

ND DEPARTMENT OF TRANSPORTATION

SHEET NO 1 OF 3

ABSTRACT OF BIDS RECEIVED

PROJECT NO.		NO.		BIDDER		BIDDER		BIDDER	
S-BRI-SIM-6-029(084)147 S-BRI-SIM-6-029(106)147		39		ENGINEERS ESTIMATE		DIAMOND SURFACE INC		INTERSTATE IMPROVEMENT INC	
COUNTY & DATE		NOV 16, 2012 09:30AM		ROGERS, MN		FARIBAULT, MN			
LENGTH & TYPE		I-29, N GRAND FORKS INTERCHANGE TO CO LN		c.c. CHECK RANK 00		c.c. BOND RANK 01		c.c. BOND RANK 02	
COMPLETION TIME		08/31/13 CONCRETE PAVEMENT REPAIR, PCC PAVEMENT							
SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	BID PRICE	AMOUNT	BID PRICE	AMOUNT	BID PRICE	AMOUNT
103	CONTRACT BOND	L SUM	1.000	1640000	1640000	7000000	7000000	5000000	5000000
202	REMOVAL OF CONCRETE PAVEMENT	SY	6000	12000	72000	318880	1913280	255000	1530000
202	REMOVAL OF BITUMINOUS SURFACING	SY	1749000	7000	12243000	8140	1423680	7750	1355475
203	GUARDRAIL EMBANKMENT-TYPE C	EA	1000	4000000	4000000	4410000	4410000	4200000	4200000
302	SALVAGED BASE COURSE	TON	172000	15000	2580000	35440	6095680	39800	6845600
401	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	1690000	10000	16900000	4730	7993700	4500	7605000
408	HOT BITUMINOUS PAVEMENT CL 31	TON	4710000	100000	471000000	117600	55389600	112000	52752000
408	PG 58-34 ASPHALT CEMENT	TON	300000	1200000	3600000	924000	2772000	880000	2640000
411	MILLING PCC PAVEMENT	SY	2111000	20000	42220000	6570	13869270	7500	15832500
570	SAW CONCRETE	LF	5564000	5000	27820000	5870	21532680	2000	11128000
570	PCC PAVEMENT GRINDING	SY	204004000	5000	1020020000	2070	422288280	2500	510010000
570	DOWELED CONTRACTION JOINT ASSEMBLY	LF	1600000	10000	16000000	8050	12880000	8500	13600000
570	DOWEL BARS	EA	2494000	13500	33696000	10550	26332800	7150	17846400
570	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	1711000	95000	162545000	104830	179364130	140000	239540000
570	CONTRACTION JOINT SILICONE SEAL	LF	5564000	4500	25038000	3260	18138640	2000	11128000
570	RANDOM PCC CRACK CLEANING & SEALING	LF	1441000	3000	4323000	6460	9308860	3000	4523000
570	SPALL REPAIR-PARTIAL DEPTH	SF	794000	30000	23820000	31270	24828380	35000	27790000
570	EPOXY COATED DEFORMED BARS	EA	810000	35000	28350000	21550	17455500	14060	11388600
624	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	671100	90000	60399000	107100	71874810	102000	68452200
702	MOBILIZATION	L SUM	1.000	75881610	75881610	153736970	153736970	90000000	90000000
704	FLAGGING	MHR	750000	30000	22500000	29680	22260000	25000	18750000
704	TRAFFIC CONTROL SIGNS	UNIT	3872000	3000	11616000	1310	5072320	1250	4840000
704	TYPE I BARRICADE	EA	50000	40000	2000000	10500	5250000	10000	5000000
704	TYPE III BARRICADE	EA	29000	140000	4060000	89250	2588250	85000	2465000
704	DELINEATOR DRUMS	EA	110000	35000	3850000	21000	2310000	20000	2200000
704	TUBULAR MARKERS	EA	341000	10000	3410000	10500	3580500	10000	3410000
704	VERTICAL PANELS-BACK TO BACK	EA	100000	23000	2300000	5250	5250000	5000	5000000
704	SEQUENCING ARROW PANEL-TYPE C	EA	3000	1100000	3300000	1575000	4725000	1500000	4500000
748	CURB	LF	120000	60000	7200000	42000	5040000	20000	2400000
762	SHORT TERM 4IN LINE-TYPE NR	LF	18865000	270	5093550	250	4716250	240	4527600
762	PVMT MK PAINTED 4IN LINE	LF	246725000	100	24672500	086	21218350	082	20231450
762	PVMT MK PAINTED 8IN LINE	LF	2345000	300	703500	190	445550	180	422100
762	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	6772000	5000	33860000	5480	37110560	5200	35214400
764	W-BEAM GUARDRAIL	LF	373400	50000	18670000	46200	17251080	44000	16429600
764	W-BEAM GUARDRAIL END TERMINAL	EA	6000	2800000	16800000	2205000	13230000	2100000	12600000
764	REMOVE W-BEAM GUARDRAIL & POSTS	LF	1398600	3000	4195800	2630	3678320	2500	3496500
764	RESET W-BEAM GUARDRAIL	LF	987500	10000	9875000	8400	8295000	8000	7900000
764	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	6000	4000000	24000000	2625000	15750000	2500000	15000000
764	REMOVE END TREATMENT & TRANSITION	EA	6000	180000	1080000	131250	787500	125000	750000
930	SILICONE SEALANT	LF	176400	25000	4410000	14700	2593080	6000	1058400
930	DECK SPALL REPAIR	SF	225000	100000	22500000	106980	24070500	40000	9000000
TOTAL					185189396		127335537		128603660
						NO LIMIT		NO LIMIT	

ACTION TAKEN BY DEPARTMENT OF TRANSPORTATION DIRECTOR: _____ AWARD TO: DIAMOND SURFACE INC WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

ND DEPARTMENT OF TRANSPORTATION

SHEET NO 2 OF 3

ABSTRACT OF BIDS RECEIVED

PROJECT NO.		NO.		BIDDER		BIDDER		BIDDER	
S-BRI-SIM-6-029(084)147 S-BRI-SIM-6-029(106)147		39		SAFETY GROOVING & GRINDING LP		PENHALL COMPANY		CHESTER BROSS CONSTR UCTION CO/CB EQUIP	
COUNTY & DATE		NOV 16, 2012 09:30AM		NAPOLEON, OH		ROGERS, MN		PALMYRA, MO	
LENGTH & TYPE		I-29, N GRAND FORKS INTERCHANGE TO CO LN		c.c. BOND RANK 03		c.c. BOND RANK 04		c.c. BOND RANK 05	
COMPLETION TIME		08/31/13 CONCRETE PAVEMENT REPAIR, PCC PAVEMENT							
SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	BID PRICE	AMOUNT	BID PRICE	AMOUNT	BID PRICE	AMOUNT
103	CONTRACT BOND	L SUM	1000	7000000	7000000	10000000	10000000	11965000	11965000
202	REMOVAL OF CONCRETE PAVEMENT	SY	6000	255000	1530000	260000	1560000	267750	1606500
202	REMOVAL OF BITUMINOUS SURFACING	SY	1749000	7750	1355475	8000	1399200	8150	1425435
203	GUARDRAIL EMBANKMENT-TYPE C	EA	1000	4200000	4200000	4200000	4200000	4410000	4410000
302	SALVAGED BASE COURSE	TON	172000	33750	5805000	35000	6020000	35400	6088800
401	SSIH OR CSSIH OR MSI EMULSIFIED ASPHALT	GAL	169000	4500	760500	5000	845000	4700	794300
408	HOT BITUMINOUS PAVEMENT CL 31	TON	471000	112000	52752000	125000	58875000	117600	55389600
408	PG 58-34 ASPHALT CEMENT	TON	30000	880000	26400000	900000	27000000	924000	27220000
411	MILLING PCC PAVEMENT	SY	2111000	5000	10555000	5000	10555000	10350	21848850
570	SAW CONCRETE	LF	5564000	2000	11128000	4000	22256000	4650	25872600
570	PCC PAVEMENT GRINDING	SY	204004000	2220	45288888	2150	43860860	2500	51001000
570	DOWELED CONTRACTION JOINT ASSEMBLY	LF	160000	6000	960000	8000	1280000	15750	2520000
570	DOWEL BARS	EA	2496000	12000	29952000	18000	44928000	8550	21340800
570	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	1711000	140000	239540000	150000	256650000	123810	211838910
570	CONTRACTION JOINT SILICONE SEAL	LF	5564000	4000	22256000	5000	27820000	2470	13743080
570	RANDOM PCC CRACK CLEANING & SEALING	LF	1441000	10000	14410000	11000	15851000	8320	11989120
570	SPALL REPAIR-PARTIAL DEPTH	SF	794000	65000	51610000	75000	59550000	50450	40057300
570	EPOXY COATED DEFORMED BARS	EA	810000	10000	8100000	12000	9720000	22180	17965800
624	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	671100	102000	68452200	102000	68452200	142770	95812950
702	MOBILIZATION	L SUM	1000	150685000	150685000	125000000	125000000	114618000	114618000
704	FLAGGING	MHR	750000	39500	26225000	25000	18750000	54380	40785000
704	TRAFFIC CONTROL SIGNS	UNIT	3872000	1250	4840000	1250	4840000	1320	5111040
704	TYPE I BARRICADE	EA	50000	10000	500000	10000	500000	10500	525000
704	TYPE III BARRICADE	EA	29000	85000	2465000	100000	2900000	89250	2588225
704	DELINEATOR DRUMS	EA	110000	20000	2200000	25000	2750000	21000	2310000
704	TUBULAR MARKERS	EA	341000	10000	3410000	12000	4092000	10500	3580500
704	VERTICAL PANELS-BACK TO BACK	EA	100000	5000	500000	5000	500000	5250	525000
704	SEQUENCING ARROW PANEL-TYPE C	EA	3000	1500000	4500000	1500000	4500000	1575000	4725000
748	CURB	LF	120000	50000	6000000	40000	4800000	38250	4590000
762	SHORT TERM 4IN LINE-TYPE NR	LF	18865000	240	4527600	250	4716250	280	5282200
762	PVMT MK PAINTED 4IN LINE	LF	246725000	082	20231450	080	19738000	100	24672500
762	PVMT MK PAINTED 8IN LINE	LF	2345000	180	422100	180	422100	320	750400
762	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	6772000	4480	30338560	4500	30474000	6820	46185040
764	W-BEAM GUARDRAIL	LF	373400	40000	16429600	45000	16803000	49000	18296600
764	W-BEAM GUARDRAIL END TERMINAL	EA	6000	2100000	12600000	2100000	12600000	2620380	15722280
764	REMOVE W-BEAM GUARDRAIL & POSTS	LF	1398600	2500	3496500	2500	3496500	3200	4475520
764	RESET W-BEAM GUARDRAIL	LF	987500	8000	7900000	8000	7900000	12860	12699250
764	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	6000	2500000	15000000	2500000	15000000	2609860	15659160
764	REMOVE END TREATMENT & TRANSITION	EA	6000	125000	750000	125000	750000	193820	1162920
930	SILICONE SEALANT	LF	176400	14000	2469600	14000	2469600	17420	3072890
930	DECK SPALL REPAIR	SF	225000	100000	22500000	100000	22500000	91230	20526750
TOTAL					136024474		138366425		144309126
				NO LIMIT		NO LIMIT		NO LIMIT	

ACTION TAKEN BY DEPARTMENT OF TRANSPORTATION DIRECTOR: _____ AWARD TO: DIAMOND SURFACE INC WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

119 _____ DATE OF AWARD _____ DEPARTMENT OF TRANSPORTATION DIRECTOR _____

ND DEPARTMENT OF TRANSPORTATION

SHEET NO 3 OF 3

ABSTRACT OF BIDS RECEIVED

PROJECT NO.	S-BRI-SIM-6-029(084)147 S-BRI-SIM-6-029(106)147	NO.	39	BIDDER	ACME CONCRETE PAVING INC	BIDDER	STRATA CORPORATION	BIDDER	
COUNTY & DATE	GRAND FORKS (035)								
LENGTH & TYPE	NOV 16, 2012 09:30AM 19.421				SPOKANE, WA		GRAND FORKS, ND		
COMPLETION TIME	I-29, N GRAND FORKS INTERCHANGE TO CO LN 08/31/13 CONCRETE PAVEMENT REPAIR, PCC PAVEMENT				c.c. BOND RANK 06		c.c. BOND RANK 07		c.c.

SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	BID PRICE	AMOUNT	BID PRICE	AMOUNT	BID PRICE	AMOUNT
103	CONTRACT BOND	L SUM	1000	8500000	8500000	15100000	15100000		
202	REMOVAL OF CONCRETE PAVEMENT	SY	6000	6000000	3600000	1000000	600000		
202	REMOVAL OF BITUMINOUS SURFACING	SY	1749000	8100	1416690	13000	2273700		
203	GUARDRAIL EMBANKMENT-TYPE C	EA	1000	4400000	4400000	8500000	8500000		
302	SALVAGED BASE COURSE	TON	172000	35250	606300	68000	1169600		
401	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	169000	4700	794300	4500	760500		
408	HOT BITUMINOUS PAVEMENT CL 31	TON	471000	117000	5510700	112000	5275200		
408	PG 58-34 ASPHALT CEMENT	TON	30000	920000	2760000	880000	2640000		
411	MILLING PCC PAVEMENT	SY	2111000	9500	2005450	9750	2058225		
570	SAW CONCRETE	LF	5564000	3250	1808300	9000	5007600		
570	PCC PAVEMENT GRINDING	SY	204004000	2000	40800800	1960	39984784		
570	DOWELED CONTRACTION JOINT ASSEMBLY	LF	160000	7300	1168000	28000	448000		
570	DOWEL BARS	EA	2496000	17500	4368000	15000	3744000		
570	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	1711000	140000	23954000	168000	28744800		
570	CONTRACTION JOINT SILICONE SEAL	LF	5564000	3400	1891760	4000	2225600		
570	RANDOM PCC CRACK CLEANING & SEALING	LF	1441000	6600	9510600	7000	1008700		
570	SPALL REPAIR-PARTIAL DEPTH	SF	794000	81000	6431400	80000	6352000		
570	EPOXY COATED DEFORMED BARS	EA	810000	13000	1053000	58000	4698000		
624	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	671100	106000	7113660	102000	6845220		
702	MOBILIZATION	L SUM	1000	27543580	27543580	23300000	23300000		
704	FLAGGING	MHR	750000	44400	3330000	38000	2850000		
704	TRAFFIC CONTROL SIGNS	UNIT	3872000	1300	503360	1250	484000		
704	TYPE I BARRICADE	EA	50000	10450	522500	10000	50000		
704	TYPE III BARRICADE	EA	29000	88800	257520	85000	246500		
704	DELINEATOR DRUMS	EA	110000	20900	2299000	20000	220000		
704	TUBULAR MARKERS	EA	341000	10400	3546400	10000	341000		
704	VERTICAL PANELS-BACK TO BACK	EA	100000	5250	525000	5000	50000		
704	SEQUENCING ARROW PANEL-TYPE C	EA	3000	1600000	4800000	1500000	4500000		
748	CURB	LF	120000	130000	1560000	175000	2100000		
762	SHORT TERM 4IN LINE-TYPE NR	LF	18865000	250	4716250	240	4527600		
762	PVMT MK PAINTED 4IN LINE	LF	246725000	090	22205250	082	20231650		
762	PVMT MK PAINTED 8IN LINE	LF	2345000	1200	469000	180	422100		
762	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	6772000	4700	3182840	4480	3033856		
764	W-BEAM GUARDRAIL	LF	373400	46000	1717640	44000	1642960		
764	W-BEAM GUARDRAIL END TERMINAL	EA	6000	2200000	1320000	2100000	1260000		
764	REMOVE W-BEAM GUARDRAIL & POSTS	LF	1398600	2600	3636360	2500	3496500		
764	RESET W-BEAM GUARDRAIL	LF	987500	8350	8245630	8000	790000		
764	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	6000	1100000	6600000	1500000	900000		
764	REMOVE END TREATMENT & TRANSITION	EA	6000	130000	780000	125000	750000		
930	SILICONE SEALANT	LF	176400	9250	1631700	40000	705600		
930	DECK SPALL REPAIR	SF	225000	92000	2070000	108000	2430000		
	TOTAL				149999999		158768160		
				NO LIMIT		NO LIMIT			

ACTION TAKEN BY DEPARTMENT OF TRANSPORTATION DIRECTOR: _____ AWARD TO: DIAMOND SURFACE INC WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

DESIGN DATA RP147.206 to RP153.337				
Traffic	Average Daily			Max.Hr.
Current 2009	Pass: 4170	Trucks: 1170	Total: 5340	535
Forecast 2029	Pass: 7260	Trucks: 2040	Total: 9300	930
Clear Zone Dist. 34'		Design Speed: 75		
Minimum Sight Dist. for Stopping: 820		Bridges: N/A		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				
Pavement Design Life 20 (years)				
DESIGN DATA RP153.337 to RP161.700				
Traffic	Average Daily			Max.Hr.
Current 2009	Pass: 2375	Trucks: 855	Total: 3230	410
Forecast 2029	Pass: 4135	Trucks: 1490	Total: 5625	565
Clear Zone Dist. 34'		Design Speed: 75		
Minimum Sight Dist. for Stopping: 820		Bridges: N/A		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				
Pavement Design Life 20 (years)				

JOB#

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

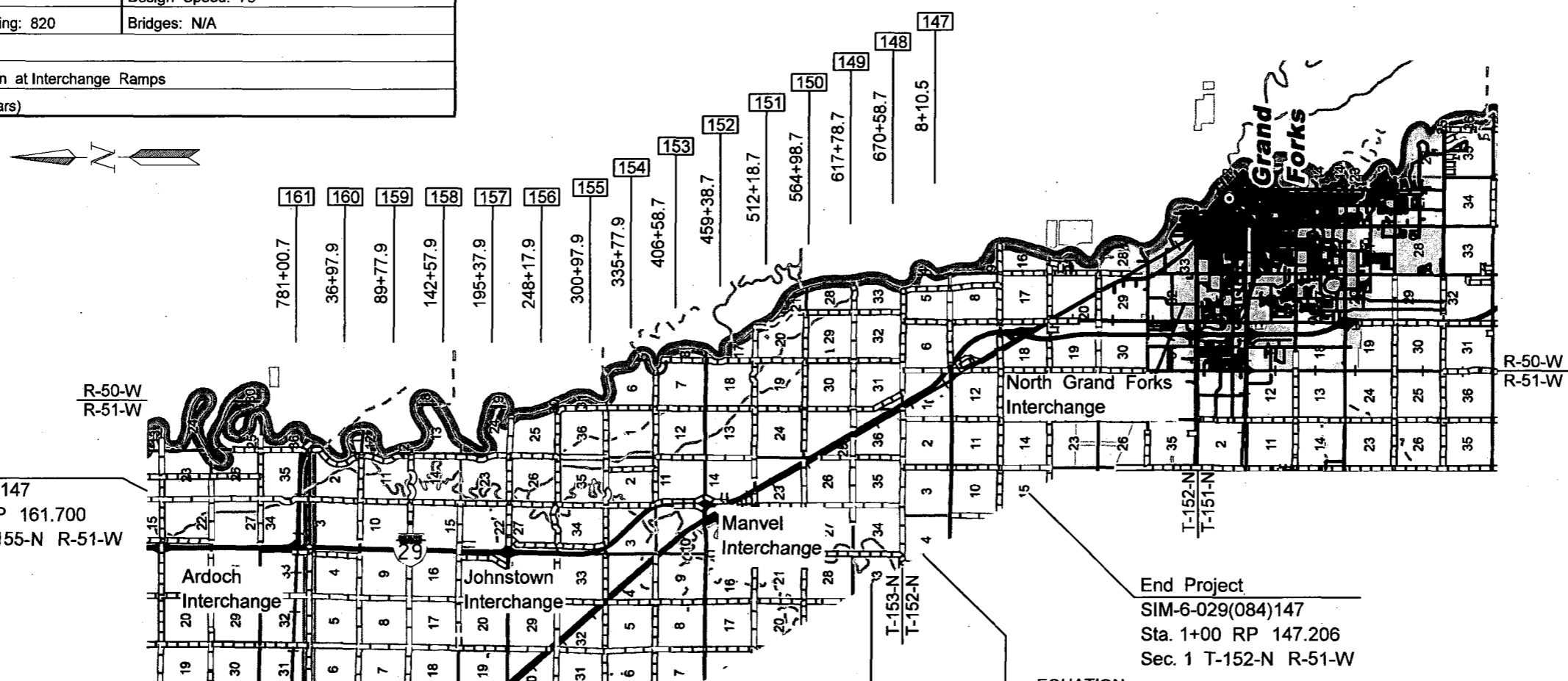
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	17763	1	1

SIM-6-029(084)147

Grand Forks and Walsh Counties
North of the North Grand Forks Interchange
to the Walsh County Line, Southbound
Concrete Pavement Repair,
Grinding and Incidentals

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota
Department of Transportation October 2008; Standard Drawings
currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SIM-6-029(084)147	14.292	14.494
Bridge Exceptions 0.202 Miles (1064 FT)		



Begin Project
SIM-6-029(084)147
Sta. 744+00 RP 161.700
Sec. 33&34 T-155-N R-51-W

End Project
SIM-6-029(084)147
Sta. 1+00 RP 147.206
Sec. 1 T-152-N R-51-W

EQUATION:
404+87.9 BK
=404+88.2 AHD

EQUATION:
711+45.4 BK
=0+00.0 AHEAD

EQUATION:
796+82.9 BACK
= 0+00.00 AHEAD

DESIGNERS

Exception
782+37
788+70
633' Bridge

Exception
365+21
368+76
356' Bridge

Exception
661+56
662+32
76' Bridge

APPROVED DATE 7/12/2010

Edward Pavlish /s/
Grand Forks District
ND DEPARTMENT OF TRANSPORTATION

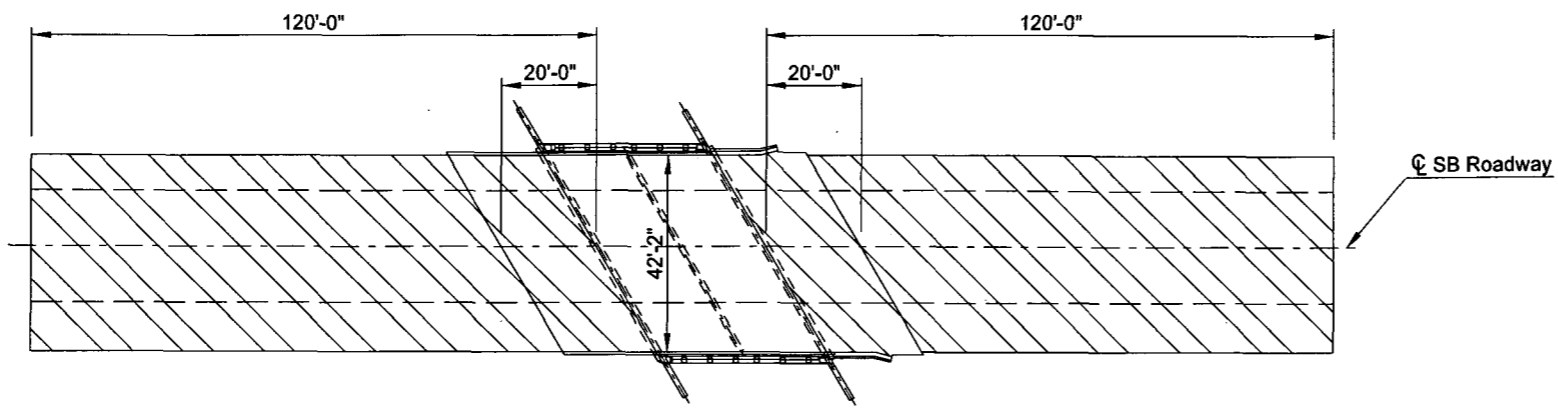
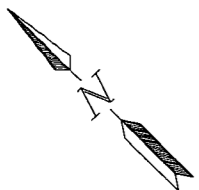
I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 6/11/2010

Jeffrey T. Lansink /s/
Houston Engineering, Inc

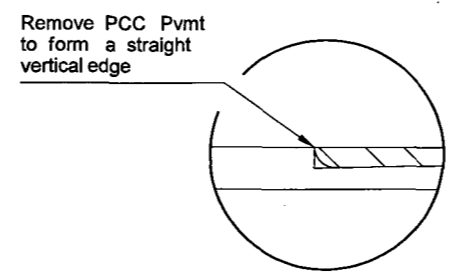
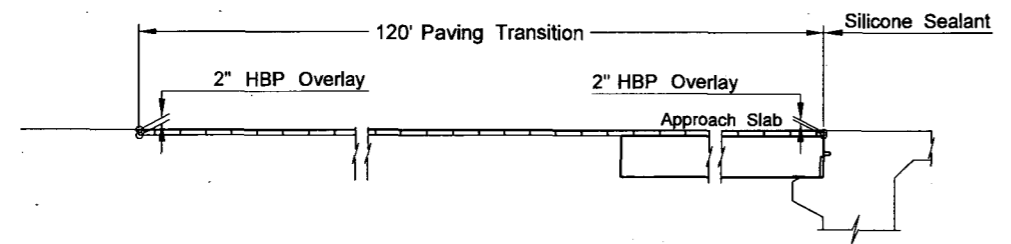
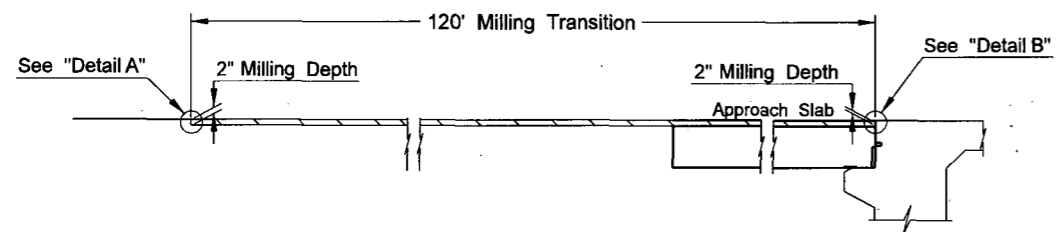
This document was originally issued and sealed by Jeffrey T. Lansink Registration Number PE-5244, on 6/11/2010 and the original document is stored at the North Dakota Department of Transportation

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	20	8

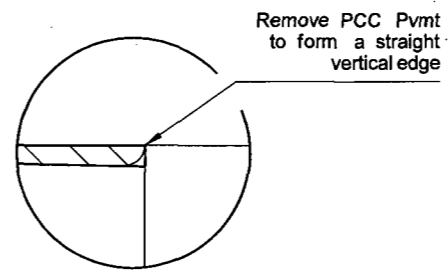


Indicates Milling PCC Pavement & paving transitions.

PLAN



Detail A



Detail B

Basis of Estimate Both Bridge Ends			
DESCRIPTION	UNIT	WIDTH	QUANTITY
Milling PCC Pavement	SY	42'-2"	1124
Hot Bituminous Pavement Class 31 @ 2 Ton/CY	TON	42'-2"	125
PG 58-34 @ 6.3% Liquid Asphalt	TON		8
SS1H or CSS1H or MS1(Tack Coat) Emulsified Asphalt 0.05 Gal/SY	GAL	42'-2"	56
SS1H or CSS1H or MS1(Fog Coat) Emulsified Asphalt 0.05 Gal/SY	GAL	24'	32
Painted Pvmt Mk 4" Line	LF		540
Silicone Sealant	LF		100.1

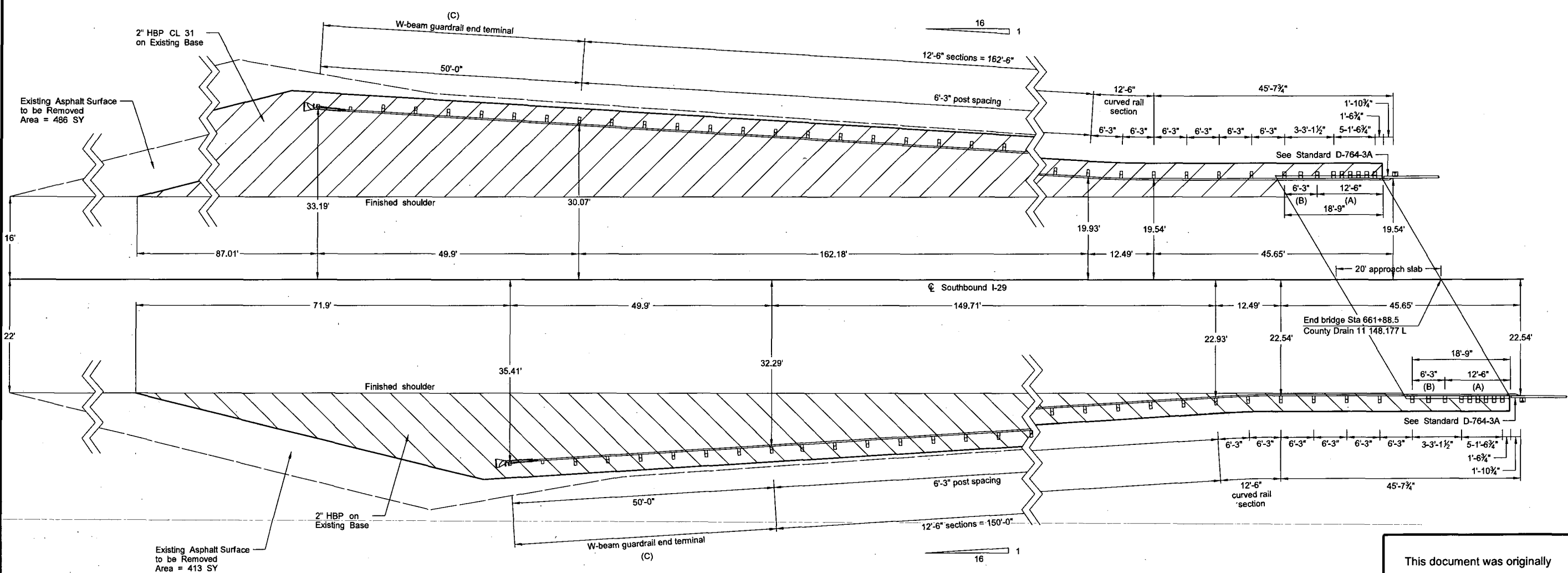
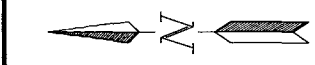
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 09/21/12 and the original document is stored at the North Dakota Department of Transportation

COUNTY DRAIN 11

**BRIDGE ENDS
MILLING & PAVING DETAIL**

23 USC § 409 Documents
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(084)147	130	1



- (A) Thrie beam rail section (Double Thickness)
- (B) W-Thrie beam transition section (Double Thickness)
- (C) The W-beam guardrail end terminal to be installed at this location shall be either a FLEAT or a Slotted Rail Terminal.

This document was originally issued and sealed by
 Adam R. Walker
 Registration Number
 PE- 5848,
 on 09/21/2012 and the original document is stored at the
 North Dakota Department
 of Transportation

Thrie/W-beam Guardrail Layout
 At Bridge End
 County Drain 11
 RP 148.177 L
 Southbound I -29

**23 USC § 409 Documents
NDDOT Reserves All Objections**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(064)147	130	2

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES THRIE/W-BEAM GUARDRAIL AT BRIDGE ENDS															
LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
	5/8" Ø x18" LONG GUARD- RAIL BOLT	6" x 8" x 6'-0" TIMBER POST	6" x 8" x 14" TIMBER BLOCK	5/8 Ø x 1 1/4" LONG GUARD- RAIL BOLT	12'-6" STRAIGH T W- BEAM RAIL SECTION	12'-6" CURVED W-BEAM RAIL SECTION	REF- LECTOR- IZED PLATES	8" x 8" x 6'-0" TIMBER POST	8" x 8" x 22" TIMBER OFFSET BLOCK	8" x 8" x 18" TIMBER OFFSET BLOCK	8" x 8" x 14" TIMBER OFFSET BLOCK	12'-6" DOUBLE W-THRIE BEAM TRAN- SITION SECTION	6'-3" THRIE BEAM TERM- INAL CON- NECTOR	7/8" Ø x LONG POST BOLT	3/4" Ø x 2 LONG POST BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta. 658+95.29 to 661+77.99 lt. Mdn.	23	6	6	56	2	1	7	9	7	1	1	1	1	5	2
Sta. 658+92.90 to 662+00.55 lt.	23	6	6	56	2	1	7	9	7	1	1	1	1	5	2
Total	46	12	12	112	4	2	14	18	14	2	2	2	2	10	4

W-beam guardrail	
Sta. 661+19.85 to 661+77.99 lt. Mdn.	58.1 LF
Sta. 661+17.46 to 662+00.55 lt.	58.1 LF
Total	116.2 LF
Reset W-beam guardrail	
Sta. 659+57.67 to 661+19.85 lt. Mdn.	162.5 LF
Sta. 659+92.70 to 661+42.41 lt.	150 LF
Total	312.5 LF
W-beam guardrail end terminal	
Sta. 659+07.77 to 659+57.67 lt. Mdn.	1 EA
Sta. 659+42.80 to 659+92.70 lt.	1 EA
Total	2 EA
Remove W-beam guardrail & posts	
Sta. 659+28.64 to 661+75.12 lt. Mdn.	239.4 LF
Sta. 659+67.88 to 662+01.88 lt.	226.9 LF
Total	466.3 LF
Remove end treatment and transition	
Sta. 658+91.77 to 659+28.64 lt. Mdn.	1 EA
Sta. 659+31.01 to 659+67.88 lt.	1 EA
Total	2 EA

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-beam Guardrail"

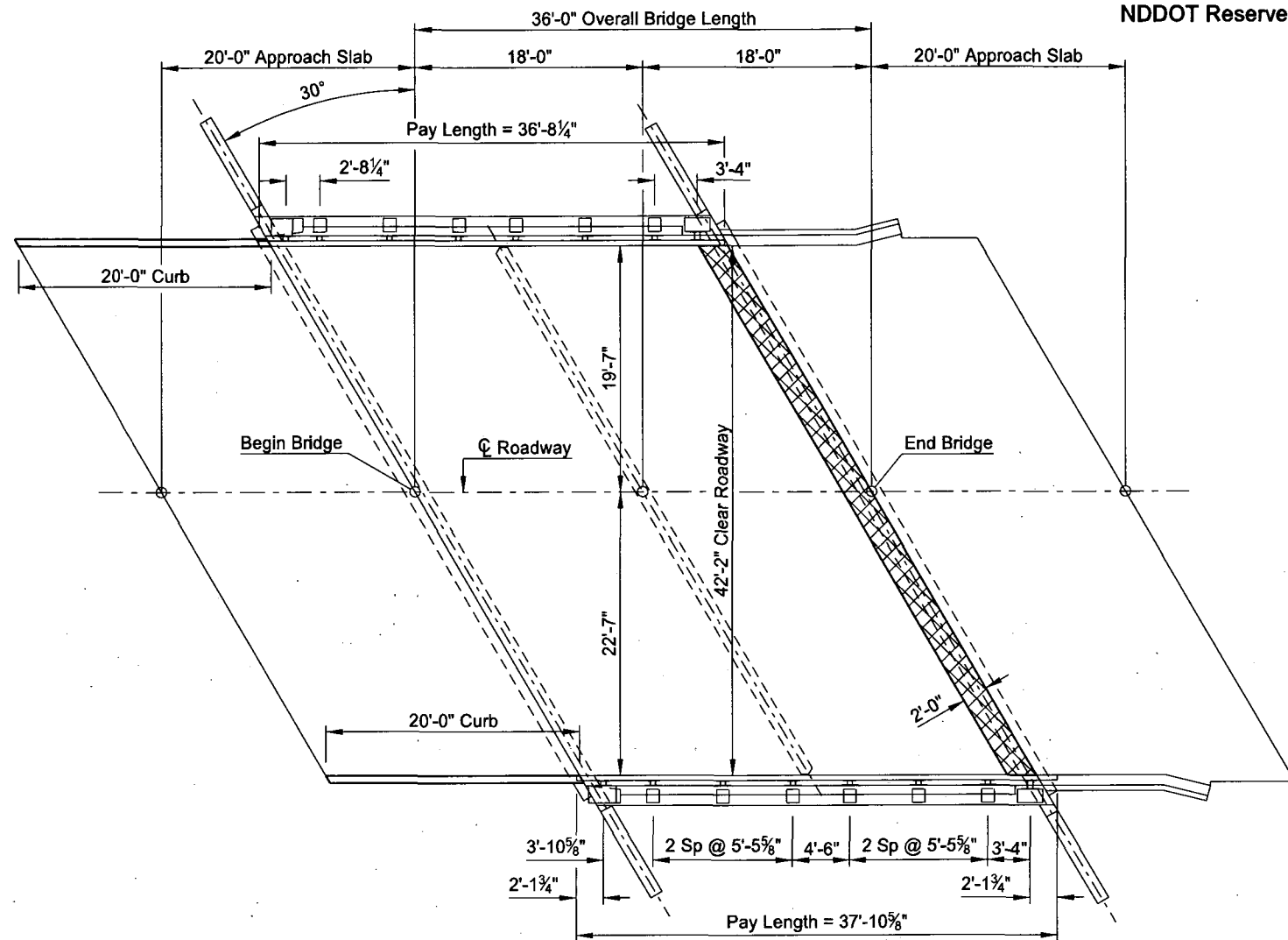
This document was originally issued and sealed by Adam R. Walker, Registration Number PE-5845, on 09/21/2012 and the original document is stored at the North Dakota Department of Transportation


**Thrie/W-beam Guardrail Quantities
At Bridge End**

County Drain 11
RP 148.177 L

Southbound I-29

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	170	1



 Indicates Deck Spall Areas

PLAN

NOTES:

- 100 SCOPE OF WORK: Work at this site consists of removing concrete safety shape transitions and portions of the north approach slab, placing concrete curbs on the north approach slab, installing double box beam rail retrofit and repairing a deck spall area at the south end of bridge.
- 764 REMOVE CONCRETE SAFETY SHAPE TRANSITION: The removal of the safety shape transitions and portion of approach slab as shown shall be included in the price bid for "Remove Concrete Safety Shape Transition."
- 930 DECK SPALL REPAIR: The bridge deck has a spall area as shown at the south end of bridge. The actual limits of the area to be repaired shall be determined by the Engineer in the field. The deck spall repair shall be constructed as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required. The minimum depth of removal shall be 2". The perimeter of the repair area shall be saw cut to a depth of 1". The saw cutting and all material, labor and equipment required to remove the concrete and repair the deck spall areas shall be included in the bid item "Deck Spall Repair."

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BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	74.6
748	0540	CURB	LF	40.0
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	2
930	9610	DECK SPALL REPAIR	SF	97

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

COUNTY DRAIN 11

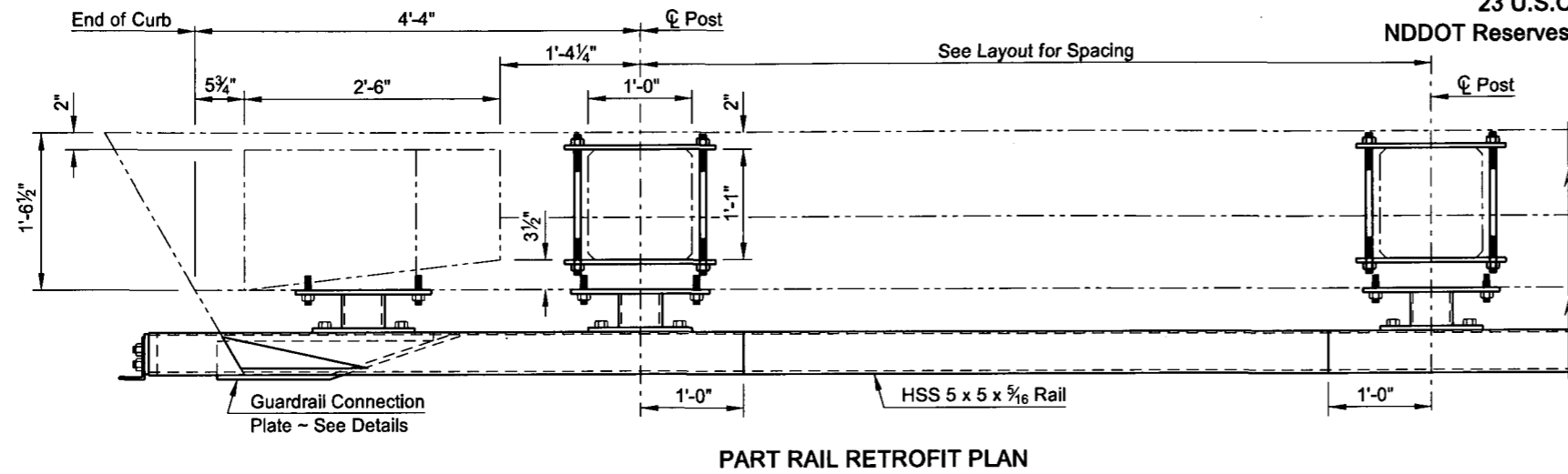
BRIDGE LAYOUT

PROJECT: SIM-6-029(084)147

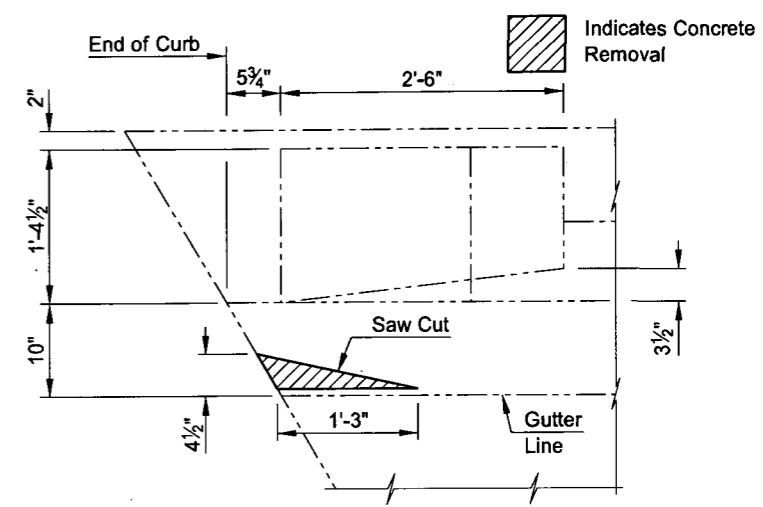
GRAND FORKS COUNTY

DATE: 09/21/12 Terrence R. Udland
BRIDGE ENGINEER

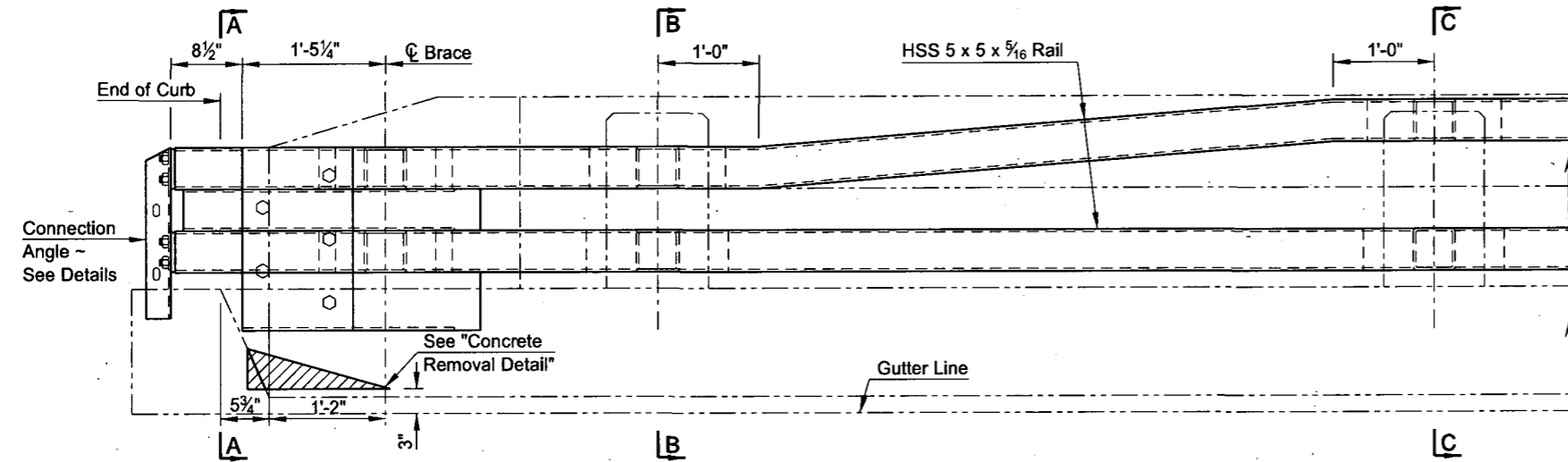
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	170	2



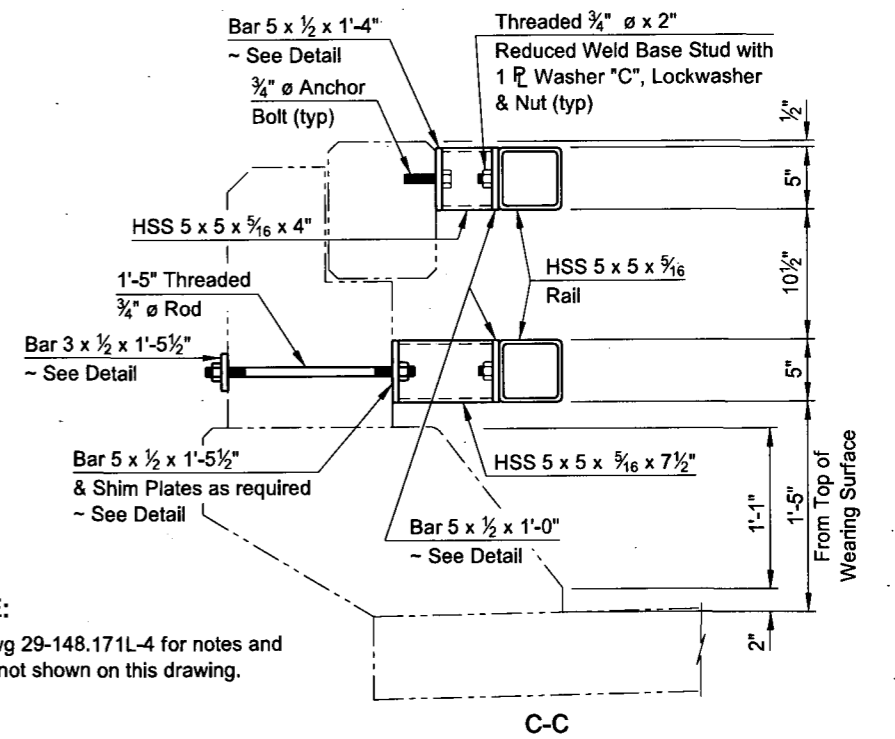
PART RAIL RETROFIT PLAN



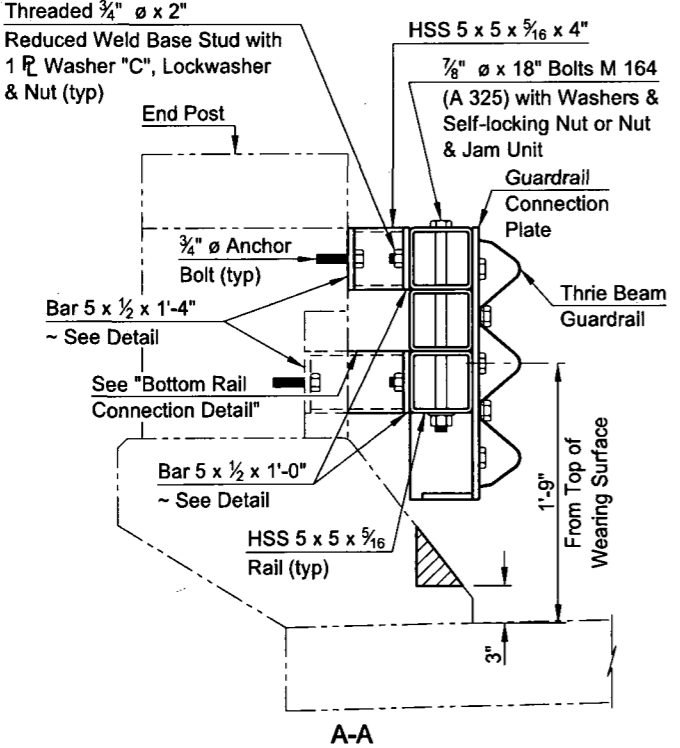
CONCRETE REMOVAL DETAIL



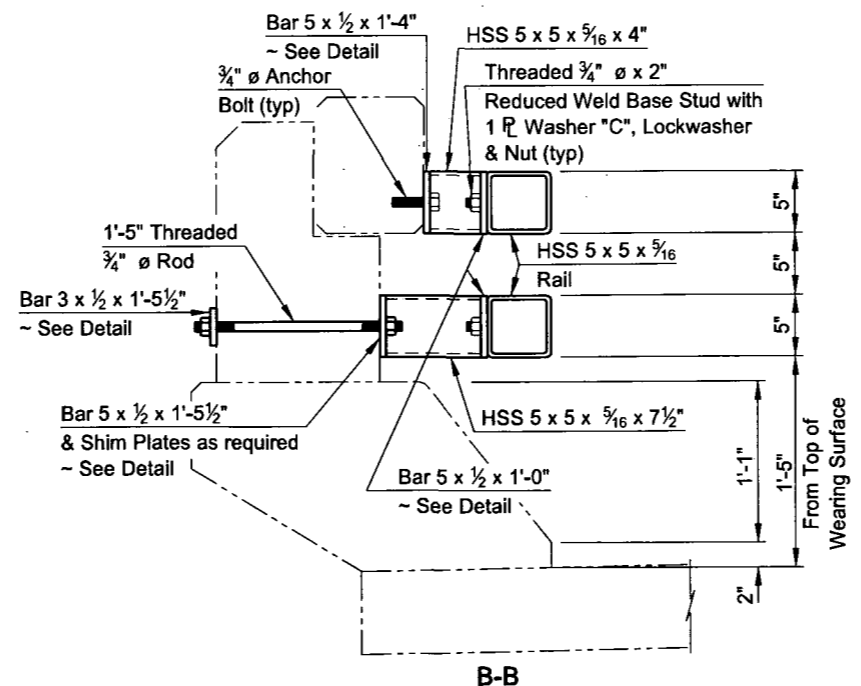
PART RAIL RETROFIT ELEVATION



NOTE:
See Dwg 29-148.171L-4 for notes and details not shown on this drawing.



A-A

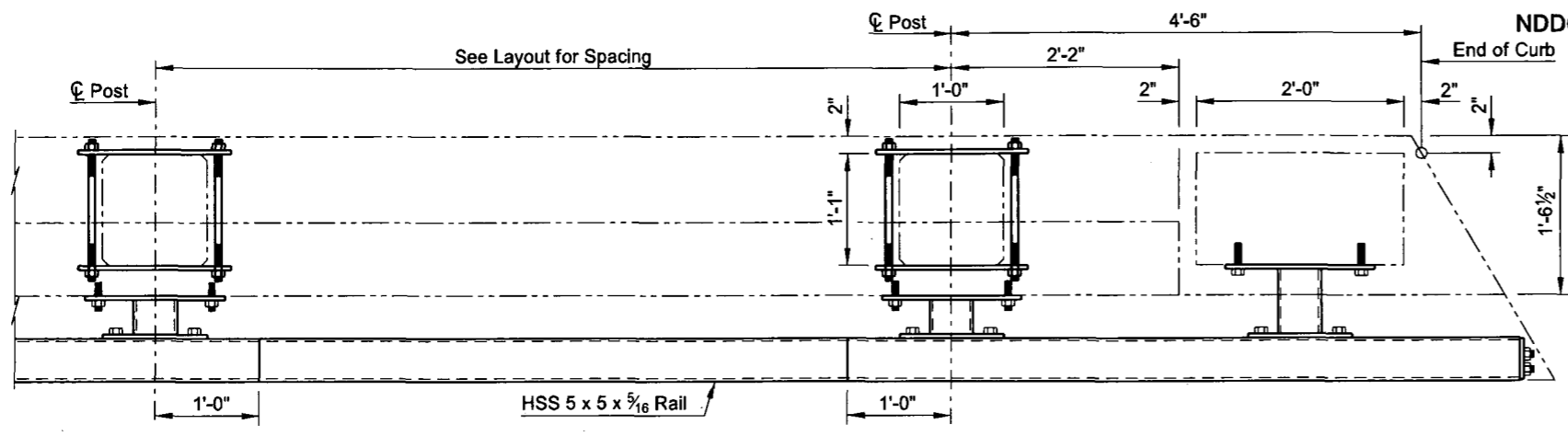


B-B

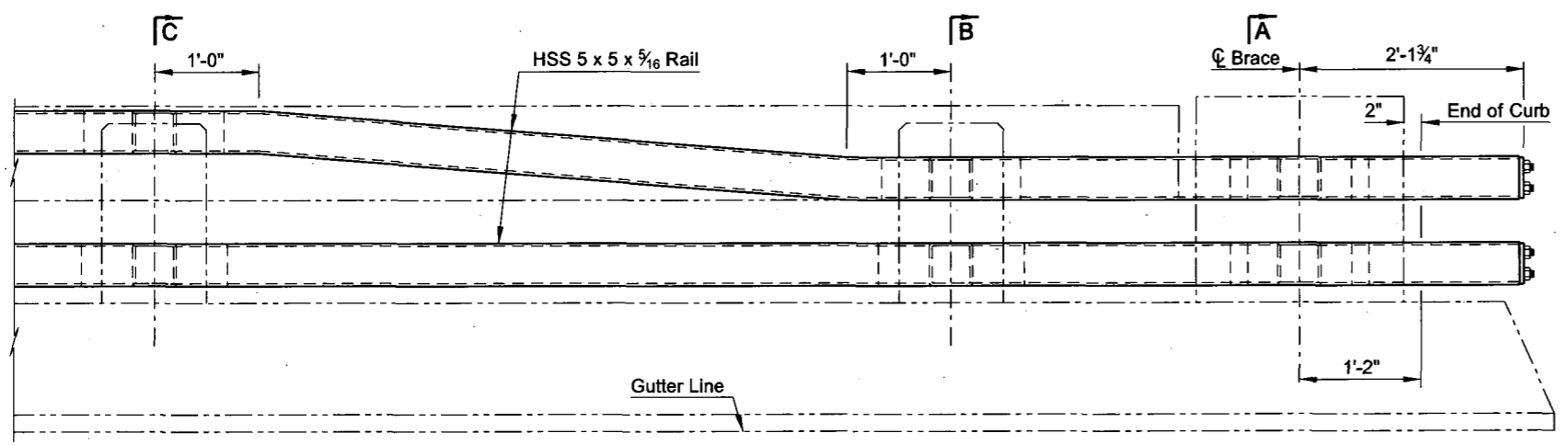
QUANTITIES
SEE DWG 29-148.171L-4
COUNTY DRAIN 11
(APPROACH END)
DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

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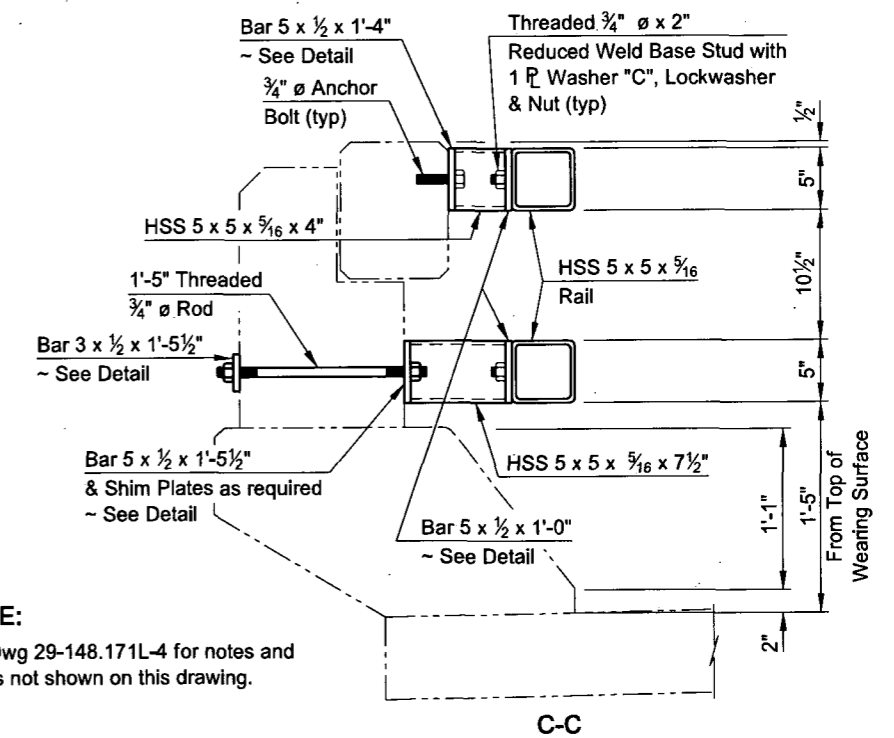
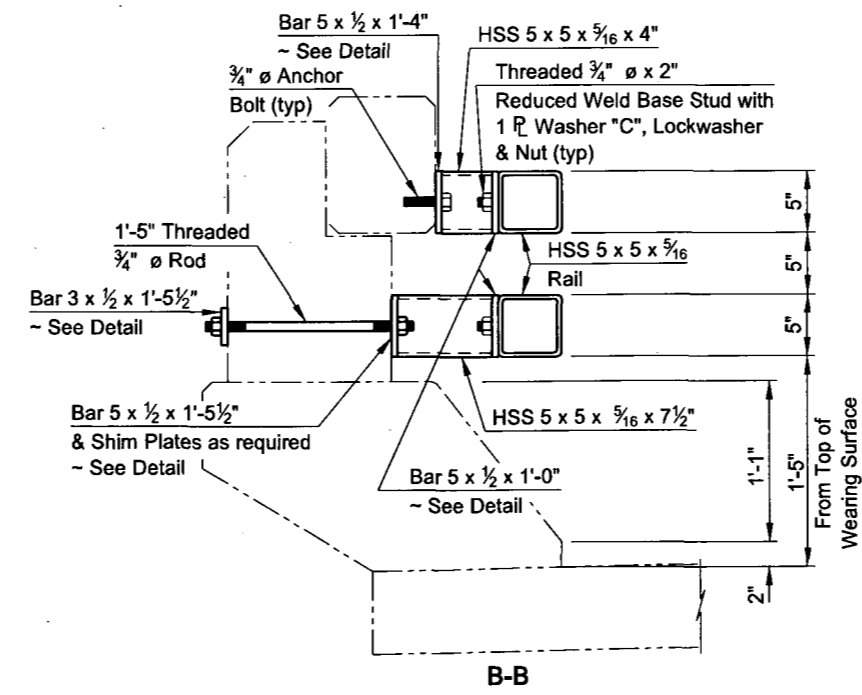
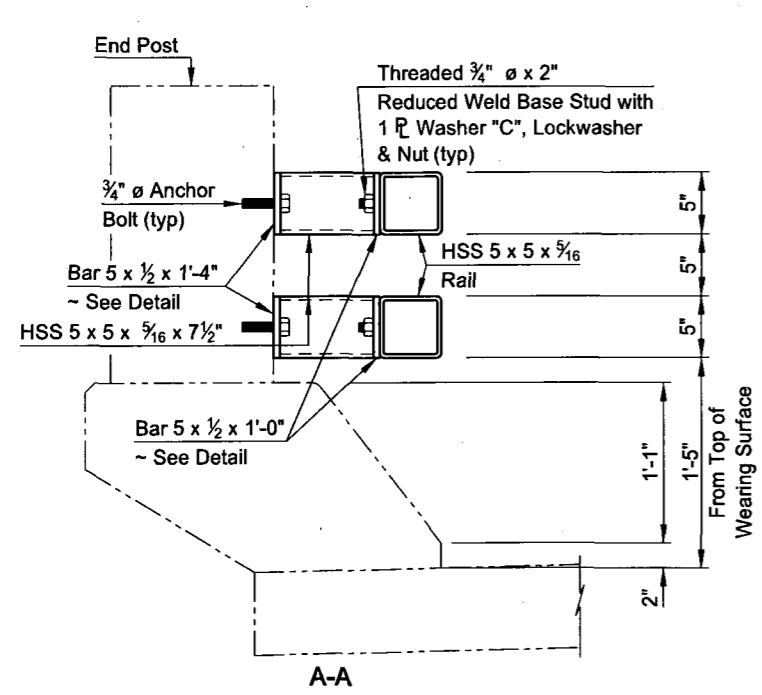
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	170	3



PART RAIL RETROFIT PLAN



PART RAIL RETROFIT ELEVATION



NOTE:
See Dwg 29-148.171L-4 for notes and details not shown on this drawing.

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QUANTITIES
SEE DWG 29-148.171L-4
COUNTY DRAIN 11
(EXIT END)
DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	170	4

NOTES:

The bid item shall be "Double Box Beam Rail Retrofit - E-Rail." The pay length shall be end to end and in linear feet.

Payment for the railing shall include compensation for furnishing and installing the guardrail connection plates and for sawing and removing portions of the curb.

Railing shall be fabricated to the horizontal and vertical alignment of the structure. Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

Rail elements shall be square structural tubing in accordance with ASTM Specification A 500 Grade B.

Steel plates and angles shall conform to ASTM Specification A 36, unless otherwise noted.

All structural steel shall be hot-dip galvanized after fabrication according to AASHTO M 111.

Threaded rods shall be Grade 36 steel and galvanized according to AASHTO M 232. The threaded rods shall be tightened to provide a minimum tensile force of 2,500 lbs and a maximum tensile force of 2,700 lbs.

All bolts and anchor bolts shall be ASTM A 325 or A 449. Reduced base studs shall be ASTM A 307 Grade C. Nuts shall be ASTM A 563 and washers shall be ASTM F 436. All bolts, studs, nuts and washers shall be galvanized according to AASHTO M 232.

Anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

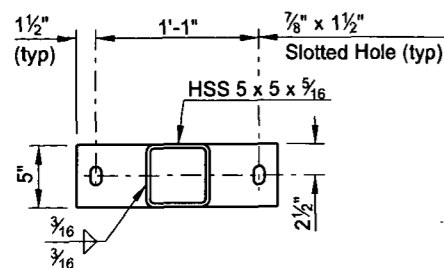
The Contractor shall field verify all dimensions and incorporate them into the shop drawings. The double box beam rail retrofit shop drawings shall be submitted for review to the Engineer before fabrication.

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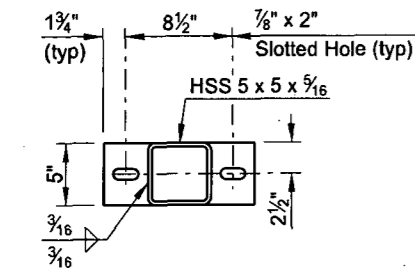
QUANTITIES	
E-RAIL RETROFIT	74.6 LF

COUNTY DRAIN 11

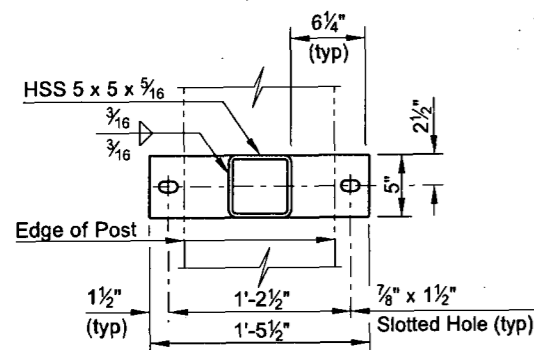
DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS



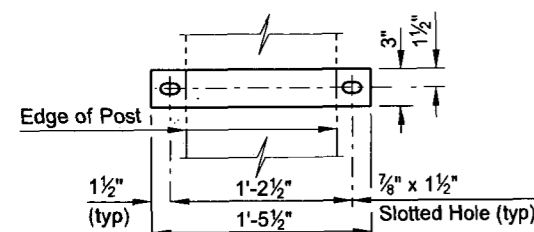
(CONCRETE RAIL CONNECTION)
BAR 5 X 1/2 X 1'-4" DETAIL



(RAIL CONNECTION)
BAR 5 X 1/2 X 1'-0" DETAIL

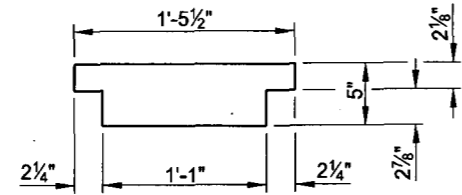


(CONCRETE POST CONNECTION)
BAR 5 X 1/2 X 1'-5 1/2" DETAIL

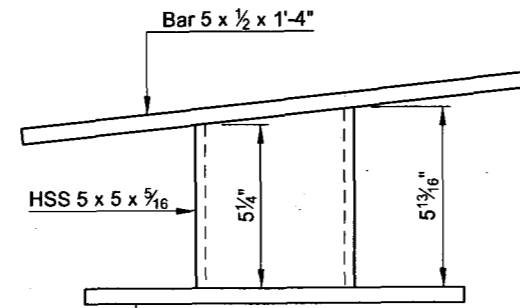


(CONCRETE POST CONNECTION)
BAR 3 X 1/2 X 1'-5 1/2" DETAIL

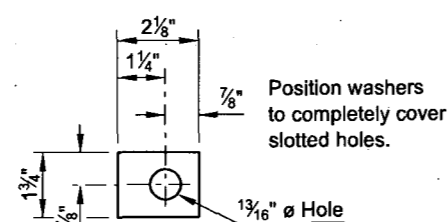
The filled circles indicate drilled and tapped holes for 7/8" ø bolts M 164 (A 325). See Detail "B."
The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M 164 (A 325).



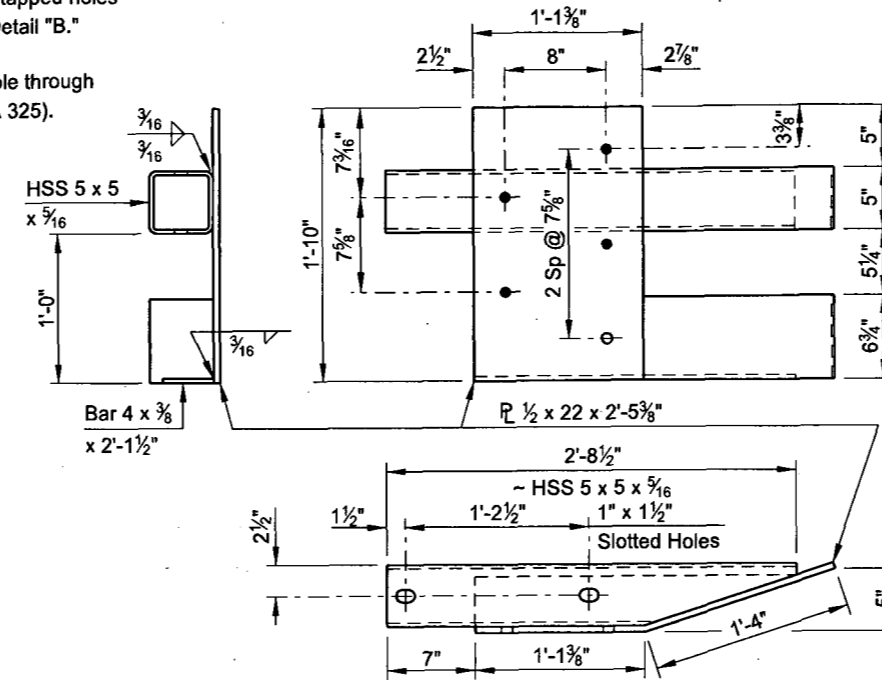
1/4" & 1/8" Thickness
Quantity determined in field.
SHIM PLATE DETAIL



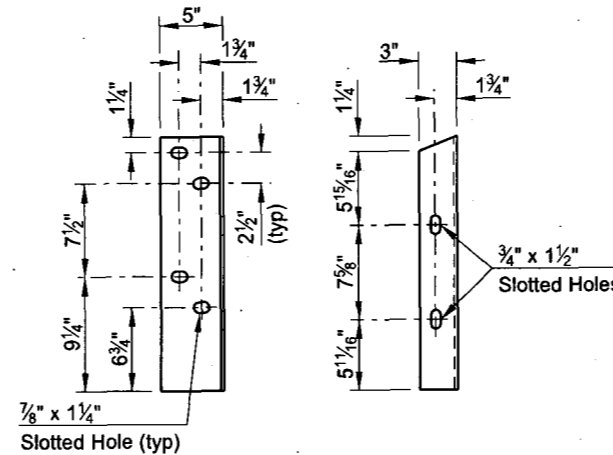
(ON MODIFIED END POST)
BOTTOM RAIL CONNECTION DETAIL



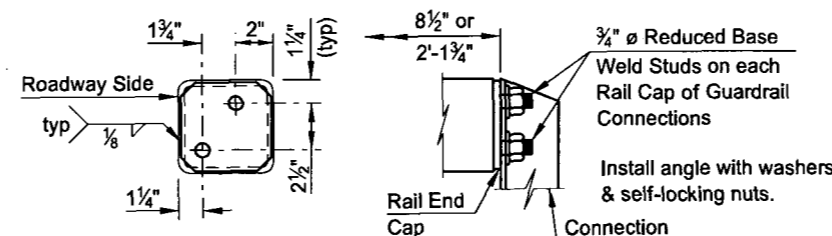
(GRADE 36)
1/4" PL WASHER "C"



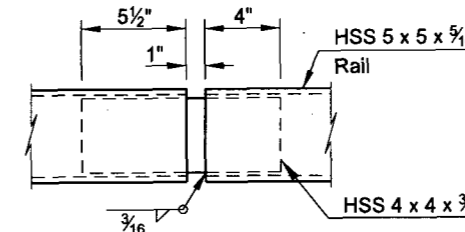
(2 REQUIRED)
GUARDRAIL CONNECTION PLATE DETAILS



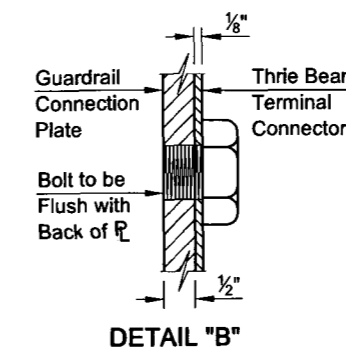
(2 REQUIRED)
CONNECTION ANGLE DETAILS



Rail cap shall be a Bar 4 3/4 x 3/16 x 4 3/4".
Cope corners 1" to provide zinc drains.
RAIL CAP DETAILS

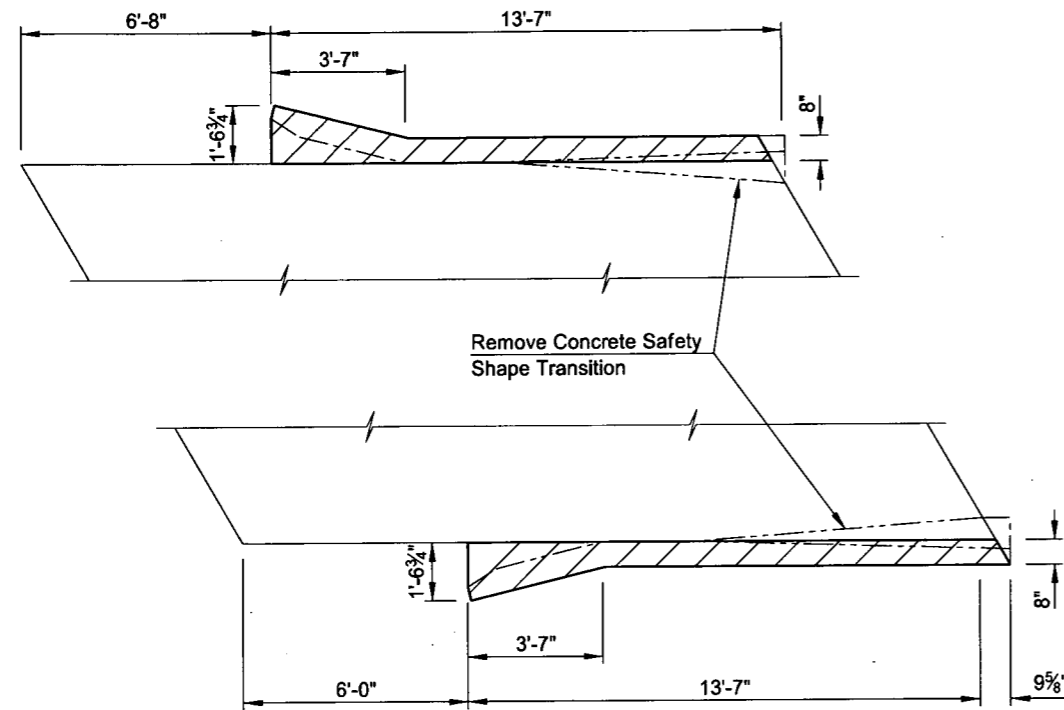


RAIL SPLICE DETAIL



DETAIL "B"

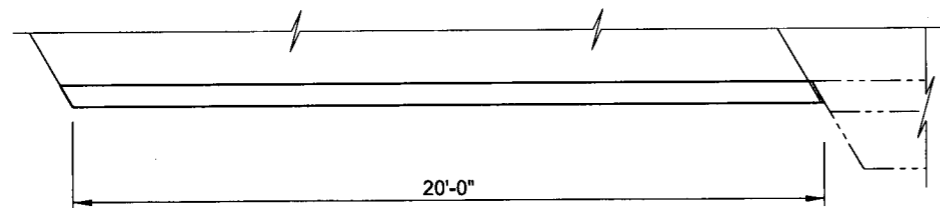
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(084)147	170	5



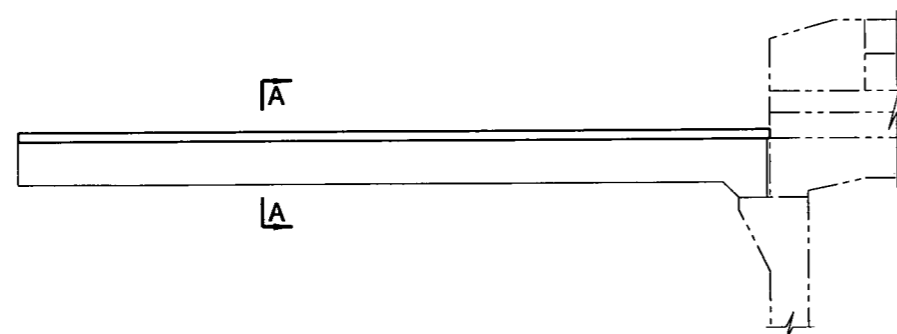
 Indicates Concrete Slab Removal

Remove Concrete Safety
 Shape Transition

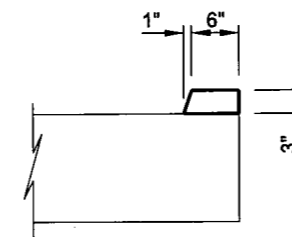
(APPROACH END)
 PART EXISTING PLAN



APPROACH CURB PLAN



APPROACH CURB ELEVATION



A-A

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COUNTY DRAIN 11

APPROACH SLAB REMOVAL
 & CURB DETAILS

GRAND FORKS COUNTY, ND
COUNTY DRAIN 11
PROJ. NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
DOUBLE BOX BEAM RAIL RETROFIT E-RAIL
(74.6 LF)

INDEX	
SHEET	TITLE
△ E09A	INDEX & GENERAL NOTES & SPECIFICATIONS
E09B	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09C	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09D	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09E	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09F	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ 0911	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0912	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0913	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0914	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0915	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0916	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0917	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0918	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0919	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0920	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS

GENERAL NOTES & SPECIFICATIONS
<p>1) ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH NORTH DAKOTA STANDARD SPECIFICATIONS DATED 2008 AND SUPPLEMENTAL SPECIFICATIONS.</p> <p>2) MATERIAL AND FABRICATION - ND DOT 624 A) STRUCTURAL STEEL ASTM A36 B) STRUCTURAL STEEL TUBING ASTM A500 GRADE B C) WELDING - AWS D1.1</p> <p>3) GALVANIZING - ND DOT 854 A) STRUCTURAL STEEL ASTM A123 - AASHTO M-111 PRIOR TO GALVANIZING NO SURFACE PREP REQUIRED B) HARDWARE ASTM A153 - AASHTO M-232 C) REPAIR OF GALVANIZED SURFACES ASTM A780</p>

WOM SEQUENCE A		
JOB NUMBER	PERCENTAGE	JOB STATUS
1309-11	10%	COMPLETE

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

△			
△			
△			
△			
△	REVISED PER 4-11-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APPROVAL: 4-17-13		AS BUILT:

WHITE OAK METALS

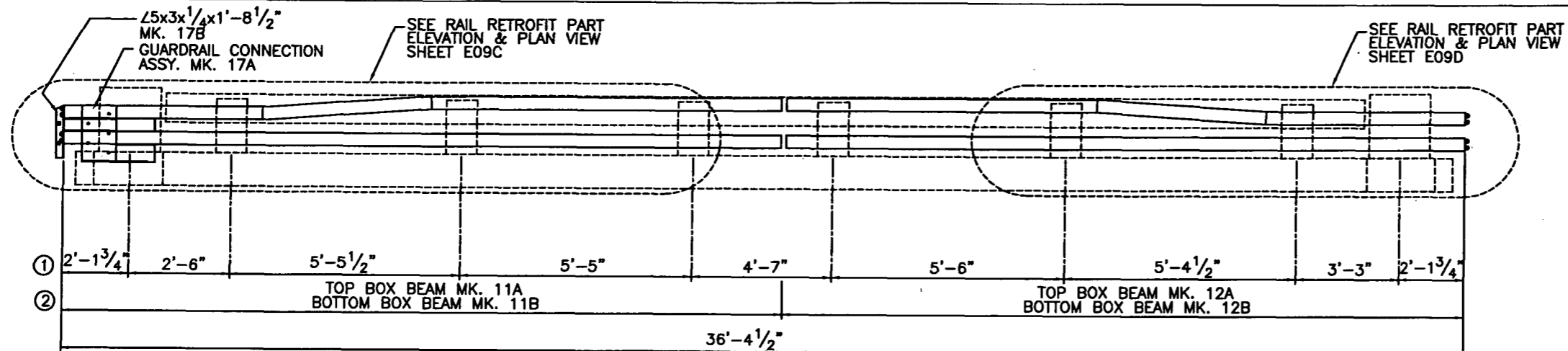
NO EXCEPTIONS NOTED

Digitally signed by Dean Stolz
DN: cn=Dean Stolz, o=NDDOT, ou=Bridge, email=dstolz@nd.gov, c=US
Date: 2013.04.17 14:25:27 -05'00'

REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS

NDDOT

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(084)147 BRIDGE NO. 29-148.171L PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS DESCRIPTION: INDEX & GALVANIZING SPECIFICATIONS	DRAWN BY: GF CHECKED BY: RS SCALE: NONE DATE: 3-13-13 JOB NUMBER SHEET 1309-11 E09A △
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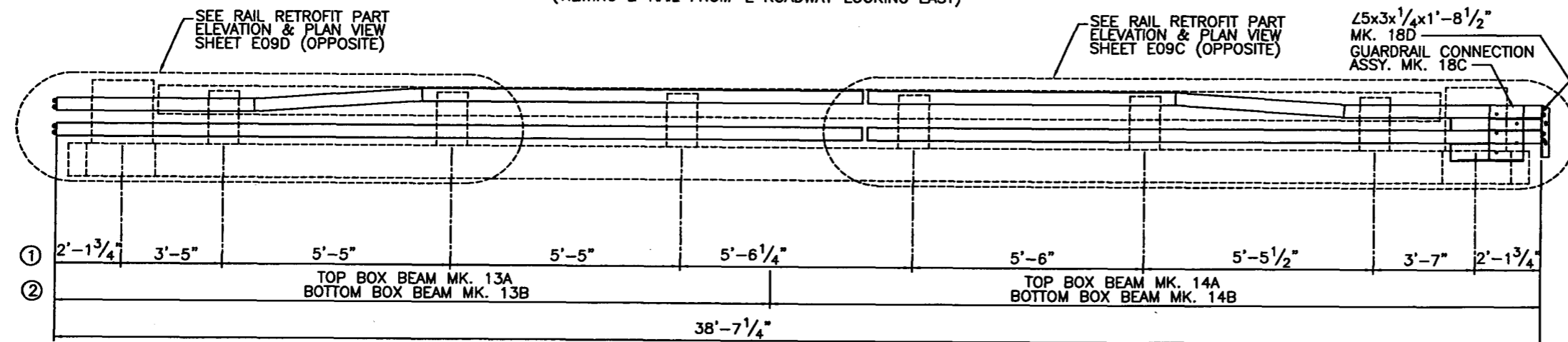


~APPROACH END~

~EXIT END~

**SOUTH BOUND I-29 COUNTY DRAIN 11
DOUBLE BOX BEAM E-RAIL EAST ELEVATION VIEW**

(VIEWING E-RAIL FROM \odot ROADWAY LOOKING EAST)



~EXIT END~

~APPROACH END~

**SOUTH BOUND I-29 COUNTY DRAIN 11
DOUBLE BOX BEAM E-RAIL WEST ELEVATION VIEW**

(VIEWING E-RAIL FROM \odot ROADWAY LOOKING WEST)

- ① FIELD MEASUREMENTS PROVIDED BY CUSTOM CONTRACTING SOLUTIONS
- ② HSS 5x5x.313 BOX BEAM SHIP MKS.

