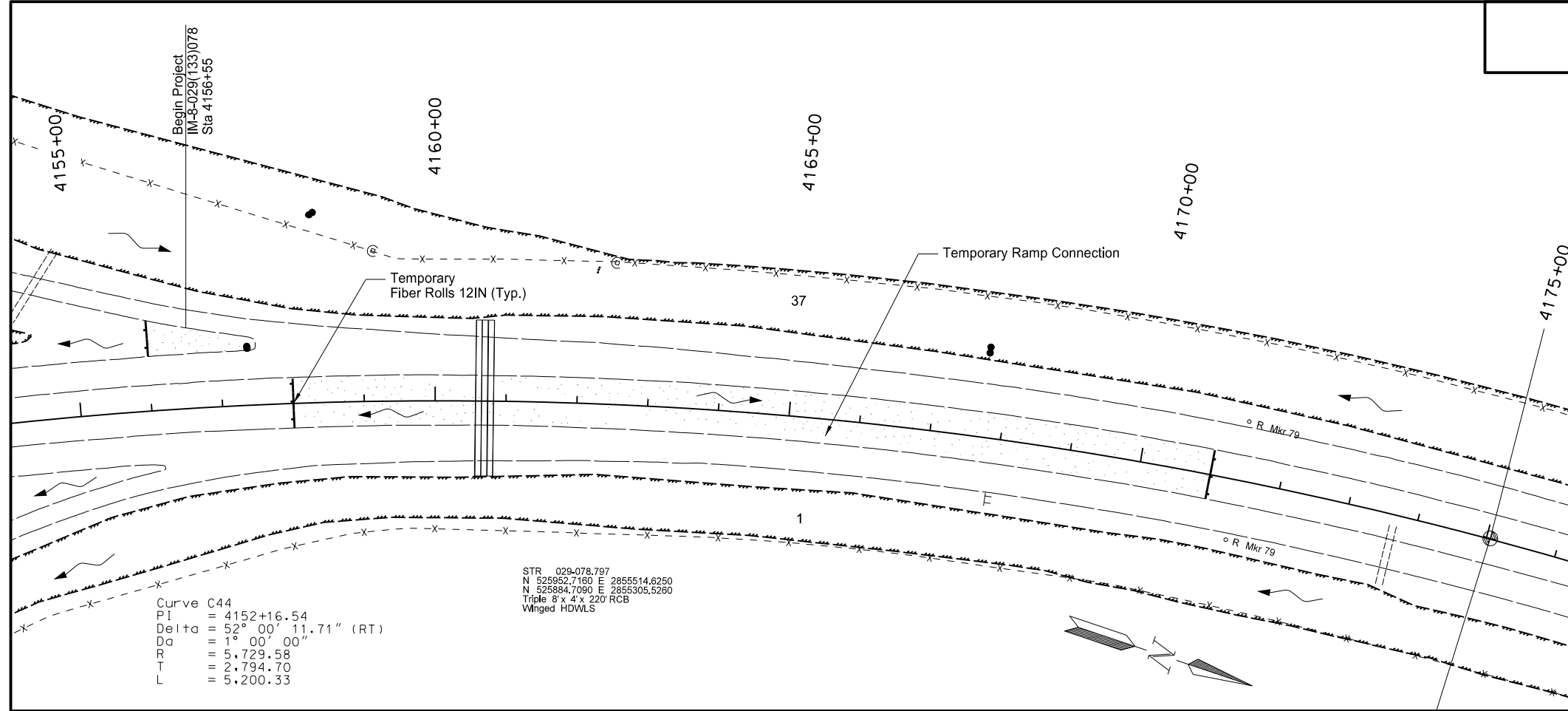


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	1



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP NW Temporary Ramp Connection	1.93	Acres
253-0201	HYDRAULIC MULCH NW Temporary Ramp Connection	1.93	Acres
261-0112	FIBER ROLLS 12IN NW Temporary Ramp Connection	190	LF
261-0113	REMOVE FIBER ROLLS 12IN NW Temporary Ramp Connection	190	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

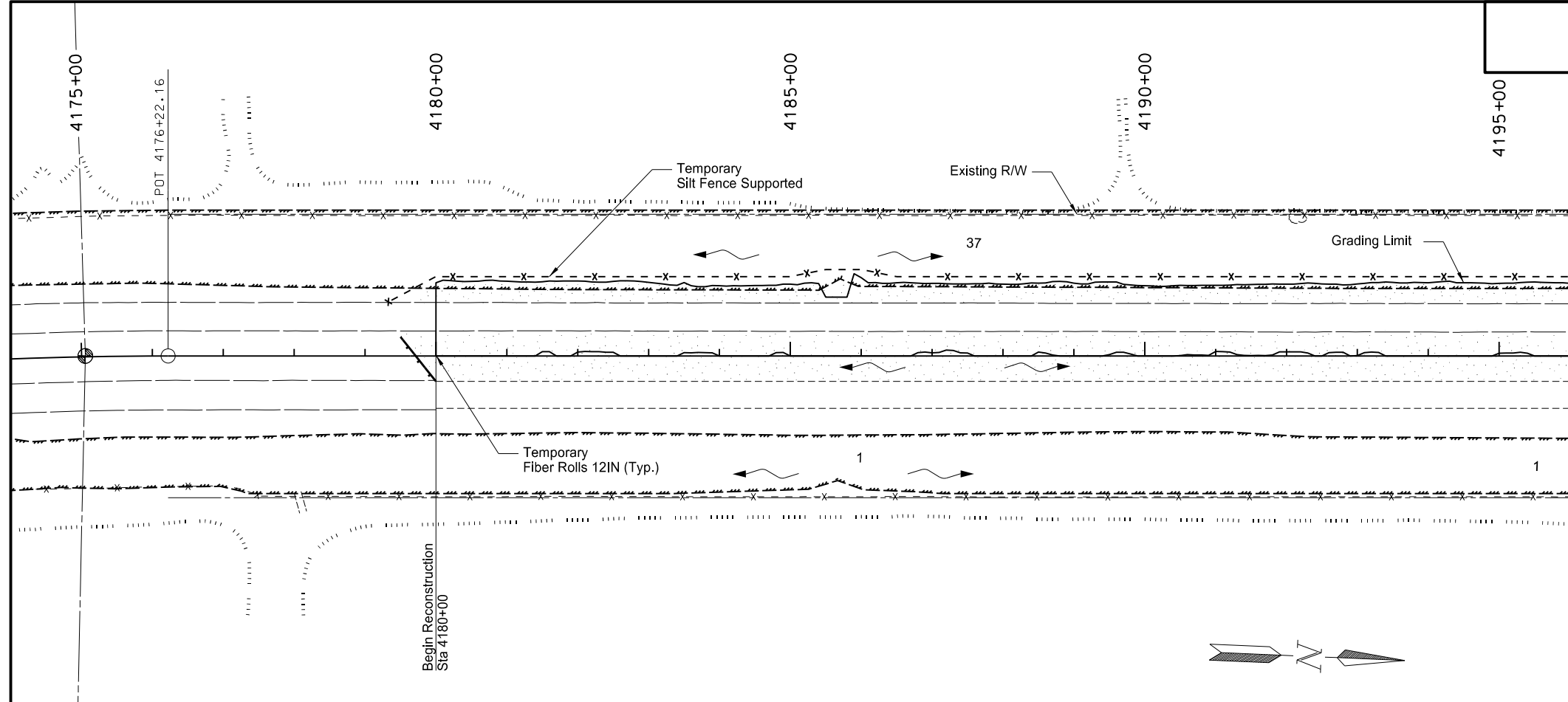
- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls
(12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported

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Wetlands, Temporary Erosion Control, and Seeding



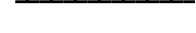
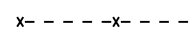
Interstate 29 - Argusville to Hunter SB
Argusville NW Temporary Ramp Connection

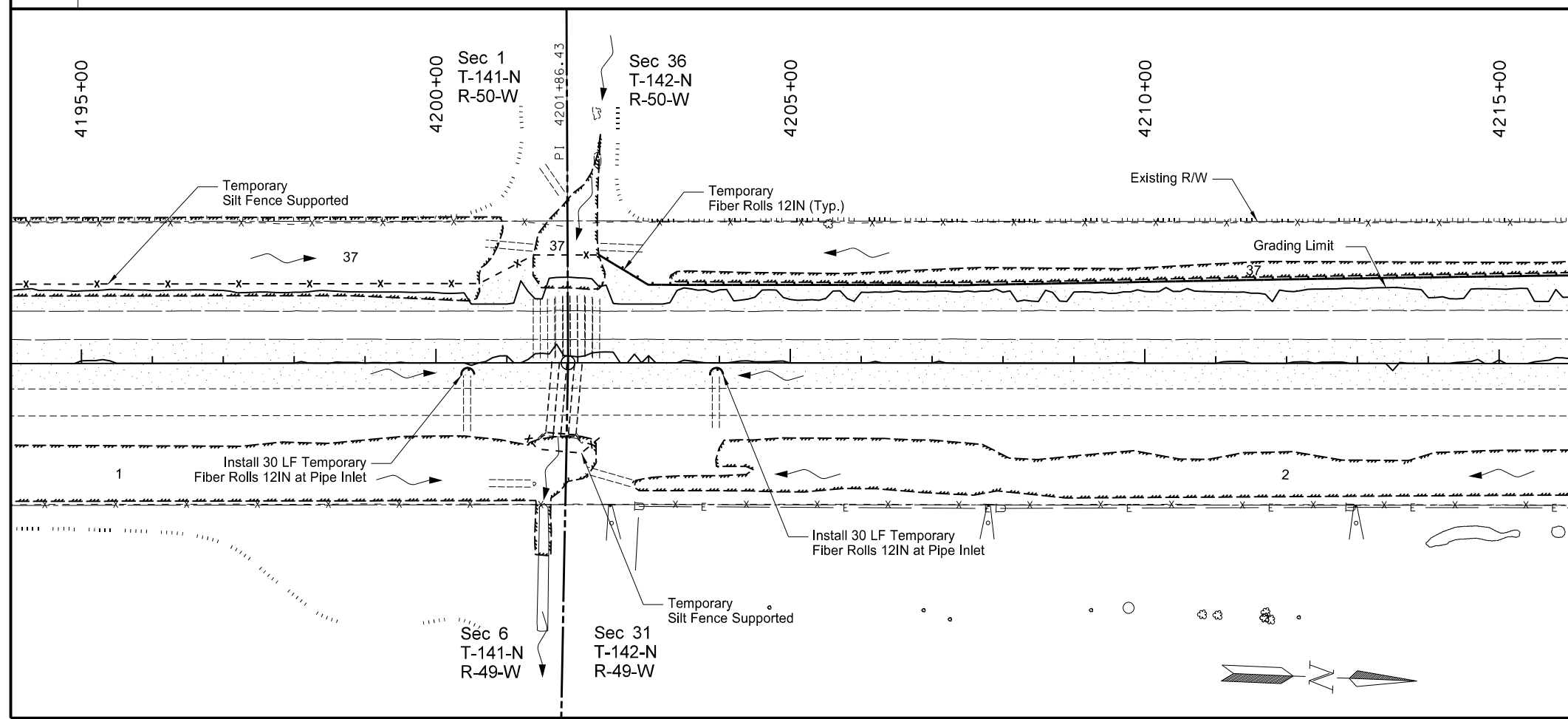
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	2



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4180+00 Lt to 4215+00 Lt	8.54	Acres
253-0201	HYDRAULIC MULCH Sta 4180+00 Lt to 4215+00 Lt	8.54	Acres
260-0200	SILT FENCE SUPPORTED Sta 4180+00 Lt to 4215+00 Lt	2,443	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4180+00 Lt to 4215+00 Lt	2,443	LF
261-0112	FIBER ROLLS 12IN Sta 4180+00 Lt to 4215+00 Lt	1,421	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4180+00 Lt to 4215+00 Lt	1,421	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

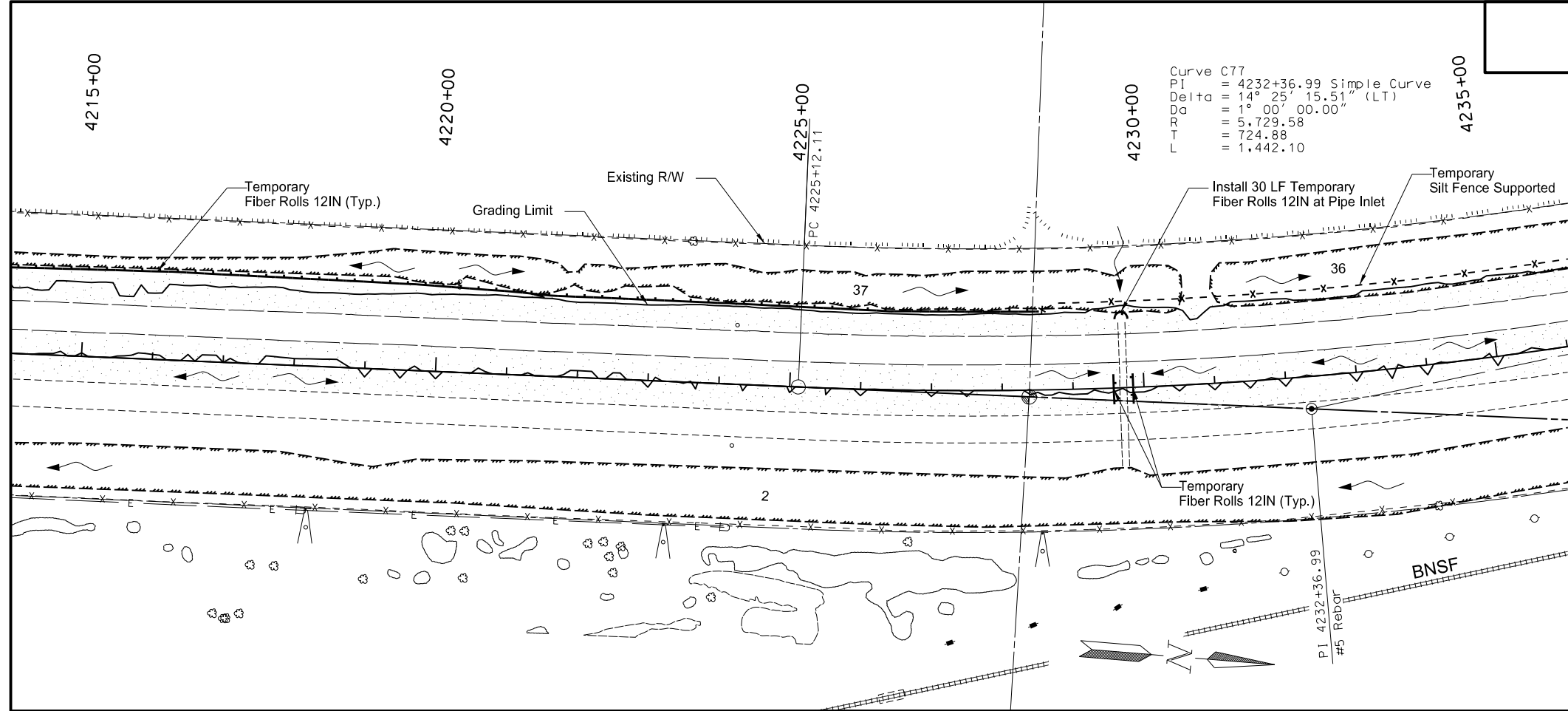


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Wetlands, Temporary Erosion Control, and Seeding



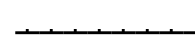
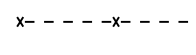
Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4215+00

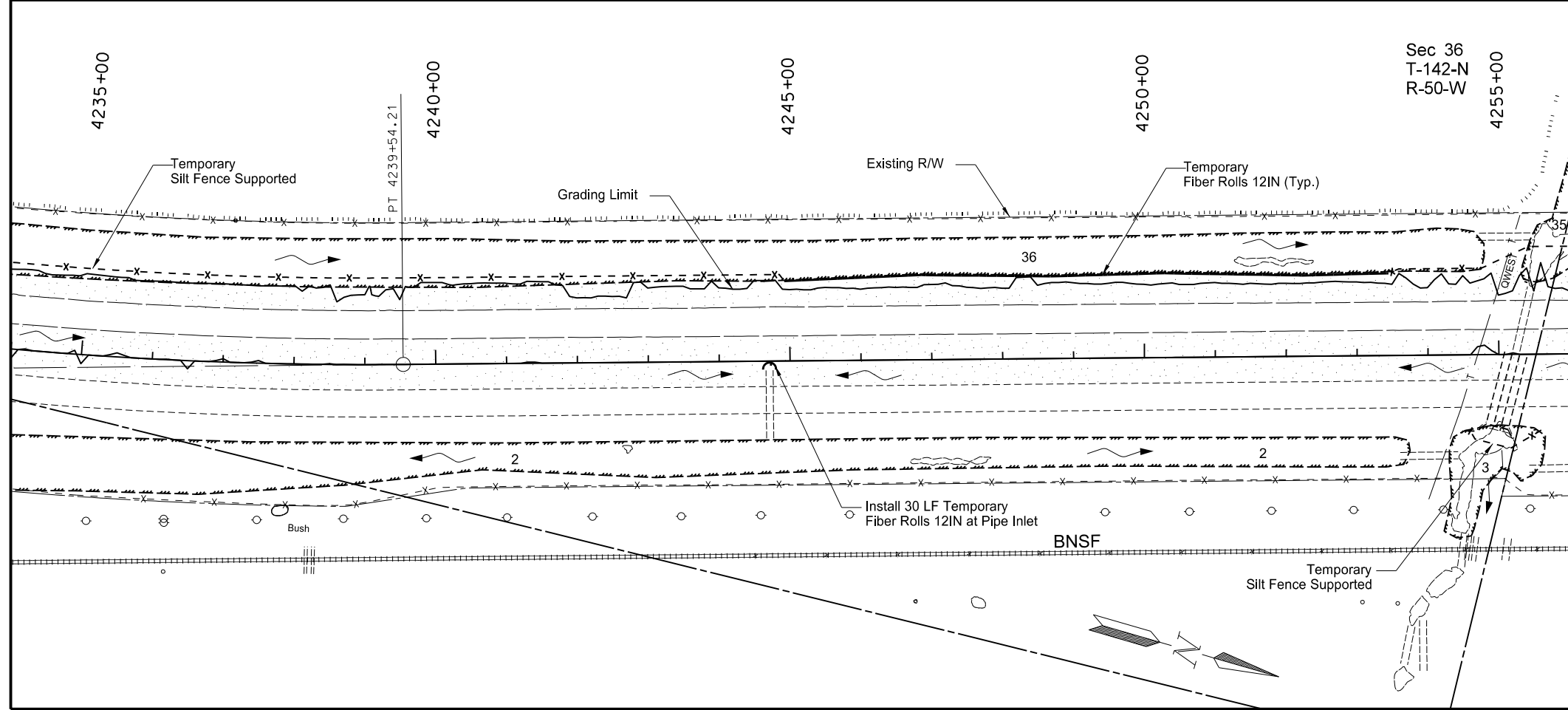
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	3



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4215+00 Lt to 4255+00 Lt	10.39	Acres
253-0201	HYDRAULIC MULCH Sta 4215+00 Lt to 4255+00 Lt	10.39	Acres
260-0200	SILT FENCE SUPPORTED Sta 4215+00 Lt to 4255+00 Lt	1,888	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4215+00 Lt to 4255+00 Lt	1,888	LF
261-0112	FIBER ROLLS 12IN Sta 4215+00 Lt to 4255+00 Lt	2,342	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4215+00 Lt to 4255+00 Lt	2,342	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

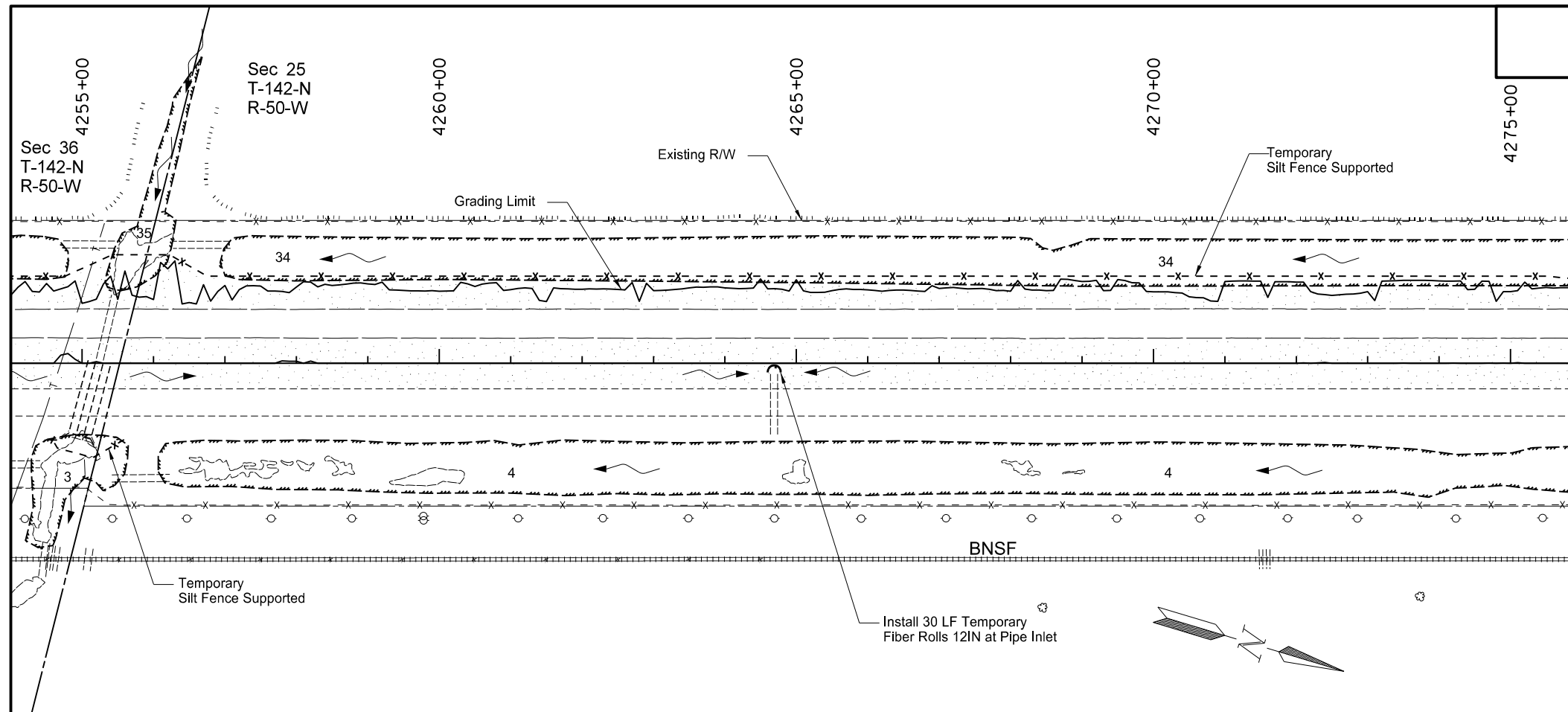


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Wetlands, Temporary Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4215+00 to Sta 4255+00

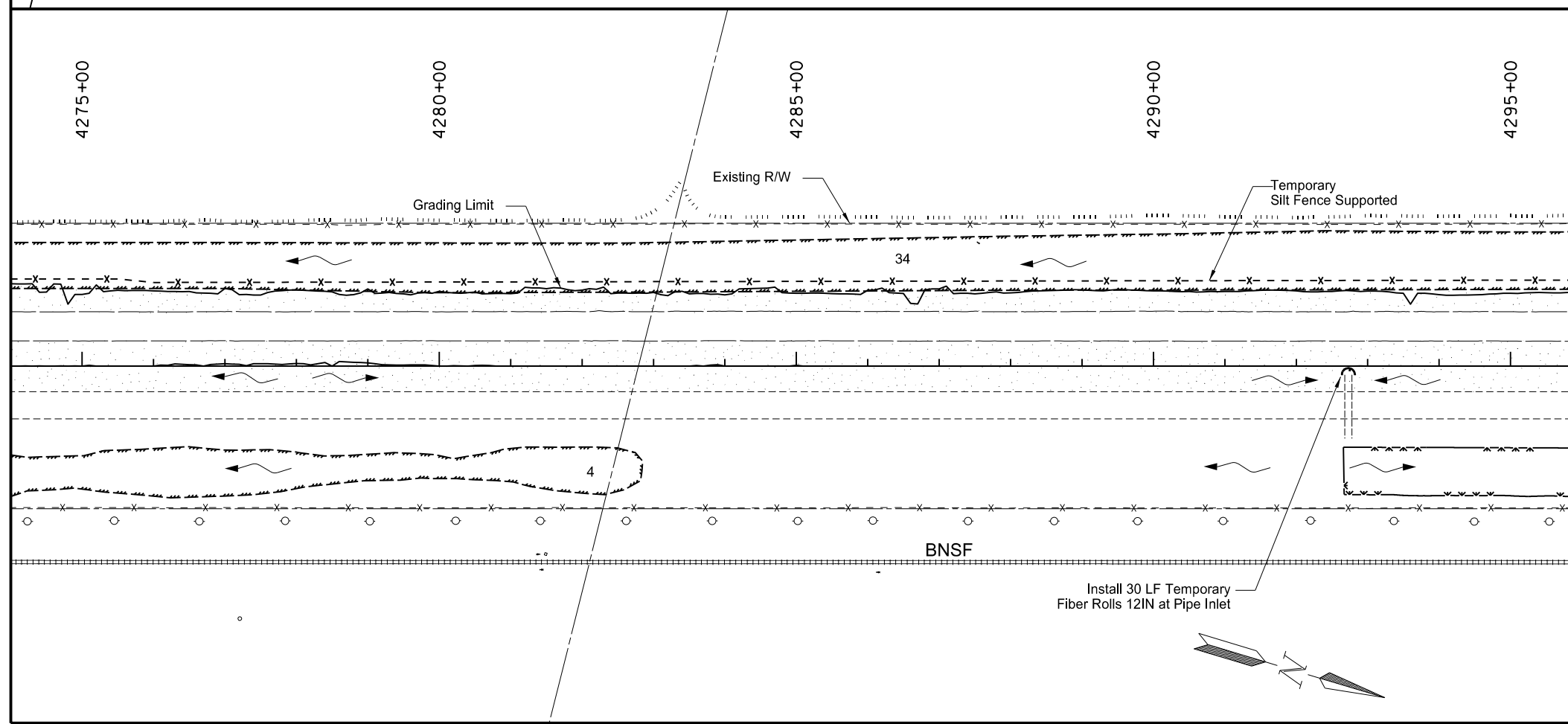
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	4



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4255+00 Lt to 4295+00 Lt	9.95	Acres
253-0201	HYDRAULIC MULCH Sta 4255+00 Lt to 4295+00 Lt	9.95	Acres
260-0200	SILT FENCE SUPPORTED Sta 4255+00 Lt to 4295+00 Lt	4,140	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4255+00 Lt to 4295+00 Lt	4,140	LF
261-0112	FIBER ROLLS 12IN Sta 4255+00 Lt to 4295+00 Lt	60	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4255+00 Lt to 4295+00 Lt	60	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls
(12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported

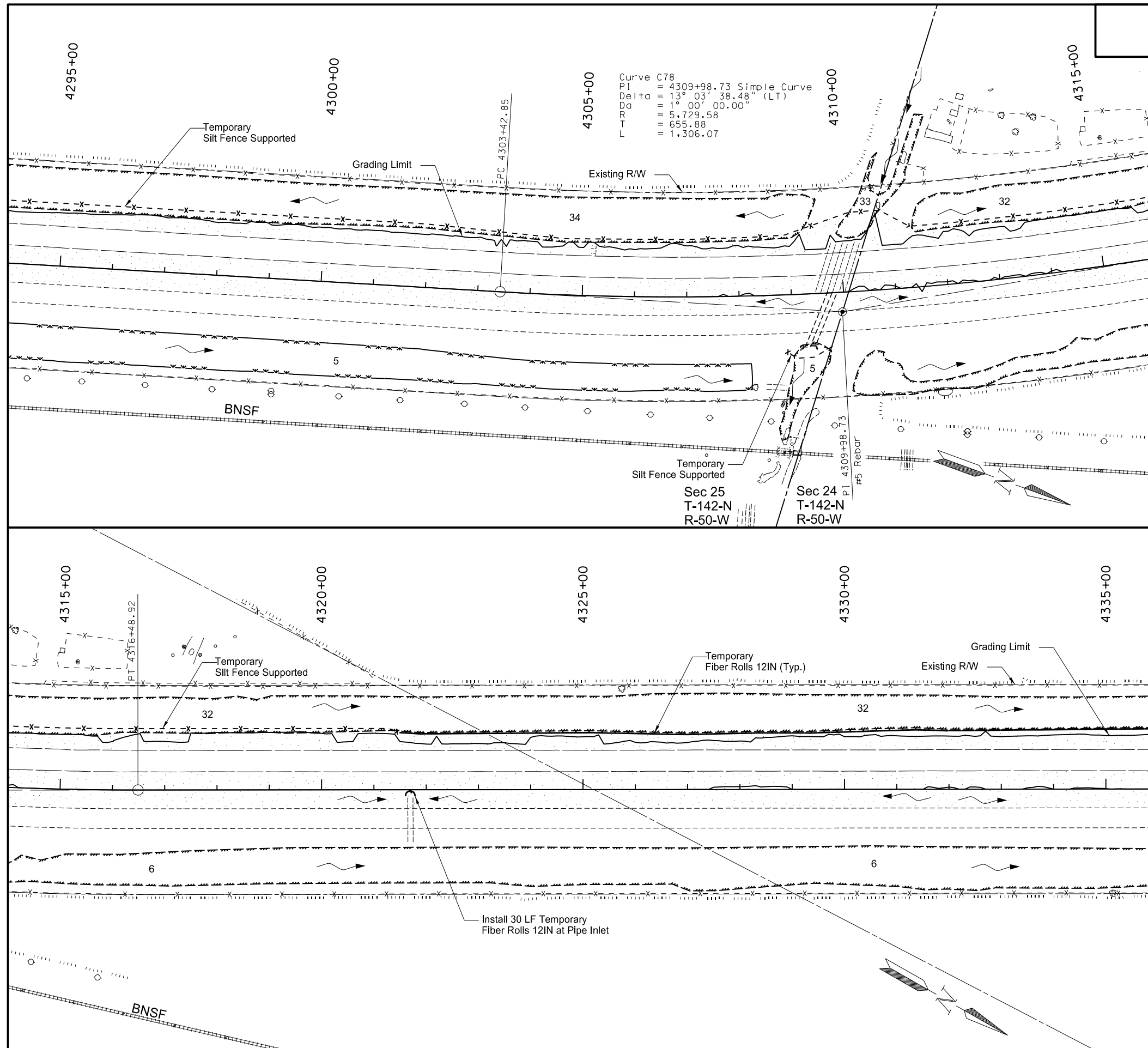


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Wetlands, Temporary Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4295+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	5



