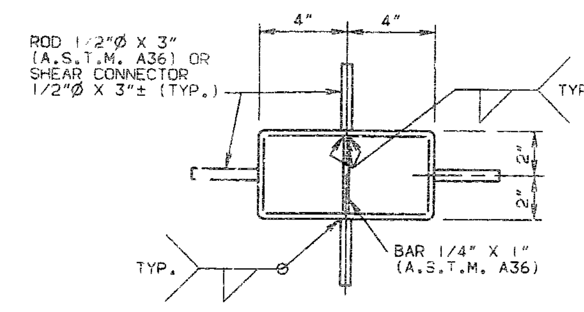
PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY



PLAN OF DRAIN

GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A50C OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8" × 4".

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION

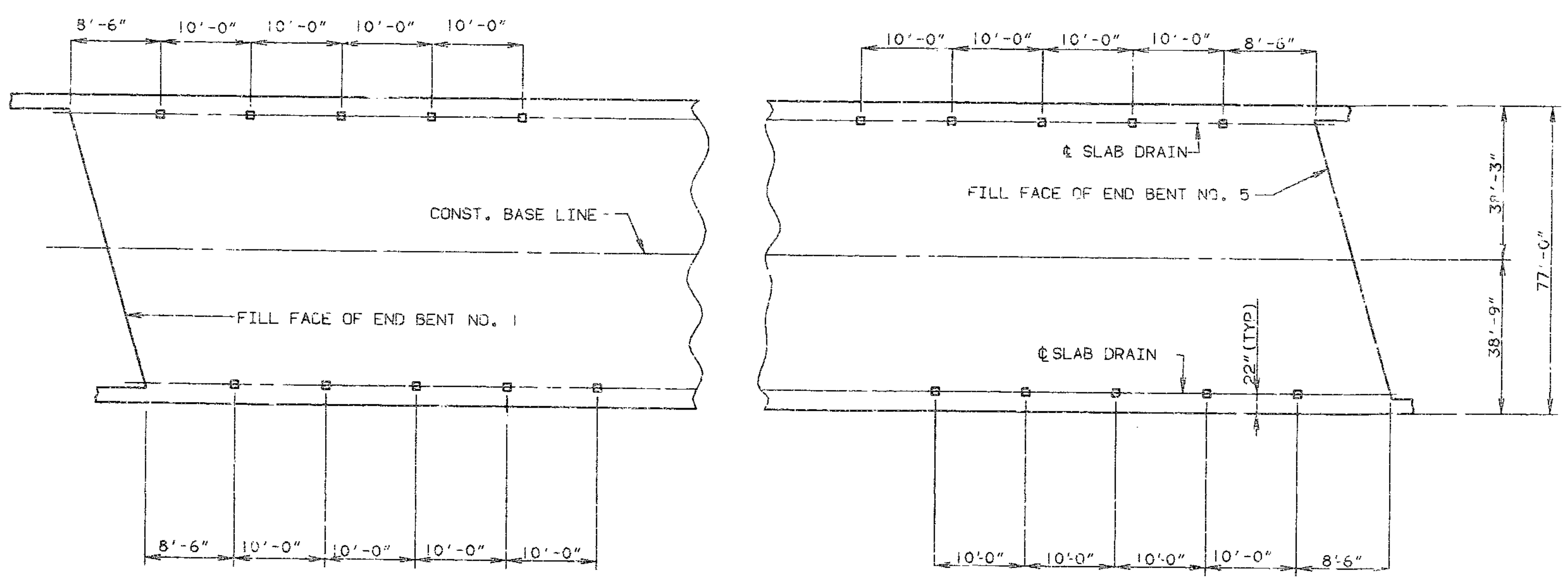
SHIFT REINFORCING IN FIELD WHERE NEC SARY TO CLEAR DRAINS.

THE DRAINS AND BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

ALL BOLTS, LOCK WASHERS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153.

SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND THE BRACKET ASSEMBLY.

THE BOLT HOLE FOR THE BRACKET ASSEMBLY ATTACHMENT SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

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

DETAILED AUG. 1989
CHECKED AUG. 1989

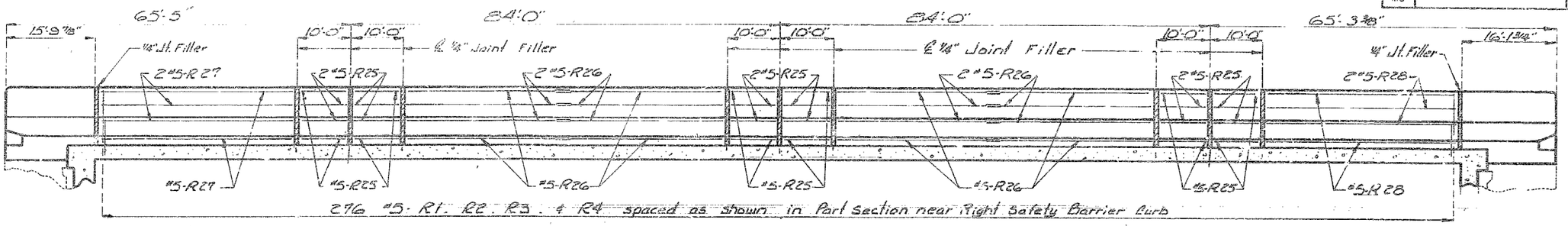
SHEET NO. 20 OF 24

CASS COUNTY

A-2094R

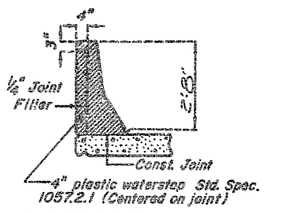
570259

STATE	PROJ NO	SHEET NO
MO		97



SECTION NEAR RIGHT BARRIER CURB

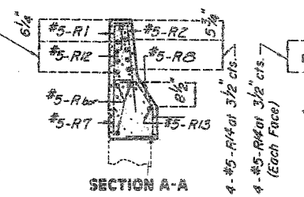
Note: Longitudinal dimensions shown are parallel to grade at top of slab.
Rustication not shown for clarity.
All existing vertical wing reinforcement shall extend into new Right Barrier Curb.



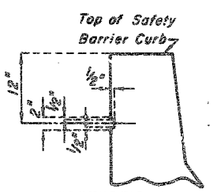
NOTE: PLASTIC WATERSTOP SHALL BE PLACED IN ALL SAFETY BARRIER CURB FILLED JOINTS. (EXCEPT STRUCTURES WITH SUPERELEVATION, USE ON ALL LOWER SAFETY BARRIER CURB JOINTS ONLY).

COST OF PLASTIC WATERSTOP COMPLETE IN PLACE TO BE INCLUDED IN CONTRACT UNIT PRICE FOR SAFETY BARRIER CURB.

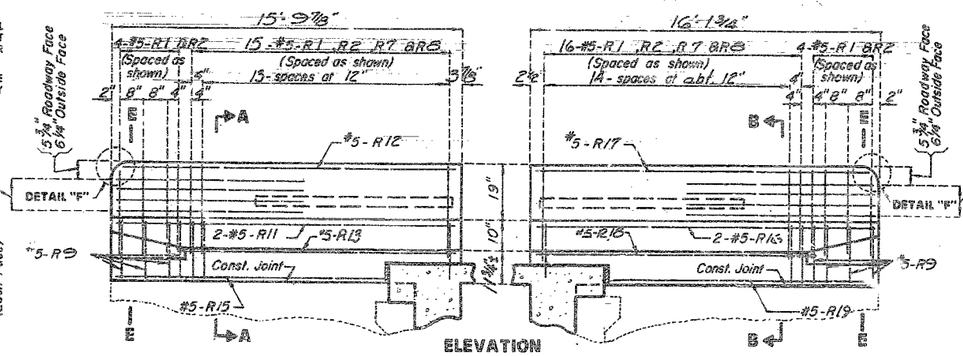
DETAILS OF PLASTIC WATERSTOP

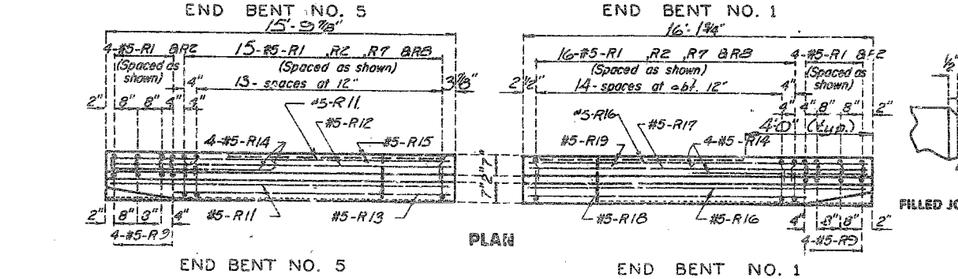


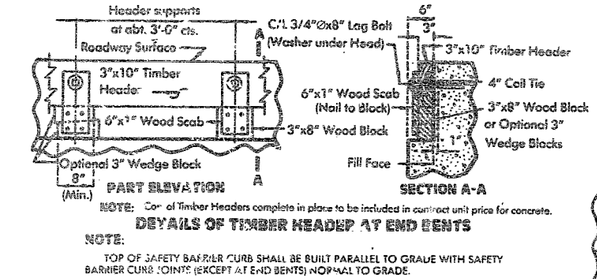
SECTION A-A



RUSTICATION DETAIL







NOTE: Cost of Timber Headers complete in place to be included in contract unit price for concrete.

DETAILS OF TIMBER HEADER AT END BENTS

NOTE:

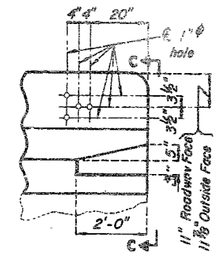
TOP OF SAFETY BARRIER CURB SHALL BE BUILT PARALLEL TO GRADE WITH SAFETY BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.

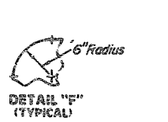
ALL EXPOSED EDGES OF SAFETY BARRIER CURB SHALL HAVE EITHER A 1/2" RADIUS OR A 3/8" BEVEL UNLESS OTHERWISE NOTED.

WHEN THE SAFETY BARRIER CURB IS BID BY LINEAR FEET, THE CONTRACT UNIT PRICE SHALL INCLUDE THE COST OF ALL CONCRETE AND REINFORCEMENT, COMPLETE-IN-PLACE.

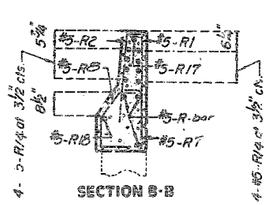
CONCRETE FOR THE SAFETY BARRIER CURB SHALL BE CLASS B1.

MEASUREMENT OF SAFETY BARRIER CURB IS TO THE NEAREST LINEAR FOOT FOR EACH STRUCTURE, MEASURED ALONG THE OUTSIDE TOP OF SLAB FROM END OF WING TO END OF WING.

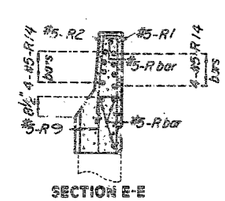




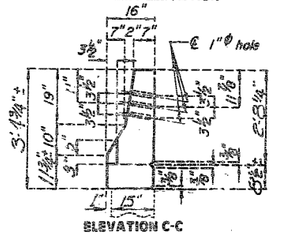
DETAIL "F" (TYPICAL)



SECTION B-B

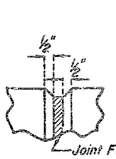


SECTION E-E

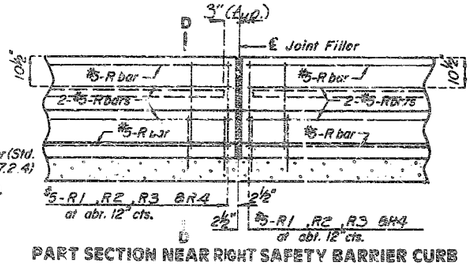


ELEVATION C-C

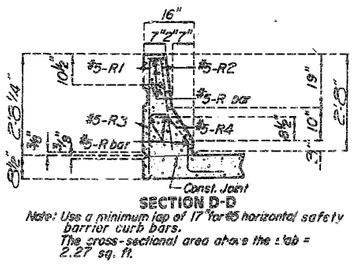
DETAILS OF GUARD RAIL ATTACHMENT



FILLED JOINT DETAIL



PART SECTION NEAR RIGHT SAFETY BARRIER CURB



SECTION D-D

Note: Use a minimum lap of 17 for #5 horizontal safety barrier curb bars.
The cross-sectional area above the slab = 2.27 sq. ft.

DETAILS OF RIGHT BARRIER CURB AT END BENTS

REVISED	MAY 1987
AUG. 1978	
SPS 127(N)	

DETAILED July 1989
CHECKED July 1989

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

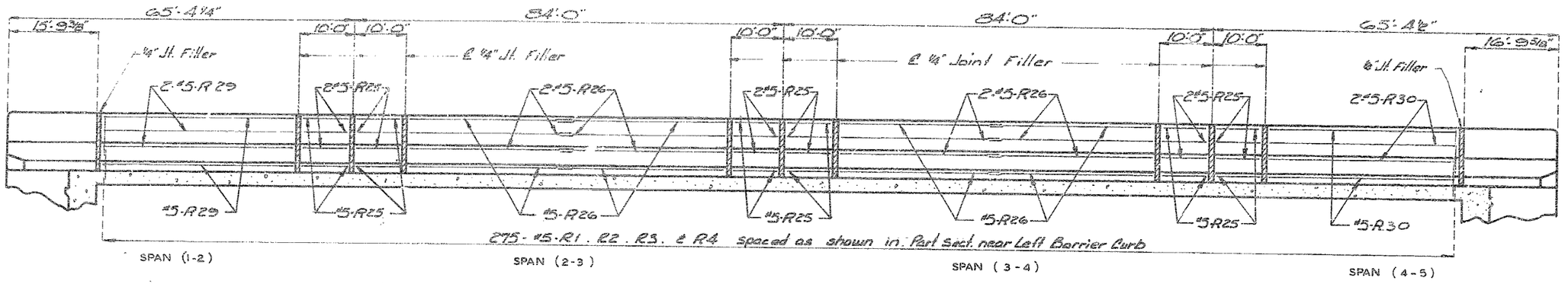
Sheet No. 21 of 24

CASS COUNTY

A209-4R

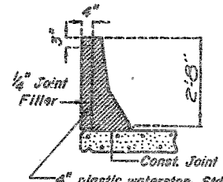
34260

STATE	PROJ NO	SHEET NO
MO		38



SECTION NEAR LEFT BARRIER CURB

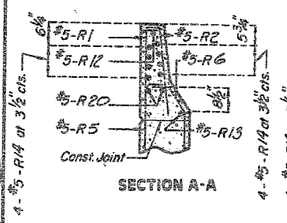
Note: Longitudinal dimensions shown are parallel to grade at top of slab.
Rustication not shown for clarity.



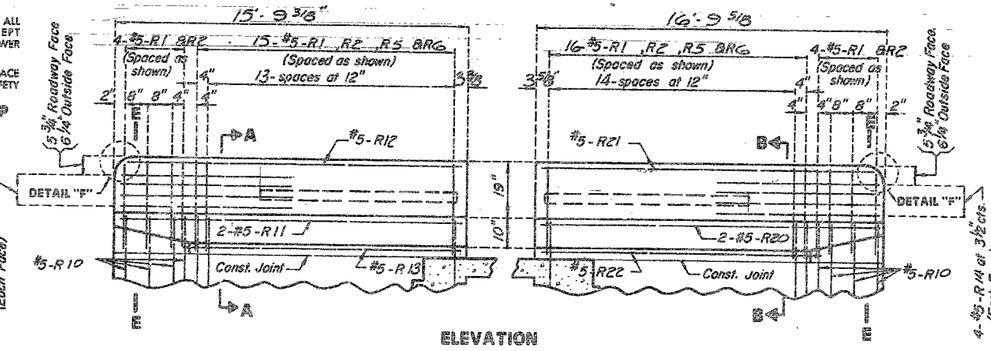
NOTE: PLASTIC WATERSTOP SHALL BE PLACED IN ALL SAFETY BARRIER CURB FILLED JOINTS. (EXCEPT STRUCTURES WITH SUPERELEVATION, USE ON ALL LOWER SAFETY BARRIER CURB JOINTS ONLY).

COST OF PLASTIC WATERSTOP COMPLETE IN PLACE TO BE INCLUDED IN CONTRACT UNIT PRICE FOR SAFETY BARRIER CURB.

DETAILS OF PLASTIC WATERSTOP



SECTION A-A



ELEVATION

DETAIL "F" (TYPICAL)

NOTE:

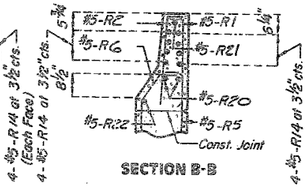
TOP OF SAFETY BARRIER CURB SHALL BE BUILT PARALLEL TO GRADE WITH SAFETY BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.

ALL EXPOSED EDGES OF SAFETY BARRIER CURB SHALL HAVE EITHER A 1/2" RADIUS OR A 3/8" BEVEL, UNLESS OTHERWISE NOTED.

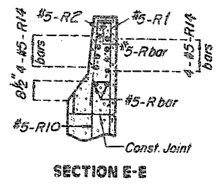
WHEN THE SAFETY BARRIER CURB IS BID BY LINEAR FEET, THE CONTRACT UNIT PRICE SHALL INCLUDE THE COST OF ALL CONCRETE AND REINFORCEMENT, COMPLETE-IN-PLACE.

CONCRETE FOR THE SAFETY BARRIER CURB SHALL BE CLASS B1.

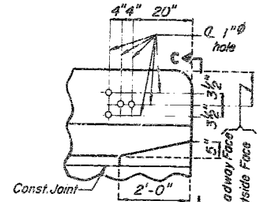
MEASUREMENT OF SAFETY BARRIER CURB IS TO THE NEAREST LINEAR FOOT FOR EACH STRUCTURE, MEASURED ALONG THE OUTSIDE TOP OF SLAB FROM END OF WING TO END OF WING.



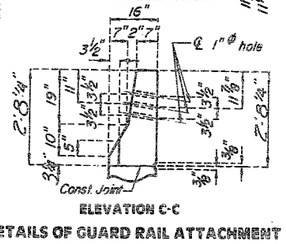
SECTION B-B



SECTION E-E

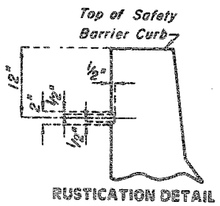


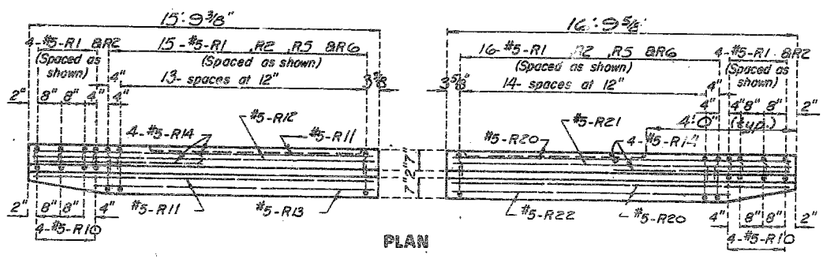
PART ELEVATION



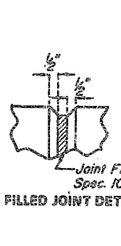
ELEVATION C-C

DETAILS OF GUARD RAIL ATTACHMENT

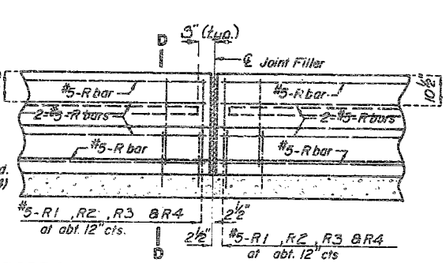




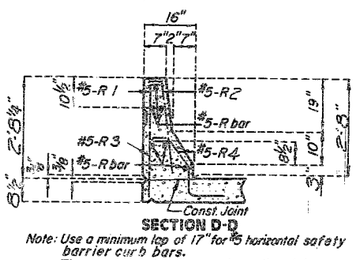
PLAN



FILLED JOINT DETAIL



PART SECTION NEAR LEFT SAFETY BARRIER CURB



SECTION D-D

Note: Use a minimum lap of 17" for #5 horizontal safety barrier curb bars.
The cross-sectional area above the slab = 2.27 sq. ft.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

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

SPS 1.7.8(L)	REVISED
AUG. 1979	MAY 1987

DETAILED July 1989
CHECKED July 1989

CASS COUNTY

A-2094R

S-8236

COMPLETE BILL OF REINFORCING STEEL

NO REQD	MARK NO SIZE	MARK NO MARK	LOCATION	EPOXY	SHAPE NO	STIRRUP	SUBSTR	VARIES	NO EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			SUBSTRUCTURE																
			INT. BENT NO. 2																
27	8D2C		FOOTINGS		20		X			6 4.000							6 4	6 4	457
24	6D21		FOOTINGS		10	S	X				3 1.000	13.000					7 3	6 11	249
4	7H2C		BEAM		7		X			4 0.000	2 7.750						9 5	9 5	77
6	8H21		BEAM		20		X			42 9.000							42 9	42 9	685
4	6H22		BEAM		20		X			42 .000							42 9	42 9	257
7	6H23		BEAM		17		X			14 2.000							14 10	14 10	199
7	6H24		BEAM		20		X			17 2.000							17 2	17 2	180
9	6H25		BEAM		17		X			23 6.000							24 2	24 2	145
3	6H26		BEAM		17		X			23 11.000							24 7	24 7	111
8	6H27		BEAM		19	S	X			22.000	2 4.000						4 2	4 0	68
8	6H28		BEAM		19	S	X			19.000	2 4.000						3 11	3 9	45
8	4N25		BEAM		20		X			2 9.000							2 9	2 9	15
51	4P2C		COLUMNS		16		X			2 3.000							7 11	7 11	220
8	5U2C		BEAM			S	X			2 9.000	3 3.000	2 9.000	3 3.000				12 11	12 7	105
18	5U21		BEAM		13	S	X			2 9.000	4 4.250	2 9.000	4 4.250				15 2	14 10	278
28	5U22		BEAM		13	S	X			2 9.000	3 10.625	2 9.000	3 10.625				14 2	13 11	406
1	5U23		BEAM		13	S	X			2 7.000	3 10.625	2 7.000	3 10.625				13 10	13 7	14
4	4U24		BEAM		10	S	X				6.000	2 9.000					3 9	3 7	10
1	4U25		BEAM		10	S	X				6.000	2 0.000					3 0	2 10	2
27	8V2C		*COLUMNS*		20		X			19 2.000							19 2	19 2	1382
8	W5H1		A.B.WELLS		22		X			15.000	9.125						23 0	23 0	31
			INT. BENT NO.3																
27	8D2C		FOOTINGS		20		X			6 4.000							6 4	6 4	457
24	6D21		FOOTINGS		10	S	X				3 1.000	13.000					7 3	6 11	249
4	7H2C		BEAM		7		X			4 0.000	2 7.750						9 5	9 5	77
6	8H21		BEAM		20		X			42 9.000							42 9	42 9	685
4	6H22		BEAM		20		X			42 9.000							42 9	42 9	257
8	6H24		BEAM		20		X			17 2.000							17 2	17 2	206
4	6H25		BEAM		17		X			23 6.000							24 2	24 2	145
4	6H26		BEAM		17		X			23 11.000							24 7	24 7	148
8	4H29		BEAM		20	S	X			2 9.000							2 9	2 9	16
8	6H3C		BEAM		17		X			14 4.000							15 0	15 0	180
8	6H31		BEAM		19	S	X			18.000	2 5.000						3 11	3 9	45
8	6H32		BEAM		19	S	X			15.000	2 5.000						3 8	3 6	42
48	4P2C		COLUMNS		16		X			2 3.000							7 11	7 11	254
8	5U2C		BEAM		13	S	X			2 9.000	3 3.000	2 9.000	3 3.000				12 11	12 7	105
4	4U24		BEAM		10	S	X				6.000	2 9.000					3 9	3 7	10
1	4U25		BEAM		10	S	X				6.000	2 0.000					3 0	2 10	2
18	5U26		BEAM		13	S	X			2 9.000	3 10.000	2 9.000	3 10.000				14 1	13 9	258
28	5U27		BEAM		13	S	X			2 9.000	3 6.500	2 9.000	3 6.500				13 6	13 2	385
1	5U28		BEAM		13	S	X			2 7.000	3 6.500	2 7.000	3 6.500				13 2	12 10	13
27	8V21		COLUMNS		20		X			17 10.000							17 10	17 10	1286

COMPLETE BILL OF REINFORCING STEEL

NO REQD	MARK NO SIZE	MARK NO MARK	LOCATION	EPOXY	SHAPE NO	STIRRUP	SUBSTR	VARIES	NO EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
8	W5H1		A.B.WELLS		22		X			15.000	9.125						23 0	23 0	31
			INT. BENT NO.4																
27	8D2C		FOOTINGS		20		X			6 4.000							6 4	6 4	457
24	6D21		FOOTINGS		10	S	X				3 1.000	13.000					7 3	6 11	249
4	7H2C		BEAM		7		X			4 0.000	2 7.750						9 5	9 5	77
7	8H21		BEAM		20		X			42 9.000							42 9	42 9	799
4	6H22		BEAM		20		X			42 9.000							42 9	42 9	257
8	6H23		BEAM		17		X			14 2.000							14 10	14 10	178
8	6H24		BEAM		20		X			17 2.000							17 2	17 2	206
8	4H29		BEAM		20		X			2 9.000							2 9	2 9	15
8	6H33		BEAM		19	S	X			23.000	2 4.000						4 3	4 1	49
8	6H34		BEAM		19	S	X			20.000	2 4.000						4 0	3 10	46
4	6H35		BEAM		17		X			25 0.000							25 8	25 8	154
4	6H36		BEAM		17		X			25 5.000							26 1	26 1	157
45	4P2C		COLUMNS		16		X			2 3.000							7 11	7 11	23
8	5U20		BEAM		13	S	X			2 9.000	3 3.000	2 9.000	3 3.000				12 11	12 7	105
1	4U24		BEAM		10	S	X				6.000	2 9.000					3 9	3 7	10
1	4U25		BEAM		10	S	X				6.000	2 0.000					3 0	2 10	2
18	5U29		BEAM		13	S	X			2 9.000	4 2.625	2 9.000	4 2.625				14 10	14 6	272
27	5U30		BEAM		13	S	X			2 9.000	3 10.875	2 9.000	3 10.875				14 3	13 11	392
1	5U31		BEAM		13	S	X			2 7.000	3 10.875	2 7.000	3 10.875				13 11	13 7	14
27	8V22		COLUMNS		20		X			16 8.000							16 8	16 8	1201
8	W5H1		A.B.WELLS		22		X			15.000	9.125						23 0	23 0	31
			SUPERSTRUCTURE																
			END BENT NO.1																
4	6F1		DIAPH.		21	S				3 4.000	7 3.000			2 8.000	2 0.000		10 7	10 1	61
5	6F2		DIAPH.&WING		23	S				14.000	7 3.000	14.000	6.250	12.500	6.250	12.500	9 7	9 7	72
10	6H1		BEAM		20					43 2.000							43 2	43 2	648
5	6H2		DIAPH.		20					43 11.000							45 11	45 11	345
5	6H3		DIAPH.		20					53 6.000							53 6	53 6	402
4	6H4	E	DIAPH.		20					53 6.000							53 6	53 6	321
5	6H5		DIAPH.		20					10 3.000							10 3	10 3	77
2	4H6		APPROACH HAUNCH		20					23 3.000							23 3	23 3	31
10	6H7		DIAPH.		20					46 0.000							46 0	46 0	691
4	6H8	E	DIAPH.		20					46 0.000							46 0	46 0	276
2	6H9	E	WING		20					13 6.000							13 6	13 6	41
4	6H10		WING		20					13 6.000							13 6	13 6	81
14	6H11		WING		20			V	2	13 0.000							13 0	13 0	
			INCR = 18.000 IN							4 0.000							4 0	4 0	179

STATE | PROJ NO | SHEET NO 99 | NO

BENDING DIAGRAMS

SHAPE 6 · SHAPE 7 · SHAPE 8 · SHAPE 9 · SHAPE 10 · SHAPE 11 · SHAPE 12 · SHAPE 13 · SHAPE 14 · SHAPE 15 · SHAPE 16 · SHAPE 17 · SHAPE 18 · SHAPE 20 · SHAPE 19 · SHAPE 21 · SHAPE 22 · SHAPE 23 · SHAPE 24 · SHAPE 25 · SHAPE 27 · SHAPE 28 · SHAPE 29 · SHAPE 30 · SHAPE 31 · SHAPE 32 · SHAPE 33

SPOT WELD AASHTO M32 SIZE W5 WIRE

6d FOR #3 THRU #5 · 12" FOR #6 OR 2½" MIN. · 9" BEAM · DETAILING DIMENSION · HOOK A OR G · 90° · 6d OR 2½" MIN. · 135°

STIRRUP HOOK DIMENSIONS

BAR SIZE	D (IN.)	GRADES 40-50-60 KSI 90° HOOK A OR G	135° HOOK A OR G	135° HOOK APPROX H
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3½"
#6	4½"	12"	7½"	4½"

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

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

DETAILING DIMENSION · HOOK A OR G · 4d OR 2½" MIN. · 180°

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

DETAILING DIMENSION · HOOK A OR G · 90° · 12d

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

BAR SIZE	D (IN.)	180° HOOKS ALL GRADES A OR G	180° HOOKS ALL GRADES J	90° HOOKS ALL GRADES A OR G
#3	2½"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¾"	17"	13¼"	22"
#11	12"	19"	14¾"	2'-0"
#14	18¼"	2'-3"	21¼"	2'-7"

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

STD. 90.0 · REVISED · MAY 1976 · APR 1988
DETAILED SEPT. 1989
CHECKED SEPT. 1989

CASS COUNTY

A-2094R

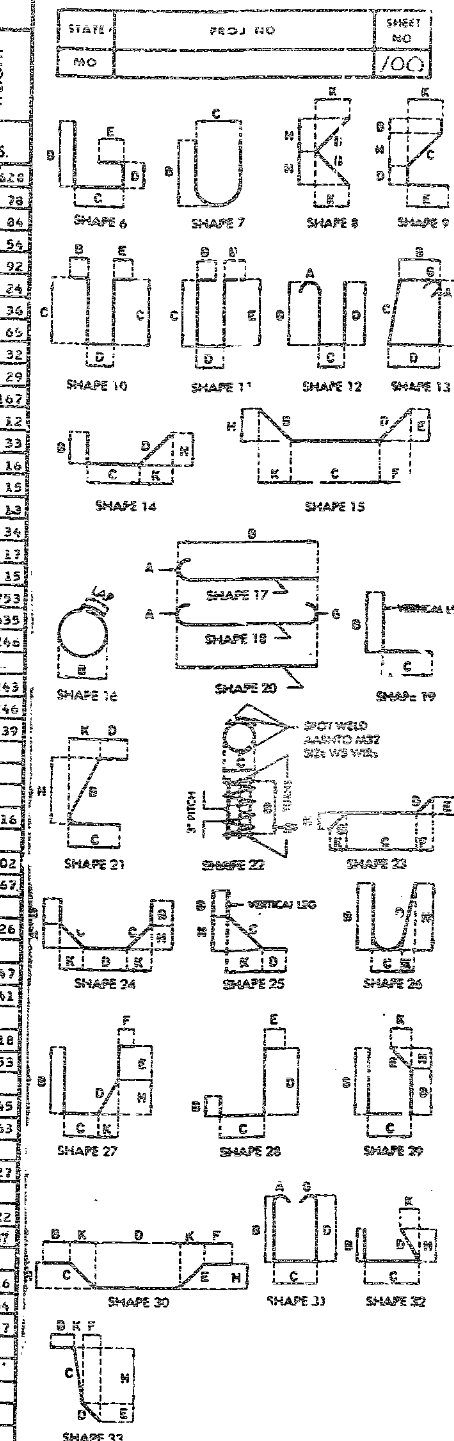
STATE	PROJ NO	SHEET NO
MO		100

COMPLETE BILL OF REINFORCING STEEL

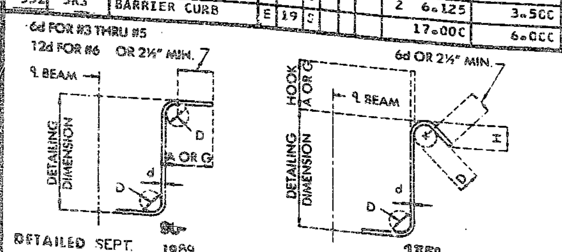
NO. REQD.	MARK NO. (SIZE MARK)	LOCATION	EPOXY (E)	SHAPE NO	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
2	6T1	WING																
				25	S													
									2 0.000	11 4.625	3 2.000							
														5 1.500	10 2.000	16 7	16 6	50
26	5U1	BEAM																
15	4U2	BEAM		10	S													
36	5U3	DIAPH.		13	S					5 4.000	3 5.500							
129	6U4	DIAPH.	E	10	S				3 5.500	2 9.000	3 5.500	2 9.000				14 2	13 11	377
3	5U5	DIAPH.	E	19	S					4 2.000	3 5.500					13 2	12 11	129
43	5U6	DIAPH.	E	13	S				4 2.000	4 10.000						11 10	11 7	435
43	5U7	DIAPH.	E	10	S				3 5.000	5 2.000	3 5.000	5 2.000				9 0	8 10	1712
44	4U8	APPROACH HAUNCH	E	6	S					2 2.000	4 8.000					18 1	17 9	56
				10	S				3 5.000	4 8.000	2 2.000					9 0	8 10	396
										17.500	6.000					10 3	10 1	452
																3 5	3 3	96
20	5V1	BEAM																
3	6V2	WING		20					5 4.000									
20	6V3	WING		20					7 3.000									
		INCR = 6.000 IN		20			V	2	6 10.000							5 4	5 4	111
36	6V4	BEAM							2 4.000							7 3	7 3	33
				20					2 0.000							6 10	6 10	
																2 4	2 4	138
																2 0	2 0	108
		END BENT NO. 5																
4	6F3	DIAPH.																
5	6F4	DIAPH.&WING		23	S				3 4.750	5 0.000								
				23	S				14.750	3 6.000	14.750	13.000	7.000	2 8.000	2 0.000	8 4	8 3	50
														13.000	7.000	6 0	5 10	44
10	6H1	BEAM		20														
5	6H2	DIAPH.		20					43 2.000									
5	6H3	DIAPH.		20					45 11.000									
4	6H4	DIAPH.	E	20					53 6.000							43 2	43 2	648
5	6H5	DIAPH.		20					53 6.000							45 11	45 11	345
2	4H6	APPROACH HAUNCH		20					10 3.000							53 6	53 6	402
10	6H7	DIAPH.		20					23 3.000							53 6	53 6	321
4	6H8	DIAPH.		20					46 0.000							10 3	10 3	77
4	6H12	WING	E	20					46 0.000							23 3	23 3	31
2	6H13	WING		20					14 4.000							46 0	46 0	691
14	6H14		E	20					14 4.000							46 0	46 0	276
		INCR = 17.500 IN		20			V	2	14 0.000							14 4	14 4	86
									5 3.000							14 4	14 4	43
																14 0	14 0	
2	6T2	WING														5 3	5 3	202
				25	S													
									2 0.000	11 4.250	4 0.000							
														5 0.750	10 2.000	17 4	17 3	52
26	5U1	BEAM																
15	4U2	BEAM		10	S													
36	5U3	DIAPH		13	S					5 4.000	3 5.500							
129	6U4	DIAPH	E	10	S				3 5.500	2 9.000	3 5.500	2 9.000				14 2	13 11	377
3	5U5	DIAPH.	E	19	S					4 2.000	3 5.500					13 2	12 11	129
43	5U6	DIAPH.	E	13	S				4 2.000	4 10.000						11 10	11 7	435
43	5U7	DIAPH.	E	10	S				3 5.000	5 2.000	3 5.000	5 2.000				9 0	8 10	1712
44	4U8	APPROACH HAUNCH	E	6	S					2 2.000	4 8.000					18 1	17 9	56
				10	S				3 5.000	4 8.000	2 2.000					9 0	8 10	396
										17.500	6.000					10 3	10 1	452
																3 5	3 3	96
20	5V1	BEAM		20														
36	6V4	BEAM		20					5 4.000									
4	6V5	WING		20					2 0.000									
20	6V6	WING		20					7 3.000							5 4	5 4	111
		INCR = 6.000 IN		20			V	2	6 10.000							2 0	2 0	108
									2 4.000							7 3	7 3	44
																6 10	6 10	
629	5R1	BARRIER CURB														2 4	2 4	138
629	5R2	BARRIER CURB	E	19	S													
551	5R3	BARRIER CURB	E	15	S				2 6.000	3.500								
			E	19	S				2 6.125	3.500						2 10	2 8	1749
									17.000	6.000				2 6.000	3.000	2 10	2 9	1804
																23	22	1054

COMPLETE BILL OF REINFORCING STEEL

NO. REQD.	MARK NO. (SIZE MARK)	LOCATION	EPOXY (E)	SHAPE NO	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
551	5R4	BARRIER CURB	E	27	S													
31	5R5	BARRIER CURB	E	19	S					6.000	11.125	7.000	12.000	9.125	6.375	3 0	2 10	1628
31	5R6	BARRIER CURB	E	27	S				2 0.000	6.000						2 6	2 5	78
31	5R7	BARRIER CURB	E	19	S					6.000	11.125	15.000		9.125	6.375	2 8	2 7	84
31	5R8	BARRIER CURB	E	27	S				15.000	6.000						21	20	54
8	5R9	BARRIER CURB	E	10	S				12.000	7.000	11.125	6.000		6.375	9.125	3 0	2 10	92
8	5R10	BARRIER CURB	E	10	S					5.000	5.000					3 0	2 10	24
4	5R11	BARRIER CURB	E	20						2 0.000	6.000					4 6	4 4	36
2	5R12	BARRIER CURB	E	20					15 6.000							15 6	15 6	65
2	5R13	BARRIER CURB	E	20					15 3.000							15 3	15 3	32
32	5R14	BARRIER CURB	E	20					13 9.000							13 9	13 9	29
1	5R15	BARRIER CURB	E	20					5 0.000							5 0	5 0	167
2	5R16	BARRIER CURB	E	20					11 9.000							11 9	11 9	12
1	5R17	BARRIER CURB	E	20					15 10.000							15 10	15 10	33
1	5R18	BARRIER CURB	E	20					15 7.000							15 7	15 7	16
1	5R19	BARRIER CURB	E	20					14 1.000							14 1	14 1	15
2	5R20	BARRIER CURB	E	20					12 4.000							12 4	12 4	13
1	5R21	BARRIER CURB	E	20					16 6.000							16 6	16 6	34
1	5R22	BARRIER CURB	E	20					16 3.000							16 3	16 3	17
74	5R2[illegible]	BARRIER CURB	E	20					14 9.000							14 9	14 9	15
46	5R24	BARRIER CURB	E	20					9 9.000							9 9	9 9	753
6	5R27	BARRIER CURB	E	20					32 8.000							32 8	32 8	1635
									39 4.000							39 4	39 4	246
6	5R28	BARRIER CURB	E	20					38 10.000							38 10	38 10	243
6	5R29	BARRIER CURB	E	20					39 3.000							39 3	39 3	246
6	5R30	BARRIER CURB	E	20					38 3.000							38 3	38 3	239
664	5S1	SLAB	E	20					35 10.000							35 10	35 10	24816
53	5S2	SLAB	E	20			V	1	41 6.000							41 6	41 6	
		INCR = 9.125 IN							2 0.000							2 0	2 0	1202
417	5S3	SLAB	E	20					42 0.000							42 0	42 0	18267
53	5S4	SLAB	E	20			V	1	40 3.000							40 3	40 3	
		INCR = 9.125 IN							2 1.000							2 1	2 1	1126
44	5S5		E	20			V	1	34 10.000							34 10	34 10	
		INCR = 9.125 IN							2 1.000							2 1	2 1	847
424	5S6	SLAB	E	20					36 6.000							36 6	36 6	16161
46	5S7	SLAB	E	20			V	1	36 3.000							36 3	36 3	
		INCR = 9.125 IN							2 0.000							2 0	2 0	918
696	5S8	SLAB	E	20					36 3.000							36 3	36 3	18753
62	6S9	SLAB	E	20			V	1	41 10.000							41 10	41 10	
		INCR = 7.875 IN							2 1.000							2 1	2 1	2045
486	6S10		E	20					42 5.000							42 5	42 5	30963
59	6S11	SLAB	E	20			V	1	40 8.000							40 8	40 8	
		INCR = 7.875 IN							2 10.000							2 10	2 10	1927
52	6S12		E	20			V	1	34 10.000							34 10	34 10	
		INCR = 7.875 IN							19.000							19	19	1422
495	6S13		E	20					36 6.000							36 6	36 6	27137
53	6S14	SLAB	E	20			V	1	36 0.000							36 0	36 0	
		INCR = 7.875 IN							2 1.000							2 1	2 1	1516
246	6S15	SLAB	E	20					29 11.000							29 11	29 11	11054
122	6S16	SLAB	E	20					33 0.000							33 0	33 0	6047
		END OF BAR LIST																



BENDING DIAGRAMS

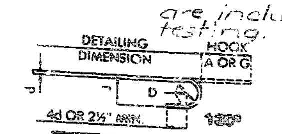


STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK: HOOK A OR G	135° HOOK: HOOK A OR G	135° HOOK: APPROX. H
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	7¾"	4½"

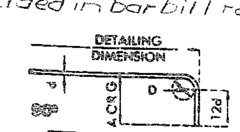
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

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

Note: Two additional #5-R25 & #6-S15 are included in bar bill for bond testing.



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



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

END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	180° HOOKS ALL GRADES: A OR G	180° HOOKS ALL GRADES: J	90° HOOKS ALL GRADES: A OR G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¾"	17"	13¼"	22"
#11	12"	19"	14¾"	2'-0"
#14	18¼"	2'-3"	21¾"	2'-7"

Sheet No. 24 of 24

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E - EPOXY COATED REINFORCEMENT.
S - STIRRUP
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN ON BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

STD. [illegible] MAY 1974
REVISED APR 1989
DETAILED SEPT. 1989
CHECKED SEPT. 1989

CASS COUNTY

A-2094R

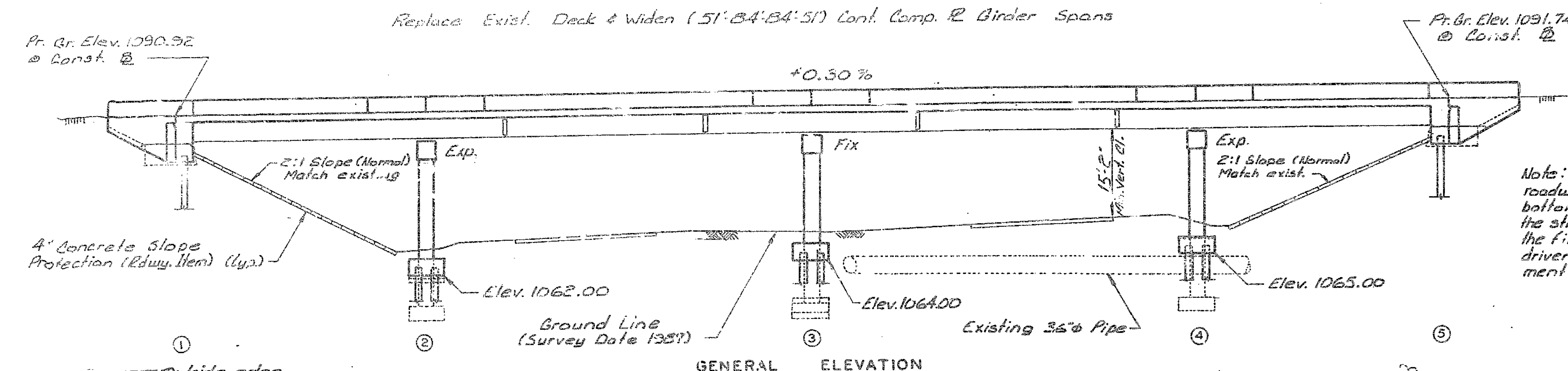
RGB
3/8" scale

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ NO	SHEET NO
MO	F-FG-BHF-71-4(51)	77
SEC/SUR 7 & 18	TWP 46N	RGE 32W

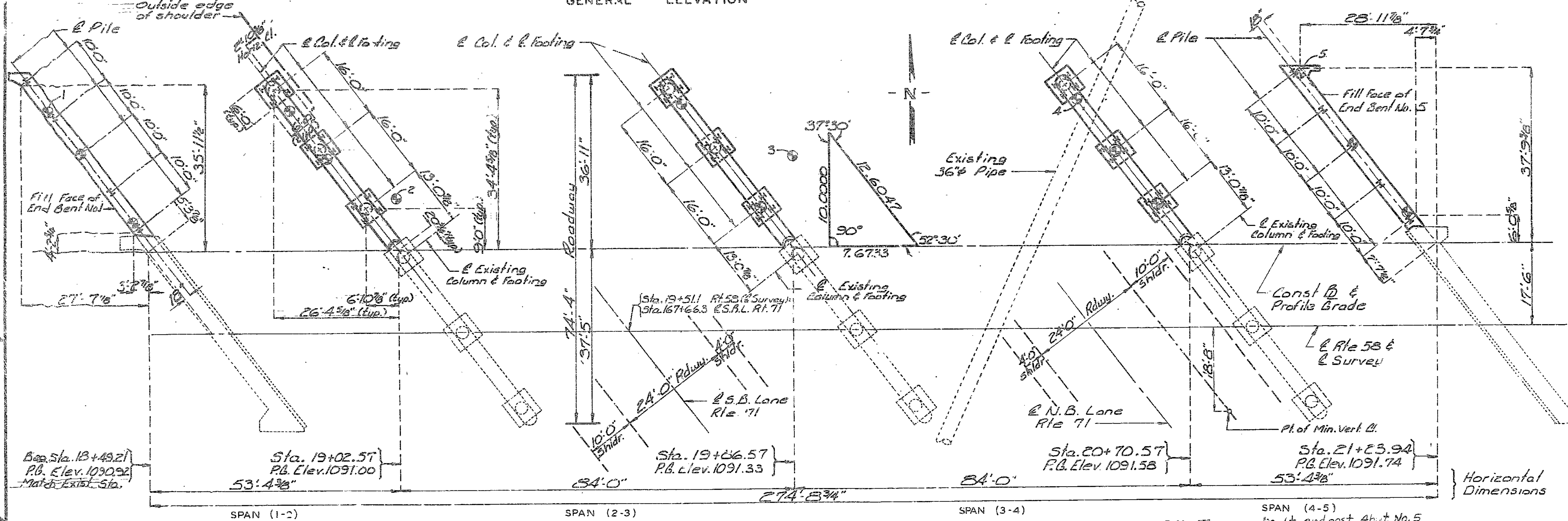
FINAL PLANS

Replace Exist. Deck & Widen (51'-84'-84'-51') Cont. Comp. ℄ Girder Spans



GENERAL ELEVATION

Note: 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' in back of the fill face of the End Bents before piles are driven for any Bents falling within the embankment section.



PLAN

B.M. Top snap tie Lt. end post Abut. No. 5
Elev. 1093.98

⊗ Indicates location of borings. Boring data for all locations is available upon request from the District Office. Boring data for numbered locations is detailed on sheet No. 3.
Note: For General Notes, Estimated Quantities, and Pile Data see sheet No. 2.

BRIDGE ROUTE 58 OVER ROUTE 71

STATE ROAD FROM JACKSON CO. LINE TO HARRISONVILLE

NEAR BELTON

PROJECT NO. STA. 168+04.8 (℄ SURVEY)

JOB NO. 4-U-71-737 RTE. 71

CASS COUNTY

DATE 9/29/89

STD. 611.60

STD. 706.35

A-2094R

DESIGNED MAY 1989
DETAILED JULY 1989
CHECKED July 1989

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

STATE	JOB NO.	SHEET NO.
MO.	F-FG-BHR-71-4(51)	78

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN. FT.		574	574
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1	1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.		11612	11612
CLASS I EXCAVATION	CU. YD.	130.5		130.5
STRUCTURAL STEEL PILE (10 IN.)	LIN. FT.	783		783
PRE-BORE FOR PILING	LIN. FT.	240		240
CLASS B CONCRETE (SUBSTR.)	CU. YD.	154.3		154.3
CLASS B-2 CONCRETE (SUPERSTRUCTURE ON STEEL)	CU. YD.		659.0	659.0
SAFETY BARRIER CURB	LIN. FT.		598	598
LAMINATED NEOPRENE BEARING PADS(STEEL STRUCTURE)	EACH		18	18
REINFORCING STEEL (BRIDGES)	POUND	14680	7260	21940
REINFORCING STEEL (EPOXY COATED)	POUND		171,560	171,560
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDER)	POUND		180,000	180,000
FABRICATED STRUCTURAL LOW ALLOY STEEL(PLATE GIRDER) A-572	POUND		20,410	20,410
SLAB DRAINS	EACH		20	20
PAINTING (NEW STEEL)(SYSTEM C)	LS.			1.0

NOTE:
ALL CONCRETE ABOVE LOWER CONSTRUCTION JOINT IN END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
ALL REINFORCEMENT IN THE END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
* APPROXIMATELY 98.9 TONS OF NEW STEEL.

EXISTING RAIL TO BE REMOVED AND STORED AT M.H.T.D. LOT LOCATED APPROXIMATELY $\frac{1}{2}$ MILE SOUTH OF RT. 58 ON WEST OUTER ROADWAY.

PILE DATA

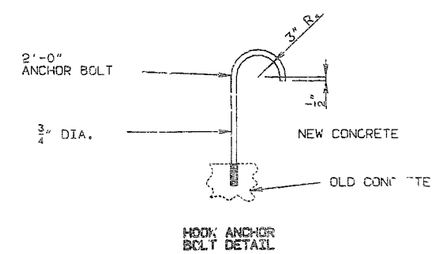
BENT NO.		1	2	3	4	5
PILE TYPE AND SIZE		HP10×42	HP10×42	HP10×42	HP10×42	HP10×42
NUMBER		5	12	12	12	5
APPROXIMATE LENGTH	FT.	29	15	12	13	30
DESIGN BEARING	TONS	41	41	48	42	41
HAMMER ENERGY REQUIRED	FT. LBS.	9200	9200	10800	9400	9200

MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH AND DESIGN BEARING VALUE OF PILES.

ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

PREBORE FOR PILES AT BENTS 2 AND 3 TO ELEVATIONS 1052.0 AND 1054.0 RESPECTIVELY.

NOTE: A MINIMUM VERTICAL CLEARANCE OF 14'9" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'0" CENTERED ON EACH EXISTING LANE SHALL BE MAINTAINED DURING CONSTRUCTION.



HOOK ANCHOR BOLT DETAIL

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989
LOAD FACTOR DESIGN.

DESIGN LOADING:
HS20-44
35#/SQ.FT. FUTURE WEARING SURFACE
MODIFIED 24,000# TANDEM AXLE
EARTH 120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS-CASE II

DESIGN UNIT STRESS:
CLASS B CONCRETE (SUBSTRUCTURE) f'c=3,000 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 CARBON STEEL fy=36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A-572) GRADE 50 fy= 50,000 PSI
STEEL PILE fh=9,000 PSI

FABRICATED STEEL CONNECTION:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS $\frac{3}{4}$"Ø,HOLES $\frac{13}{16}$"Ø EXCEPT AS NOTED.
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

TRAFFIC:
TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. SEE STAGE CONSTRUCTION SEQUENCE.

JOINT FILLER:
ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4, EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE $1\frac{1}{2}$" . UNLESS OTHERWISE SHOWN.

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

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.

ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST $\frac{1}{2}$".

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712.12.

AREAS TO BE ENCASED IN END BENT CONCRETE SHALL BE PAINTED ONE COAT OF SYSTEM C PRIMER AND SCRATCHED OR DAMAGED SURFACES ARE TO BE TOUCHED UP IN THE FIELD BEFORE CONCRETE IS POURED.

NOTE: ANCHORS SHALL BE OF THE SELF-DRILLING EXPANSION TYPE, MADE OF CASE-HARDENED AND DRAWN CARBURIZED STEEL, WITH SELF-CUTTING ANNULAR BROACHING GROOVES.

COST OF FURNISHING AND INSTALLING HOOK ANCHOR BOLT ASSEMBLIES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR CONCRETE.

AT THE OPTION OF THE CONTRACTOR, ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS MAY BE SUBSTITUTED FOR THE CONE EXPANSION TYPE CONCRETE ANCHORS NOTED ON THE PLANS.

THESE ANCHORS SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS AND THAT AN EPOXY COATED #6 GRADE 60 REINFORCING 3'-0" LONG SHALL BE SUBSTITUTED FOR THE 3/4"Ø THREADED ROD STUD.

DETAILED JULY 1989
CHECKED AUG 1989

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

CASS COUNTY A-2094R

STATE	PROJ NO	SHEET NO
NO.	[redacted]	79

PLANS

44'-4"

10'-8½" | 10'-9" | 10'-9" | 3'-9" | 8'-5½"

12" | 2-#5-U20(6"ctrs.) | 15'-#5-U20(6"ctrs.) | 12" | 12" | 7-#5-U18(6"ctrs.) | 11-#5-U20(6"ctrs.) | 18" | 2-#5-U20(6"ctrs.) | 15"

@6"ctrs.

#5-U18 2'-2"

#5-U24 7'-12"

#5-U20

#5-U24

4'-0" 1'-5"

4'-0"-H26

A

18"

12"

8-#6-H23

Elev. 1085.80

8-#6-H24

4-#4-U29

4-#6-H23*

Elev. 1087.06

4-#6-H34*

Elev. 1082.91

4-#6-H24*

Existing Elev. 1085.80

4'-1⅝"

4'-0"-U20

4'-0"-U22

4'-0"-T-U20

14'-3⅝"(MD)

15'-#8-U20 and 11'-#8-T-U20

4'-10"(TYP.)

2-#6-H22

7-#5-H21

Const. Jt. Key 10"x10"x 2"

Elev. 1082.91

3-¾"ø Hooked Anchor Bolts

9-#8-V20

9-#8-V20

9-#8-V20

℄ New Column ℄ Fty. 16'-0"

16'-0"

℄ New Column ℄ Fty. 13'-0⅞"

℄ Existing Column ℄ Fty.

*Drill 1¼" holes 9" (min.) deep at dgn. #16 #4 bars in place. No direct payment will be made for installing #6-H33, H34 bars.

Ⓐ Roughen Surface & use Epoxy Bonding Compound in accordance with Sec. 1039.

**Match Existing

Note: For details of anchor bolt well see sheet No. 3.

6'-0" | 2'-6" | 2'-6" | 2'-6" | 6'-0" | 2'-6" | 2'-6" | 2'-6" | 6'-0" | 2'-6" | 2'-6" | 2'-6"

9-#8-D20

9-#8-C20

2-#3-D20

3'-0" (Typ.)

#6-D21

#6-D21

#6-D21

Const. Jt. Key 10"x10"x 2"

Elev. 1065.00

18" | 3'-0" | 18" ℄ Pile

18" | 3'-0" | 18" ℄ Pile

18" | 3'-0" | 18" ℄ Pile

A

ELEVATION

44'-4"

2'-0½" | 16'-0" | 16'-0" | 13'-0⅞"

℄ New Column ℄ Fty. | ℄ New Column ℄ Fty. | ℄ Existing Column ℄ Fty.

10'-8½" | 10'-9" | 10'-9" | 3'-9" | 8'-5½"

#5-U Bars (Spaced as Shown in Elevation)

Const. ℄ | ℄ Exist. Col. 3'-8"

Cutting line of Existing Concrete

6'-0" | 6'-0" | 6'-0" | 3'-8" | 22" | 22"

4-#8-H29 | 4-#4-H29

2-#6 H22

3'-0"

18" (Typ.)

7-#8-T-U21 (Bot.)

2-#6-H25 (Top)

4-#6-H27 (Top)

4-#7-H20

℄ & ½"ø Anchor Bolt (Typ.)

15" Ext. (Typ.)

8-#6-H27 (Top)

37°30'

4'-0"

12"

20"

#6-H33*

#6-H34*

3-¾"ø Hooked Anchor Bolts

Laminated Neoprene Brg. Pad 21"x13"x2½" (Typ.)

℄ Bt. Col. ℄ Fty.

W5-W1 (Typ. for Girders 1A thru 4A)

22¾" | 10'-5⅝" | 10'-8⅝" | 10'-8⅝" | 10'-8⅝"

℄ New Girder 8'-6" | 8'-6" | ℄ New Girder 8'-6" | 8'-6" | ℄ Existing Girder 9'-0"

4A | 3A | 2A | 1 | 2

PLAN

Note: Contractor shall drill holes and install anchor bolts at girder #1 & #2 in accordance with Std. Spec. 712.6. For details of hooked anchor bolts see sheet No. 2. See sheet No. 7 for detail for straightening existing Bll bars. For Section A-A see sheet No. 10.

DETAILED JUNE 1989

CHECKED JULY 1989

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

DETAILS OF INTERMEDIATE BENT NO. 4 Sheet No. 9A of 24

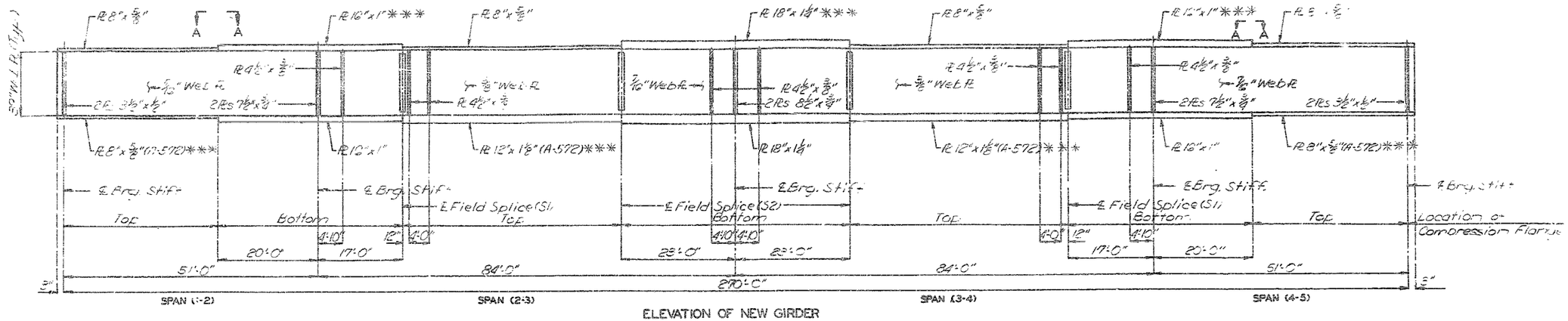
CASS COUNTY A-2094R

QUALITY REPRO

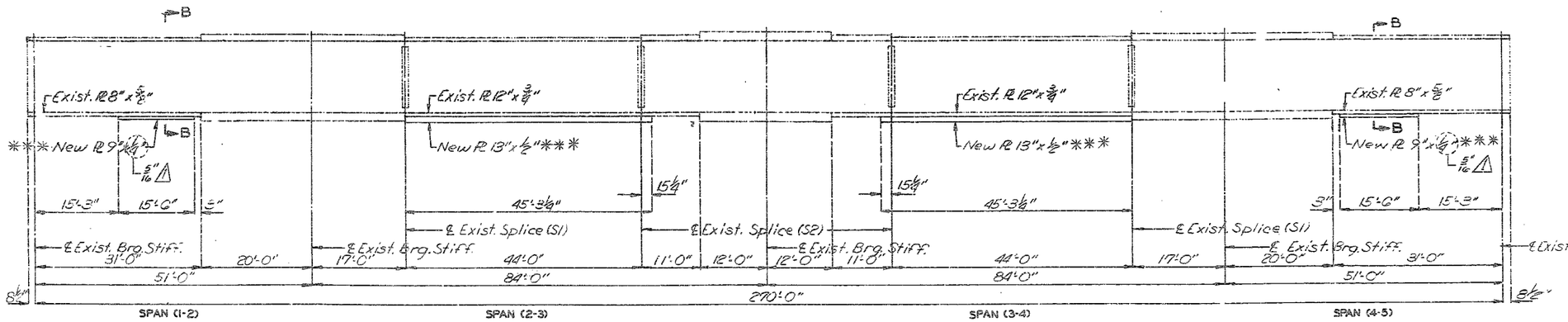
42-226

STATE	PROJ NO	SHEET NO
MO	[redacted]	80

FINAL PLANS



ELEVATION OF NEW GIRDER



ELEVATION OF EXISTING GIRDER

Note: All web plates shall be subject to notch toughness requirements.
Fabricated structural carbon steel shall be A36 except as noted.
Longitudinal dimensions shown are parallel to grade.
*** Indicates Flange Plates subject to notch toughness requirements.
For Section B-B see sheet No. 16.
For Plan A-A see sheet No. 16.

DETAILED JUNE 1989
CHECKED JULY 1989

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

Sheet No. 15A of 24 ⚠ Revised 1/2/90 CASS COUNTY A-2094R

QUALITY REPRO

STATE	PROJ NO	SHEET NO
MO	F-PG-BHF-71-4 (31)	81

GENERAL PLANS

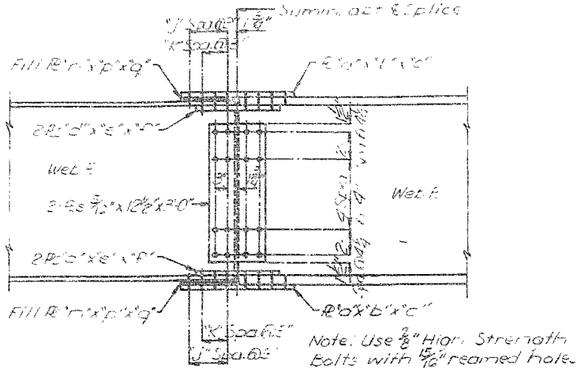
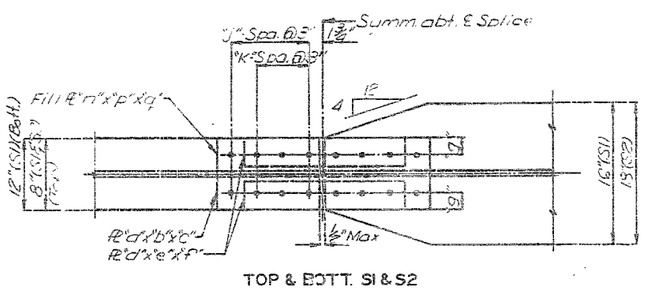
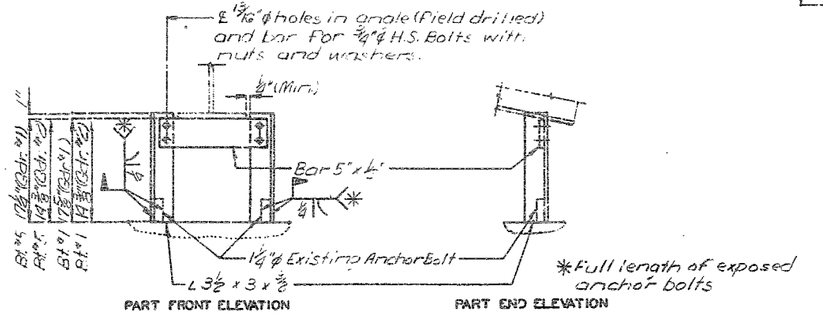


TABLE OF DIMENSIONS - FIELD SPLICE											
Location	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"j"	"k"	"m"	"p"	"q"
S1 - Top	8"	⅞"	12½"	3"	⅞"	12½"	1½"	1	1	8"	⅞"	6"
S2 - Bott.	12"	1⅛"	3'-0½"	5"	1⅛"	3'-0½"	2½"	6	5	12"	1⅛"	21"
S2 - Top	8"	⅞"	12½"	3"	⅞"	12½"	1½"	1	1	8"	⅞"	6"
S1 - Bott.	12"	1⅛"	4'-0½"	5"	1⅛"	4'-0½"	2½"	7	7	12"	1⅛"	21"

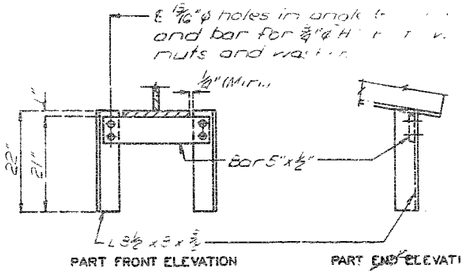
∠ △3'-0½" ∠ △3'-0½" ∠ △5 △5 ∠ △18"



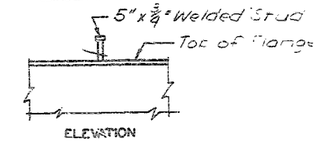
TOP & BOTT. S1 & S2

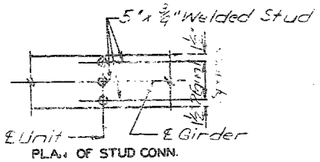


DETAILS OF SUPPORT CHAIR
(EXISTING GIRDER NO. 1 & 2)



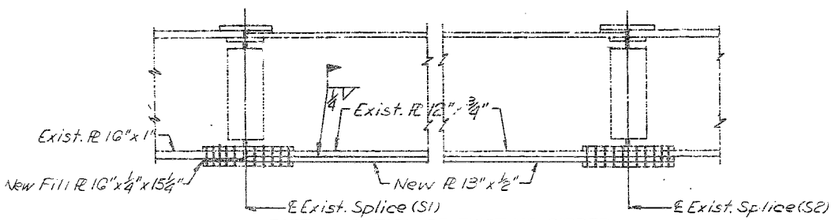
DETAILS OF SUPPORT CHAIR
(GIRDER 1A THRU 4A)



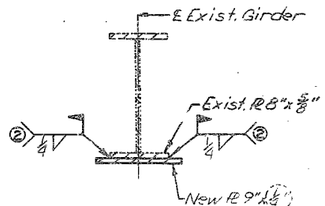


DETAILS OF SHEAR CONNECTORS

Note: Weight of 1866# of shear connectors is included in weight of Fabricated Structural Carbon Steel.

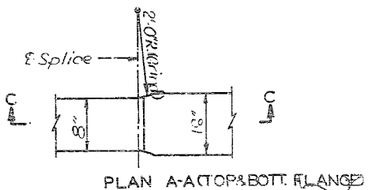


PART ELEVATION OF EXISTING GIRDER



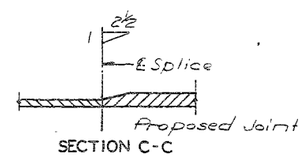
SECTION B-B

Note: For location of Section B-B see sheet No. 15.

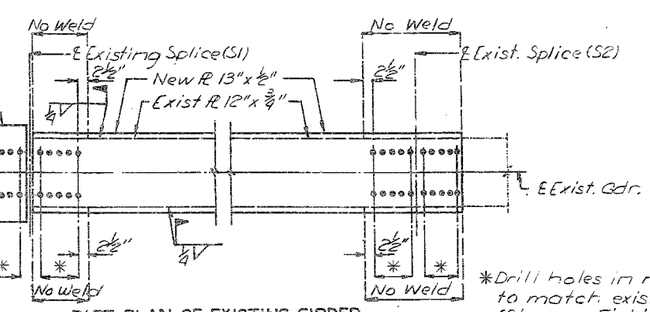


2'-0" RADIUS TRANSITION

Note: For location of Plan A-A see sheet No. 15.



SECTION C-C



PART PLAN OF EXISTING GIRDER SHOWING BOTTOM FLANGE

* Drill holes in new plate to match existing plate. (Shop or Field)

DETAILED JUNE 1989
CHECKED JULY 1989

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

② Revised 1/17/90
① Revised 1/2/90

Sheet No. 16A of 24

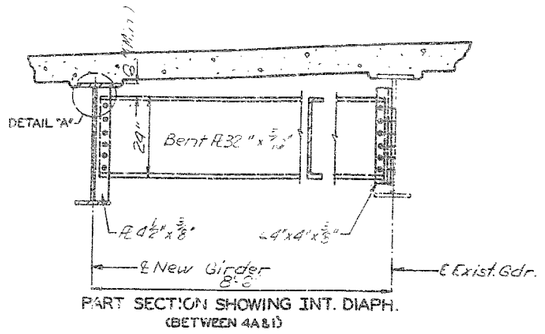
CASS COUNTY

A-2094R

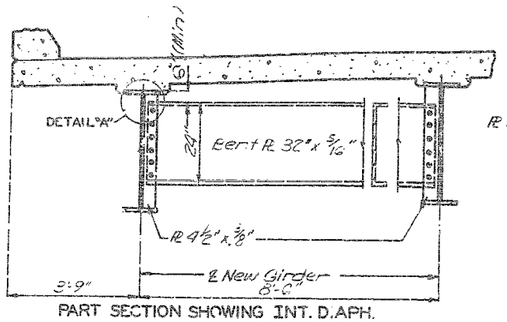
326 428

QUALITY REPRO

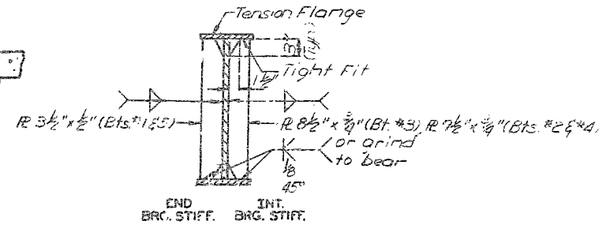
STATE	PROJ. NO.	SHEET NO.
MO.	F-FB-BHF-11-9(51)	82

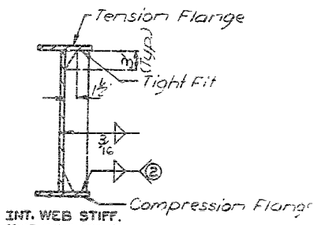


PART SECTION SHOWING INT. DIAPH.
(BETWEEN 4A & 1)



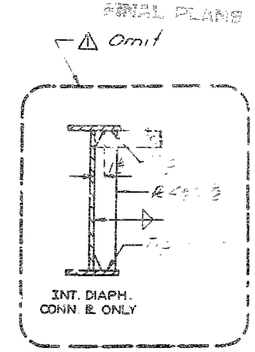
PART SECTION SHOWING INT. DIAPH.
(BETWEEN 1A, 2A, 3A & 4A)





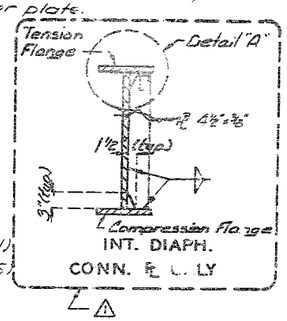
INT. WEB STIFF. (ONE SIDE ONLY)

②Weld to compression flange as located on the Elevation of Girder.

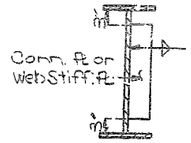



DETAILS THRU BEVEL PLATE

*When dimension exceeds ½" bevel stiffener plate.

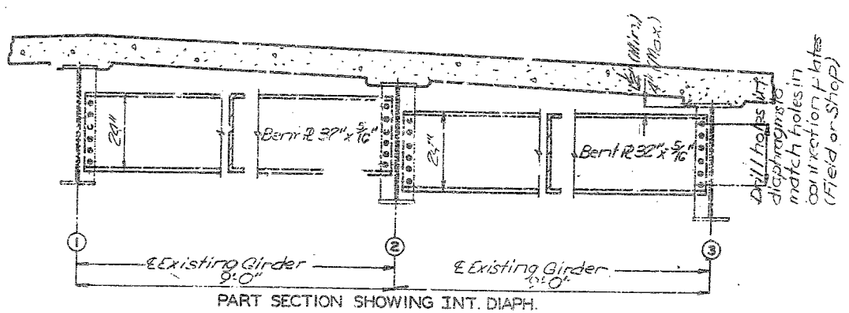


INT. DIAPH. CONN. ℄ L. LY

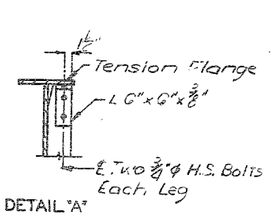


Note: When intermediate diaphragm connection plates or web stiffener plates interfere with flanges splice plates and bolts, clip connection or stiffener plates as shown.

WELDING DETAILS

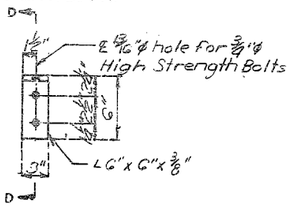


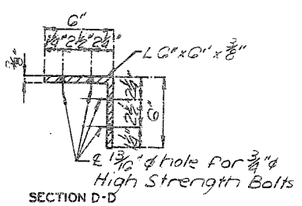
PART SECTION SHOWING INT. DIAPH.



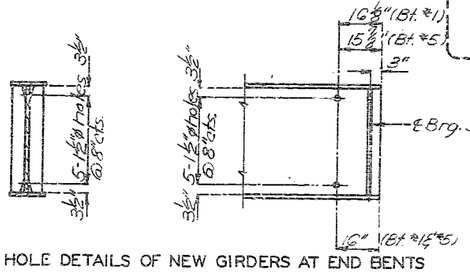
DETAIL "A"

Note: Use angle 6" x 6" x ⅜" only in top or bottom flanges in tension.

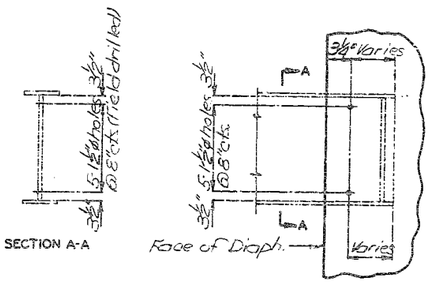




SECTION D-D



WEB HOLE DETAILS OF NEW GIRDERS AT END BENTS



WEB HOLE DETAILS AT END BENTS
(EXISTING GIRDER)

DETAILED JUNE 1989
CHECKED JULY 1989

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

Sheet No. 7A of 24 ⚠ Revised 1/17/89 CASS COUNTY A-2094R

507 868

MISSOURI STATE HIGHWAY DEPARTMENT

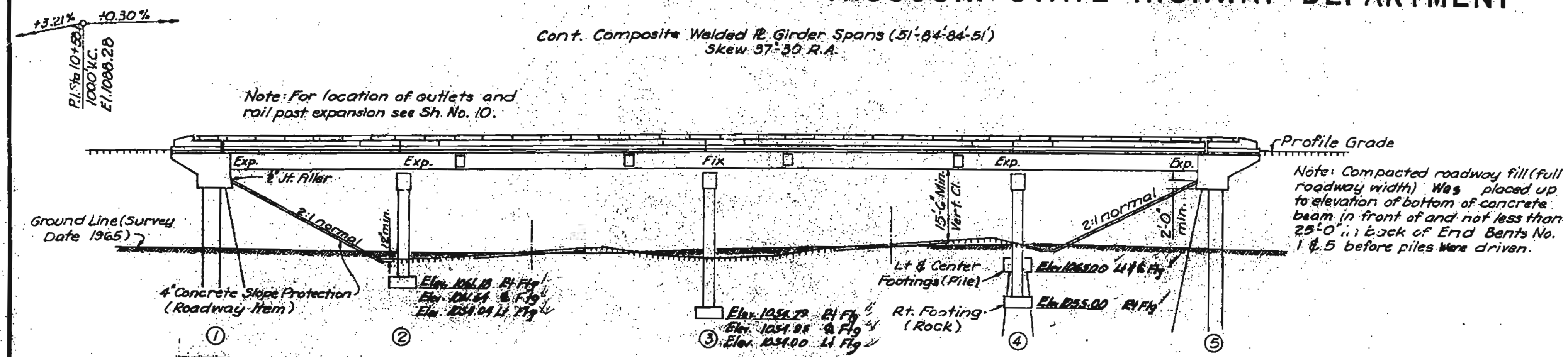
B1

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	124	

Cont. Composite Welded Plate Girder Spans (51'-84'-84'-51')
Skew 37°30' R.A.

Note: For location of outlets and rail post expansion see Sh. No. 10.



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

GENERAL ELEVATION

Pile Length Bent #1			
Pile No.	Length	Pile No.	Length
1	23.0	5	28.0
2	28.5	6	27.5
3	22.5	7	22.0
4	27.5	8	22.0

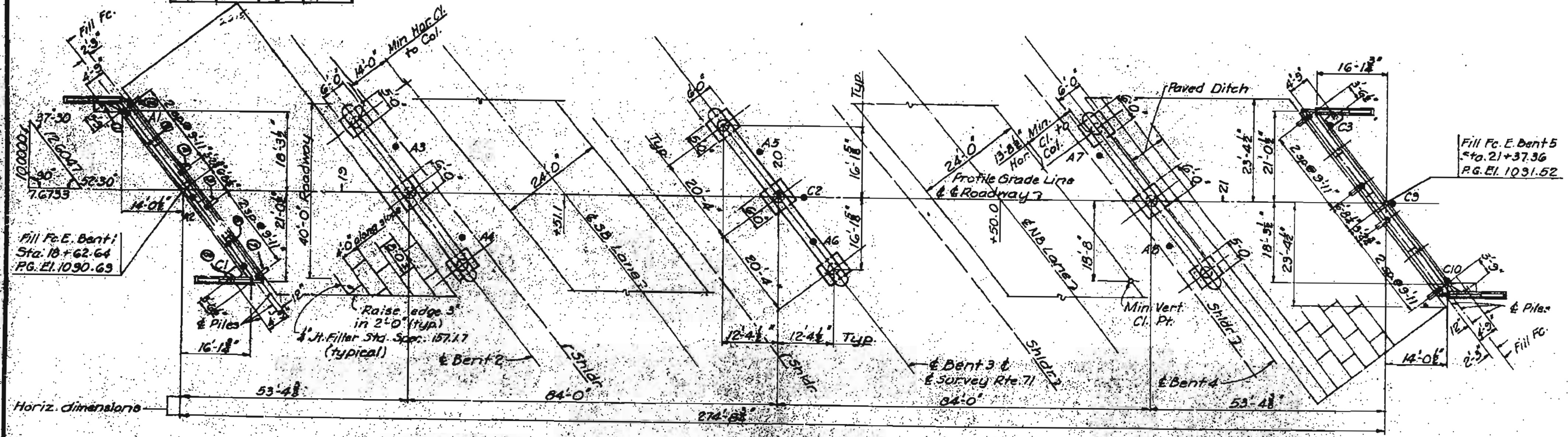
FOOTING AND PILE DATA

	Bent No.	1	2	3	4	5
Spread Footings	Foundation Material		Rock	Rock	*Rock	
	Design Bearing Tons/Sq. Ft.		8	8	8	
Bearing Pile	Pile Type and Size	10BP42			‡10BP42	10BP42
	Number	8			8	8
	Approximate Length Ft.	See Table			12	29
	Design Bearing Tons	34.9			53	34.9
	Hammer Energy required Ft. Lbs.	8700			12,500	8700

* Rt. footing, ‡ Lt. & Center footing.

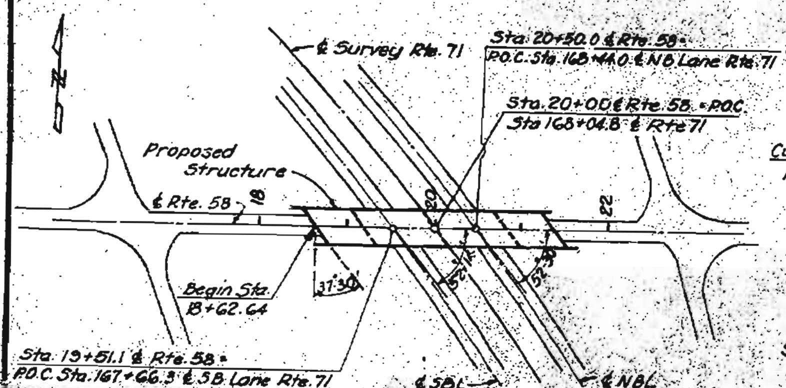
Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).

All pile were driven to practical refusal.



PLAN

● Indicates location of borings. For Boring Data see Sh. No. 2.



LOCATION SKETCH

Curve Data:
NB Lane
P.I. Sta. 169+84.4
Δ = 12°26'38" Rt.
D = 2°02.9'
T = 305.0'
L = 607.5'
R = 2797.3'
S.E. = 0.05'/ft.

SB Lane
P.I. Sta. 166+64.6
Δ = 25°04' Rt.
D = 2°00'
T = 584.6'
L = 1153.3'
R = 2865.0'
S.E. = 0.06'/ft.

QUANTITIES

Items		Substr.	Superstr.	Totals
Class 1 Excavation	Cu. Yd.	204.0		204.0
Steel Piles in Place (10")	Lin. Ft.	532		532
Class B Concrete	Cu. Yd.	203.3		203.3
Class B1 Concrete	Cu. Yd.		330.4	330.4
Reinforcing Steel	Lb.	32,150	108360	140510
Painting	Ton		104.1	104.1
Fabricated Structural Carbon Stee	Lb.		209,540	209,540
Bridge Rail (Single tube)	Lin. Ft.		573	573
Test Holes (Contingent Item)	Lin. Ft.	36		36
Class 1 Excavation (Below Plan Contingent)	Cu. Yd.	22.0		22.0
Crevice Concrete (Contingent Item)	Cu. Yd.	4.0		4.0

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

No payment for excavation was allowed at End Bents No 1 & 5

GENERAL NOTES

Design Specifications: AASHO - 1965

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

Design Unit Stresses:
Class B Concrete (Substructure) fc = 1,200 psi
Class B1 Concrete (Superstructure) fc = 1,600 psi
Reinforcing Steel fs = 20,000 psi
Structural Steel (ASTM A36-66) fs = 20,000 psi
Steel Pile (ASTM A36-66) fb = 9,000 psi

Superstructure deck was surface sealed.

Paint: Shop, none; Field, by contractor in accordance with Std. Spec. 55.4.10.

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

Details of welded joints shown are for manual arc welding except as noted.

The minimum size of fillet welds was in accordance with AWS D2.0-66, Article 217(b) except the minimum size fillet weld connecting parts carrying primary stress ¼".

An opening of 13'-6" high × 30'-0" wide was maintained during construction for each lane.

B.M. □ on Rt. Edge Pavement N.B.L. 26' Lt. Sta. 168+00 Elev. 1069.38

B.M. □ on N.E. Wing Bridge Elev. 1092.03

BRIDGE: ROUTE 58 UNDERPASS

FINISHED

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

STATE OF MISSOURI F. M. CORTELYOU, JR. NUMBER E-4155 REGISTERED PROFESSIONAL ENGINEER

SUBMITTED BY ______ BRIDGE ENGINEER DATE ______

APPROVED BY ______ CHIEF ENGINEER DATE ______

DESIGNED JAN. 1968 BY H&C
DETAILED JAN 1968 BY JER
CHECKED FEB 1968 BY FJD

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

Sheet No. 1A of 2

STD. 5400

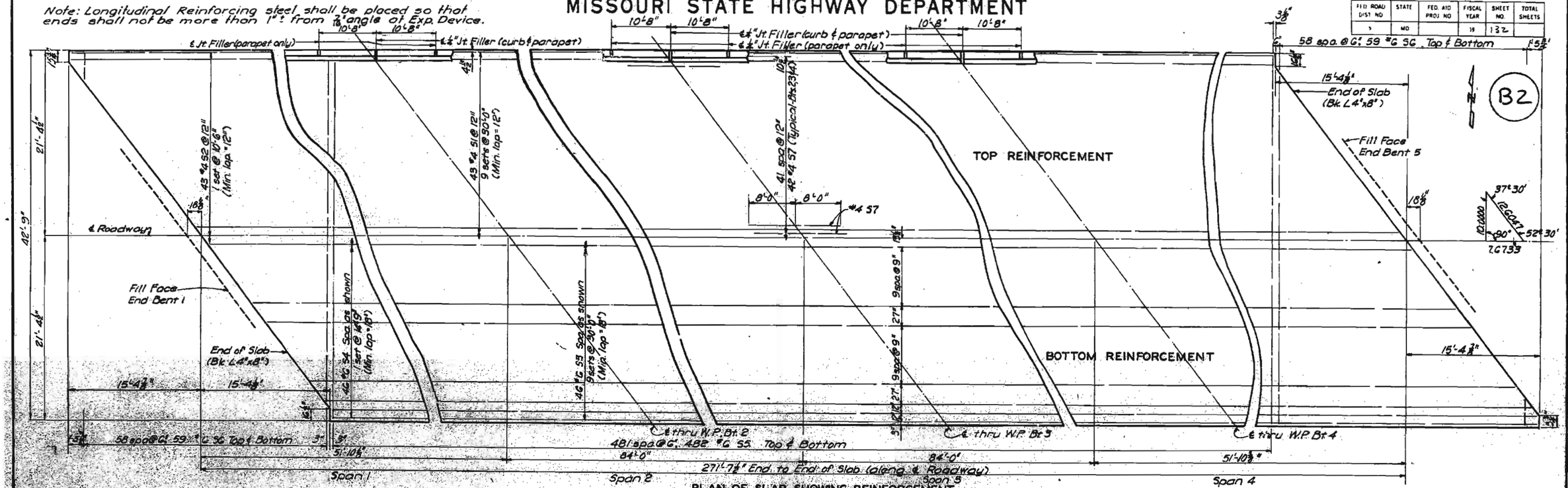
A-2094

FINAL PLANS

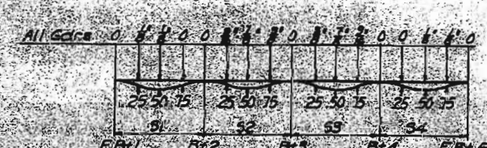
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	132	

Note: Longitudinal Reinforcing steel shall be placed so that ends shall not be more than 1" ± from ⊥ to angle of Exp. Device.

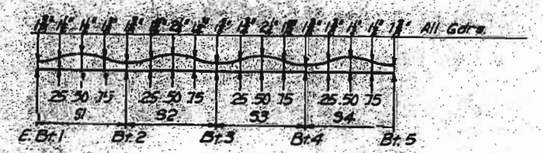


PLAN OF SLAB SHOWING REINFORCEMENT

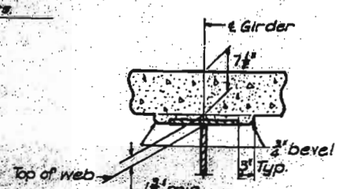


13% of D.L. Deflection included is due to weight of structural steel.

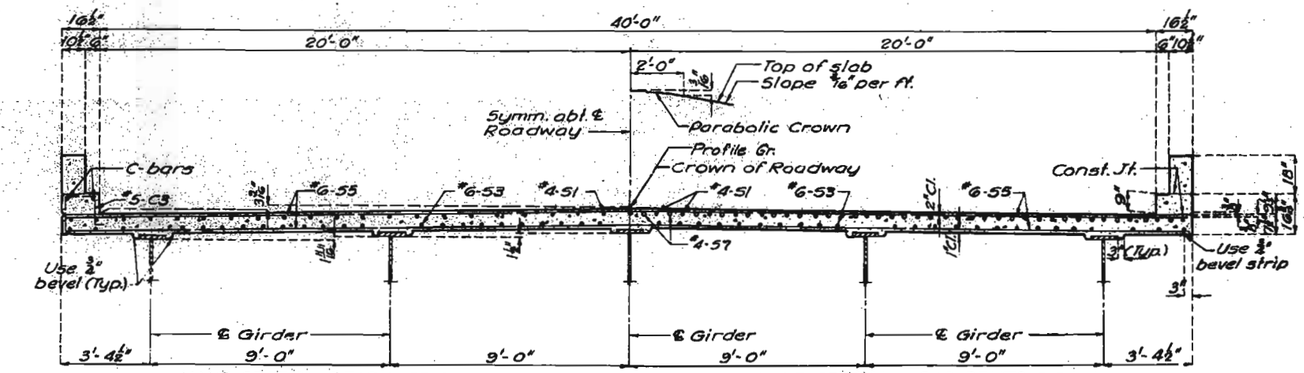
DEAD LOAD DEFLECTION DIAGRAM



THEORETICAL SLAB HAUNCHING DIAGRAM

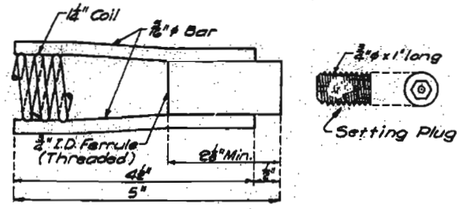


TYPICAL HAUNCH



HALF SECTION NEAR ℄ SPAN

HALF SECTION NEAR BENTS 2, 3 & 4



DETAIL OF GUARD RAIL INSERT

Note: For details and reinforcement of curb and parapet not shown see sheet No. 10 of 10.

BRIDGE ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN

CASS COUNTY

A-2094

DETAILED JAN. 1968 BY KKD

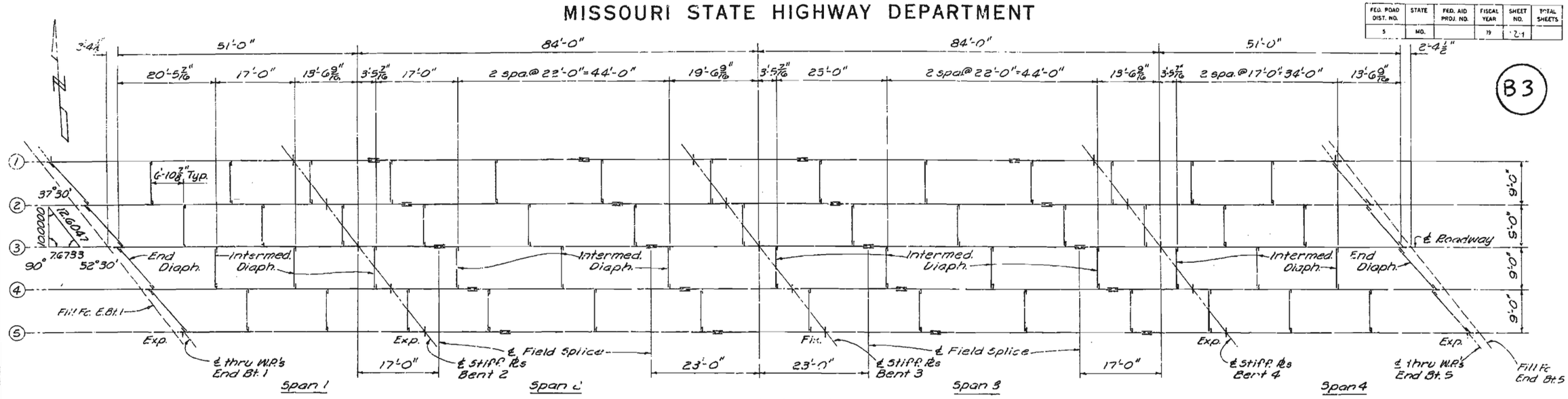
CHECKED Feb. 1968 BY FJO

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

MISSOURI STATE HIGHWAY DEPARTMENT

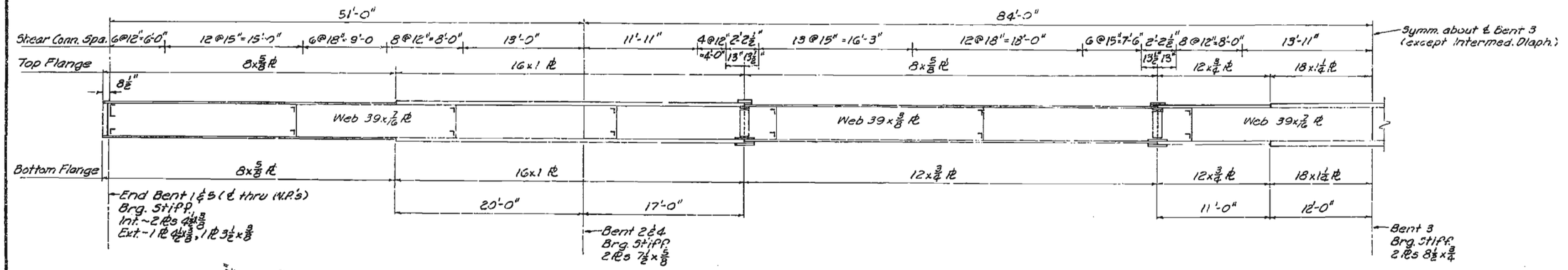
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	7-1	

B3



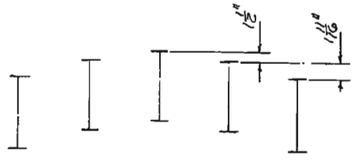
Longitudinal dimensions shown are parallel to profile grade.

FRAMING PLAN



GIRDER ELEVATION

Girder ① shown
All conn. Pls 3½"x⅜"



SECTION THRU STRINGERS

Dimensions are from top of web to top of web. Section is normal to ℄ of roadway.

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

DETAILED Jan. 1968 BY WBH
CHECKED Feb. 1968 BY FJD

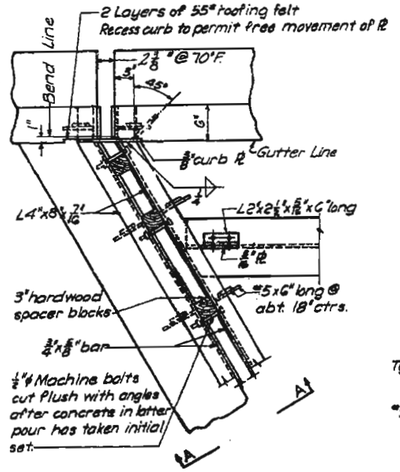
Note: This drawing is not to scale. Follow dimensions.

A-2094

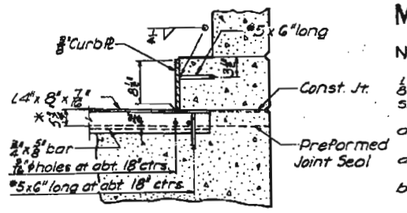
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	MO.		19	131	

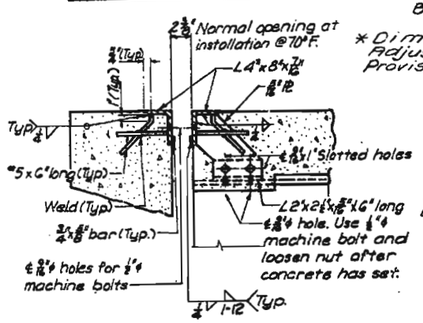
B4



PART PLAN



SECTION THRU CURB



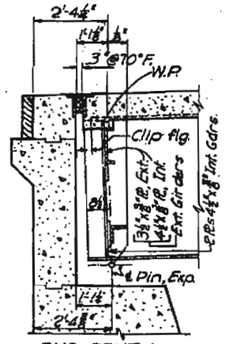
SECTION A-A

Note:
Normal opening at installation shall be increased ⅛" for each 10° below 70° and decreased ⅛" for each 10° above 70°.
Type I Joint Seal 4" wide x 4⅝" high.

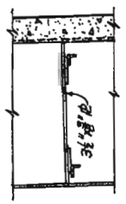
Note:
Expansion device shall be fabricated in one section except that when the length is over 50', splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.
No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.
Payment for furnishing and placing structural steel of expansion device shall be made under price bid for fabricated Structural Carbon Steel.
Payment for furnishing and placing preformed joint sealer shall be made under price bid for other items. See Special Provisions.

EXPANSION DEVICE

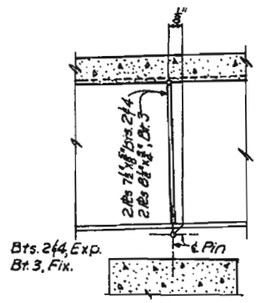
End Bents No. 1 & 5



END BENT 1

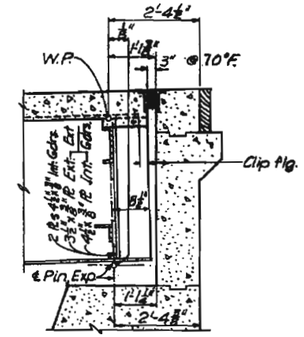


INTERMED DIAPH.



BENTS 2,3 & 4

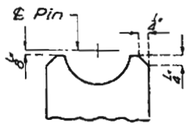
PART LONGITUDINAL SECTION



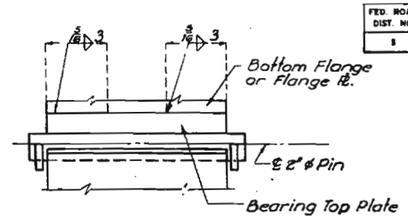
END BENT 5

NOTES: TYPE "D" BEARINGS

Lead plates under bearings shall be approximately ½" thickness and weigh 8#/sq. ft. Cost of lead plates shall be included in price bid for other items.
"Estimated weight" does not include weight of anchor bolts.
Rockers and pedestals shall be machined after welding.
Where flat surface is indicated, tolerance shall be .003 in/in in any direction.
Anchor Bolts for Type "D" Bearings shall be 1¼" ϕ swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.

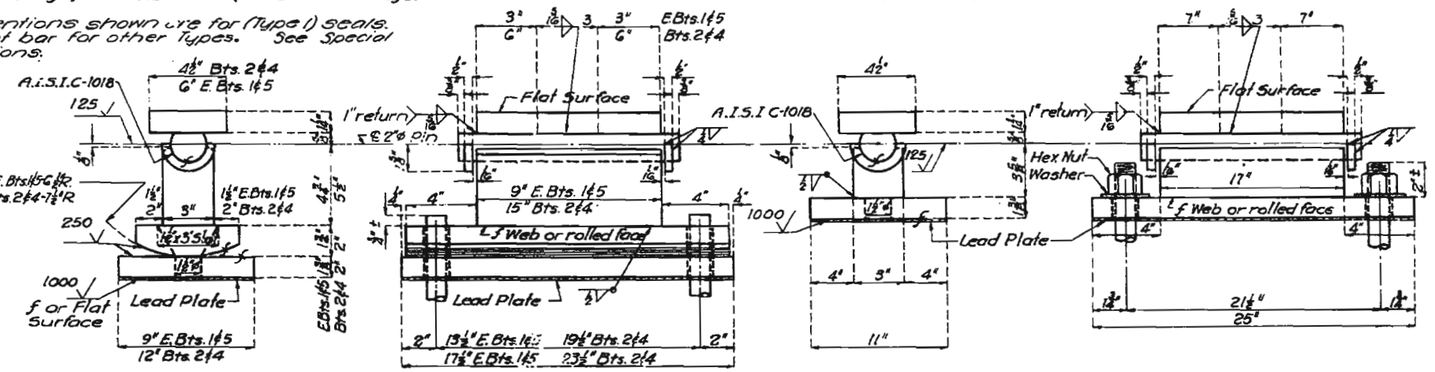


END VIEW OF WEB EXPANSION BEARING



WELDING DETAILS

* Dimensions shown are for (Type I) Seals. Adjust bar for other types. See Special Provisions.

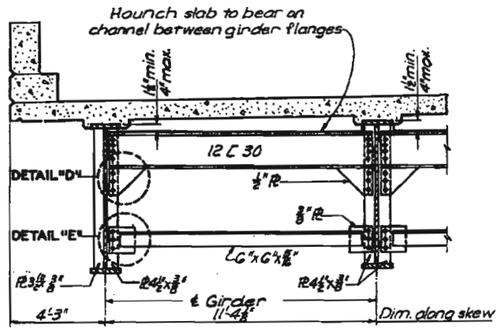


Required: 5, E. Bt. 1
5, Bt. 2
5, Bt. 4
5, E. Bt. 5

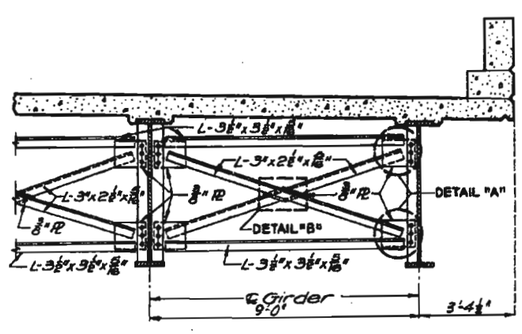
Required: 5, Bt. 3

TYPE "D" BEARINGS

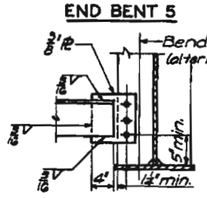
(Estimated Weight 5940#)



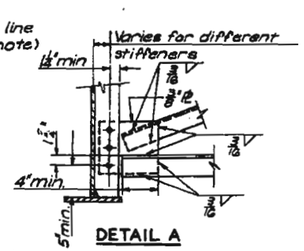
PART SECTION SHOWING END DIAPHRAGMS



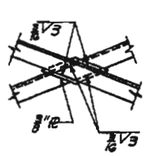
HALF SECTION SHOWING INT. DIAPHRAGMS



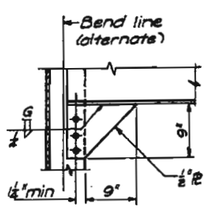
DETAIL E



DETAIL A



DETAIL B



DETAIL D

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE
ABOUT 2.0 MILES EAST OF BELTON
PROJECT NO. F-71-4 (9) (RTE. 71) STA. 168+04.8 ℄ MEDIAN
CASS COUNTY

DETAILED Jan. 1968 BY K.K.D.
CHECKED Feb. 1968 BY F.J.O.

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

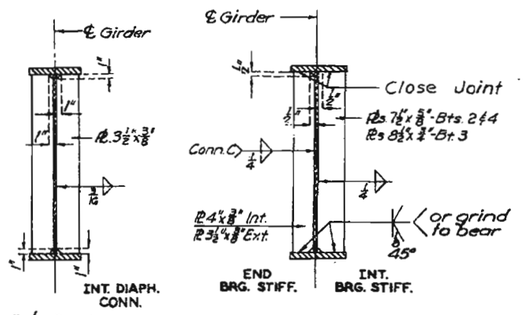
Sheet No. 8 of 10.

A-2094

MISSOURI STATE HIGHWAY DEPARTMENT

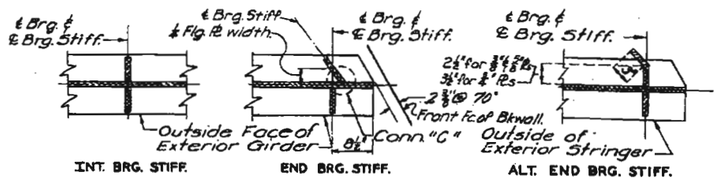
BS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	130	

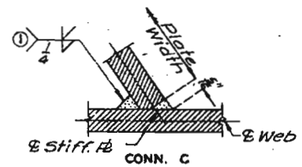


Note: Intermediate diaphragm plates shall be fitted to form a close joint (⅛") top and bottom.

STIFFENER DETAILS
GIRDER SPANS

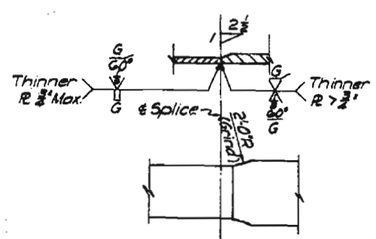


TYPICAL LOCATION DETAILS



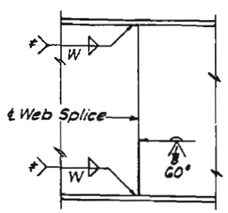
① Groove weld penetration - "¼" min. Only welding processes having good penetration will be permitted on groove welds.

WELDING DETAILS



By approval of the engineer the contractor may omit any shop flange splice, if desired, by extending the heavier flange plate and providing approved modifications of details at field flange splices and elsewhere as required. Payweight in any case will be based on material shown on design plans.

SHOP FLANGE SPLICE

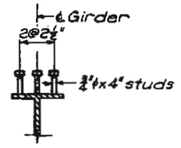


*See General Notes Sh. 1.

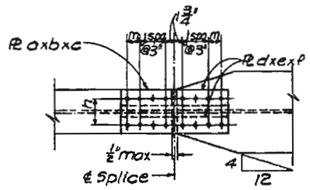
W = ¼ for ⅜" ℄ ⅝" Flg. Pls
⅝ for ⅞" ℄ 1⅜" Flg Pls.

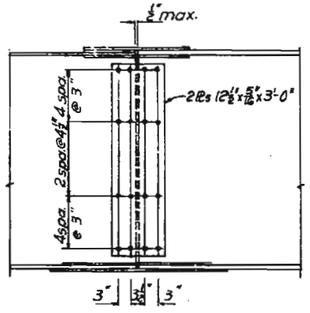
SHOP WEB SPLICE AND GIRDER WELDING

Note: Shop welded web splices may be fabricated by the contractor when detailed on the shop drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.



SHEAR CONNECTORS





Flange	a	b	c	d	e	f	h	j		m		Total no. of holes in each Pl One at Pl	Total no. of holes in each Pl One ins. Pl	Fill Pl.
8⅝"	8"	⅜"	18½"	3"	⅜"	12½"	5"	1		3"		12	4	8"x9½"; 8"x9"x⅜"
12"x⅜"	12"	⅜"	8'-6½"	5"	½"	2'-6½"	7"	3		3"		20	10	12"x 15"x½"

Field Splices: Use ⅞" ϕ high strength bolts with 1⅛" ϕ reamed holes.

FIELD SPLICES

Radiographic Inspection

The following welds will be subject to radiographic inspection.

Shop: All butt welded flange plates, and shop web splices at hangers. At least ½ of each web splice beginning at a point of maximum tension.

Field: None.

Magnetic Particle Inspection

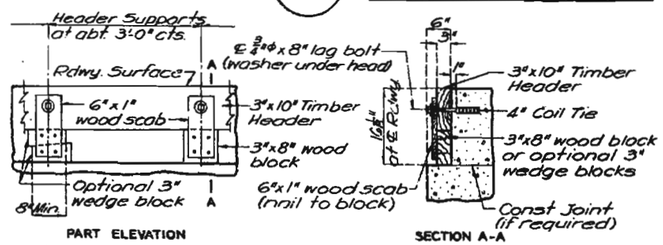
The following welds will be subject to inspection by the magnetic particle procedure.

Shop: At least 10% of each size and type of fillet welds, web to flanges and bearing stiffeners, and bearing devices.

The tests shall be located at random in the members so as to be typical for each size and type of weld.

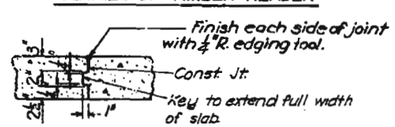
This test procedure may also be used for examination of weld passes and miscellaneous welds not specifically set out, at the discretion of the engineer.

Field: None.

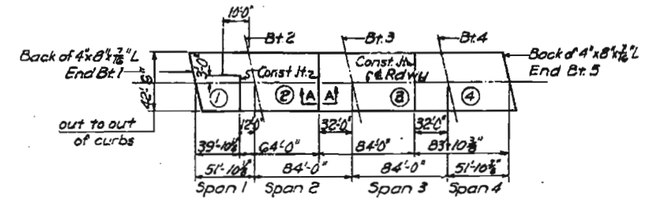


Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER



SECTION A-A



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

Note:

The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 42 cubic yards per hour unless he elects to use an approved retarder at his own expense to retard the set of the concrete to 2.5 hours in which case he may reduce his pouring and finishing rate to not less than 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 alternate pours. Finishing machine loads will not be permitted on concrete less than 48 hours old.

SLAB POURING SEQUENCE

BRIDGE: ROUTE 58 UNDERPASS

STATE ROAD FROM JACKSON CO. LINE SO. TO HARRISONVILLE

ABOUT 2.0 MILES EAST OF BELTON

PROJECT NO. F-71-4 (9) (RTE. 71) **STA.** 168+04.8 ℄ MEDIAN

CASS COUNTY

A-2094

DETAILED Jan. 1968 BY K.K.D.

CHECKED Feb. 1968 BY F.J.D.

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

STATE	PROJ. NO.	SHEET NO.
MO.		78

B6

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN. FT.		574	574
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1	1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.		11612	11612
CLASS 1 EXCAVATION	CU. YD.	140		140
STRUCTURAL STEEL PILE (10 IN.)	LIN. FT.	690		690
PRE-BORE FOR PILING	LIN. FT.	240		240
CLASS B CONCRETE (SUBSTR.)	CU. YD.	154.3		154.3
CLASS B-2 CONCRETE (SUPERSTRUCTURE ON STEEL)	CU. YD.		659.0	659.0
SAFETY BARRIER CURB	LIN. FT.		598	598
LAMINATED NEOPRENE BEARING PADS(STEEL STRUCTURE)	EACH		18	18
REINFORCING STEEL (BRIDGES)	POUND	14680	7260	21940
REINFORCING STEEL (EPOXY COATED)	POUND		171,560	171,560
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDER)	POUND		180,000	180,000
FABRICATED STRUCTURAL LOW ALLOY STEEL(PLATE GIRDER) A-572	POUND		20,410	20,410
SLAB DRAINS	EACH		20	20
PAINTING (EXISTING AND NEW STEEL)(SYSTEM C) GREEN *	LUMP SUM		1	1

NOTE:
ALL CONCRETE ABOVE LOWER CONSTRUCTION JOINT IN END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
ALL REINFORCEMENT IN THE END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
* APPROXIMATELY 98.9 TONS OF NEW STEEL AND 104.1 TONS OF EXISTING STEEL SHALL BE PAINTED (SEE SPECIAL PROVISIONS).

EXISTING RAIL TO BE REMOVED AND STORED AT M.H.T.D. LOT LOCATED APPROXIMATELY $\frac{1}{2}$ MILE SOUTH OF RT. 58 ON WEST OUTER ROADWAY.

PILE DATA

BENT NO.		1	2	3	4	5
PILE TYPE AND SIZE		HP10×42	HP10×42	HP10×42	HP10×42	HP10×42
NUMBER		5	12	12	12	5
APPROXIMATE LENGTH	FT.	27	11	11	13	27
DESIGN BEARING	TONS	41	41	48	42	41
HAMMER ENERGY REQUIRED	FT. LBS.	9200	9200	10800	9400	9200

MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH AND DESIGN BEARING VALUE OF PILES.

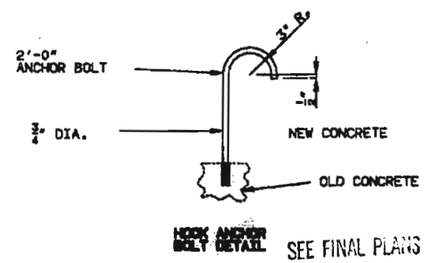
ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

PREBORE FOR PILES AT BENTS 2 AND 3 TO ELEVATIONS 1052.0 AND 1054.0 RESPECTIVELY.

DETAILED JULY 1989
CHECKED AUG 1989

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

NOTE: A MINIMUM VERTICAL CLEARANCE OF 14'9" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'0" CENTERED ON EACH EXISTING LANE SHALL BE MAINTAINED DURING CONSTRUCTION.



HOOK ANCHOR BOLT DETAIL

SEE FINAL PLANS

SHEET NO. 2 OF 24 .

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989
LOAD FACTOR DESIGN.

DESIGN LOADING:
HS20-44
35#/SQ.FT. FUTURE WEARING SURFACE
MODIFIED 24,000# TANDEM AXLE
EARTH 120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS-CASE II

DESIGN UNIT STRESS:
CLASS B CONCRETE (SUBSTRUCTURE) f'c=3,000 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 CARBON STEEL fy=36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A-572) GRADE 50 fy= 50,000 PSI
STEEL PILE fb=9,000 PSI

FABRICATED STEEL CONNECTION:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS $\frac{3}{4}$"ø,HOLES
$\frac{13}{16}$"ø EXCEPT AS NOTED.
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

TRAFFIC:
TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. SEE STAGE CONSTRUCTION SEQUENCE.

JOINT FILLER:
ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4, EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE $1\frac{1}{2}$" . UNLESS OTHERWISE SHOWN.

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

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, UNLES OTHERWISE NOTED.

ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST $\frac{1}{2}$".

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712.12.

AREAS TO BE ENCASED IN END BENT CONCRETE SHALL BE PAINTED ONE COAT OF SYSTEM C PRIMER AND SCRATCHED OR DAMAGED SURFACES ARE TO BE TOUCHED UP IN THE FIELD BEFORE CONCRETE IS POURED.

NOTE: ANCHORS SHALL BE OF THE SELF-DRILLING EXPANSION TYPE, MADE OF CASE-HARDENED AND DRAWN CARBURIZED STEEL, WITH SELF-CUTTING ANNULAR BROACHING GROOVES.

COST OF FURNISHING AND INSTALLING HOOK ANCHOR BOLT ASSEMBLIES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR CONCRETE.

AT THE OPTION OF THE CONTRACTOR, ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS MAY BE SUBSTITUTED FOR THE CONE EXPANSION TYPE CONCRETE ANCHORS NOTED ON THE PLANS.

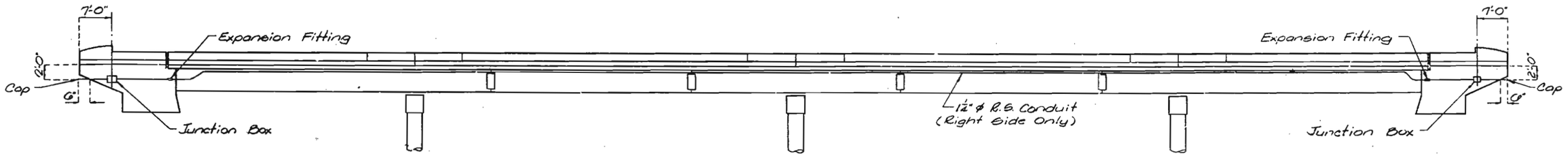
THESE ANCHORS SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS AND THAT AN EPOXY COATED #6 GRADE 60 REINFORCING 3'-0" LONG SHALL BE SUBSTITUTED FOR THE 3/4"ø THREADED ROD STUD.

CASS COUNTY A-2094R

MISSOURI STATE HIGHWAY DEPARTMENT

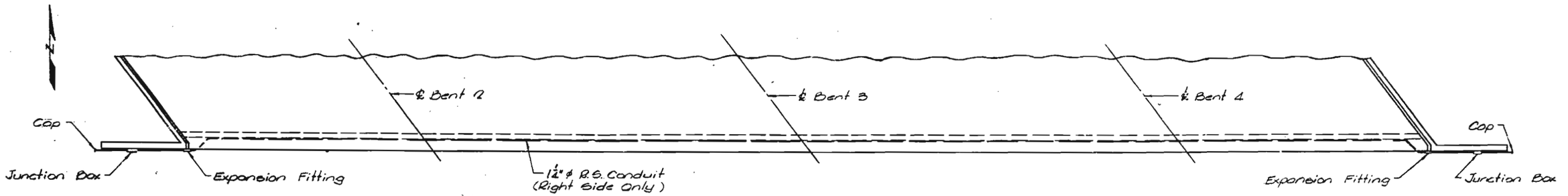
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		39		

B7

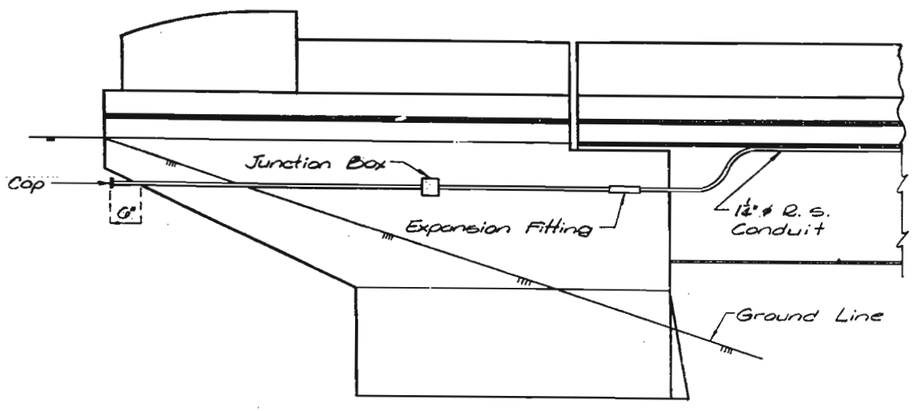


Span 1-2 Span 2-3 Span 3-4 Span 4-5

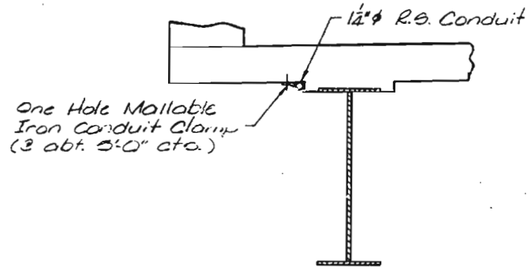
Elevation



Part Plan



Typical Elevation of Wing



Part Section Showing Conduit Attachment

General Notes:

All 1½" conduit shall be rigid steel (galvanized) as shown, complete with all necessary couplings, nipples, elbows and clamps.

Junction boxes shall be 8"×6"×4". They shall be the O.Z. Gedney Co. Type "YH" or equivalent.

Galvanized expansion fittings shall provide a minimum movement in either direction of ¾" at End Bents 1 and 5. Expansion fittings shall be equal to O.Z. Gedney Co. Type "DX" with approved bonding jumper.

Conduit shall be secured to concrete with clamps at about 5' centers.

DETAILED Nov., 1980
CHECKED Nov. 1980

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

Sheet No. 1 of 1.

CASS **COUNTY**

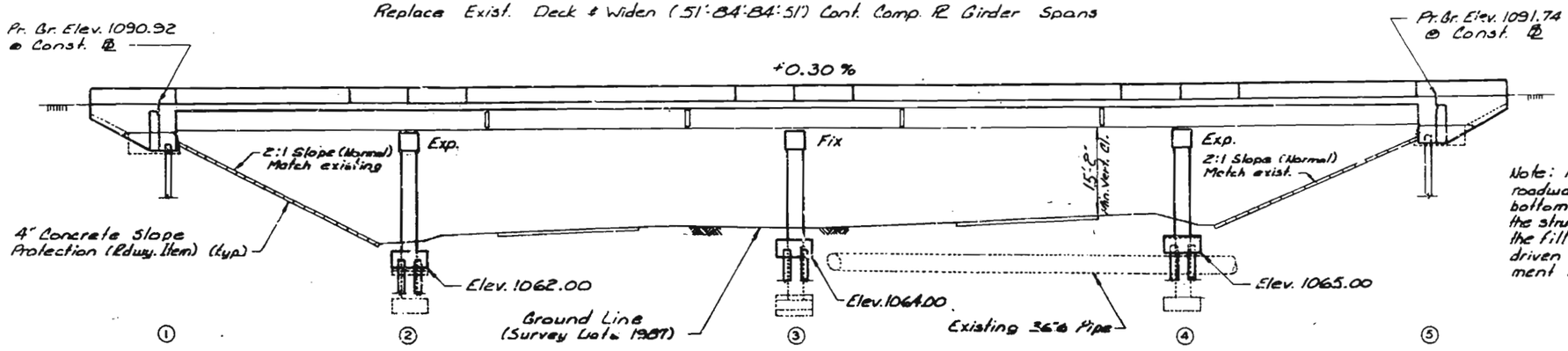
A-2094A

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ NO	SHEET NO
MO		77
SEC/SUB 7 & 18	TWP 46N	RGE 32W

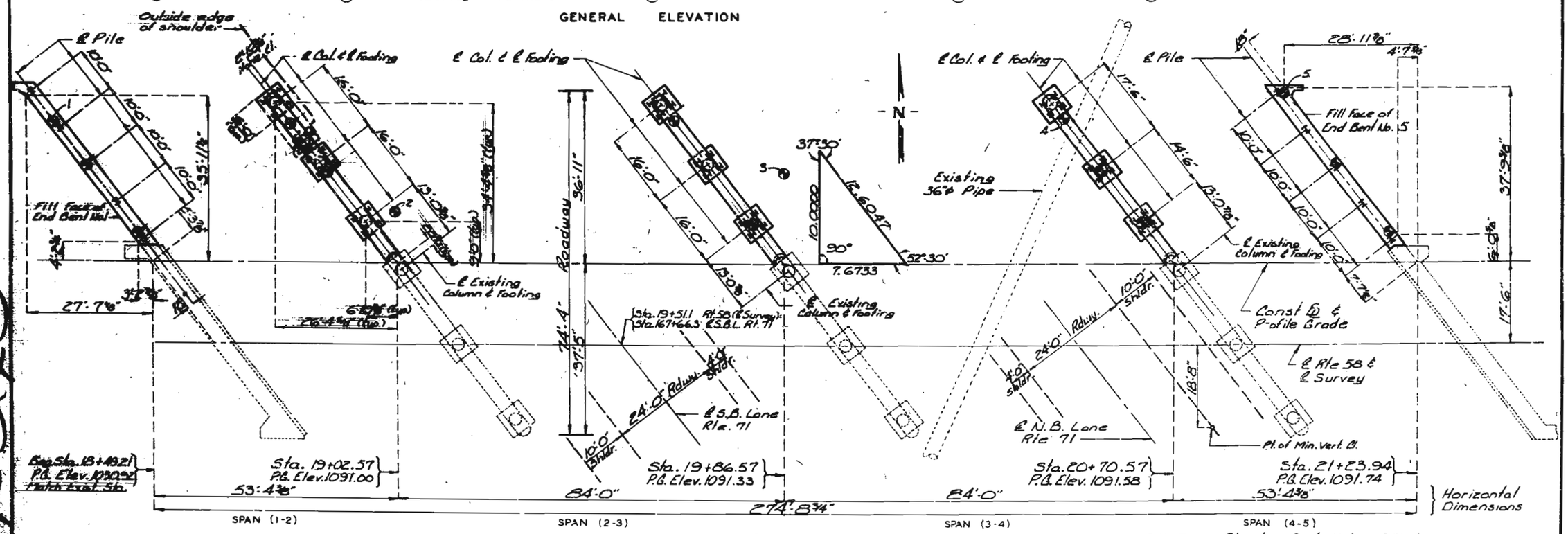
B8

Replace Exist. Deck & Widen (51'-84'-84'-51') Cont. Comp. PC Girder Spans



GENERAL ELEVATION

Note: 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' in back of the fill face of the End Bents before piles are driven for any Bents falling within the embankment section.



PLAN

B.M. □ on Rt. edge Pavt. N.B.L. 26' Lt. Sta. 168+00 (Rte 71) Elev. 1069.79

℄ Indicates location of borings. Boring data for all locations is available upon request from the District Office. Boring data for numbered locations is detailed on sheet No. 3.
Note: For General Notes, Estimated Quantities, and Pile Data see sheet No. 2.

BRIDGE ROUTE 58 OVER ROUTE 71

STATE ROAD FROM JACKSON CO. LINE TO HARRISONVILLE NEAR BELTON

PROJECT NO.

JOB NO. 4-U-71-737

CASS

STA. 168+04.8 (℄ SURVEY)

RTE. 71

COUNTY

DATE 1/27/89

STD. 611.60
STD. 706.35
A-2094R

DESIGNED MAY 1989
DETAILED JULY 1989
CHECKED July 1989

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

SEE FINAL PLANS

Sheet No. 1 of 24

STATE	PROJ. NO.	SHEET NO.
NO.	F-FG-BHR-71-4(51)	78

FINAL PLANS

B9

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
REMOVAL AND STORAGE OF EXISTING BRIDGE RAIL	LIN. FT.		574	574
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1	1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.		11612	11612
CLASS I EXCAVATION	CU. YD.	130.5		130.5
STRUCTURAL STEEL PILE (10 IN.)	LIN. FT.	783		783
PRE-BORE FOR PILING	LIN. FT.	240		240
CLASS B CONCRETE (SUBSTR.)	CU. YD.	154.3		154.3
CLASS B-2 CONCRETE (SUPERSTRUCTURE ON STEEL)	CU. YD.		659.0	659.0
SAFETY BARRIER CURB	LIN. FT.		598	598
LAMINATED NEOPRENE BEARING PADS(STEEL STRUCTURE)	EACH		18	18
REINFORCING STEEL (BRIDGES)	POUND	14680	7260	21940
REINFORCING STEEL (EPOXY COATED)	POUND		171,560	171,560
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDER)	POUND		180,000	180,000
FABRICATED STRUCTURAL LOW ALLOY STEEL(PLATE GIRDER) A-572	POUND		20,410	20,410
SLAB DRAINS	EACH		20	20
PAINTING - (NEW STEEL)(SYSTEM C) *	L.S.			1.0

NOTE: ALL CONCRETE ABOVE LOWER CONSTRUCTION JOINT IN END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES. ALL REINFORCEMENT IN THE END BENTS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.
* APPROXIMATELY 98.9 TONS OF NEW STEEL.

EXISTING RAIL TO BE REMOVED AND STORED AT M.H.T.D. LOT LOCATED APPROXIMATELY $\frac{1}{2}$ MILE SOUTH OF RT. 58 ON WEST OUTER ROADWAY.

PILE DATA						
BENT NO.		1	2	3	4	5
PILE TYPE AND SIZE		HP10×42	HP10×42	HP10×42	HP10×42	HP10×42
NUMBER		5	12	12	12	5
APPROXIMATE LENGTH	FT.	29	15	12	13	30
DESIGN BEARING	TONS	41	41	48	42	41
HAMMER ENERGY REQUIRED	FT. LBS.	9200	9200	10800	9400	9200

MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH AND DESIGN BEARING VALUE OF PILES.

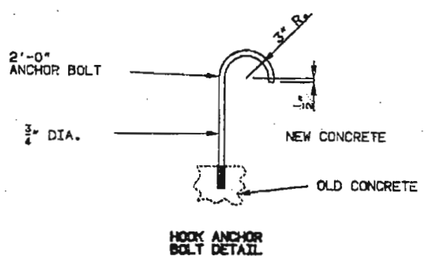
ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

PREBORE FOR PILES AT BENTS 2 AND 3 TO ELEVATIONS 1052.0 AND 1054.0 RESPECTIVELY.

DETAILED : JULY 1989
CHECKED AUG 1989

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

NOTE: A MINIMUM VERTICAL CLEARANCE OF 14'-9" FROM CROWN OF EXISTING LANES AND A MINIMUM LATERAL CLEARANCE OF 28'-0" CENTERED ON EACH EXISTING LANE SHALL BE MAINTAINED DURING CONSTRUCTION.



HOOK ANCHOR BOLT DETAIL

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989
LOAD FACTOR DESIGN.

DESIGN LOADING:
HS80-44
35#/SQ.FT. FUTURE WEARING SURFACE
MODIFIED 24,000# TANDEM AXLE
EARTH 120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS-CASE-II

DESIGN UNIT STRESS:
CLASS B CONCRETE (SUBSTRUCTURE) f'c=3,000 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 CARBON STEEL fy=36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A-572) GRADE 50 fy= 50,000 PSI
STEEL PILE fb=9,000 PSI

FABRICATED STEEL CONNECTION:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS $\frac{3}{4}$"Ø, HOLES $\frac{13}{16}$"Ø EXCEPT AS NOTED.
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW STEEL.

TRAFFIC:
TRAFFIC OVER STRUCTURE TO BE MAINTAINED DURING CONSTRUCTION. SEE STAGE CONSTRUCTION SEQUENCE.

JOINT FILLER:
ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF STD. SPEC. 1057.2.4, EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE $1\frac{1}{2}$" . UNLESS OTHERWISE SHOWN.

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

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, UNLES OTHERWISE NOTED.

ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST $\frac{1}{2}$".

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712.12.

AREAS TO BE ENCASED IN END BENT CONCRETE SHALL BE PAINTED ONE COAT OF SYSTEM C PRIMER AND SCRATCHED OR DAMAGED SURFACES ARE TO BE TOUCHED UP IN THE FIELD BEFORE CONCRETE IS POURED.

NOTE: ANCHORS SHALL BE OF THE SELF-DRILLING EXPANSION TYPE, MADE OF CASE-HARDENED AND DRAWN CARBURIZED STEEL, WITH SELF-CUTTING ANNULAR BROACHING GROOVES.

COST OF FURNISHING AND INSTALLING HOOK ANCHOR BOLT ASSEMBLIES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR CONCRETE.

AT THE OPTION OF THE CONTRACTOR, ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS MAY BE SUBSTITUTED FOR THE CONE EXPANSION TYPE CONCRETE ANCHORS NOTED ON THE PLANS.

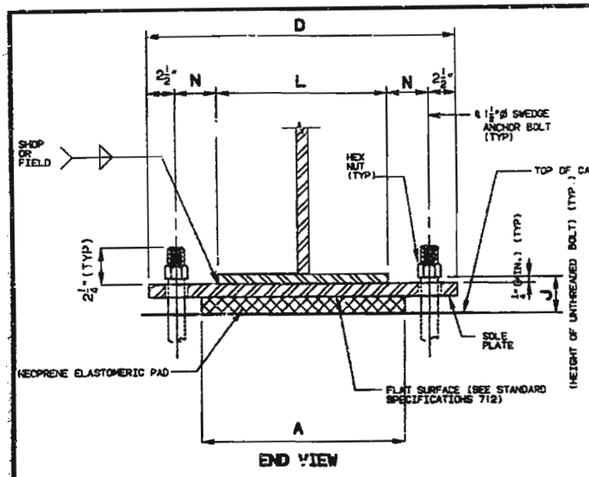
THESE ANCHORS SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS AND THAT AN EPOXY COATED #6 GRADE 60 REINFORCING 3'-0" LONG SHALL BE SUBSTITUTED FOR THE 3/4"Ø THREADED ROD STUD.

CASS COUNTY A-2094R

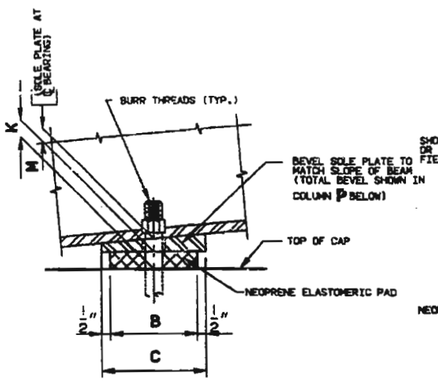
4182 265

STATE	PROJ. NO.	SHEET NO.
NO.		89

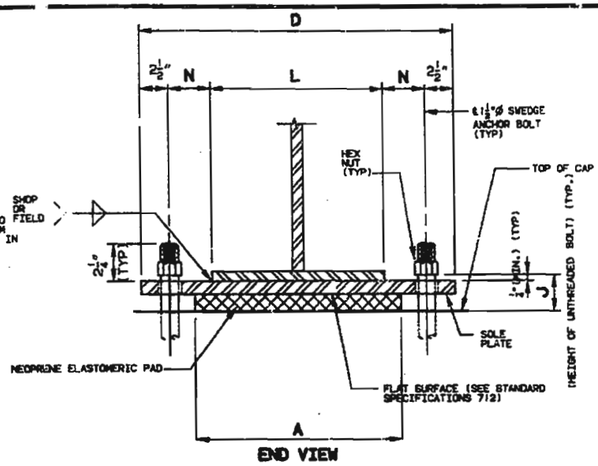
B10



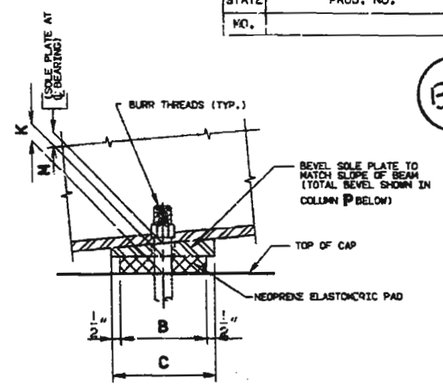
END VIEW



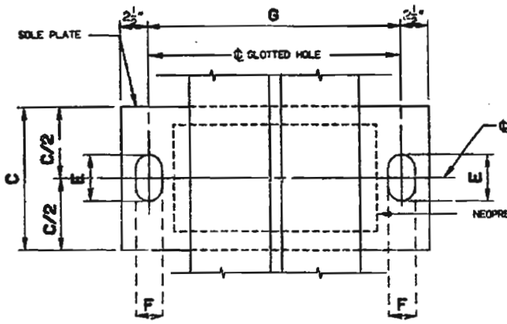
SIDE VIEW



END VIEW



SIDE VIEW



PART PLAN VIEW

NOTE: THE LOCATION OF ANCHOR BOLTS IN RELATION TO THE SLOTTED HOLES IN THE SOLE PLATE SHALL CORRESPOND WITH THE TEMPERATURE AT THE TIME OF ERECTION, AT 60°F THE SLOTTED HOLES SHOULD CENTER ON THE ANCHOR BOLTS.

EXPANSION BEARINGS

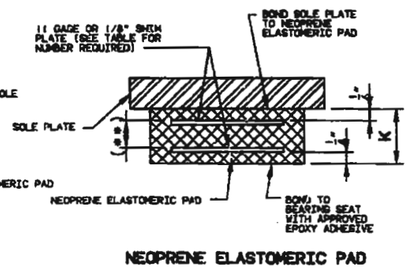
NUMBER REQUIRED = 6 AT INT. BENT NO. 2
6 AT INT. BENT NO. 4

NOTE: EXISTING GIRDER NO. ① AND ② SHALL BE PLACED ON NEW LAMINATED NEOPRENE BEARINGS.

EXPANSION BEARINGS

BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES(•)
2 & 4	20"	13"	14"	2'-7"	4½"	1⅝"	2'-2"	4¼"	2½"	16"	1½"	5"	–	4

(•) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMERIC AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.



NEOPRENE ELASTOMERIC PAD

(••) LAYERS OF 1/2" ELASTOMERIC ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE.

GENERAL NOTES:

ANCHORS BOLTS SHALL BE 1½"ø AT INT. BENT NO. 2,3, &4, A-588 STEEL SWEDGED BOLTS AND SHALL EXTEND ⑮ INTO CONCRETE AT INT. BENTS NO. 2,3, &4 WITH A194-2, 2H OR 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 SOLE PLATE, ANCHOR BOLTS AND HEAVY HEXAGON NUTS SHALL BE PAINTED WITH 2 COATS (5 MILS MIN.) OF INORGANIC ZINC, WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY.

WEIGHT OF THE ANCHOR BOLTS AND HEAVY HEXAGON NUTS FOR BEARINGS SHALL BE INCLUDED IN THE WEIGHT OF FABRICATED STRUCTURAL STEEL.

NEOPRENE ELASTOMERIC PADS SHALL BE 60 DUROMETER.

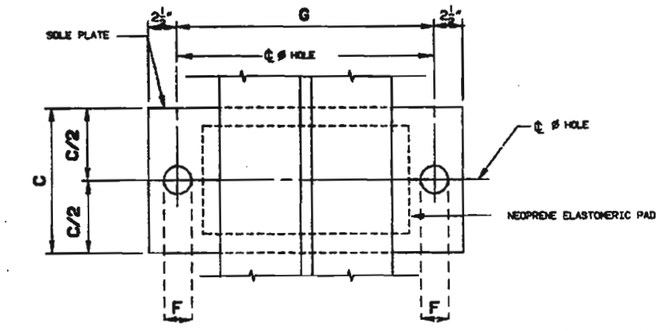
THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE GIRDERS.

STRUCTURAL STEEL FOR SOLE PLATE SHALL BE A-36

PAYMENT FOR THE SOLE PLATE WILL BE INCLUED IN THE COST OF THE BEARING ASSEMBLY, SEE SPECIAL PROVISIONS.

THE ACCEPTED QUANTITY OF ELASTOMERIC BEARING ASSEMBLIES COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES), EACH.

⑮ 15" FOR GIRDER LINES 1A THRU 4A.
EXTEND ANCHOR BOLTS 9" INTO EXISTING CONCRETE AT GDR. LINE NO. 1 & 2.



PART PLAN VIEW

FIXED BEARINGS

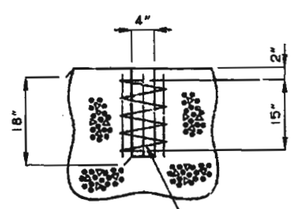
NUMBER REQUIRED =6 AT INT. BENT NO. 3

NOTE: EXISTING GIRDER NO. ① AND ② SHALL BE PLACED ON NEW LAMINATED NEOPRENE BEARINGS.

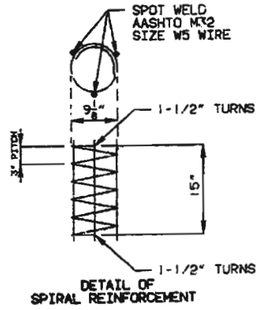
FIXED BEARINGS

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES(•)
3	22"	14"	15"	2'-9"	1⅝"	2'-4"	3⅝"	1⅞"	18"	1½"	5"	–	3

(•) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMERIC AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT

DETAILS OF LAMINATED NEOPRENE BEARING (STEEL STRUCTURES)

DETAILED JULY 1989
CHECKED JULY 1989

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

SHEET NO. 13 OF 24

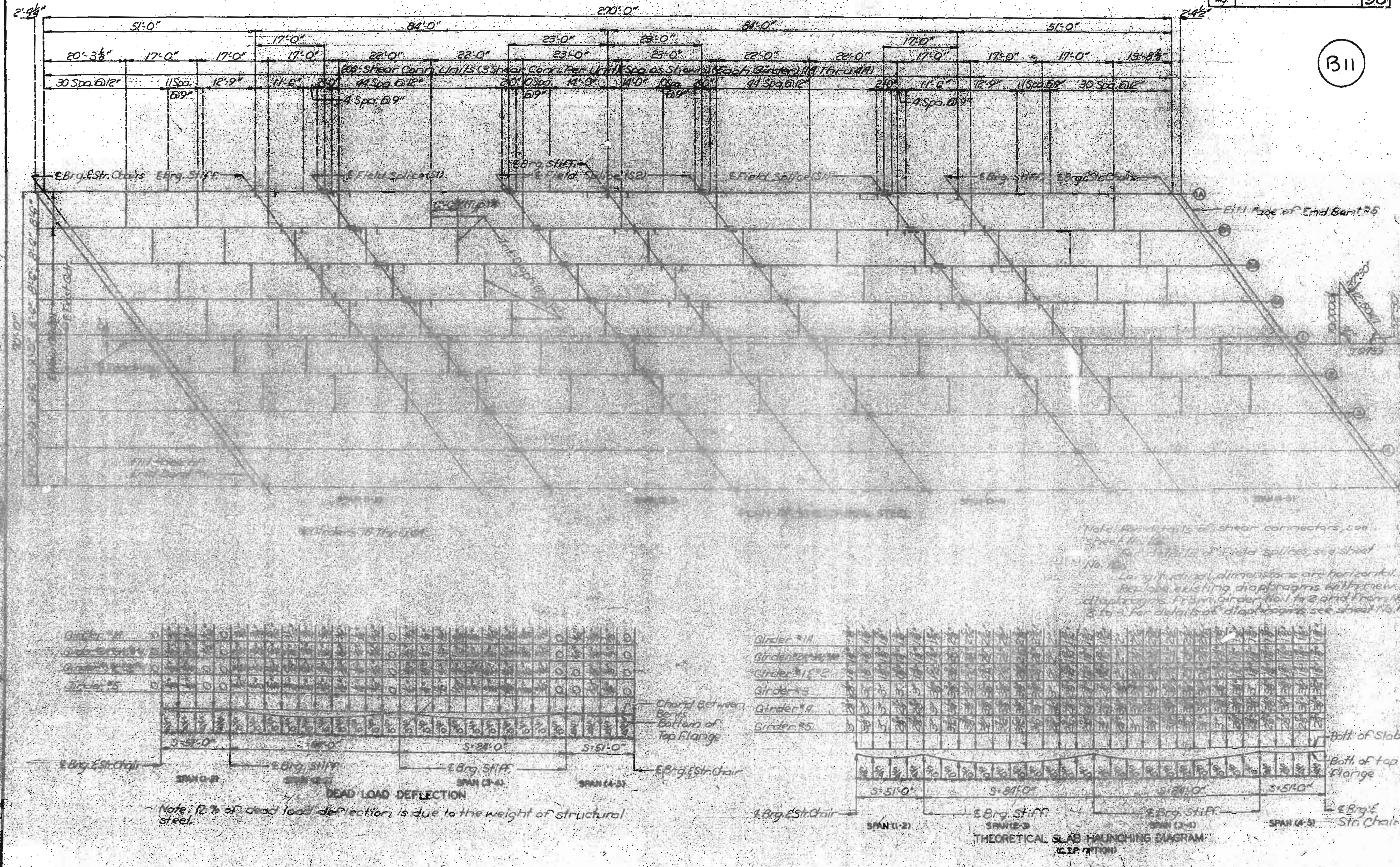
CASS COUNTY

A-2094R

SB-253

STATE	PROJ. NO.	SHEET NO.
MO.		30

(B11)



DETAILED JUNE 1989
CHECKED JULY 1989

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

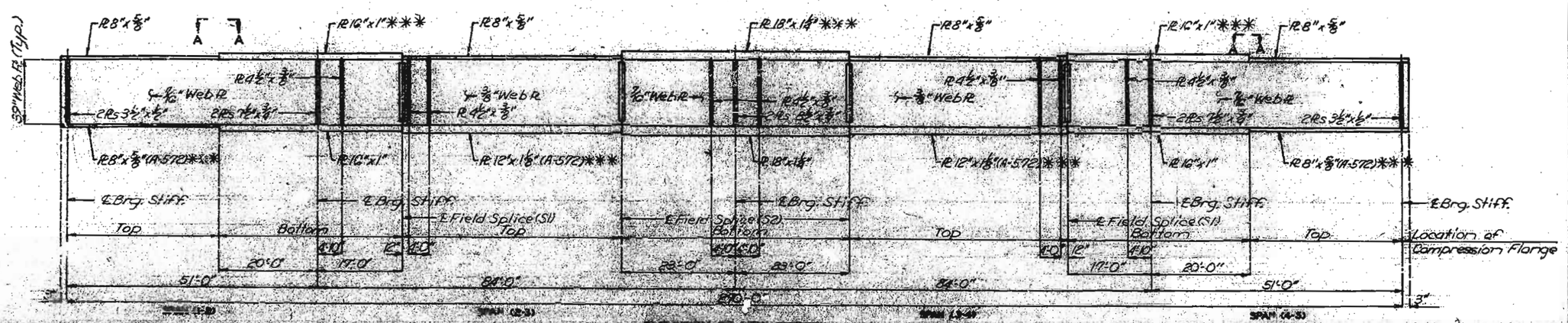
Sheet No. 14 of 24

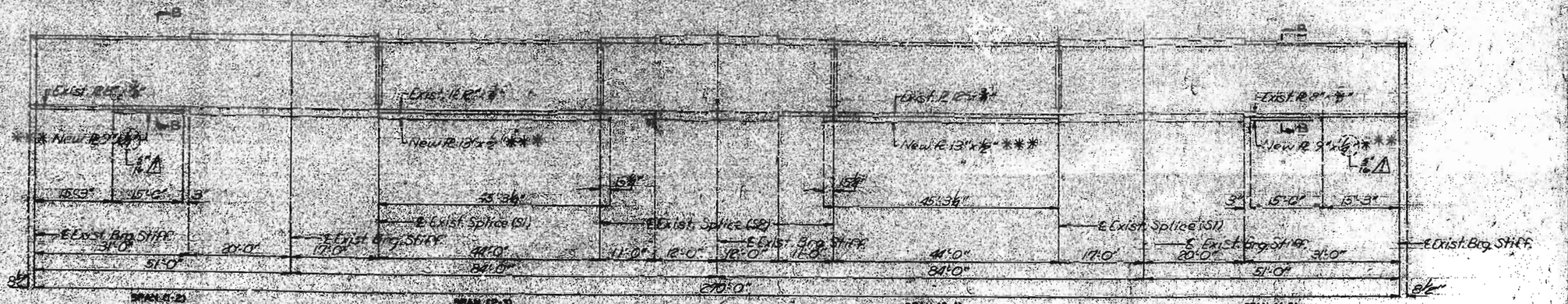
CASS COUNTY

A-2094R

STATE	PROJ. NO.	SHEET NO.
MO.		91

B12





Note: All web plates shall be subject to notch toughness requirements.
Fabricated structural carbon steel shall be A36 except as noted.
Longitudinal dimensions shown are parallel to grade.
*** Indicates Flange Plates subject to notch toughness requirements.
For Section B-B see sheet No. 16.
For Plan A-A see sheet No. 16.

DETAILED JUNE 1989
CHECKED JULY 1989

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

SEE FINAL PLANS

Sheet No. 15 of 24 ⚠ Revised 1/2/90

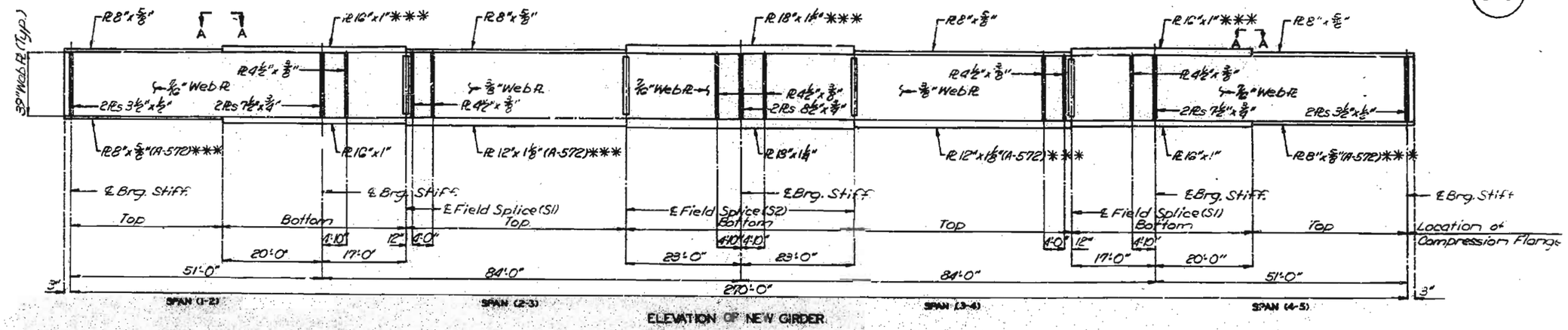
CASS COUNTY

A-2094R

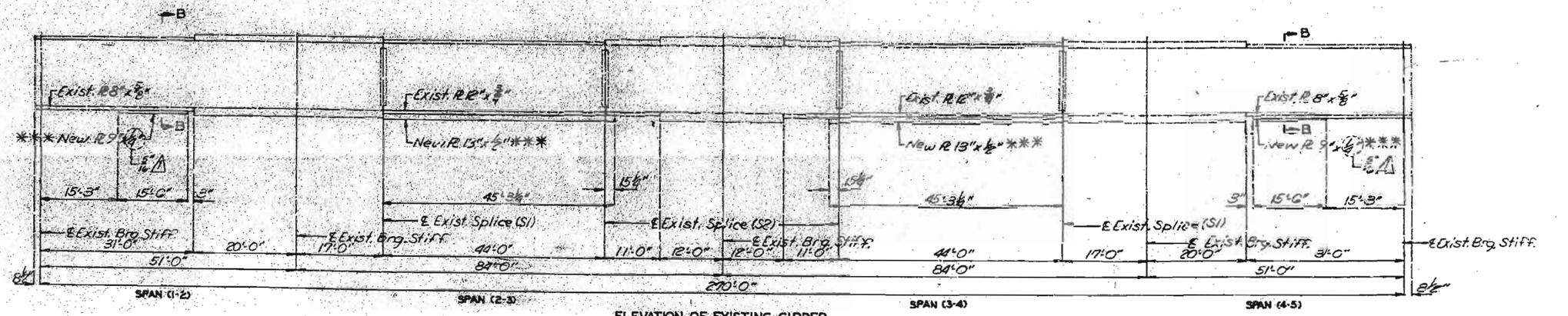
STATE	PROJ. NO.	SHEET NO.
MO	[redacted]	80

PIER PLANS

(B13)



ELEVATION OF NEW GIRDER



ELEVATION OF EXISTING GIRDER

Note: All web plates shall be subject to notch toughness requirements.
Fabricated structural carbon steel shall be A36 except as noted.
Longitudinal dimensions shown are parallel to grade.
*** Indicates Flange Plates subject to notch toughness requirements.
For Section B-B see sheet No. 16.
For Plan A-A see sheet No. 16.

