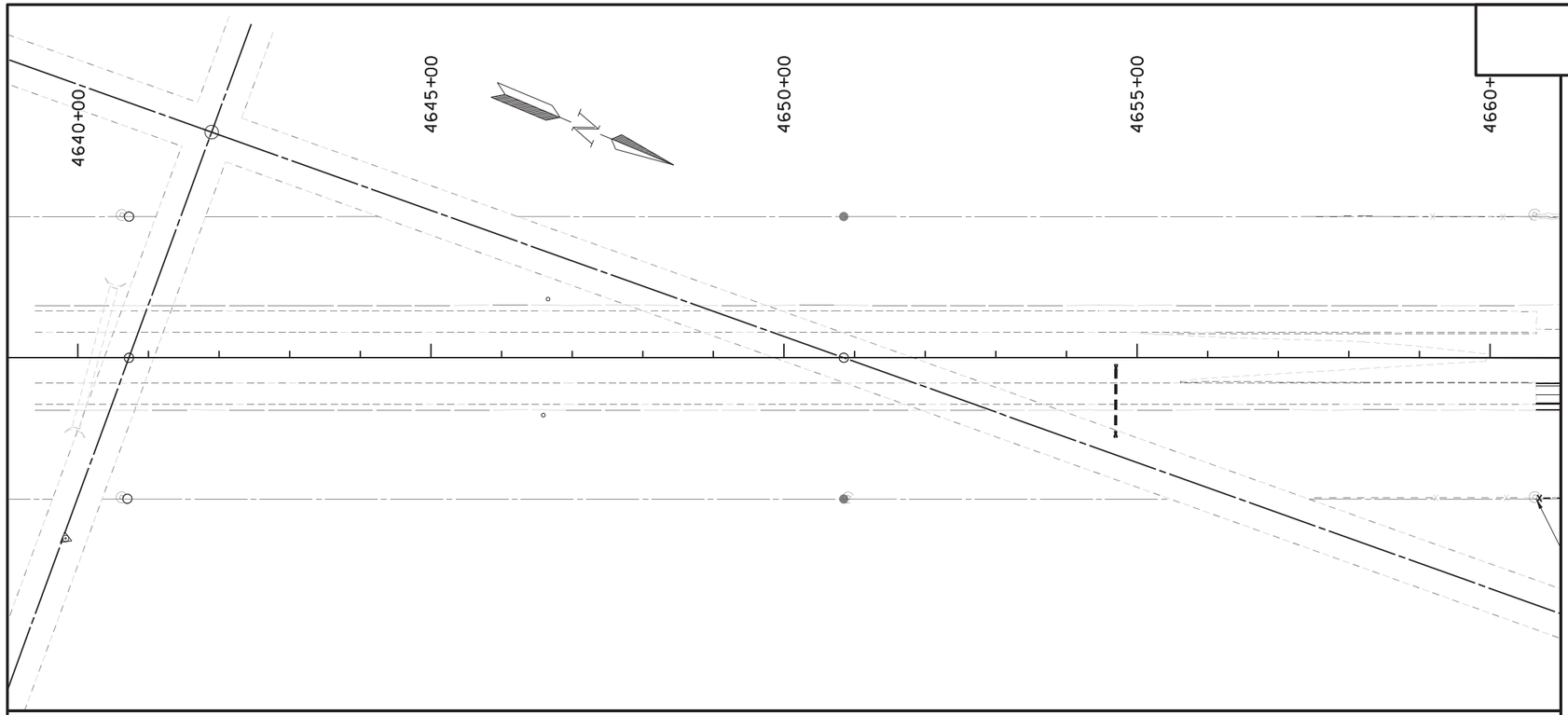
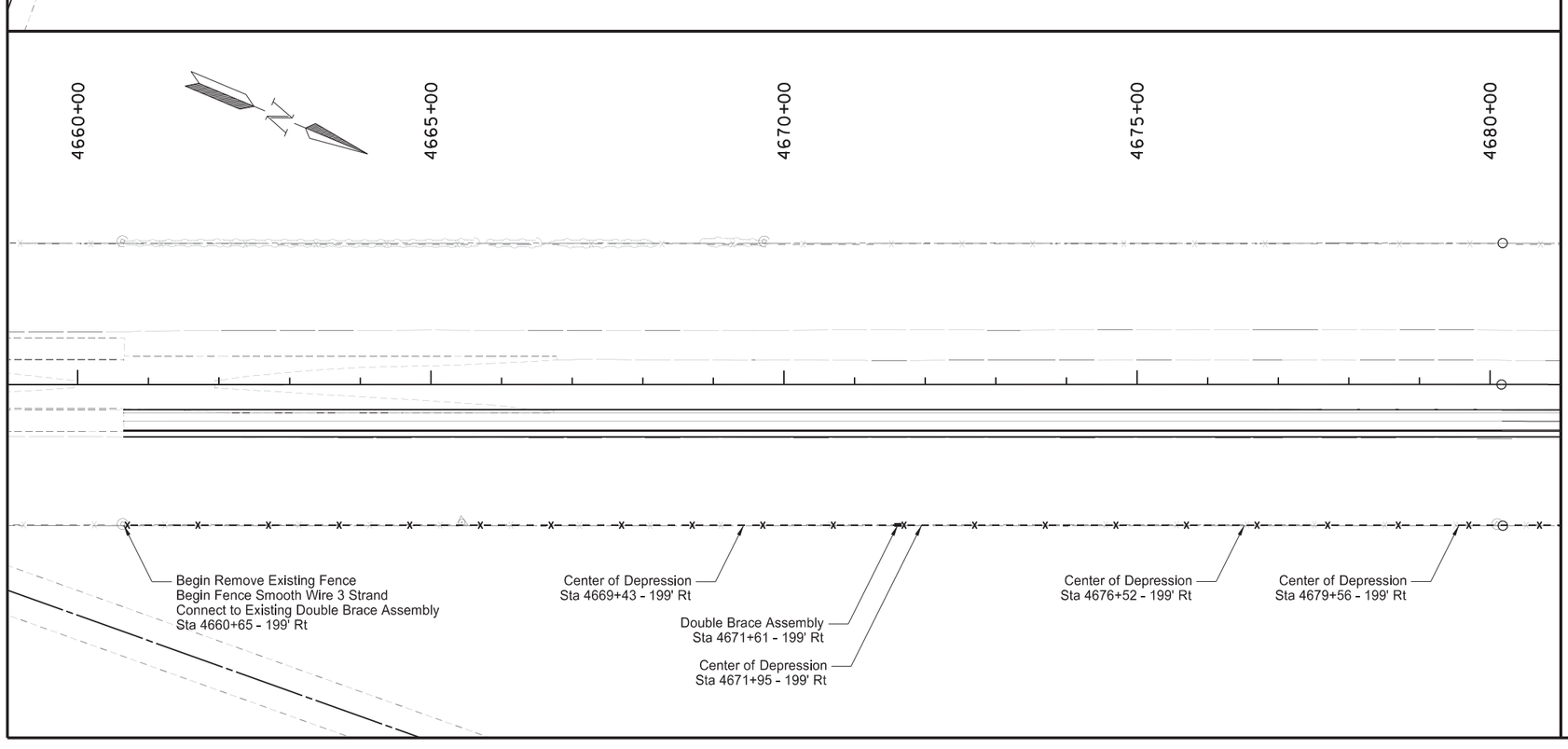
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	1





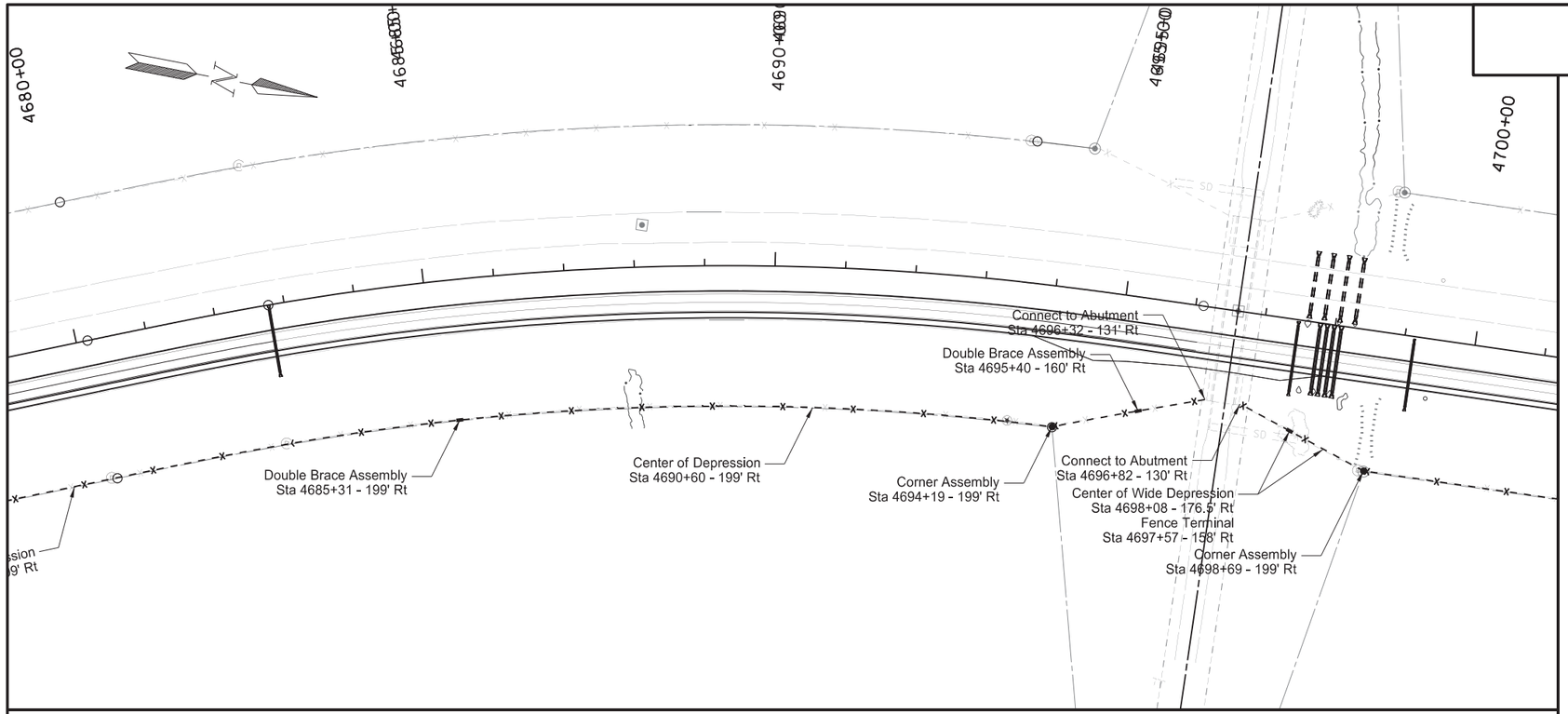
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4660+65 Rt to Sta 4680+00 Rt	LF	1935
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4660+65 to Sta 4680+00 - 199' Rt	LF	1935
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4671+61 - 199' Rt	EA	1

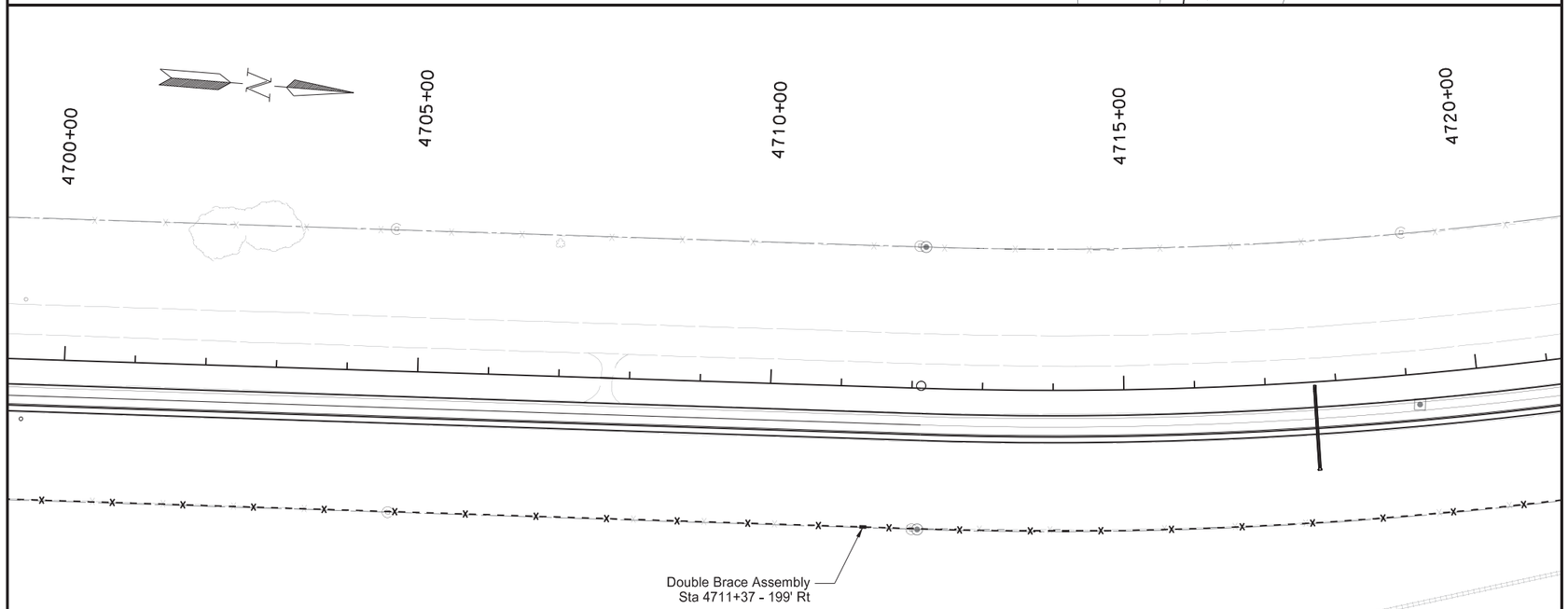
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4640+00 to Sta 4680+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	2





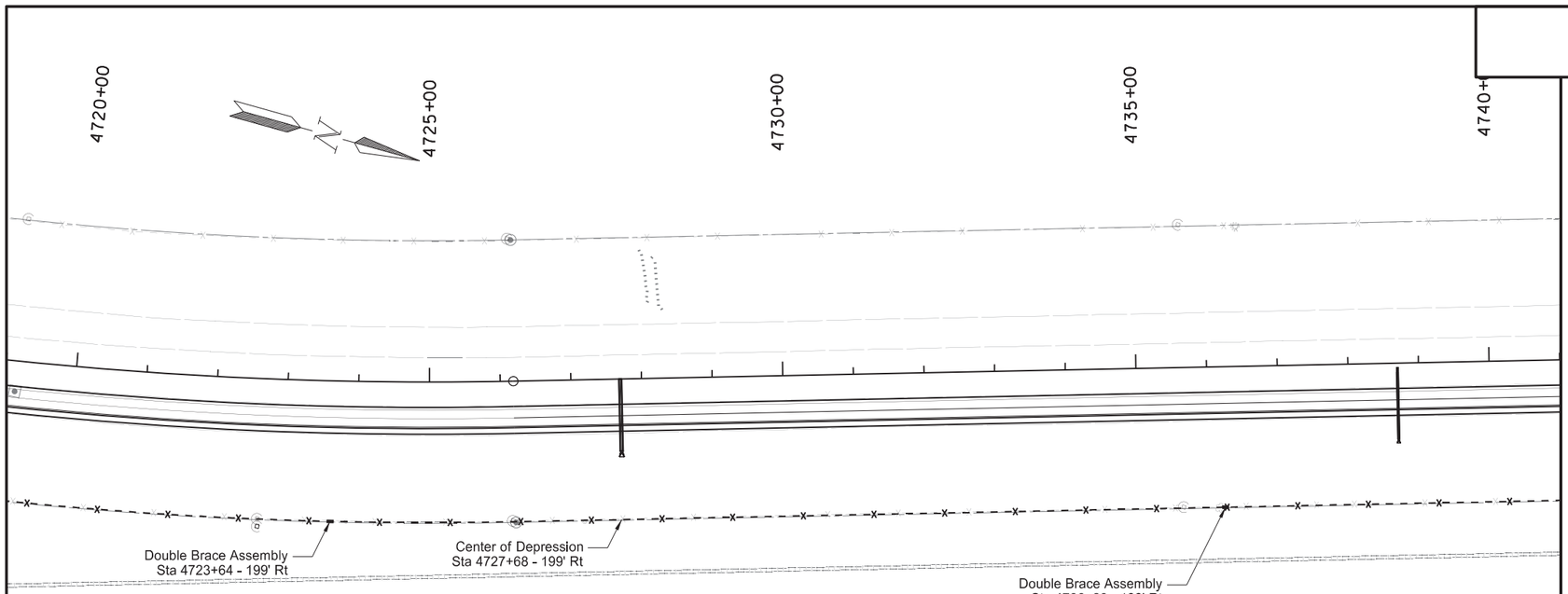
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4680+00 Rt to Sta 4696+32 Rt	LF	1576
		Sta 4696+82 Rt to Sta 4720+00 Rt	LF	2359
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4680+00 to Sta 4694+19 - 199' Rt	LF	1353
		Sta 4694+19 - 199' Rt to Sta 4696+32 - 131' R	LF	221
		Sta 4696+82 - 130' Rt to Sta 4698+69 - 199' R	LF	199
		Sta 4698+69 to Sta 4720+00 - 199' Rt	LF	2158
752	0993	**FENCE TERMINAL**		
		Sta 4697+57 - 158' Rt	EA	1
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 4694+19 - 199' Rt	EA	1
		Sta 4698+69 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4685+31 - 199' Rt	EA	1
		Sta 4695+40 - 160' Rt	EA	1
		Sta 4711+37 - 199' Rt	EA	1

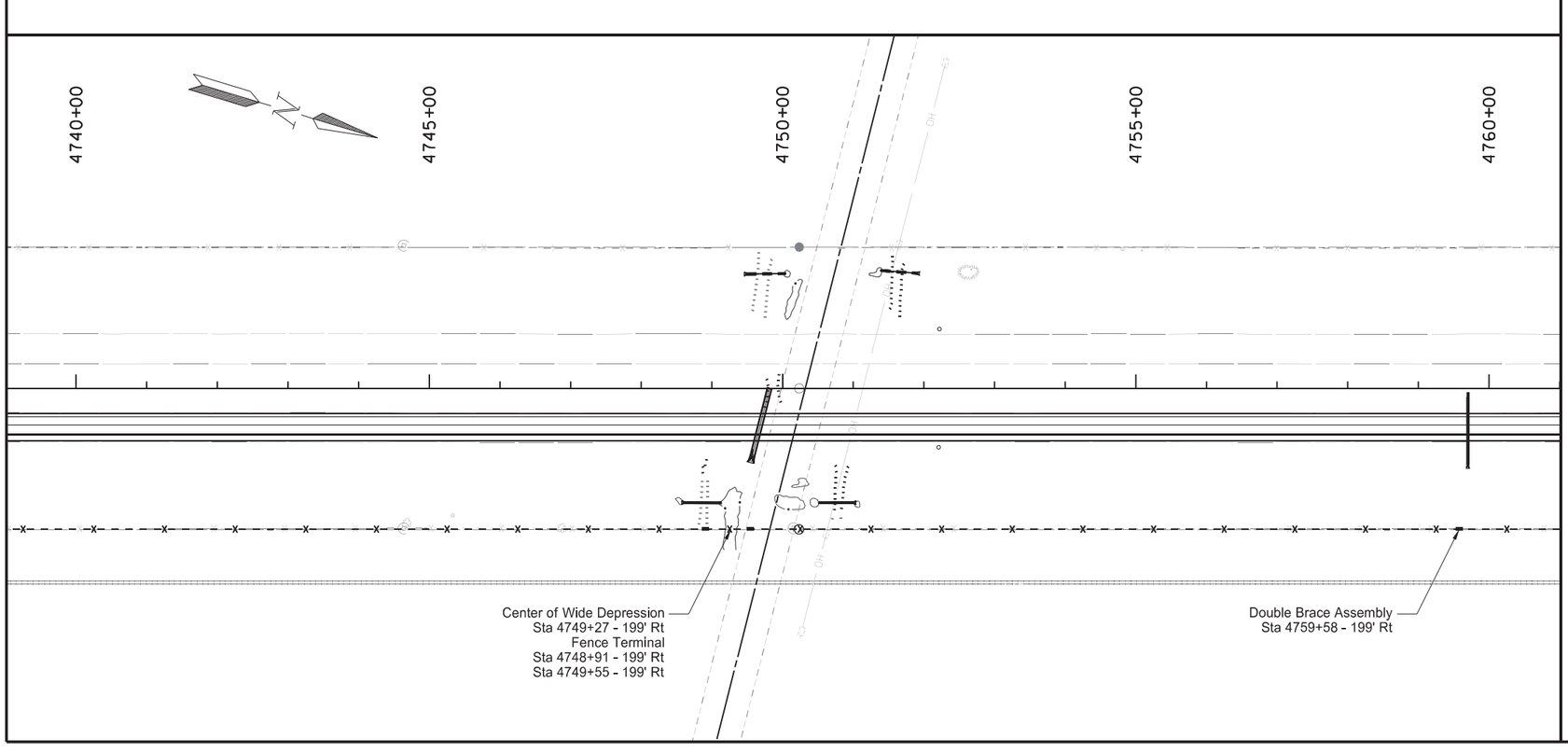
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4680+00 to Sta 4720+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	3





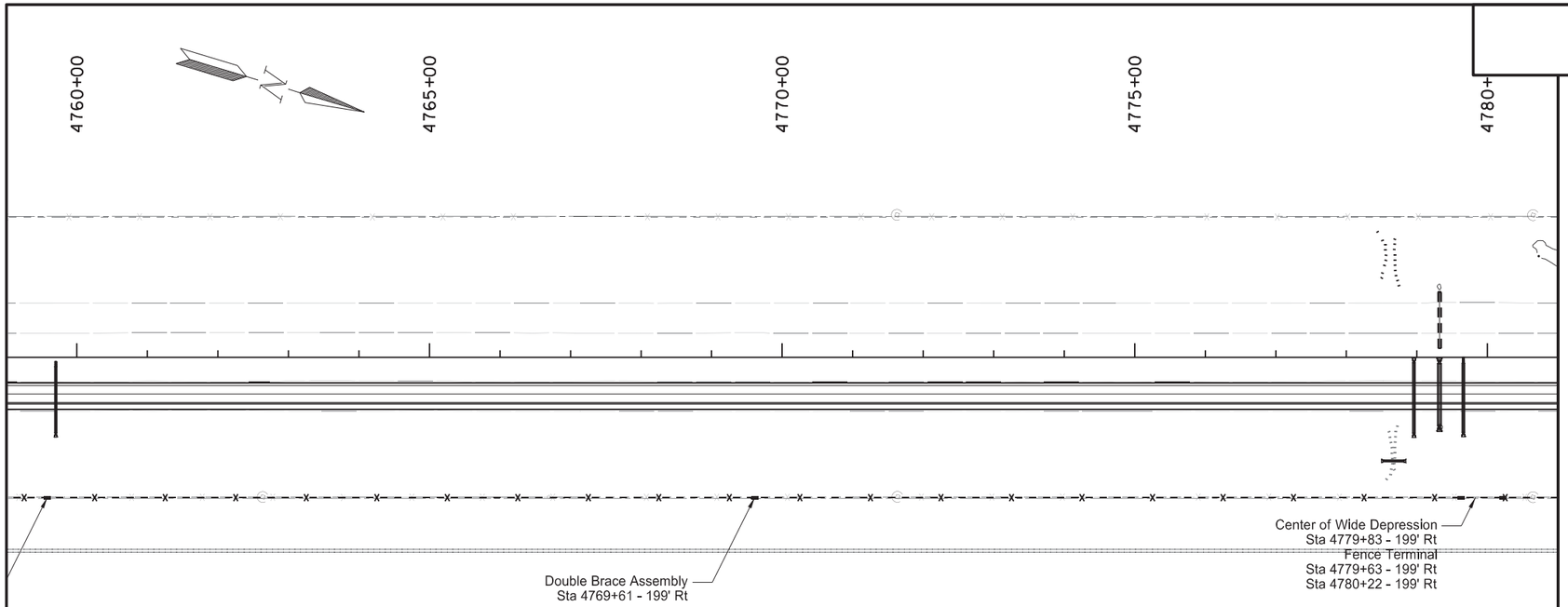
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	**0312**	**REMOVE EXISTING FENCE**		
		Sta 4720+00 Rt to Sta 4748+97 Rt	LF	2919
		Sta 4749+48 Rt to Sta 4760+00 Rt	LF	1052
752	**0126**	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4720+00 to Sta 4760+00 - 199' Rt	LF	4022
752	**0993**	**FENCE TERMINAL**		
		Sta 4748+91 - 199' Rt	EA	1
		Sta 4749+55 - 199' Rt	EA	1
752	**3996**	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4723+64 - 199' Rt	EA	1
		Sta 4736+23 - 199' Rt	EA	1
		Sta 4759+58 - 199' Rt	EA	1

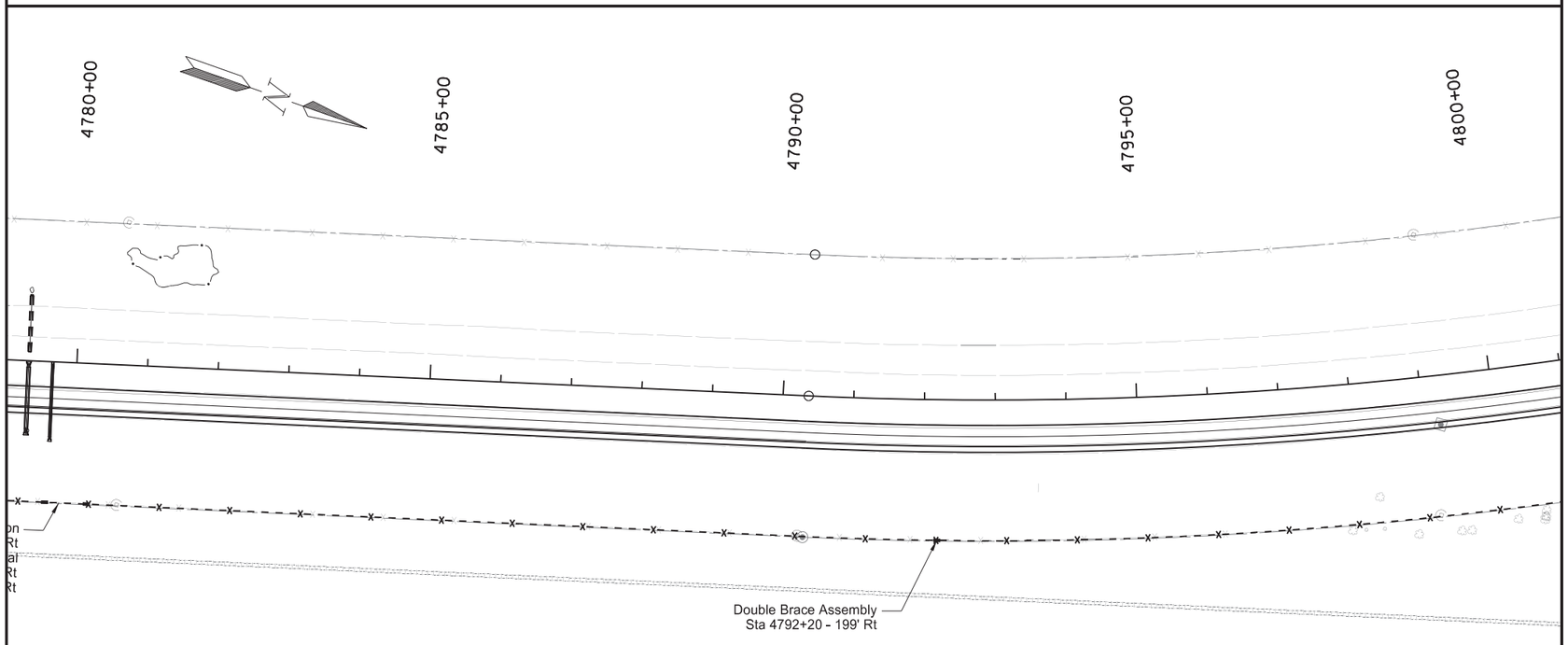
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4720+00 to Sta 4760+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	4





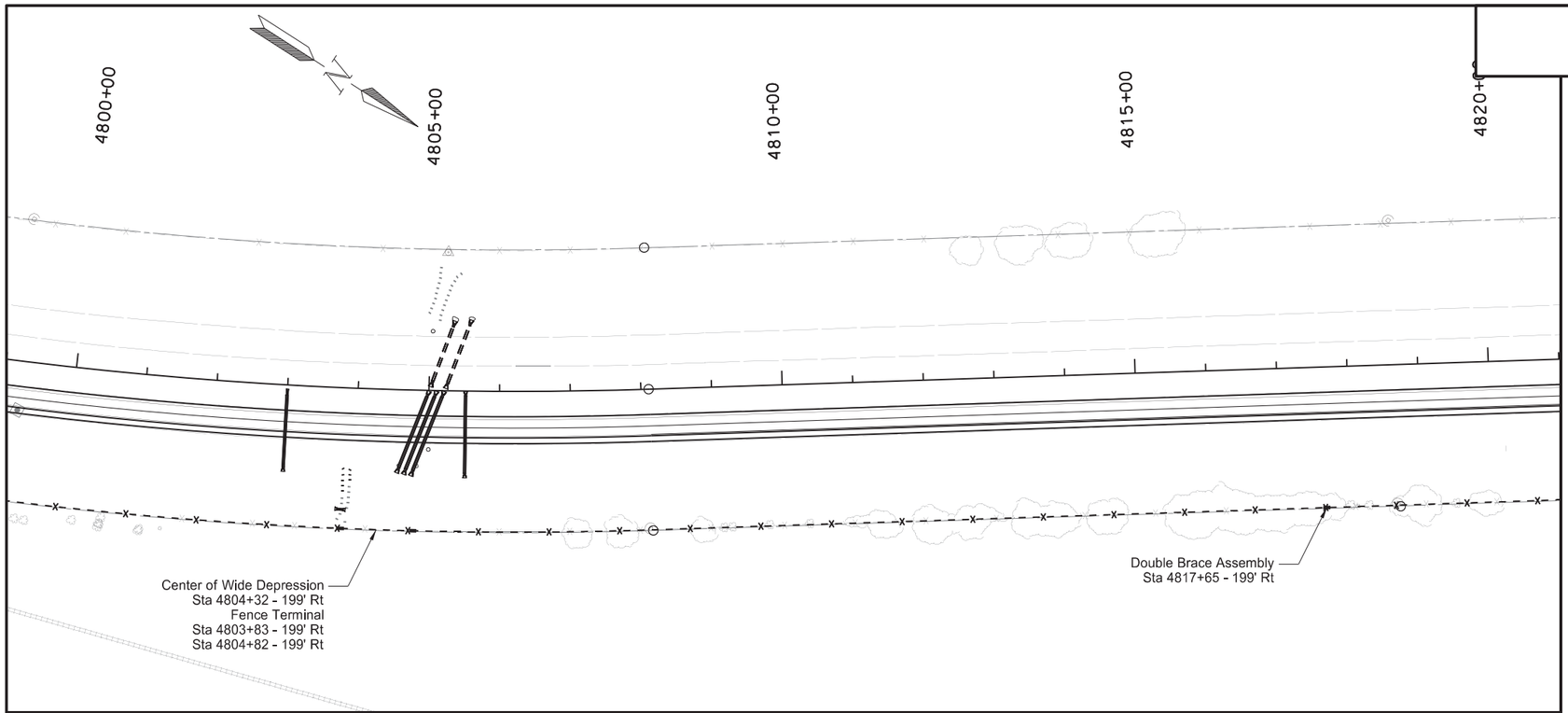
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4760+00 Rt to Sta 4800+00 Rt	LF	4033
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4760+00 to Sta 4800+00 - 199' Rt	LF	4034
752	0993	**FENCE TERMINAL**		
		Sta 4779+63 - 199' Rt	EA	1
		Sta 4780+22 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4769+61 - 199' Rt	EA	1
		Sta 4792+20 - 199' Rt	EA	1

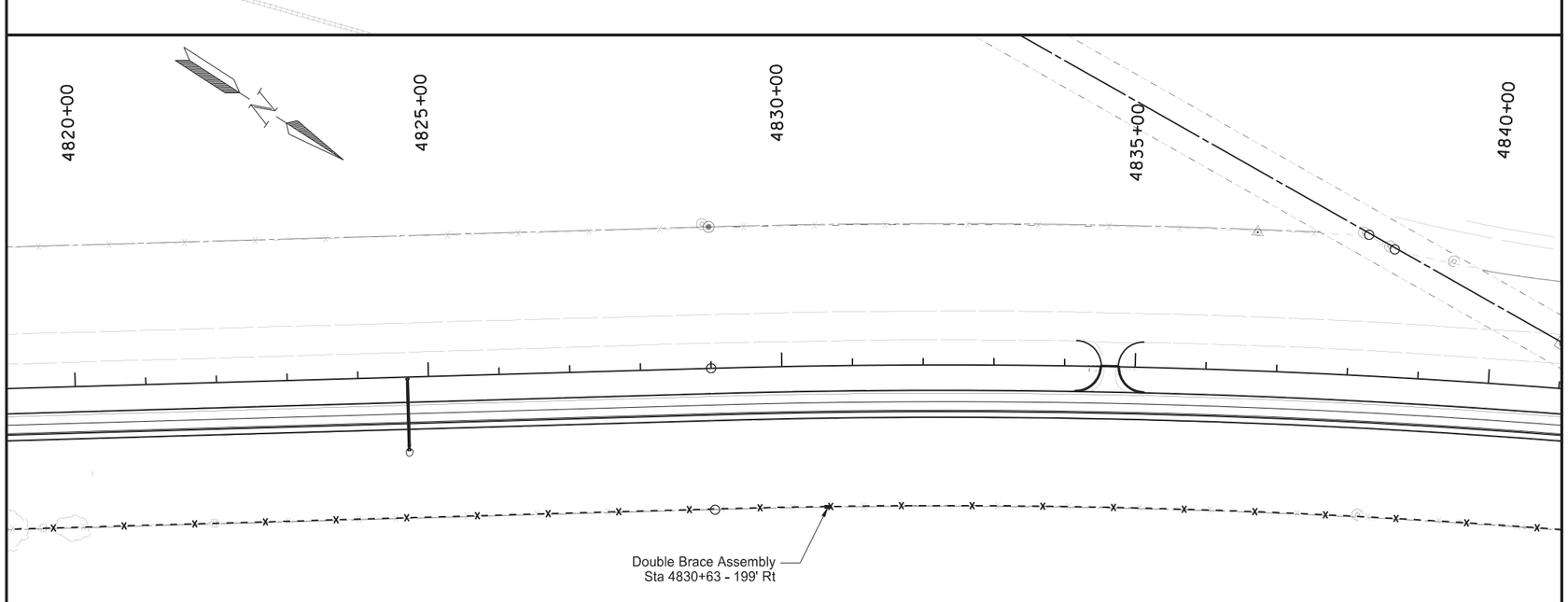
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4760+00 to Sta 4800+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	5





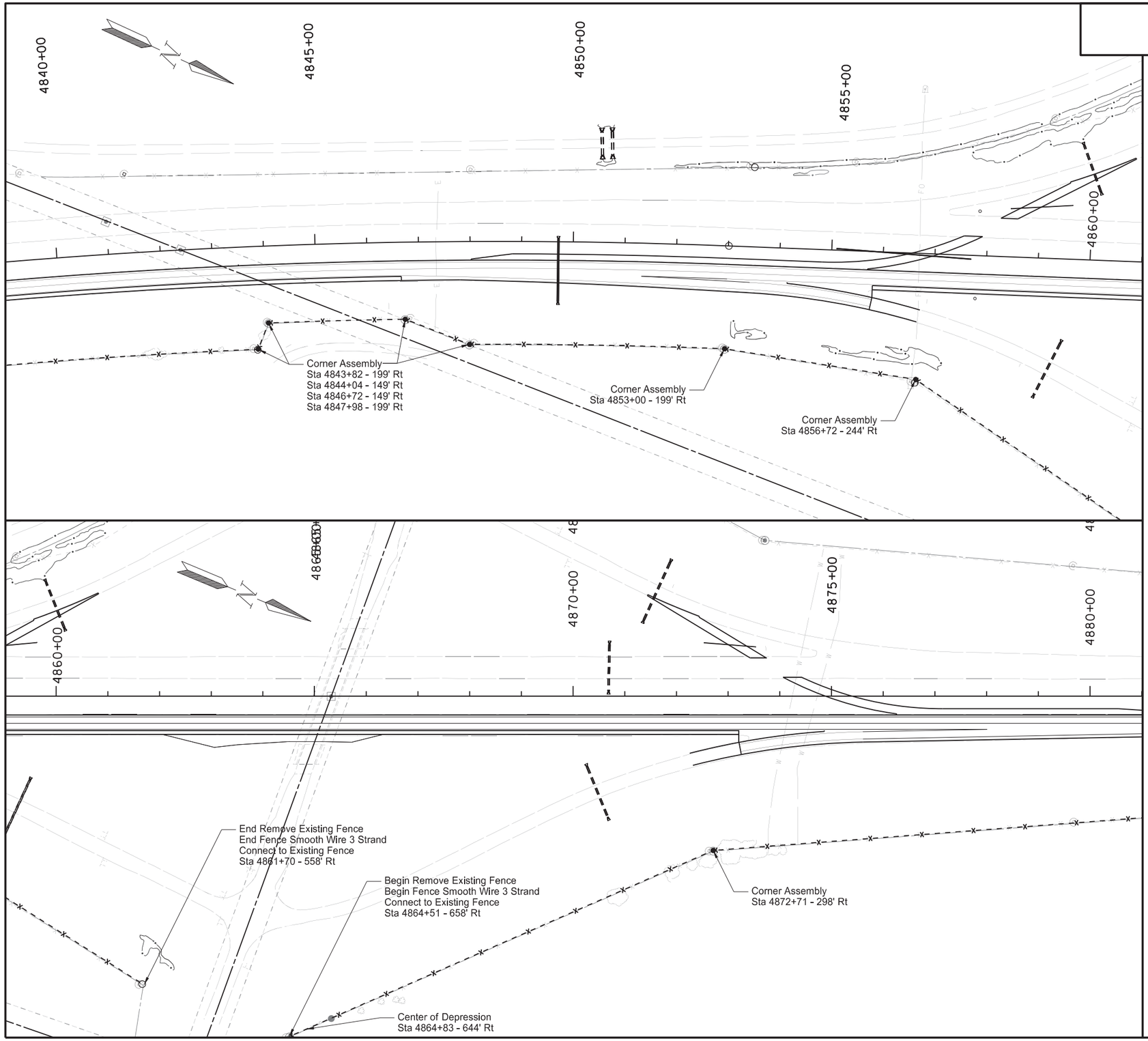
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4800+00 Rt to Sta 4840+00 Rt	LF	4009
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4800+00 to Sta 4840+00 - 199' Rt	LF	4009
752	0993	**FENCE TERMINAL**		
		Sta 4803+83 - 199' Rt	EA	1
		Sta 4804+82 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4817+65 - 199' Rt	EA	1
		Sta 4830+63 - 199' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4800+00 to Sta 4840+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	80	6



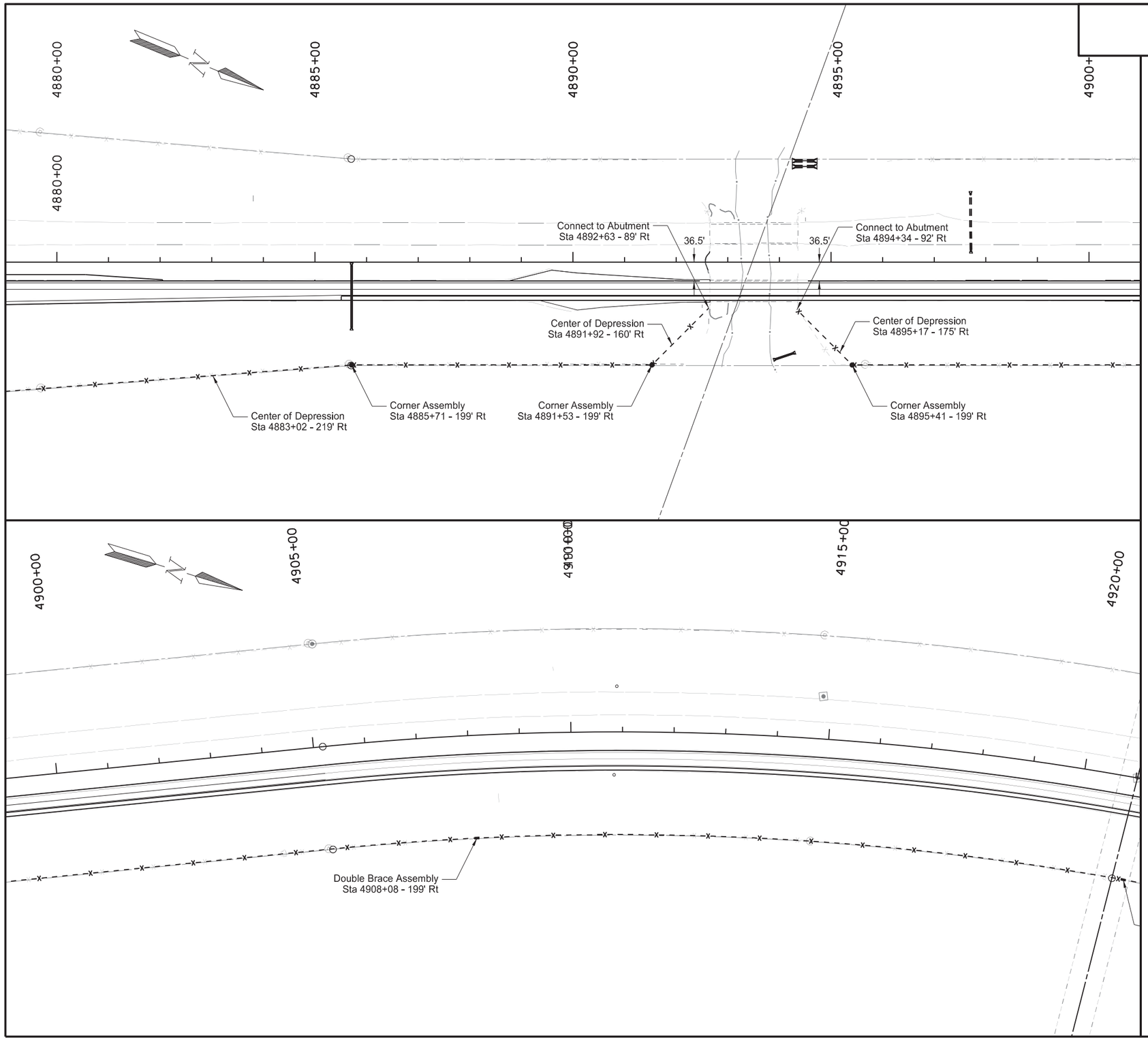
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4840+00 Rt to Sta 4861+70 Rt	LF	2280
		Sta 4864+51 Rt to Sta 4880+00 Rt	LF	1627
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4840+00 to Sta 4843+82 - 199' Rt	LF	375
		Sta 4843+82 - 199' Rt to Sta 4844+04 - 149' R	LF	55
		Sta 4844+04 - 149' Rt to Sta 4846+72 - 149' R	LF	265
		Sta 4846+72 - 149' Rt to Sta 4847+98 - 199' R	LF	134
		Sta 4847+98 - 199' Rt to Sta 4853+00 - 199' R	LF	493
		Sta 4853+00 - 199' Rt to Sta 4856+72 - 244' R	LF	375
		Sta 4856+72 - 244' Rt to Sta 4861+70 - 558' R	LF	589
		Sta 4864+51 - 658' Rt to Sta 4872+71 - 298' R	LF	896
		Sta 4872+71 - 298' Rt to Sta 4880+00 - 242.5	LF	731
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 4843+82 - 199' Rt	EA	1
		Sta 4844+04 - 149' Rt	EA	1
		Sta 4846+72 - 149' Rt	EA	1
		Sta 4847+98 - 199' Rt	EA	1
		Sta 4853+00 - 199' Rt	EA	1
		Sta 4856+72 - 244' Rt	EA	1
		Sta 4872+71 - 298' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4840+00 to Sta 4880+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	7



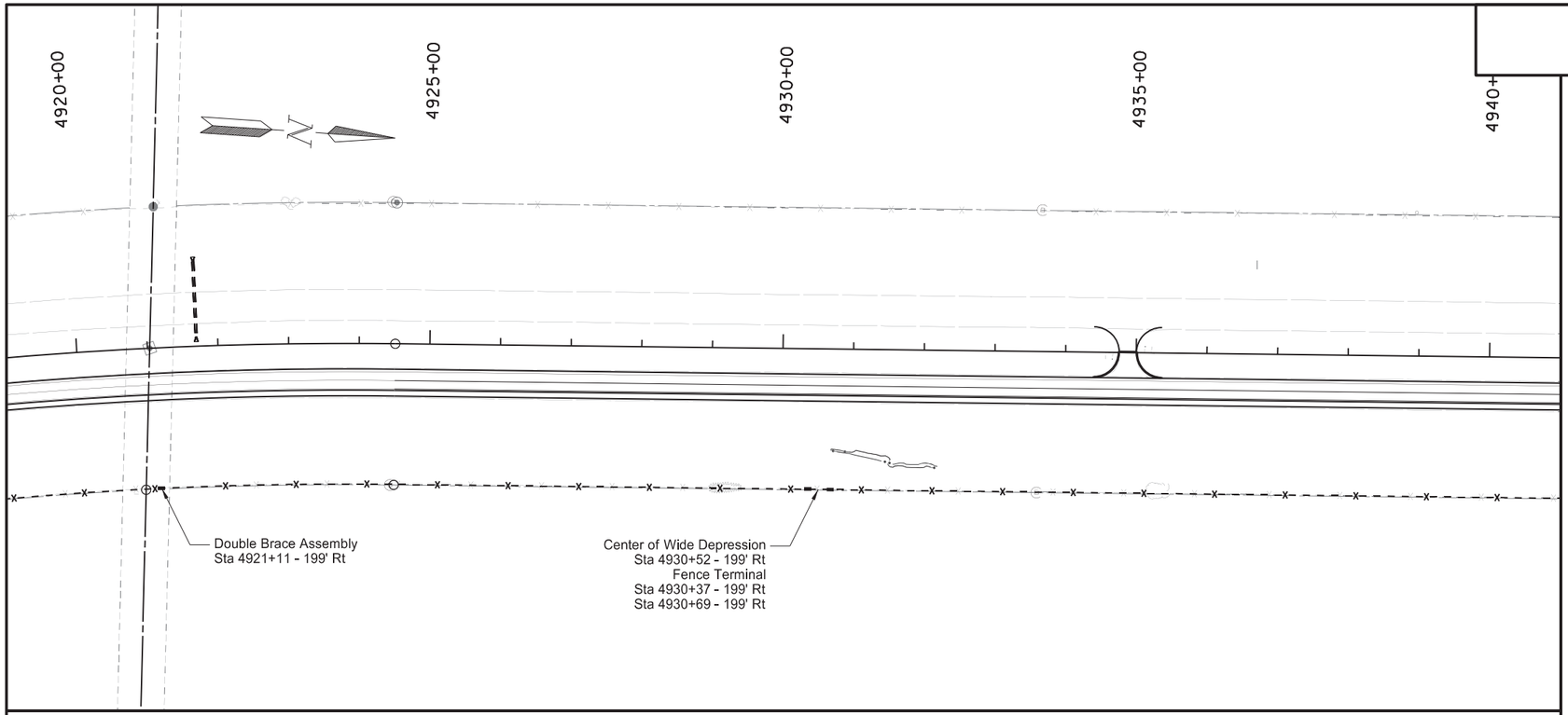
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4880+00 Rt to Sta 4892+63 Rt	LF	1267
		Sta 4894+34 Rt to Sta 4920+00 Rt	LF	2570
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4880+00 - 242.5' Rt to Sta 4885+71 - 199	LF	573
		Sta 4885+71 to Sta 4891+53 - 199' Rt	LF	582
		Sta 4891+53 - 199' Rt to Sta 4892+63 - 89' Rt	LF	156
		Sta 4894+34 - 92' Rt to Sta 4895+41 - 199' Rt	LF	151
		Sta 4895+41 to Sta 4920+00 - 199' Rt	LF	2408
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 4885+71 - 199' Rt	EA	1
		Sta 4891+53 - 199' Rt	EA	1
		Sta 4895+41 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4908+08 - 199' Rt	EA	1

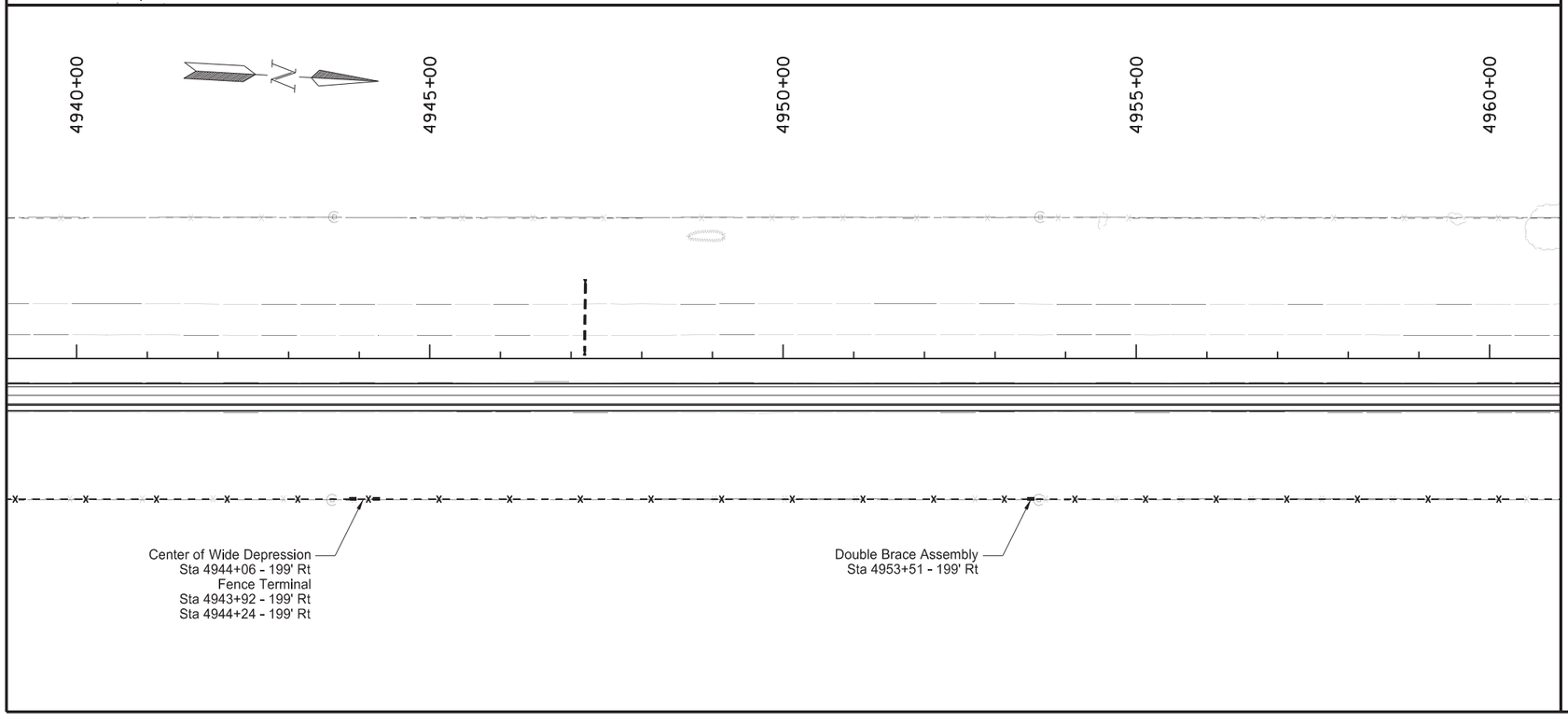
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4880+00 to Sta 4920+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	8





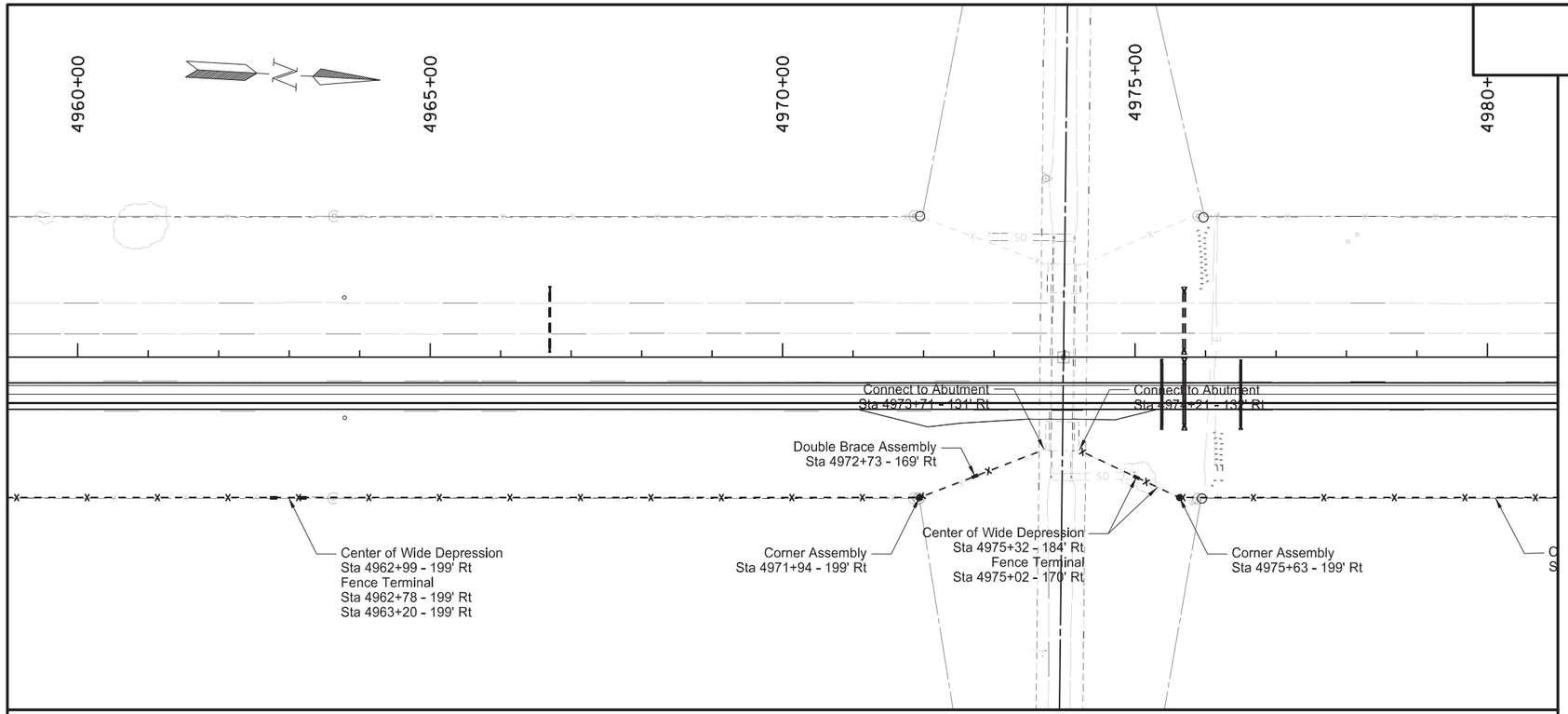
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 4920+00 Rt to Sta 4960+00 Rt	LF	3984
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4920+00 to Sta 4960+00 - 199' Rt	LF	3984
752	0993	**FENCE TERMINAL**		
		Sta 4930+37 - 199' Rt	EA	1
		Sta 4930+69 - 199' Rt	EA	1
		Sta 4943+92 - 199' Rt	EA	1
		Sta 4944+24 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4921+11 - 199' Rt	EA	1
		Sta 4953+51 - 199' Rt	EA	1

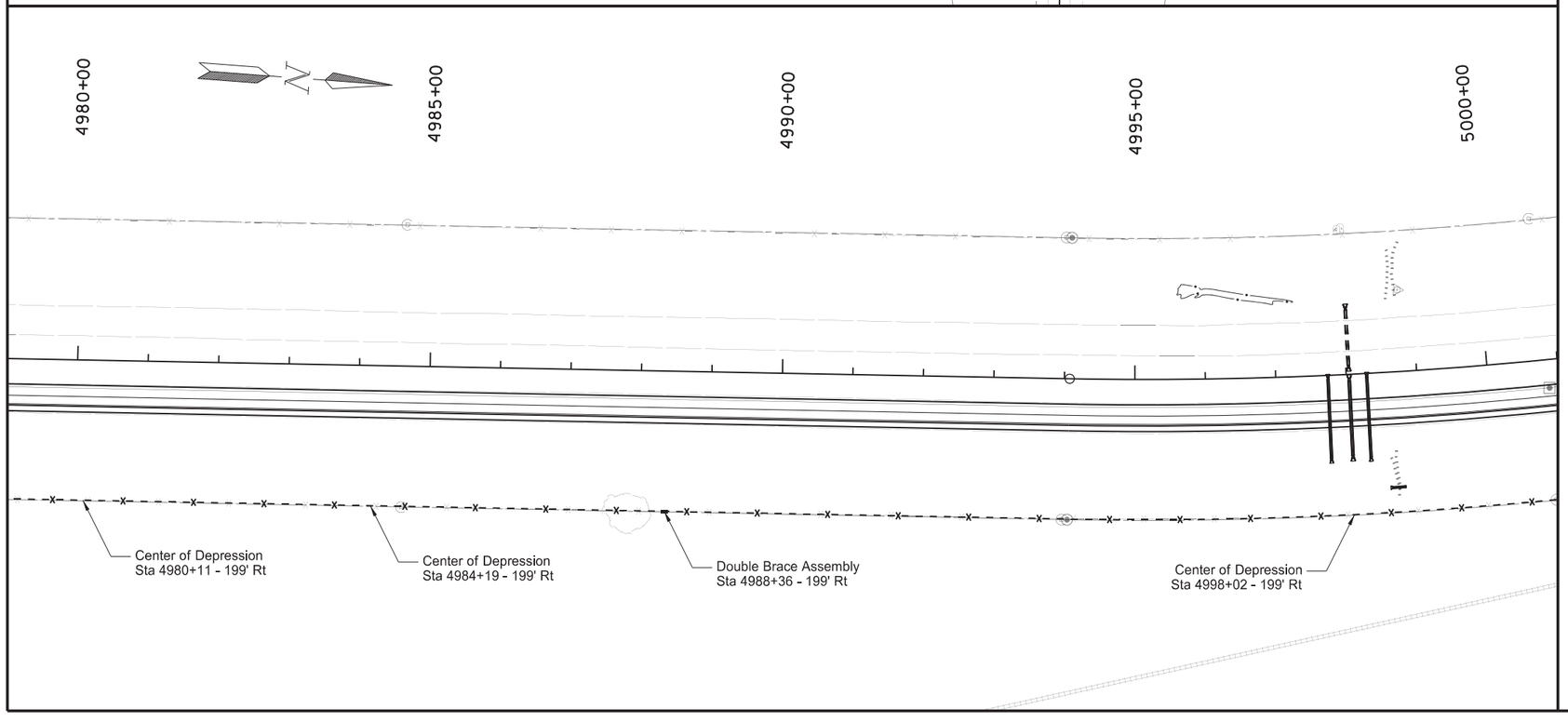
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4920+00 to Sta 4960+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	9





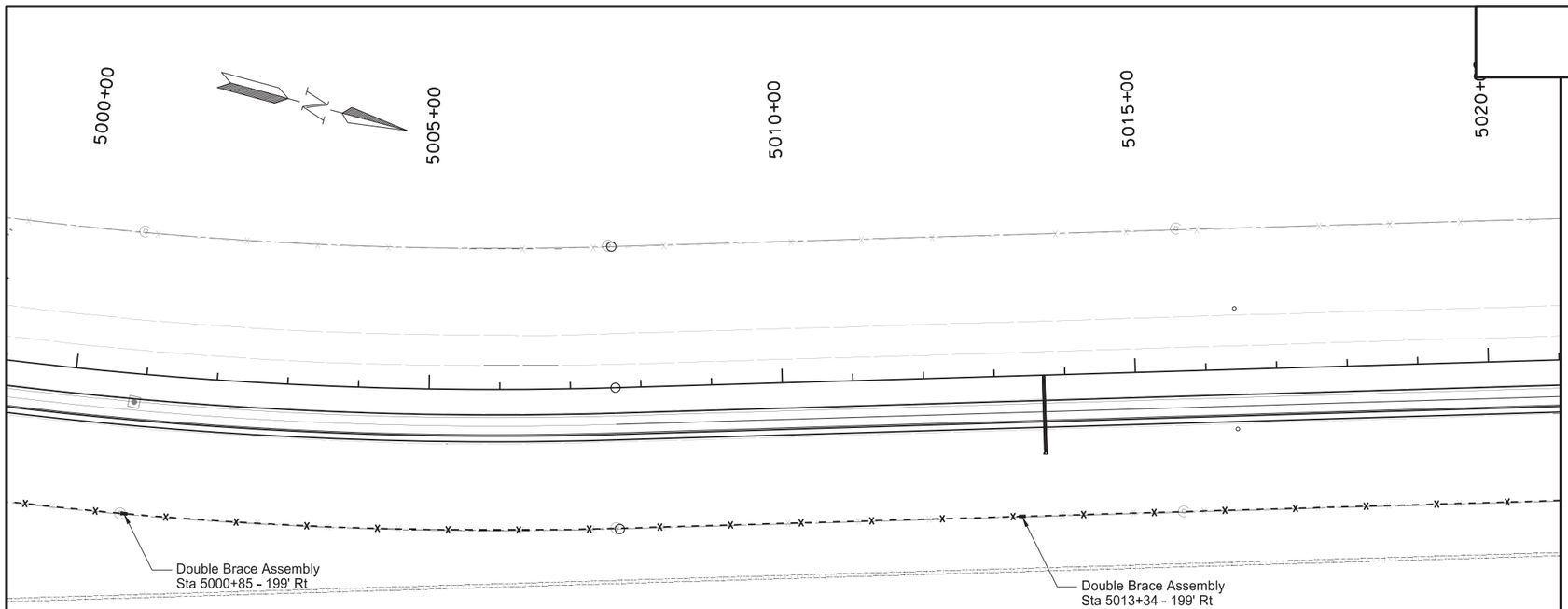
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	**0312**	**REMOVE EXISTING FENCE**		
		Sta 4960+00 Rt to Sta 4973+71 Rt	LF	1386
		Sta 4974+21 Rt to Sta 5000+00 Rt	LF	2616
752	**0126**	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 4960+00 to Sta 4971+94 - 199' Rt	LF	1194
		Sta 4971+94 - 199' Rt to Sta 4973+71 - 131' R	LF	190
		Sta 4974+21 - 132' Rt to Sta 4975+63 - 199' R	LF	157
		Sta 4975+63 to Sta 5000+00 - 199' Rt	LF	2458
752	**0993**	**FENCE TERMINAL**		
		Sta 4962+78 - 199' Rt	EA	1
		Sta 4963+20 - 199' Rt	EA	1
		Sta 4975+02 - 170' Rt	EA	1
752	**2996**	**CORNER ASSEMBLY - STEEL POST**		
		Sta 4971+94 - 199' Rt	EA	1
		Sta 4975+63 - 199' Rt	EA	1
752	**3996**	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 4972+73 - 169' Rt	EA	1
		Sta 4988+36 - 199' Rt	EA	1

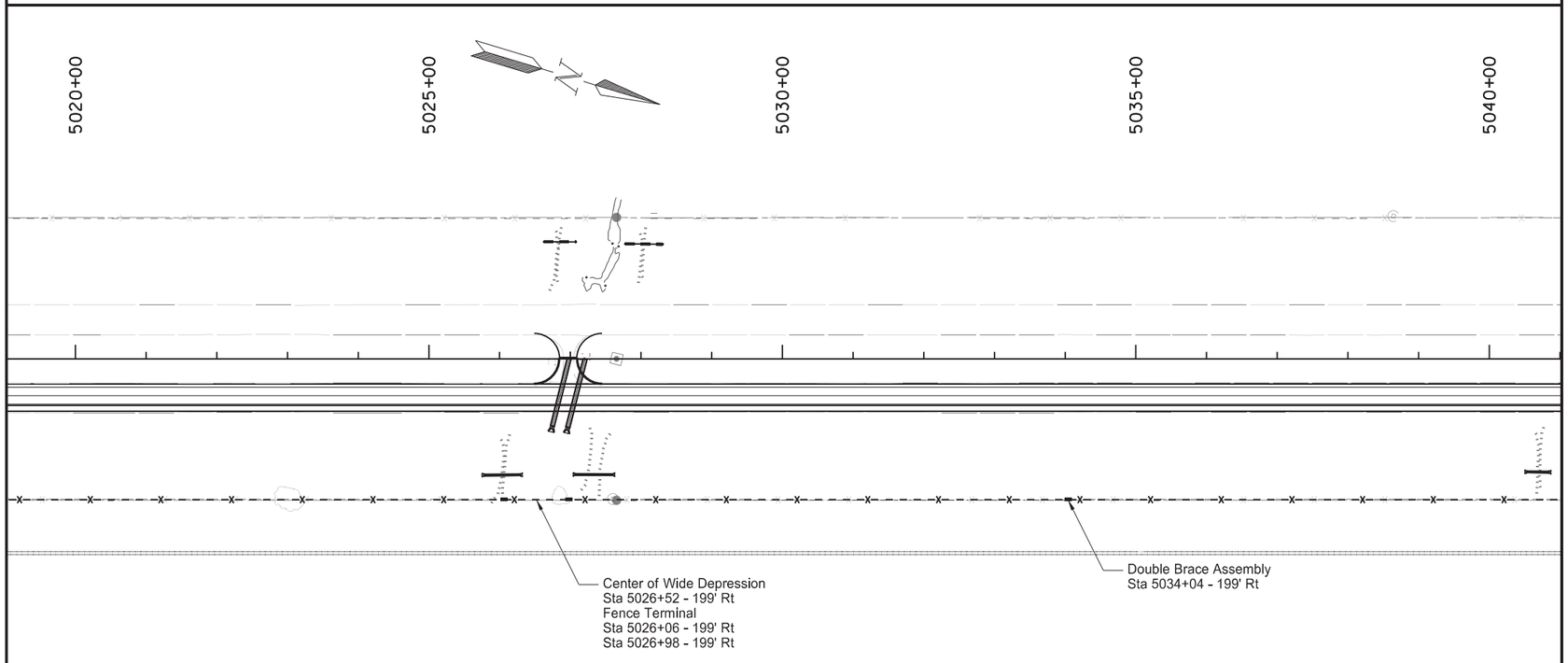
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 4960+00 to Sta 5000+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	10





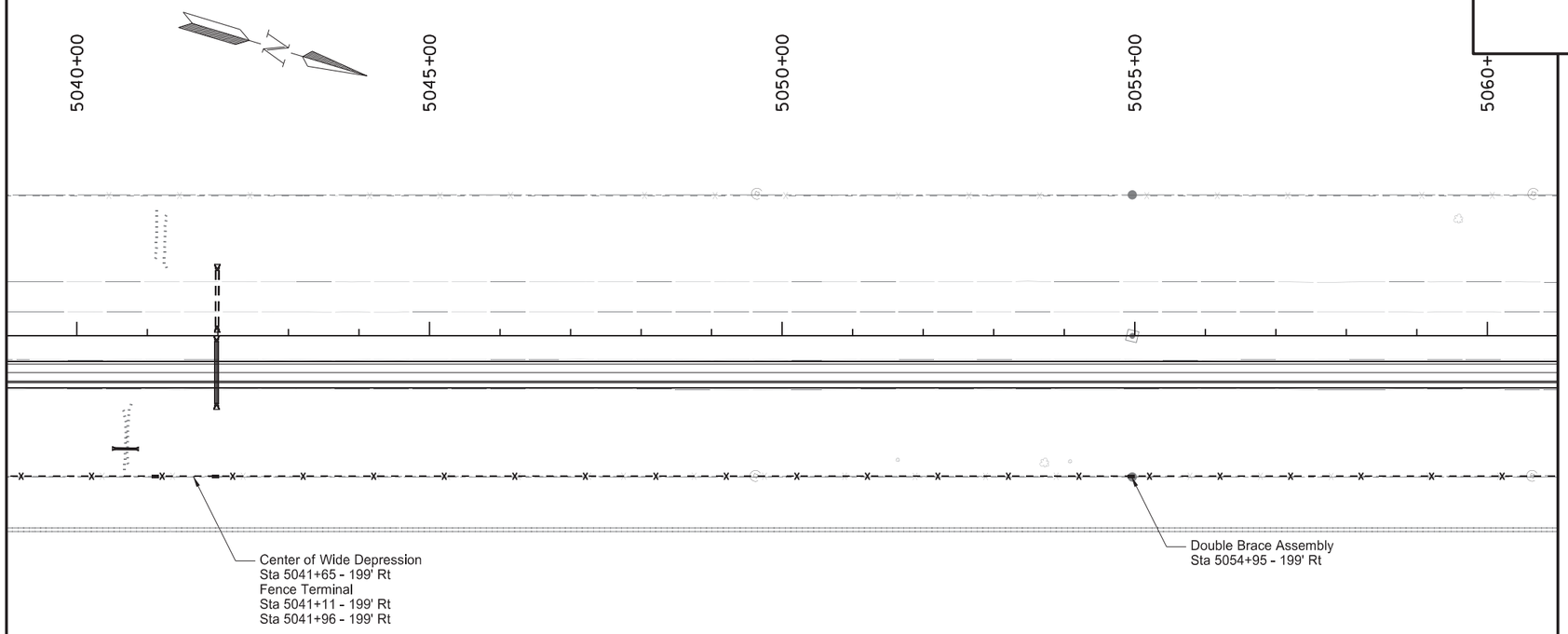
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	**0312**	**REMOVE EXISTING FENCE**		
		Sta 5000+00 Rt to Sta 5026+14 Rt	LF	2641
		Sta 5026+85 Rt to Sta 5040+00 Rt	LF	1315
752	**0126**	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5000+00 to Sta 5040+00 - 199' Rt	LF	4027
752	**0993**	**FENCE TERMINAL**		
		Sta 5026+06 - 199' Rt	EA	1
		Sta 5026+98 - 199' Rt	EA	1
752	**3996**	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5000+85 - 199' Rt	EA	1
		Sta 5013+34 - 199' Rt	EA	1
		Sta 5034+04 - 199' Rt	EA	1

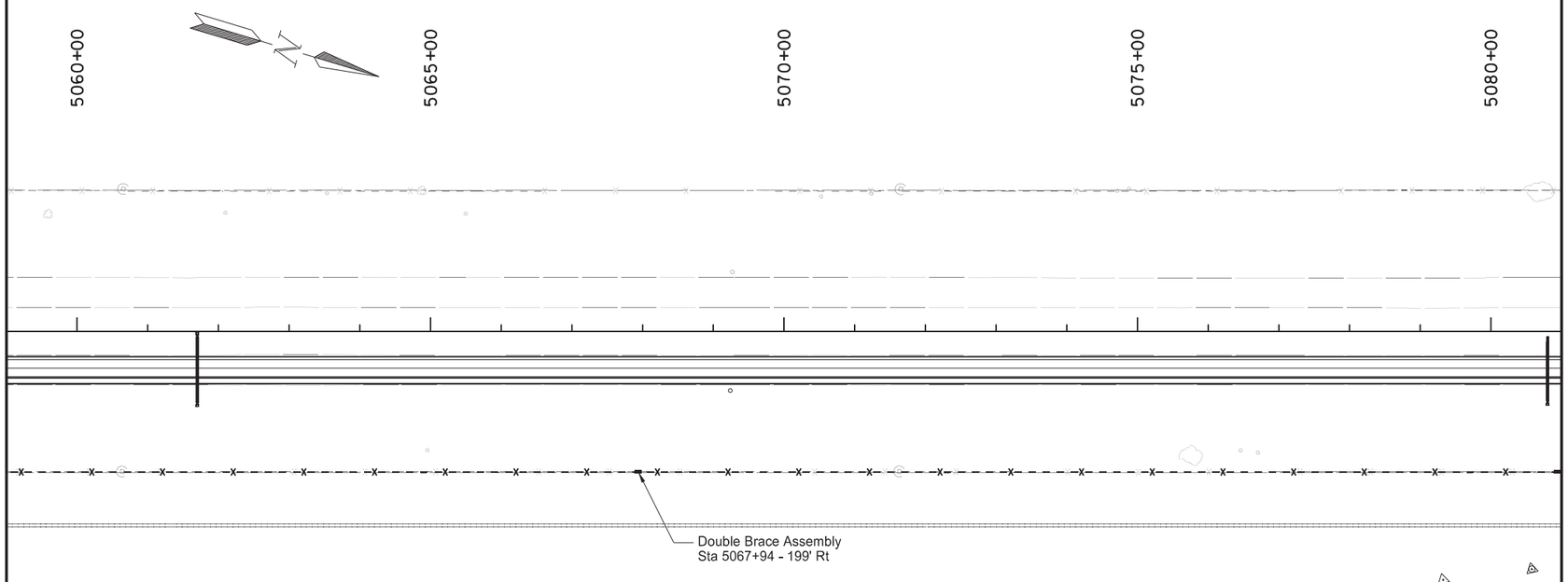
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5000+00 to Sta 5040+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	11





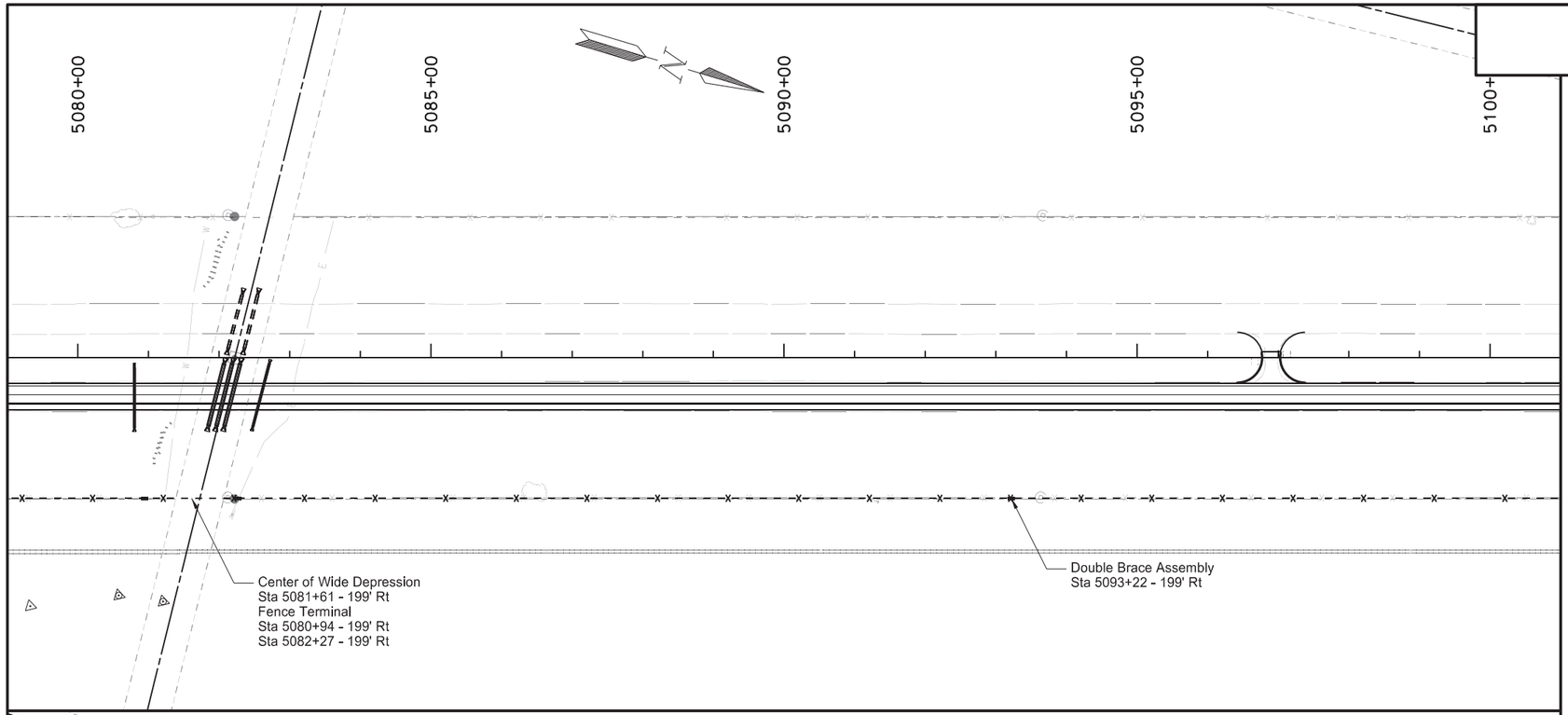
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5040+00 Rt to Sta 5080+00 Rt	LF	4000
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5040+00 to Sta 5080+00 - 199' Rt	LF	4000
752	0993	**FENCE TERMINAL**		
		Sta 5041+11 - 199' Rt	EA	1
		Sta 5041+96 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5054+95 - 199' Rt	EA	1
		Sta 5067+94 - 199' Rt	EA	1

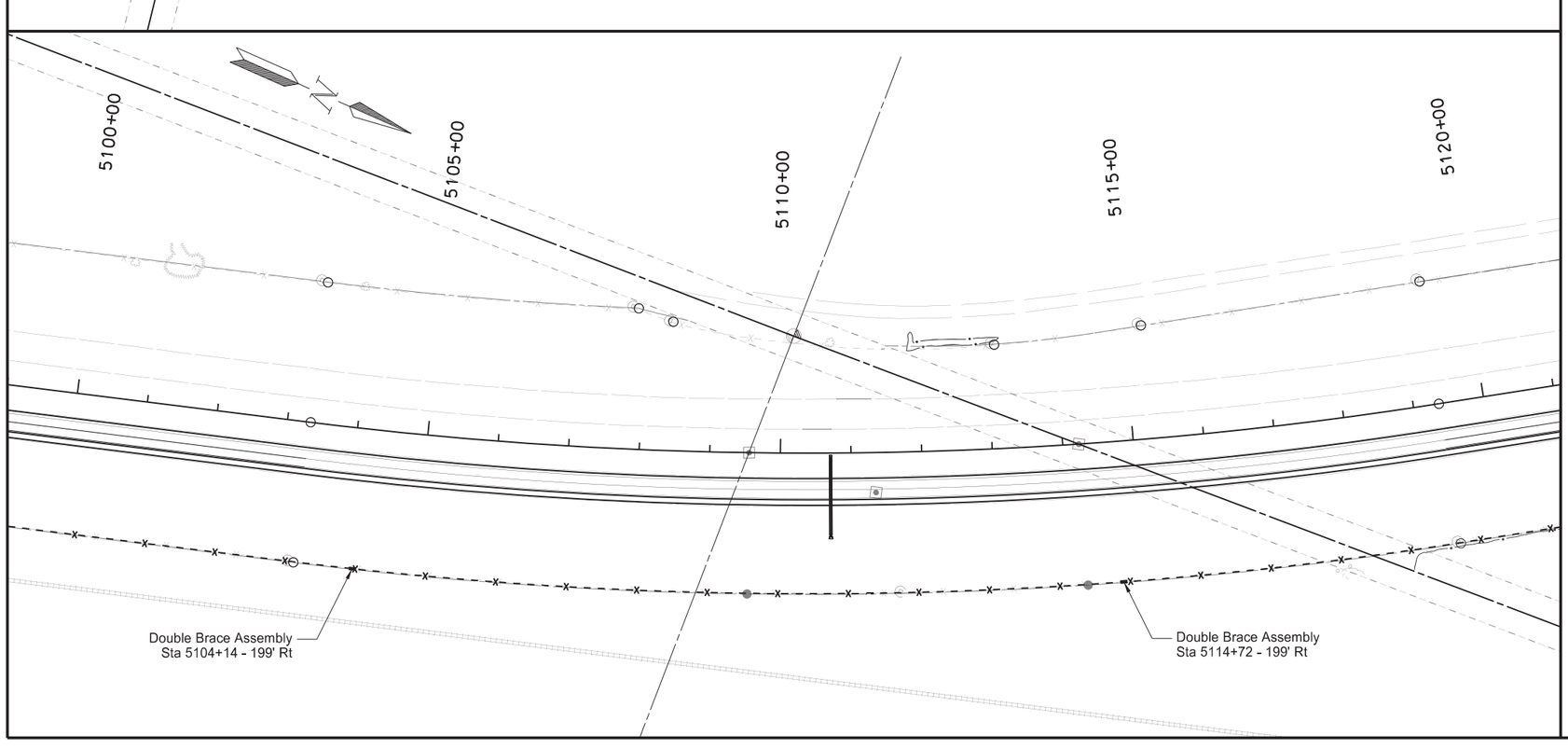
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5040+00 to Sta 5080+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	12