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

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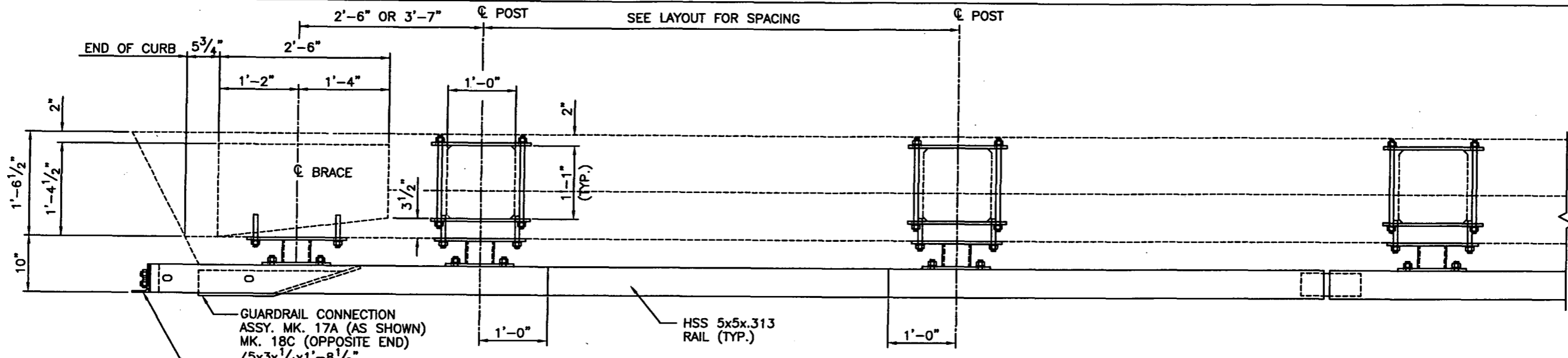
REV.	DESCRIPTION	BY	DATE

FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
R & R APPROVAL:		AS BUILT:

WHITE OAK METALS

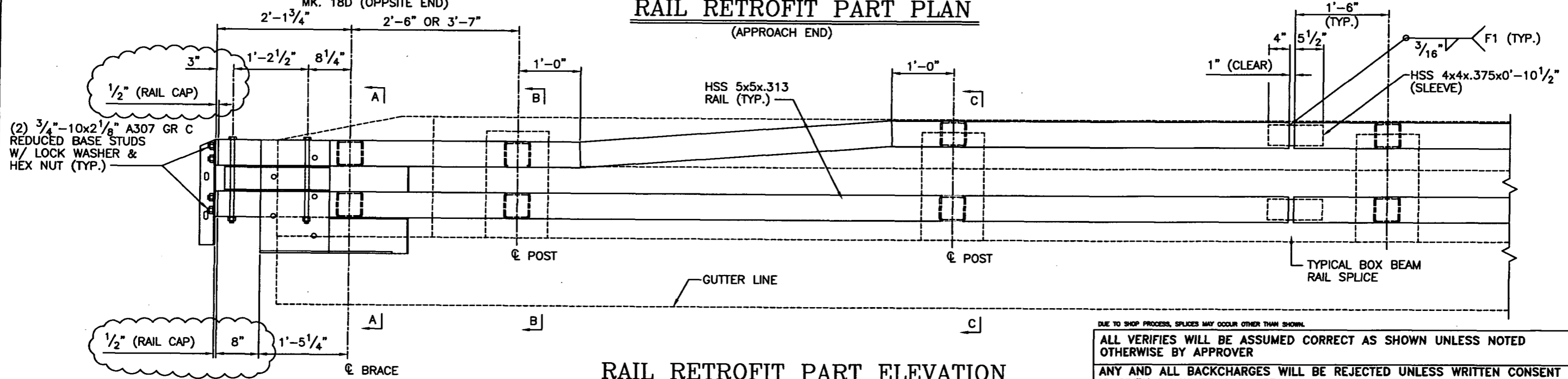
No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(084)147 BRIDGE NO. 29-148.171L PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) INST. DETAILS	DRAWN BY: GF SCALE: NONE DATE: 3-13-13 JOB NUMBER: 1309-11	CHECKED BY: RS SHEET: E09B
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RAIL RETROFIT PART PLAN

(APPROACH END)



RAIL RETROFIT PART ELEVATION

(APPROACH END)

*FOR SECTION A-A, B-B & C-C SEE SHEET E09E

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

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5			
4			
3			
2			
1	REVISED PER 4-11-13 REVIEW		GF 4-17-13
REV.	DESCRIPTION	BY	DATE

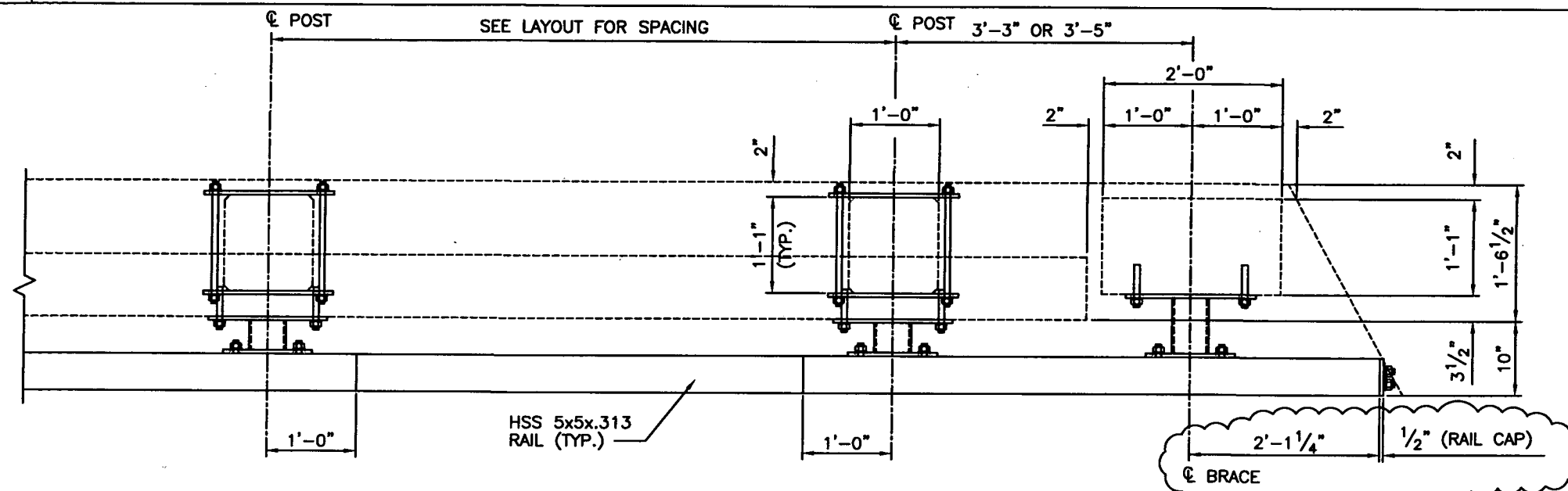
FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
R & R APROVAL: 4-17-13		AS BUILT:

WHITE OAK METALS

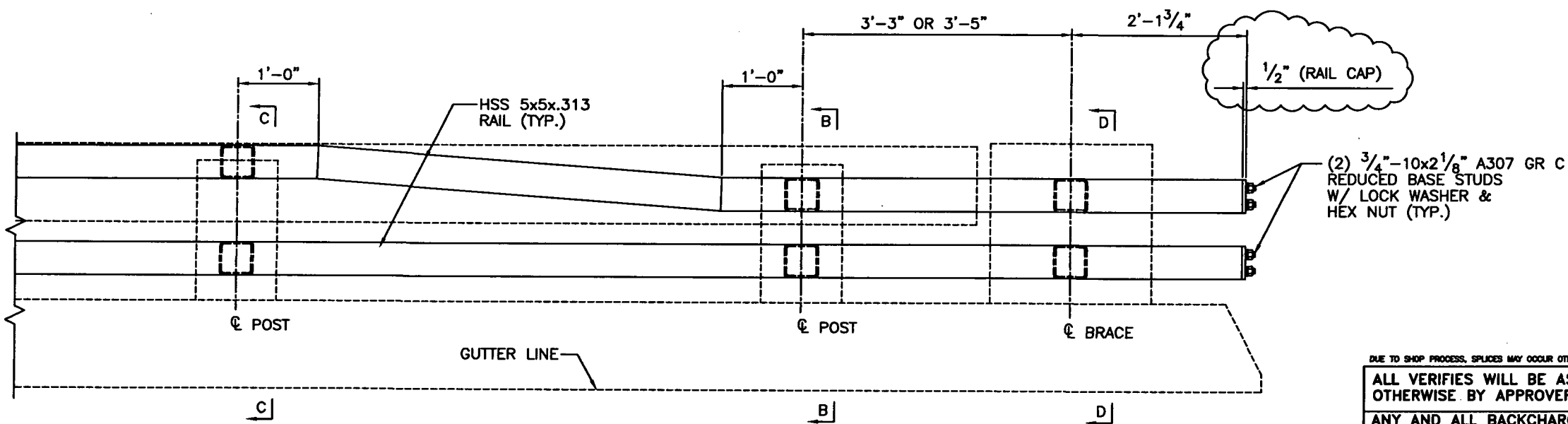
No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(084)147
 BRIDGE NO. 29-148.171L
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) INST. DETAILS

DRAWN BY: GF	CHECKED BY: RS
SCALE: NONE	
DATE: 3-13-13	
JOB NUMBER	SHEET
1309-11	E09C Δ



RAIL RETROFIT PART PLAN
(EXIT END)



RAIL RETROFIT PART ELEVATION
(EXIT END)

*FOR SECTION B-B, C-C & D-D SEE SHEET E09E & E09F

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER			
ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.			
REV.	DESCRIPTION	BY	DATE
2	REVISED PER 4-11-13 REVIEW	GF	4-17-13
FOR APPROVAL: 3-13-13		TO SHOP:	
R & R APPROVAL: 4-17-13		TO FIELD: AS BUILT:	

No Exceptions Noted

BY: D Stolz

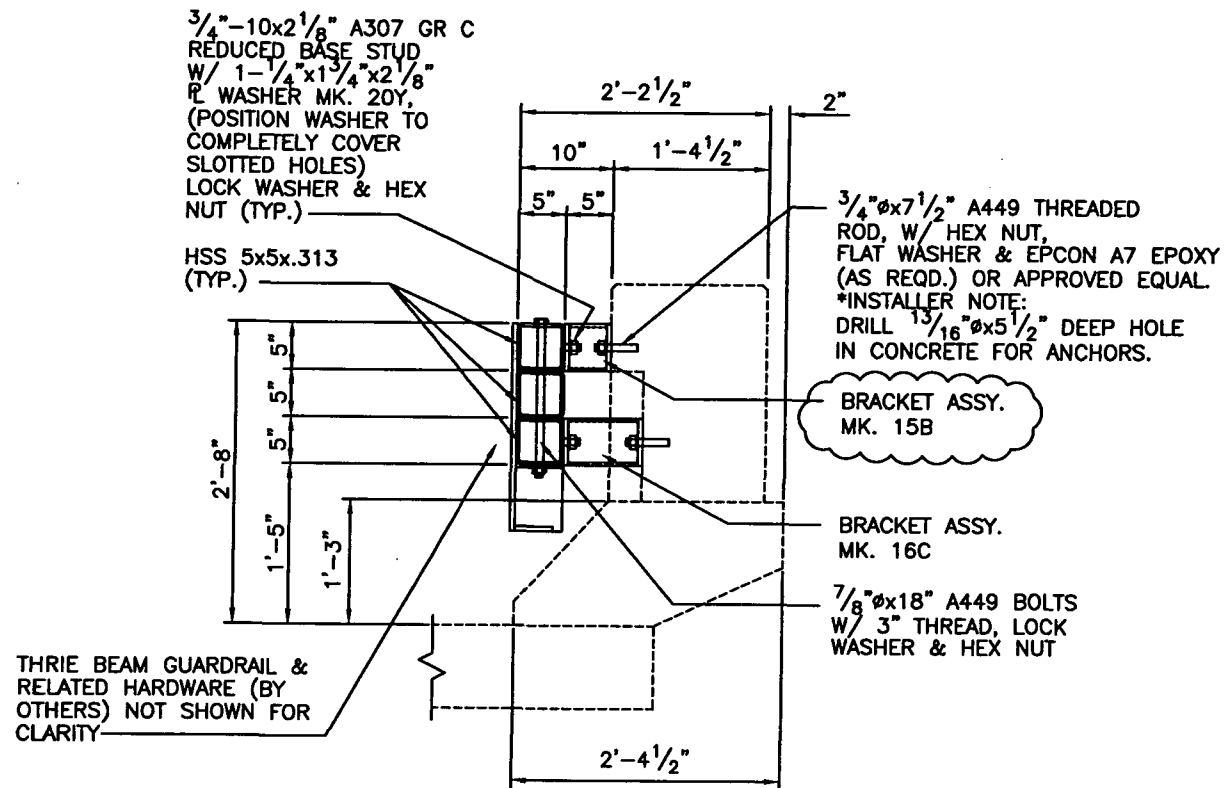
DATE: April 17, 2013

REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS

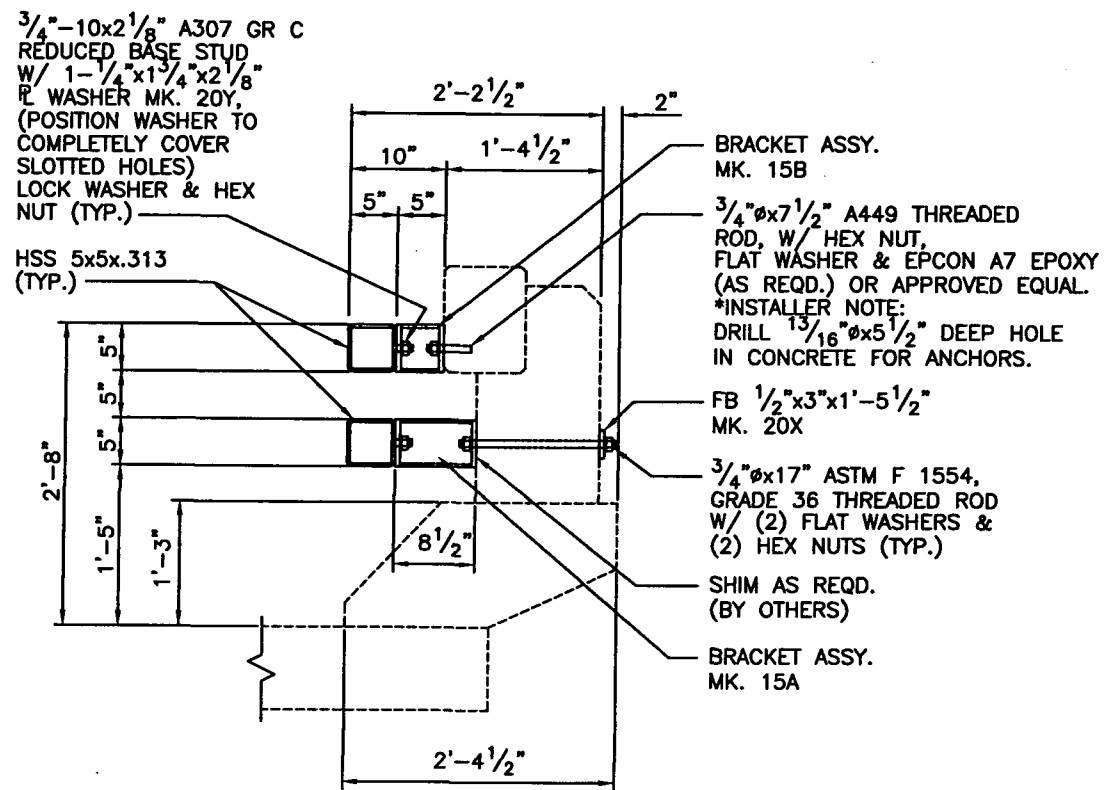
NDDOT

WHITE OAK METALS

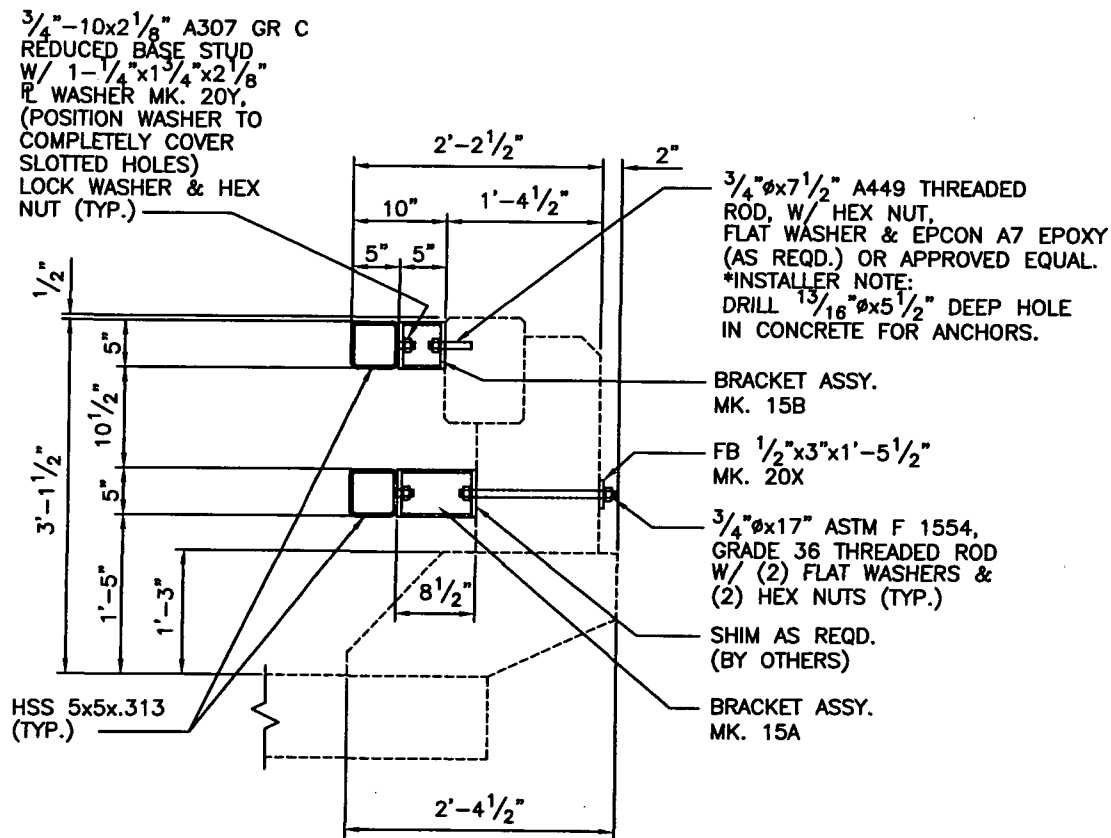
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA	DRAWN BY: GF	CHECKED BY: RS
PROJECT NO. SIM-6-029(084)147	SCALE: NONE	
BRIDGE NO. 29-148.171L	DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.	JOB NUMBER	SHEET
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	1309-11	E09D
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) INST. DETAILS		



SECTION A-A
(END POST APPROACH END)



SECTION B-B
(CONCRETE RAIL POST)



SECTION C-C
(CONCRETE RAIL POST)

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER			
ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.			
5			
4			
3			
2			
1	REVISED PER 4-11-13 REVIEW		GF 4-17-13
REV.	DESCRIPTION	BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APPROVAL: 4-17-13		AS BUILT:

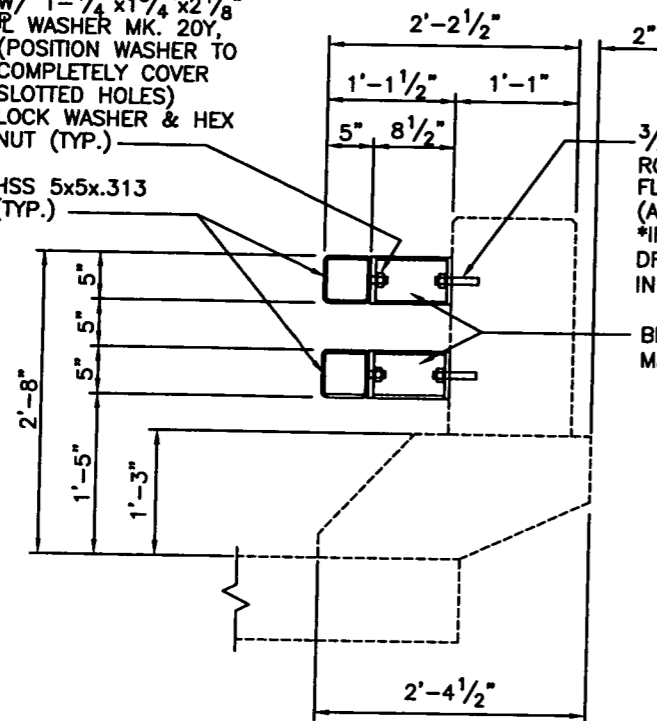
No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(084)147 BRIDGE NO. 29-148.171L	DRAWN BY: GF SCALE: NONE DATE: 3-13-13
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	CHECKED BY: RS JOB NUMBER: 1309-11 SHEET: E09E
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) INST. DETAILS	

3/4"-10x2 1/8" A307 GR C
REDUCED BASE STUD
W/ 1-1/4"x1 3/4"x2 1/8"
WASHER MK. 20Y,
(POSITION WASHER TO
COMPLETELY COVER
SLOTTED HOLES)
LOCK WASHER & HEX
NUT (TYP.)

HSS 5x5x.313
(TYP.)



SECTION D-D
(END POST EXIT END)

3/4"Øx7 1/2" A449 THREADED
ROD, W/ HEX NUT,
FLAT WASHER & EPICON A7 EPOXY
(AS REQD.) OR APPROVED EQUAL.
*INSTALLER NOTE:
DRILL 1 5/16"Øx5 1/2" DEEP HOLE
IN CONCRETE FOR ANCHORS.

BRACKET ASSY.
MK. 16A

SHIPPING LIST

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	NOTES
					FEET	INCHES		
				DOUBLE BOX BEAM				
				~SHIPPING LIST~				
		8	WOM	5x5x.313 (BOX BEAM)				
		12	WOM	BRACKET				
		14	WOM	BRACKET				
		4	WOM	BRACKET				
		2	WOM	BRACKET				
		1	WOM	GUARDRAIL CONNECTION				
		1	L	5x3x 1/4	1	8 1/2		
		1	WOM	GUARDRAIL CONNECTION				
		1	L	5x3x 1/4	1	8 1/2		
		12	FB	1/2x3	1	5 1/2	A36	
		66	FB	1/4x1 3/4	0	2 1/8	A36	
		25	TR	3/4x17			1554Gr36	
		50	NUT	3/4 NC			A563AHHN	
		42	TR	3/4x7 1/2			A449	
		42	NUT	3/4 NC			A563DH	
		92	FW	3/4			F436	
		2		A7 ADHESIVE OR APPROVED EQUAL			28 oz CARTRIDGE	
		85	LW	3/4			F436	
		85	NUT	3/4 NC			A563AHHN	
		4	HS	7/8x18			A449	3" THREAD
		4	LW	7/8			F436	
		4	NUT	7/8 NC			A563DH	

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

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ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

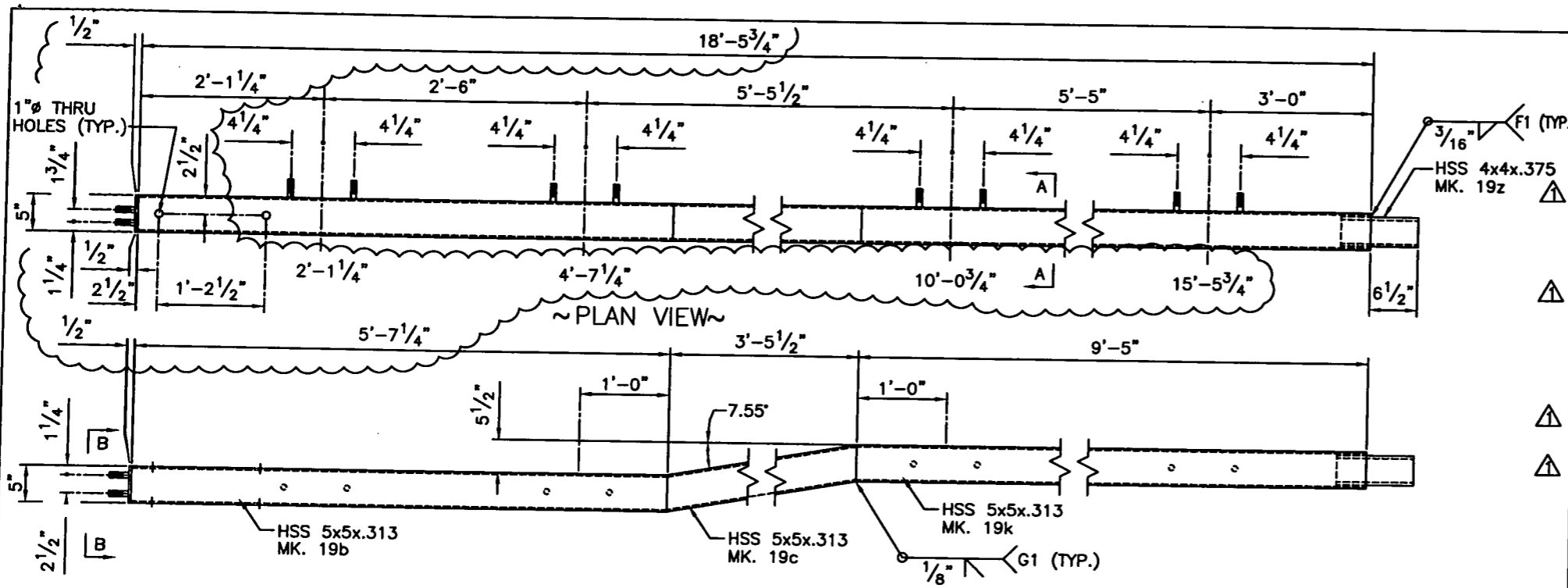
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4			
3			
2			
1	REVISED PER 4-11-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
R & R APROVAL: 4-17-13 AS BUILT:

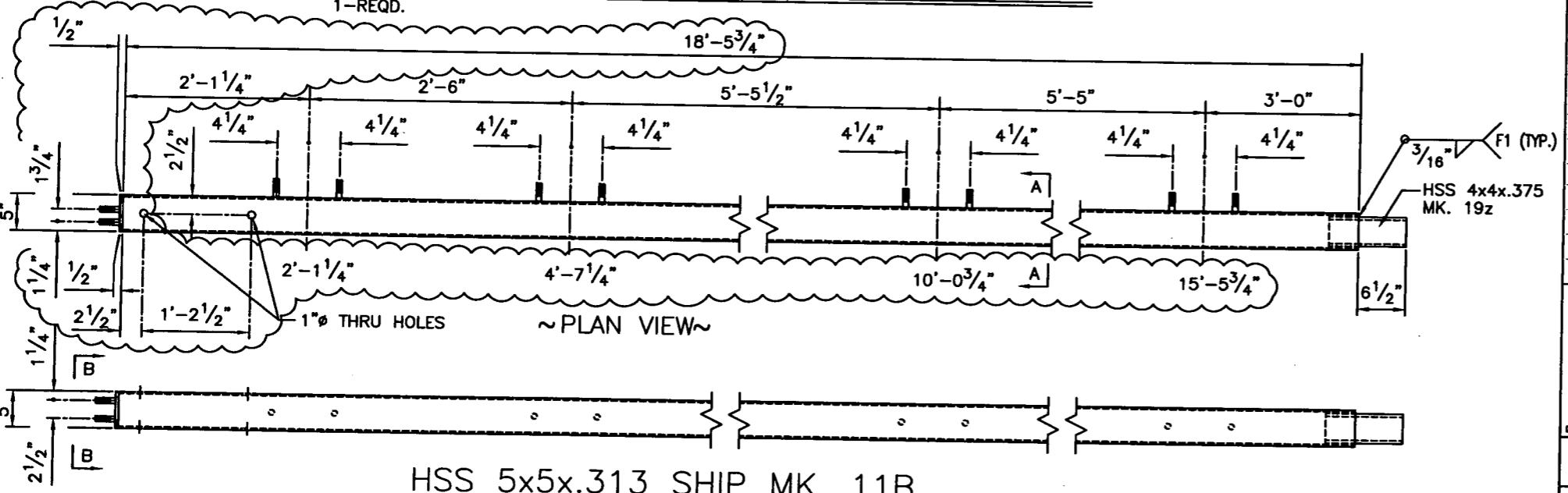
WHITE OAK METALS

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

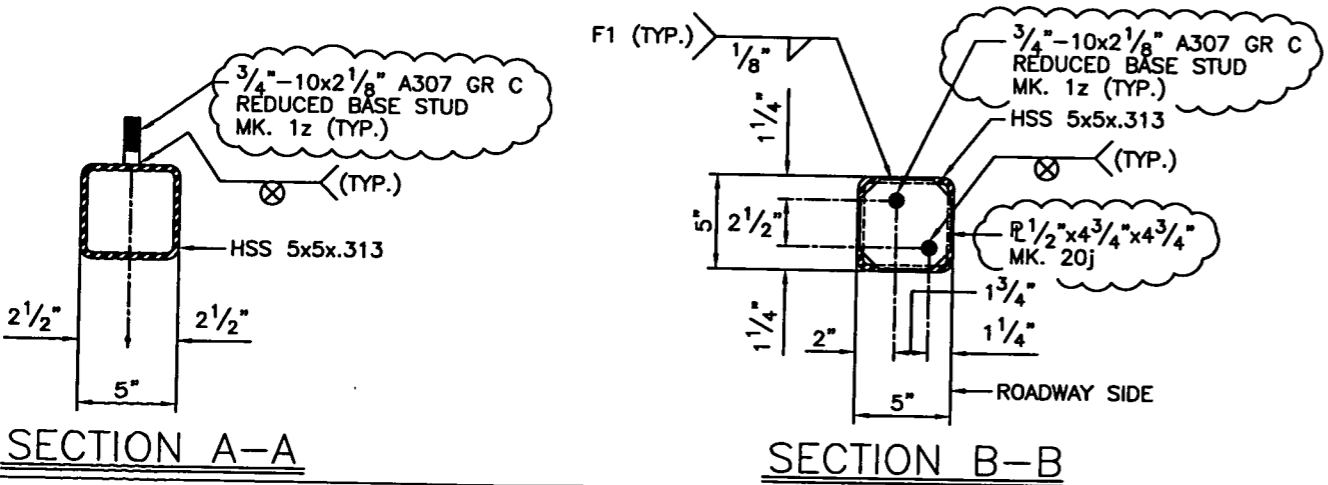
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) INST. DETAILS
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER SHEET
1309-11 E09F



HSS 5x5x.313 (BOX BEAM) SHIP MK. 11A
1-REQD.



HSS 5x5x.313 SHIP MK. 11B
1-REQD.



SECTION A-A

SECTION B-B

BILL OF MATERIAL										
SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ	
					FEET	INCHES				
11A		1	WOM	BOX BEAM						11A
	19b	1	HSS	5x5x.313	5	7 1/4	A500 GrB	S		
	19c	1	HSS	5x5x.313	3	6 1/2	A500 GrB	M		
	19k	1	HSS	5x5x.313	9	5	A500 GrB	S		
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S		
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36			
	1z	10	WS	3/4-10x2 1/8			A307 GR C			
11B		1	HSS	5x5x.313	18	5 3/4	A500 GrB	S		11A
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S		
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36			
	1z	10	WS	3/4-10x2 1/8			A307 GR C			

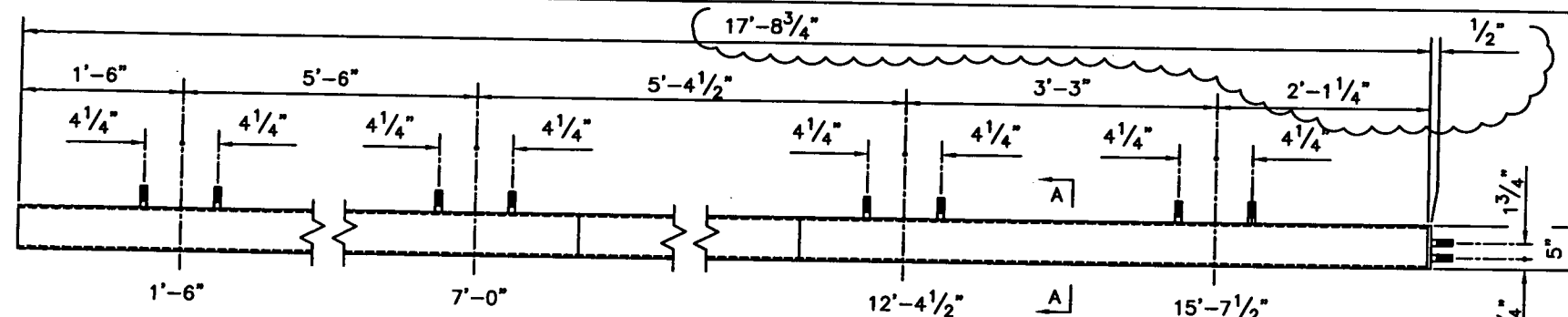
GENERAL NOTES:
 DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.
 ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

REV.	DESCRIPTION	BY	DATE
1	REVISED PER 4-11-13 REVIEW	GF	4-17-13
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APPROVAL: 4-17-13		AS BUILT:

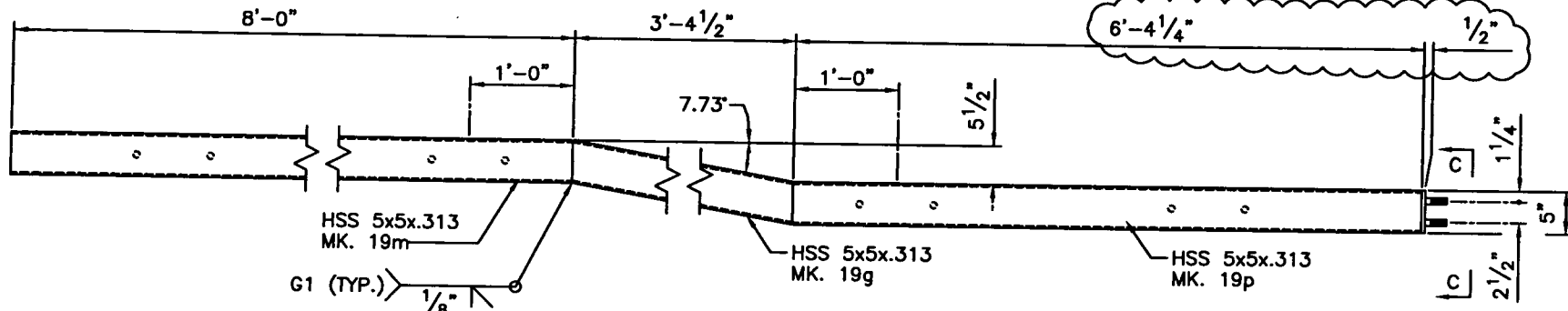
WHITE OAK METALS

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

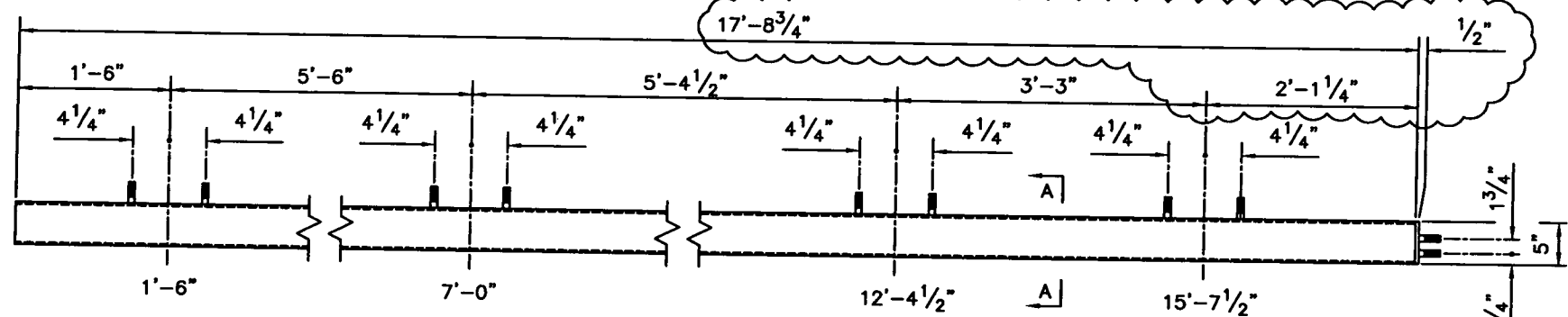
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(084)147 BRIDGE NO. 29-148.171L	DRAWN BY: GF SCALE: NONE DATE: 3-13-13
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	CHECKED BY: RS JOB NUMBER: 1309-11 SHEET: 0911
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS	



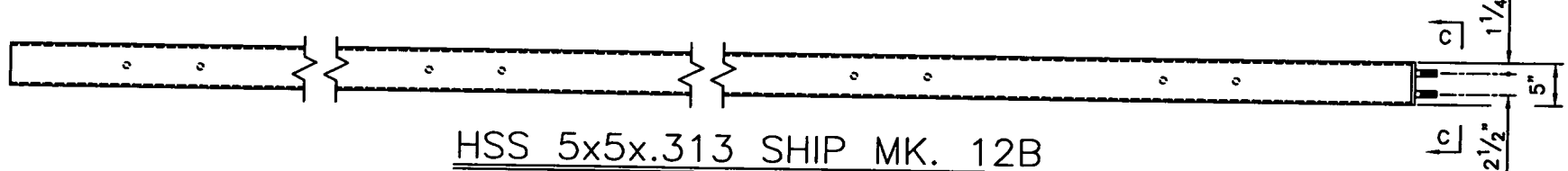
~ PLAN VIEW ~



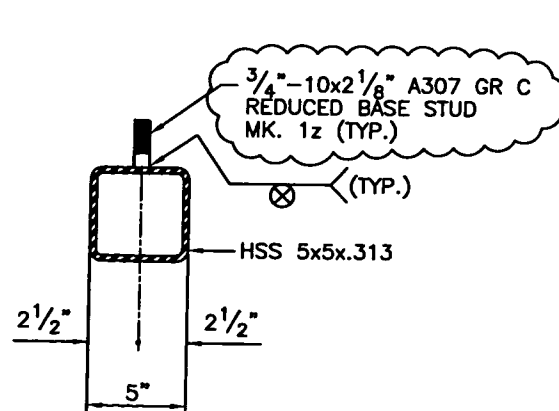
HSS 5x5x.313 (BOX BEAM) SHIP MK. 12A
1-REQD.



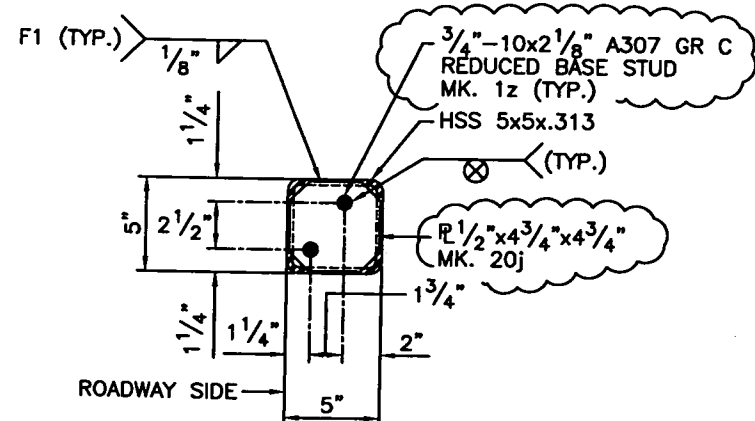
~ PLAN VIEW ~



HSS 5x5x.313 SHIP MK. 12B
1-REQD.



SECTION A-A



SECTION C-C

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
12A		1	WOM	BOX BEAM					11A
	19g	1	HSS	5x5x.313	3	5 1/2	A500 GrB	M	
	19m	1	HSS	5x5x.313	8	0	A500 GrB	S	
	19p	1	HSS	5x5x.313	6	4 1/4	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
12B		1	HSS	5x5x.313	17	8 3/4	A500 GrB	S	11A
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

GENERAL NOTES:

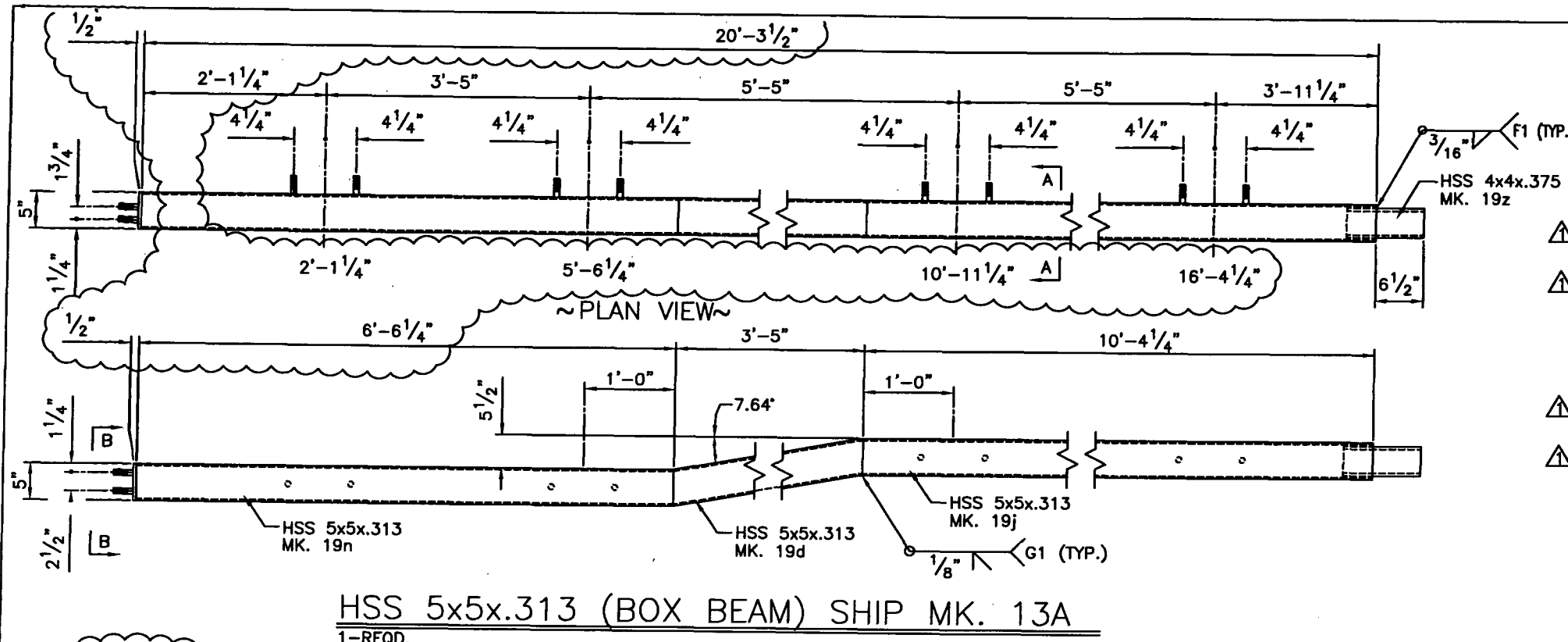
DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

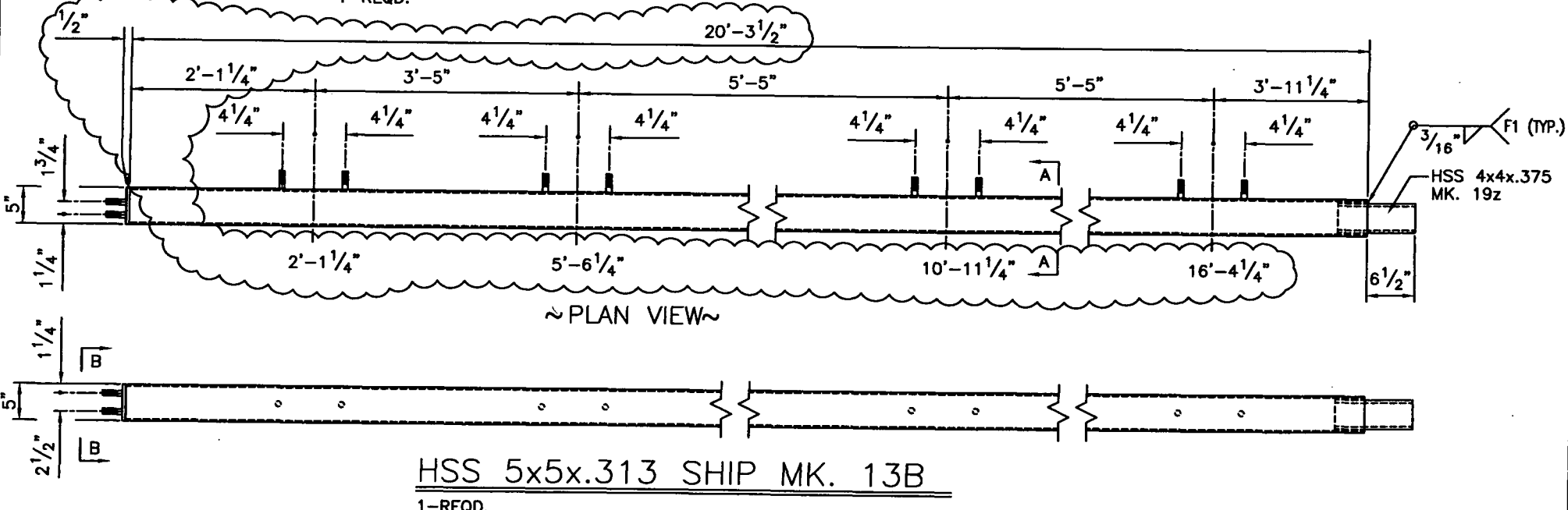
5				
4				
3				
2				
1	REVISED PER 4-11-13 REVIEW		GF	4-17-13
REV.	DESCRIPTION		BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:	
	R & R APPROVAL: 4-17-13		AS BUILT:	

WHITE OAK METALS

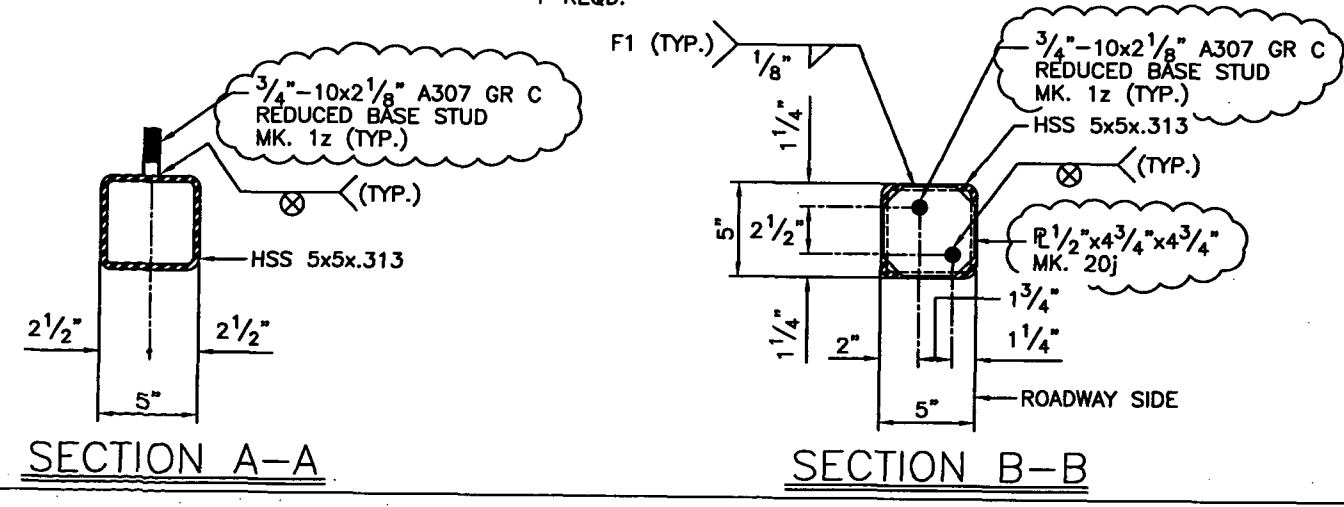
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA	DRAWN BY: GF	CHECKED BY: RS
PROJECT NO. SIM-6-029(084)147	SCALE: NONE	
BRIDGE NO. 29-148.171L	DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.	JOB NUMBER	SHEET
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	1309-11	0912
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS		



HSS 5x5x.313 (BOX BEAM) SHIP MK. 13A
1-REQD.



HSS 5x5x.313 SHIP MK. 13B
1-REQD.



SECTION A-A

SECTION B-B

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
13A		1	WOM	BOX BEAM					11A
	19d	1	HSS	5x5x.313	3	6	A500 GrB	M	
	19j	1	HSS	5x5x.313	10	4 1/4	A500 GrB	S	
	19n	1	HSS	5x5x.313	6	6 1/4	A500 GrB	S	
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
13B		1	HSS	5x5x.313	20	3 1/2	A500 GrB	S	11A
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

GENERAL NOTES:
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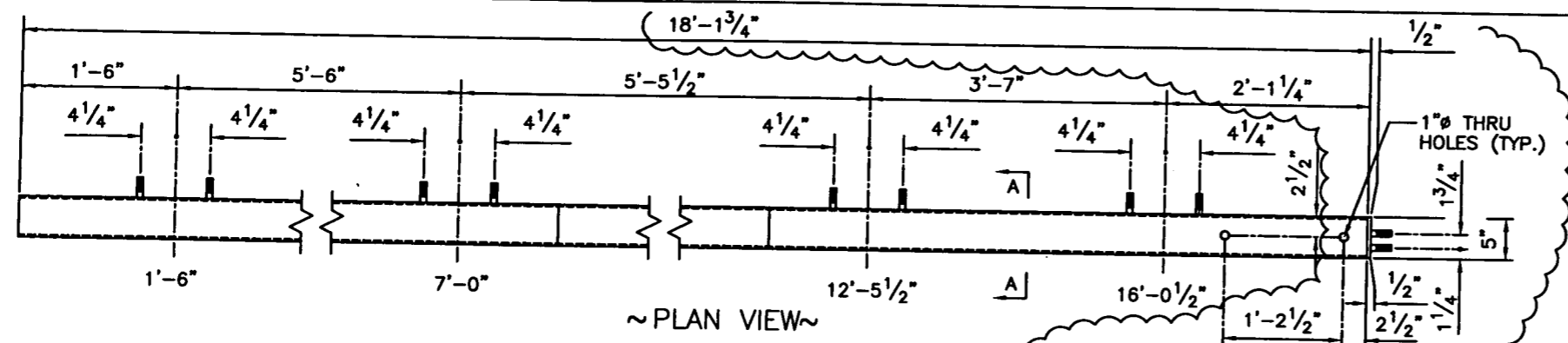
REV.	DESCRIPTION	BY	DATE
5			
4			
3			
2	REVISED PER 4-11-13 REVIEW	GF	4-17-13
1			

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
R & R APPROVAL: 4-17-13 AS BUILT:

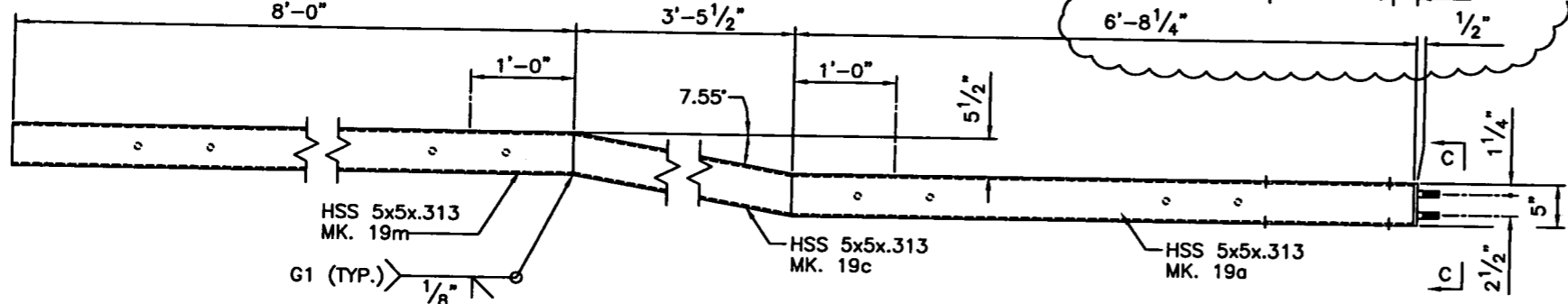
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS

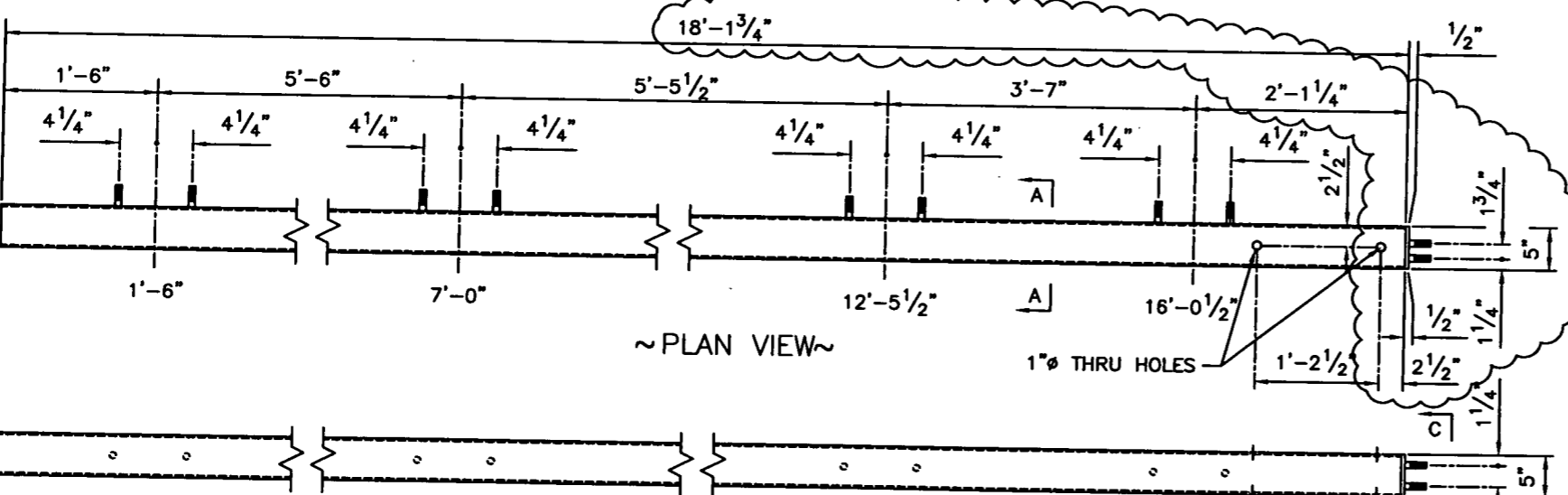
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0913



~ PLAN VIEW ~

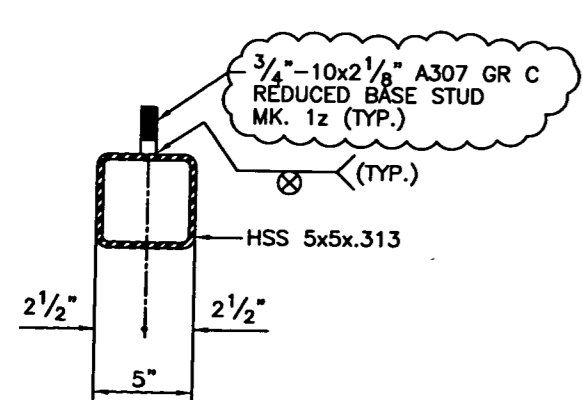


HSS 5x5x.313 (BOX BEAM) SHIP MK. 14A
1-REQD.

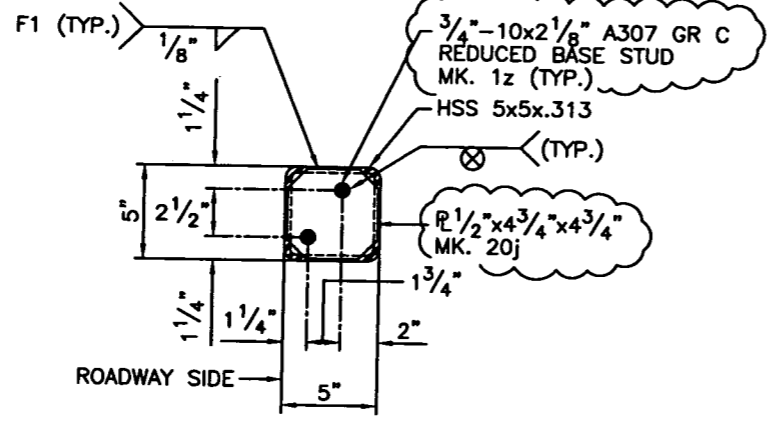


~ PLAN VIEW ~

HSS 5x5x.313 SHIP MK. 14B
1-REQD.



SECTION A-A



SECTION C-C

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
14A		1	WOM	BOX BEAM					11A
	19a	1	HSS	5x5x.313	6	8 1/4	A500 GrB	S	
	19c	1	HSS	5x5x.313	3	6 1/2	A500 GrB	M	
	19m	1	HSS	5x5x.313	8	0	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
14B		1	HSS	5x5x.313	18	1 3/4	A500 GrB	S	11A
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

GENERAL NOTES:
 DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

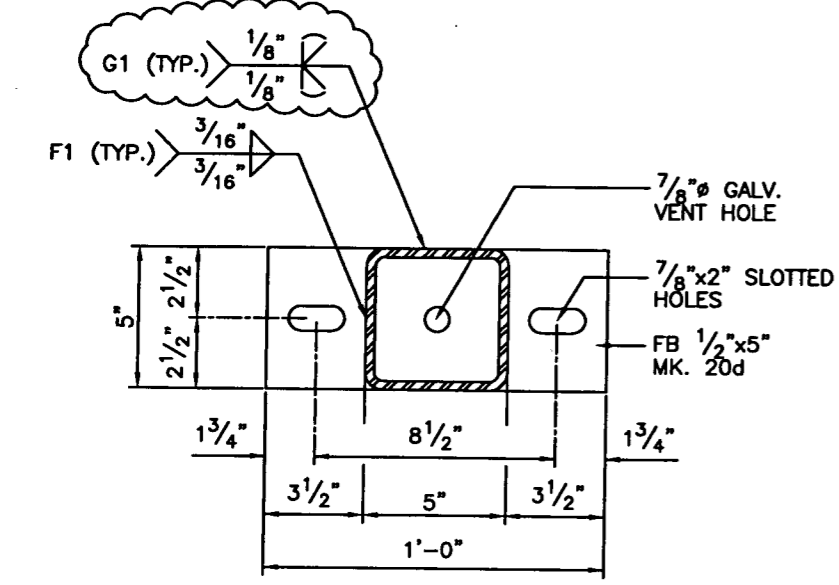
REV	DESCRIPTION	BY	DATE
1	REVISED PER 4-11-13 REVIEW	GF	4-17-13

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
 R & R APROVAL: 4-17-13 AS BUILT:

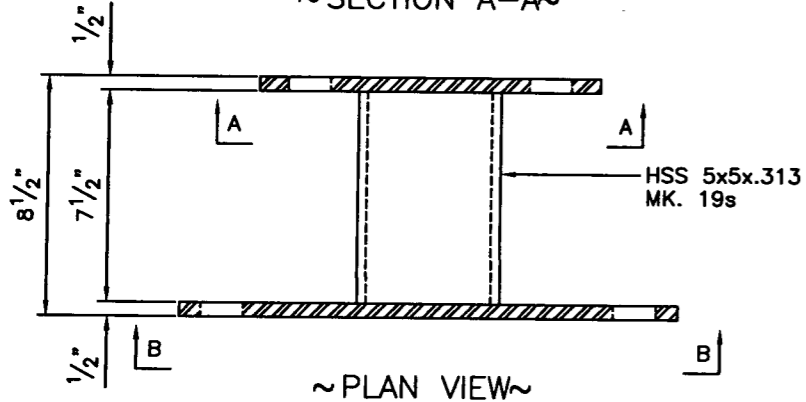
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(084)147
 BRIDGE NO. 29-148.171L
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS

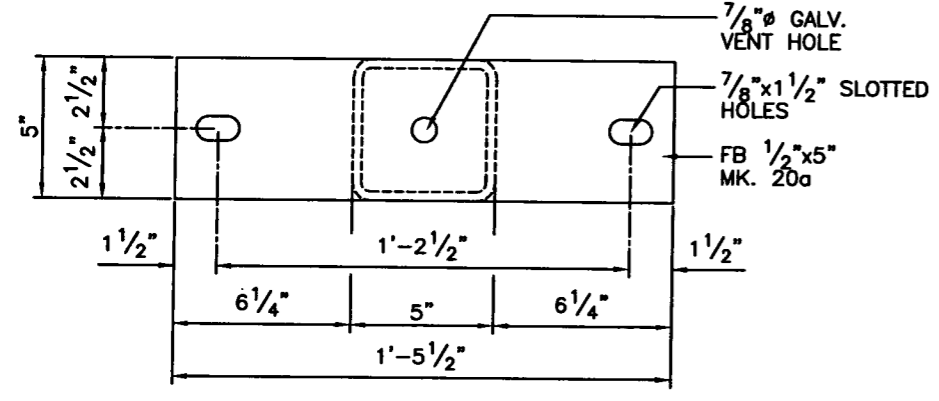
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 SCALE: NONE
 DATE: 3-13-13
 JOB NUMBER: 1309-11 SHEET: 0914



~SECTION A-A~

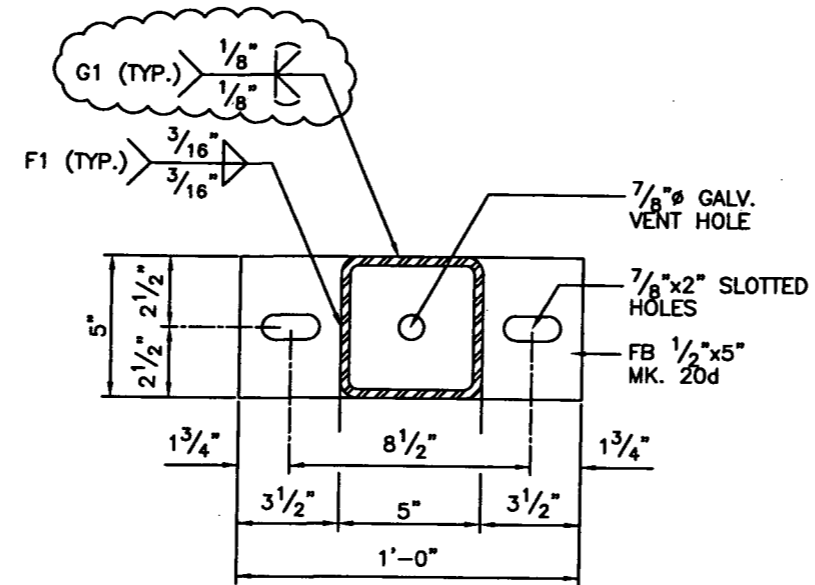


~PLAN VIEW~

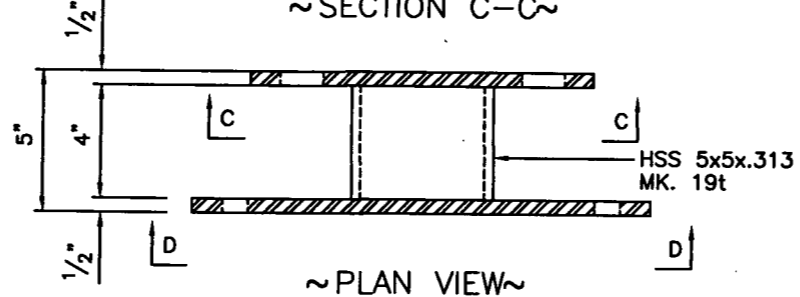


~SECTION B-B~

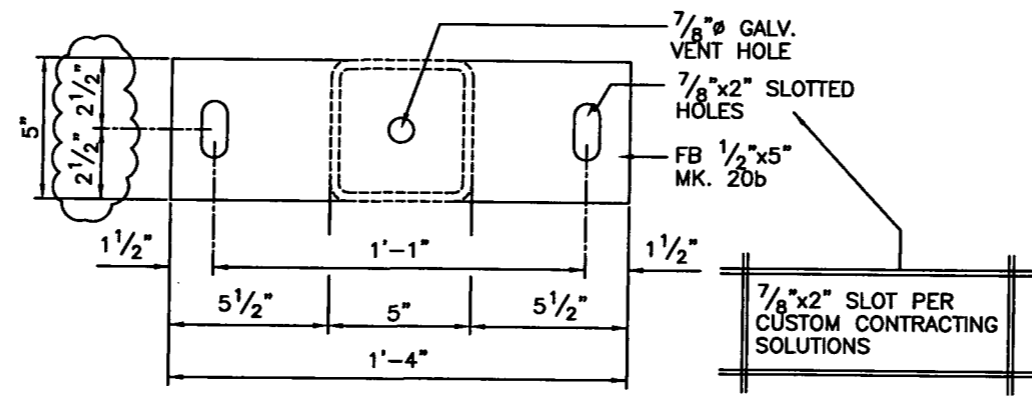
BRACKET SHIP MK. 15A
12-REQD. (CONCRETE POST LOWER CONNECTION)



~SECTION C-C~



~PLAN VIEW~



~SECTION D-D~

BRACKET SHIP MK. 15B
14-REQD. (CONCRETE RAIL UPPER CONNECTION)

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
15A		12	WOM	BRACKET					11A
	19s	12	HSS	5x5x.313	0	7 1/2	A500 GrB	S	
	20a	12	FB	1/2x5	1	5 1/2	A36	S	
	20d	12	FB	1/2x5	1	0	A36	S	
15B		14	WOM	BRACKET					11A
	19t	14	HSS	5x5x.313	0	4	A500 GrB	S	
	20b	14	FB	1/2x5	1	4	A36	S	
	20d	14	FB	1/2x5	1	0	A36	S	

GENERAL NOTES:

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

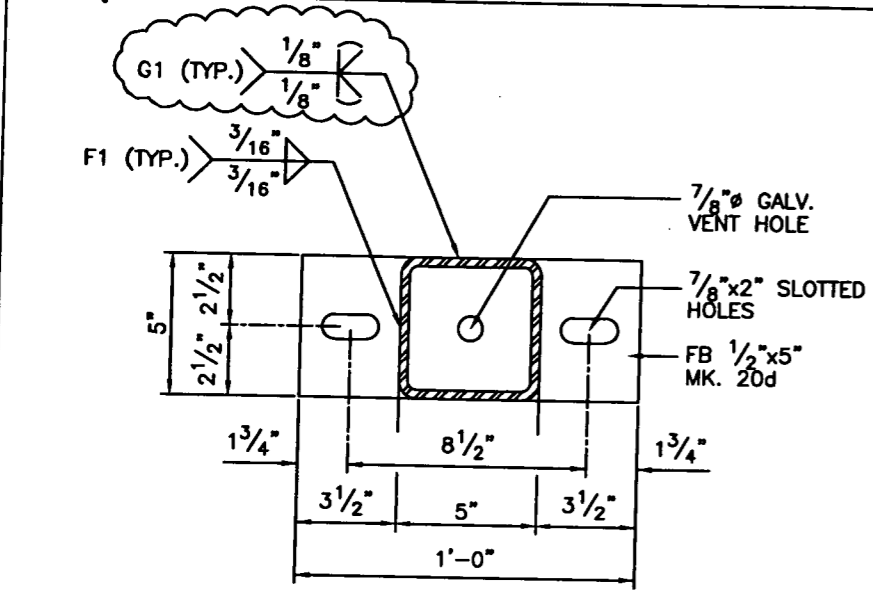
REVISED PER 4-11-13 REVIEW

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
R & R APROVAL: 4-17-13 AS BUILT:

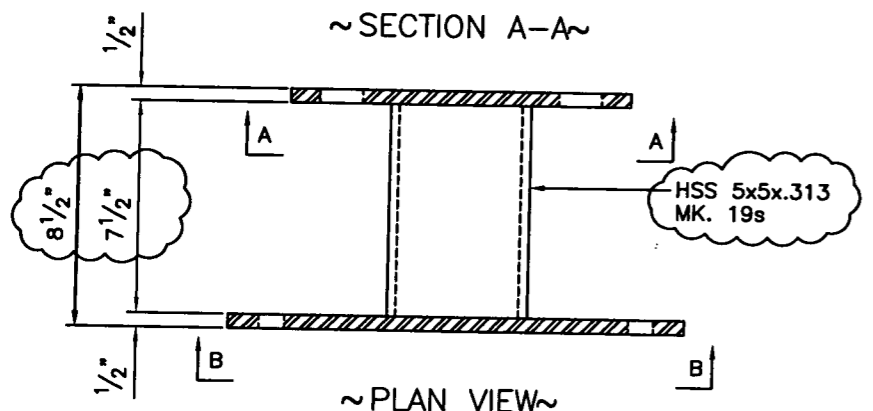
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS

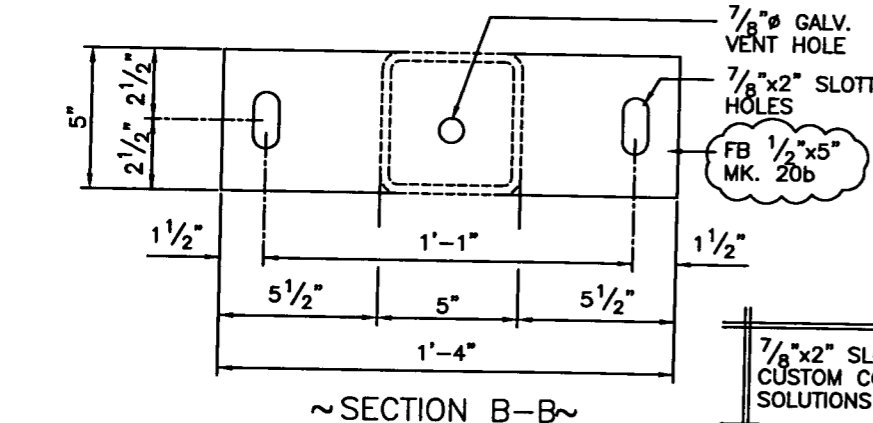
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SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0915



~SECTION A-A~

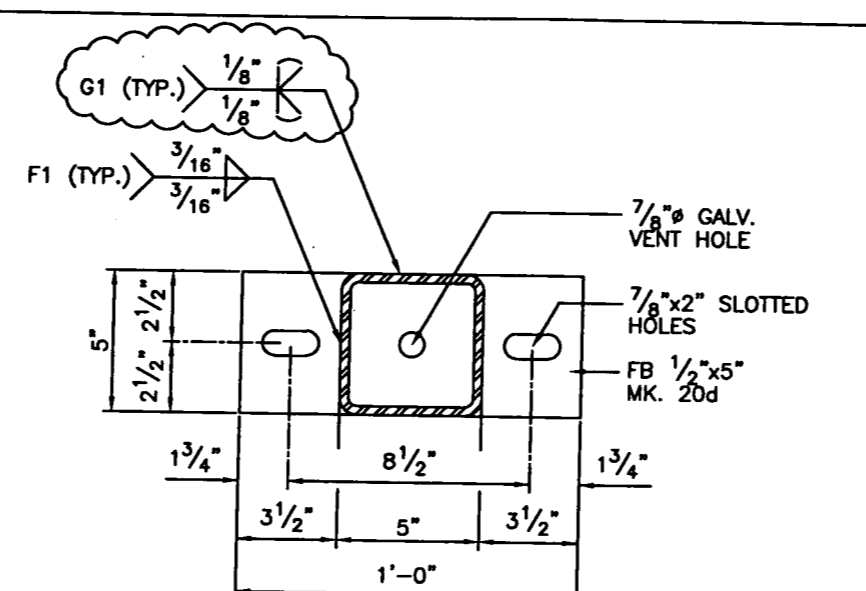


~PLAN VIEW~

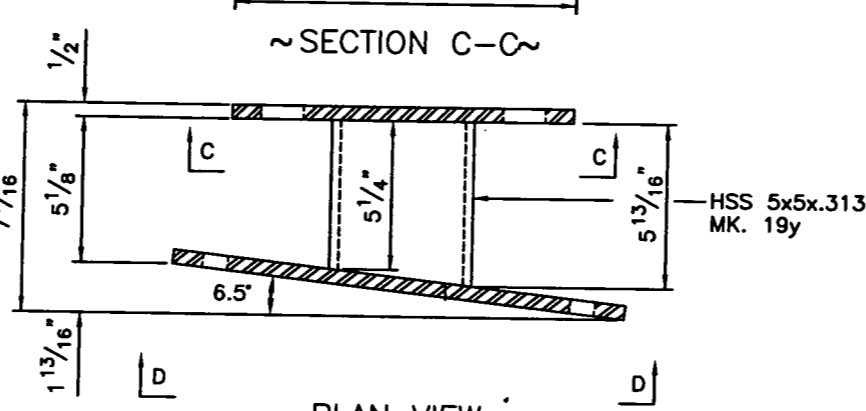


~SECTION B-B~

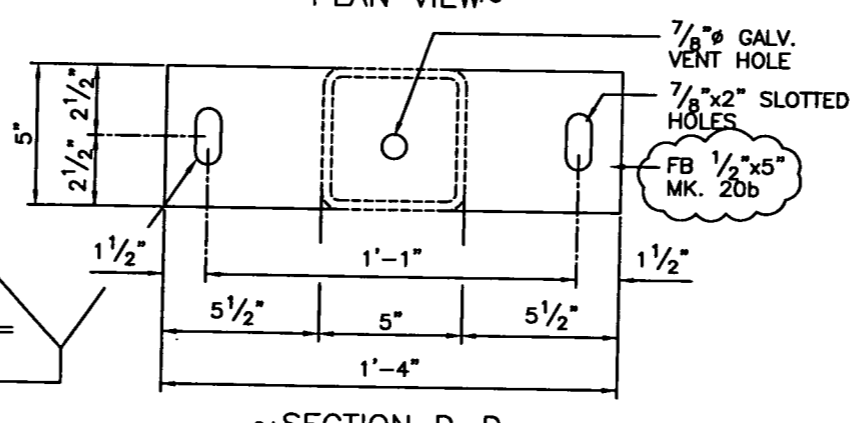
BRACKET SHIP MK. 16A
4-REQD. (END POST BRACKET)



~SECTION C-C~



~PLAN VIEW~



~SECTION D-D~

BRACKET SHIP MK. 16C
2-REQD. (MODIFIED END POST BOTTOM RAIL CONNECTION)

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
16A		4	WOM	BRACKET					11A
	19s	4	HSS	5x5x.313	0	7 1/2	A500 GrB	S	
	20b	4	FB	1/2x5	1	4	A36	S	
	20d	4	FB	1/2x5	1	0	A36	S	
16C		2	WOM	BRACKET					11A
	19y	2	HSS	5x5x.313	0	5 13/16	A500 GrB	M	
	20b	2	FB	1/2x5	1	4	A36	S	
	20d	2	FB	1/2x5	1	0	A36	S	

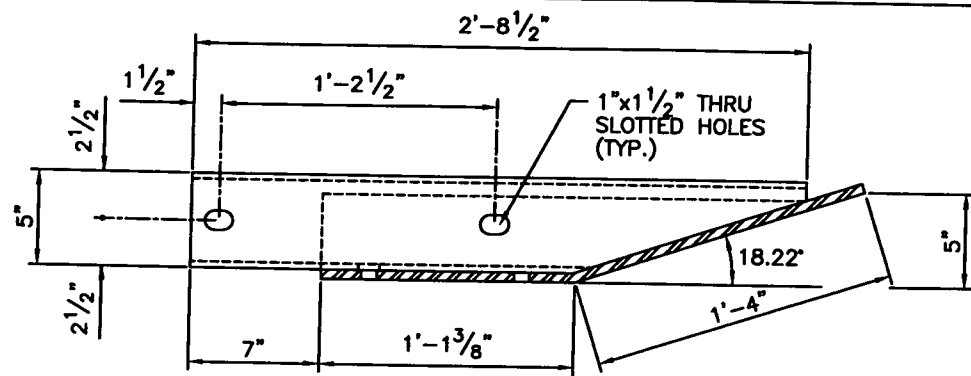
GENERAL NOTES:
DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

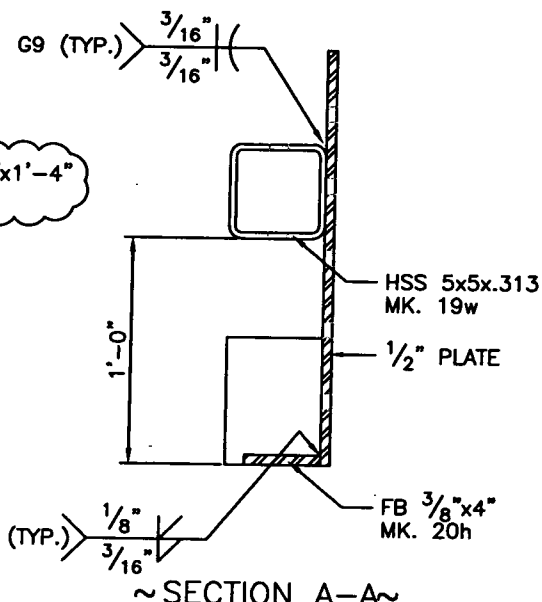
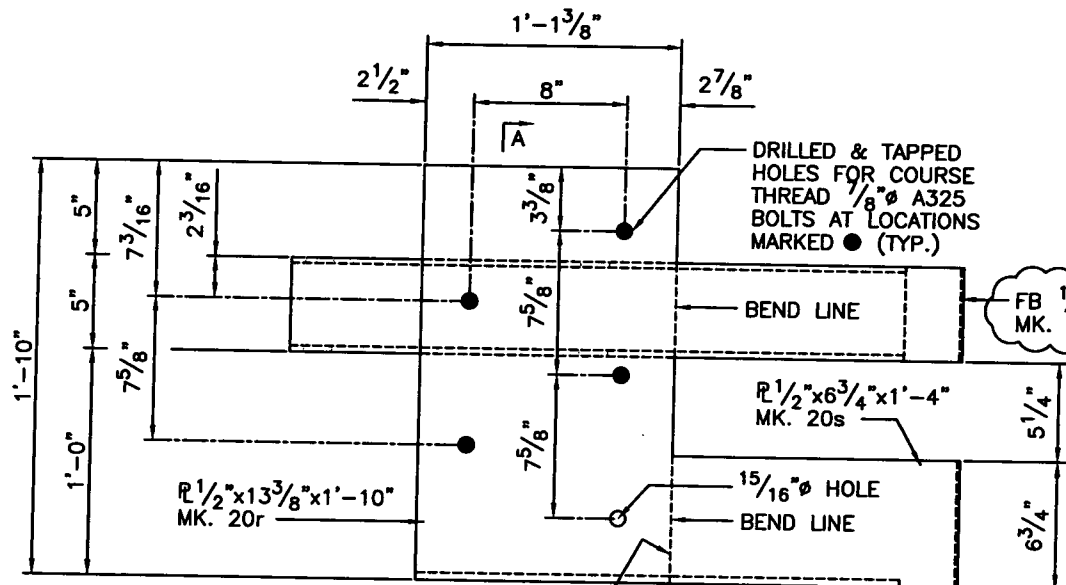
5					
4					
3					
2					
1	REVISED PER 4-11-13 REVIEW			GF	4-17-13
REV.	DESCRIPTION			BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:		TO FIELD:	
	R & R APPROVAL: 4-17-13			AS BUILT:	

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0916

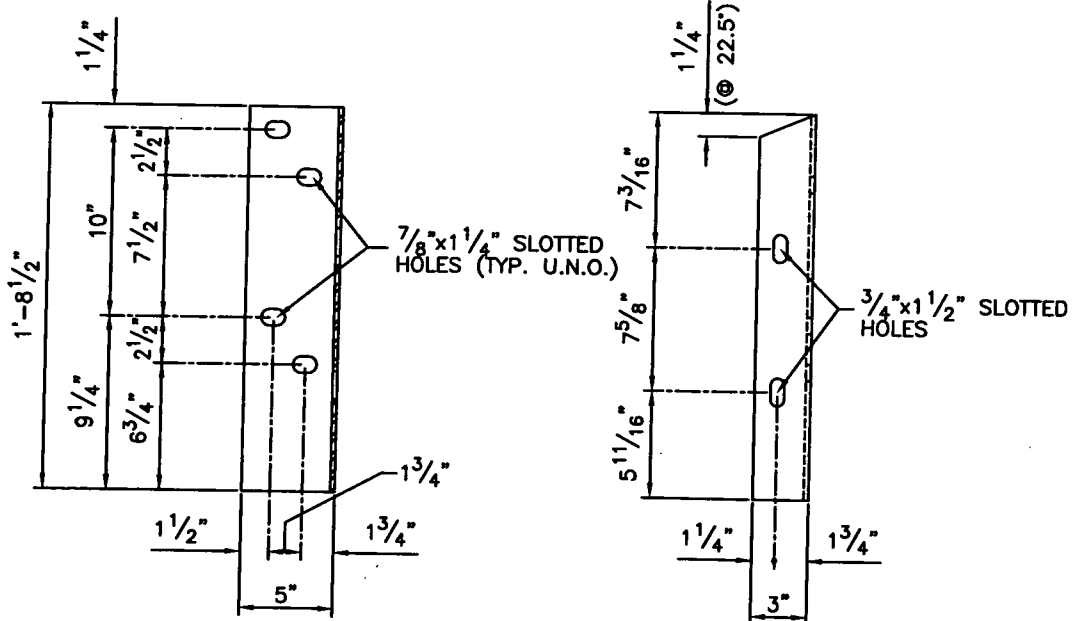


~ PLAN VIEW ~



~ SECTION A-A ~

GUARDRAIL CONNECTION SHIP MK. 17A
1-REQD.



5x3x1/4 SHIP MK. 17B
1-REQD.