DETAILED JUNE 1989
CHECKED JULY 1989

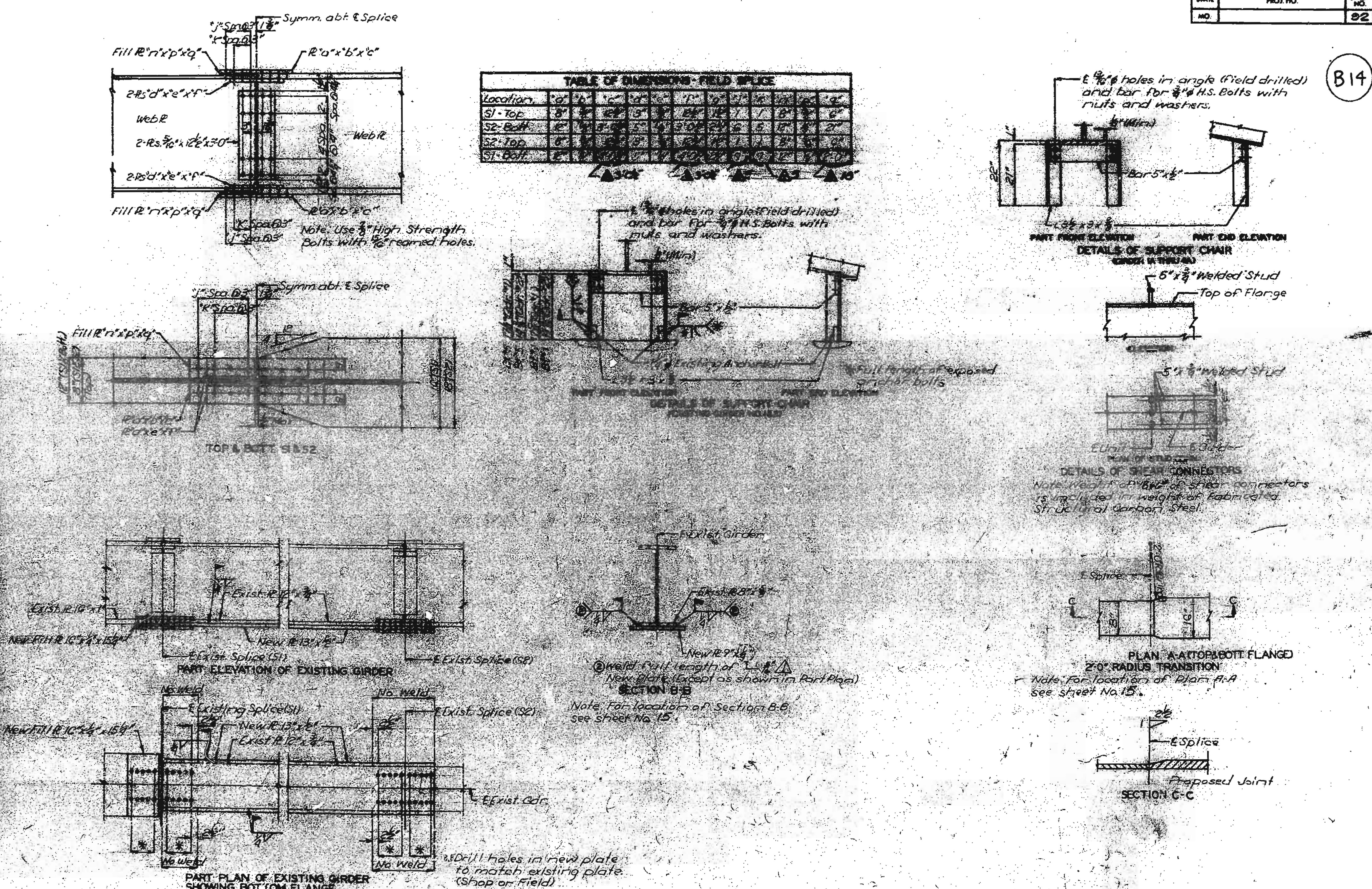
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 15A of 24 ⚠ Revised 1/2/90 CASS COUNTY

A 2094R

STATE	PROJ. NO.	SHEET NO.
MO.		82

B14


Symm. abt. ℄ Splice
Fill ℞ "n"x"p"x"q"
℞ "a"x"b"x"c"
Web ℞
2-℞s. 5/16" x 12 1/2" x 3'-0"
Note: Use 7/8" High Strength Bolts with 15/16" reamed holes.
TABLE OF DIMENSIONS - FIELD SPLICE
Location
S1 - Top
S2 - Bott.
S2 - Top
S1 - Bott.
and bar for 3/4" ⌀ H.S. Bolts with nuts and washers.
Bar 5" x 1/2"
PART FRONT ELEVATION
PART END ELEVATION
DETAILS OF SUPPORT CHAIR
6" x 3/4" Welded Stud
Top of Flange
TOP & BOTT. S1 & S2
DETAILS OF SHEAR CONNECTORS
PART ELEVATION OF EXISTING GIRDER
℄ Exist. Splice (S1)
℄ Exist. Splice (S2)
℄ Exist. Girder
SECTION B-B
Note: For location of Section B-B see Sheet No. 15.
PLAN A-A (TOP & BOTT. FLANGE)
2'-0" RADIUS TRANSITION
Note: For location of Plan A-A see sheet No. 15.
℄ Splice
Proposed Joint
SECTION C-C
No Weld
New Fill ℞ 10" x 3/4" x 1'-6"
℄ Existing Splice (S1)
℄ Exist. Splice (S2)
℄ Exist. Gdr.
*Drill holes in new plate to match existing plate. (Shop or Field)
PART PLAN OF EXISTING GIRDER SHOWING BOTTOM FLANGE

DETAILED JUNE 1989
CHECKED JULY 1989

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

SEE FINAL PLANS

Revised 1/17/90
Revised 1/2/90

Sheet No. 16 of 24

CASS COUNTY

A-2094R

B15

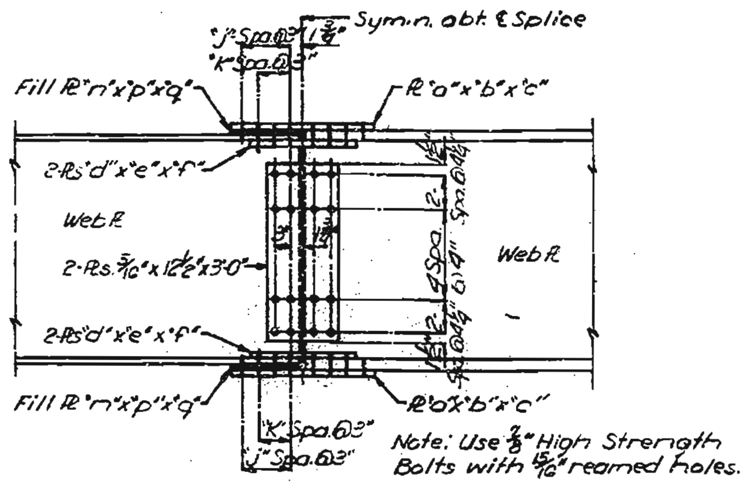
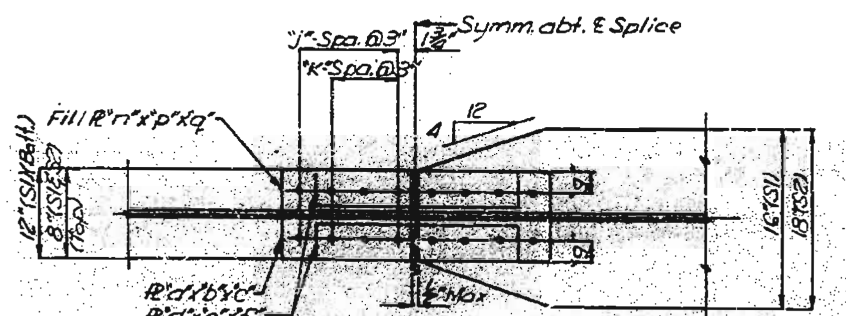
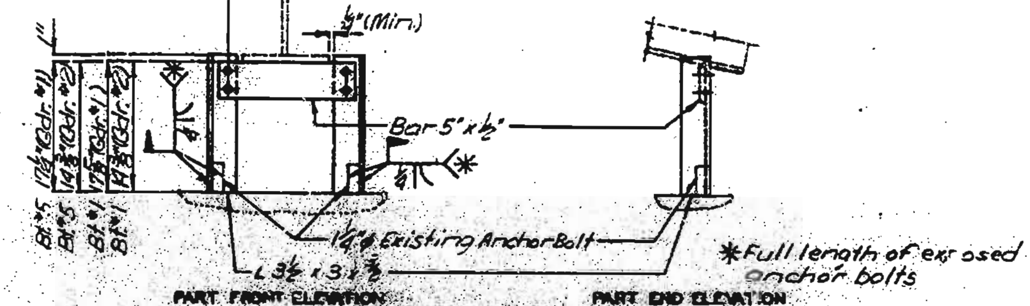


TABLE OF DIMENSIONS - FIELD SPLICE												
Location	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"j"	"k"	"n"	"p"	"q"
S1 - Top	8"	3/8"	12½"	3"	3/8"	12½"	1½"	1	1	8"	3/8"	6"
S2 - Bott.	12"	7/8"	3'-0½"	5"	7/8"	3'-0½"	2½"	6	5	12"	1/8"	21"
S2 - Top	8"	3/8"	12½"	3"	3/8"	12½"	1½"	1	1	8"	5/8"	6"
S1 - Bott.	12"	1/2"	4'-0½" (△ 3'-0½")	5"	1/2"	4'-0½" (△ 3'-0½")	2½"	7 (△ 5)	7 (△ 5)	12"	1/8"	2'-0" (△ 18")



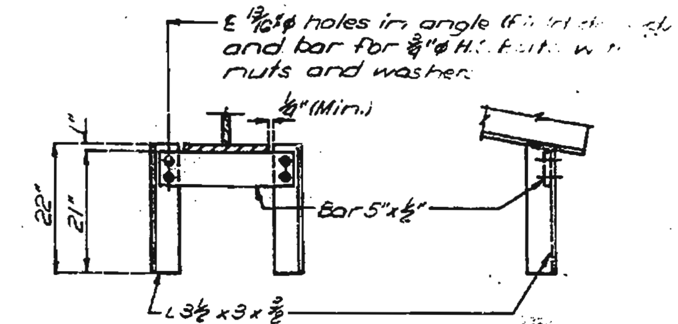
TOP & BOTT. S1 & S2



PART FRONT ELEVATION

PART END ELEVATION

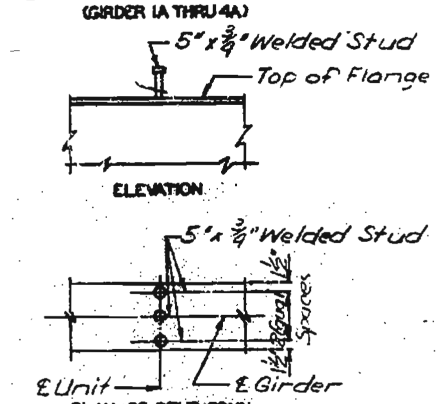
DETAILS OF SUPPORT CHAIR
(EXISTING GIRDER NO. 1 & 2)



PART FRONT ELEVATION

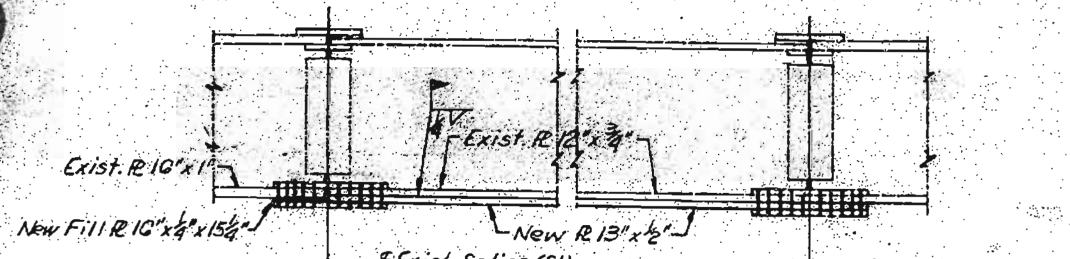
PART END ELEVATION

DETAILS OF SUPPORT CHAIR
(GIRDER 1A THRU 4A)

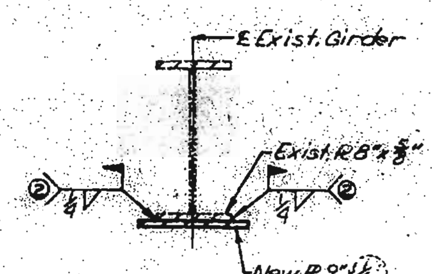


DETAILS OF SHEAR CONNECTORS

Note: Weight of 1866# of shear connectors is included in weight of Fabricated Structural Carbon Steel.



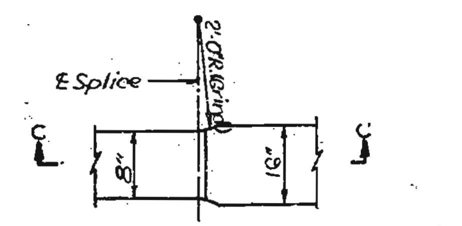
PART ELEVATION OF EXISTING GIRDER



② Weld full length of 5/16 △ New Plate: (Except as shown in Part Plan)

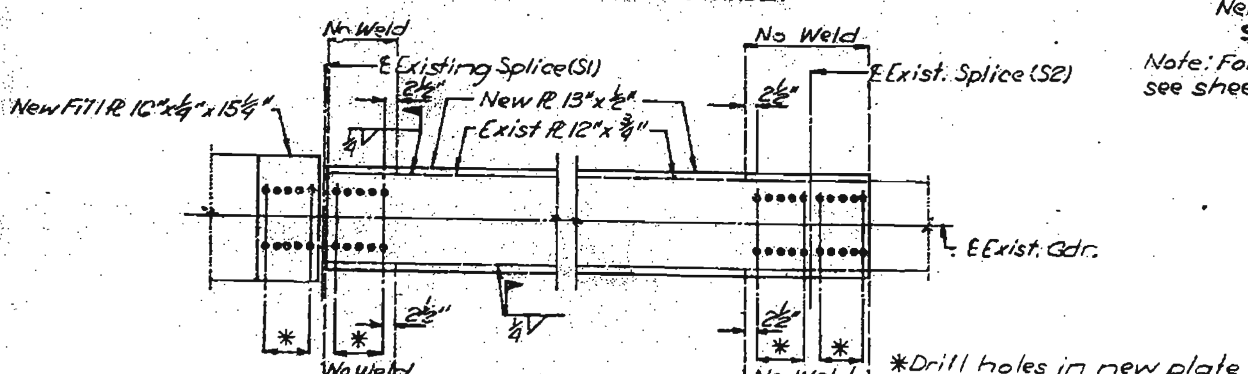
SECTION B-B

Note: For location of Section B-B see sheet No. 15.



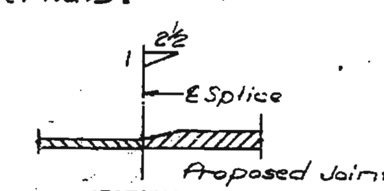
PLAN A-A (TOP & BOTT. FLANGE)
2'-0" RADIUS TRANSITION

Note: For location of Plan A-A see sheet No. 15.



PART PLAN OF EXISTING GIRDER SHOWING BOTTOM FLANGE

*Drill holes in new plate to match existing plate. (Shop or Field)



SECTION C-C

586 268

DETAILED JUNE 1989
CHECKED JULY 1989

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

△ Revised 1/17/90
Sheet No. 16A of 24 △ Revised 1/2/90

CASS COUNTY

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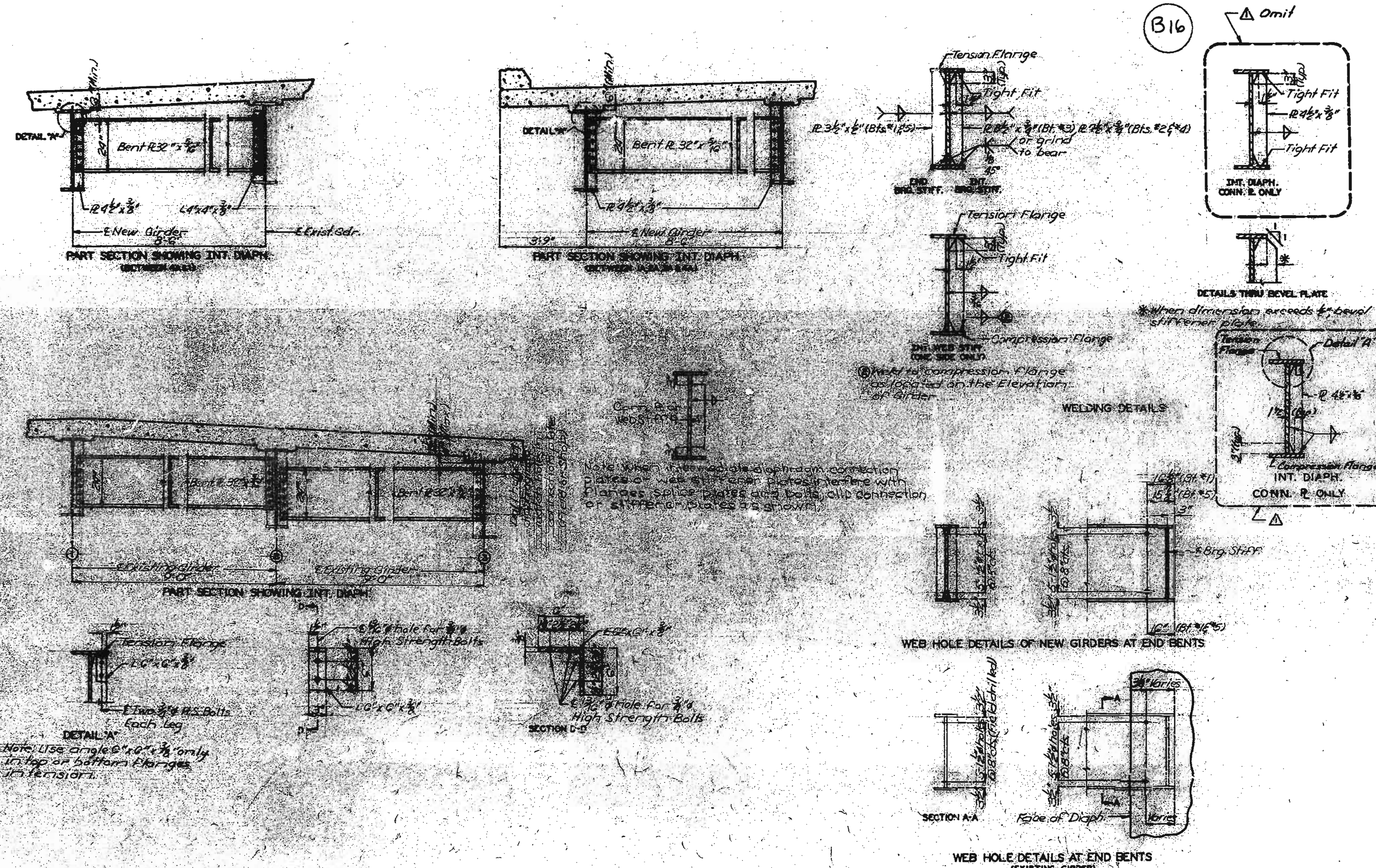


B16
Omit
DETAIL "A"
Bent ℘32"x5/16"
℘4½"x3/8"
L4"x4"x3/8"
℄ New Girder 8'-6"
℄ Exist. Gdr.
PART SECTION SHOWING INT. DIAPH.
DETAIL "A"
Bent ℘ 32"x5/16"
3'-9"
PART SECTION SHOWING INT. DIAPH.
Tension Flange
Tight Fit
or grind to bear
END BRG. STIFF.
INT. BRG. STIFF.
Tension Flange
Tight Fit
Compression Flange
INT. WEB STIFF (ONE SIDE ONLY)
Tight Fit
Tight Fit
INT. DIAPH. CONN. ℘ ONLY
DETAILS THRU BEVEL PLATE
* When dimension exceeds 1/8" bevel stiffener plate.
Tension Flange
Detail "A"
Compression Flange
INT. DIAPH. CONN. ℘ ONLY
WELDING DETAILS
Note: When the angle diaphragm connection plates or web stiffener plates interfere with flanges splice plates and bolts, clip connection or stiffener plates as shown.
Existing Girder
Existing Girder
PART SECTION SHOWING INT. DIAPH.
Brg. Stiff.
WEB HOLE DETAILS OF NEW GIRDERS AT END BENTS
Tension Flange
L6"x6"x3/8"
Two 3/4" H.S. Bolts Each Leg
DETAIL "A"
Note: Use angle 6"x6"x3/8" only in top or bottom flanges in tension.
Hole for 3/4" High Strength Bolts
L6"x6"x3/8"
Hole for 3/4" High Strength Bolts
SECTION D-D
Varies
SECTION A-A
Face of Diaph.
Varies
WEB HOLE DETAILS AT END BENTS (EXISTING GIRDER)

DETAILED JUNE 1989
CHECKED JULY 1989

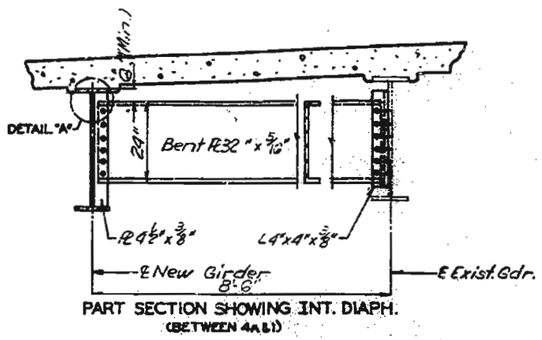
Note: This drawing is not to scale. Follow dimensions.

SEE FINAL PLANS

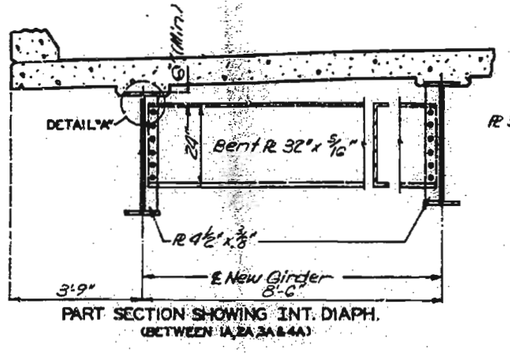
Sheet No. 17 of 24 — Revised 1/17/89 — CASS COUNTY — A-2094R

STATE	PROJ NO	SHEET NO
MO.	F-FS-BHF-71-1 (51)	82

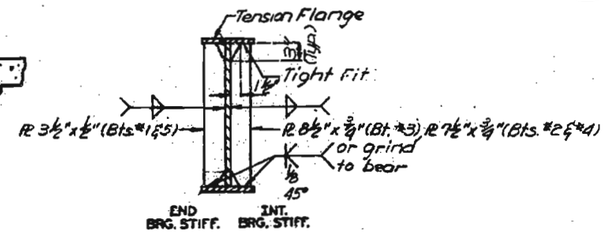
FINAL PLANS

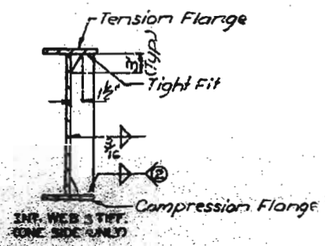


PART SECTION SHOWING INT. DIAPH.
(BETWEEN 4A & 1)



PART SECTION SHOWING INT. DIAPH.
(BETWEEN 1A, 2A, 3A & 4A)

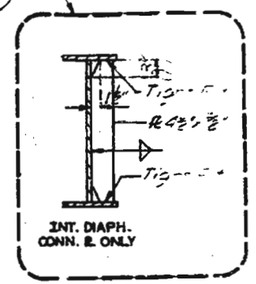


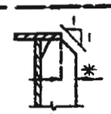


② Weld to compression flange as located on the Elevation of Girder.

WELDING DETAILS

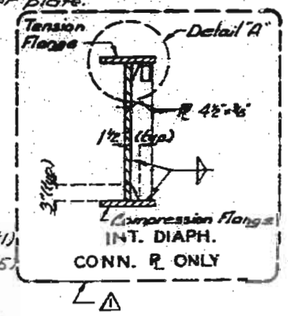
B17 ⚠ Omit

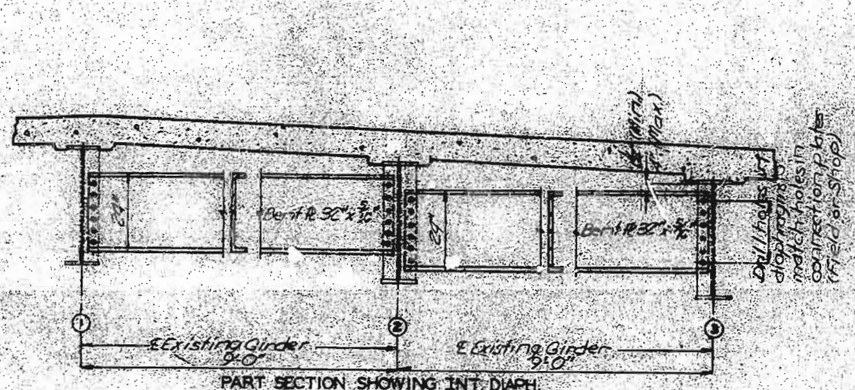




DETAILS THRU BEVEL PLATE

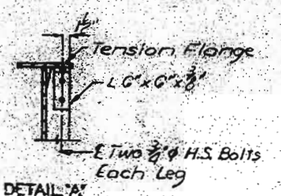
* When dimension exceeds ½", bevel stiffener plate.





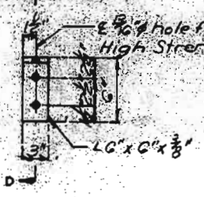
PART SECTION SHOWING INT. DIAPH.

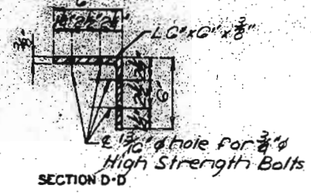
Note: when intermediate diaphragm connection plates or web stiffener plates interfere with flanges splice plates and bolts, slip connection or stiffener plates as shown.



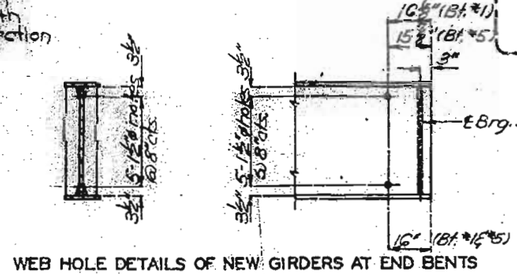
DETAIL "A"

Note: Use angle 6" x 6" x ⅜" only in top or bottom flanges in tension.

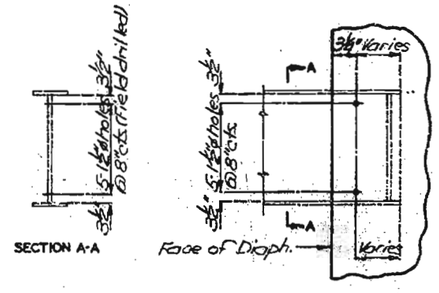




SECTION D-D



WEB HOLE DETAILS OF NEW GIRDERS AT END BENTS

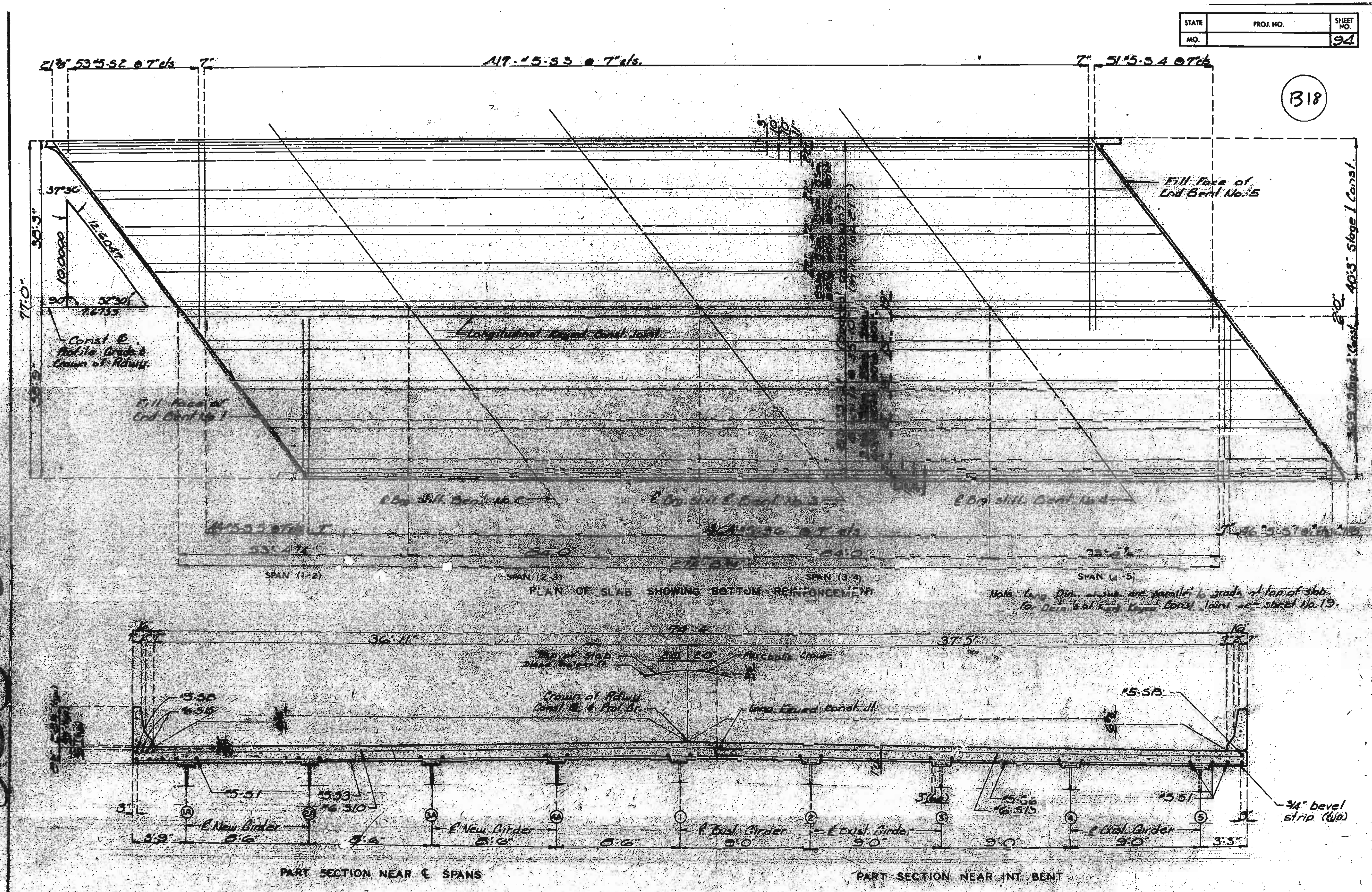


WEB HOLE DETAILS AT END BENTS
(EXISTING GIRDER)

DETAILED JUNE 1989
CHECKED JULY 1989

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

Sheet No. 17A of 24 ⚠ Revised 1/17/89 CASS COUNTY A-2094R



DETAILED June 1989
CHECKED July 1989

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

Sheet No. 18 of 24

CASS COUNTY

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MO.		95

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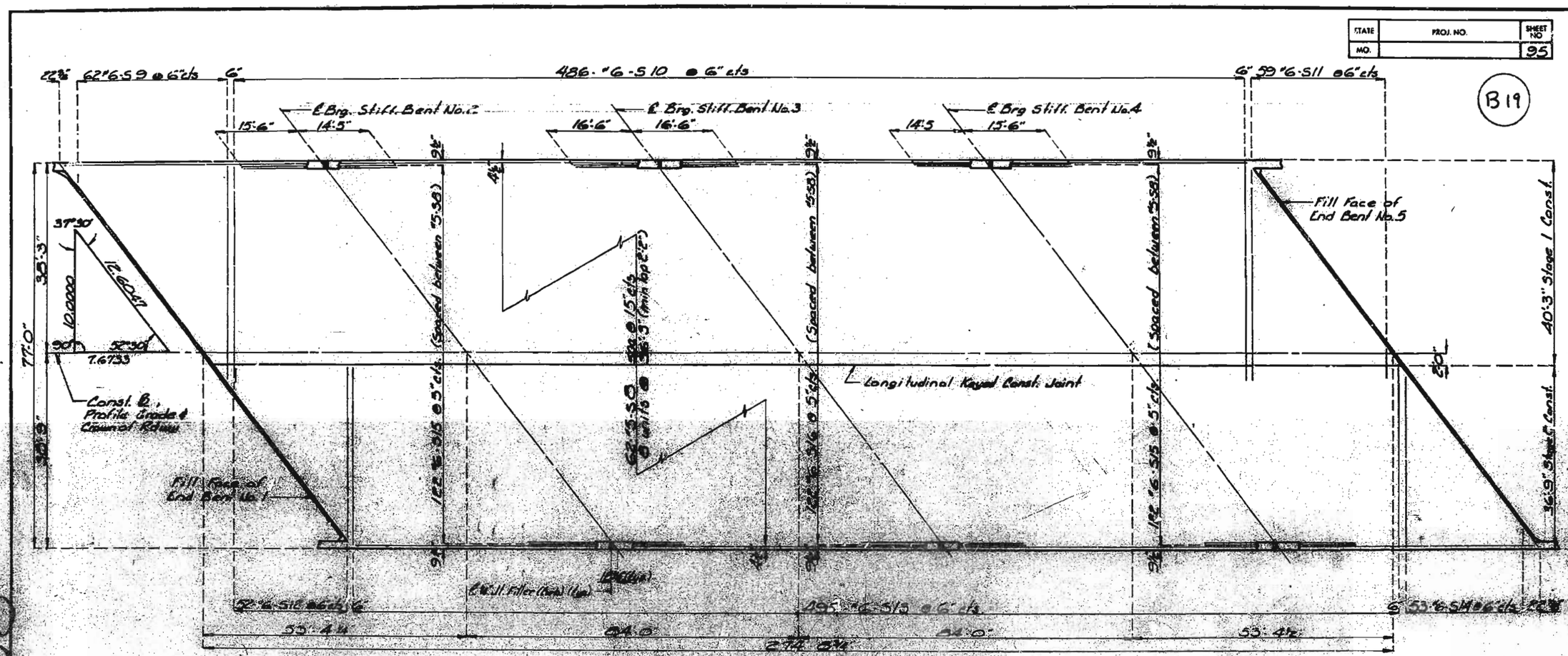
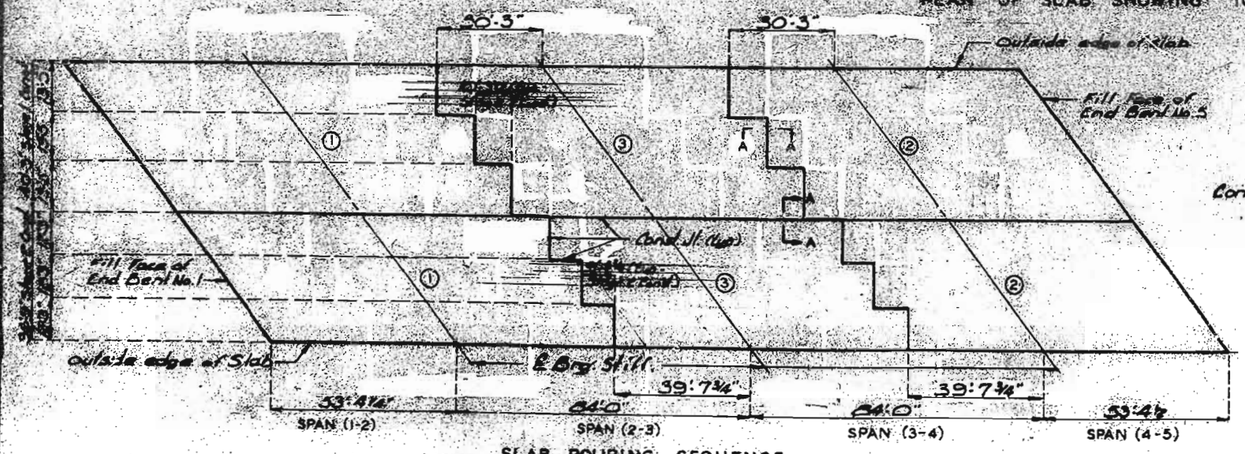
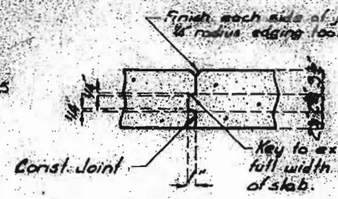


PLAN OF SLAB SHOWING TOP REINFORCEMENT

Note: Long. Dim. shown are parallel to grade at top of slab.



SLAB POURING SEQUENCE



SECTION A-A

	SEQUENCE OF POURS			MIN. RATE OF POUR CU. YDS. / HR.	
	DIRECTION			WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	25	22
	EITHER DIRECTION				

Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with section 703.3.6 of Missouri Standard Specifications.

ALTERNATE 'A' POURS	1	3 + 2	27	44
	END TO 3	1 TO END		
ALTERNATE 'B' POURS	1+3+2			
	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 conc. to 6.5 hours.

DETAILED June 1989
CHECKED Aug. 1989

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

CASS COUNTY

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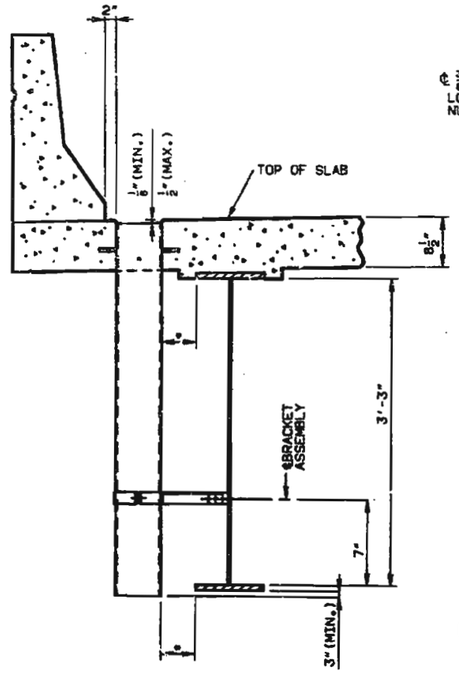
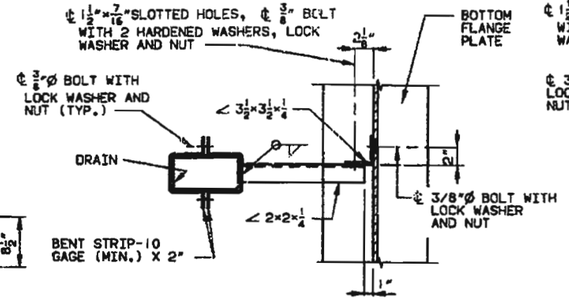
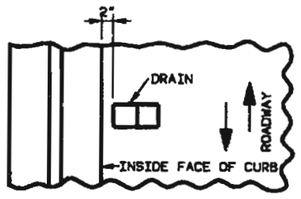


PART ELEVATION OF SLAB AT DRAIN

(*) IF DIMENSION IS LESS THAN 1", DRAINS SHALL BE PLACED PARALLEL TO ROADWAY, OTHERWISE PLACE DRAINS TRANSVERSE TO ROADWAY.

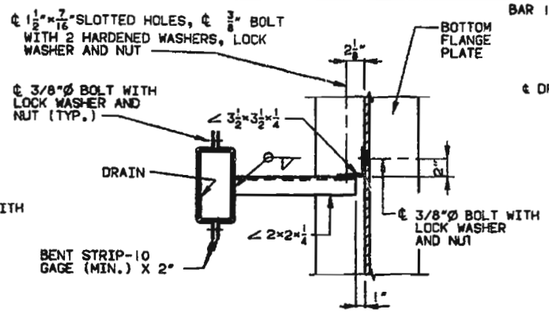


PART PLAN SHOWING BRACKET ASSEMBLY

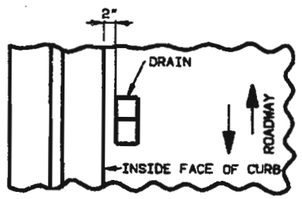


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY

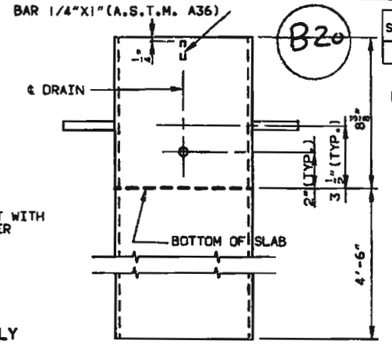


PART PLAN SHOWING BRACKET ASSEMBLY

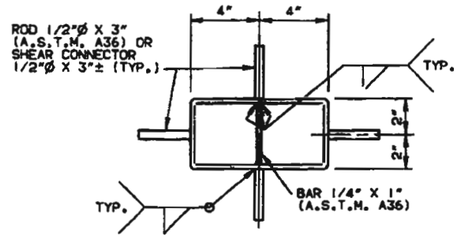


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY



ELEVATION OF DRAIN



PLAN OF DRAIN

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GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501. OUTSIDE DIMENSIONS OF DRAINS ARE 8" × 4".

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.

SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

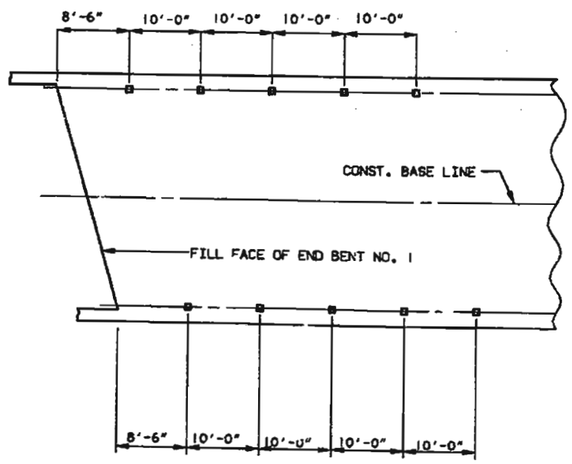
THE DRAINS AND BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

ALL BOLTS, LOCK WASHERS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153.

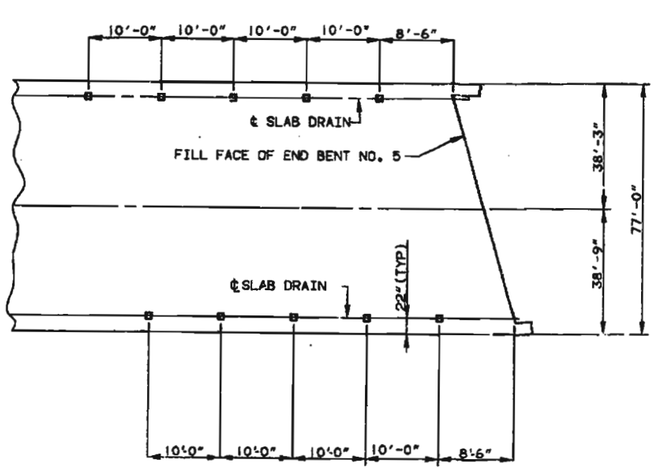
SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND THE BRACKET ASSEMBLY.

THE BOLT HOLE FOR THE BRACKET ASSEMBLY ATTACHMENT SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.

58235



SPAN(1-2)



SPAN(4-5)

PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

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

DETAILED AUG. 1989
CHECKED AUG. 1989

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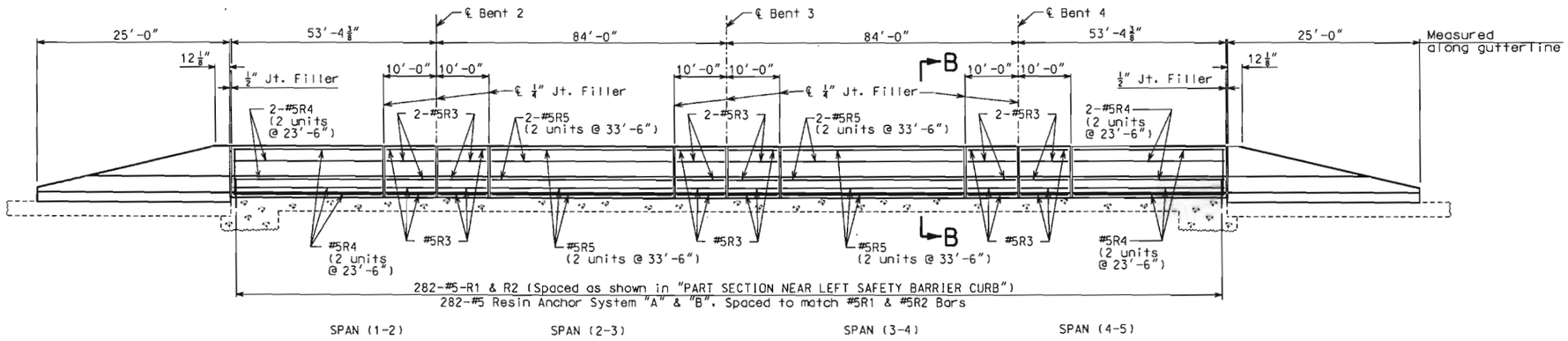


SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

Note: Longitudinal dimensions are horizontal.

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 concrete edges shall have a ½" chamfer.

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

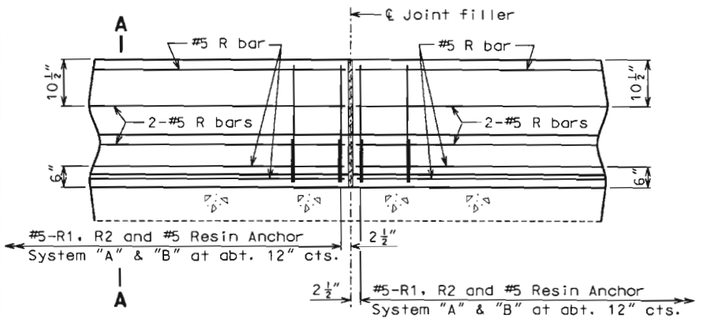
Concrete in the safety barrier curb shall be Class B-1.

Class 2 Penetrating Concrete Sealer shall be applied to all new concrete surfaces in accordance with the Job Special Provisions.

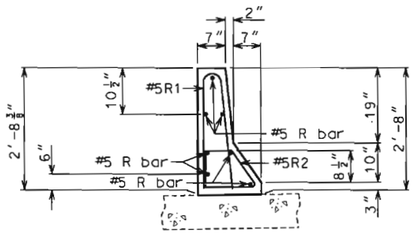
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

See Sheet 4 of 4 for location of Safety Barrier Curbs.

See Sheet 3 of 4 for General Notes and Estimated Quantity Table.



PART SECTION NEAR LEFT SAFETY BARRIER CURB

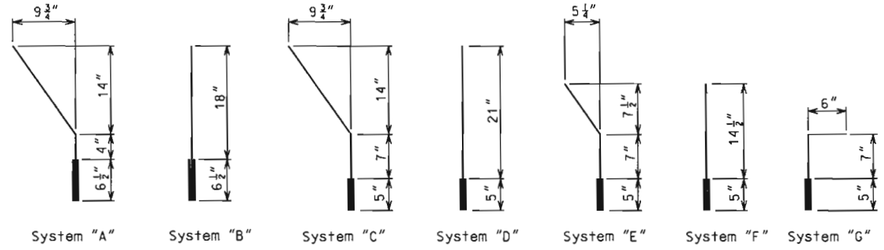


PART SECTION A-A

Note:

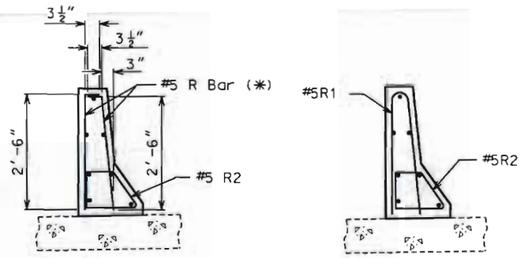
Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

Resin Anchor Systems omitted for clarity, see Details this Sheet.



DETAILS OF RESIN ANCHOR SYSTEMS

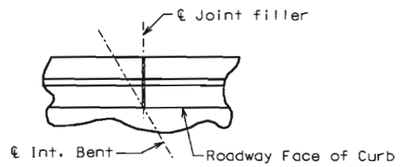
All Resin Anchor System are #5 dowels.



R-BAR PERMISSIBLE ALTERNATE SHAPE

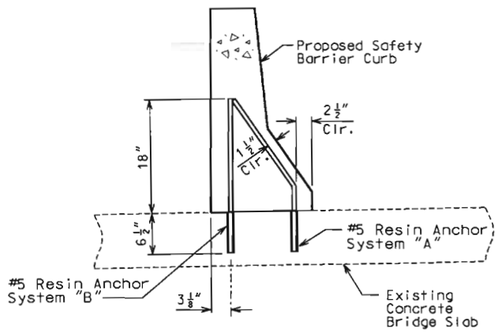
(*) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

Resin Anchor Systems omitted for clarity, see Details this Sheet.

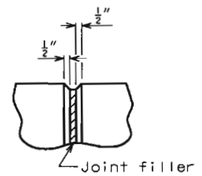


PART PLAN SHOWING SAFETY BARRIER CURB JOINT AT INTERIOR BENT

See Sheet 2 of 4 for Joint at Fill Face



SECTION B-B SHOWING DETAILS OF RESIN ANCHOR SYSTEM



FILLED JOINT DETAIL

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

11-15-13

DATE PREPARED 11/15/2013

ROUTE 58 | STATE MO

DISTRICT BR | SHEET NO. 1

COUNTY CASS

JOB NO. J4P3096D

CONTRACT ID.

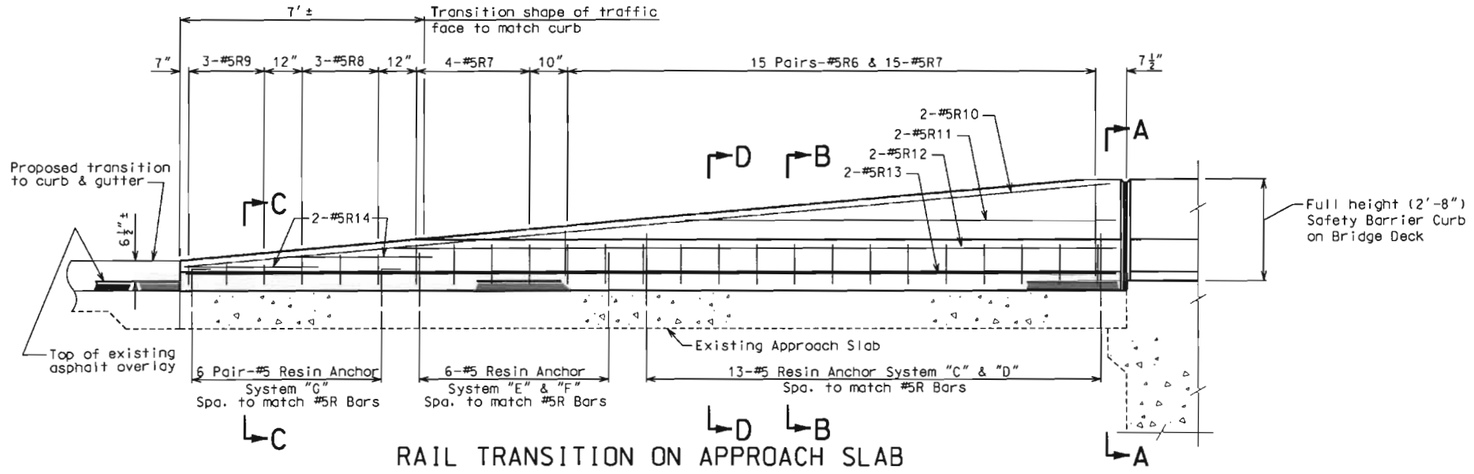
PROJECT NO.

BRIDGE NO. A20942

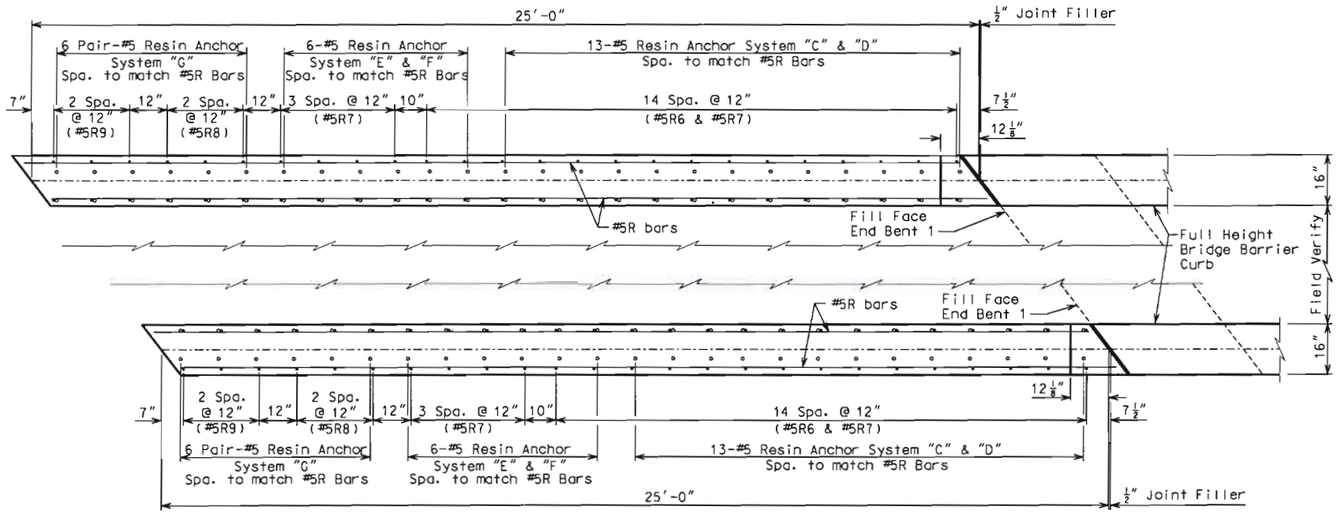
DESCRIPTION | DATE

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

VEENSTRA & KIMM, INC.
P.O. Box 238
Liberty, Missouri 64069
816-781-6182
855-241-6011 (WATS)
816-781-0049 (FAX)

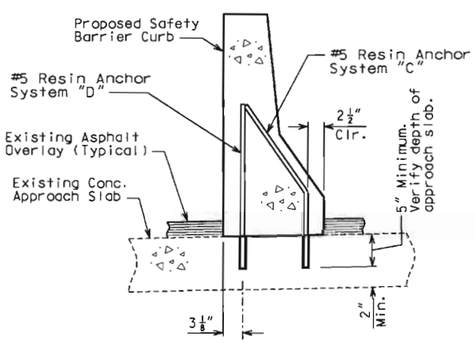


RAIL TRANSITION ON APPROACH SLAB

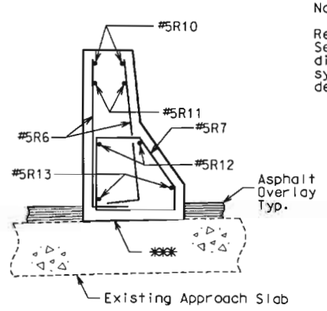


PART PLAN OF BARRIER CURB TRANSITION AT WEST END OF BRIDGE A20942

(TRANSITION AT EAST END OF BRIDGE SIMILAR ABOUT 180 DEGREE ROTATION)



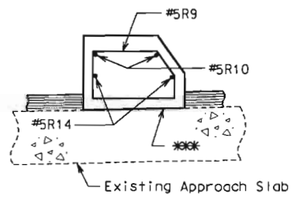
SECTION D-D SHOWING DETAILS OF RESIN ANCHOR SYSTEM



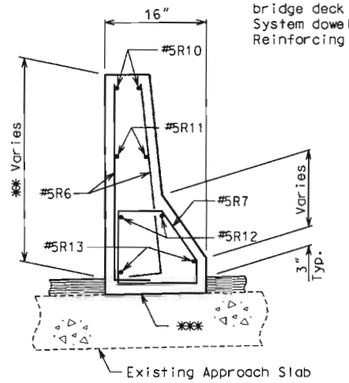
SECTION B-B

Note:

Resin Anchor Systems not shown in Sections A-A, B-B & C-C. Clearance dimensions shown are typical for all systems. See Sheet 1 of 4 for bending details.



SECTION C-C



SECTION A-A

Notes:

All dimensions in bending diagram are out to out.

Actual lengths are measured along centerline of bar to the nearest inch.

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

All reinforcement shall be Grade 60.

All reinforcement and Resin Anchor System dowels shall be epoxy coated.

Minimum clearance to reinforcing shall be 1½".

Concrete in Rail Transition shall be MoDOT Class B-1 (f′c = 4000 psi).

Class 2 Penetrating Concrete Sealer shall be applied to all new concrete surfaces in accordance with the Job Special Provisions.

All exposed concrete edges shall have a ½" chamfer.

Longitudinal dimensions shown are horizontal along ℄ of rail.

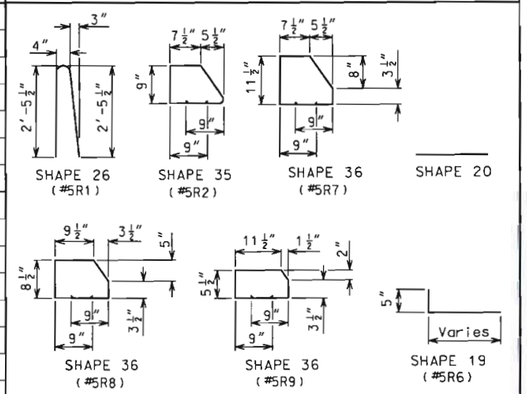
Due to the varying thickness of asphalt overlay, the contractor shall make adjustments in the field to ensure that the Barrier Curb Transition height at the fill face matches the Barrier Curb height on the bridge deck at all locations. Adjust Resin Anchor System dowels and bar dimensions in Bill of Reinforcing Steel accordingly.

✱✱ Maximum height shall be 2′-8" Fill Face to Fill face. 2′-8" to 6½"± along the 25′-0" transition length. (Measured from the top of asphalt surface.)

✱✱✱ Asphalt overlay shall be sawcut 16" wide for the full length of the Barrier Curb Transition to expose the concrete Approach Slab beneath. All laitance, oil and asphalt residue shall be removed and a clean, roughened surface obtained prior to pouring the concrete Barrier Curb Transition.

BILL OF REINFORCING STEEL

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	WEIGHT	BENDING DIAGRAMS
564	5 R1	5′-2"	26	3039	
564	5 R2	3′-6"	35	2059	
84	5 R3	9′-9"	20	854	
56	5 R4	23′-6"	20	1373	
56	5 R5	33′-6"	20	1957	
120	✱ 5 R6	1′-9"	19		
	Inc.= 1"	2′-7"		271	
76	5 R7	3′-9"	36	297	
12	5 R8	3′-4"	36	42	
12	5 R9	2′-11"	36	37	
8	5 R10	24′-10"	20	207	
8	5 R11	11′-3"	20	94	
8	5 R12	18′-7"	20	155	
8	5 R13	24′-9"	20	207	
16	5 R14	3′-6"	20	58	



✱ Length varies. Series bar. 8 req'd. each bar.

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

11-15-13

DATE PREPARED 11/15/2013

ROUTE 58 | STATE MO

DISTRICT BR | SHEET NO. 2

COUNTY CASS

JOB NO. J4P3096D

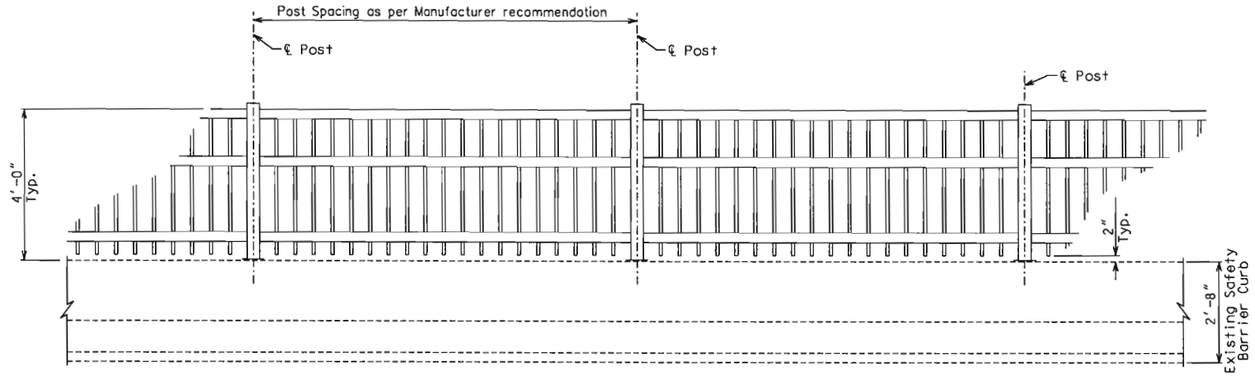
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A20942

DESCRIPTION | DATE

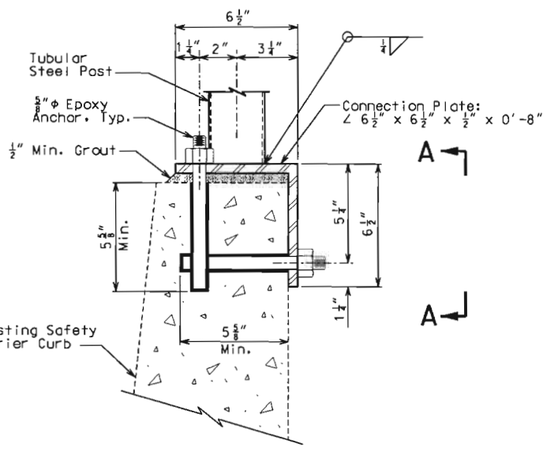
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0643 (FAX)
VEENSTRA & KIMM, INC.



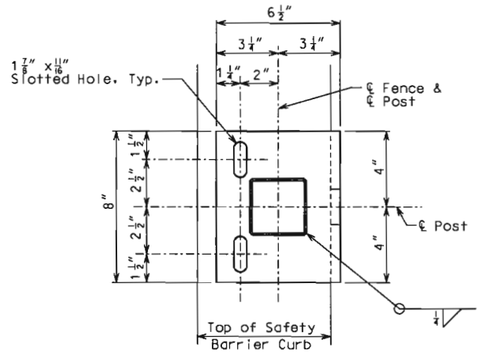
PARTIAL ELEVATION OF FENCE

Estimated Quantities		
Item		Total
Ornamental Pedestrian Fence (Structures)	Lin. Ft.	598
Safety Barrier Curb	Lin. Ft.	650
Slab Drain	Ea.	24

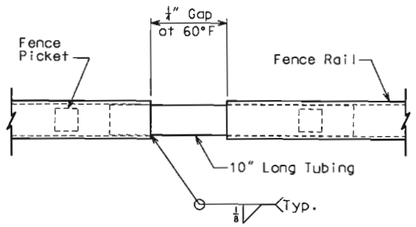
Pay length for Safety Barrier Curb is to the nearest linear foot, measured from toe of transition to toe of transition.



SECTION THRU FENCE POST BASE PLATE



PLAN OF FENCE POST BASE PLATE



EXPANSION JOINT DETAIL

General Notes:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Loading:
HS20-44

Design Unit Stresses:
Class B-1 Concrete f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

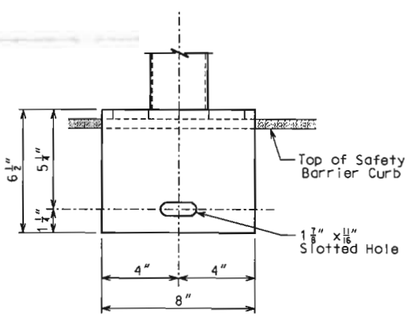
Joint Filler:
All joint filler shall be in accordance with Sec. 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

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

Miscellaneous:
"Sec" refers to the sections in the Standard and Supplemental Specifications unless specified otherwise.

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

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



ELEVATION A-A

Notes:

Fence shall have a gloss black finish (Federal Standard #17038) System "G".

Longitudinal dimensions of Pedestrian Fence are measured horizontally.

Payment for furnishing and erecting the fence complete in place, including epoxy anchoring system will be considered completely covered by the contract unit price for Pedestrian Fence (Structures) per linear foot.

All materials use in fabrication and construction of the Pedestrian Fence shall be in accordance with the manufacturers specifications.

All fence posts shall be vertical. Mortar of ½" minimum thickness shall be placed under base plates to provide for vertical alignment of fence posts. Mortar shall be in accordance with Sec 1066.

The contractor shall field verify the location of the post anchoring system prior to construction of Pedestrian Fence.

Expansion joints shall be placed in the horizontal pieces at not more than 30 feet centers and at all joint filler locations in the barrier curb with a minimum gap of ¼" at 60* F.

Shop drawings will be required for the Pedestrian Fence. The shop drawings shall be prepared in accordance with Sec. 1080.

Pedestrian Fence manufacturers shall provide structural design computations signed and sealed by a registered professional engineer in the State of Missouri

Contractor shall use one of the qualified epoxy anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with f'c = 4000 psi for the epoxy anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5⅝" embedment.

Notes:

Pedestrian fencing shall be supplied by one of the following manufacturers:

Ameristar Fence Products, Inc.
1555 N. Mingo
Tulsa, Ok 74116
(800) 321-8724
www.ameristarfence.com
Style: AEGIS II Majestic

Iron Eagle Industries, Inc.
1256 Cardiff Blvd.
Mississauga, Ontario, Canada L5S1R1
(905) 670-2558
www.ironeagleind.com
Style: Silver Eagle II Aluminum

Betafence USA
3309 S.W. Interstate 45
Ennis, Tx. 75119
(888) 650-4766
www.betafenceusa.com
Style: 4' Commercial Landmark

Slab Drain Notes:

For Slab Drain locations and details, see Sheet 4 of 4.

The contractor shall provide a method of removing the existing concrete within the limits shown without causing spalling to the top or bottom surface of the slab. Existing slab reinforcing steel shall be undamaged during concrete removal. Any damage shall be repaired by a method approved by the Engineer prior to the repair.

No separate payment for installing steel grates on the existing slab drains will be made. Payment will be considered completely covered by the contract unit price for other items included in the contract.

Concrete slab repair shall be in accordance with Sec 704.

Payment for all slab drains, concrete, sawcut, removals and preparations will be considered completely covered by the contract unit price for slab drains per each.

Slab drains may be fabricated of either ¼" welded sheets of ASTM A709 Grade 36 steel or from ¼" 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.

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

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

11-15-13

DATE PREPARED 11/15/2013
ROUTE 58 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY CASS
JOB NO. J4P3096D
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A20942

DESCRIPTION | DATE

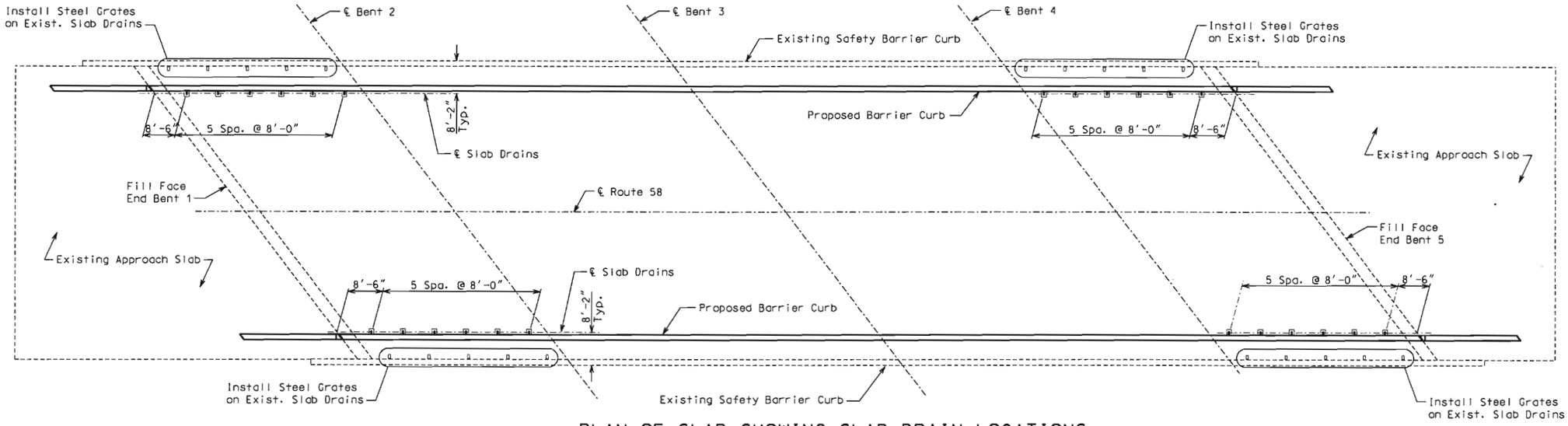
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

P.O. Box 236
Liberty, Missouri 64069
816-781-8182
855-241-8011 (WATS)
816-781-0843 (FAX)

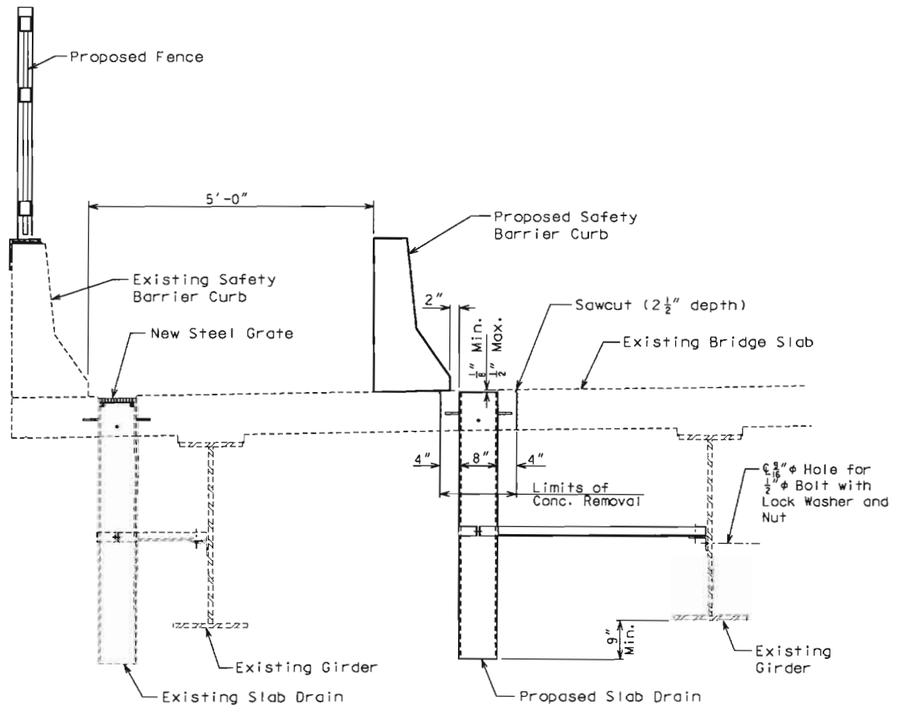
VEENSTRA & KIMM, INC.

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

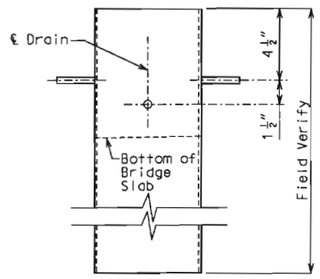


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

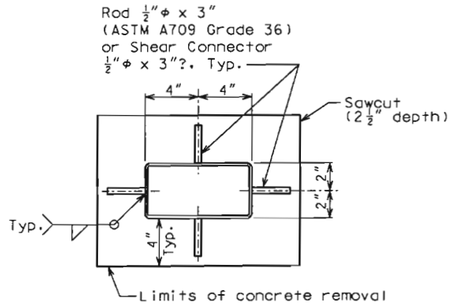
For slab drain notes, see Sheet 3 of 4.



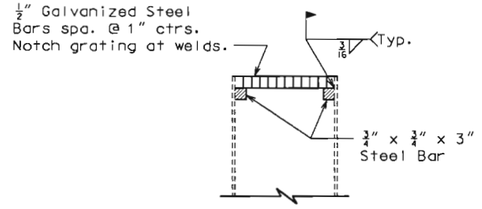
PART SECTION NEAR DRAIN



ELEVATION OF DRAIN

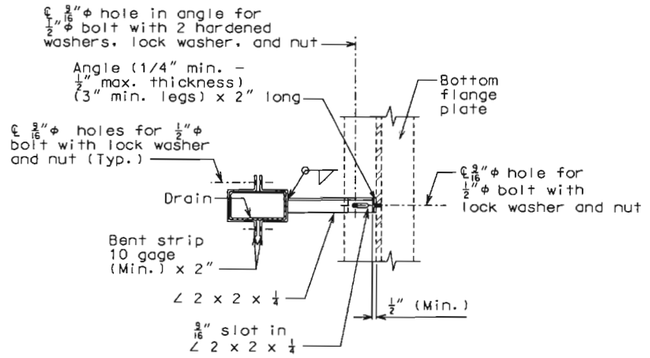


PLAN OF DRAIN



STEEL GRATE DETAIL AT EXISTING SLAB DRAIN

Note:
Coat welds and surrounding areas with zinc-rich paint.



PART SECTION SHOWING BRACKET ASSEMBLY

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

11-15-13

DATE PREPARED
11/15/2013

ROUTE	STATE
58	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
CASS

JOB NO.
J4P3096D

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A20942

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
VEENSTRA & KIMM, INC.
P.O. Box 236
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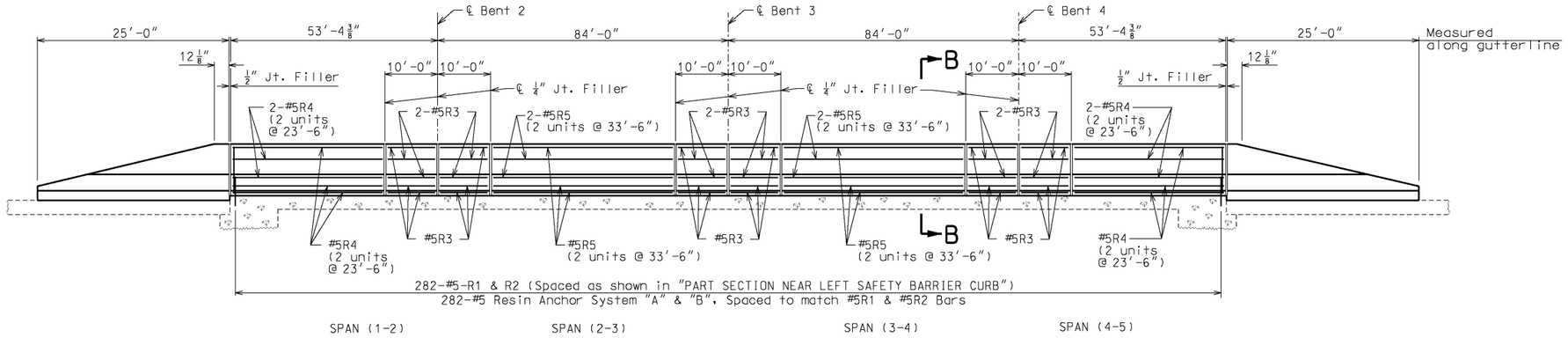


SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

Note: Longitudinal dimensions are horizontal.

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 concrete edges shall have a 1/2″ chamfer.

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

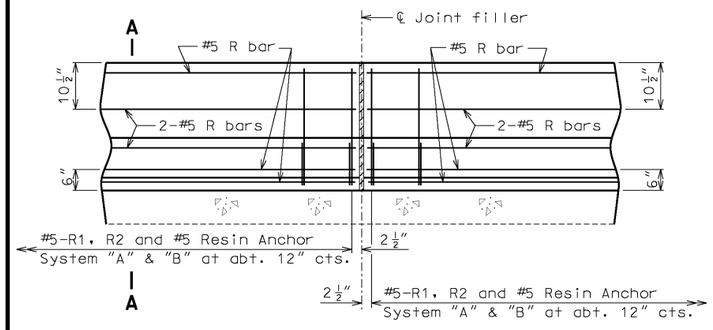
Concrete in the safety barrier curb shall be Class B-1.

Class 2 Penetrating Concrete Sealer shall be applied to all new concrete surfaces in accordance with the Job Special Provisions.

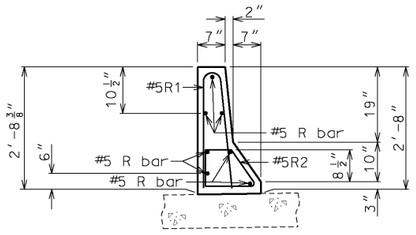
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

See Sheet 4 of 4 for location of Safety Barrier Curbs.

See Sheet 3 of 4 for General Notes and Estimated Quantity Table.



PART SECTION NEAR LEFT SAFETY BARRIER CURB

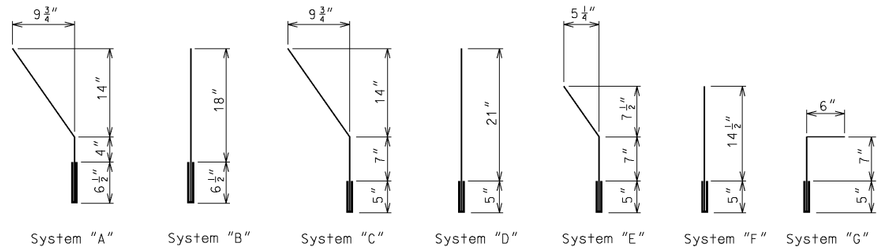


PART SECTION A-A

Note:

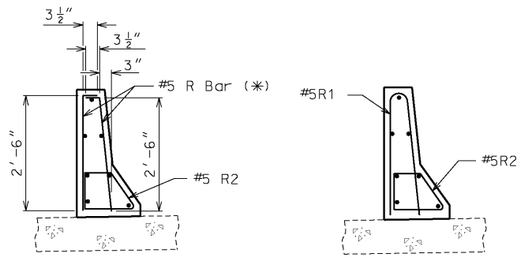
Use a minimum lap of 2′-11″ for #5 horizontal safety barrier curb bars.

Resin Anchor Systems omitted for clarity, see Details this Sheet.



DETAILS OF RESIN ANCHOR SYSTEMS

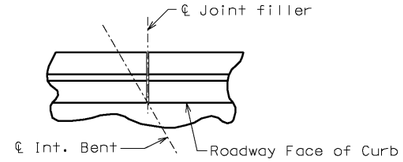
All Resin Anchor System are #5 dowels.



R-BAR PERMISSIBLE ALTERNATE SHAPE

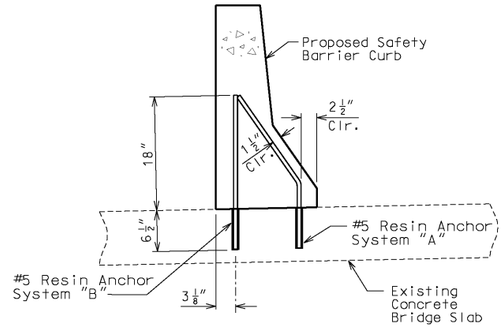
(*) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

Resin Anchor Systems omitted for clarity, see Details this Sheet.

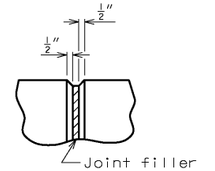


PART PLAN SHOWING SAFETY BARRIER CURB JOINT AT INTERIOR BENT

See Sheet 2 of 4 for Joint at Fill Face



SECTION B-B SHOWING DETAILS OF RESIN ANCHOR SYSTEM



FILLED JOINT DETAIL

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

11-15-13

DATE PREPARED 11/15/2013

ROUTE	STATE
58	MO
DISTRICT	SHEET NO.
BR	1

COUNTY: CASS

JOB NO.: J4P3096D

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A20942

DESCRIPTION | DATE

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105 WEST CAPITOL
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1-888-ASK-MODOT (1-888-275-6636)

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816-781-6182
885-241-8011 (WATS)
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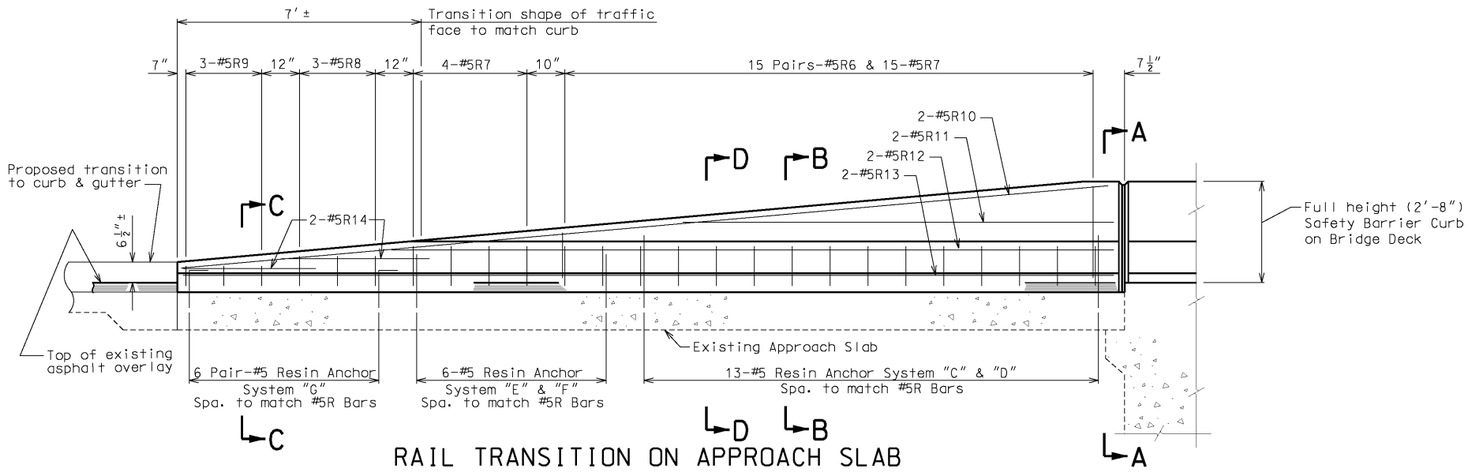
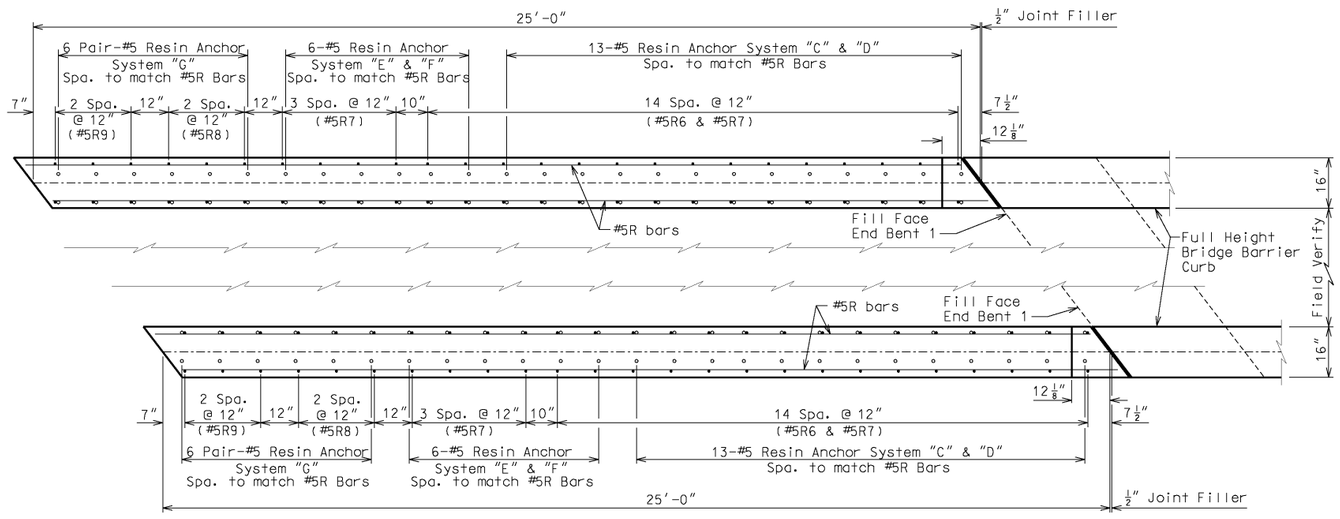
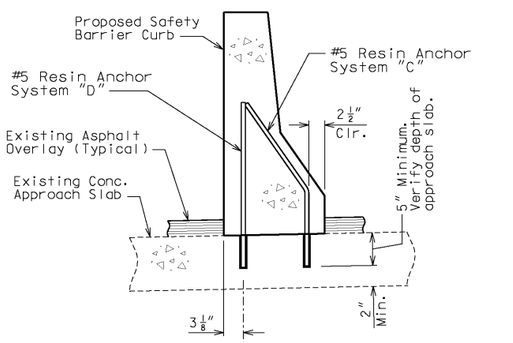


RAIL TRANSITION ON APPROACH SLAB

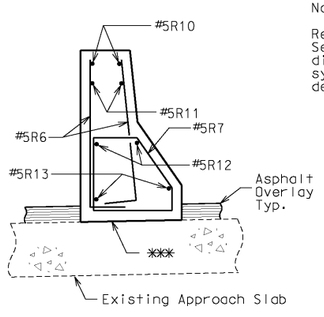


PART PLAN OF BARRIER CURB TRANSITION AT WEST END OF BRIDGE A20942

(TRANSITION AT EAST END OF BRIDGE SIMILAR ABOUT 180 DEGREE ROTATION)



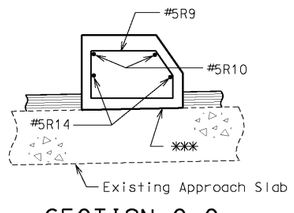
SECTION D-D SHOWING DETAILS OF RESIN ANCHOR SYSTEM



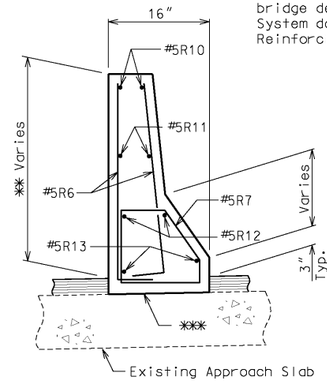
SECTION B-B

Note:

Resin Anchor Systems not shown in Sections A-A, B-B & C-C. Clearance dimensions shown are typical for all systems. See Sheet 1 of 4 for bending details.



SECTION C-C



SECTION A-A

Notes:

All dimensions in bending diagram are out to out.

Actual lengths are measured along centerline of bar to the nearest inch.

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

All reinforcement shall be Grade 60.

All reinforcement and Resin Anchor System dowels shall be epoxy coated.

Minimum clearance to reinforcing shall be 1½".

Concrete in Rail Transition shall be MoDOT Class B-1 (f′c = 4000 psi).

Class 2 Penetrating Concrete Sealer shall be applied to all new concrete surfaces in accordance with the Job Special Provisions.

All exposed concrete edges shall have a ½" chamfer.

Longitudinal dimensions shown are horizontal along ℄ of rail.

Due to the varying thickness of asphalt overlay, the contractor shall make adjustments in the field to ensure that the Barrier Curb Transition height at the fill face matches the Barrier Curb height on the bridge deck at all locations. Adjust Resin Anchor System dowels and bar dimensions in Bill of Reinforcing Steel accordingly.

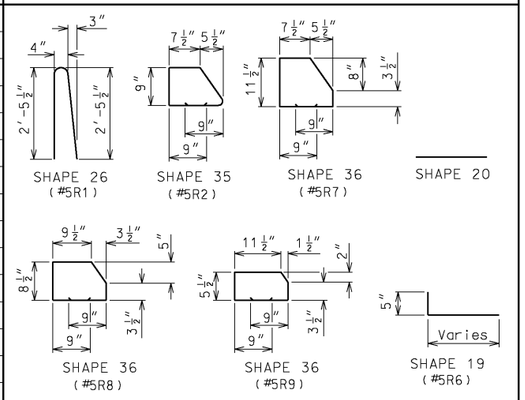
** Maximum height shall be 2′-8" Fill Face to Fill face. 2′-8" to 6½"± along the 25′-0" transition length. (Measured from the top of asphalt surface.)

*** Asphalt overlay shall be sawcut 16" wide for the full length of the Barrier Curb Transition to expose the concrete Approach Slab beneath. All laitance, oil and asphalt residue shall be removed and a clean, roughened surface obtained prior to pouring the concrete Barrier Curb Transition.

BILL OF REINFORCING STEEL

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	WEIGHT
564	5 R1	5′-2″	26	3039
564	5 R2	3′-6″	35	2059
84	5 R3	9′-9″	20	854
56	5 R4	23′-6″	20	1373
56	5 R5	33′-6″	20	1957
120	* 5 R6	1′-9″	19	
	Inc.= 1″	2′-7″		271
76	5 R7	3′-9″	36	297
12	5 R8	3′-4″	36	42
12	5 R9	2′-11″	36	37
8	5 R10	24′-10″	20	207
8	5 R11	11′-3″	20	94
8	5 R12	18′-7″	20	155
8	5 R13	24′-9″	20	207
16	5 R14	3′-6″	20	58

BENDING DIAGRAMS



* Length varies. Series bar. 8 req'd. each bar.

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

11-15-13

DATE PREPARED 11/15/2013

ROUTE 58 | STATE MO

DISTRICT BR | SHEET NO. 2

COUNTY CASS

JOB NO. J4P3096D

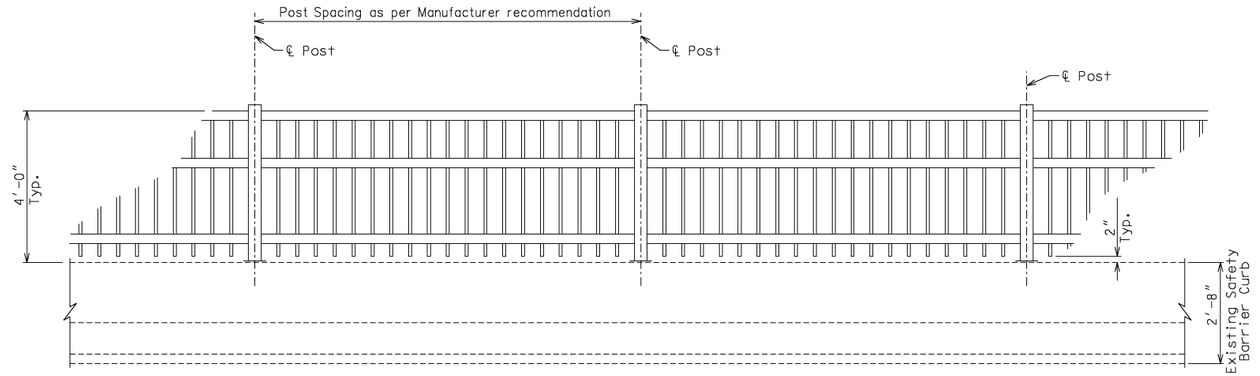
CONTRACT ID.

PROJECT NO.

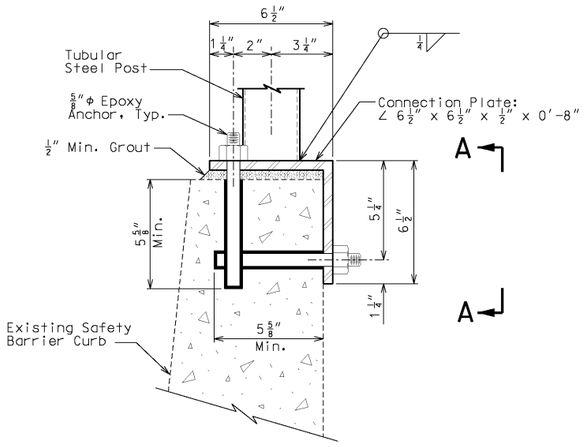
BRIDGE NO. A20942

DESCRIPTION | DATE

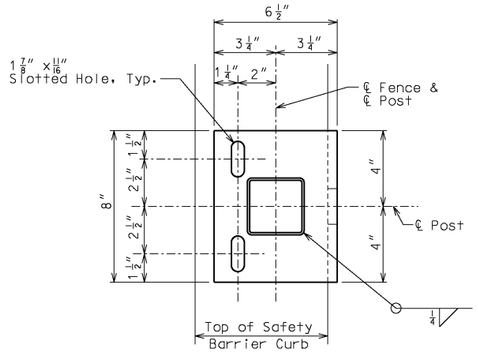
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0643 (FAX)
VEENSTRA & KIMM, INC.



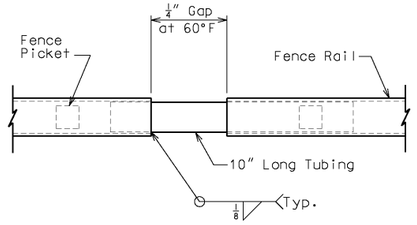
PARTIAL ELEVATION OF FENCE



SECTION THRU FENCE POST BASE PLATE



PLAN OF FENCE POST BASE PLATE



EXPANSION JOINT DETAIL

Estimated Quantities		
Item		Total
Ornamental Pedestrian Fence (Structures)	Lin. Ft.	598
Safety Barrier Curb	Lin. Ft.	650
Slab Drain	Ea.	24

Pay length for Safety Barrier Curb is to the nearest linear foot, measured from toe of transition to toe of transition.

General Notes:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Loading:
HS20-44

Design Unit Stresses:
Class B-1 Concrete f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

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 1½", unless otherwise shown.

Miscellaneous:
"Sec" refers to the sections in the Standard and Supplemental Specifications unless specified otherwise.

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

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

Notes:

Fence shall have a gloss black finish (Federal Standard #17038) System "G".

Longitudinal dimensions of Pedestrian Fence are measured horizontally.

Payment for furnishing and erecting the fence complete in place, including epoxy anchoring system will be considered completely covered by the contract unit price for Pedestrian Fence (Structures) per linear foot.

All materials use in fabrication and construction of the Pedestrian Fence shall be in accordance with the manufacturers specifications.

All fence posts shall be vertical. Mortar of ½" minimum thickness shall be placed under base plates to provide for vertical alignment of fence posts. Mortar shall be in accordance with Sec 1066.

The contractor shall field verify the location of the post anchoring system prior to construction of Pedestrian Fence.

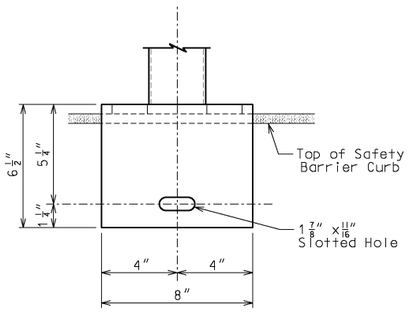
Expansion joints shall be placed in the horizontal pieces at not more than 30 feet centers and at all joint filler locations in the barrier curb with a minimum gap of ¼" at 60* F.

Shop drawings will be required for the Pedestrian Fence. The shop drawings shall be prepared in accordance with Sec. 1080.

Pedestrian Fence manufacturers shall provide structural design computations signed and sealed by a registered professional engineer in the State of Missouri

Contractor shall use one of the qualified epoxy anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with f'c = 4000 psi for the epoxy anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5⅝" embedment.



ELEVATION A-A

Notes:

Pedestrian fencing shall be supplied by one of the following manufacturers:

Ameristar Fence Products, Inc.
1555 N. Mingo
Tulsa, Ok 74116
(800) 321-8724
www.ameristarfence.com
Style: AEGIS II Majestic

Iron Eagle Industries, Inc.
1256 Cardiff Blvd.
Mississauga, Ontario, Canada L5S1R1
(905) 670-2558
www.ironeagleind.com
Style: Silver Eagle II Aluminum

Betafence USA
3309 S.W. Interstate 45
Ennis, Tx. 75119
(888) 650-4766
www.betafenceusa.com
Style: 4' Commercial Landmark

Slab Drain Notes:

For Slab Drain locations and details, see Sheet 4 of 4.

The contractor shall provide a method of removing the existing concrete within the limits shown without causing spalling to the top or bottom surface of the slab. Existing slab reinforcing steel shall be undamaged during concrete removal. Any damage shall be repaired by a method approved by the Engineer prior to the repair.

No separate payment for installing steel grates on the existing slab drains will be made. Payment will be considered completely covered by the contract unit price for other items included in the contract.

Concrete slab repair shall be in accordance with Sec 704.

Payment for all slab drains, concrete, sawcut, removals and preparations will be considered completely covered by the contract unit price for slab drains per each.

Slab drains may be fabricated of either ¼" welded sheets of ASTM A709 Grade 36 steel or from ¼" 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.

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

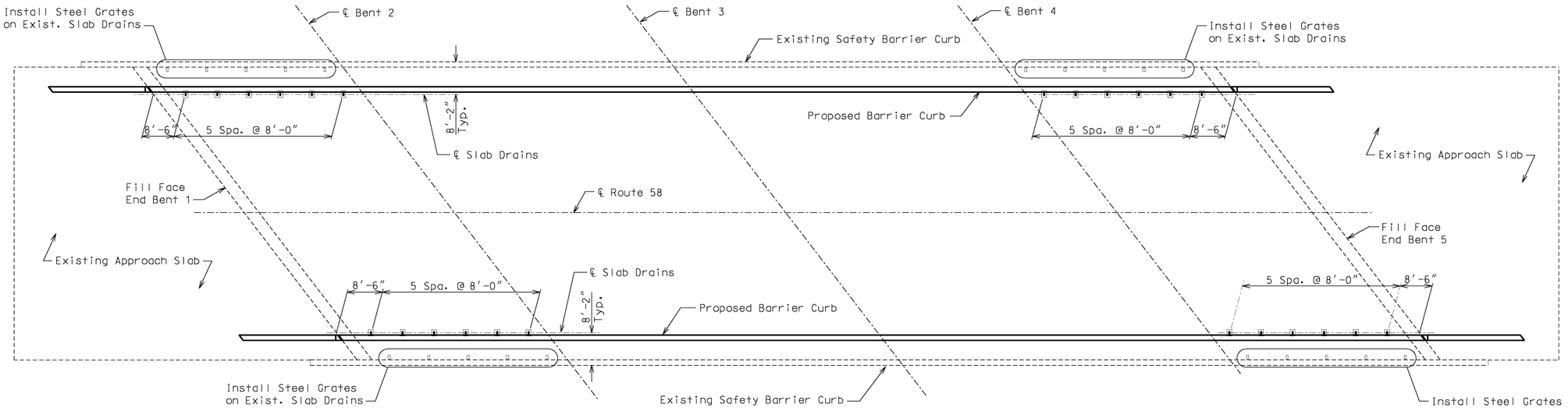
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

11-15-13

DATE PREPARED 11/15/2013
ROUTE 58 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY CASS
JOB NO. J4P3096D
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A20942

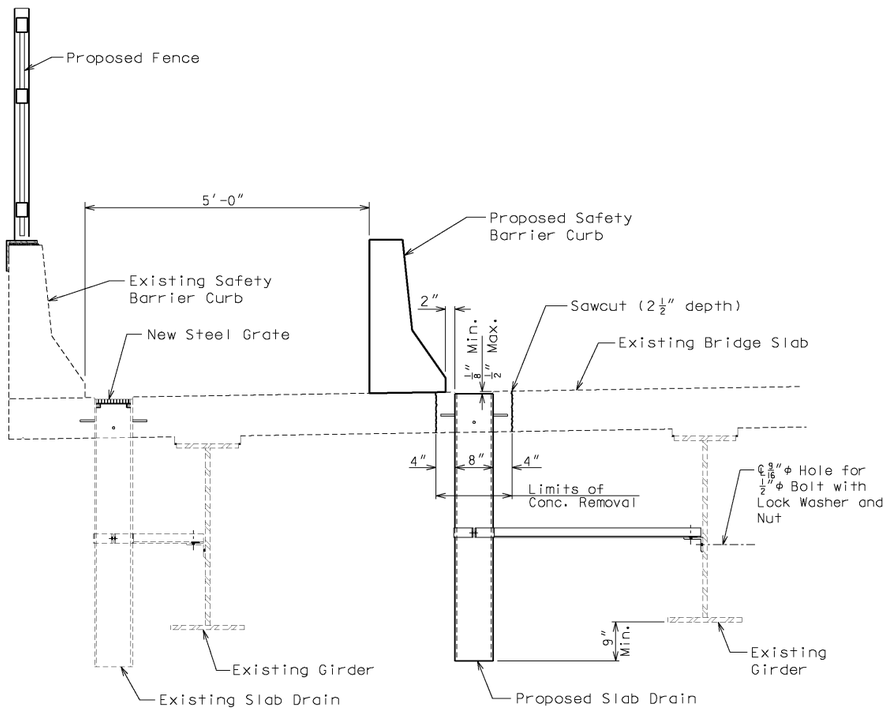
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0643 (FAX)
VEENSTRA & KIMM, INC.

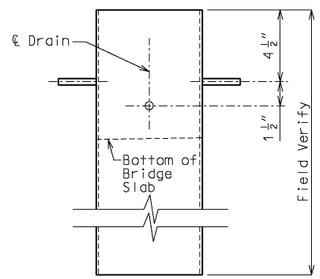


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

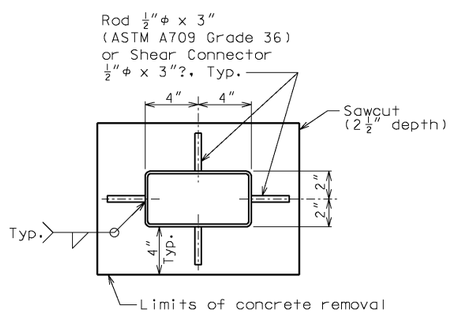
For slab drain notes, see Sheet 3 of 4.



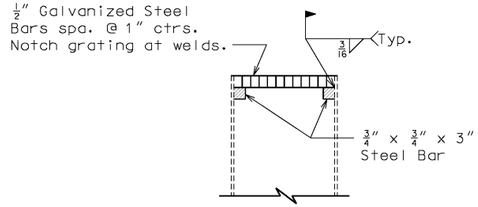
PART SECTION NEAR DRAIN



ELEVATION OF DRAIN

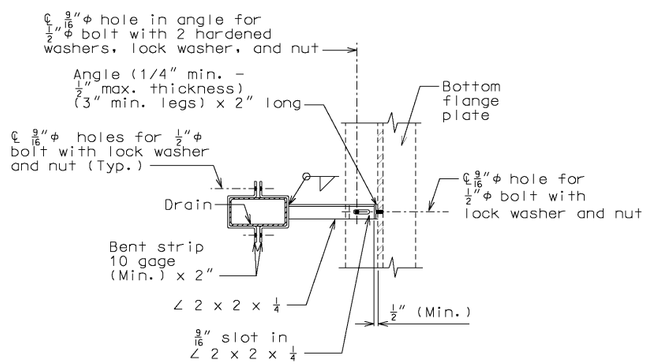


PLAN OF DRAIN



STEEL GRATE DETAIL AT EXISTING SLAB DRAIN

Note:
Coat welds and surrounding areas with zinc-rich paint.



PART SECTION SHOWING BRACKET ASSEMBLY

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

11-15-13

DATE PREPARED 11/15/2013

ROUTE	STATE
58	MO
DISTRICT	SHEET NO.
BR	4

COUNTY: CASS

JOB NO.: J4P3096D

CONTRACT ID.:

PROJECT NO.:

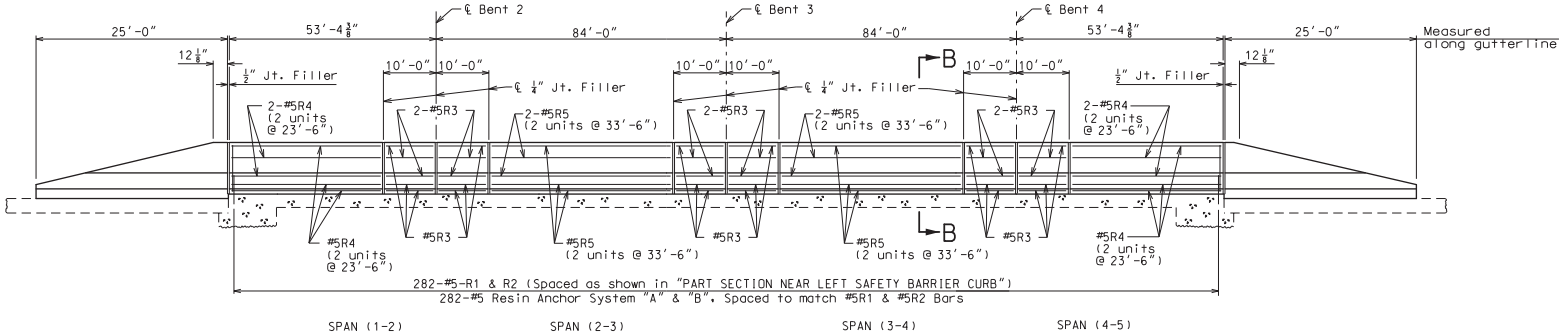
BRIDGE NO.: A20942

DESCRIPTION	DATE

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

VEENSTRA & KIMM, INC.
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0843 (FAX)

FINAL PLANS



SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

Note: Longitudinal dimensions are horizontal.

Notes:

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

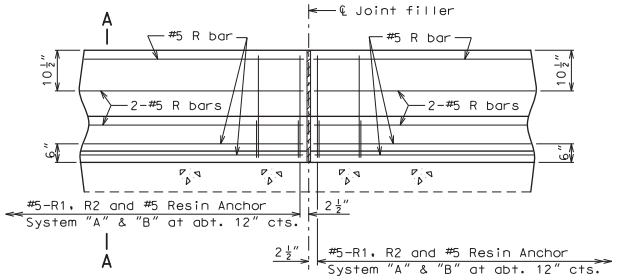
All exposed concrete edges have a 1/2" chamfer.

Concrete in the safety barrier curb is Class B-1.

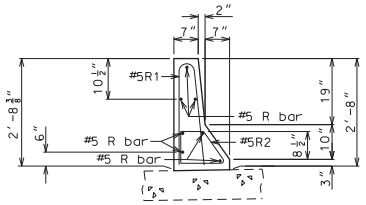
Class 2 Penetrating Concrete Sealer was applied to all new concrete surfaces in accordance with the Job Special Provisions.

Concrete traffic barrier delineators were placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. See Sheet 4 of 4 for location of Safety Barrier Curbs.

See Sheet 3 of 4 for General Notes and Estimated Quantity Table.



PART SECTION NEAR LEFT SAFETY BARRIER CURB

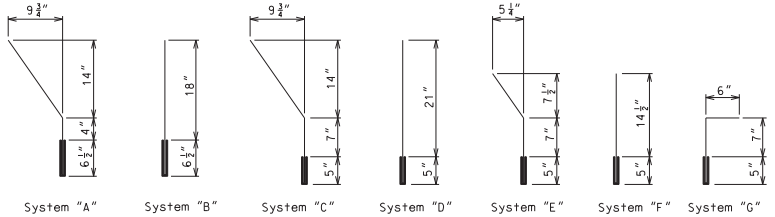


PART SECTION A-A

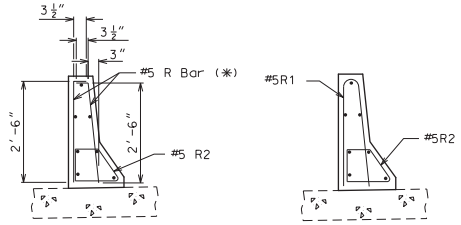
Note:

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

Resin Anchor Systems omitted for clarity, see Details this Sheet.



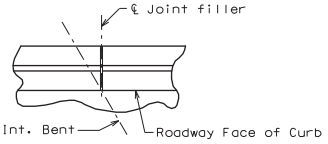
DETAILS OF RESIN ANCHOR SYSTEMS
All Resin Anchor System are #5 dowels.



R-BAR PERMISSIBLE ALTERNATE SHAPE

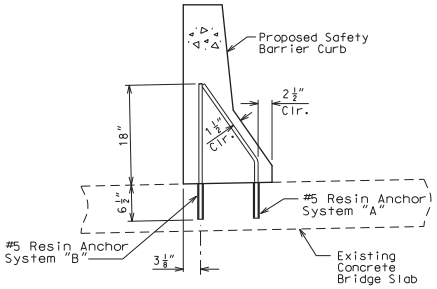
(*) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

Resin Anchor Systems omitted for clarity, see Details this Sheet.

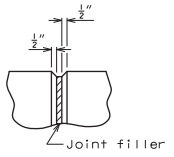


PART PLAN SHOWING SAFETY BARRIER CURB JOINT AT INTERIOR BENT

See Sheet 2 of 4 for Joint at Fill Face



SECTION B-B SHOWING DETAILS OF RESIN ANCHOR SYSTEM



FILLED JOINT DETAIL

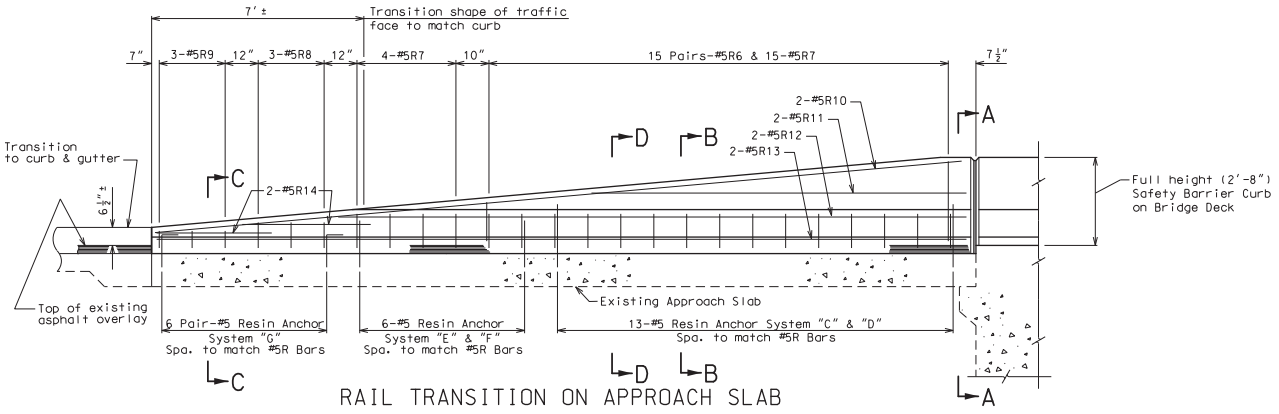
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 11/15/2013
ROUTE 58 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY CASS
JOB NO. J4P3096D
CONTRACT ID. 140523-C10
PROJECT NO. FAF-58-1(14)
BRIDGE NO. A20942

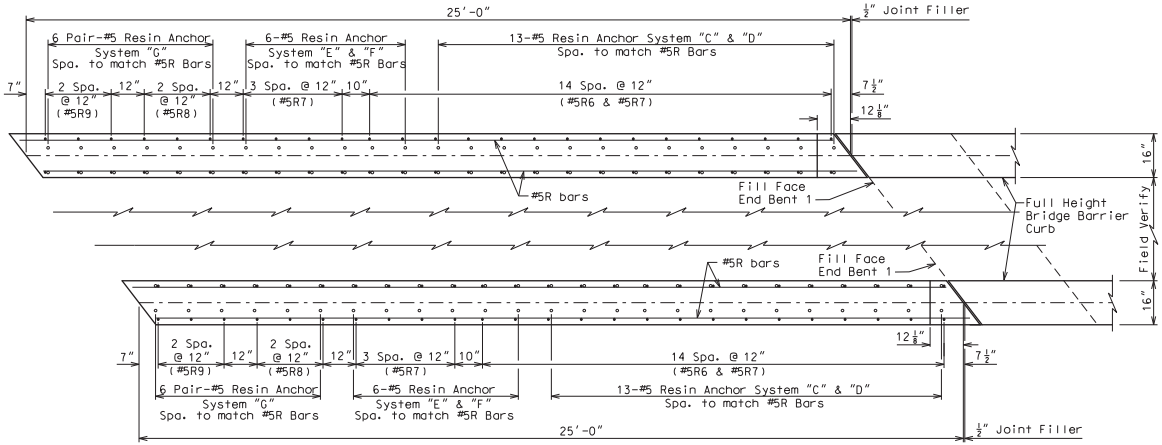
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
VEENSTRA & KIMM, INC.
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0643 (FAX)

FINAL PLANS

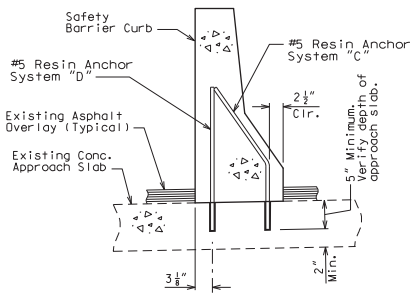


RAIL TRANSITION ON APPROACH SLAB

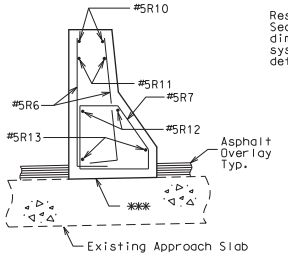


PART PLAN OF BARRIER CURB TRANSITION AT WEST END OF BRIDGE A20942

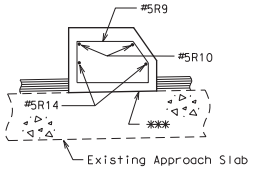
(TRANSITION AT EAST END OF BRIDGE SIMILAR ABOUT 180 DEGREE ROTATION)



SECTION D-D SHOWING DETAILS OF RESIN ANCHOR SYSTEM



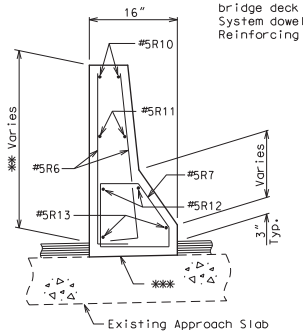
SECTION B-B



SECTION C-C

Note:

Resin Anchor Systems not shown in Sections A-A, B-B & C-C. Clearance dimensions shown are typical for all systems. See Sheet 1 of 4 for bending details.



SECTION A-A

** Maximum height shall be 2'-8" Fill Face to Fill face. 2'-8" to 6½"± along the 25'-0" transition length. (Measured from the top of asphalt surface.)

*** Asphalt overlay shall be sawcut 16" wide for the full length of the Barrier Curb Transition to expose the concrete Approach Slab beneath. All laitance, oil and asphalt residue shall be removed and a clean, roughened surface obtained prior to pouring the concrete Barrier Curb Transition.

Notes:

All dimensions in bending diagram are out to out.

Actual lengths were measured along centerline of bar to the nearest inch.

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

All reinforcement are Grade 60.

All reinforcement and Resin Anchor System dowels are epoxy coated.

Minimum clearance to reinforcing is 1½".

Concrete in Rail Transition is MoDOT Class B-1 (f'c = 4000 psi).

Class 2 Penetrating Concrete Sealer was applied to all new concrete surfaces in accordance with the Job Special Provisions.

All exposed concrete edges have a ½" chamfer.

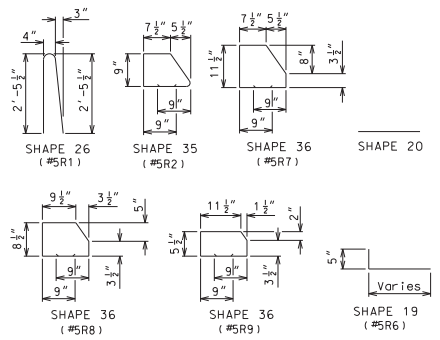
Longitudinal dimensions shown are horizontal along ℄ of rail.

Due to the varying thickness of asphalt overlay, the contractor made adjustments in the field to ensure that the Barrier Curb Transition height at the fill face matches the Barrier Curb height on the bridge deck at all locations. Resin Anchor System dowels and bar dimensions in Bill of Reinforcing Steel were adjusted

BILL OF REINFORCING STEEL

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	WEIGHT
564	5 R1	5'-2"	26	3039
564	5 R2	3'-6"	35	2059
84	5 R3	9'-9"	20	854
56	5 R4	23'-6"	20	1373
56	5 R5	33'-6"	20	1957
120	* 5 R6	1'-9"	19	
	Inc.= 1"	2'-7"		271
76	5 R7	3'-9"	36	297
12	5 R8	3'-4"	36	42
12	5 R9	2'-11"	36	37
8	5 R10	24'-10"	20	207
8	5 R11	11'-3"	20	94
8	5 R12	18'-7"	20	155
8	5 R13	24'-9"	20	207
16	5 R14	3'-6"	20	58

BENDING DIAGRAMS



* Length varies. Series bar. 8 req'd. each bar.

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

DATE PREPARED 11/15/2013

ROUTE 58 | STATE MO

DISTRICT BR | SHEET NO. 2

COUNTY CASS

JOB NO. J4P3096D

CONTRACT ID. 140523-C10

PROJECT NO. FAF-58-1(14)

BRIDGE NO. A20942

DESCRIPTION | DATE

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

VEENSTRA & KIMM, INC.
P.O. Box 236
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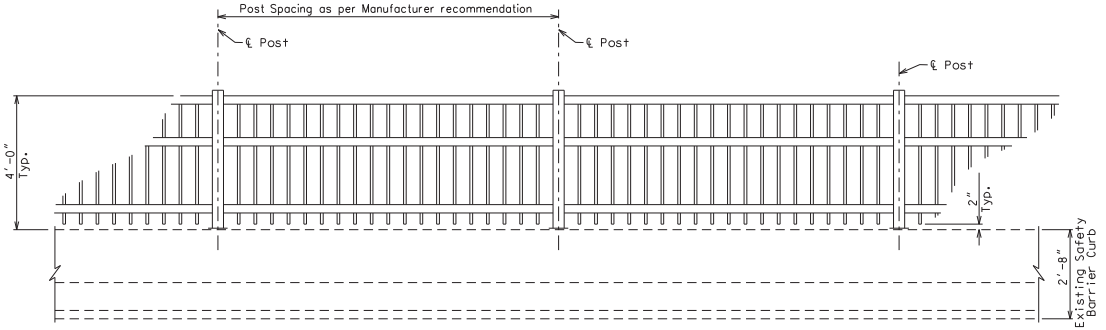
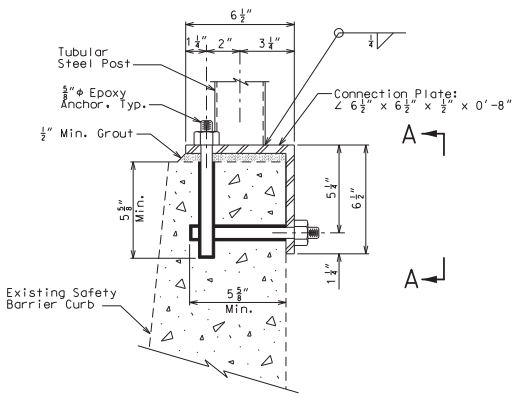
816-781-6182
855-241-8011 (WATS)
816-781-6943 (FAX)



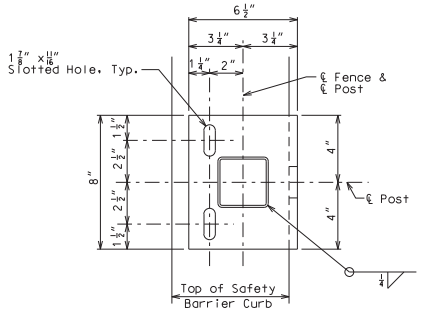
PARTIAL ELEVATION OF FENCE

Final Quantities			Line Item No.
Item		Total	
Ornamental Pedestrian Fence (Structures)	Lin. Ft.	598	0590
Safety Barrier Curb	Lin. Ft.	650	0600
Slab Drain	Ea.	24	0610

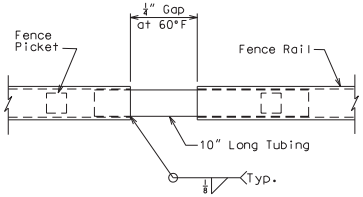
Pay length for Safety Barrier Curb is to the nearest linear foot, measured from toe of transition to toe of transition.



SECTION THRU FENCE POST BASE PLATE



PLAN OF FENCE POST BASE PLATE



EXPANSION JOINT DETAIL

General Notes:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

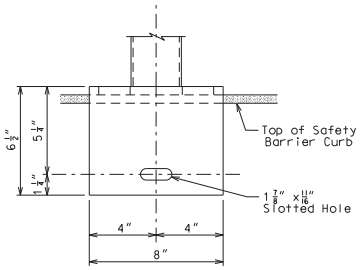
Design Loading:
HS20-44

Design Unit Stresses:
Class B-1 Concrete f'c = 4.000 psi
Reinforcing Steel (Grade 60) fy = 60.000 psi

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

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

Miscellaneous:
"Sec" refers to the sections in the Standard and Supplemental Specifications unless specified otherwise.



ELEVATION A-A

Notes:

Fence has a gloss black finish (Federal Standard #17038) System "G".

Longitudinal dimensions of Pedestrian Fence are measured horizontally.

All materials used in fabrication and construction of the Pedestrian Fence are in accordance with the manufacturers specifications.

All fence posts are vertical. Mortar of ½" minimum thickness was placed under base plates to provide for vertical alignment of fence posts. Mortar is in accordance with Sec 1066.

The contractor field verified the location of the post anchoring system prior to construction of Pedestrian Fence.

Expansion joints were placed in the horizontal pieces at not more than 30 feet centers and at all joint filler locations in the barrier curb with a minimum gap of ¼" at 60* F.

Pedestrian Fence manufacturer provided structural design computations signed and sealed by a registered professional engineer in the State of Missouri

Contractor used one of the qualified epoxy anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with f'c = 4000 psi for the epoxy anchor system meets the minimum ultimate pullout strength in accordance with Sec 1039.

Notes:

Pedestrian fencing was supplied bythe following manufacturer:

Betafence USA
3309 S.W. Interstate 45
Ennis, Tx. 75119
(888) 650-4766
www.betafenceusa.com
Style: 4' Commercial Landmark

Slab Drain Notes:

For Slab Drain locations and details, see Sheet 4 of 4.

The contractor provided a method of removing the existing concrete within the limits shown without causing spalling to the top or bottom surface of the slab. Existing slab reinforcing steel was undamaged during concrete removal.

Concrete slab repair was in accordance with Sec 704.

Slab drains were fabricated of either ¼" welded sheets of ASTM A709 Grade 36 steel or from ¼" structural steel tubing ASTM A500 or A501.

Slab drain bracket assembly is ASTM A709 Grade 36 steel.

Outside dimensions of drains are 8" x 4".

The drains in slab were located by dimensions shown in Part Section Near Drain.

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

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

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

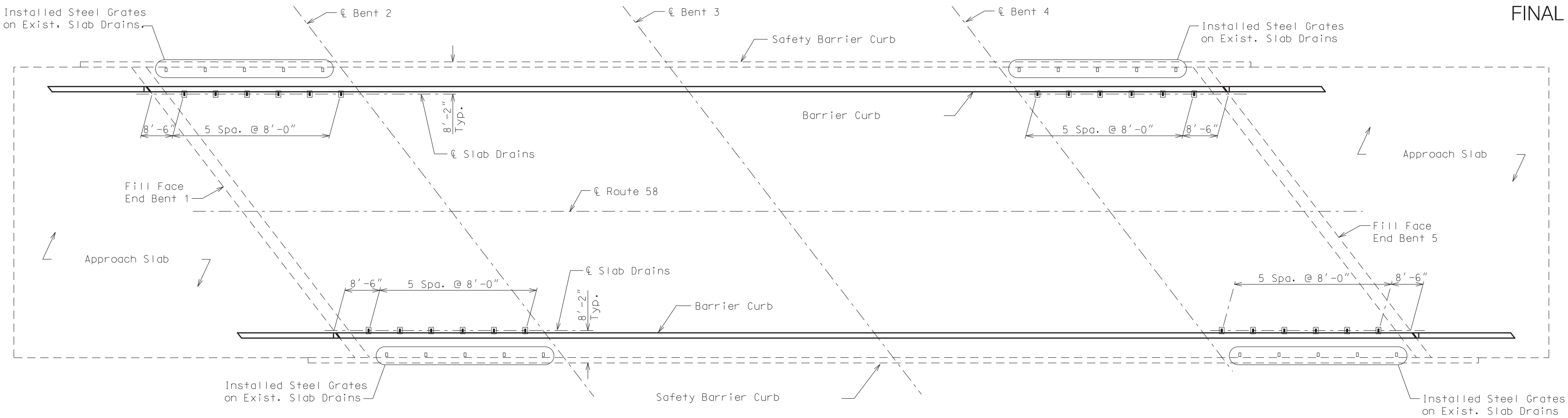
DATE PREPARED 11/15/2013
ROUTE 58 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY CASS
JOB NO. J4P3096D
CONTRACT ID. 140523-C10
PROJECT NO. FAF-58-1(14)
BRIDGE NO. A20942

DESCRIPTION | DATE

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

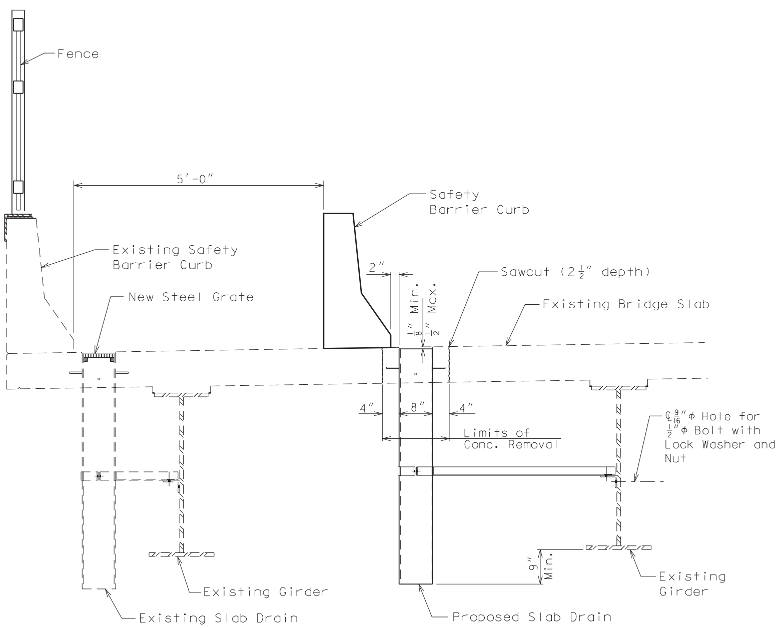
VEENSTRA & KIMM, INC.
P.O. Box 236
Liberty, Missouri 64069
816-781-0102
816-781-8611 (MATS)
816-781-0643 (FAX)

FINAL PLANS

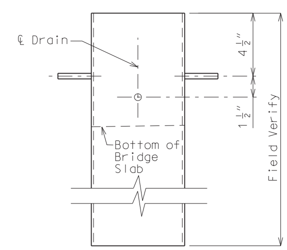


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

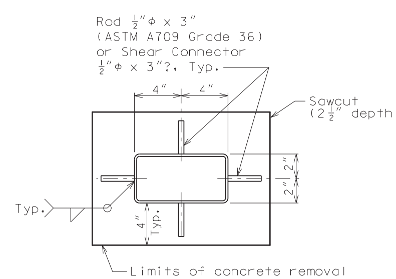
For slab drain notes, see Sheet 3 of 4.



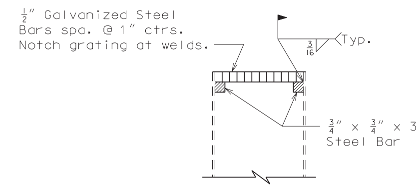
PART SECTION NEAR DRAIN



ELEVATION OF DRAIN

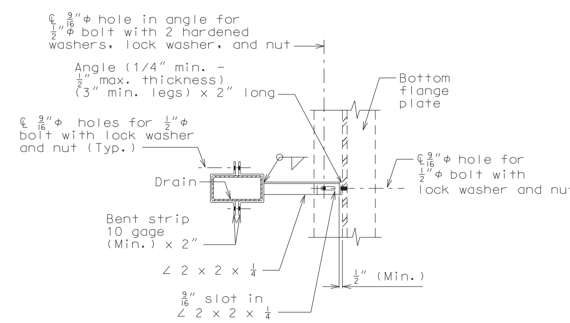


PLAN OF DRAIN



STEEL GRATE DETAIL AT EXISTING SLAB DRAIN

Note:
Coat welds and surrounding areas with zinc-rich paint.



PART SECTION SHOWING BRACKET ASSEMBLY

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

Sheet No. 4 of 4

DATE PREPARED	11/15/2013
ROUTE	58
STATE	MO
DISTRICT	BR
SHEET NO.	4
COUNTY	CASS
JOB NO.	J4P3096D
CONTRACT ID.	140523-C10
PROJECT NO.	FAF-58-1(14)
BRIDGE NO.	A20942

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

VEENSTRA & KIMM, INC.
P.O. Box 236
Liberty, Missouri 64069
816-781-6182
855-241-8011 (WATS)
816-781-0643 (FAX)

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(83'-139'-83') Continuous Composite Welded Plate Girder Spans

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B1

JOB NO. J4P1707

CONTRACT ID

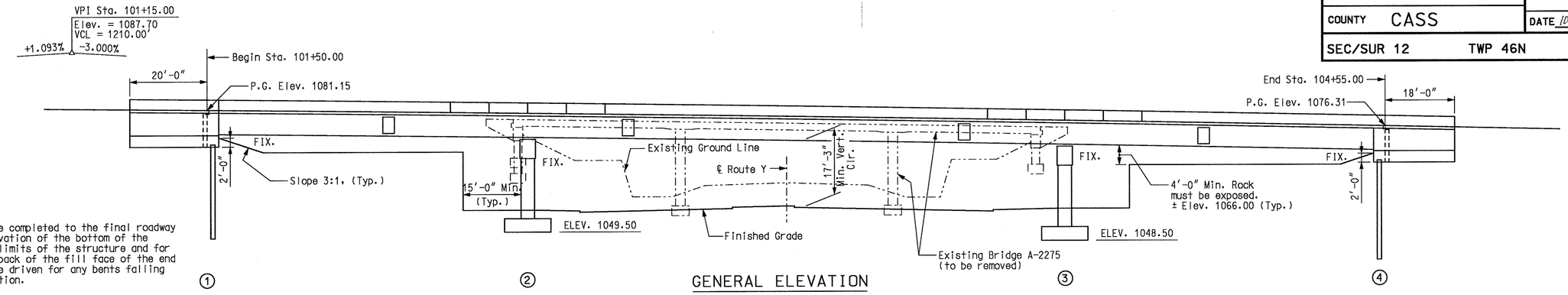
PROJECT NO.

COUNTY CASS

DATE 10-25-2006

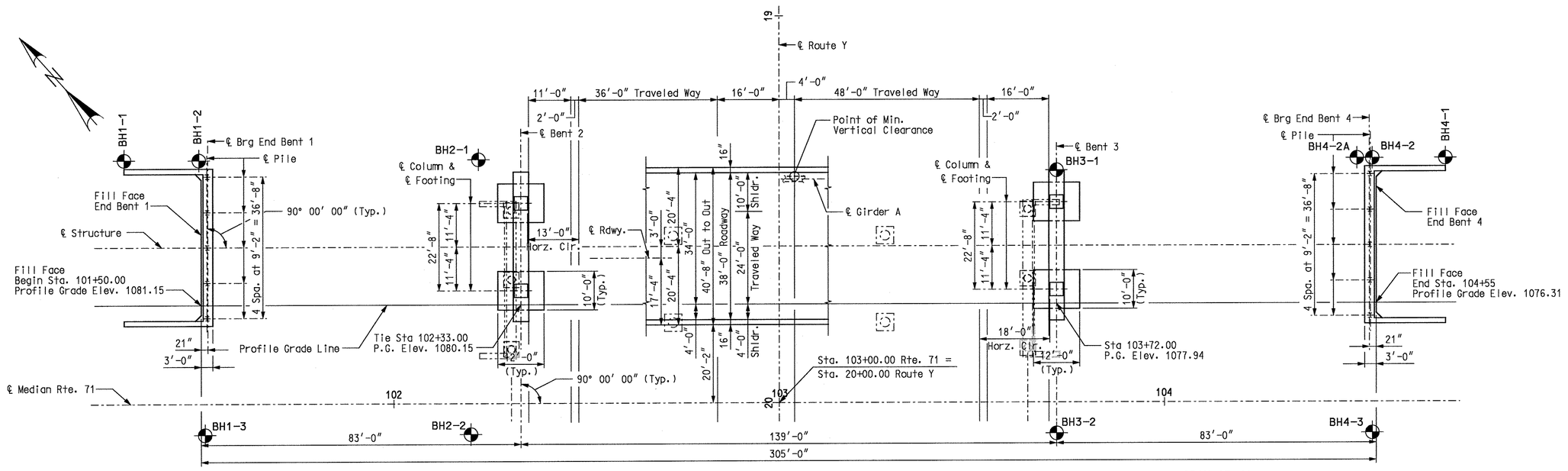
SEC/SUR 12 TWP 46N RGE 33W

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER 2005175
REGISTERED PROFESSIONAL ENGINEER



GENERAL ELEVATION

Note:
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.



PLAN

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan. Boring data is shown on Sheet Nos. 3 thru 5. 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 price, 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.

Notes:
⊕ Indicates location of borings.

All stations along ℄ Rte. 71.
All dimensions are horizontal.

Benchmarks

TBM#17:
Found chiseled sq. cut on the South corner of the West headwall of a 24" RCP pipe under the NE Outer Road at the NW corner of 163rd Street and the NE Outer Road of U.S. Hwy. No. 71. Sta. 14+20.88, Route Y 44.56' Rt. Elev. 1055.870

TBM#20:
Set sq. cut on SE corner of the SW abutment on SB 71 bridge. Sta. 103+72.67, US 71 51.11' Rt. Elev. 1076.65

BRIDGE: ROUTE 71 OVER ROUTE Y

STATE ROAD ROUTE 71
IN BELTON
PROJECT NO. STA. 101+50.00
JOB NO. J4P1707 RTE. 71 (NB)
CASS COUNTY

STD. 609.00
STD. 617.10
STD. 706.35
A7352

Designed MAY 2006
Detailed JUNE 2006
Checked JUNE 2006

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

10/30/06

USER: sgerhartz
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GENERAL NOTES:

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

Design Loading:
HS20 Modified
Military 24,000# Tandem Axle
35#/Sq. Ft. Future Wearing Surface
Earth 120#/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case I

Design Unit Stresses:

Class B Concrete (Substructure)	
Class B-1 Concrete (Safety Barrier Curb)	f'c = 3,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	f'c = 4,000 psi
Structural Carbon Steel (ASTM A709 Grade 36)	fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50)	fy = 36,000 psi
Steel Pile (ASTM A709 Grade 36)	fy = 50,000 psi
For precast prestressed panel stresses, see Sheet No. 26.	fb = 9,000 psi

Fabricated Steel Connections:
Field connections shall be made with $\frac{7}{8}$" diameter high strength bolts and $\frac{15}{16}$" diameter holes, except as noted.

Structural Steel:
Fabricated structural steel shall be ASTM A709, Grade 50, except as noted. Diaphragms and intermediate stiffeners shall be ASTM Grade 36.

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 $1\frac{1}{2}$", unless otherwise shown.

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearing by at least $\frac{1}{2}$".

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)". 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)".

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.

Miscellaneous:
A minimum vertical clearance of 14'-6" and horizontal construction clearance barrier protection shall be maintained during construction.

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.

The cost of form liner will be paid for at the contract unit price for Form Liner per sq. yd. The cost of concrete necessary to fill the form liners will be included in the contract unit price per sq. yd. of Form Liner. Concrete pay quantities are calculated to the inside face of form liners.

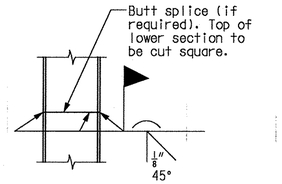
After the pile is seated in the prebore hole, it shall be backfilled with sand to 10' below the bottom of the end bent cap and compressible soil for the remainder of the prebore hole. The prebore hole diameter shall provide 2" minimum clearance to all edges of the piles.

Concrete Coatings:
Concrete and masonry protective coating shall be applied to the End Bents and Intermediate Bents as shown on the plans and in accordance with Sec. 711.

Sacrificial graffiti protective coating shall be applied to the End Bents and Intermdiate Bents as shown on the plans and in accordance with Sec. 711.

Neoprene Bearings:
Plain and Laminated Neoprene Bearing pads shall be in accordance with Sec. 716. Bearings shall be 60 durometer neoprene pads.

Abbreviations:
F.F. denotes Far Face
N.F. denotes Near Face
E.F. denotes Each Face



DETAIL OF STEEL PILE SPLICE

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B2

JOB NO. J4P1707
CONTRACT ID
PROJECT NO.
COUNTY CASS

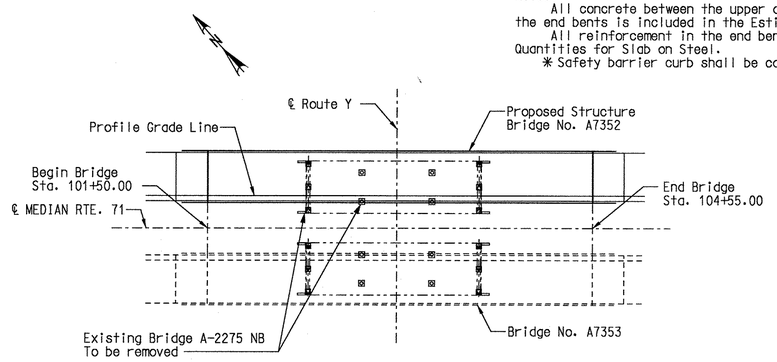
STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

DATE 10-17-2006

ESTIMATED QUANTITIES

	Item		Substr.	Superstr.	Total
	Class 1 Excavation	cu. yard	150	–	150
	Class 1 Excavation in Rock	cu. yard	114	–	114
	Removal of Bridge (A-2275 Northbound)	lump sum	–	–	1
	Bridge Approach Slab (Bridge)	sq. yard	–	214	214
	Structural Steel Piles (14in.)	linear foot	250	–	250
	Pre-Bore for Piling	linear foot	215	–	215
	Pile Point Reinforcement	each	10	–	10
	Class B Concrete (Substructure)	cu. yard	184.8	–	184.8
	Slab on Steel	sq. yard	–	1,374	1,374
*	Safety Barrier Curb	linear foot	–	686	686
	Form Liners	sq. yard	182	–	182
	Reinforcing Steel (Bridges)	pound	19,260	–	19,260
	Conduit System on Structure	lump sum	–	–	1
	Concrete and Masonry Protection System	lump sum	–	–	1
	Sacrificial Graffiti Protection System	lump sum	–	–	1
	Fabricated Structural Carbon Steel (Plate Girder)	pound	–	19,110	19,110
	Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50	pound	–	356,640	356,640
	Slab Drain	each	–	20	20
	Intermediate Field Coat (System G)	sq. foot	–	24,800	24,800
	Finish Field Coat (System G)	sq. foot	–	4,700	4,700
	Vertical Drain at End Bents	each	–	–	2
	Plain Neoprene Bearing Pad	each	–	–	10
	Laminated Neoprene Bearing Pad Assembly	each	–	–	10

Notes:
All concrete between the upper and lower construction joints in the end bents is included in the Estimated Quantities for Slab on Steel.
All reinforcement in the end bents is included in the Estimated Quantities for Slab on Steel.
* Safety barrier curb shall be cast-in-place option or slip-form option.



LOCATION SKETCH

ESTIMATED QUANTITIES FOR SLAB ON STEEL

Item		Total
Class B-2 Concrete	cu. yard	321.1
Reinforcing Steel	pound	21,660
Reinforcing Steel (Epoxy Coated)	pound	88,820

Notes:
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 prestressed panels, 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.

The Estimated Quantities for Slab on Steel are based on square precast prestressed end panels.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Steel.

PILE & FOOTING DATA

	Bent No.		1	2	3	4
Bearing Pile	Pile Type and Size		HP14x73	–	–	HP14x73
	Number		5	–	–	5
	Approximate Length	foot	25	–	–	25
	Design Bearing	ton	84.2	–	–	84.2
	Hammer Energy Required	foot-pound	19,100	–	–	19,100
Spread Footings	Foundation Material		–	Limestone	Limestone	–
	Design Bearing	Tons/Sq. Ft.	–	5.1	5.1	–

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
All piles shall be driven to practical refusal.
Prebore for piles at Bents 1 and 4 to elevation 1050 and 1046, respectively.
Manufactured pile point reinforcement shall be used on all piles in this structure.
In no case shall footings of Bents No. 2 and 3 be placed higher than elevations shown.

GENERAL NOTES AND ESTIMATED QUANTITIES

Detailed JUNE 2006
Checked JUNE 2006

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

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B3

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 9-28-06

STATE OF MISSOURI
WAYNE ALAN DURYEE
NUMBER E-18788
REGISTERED PROFESSIONAL ENGINEER

QU(TSF) P-Penet. E-Equiv. L-Labor.	DEPTH	STANDARD PENETRATION TEST BLOWS/6"	
			ELEV. 1078.3
	2.0		
3.0L	4.0		Brown and gray, fat clay, moist, very stiff
3.4L	6.0		
3.0L	7.0		
1.8L	9.0		
	11	42-10-29	ELEV. 1068.4
	13.5	50/1"	
	16.0	15-40-34	
	18.5	12-50/3"	Brown and white, highly weathered limestone, dry, with brown fat clay layers
	21	4-8-50/4"	
	23.5	50/6"	
	26.0	0-0-0	Auger refusal at 28.0'
	28	50/4"	ELEV. 1050.3

252L	ROCK CORE DEPTH	REC%	RQD%	
	33.0	100	76	Gray and yellow, very finely crystalline limestone, thin to medium bedded, moderately hard, moderately weathered
				ELEV. 1043.3
	38.0	100	27	Gray, calcareous shale, medum bedded, soft, moderately weathered
				ELEV. 1040.3

Boring No. BH1-1

End Bent 1
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1078.1
3.5	4-5-6	Brown and gray, fat clay, moist, medium stiff
8.5	3-3-5	
		ELEV. 1066.1
13	35/2"	Gray, highly weathered limestone Auger Refusal at 13'
		ELEV. 1064.9

Boring No. BH1-2

End Bent 1

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1078.6
5	3-5-7	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1070.6
10	2-4-4	White, highly weathered limestone, some fat clay layers
12.5	50/1"	Auger refusal at 12.5'
		ELEV. 1066.1

Boring No. BH1-3

End Bent 1

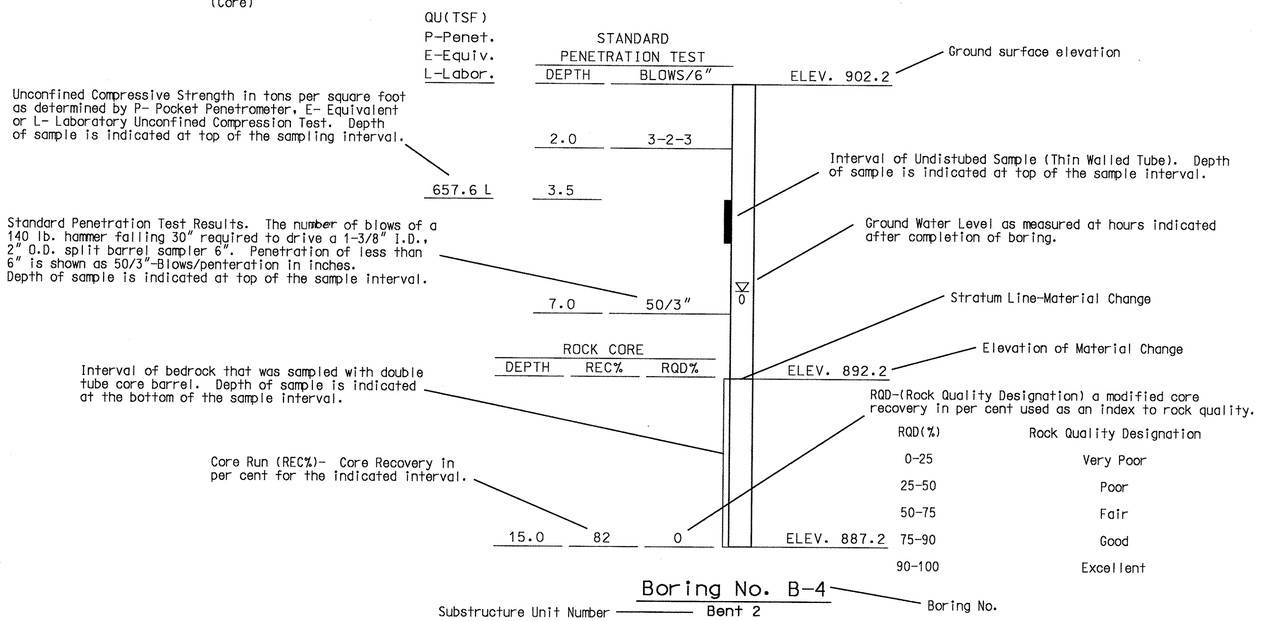
QU(TSF) P-Penet. E-Equiv. L-Labor.	DEPTH	STANDARD PENETRATION TEST BLOWS/6"	
			ELEV. 1076.0
	3.0	3-4-4	Brown and gray, fat clay, moist, medium stiff to stiff
	8.0	3-5-5	
			ELEV. 1066.5
	13	50/5"	White and yellow, highly weathered limestone Auger refusal at 13.5'
			ELEV. 1062.5

ROCK CORE DEPTH	REC%	RQD%	
15.0	100	0	Gray and yellow, very finely crystalline, limestone, thin bedded, moderately hard, highly weathered
			ELEV. 1059.2
20.0	26	0	Possible void or clay layer
			ELEV. 1056.4
25.0	100	71	Yellow and gray, very finely crystalline, limestone, medium bedded, moderately hard, moderately weathered, some yellow shale bands
332L 30.0	100	53	becoming slightly weathered at 28'
450L			ELEV. 1042.5
35.0	100	56	Gray, calcareous shale, thin bedded, moderately weathered
32L			ELEV. 1038.0
40.0	100	18	Gray shale, thinly laminated, soft, moderately weathered
45.0	100	–	ELEV. 1031.0

Boring No. BH2-1

Bent 2
(Core)

TYPICAL BORING



GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, between December 16, 2005 and January 11, 2006, by Geotechnology, Inc.
For boring locations in plan, see Sheet No. 1.
The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.
The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.
For notice and disclaimer regarding boring log data, see Sheet No. 1.