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4295+00 Lt to 4335+00 Lt	9.94	Acres
253-0201	HYDRAULIC MULCH Sta 4295+00 Lt to 4335+00 Lt	9.94	Acres
260-0200	SILT FENCE SUPPORTED Sta 4295+00 Lt to 4335+00 Lt	2,739	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4295+00 Lt to 4335+00 Lt	2,739	LF
261-0112	FIBER ROLLS 12IN Sta 4295+00 Lt to 4335+00 Lt	1,381	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4295+00 Lt to 4335+00 Lt	1,381	LF

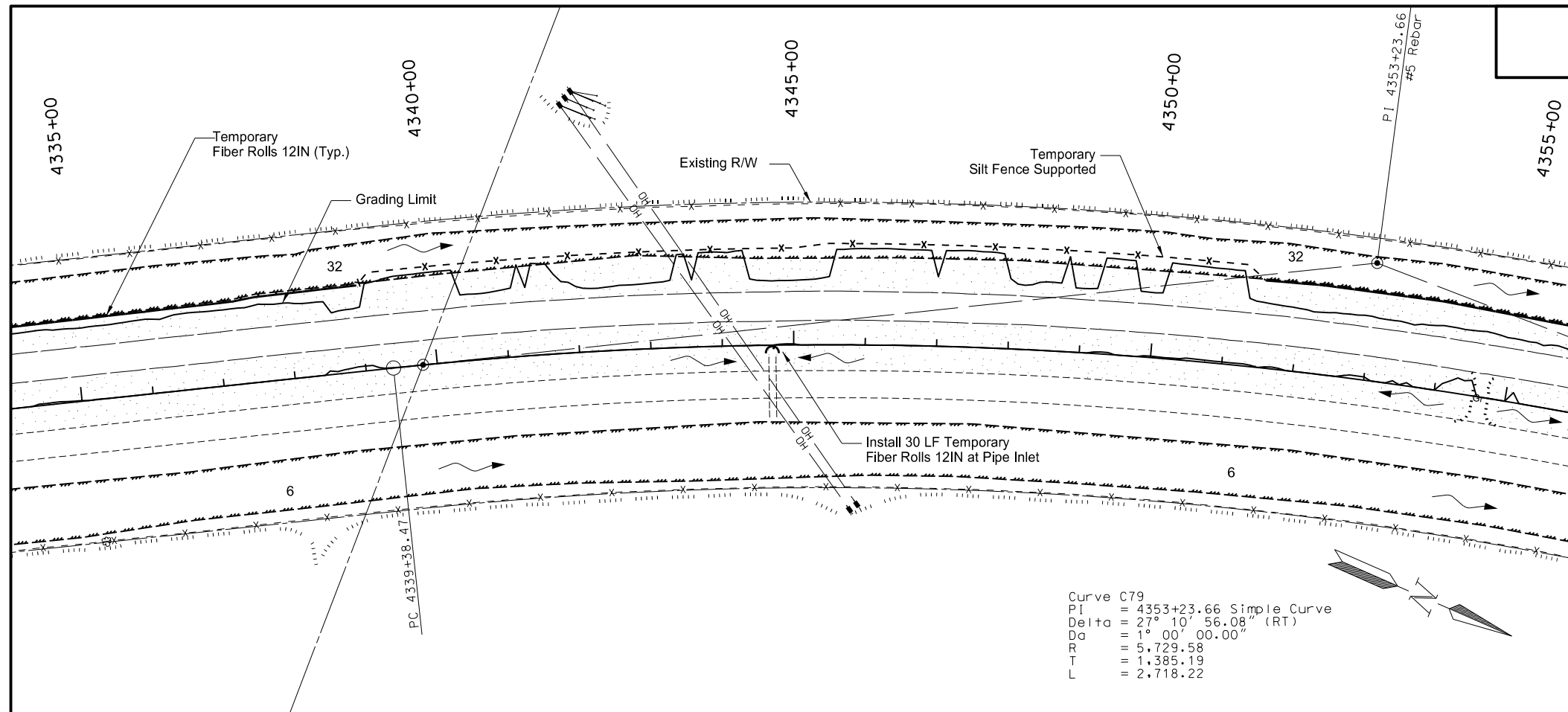
*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls (12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported

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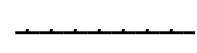
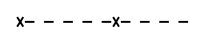
Wetlands, Temporary Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4295+00 to Sta 4335+00

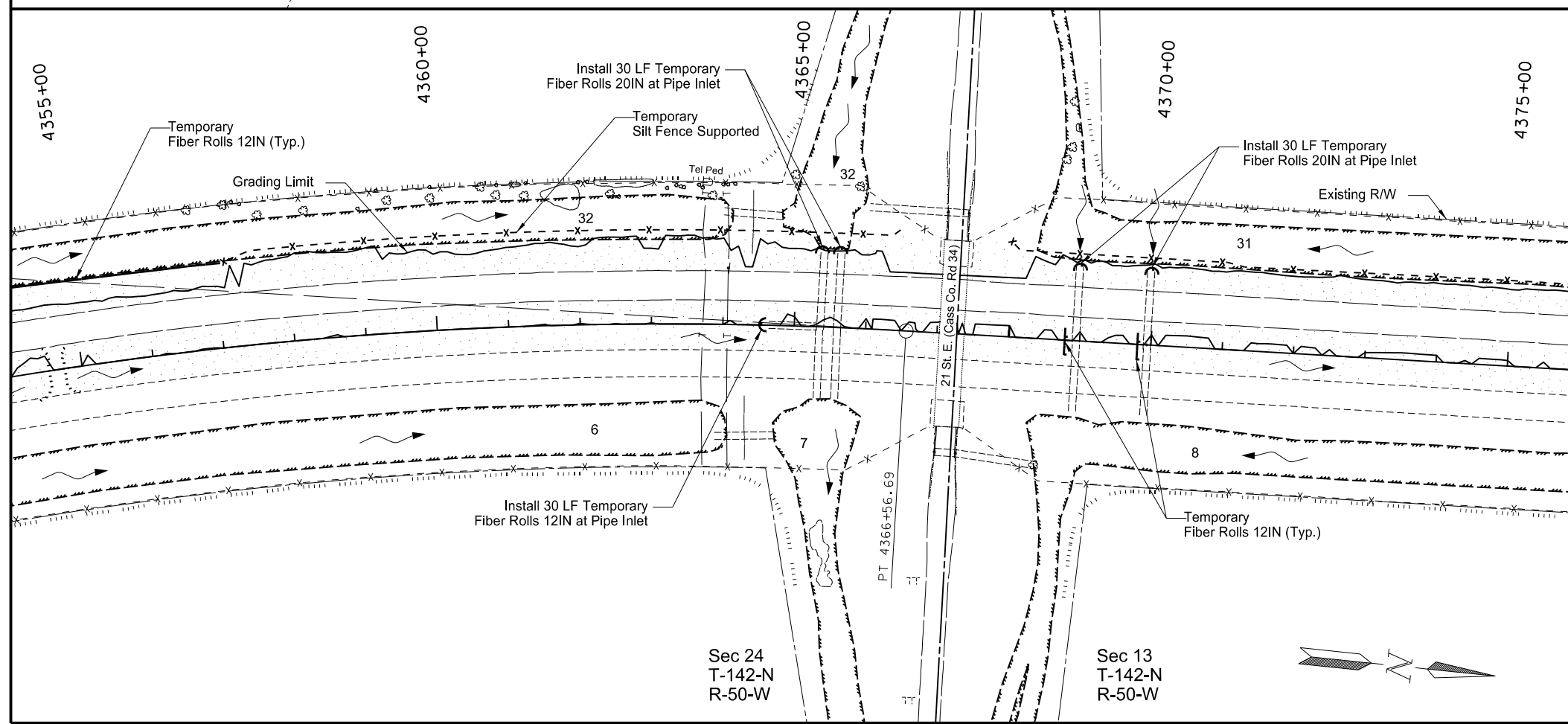
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	6



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4335+00 Lt to 4375+00 Lt	11.14	Acres
253-0201	HYDRAULIC MULCH Sta 4335+00 Lt to 4375+00 Lt	11.14	Acres
260-0200	SILT FENCE SUPPORTED Sta 4335+00 Lt to 4375+00 Lt	2,970	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4335+00 Lt to 4375+00 Lt	2,970	LF
261-0112	FIBER ROLLS 12IN Sta 4335+00 Lt to 4375+00 Lt	1,105	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4335+00 Lt to 4375+00 Lt	1,105	LF
261-0120	FIBER ROLLS 20IN Sta 4335+00 Lt to 4375+00 Lt	120	LF
261-0121	REMOVE FIBER ROLLS 20IN Sta 4335+00 Lt to 4375+00 Lt	120	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

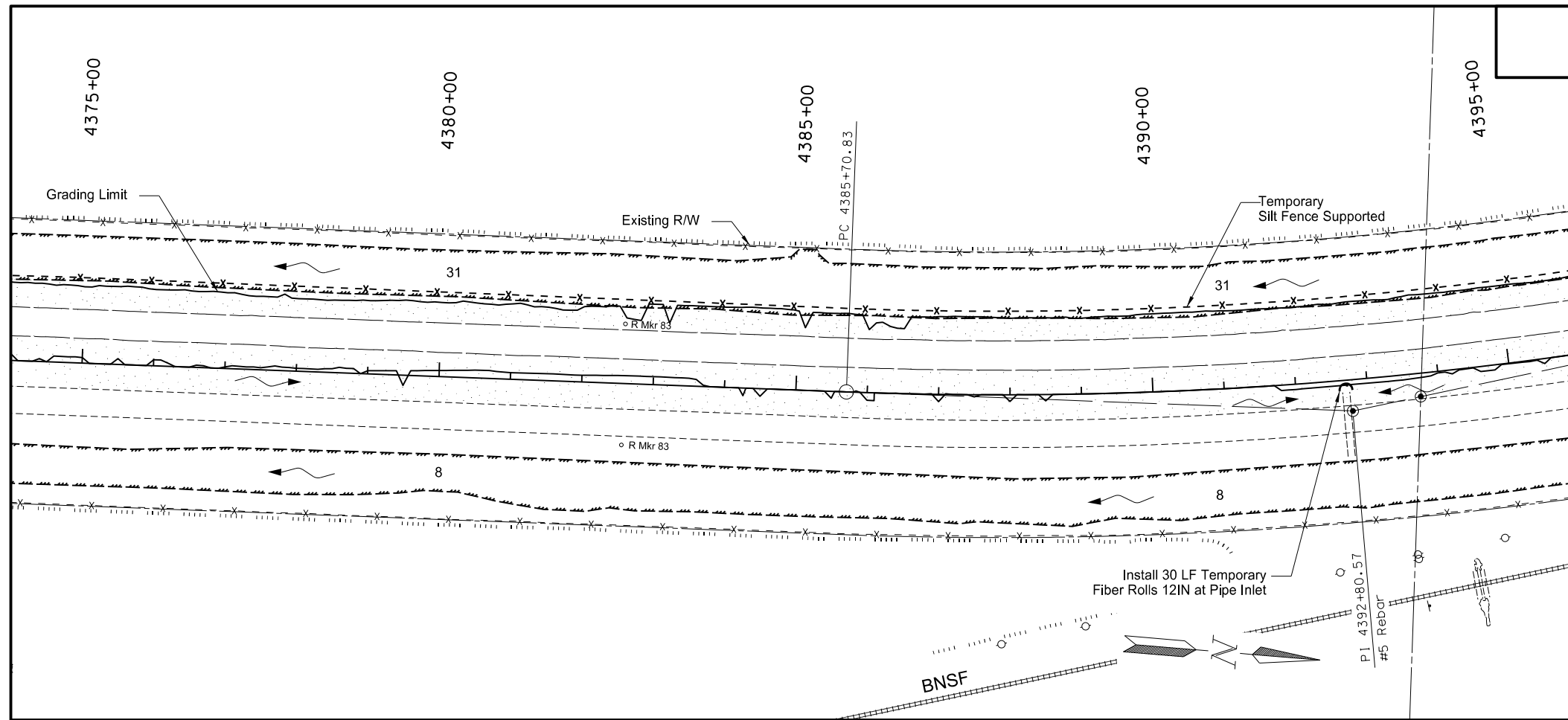
-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported



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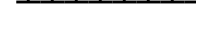
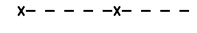
Wetlands, Temporary Erosion Control, and Seeding
Interstate 29 - Argusville to Hunter SB
Sta 4335+00 to Sta 4375+00

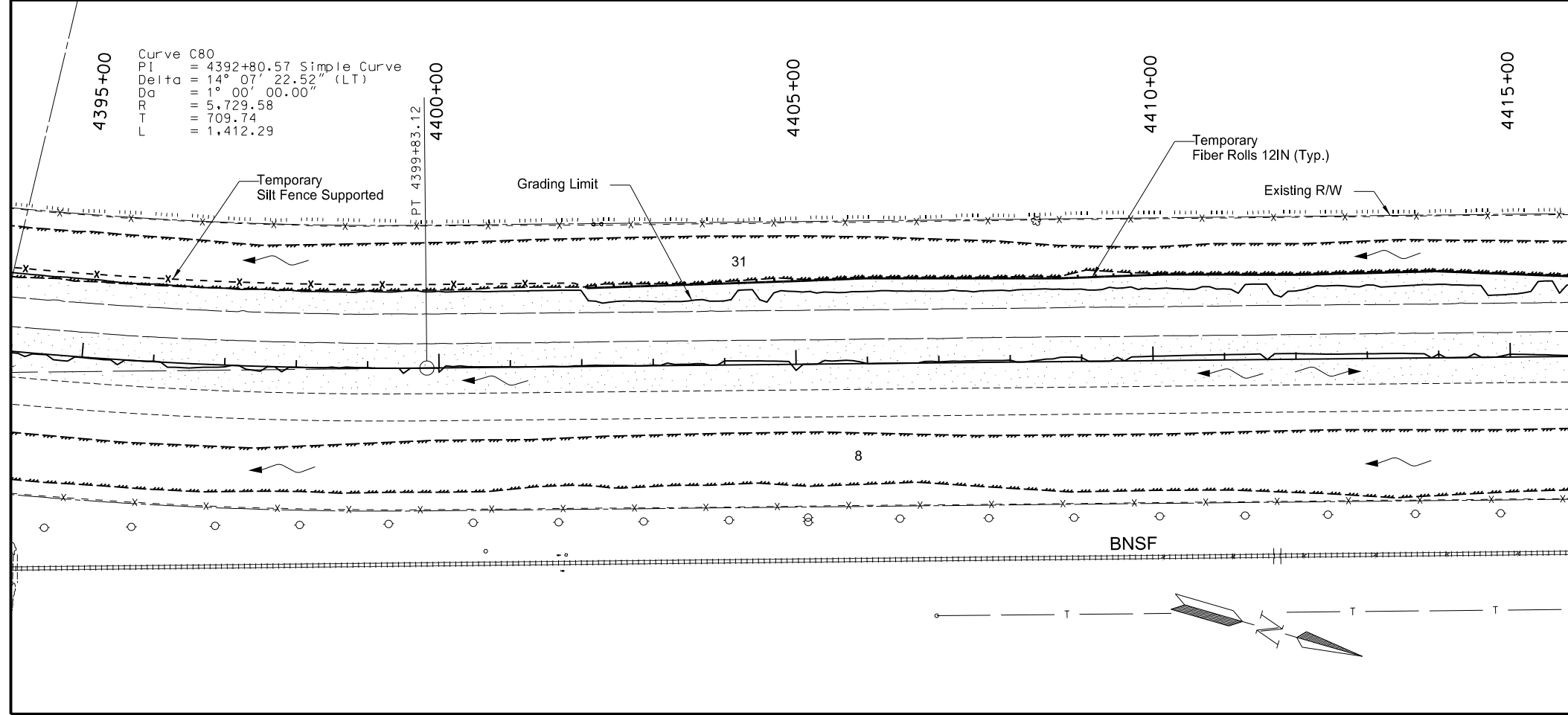
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	7



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4375+00 Lt to 4415+00 Lt	10.18	Acres
253-0201	HYDRAULIC MULCH Sta 4375+00 Lt to 4415+00 Lt	10.18	Acres
260-0200	SILT FENCE SUPPORTED Sta 4375+00 Lt to 4415+00 Lt	2,681	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4375+00 Lt to 4415+00 Lt	2,681	LF
261-0112	FIBER ROLLS 12IN Sta 4375+00 Lt to 4415+00 Lt	1,321	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4375+00 Lt to 4415+00 Lt	1,321	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

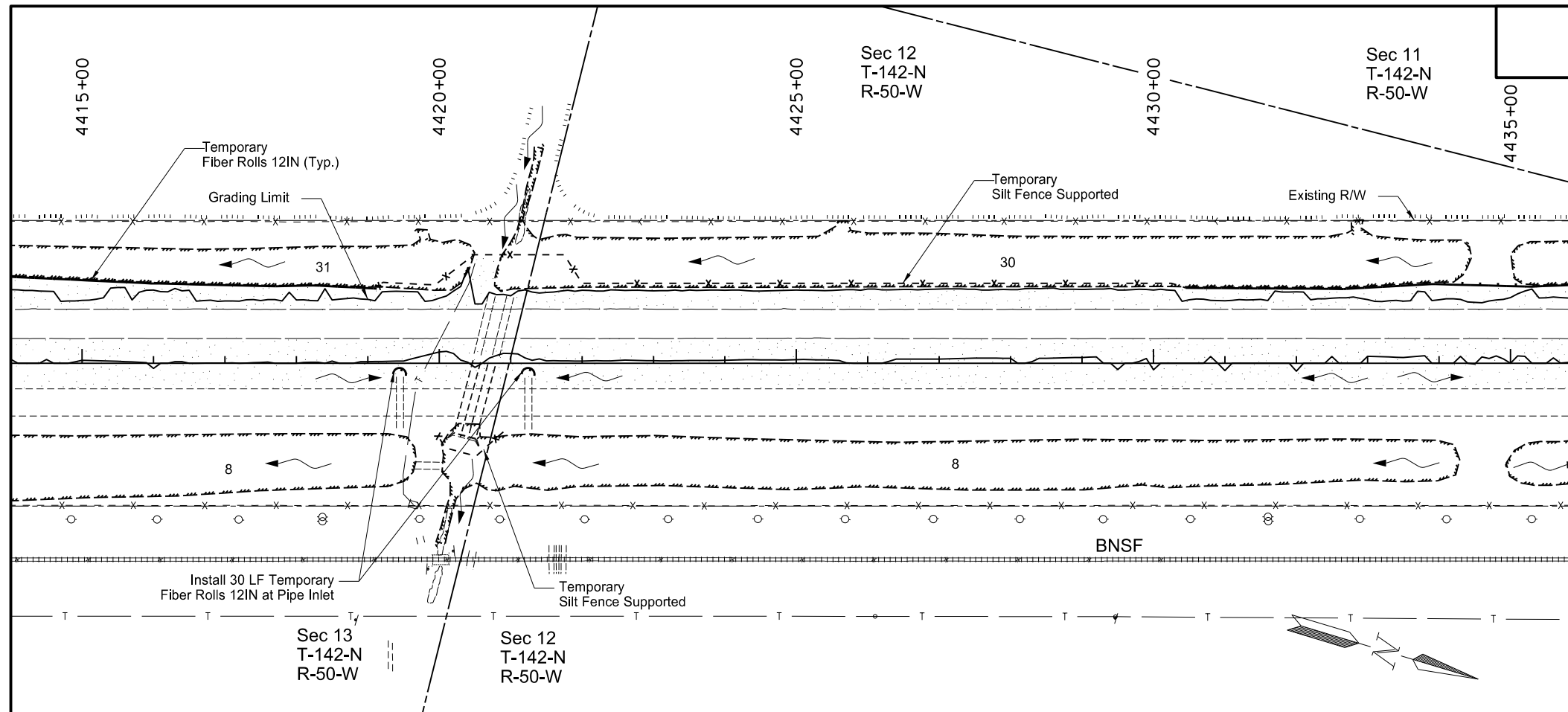


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Wetlands, Temporary Erosion Control, and Seeding



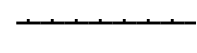
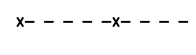
Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4415+00

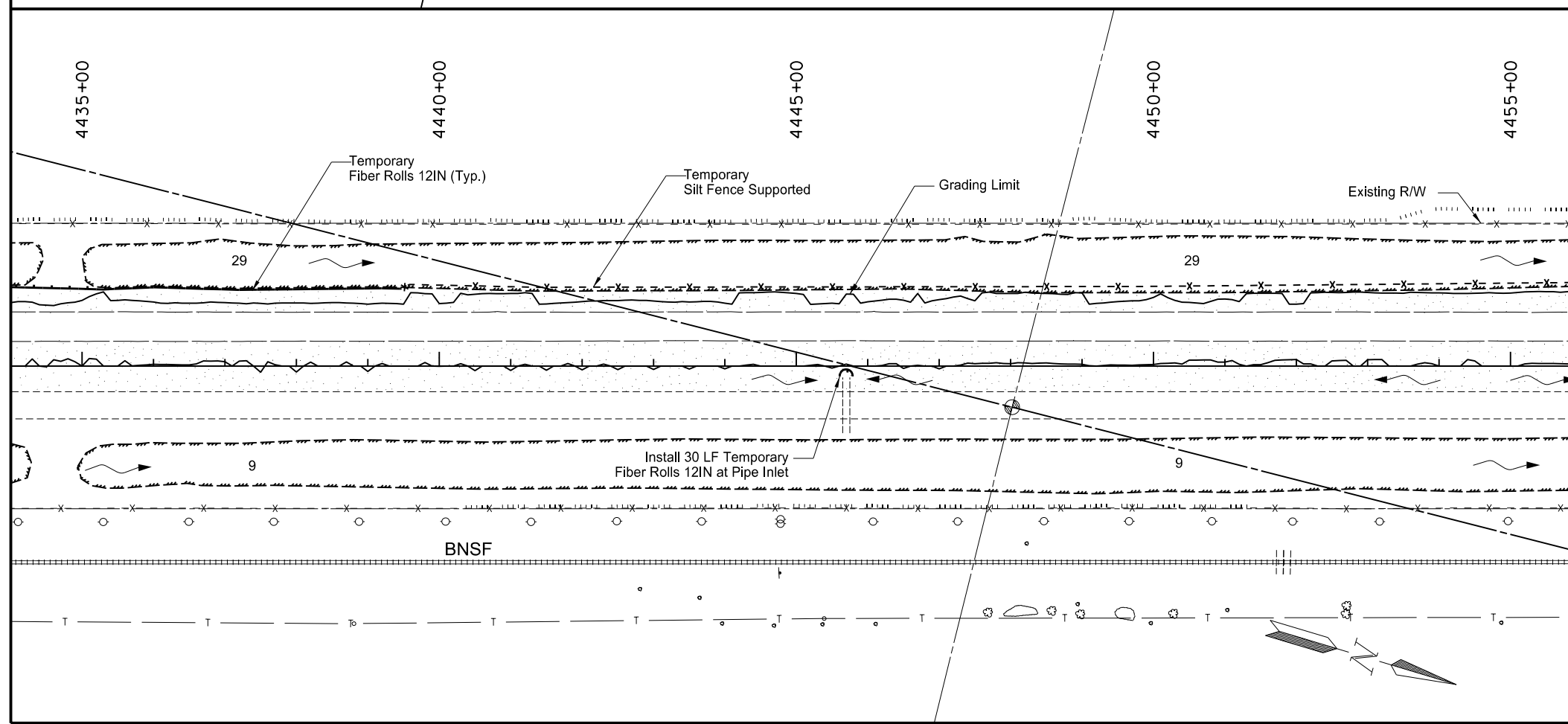
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	8



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4415+00 Lt to 4455+00 Lt	9.70	Acres
253-0201	HYDRAULIC MULCH Sta 4415+00 Lt to 4455+00 Lt	9.70	Acres
260-0200	SILT FENCE SUPPORTED Sta 4415+00 Lt to 4455+00 Lt	2,848	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4415+00 Lt to 4455+00 Lt	2,848	LF
261-0112	FIBER ROLLS 12IN Sta 4415+00 Lt to 4455+00 Lt	1,404	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4415+00 Lt to 4455+00 Lt	1,404	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

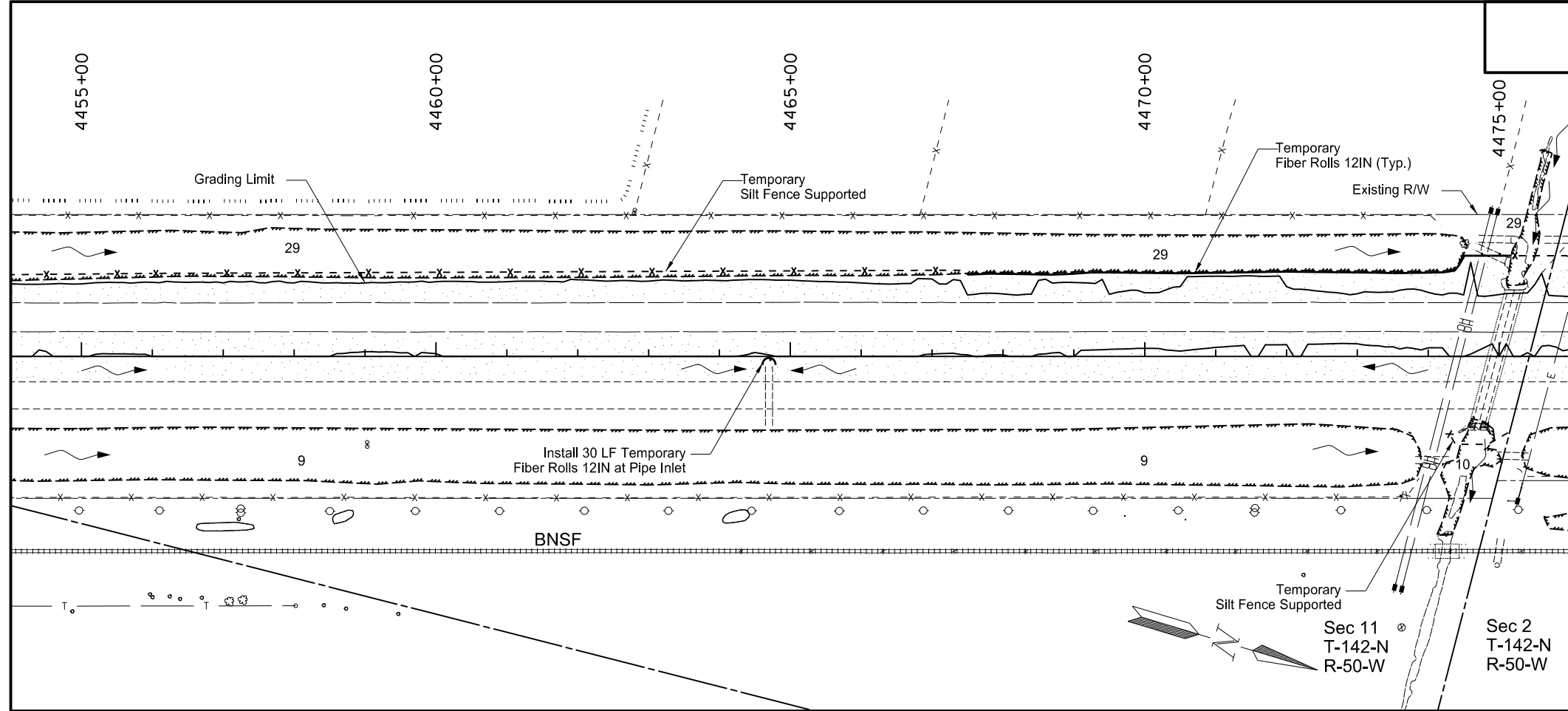


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Wetlands, Temporary Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4455+00