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
17A		1	WOM	GUARDRAIL CONNECTION					11A
	19w	1	HSS	5x5x.313	2	8 1/2	A500 GrB	M	
	20h	1	FB	3/8x4	2	1 1/2	A36	M	
	20r	1	PL	1/2x13 3/8	1	10	A36		
	20s	1	PL	1/2x6 3/4	1	4	A36		
	20t	1	FB	1/2x5	1	4	A36	S	
17B		1	L	5x3x1/4	1	8 1/2	A36	M	11A

GENERAL NOTES:

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

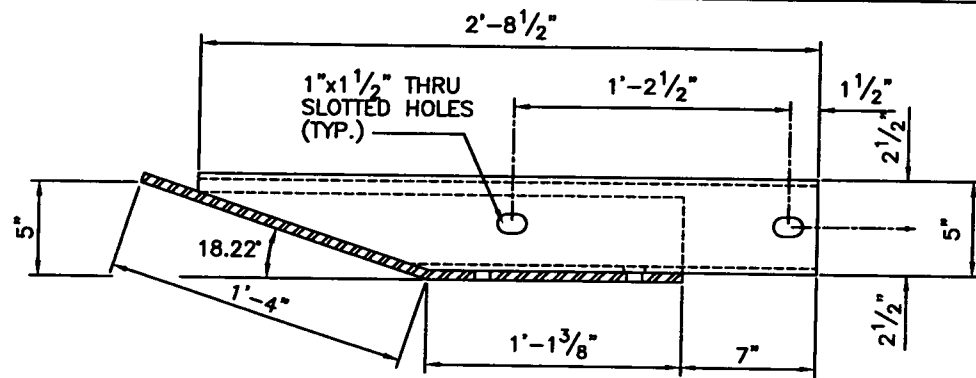
5			
4			
3			
2			
1	REVISED PER 4-11-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD: R & R APPROVAL: 4-17-13 AS BUILT:

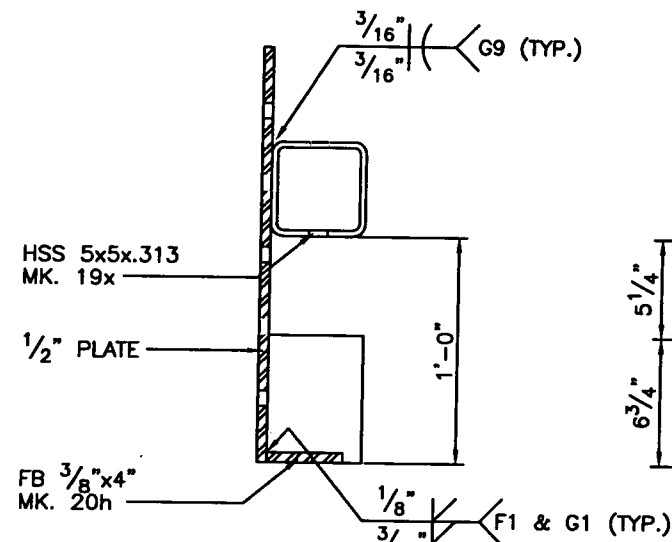
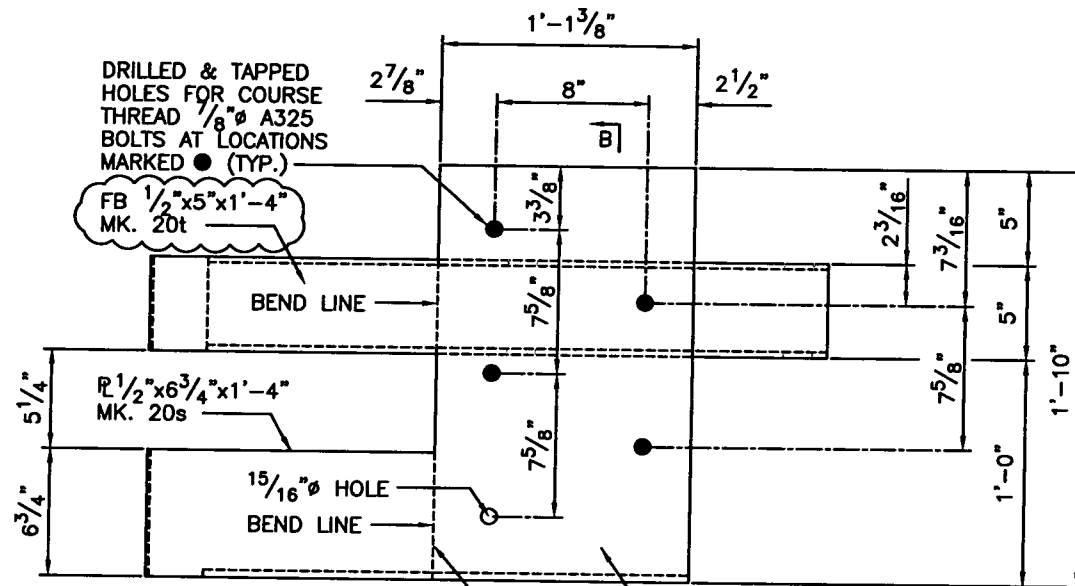
WHITE OAK METALS

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(084)147
BRIDGE NO. 29-148.171L
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0917

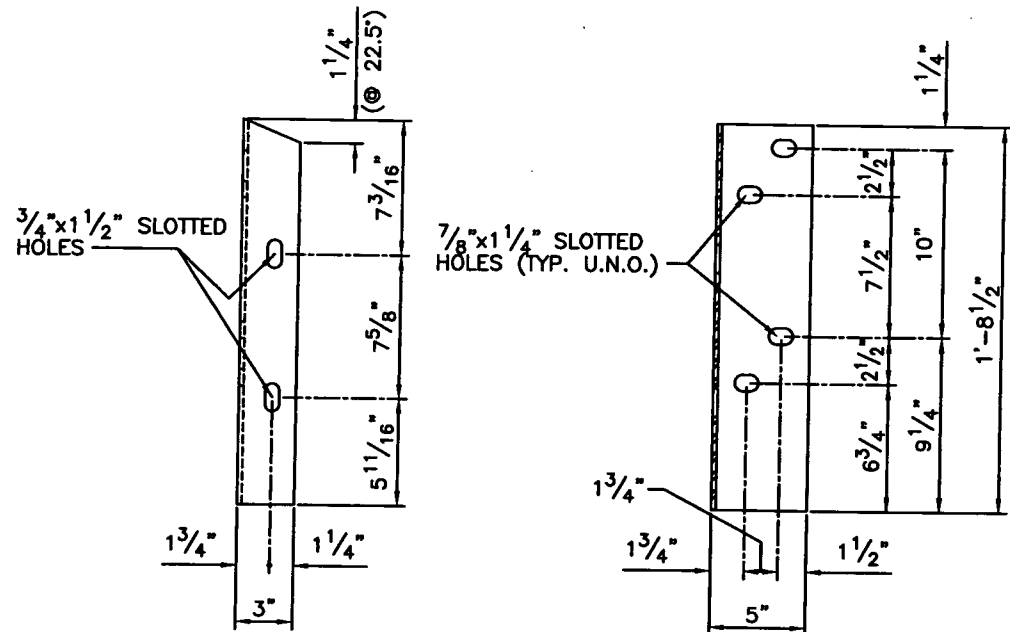


~PLAN VIEW~



~SECTION B-B~

GUARDRAIL CONNECTION SHIP MK. 18C
1-REQD.



5x3x1/4 SHIP MK. 18D
1-REQD.

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
18C		1	WOM	GUARDRAIL CONNECTION					11A
	19x	1	HSS	5x5x.3125	2	8 1/2	A500 GrB	M	
	20h	1	FB	3/8x4	2	1 1/2	A36	M	
	20r	1	PL	1/2x13 3/8	1	10	A36		
	20s	1	PL	1/2x6 3/4	1	4	A36		
	20t	1	FB	1/2x5	1	4	A36	S	
18D		1	L	5x3x1/4	1	8 1/2	A36	M	11A

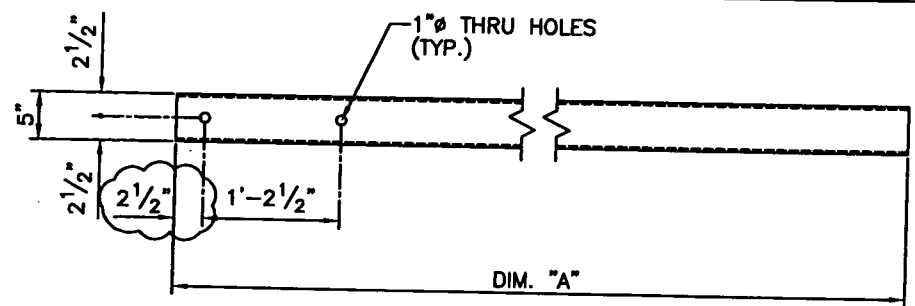
GENERAL NOTES:
 DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.
 ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

5				
4				
3				
2				
1	REVISED PER 4-11-13 REVIEW		GF	4-17-13
REV.	DESCRIPTION		BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:	
	R & R APPROVAL: 4-17-13		AS BUILT:	

WHITE OAK METALS

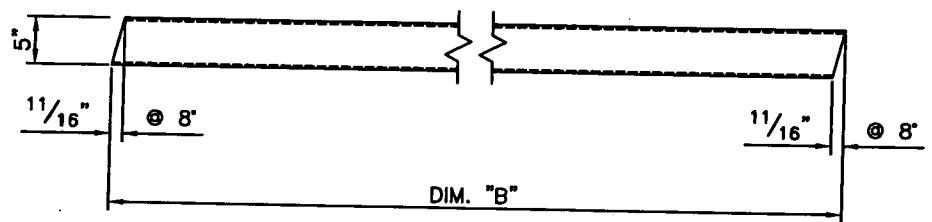
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(084)147
 BRIDGE NO. 29-148.171L
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS

DRAWN BY: GF CHECKED BY: RS
 SCALE: NONE
 DATE: 3-13-13
 JOB NUMBER: 1309-11 SHEET: 0918



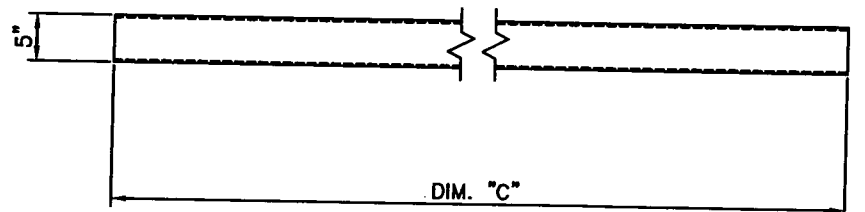
HSS 5x5x.313

PC. MK.	QN.	DIM. "A"
19a	1	6'-8 1/4"
19b	1	5'-7 1/4"



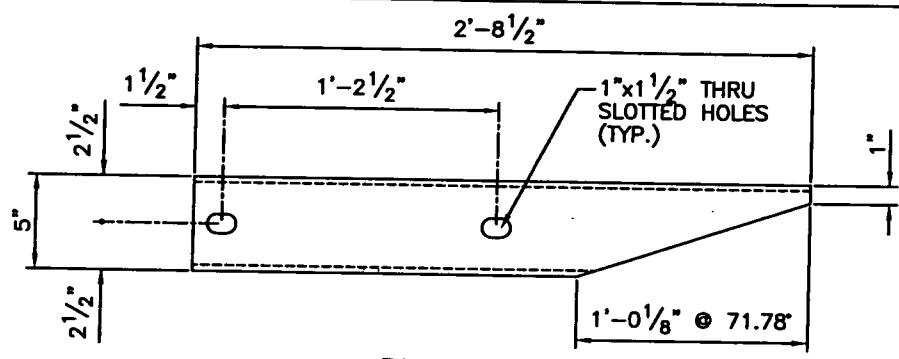
HSS 5x5x.313

PC. MK.	QN.	DIM. "B"
19c	2	3'-6 1/2"
19d	1	3'-6"
19g	1	3'-5 1/2"

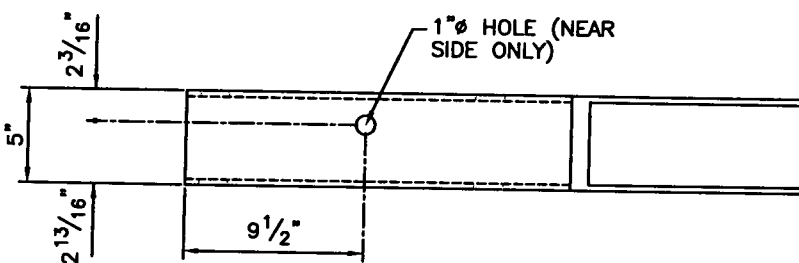


HSS 5x5x.313

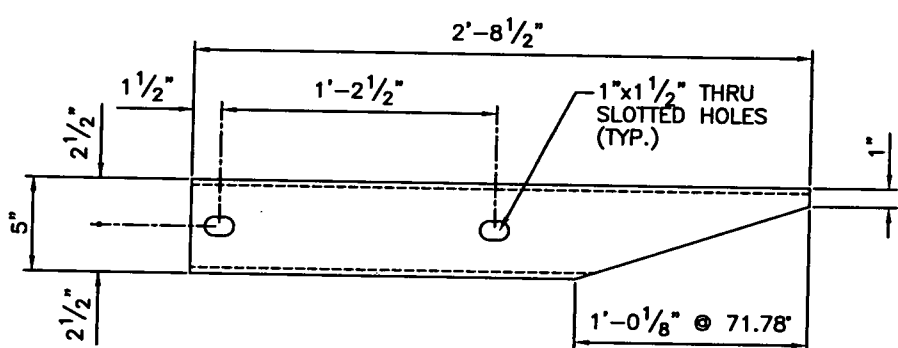
PC. MK.	QN.	DIM. "C"
19j	1	10'-4 1/4"
19k	1	9'-5"
19m	2	8'-0"
19n	1	6'-6 1/4"
19p	1	6'-4 1/4"
19s	16	0'-7 1/2"
19t	14	0'-4"



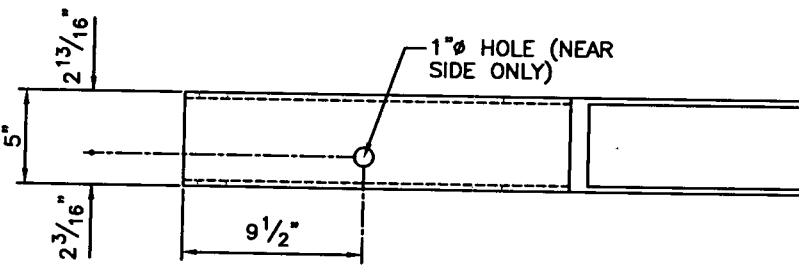
~PLAN VIEW~



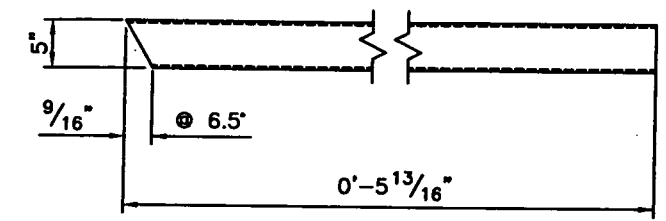
HSS 5x5x.313 PC. MK. 19w
1-REQD.



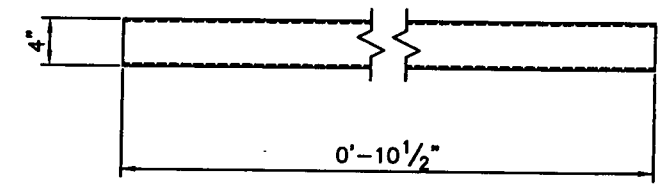
~PLAN VIEW~



HSS 5x5x.313 PC. MK. 19x
1-REQD.



HSS 5x5x.313 PC. MK. 19y
2-REQD.



HSS 4x4x.375 PC. MK. 19z
4-REQD.

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

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REV.	DESCRIPTION	BY	DATE
2	REVISED PER 4-11-13 REVIEW	GF	4-17-13
FOR APPROVAL: 3-13-13		TO SHOP:	
R & R APROVAL: 4-17-13		TO FIELD: AS BUILT:	

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(084)147 BRIDGE NO. 29-148.171L	DRAWN BY:GF CHECKED BY:RS SCALE:NONE DATE: 3-13-13
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	JOB NUMBER SHEET 1309-11 0919
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (74.6 LF) FAB. DETAILS	

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2010	Pass: 4490	Trucks: 900	Total: 5390	540
Forecast 2030	Pass: 7815	Trucks: 1570	Total: 9385	940
Clear Zone Dist. 34'		Design Speed: 75		
Minimum Sight Dist for Stopping: 820'		Bridges: 29-148.171		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				
Pavement Design Life ___ (years) NA				

JOB# 39

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	S-BRI- SIM-6-029(106)147	18691	1	1

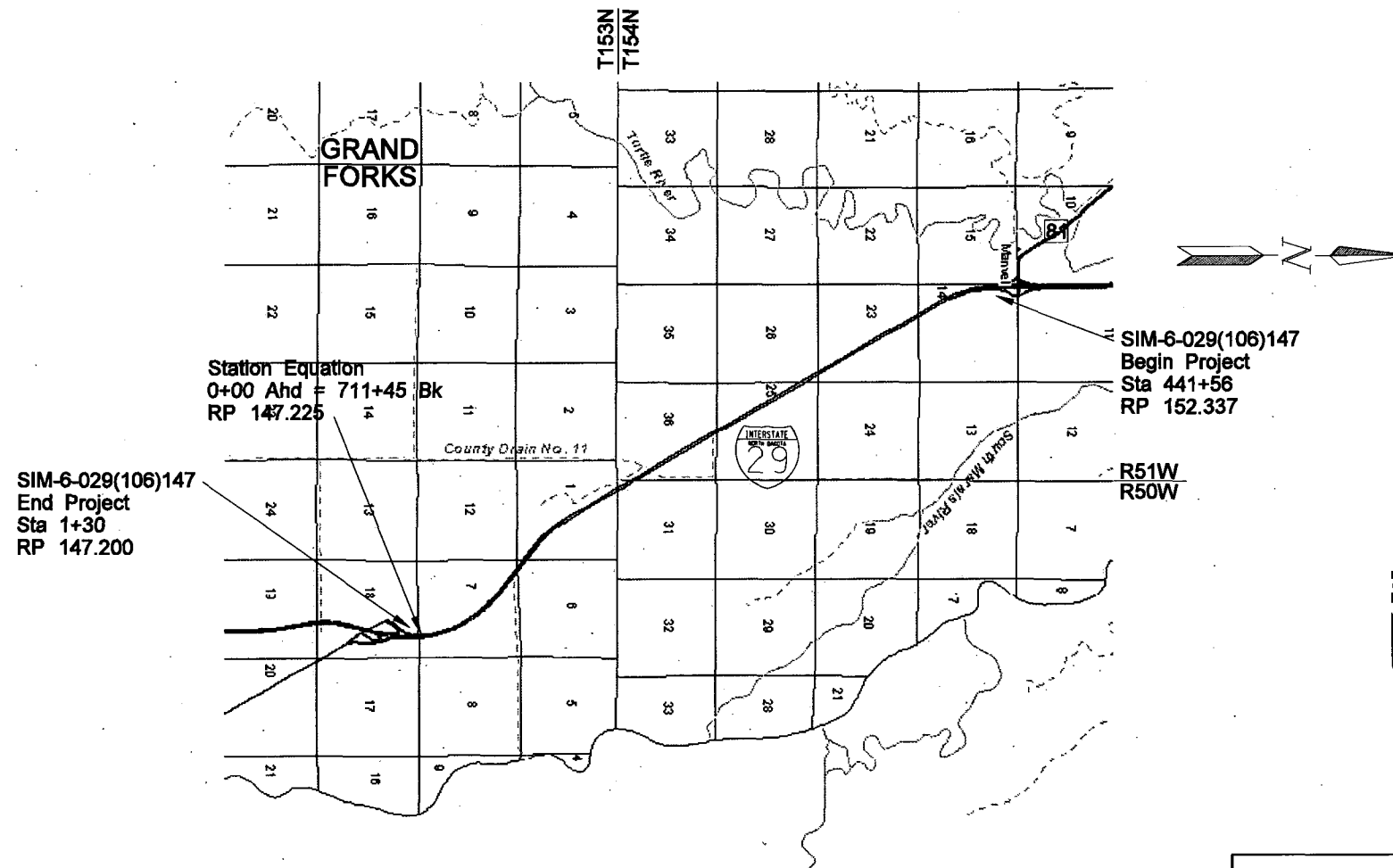
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SIM-6-029(106)147

Grand Forks County
N of North Grand Forks Interchange to Manvel - NB Roadway
RP 147.200 TO RP 152.337
PCC Pavement Grinding, Pavement Markings
FHWA LIMITED
INVOLVEMENT

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2008; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
JOB-SIM-6-029(106)147	5.129	5.137
Bridge Exception of 0.008 miles (40 ft)		



WEBSTER, FOSTER & WESTON
CONSULTING ENGINEERS
1616 MILL RD.
GRAND FORKS, NORTH DAKOTA

DESIGNERS
Dale Bergum PE
Tom Hanson PE
Ben Williams

APPROVED DATE 06/08/10

Edward Pavlish /s/
 GRAND FORKS DISTRICT
 ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

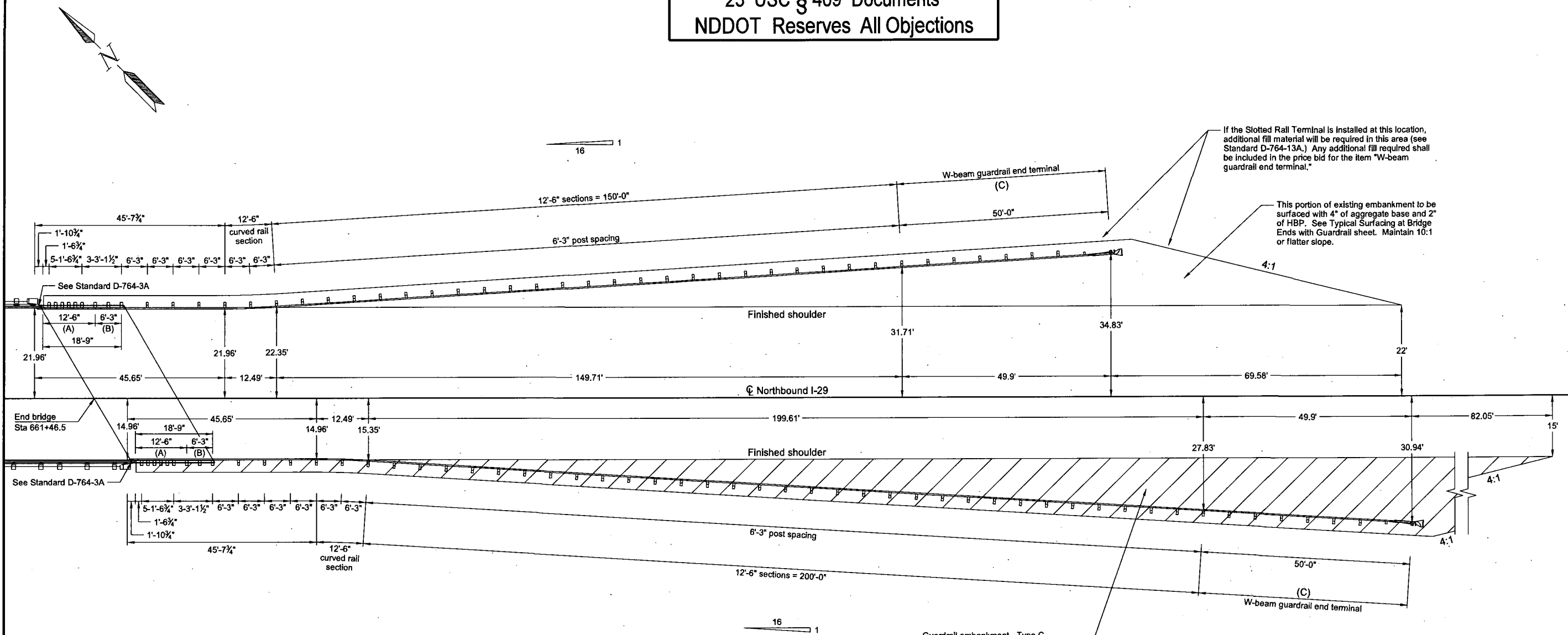
 APPROVED DATE 06/08/10

Thomas P. Hanson /s/
 Webster, Foster & Weston

This document was originally issued and sealed by
 Thomas P. Hanson
 Registration Number
 PE- 1767,
 on 06/08/10 and the original document is stored at the
 North Dakota Department
 of Transportation

23 USC § 409 Documents
NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	130	1



If the Slotted Rail Terminal is installed at this location, additional fill material will be required in this area (see Standard D-764-13A.) Any additional fill required shall be included in the price bid for the item "W-beam guardrail end terminal."

This portion of existing embankment to be surfaced with 4" of aggregate base and 2" of HBP. See Typical Surfacing at Bridge Ends with Guardrail sheet. Maintain 10:1 or flatter slope.

Guardrail embankment - Type C
To be surfaced with 4" of aggregate base and 2" of HBP. See Typical Surfacing at Bridge Ends with Guardrail sheet.

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 9/21/12 and the original document is stored at the North Dakota Department of Transportation

- (A) Thrie beam rail (double thickness)
- (B) W-thrie beam transition section (double thickness)
- (C) A FLEAT or SRT end terminal shall be installed at this location.

Thrie/W-Beam Guardrail Layout
County Drain 11
RP 148.177
Northbound I-29

**23 USC § 409 Documents
NDDOT Reserves All Objections**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	130	2

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

THRIE/W-BEAM GUARDRAIL AT BRIDGE ENDS

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)
	5/8" Ø x 18" LONG GUARDRAIL BOLT	6" x 8" x 6'-0" TIMBER POST	6" x 8" x 14" TIMBER BLOCK	5/8" Ø x 1 1/4" LONG GUARDRAIL BOLT	12'-6" STRAIGHT W-BEAM RAIL SECTION	12'-6" CURVED W-BEAM RAIL SECTION	REFLECTORIZED PLATES	8"x8" x 6' WOOD POST	8"x8" x 22" WOOD OFF-SET BLOCK	8"x8" x 18" WOOD OFF-SET BLOCK	8"x8" x 14" WOOD OFF-SET BLOCK	6'-3" DOUBLE W-THRIE BEAM TRANSITION SECTION	12'-6" DOUBLE THRIE BEAM SECTION	2'-6" THRIE BEAM TERMINAL CONNECTOR	7/8" Ø x VAR. LONG. BOLT	3/4" Ø x 2-1/2" LONG POST BOLT	EMBANKMENT TYPE C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 661+32.31 to 662+02.92 Lt	25	8	8	64	3	1	7	9	7	1	1	1	1	1	5	2	
Sta 661+54.39 to 662+25.00 Lt Mdn	25	8	8	64	3	1	8	9	7	1	1	1	1	1	5	2	40
TOTAL	50	16	16	128	6	2	15	18	14	2	2	2	2	10	4	40	

Remove W-beam guardrail & posts
 Sta 661+41.30 to 663+42.86 Lt 201.9 LF
 Sta 661+62.66 to 664+01.64 Lt Mdn 239.4 LF
 Total 441.3 LF

Remove end treatment & transition
 Sta 663+42.86 to 663+79.73 Lt 1 ea
 Sta 664+01.64 to 664+38.51 Lt Mdn 1 ea
 Total 2 ea

W-beam guardrail
 Sta 661+32.31 to 662+02.92 Lt 70.7 LF
 Sta 661+54.39 to 662+25.00 Lt Mdn 70.7 LF
 Total 141.4 LF

Reset W-beam guardrail
 Sta 662+02.92 to 663+40.15 Lt 137.5 LF
 Sta 662+25.00 to 664+12.14 Lt Mdn 187.5 LF
 Total 325 LF

W-beam guardrail end terminal
 Sta 663+40.15 to 663+90.05 Lt 1 ea
 Sta 664+12.14 to 664+62.04 Lt Mdn 1 ea
 Total 2 ea

Guardrail embankment - type C
 Sta 661+56.49 to 665+44.09 Lt Mdn 1 ea

- (A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".
- (B) The volume of embankment - type C (cubic yards) is for informational purposes only.

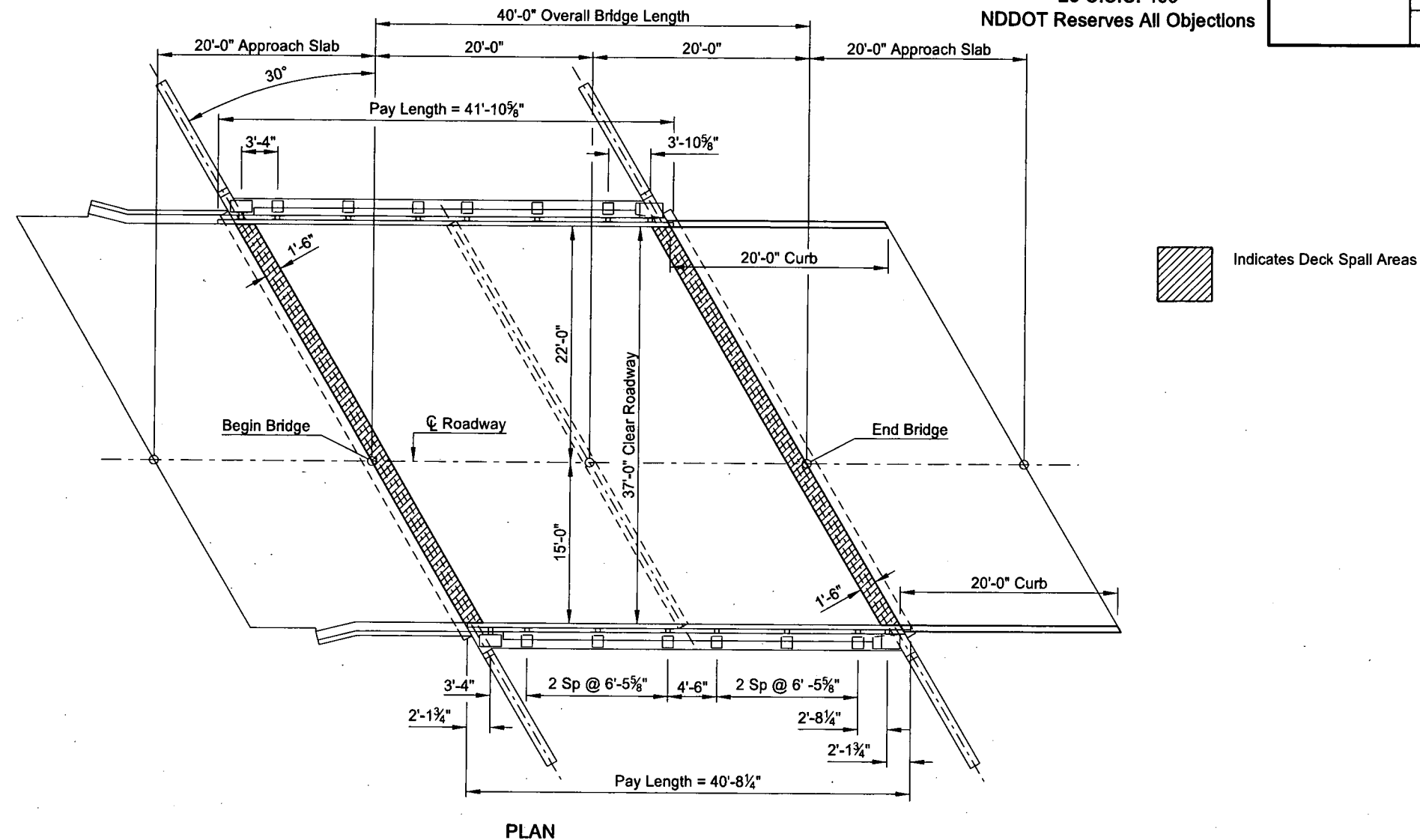
This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 9/21/12 and the original document is stored at the North Dakota Department of Transportation

Thrie/W-Beam Guardrail Quantities

County Drain 11
RP 148.177

Northbound I-29

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	170	1



PLAN

NOTES:

- 100 SCOPE OF WORK: Work at this site consists of removing concrete safety shape transitions and portions of the south approach slab, placing concrete curbs on the south approach slab, installing double box beam rail retrofit and repairing deck spall areas at both ends of bridge.
- 764 REMOVE CONCRETE SAFETY SHAPE TRANSITION: The removal of the safety shape transitions and portion of approach slab as shown shall be included in the price bid for "Remove Concrete Safety Shape Transition."
- 930 DECK SPALL REPAIR: The bridge deck has spall areas as shown at both ends of the bridge. The actual limits of the area to be repaired shall be determined by the Engineer in the field. The deck spall repair shall be constructed as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required. The minimum depth of removal shall be 2". The perimeter of the repair area shall be saw cut to a depth of 1". The saw cutting and all material, labor and equipment required to remove the concrete and repair the deck spall areas shall be included in the bid item "Deck Spall Repair."

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 09/20/12 and the original document is stored at the North Dakota Department of Transportation

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	82.6
748	0540	CURB	LF	40.0
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	2
930	9610	DECK SPALL REPAIR	SF	128

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

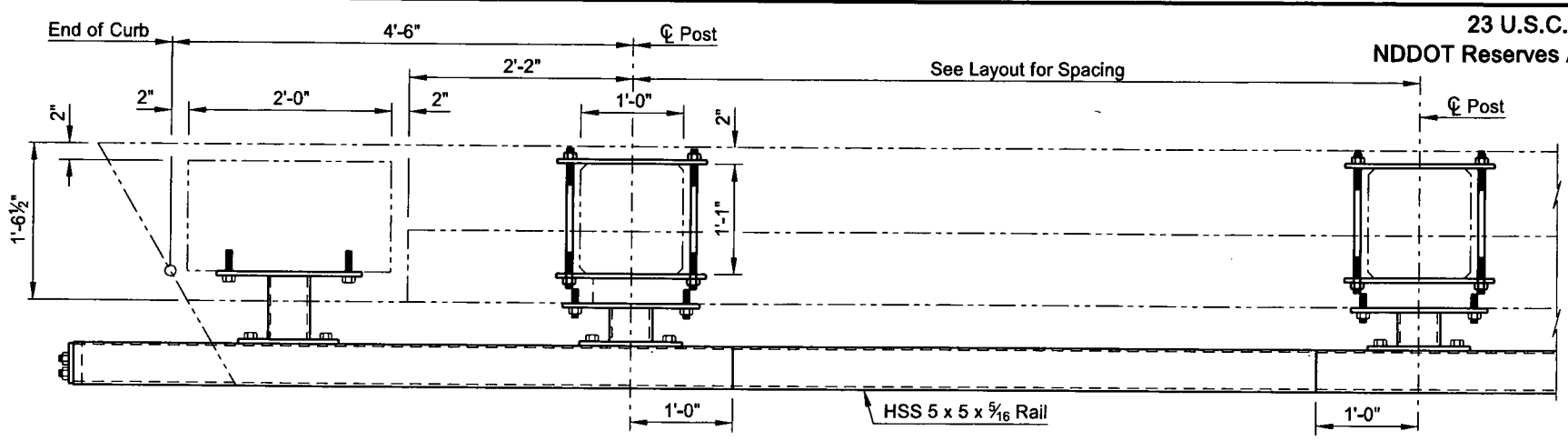
COUNTY DRAIN 11

BRIDGE LAYOUT

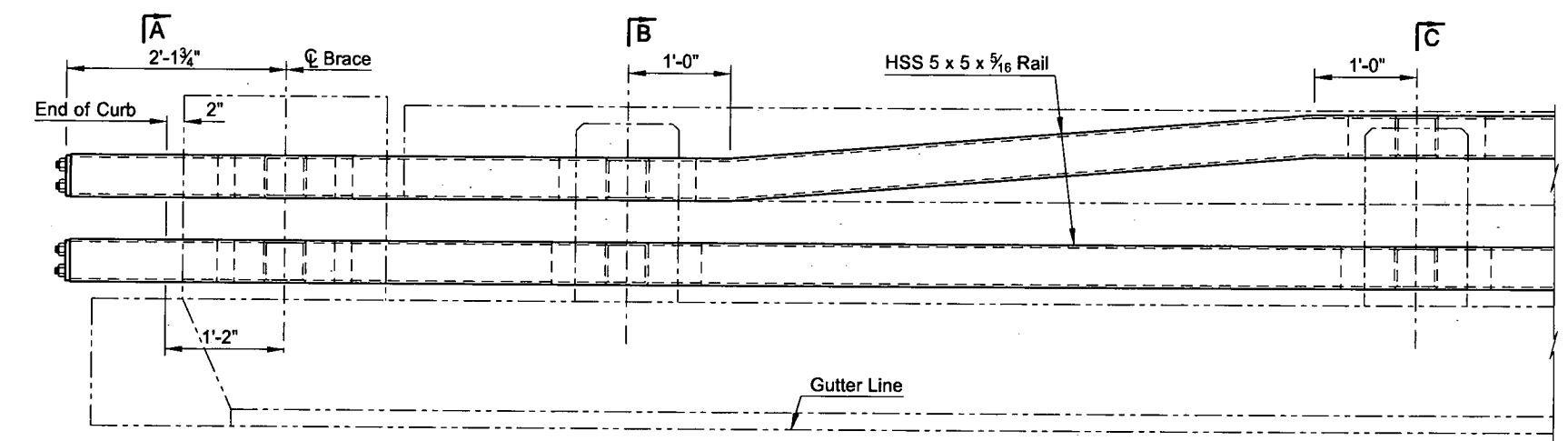
PROJECT: SIM-6-029(106)147

GRAND FORKS COUNTY

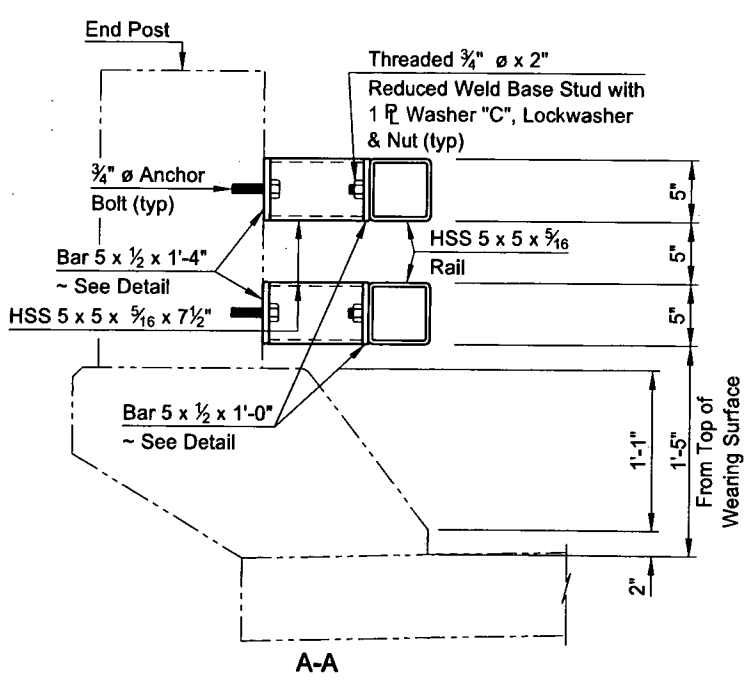
DATE: 09/21/12 BRIDGE ENGINEER: Terrence R. Udland



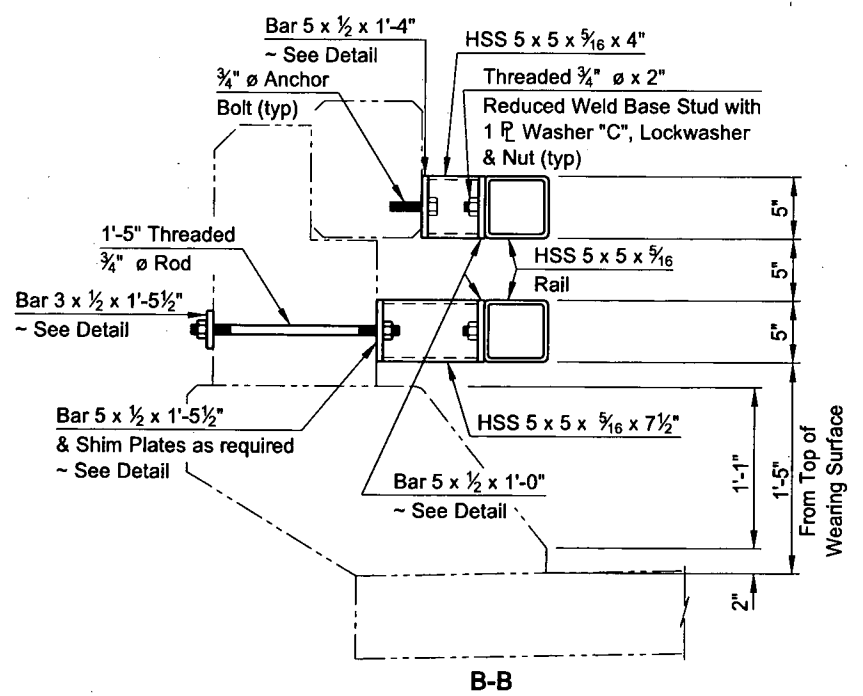
PART RAIL RETROFIT PLAN



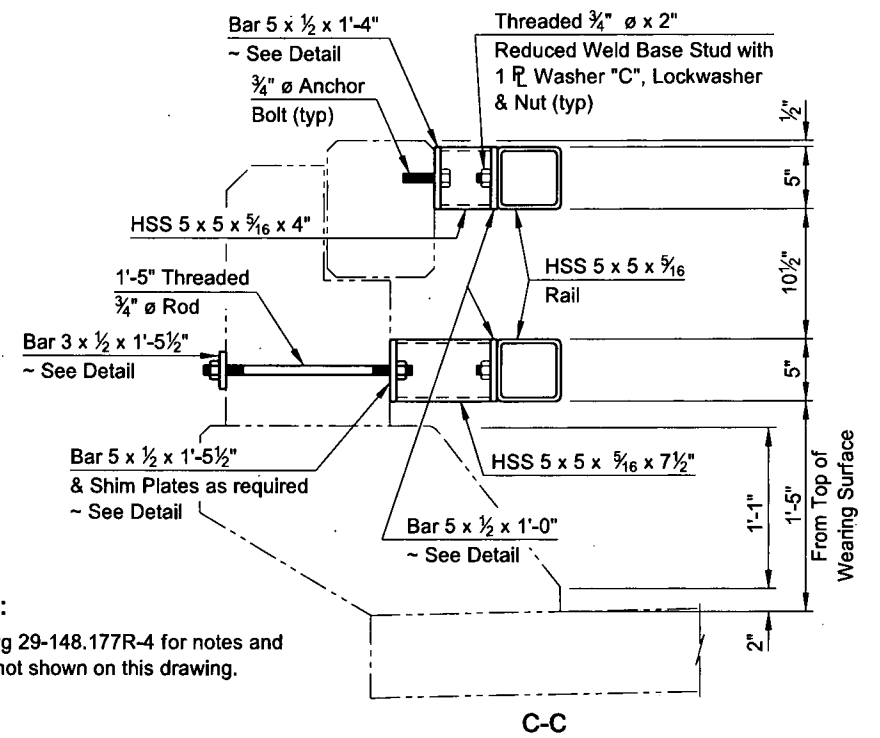
PART RAIL RETROFIT ELEVATION



A-A



B-B



C-C

NOTE:
See Dwg 29-148.177R-4 for notes and details not shown on this drawing.

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 09/20/12 and the original document is stored at the North Dakota Department of Transportation

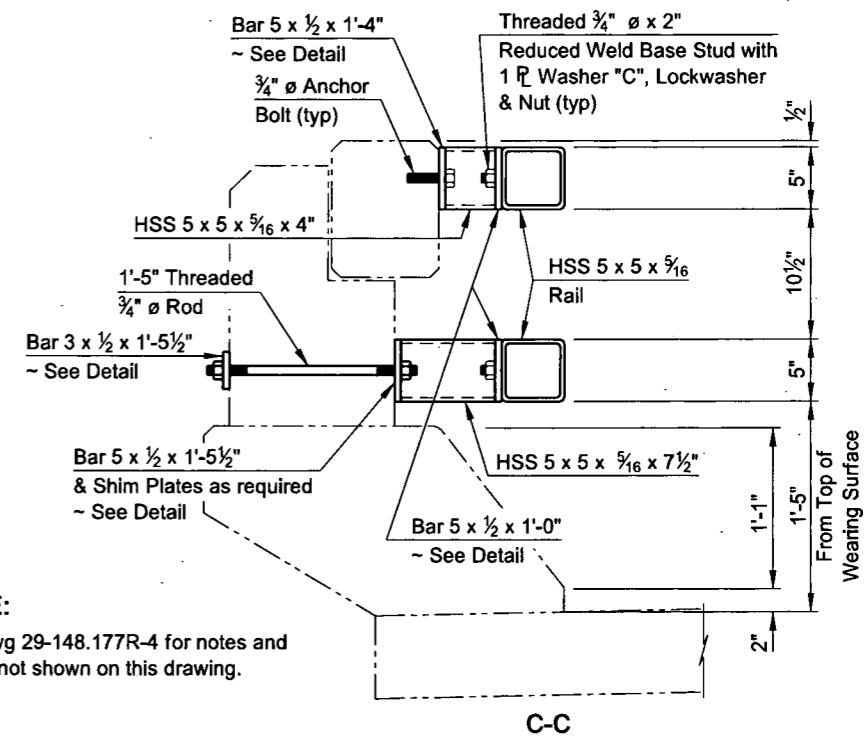
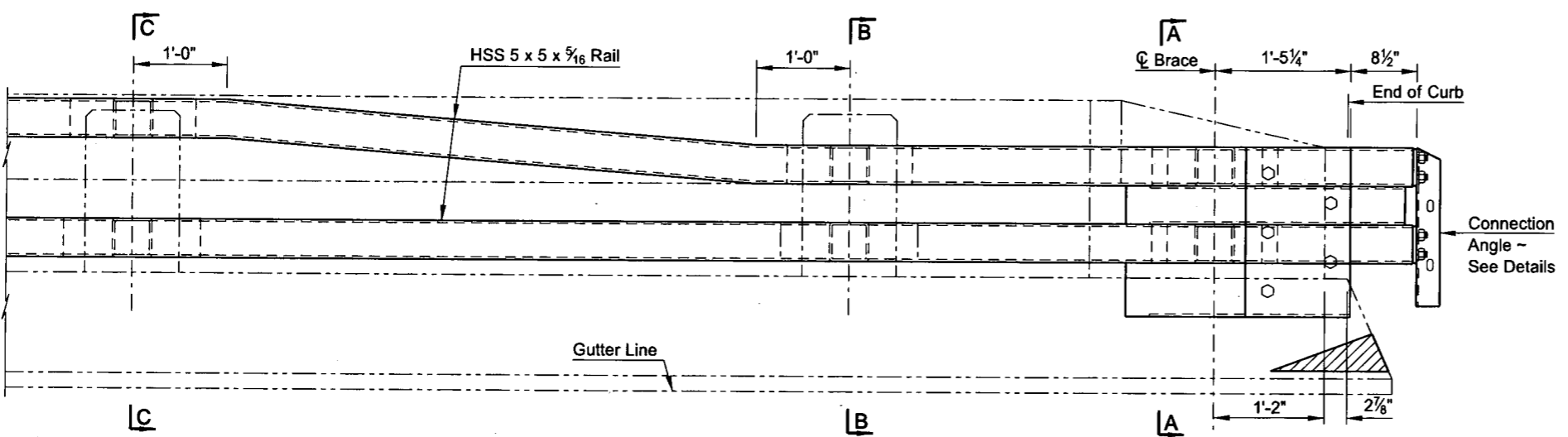
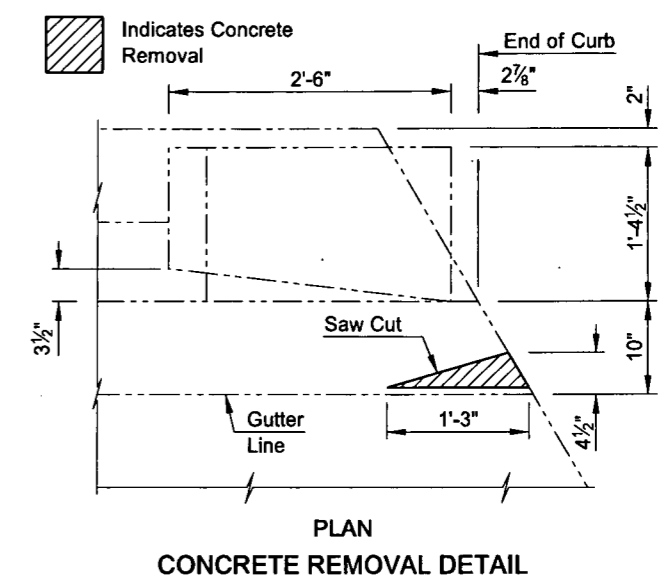
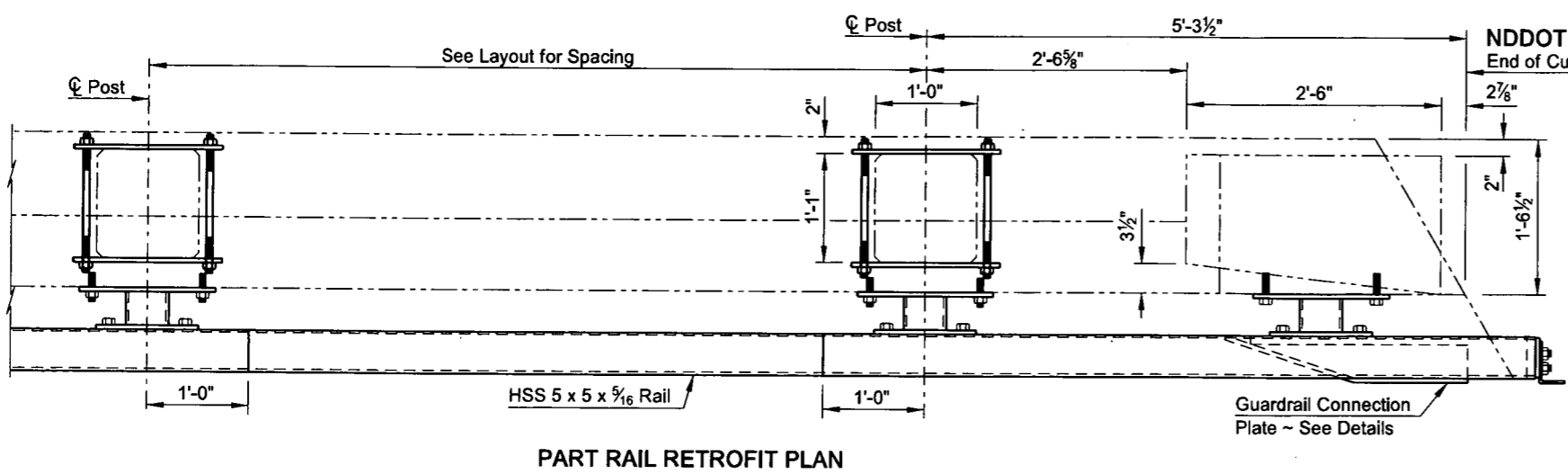
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	SIM-6-029(106)147	170 2

23 U.S.C. 409
NDDOT Reserves All Objections

QUANTITIES
SEE DWG 29-148.177R-4
COUNTY DRAIN 11 (EXIT END) DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

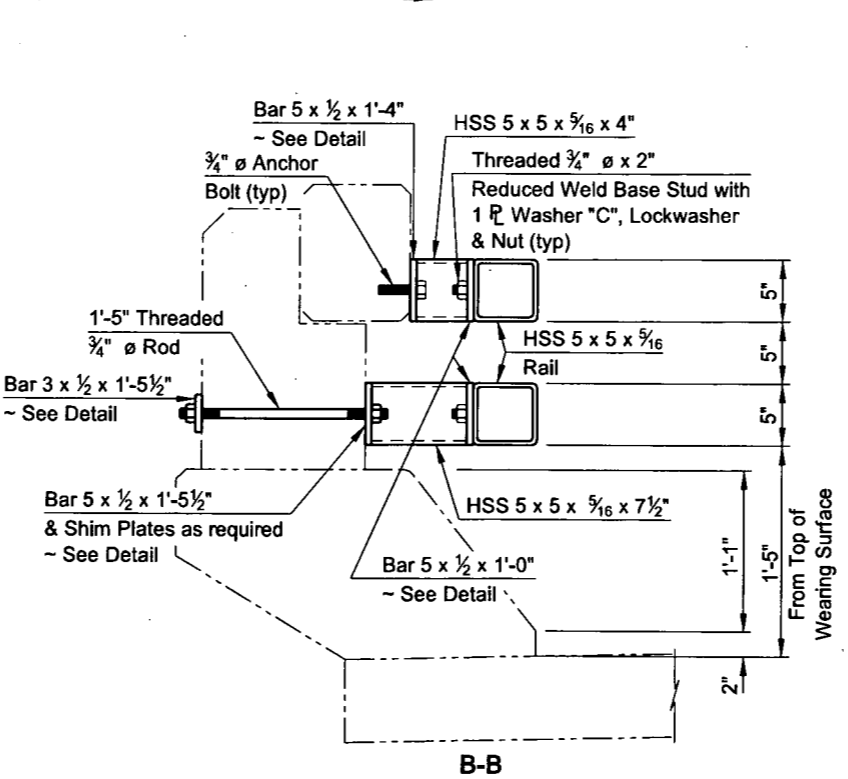
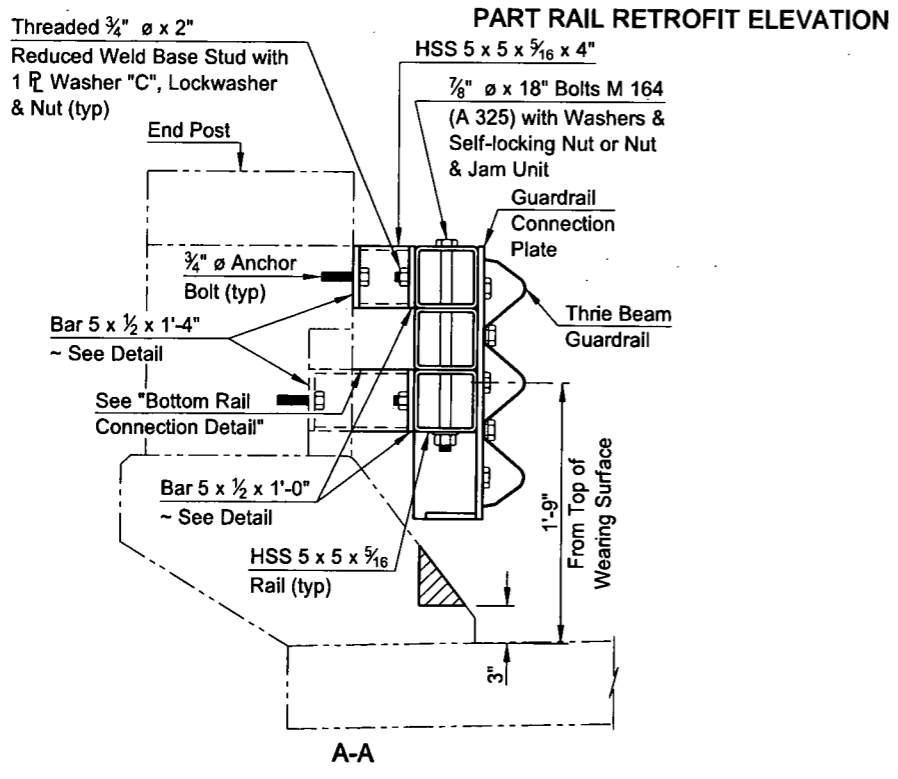
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	170	3



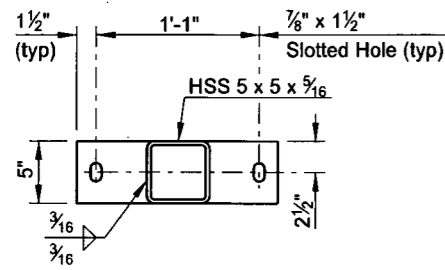
NOTE:
See Dwg 29-148.177R-4 for notes and details not shown on this drawing.

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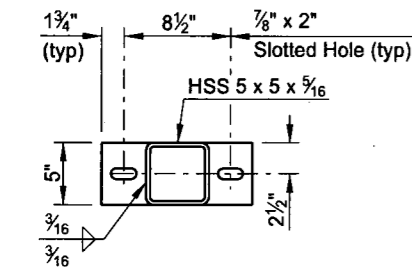
QUANTITIES
SEE DWG 29-148.177R-4
COUNTY DRAIN 11
(APPROACH END)
DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS



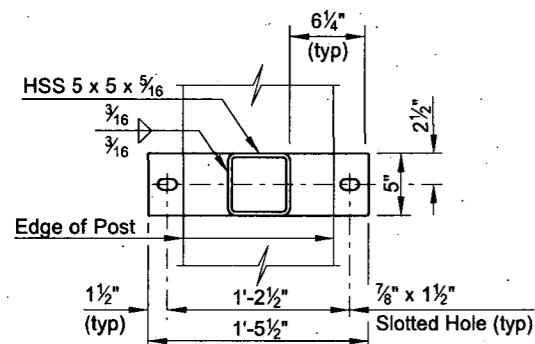
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	170	4



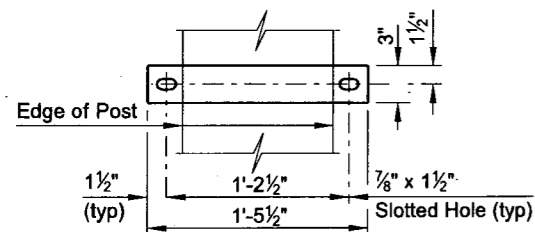
(CONCRETE RAIL CONNECTION)
BAR 5 X 1/2 X 1'-4" DETAIL



(RAIL CONNECTION)
BAR 5 X 1/2 X 1'-0" DETAIL



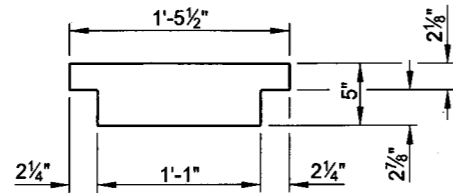
(CONCRETE POST CONNECTION)
BAR 5 X 1/2 X 1'-5 1/2" DETAIL



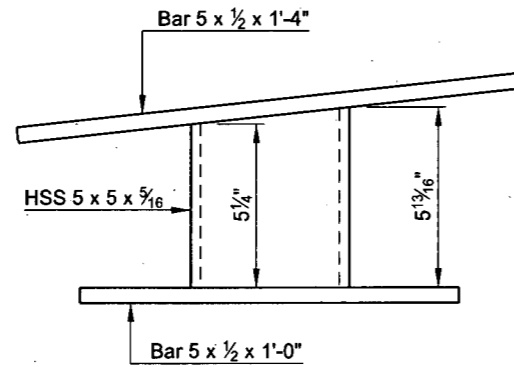
(CONCRETE POST CONNECTION)
BAR 3 X 1/2 X 1'-5 1/2" DETAIL

The filled circles indicate drilled and tapped holes for 7/8" ø bolts M 164 (A 325). See Detail "B."

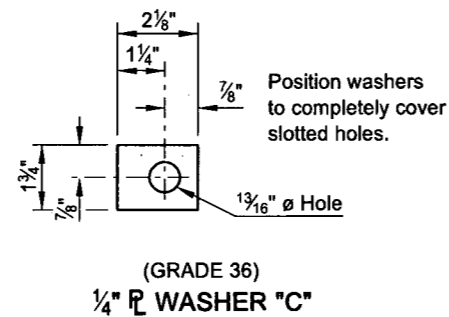
The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M 164 (A 325).



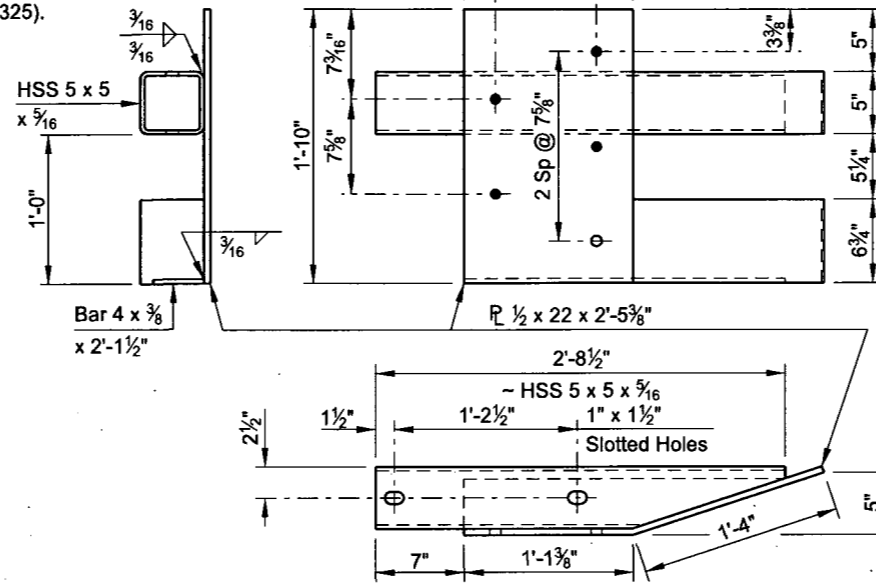
1/4" & 1/8" Thickness
Quantity determined in field.
SHIM PLATE DETAIL



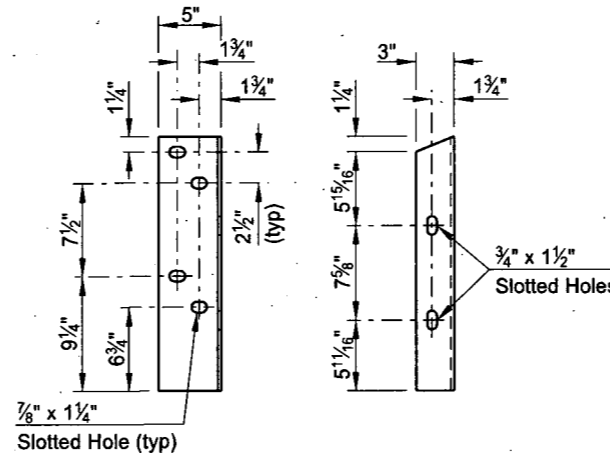
(ON MODIFIED END POST)
BOTTOM RAIL CONNECTION DETAIL



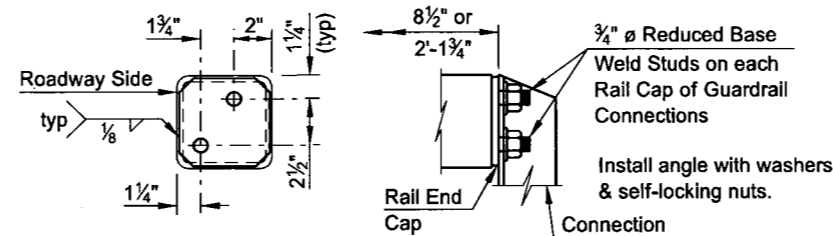
(GRADE 36)
1/4" PL WASHER "C"



(2 REQUIRED)
GUARDRAIL CONNECTION PLATE DETAILS

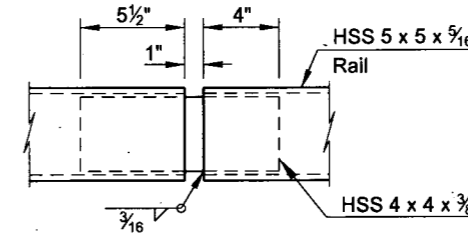


L5 X 3 X 1/4 X 1'-8 1/2"
(2 REQUIRED)
CONNECTION ANGLE DETAILS

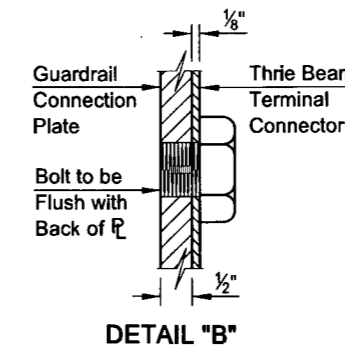


Rail cap shall be a Bar 4 3/4 x 3/16 x 4 3/4".
Cope corners 1" to provide zinc drains.

RAIL CAP DETAILS



RAIL SPLICE DETAIL



DETAIL "B"

NOTES:

The bid item shall be "Double Box Beam Rail Retrofit - E-Rail." The pay length shall be end to end and in linear feet.

Payment for the railing shall include compensation for furnishing and installing the guardrail connection plates and for sawing and removing portions of the curb.

Railing shall be fabricated to the horizontal and vertical alignment of the structure. Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

Rail elements shall be square structural tubing in accordance with ASTM Specification A 500 Grade B.

Steel plates and angles shall conform to ASTM Specification A 36, unless otherwise noted.

All structural steel shall be hot-dip galvanized after fabrication according to AASHTO M 111.

Threaded rods shall be Grade 36 steel and galvanized according to AASHTO M 232. The threaded rods shall be tightened to provide a minimum tensile force of 2,500 lbs and a maximum tensile force of 2,700 lbs.

All bolts and anchor bolts shall be ASTM A 325 or A 449. Reduced base studs shall be ASTM A 307 Grade C. Nuts shall be ASTM A 563 and washers shall be ASTM F 436. All bolts, studs, nuts and washers shall be galvanized according to AASHTO M 232.

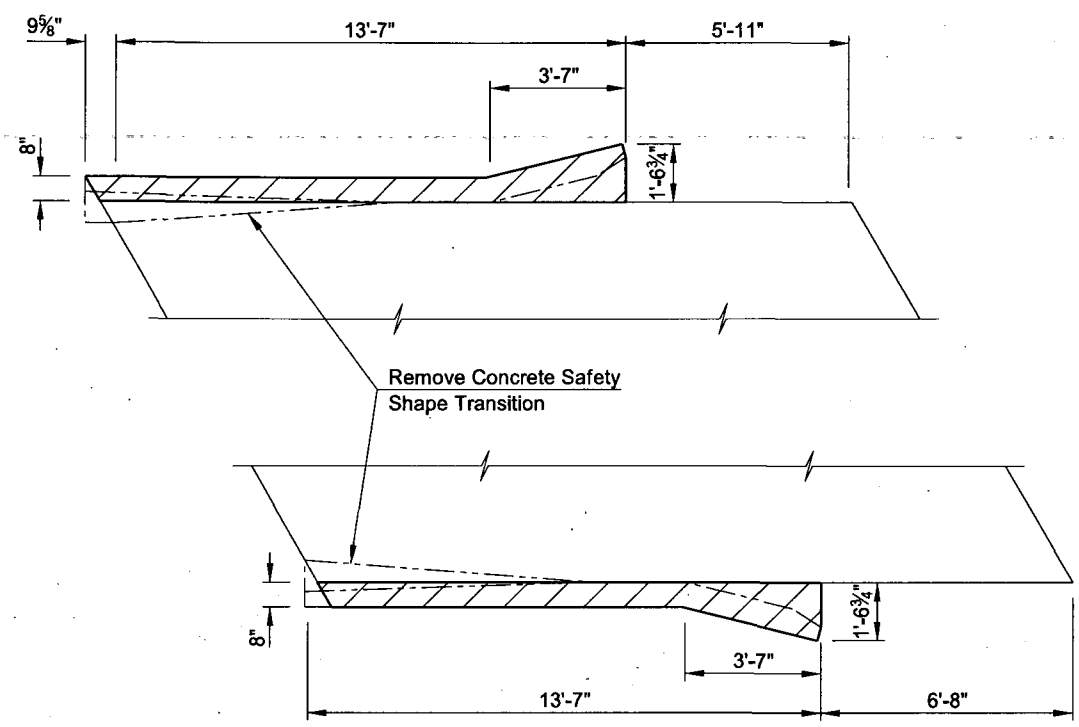
Anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

The Contractor shall field verify all dimensions and incorporate them into the shop drawings. The double box beam rail retrofit shop drawings shall be submitted for review to the Engineer before fabrication.

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QUANTITIES	
E-RAIL RETROFIT	82.6 LF
COUNTY DRAIN 11	
DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS	

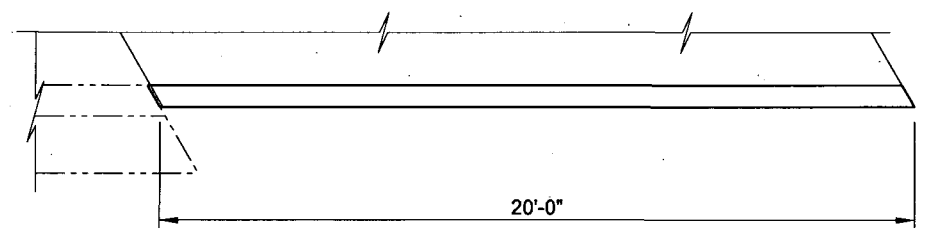
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-6-029(106)147	170	5



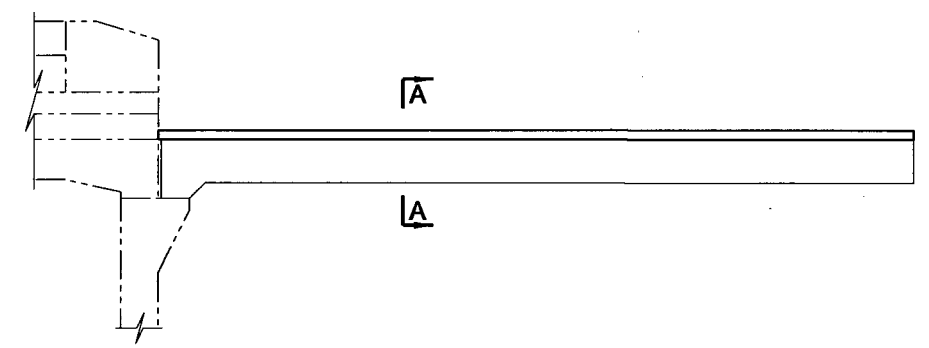
 Indicates Concrete Slab Removal

Remove Concrete Safety Shape Transition

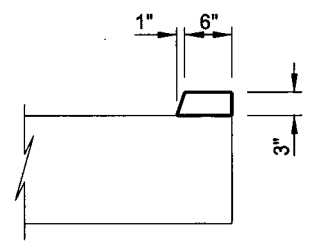
(APPROACH END)
 PART EXISTING PLAN



APPROACH CURB PLAN



APPROACH CURB ELEVATION



A-A

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COUNTY DRAIN 11

APPROACH SLAB REMOVAL
 & CURB DETAILS

GRAND FORKS COUNTY, ND
COUNTY DRAIN 11
PROJ. NO. SIM-6-029(106)147
BRIDGE NO. 29-148.177R
DOUBLE BOX BEAM RAIL RETROFIT E-RAIL
(82.6 LF)

INDEX	
SHEET	TITLE
△ E09P	INDEX & GENERAL NOTES & SPECIFICATIONS
E09Q	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09R	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09S	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09T	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ E09U	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL INST. DETAILS
△ 0937	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0938	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0939	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0940	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0941	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0942	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0943	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0944	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0945	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS
△ 0946	DOUBLE BOX BEAM RAIL RETROFIT E-RAIL FAB. DETAILS

GENERAL NOTES & SPECIFICATIONS
<p>1) ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH NORTH DAKOTA STANDARD SPECIFICATIONS DATED 2008 AND SUPPLEMENTAL SPECIFICATIONS.</p> <p>2) MATERIAL AND FABRICATION - ND DOT 624 A) STRUCTURAL STEEL ASTM A36 B) STRUCTURAL STEEL TUBING ASTM A500 GRADE B C) WELDING - AWS D1.1</p> <p>3) GALVANIZING - ND DOT 854 A) STRUCTURAL STEEL ASTM A123 - AASHTO M-111 PRIOR TO GALVANIZING NO SURFACE PREP REQUIRED B) HARDWARE ASTM A153 - AASHTO M-232 C) REPAIR OF GALVANIZED SURFACES ASTM A780</p>

WOM SEQUENCE C		
JOB NUMBER	PERCENTAGE	JOB STATUS
1309-11	10%	COMPLETE

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

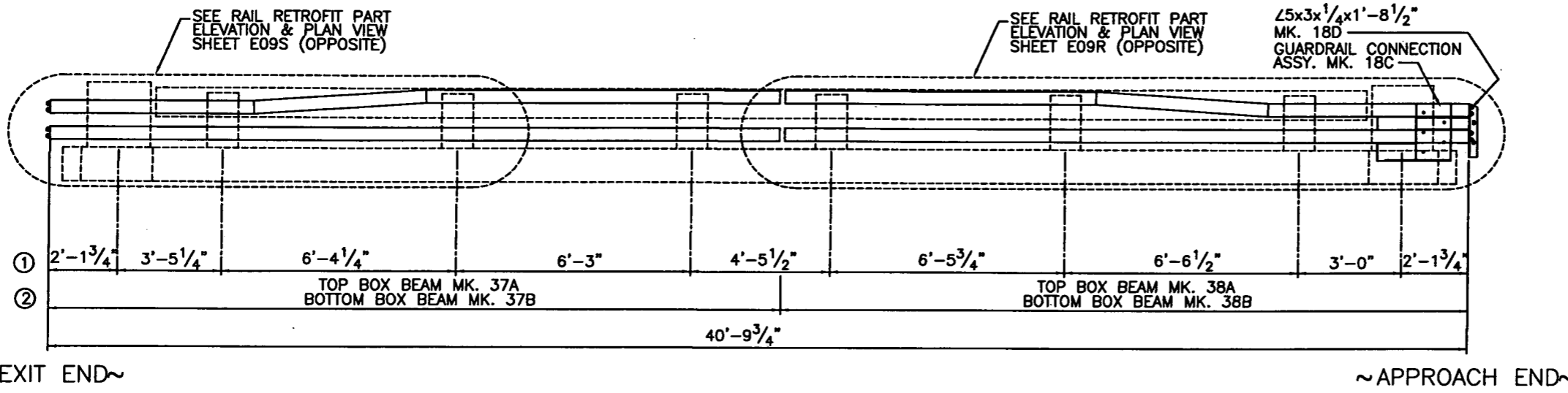
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

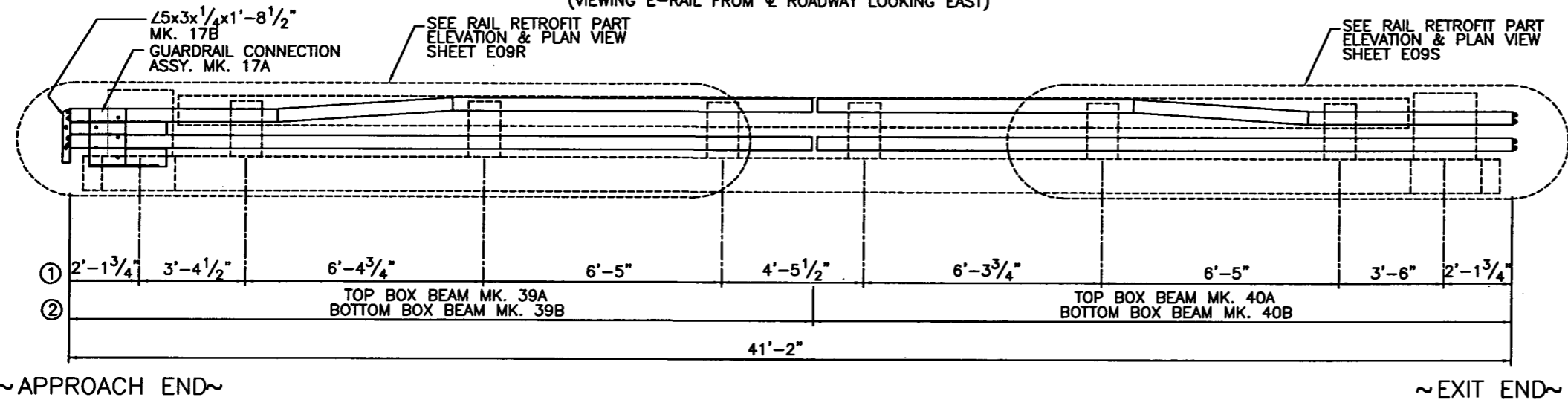
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1	REVISED PER 4-16-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE
FOR APPROVAL: 3-13-13		TO SHOP:	
R & R APPROVAL: 4-17-13		TO FIELD:	
		AS BUILT:	

WHITE OAK METALS			
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA		DRAWN BY: GF CHECKED BY: RS	
PROJECT NO. SIM-6-029(106)147		SCALE: NONE	
BRIDGE NO. 29-148.177R		DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.		JOB NUMBER SHEET	
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS		1309-11	E09P △
DESCRIPTION: INDEX & GALVANIZING SPECIFICATIONS			

NO EXCEPTIONS NOTED
Dean Stolz <small>Digitally signed by Dean Stolz DN: cn=Dean Stolz, o=NDDOT, ou=Bridge, email=dstolz@nd.gov, c=US Date: 2013.04.17 15:33:24 -0500</small>
<small>REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS</small> NDDOT



**NORTH BOUND I-29 COUNTY DRAIN 11
DOUBLE BOX BEAM E-RAIL EAST ELEVATION VIEW**
(VIEWING E-RAIL FROM \odot ROADWAY LOOKING EAST)



**NORTH BOUND I-29 COUNTY DRAIN 11
DOUBLE BOX BEAM E-RAIL WEST ELEVATION VIEW**
(VIEWING E-RAIL FROM \odot ROADWAY LOOKING WEST)

- ① FIELD MEASUREMENTS PROVIDED BY CUSTOM CONTRACTING SOLUTIONS
- ② HSS 5x5x.313 BOX BEAM SHIP MKS.