BORING DATA

USER: TThompson
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Detailed 2006
Checked 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B4

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 9-28-06

STATE OF MISSOURI
WAYNE ALAN DURYEE
NUMBER E-18780
REGISTERED PROFESSIONAL ENGINEER

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1078.8
4.5	3-3-5	Brown, fat clay, moist, medium stiff
		ELEV. 1070.8
9.5	2-6-7	White and brown, highly weathered limestone
14	50/2"	Auger refusal at 14.3'
		ELEV. 1064.5

ROCK CORE

	DEPTH	REC%	RQD%	
330L	17.0	85	31	Gray, very finely crystalline limestone, thick bedded moderately hard, moderately weathered
410L	22.0	96	32	
	27.0	100	50	
430L	32.0	98	53	
				ELEV. 1044.2
				Gray shale, medium bedded, moderately hard, slightly weathered
110L	37.0	98	75	ELEV. 1042.8
				Gray, calcareous shale, medium bedded, moderately hard, slightly weathered
	42.0	100	32	ELEV. 1039.2
				Gray shale, thinly laminated, moderately hard, slightly weathered
	47.0	98	*	
	47	50/5"		ELEV. 1031.3

* Shale, RQD not calculated

Boring No. BH2-2

Bent 2
(Core)

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1074.9
4.5	3-5-6	Gray and brown, fat clay, moist, stiff
		ELEV. 1067.9
9.5	35/1"	White, highly weathered limestone
		Auger refusal at 10.0'
		ELEV. 1064.9

Boring No. BH3-1

Bent 3

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1075.4
4.5	2-3-4	Brown and gray, fat clay, moist, medium stiff
		ELEV. 1066.9
9.5	15-6-3	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1063.4
14.5	50/3"	Yellow, highly weathered limestone
19.0	50/1"	Auger refusal at 19.0'
		ELEV. 1056.4

ROCK CORE

	DEPTH	REC%	RQD%	
				Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
				ELEV. 1055.0
				Fat clay, some highly weathered limestone layers
680L	26.5	19	0	ELEV. 1048.9
				Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
				ELEV. 1046.4
	31.5	96	63	Gray shale, thin bedded, moderately hard, slightly weathered
136L				ELEV. 1045.4
	36.5	96	48	Gray, very fine crystalline, argillaceous limestone, thick bedded, moderately hard, slightly weathered
				ELEV. 1041.4
	41.5	100	*	Gray shale, thinly laminated, moderately hard, moderately weathered becoming slightly weathered at 37.0'
	46.5	96	*	
	51.5	100	*	ELEV. 1023.9

* Shale, RQD not calculated

Boring No. BH3-2

Bent 3
(Core)

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

USER: TThompson
PLOTTED: 27-SEP-2006 15:50 K:\B41354\Plans\A7352\Drawings\ZPLOT_T04.dgn

Detailed 2006
Checked 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	13

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
WAYNE ALAN DURYEE
NUMBER E-16780
REGISTERED PROFESSIONAL ENGINEER

DATE 10-17-06

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"		
			ELEV. 1072.1	Brown and gray, fat clay, moist, medium stiff
0.9L	2.0			
1.4L	4.0			
	6.0			
			ELEV. 1065.1	
	8.5	30/2"		Highly weathered limestone
				Auger refusal at 8.5'
			ELEV. 1063.6	
	ROCK CORE DEPTH	REC%	RQD%	Gray and yellow, very finely crystalline limestone, thin bedded, moderately hard, highly weathered, with fat clay seams
			ELEV. 1060.5	
	15.1	36	18	
				Fat clay layer - 8"
			ELEV. 1059.8	
	20.1	50	36	Gray and yellow, very finely crystalline to aphanitic limestone, thin bedded, moderately hard to hard, moderately weathered, cherty, with fat clay seams
			ELEV. 1051.0	
385L	25.1	84	64	Gray, very finely crystalline to aphanitic limestone, thick bedded, moderately hard to hard, moderately to slightly weathered, cherty, with shale bands
			ELEV. 1047.0	

Boring No. BH4-1

End Bent 4
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1072.5
3.5	3-4-5	Gray and brown, fat clay, moist, stiff to soft
		ELEV. 1062.5
8.5	1-1-1	
13.5	50/4"	White and brown, highly weathered limestone, some gray fat clay layers
18.5	1-1-1	
23.5	3-4-5	Auger refusal. Sheared bottom auger at 26.0'. Refer to offset Boring No. BH4-2A for log of rock.
		ELEV. 1046.5

Boring No. BH4-2

End Bent 4
(Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"		
			ELEV. 1072.0	Refer to Boring No. BH4-2 for log of soil.
				Auger refusal at 23.0'
			ELEV. 1049.0	
	ROCK CORE DEPTH	REC%	RQD%	White and yellow, very finely crystalline limestone, medium bedded, moderately hard, moderately weathered
584L	25.0	90	41	
			ELEV. 1046.0	
				Core loss - 24 inches
			ELEV. 1044.0	
	30.0	52	12	Gray, calcareous shale, soft, moderately weathered
			ELEV. 1040.0	
	35.0	86	*	
	40.0	100	*	Gray shale, soft, thinly laminated, slightly weathered
	45.0	100	*	
	50.0	100	*	
	50	35/3"		ELEV. 1021.7

* Shale, RQD not calculated

Boring No. BH4-2A

End Bent 4
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1073.0
4.0	2-3-6	Brown, fat clay, moist, medium stiff
		ELEV. 1064.5
9.0	22-38-50/3"	Yellow and white, highly weathered limestone
		Auger refusal at 13.0'
		ELEV. 1060.0

Boring No. BH4-3

End Bent 4

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

USER: TThompson
PLOTTED: 17-OCT-2006 11:47 K:\B41354\Plans\A7352\Drawings\ZPLOT_T05.dgn

Detailed 2006
Checked 2006

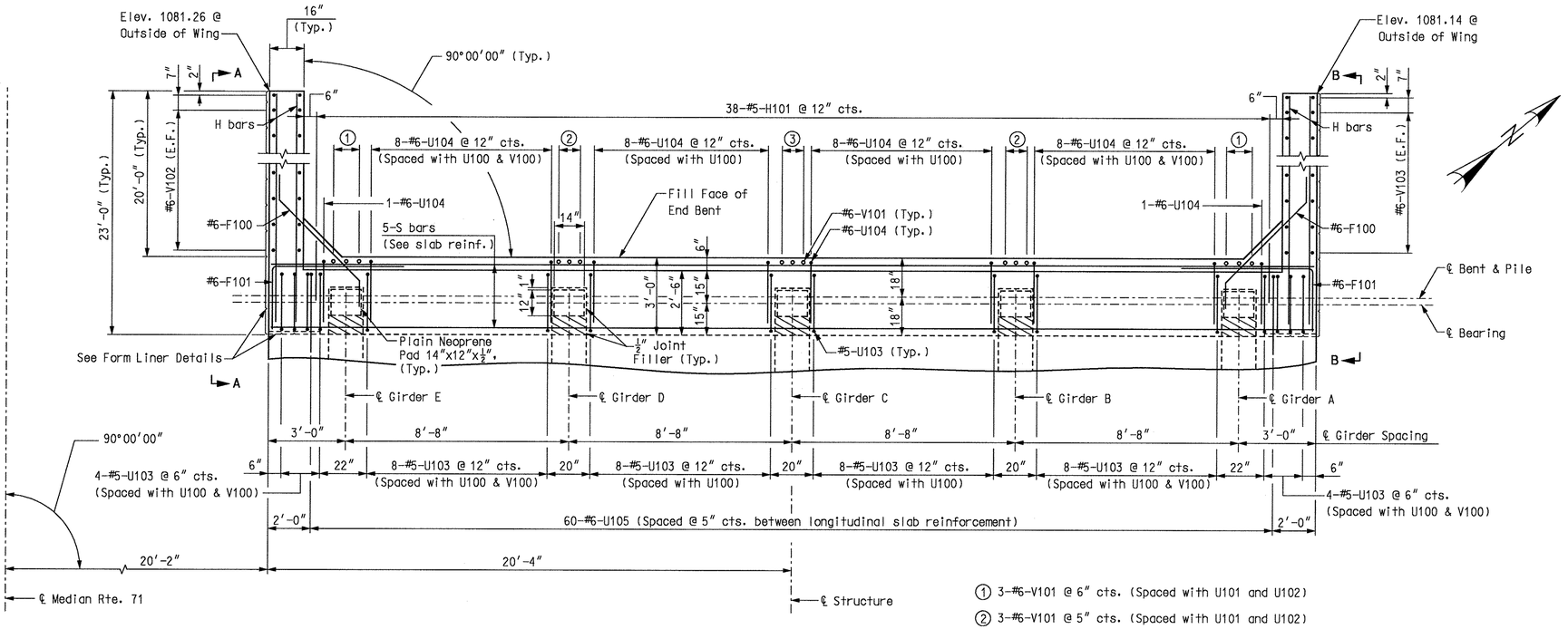
Note: This drawing is not to scale. Follow Dimensions.

A7352

HNTB

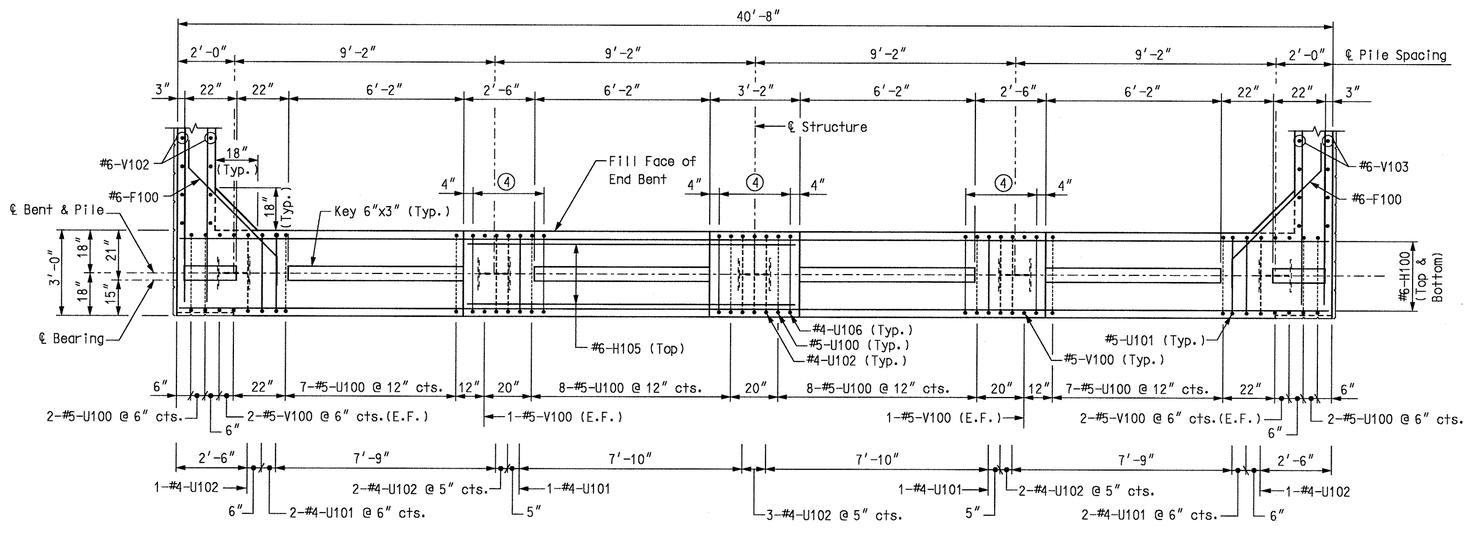
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	86
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	10-17-2006		

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER PE-2007G — REGISTERED PROFESSIONAL ENGINEER



PLAN OF DIAPHRAGM

① 3-#6-V101 @ 6" cts. (Spaced with U101 and U102)
② 3-#6-V101 @ 5" cts. (Spaced with U101 and U102)
③ 3-#6-V101 @ 5" cts. (Spaced with U102)
④ 6-#4-U106 @ 6" cts.



PLAN OF BEAM

Notes:
For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.
Bend F100 bars in field to clear girders.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.
For Form Liner Details, see Sheet No. 35.
For details of Elevation A-A and B-B, see Sheet No. 8.
For Sections and Typical Section Thru Key, see Sheet No. 7.

✱✱ SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1

Item		Quantity
Class 1 Excavation	cu. yard	80
Structural Steel Piles (14")	linear foot	125
Pre-Bore for Piling	linear foot	110
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.7
Form Liners	sq. yard	46

✱✱ These quantities are included in the estimated quantities table on Sheet No. 2.

END BENT 1 – PLAN

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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B7

JOB NO. J4P1707

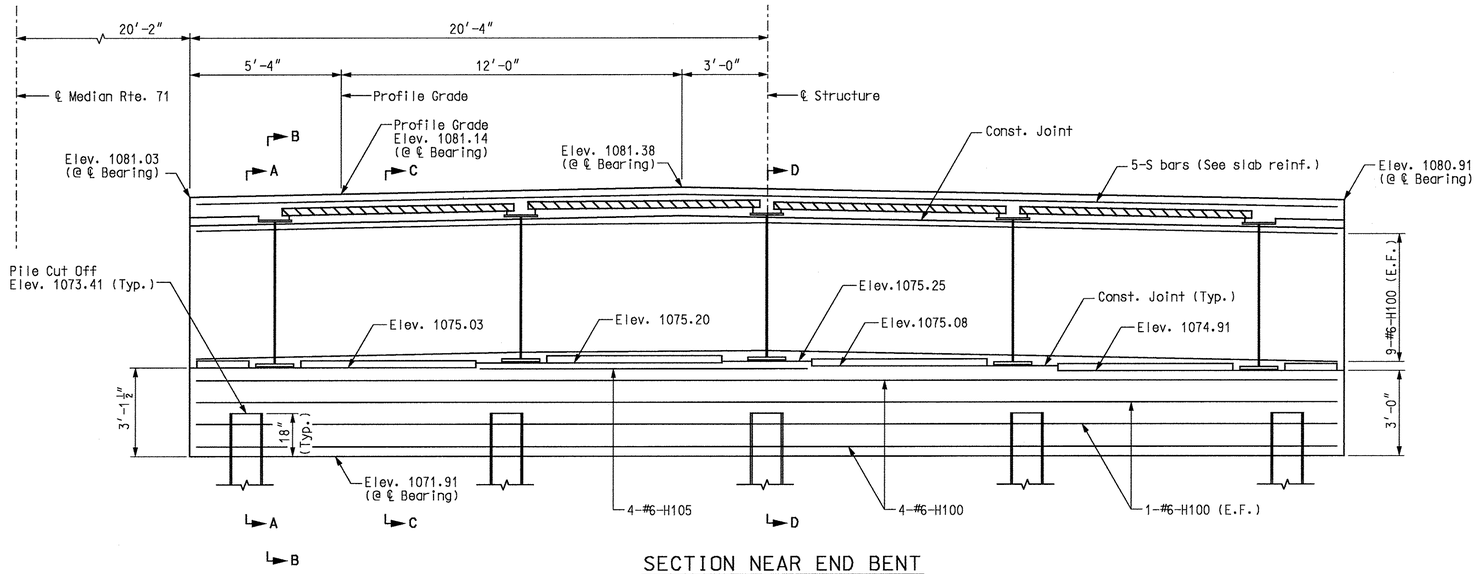
CONTRACT ID

PROJECT NO.

COUNTY CASS

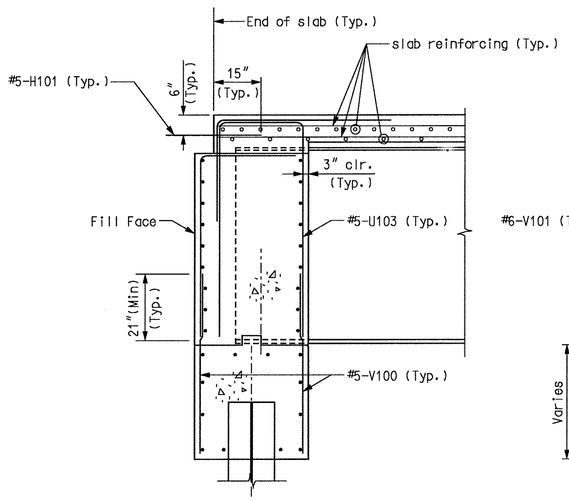
STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-29176 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

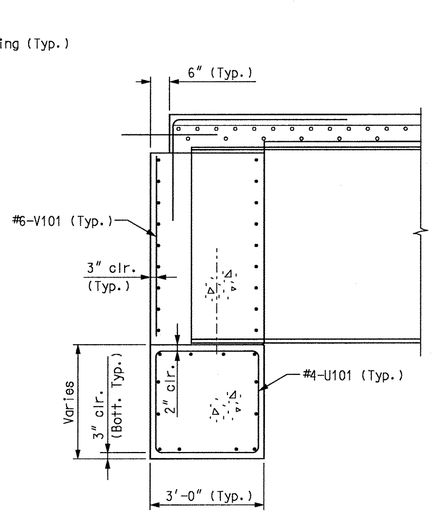


SECTION NEAR END BENT

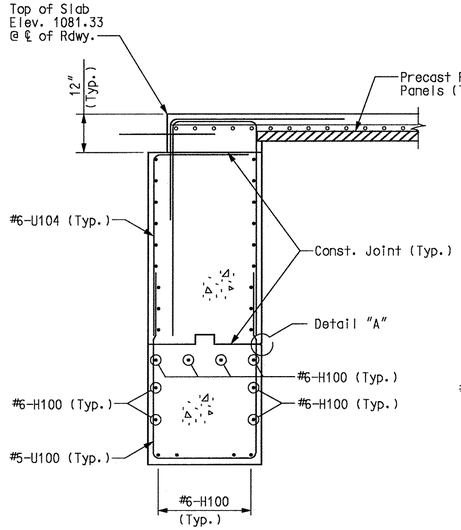
(Looking Back Station)



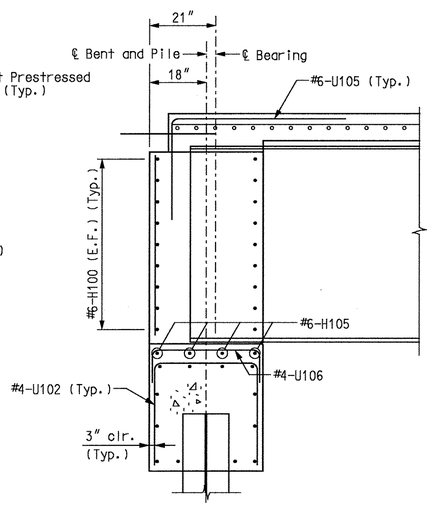
SECTION A-A



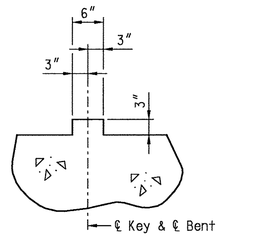
SECTION B-B



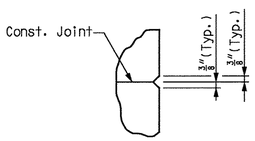
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 6 & 8.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 1 - ELEVATION

Detailed JUNE 2006
Checked JUNE 2006

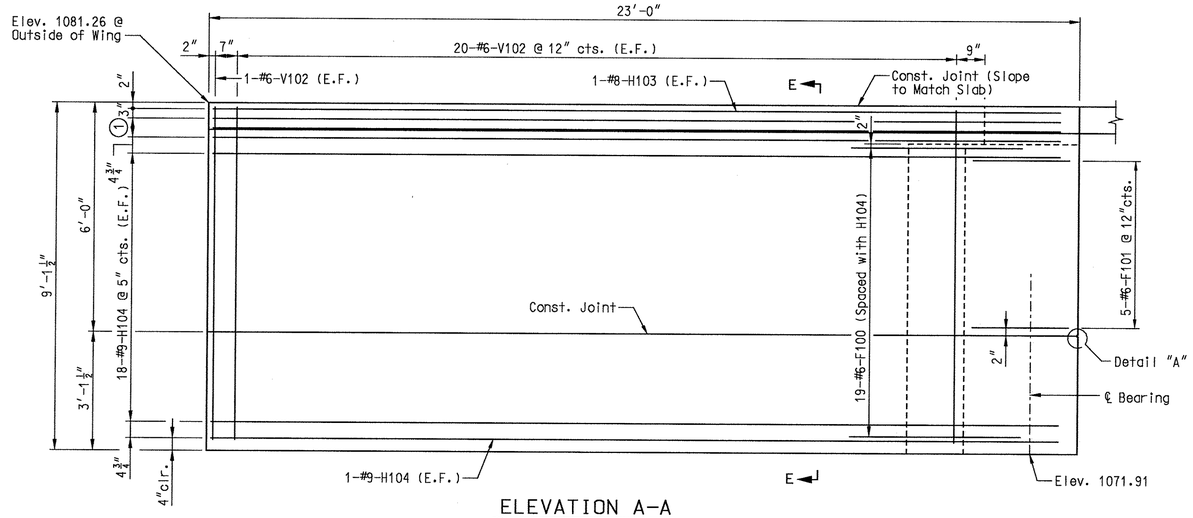
Note: This drawing is not to scale. Follow Dimensions.

A7352

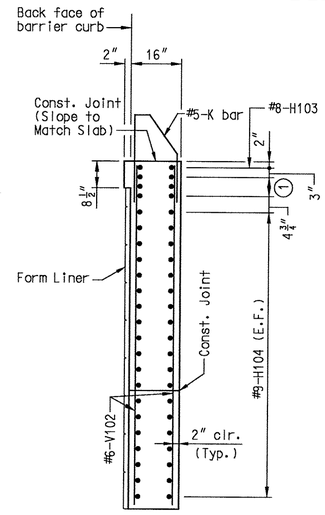
HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B8
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	09-28-2006		

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

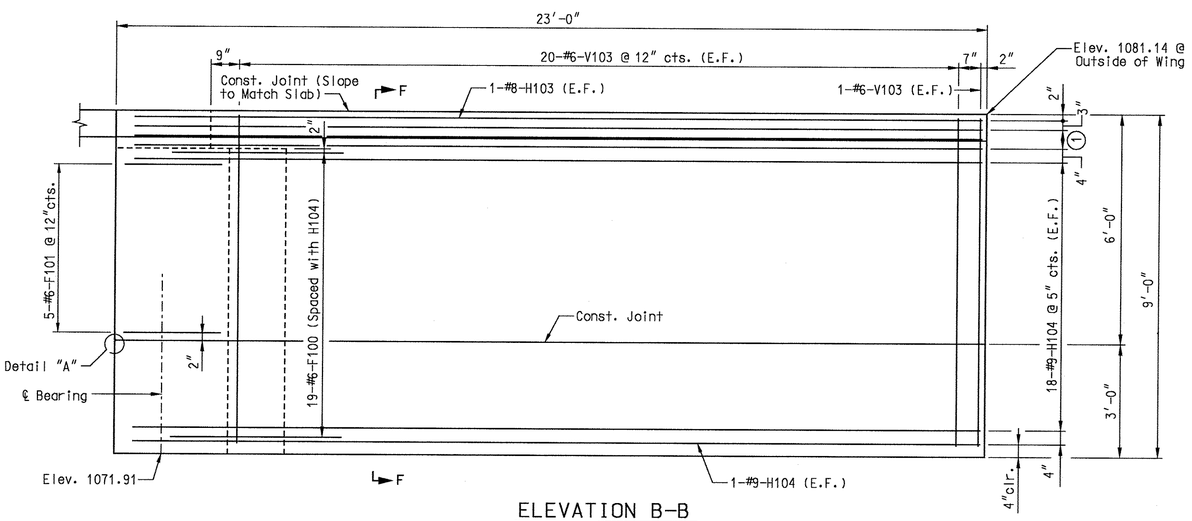


ELEVATION A-A

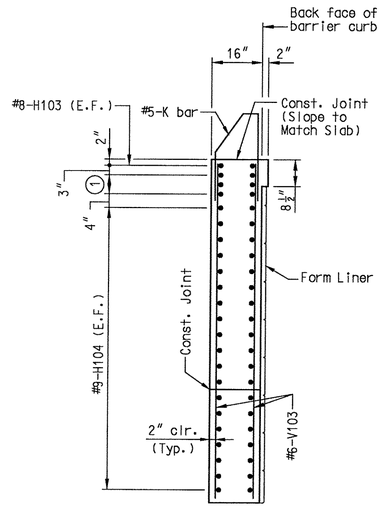


SECTION E-E

① 3-#8-H102 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 7.
For Form Liner Details, see Sheet No. 35.

END BENT 1 - WING DETAILS

USER: TThompson
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Detailed JUNE 2006
Checked JUNE 2006

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

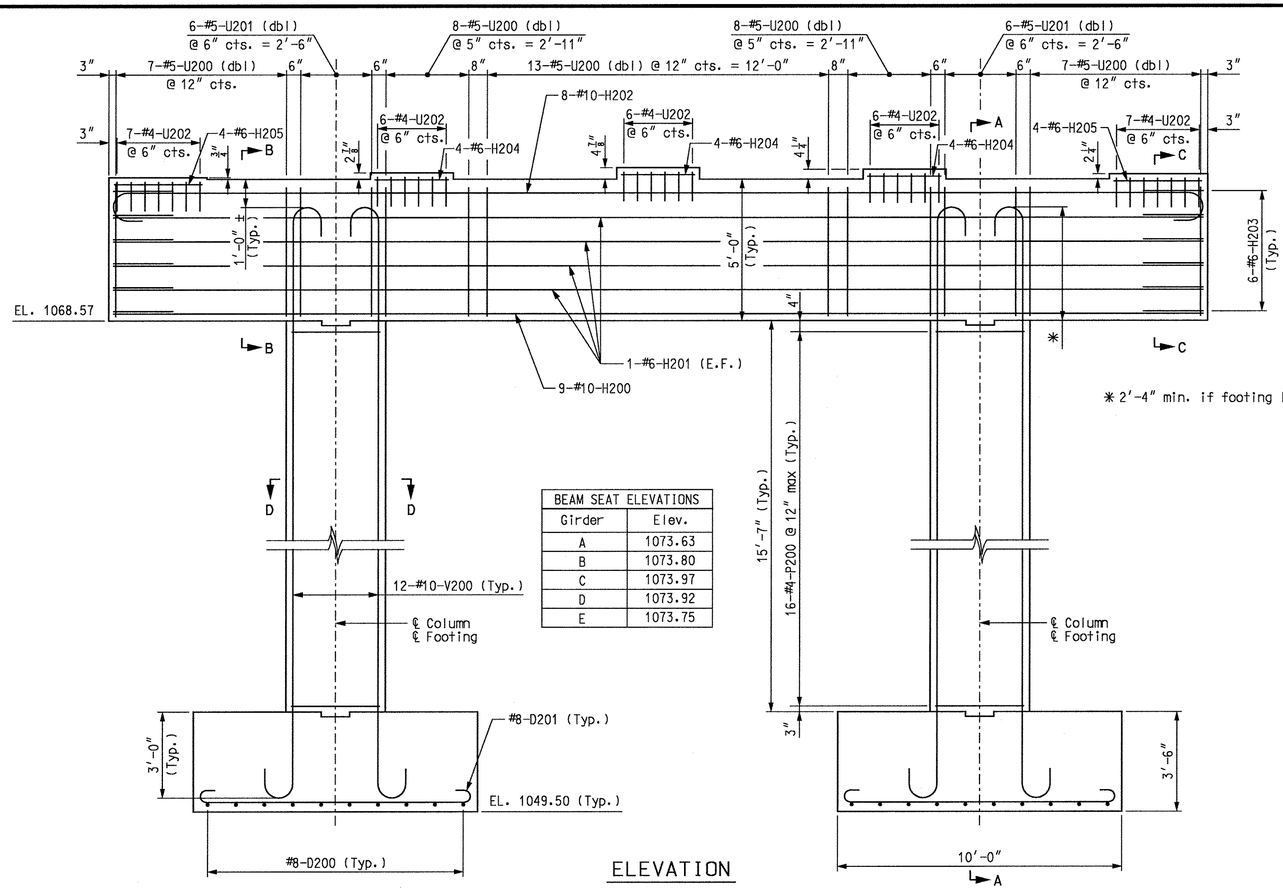
A7352

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	89
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

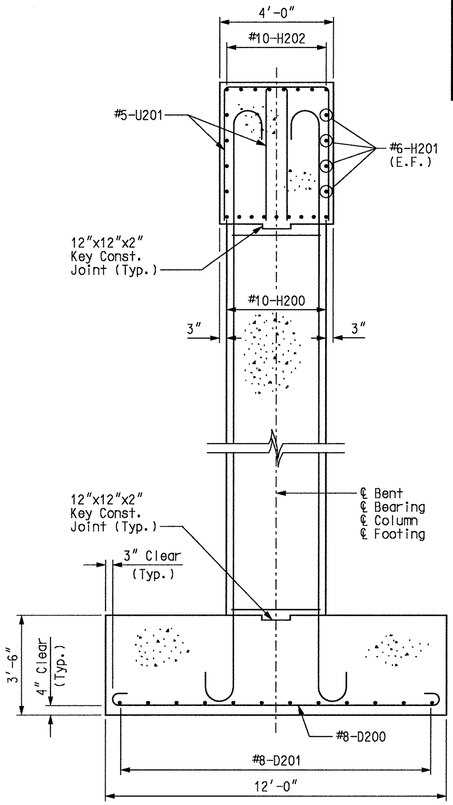
DATE 10-25-2006

STATE OF MISSOURI — THOMAS J. JOSEPH WISSEHRMAN — NUMBER E-25076 — REGISTERED PROFESSIONAL ENGINEER

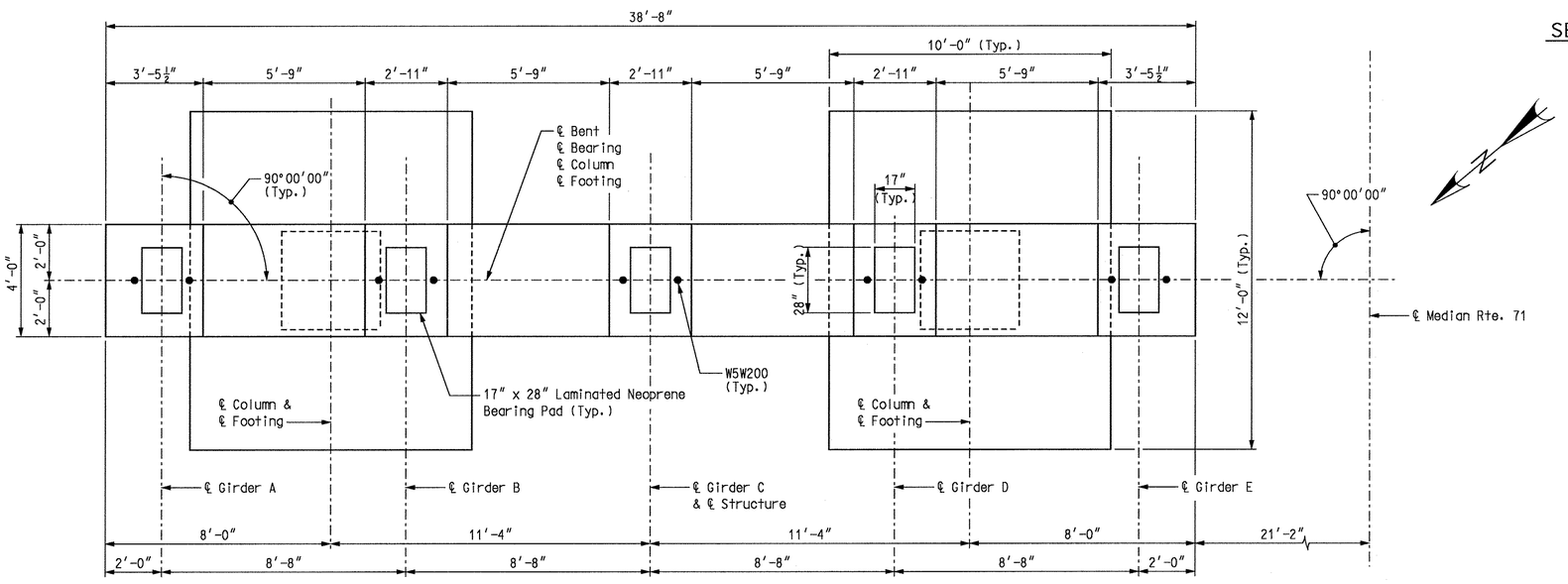
HNTB



ELEVATION



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 10.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 2

Item		Quantity
Class 1 Excavation in Rock	cu. yard	52
Class B Concrete (Substructure)	cu. yard	72.5
Form Liners	sq. yard	48
Reinforcing Steel (Bridges)	pound	9,700

*** These quantities are included in the estimated quantities table on Sheet No. 2.

BENT 2 – DETAILS

USER: sgerhartz
PLOTTED: 25-OCT-2006 11:09
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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B10

JOB NO. J4P1707

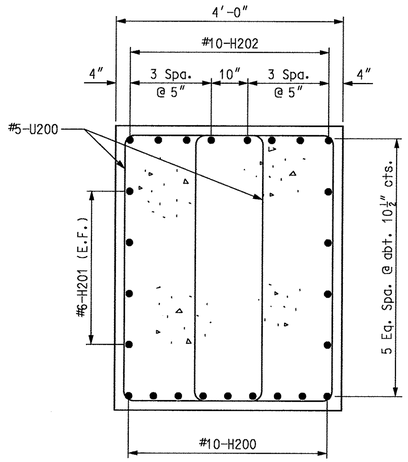
CONTRACT ID

PROJECT NO.

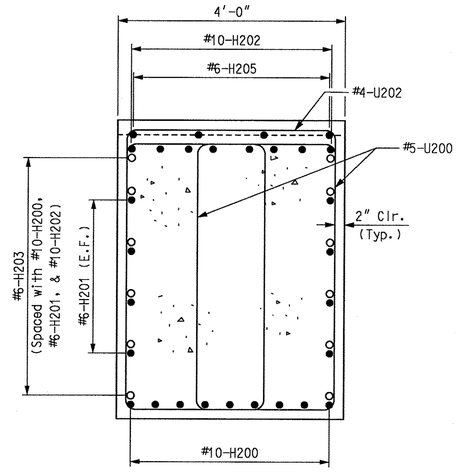
COUNTY CASS

DATE 09-28-2006

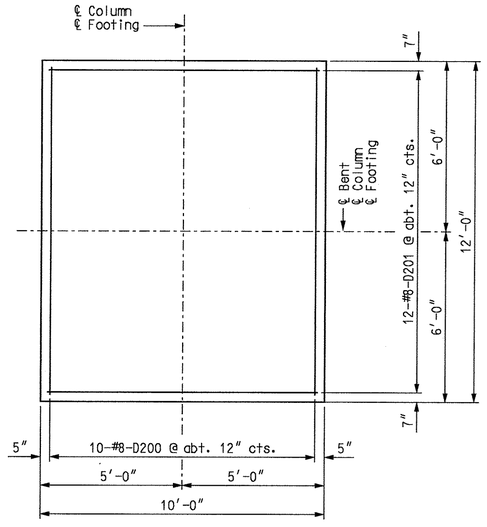
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25576
REGISTERED PROFESSIONAL ENGINEER



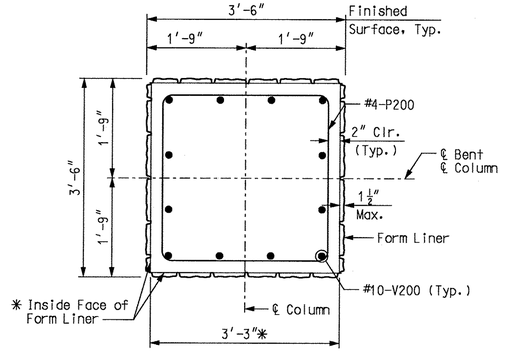
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 2 - DETAILS

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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B11

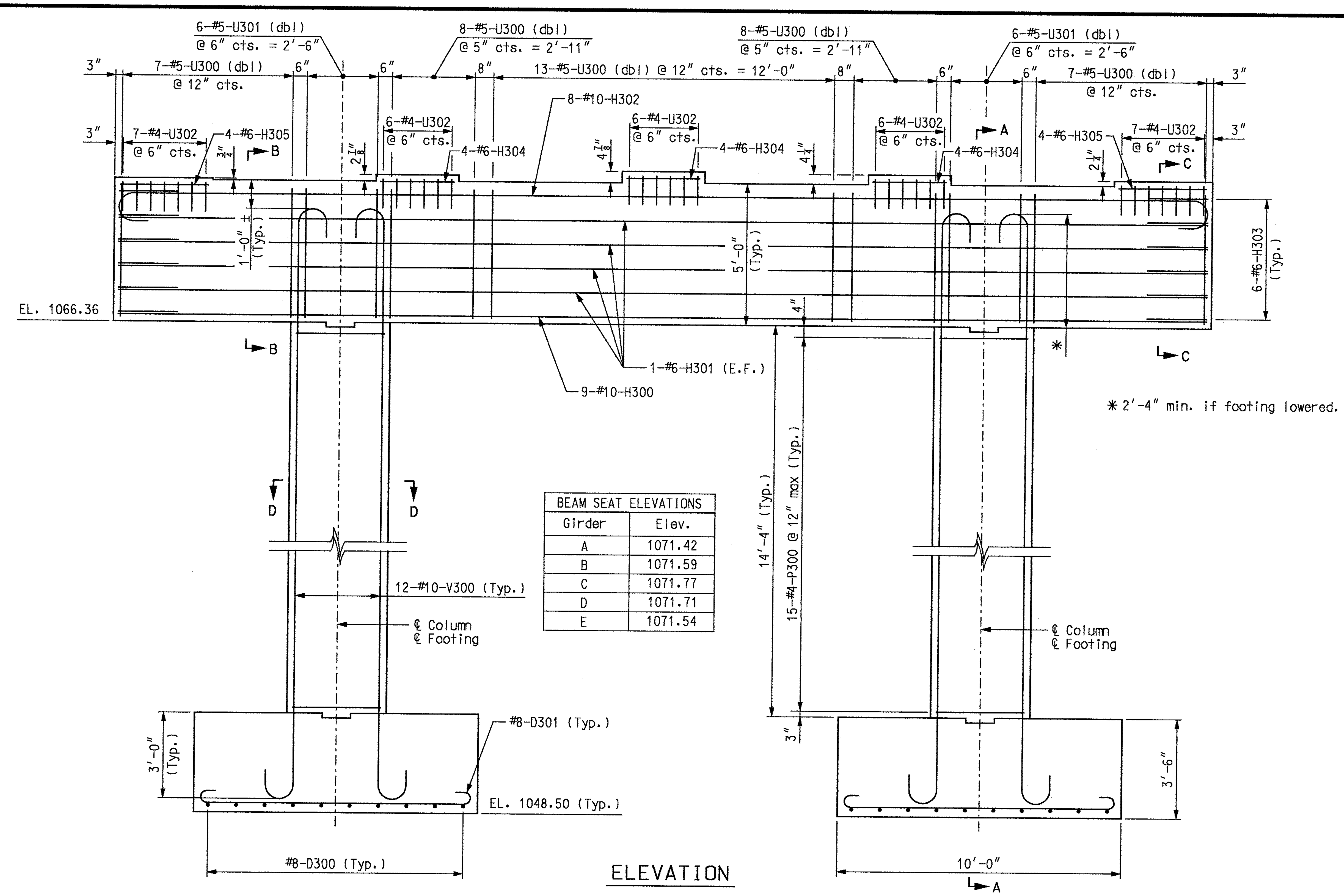
JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

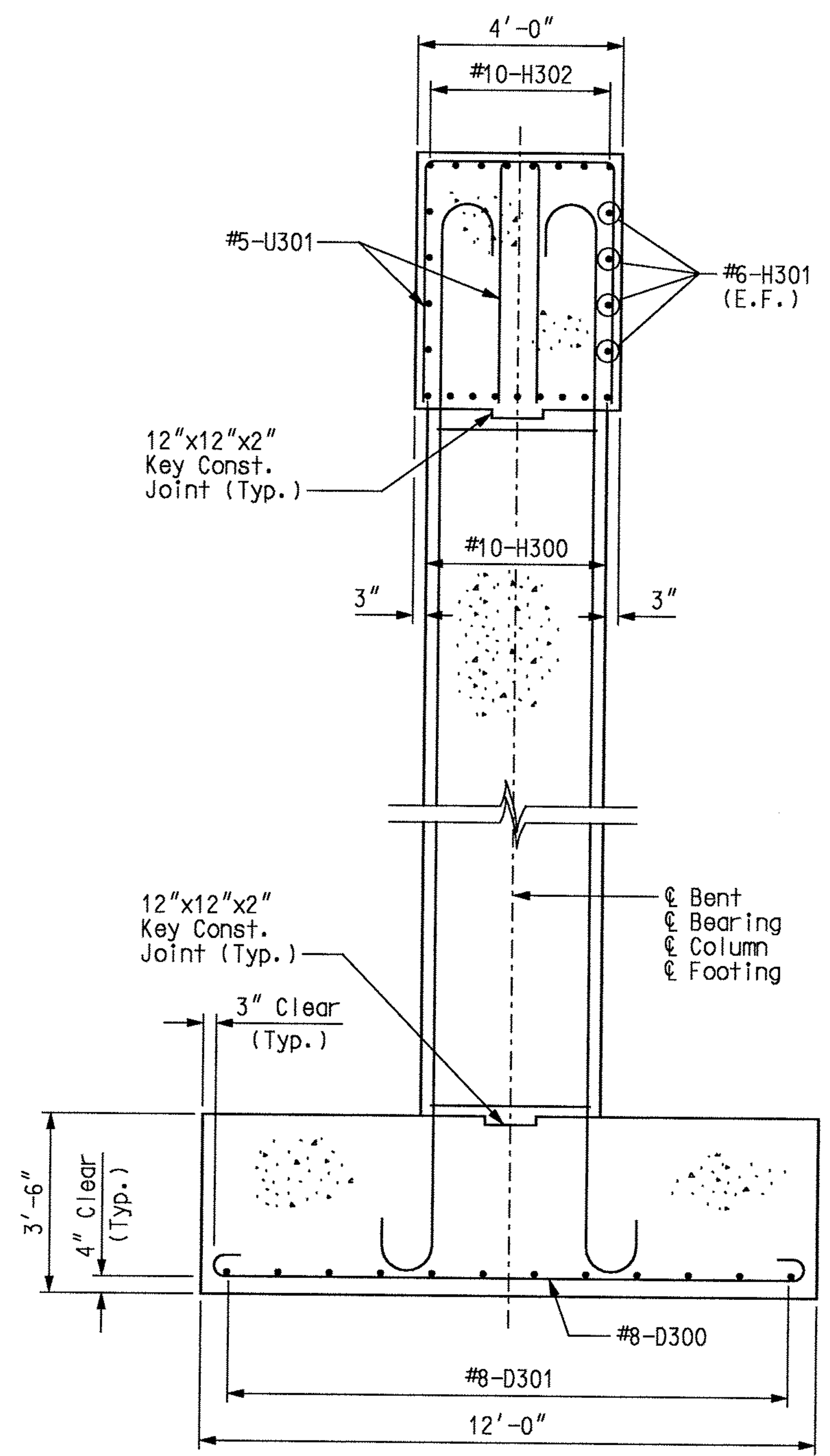
COUNTY CASS

DATE 10-25-2006

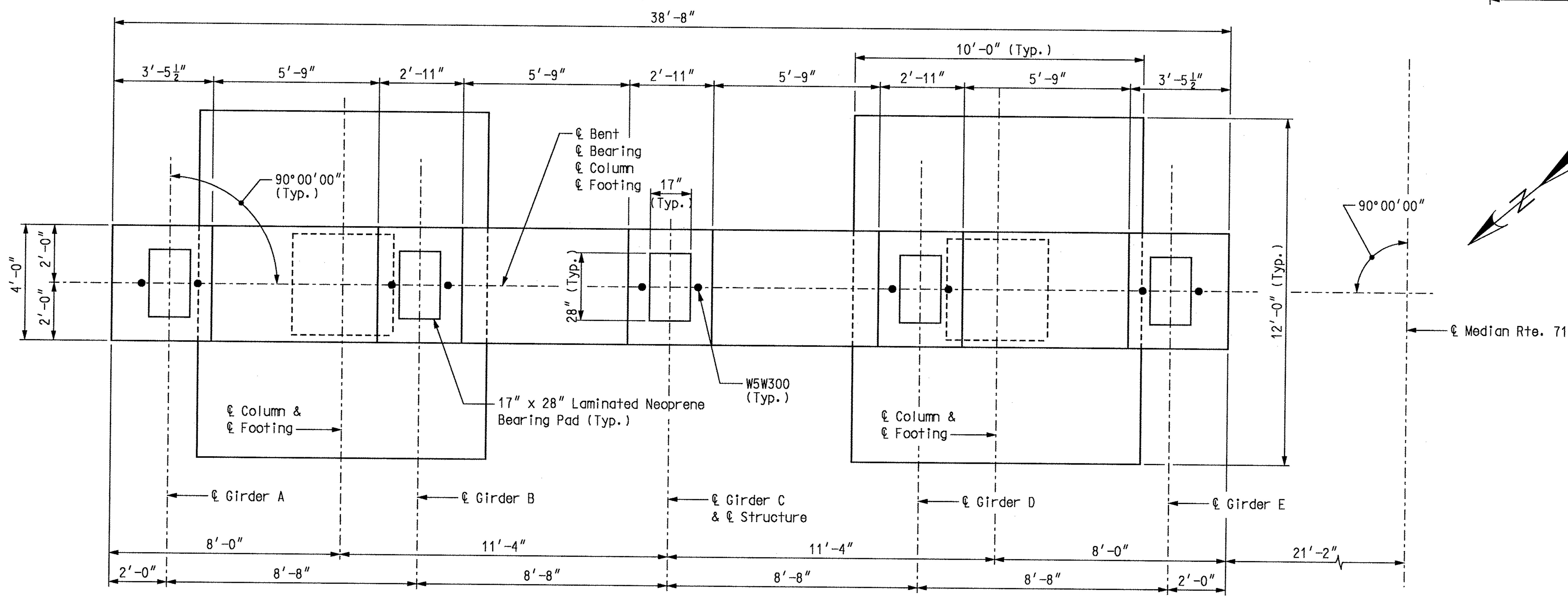


BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1071.42
B	1071.59
C	1071.77
D	1071.71
E	1071.54

ELEVATION



SECTION A-A



PLAN

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

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 12.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least $\frac{1}{2}$".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 3

Item		Quantity
Class 1 Excavation in Rock	cu. yard	62
Class B Concrete (Substructure)	cu. yard	71.5
Form Liners	sq. yard	45
Reinforcing Steel (Bridges)	pound	9,560

*** These quantities are included in the estimated quantities table on Sheet No. 2.

BENT 3 - DETAILS

Detailed JUNE 2006
Checked JUNE 2006

USER: sgerhartz K:\B41354\Plans\A7352\Drawings\ZPLOT_T12.dgn
PLOTTED: 25-OCT-2006 11:09

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B12

JOB NO. J4P1707

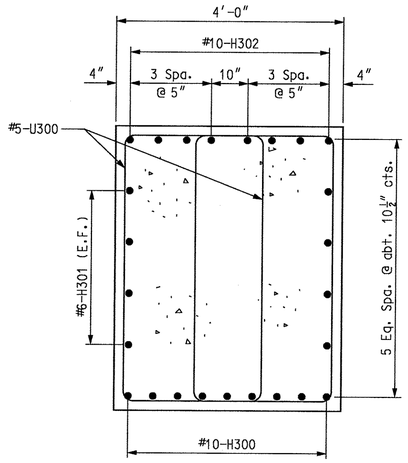
CONTRACT ID

PROJECT NO.

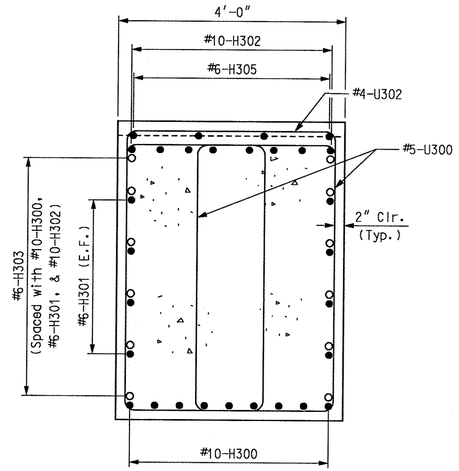
COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

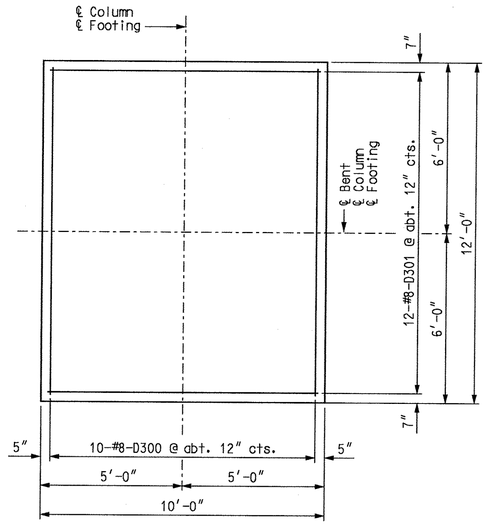
DATE 09-28-2006



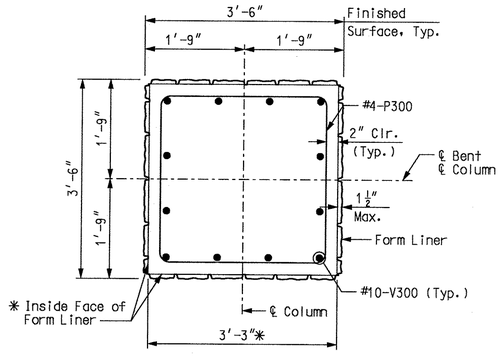
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 3 - DETAILS

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Detailed JUNE 2006
Checked JUNE 2006

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

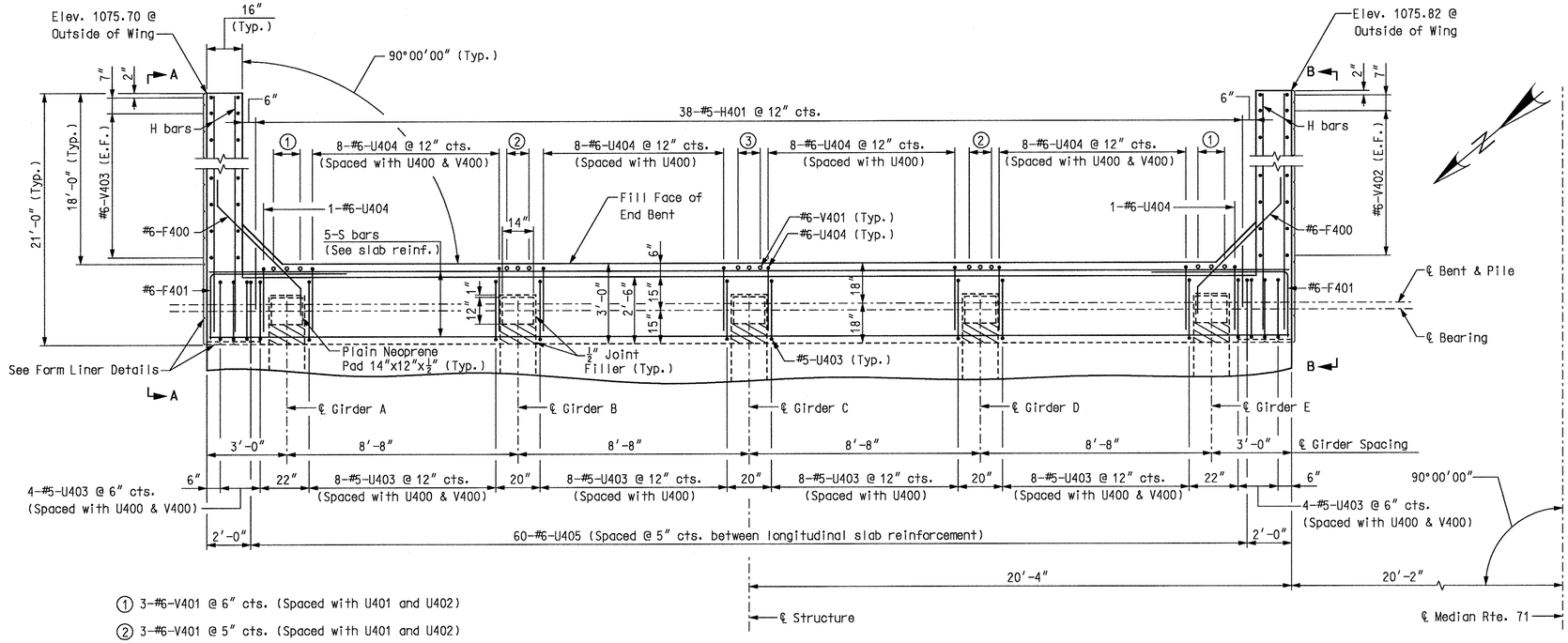
A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B13
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25576 — REGISTERED PROFESSIONAL ENGINEER

DATE 10-17-2006



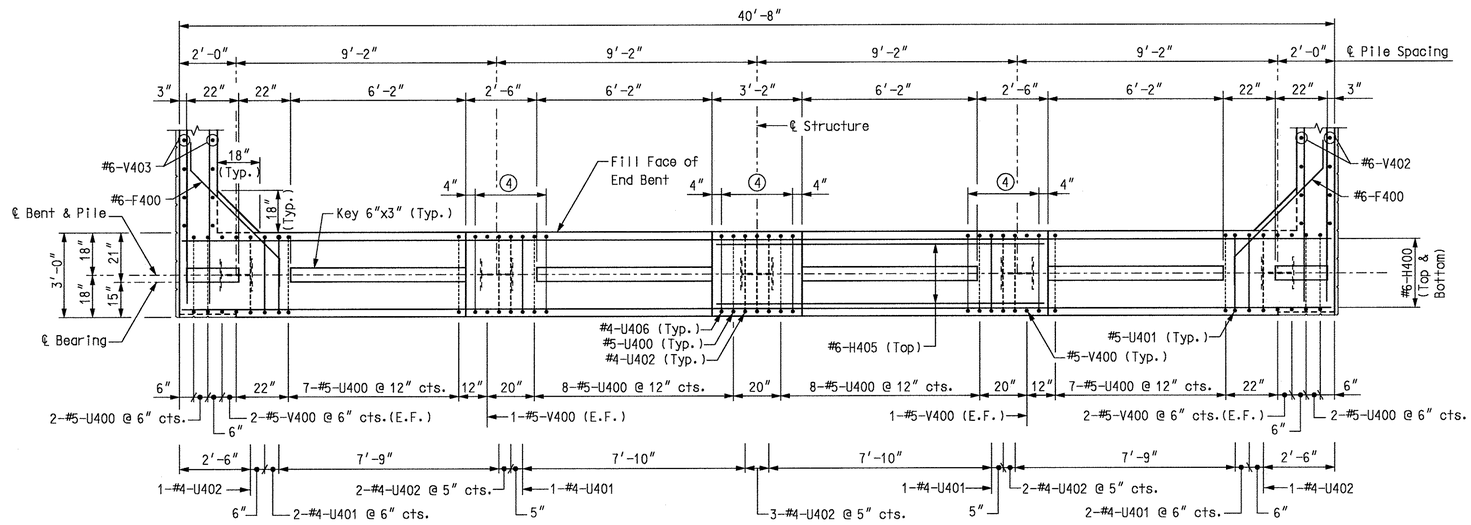
① 3-#6-V401 @ 6" cts. (Spaced with U401 and U402)

② 3-#6-V401 @ 5" cts. (Spaced with U401 and U402)

③ 3-#6-V401 @ 5" cts. (Spaced with U402)

PLAN OF DIAPHRAGM

④ 6-#4-U406 @ 6" cts.



PLAN OF BEAM

Notes:

For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.

Bend F400 bars in field to clear girders.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

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

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

For Form Liner Details, see Sheet No. 35.

For details of Elevation A-A and B-B, see Sheet No. 15.

For Sections and Typical Section Thru Key, see Sheet No. 14.

✻✻ SUBSTRUCTURE QUANTITY TABLE FOR END BENT 4

Item		Quantity
Class 1 Excavation	cu. yard	70
Structural Steel Piles (14")	linear foot	125
Pre-Bore for Piling	linear foot	105
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.1
Form Liners	sq. yard	43

✻✻ These quantities are included in the estimated quantities table on Sheet No. 2.

END BENT 4 – PLAN

USER: TThompson
PLOTTED: 17-OCT-2006 11:53
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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B14

JOB NO. J4P1707

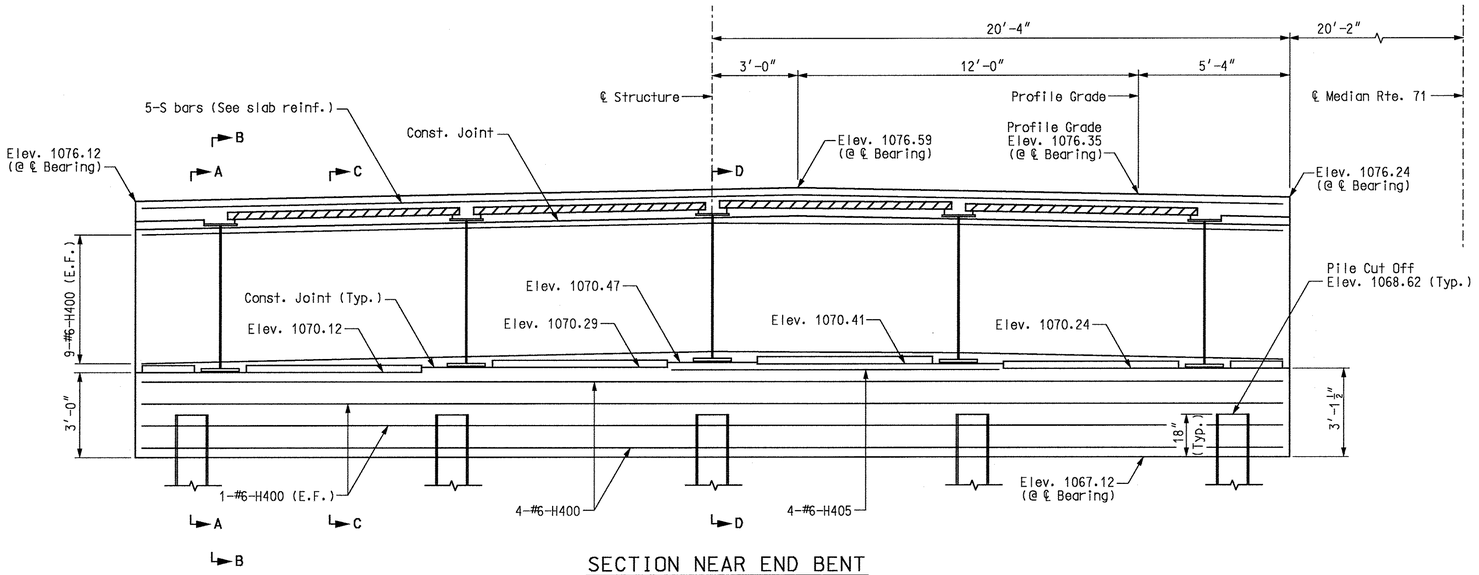
CONTRACT ID

PROJECT NO.

COUNTY CASS

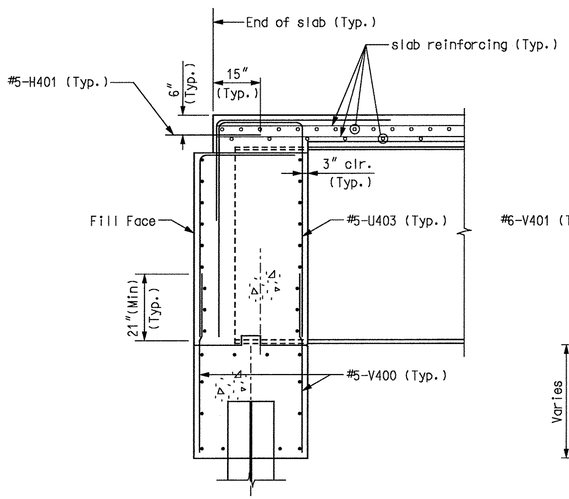
DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-26576 — PROFESSIONAL ENGINEER

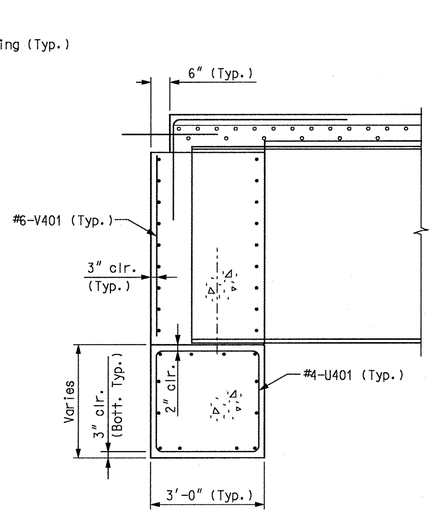


SECTION NEAR END BENT

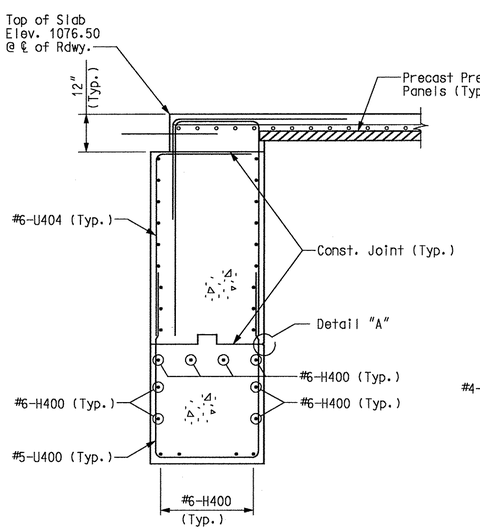
(Looking Ahead Station)



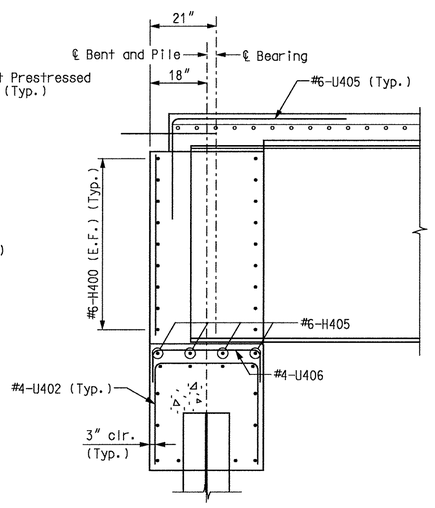
SECTION A–A



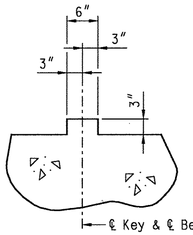
SECTION B–B



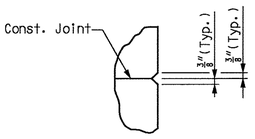
SECTION C–C



SECTION D–D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 13 & 15.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 4 – ELEVATION

USER: TThompson
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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B15

JOB NO. J4P1707

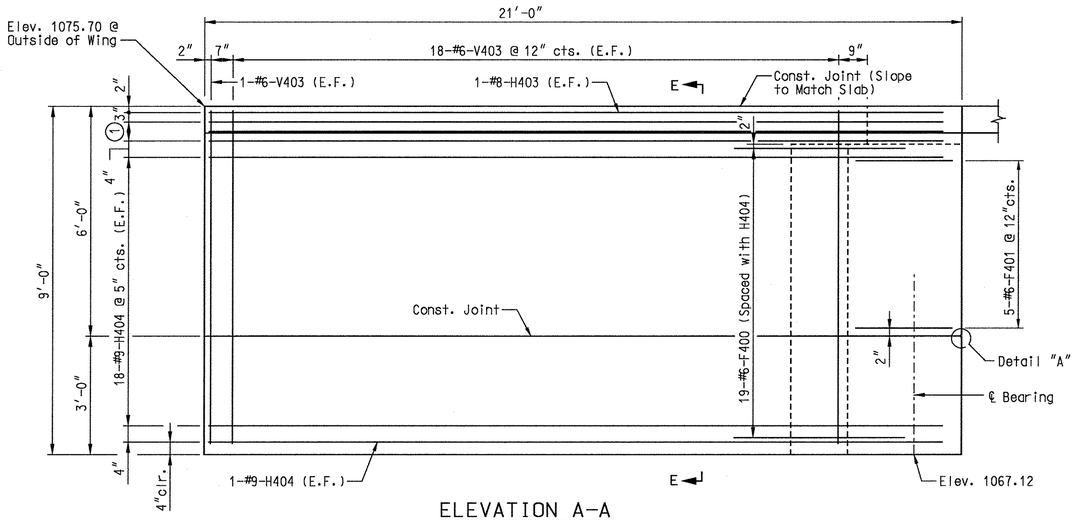
CONTRACT ID

PROJECT NO.

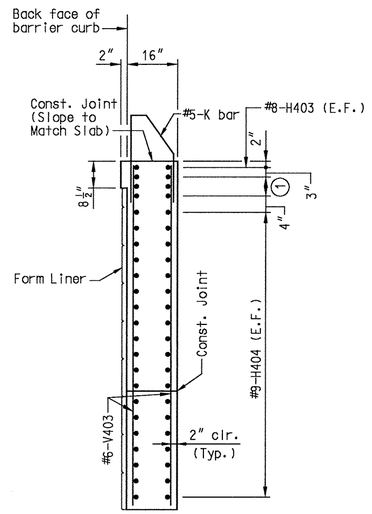
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-29176 — REGISTERED PROFESSIONAL ENGINEER

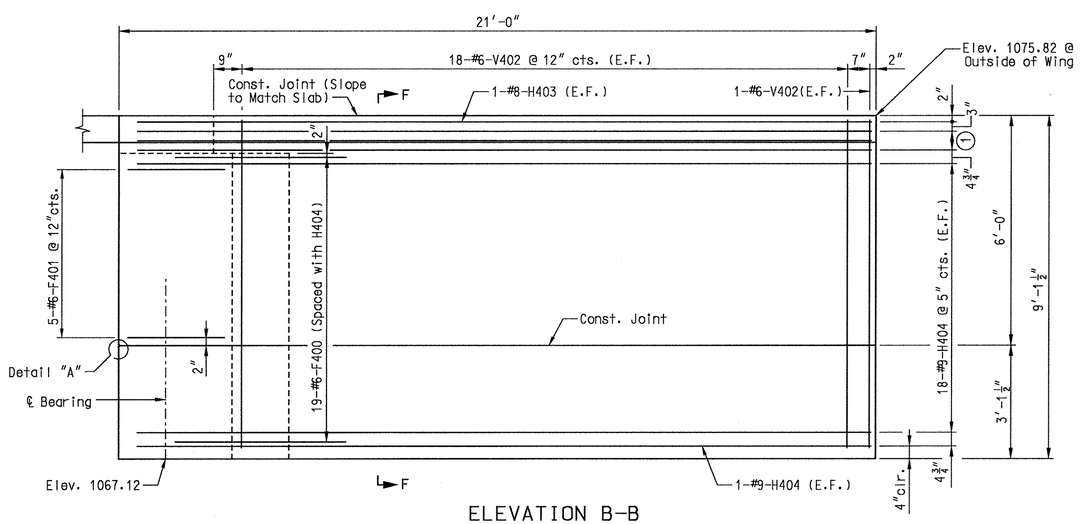


ELEVATION A-A

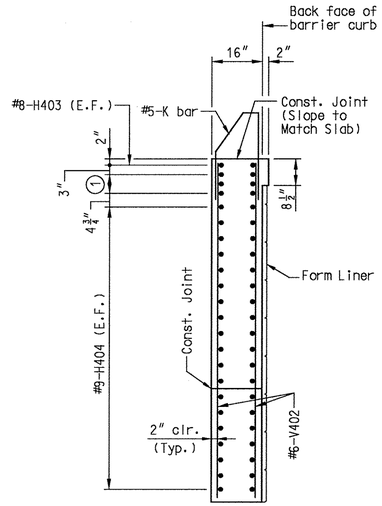


SECTION E-E

① 3-#8-H402 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 14.
For Form Liner Details, see Sheet No. 35.

END BENT 4 - WING DETAILS

USER: TThompson
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Detailed JUNE 2006
Checked JUNE 2006

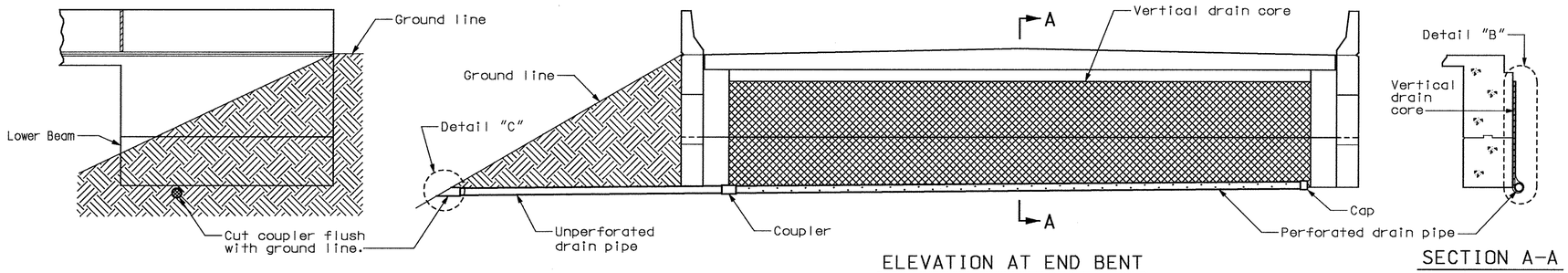
Note: This drawing is not to scale. Follow Dimensions.

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B16
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			
DATE 09-28-2006			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER



ELEVATION OF WING

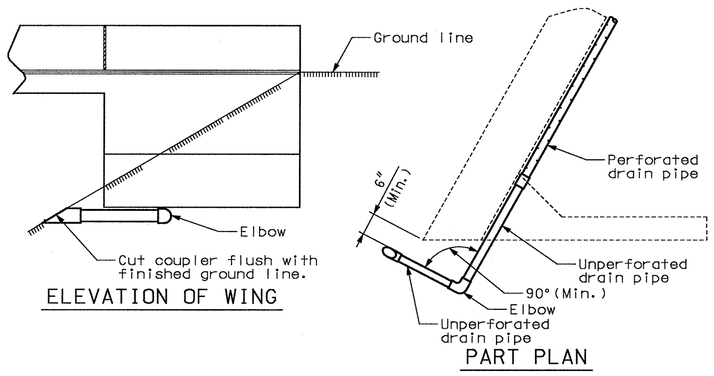
ELEVATION AT END BENT

SECTION A-A

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

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (See elevation at end bent.)

Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

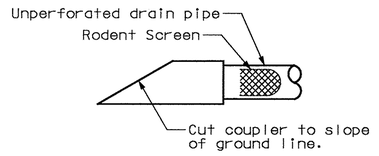


ELEVATION OF WING

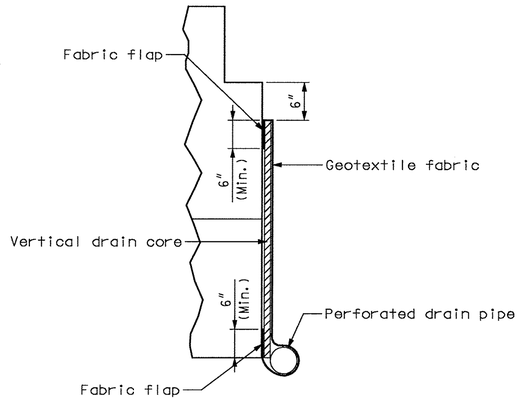
PART PLAN

OPTIONAL BENT DRAIN (*)

(*) Only if rock is encountered at outside of wing.



DETAIL "C"



DETAIL "B"

VERTICAL DRAIN AT END BENTS

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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B17

JOB NO. J4P1707

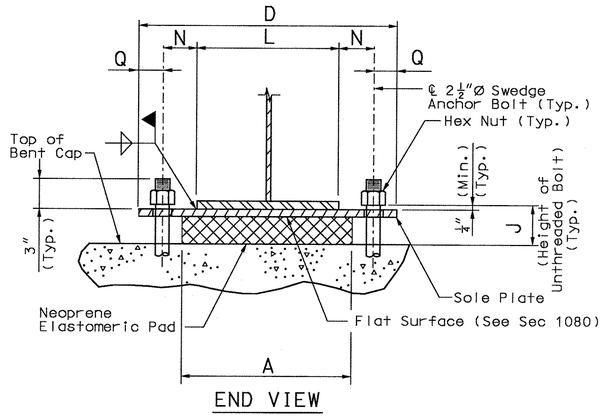
CONTRACT ID

PROJECT NO.

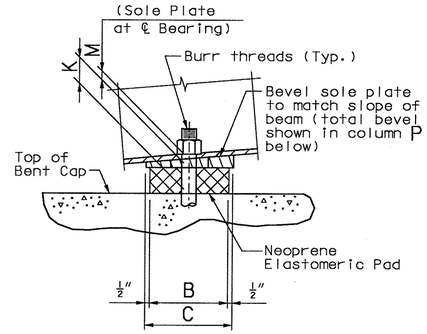
COUNTY CASS

DATE 09-28-2006

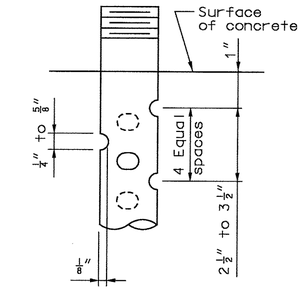
STATE OF MISSOURI THOMAS JOSEPH WESTERMANN NUMBER E-25376 REGISTERED PROFESSIONAL ENGINEER



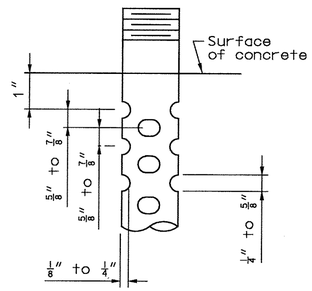
END VIEW



SIDE VIEW

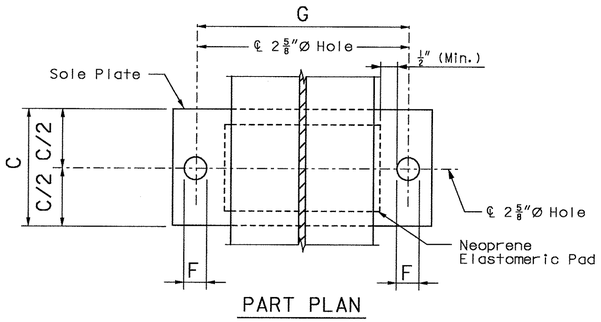


DETAIL FOR ¾" Ø THRU 2½" Ø ANCHOR BOLTS

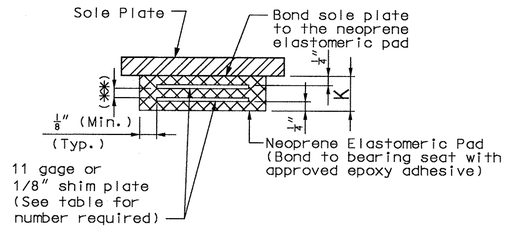


OPTIONAL DETAIL FOR 1⅜" Ø THRU 2½" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

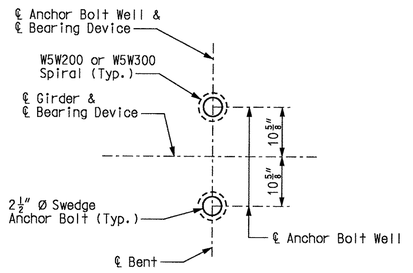


PART PLAN



NEOPRENE ELASTOMERIC PAD

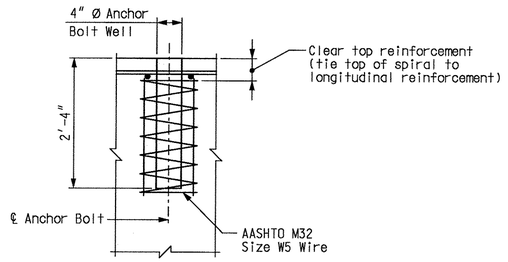
(**) Layers of ½" elastomeric pad with 11 gage or ⅛" shim plate



ANCHOR BOLT SETTING PLAN

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	⅜"	3¾"	4	5
3	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	½"	3¾"	4	5
														TOTAL BEARINGS	10

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



ANCHOR BOLT WELL DETAIL

GENERAL NOTES:

Anchor bolts shall be 2½"Ø ASTM A709 Grade 50W steel swedged bolts and shall extend 25" 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 the 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 the sole plate shall be ASTM A709 Grade 36 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.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

USER: TThompson
PLOTTED: 27-SEP-2006 15:51 K:\B41354\Plans\A7352\Drawings\ZPLOT_T17.dgn

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B18

JOB NO. J4P1707

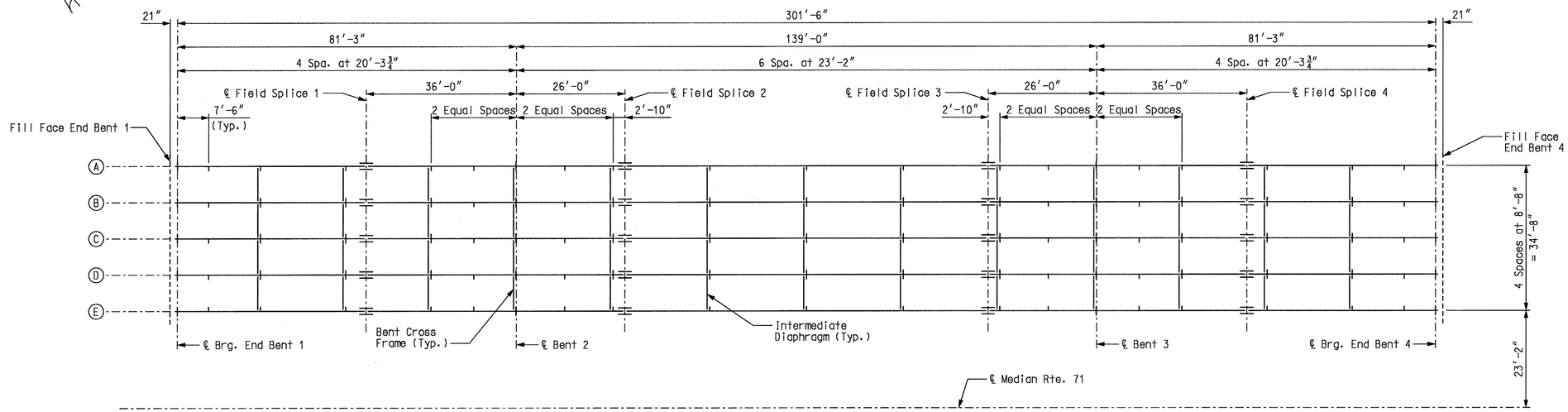
CONTRACT ID

PROJECT NO.

COUNTY CASS

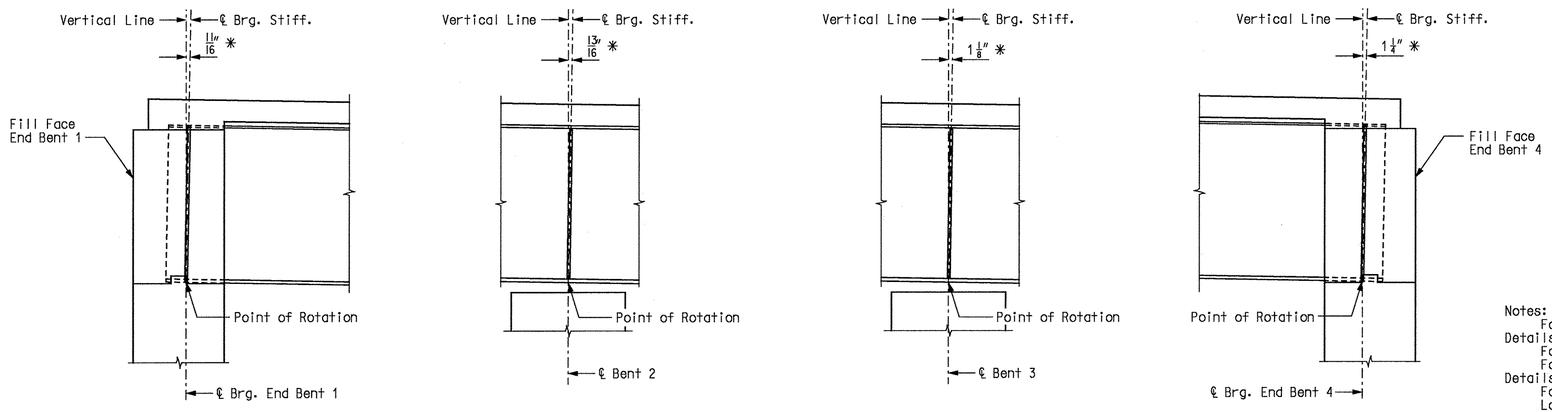
STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25776 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



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

FRAMING PLAN



PART LONGITUDINAL SECTION

* Horizontal Dimension at Top of Web.

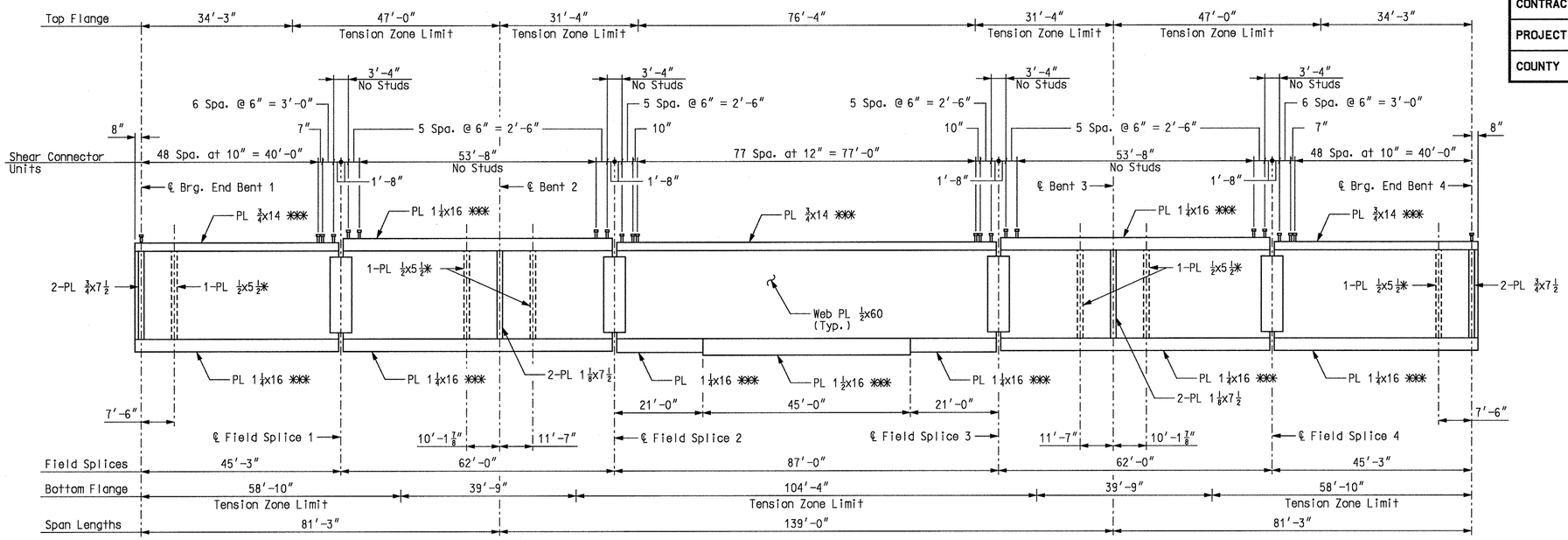
Notes:
For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.
For Field Splice Details, see Sheet No. 21.
For Intermediate Stiffener and Bearing Stiffener Details, see Sheet No. 23.
For Girder Elevation, see Sheet No. 19.
Longitudinal dimensions are horizontal from ℄ bearing to ℄ bearing.
All Intermediate Stiffeners are spaced equally between Bearing Stiffeners, unless shown otherwise.

FRAMING PLAN

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B19
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	09-28-2006		

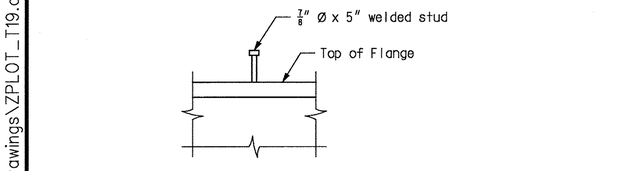
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-29476
REGISTERED PROFESSIONAL ENGINEER



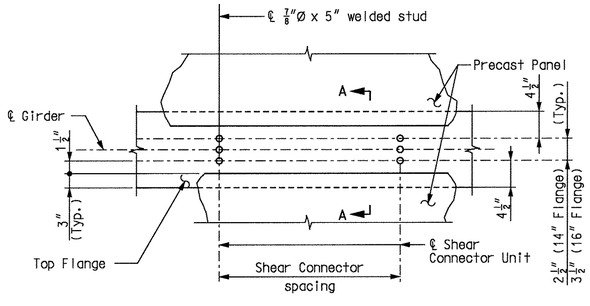
SPAN (1-2) SPAN (2-3) SPAN (3-4)

GIRDER ELEVATION

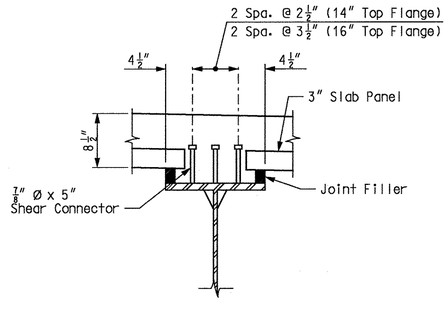
✱ Transverse web stiffener. See Plan for locations of other intermediate web stiffeners with intermediate diaphragms.



ELEVATION



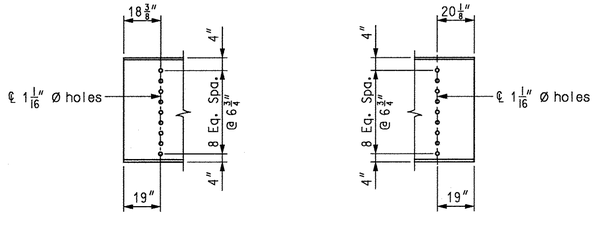
PLAN



SECTION A-A

DETAILS OF SHEAR CONNECTORS

Weight of 3320 pounds of shear connectors is included in the weight of Fabricated Structural Carbon Steel (Plate Girder). Shear connectors shall be in accordance with Sec 712, 1037, and 1080.



END BENT 1 END BENT 4

SECTION AT END OF GIRDERS

Notes:

Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. 20.

✱✱✱ Indicates flange plates subject to notch toughness requirements. All web plates shall be subject to notch toughness requirements. 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.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.

For Field Splice Details, see Sheet No. 21.

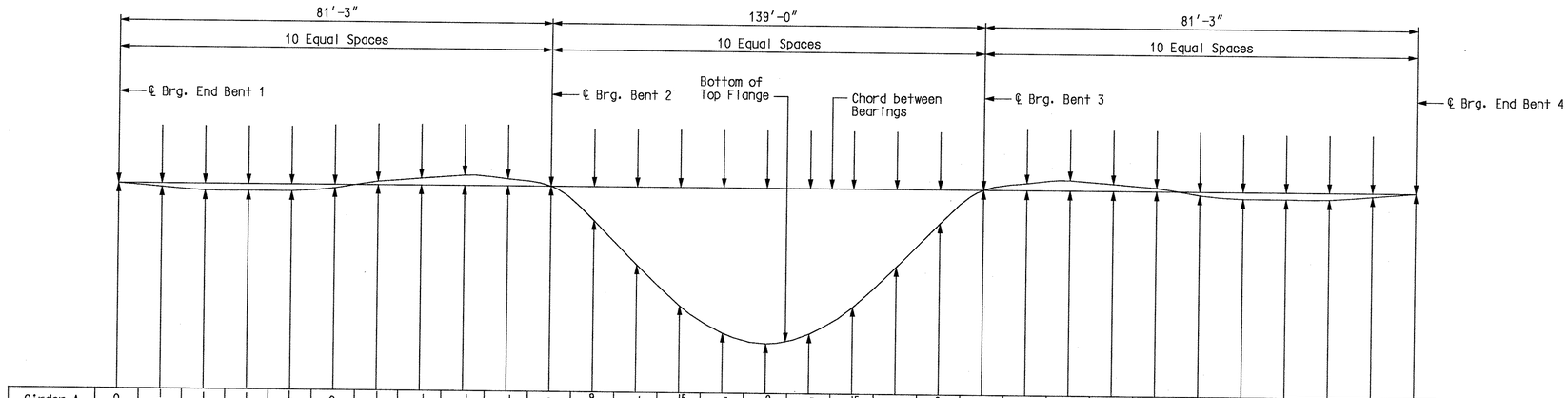
For Intermediate Stiffener and Bearing Stiffener details, see Sheet No. 23.

For Framing Plan, see Sheet No. 18.

Longitudinal dimensions are horizontal from ℄ brg. to ℄ brg.

For Intermediate Web Stiffener locations and Intermediate Diaphragm spacing not shown, see Sheet No. 18.

GIRDER ELEVATION

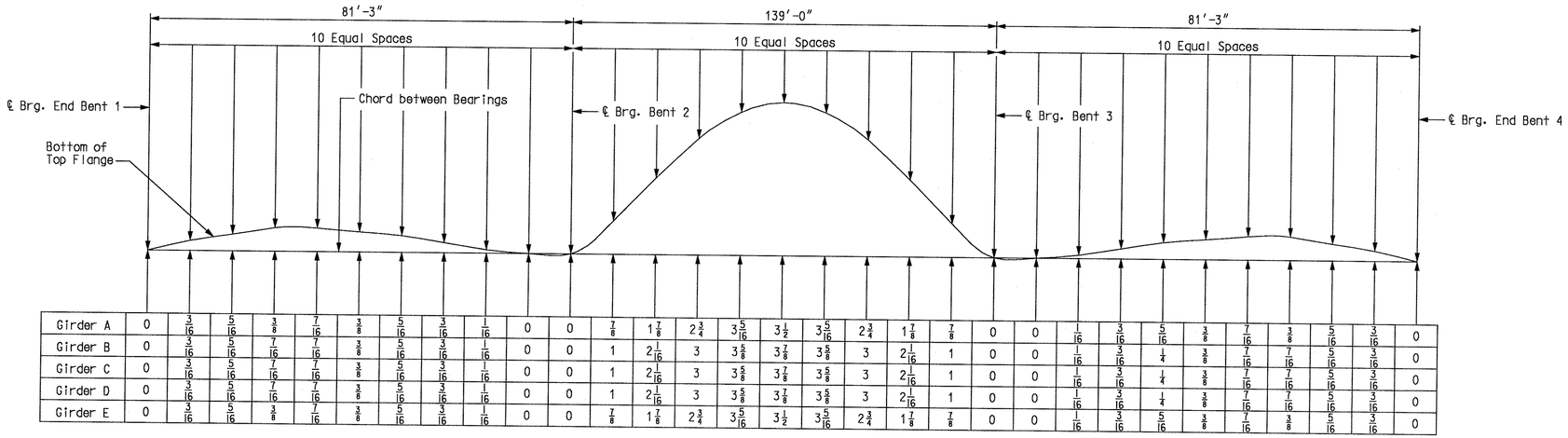


Girder A	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	9/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/8	1 15/16	1 1/4	9/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0
Girder B	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/16	1/8	1/8	1/16	0
Girder C	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/16	1/8	1/8	1/16	0
Girder D	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder E	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	9/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/8	1 15/16	1 1/4	9/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0

SPAN 1–2 SPAN 2–3 SPAN 3–4

DEAD LOAD DEFLECTIONS

Notes:
Dead load deflection includes weight of structural steel, concrete slab, and barrier curb.
20% of dead load deflection is due to the weight of structural steel.
Dead load deflection values are given in inches.
Negative values indicate upward deflection.



Girder A	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0
Girder B	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder C	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder D	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder E	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0

SPAN 1–2 SPAN 2–3 SPAN 3–4

CAMBER DIAGRAM

Notes:
Camber includes allowance for vertical curve, and for dead load deflection due to concrete slab, barrier curb, and structural steel.
Camber values are given in inches.
Positive values are above the chord between bents and negative values are below the chord between bents.

Notes:
For Theoretical Slab Haunch, see Sheet No. 27.

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B2D
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25376 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

DEAD LOAD DEFLECTION AND CAMBER DIAGRAMS

A7352

Detailed JUNE 2006
Checked JUNE 2006

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

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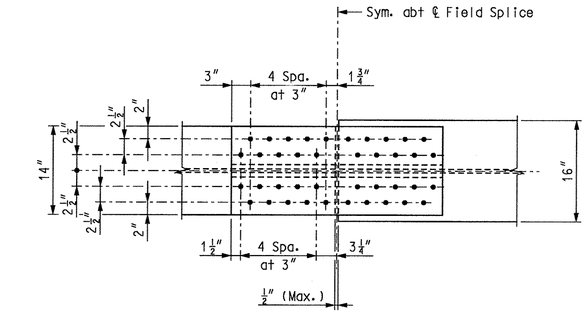
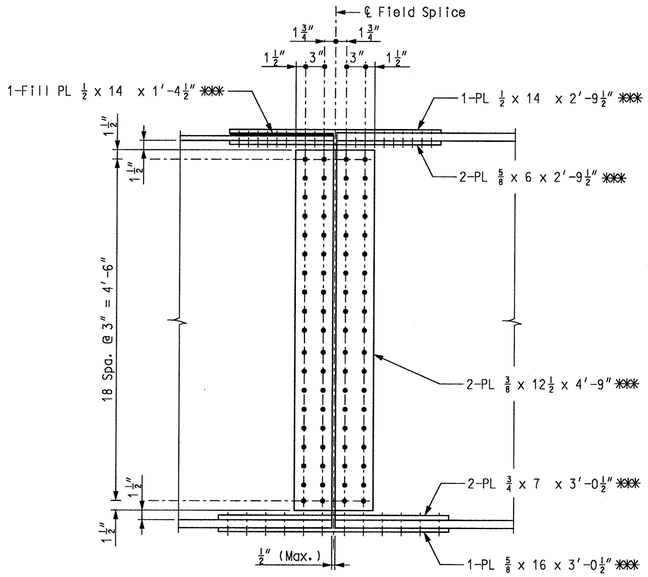
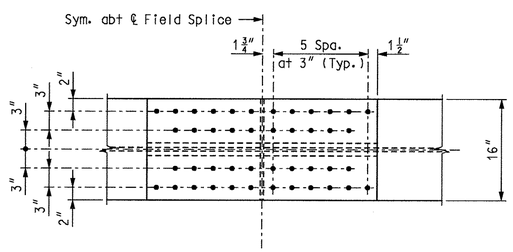


PLAN – TOP FLANGE



ELEVATION



PLAN – BOTTOM FLANGE

FIELD SPLICE 1, 2, 3, AND 4

Notes:
*** Indicates splice plates subject to notch toughness requirements.
Use ⅞" dia. high strength bolts with 15/16" dia. holes.
Fabricated Structural Steel for splice plates shall be ASTM A709 Grade 50.
For locations of field splices, see Sheet No. 18 or 19.

FIELD SPLICE DETAILS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B24

JOB NO. J4P1707
CONTRACT ID
PROJECT NO.
COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

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HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B22

JOB NO. J4P1707

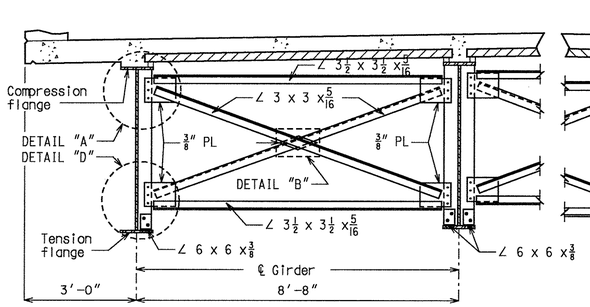
CONTRACT ID

PROJECT NO.

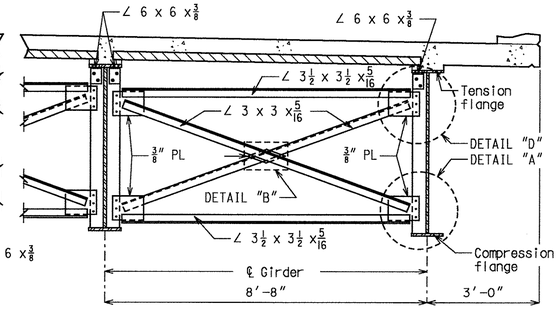
COUNTY CASS

DATE 09-28-2006

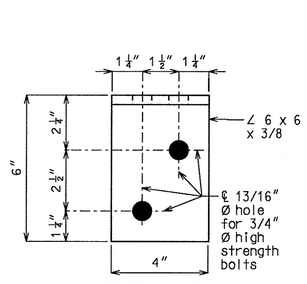
STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-23176 — REGISTERED PROFESSIONAL ENGINEER



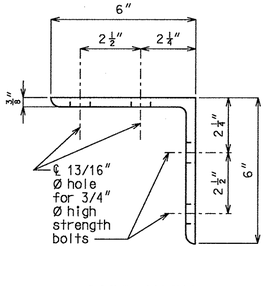
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION



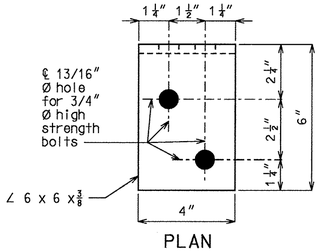
TYPICAL PART SECTION SHOWING
CROSS FRAMES AND
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION



ELEVATION

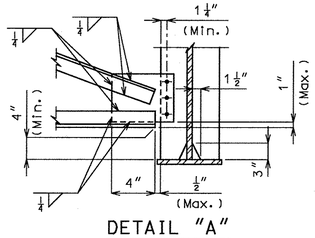


SIDE VIEW

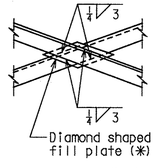


PLAN

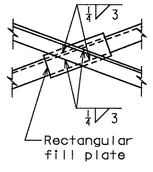
DETAIL OF FLANGE CONNECTION ANGLE



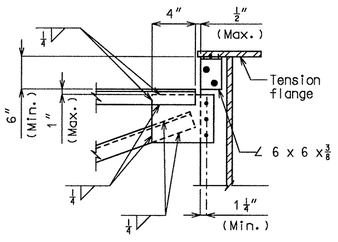
DETAIL "A"



DETAIL "B"



OPTIONAL
DETAIL "B"



DETAIL "D"

Notes:

The two ¾" Ø H.S. bolts that connect the 6 x 6 x ⅜ angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non-slab bearing diaphragms may be made 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 girder diaphragm connection plate or transverse web stiffener shall be standard size.

(*) At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail "B".

DIAPHRAGM AND CROSS FRAME DETAILS

A7352

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Detailed JUNE 2006
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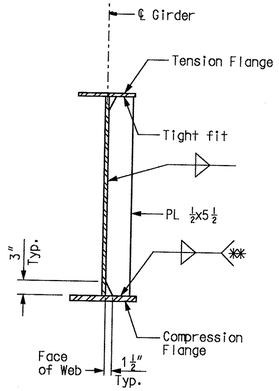
Note: This drawing is not to scale. Follow Dimensions.

HNTB

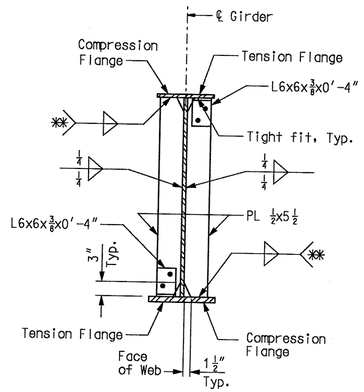
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B23
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			
DATE 09-28-2006			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

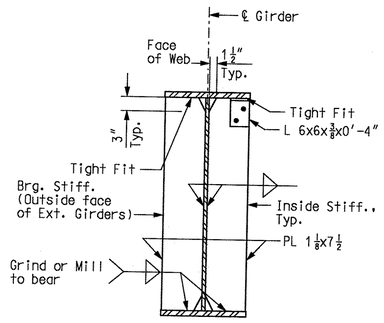


INTERMEDIATE STIFFENER

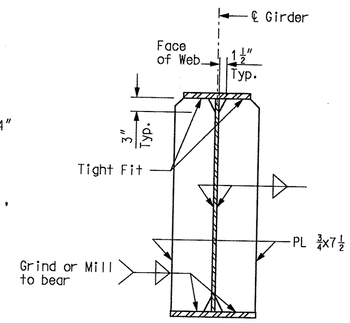
(One side only)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



BENTS 2 & 3



END BENTS 1 AND 4

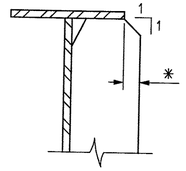
BEARING STIFFENER DETAILS

Fabricated structural steel for bearing stiffeners shall be ASTM A709 Grade 50.

WELDING DETAILS

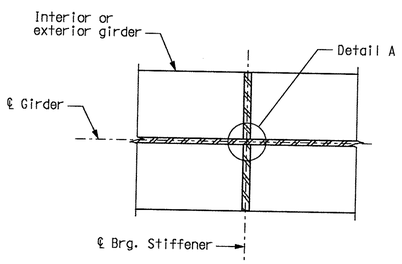
Notes:
Intermediate web stiffeners shall be located as shown in plan of structural steel.
Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

** Weld to Compression Flange. For location of Compression Flanges, see Girder Elevation.

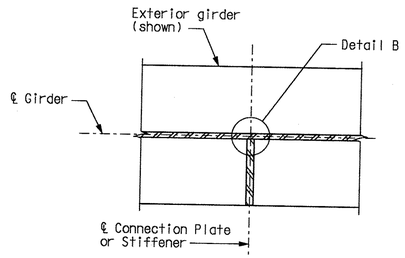


STIFFENER BEVEL DETAIL

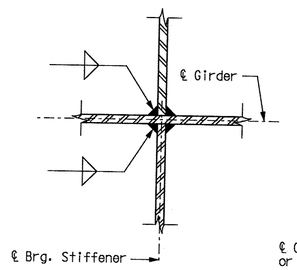
* When dimension exceeds ½", bevel Stiffener Plate.



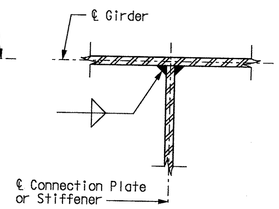
BEARING STIFFENERS



INTERMEDIATE DIAPHRAGM CONNECTION PLATE OR INTERMEDIATE STIFFENERS



DETAIL A



DETAIL B

TYPICAL LOCATION DETAILS

Notes:
For Girder Elevation, see Sheet No. 19.
For Framing Plan, see Sheet No. 18.
Fabricated Structural Steel shall be ASTM A709 Grade 36, except as noted.

STIFFENER AND WELD DETAILS

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

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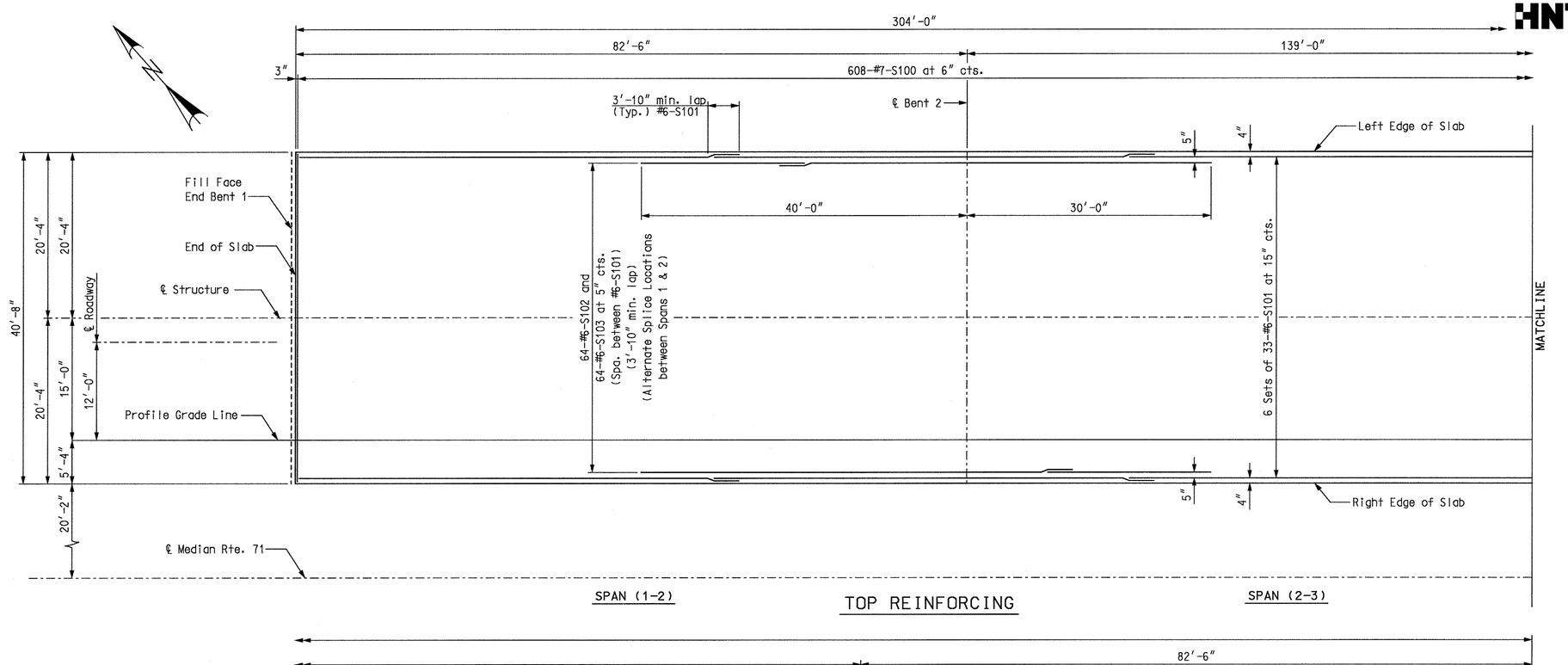
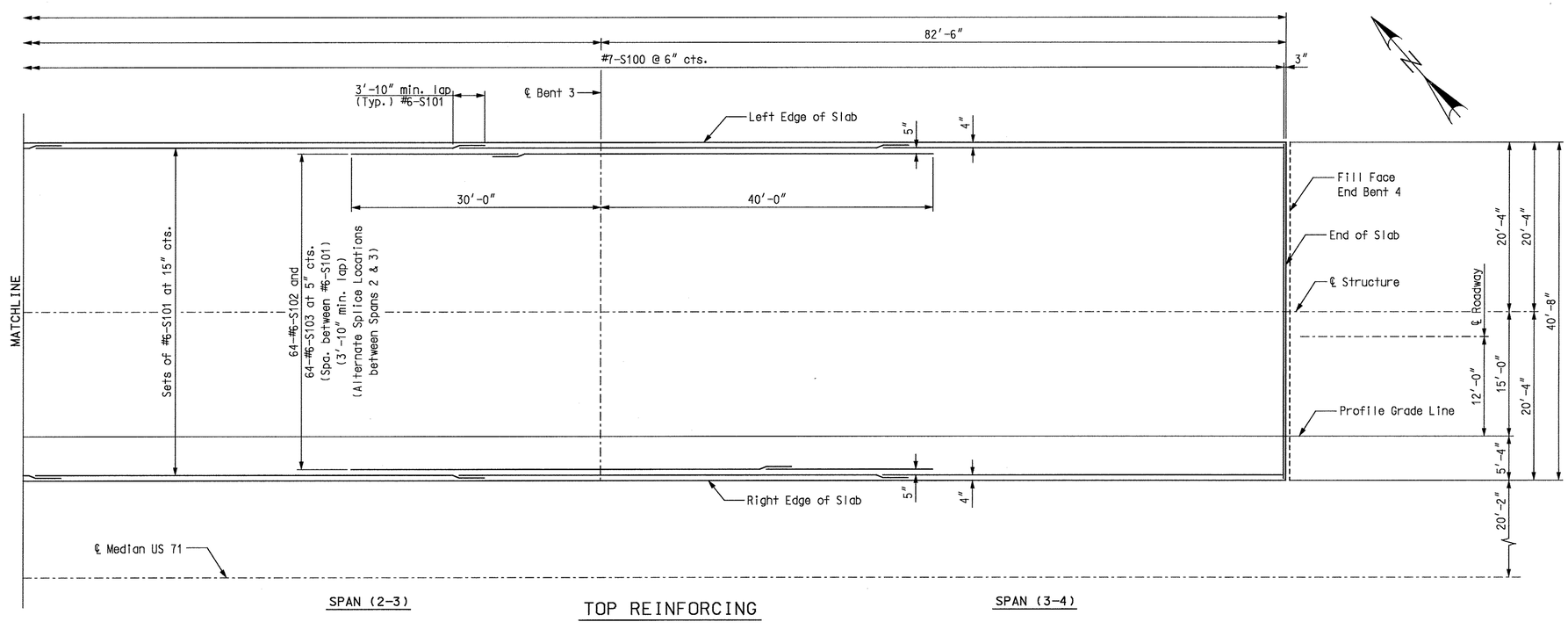
HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	329
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			
DATE 09-28-2006			

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER



TOP REINFORCING



TOP REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.

For Typical Section, see Sheet No. 27.
For Location of Slab Drains, see Sheet No. 30.
For Slab Pouring Sequence, see Sheet No. 28.
For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.
Longitudinal slab dimensions are measured horizontally.

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Detailed JUNE 2006
Checked JUNE 2006

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

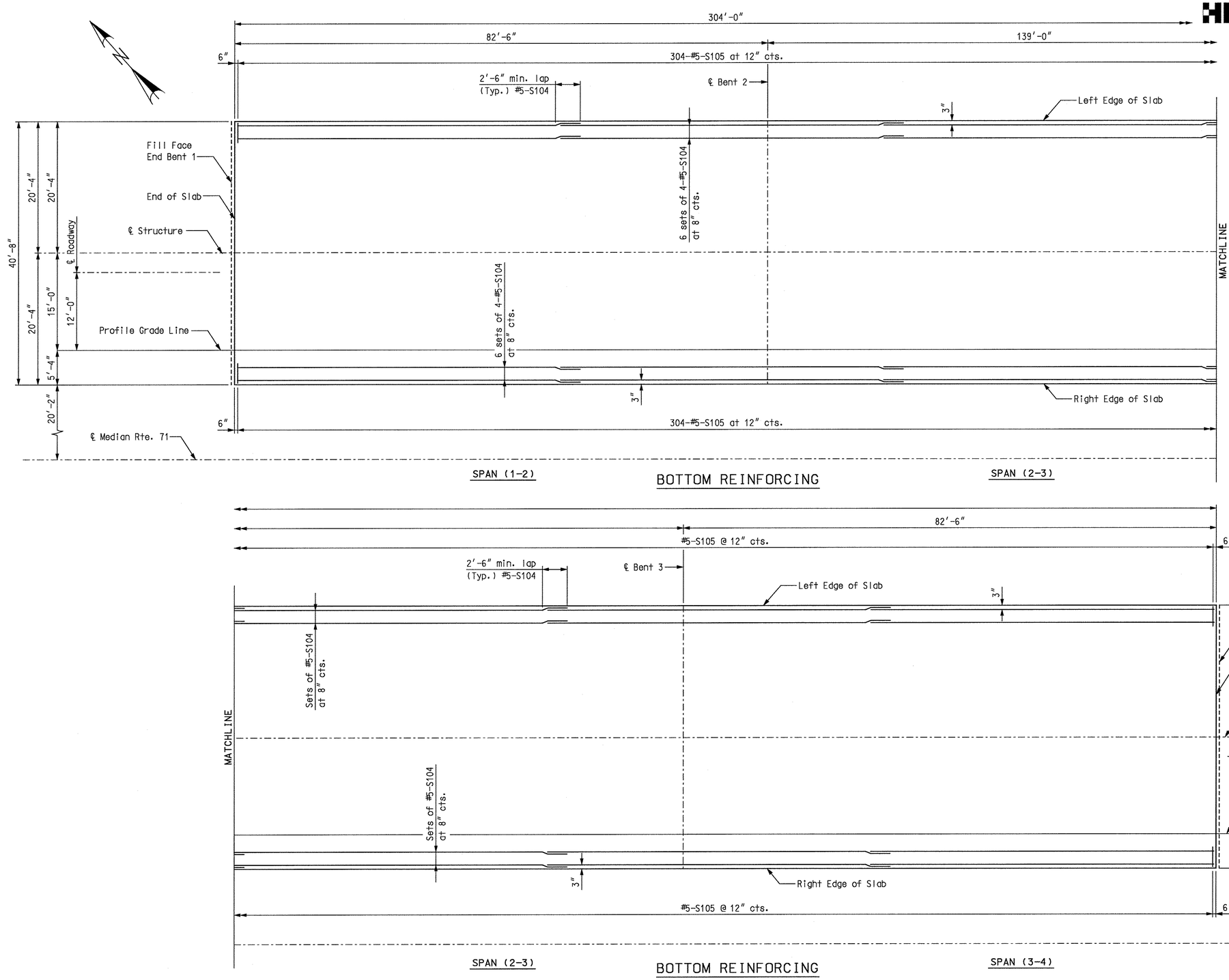
A7352

HNTB

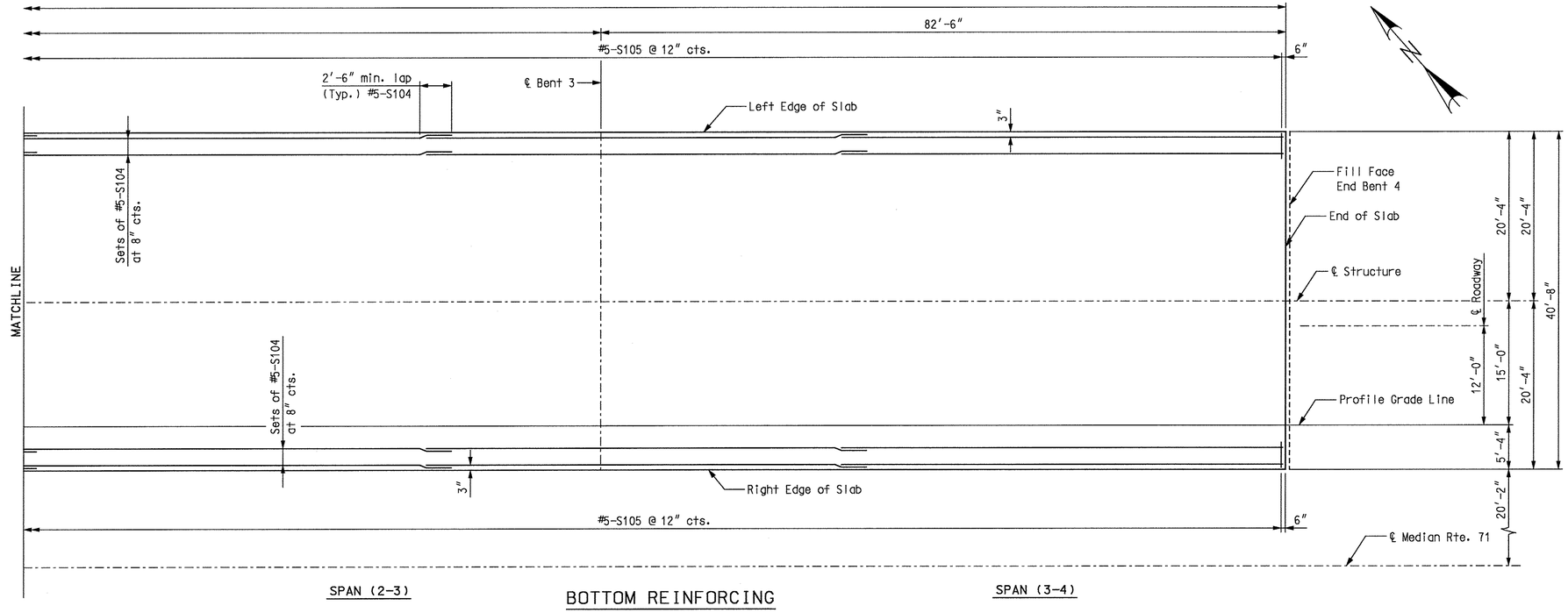
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B25
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



BOTTOM REINFORCING



BOTTOM REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.
For Typical Section, see Sheet No. 27.
For Location of Slab Drains, see Sheet No. 30.
For Slab Pouring Sequence, see Sheet No. 28.
For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.
Longitudinal slab dimensions are measured horizontally.

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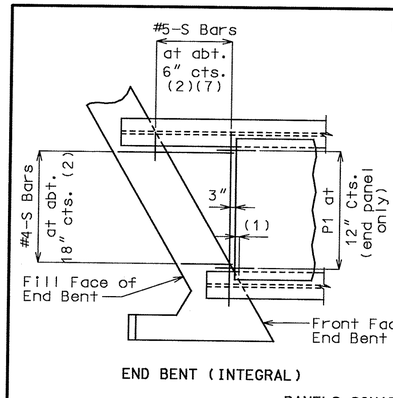
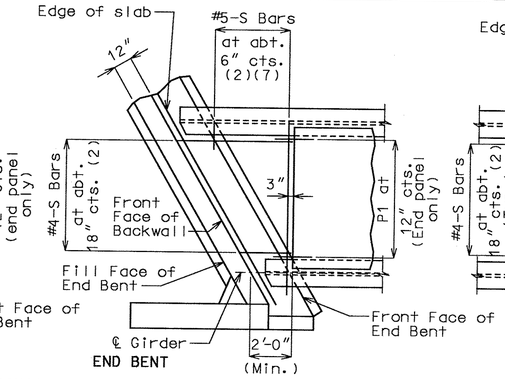
A7352

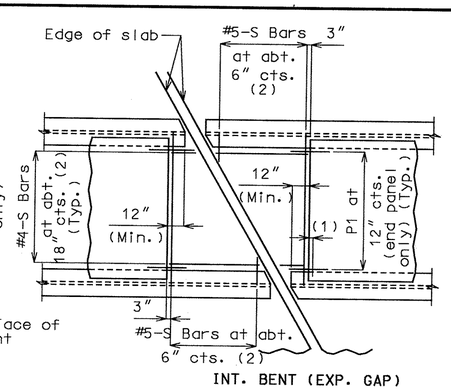


END BENT (INTEGRAL)

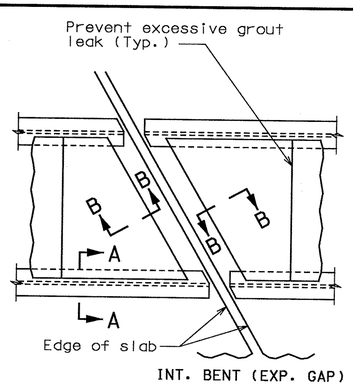
PANELS-SQUARED ENDS



END BENT



INT. BENT (EXP. GAP)



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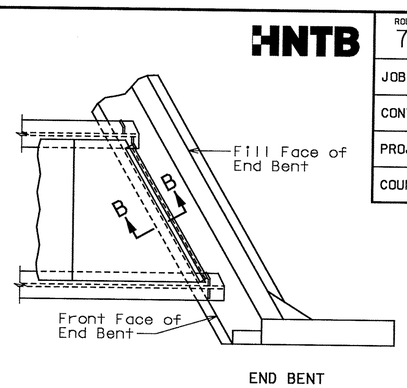
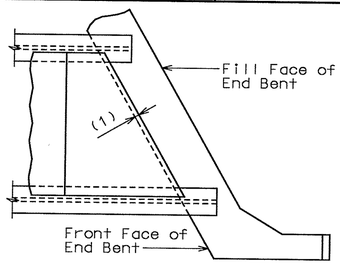


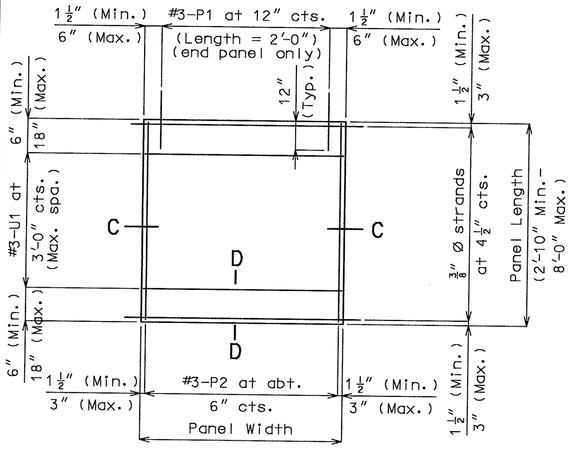
END BENT

PANELS-SKEWED ENDS

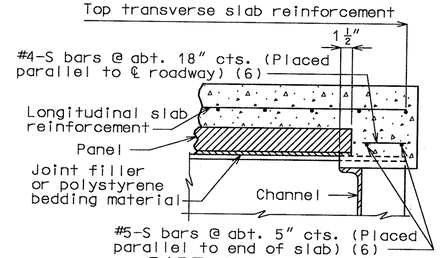


END BENT (INTEGRAL)

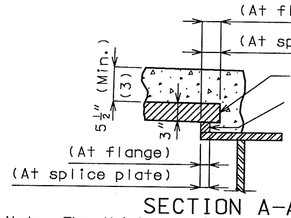
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PLAN OF PRECAST PRESTRESSED PANEL



PART SECTION B-B



SECTION A-A

Note: The thickness of the preformed fiber expansion joint material or polystyrene bedding material shall be adjusted to achieve the slab haunching dimension found on sheet no. 27. These adjustments shall be within the limits noted in the general notes.

NOTES:

Cost of S-bars will be considered completely covered by the contract unit price for the slab

S-bars are not listed in the bill of reinforcing.

(1) End panels shall be dimensioned 1" min. to 1 1/2" max. from the inside face of diaphragm.

(2) S-bars shown are bottom steel in slab between panels and used with squared end panels only.

(3) Adjustment in the slab thickness, preformed fiber expansion joint material or polystyrene bedding material thickness, or grade will be necessary if the girder camber after erection differs from plan camber by more than the % of dead load deflection due to the weight of structural steel. No payment will be made for additional labor or materials for the adjustment.

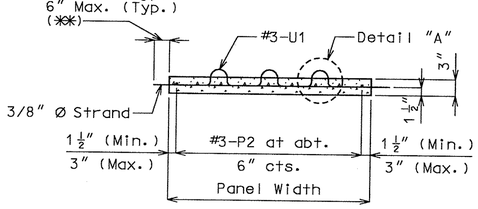
(4) All panel support pads shall be glued to the girder. When support thickness exceeds 1 1/2 inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

(5) Use #3-P3 bars if panel is skewed 45° or greater.

(6) S-bars shown are used with skewed end panels, or square end panels of square structures only. The #5 S-bars shall extend the width of slab (2'-6" lap if necessary) or to within 3 inches of expansion device assemblies.

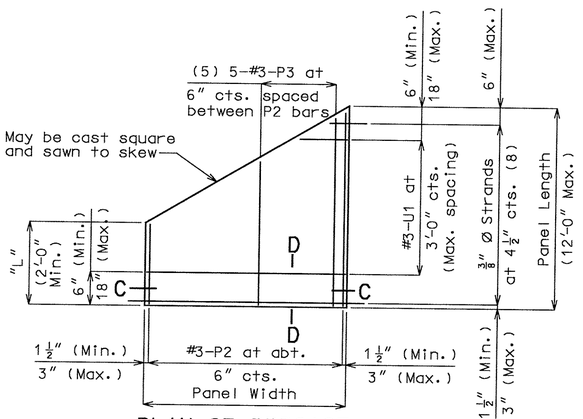
(7) Extend S-bars 18 inches beyond the front face of end bents only.

(8) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

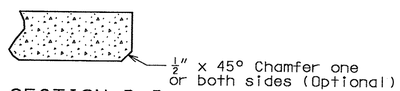


SECTION C-C

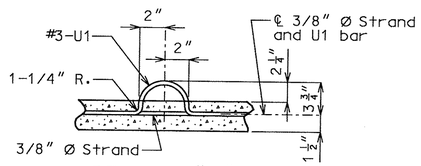
(**) Prestressing strands to extend 6" or to within 1" of adjacent panel.



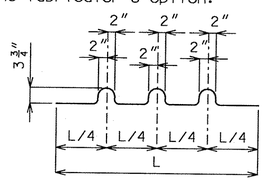
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION D-D



DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

(U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars).

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 3,500 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength uncoated seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq. in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When square end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 3/4 inch, except over splice plates where minimum thickness shall be 1/4 inch. When the material is less than 1/2 inch thick over a splice plate, the width of material at the splice shall be the same width as panel on splice. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. No more than 2" total thickness shall be used.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

REINFORCING STEEL:

All dimensions are out to out.

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

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

Actual lengths are measured along centerline of bar to the nearest inch.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 sq. in./ft., with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #3-P2 bars shown. Wireor bar diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The reinforcing steel shall be tied securely to the 3/8" Ø strands with the following maximum spacing in each direction: #3-P2 bars at 16 inches. Welded wire fabric or welded deformed bar mats at 2'-0".

Tie the #3-U1 bars to the #3-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 3'-0" centers.

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

DETAILS OF PRECAST PRESTRESSED PANELS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B26

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER PE-25176 — REGISTERED PROFESSIONAL ENGINEER

USER: TThompson
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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B27

JOB NO. J4P1707

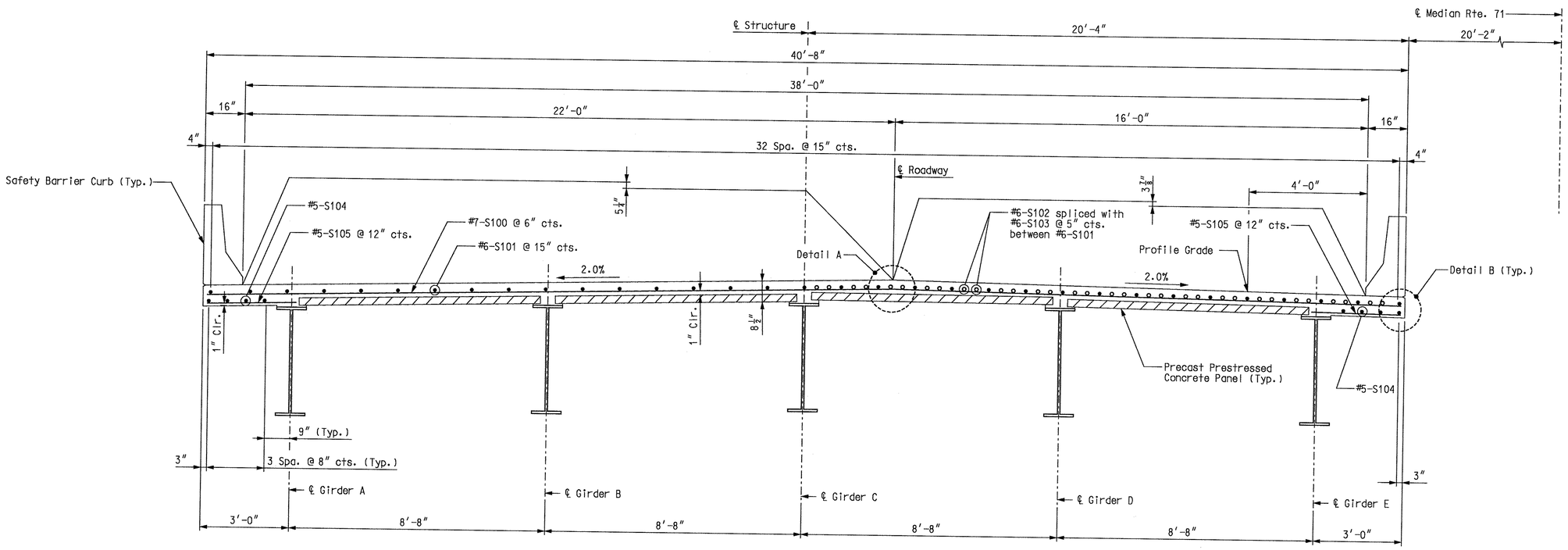
CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

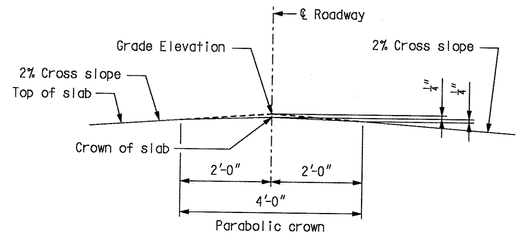
DATE 09-28-2006



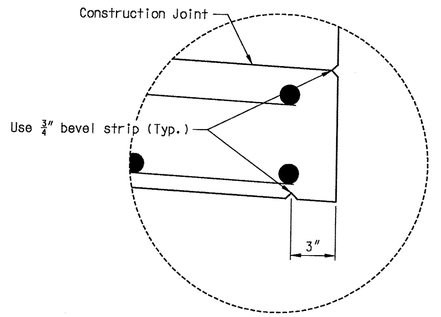
HALF-SECTION NEAR ℄ SPAN

HALF-SECTION NEAR INTERMEDIATE BENTS

TYPICAL SECTION



DETAIL A



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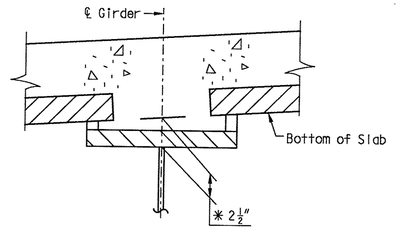

THEORETICAL SLAB HAUNCH

* Dimensions may vary if the girder 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.

Notes:
Transverse slab dimensions are measured horizontally.
For Slab Pouring Sequence, see Sheet No. 28.
For details and reinforcement of Safety Barrier Curbs, not shown, see Sheet Nos. 31 thru 33.
For details of precast panels, see Sheet No. 26.

SLAB CROSS SECTION

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Detailed JUNE 2006
Checked JUNE 2006

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A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	28

JOB NO. J4P1707

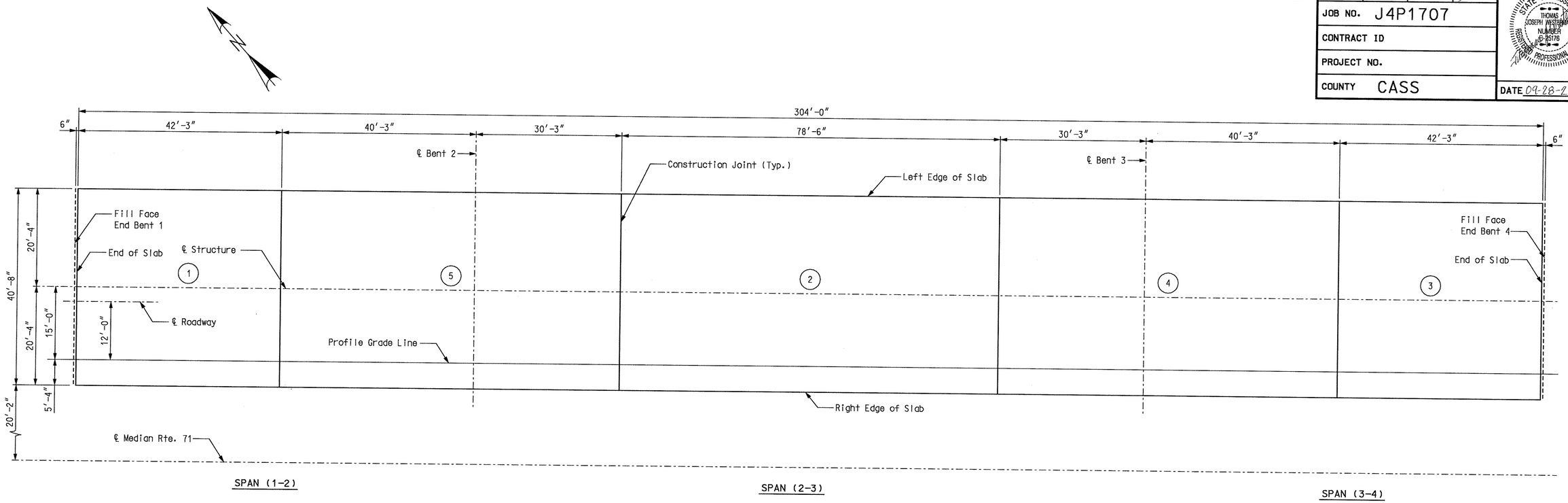
CONTRACT ID

PROJECT NO.

COUNTY CASS

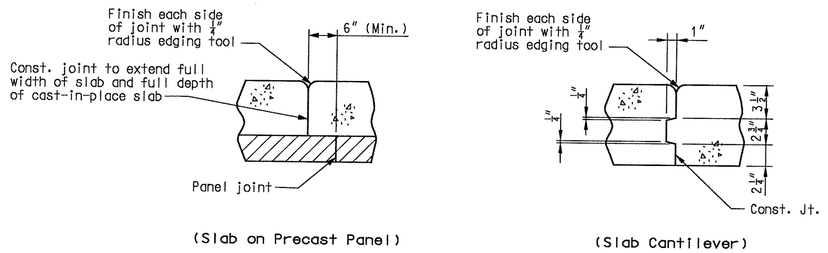
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER PE-2007176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



SLAB POURING SEQUENCE

	SEQUENCE OF POURS					MIN. RATE OF POUR CU. YDS./HR.	
	DIRECTION					WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	4	5	25	32
	Either Direction						
Alternate pours to the basic skip sequnce are subject to the approval of the engineer in accordance with Sec 703.							
Alternate "A" Pours	1 + 5 + 2 + 4 + 3					34	56
	End to End						



SLAB CONSTRUCTION JOINT DETAILS

Notes:
Transverse construction joints shall be placed parallel to ℄ bents.
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.
For details of precast panels, see Sheet No. 26.
For location of slab drains, see Sheet No. 30.

SLAB POURING SEQUENCE

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	829

JOB NO. J4P1707

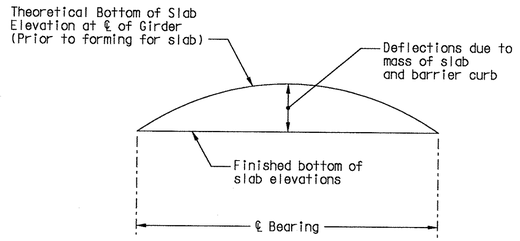
CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-28176
REGISTERED PROFESSIONAL ENGINEER



TYPICAL SLAB ELEVATION DIAGRAM

Theoretical Bottom of Slab Elevations at ℄ of Girder
(Prior to forming for slab) **

	Span (1-2)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1080.27	1080.18	1080.09	1080.00	1079.90	1079.80	1079.69	1079.59	1079.48	1079.37	1079.27
Girder B	1080.44	1080.36	1080.27	1080.17	1080.08	1079.97	1079.87	1079.76	1079.65	1079.55	1079.45
Girder C	1080.61	1080.53	1080.44	1080.35	1080.25	1080.15	1080.04	1079.93	1079.83	1079.72	1079.62
Girder D	1080.56	1080.48	1080.39	1080.29	1080.20	1080.09	1079.99	1079.88	1079.77	1079.67	1079.57
Girder E	1080.39	1080.30	1080.21	1080.12	1080.02	1079.92	1079.81	1079.71	1079.60	1079.49	1079.39
	Span (2-3)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1079.27	1079.12	1078.97	1078.81	1078.62	1078.42	1078.18	1077.92	1077.64	1077.35	1077.07
Girder B	1079.45	1079.30	1079.15	1079.00	1078.83	1078.62	1078.38	1078.12	1077.83	1077.53	1077.24
Girder C	1079.62	1079.47	1079.33	1079.17	1079.00	1078.79	1078.56	1078.29	1078.00	1077.71	1077.41
Girder D	1079.57	1079.42	1079.27	1079.12	1078.95	1078.74	1078.50	1078.24	1077.95	1077.65	1077.36
Girder E	1079.39	1079.24	1079.09	1078.93	1078.74	1078.54	1078.30	1078.04	1077.76	1077.47	1077.19
	Span (3-4)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1077.07	1076.91	1076.76	1076.60	1076.45	1076.30	1076.14	1075.98	1075.81	1075.64	1075.46
Girder B	1077.24	1077.08	1076.93	1076.77	1076.62	1076.47	1076.31	1076.15	1075.98	1075.81	1075.64
Girder C	1077.41	1077.25	1077.10	1076.95	1076.80	1076.64	1076.49	1076.32	1076.16	1075.99	1075.81
Girder D	1077.36	1077.20	1077.05	1076.89	1076.74	1076.59	1076.43	1076.27	1076.10	1075.93	1075.76
Girder E	1077.19	1077.03	1076.88	1076.72	1076.57	1076.42	1076.26	1076.10	1075.93	1075.76	1075.58

** Elevations are based on a constant slab thickness of $8\frac{1}{2}$" and include allowance for theoretical dead load deflections due to weight of slab (including prestressed panel) and barrier curb.

Detailed JUNE 2006
Checked JUNE 2006

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

THEORETICAL BOTTOM OF SLAB ELEVATIONS

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B30

JOB NO. J4P1707

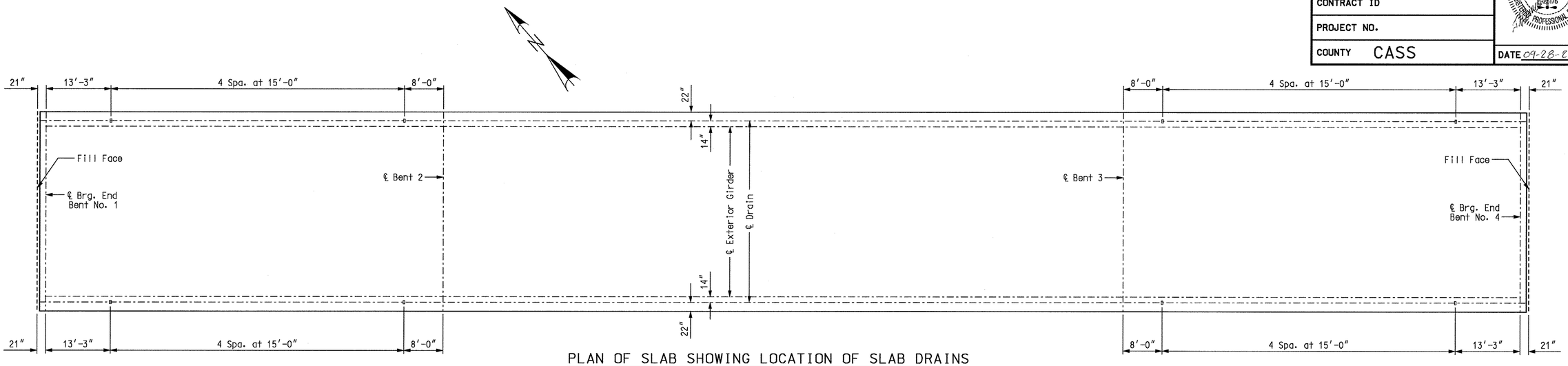
CONTRACT ID

PROJECT NO.

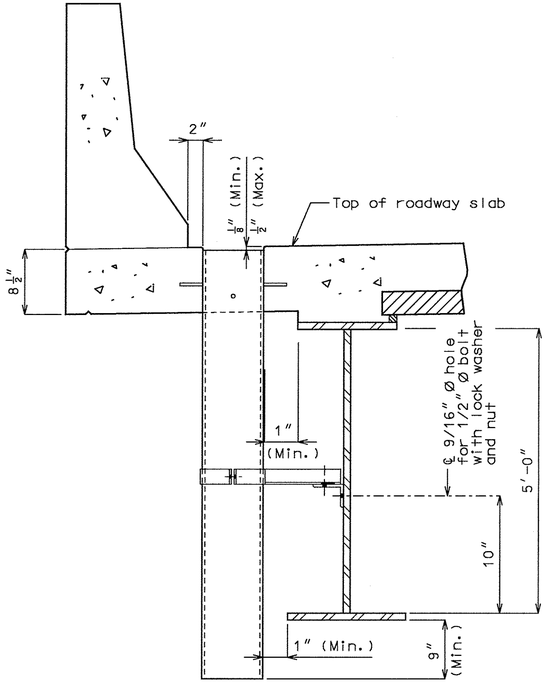
COUNTY CASS

DATE 09-28-2006

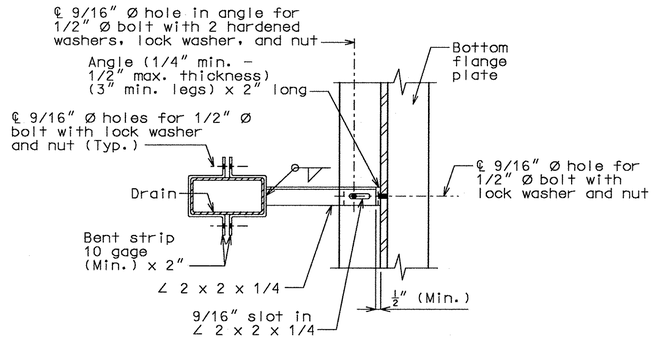
STATE OF MISSOURI THOMAS JOSEPH WESTERMAN NUMBER E-28176 REGISTERED PROFESSIONAL ENGINEER



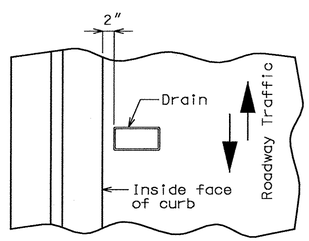
PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS



PART SECTION NEAR DRAIN

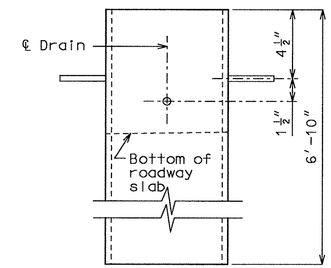


PART SECTION SHOWING BRACKET ASSEMBLY

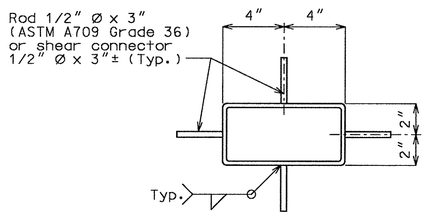


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



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 located on the plate girder shop drawings.

SLAB DRAIN DETAILS

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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B31

JOB NO. J4P1707

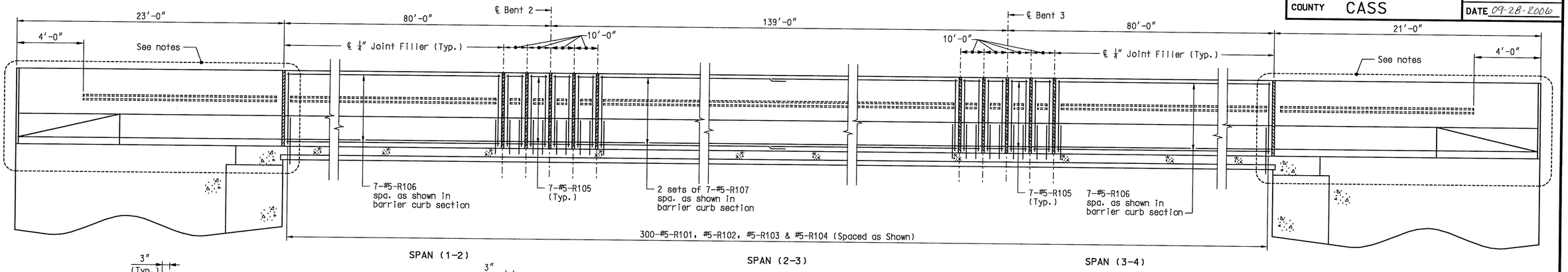
CONTRACT ID

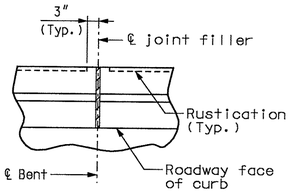
PROJECT NO.

COUNTY CASS

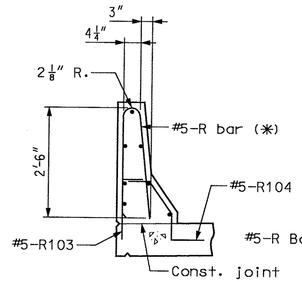
DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-29976
REGISTERED PROFESSIONAL ENGINEER

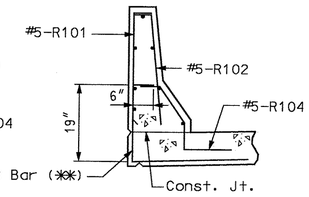




PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



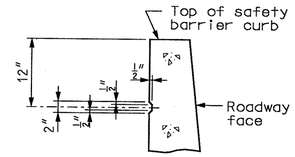
SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)



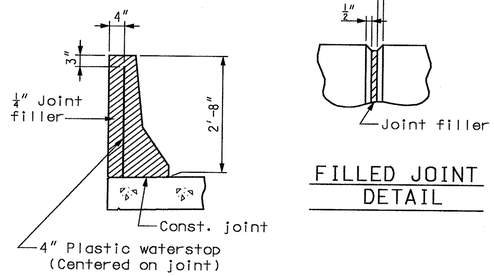
R-BAR PERMISSIBLE ALTERNATE SHAPE

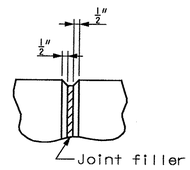
(*) The R101 and R102 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART SECTION SHOWING
RUSTICATION DETAILS





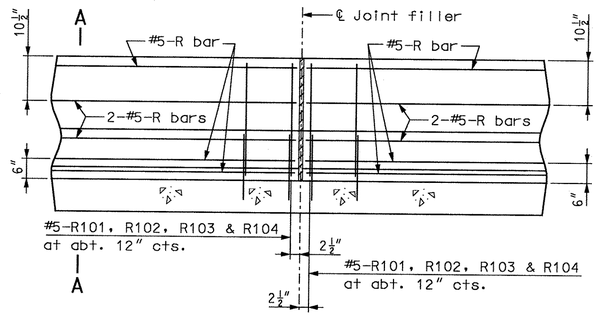
FILLED JOINT
DETAIL

DETAILS OF PLASTIC WATERSTOP

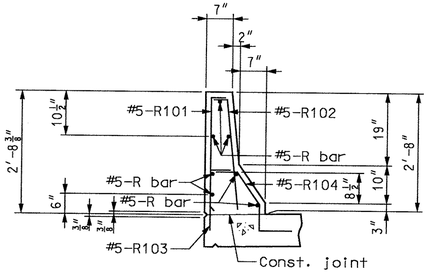
Notes:

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 = 2.29 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 ½" radius or a ⅜" 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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

Longitudinal dimensions are horizontal arc dimensions

The curb shall be cured by application of type 1-d or type 2 liquid membrane - forming compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 will not be permitted.