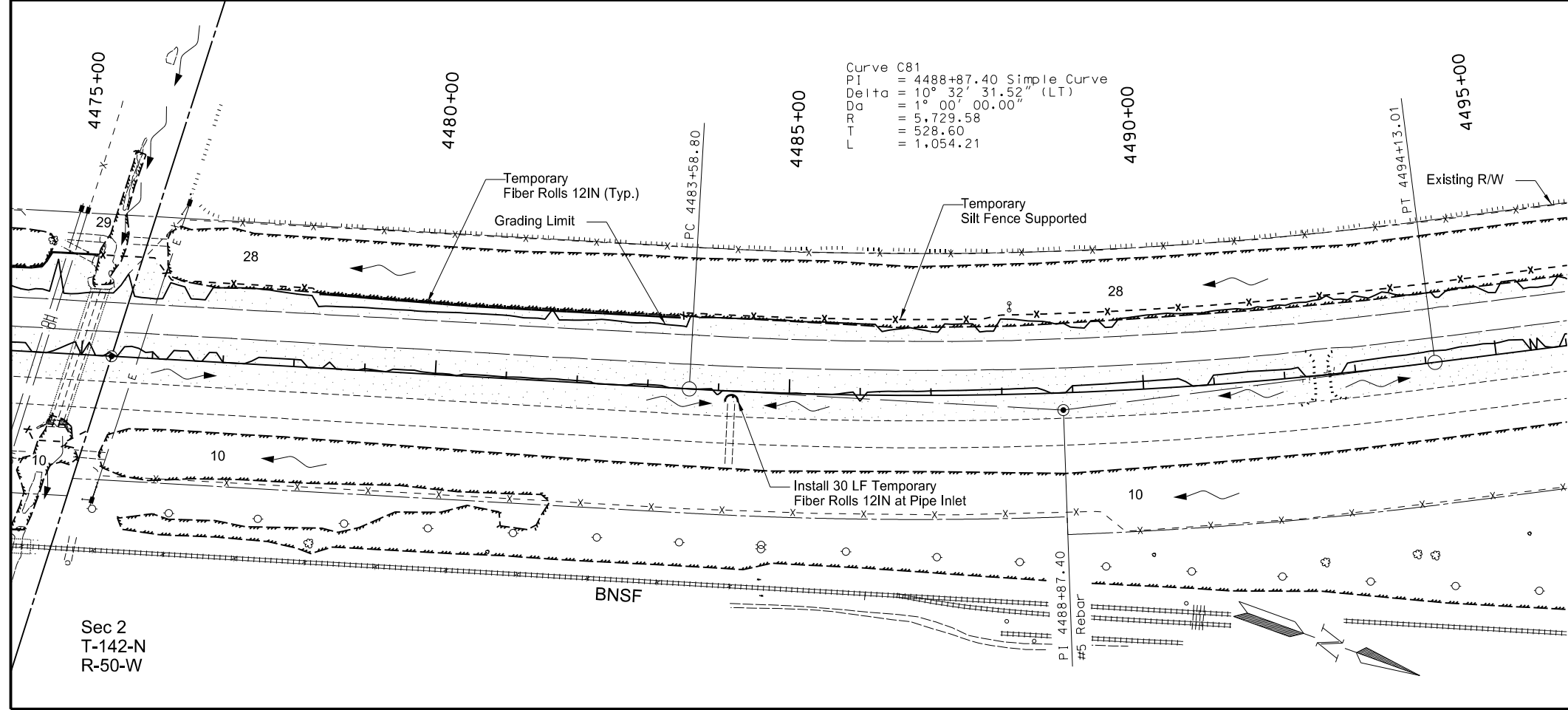
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	9



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4455+00 Lt to 4495+00 Lt	9.86	Acres
253-0201	HYDRAULIC MULCH Sta 4455+00 Lt to 4495+00 Lt	9.86	Acres
260-0200	SILT FENCE SUPPORTED Sta 4455+00 Lt to 4495+00 Lt	2,823	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4455+00 Lt to 4495+00 Lt	2,823	LF
261-0112	FIBER ROLLS 12IN Sta 4455+00 Lt to 4495+00 Lt	1,350	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4455+00 Lt to 4495+00 Lt	1,350	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

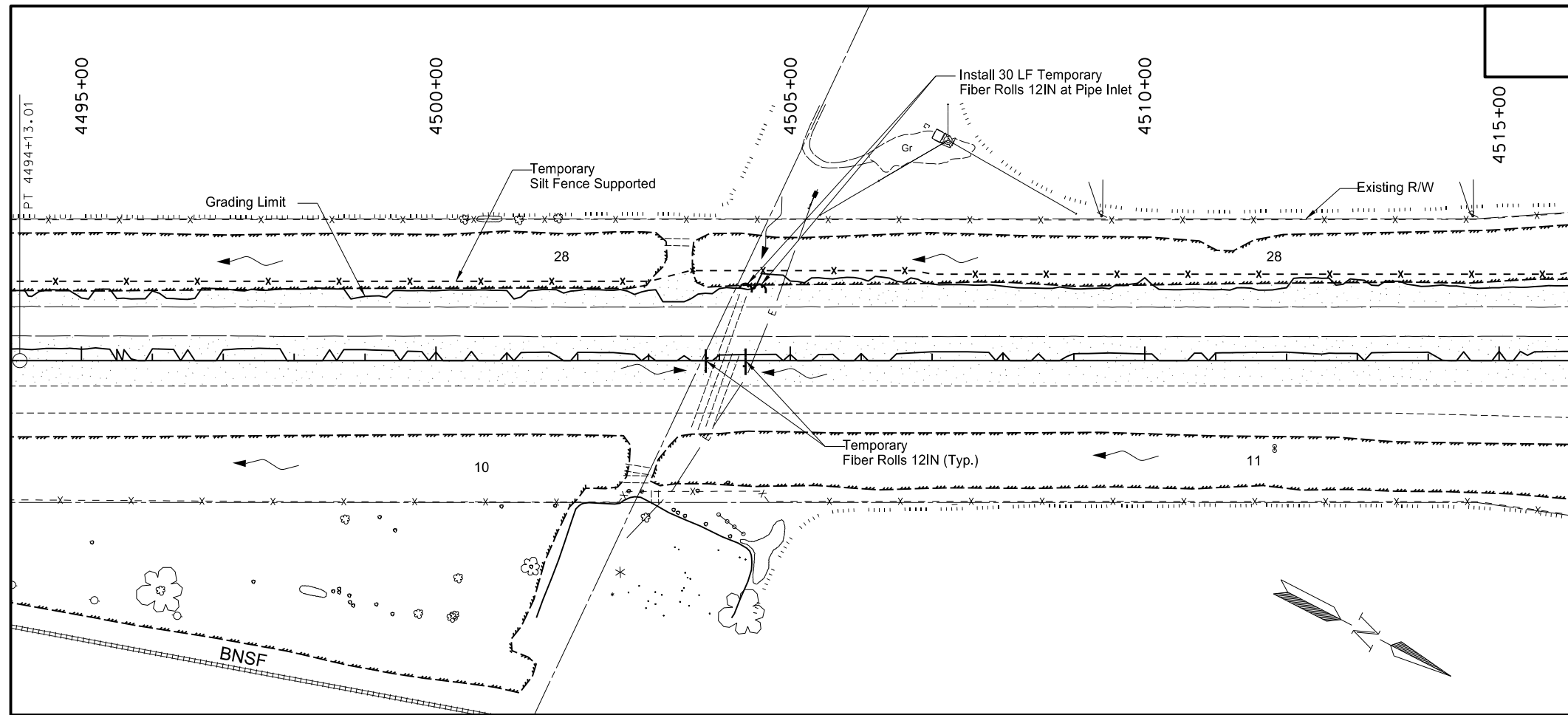
- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls (12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported



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Wetlands, Temporary Erosion Control, and Seeding
Interstate 29 - Argusville to Hunter SB
Sta 4455+00 to Sta 4495+00

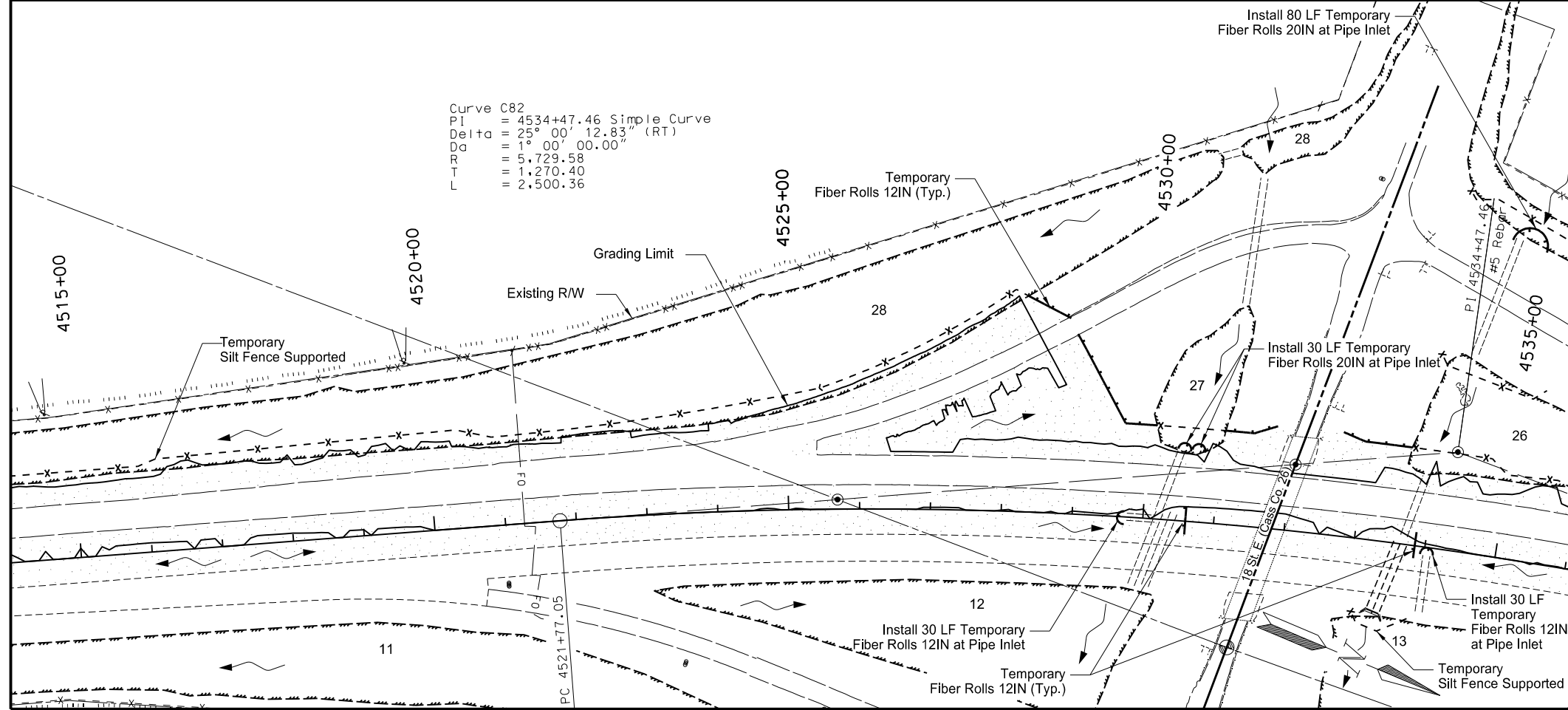
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	10



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4495+00 Lt to 4535+00 Lt	10.93	Acres
253-0201	HYDRAULIC MULCH Sta 4495+00 Lt to 4535+00 Lt	10.93	Acres
260-0200	SILT FENCE SUPPORTED Sta 4495+00 Lt to 4535+00 Lt	3,998	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4495+00 Lt to 4535+00 Lt	3,998	LF
261-0112	FIBER ROLLS 12IN Sta 4495+00 Lt to 4535+00 Lt	694	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4495+00 Lt to 4535+00 Lt	694	LF
261-0120	FIBER ROLLS 20IN Sta 4495+00 Lt to 4535+00 Lt	140	LF
261-0121	REMOVE FIBER ROLLS 20IN Sta 4495+00 Lt to 4535+00 Lt	140	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

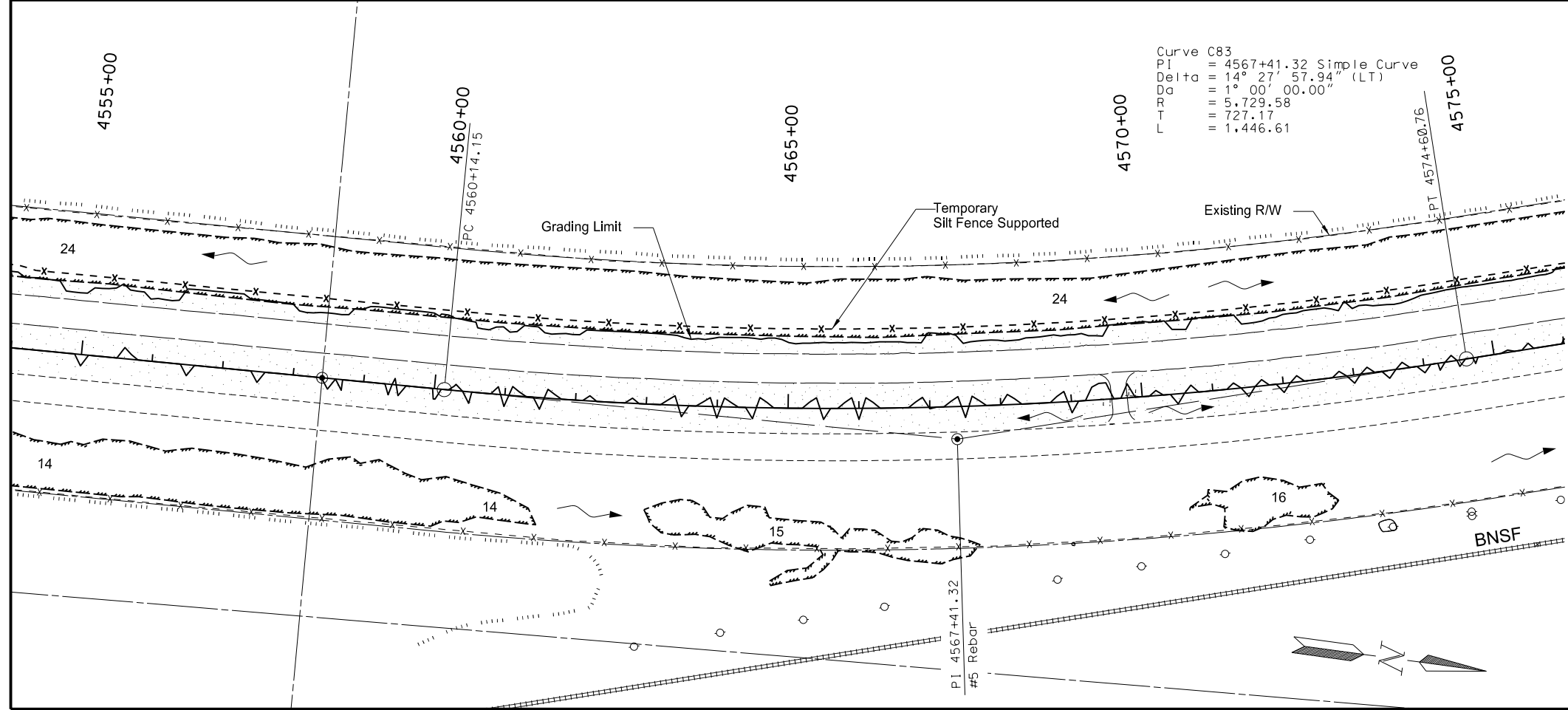
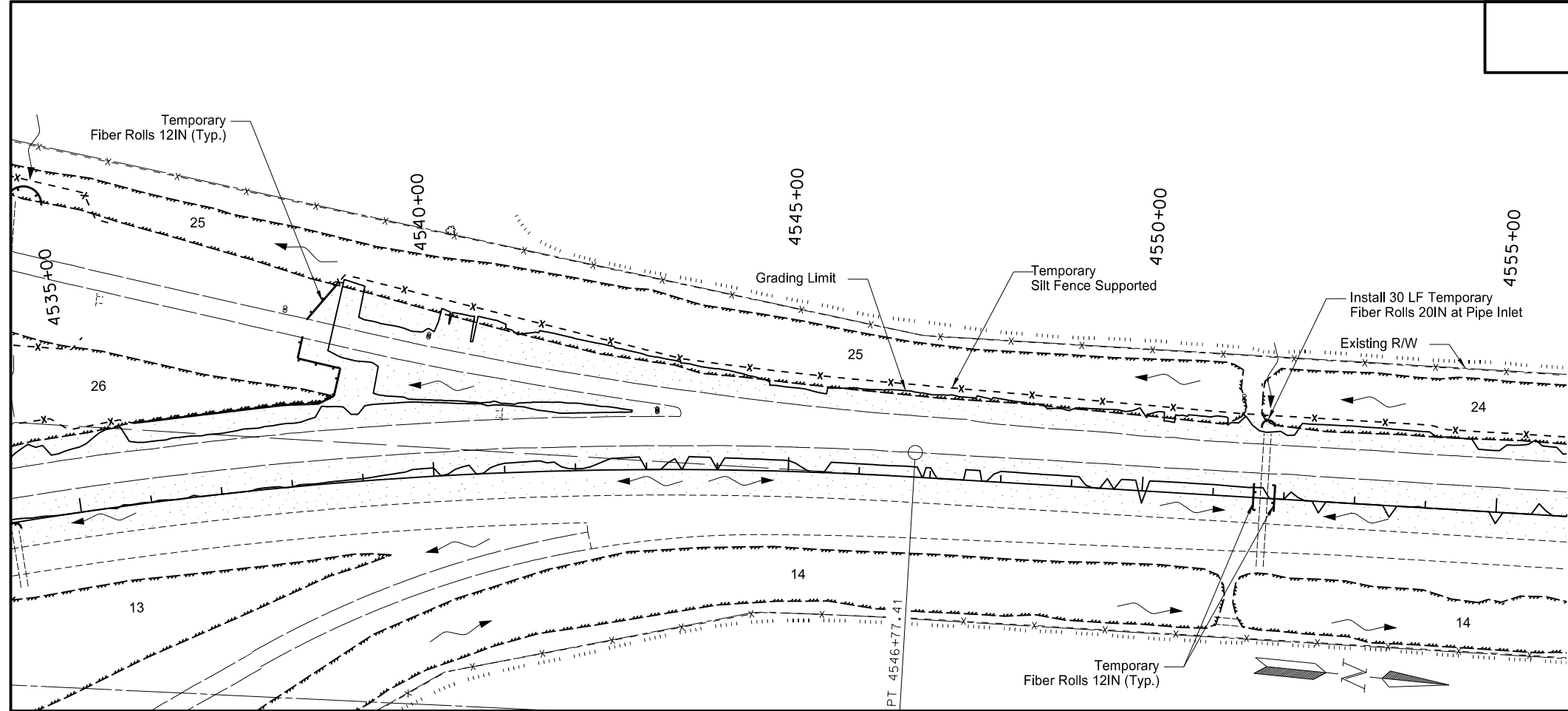
- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls (12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported



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



Wetlands, Temporary Erosion Control and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4495+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	11



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4535+00 Lt to 4575+00 Lt	10.41	Acres
253-0201	HYDRAULIC MULCH Sta 4535+00 Lt to 4575+00 Lt	10.41	Acres
260-0200	SILT FENCE SUPPORTED Sta 4535+00 Lt to 4575+00 Lt	3,912	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4535+00 Lt to 4575+00 Lt	3,912	LF
261-0112	FIBER ROLLS 12IN Sta 4535+00 Lt to 4575+00 Lt	560	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4535+00 Lt to 4575+00 Lt	560	LF
261-0120	FIBER ROLLS 20IN Sta 4535+00 Lt to 4575+00 Lt	30	LF
261-0121	REMOVE FIBER ROLLS 20IN Sta 4535+00 Lt to 4575+00 Lt	30	LF

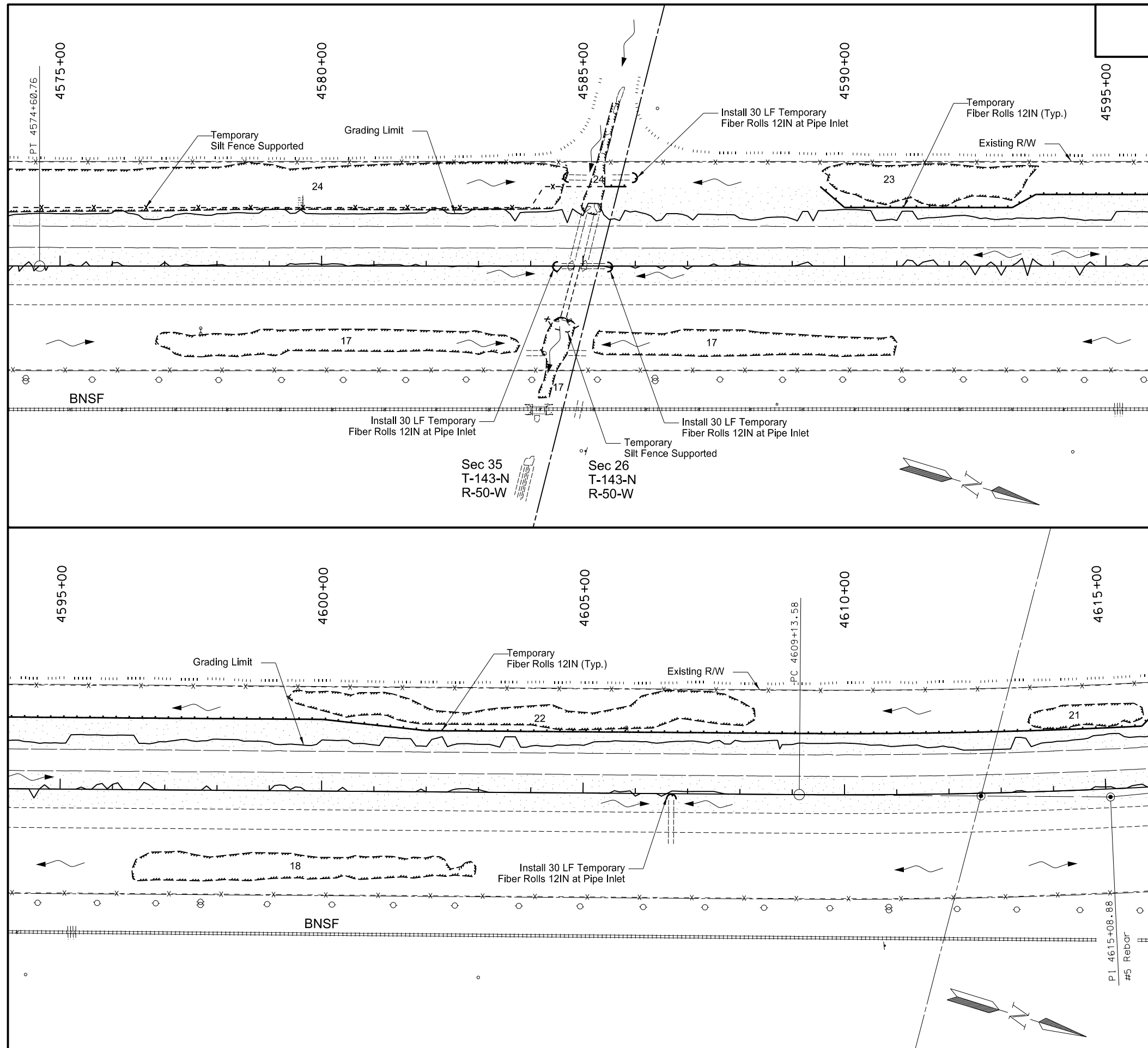
*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

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Wetlands, Temporary Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4535+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	12



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4575+00 Lt to 4615+00 Lt	11.03	Acres
253-0201	HYDRAULIC MULCH Sta 4575+00 Lt to 4615+00 Lt	11.03	Acres
260-0200	SILT FENCE SUPPORTED Sta 4575+00 Lt to 4615+00 Lt	1,144	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4575+00 Lt to 4615+00 Lt	1,144	LF
261-0112	FIBER ROLLS 12IN Sta 4575+00 Lt to 4615+00 Lt	2,824	LF
261-011	REMOVE FIBER ROLLS 12IN Sta 4575+00 Lt to 4615+00 Lt	2,824	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls (12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported

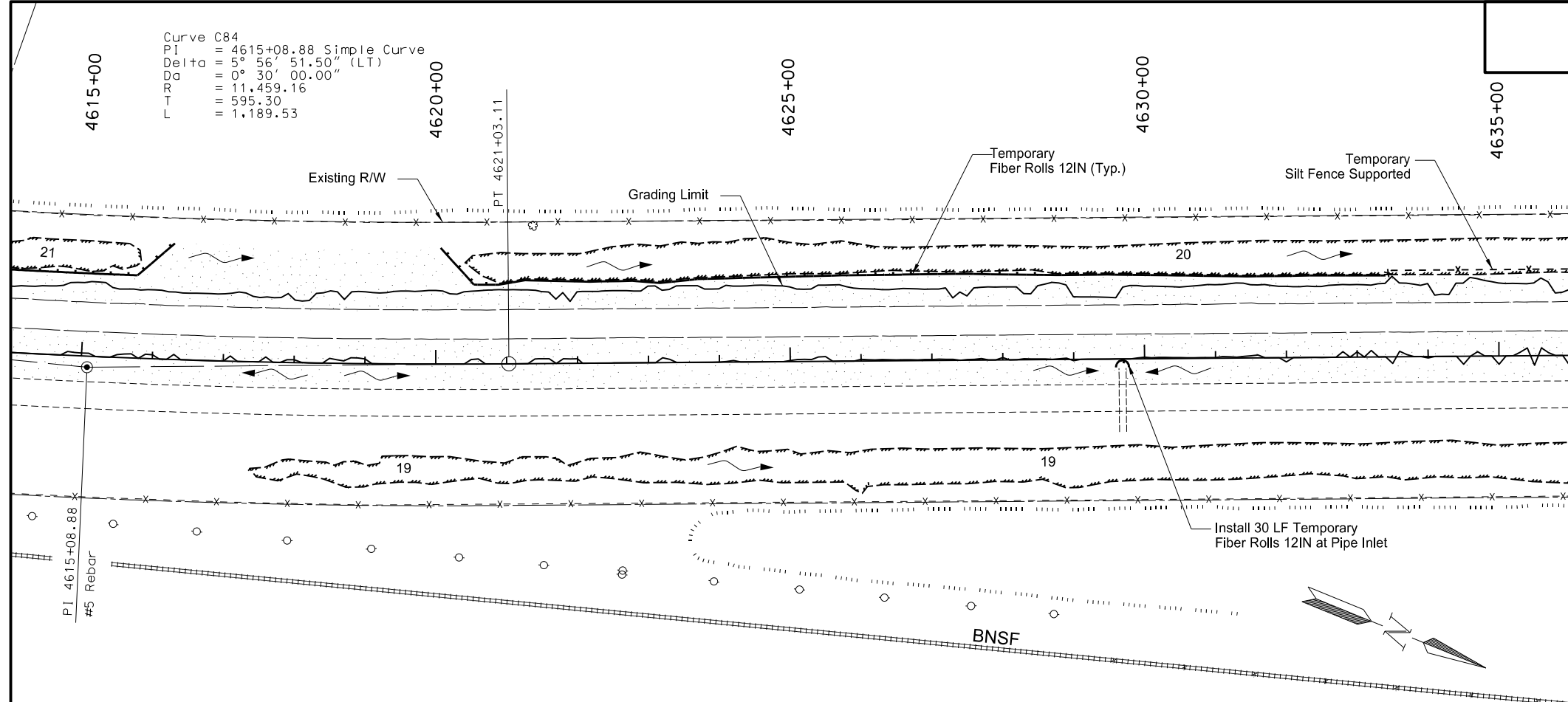
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Wetlands, Temporary Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4615+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	13

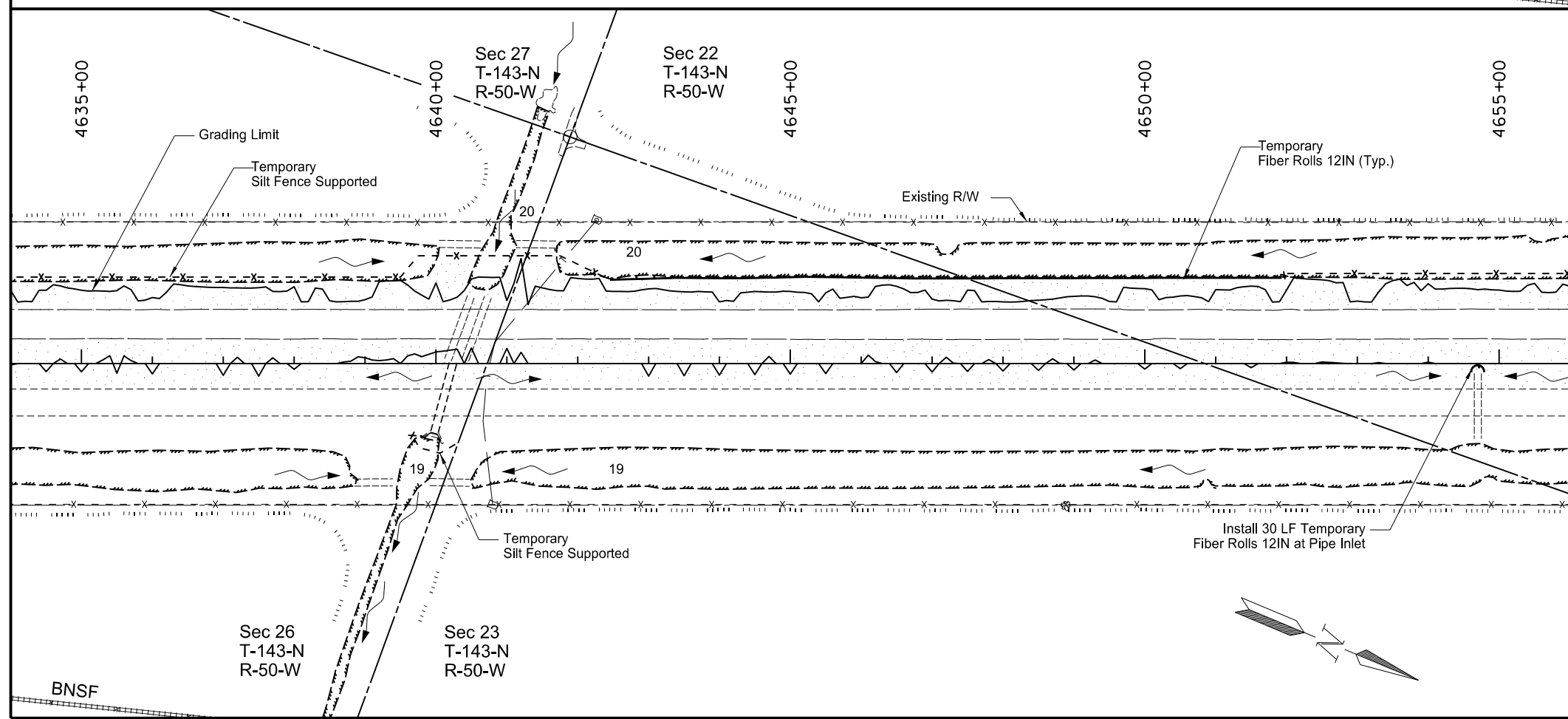
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 PI = 4615+08.88 Simple Curve
 Delta = 5° 56' 51.50" (LT)
 Da = 0° 30' 00.00"
 R = 11,459.16
 T = 595.30
 L = 1,189.53