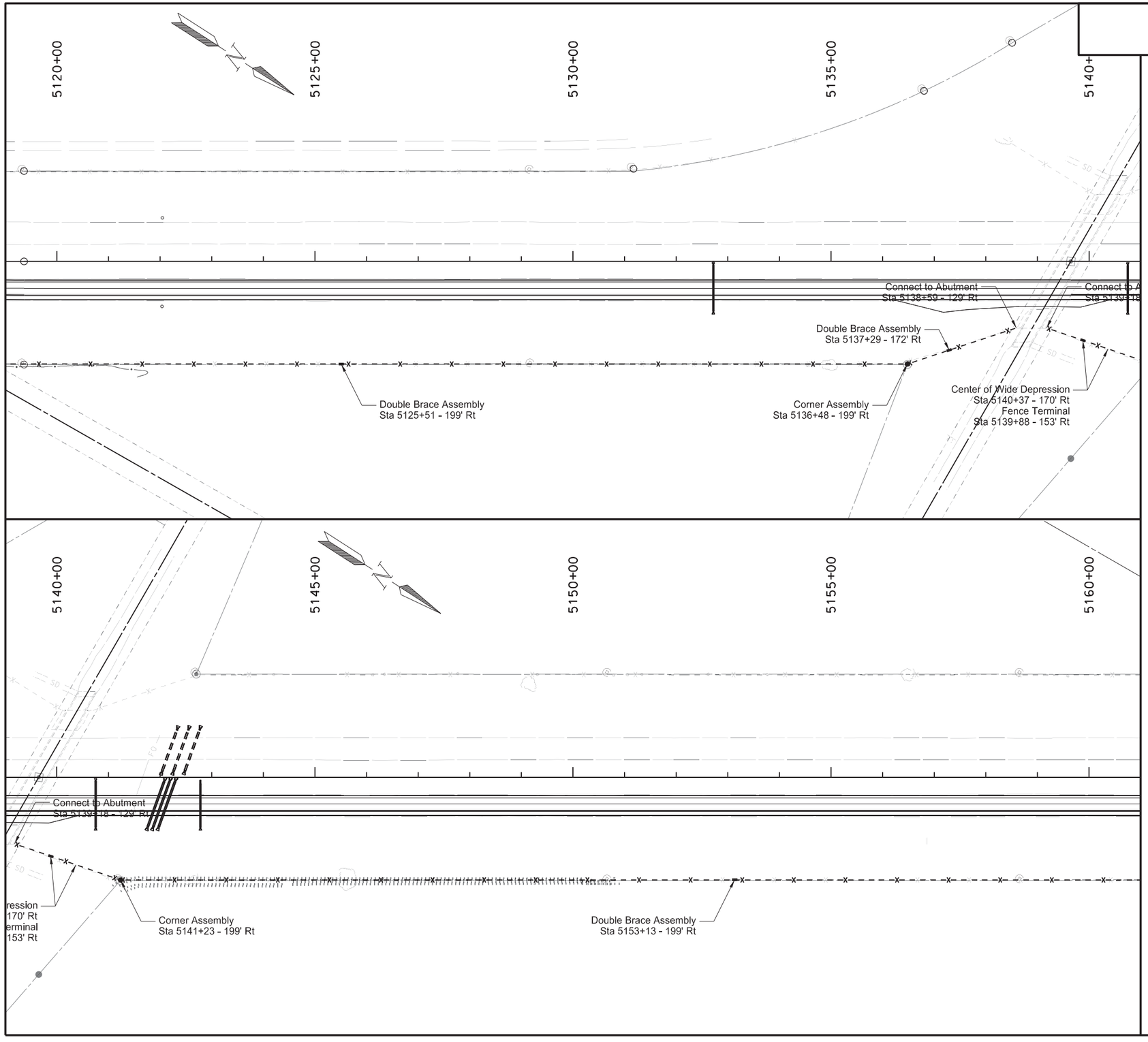
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5080+00 Rt to Sta 5081+25 Rt	LF	125
		Sta 5082+04 Rt to Sta 5120+00 Rt	LF	3852
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5080+00 to Sta 5120+00 - 199' Rt	LF	4056
752	0993	**FENCE TERMINAL**		
		Sta 5080+94 - 199' Rt	EA	1
		Sta 5082+27 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5093+22 - 199' Rt	EA	1
		Sta 5104+14 - 199' Rt	EA	1
		Sta 5114+72 - 199' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5080+00 to Sta 5120+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	13



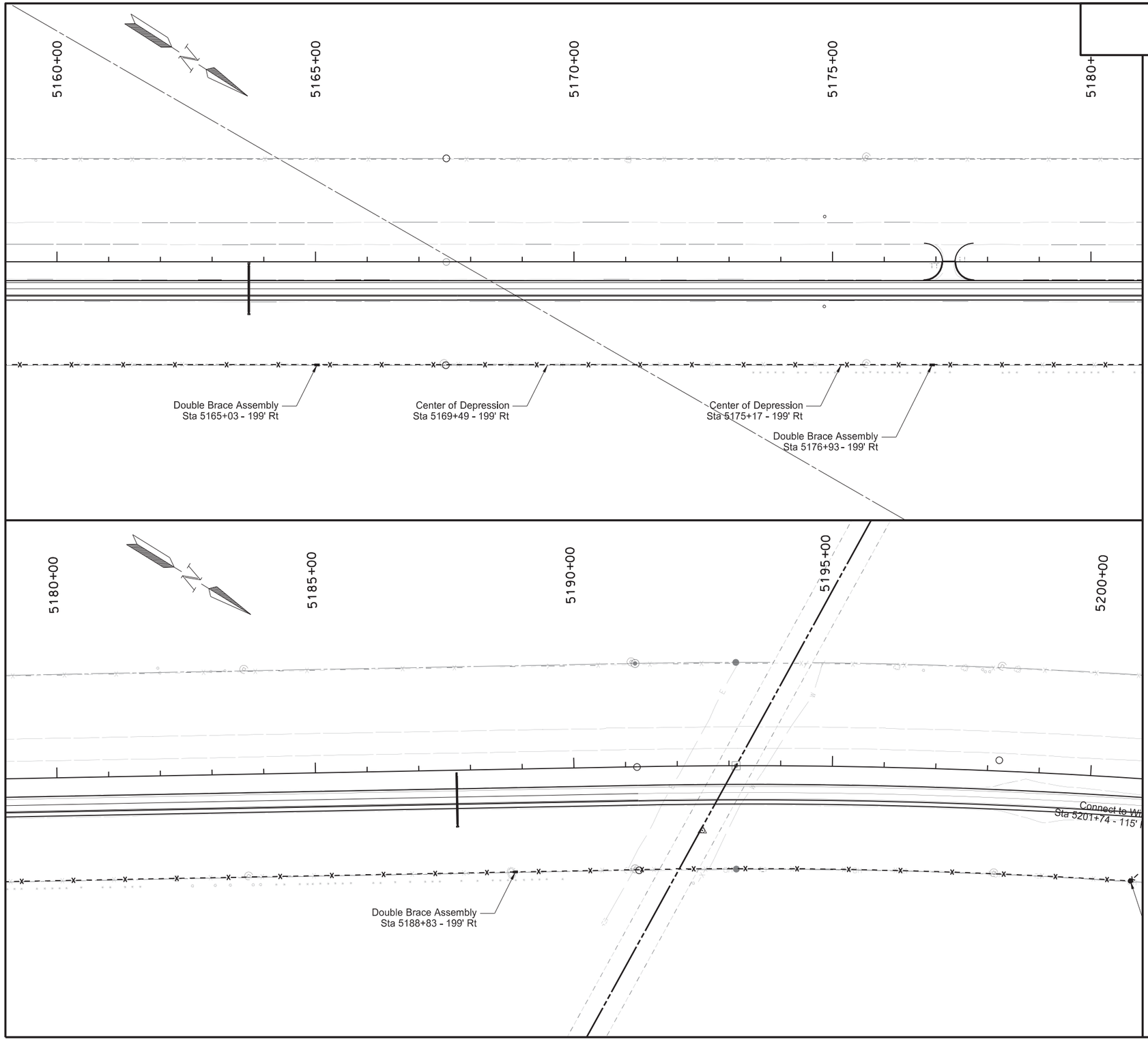
SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5120+00 Rt to Sta 5138+59 Rt	LF	1871
		Sta 5139+18 Rt to Sta 5160+00 Rt	LF	2096
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5120+00 to Sta 5136+48 - 199' Rt	LF	1648
		Sta 5136+48 - 199' Rt to Sta 5138+59 - 129' R	LF	222
		Sta 5139+18 - 129' Rt to Sta 5141+23 - 199' R	LF	217
		Sta 5141+23 to Sta 5160+00 - 199' Rt	LF	1877
752	0993	**FENCE TERMINAL**		
		Sta 5139+88 - 153' Rt	EA	1
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 5136+48 - 199' Rt	EA	1
		Sta 5141+23 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5125+51 - 199' Rt	EA	1
		Sta 5137+29 - 172' Rt	EA	1
		Sta 5153+13 - 199' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5120+00 to Sta 5160+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	14



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5160+00 Rt to Sta 5174+77 Rt	LF	1477
		Sta 5176+00 Rt to Sta 5200+00 Rt	LF	2385
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5160+00 to Sta 5200+00 - 199' Rt	LF	3985
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5165+03 - 199' Rt	EA	1
		Sta 5176+93 - 199' Rt	EA	1
		Sta 5188+83 - 199' Rt	EA	1

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SAMUEL WELCH
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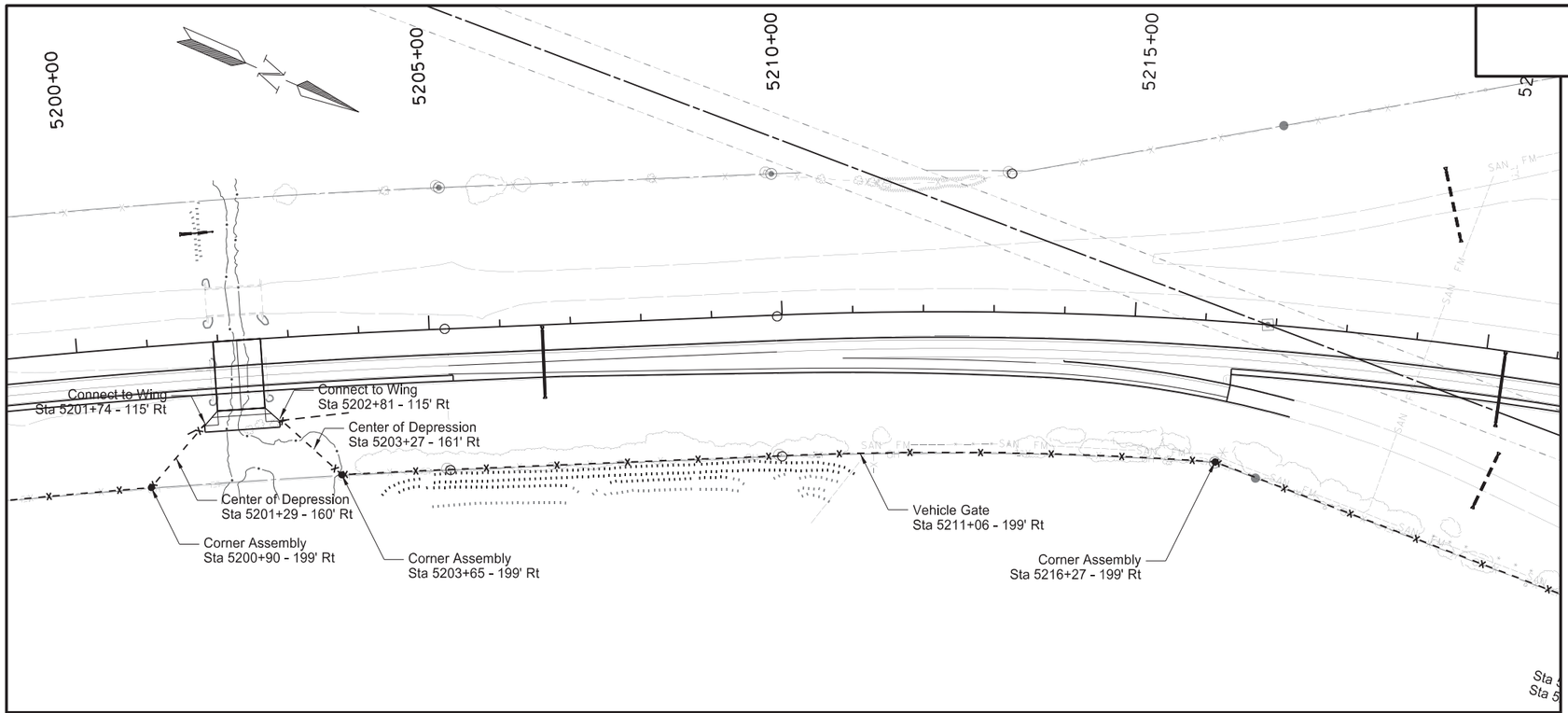
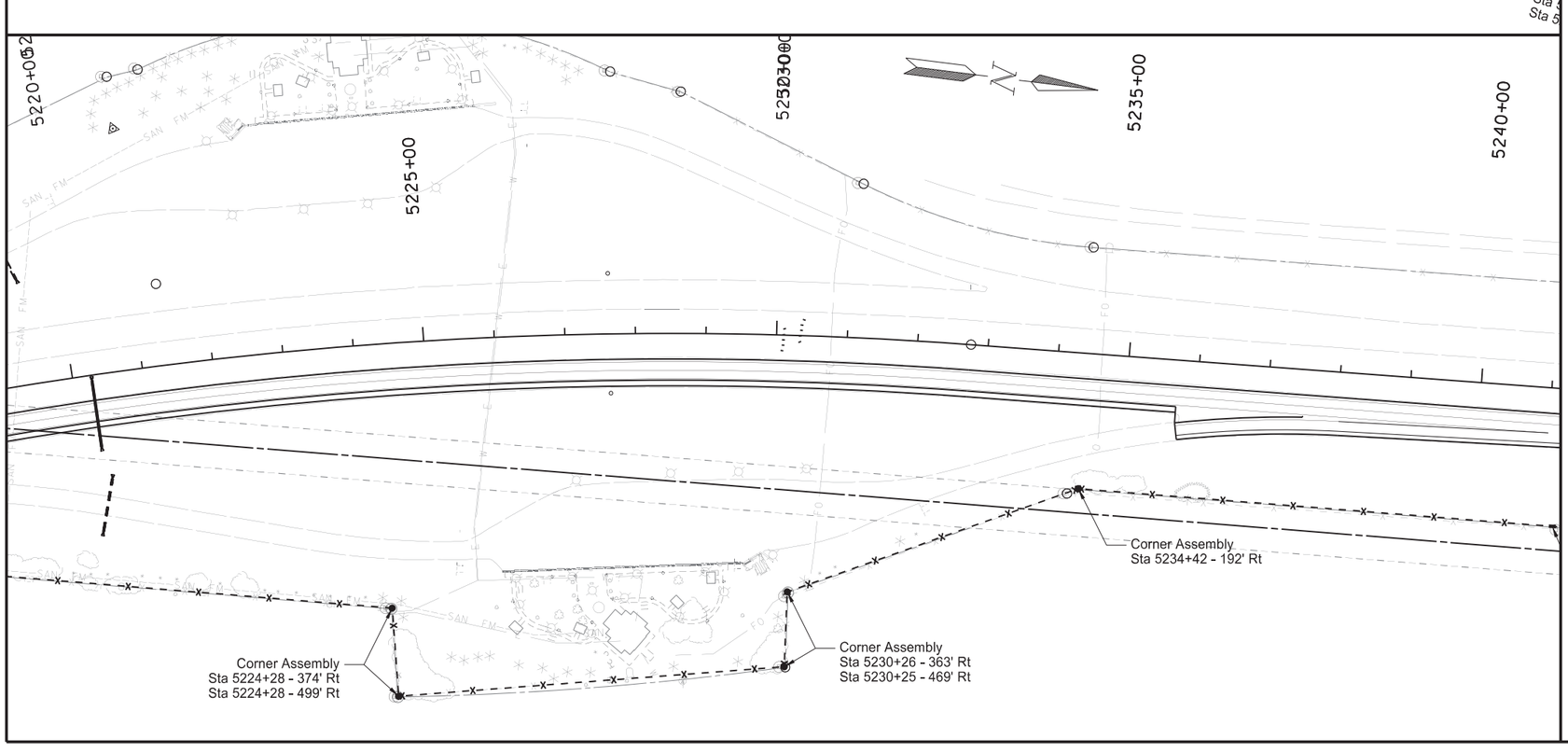
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5160+00 to Sta 5200+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	15





SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5200+00 Rt to Sta 5201+98 Rt	LF	195
		Sta 5203+32 Rt to Sta 5240+00 Rt	LF	3770
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5200+00 to Sta 5200+90 - 199' Rt	LF	88
		Sta 5200+90 - 199' Rt to Sta 5201+74 - 115' R	LF	118
		Sta 5202+81 - 115' Rt to Sta 5203+65 - 199' R	LF	118
		Sta 5203+65 to Sta 5216+27 - 199' Rt	LF	1237
		Sta 5216+27 - 199' Rt to Sta 5224+28 - 374' R	LF	780
		Sta 5224+28 - 374' Rt to Sta 5224+28 - 499' R	LF	125
		Sta 5224+28 - 499' Rt to Sta 5230+25 - 469' R	LF	547
		Sta 5230+25 - 469' Rt to Sta 5230+26 - 363' R	LF	106
		Sta 5230+26 - 363' Rt to Sta 5234+42 - 192' R	LF	437
		Sta 5234+42 - 192' Rt to Sta 5240+00 - 194.9	LF	558
752	2100	**VEHICLE GATE**		
		Sta 5211+06 - 199' Rt	EA	1
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 5200+90 - 199' Rt	EA	1
		Sta 5203+65 - 199' Rt	EA	1
		Sta 5216+27 - 199' Rt	EA	1
		Sta 5224+28 - 374' Rt	EA	1
		Sta 5224+28 - 499' Rt	EA	1
		Sta 5230+25 - 469' Rt	EA	1
		Sta 5230+26 - 363' Rt	EA	1
		Sta 5234+42 - 192' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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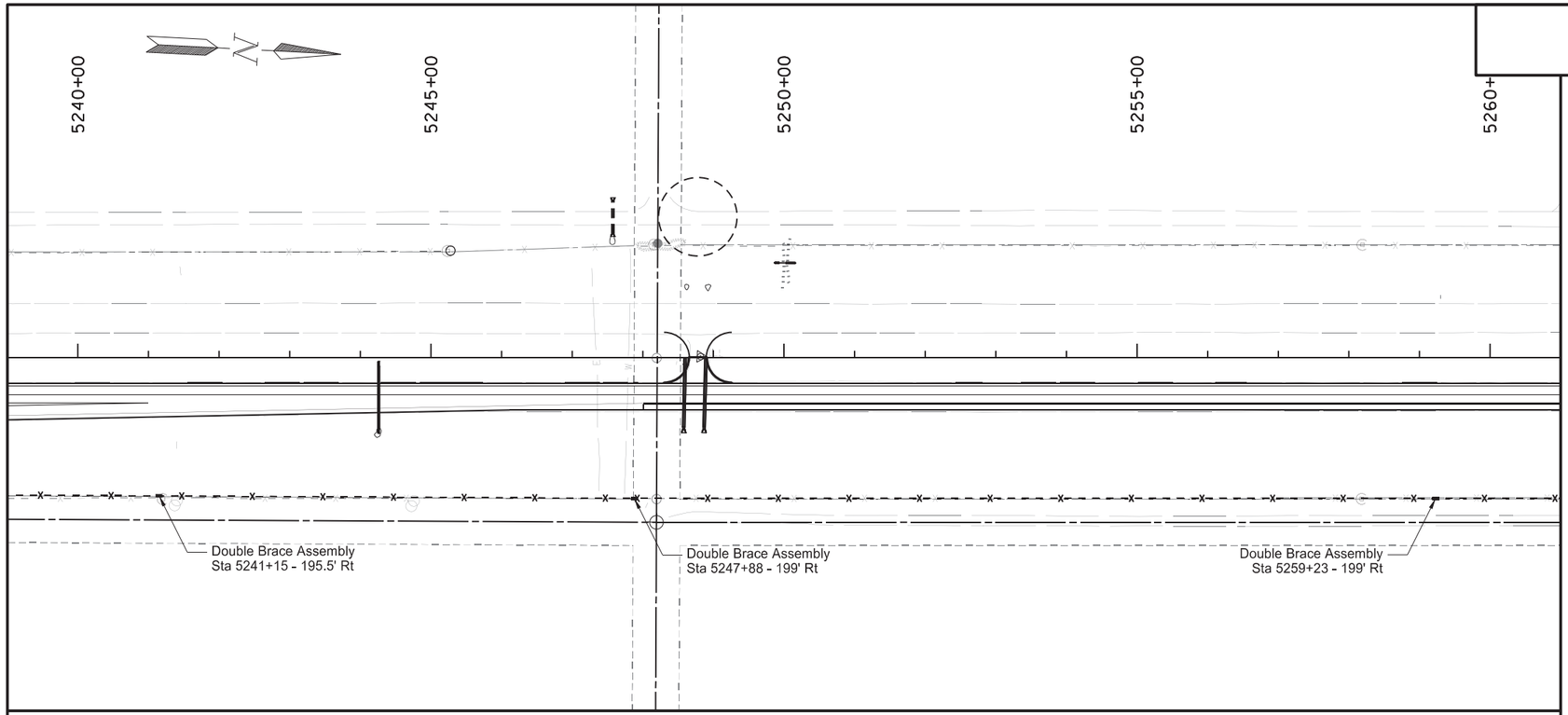
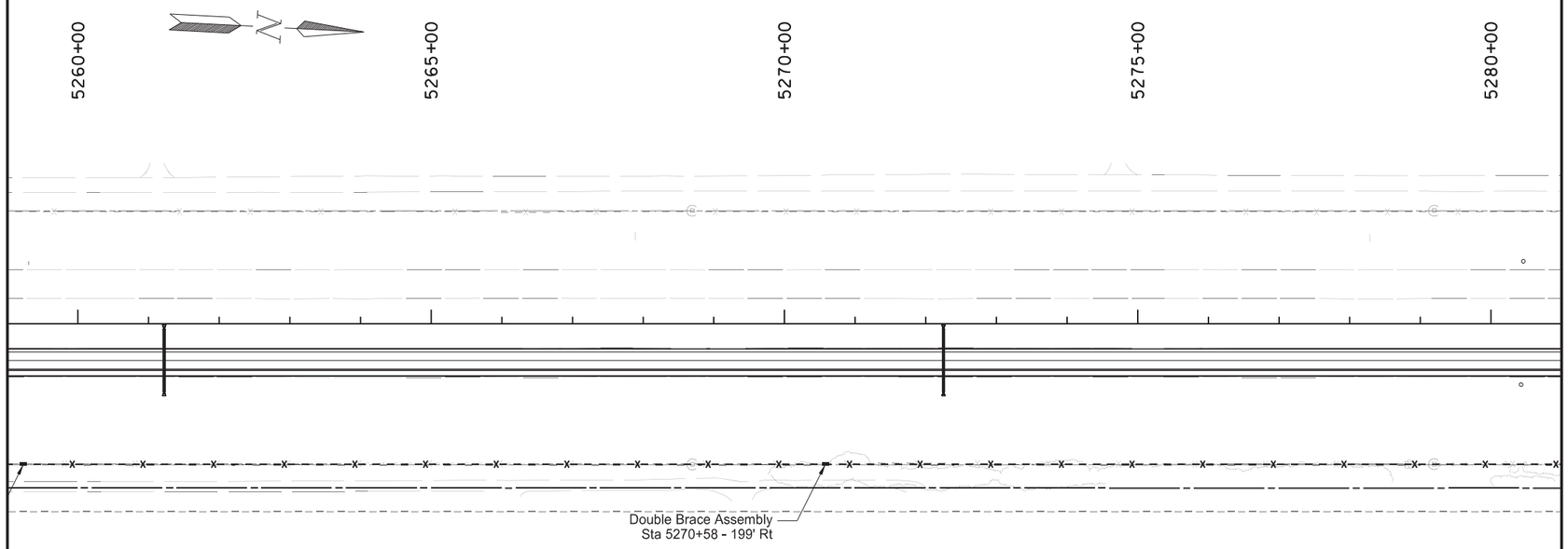
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5200+00 to Sta 5240+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	16





SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5240+00 Rt to Sta 5280+00 Rt	LF	4000
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5240+00 - 194.9' Rt to Sta 5247+87 - 199	LF	787
		Sta 5247+87 to Sta 5280+00 - 199' Rt	LF	3213
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5241+15 - 195.5' Rt	EA	1
		Sta 5247+88 - 199' Rt	EA	1
		Sta 5259+23 - 199' Rt	EA	1
		Sta 5270+58 - 199' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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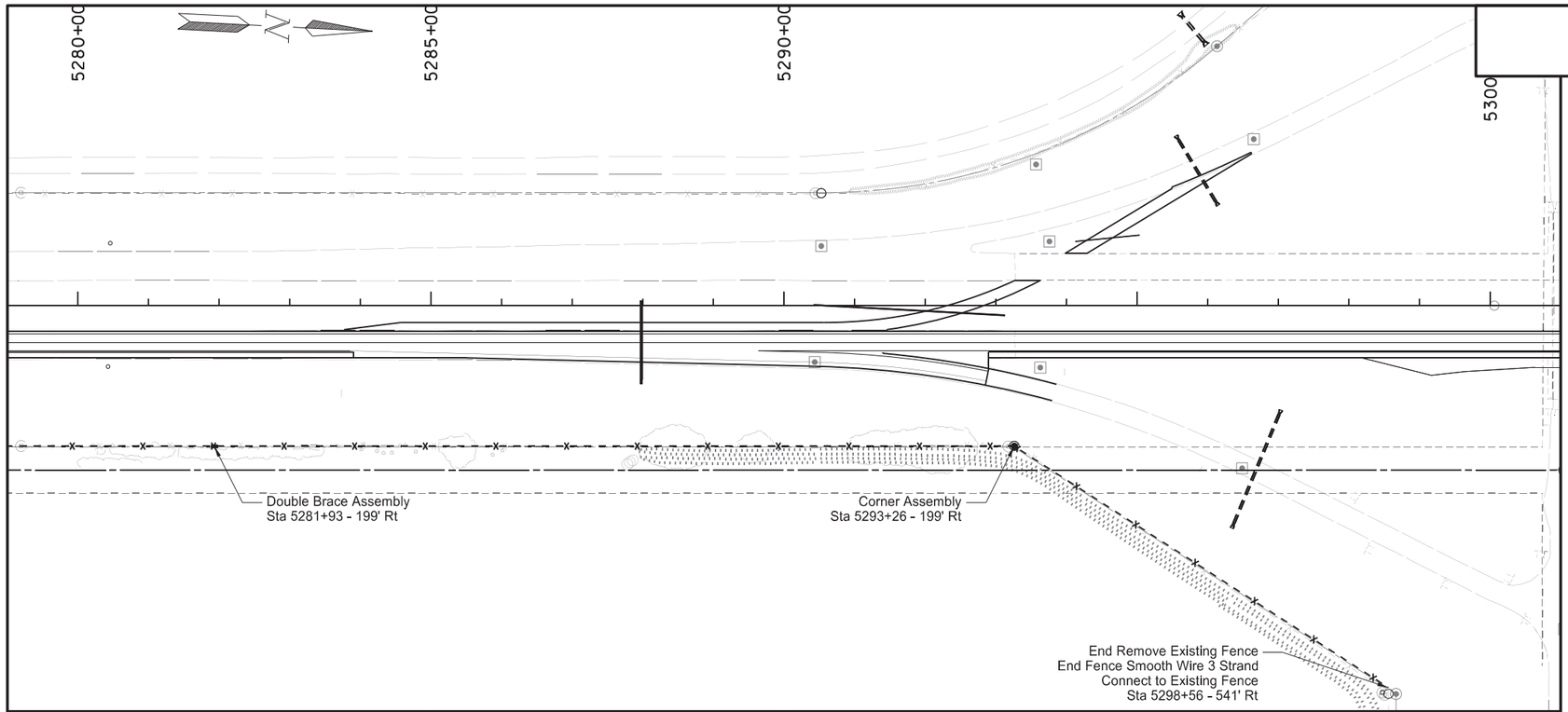
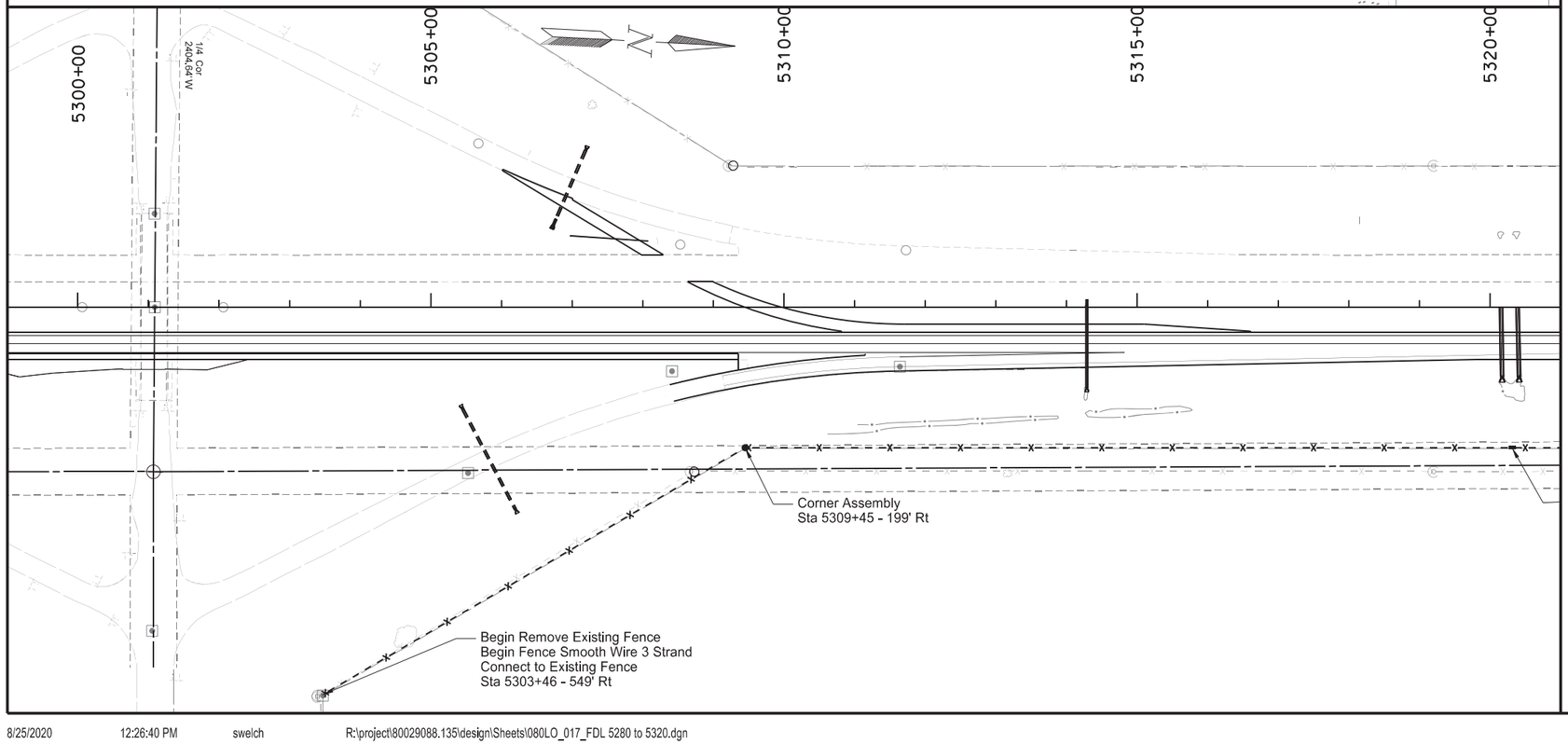
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5240+00 to Sta 5280+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	17





SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5280+00 Rt to Sta 5298+56 Rt	LF	1962
		Sta 5303+46 Rt to Sta 5320+00 Rt	LF	1743
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5280+00 to Sta 5293+26 - 199' Rt	LF	1326
		Sta 5293+26 - 199' Rt to Sta 5298+56 - 541' R	LF	631
		Sta 5303+46 - 549' Rt to Sta 5309+45 - 199' R	LF	694
		Sta 5309+45 to Sta 5320+00 - 199' Rt	LF	1055
752	2996	**CORNER ASSEMBLY - STEEL POST**		
		Sta 5293+26 - 199' Rt	EA	1
		Sta 5309+45 - 199' Rt	EA	1
752	3996	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5281+93 - 199' Rt	EA	1

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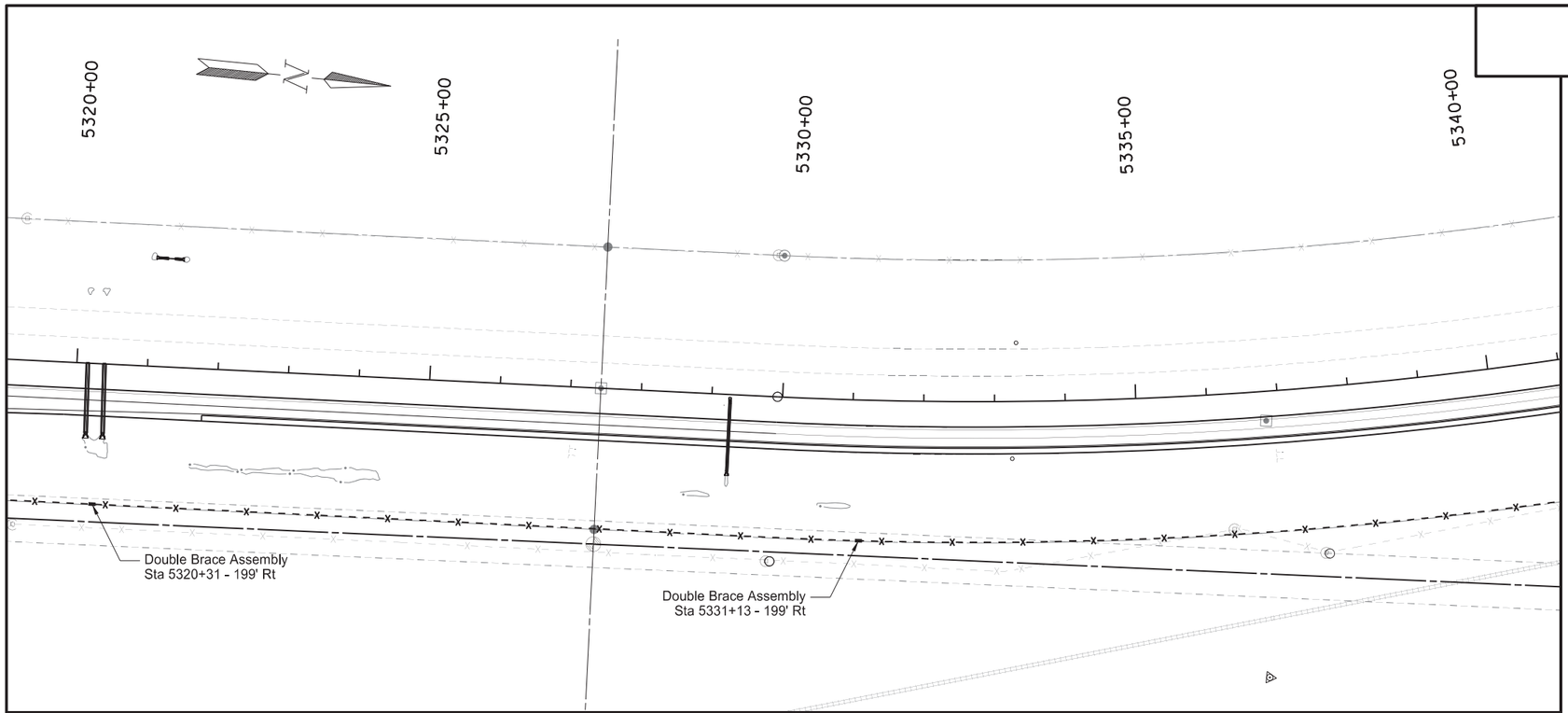
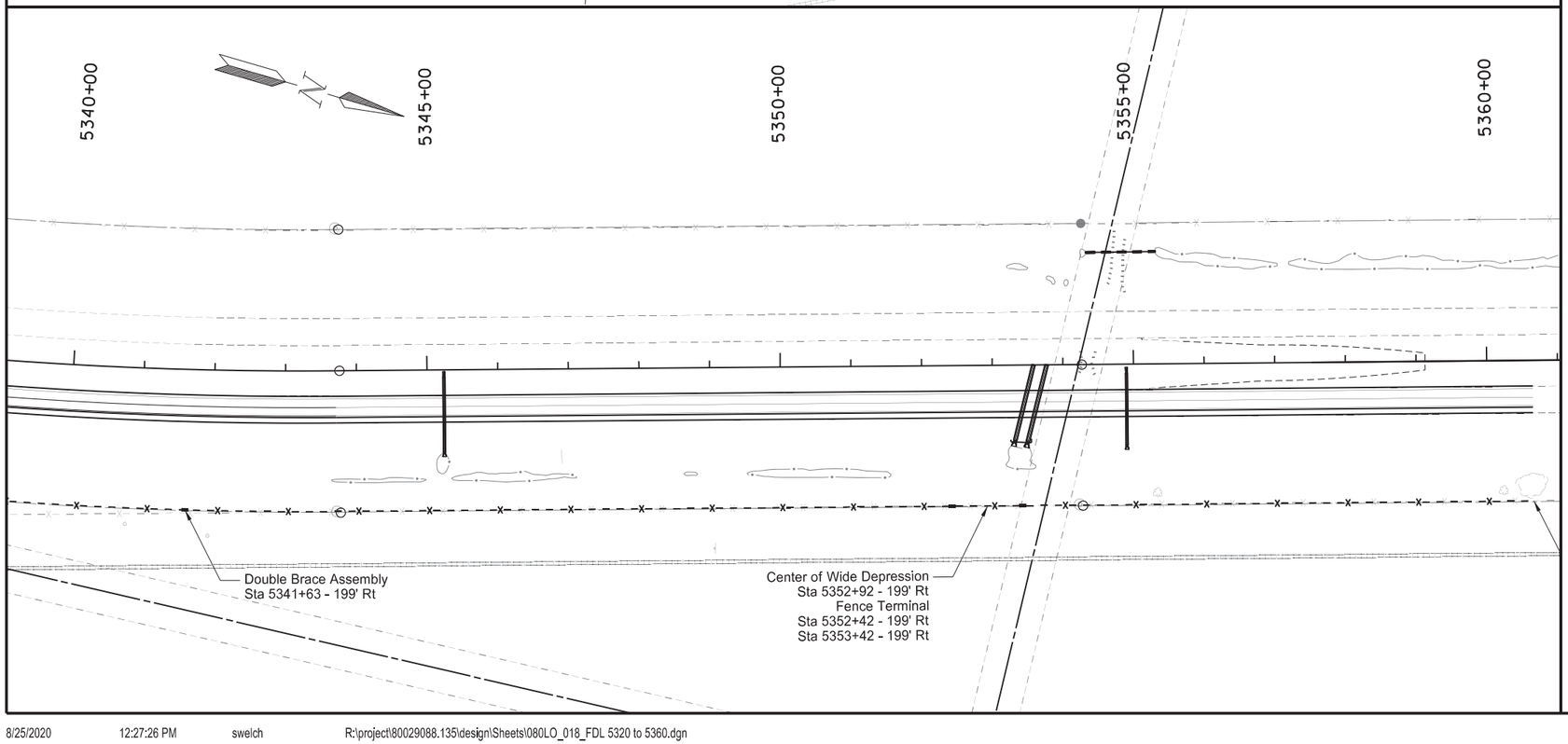
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5280+00 to Sta 5320+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	18





SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	**0312**	**REMOVE EXISTING FENCE**		
		Sta 5320+00 Rt to Sta 5360+00 Rt	LF	4061
752	**0126**	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5320+00 to Sta 5360+00 - 199' Rt	LF	4048
752	**0993**	**FENCE TERMINAL**		
		Sta 5352+42 - 199' Rt	EA	1
		Sta 5353+42 - 199' Rt	EA	1
752	**3996**	**DOUBLE BRACE ASSEMBLY - STEEL POST**		
		Sta 5320+31 - 199' Rt	EA	1
		Sta 5331+13 - 199' Rt	EA	1
		Sta 5341+63 - 199' Rt	EA	1

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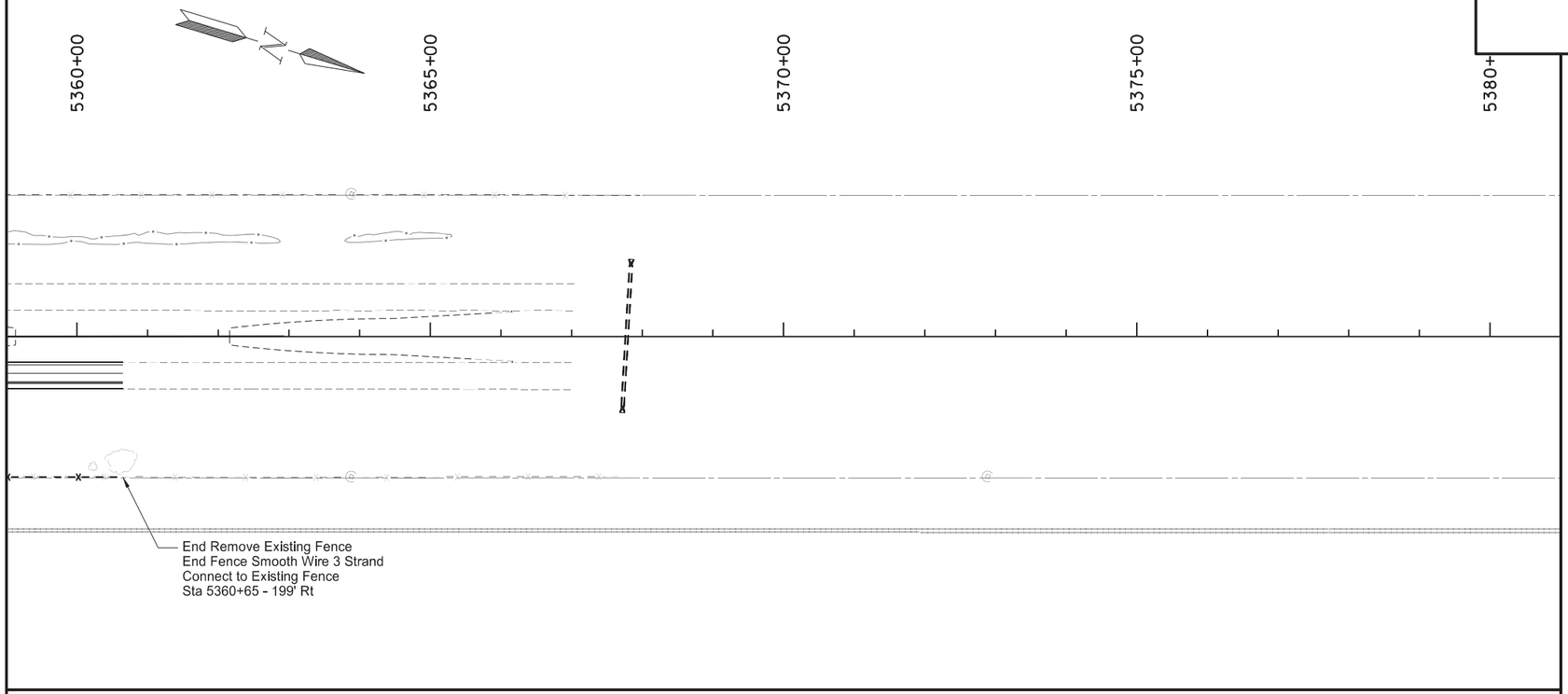
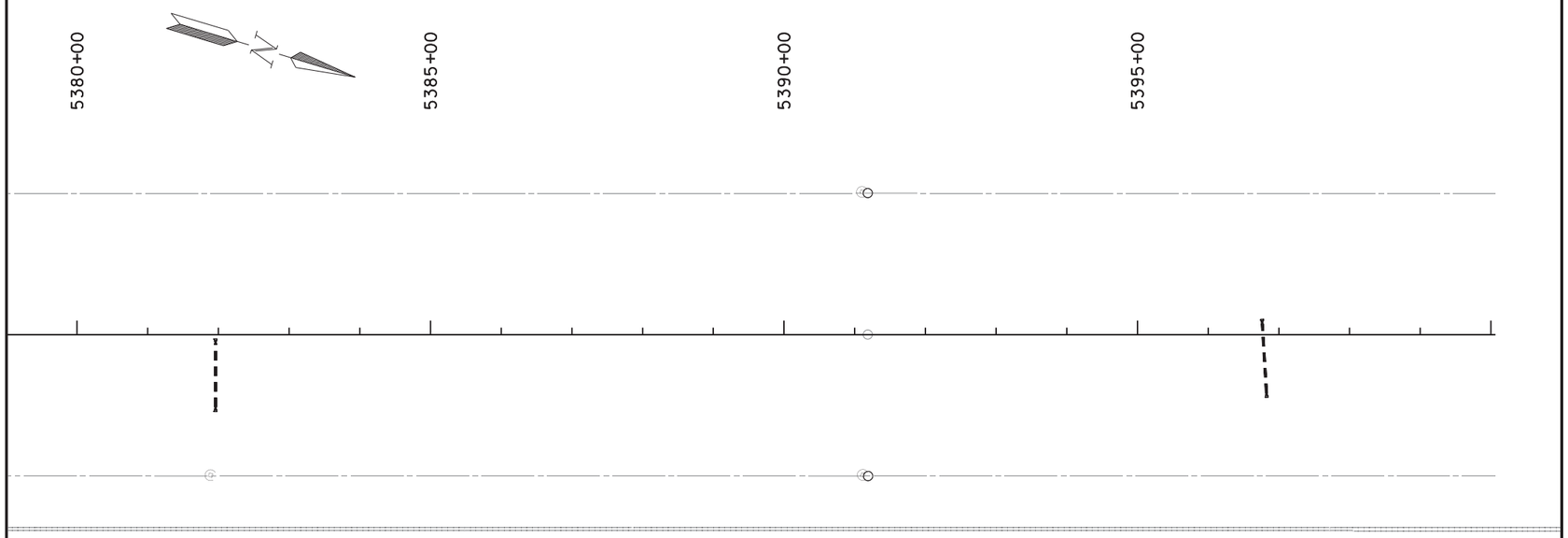
NORTH DAKOTA

Fencing Layout Sheets
Sta 5320+00 to Sta 5360+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	80	19





SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0312	**REMOVE EXISTING FENCE**		
		Sta 5360+00 Rt to Sta 5360+65 Rt	LF	65
752	0126	**FENCE SMOOTH WIRE 3 STRAND - STEEL POST**		
		Sta 5360+00 to Sta 5360+65 - 199' Rt	LF	65

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Fencing Layout Sheets
Sta 5360+00 to Sta 5400+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Hunter Separation to near Blanchard Northbound

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
I 29 (Chain: SCL_HWY029)			
Begin	4615+07.83	83,521.54	2,843,877.95
Sec line Xing	4640+72.35	85,887.02	2,842,887.34
Sec line Xing	4650+84.61	86,820.71	2,842,496.33
TS	4680+16.56	89,525.09	2,841,363.78
SC	4682+76.56	89,766.02	2,841,266.08
PI SPRL800	4688+19.86	90,270.81	2,841,074.61
CS	4693+49.21	90,808.88	2,841,030.52
ST	4696+09.21	91,068.41	2,841,015.18
Station equation I 29 (SCL_HWY029) & 15th St SE (OCL_15TH_ST_SE)			
I 29	4696+57.34	911,16.49	2,841,012.88
15th St SE	108+86.95	911,16.49	2,841,012.88
Sec line Xing	4696+60.65	91,119.79	2,841,012.73
PC	4712+13.82	92,671.19	2,840,938.65
PI C801	4719+19.61	93,376.18	2,840,904.98
PT	4726+18.32	94,051.92	2,840,701.24
Sec line Xing	4750+32.24	96,363.07	2,840,004.40
PC	4790+35.60	100,196.00	2,838,848.74
PI C802	4799+31.19	101,053.46	2,838,590.20
PT	4808+12.40	101,791.12	2,838,082.34
PC	4828+99.22	103,509.97	2,836,898.96
PI C803	4841+03.92	104,502.25	2,836,215.80
PT	4852+99.81	105,614.90	2,835,753.94
Station equation I 29 (SCL_HWY029) at 12th St SE (OCL_12TH_ST_SE)			
I 29	4865+31.27	106,752.26	2,835,281.82
12th St SE	129+69.69	106,752.26	2,835,281.82
Co line Xing	4865+32.19	106,753.11	2,835,281.47
1/4 line Xing	4893+47.06	109,352.89	2,834,202.29
PC	4905+17.63	110,434.02	2,833,753.51
PI C804	4914+93.38	111,335.21	2,833,379.42
Sec line Xing	Ahd Tan 628.79 from PI	111,963.01	2,833,344.17
PT	4924+50.58	112,309.42	2,833,324.71

CURVE DATA

ARC DEFINITION

SPRL800		C804	
PI STA	= 4688+19.86	PI STA	= 4914+93.38
Delta	= 19° 59' 21" RT	Delta	= 19° 19' 46" RT
D_a	= 1° 30' 00"	D_a	= 1° 00' 00"
R	= 3,819.83'	R	= 5,729.65'
L_s	= 260.00'	T	= 975.75'
S_c	= 1° 57' 00"	L	= 1,932.96'
T_s	= 803.29'		
L	= 1,072.65'	C805	
		PI STA	= 5000+88.66
C801		Delta	= 13° 33' 47" LT
PI STA	= 4719+19.61	D_a	= 1° 00' 00"
Delta	= 14° 02' 41" LT	R	= 5,729.65'
D_a	= 1° 00' 00"	T	= 681.34'
R	= 5,729.65'	L	= 1,356.32'
T	= 705.79'		
L	= 1,404.50'	C806	
		PI STA	= 5111+39.81
C802		Delta	= 16° 02' 16" LT
PI STA	= 4799+31.19	D_a	= 1° 00' 00"
Delta	= 17° 46' 04" LT	R	= 5,729.65'
D_a	= 1° 00' 00"	T	= 807.18'
R	= 5,729.65'	L	= 1,603.81'
T	= 895.59'		
L	= 1,776.80'	C807	
		PI STA	= 5198+25.08
C803		Delta	= 7° 00' 30" RT
PI STA	= 4841+03.92	D_a	= 0° 30' 00"
Delta	= 12° 00' 10" RT	R	= 11,459.20'
D_a	= 0° 30' 00"	T	= 701.70'
R	= 11,459.19'	L	= 1,401.65'
T	= 1,204.70'		
L	= 2,400.59'		

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
I 29 alignment continued			
Station equation I 29 (SCL_HWY029) at 10th St SE (OCL_10TH_ST_SE)			
I 29	4973+97.47	117,248.53	2,833,047.35
10th St SE	168+39.86	117,248.53	2,833,047.35
Sec line Xing	4973+98.49	117,249.55	2,833,047.30
PC	4994+07.31	119,255.21	2,832,934.67
PI C805	5000+88.66	119,935.48	2,832,896.46
PT	5007+63.63	120,587.82	2,832,699.79
8th St/ Sec line Xing	5082+21.97	127,728.70	2,830,546.95
PC	5103+32.62	129,749.51	2,829,937.71
1/4 line Xing	Bak Tan 5109+45.99	130,336.77	2,829,760.66
PI C806	5111+39.81	130,522.33	2,829,704.71
Sec line Xing	Ahd Tan 334.63' from PI	130,803.56	2,829,523.37
PT	5119+36.43	131,200.71	2,829,267.28
Station equation I 29 (SCL_HWY029) at 7th St SE (OCL_7TH_ST_SE)			
I 29	5139+63.14	132,904.00	2,828,168.95
7th St SE	174+04.13	132,904.00	2,828,168.95
Sec line Xing	5139+64.68	132,905.30	2,828,168.11
1/4 line Xing	5167+74.49	135,266.73	2,826,645.40
PC	5191+23.38	137,240.80	2,825,372.46
Twp line Xing	Bk Tan 5193+14.59	137,401.50	2,825,268.84
PI C807	5198+25.08	137,830.52	2,824,992.19
PT	5205+25.04	138,462.24	2,824,686.71
I 29 alignment definition continued on sheet 2			

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	MONUMENT DESCRIPTION
PRIMARY CONTROL (station from I 29)						
GPS 1	85,902.94	2,843,157.96	894.41	4639+83	256' Rt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 2	91,160.22	2,840,218.42	894.35	4697+39	791' Lt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 3	104,055.39	2,836,316.92	894.09	4836+66	196' Lt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 4	117,210.23	2,832,795.42	912.23	4973+73	254' Lt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 5	127,731.24	2,830,906.73	896.80	5081+21	345' Rt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 6	139,836.45	2,823,769.25	903.81	5221+03	342' Lt	30" #5 Rebar w/ 1 1/2" Alum Cap
GPS 7	151,517.34	2,823,742.29	901.00	5336+63	404' Rt	30" #5 Rebar w/ 1 1/2" Alum Cap

NOTES: Sheet 1 of 5

Reference NDDOT Project IM-8-029(135)088 for control and alignment for:
NDDOT Project IM-8-029(173)088
NDDOT Project SIM-8-029(141)088

Date Survey Completed 12/19/18

☐ Assumed Coordinates

☒ All coordinates on this sheet are Traill County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9999525

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK NDGPS Stations (OPUS)

☒ NAVD-88

☐ _____

☒ GEOID12B ☐ _____

☐ GEOID18

REGISTERED PROFESSIONAL LAND SURVEYOR
KRISTOFOR JOHNSON
LS-10169
DATE 08/20/20
NORTH DAKOTA
DocuSign

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Hunter Separation to near Blanchard Northbound

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	81	2

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
I 29 alignment definition continued from sheet 1			
PC	5209+90.57	138,881.32	2,824,483.98
Sec line Xing	Bk Tan 5215+86.83	139,418.07	2,824,224.31
PI C845	5221+48.09	139,923.35	2,823,980.00
PT	5232+74.85	141,079.31	2,823,920.06
Station equation I 29 (SCL_HWY029) at ND 200A (OCL_HWY_200A)			
I 29	5301+07.98	147,903.27	2,823,566.24
ND 200A	219+04.65	147,903.27	2,823,566.24
Sec line Xing	5301+08.72	147,904.02	2,823,566.21
PC	5329+93.13	150,784.57	2,823,417.27
PI C809	5336+85.34	151,475.86	2,823,381.53
PT	5343+70.88	152,138.75	2,823,182.18
PI	5354+26.92	153,150.06	2,822,878.06
End	5400+06.52	157,534.34	2,821,554.89
15th St SE (Chain: OCL_15TH_ST_SE)			
Begin	100+00.00	91,074.33	2,840,126.94
PI	105+18.91	91,097.96	2,840,645.31
PI	107+53.91	91,110.10	2,840,880.00
I 29	108+86.95	91,116.49	2,841,012.88
PI	112+53.97	91,134.10	2,841,379.48
End	118+87.16	91,153.83	2,842,012.36
12th St SE (Chain: OCL_12TH_ST_SE)			
Begin	120+00.00	106,709.60	2,834,313.00
Station equation 12th St SE (OCL_12TH_ST_SE) at 165th Ave SE (SRV_RP92.14)			
12th St SE	122+69.11	106,721.15	2,834,581.86
165th Ave SE	0+01.55	106,721.15	2,834,581.86
Station equation 12th St SE (OCL_12TH_ST_SE) at SW Ramp (RAMP_RP92.14_SW)			
12th St SE	125+01.04	106,731.11	2,834,813.58
SW Ramp	0+01.73	106,731.11	2,834,813.58
PI	125+19.50	106,731.90	2,834,832.03
PI	128+29.86	106,746.11	2,835,142.06
I 29	129+69.69	106,752.25	2,835,281.76

CURVE DATA

ARC DEFINITION

C845

PI STA	= 5221+48.09
Delta	= 22° 50' 33" RT
D_a	= 1° 00' 00"
R	= 5,729.65'
T	= 1,157.51'
L	= 2,284.28'

C809

PI STA	= 5336+85.34
Delta	= 13° 46' 38" LT
D_a	= 1° 00' 00"
R	= 5,729.65'
T	= 692.21'
L	= 1,377.75'

C838

PI STA	= 9+59.60
Delta	= 25° 08' 00" RT
D_a	= 3° 59' 57"
R	= 1,432.70'
T	= 319.37'
L	= 628.47'

C834

PI STA	= 2+00.00
Delta	= 21° 34' 00" LT
D_a	= 9° 59' 13"
R	= 573.70'
T	= 109.27'
L	= 215.95'

C828

PI STA	= 1+99.81
Delta	= 21° 34' 00" LT
D_a	= 9° 59' 13"
R	= 573.70'
T	= 109.27'
L	= 215.95'

C829

PI STA	= 9+41.42
Delta	= 25° 27' 06" RT
D_a	= 3° 59' 57"
R	= 1,432.70'
T	= 323.55'
L	= 636.43'

NOTES: Sheet 2 of 5

Reference NDDOT Project IM-8-029(135)088 for control and alignment for:
NDDOT Project IM-8-029(173)088
NDDOT Project SIM-8-029(141)088

Date Survey Completed 12/19/18

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
12th St SE alignment continued			
Station equation 12th St SE (OCL_12TH_ST_SE) at SE Ramp (RAMP_RP92.14_SE) and NE Ramp (RAMP_RP92.14_NE)			
12th St SE	134+35.85	106,773.46	2,835,747.43
SE Ramp	17+79.33	106,773.46	2,835,747.43
NE Ramp	0+00.00	106,773.46	2,835,747.43
End/ Rec Sec Cor	137+68.98	106,787.99	2,836,080.24
NE Ramp at 12th St SE (Chain: RAMP_RP92.14_NE)			
Begin/12th St SE /SE Ramp	0+00.00	106,773.46	2,835,747.43
PC	0+90.54	106,853.77	2,835,705.62
PI C828	1+99.81	106,950.69	2,835,655.16
PT	3+06.49	107,022.28	2,835,572.62
PC	6+17.87	107,226.29	2,835,337.37
PI C829	9+41.42	107,438.27	2,835,092.93
PT	12+54.30	107,734.72	2,834,963.32
End	22+42.97	108,640.60	2,834,567.26
NW Ramp at 12th St SE (Chain: RAMP_RP92.14_NW)			
Begin	0+00.00	108,414.60	2,834,522.53
PC	6+40.23	107,817.33	2,834,753.11
PI C838	9+59.60	107,519.39	2,834,868.13
PT	12+68.70	107,200.81	2,834,845.72
End/SW Ramp	17+38.02	106,732.64	2,834,812.78
SW Ramp at 12th St SE (Chain: RAMP_RP92.14_SW)			
Begin/NW Ramp	0+00.00	106,732.64	2,834,812.78
12th St	0+01.73	106,731.11	2,834,813.58
PC	0+90.73	106,652.18	2,834,854.72
PI C834	2+00.00	106,555.29	2,834,905.23
PT	3+06.68	106,483.74	2,834,987.82

SW Ramp alignment definition continued on sheet 3

☐ Assumed Coordinates

☒ All coordinates on this sheet are Traill County ground coordinates.
They are derived from the NAD83(2011) reference frame; North Dakota North Zone
Combination Factor (cf) = 0.9999525

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
MONUMENT DESCRIPTION					
SECONDARY CONTROL (station from I 29)					
RTK 20010	83,635.28	2,844,029.16	890.26	4615+54	183' Rt
3/4" Plastic cap, HEI					
RTK 20018	88,241.82	2,842,112.48	890.42	4665+44	195' Rt
3/4" Plastic cap, HEI					
RTK 30338	101,446.82	2,838,073.04	891.36	4805+24	196' Lt
#5 Rebar					
RTK 30111	119,709.04	2,832,773.91	893.28	4998+80	116' Lt
#5 Rebar					
RTK 20005	137,412.09	2,825,411.49	904.73	5192+48	125' Rt
#5 Rebar					
RTK 50013	142,683.98	2,823,835.06	903.92	5248+82	2' Lt
Mag Nail					

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

☒ NAVD-88
☐ _____

☒ GEOID12B ☐ _____
☐ GEOID18

REGISTERED PROFESSIONAL LAND SURVEYOR
KRISTOFOR JOHNSON
LS-10169
DATE 08/20/20
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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Hunter Separation to near Blanchard Northbound

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	81	3

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
SW Ramp alignment definition continued from sheet 2			
PC	6+22.34	106,277.07	2,835,226.41
PI C833	9+40.51	106,068.74	2,835,466.90
PT	12+48.53	105,778.20	2,835,596.60
PC	14+70.75	105,575.28	2,835,687.18
PI C832	16+53.44	105,408.45	2,835,761.66
PT	18+36.10	105,244.09	2,835,841.41
End	20+53.61	105,048.40	2,835,936.36
SE Ramp at 12th St SE (Chain: RAMP_RP92.14_SE)			
Begin	0+00.00	105,059.13	2,836,073.15
PC	1+15.06	105,164.63	2,836,027.23
PI C824	3+20.00	105,352.54	2,835,945.43
PT	5+24.90	105,543.26	2,835,870.41
PC	6+79.41	105,687.05	2,835,813.85
PI C825	9+98.78	105,984.25	2,835,696.94
PT	13+07.88	106,302.97	2,835,717.33
End/12th St /NE Ramp	17+79.33	106,773.46	2,835,747.43
10th St SE (Chain: OCL_10TH_ST_SE)			
Begin/ Rec Sec Cor	140+00.00	117,123.01	2,830,210.27
PI	165+07.40	117,233.53	2,832,715.24
I 29	168+39.86	117,248.53	2,833,047.35
PI	171+72.35	117,263.53	2,833,379.51
End/ Rec Sec Cor	192+79.07	117,358.24	2,835,484.10
7th St SE (Chain: OCL_7TH_ST_SE)			
Begin/ Rec 1/4 Cor	160+00.00	132,835.89	2,826,766.48
PI	169+82.36	132,884.48	2,827,747.64
I 29	174+04.13	132,904.00	2,828,168.95
PI	178+15.93	132,923.07	2,828,580.31
End/ Rec Sec Cor	186+42.83	132,966.60	2,829,406.06

CURVE DATA

ARC DEFINITION

C833		C847	
PI STA	= 9+40.51	PI STA	= 6+45.35
Delta	= 25° 02' 32" RT	Delta	= 3° 30' 00" RT
D_a	= 3° 59' 57"	D_a	= 1° 00' 00"
R	= 1,432.70'	R	= 5,729.70'
T	= 318.18'	T	= 175.06'
L	= 626.19'	L	= 350.01'
C832			
PI STA	= 16+53.44	**C848**	
Delta	= 1° 49' 36" LT	PI STA	= 11+69.35
D_a	= 0° 30' 00"	Delta	= 23° 12' 27" RT
R	= 11,459.20'	D_a	= 3° 30' 00"
T	= 182.69'	R	= 1,637.02'
L	= 365.35'	T	= 336.14'
		L	= 663.07'
C824			
PI STA	= 3+20.00	**C849**	
Delta	= 2° 02' 57" RT	PI STA	= 18+87.37
D_a	= 0° 30' 00"	Delta	= 11° 26' 22" LT
R	= 11,459.20'	D_a	= 6° 00' 00"
T	= 204.94'	R	= 954.93'
L	= 409.84'	T	= 95.65'
		L	= 190.66'
C825			
PI STA	= 9+98.78	**C850**	
Delta	= 25° 08' 00" RT	PI STA	= 25+01.73
D_a	= 3° 59' 57"	Delta	= 22° 58' 52" LT
R	= 1,432.70'	D_a	= 19° 05' 55"
T	= 319.37'	R	= 300.00'
L	= 628.47'	T	= 60.98'
		L	= 120.33'

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
NB Ramp near RP 99 (Chain: RAMP_99NB)			
Begin	0+00.00	138,487.78	2,824,745.40
PC	4+70.29	138,916.15	2,824,551.31
PI C847	6+45.35	139,075.61	2,824,479.06
PT	8+20.30	139,239.18	2,824,416.68
PC	8+33.21	139,251.24	2,824,412.08
PI C848	11+69.35	139,565.32	2,824,292.30
PT	14+96.28	139,901.18	2,824,305.98
PC	17+91.72	140,196.38	2,824,318.01
PI C849	18+87.37	140,291.95	2,824,321.90
PT	19+82.38	140,386.39	2,824,306.76
PC	24+40.75	140,838.98	2,824,234.22
PI C850	25+01.73	140,899.19	2,824,224.56
PT	25+61.08	140,950.86	2,824,192.17
NB Ramp alignment definition continued on sheet 4			

REFERENCE MARKERS

All R Mkrs stationed to I 29 (Chain: SCL_HWY029)

R Mkr #	NORTHING	EASTING	STATION	OFFSET
87	81,504.67	2,844,570.96	N/A	N/A
88	86,402.22	2,842,581.40	4646+66	83' Lt
88	86,459.61	2,842,735.61	4646+59	81' Rt
89	91,397.28	2,840,914.83	4699+43	85' Lt
89	91,403.78	2,841,084.07	4699+41	85' Rt
90	96,520.57	2,839,869.15	4752+22	84' Lt
90	96,567.73	2,840,029.65	4752+21	83' Rt
91	101,488.84	2,838,178.72	4805+04	84' Lt
91	101,573.41	2,838,323.18	4805+01	84' Rt
92	106,028.90	2,835,489.03	4857+84	86' Lt
92	106,090.63	2,835,646.49	4857+81	83' Rt
93	110,946.18	2,833,476.44	4910+89	88' Lt
93	110,990.81	2,833,642.28	4910+84	83' Rt
94	116,226.06	2,833,019.76	4963+78	85' Lt
94	116,236.27	2,833,190.15	4963+79	86' Rt
95	121,404.58	2,832,363.32	5016+43	86' Lt
95	121,453.88	2,832,526.86	5016+43	84' Rt
96	126,464.58	2,830,840.20	5069+27	84' Lt
96	126,510.18	2,831,001.81	5069+24	84' Rt
97	131,380.13	2,829,051.14	5122+04	84' Lt
97	131,472.49	2,829,195.81	5122+04	87' Rt
98	135,816.25	2,826,186.65	5174+85	88' Lt
98	135,909.82	2,826,333.21	5174+85	86' Rt
99	140,557.10	2,823,884.54	5227+62	86' Lt
99	140,582.93	2,824,052.13	5227+64	84' Rt
100	145,839.25	2,823,584.67	5280+46	88' Lt
100	145,845.15	2,823,759.31	5280+43	86' Rt
101	151,112.44	2,823,307.47	5333+31	83' Lt
101	151,123.64	2,823,471.03	5333+24	81' Rt

NOTES: Sheet 3 of 5

Reference NDDOT Project IM-8-029(135)088 for control and alignment for:
NDDOT Project IM-8-029(173)088
NDDOT Project SIM-8-029(141)088

Date Survey Completed 12/19/18

☐ Assumed Coordinates

☒ All coordinates on this sheet are Traill County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9999525

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

☒ NAVD-88
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☒ GEOID12B ☐ _____
☐ GEOID18

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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Hunter Separation to near Blanchard Northbound

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	81	4

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
NB Ramp alignment definition continued from sheet 3			
PC	25+62.10	140,951.73	2,824,191.62
PI C851	29+19.24	141,254.31	2,824,001.90
PT	32+62.10	141,610.54	2,823,976.44
POT	42+62.39	142,608.28	2,823,905.14
SB Ramp near RP 99 (Chain: RAMP_99SB)			
Begin	0+00.00	141,946.19	2,823,811.15
PC	6+40.24	141,306.18	2,823,828.03
PI C854	8+79.94	141,066.56	2,823,834.35
PT	11+15.23	140,837.94	2,823,762.32
PC	13+21.08	140,641.61	2,823,700.46
PI C855	14+46.49	140,522.00	2,823,662.77
PT	15+66.36	140,399.30	2,823,688.72
PC	19+56.53	140,017.58	2,823,769.48
PI C856	20+55.95	139,920.31	2,823,790.05
PT	21+52.57	139,839.34	2,823,847.75
PC	23+40.62	139,686.19	2,823,956.86
PI C857	25+53.78	139,512.59	2,824,080.56
PT	27+66.16	139,322.59	2,824,177.19
End	37+66.34	138,431.10	2,824,630.63
ND 200A (Chain: OCL_HWY_200A)			
Begin/ 1/4 Cor	195+00.00	147,798.48	2,821,163.88
Station equation ND 200A (Chain: OCL_HWY_200A) & 164th Ave SE (Chain: SRV_RP100.4)			
ND 200A	211+95.63	147,872.90	2,822,857.88
165th Ave SE	0+00.00	147,872.90	2,822,857.88
Station equation ND 200A (Chain: OCL_HWY_200A), NW Ramp (Chain: RAMP_RP100.4_NW), & SW Ramp (Chain: RAMP_RP100.4_SW)			
ND 200A	214+44.89	147,883.84	2,823,106.89
NW Ramp	17+95.63	147,883.84	2,823,106.89
SW Ramp	0+00.00	147,883.84	2,823,106.89
PI	217+72.14	147,897.03	2,823,433.87
I 29	219+04.65	147,903.27	2,823,566.24

NOTES: Sheet 4 of 5

Reference NDDOT Project IM-8-029(135)088 for control and alignment for:
NDDOT Project IM-8-029(173)088
NDDOT Project SIM-8-029(141)088

CURVE DATA

ARC DEFINITION

	C851	C857
PI STA	= 29+19.24	= 25+53.78
Delta	= 28° 00' 01" RT	= 8° 30' 39" RT
D_a	= 4° 00' 00"	= 2° 00' 00"
R	= 1,432.39'	= 2,864.79'
T	= 357.14'	= 213.16'
L	= 700.00'	= 425.54'

	C854	C879
PI STA	= 8+79.94	= 8+22.87
Delta	= 19° 00' 00" RT	= 25° 23' 20" RT
D_a	= 4° 00' 00"	= 3° 59' 57"
R	= 1,432.39'	= 1,432.69'
T	= 239.70'	= 322.72'
L	= 475.00'	= 634.85'

	C855	C883
PI STA	= 14+46.49	= 9+77.35
Delta	= 29° 26' 01" LT	= 25° 09' 39" RT
D_a	= 12° 00' 00"	= 3° 59' 57"
R	= 477.46'	= 1,432.69'
T	= 125.41'	= 319.73'
L	= 245.28'	= 629.15'

	C856	C870
PI STA	= 20+55.95	= 8+23.60
Delta	= 23° 31' 31" LT	= 25° 27' 17" RT
D_a	= 12° 00' 00"	= 3° 59' 57"
R	= 477.46'	= 1,432.69'
T	= 99.42'	= 323.59'
L	= 196.04'	= 636.50'

Date Survey Completed 12/19/18

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
ND 200A alignment continued			
Rec Sec Cor	221+37.66	147,914.24	2,823,798.99
Station equation ND 200A (Chain: OCL_HWY_200A), NE Ramp (Chain: RAMP_RP100.4_NE), & SE Ramp (Chain: RAMP_RP100.4_SE)			
ND 200A	223+62.92	147,924.13	2,824,024.03
NE Ramp	0+00.00	147,924.13	2,824,024.03
SE Ramp	18+03.21	147,924.13	2,824,024.03
End	229+47.26	147,952.49	2,824,607.69
NE Ramp at ND 200A (Chain: RAMP_RP100.4_NE)			
Begin/ND 200A /SE Ramp	0+00.00	147,924.13	2,824,024.03
PC	5+00.14	148,359.49	2,823,777.85
PI C879	8+22.87	148,640.40	2,823,618.99
PT	11+34.99	148,962.30	2,823,595.92
End	21+57.37	149,982.07	2,823,522.85
NW Ramp at ND 200A (Chain: RAMP_RP100.4_NW)			
Begin	0+00.00	149,619.87	2,823,413.40
PC	6+57.62	148,962.48	2,823,430.78
PI C883	9+77.35	148,642.86	2,823,439.23
PT	12+86.77	148,349.97	2,823,310.99
End/ND 200A /SW Ramp	17+95.63	147,883.84	2,823,106.89
SW Ramp at ND 200A (Chain: RAMP_RP100.4_SW)			
Begin/ND 200A /NW Ramp	0+00.00	147,883.84	2,823,106.89
PC	5+00.01	147,448.94	2,823,353.63
PI C870	8+23.60	147,167.50	2,823,513.30
PT	11+36.51	146,844.74	2,823,536.52
End	21+62.68	145,821.22	2,823,610.12

☐ Assumed Coordinates

☒ All coordinates on this sheet are Traill County ground coordinates.
They are derived from the NAD83(2011) reference frame; North Dakota North Zone
Combination Factor (cf) = 0.9999525

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	MONUMENT DESCRIPTION

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

☒ NAVD-88
☐ _____

☒ GEOID12B ☐ _____
☐ GEOID18

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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Hunter Separation to near Blanchard Northbound

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	81	5

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
SE Ramp at ND 200A (Chain: RAMP_RP100.4_SE)			
Begin	0+00.00	146,186.63	2,823,719.34
PC	6+58.00	146,844.38	2,823,701.20
PI C867	9+77.52	147,163.78	2,823,692.39
PT	12+86.75	147,456.65	2,826,820.13
End/ND 200A /NE Ramp	18+03.21	147,924.13	2,824,024.03
Service road 165th Ave SE (Chain: SRV_RP92.14)			
Begin/ Co line	0+00.00	106,722.52	2,834,581.15
12th St	0+01.55	106,721.15	2,834,581.86
PC	0+89.53	106,643.18	2,834,622.61
PI C843	1+98.79	106,546.34	2,834,673.22
PT	3+05.47	106,474.88	2,834,755.88
PC	8+26.01	106,134.47	2,835,149.68
PI C842	11+24.88	105,939.02	2,835,375.78
PT	14+15.29	105,669.47	2,835,504.88
PC	28+24.58	104,398.44	2,836,113.63
PI C841	31+05.23	104,145.32	2,836,234.86
PT	33+78.86	103,865.17	2,836,251.63
POT	35+79.11	103,665.28	2,836,263.59

CURVE DATA

ARC DEFINITION

C867		C873	
PI STA	= 9+77.52	PI STA	= 1+64.93
Delta	= 25° 08' 41" RT	Delta	= 40° 40' 00" LT
D_a	= 3° 59' 57"	D_a	= 27° 43' 19"
R	= 1,432.69'	R	= 206.68'
T	= 319.52'	T	= 76.59'
L	= 628.75'	L	= 146.69'

C843		C874	
PI STA	= 1+98.79	PI STA	= 9+39.51
Delta	= 21° 34' 00" LT	Delta	= 40° 40' 00" RT
D_a	= 9° 59' 13"	D_a	= 6° 59' 39"
R	= 573.70'	R	= 819.20'
T	= 109.27'	T	= 303.57'
L	= 215.95'	L	= 581.44'

C842		C875	
PI STA	= 11+24.88	PI STA	= 69+95.65
Delta	= 23° 34' 00" RT	Delta	= 22° 30' 00" RT
D_a	= 3° 59' 57"	D_a	= 6° 59' 39"
R	= 1,432.69'	R	= 819.20'
T	= 298.87'	T	= 162.95'
L	= 589.29'	L	= 321.70'

C841		C876	
PI STA	= 31+05.23	PI STA	= 79+53.35
Delta	= 22° 10' 00" RT	Delta	= 53° 00' 00" LT
D_a	= 3° 59' 57"	D_a	= 6° 59' 39"
R	= 1,432.69'	R	= 819.20'
T	= 280.65'	T	= 408.44'
L	= 554.28'	L	= 757.78'

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
Service road 164th Ave SE (Chain: SRV_RP100.4)			
Begin/ ND 200A	0+00.00	147,872.90	2,822,857.88
PC	0+88.34	147,784.68	2,822,862.45
PI C873	1+64.93	147,708.19	2,822,866.42
PT	2+35.03	147,652.76	2,822,919.27
PC	6+35.94	147,362.60	2,823,195.92
PI C874	9+39.51	147,142.89	2,823,405.40
PT	12+17.38	146,839.72	2,823,421.12
PC	68+32.70	141,231.93	2,823,711.88
PI C875	69+95.65	141,069.20	2,823,720.32
PT	71+54.40	140,915.63	2,823,665.84
PC	75+44.92	140,547.59	2,823,535.28
PI C876	79+53.35	140,162.66	2,823,398.73
PT	83+02.70	139,821.94	2,823,623.97
End	94+37.71	138,875.12	2,824,249.90

US PUBLIC LAND SURVEY DATA

CORNER	IRN	NORTHING	EASTING
T-143-N R-50-W			
W 1/4 Cor Sec 4	5-B	103,887.04	2,830,956.50
NW Cor Sec 9	5-C	101,258.19	2,831,110.49
NW Cor Sec 15	7-E	96,211.44	2,836,699.56
NW Cor Sec 22	7-G	90,930.35	2,836,967.00
N 1/4 Cor Sec 22	8-G	91,054.31	2,839,614.49
NE Cor Sec 10	9-C	101,749.08	2,841,653.48
E 1/4 Cor Sec 10	9-D	99,101.32	2,841,813.97
NE Cor Sec 15	9-E	96,453.44	2,841,974.14
NE Cor Sec 22	9-G	91,178.28	2,842,261.85
NW Cor Sec 26	9-J	85,871.53	2,842,547.40
N 1/4 Cor Sec 26	10-J	85,991.99	2,845,191.13
NW Cor Sec 25	11-J	86,112.53	2,847,834.58

US PUBLIC LAND SURVEY DATA

CORNER	IRN	NORTHING	EASTING
T-144-N R-50-W			
NW Cor Sec 5	3-A	137,334.84	2,823,895.20
N 1/4 Cor Sec 5	4-A	137,465.71	2,826,535.87
S 1/4 Cor Sec 5	4-C	132,835.89	2,826,766.48
NE Cor Sec 5	5-A	137,579.38	2,829,177.32
NE Cor Sec 8	5-C	132,966.60	2,829,406.06
E 1/4 Cor Sec 8	5-D	130,326.22	2,829,549.26
SE Cor Sec 8	5-E	127,685.31	2,829,681.03
SW Cor Sec 21	5-J	117,123.01	2,830,210.27
NW Cor Sec 33	5-L	111,839.02	2,830,503.98
W 1/4 Cor Sec 33	5-M	109,197.19	2,830,652.00
SW Cor Sec 33	5-N	106,555.38	2,830,800.10
S 1/4 Cor Sec 33	6-N	106,672.63	2,833,438.88
NE Cor Sec 28	7-J	117,358.24	2,835,484.10
NE Cor Sec 33	7-L	112,069.34	2,835,779.80
E 1/4 Cor Sec 33	7-M	109,428.66	2,835,929.94
SE Cor Sec 33	7-N	106,787.99	2,836,080.24
T-145-N R-50-W			
N 1/4 Cor Sec 29	4-J	147,798.48	2,821,163.88
NE Cor Sec 20	5-G	153,177.20	2,823,502.31
E 1/4 Cor Sec 20	5-H	150,545.79	2,823,650.70
NW Cor Sec 28	5-J	147,914.24	2,823,798.99
NW Cor Sec 33	5-L	142,633.84	2,824,072.77
SW Cor Sec 33	5-N	137,353.49	2,824,321.60
SE Cor Sec 33	7-N	137,606.31	2,829,565.96

NOTES: Sheet 5 of 5

Reference NDDOT Project IM-8-029(135)088 for control and alignment for:
NDDOT Project IM-8-029(173)088
NDDOT Project SIM-8-029(141)088

Date Survey Completed 12/19/18

☐ Assumed Coordinates

☒ All coordinates on this sheet are Traill County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9999525

All coordinates and measurements on this document derived from the International Foot definition.