SAFETY BARRIER CURB

USER: TThompson
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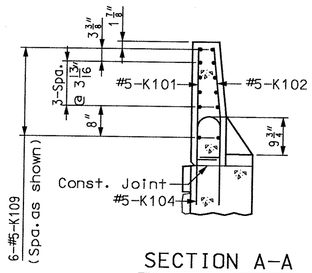
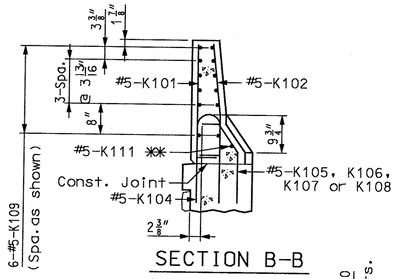
Detailed JUNE 2006
Checked JUNE 2006

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

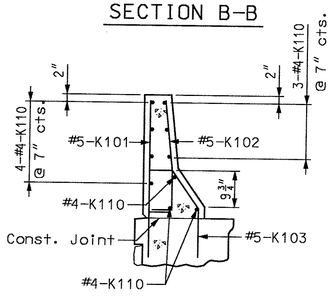
A7352



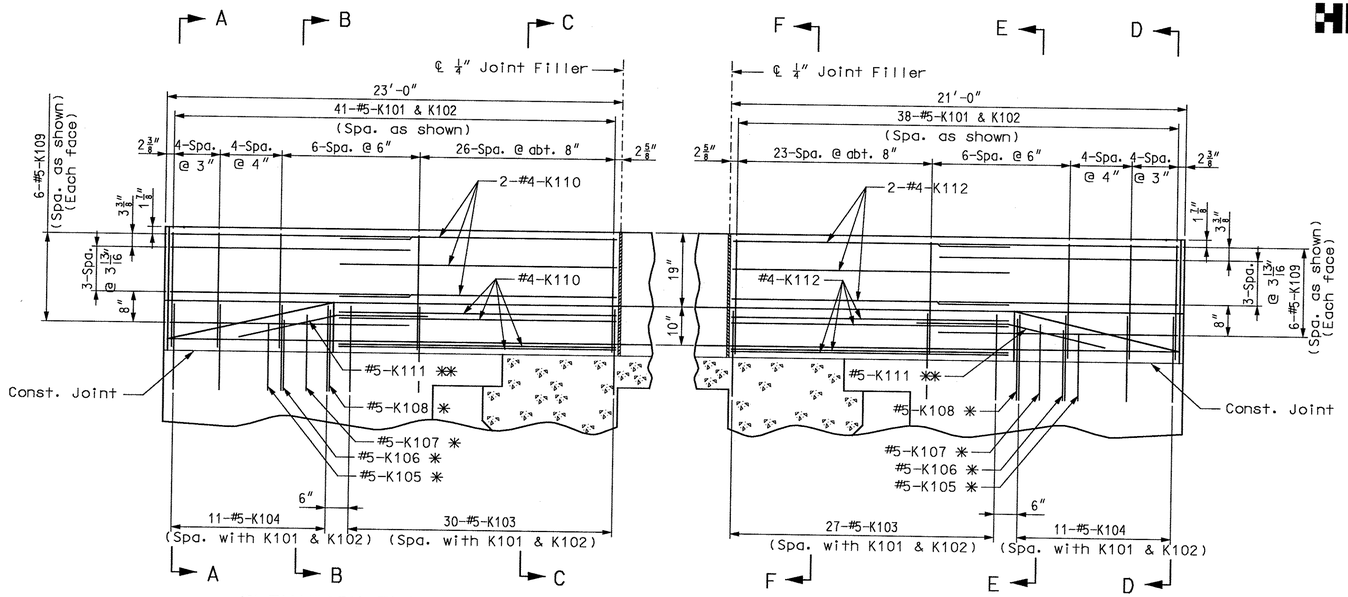
SECTION A-A



SECTION B-B



SECTION C-C

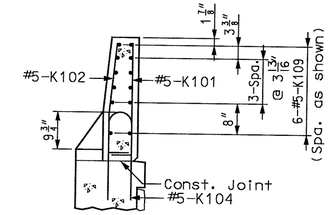


ELEVATION END BENT 1

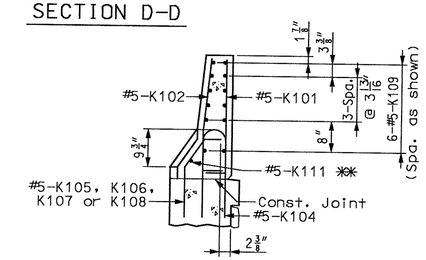
ELEVATION END BENT 4

* Spaced with #5-K104 bars.

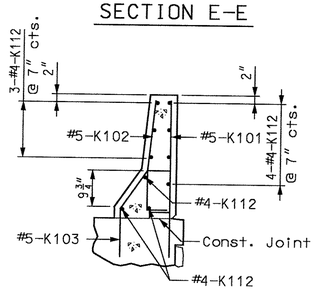
** Fit bar to follow transition face of curb.



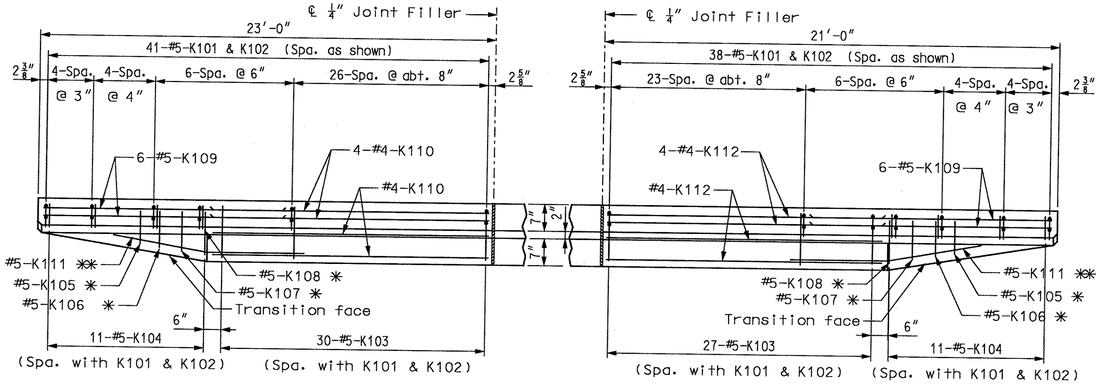
SECTION D-D



SECTION E-E

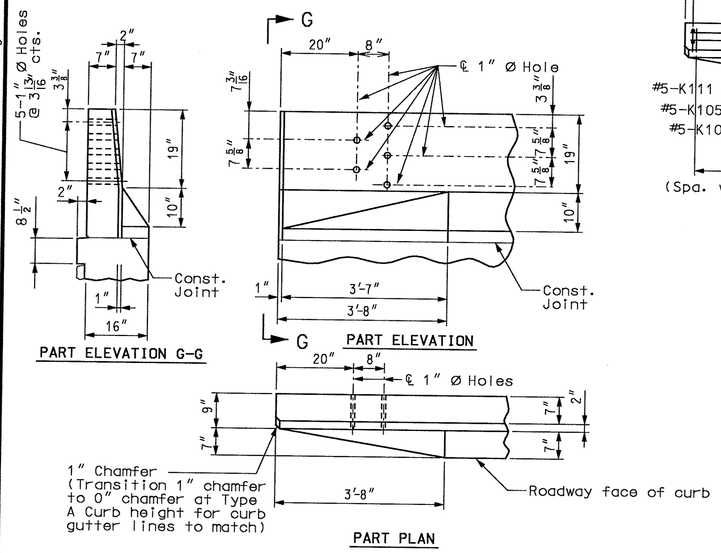


SECTION F-F



PLAN END BENT 1

PLAN END BENT 4

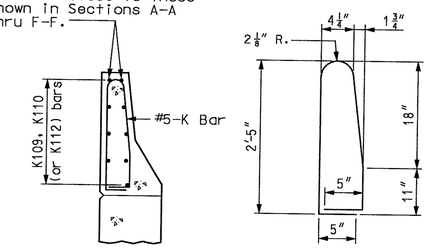


DETAILS OF GUARD RAIL ATTACHMENT

NOTES: Use a minimum lap of 2'-0" between K109 and K110 (or K112) bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

The top two K109 and K110 (or K112) bars shall be kept with position close to those shown in Sections A-A thru F-F.



(K103 or K104 thru K108 bars not shown for clarity)

K101-K102 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K101 and K102 bar combination may be furnished as one bar as shown, at the contractor's option.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown: right barrier curb similar)

DETAILS OF SAFETY BARRIER CURB AT END BENTS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B32

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

USER: TThompson
PLOTTED: 27-SEP-2006 15:54
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Detailed JUNE 2006
Checked JUNE 2006

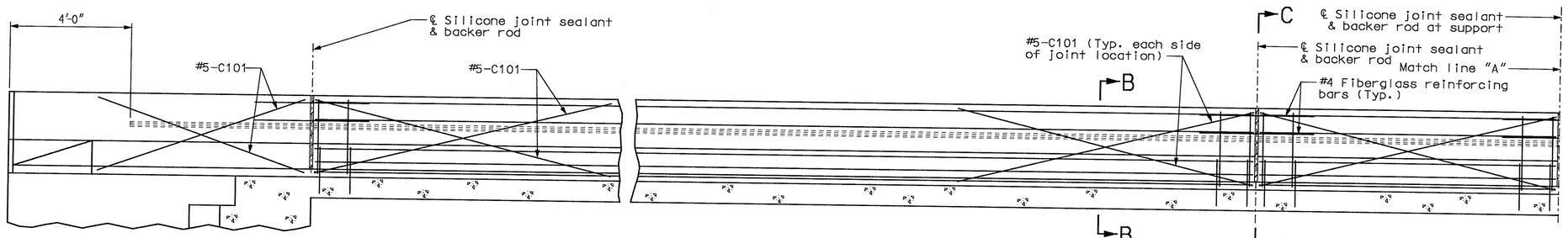
Note: This drawing is not to scale. Follow Dimensions.

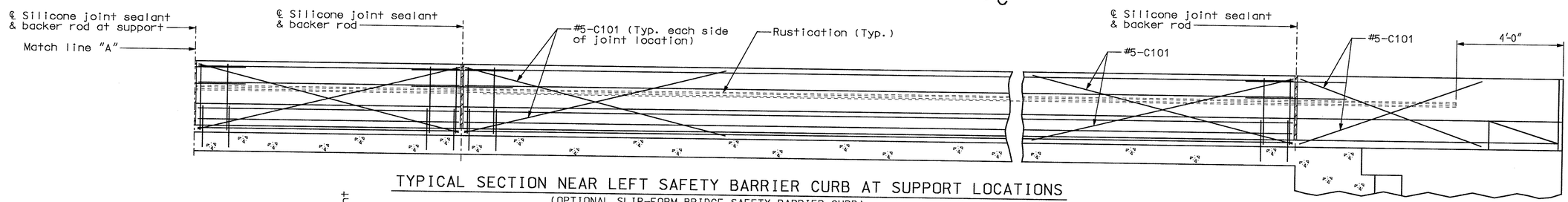
A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B33
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			
DATE 09-28-2006			

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN NUMBER 2015176
REGISTERED PROFESSIONAL ENGINEER





TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS

(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

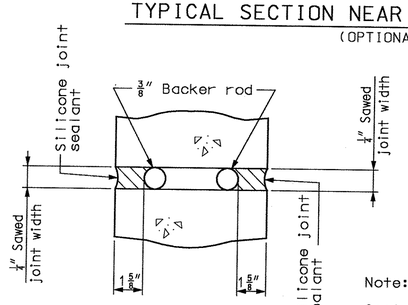
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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. Surface sealing for concrete in accordance with Sec 703 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.

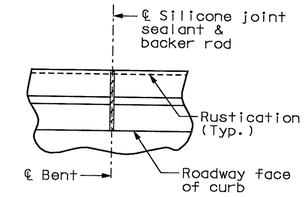
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

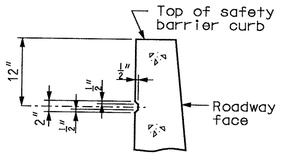
Note:

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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



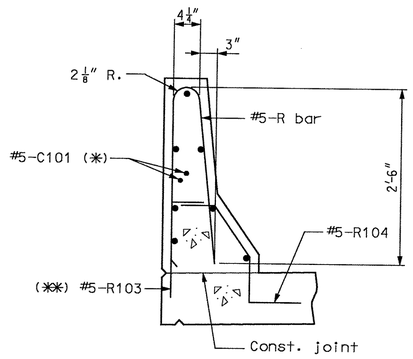
PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

(Use on highway grade separation only)

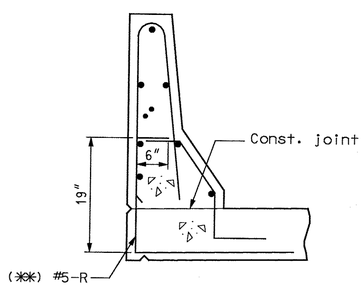


PART SECTION B-B

Notes:

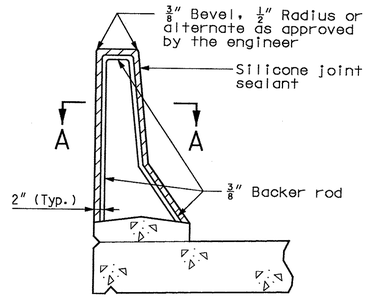
(*) Each side of joint location.

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.



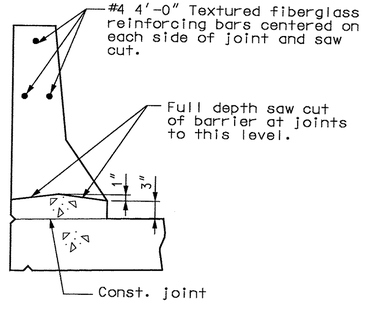
PART SECTION B-B

(Optional #5-R bar shown)

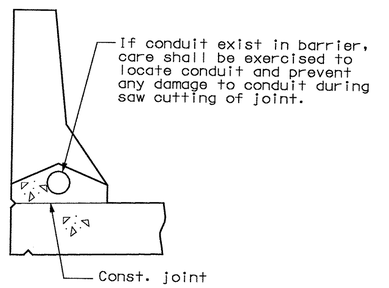


SECTION THRU JOINT

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



PART SECTION C-C



PART SECTION C-C

(Use when conduit required)

OPTIONAL SLIP-FORM
BRIDGE SAFETY BARRIER CURB

USER: TThompson
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Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B34

JOB NO. J4P1707

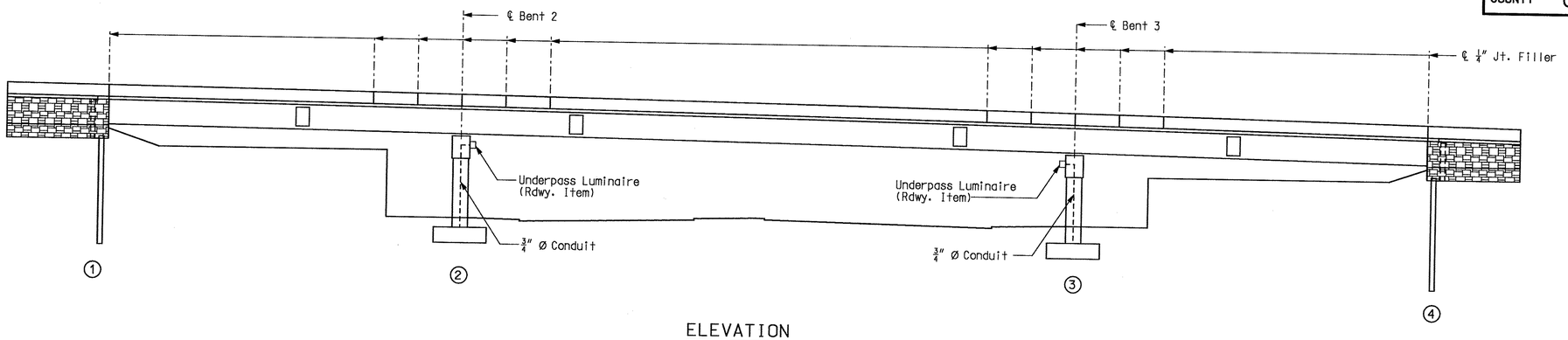
CONTRACT ID

PROJECT NO.

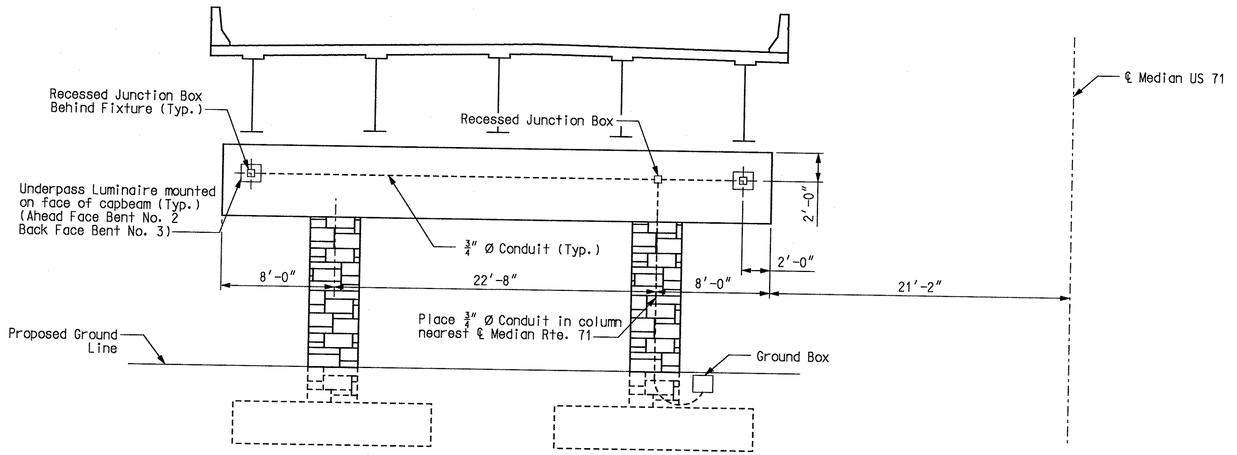
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI
THOMAS J. (JOSEPH WESTERMAN) NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER



ELEVATION



TYPICAL SECTION

Notes:

Payment for furnishing and installing Conduit System in substructure, complete-in-place, will be paid for at the contract unit price for Conduit System on Structure, lump sum.

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters' Laboratories, Inc., (UL) label.

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

For details of underdeck lighting and wiring, see electrical plans.

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PLOTTED: 27-SEP-2006 15:54 K:\B41354\Plans\A7352\Drawings\ZPLOT_T33.dgn

Detailed JUNE 2006
Checked JUNE 2006

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

CONDUIT SYSTEM FOR LIGHTING UNDER BRIDGE

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	835

JOB NO. J4P1707

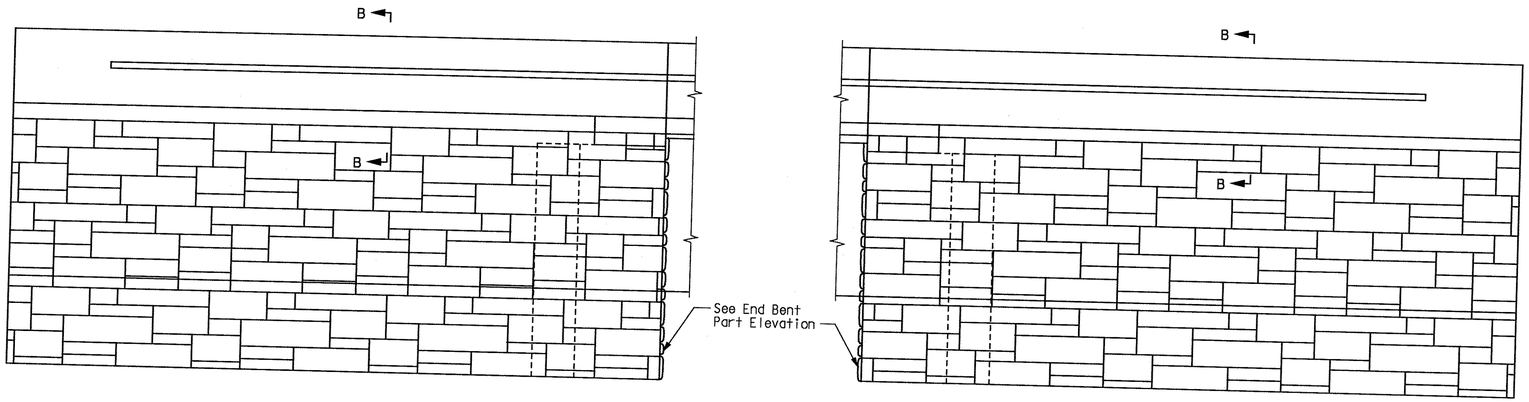
CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

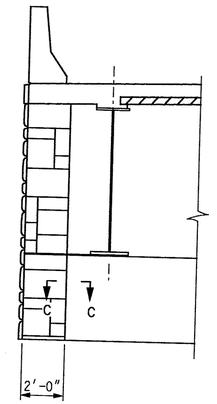
STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER



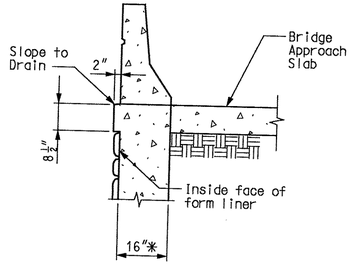
END BENT NO. 1

END BENT NO. 4

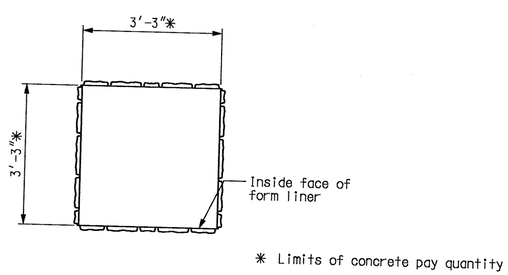
END BENT WING ELEVATION



END BENT NO. 1 PART ELEVATION
(End Bent No. 4 Similar)

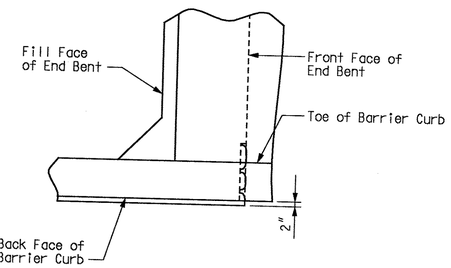


PART SECTION B-B

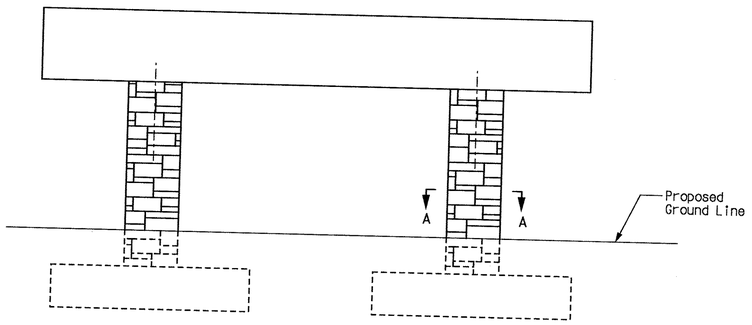


* Limits of concrete pay quantity

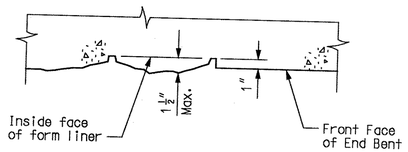
SECTION A-A



PLAN AT END BENTS



INTERMEDIATE BENT ELEVATION



SECTION C-C

Notes:

The cost of form liner will be paid for at the contract unit price for Form Liner per Sq. Yd. The cost of concrete necessary to fill the form lines shall be included in the contract unit price per Sq. Yd. of Form Liner.

Form liner seams shall be oriented away from traffic.

The following is a list of form liner manufacturers and types which may be used. All form liner patterns depth of relief shall vary up to 1½". The height of any single 'stone' shall be 15" maximum.

Scott System, Inc.: Form liner pattern #167 "Ashlar Stone".

Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone".

Dayton Superior/Symons: Form liner pattern #1515 "Ashlar Stone".

Limits of Masonry and Graffiti Protection System at End Bents shall be all surfaces with Form Liner.

Limits of Masonry and Graffiti Protection System at Intermediate Bents shall be all column surfaces from the top of the footing to the bottom of the capbeam.

FORM LINER DETAILS

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PLOTTED: 27-SEP-2006 15:54 K:\B41354\Plans\A7352\Drawings\ZPLOT_T33A.dgn

Detailed JUNE 2006
Checked JUNE 2006

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

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B36

HNTB

JOB NO. J4P1707

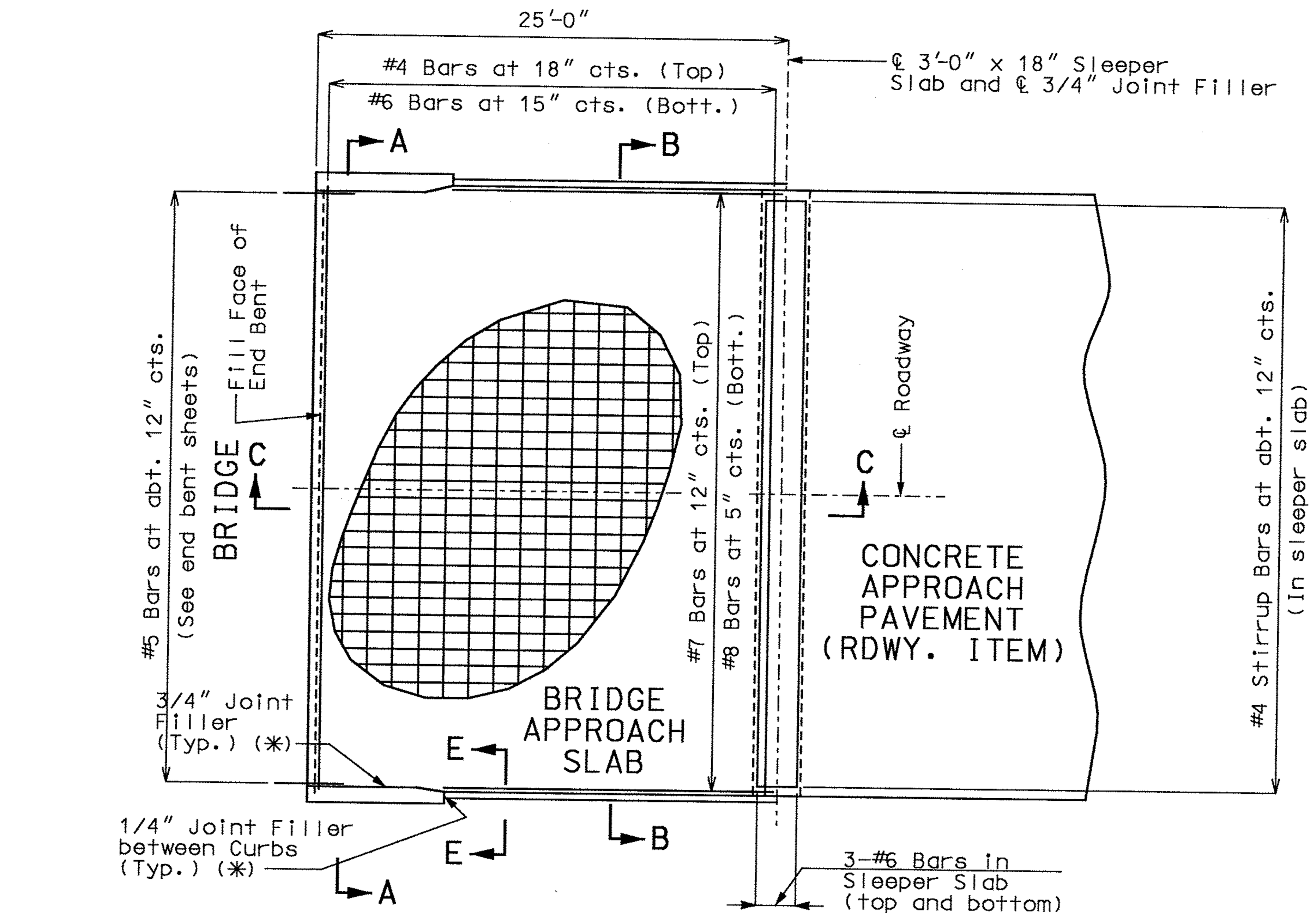
CONTRACT ID

PROJECT NO.

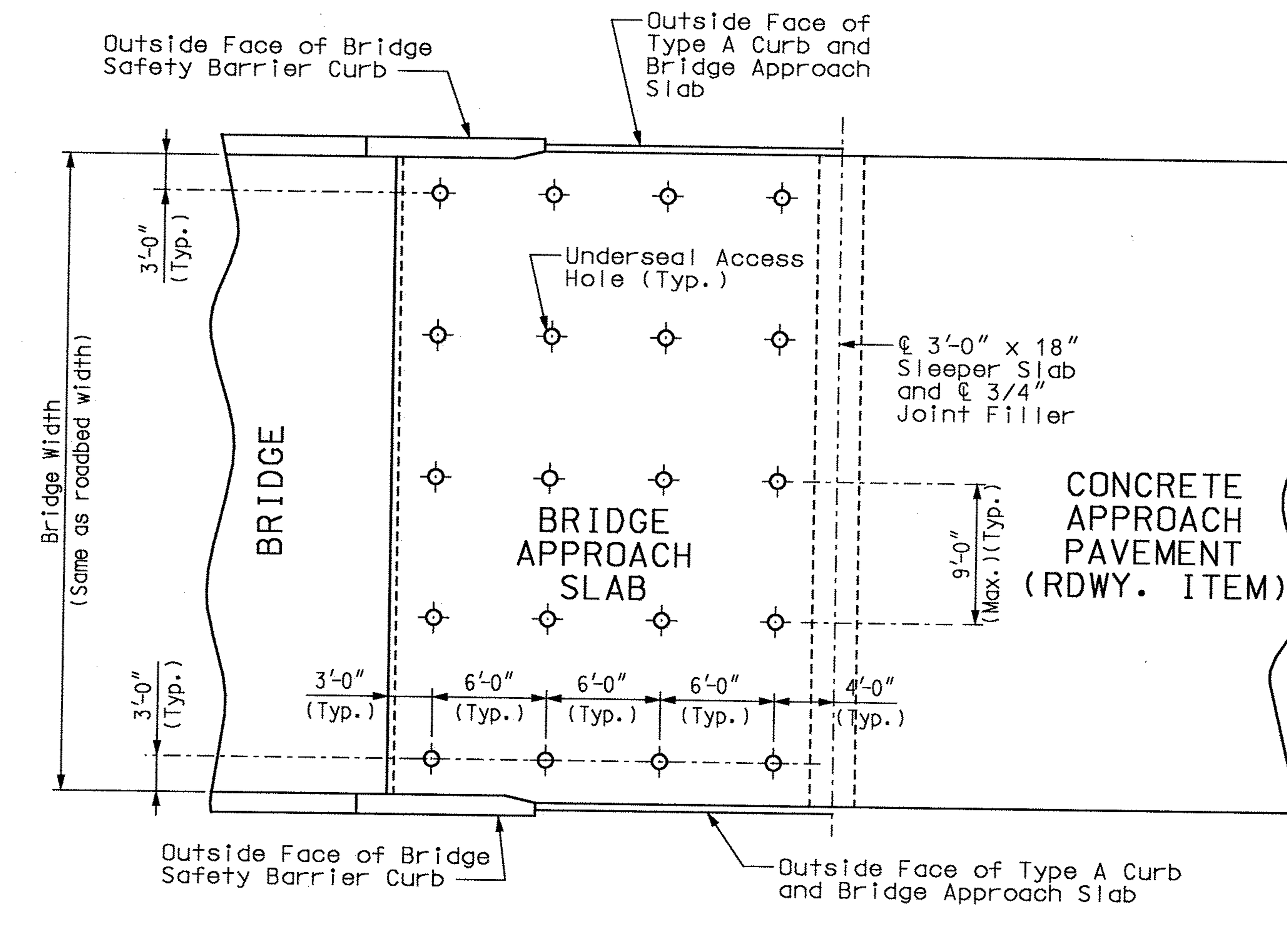
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25976 — REGISTERED PROFESSIONAL ENGINEER

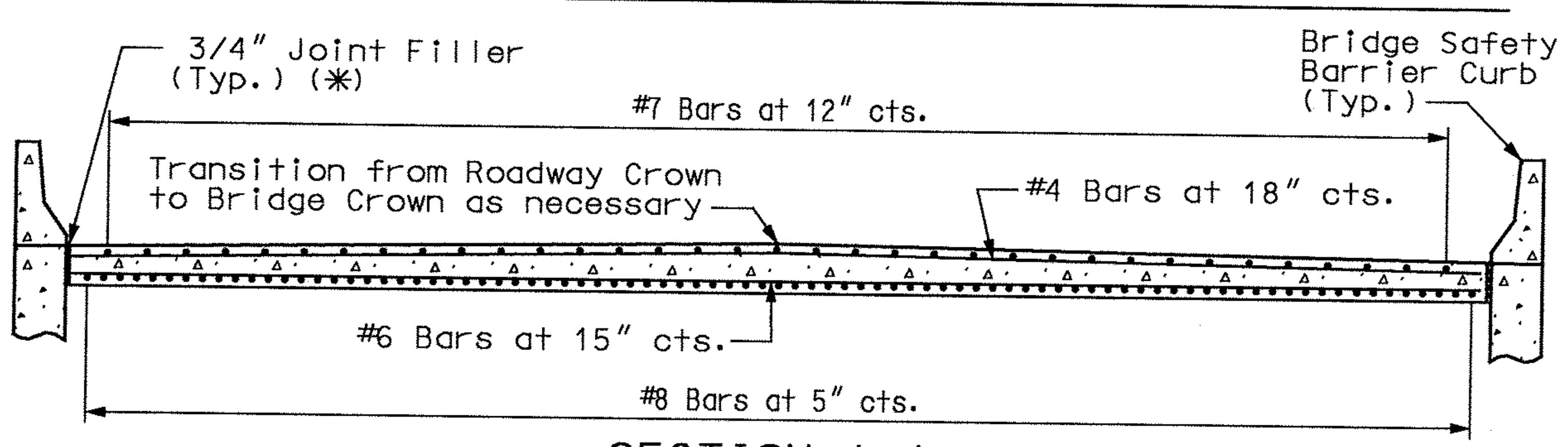


PART PLAN SHOWING REINFORCEMENT

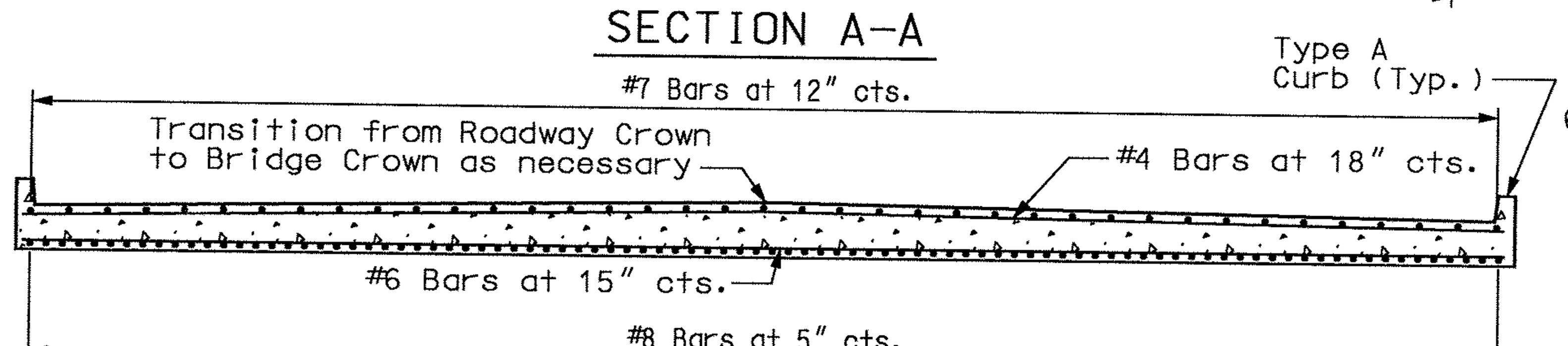


PART PLAN

(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

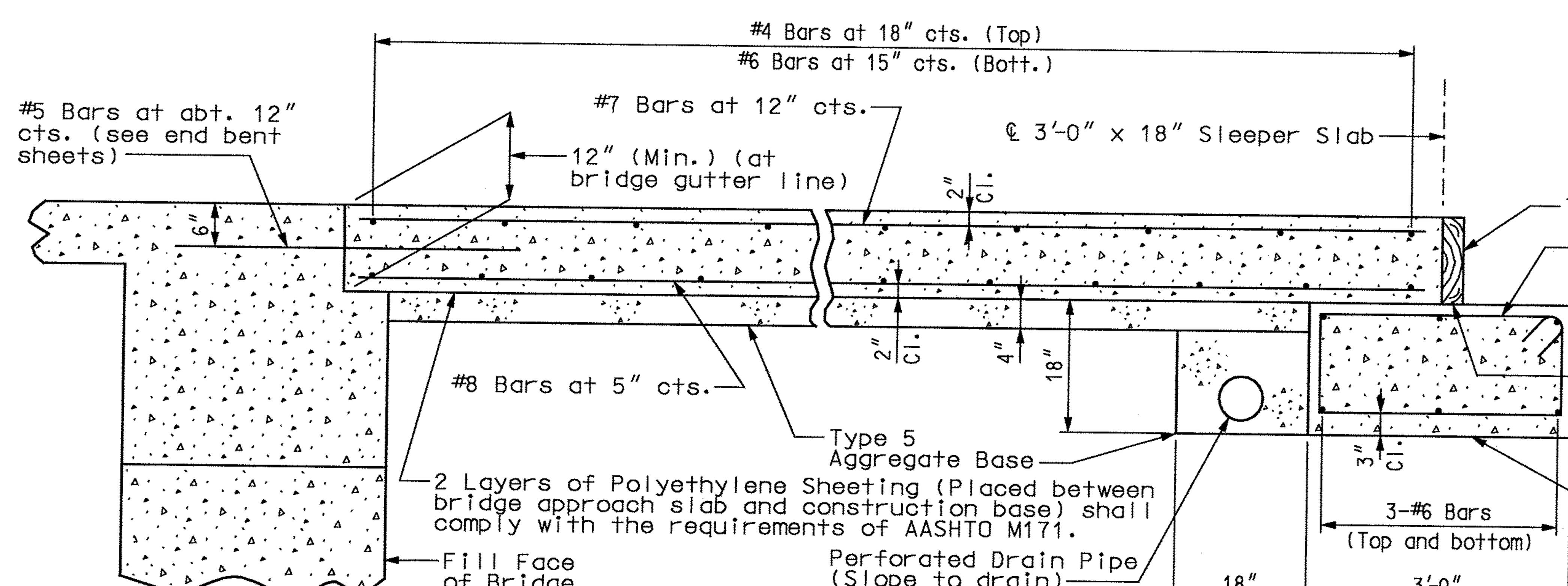


SECTION A-A

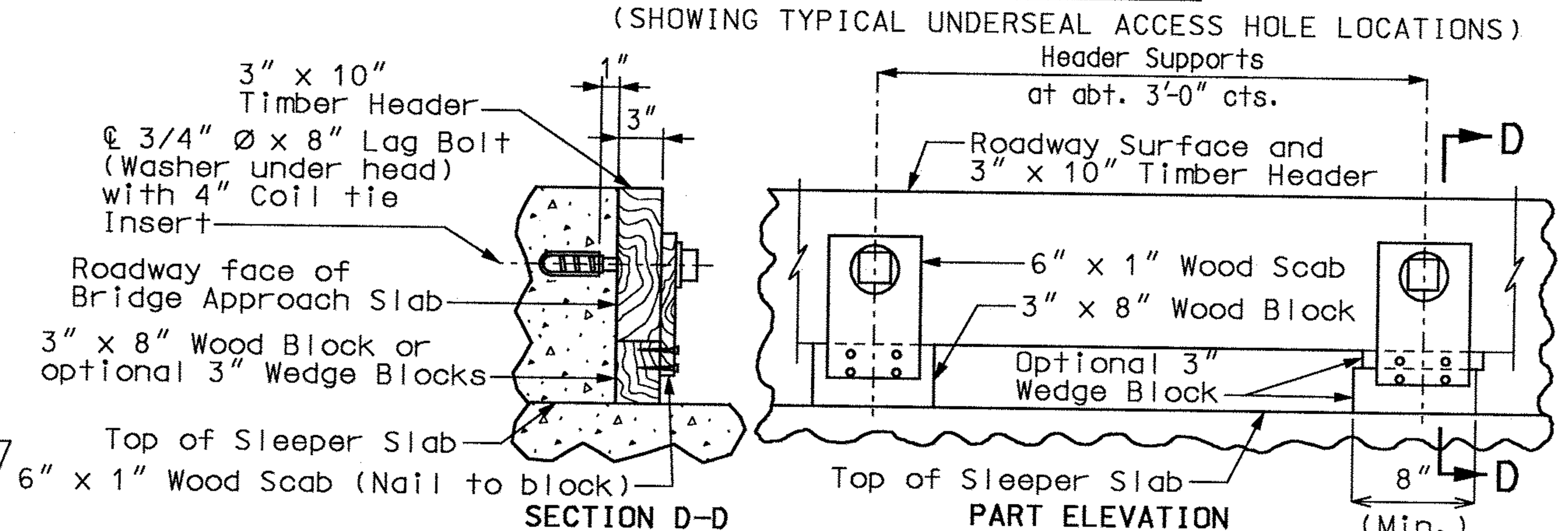


SECTION B-B

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

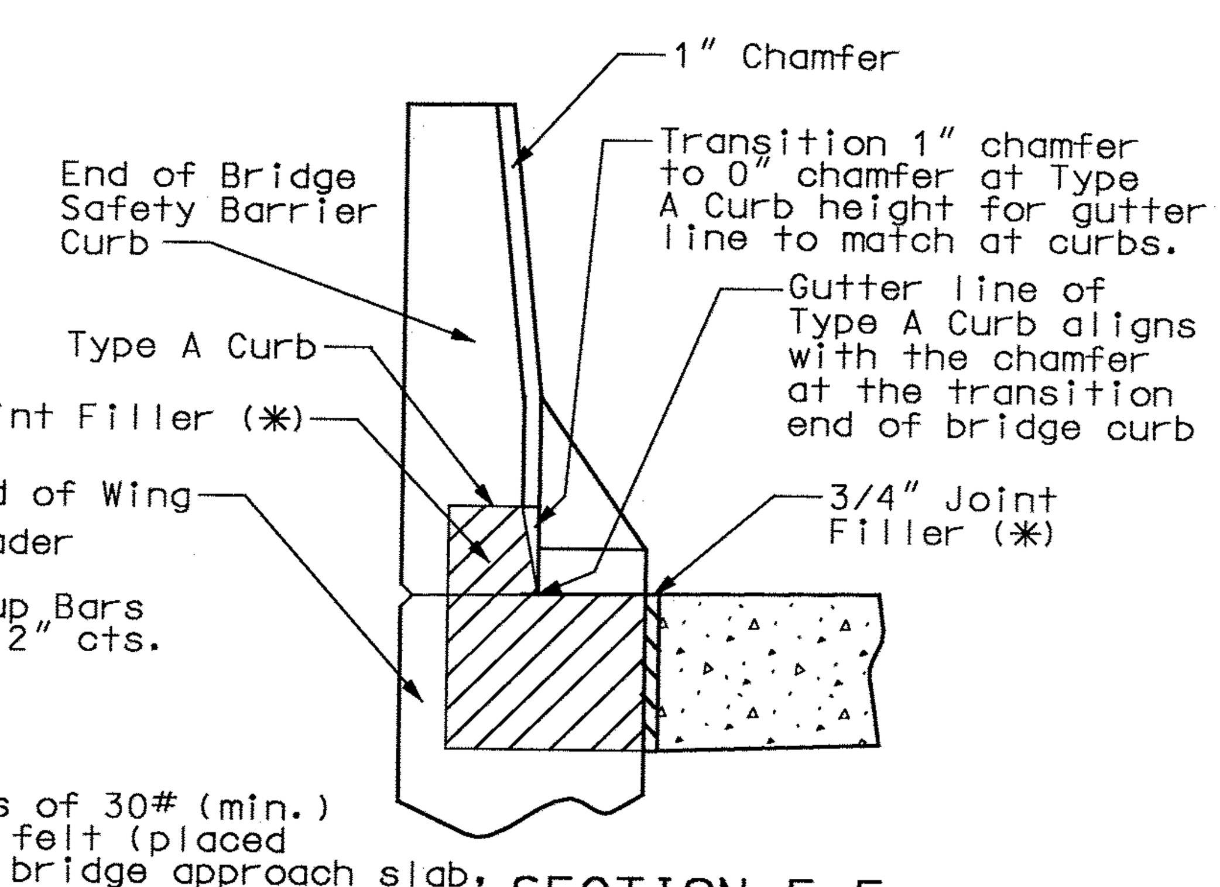


SECTION C-C



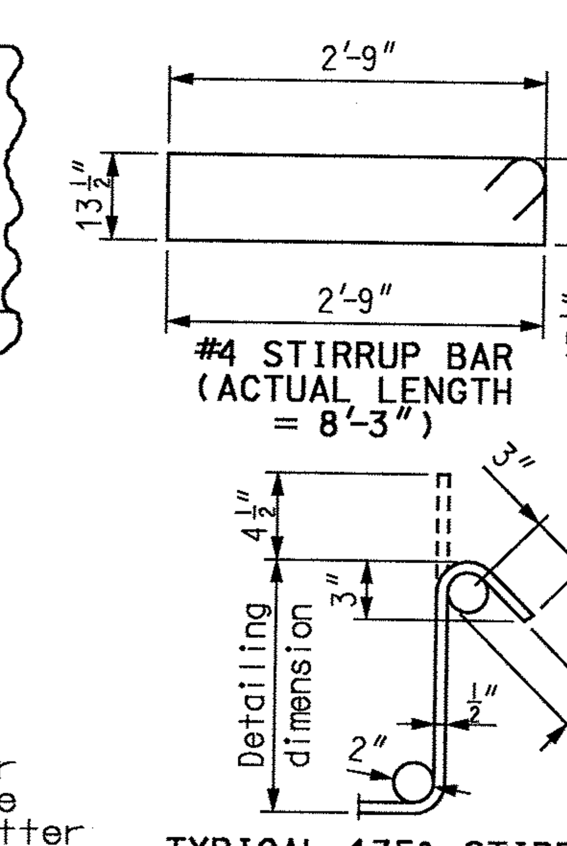
Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER



SECTION E-E

(BETWEEN CURBS)



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).

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 shall 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 by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

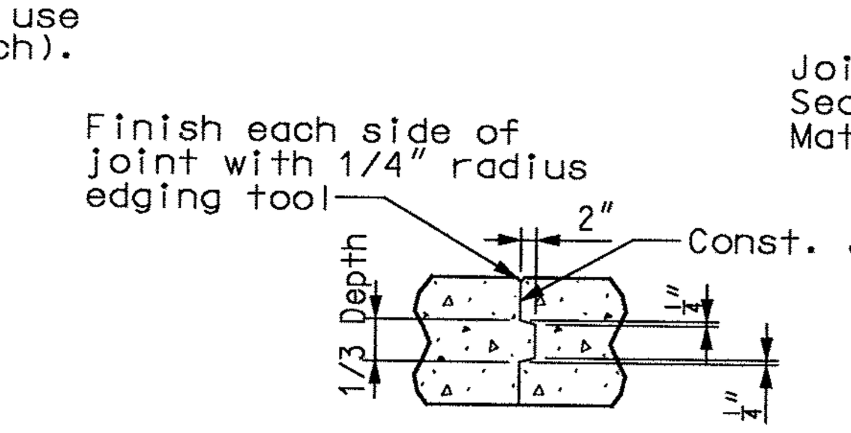
For Concrete Approach Pavement details, see roadway plans.

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

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.

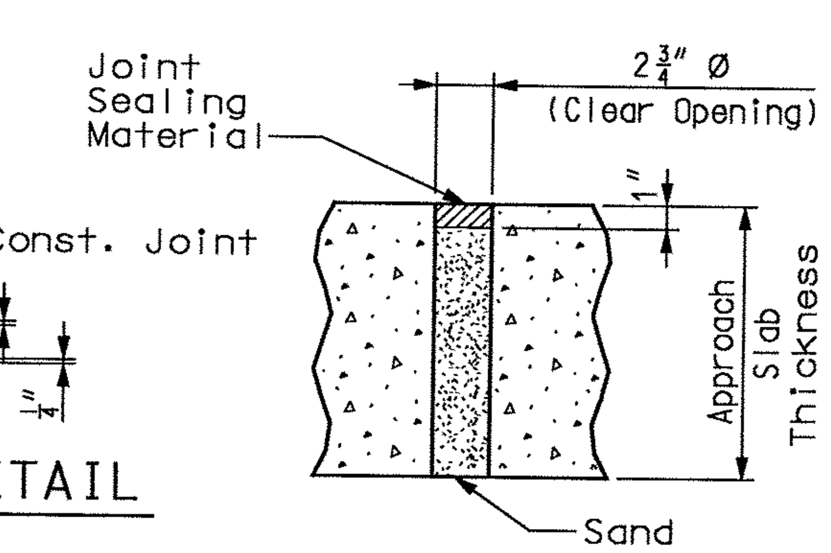
When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy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



CONST. JOINT DETAIL

(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

BRIDGE APPROACH SLAB

USER: TThompson K:\B41354\Plans\A7352\Drawings\ZPLOT_T34.dgn
PLOTTED: 27-SEP-2006 15:54

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B37

JOB NO. J4P1707

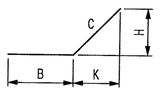
CONTRACT ID

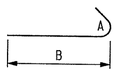
PROJECT NO.

COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25876 — REGISTERED PROFESSIONAL ENGINEER


SHAPE 2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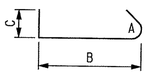
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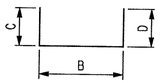
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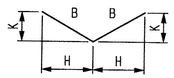
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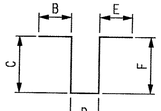
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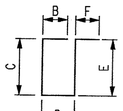
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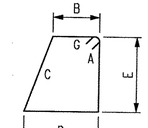
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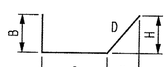
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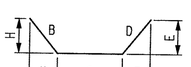
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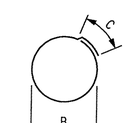
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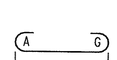
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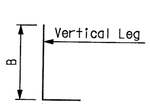
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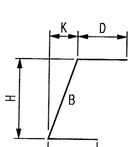
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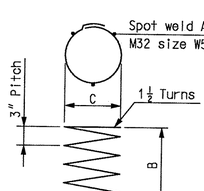
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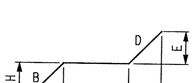
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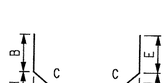
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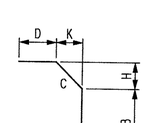
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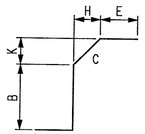
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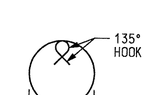
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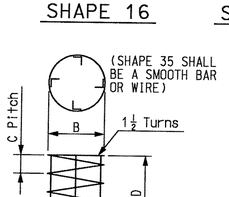
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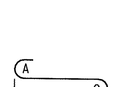
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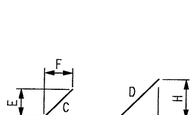
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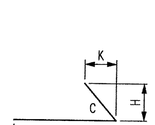
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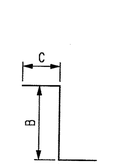
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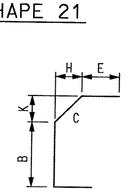
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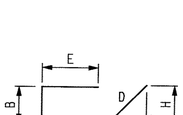
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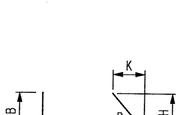
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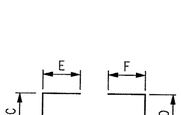
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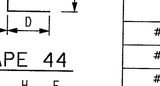
SHAPE 44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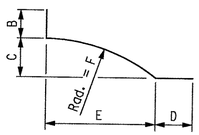
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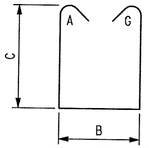
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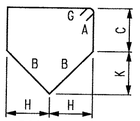
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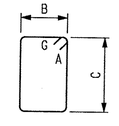
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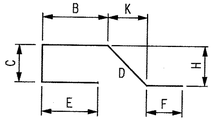
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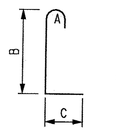
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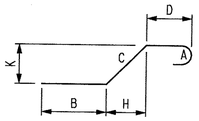
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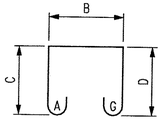
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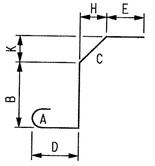
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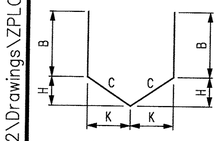
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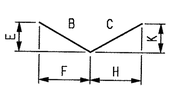
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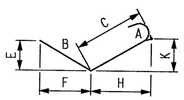
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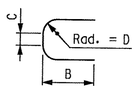
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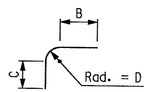
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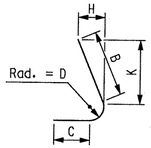
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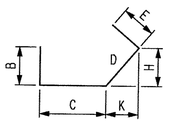
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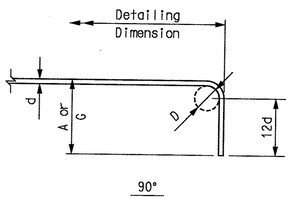
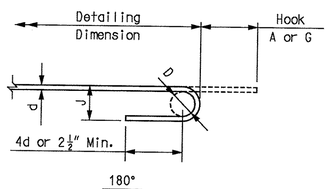
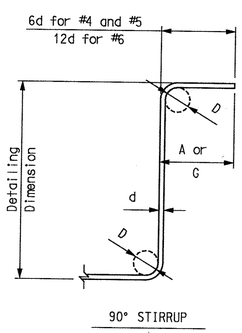
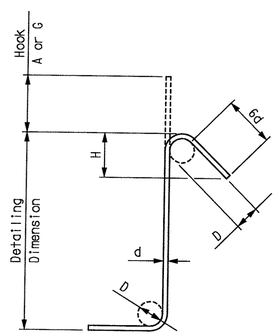

90°


180°


90° STIRRUP


135° STIRRUP

STIRRUP HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		90° Hooks	135° Hooks	
		Hook A or G	Hook A or G	Approx. H
#4	2″	4½″	4½″	3″
#5	2½″	6″	5½″	3¾″
#6	4½″	12″	8″	4½″

END HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		180° Hooks		90° Hooks
		Hook A or G	J	Hook A or G
#3	2¼″	5″	3″	6″
#4	3″	6″	4″	8″
#5	3¾″	7″	5″	10″
#6	4½″	8″	6″	12″
#7	5¼″	10″	7″	14″
#8	6″	11″	8″	16″
#9	9½″	15″	11¾″	19″
#10	10¾″	17″	13¼″	22″
#11	12″	19″	14¾″	2′-0″
#14	18¼″	2′-3″	21¾″	2′-7″
#18	2′-0″	3′-0″	2′-4½″	3′-5″

Notes:
All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (Nearest inch)
Payweights are based on actual lengths.
Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.
E = Epoxy coated reinforcment.
S = Stirrup.
X = Bar is included in substructure quantities.
Actual lengths are measured along centerline bar to the nearest inch.
V = Bar dimensions vary in equal increments between dimensions shown on this line and the following line.
No. ea. = Number of bars of each length.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.
Reinforcing steel (Grade 60) fy = 60,000 psi.

BAR BENDING DIAGRAMS

USER: TThompson
PLOTTED: 27-SEP-2006 15:54 K:\B4135\Plans\A7352\Drawings\ZPLOT_T35.dgn

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B38

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-29176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 1																									
38	6	F100	Beam & Diaph.		23						14″	5′	-0″		14″		9⅞″		9⅞″		9⅞″		9⅞″	7′	-4″	7′	-4″	419
10	6	F101	Diaphragm		19					5′	-3″	2′	-6″											7′	-9″	7′	-8″	115
30	6	H100	Beam & Diaph.		20					40′	-4″													40′	-4″	40′	-4″	1,817
38	5	H101	App. Seat	E	20					2′	-6″													2′	-6″	2′	-6″	99
12	8	H102	Wingwall		20					22′	-6″													22′	-6″	22′	-6″	721
4	8	H103	Wingwall	E	20					22′	-6″													22′	-6″	22′	-6″	240
76	9	H104	Wingwall		20					22′	-6″													22′	-6″	22′	-6″	5,814
4	6	H105	Beam		20					11′	-6″													11′	-6″	11′	-6″	69
34	5	U100	Beam & Diaph.		5	S				2′	-6″	5′	-3″	5′	-3″									13′	-0″	12′	-9″	452
6	4	U101	Beam		53	S				2′	-6″	2′	-7″											10′	-11″	10′	-8″	43
9	4	U102	Beam		5	S				2′	-6″	2′	-7″	2′	-7″									7′	-8″	7′	-6″	45
40	5	U103	Diaphragm	E	21	S				2′	-1″	5′	-8″	5′	-8″					2′	-1″	½″		13′	-5″	13′	-2″	549
34	6	U104	Diaphragm		19	S				4′	-9″	2′	-6″											7′	-3″	7′	-2″	366
60	6	U105	Diaphragm	E	38	S				4′	-0″	6′	-0″							6′	-0″	1½″		10′	-0″	10′	-0″	901
18	4	U106	Beam		5	S				2′	-6″	14″		14″										4′	-10″	4′	-8″	56
12	5	V100	Beam & Diaph.		20					5′	-3″													5′	-3″	5′	-3″	66
15	6	V101	Diaphragm		20					4′	-10″													4′	-10″	4′	-10″	109
42	6	V102	Wingwall		20					8′	-7″													8′	-7″	8′	-7″	541
42	6	V103	Wingwall		20					8′	-6″													8′	-6″	8′	-6″	536
			END BENT 4																									
38	6	F400	Beam & Diaph.		23						14″	5′	-0″		14″		9⅞″		9⅞″		9⅞″		9⅞″	7′	-4″	7′	-4″	419
10	6	F401	Diaphragm		19					5′	-3″	2′	-6″											7′	-9″	7′	-8″	115
30	6	H400	Beam & Diaph.		20					40′	-4″													40′	-4″	40′	-4″	1,817
38	5	H401	App. Seat	E	20					2′	-6″													2′	-6″	2′	-6″	99
12	8	H402	Wingwall		20					20′	-6″													20′	-6″	20′	-6″	657
6	8	H403	Wingwall *	E	20					20′	-6″													20′	-6″	20′	-6″	328
76	9	H404	Wingwall		20					20′	-6″													20′	-6″	20′	-6″	5,297
4	6	H405	Beam		20					11′	-6″													11′	-6″	11′	-6″	69
34	5	U400	Beam & Diaph.		5	S				2′	-6″	5′	-3″	5′	-3″									13′	-0″	12′	-9″	452
6	4	U401	Beam		53	S				2′	-6″	2′	-7″											10′	-11″	10′	-8″	43
9	4	U402	Beam		5	S				2′	-6″	2′	-7″	2′	-7″									7′	-8″	7′	-6″	45
40	5	U403	Diaphragm	E	21	S				2′	-1″	5′	-8″	5′	-8″					2′	-1″	½″		13′	-5″	13′	-2″	549
34	6	U404	Diaphragm		19	S				4′	-9″	2′	-6″											7′	-3″	7′	-2″	366
60	6	U405	Diaphragm	E	2	S				4′	-0″	6′	-0″							6′	-0″	1½″		10′	-0″	10′	-0″	901
18	4	U406	Beam		5	S				2′	-6″	14″		14″										4′	-10″	4′	-8″	56
12	5	V400	Beam & Diaph.		20					5′	-3″													5′	-3″	5′	-3″	66
15	6	V401	Diaphragm		20					4′	-10″													4′	-10″	4′	-10″	109
38	6	V402	Wingwall		20					8′	-7″													8′	-7″	8′	-7″	490
38	6	V403	Wingwall		20					8′	-6″													8′	-6″	8′	-6″	485

* Two additional #8-H403 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			BENT 2																									
10	W5	W200	Anchor Bolt Wells		22		X			2′	-1″	9⅛″												33′	-2″	33′	-2″	55
20	8	D200	Footing		18		X			11′	-6″													13′	-4″	13′	-4″	712
24	8	D201	Footing		18		X			9′	-6″													11′	-4″	11′	-4″	726
9	10	H200	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	1,485
8	6	H201	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	461
8	10	H202	Beam		18		X			38′	-4″													41′	-2″	41′	-2″	1,417
12	6	H203	Beam		5	S	X			3′	-7″	22″		22″										7′	-3″	7′	-0″	126
12	6	H204	Beam		20		X			2′	-7″													2′	-7″	2′	-7″	47
8	6	H205	Beam		20		X			3′	-1″													3′	-1″	3′	-1″	37
32	4	P200	Column		53	S	X			2′	-11″	2′	-11″											12′	-5″	12′	-2″	260
86	5	U200	Beam		53	S	X			2′	-6″	4′	-8″											15′	-3″	15′	-0″	1,345
24	5	U201	Beam		5	S	X			2′	-6″	4′	-8″	4′	-8″									11′	-10″	11′	-7″	290
32	4	U202	Beam		5	S	X			3′	-8″	12″		12″										5′	-8″	5′	-6″	118
24	10	V200	Column		36		X			22′	-7″													25′	-5″	25′	-5″	2,625
			BENT 3																									
10	W5	W300	Anchor Bolt Wells		22		X			2′	-1″	9⅛″												33′	-2″	33′	-2″	55
20	8	D300	Footing		18		X			11′	-6″													13′	-4″	13′	-4″	712
24	8	D301	Footing		18		X			9′	-6″													11′	-4″	11′	-4″	726
9	10	H300	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	1,485
8	6	H301	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	461
8	10	H302	Beam		18		X			38′	-4″													41′	-2″	41′	-2″	1,417
12	6	H303	Beam		5	S	X			3′	-7″	22″		22″										7′	-3″	7′	-0″	126
12	6	H304	Beam		20		X			2′	-7″													2′	-7″	2′	-7″	47
8	6	H305	Beam		20		X			3′	-1″													3′	-1″	3′	-1″	37
30	4	P300	Column		53	S	X			2′	-11″	2′	-11″											12′	-5″	12′	-2″	244
86	5	U300	Beam		53	S	X			2′	-6″	4′	-8″											15′	-3″	15′	-0″	1,345
24	5	U301	Beam		5	S	X			2′	-6″	4′	-8″	4′	-8″									11′	-10″	11′	-7″	290
32	4	U302	Beam		5	S	X			3′	-8″	12″		12″										5′	-8″	5′	-6″	118
24	10	V300	Column		36		X			21′	-4″													24′	-2″	24′	-2″	2,496

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

Detailed JUNE 2006
Checked JULY 2006

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

Sheet No. 38 of 40.

A7352

USER: TThompson
PLOTTED: 27-SEP-2006 15:55 K:\B41354\Plans\A7352\Drawings\ZPLOT_T36.dgn

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B9

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
		SLAB																
610	7S100	Top Trans *	E	20					40′-4″							40′-4″	40′-4″	50,289
198	6S101	Top Long	E	20					54′-0″							54′-0″	54′-0″	16,059
130	6S102	Top Long over Bent *	E	20					20′-0″							20′-0″	20′-0″	3,905
128	6S103	Top Long over Bent	E	20					53′-10″							53′-10″	53′-10″	10,350
48	5S104	Bottom Long	E	20					53′-0″							53′-0″	53′-0″	2,653
608	5S105	Bottom Trans	E	20					3′-0″							3′-0″	3′-0″	1,902
		BARRIER CURB																
64	5C101	Slip Form B.C.	E	20					10′-0″							10′-0″	10′-0″	668
158	5K101	B.C. at EB	E	19	S				2′-5″	5 1/8″						2′-11″	2′-9″	453
158	5K102	B.C. at EB	E	14	S				5 1/8″	11 1/8″	18″			2″	17 7/8″	2′-11″	2′-9″	453
114	5K103	B.C. at EB	E	40	S				5 1/8″	12″	3′-0″	2′-2 1/8″		9 7/8″	6 7/8″	6′-8″	6′-4″	753
44	5K104	B.C. at EB	E	7					3′-0″	6″						6′-3″	6′-3″	287
4	5K105	B.C. at EB	E	25	S				2′-6 1/2″	6 3/4″	4 3/8″			5 1/2″	4″	3′-6″	3′-4″	14
4	5K106	B.C. at EB	E	25	S				2′-5 1/2″	7 7/8″	4 3/8″			6 1/2″	4 1/2″	3′-6″	3′-5″	14
4	5K107	B.C. at EB	E	25	S				2′-4 1/8″	9 5/8″	4 3/8″			7 7/8″	5 1/2″	3′-7″	3′-5″	14
4	5K108	B.C. at EB	E	25	S				2′-2 3/4″	11 1/4″	4 3/8″			9 1/4″	6 1/2″	3′-7″	3′-5″	14
48	5K109	B.C. at EB	E	20					5′-7″							5′-7″	5′-7″	280
22	4K110	B.C. at EB1 *	E	20					19′-0″							19′-0″	19′-0″	279
4	5K111	B.C. at EB	E	8					2′-2 1/8″					2′-2″	2 3/8″	4′-5″	4′-5″	18
20	4K112	B.C. at EB4	E	20					17′-0″							17′-0″	17′-0″	227
600	5R101	Barrier Curb	E	19	S				2′-6″	3 1/2″						2′-10″	2′-8″	1,669
600	5R102	Barrier Curb	E	2	S				3 1/2″	2′-6 5/8″				2′-6″	3″	2′-10″	2′-10″	1,773
600	5R103	Barrier Curb	E	19	S				17″	6″						23″	22″	1,147
600	5R104	Barrier Curb	E	27	S				7″	11 1/4″	12″	6″		6 3/8″	9 1/4″	3′-1″	2′-9″	1,721
114	5R105	Barrier Curb *	E	20					9′-7″							9′-7″	9′-7″	1,139
28	5R106	Barrier Curb	E	20					59′-7″							59′-7″	59′-7″	1,740
28	5R107	Barrier Curb	E	20					50′-9″							50′-9″	50′-9″	1,482

* Two additional #7-S100, #6-S102, #4-K110, and #5-R105 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
		TOTALS																
	W5																	110
	4																	1,028
	4		E															506
	5																	4,306
	5		E															19,490
	6																	9,184
	6		E															32,116
	7		E															50,289
	8																	4,254
	8		E															569
	9																	11,111
	10																	10,925
		SLAB ON STEEL																
	4																	288
	5																	1,036
	5		E															5,851
	6																	7,842
	6		E															32,116
	7		E															50,289
	8																	1,378
	8		E															569
	9																	11,111
		REINFORCING STEEL (BRIDGES)																
	W5																	110
	4																	740
	5																	3,270
	6																	1,342
	8																	2,876
	10																	10,925
		BARRIER CURB																
	4		E															506
	5		E															12,971
		SLIP FORM OPTION																
	5		E															668

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

Detailed JUNE 2006
Checked JULY 2006

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

A7352

USER: TThompson
PLOTTED: 27-SEP-2006 15:55 K:\B41354\Plans\A7352\Drawings\ZPLOT_T37.dgn

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B40

JOB NO. J4P1707

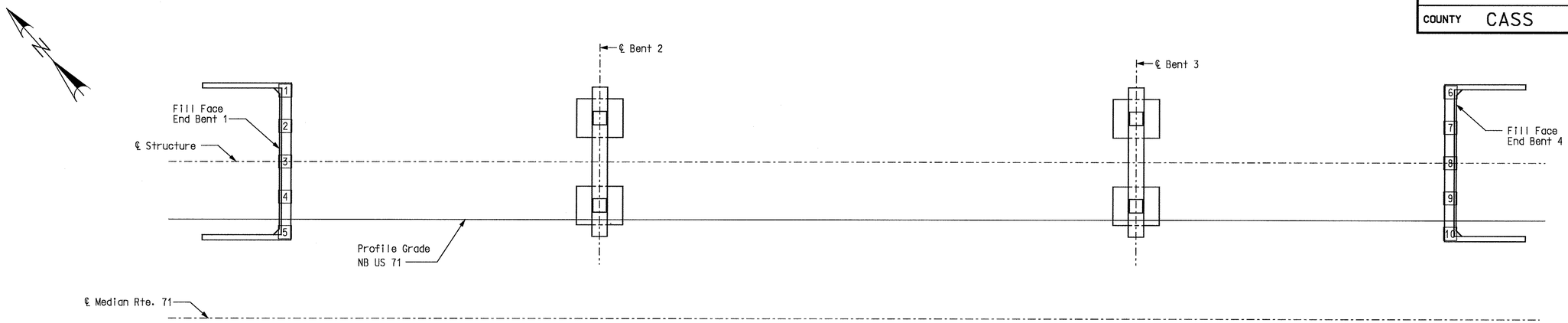
CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WISSEMANN
NUMBER E-29176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



END BENT 1 BENT 2 BENT 3 END BENT 4

PART PLAN SHOWING PILE NUMBERING FOR RECORDING "AS BUILT PILE" DATA

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent 1
1			
2			
3			
4			
5			
			End Bent 4
6			
7			
8			
9			
10			

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.

AS-BUILT PILE DATA

A7352

USER: TThompson
PLOTTED: 27-SEP-2006 15:55 K:\B41354\Plans\A7352\Drawings\ZPLOT_T39.dgn

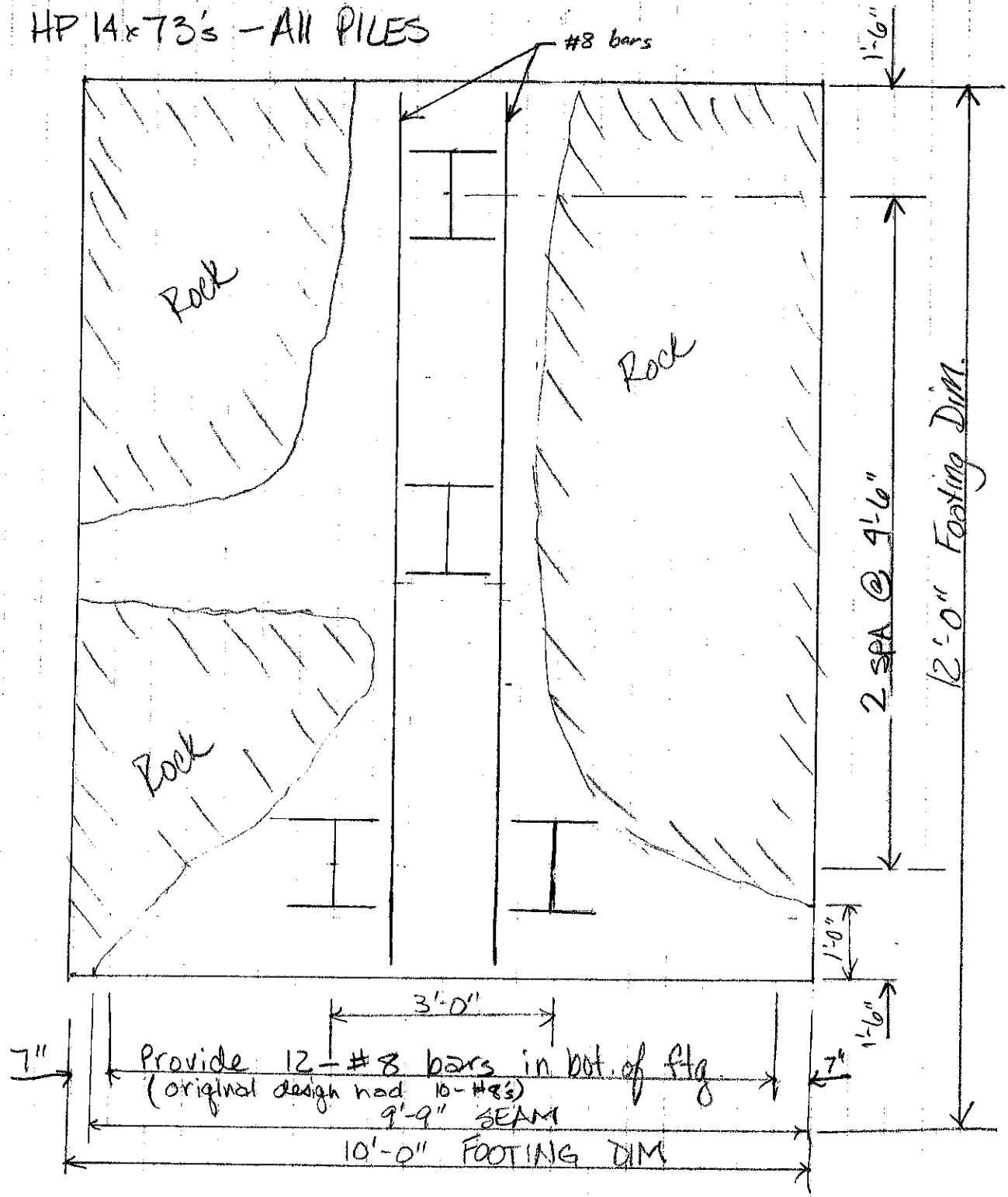
Detailed JUNE 2006
Checked JUNE 2006

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

For Route 11 over Route 7	Job no.	Sheet no.
Made by GDH	Checked by	Backchecked by
Date 3/30/09	Date	Date

NB BR. A7352, BENT 2
(Excavation #4 - East)

HP 14x73's - All PILES

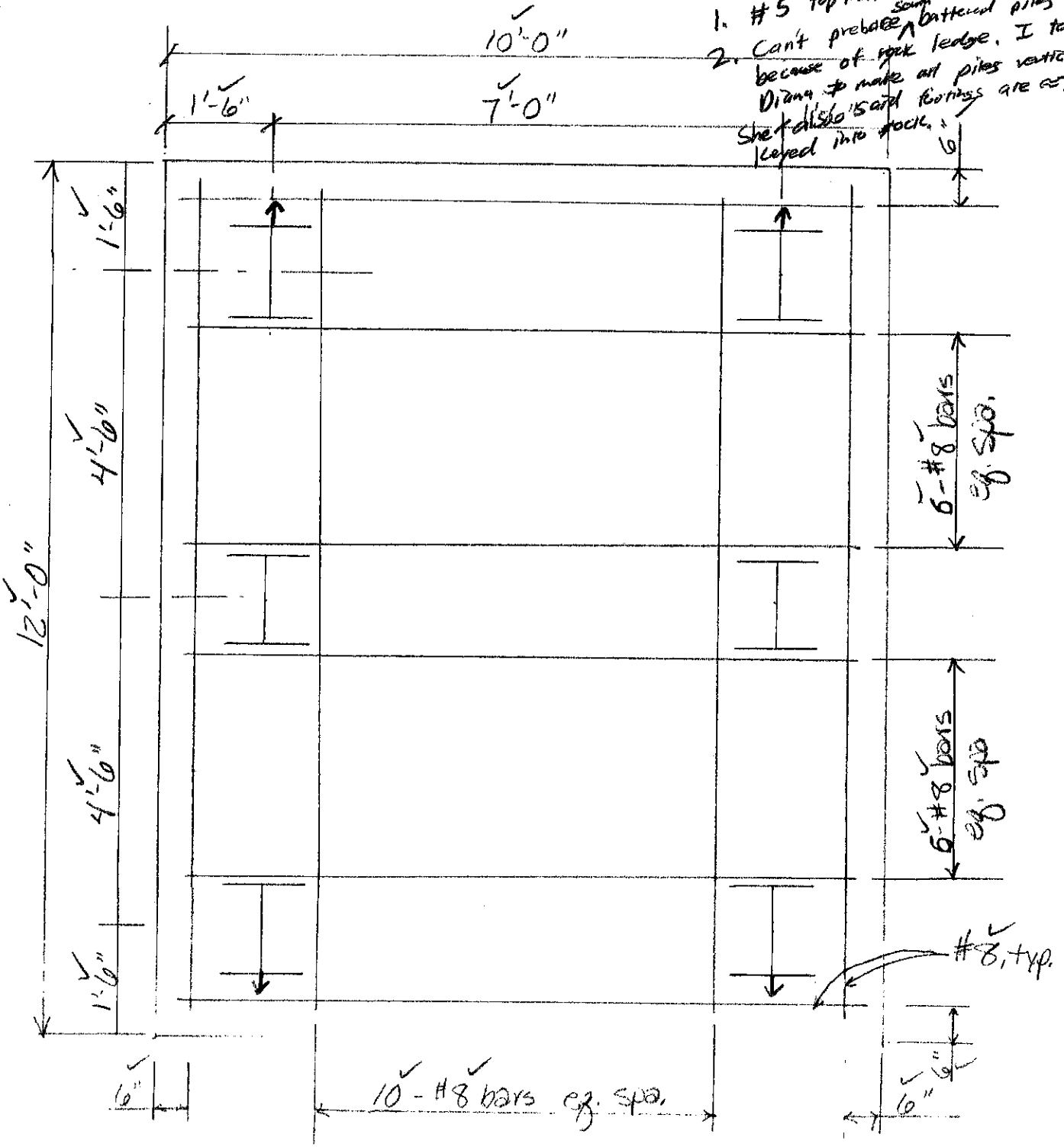


ME101-1204

[illegible]	Job No. 11227	Sheet No.	
Made by GDH	Checked by FPB	Backchecked by	
Date 4-10-09	Date 4/6/09	Date	

Conversation w/ Diana 4/7/09

1. #5 top mat bars are straight
2. Can't prebatter soup batttered piles because of rock ledge. I told Diana to make all piles vertical. She said footings are ≈75% keyed into rock.



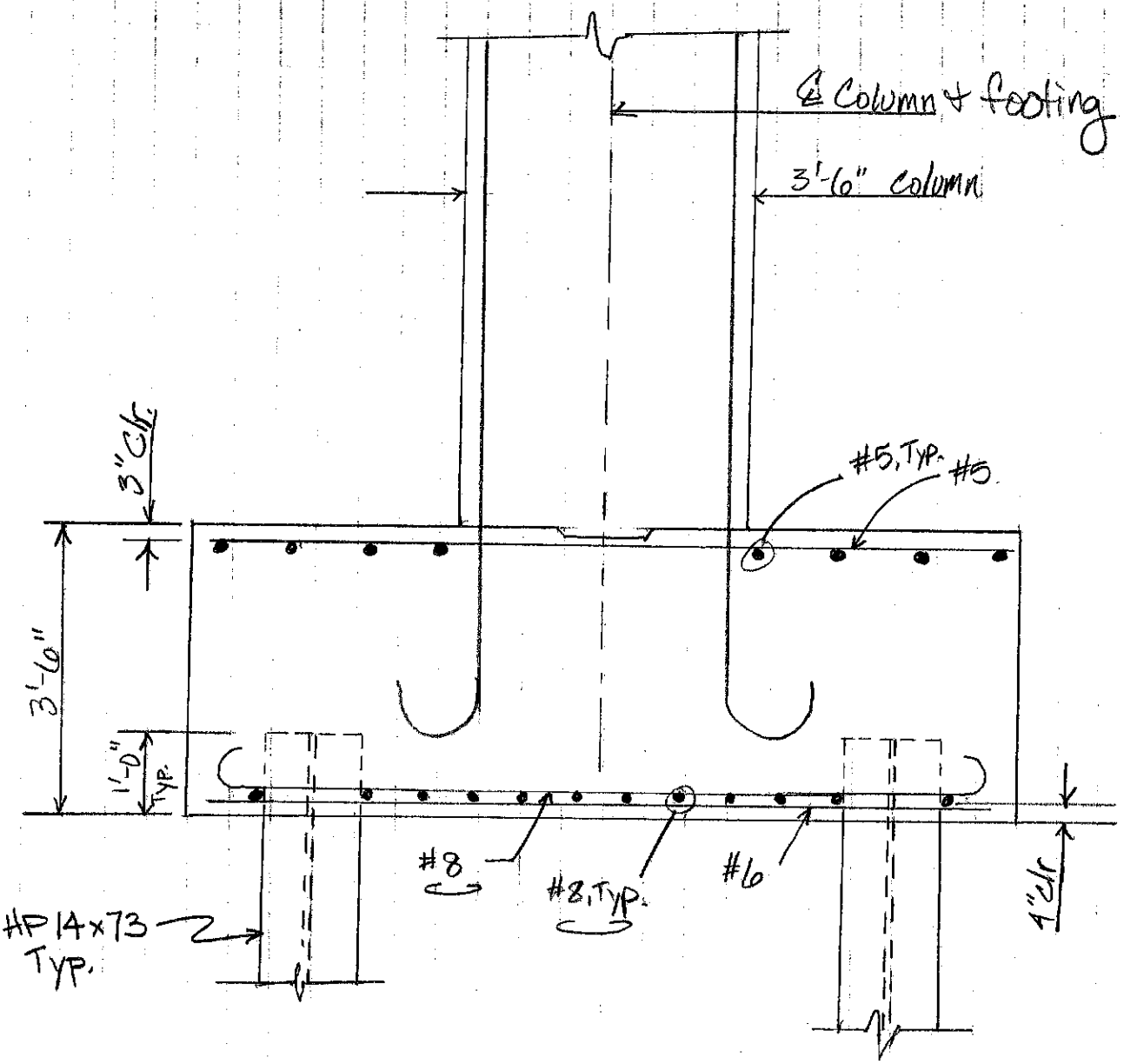
↓ denotes 2:12 batter

Bottom reinforcing shown, top reinforcing shall be #5 @ 12" each direction

Bent 3

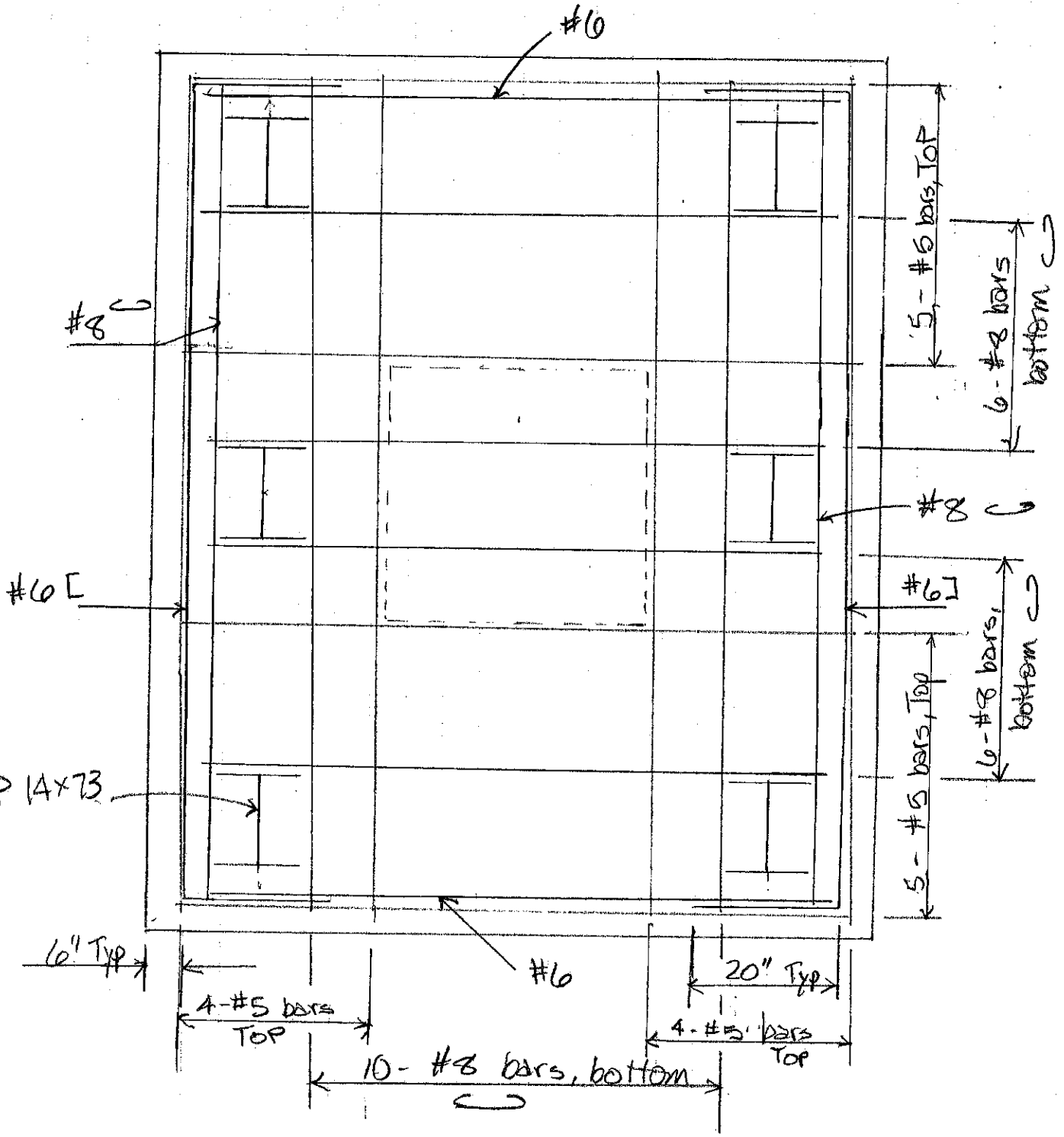
For	Kyle II over Kyle I	Job no. 41054	Sheet no.
Made by	GDH	Checked by	Backchecked by
Date	4-8-09	Date	Date

HNTB



FOOTING ELEV.
BENT 3

For Rte 11 over Rte 7	Job no. 41554	Sheet no.	HNTB
Made by GDH	Checked by	Backchecked by	
Date 4-8-09	Date	Date	



Footing ~~Reinforcing~~ Bent 3

HP14X73, 17'
Design Bearing (tons) = 80
Ram Weight (lbs) = 2830

J4P1707

NB US 71 Br. A7352

Pile No.	Length (feet)	Heat #	Cut-off (feet)	In Place (feet)	Splice (feet)	Heat #	Penetration/10 blows (inches)	Stroke (feet)
Bent 2								
1	17' 7"	30396400	10' 4"	17' 10"	10' 7"	30396480	1/2	8
2	30' 0"	318714	12' 2"	17' 10"	-0-		1/4	8
3	17' 2"	30396400	12' 3"	18' 7"	13' 8"	30396420	1/2	8
4	16' 4"	30396420	11' 10"	18' 3"	13' 9"	320116	5/8	9
Bent 3								
1	24' 0"	309866	6' 4"	17' 8"	-0-		1/4	7
2	24' 0"	318575	5' 0"	19' 0"	-0-		1/4	8
3	29' 11"	318112	12' 1"	17' 10"	-0-		1/4	7
4	24' 2"	318575	6' 2"	18' 0"	-0-		1/4	7
5	24' 3"	318571	5' 5"	18' 10"	-0-		1/4	7
6	30' 3"	320116	13' 9"	16' 6"	-0-		1/4	7
7	16' 8"	30396420	8' 9"	19' 1"	11' 2"	275167	1/4	8
8	16' 11"	30396480	4' 10"	19' 0"	6' 11"	30396420	1/2	8
9	15' 3"	320116	8' 8"	17' 2"	10' 7"	30396400	1/2	8
10	16' 8"	30396480	10' 7"	14' 5"	13' 4"	30396480	3/8	9
11	15' 2"	320116	9' 4"	18' 11"	13' 1"	30396350	1/4	8
12	16' 7"	30396420	13' 8"	18' 11"	16' 0"	30396350	3/8	9
			Total	292.833				

163.72 pd

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(83'-139'-83') Continuous Composite Welded Plate Girder Spans

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	129

JOB NO. J4P1707

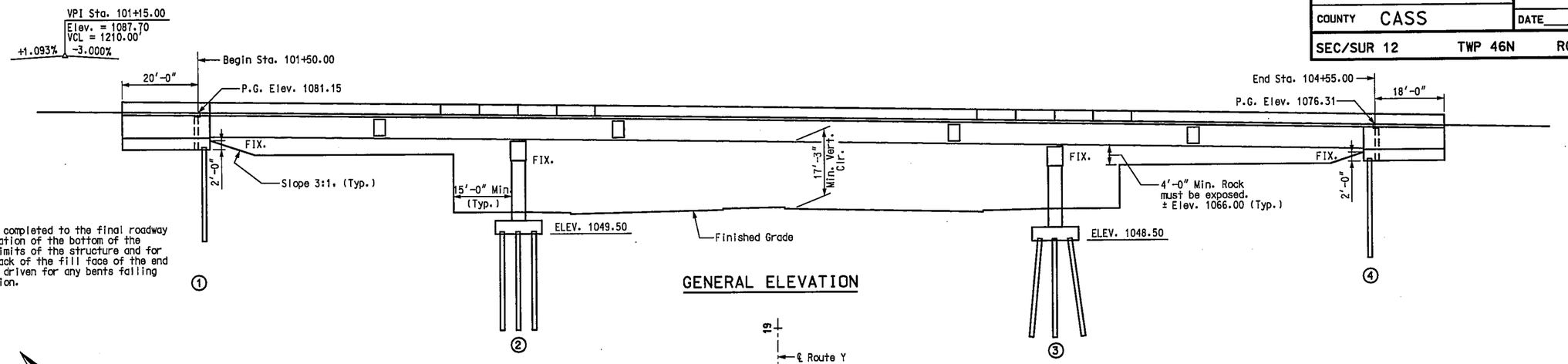
CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

SEC/SUR 12 TWP 46N RGE 33W



PLAN

Note:
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.

Notes:
Indicates location of borings.
All stations along ℄ Rte. 71.
All dimensions are horizontal.

Benchmarks

TBM#17:
Found chiseled sq. cut on the South corner of the West headwall of a 24" RCP pipe under the NE Outer Road at the NW corner of 163rd Street and the NE Outer Road of U.S. Hwy. No. 71. Sta. 14+20.88, Route Y 44.56' Rt. Elev. 1055.870

TBM#20:
Set sq. cut on SE corner of the SW abutment on SB 71 bridge. Sta. 103+72.67, US 71 51.11' Rt. Elev. 1076.65

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan. Boring data is shown on Sheet Nos. 3 thru 5. 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 price, 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.

Designed MAY 2006
Detailed JUNE 2006
Checked JUNE 2006

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

Sheet No. 1 of 40.

BRIDGE: ROUTE 71 OVER ROUTE Y

STATE ROAD ROUTE 71
IN KANSAS CITY
PROJECT NO. STA. 101+50.00
JOB NO. J4P1707 RTE. 71 (NB)
CASS COUNTY

STD. 609.00
STD. 617.10
STD. 706.35
A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	130

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

GENERAL NOTES:

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

Design Loading:
HS20 Modified
Military 24,000# Tandem Axle
35#/Sq. Ft. Future Wearing Surface
Earth 120#/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case I

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 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 Carbon Steel (ASTM A709 Grade 36)	fy = 36,000 psi
Structural Steel (ASTM A709 Grade 50)	fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36)	fb = 9,000 psi

For precast prestressed panel stresses, see Sheet No. 26.

Fabricated Steel Connections:
Field connections shall be made with $\frac{7}{8}$" diameter high strength bolts and $\frac{15}{16}$" diameter holes, except as noted.

Structural Steel:
Fabricated structural steel shall be ASTM A709, Grade 50, except as noted. Diaphragms and intermediate stiffeners shall be ASTM Grade 36.

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 $1\frac{1}{2}$", unless otherwise shown.

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearing by at least $\frac{1}{2}$".

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)". 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)".

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.

Miscellaneous:
A minimum vertical clearance of 14'-6" and horizontal construction clearance barrier protection shall be maintained during construction.

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.

The cost of form liner will be paid for at the contract unit price for Form Liner per sq. yd. The cost of concrete necessary to fill the form liners will be included in the contract unit price per sq. yd. of Form Liner. Concrete pay quantities are calculated to the inside face of form liners.

Concrete Coatings:
Concrete and masonry protective coating shall be applied to the End Bents and Intermediate Bents as shown on the plans and in accordance with Sec. 711.

Sacrificial graffiti protective coating shall be applied to the End Bents and Intermdiate Bents as shown on the plans and in accordance with Sec. 711.

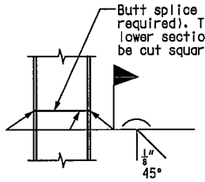
Neoprene Bearings:
Plain and Laminated Neoprene Bearing pads shall be in accordance with Sec. 716. Bearings shall be 60 durometer neoprene pads.

Abbreviations:
F.F. denotes Far Face
N.F. denotes Near Face
E.F. denotes Each Face

PILE & FOOTING DATA

Bent No.			1	2	3	4
Bearing Pile	Pile Type and Size		HP14x73	HP14x73	HP14x73	HP14x73
	Number		5	4	12	5
	Approximate Length	foot	25	17	17	25
	Design Bearing	ton	84.2	80.0	80.0	84.2
	Hammer Energy Required	foot-pound	19,100	18,100	18,100	19,100
Spread/Pile Footings	Foundation Material		-	Limestone	Limestone	-
	Design Bearing	Tons/Sq. Ft.	-	5.1	5.1	-

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
All piles shall be driven to practical refusal.
Prebore for piles at Bents 1 and 4 to elevation 1050 and 1046, respectively.
Manufactured pile point reinforcement shall be used on all piles in this structure.
In no case shall footings of Bents No. 2 and 3 be placed higher than elevations shown.

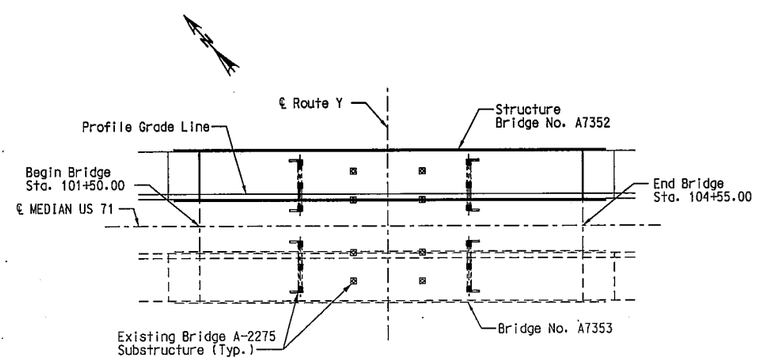


DETAIL OF STEEL PILE SPLICE

FINAL QUANTITIES

Item		Substr.	Superstr.	Total
Class 1 Excavation - Line No. 2420	cu. yard	150	-	150
Class 1 Excavation in Rock - Line No. 2430	cu. yard	114	-	114
Removal of Bridge (A-2275 Northbound) - Line No. 2440	lump sum	-	-	1
Bridge Approach Slab (Bridge) - Line No. 2450	sq. yard	-	214	214
Structural Steel Piles (14in.) - Line No. 2460	linear foot	541	-	541
Pre-Bore for Piling, Bents 1 & 4 - Line No. 2470	linear foot	215	-	215
Pile Point Reinforcement, Bents 1, 2, 3 & 4 - Line No. 2480	each	26	-	26
Class B Concrete (Substructure) - Line No. 2490	cu. yard	212.8	-	212.8
Slab on Steel - Line No. 2500	sq. yard	-	1,374	1,374
* Safety Barrier Curb - Line No. 2510	linear foot	-	686	686
Form Liners - Line No. 2520	sq. yard	182	-	182
Reinforcing Steel (Bridges) - Line No. 2530	pound	19,260	-	19,260
Conduit System on Structure - Line No. 2540	lump sum	-	-	1
Concrete and Masonry Protection System - Line No. 2550	lump sum	-	-	1
Sacrificial Graffiti Protection System - Line No. 2560	lump sum	-	-	1
Fabricated Structural Carbon Steel (Plate Girder) - Line No. 2570	pound	-	19,110	19,110
Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50 - Line No. 2580	pound	-	356,640	356,640
Slab Drain - Line No. 2590	each	-	20	20
Intermediate Field Coat (System G) - Line No. 2600	sq. foot	-	24,800	24,800
Finish Field Coat (System G) - Line No. 2610	sq. foot	-	4,700	4,700
Vertical Drain at End Bents - Line No. 2620	each	-	-	2
Plain Neoprene Bearing Pad - Line No. 2630	each	-	-	10
Laminated Neoprene Bearing Pad Assembly - Line No. 2640	each	-	-	10
Prebore for Piling, Bents 2 & 3 - Line No. 5017	linear foot	155	-	155

Notes:
All concrete between the upper and lower construction joints in the end bents is included in the Estimated Quantities for Slab on Steel.
All reinforcement in the end bents is included in the Estimated Quantities for Slab on Steel.
* Safety barrier curb shall be cast-in-place option or slip-form option.



LOCATION SKETCH

QUANTITIES FOR SLAB ON STEEL

Item		Total
Class B-2 Concrete	cu. yard	321.1
Reinforcing Steel	pound	21,660
Reinforcing Steel (Epoxy Coated)	pound	88,820

Notes:
The table of 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 prestressed panels, 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 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.

The Quantities for Slab on Steel are based on square precast prestressed end panels.

The prestressed panel quantities are not included in the table of Quantities for Slab on Steel.

GENERAL NOTES AND ESTIMATED QUANTITIES

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

QU(TSF) P-Penet. E-Equiv. L-Labor. | STANDARD PENETRATION TEST DEPTH | BLOWS/6"

ELEV. 1078.3

2.0
3.0L 4.0
3.4L 6.0
3.0L 7.0
1.8L 9.0

Brown and gray, fat clay, moist, very stiff

11 42-10-29

ELEV. 1068.4

13.5 50/1"
16.0 15-40-34
18.5 12-50/3"
21 4-8-50/4"
23.5 50/6"
26.0 0-0-0

Brown and white, highly weathered limestone, dry, with brown fat clay layers

28 50/4"

Auger refusal at 28.0'
ELEV. 1050.3

252L ROCK CORE

DEPTH	REC%	RQD%
33.0	100	76

Gray and yellow, very finely crystalline limestone, thin to medium bedded, moderately hard, moderately weathered

ELEV. 1043.3

DEPTH	REC%	RQD%
38.0	100	27

Gray, calcareous shale, medum bedded, soft, moderately weathered

ELEV. 1040.3

Boring No. BH1-1

End Bent 1
(Core)

STANDARD PENETRATION TEST DEPTH | BLOWS/6"

ELEV. 1078.1

3.5 4-5-6

Brown and gray, fat clay, moist, medium stiff

8.5 3-3-5

ELEV. 1066.1

13 35/2"

Gray, highly weathered limestone
Auger Refusal at 13'

ELEV. 1064.9

Boring No. BH1-2

End Bent 1

STANDARD PENETRATION TEST DEPTH | BLOWS/6"

ELEV. 1078.6

5 3-5-7

Brown, fat clay, moist, medium stiff, some weathered limestone layers

ELEV. 1070.6

10 2-4-4

White, highly weathered limestone, some fat clay layers

12.5 50/1"

Auger refusal at 12.5'
ELEV. 1066.1

Boring No. BH1-3

End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor. | STANDARD PENETRATION TEST DEPTH | BLOWS/6"

ELEV. 1076.0

3.0 3-4-4

Brown and gray, fat clay, moist, medium stiff to stiff

8.0 3-5-5

ELEV. 1066.5

13 50/5"

White and yellow, highly weathered limestone
Auger refusal at 13.5'

ELEV. 1062.5

ROCK CORE

DEPTH	REC%	RQD%
15.0	100	0

Gray and yellow, very finely crystalline, limestone, thin bedded, moderately hard, highly weathered

ELEV. 1059.2

DEPTH	REC%	RQD%
20.0	26	0

Possible void or clay layer

ELEV. 1056.4

DEPTH	REC%	RQD%
25.0	100	71

Yellow and gray, very finely crystalline, limestone, medium bedded, moderately hard, moderately weathered, some yellow shale bands

332L
DEPTH	REC%	RQD%
30.0	100	53

becoming slightly weathered at 28'

450L

ELEV. 1042.5

DEPTH	REC%	RQD%
35.0	100	56

Gray, calcareous shale, thin bedded, moderately weathered

32L

ELEV. 1038.0

DEPTH	REC%	RQD%
40.0	100	18

Gray shale, thinly laminated, soft, moderately weathered

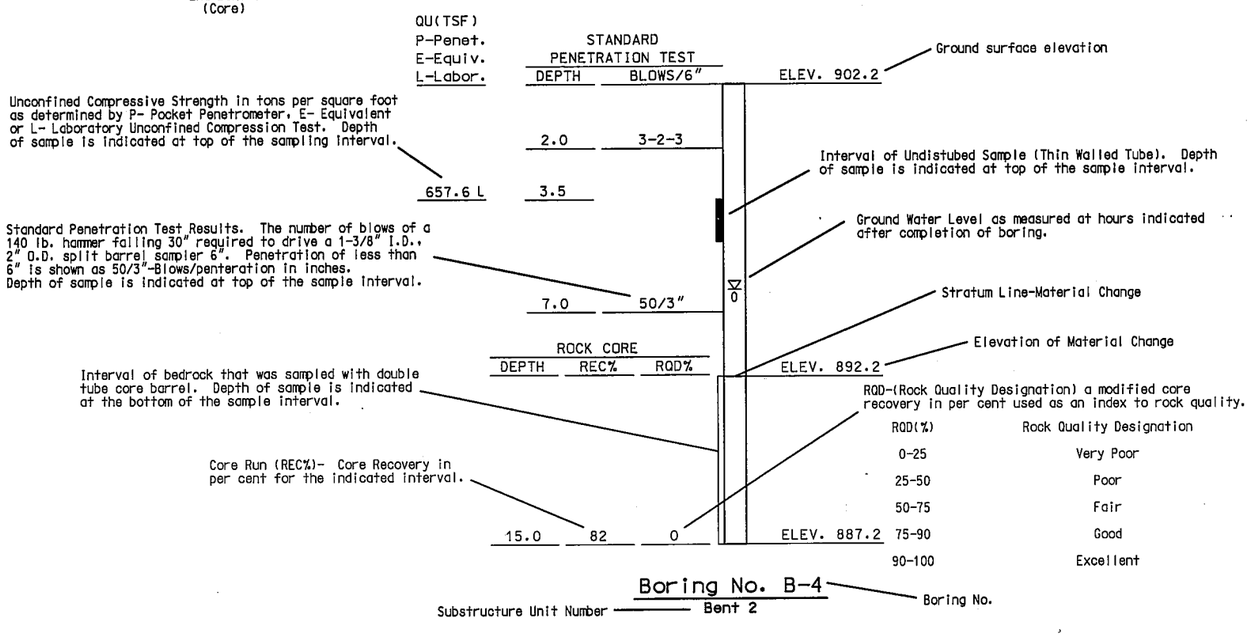
DEPTH	REC%	RQD%
45.0	100	-

ELEV. 1031.0

Boring No. BH2-1

Bent 2
(Core)

TYPICAL BORING



GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, between December 16, 2005 and January 11, 2006, by Geotechnology, Inc.

For boring locations in plan, see Sheet No. 1.

The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.

The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.

For notice and disclaimer regarding boring log data, see Sheet No. 1.

BORING DATA

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	132

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1078.8
		Brown, fat clay, moist, medium stiff
4.5	3-3-5	
		ELEV. 1070.8
		White and brown, highly weathered limestone
9.5	2-6-7	
		Auger refusal at 14.3'
14	50/2"	
		ELEV. 1064.5

ROCK CORE

	DEPTH	REC%	RQD%	
330L	17.0	85	31	
410L	22.0	96	32	Gray, very finely crystalline limestone, thick bedded moderately hard, moderately weathered
	27.0	100	50	
430L				
	32.0	98	53	
				ELEV. 1044.2
				Gray shale, medium bedded, moderately hard, slightly weathered
110L	37.0	98	75	
				ELEV. 1042.8
				Gray, calcareous shale, medium bedded, moderately hard, slightly weathered
	42.0	100	32	
				ELEV. 1039.2
				Gray shale, thinly laminated, moderately hard, slightly weathered
	47.0	98	*	
	47	50/5"		ELEV. 1031.3

* Shale, RQD not calculated

Boring No. BH2-2

Bent 2
(Core)

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1074.9
		Gray and brown, fat clay, moist, stiff
4.5	3-5-6	
		ELEV. 1067.9
		White, highly weathered limestone
9.5	35/1"	
		Auger refusal at 10.0'
		ELEV. 1064.9

Boring No. BH3-1

Bent 3

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1075.4
4.5	2-3-4	Brown and gray, fat clay, moist, medium stiff
		ELEV. 1066.9
9.5	15-6-3	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1063.4
14.5	50/3"	Yellow, highly weathered limestone
19.0	50/1"	Auger refusal at 19.0'
		ELEV. 1056.4

ROCK CORE

	DEPTH	REC%	RQD%	
				Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
				ELEV. 1055.0
				Fat clay, some highly weathered limestone layers
680L	26.5	19	0	ELEV. 1048.9
				Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
				ELEV. 1046.4
	31.5	96	63	Gray shale, thin bedded, moderately hard, slightly weathered
136L				ELEV. 1045.4
				Gray, very fine crystalline, argillaceous limestone, thick bedded, moderately hard, slightly weathered
	36.5	96	48	ELEV. 1041.4
	41.5	100	*	Gray shale, thinly laminated, moderately hard, moderately weathered becoming slightly weathered at 37.0'
	46.5	96	*	
	51.5	100	*	ELEV. 1023.9

* Shale, RQD not calculated

Boring No. BH3-2

Bent 3
(Core)

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed 2006
Checked 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	133

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
2.0		ELEV. 1072.1
4.0		Brown and gray, fat clay, moist, medium stiff
6.0		
8.5	30/2"	ELEV. 1065.1

ROCK CORE

DEPTH	REC%	RQD%	
			Highly weathered limestone Auger refusal at 8.5' ELEV. 1063.6
15.1	36	18	Gray and yellow, very finely crystalline limestone, thin bedded, moderately hard, highly weathered, with fat clay seams ELEV. 1060.5 Fat clay layer - 8" ELEV. 1059.8
20.1	50	36	Gray and yellow, very finely crystalline to aphanitic limestone, thin bedded, moderately hard to hard, moderately weathered, cherty, with fat clay seams ELEV. 1051.0
25.1	84	64	Gray, very finely crystalline to aphanitic limestone, thick bedded, moderately hard to hard, moderately to slightly weathered, cherty, with shale bands ELEV. 1047.0

0.9L
1.4L
385L

Boring No. BH4-1

End Bent 4
(Core)

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1072.5
3.5	3-4-5	Gray and brown, fat clay, moist, stiff to soft
8.5	1-1-1	ELEV. 1062.5
13.5	50/4"	White and brown, highly weathered limestone, some gray fat clay layers
18.5	1-1-1	
23.5	3-4-5	Auger refusal. Sheared bottom auger at 26.0'. Refer to offset Boring No. BH4-2A for log of rock.
		ELEV. 1046.5

Boring No. BH4-2

End Bent 4
(Core)

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1072.0
		Refer to Boring No. BH2-4 for log of soil.

ROCK CORE

DEPTH	REC%	RQD%	
			Auger refusal at 23.0' ELEV. 1049.0
25.0	90	41	White and yellow, very finely crystalline limestone, medium bedded, moderately hard, moderately weathered ELEV. 1046.0
			Core loss - 24 inches ELEV. 1044.0
30.0	52	12	Gray, calcareous shale, soft, moderately weathered ELEV. 1040.0
35.0	86	*	
40.0	100	*	Gray shale, soft, thinly laminated, slightly weathered
45.0	100	*	
50.0	100	*	ELEV. 1021.7
50		35/3"	

584L

* Shale, RQD not calculated

Boring No. BH4-2A

End Bent 4
(Core)

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1073.0
4.0	2-3-6	Brown, fat clay, moist, medium stiff
9.0	22-38-50/3"	ELEV. 1064.5
		Yellow and white, highly weathered limestone Auger refusal at 13.0' ELEV. 1060.0

Boring No. BH4-3

End Bent 4

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed 2006
Checked 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	134

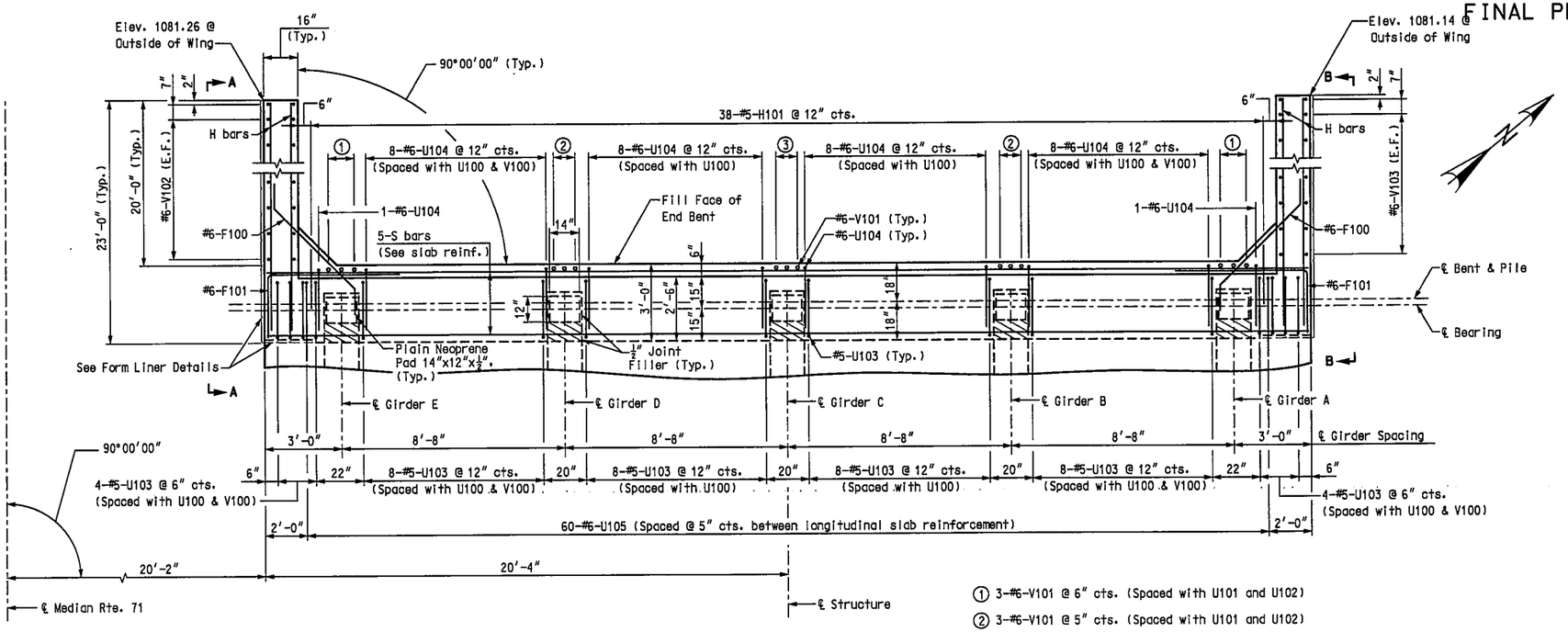
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



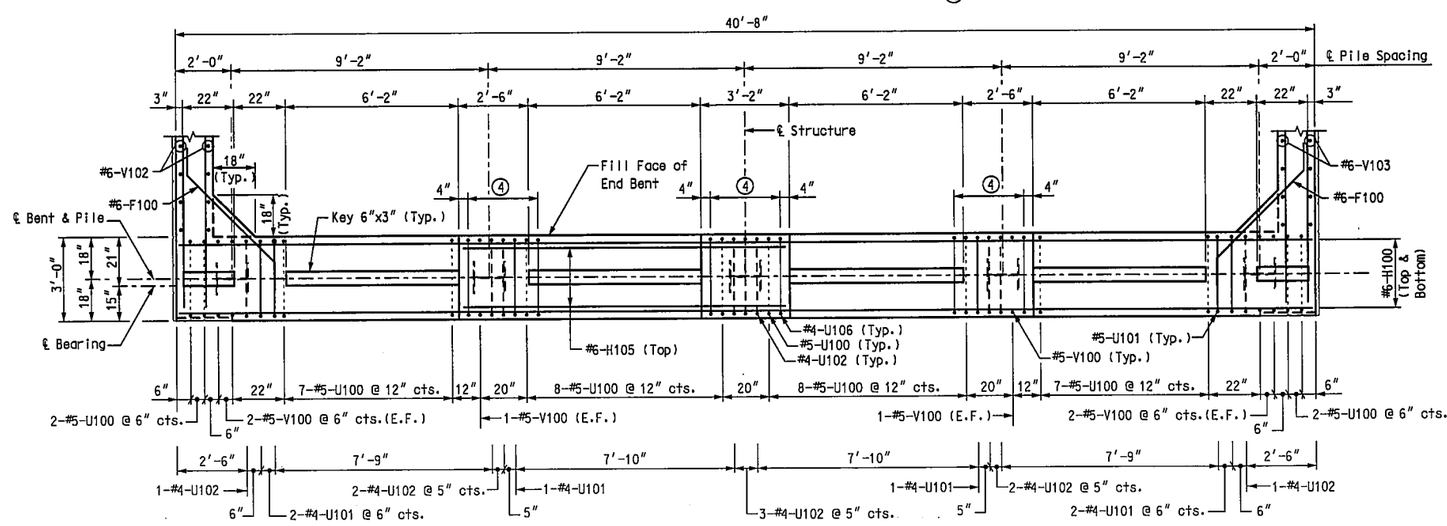
PLAN OF DIAPHRAGM

① 3-#6-V101 @ 6" cts. (Spaced with U101 and U102)

② 3-#6-V101 @ 5" cts. (Spaced with U101 and U102)

③ 3-#6-V101 @ 5" cts. (Spaced with U102)

④ 6-#4-U106 @ 6" cts.



PLAN OF BEAM

Notes:

For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.

Bend F100 bars in field to clear girders.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

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

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

For Form Liner Details, see Sheet No. 35.

For details of Elevation A-A and B-B, see Sheet No. 8.

For Sections and Typical Section Thru Key, see Sheet No. 7.

✻✻ SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1

Item		Quantity
Class 1 Excavation	cu. yard	80
Structural Steel Piles (14")	linear foot	125
Pre-Bore for Piling	linear foot	110
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.7
Form Liners	sq. yard	46

✻✻ These quantities are included in the quantities table on Sheet No. 2.

END BENT 1 - PLAN

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

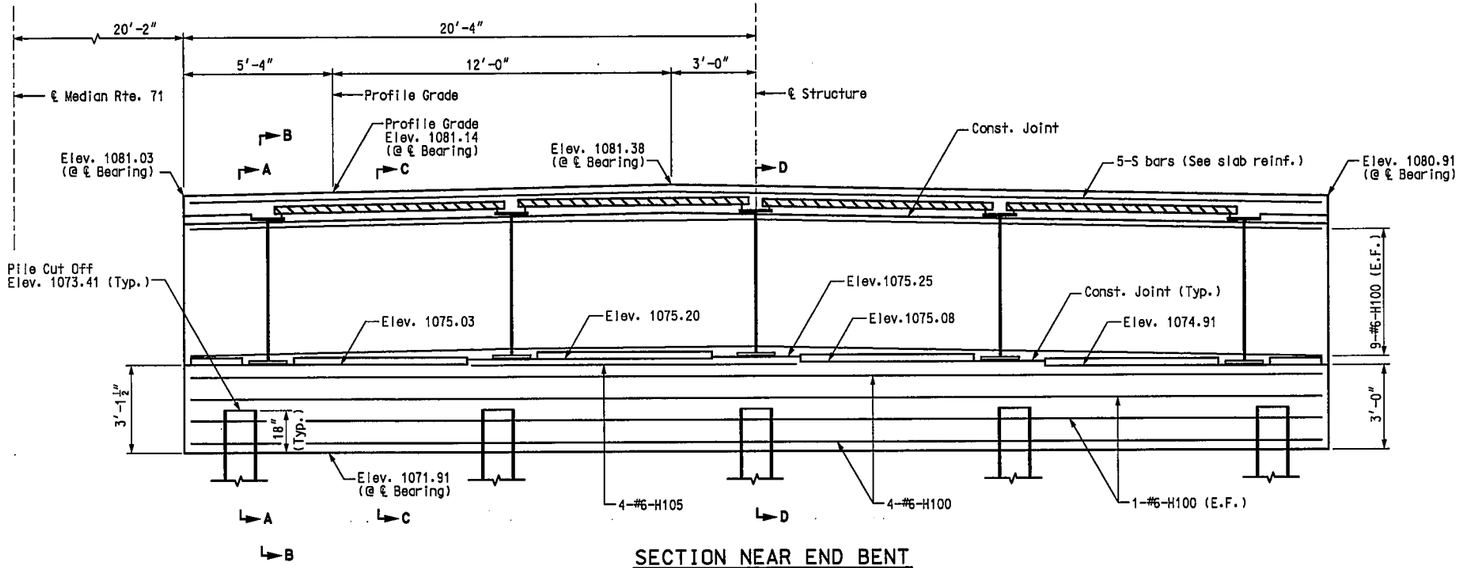
Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

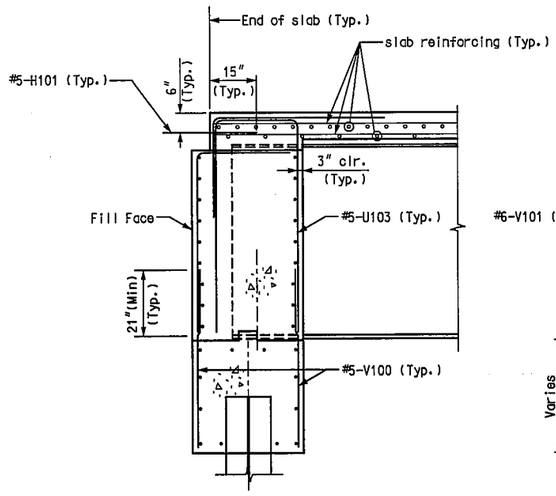
FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	135
JOB NO. J4P1707			
CONTRACT ID 080620-403			
PROJECT NO. FAF 70-4(98)			
COUNTY CASS			DATE

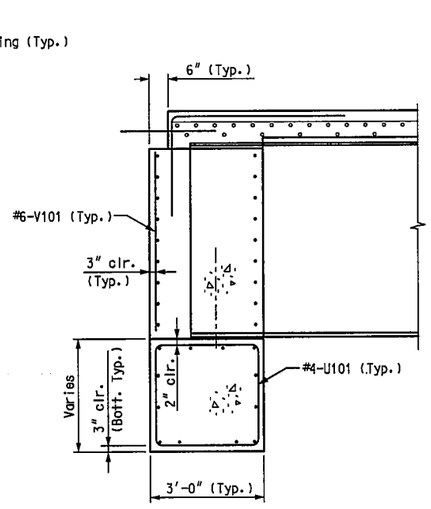


SECTION NEAR END BENT

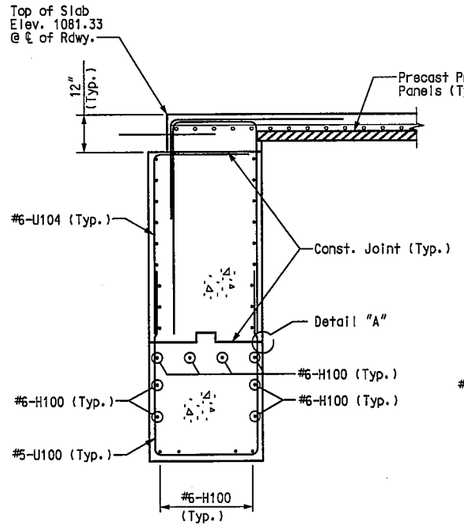
(Looking Back Station)



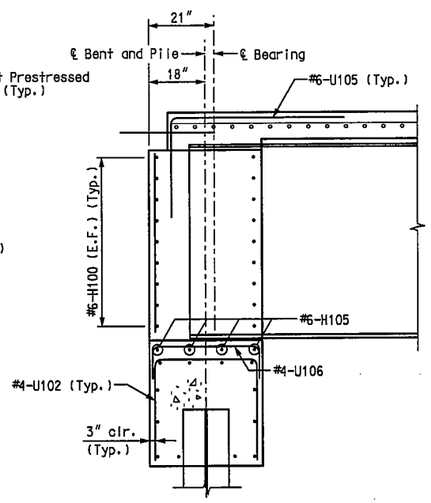
SECTION A-A



SECTION B-B

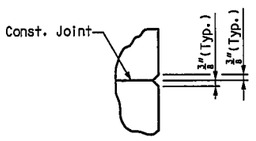


SECTION C-C



SECTION D-D

TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 6 & 8.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 1 - ELEVATION

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	136

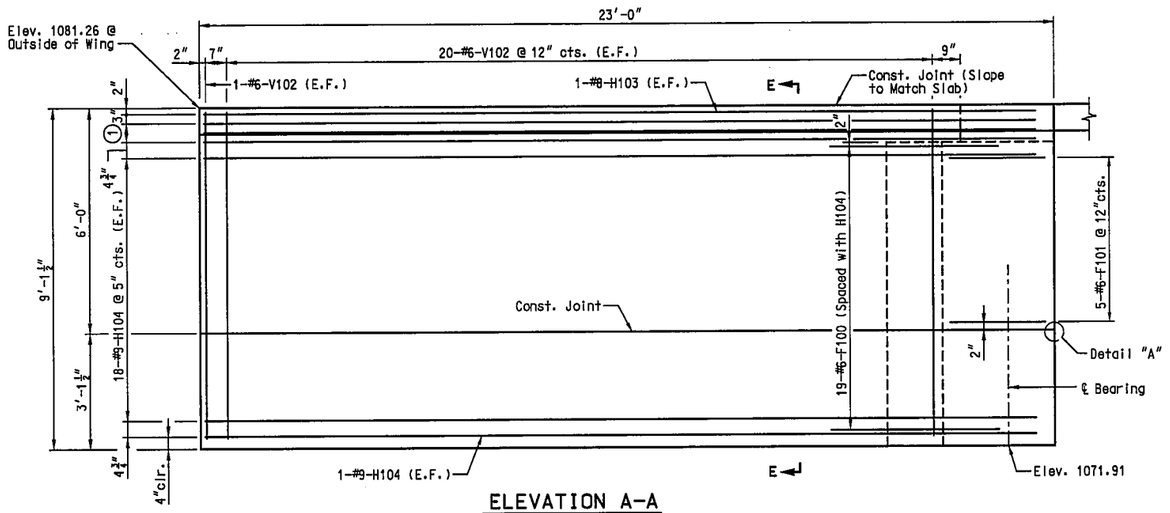
JOB NO. J4P1707

CONTRACT ID 080620-403

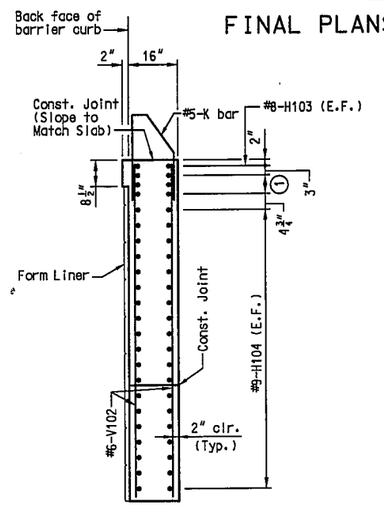
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

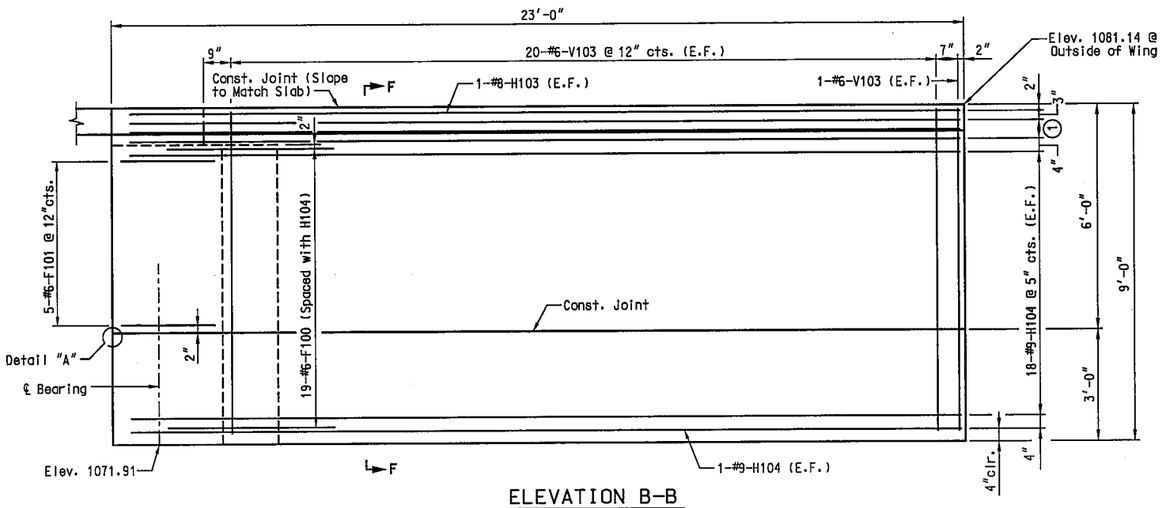


ELEVATION A-A

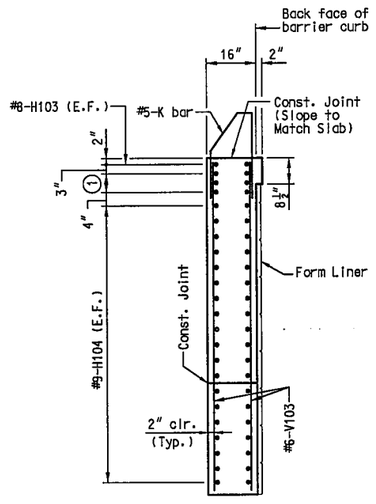


SECTION E-E

① 3-#8-H102 @ 3" cts. (E.F.) (Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 7.
For Form Liner Details, see Sheet No. 35.

END BENT 1 - WING DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

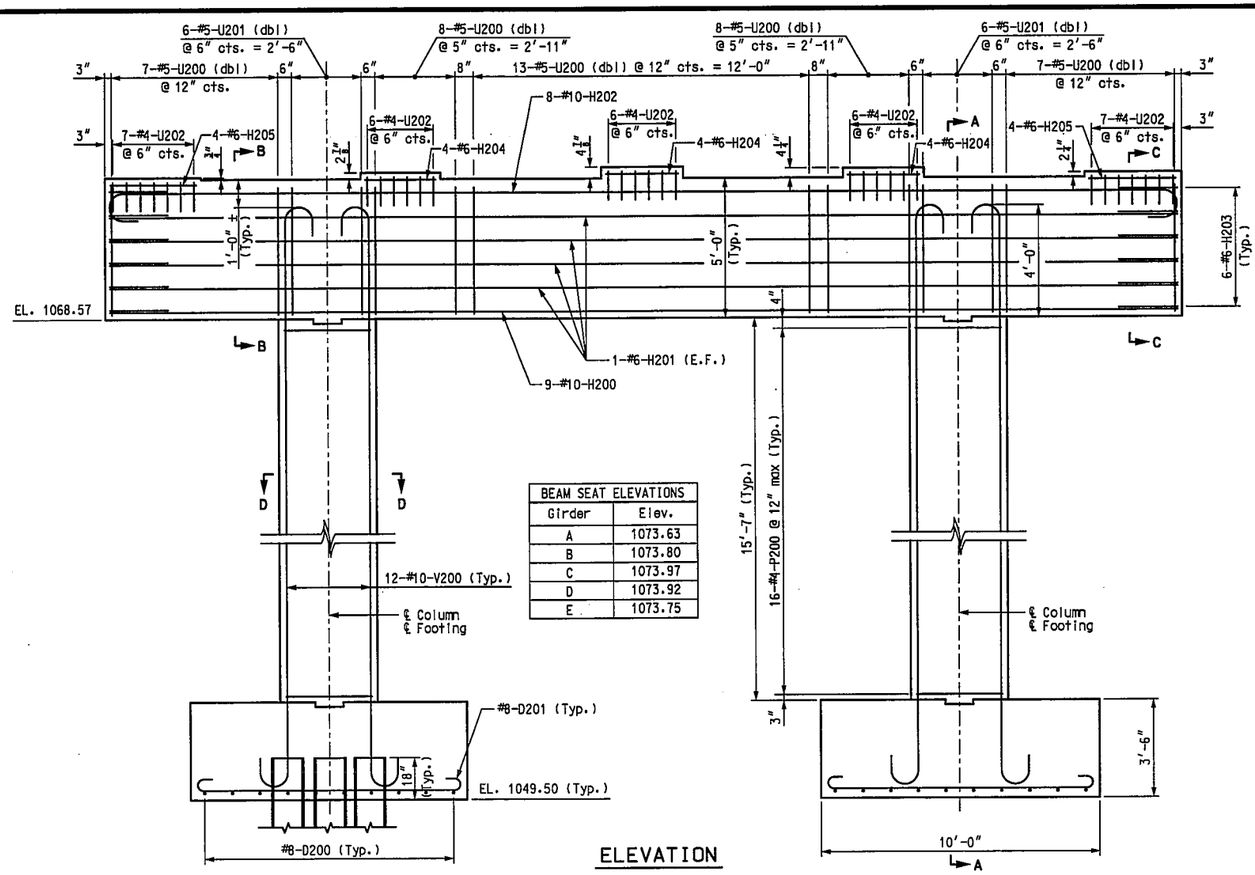
Detailed JUNE 2006
Checked JUNE 2006

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

A7352

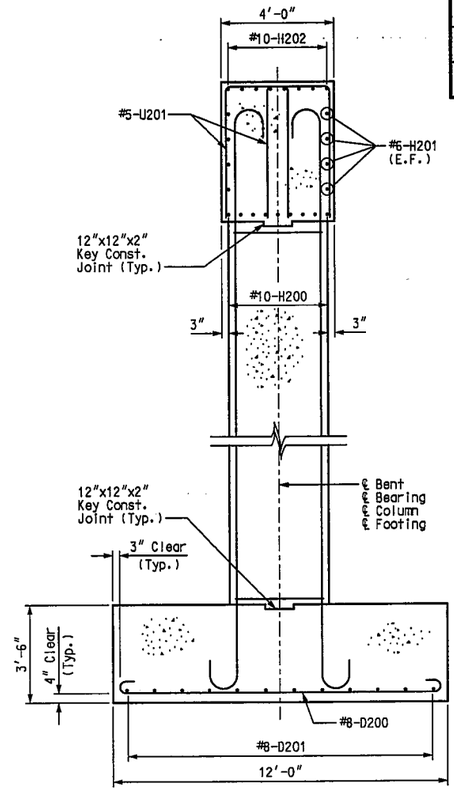
HNTB

FINAL PLANS

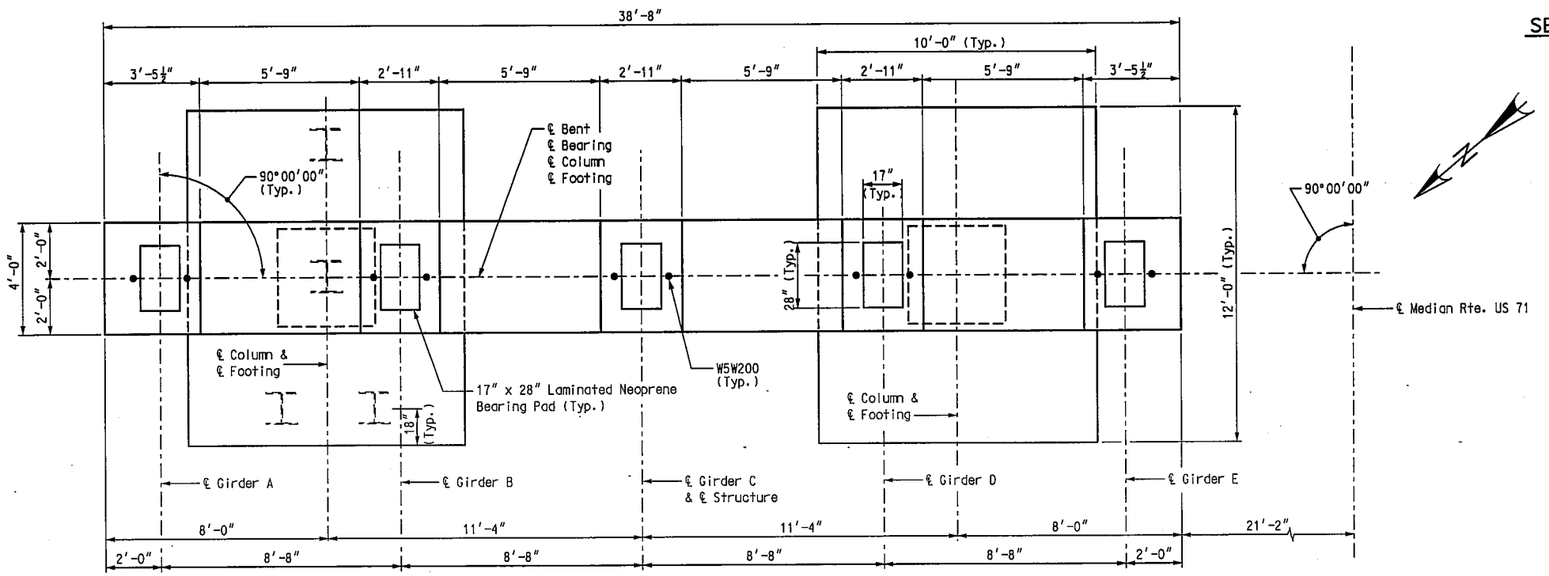


BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1073.63
B	1073.80
C	1073.97
D	1073.92
E	1073.75

ELEVATION



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 10.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

✱✱✱ SUBSTRUCTURE QUANTITY TABLE FOR BENT 2		
Item		Quantity
Class 1 Excavation in Rock	cu. yard	52
Class B Concrete (Substructure)	cu. yard	86.5
Form Liners	sq. yard	48
Reinforcing Steel (Bridges)	pound	9,700
Structural Steel Piles (14")	linear foot	73
Pile Point Reinforcement	each	4
Pre-Bore for Piling	linear foot	52

✱✱✱ These quantities are included in the quantities table on Sheet No. 2.

BENT 2 – DETAILS

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	138

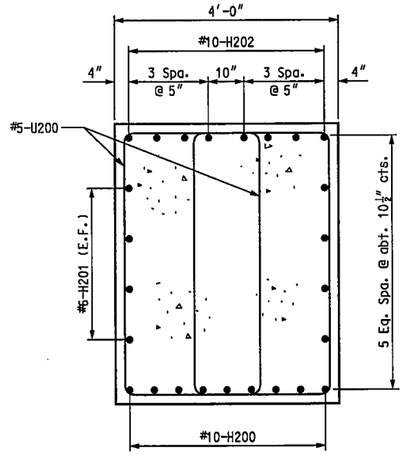
JOB NO. J4P1707

CONTRACT ID 080620-403

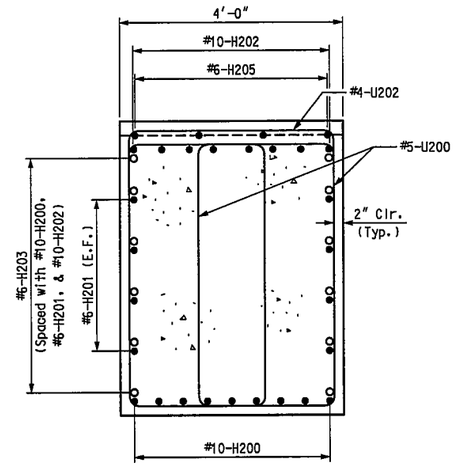
PROJECT NO. FAF 70-4(98)

COUNTY CASS

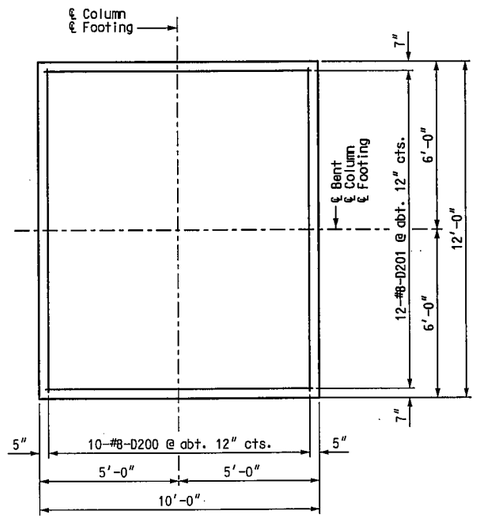
DATE



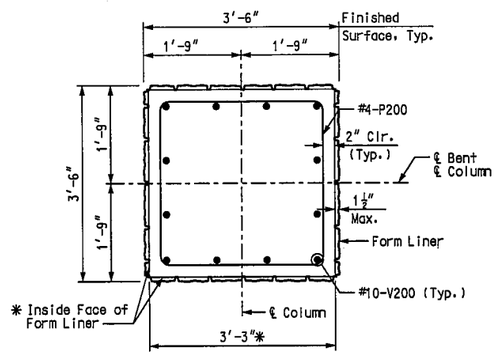
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 2 - DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	139

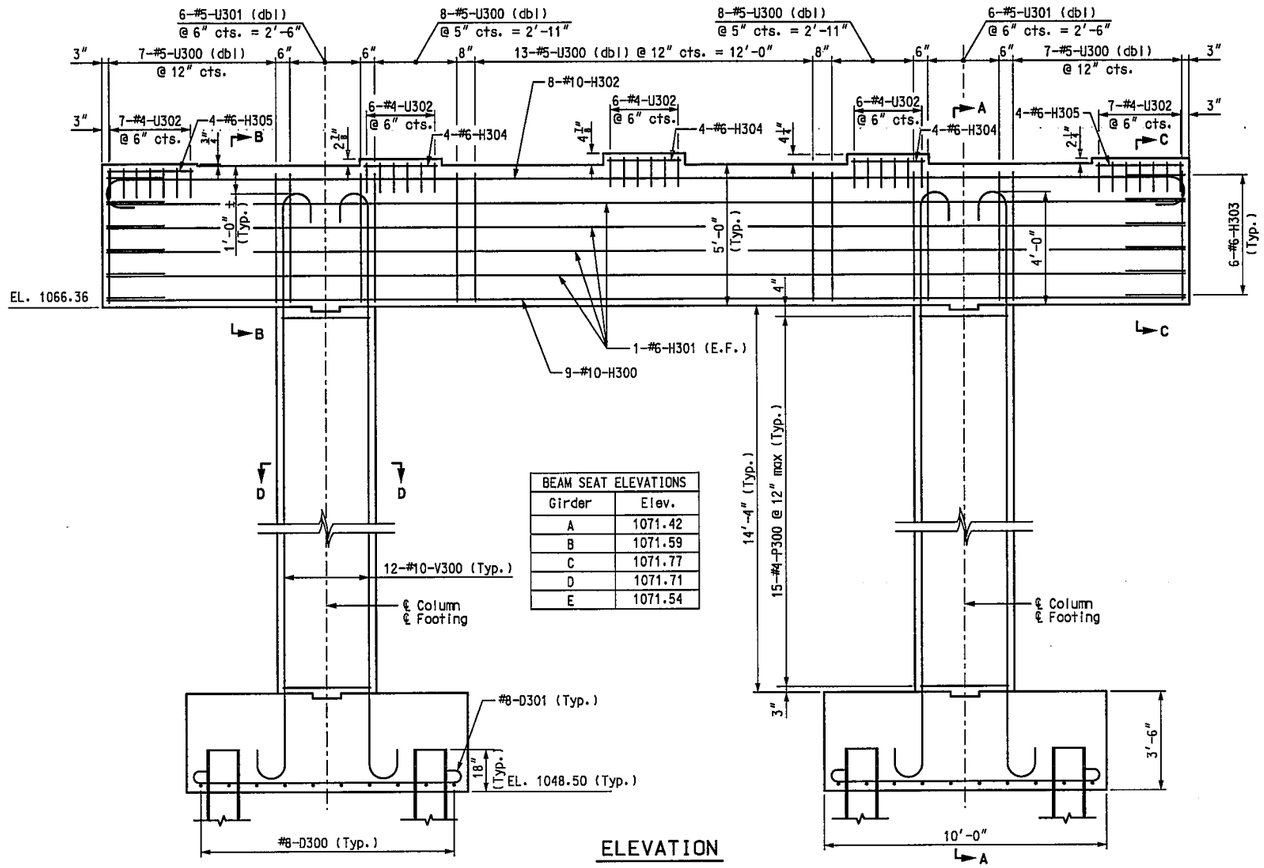
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

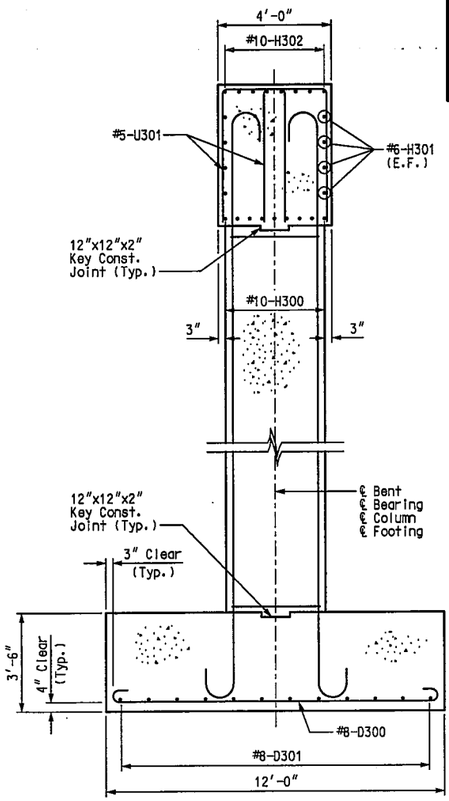
COUNTY CASS

DATE

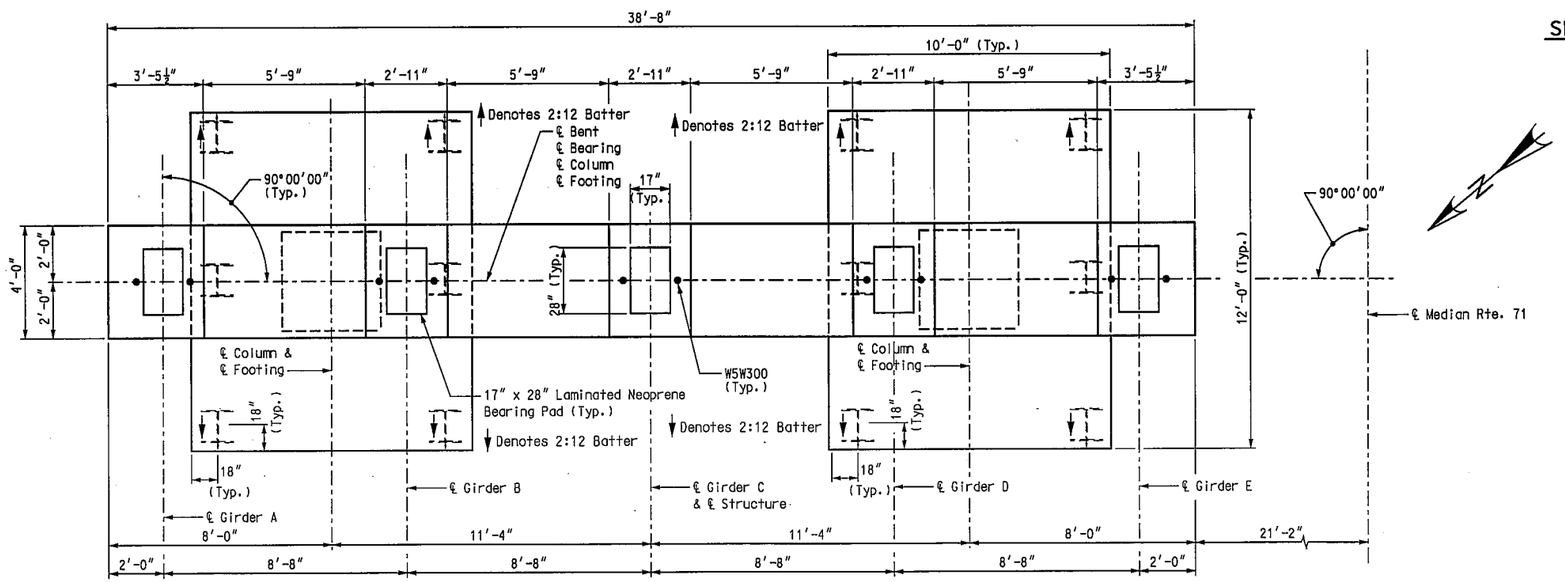


ELEVATION

BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1071.42
B	1071.59
C	1071.77
D	1071.71
E	1071.54



SECTION A-A



PLAN

Notes:

For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 12.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

✱✱✱ SUBSTRUCTURE QUANTITY TABLE FOR BENT 3		
Item		Quantity
Class 1 Excavation in Rock	cu. yard	62
Class B Concrete (Substructure)	cu. yard	85.5
Form Liners	sq. yard	45
Reinforcing Steel (Bridges)	pound	9,560
Structural Steel Piles (14")	linear foot	221
Pile Point Reinforcement	each	12
Pre-Bore for Piling	linear foot	103

✱✱✱ These quantities are included in the quantities table on Sheet No. 2.