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4615+00 Lt to 4655+00 Lt	11.35	Acres
253-0201	HYDRAULIC MULCH Sta 4615+00 Lt to 4655+00 Lt	11.35	Acres
260-0200	SILT FENCE SUPPORTED Sta 4615+00 Lt to 4655+00 Lt	1,318	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4615+00 Lt to 4655+00 Lt	1,318	LF
261-0112	FIBER ROLLS 12IN Sta 4615+00 Lt to 4655+00 Lt	2,501	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4615+00 Lt to 4655+00 Lt	2,501	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

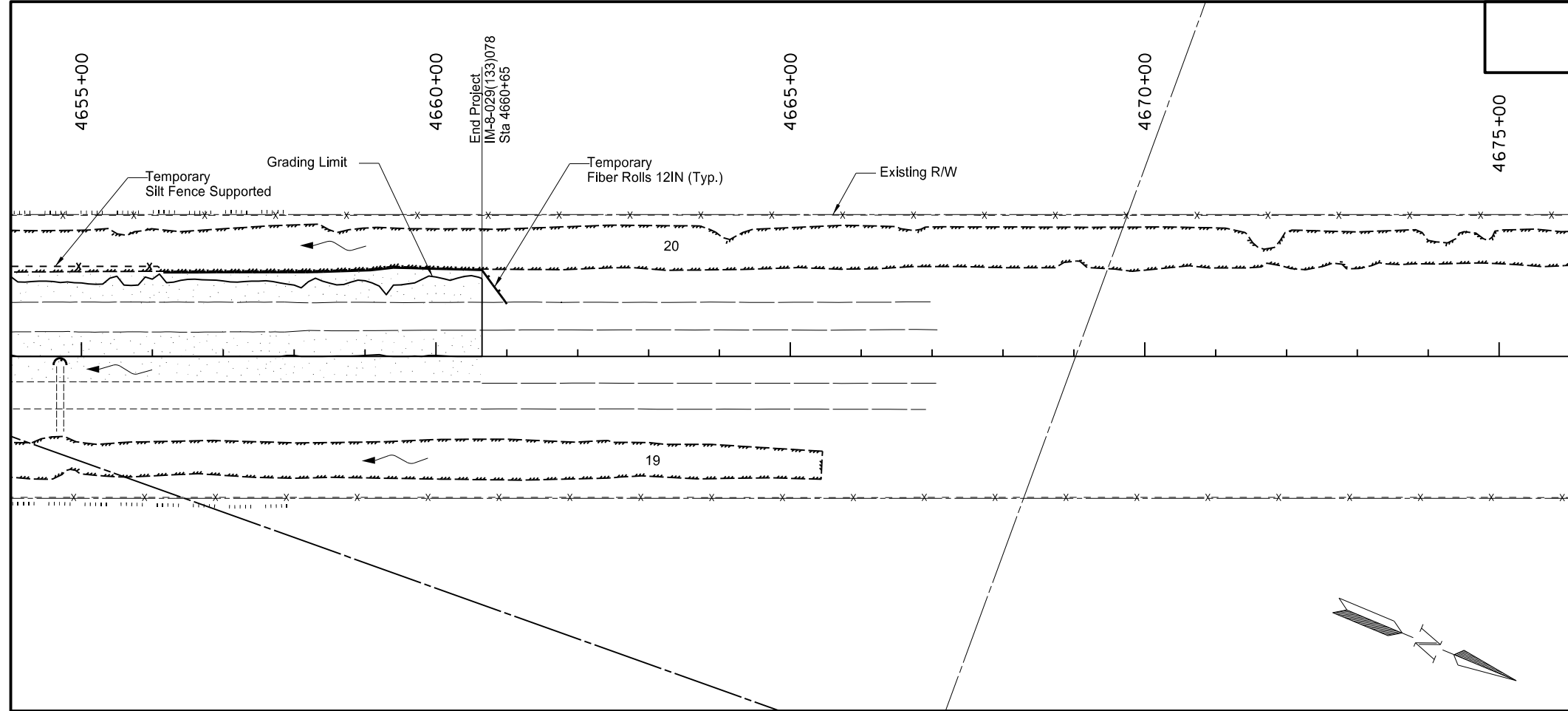
- Temporary Cover Crop
- Temporary Hydraulic Mulch
- Temporary Fiber Rolls (12IN Unless Otherwise Noted)
- Temporary Silt Fence Supported



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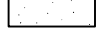

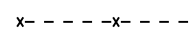
Wetlands, Temporary Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4615+00 to Sta 4655+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	76	14



Item	Description	Quantity	Unit
251-2000	TEMPORARY COVER CROP Sta 4655+00 Lt to 4660+65 Lt	1.55	Acres
253-0201	HYDRAULIC MULCH Sta 4655+00 Lt to 4660+65 Lt	1.55	Acres
260-0200	SILT FENCE SUPPORTED Sta 4655+00 Lt to 4660+65 Lt	120	LF
260-0201	REMOVE SILT FENCE SUPPORTED Sta 4655+00 Lt to 4660+65 Lt	120	LF
261-0112	FIBER ROLLS 12IN Sta 4655+00 Lt to 4660+65 Lt	508	LF
261-0113	REMOVE FIBER ROLLS 12IN Sta 4655+00 Lt to 4660+65 Lt	508	LF

*See Sheet 76-15 for Temporary Fiber Roll Placement Locations.

-  Temporary Cover Crop
-  Temporary Hydraulic Mulch
-  Temporary Fiber Rolls (12IN Unless Otherwise Noted)
-  Temporary Silt Fence Supported

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Wetlands, Temporary Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to sta 4660+65

Temporary Fiber Rolls 12IN				
Sheet 1 - Argusville NW Temporary Ramp Connection				
Start Sta	Offset	End Sta	Offset	Length (LF)
4156+00	77' Lt	4156+00	127' Lt	50
4158+00	35' Rt	4158+00	35' Lt	70
4171+00	35' Rt	4171+00	35' Lt	70
Total				190
Sheet 2 - Sta 4180+00 to Sta 4215+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4179+50	27' Lt	4180+00	35' Rt	80
4200+35	17' Rt	4200+53	16' Rt	30
4202+29	152' Lt	4215+00	122' Lt	1,281
4203+86	17' Rt	4204+04	16' Rt	30
Total				1,421
Sheet 3 - Sta 4215+00 to Sta 4255+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4215+00	122' Lt	4228+53	110' Lt	1,346
4229+57	19' Lt	4229+57	22' Rt	42
4229+61	96' Lt	4229+80	96' Lt	30
4229+84	22' Rt	4229+84	19' Lt	42
4244+61	11' Rt	4244+79	11' Rt	30
4244+92	112' Lt	4253+45	115' Lt	852
Total				2,342
Sheet 4 - Sta 4255+00 to Sta 4295+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4264+60	12' Rt	4264+78	12' Rt	30
4292+64	12' Rt	4292+82	12' Rt	30
Total				60
Sheet 5 - Sta 4295+00 to Sta 4335+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4321+48	109' Lt	4335+00	114' Lt	1,351
4321+60	12' Rt	4321+78	12' Rt	30
Total				1,381
Sheet 6 - Sta 4335+00 to Sta 4375+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4335+00	114' Lt	4338+99	120' Lt	399
4344+60	11' Rt	4344+78	11' Rt	30
4351+49	122' Lt	4357+07	118' Lt	570
4364+60	9' Lt	4364+61	8' Rt	30
4368+79	20' Rt	4368+79	17' Lt	38
4369+81	16' Lt	4369+81	22' Rt	38
Total				1,105

Temporary Fiber Rolls 12IN				
Sheet 7 - Sta 4375+00 to Sta 4415+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4392+60	14' Rt	4392+78	14' Rt	30
4402+08	109' Lt	4415+00	116' Lt	1,291
Total				1,321
Sheet 8 - Sta 4415+00 to Sta 4455+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4415+00	116' Lt	4419+12	104' Lt	412
4419+35	15' Rt	4419+53	17' Rt	30
4421+15	15' Rt	4421+33	17' Rt	30
4430+45	105' Lt	4439+47	108' Lt	902
4445+60	14' Rt	4445+78	14' Rt	30
Total				1,404
Sheet 9 - Sta 4455+00 to Sta 4495+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4464+60	12' Rt	4464+78	11' Rt	30
4467+50	115' Lt	4475+17	142' Lt	779
4478+30	104' Lt	4483+41	99' Lt	511
4484+09	15' Rt	4484+27	15' Rt	30
Total				1,350
Sheet 10 - Sta 4495+00 to Sta 4535+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4503+80	17' Rt	4503+80	15' Lt	33
4504+27	101' Lt	4504+45	95' Lt	30
4504+36	17' Lt	4504+36	20' Rt	37
4504+47	100' Lt	4504+64	95' Lt	30
4528+27	304' Lt	4528+85	275' Lt	67
4528+96	254' Lt	4530+11	132' Lt	187
4529+73	8' Lt	4529+73	10' Rt	30
4530+59	20' Lt	4530+59	18' Rt	39
4531+06	132' Lt	4531+77	145' Lt	75
4532+68	147' Lt	4533+64	137' Lt	100
4533+85	17' Rt	4533+85	19' Lt	36
4533+94	10' Rt	4534+12	9' Rt	30
Total				694
Sheet 11 - Sta 4535+00 to Sta 4575+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4535+88	114' Lt	4538+80	160' Lt	421
4538+39	232' Lt	4538+83	278' Lt	64
4551+57	17' Rt	4551+57	20' Lt	37
4551+86	19' Lt	4551+86	18' Rt	38
Total				560

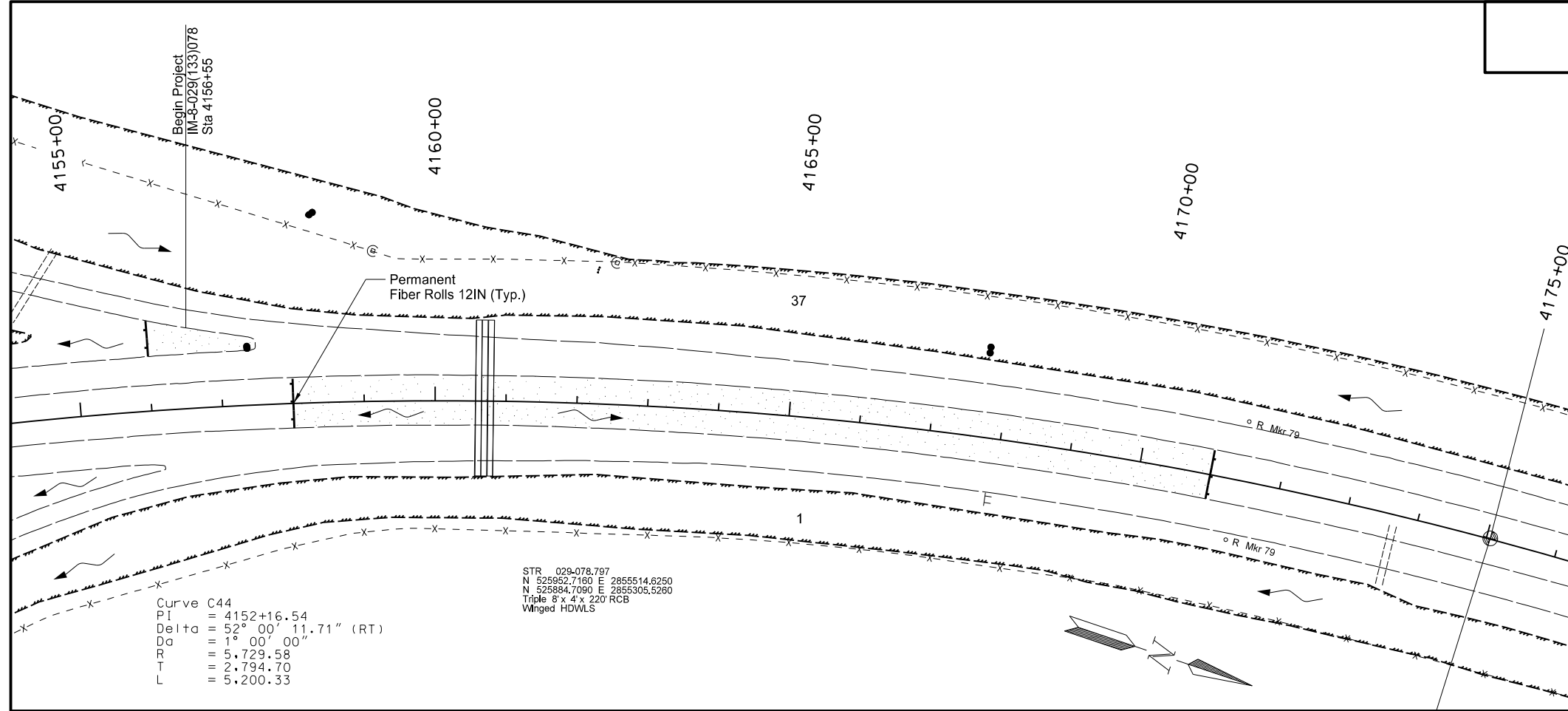
Temporary Fiber Rolls 12IN				
Sheet 12 - Sta 4575+00 to Sta 4615+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4584+52	9' Rt	4584+52	8' Lt	30
4584+73	179' Lt	4584+73	161' Lt	30
4585+41	152' Lt	4585+83	152' Lt	41
4585+46	10' Rt	4585+46	7' Lt	30
4585+93	169' Lt	4586+04	168' Lt	30
4589+00	198' Lt	4615+00	117' Lt	2,633
4606+59	10' Rt	4606+77	10' Rt	30
Total				2,824
Sheet 13 - Sta 4615+00 to Sta 4655+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4615+00	117' Lt	4616+26	164' Lt	143
4620+06	164' Lt	4633+40	114' Lt	1,351
4629+59	11' Rt	4629+77	11' Rt	30
4642+45	117' Lt	4651+93	120' Lt	947
4654+60	12' Rt	4654+78	12' Rt	30
Total				2,501
Sheet 14 - Sta 4655+00 to Sta 4660+65				
Start Sta	Offset	End Sta	Offset	Length (LF)
4656+15	118' Lt	4661+00	74' Lt	508
Total				508
Total				17,661

Temporary Fiber Rolls 20IN				
Sheet 6 - Sta 4335+00 to Sta 4375+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4365+26	102' Lt	4365+44	103' Lt	30
4365+51	102' Lt	4365+69	104' Lt	30
4368+86	98' Lt	4369+04	99' Lt	30
4369+86	98' Lt	4370+04	99' Lt	30
Total				120
Sheet 10 - Sta 4495+00 to Sta 4535+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4530+42	102' Lt	4530+60	99' Lt	30
4530+62	102' Lt	4530+79	99' Lt	30
4534+60	446' Lt	4535+00	436' Lt	80
Total				140
Sheet 11 - Sta 4535+00 to Sta 4575+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4551+63	99' Lt	4551+81	101' Lt	30
Total				30
Total				290

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Temporary Fiber Roll Table
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	1



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II NW Temporary Ramp Connection	2.20	Acres
253-0201	HYDRAULIC MULCH NW Temporary Ramp Connection	2.20	Acres
261-0112	FIBER ROLLS 12IN NW Temporary Ramp Connection	190	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II

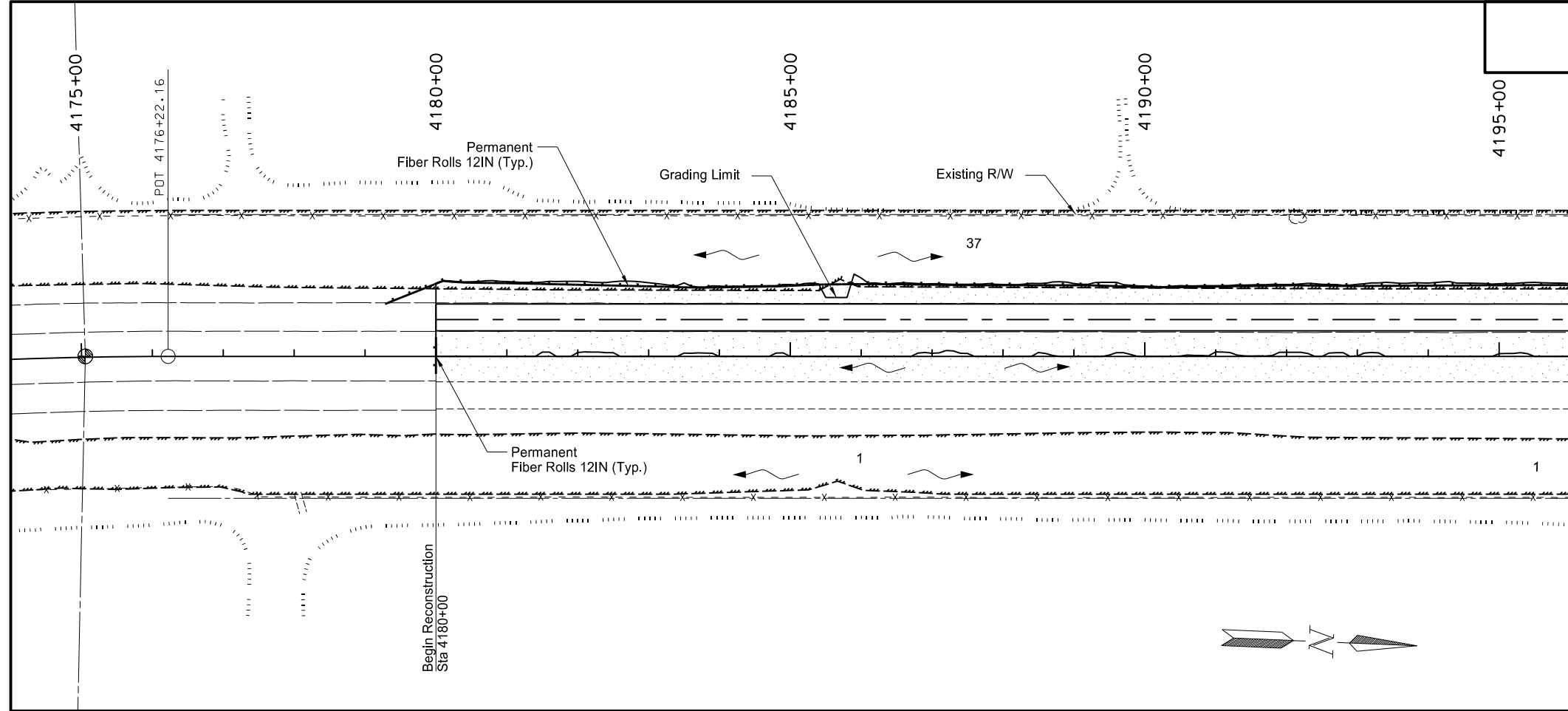
 Permanent Fiber Rolls
(12IN Unless Otherwise Noted)

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Wetlands, Permanent Erosion Control, and Seeding





Interstate 29 - Argusville to Hunter SB
Argusville NW Temporary Ramp Connection

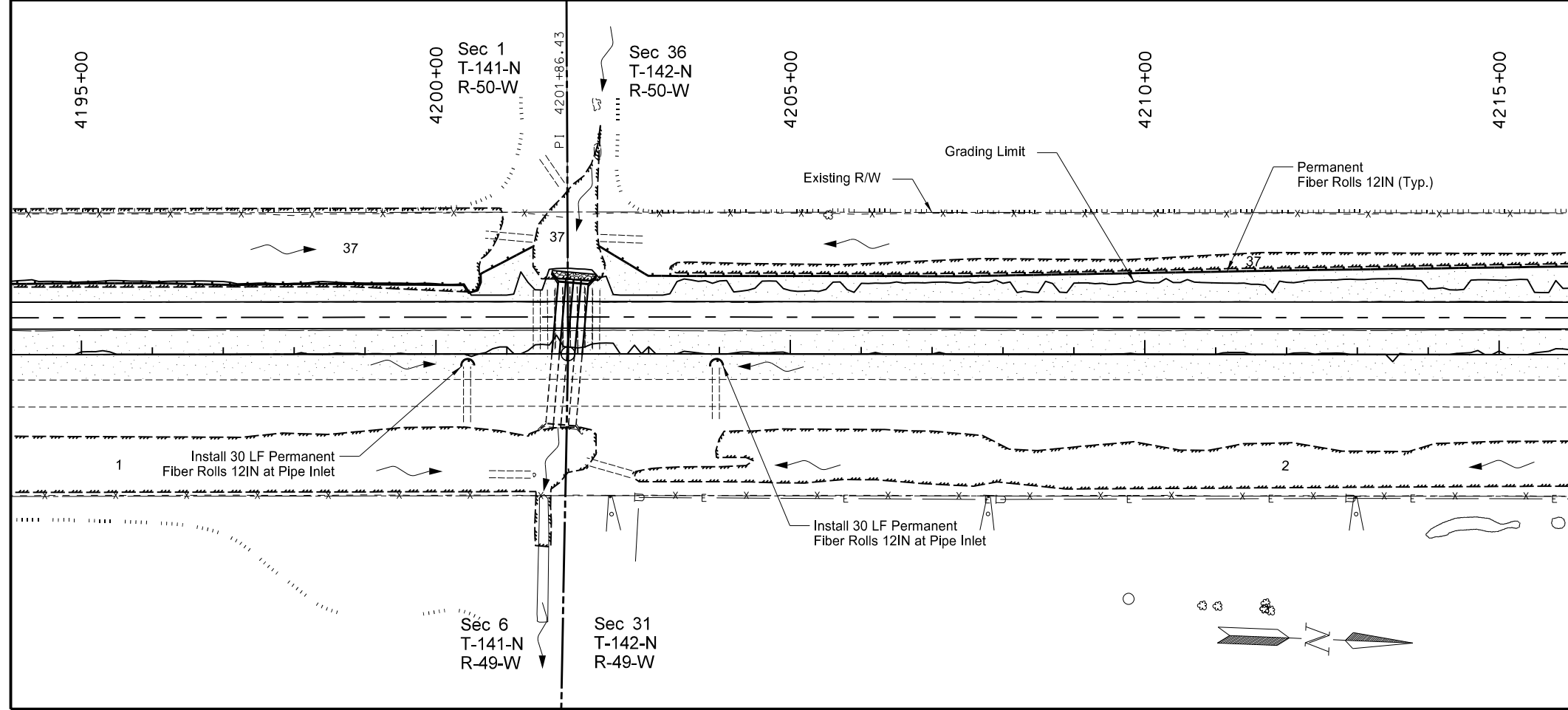
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	2



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4180+00 Lt to 4215+00 Lt	8.48	Acres
253-0201	HYDRAULIC MULCH Sta 4180+00 Lt to 4215+00 Lt	8.48	Acres
261-0112	FIBER ROLLS 12IN Sta 4180+00 Lt to 4215+00 Lt	3,647	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
- Permanent Fiber Rolls (12IN Unless Otherwise Noted)

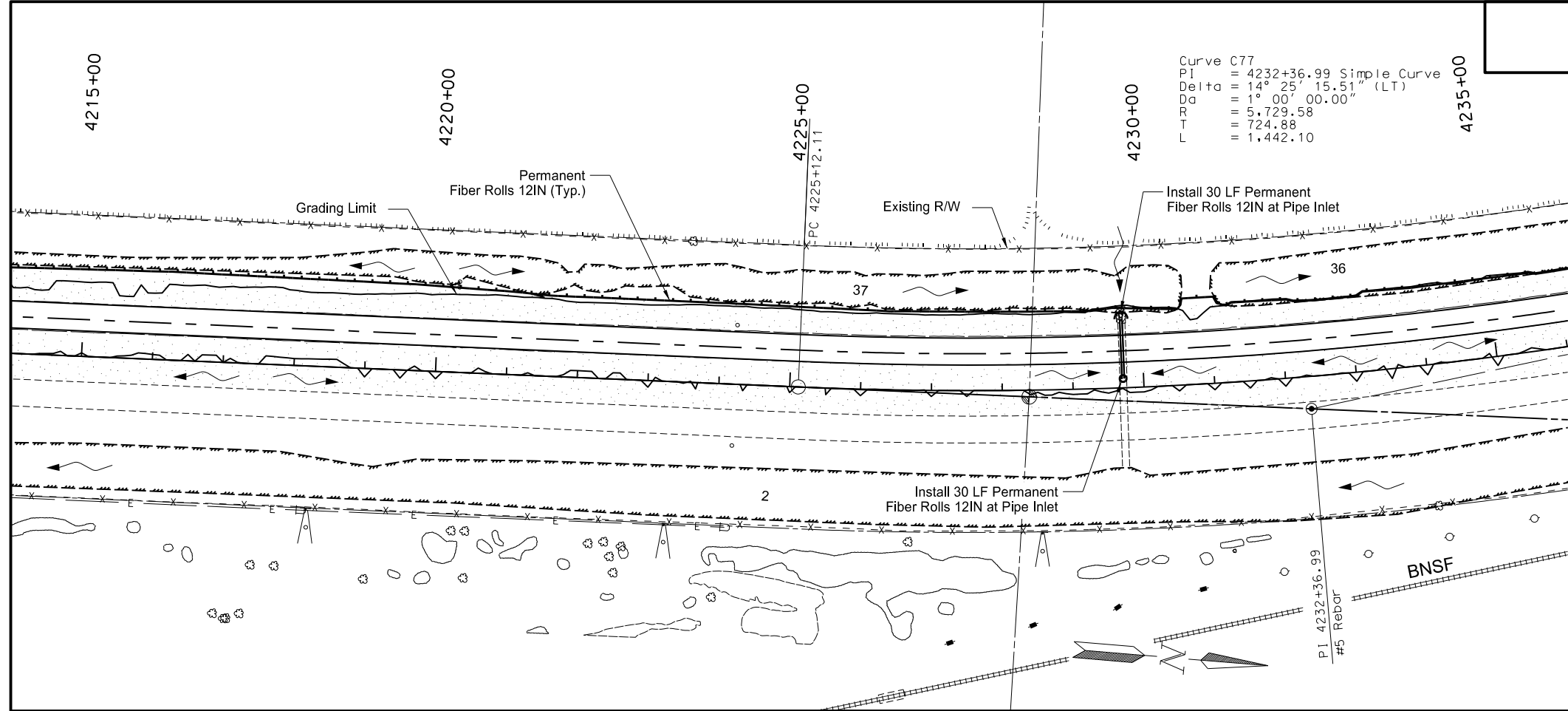


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Wetlands, Permanent Erosion Control, and Seeding
Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4215+00






STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	3

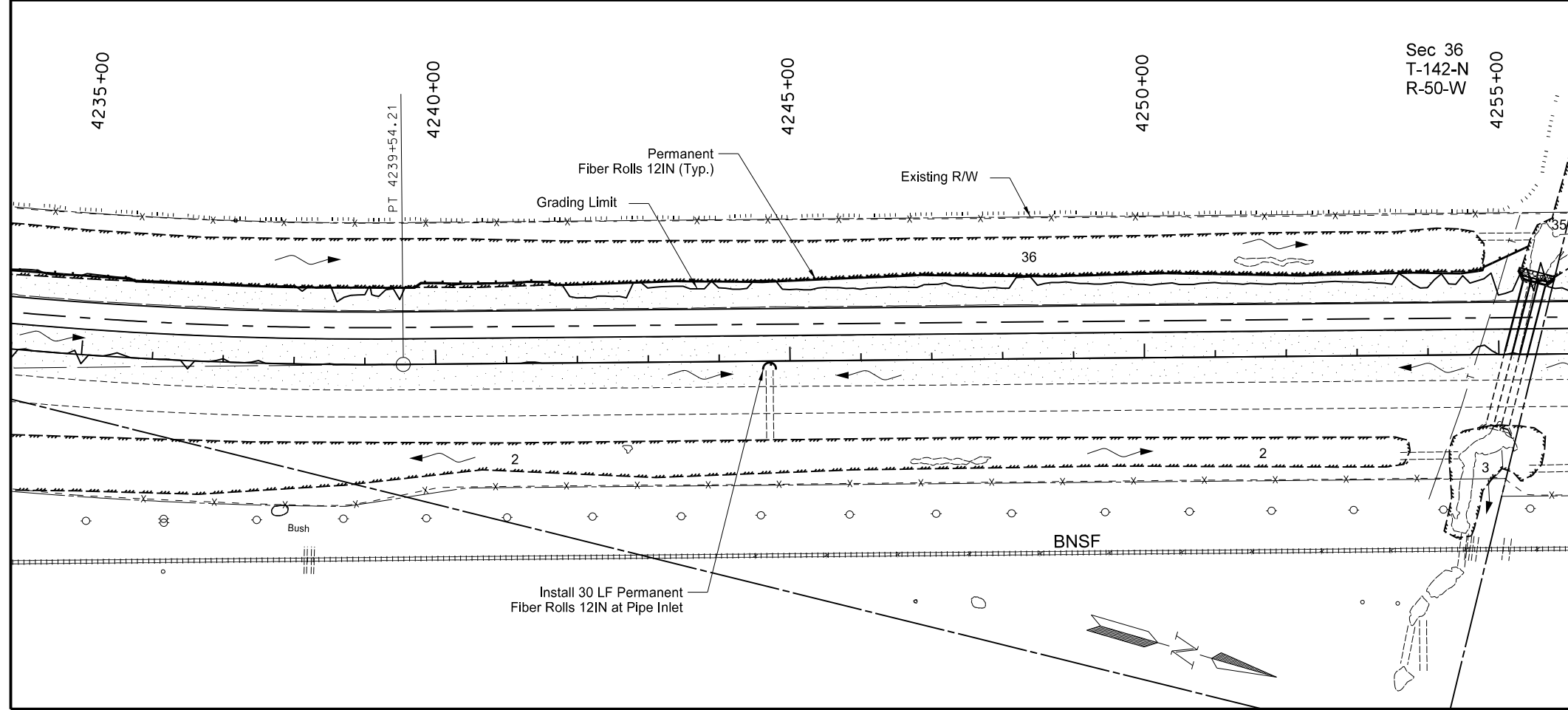
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 PI = 4232+36.99 Simple Curve
 Delta = 14° 25' 15.51" (LT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 724.88
 L = 1,442.10