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

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REV.	DESCRIPTION	BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APPROVAL:		AS BUILT:

No Exceptions Noted

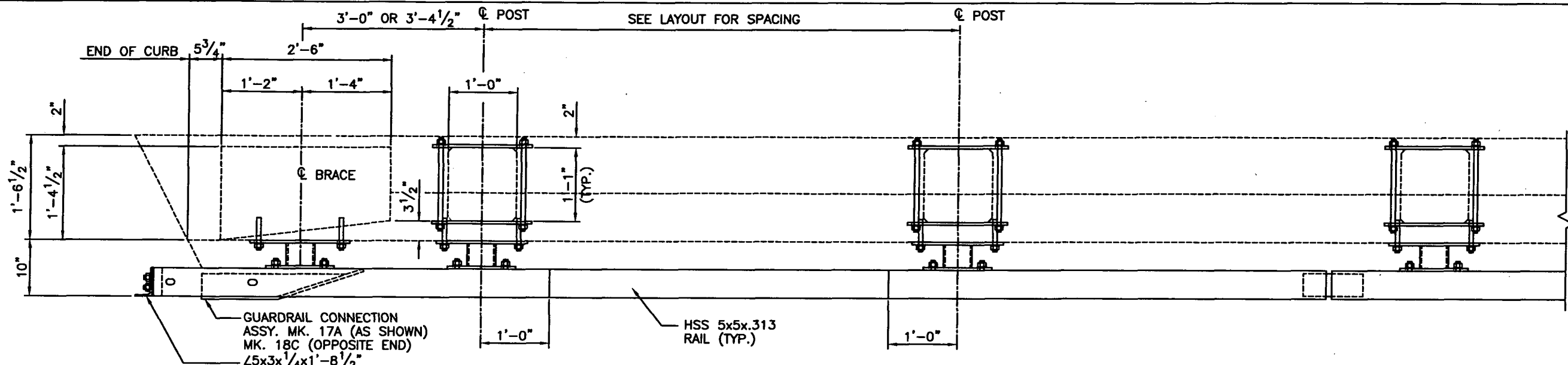
BY: D Stolz
DATE: April 17, 2013

REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS

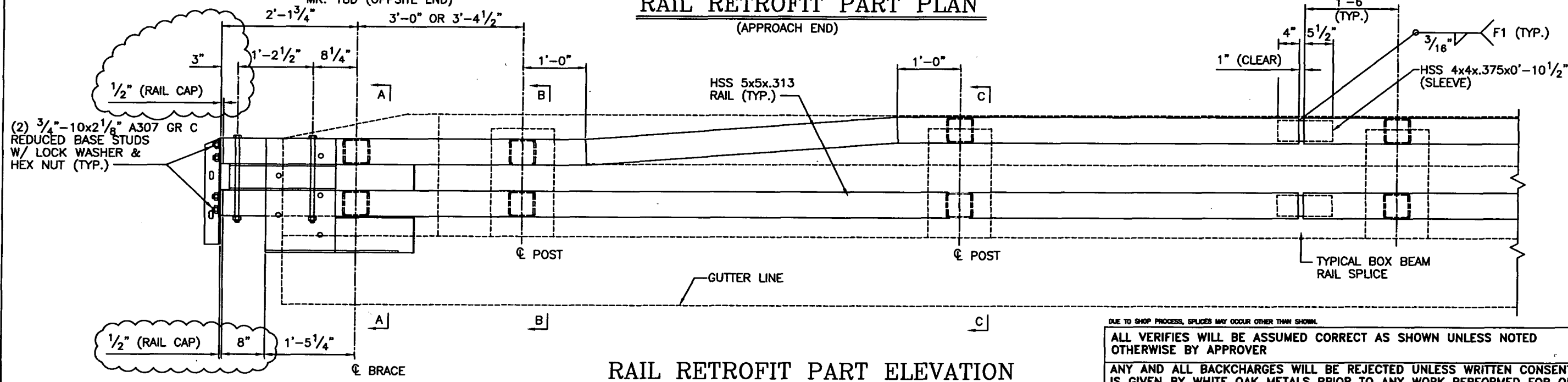
NDDOT

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(106)147 BRIDGE NO. 29-148.177R	DRAWN BY:GF CHECKED BY:RS SCALE:NONE DATE: 3-13-13
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	JOB NUMBER SHEET 1309-11 E09Q Δ
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) INST. DETAILS	



RAIL RETROFIT PART PLAN
(APPROACH END)



RAIL RETROFIT PART ELEVATION
(APPROACH END)

*FOR SECTION A-A, B-B & C-C SEE SHEET E09T

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1	REVISED PER 4-16-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APPROVAL: 4-17-13		AS BUILT:

No Exceptions Noted

BY: D Stolz

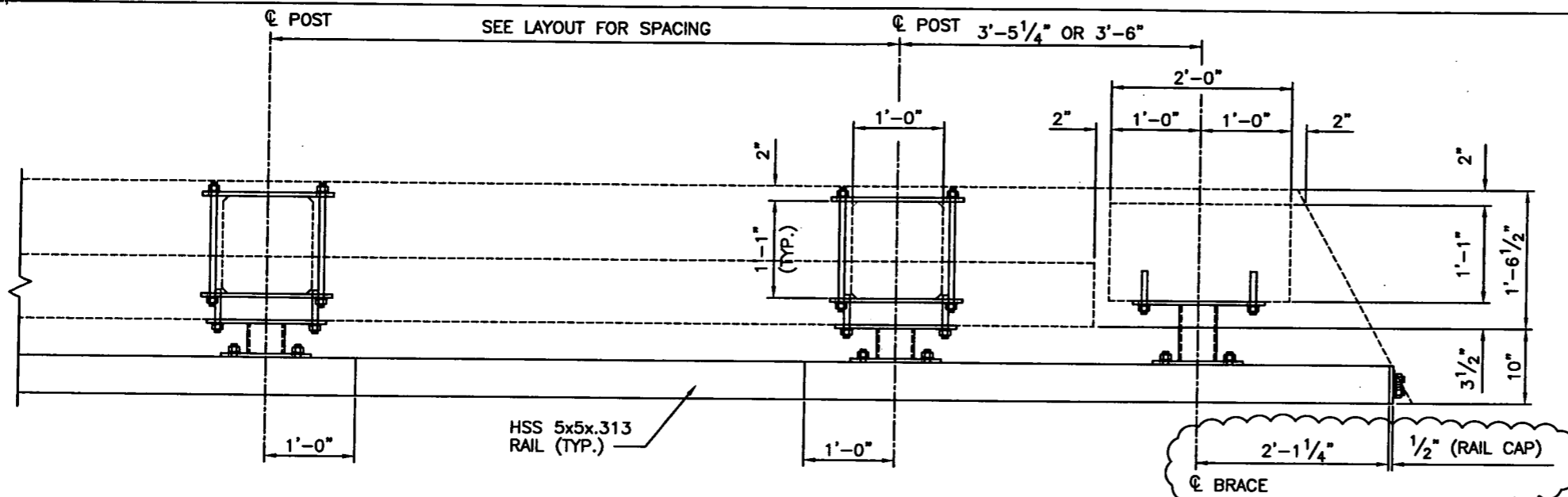
DATE: April 17, 2013

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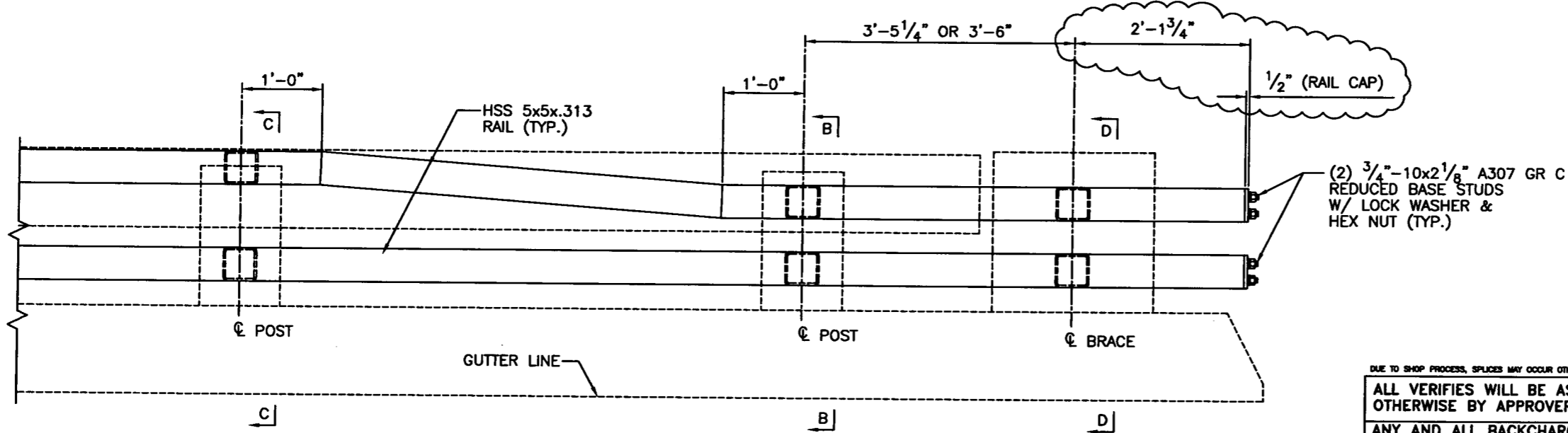
NDDOT

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA	DRAWN BY: GF	CHECKED BY: RS
PROJECT NO. SIM-6-029(106)147	SCALE: NONE	
BRIDGE NO. 29-148.177R	DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.	JOB NUMBER	SHEET
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	1309-11	E09R
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) INST. DETAILS		



RAIL RETROFIT PART PLAN
(EXIT END)



RAIL RETROFIT PART ELEVATION
(EXIT END)

*FOR SECTION B-B, C-C & D-D SEE SHEET E09T & E09U

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REV.	DESCRIPTION	BY	DATE

FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
R & R APPROVAL: 4-17-13		AS BUILT:

WHITE OAK METALS

No Exceptions Noted

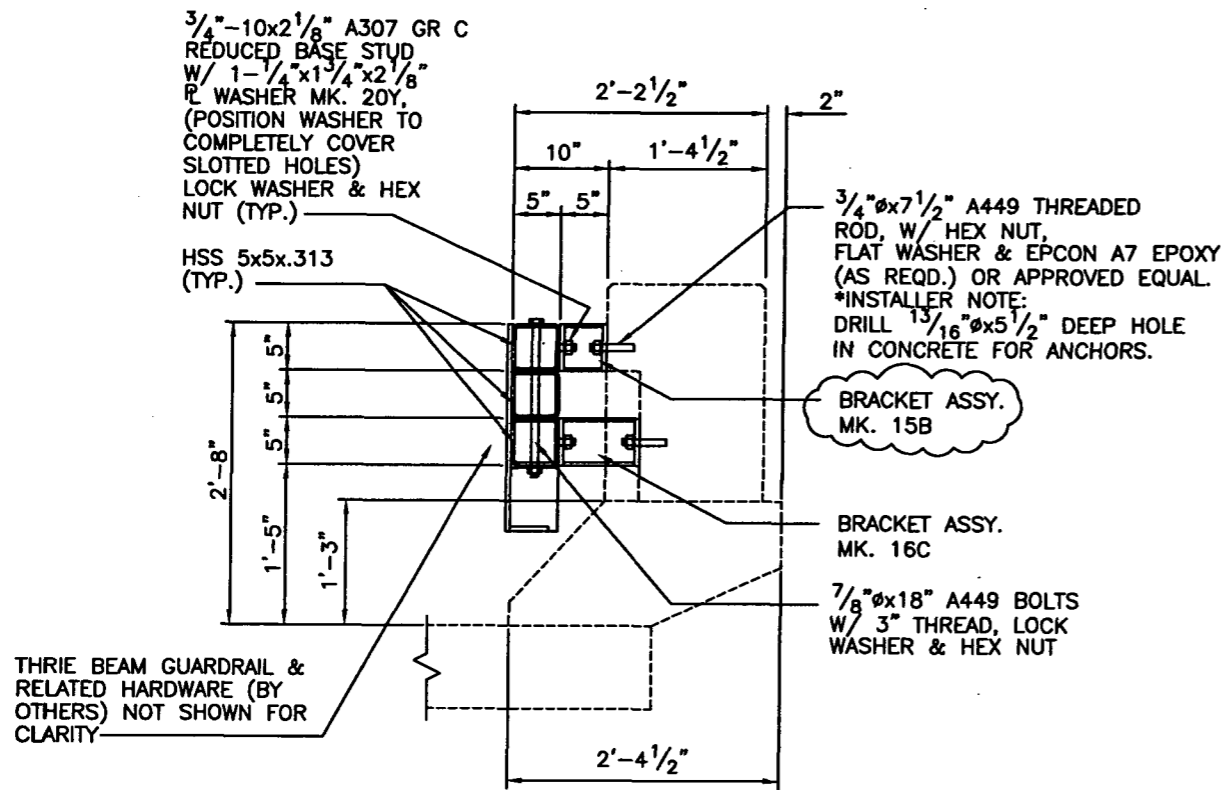
BY: D Stolz

DATE: April 17, 2013

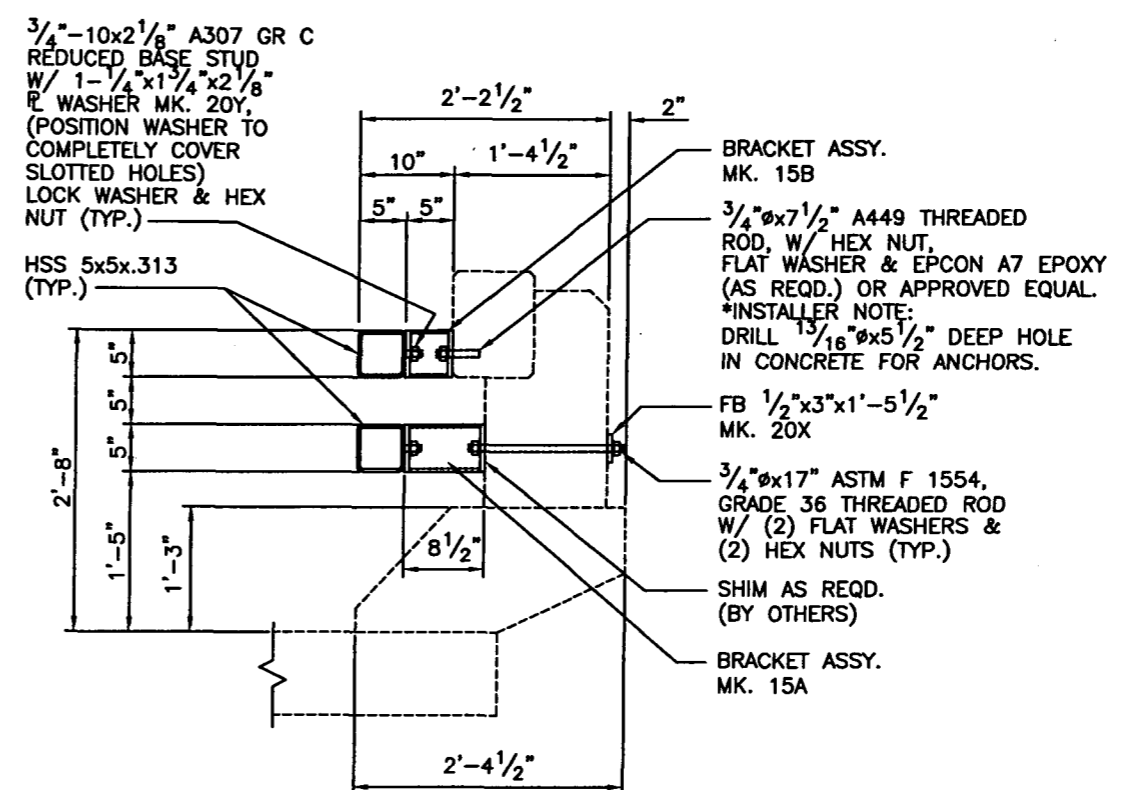
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NDDOT

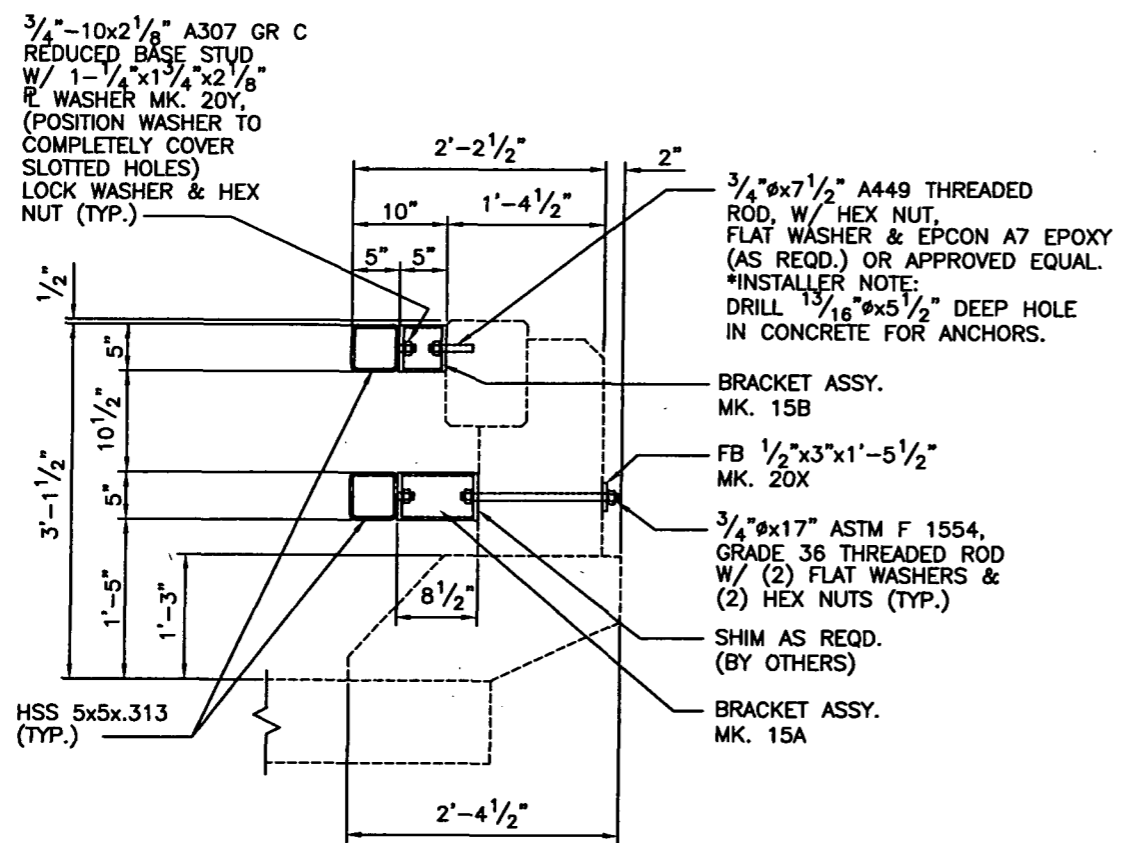
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PROJECT NO. SIM-6-029(106)147	SCALE: NONE	
BRIDGE NO. 29-148.177R	DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.	JOB NUMBER	SHEET
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	1309-11	E09S
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) INST. DETAILS		



SECTION A-A
(END POST APPROACH END)



SECTION B-B
(CONCRETE RAIL POST)



SECTION C-C
(CONCRETE RAIL POST)

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

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	R & R APROVAL: 4-17-13		AS BUILT:

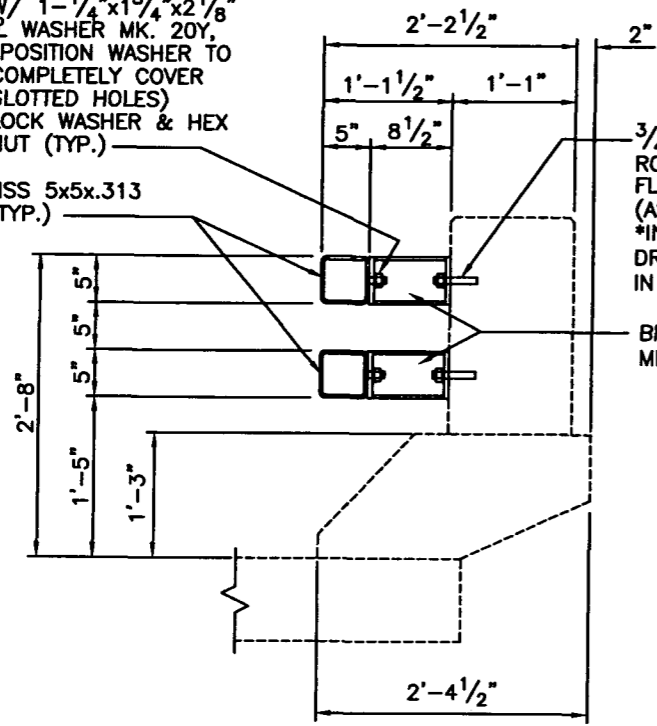
No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(106)147 BRIDGE NO. 29-148.177R	DRAWN BY: GF SCALE: NONE DATE: 3-13-13	CHECKED BY: RS JOB NUMBER SHEET
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) INST. DETAILS	1309-11 E09T

3/4"-10x2 1/8" A307 GR C
 REDUCED BASE STUD
 W/ 1-1/4"x1 1/4"x2 1/8"
 W/ WASHER MK. 20Y,
 (POSITION WASHER TO
 COMPLETELY COVER
 SLOTTED HOLES)
 LOCK WASHER & HEX
 NUT (TYP.)

HSS 5x5x.313
 (TYP.)



3/4"Øx7 1/2" A449 THREADED
 ROD, W/ HEX NUT,
 FLAT WASHER & EPCON A7 EPOXY
 (AS REQD.) OR APPROVED EQUAL.
 *INSTALLER NOTE:
 DRILL 1 3/16"Øx5 1/2" DEEP HOLE
 IN CONCRETE FOR ANCHORS.

BRACKET ASSY.
 MK. 16A

SECTION D-D
 (END POST EXIT END)

SHIPPING LIST

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	NOTES
					FEET	INCHES		
				DOUBLE BOX BEAM				
				~SHIPPING LIST~				
		8	WOM	5x5x.313 (BOX BEAM)				
		12	WOM	BRACKET				
		14	WOM	BRACKET				
		4	WOM	BRACKET				
		2	WOM	BRACKET				
		1	WOM	GUARDRAIL CONNECTION				
		1	L	5x3x 1/4	1	8 1/2		
		1	WOM	GUARDRAIL CONNECTION				
		1	L	5x3x 1/4	1	8 1/2		
		12	FB	1/2x3	1	5 1/2	A36	
		66	FB	1/4x1 3/4	0	2 1/8	A36	
		25	TR	3/4x17			1554Gr36	
		50	NUT	3/4 NC			A563AHHN	
		42	TR	3/4x7 1/2			A449	
		42	NUT	3/4 NC			A563DH	
		92	FW	3/4			F436	
		2		A7 ADHESIVE OR APPROVED EQUAL			28 oz CARTRIDGE	
		85	LW	3/4			F436	
		85	NUT	3/4 NC			A563AHHN	
		4	HS	1/8x18			A449	3" THREAD
		4	LW	1/8			F436	
		4	NUT	1/8 NC			A563DH	

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY WHITE OAK METALS PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

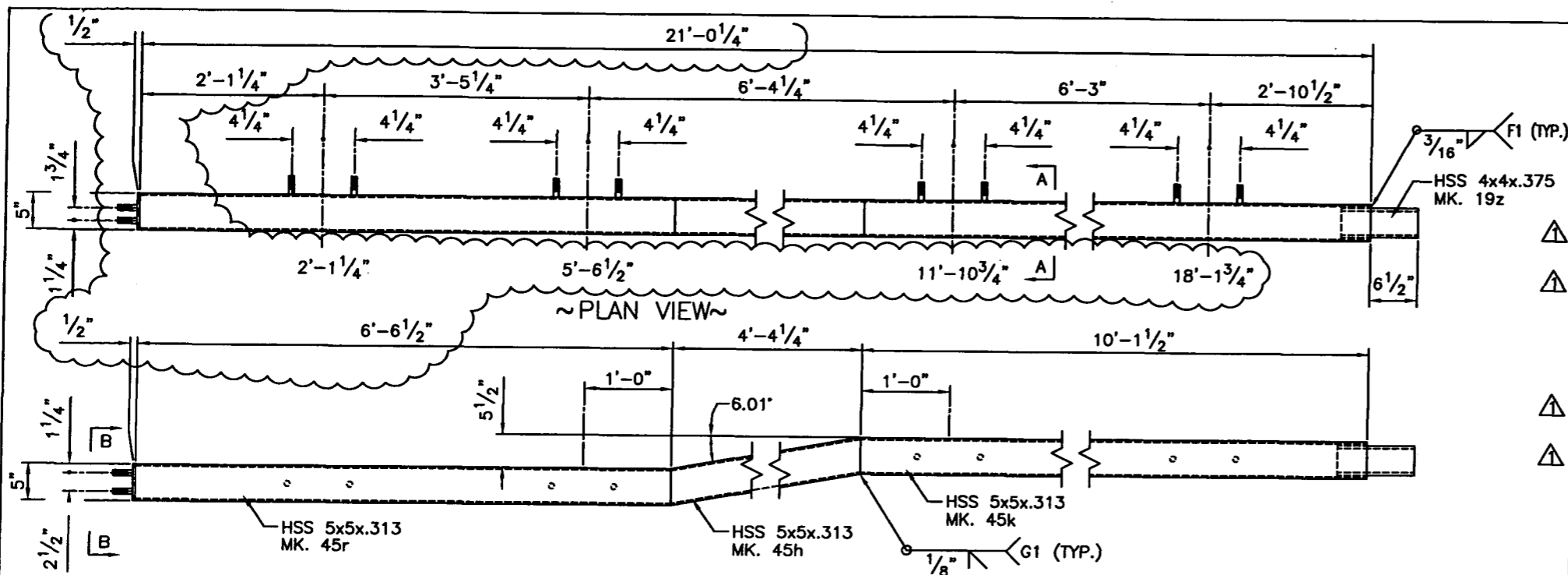
5					
4					
3					
2					
1	REVISED PER 4-16-13 REVIEW			GF	4-17-13
REV.	DESCRIPTION			BY	DATE

FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
 R & R APROVAL: 4-17-13 AS BUILT:

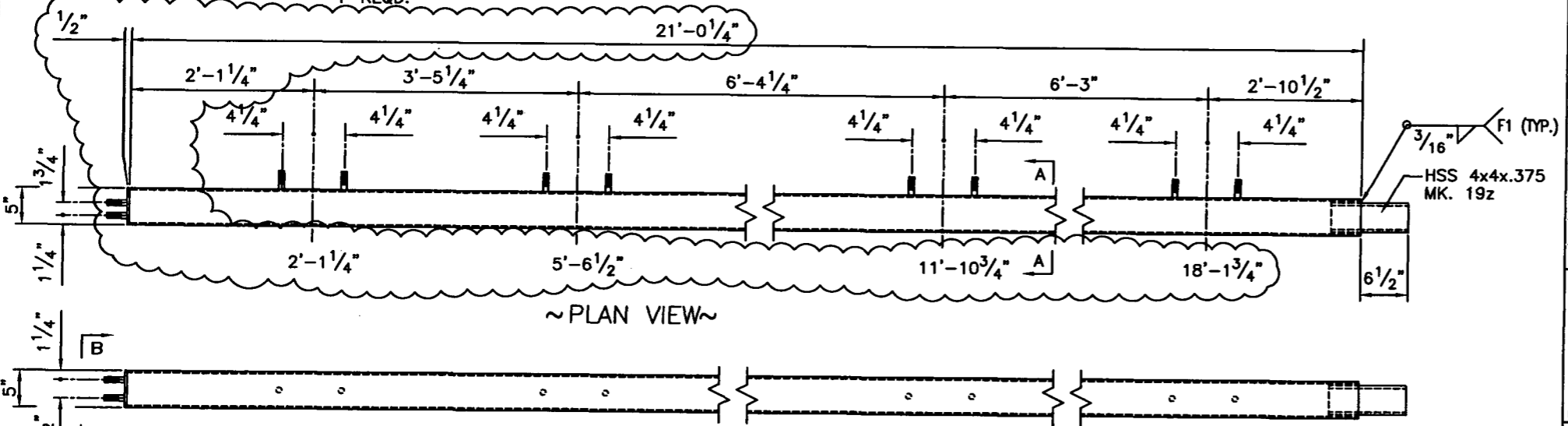
WHITE OAK METALS

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

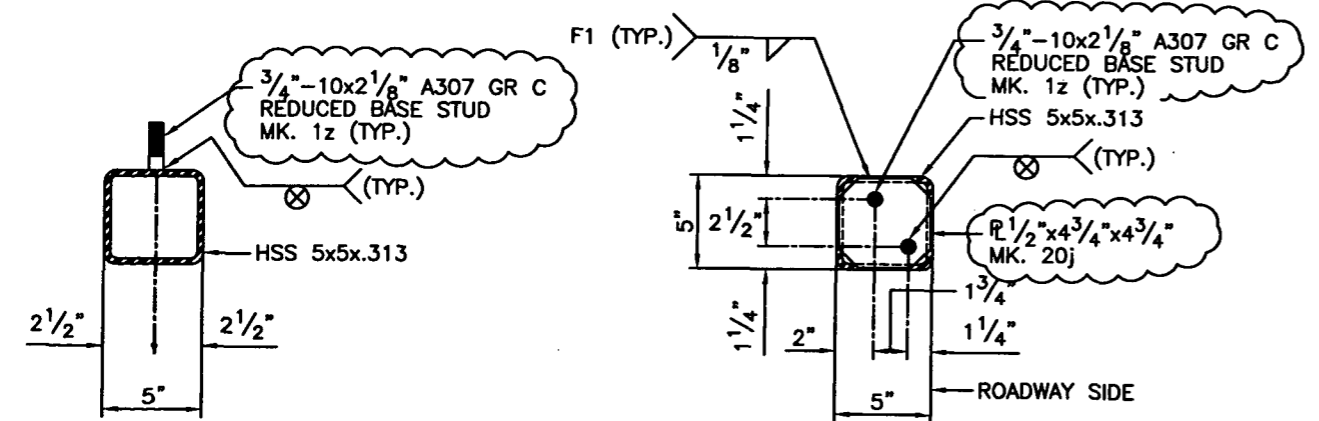
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(106)147
 BRIDGE NO. 29-148.177R
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) INST. DETAILS
 DRAWN BY: GF CHECKED BY: RS
 SCALE: NONE
 DATE: 3-13-13
 JOB NUMBER SHEET
 1309-11 E09U



HSS 5x5x.313 (BOX BEAM) SHIP MK. 37A
1-REQD.



HSS 5x5x.313 SHIP MK. 37B
1-REQD.



SECTION A-A

SECTION B-B

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
37A		1	WOM	BOX BEAM					11C
	45h	1	HSS	5x5x.313	4	5	A500 GrB	M	
	45k	1	HSS	5x5x.313	10	1 1/2	A500 GrB	S	
	45r	1	HSS	5x5x.313	6	6 1/2	A500 GrB	S	
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
37B		1	HSS	5x5x.313	21	0 1/4	A500 GrB	S	11C
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

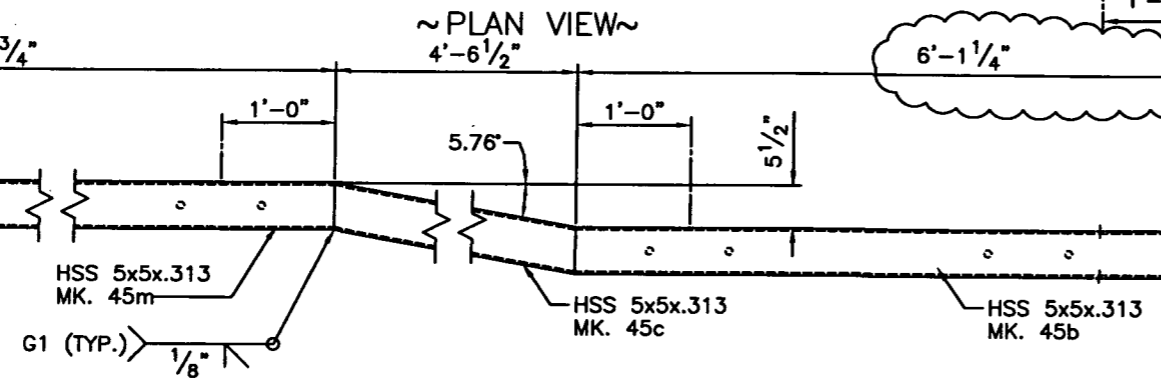
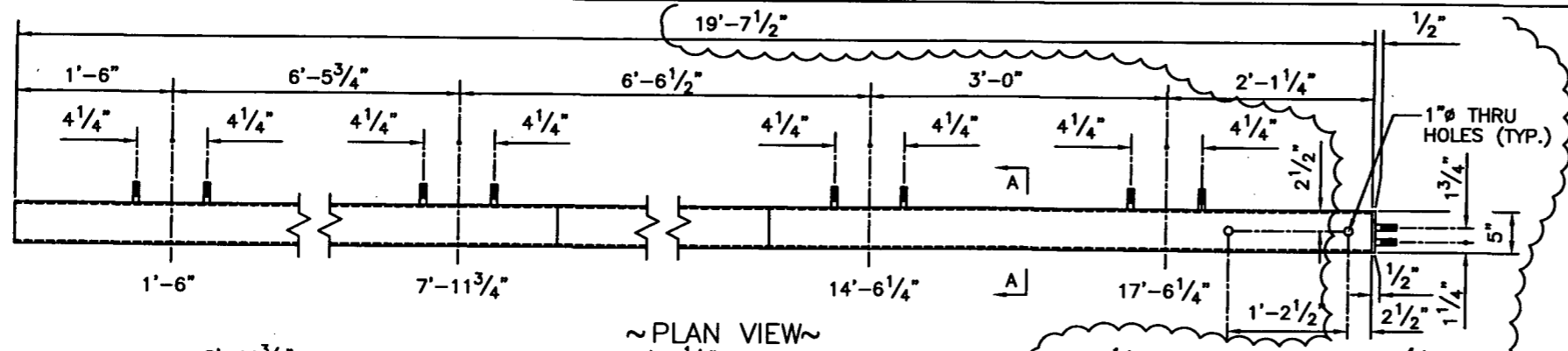
GENERAL NOTES:
DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

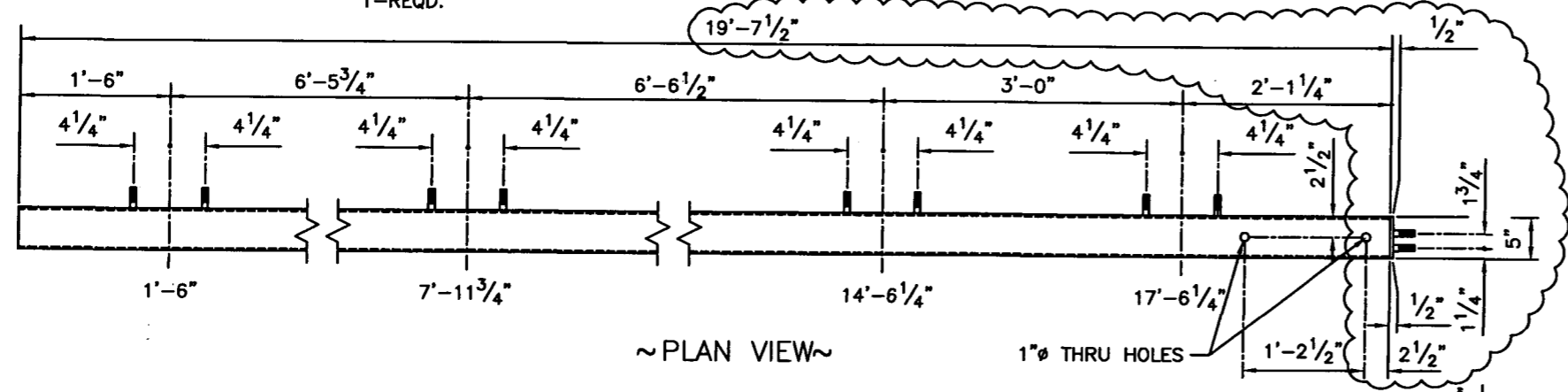
5					
4					
3					
2					
1	REVISED PER 4-16-13 REVIEW			GF	4-17-13
REV.	DESCRIPTION	BY	DATE		
	FOR APPROVAL: 3-13-13	TO SHOP:		TO FIELD:	
	R & R APROVAL: 4-17-13			AS BUILT:	

WHITE OAK METALS

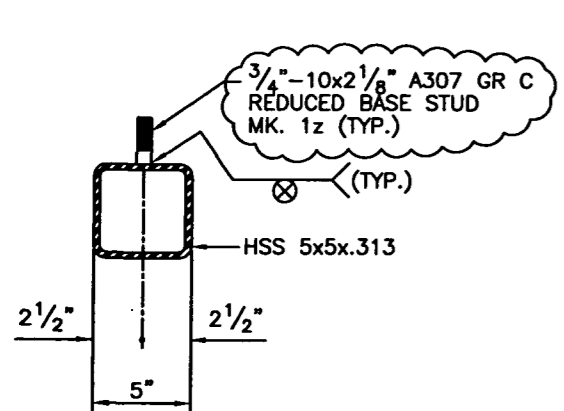
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(106)147 BRIDGE NO. 29-148.177R	DRAWN BY:GF CHECKED BY:RS
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	SCALE: NONE
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS	DATE: 3-13-13
	JOB NUMBER SHEET
	1309-11 0937



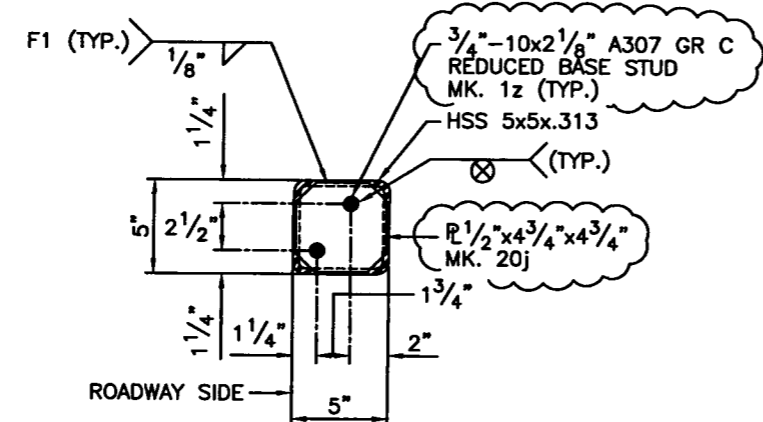
HSS 5x5x.313 (BOX BEAM) SHIP MK. 38A
1-REQD.



HSS 5x5x.313 SHIP MK. 38B
1-REQD.



SECTION A-A



SECTION C-C

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
38A		1	WOM	BOX BEAM					11C
	45b	1	HSS	5x5x.313	6	1 1/4	A500 GrB	S	
	45c	1	HSS	5x5x.313	4	7 1/4	A500 GrB	M	
	45m	1	HSS	5x5x.313	8	11 3/4	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
38B		1	HSS	5x5x.313	19	7 1/2	A500 GrB	S	11C
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

GENERAL NOTES:

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

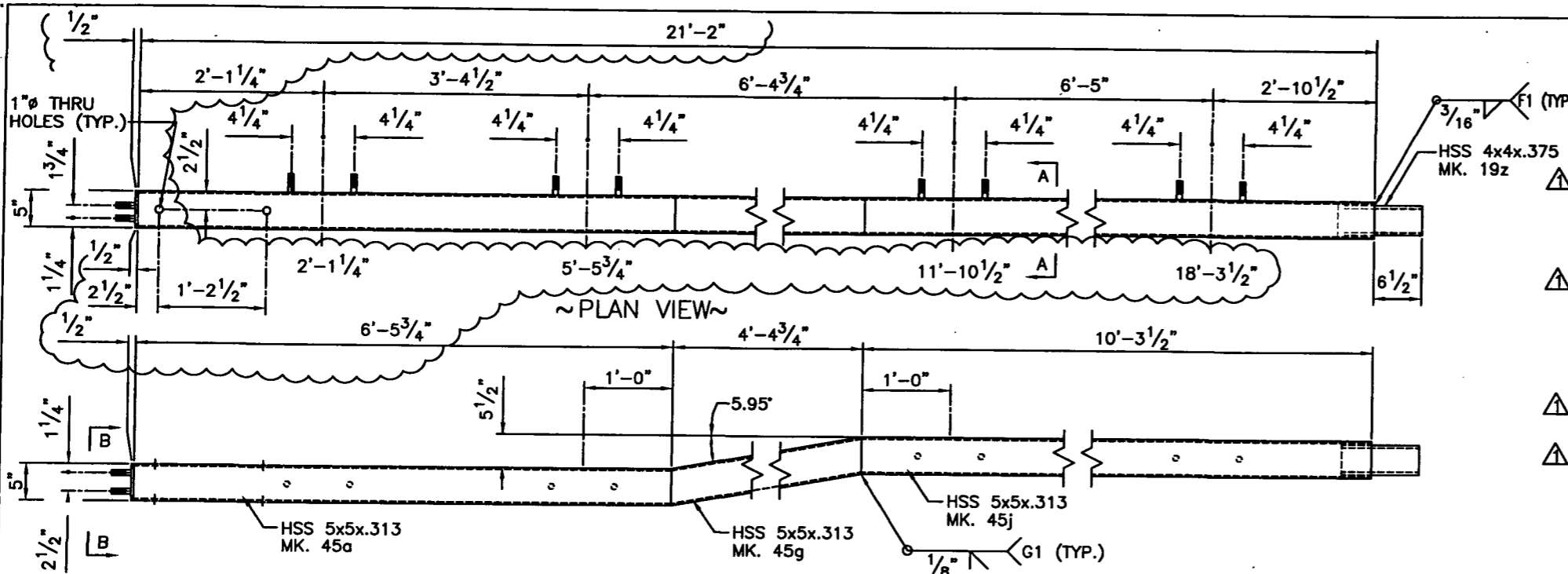
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

5					
4					
3					
2					
1	REVISED PER 4-16-13 REVIEW			GF	4-17-13
REV.	DESCRIPTION			BY	DATE
	FOR APPROVAL: 3-13-13	TO SHOP:		TO FIELD:	
	R & R APPROVAL: 4-17-13			AS BUILT:	

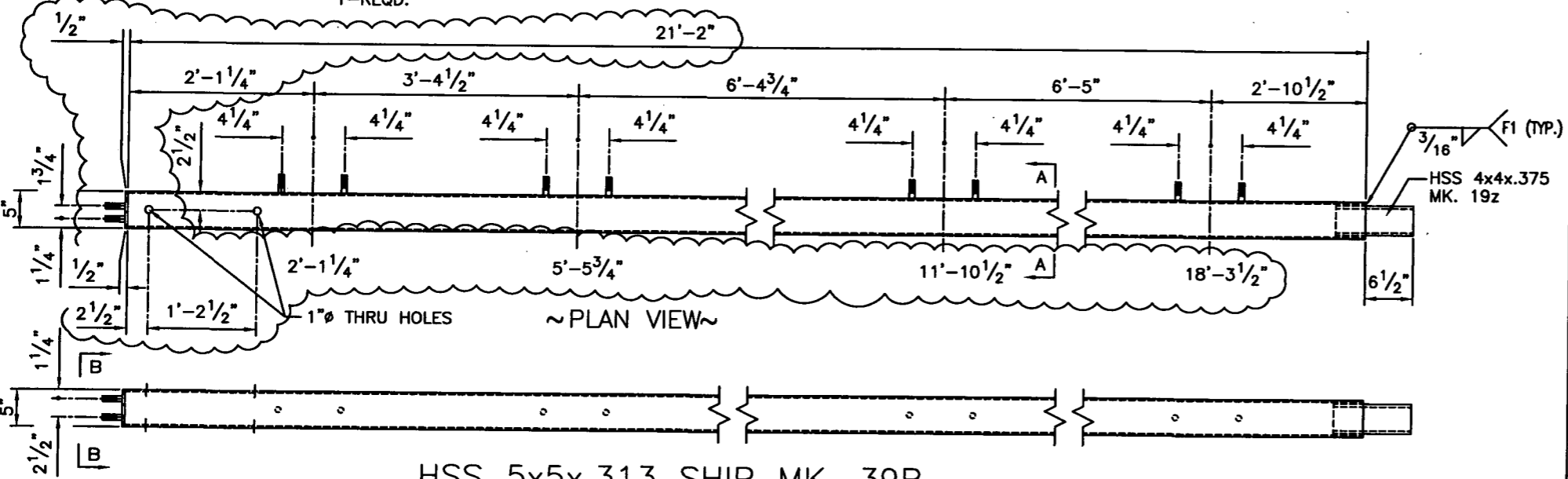
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(106)147
 BRIDGE NO. 29-148.177R
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS

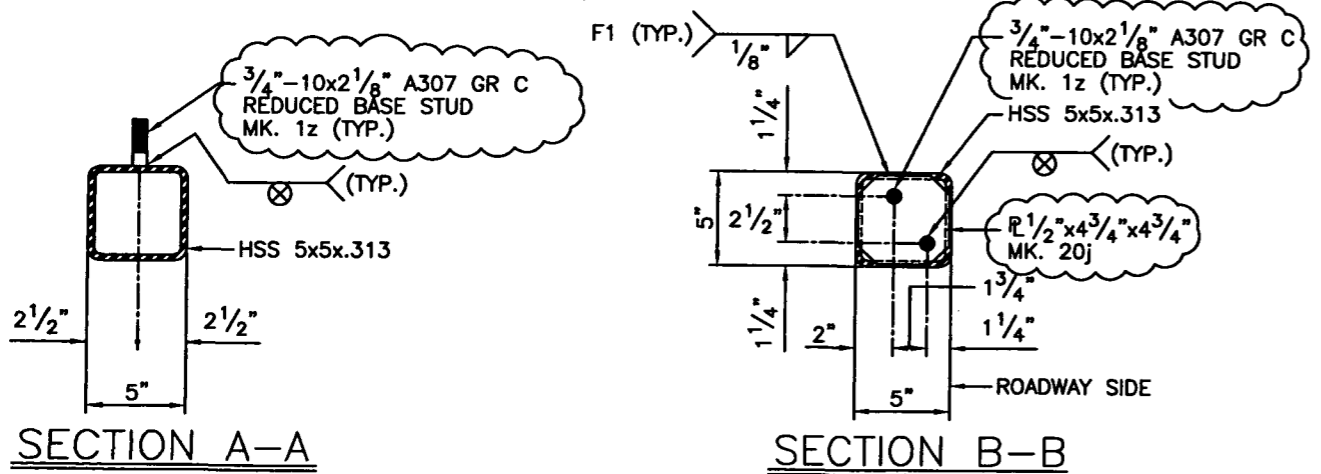
DRAWN BY: GF CHECKED BY: RS
 SCALE: NONE
 DATE: 3-13-13
 JOB NUMBER: 1309-11 SHEET: 0938



HSS 5x5x.313 (BOX BEAM) SHIP MK. 39A
1-REQD.



HSS 5x5x.313 SHIP MK. 39B
1-REQD.



SECTION A-A

SECTION B-B

BILL OF MATERIAL										
SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ	
					FEET	INCHES				
39A		1	WOM	BOX BEAM						11C
	45a	1	HSS	5x5x.313	6	5 3/4	A500 GrB	S		
	45g	1	HSS	5x5x.313	4	5 1/2	A500 GrB	M		
	45j	1	HSS	5x5x.313	10	3 1/2	A500 GrB	S		
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S		
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36			
	1z	10	WS	3/4-10x2 1/8			A307 GR C			
39B		1	HSS	5x5x.313	21	2	A500 GrB	S		11C
	19z	1	HSS	4x4x.375	0	10 1/2	A500 GrB	S		
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36			
	1z	10	WS	3/4-10x2 1/8			A307 GR C			

GENERAL NOTES:

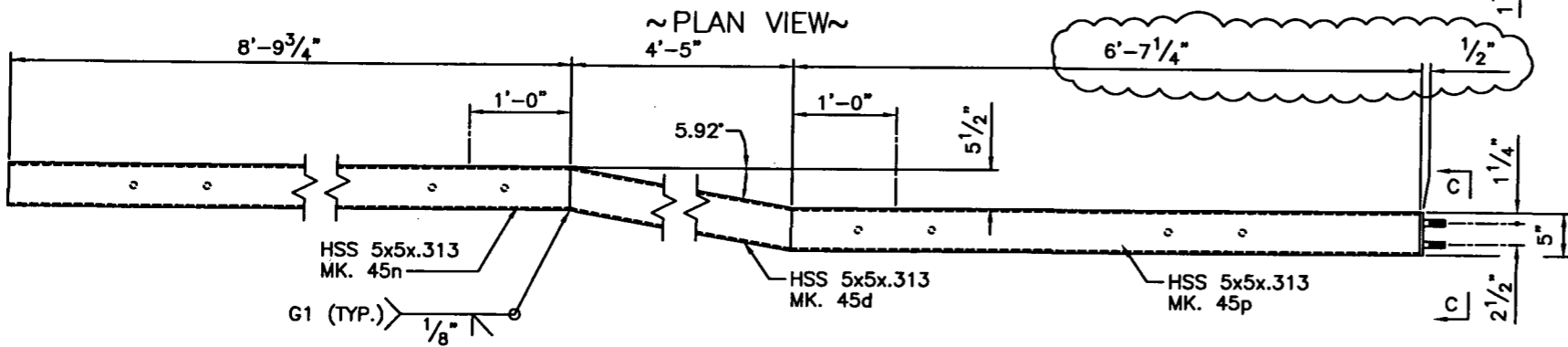
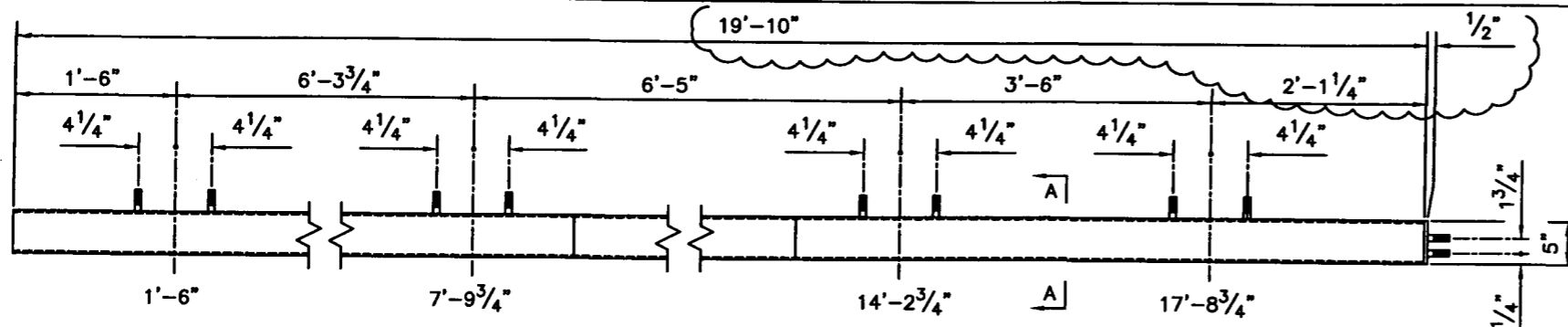
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

5					
4					
3					
2					
1	REVISED PER 4-16-13 REVIEW			GF	4-17-13
REV.	DESCRIPTION	BY	DATE		
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:		
	R & R APPROVAL: 4-17-13		AS BUILT:		

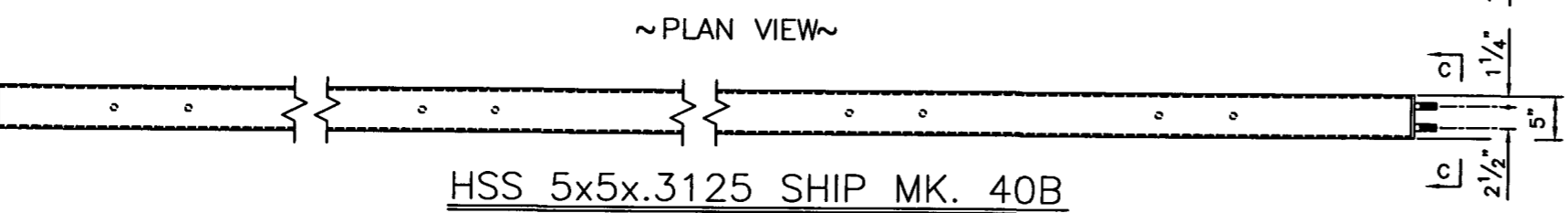
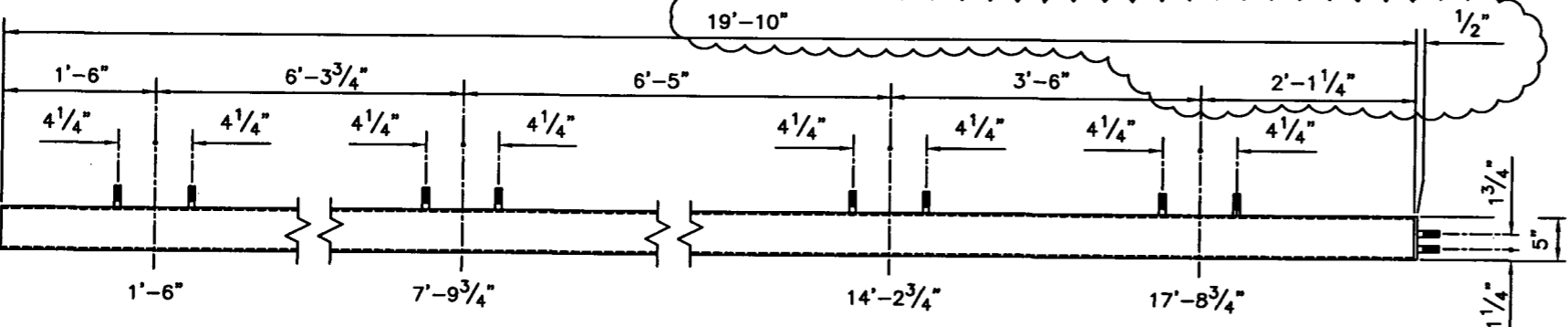
WHITE OAK METALS

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

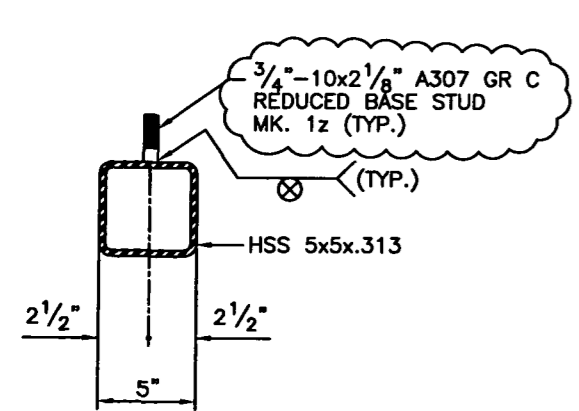
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA	DRAWN BY:GF	CHECKED BY:RS
PROJECT NO. SIM-6-029(106)147	SCALE:NONE	
BRIDGE NO. 29-148.177R	DATE: 3-13-13	
PRIME CONTRACTOR: DIAMOND SURFACE, INC.	JOB NUMBER	SHEET
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	1309-11	0939
DESCRIPTION:DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS		



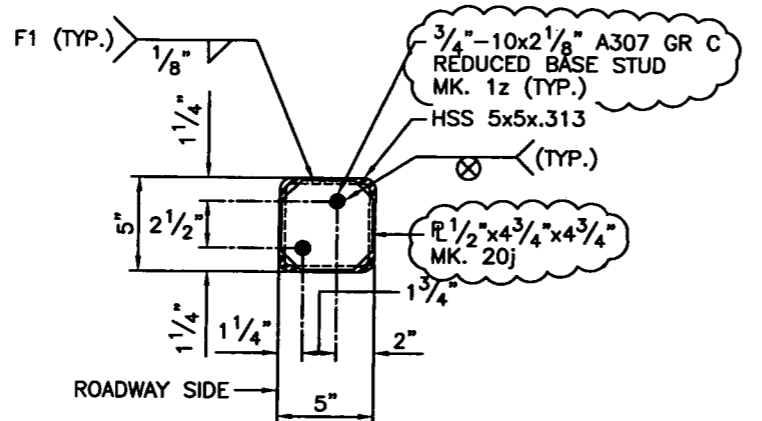
HSS 5x5x.313 (BOX BEAM) SHIP MK. 40A
1-REQD.



HSS 5x5x.3125 SHIP MK. 40B
1-REQD.



SECTION A-A



SECTION C-C

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
40A		1	WOM	BOX BEAM					11C
	45d	1	HSS	5x5x.313	4	5 3/4	A500 GrB	M	
	45n	1	HSS	5x5x.313	8	9 3/4	A500 GrB	S	
	45p	1	HSS	5x5x.313	6	7 1/4	A500 GrB	S	
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		
40B		1	HSS	5x5x.313	19	10	A500 GrB	S	11C
	20j	1	PL	1/2x4 3/4	0	4 3/4	A36		
	1z	10	WS	3/4-10x2 1/8			A307 GR C		

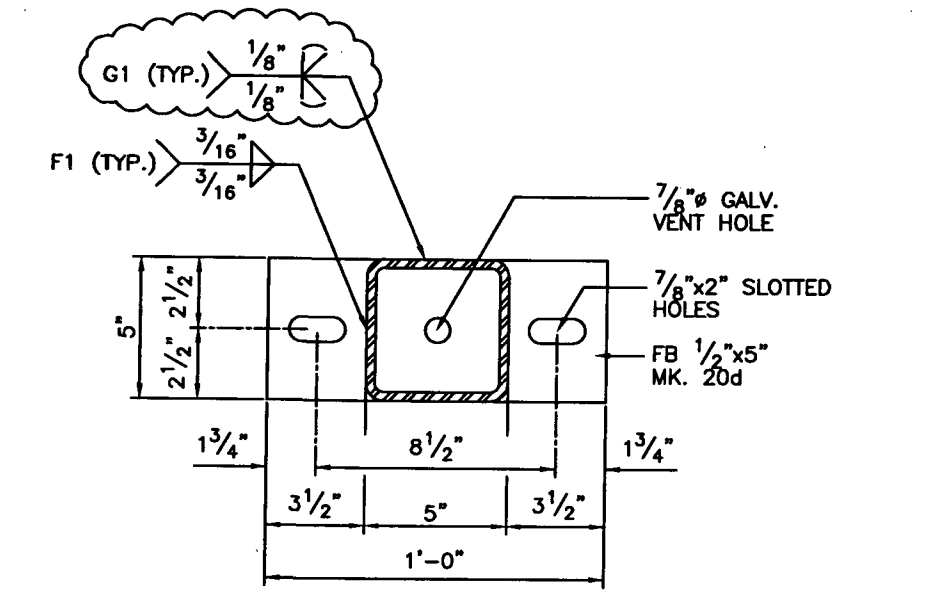
GENERAL NOTES:
DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

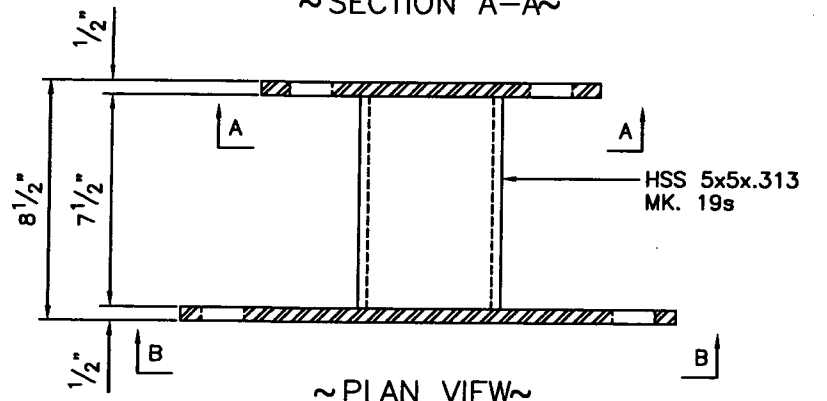
REV.	DESCRIPTION	BY	DATE
1	REVISED PER 4-16-13 REVIEW	GF	4-17-13
	FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
	R & R APROVAL: 4-17-13		AS BUILT:

WHITE OAK METALS

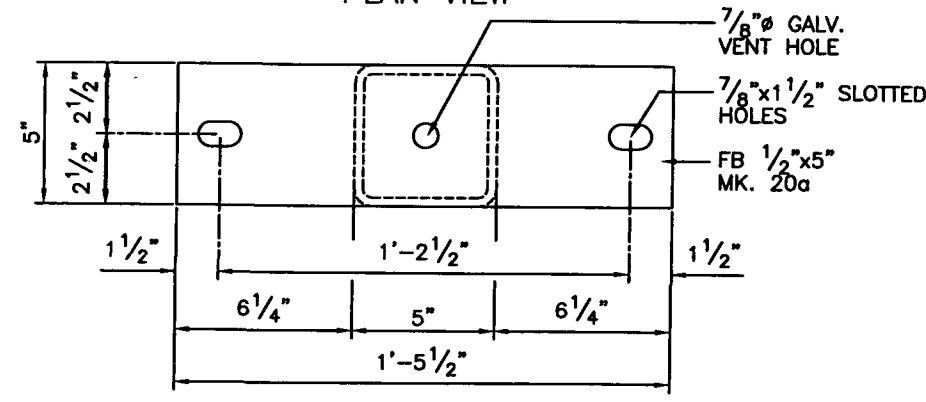
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(106)147
BRIDGE NO. 29-148.177R
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0940



~SECTION A-A~

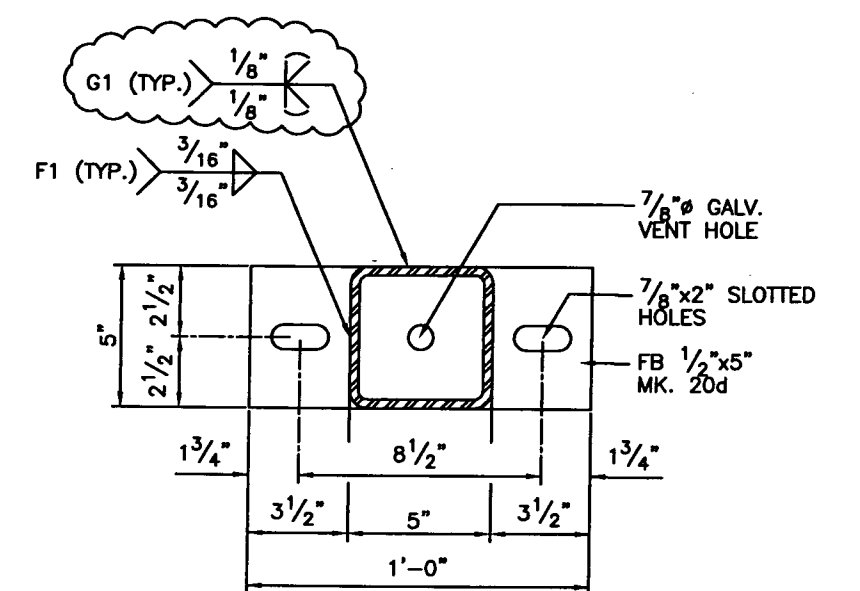


~PLAN VIEW~

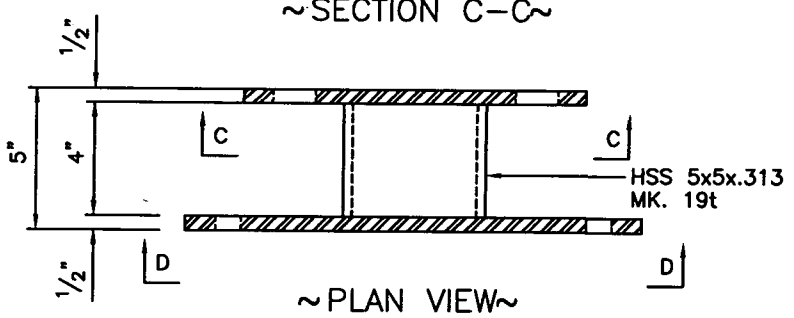


~SECTION B-B~

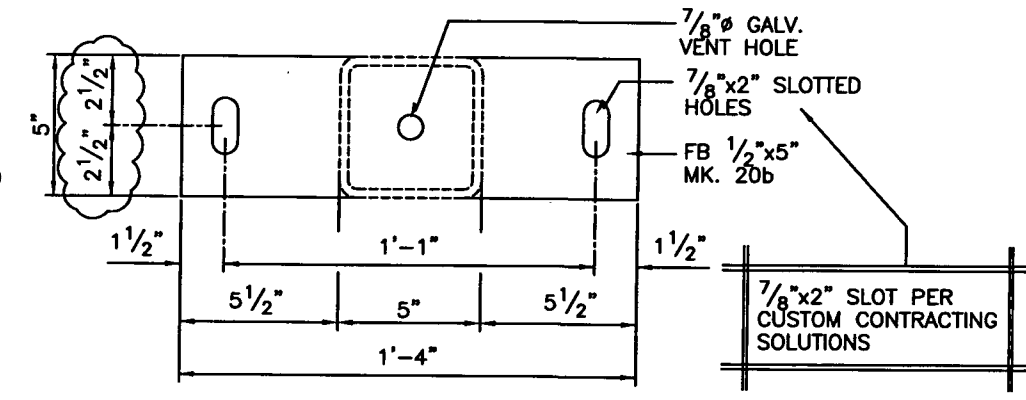
BRACKET SHIP MK. 15A
12-REQD. (CONCRETE POST LOWER CONNECTION)



~SECTION C-C~



~PLAN VIEW~



~SECTION D-D~

BRACKET SHIP MK. 15B
14-REQD. (CONCRETE RAIL UPPER CONNECTION)

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
15A'		12	WOM	BRACKET					11C
	19s	12	HSS	5x5x.313	0	7 1/2	A500 GrB	S	
	20a	12	FB	1/2x5	1	5 1/2	A36	S	
	20d	12	FB	1/2x5	1	0	A36	S	
15B'		14	WOM	BRACKET					11C
	19t	14	HSS	5x5x.313	0	4	A500 GrB	S	
	20b	14	FB	1/2x5	1	4	A36	S	
	20d	14	FB	1/2x5	1	0	A36	S	

GENERAL NOTES:
 DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

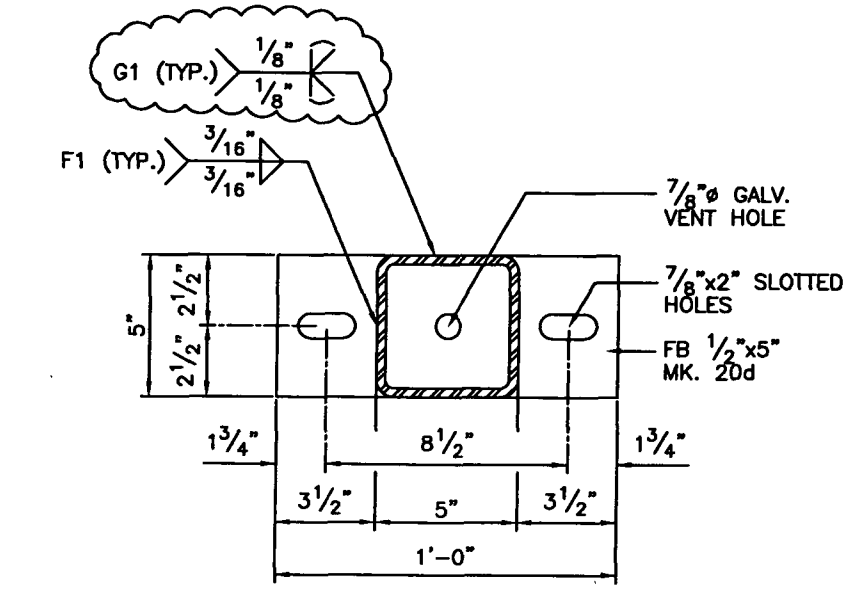
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

5				
4				
3				
2				
1	REVISED PER 4-16-13 REVIEW		GF	4-17-13
REV.	DESCRIPTION		BY	DATE

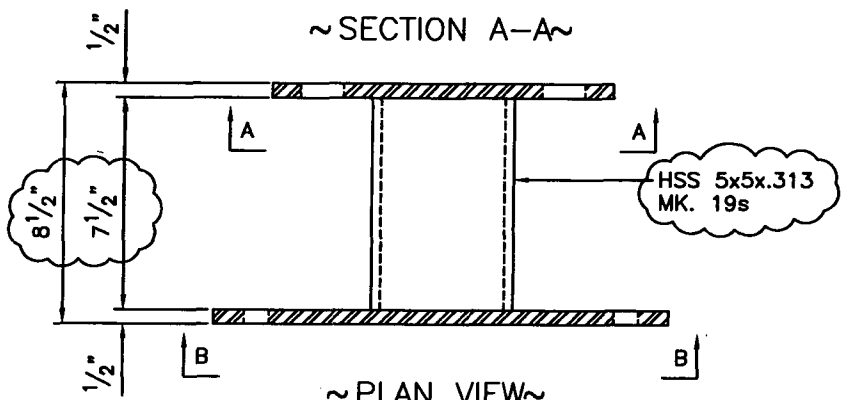
FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
 R & R APROVAL: 4-17-13 AS BUILT:

WHITE OAK METALS

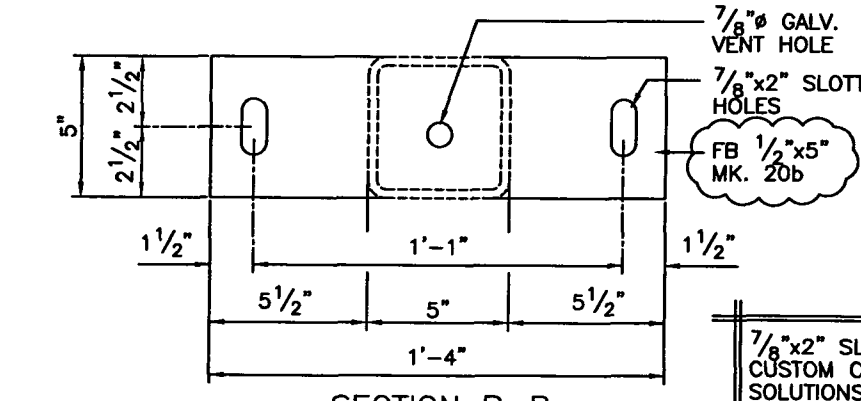
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(106)147 BRIDGE NO. 29-148.177R	DRAWN BY:GF CHECKED BY:RS SCALE: NONE DATE: 3-13-13
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	JOB NUMBER SHEET 1309-11 0941
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS	



~SECTION A-A~

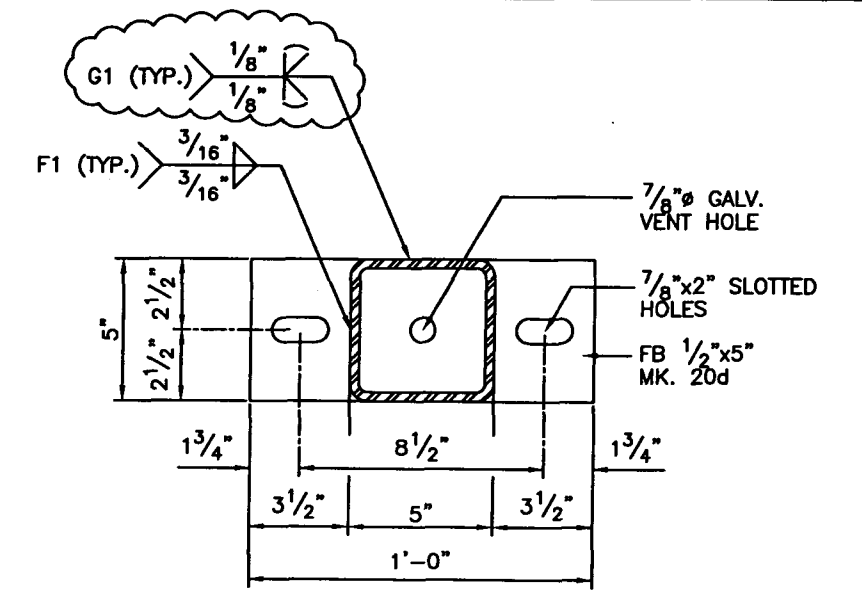


~PLAN VIEW~

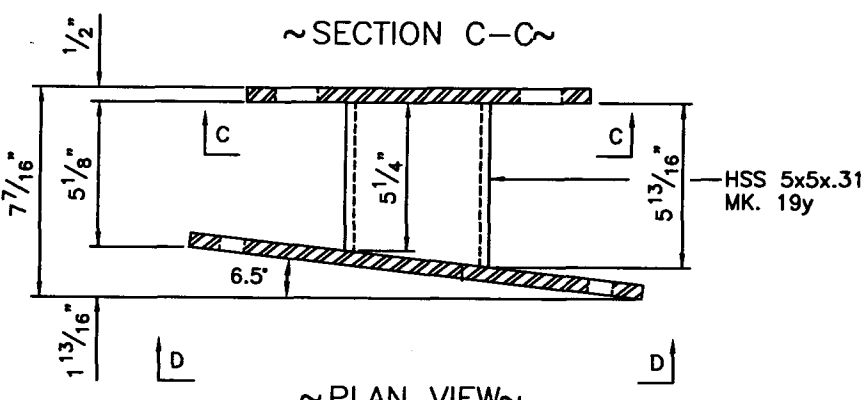


~SECTION B-B~

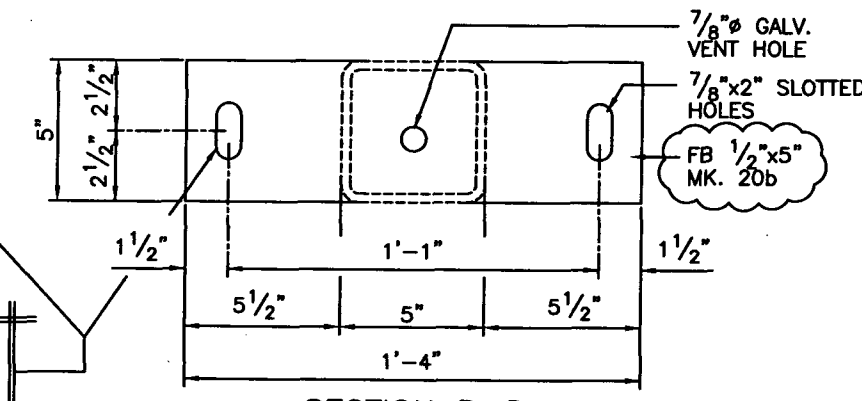
BRACKET SHIP MK. 16A
4-REQD. (END POST BRACKET)



~SECTION C-C~



~PLAN VIEW~



~SECTION D-D~

BRACKET SHIP MK. 16C
2-REQD. (MODIFIED END POST BOTTOM RAIL CONNECTION)

7/8" x 2" SLOT PER CUSTOM CONTRACTING SOLUTIONS

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
16A'		4	WOM	BRACKET					11C
	19s	4	HSS	5x5x.313	0	7 1/2	A500 GrB	S	
	20b	4	FB	1/2x5	1	4	A36	S	
	20d	4	FB	1/2x5	1	0	A36	S	
16C'		2	WOM	BRACKET					11C
	19y	2	HSS	5x5x.313	0	5 13/16	A500 GrB	M	
	20b	2	FB	1/2x5	1	4	A36	S	
	20d	2	FB	1/2x5	1	0	A36	S	

GENERAL NOTES:

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

REV.	DESCRIPTION	BY	DATE
1	REVISED PER 4-16-13 REVIEW	GF	4-17-13

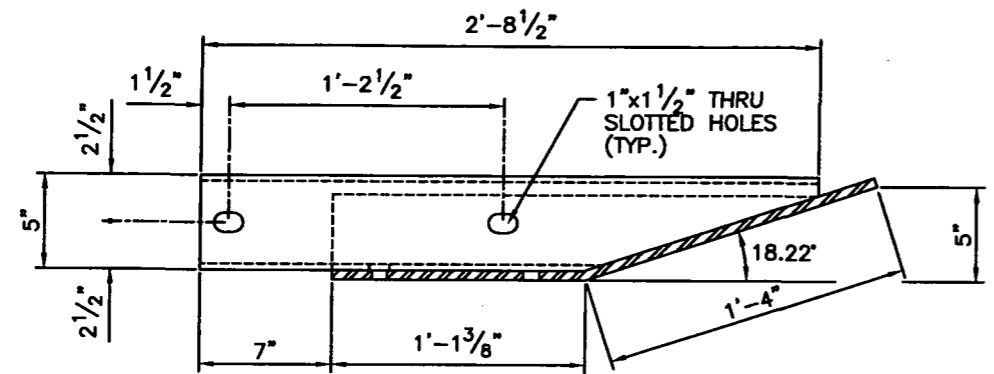
FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
R & R APROVAL: 4-17-13 AS BUILT:

WHITE OAK METALS

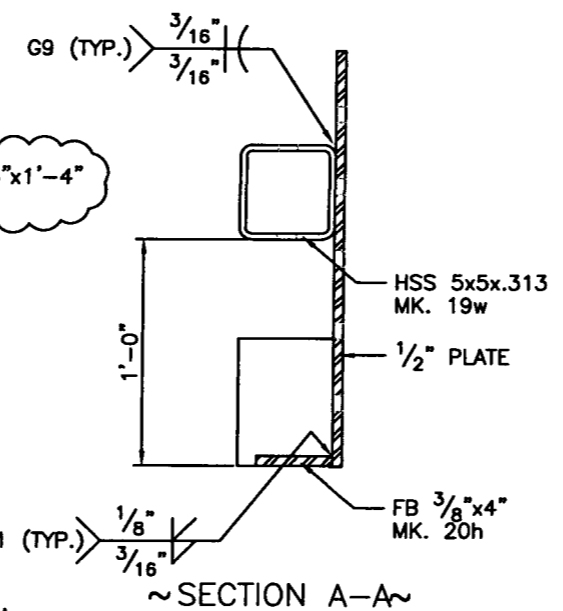
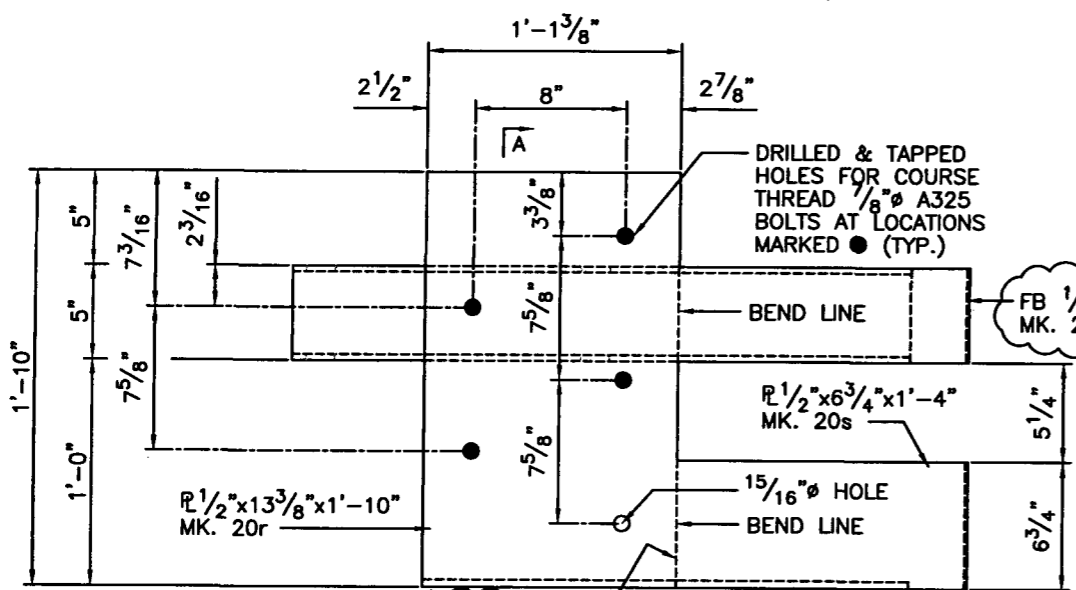
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(106)147
BRIDGE NO. 29-148.177R
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS

DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0942

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

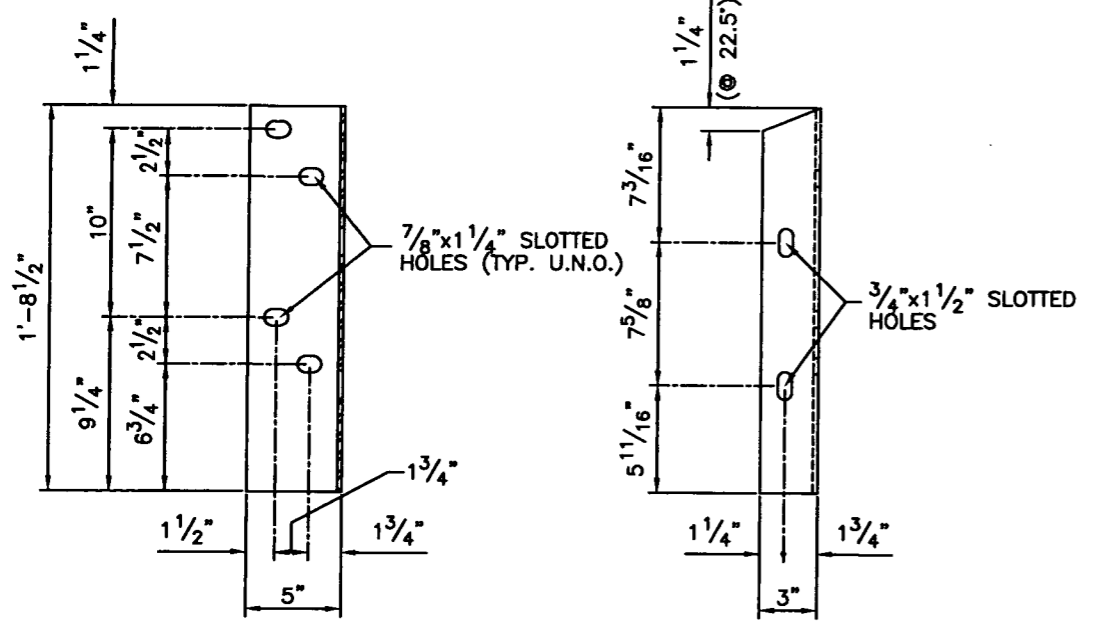


~ PLAN VIEW ~



~ SECTION A-A ~

GUARDRAIL CONNECTION SHIP MK. 17A
1-REQD.



L5x3x1/4 SHIP MK. 17B
1-REQD.

No Exceptions Noted
BY: D Stolz
DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
17A'		1	WOM	GUARDRAIL CONNECTION					11C
19w		1	HSS	5x5x.313	2	8 1/2	A500 GrB	M	
20h		1	FB	3/8x4	2	1 1/2	A36	M	
20r		1	PL	1/2x13 3/8	1	10	A36		
20s		1	PL	1/2x6 3/4	1	4	A36		
20t		1	FB	1/2x5	1	4	A36	S	
17B'		1	L	5x3x1/4	1	8 1/2	A36	M	11C

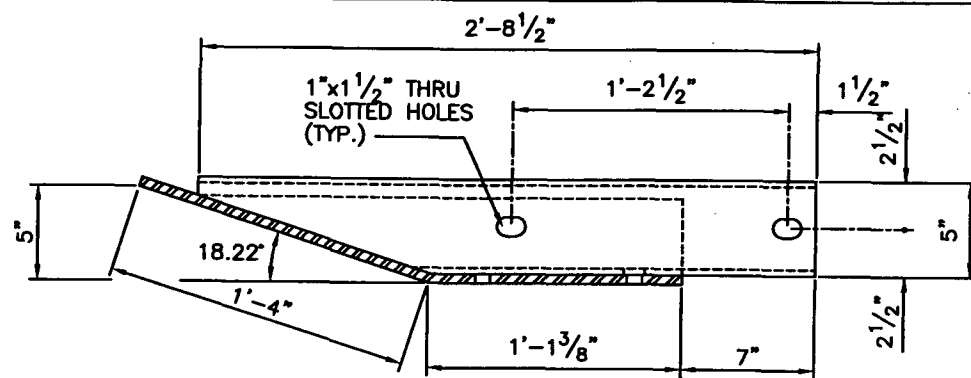
GENERAL NOTES:

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.
ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER
REVISED PER 4-16-13 REVIEW
FOR APPROVAL: 3-13-13 TO SHOP: TO FIELD:
R & R APROVAL: 4-17-13 AS BUILT:

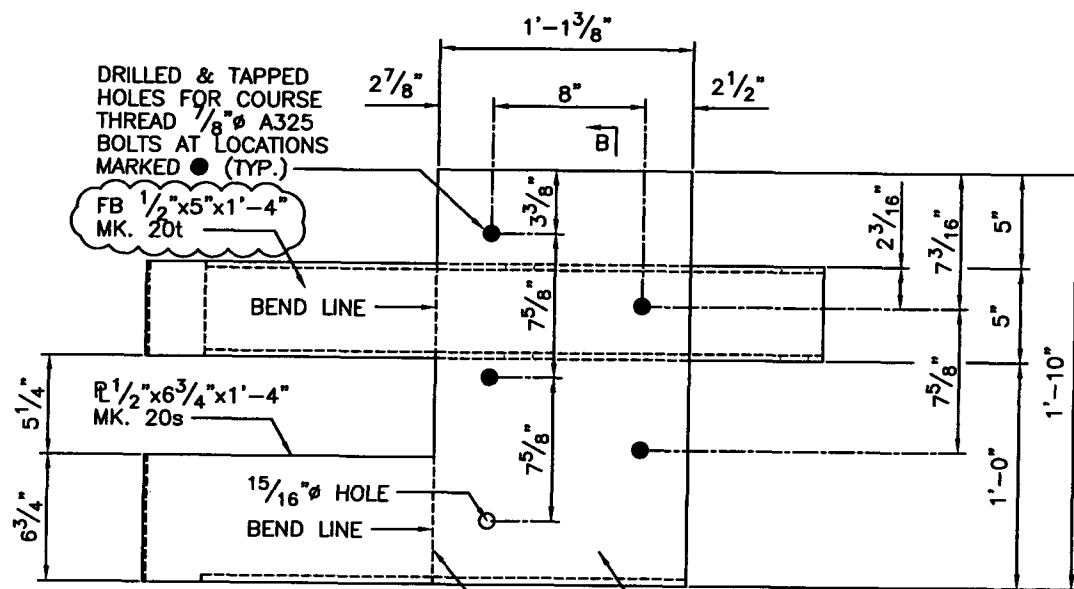
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
PROJECT NO. SIM-6-029(106)147
BRIDGE NO. 29-148.177R
PRIME CONTRACTOR: DIAMOND SURFACE, INC.
SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS

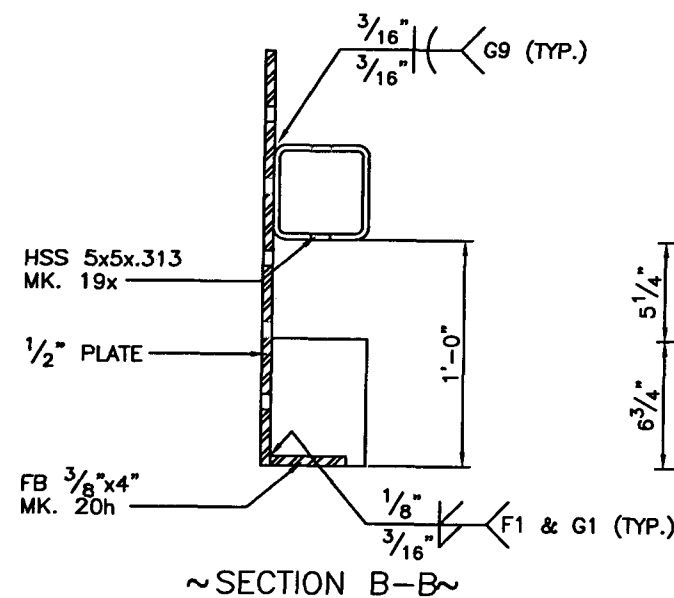
DRAWN BY: GF CHECKED BY: RS
SCALE: NONE
DATE: 3-13-13
JOB NUMBER: 1309-11 SHEET: 0943



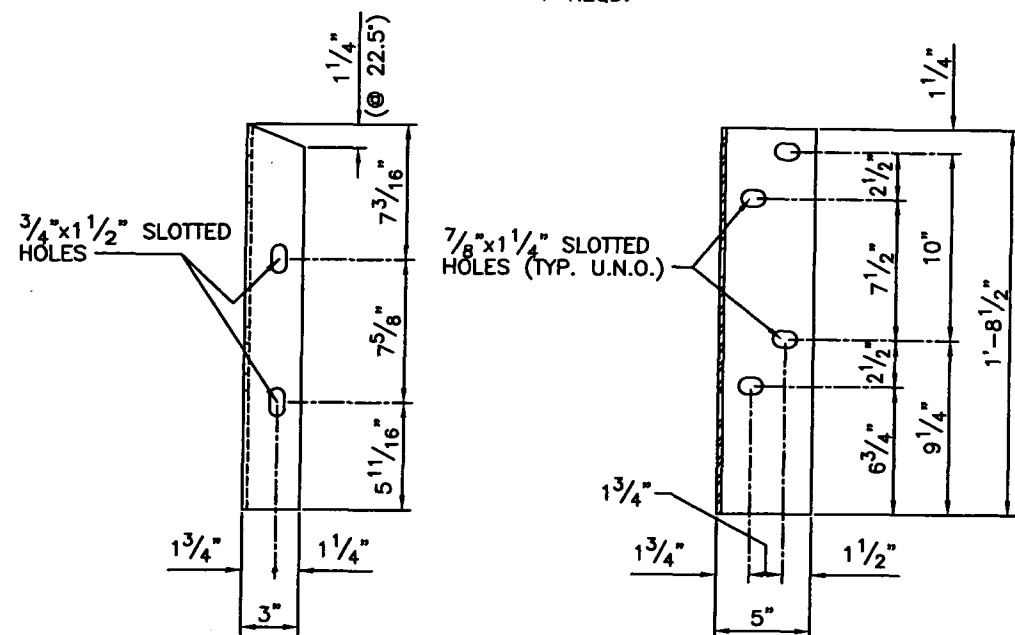
~ PLAN VIEW ~



GUARDRAIL CONNECTION SHIP MK. 18C
1-REQD.