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

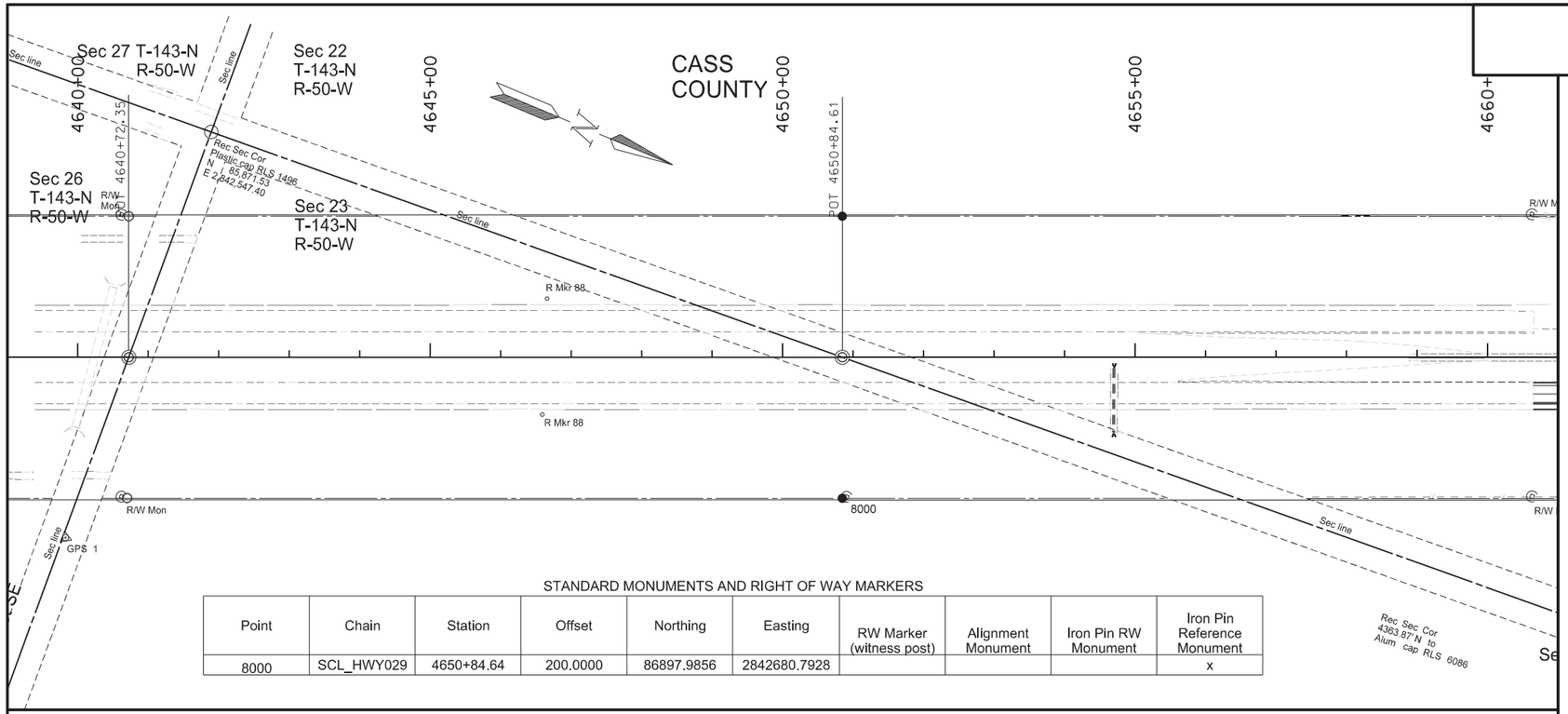
☒ NAVD-88
☐ _____

☒ GEOID12B ☐ _____
☐ GEOID18

REGISTERED PROFESSIONAL LAND SURVEYOR
KRISTOFOR JOHNSON
LS-10169
DATE
08/20/20
NORTH DAKOTA
DocuSign

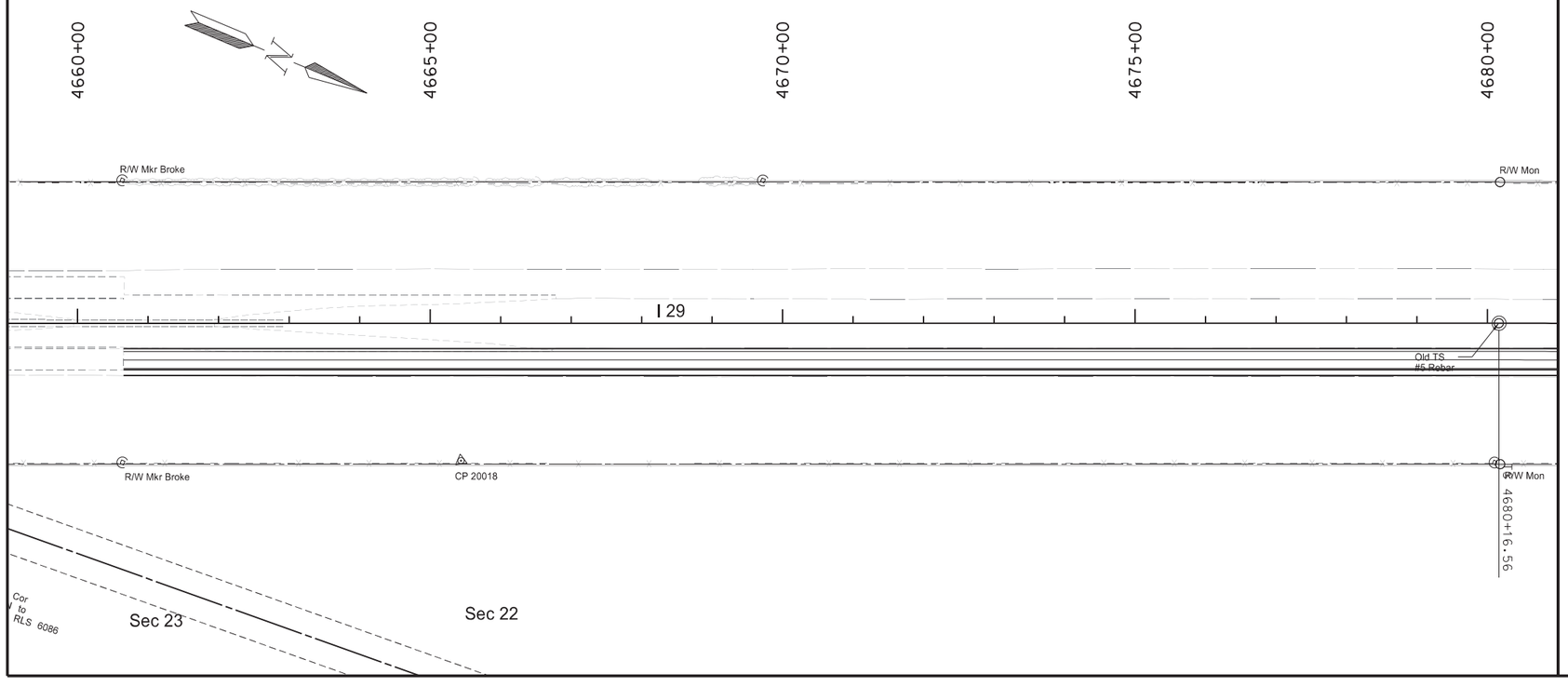
8/20/2020 7:08:52 AM kjjohnson Y:\project\80029088.135\survey\Final\081CD_005.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	1



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8000	SCL_HWY029	4650+84.64	200.0000	86897.9856	2842680.7928				x



SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0135	IRON PIN REFERENCE MONUMENTS		
		Sta 4650+84.64 - 200.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4640+00 to Sta 4680+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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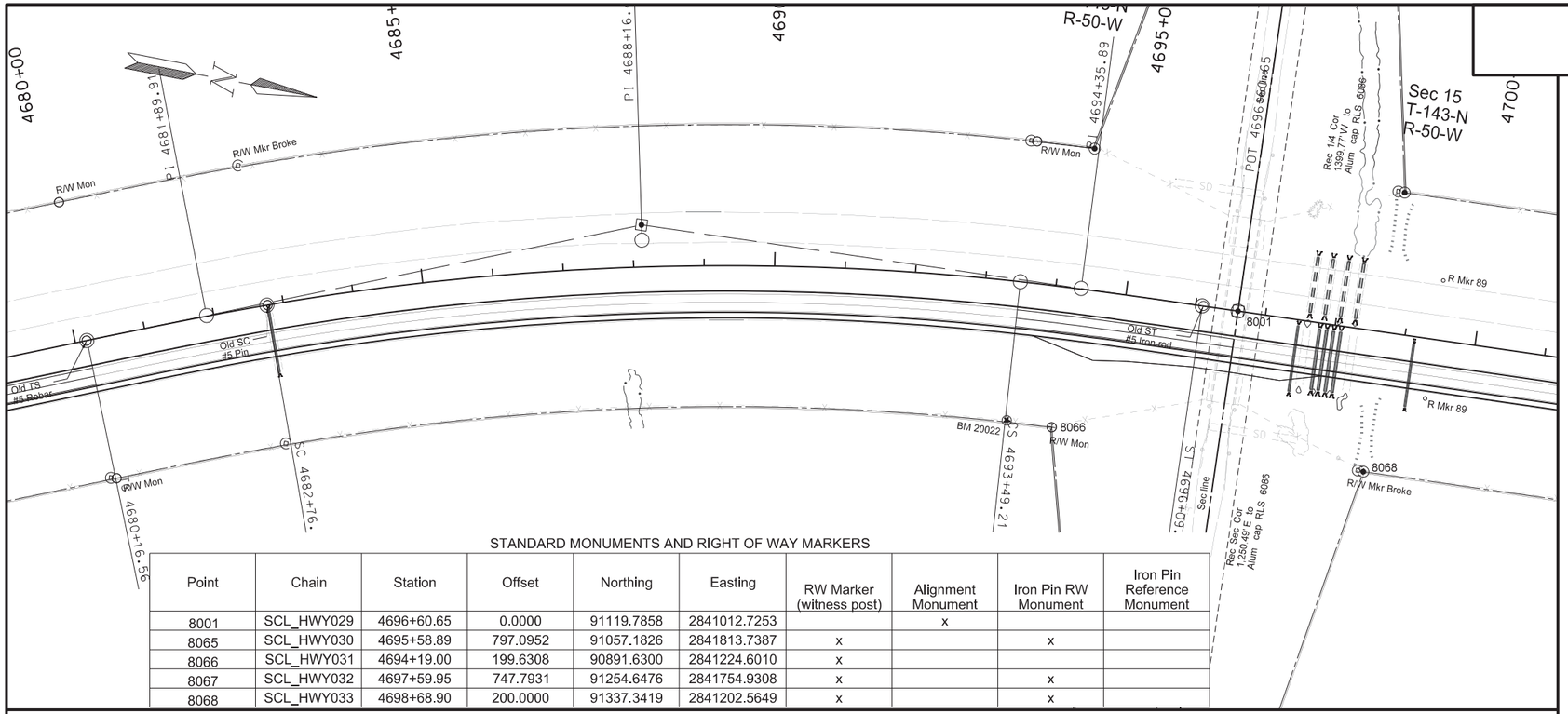
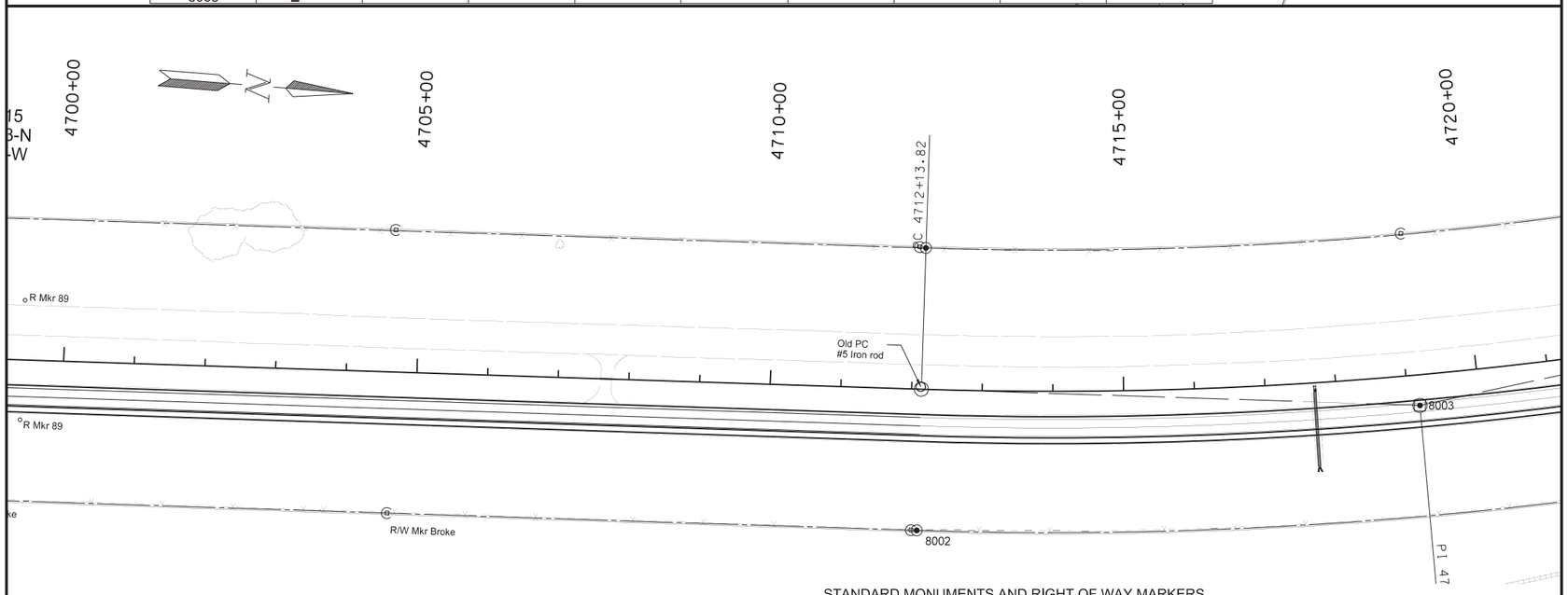
ND	IM-8-029(135)088	82	2



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8001	SCL_HWY029	4696+60.65	0.0000	91119.7858	2841012.7253		x		
8065	SCL_HWY030	4695+58.89	797.0952	91057.1826	2841813.7387	x		x	
8066	SCL_HWY031	4694+19.00	199.6308	90891.6300	2841224.6010	x			
8067	SCL_HWY032	4697+59.95	747.7931	91254.6476	2841754.9308	x		x	
8068	SCL_HWY033	4698+68.90	200.0000	91337.3419	2841202.5649	x		x	



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8002	SCL_HWY029	4712+13.82	200.0014	92680.7333	2841138.4196			x	
8003	SCL_HWY029	4719+16.07	43.3064	93376.1766	2840904.9830		x		

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 4695+58.89 - 797.10' Rt	EA	1
		Sta 4694+19.00 - 199.63' Rt	EA	1
		Sta 4697+59.95 - 747.79' Rt	EA	1
		Sta 4698+68.90 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 4696+60.65 - 0.00' Rt	EA	1
		Sta 4719+16.07 - 43.31' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 4695+58.89 - 797.10' Rt	EA	1
		Sta 4697+59.95 - 747.79' Rt	EA	1
		Sta 4698+68.90 - 200.00' Rt	EA	1
		Sta 4712+13.82 - 200.00' Rt	EA	1

Note: Points 8065 and 8067 are outside the sheet border.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4680+00 to Sta 4720+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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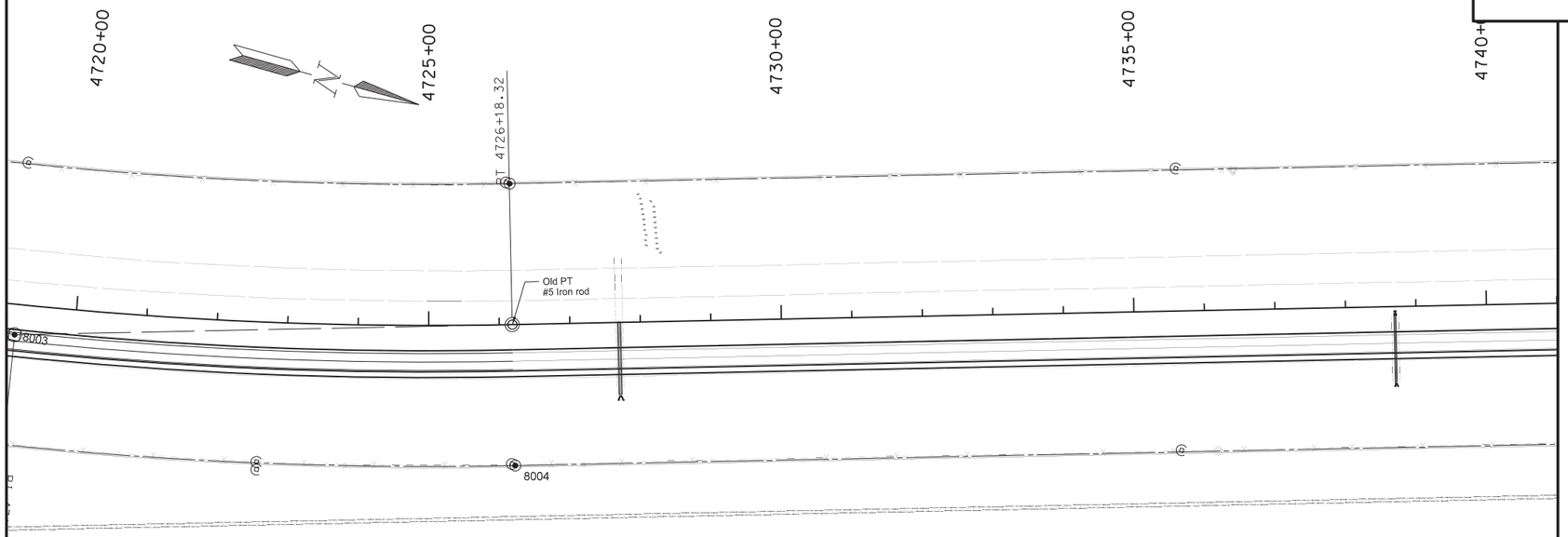
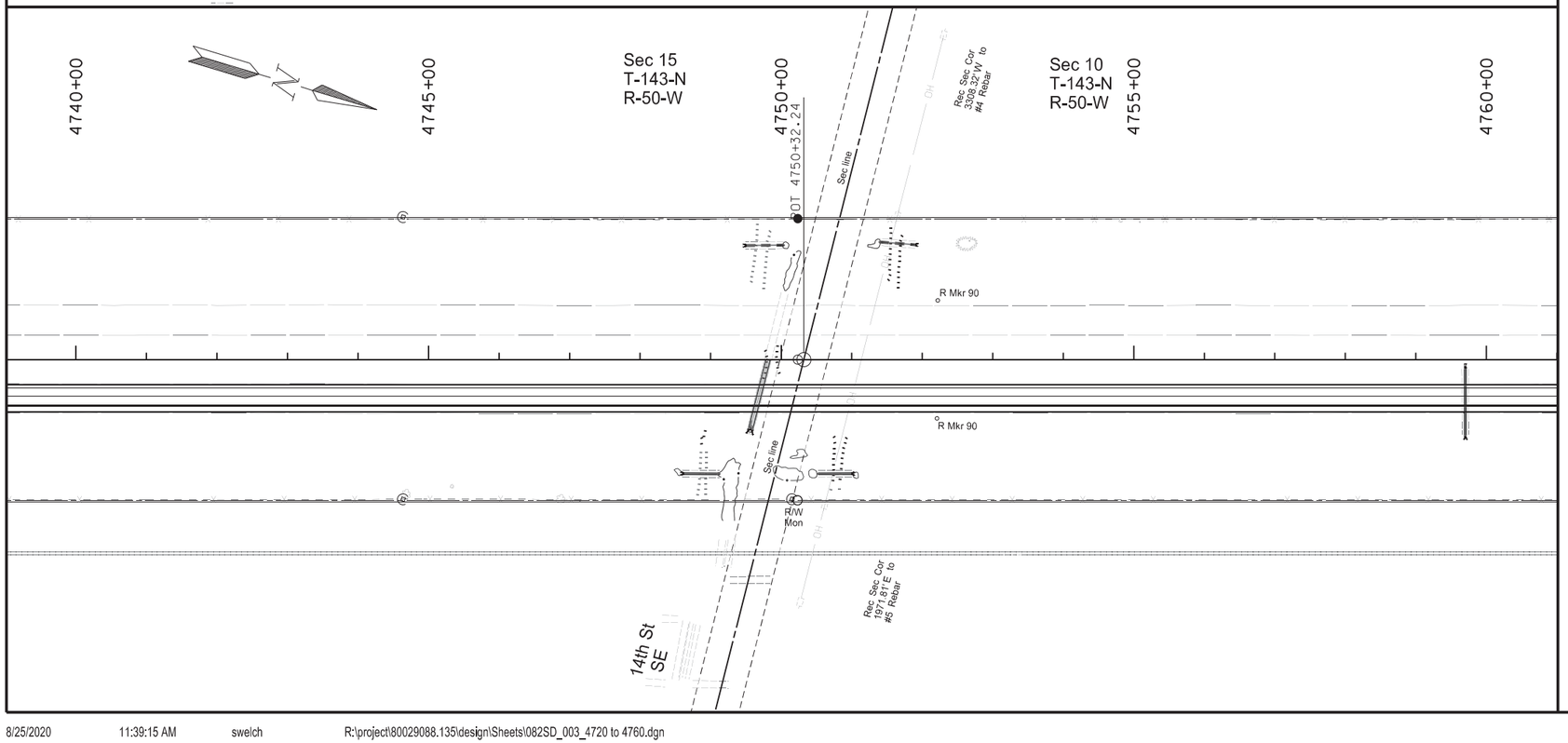


STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8004	SCL_HWY029	4726+18.64	200.0018	94109.9633	2840892.6336			x	



SPEC CODE BID ITEM — **UNIT QUANTITY**

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0130	IRON PIN R/W MONUMENTS		
		Sta 4726+18.64 - 200.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
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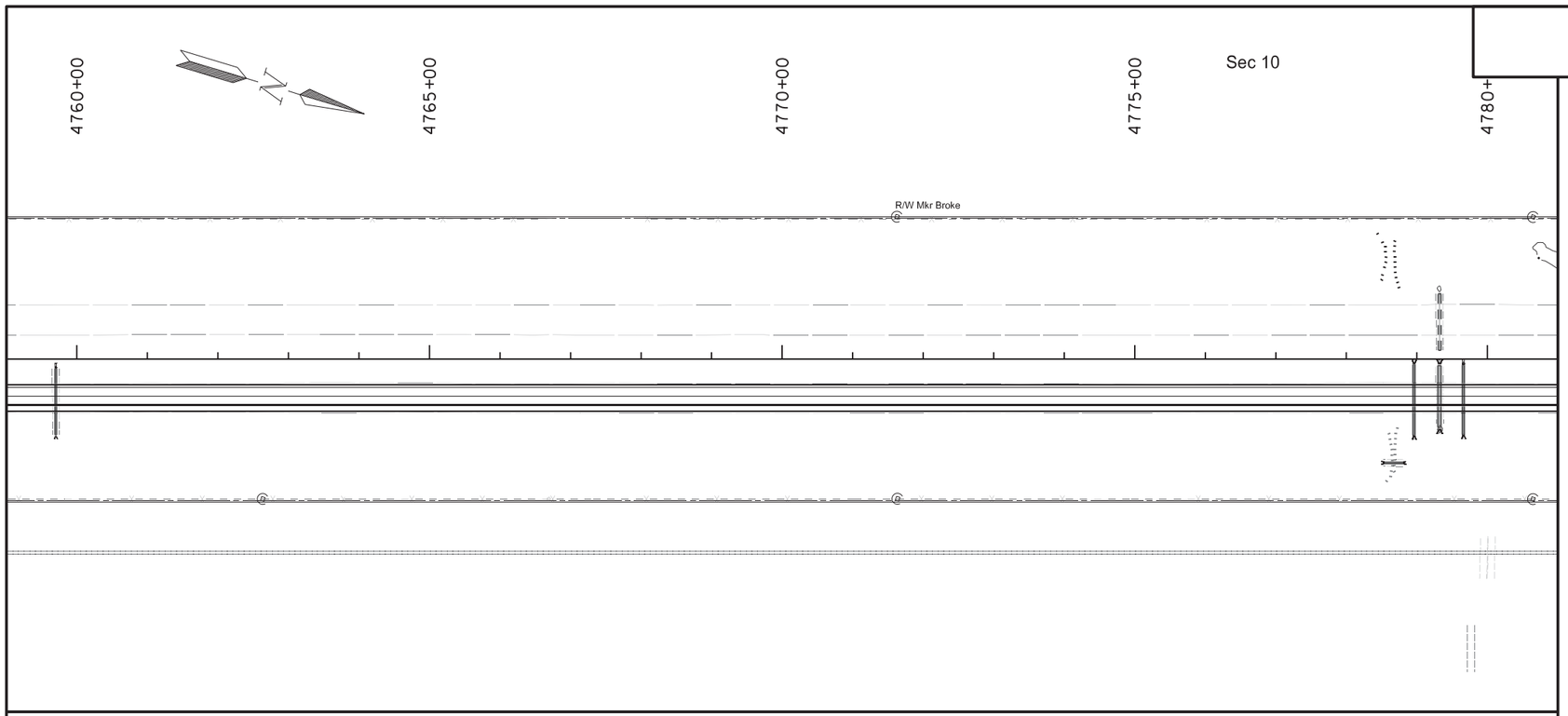
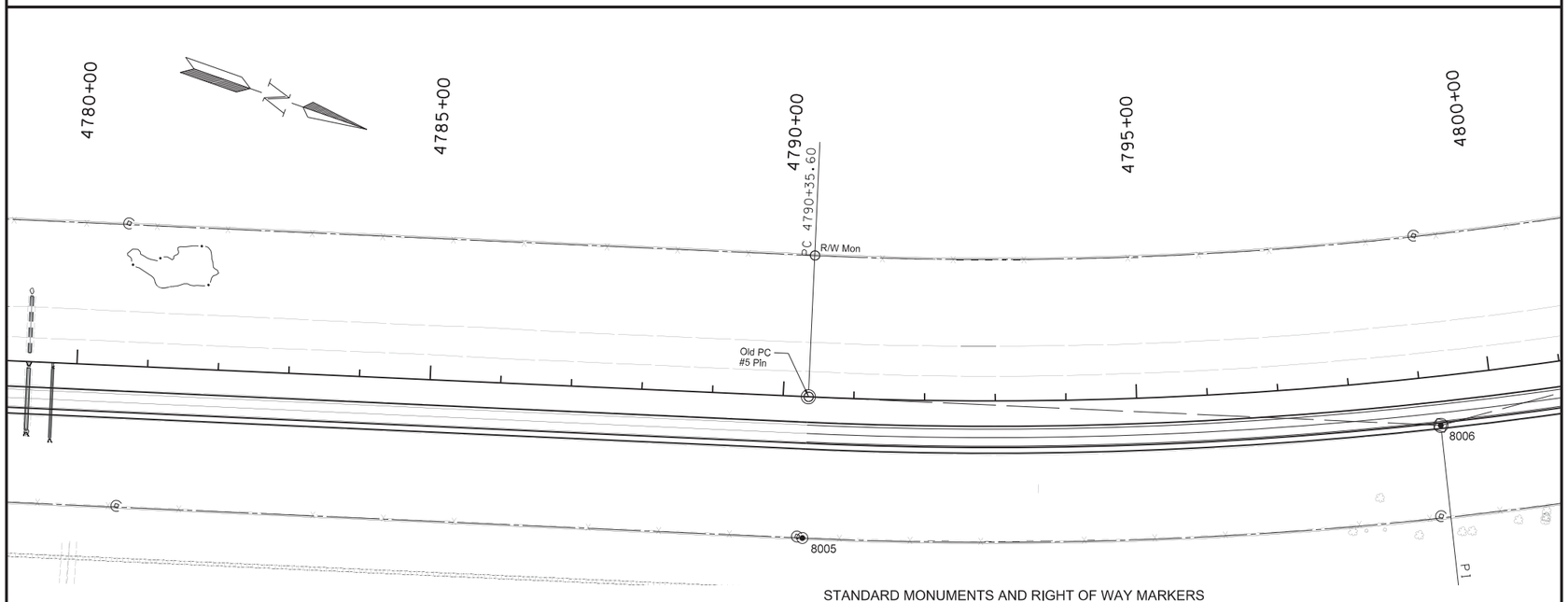
Right of Way Markers and Monuments
Sta 4720+00 to Sta 4760+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	4





SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 4799+24.00 - 69.57' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 4790+36.08 - 200.00' Rt	EA	1

STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8005	SCL_HWY029	4790+36.08	200.0018	100254.2078	2839040.0794			x	
8006	SCL_HWY029	4799+24.00	69.5712	101053.4565	2838590.2025		x		

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
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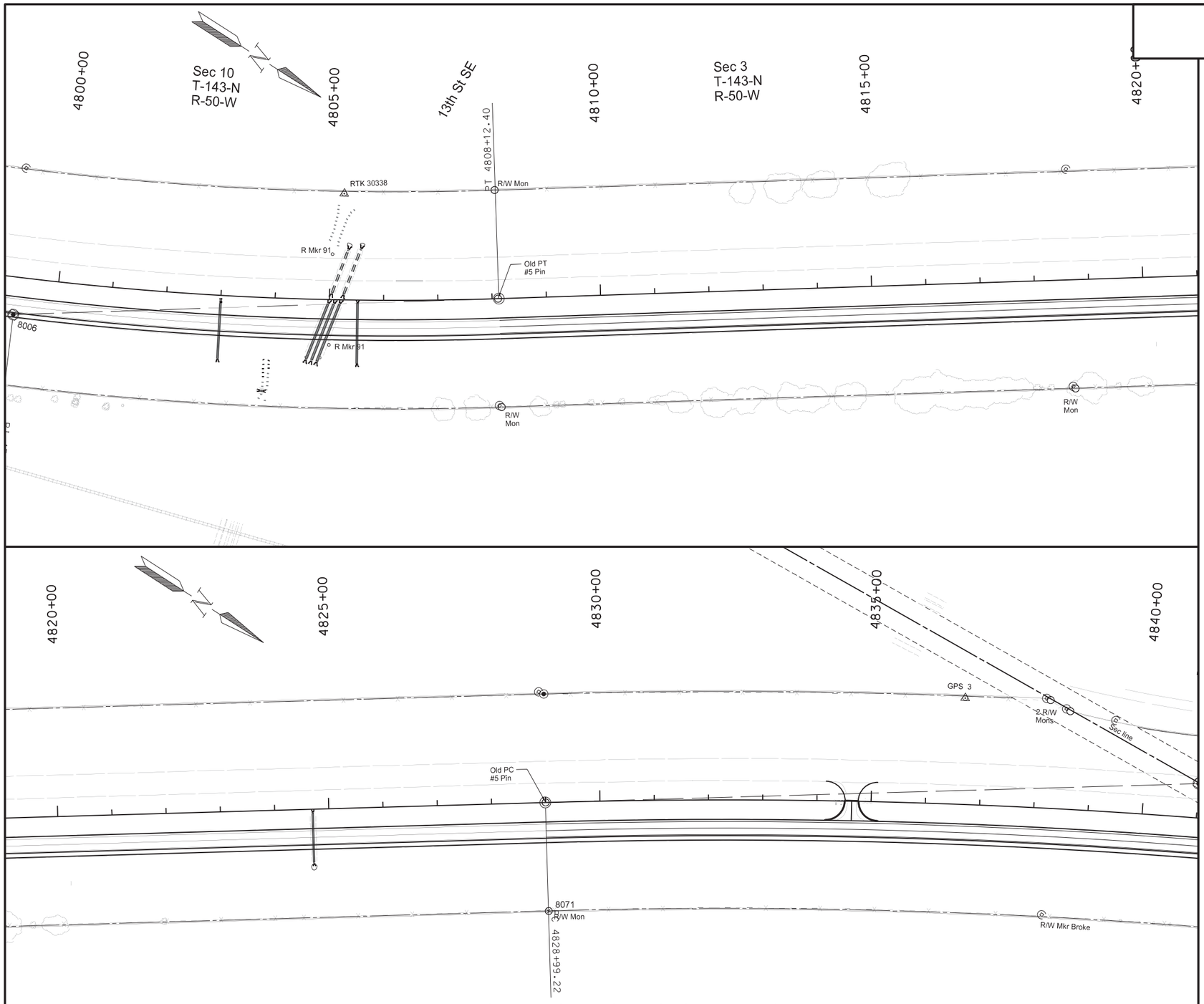
Right of Way Markers and Monuments
Sta 4760+00 to Sta 4800+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8071	SCL_HWY029	4828+99.81	200.1877	103623.9720	2837063.5160	x			

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	5

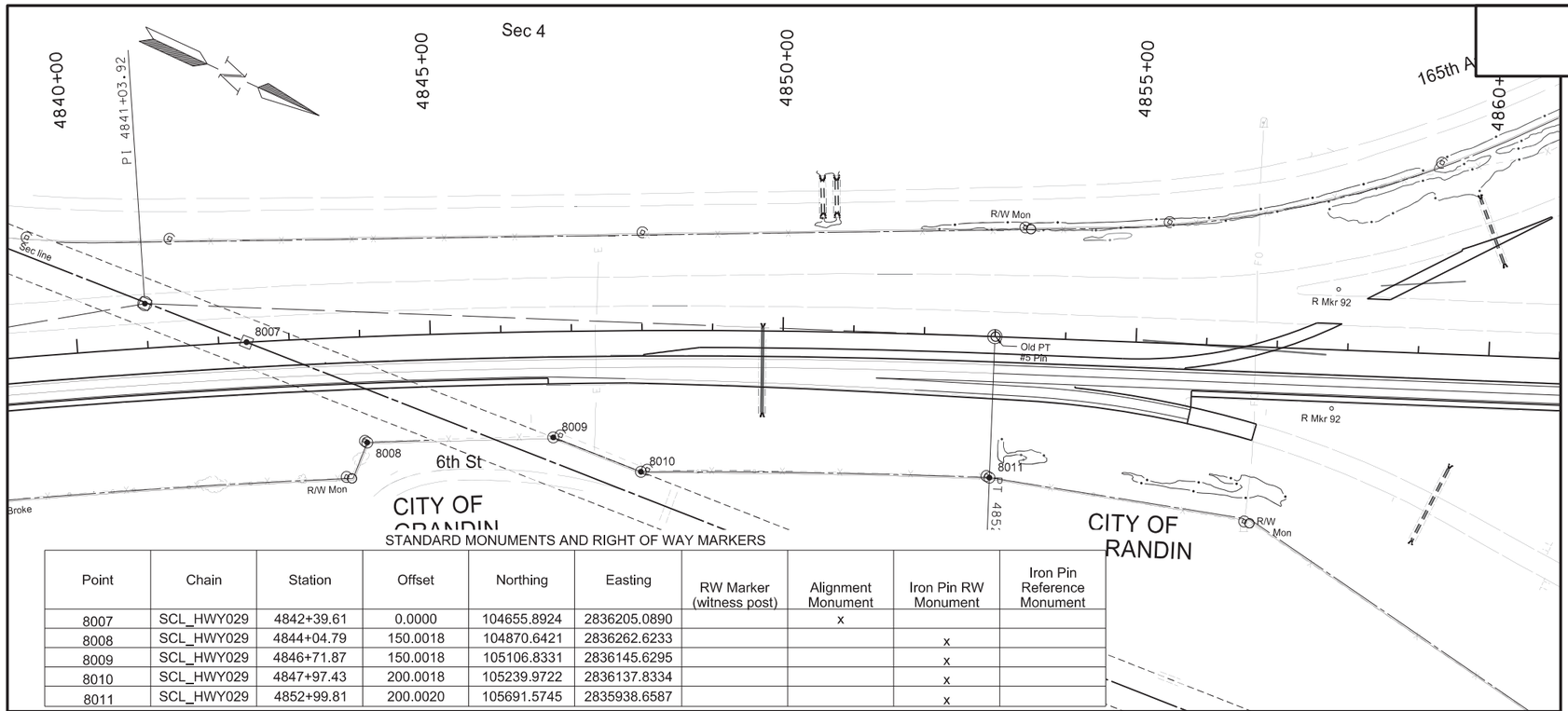
SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	RIGHT OF WAY MARKERS		
		Sta 4828+99.81 - 200.19' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4800+00 to Sta 4840+00

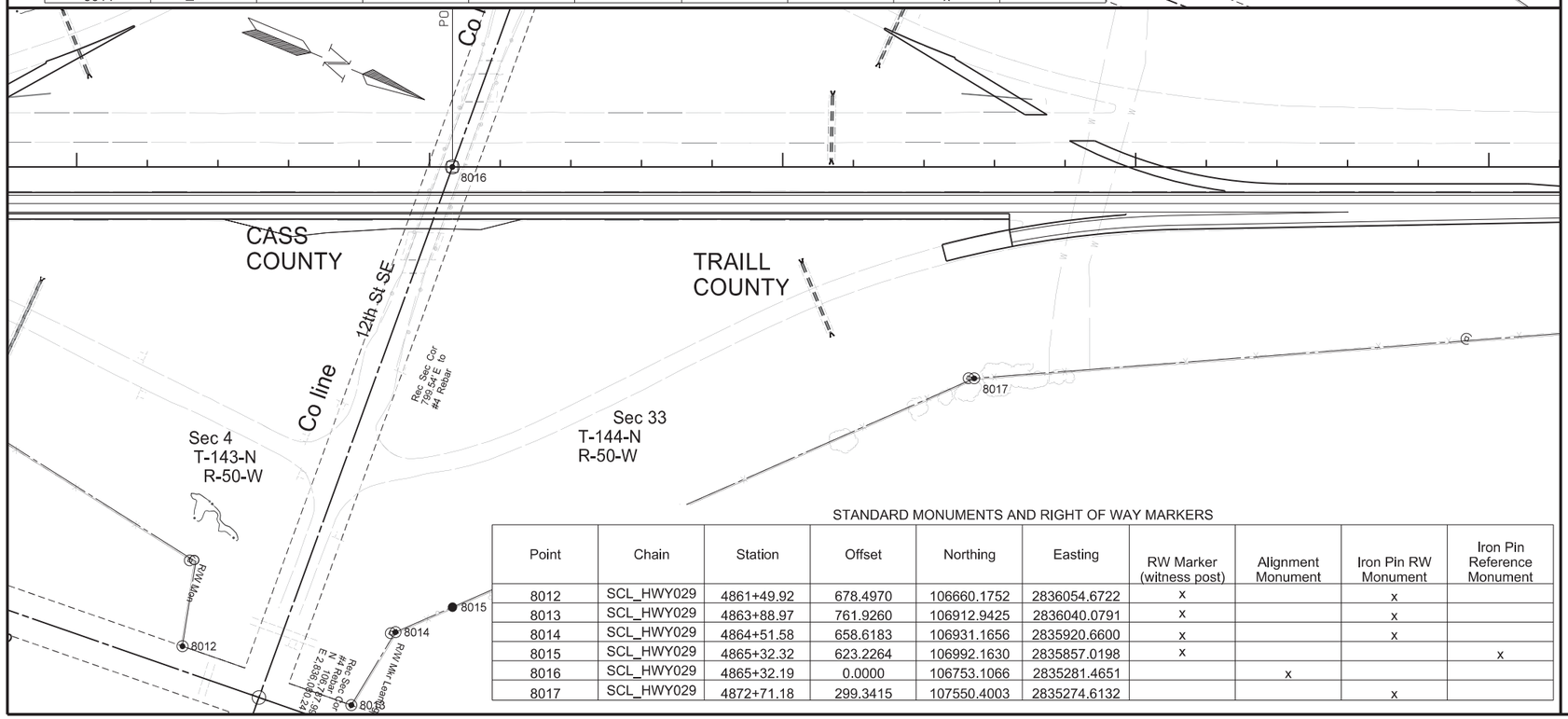
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	6



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8007	SCL_HWY029	4842+39.61	0.0000	104655.8924	2836205.0890		x		
8008	SCL_HWY029	4844+04.79	150.0018	104870.6421	2836262.6233			x	
8009	SCL_HWY029	4846+71.87	150.0018	105106.8331	2836145.6295			x	
8010	SCL_HWY029	4847+97.43	200.0018	105239.9722	2836137.8334			x	
8011	SCL_HWY029	4852+99.81	200.0020	105691.5745	2835938.6587			x	



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8012	SCL_HWY029	4861+49.92	678.4970	106660.1752	2836054.6722	x		x	
8013	SCL_HWY029	4863+88.97	761.9260	106912.9425	2836040.0791	x		x	
8014	SCL_HWY029	4864+51.58	658.6183	106931.1656	2835920.6600	x		x	
8015	SCL_HWY029	4865+32.32	623.2264	106992.1630	2835857.0198	x			x
8016	SCL_HWY029	4865+32.19	0.0000	106753.1066	2835281.4651		x		
8017	SCL_HWY029	4872+71.18	299.3415	107550.4003	2835274.6132			x	

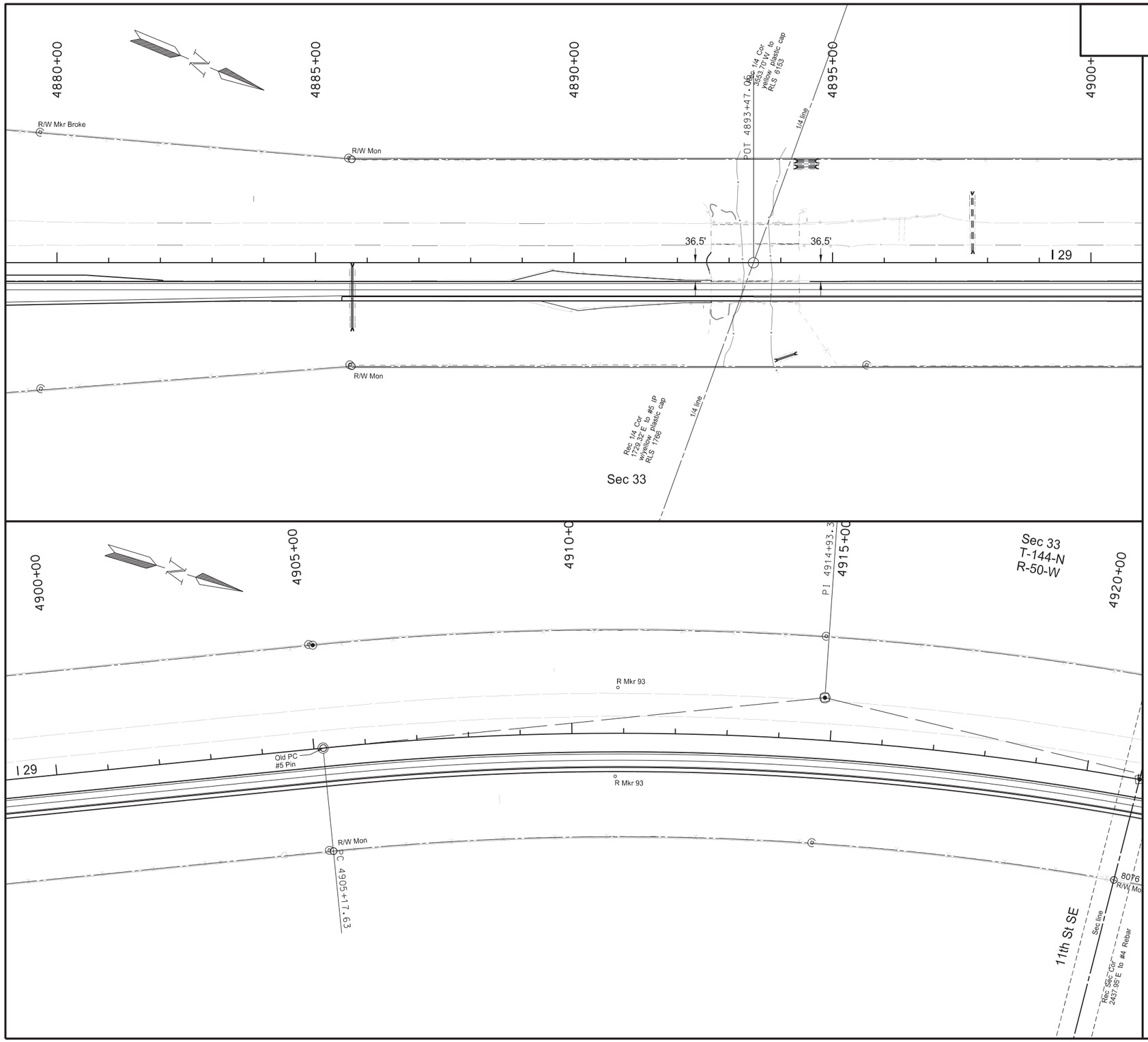
SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 4861+49.92 - 678.50' Rt	EA	1
		Sta 4863+88.97 - 761.93' Rt	EA	1
		Sta 4864+51.58 - 658.62' Rt	EA	1
		Sta 4865+32.32 - 623.23' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 4842+39.61 - 0.00' Rt	EA	1
		Sta 4864+51.58 - 658.62' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 4844+04.79 - 150.00' Rt	EA	1
		Sta 4846+71.87 - 150.00' Rt	EA	1
		Sta 4847+97.43 - 200.00' Rt	EA	1
		Sta 4852+99.81 - 200.00' Rt	EA	1
		Sta 4861+49.92 - 678.50' Rt	EA	1
		Sta 4863+88.97 - 761.93' Rt	EA	1
		Sta 4864+51.58 - 658.62' Rt	EA	1
		Sta 4872+71.18 - 299.34' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 4865+32.32 - 623.23' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4840+00 to Sta 4880+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	7



REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4880+00 to Sta 4920+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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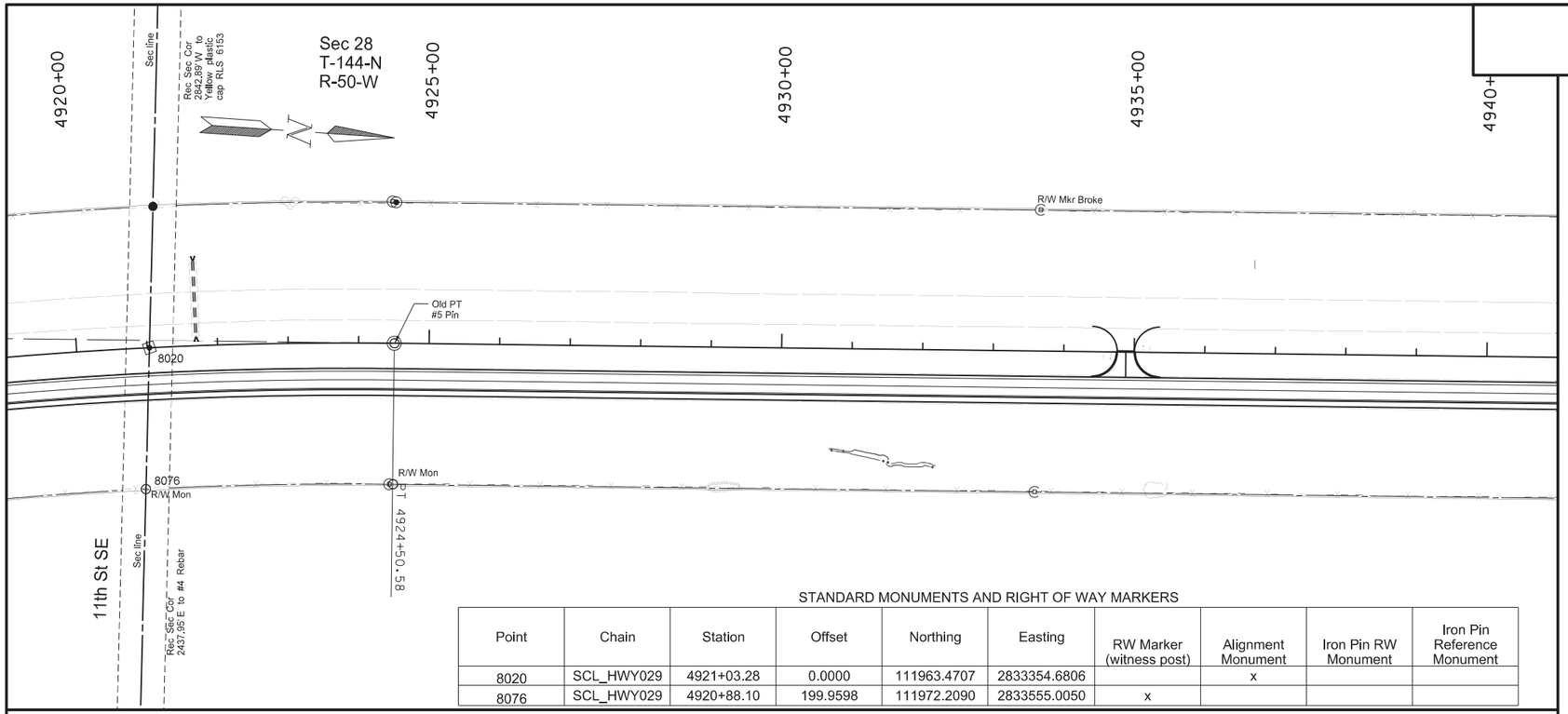
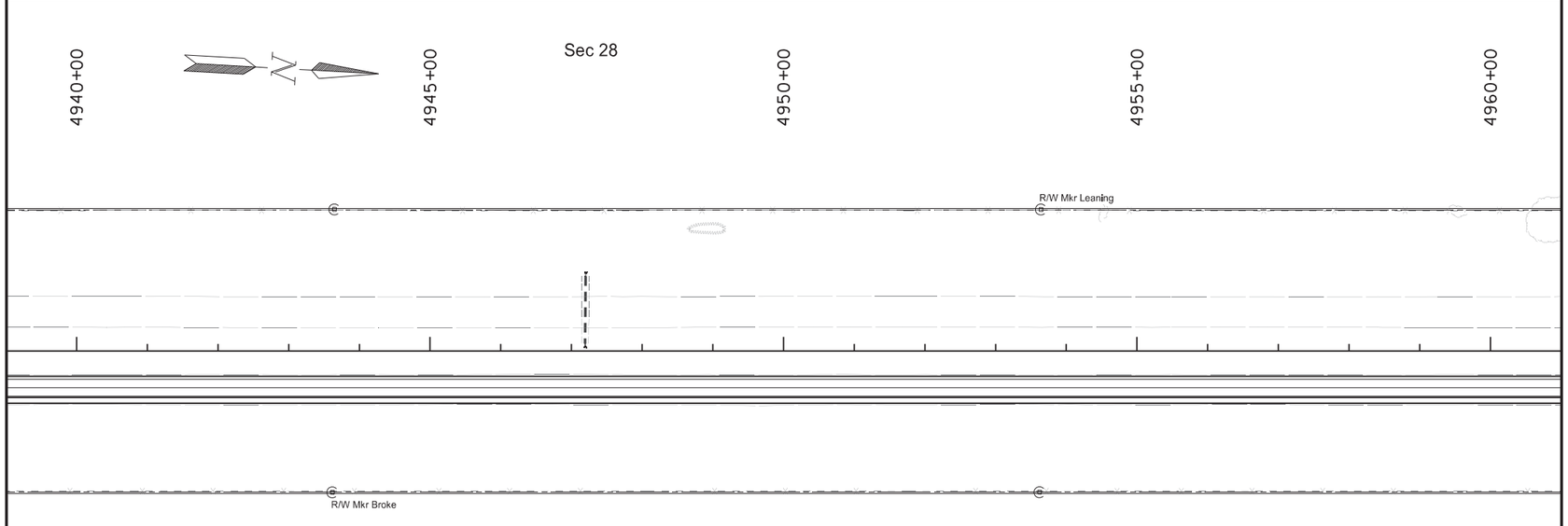


STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8020	SCL_HWY029	4921+03.28	0.0000	111963.4707	2833354.6806		x		
8076	SCL_HWY029	4920+88.10	199.9598	111972.2090	2833555.0050	x			



SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 4920+88.10 - 199.96' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 4921+03.28 - 0.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4920+00 to Sta 4960+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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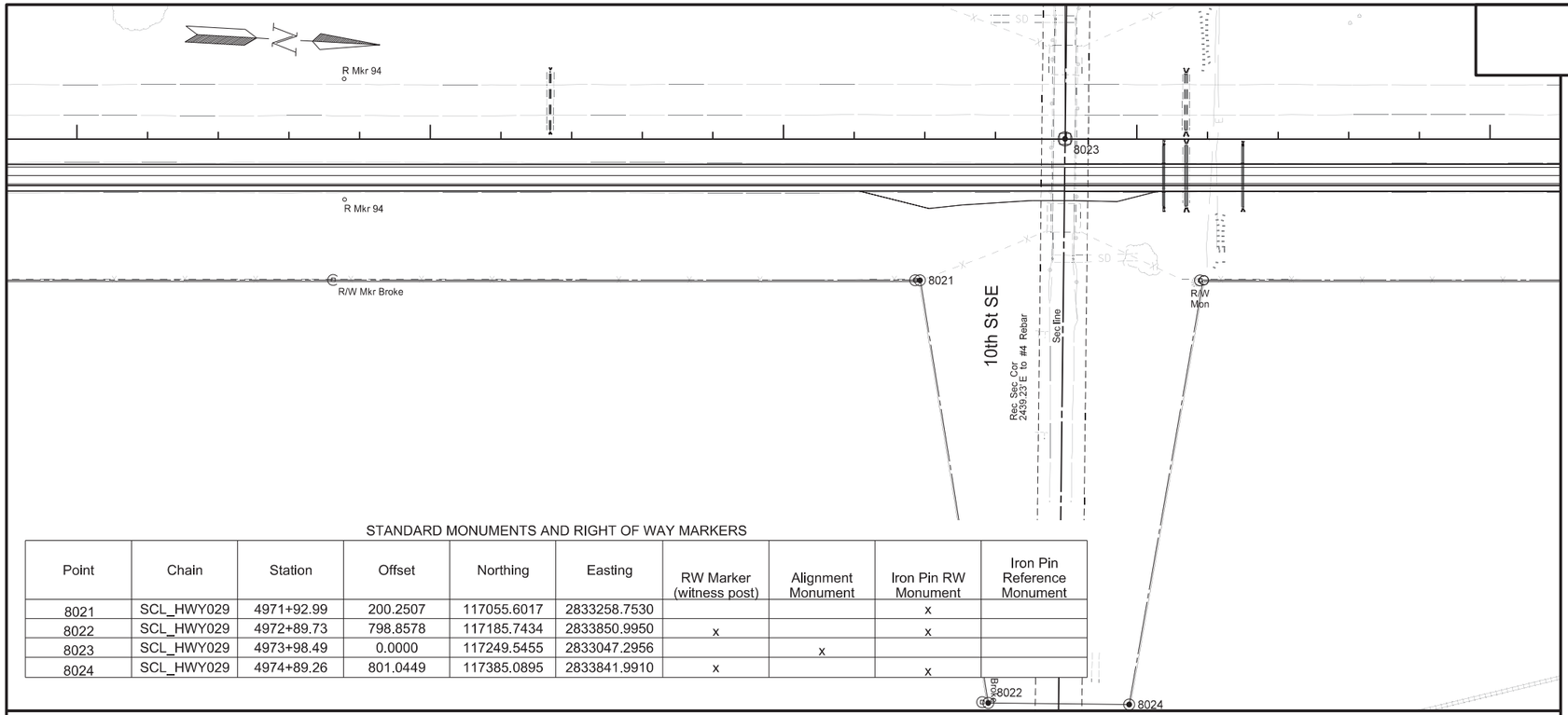
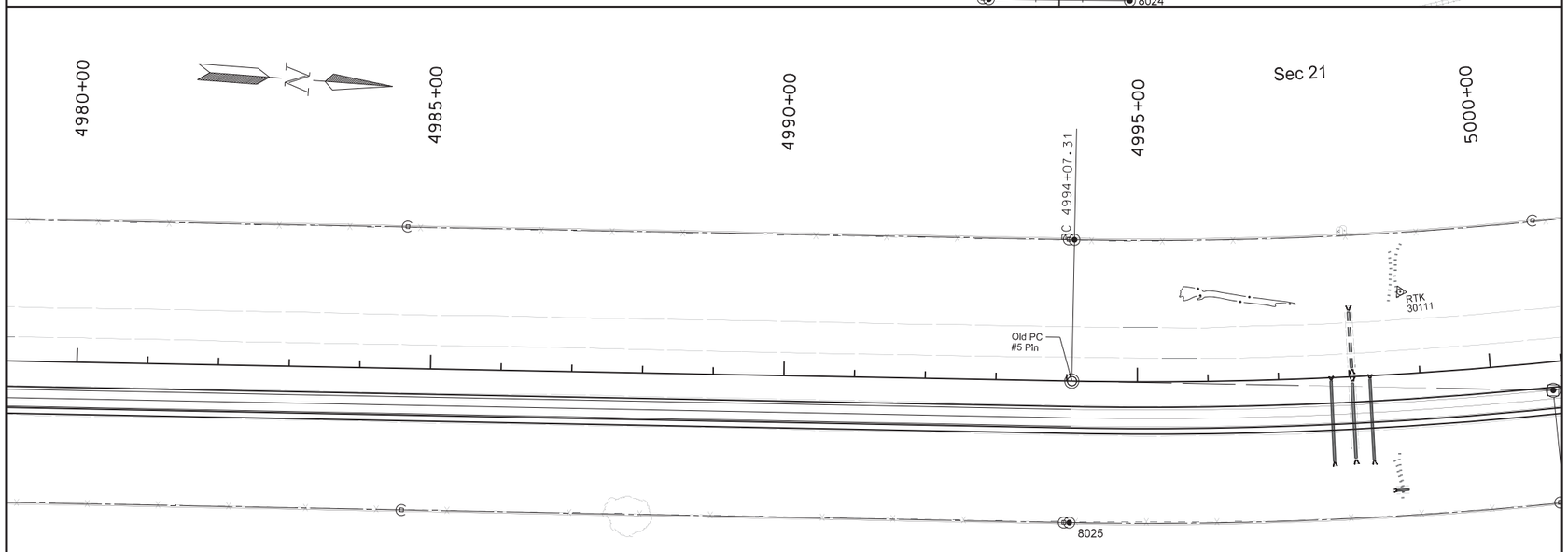


STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8021	SCL_HWY029	4971+92.99	200.2507	117055.6017	2833258.7530			x	
8022	SCL_HWY029	4972+89.73	798.8578	117185.7434	2833850.9950	x		x	
8023	SCL_HWY029	4973+98.49	0.0000	117249.5455	2833047.2956		x		
8024	SCL_HWY029	4974+89.26	801.0449	117385.0895	2833841.9910	x		x	



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8025	SCL_HWY029	4994+07.57	200.0019	119266.6841	2833134.3378			x	

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 4972+89.73 - 798.86' Rt	EA	1
		Sta 4974+89.26 - 801.04' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 4973+98.49 - 0.00' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 4971+92.99 - 200.25' Rt	EA	1
		Sta 4972+89.73 - 798.86' Rt	EA	1
		Sta 4974+89.26 - 801.04' Rt	EA	1
		Sta 4994+07.57 - 200.00' Rt	EA	1

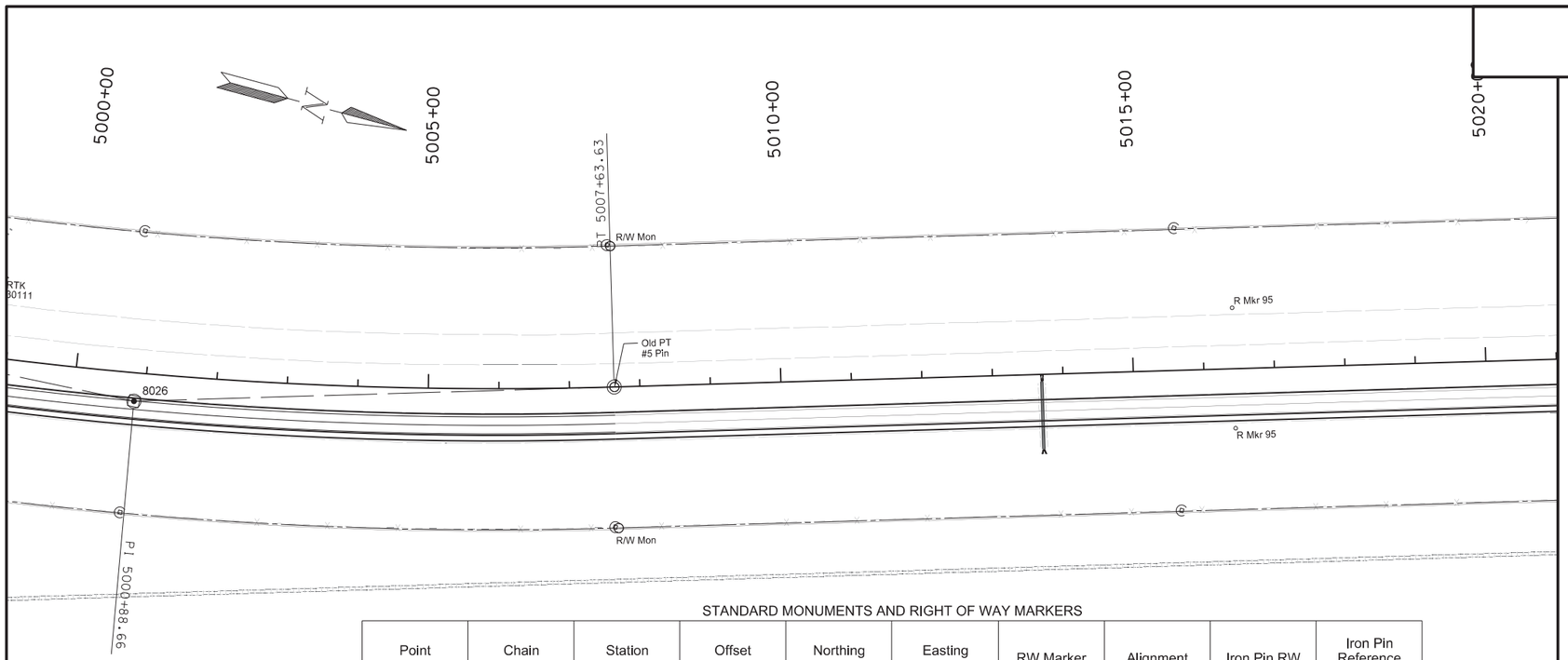
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 4960+00 to Sta 5000+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

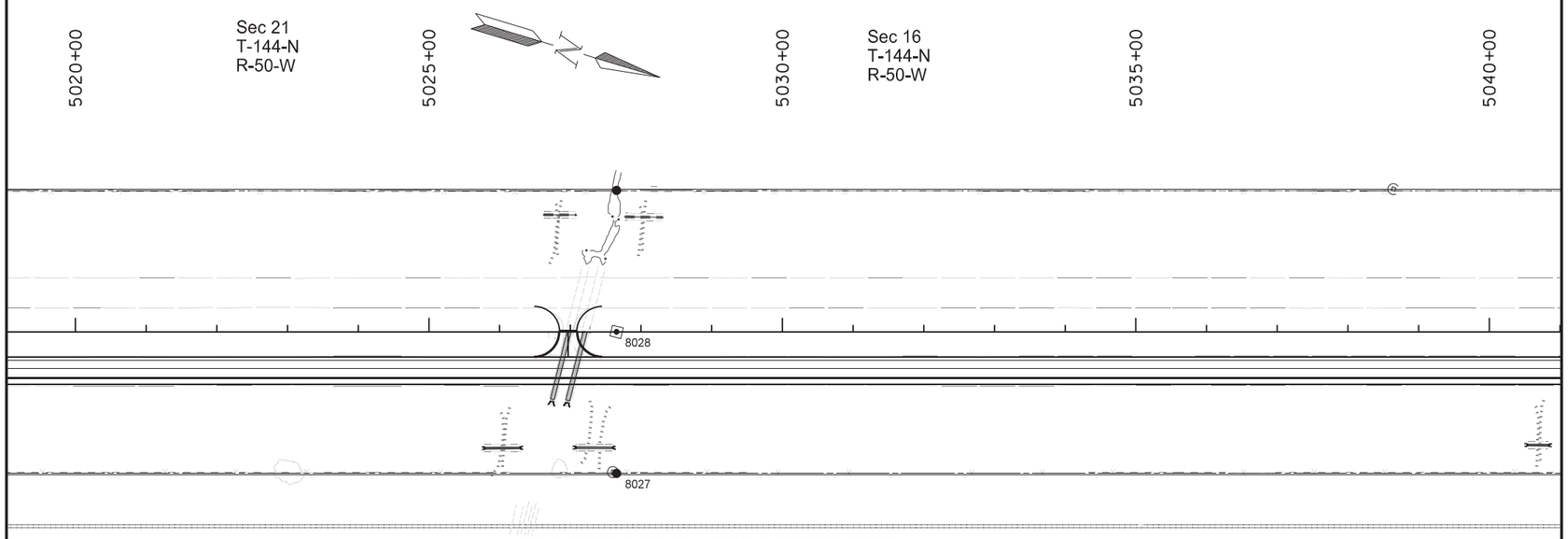
8/25/2020 11:44:18 AM swelch R:\project\80029088.135\design\Sheets\082SD_009_4960 to 5000.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	10



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8026	SCL_HWY029	5000+85.47	40.3688	119935.4798	2832896.4639		x		



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8027	SCL_HWY029	5027+65.45	200.0000	122562.1637	2832313.4567				x
8028	SCL_HWY029	5027+65.45	0.0000	122504.4337	2832121.9698		x		

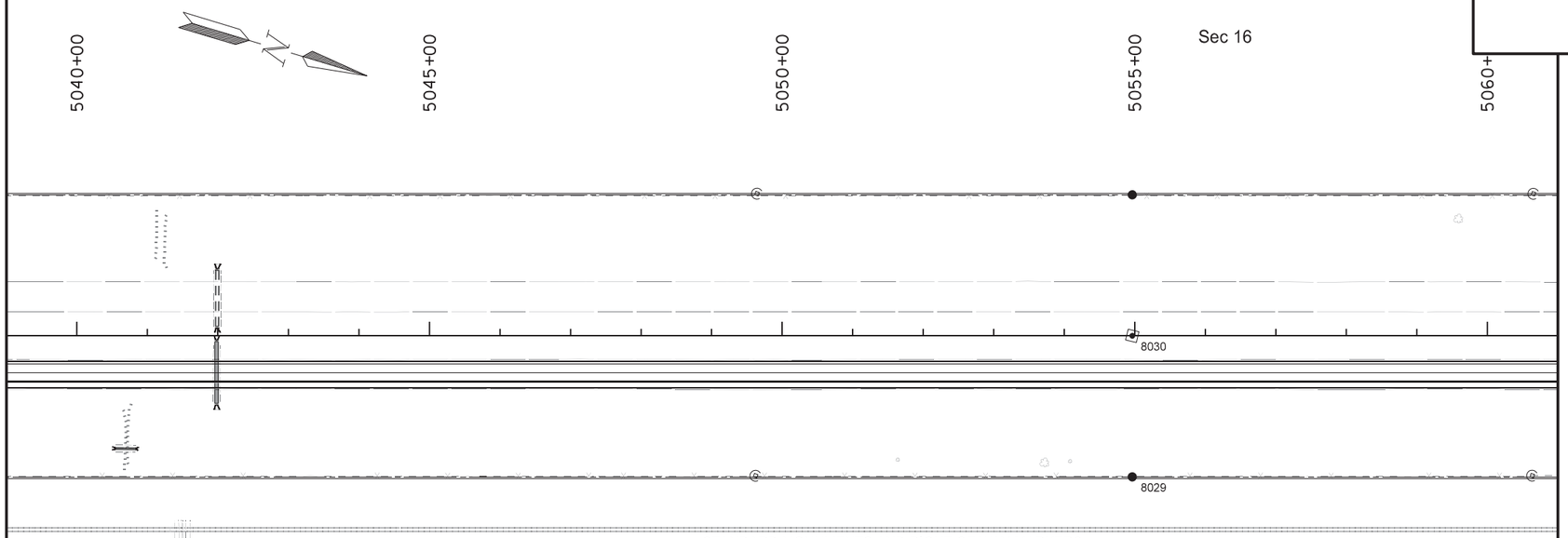
SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5000+85.47 - 40.37' Rt	EA	1
		Sta 5027+65.45 - 0.00' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5027+65.45 - 200.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5000+00 to Sta 5040+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

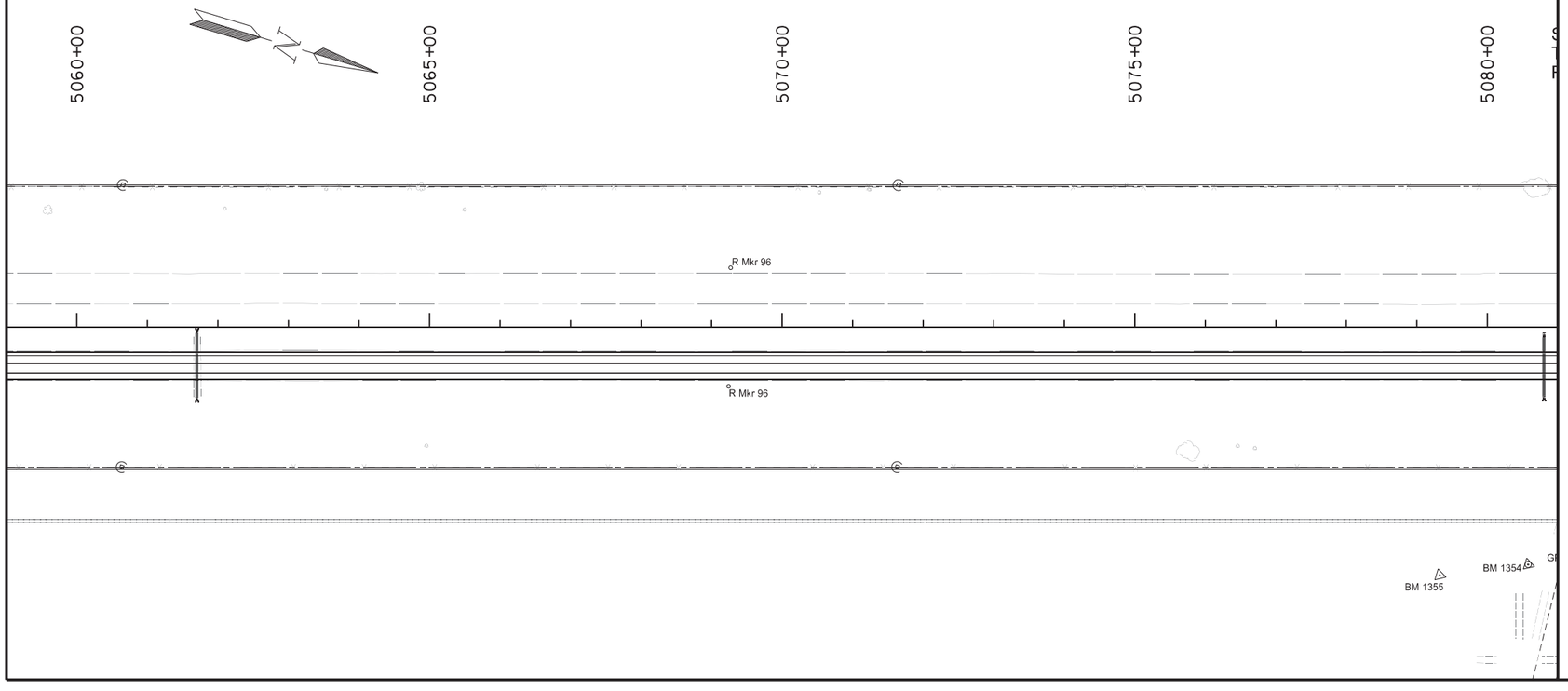
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	11



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8029	SCL_HWY029	5054+96.47	200.0000	125176.9412	2831525.1476	x			x
8030	SCL_HWY029	5054+96.47	0.0000	125119.2113	2831333.6607		x		

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5054+96.47 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5054+96.47 - 0.00' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5054+96.47 - 200.00' Rt	EA	1

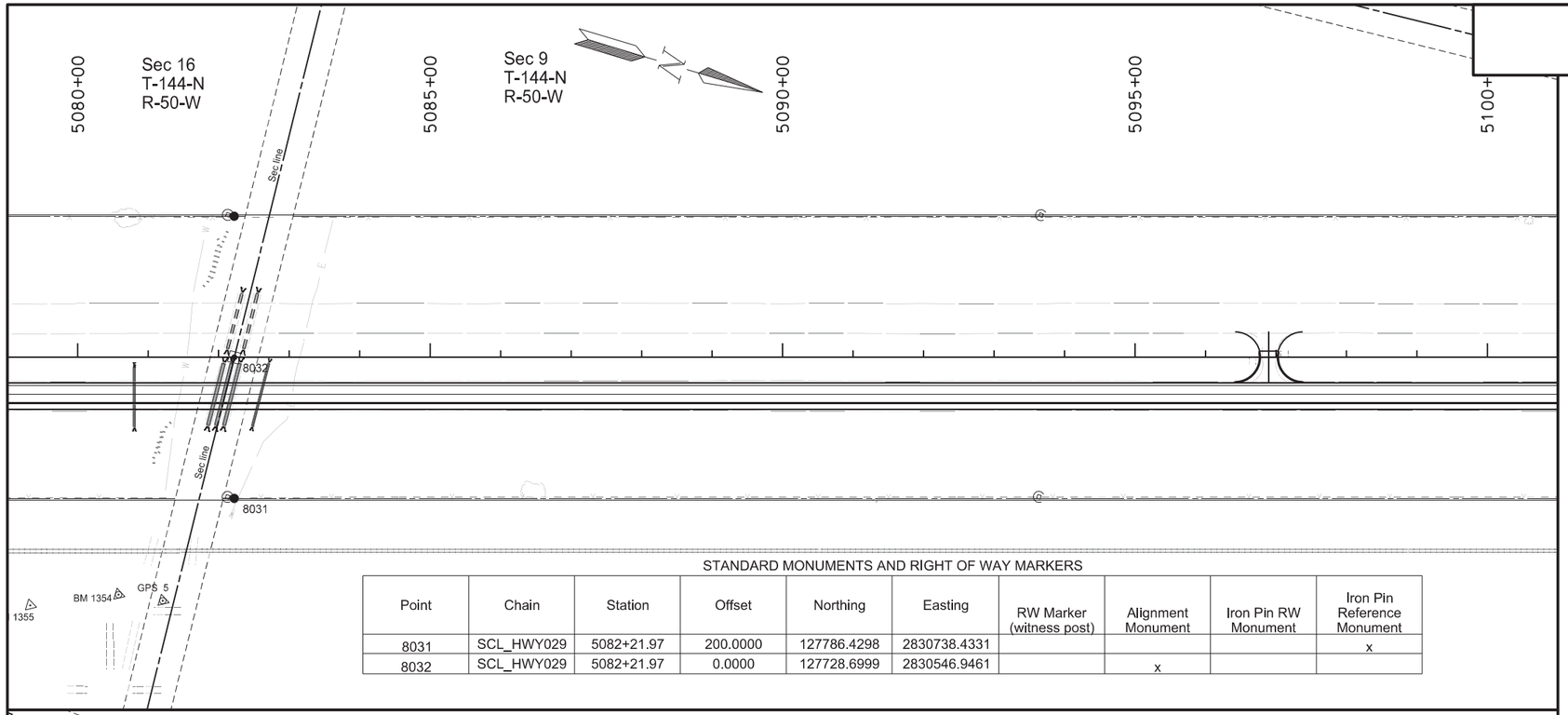


REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5040+00 to Sta 5080+00

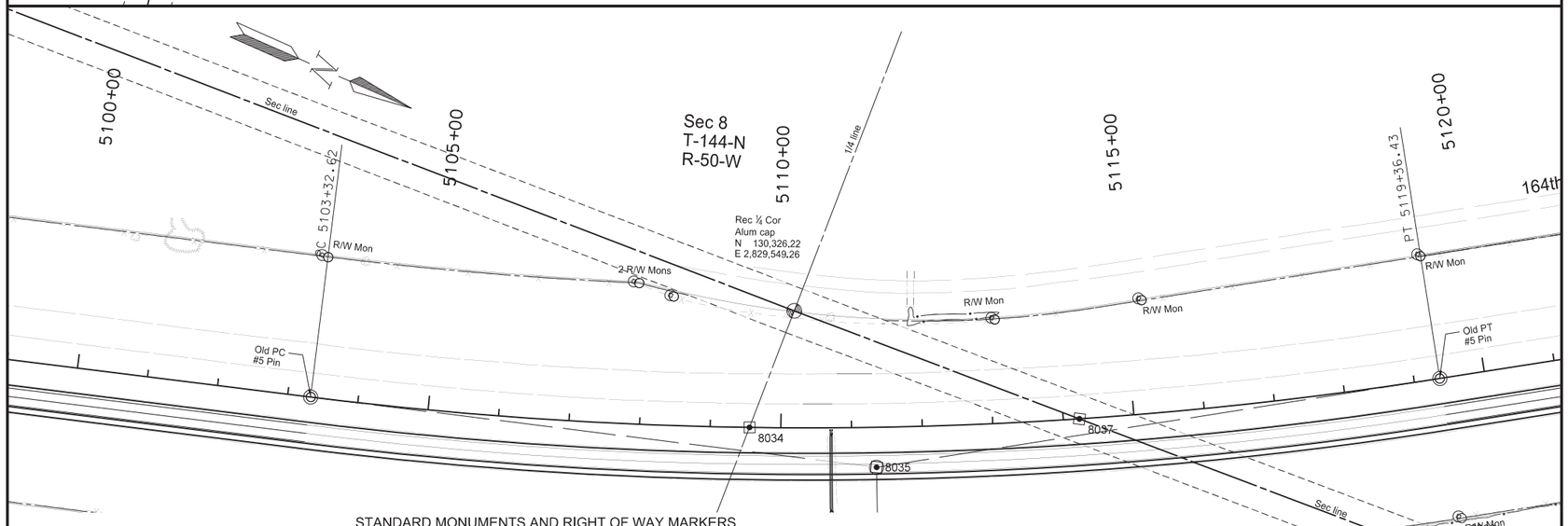
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	12



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8031	SCL_HWY029	5082+21.97	200.0000	127786.4298	2830738.4331				x
8032	SCL_HWY029	5082+21.97	0.0000	127728.6999	2830546.9461		x		



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8033	SCL_HWY029	5109+55.61	200.0000	130413.2016	2829909.9351	x			x
8034	SCL_HWY029	5109+55.61	-0.0006	130335.0327	2829725.8431		x		
8035	SCL_HWY029	5111+34.53	56.5779	130522.3339	2829704.7149		x		
8036	SCL_HWY029	5114+22.89	200.0000	130850.1338	2829702.9944	x			x
8037	SCL_HWY029	5114+22.89	0.0000	130757.2282	2829525.8827		x		
8038	SCL_HWY029	5119+36.23	200.0014	131308.9170	2829435.4811			x	

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5109+55.61 - 200.00' Rt	EA	1
		Sta 5114+22.89 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5082+21.97 - 0.00' Rt	EA	1
		Sta 5109+55.61 - 0.00' Rt	EA	1
		Sta 5111+34.53 - 56.58' Rt	EA	1
		Sta 5114+22.89 - 0.00' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 5119+36.23 - 200.00' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5082+21.97 - 200.00' Rt	EA	1
		Sta 5109+55.61 - 200.00' Rt	EA	1
		Sta 5114+22.89 - 200.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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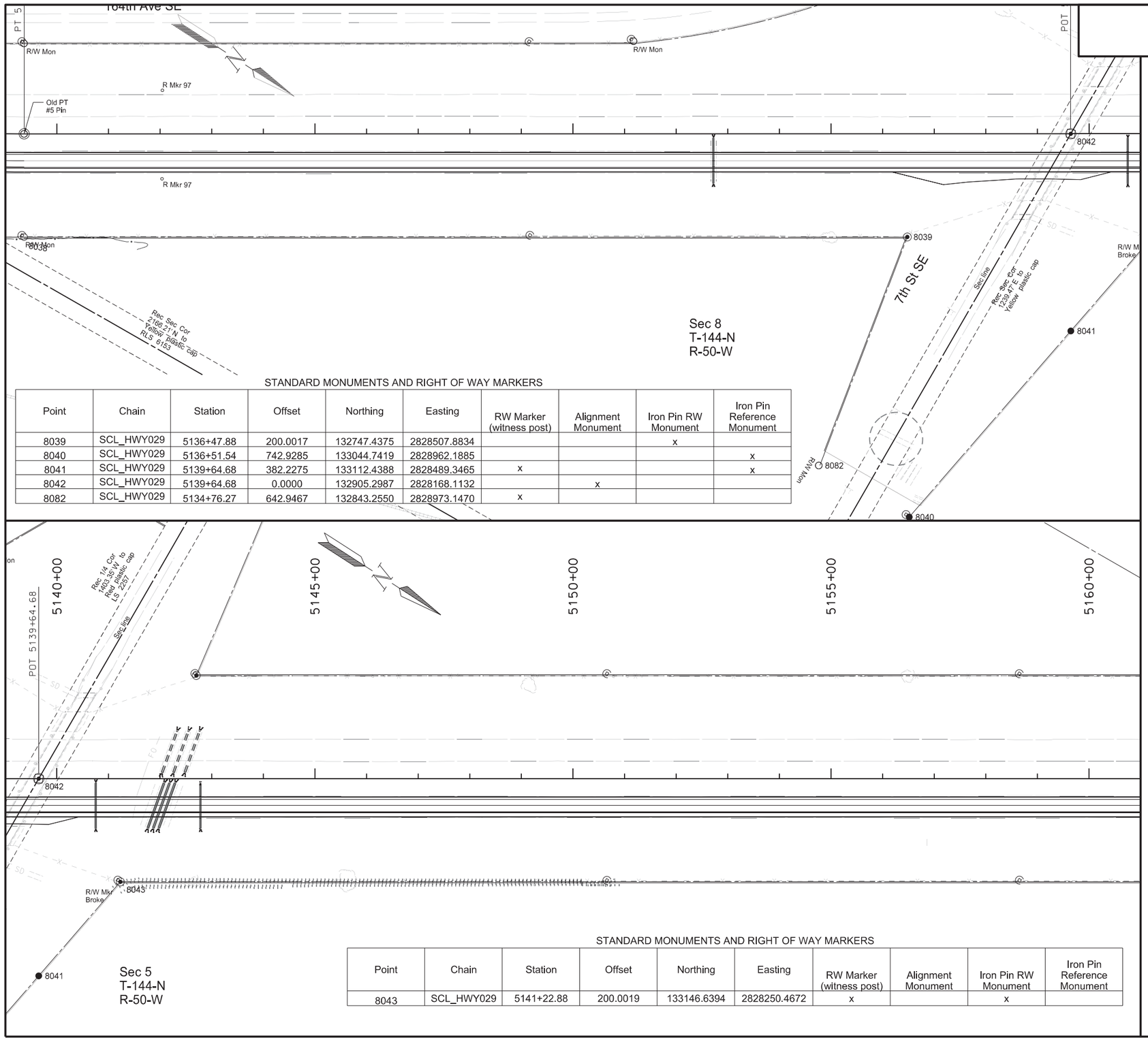
Right of Way Markers and Monuments
Sta 5080+00 to Sta 5120+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	13



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8039	SCL_HWY029	5136+47.88	200.0017	132747.4375	2828507.8834			x	
8040	SCL_HWY029	5136+51.54	742.9285	133044.7419	2828962.1885				x
8041	SCL_HWY029	5139+64.68	382.2275	133112.4388	2828489.3465	x			x
8042	SCL_HWY029	5139+64.68	0.0000	132905.2987	2828168.1132		x		
8082	SCL_HWY029	5134+76.27	642.9467	132843.2550	2828973.1470	x			

STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8043	SCL_HWY029	5141+22.88	200.0019	133146.6394	2828250.4672	x		x	

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5139+64.68 - 382.23' Rt	EA	1
		Sta 5134+76.27 - 642.95' Rt	EA	1
		Sta 5141+22.88 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5139+64.68 - 0.00' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 5136+47.88 - 200.00' Rt	EA	1
		Sta 5141+22.88 - 200.00' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5136+51.54 - 742.93' Rt	EA	1
		Sta 5139+64.68 - 382.23' Rt	EA	1