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4215+00 Lt to 4255+00 Lt	10.39	Acres
253-0201	HYDRAULIC MULCH Sta 4215+00 Lt to 4255+00 Lt	10.39	Acres
261-0112	FIBER ROLLS 12IN Sta 4215+00 Lt to 4255+00 Lt	4,092	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

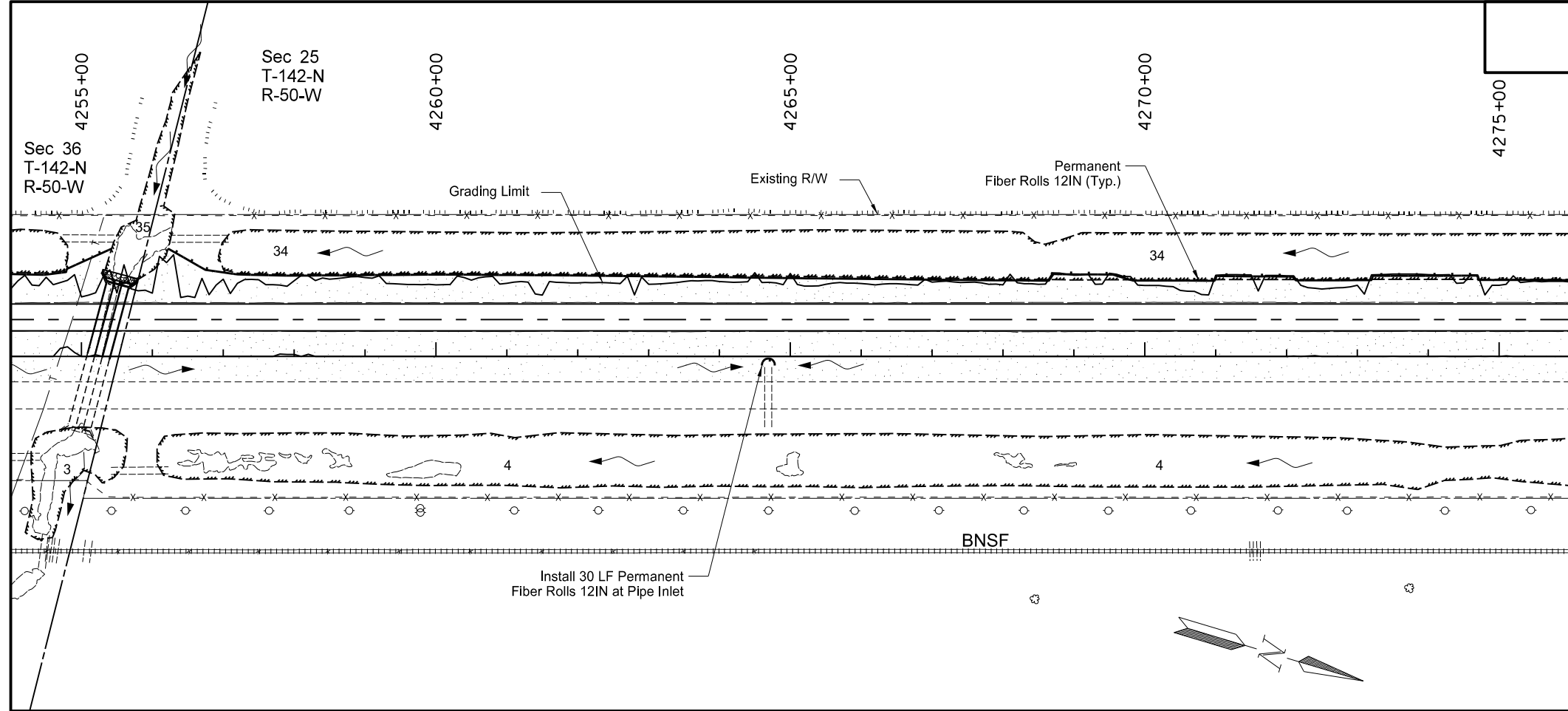
-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls (12IN Unless Otherwise Noted)



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Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4215+00 to Sta 4255+00

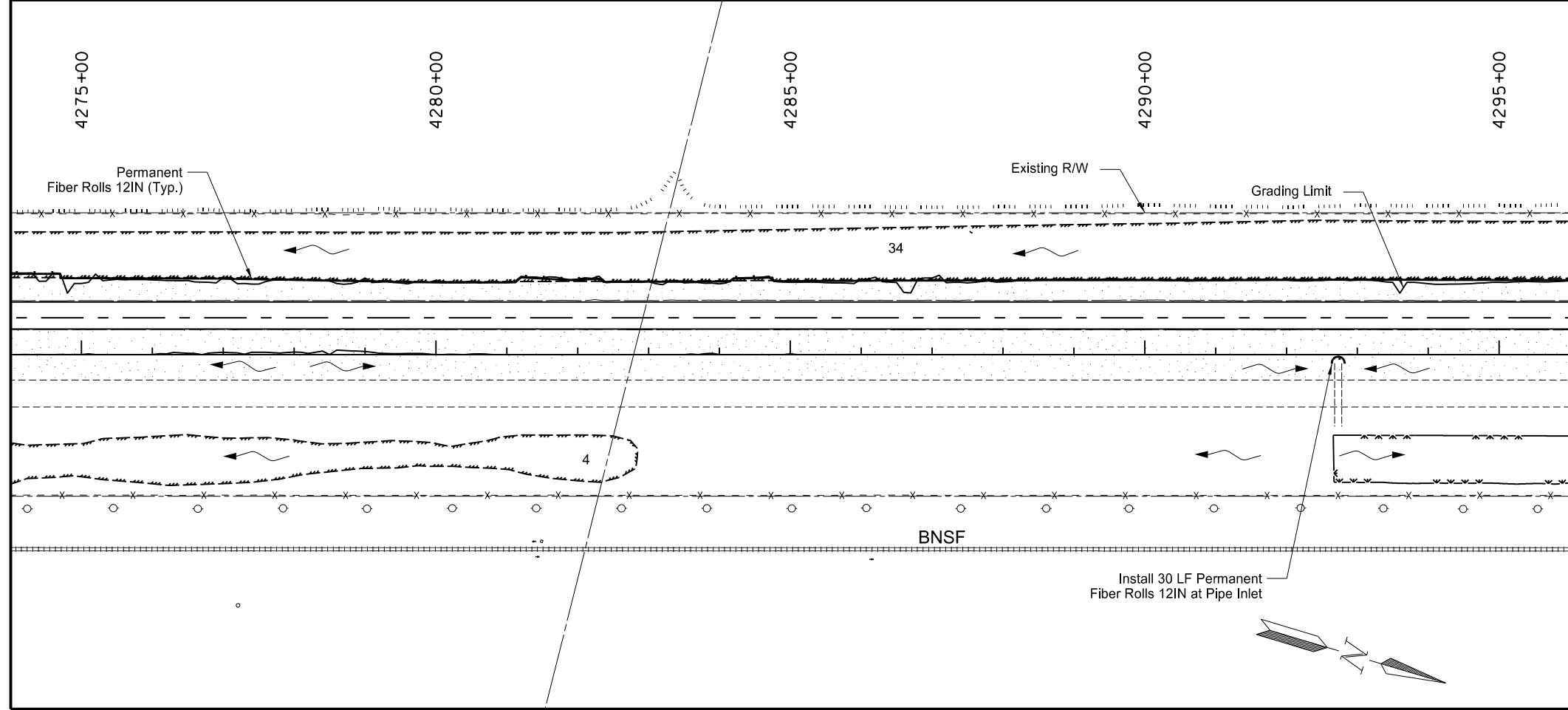
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	4



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4255+00 Lt to 4295+00 Lt	9.95	Acres
253-0201	HYDRAULIC MULCH Sta 4255+00 Lt to 4295+00 Lt	9.95	Acres
261-0112	FIBER ROLLS 12IN Sta 4255+00 Lt to 4295+00 Lt	4,023	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls (12IN Unless Otherwise Noted)

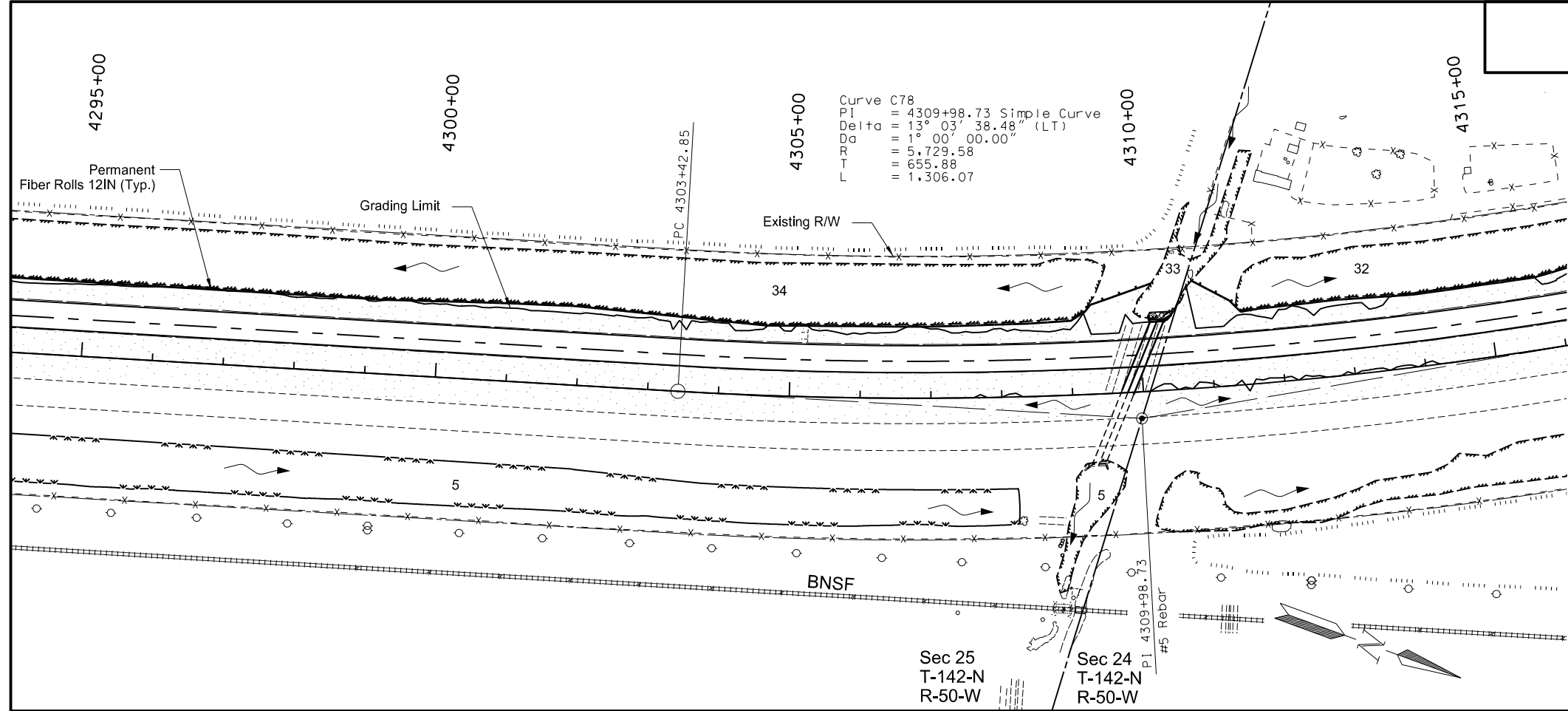


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Wetlands, Permanent Erosion Control, and Seeding






Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4295+00

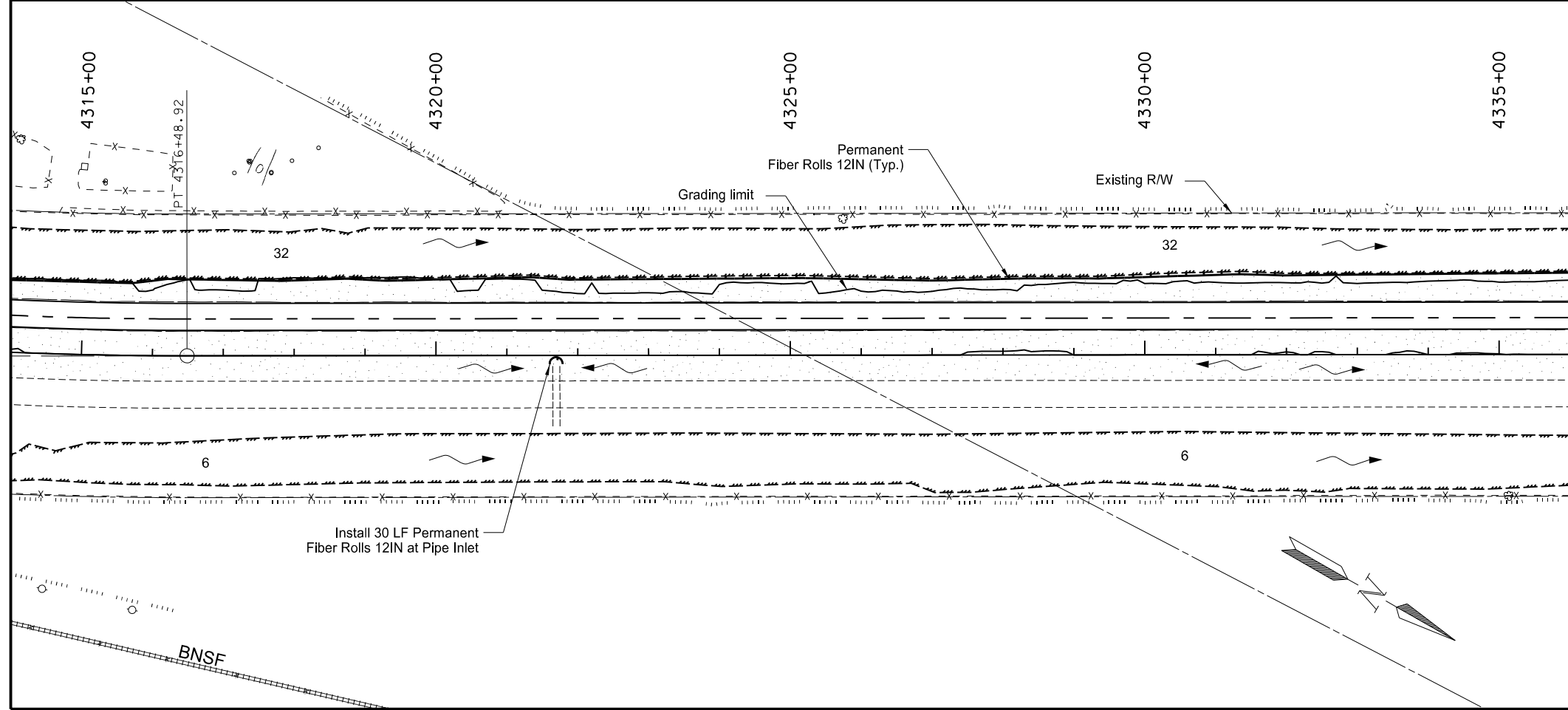
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	5



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4295+00 Lt to 4335+00 Lt	9.94	Acres
253-0201	HYDRAULIC MULCH Sta 4295+00 Lt to 4335+00 Lt	9.94	Acres
261-0112	FIBER ROLLS 12IN Sta 4295+00 Lt to 4335+00 Lt	3,978	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

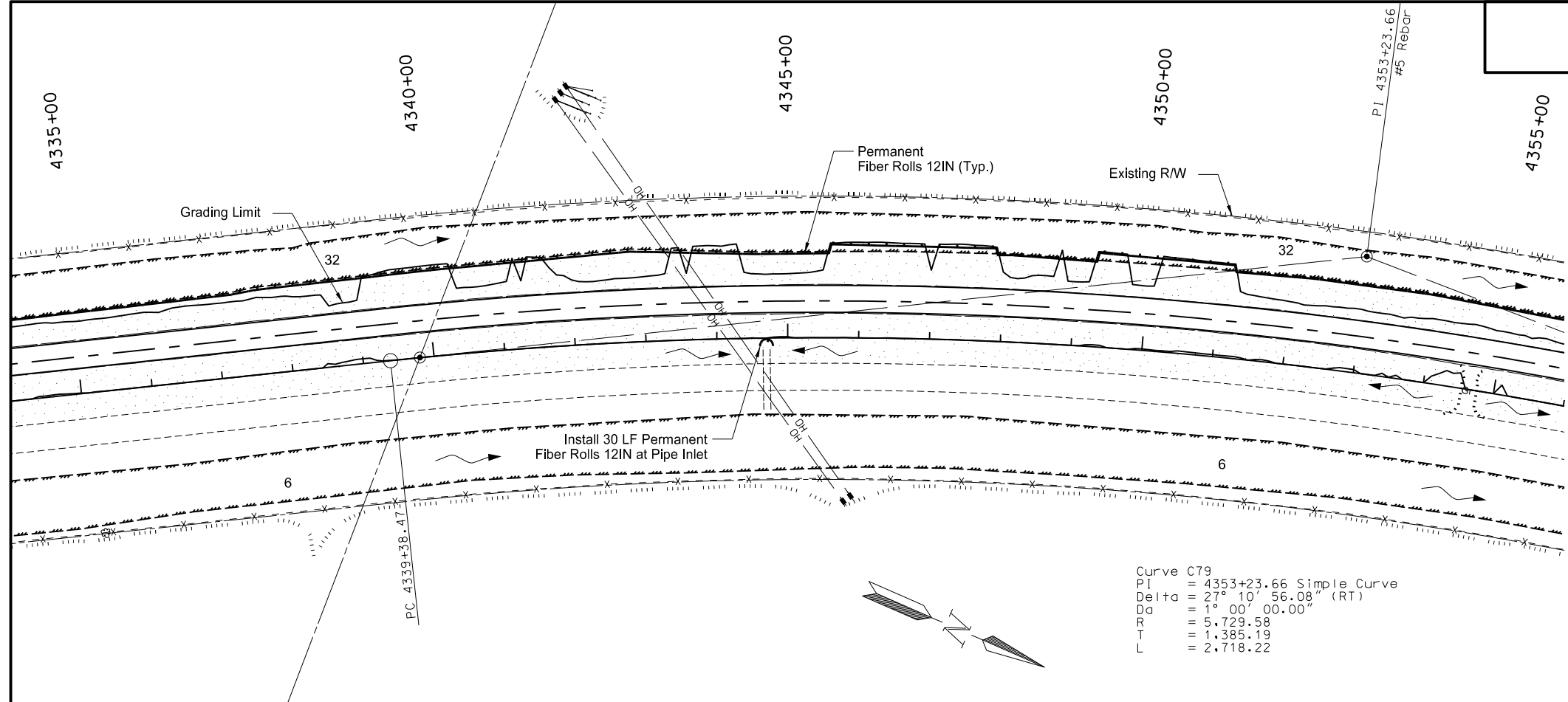
-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls (12IN Unless Otherwise Noted)



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Wetlands, Permanent Erosion Control, and Seeding
Interstate 29 - Argusville to Hunter SB
Sta 4295+00 to Sta 4335+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	6



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4335+00 Lt to 4375+00 Lt	11.14	Acres
253-0201	HYDRAULIC MULCH Sta 4335+00 Lt to 4375+00 Lt	11.14	Acres
261-0112	FIBER ROLLS 12IN Sta 4335+00 Lt to 4375+00 Lt	4,014	LF
261-0120	FIBER ROLLS 20IN Sta 4335+00 Lt to 4375+00 Lt	120	LF

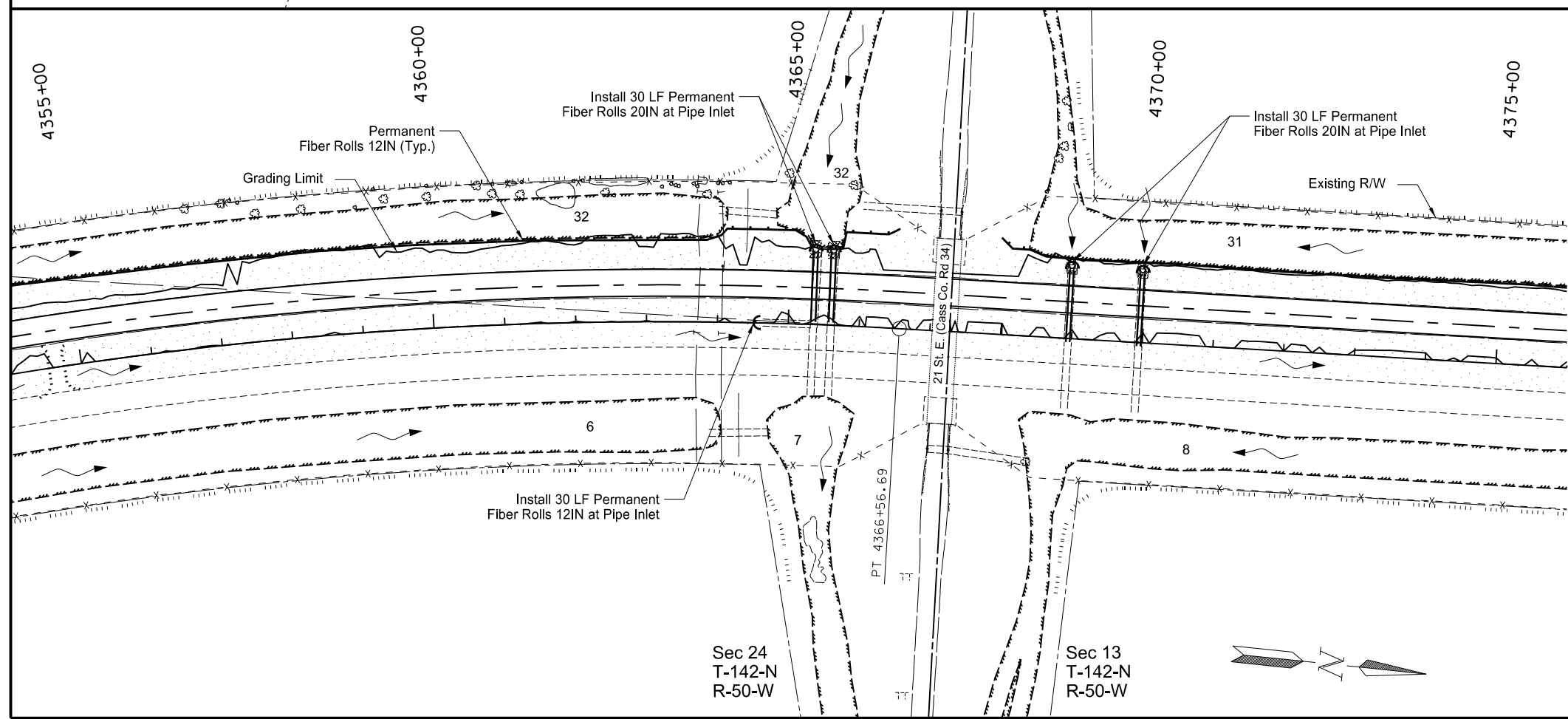
*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

Seeding Class II
 Permanent Hydraulic Mulch

ECB Type 3

Riprap Grade II

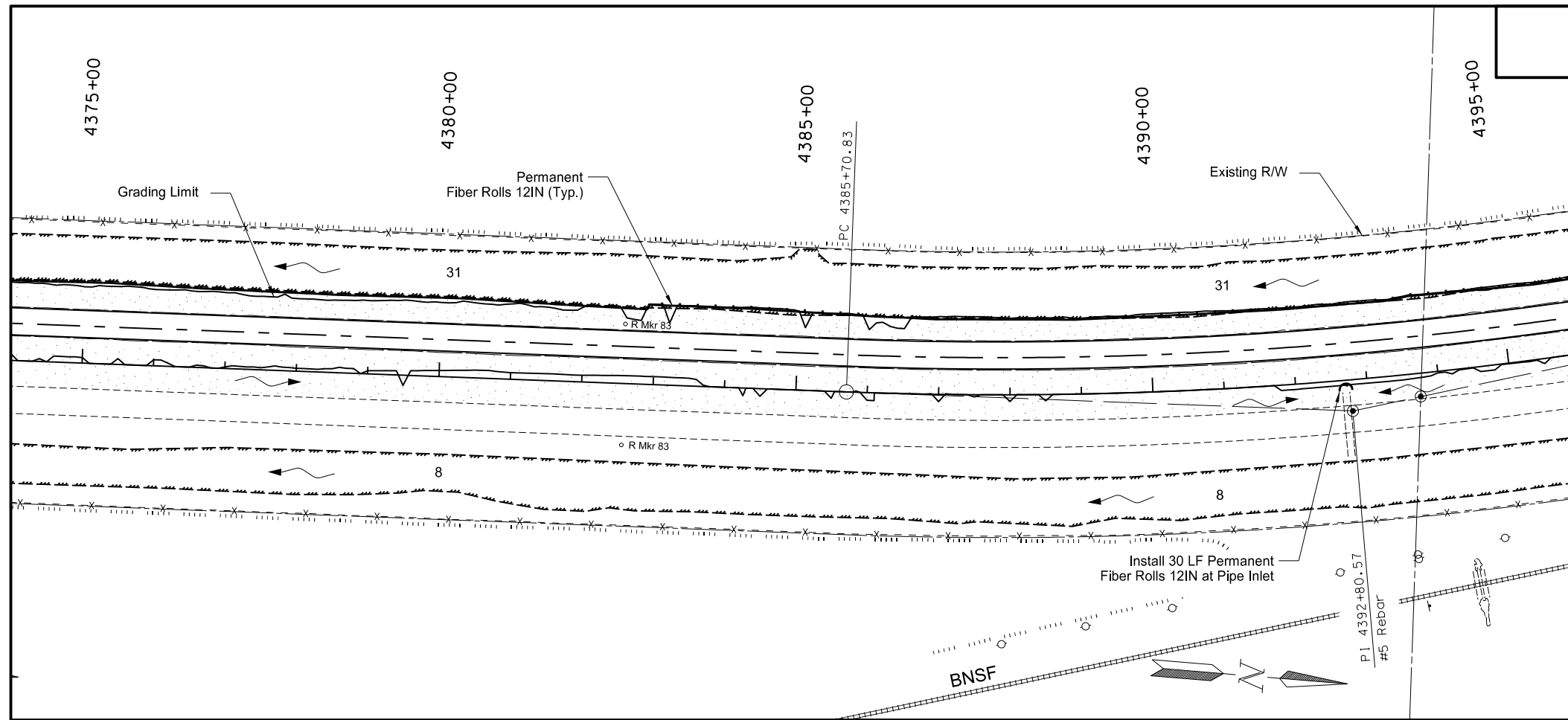
Permanent Fiber Rolls
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


Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4335+00 to Sta 4375+00

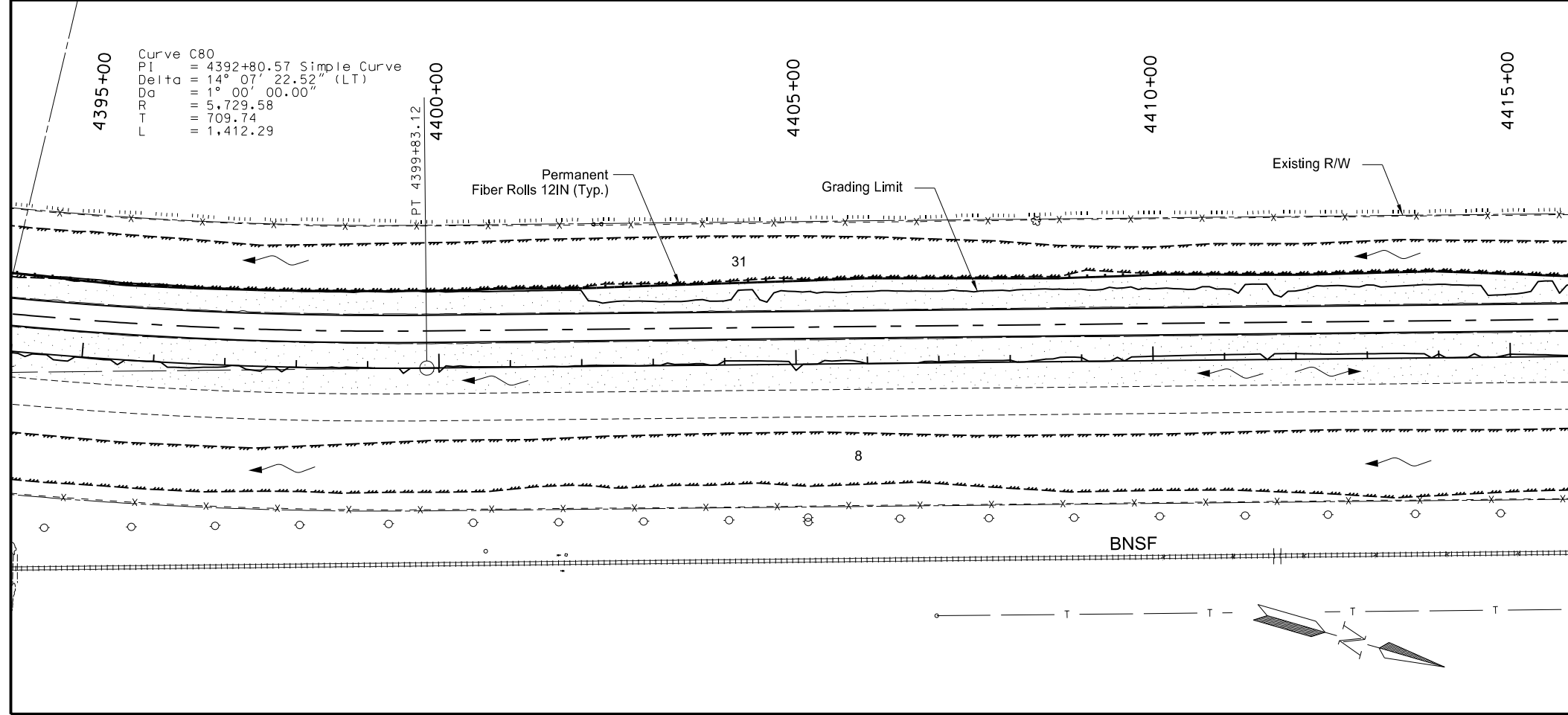
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	7