~ SECTION B-B ~



5x3x1/4 SHIP MK. 18D
1-REQD.

BILL OF MATERIAL

SHIP MARK	PIECE MARK	NO. OF PIECES	TYPE	DESCRIPTION	LENGTH		GRADE	SHOP NOTES	SEQ
					FEET	INCHES			
18C'		1	WOM	GUARDRAIL CONNECTION					11C
19x		1	HSS	5x5x.3125	2	8 1/2	A500 GrB	M	
20h		1	FB	3/8x4	2	1 1/2	A36	M	
20r		1	PL	1/2x13 3/8	1	10	A36		
20s		1	PL	1/2x6 3/4	1	4	A36		
20t		1	FB	1/2x5	1	4	A36	S	
18D'		1	L	5x3x1/4	1	8 1/2	A36	M	11C

GENERAL NOTES:

DUE TO SHOP PROCESS, SPICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

5			
4			
3			
2			
1	REVISED PER 4-16-13 REVIEW	GF	4-17-13
REV.	DESCRIPTION	BY	DATE

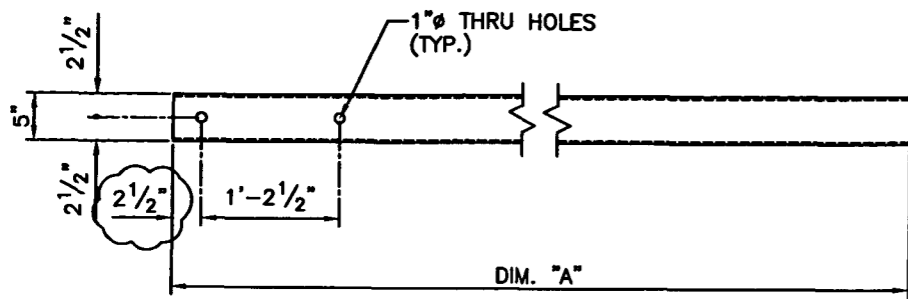
FOR APPROVAL: 3-13-13	TO SHOP:	TO FIELD:
R & R APPROVAL: 4-17-13		AS BUILT:

WHITE OAK METALS

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
 REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

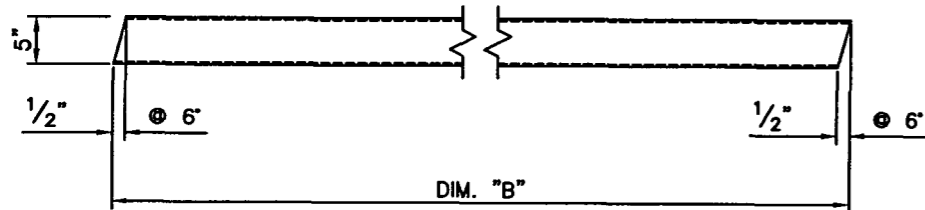
LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA
 PROJECT NO. SIM-6-029(106)147
 BRIDGE NO. 29-148.177R
 PRIME CONTRACTOR: DIAMOND SURFACE, INC.
 SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS
 DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS

DRAWN BY: GF CHECKED BY: RS
 SCALE: NONE
 DATE: 3-13-13
 JOB NUMBER: 1309-11 SHEET: 0944



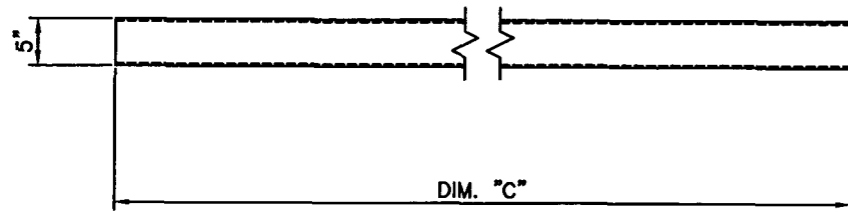
HSS 5x5x.313

PC. MK.	QN.	DIM. "A"
45a	1	6'-5 ³ / ₄ "
45b	1	6'-1 ¹ / ₄ "



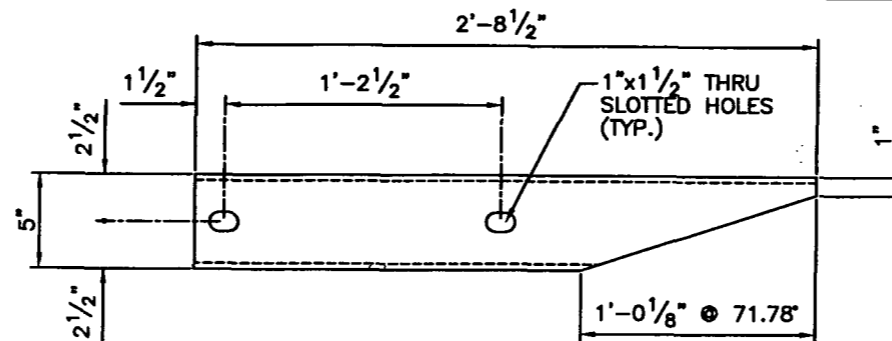
HSS 5x5x.313

PC. MK.	QN.	DIM. "B"
45c	1	4'-7 ¹ / ₄ "
45d	1	4'-5 ³ / ₄ "
45g	1	4'-5 ¹ / ₂ "
45h	1	4'-5"

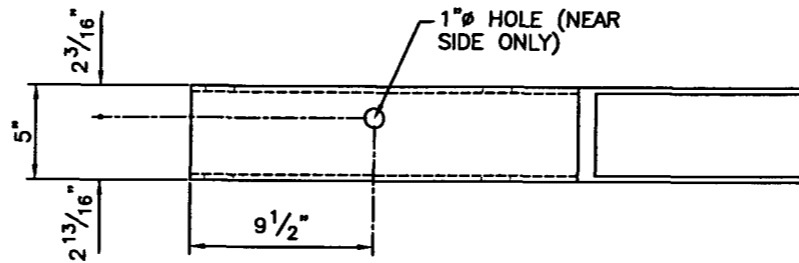


HSS 5x5x.313

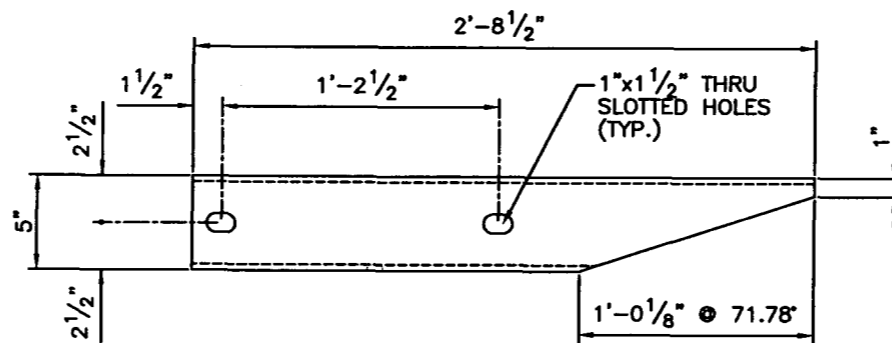
PC. MK.	QN.	DIM. "C"
45j	1	10'-3 ¹ / ₂ "
45k	1	10'-1 ¹ / ₂ "
45m	1	8'-11 ³ / ₄ "
45n	1	8'-9 ³ / ₄ "
45p	1	6'-7 ¹ / ₄ "
45r	1	6'-6 ¹ / ₂ "
19s	16	0'-7 ¹ / ₂ "
19t	14	0'-4"



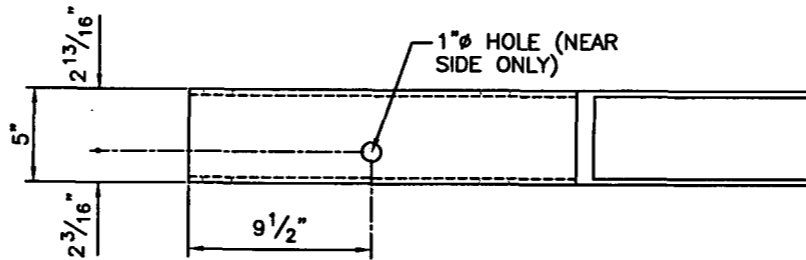
~PLAN VIEW~



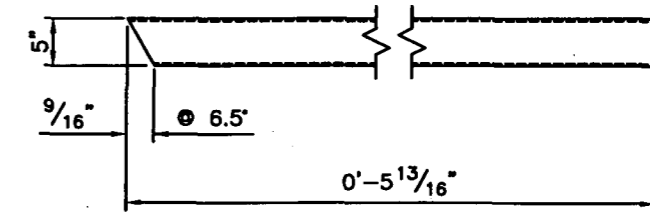
HSS 5x5x.313 PC. MK. 19w
1-REQD.



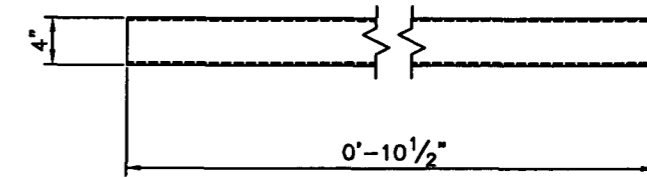
~PLAN VIEW~



HSS 5x5x.313 PC. MK. 19x
1-REQD.



HSS 5x5x.313 PC. MK. 19y
2-REQD.



HSS 4x4x.375 PC. MK. 19z
4-REQD.

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

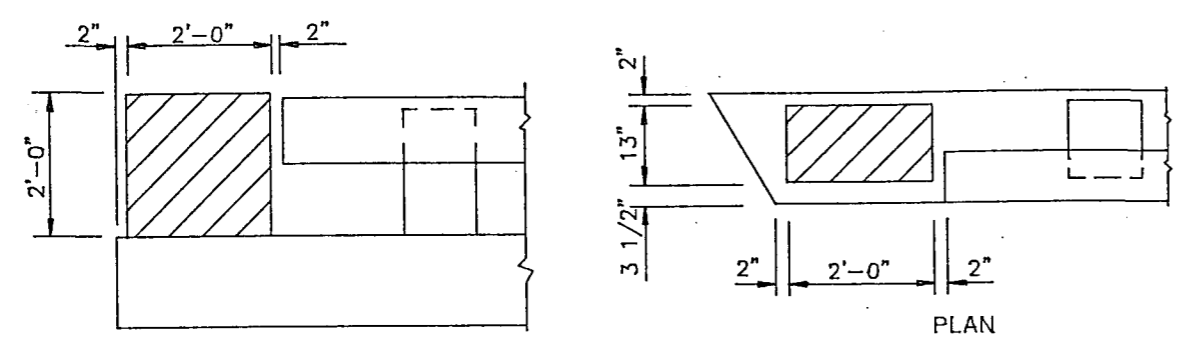
REV.	DESCRIPTION	BY	DATE
5			
4			
3			
2			
1	REVISED PER 4-16-13 REVIEW	GF	4-17-13
FOR APPROVAL: 3-13-13		TO SHOP:	TO FIELD:
R & R APROVAL: 4-17-13		AS BUILT:	

No Exceptions Noted
 BY: D Stolz
 DATE: April 17, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
 NDDOT

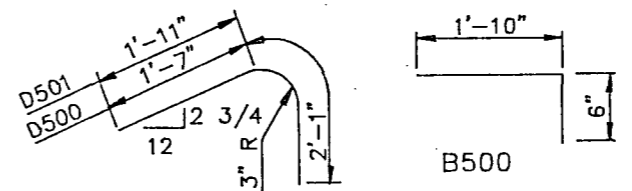
WHITE OAK METALS

LOCATION: GRAND FORKS COUNTY, NORTH DAKOTA PROJECT NO. SIM-6-029(106)147 BRIDGE NO. 29-148.177R	DRAWN BY: GF CHECKED BY: RS
PRIME CONTRACTOR: DIAMOND SURFACE, INC. SUBCONTRACTOR: CUSTOM CONTRACTING SOLUTIONS	SCALE: NONE
DESCRIPTION: DOUBLE BOX BEAM RAIL RETROFIT E-RAIL (82.6 LF) FAB. DETAILS	DATE: 3-13-13
	JOB NUMBER SHEET
	1309-11 0945

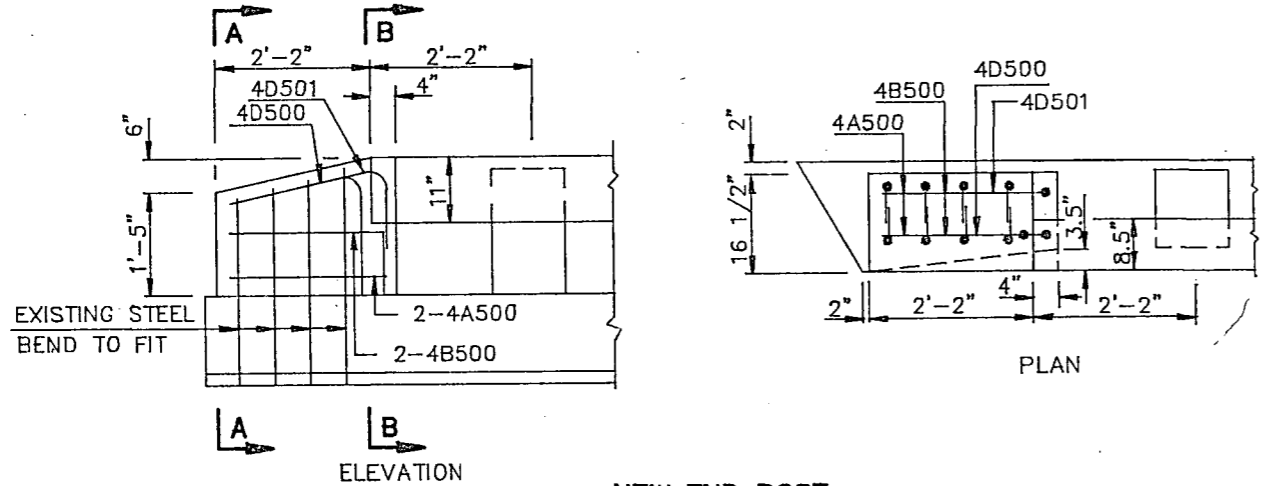
BAR LIST (ONE POST)				
SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	2	1'-10"	STR.
4	B500	2	2'-4"	BENT
4	D500	1	3'-8"	BENT
4	D501	1	4'-0"	BENT



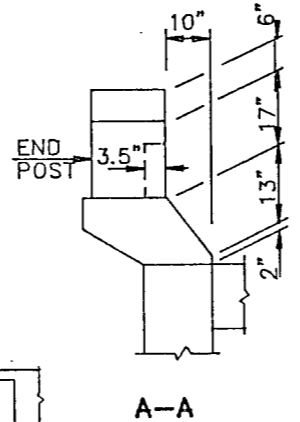
ELEVATION
PLAN
SHOWING END POST REMOVAL LIMITS



D500 & D501
BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT



ELEVATION
PLAN
NEW END POST



A-A

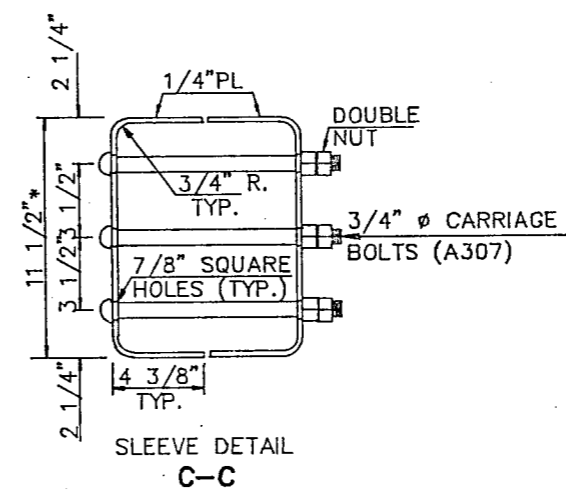
B-B

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0103	CLASS 1 EXCAVATION - SITE 2	L.SUM	1.0
210	0198	SELECT BACKFILL	TON	440.0
550	0217	BRIDGE APPR. SLAB (REMOVE & REPL.)	SQ.YD.	196.6
602	1210	BRIDGE END POST MODIFICATION	EA.	2.0
714	9730	UNDERDRAIN, PIPE PVC PERFORATED 6 IN	L.FT.	100.0
714	9771	UNDERDRAIN, PIPE PVC NONPRFTD 6 IN	L.FT.	64.0
744	0100	POLYSTYRENE INSULATION BOARD	BD.FT.	3,904.0

NOTE:

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60. THE EXISTING END POSTS AT THE TRAFFIC ENTRANCE END SHALL BE REMOVED AND PROPERLY DISPOSED OF. THE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, LABOR, AND EQUIPMENT INCLUDING CONCRETE AND REINFORCING BARS REQUIRED TO REMOVE AND REPLACE THE END POSTS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE END POST MODIFICATION". (1)

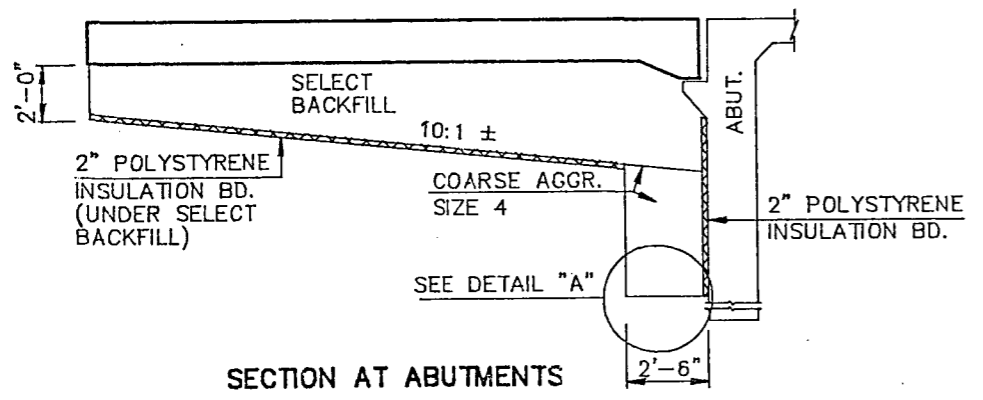
*THE COARSE AGGREGATE SIZE 4 AND THE FILTER FABRIC UNDERDRAIN MATERIAL SHALL BE INCIDENTAL TO THE PRICE BID FOR "UNDERDRAIN, PIPE PVC PERFORATED 6 IN".



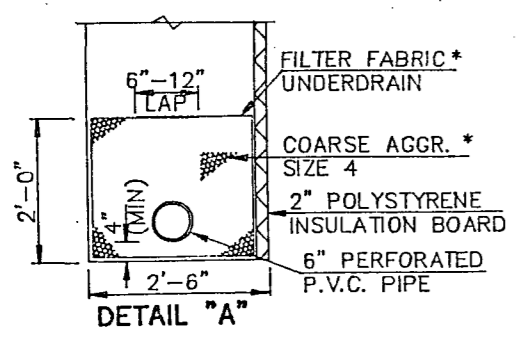
SLEEVE DETAIL
C-C

NOTE:

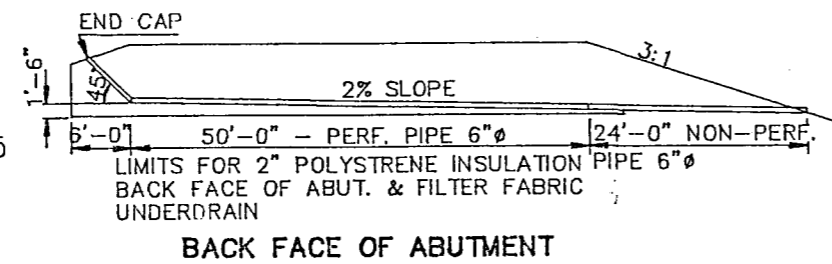
PL'S BOLTS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153. (ALL STEEL ~ M183)



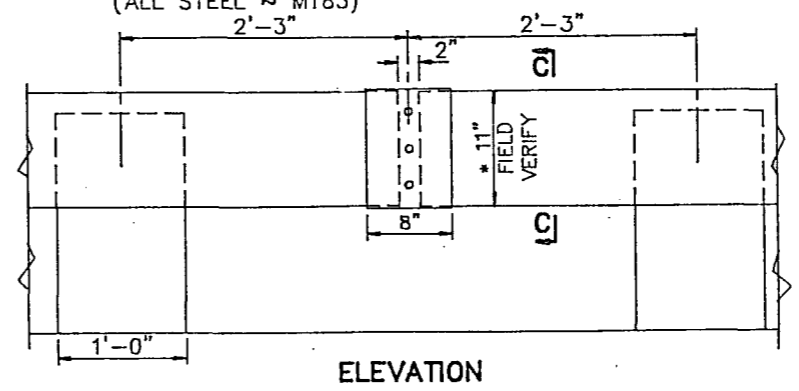
SECTION AT ABUTMENTS



DETAIL "A"



BACK FACE OF ABUTMENT



ELEVATION

* FABRICATE 1/4" PL ACCORDINGLY TO FIELD VERIFICATION OF E-RAIL. SLEEVE REQUIRED AT EACH RAIL JOINT

QUANTITIES 2 POSTS	
(1)	REMOVAL OF CONCRETE 0.3 C.YD
(1)	CL. AE-3 CONCRETE 0.4 C.YD
(1)	REINF. STEEL 22 LBS
(1)	SLEEVE 2 EA.

COUNTY DRAIN 11

END POST DETAILS

WIDTH = 42'-2" CL. RDWY.

SKREW ANGLE = 30°

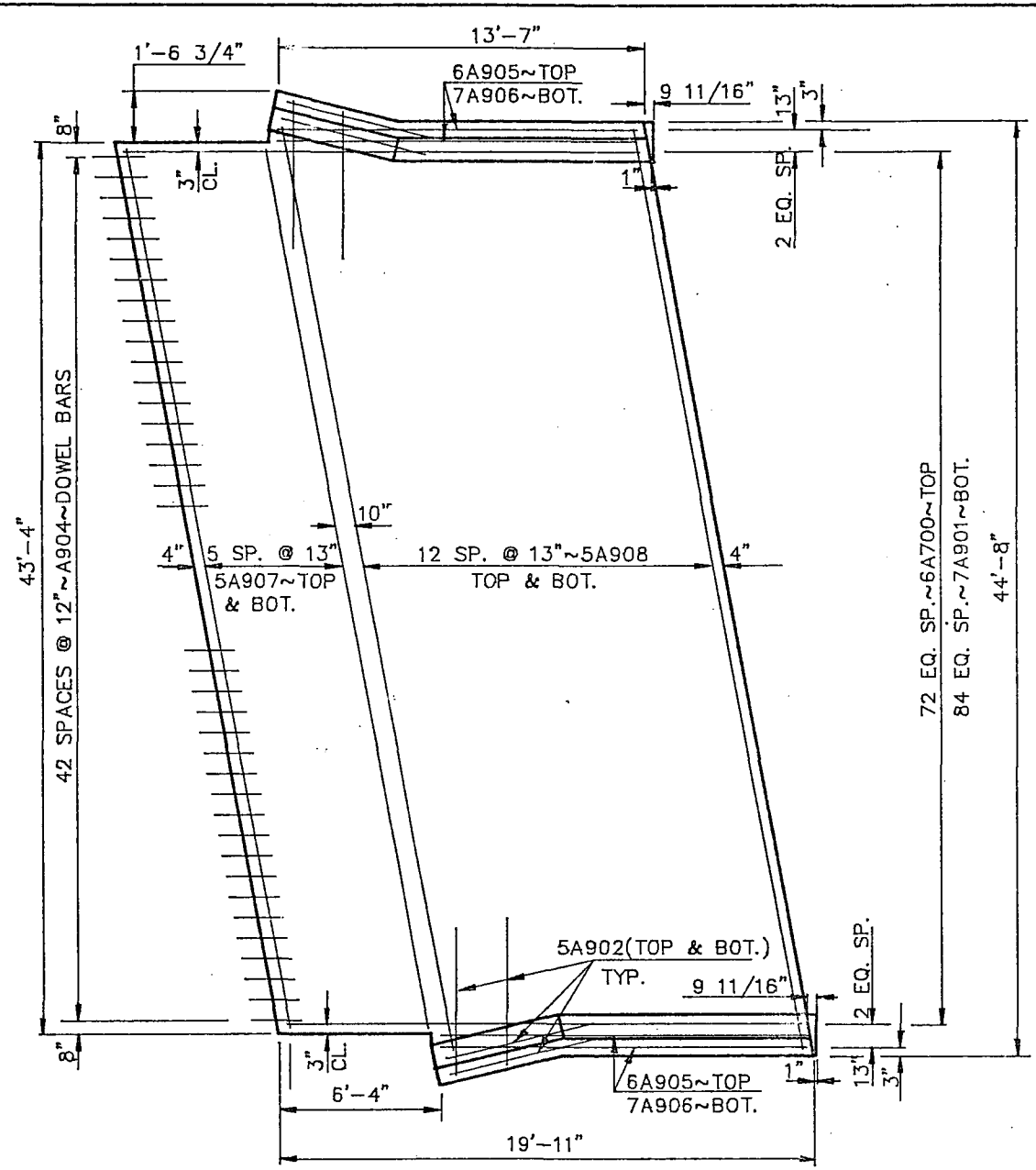
BAR LIST - EXIT SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	73	19'-7"
7	A901	85	19'-7"
5	A902	16	4'-6"
4	A903	4	13'-3"
1 1/4"	A904	43	1'-6"
6	A905	4	13'-3"
7	A906	4	13'-3"
5	A907	12	49'-7"
5	A908	26	51'-2"
4	B902	56	2'-9"

ESTIMATED MATERIAL QUANTITIES

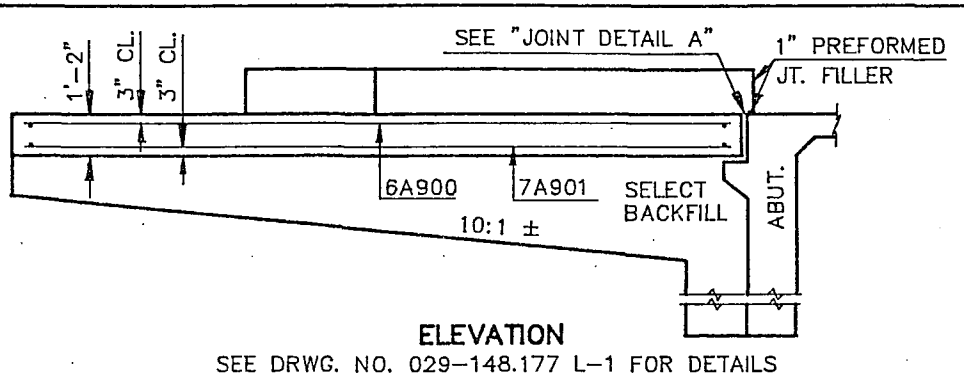
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,237	39.3

QUANTITIES	(ONE SLAB)
APPROACH SLAB	98.3 S.Y.

COUNTY DRAIN 11
APPROACH SLAB
 EXIT SLAB



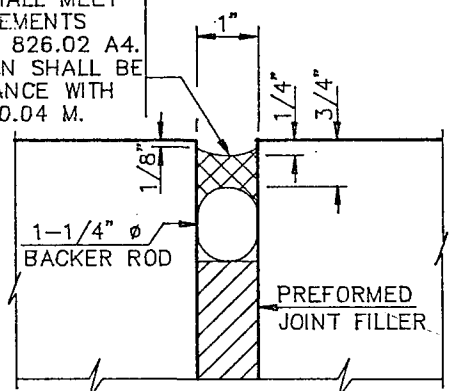
PLAN



ELEVATION

SEE DRWG. NO. 029-148.177 L-1 FOR DETAILS

LOW MODULUS SILICONE SEALANT SHALL MEET THE REQUIREMENTS OF SECTION 826.02 A4. INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 550.04 M.



JOINT DETAIL A

NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

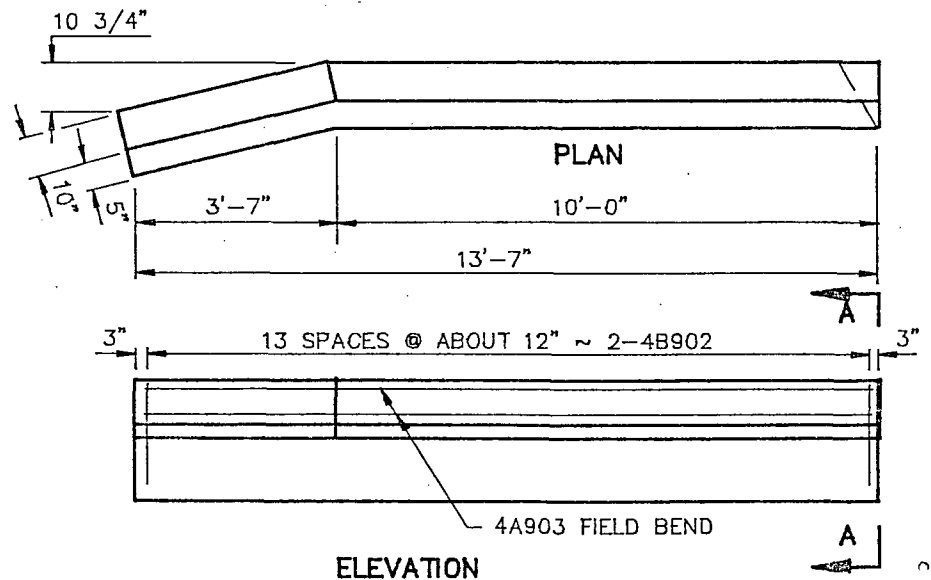
SURFACE FINISH "D" SHALL BE REQUIRED FOR ALL SURFACES OF THE CURB TRANSITIONS.

CARE SHALL BE TAKEN THAT THIS APPROACH SLAB BE PLACED ON THE EXIT END OF THE ROADWAY STRUCTURE.

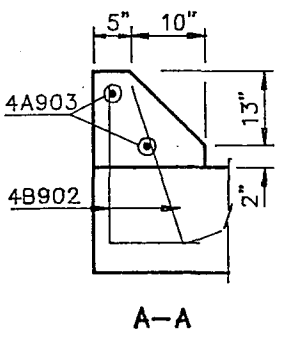
A MECHANICAL OR HAND-HELD TRANSVERSE METAL TIME FINISH SHALL BE APPLIED. A SURFACE TOLERANCE OF 3/16" IN 10 FEET IS ALSO REQUIRED. TILING SHALL BEGIN 3 INCHES FROM THE BEGINNING AND END OF THE APPROACH SLABS.

SPALL REPAIR: THE ENDS OF THE BRIDGE SLABS HAVE SPALLED. THE SPALL SHALL BE SANDBLASTED TO REMOVE ALL UNSOUND CONCRETE. THE AREA SHALL BE RESTORED WITH "SIKA REPAIR 223" SUPPLIED BY THE SIKA CORPORATION. ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR THE SPALL SHALL BE INCIDENTAL TO THE PRICE BID FOR "APPROACH SLAB (REMOVE AND REPLACE)".

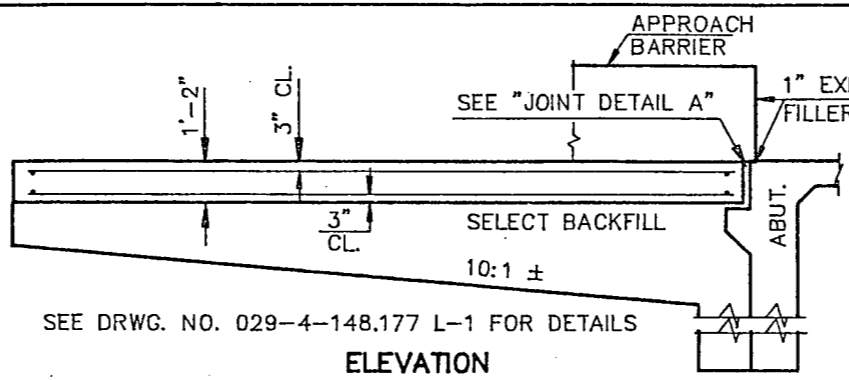
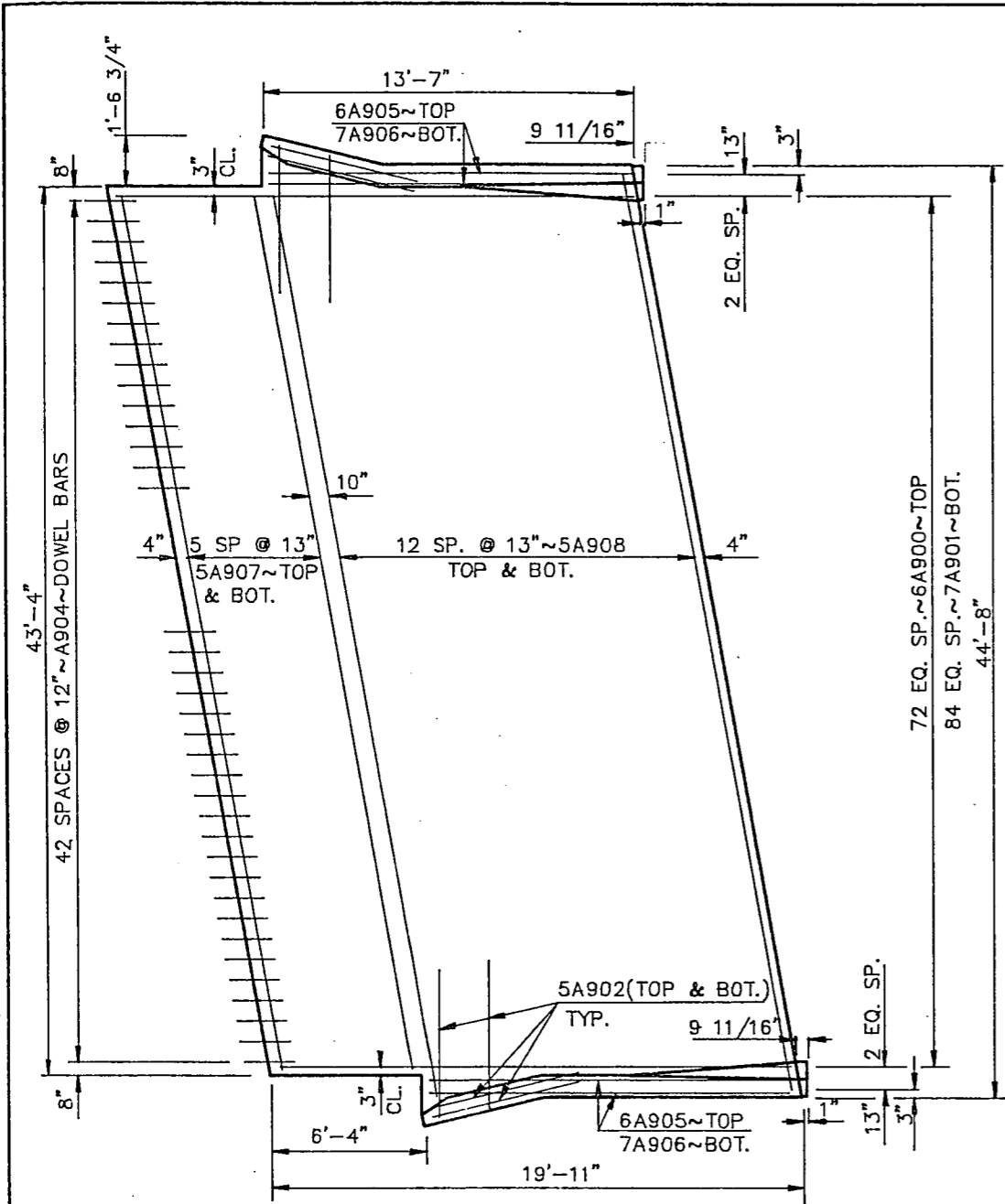
ALL DOWEL BARS SHALL BE EPOXY COATED AND CONFORM TO AASHTO M-254 TYPE B. FREE ENDS OF TYPE B EPOXY COATED DOWELS (MINIMUM OF ONE-HALF OF DOWEL LENGTH PLUS 2 INCHES) SHALL BE GIVEN A THIN UNIFORM COATING OF GREASE. THIS COATING SHALL BE APPLIED WITHIN TWO HOURS BEFORE COVERING WITH CONCRETE.



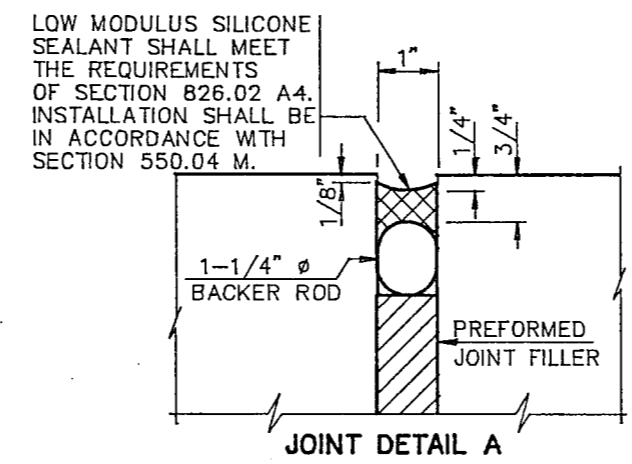
ELEVATION



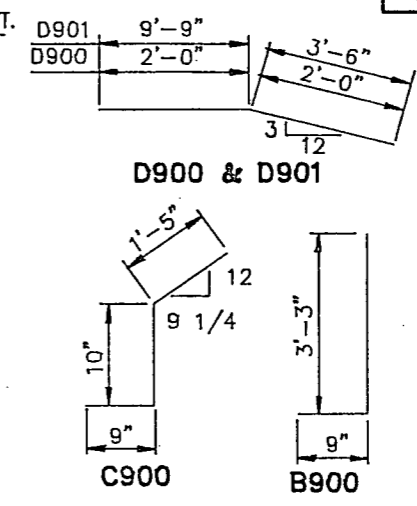
A-A



SEE DRWG. NO. 029-4-148.177 L-1 FOR DETAILS



LOW MODULUS SILICONE SEALANT SHALL MEET THE REQUIREMENTS OF SECTION 826.02 A4. INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 550.04 M.



NOTE:
A MECHANICAL OR HAND-HELD TRANSVERSE METAL TINE FINISH SHALL BE APPLIED. A SURFACE TOLERANCE OF 3/16" IN 10 FEET IS ALSO REQUIRED. TINING SHALL BEGIN 3 INCHES FROM THE BEGINNING AND THE END OF THE APPROACH SLABS.

ALL DOWEL BARS SHALL BE EPOXY COATED AND CONFORM TO AASHTO M-254 TYPE B. FREE ENDS OF TYPE B EPOXY COATED DOWELS (MINIMUM OF ONE-HALF OF DOWEL LENGTH PLUS 2 INCHES) SHALL BE GIVEN A THIN UNIFORM COATING OF GREASE. THIS COATING SHALL BE APPLIED WITHIN TWO HOURS BEFORE COVERING WITH CONCRETE.

WIDTH = 42'-2" CL RDWY.
SKEW ANGLE = 30°

BAR LIST - ENTRANCE SLAB

SIZE	MARK	NO.	LENGTH
6	A900	73	19'-7"
7	A901	85	19'-7"
5	A902	16	4'-6"
4	A903	4	13'-3"
1 1/4"	A904	43	1'-6"
6	A905	4	13'-3"
7	A906	4	13'-3"
5	A907	12	49'-7"
5	A908	26	51'-2"
4	B900	112	4'-0"
4	C900	18	3'-0"
4	D900	4	4'-0"
4	D901	12	13'-3"

ESTIMATED MATERIAL QUANTITIES

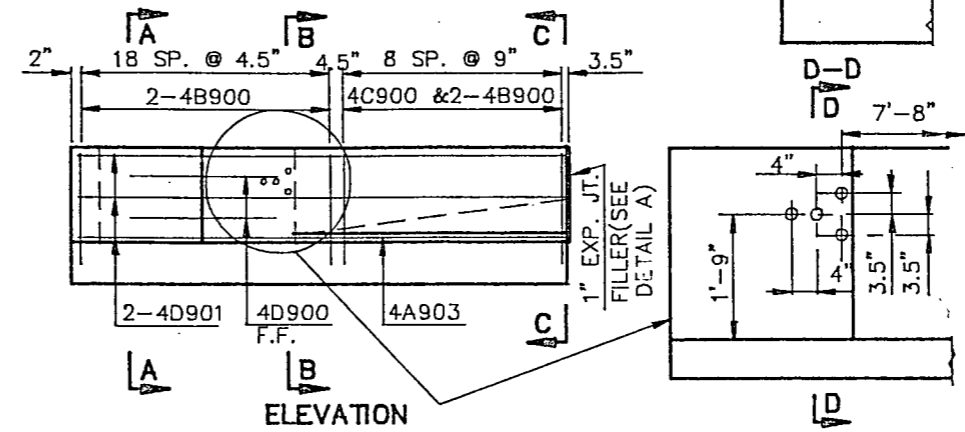
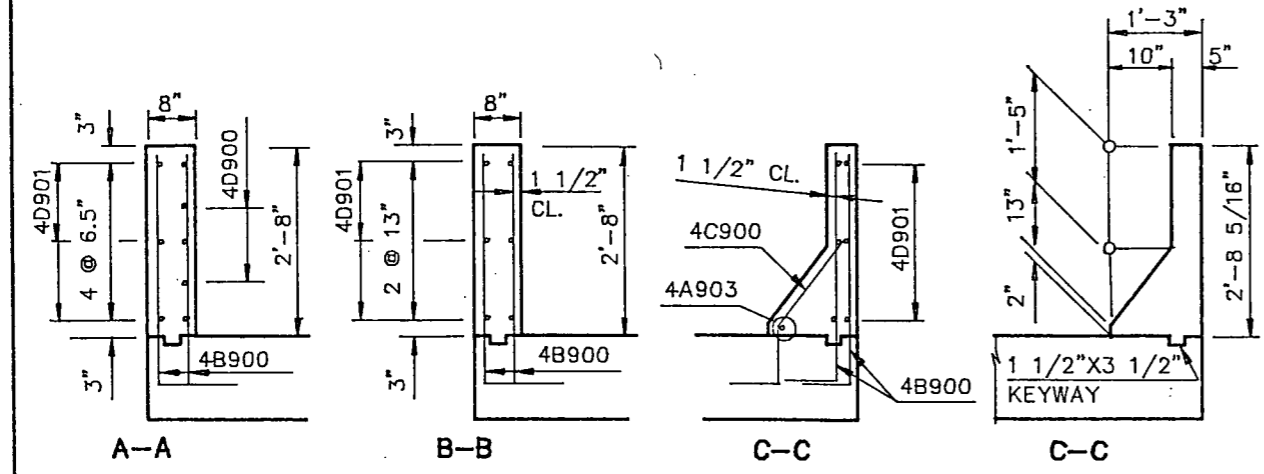
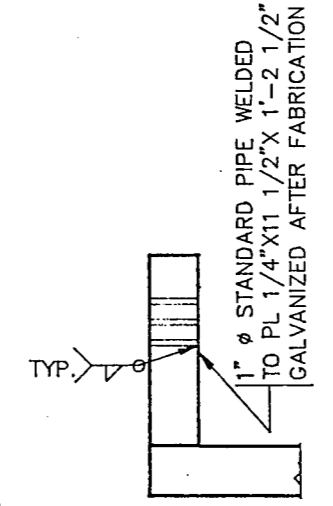
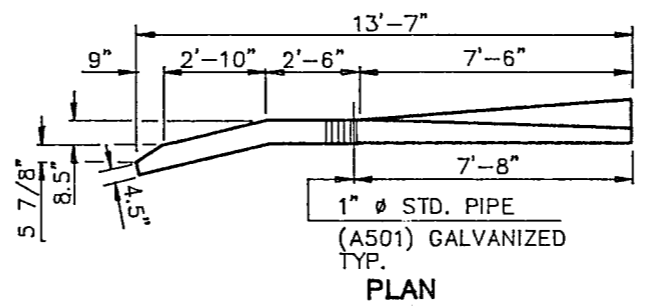
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,512	40.0

NOTES:
THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND THE APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

SURFACE FINISH "D" SHALL BE REQUIRED FOR ALL SURFACES OF THE CURB TRANSITIONS.

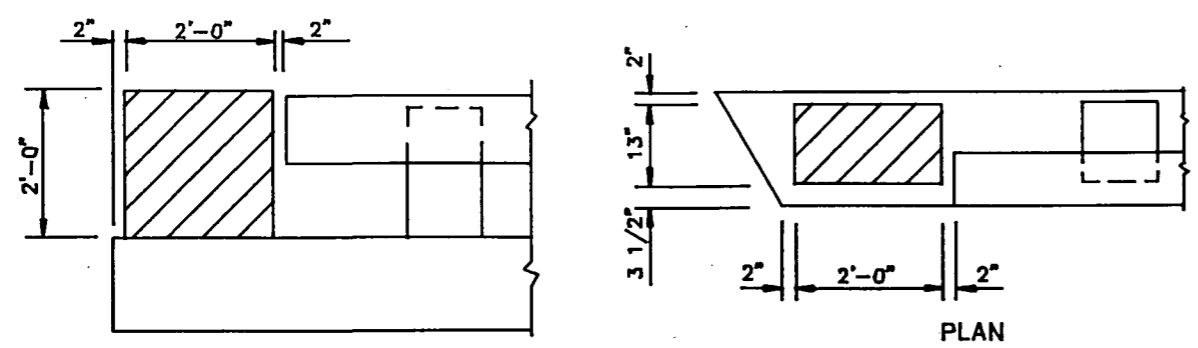
CARE SHALL BE TAKEN THAT THIS APPROACH SLAB SHALL BE PLACED ON THE ENTRANCE END OF BOTH ROADWAY STRUCTURES.



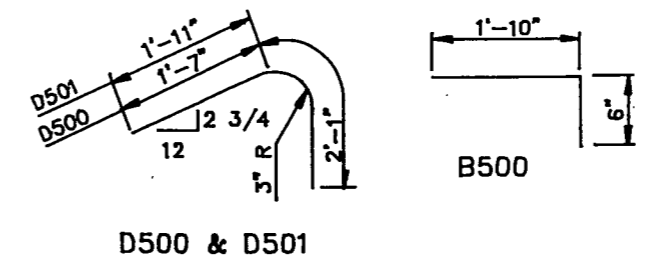
QUANTITIES	(ONE SLAB)
APPROACH SLAB	98.3 S.Y.

COUNTY DRAIN 11
APPROACH SLAB
ENTRANCE SLAB

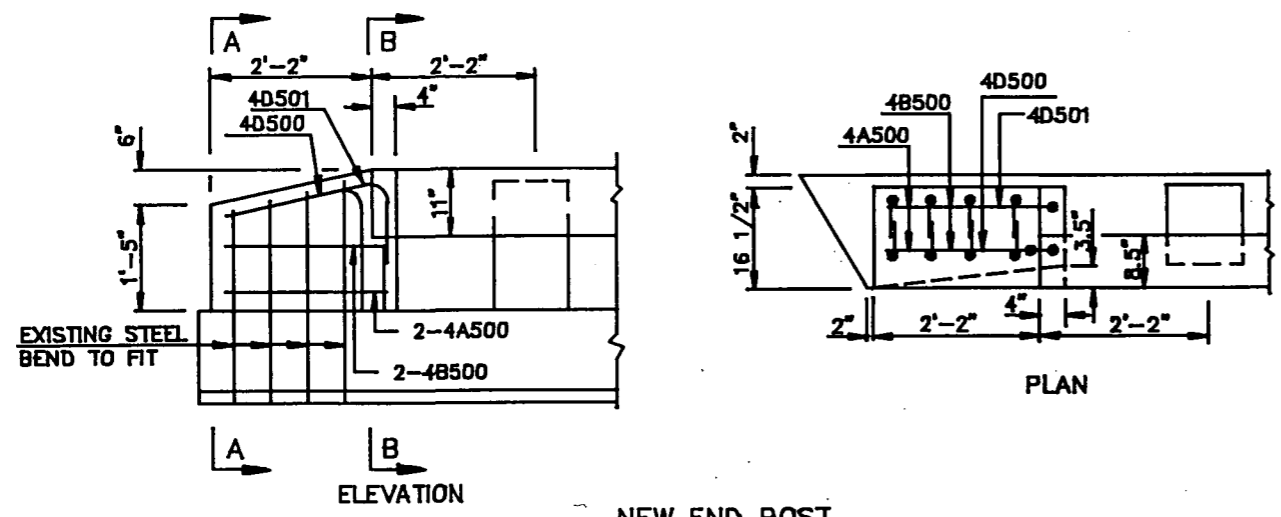
BAR LIST (ONE POST)				
SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	2	1'-10"	STR.
4	B500	2	2'-4"	BENT
4	D500	1	3'-8"	BENT
4	D501	1	4'-0"	BENT



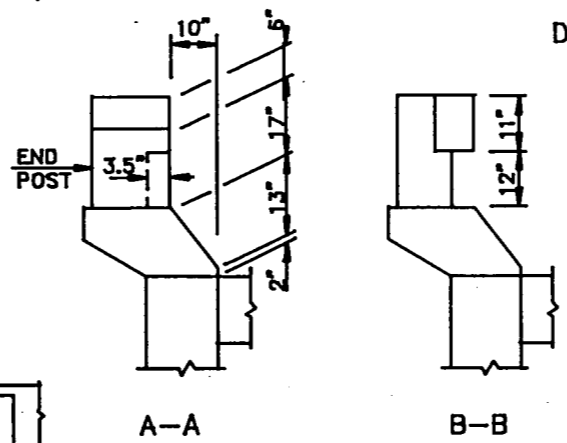
ELEVATION
SHOWING END POST REMOVAL LIMITS



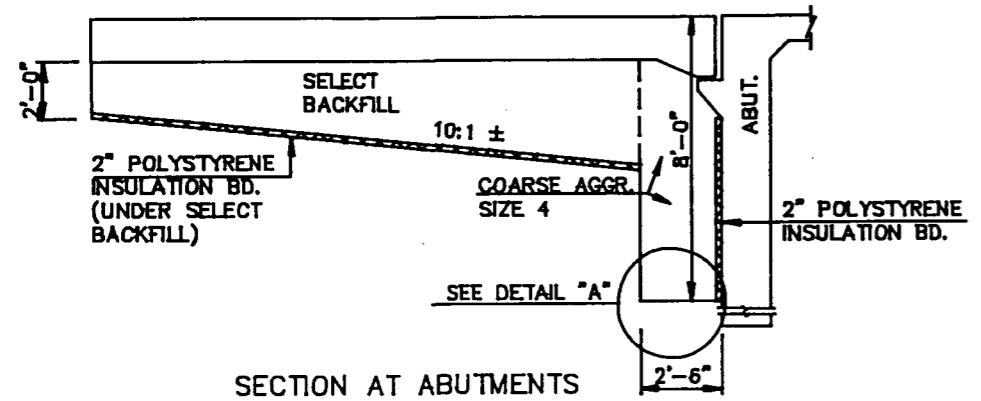
BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT



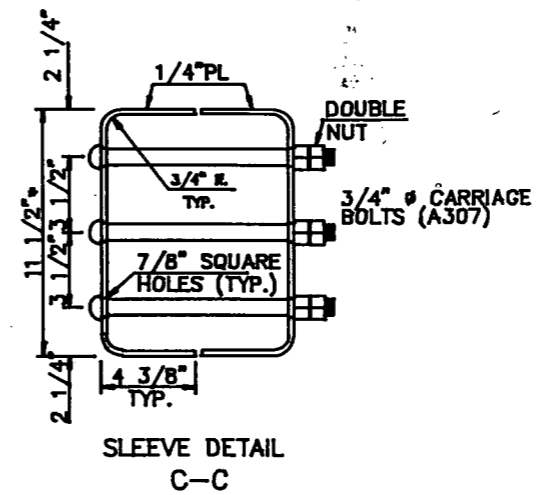
NEW END POST



SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0100	CLASS 1 EXCAVATION	CU.YD.	240.0
210	0200	SELECT BACKFILL	CU.YD.	181.0
550	0217	BRIDGE APPR. SLAB (REMOVE & REPL.)	SQ.YD.	173.8
560	2022	COARSE AGGREGATE SIZE 4	TON	111.1
602	1210	BRIDGE END POST MODIFICATION	EA.	2.0
714	9730	UNDERDRAIN, PIPE PVC PERFORATED 6 IN	LFT.	100.0
714	9771	UNDERDRAIN, PIPE PVC NONPRFTD 6 IN	LFT.	64.0
744	0100	POLYSTYRENE INSULATION BOARD	BD.FT.	3,804.2
920	1220	GEOTEXTILE FILTER FABRIC	SQ.YD.	105.0



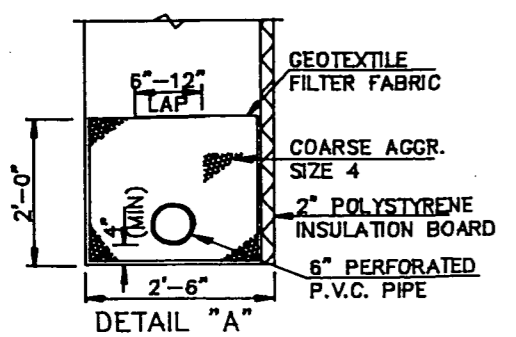
SECTION AT ABUTMENTS



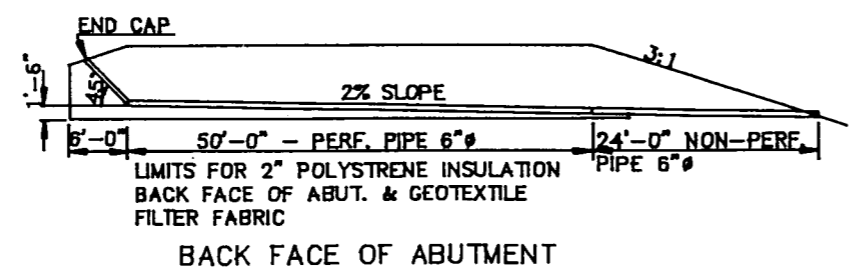
SLEEVE DETAIL
C-C

NOTE:
PL & BOLTS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153. (ALL STEEL ~ M183)

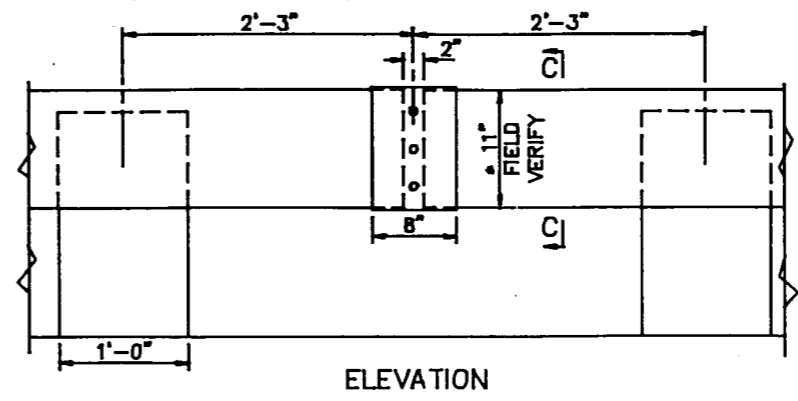
NOTE:
THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60. THE EXISTING END POSTS AT THE TRAFFIC ENTRANCE END SHALL BE REMOVED AND PROPERLY DISPOSED OF. THE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, LABOR, AND EQUIPMENT INCLUDING CONCRETE AND REINFORCING BARS REQUIRED TO REMOVE AND REPLACE THE END POSTS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE END POST MODIFICATION". (1)



DETAIL "A"



BACK FACE OF ABUTMENT

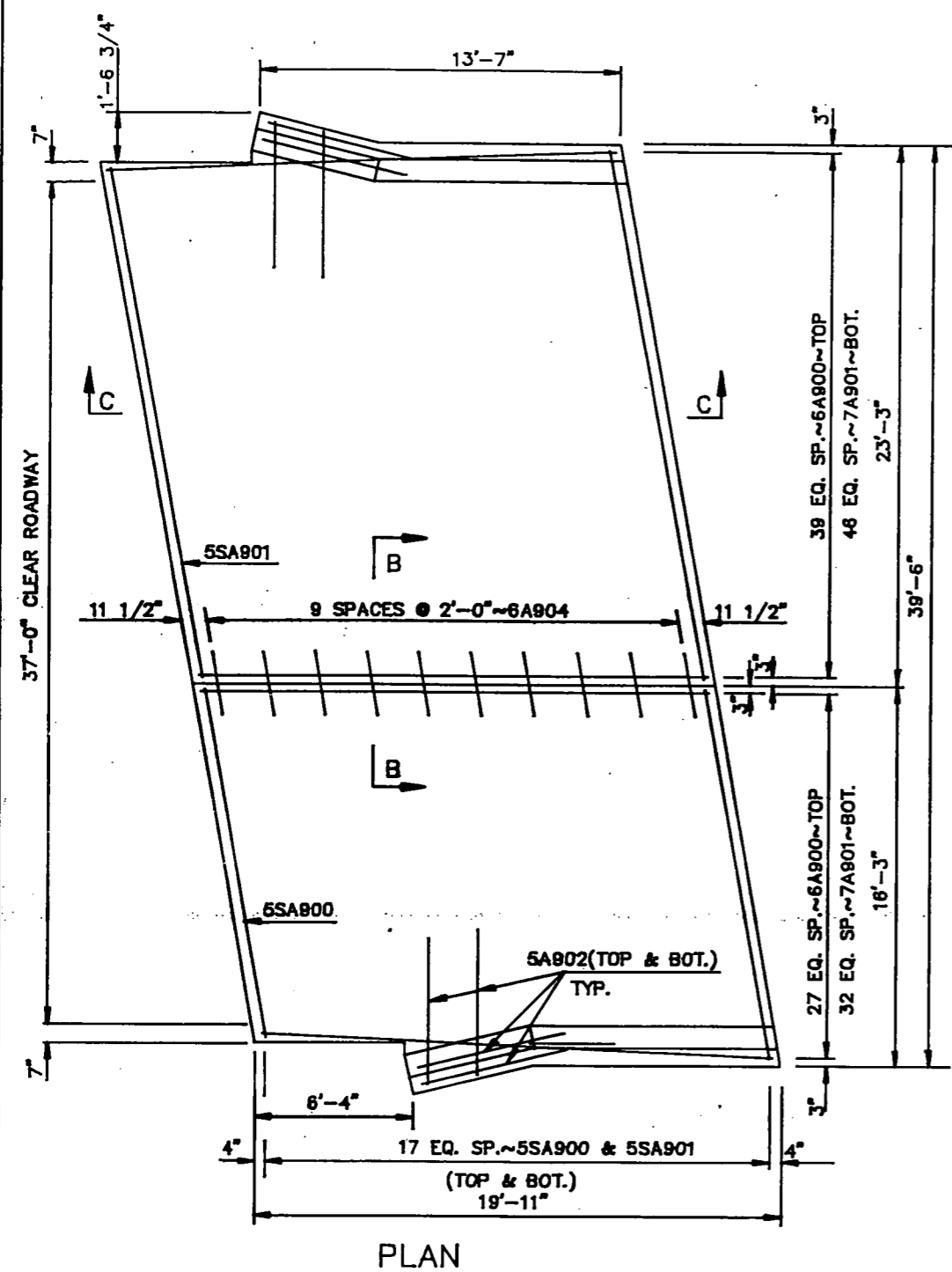


ELEVATION

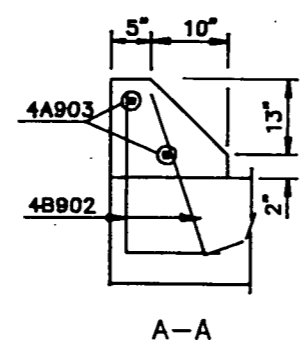
* FABRICATE 1/4" PL ACCORDINGLY TO FIELD VERIFICATION OF E-RAIL SLEEVE REQUIRED AT EACH RAIL JOINT

QUANTITIES 2 POSTS	
(1) REMOVAL OF CONCRETE	0.3 C.YD.
(1) CLASS AE-3 CONCRETE	0.4 C.YD.
(1) REINFORCING STEEL	22 LBS.
(1) SLEEVE	2 EA.

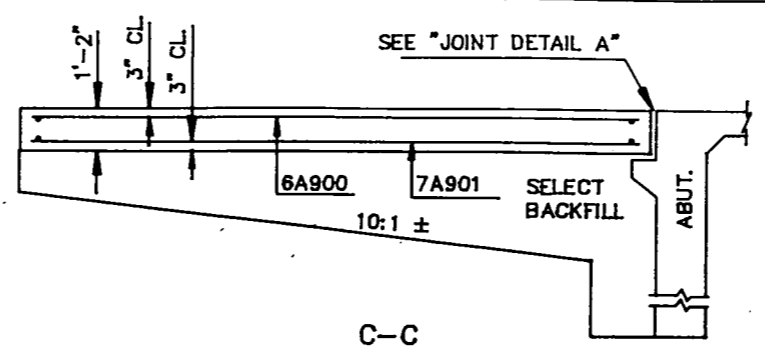
COUNTY DRAIN 11
END POST DETAILS



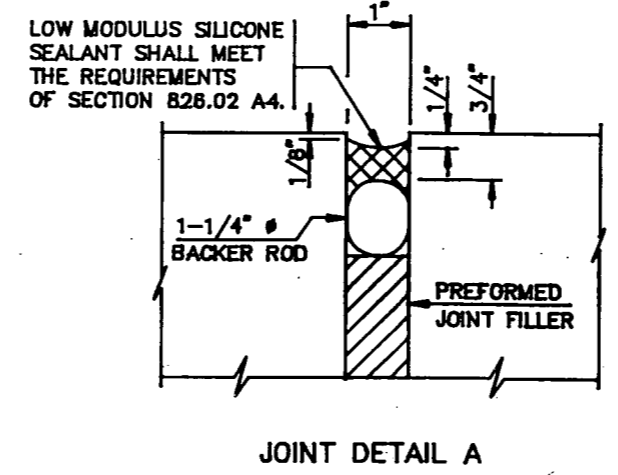
PLAN



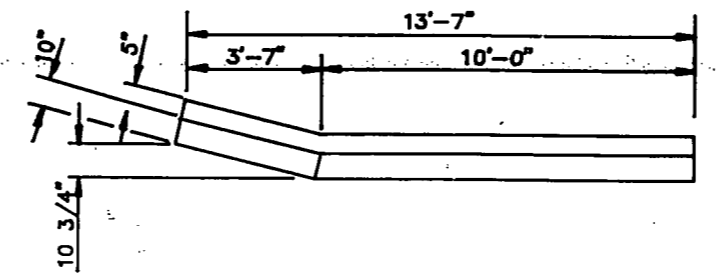
A-A



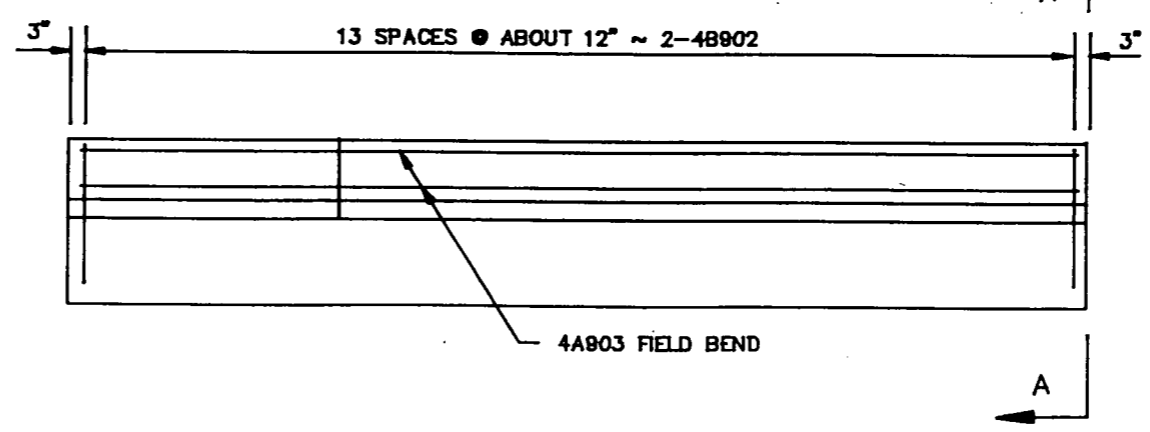
SEE DRWG. NO. 029-148.171 RT-1 FOR DETAILS



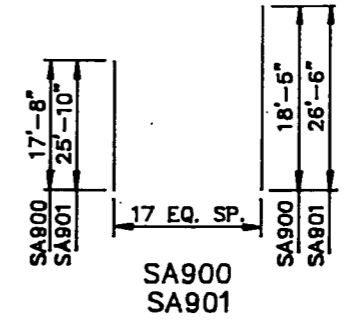
JOINT DETAIL A



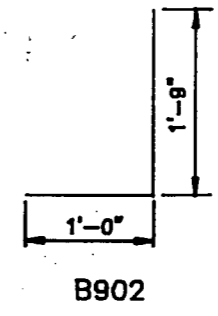
PLAN



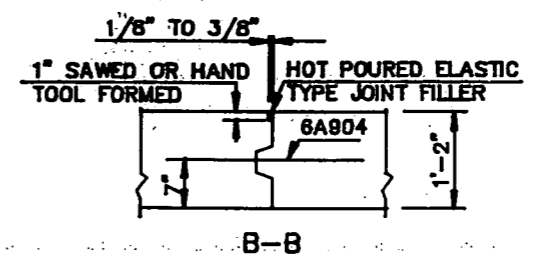
ELEVATION



SA900
SA901



B902



B-B

WIDTH = 37'-0" CL. RDWY.
SKEW ANGLE = 30°

BAR LIST - EXIT SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	68	19'-7"
7	A901	80	19'-7"
5	A902	16	4'-6"
4	A903	4	13'-3"
8	A904	10	2'-6"
5	SA900	2	324'-9"
5	SA901	2	471'-0"
4	B902	56	2'-9"

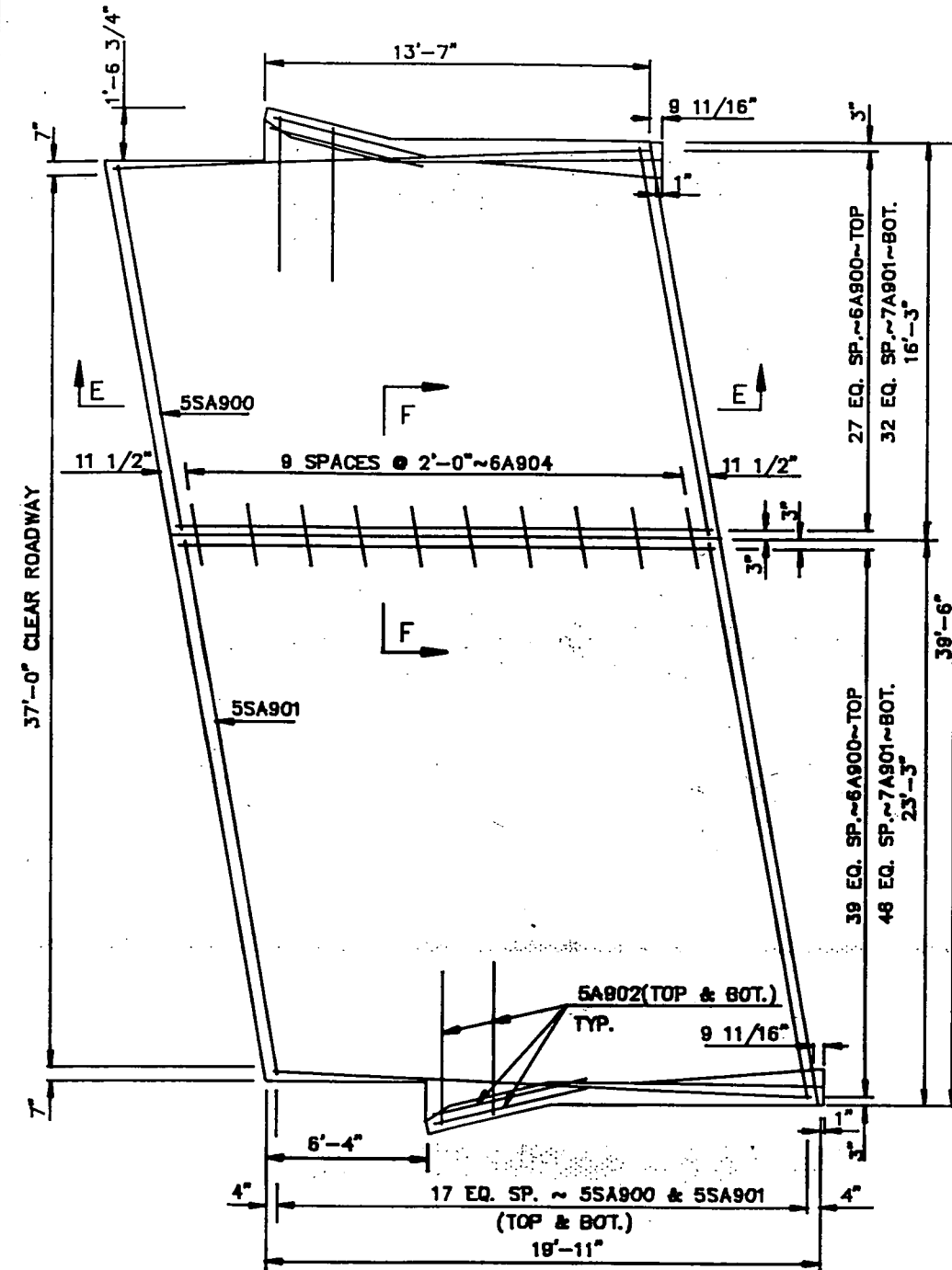
ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
7,113	34.8

NOTES:
THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

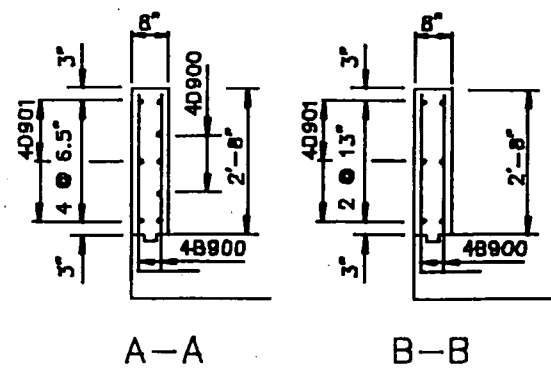
THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

NOTE:
CARE SHALL BE TAKEN THAT THIS APPROACH SLAB BE PLACED ON THE EXIT END OF THE ROADWAY STRUCTURE.

QUANTITIES (ONE SLAB)	
APPROACH SLAB	86.9 S.Y.
COUNTY DRAIN 11	
APPROACH SLAB	
EXIT SLAB	

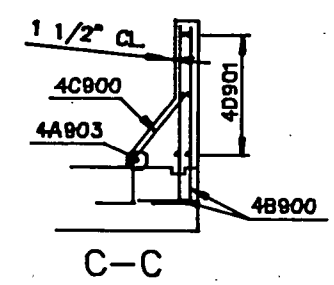


PLAN

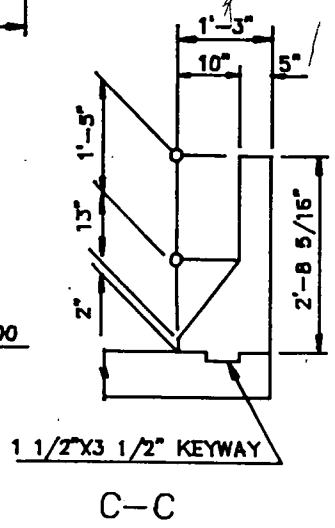


A-A

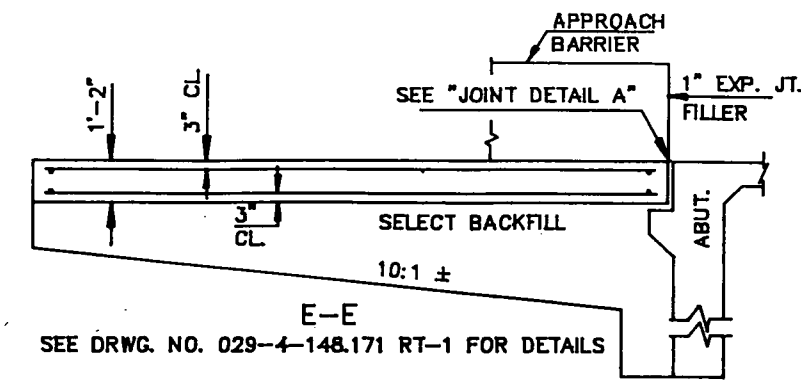
B-B



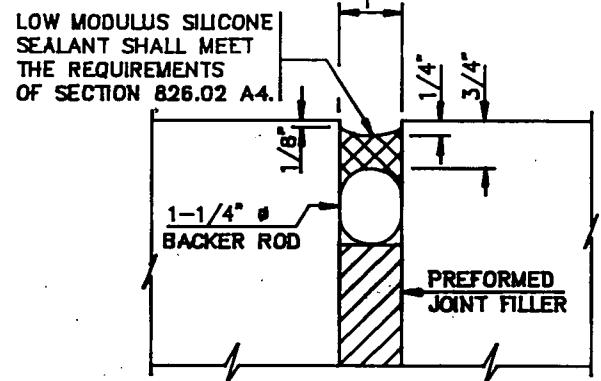
C-C



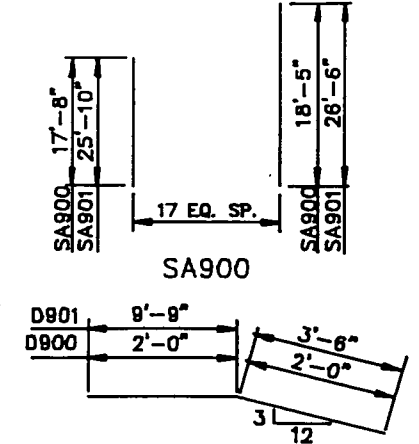
C-C



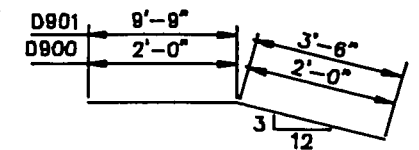
SEE DRWG. NO. 029-4-148.171 RT-1 FOR DETAILS



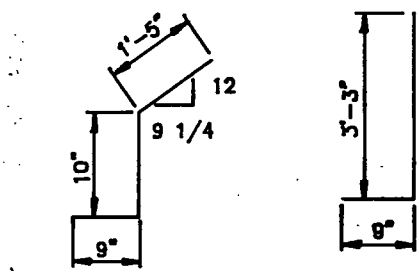
JOINT DETAIL A



SA900

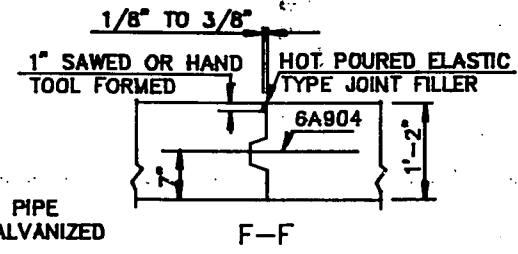


D900 & D901

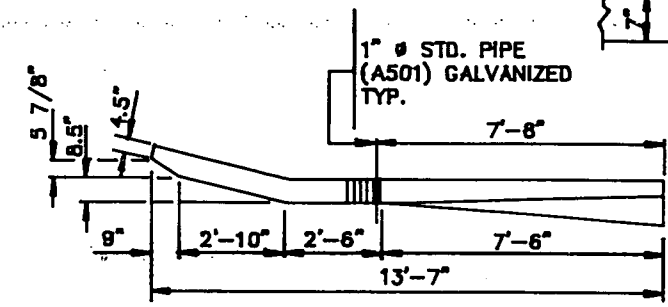


C900

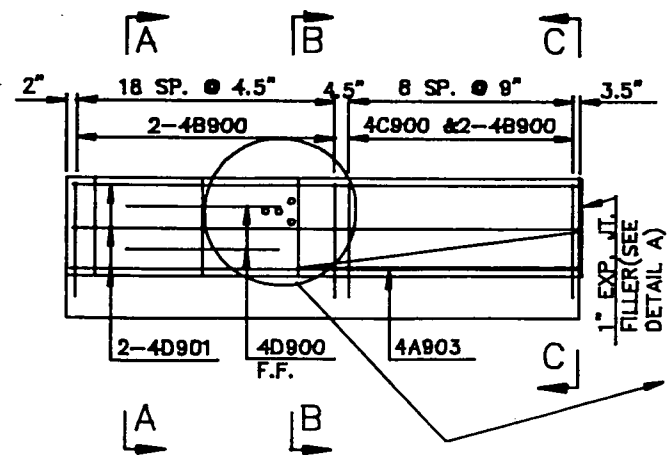
B900



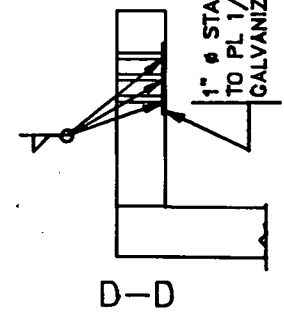
F-F



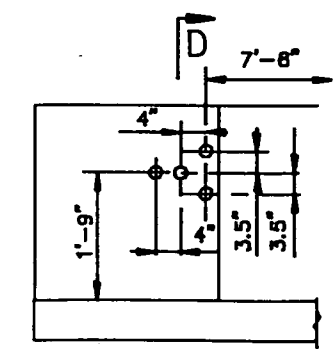
PLAN



ELEVATION



D-D



D

WIDTH = 37'-0" CL. RDWY.
SKEW ANGLE = 30°

BAR LIST - ENTRANCE SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	68	19'-7"
7	A901	80	19'-7"
5	A902	16	4'-6"
4	A903	2	7'-6"
6	A904	10	2'-6"
4	B900	112	4'-0"
4	C900	18	3'-0"
4	D900	4	4'-0"
4	D901	12	13'-3"
5	SA900	2	324'-9"
5	SA901	2	471'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
7,437	35.6

NOTES:
THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND THE APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

NOTE:
CARE SHALL BE TAKEN THAT THIS APPROACH SLAB SHALL BE PLACED ON THE ENTRANCE END OF BOTH ROADWAY STRUCTURES.