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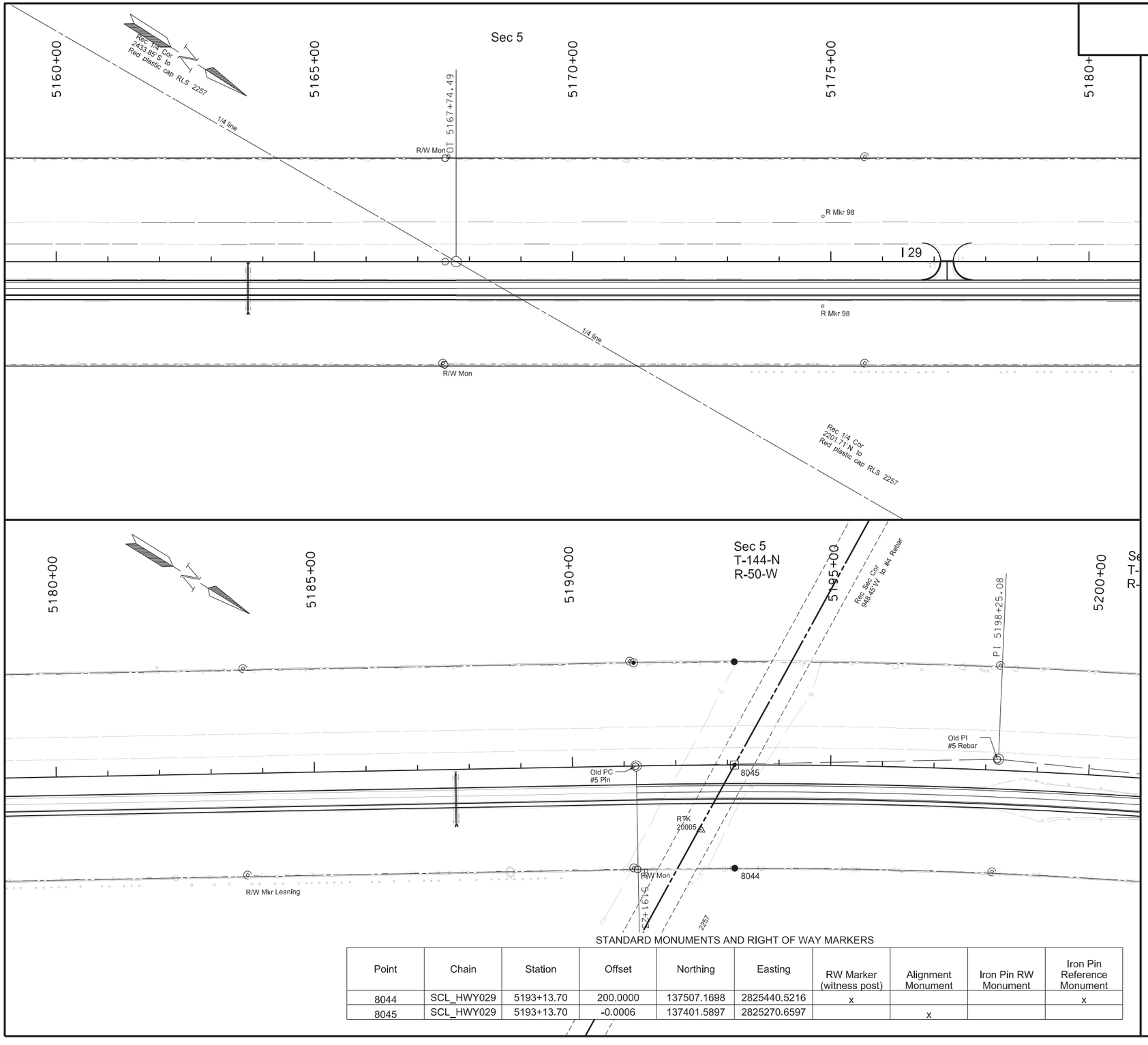
DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5120+00 to Sta 5160+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	14



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8044	SCL_HWY029	5193+13.70	200.0000	137507.1698	2825440.5216	x			x
8045	SCL_HWY029	5193+13.70	-0.0006	137401.5897	2825270.6597		x		

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5193+13.70 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5193+13.70 - 0.00' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5193+13.70 - 200.00' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
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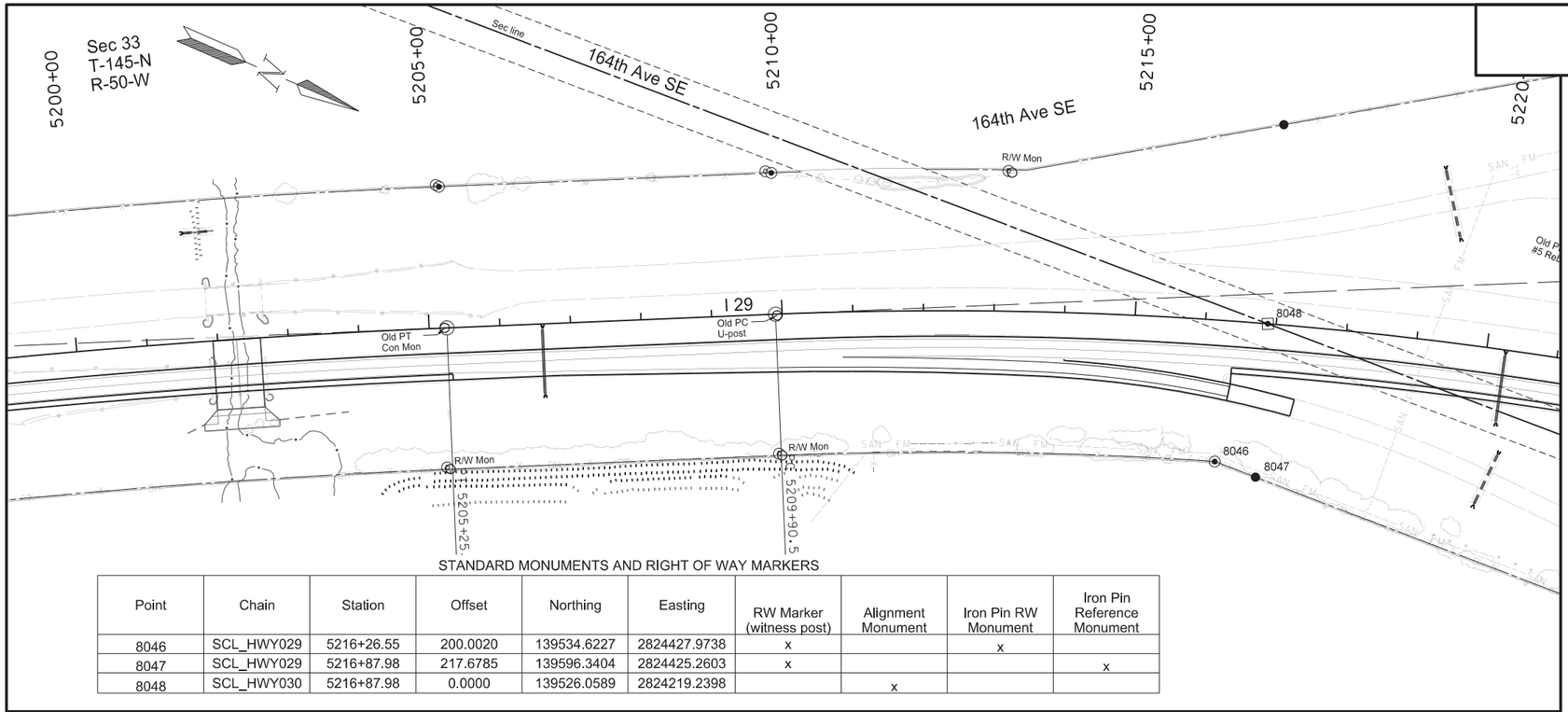
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5160+00 to Sta 5200+00

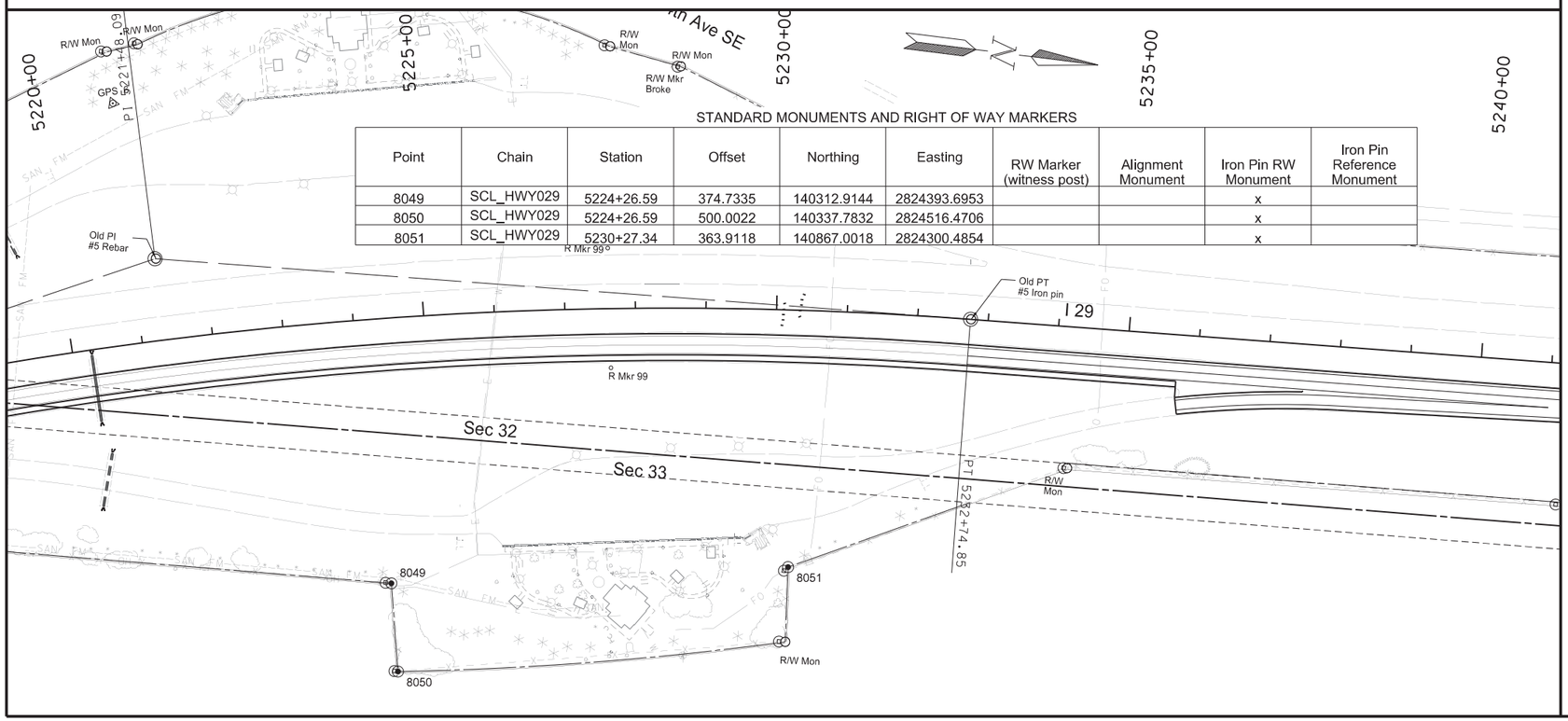
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	15



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8046	SCL_HWY029	5216+26.55	200.0020	139534.6227	2824427.9738	x		x	
8047	SCL_HWY029	5216+87.98	217.6785	139596.3404	2824425.2603	x			x
8048	SCL_HWY030	5216+87.98	0.0000	139526.0589	2824219.2398		x		



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8049	SCL_HWY029	5224+26.59	374.7335	140312.9144	2824393.6953			x	
8050	SCL_HWY029	5224+26.59	500.0022	140337.7832	2824516.4706			x	
8051	SCL_HWY029	5230+27.34	363.9118	140867.0018	2824300.4854			x	

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5216+26.55 - 200.00' Rt	EA	1
		Sta 5216+87.98 - 217.68' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5216+87.98 - 0.00' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 5216+26.55 - 200.00' Rt	EA	1
		Sta 5224+26.59 - 374.73' Rt	EA	1
		Sta 5224+26.59 - 500.00' Rt	EA	1
		Sta 5230+27.34 - 363.91' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta 5216+87.98 - 217.68' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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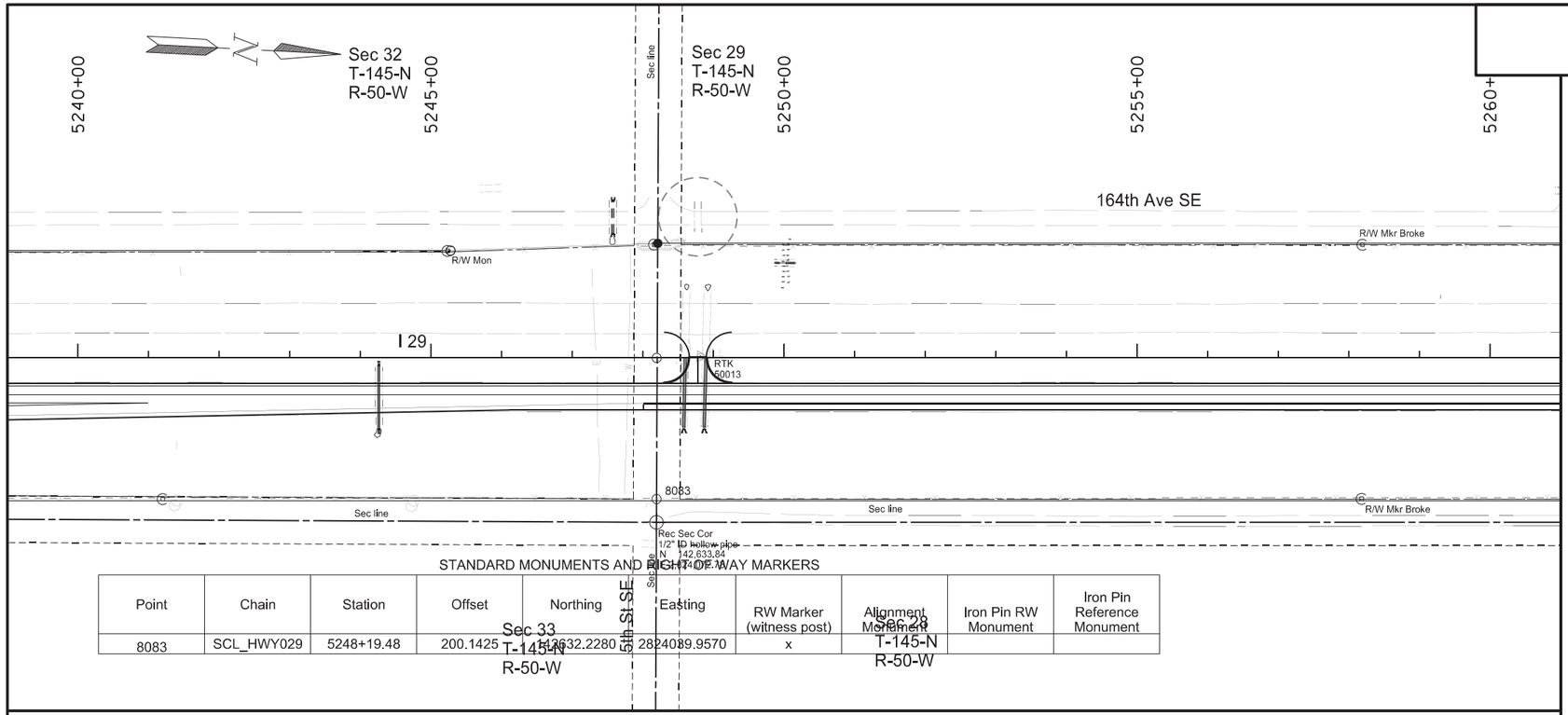
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5200+00 to Sta 5240+00

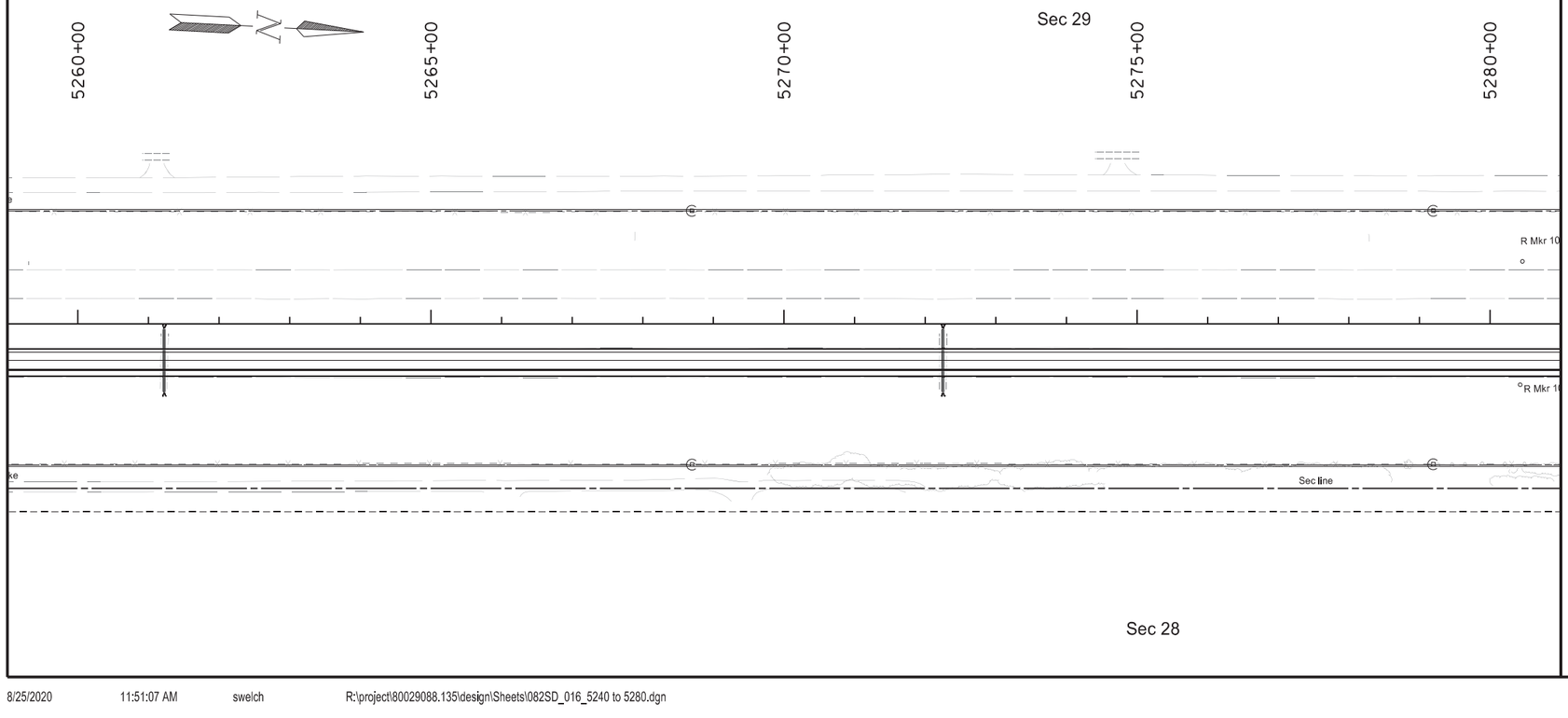
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	16



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8083	SCL_HWY029	5248+19.48	200.1425	142632.2280	2824089.9570	x			



SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	RIGHT OF WAY MARKERS		
		Sta 5248+19.48 - 200.14' Rt	EA	1

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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DATE
08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5240+00 to Sta 5280+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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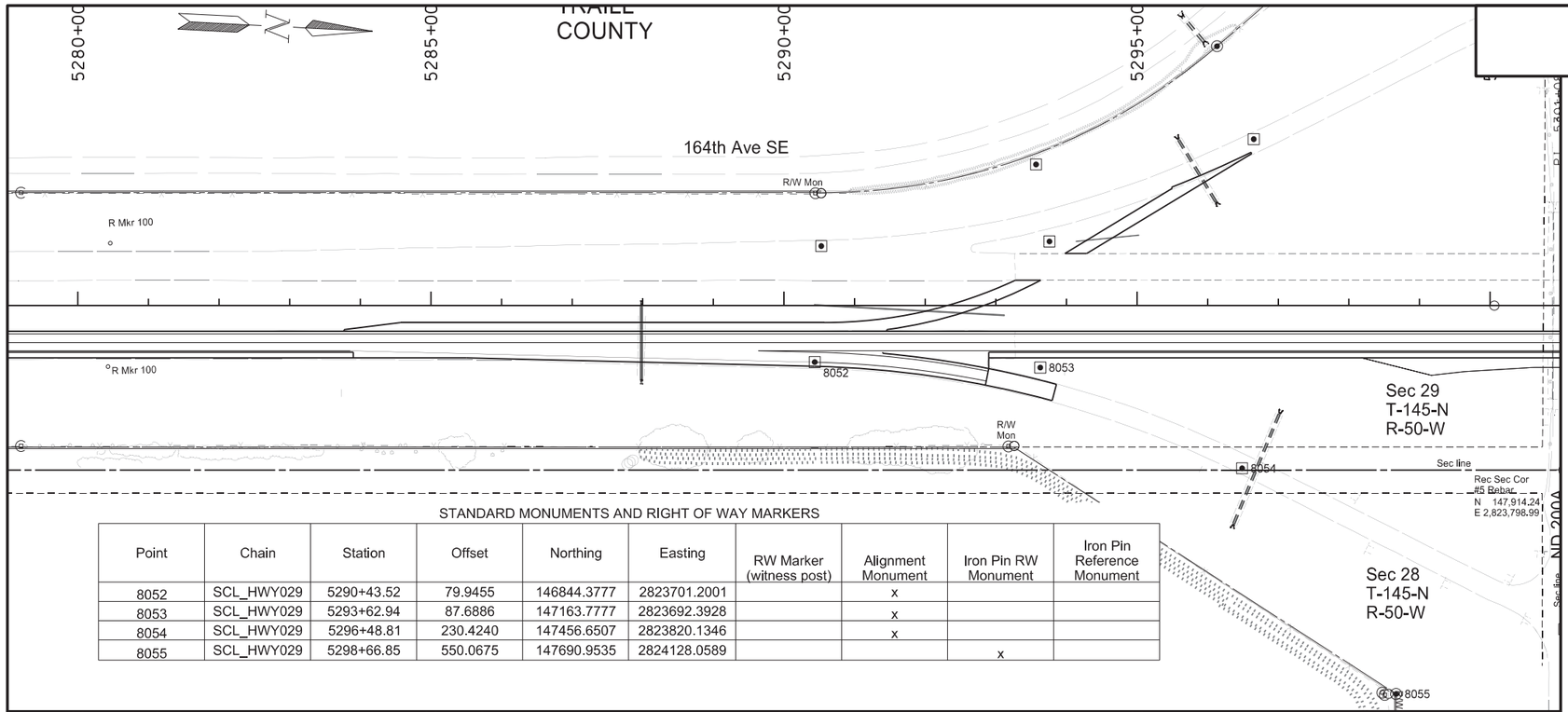
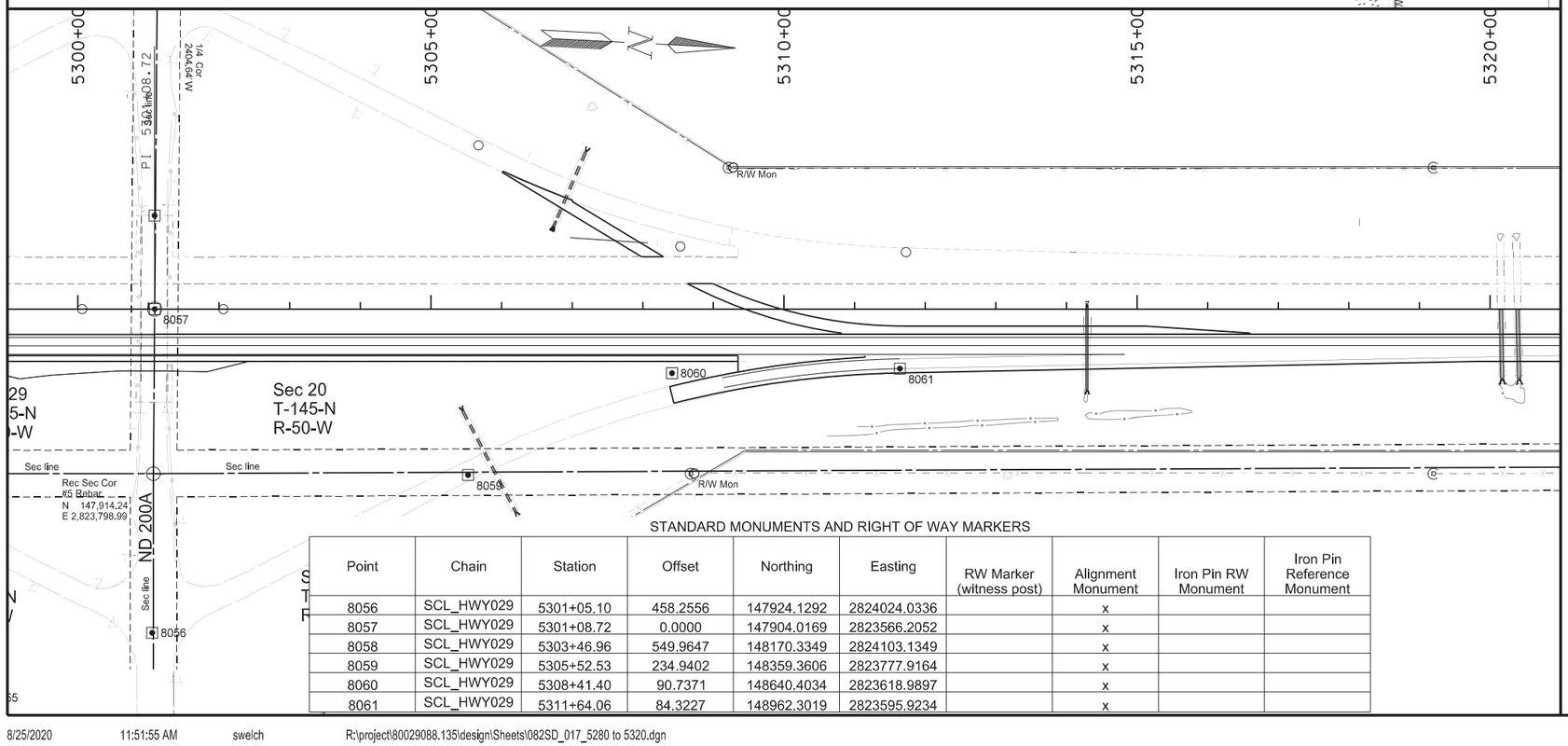
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	17



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8052	SCL_HWY029	5290+43.52	79.9455	146844.3777	2823701.2001		x		
8053	SCL_HWY029	5293+62.94	87.6886	147163.7777	2823692.3928		x		
8054	SCL_HWY029	5296+48.81	230.4240	147456.6507	2823820.1346		x		
8055	SCL_HWY029	5298+66.85	550.0675	147690.9535	2824128.0589			x	



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8056	SCL_HWY029	5301+05.10	458.2556	147924.1292	2824024.0336		x		
8057	SCL_HWY029	5301+08.72	0.0000	147904.0169	2823566.2052		x		
8058	SCL_HWY029	5303+46.96	549.9647	148170.3349	2824103.1349		x		
8059	SCL_HWY029	5305+52.53	234.9402	148359.3606	2823777.9164		x		
8060	SCL_HWY029	5308+41.40	90.7371	148640.4034	2823618.9897		x		
8061	SCL_HWY029	5311+64.06	84.3227	148962.3019	2823595.9234		x		

SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5290+43.52 - 79.95' Rt	EA	1
		Sta 5293+62.94 - 87.69' Rt	EA	1
		Sta 5296+48.84 - 230.42' Rt	EA	1
		Sta 5301+05.10 - 458.26' Rt	EA	1
		Sta 5301+08.72 - 0.00' Rt	EA	1
		Sta 5303+46.96 - 549.96' Rt	EA	1
		Sta 5305+52.53 - 234.94' Rt	EA	1
		Sta 5308+41.40 - 90.74' Rt	EA	1
		Sta 5311+64.06 - 84.32' Rt	EA	1
720	0130	**IRON PIN R/W MONUMENTS**		
		Sta 5298+66.85 - 550.07' Rt	EA	1

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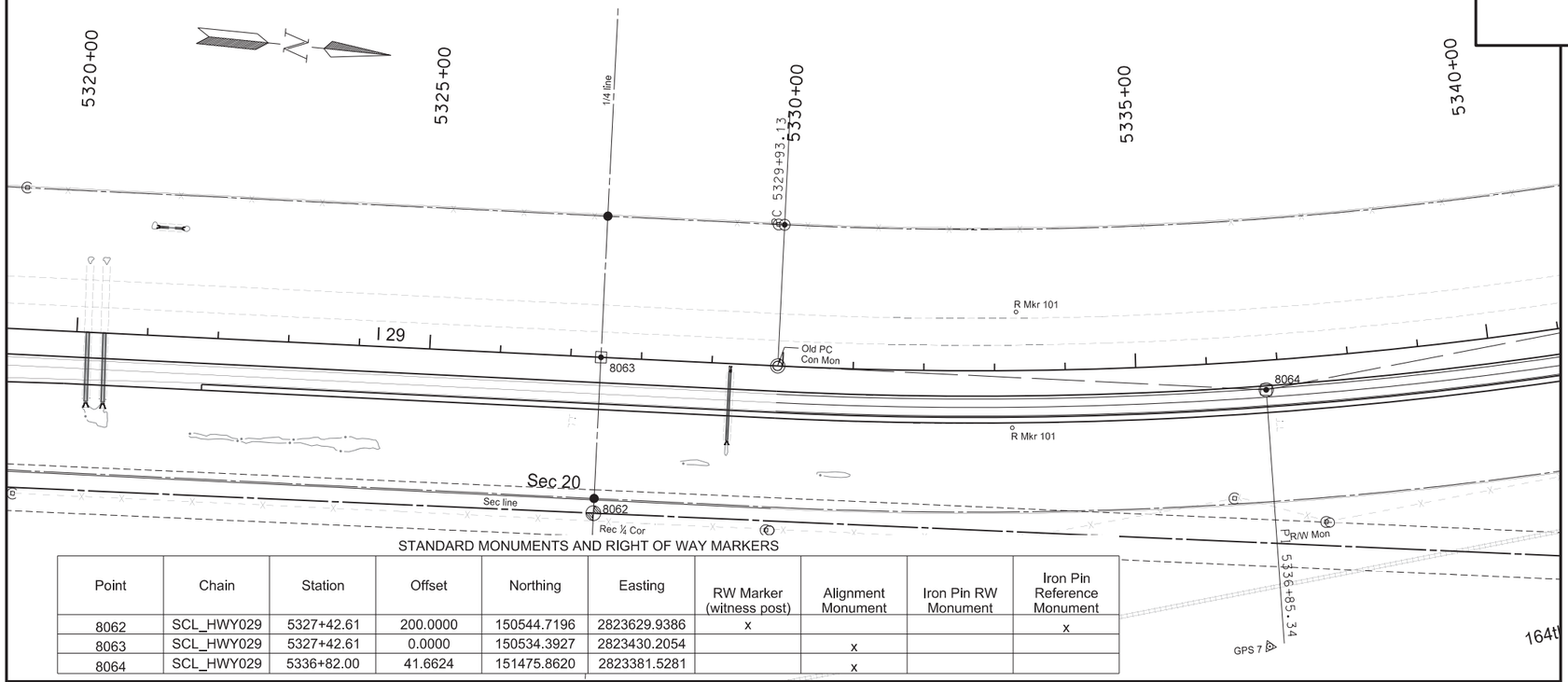
Right of Way Markers and Monuments
Sta 5280+00 to Sta 5320+00

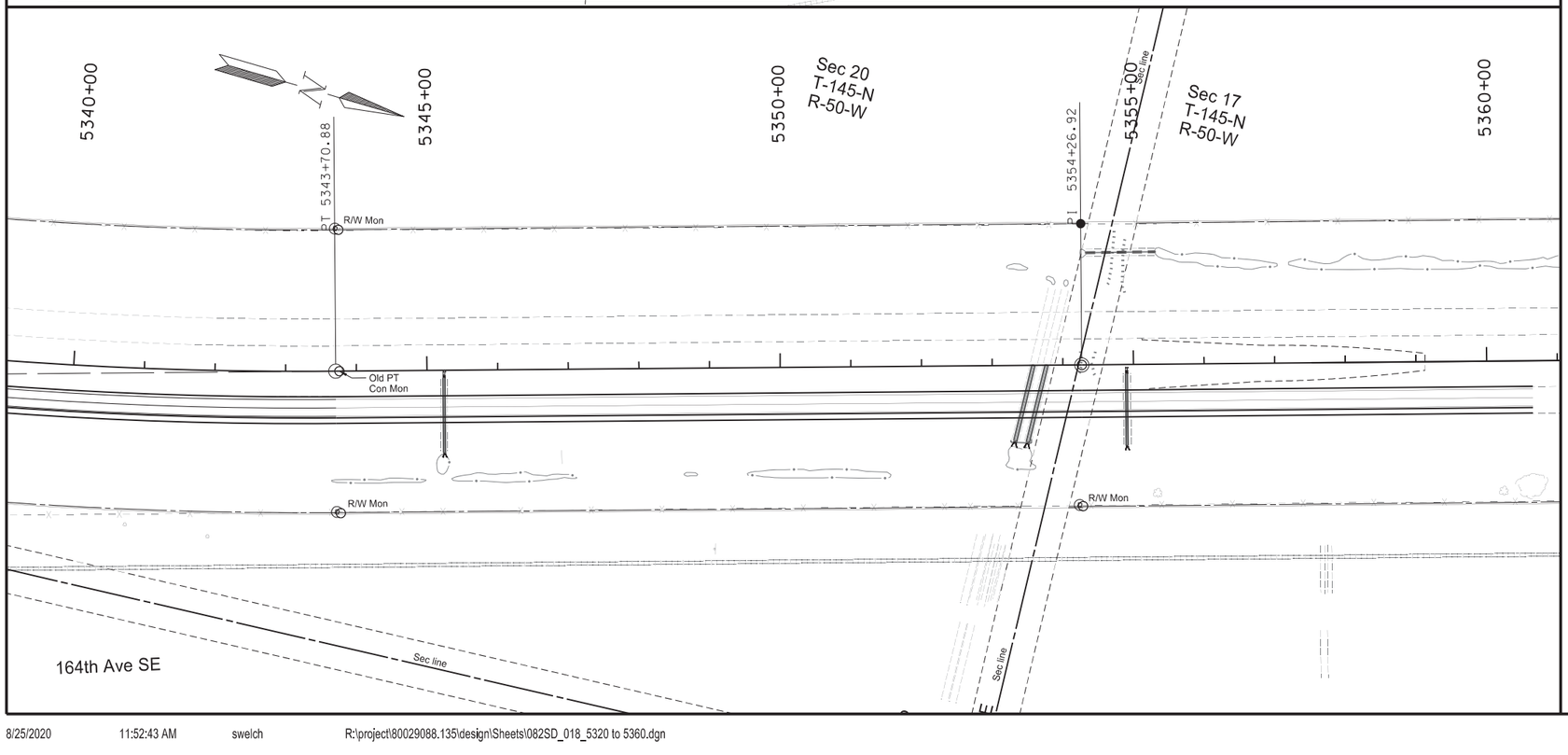
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	82	18



STANDARD MONUMENTS AND RIGHT OF WAY MARKERS

Point	Chain	Station	Offset	Northing	Easting	RW Marker (witness post)	Alignment Monument	Iron Pin RW Monument	Iron Pin Reference Monument
8062	SCL_HWY029	5327+42.61	200.0000	150544.7196	2823629.9386	x			x
8063	SCL_HWY029	5327+42.61	0.0000	150534.3927	2823430.2054		x		
8064	SCL_HWY029	5336+82.00	41.6624	151475.8620	2823381.5281		x		



SPEC	CODE	BID ITEM	UNIT	QUANTITY
720	0110	**RIGHT OF WAY MARKERS**		
		Sta 5327+42.61 - 200.00' Rt	EA	1
720	0125	**ALIGNMENT MONUMENTS**		
		Sta 5327+42.61 - 0.00' Rt	EA	1
		Sta 5336+82.00 - 41.66' Rt	EA	1
720	0135	**IRON PIN REFERENCE MONUMENTS**		
		Sta5327+42.61 - 200.00' Rt	EA	1

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DATE 08/25/20
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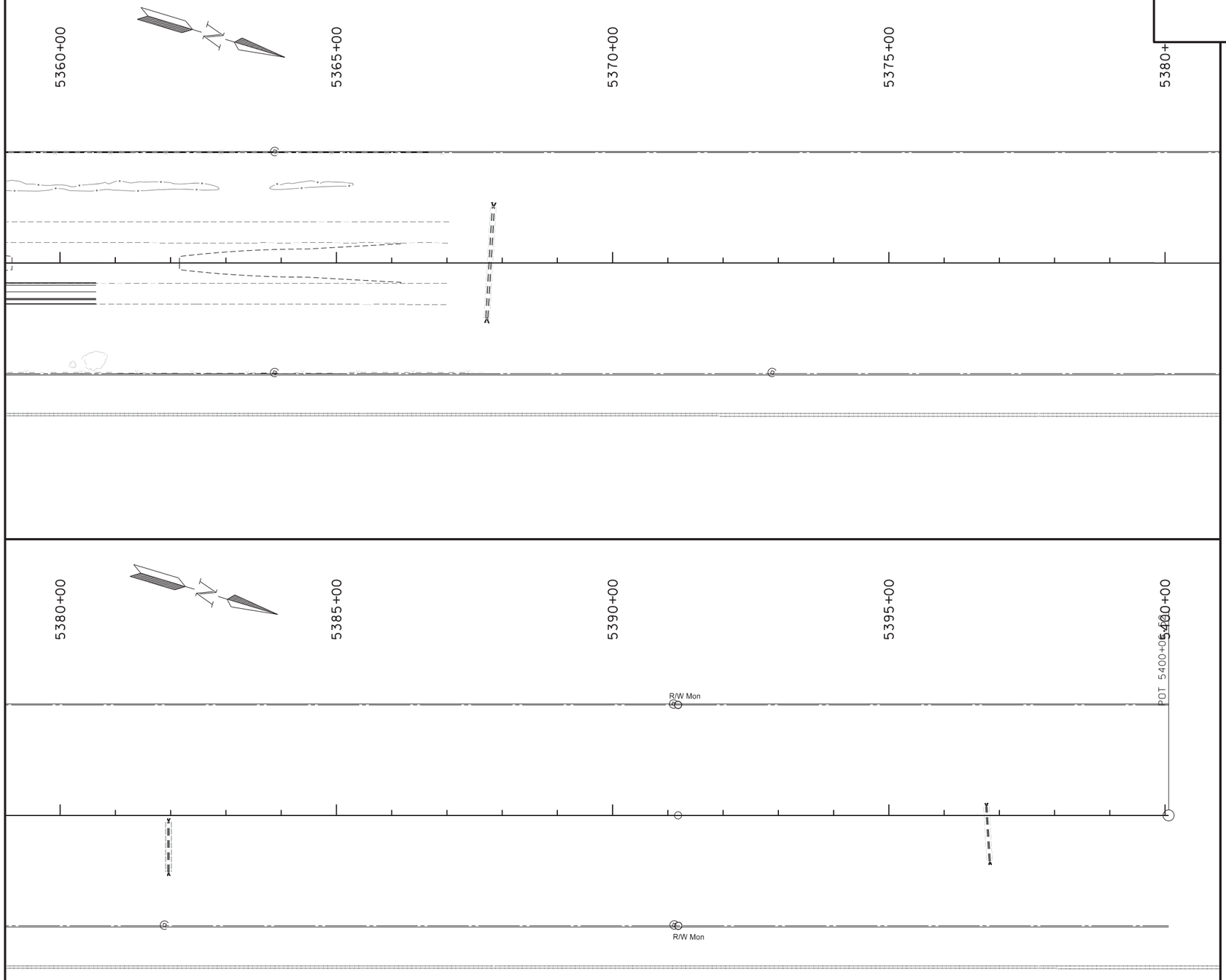
Right of Way Markers and Monuments
Sta 53200+00 to Sta 5360+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	82	19



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08/25/20
NORTH DAKOTA

Right of Way Markers and Monuments
Sta 5360+00 to Sta 5400+00

PCC Pavement Reconstruction
Interstate 29 - Northbound
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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	82	20

SW GRANDIN TEMPORARY RAMP CONNECTION ALIGNMENT

Chain RAMP_GSW_ENTER contains:
8100 CUR RAMP_GSW_ENTE_3 CUR RAMP_GSW_ENTE_6 8101 8102 8103 8104 8105 8106 8107 8108 8109 8110 8111 8112 8113 8114 8115 8116 8117 8118 8119 8120

Beginning chain RAMP_GSW_ENTER description
Feature: Alignment 2 L
==========

Point 8100 N 106,300.4238 E 2,835,199.4429 Sta 0+00.00

Course from 8100 to PC RAMP_GSW_ENTE_3 S 51° 30' 11.65" E Dist 402.5350 402.5350

Curve Data

Curve RAMP_GSW_ENTE_3
P.I. Station 5+68.59 N 105,946.4964 E 2,835,644.4423
Delta = 28° 57' 35.15" (RT) (RT)
Degree = 8° 54' 38.51" 38.51"
Tangent = 166.0503
Length = 325.0000
Radius = 643.0000
External = 21.0946
Long Chord = 321.5515
Mid. Ord. = 20.4246
P.C. Station 4+02.53 N 106,049.8577 E 2,835,514.4842
P.T. Station 7+27.53 N 105,793.1342 E 2,835,708.1034
C.C. N 105,546.6181 E 2,835,114.2357
Back = S 51° 30' 11.65" E E
Ahead = S 22° 32' 36.50" E E
Chord Bear = S 37° 01' 24.08" E E

Course from PT RAMP_GSW_ENTE_3 to PC RAMP_GSW_ENTE_6 S 22° 32' 36.50" E Dist 182.1920 182.1920

Curve Data

Curve RAMP_GSW_ENTE_6
P.I. Station 11+18.18 N 105,432.3387 E 2,835,857.8706
Delta = 2° 05' 20.52" (LT) (LT)
Degree = 0° 30' 04.09" 04.09"
Tangent = 208.4531
Length = 416.8601
Radius = 11,433.1900
External = 1.9001
Long Chord = 416.8370
Mid. Ord. = 1.8998
P.C. Station 9+09.73 N 105,624.8637 E 2,835,777.9529
P.T. Station 13+26.59 N 105,242.8549 E 2,835,944.7531
C.C. N 110,008.1693 E 2,846,337.5204
Back = S 22° 32' 36.50" E E
Ahead = S 24° 37' 57.02" E E
Chord Bear = S 23° 35' 16.76" E E

Course from PT RAMP_GSW_ENTE_6 to 8101 S 31° 47' 15.99" E Dist 5.6308 5.6308

Point 8101 N 105,238.0687 E 2,835,947.7193 Sta 13+32.22

Course from 8101 to 8102 S 31° 48' 58.35" E Dist 5.6305 5.6305

Point 8102 N 105,233.2842 E 2,835,950.6877 Sta 13+37.85

Course from 8102 to 8103 S 31° 50' 40.70" E Dist 5.6301 5.6301

Point 8103 N 105,228.5015 E 2,835,953.6582 Sta 13+43.48

Course from 8103 to 8104 S 31° 52' 23.06" E Dist 5.6298 5.6298

Point 8104 N 105,223.7206 E 2,835,956.6310 Sta 13+49.11

Course from 8104 to 8105 S 31° 54' 05.42" E Dist 5.6294 5.6294

Point 8105 N 105,218.9414 E 2,835,959.6059 Sta 13+54.74

Course from 8105 to 8106 S 31° 55' 47.78" E Dist 5.6291 5.6291

Point 8106 N 105,214.1640 E 2,835,962.5830 Sta 13+60.37

Course from 8106 to 8107 S 31° 57' 30.14" E Dist 5.6288 5.6288

Point 8107 N 105,209.3884 E 2,835,965.5624 Sta 13+66.00

Course from 8107 to 8108 S 31° 59' 12.50" E Dist 5.6284 5.6284

Point 8108 N 105,204.6145 E 2,835,968.5439 Sta 13+71.62

Course from 8108 to 8109 S 32° 00' 54.85" E Dist 5.6281 5.6281

Point 8109 N 105,199.8424 E 2,835,971.5276 Sta 13+77.25

Course from 8109 to 8110 S 32° 02' 37.22" E Dist 5.6277 5.6277

Point 8110 N 105,195.0721 E 2,835,974.5135 Sta 13+82.88

Course from 8110 to 8111 S 32° 04' 19.58" E Dist 5.6274 5.6274

Point 8111 N 105,190.3036 E 2,835,977.5015 Sta 13+88.51

Course from 8111 to 8112 S 32° 06' 01.93" E Dist 5.6271 5.6271

Point 8112 N 105,185.5368 E 2,835,980.4918 Sta 13+94.13

Course from 8112 to 8113 S 32° 07' 44.29" E Dist 5.6267 5.6267

Point 8113 N 105,180.7718 E 2,835,983.4842 Sta 13+99.76

Course from 8113 to 8114 S 32° 09' 26.65" E Dist 5.6264 5.6264

Point 8114 N 105,176.0085 E 2,835,986.4789 Sta 14+05.39

Course from 8114 to 8115 S 32° 11' 09.02" E Dist 5.6261 5.6261

Point 8115 N 105,171.2471 E 2,835,989.4757 Sta 14+11.01

Course from 8115 to 8116 S 32° 12' 51.37" E Dist 5.6257 5.6257

Point 8116 N 105,166.4874 E 2,835,992.4747 Sta 14+16.64

Course from 8116 to 8117 S 32° 14' 33.73" E Dist 5.6254 5.6254

Point 8117 N 105,161.7294 E 2,835,995.4758 Sta 14+22.26

Course from 8117 to 8118 S 32° 16' 16.09" E Dist 5.6250 5.6250

Point 8118 N 105,156.9733 E 2,835,998.4792 Sta 14+27.89

Course from 8118 to 8119 S 32° 17' 58.46" E Dist 5.6247 5.6247

Point 8119 N 105,152.2189 E 2,836,001.4847 Sta 14+33.51

Course from 8119 to 8120 S 32° 19' 40.82" E Dist 5.6244 5.6244

Point 8120 N 105,147.4664 E 2,836,004.4924 Sta 14+39.14

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Ending chain RAMP_GSW_ENTER description

NW GRANDIN TEMPORARY RAMP CONNECTION ALIGNMENT

Chain RAMP_GNW_EXIT contains:
8097 8098 CUR RAMP_GNW_EXIT_5 8099

Beginning chain RAMP_GNW_EXIT description
Feature: Alignment 5 L
==========

Point 8097 N 108,368.8495 E 2,834,654.0751 Sta 0+00.00

Course from 8097 to 8098 S 18° 43' 45.83" E Dist 210.4661 210.4661

Point 8098 N 108,169.5284 E 2,834,721.6556 Sta 2+10.47

Course from 8098 to PC RAMP_GNW_EXIT_5 S 22° 32' 36.50" E Dist 340.0000 340.0000

Curve Data

Curve RAMP_GNW_EXIT_5
P.I. Station 7+29.92 N 107,689.7676 E 2,834,920.8056
Delta = 31° 11' 14.78" (RT) (RT)
Degree = 8° 54' 38.51" 38.51"
Tangent = 179.4528
Length = 350.0000
Radius = 643.0000
External = 24.5720
Long Chord = 345.6951
Mid. Ord. = 23.6675
P.C. Station 5+50.47 N 107,855.5082 E 2,834,852.0062
P.T. Station 9+00.47 N 107,512.3531 E 2,834,893.8350
C.C. N 107,608.9921 E 2,834,258.1386
Back = S 22° 32' 36.50" E E
Ahead = S 8° 38' 38.28" W W
Chord Bear = S 6° 56' 59.11" E E

Course from PT RAMP_GNW_EXIT_5 to 8099 S 8° 38' 38.28" W Dist 324.4856 324.4856

Point 8099 N 107,191.5532 E 2,834,845.0667 Sta 12+24.95

==========
Ending chain RAMP_GNW_EXIT description

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Temporary Ramp Alignment Descriptions

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	82	21

SW BLANCHARD TEMPORARY RAMP CONNECTION ALIGNMENT

Chain RAMP_BSW_ENTER contains:
8094 CUR RAMP_BSW_ENTE_3 8095 8096

Beginning chain RAMP_BSW_ENTER description
Feature: Alignment 3 L
==========

Point 8094 N 147,470.1967 E 2,823,341.5695 Sta 0+00.00

Course from 8094 to PC RAMP_BSW_ENTE_3 S 34° 09' 19.97" E Dist 347.3468 347.3468

Curve Data

Curve RAMP_BSW_ENTE_3
P.I. Station 5+26.80 N 147,034.2614 E 2,823,637.3367
Delta = 31° 11' 14.78" (RT) (RT)
Degree = 8° 54' 38.51" 38.51"
Tangent = 179.4528
Length = 350.0000
Radius = 643.0000
External = 24.5720
Long Chord = 345.6951
Mid. Ord. = 23.6675
P.C. Station 3+47.35 N 147,182.7616 E 2,823,536.5844
P.T. Station 6+97.35 N 146,855.0493 E 2,823,646.6288
C.C. N 146,821.7547 E 2,823,004.4914
Back = S 34° 09' 19.97" E E
Ahead = S 2° 58' 05.19" E E
Chord Bear = S 18° 33' 42.58" E E

Course from PT RAMP_BSW_ENTE_3 to 8095 S 2° 58' 05.19" E Dist 600.0000 600.0000

Point 8095 N 146,255.8542 E 2,823,677.6968 Sta 12+97.35

Course from 8095 to 8096 S 10° 05' 35.25" E Dist 112.8716 112.8716

Point 8096 N 146,144.7293 E 2,823,697.4774 Sta 14+10.22

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Ending chain RAMP_BSW_ENTER description

NW BLANCHARD TEMPORARY RAMP CONNECTION ALIGNMENT

Chain RAMP_BNW_EXIT contains:
8091 8092 CUR RAMP_BNW_EXIT_5 8093

Beginning chain RAMP_BNW_EXIT description
Feature: Alignment 4 L
==========

Point 8091 N 149,515.2081 E 2,823,522.9543 Sta 0+00.00

Course from 8091 to 8092 S 0° 51' 15.53" W Dist 210.4661 210.4661

Point 8092 N 149,304.7654 E 2,823,519.8163 Sta 2+10.47

Course from 8092 to PC RAMP_BNW_EXIT_5 S 2° 57' 35.14" E Dist 340.0000 340.0000

Curve Data

Curve RAMP_BNW_EXIT_5
P.I. Station 7+29.92 N 148,786.0055 E 2,823,546.6380
Delta = 31° 11' 14.78" (RT) (RT)
Degree = 8° 54' 38.51" 38.51"
Tangent = 179.4528
Length = 350.0000
Radius = 643.0000
External = 24.5720
Long Chord = 345.6951
Mid. Ord. = 23.6675
P.C. Station 5+50.47 N 148,965.2189 E 2,823,537.3720
P.T. Station 9+00.47 N 148,627.8940 E 2,823,461.7610
C.C. N 148,932.0179 E 2,822,895.2298
Back = S 2° 57' 35.14" E E
Ahead = S 28° 13' 39.64" W W
Chord Bear = S 12° 38' 02.25" W W

Course from PT RAMP_BNW_EXIT_5 to 8093 S 28° 13' 39.64" W Dist 333.5166 333.5166

Point 8093 N 148,334.0408 E 2,823,304.0155 Sta 12+33.98

==========
Ending chain RAMP_BNW_EXIT description

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DATE
08/25/20
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Temporary Ramp Alignment Descriptions

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	82	22

SE GRANDIN TEMPORARY RAMP DETOUR ALIGNMENT

Chain PRSEGRNTRDET contains:
CUR PRSEGRNTRDET_1 CUR PRSEGRNTRDET_4

Beginning chain PRSEGRNTRDET description
Feature: Alignment 6 L

Curve Data

Curve PRSEGRNTRDET_1
P.I. Station 0+39.66 N 105,420.7976 E 2,835,807.8862
Delta = 20° 20' 46.52" (RT) (RT)
Degree = 25° 55' 32.49" 32.49"
Tangent = 39.6572
Length = 78.4791
Radius = 221.0000
External = 3.5299
Long Chord = 78.0674
Mid. Ord. = 3.4744
P.C. Station 0+00.00 N 105,384.1283 E 2,835,822.9876
P.T. Station 0+78.48 N 105,460.4297 E 2,835,806.4766
C.C. N 105,468.2851 E 2,836,027.3369
Back = N 22° 22' 59.71" W W
Ahead = N 2° 02' 13.19" W W
Chord Bear = N 12° 12' 36.45" W W

Course from PT PRSEGRNTRDET_1 to PC PRSEGRNTRDET_4 N 2° 02' 13.19" W Dist 238.5245 238.5245

Curve Data

Curve PRSEGRNTRDET_4
P.I. Station 3+49.66 N 105,731.4346 E 2,835,796.8377
Delta = 16° 13' 46.35" (LT) (LT)
Degree = 25° 01' 11.97" 11.97"
Tangent = 32.6518
Length = 64.8663
Radius = 229.0000
External = 2.3161
Long Chord = 64.6497
Mid. Ord. = 2.2929
P.C. Station 3+17.00 N 105,698.8034 E 2,835,797.9983
P.T. Station 3+81.87 N 105,762.4410 E 2,835,786.6034
C.C. N 105,690.6637 E 2,835,569.1430
Back = N 2° 02' 13.19" W W
Ahead = N 18° 15' 59.54" W W
Chord Bear = N 10° 09' 06.36" W W

Ending chain PRSEGRNTRDET description

NE GRANDIN TEMPORARY RAMP DETOUR ALIGNMENT

Chain PRNEGRNTRDET contains:
CUR PRNEGRNTRDET_1 CUR PRNEGRNTRDET_4

Beginning chain PRNEGRNTRDET description
Feature: Alignment 6 L

Curve Data

Curve PRNEGRNTRDET_1
P.I. Station 0+30.02 N 107,695.6305 E 2,834,980.7668
Delta = 14° 56' 13.82" (LT) (LT)
Degree = 25° 01' 11.97" 11.97"
Tangent = 30.0207
Length = 59.7010
Radius = 229.0000
External = 1.9594
Long Chord = 59.5320
Mid. Ord. = 1.9428
P.C. Station 0+00.00 N 107,668.7705 E 2,834,994.1751
P.T. Station 0+59.70 N 107,718.1267 E 2,834,960.8882
C.C. N 107,566.4910 E 2,834,789.2851
Back = N 26° 31' 40.78" W W
Ahead = N 41° 27' 54.60" W W
Chord Bear = N 33° 59' 47.69" W W

Course from PT PRNEGRNTRDET_1 to PC PRNEGRNTRDET_4 N 41° 27' 54.60" W Dist 260.7222 260.7222

Curve Data

Curve PRNEGRNTRDET_4
P.I. Station 3+54.98 N 107,939.3990 E 2,834,765.3627
Delta = 17° 46' 33.36" (RT) (RT)
Degree = 25° 55' 32.49" 32.49"
Tangent = 34.5601
Length = 68.5649
Radius = 221.0000
External = 2.6859
Long Chord = 68.2903
Mid. Ord. = 2.6537
P.C. Station 3+20.42 N 107,913.5011 E 2,834,788.2472
P.T. Station 3+88.99 N 107,971.0470 E 2,834,751.4773
C.C. N 108,059.8395 E 2,834,953.8554
Back = N 41° 27' 54.60" W W
Ahead = N 23° 41' 21.25" W W
Chord Bear = N 32° 34' 37.93" W W

Ending chain PRNEGRNTRDET description

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Temporary Ramp Detour Alignment Descriptions

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	82	23

SE BLANCHARD TEMPORARY RAMP DETOUR ALIGNMENT

Chain PRSEBLNTRDET contains:
CUR PRSEBLNTRDET_1 CUR PRSEBLNTRDET_4

Beginning chain PRSEBLNTRDET description
Feature: Alignment 7 L

Curve Data
———
Curve PRSEBLNTRDET_1
P.I. Station 0+39.68 N 146,700.0467 E 2,823,604.5855
Delta = 20° 21' 29.74" (RT) (RT)
Degree = 25° 55' 32.49" 32.49"
Tangent = 39.6811
Length = 78.5254
Radius = 221.0000
External = 3.5342
Long Chord = 78.1130
Mid. Ord. = 3.4785
P.C. Station 0+00.00 N 146,660.3799 E 2,823,605.6491
P.T. Station 0+78.53 N 146,737.6058 E 2,823,617.3879
C.C. N 146,666.3038 E 2,823,826.5697
Back = N 1° 32' 09.65" W W
Ahead = N 18° 49' 20.10" E E
Chord Bear = N 8° 38' 35.23" E E

Course from PT PRSEBLNTRDET_1 to PC PRSEBLNTRDET_4 N 18° 49' 20.10" E Dist 243.4936 243.4936

Curve Data
———
Curve PRSEBLNTRDET_4
P.I. Station 3+48.85 N 146,993.4701 E 2,823,704.6021
Delta = 13° 21' 46.62" (LT) (LT)
Degree = 25° 01' 11.97" 11.97"
Tangent = 26.8263
Length = 53.4091
Radius = 229.0000
External = 1.5659
Long Chord = 53.2881
Mid. Ord. = 1.5553
P.C. Station 3+22.02 N 146,968.0784 E 2,823,695.9470
P.T. Station 3+75.43 N 147,020.1746 E 2,823,707.1543
C.C. N 147,041.9614 E 2,823,479.1930
Back = N 18° 49' 20.10" E E
Ahead = N 5° 27' 33.47" E E
Chord Bear = N 12° 08' 26.79" E E

Ending chain PRSEBLNTRDET description

NE BLANCHARD TEMPORARY RAMP DETOUR ALIGNMENT

Chain PRNEBLNTRDET contains:
CUR PRNEBLNTRDET_1 CUR PRNEBLNTRDET_4

Beginning chain PRNEBLNTRDET description
Feature: Alignment 7 L

Curve Data
———
Curve PRNEBLNTRDET_1
P.I. Station 0+28.70 N 148,890.0016 E 2,823,602.6611
Delta = 14° 17' 06.55" (LT) (LT)
Degree = 25° 01' 11.97" 11.97"
Tangent = 28.6963
Length = 57.0950
Radius = 229.0000
External = 1.7910
Long Chord = 56.9472
Mid. Ord. = 1.7771
P.C. Station 0+00.00 N 148,861.5951 E 2,823,606.7293
P.T. Station 0+57.09 N 148,916.5259 E 2,823,591.7095
C.C. N 148,829.1303 E 2,823,380.0423
Back = N 8° 09' 00.55" W W
Ahead = N 22° 26' 07.10" W W
Chord Bear = N 15° 17' 33.83" W W

Course from PT PRNEBLNTRDET_1 to PC PRNEBLNTRDET_4 N 22° 26' 07.10" W Dist 261.0370 261.0370

Curve Data
———
Curve PRNEBLNTRDET_4
P.I. Station 3+53.79 N 149,190.7618 E 2,823,478.4799
Delta = 18° 19' 47.21" (RT) (RT)
Degree = 25° 55' 32.49" 32.49"
Tangent = 35.6552
Length = 70.7012
Radius = 221.0000
External = 2.8578
Long Chord = 70.4001
Mid. Ord. = 2.8213
P.C. Station 3+18.13 N 149,157.8053 E 2,823,492.0873
P.T. Station 3+88.83 N 149,226.3255 E 2,823,475.9272
C.C. N 149,242.1477 E 2,823,696.3601
Back = N 22° 26' 07.10" W W
Ahead = N 4° 06' 19.89" W W
Chord Bear = N 13° 16' 13.49" W W

Ending chain PRNEBLNTRDET description

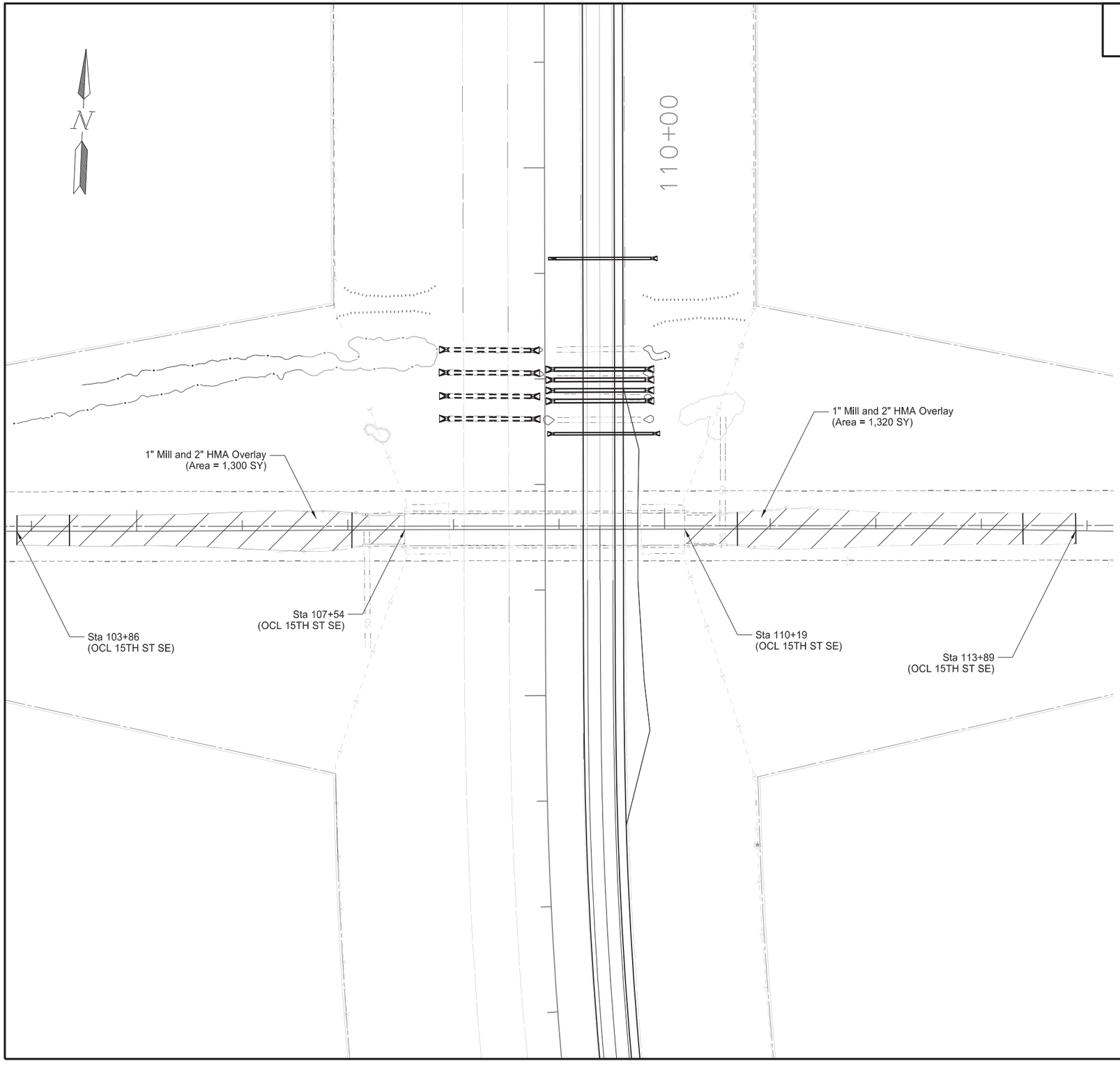
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Temporary Ramp Detour Alignment Descriptions

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	1

SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	0050	**TACK COAT**		
		Sta 103+86 to Sta 107+54 (OCL_15TH_ST_SE)	GAL	65
		Sta 110+19 to Sta 113+89 (OCL_15TH_ST_SE)	GAL	66
411	0100	**MILLING PAVEMENT SURFACE**		
		Sta 103+86 to Sta 107+54 (OCL_15TH_ST_SE)	TON	84
		Sta 110+19 to Sta 113+89 (OCL_15TH_ST_SE)	TON	85
430	0042	**SUPERPAVE FAA 42**		
		Sta 103+86 to Sta 107+54 (OCL_15TH_ST_SE)	TON	149
		Sta 110+19 to Sta 113+89 (OCL_15TH_ST_SE)	TON	151
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 103+86 to Sta 107+54 (OCL_15TH_ST_SE)	TON	9
		Sta 110+19 to Sta 113+89 (OCL_15TH_ST_SE)	TON	9



REGISTERED PROFESSIONAL ENGINEER
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PE-10948
DATE
08/25/20
NORTH DAKOTA

Hunter Separation Mill & Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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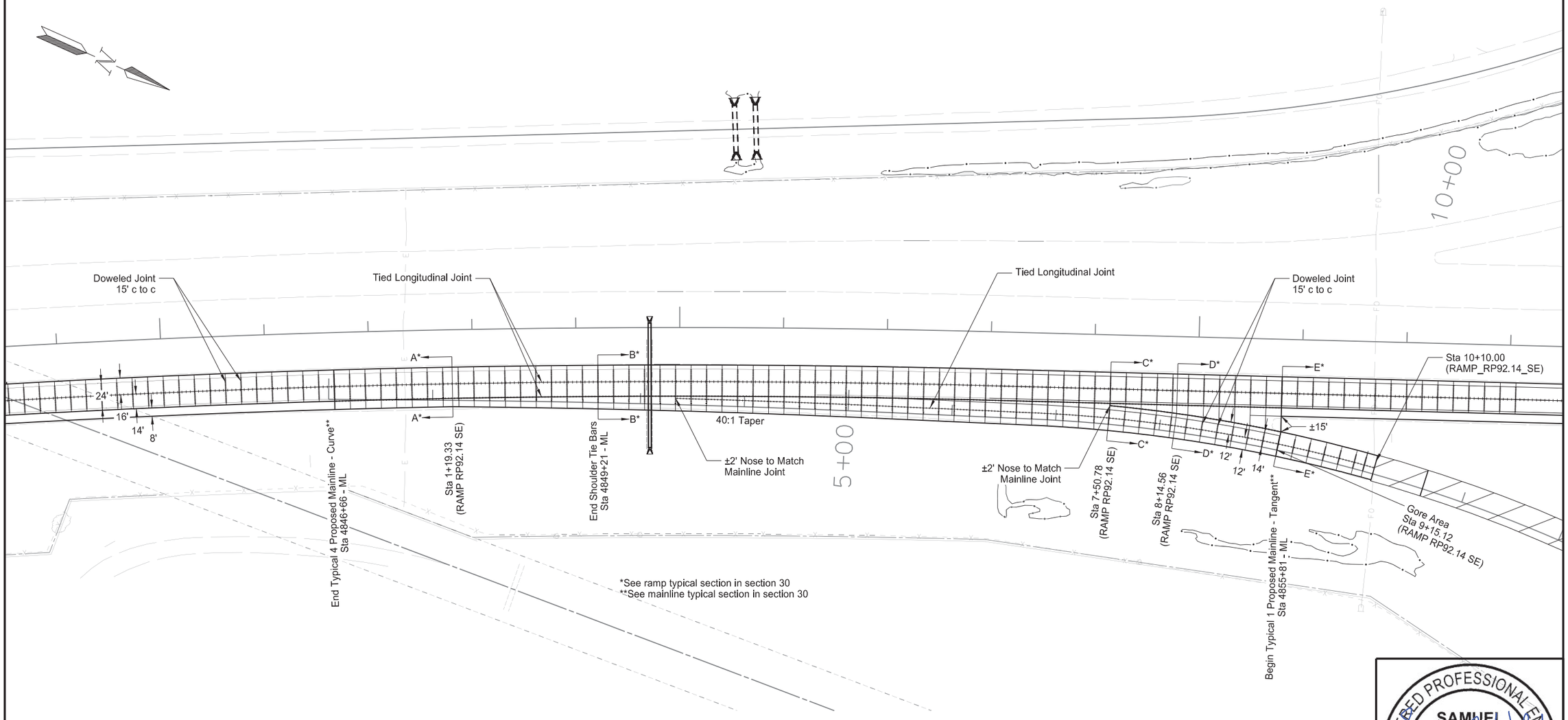
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+06 to Sta 10+10 (RAMP_RP92.14_SE)	CY	1408
401	0060	**PRIME COAT**		
		Sta 0+06 to Sta 10+10 (RAMP_RP92.14_SE)	GAL	1305
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 0+06 to Sta 10+10 (RAMP_RP92.14_SE)	TON	31
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 0+06 to Sta 10+10 (RAMP_RP92.14_SE)	SY	5220
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 0+06 to Sta 10+10 (RAMP_RP92.14_SE)	SY	6505

REGISTERED PROFESSIONAL ENGINEER
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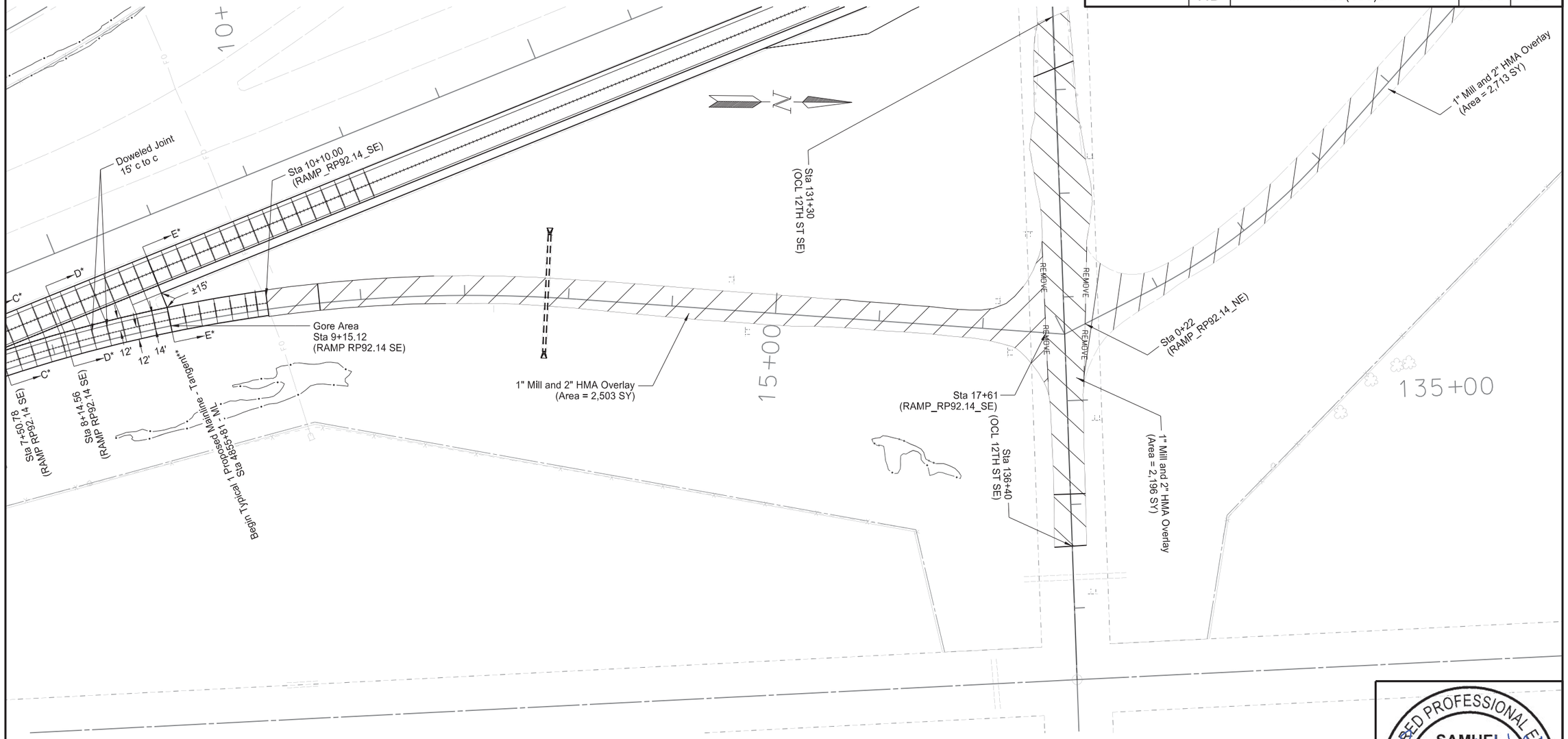
PE-10948
DATE
08/25/20
NORTH DAKOTA

Grandin Interchange SE Ramp

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	3



GRANDIN INTERCHANGE

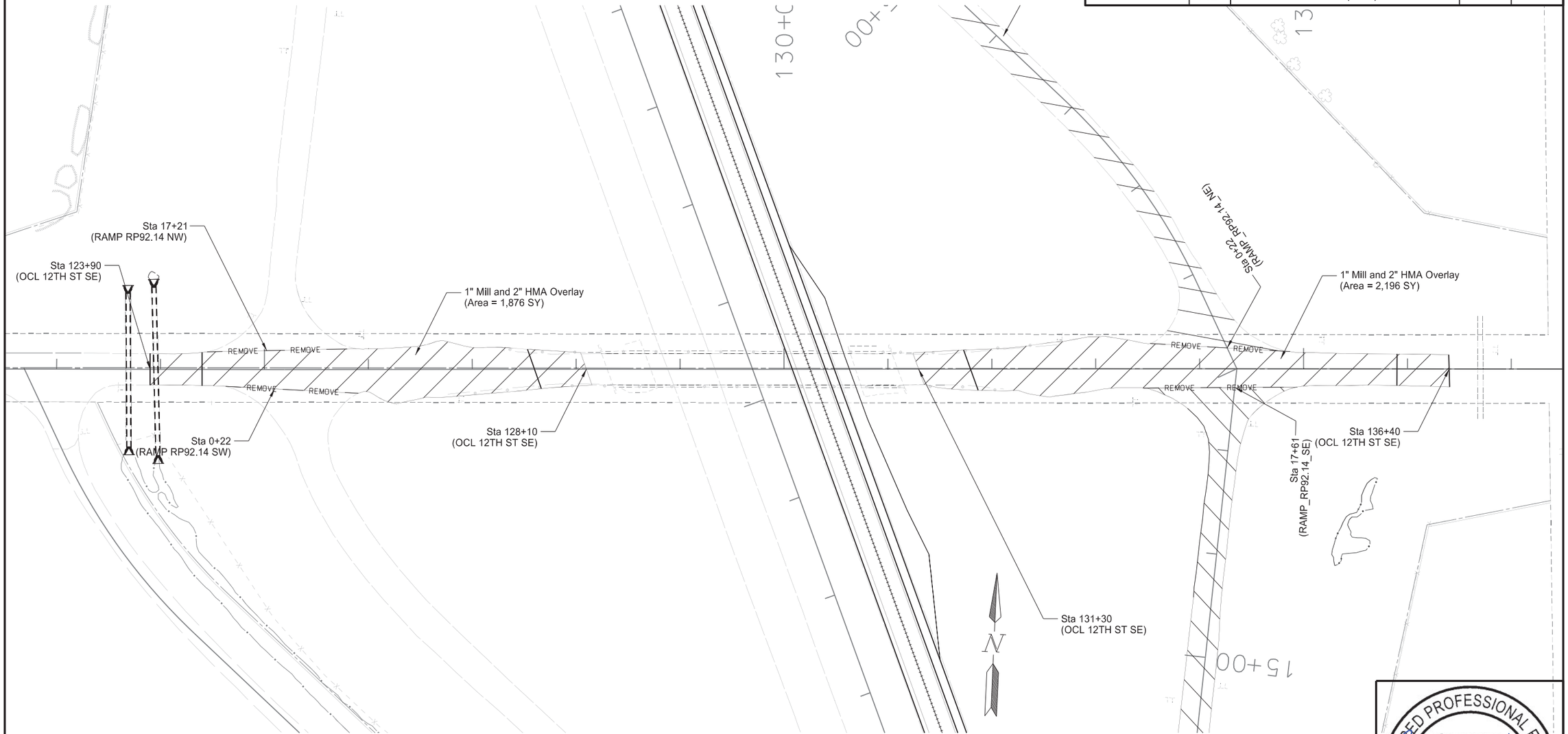
SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	0050	**TACK COAT**		
		Sta 9+15 to Sta 17+61 (RAMP_RP92.14_SE)	GAL	139
411	0100	**MILLING PAVEMENT SURFACE**		
		Sta 9+15 to Sta 17+61 (RAMP_RP92.14_SE)	TON	159
430	0042	**SUPERPAVE FAA 42**		
		Sta 9+15 to Sta 17+61 (RAMP_RP92.14_SE)	TON	311
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 9+15 to Sta 17+61 (RAMP_RP92.14_SE)	TON	18

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Grandin Interchange SE Ramp
Mill and Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	4



GRANDIN INTERCHANGE

SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	**0050**	**TACK COAT**		
		Sta 123+90 to Sta 128+10 (OCL_12TH_ST_SE)	GAL	94
		Sta 131+30 to Sta 136+40 (OCL_12TH_ST_SE)	GAL	110
411	**0100**	**MILLING PAVEMENT SURFACE**		
		Sta 123+90 to Sta 128+10 (OCL_12TH_ST_SE)	TON	115
		Sta 131+30 to Sta 136+40 (OCL_12TH_ST_SE)	TON	133
430	**0042**	**SUPERPAVE FAA 42**		
		Sta 123+90 to Sta 128+10 (OCL_12TH_ST_SE)	TON	211
		Sta 131+30 to Sta 136+40 (OCL_12TH_ST_SE)	TON	247
430	**5803**	**PG 58S-28 ASPHALT CEMENT**		
		Sta 123+90 to Sta 128+10 (OCL_12TH_ST_SE)	TON	12
		Sta 131+30 to Sta 136+40 (OCL_12TH_ST_SE)	TON	15

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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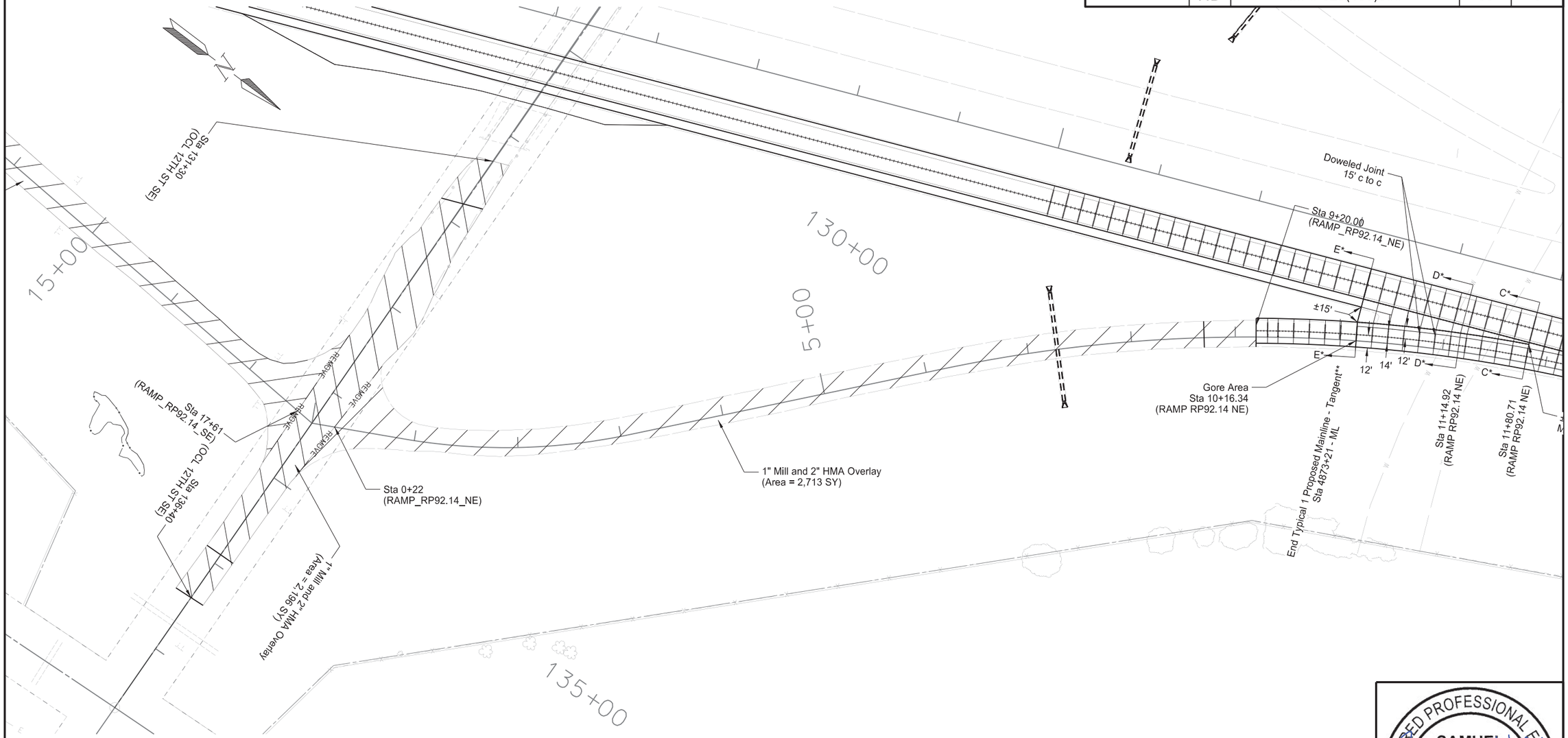
DATE
08/25/20
NORTH DAKOTA

Grandin Interchange Crossroad
Mill and Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	5