BENT 3 – DETAILS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

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HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	140

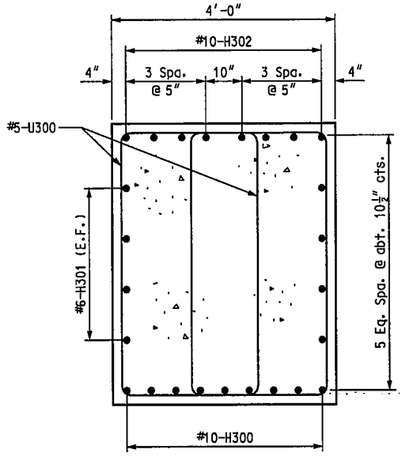
JOB NO. J4P1707

CONTRACT ID 080620-403

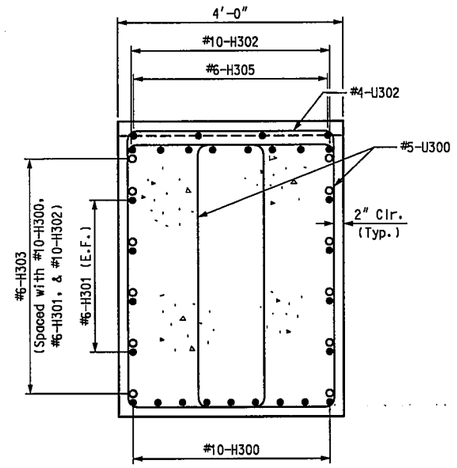
PROJECT NO. FAF 70-4(98)

COUNTY CASS

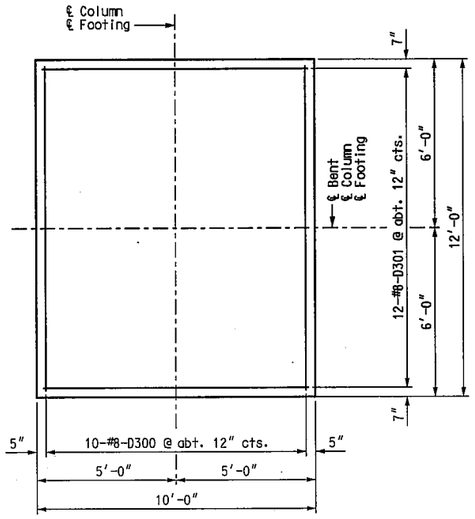
DATE_____



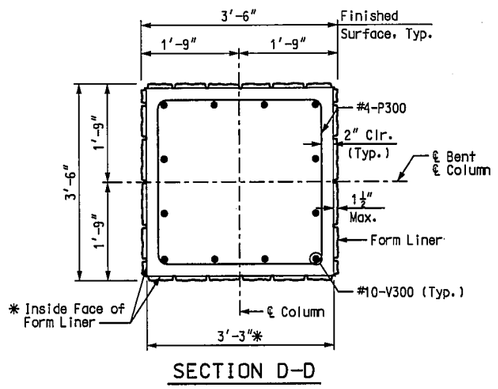
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 3 - DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	141

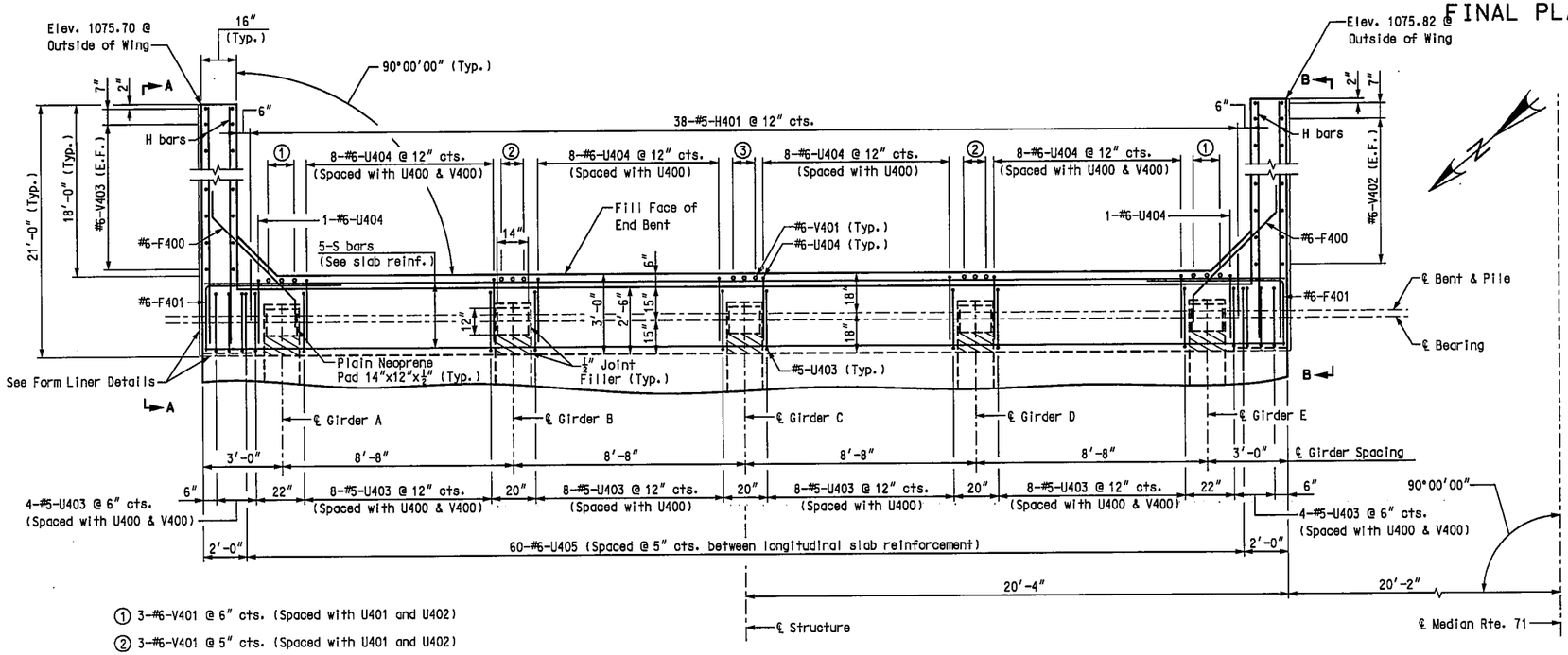
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



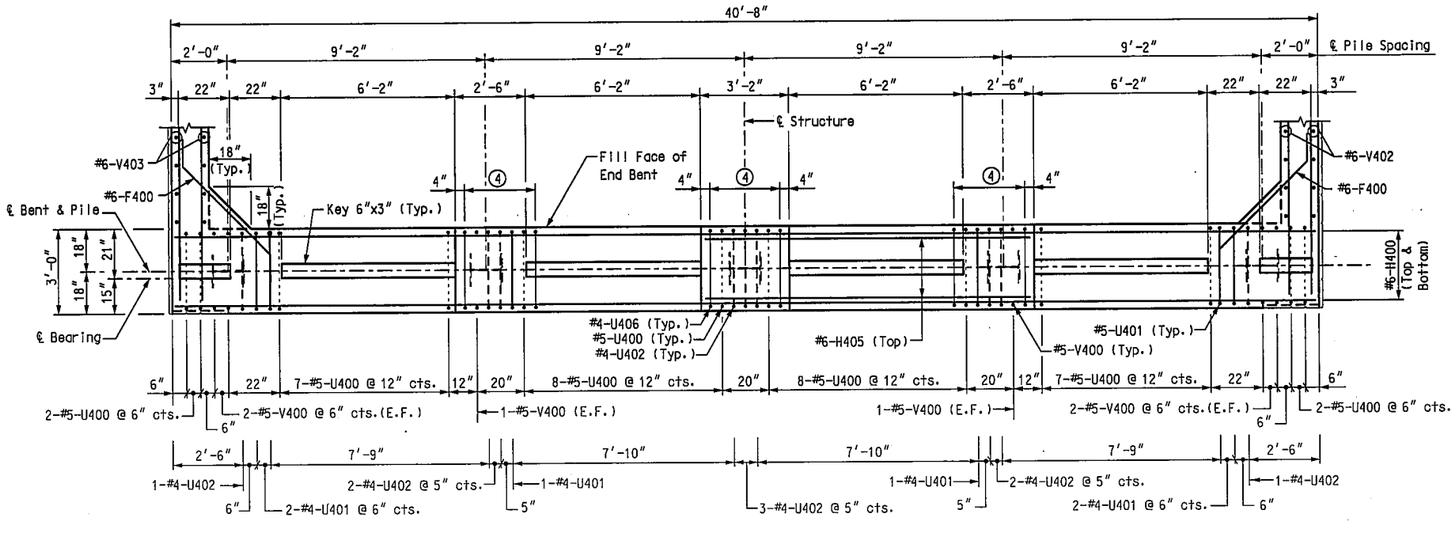
① 3-#6-V401 @ 6" cts. (Spaced with U401 and U402)

② 3-#6-V401 @ 5" cts. (Spaced with U401 and U402)

③ 3-#6-V401 @ 5" cts. (Spaced with U402)

PLAN OF DIAPHRAGM

④ 6-#4-U406 @ 6" cts.



PLAN OF BEAM

Notes:

For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.

Bend F400 bars in field to clear girders.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

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

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

For Form Liner Details, see Sheet No. 35.

For details of Elevation A-A and B-B, see Sheet No. 15.

For Sections and Typical Section Thru Key, see Sheet No. 14.

**** SUBSTRUCTURE QUANTITY TABLE FOR END BENT 4**

Item		Quantity
Class 1 Excavation	cu. yard	70
Structural Steel Piles (14")	linear foot	122
Pre-Bore for Piling	linear foot	105
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.1
Form Liners	sq. yard	43

** These quantities are included in the quantities table on Sheet No. 2.

END BENT 4 – PLAN

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	142

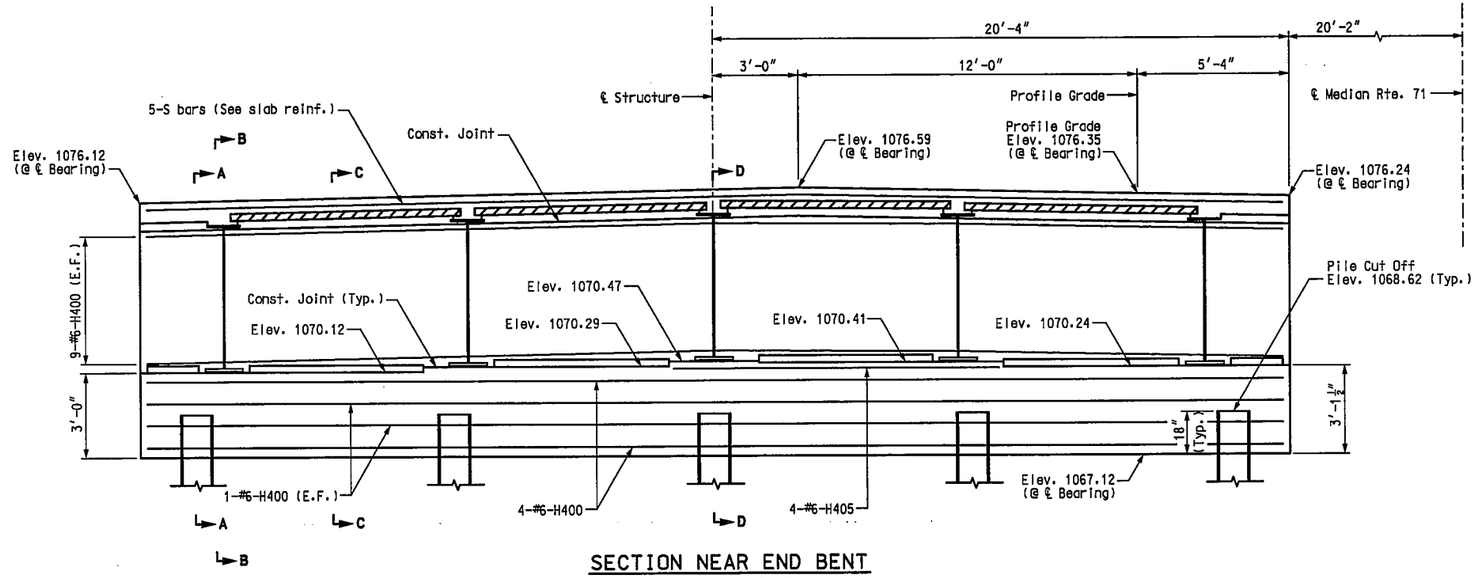
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

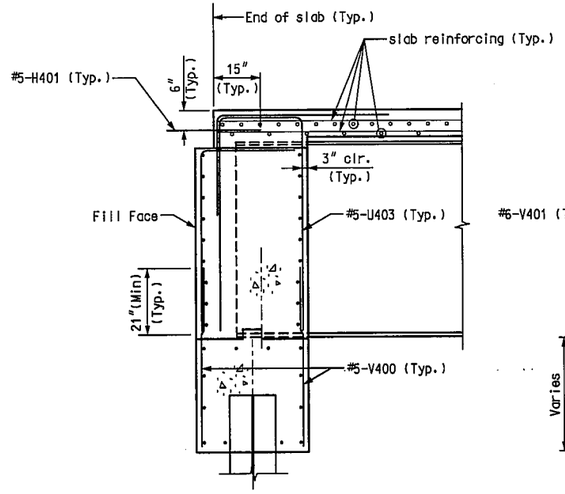
COUNTY CASS

DATE

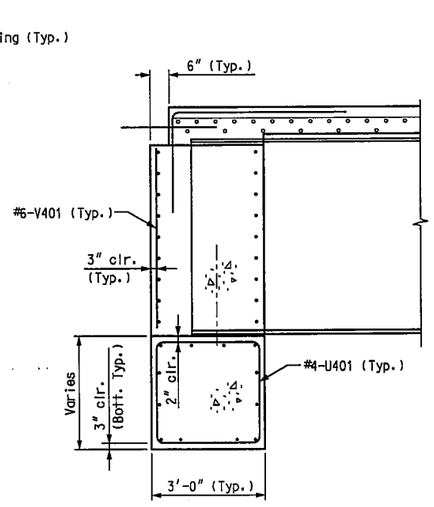


SECTION NEAR END BENT

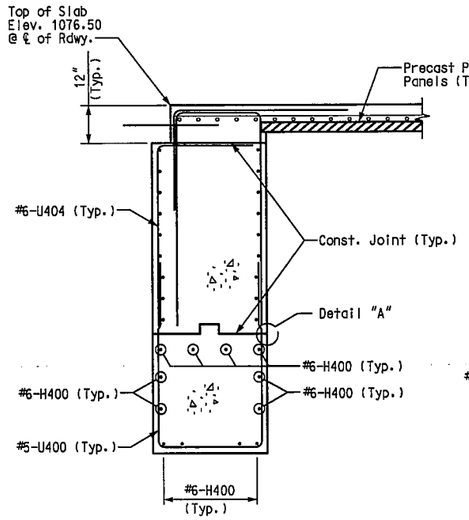
(Looking Ahead Station)



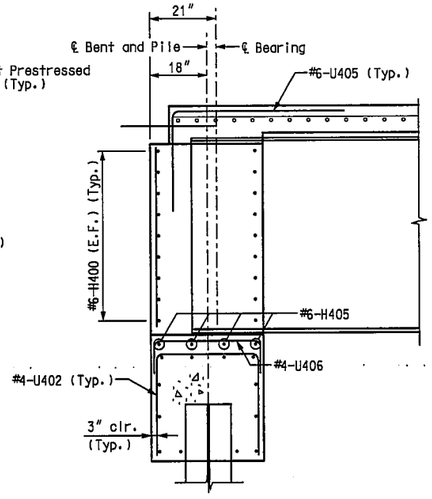
SECTION A-A



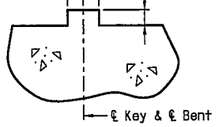
SECTION B-B



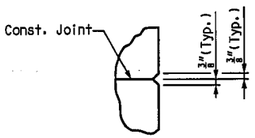
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 13 & 15.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 4 - ELEVATION

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	143

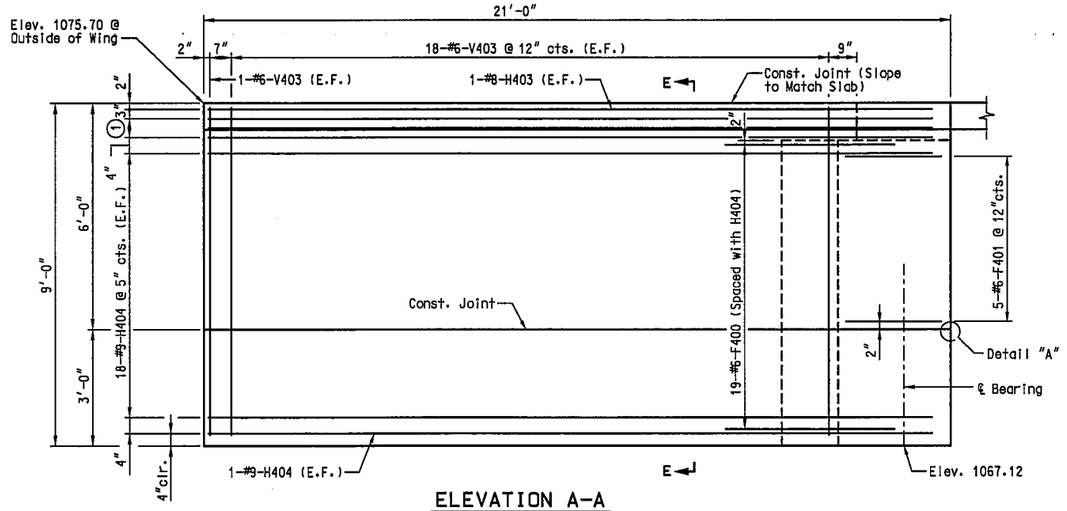
JOB NO. J4P1707

CONTRACT ID 080620-403

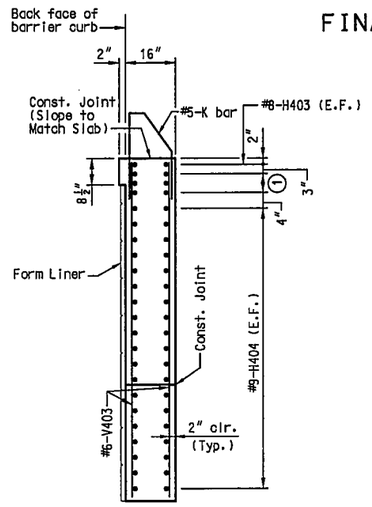
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

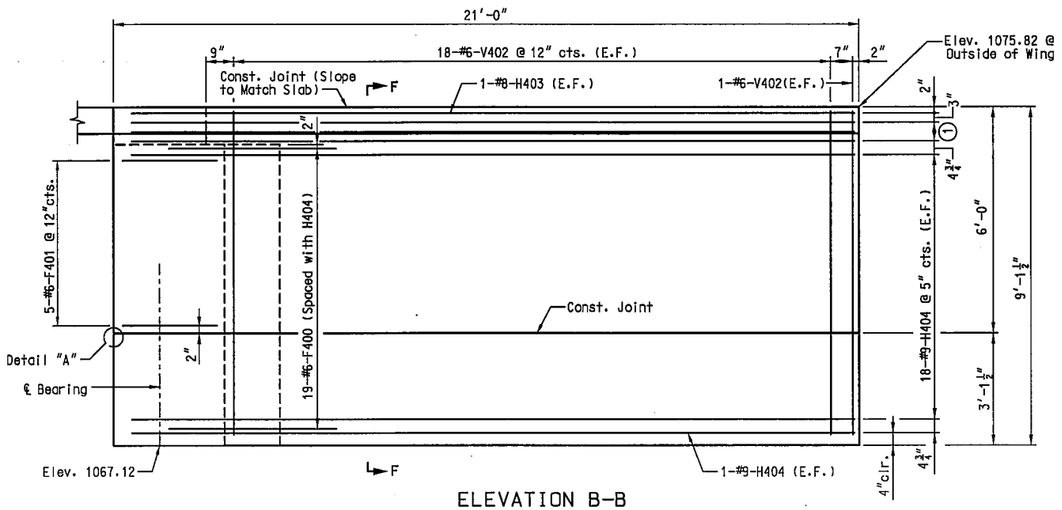


ELEVATION A-A

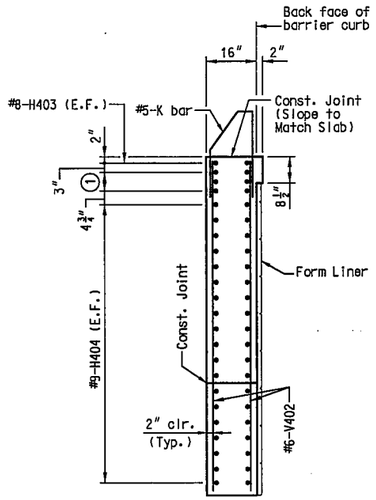


SECTION E-E

① 3-#8-H402 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 14.
For Form Liner Details, see Sheet No. 35.

END BENT 4 - WING DETAILS

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	144

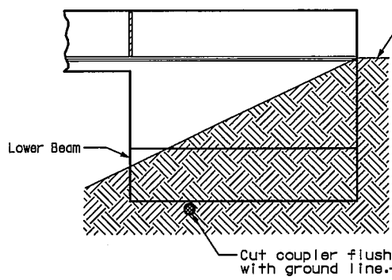
JOB NO. J4P1707

CONTRACT ID 080620-403

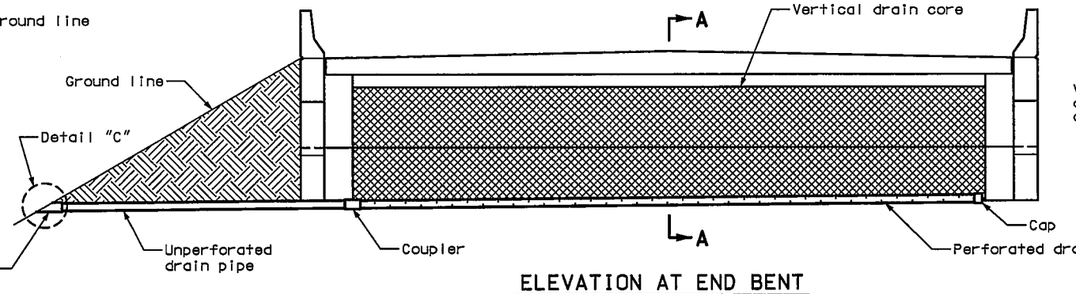
PROJECT NO. FAF 70-4(98)

COUNTY CASS

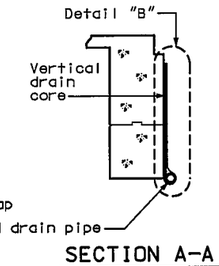
DATE



ELEVATION OF WING



ELEVATION AT END BENT

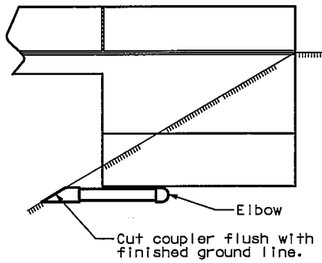


SECTION A-A

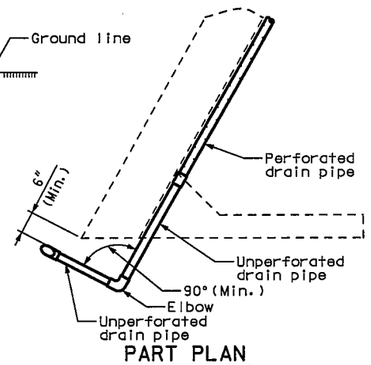
Note:
Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (See elevation at end bent.)

Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.



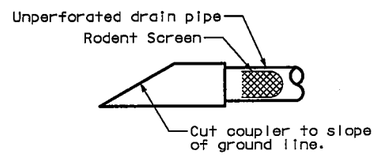
ELEVATION OF WING



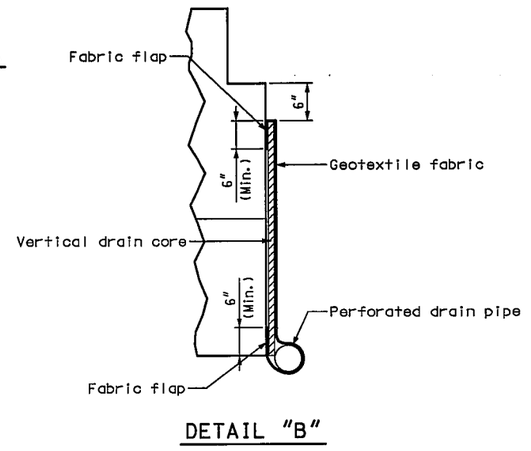
PART PLAN

OPTIONAL BENT DRAIN (*)

(*) Only if rock is encountered at outside of wing.



DETAIL "C"



DETAIL "B"

VERTICAL DRAIN AT END BENTS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	145

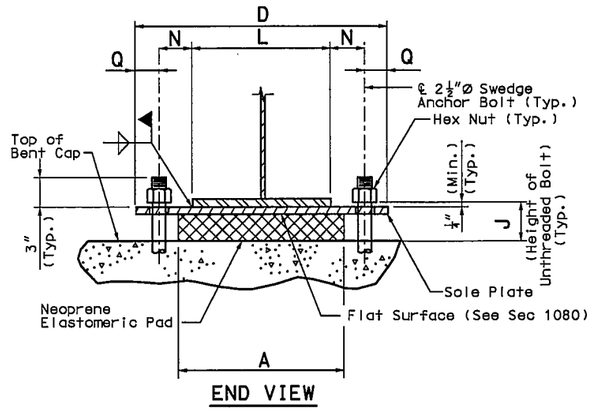
JOB NO. J4P1707

CONTRACT ID 080620-403

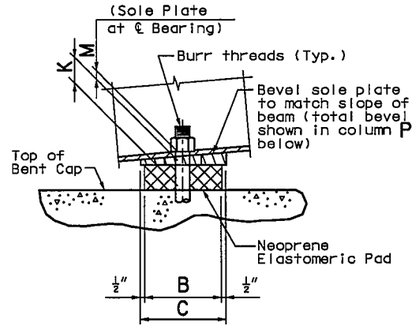
PROJECT NO. FAF 70-4(98)

COUNTY CASS

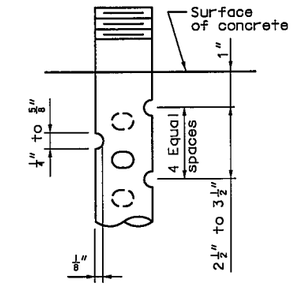
DATE



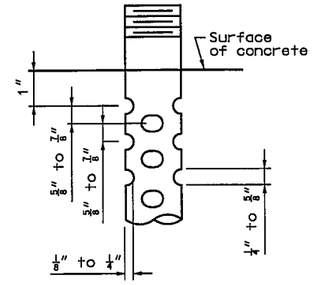
END VIEW



SIDE VIEW

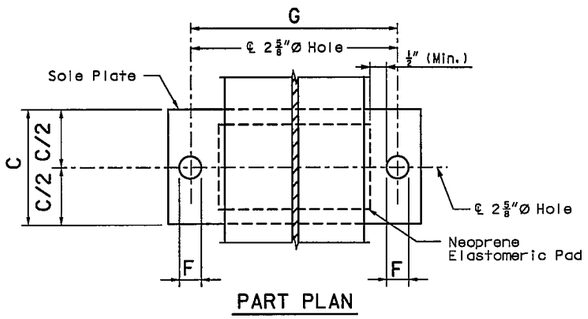


DETAIL FOR ¾" Ø THRU 2½" Ø ANCHOR BOLTS

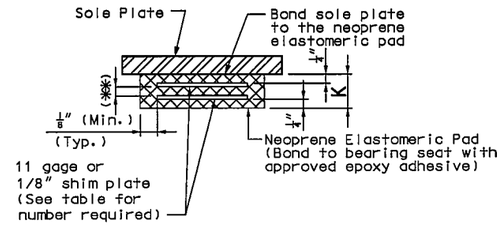


OPTIONAL DETAIL FOR 1⅜" Ø THRU 2½" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

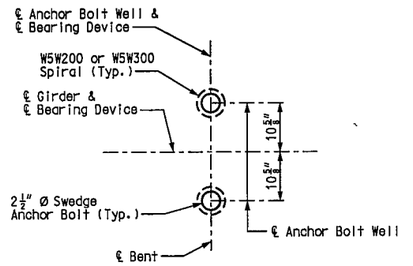


PART PLAN



NEOPRENE ELASTOMERIC PAD

(**) Layers of ½" elastomeric pad with 11 gage or ⅛" shim plate

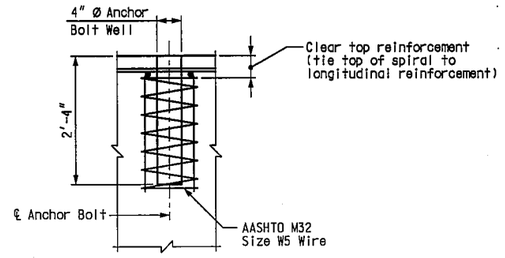


ANCHOR BOLT SETTING PLAN

FIXED BEARINGS

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	⅜"	3¾"	4	5
3	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	½"	3¾"	4	5
														TOTAL BEARINGS	10

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



ANCHOR BOLT WELL DETAIL

GENERAL NOTES:

Anchor bolts shall be 2½"Ø ASTM A709 Grade 50W steel swedged bolts and shall extend 25" 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 the 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 the sole plate shall be ASTM A709 Grade 36 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.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	146

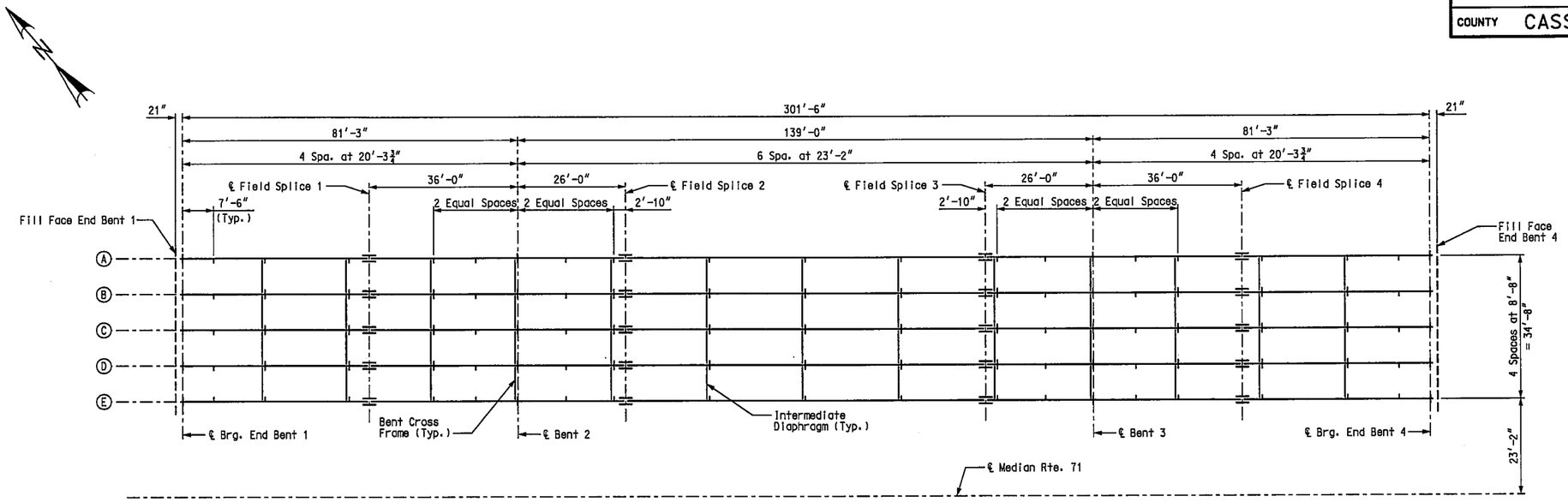
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

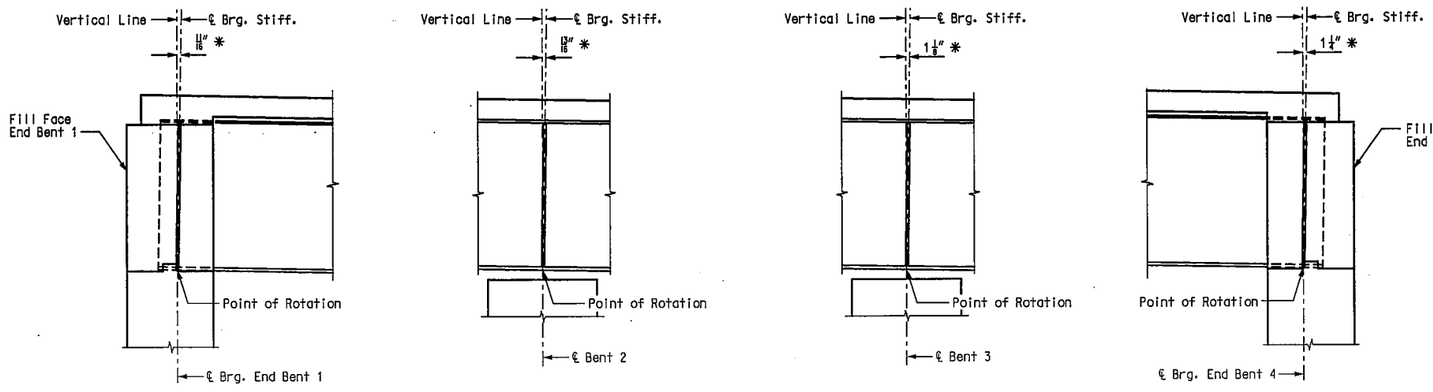
COUNTY CASS

DATE



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

FRAMING PLAN



* Horizontal Dimension at Top of Web.

PART LONGITUDINAL SECTION

Notes:
For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.
For Field Splice Details, see Sheet No. 21.
For Intermediate Stiffener and Bearing Stiffener Details, see Sheet No. 23.
For Girder Elevation, see Sheet No. 19.
Longitudinal dimensions are horizontal from ℄ bearing to ℄ bearing.
All Intermediate Stiffeners are spaced equally between Bearing Stiffeners, unless shown otherwise.

FRAMING PLAN

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	147

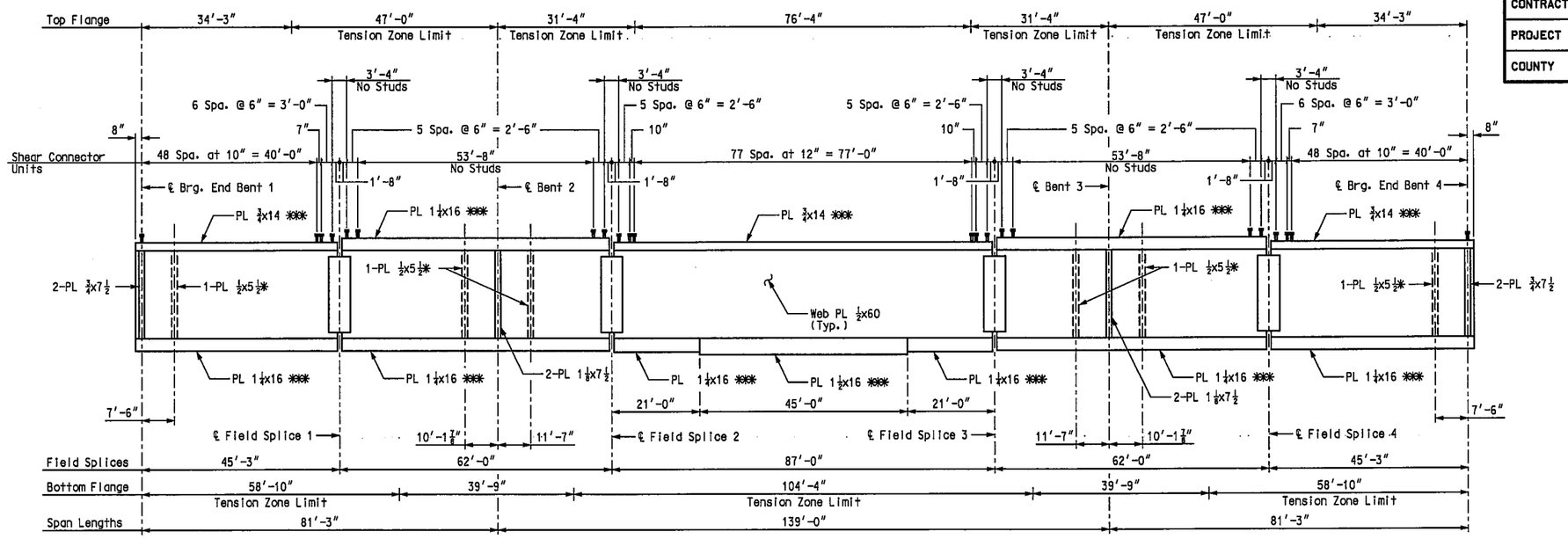
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

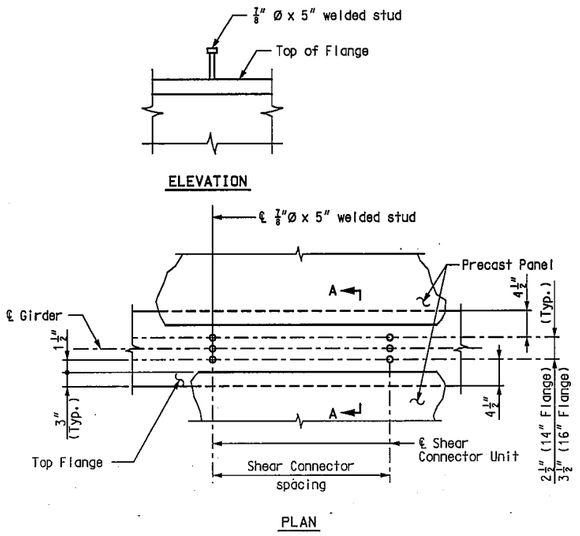
COUNTY CASS

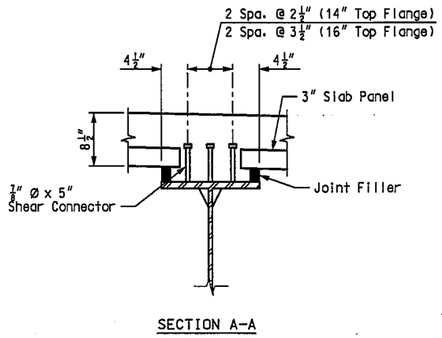
DATE



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

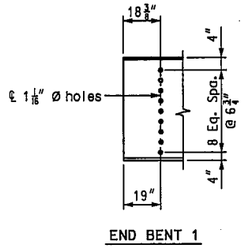
GIRDER ELEVATION

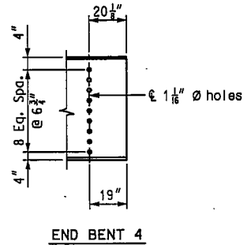




DETAILS OF SHEAR CONNECTORS

Weight of 3320 pounds of shear connectors is included in the weight of Fabricated Structural Carbon Steel (Plate Girder). Shear connectors shall be in accordance with Sec 712, 1037, and 1080.





SECTION AT END OF GIRDERS

* Transverse web stiffener. See Plan for locations of other intermediate web stiffeners with intermediate diaphragms.

Notes:

Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. 20.

*** Indicates flange plates subject to notch toughness requirements. All web plates shall be subject to notch toughness requirements.

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.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.

For Field Splice Details, see Sheet No. 21.

For Intermediate Stiffener and Bearing Stiffener details, see Sheet No. 23.

For Framing Plan, see Sheet No. 18.

Longitudinal dimensions are horizontal from ℄ brg. to ℄ brg.

For Intermediate Web Stiffener locations and Intermediate Diaphragm spacing not shown, see Sheet No. 18.

GIRDER ELEVATION

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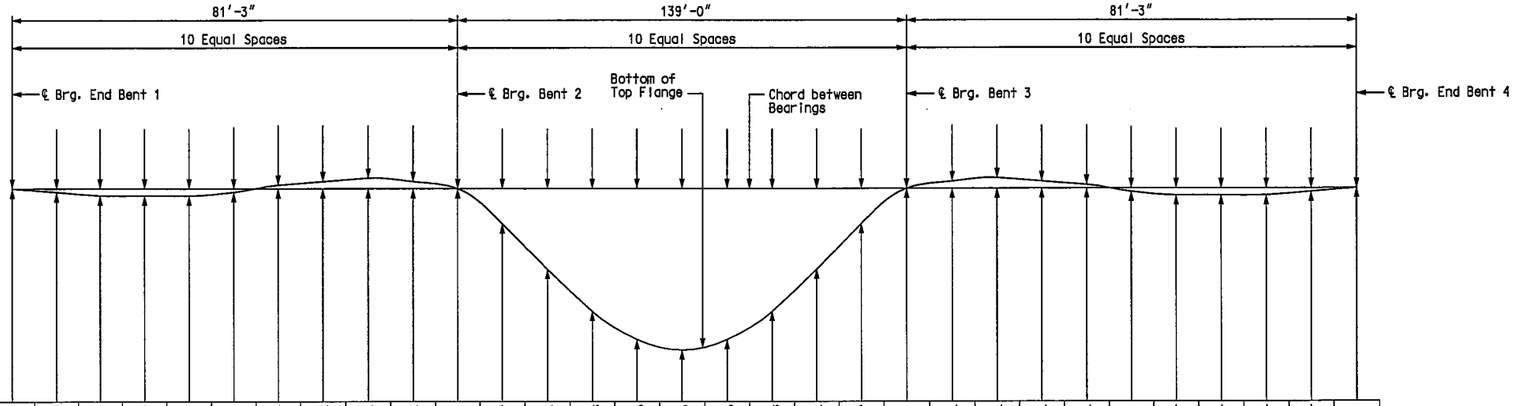
USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

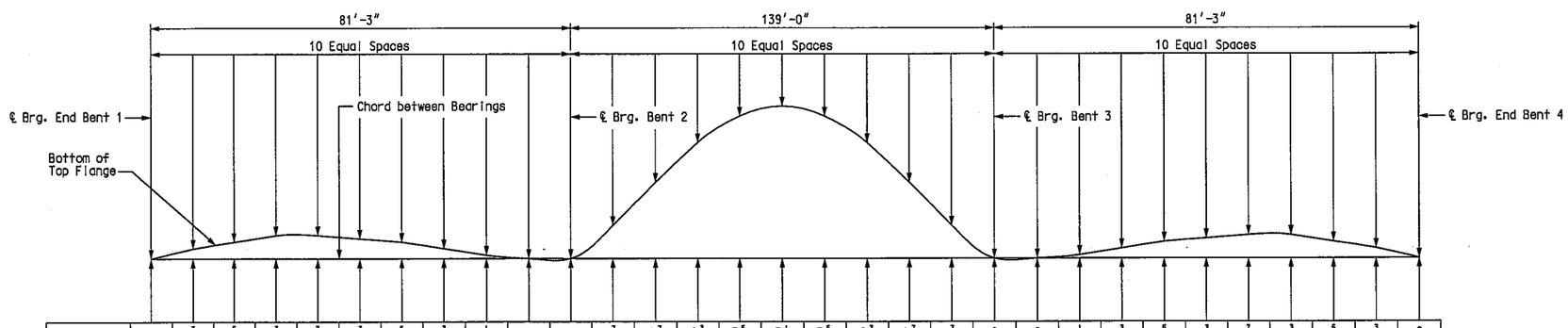


Girder A	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	5/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/4	1 15/16	1 1/4	5/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0
Girder B	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder C	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder D	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder E	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	5/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/4	1 15/16	1 1/4	5/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

DEAD LOAD DEFLECTIONS

Notes:
Dead load deflection includes weight of structural steel, concrete slab, and barrier curb.
20% of dead load deflection is due to the weight of structural steel.
Dead load deflection values are given in inches.
Negative values indicate upward deflection.



Girder A	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/8	3 1/2	3 5/8	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0
Girder B	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder C	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder D	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder E	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 7/16	3 1/2	3 7/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

CAMBER DIAGRAM

Notes:
Camber includes allowance for vertical curve, and for dead load deflection due to concrete slab, barrier curb, and structural steel.
Camber values are given in inches.
Positive values are above the chord between bents and negative values are below the chord between bents.

Notes:
For Theoretical Slab Haunch, see Sheet No. 27.

DEAD LOAD DEFLECTION AND CAMBER DIAGRAMS

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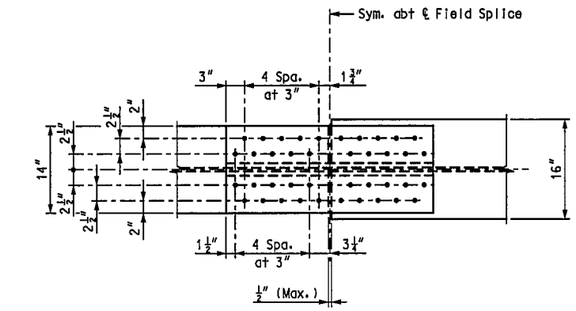
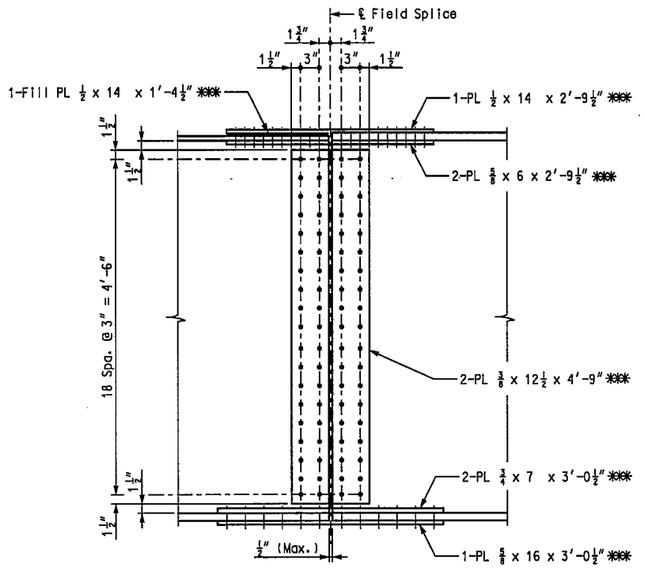
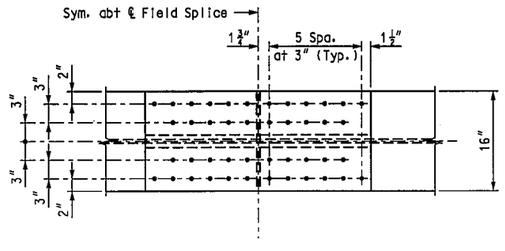


PLAN – TOP FLANGE



ELEVATION



PLAN – BOTTOM FLANGE

FIELD SPLICE 1, 2, 3, AND 4

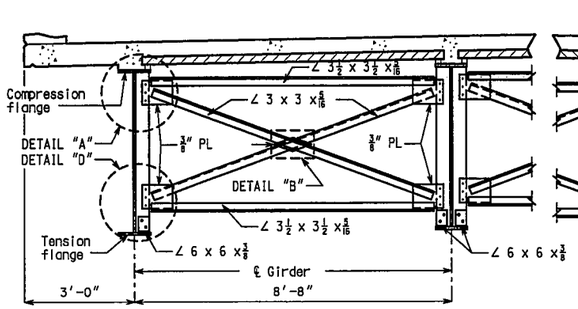
Notes:
*** Indicates splice plates subject to notch toughness requirements.
Use ⅞" dia. high strength bolts with 15/16" dia. holes.
Fabricated Structural Steel for splice plates shall be ASTM A709 Grade 50.
For locations of field splices, see Sheet No. 18 or 19.

FIELD SPLICE DETAILS

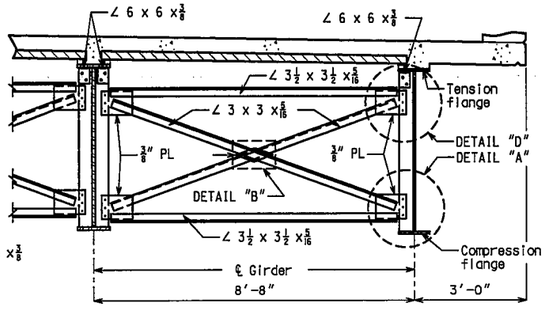
HNTB

FINAL PLANS

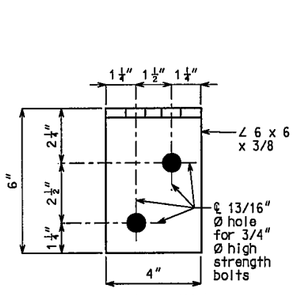
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	150
JOB NO. J4P1707			
CONTRACT ID 080620-403			
PROJECT NO. FAF 70-4(98)			
COUNTY CASS			DATE



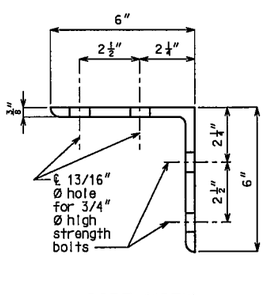
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION



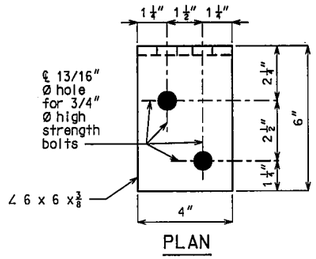
TYPICAL PART SECTION SHOWING
CROSS FRAMES AND
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION



ELEVATION

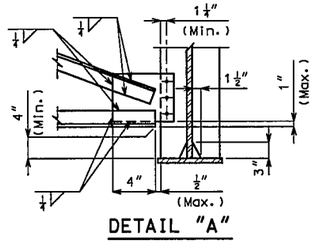


SIDE VIEW

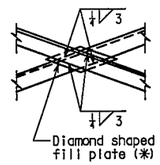


PLAN

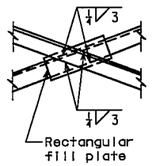
DETAIL OF FLANGE CONNECTION ANGLE



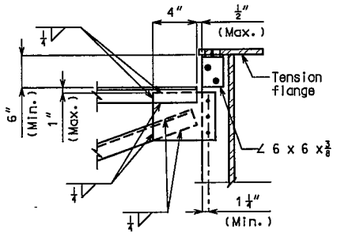
DETAIL "A"



DETAIL "B"



OPTIONAL
DETAIL "B"



DETAIL "D"

Notes:

The two ¾" Ø H.S. bolts that connect the 6 x 6 x ⅜ angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non-slab bearing diaphragms may be made 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 girder diaphragm connection plate or transverse web stiffener shall be standard size.

(*) At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail "B".

DIAPHRAGM AND CROSS FRAME DETAILS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

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HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	151

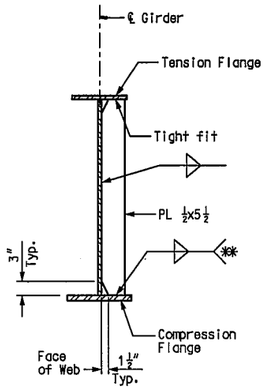
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

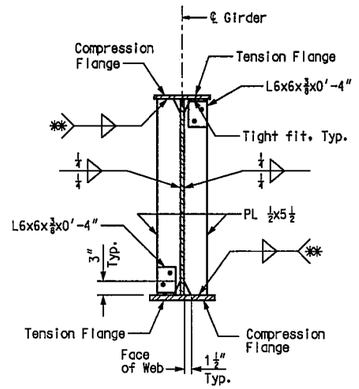
COUNTY CASS

DATE

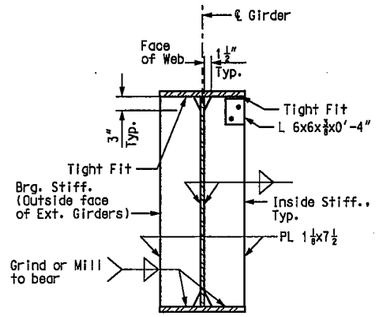


INTERMEDIATE STIFFENER

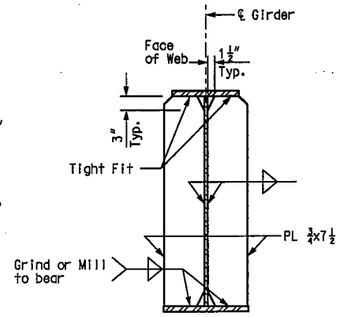
(One side only)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



BENTS 2 & 3



END BENTS 1 AND 4

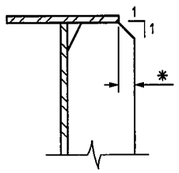
BEARING STIFFENER DETAILS

Fabricated structural steel for bearing stiffeners shall be ASTM A709 Grade 50.

WELDING DETAILS

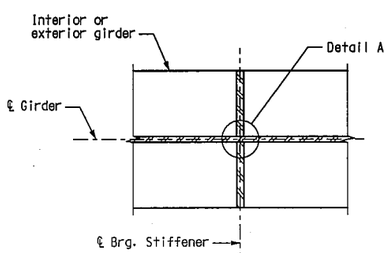
Notes:
Intermediate web stiffeners shall be located as shown in plan of structural steel.
Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

** Weld to Compression Flange. For location of Compression Flanges, see Girder Elevation.

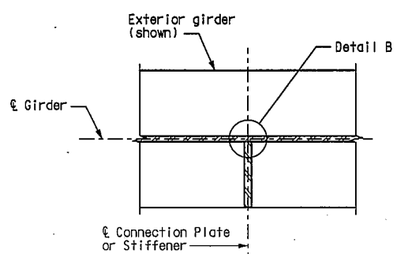


STIFFENER BEVEL DETAIL

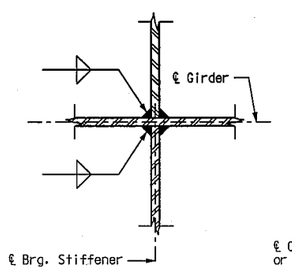
* When dimension exceeds ½", bevel Stiffener Plate.



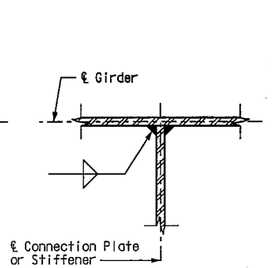
BEARING STIFFENERS



INTERMEDIATE DIAPHRAGM CONNECTION PLATE OR INTERMEDIATE STIFFENERS



DETAIL A



DETAIL B

TYPICAL LOCATION DETAILS

Notes:
For Girder Elevation, see Sheet No. 19.
For Framing Plan, see Sheet No. 18.
Fabricated Structural Steel shall be ASTM A709 Grade 36, except as noted.

STIFFENER AND WELD DETAILS

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	152

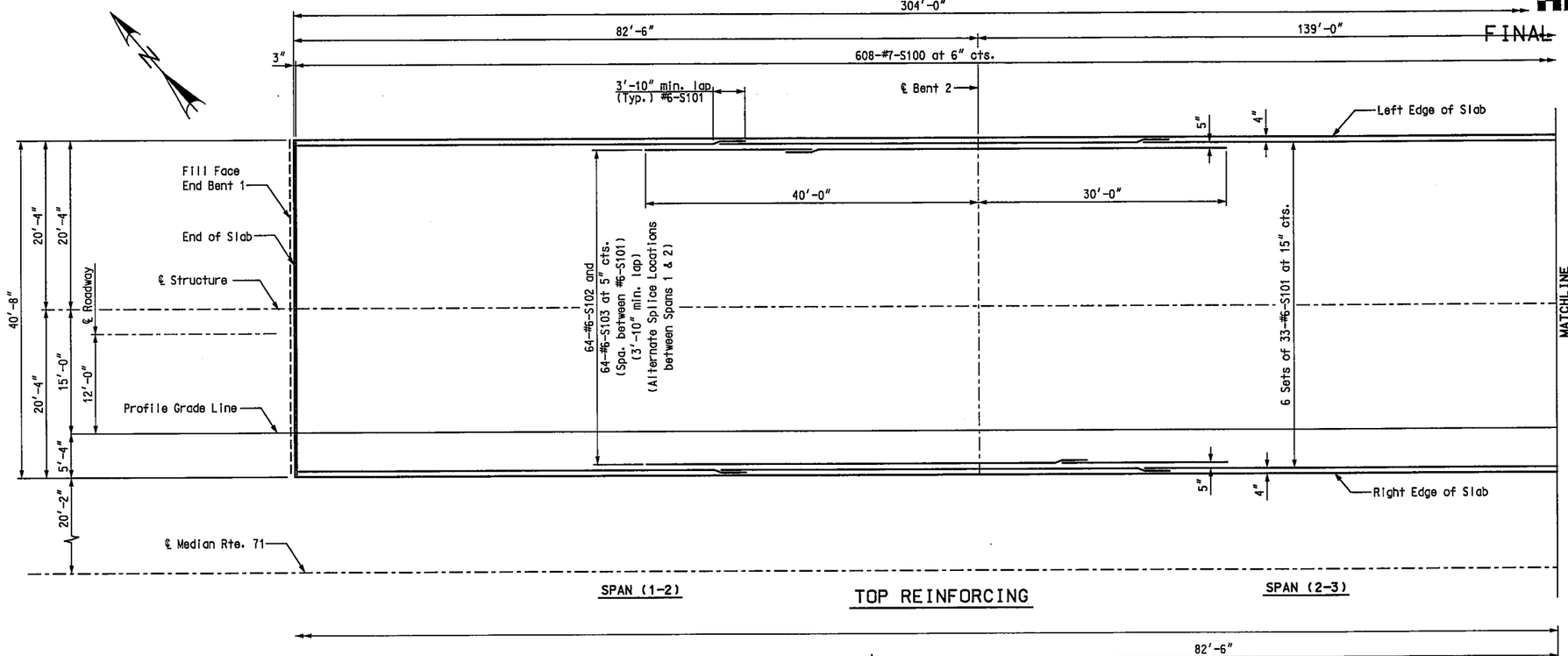
JOB NO. J4P1707

CONTRACT ID 080620-403

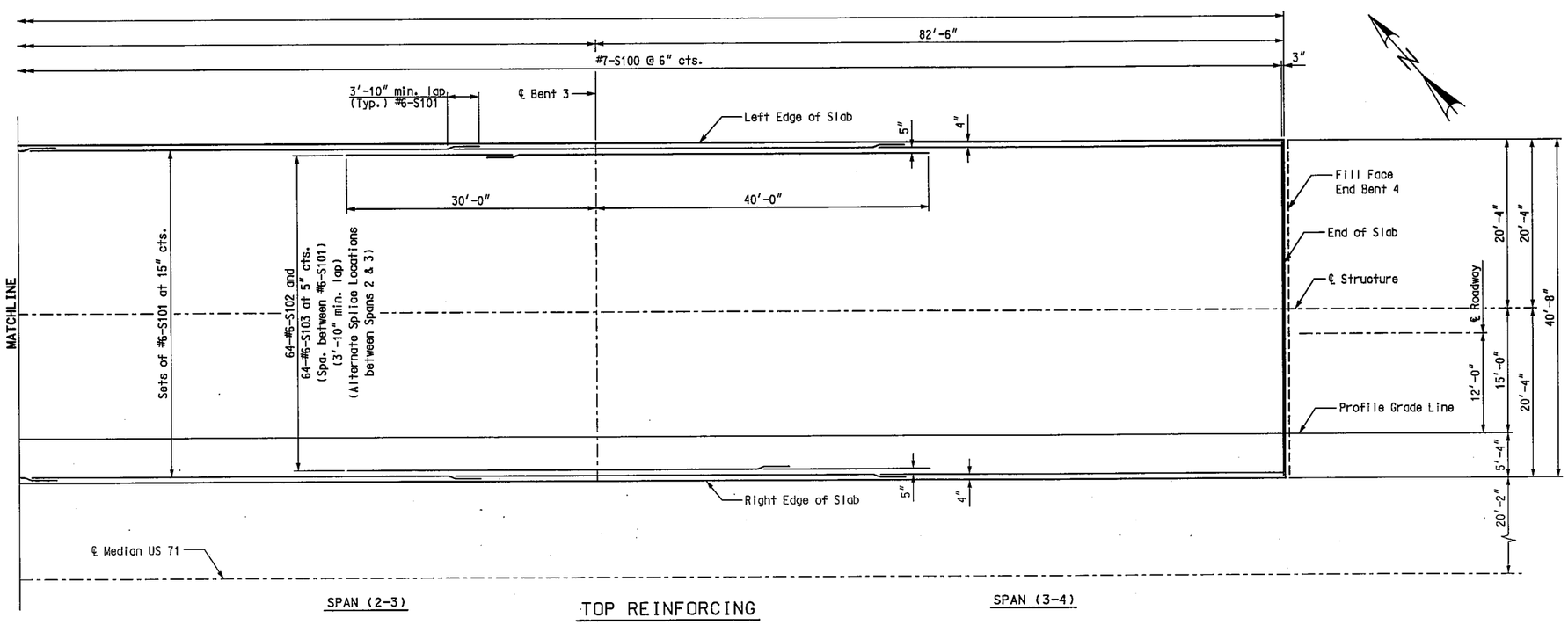
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



TOP REINFORCING



TOP REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.

For Typical Section, see Sheet No. 27.

For Location of Slab Drains, see Sheet No. 30.

For Slab Pouring Sequence, see Sheet No. 28.

For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.

Longitudinal slab dimensions are measured horizontally.

PLOTTED: $$DATE AND TIME$$. $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	153

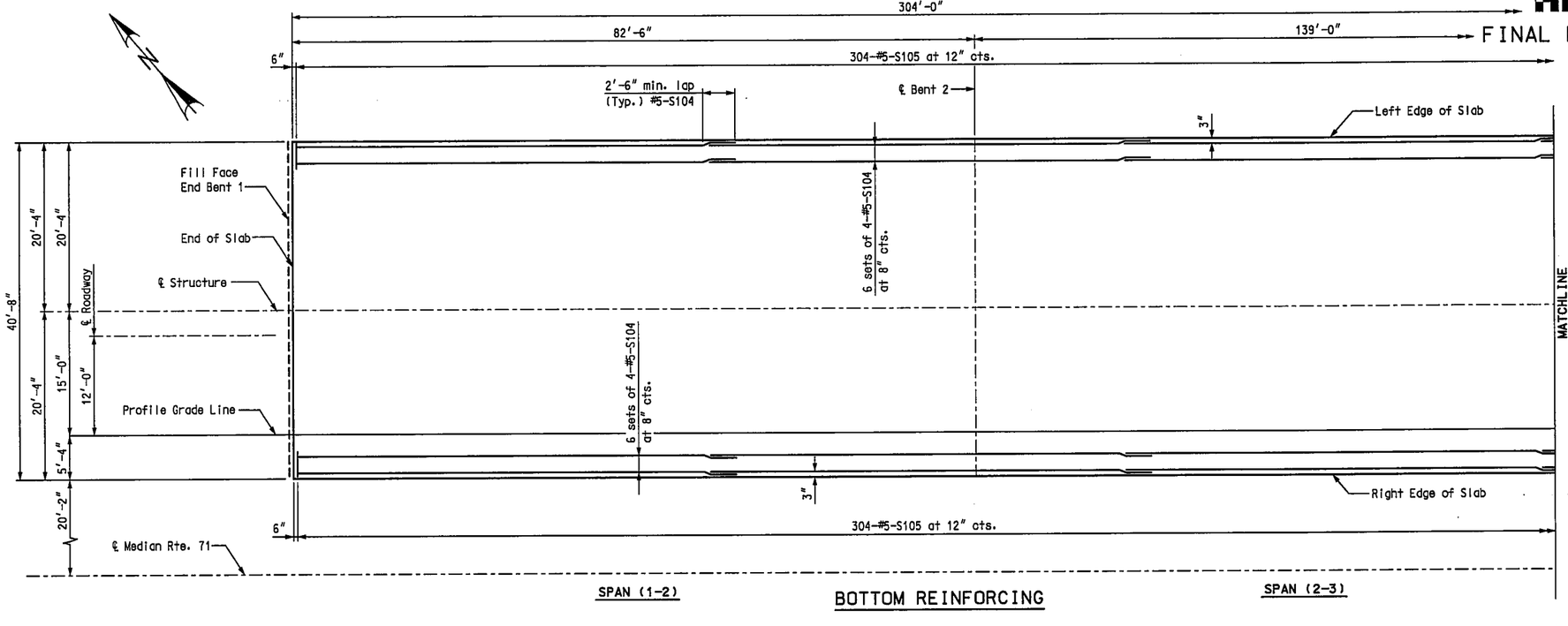
JOB NO. J4P1707

CONTRACT ID 080620-403

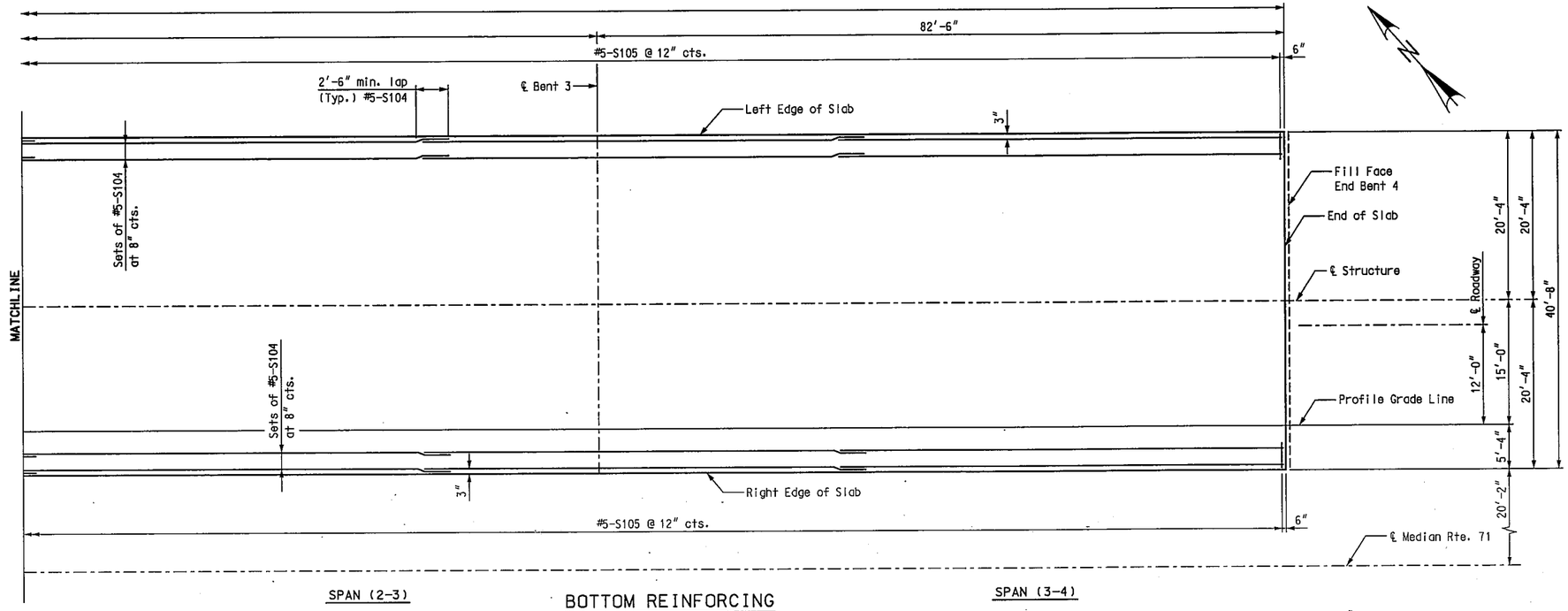
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



BOTTOM REINFORCING



BOTTOM REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.

For Typical Section, see Sheet No. 27.
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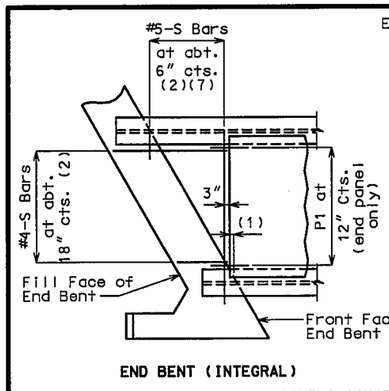
Longitudinal slab dimensions are measured horizontally.

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

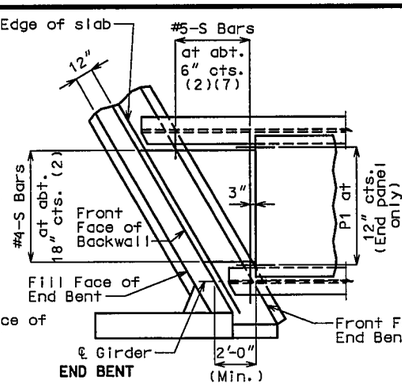
Note: This drawing is not to scale. Follow Dimensions.

A7352

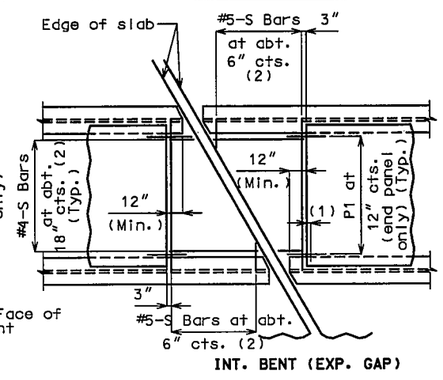


END BENT (INTEGRAL)

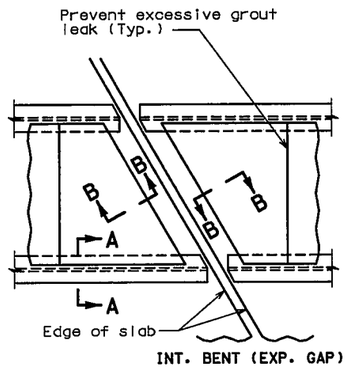
PANELS-SQUARED ENDS



END BENT



INT. BENT (EXP. GAP)



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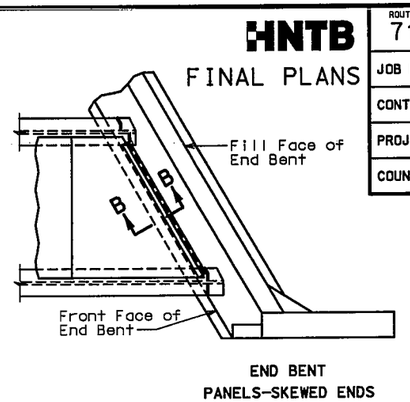
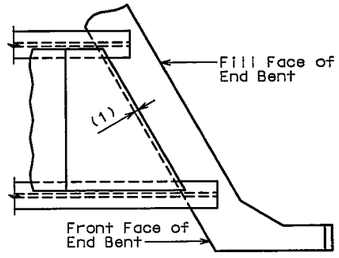


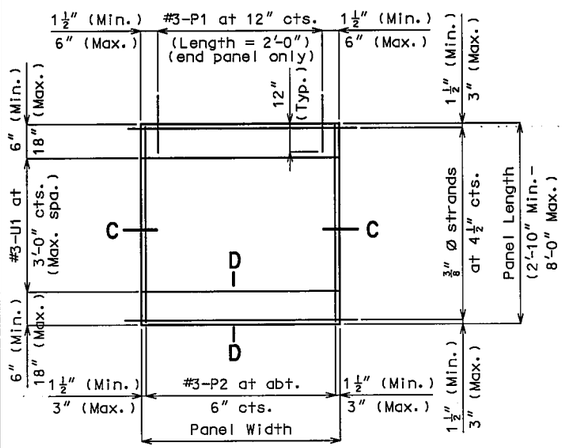
END BENT

PANELS-SKEWED ENDS

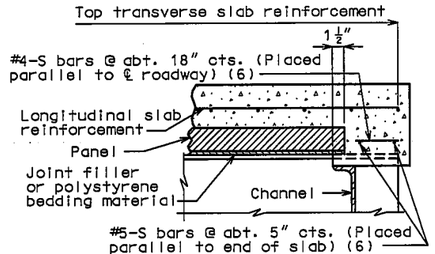


END BENT (INTEGRAL)

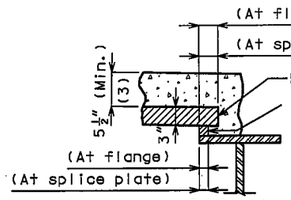
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PLAN OF PRECAST PRESTRESSED PANEL



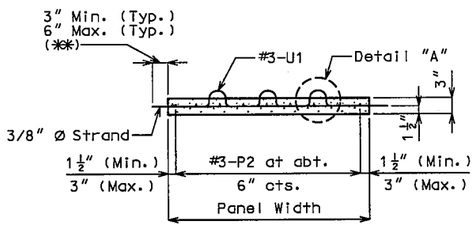
PART SECTION B-B



SECTION A-A(4)

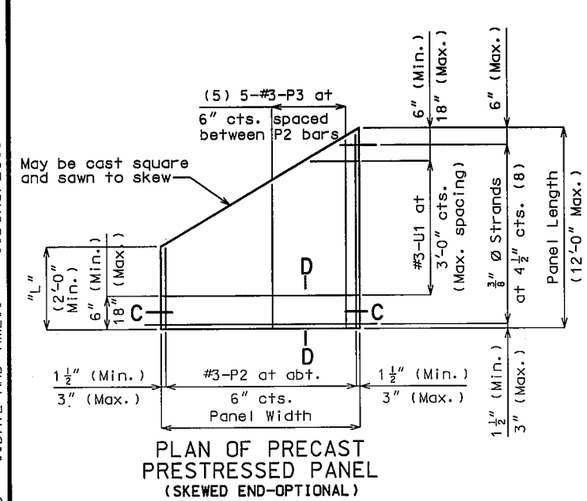
3/4" (Min.)Preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material with Sec 1073

Note: The thickness of the preformed fiber expansion joint material or polystyrene bedding material shall be adjusted to achieve the slab haunching dimension found on sheet no. 27. These adjustments shall be within the limits noted in the general notes.

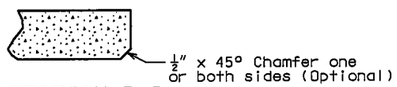


SECTION C-C

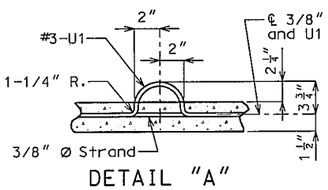
(**) Prestressing strands to extend 6" or to within 1" of adjacent panel.



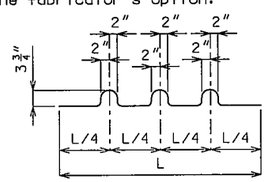
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION D-D



DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

(U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars).

NOTES:

Cost of S-bars will be considered completely covered by the contract unit price for the slab

S-bars are not listed in the bill of reinforcing.

(1) End panels shall be dimensioned 1" min. to 1 1/2" max. from the inside face of diaphragm.

(2) S-bars shown are bottom steel in slab between panels and used with squared end panels only.

(3) Adjustment in the slab thickness, preformed fiber expansion joint material or polystyrene bedding material thickness, or grade will be necessary if the girder camber after erection differs from plan camber by more than the % of dead load deflection due to the weight of structural steel. No payment will be made for additional labor or materials for the adjustment.

(4) All panel support pads shall be glued to the girder. When support thickness exceeds 1 1/2 inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

(5) Use #3-P3 bars if panel is skewed 45° or greater.

(6) S-bars shown are used with skewed end panels, or square end panels of square structures only. The #5 S-bars shall extend the width of slab (2'-6" lap if necessary) or to within 3 inches of expansion device assemblies.

(7) Extend S-bars 18 inches beyond the front face of end bents only.

(8) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi. f'ci = 3,500 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength uncoated seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq. in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When square end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 3/4 inch, except over splice plates where minimum thickness shall be 1/4 inch. When the material is less than 1/2 inch thick over a splice plate, the width of material at the splice shall be the same width as panel on splice. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. No more than 2" total thickness shall be used.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

REINFORCING STEEL:

All dimensions are out to out.

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

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

Actual lengths are measured along centerline of bar to the nearest inch.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 sq. in./ft., with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #3-P2 bars shown. Wireor bar diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The reinforcing steel shall be tied securely to the 3/8" Ø strands with the following maximum spacing in each direction: #3-P2 bars at 16 inches. Welded wire fabric or welded deformed bar mats at 2'-0".

Tie the #3-U1 bars to the #3-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 3'-0" centers.

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

DETAILS OF PRECAST PRESTRESSED PANELS

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	154

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

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71	MO	4	155

JOB NO. J4P1707

CONTRACT ID 080620-403

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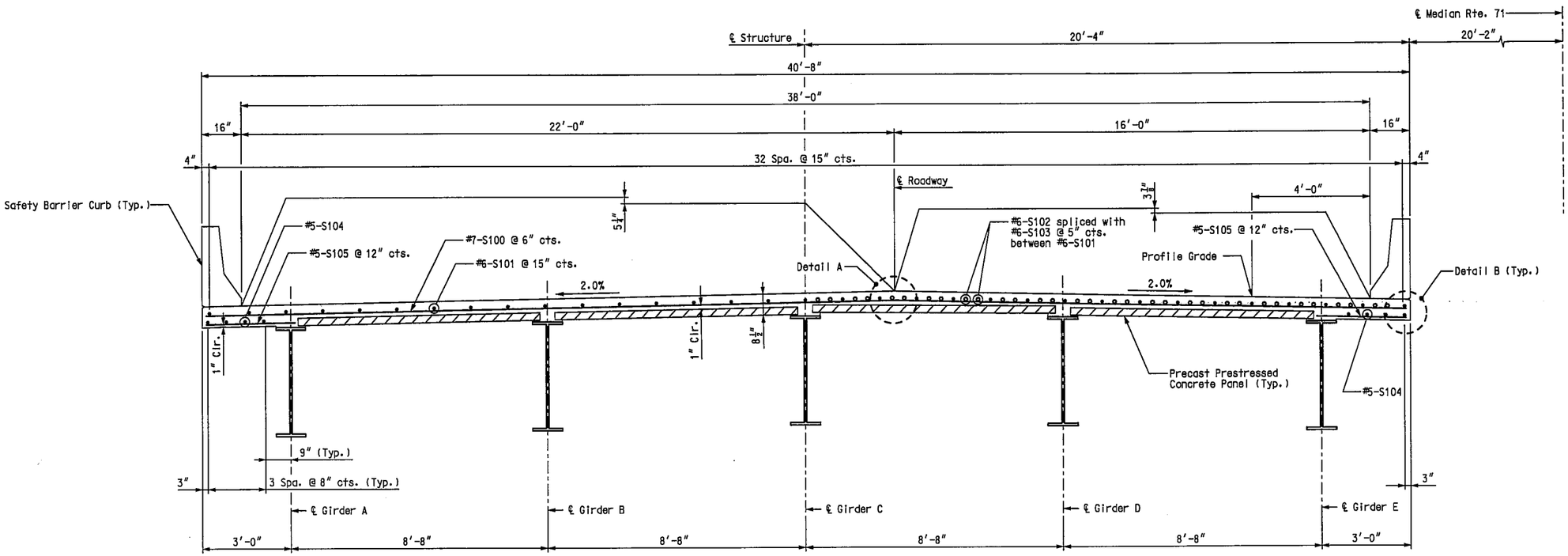
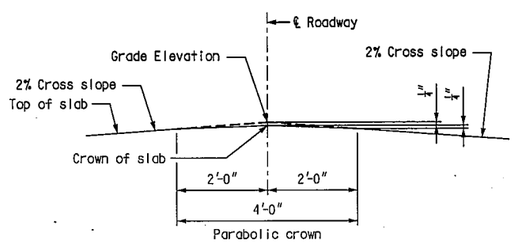


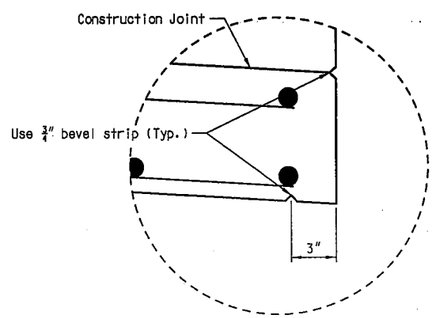
HALF-SECTION NEAR ℄ SPAN

HALF-SECTION NEAR INTERMEDIATE BENTS

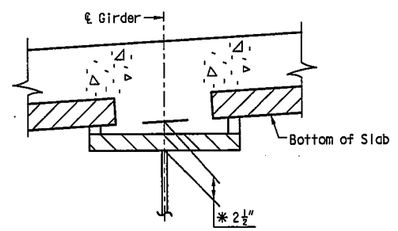
TYPICAL SECTION



DETAIL A



DETAIL B



THEORETICAL SLAB HAUNCH

* Dimensions may vary if the girder camber after erection differs from plan camber by more or less than the ¾ 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.

Notes:
Transverse slab dimensions are measured horizontally.
For Slab Pouring Sequence, see Sheet No. 28.
For details and reinforcement of Safety Barrier Curbs, not shown, see Sheet Nos. 31 thru 33.
For details of precast panels, see Sheet No. 26.

SLAB CROSS SECTION

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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FINAL PLANS

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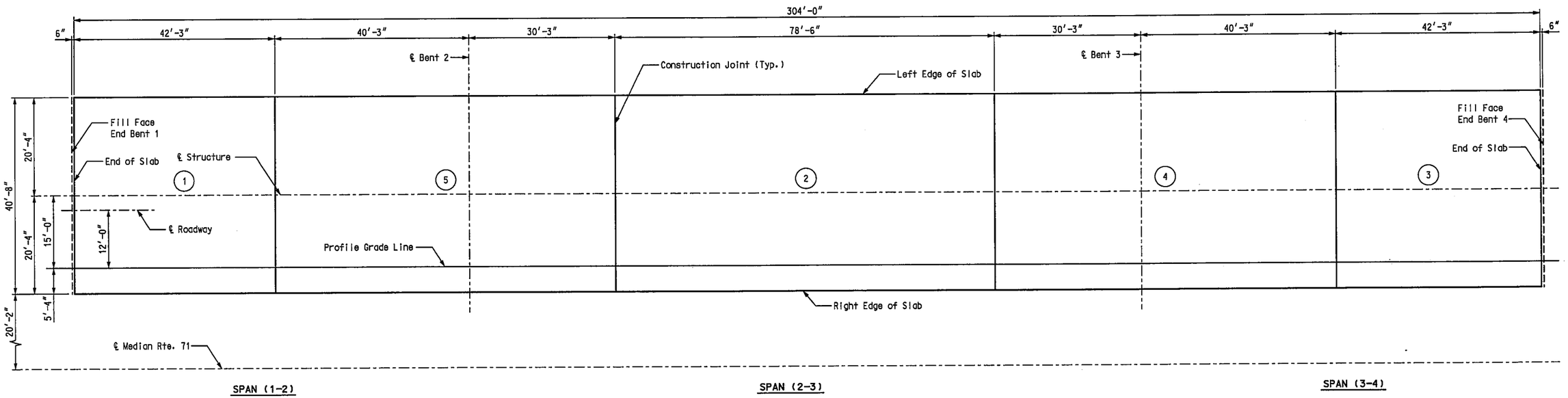
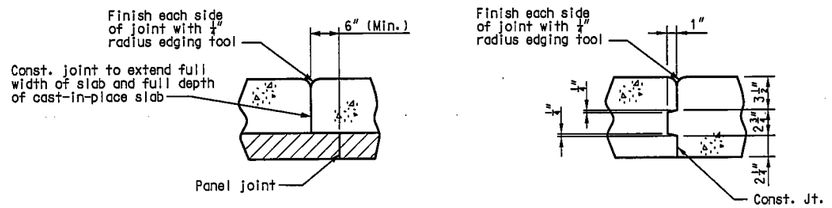


SLAB POURING SEQUENCE

	SEQUENCE OF POURS					MIN. RATE OF POUR CU. YDS./HR.	
	DIRECTION					WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	4	5	25	32
	Either Direction						
Alternate pours to the basic skip sequnce are subject to the approval of the engineer in accordance with Sec 703.							
Alternate "A" Pours	1 + 5 + 2 + 4 + 3					34	56
	End to End						



SLAB CONSTRUCTION JOINT DETAILS

Notes:
Transverse construction joints shall be placed parallel to ℄ bents.
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.
For details of precast panels, see Sheet No. 26.
For location of slab drains, see Sheet No. 30.

SLAB POURING SEQUENCE

A7352

PLOTTED: $$DATE_AND_TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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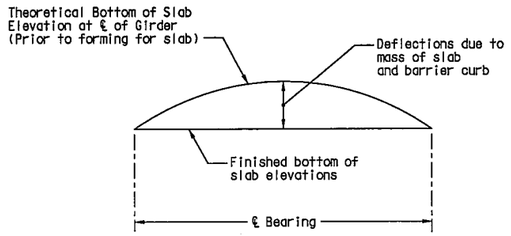

TYPICAL SLAB ELEVATION DIAGRAM

Theoretical Bottom of Slab Elevations at ℄ of Girder (Prior to forming for slab) **

	Span (1-2)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1080.27	1080.18	1080.09	1080.00	1079.90	1079.80	1079.69	1079.59	1079.48	1079.37	1079.27
Girder B	1080.44	1080.36	1080.27	1080.17	1080.08	1079.97	1079.87	1079.76	1079.65	1079.55	1079.45
Girder C	1080.61	1080.53	1080.44	1080.35	1080.25	1080.15	1080.04	1079.93	1079.83	1079.72	1079.62
Girder D	1080.56	1080.48	1080.39	1080.29	1080.20	1080.09	1079.99	1079.88	1079.77	1079.67	1079.57
Girder E	1080.39	1080.30	1080.21	1080.12	1080.02	1079.92	1079.81	1079.71	1079.60	1079.49	1079.39
	Span (2-3)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1079.27	1079.12	1078.97	1078.81	1078.62	1078.42	1078.18	1077.92	1077.64	1077.35	1077.07
Girder B	1079.45	1079.30	1079.15	1079.00	1078.83	1078.62	1078.38	1078.12	1077.83	1077.53	1077.24
Girder C	1079.62	1079.47	1079.33	1079.17	1079.00	1078.79	1078.56	1078.29	1078.00	1077.71	1077.41
Girder D	1079.57	1079.42	1079.27	1079.12	1078.95	1078.74	1078.50	1078.24	1077.95	1077.65	1077.36
Girder E	1079.39	1079.24	1079.09	1078.93	1078.74	1078.54	1078.30	1078.04	1077.76	1077.47	1077.19
	Span (3-4)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1077.07	1076.91	1076.76	1076.60	1076.45	1076.30	1076.14	1075.98	1075.81	1075.64	1075.46
Girder B	1077.24	1077.08	1076.93	1076.77	1076.62	1076.47	1076.31	1076.15	1075.98	1075.81	1075.64
Girder C	1077.41	1077.25	1077.10	1076.95	1076.80	1076.64	1076.49	1076.32	1076.16	1075.99	1075.81
Girder D	1077.36	1077.20	1077.05	1076.89	1076.74	1076.59	1076.43	1076.27	1076.10	1075.93	1075.76
Girder E	1077.19	1077.03	1076.88	1076.72	1076.57	1076.42	1076.26	1076.10	1075.93	1075.76	1075.58

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab (including prestressed panel) and barrier curb.

HNTB

FINAL PLANS

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71	MO	4	158

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COUNTY CASS

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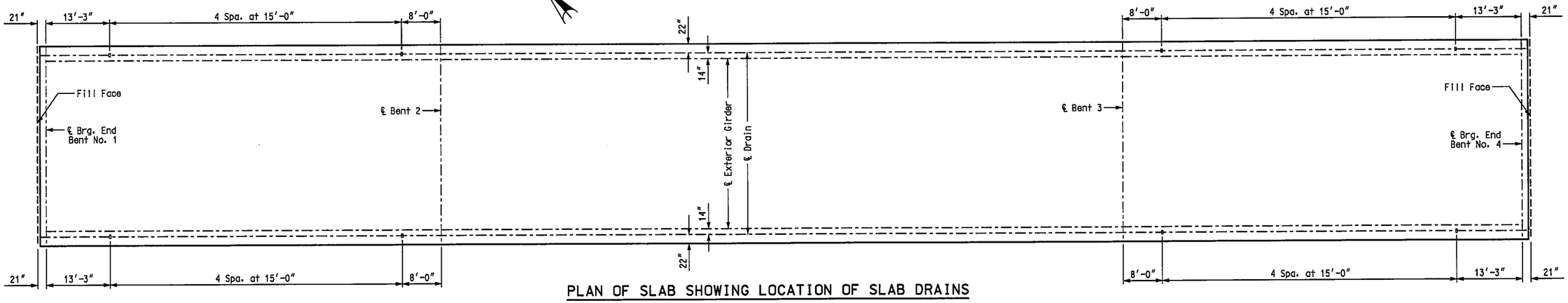
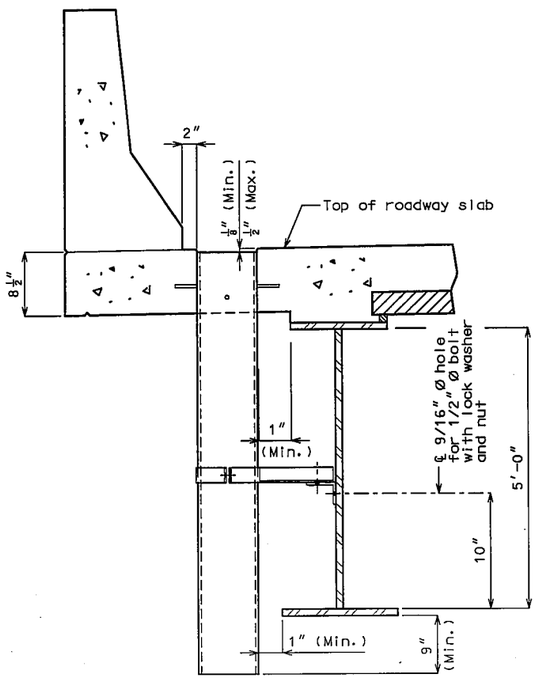
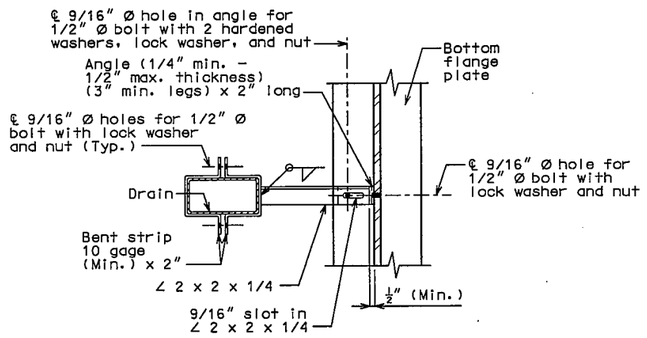


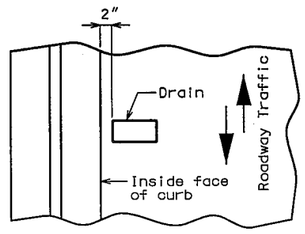
PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS



PART SECTION NEAR DRAIN

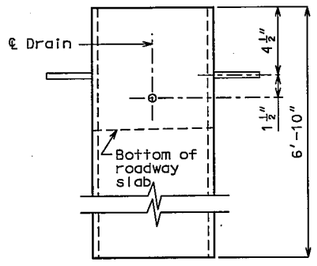


PART SECTION SHOWING BRACKET ASSEMBLY

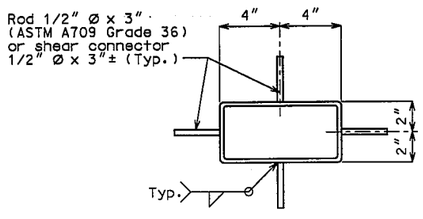


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



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 located on the plate girder shop drawings.

SLAB DRAIN DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	159

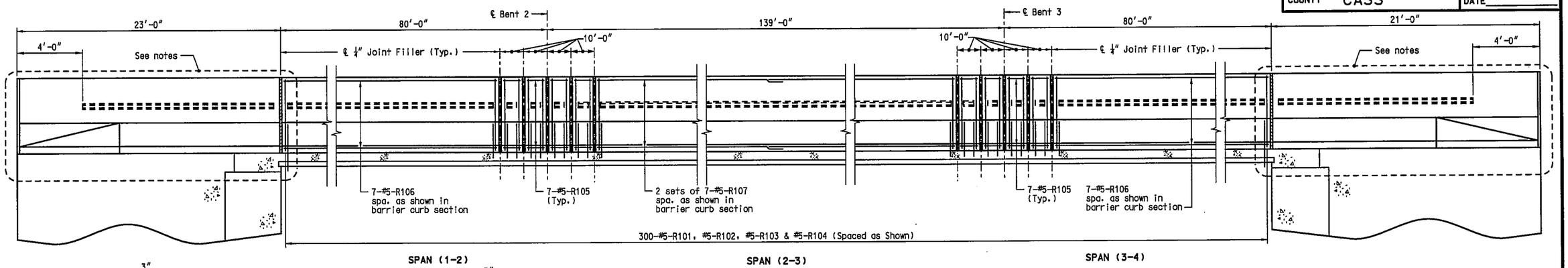
JOB NO. J4P1707

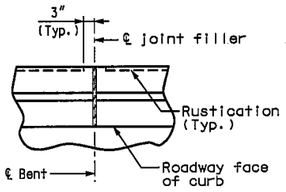
CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

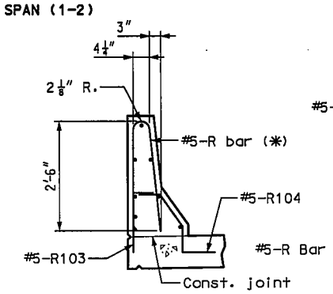
COUNTY CASS

DATE

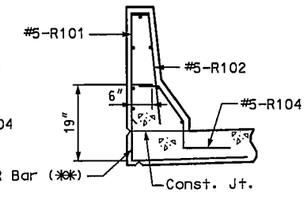




PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



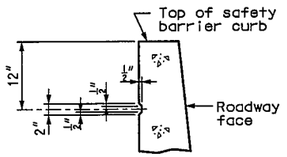
SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)



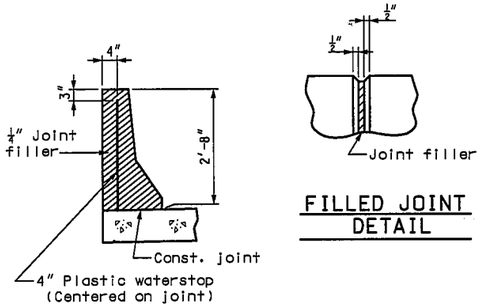
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R101 and R102 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART SECTION SHOWING
RUSTICATION DETAILS



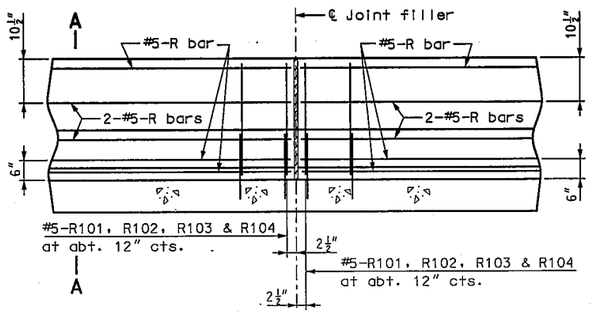
FILLED JOINT
DETAIL

DETAILS OF PLASTIC WATERSTOP

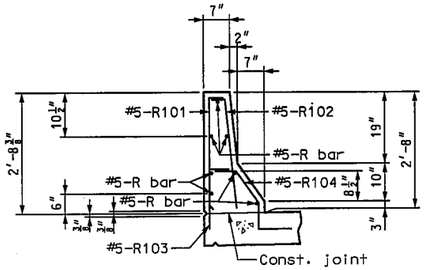
Notes:

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 = 2.29 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 ½" radius or a ⅜" 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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

Longitudinal dimensions are horizontal arc dimensions

The curb shall be cured by application of type 1-d or type z liquid membrane - forming compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 will not be permitted.

SAFETY BARRIER CURB

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	160

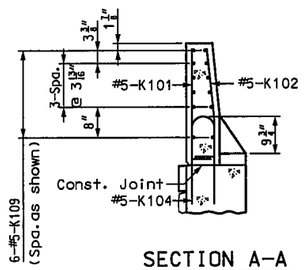
JOB NO. J4P1707

CONTRACT ID 080620-403

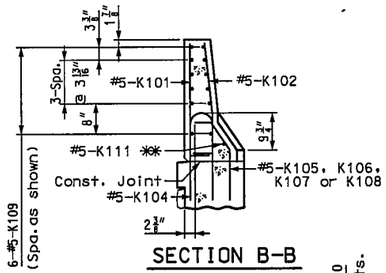
PROJECT NO. FAF 70-4(98)

COUNTY CASS

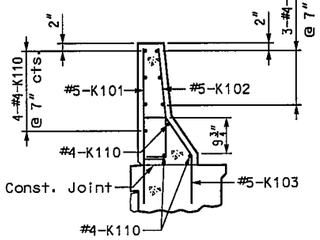
DATE



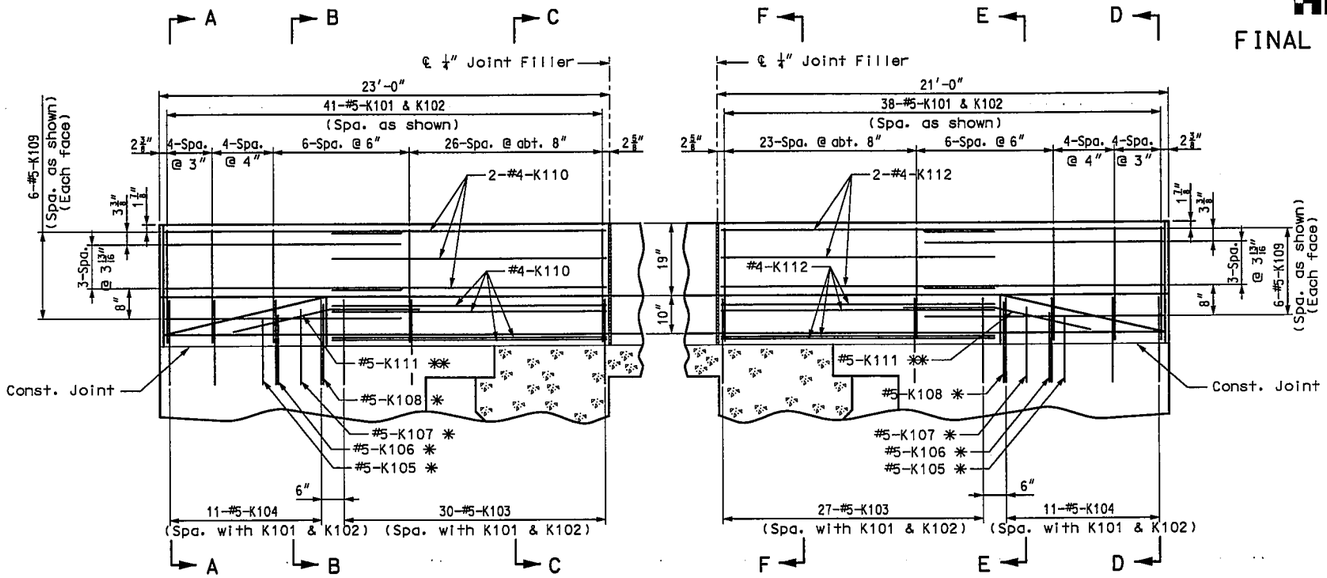
SECTION A-A



SECTION B-B



SECTION C-C

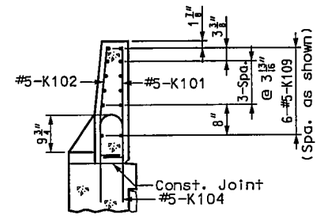


ELEVATION END BENT 1

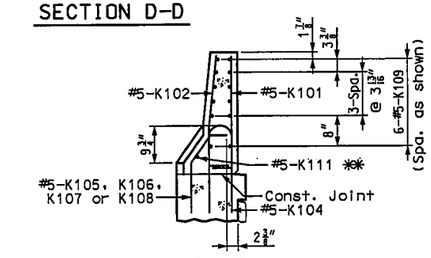
ELEVATION END BENT 4

* Spaced with #5-K104 bars.

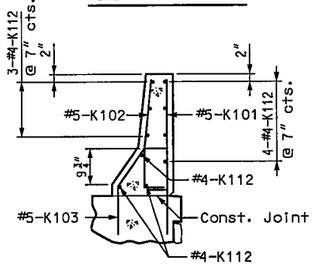
** Fit bar to follow transition face of curb.



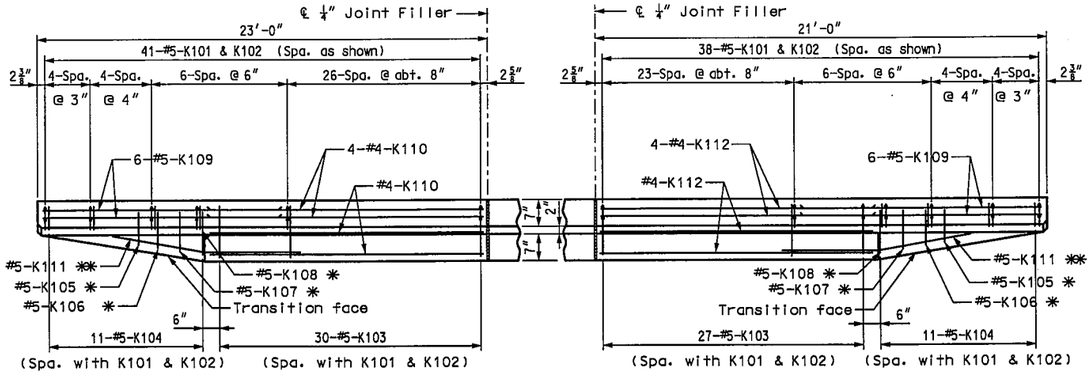
SECTION D-D



SECTION E-E



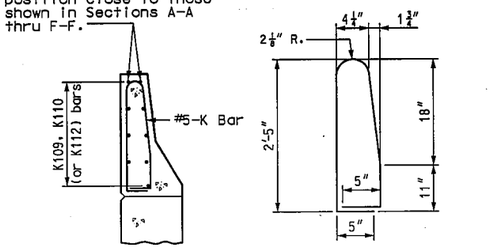
SECTION F-F



PLAN END BENT 1

PLAN END BENT 4

The top two K109 and K110 (or K112) bars shall be kept with position close to those shown in Sections A-A thru F-F.

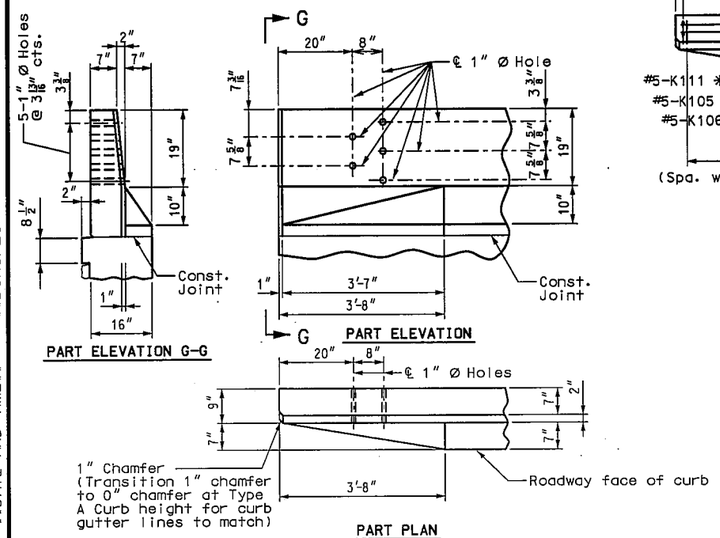


(K103 or K104 thru K108 bars not shown for clarity)

K101-K102 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K101 and K102 bar combination may be furnished as one bar as shown, at the contractor's option.

DETAILS OF SAFETY BARRIER CURB AT END BENTS



DETAILS OF GUARD RAIL ATTACHMENT

NOTES: Use a minimum lap of 2'-0" between K109 and K110 (or K112) bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown; right barrier curb similar)

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	161

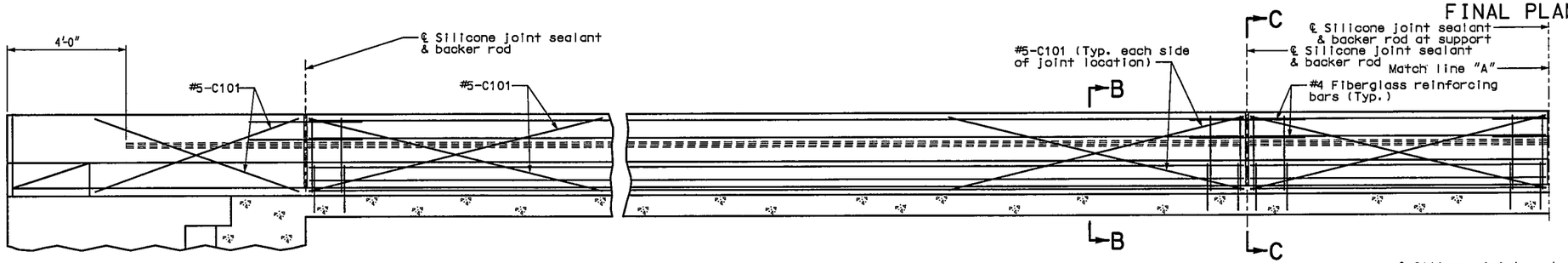
JOB NO. J4P1707

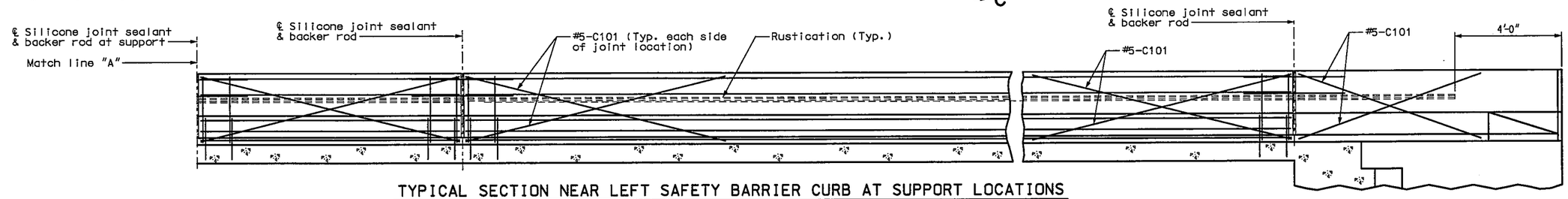
CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE





TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS

(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

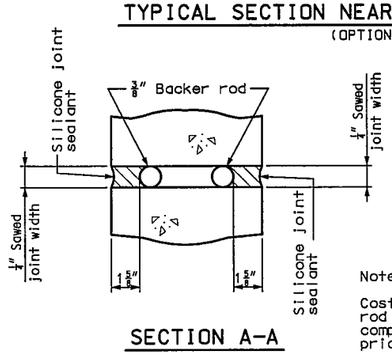
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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. Surface sealing for concrete in accordance with Sec 703 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.

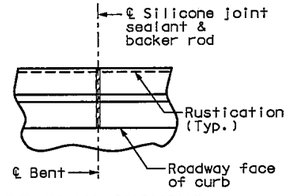
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

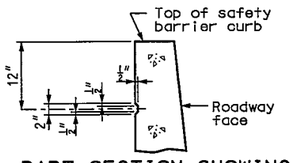
Note:

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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



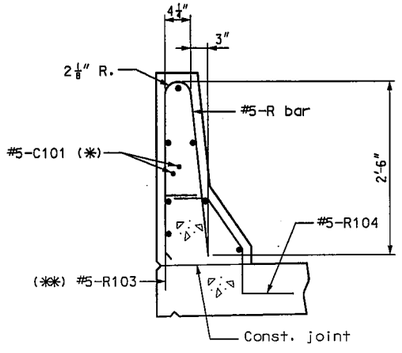
PART PLAN SHOWING SAFETY BARRIER CURB JOINT



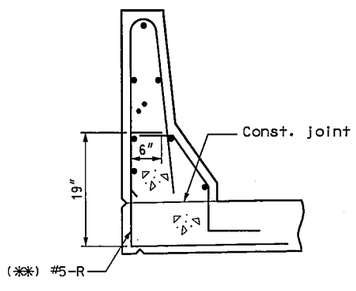
PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

(Use on highway grade separation only)

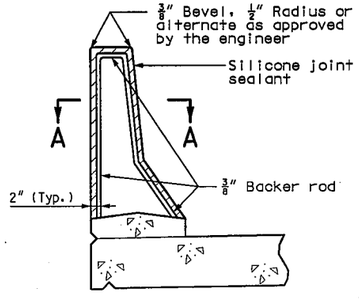


PART SECTION B-B

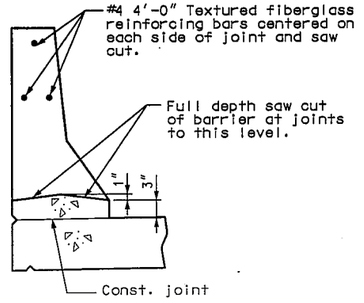


PART SECTION B-B

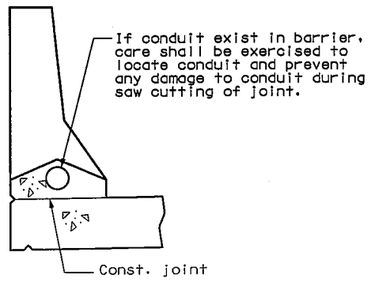
(Optional #5-R bar shown)



SECTION THRU JOINT



PART SECTION C-C



PART SECTION C-C

(Use when conduit required)

Notes:

(*) Each side of joint location.

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.

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

OPTIONAL SLIP-FORM
BRIDGE SAFETY BARRIER CURB

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	162

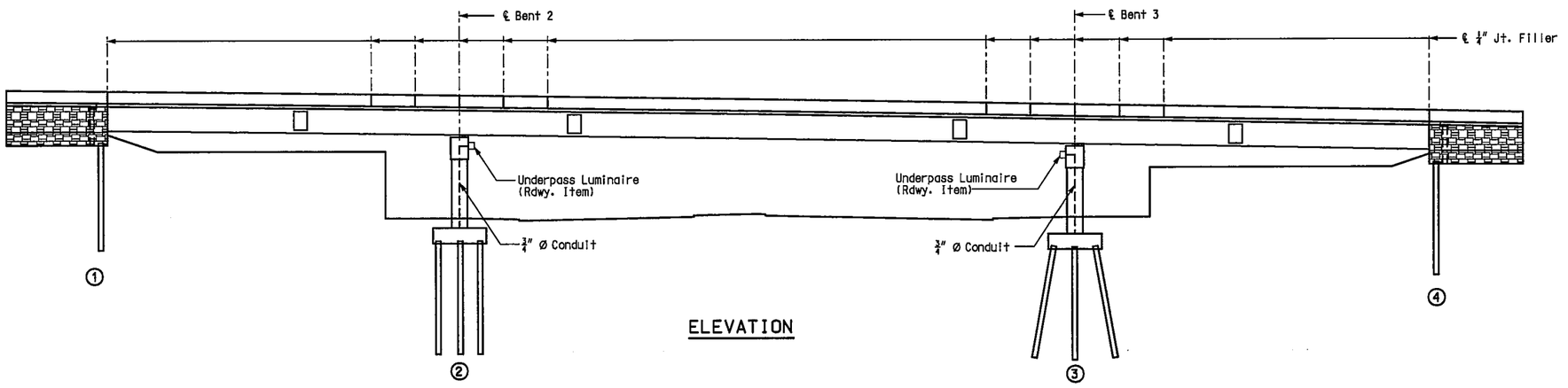
JOB NO. J4P1707

CONTRACT ID 080620-403

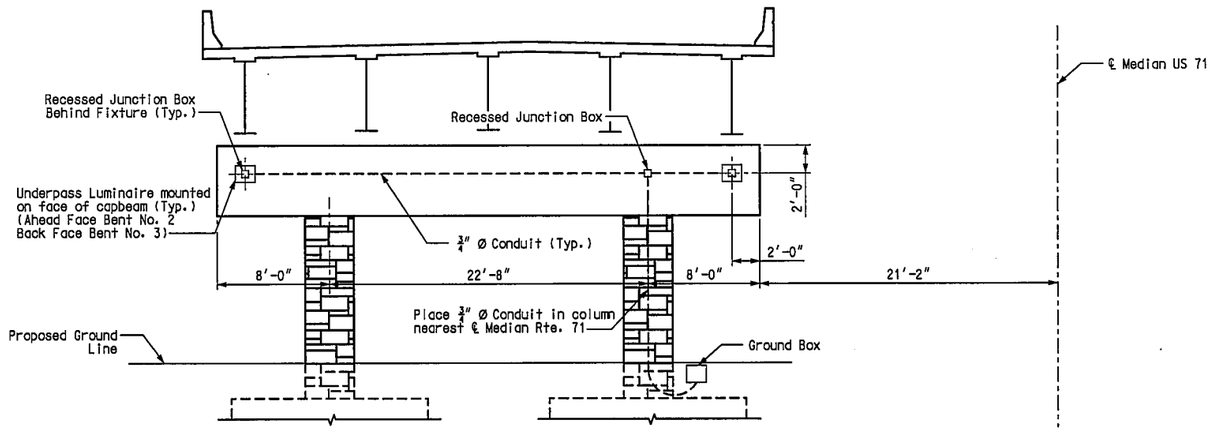
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



ELEVATION



TYPICAL SECTION

Notes:

Payment for furnishing and installing Conduit System in substructure, complete-in-place, will be paid for at the contract unit price for Conduit System on Structure, lump sum.

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters' Laboratories, Inc., (UL) label.

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

For details of underdeck lighting and wiring, see electrical plans.

CONDUIT SYSTEM FOR LIGHTING UNDER BRIDGE

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	163

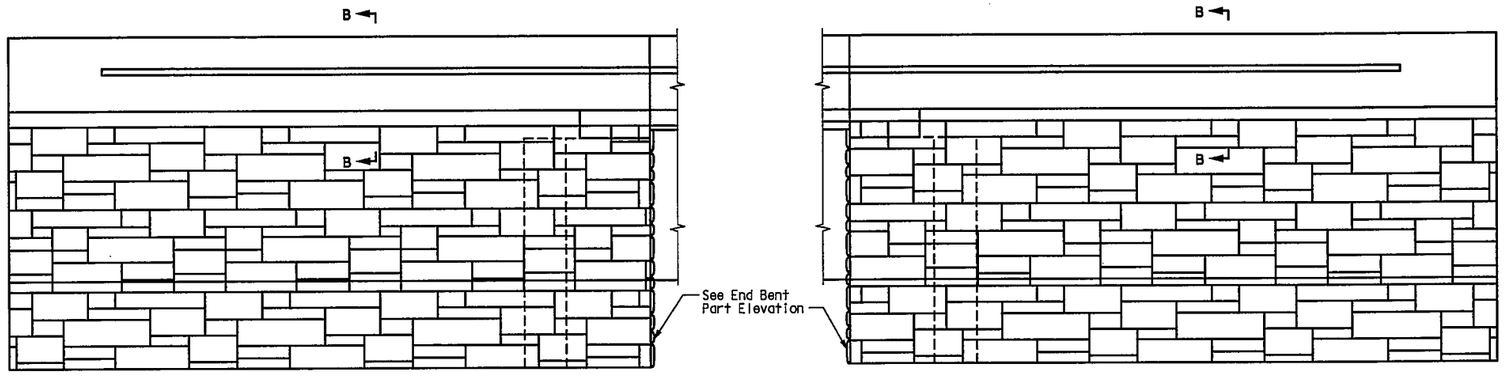
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

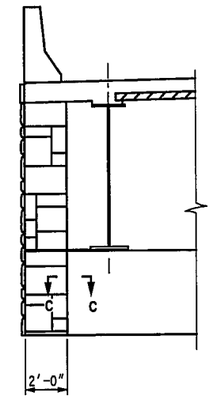
DATE



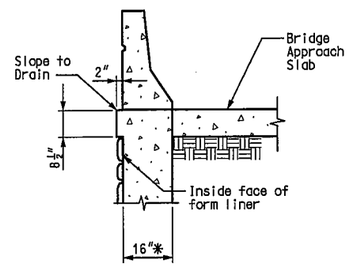
END BENT NO. 1

END BENT NO. 4

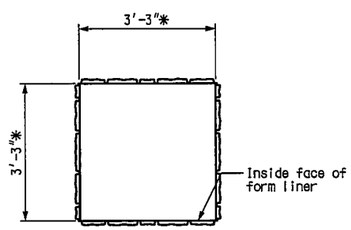
END BENT WING ELEVATION



END BENT NO. 1 PART ELEVATION
(End Bent No. 4 Similar)

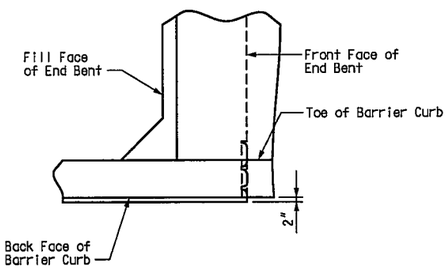


PART SECTION B-B

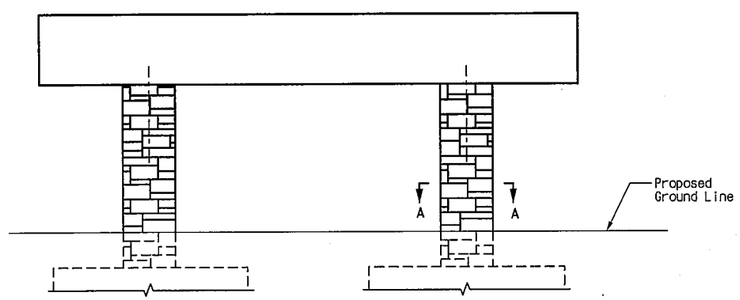


* Limits of concrete pay quantity

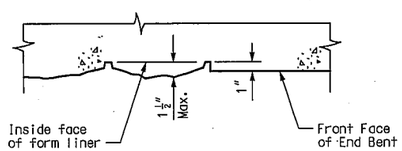
SECTION A-A



PLAN AT END BENTS



INTERMEDIATE BENT ELEVATION



SECTION C-C

Notes:

The cost of form liner will be paid for at the contract unit price for Form Liner per Sq. Yd. The cost of concrete necessary to fill the form lines shall be included in the contract unit price per Sq. Yd. of Form Liner.

Form liner seams shall be oriented away from traffic.

The following is a list of form liner manufacturers and types which may be used. All form liner patterns depth of relief shall vary up to 1½". The height of any single 'stone' shall be 15" maximum.

Scott System, Inc.: Form liner pattern #167 "Ashlar Stone".

Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone".

Dayton Superior/Symons: Form liner pattern #1515 "Ashlar Stone".

Limits of Masonry and Graffiti Protection System at End Bents shall be all surfaces with Form Liner.

Limits of Masonry and Graffiti Protection System at Intermediate Bents shall be all column surfaces from the top of the footing to the bottom of the capbeam.

FORM LINER DETAILS

A7352

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	164

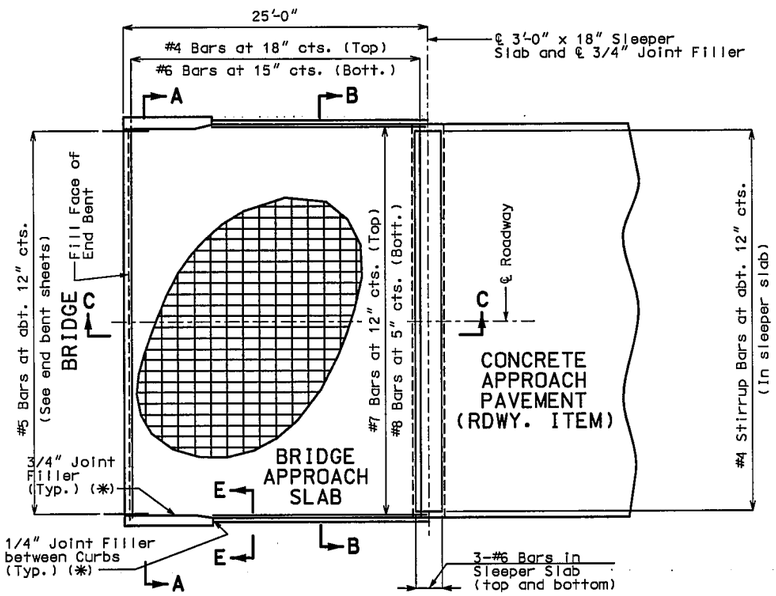
JOB NO. J4P1707

CONTRACT ID 080620-403

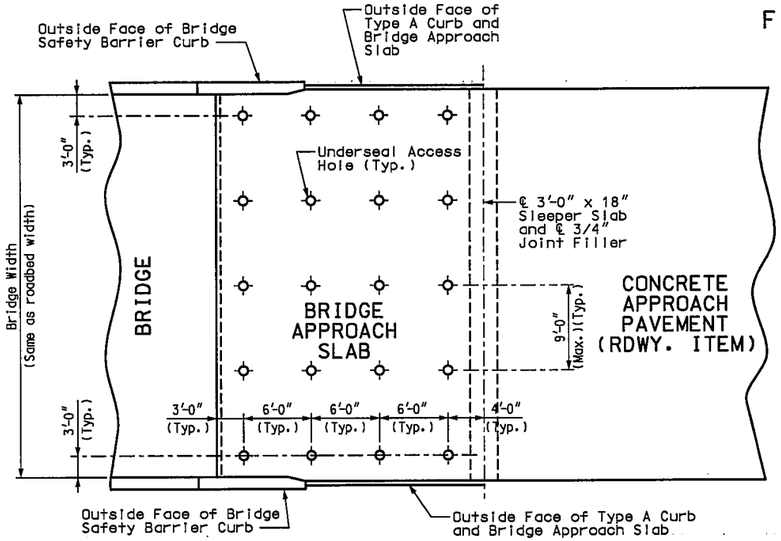
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

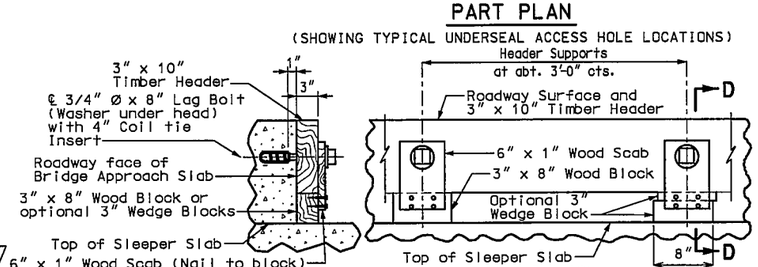


PART PLAN SHOWING REINFORCEMENT



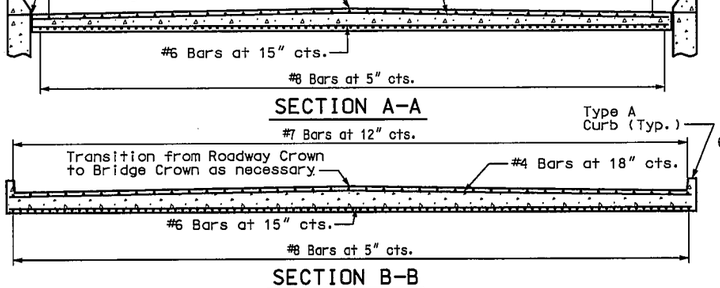
PART PLAN

(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



Note: Remove timber header when concrete pavement is placed.

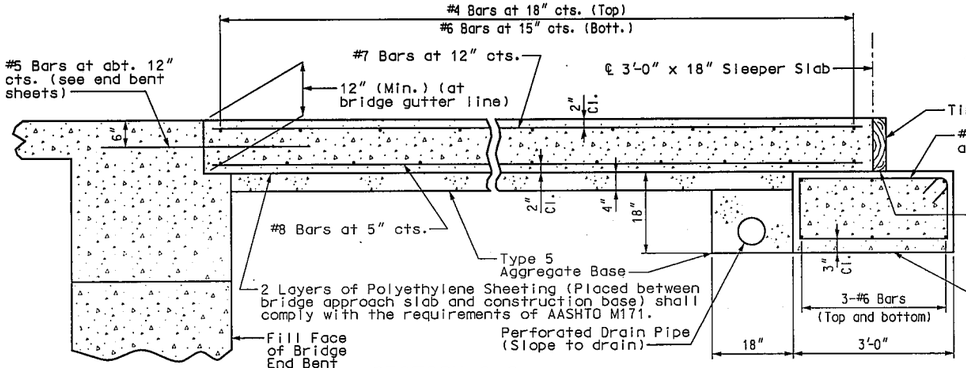
DETAILS OF TIMBER HEADER



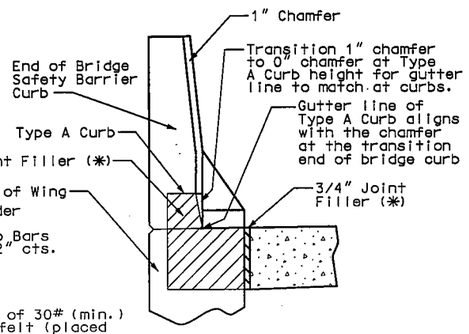
SECTION A-A

SECTION B-B

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

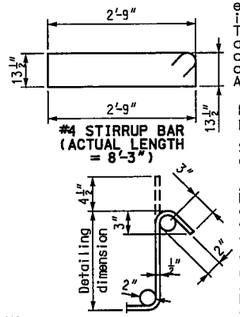


SECTION C-C



SECTION E-E

(BETWEEN CURBS)



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).

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 shall 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 by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

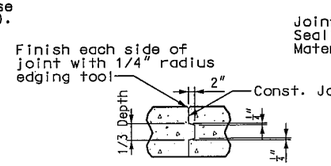
For Concrete Approach Pavement details, see roadway plans.

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

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.

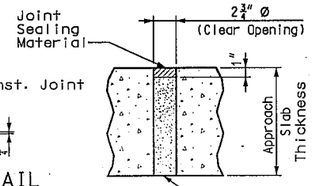
When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy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



CONST. JOINT DETAIL

(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

BRIDGE APPROACH SLAB

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	165

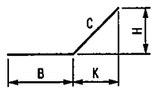
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



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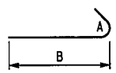

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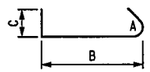
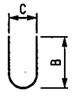


SHAPE 4

SHAPE 5



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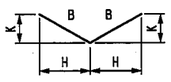

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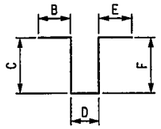

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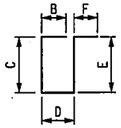

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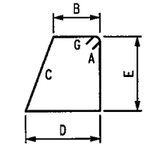

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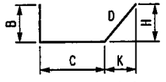

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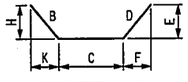

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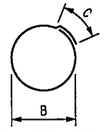

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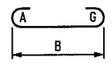

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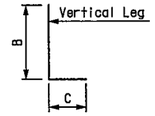

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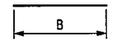

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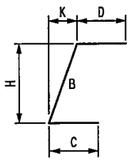

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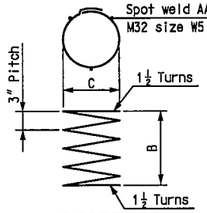

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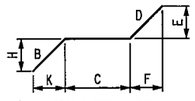

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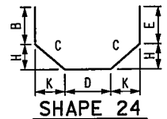

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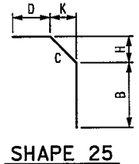

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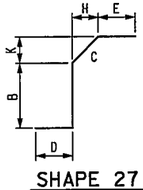

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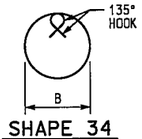

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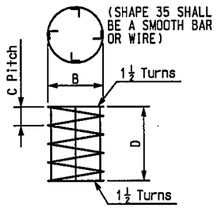

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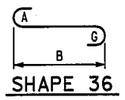

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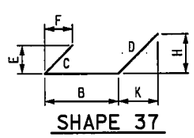

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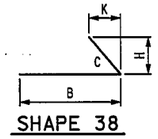

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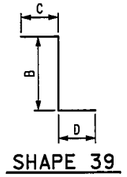

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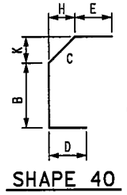

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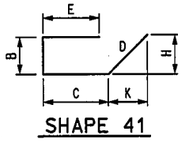

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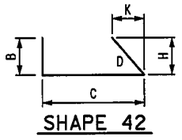

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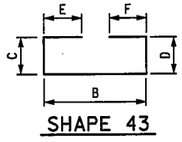

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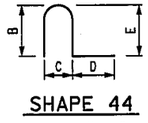

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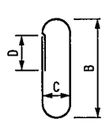

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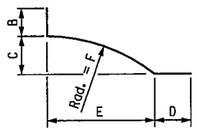

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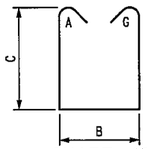

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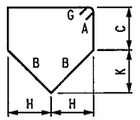

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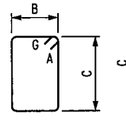

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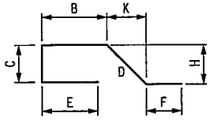

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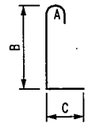

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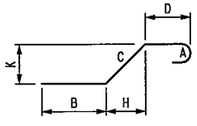

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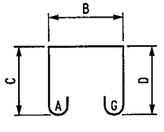

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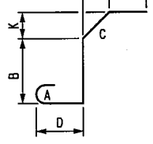

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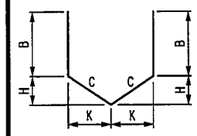

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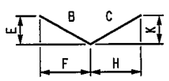
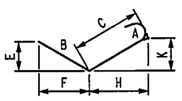
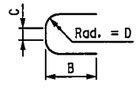


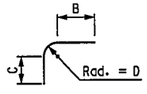
SHAPE 61



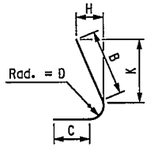
SHAPE 62



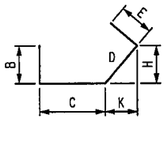
SHAPE 63



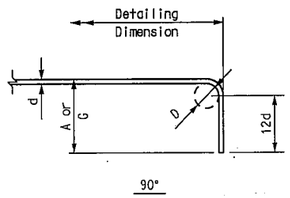
SHAPE 64



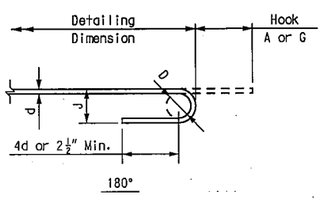
SHAPE 65



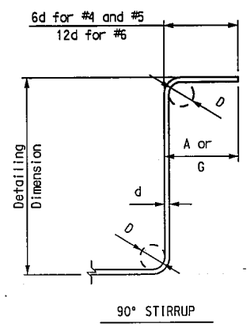
SHAPE 66



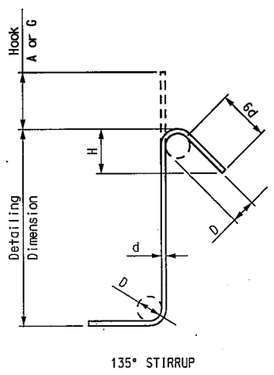
90°



180°



90° STIRRUP



135° STIRRUP

STIRRUP HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		90° Hooks	135° Hooks	
		Hook A or G	Hook A or G	Approx. H
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	8"	4½"

END HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		180° Hooks		90° Hooks
		Hook A or G	J	Hook A or G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¾"	17"	13¼"	22"
#11	12"	19"	14¾"	2'-0"
#14	18¼"	2'-3"	21¾"	2'-7"
#18	2'-0"	3'-0"	2'-4½"	3'-5"

Notes:
All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (Nearest inch)
Payweights are based on actual lengths.
Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.
E = Epoxy coated reinforcement.
S = Stirrup.
X = Bar is included in substructure quantities.
Actual lengths are measured along centerline bar to the nearest inch.
V = Bar dimensions vary in equal increments between dimensions shown on this line and the following line.
No. ea. = Number of bars of each length.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.
Reinforcing steel (Grade 60) fy = 60,000 psi.

BAR BENDING DIAGRAMS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	166

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 1																									
38	6F100	Beam & Diaph.		23						14″	5′-0″	14″	9⅞″	9⅞″	9⅞″	9⅞″	7′-4″	7′-4″	419										
10	6F101	Diaphragm		19						5′-3″	2′-6″						7′-9″	7′-8″	115										
30	6H100	Beam & Diaph.		20						40′-4″							40′-4″	40′-4″	1,817										
38	5H101	App. Seat	E	20						2′-6″							2′-6″	2′-6″	99										
12	8H102	Wingwall		20						22′-6″							22′-6″	22′-6″	721										
4	8H103	Wingwall	E	20						22′-6″							22′-6″	22′-6″	240										
76	9H104	Wingwall		20						22′-6″							22′-6″	22′-6″	5,814										
4	6H105	Beam		20						11′-6″							11′-6″	11′-6″	69										
34	5U100	Beam & Diaph.		5	S					2′-6″	5′-3″	5′-3″					13′-0″	12′-9″	452										
6	4U101	Beam		53	S					2′-6″	2′-7″						10′-11″	10′-8″	43										
9	4U102	Beam		5	S					2′-6″	2′-7″	2′-7″					7′-8″	7′-6″	45										
40	5U103	Diaphragm	E	21	S					2′-1″	5′-8″	5′-8″				2′-1″	½″	13′-5″	13′-2″	549									
34	6U104	Diaphragm		19	S					4′-9″	2′-6″						7′-3″	7′-2″	366										
60	6U105	Diaphragm	E	38	S					4′-0″	6′-0″					6′-0″	1½″	10′-0″	10′-0″	901									
18	4U106	Beam		5	S					2′-6″	14″	14″					4′-10″	4′-8″	56										
12	5V100	Beam & Diaph.		20						5′-3″							5′-3″	5′-3″	66										
15	6V101	Diaphragm		20						4′-10″							4′-10″	4′-10″	109										
42	6V102	Wingwall		20						8′-7″							8′-7″	8′-7″	541										
42	6V103	Wingwall		20						8′-6″							8′-6″	8′-6″	536										
			END BENT 4																									
38	6F400	Beam & Diaph.		23						14″	5′-0″	14″	9⅞″	9⅞″	9⅞″	9⅞″	7′-4″	7′-4″	419										
10	6F401	Diaphragm		19						5′-3″	2′-6″						7′-9″	7′-8″	115										
30	6H400	Beam & Diaph.		20						40′-4″							40′-4″	40′-4″	1,817										
38	5H401	App. Seat	E	20						2′-6″							2′-6″	2′-6″	99										
12	8H402	Wingwall		20						20′-6″							20′-6″	20′-6″	657										
6	8H403	Wingwall *	E	20						20′-6″							20′-6″	20′-6″	328										
76	9H404	Wingwall		20						20′-6″							20′-6″	20′-6″	5,297										
4	6H405	Beam		20						11′-6″							11′-6″	11′-6″	69										
34	5U400	Beam & Diaph.		5	S					2′-6″	5′-3″	5′-3″					13′-0″	12′-9″	452										
6	4U401	Beam		53	S					2′-6″	2′-7″						10′-11″	10′-8″	43										
9	4U402	Beam		5	S					2′-6″	2′-7″	2′-7″					7′-8″	7′-6″	45										
40	5U403	Diaphragm	E	21	S					2′-1″	5′-8″	5′-8″				2′-1″	½″	13′-5″	13′-2″	549									
34	6U404	Diaphragm		19	S					4′-9″	2′-6″						7′-3″	7′-2″	366										
60	6U405	Diaphragm	E	2	S					4′-0″	6′-0″					6′-0″	1½″	10′-0″	10′-0″	901									
18	4U406	Beam		5	S					2′-6″	14″	14″					4′-10″	4′-8″	56										
12	5V400	Beam & Diaph.		20						5′-3″							5′-3″	5′-3″	66										
15	6V401	Diaphragm		20						4′-10″							4′-10″	4′-10″	109										
38	6V402	Wingwall		20						8′-7″							8′-7″	8′-7″	490										
38	6V403	Wingwall		20						8′-6″							8′-6″	8′-6″	485										

* Two additional #8-H403 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			BENT 2																									
10	W5W200	Anchor Bolt Wells			22		X			2′-1″	9⅛″														33′-2″	33′-2″	55	
20	8D200	Footing			18		X			11′-6″															13′-4″	13′-4″	712	
24	8D201	Footing			18		X			9′-6″															11′-4″	11′-4″	726	
9	10H200	Beam			20		X			38′-4″															38′-4″	38′-4″	1,485	
8	6H201	Beam			20		X			38′-4″															38′-4″	38′-4″	461	
8	10H202	Beam			18		X			38′-4″															41′-2″	41′-2″	1,417	
12	6H203	Beam			5	S	X			3′-7″		22″		22″											7′-3″	7′-0″	126	
12	6H204	Beam			20		X			2′-7″															2′-7″	2′-7″	47	
8	6H205	Beam			20		X			3′-1″															3′-1″	3′-1″	37	
32	4P200	Column			53	S	X			2′-11″		2′-11″													12′-5″	12′-2″	260	
86	5U200	Beam			53	S	X			2′-6″		4′-8″													15′-3″	15′-0″	1,345	
24	5U201	Beam			5	S	X			2′-6″		4′-8″		4′-8″											11′-10″	11′-7″	290	
32	4U202	Beam			5	S	X			3′-8″		12″		12″											5′-8″	5′-6″	118	
24	10V200	Column			36		X			22′-7″															25′-5″	25′-5″	2,625	
			BENT 3																									
10	W5W300	Anchor Bolt Wells			22		X			2′-1″	9⅛″														33′-2″	33′-2″	55	
20	8D300	Footing			18		X			11′-6″															13′-4″	13′-4″	712	
24	8D301	Footing			18		X			9′-6″															11′-4″	11′-4″	726	
9	10H300	Beam			20		X			38′-4″															38′-4″	38′-4″	1,485	
8	6H301	Beam			20		X			38′-4″															38′-4″	38′-4″	461	
8	10H302	Beam			18		X			38′-4″															41′-2″	41′-2″	1,417	
12	6H303	Beam			5	S	X			3′-7″		22″		22″											7′-3″	7′-0″	126	
12	6H304	Beam			20		X			2′-7″															2′-7″	2′-7″	47	
8	6H305	Beam			20		X			3′-1″															3′-1″	3′-1″	37	
30	4P300	Column			53	S	X			2′-11″		2′-11″													12′-5″	12′-2″	244	
86	5U300	Beam			53	S	X			2′-6″		4′-8″													15′-3″	15′-0″	1,345	
24	5U301	Beam			5	S	X			2′-6″		4′-8″		4′-8″											11′-10″	11′-7″	290	
32	4U302	Beam			5	S	X			3′-8″		12″		12″											5′-8″	5′-6″	118	
24	10V300	Column			36		X			21′-4″															24′-2″	24′-2″	2,496	

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

Detailed JUNE 2006
Checked JULY 2006

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

Sheet No. 38 of 40.

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	167

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SLAB																									
610		7S100	Top Trans *	E	20					40′	4″													40′	4″	40′	4″	50,289
198		6S101	Top Long	E	20					54′	0″													54′	0″	54′	0″	16,059
130		6S102	Top Long over Bent *	E	20					20′	0″													20′	0″	20′	0″	3,905
128		6S103	Top Long over Bent	E	20					53′	10″													53′	10″	53′	10″	10,350
48		5S104	Bottom Long	E	20					53′	0″													53′	0″	53′	0″	2,653
608		5S105	Bottom Trans	E	20					3′	0″													3′	0″	3′	0″	1,902
			BARRIER CURB																									
64		5C101	Slip Form B.C.	E	20					10′	0″													10′	0″	10′	0″	668
158		5K101	B.C. at EB	E	19	S				2′	5″	5	1/8″									17	7/8″	2′	11″	2′	9″	453
158		5K102	B.C. at EB	E	14	S				5	1/8″	11	1/8″	18″						2″		17	7/8″	2′	11″	2′	9″	453
114		5K103	B.C. at EB	E	40	S				5	1/8″	12″		3′	0″	2′	2 1/8″			9	7/8″	6	7/8″	6′	8″	6′	4″	753
44		5K104	B.C. at EB	E	7					3′	0″	6″												6′	3″	6′	3″	287
4		5K105	B.C. at EB	E	25	S				2′	6 1/2″	6	3/4″	4	3/8″					5	1/2″	4″		3′	6″	3′	4″	14
4		5K106	B.C. at EB	E	25	S				2′	5 1/2″	7	1/8″	4	3/8″					6	1/2″	4	1/2″	3′	6″	3′	5″	14
4		5K107	B.C. at EB	E	25	S				2′	4 1/8″	9	5/8″	4	3/8″					7	1/8″	5	1/2″	3′	7″	3′	5″	14
4		5K108	B.C. at EB	E	25	S				2′	2 3/4″	11	1/4″	4	3/8″					9	1/4″	6	1/2″	3′	7″	3′	5″	14
48		5K109	B.C. at EB	E	20					5′	7″													5′	7″	5′	7″	280
22		4K110	B.C. at EB1 *	E	20					19′	0″													19′	0″	19′	0″	279
4		5K111	B.C. at EB	E	8					2′	2 1/8″									2′	2″	2	3/8″	4′	5″	4′	5″	18
20		4K112	B.C. at EB4	E	20					17′	0″													17′	0″	17′	0″	227
600		5R101	Barrier Curb	E	19	S				2′	6″	3	1/2″											2′	10″	2′	8″	1,669
600		5R102	Barrier Curb	E	2	S				3	1/2″	2′	6 1/8″							2′	6″	3	0″	2′	10″	2′	10″	1,773
600		5R103	Barrier Curb	E	19	S				17	0″	6	0″											23	0″	22	0″	1,147
600		5R104	Barrier Curb	E	27	S				7	0″	11	1/4″	12″		6″				6	3/8″	9	1/4″	3′	1″	2′	9″	1,721
114		5R105	Barrier Curb *	E	20					9′	7″													9′	7″	9′	7″	1,139
28		5R106	Barrier Curb	E	20					59′	7″													59′	7″	59′	7″	1,740
28		5R107	Barrier Curb	E	20					50′	9″													50′	9″	50′	9″	1,482

* Two additional #7-S100, #6-S102, #4-K110, and #5-R105 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTALS																									
	W5																											110
	4																											1,028
	4			E																								506
	5																											4,306
	5			E																								19,490
	6																											9,184
	6			E																								32,116
	7			E																								50,289
	8																											4,254
	8			E																								569
	9																											11,111
	10																											10,925
			SLAB ON STEEL																									
	4																											288
	5																											1,036
	5			E																								5,851
	6																											7,842
	6			E																								32,116
	7			E																								50,289
	8																											1,378
	8			E																								569
	9																											11,111
			REINFORCING STEEL (BRIDGES)																									
	W5																											110
	4																											740
	5																											3,270
	6																											1,342
	8																											2,876
	10																											10,925
			BARRIER CURB																									
	4			E																								506
	5			E																								12,971
			SLIP FORM OPTION																									
	5			E																								668

Note: For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JULY 2006

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

A7352

HNTB

FINAL PLANS

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	168

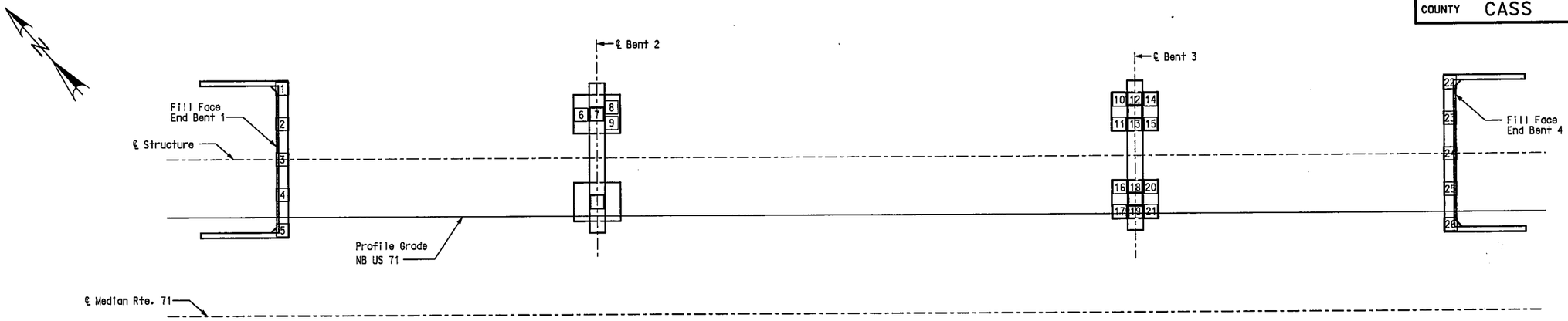
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



END BENT 1 BENT 2 BENT 3 END BENT 4

PART PLAN SHOWING PILE NUMBERING FOR RECORDING "AS BUILT PILE" DATA

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent 1
1	24	195	Driven to practical refusal, HP14x73
2	24	194	Driven to practical refusal, HP14x73
3	23	194	Driven to practical refusal, HP14x73
4	24	194	Driven to practical refusal, HP14x73
5	30	182	Driven to practical refusal, HP14x73
			Bent 2
6	18	218	Driven to practical refusal, HP14x73
7	18	221	Driven to practical refusal, HP14x73
8	18	242	Driven to practical refusal, HP14x73
9	19	218	Driven to practical refusal, HP14x73

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			Bent 3
10	18	186	Driven to practical refusal, 2:12 Batter, HP14x73
11	18	186	Driven to practical refusal, 2:12 Batter, HP14x73
12	19	194	Driven to practical refusal, HP14x73
13	19	221	Driven to practical refusal, HP14x73
14	17	186	Driven to practical refusal, 2:12 Batter, HP14x73
15	18	186	Driven to practical refusal, 2:12 Batter, HP14x73
16	19	236	Driven to practical refusal, 2:12 Batter, HP14x73
17	19	211	Driven to practical refusal, 2:12 Batter, HP14x73
18	19	221	Driven to practical refusal, HP14x73
19	19	217	Driven to practical refusal, HP14x73
20	19	236	Driven to practical refusal, 2:12 Batter, HP14x73
21	17	208	Driven to practical refusal, 2:12 Batter, HP14x73
			End Bent 4
22	24	220	Driven to practical refusal, HP14x73
23	24	249	Driven to practical refusal, HP14x73
24	24	218	Driven to practical refusal, HP14x73
25	25	219	Driven to practical refusal, HP14x73
26	25	218	Driven to practical refusal, HP14x73

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.