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4375+00 Lt to 4415+00 Lt	10.18	Acres
253-0201	HYDRAULIC MULCH Sta 4375+00 Lt to 4415+00 Lt	10.18	Acres
261-0112	FIBER ROLLS 12IN Sta 4375+00 Lt to 4415+00 Lt	4,009	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

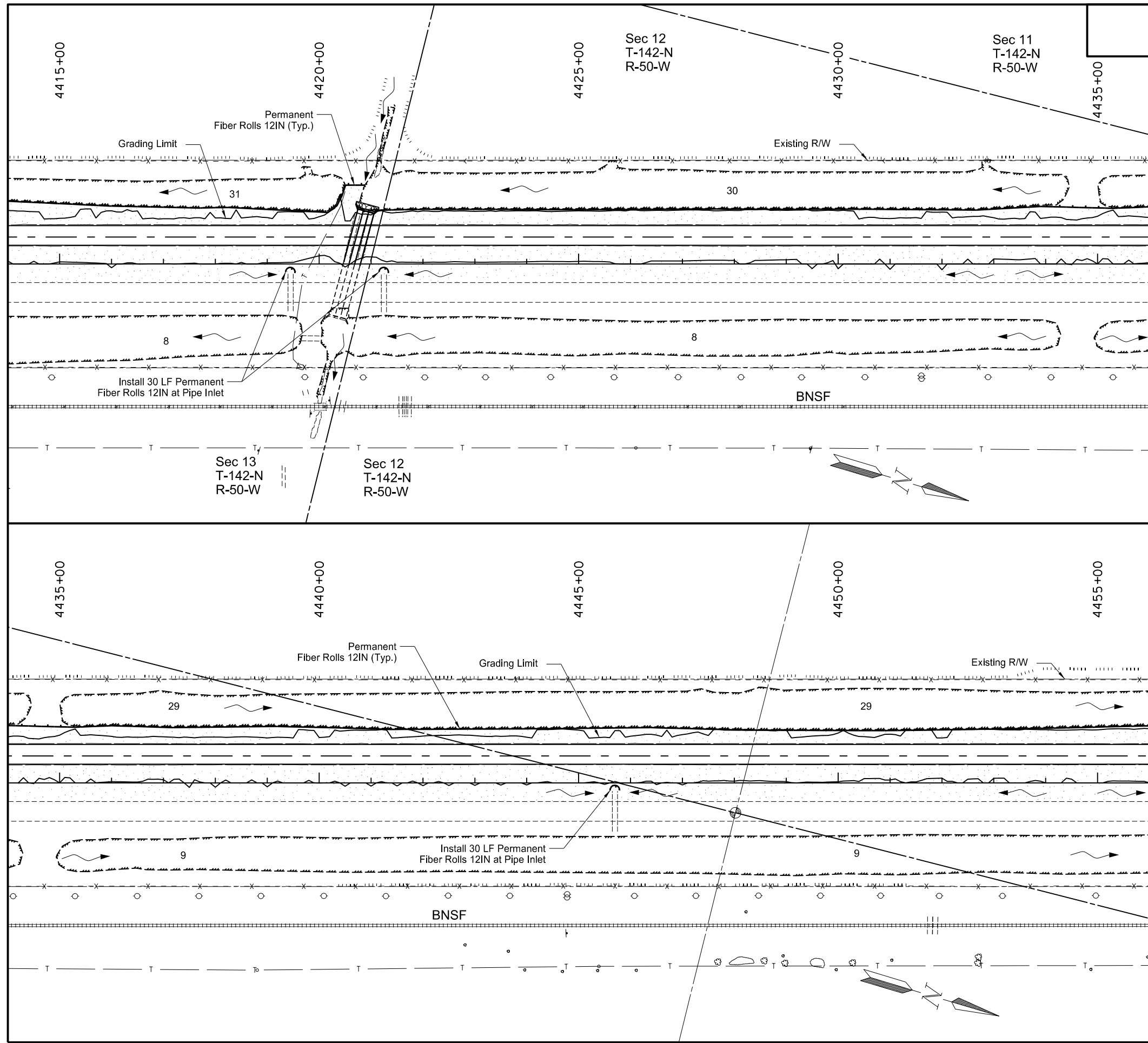
-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
- Permanent Fiber Rolls
(12IN Unless Otherwise Noted)



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Wetlands, Permanent Erosion Control, and Seeding
Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4415+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	8



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4415+00 Lt to 4455+00 Lt	9.70	Acres
253-0201	HYDRAULIC MULCH Sta 4415+00 Lt to 4455+00 Lt	9.70	Acres
261-0112	FIBER ROLLS 12IN Sta 4415+00 Lt to 4455+00 Lt	4,095	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

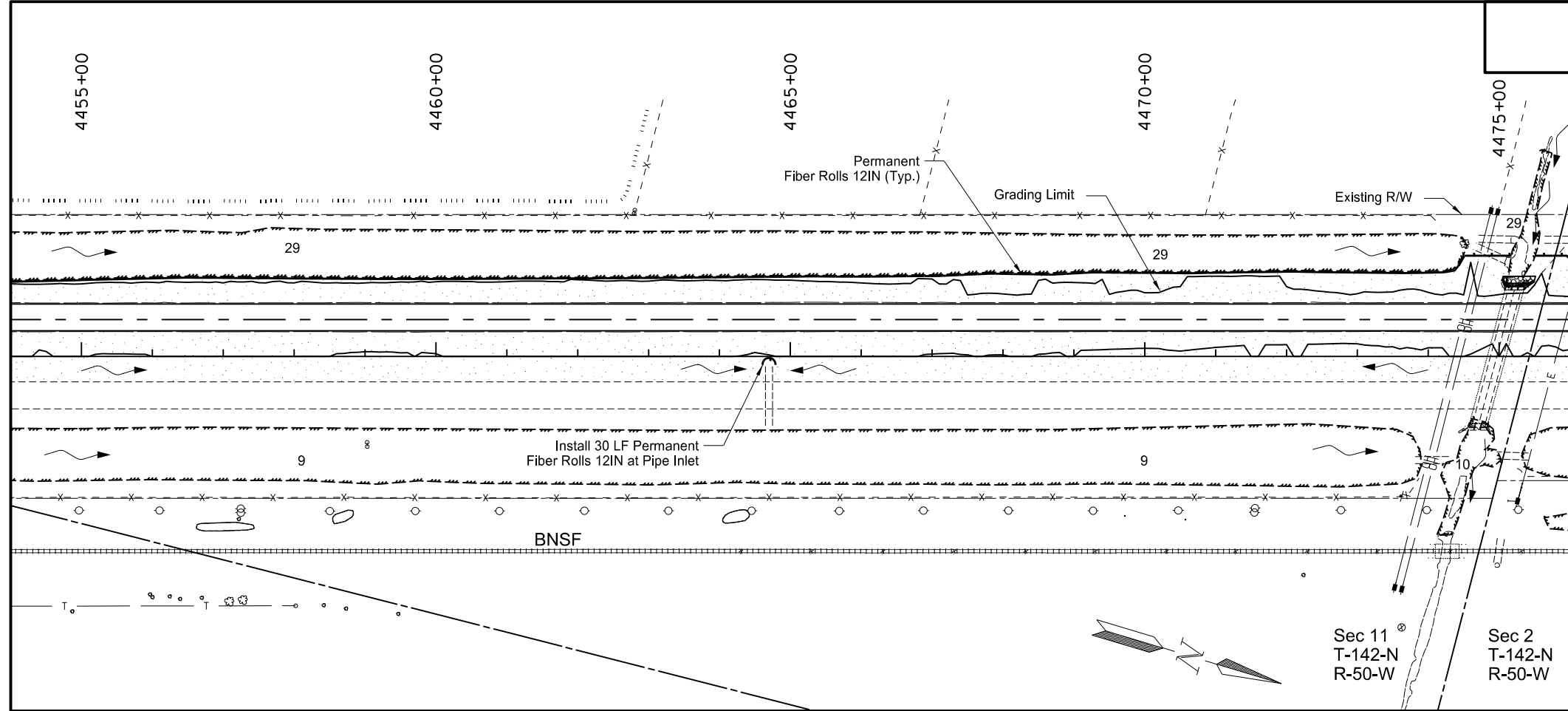
-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls (12IN Unless Otherwise Noted)

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Wetlands, Permanent Erosion Control, and Seeding





Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4455+00

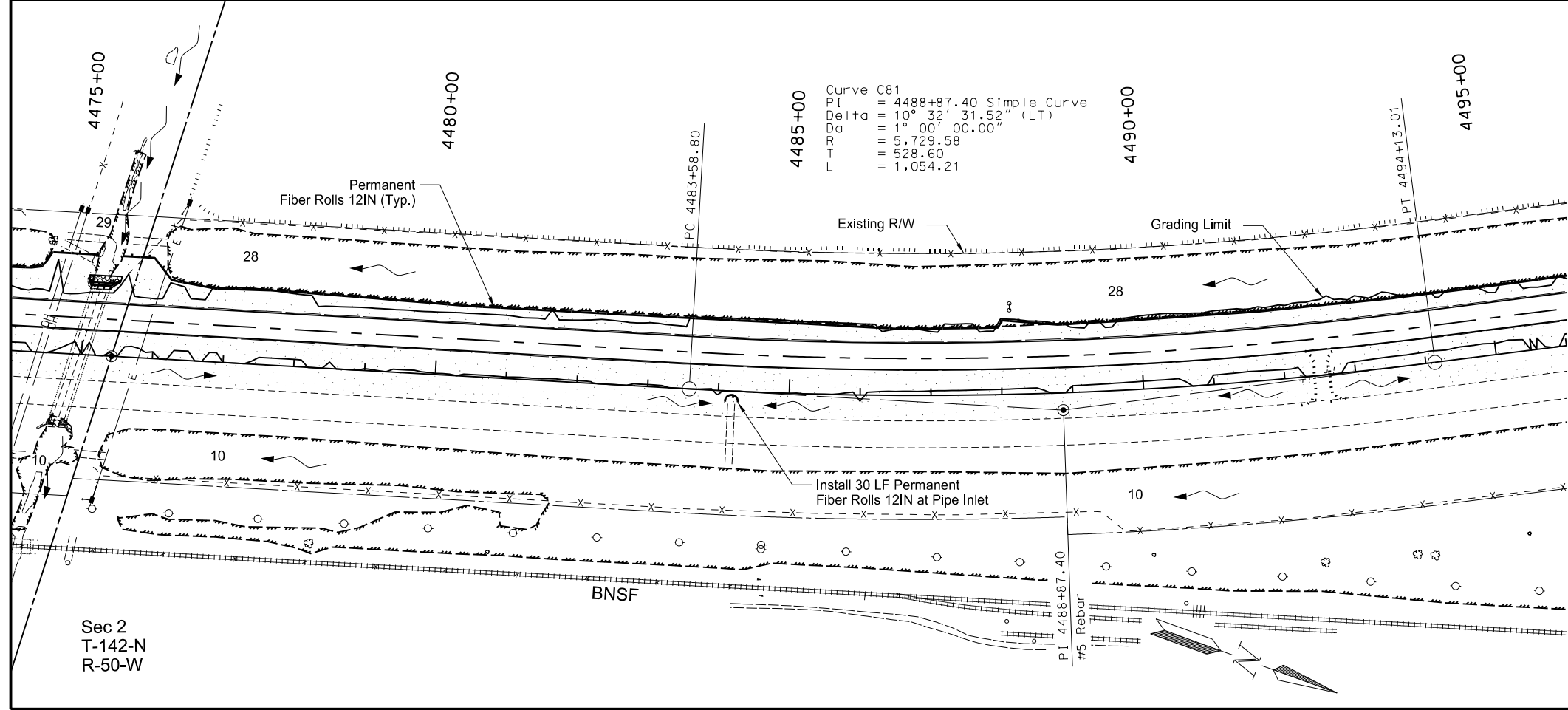
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	9



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4455+00 Lt to 4495+00 Lt	9.86	Acres
253-0201	HYDRAULIC MULCH Sta 4455+00 Lt to 4495+00 Lt	9.86	Acres
261-0112	FIBER ROLLS 12IN Sta 4455+00 Lt to 4495+00 Lt	4,041	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

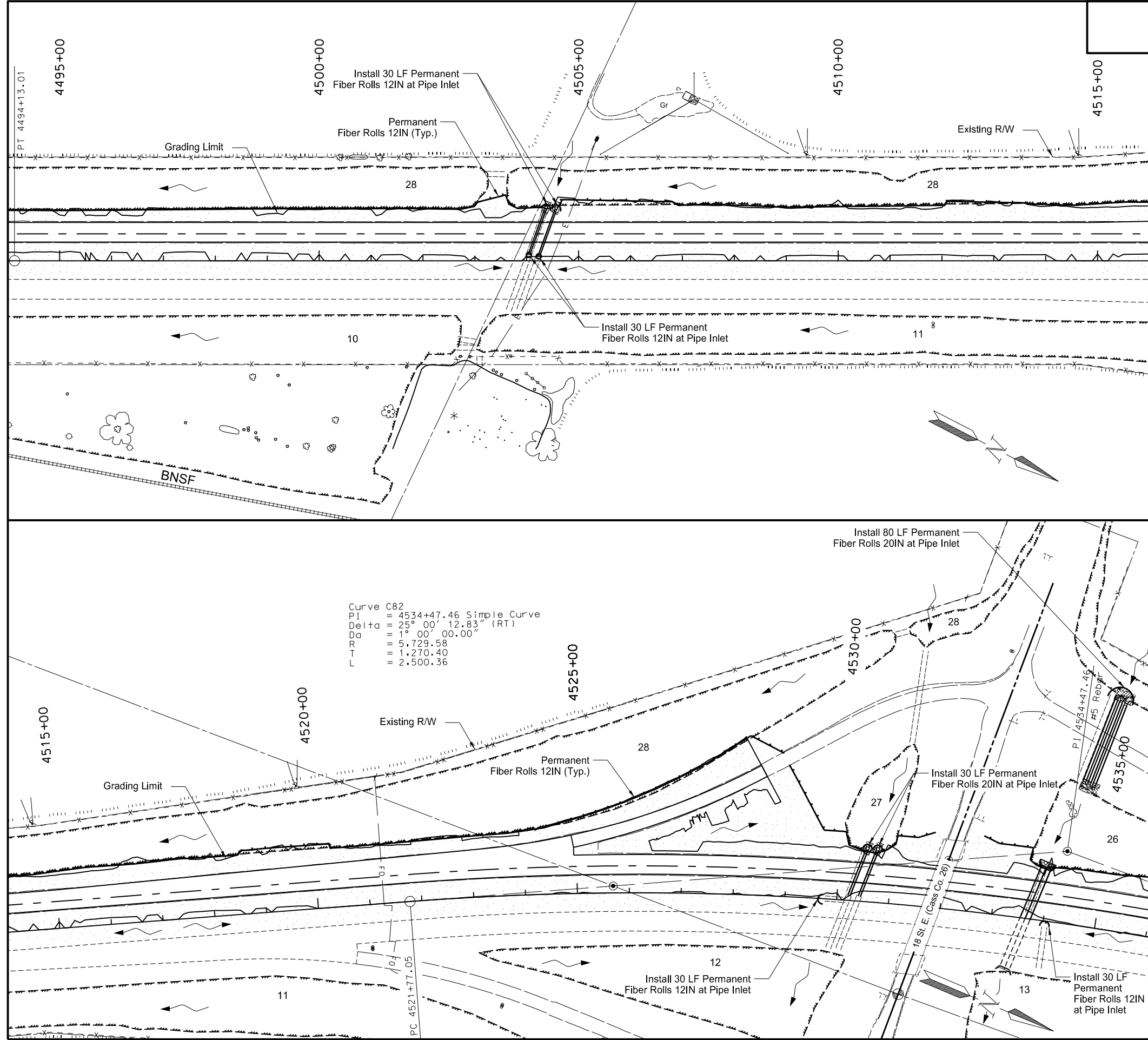
-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
- Permanent Fiber Rolls (12IN Unless Otherwise Noted)



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


Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4455+00 to Sta 4495+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	10



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4495+00 Lt to 4535+00 Lt	10.93	Acres
253-0201	HYDRAULIC MULCH Sta 4495+00 Lt to 4535+00 Lt	10.93	Acres
261-0112	FIBER ROLLS 12IN Sta 4495+00 Lt to 4535+00 Lt	4,263	LF
261-0120	FIBER ROLLS 20IN Sta 4495+00 Lt to 4535+00 Lt	140	LF

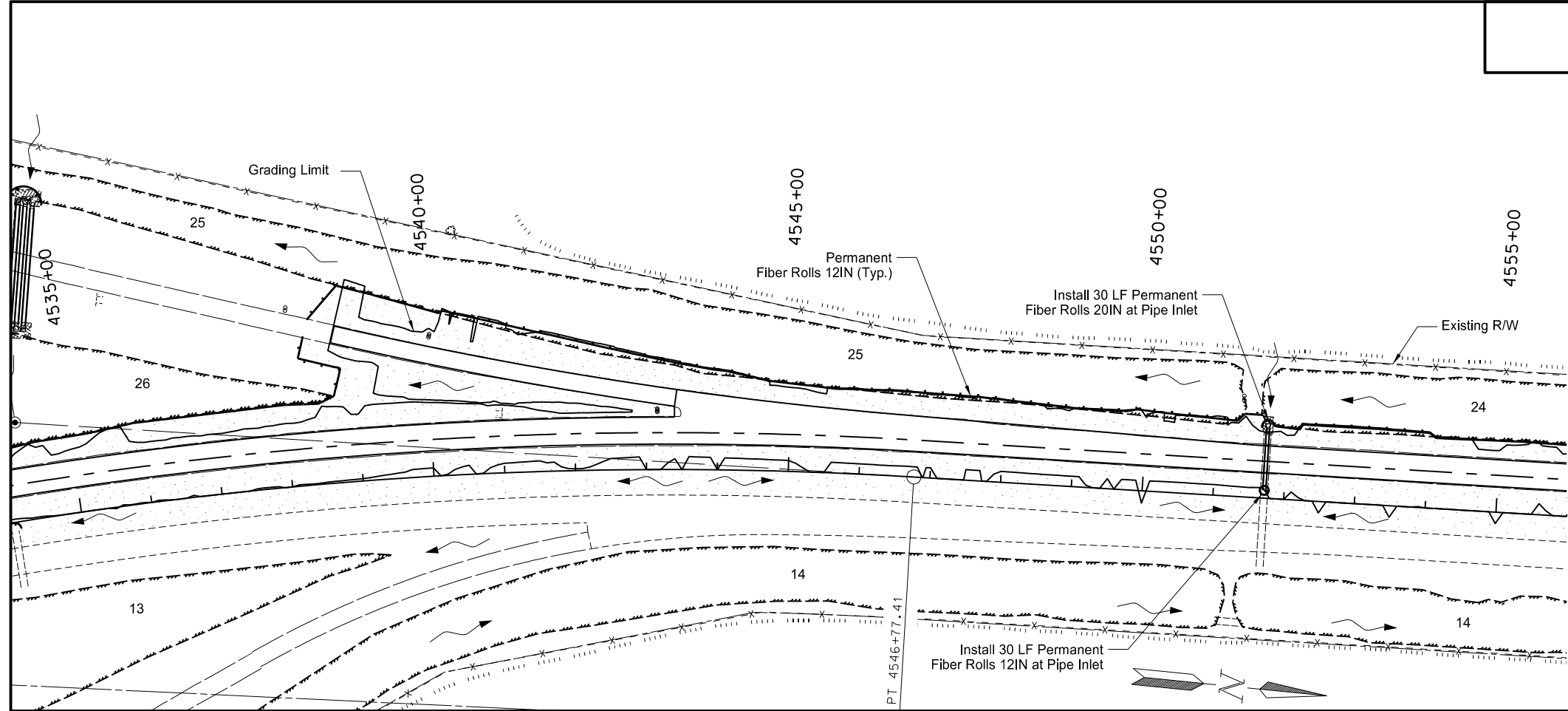
*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls (12IN Unless Otherwise Noted)

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Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4495+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	11



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4535+00 Lt to 4575+00 Lt	10.41	Acres
253-0201	HYDRAULIC MULCH Sta 4535+00 Lt to 4575+00 Lt	10.41	Acres
261-0112	FIBER ROLLS 12IN Sta 4535+00 Lt to 4575+00 Lt	4,253	LF
261-0120	FIBER ROLLS 20IN Sta 4535+00 Lt to 4575+00 Lt	30	LF

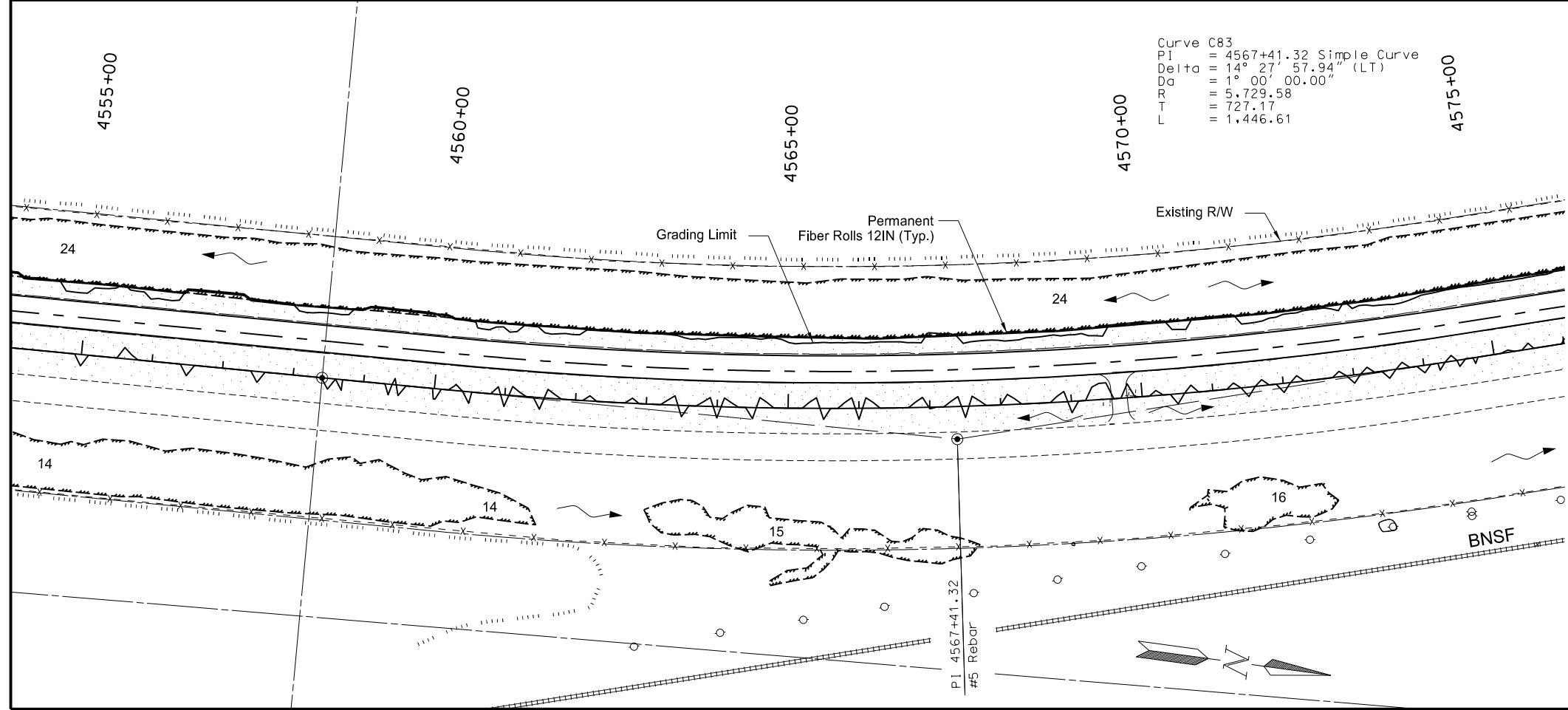
*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

 Seeding Class II
Permanent Hydraulic Mulch

 ECB Type 3

 Riprap Grade II

 Permanent Fiber Rolls
(12IN Unless Otherwise Noted)

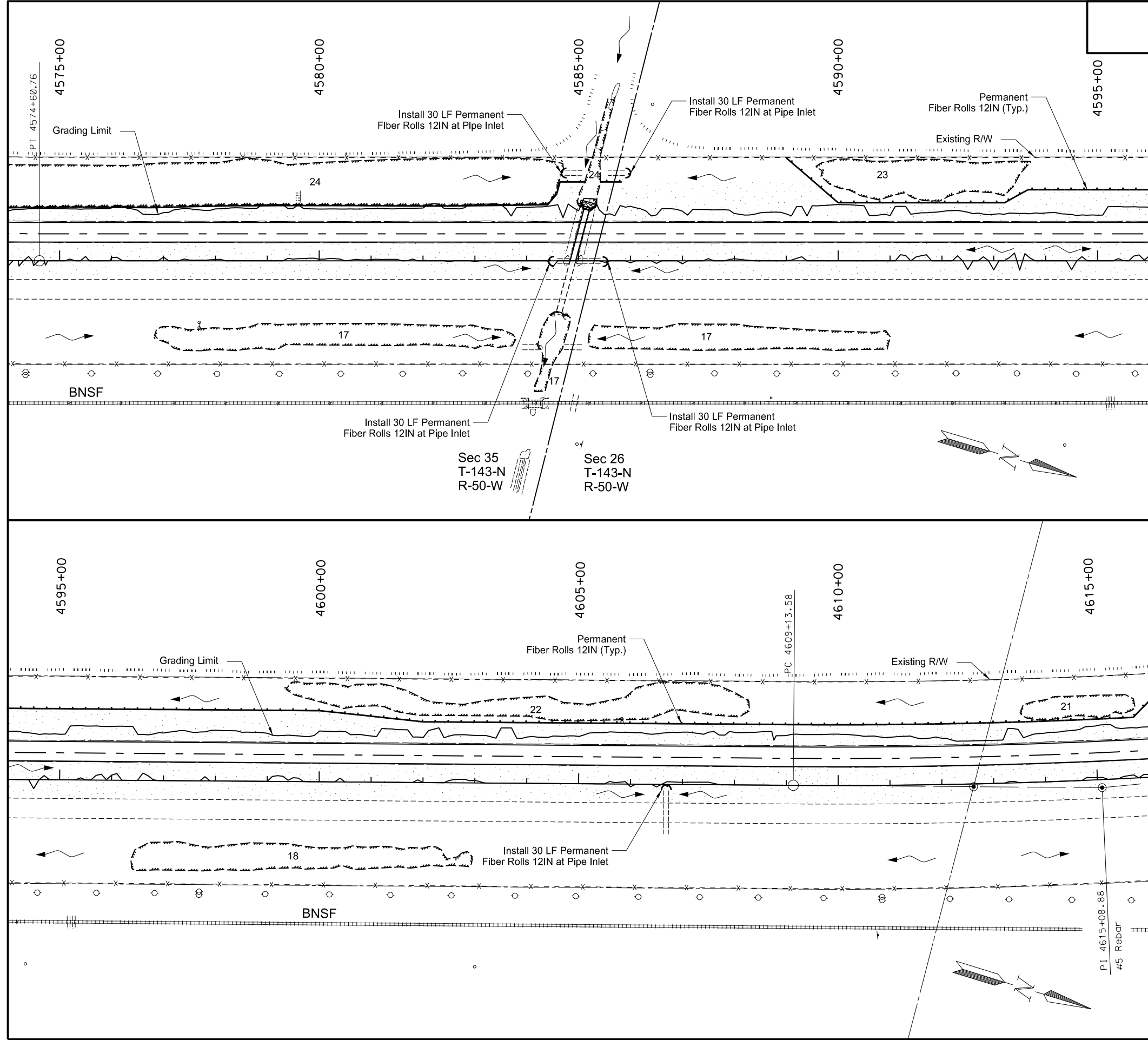


Curve C83
 PI = 4567+41.32 Simple Curve
 Delta = 14° 27' 57.94" (LT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 727.17
 L = 1,446.61

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
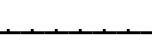
Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4535+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	12



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4575+00 Lt to 4615+00 Lt	11.03	Acres
253-0201	HYDRAULIC MULCH Sta 4575+00 Lt to 4615+00 Lt	11.03	Acres
261-0112	FIBER ROLLS 12IN Sta 4575+00 Lt to 4615+00 Lt	3,864	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls
(12IN Unless Otherwise Noted)