GRANDIN INTERCHANGE

SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	0050	**TACK COAT**		
		Sta 0+22 to Sta 10+16 (RAMP_RP92.14_NE)	GAL	150
411	0100	**MILLING PAVEMENT SURFACE**		
		Sta 0+22 to Sta 10+16 (RAMP_RP92.14_NE)	TON	172
430	0042	**SUPERPAVE FAA 42**		
		Sta 0+22 to Sta 10+16 (RAMP_RP92.14_NE)	TON	336
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 0+22 to Sta 10+16 (RAMP_RP92.14_NE)	TON	20

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
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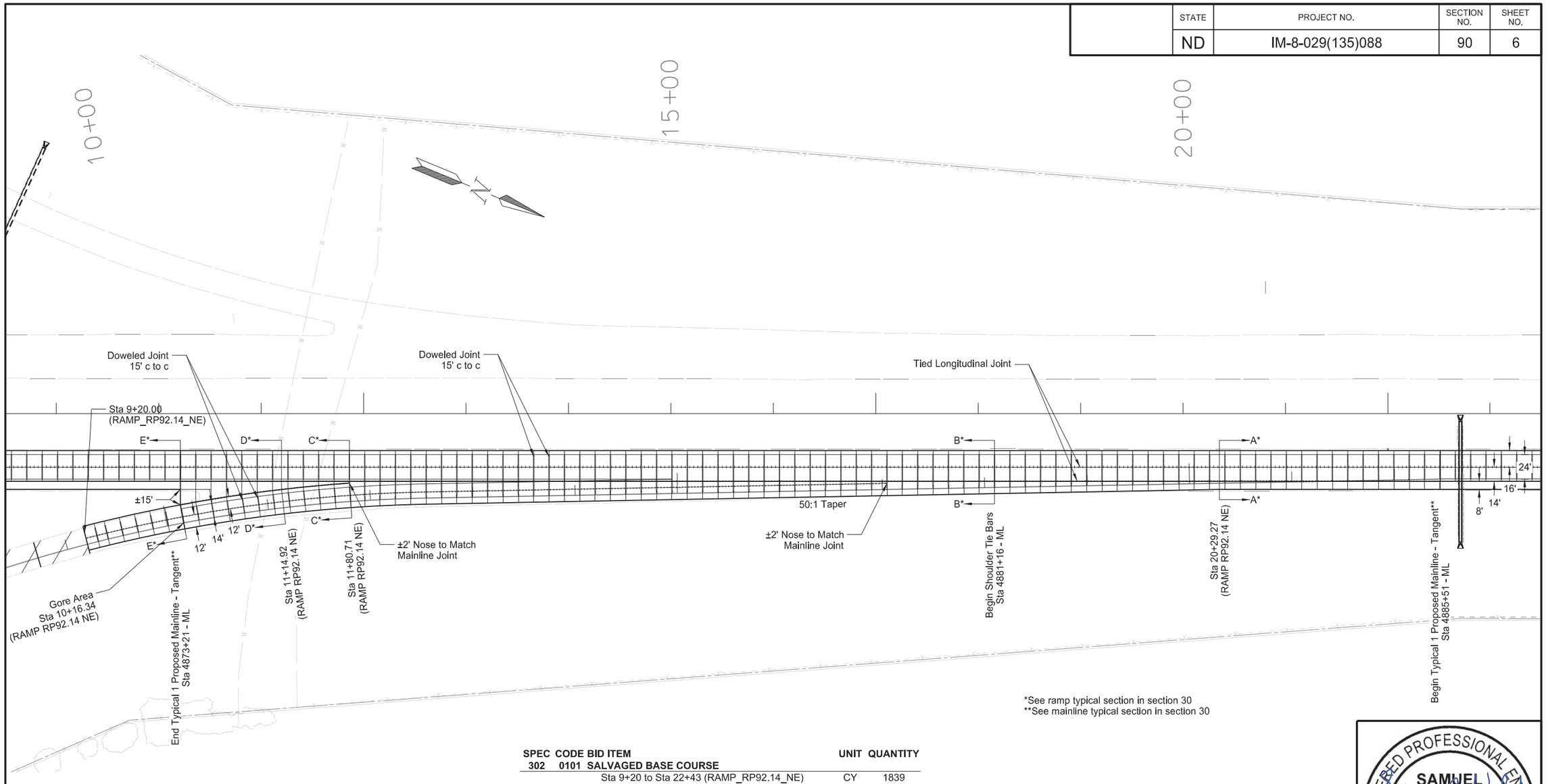
DATE
08/25/20
NORTH DAKOTA

Grandin Interchange NE Ramp
Mill and Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	90	6



*See ramp typical section in section 30
**See mainline typical section in section 30

SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 9+20 to Sta 22+43 (RAMP_RP92.14_NE)	CY	1839
401	0060	**PRIME COAT**		
		Sta 9+20 to Sta 22+43 (RAMP_RP92.14_NE)	GAL	1674
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 9+20 to Sta 22+43 (RAMP_RP92.14_NE)	TON	40
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 9+20 to Sta 22+43 (RAMP_RP92.14_NE)	SY	6696
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 9+20 to Sta 22+43 (RAMP_RP92.14_NE)	SY	8326

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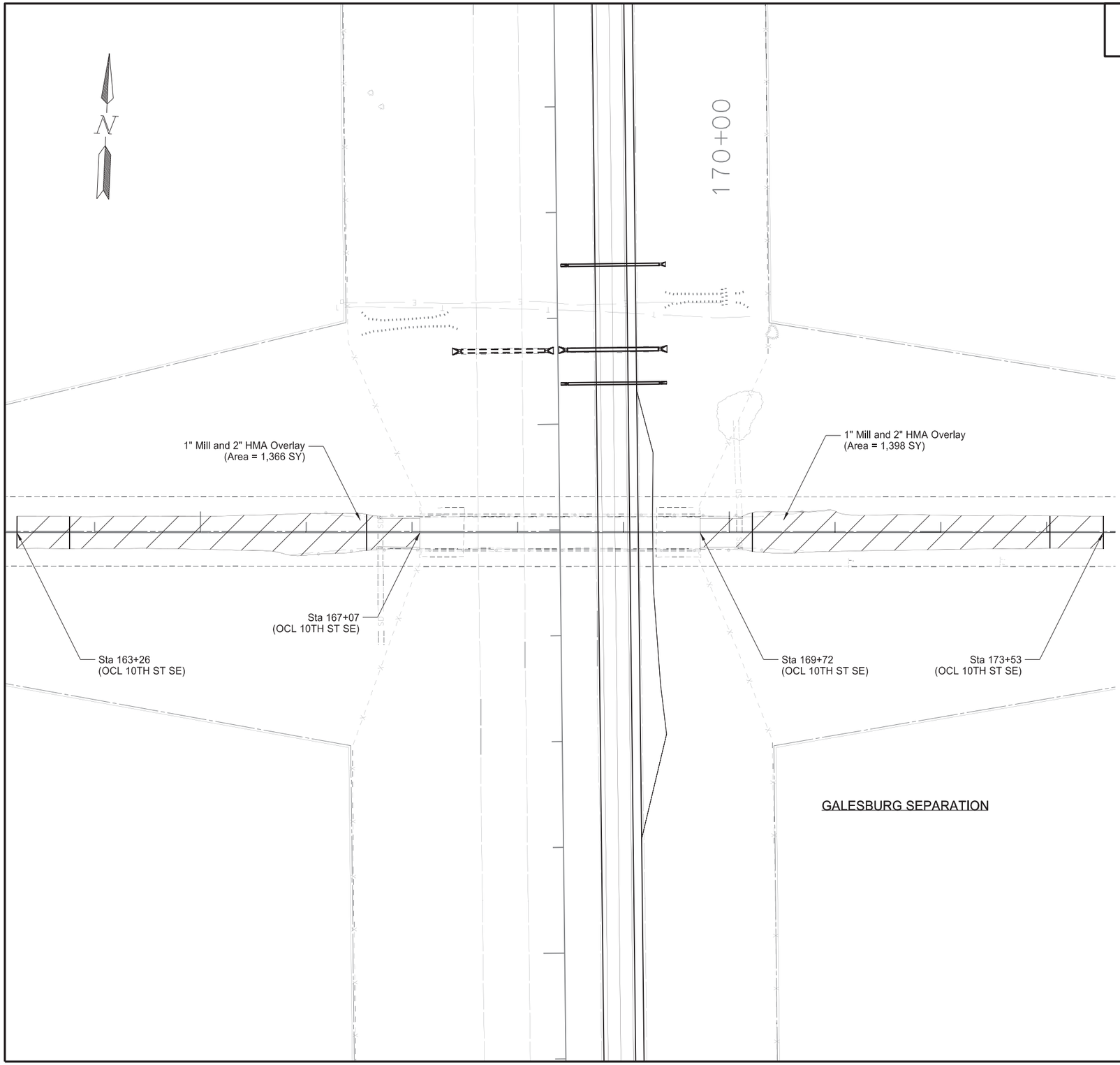
Grandin Interchange NE Ramp Taper

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	7

SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	**0050**	**TACK COAT**		
		Sta 163+26 to Sta 167+07 (OCL_10TH_ST_SE)	GAL	68
		Sta 169+72 to Sta 173+53 (OCL_10TH_ST_SE)	GAL	70
411	**0100**	**MILLING PAVEMENT SURFACE**		
		Sta 163+26 to Sta 167+07 (OCL_10TH_ST_SE)	TON	88
		Sta 169+72 to Sta 173+53 (OCL_10TH_ST_SE)	TON	89
430	**0042**	**SUPERPAVE FAA 42**		
		Sta 163+26 to Sta 167+07 (OCL_10TH_ST_SE)	TON	156
		Sta 169+72 to Sta 173+53 (OCL_10TH_ST_SE)	TON	160
430	**5803**	**PG 58S-28 ASPHALT CEMENT**		
		Sta 163+26 to Sta 167+07 (OCL_10TH_ST_SE)	TON	9
		Sta 169+72 to Sta 173+53 (OCL_10TH_ST_SE)	TON	9



GALESBURG SEPARATION

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Galesburg Separation Mill and Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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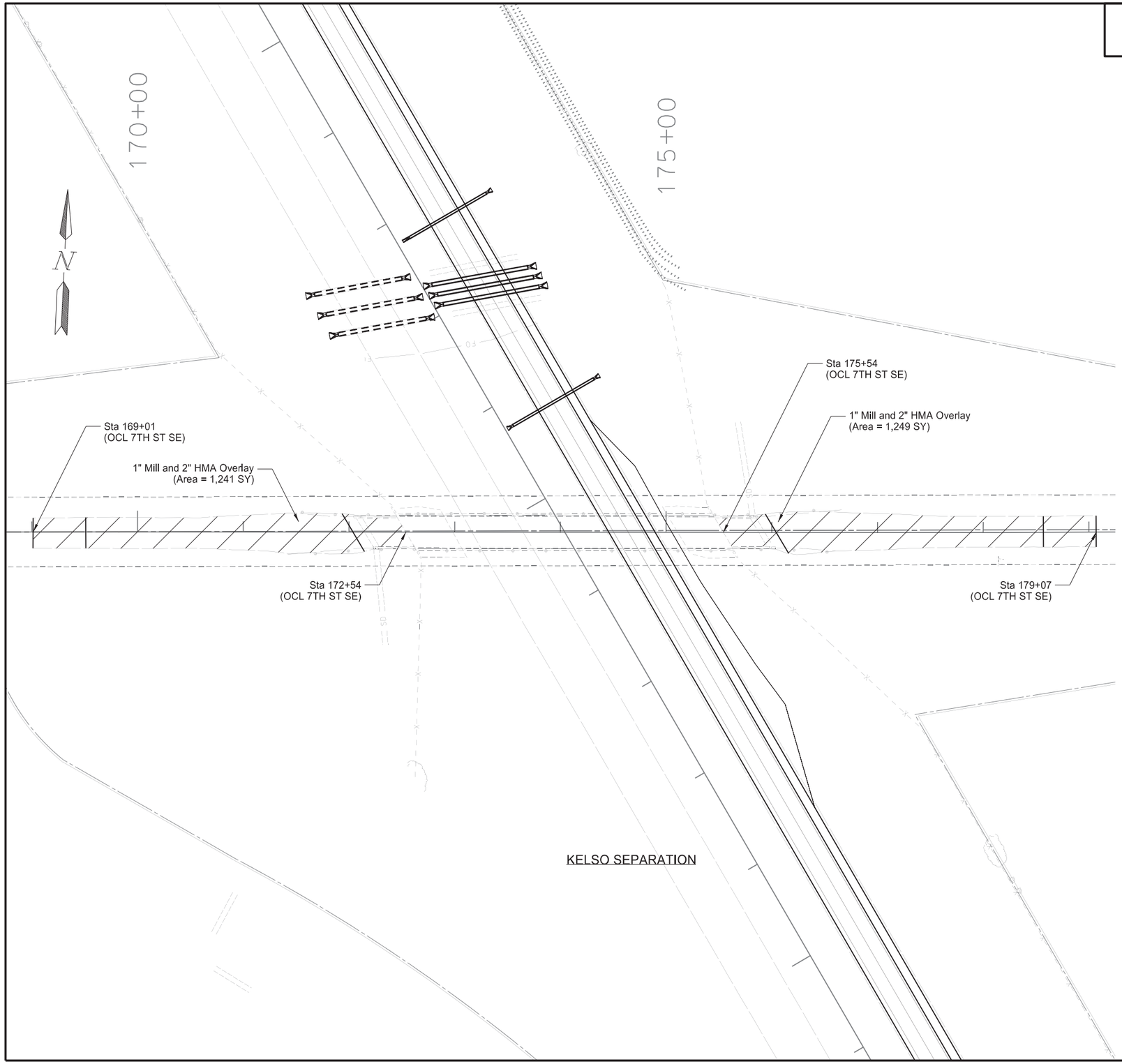
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	8

SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	**0050**	**TACK COAT**		
		Sta 169+01 to Sta 172+54 (OCL_7TH_ST_SE)	GAL	62
		Sta 175+54 to Sta 179+07 (OCL_7TH_ST_SE)	GAL	62
411	**0100**	**MILLING PAVEMENT SURFACE**		
		Sta 169+01 to Sta 172+54 (OCL_7TH_ST_SE)	TON	80
		Sta 175+54 to Sta 179+07 (OCL_7TH_ST_SE)	TON	81
430	**0042**	**SUPERPAVE FAA 42**		
		Sta 169+01 to Sta 172+54 (OCL_7TH_ST_SE)	TON	142
		Sta 175+54 to Sta 179+07 (OCL_7TH_ST_SE)	TON	143
430	**5803**	**PG 58S-28 ASPHALT CEMENT**		
		Sta 169+01 to Sta 172+54 (OCL_7TH_ST_SE)	TON	8
		Sta 175+54 to Sta 179+07 (OCL_7TH_ST_SE)	TON	8



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SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Kelso Separation Mill and Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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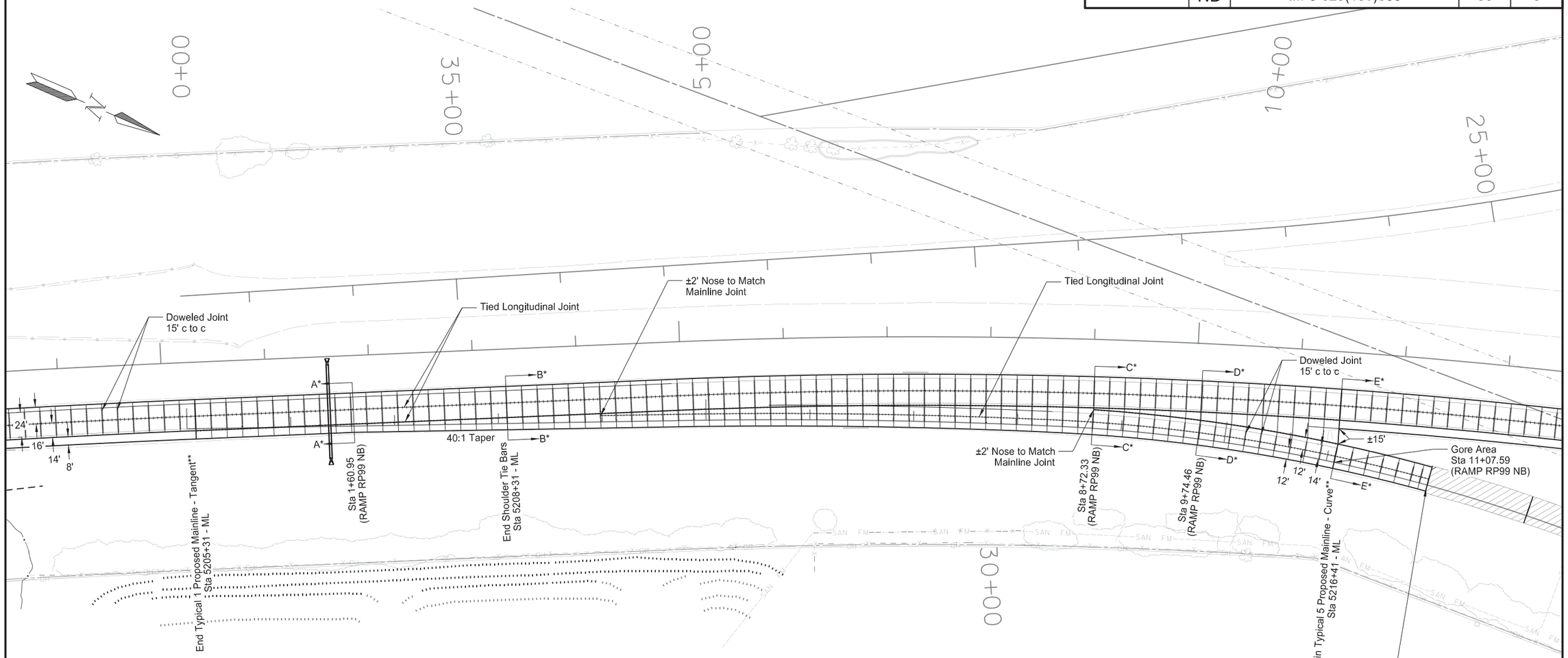
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	9



*See ramp typical section in section 30
**See mainline typical section in section 30

SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+09 to Sta 12+00 (RAMP_RP99_NB)	CY	1684
401	0060	**PRIME COAT**		
		Sta 0+09 to Sta 12+00 (RAMP_RP99_NB)	GAL	1575
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 0+09 to Sta 12+00 (RAMP_RP99_NB)	TON	38
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 0+09 to Sta 12+00 (RAMP_RP99_NB)	SY	6299
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 0+09 to Sta 12+00 (RAMP_RP99_NB)	SY	7780

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Elm River Rest Area SE Ramp Taper

PCC Pavement Reconstruction
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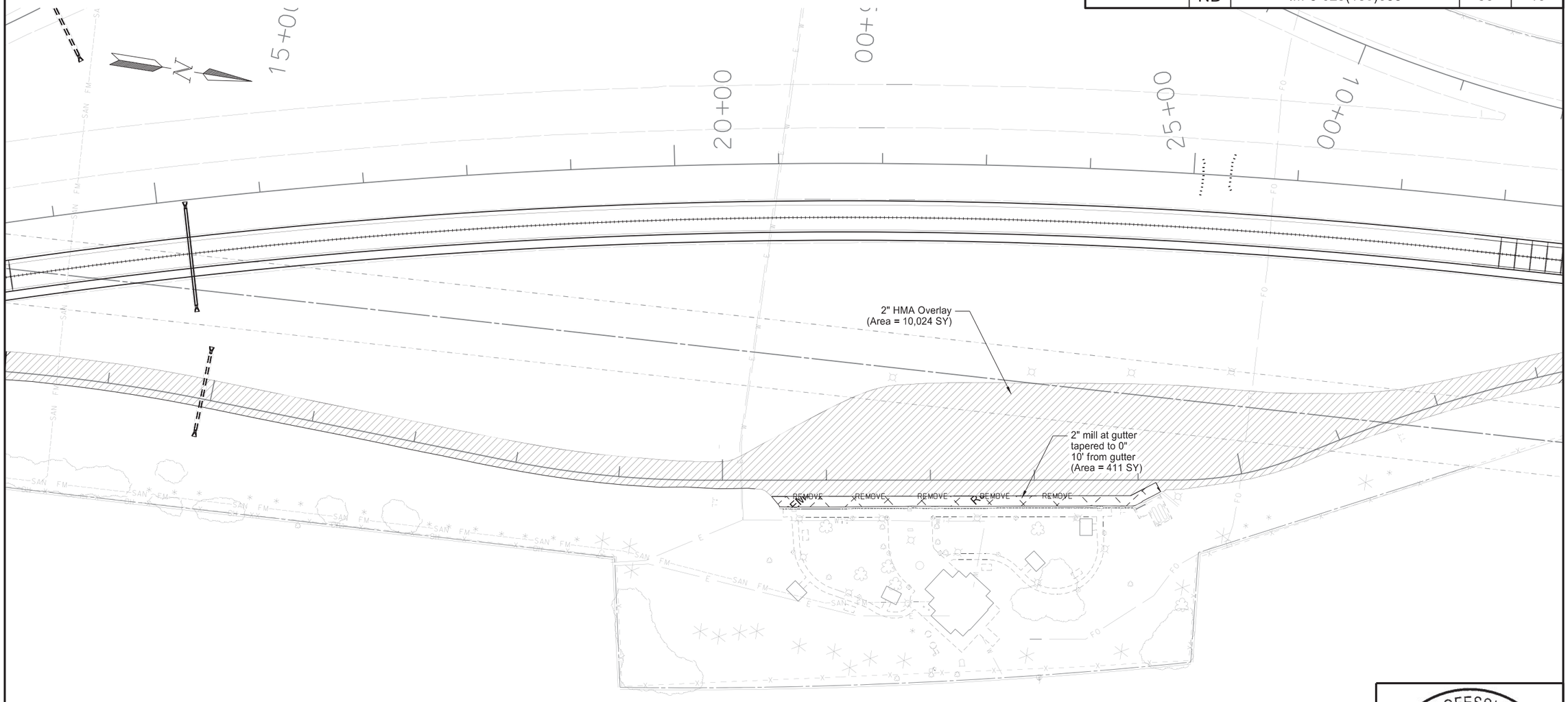
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	10



SPEC	CODE	BID ITEM	UNIT	QUANTITY
401	0050	**TACK COAT**		
		Sta 11+08 to Sta 30+32 (RAMP_RP99_NB)	GAL	501
411	0100	**MILLING PAVEMENT SURFACE**		
		Sta 11+08 to Sta 12+08 (RAMP_RP99_NB)	TON	17
		Sta 20+55 to Sta 24+23 (RAMP_RP99_NB)	TON	23
		Sta 29+32 to Sta 30+32 (RAMP_RP99_NB)	TON	17
430	0042	**SUPERPAVE FAA 42**		
		Sta 11+08 to Sta 30+32 (RAMP_RP99_NB)	TON	1133
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 11+08 to Sta 30+32 (RAMP_RP99_NB)	TON	67

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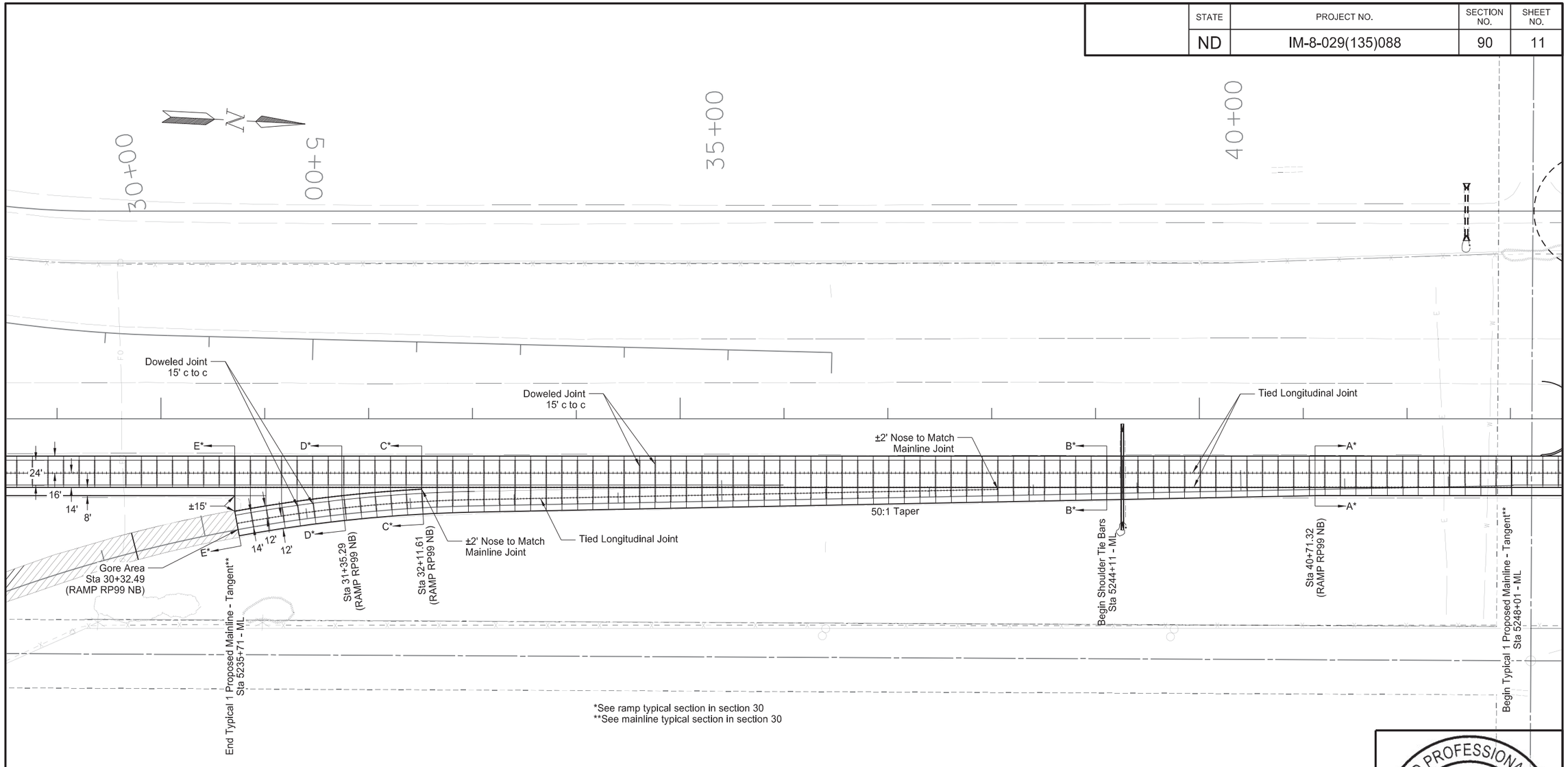
08/25/20
NORTH DAKOTA

Elm River Rest Area HMA Overlay

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	90	11



*See ramp typical section in section 30
**See mainline typical section in section 30

SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 30+32 to Sta 42+61 (RAMP_RP99_NB)	CY	1695
401	0060	**PRIME COAT**		
		Sta 30+32 to Sta 42+61 (RAMP_RP99_NB)	GAL	1631
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 30+32 to Sta 42+61 (RAMP_RP99_NB)	TON	39
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 30+32 to Sta 42+61 (RAMP_RP99_NB)	SY	6525
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 30+32 to Sta 42+61 (RAMP_RP99_NB)	SY	7836

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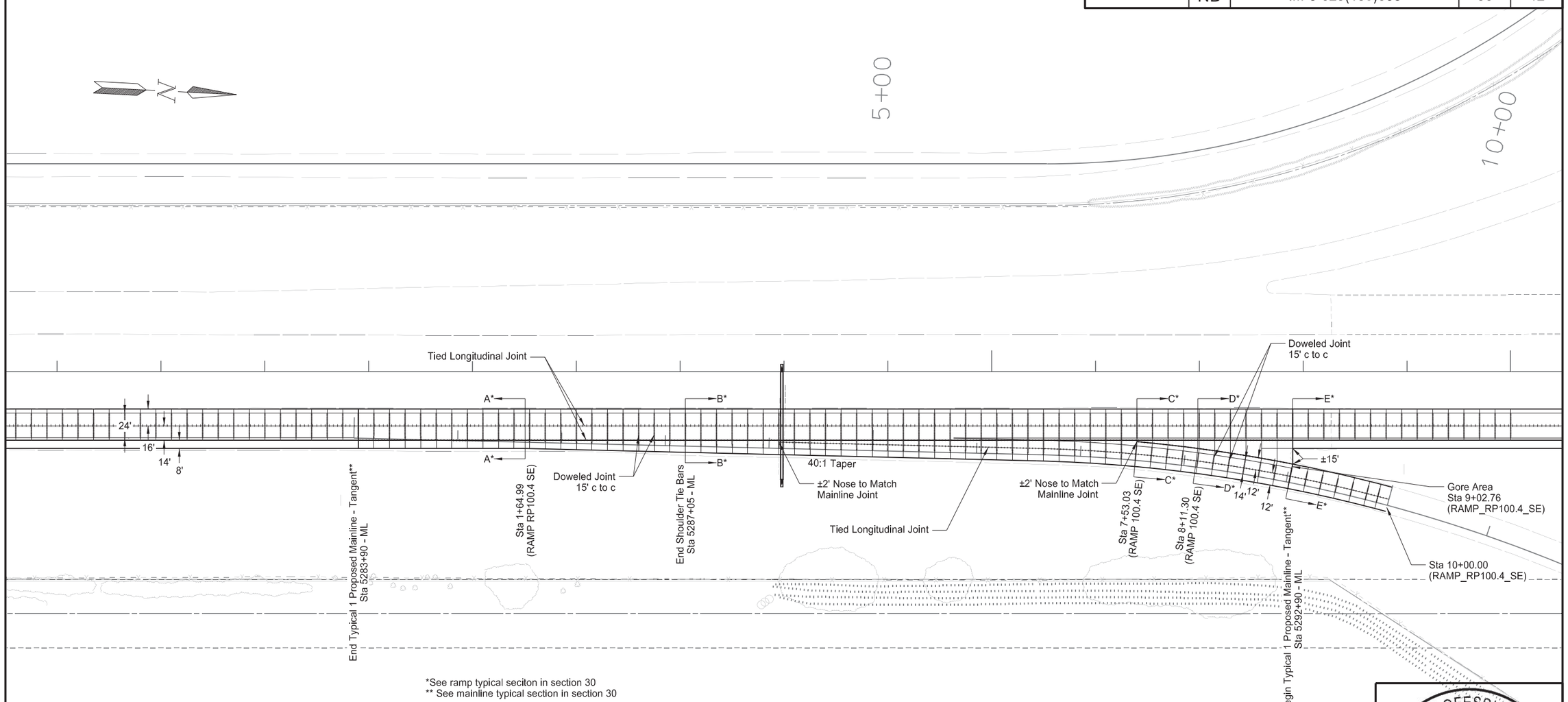
Elm River Rest Area NE Ramp Taper

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	12



*See ramp typical seciton in section 30
** See mainline typical section in section 30

SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+04 to Sta 10+00 (RAMP_RP100.4_SE)	CY	1355
401	0060	**PRIME COAT**		
		Sta 0+04 to Sta 10+00 (RAMP_RP100.4_SE)	GAL	1247
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 0+04 to Sta 10+00 (RAMP_RP100.4_SE)	TON	30
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 0+04 to Sta 10+00 (RAMP_RP100.4_SE)	SY	4987
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 0+04 to Sta 10+00 (RAMP_RP100.4_SE)	SY	6267

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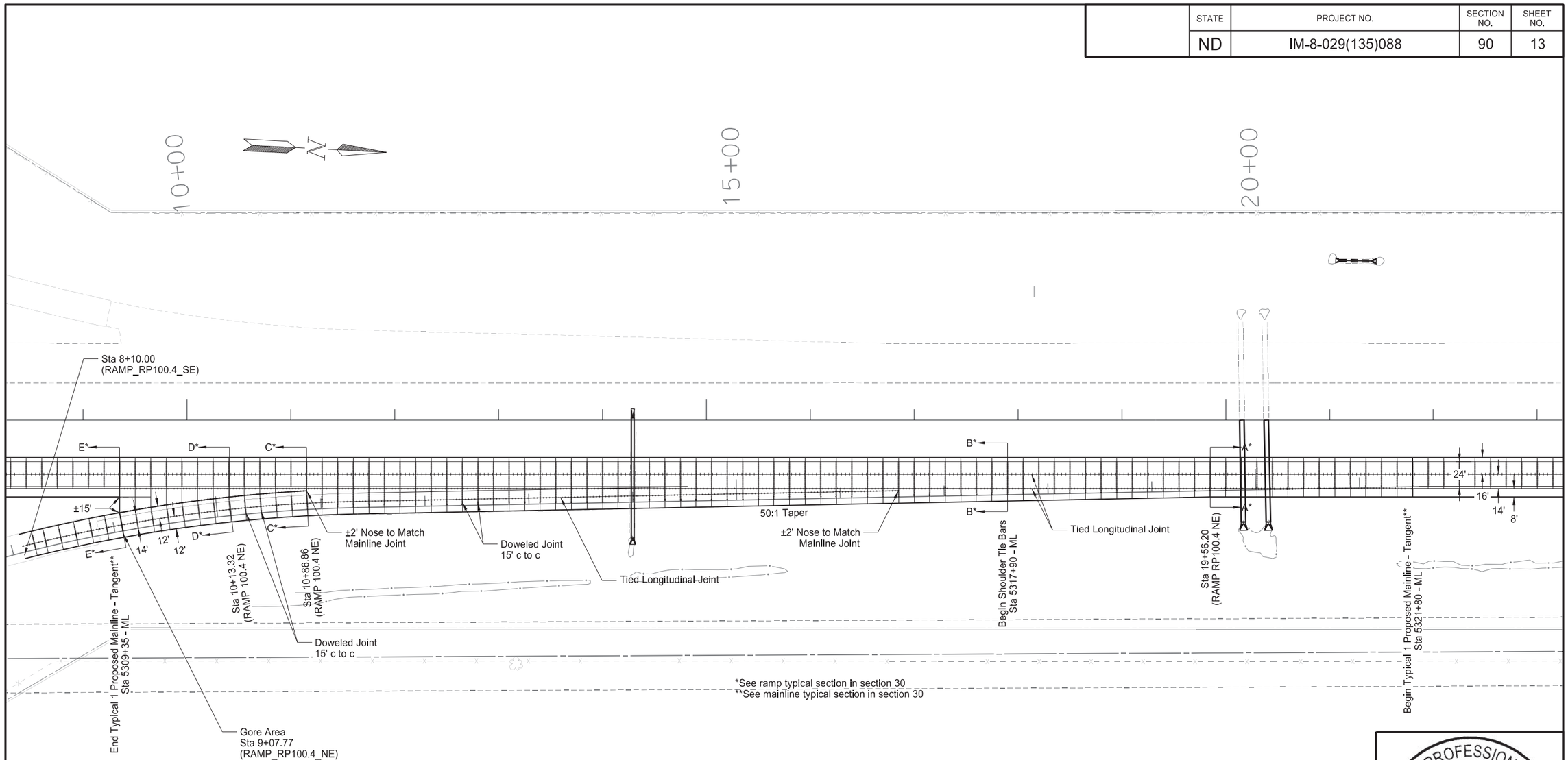
Blanchard Interchange SE Ramp Taper

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	13



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 8+10 to Sta 21+51 (RAMP_RP100.4_NE)	CY	1863
401	0060	**PRIME COAT**		
		Sta 8+10 to Sta 21+51 (RAMP_RP100.4_NE)	GAL	1737
401	0160	**BLOTTER MATERIAL CL 44**		
		Sta 8+10 to Sta 21+51 (RAMP_RP100.4_NE)	TON	42
550	0302	**8.5IN NON-REINF CONCRETE PVMT CL AE - DOWELED**		
		Sta 8+10 to Sta 21+51 (RAMP_RP100.4_NE)	SY	6949
709	0100	**GEOSYNTHETIC MATERIAL - TYPE G**		
		Sta 8+10 to Sta 21+51 (RAMP_RP100.4_NE)	SY	8611

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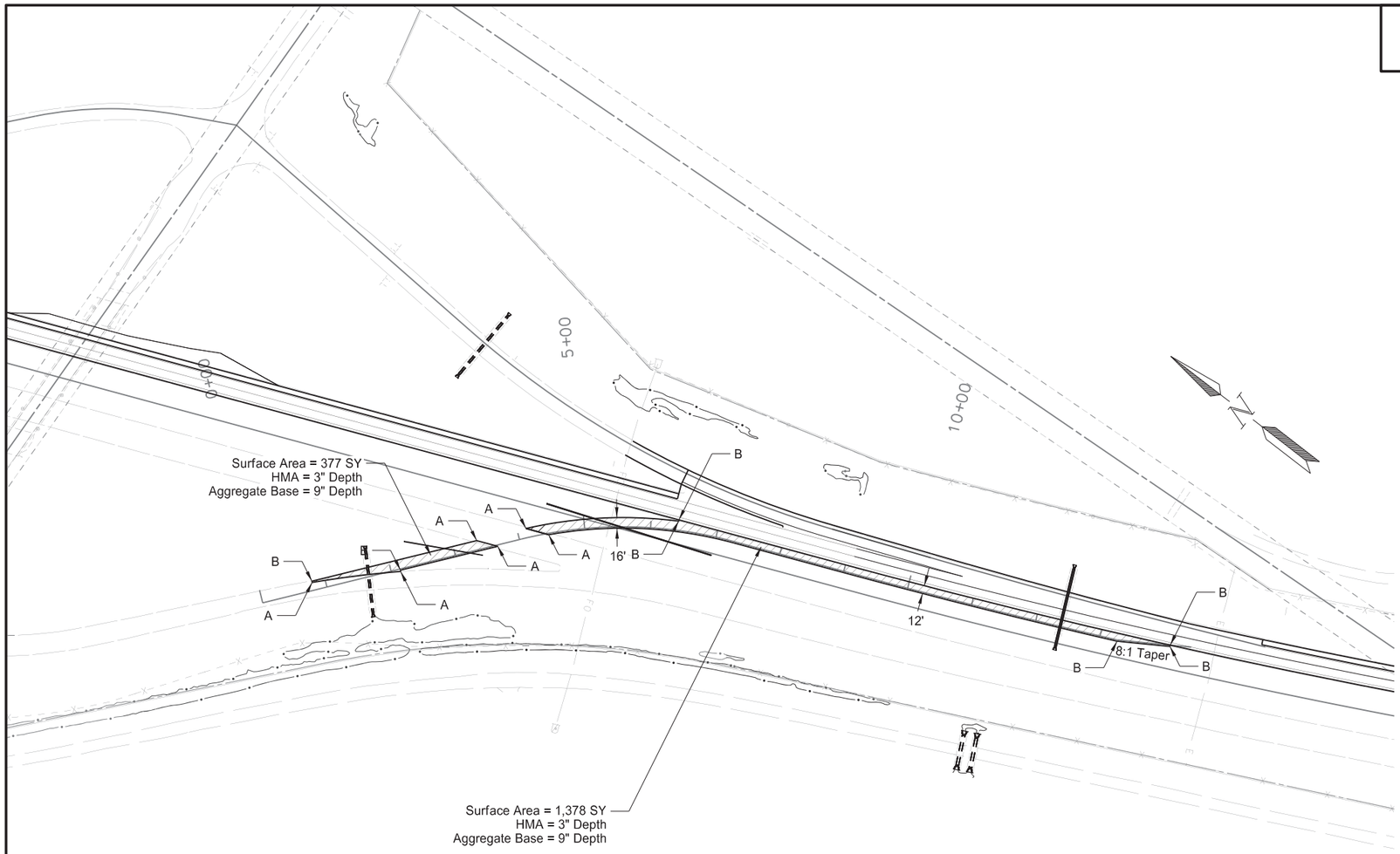
NORTH DAKOTA

Blanchard Interchange NE Ramp Taper

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	14



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+80 to Sta 3+66 (9 inch depth) Sta 4+13 to Sta 14+07 (9 inch depth)	CY	553
401	0050	**TACK COAT**		
		Sta 0+80 to Sta 3+66	GAL	38
		Sta 4+13 to Sta 14+07	GAL	138
401	0060	**PRIME COAT**		
		Sta 0+80 to Sta 3+66	GAL	95
		Sta 4+13 to Sta 14+07	GAL	345
430	0042	**SUPERPAVE FAA 42**		
		Sta 0+80 to Sta 3+66 (3 inch depth) Sta 4+13 to Sta 14+07 (3 inch depth)	TON	307
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 0+80 to Sta 3+66 Sta 4+13 to Sta 14+07	TON	19
709	0100	**GEOSYNTHETIC MATERIAL TYPE G**		
		Sta 0+80 to Sta 3+66	SY	538
		Sta 4+13 to Sta 14+07	SY	1,934

Note: Stationing is based off of RAMP_GSW_ENTER Alignment.
Note: SBC, Superpave, and AC totals are for the entire temporary ramp connection.

A - VERTICAL CUT LOCATIONS
(TO REMOVE EXISTING ASPHALT SLOUGH)

Chain	From Stationing & Offset	To Stationing & Offset	Length (ft)
RAMP_RP92.14_SW	6+65 - 16' Lt	7+99 - 16' Lt	134
SCL_HWY029	4858+63 - 74' Lt	4858+25 - 74' Lt	38
SCL_HWY029	4857+91 - 37' Lt	4857+50 - 37' Lt	41

B - NEW PAVEMENT BREAK POINTS

Chain	Stationing	Offset
RAMP_GSW_ENTE	0+80	14' Lt
RAMP_GSW_ENTE	2+14	2' Rt
RAMP_GSW_ENTE	6+41	14' Lt
RAMP_GSW_ENTE	6+41	16' Lt
RAMP_GSW_ENTE	13+27	2' Rt
RAMP_GSW_ENTE	14+07	2' Rt
RAMP_GSW_ENTE	14+07	0'

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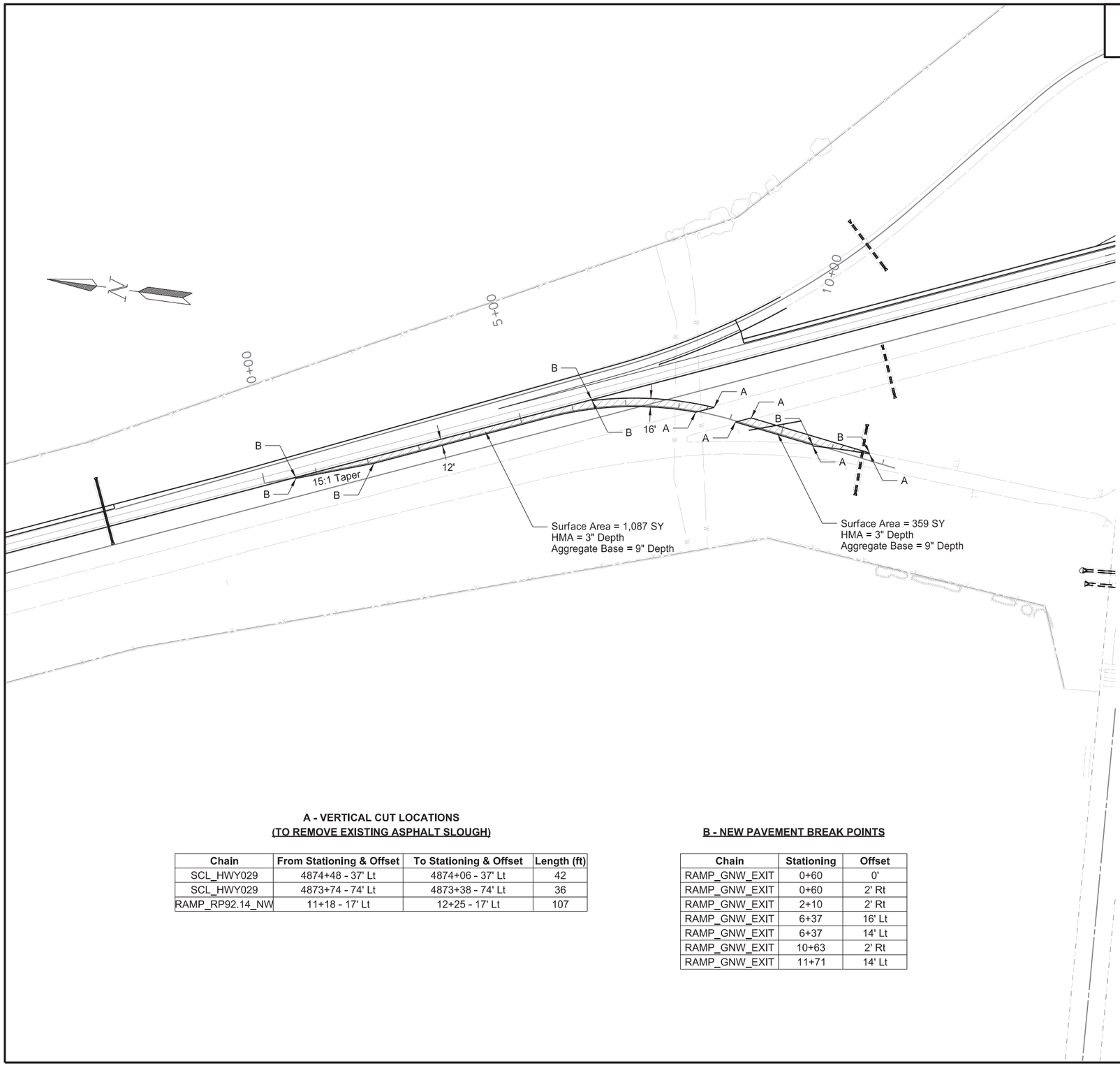
Grandin Interchange SW Ramp Connection

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	15



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+60 to Sta 8+65 (9 inch depth) Sta 9+11 to Sta 11+71 (9 inch depth)	CY	472
401	0050	**TACK COAT**		
		Sta 0+60 to Sta 8+65	GAL	109
		Sta 9+11 to Sta 11+71	GAL	36
401	0060	**PRIME COAT**		
		Sta 0+60 to Sta 8+65	GAL	272
		Sta 9+11 to Sta 11+71	GAL	90
430	0042	**SUPERPAVE FAA 42**		
		Sta 0+60 to Sta 8+65 (3 inch depth) Sta 9+11 to Sta 11+71 (3 inch depth)	TON	261
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 0+60 to Sta 8+65 Sta 9+11 to Sta 11+71	TON	16
709	0100	**GEOSYNTHETIC MATERIAL TYPE G**		
		Sta 0+60 to Sta 8+65	SY	1,546
		Sta 9+11 to Sta 11+71	SY	519

Note: Stationing is based off of RAMP_GNW_EXIT Alignment.
Note: SBC, Superpave, and AC totals are for the entire temporary ramp connection.

A - VERTICAL CUT LOCATIONS
(TO REMOVE EXISTING ASPHALT SLOUGH)

Chain	From Stationing & Offset	To Stationing & Offset	Length (ft)
SCL_HWY029	4874+48 - 37' Lt	4874+06 - 37' Lt	42
SCL_HWY029	4873+74 - 74' Lt	4873+38 - 74' Lt	36
RAMP_RP92.14_NW	11+18 - 17' Lt	12+25 - 17' Lt	107

B - NEW PAVEMENT BREAK POINTS

Chain	Stationing	Offset
RAMP_GNW_EXIT	0+60	0'
RAMP_GNW_EXIT	0+60	2' Rt
RAMP_GNW_EXIT	2+10	2' Rt
RAMP_GNW_EXIT	6+37	16' Lt
RAMP_GNW_EXIT	6+37	14' Lt
RAMP_GNW_EXIT	10+63	2' Rt
RAMP_GNW_EXIT	11+71	14' Lt

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DATE
08/25/20
NORTH DAKOTA

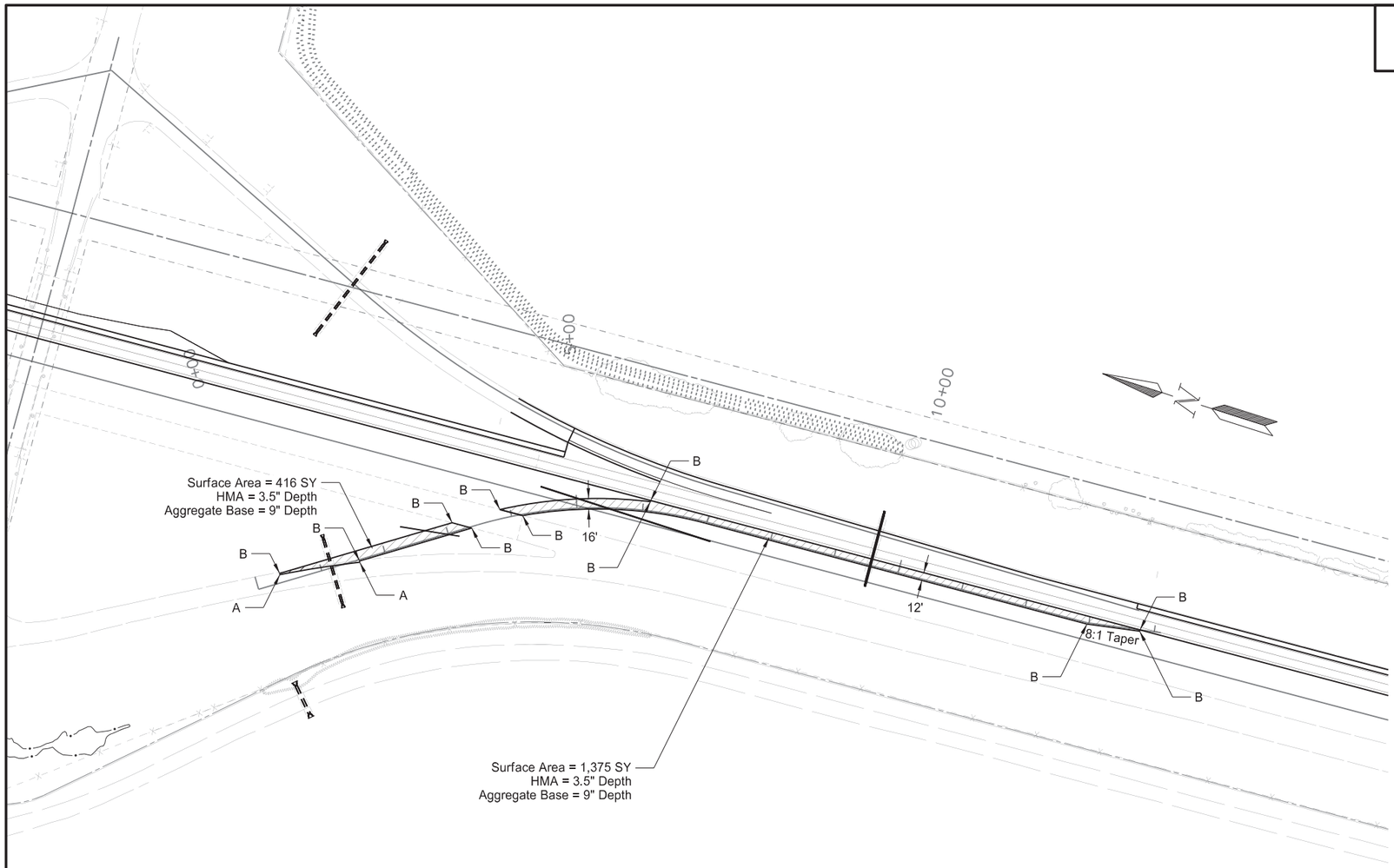
Grandin Interchange NW Ramp Connection

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	16

SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+37 to Sta 3+37 (9 inch depth) Sta 3+85 to Sta 13+78 (9 inch depth)	CY	574
401	0050	**TACK COAT**		
		Sta 0+37 to Sta 3+37	GAL	42
		Sta 3+85 to Sta 13+78	GAL	138
401	0060	**PRIME COAT**		
		Sta 0+37 to Sta 3+37	GAL	105
		Sta 3+85 to Sta 13+78	GAL	344
430	0042	**SUPERPAVE FAA 42**		
		Sta 0+37 to Sta 3+37 (3.5 inch depth) Sta 3+85 to Sta 13+78 (3.5 inch depth)	TON	370
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 0+37 to Sta 3+37 Sta 3+85 to Sta 13+78	TON	22
709	0100	**GEOSYNTHETIC MATERIAL TYPE G**		
		Sta 0+37 to Sta 3+37	SY	594
		Sta 3+85 to Sta 13+78	SY	1,953

Note: Stationing is based off of RAMP_BSW_ENTER Alignment.
Note: SBC, Superpave, and AC totals are for the entire temporary ramp connection.



A - VERTICAL CUT LOCATIONS
(TO REMOVE EXISTING ASPHALT SLOUGH)

Chain	From Stationing & Offset	To Stationing & Offset	Length (ft)
RAMP_RP100.4_SW	5+12 - 15' Lt	6+33 - 15' Lt	121

B - NEW PAVEMENT BREAK POINTS

Chain	Stationing	Offset
RAMP_BSW_ENTE	0+37	14' Lt
RAMP_BSW_ENTE	1+59	2' Rt
RAMP_BSW_ENTE	3+11	14' Lt
RAMP_BSW_ENTE	3+37	2' Rt
RAMP_BSW_ENTE	3+85	14' Lt
RAMP_BSW_ENTE	4+17	2' Rt
RAMP_BSW_ENTE	6+10	14' Lt
RAMP_BSW_ENTE	6+11	16' Lt
RAMP_BSW_ENTE	12+97	2' Rt
RAMP_BSW_ENTE	13+78	2' Rt
RAMP_BSW_ENTE	13+78	0'

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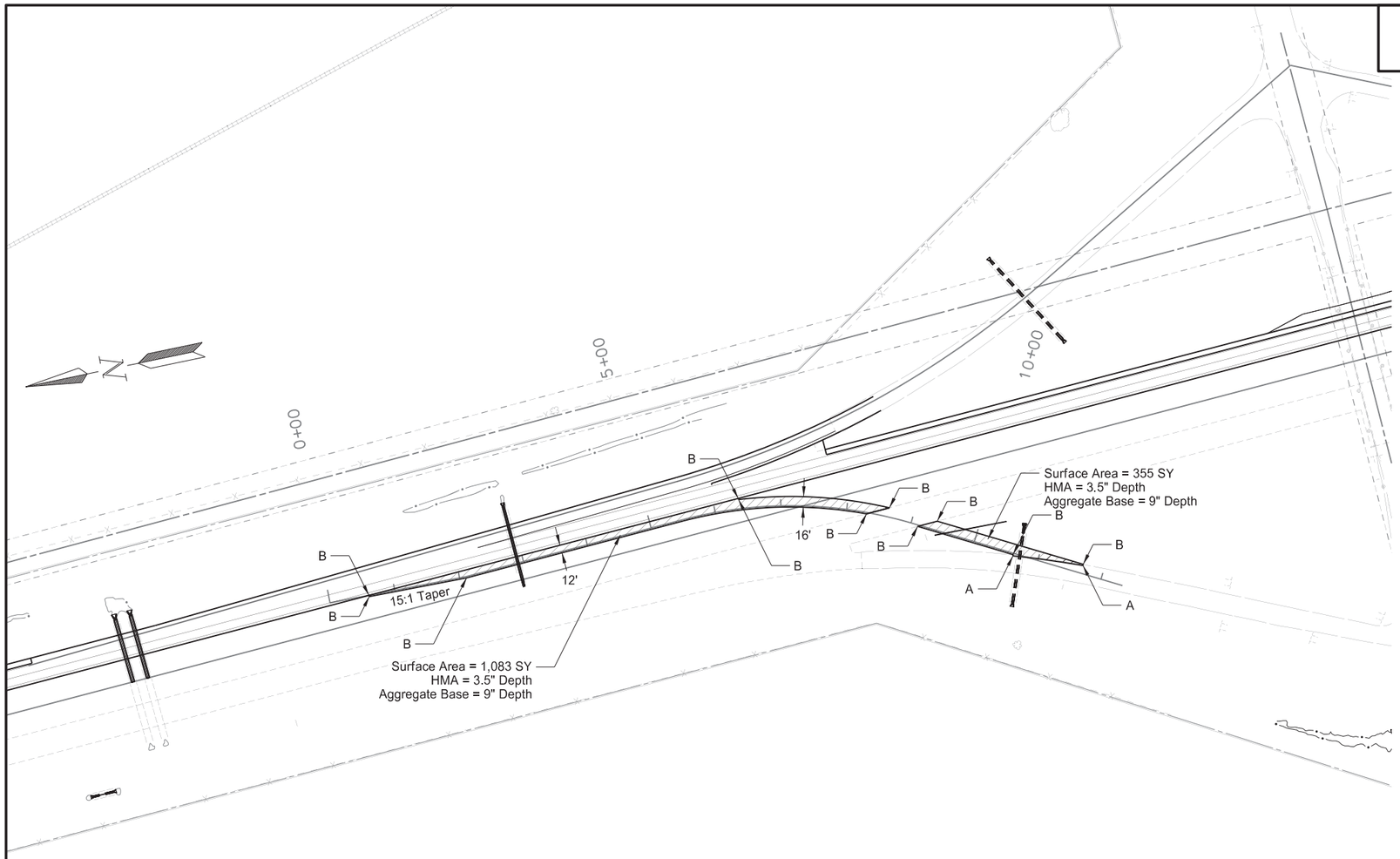
PE-10948
DATE
08/25/20
NORTH DAKOTA

Blanchard Interchange SW Ramp Connection

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	90	17



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0101	**SALVAGED BASE COURSE**		
		Sta 0+60 to Sta 8+63 (9 inch depth) Sta 9+11 to Sta 11+68 (9 inch depth)	CY	462
401	0050	**TACK COAT**		
		Sta 0+60 to Sta 8+63	GAL	109
		Sta 9+11 to Sta 11+68	GAL	36
401	0060	**PRIME COAT**		
		Sta 0+60 to Sta 8+63	GAL	271
		Sta 9+11 to Sta 11+68	GAL	89
430	0042	**SUPERPAVE FAA 42**		
		Sta 0+60 to Sta 8+63 (3.5 inch depth) Sta 9+11 to Sta 11+68 (3.5 inch depth)	TON	297
430	5803	**PG 58S-28 ASPHALT CEMENT**		
		Sta 0+60 to Sta 8+63 Sta 9+11 to Sta 11+68	TON	18
709	0100	**GEOSYNTHETIC MATERIAL TYPE G**		
		Sta 0+60 to Sta 8+63	SY	1,559
		Sta 9+11 to Sta 11+68	SY	509

Note: Stationing is based off of RAMP_BNW_EXIT Alignment.
Note: SBC, Superpave, and AC totals are for the entire temporary ramp connection.

A - VERTICAL CUT LOCATIONS
(TO REMOVE EXISTING ASPHALT SLOUGH)

Chain	From Stationing & Offset	To Stationing & Offset	Length (ft)
RAMP_RP100.4_NW	11+34 - 18' Lt	12+40 - 18' Lt	106

B - NEW PAVEMENT BREAK POINTS

Chain	Stationing	Offset
RAMP_BNW_EXIT	0+60	0'
RAMP_BNW_EXIT	0+60	2' Rt
RAMP_BNW_EXIT	2+10	2' Rt
RAMP_BNW_EXIT	6+37	16' Lt
RAMP_BNW_EXIT	6+37	14' Lt
RAMP_BNW_EXIT	8+31	2' Rt
RAMP_BNW_EXIT	8+63	14' Lt
RAMP_BNW_EXIT	9+11	2' Rt
RAMP_BNW_EXIT	9+37	14' Lt
RAMP_BNW_EXIT	10+62	2' Rt
RAMP_BNW_EXIT	11+68	14' Lt

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Blanchard Interchange NW Ramp Connection

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	**48"x48"**	**EXIT GORE**	**2**			**2**	**35**	**70**
E5-2a-48	**48"x36"**	**EXIT CLOSED**	**2**			**2**	**14**	**28**
G20-1-60	**60"x24"**	**ROAD WORK NEXT __ MILES**	**1**			**1**	**28**	**28**
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)					18	
G20-2-48	**48"x24"**	**END ROAD WORK**	**20**			**20**	**26**	**520**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)					18	
G20-10-108	**108"x48"**	**CONTRACTOR SIGN**	**2**			**2**	**70**	**140**
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS					43	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW					36	
G20-55-96	**96"x48"**	**SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT**	**12**			**12**	**59**	**708**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)					10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)					10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)					10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)					7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)					7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)					7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)					7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)					7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT					15	
M4-10-48	**48"x18"**	**DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)**	**4**	**2**		**4**	**7**	**28**
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)					7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)					9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)					7	
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)					9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)					7	
R1-1-48	**48"x48"**	**STOP**	**4**			**4**	**32**	**128**
R1-2-60	**60"x60"**	**YIELD**	**3**	**2**		**3**	**29**	**87**
R2-1-36	**36"x48"**	**SPEED LIMIT __ (Portable only)**	**14**			**14**	**30**	**420**
R2-1-48	**48"x60"**	**SPEED LIMIT __**	**32**	**4**		**32**	**39**	**1248**
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**30**	**4**		**30**	**10**	**300**
R3-2-48	48"x48"	NO LEFT TURN					35	
R4-1-36	**36"x48"**	**DO NOT PASS (Portable only)**	**2**			**2**	**30**	**60**
R4-1-48	**48"x60"**	**DO NOT PASS**	**29**			**29**	**39**	**1131**
R4-7-48	**48"x60"**	**KEEP RIGHT**	**2**			**2**	**39**	**78**
R5-1-48	48"x48"	DO NOT ENTER					35	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)					14	
R7-1-12	12"x18"	NO PARKING ANY TIME					11	
R10-6-24	24"x36"	STOP HERE ON RED					16	
R11-2-48	**48"x30"**	**ROAD CLOSED (Mounted on barricade)**	**12**	**8**		**12**	**12**	**144**
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)					12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)					15	
W1-3-48	**48"x48"**	**REVERSE TURN RIGHT or LEFT**		**4**		**4**	**35**	**140**
W1-4-48	**48"x48"**	**REVERSE CURVE RIGHT or LEFT**	**2**			**2**	**35**	**70**
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT					35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW					26	
W1-6-60	**60"x30"**	**ONE DIRECTION LARGE ARROW**	**2**			**2**	**31**	**62**
W3-1-48	48"x48"	STOP AHEAD					35	
W3-3-48	48"x48"	SIGNAL AHEAD					35	
W3-4-48	**48"x48"**	**BE PREPARED TO STOP**	**4**			**4**	**35**	**140**
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**16**			**16**	**35**	**560**
W4-2-48	**48"x48"**	**LANE ENDS RIGHT or LEFT**	**16**			**16**	**35**	**560**
W5-1-48	**48"x48"**	**ROAD NARROWS**	**3**			**3**	**35**	**105**
W5-8-48	**48"x48"**	**THRU TRAFFIC RIGHT LANE**	**1**			**1**	**35**	**35**
W5-9-48	**48"x48"**	**ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW**	**1**			**1**	**35**	**35**
W6-3-48	**48"x48"**	**TWO WAY TRAFFIC**	**27**			**27**	**35**	**945**
W8-1-48	**48"x48"**	**BUMP**	**2**			**2**	**35**	**70**
W8-3-48	48"x48"	PAVEMENT ENDS					35	
W8-7-48	48"x48"	LOOSE GRAVEL					35	
W8-11-48	**48"x48"**	**UNEVEN LANES**	**2**			**2**	**35**	**70**
W8-12-48	48"x48"	NO CENTER LINE					35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL					35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY					35	
W8-54-48	**48"x48"**	**TRUCKS ENTERING AHEAD or __ FT or _ MILE**	**2**			**2**	**35**	**70**
W8-55-48	**48"x48"**	**TRUCKS CROSSING AHEAD or __ FT or _ MILE**	**2**			**2**	**35**	**70**
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY					35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL					35	
W12-2-48	48"x48"	LOW CLEARANCE					35	
W13-1P-30	**30"x30"**	**__ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)**	**2**	**4**		**4**	**14**	**56**
W13-4-36	**36"x36"**	**ON RAMP**	**4**			**4**	**11**	**44**
W14-3-64	64"x48"	NO PASSING ZONE					28	
W16-2P-30	**30"x24"**	**__ FEET PLAQUE (Mounted on warning sign post)**	**2**			**2**	**10**	**20**
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**30**			**30**	**35**	**1050**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT or _ MILE					35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE					35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT or _ MILE					35	
W20-5-48	**48"x48"**	**RIGHT or CENTER or LEFT LANE CLOSED AHEAD or __ FT or _ MILE**	**24**			**24**	**35**	**840**
W20-7-48	**48"x48"**	**FLAGGER**	**8**			**8**	**35**	**280**
W20-8-18	**18"x18"**	**STOP - SLOW PADDLE Back to Back**	**8**			**8**	**5**	**40**
W20-52P-54	**54"x12"**	**NEXT __ MILES (Mounted on warning sign post)**	**27**			**27**	**12**	**324**
W21-1-48	48"x48"	WORKERS					35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-2-48	**48"x48"**	**FRESH OIL**	**2**			**2**	**35**	**70**
W21-3-48	**48"x48"**	**ROAD MACHINERY AHEAD or __ FT or _ MILE**	**4**			**4**	**35**	**140**
W21-5-48	**48"x48"**	**SHOULDER WORK**	**3**			**3**	**35**	**105**
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED					35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE					35	
W21-6-48	48"x48"	SURVEY CREW					35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT					35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY					35	
W21-52-48	48"x48"	PAVEMENT BREAKS					35	
W21-53-48	**48"x48"**	**RUMBLE STRIPS AHEAD**	**2**			**2**	**35**	**70**
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK					35	

SPECIAL SIGNS

Consign 1	**72"x54"**	**GRANDIN ARROW UP & RT**	**1**	**1**		**1**	**54**	**54**
Consign 2	**72"x30"**	**EXIT 92**	**1**	**1**		**1**	**40**	**40**
Consign 3	**84"x96"**	**HALSTAD BLANCHARD ARROW UP & RT**	**1**	**1**		**1**	**87**	**87**
Consign 4	**84"x30"**	**EXIT 100**	**1**	**1**		**1**	**43**	**43**
Consign 5	**84"x48"**	**GRANDIN 1 MILE**	**1**	**1**		**1**	**55**	**55**
Consign 6	**66"x54"**	**EXIT 92 ARROW UP & RT**	**1**	**1**		**1**	**51**	**51**
Consign 7	**84"x78"**	**HALSTAD BLANCHARD 1 MILE**	**1**	**1**		**1**	**75**	**75**
Consign 8	**72"x54"**	**EXIT 100 ARROW UP & RT**	**1**	**1**		**1**	**54**	**54**

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS 11548**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**2000**			**2000**
704-1045	**ATTENUATION DEVICE-TYPE B-75**	EACH	**2**			**2**
704-1048	**PORTABLE RUMBLE STRIPS**	EACH	**2**			**2**
704-1050	TYPE I BARRICADES	EACH				
704-1052	**TYPE III BARRICADES**	EACH	**45**	**26**		**45**
704-1060	**DELINEATOR DRUMS**	EACH	**316**	**160**		**316**
704-1065	TRAFFIC CONES	EACH				
704-1067	**TUBULAR MARKERS**	EACH	**246**			**246**
704-1070	**DELINEATOR**	EACH	**437**	**188**		**437**
704-1072	**FLEXIBLE DELINEATORS**	EACH	**845**			**845**
704-1080	STACKABLE VERTICAL PANELS	EACH				
704-1081	**VERTICAL PANELS - BACK TO BACK**	EACH	**12**			**12**
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH				
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH				
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**6**			**6**
704-1088	**SEQUENCING ARROW PANEL - TYPE C - CROSSOVER**	EACH	**2**			**2**
704-1090	**FLASHING BEACON**	EACH	**2**			**2**
704-1500	**OBLITERATION OF PVMT MK**	SF	**7970**			**7970**
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF				
704-3510	**PRECAST CONCRETE MED BARRIER - STATE FURNISHED**	EACH	**80**			**80**
762-0200	**RAISED PAVEMENT MARKERS**	EACH	**31001**			**31001**
762-0420	SHORT TERM 4IN LINE - TYPE R	LF				
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF				

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

REGISTERED PROFESSIONAL ENGINEER
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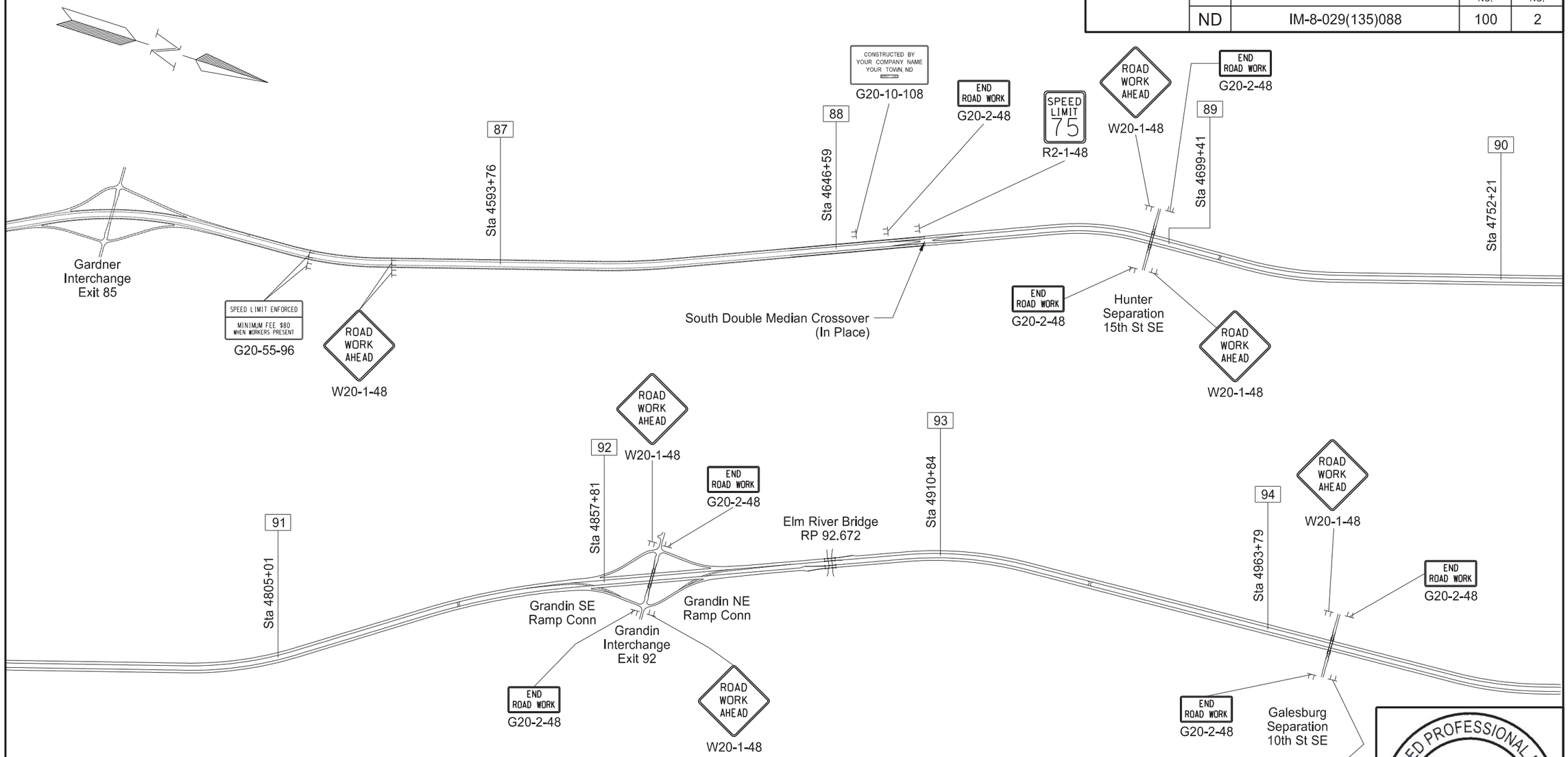
08/25/20
NORTH DAKOTA

Traffic Control Devices List

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Sep to N of Blanchard

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	2



W6-3-48

NEXT 00 MILES W20-52P-54

DO NOT PASS
R4-1-48

NOTE: Install signs R4-1-48, W6-3-48 and W20-52P-54 at one mile increments and after each interchange. A quantity of 27 has been provided for each sign on the traffic control devices list.

REGISTERED PROFESSIONAL ENGINEER
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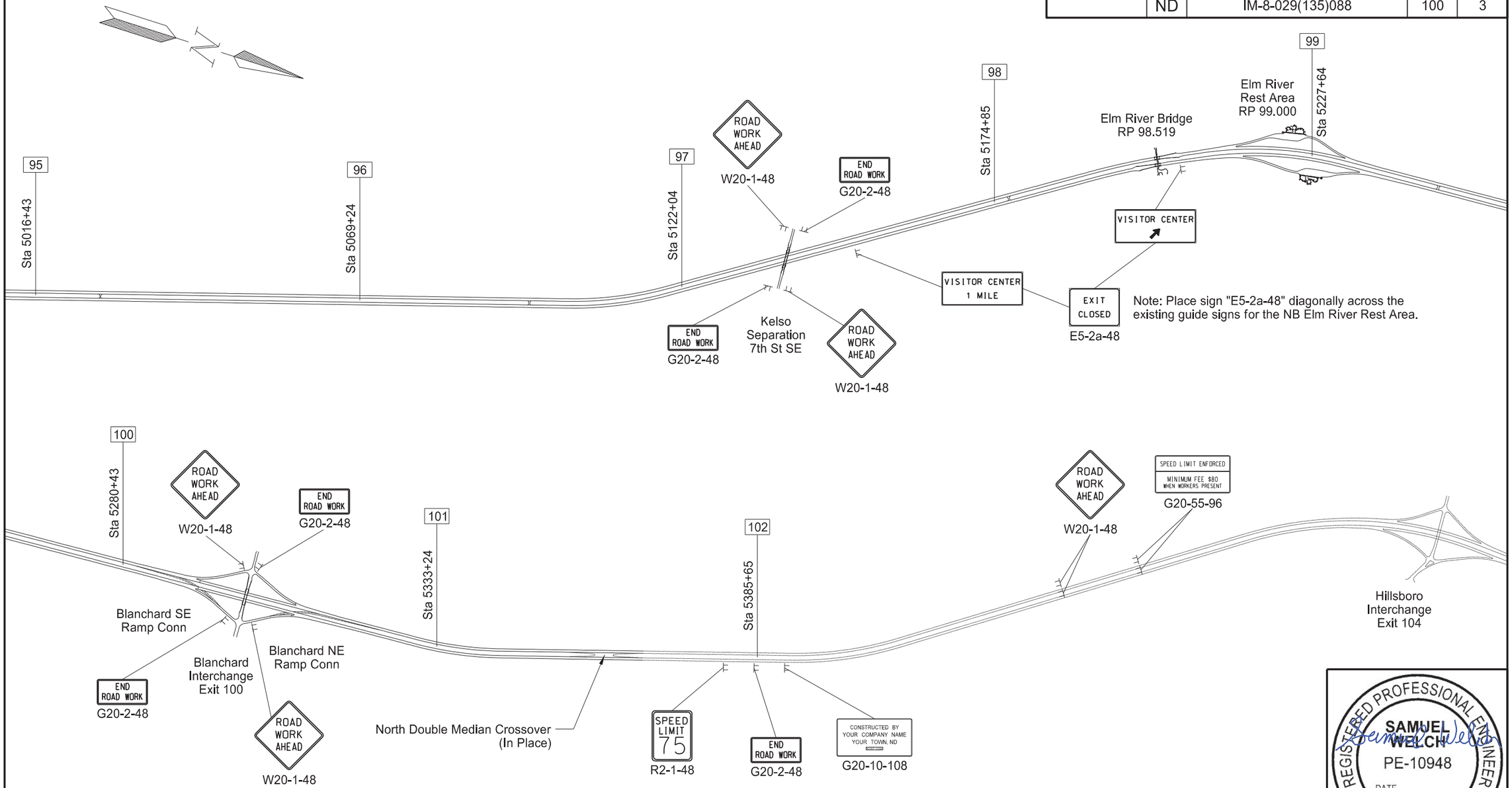
NORTH DAKOTA

Construction Sign Layout

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	3



NOTE: Install signs W6-3-48 and W20-52P-54 at one mile increments and after each interchange. A quantity of 27 has been provided for each sign on the traffic control devices list.

REGISTERED PROFESSIONAL ENGINEER
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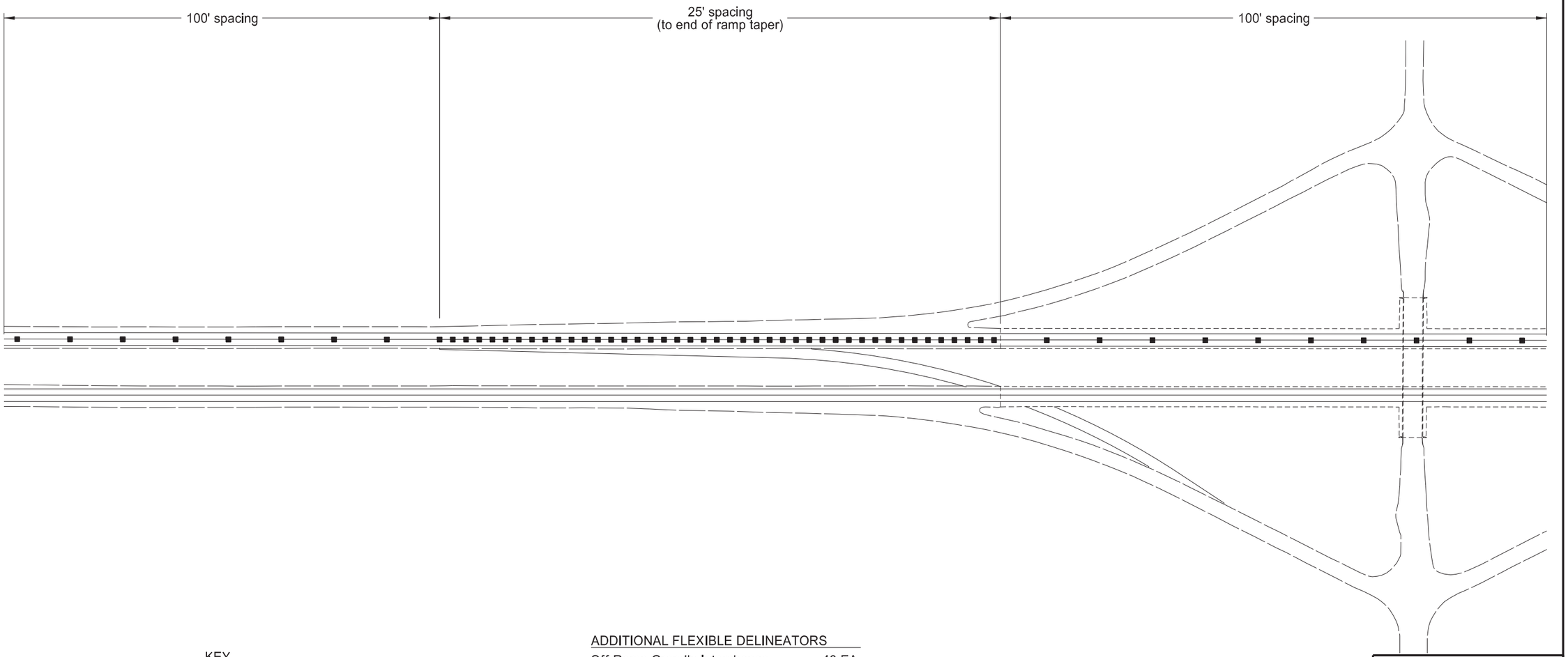
NORTH DAKOTA

Construction Sign Layout

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	4



KEY

■ FLEXIBLE DELINEATOR

ADDITIONAL FLEXIBLE DELINEATORS

Off Ramp Grandin Interchange	43 EA
On Ramp Grandin Interchange	57 EA
Off Ramp Blanchard Interchange	43 EA
On Ramp Blanchrad Interchange	57 EA
TOTAL	200 EA

REGISTERED PROFESSIONAL ENGINEER
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08/25/20
NORTH DAKOTA

Mainline Traffic Control at Intersections
Ramp Connections

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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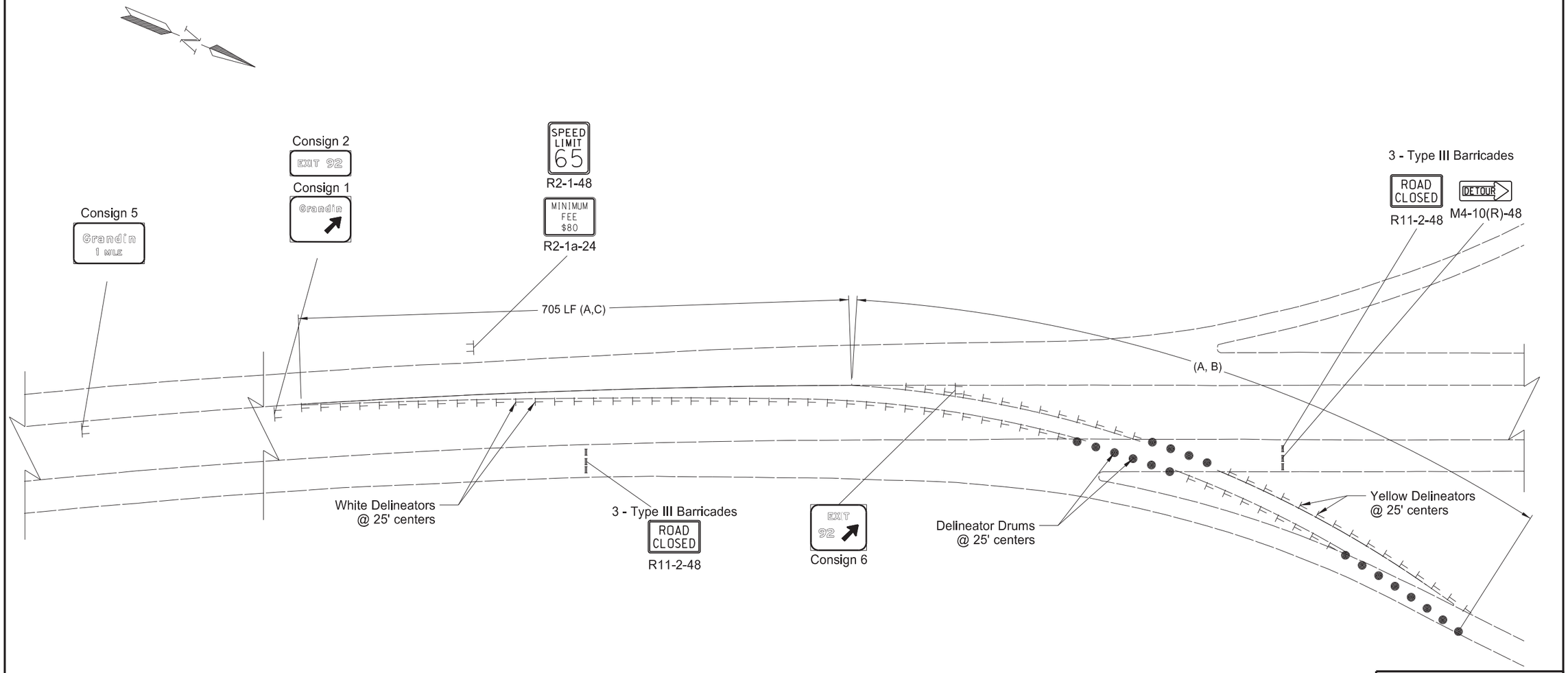
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	5



SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1052	TYPE III BARRICADES	EA	6
704	1060	DELINEATOR DRUMS	EA	18
704	1070	DELINEATOR		
		White Delineators	EA	49
		Yellow Delineators	EA	28
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	326
762	0200	RAISED PAVEMENT MARKERS *		
		White Raised Pavement Markers	EA	311
		Yellow Raised Pavement markers	EA	171

* 5' Centers.