QUANTITIES (ONE SLAB)	
APPROACH SLAB	86.9 S.Y.
COUNTY DRAIN 11	
APPROACH SLAB	
ENTRANCE SLAB	

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PROJECT NO. 1-10-29-4-26-147
 COUNTY & DATE WALSH & GRAND FORKS NOV 12 1971
 LENGTH & TYPE 14 353 MILES PCC PJMT

SHEET NO. 1 OF 3

ABSTRACT OF BIDS RECEIVED

COMPLETION TIME BY SEPT, 1 1972

ENGINEER'S ESTIMATE

BIDDER
 WM. COLLINS & SONS, INC.
 Fargo, North Dakota

BIDDER
 SCHULTZ & LINDSAY CONSTR.
 Dickinson, North Dakota

SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	ENGINEER'S ESTIMATE		BIDDER		BIDDER	
				BID PRICE	AMOUNT	C.C. Bond	Rank 1	C.C. Bond	Rank 2
216	ATER								
234	HYDRATED LIME	M GAL	1388	300	416400				
234	LIME TREATED SUBGRADE	TON	87	3800	330600	300	416400	200	277600
230	SUBGRADE PREPARATION-TYPE V	SQ YD	4800	18	86400	5000	435000	3500	304500
230	SUBGRADE PREPARATION-TYPE II	SQ YD	416910	11	4586076	50	240000	20	96000
550	IN. NON-REINF. CONC. PVMT. CL. YE-1 CEM. INCL.	MILE	962	25000	24050	12	5002992	10	4169160
550	IN. CONT. REINF. CONC PVMT-CL. YE-1 CEM & STEEL INCL.	SQ YD	7430	500	3715000	50000	48100	40000	38480
550	IN. NON-REINF. CONCRETE PAVEMENT-CL. YE-1 CEM INCL.	SQ YD	352619	560	19746640	590	4383700	560	4160800
550	IN. CONT. REINF. CONC. PVMT. CL. YE-1 CEM & STEEL INCL.	SQ YD	5982	600	3589200	550	193940450	613	216155447
550	OWELED EXPANSION JOINT ASSEMBLY	SQ YD	59294	400	23717600	610	3649020	670	4007940
550	FINGER TYPE EXPANSION JOINT	L FT	880	200	176000	550	32611700	500	29647000
550	PREF. COMPRESSION JOINT SEAL 5 IN.	EA	10	400000	4000000	210	184800	200	176000
550	PREF. COMPRESSION JOINT SEAL 1 3/16 IN.	L FT	146	600	87600	420000	4200000	400000	4000000
550	PREF. COMPRESSION JOINT SEAL 1 5/8 IN.	L FT	2826	60	169560	150	21900	3200	467200
612	REINFORCING STEEL-GRADE 40	L LB	1118	250	279500	70	197820	50	141300
610	CLASS AAF-3 CONCRETE-RAILING & POSTS	CU YD	4953	18	89154	280	313040	200	223600
610	CLASS AE-3 CONCRETE-SLAB SUPERSTRUCTURE	CU YD	3	20000	60000	18	89154	14	69342
616	STRUCTURAL STEEL A36	CU YD	41	8000	328000	30000	900000	20000	60000
750	LINSEED OIL TREATMENT	L LB	4809	43	216405	15000	615000	13000	533000
202	REMOVAL OF PORTINGS OF EXISTING STRUCTURE	GAL	8	600	4800	50	240450	60	288540
702	LOOSE ROCK RIPRAP	L SUM	1	200000	200000	1000	8000	500	4000
703	AGGREGATE CUSHION	CU YD	935	1000	935000	50000	50000	100000	100000
322	PLANT MIX BIT. BASE CL. 20	CU YD	300	700	210000	1000	935000	200	187000
322	120-150 A.C. FOR PLANT MIX BIT. BASE COURSE	TON	70575	400	28230000	900	270000	400	120000
401	SS1H OR SSKH EMULS. ASPH. FOR PRIME, FOG OR TACK COAT	TON	5033	3500	17615500	597	42133275	470	33170250
738	WOVEN WIRE FENCE	GAL	13325	21	279825	4000	20132000	4000	20132000
738	CORNER ASSEMBLY-WOVEN WIRE	L FT	638	70	44660	26	346450	22	293150
203	COMMON EXCAVATION-TYPE A	EA	2	10000	20000	50	31900	50	31900
202	REMOVAL OF CONCRETE PAVEMENT	CU YD	13720	100	1372000	5000	10000	5000	10000
754	BARRICADE SIGNS	SQ YD	5255	150	788250	100	1372000	75	1029000
746	FLAGGING	EA	1	22000	22000	150	788250	100	525500
756	FIELD LABORATORY-TYPE A	M HR	300	260	78000	20000	20000	20000	20000
756	FIELD LABORATORY-TYPE R	EA	1	100000	100000	260	78000	260	78000
762	TRCE. & PROTECTION OF TRAFFIC-INTERSTATE SURFACING	EA	1	120000	120000	150000	150000	200000	200000
705	UTILIZATION	L SUM	1	300000	300000	180000	180000	100000	100000
900	TRAINEE	M HR	1000	5000000	5000000	4000000	4000000	6000000	6000000
TOTAL SUM BID					294738220		318664401		326996709

ACTION TAKEN BY STATE HIGHWAY COMMISSION:

AWARD TO:

WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

ABSTRACT OF BIDS RECEIVED

PROJECT NO. I-1G-29-4-26-147
 COUNTY & DATE WALSH & GRAND FORKS NOV 12 1971
 LENGTH & TYPE 14 353 MILES PCC PJMT

SHEET NO. 1 OF 3

COMPLETION TIME BY SEPT. 1 1972

SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	BIDDER NORTHERN IMPROVEMENT CO. Fargo, North Dakota		BIDDER WOODRICH CONSTR. CO. Hopkins, Minnesota		BIDDER MALLETT CONSTR. CO. Crosby, Minnesota	
				Rank 3		Rank 4		Rank 5	
				BID PRICE	AMOUNT	BID PRICE	AMOUNT	BID PRICE	AMOUNT
216	WATER	M GAL	1388	300	416400	300	416400	350	485800
234	HYDRATED LIME	TON	87	4200	365400	5000	435000	5000	435000
234	LIME TREATED SUBGRADE	SQ YD	4800	32	153600	50	240000	40	192000
230	SUBGRADE PREPARATION-TYPE V	SQ YD	416916	9	3752244	10	4169160	15	6253740
230	SUBGRADE PREPARATION-TYPE II	MILE	962	90000	86580	100000	96200	50000	48100
550	IN. NON-REINF. CONC. PVMT. CL. YE-1 CEM. INCL.	SQ YD	7430	490	3640700	600	4458000	556	4131080
550	IN. CONT. REINF. CONC. PVMT-CL. YE-1 CEM & STEEL INCL.	SQ YD	352619	627	221092113	650	229202350	659	232375921
550	IN. NON-REINF. CONCRETE PAVEMENT-CL. YE-1 CEM INCL.	SQ YD	5982	700	4187400	700	4187400	630	3768660
550	IN. CONT. REINF. CONC. PVMT. CL. YE-1 CEM & STEEL INCL.	SQ YD	59294	580	34390520	600	35576400	570	3379750
550	WHEELED EXPANSION JOINT ASSEMBLY	EA	880	220	193600	220	193600	185	162800
550	FINGER TYPE EXPANSION JOINT	EA	10	370000	370000	400000	400000	460000	460000
550	PREF. COMPRESSION JOINT SEAL 5 IN.	EA	146	3800	554800	3800	554800	3750	547500
550	PREF. COMPRESSION JOINT SEAL 1 3/16 IN.	EA	2826	45	127170	70	197820	75	240210
550	PREF. COMPRESSION JOINT SEAL 1 5/8 IN.	EA	1118	200	223600	220	245960	250	279500
612	REINFORCING STEEL-GRADE 40	LB	4953	25	123825	20	99000	30	148500
610	CLASS AAE-3 CONCRETE-RAILING & POSTS	CU YD	3	32500	97500	30000	90000	30000	90000
610	CLASS AE-3 CONCRETE-SLAB SUPERSTRUCTURE	CU YD	41	12000	492000	14000	574000	15000	615000
616	STRUCTURAL STEEL A36	LB	4809	75	360675	70	336630	100	480900
750	INSEED OIL TREATMENT	GAL	8	600	4800	500	4000	800	6400
202	REMOVAL OF PORTINGS OF EXISTING STRUCTURE	L SUM	1	450000	450000	200000	200000	400000	400000
702	LOOSE ROCK RIPRAP	CU YD	935	400	374000	600	561000	675	631125
703	AGGREGATE CUSHION	CU YD	300	500	150000	800	240000	675	202500
322	PLANT MIX BIT, BASE CL. 20	TON	70575	420	29641500	455	32111625	595	37757625
322	120-150 A.C. FOR PLANT MIX BIT, BASE COURSE	TON	5033	4100	20635300	3900	19628700	4300	21641900
401	SSSH OR SSKH EMULS. ASPH. FOR PRIME, FOG OR TACK COAT	GAL	13325	25	333125	26	346450	25	333125
738	EVEN WIRE FENCE	EA	638	85	54230	75	47850	120	76560
738	CORNER ASSEMBLY-WOVEN WIRE	EA	2	15000	30000	10000	20000	7500	15000
203	COMMON EXCAVATION-TYPE A	CU YD	13720	70	960400	100	1372000	100	1372000
202	REMOVAL OF CONCRETE PAVEMENT	SQ YD	5255	140	735700	100	525500	185	972175
754	BARRICADE SIGNS	EA	1	20000	20000	20000	20000	30000	30000
746	FLAGGING	M HR	300	260	78000	260	78000	260	78000
756	FIELD LABORATORY-TYPE A	EA	1	120000	120000	150000	150000	200000	200000
756	FIELD LABORATORY-TYPE B	EA	1	100000	100000	100000	100000	200000	200000
762	TRCE. & PROTECTION OF TRAFFIC-INTERSTATE SURFACING	L SUM	1	800000	800000	200000	200000	550000	550000
705	MOBILIZATION	L SUM	1	6000000	6000000	8000000	8000000	4500000	4500000
900	TRAINING	M HR	1000	80	80000	80	80000	80	80000
TOTAL SUB BID					334525182		348757905		357698791

ACTION TAKEN BY STATE HIGHWAY COMMISSION:

AWARD TO:

WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

SHEET NO. **3** OF **3**

ABSTRACT OF BIDS RECEIVED

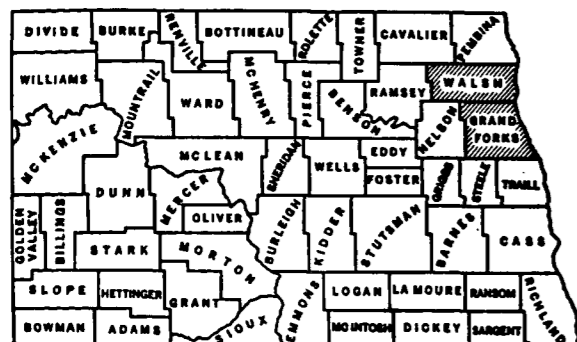
PROJECT NO 1-16-29-4-26-147		NO. 1		BIDDER JOE MAYO & SON, INC. Cavalier, North Dakota		BIDDER WESTERN CONTRACTING CORP. Sioux City, Iowa		BIDDER S & S CONSTR. CO. Moorhead, Minnesota	
COUNTY & DATE WALSH & GRAND FORKS NOV 12 1971				C.C. Bond Rank 6		C.C. Bond Rank 7		C.C. Bond Rank 8	
LENGTH & TYPE 14 353 MILES PCC PJMT									
COMPLETION TIME BY SEPT. 1 1972									
SPEC. NO.	ITEM DESCRIPTION	UNIT	QUANTITY	BID PRICE	AMOUNT	BID PRICE	AMOUNT	BID PRICE	AMOUNT
216	WATER	M GAL	1388	350	485800	300	416400	300	416400
234	HYDRATED LIME	TON	87	5000	435000	5000	435000	4000	348000
234	LINE TREATED SUBGRADE	SQ YD	4800	50	240000	100	480000	17	81600
230	SUBGRADE PREPARATION-TYPE V	SQ YD	416916	12	5002992	15	6253740	10	4169160
230	SUBGRADE PREPARATION-TYPE II	MILE	962	50000	48100	300000	288600	37500	36075
550	IN. NON-REINF. CONC. PVMT. CL. YE-1 CEM. INCL.	SQ YD	7430	620	4606600	800	5944000	613	4554590
550	IN. CONT. REINF. CONC PVMT-CL. YE-1 CEM & STEEL INCL	SQ YD	352619	655	230965445	690	243307110	911	321235909
550	IN. NON-REINF. CONCRETE PAVEMENT-CL. YE-1 CEM INCL	SQ YD	5982	700	4187400	800	4785600	840	5024880
550	IN. CONT. REINF. CONC. PVMT. CL. YE-1 CEM & STEEL INCL	SQ YD	59294	630	37355220	550	32611700	760	45063440
550	ROVELED EXPANSION JOINT ASSEMBLY	L FT	880	200	176000	300	264000	250	220000
550	FINGER TYPE EXPANSION JOINT	EA	10	400000	400000	400000	400000	400000	400000
550	PREF. COMPRESSION JOINT SEAL 5 IN.	FT	146	800	116800	1000	146000	3850	562100
550	PREF. COMPRESSION JOINT SEAL 1 3/16 IN.	FT	2826	45	127170	100	282600	70	197820
550	PREF. COMPRESSION JOINT SEAL 1 5/8 IN.	FT	1118	200	223600	300	335400	215	240370
612	REINFORCING STEEL-GRADE 40	LB	4953	30	148590	50	247650	30	148590
610	CLASS AAF-3 CONCRETE-RAILING & POSTS	CU YD	3	20000	60000	35000	105000	36000	108000
610	CLASS AE-3 CONCRETE-SLAB SUPERSTRUCTURE	CU YD	41	20000	820000	12500	512500	15000	615000
616	STRUCTURAL STEEL A36	LB	4809	100	480900	50	240450	90	432810
750	LINSEED OIL TREATMENT	GAL	8	1500	12000	2500	20000	700	5600
202	REMOVAL OF PORTINGS OF EXISTING STRUCTURE	L SUM	1	500000	500000	300000	300000	500000	500000
702	LOOSE ROCK RIPRAP	CU YD	935	800	748000	1200	1122000	850	794750
703	AGGREGATE CUSHION	CU YD	300	500	150000	800	240000	435	130500
322	PLANT MIX BIT, BASE CL. 20	TON	70575	549	38743675	600	42345000	463	32676225
322	120-150 A.C. FOR PLANT MIX BIT, BASE COURSE	TON	5033	4050	20383650	4400	22145200	3900	19628700
401	SS1H OR SSKH EMULS. ASPH. FOR PRIME, FOG OR TACK COAT	GAL	13325	28	373100	40	533000	26	346480
738	OVEN WIRE FENCE	L FT	638	100	63800	100	63800	50	31900
738	CORNER ASSEMBLY-OVEN WIRE	EA	2	10000	20000	20000	40000	9000	18000
203	COMMON EXCAVATION-TYPE A	CU YD	13720	100	1372000	100	1372000	100	1372000
202	REMOVAL OF CONCRETE PAVEMENT	SQ YD	5255	200	1051000	100	525500	250	1313750
754	BARRICADE SIGNS	EA	1	20000	20000	200000	200000	17500	17500
746	FLAGGING	M HR	300	260	78000	260	78000	260	78000
756	FIELD LABORATORY-TYPE A	EA	1	100000	100000	100000	100000	60000	60000
756	FIELD LABORATORY-TYPE B	EA	1	80000	80000	100000	100000	60000	60000
762	TRCE. & PROTECTION OF TRAFFIC-INTERSTATE SURFACING	L SUM	1	400000	400000	500000	500000	400000	400000
705	MOBILIZATION	L SUM	1	6000000	6000000	5000000	5000000	3500000	3500000
900	TRAINING	M HR	1000	80	80000	80	80000	80	80000
TOTAL SUM BID						359656842		375420250	448468119

ACTION TAKEN BY STATE HIGHWAY COMMISSION:

AWARD TO:

WHEN PRELIMINARY ARRANGEMENTS ARE COMPLETED.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
5	N.D.	I-IG-29-4(26)	1



SKETCH-MAP OF NORTH DAKOTA SHOWING COUNTIES



NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A
STATE HIGHWAY
IN WALSH & GRAND FORKS COUNTIES
FEDERAL AID PROJECT NO. I-IG-29-4(26)147
P.C.C. PAVEMENT & BITUMINOUS SHOULDERS

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
I-IG-29-4(26)	14.474	14.353
TOTALS	14.474	14.353

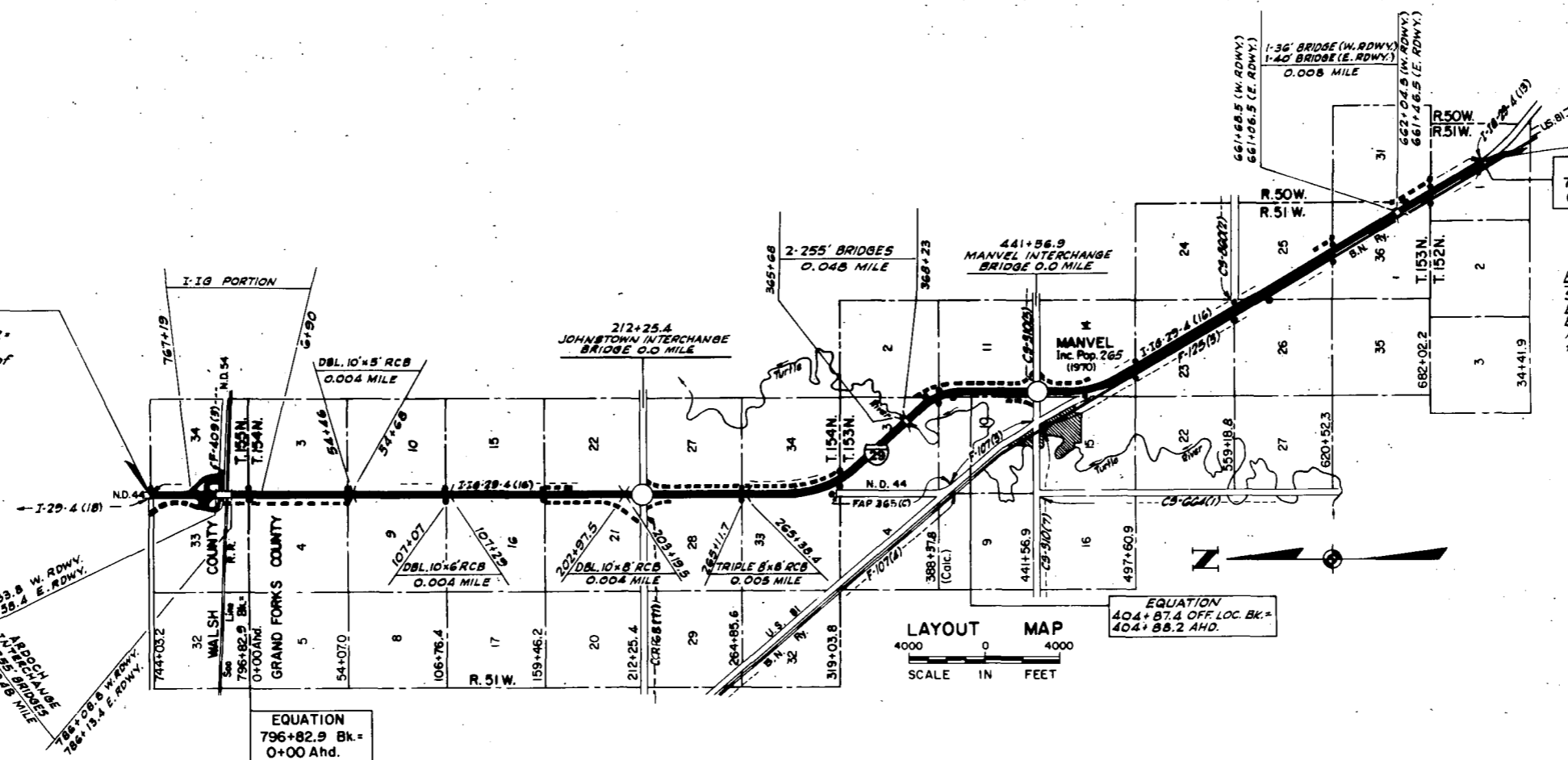
0.121 MILE DEDUCTED FOR STRUCTURES

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota State Highway Department July 1971. Required Contract Provision (Form PR-1273) dated October 1969 and others submitted herewith.

DESIGN DATA

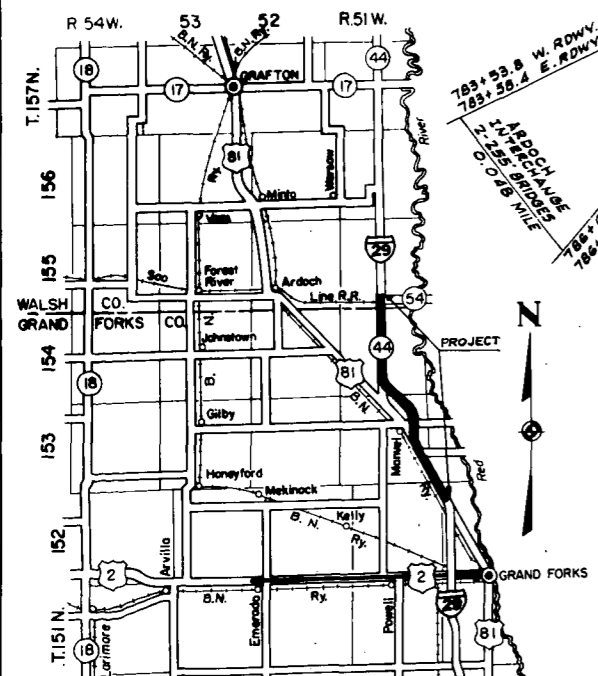
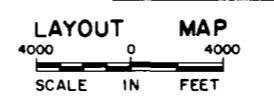
TRAFFIC	AVERAGE DAILY	EST. MTH MAX. MTH.
CURRENT TRAFFIC (1971)	3500 PASS. 500 TRUCKS 4000 TOTAL	520
TRAFFIC FORECAST (1991)	7000 PASS. 1000 TRUCKS 8000 TOTAL	1000
DESIGN SPEED	80 MPH	
TRAFFIC CLASSIFICATION	"M"	
MINIMUM SIGHT DISTANCE (STOPPING)	750'	
FULL CONTROL OF ACCESS.		
NO POINT OF ACCESS OTHER THAN BY RAMPS AT INTERCHANGES.		

BEG. PROJ. I-IG-29-4(26) 147
STA. 744+03.2 =
Beg. Proj. I-IG-29-4(16) 147 Sta. 744+03.2 =
End Proj. I-IG-29-4(18) 141 Sta. 744+03.2 =
A point 32.0' East of the N.W. Corner of
Sec. 34, Twp. 155 N., Rge. 51 W.



EQUATION
711+45.5 Bk.=
0+00 Ahd.

END PROJ. I-IG-29-4(26) 147
STA. 711+45.5 =
End Proj. I-IG-29-4(16) 147 Sta. 711+45.5 Bk.
Beg. Proj. I-IG-29-4(18) 141 Sta. 0+00 Ahd.
A point 3672.0' North and 2200.9' West of
the S.E. corner of Sec. 1, Twp. 152 N., Rge. 51 W.



SKETCH MAP OF PARTS OF WALSH & GRAND FORKS CO.'S.

APPROVED DATE 9/22/71
[Signature]
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER DATE

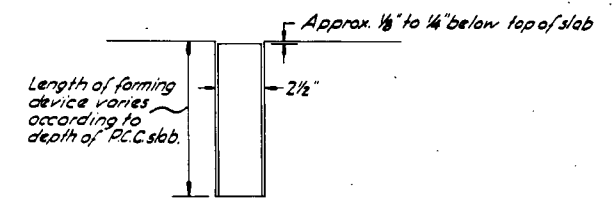
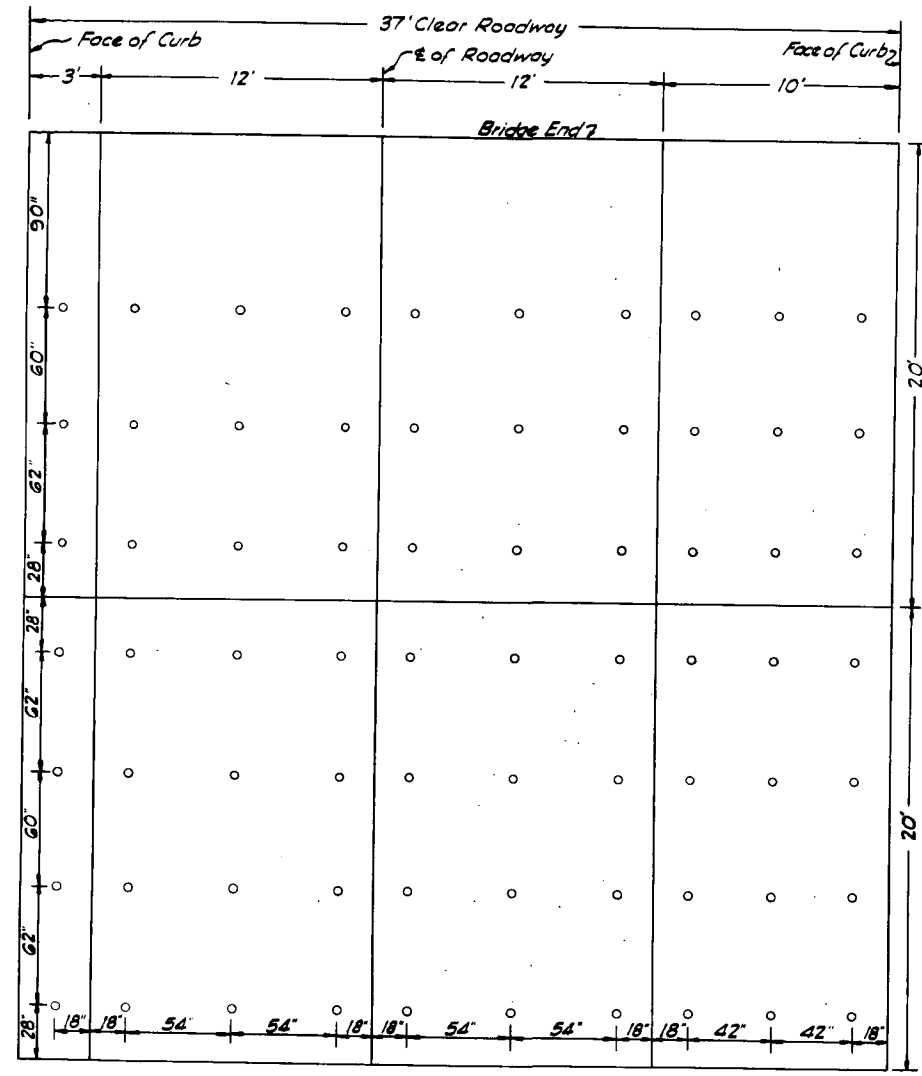
SYMBOLS

STATE & NATIONAL LINES	
COUNTY LINE	
TOWNSHIP & RANGE LINES	
SECTION LINE	
QUARTER SECTION LINE	
SECTION CORNER	
QUARTER SECTION CORNER	
OLD RIGHT OF WAY LINE	
NEW RIGHT OF WAY LINE	
GRADE LINE	
CENTERLINE OF CONSTRUCTION	
RAILROAD RIGHT OF WAY LINE	
CITY OR VILLAGE CORPORATE LIMITS	
PROPERTY LINE	
EASEMENT LINE	
FENCES	
SNOW FENCE	
DRAINAGE	
WATERS EDGE	
MARSH OR SWAMP	
RIPRAP	
DRAINAGE DITCH	
APPROACH	
TRAVELED WAY	
RAILROADS	
GUARD RAIL	
GUIDE POSTS	
DELINEATORS	
HEDGES AND TREES	
INTERCHANGE	
HIGHWAY GRADE SEPARATION-NO CONNECTION	
OTHER BRIDGE	
SERVICE ROAD	
TERMINATED CROSS-ROAD	
RAILROAD GRADE SEPARATION	

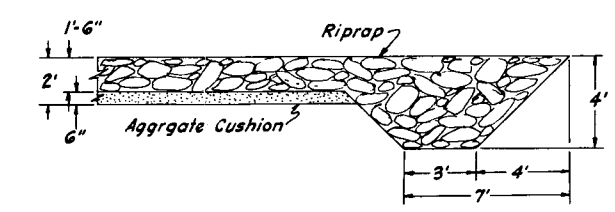
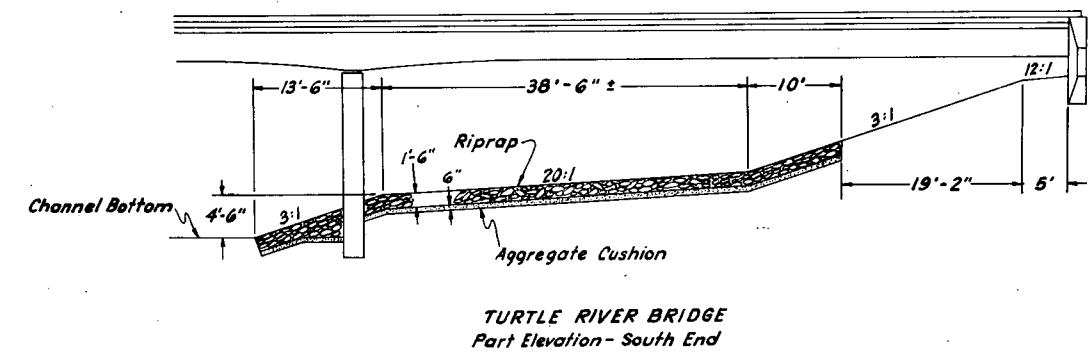
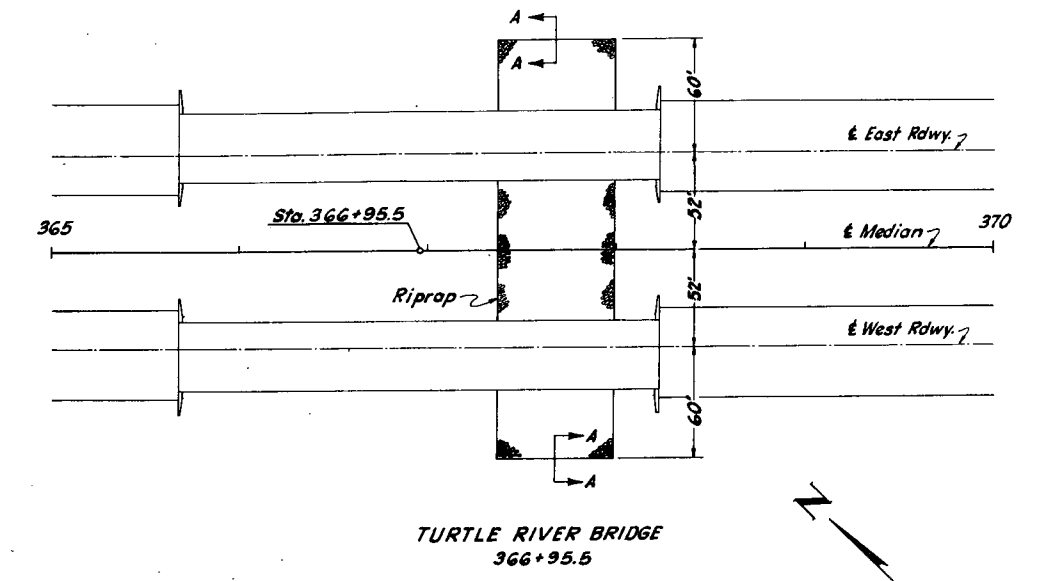
BUILDINGS	
TELEGRAPH LINES	
TELEPHONE LINES	
POWER LINES	
CULVERTS (In Place)	
CULVERTS (Install)	
CONCRETE BOX CULVERTS (Install)	
BRIDGES (Install)	
CONCRETE CURB	
CONCRETE CURB AND GUTTER	
CONCRETE WALK	
CATCH BASIN (Existing)	
CATCH BASIN (New)	
MANHOLE (Existing)	
MANHOLE (New)	
CURB INLET (Existing)	
CURB INLET (New)	
GROUND MOUNTED SIGNS	
OVERHEAD SIGNS	
HYDRANT	
LIGHT STANDARDS	
TRAFFIC SIGNALS (Plan & Profile Sheets)	
TRAFFIC SIGNALS (Lighting Plan Sheets)	
GROUND ELEVATION	
GRADE	
CENTERLINE	
SECTION LINE	
DEFLECTION ANGLE (Delta)	
SOD OR JUTE MESH	
POLES TO BE MOVED	
POLES TO BE LOWERED	

ABBREVIATIONS

Aggr.	Aggregate	M.L.	Main Line
Ahd.	Ahead	N.R.	North Roadway
Alt.	Alternate	Off. Loc.	Office Location
Approx.	Approximate or Approximately	O. to O.	Out to Out
Appr.	Approach	P. & P.	Plan and Profile
Asph. Cem. or A.C.	Asphalt Cement	P.C.	Point of Curvature
Asph. Conc.	Asphaltic Concrete	P.C.C.	Point of Compound Curve
Bit.	Bituminous or Bitumen	P.C.C. Pvm't	Portland Cement Concrete Pavement
Bk.	Back	P.D.	Private Drive
B.M.	Bench Mark	Pen.	Penetration
Bldg.	Building	Perf.	Perforated
Br.	Bridge	P.I.	Point of Intersection
C.A.E.S.	Corrugated Aluminum End Section	P.O.C.	Point on Curve
C.A.P.	Corrugated Aluminum Pipe	P.O.T.	Point on Tangent
C.B.	Catch Basin	P.P.	Power Pole
C. & G.	Curb and Gutter	P.R.C.	Point of Reverse Curvature
Ch. Blk.	Channel Block	Pref.	Preformed
Ch. Ch.	Channel Change	P.S.D.	Passing Sight Distance
C.I.	Curb Inlet	P.T.	Point of Tangency
C.I.P.	Cast Iron Pipe	P.V.C.	Polyvinyl Chloride Sewer Pipe
Cl.	Class	Quant.	Quantity or Quantities
C.S.E.S.	Corrugated Steel End Section	R	Radius
C.S.P.	Corrugated Steel Pipe	R or Rge.	Range
CMS	Cationic Medium Setting	RC	Rapid Curing
Comp.	Compression	R.C.E.S.	Reinforced Concrete End Section
Const.	Construction	R.C.P.	Reinforced Concrete Pipe
Conc.	Concrete	R.C.P.S.	Reinforced Concrete Pipe Sewer
Cont. Reinf. Conc. Pvm't	Continuously Reinforced Concrete Pavement	Rd.	Road
Contn.	Contraction	Rdbd.	Roadbed
Crn.	Crown	Rdwy.	Roadway
CRS.	Cationic Rapid Setting	Ref.	Reflectorized
Crse.	Course	R.R.	Railroad
C.S.	Curve to Spiral	Rt.	Right
C.to C.	Center to Center	R/W	Right of Way
C.Y.	Cubic Yard	Salv.	Salvage
D	Degree of Curvature	San.	Sanitary
D-Load	Dead Load	S.C.	Spiral to Curve
D.B.	Ditch Block	SC	Slow Curing
Def.	Deformed	Sc	Spiral Deflection Angle
Del.	Deliver	S.D.	Sight Distance
D.G.	Ditch Grade	S.E.	Superelevation
El. or Elev.	Elevation	Sec.	Section
Ellipt.	Elliptical	Sec. Line Appr.	Section Line Approach
Emb.	Embankment	Sep.	Separation
Emul.	Emulsified	Serv.	Service
Engr.	Engineer	Sgr. Prep.	Subgrade Preparation
Eq.	Equation	Shldr.	Shoulder
E.R.	East Roadway	SP	Special Provision
E.S.	End Section	S.P.P.	Structural Plate Pipe
Esmt.	Easement	S.P.P.A.	Structural Plate Pipe Arch
Exc.	Excavation	S.R.	South Roadway
Exp.	Expansion	SS	Slow Setting or Supplement Specification
F.D.	Field Drive	S.S.D.	Stopping Sight Distance
Found.	Foundation	S.T.	Spiral to Tangent
F.P.	Fence Post	Sta.	Station
Furn.	Furnish	Std.	Standard
Go.	Gage or Gauge	Std. Specs.	Standard Specifications
Gr.	Gravel	Struct.	Structure
Grd.	Graded	Surf.	Surface or Surfacing
G.V.	Gate Valve	Surv.	Survey
Hel.	Helical	S.W.	Sidewalk
Hyd.	Hydrant	S.Y.	Square Yard
Ident.	Identification	T	Tangent Length (circular curve)
Inchg.	Interchange	T or Twp.	Township
I. M.	Iron Monument	Tel.	Telephone
Inst.	Install	Temp.	Temporary
Inter.	Intersection	T.P.	Telephone Pole
Inv.	Invert	Tr.	Traffic
Jt.	Joint	Trans.	Transverse or Transition
L	Length of Curve	Trid.	Treated
Lc	Length of Spiral	Ts	Tangent Length (curve with spirals)
Levg.	Leveling	T.S.	Tangent to Spiral
L.F.	Linear or Lineal Foot	U.S.C. & G.S.	United States Coast and Geodetic Survey
Liq.	Liquid	V.C.	Vertical Curve
Long	Longitudinal	V.C.P.	Vitrified Clay Pipe
L.P.	Light Pole	W.M.	Water Main
Lt.	Left	W.M.V.	Water Main Valve
"M"	One Thousand	W.R.	West Roadway
Matl.	Material	Wrng.	Wearing
Max.	Maximum	W.S.V.	Water Service Valve
MC	Medium Curing	X-Sec.	Cross Section
M.H.	Manhole	Xc	Spiral Coordinate
Min.	Minimum	Yc	Spiral Coordinate



Note:
 Preformed Holes to be formed to the outside diameter shown and the depth of the forming device shall conform to the depth of the slab in which it is installed. The forming device shall be approved by the Engineer before installation. The device shall not be made of wood and must either be a solid rod shape or have a cap over it to prevent entrance of concrete into the hole. The device may be designed for removal after the concrete is hardened or left in place. If the forming device is to be left in place, it shall have an inside diameter of 2 1/2".
 To prevent water or other material from entering the preformed holes, the holes shall be capped and sealed. If the device is removed the holes can be backfilled with aggregate to a depth of 2" from the top of slab and the remaining 2" backfilled with bituminous material. Other means may be used to seal the holes, subject to the approval of the Engineer.



PLAN LAYOUT FOR PREFORMED HOLES IN BRIDGE APPROACH SLAB - See Note (16)
 TURTLE RIVER BRIDGE - STA. 366+95.5 & M.L.
 (North & South ends - both roadways)
 DRAINAGE DITCH BRIDGE - STA. 661+26.5 & EAST ROADWAY (SKEWED 30° LT. & BK.)
 (North & South ends - East Roadway)

SECTION A-A

BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
	5	N. D.	I-1G-29-4(26)	42

NOTES:

GENERAL:

WORK SHALL CONFORM TO ALL APPLICABLE PARAGRAPHS OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

THE COST OF FURNISHING AND PLACING JOINT FILLER, ASPHALT CURB SEAL, QUICK SETTING ANCHOR GROUT, AND OTHER MISCELLANEOUS ITEMS, INSTALLING NAME PLATES, SLAB SURFACE PREPARATION, AND DRILLING ANCHOR BOLT HOLES SHALL BE INCLUDED IN THE PRICE BID FOR CONCRETE.

WELDING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL STEEL.

REINFORCING STEEL:

DIMENSIONS FOR BENT BARS ARE GIVEN OUT TO OUT AND TO TANGENT INTERSECTIONS UNLESS OTHERWISE NOTED. BENT BARS SHALL BE BENT AROUND A.C.I. STANDARD SIZE PINS.

CONCRETE:

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE DECK SLAB CONCRETE SHALL BE STRUCK OFF AND COMPACTED BY AN APPROVED DECK FINISHING MACHINE. ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED WITH 3/4" TRIANGULAR MOLDING UNLESS OTHERWISE NOTED.

ALL CONCRETE ABOVE THE TOP OF THE CURBS SHALL BE CLASS AAE-3. SLAB AND CURBS SHALL BE CLASS AE-3.

THE "RUBBED SURFACE FINISH" OR THE "SPECIAL SURFACE FINISH" (SECTION 602-3.10.5) WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS AND END POSTS. ALL OTHER SURFACES SHALL BE GIVEN THE "ORDINARY SURFACE FINISH". ALL "ORDINARY SURFACE FINISH" SHALL BE COMPLETED WITHIN 24 HOURS AFTER REMOVAL OF THE FORMS.

PAINT:

PAINT AND PAINTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS, SECTION 718, 870-1.2, AND 870-1.8.

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT, ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED, AND TWO FIELD COATS OF ALUMINUM PAINT. SURFACES IN CONTACT WITH CONCRETE AND PREFORMED COMPRESSION JOINT SEAL SHALL NOT BE PAINTED.

LINSEED OIL TREATMENT:

LINSEED OIL TREATMENT SHALL NOT BE DONE UNTIL ALL CONCRETE WORK IS COMPLETED AND THE ASPHALT CURB SEAL HAS BEEN INSTALLED.

STATIONING:

THE SURVEY STATIONING IS FROM NORTH TO SOUTH WHEREAS THE MILEAGE GIVEN IS DETERMINED FROM SOUTH TO NORTH.

CURING CONCRETE:

EXCEPT AS PROVIDED IN THE FOLLOWING PARAGRAPH, LIQUID MEMBRANE CURING COMPOUND SHALL NOT BE USED ON ANY CONCRETE WHICH IS TO RECEIVE FURTHER TREATMENT.

THE WATER SOLUBLE LIQUID MEMBRANE CURE (SECTIONS 550-4.13.2.1 AND 880-5 OF THE STANDARD SPECIFICATIONS) MAY BE USED FOR CURING THE DECK SLAB CONCRETE. A PROTECTIVE COVERING SHALL BE USED SO THAT LINSEED OIL IS NOT APPLIED TO THE AREA WITHIN THREE INCHES OF THE CUTTER LINE UNTIL AFTER THE ASPHALT CURB SEAL IS IN PLACE. IF THE CONTRACTOR ELECTS TO USE THIS METHOD OF CURING THE DECK SLAB CONCRETE, THE QUANTITY FOR LINSEED OIL TREATMENT MAY BE REDUCED WITHOUT ADJUSTMENT TO ITS UNIT BID PRICE.

DESIGN STRESSES:

$f_c = 1,700 \text{ psi} \sim \text{Class AAE-3 Concrete}$
 $f_c = 1,200 \text{ psi} \sim \text{Class AE-3 Concrete}$
 $f_s = 20,000 \text{ psi} \sim \text{Reinforcing Steel}$

HYDRAULIC DESIGN DATA:

DRAINAGE AREA	20 SQ. MI.
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	1290 C.F.S.
STREAM GRADIENT	0.0005 FT./FT.
WATERWAY PROVIDED BELOW DESIGN STAGE	141 SQ. FT.
WATERWAY PROVIDED BELOW CLEARANCE	217 SQ. FT.
AVERAGE VELOCITY OF FLOW IN NATURAL CHANNEL	1.6 F.P.S.
DEPTH OF FLOW	5.0 FT.
VELOCITY OF FLOW UNDER BRIDGE	9.1 F.P.S.
FREEBOARD PROVIDED	2.5 FT.
MAXIMUM RECORDED STAGE	UNKNOWN
MAXIMUM RECORDED DISCHARGE	UNKNOWN
FREQUENCY OF MAXIMUM FLOOD	UNKNOWN
MINIMUM WATER ELEVATION	820.0

ESTIMATE OF QUANTITIES

SPEC. NO.	CODE NO.	BID ITEM	QUANTITY	UNIT
202	0250	REMOVAL OF PORTIONS OF EXISTING STRUCTURE		LUMP SUM
610	1136	CLASS AE-3 CONCRETE (SLAB SUPERSTRUCTURE)	40.9	CU. YD.
610	0138	CLASS AAE-3 (RAILING & POSTS)	2.81	CU. YD.
612	0110	REINFORCING STEEL (GRADE 40)	4953	LB.
616	0360	STRUCTURAL STEEL (A36)	3009	LB.
750	0100	LINSEED OIL TREATMENT	8	GAL.

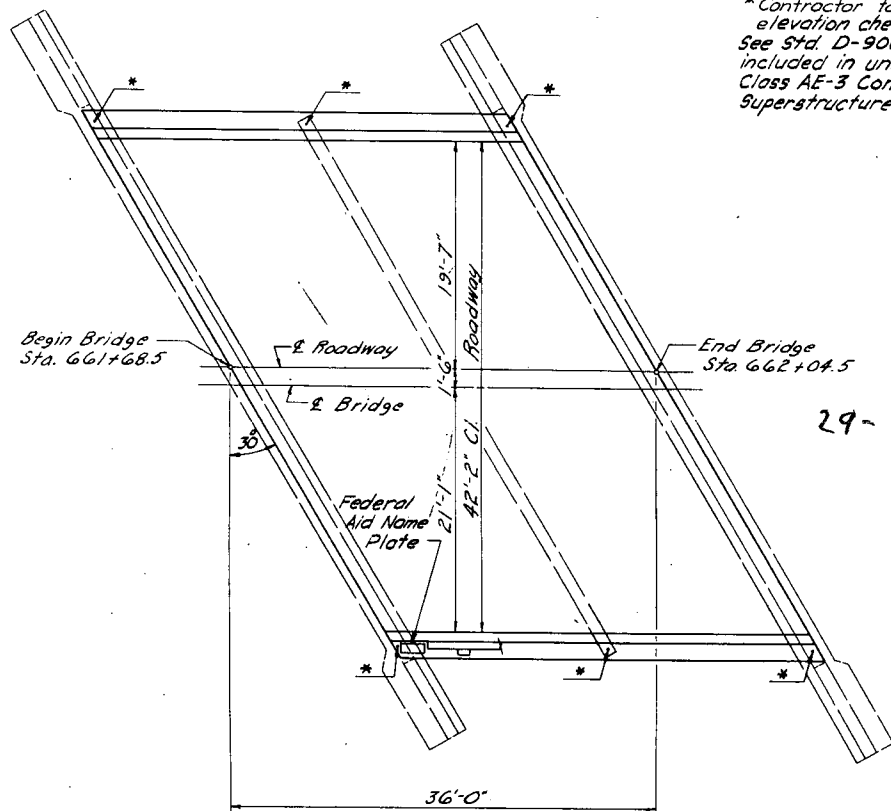
STRUCTURAL DRAWINGS

GENERAL DRAWING 29-148.19L (THIS DWG.)
 SUBSTRUCTURE
 SUPERSTRUCTURE 29-148.19L-1, 29-148.19L-2, H-0501, D-900-1 & D-900-6
 DESIGN LOADING HS20 ** SCALE 1/8 INCH = 1 FEET

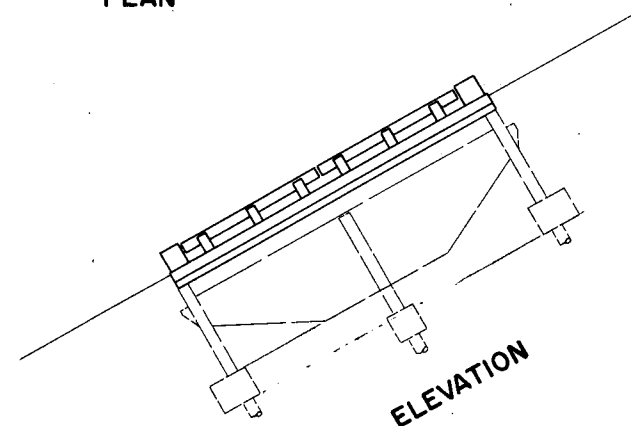
NORTH DAKOTA
 STATE HIGHWAY DEPARTMENT
COUNTY DRAIN II
 BRIDGE LAYOUT
 PROJECT I-1G-29-4(26)147 STA. 661+86.5
 GRAND FORKS COUNTY

APPROVED
 9-22-71
 DATE
 [Signature]
 BRIDGE ENGINEER
 [Seal: ALLEN J. ANDERSON, PROFESSIONAL ENGINEER, NORTH DAKOTA]

*Contractor to install elevation check points only. See Std. D-900-1. (Cost to be included in unit price bid for Class AE-3 Concrete (slab superstructure))



PLAN



ELEVATION

1950
 FEDERAL AID
 PROJECT
 FI-125(3)
 NORTH DAKOTA
 29-35R

FEDERAL AID NAME PLATE
 (1 Required)

Name plate to be furnished by State; obtain at Grand Forks District Office. Plate to be installed by Contractor.

BENCH MARKS

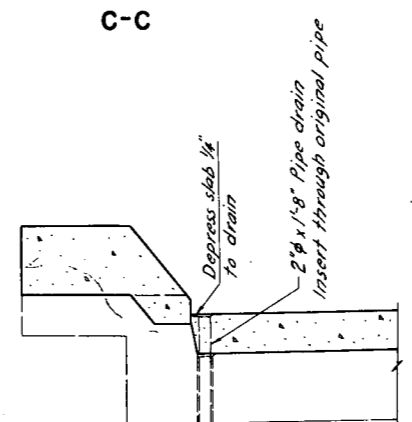
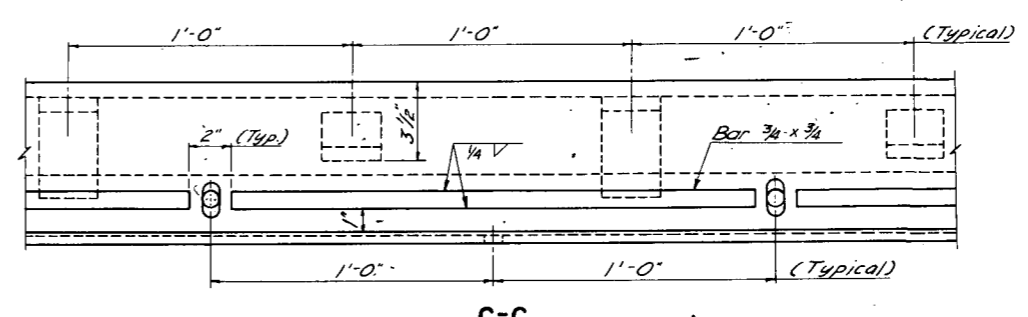
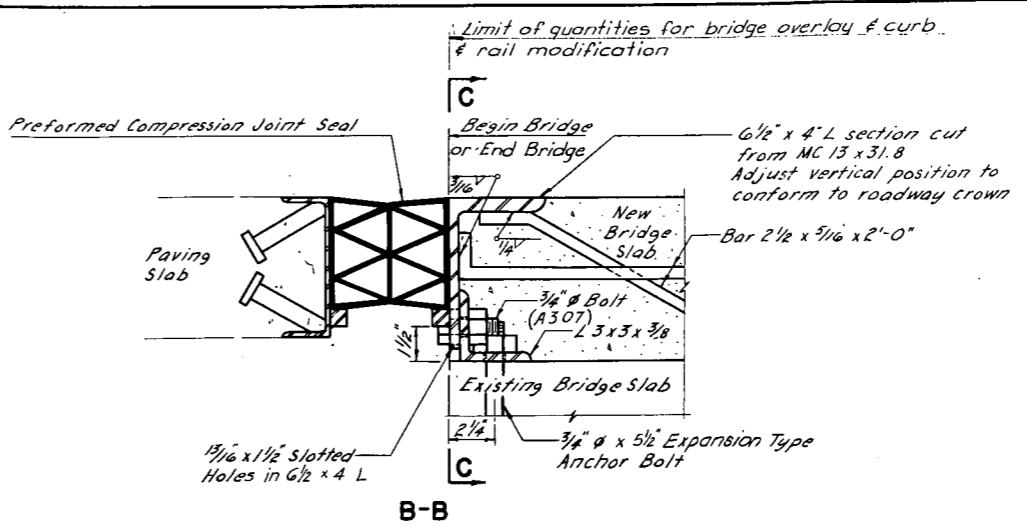
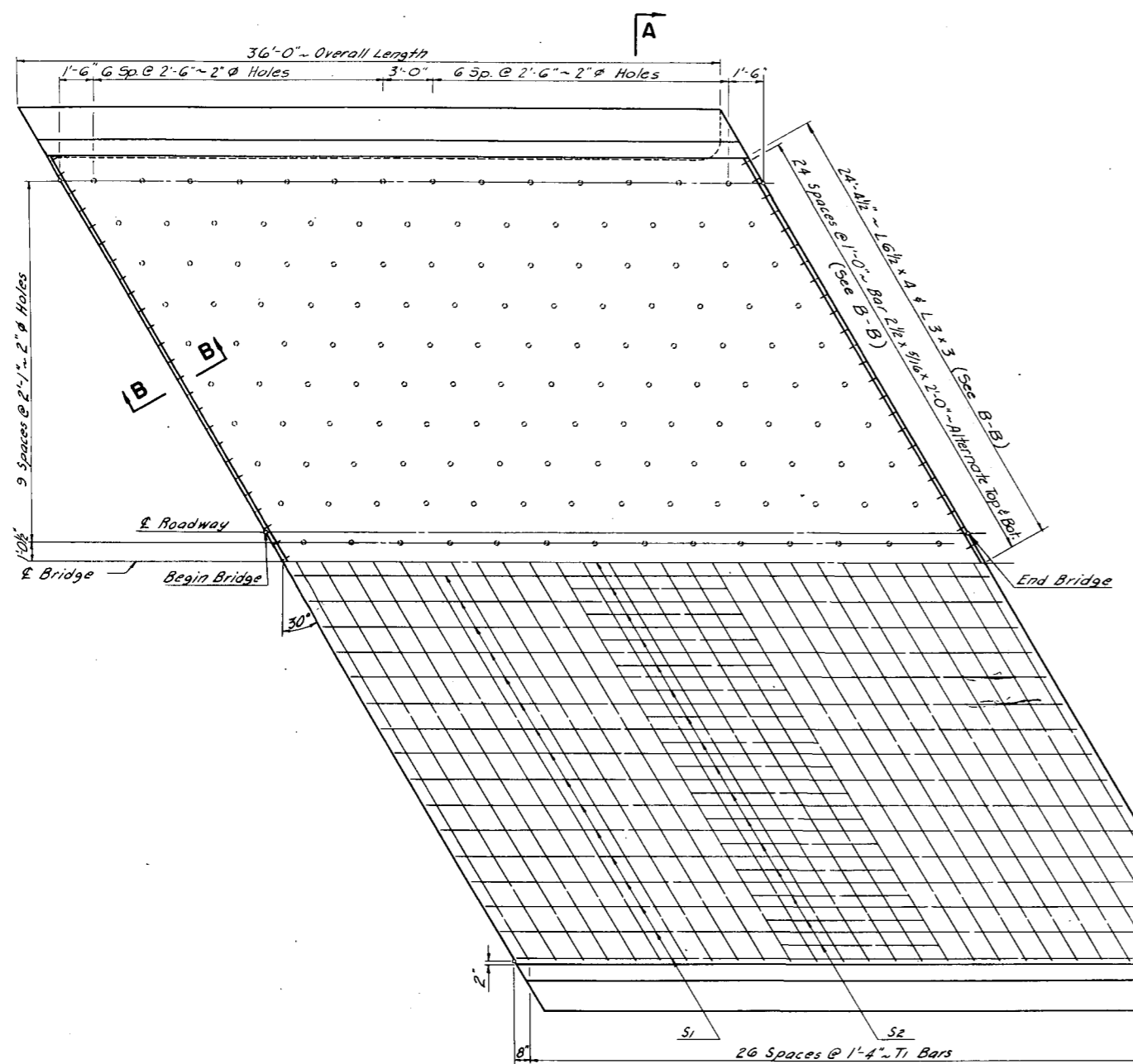
NO.	DESCRIPTION	LOCATION	ELEV.
1	Std. Bridge Bench Mark	Sta. 658+00 Rt. ~ Near R/W Line	823.91
2	Std. Bridge Bench Mark	Sta. 665+00 Lt. ~ Near R/W Line	825.00

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	WIND			DESIGN LOAD
				50 LB.	15 LB.	100 LB. LL.	
Abut. 1 & 3	11.4 T	5.1 T	3.6 T				20.1 T
Pier 2	14.5 T	7.1 T	1.4 T				23.0 T

**HS20 and "Alternate Loading as designated in PPM. 20-4, Section 4C."

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
5	N. D.	1-16-29-4(26)	43

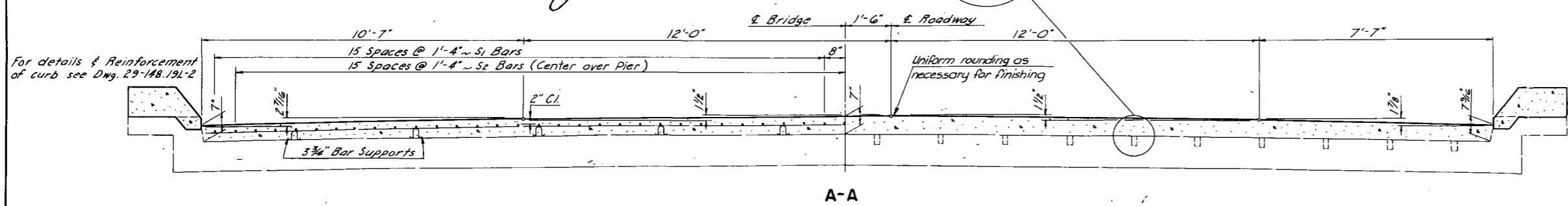


BAR LIST					
MARK	NUMBER	SIZE	LENGTH	SHAPE	UNIT WT.
	SLAB				
S1	32	6"	35'-8"	Str.	53.57
S2	31	6"	8'-0"	"	12.02
T1	54	2"	24'-9"	Str.	16.52
SR4*	1	4"	3'-8"	Str.	
SR5*	1	5"	4'-0"	"	
SR6*	1	6"	4'-6"	"	

NOTES:
 Holes shall be drilled as shown in the existing structure to permit the anchorage of the anchor bolts in quick setting anchor grout, Section 768 of Std. Spec. Prior to drilling the bolt holes, the surface of the existing slab shall be thoroughly cleaned by sandblasting. All oil drippings and traces of asphalt or tar shall be completely removed. Any spalled or cracked concrete at the slab surface shall be removed down to sound material.
 The 1/4" x 5/16" expansion bolts will be paid for as A36 steel.
 As an alternate to sandblasting, the surface of the existing slab may be bushhammered as a preparation for the overlay. Following completion of the surface preparation work, all loosened material shall be completely removed from the slab surface with compressed air or by flushing with water.
 * Sample replacement bar to be spliced to bar from which 2'-0" sample has been cut. Furnish only one set for the entire bridge. This is not a pay item and shall be included in the unit price bid for reinforcing steel.

MADE BY: C.F.J.
 CHECKED BY: L.P.H.
 MADE BY: G.A.L.
 CHECKED BY: C.F.S.
 MADE BY: L.E.G.
 CHECKED BY: D.L.R.
 MADE BY: D.L.R.
 CHECKED BY: L.F.G.

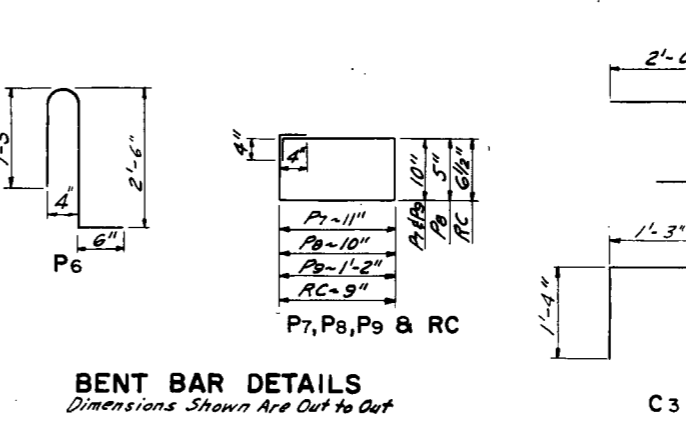
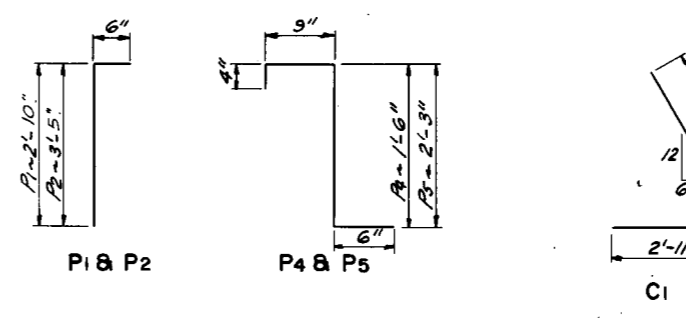
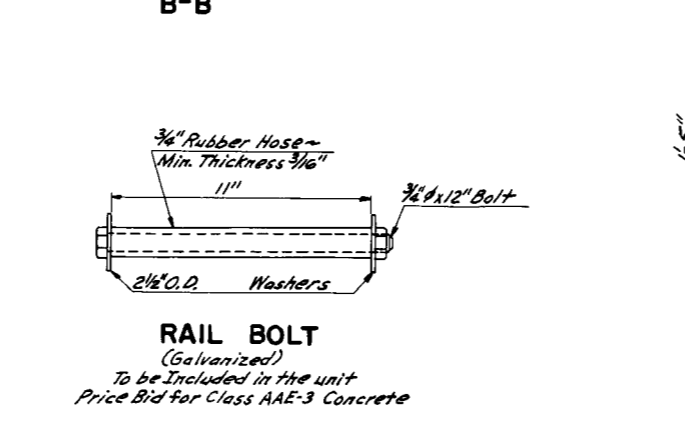
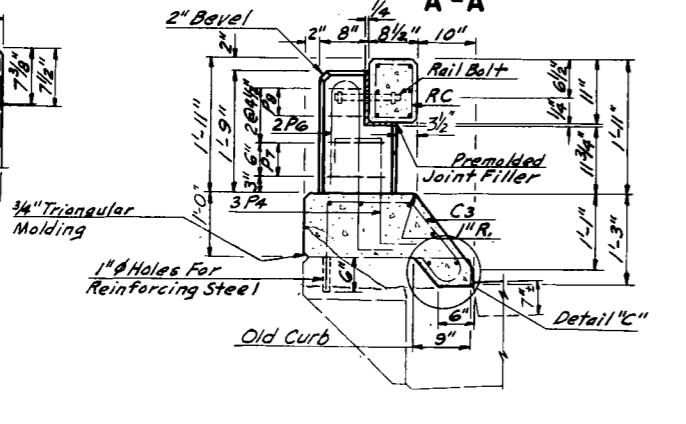
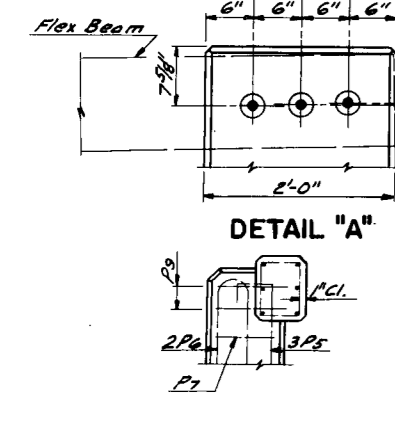
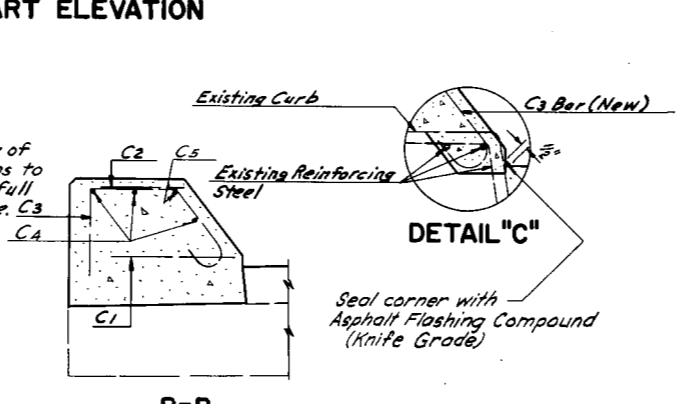
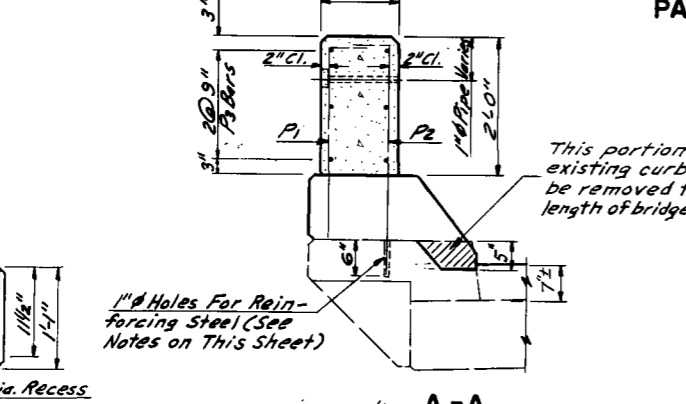
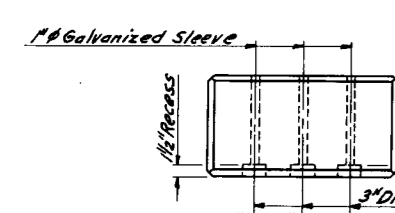
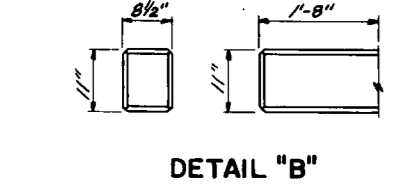
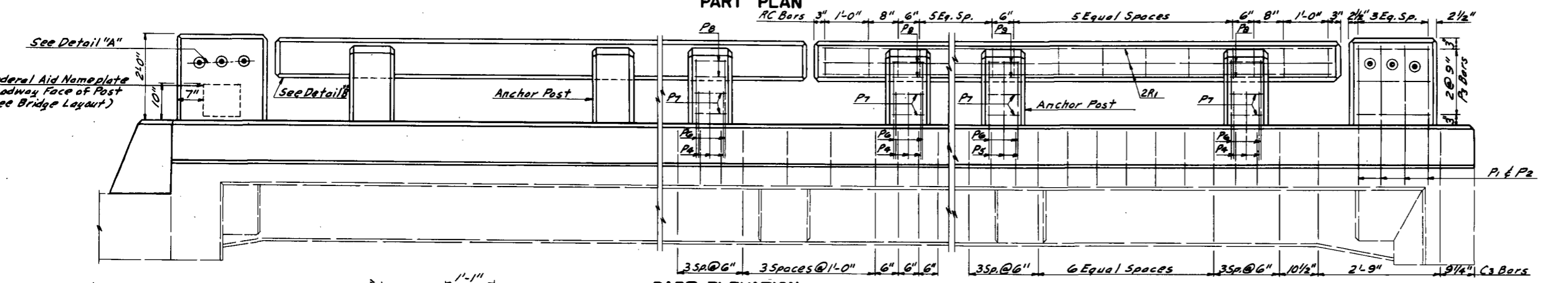
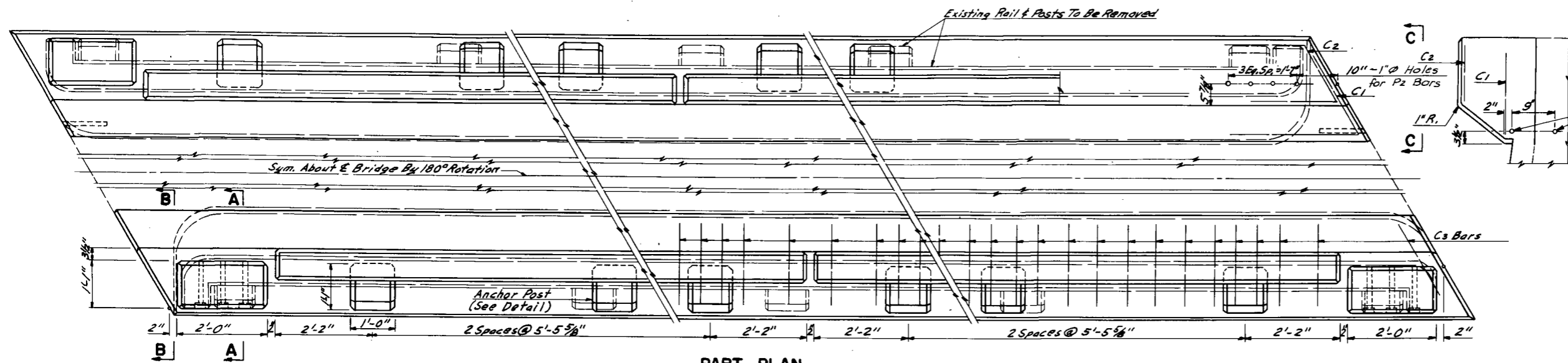
Pay for as A36 Steel
 JAP 11-16-71
 2" 3/4" x 7" Bolt (A307) with hex. nut & washer
 Std. Washer
 Drilled hole



QUANTITIES	
Class A-3 Concrete	350 C.Y.
Reinforcing Steel	2979 Lbs.
Structural Steel A36	3003 Lbs.

MODIFICATION DETAILS
 SLAB OVERLAY

3356



NOTES:
 All old railing and posts shall be removed from the existing structure. The exposed reinforcing shall be cut or burned off to a minimum of 1/2" below the top of the new curb unless such reinforcing can be utilized with in the framework of the new railing or posts.

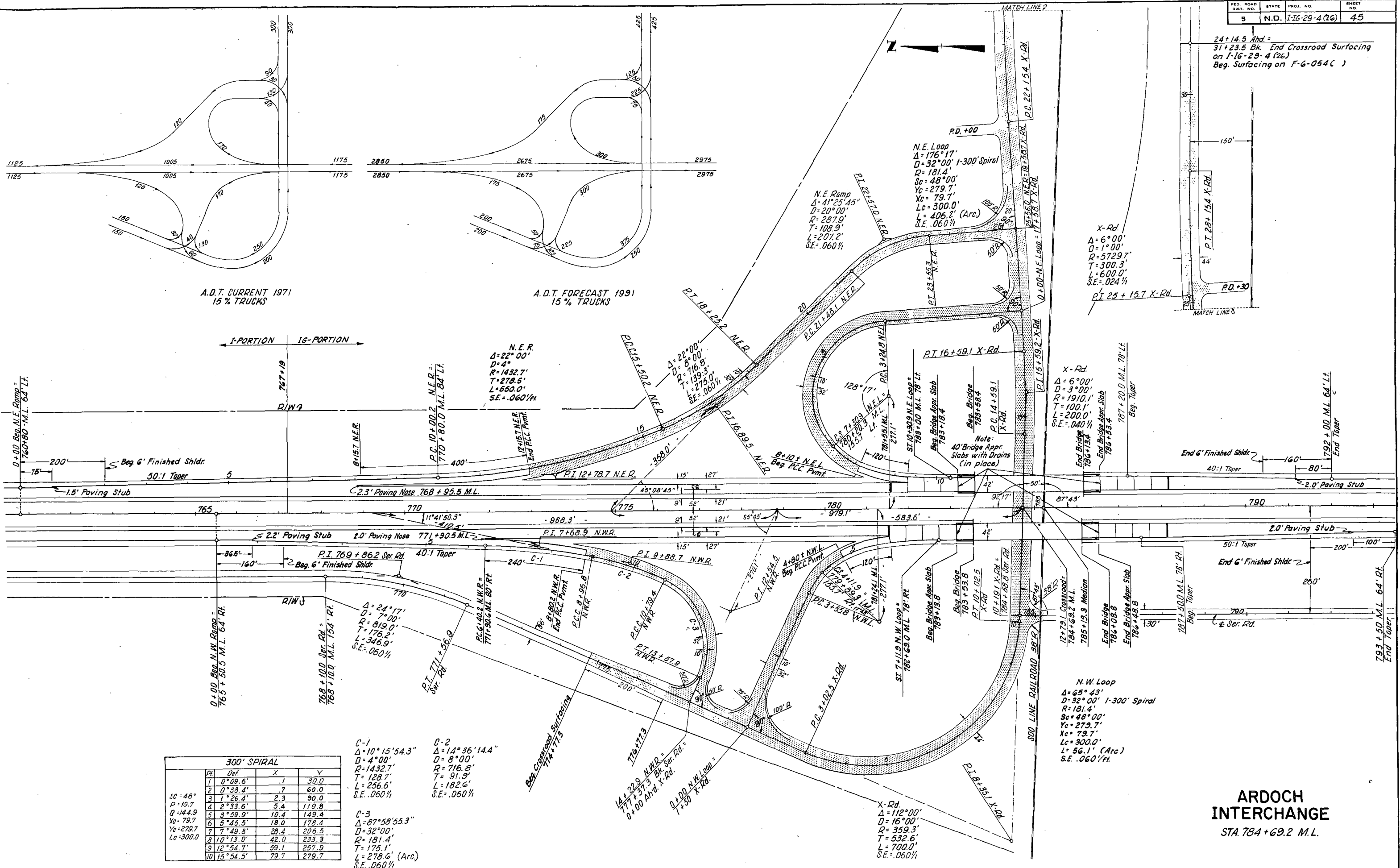
Holes shall be drilled as shown in the existing structure to permit the anchorage of the new reinforcing in quick setting anchor grout, Section 708 of the Std Specifications. The price bid for "Removal of Portions of Existing Structure" shall include the removal of the railing, posts, end posts, portions of curbs, and all unusable reinforcing steel. The cost of drilling anchorage holes, quick setting grout and the 7/8" openings provided for the approach curb shall be included in the price bid for Class AE-3 Concrete. Concrete for the curb addition shall be Class AE-3, Concrete for rails & posts shall be Class AAE-3.

BAR LIST						
MARK	NUMBER	SIZE	LENGTH	SHAPE	UNIT	WT.
P1	16	5	3'-4"	Bent	3.48	
P2	16	6	3'-11"	"	5.88	
P3	24	4	1'-8"	Str.	1.11	
P4	24	6	3'-1"	Bent	4.63	
P5	12	6	3'-10"	"	5.76	
P6	24	5	4'-8"	"	4.87	
P7	24	3	4'-2"	"	1.56	
P8	16	3	3'-2"	"	1.15	
P9	8	3	4'-8"	"	1.75	
RC	72	3	3'-3"	Bent	1.22	
R1	24	6	15'-0"	Str.	22.53	
C1	4	4	5'-0"	Bent	3.34	
C2	4	4	5'-6"	Bent	3.67	
C3	96	5	4'-5"	Bent	4.61	
CA	6	5	35'-8"	Str.	37.20	
C5	2	6	35'-8"	"	53.57	

QUANTITIES	
Class AE-3 Concrete	5.9 Cu Yds.
Class AAE-3 Concrete	2.81 Cu Yds.
Reinforcing Steel	1974 Lbs.

MODIFICATION DETAILS
RAILING & CURB

24+14.5 Ahd. =
 31+23.5 Bk. End Crossroad Surfacing
 on F-16-29-4 (26)
 Beg. Surfacing on F-6-054C)



A.D.T. CURRENT 1971
 15% TRUCKS

A.D.T. FORECAST 1991
 15% TRUCKS

300' SPIRAL				
St.	Def.	X	Y	
1	0° 09.6'	.1	30.0	
2	0° 38.4'	.7	60.0	
3	1° 26.4'	2.3	90.0	
4	2° 33.6'	5.4	119.8	
5	3° 59.9'	10.4	149.4	
6	5° 45.5'	18.0	178.4	
7	7° 49.8'	28.4	206.5	
8	10° 13.0'	42.0	233.3	
9	12° 54.7'	59.1	257.9	
10	15° 54.5'	79.7	279.7	

C-1
 $\Delta = 10^\circ 15' 54.3''$
 $D = 4^\circ 00'$
 $R = 1432.7'$
 $T = 128.7'$
 $L = 256.6'$
 $S.E. = .060\%$

C-2
 $\Delta = 14^\circ 36' 14.4''$
 $D = 8^\circ 00'$
 $R = 716.8'$
 $T = 91.9'$
 $L = 182.6'$
 $S.E. = .060\%$

C-3
 $\Delta = 87^\circ 58' 55.3''$
 $D = 32^\circ 00'$
 $R = 181.4'$
 $T = 175.1'$
 $L = 278.6'$ (Arc)
 $S.E. = .060\%$

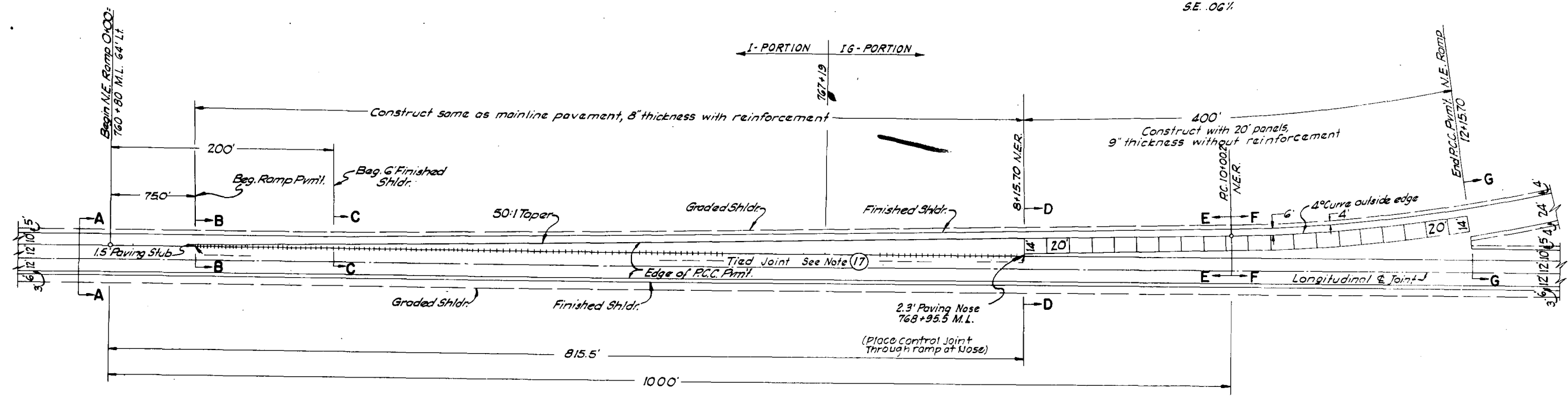
N.W. Loop
 $\Delta = 65^\circ 43'$
 $D = 32^\circ 00'$ 1-300' Spiral
 $R = 181.4'$
 $S_c = 48^\circ 00'$
 $Y_c = 279.7'$
 $X_c = 79.7'$
 $L_c = 300.0'$
 $L = 56.1'$ (Arc)
 $S.E. = .060\%$

N.E. Loop
 $\Delta = 176^\circ 17'$
 $D = 32^\circ 00'$ 1-300' Spiral
 $R = 181.4'$
 $S_c = 48^\circ 00'$
 $Y_c = 279.7'$
 $X_c = 79.7'$
 $L_c = 300.0'$
 $L = 406.2'$ (Arc)
 $S.E. = .060\%$

N.E. Ramp
 $\Delta = 41^\circ 25' 45''$
 $D = 20^\circ 00'$
 $R = 287.9'$
 $T = 108.9'$
 $L = 207.2'$
 $S.E. = .060\%$

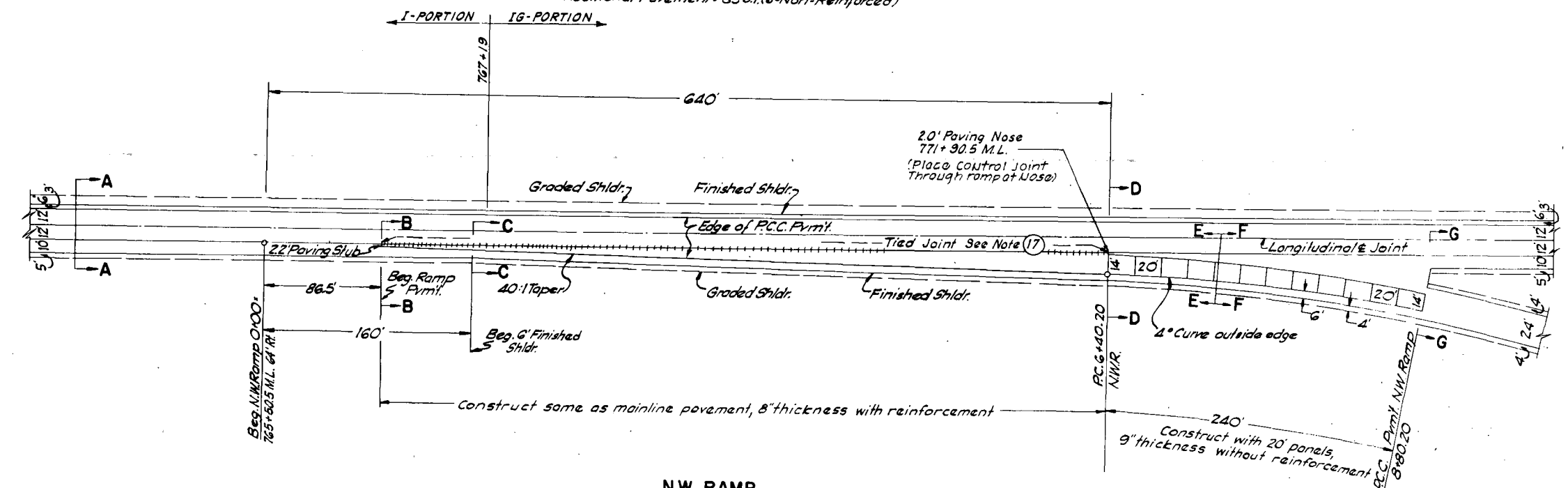
ARDOCH INTERCHANGE
 STA. 784+69.2 M.L.