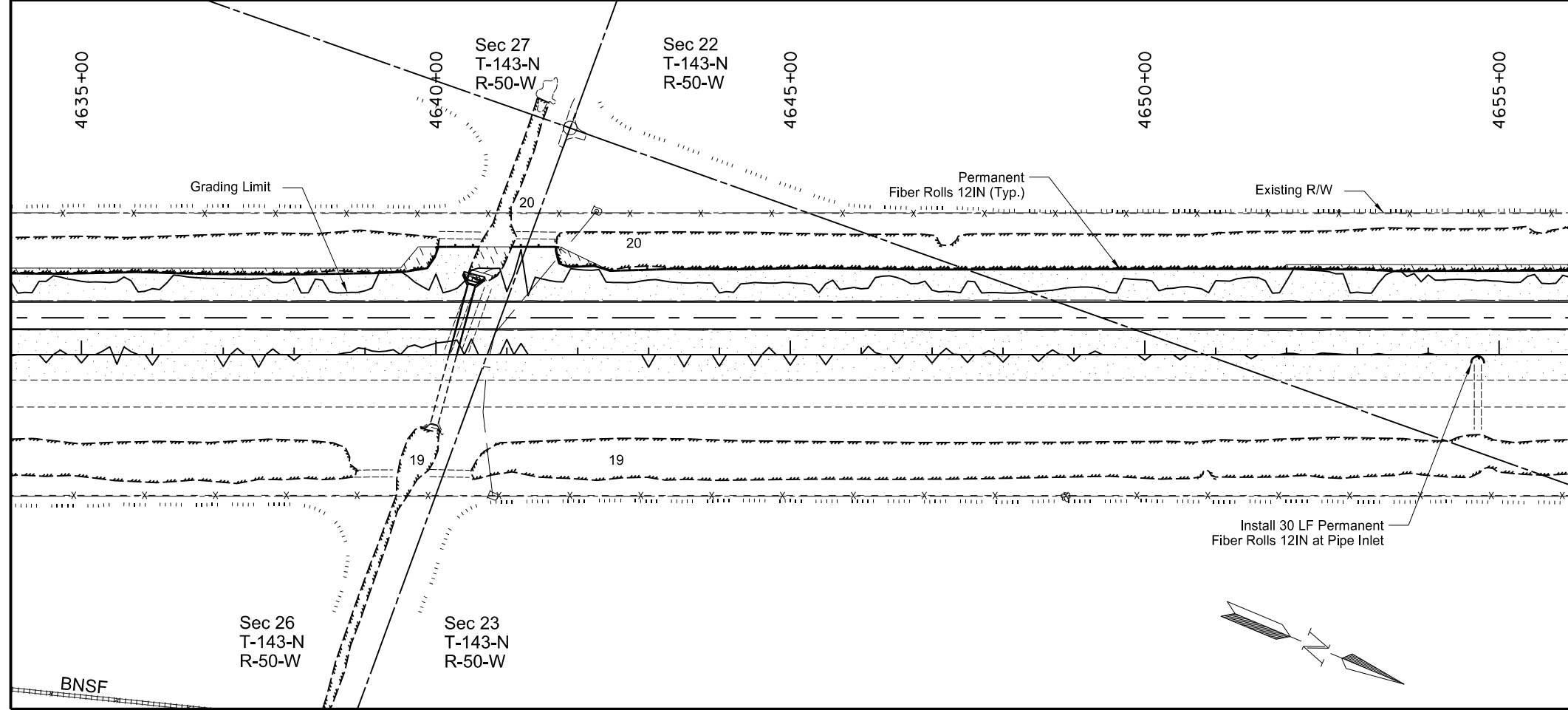
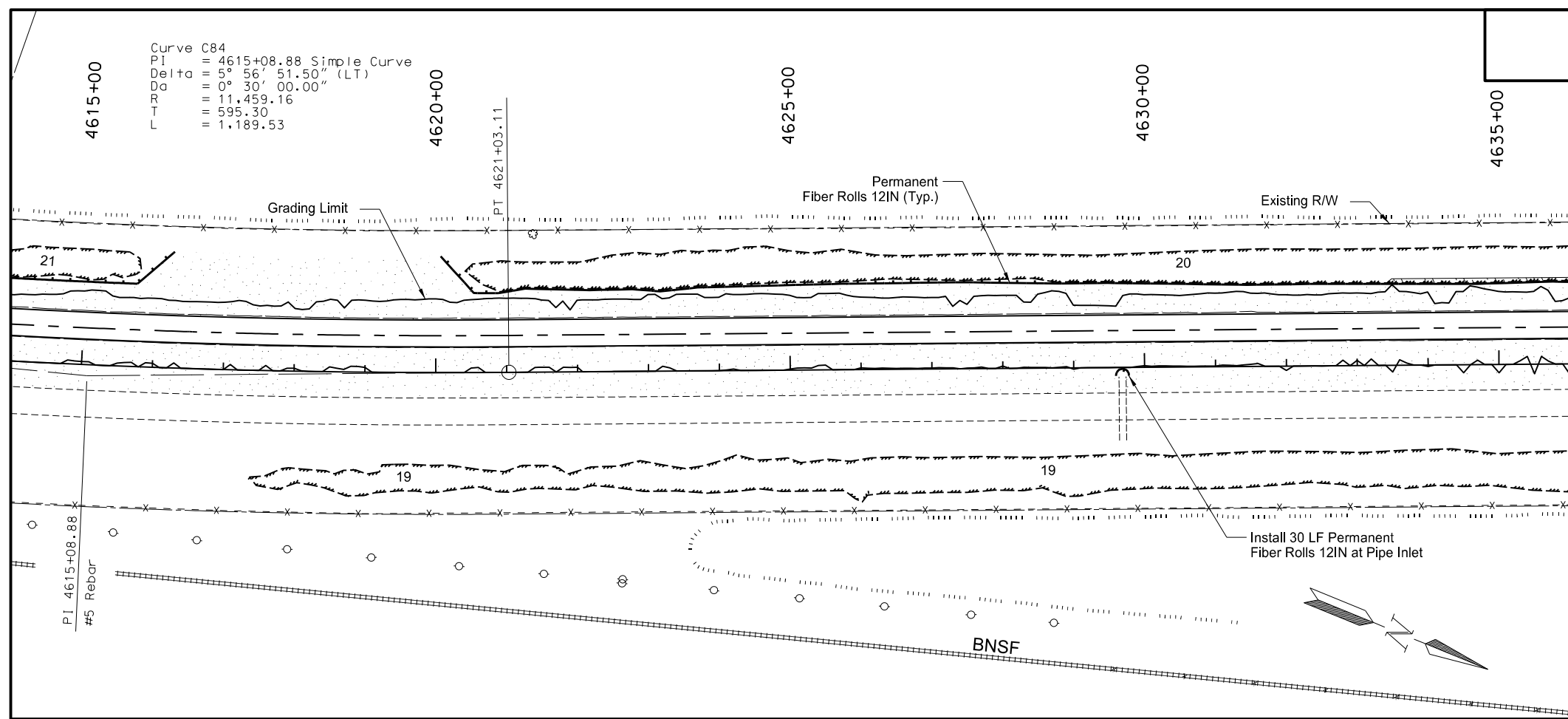
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Wetlands, Permanent Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4615+00





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	13

Curve C84
 PI = 4615+08.88 Simple Curve
 Delta = 5° 56' 51.50" (LT)
 Da = 0° 30' 00.00"
 R = 11,459.16
 T = 595.30
 L = 1,189.53



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4615+00 Lt to 4655+00 Lt	11.35	Acres
253-0201	HYDRAULIC MULCH Sta 4615+00 Lt to 4655+00 Lt	11.35	Acres
261-0112	FIBER ROLLS 12IN Sta 4615+00 Lt to 4655+00 Lt	3,713	LF

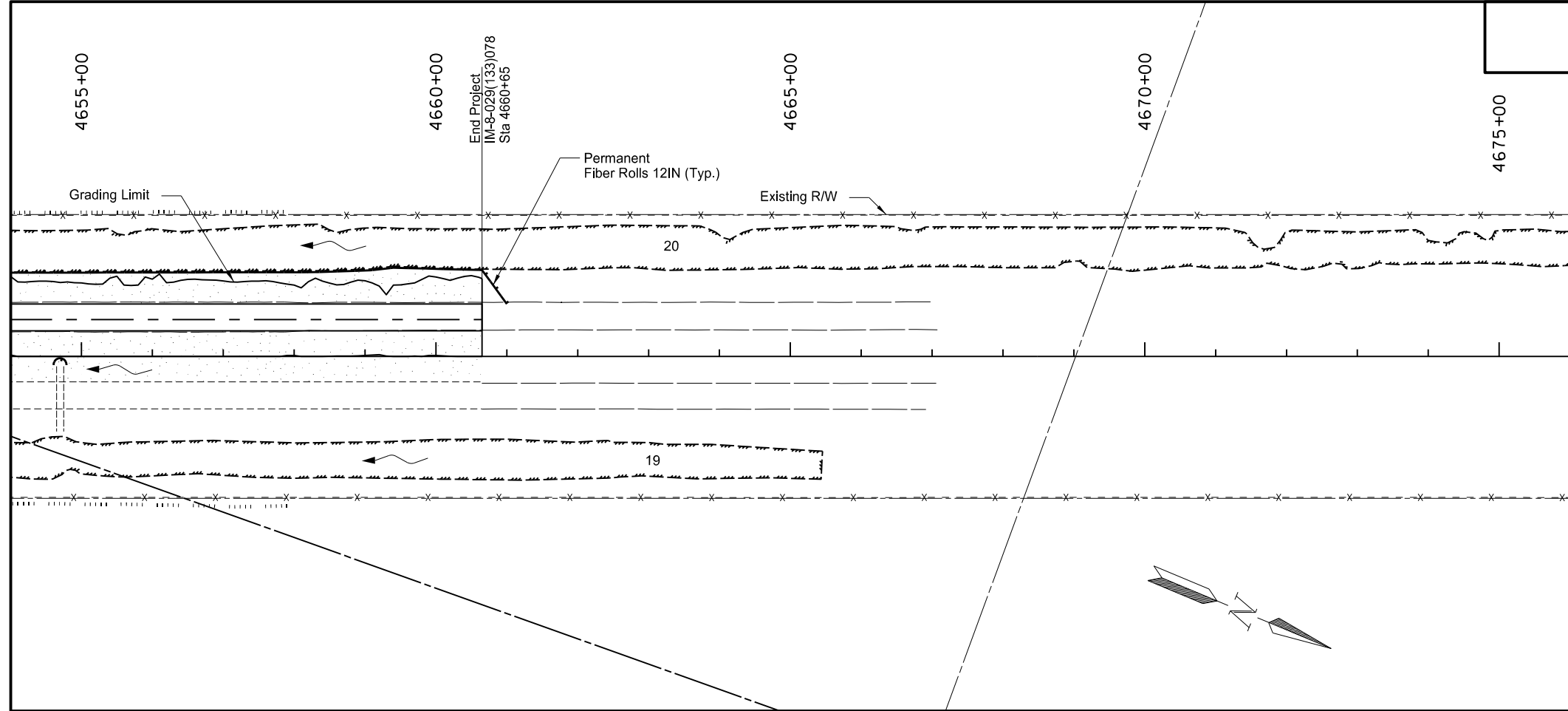
*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls
(12IN Unless Otherwise Noted)

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Wetlands, Permanent Erosion Control, and Seeding
 Interstate 29 - Argusville to Hunter SB
 Sta 4615+00 to Sta 4655+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	77	14



Item	Description	Quantity	Unit
251-0200	SEEDING CLASS II Sta 4655+00 Lt to 4660+65 Lt	1.55	Acres
253-0201	HYDRAULIC MULCH Sta 4655+00 Lt to 4660+65 Lt	1.55	Acres
261-0112	FIBER ROLLS 12IN Sta 4655+00 Lt to 4660+65 Lt	625	LF

*See Sheet 77-15 for Permanent Fiber Roll Placement Locations.

-  Seeding Class II
-  Permanent Hydraulic Mulch
-  ECB Type 3
-  Riprap Grade II
-  Permanent Fiber Rolls
(12IN Unless Otherwise Noted)

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Wetlands, Permanent Erosion Control, and Seeding

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to sta 4660+65

Permanent Fiber Rolls 12IN				
Sheet 1 - Argusville NW Temporary Ramp Connection				
Start Sta	Offset	End Sta	Offset	Length (LF)
4156+00	77' Lt	4156+00	127' Lt	50
4158+00	35' Rt	4158+00	35' Lt	70
4171+00	35' Rt	4171+00	35' Lt	70
Total				190
Sheet 2 - Sta 4180+00 to Sta 4215+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4179+28	74' Lt	4201+38	152' Lt	2,253
4180+00	25' Rt	4180+00	27' Lt	52
4200+35	18' Rt	4200+53	16' Rt	30
4202+29	152' Lt	4215+00	123' Lt	1,282
4203+86	18' Rt	4204+04	16' Rt	30
Total				3,647
Sheet 3 - Sta 4215+00 to Sta 4255+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4215+00	123' Lt	4255+00	133' Lt	4,002
4229+61	97' Lt	4229+80	97' Lt	30
4229+66	13' Lt	4229+76	13' Lt	30
4244+61	12' Rt	4244+79	12' Rt	30
Total				4,092
Sheet 4 - Sta 4255+00 to Sta 4295+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4255+00	133' Lt	4255+42	152' Lt	47
4256+22	152' Lt	4295+00	105' Lt	3,916
4264+60	13' Rt	4264+78	13' Rt	30
4292+64	13' Rt	4292+82	13' Rt	30
Total				4,023
Sheet 5 - Sta 4295+00 to Sta 4335+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4295+00	105' Lt	4310+19	152' Lt	1,519
4310+78	152' Lt	4335+00	115' Lt	2,429
4321+60	12' Rt	4321+78	12' Rt	30
Total				3,978
Sheet 6 - Sta 4335+00 to Sta 4375+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4335+00	115' Lt	4365+29	110' Lt	3,135
4344+60	11' Rt	4344+78	11' Rt	30
4364+60	10' Lt	4364+61	8' Rt	30
4365+67	109' Lt	4366+50	141' Lt	106
4367+92	137' Lt	4375+00	113' Lt	713
Total				4,014

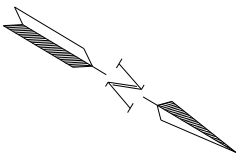
Permanent Fiber Rolls 12IN				
Sheet 7 - Sta 4375+00 to Sta 4415+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4375+00	113' Lt	4415+00	116' Lt	3,979
4392+60	15' Rt	4392+78	14' Rt	30
Total				4,009
Sheet 8 - Sta 4415+00 to Sta 4455+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4415+00	116' Lt	4420+88	152' Lt	619
4419+35	15' Rt	4419+53	18' Rt	30
4421+14	104' Lt	4455+00	108' Lt	3,386
4421+15	15' Rt	4421+33	18' Rt	30
4445+60	15' Rt	4445+78	14' Rt	30
Total				4,095
Sheet 9 - Sta 4455+00 to Sta 4495+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4455+00	108' Lt	4475+17	142' Lt	2,029
4464+60	12' Rt	4464+78	12' Rt	30
4475+50	142' Lt	4495+00	97' Lt	1,952
4484+09	15' Rt	4484+27	15' Rt	30
Total				4,041
Sheet 10 - Sta 4495+00 to Sta 4535+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4495+00	97' Lt	4504+28	103' Lt	949
4503+99	11' Lt	4504+08	11' Lt	30
4504+18	9' Lt	4504+28	9' Lt	30
4504+27	101' Lt	4504+45	96' Lt	30
4504+47	101' Lt	4504+64	95' Lt	30
4504+62	105' Lt	4528+85	276' Lt	2,519
4528+96	254' Lt	4530+47	97' Lt	245
4529+73	8' Lt	4529+73	10' Rt	30
4530+71	96' Lt	4531+77	145' Lt	130
4532+68	148' Lt	4533+80	102' Lt	147
4533+94	11' Rt	4534+12	10' Rt	30
4534+08	104' Lt	4535+00	108' Lt	93
Total				4,263
Sheet 11 - Sta 4535+00 to Sta 4575+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4535+00	108' Lt	4538+80	161' Lt	512
4538+39	233' Lt	4551+63	117' Lt	1,395
4551+66	11' Lt	4551+78	11' Lt	40
4551+81	103' Lt	4575+00	103' Lt	2,306
Total				4,253

Permanent Fiber Rolls 12IN				
Sheet 12 - Sta 4575+00 to Sta 4615+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4575+00	103' Lt	4585+11	152' Lt	1,039
4584+52	10' Rt	4584+52	8' Lt	30
4584+73	179' Lt	4584+73	161' Lt	30
4585+41	152' Lt	4585+83	152' Lt	41
4585+46	11' Rt	4585+46	7' Lt	30
4585+90	160' Lt	4585+90	178' Lt	30
4589+00	198' Lt	4615+00	117' Lt	2,634
4606+59	11' Rt	4606+77	11' Rt	30
Total				3,864
Sheet 13 - Sta 4615+00 to Sta 4655+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4615+00	117' Lt	4616+26	164' Lt	143
4620+06	164' Lt	4640+60	152' Lt	2,096
4629+59	12' Rt	4629+77	12' Rt	30
4641+07	152' Lt	4655+00	118' Lt	1,414
4654+60	12' Rt	4654+78	12' Rt	30
Total				3,713
Sheet 14 - Sta 4655+00 to Sta 4660+65				
Start Sta	Offset	End Sta	Offset	Length (LF)
4655+00	118' Lt	4661+00	74' Lt	625
Total				625
Total				48,807

Permanent Fiber Rolls 20IN				
Sheet 6 - Sta 4335+00 to Sta 4375+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4365+26	102' Lt	4365+44	103' Lt	30
4365+51	102' Lt	4365+69	104' Lt	30
4368+86	98' Lt	4369+04	99' Lt	30
4369+86	98' Lt	4370+04	99' Lt	30
Total				120
Sheet 10 - Sta 4495+00 to Sta 4535+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4530+42	102' Lt	4530+60	99' Lt	30
4530+62	102' Lt	4530+79	99' Lt	30
4534+60	446' Lt	4535+00	436' Lt	80
Total				140
Sheet 11 - Sta 4535+00 to Sta 4575+00				
Start Sta	Offset	End Sta	Offset	Length (LF)
4551+63	99' Lt	4551+81	101' Lt	30
Total				30
Total				290

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Permanent Fiber Roll Table
Interstate 29 - Argusville to Hunter SB





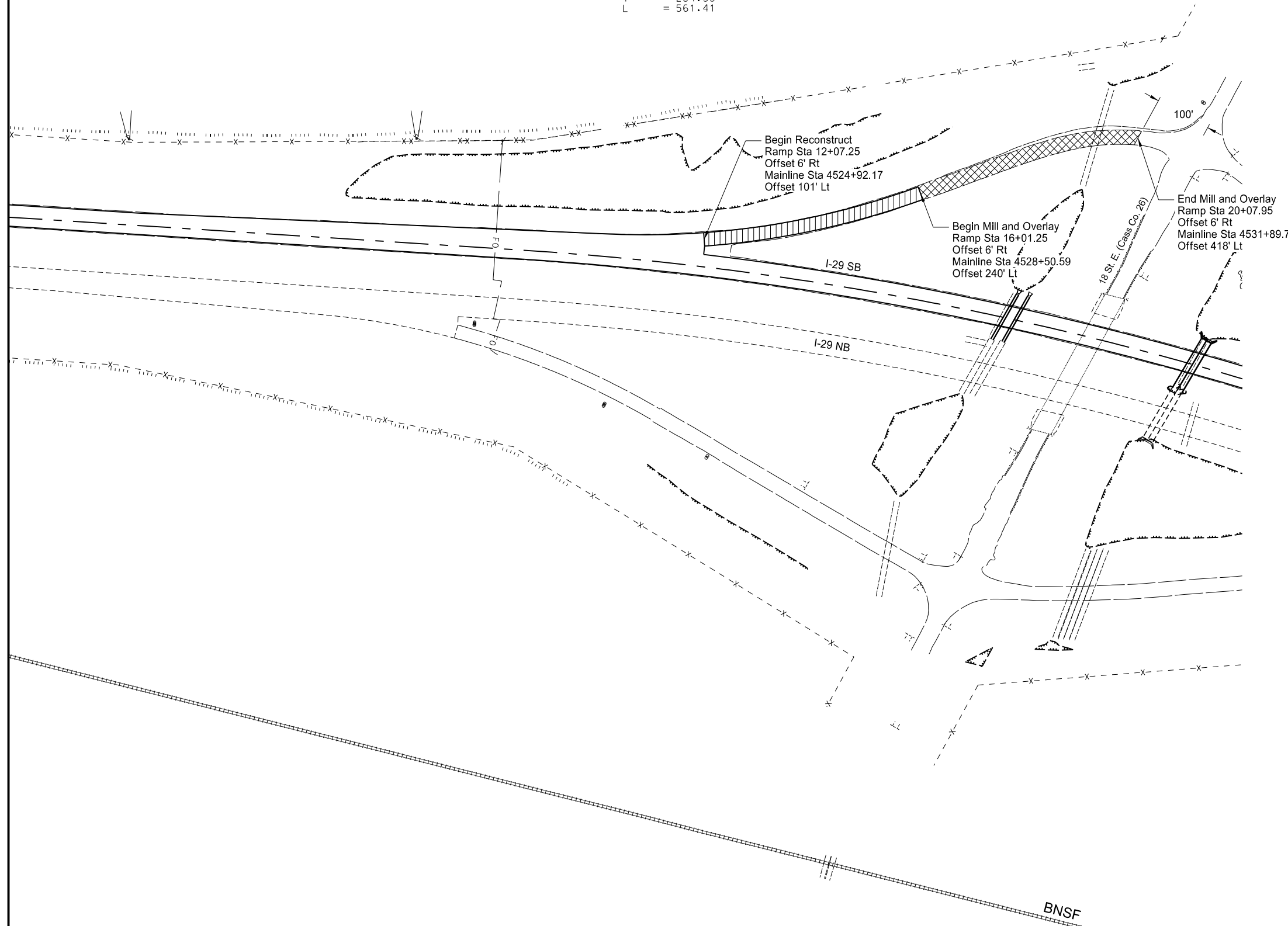
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	1

Curve C8011
 PI = 19+10.40 Simple Curve
 Delta = 23° 38' 31.00" (RT)
 Dc = 15° 00' 00.00"
 R = 381.97
 T = 79.94
 L = 157.61

Curve C8010
 PI = 13+24.18 Simple Curve
 Delta = 22° 27' 22.97" (LT)
 Dc = 4° 00' 00.00"
 R = 1,432.39
 T = 284.35
 L = 561.41

Item	Description	Quantity	Unit
302-0101	SALVAGED BASE COURSE SW Ramp	579	CY
401-0050	TACK COAT SW Ramp	115	Gal
401-0060	PRIME COAT SW Ramp	292	Gal
401-0160	BLOTTER MATERIAL CL 44 SW Ramp	12	Ton
411-0105	MILLING PAVEMENT SURFACE SW Ramp	1,085	SY
430-0043	SUPERPAVE FAA 43 SW Ramp	372	Ton
430-5828	PG 58-28 ASPHALT CEMENT SW Ramp	23	Ton
709-0151	GEOSYNTHETIC MATERIAL TYPE R1 SW Ramp	1,609	SY

	Reconstruct Ramp Transition
	Mill 2" and Overlay with 2" Superpave FAA 43





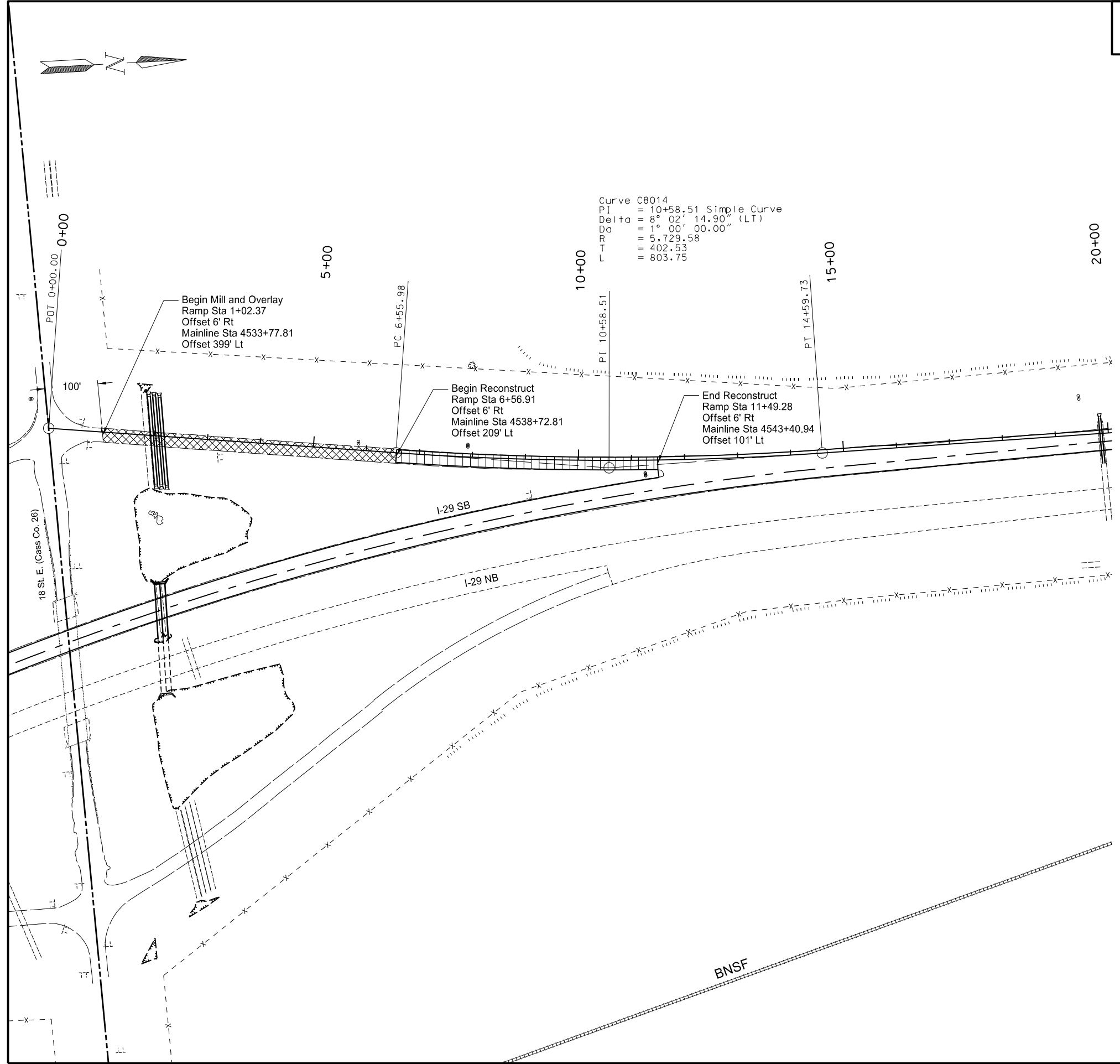
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Milling and Paving Layout
 Gardner Interchange
 SW Ramp
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	2

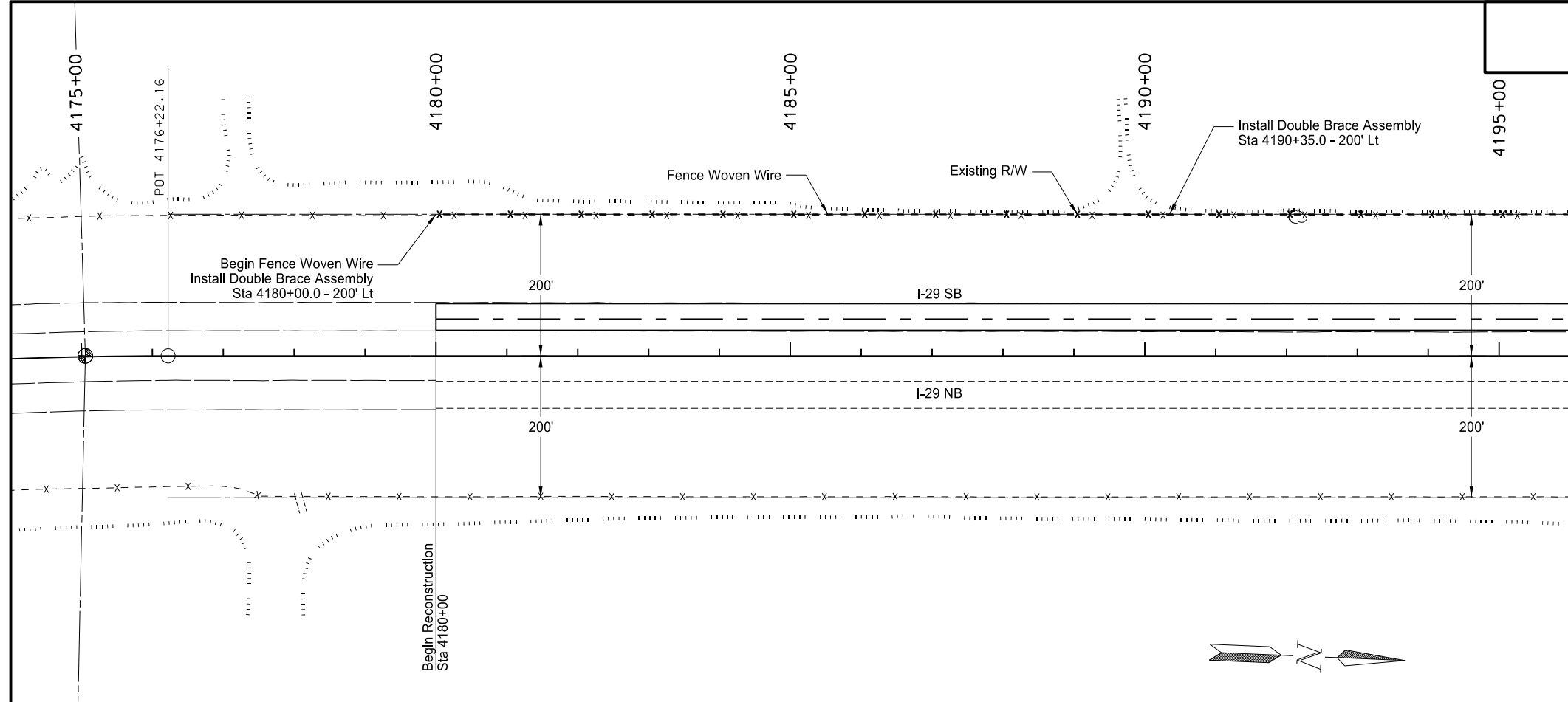
Item	Description	Quantity	Unit
302-0101	SALVAGED BASE COURSE NW Ramp	723	CY
401-0050	TACK COAT NW Ramp	149	Gal
401-0060	PRIME COAT NW Ramp	365	Gal
401-0160	BLOTTER MATERIAL CL 44 NW Ramp	15	Ton
411-0105	MILLING PAVEMENT SURFACE NW Ramp	1,479	SY
430-0043	SUPERPAVE FAA 43 NW Ramp	480	Ton
430-5828	PG 58-28 ASPHALT CEMENT NW Ramp	29	Ton
709-0151	GEOSYNTHETIC MATERIAL TYPE R1 NW Ramp	2,011	SY