LEGEND
A - White Raised Pavement Markers @ 5' ctrs
B - Yellow Raised Pavement Markers @ 5' ctrs
C - Obliteration of Pavement Marking Edge Lines

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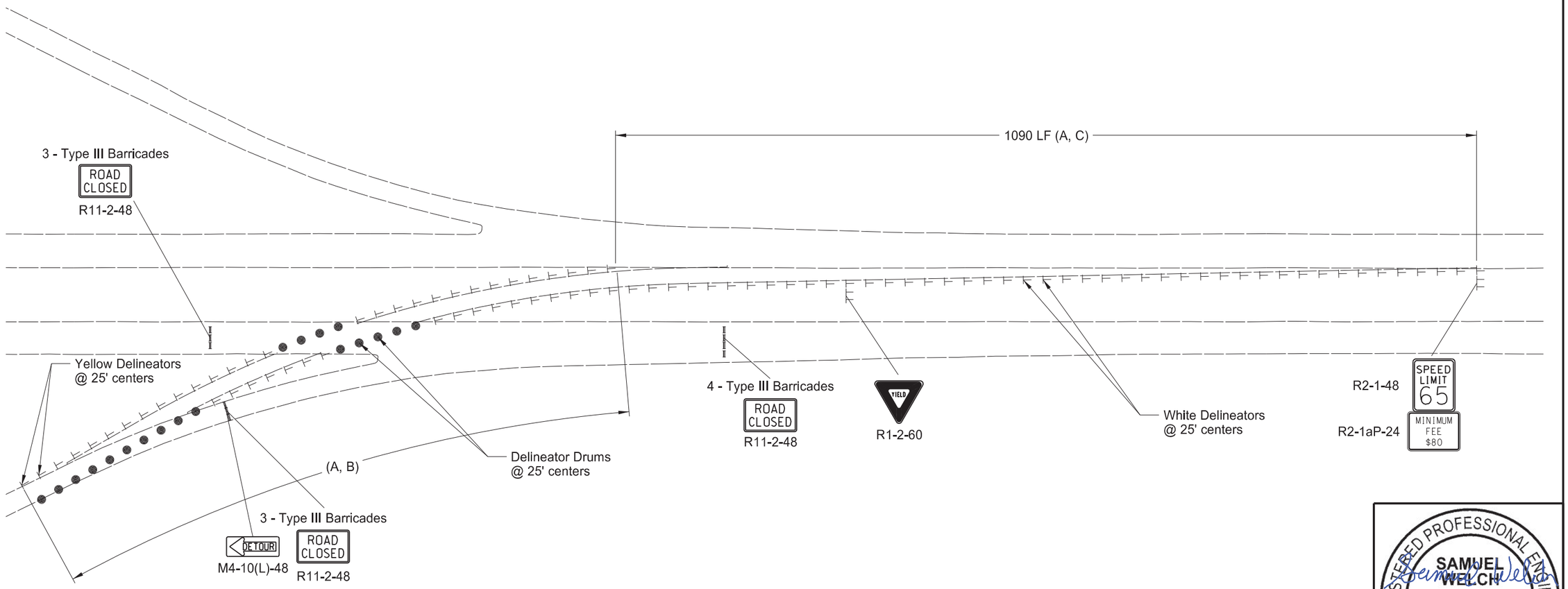
NORTH DAKOTA

Grandin Interchange
Southeast Ramp Connection Traffic Control

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

Note: See Construction Sign Detail Sheet for detailed images and dimensions of special signs.

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	6



SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1052	TYPE III BARRICADES	EA	10
704	1060	DELINEATOR DRUMS	EA	19
704	1070	DELINEATOR		
		White Delineators	EA	61
		Yellow Delineators	EA	29
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	435
762	0200	RAISED PAVEMENT MARKERS *		
		White Raised Pavement Markers	EA	376
		Yellow Raised Pavement markers	EA	161

* 5' Centers

LEGEND

A - White Raised Pavement Markers @ 5' ctrs
B - Yellow Raised Pavement Markers @ 5' ctrs
C - Obliteration of Pavement Marking Edge Lines

REGISTERED PROFESSIONAL ENGINEER
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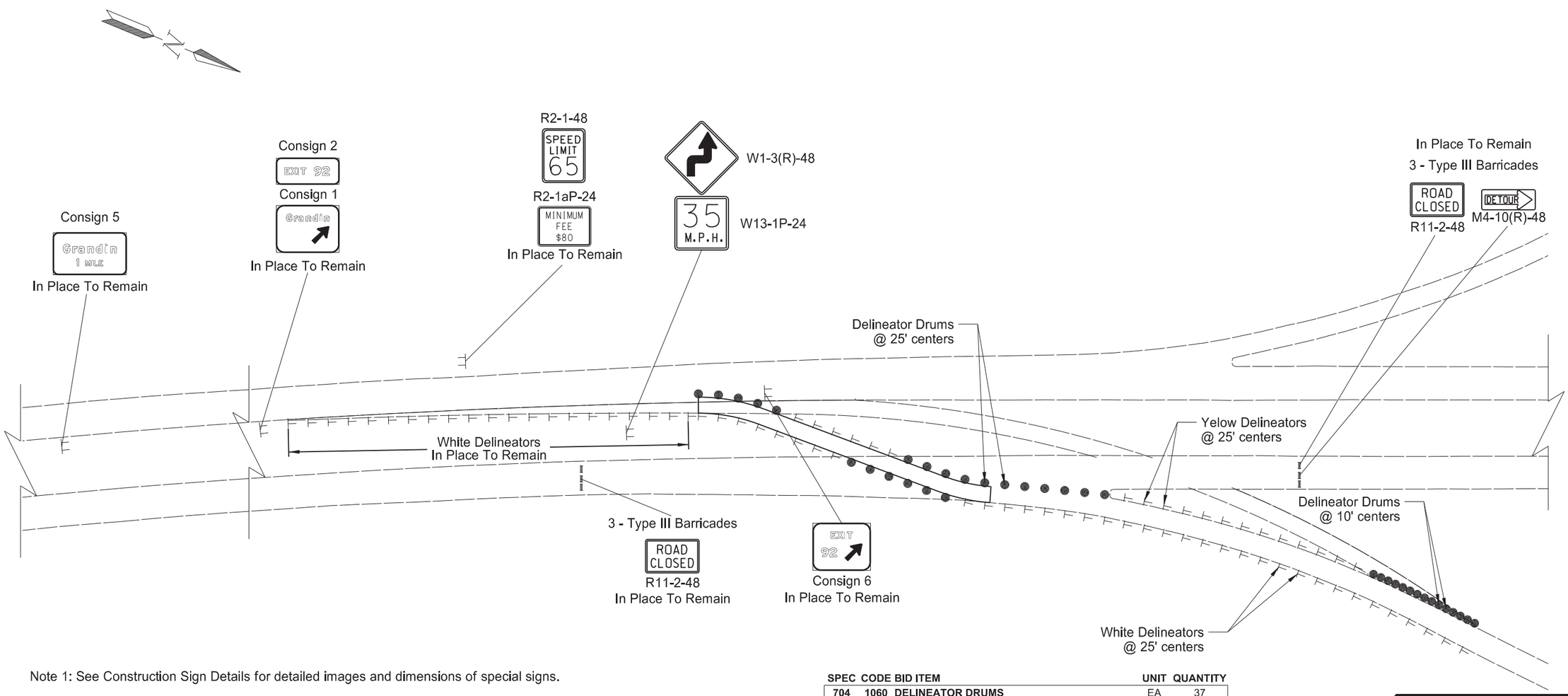
DATE
08/25/20
NORTH DAKOTA

Grandin Interchange
Northeast Ramp Connection Traffic Control

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

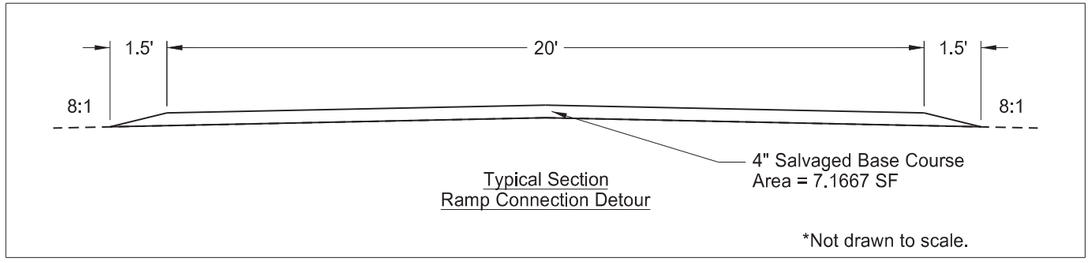
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	7



Note 1: See Construction Sign Details for detailed images and dimensions of special signs.

Note 2: See Section 82 for the alignment location/description of the temporary ramp connection detour.

SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1060	DELINEATOR DRUMS	EA	37
704	1070	DELINEATOR		
		White Delineators	EA	35
		Yellow Delineators	EA	19
710	0100	TEMPORARY BYPASS	EA	1



Typical Section
Ramp Connection Detour

*Not drawn to scale.

*ESTIMATED SURFACING QUANTITIES	
Borrow - Excavation	815 CY
Salvaged Base Course	42 CY
Prime Coat @ 0.25 Gal/SY	87 Gal
Blotter Material CI 44 @ 12 Lbs/SY	2 Ton
Water	9.7 Mgal

*These quantities are for informational purposes only. See note 710-P01.

REGISTERED PROFESSIONAL ENGINEER
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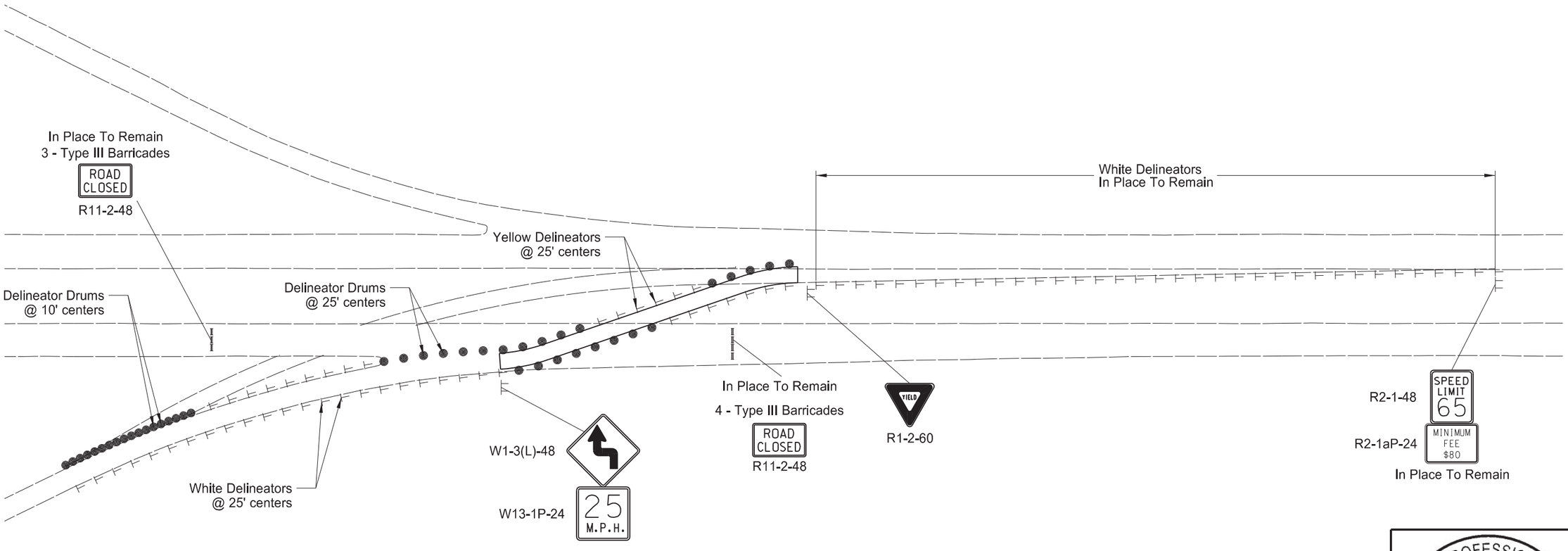
NORTH DAKOTA

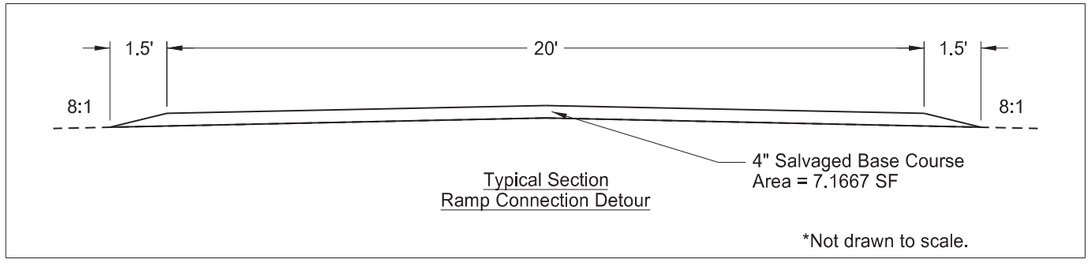
Grandin Interchange
Traffic Control - Southeast Ramp Connection Detour

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	8



Note 1: See Section 82 for the alignment location/description of the temporary ramp connection detour.



SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1060	DELINEATOR DRUMS	EA	42
704	1070	DELINEATOR		
		White Delineators	EA	30
		Yellow Delineators	EA	15
710	0100	TEMPORARY BYPASS	EA	1

*ESTIMATED SURFACING QUANTITIES	
Borrow - Excavation	676 CY
Salvaged Base Course	42 CY
Prime Coat @ 0.25 Gal/SY	87 Gal
Blotter Material CI 44 @ 12 Lbs/SY	2 Ton
Water	8.3 Mgal

*These quantities are for informational purposes only. See note 710-P01.

REGISTERED PROFESSIONAL ENGINEER
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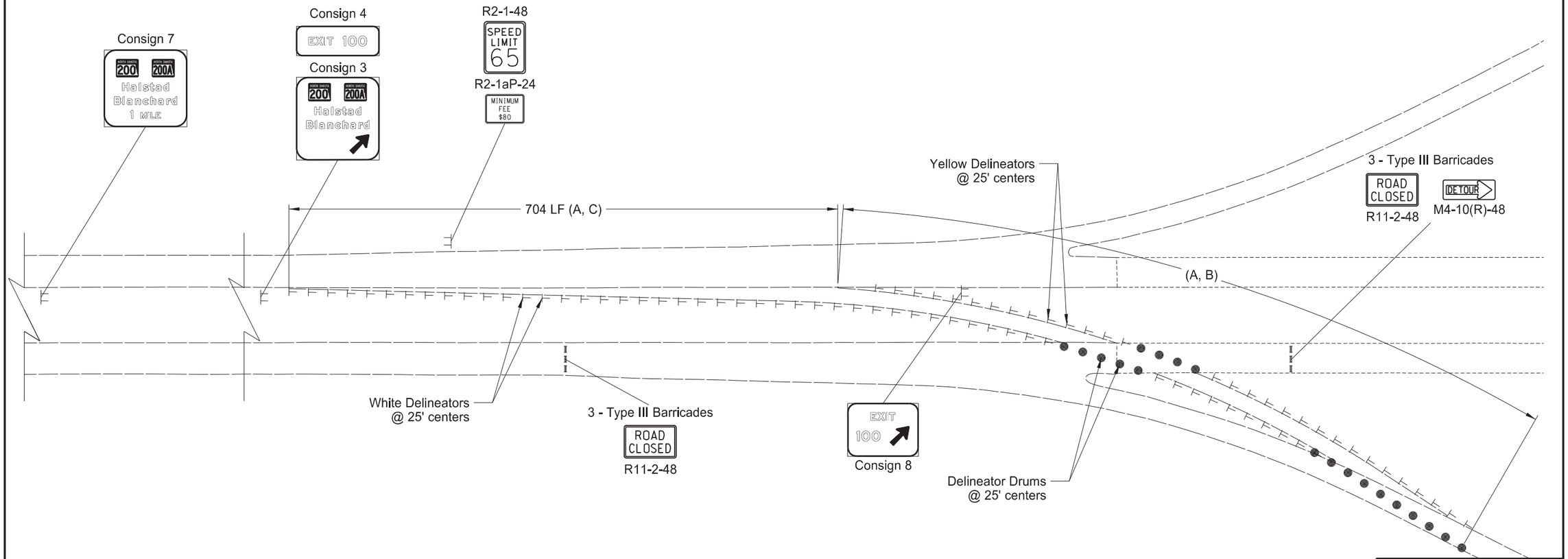
PE-10948
DATE 08/25/20
NORTH DAKOTA

Grandin Interchange
Traffic Control - Northeast Ramp Connection Detour

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	9



SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1052	TYPE III BARRICADES	EA	6
704	1060	DELINEATOR DRUMS	EA	19
704	1070	DELINEATOR		
		White Delineators	EA	49
		Yellow Delineators	EA	30
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	339
762	0200	RAISED PAVEMENT MARKERS *		
		White Raised Pavement Markers	EA	316
		Yellow Raised Pavement markers	EA	176

* 5' Centers

LEGEND

A - White Raised Pavement Markers @ 5' ctrs
B - Yellow Raised Pavement Markes @ 5' ctrs
C - Obliteration of Pavement Marking Edge Lines

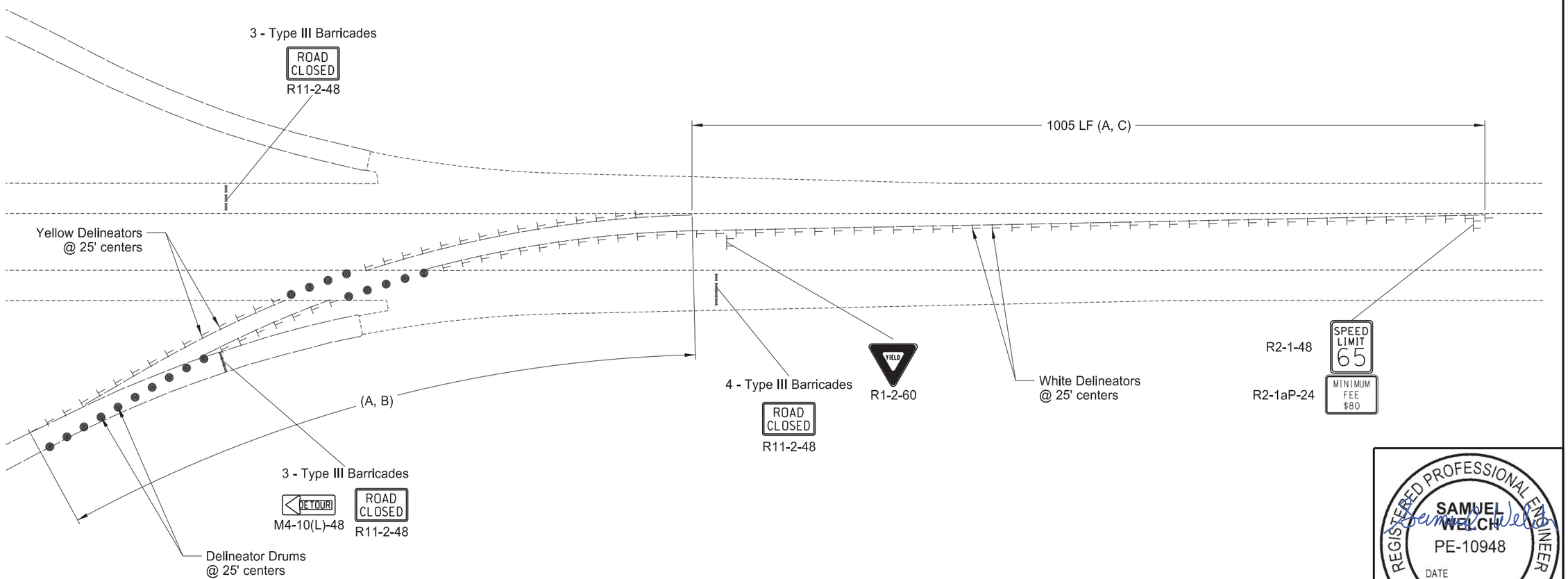
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Blanchard Interchange
Southeast Ramp Connection Traffic Control

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

Note: See Construction Sign Detail Sheet for detailed images and dimensions of special signs.

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	10



LEGEND

A - Whte Raised Pavement Markes @ 5' ctrs
B - Yellow Raised Pavement Markers @ 5' ctrs
C - Obliteration of Pavement Marking Edge Lines

SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1052	TYPE III BARRICADES	EA	10
704	1060	DELINEATOR DRUMS	EA	19
704	1070	DELINEATOR		
		White Delineators	EA	61
		Yellow Delineators	EA	30
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	457
762	0200	RAISED PAVEMENT MARKERS *		
		White Raised Pavement Markers	EA	376
		Yellow Raised Pavement markers	EA	161

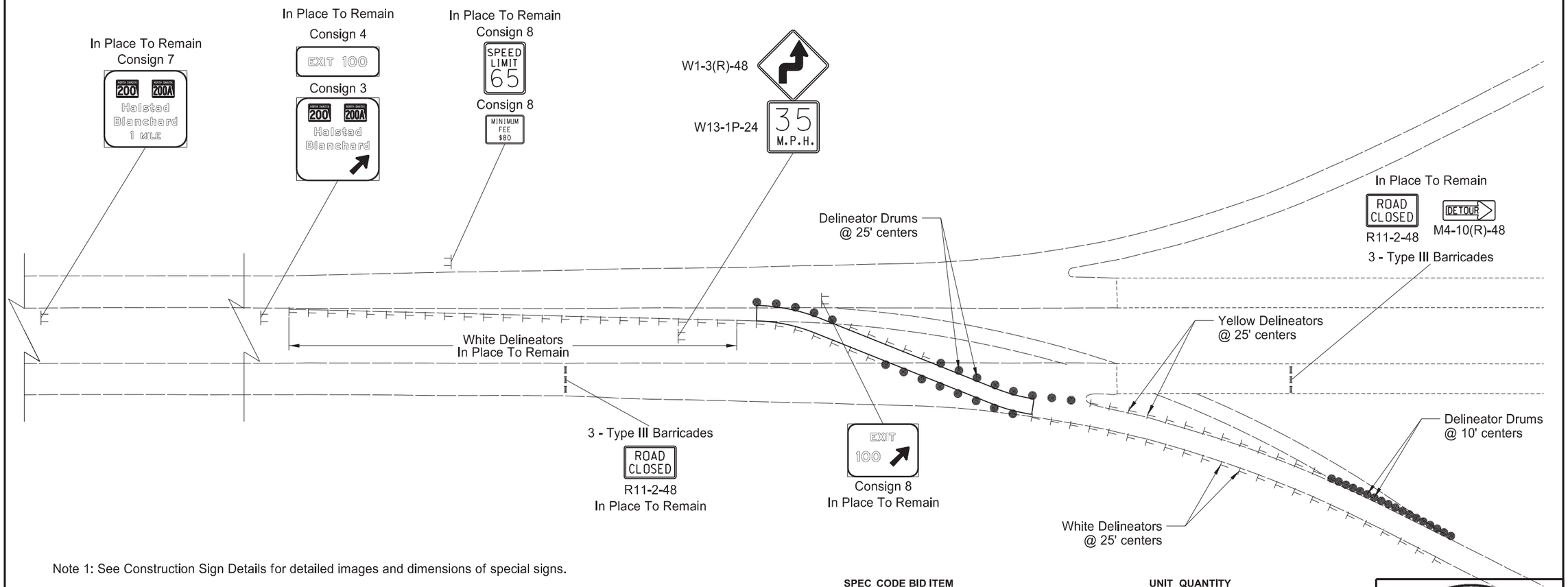
* 5' Centers

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

Blanchard Interchange
Northeast Ramp Connection Traffic Control

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

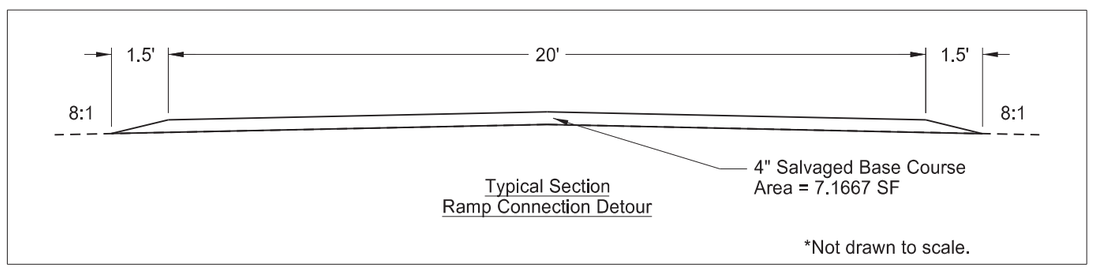
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	11



Note 1: See Construction Sign Details for detailed images and dimensions of special signs.

Note 2: See Section 82 for the alignment location/description of the temporary ramp connection detour.

SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1060	DELINEATOR DRUMS	EA	39
704	1070	DELINEATOR		
		White Delineators	EA	30
		Yellow Delineators	EA	18
710	0100	TEMPORARY BYPASS	EA	1



*ESTIMATED SURFACING QUANTITIES	
Borrow - Excavation	583 CY
Salvaged Base Course	39 CY
Prime Coat @ 0.25 Gal/SY	80 Gal
Blotter Material CI 44 @ 12 Lbs/SY	2 Ton
Water	7.3 Mgal

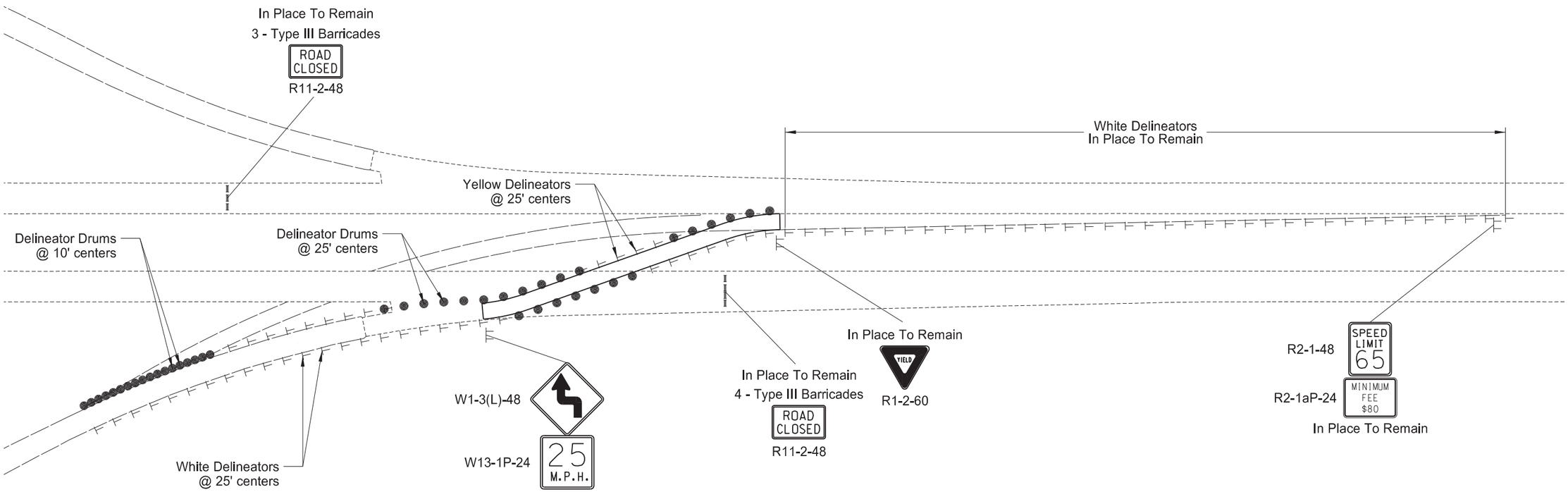
*These quantities are for informational purposes only. See note 710-P01.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Blanchard Interchange
Traffic Control - Southeast Ramp Connection Detour

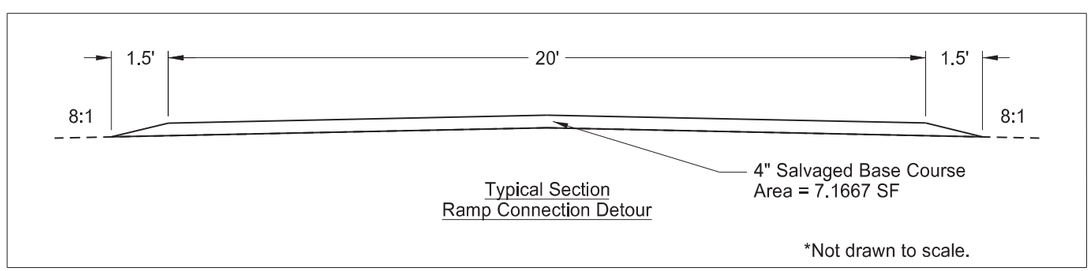
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	12



Note 1: See Section 82 for the alignment location/description of the temporary ramp connection detour.

SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1060	DELINEATOR DRUMS	EA	42
704	1070	DELINEATOR		
		White Delineators	EA	29
		Yellow Delineators	EA	12
710	0100	TEMPORARY BYPASS	EA	1



Typical Section
Ramp Connection Detour

*Not drawn to scale.

*ESTIMATED SURFACING QUANTITIES	
Borrow - Excavation	598 CY
Salvaged Base Course	42 CY
Prime Coat @ 0.25 Gal/SY	86 Gal
Blotter Material CI 44 @ 12 Lbs/SY	2 Ton
Water	7.5 Mgal

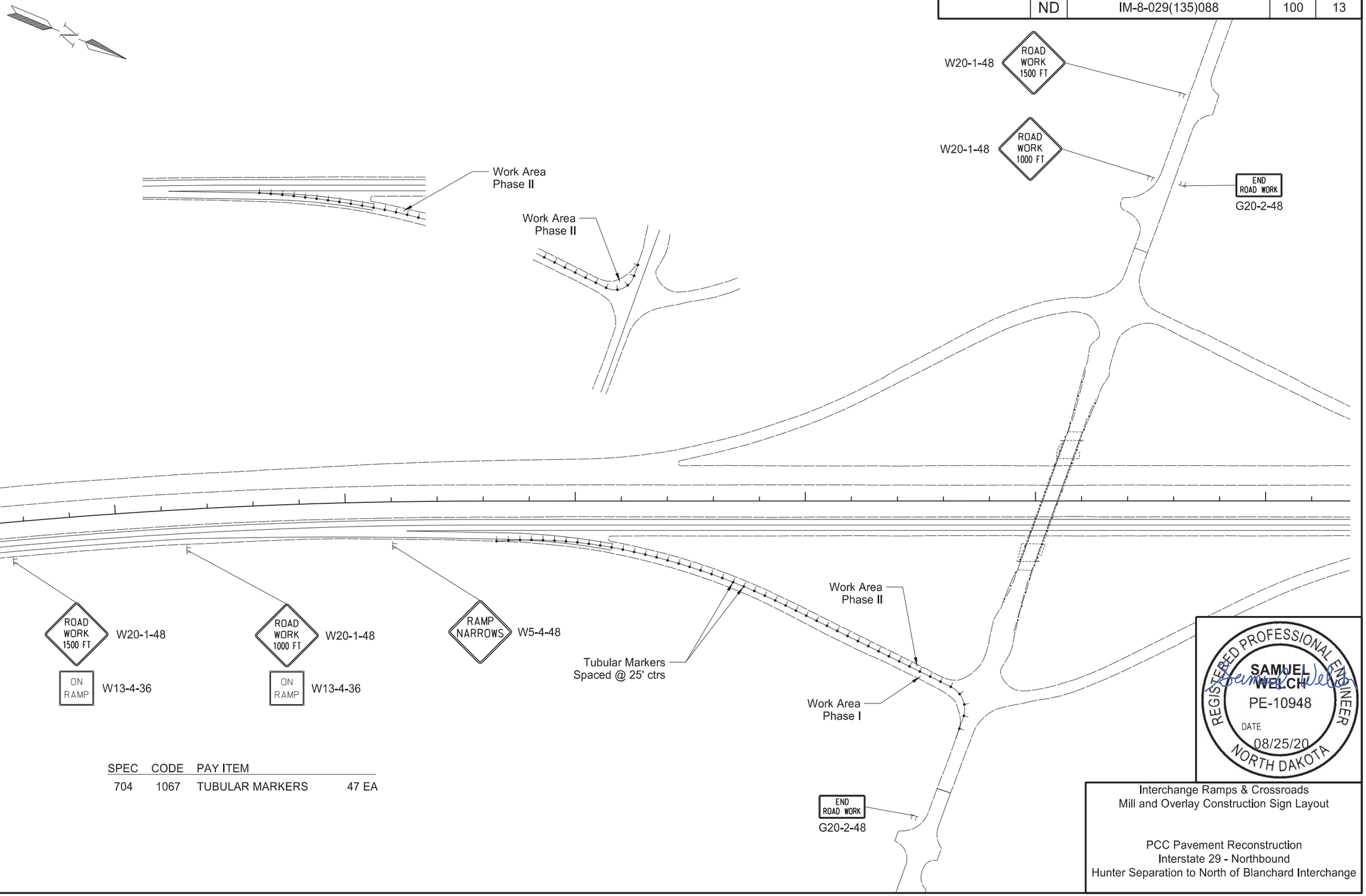
*These quantities are for informational purposes only. See note 710-P01.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Blanchard Interchange
Traffic Control - Northeast Ramp Connection Detour

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	13



SPEC	CODE	PAY ITEM	
704	1067	TUBULAR MARKERS	47 EA

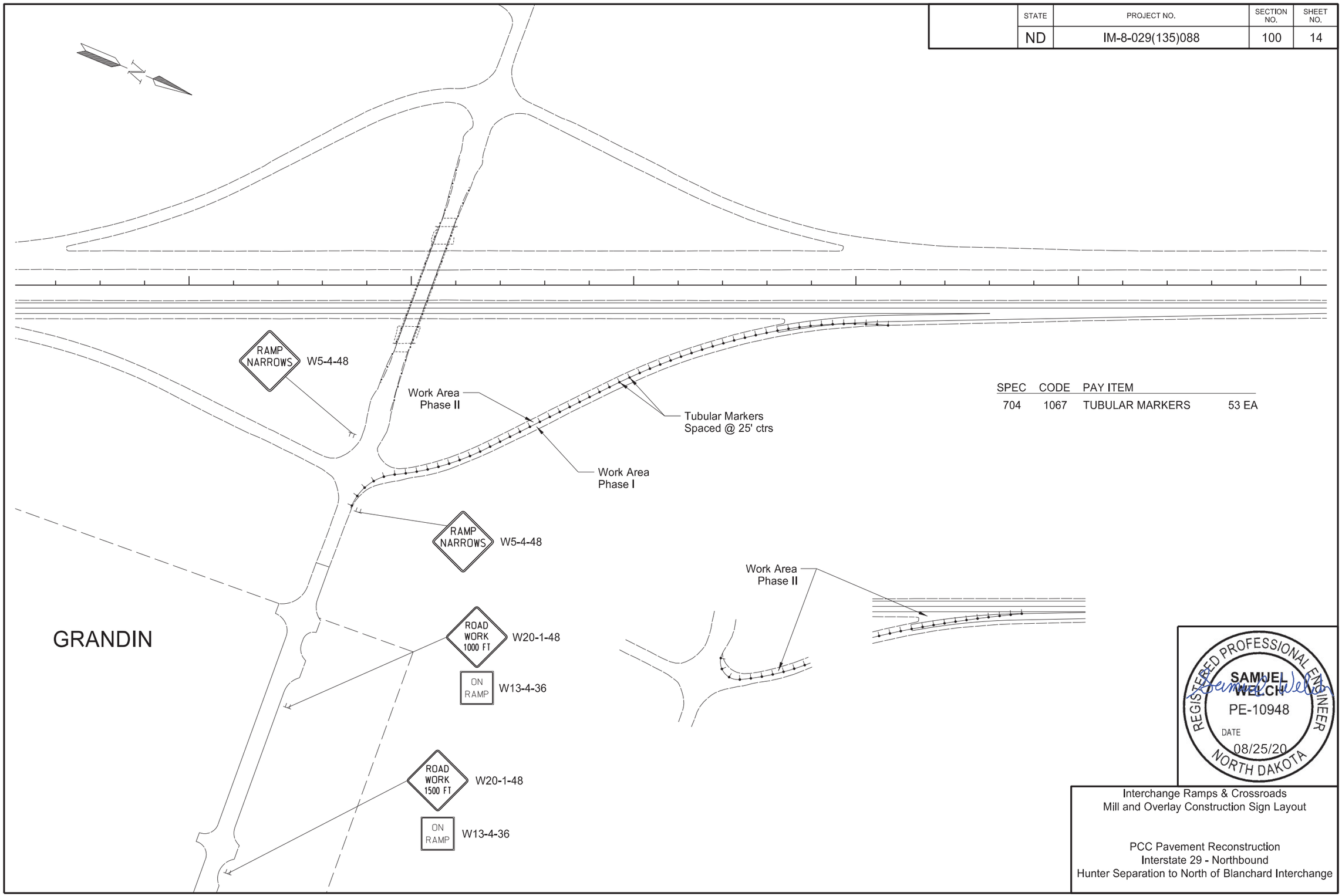
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Interchange Ramps & Crossroads
Mill and Overlay Construction Sign Layout

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

8/25/2020 10:40:06 AM swelch R:\project\80029088.135\design\Sheets\100WZ_013_Grandin M&O SE.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	14



SPEC	CODE	PAY ITEM	
704	1067	TUBULAR MARKERS	53 EA

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Interchange Ramps & Crossroads
Mill and Overlay Construction Sign Layout

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

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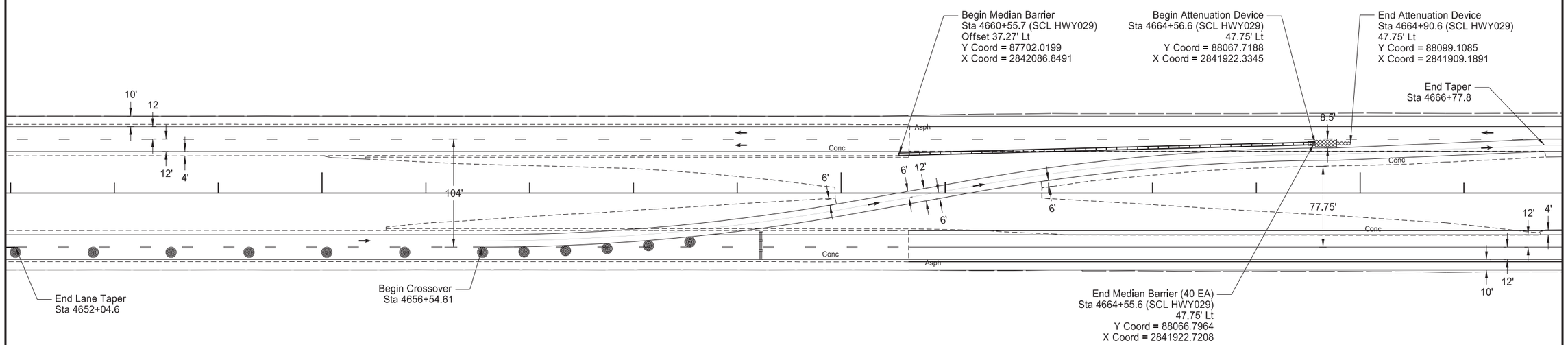
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	15

4655+00

4660+00

4665+00



NOTE: See Std D-704-38 for additional devices and traffic control signs required for the median crossover traffic control.

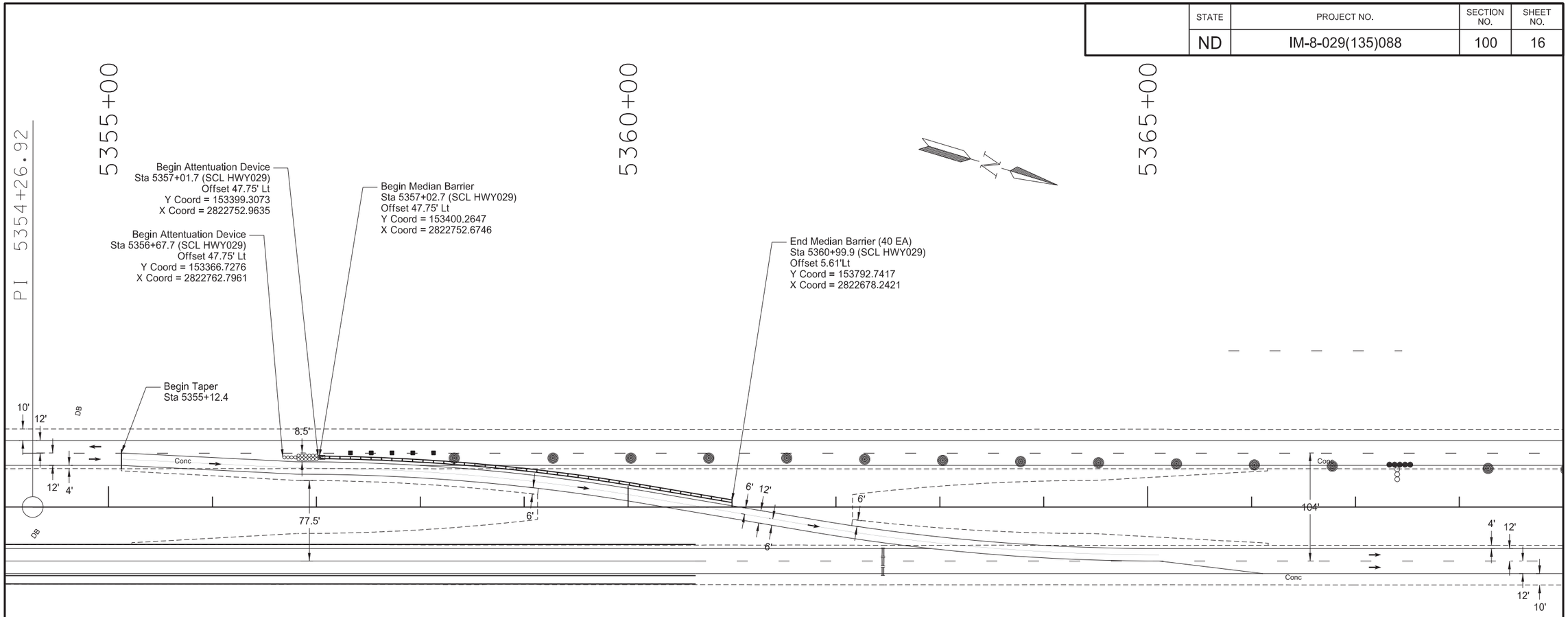
REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

Work Zone Traffic Control
Location Detail for Attenuation Device
and Median Barriers at South Median Crossover

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

8/25/2020 10:40:14 AM swelch R:\project\80029088.135\design\Sheets\100WZ_015_South_XOver.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	16



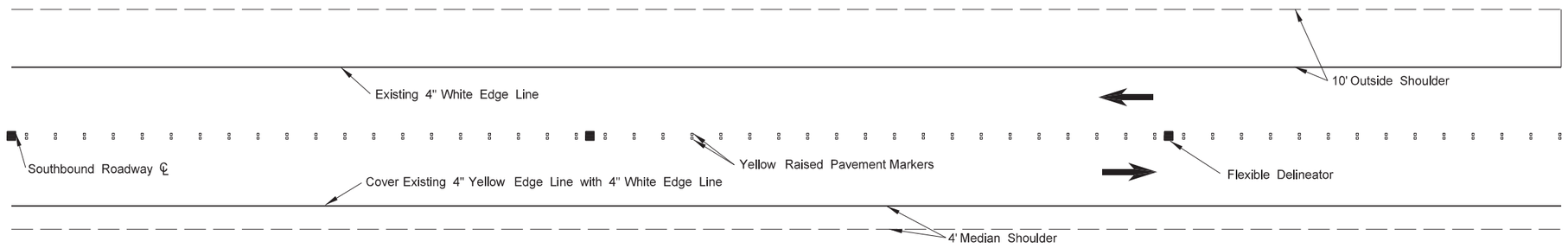
NOTE: See Std D-704-39 for additional devices and traffic control signs required for the median crossover traffic control.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE
08/25/20
NORTH DAKOTA

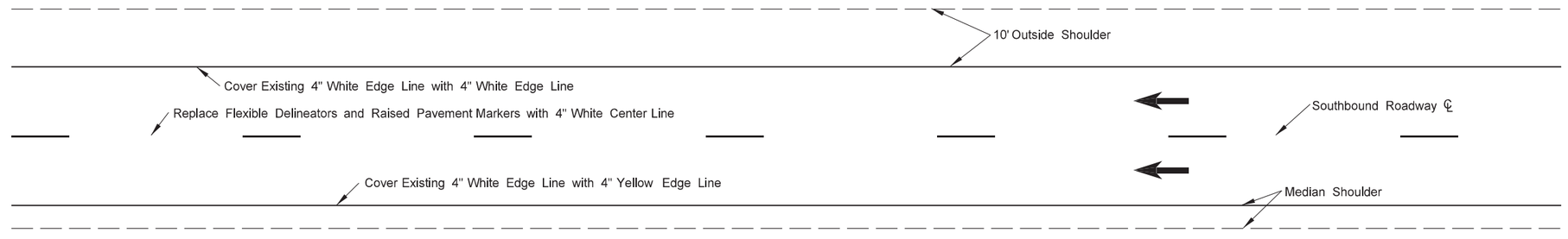
Work Zone Traffic Control
Location Detail for Attenuation Device
and Median Barriers at North Median Crossover

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	17



TWO-WAY TRAFFIC ON A SINGLE TWO-LANE ROADWAY
Center Line has been obliterated.
Flexible Delineators installed @ 100' ctrs.
Two rows of Yellow Raised Pvmt Mrks installed @ 5' ctrs. - 4" Between.
Median 4" Yellow Edge Line covered by placing 4" White Edge Line on top.



TO RETURN TRAFFIC TO NORMAL FOUR LANE DIVIDED OPERATION:
Remove Flexible Delineators and Raised Pvmt Mkrs.
Place 4" White Center Line.
Place 4" Yellow Edge Line over Median 4" White Edge Line.
Place 4" White Edge Line over Outside 4" White Edge Line.

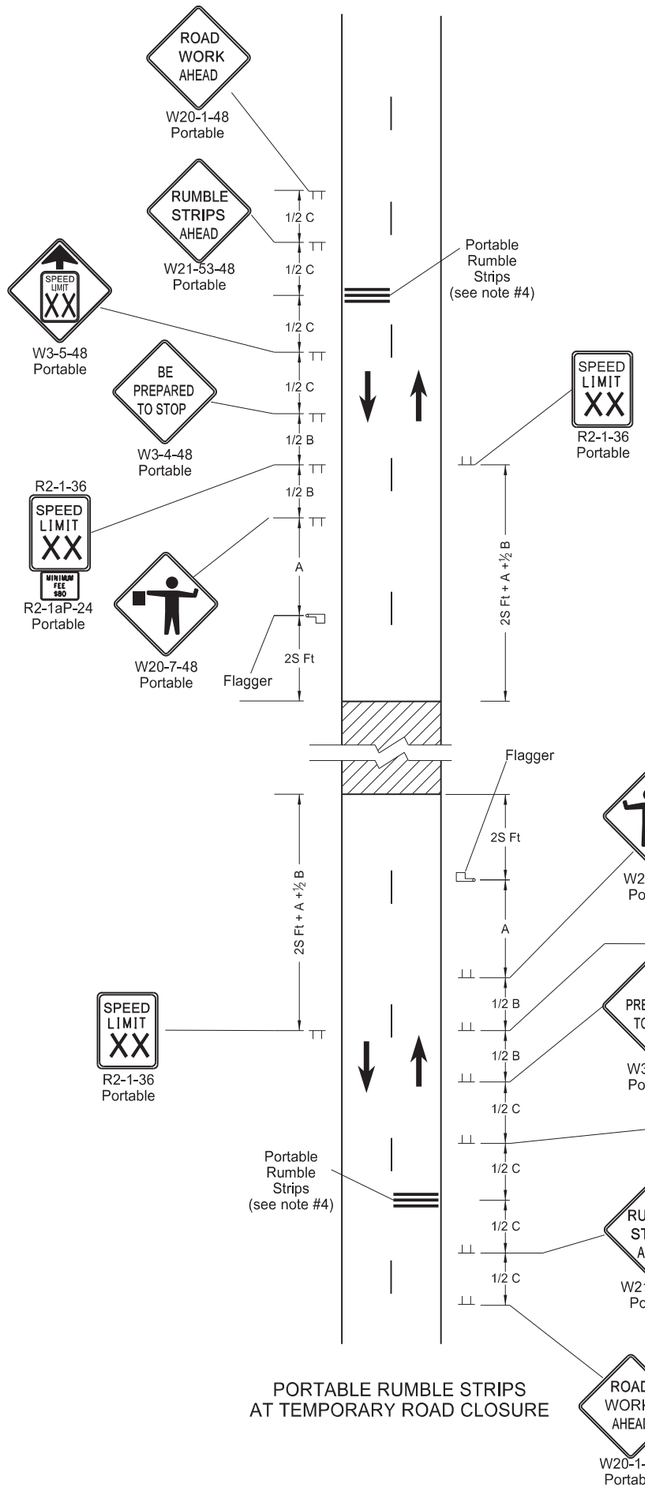
SPEC	CODE	BID ITEM	UNIT	QUANTITY
704	1072	**FLEXIBLE DELINEATORS @ 100' CTRS**		
		Sta 4666+77.8 to Sta 5355+12.3(Minus Temporary Ramp Connection Areas)	EA	640
704	1500	**OBLITERATION OF PAVEMENT MARKING**		
		Sta 4666+77.8 to Sta 5355+12.3		
		(4" White Centerline Skips - centerline of south roadway for two - way traffic)	SF	5,736
762	0200	**RAISED PAVEMENT MARKERS @ 5' CTRS (CL DBL Yellow)**		
		Sta 4666+77.8 to Sta 5355+12.3	EA	27,536
762	1104	**PVMT MK PAINTED 4IN LINE**		
		Sta 4666+77.8 to Sta 5355+12.3 (Minus Temporary Ramp Connection Areas)	LF	65,399
		(4" White Edge Lines - median side edge line on south roadway for two - way traffic)		

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

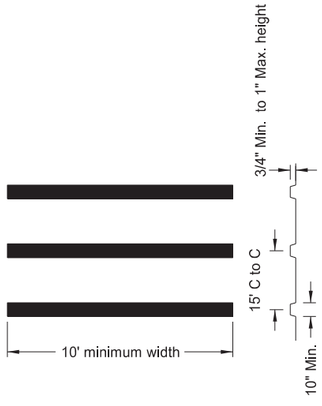
TRAFFIC CONTROL FOR TWO-WAY
INTERSTATE TRAFFIC ON ONE ROADWAY

PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

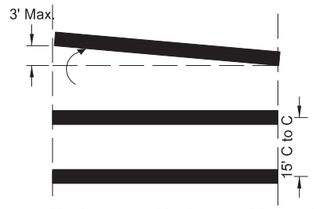
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	18



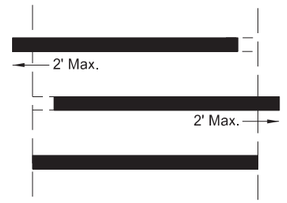
PORTABLE RUMBLE STRIPS
AT TEMPORARY ROAD CLOSURE



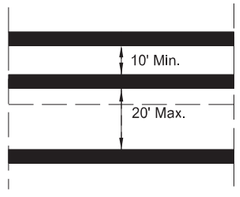
PORTABLE RUMBLE STRIPS ARRAY DETAIL



Reposition if movement is >3' from original position.
Skewing



Reposition if movement is >2' from original position.
Lateral



Reposition if distance between strips is <10' or >20'.
Perpendicular to Travel with or against traffic

PORTABLE RUMBLE STRIPS ARRAY
TYPES OF MOVEMENT AND MAXIMUM ALLOWANCES

Notes:
1. Number of devices were calculated using 40 mph. Speed determined in the field based on location and conditions.
2. Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
3. Sign R2-1aP-24 is not required when pilot car operation is used.
4. Rumble strips are not used on a non paved surface or in a pre-construction speed zone of 25 mph or less.

ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720

KEY
- Work area
- Flagger
- Sign

S = Numerical value of speed limit or 85th percentile.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL WELCH
PE-10948
DATE 08/25/20
NORTH DAKOTA

TWO-LANE PORTABLE RUMBLE STRIPS

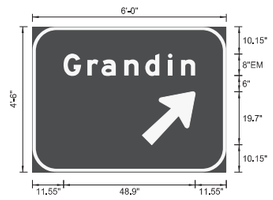
PCC Pavement Reconstruction
Interstate 29 - Northbound
Hunter Separation to North of Blanchard Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	100	19

SIGN NUMBER	Consign 1
WIDTH X HEIGHT	6'-0" x 4'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_8IN_TYPE A	40.8	10.2	15.1	25	315

STATION(S): AREA: 27.0 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

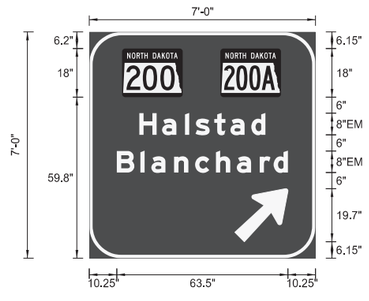
PANEL STYLE: ND_Const_Guide.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
G	r	a	n	d	i	n														48.9	8/6	EM 2000
11.6	20.4	25.6	34.1	41.9	50.4	55.2																

SIGN NUMBER	Consign 3
WIDTH X HEIGHT	7'-0" x 7'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_M1-5_3	12.2	59.8	22.5	18	0
ND_M1-5_4	48.7	59.8	22.5	18	0
ND_8IN_TYPE A	54.1	6.2	15.1	25	315

STATION(S): AREA: 49.0 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Const_Guide.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
H	a	l	s	t	a	d														46.9	8/6	EM 2000
18.6	27	35.5	39.4	46.4	52.4	60.2																
B	l	a	n	c	h	a	r	d												63.5	8/6	EM 2000
10.2	19	23	31.5	39.3	47	54.8	63.3	68.5														

SIGN NUMBER	Cosign 2
WIDTH X HEIGHT	6'-0" x 2'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 15.0 Sq.Ft.

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

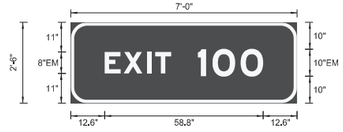
PANEL STYLE: ND_Const_Guide.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	X	I	T	9	2															52.9	8,10	EM 2000
9.5	16.6	25.2	28.3	44.2	54.4																	

SIGN NUMBER	Cosign 4
WIDTH X HEIGHT	7'-0" x 2'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 17.5 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Const_Guide.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	X	I	T	1	0	0														58.8	8,10	EM 2000
12.6	19.6	28.3	31.3	47.2	52.6	63																

08/17/20

Construction Sign Details

Hunter sep to near Blanchard NB

I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	100	20

SIGN NUMBER	Consign 5
WIDTH X HEIGHT	7'-0" x 4'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 28.0 Sq.Ft.

Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

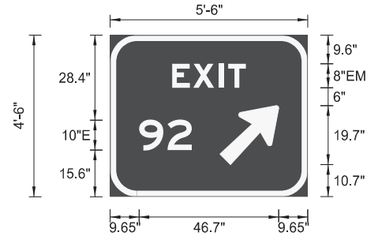
PANEL STYLE: ND_Const_Guide.sld

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
G	r	a	n	d	i	n													61.1	10/7.5	EM 2000
11.5	22.6	29.1	39.7	49.4	60	66															
1	M	I	L	E															30.3	8,6	E 2000
26.9	37.3	44.5	47.1	52.6																	

SIGN NUMBER	Consign 6
WIDTH X HEIGHT	5'-6" x 4'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_8IN_TYPE A	36.7	10.8	15.1	25	315

STATION(S): AREA: 24.8 Sq.Ft.
none



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

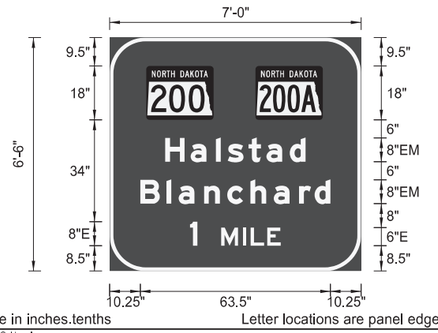
PANEL STYLE: ND_Const_Gore.sld

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
E	X	I	T																24.6	8	EM 2000
20.7	27.7	36.4	39.4																		
9	2																		17.6	10	E 2000
9.7	19.2																				

SIGN NUMBER	Consign 7
WIDTH X HEIGHT	7'-0" x 6'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_M1-5_3	12.2	50.5	22.5	18	0
ND_M1-5_4	48.7	50.5	22.5	18	0

STATION(S): AREA: 45.5 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

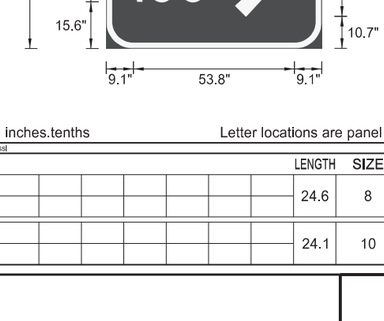
PANEL STYLE: ND_Const_Guide.sld

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
H	a	l	s	t	a	d													46.9	8/6	EM 2000
18.6	27	35.5	39.4	46.4	52.4	60.2															
B	l	a	n	c	h	a	r	d											63.5	8/6	EM 2000
10.2	19	23	31.5	39.3	47	54.8	63.3	68.5													
1	M	I	L	E															30.3	8,6	E 2000
26.9	37.3	44.5	47.1	52.6																	

SIGN NUMBER	Consign 8
WIDTH X HEIGHT	6'-0" x 4'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_8IN_TYPE A	43.2	10.8	15.1	25	315

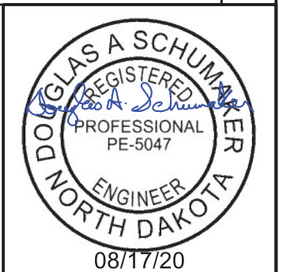
STATION(S): AREA: 27.0 Sq.Ft.
none



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Const_Gore.sld

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
E	X	I	T																24.6	8	EM 2000
23.7	30.7	39.4	42.4																		
1	0	0																	24.1	10	E 2000
9.1	14.4	24.8																			

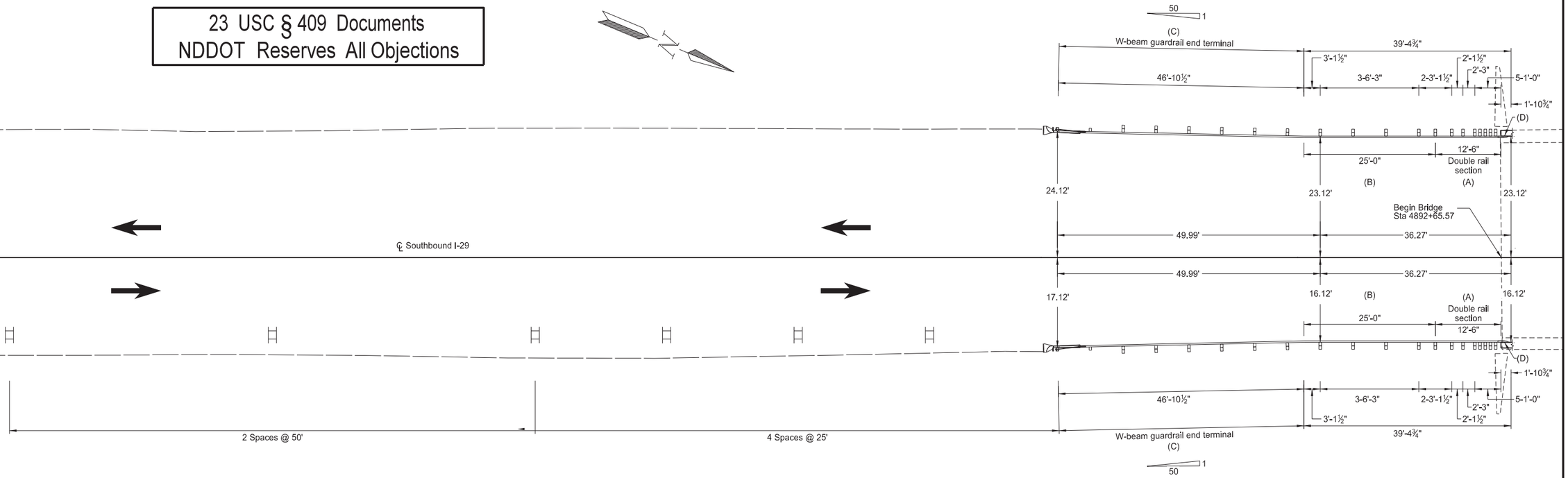


Construction Sign Details

Hunter sep to near Blanchard NB

I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	21



Legend

Vertical Panels (Back to Back)

Traffic Direction

(A) Double Rail Section (double thickness). Set rail height to 33".

(B) Height Transition Section. Transition from 33" to 31".

(C) Install a MASH SoftStop or SKT Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH Softstop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length, and start spacing for vertical panels at the end of the end terminal.

(D) Terminal connector not to be connected to the end post.

SPEC	CODE	BID ITEM	QTY	UNIT
704	1081	VERTICAL PANELS - BACK TO BACK		
		Lt Mdn	6	EA
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Lt	1	EA
		Lt Mdn	1	EA

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

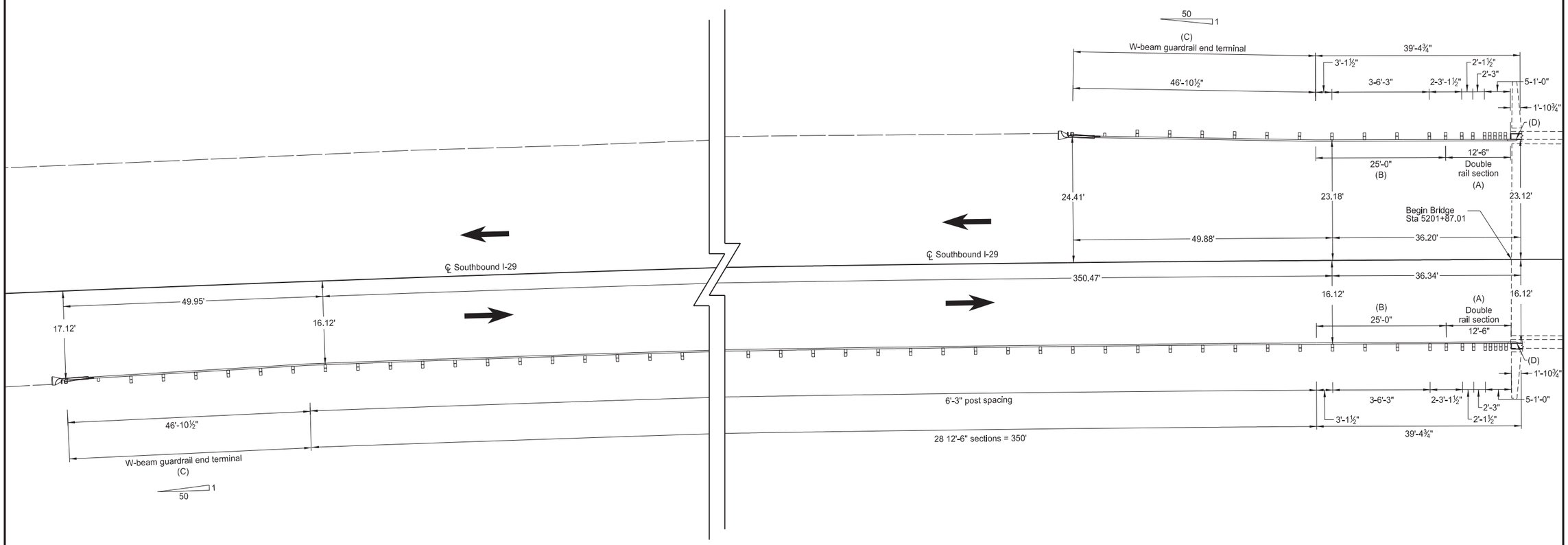
MGS W-Beam Guardrail End Terminal Layout
For Two-Way Traffic

Elm River Bridge
RP 92.672

SB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	100	22

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

Traffic Direction

(A) Double Rail Section (double thickness). Set rail height to 33".

(B) Height Transition Section. Transition from 33" to 31".

(C) Install a MASH SoftStop or SKT Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH Softstop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

(D) Terminal connector not to be connected to the end post.

SPEC	CODE	BID ITEM	QTY	UNIT
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Lt	1	EA
		Lt Mdn	1	EA

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail End Terminal Layout
For Two-Way Traffic

North Branch Elm River Bridge
RP 98.519

SB I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	IM-8-029(135)088	110	1

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
I-94																							
4707+45 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
4707+95 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
4834+40 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
4834+93 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
4934+61 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
4935+17 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5026+74 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5027+24 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5096+67 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5097+12 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5176+97 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5177+52 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5243+53 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
5244+04 Rt mdn		32		5.0	9.0				5.0	2 x 2 12 ga	10.6						1	4	2.25 x 2.25 12 ga				
Sub Total			0.0	70.0		**Total**	126.0										**Total**	56.0		0	0	0	
Grand Total			**0.0**	**70.0**		**Total**	**126.0**										**Total**	**56**	**0**	**0**	**0**	**0**	

Sign Summary
Perforated Tube

Hunter sep to near Blanchard NB

I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	IM-8-029(135)088	110	2

Station / RP	Sign / Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Panel For Signs IV SF	Panel For Signs XI SF	Overlay Panel IV SF	Overlay Panel XI SF	Vert Clear-ance FT	Galv Steel Sheet Standard Pipe 1st LF	Galv Steel Sheet Standard Pipe 2nd LF	Galv Steel Post W-Shape Posts Size	Galv Steel Post W-Shape Posts 1st LF	Galv Steel Post W-Shape Posts 2nd LF	Galv Steel Post W-Shape Posts 3rd LF	Max Post Len LF	Post Space FT	Revise Fuse Joint EA	Std Pipe Fdn Dia FT	Std Pipe Fdn Dep FT	Std Pipe Fdn Vol CY	W-Shape Pile LF	Remove Sign Fdns Conc Fdn EA	Remove Sign Fdns W-Shape Pile EA	Reset Sign Panel EA	Reset Sign Support EA	Stub Post EA	Multi Dir Base EA	Comments
I-94																												
4793+61 Rt								7.0			W6x20	21.4	21.4		26.5	6.0					28		2	1				
4820+21 Rt								7.0			W4x13	19.4	19.4		22.8	4.0					28	2		1				
4846+40 Rt								7.0			W6x20	21.9	21.9		25.1	6.0					28		2	1				
4892+50 Rt	SN 2			13.0				7.0			W4x13	14.4	15.2		46.1	3.3					28	2						
4908+54 Rt	SN 3			140.0				7.0			W8x24	22.9	22.9		24.1	8.8					28		2					
5156+86 Rt	SN 4			84.5				7.0			W6x20	21.4	21.4		24.6	6.5					28	2						
5205+22 Rt	SN 5			84.5				7.0			W6x20	21.4	21.4		24.6	6.5					28	2						
5216+34 Rt	SN 6			74.8				7.0			W6x20	21.4	21.4		27.5	5.8					28	2						
5241+40 Rt	SN 7&9			237.5				7.0			W10x39	29.9	29.9		36.4	7.0					28		2					
5283+73 Rt	SN 8&9			258.5				7.0			W10x39	31.4	31.4		34.5	7.0					28		2					
5327+02 Rt								7.0	16.2		3.5				16.6			1.3	6.0	0.3		1		1				
5336+95 Rt								7.0	17.1		5.0				23.7			1.8	7.0	0.6		1		1				
5346+90 Rt								7.0			W5x16	19.9	19.9		24.3	5.3					28		2	1				
Sub Total				892.8				**Total**	33.3			**Total**	491.6							0.9	308	12	12	6	0	0	0	
Exit 92																												
10+18 Lt								7.0	17.0	17.0	5.0				19.8	4.3		1.8	7.5	1.3		2		1				
12+28 Rt	SN 1			14.0				7.0			W4x13	13.4	14.2		42.9	3.5					28	2						
14+58 Lt								7.0	13.9		3.5				21.2			1.3	5.0	0.3		1		1				
14+72 Rt	S.A.A	16.9						7.0	18.1		4.0				18.1			1.3	7.5	0.4								
17+15 Lt								7.0	16.4		5.0				23.7			1.8	7.0	0.6		1		1				
17+26 Rt								7.0	16.4		5.0				23.7			1.8	7.0	0.6		1		1				
Sub Total		16.9		14.0				**Total**	98.8			**Total**	27.6							3.2	28	7	0	4	0	0	0	
Exit 100																												
10+07 Lt	SN 10			40.0				7.0	16.4	16.4	4.0				17.1	4.0		1.3	7.0	0.7		2						
12+33 Rt								7.0			W4x13	15.0	16.2		23.8	4.8					28		2	1				
14+53 Lt								7.0	13.9		3.5				21.2			1.3	5.0	0.3		1		1				
14+95 Rt	S.A.B			44.8				7.0			W4x13	19.2	20.2		21.5	3.8					28	1						
16+14 Rt	S.A.C	10.7						7.0	15.6		3.5				19.5			1.3	5.5	0.3		1						
16+99 Lt								7.0	16.4		5.0				23.7			1.8	7.0	0.6		1		1				
17+33 Rt	S.A.D		13.3					7.0	15.4		4.0				19.7			1.3	6.5	0.3		1						
Sub Total		10.7	13.3	84.8				**Total**	94.1			**Total**	70.6							2.2	56	7	2	3	0	0	0	
Grand Total		**27.6**	**13.3**	**991.6**				**Total**	**226.2**			**Total**	**589.8**							**6.3**	**392**	**26**	**14**	**13**	**0**	**0**	**0**	

Sign Summary
Round Steel Pipe & W-Shape

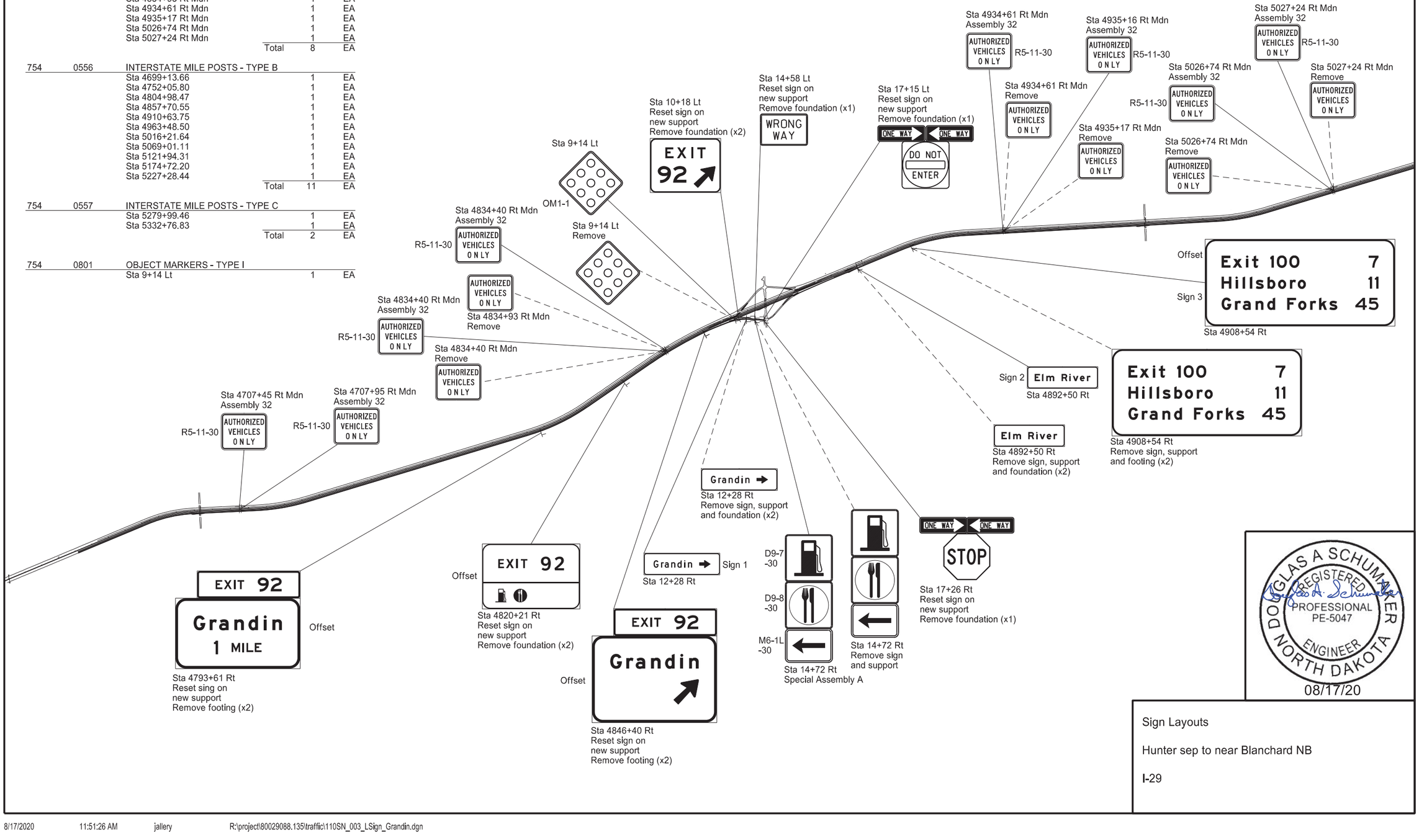
Hunter sep to near Blanchard NB

I-29

8/17/20 11:48:34AM

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	110	3

SPEC	CODE	BID ITEM		QTY	UNIT
754	0166	DELINEATORS-TYPE E			
		Sta 4707+45 Rt Mdn		1	EA
		Sta 4707+95 Rt Mdn		1	EA
		Sta 4834+40 Rt Mdn		1	EA
		Sta 4834+93 Rt Mdn		1	EA
		Sta 4934+61 Rt Mdn		1	EA
		Sta 4935+17 Rt Mdn		1	EA
		Sta 5026+74 Rt Mdn		1	EA
		Sta 5027+24 Rt Mdn		1	EA
			Total	8	EA
754	0556	INTERSTATE MILE POSTS - TYPE B			
		Sta 4699+13.66		1	EA
		Sta 4752+05.80		1	EA
		Sta 4804+98.47		1	EA
		Sta 4857+70.55		1	EA
		Sta 4910+63.75		1	EA
		Sta 4963+48.50		1	EA
		Sta 5016+21.64		1	EA
		Sta 5069+01.11		1	EA
		Sta 5121+94.31		1	EA
		Sta 5174+72.20		1	EA
		Sta 5227+28.44		1	EA
			Total	11	EA
754	0557	INTERSTATE MILE POSTS - TYPE C			
		Sta 5279+99.46		1	EA
		Sta 5332+76.83		1	EA
			Total	2	EA
754	0801	OBJECT MARKERS - TYPE I			
		Sta 9+14 Lt		1	EA



DOUGLAS A SCHUMACHER
REGISTERED
PROFESSIONAL
PE-5047
ENGINEER
NORTH DAKOTA
08/17/20

Sign Layouts

Hunter sep to near Blanchard NB

I-29

8/17/2020 11:51:26 AM jallery R:\project\80029088.135\traffic\110SN_003_LSign_Grandin.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	110	4

Sta 9+05 Lt
OM1-1

Sta 9+05 Lt
Remove

Sta 10+07 Lt
Sign 10
EXIT 100

Sta 10+07 Lt
Remove sign, support and foundation (x2)
EXIT 100

Sta 14+53 Lt
Reset sign on new support
Remove foundation (x1)
WRONG WAY

Sta 16+99 Lt
Reset sign on new support
Remove foundation (x1)
ONE WAY
ONE WAY
DO NOT ENTER

Sta 5177+52 Rt Mdn
Assembly 32
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5177+52 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY

Sta 5176+97 Rt Mdn
Assembly 32
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5097+12 Rt Mdn
Assembly 32
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5176+97 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY

Sta 5097+12 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY

Sta 5096+67 Rt Mdn
Assembly 32
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5096+67 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY

AUTHORIZED VEHICLES ONLY

Sta 5244+04 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5244+04 Rt Mdn
Assembly 32

AUTHORIZED VEHICLES ONLY

Sta 5243+53 Rt Mdn
Remove
AUTHORIZED VEHICLES ONLY
R5-11-30

Sta 5243+53 Rt Mdn
Assembly 32

STOP R1-1 -48

Sta 17+33 Rt
Special Assembly D

STOP

Sta 17+33 Rt
Remove sign, support and foundation (x1)

NORTH INTERSTATE NORTH DAKOTA 29

Sta 5327+02 Rt
Reset sign on new support
Remove foundation (x1)

SPEED LIMIT 75

Sta 5336+95 Rt
Reset sign on new support
Remove foundation (x1)

Sta 16+14 Rt
Remove

I-5 -30
M6-1L -30

Sta 16+14 Rt
Special Assembly C

Offset
Hillsboro 3
Mayville Exit 10
Grand Forks 37

Sta 5346+90 Rt
Reset sign on new support
Remove footing (x2)

VISITOR CENTER
1 MILE

Sta 5156+86 Rt
Remove sign, support and foundation (x2)

TOURIST INFO CENTER
1 MILE
Sign 4
Offset

Sta 5156+86 Rt

VISITOR CENTER

Sta 5216+34 Rt
Remove sign, support and foundation (x2)

EXIT 100
EAST 200
WEST 200A
Halstad
Blanchard
1 MILE

Sta 5241+40 Rt
Remove sign, support and footing (x2)

EXIT 100
EAST 200
WEST 200A
Halstad
Blanchard

Sta 5283+73 Rt
Remove sign, support and footing (x2)

ALTERNATE
WEST N 200
EAST N 200

Sta 14+95 Rt
Remove sign, support and foundation (x1)

M4-1 -36
ALTERNATE
M3-4 -36
WEST
EAST
M3-2 -36
M1-5 -45
NORTH DAKOTA 200
NORTH DAKOTA 200
M1-5 -45
M6-1L -30
M6-1R -30

Sta 14+95 Rt
Sign Assembly B

TOURIST INFO CENTER NEXT RIGHT
Sign 5
Offset

Sta 5205+22 Rt

VISITOR CENTER

Sta 5205+22 Rt
Remove sign, support and foundation (x2)

TOURIST INFO CENTER
Sign 6
Offset

Sta 5216+34 Rt

Sign 9
EXIT 100
EAST NORTH DAKOTA 200
WEST NORTH DAKOTA 200A
Offset
Sign 7
Halstad
Blanchard
1 MILE

Sta 5241+40 Rt

Sign 9
EXIT 100
EAST NORTH DAKOTA 200
WEST NORTH DAKOTA 200A
Offset
Halstad
Blanchard

Sta 5283+73 Rt
Sign 8

Blanchard 9
Halstad 10

Sta 12+33 Rt
Reset sing on new support
Remove footing (x2)

SPEC	CODE	BID ITEM	QTY	UNIT
754	0166	DELINEATORS-TYPE E		
		Sta 5096+67 Rt Mdn	1	EA
		Sta 5097+12 Rt Mdn	1	EA
		Sta 5176+97 Rt Mdn	1	EA
		Sta 5177+52 Rt Mdn	1	EA
		Sta 5243+53 Rt Mdn	1	EA
		Sta 5244+04 Rt Mdn	1	EA
		Total	6	EA
754	0801	OBJECT MARKERS - TYPE I		
		Sta 9+05 Lt	1	EA

DOUGLAS A SCHUMACHER
REGISTERED
PROFESSIONAL
PE-5047
ENGINEER
NORTH DAKOTA
08/17/20

Sign Layouts

Hunter sep to near Blanchard NB

I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	110	5

SIGN NUMBER	Sign 1
WIDTH X HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	3"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_8IN_TYPE D	61.3	8	8	12	270