AS-BUILT PILE DATA

A7352

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JUNE 2006
Checked JUNE 2006

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

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(83'-139'-83') Continuous Composite Welded Plate Girder Spans

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B41

JOB NO. J4P1707

CONTRACT ID

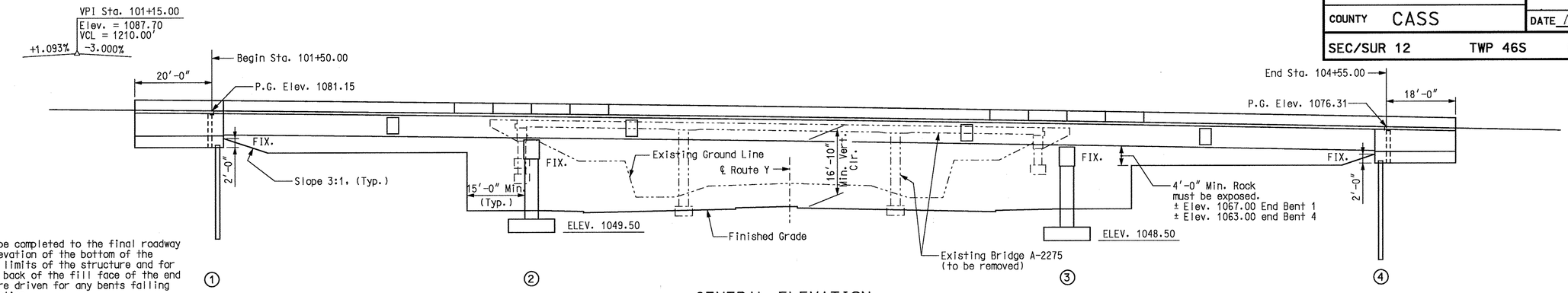
PROJECT NO.

COUNTY CASS

SEC/SUR 12 TWP 46S RGE 33W

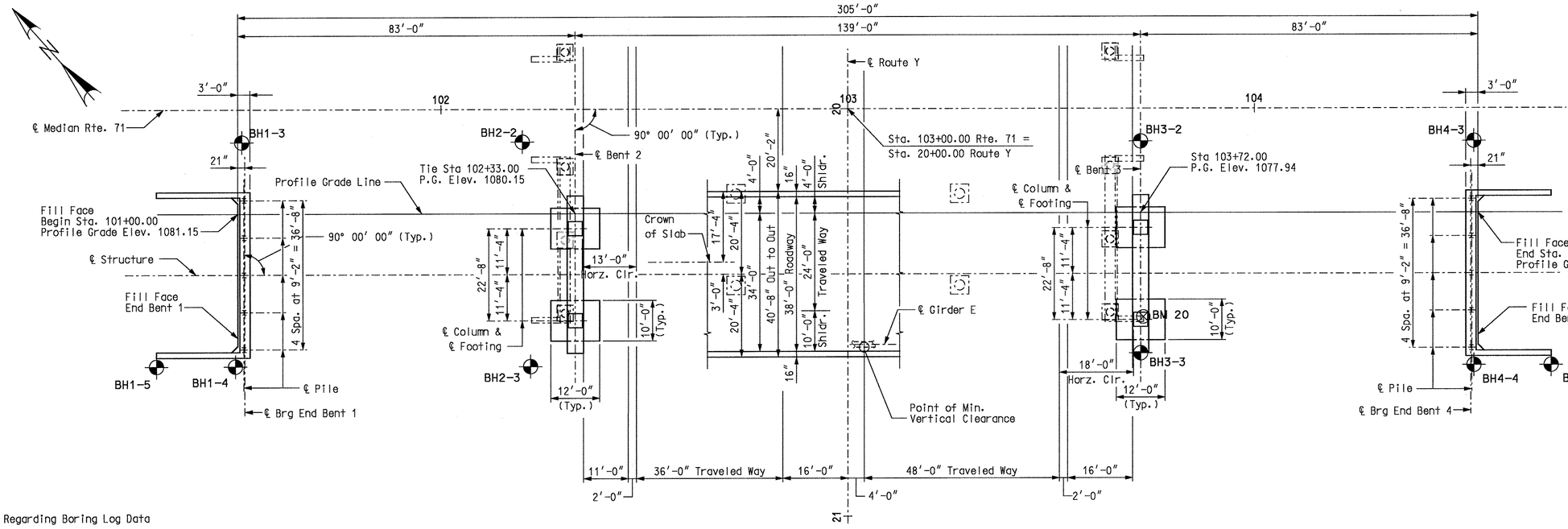
STATE OF MISSOURI THOMAS JOSEPH WESTERMAN NUMBER PE-2007016 REGISTERED PROFESSIONAL ENGINEER

DATE 10-25-2006



GENERAL ELEVATION

Note:
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.



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

PLAN

Notes:
Indicates location of borings.
All stations along ℄ Rte. 71.
All dimensions are horizontal.

Benchmarks

TBM#17:
Found chiseled sq. cut on the South corner of the West headwall of a 24" RCP pipe under the NE Outer Road at the NW corner of 163rd Street and the NE Outer Road of U.S. Hwy. No. 71.
Sta. 14+20.88, Route Y 44.56' Rt. Elev. 1055.870

TBM#20:
Set sq. cut on SE corner of the SW abutment on SB 71 bridge.
Sta. 103+72.67, US 71 51.11' Rt. Elev. 1076.65

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan. Boring data is shown on Sheet Nos. 3 thru 5. 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 price, 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.

BRIDGE: ROUTE 71 OVER ROUTE Y

STATE ROAD ROUTE 71
IN BELTON
PROJECT NO. STA. 101+50.00
JOB NO. J4P1707 RTE. 71 (SB)
CASS COUNTY
10/30/06

STD. 609.00
STD. 617.10
STD. 706.35
A7353

Designed MAY 2006
Detailed JULY 2006
Checked JULY 2006

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

USER: sgerhartz
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GENERAL NOTES:

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

Design Loading:
HS20 Modified
Military 24,000# Tandem Axle
35#/Sq. Ft. Future Wearing Surface
Earth 120#/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case I

Design Unit Stresses:

Class B Concrete (Substructure)	
Class B-1 Concrete (Safety Barrier Curb)	f'c = 3,000 psi
LC - HPC Concrete (Superstructure, except Safety Barrier Curb)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	f'c = 4,000 psi
Structural Carbon Steel (ASTM A709 Grade 36)	fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50)	fy = 36,000 psi
Steel Pile (ASTM A709 Grade 36)	fy = 50,000 psi
For precast prestressed panel stresses, see Sheet No. 26.	fb = 9,000 psi

Fabricated Steel Connections:
Field connections shall be made with $\frac{7}{8}$" diameter high strength bolts and $\frac{15}{16}$" diameter holes, except as noted.

Structural Steel:
Fabricated structural steel shall be ASTM A709, Grade 50, except as noted. Diaphragms and intermediate stiffeners shall be ASTM Grade 36.

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 $1\frac{1}{2}$", unless otherwise shown.

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearing by at least $\frac{1}{2}$".

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)". 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)".

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.

Miscellaneous:
A minimum vertical clearance of 14'-6" and horizontal construction clearance barrier protection shall be maintained during construction.

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.

The cost of form liner will be paid for at the contract unit price for Form Liner per sq. yd. The cost of concrete necessary to fill the form liners will be included in the contract unit price per sq. yd. of Form Liner. Concrete pay quantities are calculated to the inside face of form liners.

Low-Cracking High Perfromance Concrete (LC-HPC) will be in accordance with the Job Special Provisions.

The bridge deck shall be diamond ground in accordance with Sec. 703 and the Low-Cracking High Performance Concrete Job Special Provision. The area of diamond grinding will be measured to the nearest square yard with the longitudinal dimensions as shown on the plan of slab and transversely from 2 feet inside the roadway face of curb to 2 feet inside the roadway face of curb. Diamond grind will not be performed on the bridge approach slab.

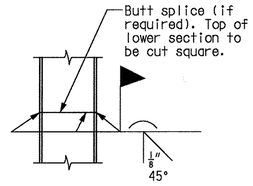
After the pile is seated in the prebore hole, it shall be backfilled with sand to 10' below the end bent cap and compressible soil for the remainder of the prebore hole. The prebore hole diameter shall provide 2" minimum clearance to all edges of the piles.

Concrete Coatings:
Concrete and masonry protective coating shall be applied to the End Bents and Intermediate Bents as shown on the plans and in accordance with Sec. 711.

Sacrificial graffiti protective coating shall be applied to the End Bents and Intermdiate Bents as shown on the plans and in accordance with Sec. 711.

Neoprene Bearings:
Plain and Laminated Neoprene Bearing pads shall be in accordance with Sec. 716. Bearings shall be 60 durometer neoprene pads.

Abbreviations:
F.F. denotes Far Face
N.F. denotes Near Face
E.F. denotes Each Face

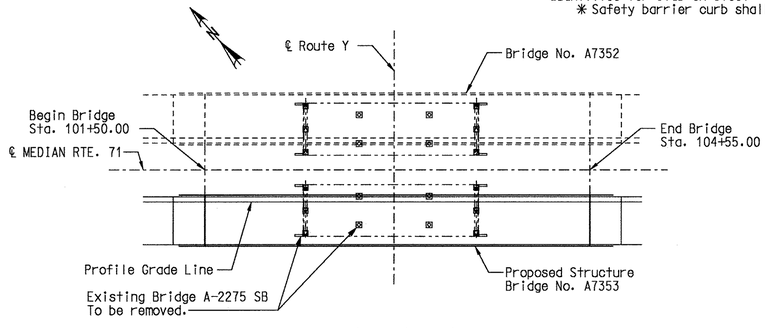


DETAIL OF STEEL PILE SPLICE

ESTIMATED QUANTITIES

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	150	-	150
Class 1 Excavation in Rock	cu. yard	120	-	120
Removal of Bridge (A-2275 Southbound)	lump sum	-	-	1
Bridge Approach Slab (Bridge)	sq. yard	-	214	214
Structural Steel Piles (14in.)	linear foot	250	-	250
Pre-Bore for Piling	linear foot	215	-	215
Pile Point Reinforcement	each	10	-	10
Diamond Grinding	sq. yard	-	1,148	1,148
Class B Concrete (Substructure)	cu. yard	184.8	-	184.8
* Safety Barrier Curb	linear foot	-	686	686
Form Liners	sq. yard	182	-	182
Slab on Steel (LC-HPC)	sq. yard	-	1,374	1,374
Reinforcing Steel (Bridges)	pound	19,260	-	19,260
Conduit System on Structure	lump sum	-	-	1
Concrete and Masonry Protection System	lump sum	-	-	1
Sacrificial Graffiti Protection System	lump sum	-	-	1
Fabricated Structural Carbon Steel (Plate Girder)	pound	-	19,110	19,110
Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50	pound	-	356,640	356,640
Slab Drain	each	-	20	20
Intermediate Field Coat (System G)	sq. foot	-	24,800	24,800
Finish Field Coat (System G)	sq. foot	-	4,700	4,700
Vertical Drain at End Bents	each	-	-	2
Plain Neoprene Bearing Pad	each	-	-	10
Laminated Neoprene Bearing Pad Assembly	each	-	-	10

Notes:
All concrete between the upper and lower construction joints in the end bents is included in the Estimated Quantities for Slab on Steel.
All reinforcement in the end bents is included in the Estimated Quantities for Slab on Steel.
* Safety barrier curb shall be cast-in-place option or slip-form option.



LOCATION SKETCH

ESTIMATED QUANTITIES FOR SLAB ON STEEL

Item		Total
LC-HPC Concrete	cu. yard	321.1
Reinforcing Steel	pound	21,660
Reinforcing Steel (Epoxy Coated)	pound	88,820

Notes:
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 prestressed panels, 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.

The Estimated Quantities for Slab on Steel are based on square precast prestressed end panels.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Steel.

PILE & FOOTING DATA

Bent No.			1	2	3	4
Bearing Pile	Pile Type and Size		HP14x73	-	-	HP14x73
	Number		5	-	-	5
	Approximate Length	foot	25	-	-	25
	Design Bearing	ton	84.2	-	-	84.2
	Hammer Energy Required	foot-pound	19,100	-	-	19,100
Spread Footings	Foundation Material		-	Limestone	Limestone	-
	Design Bearing	Tons/Sq. Ft.	-	5.1	5.1	-

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
All piles shall be driven to practical refusal.
Prebore for piles at Bents 1 and 4 to elevation 1050 and 1046, respectively.
Manufactured pile point reinforcement shall be used on all piles in this structure.
In no case shall footings of Bents No. 2 and 3 be placed higher than elevations shown.

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B12

JOB NO. J4P1707
CONTRACT ID
PROJECT NO.
COUNTY CASS

STATE OF MISSOURI — THOMAS JOSEPH WISTERMAN — NUMBER E-25106 — REGISTERED PROFESSIONAL ENGINEER

DATE 10-17-2006

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Detailed JULY 2006
Checked JULY 2006

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

GENERAL NOTES AND ESTIMATED QUANTITIES

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B43

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 9-28-06

STATE OF MISSOURI
WAYNE ALAN DURYEE
NUMBER E-19780
REGISTERED PROFESSIONAL ENGINEER

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1078.6
5	3-5-7	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1070.6
10	2-4-4	White, highly weathered limestone, some fat clay layers
12.5	50/1"	Auger refusal at 12.5'
		ELEV. 1066.1

Boring No. BH1-3

End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1077.7
	4	4-5-8	Gray and brown, fat clay, moist, stiff
	9	50/3"	
	ROCK CORE DEPTH	REC%	RQD%
			ELEV. 1069.7
			White and brown, highly weathered limestone, with fat clay seams
			Auger refusal at 9.0'
	14.9	47	8
			ELEV. 1062.8
	19.9	98	21
600L			
			Gray and yellow, very finely crystalline limestone, thinly bedded, moderately hard, slightly to moderately weathered, with clay seams
	24.9	90	24
	29.9	94	17
			ELEV. 1047.3
692L			
			Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
698L			
	34.9	98	84
			ELEV. 1043.0
			Gray, calcareous shale, thinly laminated, moderately hard to soft, moderately weathered
159L			
			ELEV. 1039.4
	39.9	100	61
	39.9	50/5"	Gray, shale, thick bedded, soft, slightly weathered
			ELEV. 1037.4

Boring No. BH1-4

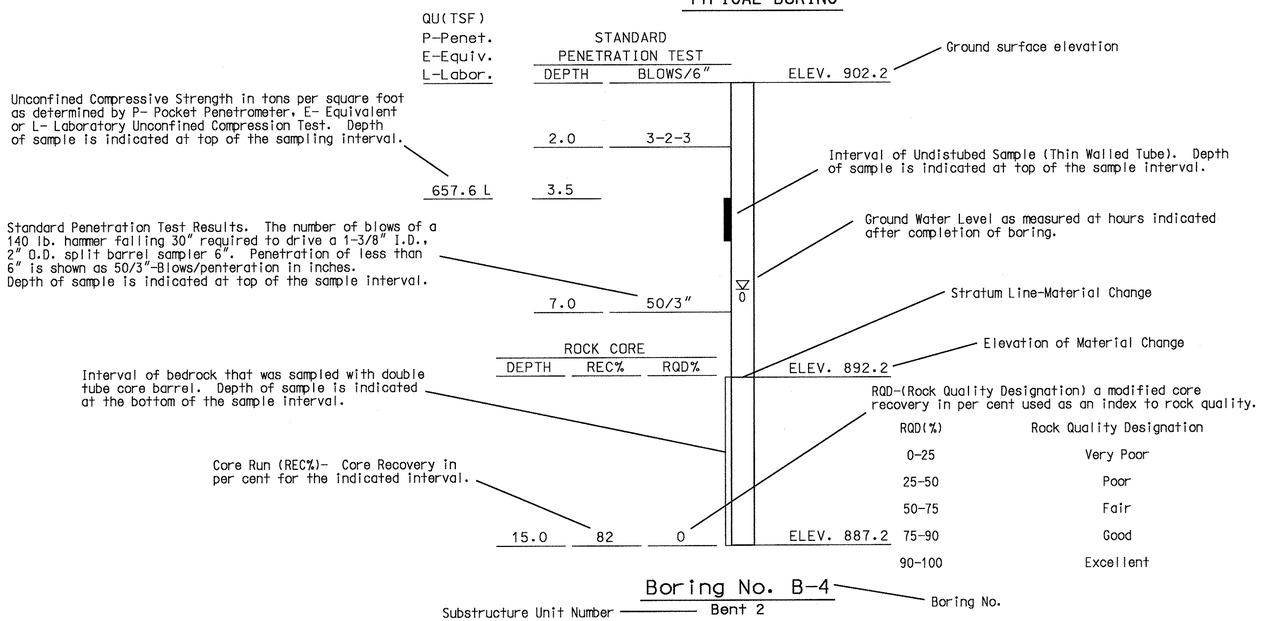
End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1077.7
1.5L	2.0		
3.3L	4.0		Gray and brown fat clay, moist, medium stiff
1.5L	6.0		
	8.0		
0.8L	9.5	50/3"	ELEV. 1068.3
	12	15-50/3"	White and yellow, highly weathered limestone, hard
	14.5	11-8-7	ELEV. 1063.7
	17.0	7-13-6	
	19.5	4-3-2	
	22	1-1-1	
	23.5		
	25.0	3-1-1	Red and brown fat clay, moist, soft, with highly weathered limestone layers
	26.5		
	30	0-0-4	
	32.0	0-1-1	
	34.0		
	36.5	4-8-50/3"	
	39	50/5"	ELEV. 1040.2
	ROCK CORE DEPTH	REC%	RQD%
			Gray shale, soft to moderately hard
			ELEV. 1038.2
42.5	-	-	Core barrel lost in hole and boring was terminated
			ELEV. 1035.2

Boring No. BH1-5

End Bent 1
(Core)

TYPICAL BORING



Boring No. B-4

Substructure Unit Number — Bent 2 — Boring No.

GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, between December 28, 2005 and January 11, 2006, by Geotechnology, Inc.

For boring locations in plan, see Sheet No. 1.

The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.

The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.

For notice and disclaimer regarding boring log data, see Sheet No. 1.

BORING DATA

Detailed 2006
Checked 2006

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

A7353

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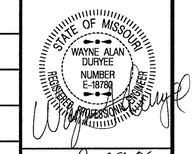


QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1078.8
	4.5	3-3-5	Brown, fat clay, moist, medium stiff
			ELEV. 1070.8
	9.5	2-6-7	White and brown, highly weathered limestone
	14	50/2"	Auger refusal at 14.3'
			ELEV. 1064.5

	ROCK CORE DEPTH	REC%	RQD%	
330L	17.0	85	31	
410L	22.0	96	32	Gray, very finely crystalline limestone, thick bedded, moderately hard, moderately weathered
	27.0	100	50	
430L				
	32.0	98	53	
				ELEV. 1044.2
110L	37.0	98	75	Gray shale, medium bedded, moderately hard, slightly weathered
				ELEV. 1042.8
				Gray, calcareous shale, medium bedded, moderately hard, slightly weathered
	42.0	100	32	ELEV. 1039.2
				Gray shale, thinly laminated, moderately hard, slightly weathered
	47.0	98	*	
	47	50/5"		ELEV. 1031.3

* Shale, RQD not calculated

Boring No. BH2-2

Bent 2
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1077.2
3.5	3-3-5	Brown and gray, fat clay, moist, medium stiff
8.5	2-3-5	ELEV. 1067.5
13.5	50/6"	Brown and white, highly weathered limestone
18.5	50/3"	Auger refusal at 22.5'
		ELEV. 1054.8

ROCK CORE DEPTH	REC%	RQD%	
26.3	29	0	Gray, very finely crystalline limestone, thinly bedded moderately hard, moderately to highly weathered.
31.3	44	0	
			ELEV. 1044.0
36.3	100	26	Gray, calcareous shale, medium bedded, soft, slightly weathered
			ELEV. 1039.0
41.3	100	*	
46.3	100	*	Gray, shale, medium bedded, soft, slightly weathered
51.3	100	*	becoming thinly laminated at 51.3'
56.3	94	*	
56.3	50/4"		ELEV. 1020.6

* Shale, RQD not calculated

Boring No. BH2-3

Bent 2
(Core)

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1075.4
	4.5	2-3-4	Brown and gray, fat clay, moist, medium stiff
			ELEV. 1066.9
	9.5	15-6-3	Brown, fat clay, moist, medium stiff, some weathered limestone layers
			ELEV. 1063.4
	14.5	50/3"	Yellow, highly weathered limestone
	19.0	50/1"	Auger refusal at 19.0'
			ELEV. 1056.4

	ROCK CORE DEPTH	REC%	RQD%	
				Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
				ELEV. 1055.0
				Fat clay, some highly weathered limestone layers
680L	26.5	19	0	ELEV. 1048.9
				Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
				ELEV. 1046.4
	31.5	96	63	Gray shale, thin bedded, moderately hard, slightly weathered
136L				ELEV. 1045.4
				Gray, very fine crystalline, argillaceous limestone, thick bedded, moderately hard, slightly weathered
	36.5	96	48	ELEV. 1041.4
	41.5	100	*	Gray shale, thinly laminated, moderately hard, moderately weathered becoming slightly weathered at 37.0'
	46.5	96	*	
	51.5	100	*	ELEV. 1023.9

* Shale, RQD not calculated

Boring No. BH3-2

Bent 3
(Core)

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B45

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 9-28-06

STATE OF MISSOURI
WAYNE ALAN DURYEE
NUMBER E-18780
REGISTERED PROFESSIONAL ENGINEER

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1075.4
	4.0	3-4-6	Brown, fat clay, moist, medium stiff
	9.0	1-2-3	
			ELEV. 1064.4
	14	50/4"	Yellow, highly weathered limestone
	19	50/3"	Auger refusal at 19.3'
			ELEV. 1056.1

	ROCK CORE DEPTH	REC%	RQD%	
230L	21.3	90	39	Gray, very finely crystalline to aphanitic limestone, medium bedded, moderately hard, highly weathered, with clay layers Clay seam - 3" at 22.3' Clay layer - 2.7' at 23.3'
	26.3	24	7	ELEV. 1049.1
720L				Gray, very finely crystalline to aphanitic limestone, medium bedded, moderately hard, slightly weathered
	31.3	70	25	ELEV. 1046.1 Gray shale, medium bedded, soft, highly weathered Core loss - 1.5' at 29.8'
				ELEV. 1044.1
	36.3	100	50	Gray, aphanitic to very finely crystalline, argillaceous limestone, thick bedded, moderately hard, moderately weathered
				ELEV. 1041.2
77L	41.3	92	*	Gray shale, thin bedded, soft, moderately weathered
				ELEV. 1034.1
	46.3	100	*	Gray shale, medium bedded, soft to moderately hard, slightly weathered
	51.3	100	*	
	51.3	50/3"		ELEV. 1023.8

* Shale, RQD not calculated

Boring No. BH3-3

Bent 3
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1073.0
4.0	2-3-6	Brown, fat clay, moist, medium stiff
		ELEV. 1064.5
9.0	22-38-50/3"	Yellow and white, highly weathered limestone Auger refusal at 13.0'
		ELEV. 1060.0

Boring No. BH4-3

End Bent 4

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1072.6
	4.0	2-4-4	Brown, fat clay, moist, medium stiff
	9.0	1-3-2	
			ELEV. 1060.6
	14.0	7-14-21	White and brown, highly weathered limestone
			ELEV. 1056.6
	19.0	0-0-1	Brown, fat clay, moist to wet, very soft
			ELEV. 1050.6
	24	3-3-50/3"	White and brown, highly weathered limestone, some fat clay layers
	26	50/3"	Auger refusal at 26.5'
			ELEV. 1046.1

	ROCK CORE DEPTH	REC%	RQD%	
	27.0	100	0	Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
				ELEV. 1045.1
	32.0	98	80	Gray, very finely crystalline to aphanitic, argillaceous limestone, thin bedded, moderately hard to soft, moderately to slightly weathered
				ELEV. 1040.6
	37.0	98	*	Gray shale, thinly laminated, moderately hard, slightly weathered, becoming soft, moderately weathered at 34.5'
224L	42.0	96	*	
	47.0	98	*	becoming thick bedded, moderately hard, slightly weathered at 46'
	52.0	100	*	
	57.0	90	*	
	57	23-50/4"		ELEV. 1014.8

Boring No. BH4-4

End Bent 4
(Core)

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1072.0
1.8L	2.0		
1.4L	4.0		
1.3L	6.0		
0.5L	8.0		
	10.0		
0.5L	12.0		Brown and gray, fat clay, moist, medium stiff to very soft, highly weathered limestone layers from 8 to 14'
0.4L			
	15.5	0-0-0	
	18.0	0-0-0	
	20.5		
0.5L	23.0		
	25.5	50/1"	ELEV. 1048.0
	28	50/2"	Gray calcareous shale, hard
	30.5	50/5"	
	33.5	50/6"	ELEV. 1039.0

	ROCK CORE DEPTH	REC%	RQD%	
	40.0	100	*	Gray shale, thinly bedded, moderately hard, slightly weathered
	45.0	100	*	
	45	50/4"		ELEV. 1026.7

* Shale, RQD not calculated

Boring No. BH4-5

End Bent 4
(Core)

NOTE:

For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

USER: TThompson
PLOTTED: 27-SEP-2006 15:58
K:\B41354\Plans\A7353\Drawings\ZPLOT_T05.dgn

Detailed 2006
Checked 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	8/46

JOB NO. J4P1707

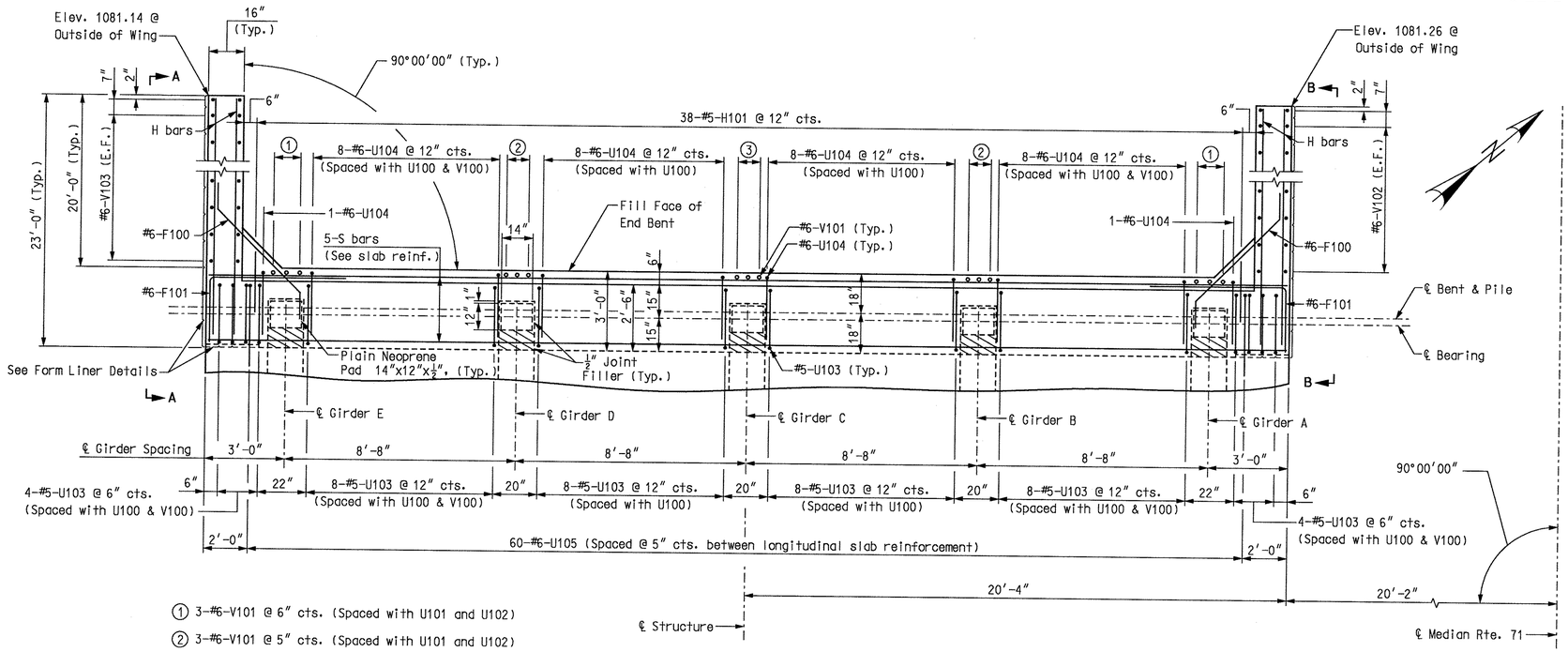
CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 10-17-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER



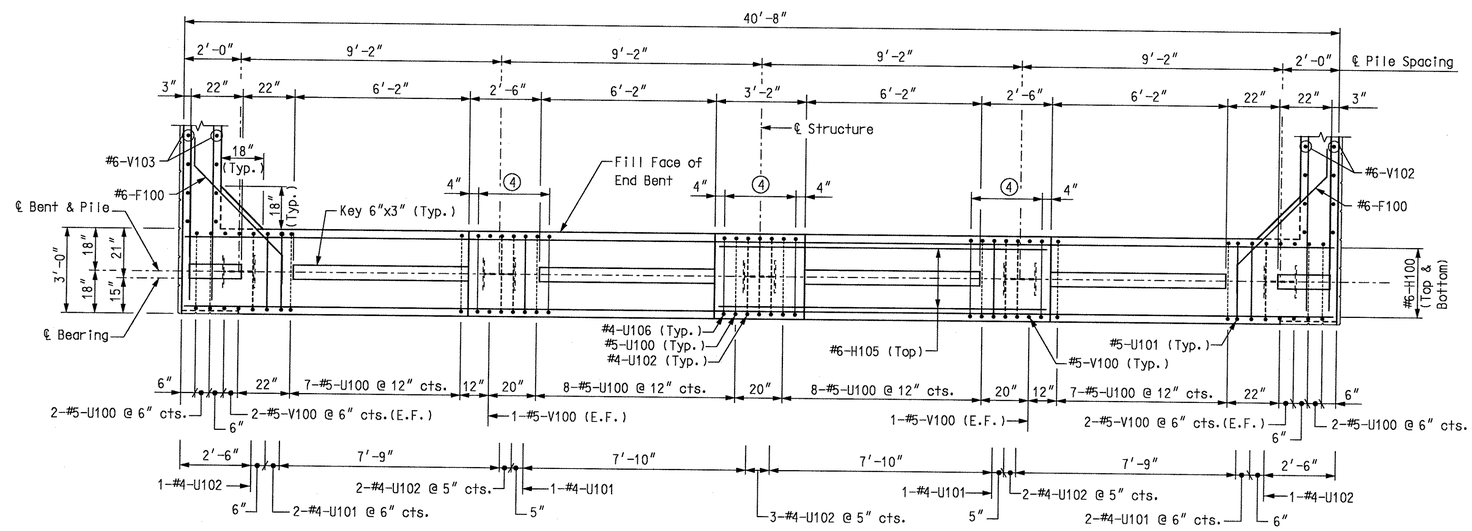
① 3-#6-V101 @ 6" cts. (Spaced with U101 and U102)

② 3-#6-V101 @ 5" cts. (Spaced with U101 and U102)

③ 3-#6-V101 @ 5" cts. (Spaced with U102)

PLAN OF DIAPHRAGM

④ 6-#4-U106 @ 6" cts.



PLAN OF BEAM

Notes:

For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.

Bend F100 bars in field to clear girders.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

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

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

For Form Liner Details, see Sheet No. 35.

For details of Elevation A-A and B-B, see Sheet No. 8.

For Sections and Typical Section Thru Key, see Sheet No. 7.

**** SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1**

Item		Quantity
Class 1 Excavation	cu. yard	80
Structural Steel Piles (14")	linear foot	125
Pre-Bore for Piling	linear foot	110
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.7
Form Liners	sq. yard	46

** These quantities are included in the estimated quantities table on Sheet No. 2.

END BENT 1 – PLAN

USER: TThompson
PLOTTED: 17-OCT-2006 11:55 K:\B41354\Plans\A7353\Drawings\ZPLOT_T08.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B47

JOB NO. J4P1707

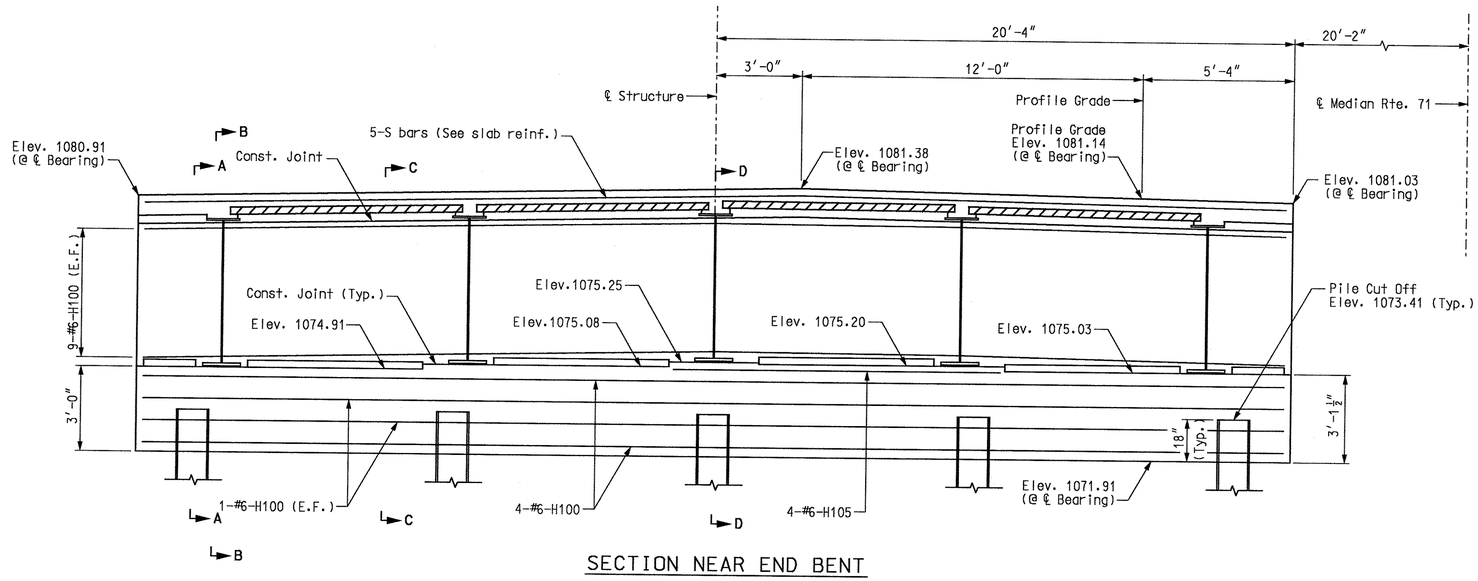
CONTRACT ID

PROJECT NO.

COUNTY CASS

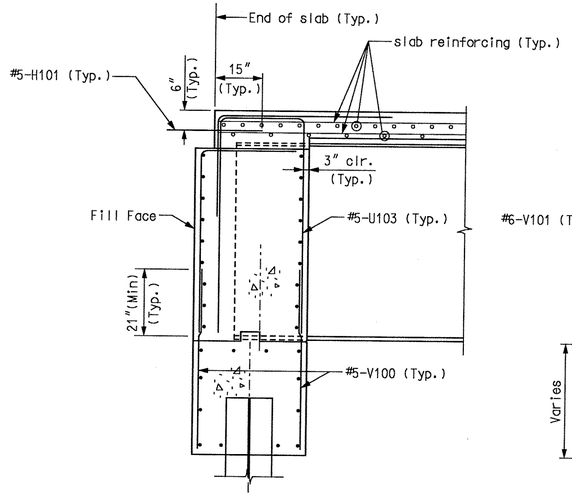
STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-29976 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

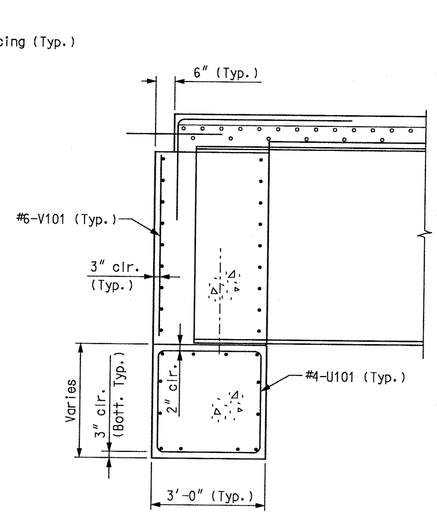


SECTION NEAR END BENT

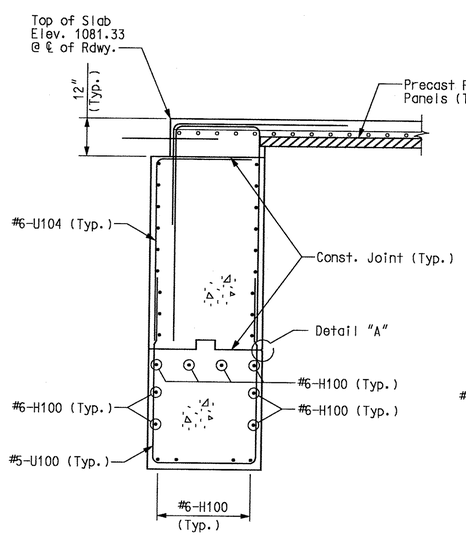
(Looking Back Station)



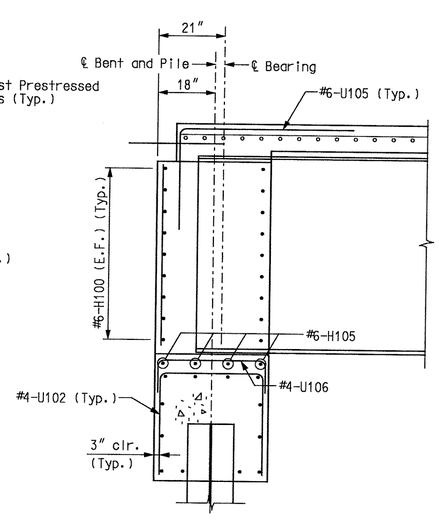
SECTION A-A



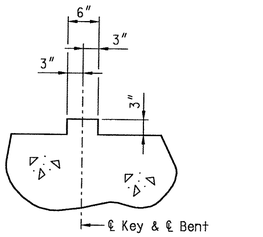
SECTION B-B



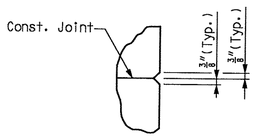
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 6 & 8.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 1 - ELEVATION

USER: TThompson
PLOTTED: 27-SEP-2006 15:58 K:\B41354\Plans\A7353\Drawings\ZPLOT_T09.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B4

JOB NO. J4P1707

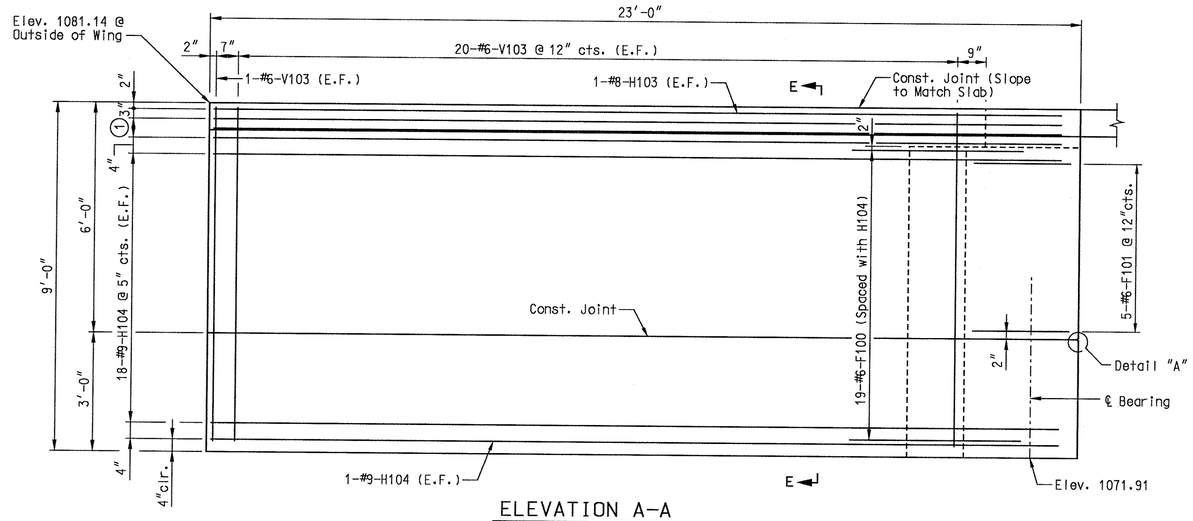
CONTRACT ID

PROJECT NO.

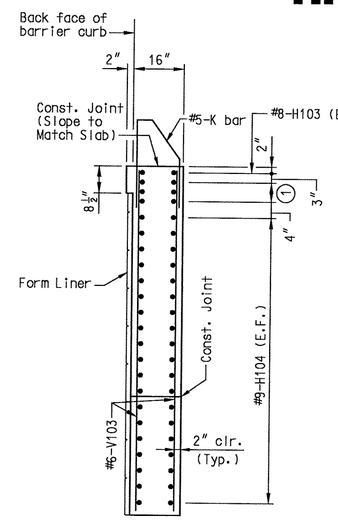
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

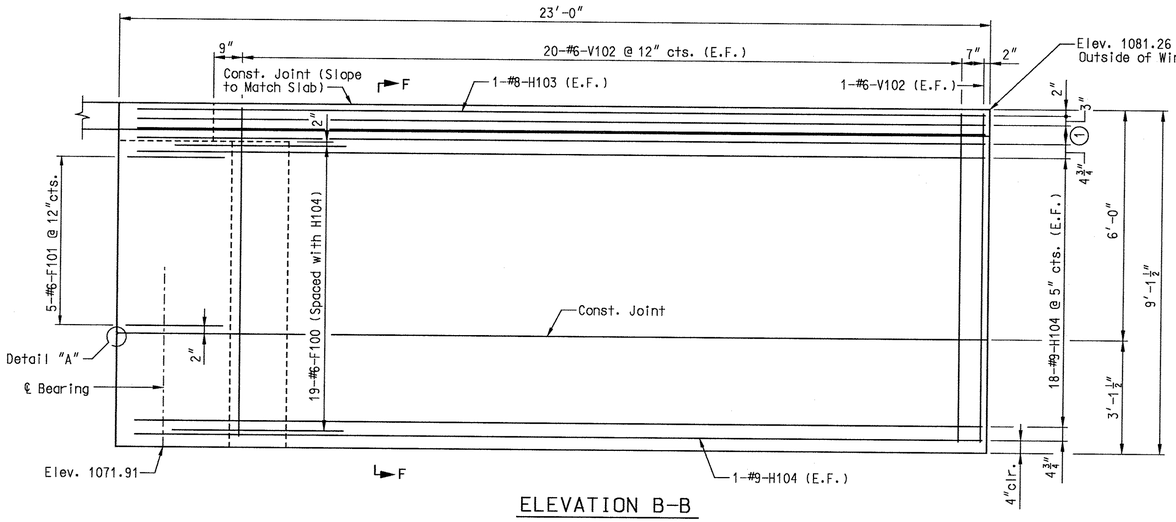


ELEVATION A-A

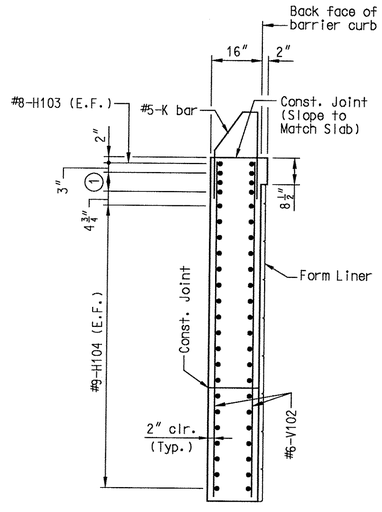


SECTION E-E

① 3-#8-H102 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 7.
For Form Liner Details, see Sheet No. 35.

END BENT 1 - WING DETAILS

USER: TThompson
PLOTTED: 27-SEP-2006 15:58 K:\B41354\Plans\A7353\Drawings\ZPLOT_T10.dgn

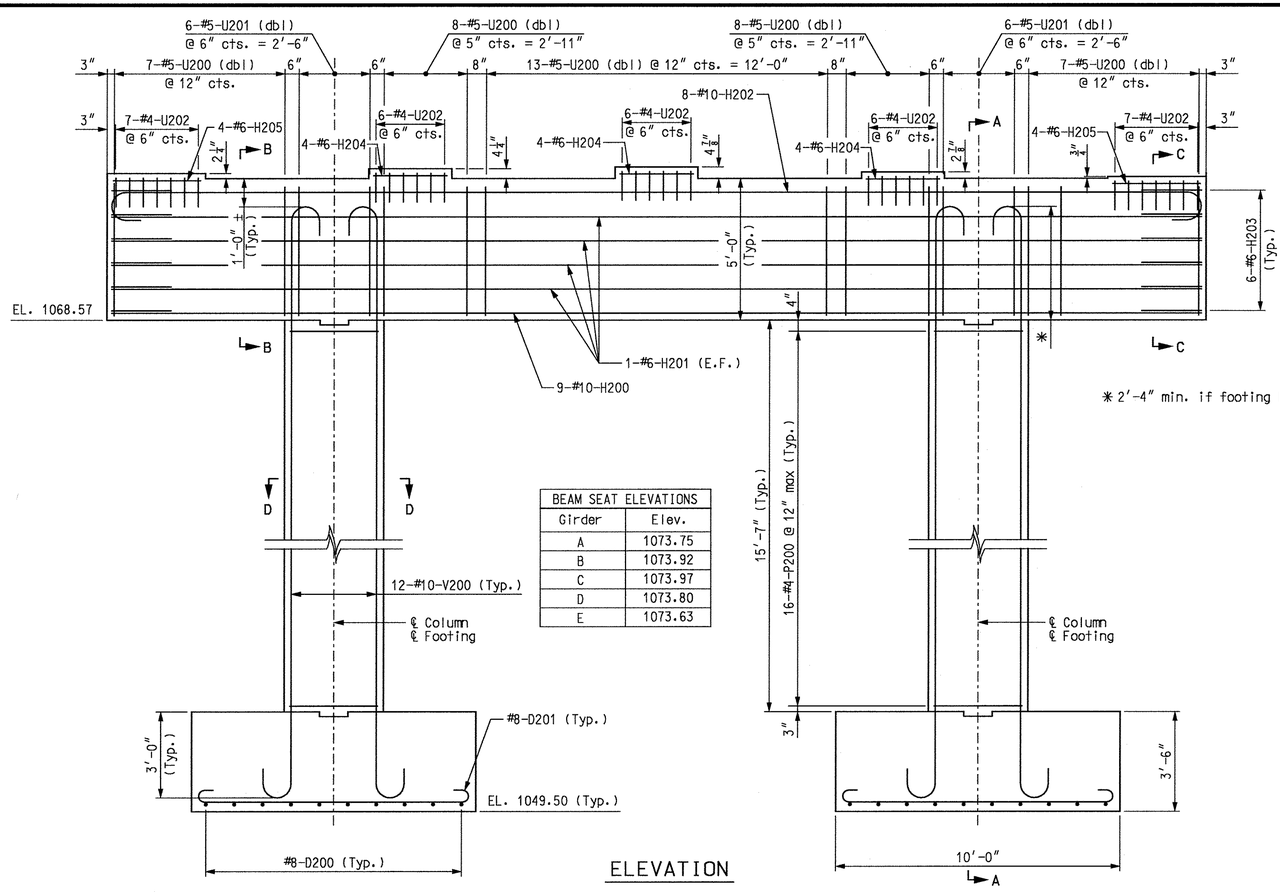
Detailed JULY 2006
Checked JULY 2006

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

A7353

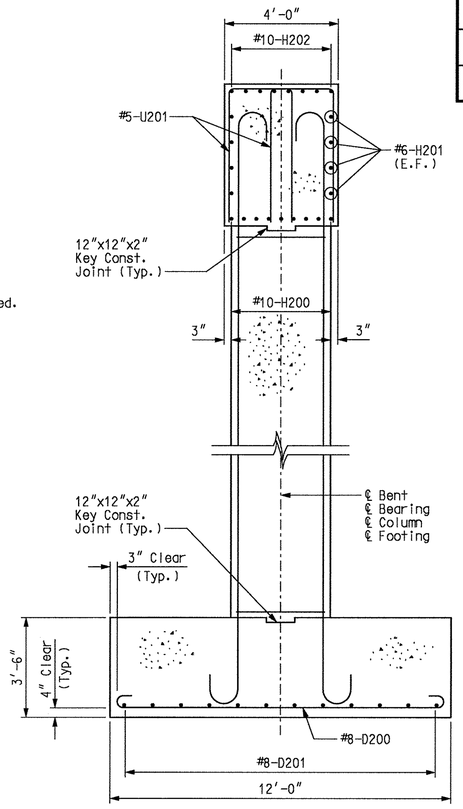
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B49
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			
DATE 10-25-2006			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER PE-25976 — REGISTERED PROFESSIONAL ENGINEER

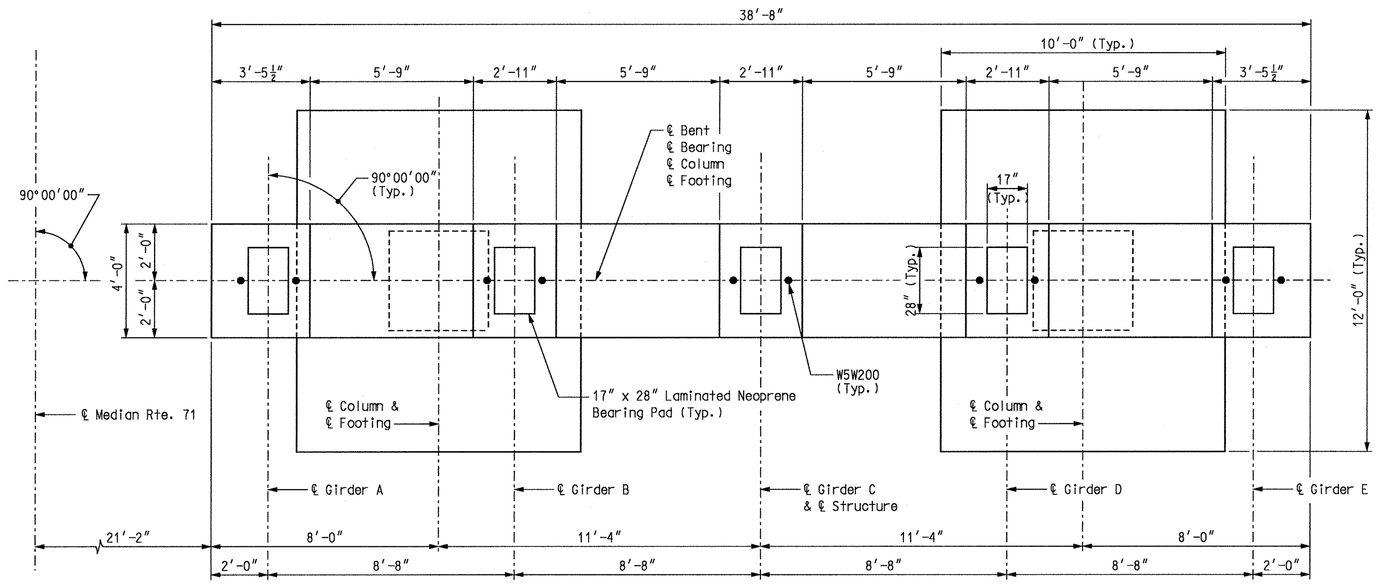


BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1073.75
B	1073.92
C	1073.97
D	1073.80
E	1073.63

ELEVATION



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 10.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 2		
Item		Quantity
Class 1 Excavation in Rock	cu. yard	55
Class B Concrete (Substructure)	cu. yard	72.5
Form Liners	sq. yard	48
Reinforcing Steel (Bridges)	pound	9,700

*** These quantities are included in the estimated quantities table on Sheet No. 2.

BENT 2 - DETAILS

USER: sgerhartz
PLOTTED: 25-OCT-2006 11:07
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Detailed JULY 2006
Checked JULY 2006

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

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B50

JOB NO. J4P1707

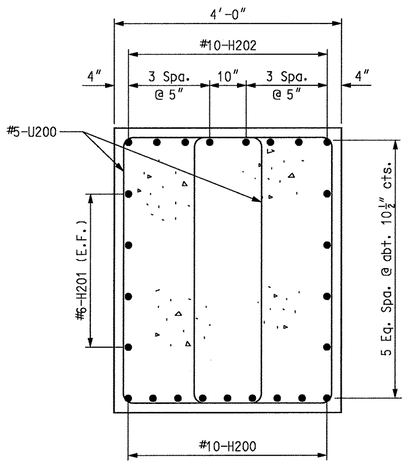
CONTRACT ID

PROJECT NO.

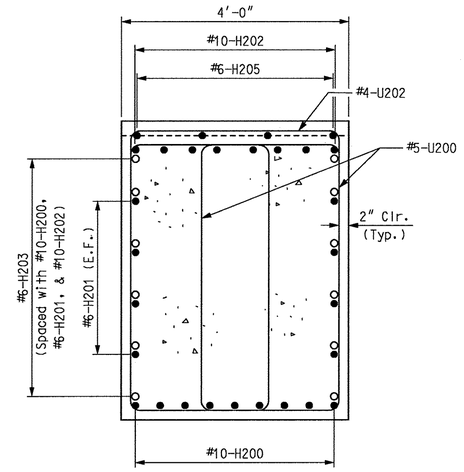
COUNTY CASS

DATE 09-28-2006

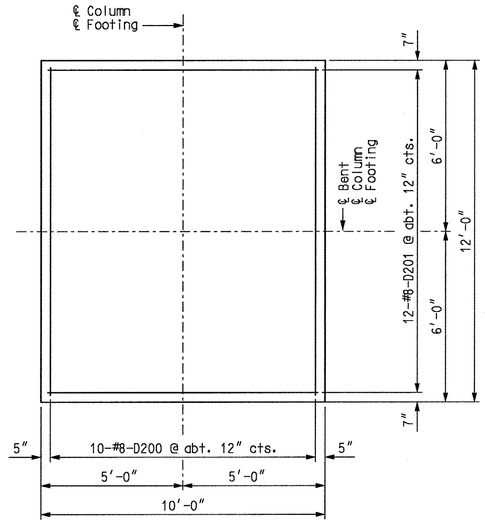
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER 2002876
REGISTERED PROFESSIONAL ENGINEER



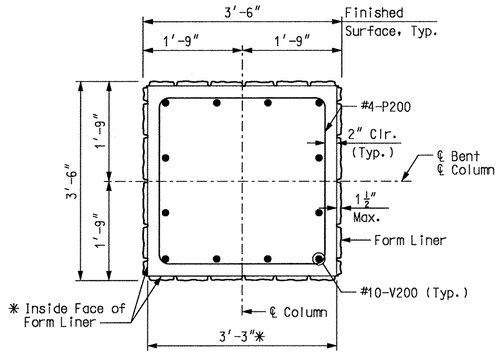
SECTION B–B



SECTION C–C



PLAN OF FOOTING



SECTION D–D

BENT 2 – DETAILS

USER: TThompson
PLOTTED: 27-SEP-2006 15:58
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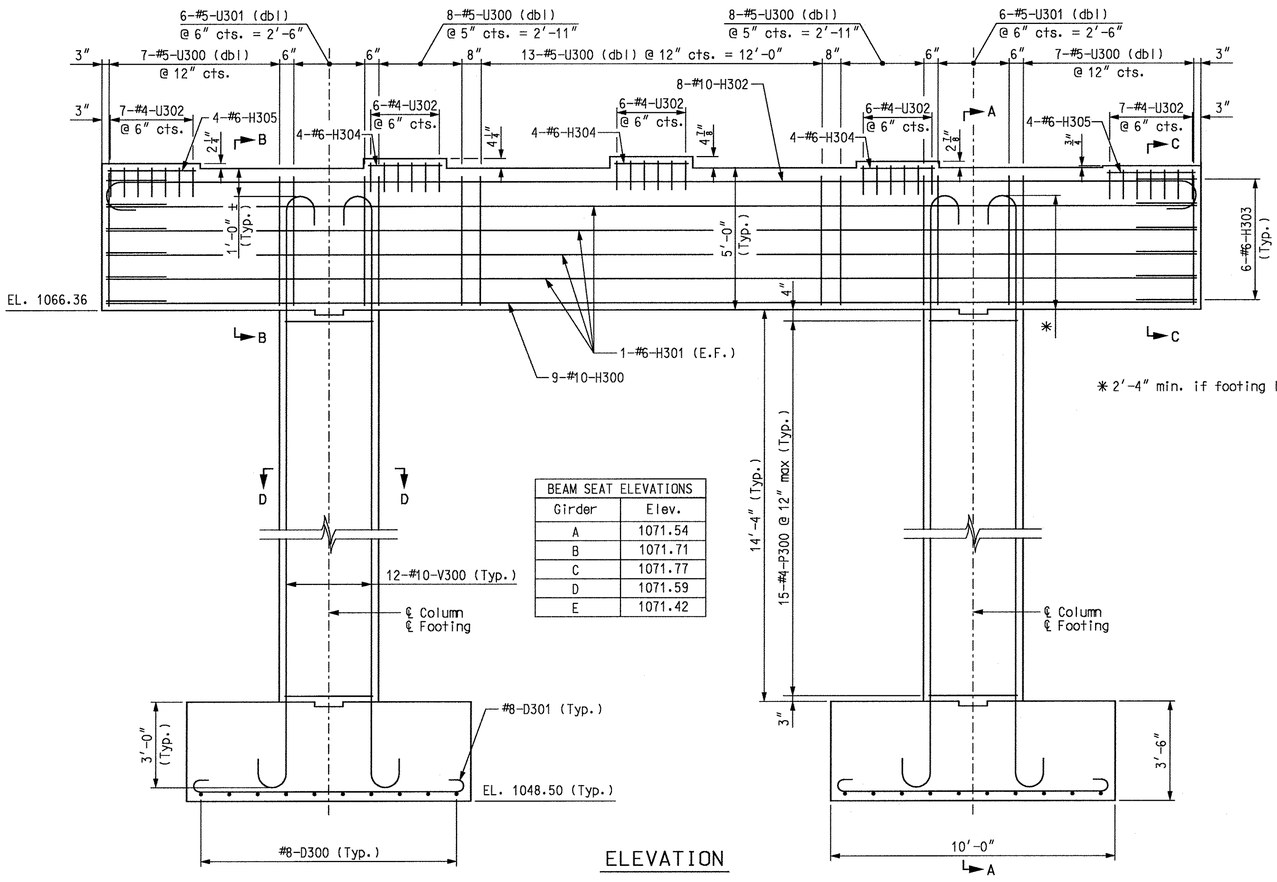
Detailed JULY 2006
Checked JULY 2006

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

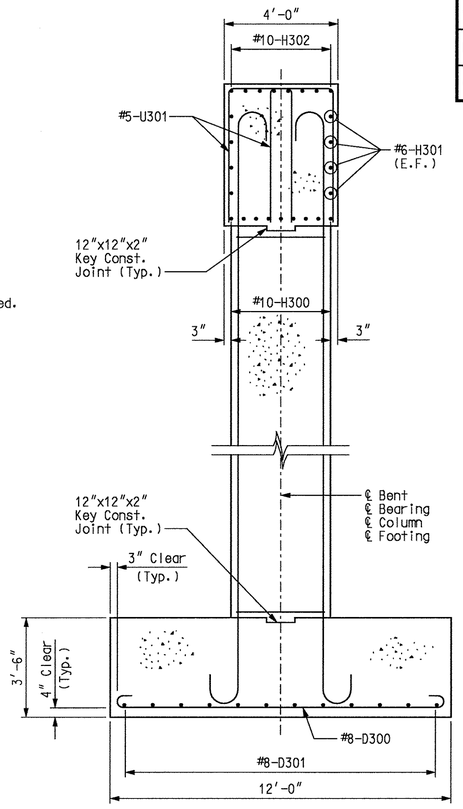
A7353

HNTB

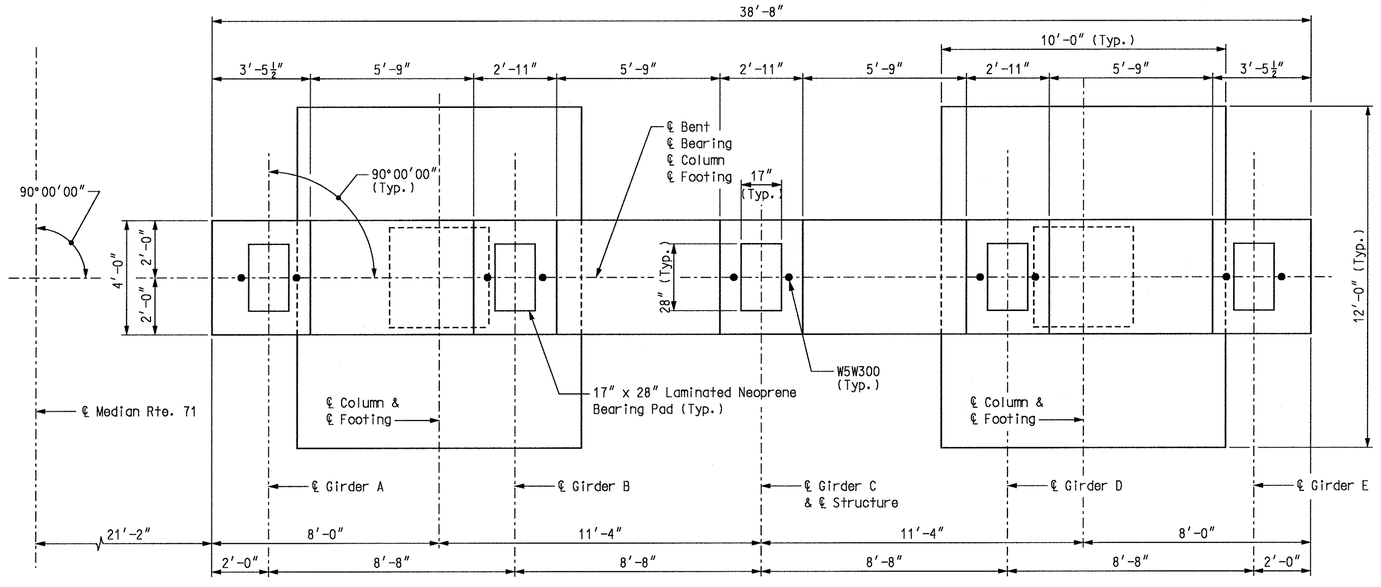


BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1071.54
B	1071.71
C	1071.77
D	1071.59
E	1071.42

ELEVATION



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 12.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1/2".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 3

Item		Quantity
Class 1 Excavation in Rock	cu. yard	65
Class B Concrete (Substructure)	cu. yard	71.5
Form Liners	sq. yard	45
Reinforcing Steel (Bridges)	pound	9,560

*** These quantities are included in the estimated quantities table on Sheet No. 2.

BENT 3 - DETAILS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B52

JOB NO. J4P1707

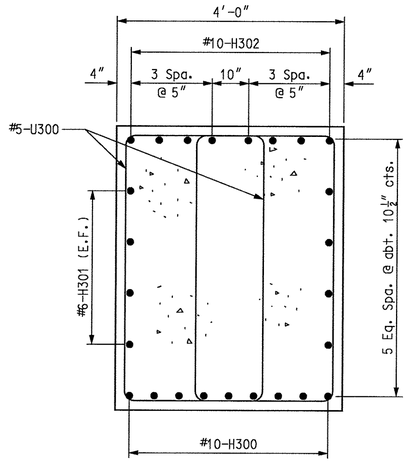
CONTRACT ID

PROJECT NO.

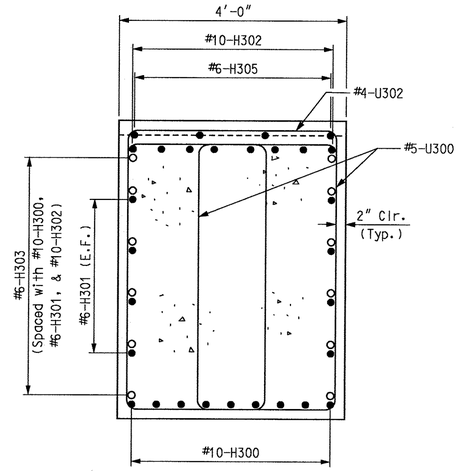
COUNTY CASS

DATE 09-28-2006

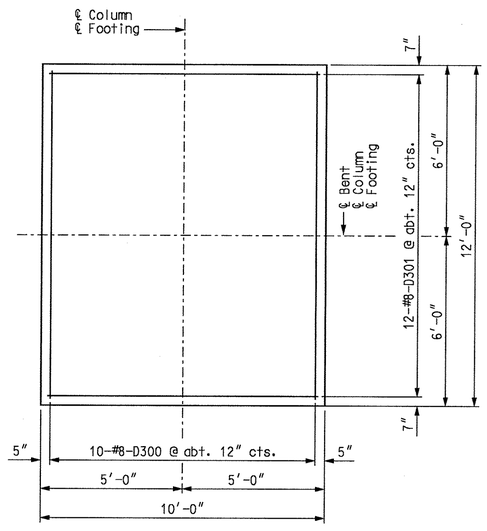
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER



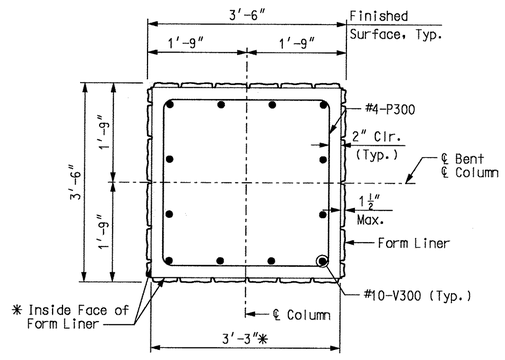
SECTION B–B



SECTION C–C



PLAN OF FOOTING



SECTION D–D

BENT 3 – DETAILS

USER: TThompson
PLOTTED: 27-SEP-2006 15:59 K:\B41354\Plans\A7353\Drawings\ZPLOT_T12A.dgn

Detailed JULY 2006
Checked JULY 2006

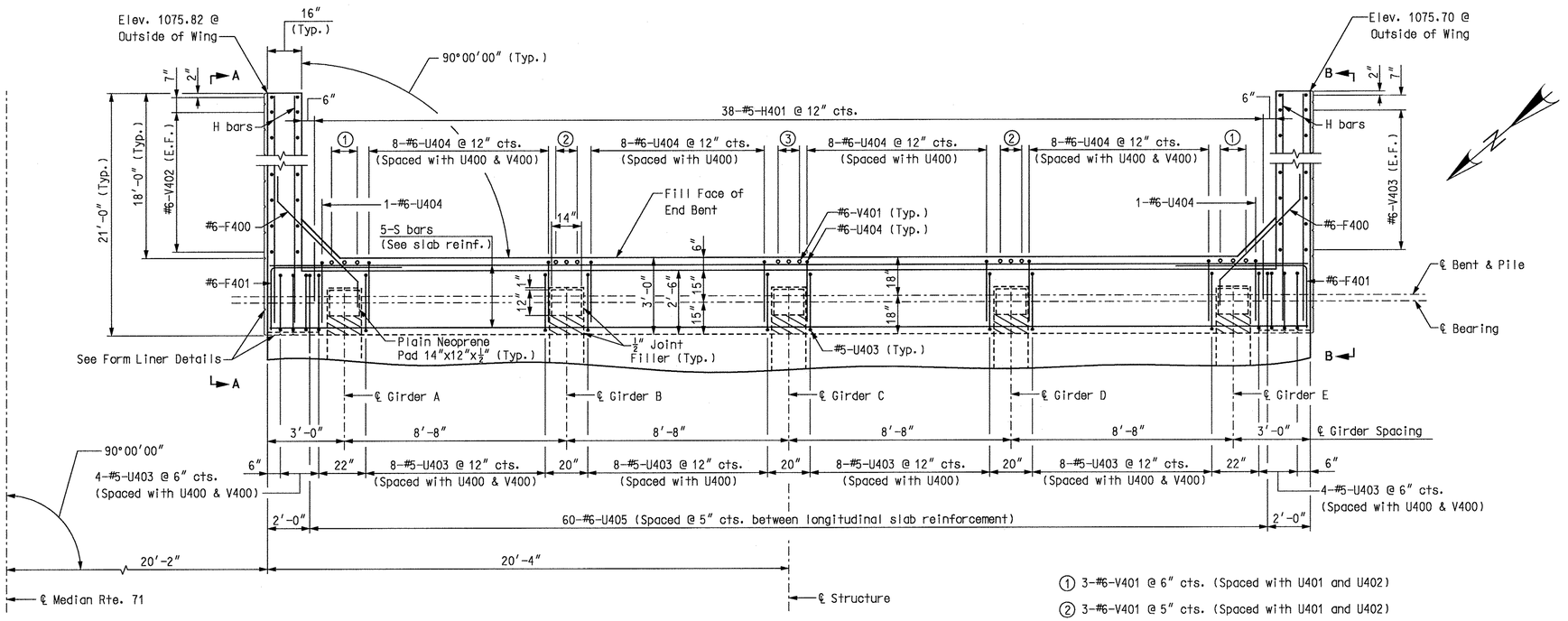
Note: This drawing is not to scale. Follow Dimensions.

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B53
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	10-17-2006		

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER



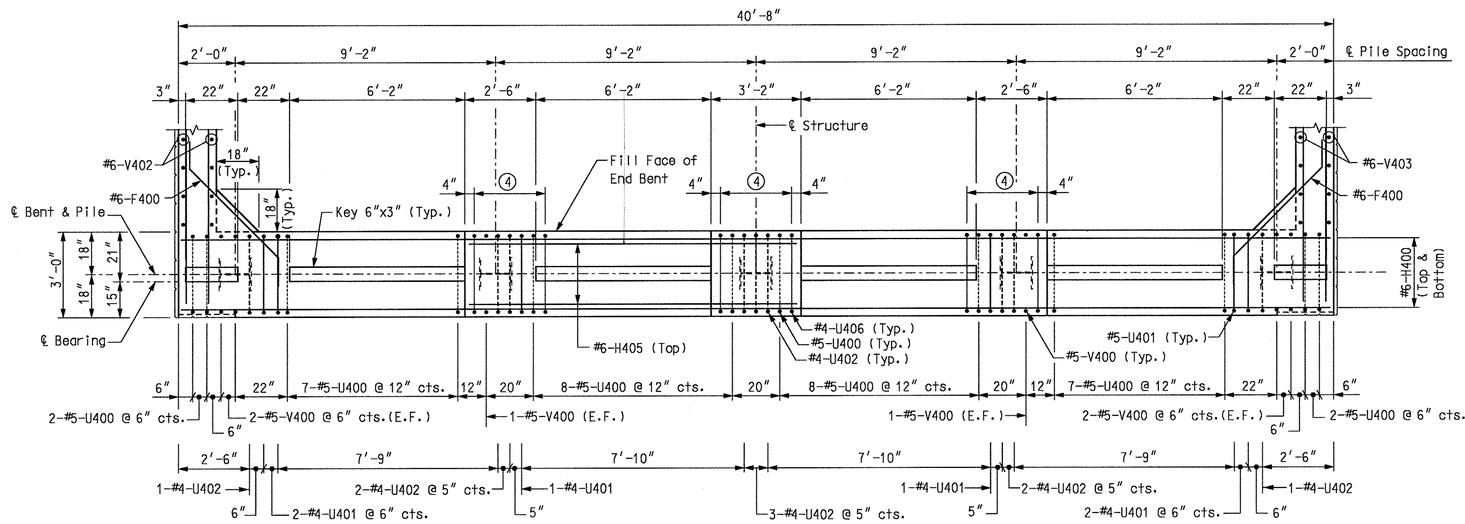
PLAN OF DIAPHRAGM

① 3-#6-V401 @ 6" cts. (Spaced with U401 and U402)

② 3-#6-V401 @ 5" cts. (Spaced with U401 and U402)

③ 3-#6-V401 @ 5" cts. (Spaced with U402)

④ 6-#4-U406 @ 6" cts.



PLAN OF BEAM

Notes:

For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.

Bend F400 bars in field to clear girders.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

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

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

For Form Liner Details, see Sheet No. 35.

For details of Elevation A-A and B-B, see Sheet No. 15.

For Sections and Typical Section Thru Key, see Sheet No. 14.

✻✻ SUBSTRUCTURE QUANTITY TABLE FOR END BENT 4

Item		Quantity
Class 1 Excavation	cu. yard	70
Structural Steel Piles (14")	linear foot	125
Pre-Bore for Piling	linear foot	105
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.1
Form Liners	sq. yard	43

✻✻ These quantities are included in the estimated quantities table on Sheet No. 2.

END BENT 4 – PLAN

A7353

USER: TThompson
PLOTTED: 17-OCT-2006 11:55
K:\B41354\Plans\A7353\Drawings\ZPLOT_T13.dgn

Detailed JULY 2006
Checked JULY 2006

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

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B54

JOB NO. J4P1707

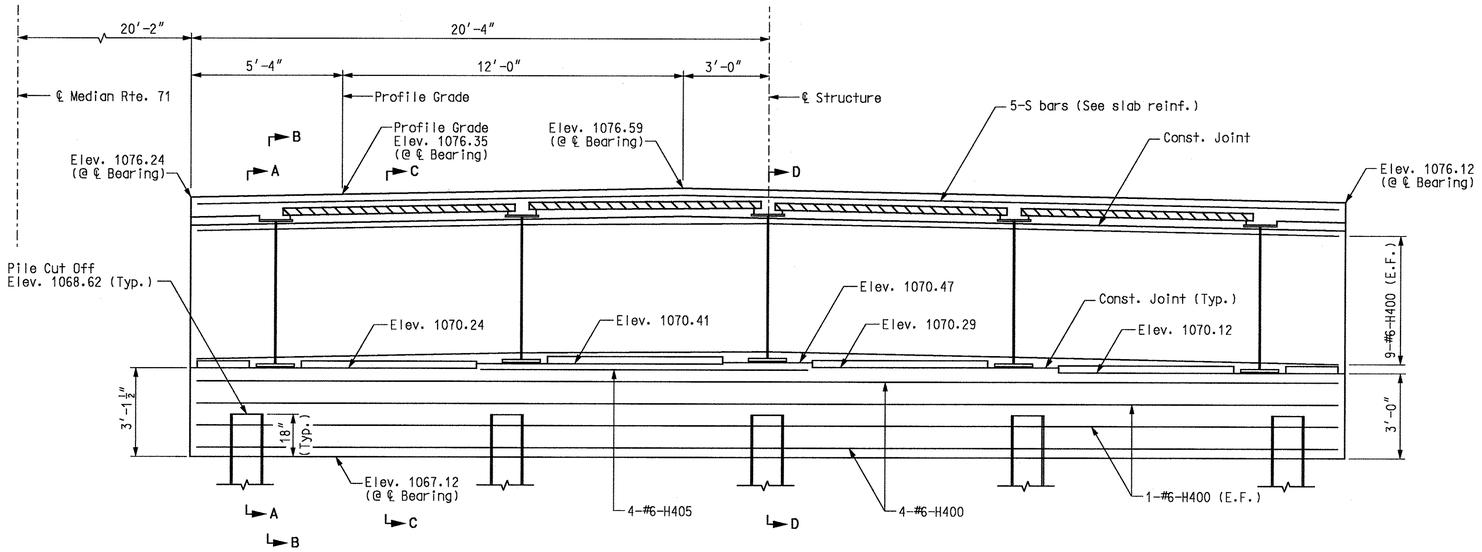
CONTRACT ID

PROJECT NO.

COUNTY CASS

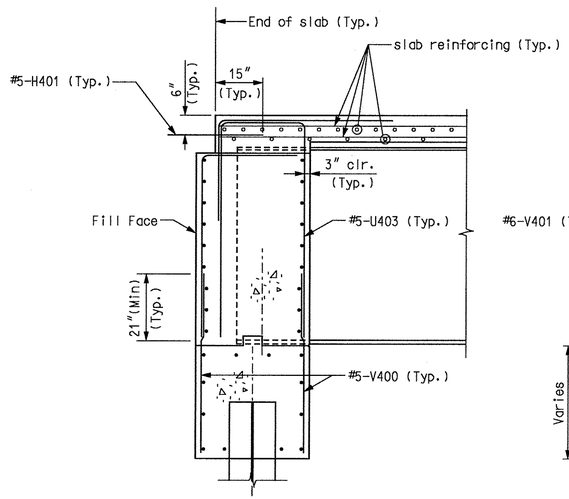
STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-29176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

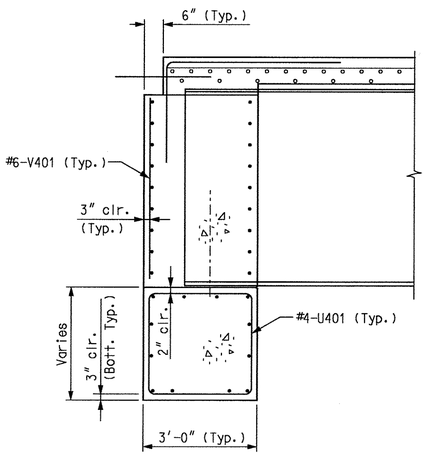


SECTION NEAR END BENT

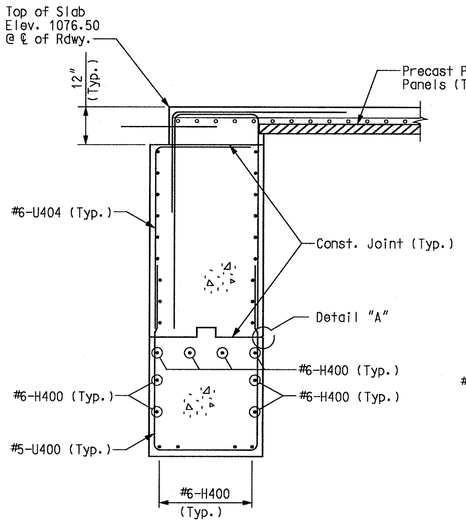
(Looking Ahead Station)



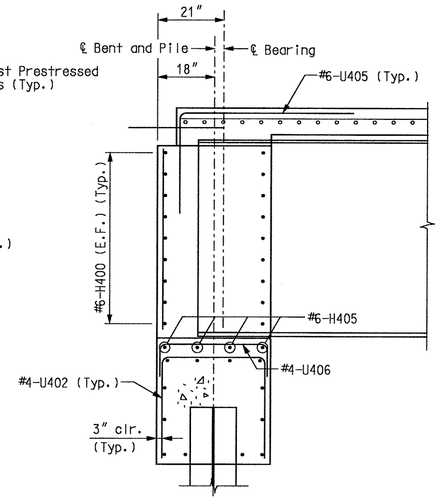
SECTION A-A



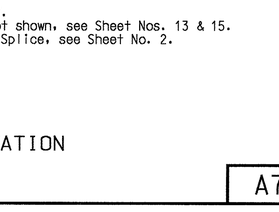
SECTION B-B



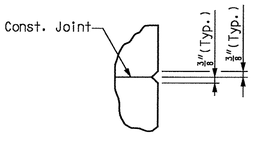
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 13 & 15.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 4 - ELEVATION

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B55

JOB NO. J4P1707

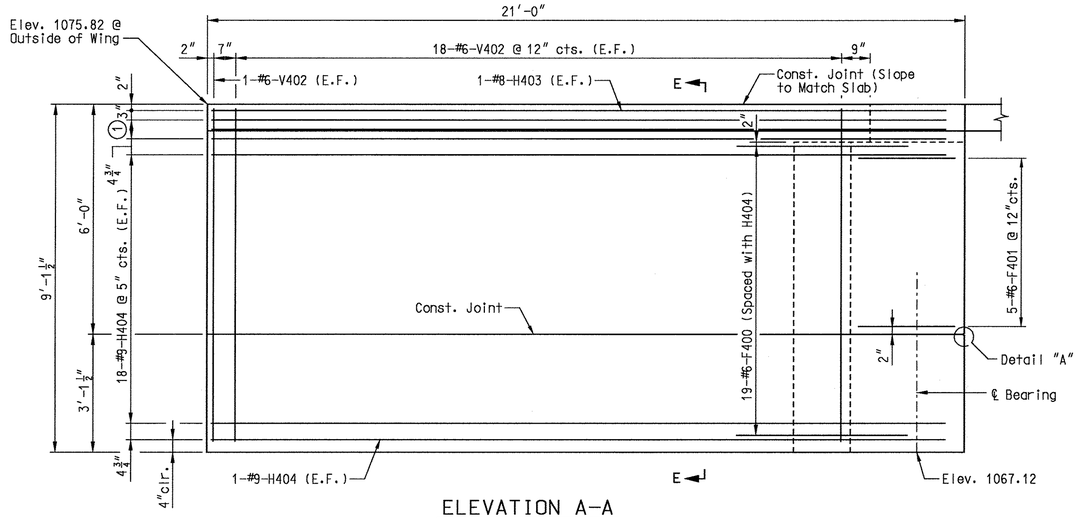
CONTRACT ID

PROJECT NO.

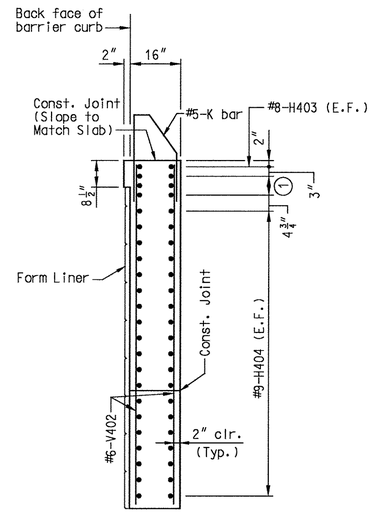
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI THOMAS JOSEPH WESTERMAN NUMBER E-25876 REGISTERED PROFESSIONAL ENGINEER

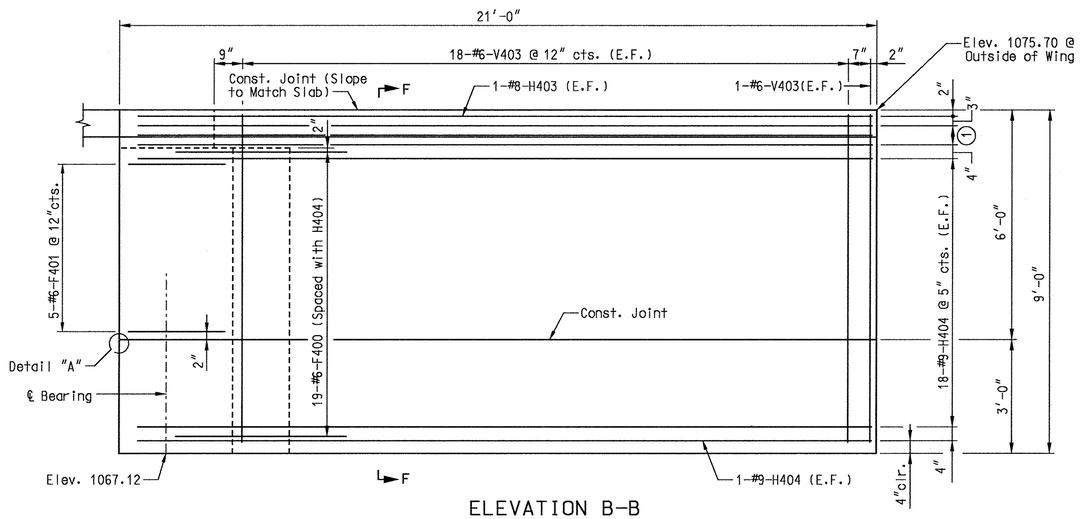


ELEVATION A-A

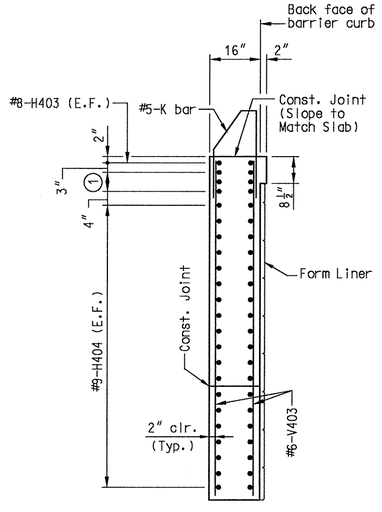


SECTION E-E

① 3-#8-H402 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 14.
For Form Liner Details, see Sheet No. 35.

END BENT 4 - WING DETAILS

USER: TThompson
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Detailed JULY 2006
Checked JULY 2006

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

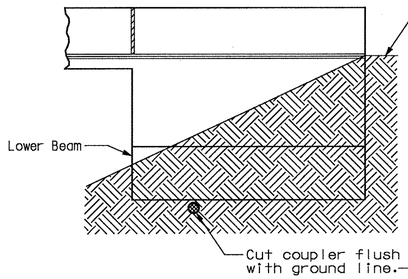
A7353

HNTB

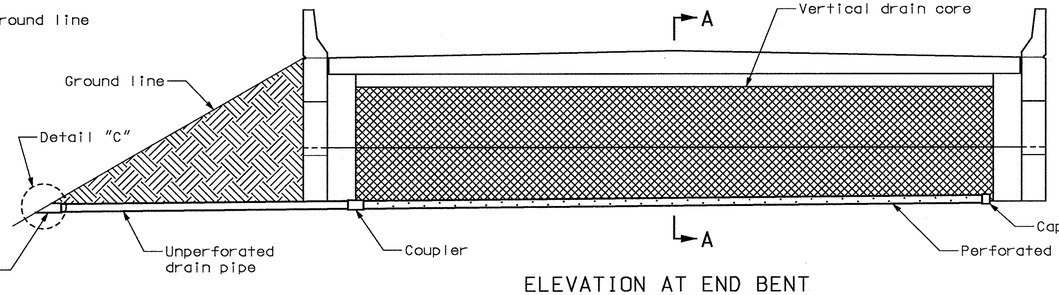
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B56
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25076
REGISTERED PROFESSIONAL ENGINEER

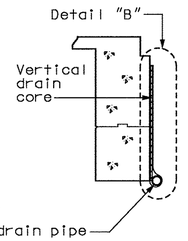
DATE 09-28-2006



ELEVATION OF WING



ELEVATION AT END BENT

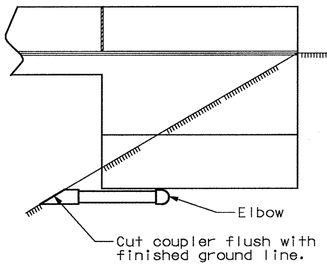


SECTION A-A

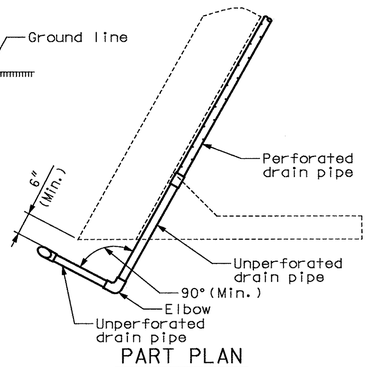
Note:
Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (See elevation at end bent.)

Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.



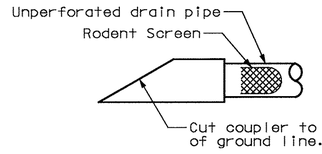
ELEVATION OF WING



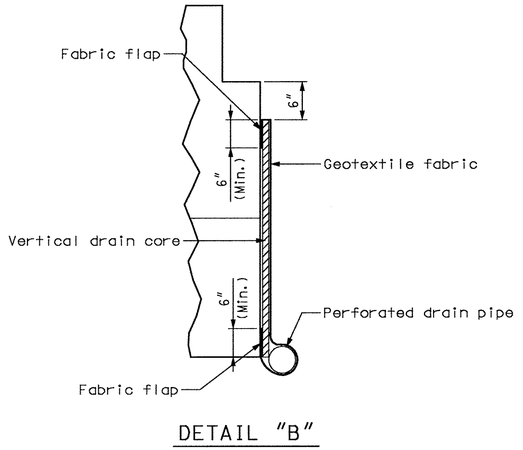
PART PLAN

OPTIONAL BENT DRAIN (*)

(*) Only if rock is encountered at outside of wing.



DETAIL "C"



DETAIL "B"

VERTICAL DRAIN AT END BENTS

A7353

Detailed JULY 2006
Checked JULY 2006

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

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HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B57

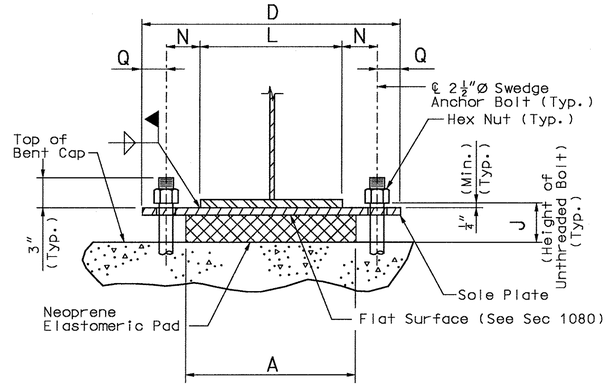
JOB NO. J4P1707

CONTRACT ID

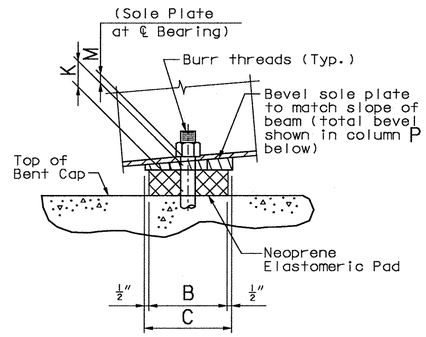
PROJECT NO.

COUNTY CASS

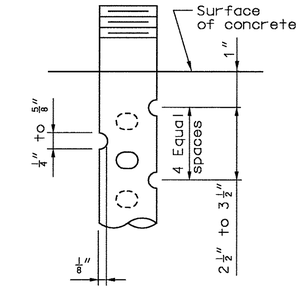
DATE 09-28-2006



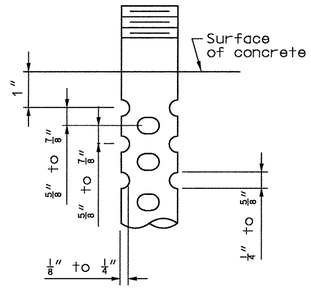
END VIEW



SIDE VIEW

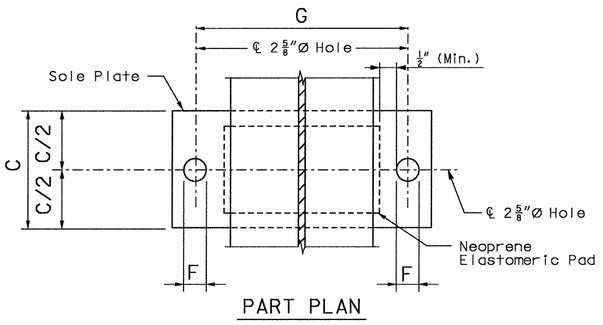


DETAIL FOR ¾" Ø THRU 2½" Ø ANCHOR BOLTS

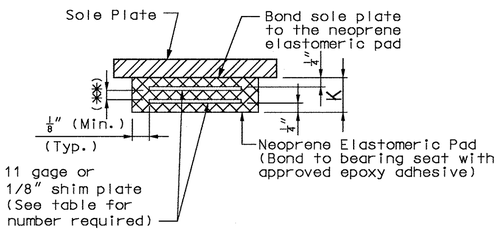


OPTIONAL DETAIL FOR 1⅜" Ø THRU 2½" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

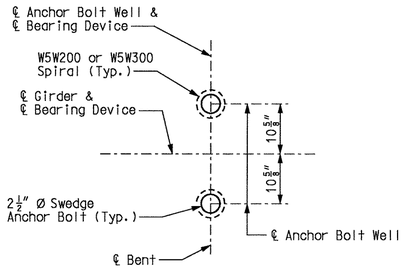


PART PLAN



NEOPRENE ELASTOMERIC PAD

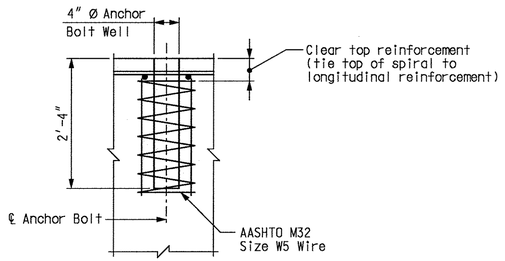
(**) Layers of ½" elastomeric pad with 11 gage or ⅛" shim plate



ANCHOR BOLT SETTING PLAN

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	⅜"	3¾"	4	5
3	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	½"	3¾"	4	5
														TOTAL BEARINGS	10

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



ANCHOR BOLT WELL DETAIL

GENERAL NOTES:

Anchor bolts shall be 2½"Ø ASTM A709 Grade 50W steel swedged bolts and shall extend 25" 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 the 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 the sole plate shall be ASTM A709 Grade 36 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.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

USER: TThompson
PLOTTED: 27-SEP-2006 15:59
K:\B4135A\Plans\A7353\Drawings\ZPLOT_T17.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	158

JOB NO. J4P1707

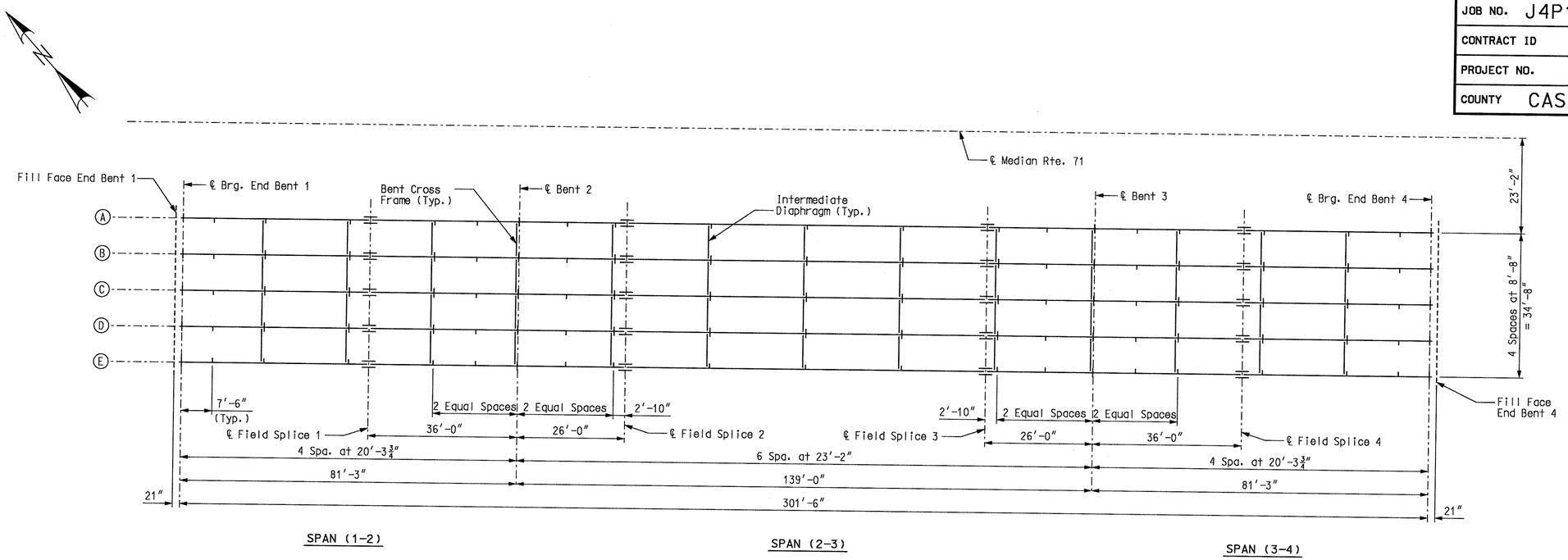
CONTRACT ID

PROJECT NO.

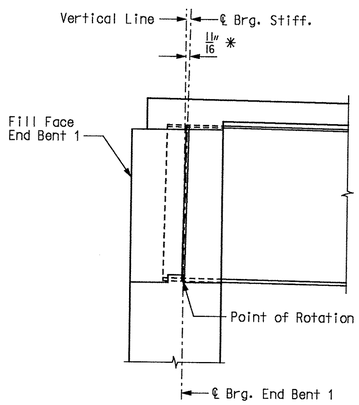
COUNTY CASS

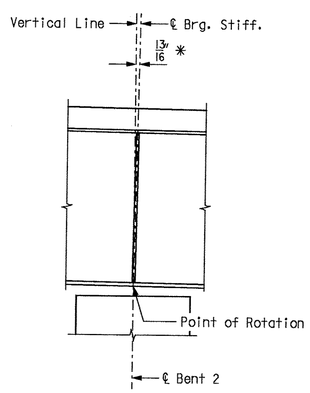
STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

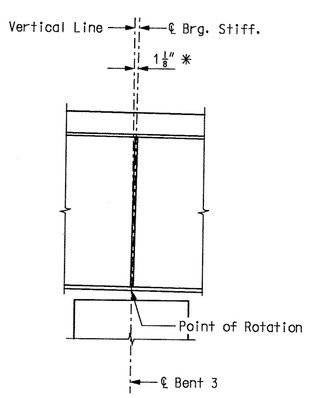
DATE 09-28-2006

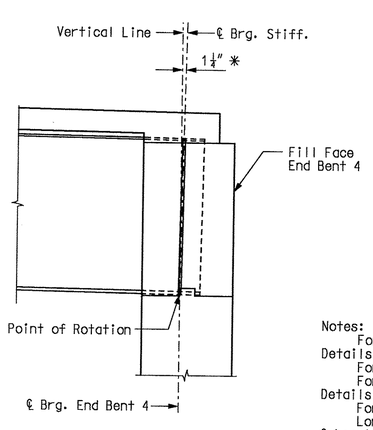


FRAMING PLAN









* Horizontal Dimension at Top of Web.

Notes:
For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.
For Field Splice Details, see Sheet No. 21.
For Intermediate Stiffener and Bearing Stiffener Details, see Sheet No. 23.
For Girder Elevation, see Sheet No. 19.
Longitudinal dimensions are horizontal from ℄ bearing to ℄ bearing.
All Intermediate Stiffeners are spaced equally between Bearing Stiffeners, unless shown otherwise.

PART LONGITUDINAL SECTION

FRAMING PLAN

USER: TThompson
PLOTTED: 27-SEP-2006 15:59 K:\B41354\Plans\A7353\Drawings\ZPLOT_T18.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B59

JOB NO. J4P1707

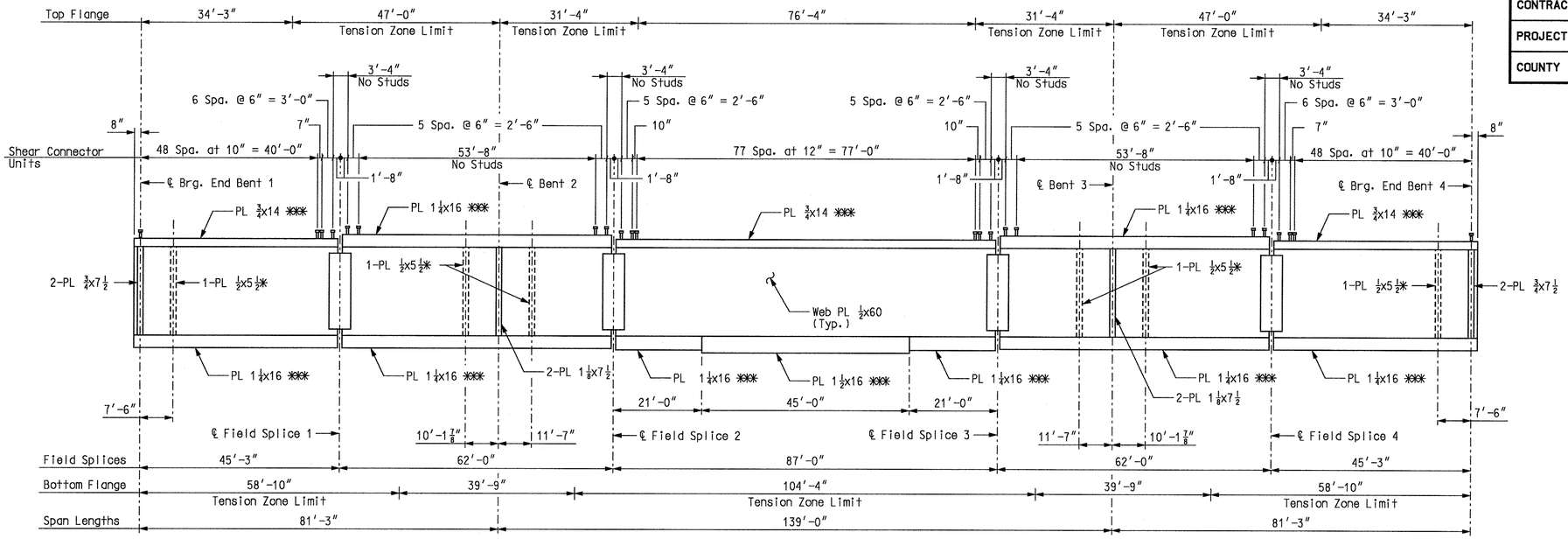
CONTRACT ID

PROJECT NO.

COUNTY CASS

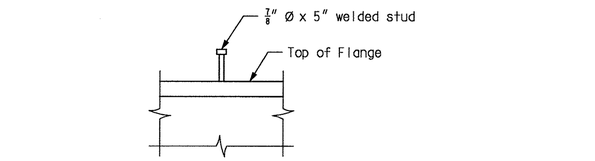
DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTBROOK — NUMBER E-25826 — REGISTERED PROFESSIONAL ENGINEER

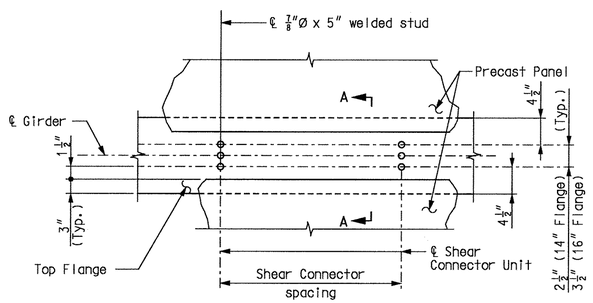


SPAN (1-2) SPAN (2-3) SPAN (3-4)

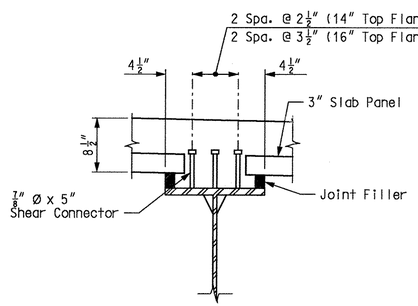
GIRDER ELEVATION



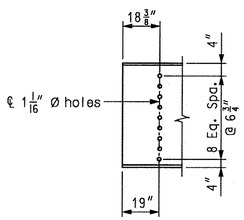
ELEVATION



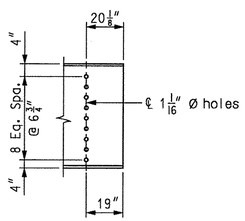
PLAN



SECTION A-A



END BENT 1



END BENT 4

SECTION AT END OF GIRDERS

DETAILS OF SHEAR CONNECTORS

Weight of 3320 pounds of shear connectors is included in the weight of Fabricated Structural Carbon Steel (Plate Girder).

Shear connectors shall be in accordance with Sec 712, 1037, and 1080.

* Transverse web stiffener. See Plan for locations of other intermediate web stiffeners with intermediate diaphragms.

Notes:

Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. 20.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

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.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.

For Field Splice Details, see Sheet No. 21.

For Intermediate Stiffener and Bearing Stiffener details, see Sheet No. 23.

For Framing Plan, see Sheet No. 18.

Longitudinal dimensions are horizontal from ℄ brg. to ℄ brg.

For Intermediate Web Stiffener locations and Intermediate Diaphragm spacing not shown, see Sheet No. 18.

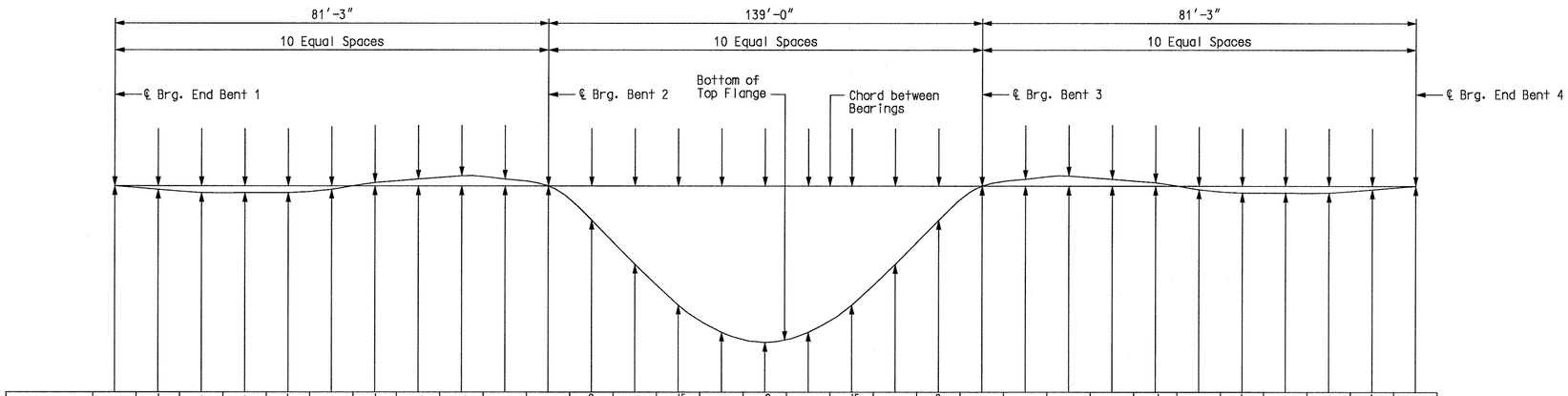
GIRDER ELEVATION

USER: TThompson
PLOTTED: 27-SEP-2006 16:00 K:\B41354\Plans\A7353\Drawings\ZPLOT_T19.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

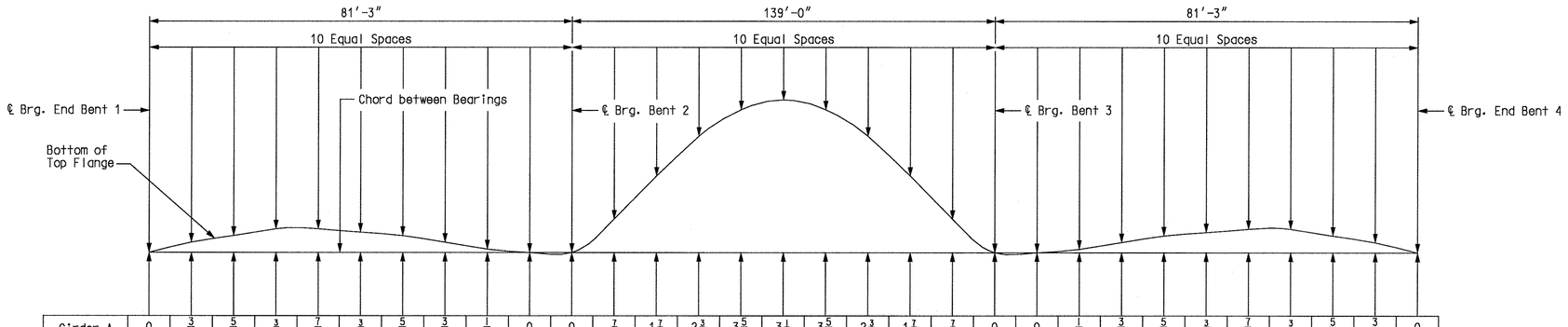


Girder A	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	9/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/8	1 15/16	1 1/4	9/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0
Girder B	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder C	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder D	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/16	0
Girder E	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	9/16	1 1/4	1 15/16	2 3/8	2 9/16	2 3/8	1 15/16	1 1/4	9/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

DEAD LOAD DEFLECTIONS

Notes:
Dead load deflection includes weight of structural steel, concrete slab, and barrier curb.
20% of dead load deflection is due to the weight of structural steel.
Dead load deflection values are given in inches.
Negative values indicate upward deflection.



Girder A	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0
Girder B	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder C	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder D	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder E	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

CAMBER DIAGRAM

Notes:
Camber includes allowance for vertical curve, and for dead load deflection due to concrete slab, barrier curb, and structural steel.
Camber values are given in inches.
Positive values are above the chord between bents and negative values are below the chord between bents.

Notes:
For Theoretical Slab Haunch, see Sheet No. 27.

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B&D
JOB NO. J4P1707			
CONTRACT ID			
PROJECT NO.			
COUNTY CASS			

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25376 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

DEAD LOAD DEFLECTION AND CAMBER DIAGRAMS

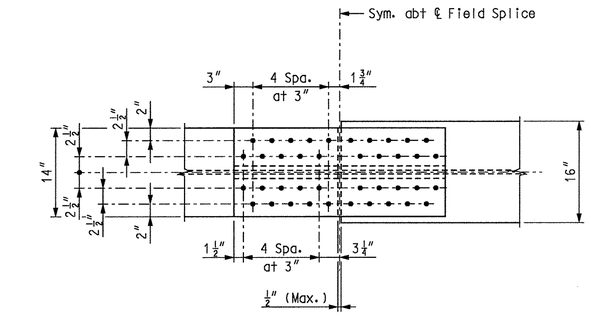
A7353

Detailed JULY 2006
Checked JULY 2006

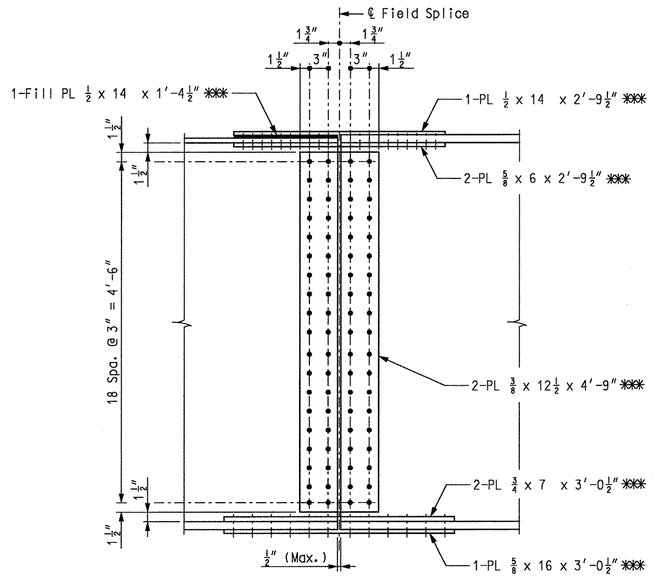
Note: This drawing is not to scale. Follow Dimensions.

Sheet No. 20 of 40.

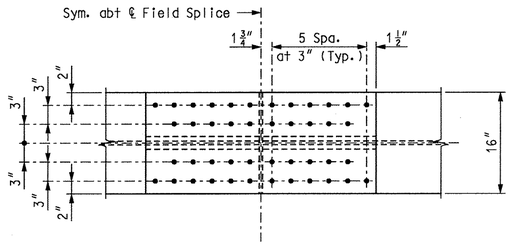
USER: TThompson
PLOTTED: 27-SEP-2006 16:00 K:\B41354\Plans\A7353\Drawings\ZPLOT_T20.dgn



PLAN – TOP FLANGE



ELEVATION



PLAN – BOTTOM FLANGE

FIELD SPLICE 1, 2, 3, AND 4

Notes:
*** Indicates splice plates subject to notch toughness requirements.
Use ⅞" dia. high strength bolts with 15/16" dia. holes.
Fabricated Structural Steel for splice plates shall be ASTM A709 Grade 50.
For locations of field splices, see Sheet No. 18 or 19.

FIELD SPLICE DETAILS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B61

JOB NO. J4P1707
CONTRACT ID
PROJECT NO.
COUNTY CASS
DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

USER: TThompson
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Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	362

JOB NO. J4P1707

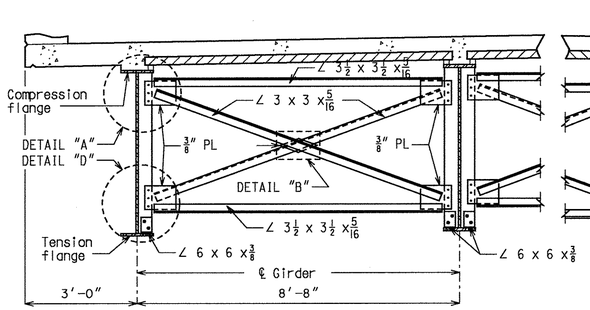
CONTRACT ID

PROJECT NO.

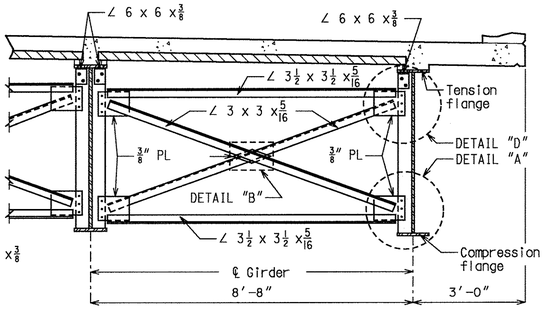
COUNTY CASS

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

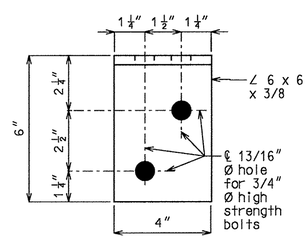
DATE 09-28-2006



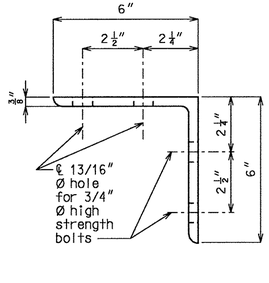
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION



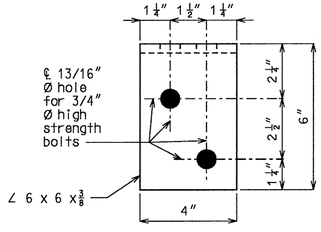
TYPICAL PART SECTION SHOWING
CROSS FRAMES AND
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION



ELEVATION

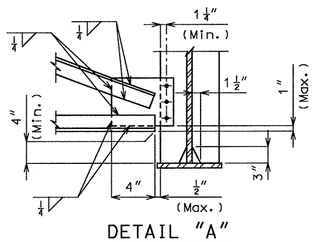


SIDE VIEW

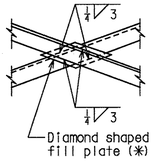


PLAN

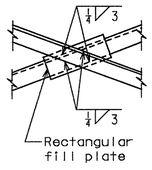
DETAIL OF FLANGE CONNECTION ANGLE



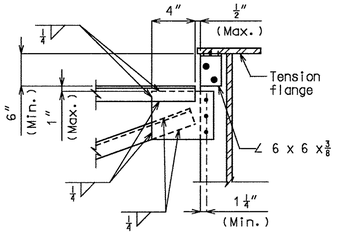
DETAIL "A"



DETAIL "B"



OPTIONAL
DETAIL "B"



DETAIL "D"

Notes:

The two ¾" Ø H.S. bolts that connect the 6 x 6 x ⅜ angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non-slab bearing diaphragms may be made 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 girder diaphragm connection plate or transverse web stiffener shall be standard size.

(*) At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail "B".

DIAPHRAGM AND CROSS FRAME DETAILS

A7353

Detailed JULY 2006
Checked JULY 2006

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

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B63

JOB NO. J4P1707

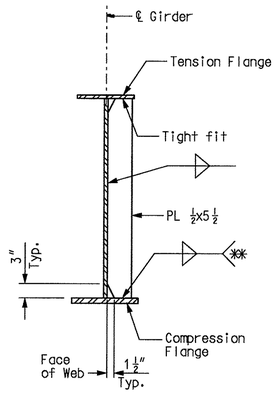
CONTRACT ID

PROJECT NO.

COUNTY CASS

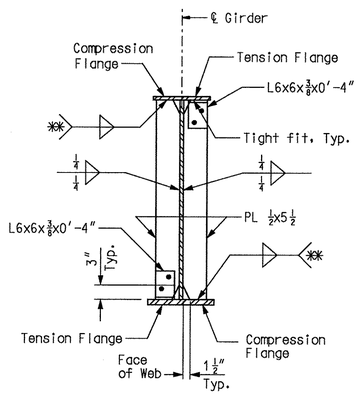
STATE OF MISSOURI THOMAS JOSEPH WESTERMANN NUMBER E-25976 REGISTERED PROFESSIONAL ENGINEER

DATE 07-28-2006

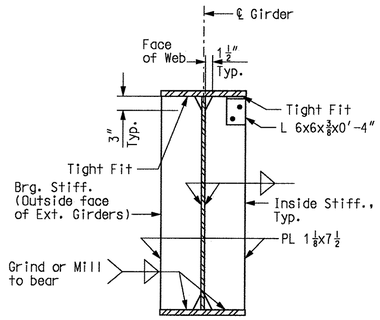


INTERMEDIATE STIFFENER

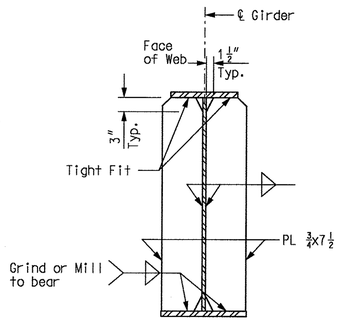
(One side only)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



BENTS 2 & 3



END BENTS 1 AND 4

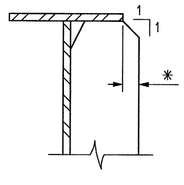
BEARING STIFFENER DETAILS

Fabricated structural steel for bearing stiffeners shall be ASTM A709 Grade 50.

WELDING DETAILS

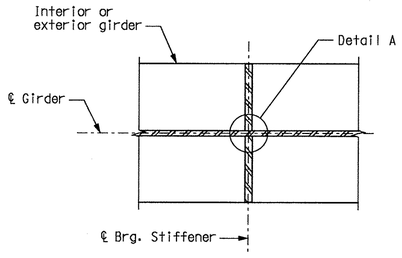
Notes:
Intermediate web stiffeners shall be located as shown in plan of structural steel.
Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

** Weld to Compression Flange. For location of Compression Flanges, see Girder Elevation.

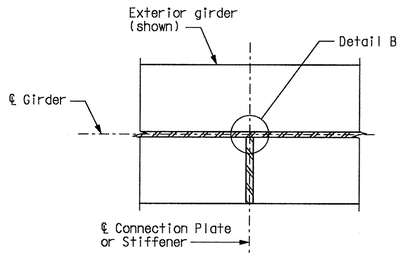


STIFFENER BEVEL DETAIL

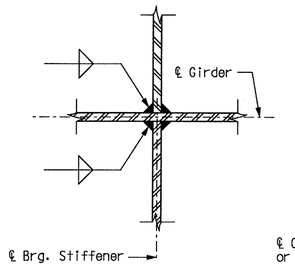
* When dimension exceeds ½", bevel Stiffener Plate.



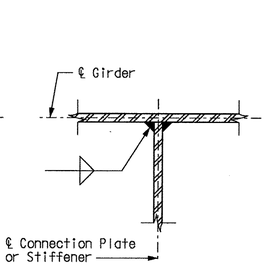
BEARING STIFFENERS



INTERMEDIATE DIAPHRAGM CONNECTION PLATE OR INTERMEDIATE STIFFENERS



DETAIL A



DETAIL B

TYPICAL LOCATION DETAILS

Notes:
For Girder Elevation, see Sheet No. 19.
For Framing Plan, see Sheet No. 18.
Fabricated Structural Steel shall be ASTM A709 Grade 36, except as noted.

STIFFENER AND WELD DETAILS

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Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	364

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

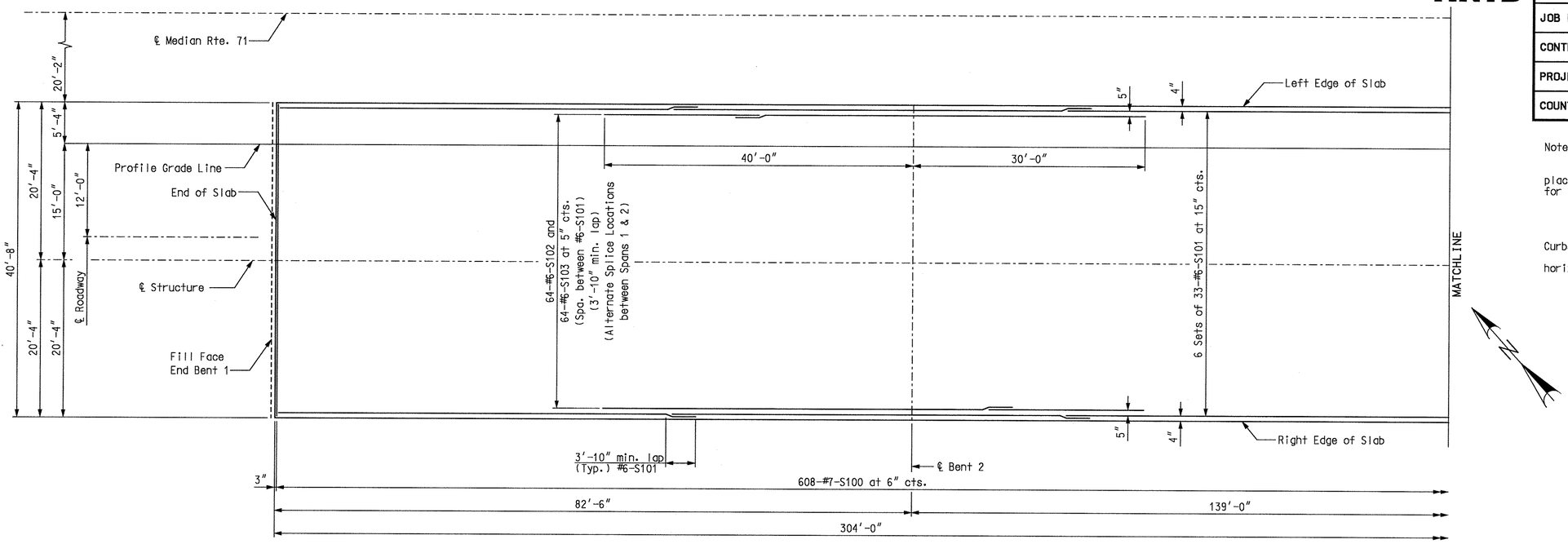
COUNTY CASS

DATE 09-28-2006

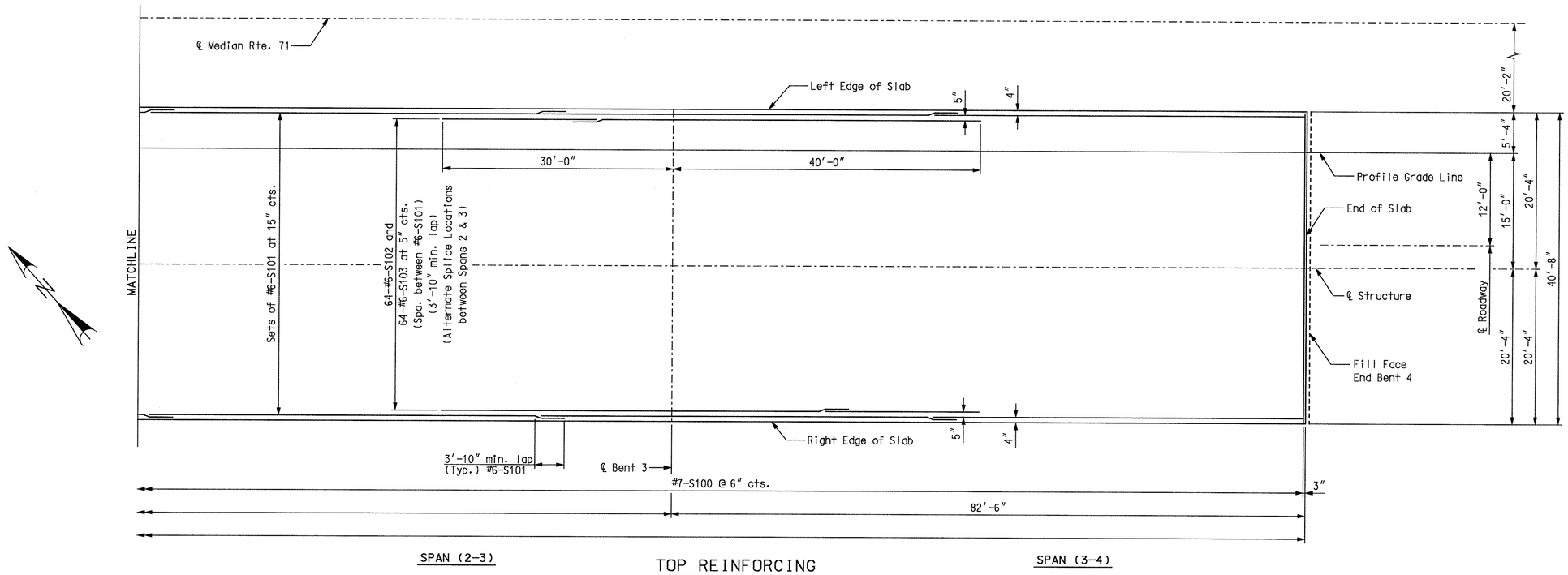
STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25976 — REGISTERED PROFESSIONAL ENGINEER

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.
For Typical Section, see Sheet No. 27.
For Location of Slab Drains, see Sheet No. 30.
For Slab Pouring Sequence, see Sheet No. 28.
For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.
Longitudinal slab dimensions are measured horizontally.



TOP REINFORCING



TOP REINFORCING

SLAB PLAN

USER: TThompson
PLOTTED: 27-SEP-2006 16:00 K:\B41354\Plans\A7353\Drawings\ZPLOT_T24.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B45

JOB NO. J4P1707

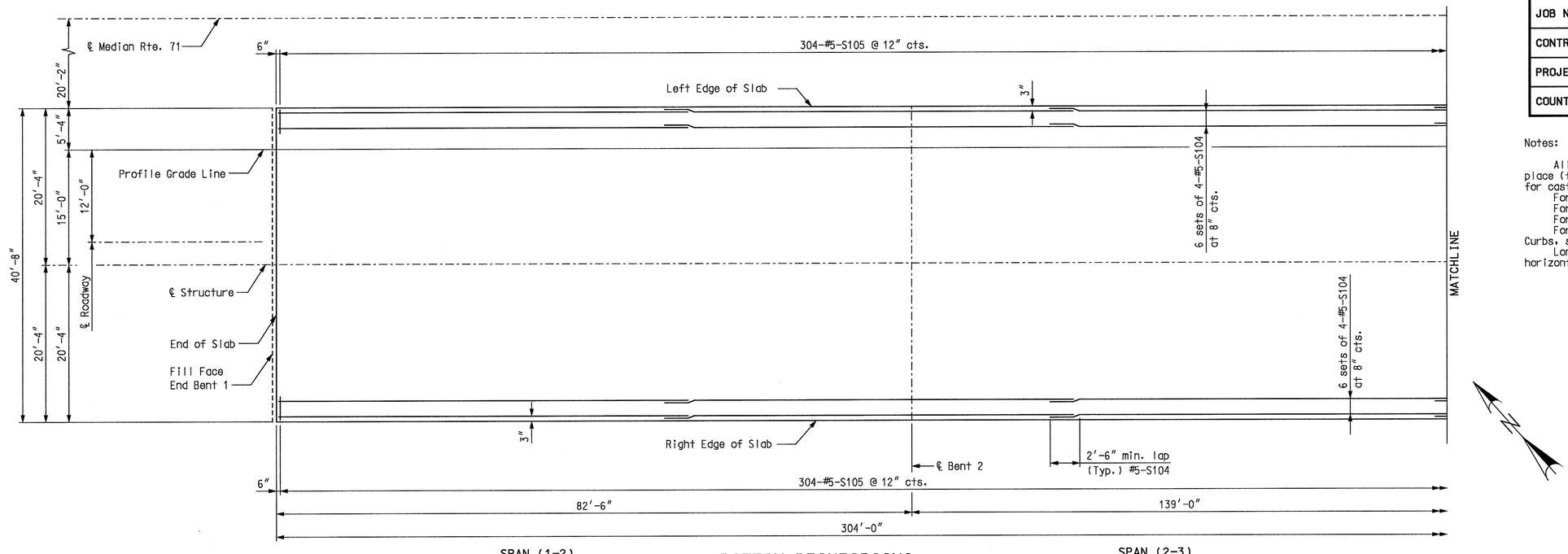
CONTRACT ID

PROJECT NO.

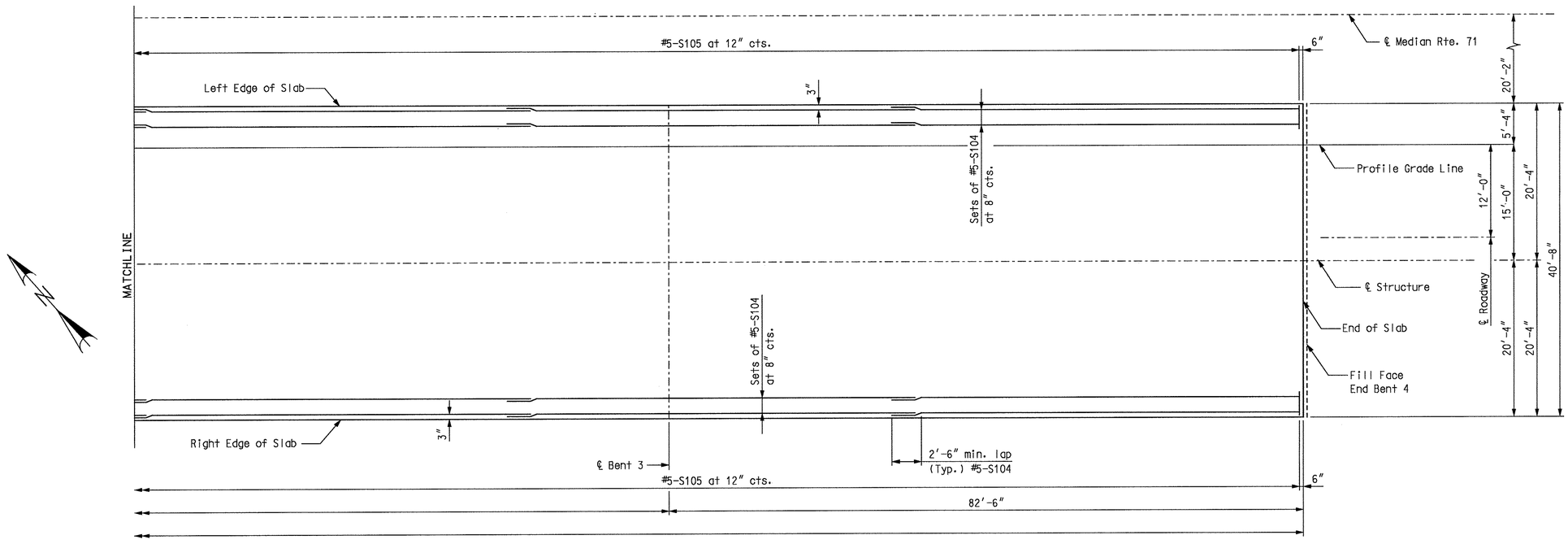
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-24976
REGISTERED PROFESSIONAL ENGINEER



BOTTOM REINFORCING



BOTTOM REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.
For Typical Section, see Sheet No. 27.
For Location of Slab Drains, see Sheet No. 30.
For Slab Pouring Sequence, see Sheet No. 28.
For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.
Longitudinal slab dimensions are measured horizontally.

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Detailed JULY 2006
Checked JULY 2006

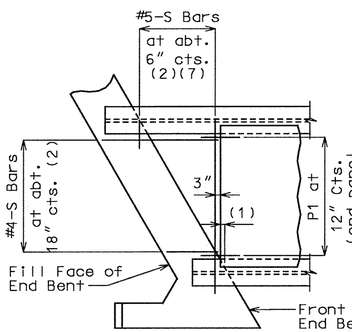
Note: This drawing is not to scale. Follow Dimensions.

A7353

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B66
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	09-28-2006		

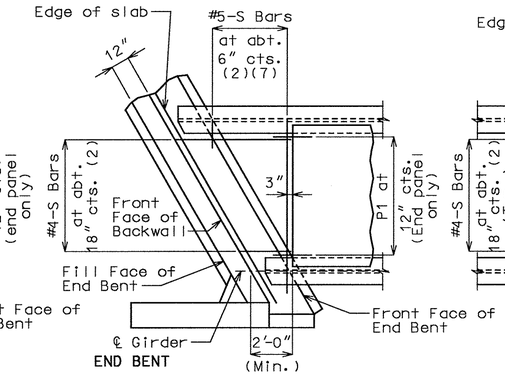
HNTB

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25976 — REGISTERED PROFESSIONAL ENGINEER



END BENT (INTEGRAL)

PANELS-SQUARED ENDS



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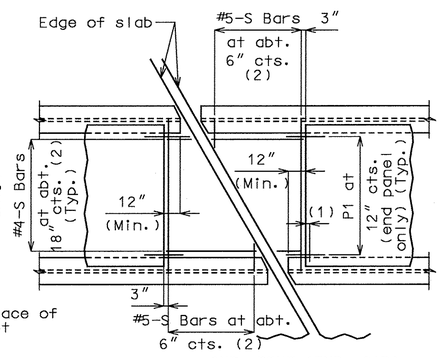
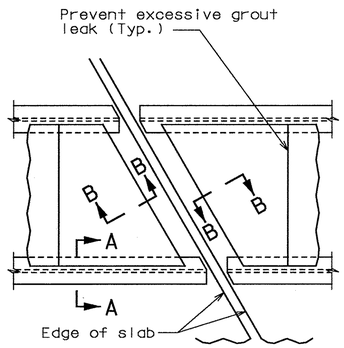


INT. BENT (EXP. GAP)



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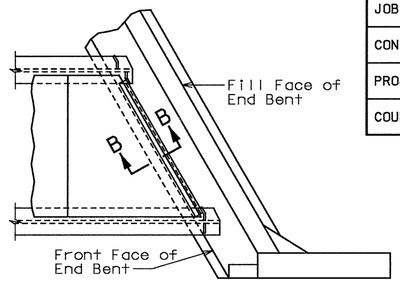
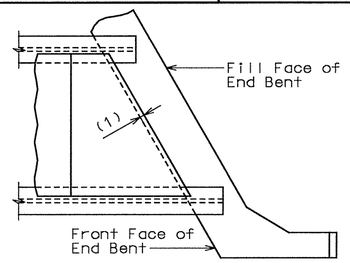


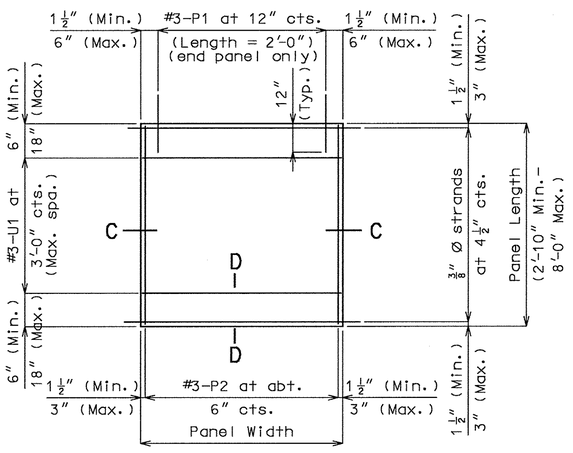
END BENT

PANELS-SKEWED ENDS

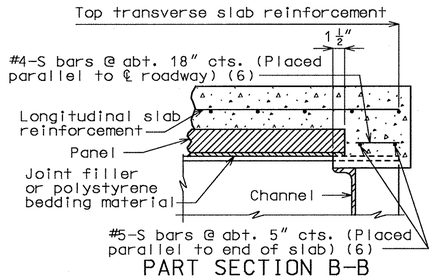


END BENT (INTEGRAL)

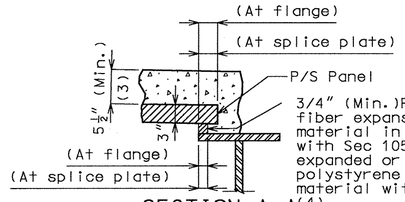
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PLAN OF PRECAST PRESTRESSED PANEL



PART SECTION B-B



SECTION A-A(4)

Note: The thickness of the preformed fiber expansion joint material or polystyrene bedding material shall be adjusted to achieve the slab haunching dimension found on sheet no. 27. These adjustments shall be within the limits noted in the general notes.

NOTES:

Cost of S-bars will be considered completely covered by the contract unit price for the slab

S-bars are not listed in the bill of reinforcing.

(1) End panels shall be dimensioned 1" min. to 1 1/2" max. from the inside face of diaphragm.

(2) S-bars shown are bottom steel in slab between panels and used with squared end panels only.

(3) Adjustment in the slab thickness, preformed fiber expansion joint material or polystyrene bedding material thickness, or grade will be necessary if the girder camber after erection differs from plan camber by more than the % of dead load deflection due to the weight of structural steel. No payment will be made for additional labor or materials for the adjustment.

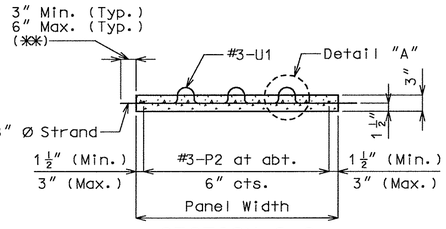
(4) All panel support pads shall be glued to the girder. When support thickness exceeds 1 1/2 inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

(5) Use #3-P3 bars if panel is skewed 45° or greater.

(6) S-bars shown are used with skewed end panels, or square end panels of square structures only. The #5 S-bars shall extend the width of slab (2'-6" lap if necessary) or to within 3 inches of expansion device assemblies.

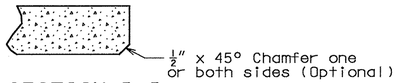
(7) Extend S-bars 18 inches beyond the front face of end bents only.

(8) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

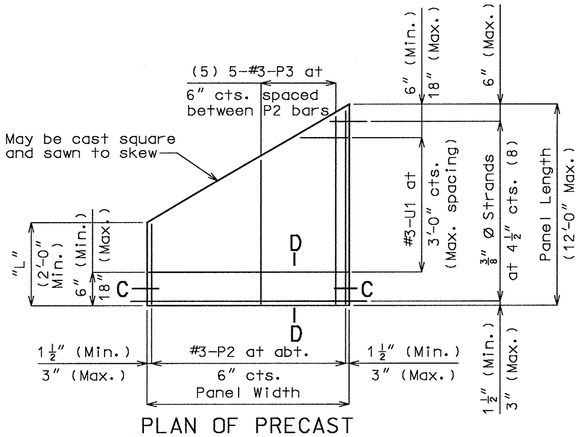


SECTION C-C

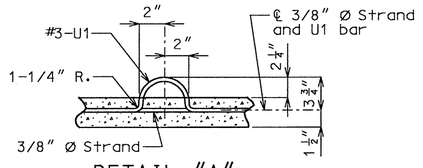
(**) Prestressing strands to extend 6" or to within 1" of adjacent panel.



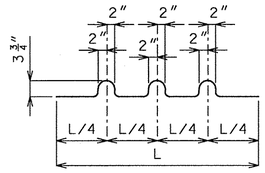
SECTION D-D



PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

(U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars).

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 3,500 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength uncoated seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq. in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When square end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 3/4 inch, except over splice plates where minimum thickness shall be 1/4 inch. When the material is less than 1/2 inch thick over a splice plate, the width of material at the splice shall be the same width as panel on splice. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. No more than 2" total thickness shall be used.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

REINFORCING STEEL:

All dimensions are out to out.

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

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

Actual lengths are measured along centerline of bar to the nearest inch.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 sq. in./ft., with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #3-P2 bars shown. Wireor bar diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The reinforcing steel shall be tied securely to the 3/8" Ø strands with the following maximum spacing in each direction: #3-P2 bars at 16 inches. Welded wire fabric or welded deformed bar mats at 2'-0".

Tie the #3-U1 bars to the #3-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 3'-0" centers.

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

DETAILS OF PRECAST PRESTRESSED PANELS

USER: TThompson
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Detailed JULY 2006
Checked JULY 2006

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

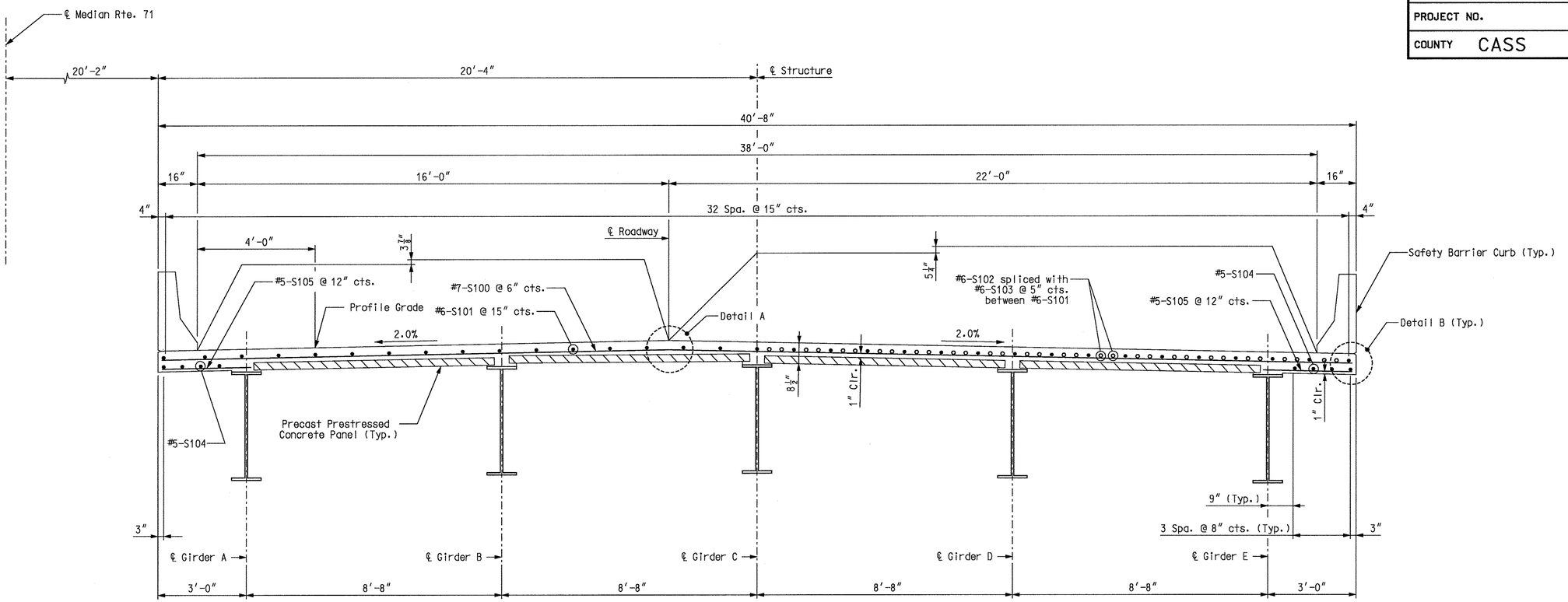
A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B67
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25376 — REGISTERED PROFESSIONAL ENGINEER

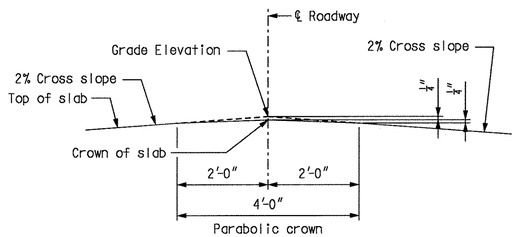
DATE 09-28-2006



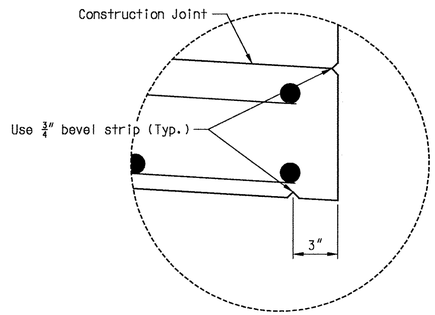
HALF-SECTION NEAR ℄ SPAN

HALF-SECTION NEAR INTERMEDIATE BENTS

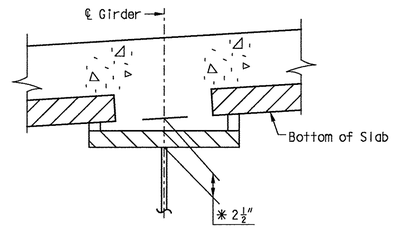
TYPICAL SECTION



DETAIL A



DETAIL B



THEORETICAL SLAB HAUNCH

* Dimensions may vary if the girder camber after erection differs from plan camber by more or less than the ¾ 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.

Notes:
Transverse slab dimensions are measured horizontally.
For Slab Pouring Sequence, see Sheet No. 28.
For details and reinforcement of Safety Barrier Curbs, not shown, see Sheet Nos. 31 thru 33.
For details of precast panels, see Sheet No. 26.

SLAB CROSS SECTION

USER: TThompson
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Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B6

JOB NO. J4P1707

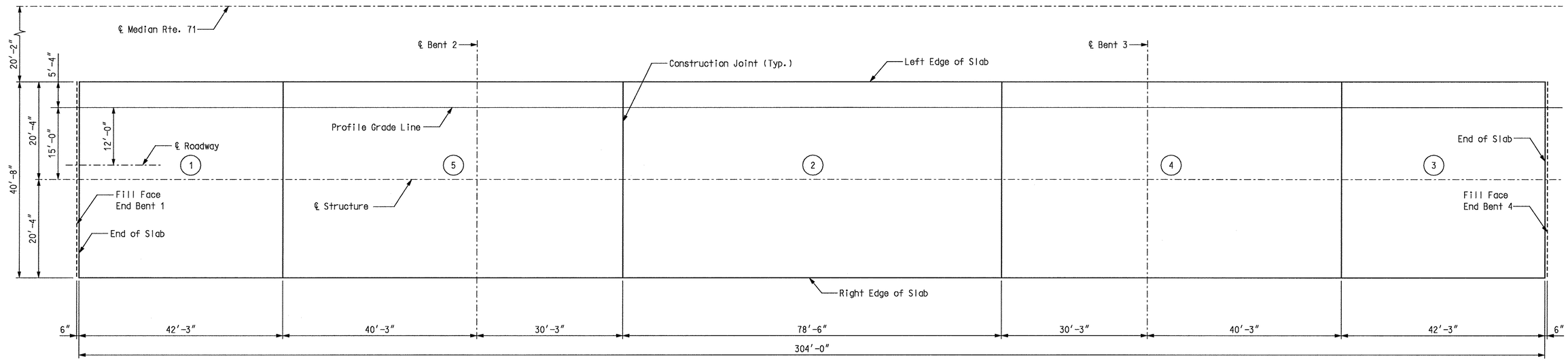
CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

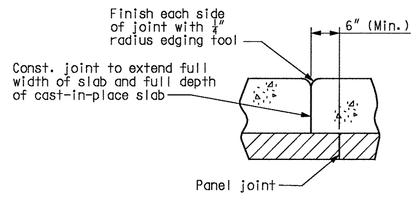
STATE OF MISSOURI — THOMAS JOSEPH WESTHUSIN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER



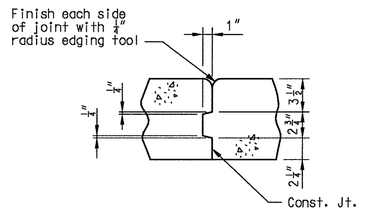
SPAN (1-2) SPAN (2-3) SPAN (3-4)

SLAB POURING SEQUENCE

	SEQUENCE OF POURS					MIN. RATE OF POUR CU. YDS./HR.	
	DIRECTION					WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	4	5	25	32
	Either Direction						
Alternate pours to the basic skip sequnce are subject to the approval of the engineer in accordance with Sec 703.							
Alternate "A" Pours	1 + 5 + 2 + 4 + 3					34	56
	End to End						



(Slab on Precast Panel)



(Slab Cantilever)

SLAB CONSTRUCTION JOINT DETAILS

Notes:
Transverse construction joints shall be placed parallel to ℄ bents.
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.
For details of precast panels, see Sheet No. 26.
For location of slab drains, see Sheet No. 30.