$\Delta = 22^{\circ} 00' Lt$
 $D = 4^{\circ} 00'$
 $T = 278.5'$
 $L = 550.0'$
 $R = 1432.7$
 $S.E. .06\%$



N.E. RAMP

Additional Pavement - 732 SY. (8" Reinforced)
 Additional Pavement - 622 SY. (9" Non-Reinforced)
 Additional Pavement - 85 SY. (6" Non-Reinforced)

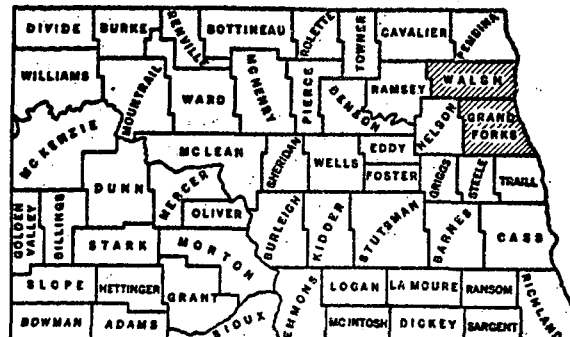


N.W. RAMP

Additional Pavement - 560 SY. (8" Reinforced)
 Additional Pavement - 373 SY. (9" Non-Reinforced)
 Additional Pavement - 38 SY. (6" Non-Reinforced)

$\Delta = 10^{\circ} 15' 54.3''$
 $D = 4^{\circ} 00'$
 $T = 128.7'$
 $L = 256.6'$
 $R = 1432.7$
 $S.E. .06\%$

See Sheet No. 13 for Section Views
P.C.C. PAVEMENT RAMP LAYOUT
N.E. & N.W. RAMPS
FOR
ARDOCH
INTERCHANGE



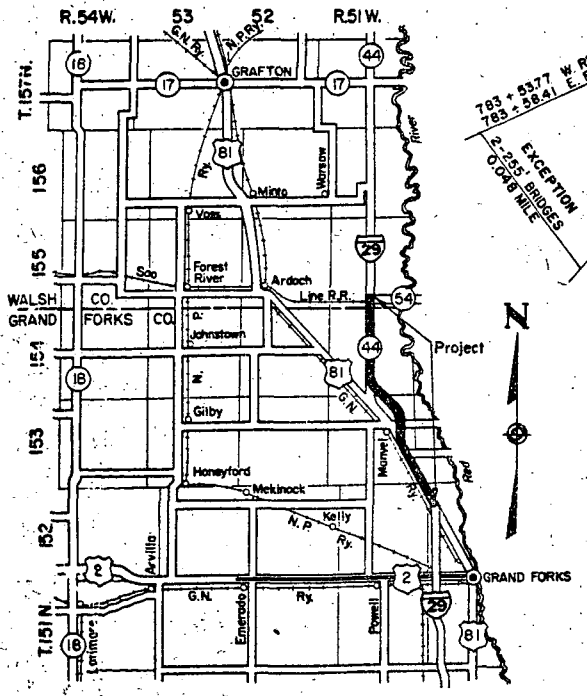
SKETCH-MAP OF NORTH DAKOTA SHOWING COUNTIES

DESIGN DATA

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. NR.
CURRENT TRAFFIC (1970)	3150 PASS. 550 TRUCKS 3700 TOTAL	480
TRAFFIC FORECAST (1990)	7700 PASS. 1100 TRUCKS 8800 TOTAL	1100
DESIGN SPEED	80 MPH	
TRAFFIC CLASSIFICATION	"M"	
MINIMUM SIGHT DISTANCE (STOPPING)	750'	
FULL CONTROL OF ACCESS.		
NO POINT OF ACCESS OTHER THAN BY RAMPS AT INTERCHANGES.		

LEGEND

- INTERCHANGE
- HIGHWAY GRADE SEPARATION- NO CONNECTION
- OTHER BRIDGE
- SERVICE ROAD
- TERMINATED CROSS-ROAD



SKETCH MAP OF PARTS OF WALSH & GRAND FORKS CO.'S.

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A
STATE HIGHWAY
IN WALSH & GRAND FORKS COUNTIES
FEDERAL AID PROJECT NO. I-IG-29-4 (16) 147
GRADING AND STRUCTURAL

SCALES
LAYOUT SHEET: 1 IN. = 4000 FT.
PLAN AND PROFILE: 1 IN. = 100 FT.
PROFILE DRAWINGS: 1 IN. = 18 FT.
STRUCTURAL DRAWINGS: AS SHOWN
CROSS SECTION SHEETS: 1 IN. = 18 FT.

STA.	CLEAR RDWY. WIDTH.	DESIGN LOADING
0 + 53 (Dbl. R.C.B.)		HS-20 (1944)
54 + 57 (Dbl. R.C.B.)		HS-20 (1944)
106 + 76.35 Rt. (Dbl. R.C.B.)		HS-20 (1944)
106 + 76.35 Lt. (Dbl. R.C.B.)		HS-20 (1944)
107 + 18 (Dbl. R.C.B.)		HS-20 (1944)
203 + 08.3 (Dbl. R.C.B.)		HS-20 (1944)
265 + 25 (Triple R.C.B.)		HS-20 (1944)
265 + 25 Ser. Rd. (Triple R.C.B.)		HS-20 (1944)
366 + 95.95	37'	HS-20 (1944) *
661 + 56.5	37'	HS-20 (1944) *

* And "Alternate Load as designated in P.P.M. 20-4 Sec. 4 C"
See Sheet 2E for list of Structural Drawings and Sheet Nos.

INDEX OF DRAWINGS

SHEET NO.	TITLE PAGE
SHEETS NO. 2 TO 2J	TYPICAL SECTIONS & SUMMARY OF QUANTITIES
SHEETS NO. 3	CULVERT LIST
SHEETS NO. 4	TO 58 INCL. PLAN AND PROFILE DRAWINGS.
SHEETS NO. 59 TO 64	INCL. INTERCHANGE LAYOUTS
SHEETS NO. 65 TO 71	INCL. FENCING PLAN
SHEETS NO. 72 TO 109	INCL. STRUCTURAL DRAWINGS
SHEETS NO. 110	TO 158 INCL. SOIL PROFILE
SHEETS NO. 159	TO 428 INCL. CROSS SECTIONS

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway Department Jan. 1965 and approved as standard by the Bureau of Public Roads June 23, 1965. Required Contract Provision (Form PR-1273) dated Oct. 1969 and others submitted herewith.

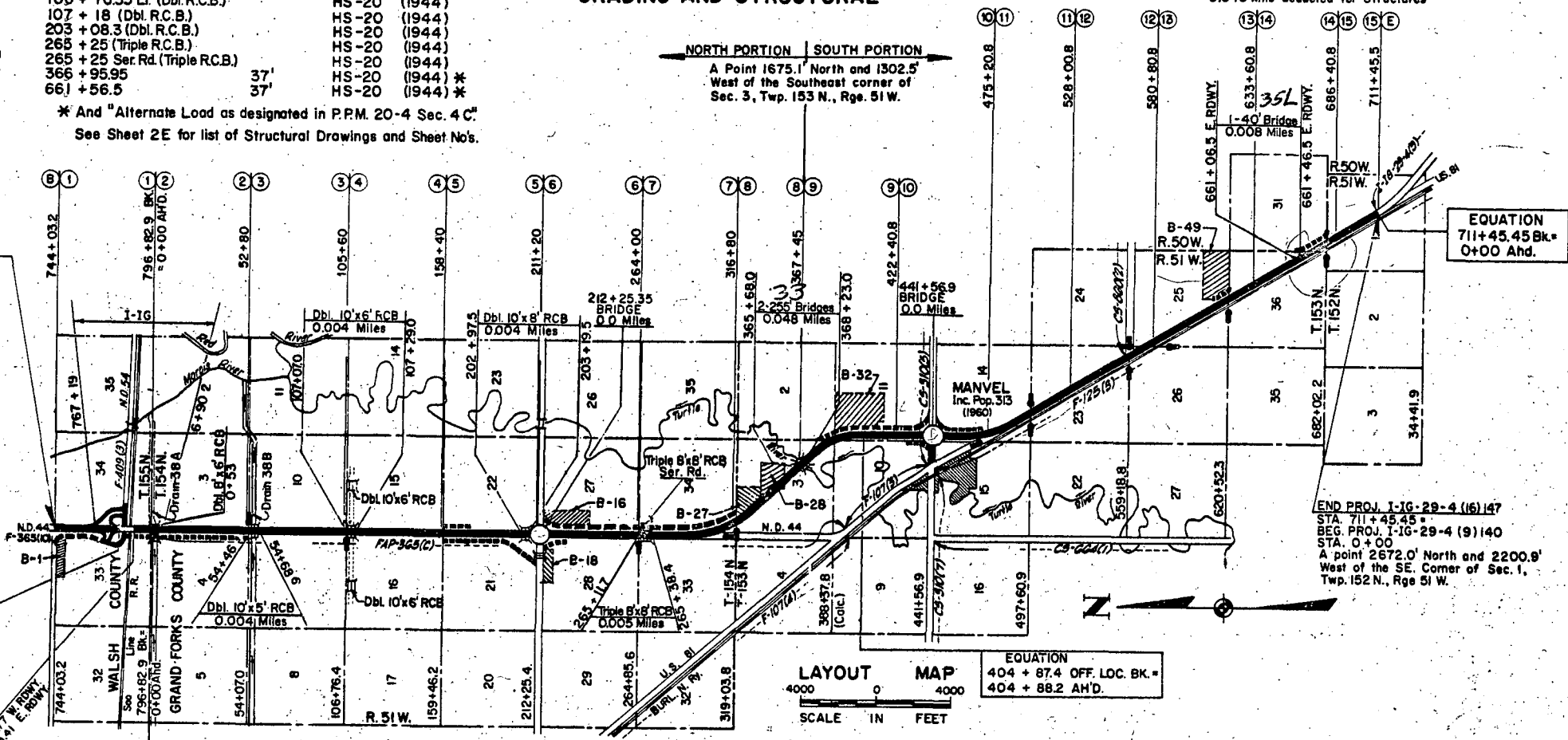
KEY TO CONVENTIONAL SIGNS

- STATE & NATIONAL LINES
- COUNTY LINE
- TOWNSHIP & RANGE LINES
- GRADE LINE
- CENTERLINE OF CONSTRUCTION
- OLD RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE
- ABANDONED RIGHT OF WAY LINE
- PROPERTY LINE
- STONE WALL
- OTHER FENCES
- POLE LINES
- POWER LINES
- BRIDGE
- GROUND ELEVATION
- GRADE
- TRAVELED WAY
- RAILROADS
- HEDGES AND TREES
- TRAILS
- CITY OR VILLAGE CORPORATE LIMITS
- SECTION CORNER
- QUARTER SECTION CORNER
- BUILDINGS
- OLD CULVERTS
- NEW CULVERTS
- DRAINAGE
- BENCH MARKS
- WATERS EDGE
- MARSH
- WIRE ROPE GUARD RAIL
- SNOW FENCE
- RIPRAP
- GUARD POSTS
- COBBLE GUTTERS
- CONCRETE GUTTERS

LENGTH OF PROJECT

PROJECT MILES-GROSS	MILES-NET
14.474	14.426
TOTALS	14.474 14.426

0.048 Mile deducted for Structures



EQUATION
796+82.85 Bk.
0+00 Ahd.

LAYOUT MAP
SCALE IN FEET
EQUATION
404 + 87.4 OFF. LOC. BK.
404 + 88.2 AHD.

BORROW AREAS

- B-1
- B-18
- B-18
- B-27
- B-28
- B-30
- B-48

North Portion Grading
Sheet Nos. 1, 2, 2A, B, C, D, F, G, H, I, J, 3, 4 thru 31, 47, 48, 49, 50, 53, 54, 55, 56, 59, 60, 61, 62, 65, 66, 67, 68, 110; thru 125, 137, 138, 139 thru 342

South Portion Grading
Sheet Nos. 1, 2, 2A, B, C, F, G, H, I, J, 3A, 31 thru 47, 51, 52, 57, 58, 59, 63, 64, 66, 69, 70, 71, 110, 125 thru 136, 138, 340 thru 428

See Sheet 2 E for Structural Plan Sheet Nos.

APPROVED DATE 5-7-70

R. Bradley
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE

North Dakota State Highway Department

SHEET NO. 1 OF 2

ABSTRACT OF BIDS RECEIVED

Project No. 1 IG 22 & 16 147 CONTRACT NO. 5
 County & Date GRAND FORKS JUNE 19, 1970
 Length & Type 00.056 MILES STRUCT. & INCLD.

Completion Time BY JULY 1, 1971

Bridges 33 & 35L

SPC. NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	APPROXIMATE QUANTITY
203	1	COMMON EXCAVATION	CU YD	31,228
208	2	CLASS 1 EXCAVATION	CU YD	250
208	3	CLASS 2 EXCAVATION	CU YD	430
228	4	SELECT BACKFILL	CU YD	630
610	5	CLASS AE-1 CONCRETE SLAB SUPERSTRUCTURE	CU YD	76
610	6	CLASS AE-1 CONCRETE SUB-STRUCTURES	CU YD	364
610	7	CLASS AE-3 CONCRETE I-BEAM SUPERSTRUCTURE	CU YD	603
610	8	CLASS AAE-3 CONCRETE RAILING	CU YD	39
612	9	REINFORCING STEEL-GRADE 40	LB	235,479
616	10	STRUCTURAL STEEL A-441 WELDED GIRDER	LB	339,900
616	11	STRUCTURAL STEEL A-36 WELDED GIRDER	LB	63,700
622	12	STEEL PILING 10RP42	L FT	4,350
622	13	STEEL PILING 12RP43	L FT	5,100
622	14	STEEL TEST PILES 10RP42 135 FT.	EA	1
622	15	STEEL TEST PILES 12RP43 145 FT.	EA	1
750	16	PILE STRUT	EA	12
750	17	LINSEED OIL TREATMENT	GAL	106
750	18	BRIDGE BENCH MARKS	SET	2
750	19	MOBILIZATION	L SUM	1
202	20	REMOVAL OF PORTIONS OF EXISTING STRUCTURE	L SUM	1
203	21	MOISTURE CONTROL	L SUM	1
203	22	MOISTURE CONTROL	L SUM	1
756	23	FIELD LABORATORY	EA	1
TOTAL SUM BID				

BIDDER

ENGINEER'S ESTIMATE

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		1.00		31,228.00
2		3.00		750.00
3		20.00		8,600.00
4		5.00		3,150.00
5		85.00		6,460.00
6		80.00		29,120.00
7		85.00		51,255.00
8		200.00		7,800.00
9		.15		35,321.85
10		.30		101,850.00
11		.30		19,110.00
12		6.00		26,100.00
13		7.00		35,700.00
14		1,000.00		1,000.00
15		1,200.00		1,200.00
16		80.00		960.00
17		5.00		530.00
18		175.00		350.00
19		4,000.00		4,000.00
20		1,000.00		1,000.00
21		1,000.00		1,000.00
22		300.00		300.00
23		500.00		500.00
TOTAL				367,284.85

BIDDER

Swingen Construction Co.
Grand Forks, NDak.

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		.75		23,421.00
2		.85		212.90
3		3.00		1,290.00
4		4.25		2,677.50
5		75.00		5,700.00
6		67.00		24,388.00
7		64.00		38,592.00
8		120.00		4,680.00
9		.17		40,031.43
10		.31		105,245.00
11		.31		19,747.00
12		6.50		28,275.00
13		7.30		37,230.00
14		1,100.00		1,100.00
15		1,300.00		1,300.00
16		180.00		2,160.00
17		3.00		318.00
18		200.00		400.00
19		5,000.00		5,000.00
20		650.00		650.00
21		8,500.00		8,500.00
22		2,500.00		2,500.00
23		500.00		500.00
TOTAL				353,917.43

S.F.R. 348,474.3

BIDDER

Otto J. Eickhof & Sons, Inc.
Crookston, Minn.

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		.65		20,298.20
2		4.00		1,000.00
3		6.00		2,580.00
4		4.00		2,520.00
5		80.00		6,080.00
6		75.00		27,300.00
7		75.00		45,225.00
8		160.00		6,240.00
9		.16		37,676.64
10		.33		112,035.00
11		.33		21,021.00
12		6.40		27,840.00
13		7.35		37,485.00
14		1,350.00		1,350.00
15		1,590.00		1,590.00
16		285.00		3,420.00
17		6.00		366.00
18		150.00		300.00
19		8,000.00		8,000.00
20		2,000.00		2,000.00
21		2,000.00		2,000.00
22		1,000.00		1,000.00
23		1,000.00		1,000.00
TOTAL				368,596.84

Project No. 1 IG 22 & 16 147 CONTRACT NO. 5
 County & Date GRAND FORKS JUNE 19, 1970
 Length & Type 00.056 MILES STRUCT. & INCLD.

Completion Time BY JULY 1, 1971

SPC. NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	APPROXIMATE QUANTITY
203	1	COMMON EXCAVATION	CU YD	31,228
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610	6	CLASS AE-1 CONCRETE SUB-STRUCTURES	CU YD	364
610	7	CLASS AE-3 CONCRETE I-BEAM SUPERSTRUCTURE	CU YD	603
610	8	CLASS AAE-3 CONCRETE RAILING	CU YD	39
612	9	REINFORCING STEEL-GRADE 40	LB	235,479
616	10	STRUCTURAL STEEL A-441 WELDED GIRDER	LB	339,900
616	11	STRUCTURAL STEEL A-36 WELDED GIRDER	LB	63,700
622	12	STEEL PILING 10RP42	L FT	4,350
622	13	STEEL PILING 12RP43	L FT	5,100
622	14	STEEL TEST PILES 10RP42 135 FT.	EA	1
622	15	STEEL TEST PILES 12RP43 145 FT.	EA	1
750	16	PILE STRUT	EA	12
750	17	LINSEED OIL TREATMENT	GAL	106
750	18	BRIDGE BENCH MARKS	SET	2
750	19	MOBILIZATION	L SUM	1
202	20	REMOVAL OF PORTIONS OF EXISTING STRUCTURE	L SUM	1
203	21	MOISTURE CONTROL	L SUM	1
203	22	MOISTURE CONTROL	L SUM	1
756	23	FIELD LABORATORY	EA	1
TOTAL SUM BID				

BIDDER

James J. Igoe & Sons Constr. Inc.
Bismarck, NDak

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		1.00		31,228.00
2		2.50		625.00
3		3.00		1,290.00
4		5.00		3,150.00
5		80.00		6,080.00
6		80.00		29,120.00
7		80.00		48,240.00
8		150.00		5,850.00
9		.14		32,967.06
10		.29		98,455.00
11		.32		20,384.00
12		6.50		28,275.00
13		7.00		35,700.00
14		1,100.00		1,100.00
15		1,200.00		1,200.00
16		100.00		1,200.00
17		6.00		636.00
18		150.00		300.00
19		20,000.00		20,000.00
20		500.00		500.00
21		4,500.00		4,500.00
22		2,000.00		2,000.00
23		1,800.00		1,800.00
TOTAL				374,600.06

BIDDER

Northern Improvement Co.
 Fargo, NDak

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		1.35		42,157.80
2		3.50		875.00
3		12.00		5,160.00
4		8.00		5,040.00
5		95.00		7,220.00
6		93.00		33,852.00
7		100.00		60,300.00
8		180.00		7,020.00
9		.16		37,676.64
10		.31		105,245.00
11		.31		19,747.00
12		6.50		28,275.00
13		7.80		39,780.00
14		1,200.00		1,200.00
15		1,600.00		1,600.00
16		250.00		3,000.00
17		5.00		500.00
18		150.00		300.00
19		12,000.00		12,000.00
20		1,000.00		1,000.00
21		8,000.00		8,000.00
22		3,000.00		3,000.00
23		1,200.00		1,200.00
TOTAL				424,178.44

BIDDER

Sornsin Construction Co.
 Fargo, NDak

C. C. RANK	BOND	BID PRICE	VENDOR NO.	AMOUNT
1		.83		25,919.24
2		2.20		550.00
3		2.50		1,075.00
4		5.00		3,150.00
5		74.00		5,624.00
6		114.00		41,496.00
7		103.00		62,109.00
8		235.00		9,165.00
9		.17		40,031.43
10		.37		125,615.00
11		.36		22,932.00
12		7.00		30,450.00
13		8.00		40,800.00
14		1,200.00		1,200.00
15		1,500.00		1,500.00
16		250.00		3,000.00
17		3.75		397.50
18		150.00		300.00
19		7,000.00		7,000.00
20		1,125.00		1,125.00
21		1,000.00		1,000.00
22		1,000.00		1,000.00
23		1,100.00		1,100.00
TOTAL				426,539.17

BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X-020	5	N. D.	I-29-416		101	428

HYDRAULIC DESIGN DATA

DRAINAGE AREA _____ 20 SQ. MI.
DESIGN FREQUENCY _____ 50 YEARS
DESIGN DISCHARGE _____ 1290 C.F.S.
STREAM GRADIENT _____ 0.0005 FT/FT
DEPTH OF FLOW _____ 5.0 FT.
WATERWAY PROVIDED BELOW DESIGN STAGE _____ 132 SQ. FT.
WATERWAY PROVIDED BELOW CLEARANCE _____ 214 SQ. FT.
VELOCITY OF FLOW UNDER BRIDGE _____ 9.8 F.P.S.
FREEBOARD PROVIDED _____ 2.6 FT.
MAXIMUM DISCHARGE @ STAGE _____ NOT RECORDED
MINIMUM WATER ELEVATION _____ DRY

SPECIAL PROVISIONS

SP-32 Reinforcement
SP-29 Concrete Structures
SS-21 Piling
SP-34 Quick Setting Anchor Grout
(This Project) Epoxy Resin

ESTIMATE OF QUANTITIES

SPEC. CODE NO.	BID ITEM	QUANTITY
202 0250	REMOVAL OF PORTIONS OF EXISTING STRUCTURE	LUMP SUM
203 0908	COMMON EXCAVATION	6,499 CU. YD.
208 0110	CLASS 2 EXCAVATION	333 CU. YD.
228 0100	SELECT BACKFILL	145 CU. YD.
205 0998	MOISTURE CONTROL	LUMP SUM
600 1118	CLASS AA-1 CONCRETE (SUBSTRUCTURE)	884 CU. YD.
610 1118	CLASS AA-1 SLAB (SUPERSTRUCTURE)	78.1 CU. YD.
610 0136	CLASS AA-3 (RAILING)	5.86 CU. YD.
602 0110	REINFORCING STEEL (GRADE 40)	28,259 LB.
622 0020	STEEL PILING 10BP42	1,680 LIN. FT.
622 0040	STEEL PILING 12BP53	360 LIN. FT.
9225	PILE STRUT	12 EACH
750 0400	LINSEED OIL TREATMENT	8.0 GAL.
3000	BRIDGE BENCH MARKS	1 SET

STRUCTURAL DRAWINGS

GENERAL DRAWING (THIS SHEET), 29-35L-1, 29-35L-2
SUBSTRUCTURE 29-35L-3, 29-35L-4
SUPERSTRUCTURE 29-35L-1, 29-35L-6, H-0155, H-0404, H-0501, STD. 7.6 & STD. 14.98

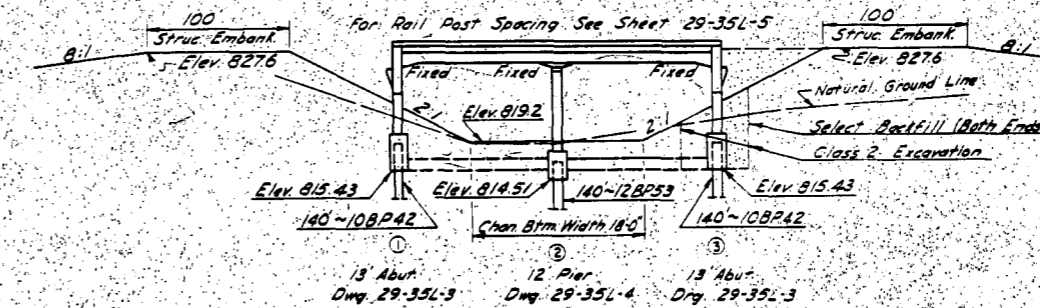
DESIGN LOADING HS20 (1944)* SCALE 1 INCH = 10 FEET

NORTH DAKOTA STATE HIGHWAY DEPARTMENT
DRAINAGE DITCH BRIDGE LAYOUT
PROJECT I-29-4(16) STA. 661+56.5
GRAND FORKS COUNTY

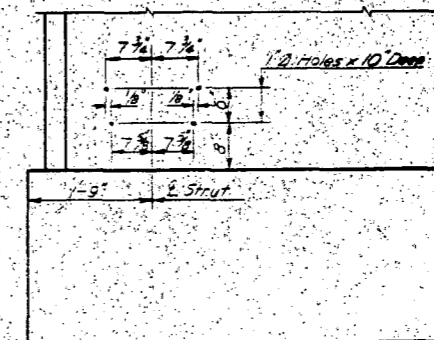
APPROVED
3-6-69
DATE
Joseph R. Kirby
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA



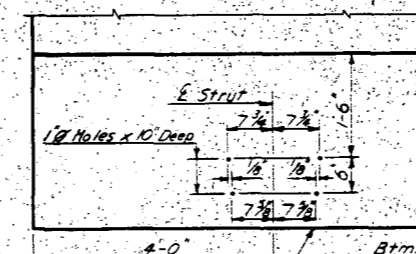
DETAIL AT ABUTMENTS



A-A



B-B



C-C



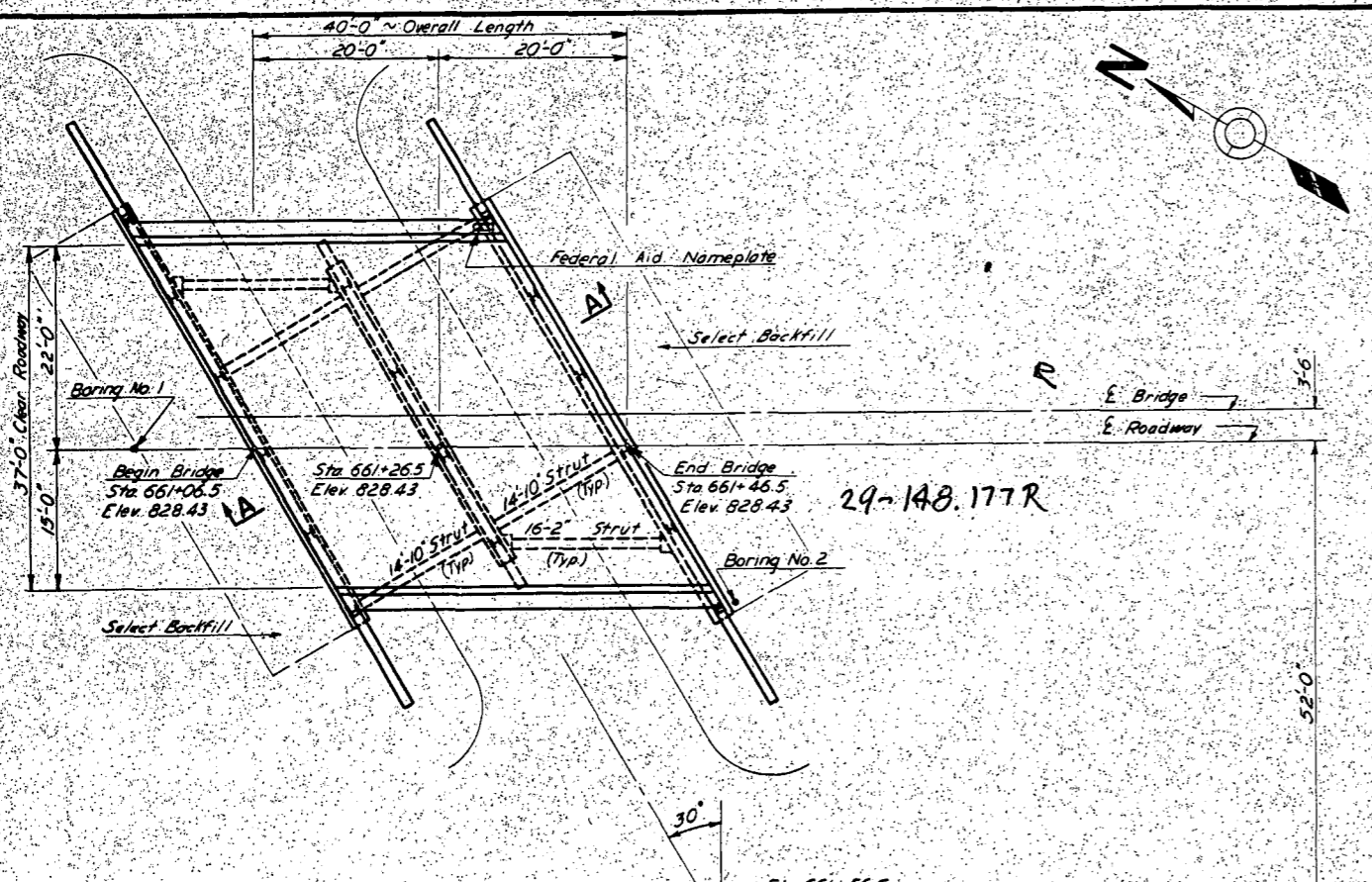
1970
FEDERAL AID PROJECT
I-29-4(16)
NORTH DAKOTA
29-35L

1950
FEDERAL AID PROJECT
FI-125(3)
NORTH DAKOTA
29-35R

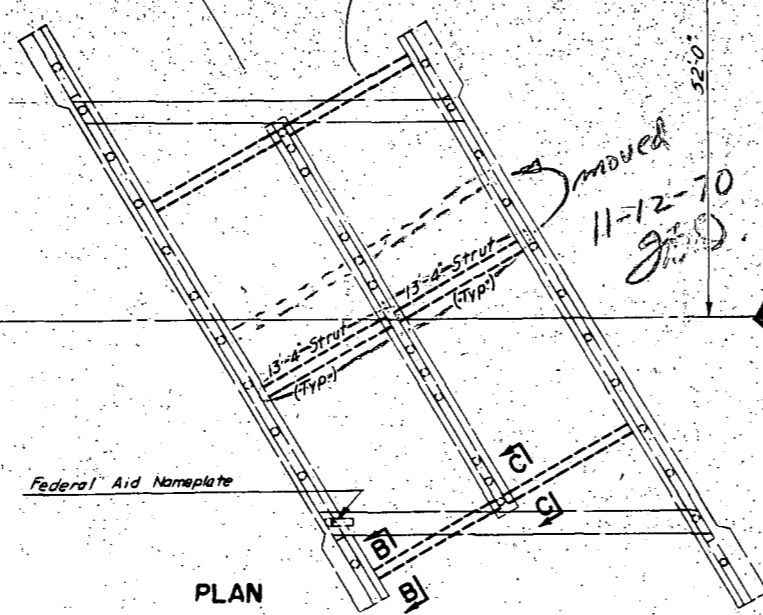
FEDERAL AID NAMEPLATE
ONE REQ'D. ON NEW BRIDGE

FEDERAL AID NAMEPLATE
ONE REQ'D. ON EXISTING BRIDGE

* HS20 and "Alternate Loading as designated in PPM, 20-A, Section 4-C"



PLAN



BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
133	Tr. Mon. By T.P.	Sta 655+27 146 Pt	824.81
154	X On S.E. Bridge Abut.	Sta 661+83 274 Pt	828.37
155	Tr. Mon. By T.P.	Sta 670+16 146 Pt	825.09

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND			DESIGN LOAD	MAX. REQ. BEARING	# MINIMUM PENETRATION
				50 LB.	15 LB.	100 LB. LL			
Abut 1 & 3	18.3T	84T	1.2T				27.9T	36.3T	
Pier 2	33.8T	31.2T	0.8T				63.2T	70.0T	

* Below Bottom Of Footing In Feet

REVISIONS

NO.	DATE	BY	DESCRIPTION

TOPOGRAPHY

PLOTTED BY	
CHECKED BY	
MADE BY	
CHECKED BY	
MADE BY	
CHECKED BY	
MADE BY	
CHECKED BY	

29-35L

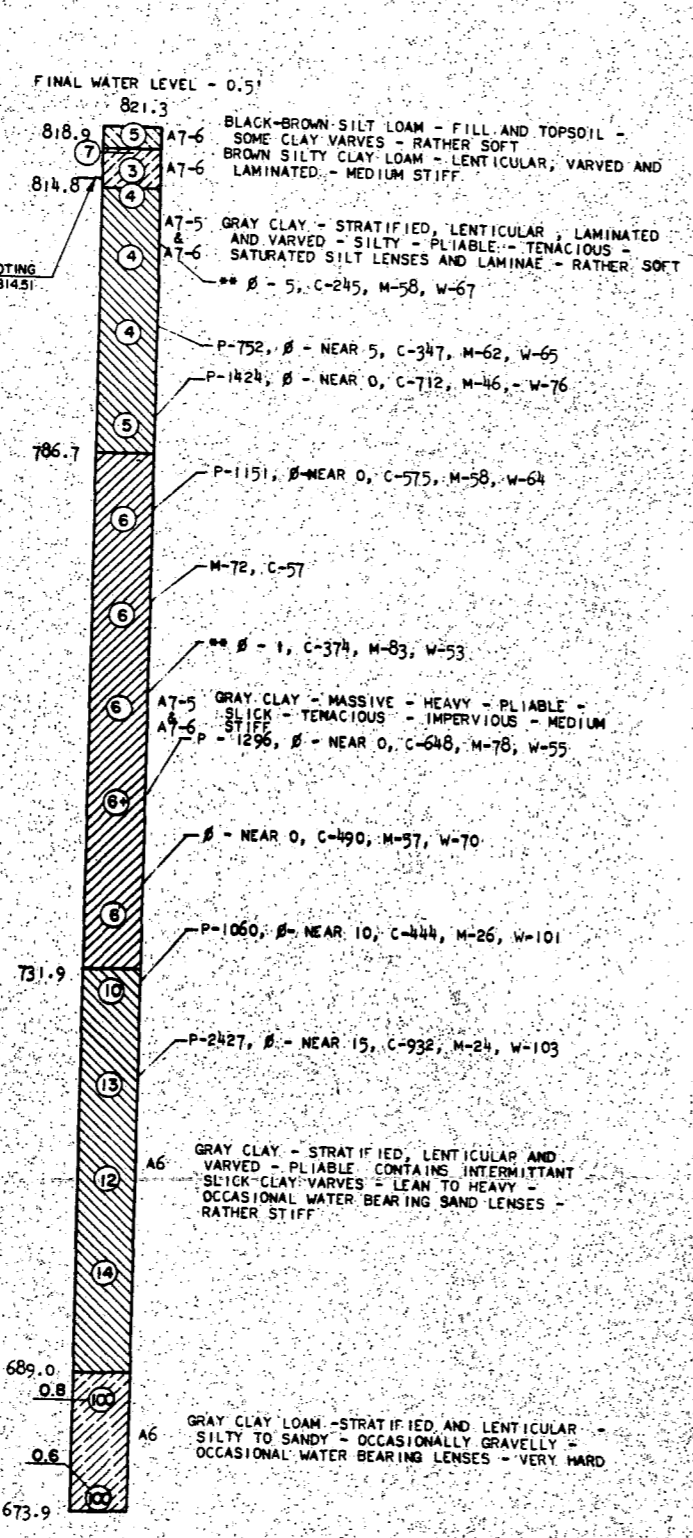
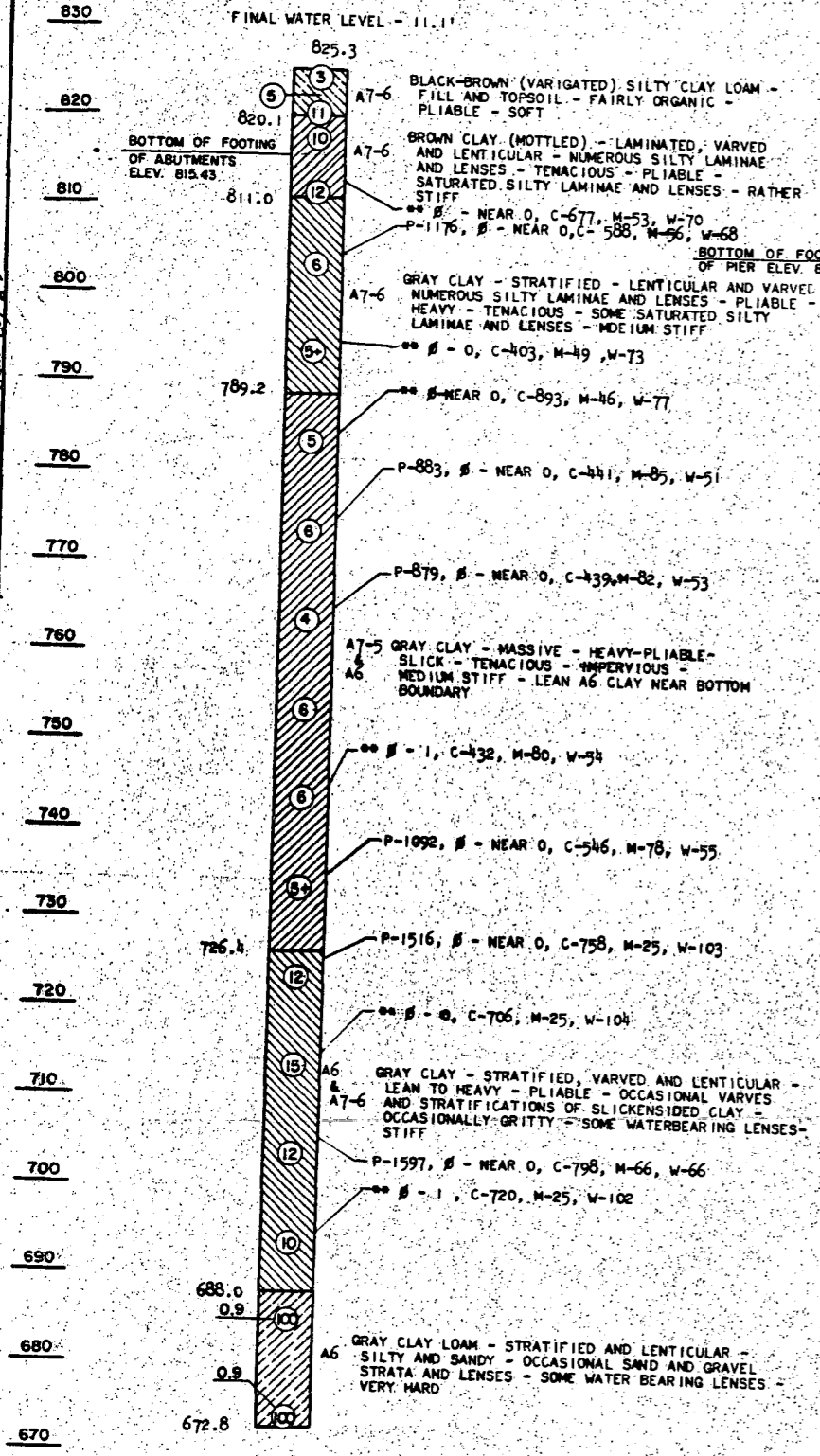
29-35L

29-148,177R

29-35L

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-406		102	428

Plotted by S.H. Y.H.S. Jan. 19, 49



SYMBOLS:
P - MAXIMUM LOAD (LBS./SQ. FT.)
beta - SHEAR ANGLE (DEGREES)
C - COHESION (LBS./SQ. FT.)
M - MOISTURE (PER CENT)
W - DRY WEIGHT (LBS./CU. FT.)

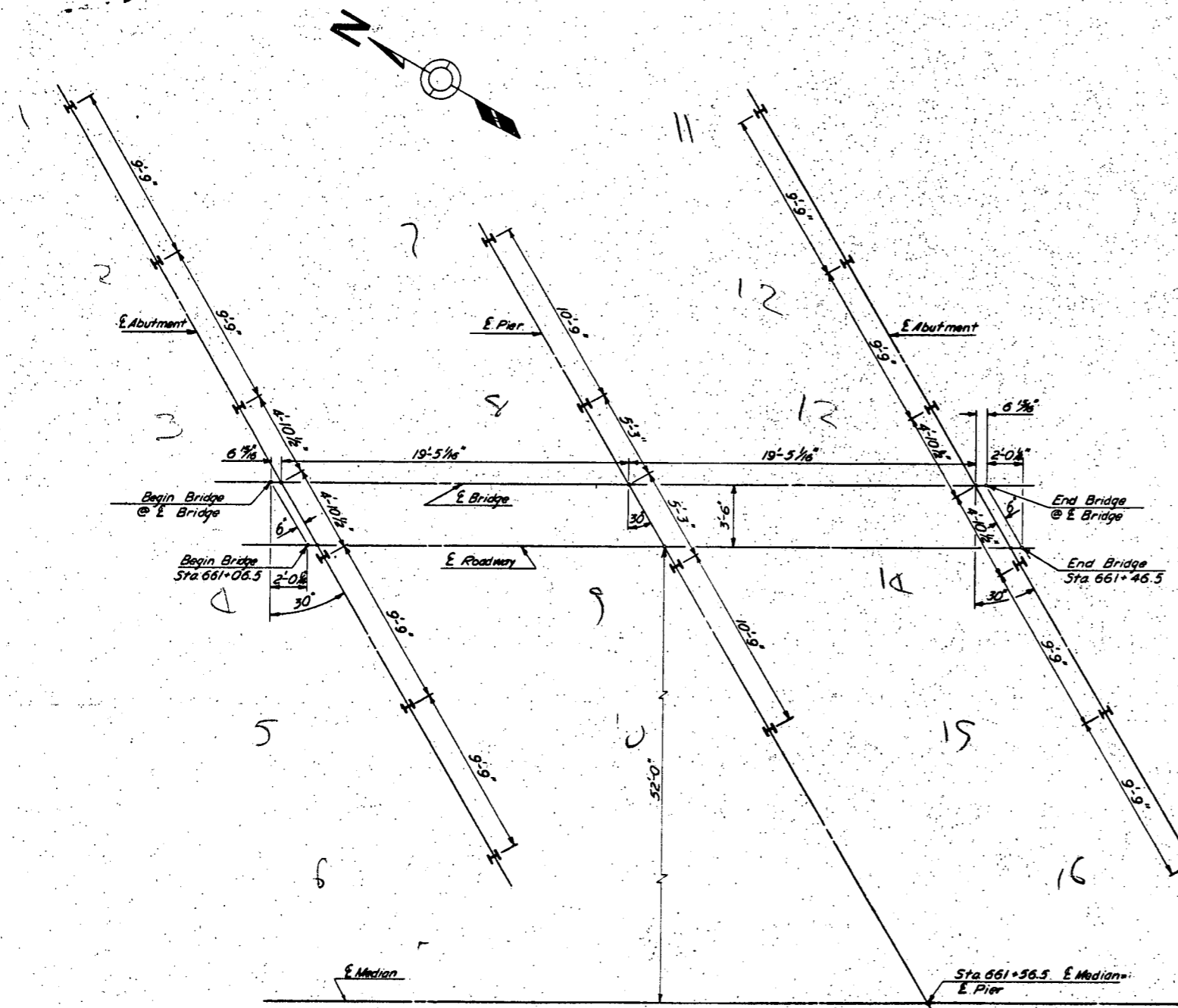
NOTES:
ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LB. HAMMER FROM A HEIGHT OF 30" TO DRIVE CORE TUBE 1.0'.
THE BORING LOG DATA SHOWN IS FOR DESIGN PURPOSES ONLY. THE STATE ASSUMES NO RESPONSIBILITY IF SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN.

BRIDGE NO. 29-35L

BORING LOG
I-29-406
GRAND FORKS COUNTY

REVISIONS		MADE BY	DATE

DESIGN	MADE BY	CHECKED BY
DETAILS	MADE BY ROM	CHECKED BY RAR
TRACING	MADE BY ROM	CHECKED BY RAR
QUANTITIES	MADE BY	CHECKED BY



PILE STAKING LAYOUT

GENERAL:
WORK SHALL CONFORM TO ALL APPLICABLE PARAGRAPHS OF THE "NORTH DAKOTA STATE HIGHWAY DEPARTMENT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", 1965 EDITION, AND TO ALL SPECIAL AND SUPPLEMENTAL SPECIFICATIONS IN THIS CONTRACT.

THE COST OF FURNISHING AND PLACING JOINT FILLER, ASPHALT CURB SEAL, NAME PLATES, AND OTHER MISCELLANEOUS ITEMS SHALL BE INCLUDED IN THE PRICE BID FOR CONCRETE.

PILE STRUTS:
STRUTS COMPOSED OF TREATED TIMBER PILES ARE TO BE PLACED IN BOTH THE OLD AND NEW STRUCTURES AS SHOWN ON THE PLANS. THE ENDS ARE TO BE TRIMMED FOR A SNUG FIT BETWEEN THE SUBSTRUCTURES AND IF NECESSARY, TO FIT IN THE BRACKETS. THREE COATS OF HOT CREOSOTE OIL SHALL BE APPLIED TO THE TRIMMED ENDS BEFORE FINAL PLACEMENT.

HOLES ARE TO BE DRILLED IN THE OLD FOOTINGS FOR THE BRACKET ANCHOR RODS WHICH SHALL BE SET IN GROUT CONSISTING OF ONE PART CEMENT TO ONE PART SAND.

THE PRICE BID FOR EACH STRUT SHALL INCLUDE ALL TRENCHING, BRACKETS, TREATED TIMBER PILES, AND LABOR NECESSARY TO SATISFACTORILY PLACE THE STRUTS.

CONCRETE:
ALL EXPOSED CORNERS OF CONCRETE SHALL BE BEVELED WITH 3/4" TRIANGULAR MOLDINGS UNLESS OTHERWISE NOTED. THE DECK SLAB CONCRETE SHALL BE STRUCK OFF AND COMPACTED BY AN APPROVED DECK FINISHING MACHINE. ALL CONCRETE ABOVE THE TOP OF CURBS SHALL BE CLASS 'AAE-3'. ALL OTHER CONCRETE SHALL BE CLASS 'AE-1'.

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE "RUBBED SURFACE FINISH" WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS, END POSTS, ALL EXPOSED FACES OF PIERS, AND ALL EXPOSED FACES OF ABUTMENT WINGS. ALL OTHER SURFACES SHALL BE GIVEN AN "ORDINARY SURFACE FINISH".

IF THE EXPOSED FACES OF THE ABUTMENTS AND PIERS HAVE A SURFACE FINISH ACCEPTABLE TO THE ENGINEER WITHOUT RUBBING, THE REQUIREMENT FOR "RUBBED SURFACE FINISH" MAY BE WAIVED AT THE OPTION OF THE ENGINEER, AND THE "ORDINARY SURFACE FINISH" WILL APPLY.

ALL "ORDINARY SURFACE FINISH" SHALL BE COMPLETED WITHIN 24 HOURS AFTER THE REMOVAL OF FORMS.

THE CONTRACTOR HAS THE OPTION OF USING THE SPECIAL SURFACE FINISH AS PROVIDED IN SPECIAL PROVISION NO. 29, CONCRETE STRUCTURES, IN LIEU OF THE "RUBBED SURFACE FINISH" (602-3-10.3) CALLED FOR ABOVE.

REINFORCING STEEL:
DIMENSIONS FOR BENT BARS ARE GIVEN OUT TO OUT. ALL BENDS ARE TO MEET ACI STANDARDS UNLESS OTHERWISE NOTED.

LINSEED OIL TREATMENT:
LINSEED OIL TREATMENT SHALL NOT BE APPLIED UNTIL ALL CONCRETE WORK IS COMPLETED AND ASPHALT CURB SEAL HAS BEEN INSTALLED.

PILING:
THE PILES FOR THIS STRUCTURE SHALL BE DRIVEN BY A STEAM, AIR OR DIESEL HAMMER HAVING A RATED ENERGY AND RAM WEIGHT NOT LESS THAN 81,500 FOOT-POUND-TONS AS COMPUTED BY THE FORMULA $W(E-3,820) + 0.94E$, WHERE W IS THE WEIGHT OF RAM IN TONS AND E IS THE RATED HAMMER ENERGY AS ALLOWED IN THE SPECIAL PROVISIONS/SUPPLEMENTAL SPECIFICATIONS. IN NO CASE SHALL THE RAM WEIGHT BE LESS THAN 4,000 POUNDS.

DESIGN STRESSES:

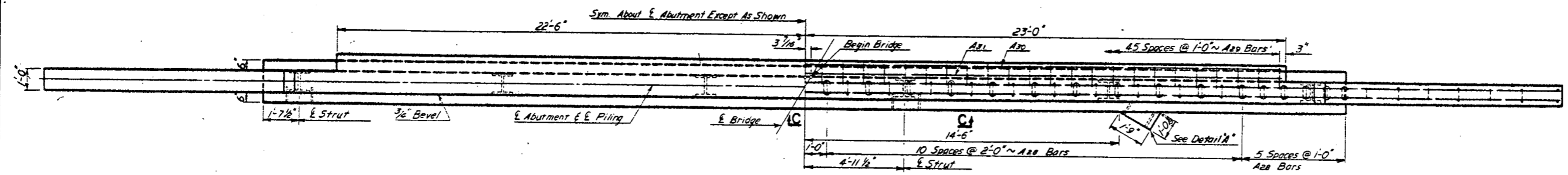
FC	1,700 PSI	CLASS 'AAE-3' CONCRETE
FC	1,200 PSI	CLASS 'AE-1' CONCRETE
FS	20,000 PSI	REINFORCING STEEL

PILE STAKING LAYOUT AND GENERAL NOTES

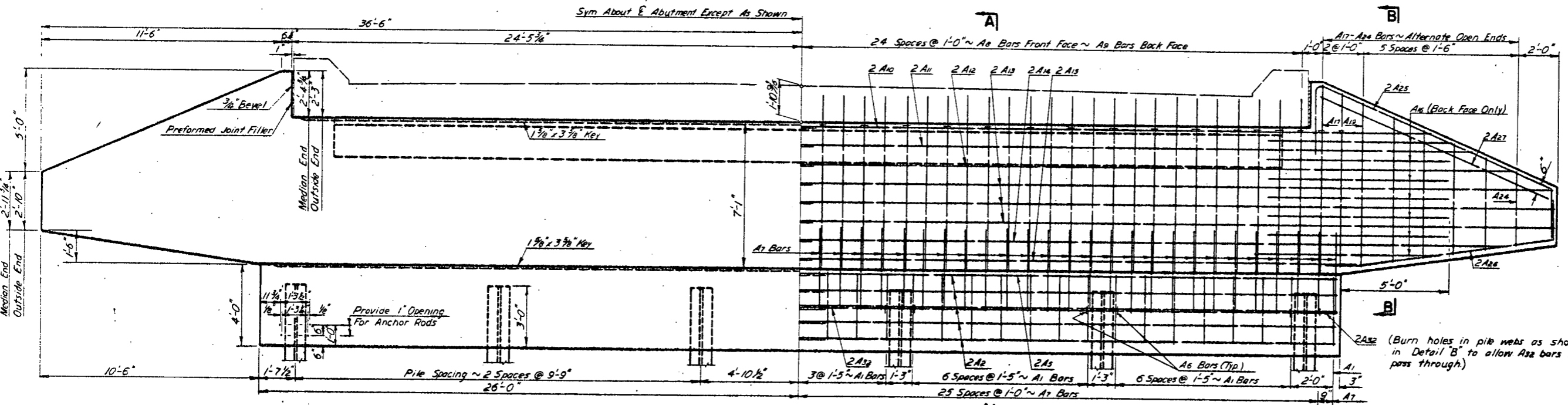
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	7-29-488		104	428

BAR LIST (ONE ABUT.)

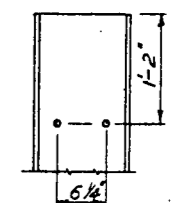
MARK	NO.	SIZE	LENGTH	SHAPE
A1	37	5	10'-6"	Bent
A2	20	8	27'-3"	Str.
A3	2	4	4'-0"	Bent
A4	1	4	1'-0"	Str.
A5	4	4	26'-6"	"
A6	12	4	2'-6"	Bent
A7	53	5	9'-9"	"
A8	49	5	8'-6"	Str.
A9	49	5	6'-11"	"
A10	4	5	31'-3"	"
A11	4	4	33'-3"	"
A12	4	4	35'-3"	"
A13	12	4	37'-0"	"
A14	4	4	34'-9"	"
A15	4	4	27'-3"	"
A16	14	5	8'-9"	"
A17	2	5	18'-8"	Bent
A18	2	5	17'-6"	"
A19	2	5	16'-4"	"
A20	2	5	14'-8"	"
A21	2	5	12'-10"	"
A22	2	4	11'-2"	"
A23	2	4	9'-6"	"
A24	2	4	7'-8"	"
A25	4	6	19'-0"	"
A26	4	6	13'-3"	"
A27	4	5	12'-6"	Str.
A28	32	4	1'-9"	Bent
A29	46	4	4'-0"	"
A30	2	6	23'-9"	Str.
A31	2	4	23'-6"	"
A32	4	4	26'-6"	"



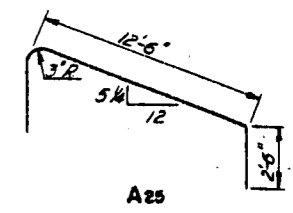
Showing Dimensions PLAN Showing Reinforcing



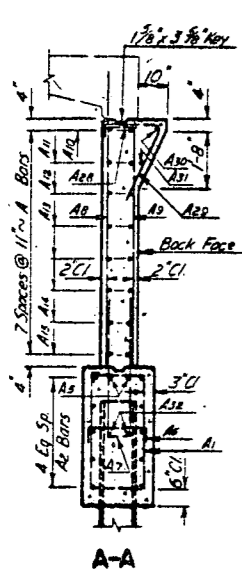
Showing Dimensions ELEVATION Showing Reinforcing



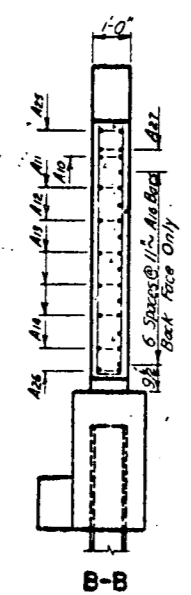
DETAIL "B"



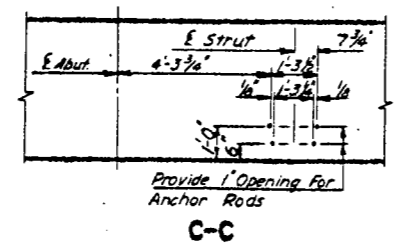
A25



A-A

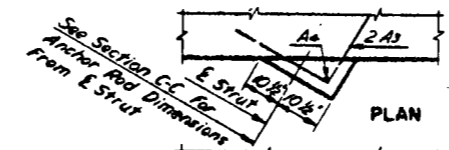


B-B

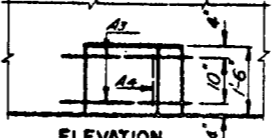


C-C

See Sheet 29-35L-4 for detail of strut brackets.

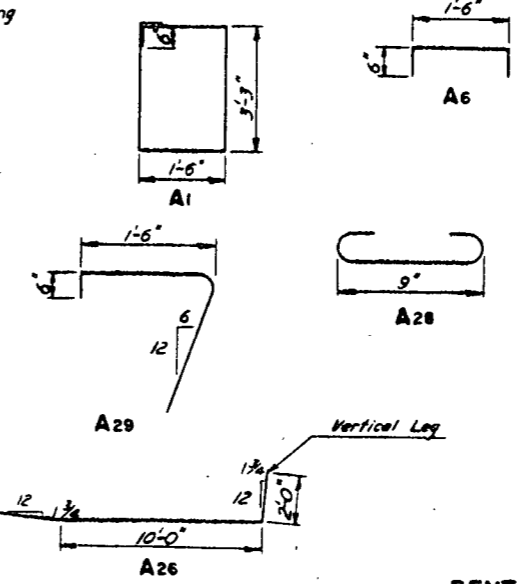


PLAN



ELEVATION

DETAIL "A"



BENT BAR DETAILS
Dimensions shown are out to out.

QUANTITIES (ONE ABUT.)

Cross A-1 Concrete	336 Cu Yds
Reinforcing Steel	4872 Lbs

13' ABUTMENT FOR SLAB SPANS
37' ROADWAY 30° SKEW
HS20 LOADING

29-35L-3

29-35L-3

BAR LIST

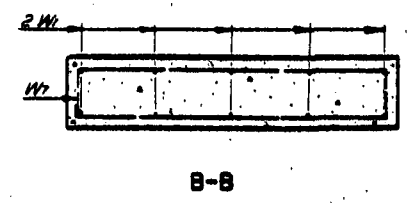
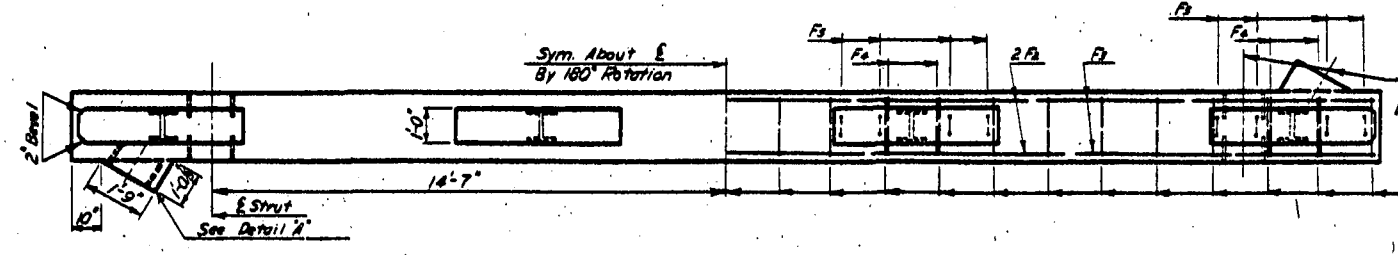
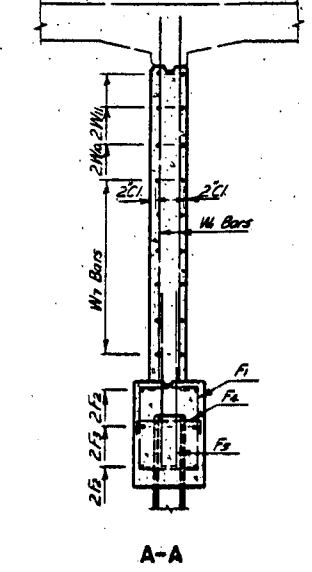
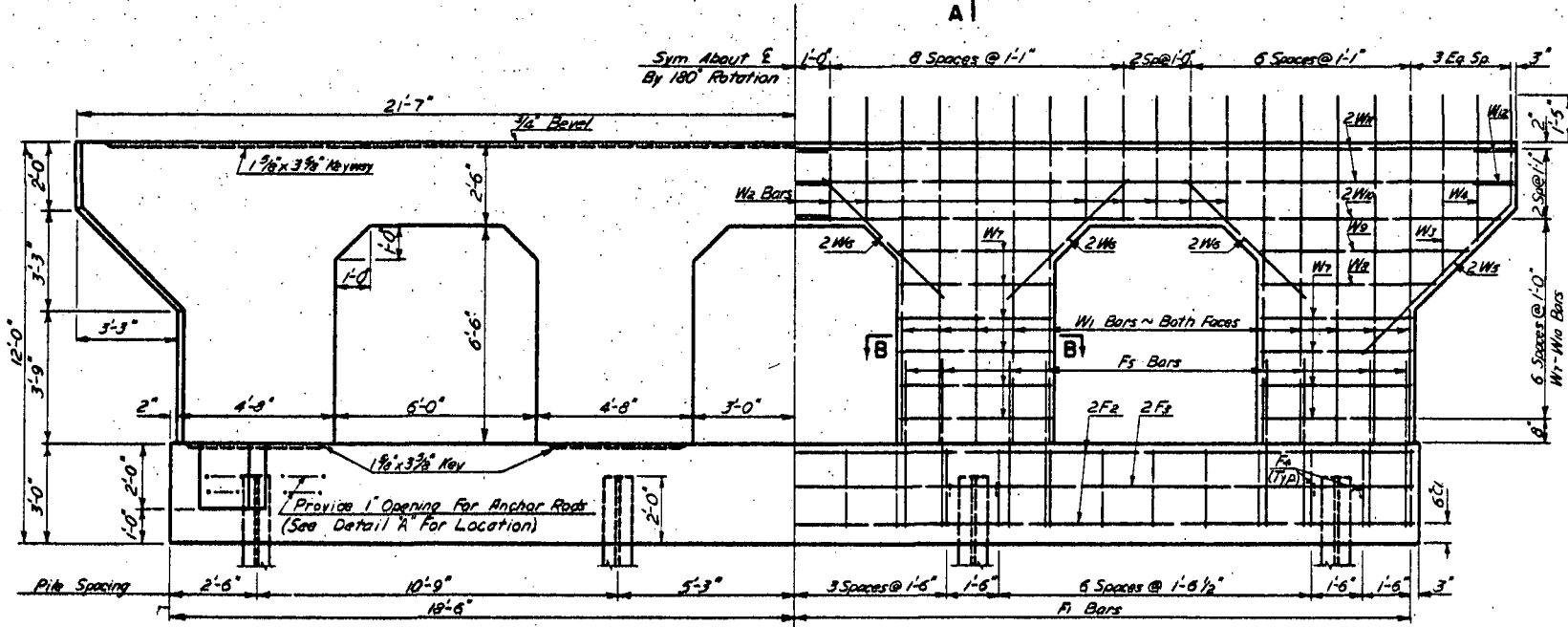
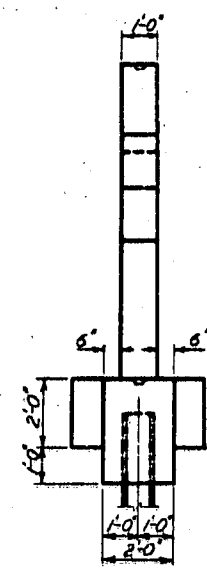
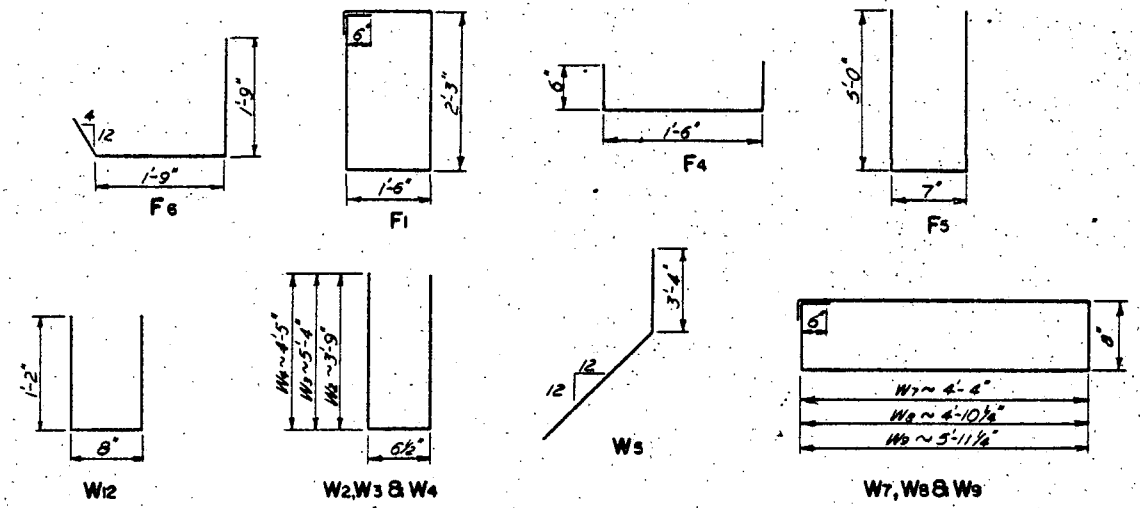
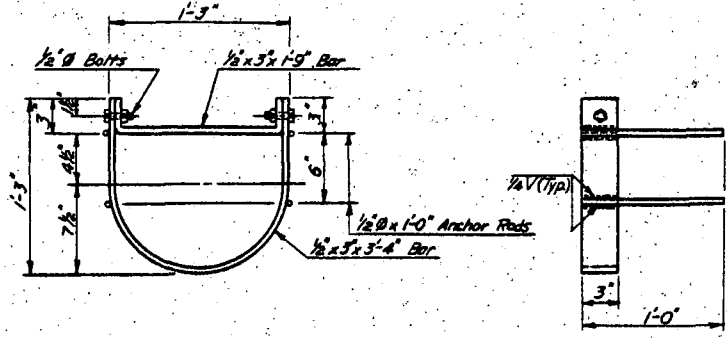
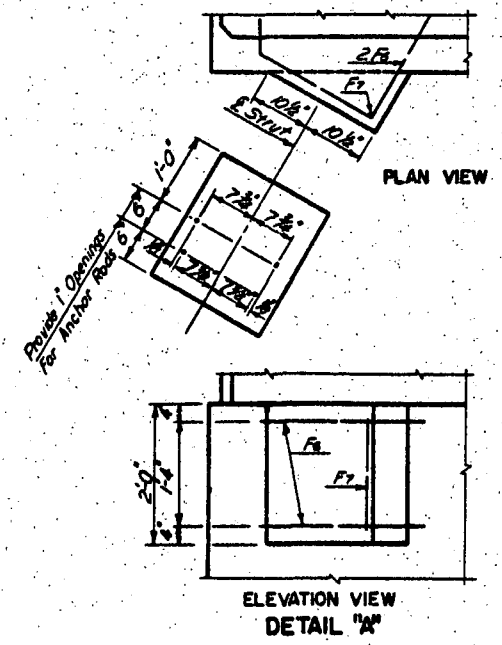
MARK NO.	SIZE	LENGTH	SHAPE
F1	25	5	8'-6" Bent
F2	4	8	36'-8" Str.
F3	2	6	36'-8" "
F4	8	4	2'-6" Bent
F5	16	6	10'-8" "
F6	4	4	4'-0" "
F7	2	4	7'-6" Str.
W1	40	5	10'-5" Str.
W2	15	5	9'-0" BENT
W3	2	5	11'-3" "
W4	2	5	9'-4" "
W5	4	6	9'-5" "
W6	12	6	5'-0" Str.
W7	20	4	11'-0" Bent
W8	2	4	12'-0" "
W9	2	4	14'-3" "
W10	4	6	21'-9" Str.
W11	8	7	22'-3" "
W12	4	4	3'-0" Bent
SR1	1	4	3'-9" Str.
SR2	1	5	4'-0" "
SR3	1	6	4'-6" "
SR4	1	8	5'-4" "

* Sample replacement bars are to be spliced to bars from which a 2'-0" sample has been cut. Furnish only one of each for entire bridge.
The replacement bars will not be paid for directly. Their cost shall be included in the unit price bid for reinforcing steel.

QUANTITIES

Class A-1 Concrete	172 Cu Yds.
Reinforcing Steel	2,436 Lbs.

12' PIER FOR SLAB SPANS
37' ROADWAY.
30° SKEW HS20 LOADING



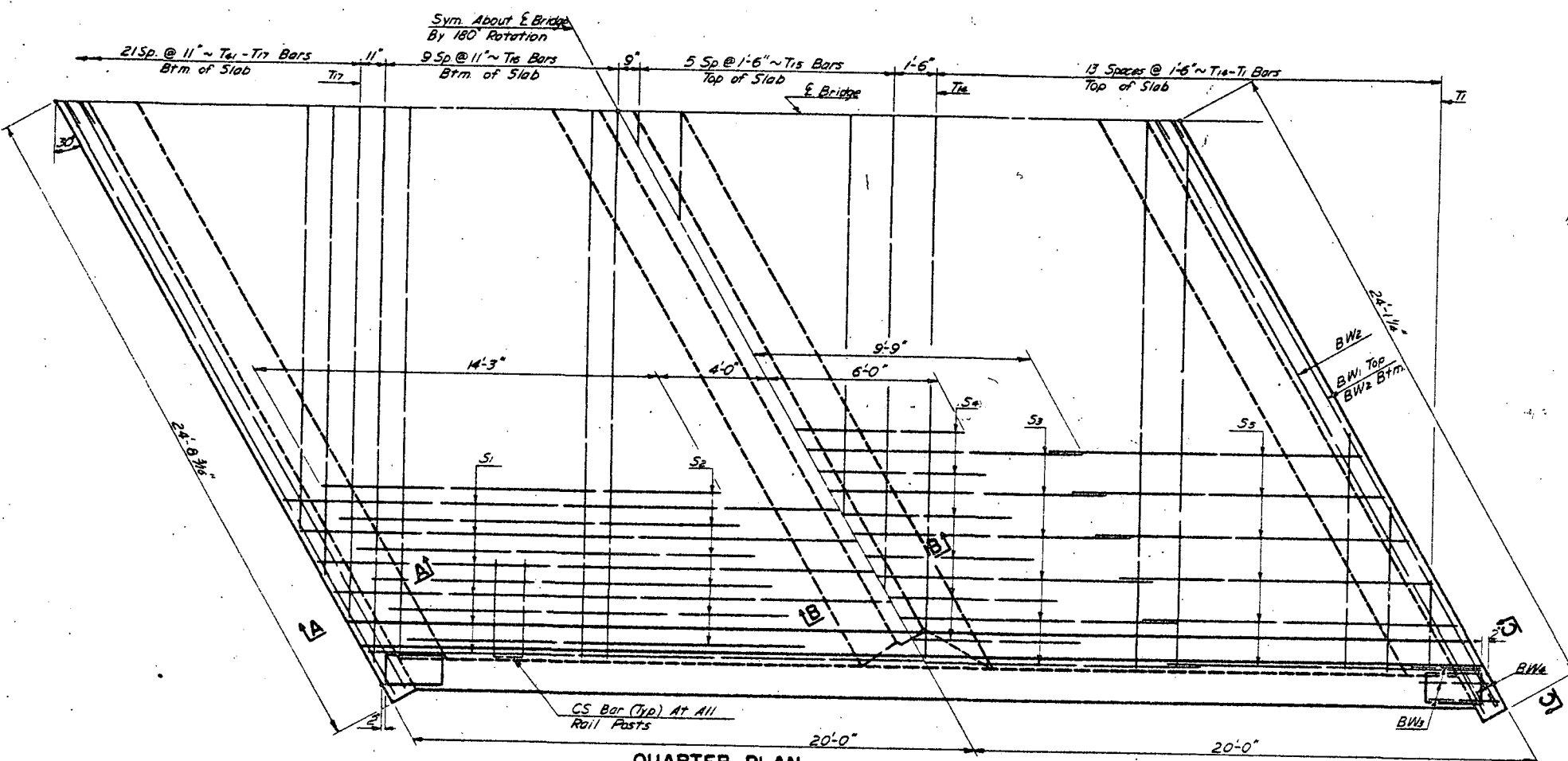
DESIGN	REVISIONS	DATE
MADE BY L.P.H.		
CHECKED BY D.L.V.		
MADE BY R.A.R.		
CHECKED BY L.P.H.		
MADE BY R.D.M.		
CHECKED BY R.A.R.		
MADE BY L.C.S.		
CHECKED BY L.C.S.		

29-35L-4

29-35L-4

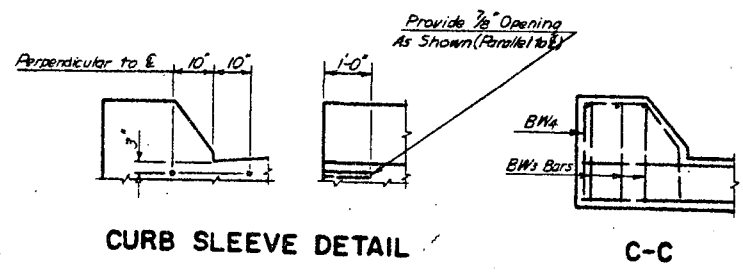
Right 29-35L-4

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	1-29-063		106	428



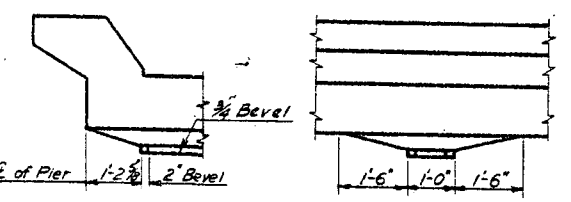
QUARTER PLAN
(Showing Reinforcing In Bottom of Slab)

QUARTER PLAN
(Showing Reinforcing In Top of Slab)

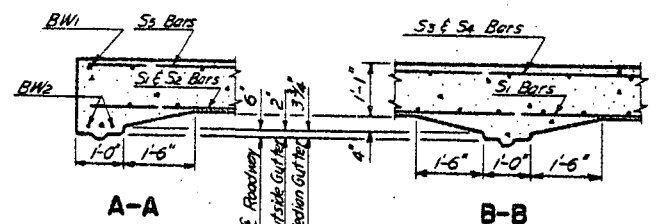


CURB SLEEVE DETAIL

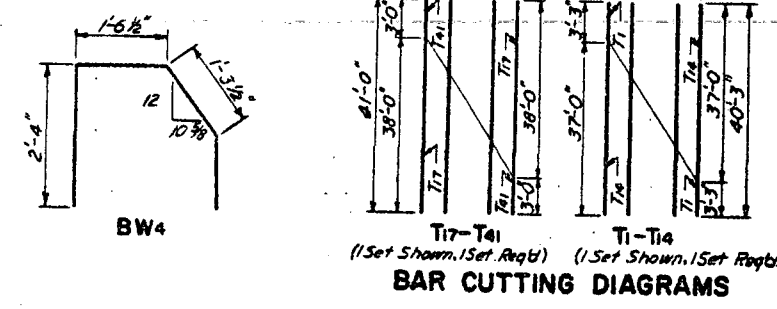
BAR LIST					
MARK	NO.	SIZE	LENGTH	SHAPE	
BW1	4	6	26'-3"	Str.	
BW2	8	4	25'-6"	"	
BW3	12	5	4'-9"	Bent	
BW4	8	5	6'-6"	"	
C1	100	5	6'-0"	Bent	
C2	10	5	39'-8"	Str.	
C3	2	6	39'-8"	"	
C4	4	5	10'-0"	"	
C5	12	6	8'-0"	Bent	
P1	24	6	4'-0"	Bent	
P2	12	6	4'-9"	"	
P3	24	5	4'-9"	"	
P4	24	3	3'-9"	"	
P5	16	3	2'-9"	"	
P6	8	3	4'-3"	"	
R1	24	6	17'-0"	Str.	
RC	80	3	2'-10"	Bent	
S1	37	8	39'-8"	Str.	
S2	72	8	14'-3"	"	
S3	27	8	18'-6"	"	
S4	26	8	12'-0"	"	
S5	54	4	11'-6"	"	
Tr-Ts	1 Set	4	563'-6"	Str.	
Ts	12	4	39'-2"	"	
Ts	19	5	39'-2"	"	
Tr-Ts	1 Set	5	943'-0"	"	



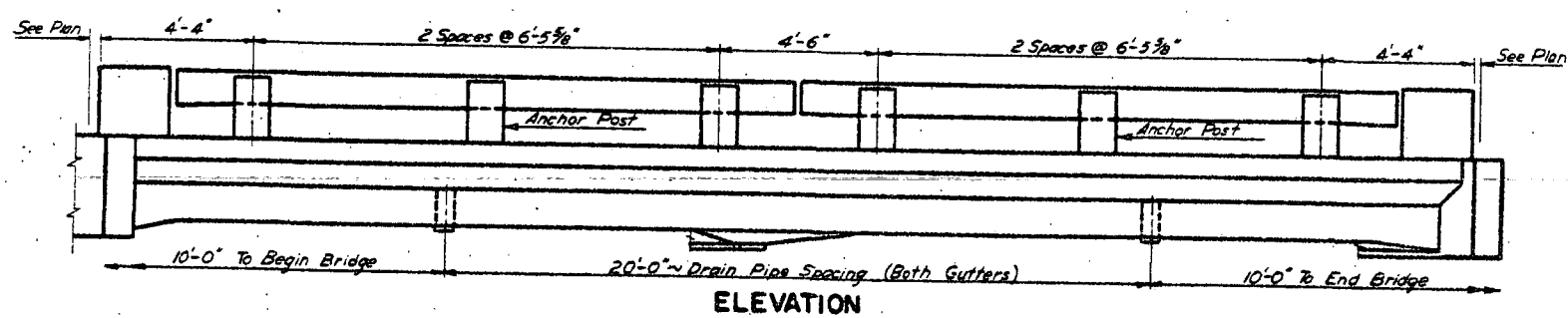
PIER HAUNCH DETAILS



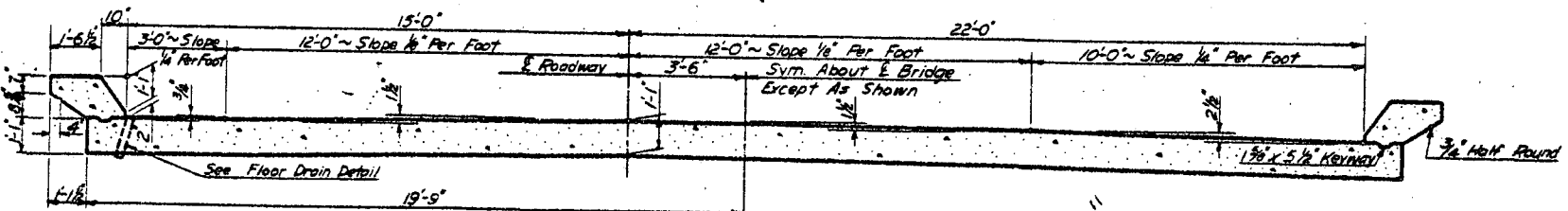
A-A **B-B**



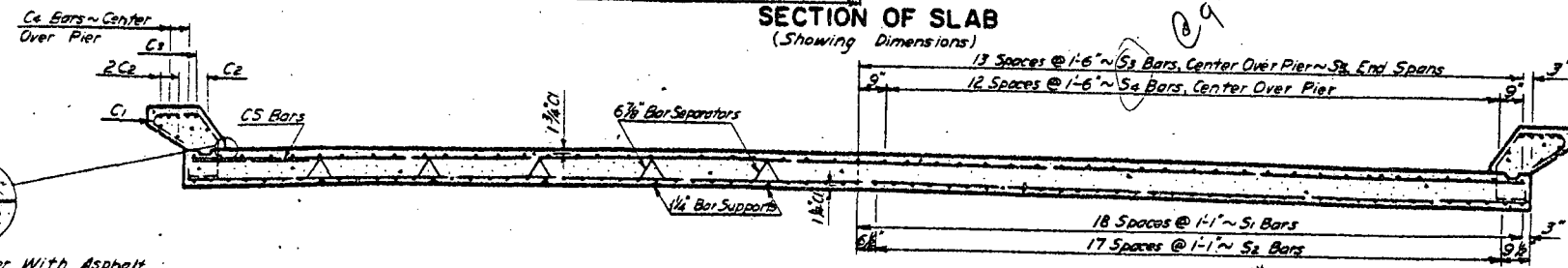
BAR CUTTING DIAGRAMS



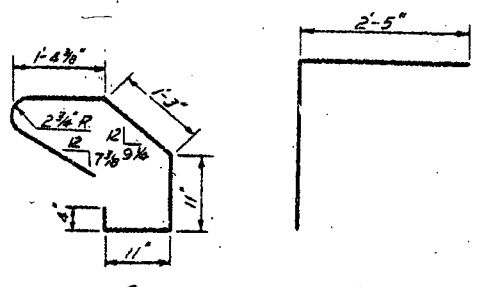
ELEVATION



SECTION OF SLAB
(Showing Dimensions)



SECTION OF SLAB
(Showing Reinforcing)



BENT BAR DETAILS
(Dimensions are shown out to out)

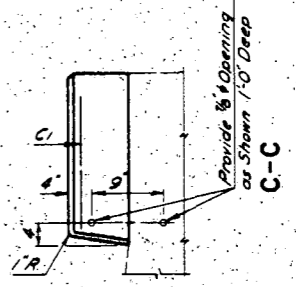
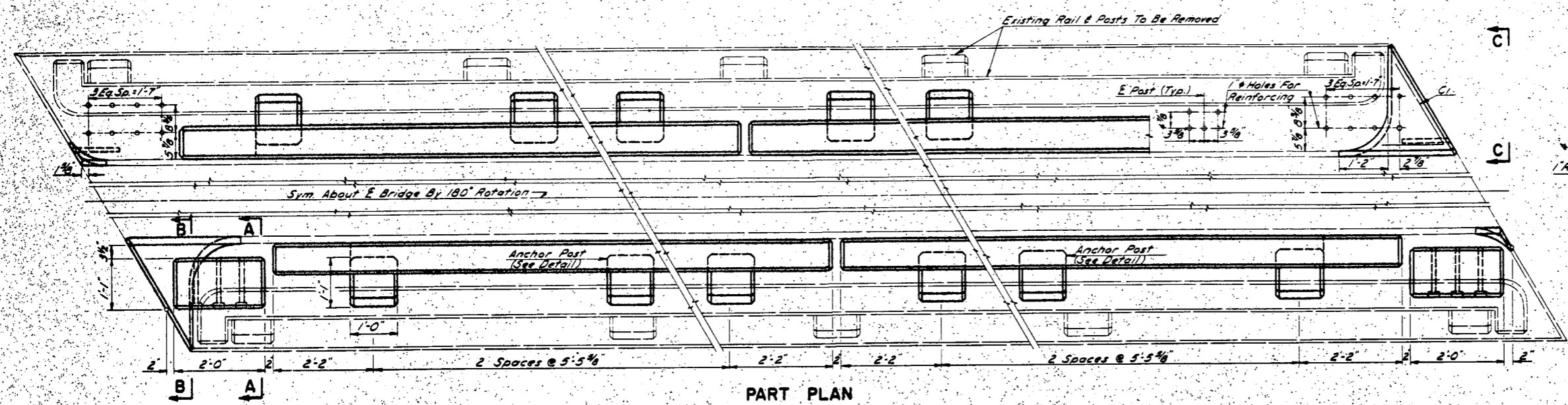
QUANTITIES	
Class AE-1 Concrete	76.1 Cu Yds
Class AE-3 Concrete	9.01 Cu Yds
Reinforcing Steel	74,780 Lbs
Includes 4 End Posts	

DETAILS FOR SLAB SPANS
40' OVERALL LENGTH
37' CLEAR ROADWAY
MS20 LOADING

FLOOR DRAIN DETAIL
Will not be paid for directly but will be considered incidental to Class AE-1 Concrete.