STATION(S): 12+28 Rt

AREA: 14.0 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Destination.ssl

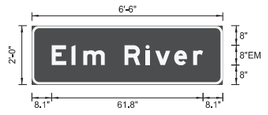
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
G	r	a	n	d	i	n														42.7	8/6	D 2000
10.6	18.9	22.9	30.1	36.9	44.5	48.6																

SIGN NUMBER	Sign 2
WIDTH X HEIGHT	6'-6" x 2'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	3"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): 4892+50 Rt

AREA: 13.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Geographic Feature.ssl

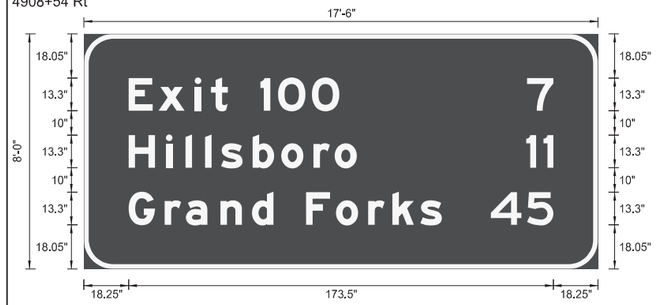
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	l	m		R	i	v	e	r												61.8	8/6	EM 2000
8.1	16.2	21	29.8	37.8	46.4	50.4	58.1	65.9														

SIGN NUMBER	Sign 3
WIDTH X HEIGHT	17'-6" x 8'-0"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): 4908+54 Rt

AREA: 140.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Distance_Post Intchg.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	x	i	t		1	0	0													86.1	13.3/10	EM 2000
18.3	30.5	45.3	51.9	58.8	72.1	79.3	93.1															
7																				10.8	13.3	E 2000
181																						
H	i	l	l	s	b	o	r	o												93.2	13.3/10	EM 2000
18.3	33.6	41.5	49.5	56	68.9	80.6	93.8	102.4														
1	1																			11	13.3	E 2000
180.7	187.8																					
G	r	a	n	d		F	o	r	k	s										127.9	13.3/10	EM 2000
18.3	33	41.7	55.8	68.7	77.4	90.7	103	116.1	126	137.4												
4	5																			25.5	13.3	E 2000
166.2	181																					

DOUGLAS A SCHUMACHER
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ENGINEER
NORTH DAKOTA
08/17/20

Sign Details

Hunter sep to near Blanchard NB

I-29

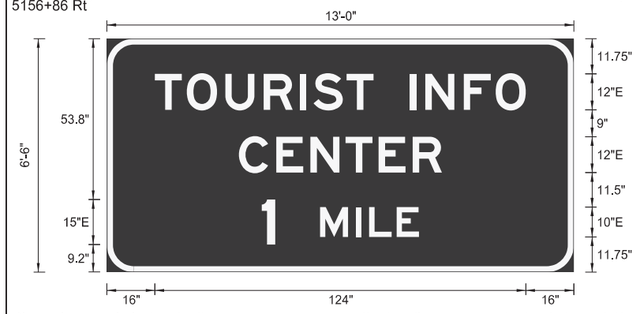
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	110	6

SIGN NUMBER	Sign 4
WIDTH X HEIGHT	13'-0" x 6'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): 5156+86 Rt

AREA: 84.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Gen Serv_TouristInfo.ssl

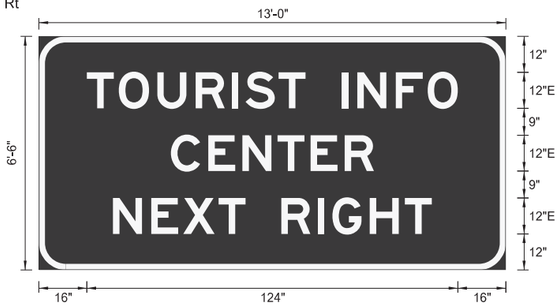
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
T	O	U	R	I	S	T		I	N	F	O									124	12	E 2000
16	26.7	39.5	52.4	64.5	69.1	80.1	89.1	101.1	106.4	119.2	129.9											
C	E	N	T	E	R															67.8	12	E 2000
44.1	56.6	68	79.7	90.8	102.2																	
1	M	I	L	E																52.6	15,10	E 2000
51.7	71.2	83.2	87.6	96.8																		

SIGN NUMBER	Sign 5
WIDTH X HEIGHT	13'-0" x 6'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): 5205+22 Rt

AREA: 84.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Gen Serv_TouristInfo.ssl

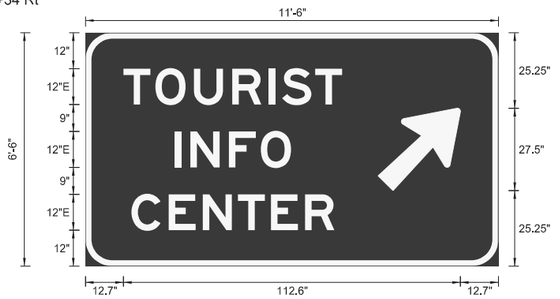
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
T	O	U	R	I	S	T		I	N	F	O									124	12	E 2000
16	26.7	39.5	52.4	64.5	69.1	80.1	89.1	101.1	106.4	119.2	129.9											
C	E	N	T	E	R															67.8	12	E 2000
44.1	56.6	68	79.7	90.8	102.2																	
N	E	X	T		R	I	G	H	T											106.6	12	E 2000
24.7	37.6	48.2	60	69	81	93.1	98	110.5	122.3													

SIGN NUMBER	Sign 6
WIDTH X HEIGHT	11'-6" x 6'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_16IN_TYPE A	97.8	25.3	22.2	35	315

STATION(S): 5216+34 Rt

AREA: 74.8 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Gen Serv_TouristInfo.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
T	O	U	R	I	S	T														73.1	12	E 2000
12.7	23.4	36.2	49.1	61.2	65.7	76.8																
I	N	F	O																	38.9	12	E 2000
29.8	35.1	47.9	58.6																			
C	E	N	T	E	R															67.8	12	E 2000
15.3	27.8	39.2	51	62	73.4																	

08/17/20

Sign Details

Hunter sep to near Blanchard NB

I-29

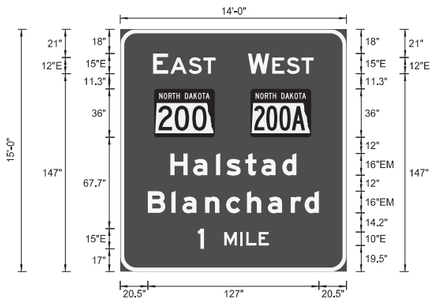
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	110	7

SIGN NUMBER	Sign 7
WIDTH X HEIGHT	14'-0" x 15'-0"
BORDER WIDTH	3" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_M1-5_3	25.1	99.7	45	36	0
ND_M1-5_4	96.7	99.7	45	36	0

STATION(S): 5241+40 Rt

AREA: 210.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Advance_Int.ssl

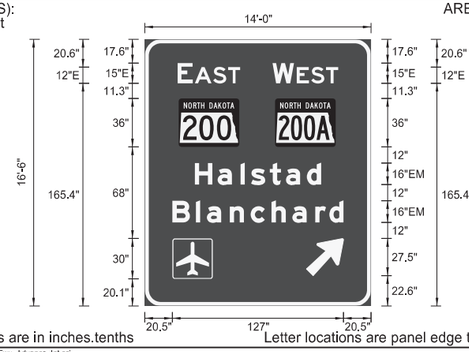
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	A	S	T																	46.4	15,12	E 2000
24.4	37.2	50.8	61.8																			
W	E	S	T																	48.8	15,12	E 2000
94.8	112.9	123.5	134.6																			
H	a	l	s	t	a	d														93.8	16/12	EM 2000
37.1	54.1	71	78.9	92.8	104.8	120.3																
B	l	a	n	c	h	a	r	d												127	16/12	EM 2000
20.5	37.9	46.1	63	78.6	94.1	109.6	126.6	137														
1	M	I	L	E																52.6	15,10	E 2000
57.7	77.2	89.2	93.6	102.8																		

SIGN NUMBER	Sign 8
WIDTH X HEIGHT	14'-0" x 16'-6"
BORDER WIDTH	3" (inset 0")
CORNER RADIUS	12"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_M1-5_3	25.1	118.1	45	36	0
ND_M1-5_4	96.7	118.1	45	36	0
ND_16IN_TYPE A	120	22.6	22.2	35	315
ND_I-5	20.5	20.1	30	30	0

STATION(S): 5283+73 Rt

AREA: 231.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Advance_Int.ssl

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
E	A	S	T																	46.4	15,12	E 2000
24.4	37.2	50.8	61.8																			
W	E	S	T																	48.8	15,12	E 2000
94.8	112.9	123.5	134.6																			
H	a	l	s	t	a	d														93.8	16/12	EM 2000
37.1	54.1	71	78.9	92.8	104.8	120.3																
B	l	a	n	c	h	a	r	d												127	16/12	EM 2000
20.5	37.9	46.1	63	78.6	94.1	109.6	126.6	137														

DOUGLAS A SCHUMACHER
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ENGINEER
NORTH DAKOTA

08/17/20

Sign Details

Hunter sep to near Blanchard NB

I-29

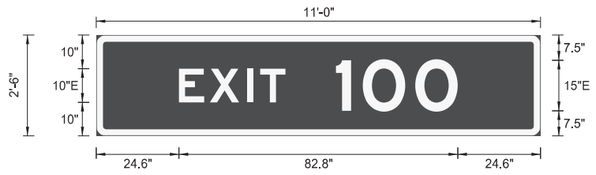
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	110	8

SIGN NUMBER	Sign 9
WIDTH X HEIGHT	11'-0" x 2'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	3"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
5241+40 Rt
5283+73 Rt

AREA: 27.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Exit Panel.tsl

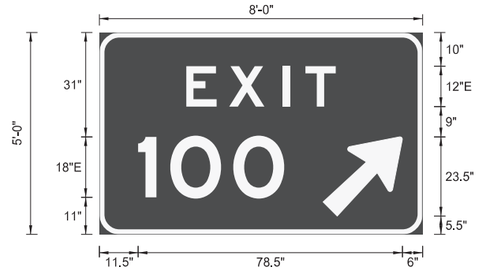
LETTER POSITION (X)																		LENGTH	SIZE	SERIES
E	X	I	T															31.6	10	E 2000
24.6	33.8	44.9	48.7																	
1	0	0																36.2	15	E 2000
71.2	79.2	94.8																		

SIGN NUMBER	Sign 10
WIDTH X HEIGHT	8'-0" x 5'-0"
BORDER WIDTH	1.5" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE A	66.5	5.5	18.2	30	315

STATION(S):
10+07 Lt

AREA: 40.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Fwy_Gore.tsl

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
E	X	I	T															44.4	12	E 2000
25.8	38.6	54.4	61.2																	
1	0	0																43.4	18	E 2000
11.5	21.1	39.8																		

DOUGLAS A SCHUMACHER
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NORTH DAKOTA

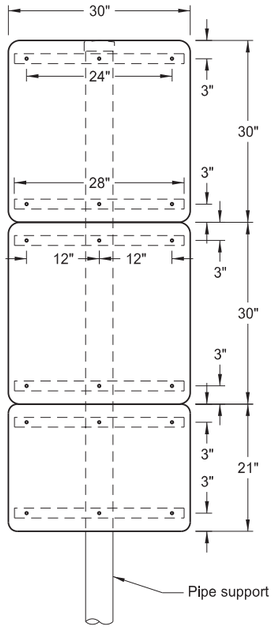
08/17/20

Sign Details

Hunter sep to near Blanchard NB

I-29

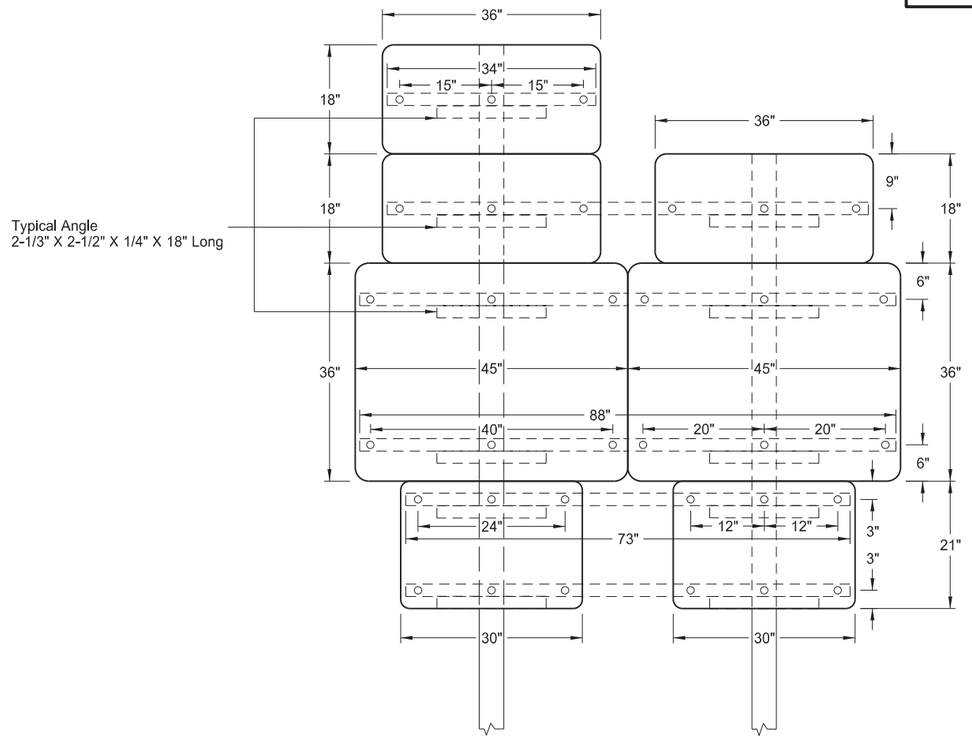
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	110	9



Special Assembly A
(Round Pipe)

Sta 14+72 Rt

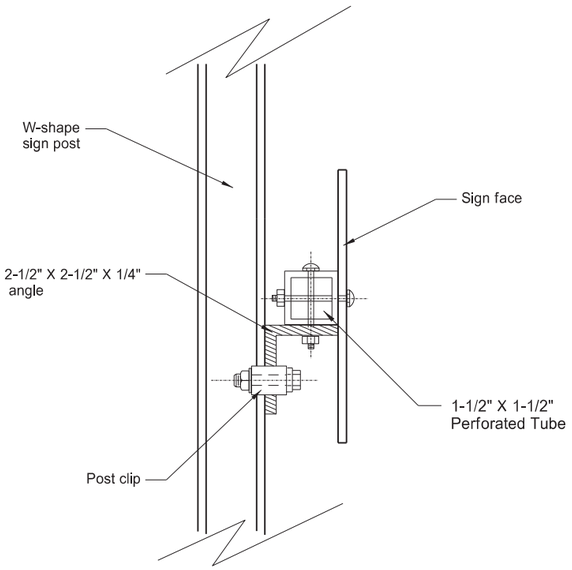
Pay Area: 16.9 SF



Special Assembly B
(W-Shape)

Sta 14+95 Rt

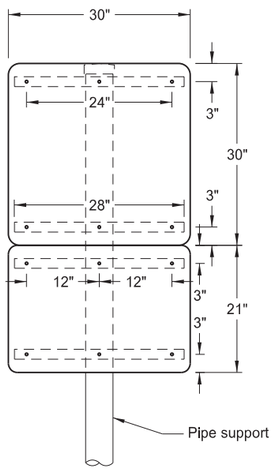
Pay Area: 44.8 SF



Side View

FLAT SHEET ATTACHED TO W-SHAPE DETAIL

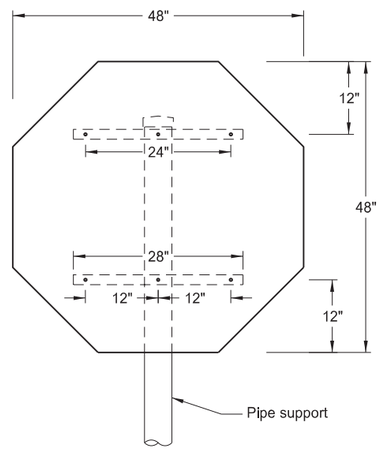
Special Assembly B



Special Assembly C
(Round Pipe)

Sta 16+14 Rt

Pay Area: 10.7 SF



Special Assembly D
(Round Pipe)

Sta 17+33 Rt

Pay Area: 13.3 SF

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NORTH DAKOTA

08/17/20

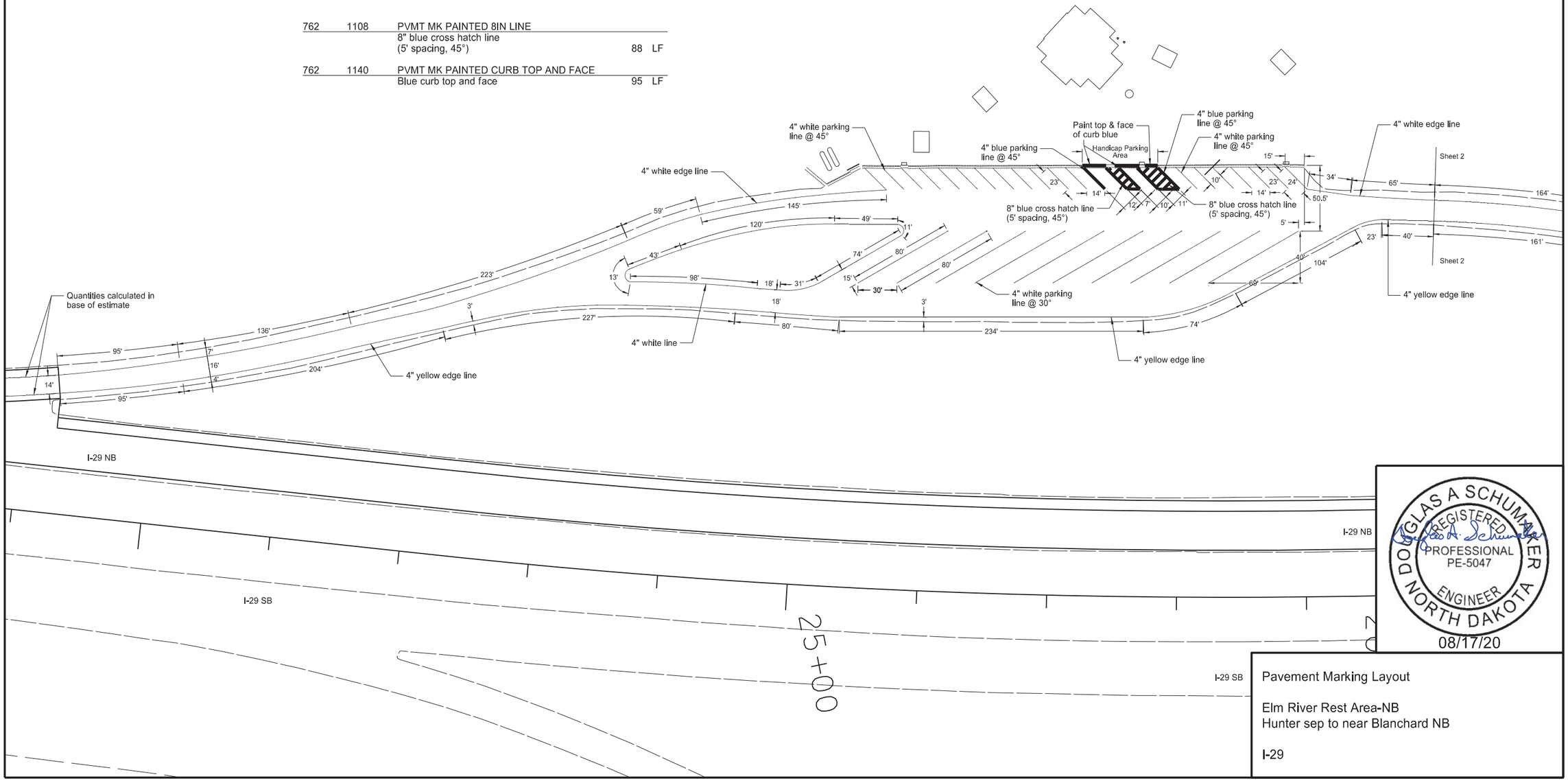
Sign Details

Hunter sep to near Blanchard NB

I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	120	1

SPEC	CODE	BID ITEM		QTY	UNIT
762	1104	PVMT MK PAINTED 4IN LINE			
		4" white line		456	LF
		4" white edge line		757	LF
		4" yellow edge line		1081	LF
		4" white parking line		1239	LF
		4" blue parking line		142	LF
			Total	3675	LF
762	1108	PVMT MK PAINTED 8IN LINE			
		8" blue cross hatch line (5' spacing, 45°)		88	LF
762	1140	PVMT MK PAINTED CURB TOP AND FACE			
		Blue curb top and face		95	LF



DOUGLAS A SCHUMACHER
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NORTH DAKOTA
08/17/20

Pavement Marking Layout

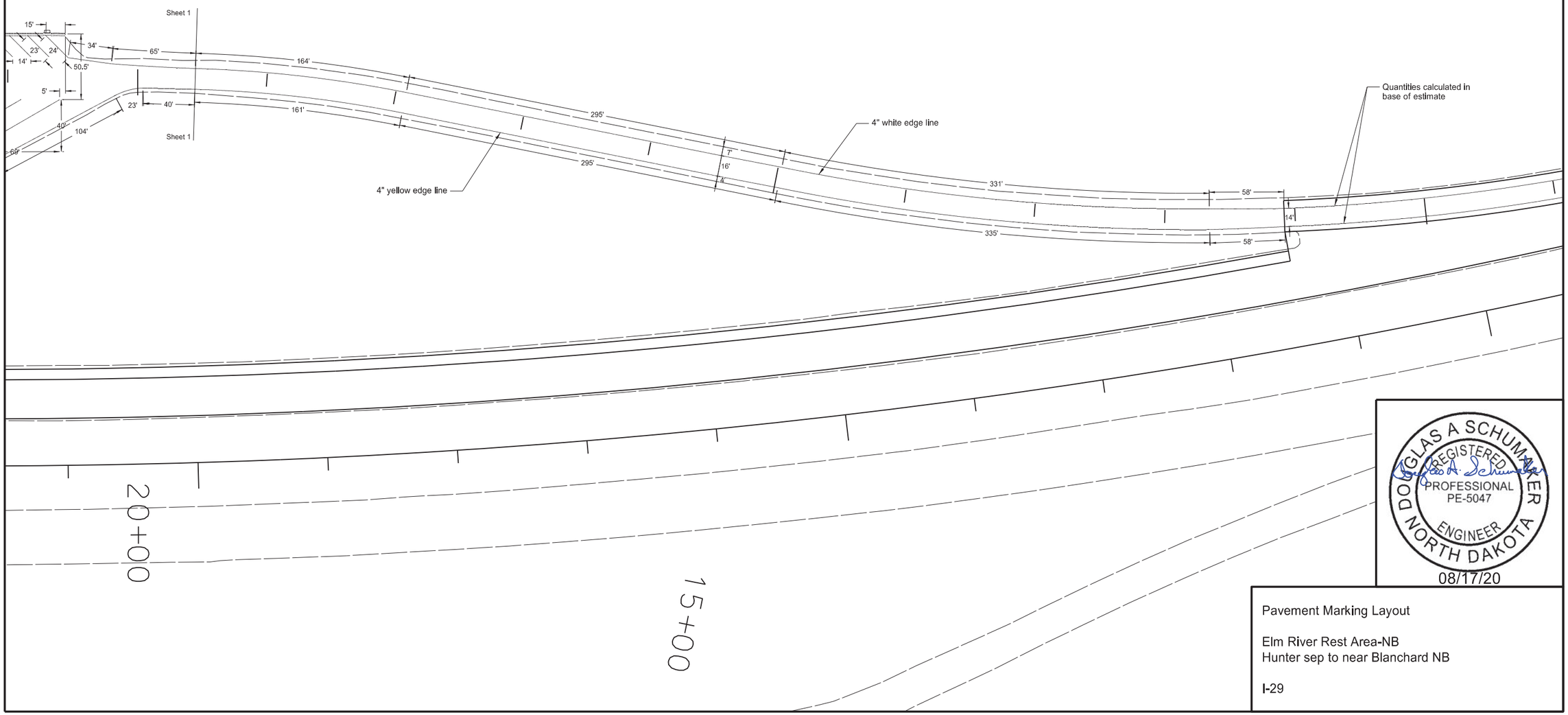
Elm River Rest Area-NB
Hunter sep to near Blanchard NB

I-29

8/17/2020 11:55:28 AM jallery R:\project\80029088.135\traffic\120MK_001_LPvmt_RestArea.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	120	2

SPEC	CODE	BID ITEM	QTY	UNIT
762	1104	PVMT MK PAINTED 4IN LINE		
		4" white edge line	848	LF
		4" yellow edge line	848	LF
		Total	1696	LF



DOUGLAS A SCHUMACHER
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PE-5047
ENGINEER
NORTH DAKOTA
08/17/20

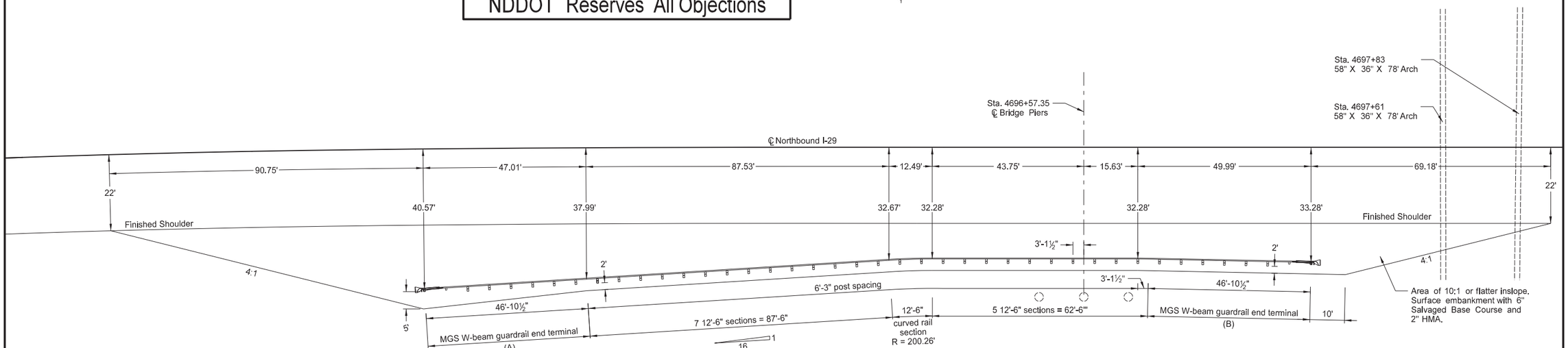
Pavement Marking Layout

Elm River Rest Area-NB
Hunter sep to near Blanchard NB

I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	1

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Install a MGS FLEAT End Terminal at this location. See Standard D-764-38.

(B) Install a MASH SoftStop or SKT End Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH SoftStop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail Layout
Outside Pier Protection

Hunter Separation
RP 88.947

NB I-29

8/20/2020 9:23:09 AM ehodgson pw:\\srf-pw.bentley.com:srf-pw\Documents\Projects\12394\8029088.135\Design\Plan\130GR_001__LGDRL.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	2

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES							
MGS W-BEAM GUARDRAIL AT OBSTRUCTIONS							
Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4694+66.05 to 4697+22.97 Rt	26	112	26	26	12	1	7
Total	26	112	26	26	12	1	7

SPEC	CODE	BID ITEM	QTY	UNIT
764	0131	W-BEAM GUARDRAIL		
		Sta 4695+16.50 to 4696+76.10 Rt	162.5	LF
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Sta 4694+66.05 to 4695+16.50 Rt	1	EA
		Sta 4696+76.10 to 4697+22.97 Rt	1	EA

NOTES:
(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

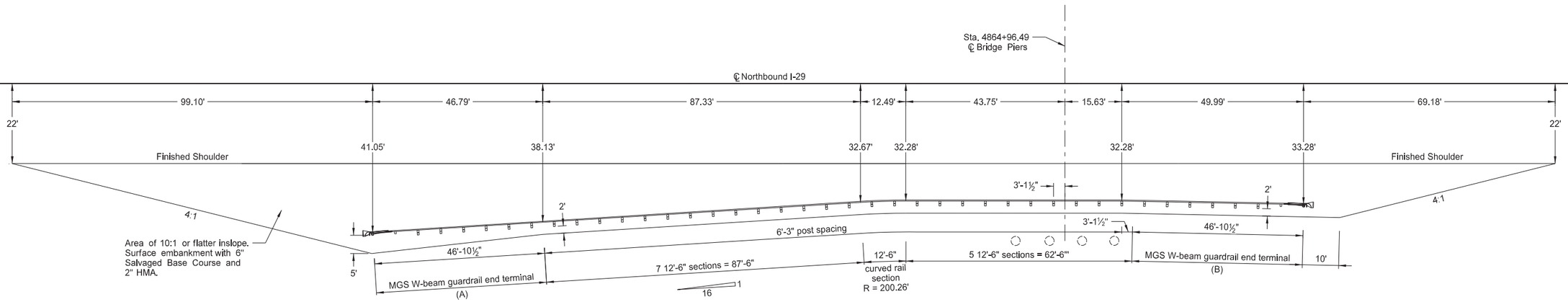
MGS W-Beam Guardrail Quantites
Outside Pier Protection

Hunter Separation
RP 88.947

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	3

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Install a MGS FLEAT End Terminal at this location. See Standard D-764-38.

(B) Install a MASH SoftStop or SKT End Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH SoftStop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail Layout
Outside Pier Protection

Grandin Interchange
RP 92.124

NB I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	4

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES							
MGS W-BEAM GUARDRAIL AT OBSTRUCTIONS							
Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4863+06.13 to 4865+62.10 Rt	26	112	26	26	12	1	7
Total	26	112	26	26	12	1	7

SPEC	CODE	BID ITEM	QTY	UNIT
764	0131	W-BEAM GUARDRAIL		
		Sta 4863+52.92 to 4865+15.24 Rt	162.5	LF
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Sta 4863+06.13 to 4863+52.92 Rt	1	EA
		Sta 4865+15.24 to 4865+62.10 Rt	1	EA

NOTES:
(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

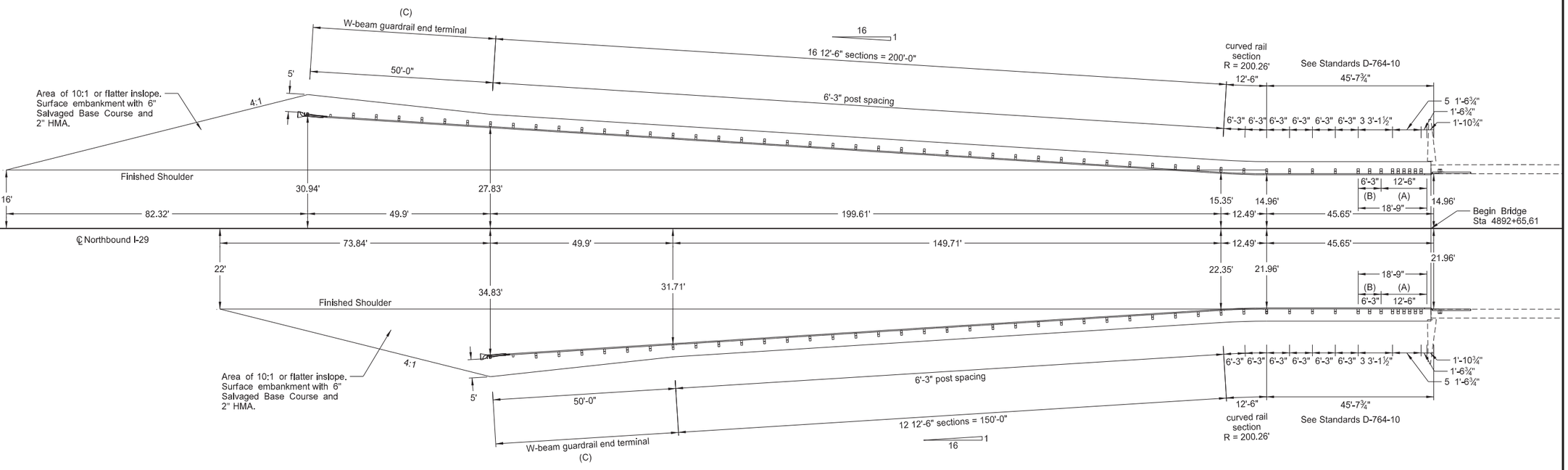
MGS W-Beam Guardrail Quantites
Outside Pier Protection

Grandin Interchange
RP 92.124

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	5

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Thrie beam rail section (Double Thickness)

(B) W-Thrie beam transition section (Double Thickness)

(C) Install a FLEAT Terminal at this location.
See Standard D-764-6.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

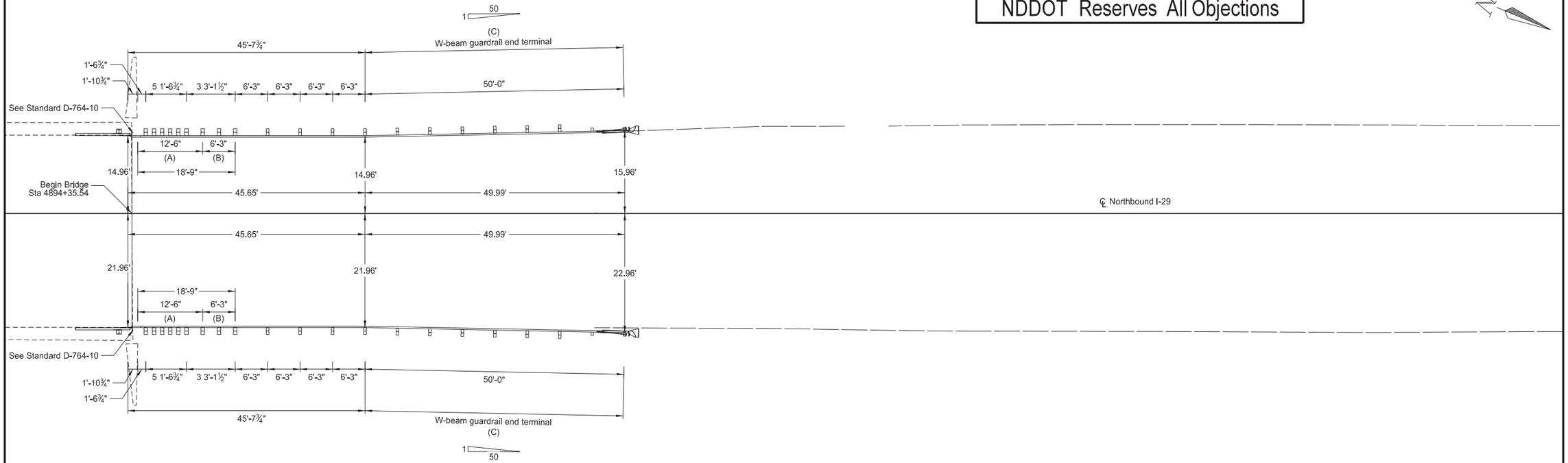
Thrie/W-Beam Guardrail Layout

Elm River Bridge
RP 92.672

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	6

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Thrie beam rail section (Double Thickness)

(B) W-Thrie beam transition section (Double Thickness)

(C) Install a SKT Terminal at this location.
See Standard D-764-5.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

Thrie/W-Beam Guardrail Layout

Elm River Bridge
RP 92.672

NB I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	7

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES
THRIE/W-BEAM GUARDRAIL AT OBSTRUCTIONS

Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES	(A) 8" X 8" X 6'-0" TIMBER POST	(A) 8" X 8" X 22" TIMBER OFFSET BLOCK	(A) 8" X 8" X 18" TIMBER OFFSET BLOCK	(A) 8" X 8" X 14" TIMBER OFFSET BLOCK	(A) 6'-3" W-THRIE BEAM TRANS-ITION SECTION	(A) 12'-6" DOUBLE THRIE BEAM SECTION	(A) 2'-6" THRIE BEAM TERMINAL CONNE-CTOR	(A) 7/8" ø X VARIABLE LONG HEX HEAD BOLT	(A) 3/4" ø X 2-1/2" LONG POST BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4889+58.73 to 4892+66.38 Rt Mdn	23	56	6	6	2	1	8	9	7	1	1	1	1	1	5	2
Sta 4890+08.63 to 4892+66.38 Rt	23	56	6	6	2	1	7	9	7	1	1	1	1	1	5	2
Sta 4894+34.77 to 4894+80.42 Rt Mdn	21	48	4	4	2		5	9	7	1	1	1	1	1	5	2
Sta 4894+34.77 to 4894+80.42 Rt	21	48	4	4	2		5	9	7	1	1	1	1	1	5	2
Total	88	208	20	20	8	2	25	36	28	4	4	4	4	4	20	8

SPEC	CODE	BID ITEM	QTY	UNIT
764	0131	W-BEAM GUARDRAIL		
		Sta 4892+08.24 to 4892+66.38 Rt Mdn	58.2	LF
		Sta 4892+08.24 to 4892+66.38 Rt	58.2	LF
		Sta 4894+34.77 to 4894+80.42 Rt Mdn	45.7	LF
		Sta 4894+34.77 to 4894+80.42 Rt	45.7	LF
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Sta 4889+58.73 to 4890+08.63 Rt Mdn	1	EA
		Sta 4890+08.63 to 4890+58.53 Rt	1	EA
		Sta 4894+80.42 to 4895+30.40 Rt Mdn	1	EA
		Sta 4894+80.42 to 4895+30.40 Rt	1	EA
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS		
		Sta 4889+96.78 to 4892+58.11 Rt Mdn	264.4	LF
		Sta 4890+34.32 to 4892+58.11 Rt	226.9	LF
764	1050	RESET W-BEAM GUARDRAIL		
		Sta 4890+08.63 to 4892+08.24 Rt Mdn	200	LF
		Sta 4890+58.53 to 4892+08.24 Rt	150	LF
764	2081	REMOVE END TREATMENT & TRANSITION		
		Sta 4889+59.69 to 4889+96.78 Rt Mdn	1	EA
		Sta 4889+97.37 to 4890+34.32 Rt	1	EA

NOTES:
(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

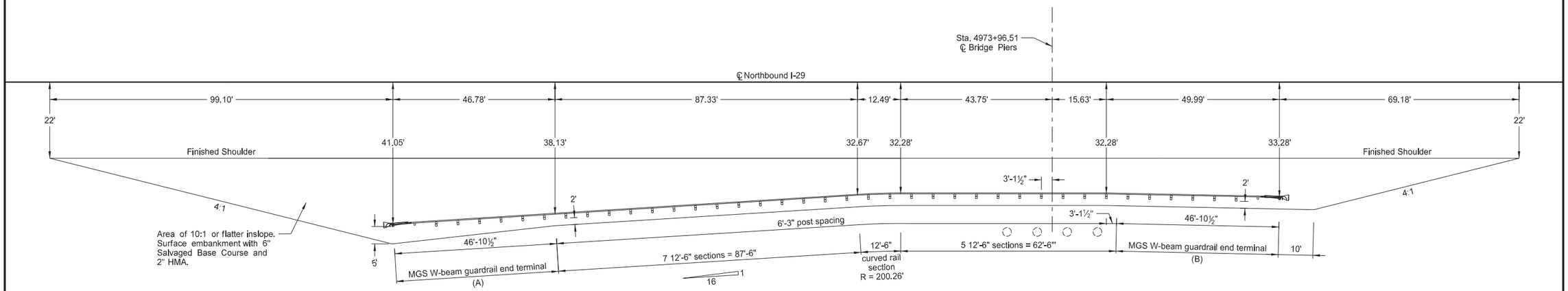
Thrie/W-Beam Guardrail Quantites

Elm River Bridge
RP 92.672

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	8

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Install a MGS FLEAT End Terminal at this location. See Standard D-764-38.

(B) Install a MASH SoftStop or SKT End Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH SoftStop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail Layout
Outside Pier Protection

Galesburg Separation
RP 94.196

NB I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	9

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES							
MGS W-BEAM GUARDRAIL AT OBSTRUCTIONS							
Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4972+06.16 to 4974+62.13 Rt	26	112	26	26	12	1	7
Total	26	112	26	26	12	1	7

SPEC	CODE	BID ITEM	QTY	UNIT
764	0131	W-BEAM GUARDRAIL		
		Sta 4972+52.94 to 4974+15.26 Rt	162.5	LF
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Sta 4972+06.16 to 4972+52.94 Rt	1	EA
		Sta 4974+15.26 to 4974+62.13 Rt	1	EA

NOTES:
(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

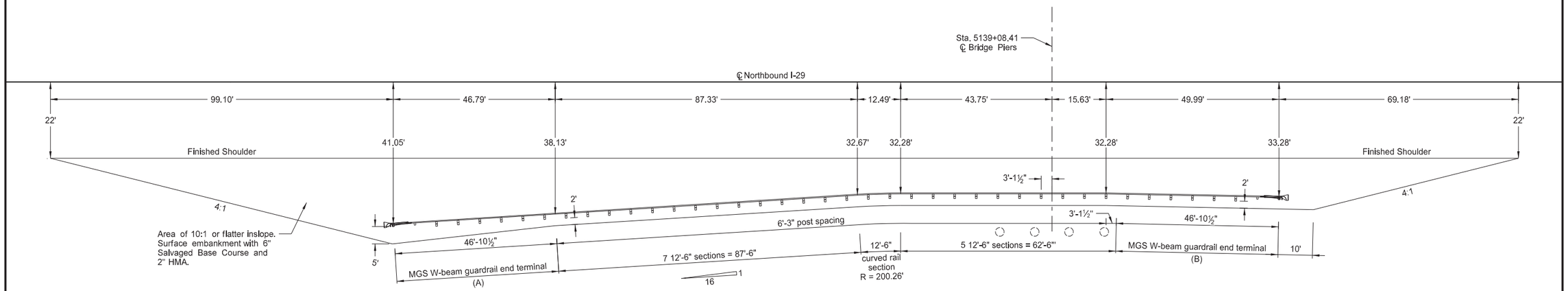
MGS W-Beam Guardrail Quantites
Outside Pier Protection

Galesburg Separation
RP 94.196

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	10

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Install a MGS FLEAT End Terminal at this location. See Standard D-764-38.

(B) Install a MASH SoftStop or SKT End Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH SoftStop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail Layout
Outside Pier Protection

Kelso Separation
RP 97.333

NB I-29

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	11

23 USC § 409 Documents
NDDOT Reserves All Objections

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES							
MGS W-BEAM GUARDRAIL AT OBSTRUCTIONS							
Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 5137+18.05 to 5139+74.02 Rt	26	112	26	26	12	1	7
Total	26	112	26	26	12	1	7

SPEC	CODE	BID ITEM	QTY	UNIT	
764	0131	W-BEAM GUARDRAIL			
		Sta 5137+64.84 to 5139+27.16 Rt	162.5	LF	
764	0145	W-BEAM GUARDRAIL END TERMINAL			
		Sta 5137+18.05 to 5137+64.84 Rt	1	EA	
		Sta 5139+27.16 to 5139+74.02 Rt	1	EA	
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS			
		Sta 5199+15.66 to 5201+78.97 Rt Mdn	264.4	LF	(B)
		Sta 5199+48.71 to 5201+78.97 Rt	226.9	LF	(B)
764	2081	REMOVE END TREATMENT & TRANSITION			
		Sta 5198+78.63 to 5199+15.66 Rt Mdn	1	EA	(B)
		Sta 5199+15.41 to 5199+48.71 Rt	1	EA	(B)

NOTES:

(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

(B) Removal is located at the North Branch Elm River crossing in the NB I-29 lanes.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

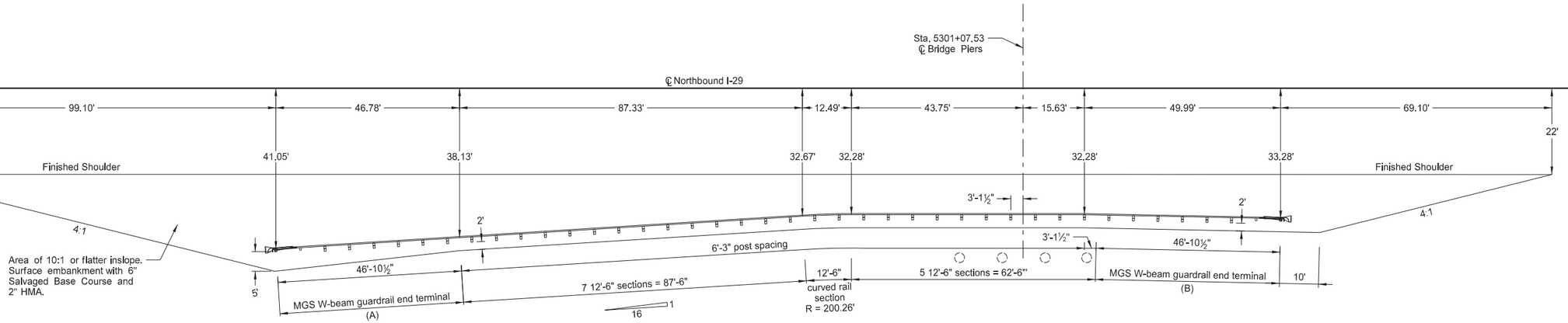
MGS W-Beam Guardrail Quantites
Outside Pier Protection

Kelso Separation
RP 97.333

NB I-29

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	130	12

23 USC § 409 Documents
NDDOT Reserves All Objections



Legend

(A) Install a MGS FLEAT End Terminal at this location. See Standard D-764-38.

(B) Install a MASH SoftStop or SKT End Terminal at this location. See Standard D-764-50 or D-764-51. Dimensions shown are for a MASH SKT End Terminal. If a MASH SoftStop End Terminal is used, install per Standard D-764-50 at a 50:1 taper over it's length.

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

MGS W-Beam Guardrail Layout
Outside Pier Protection

Blanchard Interchange
RP 100.391

NB I-29

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	130	13

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES							
MGS W-BEAM GUARDRAIL AT OBSTRUCTIONS							
Location	(A) 5/8" ø X 18" LONG GUARD-RAIL BOLT	(A) 5/8" ø X 1-1/4" LONG GUARD-RAIL BOLT	(A) 6" X 8" X 6'-0" TIMBER POST	(A) 6" X 8" X 14" TIMBER BLOCK	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) REFLEC-TORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 5299+17.18 to 5301+73.15 Rt	26	112	26	26	12	1	7
Total	26	112	26	26	12	1	7

SPEC	CODE	BID ITEM	QTY	UNIT
764	0131	W-BEAM GUARDRAIL		
		Sta 5299+63.96 to 5301+26.28 Rt	162.5	LF
764	0145	W-BEAM GUARDRAIL END TERMINAL		
		Sta 5299+17.18 to 5299+63.96 Rt	1	EA
		Sta 5301+26.28 to 5301+73.15 Rt	1	EA

NOTES:
(A) Include these items in the contract unit price bid for "W-BEAM GUARDRAIL".

REGISTERED PROFESSIONAL ENGINEER
ERIC HODGSON
PE-10605
DATE: 8/20/2020
NORTH DAKOTA

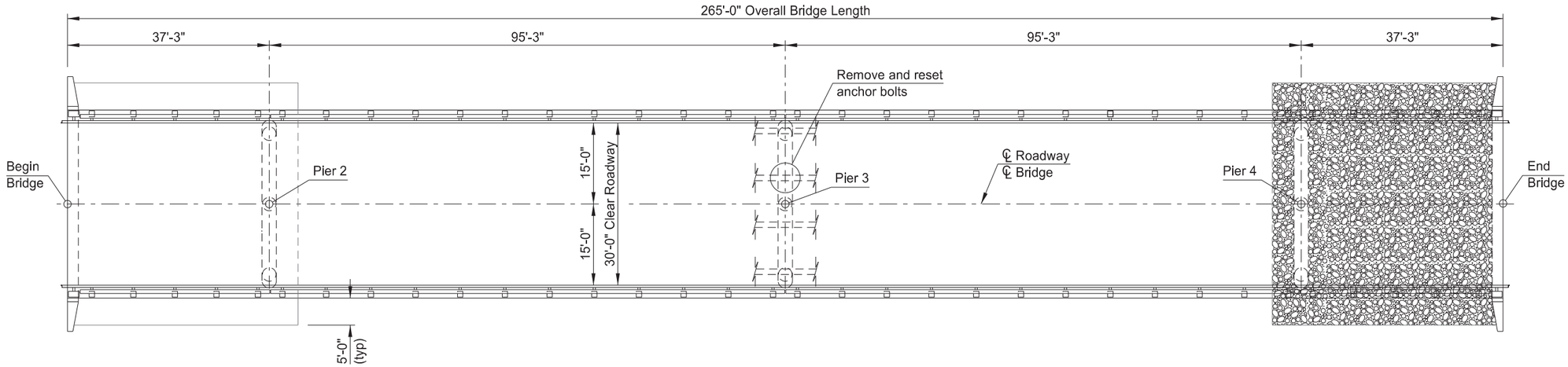
MGS W-Beam Guardrail Quantites
Outside Pier Protection

Blanchard Interchange
RP 100.391

NB I-29

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

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	1



PLAN

Hatched area indicates aggregate slope protection areas.

NOTES:

100 SCOPE OF WORK: Work at this site consists of removing and resetting an anchor bolt and removing and replacing the existing concrete slope protection, adjacent to the northbound roadway, with aggregate slope protection .

602 REMOVE AND RESET ANCHOR BOLTS: Remove and reset loose anchor bolt for beam number 2 on pier 3. Remove any debris from anchor bolt and anchor bolt hole in pier cap. Embed the anchor bolts into concrete using a chemical adhesive system that meets the requirements of AASHTO M 235, Type IV, Grade 3. Select the appropiate class of adhesive based on the surface temperature of the concrete the adhesive will be applied to and install according to Manufacturer's recomendations.

Include all costs for labor, materials, and equipment to complete this work in the unit price bid for “Remove and Reset Anchor Bolts.”

930 AGGREGATE SLOPE PROTECTION: Remove the existing concrete slope protection and place ordinary backfill and aggregate slope protection on the embankment slopes as shown. Place the ordinary backfill in accordance with Section 210.

Clear the subgrade of rubbish and vegetation before placing the aggregate slope protection. Thoroughly compact all loose material. Excavate or backfill as required to obtain the plan cross-section or lines and grades established in the field.

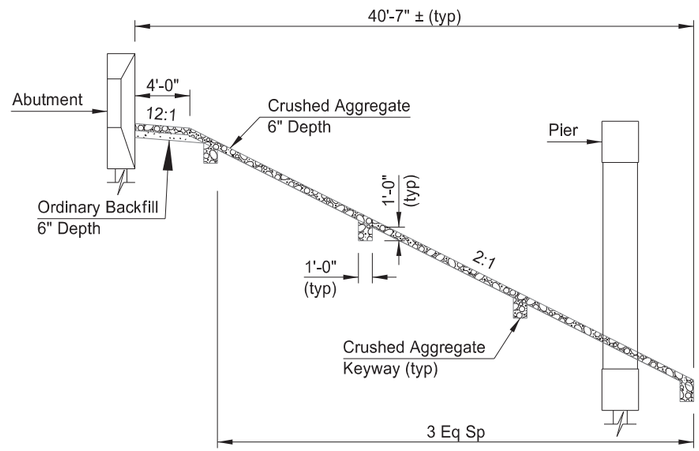
The gradation of the material used to form the slope protection is given in the following chart:

Sieve Size	% Passing
2"	100%
¾"	5-35%
#4	0-5%

The minimum fractured face requirement of the aggregate is 50% by weight on the portion of the aggregate retained on the No. 4 sieve. To be considered fractured the rock must have at least one fractured face.

Deposit, spread, consolidate, and shape the aggregate by mechanical or hand methods to provide a uniform depth and density and produce a uniform surface appearance. Apply MC-250 that meets the requirements of Section 818.02 C, “Medium-Curing Cutback Asphalt” at an approximate rate of 1.8 gallons per square yard. The bituminous materials are to penetrate to a depth of not less than one-half the required thickness of the aggregate. Protect adjacent structure surfaces against bituminous splatter.

Include all costs for labor, materials, and equipment to complete this work, including the removals of the existing concrete slope protection and the ordinary backfill, in the unit price bid for “Aggregate Slope Protection.”



AGGREGATE SLOPE PROTECTION DETAIL

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	2000	REMOVE AND RESET ANCHOR BOLTS	EA	1
930	8686	AGGREGATE SLOPE PROTECTION	SY	225

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE 08/25/20
NORTH DAKOTA
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HUNTER SEPARATION

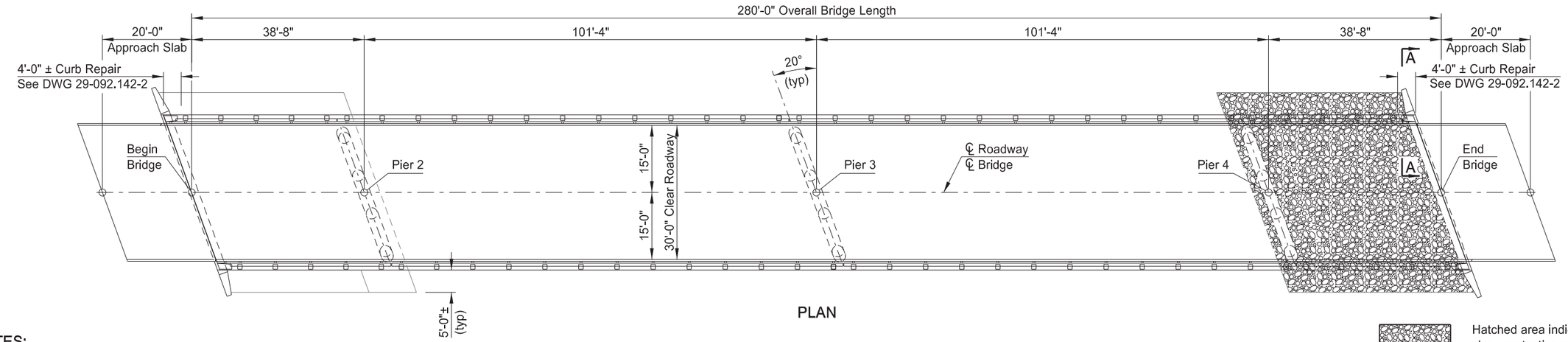
STATION: 4696+57

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION
08/26/20
DocuSign

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

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	2



PLAN

Hatched area indicates aggregate slope protection areas.

NOTES:

100 SCOPE OF WORK: Work at this site consists of repairing spall areas on the curb, repairing concrete spall areas on pier caps, removing and resetting anchor bolts on the piers, and removing and replacing the existing concrete slope protection, adjacent to the northbound roadway, with aggregate slope protection.

602 REMOVE AND RESET ANCHOR BOLTS: Remove and reset anchor bolts for girders 1-4 at pier 3 and girders 1-3 at pier 4. Remove any debris from anchor bolts and anchor bolt holes in pier cap. Embed the anchor bolts into concrete using a chemical adhesive system that meets the requirements of AASHTO M 235, Type IV, Grade 3. Select the appropiate class of adhesive based on the surface temperature of the concrete the adhesive will be applied to, and install according to Manufacturer's recomendations.

Include all costs for labor, materials, and equipment to complete this work in the unit price bid for "Remove and Reset Anchor Bolts."

930 SILICONE SEALANT: Remove and replace the backer rod and silicone sealant between the approach slab and deck at both ends of the bridge (See Joint Detail). Clean the joint of all foreign material and sandblast before the new backer rod and silicone sealant is installed. Provide a silicone sealant in accordance with Section 826.02 B.1. Provide a larger backer rod diameter if the existing joint is greater than the 1" as shown. Extend the new silicone sealant and backer rod 6" up the face of the curb. Include all materials, labor and equipment required to remove and replace the backer rod and silicone sealant in the bid item "Silicone Sealant."

930 AGGREGATE SLOPE PROTECTION: Remove the existing concrete slope protection and place aggregate slope protection and ordinary backfill on the embankment slopes as shown. Place ordinary backfill in accordance with Section 210.

Clear the subgrade of rubbish and vegetation before placing the aggregate slope protection. Thoroughly compact all loose material. Excavate or backfill as required to obtain the plan cross-section or lines and grades established in the field.

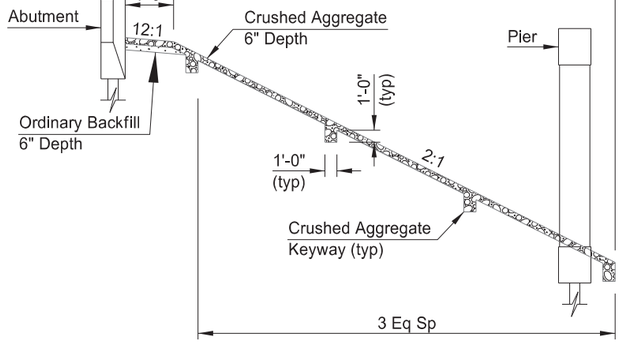
The gradation of the material used to form the slope protection is given in the following chart:

Sieve Size	% Passing
2"	100%
¾"	5-35%
#4	0-5%

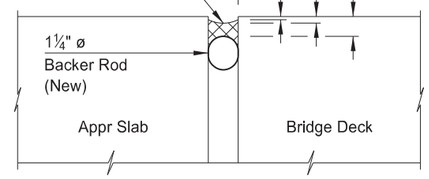
The minimum fractured face requirement of the aggregate is 50% by weight on the portion of the aggregate retained on the No. 4 sieve. To be considered fractured the rock must have at least one fractured face.

Deposit, spread, consolidate, and shape the aggregate by mechanical or hand methods to provide a uniform depth and density and produce a uniform surface appearance. Apply MC-250 that meets the requirements of Section 818.02 C, "Medium-Curing Cutback Asphalt" at an approximate rate of 1.8 gallons per square yard. The bituminous materials are to penetrate to a depth of not less than one-half the required thickness of the aggregate. Protect adjacent structure surfaces against bituminous splatter.

Include all costs for labor, materials, and equipment to complete this work, including the removals of the existing concrete slope protection and ordinary backfill, in the unit price bid for "Aggregate Slope Protection."



AGGREGATE SLOPE PROTECTION DETAIL



JOINT DETAIL

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	2000	REMOVE AND RESET ANCHOR BOLTS	EA	14
602	2105	CURB REPAIR	SF	23.3
930	8644	SILICONE SEALANT	LF	66
930	8686	AGGREGATE SLOPE PROTECTION	SY	240
930	9612	SPALL REPAIR	SF	10

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE 08/25/20
NORTH DAKOTA
DocuSign

GRANDIN INTERCHANGE

STATION: 4685+31

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

08/26/20

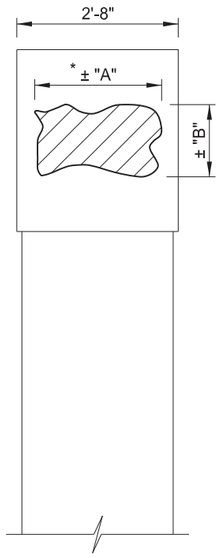
DocuSign

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

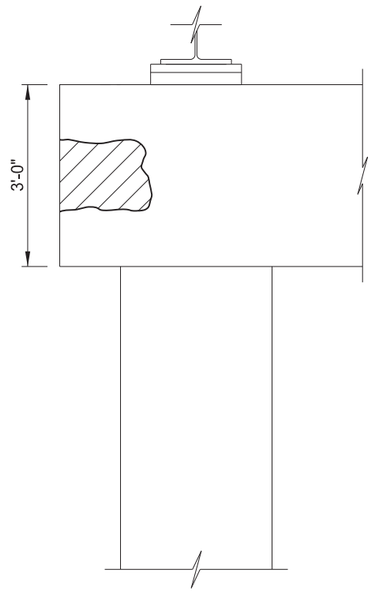
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	3

* Dimension A is measured along the curve of the pier cap.

Indicates spall repair area.



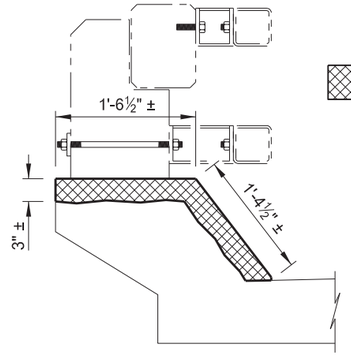
END VIEW



ELEVATION

SPALL REPAIR DETAILS

SPALL REPAIR			
PIER	LOCATION	"A"	"B"
3	North	1'-11"	0'-7"
3	South	1'-1"	0'-8"
4	South	1'-4"	1'-6"



CURB REPAIR
A-A

Indicates curb repair area.

NOTES:

602 CURB REPAIR: The northwest and northeast curb ends require repair as shown in the "Curb Repair Detail" at the locations indicated on "DWG 29-092.142-1."

Remove all unsound concrete and replace it with new concrete material. Use a 15 pound maximum size chipping hammer on any unsound concrete, also remove all concrete around the periphery of the exposed rebar to maintain a minimum clearance of 1" around the bar. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer.

Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantity is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation view. The Engineer will sound the curb and mark out the actual limits of the repair in the field. It is also assumed that the spall repair areas are approximately 3 inches deep at the curb. Include all labor, equipment and materials needed to repair the spall areas in the bid item "Barrier Repair."

930 SPALL REPAIR: The Engineer will sound and mark out areas of unsound concrete at the end of the pier caps identified in the Spall Repair table.

Remove all unsound concrete and replace it with new concrete material. Use a 15 pound maximum size chipping hammer on any unsound concrete. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer. Remove concrete to a minimum depth of 4" to provide a minimum clearance of 1" around the periphery of the rebar. Take care not to damage existing reinforcing.

Sand blast clean any rust scale found on the exposed reinforcing steel. Clean the existing concrete surface by light sand blasting or high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantitiy is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation views. It is also assumed that the spall repair areas are approximately 4" deep at the pier. The actual limits of the repair are to be determined by the Engineer in the field.

Surface Finish "D", in accordance with Section 602, is required on the spall repair areas. Match the finish color and texture of the surrounding areas.

Include all labor, equipment and materials needed to repair the spall areas and apply Surface Finish "D" in the bid item "Spall Repair."

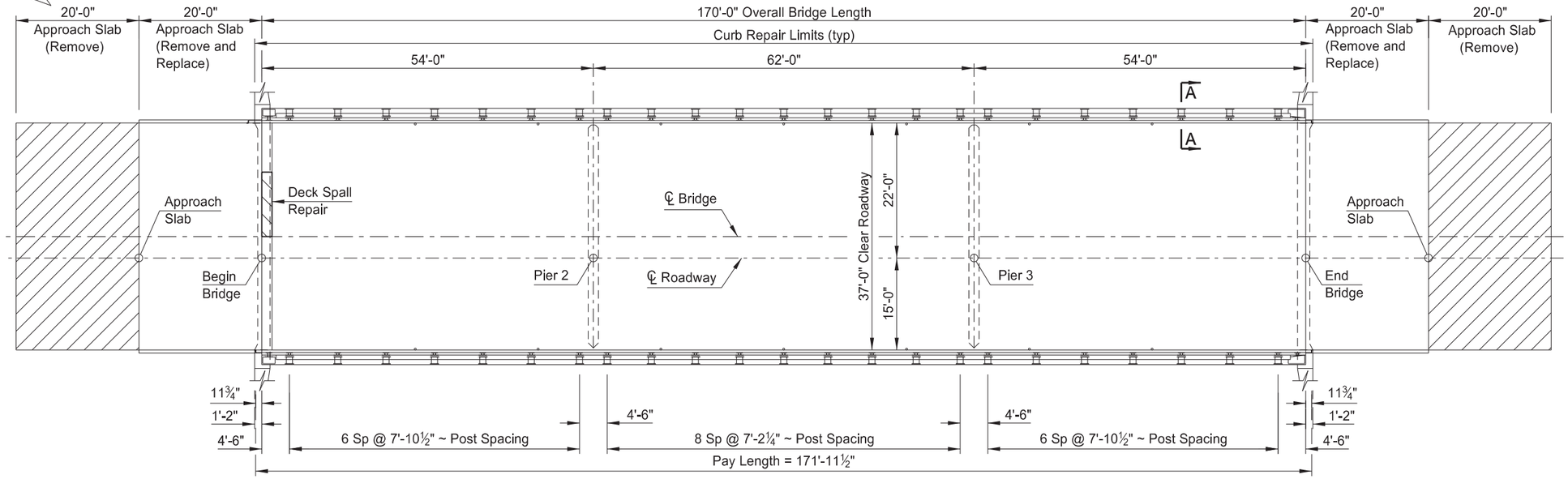
QUANTITIES	
CURB REPAIR	23.3 SF
SPALL REPAIR	10 SF

GRANDIN INTERCHANGE

SPALL REPAIR

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	4



PLAN

NOTES:

100 SCOPE OF WORK: Work at this site consists of removing and replacing 40'-0" approach slabs with 20'-0" approach slabs on both ends of the bridge, curb repair, deck spall repair, installing a double box beam Erail retrofit, and repairing the approach lip on both ends of the bridge.

202 REMOVAL OF CONCRETE: Remove the outside 20'-0" concrete approach slab on both ends of the bridge. Include all material, labor, and equipment required to remove the concrete approach slab in the price bid for "Removal of Concrete." A quantity of 1 EA will be paid for each end.

602 BRIDGE APPROACH SLAB-REMOVE & REPLACE: Remove and replace the inside 20'-0" approach slabs at each end of the bridge. Do not damage the parts of the structure to remain in place. Include all labor, material, and equipment to remove and replace the approach slabs in the price bid for "Bridge Approach Slab-Remove and Replace."

602 PENETRATING WATER REPELLENT TREATMENT: Apply the penetrating water repellent solution according to Section 602.04 J with the modification that it will only be applied to the driving surface of the deck and approach slabs and the front face and top of the curbs.

602 CURB REPAIR: The east and west curb has deteriorated along the length of the bridge. Remove all unsound concrete and replace it with a new concrete material to the original constructed section along the length of the bridge, as shown in the Curb Repair Detail. Use a 15 pound maximum size chipping hammer on any unsound concrete, also remove all concrete around the periphery of the exposed rebar to maintain a minimum clearance of 1" around the bar. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer.

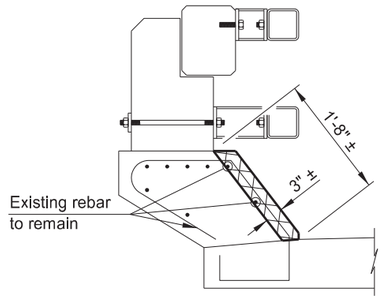
Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantity is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation view. The Engineer will sound the curb and mark out the actual limits of repair in the field. It is also assumed that the spall repair areas are approximately 3 inches deep at the curb. Include all labor, equipment and materials needed to repair the spall areas in the bid item "Curb Repair."

650 DECK SPALL REPAIR: The bridge deck has spall areas as shown. Construct the deck spall repair as a Bridge Deck Overlay meeting Section 650. The Engineer will sound the deck and mark out the actual limits of the area to be repaired in the field.

Saw cut the perimeter of the repair area to a depth of 1". Remove the concrete to a minimum depth of 2". Include the saw cutting and all material, labor and equipment required to remove the concrete and repair the deck and approach slab spall areas in the bid item "Deck Spall Repair."



CURB REPAIR
A-A

Hatched area indicates concrete to be removed.

Hatched area indicates deck spall repair area.

Hatched area indicates curb repair area.

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BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0101	REMOVAL OF CONCRETE	EA	2
602	1135	BRIDGE APPROACH SLAB-REMOVE & REPLACE	SY	168.8
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1,010
602	2105	CURB REPAIR	SF	570
624	3002	DOUBLE BOX BEAM RAIL RETROFIT-ERAIL	LF	343.9
650	0805	DECK SPALL REPAIR	SF	18
930	9639	APPROACH SLAB LIP REPAIR	LF	76.0

SOUTH BRANCH ELM RIVER

STATION: 4893+50

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

08/26/20

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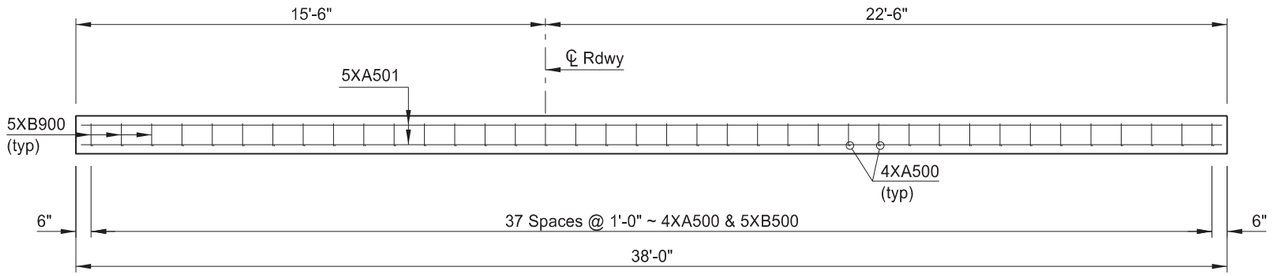
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	5



(SHOWING ONLY NEW REINFORCING)

LOOKING NORTH

ELEVATION

NOTES:

* Length may vary depending on manufacturer's recommendations for anchorage. If anchorage depth requires increase, notify Bridge Division to avoid damage to the prestressed girders.

Install 4XA500 and 5XB900 bars according to the manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Sec. 806.02 of the NDDOT Standard Specifications.

Include Class AAE-3 Concrete, Grade 60 reinforcing steel, labor and equipment required to build the approach slab lip in the bid item "Approach Slab Lip Repair".

Provide concrete in accordance with Section 602 and reinforcing steel in accordance with Section 612.

Quantities shown are for informational purposes only.

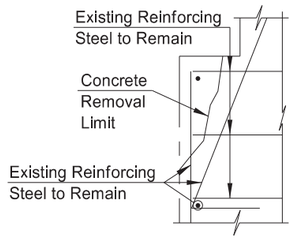
SKEW ANGLE = 0°

BAR LIST - ONE APPROACH LIP

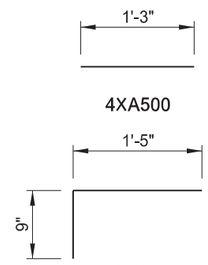
SIZE	MARK	NO.	LENGTH
4	XA500	38	*1'-3"
5	XA501	2	37'-8"
5	XB900	38	*2'-2"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS)	CONCRETE (CY)
196	0.8

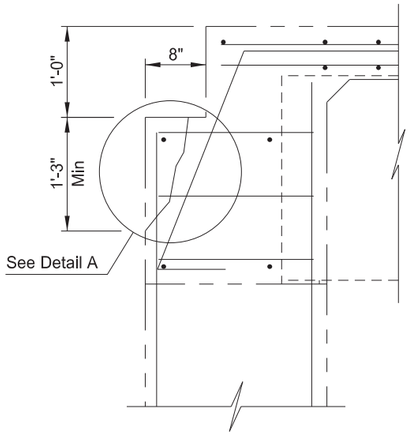


DETAIL A



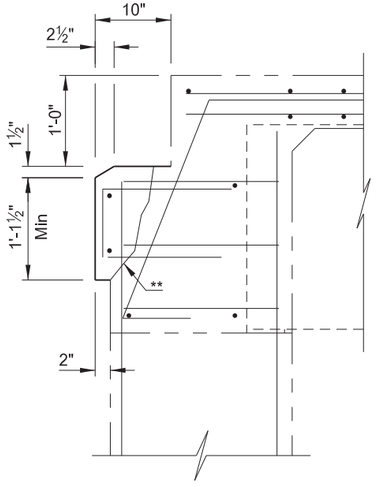
(DIMENSIONS SHOWN ARE OUT TO OUT)

BENT BAR DETAILS



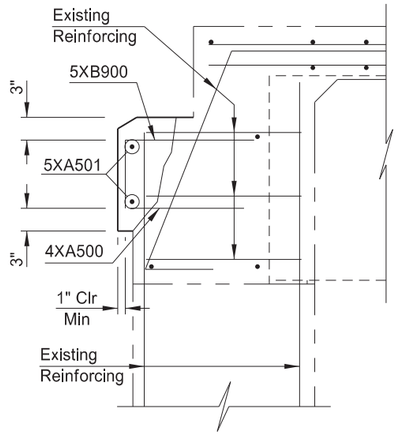
(SHOWING REMOVAL)

EXISTING APPROACH SLAB LIP



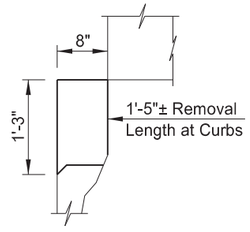
(SHOWING DIMENSIONS)

NEW APPROACH SLAB LIP



(SHOWING REINFORCING)

NEW APPROACH SLAB LIP



(SHOWING REMOVAL AT CURBS)

EXISTING APPROACH SLAB

** Bush Hammer Finish: Before any concrete is placed against the existing concrete the surface shall be prepared with a bush hammer to produce a clean rough finish.

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QUANTITIES	(ONE APPROACH LIP)
APPROACH SLAB LIP REPAIR	38 LF

SOUTH BRANCH ELM RIVER

APPROACH SLAB LIP REPAIR DETAILS

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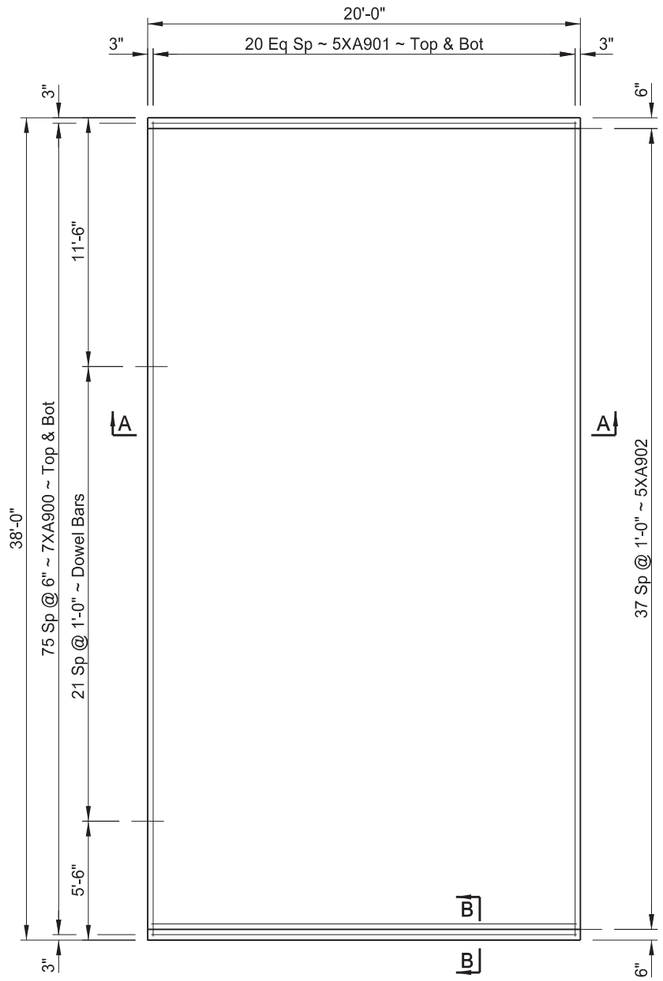
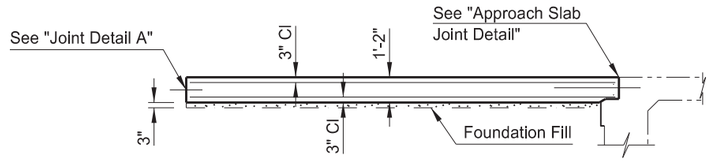
NDDOT Reserves All Objections

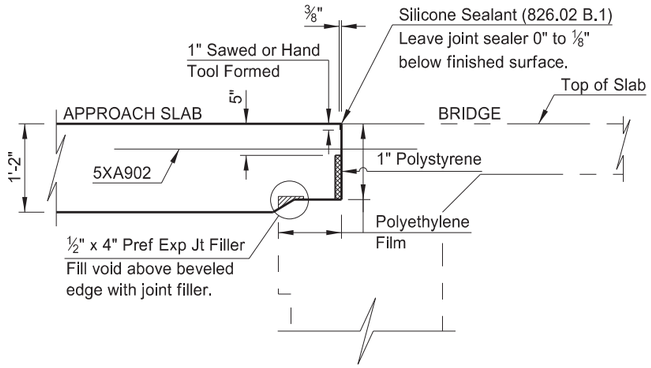
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	6



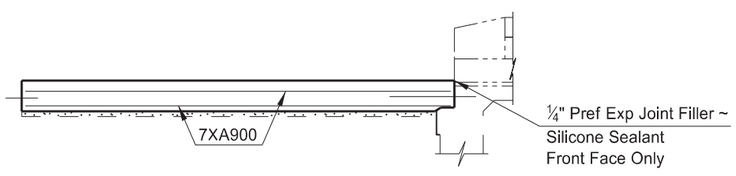
PLAN



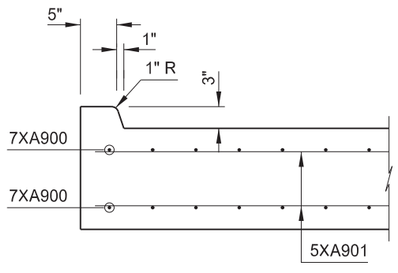
A-A



APPROACH SLAB JOINT DETAIL



ELEVATION



B-B

NOTES:

The estimated material quantities shown are for information purposes only. Include the concrete, reinforcing bars, polyethylene film, preformed joint filler, polystyrene, silicone sealant, foundation fill, and labor required to build the approach slabs and curbs in the pay item "Bridge Approach Slab-Remove and Replace." Use Class AE-3 concrete and Grade 60 reinforcing steel. Provide reinforcing steel that meets the requirements of Section 612. Use polyethylene film that meets the requirements of ASTM C171.

The dimensions shown in the "Bent Bar Details" are out to out.

Install 5XA902 bars according to manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage (16k min. ultimate pullout) and that meets the requirements of Section 806.02. Provide an anchorage depth of 1'-0", or the depth as recomended by the manufacturer to achieve desired capacity, whichever is greater.

An "X" preceding a bar designation indicates an epoxy coated bar.