SLAB POURING SEQUENCE

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B69

JOB NO. J4P1707

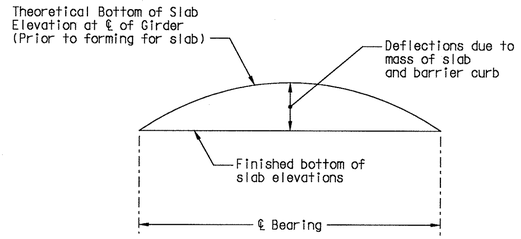
CONTRACT ID

PROJECT NO.

COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-29176
REGISTERED PROFESSIONAL ENGINEER



TYPICAL SLAB ELEVATION DIAGRAM

Theoretical Bottom of Slab Elevations at ℄ of Girder
(Prior to forming for slab) **

	Span (1-2)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1080.39	1080.30	1080.21	1080.12	1080.02	1079.92	1079.81	1079.71	1079.60	1079.49	1079.39
Girder B	1080.56	1080.48	1080.39	1080.29	1080.20	1080.09	1079.99	1079.88	1079.77	1079.67	1079.57
Girder C	1080.61	1080.53	1080.44	1080.35	1080.25	1080.15	1080.04	1079.93	1079.83	1079.72	1079.62
Girder D	1080.44	1080.36	1080.27	1080.17	1080.08	1079.97	1079.87	1079.76	1079.65	1079.55	1079.45
Girder E	1080.27	1080.18	1080.09	1080.00	1079.90	1079.80	1079.69	1079.59	1079.48	1079.37	1079.27
	Span (2-3)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1079.39	1079.24	1079.09	1078.93	1078.74	1078.54	1078.30	1078.04	1077.76	1077.47	1077.19
Girder B	1079.57	1079.42	1079.27	1079.12	1078.95	1078.74	1078.50	1078.24	1077.95	1077.65	1077.36
Girder C	1079.62	1079.47	1079.33	1079.17	1079.00	1078.79	1078.56	1078.29	1078.00	1077.71	1077.41
Girder D	1079.45	1079.30	1079.15	1079.00	1078.83	1078.62	1078.38	1078.12	1077.83	1077.53	1077.24
Girder E	1079.27	1079.12	1078.97	1078.81	1078.62	1078.42	1078.18	1077.92	1077.64	1077.35	1077.07
	Span (3-4)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1077.19	1077.03	1076.88	1076.72	1076.57	1076.42	1076.26	1076.10	1075.93	1075.76	1075.58
Girder B	1077.36	1077.20	1077.05	1076.89	1076.74	1076.59	1076.43	1076.27	1076.10	1075.93	1075.76
Girder C	1077.41	1077.25	1077.10	1076.95	1076.80	1076.64	1076.49	1076.32	1076.16	1075.99	1075.81
Girder D	1077.24	1077.08	1076.93	1076.77	1076.62	1076.47	1076.31	1076.15	1075.98	1075.81	1075.64
Girder E	1077.07	1076.91	1076.76	1076.60	1076.45	1076.30	1076.14	1075.98	1075.81	1075.64	1075.46

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab (including prestressed panel) and barrier curb.

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Detailed JULY 2006
Checked JULY 2006

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

THEORETICAL BOTTOM OF SLAB ELEVATIONS

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	870

JOB NO. J4P1707

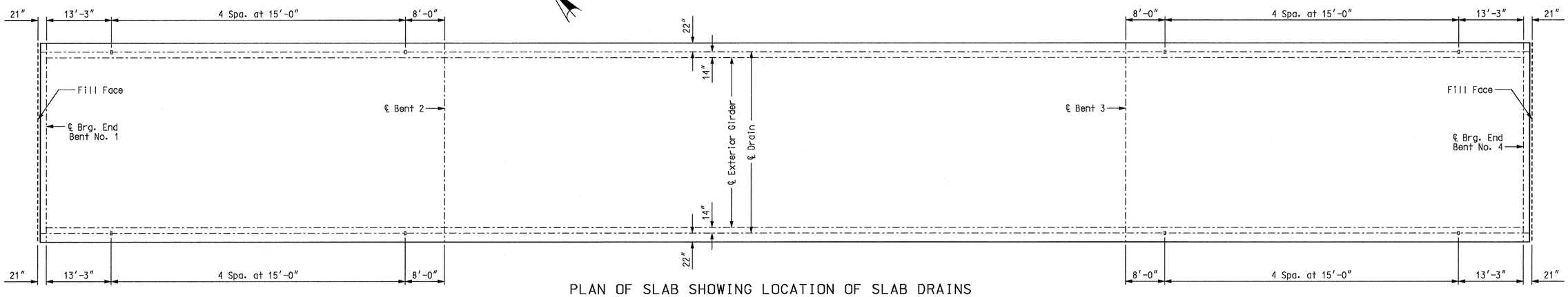
CONTRACT ID

PROJECT NO.

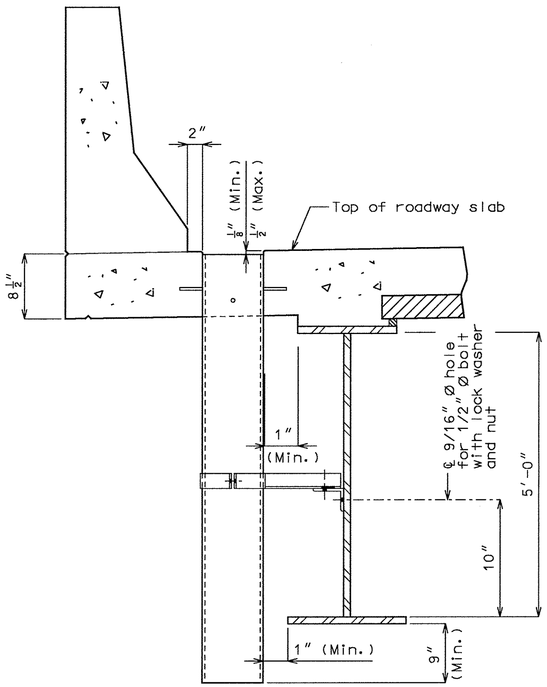
COUNTY CASS

DATE 09-28-2006

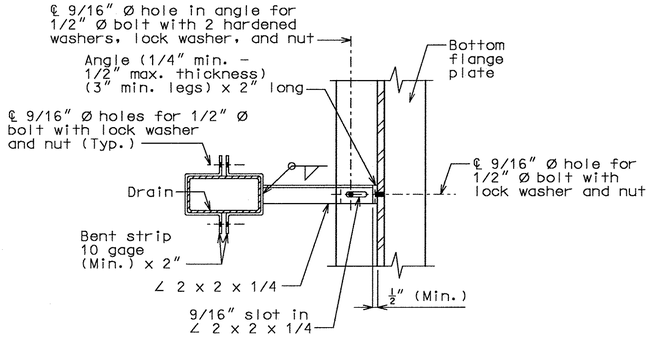
STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER



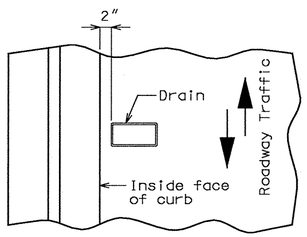
PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS



PART SECTION NEAR DRAIN

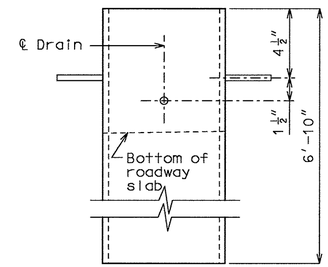


PART SECTION SHOWING BRACKET ASSEMBLY

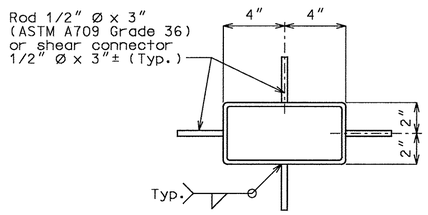


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



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 located on the plate girder shop drawings.

SLAB DRAIN DETAILS

USER: TThompson
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Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B71

JOB NO. J4P1707

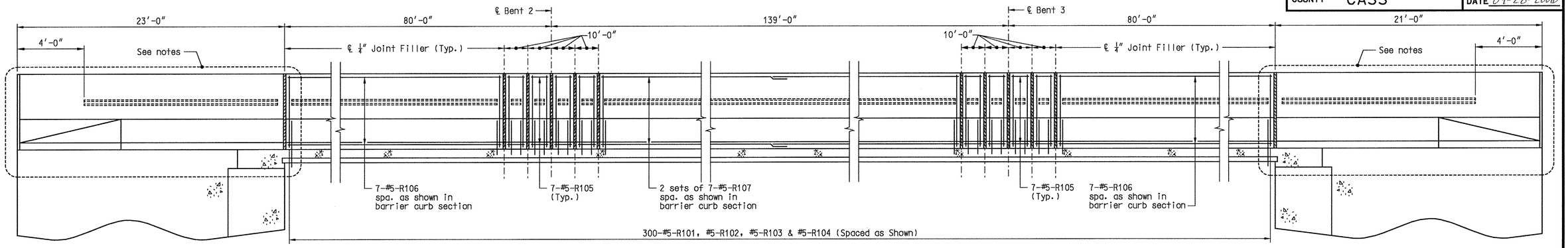
CONTRACT ID

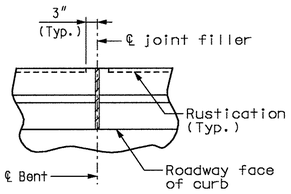
PROJECT NO.

COUNTY CASS

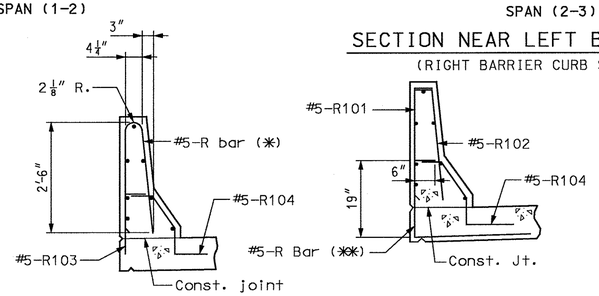
STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006





PART PLAN SHOWING
SAFETY BARRIER CURB JOINT

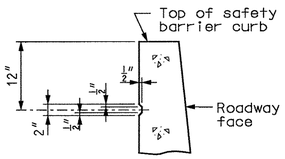


SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

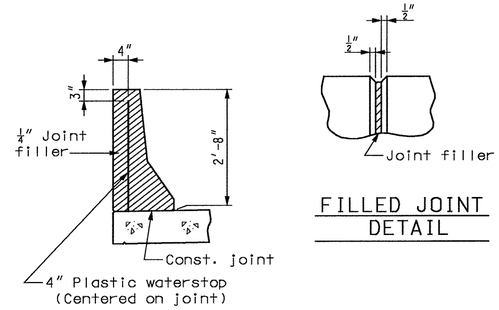
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R101 and R102 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART SECTION SHOWING
RUSTICATION DETAILS



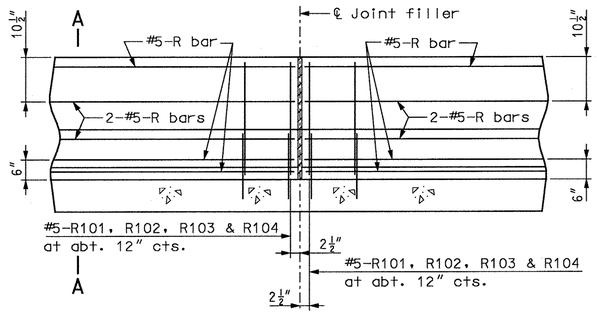
FILLED JOINT
DETAIL

DETAILS OF PLASTIC WATERSTOP

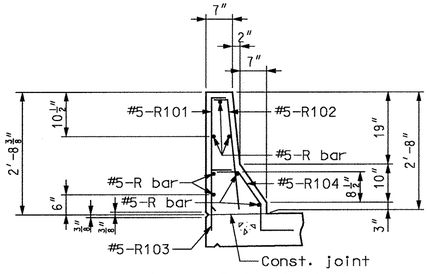
Notes:

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 = 2.29 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 ½" radius or a ⅜" 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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

Longitudinal dimensions are horizontal arc dimensions

The curb shall be cured by application of type 1-d or type 2 liquid membrane - forming compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 will not be permitted.

SAFETY BARRIER CURB

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B72

JOB NO. J4P1707

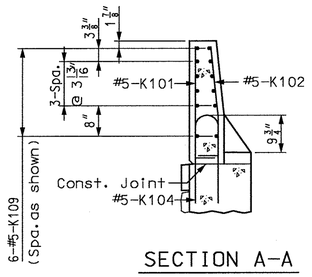
CONTRACT ID

PROJECT NO.

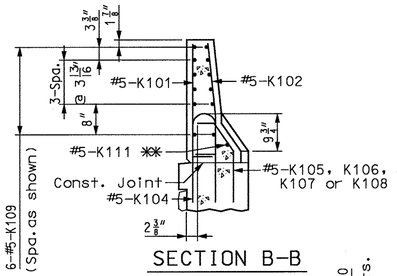
COUNTY CASS

STATE OF MISSOURI THOMAS JOSEPH WESTERMAN NUMBER E-25176 REGISTERED PROFESSIONAL ENGINEER

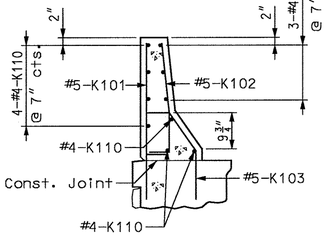
DATE 09-28-2006



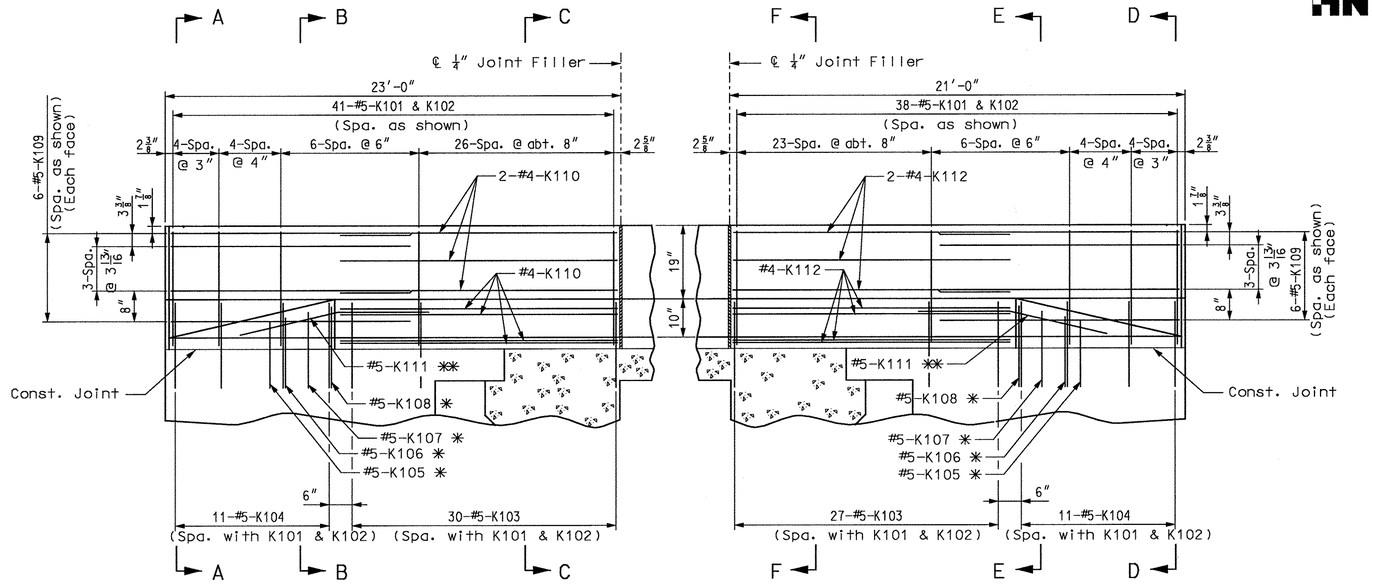
SECTION A-A



SECTION B-B



SECTION C-C

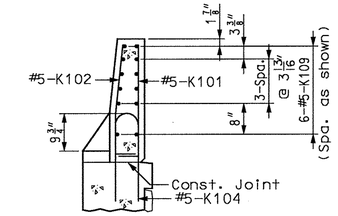


ELEVATION END BENT 1

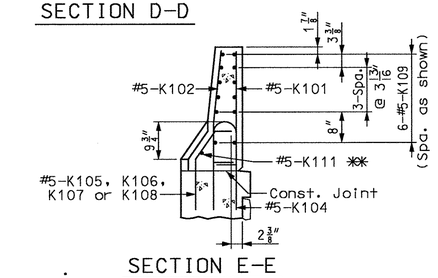
ELEVATION END BENT 4

* Spaced with #5-K104 bars.

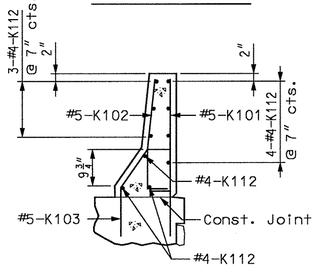
** Fit bar to follow transition face of curb.



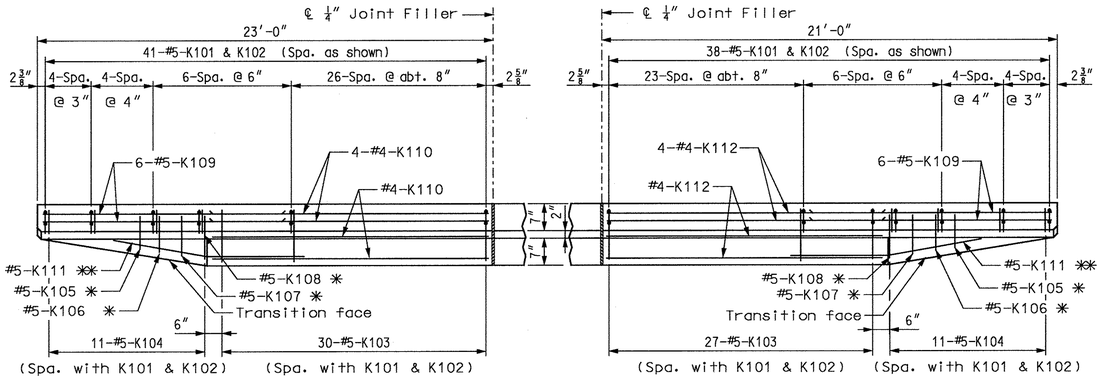
SECTION D-D



SECTION E-E

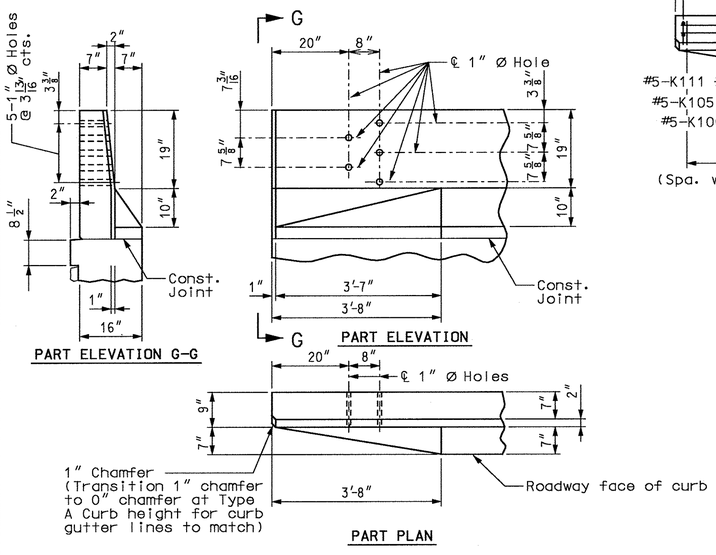


SECTION F-F



PLAN END BENT 1

PLAN END BENT 4



DETAILS OF GUARD RAIL ATTACHMENT

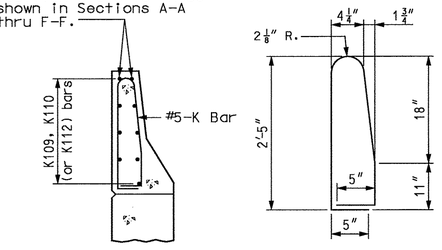
NOTES: Use a minimum lap of 2'-0" between K109 and K110 (or K112) bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown: right barrier curb similar)

The top two K109 and K110 (or K112) bars shall be kept with position close to those shown in Sections A-A thru F-F.



(K103 or K104 thru K108 bars not shown for clarity)

K101-K102 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K101 and K102 bar combination may be furnished as one bar as shown, at the contractor's option.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

USER: TThompson
PLOTTED: 27-SEP-2006 16:01
K:\B4354\Plans\A7353\Drawings\ZPLOT_T31.dgn

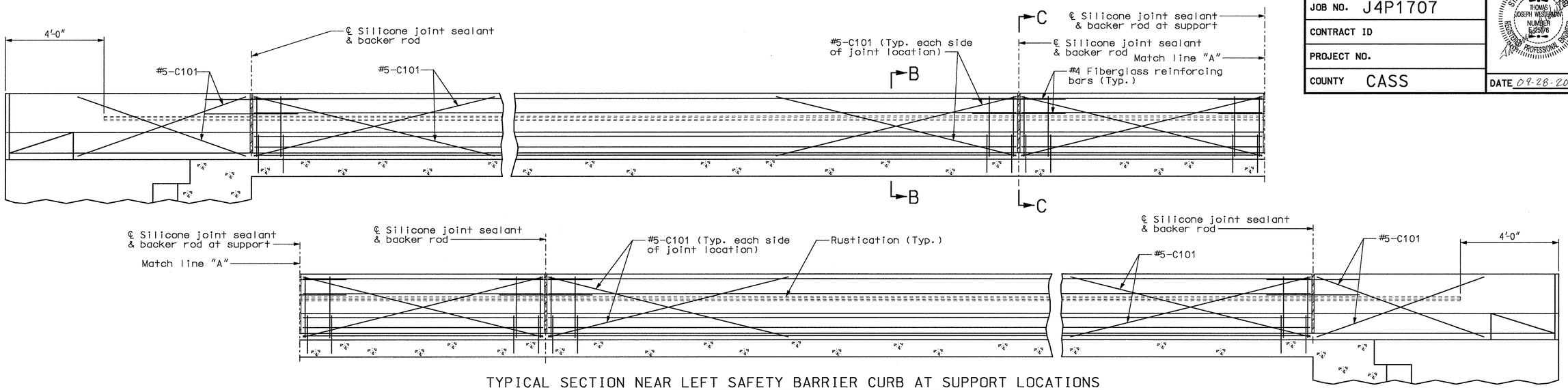
Detailed JULY 2006
Checked JULY 2006

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

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B73
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	07-28-2006		

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER 025076 — REGISTERED PROFESSIONAL ENGINEER



TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS

(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

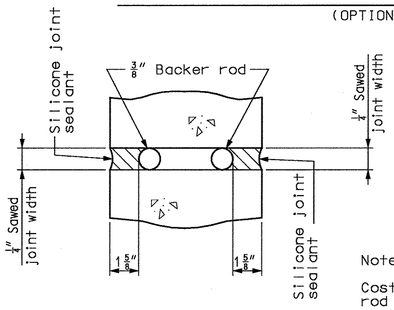
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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. Surface sealing for concrete in accordance with Sec 703 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.

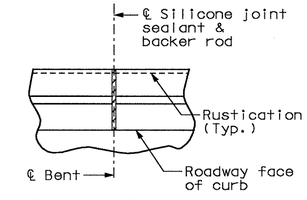
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

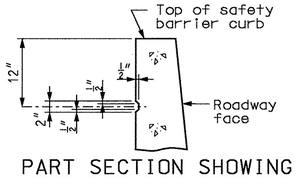
Note:

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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



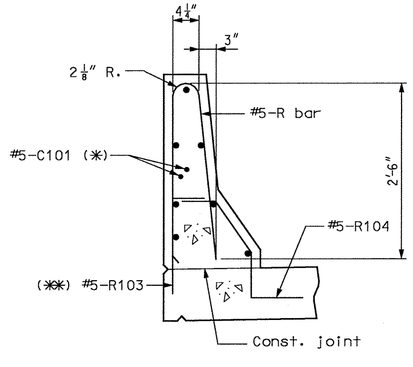
PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

(Use on highway grade separation only)

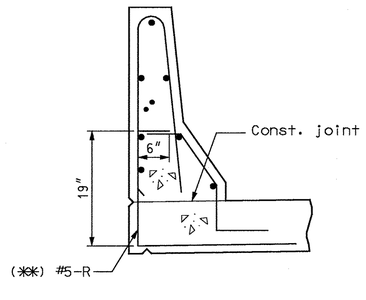


PART SECTION B-B

Notes:

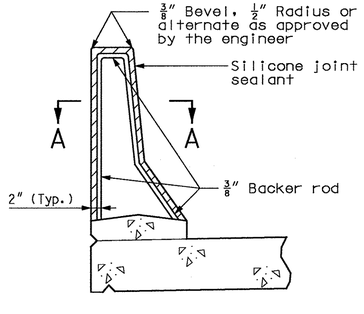
(✳) Each side of joint location.

(✳✳) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.

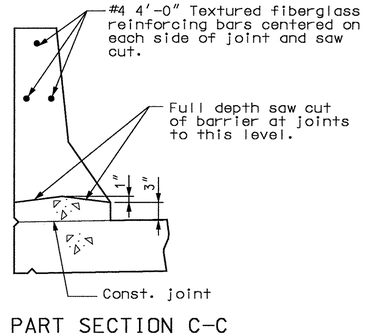


PART SECTION B-B

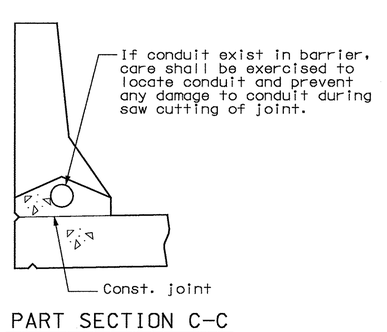
(Optional #5-R bar shown)



SECTION THRU JOINT



PART SECTION C-C



PART SECTION C-C

(Use when conduit required)

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

OPTIONAL SLIP-FORM
BRIDGE SAFETY BARRIER CURB

USER: TThompson
PLOTTED: 27-SEP-2006 16:02 K:\B41354\Plans\A7353\Drawings\ZPLOT_T32.dgn

Detailed JULY 2006
Checked JULY 2006

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B74

JOB NO. J4P1707

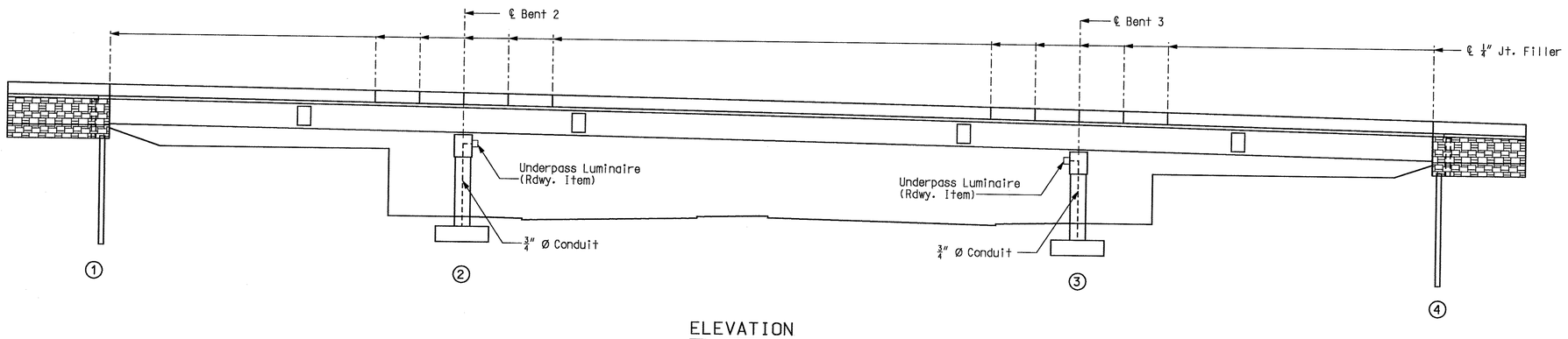
CONTRACT ID

PROJECT NO.

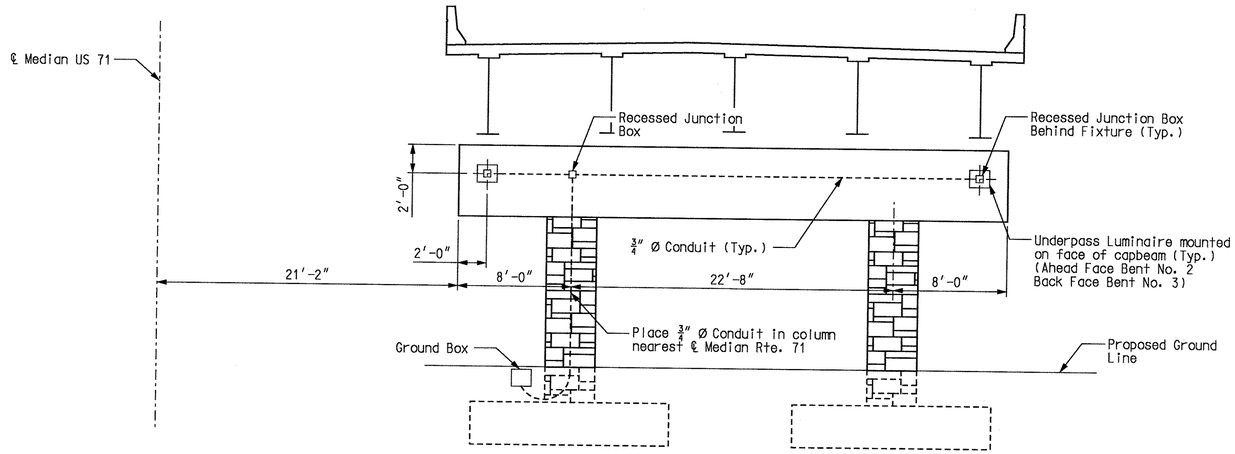
COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25776
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



ELEVATION



TYPICAL SECTION

Notes:

Payment for furnishing and installing Conduit System in substructure, complete-in-place, will be paid for at the contract unit price for Conduit System on Structure, lump sum.

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters' Laboratories, Inc., (UL) label.

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

For details of underdeck lighting and wiring, see electrical plans.

CONDUIT SYSTEM FOR LIGHTING UNDER BRIDGE

A7353

USER: TThompson
PLOTTED: 27-SEP-2006 16:02 K:\B41354\Plans\A7353\Drawings\ZPLOT_T33.dgn

Detailed JULY 2006
Checked JULY 2006

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

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B35

JOB NO. J4P1707

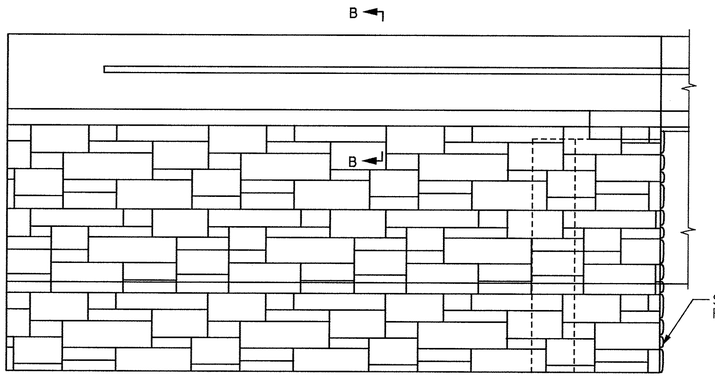
CONTRACT ID

PROJECT NO.

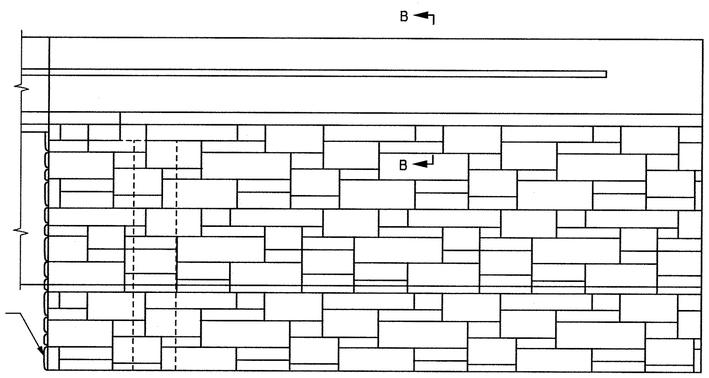
COUNTY CASS

DATE 09-28-2006

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25178 — REGISTERED PROFESSIONAL ENGINEER

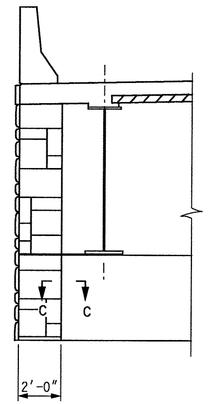


END BENT NO. 1

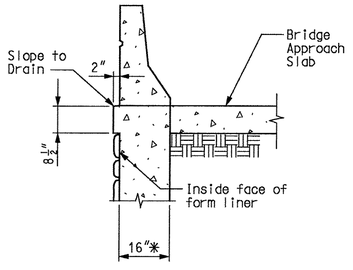


END BENT NO. 4

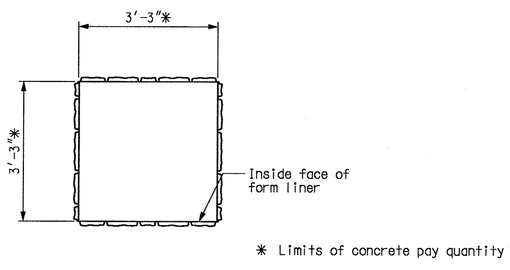
END BENT WING ELEVATION



END BENT NO. 1 PART ELEVATION
(End Bent No. 4 Similar)

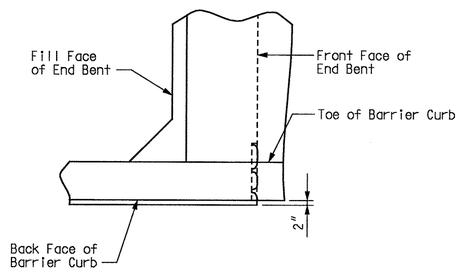


PART SECTION B-B

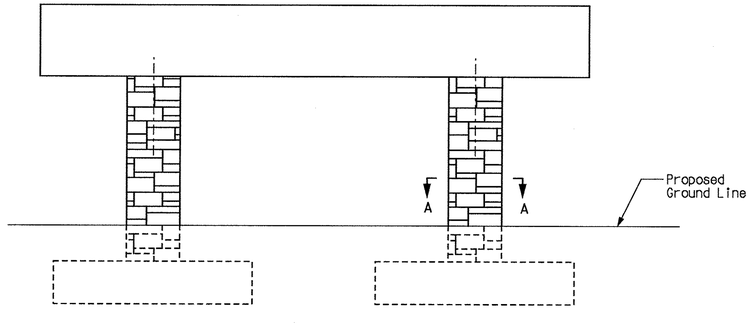


* Limits of concrete pay quantity

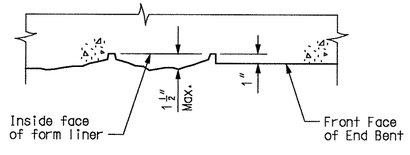
SECTION A-A



PLAN AT END BENTS



INTERMEDIATE BENT ELEVATION



SECTION C-C

Notes:

The cost of form liner will be paid for at the contract unit price for Form Liner per Sq. Yd. The cost of concrete necessary to fill the form lines shall be included in the contract unit price per Sq. Yd. of Form Liner.

Form liner seams shall be oriented away from traffic.

The following is a list of form liner manufacturers and types which may be used. All form liner patterns depth of relief shall vary up to 1½". The height of any single 'stone' shall be 15" maximum.

Scott System, Inc.: Form liner pattern #167 "Ashlar Stone".

Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone".

Dayton Superior/Symons: Form liner pattern #1515 "Ashlar Stone".

Limits of Masonry and Graffiti Protection System at End Bents shall be all surfaces with Form Liner.

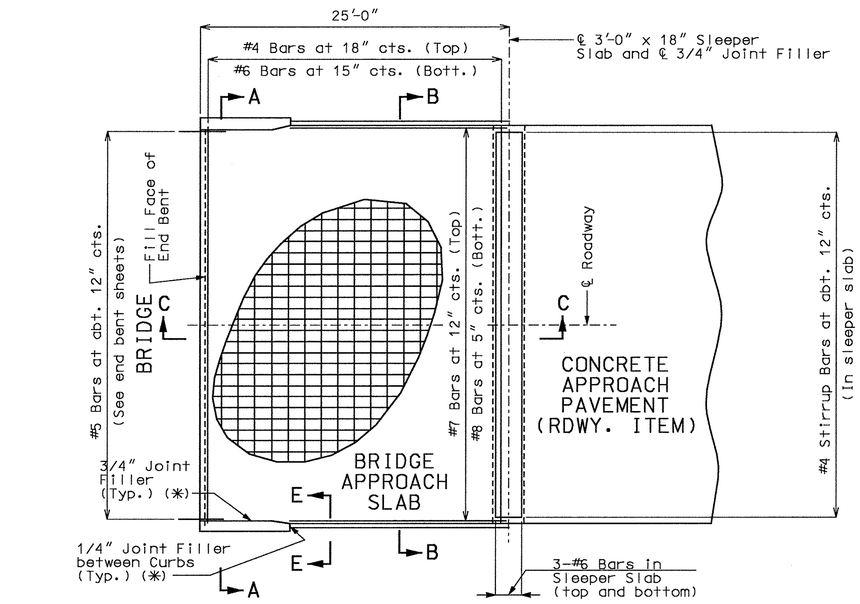
Limits of Masonry and Graffiti Protection System at Intermediate Bents shall be all column surfaces from the top of the footing to the bottom of the capbeam.

FORM LINER DETAILS

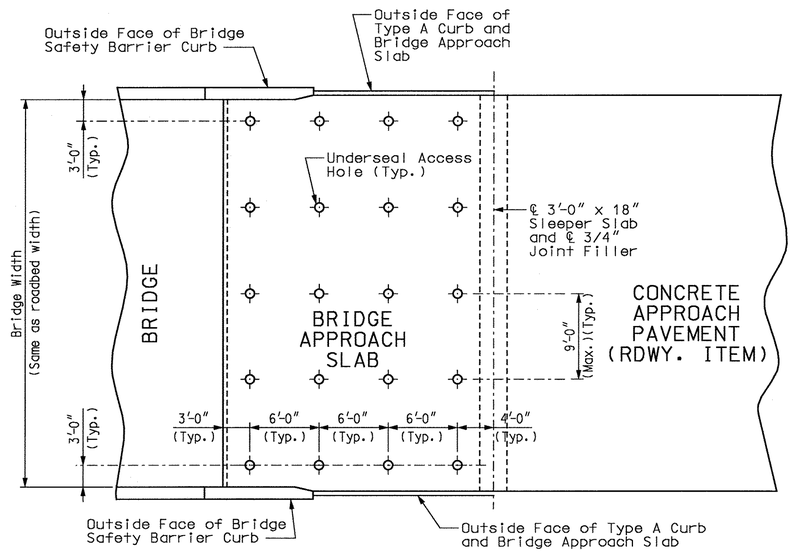
USER: TThompson
PLOTTED: 27-SEP-2006 16:02 K:\B4135A\Plans\A7353\Drawings\ZPLOT_T33A.dgn

Detailed JULY 2006
Checked JULY 2006

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

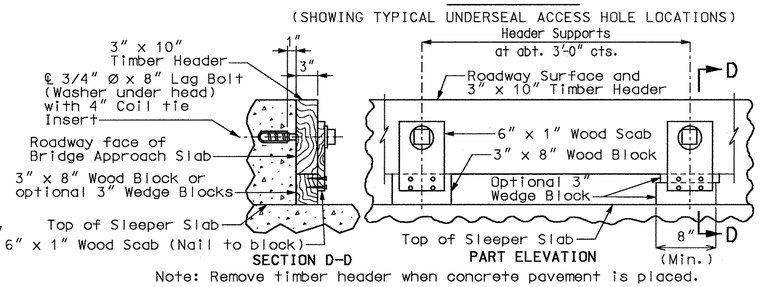


PART PLAN SHOWING REINFORCEMENT



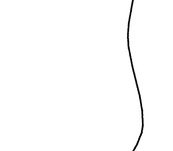
PART PLAN

(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



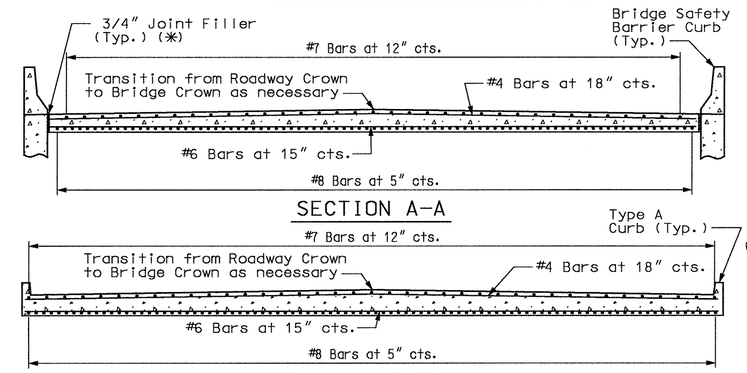
Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER



TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

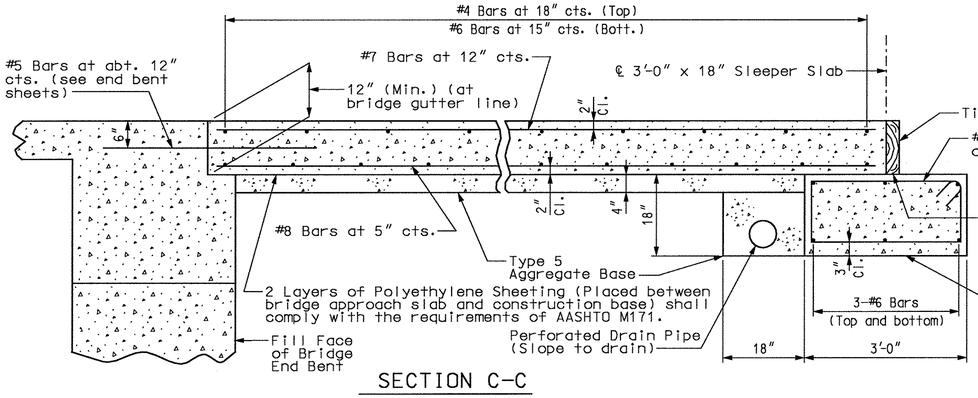
Note:
Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



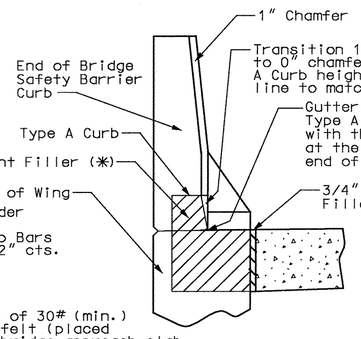
SECTION A-A

SECTION B-B

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

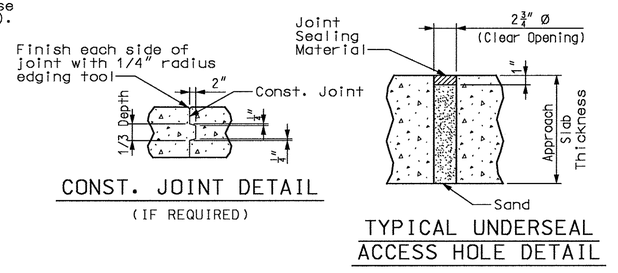


SECTION C-C



SECTION E-E

(BETWEEN CURBS)



CONST. JOINT DETAIL

(IF REQUIRED)

TYPICAL UNDERSEAL ACCESS HOLE DETAIL

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 shall 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 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 Barrier Curb.

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.

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B76

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI — THOMAS JOSEPH WESTERMAN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

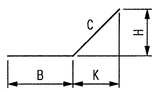
DATE 09-28-2006

BRIDGE APPROACH SLAB

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B77
JOB NO.	J4P1707		
CONTRACT ID			
PROJECT NO.			
COUNTY	CASS		
DATE	09-28-2006		

STATE OF MISSOURI
THOMAS JOSEPH WESTERMANN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER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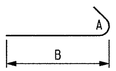
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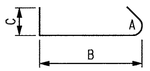
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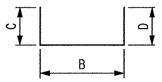
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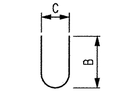
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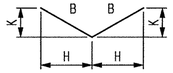
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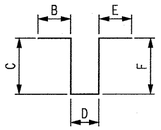
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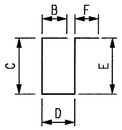
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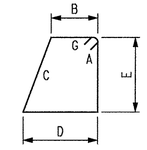
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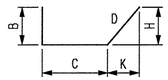
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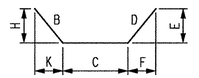
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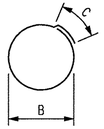
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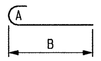
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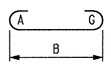
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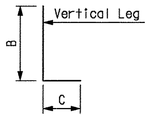
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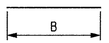
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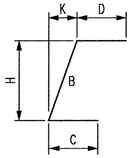
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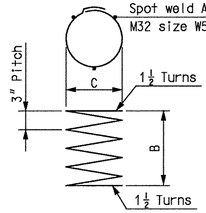

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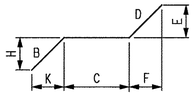
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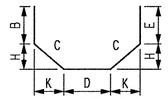
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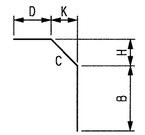
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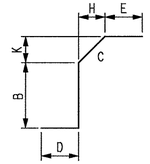
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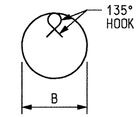

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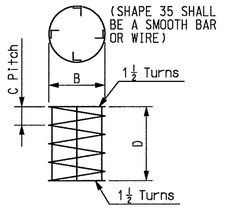

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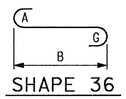
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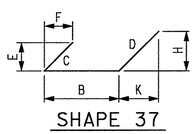
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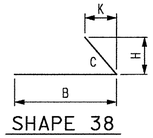
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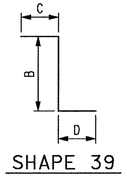
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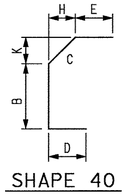
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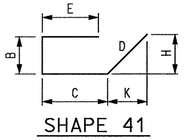
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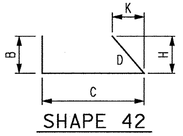
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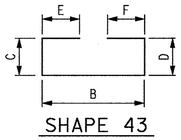
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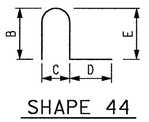
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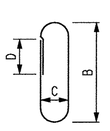
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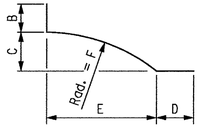

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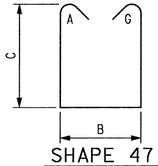
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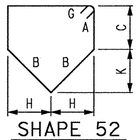
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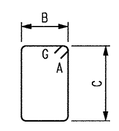
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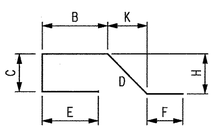
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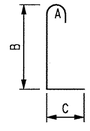
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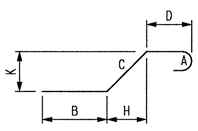
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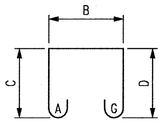
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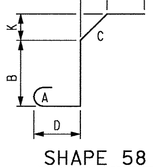
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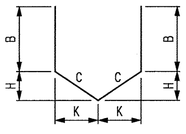
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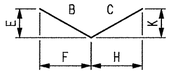
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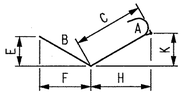
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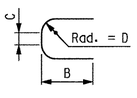

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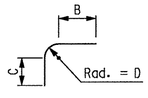

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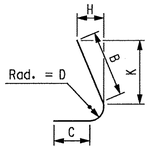

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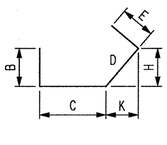
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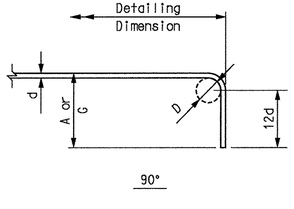
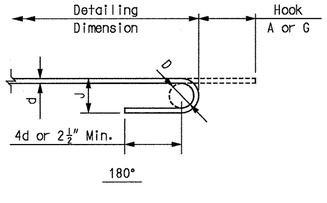
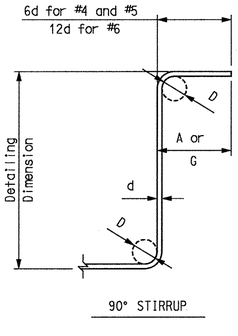
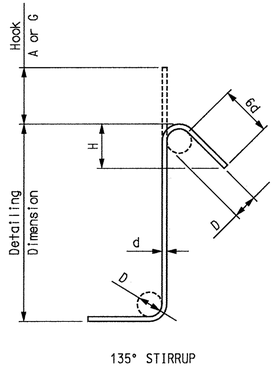








STIRRUP HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		90° Hooks	135° Hooks	
		Hook A or G	Hook A or G	Approx. H
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	8"	4½"

END HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		180° Hooks		90° Hooks
		Hook A or G	J	Hook A or G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¾"	17"	13¼"	22"
#11	12"	19"	14¾"	2'-0"
#14	18¼"	2'-3"	21¾"	2'-7"
#18	2'-0"	3'-0"	2'-4½"	3'-5"

Notes:
All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (Nearest inch)
Payweights are based on actual lengths.
Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.
E = Epoxy coated reinforcement.
S = Stirrup.
X = Bar is included in substructure quantities.
Actual lengths are measured along centerline bar to the nearest inch.
V = Bar dimensions vary in equal increments between dimensions shown on this line and the following line.
No. ea. = Number of bars of each length.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.
Reinforcing steel (Grade 60) fy = 60,000 psi.

BAR BENDING DIAGRAMS

USER: TThompson
PLOTTED: 27-SEP-2006 16:02 K:\B41354\Plans\A7353\Drawings\ZPLOT_T35.dgn

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B78

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-25176
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 1																									
38	6	F100	Beam & Diaph.		23						14″	5′	-0″	14″		9 7/8″		9 7/8″		9 7/8″		9 7/8″	7′	-4″	7′	-4″	419
10	6	F101	Diaphragm		19						5′-3″	2′	-6″											7′	-9″	7′	-8″	115
30	6	H100	Beam & Diaph.		20						40′-4″													40′	-4″	40′	-4″	1,817
38	5	H101	App. Seat	E	20						2′-6″													2′	-6″	2′	-6″	99
12	8	H102	Wingwall		20						22′-6″													22′	-6″	22′	-6″	721
4	8	H103	Wingwall	E	20						22′-6″													22′	-6″	22′	-6″	240
76	9	H104	Wingwall		20						22′-6″													22′	-6″	22′	-6″	5,814
4	6	H105	Beam		20						11′-6″													11′	-6″	11′	-6″	69
34	5	U100	Beam & Diaph.		5	S					2′-6″	5′	-3″	5′	-3″									13′	-0″	12′	-9″	452
6	4	U101	Beam		53	S					2′-6″	2′	-7″											10′	-11″	10′	-8″	43
9	4	U102	Beam		5	S					2′-6″	2′	-7″	2′	-7″									7′	-8″	7′	-6″	45
40	5	U103	Diaphragm	E	21	S					2′-1″	5′	-8″	5′	-8″							2′-1″	1/2″	13′	-5″	13′	-2″	549
34	6	U104	Diaphragm		19	S					4′-9″	2′	-6″											7′	-3″	7′	-2″	366
60	6	U105	Diaphragm	E	38	S					4′-0″	6′	-0″									6′-0″	1 1/2″	10′	-0″	10′	-0″	901
18	4	U106	Beam		5	S					2′-6″	14″		14″										4′	-10″	4′	-8″	56
12	5	V100	Beam & Diaph.		20						5′-3″													5′	-3″	5′	-3″	66
15	6	V101	Diaphragm		20						4′-10″													4′	-10″	4′	-10″	109
42	6	V102	Wingwall		20						8′-7″													8′	-7″	8′	-7″	541
42	6	V103	Wingwall		20						8′-6″													8′	-6″	8′	-6″	536
			END BENT 4																									
38	6	F400	Beam & Diaph.		23						14″	5′	-0″	14″		9 7/8″		9 7/8″		9 7/8″		9 7/8″	7′	-4″	7′	-4″	419
10	6	F401	Diaphragm		19						5′-3″	2′	-6″											7′	-9″	7′	-8″	115
30	6	H400	Beam & Diaph.		20						40′-4″													40′	-4″	40′	-4″	1,817
38	5	H401	App. Seat	E	20						2′-6″													2′	-6″	2′	-6″	99
12	8	H402	Wingwall		20						20′-6″													20′	-6″	20′	-6″	657
6	8	H403	Wingwall *	E	20						20′-6″													20′	-6″	20′	-6″	328
76	9	H404	Wingwall		20						20′-6″													20′	-6″	20′	-6″	5,297
4	6	H405	Beam		20						11′-6″													11′	-6″	11′	-6″	69
34	5	U400	Beam & Diaph.		5	S					2′-6″	5′	-3″	5′	-3″									13′	-0″	12′	-9″	452
6	4	U401	Beam		53	S					2′-6″	2′	-7″											10′	-11″	10′	-8″	43
9	4	U402	Beam		5	S					2′-6″	2′	-7″	2′	-7″									7′	-8″	7′	-6″	45
40	5	U403	Diaphragm	E	21	S					2′-1″	5′	-8″	5′	-8″							2′-1″	1/2″	13′	-5″	13′	-2″	549
34	6	U404	Diaphragm		19	S					4′-9″	2′	-6″											7′	-3″	7′	-2″	366
60	6	U405	Diaphragm	E	2	S					4′-0″	6′	-0″									6′-0″	1 1/2″	10′	-0″	10′	-0″	901
18	4	U406	Beam		5	S					2′-6″	14″		14″										4′	-10″	4′	-8″	56
12	5	V400	Beam & Diaph.		20						5′-3″													5′	-3″	5′	-3″	66
15	6	V401	Diaphragm		20						4′-10″													4′	-10″	4′	-10″	109
38	6	V402	Wingwall		20						8′-7″													8′	-7″	8′	-7″	490
38	6	V403	Wingwall		20						8′-6″													8′	-6″	8′	-6″	485

* Two additional #8-H403 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			BENT 2																									
10	W	5W200	Anchor Bolt Wells		22		X			2′	-1″	9 1/8″												33′	-2″	33′	-2″	55
20	8	D200	Footing		18		X			11′	-6″													13′	-4″	13′	-4″	712
24	8	D201	Footing		18		X			9′	-6″													11′	-4″	11′	-4″	726
9	10	H200	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	1,485
8	6	H201	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	461
8	10	H202	Beam		18		X			38′	-4″													41′	-2″	41′	-2″	1,417
12	6	H203	Beam		5	S	X			3′	-7″	22″		22″										7′	-3″	7′	-0″	126
12	6	H204	Beam		20		X			2′	-7″													2′	-7″	2′	-7″	47
8	6	H205	Beam		20		X			3′	-1″													3′	-1″	3′	-1″	37
32	4	P200	Column		53	S	X			2′	-11″	2′	-11″											12′	-5″	12′	-2″	260
86	5	U200	Beam		53	S	X			2′	-6″	4′	-8″											15′	-3″	15′	-0″	1,345
24	5	U201	Beam		5	S	X			2′	-6″	4′	-8″	4′	-8″									11′	-10″	11′	-7″	290
32	4	U202	Beam		5	S	X			3′	-8″	12″		12″										5′	-8″	5′	-6″	118
24	10	V200	Column		36		X			22′	-7″													25′	-5″	25′	-5″	2,625
			BENT 3																									
10	W	5W300	Anchor Bolt Wells		22		X			2′	-1″	9 1/8″												33′	-2″	33′	-2″	55
20	8	D300	Footing		18		X			11′	-6″													13′	-4″	13′	-4″	712
24	8	D301	Footing		18		X			9′	-6″													11′	-4″	11′	-4″	726
9	10	H300	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	1,485
8	6	H301	Beam		20		X			38′	-4″													38′	-4″	38′	-4″	461
8	10	H302	Beam		18		X			38′	-4″													41′	-2″	41′	-2″	1,417
12	6	H303	Beam		5	S	X			3′	-7″	22″		22″										7′	-3″	7′	-0″	126
12	6	H304	Beam		20		X			2′	-7″													2′	-7″	2′	-7″	47
8	6	H305	Beam		20		X			3′	-1″													3′	-1″	3′	-1″	37
30	4	P300	Column		53	S	X			2′	-11″	2′	-11″											12′	-5″	12′	-2″	244
86	5	U300	Beam		53	S	X			2′	-6″	4′	-8″											15′	-3″	15′	-0″	1,345
24	5	U301	Beam		5	S	X			2′	-6″	4′	-8″	4′	-8″									11′	-10″	11′	-7″	290
32	4	U302	Beam		5	S	X			3′	-8″	12″		12″										5′	-8″	5′	-6″	118
24	10	V300	Column		36		X			21′	-4″													24′	-2″	24′	-2″	2,496

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

Detailed JULY 2006
Checked JULY 2006

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

A7353

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	879

JOB NO. J4P1707

CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI — THOMAS JOSEPH WESTERMANN — NUMBER E-25176 — REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SLAB																									
610		7S100	Top Trans ✳	E	20					40′	-4″													40′	-4″	40′	-4″	50,289
198		6S101	Top Long	E	20					54′	-0″													54′	-0″	54′	-0″	16,059
130		6S102	Top Long over Bent ✳	E	20					20′	-0″													20′	-0″	20′	-0″	3,905
128		6S103	Top Long over Bent	E	20					53′	-10″													53′	-10″	53′	-10″	10,350
48		5S104	Bottom Long	E	20					53′	-0″													53′	-0″	53′	-0″	2,653
608		5S105	Bottom Trans	E	20					3′	-0″													3′	-0″	3′	-0″	1,902
			BARRIER CURB																									
64		5C101	Slip Form B.C.	E	20					10′	-0″													10′	-0″	10′	-0″	668
158		5K101	B.C. at EB	E	19	S				2′	-5″	5	1/8″											2′	-11″	2′	-9″	453
158		5K102	B.C. at EB	E	14	S				5	1/8″	11	1/8″	18″						2″		17	7/8″	2′	-11″	2′	-9″	453
114		5K103	B.C. at EB	E	40	S				5	1/8″	12″		3′	-0″	2′	-2 1/8″			9	7/8″	6	3/4″	6′	-8″	6′	-4″	753
44		5K104	B.C. at EB	E	7					3′	-0″	6″												6′	-3″	6′	-3″	287
4		5K105	B.C. at EB	E	25	S				2′	-6 1/2″	6	3/4″	4	3/8″					5	1/2″	4″		3′	-6″	3′	-4″	14
4		5K106	B.C. at EB	E	25	S				2′	-5 1/2″	7	1/8″	4	3/8″					6	1/2″	4	1/2″	3′	-6″	3′	-5″	14
4		5K107	B.C. at EB	E	25	S				2′	-4 1/8″	9	5/8″	4	3/8″					7	7/8″	5	1/2″	3′	-7″	3′	-5″	14
4		5K108	B.C. at EB	E	25	S				2′	-2 3/4″	11	1/4″	4	3/8″					9	1/4″	6	1/2″	3′	-7″	3′	-5″	14
48		5K109	B.C. at EB	E	20					5′	-7″													5′	-7″	5′	-7″	280
22		4K110	B.C. at EB1 ✳	E	20					19′	-0″													19′	-0″	19′	-0″	279
4		5K111	B.C. at EB	E	8					2′	-2 1/8″									2′	-2″	2	3/8″	4′	-5″	4′	-5″	18
20		4K112	B.C. at EB4	E	20					17′	-0″													17′	-0″	17′	-0″	227
600		5R101	Barrier Curb	E	19	S				2′	-6″	3	1/2″											2′	-10″	2′	-8″	1,669
600		5R102	Barrier Curb	E	2	S				3	1/2″	2′	-6 1/8″							2′	-6″	3″		2′	-10″	2′	-10″	1,773
600		5R103	Barrier Curb	E	19	S				17″		6″												23″		22″		1,147
600		5R104	Barrier Curb	E	27	S				7″		11	1/4″	12″		6″				6	3/8″	9	1/4″	3′	-1″	2′	-9″	1,721
114		5R105	Barrier Curb ✳	E	20					9′	-7″													9′	-7″	9′	-7″	1,139
28		5R106	Barrier Curb	E	20					59′	-7″													59′	-7″	59′	-7″	1,740
28		5R107	Barrier Curb	E	20					50′	-9″													50′	-9″	50′	-9″	1,482

✳ Two additional #7-S100, #6-S102, #4-K110, and #5-R105 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTALS																									
	W5																											110
	4																											1,028
	4			E																								506
	5																											4,306
	5			E																								19,490
	6																											9,184
	6			E																								32,116
	7			E																								50,289
	8																											4,254
	8			E																								569
	9																											11,111
	10																											10,925
			SLAB ON STEEL																									
	4																											288
	5																											1,036
	5			E																								5,851
	6																											7,842
	6			E																								32,116
	7			E																								50,289
	8																											1,378
	8			E																								569
	9																											11,111
			REINFORCING STEEL (BRIDGES)																									
	W5																											110
	4																											740
	5																											3,270
	6																											1,342
	8																											2,876
	10																											10,925
			BARRIER CURB																									
	4			E																								506
	5			E																								12,971
			SLIP FORM OPTION																									
	5			E																								668

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

Detailed JULY 2006
Checked JULY 2006

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

A7353

USER: TThompson
PLOTTED: 27-SEP-2006 16:03
K:\B41354\Plans\A7353\Drawings\ZPLOT_T37.dgn

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	B39

JOB NO. J4P1707

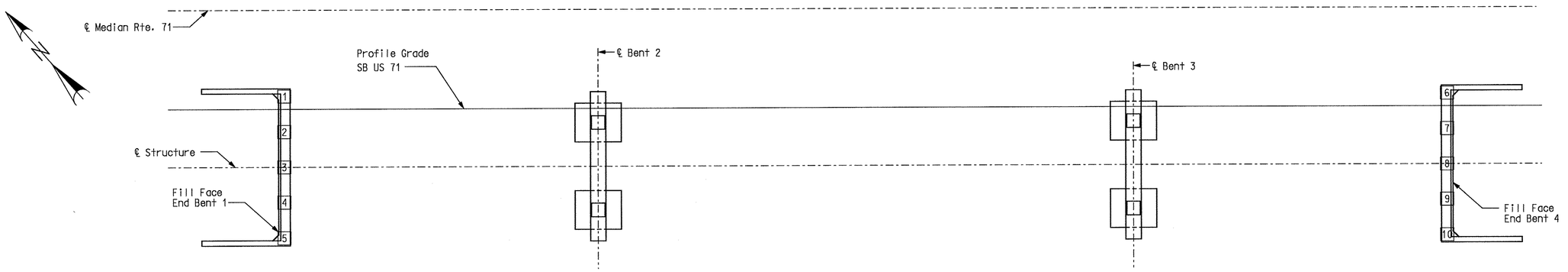
CONTRACT ID

PROJECT NO.

COUNTY CASS

STATE OF MISSOURI
THOMAS JOSEPH WESTERMAN
NUMBER E-25976
REGISTERED PROFESSIONAL ENGINEER

DATE 09-28-2006



END BENT 1 BENT 2 BENT 3 END BENT 4

PART PLAN SHOWING PILE NUMBERING FOR RECORDING "AS BUILT PILE" DATA

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent 1
1			
2			
3			
4			
5			
			End Bent 4
6			
7			
8			
9			
10			

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.

AS-BUILT PILE DATA

A7353

USER: TThompson
PLOTTED: 27-SEP-2006 16:03 K:\B41354\Plans\A7353\Drawings\ZPLOT_T39.dgn

Detailed JULY 2006
Checked JULY 2006

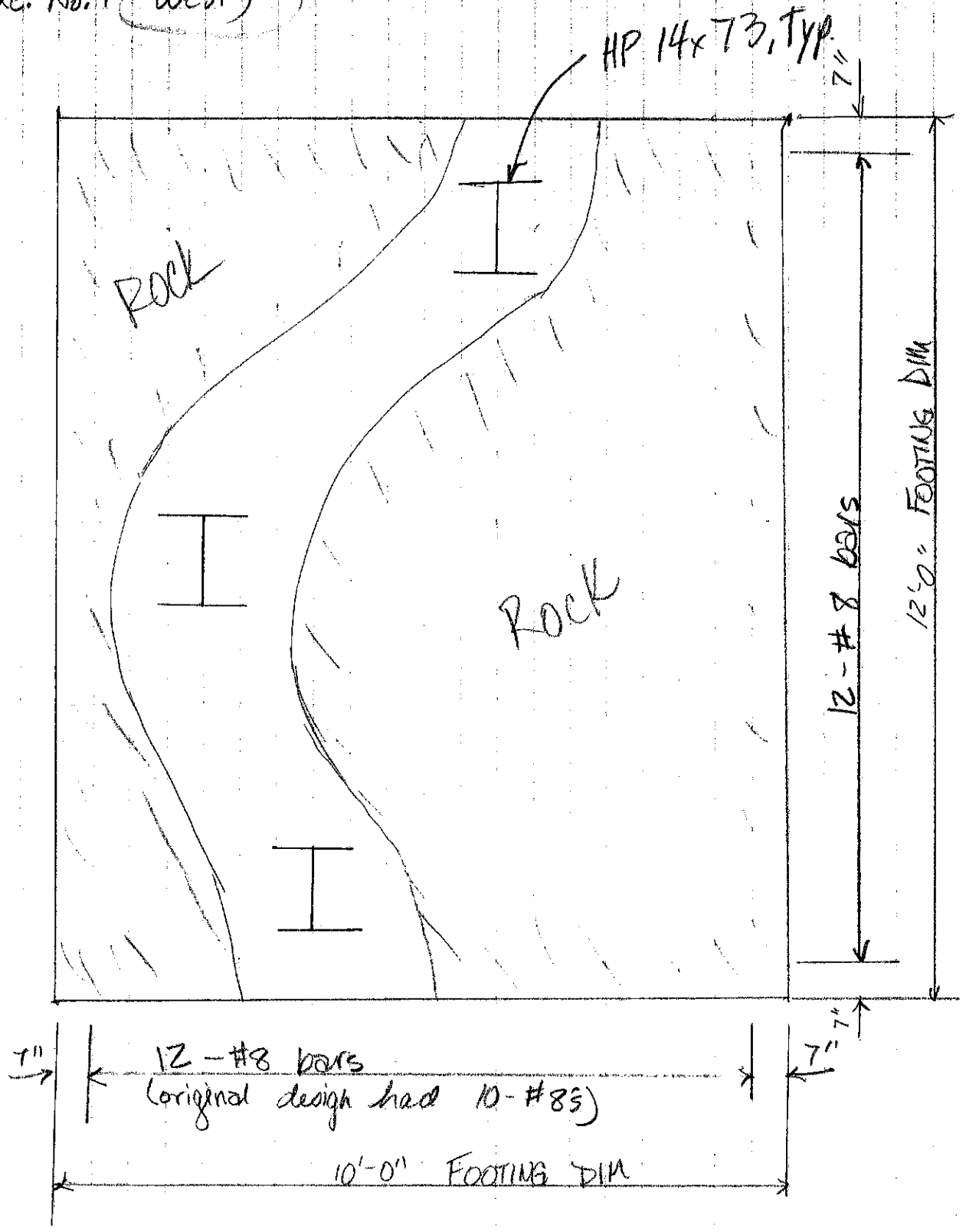
Note: This drawing is not to scale. Follow Dimensions.

For Key 11 over Key	Job no.	Sheet no.
Made by	Checked by	Backchecked by
Date	Date	Date

HNTB

As-Built Footings

A7353 (Bent 2 (Exc. No. 1 - West))

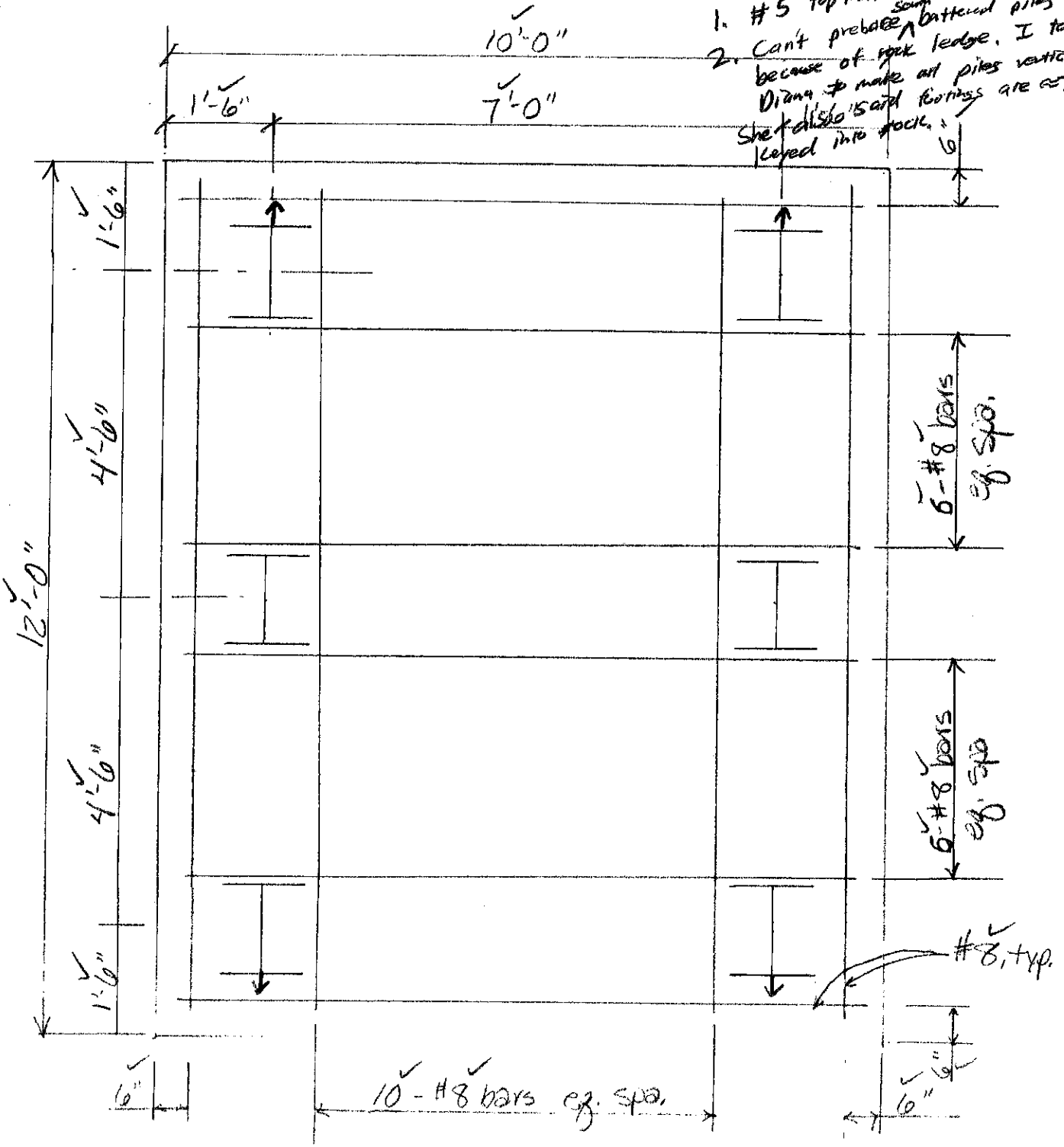


ME101-1204

[illegible]	Job No. 11227	Sheet No.	
Made by GDH	Checked by FPB	Backchecked by	
Date 4-10-09	Date 4/6/09	Date	

Conversation w/ Diana 4/7/09

1. #5 top mat bars are straight
2. Can't prebatter soup batttered piles because of rock ledge. I told Diana to make all piles vertical. She said footings are ≈75% keyed into rock.



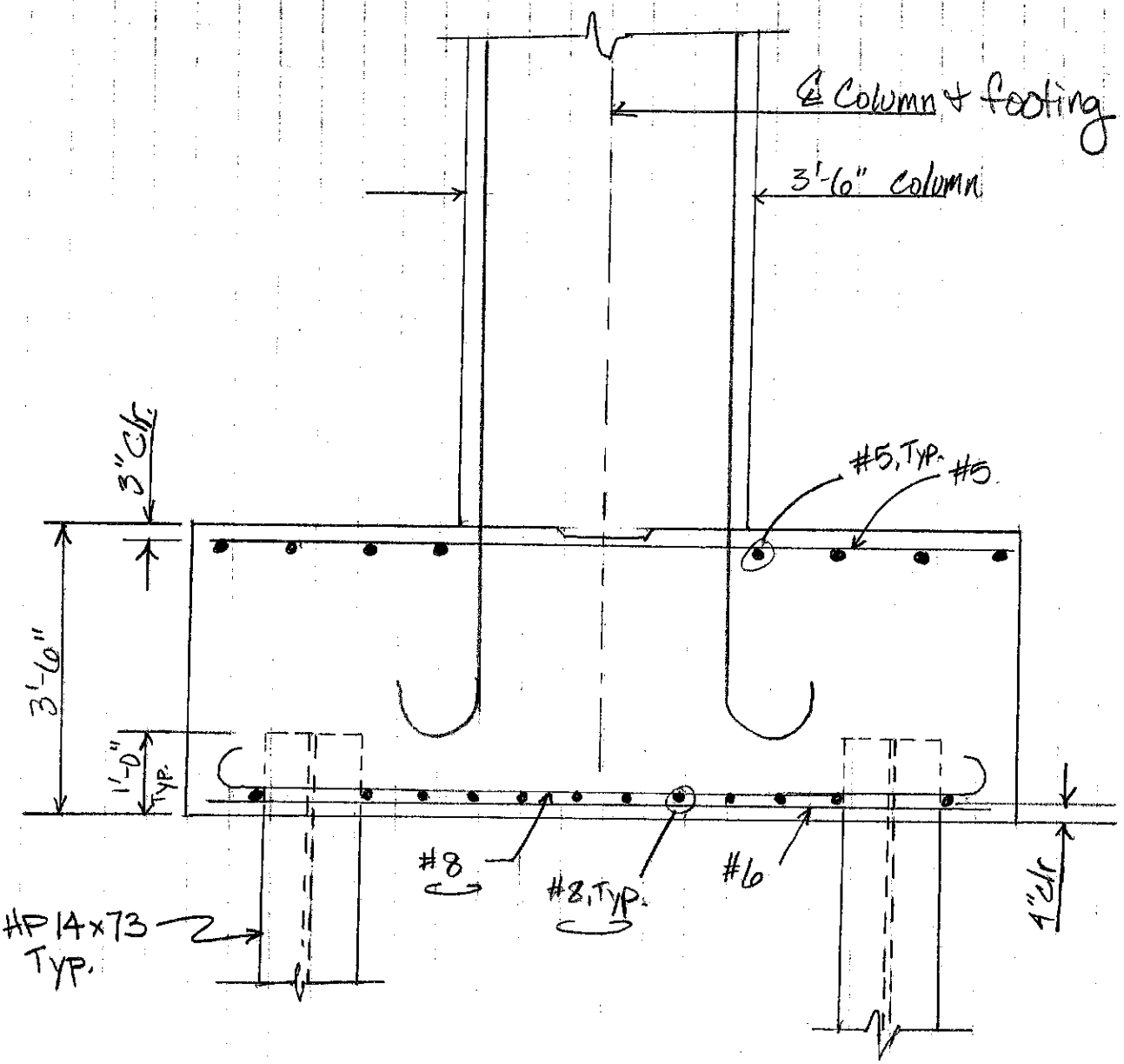
↓ denotes 2:12 batter

Bottom reinforcing shown, top reinforcing shall be #5 @ 12" each direction

Bent 3

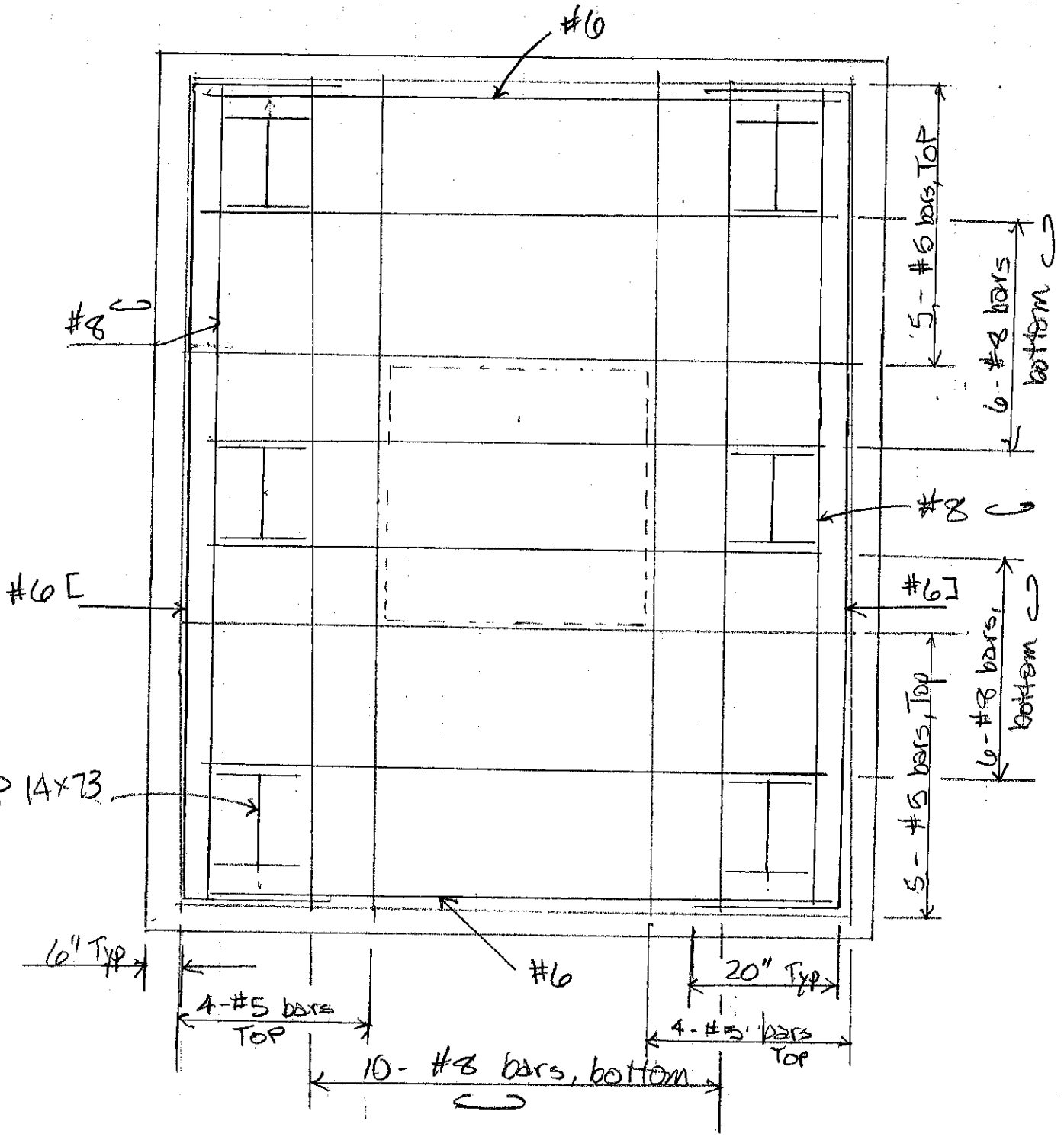
For	Kyle II over Kyle I	Job no. 41054	Sheet no.
Made by	GDH	Checked by	Backchecked by
Date	4-8-09	Date	Date

HNTB



FOOTING ELEV.
BENT 3

For Rte 11 over Rte 7	Job no. 41554	Sheet no.	HNTB
Made by GDH	Checked by	Backchecked by	
Date 4-8-09	Date	Date	



Footing ~~Reinforcing~~ Bent 3

HP14X73, 17'
Design Bearing (tons) = 80
Ram Weight (lbs) = 2830

J4P1707

SB US 71 Br. A7353

Pile No.	Length (feet)	Heat #	Splice (feet)	Heat #	Cut-off (feet)	In Place (feet)	Penetration/10 blows (inches)	Stroke (feet)
Bent 2								
1	17.16666667	30396420	16.25	30396420	14.33333333	19.08333333	0.625	9
2	17.5	30396400	14.83333333	30396480	13.08333333	19.25	0.375	8
3	16.5	30396480	16	30396480	14.83333333	17.66666667	0.375	8
Bent 3								
1	16.75	30396480	13.41666667	275167	11.16666667	19	0.5	8
2	16.41666667	30396480	16.41666667	30396350	16	16.83333333	0.375	8
3	18.58333333	30396420	0	-	0	18.58333333	0.25	7
4	16.16666667	30396480	15.75	30396400	10.58333333	21.33333333	0.5	8
5	16.41666667	30396420	16.58333333	30396480	13.41666667	19.58333333	0.25	8
6	16.25	30396480	16.33333333	30396350	13.08333333	19.5	0.5	8
7	16.41666667	30396350	17.16666667	30396400	15.75	17.83333333	0.375	8
8	17.08333333	30396420	11.25	30396420	11.25	17.08333333	0.375	8
9	16.33333333	30396400	14.33333333	30396420	6.25	24.41666667	0.5	8
10	16.58333333	30396420	13.83333333	275167	13.41666667	17	0.25	8
11	16.91666667	30396400	13.08333333	30396480	8.75	21.25	0.25	7
12	18.41666667	30396420	8.75	30396480	6.833333333	20.33333333	0.375	9
					Total	288.75		

153.76 grid

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FINAL PLANS HNTB

(83'-139'-83') Continuous Composite Welded Plate Girder Spans

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	169

JOB NO. J4P1707

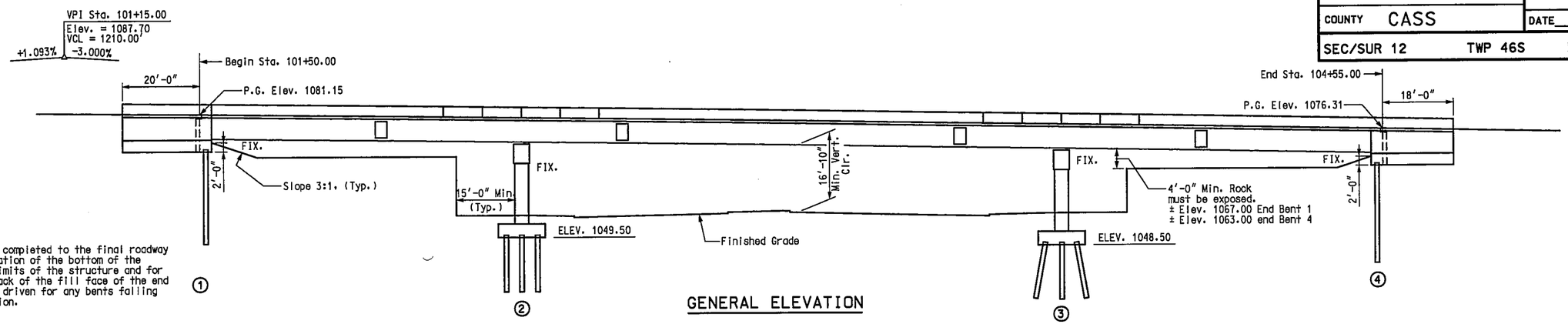
CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

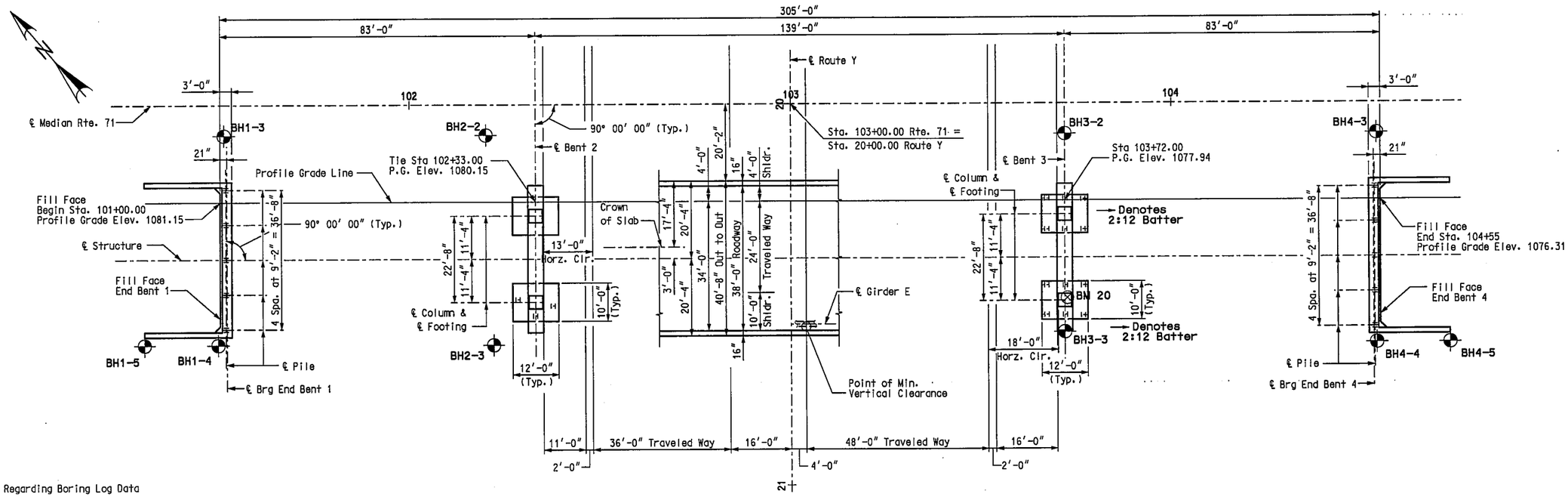
DATE

SEC/SUR 12 TWP 46S RGE 33W



GENERAL ELEVATION

Note:
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.



PLAN

Notes:
Indicates location of borings.
All stations along ℄ Rte. 71.
All dimensions are horizontal.

Benchmarks

TBM#17:
Found chiseled sq. cut on the South corner of the West headwall of a 24" RCP pipe under the NE Outer Road at the NW corner of 163rd Street and the NE Outer Road of U.S. Hwy. No. 71. Sta. 14+20.88, Route Y 44.56' Rt. Elev. 1055.870

TBM#20:
Set sq. cut on SE corner of the SW abutment on SB 71 bridge. Sta. 103+72.67, US 71 51.11' Rt. Elev. 1076.65

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan. Boring data is shown on Sheet Nos. 3 thru 5. 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 price, 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.

BRIDGE: ROUTE 71 OVER ROUTE Y

STATE ROAD ROUTE 71
IN KANSAS CITY

PROJECT NO. STA. 101+50.00
JOB NO. J4P1707 RTE. 71 (SB)
CASS COUNTY

STD. 609.00
STD. 617.10
STD. 706.35
A7353

Designed MAY 2006
Detailed JULY 2006
Checked JULY 2006

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

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

GENERAL NOTES:

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

Design Loading:
HS20 Modified
Military 24,000# Tandem Axle
35#/Sq. Ft. Future Wearing Surface
Earth 120#/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress - Case I

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 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 Carbon Steel (ASTM A709 Grade 36)	fy = 36,000 psi
Structural Steel (ASTM A709 Grade 50)	fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36)	fb = 9,000 psi

For precast prestressed panel stresses, see Sheet No. 26.

Fabricated Steel Connections:
Field connections shall be made with $\frac{7}{8}$" diameter high strength bolts and $\frac{15}{16}$" diameter holes, except as noted.

Structural Steel:
Fabricated structural steel shall be ASTM A709, Grade 50, except as noted. Diaphragms and intermediate stiffeners shall be ASTM Grade 36.

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 $1\frac{1}{2}$", unless otherwise shown.

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearing by at least $\frac{1}{2}$".

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)". 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)".

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.

Miscellaneous:
A minimum vertical clearance of 14'-6" and horizontal construction clearance barrier protection shall be maintained during construction.

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.

The cost of form liner will be paid for at the contract unit price for Form Liner per sq. yd. The cost of concrete necessary to fill the form liners will be included in the contract unit price per sq. yd. of Form Liner. Concrete pay quantities are calculated to the inside face of form liners.

Low-Cracking High Performance Concrete (LC-HPC) will be in accordance with the Job Special Provisions.

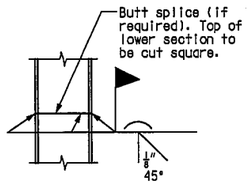
The bridge deck shall be diamond ground in accordance with Sec. 703 and the Low-Cracking High Performance Concrete Job Special Provision. The area of diamond grinding will be measured to the nearest square yard with the longitudinal dimensions as shown on the plan of slab and transversely from 2 feet inside the roadway face of curb to 2 feet inside the roadway face of curb. Diamond grind will not be performed on the bridge approach slab.

Concrete Coatings:
Concrete and masonry protective coating shall be applied to the End Bents and Intermediate Bents as shown on the plans and in accordance with Sec. 711.

Sacrificial graffiti protective coating shall be applied to the End Bents and Intermdiate Bents as shown on the plans and in accordance with Sec. 711.

Neoprene Bearings:
Plain and Laminated Neoprene Bearing pads shall be in accordance with Sec. 716. Bearings shall be 60 durometer neoprene pads.

Abbreviations:
F.F. denotes Far Face
N.F. denotes Near Face
E.F. denotes Each Face

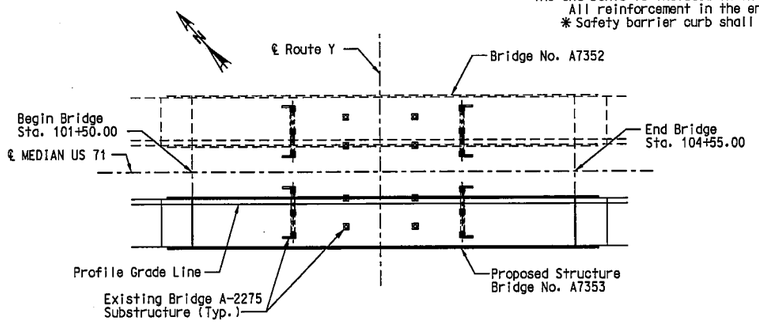


DETAIL OF STEEL PILE SPLICE

FINAL QUANTITIES

	Item		Substr.	Superstr.	Total
	Class 1 Excavation - Line No. 2650	cu. yard	150	-	150
	Class 1 Excavation in Rock - Line No. 2660	cu. yard	120	-	120
	Removal of Bridge (A-2275 Southbound) - Line No. 2670	lump sum	-	-	1
	Bridge Approach Slab (Bridge) - Line No. 2680	sq. yard	-	214	214
	Structural Steel Piles (14in.) - Line No. 2690	linear foot	526	-	526
	Pre-Bore for Piling - Line No. 2700	linear foot	215	-	215
	Pile Point Reinforcement - Line No. 2710	each	25	-	25
	Diamond Grinding - Line No. 2720	sq. yard	-	0	0
	Class B Concrete (Substructure) - Line No. 2730	cu. yard	212.8	-	212.8
*	Safety Barrier Curb - Line No. 2740	linear foot	-	686	686
	Form Liners - Line No. 2750	sq. yard	182	-	182
	Slab on Steel (LC-HPC) - Line No. 2760	sq. yard	-	0	0
	Reinforcing Steel (Bridges) - Line No. 2770	pound	19,260	-	19,260
	Conduit System on Structure - Line No. 2780	lump sum	-	-	1
	Concrete and Masonry Protection System - Line No. 2790	lump sum	-	-	1
	Sacrificial Graffiti Protection System - Line No. 2800	lump sum	-	-	1
	Fabricated Structural Carbon Steel (Plate Girder) - Line No. 2810	pound	-	19,110	19,110
	Fab. Str. Low Alloy Steel (Plate Girder) A709, Grade 50 - Line No. 2820	pound	-	356,640	356,640
	Slab Drain - Line No. 2830	each	-	20	20
	Intermediate Field Coat (System G) - Line No. 2840	sq. foot	-	24,800	24,800
	Finish Field Coat (System G) - Line No. 2850	sq. foot	-	4,700	4,700
	Vertical Drain at End Bents - Line No. 2860	each	-	-	2
	Plain Neoprene Bearing Pad - Line No. 2870	each	-	-	10
	Laminated Neoprene Bearing Pad Assembly - Line No. 2880	each	-	-	10
	Slab on Steel (B-2 Concrete) - Line No. 5036	sq. yard	-	1,374	1,374
	Prebore for piling, Bents 2 & 3 - Line No. 5018	linear foot	155	-	155
	Remobilization for pile hammer - Line No. 5019	lump sum	1	-	1

Notes:
All concrete between the upper and lower construction joints in the end bents is included in the Quantities for Slab on Steel.
All reinforcement in the end bents is included in the Quantities for Slab on Steel.
* Safety barrier curb shall be cast-in-place option or slip-form option.



LOCATION SKETCH

QUANTITIES FOR SLAB ON STEEL

Item		Total
B-2 Concrete	cu. yard	321.1
Reinforcing Steel	pound	21,660
Reinforcing Steel (Epoxy Coated)	pound	88,820

Notes:
The table of 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 prestressed panels, 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 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.

The Quantities for Slab on Steel are based on square precast prestressed end panels.

The prestressed panel quantities are not included in the table of Quantities for Slab on Steel.

PILE & FOOTING DATA

Bent No.			1	2	3	4
Bearing Pile	Pile Type and Size		HP14x73	HP14x73	HP14x73	HP14x73
	Number		5	3	12	5
	Approximate Length	foot	25	17	17	25
	Design Bearing	ton	84.2	80.0	80.0	84.2
	Hammer Energy Required	foot-pound	19,100	18,100	18,100	19,100
Spread/Pile Footings	Foundation Material		-	Limestone	Limestone	-
	Design Bearing	Tons/Sq. Ft.	-	5.1	5.1	-

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
All piles shall be driven to practical refusal.
Prebore for piles at Bents 1 and 4 to elevation 1050 and 1046, respectively.
Manufactured pile point reinforcement shall be used on all piles in this structure.
In no case shall footings of Bents No. 2 and 3 be placed higher than elevations shown.

GENERAL NOTES AND ESTIMATED QUANTITIES

A7353

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	171

JOB NO. J4P1707 4
CONTRACT ID 080620-403
PROJECT NO. FAP 70-4(98)
COUNTY CASS
DATE

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	ELEV. 1078.6
5	3-5-7	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1070.6
10	2-4-4	White, highly weathered limestone, some fat clay layers
12.5	50/1"	Auger refusal at 12.5' ELEV. 1066.1

Boring No. BH1-3

End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	ELEV. 1077.7
	4	4-5-8	Gray and brown, fat clay, moist, stiff
	9	50/3"	ELEV. 1069.7
	ROCK CORE DEPTH	REC%	RQD%
			White and brown, highly weathered limestone, with fat clay seams
			Auger refusal at 9.0'
	14.9	47	8 ELEV. 1062.8
	19.9	98	21
600L			Gray and yellow, very finely crystalline limestone, thinly bedded, moderately hard, slightly to moderately weathered, with clay seams
	24.9	90	24
	29.9	94	17 ELEV. 1047.3
692L			Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
698L			ELEV. 1043.0
	34.9	98	84
159L			Gray, calcareous shale, thinly laminated, moderately hard to soft, moderately weathered
			ELEV. 1039.4
	39.9	100	61
	39.9	50/5"	Gray, shale, thick bedded, soft, slightly weathered ELEV. 1037.4

Boring No. BH1-4

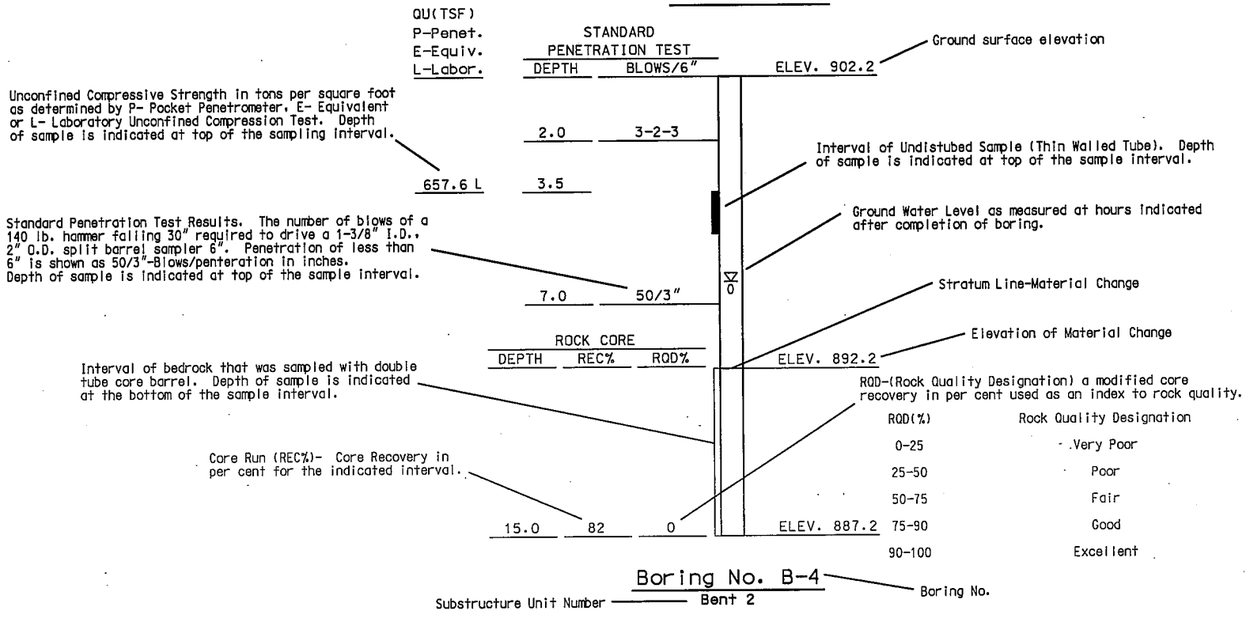
End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	ELEV. 1077.7
1.5L	2.0		
3.3L	4.0		Gray and brown fat clay, moist, medium stiff
1.5L	6.0		
	8.0		
0.8L	9.5	50/3"	ELEV. 1068.3
	12	15-50/3"	White and yellow, highly weathered limestone, hard
	14.5	11-8-7	ELEV. 1063.7
	17.0	7-13-6	
	19.5	4-3-2	
	22	1-1-1	
	23.5		
	25.0	3-1-1	Red and brown fat clay, moist, soft, with highly weathered limestone layers
	26.5		
	30	0-0-4	
	32.0	0-1-1	
	34.0		
	36.5	4-8-50/3"	
	39	50/5"	ELEV. 1040.2 Gray shale, soft to moderately hard ELEV. 1038.2
	ROCK CORE DEPTH	REC%	RQD%
	42.5	-	-	Core barrel lost in hole and boring was terminated ELEV. 1035.2

Boring No. BH1-5

End Bent 1
(Core)

TYPICAL BORING



Boring No. B-4

Substructure Unit Number — Bent 2 — Boring No.

GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, between December 28, 2005 and January 11, 2006, by Geotechnology, Inc.

For boring locations in plan, see Sheet No. 1.

The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.

The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.

For notice and disclaimer regarding boring log data, see Sheet No. 1.

BORING DATA

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed 2006
Checked 2006

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

A7353

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1078.8
4.5	3-3-5	Brown, fat clay, moist, medium stiff
		ELEV. 1070.8
9.5	2-6-7	White and brown, highly weathered limestone
14	50/2"	Auger refusal at 14.3'
		ELEV. 1064.5

ROCK CORE

	DEPTH	REC%	RQD%	
330L	17.0	85	31	
410L	22.0	96	32	
	27.0	100	50	Gray, very finely crystalline limestone, thick bedded, moderately hard, moderately weathered
430L				
	32.0	98	53	
				ELEV. 1044.2
110L	37.0	98	75	Gray shale, medium bedded, moderately hard, slightly weathered
				ELEV. 1042.8
				Gray, calcareous shale, medium bedded, moderately hard, slightly weathered
	42.0	100	32	ELEV. 1039.2
				Gray shale, thinly laminated, moderately hard, slightly weathered
	47.0	98	*	
	47	50/5"		ELEV. 1031.3

* Shale, RQD not calculated

Boring No. BH2-2

Bent 2
(Core)

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1077.2
3.5	3-3-5	Brown and gray, fat clay, moist, medium stiff
		ELEV. 1067.5
8.5	2-3-5	Brown and white, highly weathered limestone
13.5	50/6"	Auger refusal at 22.5'
18.5	50/3"	ELEV. 1054.8

ROCK CORE

DEPTH	REC%	RQD%	
26.3	29	0	Gray, very finely crystalline limestone, thinly bedded moderately hard, moderately to highly weathered.
31.3	44	0	
			ELEV. 1044.0
36.3	100	26	Gray, calcareous shale, medium bedded, soft, slightly weathered
			ELEV. 1039.0
41.3	100	*	
46.3	100	*	Gray, shale, medium bedded, soft, slightly weathered
51.3	100	*	becoming thinly laminated at 51.3'
56.3	94	*	ELEV. 1020.6
56.3	50/4"		

* Shale, RQD not calculated

Boring No. BH2-3

Bent 2
(Core)

QU(TSF)
P-Penet.
E-Equiv.
L-Labor.

STANDARD PENETRATION TEST

DEPTH	BLOWS/6"	
		ELEV. 1075.4
4.5	2-3-4	Brown and gray, fat clay, moist, medium stiff
		ELEV. 1066.9
9.5	15-6-3	Brown, fat clay, moist, medium stiff, some weathered limestone layers
		ELEV. 1063.4
14.5	50/3"	Yellow, highly weathered limestone
19.0	50/1"	Auger refusal at 19.0'
		ELEV. 1056.4

ROCK CORE

	DEPTH	REC%	RQD%	
				Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
				ELEV. 1055.0
				Fat clay, some highly weathered limestone layers
680L	26.5	19	0	ELEV. 1048.9
				Gray, very finely crystalline limestone, thick bedded, moderately hard, slightly weathered
				ELEV. 1046.4
	31.5	96	63	Gray shale, thin bedded, moderately hard, slightly weathered
				ELEV. 1045.4
136L				Gray, very fine crystalline, argillaceous limestone, thick bedded, moderately hard, slightly weathered
	36.5	96	48	ELEV. 1041.4
	41.5	100	*	Gray shale, thinly laminated, moderately hard, moderately weathered becoming slightly weathered at 37.0'
	46.5	96	*	
	51.5	100	*	ELEV. 1023.9

* Shale, RQD not calculated

Boring No. BH3-2

Bent 3
(Core)

NOTE:
For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

QU(TSF) P-Penet. E-Equiv. L-Labor.	DEPTH	BLOWS/6"	
			ELEV. 1075.4
	4.0	3-4-6	Brown, fat clay, moist, medium stiff
	9.0	1-2-3	
			ELEV. 1064.4
	14	50/4"	Yellow, highly weathered limestone
	19	50/3"	Auger refusal at 19.3'
	ROCK CORE		ELEV. 1056.1
230L	DEPTH	REC%	RQD%
	21.3	90	39
			Gray, very finely crystalline to aphanitic limestone, medium bedded, moderately hard, highly weathered, with clay layers Clay seam - 3" at 22.3' Clay layer - 2.7' at 23.3'
	26.3	24	7
			ELEV. 1049.1
720L			Gray, very finely crystalline to aphanitic limestone, medium bedded, moderately hard, slightly weathered
			ELEV. 1046.1
	31.3	70	25
			Gray shale, medium bedded, soft, highly weathered Core loss - 1.5' at 29.8'
			ELEV. 1044.1
	36.3	100	50
			Gray, aphanitic to very finely crystalline, argillaceous limestone, thick bedded, moderately hard, moderately weathered
			ELEV. 1041.2
			Gray shale, thin bedded, soft, moderately weathered
77L	41.3	92	*
			ELEV. 1034.1
	46.3	100	*
			Gray shale, medium bedded, soft to moderately hard, slightly weathered
	51.3	100	*
	51.3	50/3"	
			ELEV. 1023.8

* Shale, RQD not calculated

Boring No. BH3-3

Bent 3
(Core)

STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
		ELEV. 1073.0
4.0	2-3-6	Brown, fat clay, moist, medium stiff
		ELEV. 1064.5
9.0	22-38-50/3"	Yellow and white, highly weathered limestone Auger refusal at 13.0'
		ELEV. 1060.0

Boring No. BH4-3

End Bent 4

QU(TSF) P-Penet. E-Equiv. L-Labor.	DEPTH	BLOWS/6"	
			ELEV. 1072.6
	4.0	2-4-4	Brown, fat clay, moist, medium stiff
	9.0	1-3-2	
			ELEV. 1060.6
	14.0	7-14-21	White and brown, highly weathered limestone
			ELEV. 1056.6
	19.0	0-0-1	Brown, fat clay, moist to wet, very soft
			ELEV. 1050.6
	24	3-3-50/3"	White and brown, highly weathered limestone, some fat clay layers
	26	50/3"	Auger refusal at 26.5'
	ROCK CORE		ELEV. 1046.1
	DEPTH	REC%	RQD%
	27.0	100	0
			Gray, very finely crystalline limestone, thin bedded, moderately hard, moderately weathered
			ELEV. 1045.1
	32.0	98	80
			Gray, very finely crystalline to aphanitic, argillaceous limestone, thin bedded, moderately hard to soft, moderately to slightly weathered
			ELEV. 1040.6
	37.0	98	*
			Gray shale, thinly laminated, moderately hard, slightly weathered, becoming soft, moderately weathered at 34.5'
224L	42.0	96	*
			becoming thick bedded, moderately hard, slightly weathered at 46'
	47.0	98	*
	52.0	100	*
	57.0	90	*
	57	23-50/4"	
			ELEV. 1014.8

Boring No. BH4-4

End Bent 4
(Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1072.0
1.8L	2.0		
1.4L	4.0		
1.3L	6.0		
0.5L	8.0		
	10.0		
0.5L	12.0		Brown and gray, fat clay, moist, medium stiff to very soft, highly weathered limestone layers from 8 to 14'
0.4L			
	15.5	0-0-0	
	18.0	0-0-0	
	20.5		
0.5L	23.0		
			ELEV. 1048.0
	25.5	50/1"	
	28	50/2"	Gray calcareous shale, hard
	30.5	50/5"	
	33.5	50/6"	
			ELEV. 1039.0
	ROCK CORE		
	DEPTH	REC%	RQD%
	40.0	100	*
			Gray shale, thinly bedded, moderately hard, slightly weathered
	45.0	100	*
	45	50/4"	
			ELEV. 1026.7

* Shale, RQD not calculated

Boring No. BH4-5

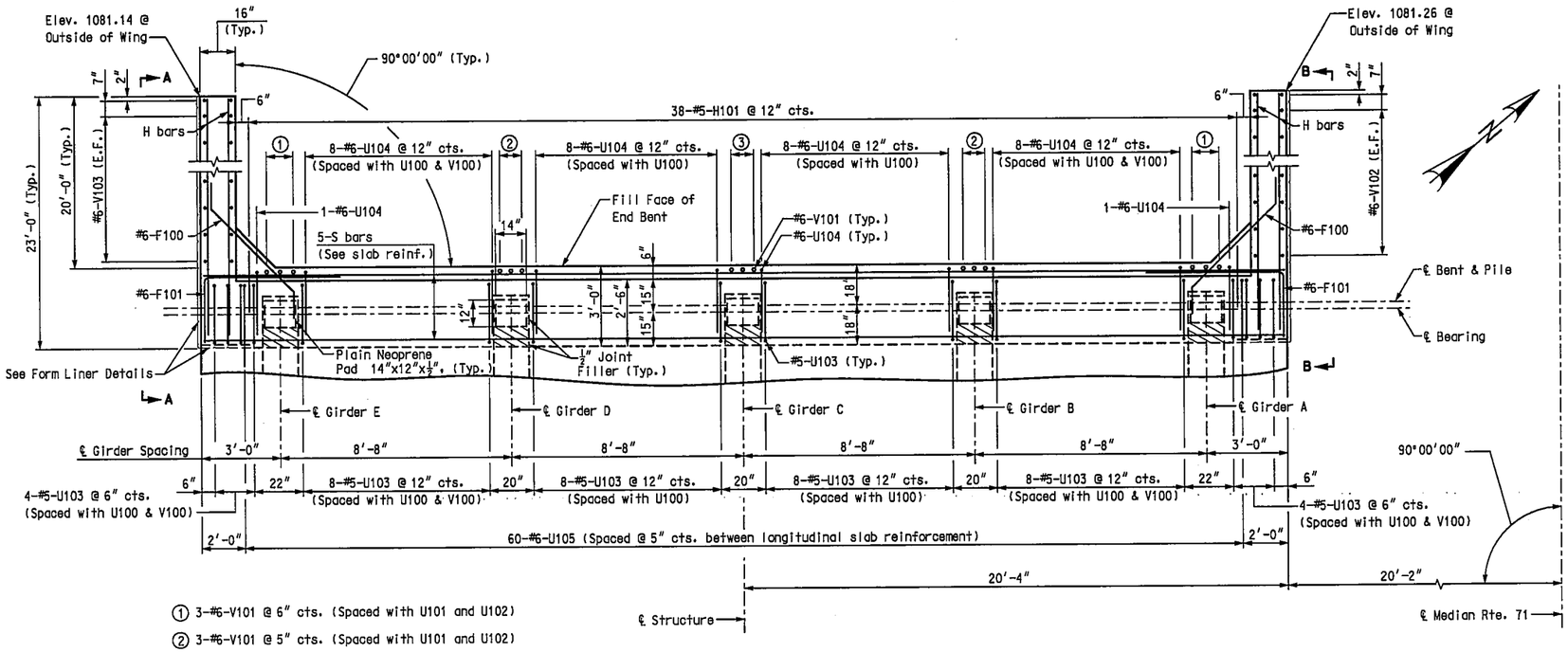
End Bent 4
(Core)

NOTE:
For Typical Boring and General Notes, see Sheet No. 3.

BORING DATA

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	174

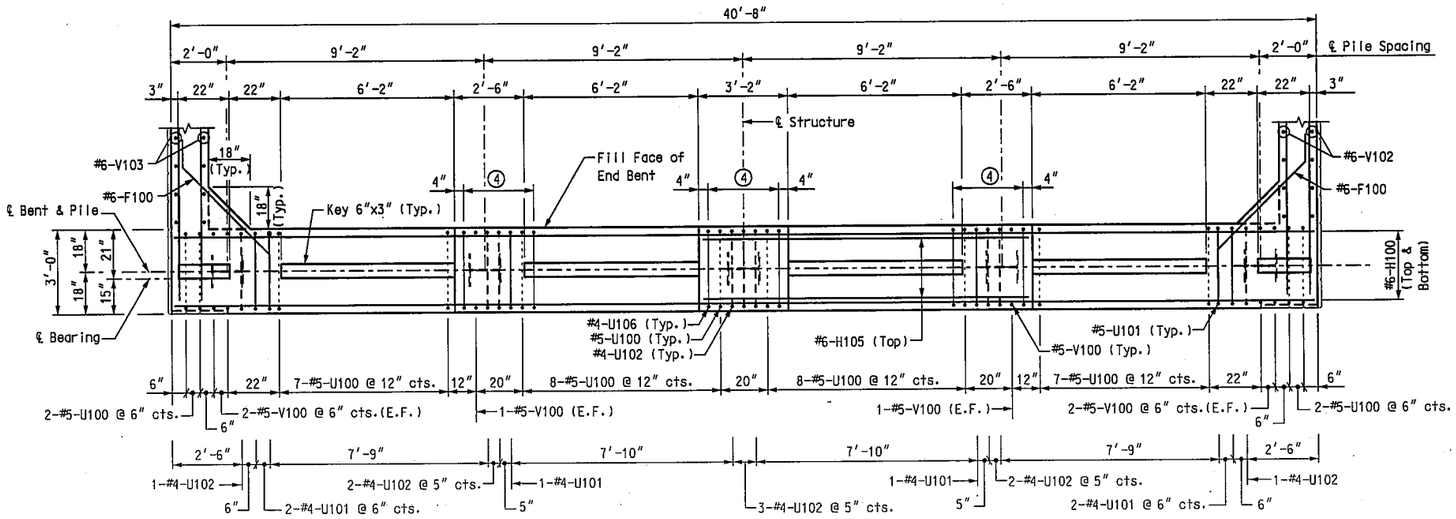
JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE



① 3-#6-V101 @ 6" cts. (Spaced with U101 and U102)
② 3-#6-V101 @ 5" cts. (Spaced with U101 and U102)
③ 3-#6-V101 @ 5" cts. (Spaced with U102)

PLAN OF DIAPHRAGM

④ 6-#4-U106 @ 6" cts.



PLAN OF BEAM

Notes:
For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.
Bend F100 bars in field to clear girders.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.
For Form Liner Details, see Sheet No. 35.
For details of Elevation A-A and B-B, see Sheet No. 8.
For Sections and Typical Section Thru Key, see Sheet No. 7.

✻✻ SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1

Item		Quantity
Class 1 Excavation	cu. yard	80
Structural Steel Piles (14")	linear foot	118
Pre-Bore for Piling	linear foot	110
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.7
Form Liners	sq. yard	46

✻✻ These quantities are included in the quantities table on Sheet No. 2.

END BENT 1 - PLAN

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$
Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	175

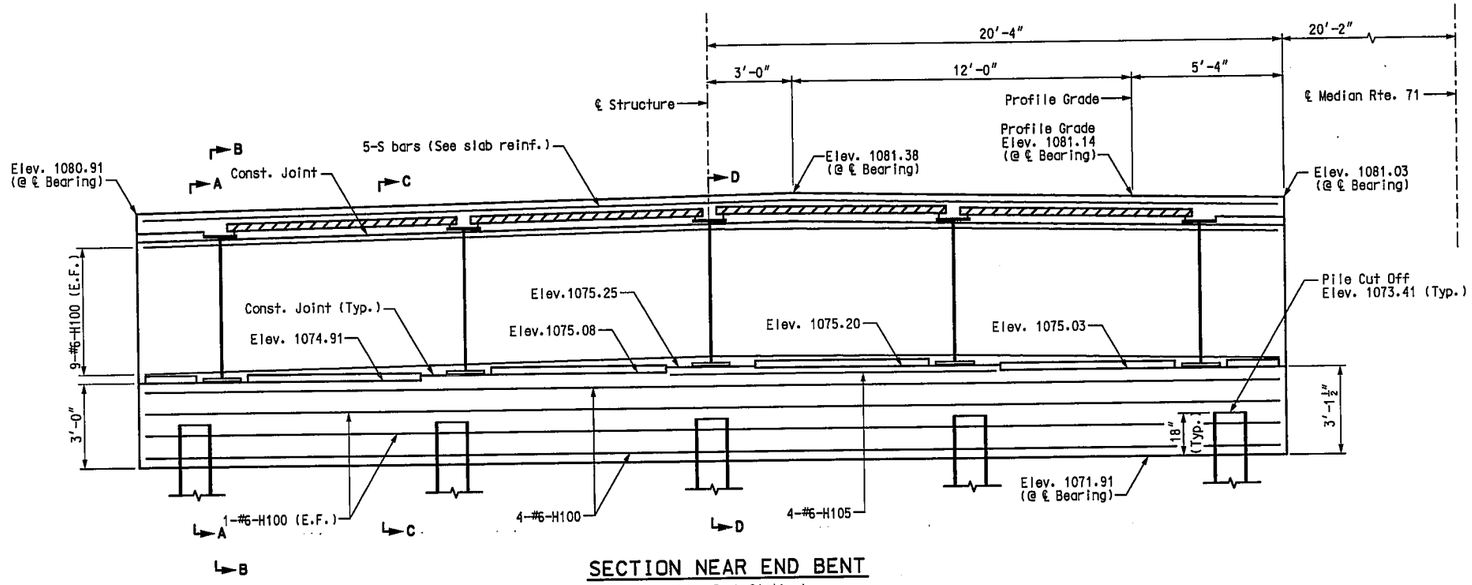
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

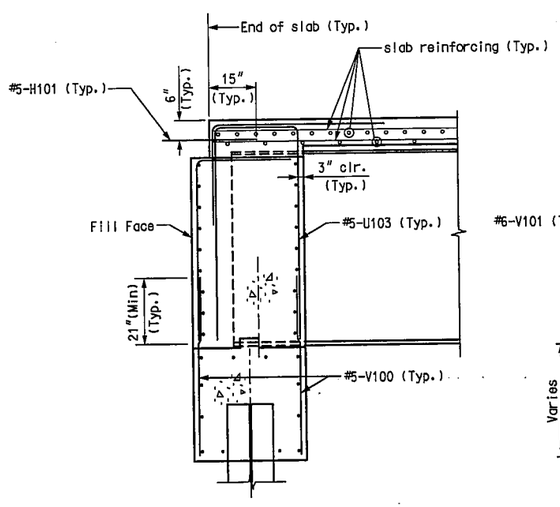
COUNTY CASS

DATE

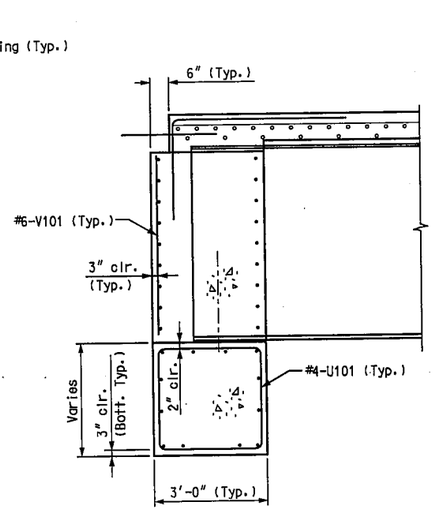


SECTION NEAR END BENT

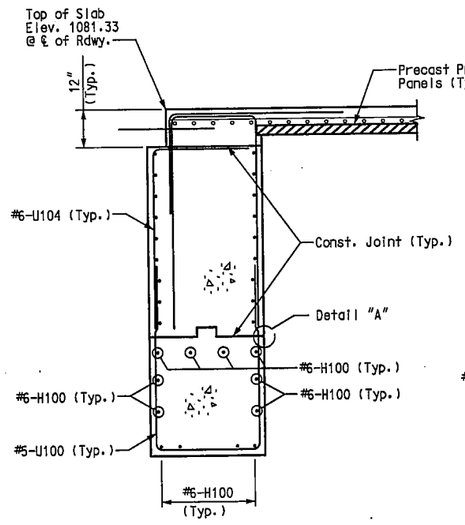
(Looking Back Station)



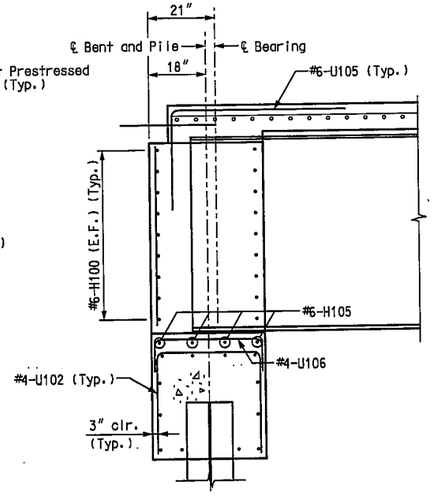
SECTION A-A



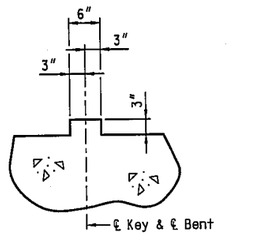
SECTION B-B



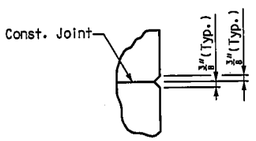
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 6 & 8.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 1 - ELEVATION

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS **HNTB**

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	176

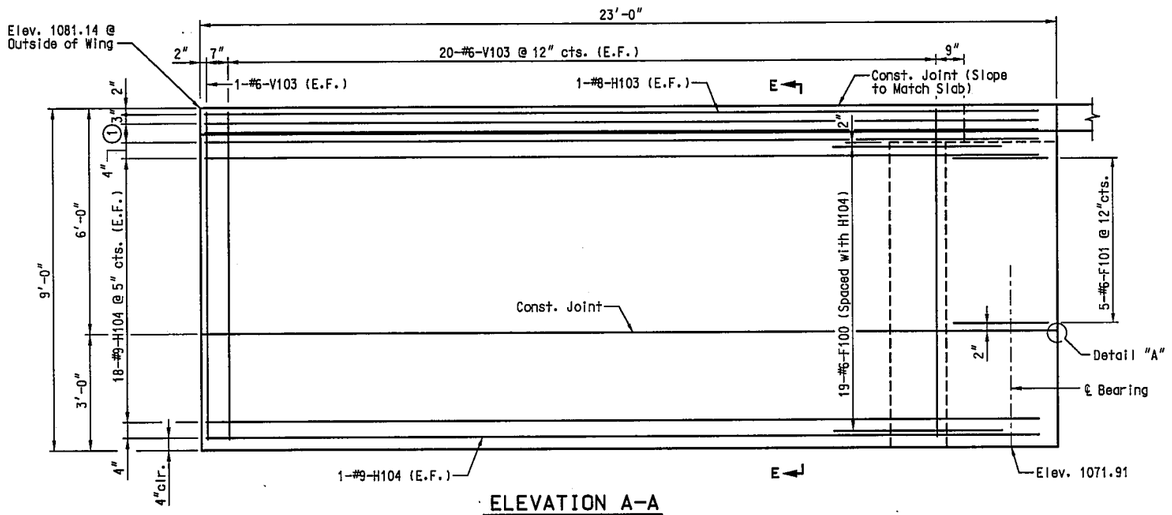
JOB NO. J4P1707

CONTRACT ID 080620-403

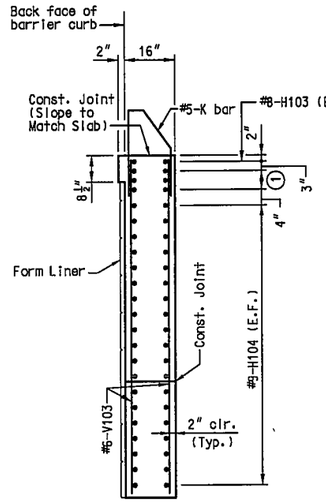
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

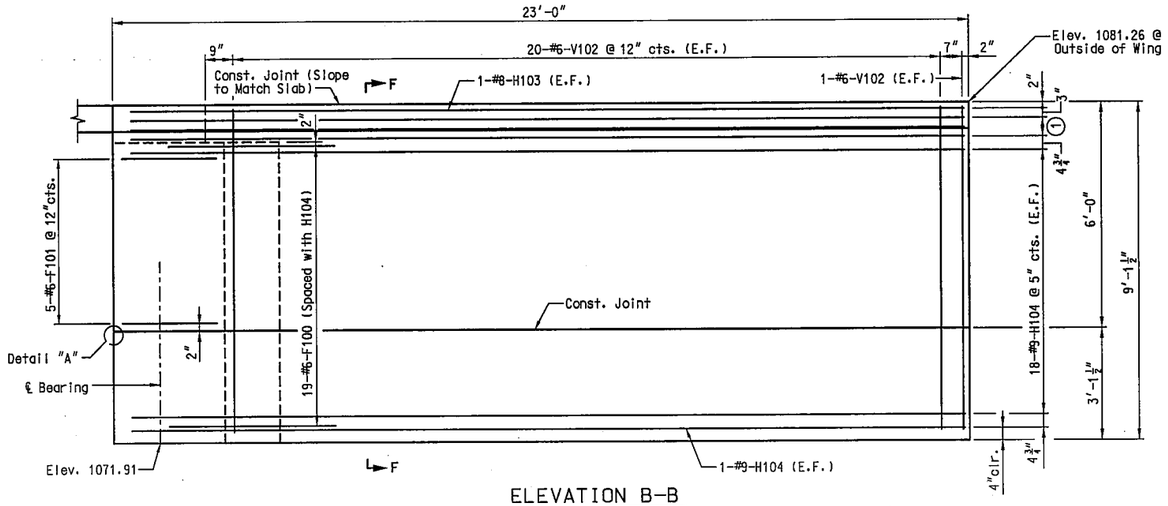


ELEVATION A-A

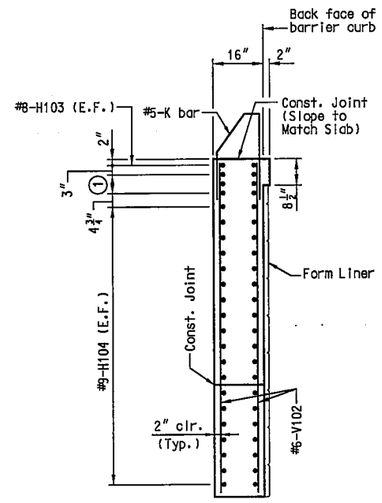


SECTION E-E

① 3-#8-H102 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 7.
For Form Liner Details, see Sheet No. 35.

END BENT 1 - WING DETAILS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	177

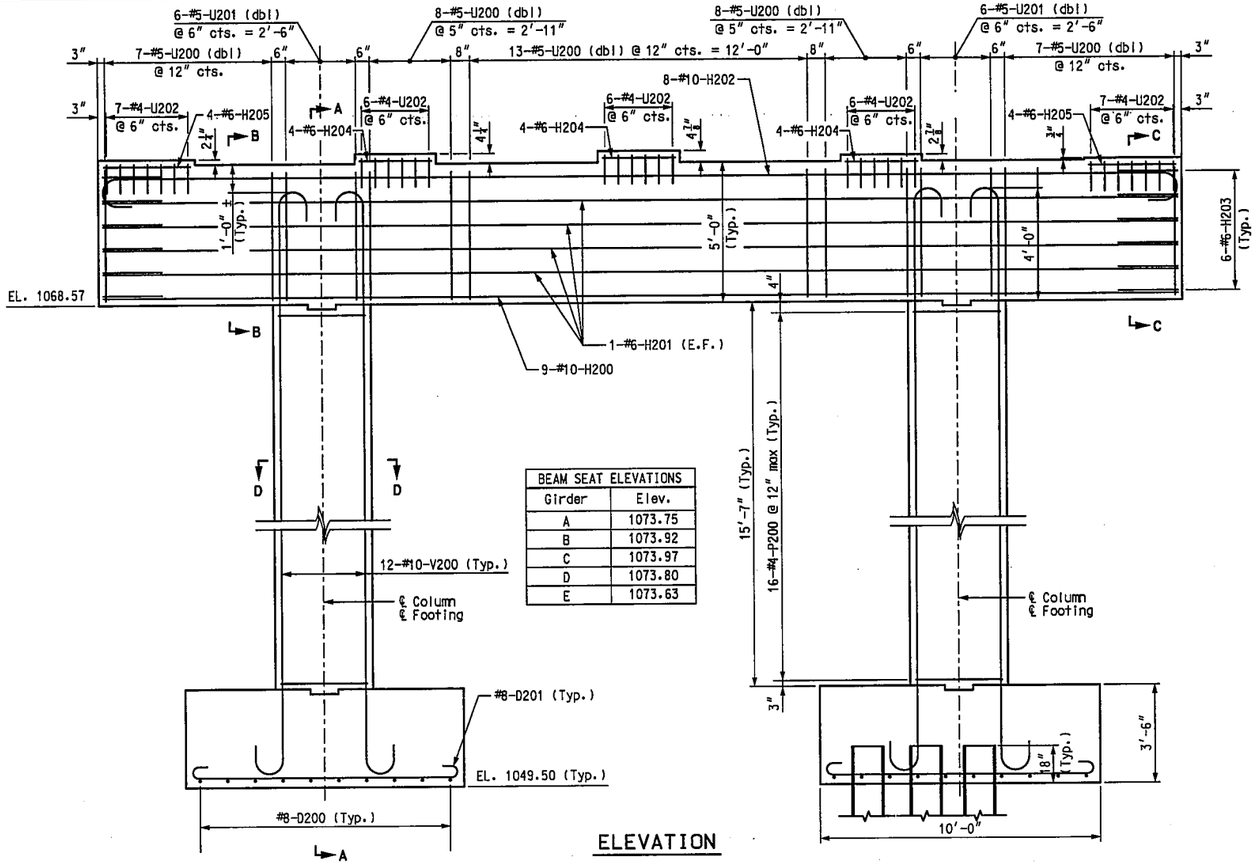
JOB NO. J4P1707

CONTRACT ID 080620-403

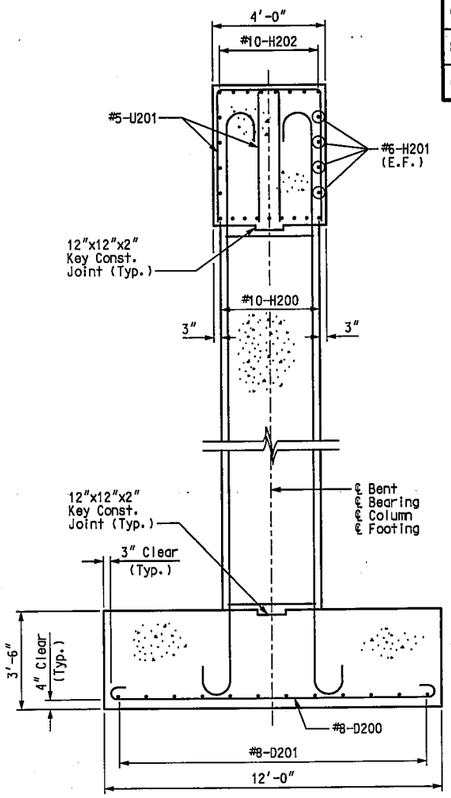
PROJECT NO. FAF 70-4(98)

COUNTY CASS

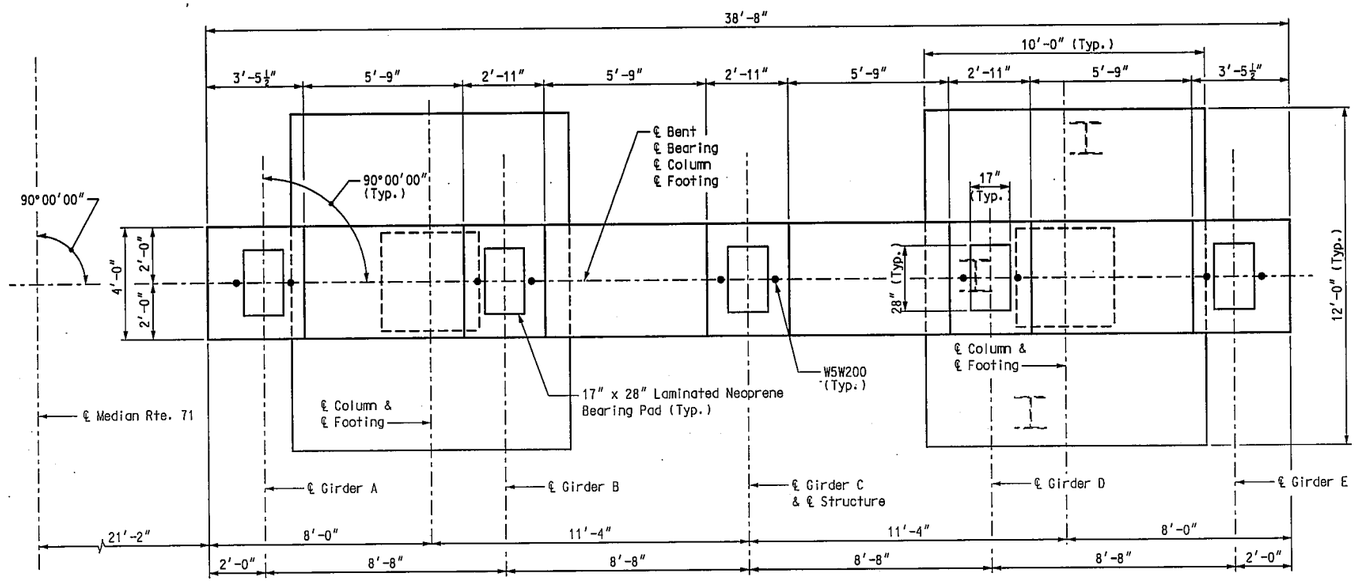
DATE



ELEVATION



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 10.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".
At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 2

Item		Quantity
Class 1 Excavation in Rock	cu. yard	55
Class B Concrete (Substructure)	cu. yard	86.5
Form Liners	sq. yard	48
Reinforcing Steel (Bridges)	pound	9,700
Structural Steel Piles (14")	linear foot	56
Pile Point Reinforcement	each	3
Pre-Bore for Piling	linear foot	31

*** These quantities are included in the quantities table on Sheet No. 2.

BENT 2 - DETAILS

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	178

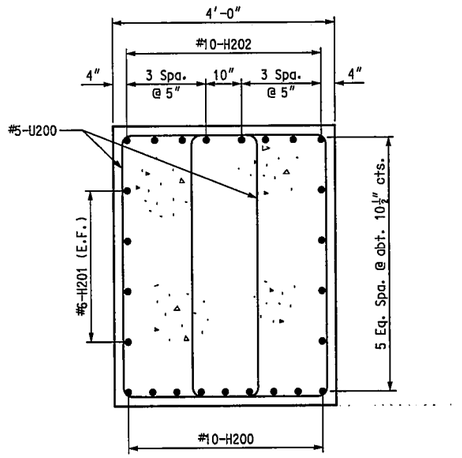
JOB NO. J4P1707

CONTRACT ID 080620-403

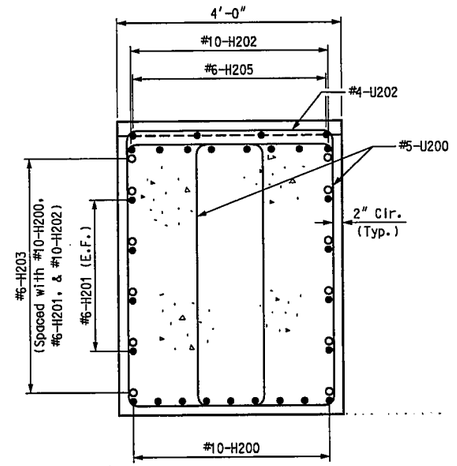
PROJECT NO. FAF 70-4(98)

COUNTY CASS

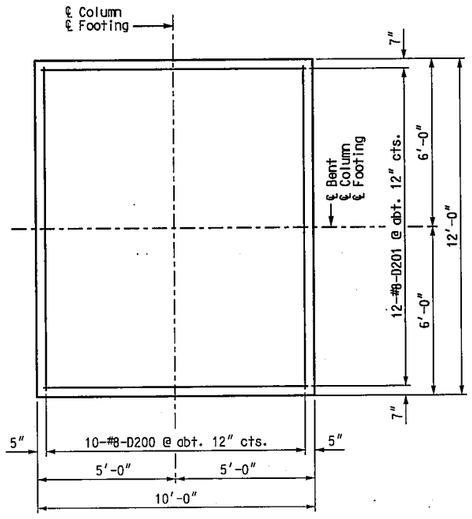
DATE



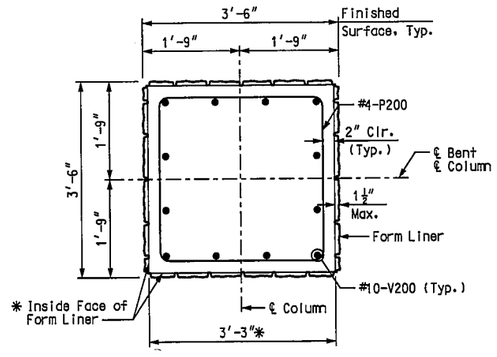
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 2 - DETAILS

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	179

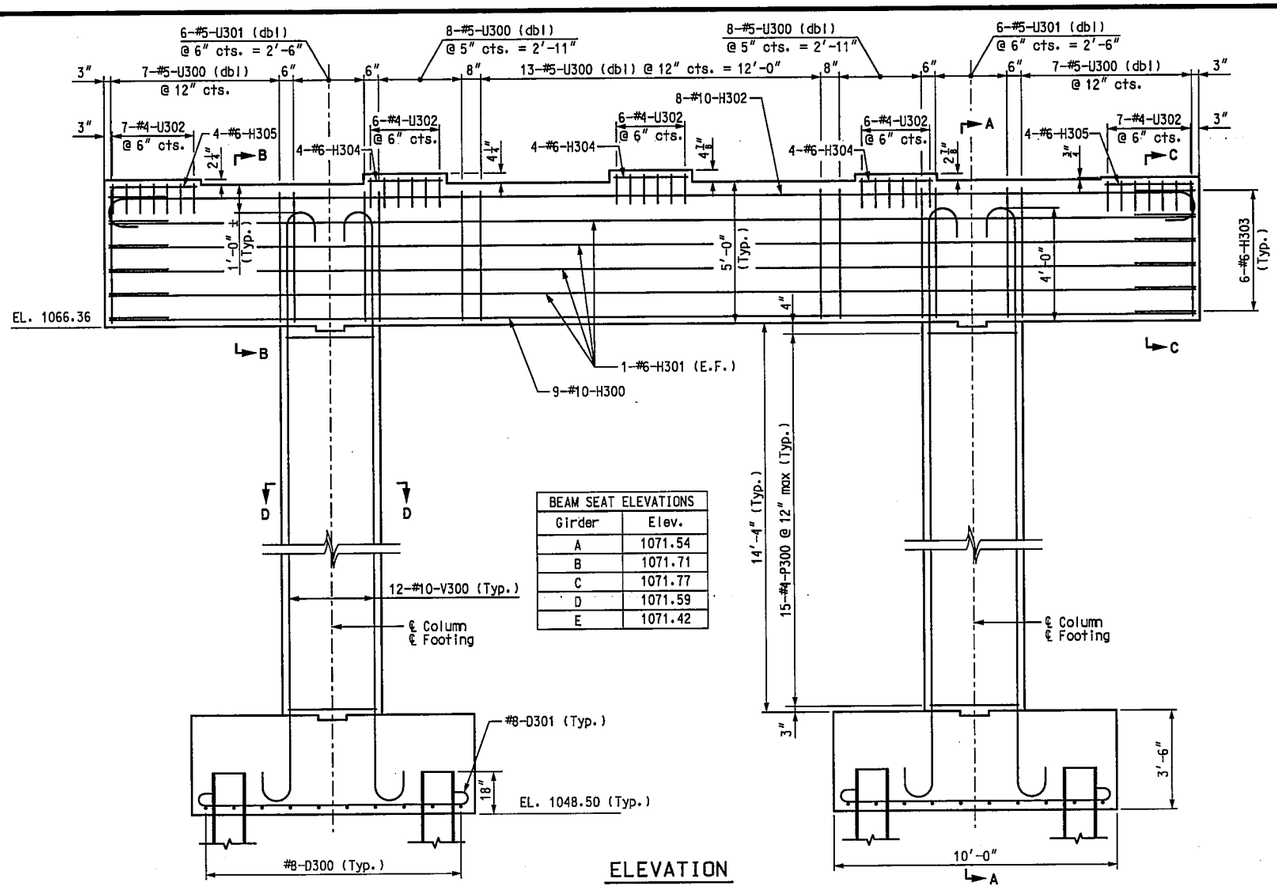
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

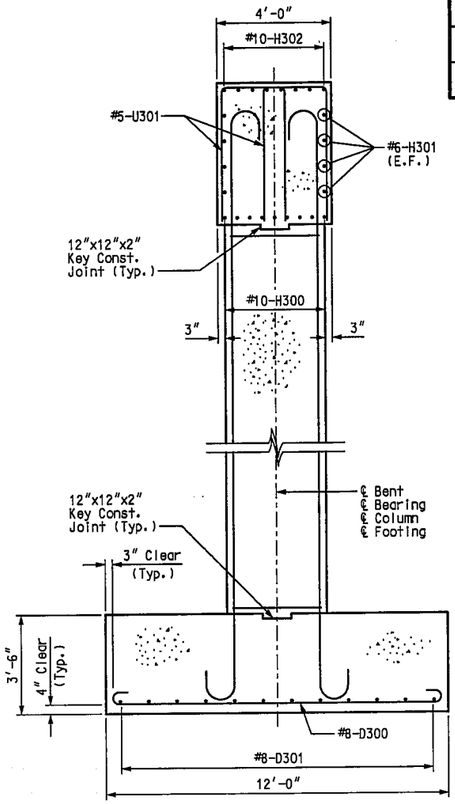
COUNTY CASS

DATE

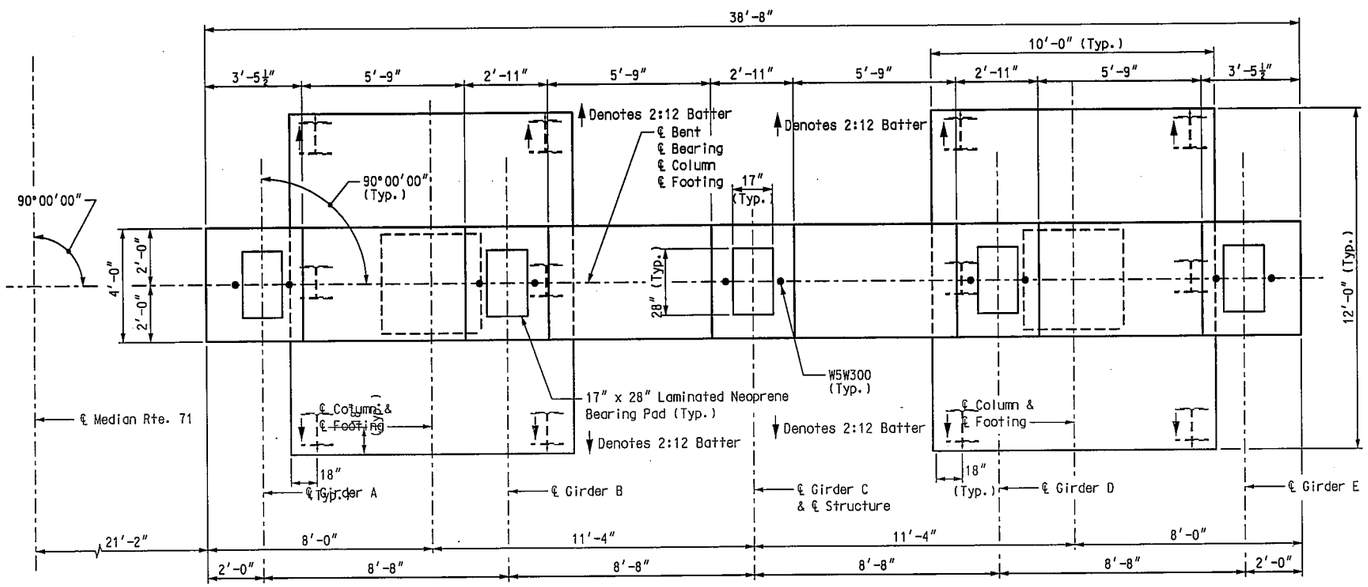


ELEVATION

BEAM SEAT ELEVATIONS	
Girder	Elev.
A	1071.54
B	1071.71
C	1071.77
D	1071.59
E	1071.42



SECTION A-A



PLAN

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 17.
For details of anchor bolt wells, see Sheet No. 17.
For Section B-B, Section C-C, Section D-D, and Plan of Footing, see Sheet No. 12.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½". At the contractor's option, the hooks of the V-bars embedded in the beam cap may be oriented inward or outward for Seismic Category A. If inward, rotate V-bar hooks nominally to avoid conflicts in cap beam.
For details of Form Liner, see Sheet No. 35.
For Conduit details, see Sheet No. 34.