Seal Corner With Asphalt Flashing Compound (Knife Grade)

DESIGN	MADE BY	DATE
DETAILS	CHECKED BY	
TRACING	MADE BY	
QUANTITIES	CHECKED BY	



NOTES:

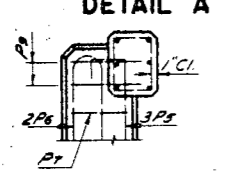
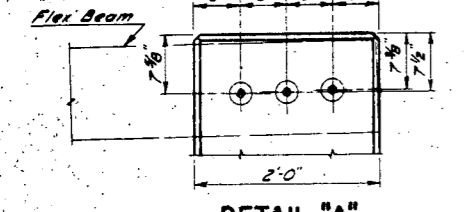
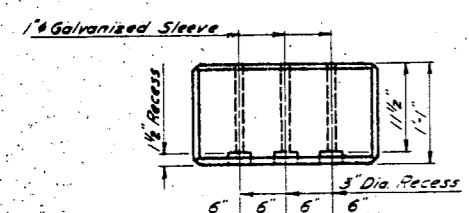
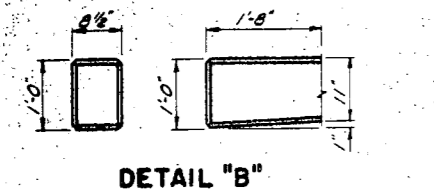
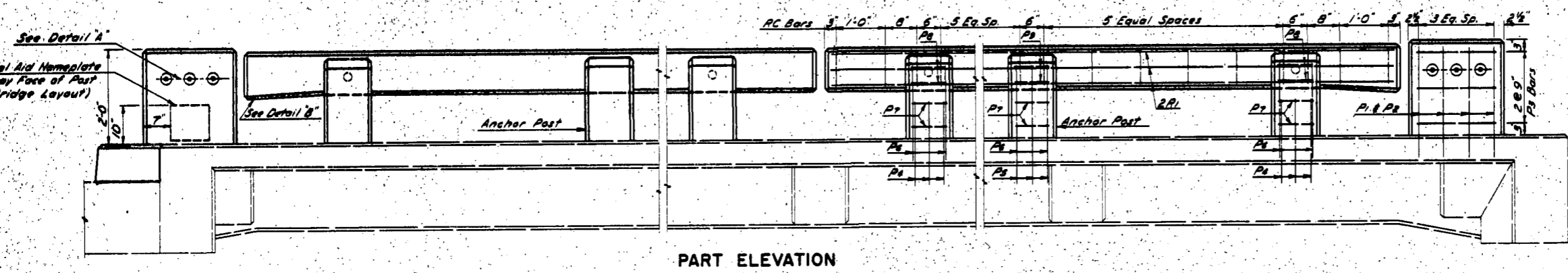
All old railing and posts shall be removed from the existing structure. The exposed reinforcing shall be cut or burned off slightly below the top of the curb unless such reinforcing can be utilized within the framework of the new railing or posts. All areas where steel removal is necessary shall be painted with an epoxy resin and then smoothly patched with mortar.

Before pouring the new concrete, contact surfaces between new and old concrete shall be painted with epoxy resin (Special Provision, This Project). Epoxy not needed between curb and posts.

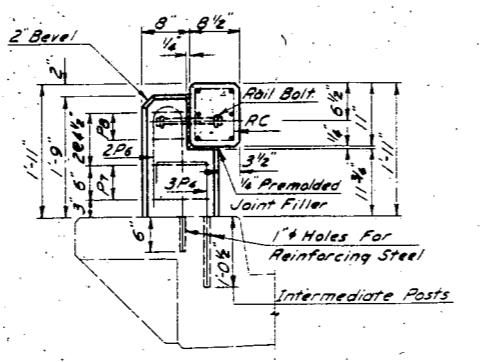
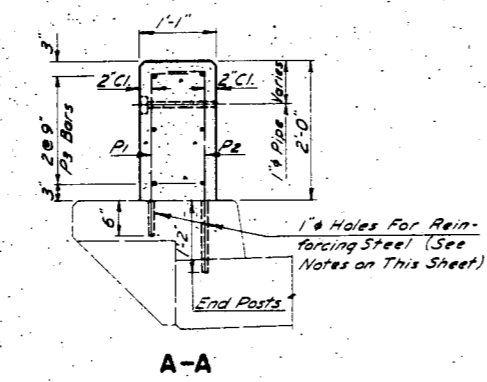
Holes shall be drilled as shown in the existing structure to permit the anchorage of the new reinforcing in quick setting anchor grout, Special Provision SP-34.

The price bid for "Removal of Portions of Existing Structure" shall include the removal of the railing, posts, end posts and all unusable reinforcing steel as well as the cost of patching. The cost of epoxy resin, post-anchorage holes, quick setting grout and the 1/4" openings provided for the approach curb shall be included in the price bid for Class AAE-3 Concrete.

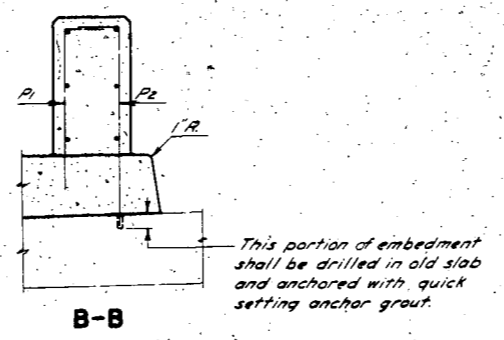
Concrete for the curb addition is included in the quantities for Class AAE-3 Concrete.



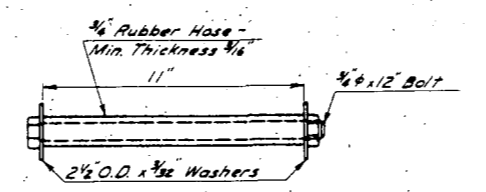
ANCHOR POST DETAIL



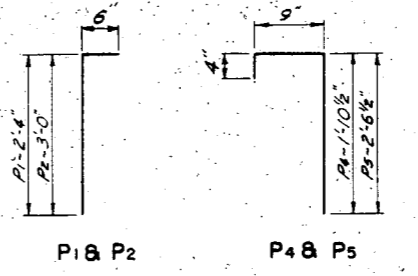
TYPICAL SECTION



B-B

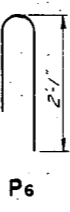


RAIL BOLT (Galvanized) To be Included in the unit Price Bid for Class AAE-3 Concrete

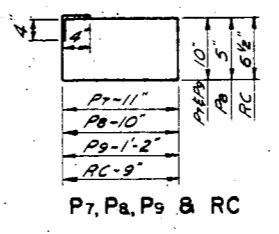


P1 & P2

P4 & P5



P6



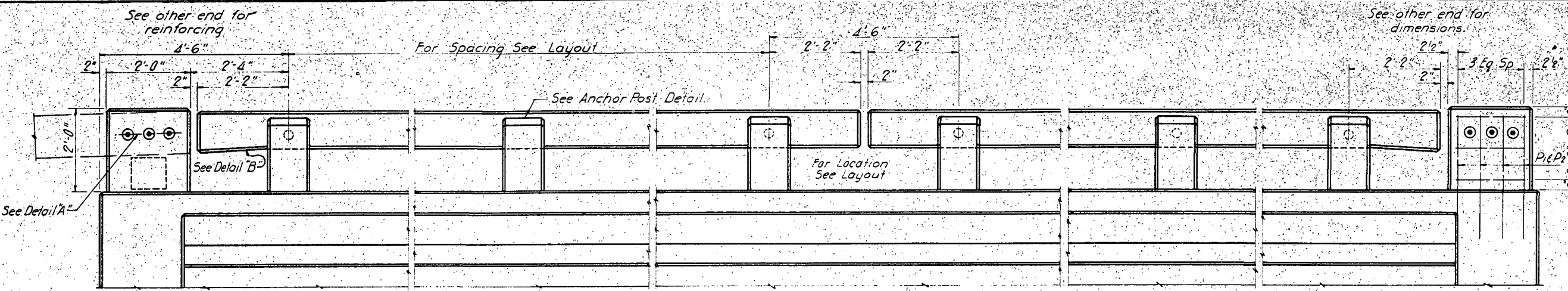
P7, P8, P9 & RC

BENT BAR DETAILS Dimensions Shown Are Out to Out

BAR LIST					
MARK	NUMBER	SIZE	LENGTH	SHAPE	UNIT WT.
P1	16	5	2'-9"	Bent	2.87
P2	16	6	3'-3"		4.88
P3	24	4	1'-8"	Str.	1.11
P4	24	6	2'-11"	Bent	4.38
P5	12	6	3'-7"		5.38
P6	24	5	3'-9"		3.91
P7	24	3	3'-9"		1.41
P8	16	3	2'-9"		1.03
P9	8	3	4'-3"		1.60
RC	72	3	2'-10"	Bent	1.06
P1	24	6	15'-0"	Str.	22.53
C1	2	4	3'-3"	Bent	2.17

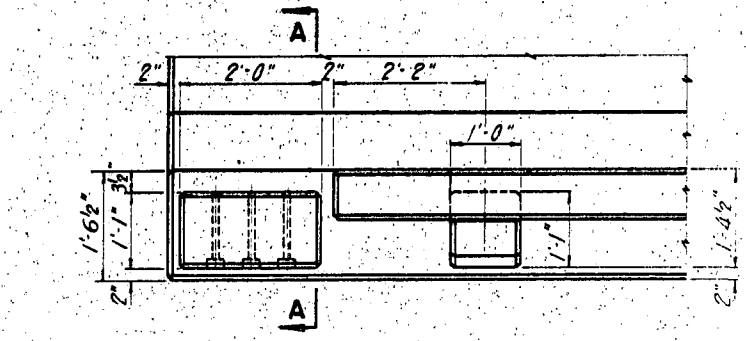
QUANTITIES	
Class AAE-3 Concrete	2.95 Cu Yds.
Reinforcing Steel	1,089 Lbs.

RAILING & CURB
DETAILS FOR
EXISTING STRUCTURE

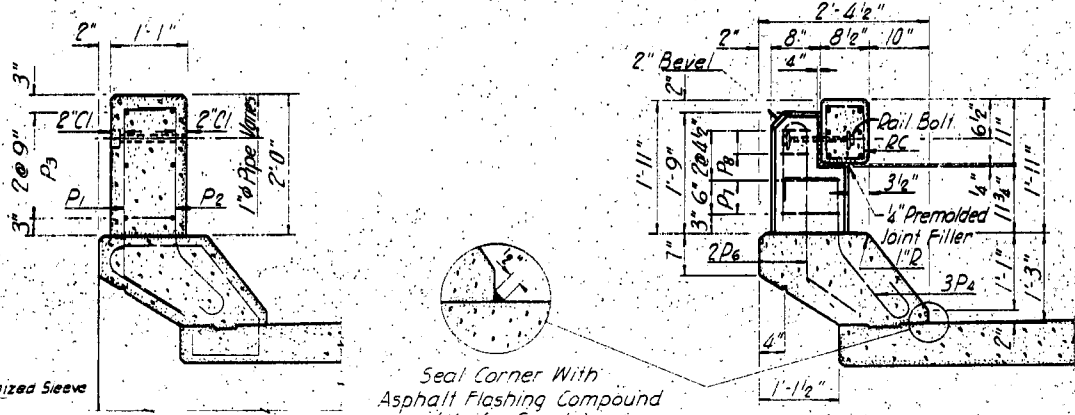


PART ELEVATION

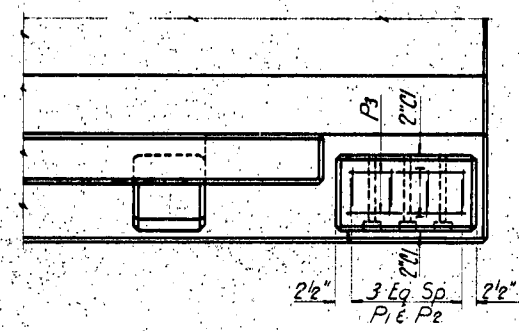
NOTES:
 All concrete above top of curb shall be Class AAE-3.
 "Rubbed Surface Finish" will be required for the roadway faces of curbs, the outside vertical faces of curbs and slab, and all faces of rails, intermediate and end posts.
 Designed in accordance with 1965 A.A.S.H.O. Specifications.



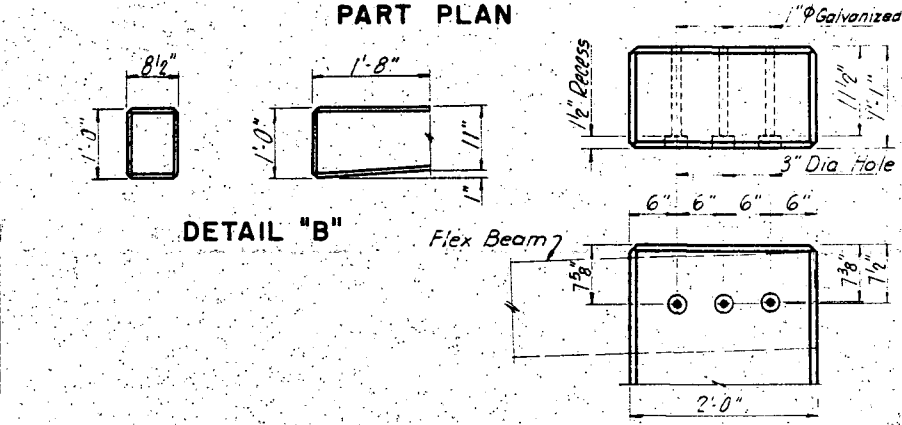
PART PLAN



TYPICAL SECTION



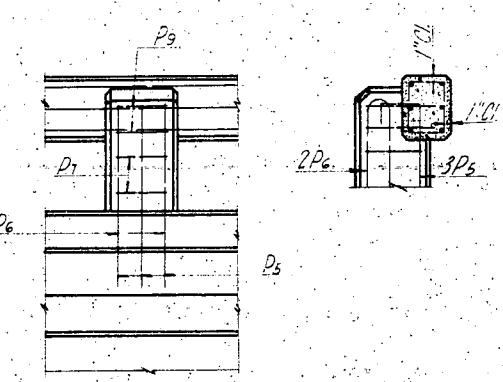
PART PLAN



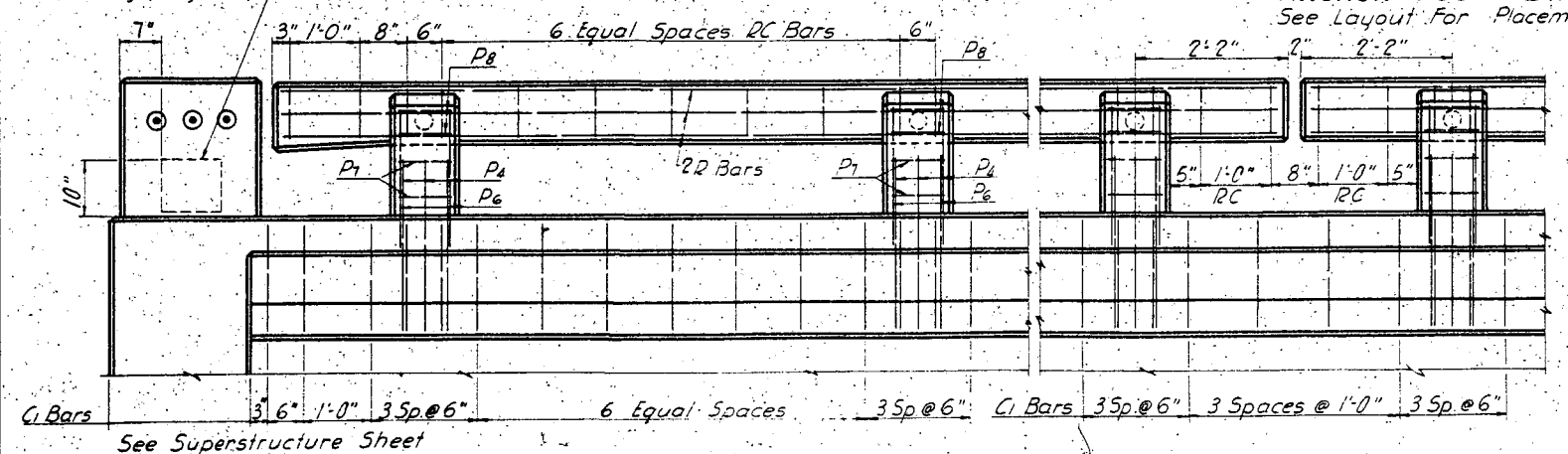
DETAIL "B"

DETAIL "A"

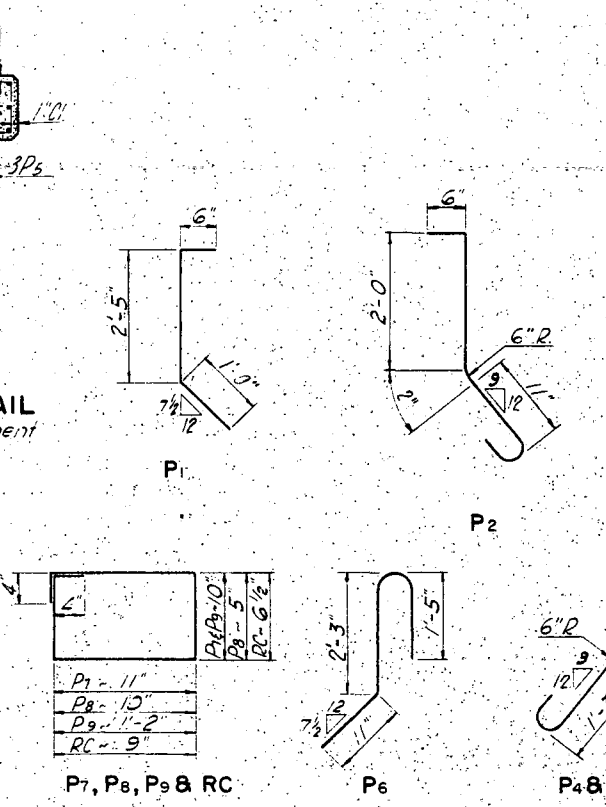
Federal Aid Name Plate
 Roadway Face of Post
 (See Bridge Layout)



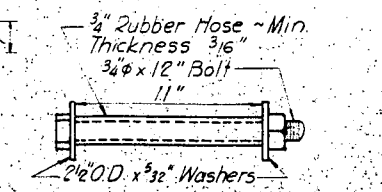
ANCHOR POST DETAIL
 See Layout for Placement



HAND RAIL DETAILS



BENT BAR DETAILS
 Dimensions shown are out to out



RAIL BOLT
 (Galvanized)
 To be included in the unit price bid for Class AAE-3 Concrete.

* Number of bars shown on superstructure sheet.
 ** Number, length & splicing information of 2 bars shown on superstructure sheet.

BAR LIST (BARS FOR FOUR END POSTS)			
MARK NO.	SIZE	LENGTH	SHAPE
P1	16	5	3'-9" Bent
P2	16	5	4'-0" "
P3	24	4	1'-8" Str.

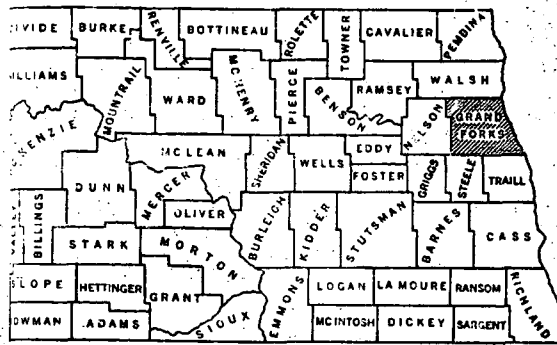
BAR LIST (BARS FOR RAILING AND POSTS)			
MARK NO.	SIZE	LENGTH	SHAPE
P4	#	6	4'-0" Bent
P5	#	6	4'-9" "
P6	#	5	4'-9" "
P7	#	3	3'-9" "
P8	#	3	2'-9" "
P9	#	3	4'-3" "
RC	3	2'-0"	Bent
P**	**	6	** Str.

QUANTITIES 4 END POSTS
 Class AAE-3 Concrete 0.64 Cu Yd
 Reinforcing Steel 156 lbs.

* Railing and end post quantities are included in slab quantities on superstructure sheet.

STANDARD RAILING DETAILS

Right



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES



SCALES
LAYOUT SHEET: 1 IN. = 4000 FT.
PLAN AND PROFILE DRAWINGS: VERT. 1 IN. = 100 FT.
STRUCTURAL DRAWINGS: AS SHOWN
CROSS SECTION SHEETS: 1 IN. = 10 FT.

NORTH DAKOTA STATE HIGHWAY DEPARTMENT PLANS

FOR THE PROPOSED IMPROVEMENT OF A
STATE HIGHWAY
IN GRAND FORKS COUNTY
FEDERAL AID PROJECT NO. $\left\{ \begin{array}{l} \text{F1-125(3)} \\ \text{U1-125(4)} \end{array} \right.$

INDEX OF DRAWINGS

SHEET NO.	TITLE
1	TITLE PAGE
2 to 2E	TYPICAL SECTIONS & SUMMARY OF QUANTITIES
3	CULVERT AND BRIDGE LIST
4	TO 25 INCL. PLAN AND PROFILE DRAWINGS
26	TO 34 INCL. STRUCTURAL DRAWINGS
35	TO 39 INCL. COR. PROFILES
40	TO 126 INCL. CROSS SECTIONS

P.S.&E.
PREPARED UNDER
SNAIE F.A.P. 675 (1)
Sta. 0+00 to Sta. 125+33.1

LENGTH OF PROJECT		
PROJECT	MILS-GROSS	MILS-NET
F1-125(3)	11.240	11.240
U1-125(4)	0.385	0.385
TOTALS	11.625	11.625

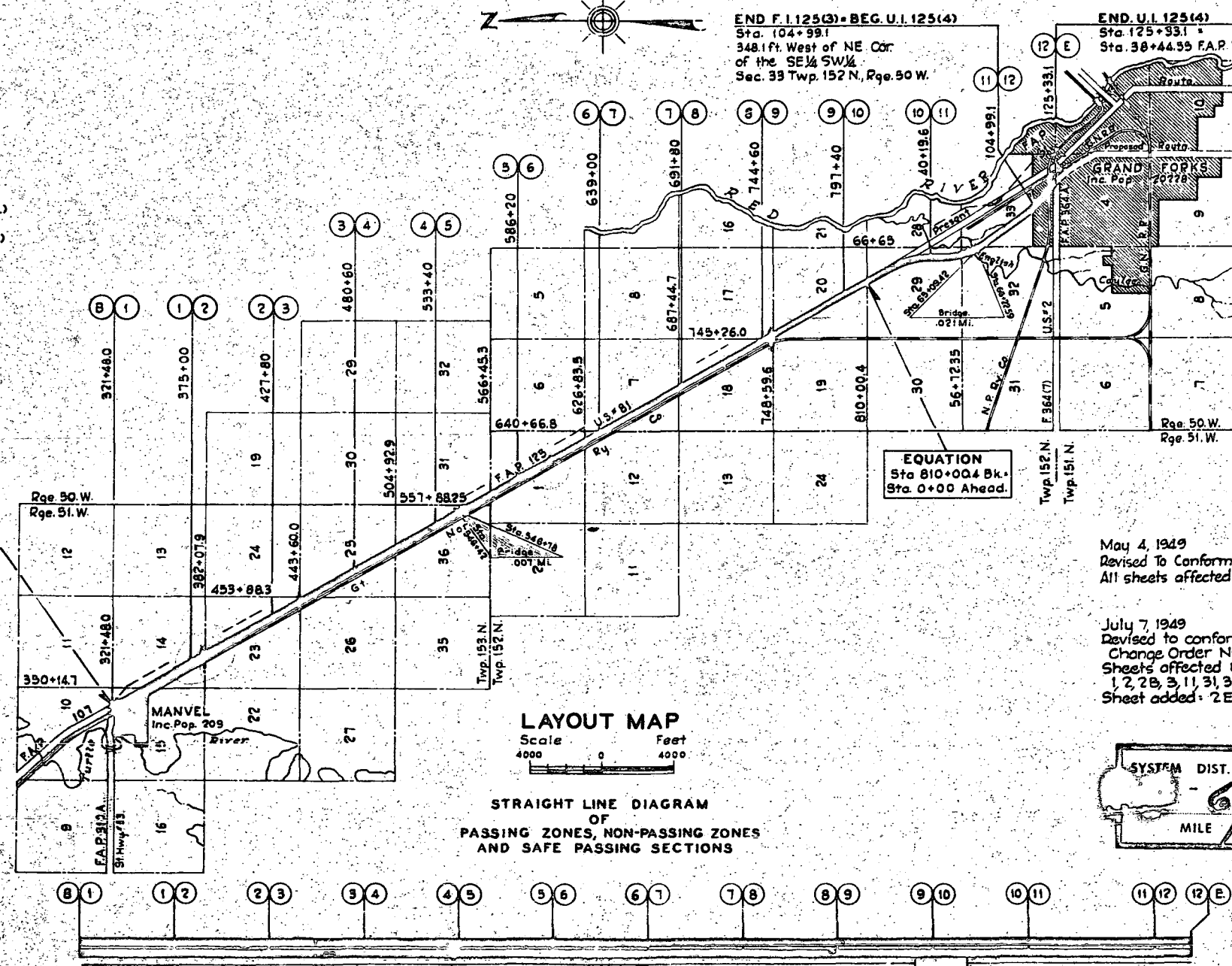
GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota State Highway Department Sept. 1939 and approved as standard by the Public Roads Administration Jan. 18, 1940. Required Special Provisions approved as standard by the Public Roads Administration Aug. 5, 1948 and those submitted herewith.

KEY TO CONVENTIONAL SIGNS

- STATE & NATIONAL LINES
- COUNTY LINE
- TOWNSHIP & RANGE LINES
- GRADE LINE
- CENTERLINE OF CONSTRUCTION
- OLD RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE
- ABANDONED RIGHT OF WAY LINE
- PROPERTY LINE
- STONE WALL
- OTHER FENCES
- POLE LINES
- POWER LINES
- BRIDGE
- GROUND ELEVATION
- GRADE
- TRAVELED WAY
- RAILROADS
- HEDGES AND TREES
- TRAILS
- CITY OR VILLAGE CORPORATE LIMITS
- SECTION CORNER
- QUARTER SECTION CORNER
- BUILDINGS
- OLD CULVERTS
- NEW CULVERTS
- DRAINAGE
- BENCH MARKS
- WATERS EDGE
- MARSH
- WIRE ROPE GUARD RAIL
- SNOW FENCE
- RIPRAP
- GUARE
- COBBLE GUTTERS
- CONCRETE GUTTERS

DESIGN DATA:

	30TH. MAX.
	AVERAGE DAILY HOUR
Present Traffic: (1948)	Pass. 675, Trucks 225, Total 900
Traffic Forecast: (1969)	Pass. 900, Trucks 300, Total 1200
DESIGN SPEED	70 M.P.H. 60 M.P.H. Sta. 42+00 to Sta. 104+99.1
TRAFFIC CLASSIFICATION	"M" 30 M.P.H. Sta. 104+99.1 to Sta. 125+33.1
MINIMUM SAFE PASSING SIGHT DISTANCE	3200 FT. (70 M.P.H.)
MINIMUM PASSING SIGHT DISTANCE FOR MARKING	1200 FT.
MINIMUM NON-PASSING SIGHT DISTANCE	600 FT. (70 M.P.H.)
BRIDGES:	
Minimum Width: Length over 50 ft. = 32 ft., Length under 50 ft. = 38 ft.	
Design Loading: H20-S16 (1944)	



LAYOUT MAP

Scale 4000 0 4000 Feet

STRAIGHT LINE DIAGRAM OF PASSING ZONES, NON-PASSING ZONES AND SAFE PASSING SECTIONS

LEGEND
 Passing Zones
 Non-Passing Zones
 Safe Passing Sections
 Design Speed for Sight Distance: (70 M.P.H.)

BEG. F.1.125(3)-END F.1-107(3)
Sta. 321+48.0 - Approx. 105 ft.
East of Sta. 321+67.4 Old F.A.P. 125
1401.5 ft. west of the NE corner
Sec. 15, Twp. 153 N., Rge. 51 W.

END F.1.125(3)-BEG. U.1.125(4)
Sta. 104+99.1
348.1 ft. West of NE Cor.
of the SE 1/4 SW 1/4
Sec. 33 Twp. 152 N., Rge. 50 W.

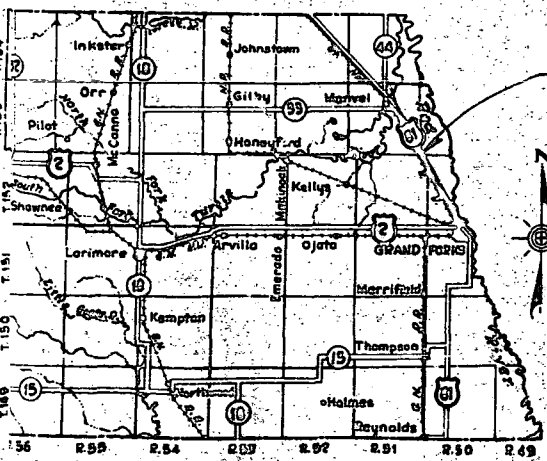
END U.1.125(4)
Sta. 125+33.1
Sta. 38+44.55 F.A.P. 364A.
(192.61 ft. East
of N. 1/4 Cor. Sec. 4
Twp. 151 N., Rge. 50 W.)

EQUATION
Sta. 810+00.4 Bk.
Sta. 0+00 Ahead.

May 4, 1949
Revised To Conform to P.S.&E.
All sheets affected.

July 7, 1949
Revised to conform to
Change Order No. 1.
Sheets affected & changed:
1, 2, 2B, 3, 11, 31, 32, 33, 34, & 69.
Sheet added: 2E

SYSTEM DIST. HWY. AGREEMENT
6-31
MILE 149



APPROVED DATE 5-18-49
M. H. Winkler
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

RECOMMENDED FOR APPROVAL DATE
DISTRICT ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

APPROVED DATE
DIVISION ENGINEER, ASSOCIATE
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

INSTALL BRIDGE

A. Sta. 546+50 E. Dwg. No. 125(3)6 to 125(3)9 Incl.

Class 2 Excav. 325 Cu.Yds.
 Ch. Chg. Excav. 120 Cu.Yds.
 Tr. Timb. Piling 1062 Lin. Ft.
 Tr. Timb. Test Piles 2 Ea.
 Class A-1" Conc. 1.97 Cu.Yds.
 Class A-1/2" Conc. 155.4 Cu.Yds.
 Reinforc'g Steel 21670 Lb.

INSTALL TEMP CROSSING & DETOUR

Sta. 545+00 to 548+00 - Force Account

REMOVE OLD DRAINAGE STRUCTURE

Sta. 546+60.1-0.8 Rt. Lump Sum

RELAY PIPE CULVERTS

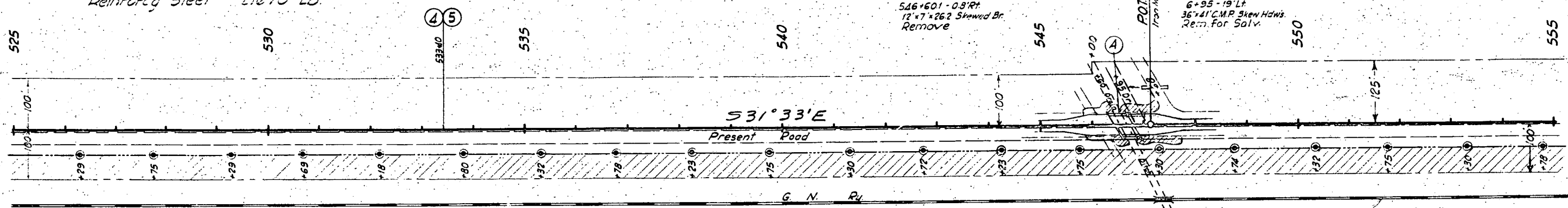
Sta. 547+08 Lt. 36x46' CMP from Salv.

SODDING

Sta. 545+89 to 547+60 Lt.
 Sta. 545+80 to 547+75 Rt.
 600 Sq.Yds.

BENCH MARKS			
NP	Description	Location	Elev.
65	Iron Mon. by T.P. 285	527+75 - 51' Rt.	825.24
66	Iron Mon. by T.P. 280	535+32 - 51' Rt.	825.35
67	Iron Mon. by T.P. 275	542+72 - 50' Rt.	823.91
68	Iron Mon. by T.P. 270	550+32 - 51' Rt.	825.52

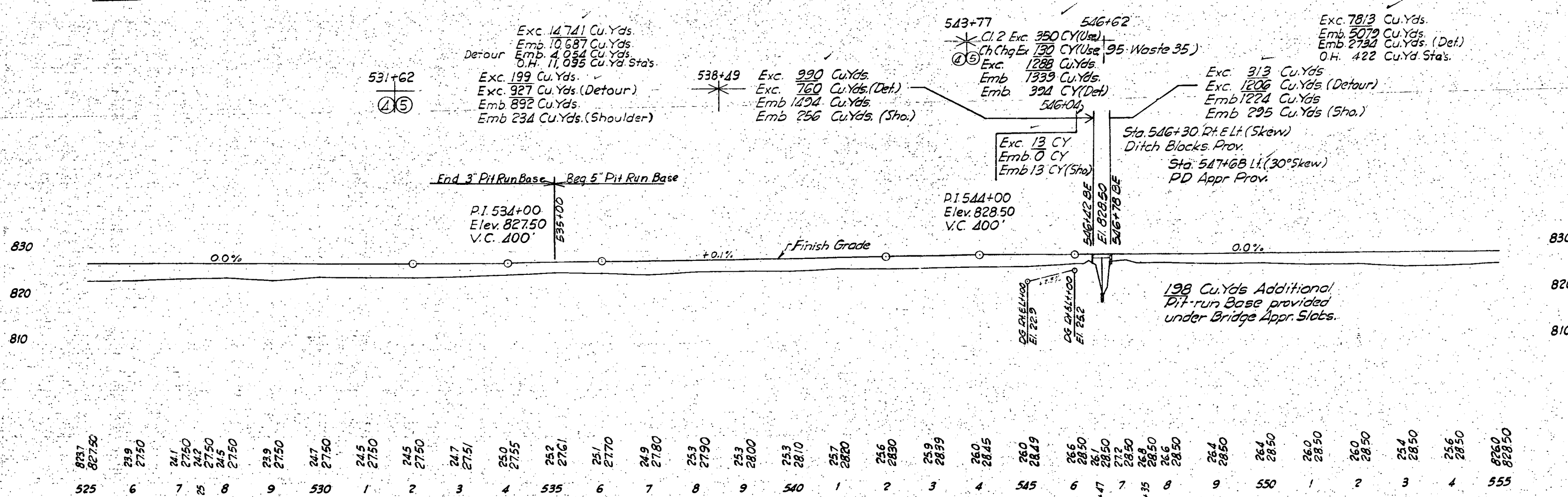
NO.	DATE	BY	SCALE	SHEET	TOTAL
11				11	126



ADD'L PVMT. FOR APPR. SLABS

Sta. 545+45.17 to 546+42
 Sta. 546+78 to 547+748.3
 PCC Pavement 411.44 Sq.Yds.
 Portland Cement 184 Bbls.

See Sheet 28 for Details of Appr. Slabs, Sodding, Pit-run Base, etc.



Exc. 14741 Cu.Yds.
 Emb. 10687 Cu.Yds.
 Detour Emb. 4034 Cu.Yds.
 O.H. 11,095 Cu.Yd. Sta's.
 Exc. 199 Cu.Yds.
 Exc. 927 Cu.Yds. (Detour)
 Emb. 892 Cu.Yds.
 Emb. 234 Cu.Yds. (Shoulder)

Exc. 990 Cu.Yds.
 Exc. 760 Cu.Yds. (Det.)
 Emb. 1494 Cu.Yds.
 Emb. 256 Cu.Yds. (Sho.)

543+77
 Cl. 2 Exc. 350 CY (Use)
 Ch. Chg. Ex. 130 CY (Use) 95 Waste 35
 Exc. 1288 Cu.Yds.
 Emb. 1339 Cu.Yds.
 Emb. 394 CY (Det.)

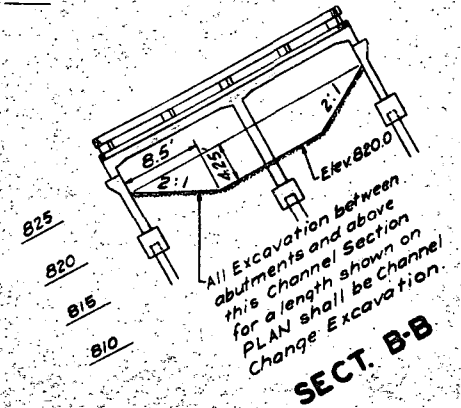
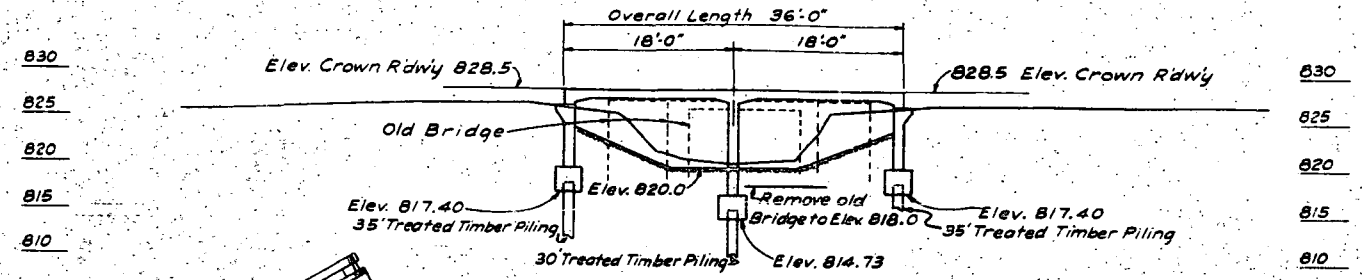
Exc. 7813 Cu.Yds.
 Emb. 5079 Cu.Yds.
 Emb. 2734 Cu.Yds. (Det.)
 O.H. 422 Cu.Yd. Sta's.
 Exc. 313 Cu.Yds.
 Exc. 1206 Cu.Yds. (Detour)
 Emb. 1224 Cu.Yds.
 Emb. 295 Cu.Yds. (Sho.)

Sta. 546+30 Rt. E.Lt. (Skew)
 Ditch Blocks. Prov.
 Sta. 547+08 Lt. (30° Skew)
 PD Appr. Prov.

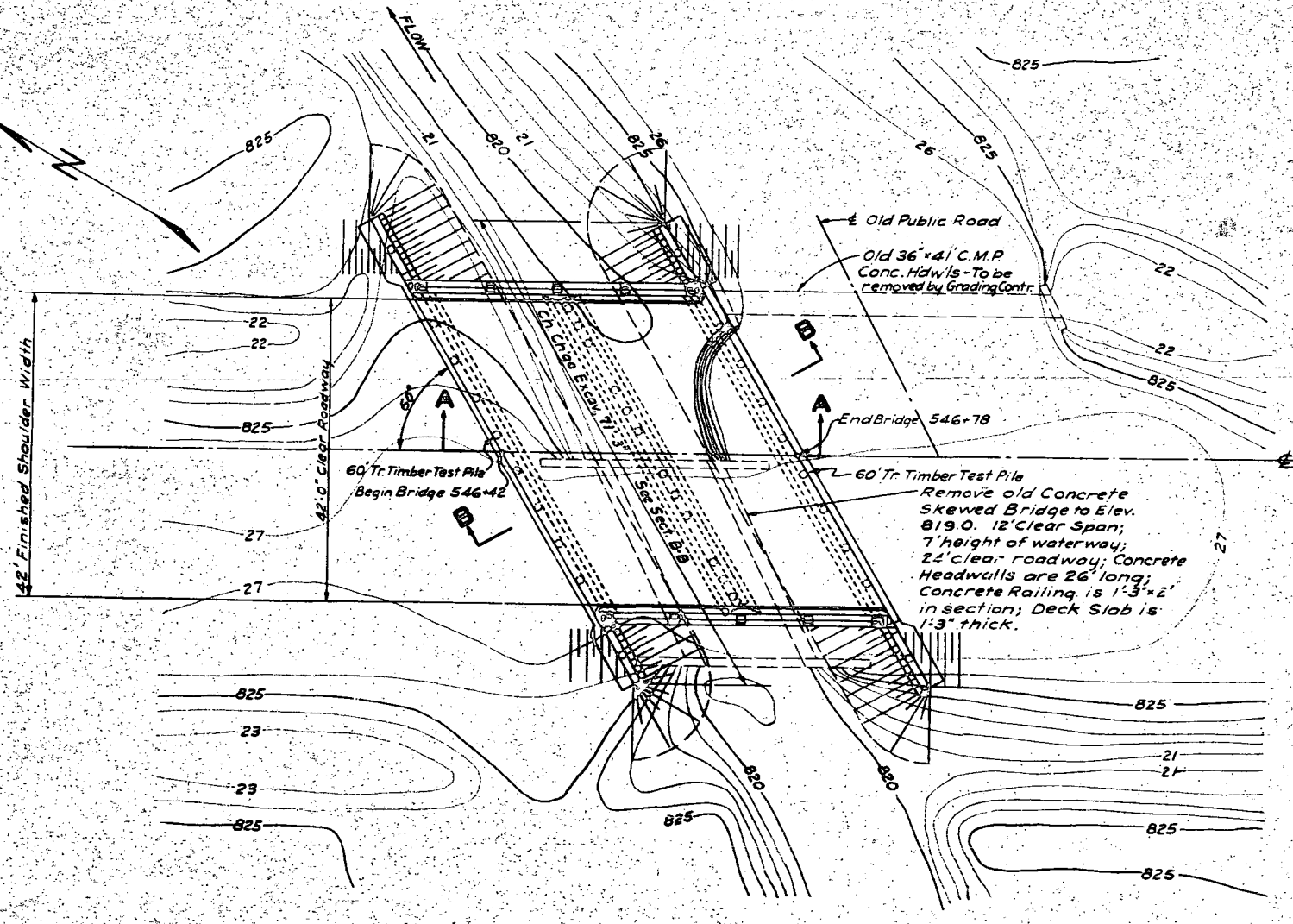
827	827.50	23.9	27.50	24.1	27.50	24.2	27.50	24.5	27.50	23.9	27.50	24.7	27.50	24.5	27.50	24.7	27.51	25.0	27.55	25.2	27.61	25.1	27.70	24.9	27.80	25.3	27.90	25.3	28.00	25.3	28.10	25.7	28.20	25.6	28.30	25.9	28.39	26.0	28.45	26.0	28.49	26.6	28.50	26.1	28.50	27.2	28.50	26.8	28.50	26.6	28.50	26.4	28.50	26.4	28.50	26.0	28.50	26.0	28.50	25.4	28.50	25.6	28.50	826.0	828.50
525		6		7		8		9		530		1		2		3		4		535		6		7		8		9		540		1		2		3		4		545		6		7		8		9		550		1		2		3		4		555					

BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
67	Iron Monument by Tol. Pole # 275	50°RT Sta. 542+72	823.91
68	Iron Monument by Tol. Pole # 270	51°RT Sta. 550+32	825.52

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BN	N.D.	F:125(3)		31	126



PLANNED BY	J.C.
DESIGNED BY	J.C.
DRAWN BY	J.C.
CHECKED BY	J.C.
ENTERED BY	J.C.
CHECKED BY	J.R.K.



PLAN

NOTE: The plans for this structure have been revised to increase the clear roadway from 38' to 42'. June 22, 1949.

NOTES

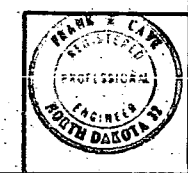
Premolded Expansion material and drain pipes will not be paid for directly, but shall be included in the various bid items.
 Bevel all exposed edges of concrete with a 3" triangular molding.
 All concrete shall be compacted by vibration. A cutoff of two (2) feet has been assumed in estimating the pay length below cutoff of piling as compared to the ordered length.
 The Structural Contractor shall perform all Channel Change Excavation between the limits shown on this sheet.
 All Structural Excavation for Piers and Abutments shall be classed as Excavation Class 2. There will be no pay item for Embankment as waste material from Channel Change Excavation will be used for the fill portions of the new waterway channel shown on this sheet.
 The floor slab shall be poured in one continuous run.

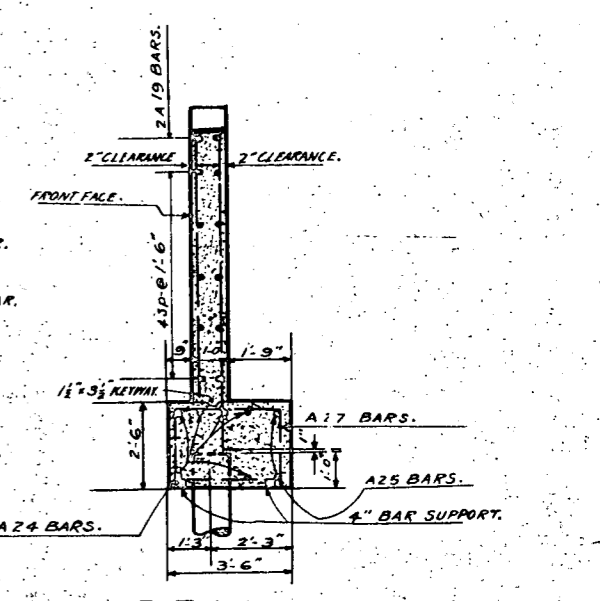
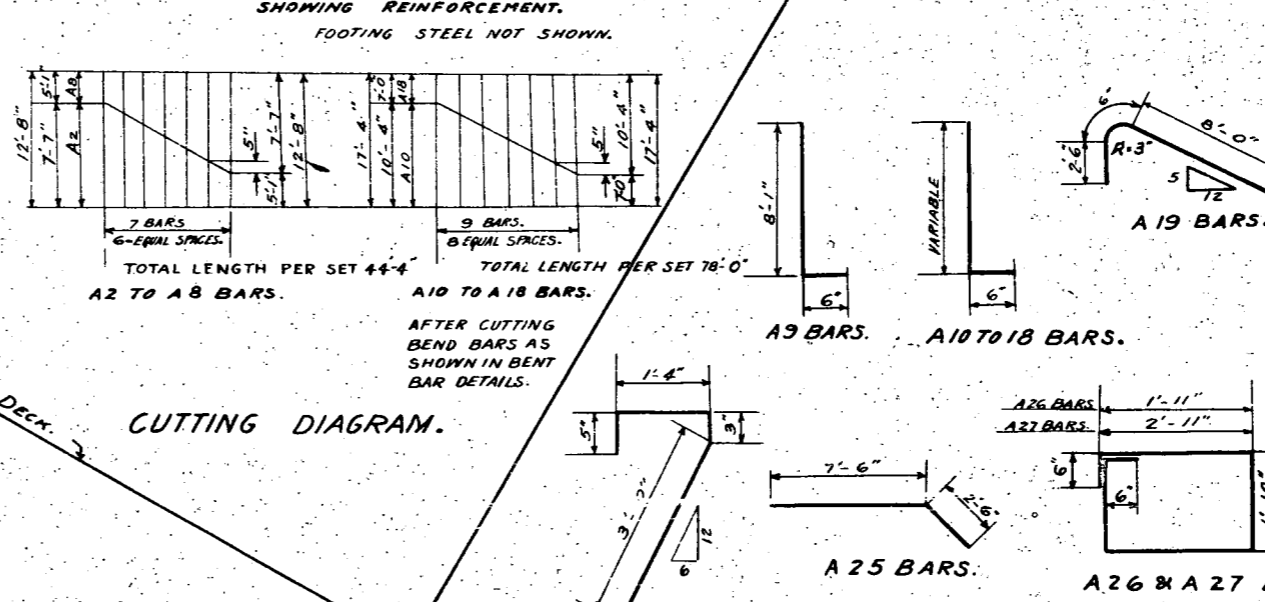
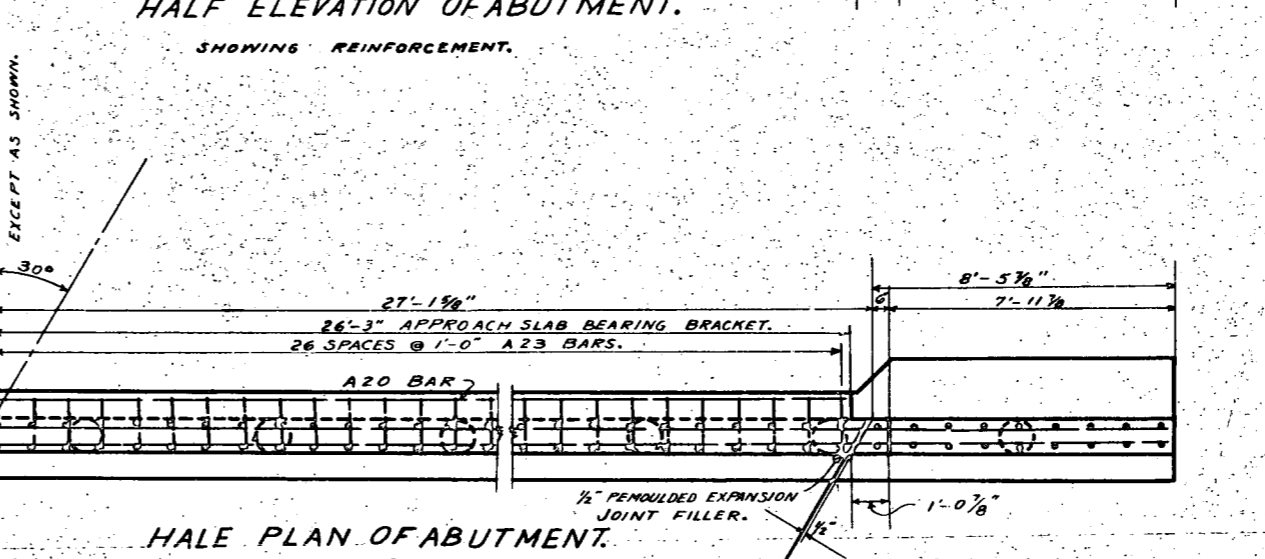
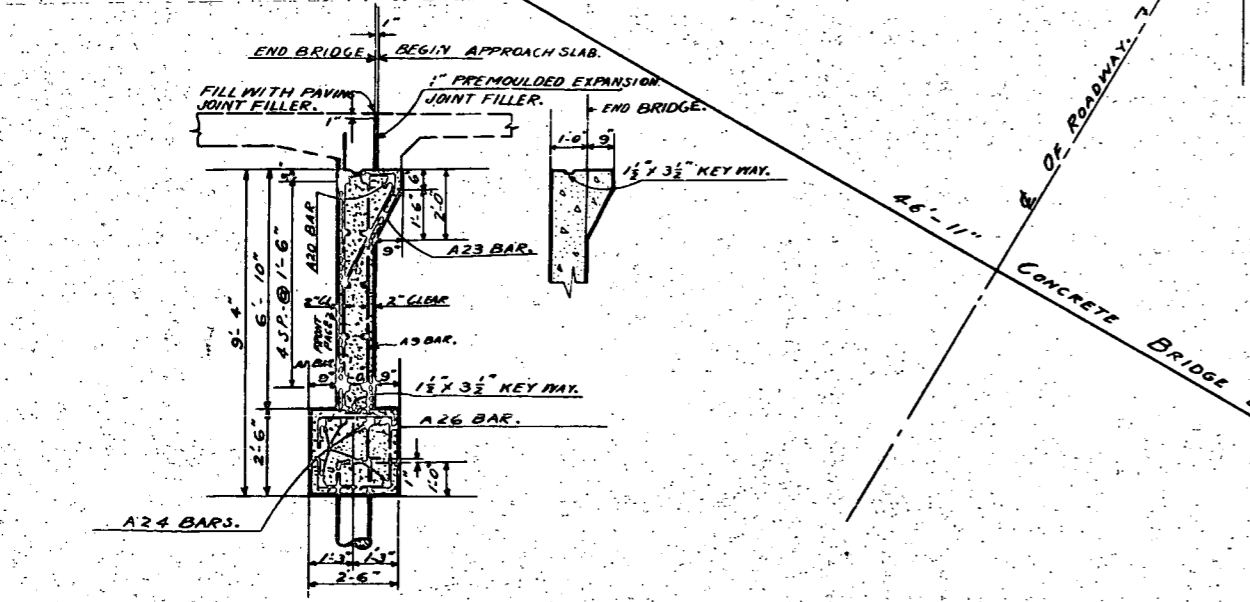
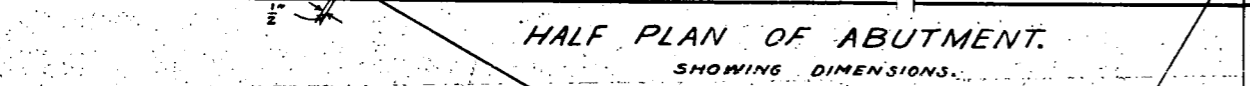
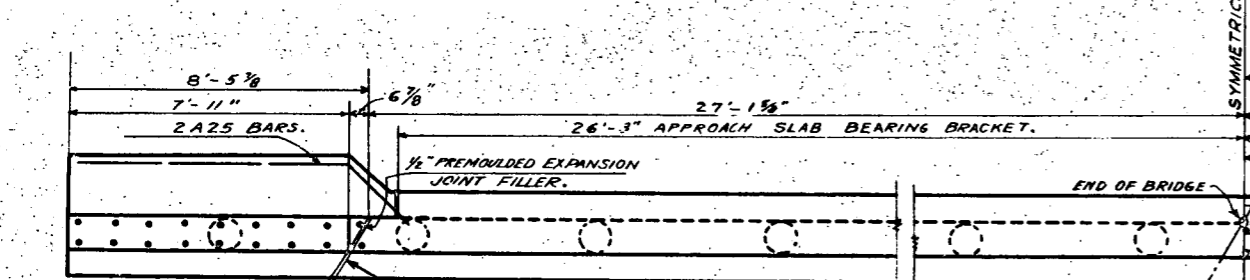
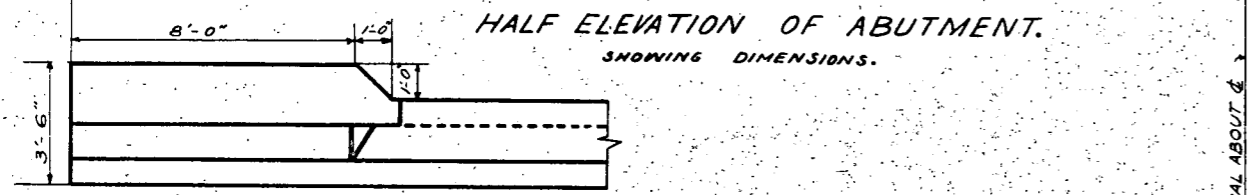
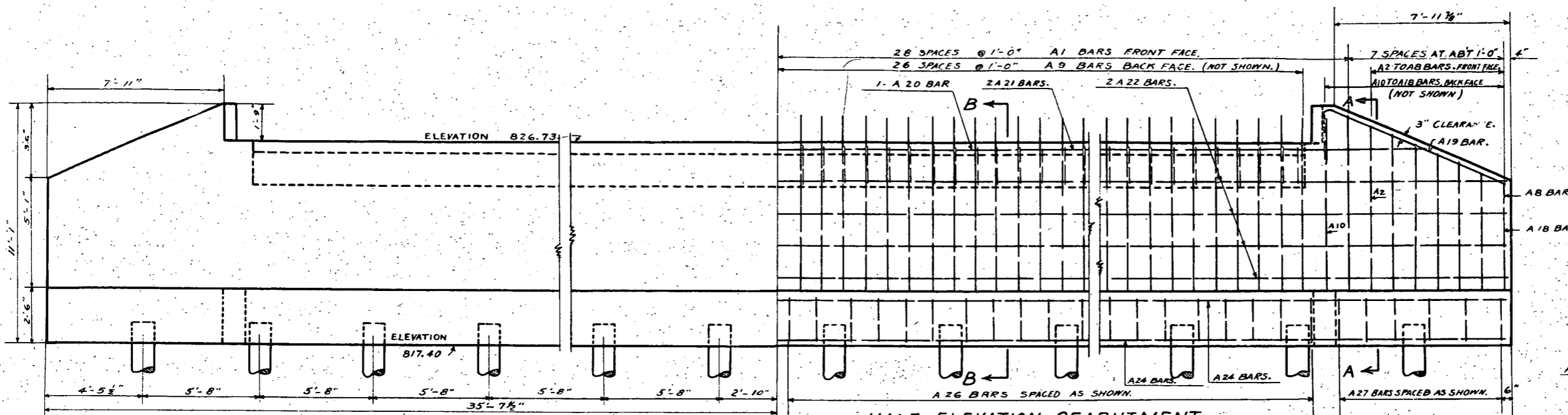
SPEC. NO.	ESTIMATE OF QUANTITIES	
81*	TEMPORARY CROSSING AND DETOUR	FORCE ACCOUNT
12B	REMOVING OLD STRUCTURE	LUMP SUM
15*	STRUCTURAL EXCAVATION	
	CLASS 2	350 CU. YD.
	CLASS 3	NONE CU. YD.
13*	Excavation (Channel Change)	130 CU. YD.
65*	UNTREATED TIMBER PILING	FT. NONE LIN. FT.
	TREATED TIMBER PILING	12 @ 30 FT. 336 LIN. FT. 22 @ 35 FT. 770 LIN. FT. TEST PILE @ 60' 2 EACH
60*	UNTREATED TIMBER	NONE M.B.M.
	TREATED TIMBER	NONE M.B.M.
60*	CONCRETE CLASS "A 1"	1.97 CU. YD.
	"-A 1"	167.6 CU. YD.
62	REINFORCING STEEL	23199 LB.
63A	STRUCTURAL STEEL	NONE LB.

STRUCTURAL DRAWINGS	
GENERAL DRAWING	125(3)-6 This sheet
SUBSTRUCTURE	125(3)-7 & 125(3)-8
SUPERSTRUCTURE	125(3)-9

NORTH DAKOTA
 STATE HIGHWAY DEPARTMENT
 BRIDGE LAYOUT
 PROJECT No. F1 125(3) STA. 546+60
 GRAND FORKS COUNTY
 APPROVED: *Max H. ...*
 DESIGNER: *...*

MAX. DESIGN PILE LOADS		
DESCRIPTION	ABUTS	PIER
Dead, Live, and Earth Loads	163 Tons	182 Tons
Design Load	163 Tons	182 Tons





BAR LIST, 1 ABUTMENT.					
MARK.	NUMBER.	SIZE.	LENGTH.	SHAPE.	
A1	57	1/2" Ø	8'-0"	STR.	
A2 TO A8	26 SETS.	1/2" Ø	44'-4"	STR.	
A9	53	1/2" Ø	8'-7"	BENT.	
A10 TO A16	2 SETS.	1/2" Ø	78'-0"	BENT.	
A19	4	3/8" Ø	11'-0"	BENT.	
A20	2	3/8" Ø	27'-3"	STR.	
A21	4	3/8" Ø	32'-6"	STR.	
A22	16	1/2" Ø	36'-3"	STR.	
A23	53	1/2" Ø	5'-0"	BENT.	
A24	12	1/2" Ø	37'-3"	STR.	
A25	4	3/8" Ø	10'-0"	BENT.	
A26	38	1/2" Ø	8'-6"	BENT.	
A27	12	1/2" Ø	10'-6"	BENT.	

QUANTITIES FOR 1 ABUTMENT.	
CONCRETE CLASS A1 1/2	38.0 CU. YDS.
REINFORCING STEEL.	3232 LBS.
EXCAVATION CLASS 2. N. AB.	145 CU. YDS.
EXCAVATION CLASS 2. S. AB.	145 CU. YDS.
TREATED TIMBER PILING.	11 EACH
TREATED TIMBER TEST PILING.	1 EACH.

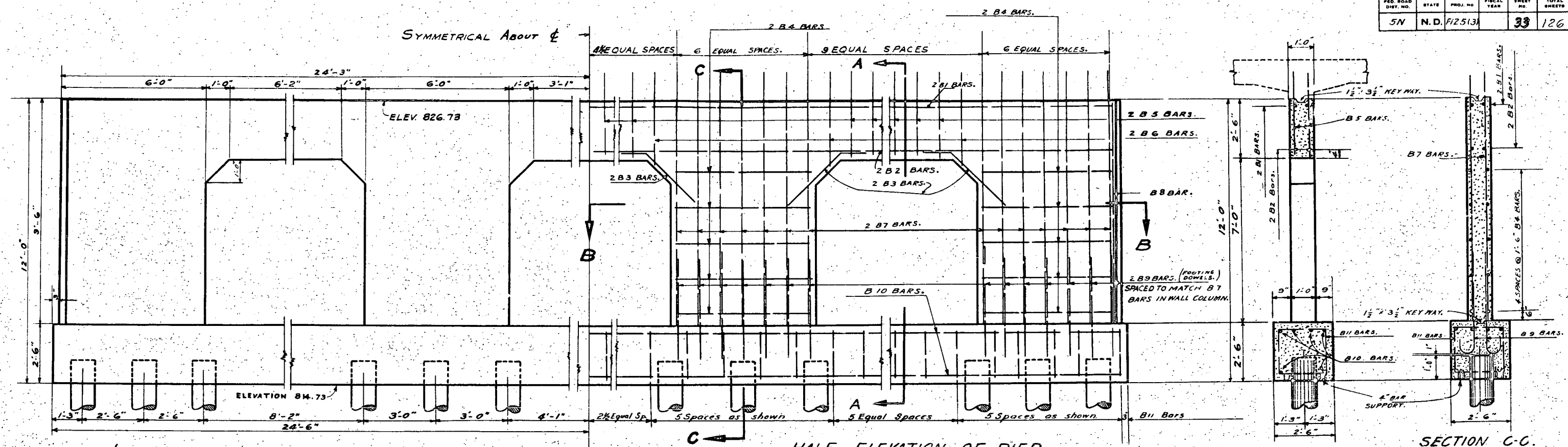
ABUTMENT DETAILS

FI 125(3) GRAND FORKS CO.

Note: Drawings not to scale.

MADE BY J.C.
 CHECKED BY A.J.A.
 MADE BY M.B.W.
 CHECKED BY J.C.

FI 125(3)-7

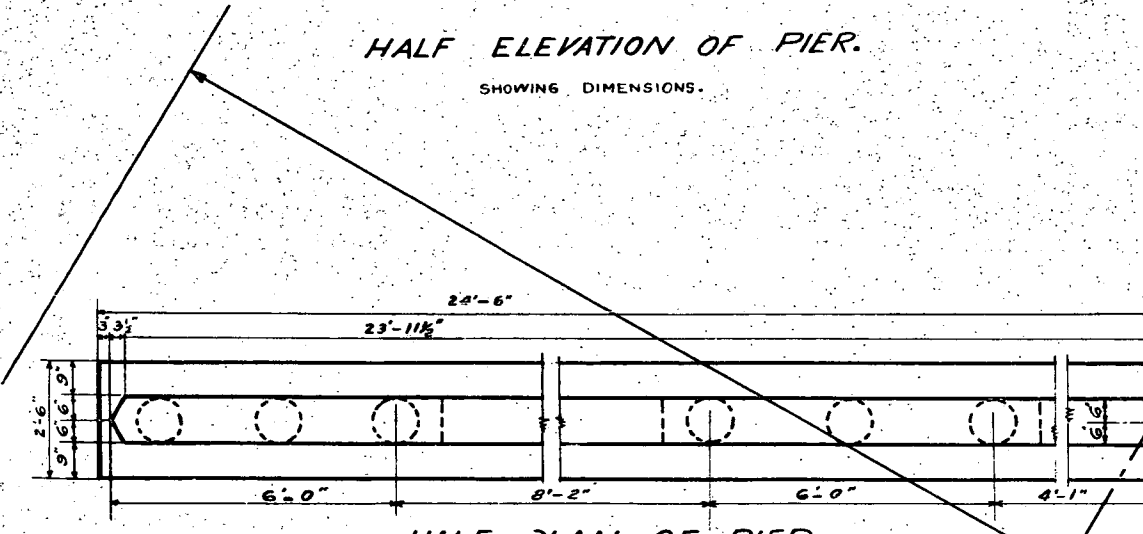


HALF ELEVATION OF PIER.
SHOWING DIMENSIONS.

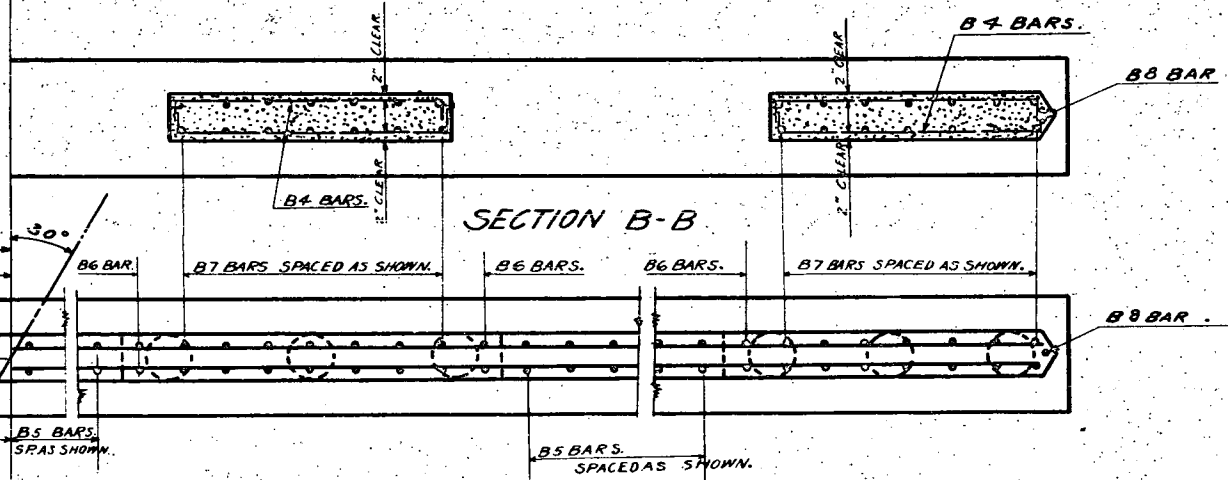
HALF ELEVATION OF PIER.
SHOWING REINFORCEMENT.

SECTION A-A.

SECTION C-C.



HALF PLAN OF PIER.
SHOWING DIMENSIONS.

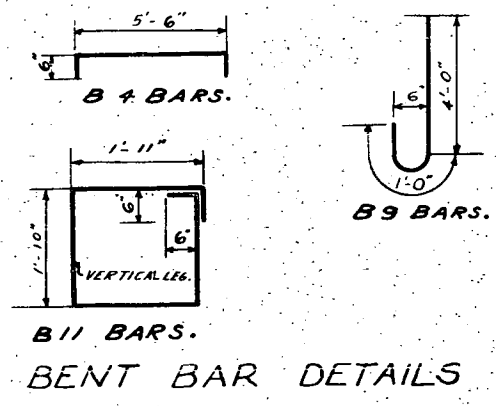


HALF PLAN OF PIER.
SHOWING REINFORCEMENT.
STEEL IN FOOTING NOT SHOWN.

BAR LIST - 1 PIER.					
MARK	NUMBER	SIZE	LENG.	SHAPE	
B1	4	3/4" φ	25'-9"	STR.	
B2	4	1" φ	25'-9"	STR.	
B3	12	3/4" φ	4'-0"	BENT	
B4	40	3/4" φ	6'-6"	BENT	
B5	36	3/4" φ	3'-9"	STR.	
B6	12	3/4" φ	4'-0"	STR.	
B7	56	3/4" φ	10'-9"	STR.	
B8	2	1" φ	9'-3"	STR.	
B9	56	3/4" φ	5'-0"	BENT	
B10	12	1" φ	26'-3"	STR.	
B11	36	3/4" φ	8'-6"	BENT	

QUANTITIES FOR ONE PIER.	
CONCRETE CLASS A1 1/2	221 cu yd
REINFORCING STEEL	3125 lb.
STR. EXC. CLASS 2	60 cu yd
TREATED TIMBER PILING	12 Each

PIER DETAILS
F1125(3) GRAND FORKS CO



Note: Drawings not to scale.

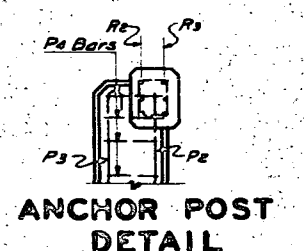
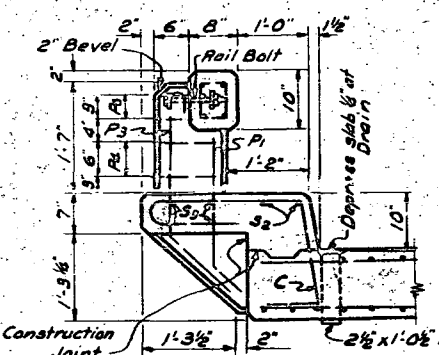
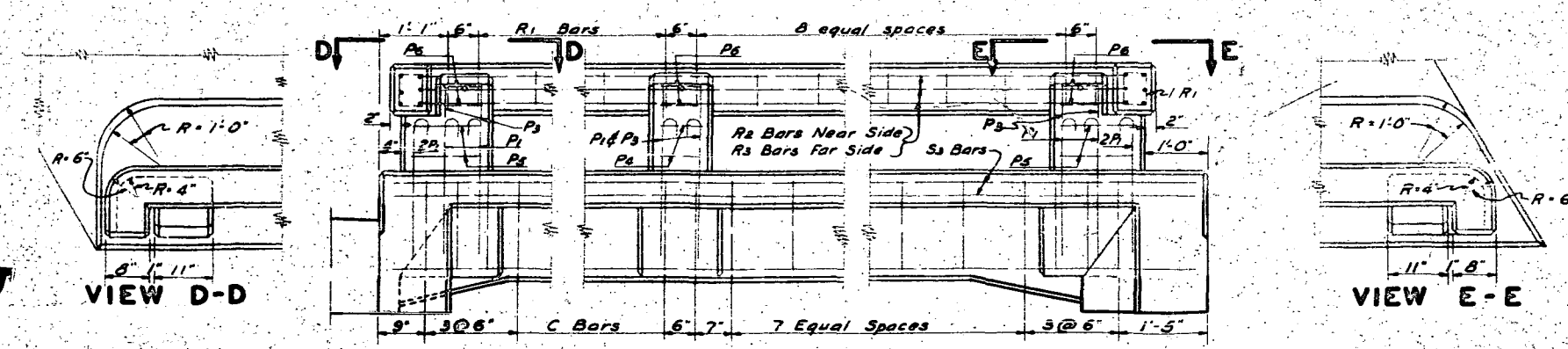
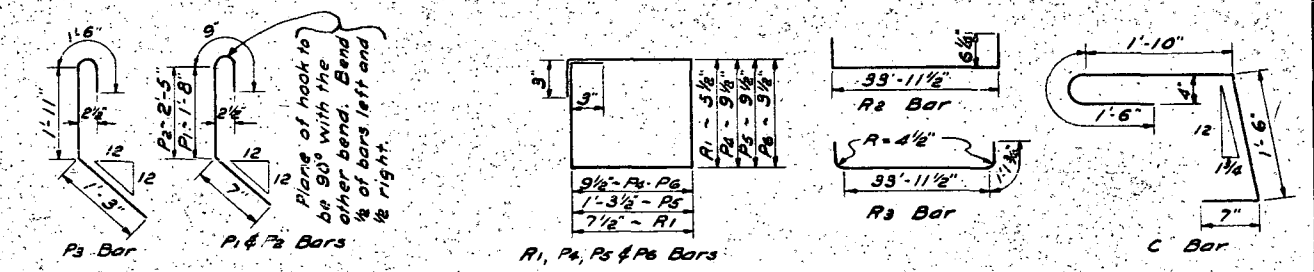
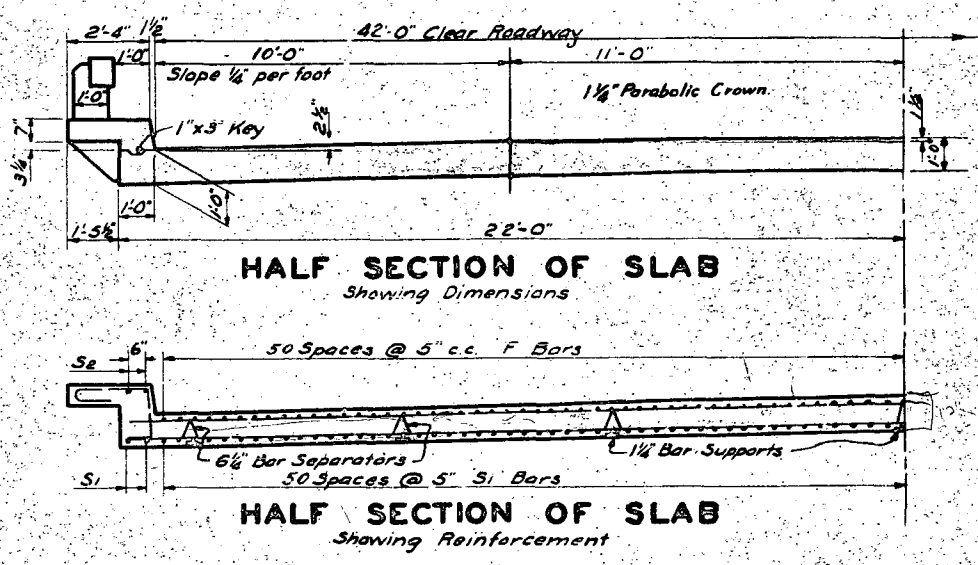
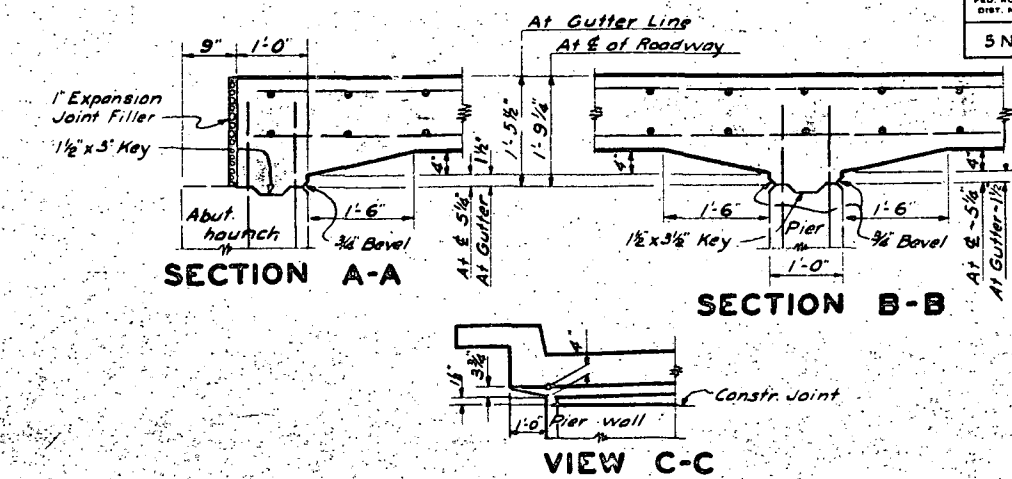
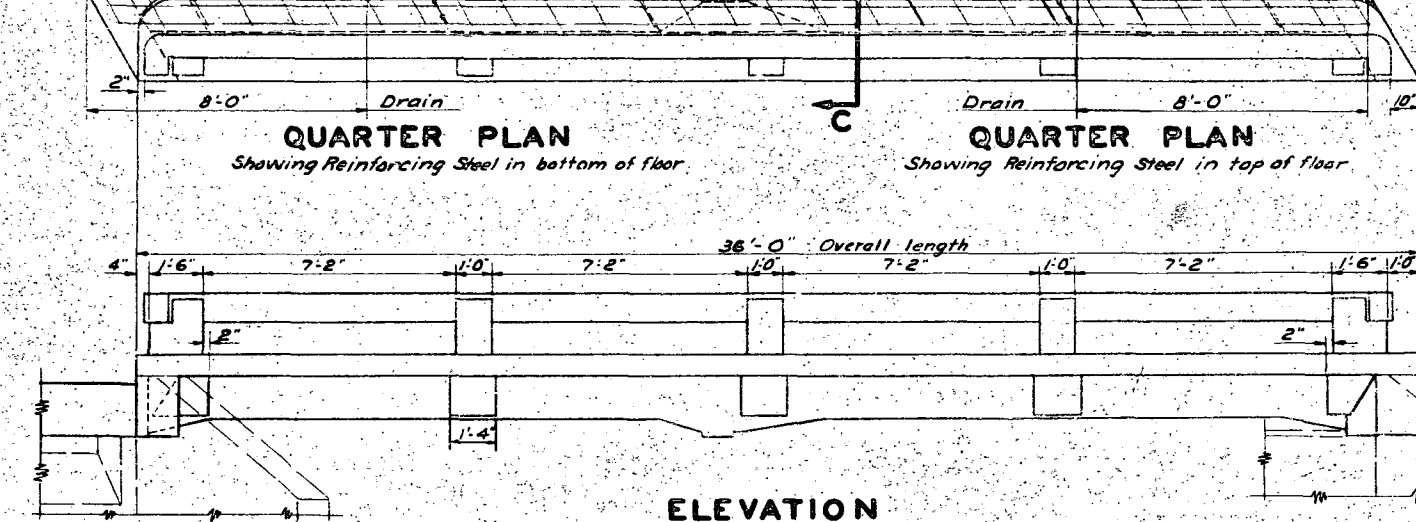
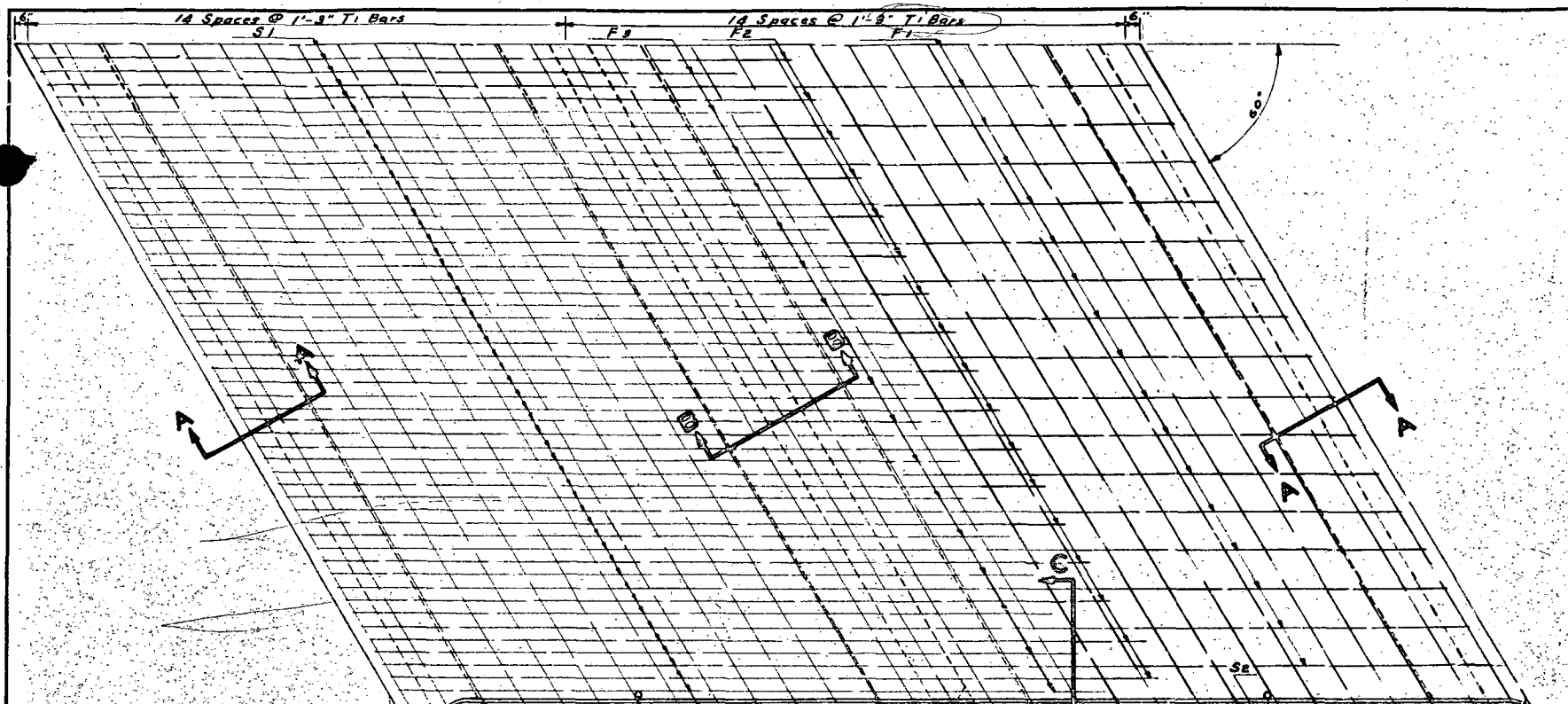
CHECKED BY I.C.F.
MADE BY J.C.
CHECKED BY A.J.A.
MADE BY M.G.H.
CHECKED BY J.C.

125 (3) - 8.

125 (3) - 8.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5 N	N. D.	FI 125(3)		34	126

BAR LIST				
Mark No	Size	Length	Shape	
C 88	4/8"	5'-5"	Bent	
F1 33	3/4"	35'-6"	Str.	
F2 34	"	14'-0"	"	
F3 34	"	10'-0"	"	
P1 24	5/8"	3'-0"	Bent	
P2 4	"	3'-9"	"	
P3 20	"	4'-8"	"	
P4 16	3/8"	3'-8"	"	
P5 8	"	4'-8"	"	
P6 16	"	2'-8"	"	
P7 80	"	2'-8"	"	
P8 6	5/8"	35'-0"	"	
R1 6	"	36'-3"	"	
S1 105	3/4"	35'-6"	Str.	
S2 4	"	34'-0"	"	
S3 8	4/8"	35'-0"	"	
T 116	"	27'-0"	"	



QUANTITIES	
Concrete Class A-1 1/2	69.5 C.Y.
Concrete Class A-1	1.97 C.Y.
Reinforcing Steel	13610 Lbs.

Revised 12-24-49
 FI 125(3) GRAND FORKS CO.
 125(3)

CHECKED BY J.C.
 MADE BY C.C.A.
 TRACING
 CHECKED BY J.C.