SKEW ANGLE = 0°

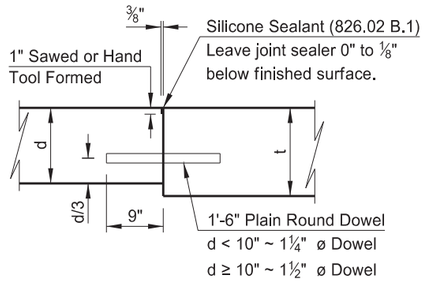
BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
7	XA900	152	19'-8"
5	XA901	42	37'-8"
5	XA902	38	* 4'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS)	CONCRETE (CY)
7,919	33.0

* Length may increase, depending on manufacturer's recommendations for anchorage. Provide a minimum anchorage length of 1'-0".



d = Pavement Thickness
t = Approach Slab Thickness

JOINT DETAIL A

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QUANTITIES	(ONE SLAB)
APPROACH SLAB REMOVE & REPLACE	84.4 SY

SOUTH BRANCH ELM RIVER

APPROACH SLAB DETAILS

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	7

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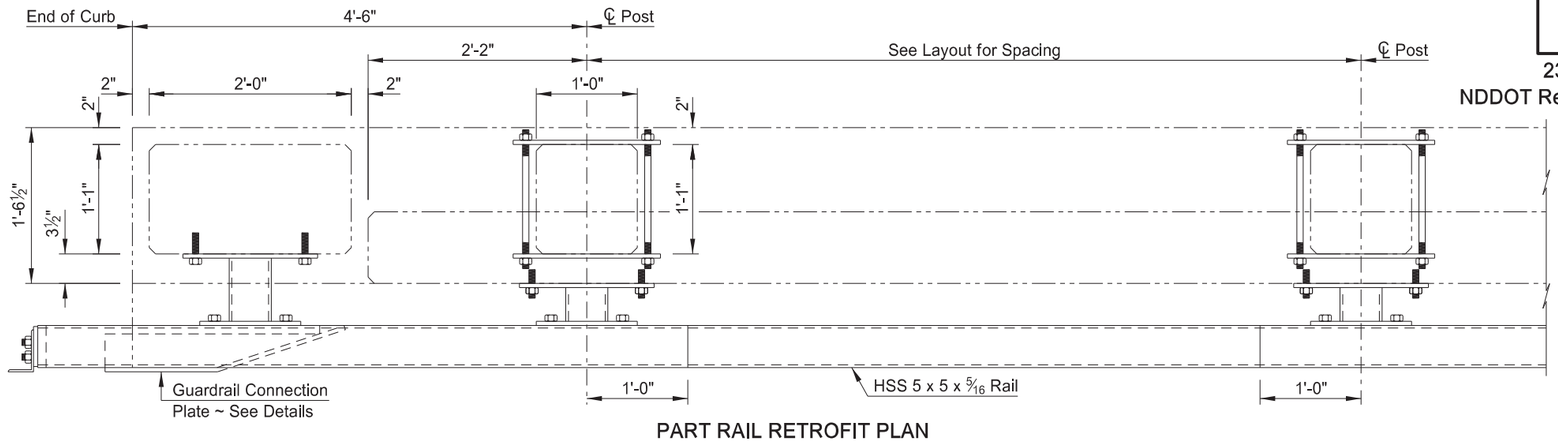
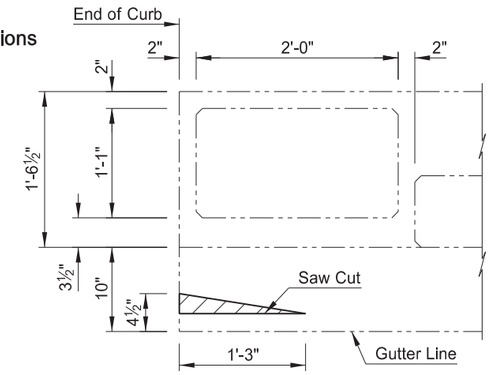
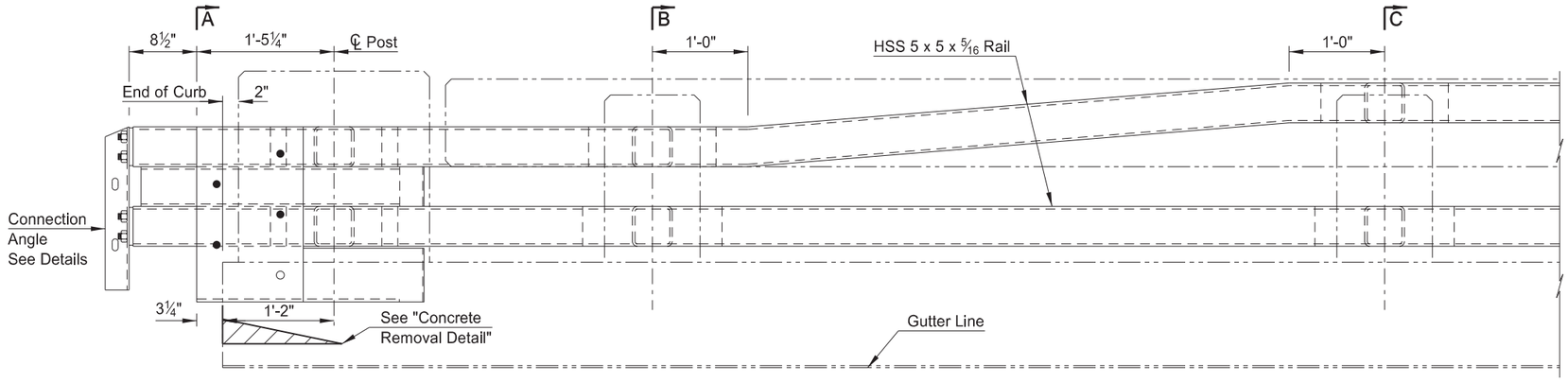


PART RAIL RETROFIT PLAN



PLAN
CONCRETE REMOVAL DETAIL

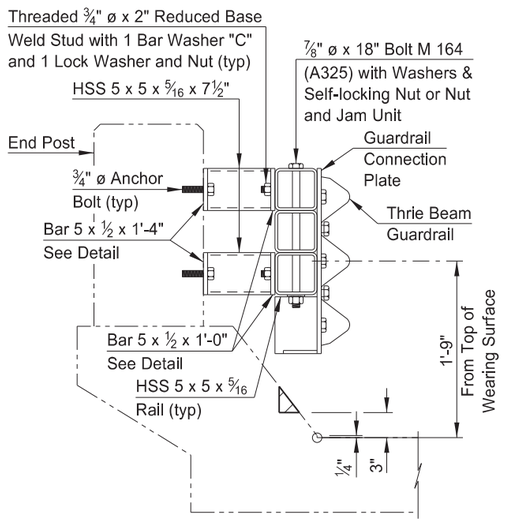
Indicates Concrete Removal



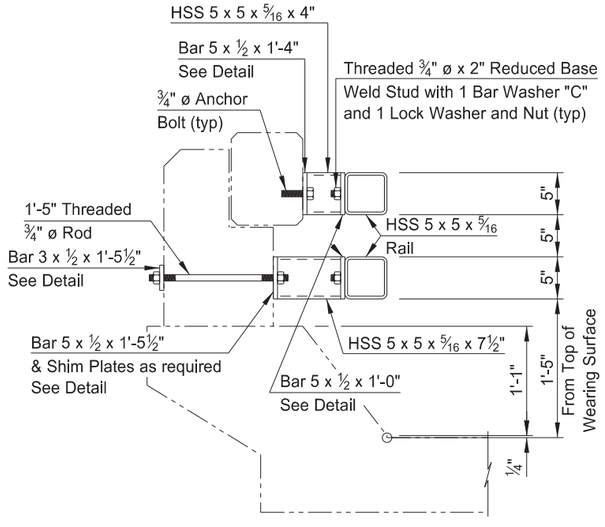
PART RAIL RETROFIT ELEVATION

NOTE:

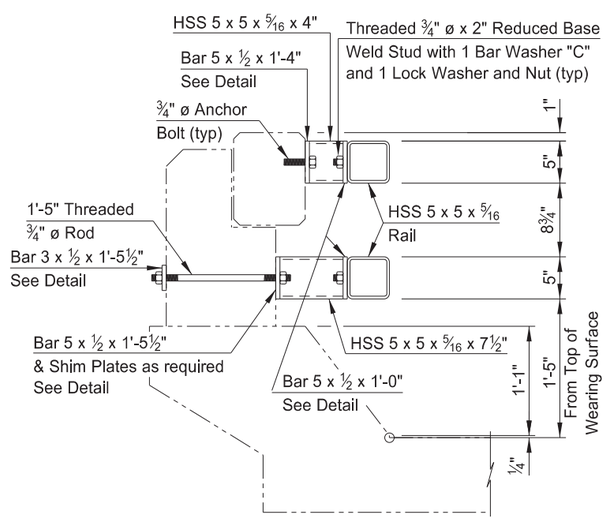
See Dwg 29-092.672R-6 for notes and details not shown on this drawing.



A-A



B-B



C-C

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QUANTITIES
SEE DWG 29-092.672R-6

SOUTH BRANCH ELM RIVER

(EXIT END)

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	8

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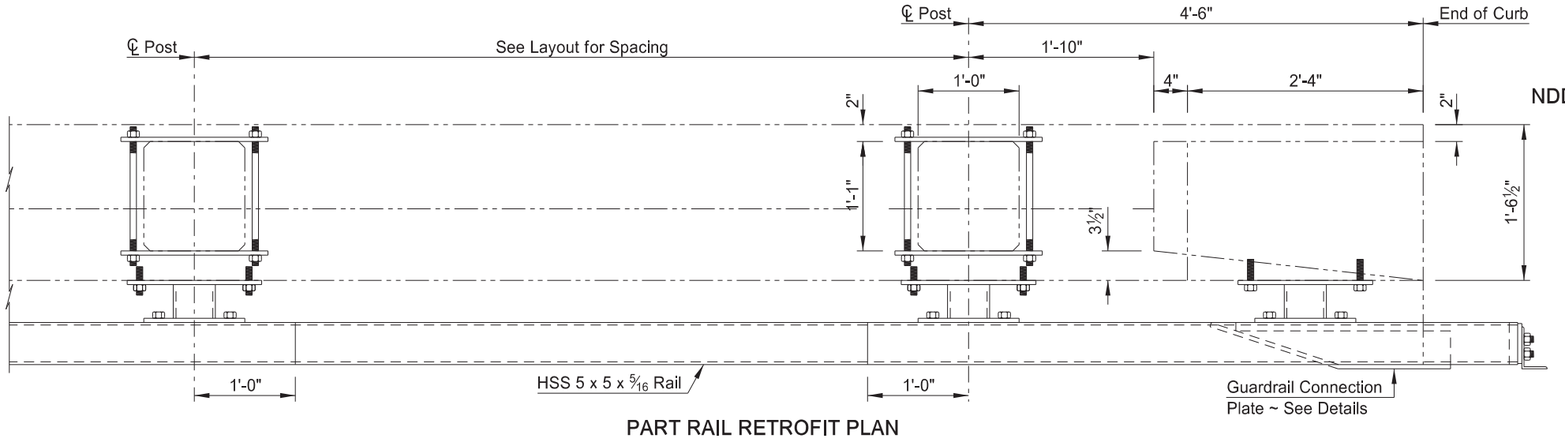
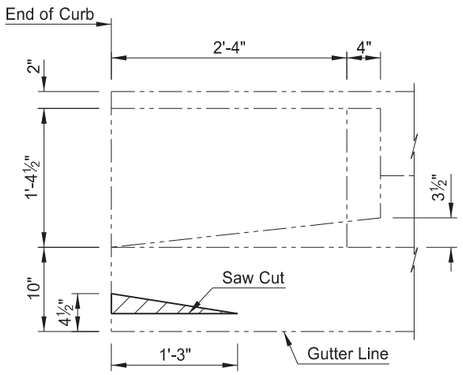
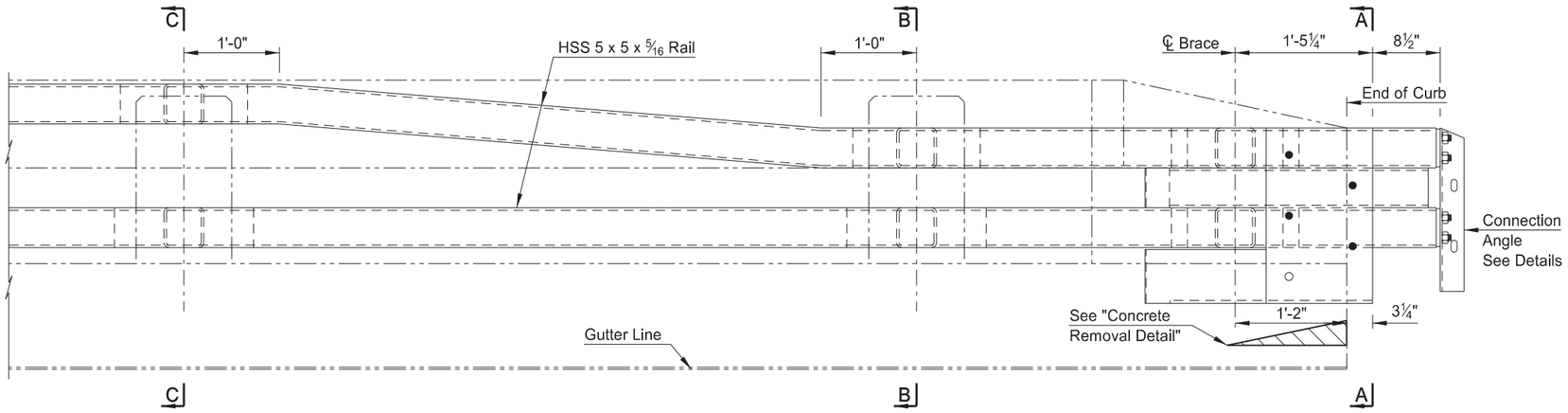


PART RAIL RETROFIT PLAN



PLAN
CONCRETE REMOVAL DETAIL

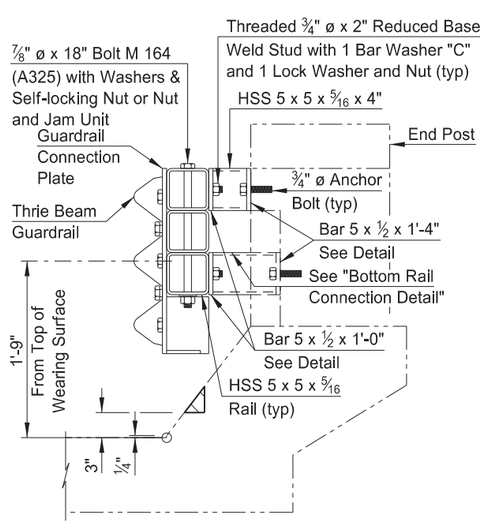
Indicates Concrete Removal



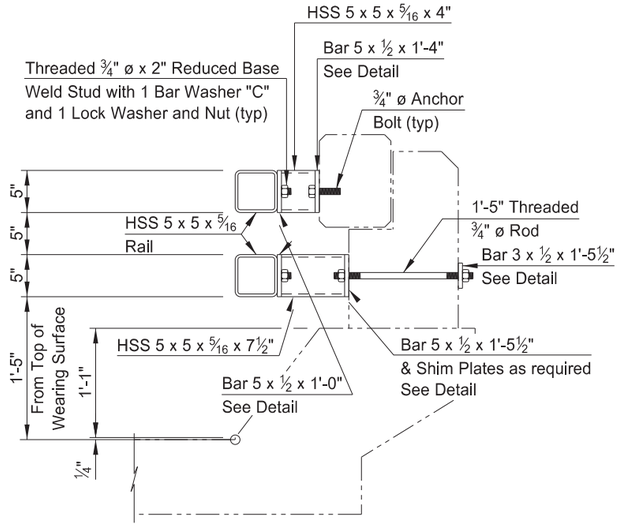
PART RAIL RETROFIT ELEVATION

NOTE:

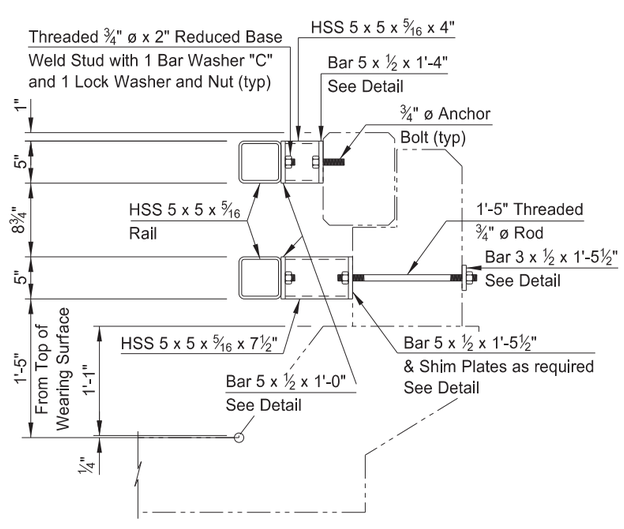
See Dwg 29-092.672R-6 for notes and details not shown on this drawing.



A-A



B-B



C-C

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QUANTITIES
SEE DWG 29-092.672R-6

SOUTH BRANCH ELM RIVER

(ENTRANCE END)

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

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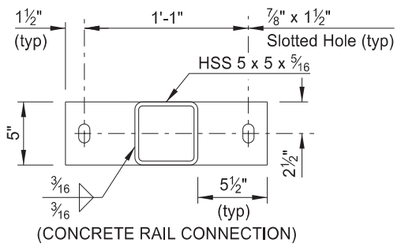
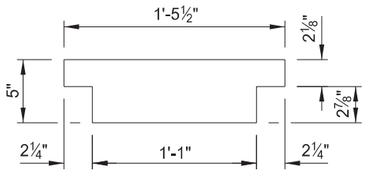
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	9



(CONCRETE RAIL CONNECTION)

BAR 5 X ½ X 1'-4" DETAIL

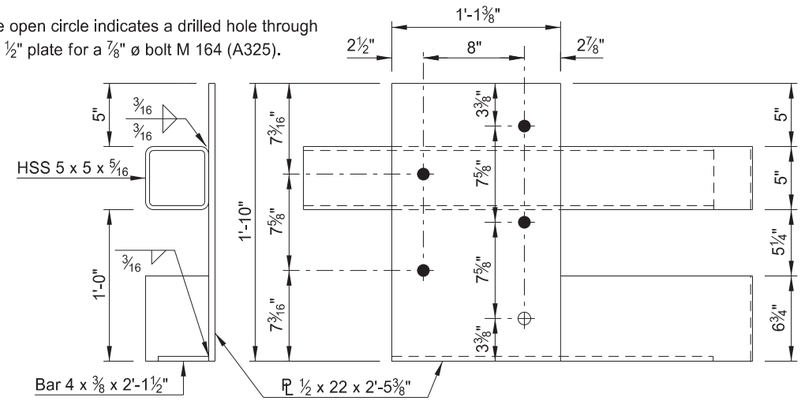


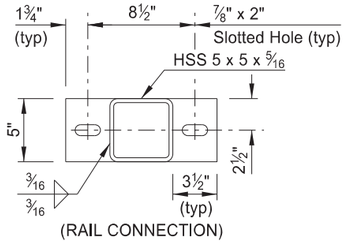
¼" & ⅛" Thickness
Quantity determined in field.

SHIM PLATE DETAIL

The filled circles indicate drilled and tapped holes for ⅞ ø bolts M 164 (A325). See Detail "B."

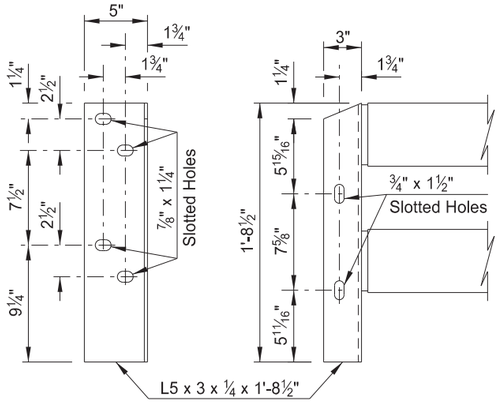
The open circle indicates a drilled hole through the ½" plate for a ⅞" ø bolt M 164 (A325).





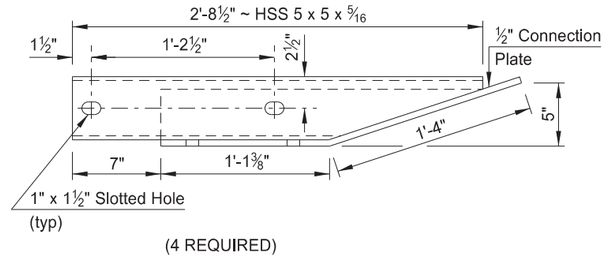
(RAIL CONNECTION)

BAR 5 X ½ X 1'-0" DETAIL



(4 REQUIRED)

CONNECTION ANGLE DETAILS



(4 REQUIRED)

GUARDRAIL CONNECTION PLATE DETAILS

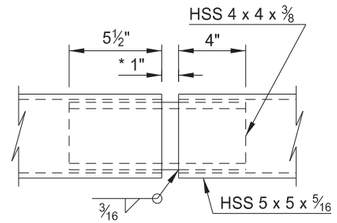
NOTES:

Galvanize all steel components after fabrication according to Section 854.

Provide reduced base studs in accordance with ASTM A108.

Tighten the threaded rods to provide a minimum tensile force of 2,500 lbs and a maximum tensile force of 2,700 lbs.

Embed anchor bolts into the concrete using a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

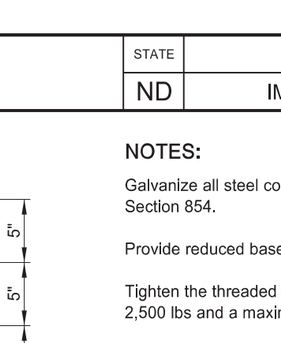


* 2" at expansion joints.

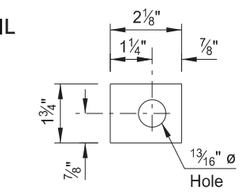
RAIL SPLICE DETAIL

(CONCRETE POST CONNECTION)

BAR 5 X ½ X 1'-5½" DETAIL

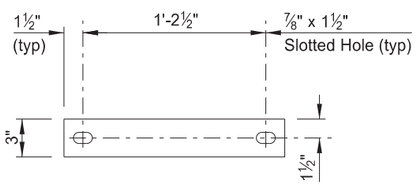


DETAIL "B"



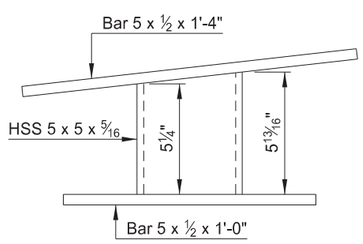
Position washers to completely cover slotted holes.

¼" BAR WASHER "C"



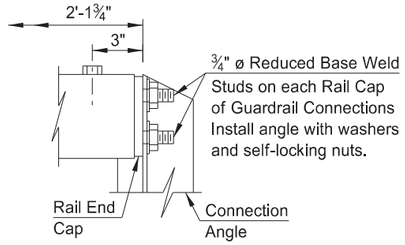
(CONCRETE POST CONNECTION)

BAR 3 X ½ X 1'-5½" DETAIL

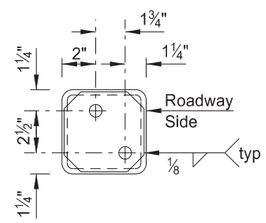


(FOR MODIFIED END POST)

BOTTOM RAIL CONNECTION DETAIL



RAIL CAP DETAIL



(Bar 4¾ x ½ x 4¾")

Cope corners 1" to provide zinc drains.

RAIL CAP END VIEW

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE
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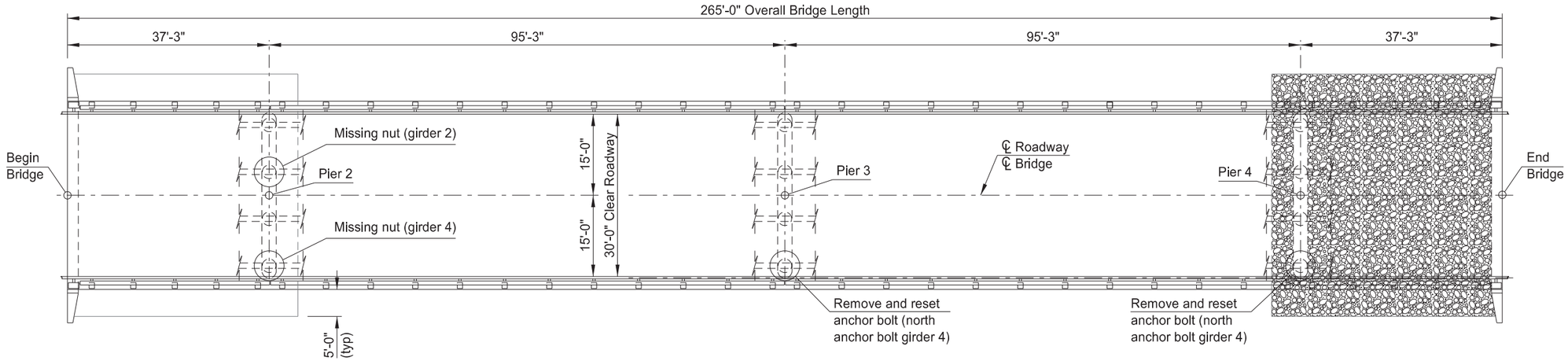
QUANTITIES	
E-RAIL RETROFIT	343.9 LF

SOUTH BRANCH ELM RIVER

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	10



Hatched area indicates aggregate slope protection areas.

NOTES:

100 SCOPE OF WORK: Work at this site consists of removing and resetting anchor bolts, replacing anchor bolt hex nuts, pier spall repair, and removing and replacing concrete slope protection, adjacent to the northbound roadway, with aggregate slope protection.

100 GENERAL: Anchor bolts for girder 2 and girder 4, on pier 2, are missing one of the double hex nuts. Replace the two missing hex nuts with 1½" nuts meeting Section 834 D. Include all costs for labor, materials, and equipment to complete this work in the price bid for other items.

602 REMOVE AND RESET ANCHOR BOLTS: Remove and reset anchor bolts on girder 4 at pier 3 and pier 4. Remove any debris from anchor bolts and anchor bolt holes in pier cap. Embed the anchor bolts into concrete using a chemical adhesive system that meets the requirements of AASHTO M 235, Type IV, Grade 3. Select the appropiate class of adhesive based on the surface temperature of the concrete the adhesive will be applied to.

Include all costs for labor, materials, and equipment to complete this work in the unit price bid for “Remove and Reset Anchor Bolts.”

930 AGGREGATE SLOPE PROTECTION: Remove the existing concrete slope protection and place aggregate slope protection and ordinary backfill on the embankment slopes as shown. Place ordinary backfill in accordance with Section 210.

Clear the subgrade of rubbish and vegetation before placing the aggregate slope protection. Thoroughly compact all loose material. Excavate or backfill as required to obtain the plan cross- section or lines and grades established in the field.

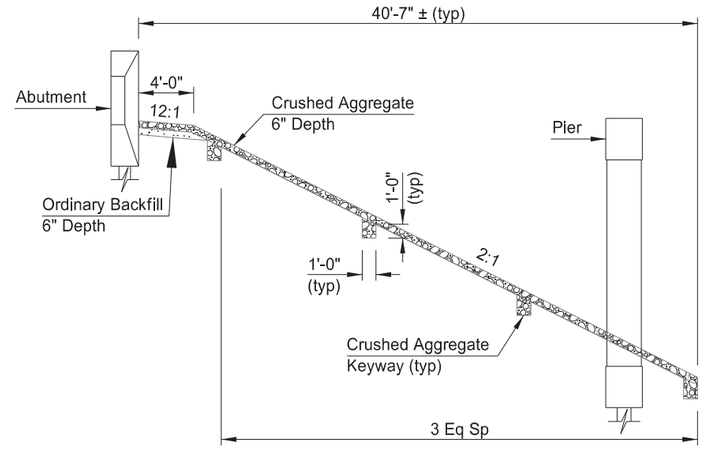
The gradation of the material used to form the slope protection is given in the following chart:

Sieve Size	% Passing
2"	100%
3/4"	5-35%
#4	0-5%

The minimum fractured face requirement of the aggregate is 50% by weight on the portion of the aggregate retained on the No. 4 sieve. To be considered fractured the rock must have at least one fractured face.

Deposit, spread, consolidate, and shape the aggregate by mechanical or hand methods to provide a uniform depth and density and produce a uniform surface appearance. Apply MC-250 that meets the requirements of Section 818.02 C, "Medium-Curing Cutback Asphalt" at an approximate rate of 1.8 gallons per square yard. The bituminous materials are to penetrate to a depth of not less than one-half the required thickness of the aggregate. Protect adjacent structure surfaces against bituminous splatter.

Include all costs for labor, materials, and equipment to complete this work, including the removals of the existing concrete slope protection and ordinary backfill, in the unit price bid for "Aggregate Slope Protection."



AGGREGATE SLOPE PROTECTION DETAIL

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	2000	REMOVE AND RESET ANCHOR BOLTS	EA	6
930	8686	AGGREGATE SLOPE PROTECTION	SY	225
930	9612	SPALL REPAIR	SF	12

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GALESBURG SEPARATION

STATION: 4973+97

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION
08/26/20
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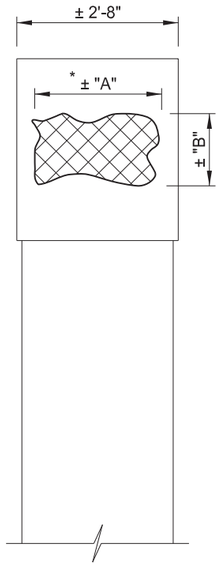
23 U.S.C. 409
NDDOT Reserves All Objections

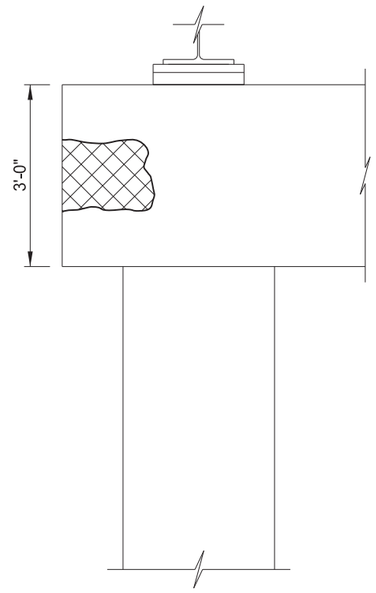
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	11

* Dimension A is measured along the curve of the pier cap.

Indicates spall repair area.



END VIEW



ELEVATION

SPALL REPAIR DETAILS

SPALL REPAIR			
PIER	LOCATION	"A"	"B"
3	South	2'-6"	3'-0"
4	South	1'-5"	0'-10"

NOTES:

930 SPALL REPAIR: The Engineer will sound and mark out areas of unsound concrete at the end of the pier caps identified in the Spall Repair table.

Remove all unsound concrete and replace it with new concrete material. Use a 15 pound maximum size chipping hammer on any unsound concrete. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer. Remove concrete to a minimum depth of 4" to provide a minimum clearance of 1" around the periphery of the rebar. Take care not to damage existing reinforcing.

Sand blast clean any rust scale found on the exposed reinforcing steel. Clean the existing concrete surface by light sand blasting or high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantitiy is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation views. It is also assumed that the spall repair areas are approximately 4" deep at the pier. The actual limits of the repair are to be determined by the Engineer in the field.

Surface Finish "D", in accordance with Section 602, is required on the spall repair areas. Match the finish color and texture of the surrounding areas.

Include all labor, equipment and materials needed to repair the spall areas and apply Surface Finish "D" in the bid item "Spall Repair."

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DUSTIN WING
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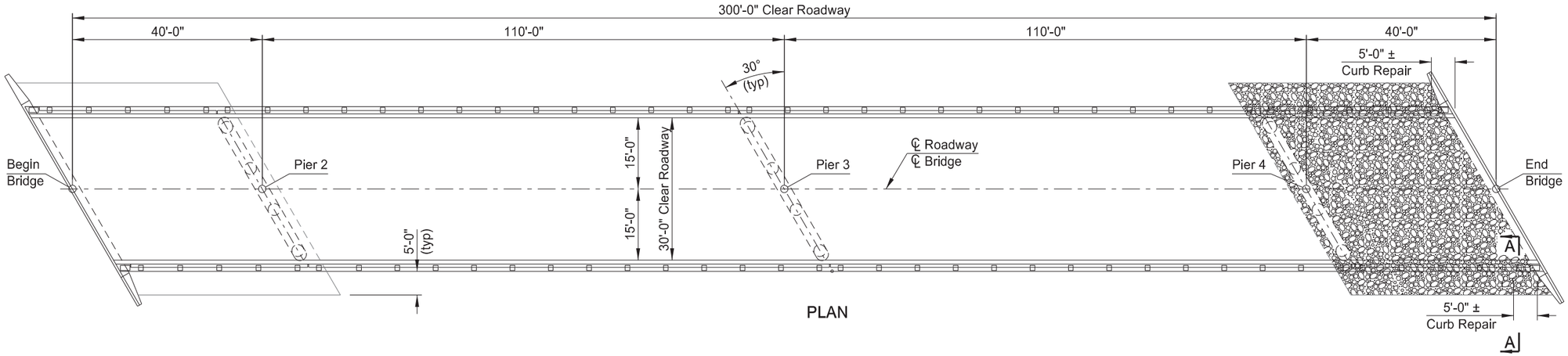
QUANTITIES	
SPALL REPAIR	12 SF

GALESBURG SEPARATION

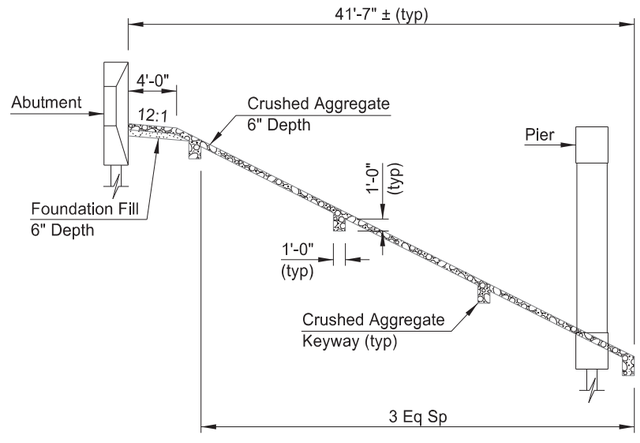
SPALL REPAIR

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	12



PLAN



AGGREGATE SLOPE PROTECTION DETAIL

Hatched area indicates aggregate slope protection areas.

Indicates curb repair area.

NOTES:

100 SCOPE OF WORK: Work at this site consists of curb repair, pier spall repair, and removing and replacing concrete slope protection, adjacent to the northbound roadway, with aggregate slope protection.

930 AGGREGATE SLOPE PROTECTION: Remove the existing concrete slope protection and place aggregate slope protection and ordinary backfill on the embankment slopes as shown. Place the ordinary backfill in accordance with Section 210.

Clear the subgrade of rubbish and vegetation before placing the aggregate slope protection. Thoroughly compact all loose material. Excavate or backfill as required to obtain the plan cross-section or lines and grades established in the field.

The gradation of the material used to form the slope protection is given in the following chart:

Sieve Size	% Passing
2"	100%
¾"	5-35%
#4	0-5%

The minimum fractured face requirement of the aggregate is 50% by weight on the portion of the aggregate retained on the No. 4 sieve. To be considered fractured the rock must have at least one fractured face.

Deposit, spread, consolidate, and shape the aggregate by mechanical or hand methods to provide a uniform depth and density and produce a uniform surface appearance. Apply MC-250 that meets the requirements of Section 818.02 C, "Medium-Curing Cutback Asphalt" at an approximate rate of 1.8 gallons per square yard. The bituminous materials are to penetrate to a depth of not less than one-half the required thickness of the aggregate. Protect adjacent structure surfaces against bituminous splatter.

Include all costs for labor, materials, and equipment to complete this work, including removing the existing concrete slope protection and placing ordinary backfill, in the unit price bid for "Aggregate Slope Protection."

REGISTERED PROFESSIONAL ENGINEER
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KELSO SEPARATION

STATION: 5139+63

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

08/26/20
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BRIDGE BID ITEMS

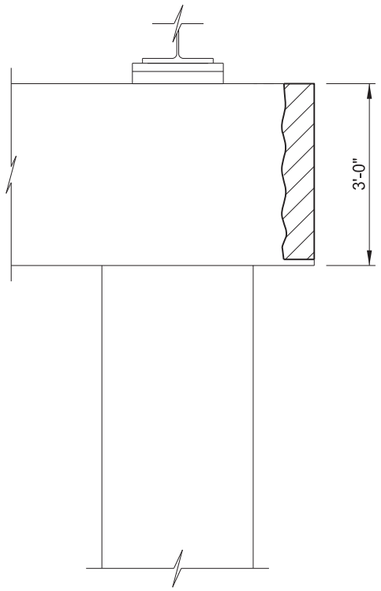
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	2105	CURB REPAIR	SF	30.4
930	8686	AGGREGATE SLOPE PROTECTION	SY	265
930	9612	SPALL REPAIR	SF	2

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

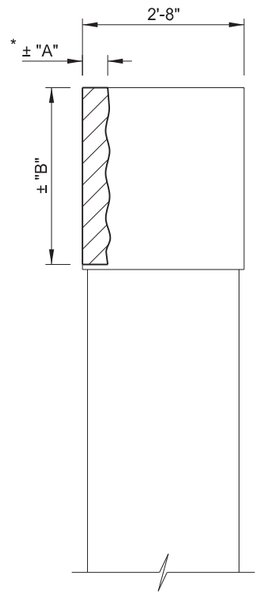
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	13

Indicates spall repair area.

* Dimension A is measured along the curve of the pier cap.



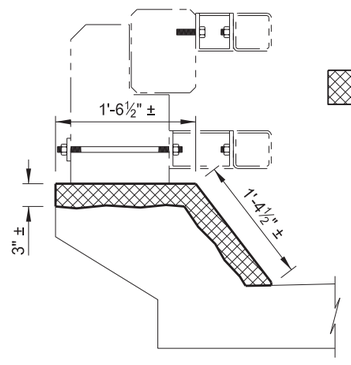
ELEVATION



END VIEW

SPALL REPAIR DETAILS

SPALL REPAIR			
PIER	LOCATION	"A"	"B"
2	North	0'-5"	2'-11"



CURB REPAIR
A-A

Indicates curb repair area.

NOTES:

602 CURB REPAIR: The north and south curbs require repair as shown in the "Curb Repair Detail" at the locations indicated on "DWG 29-097.333-1."

Remove all unsound concrete and replace it with a new concrete material. Use a 15 pound maximum size chipping hammer on any unsound concrete, also remove all concrete around the periphery of the exposed rebar to maintain a minimum clearance of 1" around the bar. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer.

Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantity is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation view. The actual limits of the repair are to be determined by the Engineer in the field. It is also assumed that the spall repair areas are approximately 3 inches deep at the curb. Include all labor, equipment and materials needed to repair the spall areas in the bid item "Curb Repair."

930 SPALL REPAIR: The Engineer will sound and mark out areas of unsound concrete at the end of the pier caps identified in the Spall Repair table.

Remove all unsound concrete and replace it with new concrete material. Use a 15 pound maximum size chipping hammer on any unsound concrete. Provide sharp, neat lines at least 1 inch deep at the edges of the repair areas. Produce these sharp, neat lines by saw cutting or other means approved by the Engineer. Remove concrete to a minimum depth of 4" to provide a minimum clearance of 1" around the periphery of the rebar. Take care not to damage existing reinforcing.

Sand blast clean any rust scale found on the exposed reinforcing steel. Clean the existing concrete surface by light sand blasting or high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortor material that is specifically intended for patching concrete. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400(BASF Corporation), or an approved equal repair mortar. Apply and cure the material as recommended by the manufacturer.

The spall repair quantitiy is based on the assumption that the areas to be repaired are to the dimensions shown in the elevation views. It is also assumed that the spall repair areas are approximately 4" deep at the pier. The actual limits of the repair are to be determined by the Engineer in the field.

Surface Finish "D", in accordance with Section 602, is required on the spall repair areas. Match the finish color and texture of the surrounding areas.

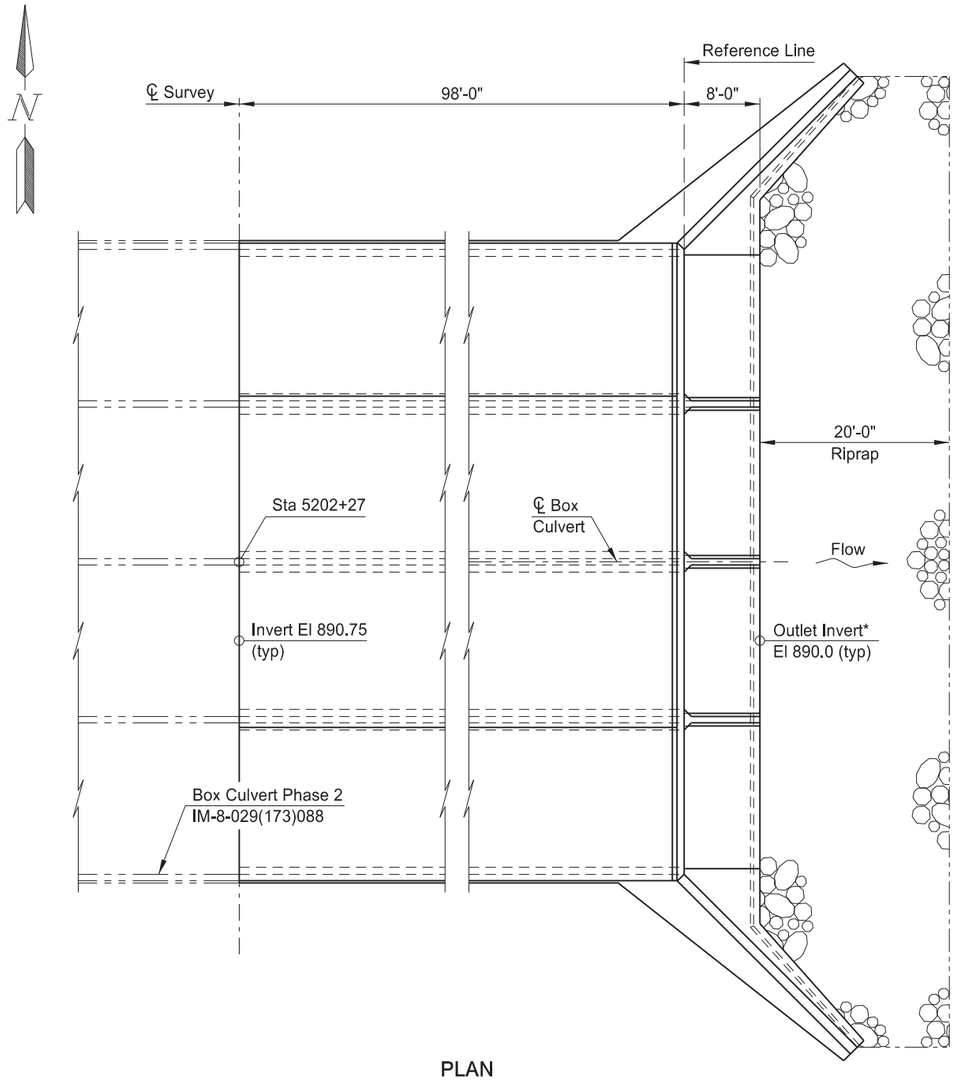
Include all labor, equipment and materials needed to repair the spall areas and apply Surface Finish "D" in the bid item "Spall Repair."

QUANTITIES	
CURB REPAIR	30.4 SF
SPALL REPAIR	2 SF

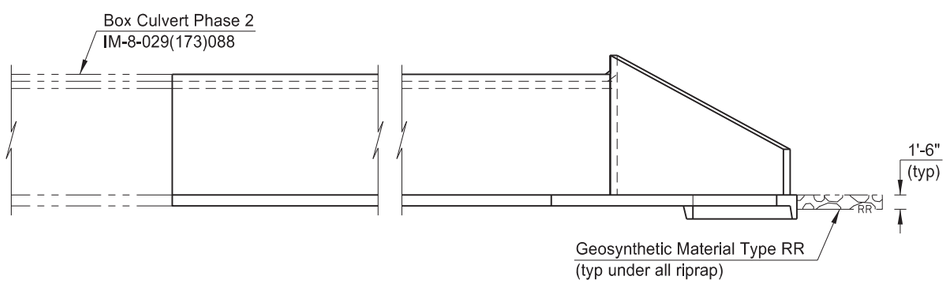
KELSO SEPARATION

SPALL REPAIR

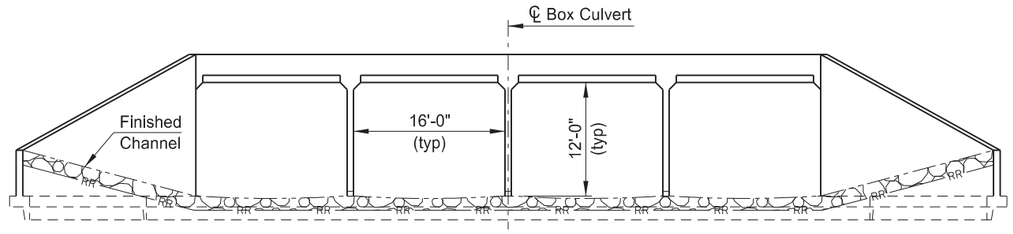
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	14



PLAN



ELEVATION



END VIEW

HYDRAULIC DATA:

Drainage Area	119.465	sq mi
Stream Gradient	0.0007	ft/ft
Design Frequency	50	yr
Design Discharge	2149.3	cfs
Design Headwater Stage	903.79	ft
Design Tailwater Stage	903.7	ft
Velocity Through Culvert	3.05	fps
100-Year Frequency Discharge	2688.7	cfs
100-Year Frequency Headwater	904.7	ft
Overtopping Stage	907	ft
Overtopping Discharge	5320	cfs

*Inverts shown include culvert and associated riprap being sunk 1 ft below existing stream bed elevation

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE 08/25/20
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BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0105	REMOVAL OF STRUCTURE	L SUM	1
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	3,500
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	150
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	680.2
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	129,173
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	855
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	300
930	8230	SHORING	EA	2

SPECIAL PROVISIONS	
SSP 2	MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH BRANCH ELM RIVER

CLEAR SPAN 4 x 16' CLEAR HEIGHT 12'
MAXIMUM FILL 5'

STATION: 5202+27
QUAD BOX CULVERT LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

08/26/20
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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	15

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new quadruple barrel 16’ x 12' x 98'-0” reinforced concrete box culvert under the northbound I-29 roadway as part of a phased box culvert construction. Phase 2 will extend the box culvert underneath the southbound roadway as part of project IM-8-029(173)088.

107 HEIGHT RESTRICTION FOR CONSTRUCTION EQUIPMENT: Restrict all construction vehicles and equipment at this location to 100 feet or less due to Hillsboro Municipal Airport restrictions. Equipment will be measured from the centerline roadway elevation.

202 REMOVAL OF STRUCTURE: The existing structure is a 3-span concrete slab bridge, 80’-0” long with a clear roadway width of 37’-0”.

The reinforced concrete substructures are supported on a single row of steel piling. Remove the substructures in entirety and cut the piling off 1 foot below the foundation fill.

Include all work required to remove the bridge in the contract unit price for “Removal of Structure.”

210 EXCAVATION: All excavation required to build the box culvert shall be included in the bid for “Class 2 Excavation-Box Culvert.”

602 CONCRETE: Cast the following elements of each section in one continuous run:

1. Floor slab* and wing footings
2. Each intermediate wall up to the bottom of fillets
3. Each sidewall up to the bottom of fillets with its adjacent wings complete to the top
4. Roof slab and parapets

Allow the concrete in the walls to set at least two hours before the roof slab is poured.

*A longitudinal construction joint in the floor slab, located beneath an interior wall, is allowed if it is required as part of the Temporary Stream Diversion plan.

602 CURING CONCRETE: Wet cure all concrete surfaces not covered by forms. Cover the concrete with a double thickness of burlap. Maintain surface moisture between the final finish and placement of burlap by periodic applications of a light fog spray of water. Keep the burlap continuously moist until the end of the curing period.

612 REINFORCING STEEL: Place bolsters and bar supports for the roof steel at a maximum of 4 foot spacing.

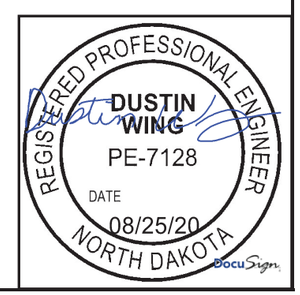
Dimensions of bent bars are given out to out.

930 SHORING: Sheet pile shoring is required, after Phase 1 of the box culvert is complete, to accommodate backfill being placed in the median. The shoring should extend from both outside walls of the box culvert, at the median, to the corresponding southbound structure’s abutment wing walls.

The Contractor is responsible to design, construct and maintain the shoring until the project is complete. The shoring will be removed by others as part of project IM-8-029(135)088.

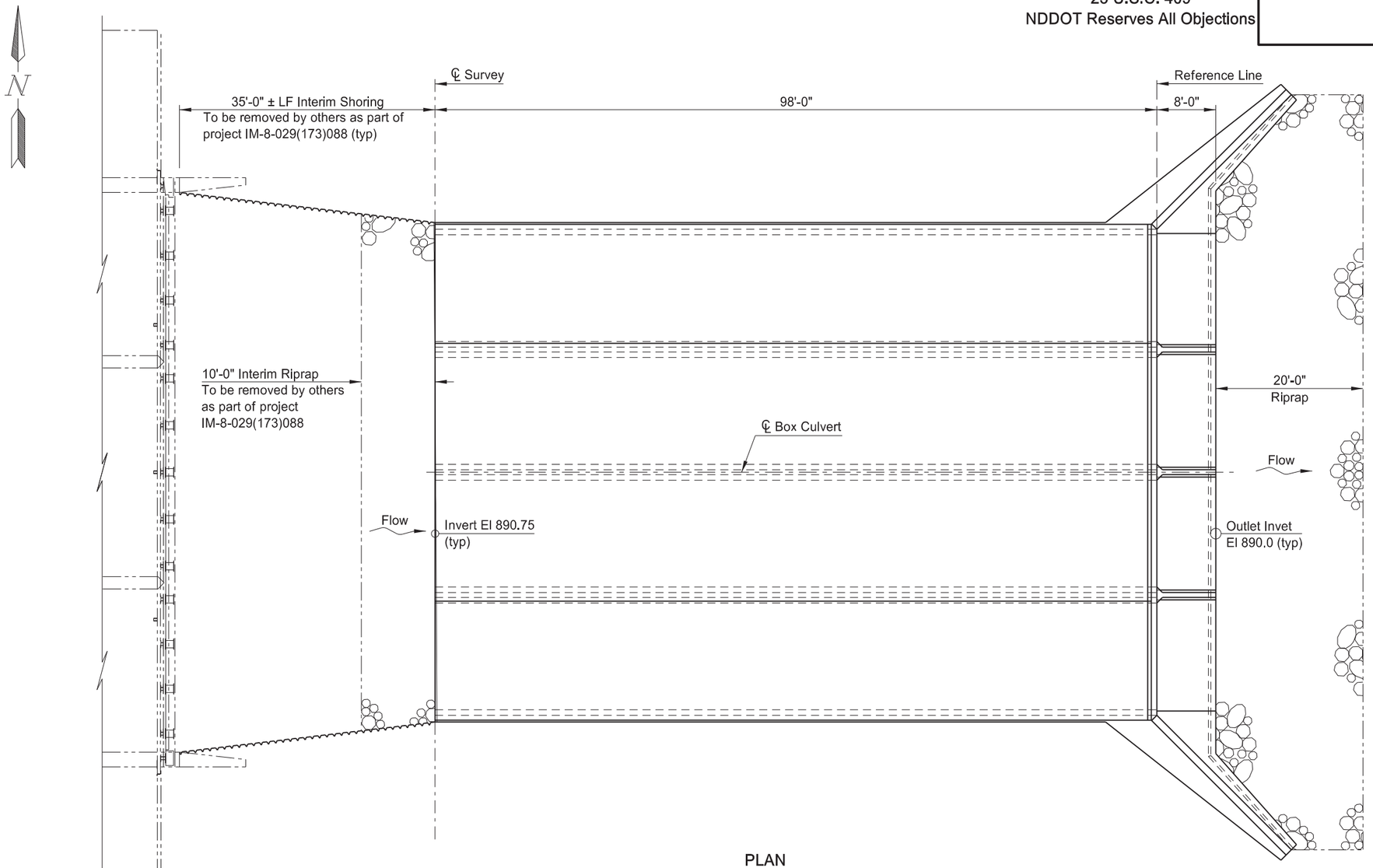
Submit a shoring plan with a design stamped by a Professional Engineer registered in North Dakota.

Include all materials, equipment, and labor to design, place, and maintain the shoring in the price bid for “Shoring.” A quantity of 1 EA will be paid for installing shoring from the median end of the box culvert to the abutment of the adjacent structure as shown on DWG 29-098.519-3 of the plans.

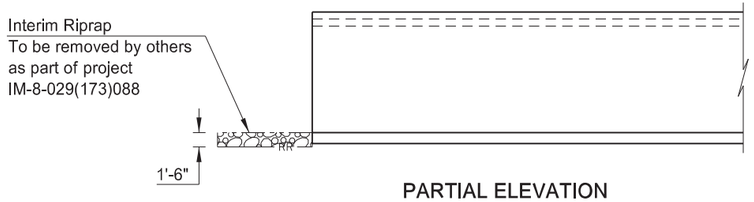


23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	16



PLAN



PARTIAL ELEVATION

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
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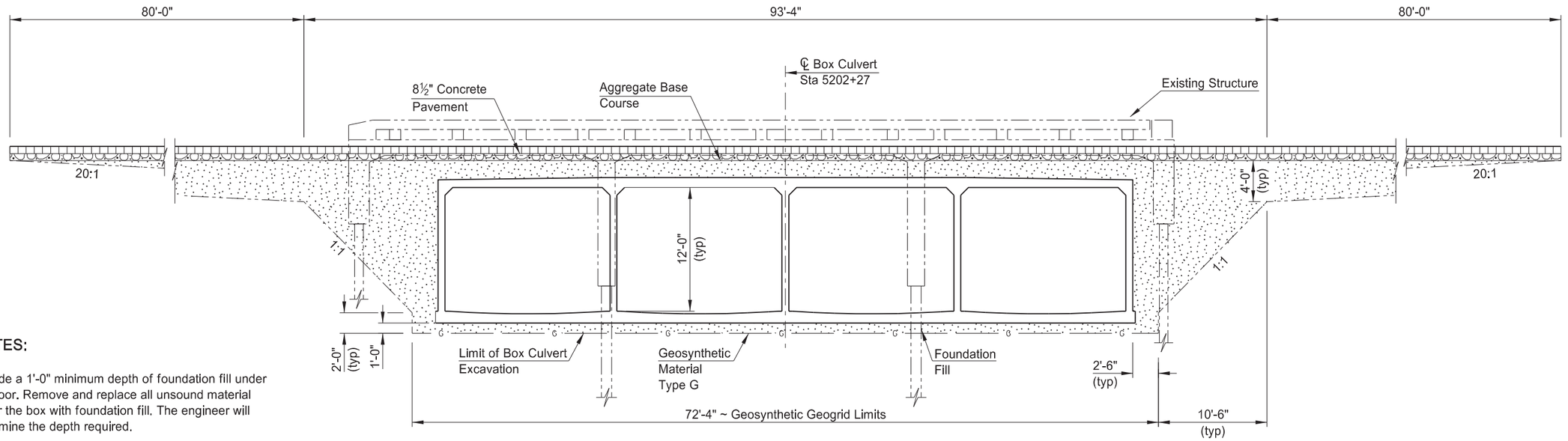
QUANTITIES	
SHORING	2 EA

NORTH BRANCH RIVER

INTERIM BOX CULVERT TRANSITION

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	17



(SHOWING SECTION ALONG ℄ ROADWAY)

GEOSYNTHETIC GEOGRID PLACEMENT AND FOUNDATION FILL
THROUGH EXISTING EMBANKMENT

NOTES:

Provide a 1'-0" minimum depth of foundation fill under the floor. Remove and replace all unsound material under the box with foundation fill. The engineer will determine the depth required.

Extend the geosynthetic material and foundation fill to the end of the apron.

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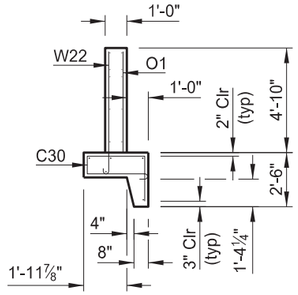
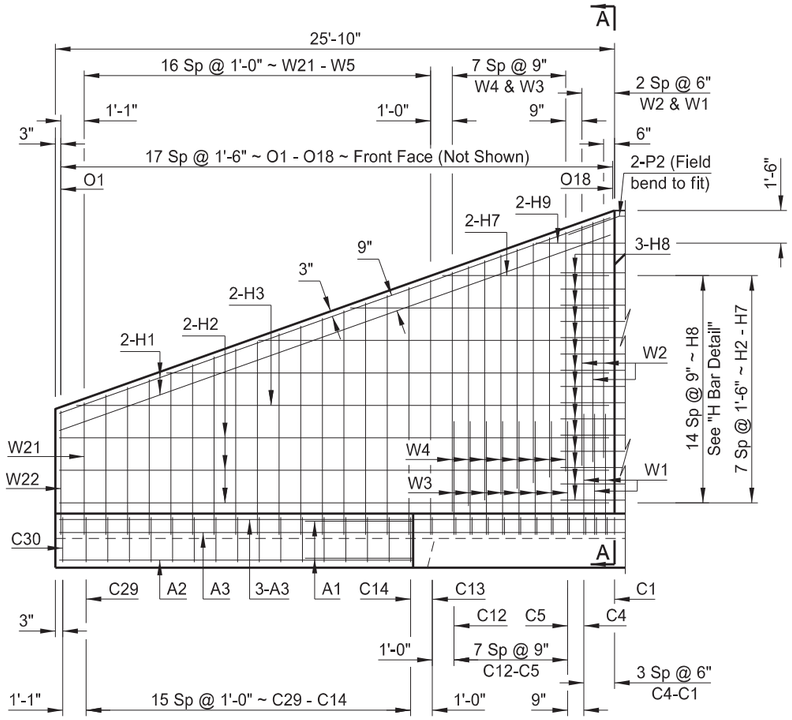
NORTH BRANCH ELM RIVER

EXCAVATION & FOUNDATION
FILL DETAIL

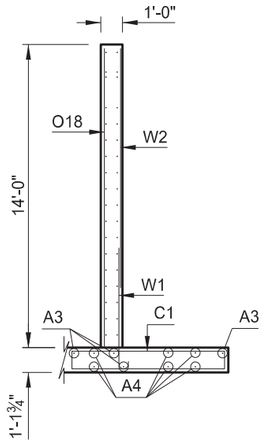
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	18



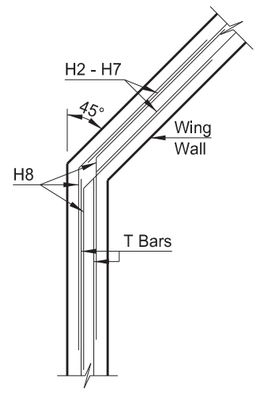
END VIEW



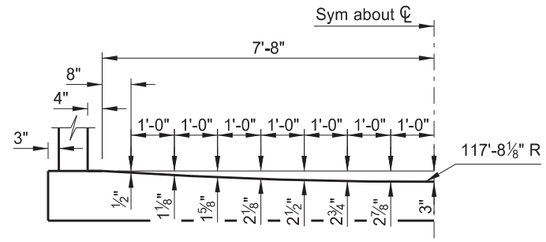
WING ELEVATION



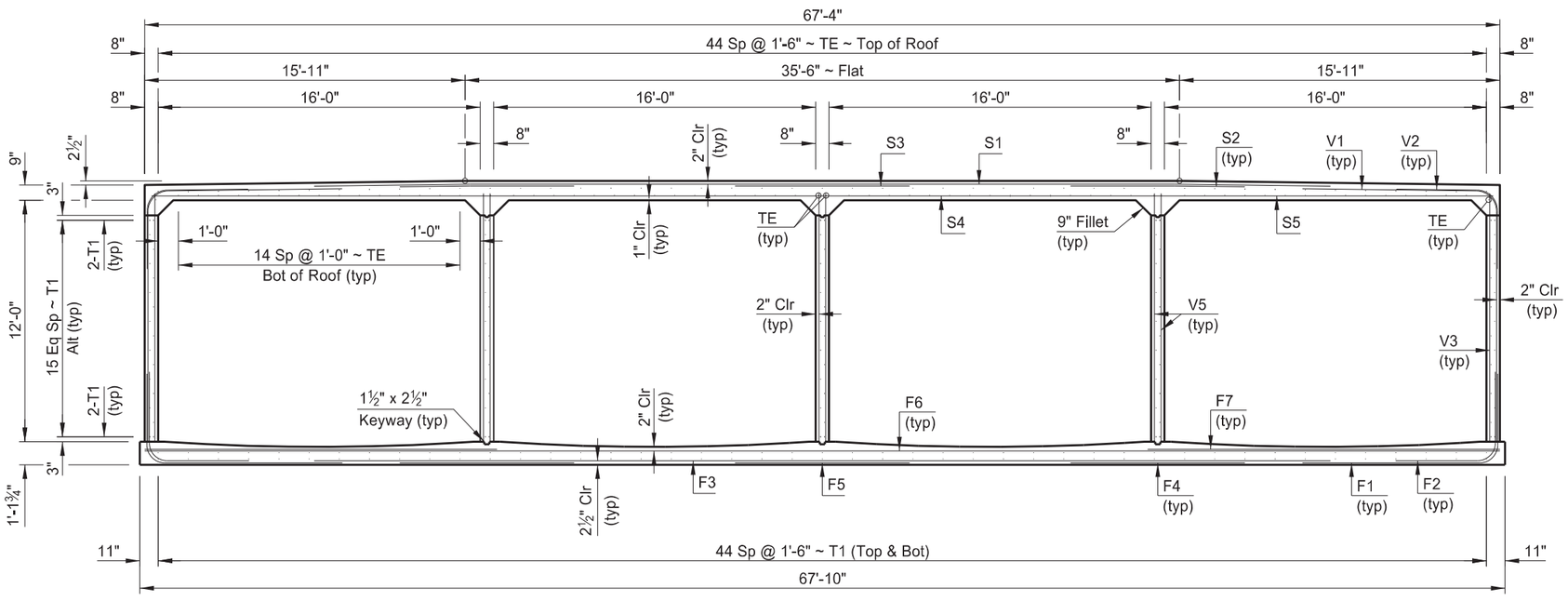
A-A



H BAR DETAIL



CURVED FLOOR OFFSETS



SECTION OF BARREL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE
08/25/20
NORTH DAKOTA
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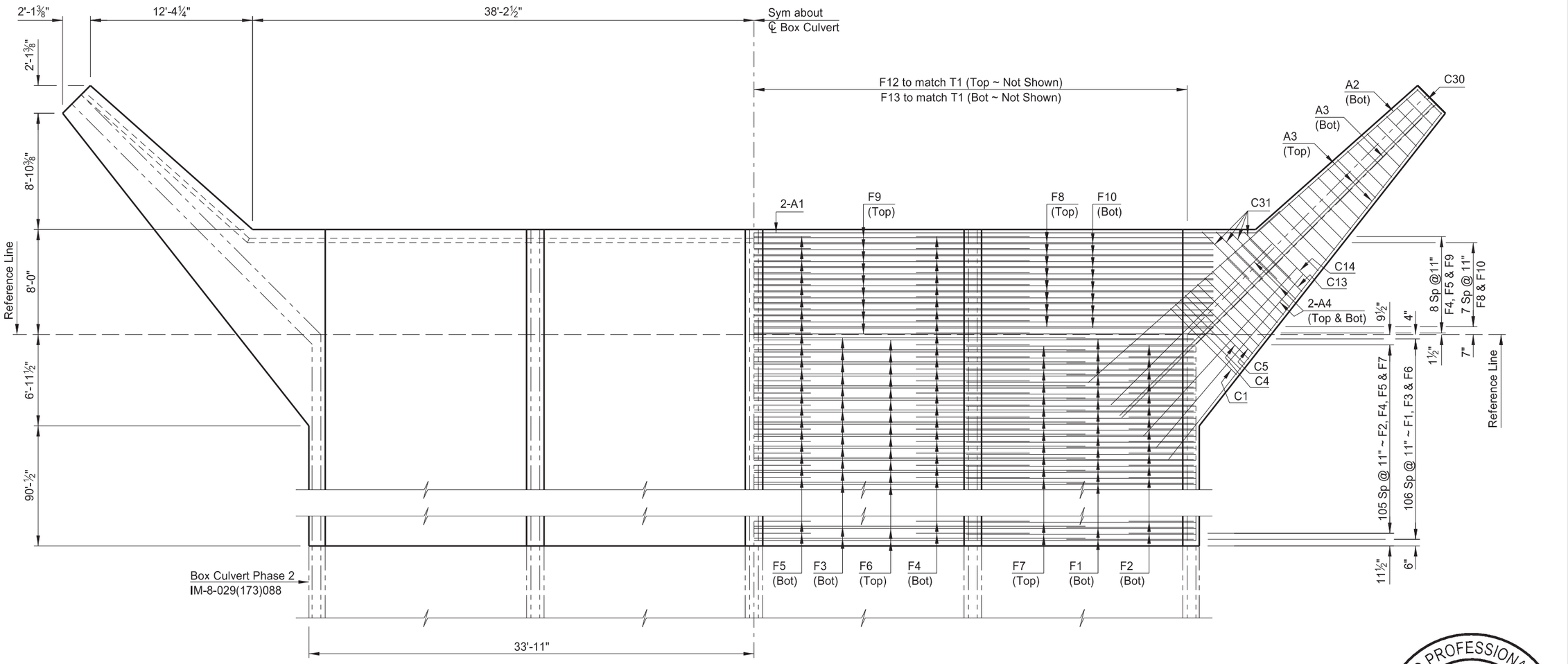
NORTH BRANCH ELM RIVER

BARREL SECTION & WINGS DETAILS

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	19



(SHOWING DIMENSIONS) (SHOWING REINFORCING)

FLOOR PLAN

REGISTERED PROFESSIONAL ENGINEER
DUSTIN WING
PE-7128
DATE
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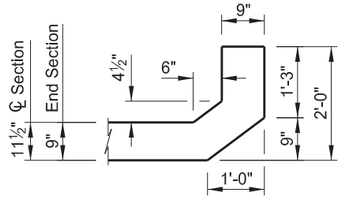
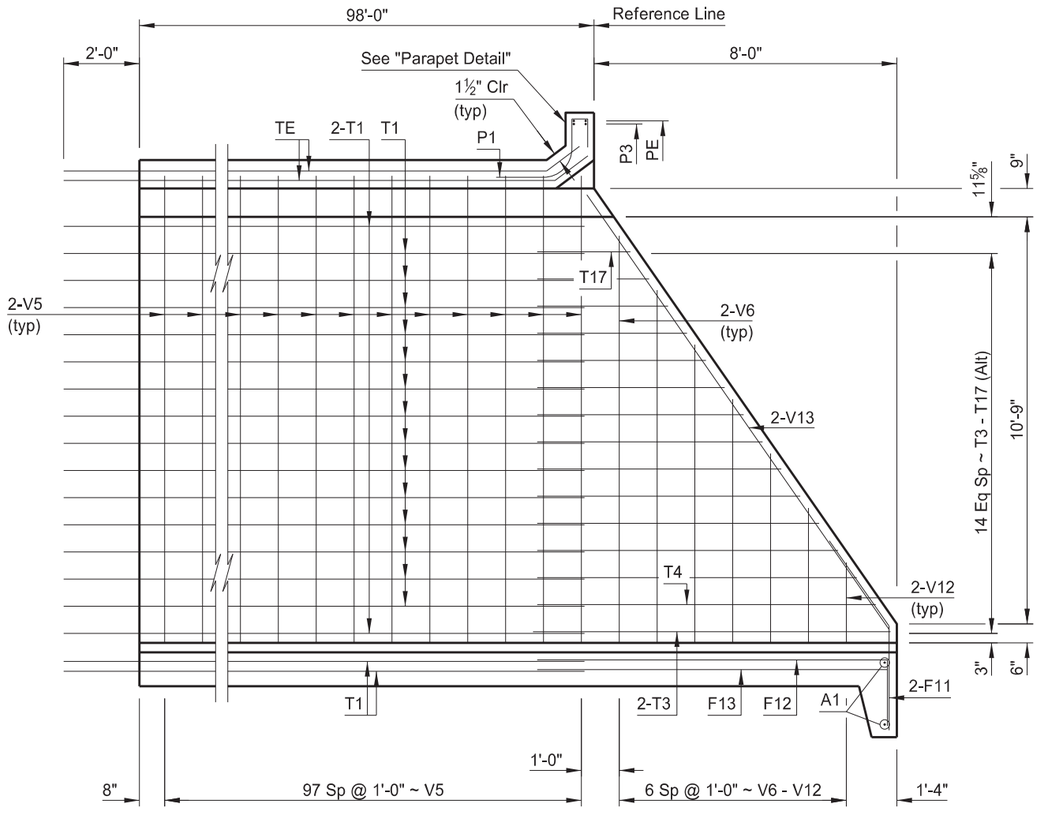
NORTH BRANCH ELM RIVER

FLOOR DETAIL

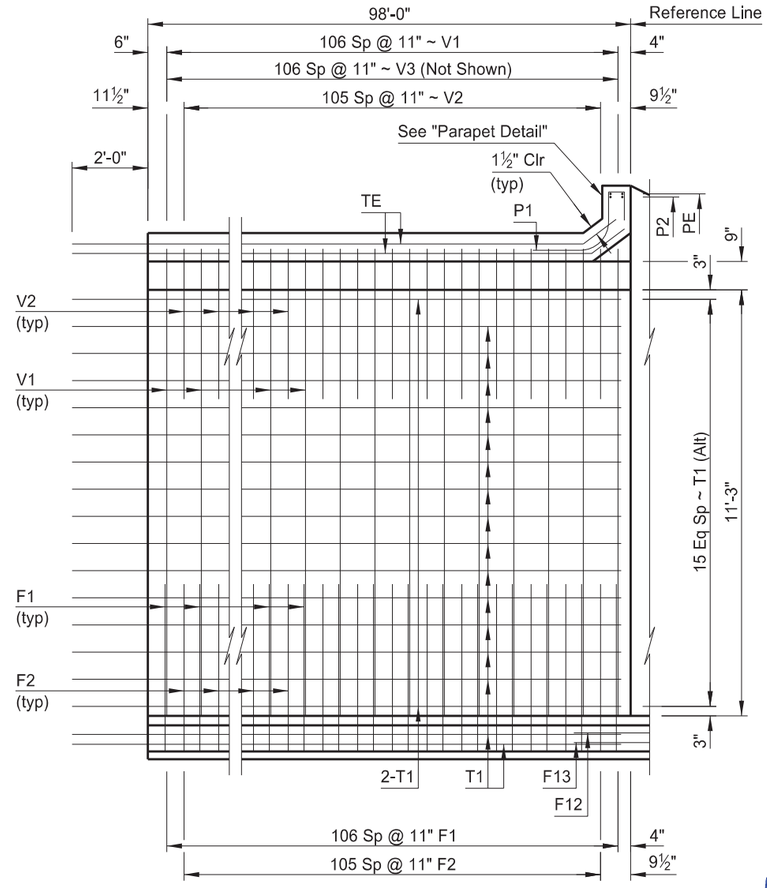
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	20



PARAPET DETAIL



INNER WALL



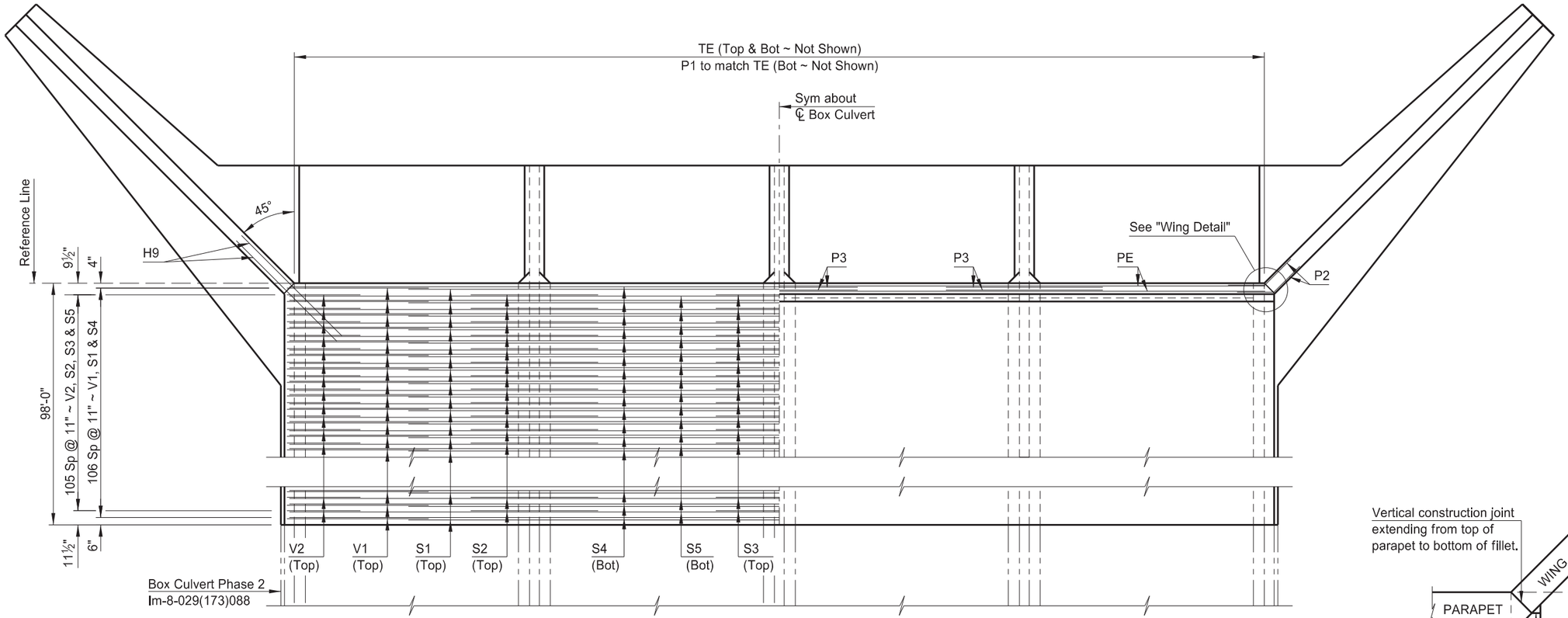
OUTER WALL

LONGITUDINAL SECTIONS

NORTH BRANCH ELM RIVER

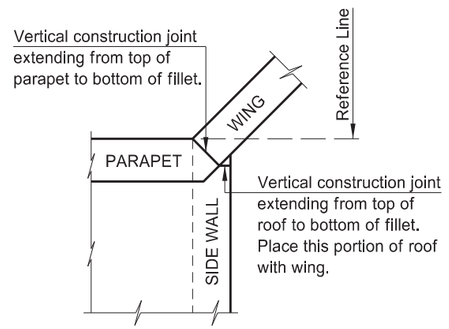
WALL DETAILS &
PARAPET DETAIL

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	21



(SHOWING ROOF REINFORCING) (SHOWING PARAPET REINFORCING)

ROOF PLAN



WING DETAIL

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NORTH BRANCH ELM RIVER

ROOF DETAIL

BAR LIST (CONSTANT)				
MARK	SIZE	NO.	LENGTH	SHAPE
W1	7	6	6'-5"	BENT
W2	6	6	11'-1"	BENT
W3	7	16	5'-3"	BENT
W4	6	16	11'-1"	BENT
W5	7	2	12'-7"	BENT
W6	7	2	12'-2"	BENT
W7	7	2	11'-10"	BENT
W8	7	2	11'-6"	BENT
W9	7	2	11'-2"	BENT
W10	7	2	10'-9"	BENT
W11	6	2	10'-3"	BENT
W12	6	2	9'-11"	BENT
W13	5	2	9'-5"	BENT
W14	5	2	9'-1"	BENT
W15	5	2	8'-9"	BENT
W16	4	2	8'-4"	BENT
W17	4	2	7'-11"	BENT
W18	4	2	7'-7"	BENT
W19	4	2	7'-3"	BENT
W20	4	2	6'-11"	BENT
W21	4	2	6'-6"	BENT
W22	4	2	6'-2"	BENT
C1	6	2	16'-6"	BENT
C2	6	2	16'-2"	BENT
C3	6	2	16'-0"	BENT
C4	6	2	15'-10"	BENT
C5	6	2	15'-8"	BENT
C6	6	2	15'-6"	BENT
C7	6	2	15'-2"	BENT
C8	6	2	14'-10"	BENT
C9	6	2	14'-8"	BENT
C10	6	2	14'-4"	BENT
C11	6	2	14'-2"	BENT
C12	6	2	13'-10"	BENT
C13	5	2	13'-6"	BENT
C14	5	2	14'-7"	BENT
C15	5	2	14'-3"	BENT
C16	5	2	13'-9"	BENT
C17	5	2	13'-5"	BENT
C18	5	2	13'-1"	BENT
C19	5	2	12'-9"	BENT
C20	5	2	12'-5"	BENT
C21	4	2	12'-0"	BENT
C22	4	2	11'-8"	BENT
C23	4	2	11'-2"	BENT
C24	4	2	10'-10"	BENT
C25	4	2	10'-6"	BENT
C26	4	2	10'-2"	BENT
C27	4	2	9'-10"	BENT
C28	4	2	9'-6"	BENT
C29	4	2	9'-2"	BENT
C30	4	2	8'-8"	BENT
C31	4	8	7'-2"	BENT

BAR LIST (CONSTANT)				
MARK	SIZE	NO.	LENGTH	SHAPE
H1	7	8	26'-11"	STR.
H2	4	12	25'-4"	STR.
H3	4	4	24'-7"	STR.
H4	4	4	20'-4"	STR.
H5	4	4	16'-2"	STR.
H6	4	4	11'-11"	STR.
H7	4	4	7'-8"	STR.
H8	4	90	6'-0"	BENT
H9	6	4	9'-8"	STR.
O1-O18	4	2 SETS	166'-6"	STR.
A1	6	4	41'-9"	BENT
A2	6	2	16'-6"	STR.
A3	6	8	33'-8"	STR.
A4	6	12	17'-4"	STR.
P1	4	68	4'-7"	BENT
P2	6	4	5'-0"	BENT
P3	6	6	10'-8"	STR.
PE	6	4	34'-0"	STR.
V6	4	6	10'-9"	STR.
V7	4	6	9'-3"	STR.
V8	4	6	7'-10"	STR.
V9	4	6	6'-5"	STR.
V10	4	6	5'-0"	STR.
V11	4	6	3'-6"	STR.
V12	4	6	2'-1"	STR.
V13	4	6	14'-0"	STR.
F8	7	8	73'-0"	STR.
F9	6	9	72'-9"	STR.
F10	6	8	72'-9"	STR.
F11	6	6	5'-6"	BENT
F12	4	45	11'-0"	BENT
F13	4	45	9'-3"	STR.
T3	4	6	9'-6"	STR.
T4-T17	4	3	79'-4"	STR.

BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE
V1	6	214	21'-9"	BENT
V2	7	212	8'-6"	BENT
V3	4	214	12'-4"	STR.
V5	4	588	12'-4"	STR.
F1	5	214	13'-6"	BENT
F2	6	212	8'-9"	BENT
F3	6	107	50'-6"	STR.
F4	7	230	8'-8"	STR.
F5	6	115	8'-8"	STR.
F6	7	107	67'-4"	STR.
F7	6	212	17'-6"	STR.
S1	7	107	50'-6"	STR.
S2	8	212	8'-8"	STR.
S3	7	106	8'-8"	STR.
S4	7	107	66'-8"	STR.
S5	6	106	66'-8"	STR.
T1	4	180	101'-0"	STR.
TE	4	113	101'-4"	BENT

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(135)088	170	22

NOTE:

Unless construction requirements dictate otherwise, the Contractor has the option to construct the box culvert using construction joints or as one continuous unit. If construction joints are used, the longitudinal bar lengths may be adjusted, but a minimum lap length of 1'-3" must be maintained.

CONCRETE FORMULAS	
ENTIRE FLOOR	281.7 CY
TWO OUTSIDE WALLS & FOUR WINGS	72.3 CY
INSIDE WALLS	85.4 CY
ENTIRE ROOF	240.8 CY
TOTAL	680.2 CY

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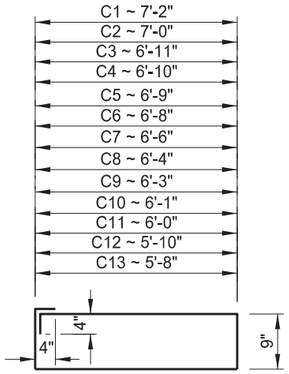
QUANTITIES	
AE-3 CONCRETE	680.2 CY
REINFORCING STEEL	129,173 LBS

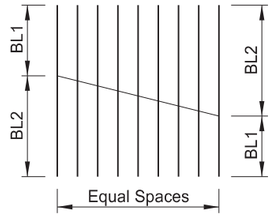
NORTH BRANCH ELM RIVER

REINFORCING BAR LIST

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(135)088	170	23



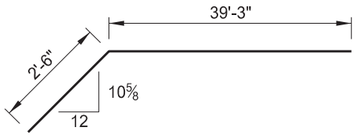
C1 - C13



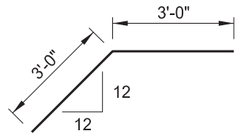
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O18	166'-6"	4'-8"	13'-10"	17
T4-T17	79'-4"	2'-5"	8'-11"	12

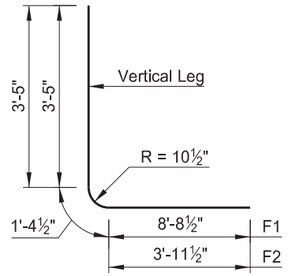
BAR CUTTING DETAILS



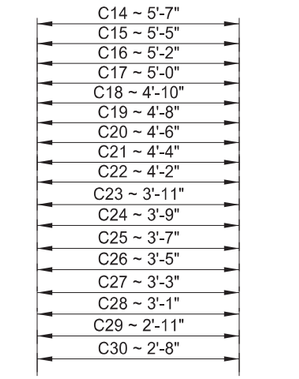
A1



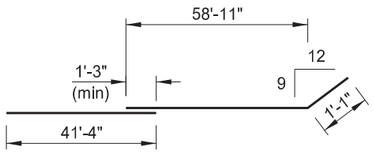
H8



F1 & F2



C14 - C30



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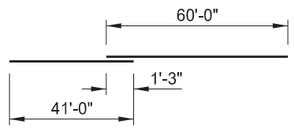
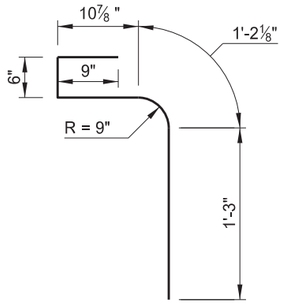
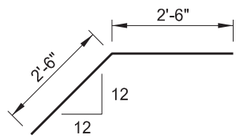


T1



P1



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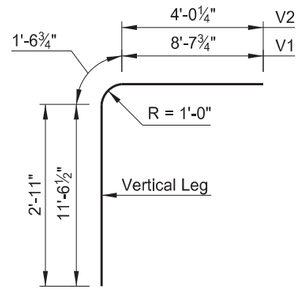
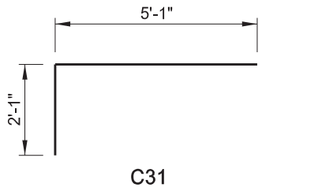


V1 & V2



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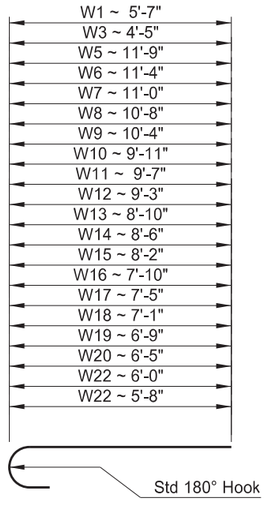
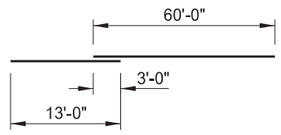


W1 - W22



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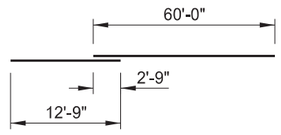
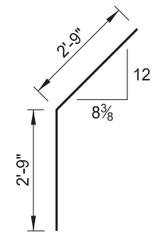


F9 & F10



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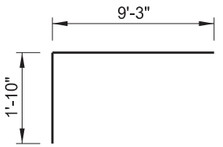

F12

NORTH BRANCH ELM RIVER

BAR DETAILS