*** SUBSTRUCTURE QUANTITY TABLE FOR BENT 3		
Item		Quantity
Class 1 Excavation in Rock	cu. yard	65
Class B Concrete (Substructure)	cu. yard	85.5
Form Liners	sq. yard	45
Reinforcing Steel (Bridges)	pound	9,560
Structural Steel Piles (14")	linear foot	233
Pile Point Reinforcement	each	12
Pre-Bore for Piling	linear foot	124

*** These quantities are included in the Quantities table on Sheet No. 2.

BENT 3 - DETAILS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	180

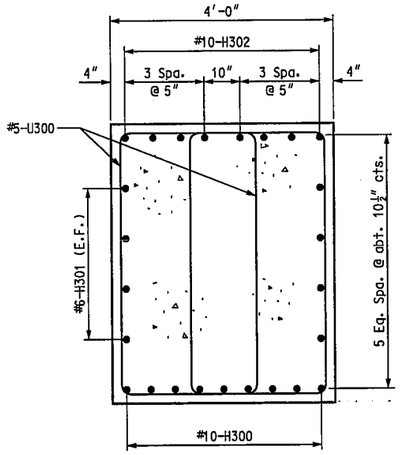
JOB NO. J4P1707

CONTRACT ID 080620-403

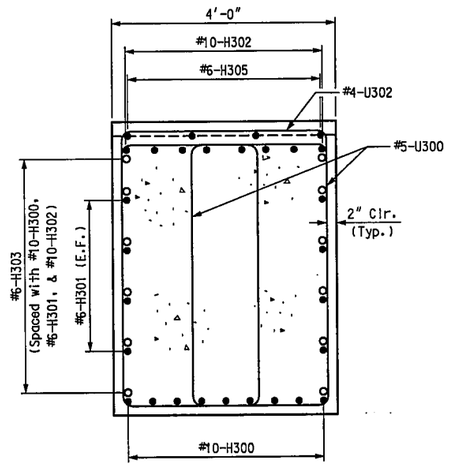
PROJECT NO. FAF 70-4(98)

COUNTY CASS

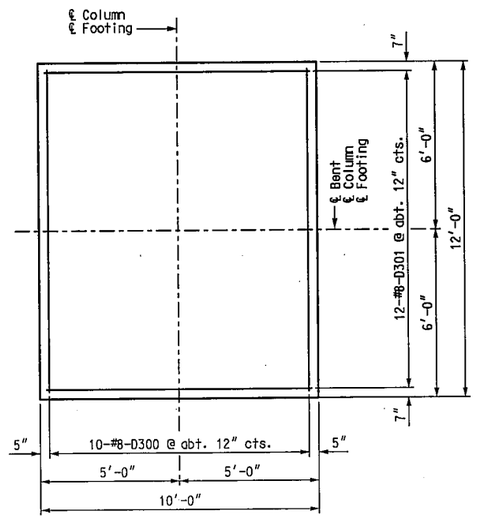
DATE



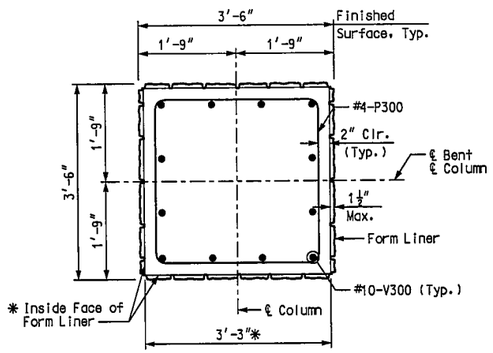
SECTION B-B



SECTION C-C



PLAN OF FOOTING



SECTION D-D

BENT 3 - DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

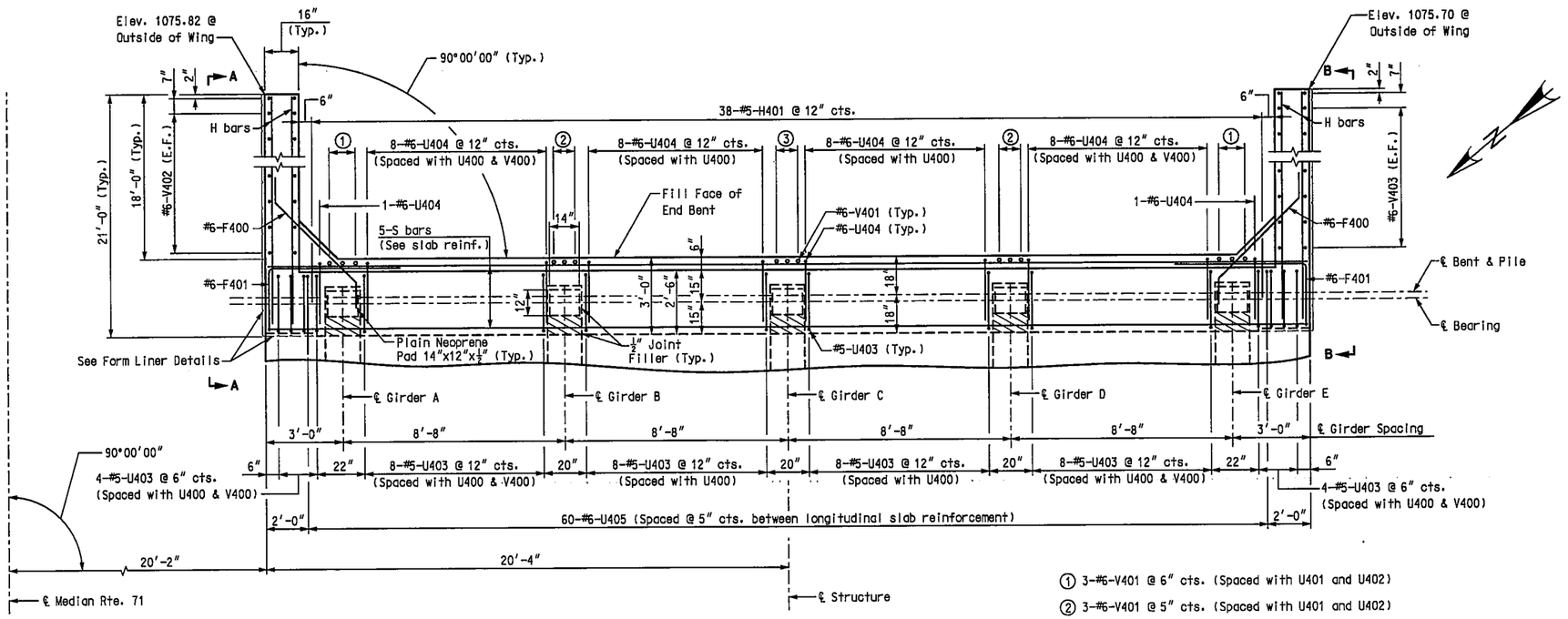
Detailed JULY 2006
Checked JULY 2006

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

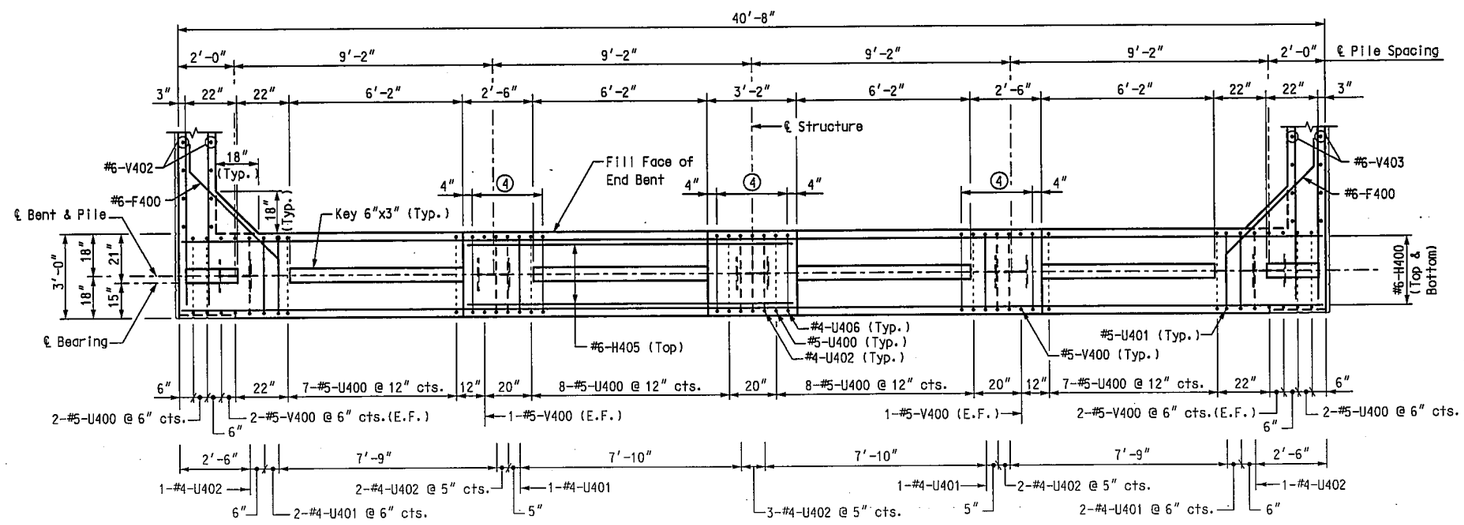
A7353

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	181

JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE



PLAN OF DIAPHRAGM



PLAN OF BEAM

① 3-#6-V401 @ 6" cts. (Spaced with U401 and U402)
② 3-#6-V401 @ 5" cts. (Spaced with U401 and U402)
③ 3-#6-V401 @ 5" cts. (Spaced with U402)
④ 6-#4-U406 @ 6" cts.

Notes:
For reinforcement of the safety barrier curb, see Sheet Nos. 31 thru 33.
Bend F400 bars in field to clear girders.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.
For Form Liner Details, see Sheet No. 35.
For details of Elevation A-A and B-B, see Sheet No. 15.
For Sections and Typical Section Thru Key, see Sheet No. 14.

**** SUBSTRUCTURE QUANTITY TABLE FOR END BENT 4**

Item		Quantity
Class 1 Excavation	cu. yard	70
Structural Steel Piles (14")	linear foot	119
Pre-Bore for Piling	linear foot	105
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	20.1
Form Liners	sq. yard	43

** These quantities are included in the quantities table on Sheet No. 2.

END BENT 4 - PLAN

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	182

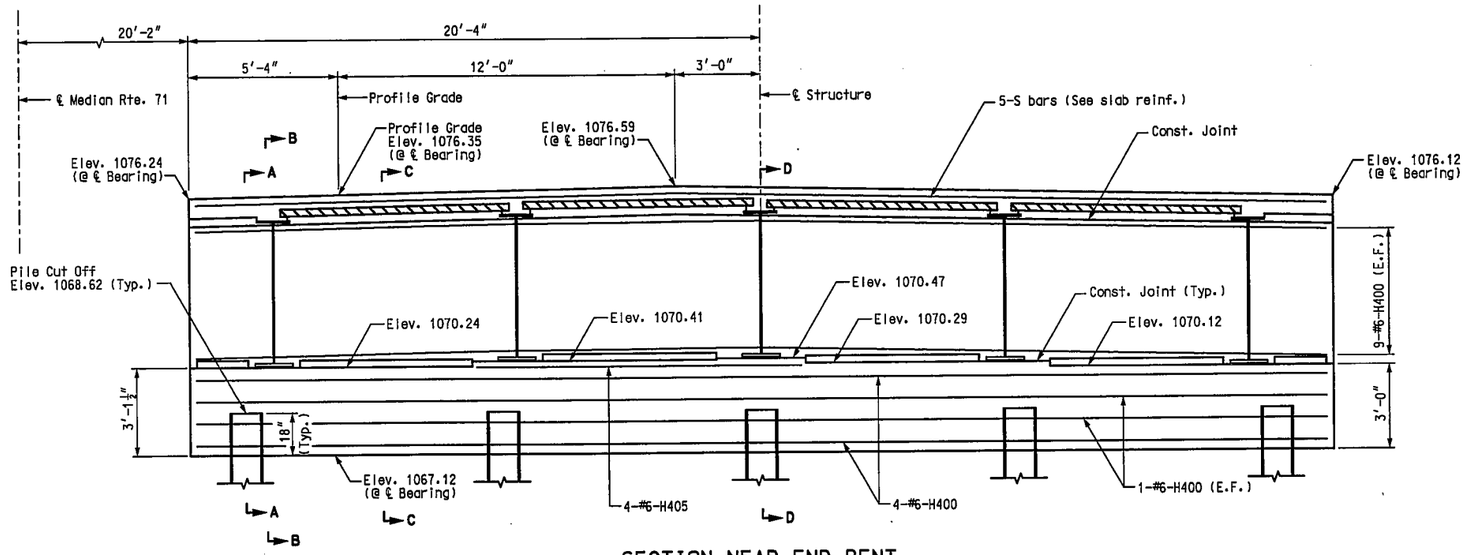
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

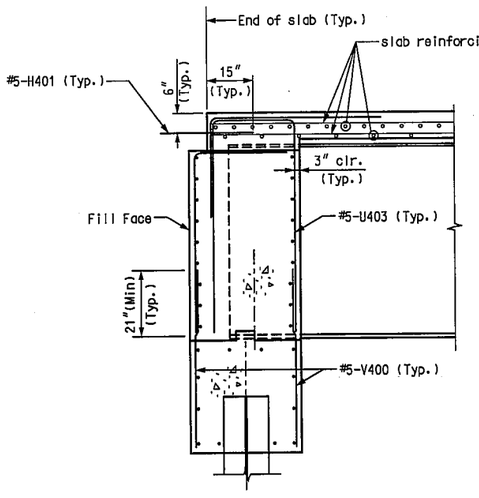
COUNTY CASS

DATE

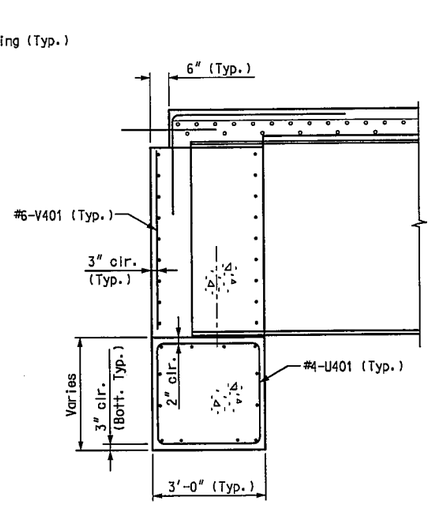


SECTION NEAR END BENT

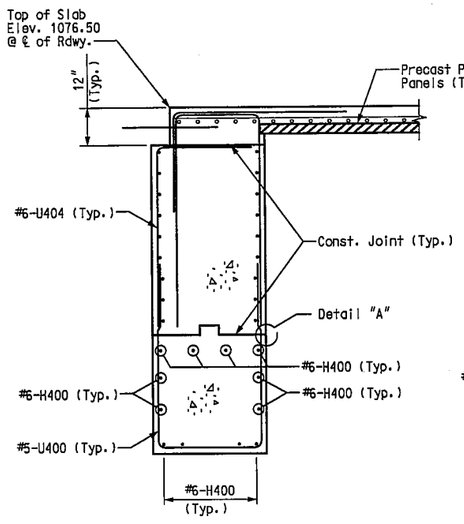
(Looking Ahead Station)



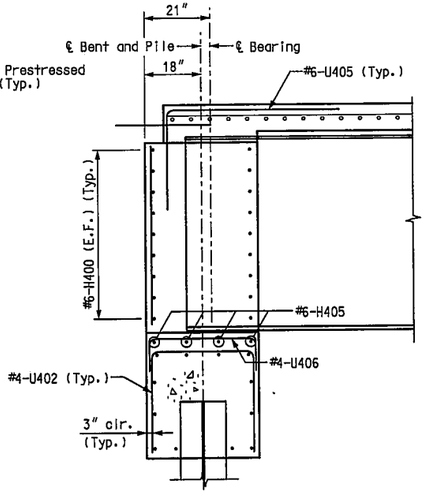
SECTION A-A



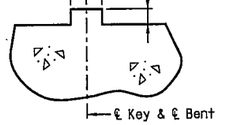
SECTION B-B



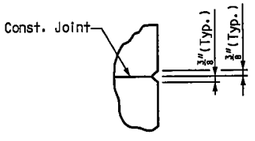
SECTION C-C



SECTION D-D



TYPICAL SECTION THRU KEY



DETAIL "A"

Notes:
All piles shall be HP14x73.
For details of End Bent not shown, see Sheet Nos. 13 & 15.
For details of Steel Pile Splice, see Sheet No. 2.

END BENT 4 - ELEVATION

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	183

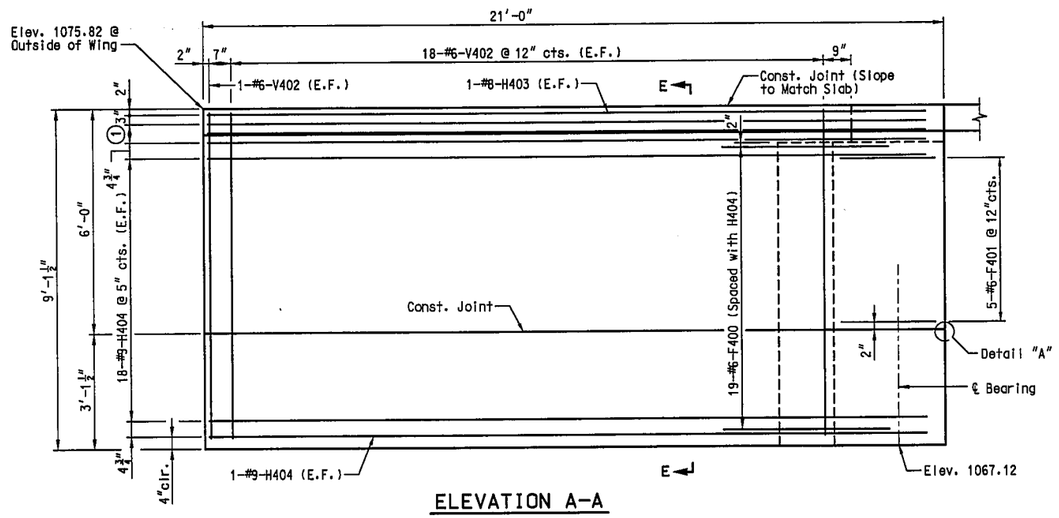
JOB NO. J4P1707

CONTRACT ID 080620-403

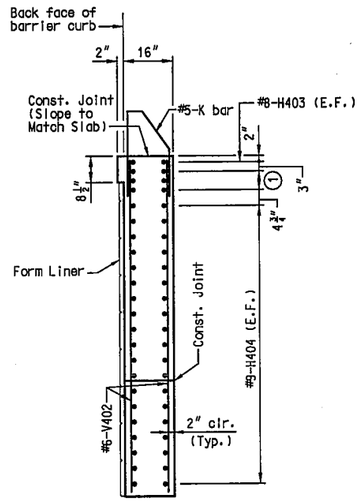
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

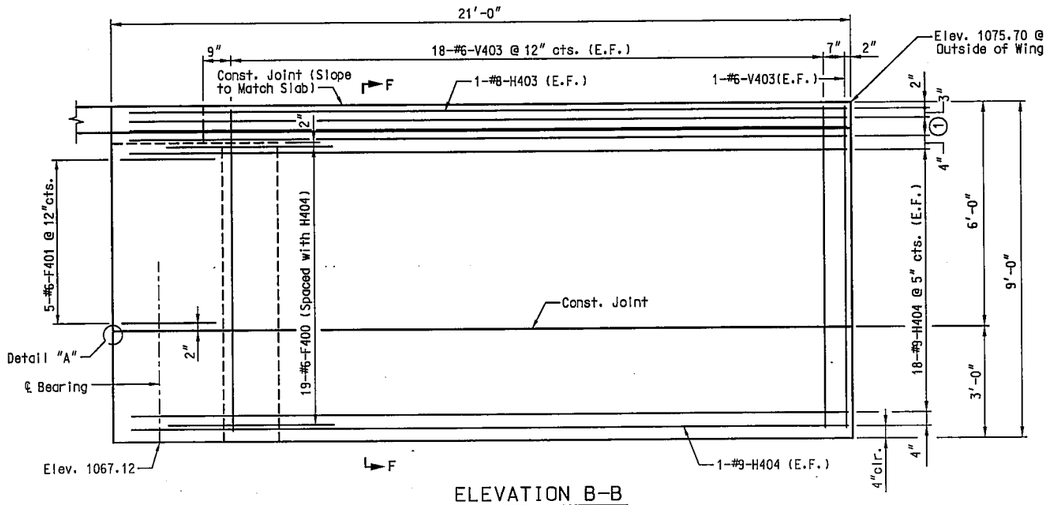


ELEVATION A-A

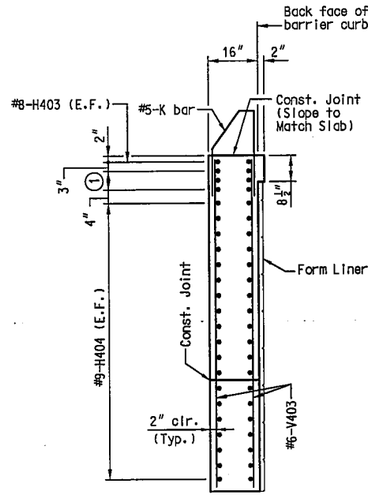


SECTION E-E

① 3-#8-H402 @ 3" cts. (E.F.)
(Placed with grade)



ELEVATION B-B



SECTION F-F

Notes:
For barrier curb reinforcement embedded in wing wall, see Sheet Nos. 31 thru 33.
For Detail "A", see Sheet No. 14.
For Form Liner Details, see Sheet No. 35.

END BENT 4 - WING DETAILS

A7353

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	184

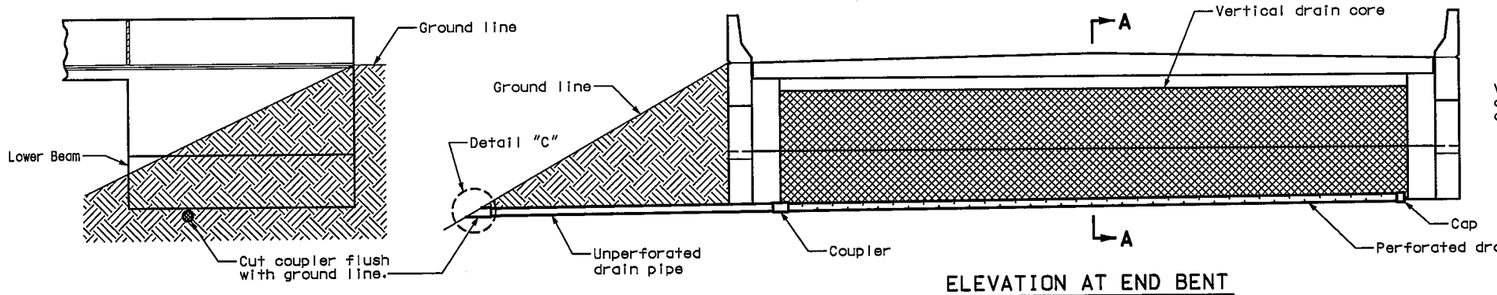
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

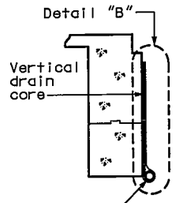
COUNTY CASS

DATE



ELEVATION OF WING

ELEVATION AT END BENT

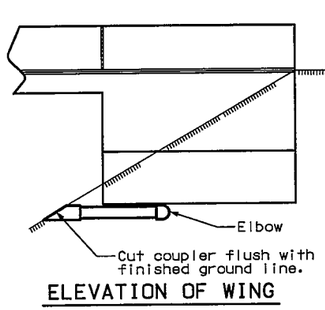


SECTION A-A

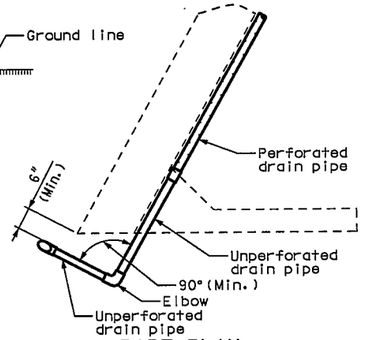
Note:
Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (See elevation at end bent.)

Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.



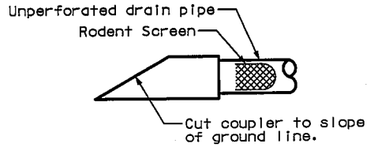
ELEVATION OF WING



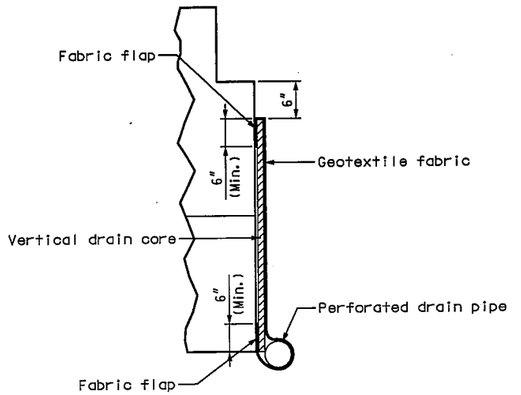
PART PLAN

OPTIONAL BENT DRAIN (*)

(*) Only if rock is encountered at outside of wing.



DETAIL "C"



DETAIL "B"

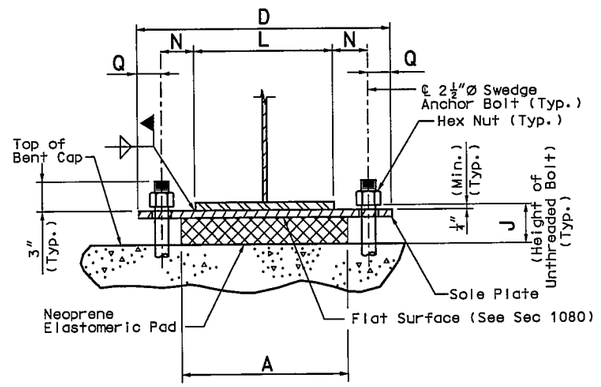
VERTICAL DRAIN AT END BENTS

A7353

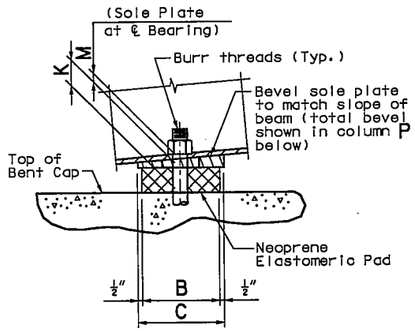
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

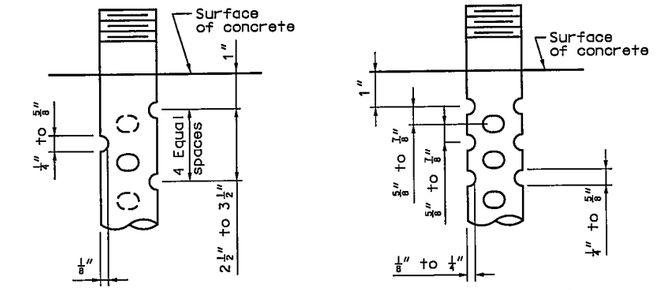
Note: This drawing is not to scale. Follow Dimensions.



END VIEW



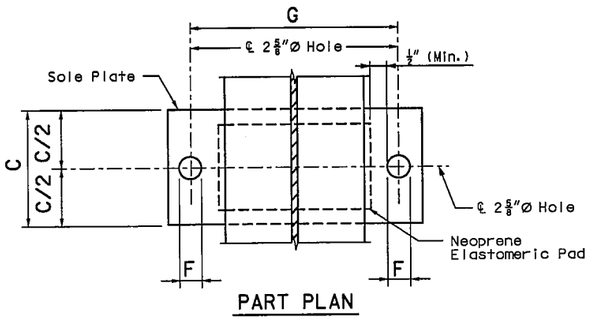
SIDE VIEW



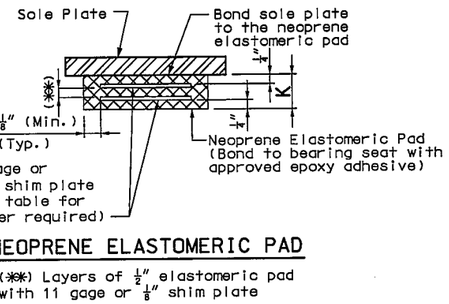
DETAIL FOR ¾" Ø THRU 2½" Ø ANCHOR BOLTS

OPTIONAL DETAIL FOR 1⅜" Ø THRU 2½" Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

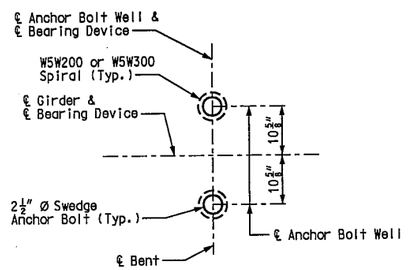


PART PLAN



NEOPRENE ELASTOMERIC PAD

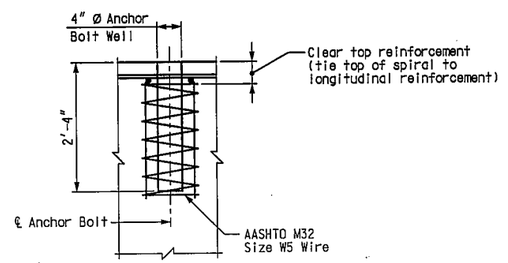
(**) Layers of ½" elastomeric pad with 11 gage or ⅛" shim plate



ANCHOR BOLT SETTING PLAN

FIXED BEARINGS.															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	⅜"	3¾"	4	5
3	17"	28"	29"	28¾"	2⅝"	21¼"	4⅜"	2½"	16"	1½"	2⅝"	½"	3¾"	4	5
														TOTAL BEARINGS	10

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



ANCHOR BOLT WELL DETAIL

GENERAL NOTES:

Anchor bolts shall be 2½"Ø ASTM A709 Grade 50W steel swedged bolts and shall extend 25" 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 the 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 the sole plate shall be ASTM A709 Grade 36 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.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	186

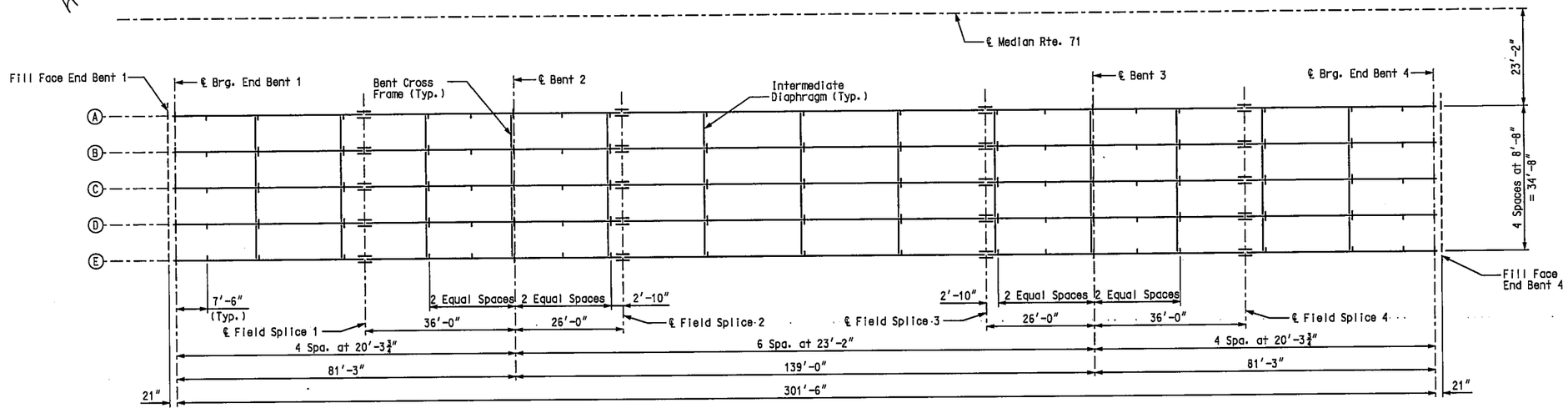
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

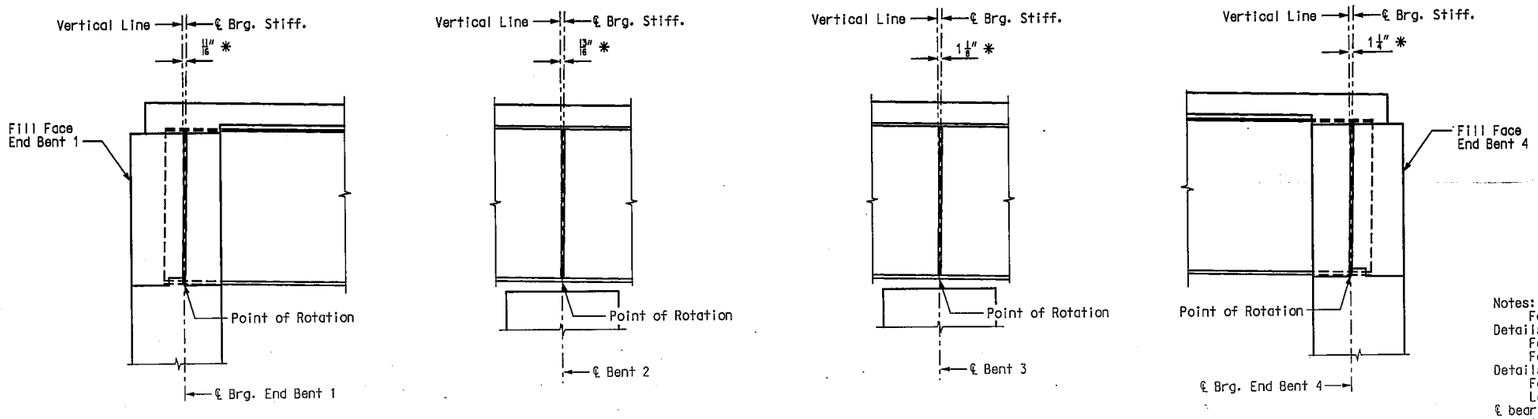
COUNTY CASS

DATE



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

FRAMING PLAN



* Horizontal Dimension at Top of Web.

PART LONGITUDINAL SECTION

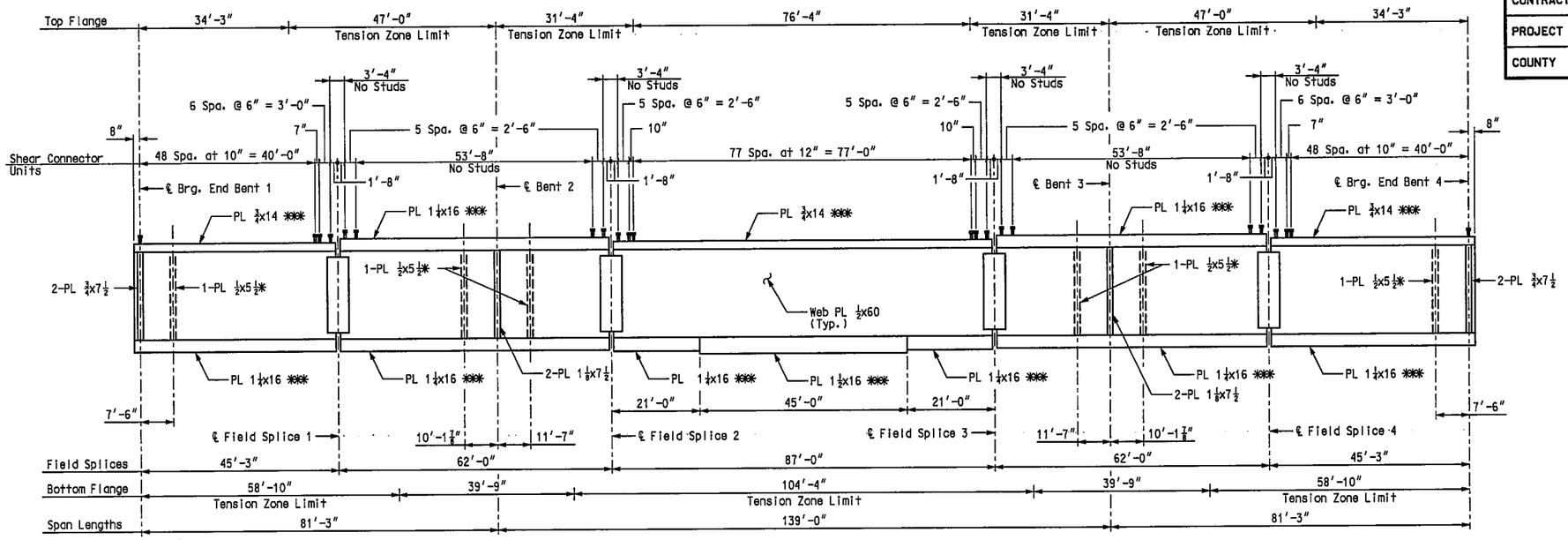
Notes:
For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.
For Field Splice Details, see Sheet No. 21.
For Intermediate Stiffener and Bearing Stiffener Details, see Sheet No. 23.
For Girder Elevation, see Sheet No. 19.
Longitudinal dimensions are horizontal from ℄ bearing to ℄ bearing.
All Intermediate Stiffeners are spaced equally between Bearing Stiffeners, unless shown otherwise.

FRAMING PLAN

A7353

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	187

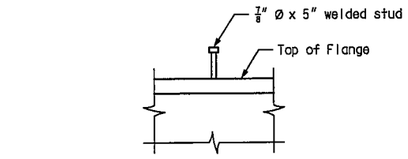
JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE



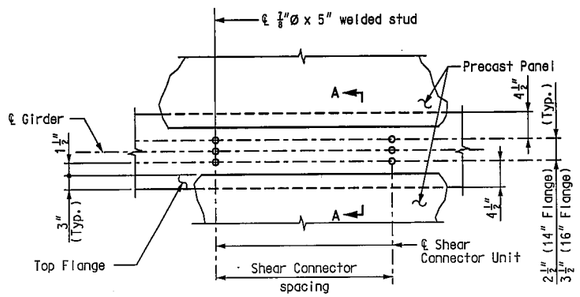
SPAN (1-2) SPAN (2-3) SPAN (3-4)

GIRDER ELEVATION

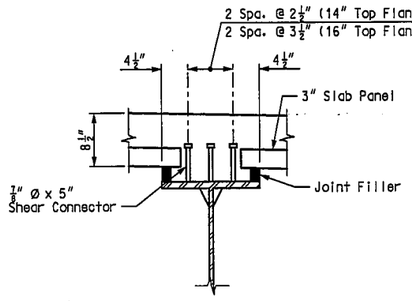
* Transverse web stiffener. See Plan for locations of other intermediate web stiffeners with intermediate diaphragms.



ELEVATION



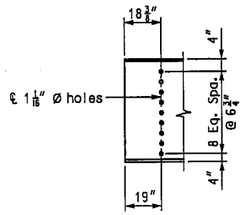
PLAN



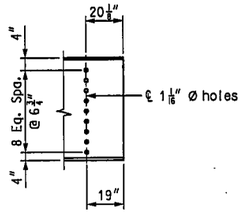
SECTION A-A

DETAILS OF SHEAR CONNECTORS

Weight of 3320 pounds of shear connectors is included in the weight of Fabricated Structural Carbon Steel (Plate Girder). Shear connectors shall be in accordance with Sec 712, 1037, and 1080.



END BENT 1



END BENT 4

SECTION AT END OF GIRDERS

Notes:
Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. 20.
*** Indicates flange plates subject to notch toughness requirements.
All web plates shall be subject to notch toughness requirements.
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.
Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.
For Intermediate Diaphragm and Bent Cross Frame Details, see Sheet No. 22.
For Field Splice Details, see Sheet No. 21.
For Intermediate Stiffener and Bearing Stiffener details, see Sheet No. 23.
For Framing Plan, see Sheet No. 18.
Longitudinal dimensions are horizontal from ℄ brg. to ℄ brg.
For Intermediate Web Stiffener locations and Intermediate Diaphragm spacing not shown, see Sheet No. 18.

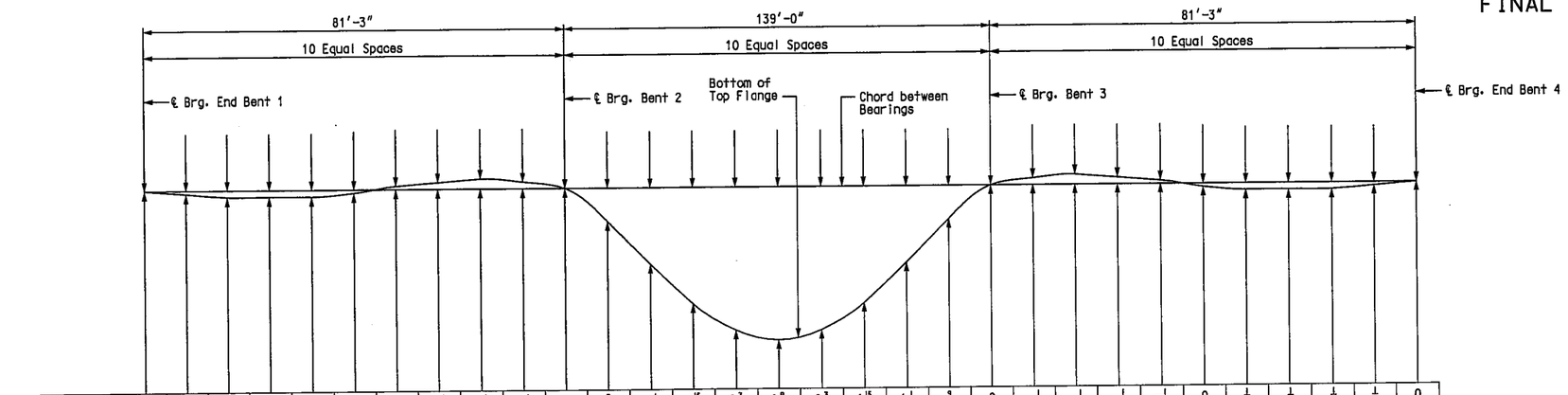
GIRDER ELEVATION

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

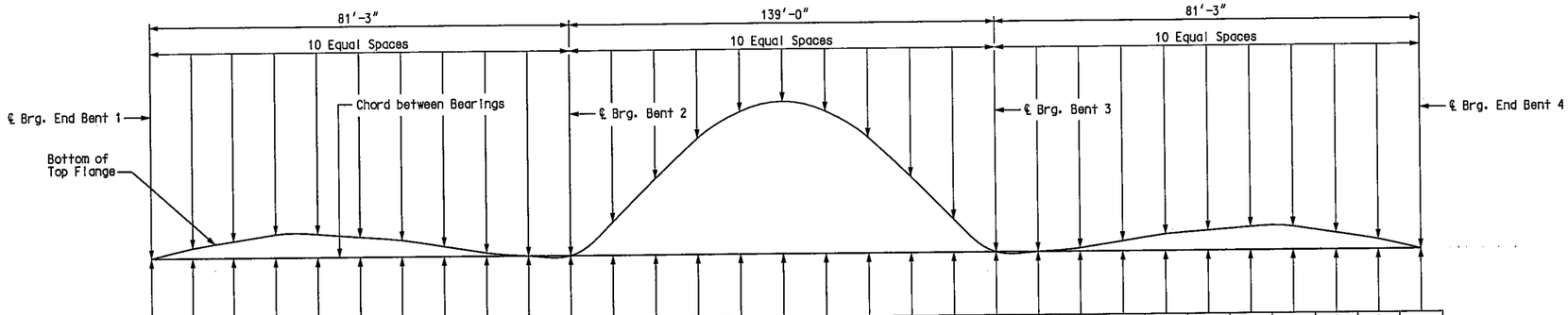


Girder A	0	1/16	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	5/16	1 1/4	1 15/16	2 3/8	2 5/16	2 3/8	1 15/16	1 1/4	5/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/8	1/16	0
Girder B	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/8	1/16	0
Girder C	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/8	1/16	0
Girder D	0	1/16	1/8	1/8	1/8	1/16	-1/16	-1/8	-3/16	-1/8	0	5/8	1 7/16	2 3/16	2 11/16	2 7/8	2 11/16	2 3/16	1 7/16	5/8	0	-1/8	-3/16	-1/8	-1/16	1/16	1/8	1/8	1/8	1/8	1/16	0
Girder E	0	1/16	1/8	1/8	1/8	1/16	0	-1/16	-1/8	-1/8	-1/8	0	5/16	1 1/4	1 15/16	2 3/8	2 5/16	2 3/8	1 15/16	1 1/4	5/16	0	-1/8	-1/8	-1/8	-1/16	0	1/16	1/8	1/8	1/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

DEAD LOAD DEFLECTIONS

Notes:
Dead load deflection includes weight of structural steel, concrete slab, and barrier curb.
20% of dead load deflection is due to the weight of structural steel.
Dead load deflection values are given in inches.
Negative values indicate upward deflection.



Girder A	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0
Girder B	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/16	3 7/8	3 5/16	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder C	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder D	0	3/16	5/16	7/16	7/16	3/8	5/16	3/16	1/16	0	0	1	2 1/16	3	3 5/8	3 7/8	3 5/8	3	2 1/16	1	0	0	1/16	3/16	1/4	3/8	7/16	7/16	5/16	3/16	0
Girder E	0	3/16	5/16	3/8	7/16	3/8	5/16	3/16	1/16	0	0	7/8	1 7/8	2 3/4	3 5/16	3 1/2	3 5/16	2 3/4	1 7/8	7/8	0	0	1/16	3/16	5/16	3/8	7/16	3/8	5/16	3/16	0

SPAN 1-2 SPAN 2-3 SPAN 3-4

CAMBER DIAGRAM

Notes:
Camber includes allowance for vertical curve, and for dead load deflection due to concrete slab, barrier curb, and structural steel.
Camber values are given in inches.
Positive values are above the chord between bents and negative values are below the chord between bents.

Notes:
For Theoretical Slab Haunch, see Sheet No. 27.

DEAD LOAD DEFLECTION AND CAMBER DIAGRAMS

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ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	189

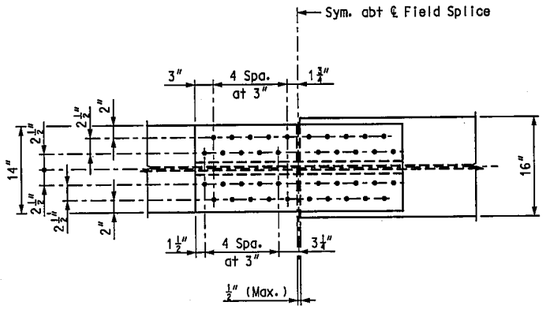
JOB NO. J4P1707

CONTRACT ID 080620-403

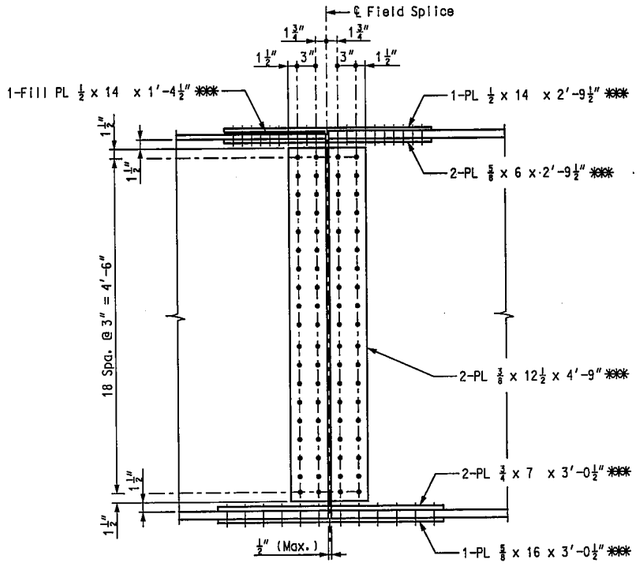
PROJECT NO. FAF 70-4(98)

COUNTY CASS

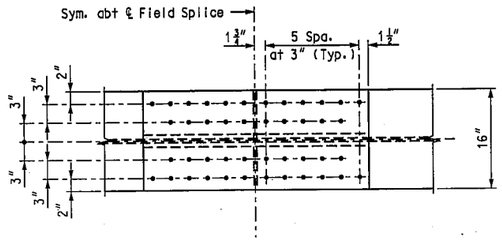
DATE



PLAN – TOP FLANGE



ELEVATION



PLAN – BOTTOM FLANGE

FIELD SPLICE 1, 2, 3, AND 4

Notes:
*** Indicates splice plates subject to notch toughness requirements.
Use ⅞" dia. high strength bolts with 15/16" dia. holes.
Fabricated Structural Steel for splice plates shall be ASTM A709 Grade 50.
For locations of field splices, see Sheet No. 18 or 19.

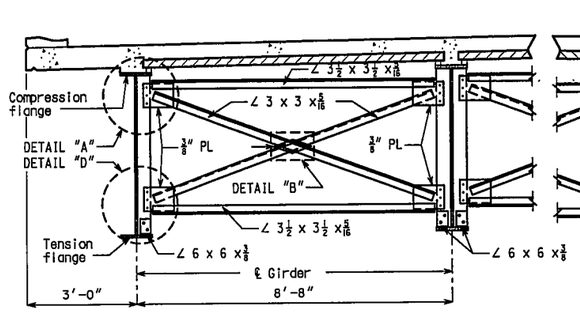
FIELD SPLICE DETAILS

A7353

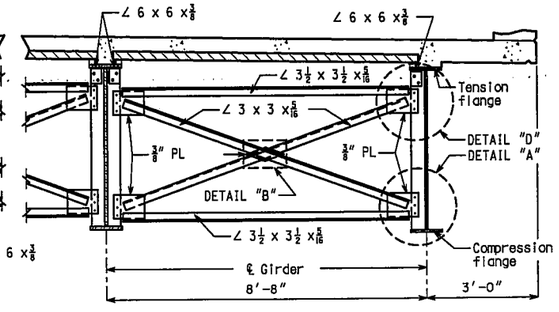
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

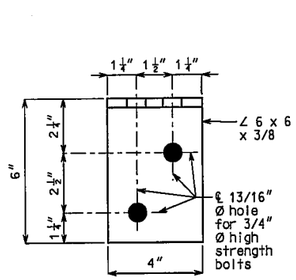
Note: This drawing is not to scale. Follow Dimensions.



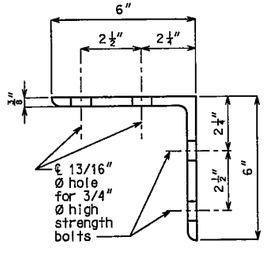
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION



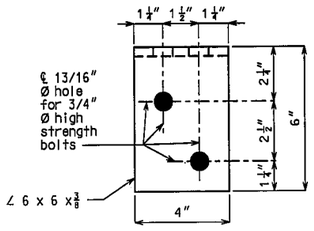
TYPICAL PART SECTION SHOWING
CROSS FRAMES AND
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION



ELEVATION

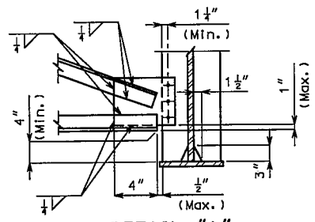


SIDE VIEW

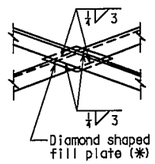


PLAN

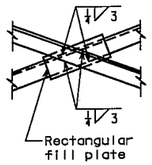
DETAIL OF FLANGE CONNECTION ANGLE



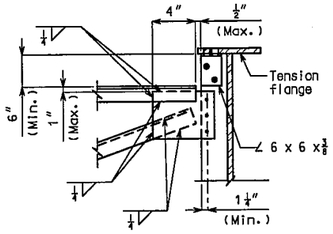
DETAIL "A"



DETAIL "B"



OPTIONAL
DETAIL "B"



DETAIL "D"

Notes:

The two ¾" Ø H.S. bolts that connect the 6 x 6 x ⅜ angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non-slab bearing diaphragms may be made 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 girder diaphragm connection plate or transverse web stiffener shall be standard size.

(*) At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail "B".

DIAPHRAGM AND CROSS FRAME DETAILS

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FINAL PLANS **HNTB**

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	191

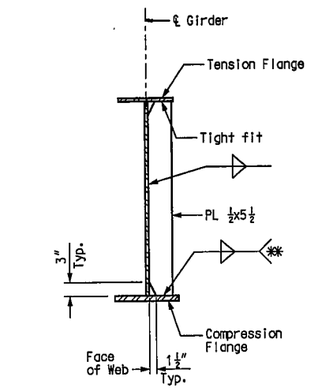
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

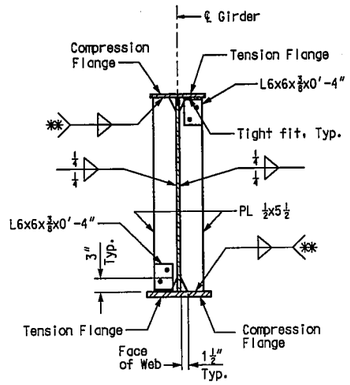
COUNTY CASS

DATE

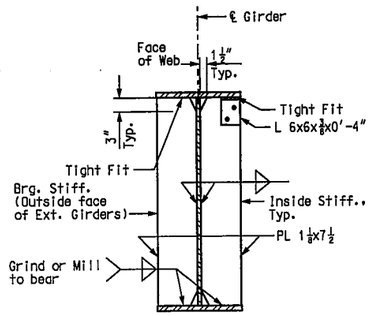


INTERMEDIATE STIFFENER

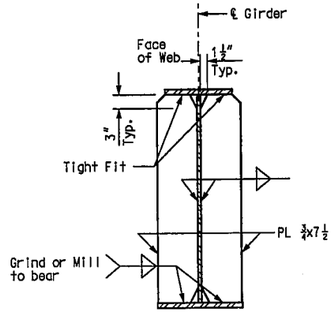
(One side only)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



BENTS 2 & 3



END BENTS 1 AND 4

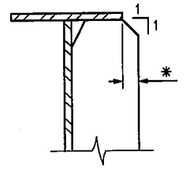
BEARING STIFFENER DETAILS

Fabricated structural steel for bearing stiffeners shall be ASTM A709 Grade 50.

WELDING DETAILS

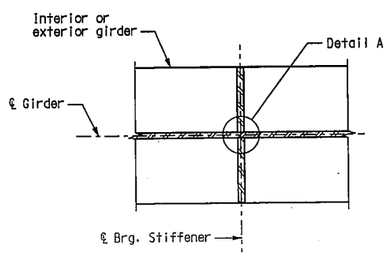
Notes:
Intermediate web stiffeners shall be located as shown in plan of structural steel.
Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

** Weld to Compression Flange. For location of Compression Flanges, see Girder Elevation.

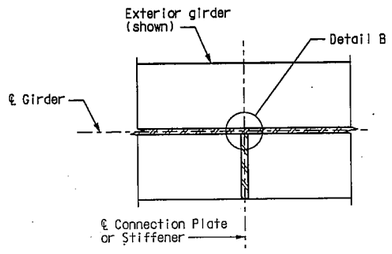


STIFFENER BEVEL DETAIL

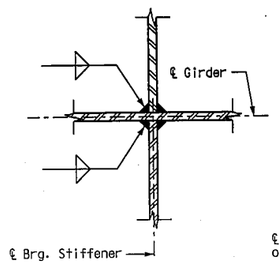
* When dimension exceeds ½", bevel Stiffener Plate.



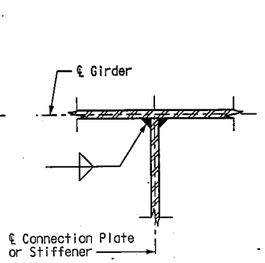
BEARING STIFFENERS



INTERMEDIATE DIAPHRAGM CONNECTION PLATE OR INTERMEDIATE STIFFENERS



DETAIL A



DETAIL B

TYPICAL LOCATION DETAILS

Notes:
For Girder Elevation, see Sheet No. 19.
For Framing Plan, see Sheet No. 18.
Fabricated Structural Steel shall be ASTM A709 Grade 36, except as noted.

STIFFENER AND WELD DETAILS

A7353

Detailed JULY 2006
Checked JULY 2006

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

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

USER: $$USER$$

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	192

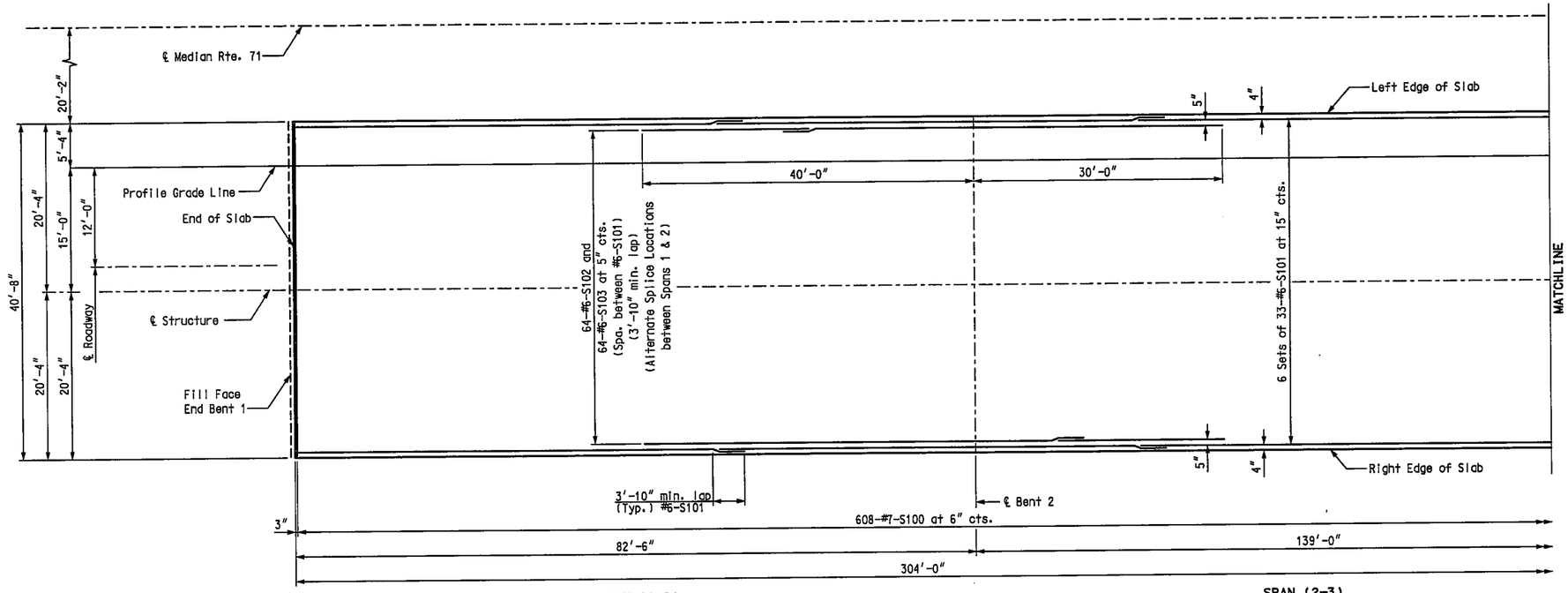
JOB NO. J4P1707

CONTRACT ID 080620-403

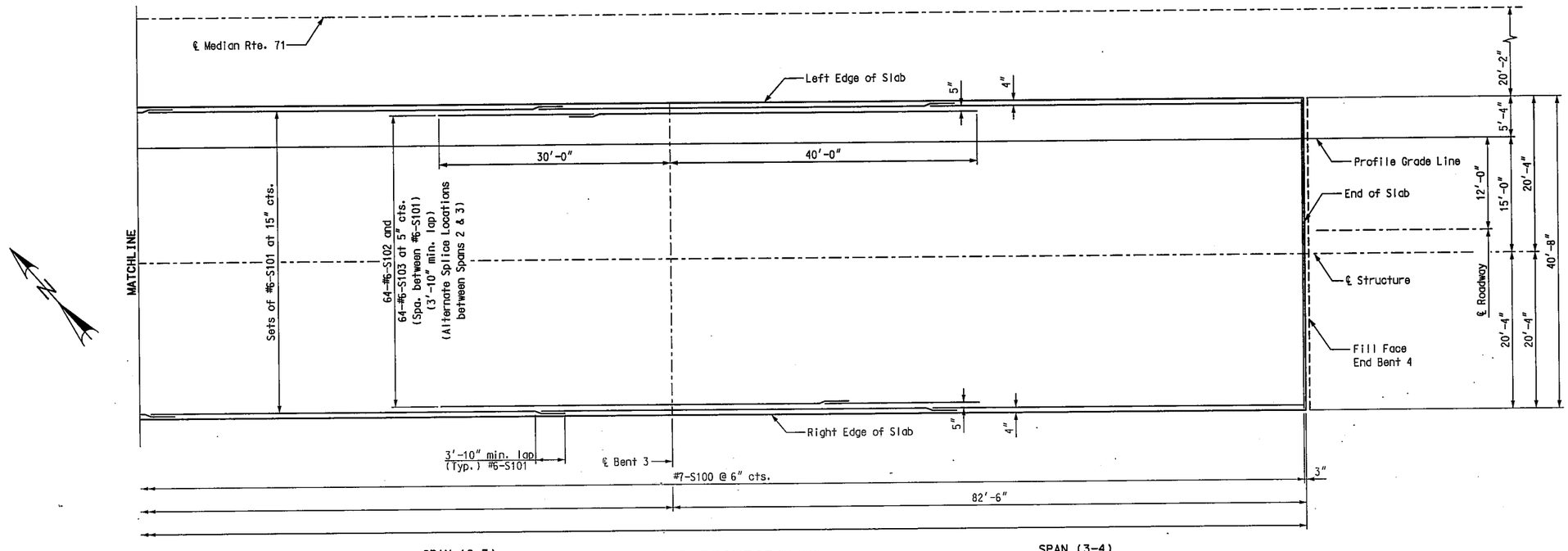
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



TOP REINFORCING



TOP REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.
For Typical Section, see Sheet No. 27.
For Location of Slab Drains, see Sheet No. 30.
For Slab Pouring Sequence, see Sheet No. 28.
For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.
Longitudinal slab dimensions are measured horizontally.

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	193

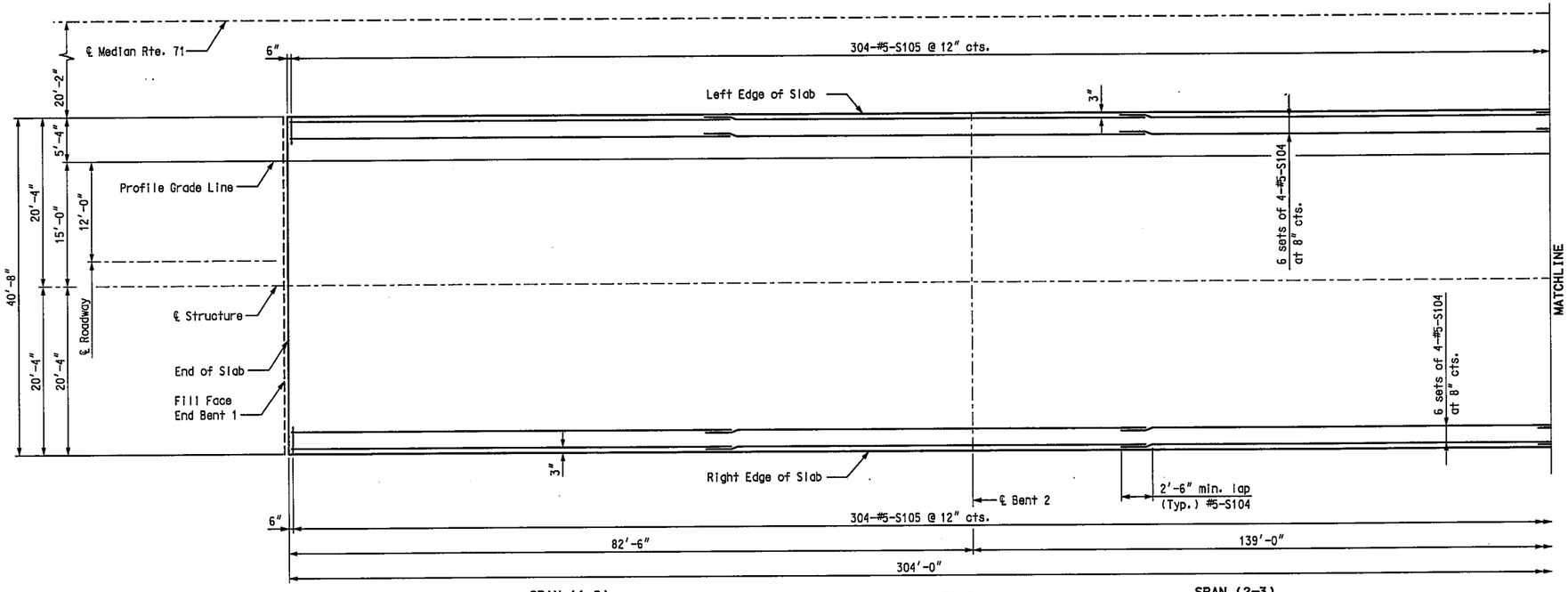
JOB NO. J4P1707

CONTRACT ID 080620-403

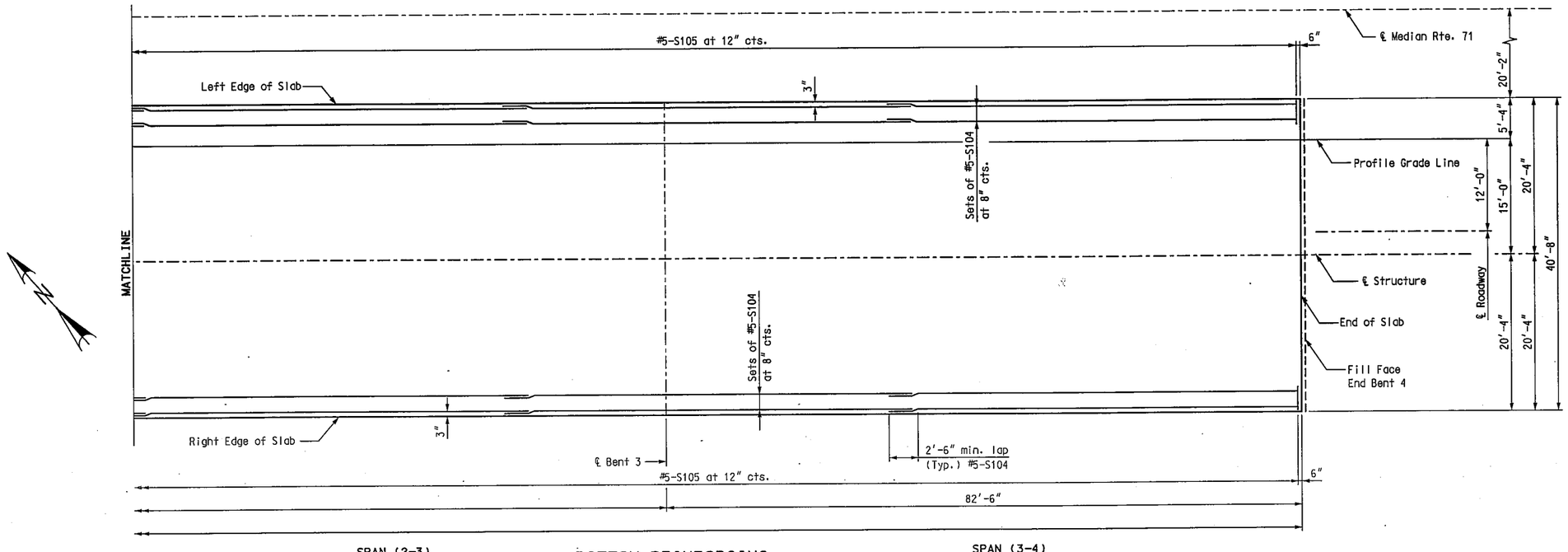
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



BOTTOM REINFORCING



BOTTOM REINFORCING

SLAB PLAN

Notes:

All precast prestressed deck panels shall be in place (full width of deck) before beginning pours for cast-in-place deck.

For Typical Section, see Sheet No. 27.

For Location of Slab Drains, see Sheet No. 30.

For Slab Pouring Sequence, see Sheet No. 28.

For Details and Reinforcing of Safety Barrier Curbs, see Sheet Nos. 31 thru 33.

Longitudinal slab dimensions are measured horizontally.

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

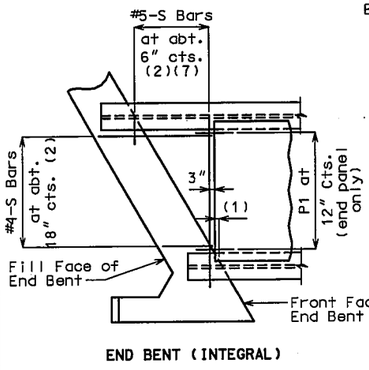
Note: This drawing is not to scale. Follow Dimensions.

A7353

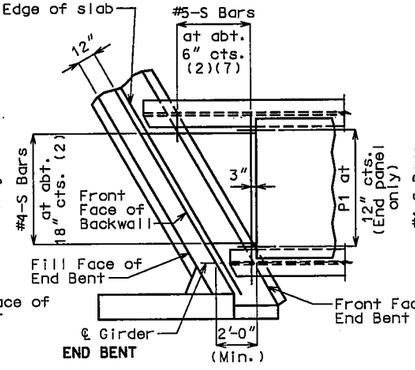
ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	194

JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE

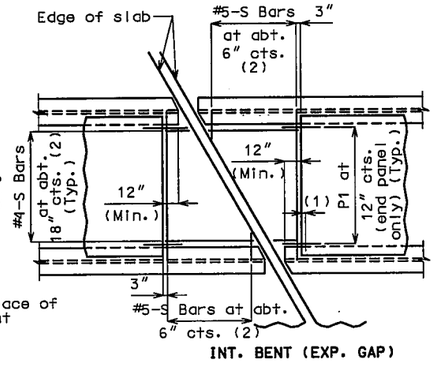
FINAL PLANS **HNTB**



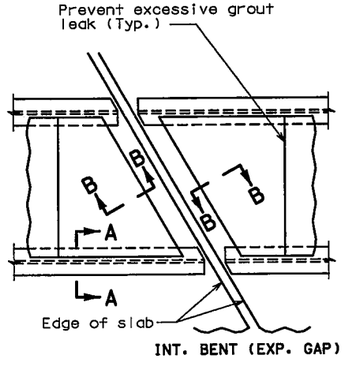
END BENT (INTEGRAL)
PANELS-SQUARED ENDS



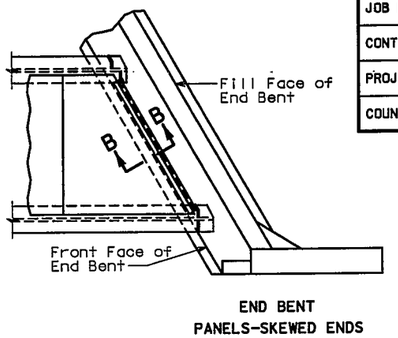
END BENT



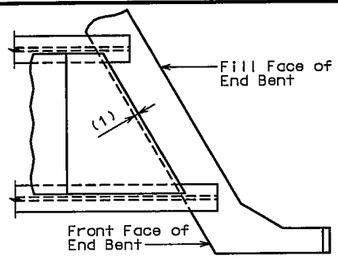
INT. BENT (EXP. GAP)



INT. BENT (EXP. GAP)

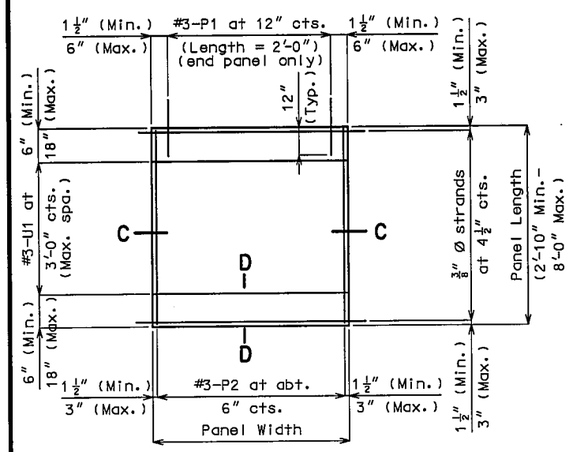


END BENT
PANELS-SKEWED ENDS

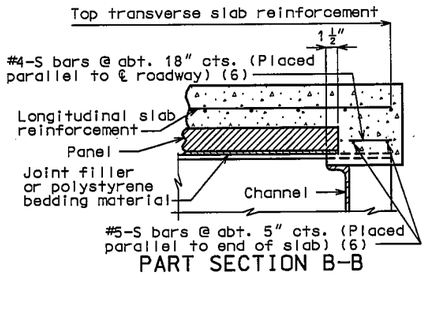


END BENT (INTEGRAL)

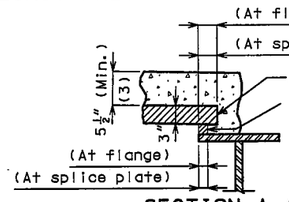
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PLAN OF PRECAST PRESTRESSED PANEL



PART SECTION B-B



SECTION A-A(4)

Note: The thickness of the preformed fiber expansion joint material or polystyrene bedding material shall be adjusted to achieve the slab haunching dimension found on sheet no. 27. These adjustments shall be within the limits noted in the general notes.

NOTES:

Cost of S-bars will be considered completely covered by the contract unit price for the slab

S-bars are not listed in the bill of reinforcing.

(1) End panels shall be dimensioned 1" min. to 1 1/2" max. from the inside face of diaphragm.

(2) S-bars shown are bottom steel in slab between panels and used with squared end panels only.

(3) Adjustment in the slab thickness, preformed fiber expansion joint material or polystyrene bedding material thickness, or grade will be necessary if the girder camber after erection differs from plan camber by more than the % of dead load deflection due to the weight of structural steel. No payment will be made for additional labor or materials for the adjustment.

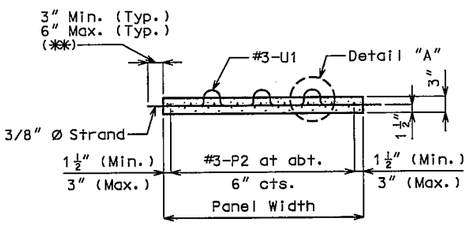
(4) All panel support pads shall be glued to the girder. When support thickness exceeds 1 1/2 inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

(5) Use #3-P3 bars if panel is skewed 45° or greater.

(6) S-bars shown are used with skewed end panels, or square end panels of square structures only. The #5 S-bars shall extend the width of slab (2'-6" lap if necessary) or to within 3 inches of expansion device assemblies.

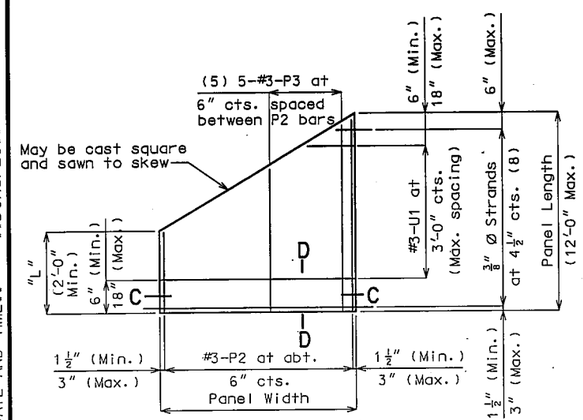
(7) Extend S-bars 18 inches beyond the front face of end bents only.

(8) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

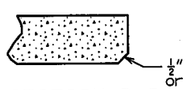


SECTION C-C

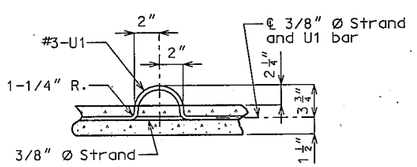
(**) Prestressing strands to extend 6" or to within 1" of adjacent panel.



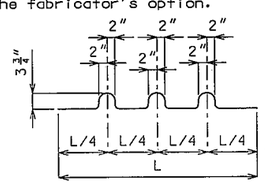
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION D-D



DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

(U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars).

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 3,500 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength uncoated seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq. in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When square end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 3/4 inch, except over splice plates where minimum thickness shall be 1/4 inch. When the material is less than 1/2 inch thick over a splice plate, the width of material at the splice shall be the same width as panel on splice. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. No more than 2" total thickness shall be used.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

REINFORCING STEEL:

All dimensions are out to out.

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

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

Actual lengths are measured along centerline of bar to the nearest inch.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 sq. in./ft., with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #3-P2 bars shown. Wirear bar diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The reinforcing steel shall be tied securely to the 3/8" Ø strands with the following maximum spacing in each direction: #3-P2 bars at 16 inches. Welded wire fabric or welded deformed bar mats at 2'-0".

Tie the #3-U1 bars to the #3-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 3'-0" centers.

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

DETAILS OF PRECAST PRESTRESSED PANELS

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS **HNTB**

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	195

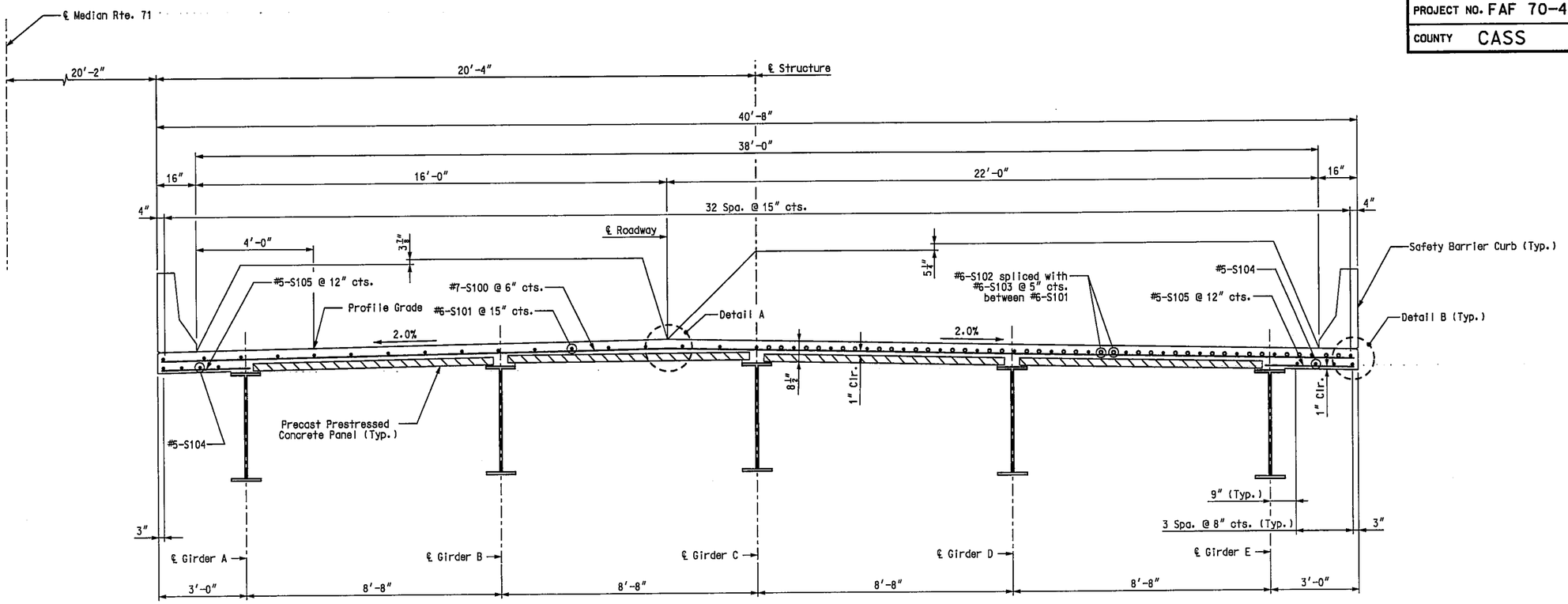
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

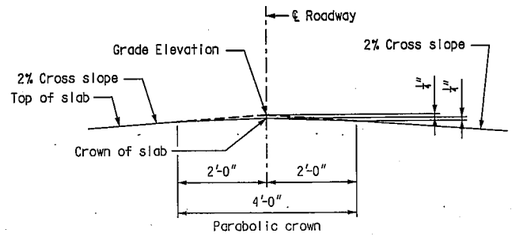
DATE



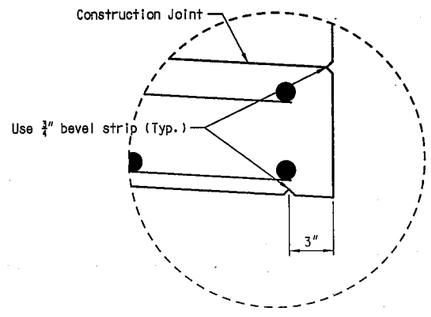
HALF-SECTION NEAR ℄ SPAN

HALF-SECTION NEAR INTERMEDIATE BENTS

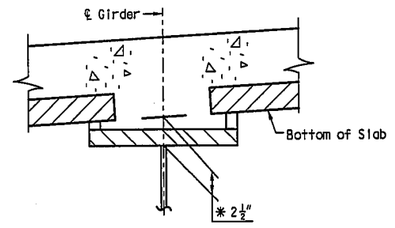
TYPICAL SECTION



DETAIL A



DETAIL B



THEORETICAL SLAB HAUNCH

* Dimensions may vary if the girder camber after erection differs from plan camber by more or less than the ¼ 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.

Notes:
Transverse slab dimensions are measured horizontally.
For Slab Pouring Sequence, see Sheet No. 28.
For details and reinforcement of Safety Barrier Curbs, not shown, see Sheet Nos. 31 thru 33.
For details of precast panels, see Sheet No. 26.

SLAB CROSS SECTION

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
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COUNTY CASS

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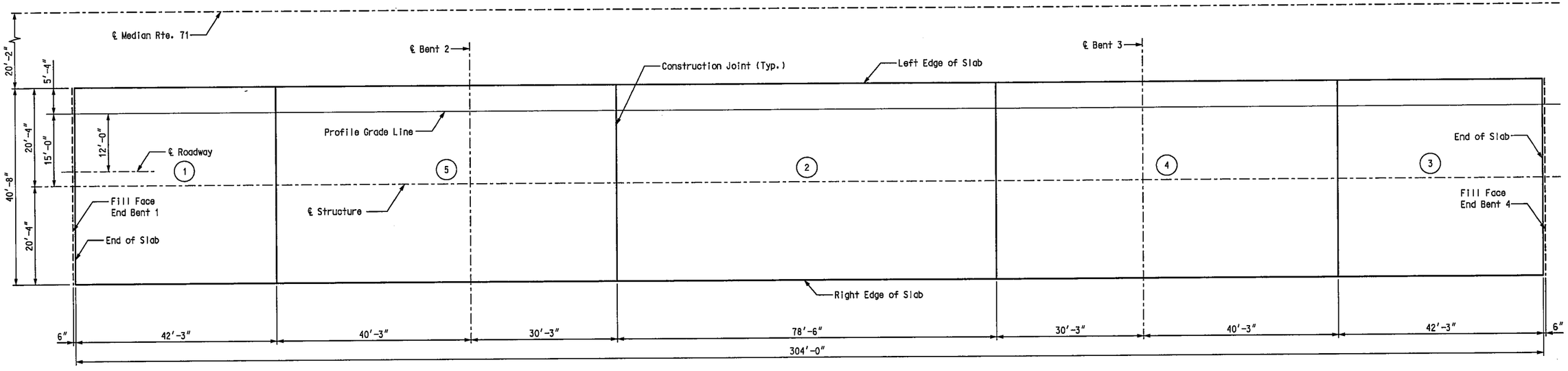
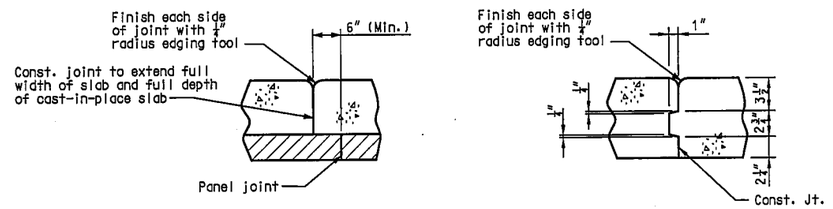


SPAN (1-2) SPAN (2-3) SPAN (3-4)

SLAB POURING SEQUENCE

	SEQUENCE OF POURS					MIN. RATE OF POUR CU. YDS./HR.	
	DIRECTION					WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	4	5	25	32
	Either Direction						
Alternate pours to the basic skip sequnce are subject to the approval of the engineer in accordance with Sec 703.							
Alternate "A" Pours	1 + 5 + 2 + 4 + 3					34	56
	End to End						



(Slab on Precast Panel) (Slab Cantilever)

SLAB CONSTRUCTION JOINT DETAILS

Notes:
Transverse construction joints shall be placed parallel to ℄ bents.
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.
For details of precast panels, see Sheet No. 26.
For location of slab drains, see Sheet No. 30.

SLAB POURING SEQUENCE

A7353

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	197

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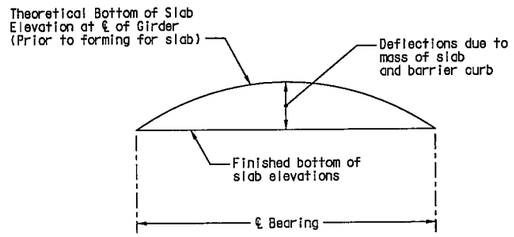


TYPICAL SLAB ELEVATION DIAGRAM

Theoretical Bottom of Slab Elevations at ℄ of Girder
(Prior to forming for slab) **

	Span (1-2)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1080.39	1080.30	1080.21	1080.12	1080.02	1079.92	1079.81	1079.71	1079.60	1079.49	1079.39
Girder B	1080.56	1080.48	1080.39	1080.29	1080.20	1080.09	1079.99	1079.88	1079.77	1079.67	1079.57
Girder C	1080.61	1080.53	1080.44	1080.35	1080.25	1080.15	1080.04	1079.93	1079.83	1079.72	1079.62
Girder D	1080.44	1080.36	1080.27	1080.17	1080.08	1079.97	1079.87	1079.76	1079.65	1079.55	1079.45
Girder E	1080.27	1080.18	1080.09	1080.00	1079.90	1079.80	1079.69	1079.59	1079.48	1079.37	1079.27
	Span (2-3)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1079.39	1079.24	1079.09	1078.93	1078.74	1078.54	1078.30	1078.04	1077.76	1077.47	1077.19
Girder B	1079.57	1079.42	1079.27	1079.12	1078.95	1078.74	1078.50	1078.24	1077.95	1077.65	1077.36
Girder C	1079.62	1079.47	1079.33	1079.17	1079.00	1078.79	1078.56	1078.29	1078.00	1077.71	1077.41
Girder D	1079.45	1079.30	1079.15	1079.00	1078.83	1078.62	1078.38	1078.12	1077.83	1077.53	1077.24
Girder E	1079.27	1079.12	1078.97	1078.81	1078.62	1078.42	1078.18	1077.92	1077.64	1077.35	1077.07
	Span (3-4)										
	℄ Brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	℄ Brg.
Girder A	1077.19	1077.03	1076.88	1076.72	1076.57	1076.42	1076.26	1076.10	1075.93	1075.76	1075.58
Girder B	1077.36	1077.20	1077.05	1076.89	1076.74	1076.59	1076.43	1076.27	1076.10	1075.93	1075.76
Girder C	1077.41	1077.25	1077.10	1076.95	1076.80	1076.64	1076.49	1076.32	1076.16	1075.99	1075.81
Girder D	1077.24	1077.08	1076.93	1076.77	1076.62	1076.47	1076.31	1076.15	1075.98	1075.81	1075.64
Girder E	1077.07	1076.91	1076.76	1076.60	1076.45	1076.30	1076.14	1075.98	1075.81	1075.64	1075.46

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab (including prestressed panel) and barrier curb.

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	198

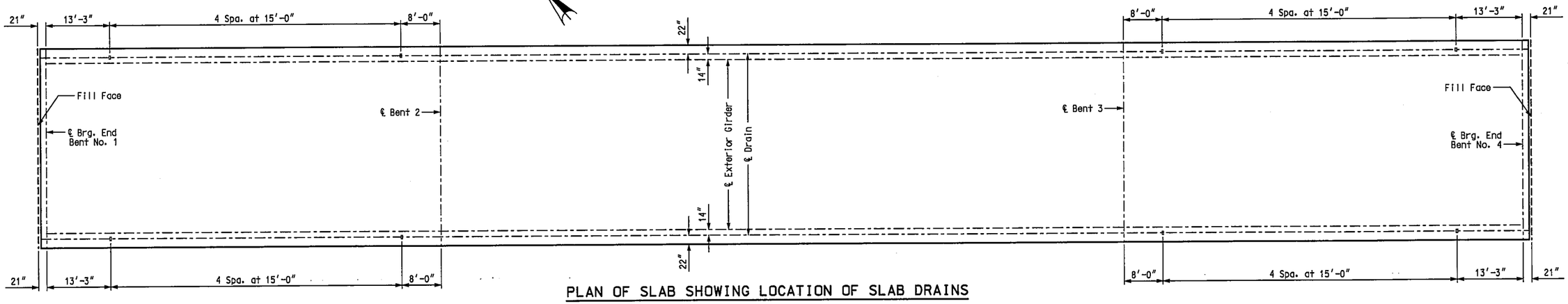
JOB NO. J4P1707

CONTRACT ID 080620-403

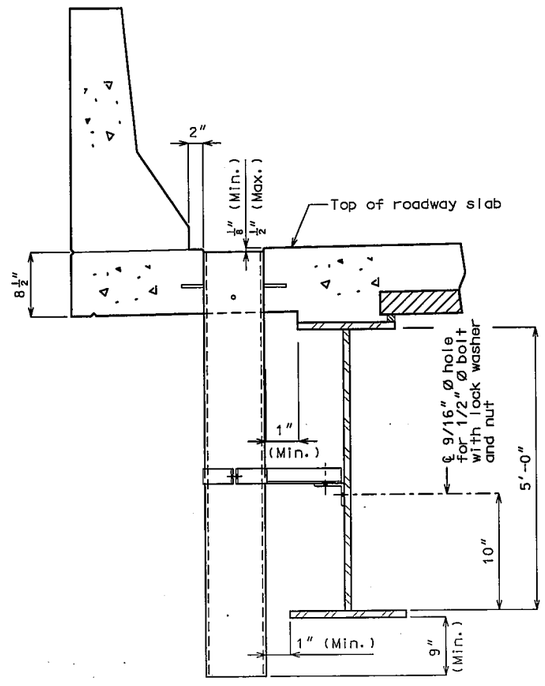
PROJECT NO. FAF 70-4(98)

COUNTY CASS

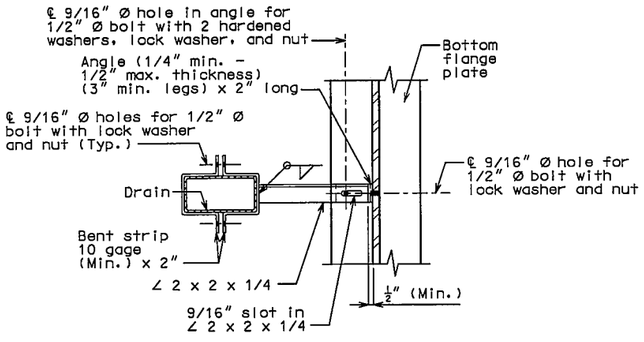
DATE



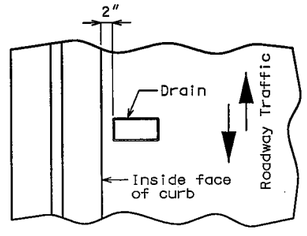
PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS



PART SECTION NEAR DRAIN

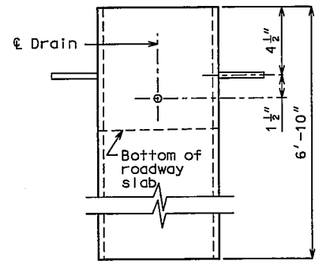


PART SECTION SHOWING BRACKET ASSEMBLY

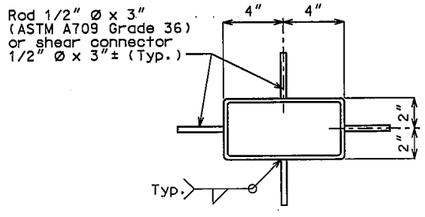


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



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 located on the plate girder shop drawings.

SLAB DRAIN DETAILS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	199

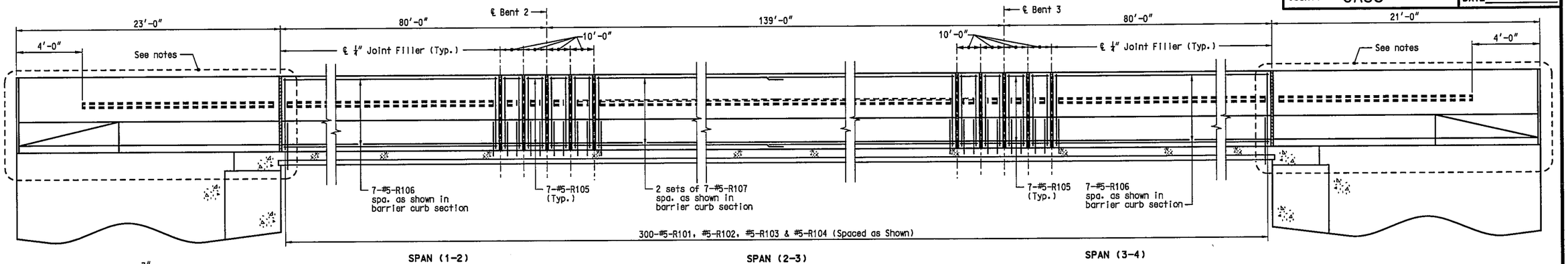
JOB NO. J4P1707

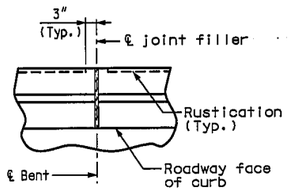
CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

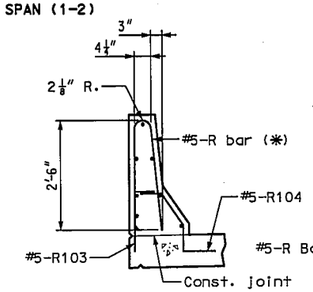
COUNTY CASS

DATE

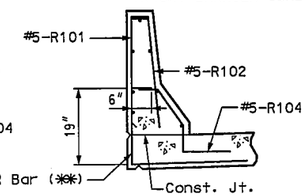


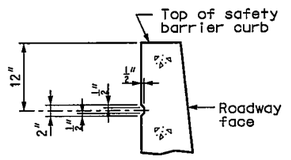


PART PLAN SHOWING
SAFETY BARRIER CURB JOINT

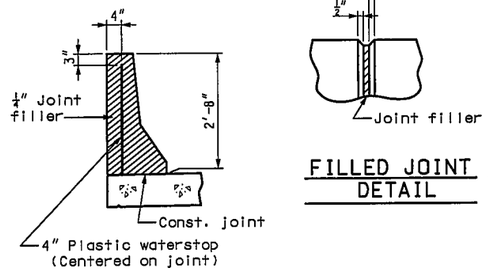


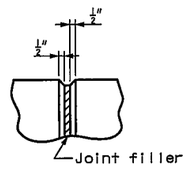
SECTION NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)





PART SECTION SHOWING
RUSTICATION DETAILS





FILLED JOINT
DETAIL

DETAILS OF PLASTIC WATERSTOP

Notes:

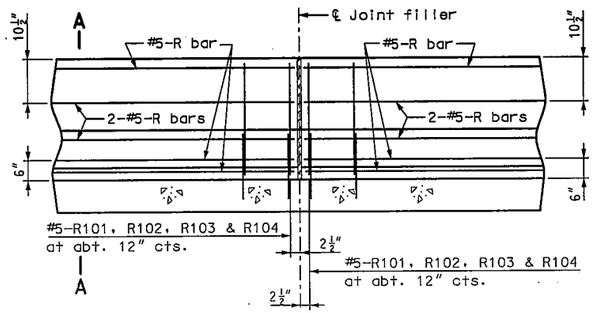
Plastic waterstop shall be placed in all safety barrier curb filled joints, except structures with superelevation, use on all lower safety barrier curb joints only.

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

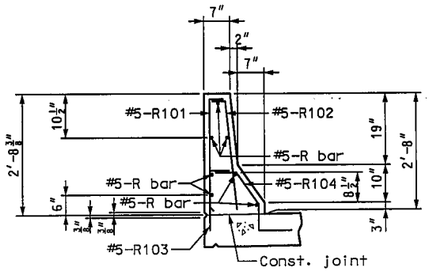
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R101 and R102 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



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 = 2.29 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 ½" radius or a ⅜" 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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

Longitudinal dimensions are horizontal arc dimensions

The curb shall be cured by application of type 1-d or type z liquid membrane - forming compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 will not be permitted.

SAFETY BARRIER CURB

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	200

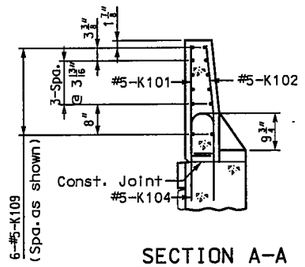
JOB NO. J4P1707

CONTRACT ID 080620-403

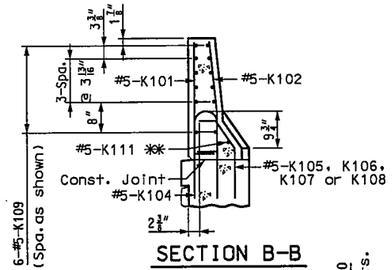
PROJECT NO. FAF 70-4(98)

COUNTY CASS

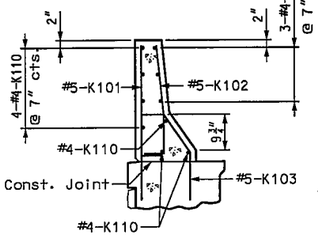
DATE



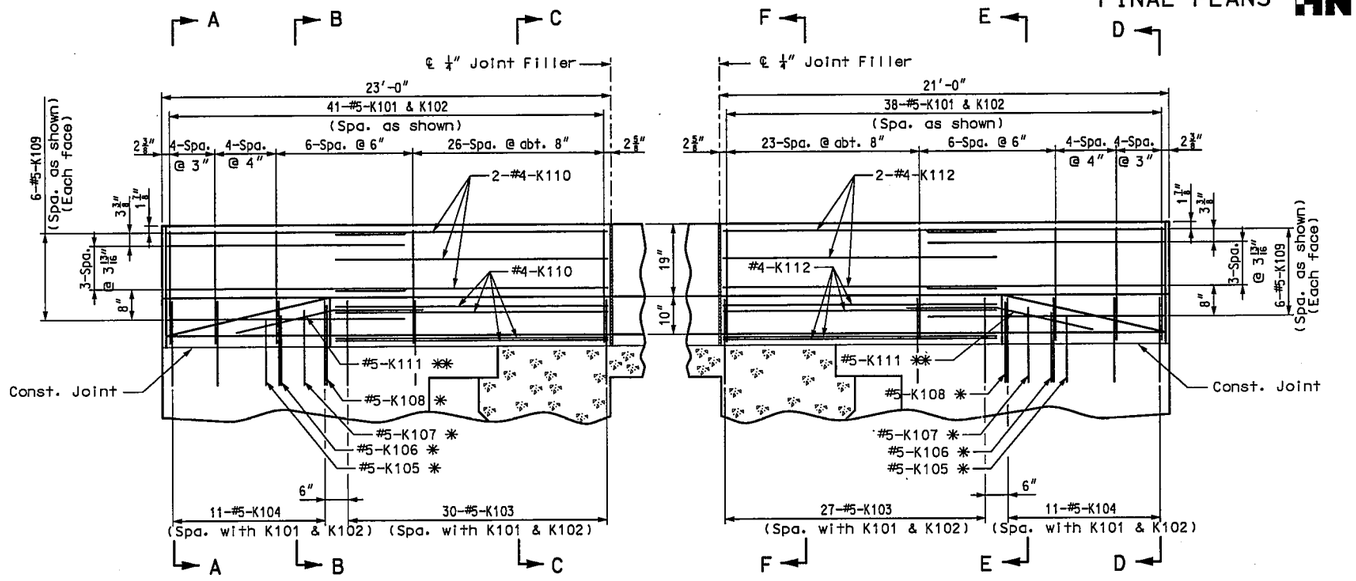
SECTION A-A



SECTION B-B



SECTION C-C

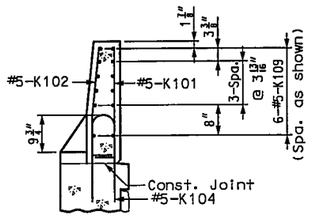


ELEVATION END BENT 1

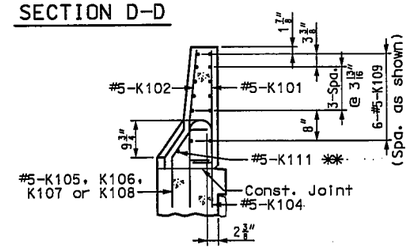
ELEVATION END BENT 4

* Spaced with #5-K104 bars.

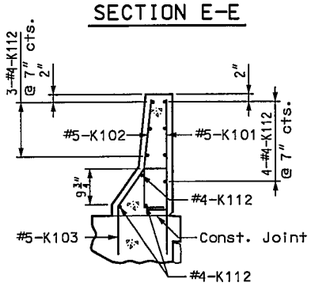
** Fit bar to follow transition face of curb.



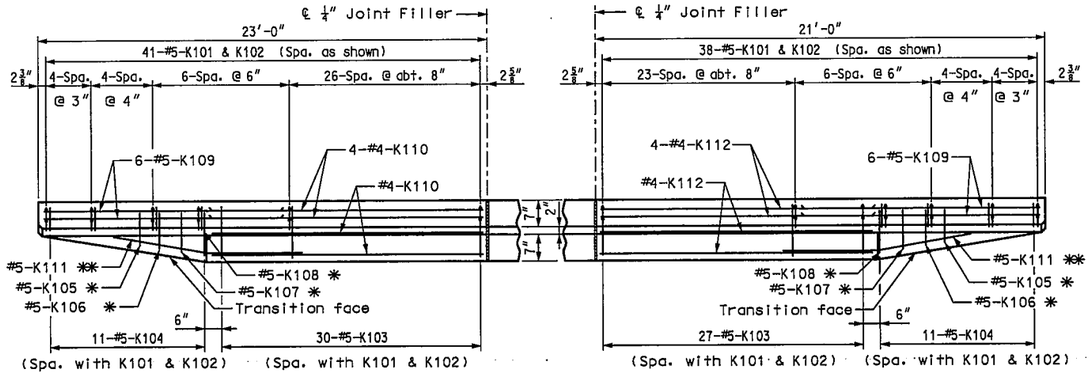
SECTION D-D



SECTION E-E

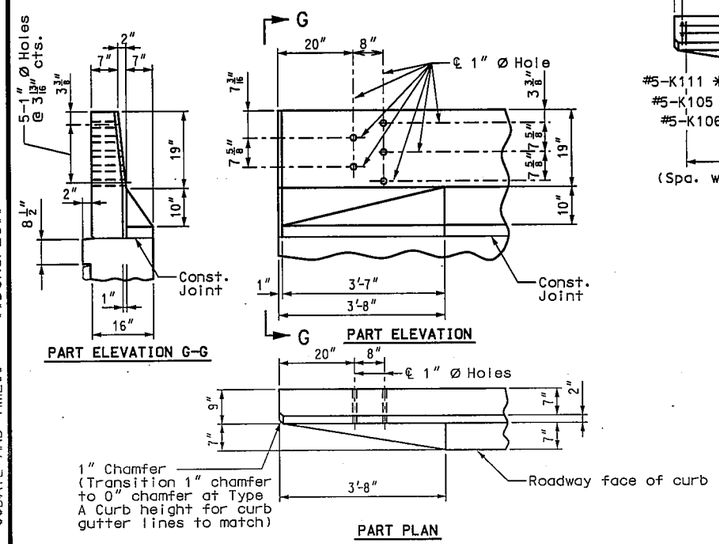


SECTION F-F



PLAN END BENT 1

PLAN END BENT 4



DETAILS OF GUARD RAIL ATTACHMENT

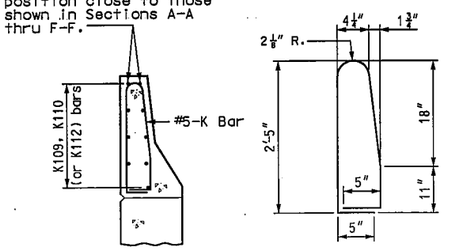
NOTES: Use a minimum lap of 2'-0" between K109 and K110 (or K112) bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown: right barrier curb similar)

The top two K109 and K110 (or K112) bars shall be kept with position close to those shown in Sections A-A thru F-F.



(K103 or K104 thru K108 bars not shown for clarity)

K101-K102 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) The K101 and K102 bar combination may be furnished as one bar as shown, at the contractor's option.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

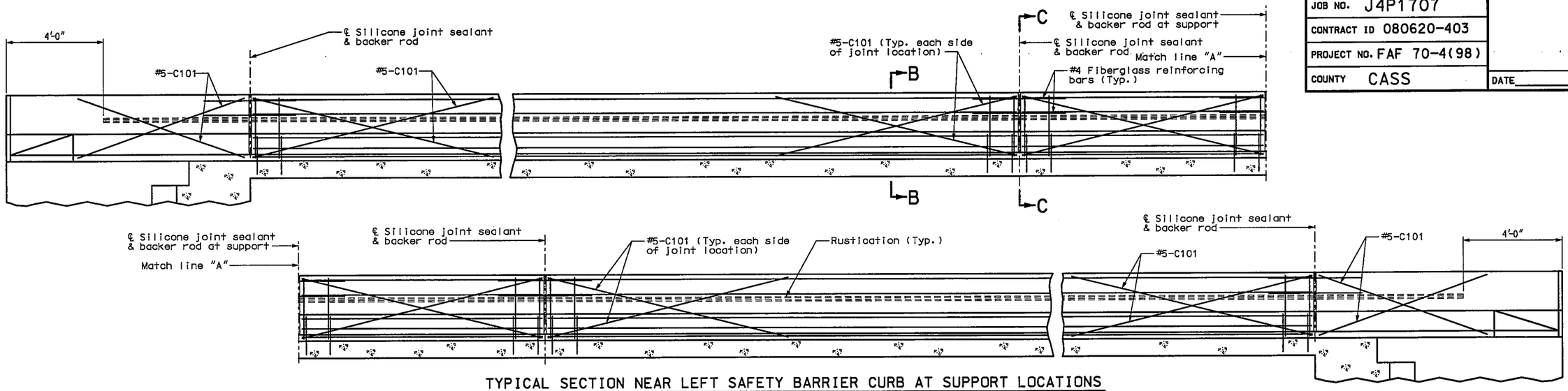
Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	201

JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE



TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS

(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Notes:

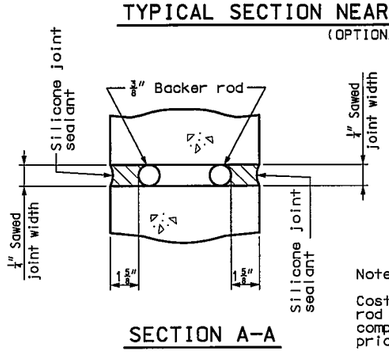
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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. Surface sealing for concrete in accordance with Sec 703 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.

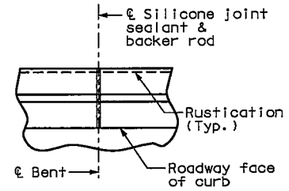
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

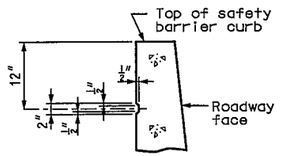
Note:

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.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



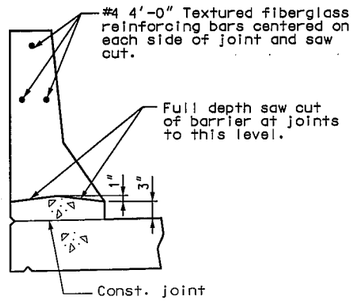
PART PLAN SHOWING SAFETY BARRIER CURB JOINT



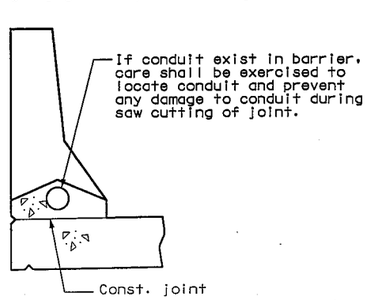
PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

(Use on highway grade separation only)

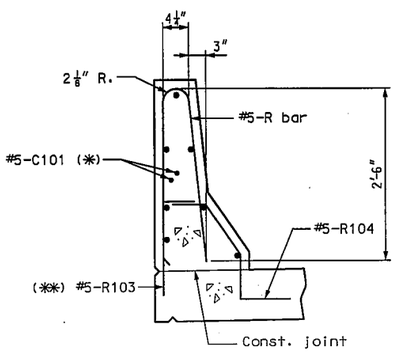


PART SECTION C-C



PART SECTION C-C

(Use when conduit required)

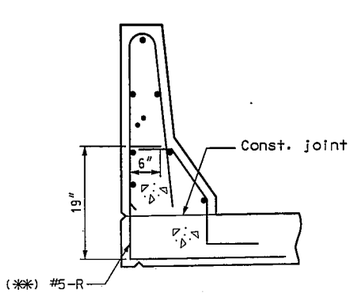


PART SECTION B-B

Notes:

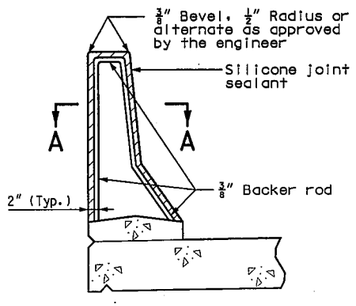
(*) Each side of joint location.

(**) The R103 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.



PART SECTION B-B

(Optional #5-R bar shown)



SECTION THRU JOINT

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

OPTIONAL SLIP-FORM
BRIDGE SAFETY BARRIER CURB

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$
$$USER$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	202

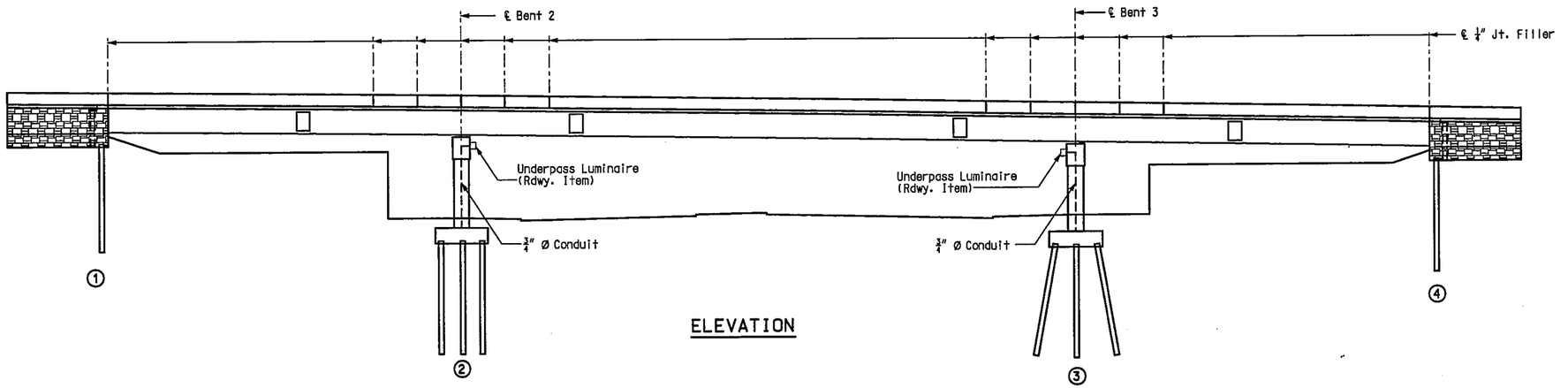
JOB NO. J4P1707

CONTRACT ID 080620-403

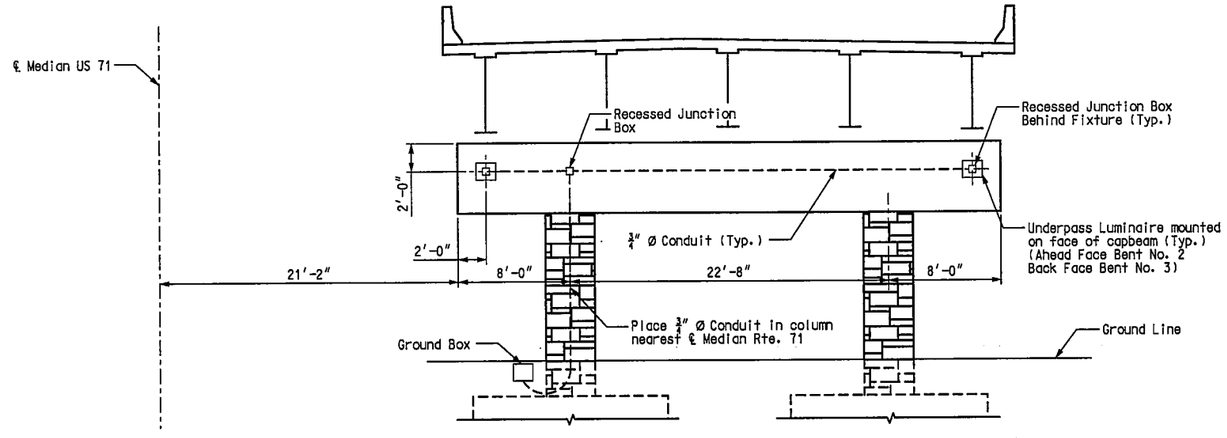
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



ELEVATION



TYPICAL SECTION

Notes:

Payment for furnishing and installing Conduit System in substructure, complete-in-place, will be paid for at the contract unit price for Conduit System on Structure, lump sum.

All conduit shall be rigid non-metallic schedule 40 heavy wall PVC (polyvinyl chloride plastic) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters' Laboratories, Inc., (UL) label.

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

For details of underdeck lighting and wiring, see electrical plans.

CONDUIT SYSTEM FOR LIGHTING UNDER BRIDGE

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS **HNTB**

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	203

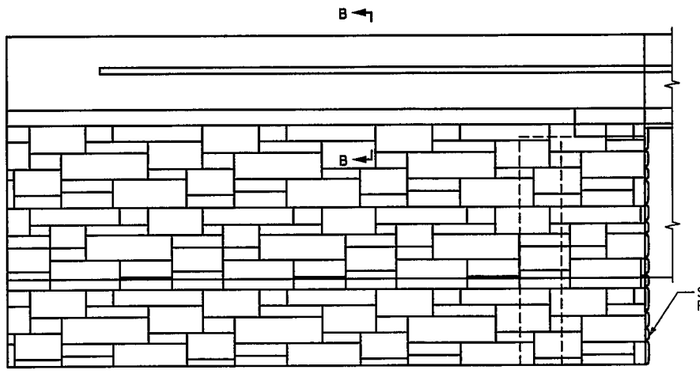
JOB NO. J4P1707

CONTRACT ID 080620-403

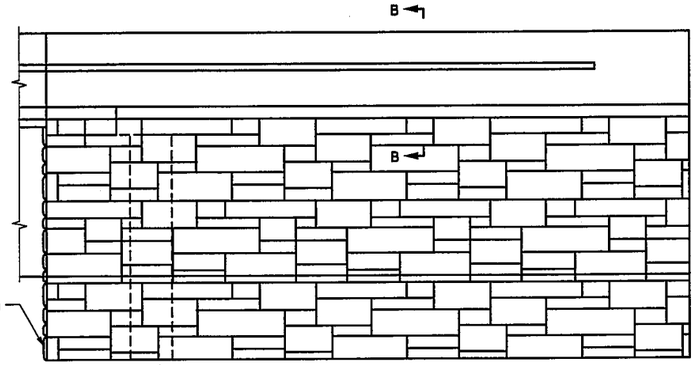
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

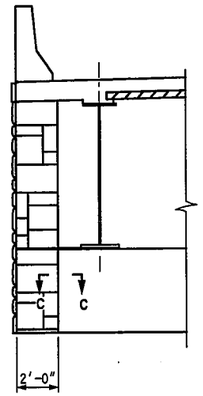


END BENT NO. 1

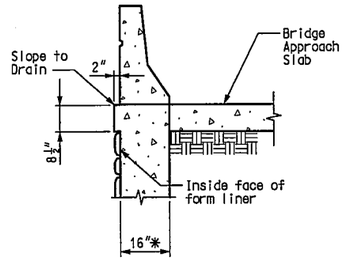


END BENT NO. 4

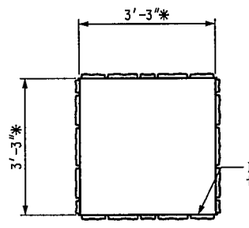
END BENT WING ELEVATION



END BENT NO. 1 PART ELEVATION
(End Bent No. 4 Similar)

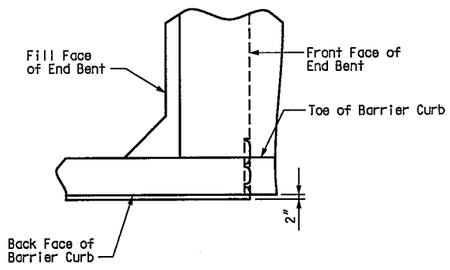


PART SECTION B-B

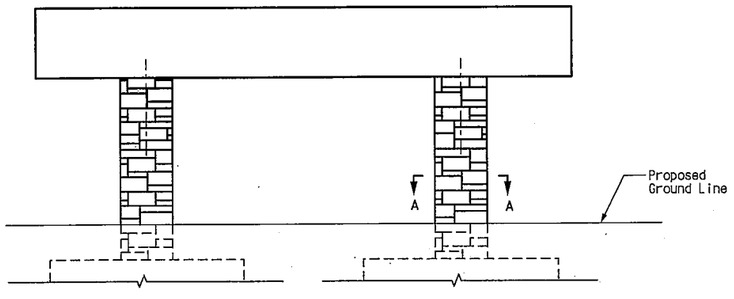


* Limits of concrete pay quantity

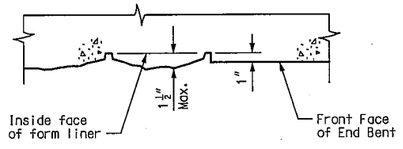
SECTION A-A



PLAN AT END BENTS



INTERMEDIATE BENT ELEVATION



SECTION C-C

Notes:

The cost of form liner will be paid for at the contract unit price for Form Liner per Sq. Yd. The cost of concrete necessary to fill the form lines shall be included in the contract unit price per Sq. Yd. of Form Liner.

Form liner seams shall be oriented away from traffic.

The following is a list of form liner manufacturers and types which may be used. All form liner patterns depth of relief shall vary up to 1½". The height of any single 'stone' shall be 15" maximum.

Scott System, Inc.: Form liner pattern #167 "Ashlar Stone".

Fitzgerald Formliners: Form liner pattern #16986 "Ashlar Stone".

Dayton Superior/Symons: Form liner pattern #1515 "Ashlar Stone".

Limits of Masonry and Graffiti Protection System at End Bents shall be all surfaces with Form Liner.

Limits of Masonry and Graffiti Protection System at Intermediate Bents shall be all column surfaces from the top of the footing to the bottom of the capbeam.

FORM LINER DETAILS

USER: $$USER$$
PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS

HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	204

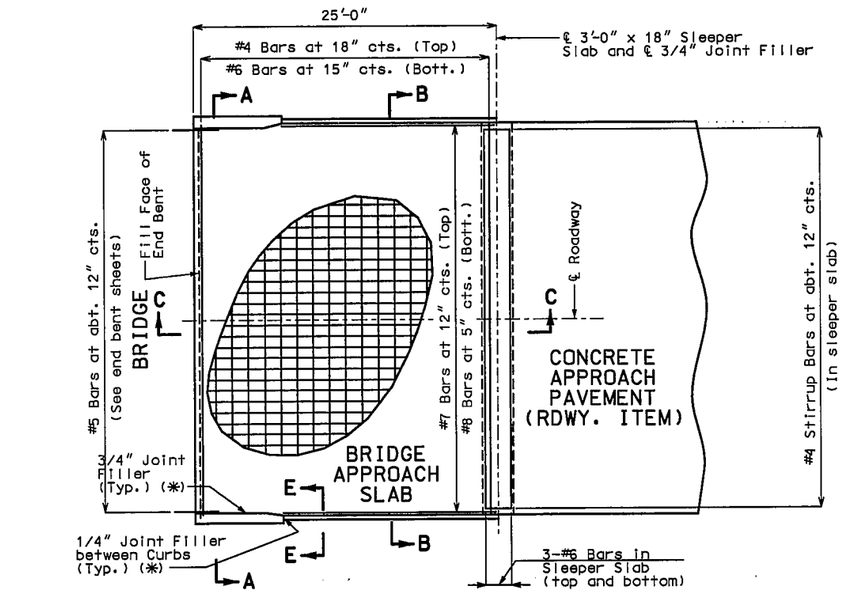
JOB NO. J4P1707

CONTRACT ID 080620-403

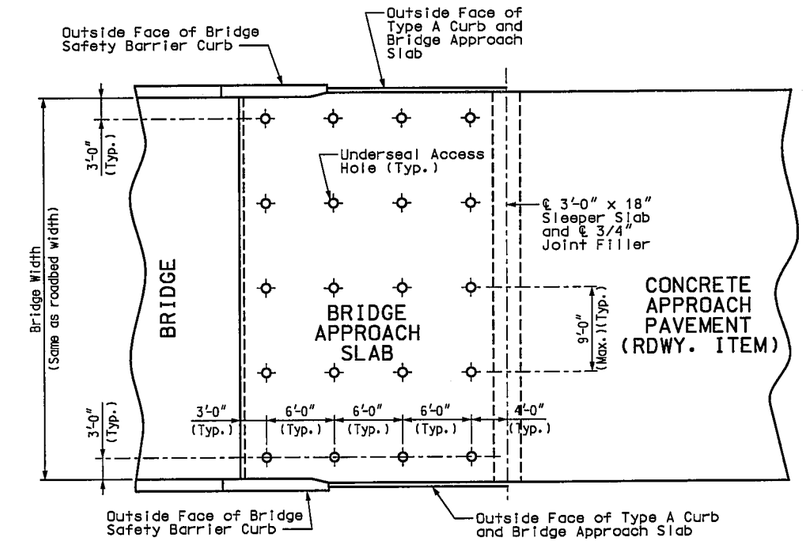
PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

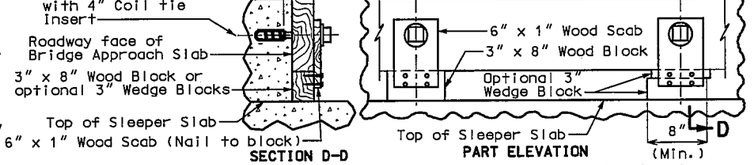


PART PLAN SHOWING REINFORCEMENT



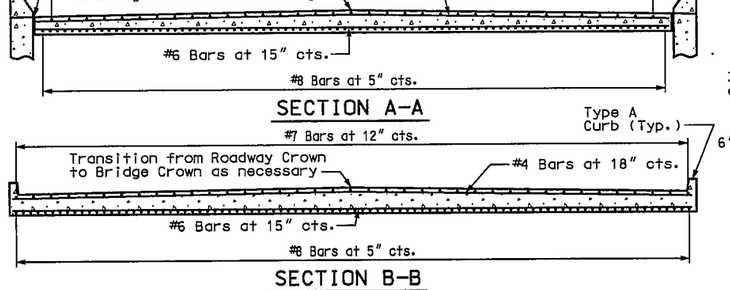
PART PLAN

(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

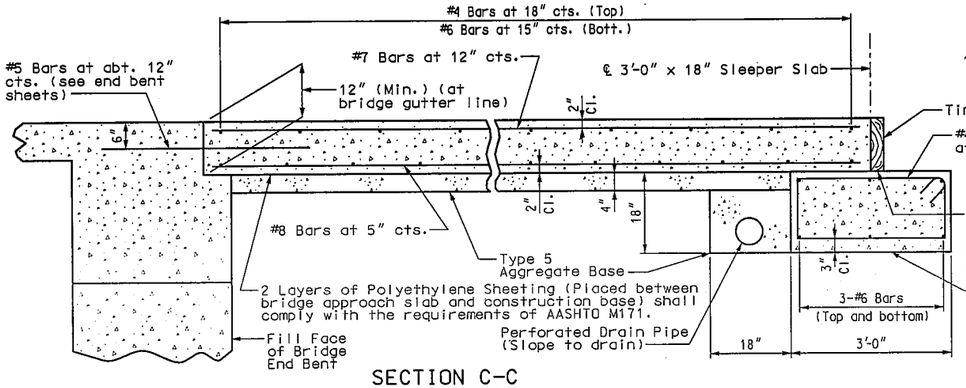


Note: Remove timber header when concrete pavement is placed.

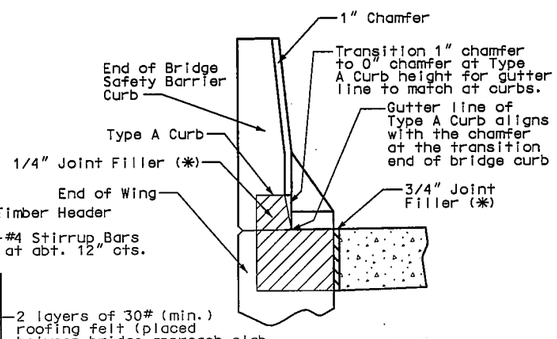
DETAILS OF TIMBER HEADER



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

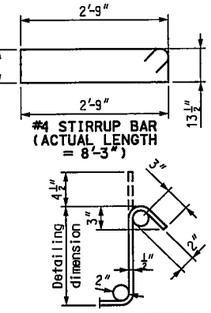


SECTION C-C



SECTION E-E

(BETWEEN CURBS)



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).

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 shall 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 by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

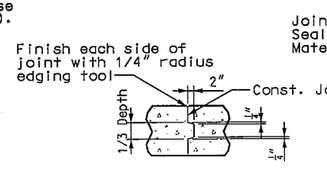
For Concrete Approach Pavement details, see roadway plans.

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

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.

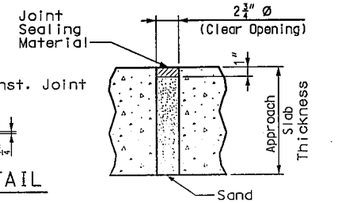
When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy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



CONST. JOINT DETAIL

(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

BRIDGE APPROACH SLAB

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	205

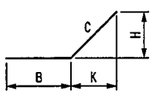
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



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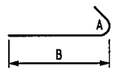

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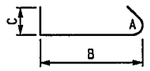

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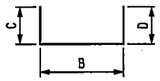
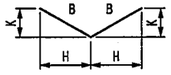


SHAPE 5

SHAPE 7



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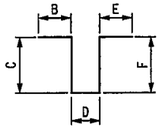

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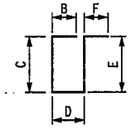

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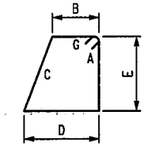

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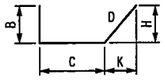

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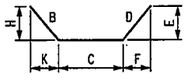

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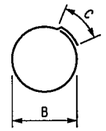
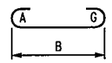


SHAPE 16

SHAPE 17



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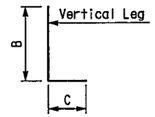

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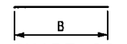

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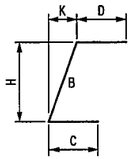

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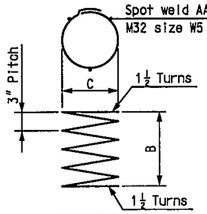

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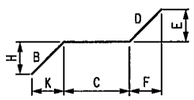

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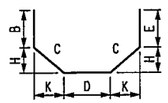

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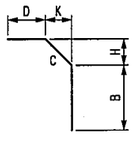

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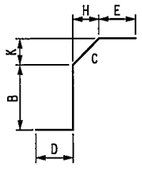

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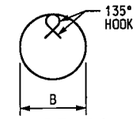

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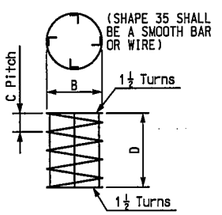

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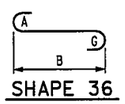

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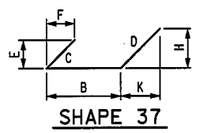

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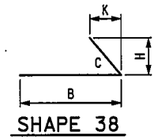

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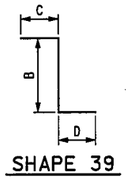

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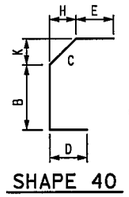

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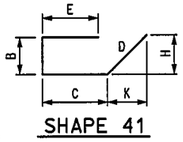

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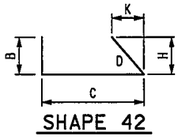

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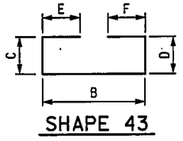

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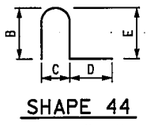

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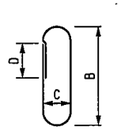

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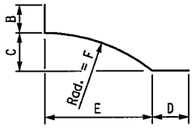

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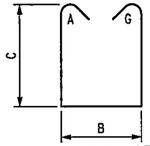
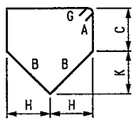
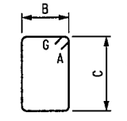


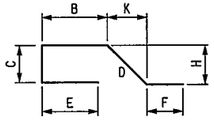
SHAPE 47



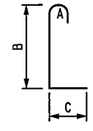
SHAPE 52



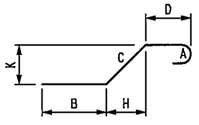
SHAPE 53



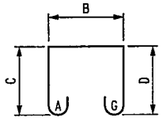
SHAPE 54



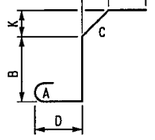
SHAPE 55



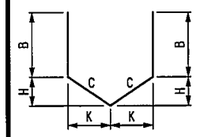
SHAPE 56



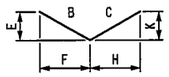
SHAPE 57



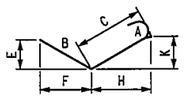
SHAPE 58



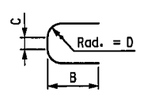
SHAPE 60



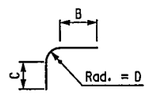
SHAPE 61



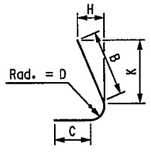
SHAPE 62



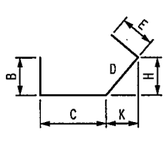
SHAPE 63



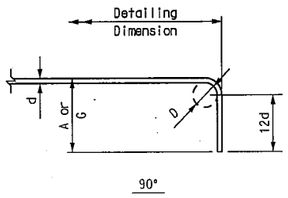
SHAPE 64



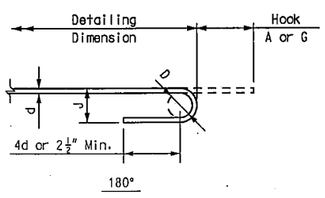
SHAPE 65



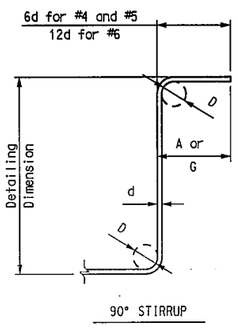
SHAPE 66



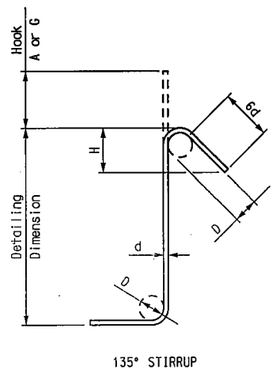
90°



180°



90° STIRRUP



135° STIRRUP

STIRRUP HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		90° Hooks	135° Hooks	
		Hook A or G	Hook A or G	Approx. H
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	8"	4½"

END HOOK DIMENSIONS

Bar Size	D (IN.)	All Grades		
		180° Hooks		90° Hooks
		Hook A or G	J	Hook A or G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¾"	17"	13¼"	22"
#11	12"	19"	14¾"	2'-0"
#14	18¼"	2'-3"	21¾"	2'-7"
#18	2'-0"	3'-0"	2'-4½"	3'-5"

Notes:

All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.

Hooks and bends shall be in accordance with the procedures as shown on this sheet.

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricators use. (Nearest inch)

Payweights are based on actual lengths.

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

E = Epoxy coated reinforcment.

S = Stirrup.

X = Bar is included in substructure quantities.

Actual lengths are measured along centerline bar to the nearest inch.

V = Bar dimensions vary in equal increments between dimensions shown on this line and the following line.

No. ea. = Number of bars of each length.

Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

Reinforcing steel (Grade 60) fy = 60,000 psi.

BAR BENDING DIAGRAMS

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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

A7353

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	206

JOB NO. J4P1707
CONTRACT ID 080620-403
PROJECT NO. FAF 70-4(98)
COUNTY CASS
DATE

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			END BENT 1																									
38	6F	100	Beam & Diaph.		23					14		5′	0″	14		9	7/8	9	7/8	9	7/8	9	7/8	7′	4″	7′	4″	419
10	6F	101	Diaphragm		19					5′	3″	2′	6″											7′	9″	7′	8″	115
30	6H	100	Beam & Diaph.		20					40′	4″													40′	4″	40′	4″	1,817
38	5H	101	App. Seat	E	20					2′	6″													2′	6″	2′	6″	99
12	8H	102	Wingwall		20					22′	6″													22′	6″	22′	6″	721
4	8H	103	Wingwall	E	20					22′	6″													22′	6″	22′	6″	240
76	9H	104	Wingwall		20					22′	6″													22′	6″	22′	6″	5,814
4	6H	105	Beam		20					11′	6″													11′	6″	11′	6″	69
34	5U	100	Beam & Diaph.		5	S				2′	6″	5′	3″	5′	3″									13′	0″	12′	9″	452
6	4U	101	Beam		53	S				2′	6″	2′	7″											10′	11″	10′	8″	43
9	4U	102	Beam		5	S				2′	6″	2′	7″	2′	7″									7′	8″	7′	6″	45
40	5U	103	Diaphragm	E	21	S				2′	1″	5′	8″	5′	8″					2′	1″	1/2		13′	5″	13′	2″	549
34	6U	104	Diaphragm		19	S				4′	9″	2′	6″											7′	3″	7′	2″	366
60	6U	105	Diaphragm	E	38	S				4′	0″	6′	0″							6′	0″	1 1/2		10′	0″	10′	0″	901
18	4U	106	Beam		5	S				2′	6″	14		14										4′	10″	4′	8″	56
12	5V	100	Beam & Diaph.		20					5′	3″													5′	3″	5′	3″	66
15	6V	101	Diaphragm		20					4′	10″													4′	10″	4′	10″	109
42	6V	102	Wingwall		20					8′	7″													8′	7″	8′	7″	541
42	6V	103	Wingwall		20					8′	6″													8′	6″	8′	6″	536
			END BENT 4																									
38	6F	400	Beam & Diaph.		23					14		5′	0″	14		9	7/8	9	7/8	9	7/8	9	7/8	7′	4″	7′	4″	419
10	6F	401	Diaphragm		19					5′	3″	2′	6″											7′	9″	7′	8″	115
30	6H	400	Beam & Diaph.		20					40′	4″													40′	4″	40′	4″	1,817
38	5H	401	App. Seat	E	20					2′	6″													2′	6″	2′	6″	99
12	8H	402	Wingwall		20					20′	6″													20′	6″	20′	6″	657
6	8H	403	Wingwall *	E	20					20′	6″													20′	6″	20′	6″	328
76	9H	404	Wingwall		20					20′	6″													20′	6″	20′	6″	5,297
4	6H	405	Beam		20					11′	6″													11′	6″	11′	6″	69
34	5U	400	Beam & Diaph.		5	S				2′	6″	5′	3″	5′	3″									13′	0″	12′	9″	452
6	4U	401	Beam		53	S				2′	6″	2′	7″											10′	11″	10′	8″	43
9	4U	402	Beam		5	S				2′	6″	2′	7″	2′	7″									7′	8″	7′	6″	45
40	5U	403	Diaphragm	E	21	S				2′	1″	5′	8″	5′	8″					2′	1″	1/2		13′	5″	13′	2″	549
34	6U	404	Diaphragm		19	S				4′	9″	2′	6″											7′	3″	7′	2″	366
60	6U	405	Diaphragm	E	2	S				4′	0″	6′	0″							6′	0″	1 1/2		10′	0″	10′	0″	901
18	4U	406	Beam		5	S				2′	6″	14		14										4′	10″	4′	8″	56
12	5V	400	Beam & Diaph.		20					5′	3″													5′	3″	5′	3″	66
15	6V	401	Diaphragm		20					4′	10″													4′	10″	4′	10″	109
38	6V	402	Wingwall		20					8′	7″													8′	7″	8′	7″	490
38	6V	403	Wingwall		20					8′	6″													8′	6″	8′	6″	485

* Two additional #8-H403 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			BENT 2																									
10	W5W	200	Anchor Bolt Wells		22		X			2′	1″	9	1/8													33′	2″	33′	2″	55
20	8D	200	Footing		18		X			11′	6″															13′	4″	13′	4″	712
24	8D	201	Footing		18		X			9′	6″															11′	4″	11′	4″	726
9	10H	200	Beam		20		X			38′	4″															38′	4″	38′	4″	1,485
8	6H	201	Beam		20		X			38′	4″															38′	4″	38′	4″	461
8	10H	202	Beam		18		X			38′	4″															41′	2″	41′	2″	1,417
12	6H	203	Beam		5	S	X			3′	7″	22		22												7′	3″	7′	0″	126
12	6H	204	Beam		20		X			2′	7″															2′	7″	2′	7″	47
8	6H	205	Beam		20		X			3′	1″															3′	1″	3′	1″	37
32	4P	200	Column		53	S	X			2′	11″	2′	11″													12′	5″	12′	2″	260
86	5U	200	Beam		53	S	X			2′	6″	4′	8″													15′	3″	15′	0″	1,345
24	5U	201	Beam		5	S	X			2′	6″	4′	8″	4′	8″											11′	10″	11′	7″	290
32	4U	202	Beam		5	S	X			3′	8″	12		12												5′	8″	5′	6″	118
24	10V	200	Column		36		X			22′	7″															25′	5″	25′	5″	2,625
			BENT 3																									
10	W5W	300	Anchor Bolt Wells		22		X			2′	1″	9	1/8													33′	2″	33′	2″	55
20	8D	300	Footing		18		X			11′	6″															13′	4″	13′	4″	712
24	8D	301	Footing		18		X			9′	6″															11′	4″	11′	4″	726
9	10H	300	Beam		20		X			38′	4″															38′	4″	38′	4″	1,485
8	6H	301	Beam		20		X			38′	4″															38′	4″	38′	4″	461
8	10H	302	Beam		18		X			38′	4″															41′	2″	41′	2″	1,417
12	6H	303	Beam		5	S	X			3′	7″	22		22												7′	3″	7′	0″	126
12	6H	304	Beam		20		X			2′	7″															2′	7″	2′	7″	47
8	6H	305	Beam		20		X			3′	1″															3′	1″	3′	1″	37
30	4P	300	Column		53	S	X			2′	11″	2′	11″													12′	5″	12′	2″	244
86	5U	300	Beam		53	S	X			2′	6″	4′	8″													15′	3″	15′	0″	1,345
24	5U	301	Beam		5	S	X			2′	6″	4′	8″	4′	8″											11′	10″	11′	7″	290
32	4U	302	Beam		5	S	X			3′	8″	12		12												5′	8″	5′	6″	118
24	10V	300	Column		36		X			21′	4″															24′	2″	24′	2″	2,496

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

A7353

Detailed JULY 2006
Checked JULY 2006

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

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	207

JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SLAB																									
610	7	S100	Top Trans *	E	20					40′	-4″													40′	-4″	40′	-4″	50,289
198	6	S101	Top Long	E	20					54′	-0″													54′	-0″	54′	-0″	16,059
130	6	S102	Top Long over Bent *	E	20					20′	-0″													20′	-0″	20′	-0″	3,905
128	6	S103	Top Long over Bent	E	20					53′	-10″													53′	-10″	53′	-10″	10,350
48	5	S104	Bottom Long	E	20					53′	-0″													53′	-0″	53′	-0″	2,653
608	5	S105	Bottom Trans	E	20					3′	-0″													3′	-0″	3′	-0″	1,902
			BARRIER CURB																									
64	5	C101	Slip Form B.C.	E	20					10′	-0″													10′	-0″	10′	-0″	668
158	5	K101	B.C. at EB	E	19	S				2′	-5″	5	1/8″											2′	-11″	2′	-9″	453
158	5	K102	B.C. at EB	E	14	S				5	1/8″	11	1/8″	18″						2″		17	7/8″	2′	-11″	2′	-9″	453
114	5	K103	B.C. at EB	E	40	S				5	1/8″	12″		3′	-0″	2′	-2 1/8″			9	1/8″	6	7/8″	6′	-8″	6′	-4″	753
44	5	K104	B.C. at EB	E	7					3′	-0″	6″												6′	-3″	6′	-3″	287
4	5	K105	B.C. at EB	E	25	S				2′	-6 1/2″	6	3/4″	4	3/8″					5	1/2″	4″		3′	-6″	3′	-4″	14
4	5	K106	B.C. at EB	E	25	S				2′	-5 1/2″	7	1/8″	4	3/8″					6	1/2″	4	1/2″	3′	-6″	3′	-5″	14
4	5	K107	B.C. at EB	E	25	S				2′	-4 1/2″	9	5/8″	4	3/8″					7	1/8″	5	1/2″	3′	-7″	3′	-5″	14
4	5	K108	B.C. at EB	E	25	S				2′	-2 3/4″	11	1/4″	4	3/8″					9	1/4″	6	1/2″	3′	-7″	3′	-5″	14
48	5	K109	B.C. at EB	E	20					5′	-7″													5′	-7″	5′	-7″	280
22	4	K110	B.C. at EB1 *	E	20					19′	-0″													19′	-0″	19′	-0″	279
4	5	K111	B.C. at EB	E	8					2′	-2 1/8″									2′	-2″	2	3/8″	4′	-5″	4′	-5″	18
20	4	K112	B.C. at EB4	E	20					17′	-0″													17′	-0″	17′	-0″	227
600	5	R101	Barrier Curb	E	19	S				2′	-6″	3	1/2″											2′	-10″	2′	-8″	1,669
600	5	R102	Barrier Curb	E	2	S				3	1/2″	2′	-6 1/8″							2′	-6″	3		2′	-10″	2′	-10″	1,773
600	5	R103	Barrier Curb	E	19	S				17		6												23		22		1,147
600	5	R104	Barrier Curb	E	27	S				7		11	1/4″	12″		6″				6	3/8″	9	1/4″	3′	-1″	2′	-9″	1,721
114	5	R105	Barrier Curb *	E	20					9′	-7″													9′	-7″	9′	-7″	1,139
28	5	R106	Barrier Curb	E	20					59′	-7″													59′	-7″	59′	-7″	1,740
28	5	R107	Barrier Curb	E	20					50′	-9″													50′	-9″	50′	-9″	1,482

* Two additional #7-S100, #6-S102, #4-K110, and #5-R105 are included in bar bill for testing.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTALS																									
		W5																										110
		4																										1,028
		4		E																								506
		5																										4,306
		5		E																								19,490
		6																										9,184
		6		E																								32,116
		7		E																								50,289
		8																										4,254
		8		E																								569
		9																										11,111
		10																										10,925
			SLAB ON STEEL																									
		4																										288
		5																										1,036
		5		E																								5,851
		6																										7,842
		6		E																								32,116
		7		E																								50,289
		8																										1,378
		8		E																								569
		9																										11,111
			REINFORCING STEEL (BRIDGES)																									
		W5																										110
		4																										740
		5																										3,270
		6																										1,342
		8																										2,876
		10																										10,925
			BARRIER CURB																									
		4		E																								506
		5		E																								12,971
			SLIP FORM OPTION																									
		5		E																								668

Note:
For Bar Bending Diagrams, see Sheet No. 37.

BILL OF REINFORCING STEEL

A7353

Detailed JULY 2006
Checked JULY 2006

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

Sheet No. 39 of 40.

PLOTTED: $$DATE AND TIME$$ $$USGNSPEC$$

FINAL PLANS HNTB

ROUTE	STATE	DISTRICT	SHEET NO.
71	MO	4	208

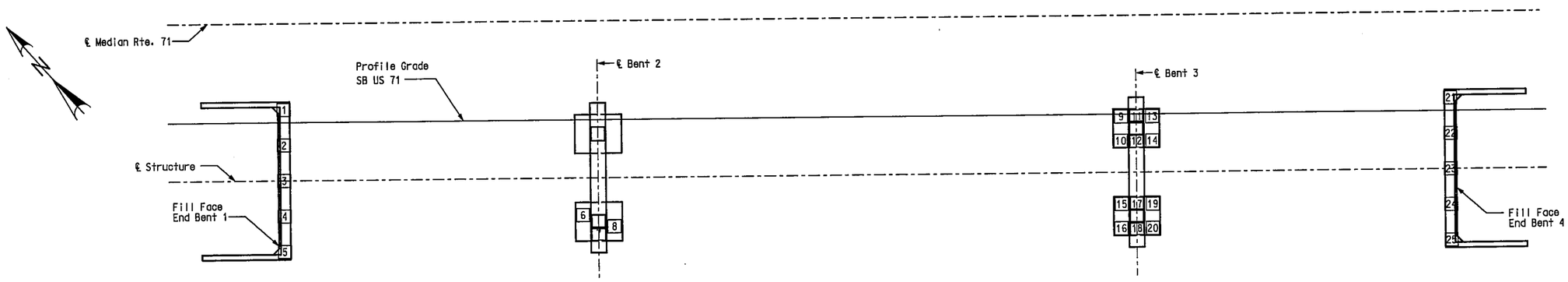
JOB NO. J4P1707

CONTRACT ID 080620-403

PROJECT NO. FAF 70-4(98)

COUNTY CASS

DATE



END BENT 1 BENT 2 BENT 3 END BENT 4

PART PLAN SHOWING PILE NUMBERING FOR RECORDING "AS BUILT PILE" DATA

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			End Bent 1
1	23	222	Driven to practical refusal, HP14x73
2	23	221	Driven to practical refusal, HP14x73
3	26	245	Driven to practical refusal, HP14x73
4	23	219	Driven to practical refusal, HP14x73
5	23	219	Driven to practical refusal, HP14x73
			Bent 2
6	19	242	Driven to practical refusal, HP14x73
7	19	219	Driven to practical refusal, HP14x73
8	18	219	Driven to practical refusal, HP14x73

"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS
			Bent 3
9	21	207	Driven to practical refusal, 2:12 Batter, HP14x73
10	19	207	Driven to practical refusal, 2:12 Batter, HP14x73
11	20	221	Driven to practical refusal, HP14x73
12	17	219	Driven to practical refusal, HP14x73
13	20	207	Driven to practical refusal, 2:12 Batter, HP14x73
14	19	185	Driven to practical refusal, 2:12 Batter, HP14x73
15	17	211	Driven to practical refusal, 2:12 Batter, HP14x73
16	18	209	Driven to practical refusal, 2:12 Batter, HP14x73
17	21	194	Driven to practical refusal, HP14x73
18	17	219	Driven to practical refusal, HP14x73
19	20	235	Driven to practical refusal, 2:12 Batter, HP14x73
20	24	207	Driven to practical refusal, 2:12 Batter, HP14x73
			End Bent 4
21	24	220	Driven to practical refusal, HP14x73
22	24	246	Driven to practical refusal, HP14x73
23	24	221	Driven to practical refusal, HP14x73
24	24	248	Driven to practical refusal, HP14x73
25	23	249	Driven to practical refusal, HP14x73

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.

AS-BUILT PILE DATA

A7353

PLOTTED: $$DATE AND TIME$$ $$DGNSPEC$$

Detailed JULY 2006
Checked JULY 2006

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