-  Reconstruct Ramp Transition
-  Mill 2" and Overlay with 2" Superpave FAA 43



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Milling and Paving Layout
 Gardner Interchange
 NW Ramp
 Interstate 29 - Argusville to Hunter SB



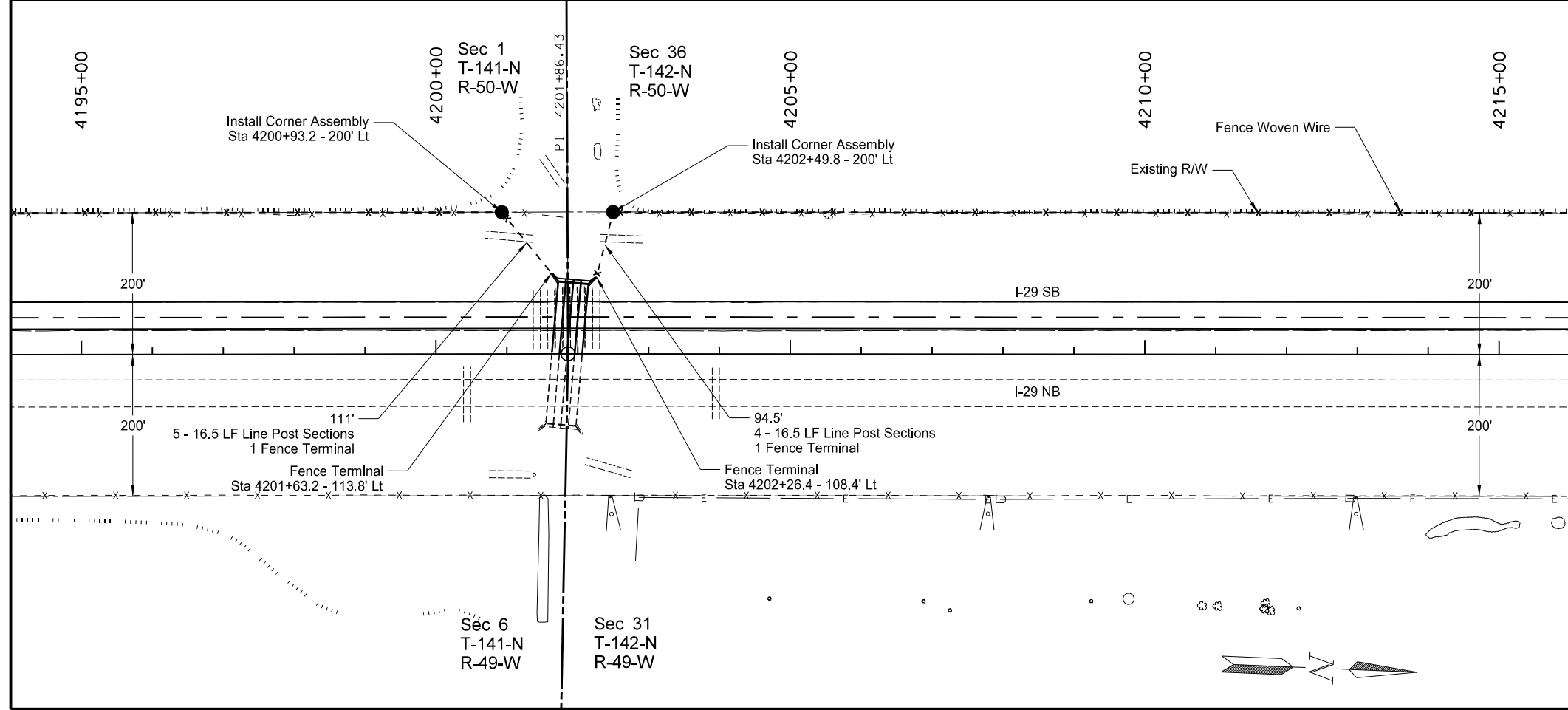
Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE Sta 4180+00.0 Lt to 4200+93.2 Lt Sta 4200+93.2 Lt to 4201+63.2 Lt Sta 4202+26.4 Lt to 4202+49.8 Lt Sta 4202+49.8 Lt to 4215+00.0 Lt Total	2,093 111 95 1,250 3,549	LF LF LF LF LF
752-3120	CORNER ASSEMBLY WOVEN WIRE Sta 4200+93.2 Lt Sta 4202+49.8 Lt Total	1 1 2	Each Each Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE Sta 4180+00.0 Lt Sta 4190+35.0 Lt Sta 4201+63.2 Lt (Fence Terminal) Sta 4202+26.4 Lt (Fence Terminal) Total	1 1 1 1 4	Each Each Each Each Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

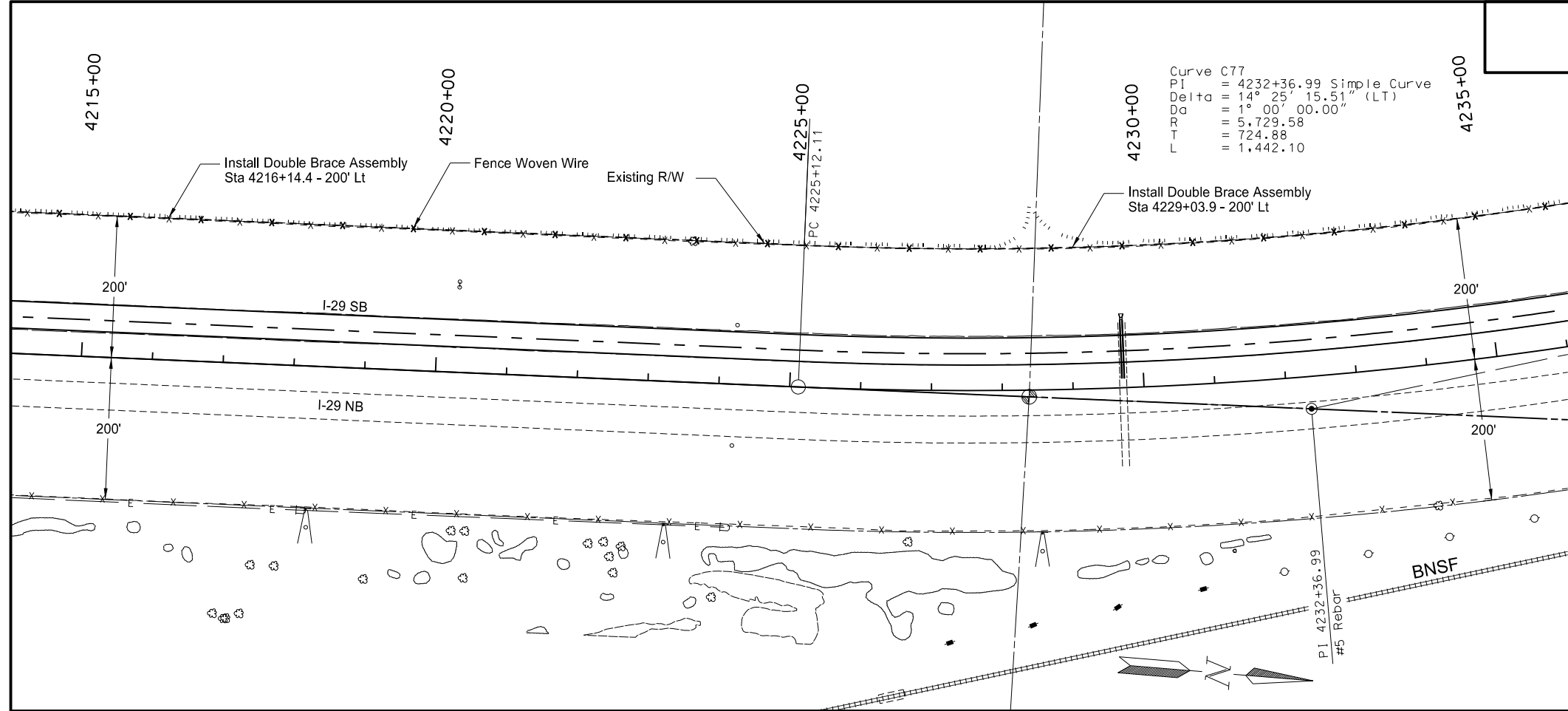
—X Fence Woven Wire
● Corner Assembly Woven Wire



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Fencing Layout
Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4215+00

Curve C77
 PI = 4232+36.99 Simple Curve
 Delta = 14° 25' 15.51" (LT)
 Da = 1° 00' 00.00"
 RT = 5,729.58
 T = 724.88
 L = 1,442.10



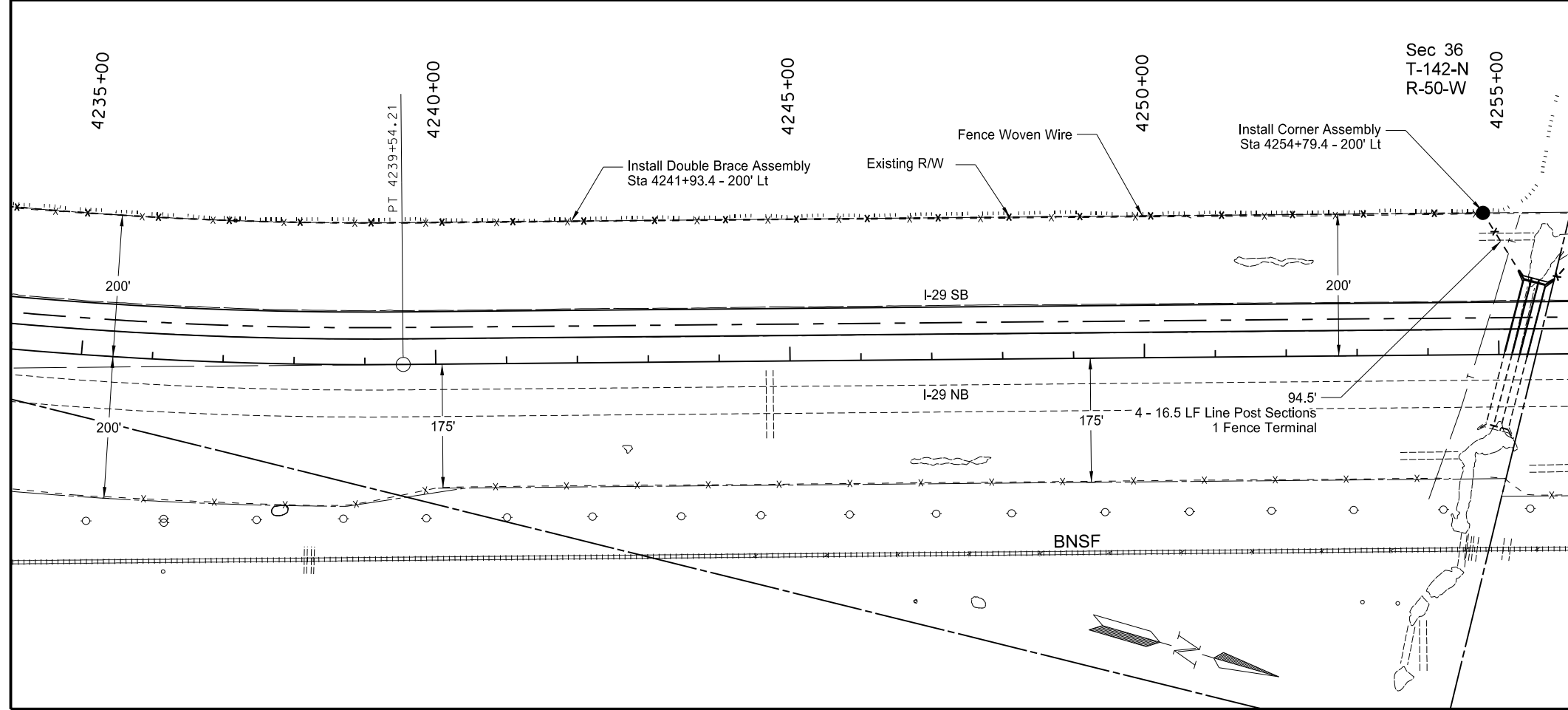
Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4215+00.0 Lt to 4254+79.4 Lt	3,929	LF
	Sta 4254+79.4 Lt to 4255+00.0 Lt	40	LF
	Total	3,969	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4254+79.4 Lt	1	Each
	Total	1	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4216+14.4 Lt	1	Each
	Sta 4229+03.9 Lt	1	Each
	Sta 4241+93.4 Lt	1	Each
	Total	3	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

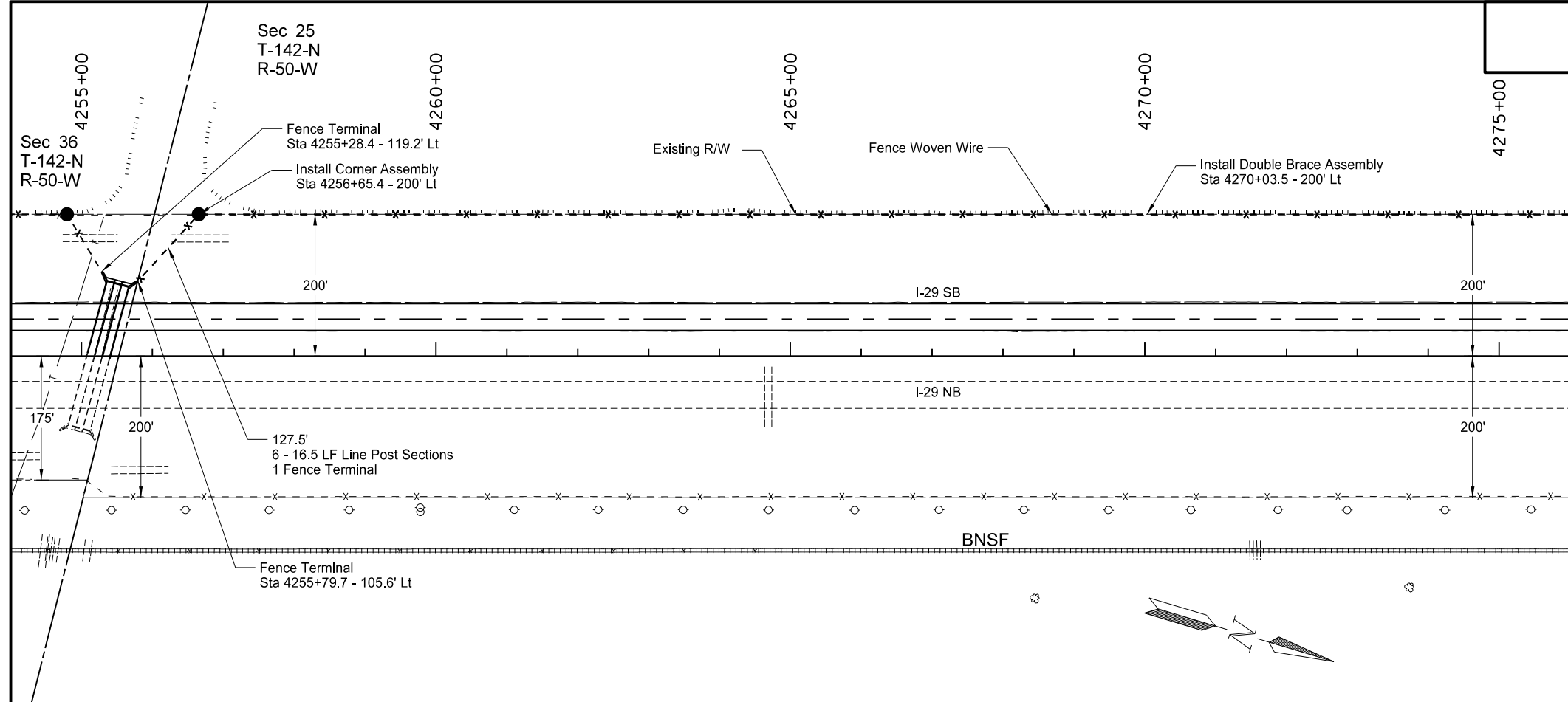
- - X Fence Woven Wire
- Corner Assembly Woven Wire



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Fencing Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4215+00 to Sta 4255+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	5



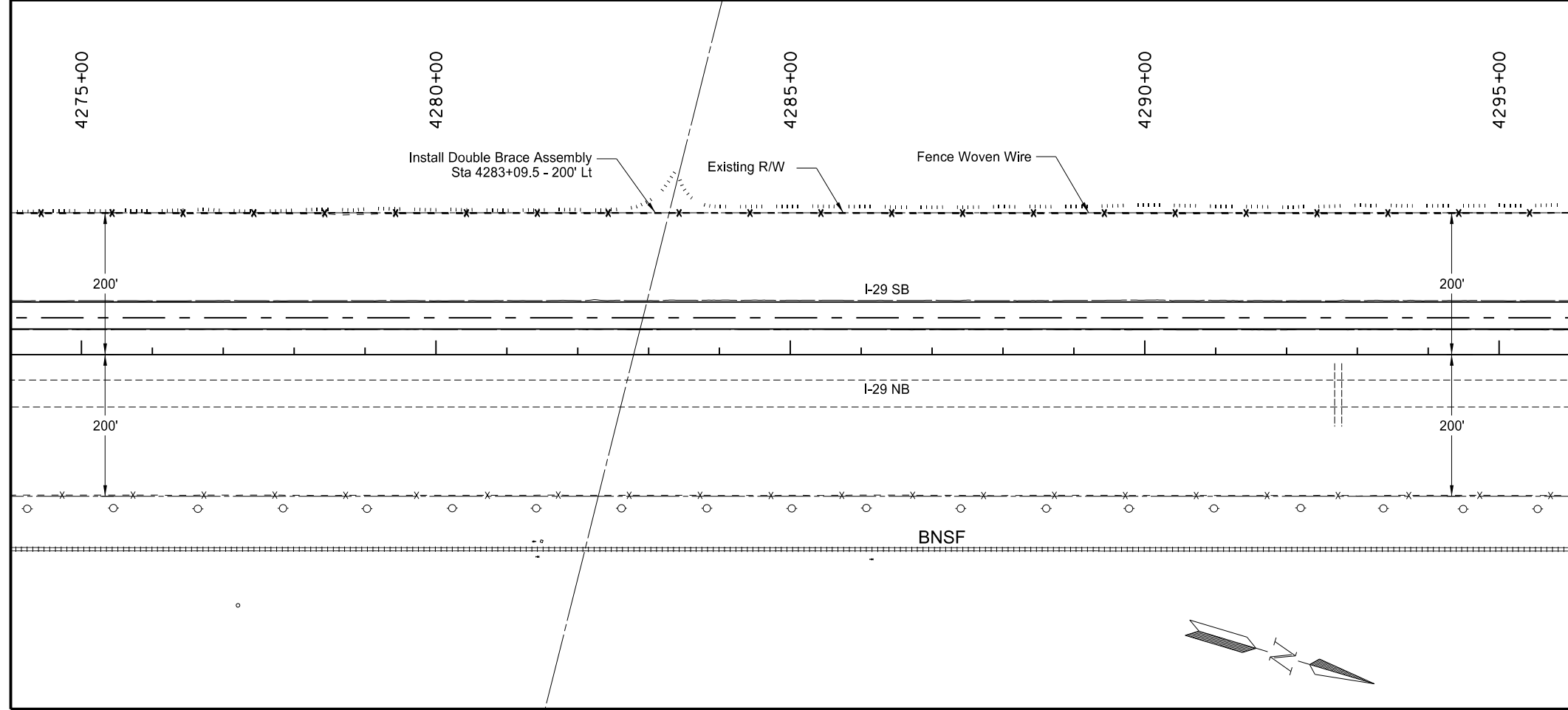
Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4255+00.0 Lt to 4255+28.4 Lt	55	LF
	Sta 4255+79.7 Lt to 4256+65.4 Lt	128	LF
	Sta 4256+65.4 Lt to 4295+00.0 Lt	3,835	LF
	Total	4,018	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4256+65.4 Lt	1	Each
	Total	1	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4255+28.4 Lt (Fence Terminal)	1	Each
	Sta 4255+79.7 Lt (Fence Terminal)	1	Each
	Sta 4270+03.5 Lt	1	Each
	Sta 4283+09.5 Lt	1	Each
	Total	4	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

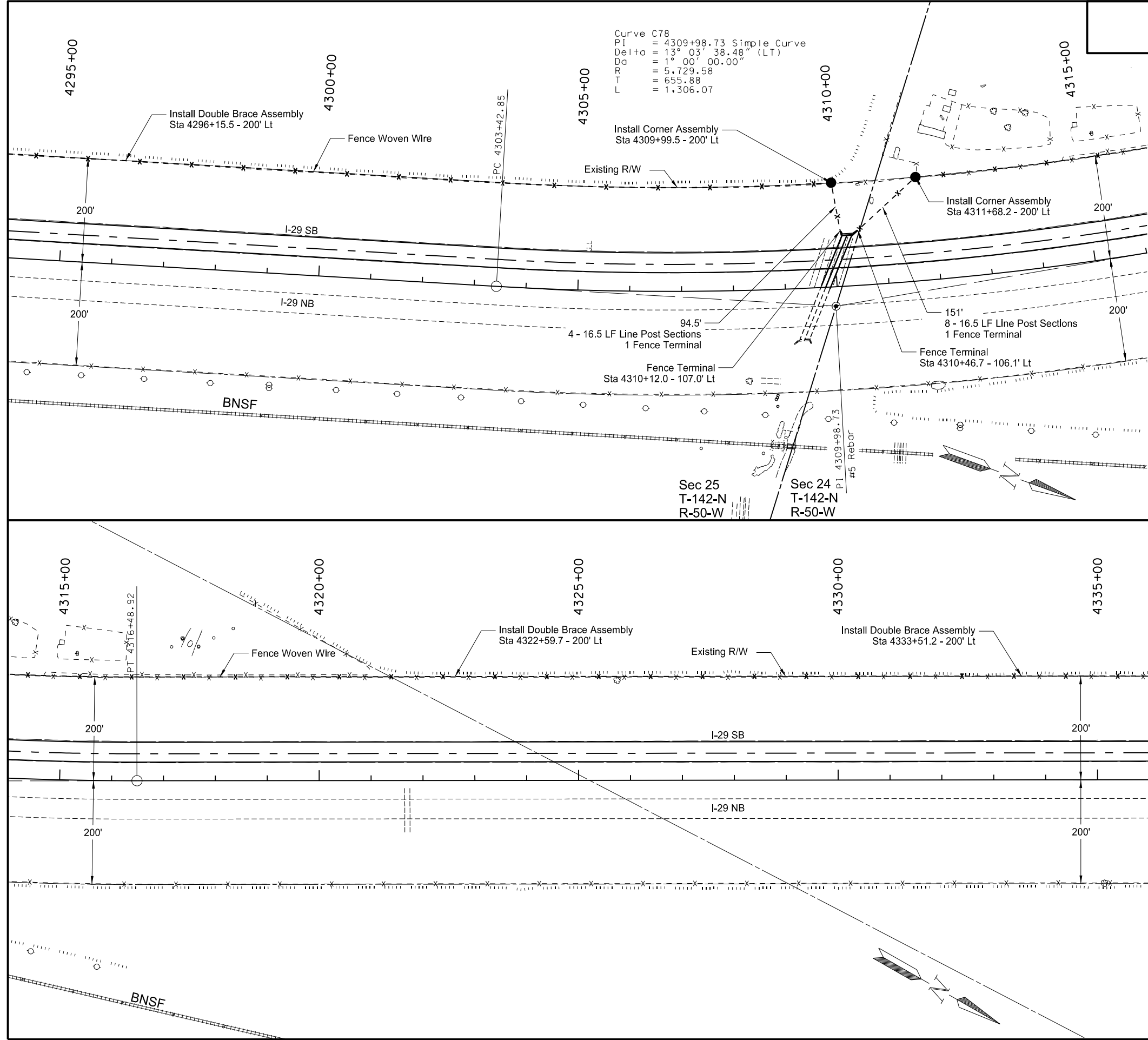
—X Fence Woven Wire
● Corner Assembly Woven Wire



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Fencing Layout
Interstate 29 - Argusville to Hunter SB
Sta 4255+00 to Sta 4295+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	6



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE Sta 4295+00.0 Lt to 4309+99.5 Lt Sta 4309+99.5 Lt to 4310+12.0 Lt Sta 4310+46.7 Lt to 4311+68.2 Lt Sta 4311+68.2 Lt to 4335+00.0 Lt Total	1,477 95 151 2,332 4,055	LF LF LF LF LF
752-3120	CORNER ASSEMBLY WOVEN WIRE Sta 4309+99.5 Lt Sta 4311+68.2 Lt Total	1 1 2	Each Each Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE Sta 4296+15.5 Lt Sta 4310+12.0 Lt (Fence Terminal) Sta 4310+46.7 Lt (Fence Terminal) Sta 4322+59.7 Lt Sta 4333+51.2 Lt Total	1 1 1 1 1 5	Each Each Each Each Each Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

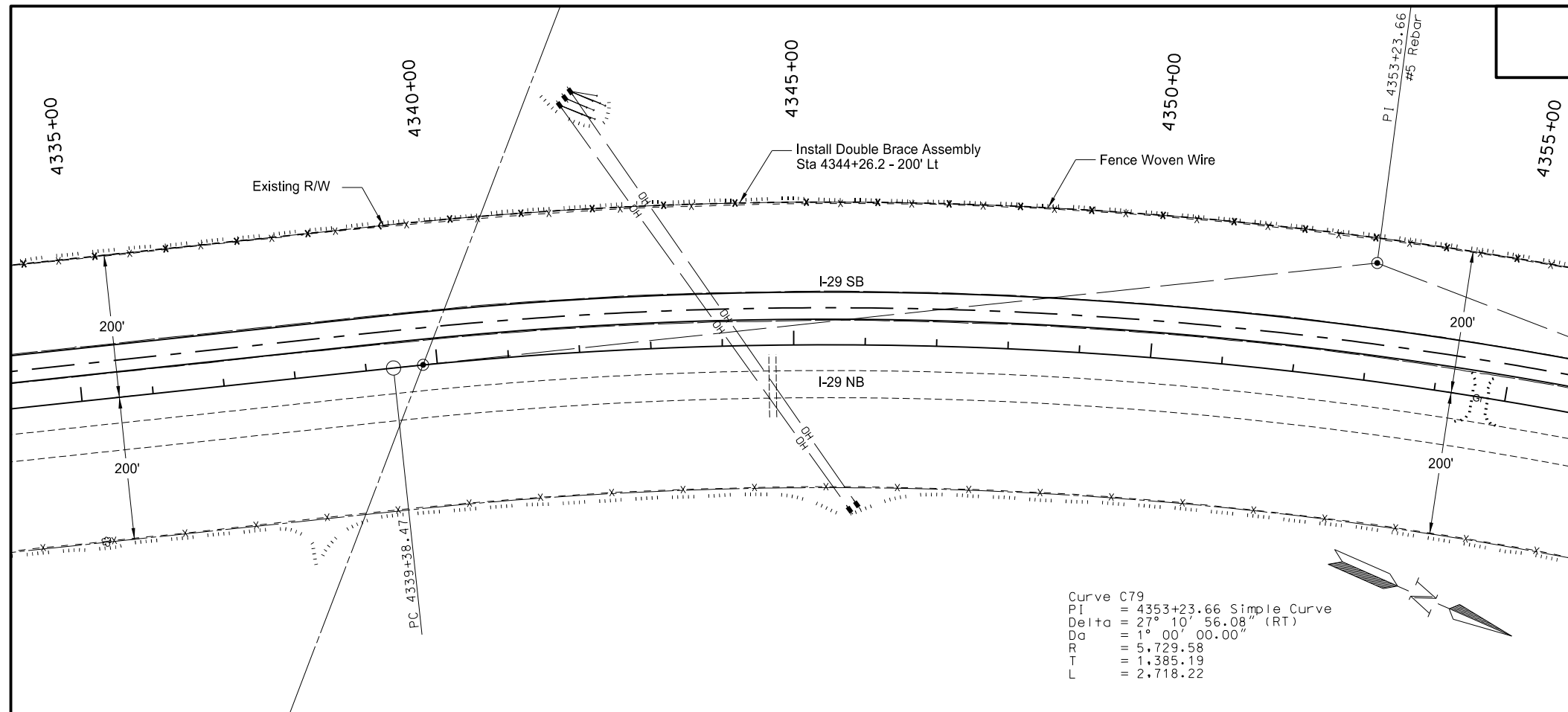
Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

- - X Fence Woven Wire
 ● Corner Assembly Woven Wire

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Fencing Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4295+00 to Sta 4335+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	7



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4335+00.0 Lt to 4365+82.2 Lt	3,174	LF
	Sta 4365+82.2 Lt to 4366+96.6 Lt	135	LF
	Sta 4367+45.1 Lt to 4368+61.8 Lt	135	LF
	Sta 4368+61.8 Lt to 4375+00.0 Lt	638	LF
	Total	4,082	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4365+82.2 Lt	1	Each
	Sta 4368+61.8 Lt	1	Each
	Total	2	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4344+26.2 Lt	1	Each
	Sta 4355+01.2 Lt	1	Each
	Sta 4366+96.6 Lt (Fence Terminal)	1	Each
	Sta 4367+45.1 Lt (Fence Terminal)	1	Each
	Total	4	Each

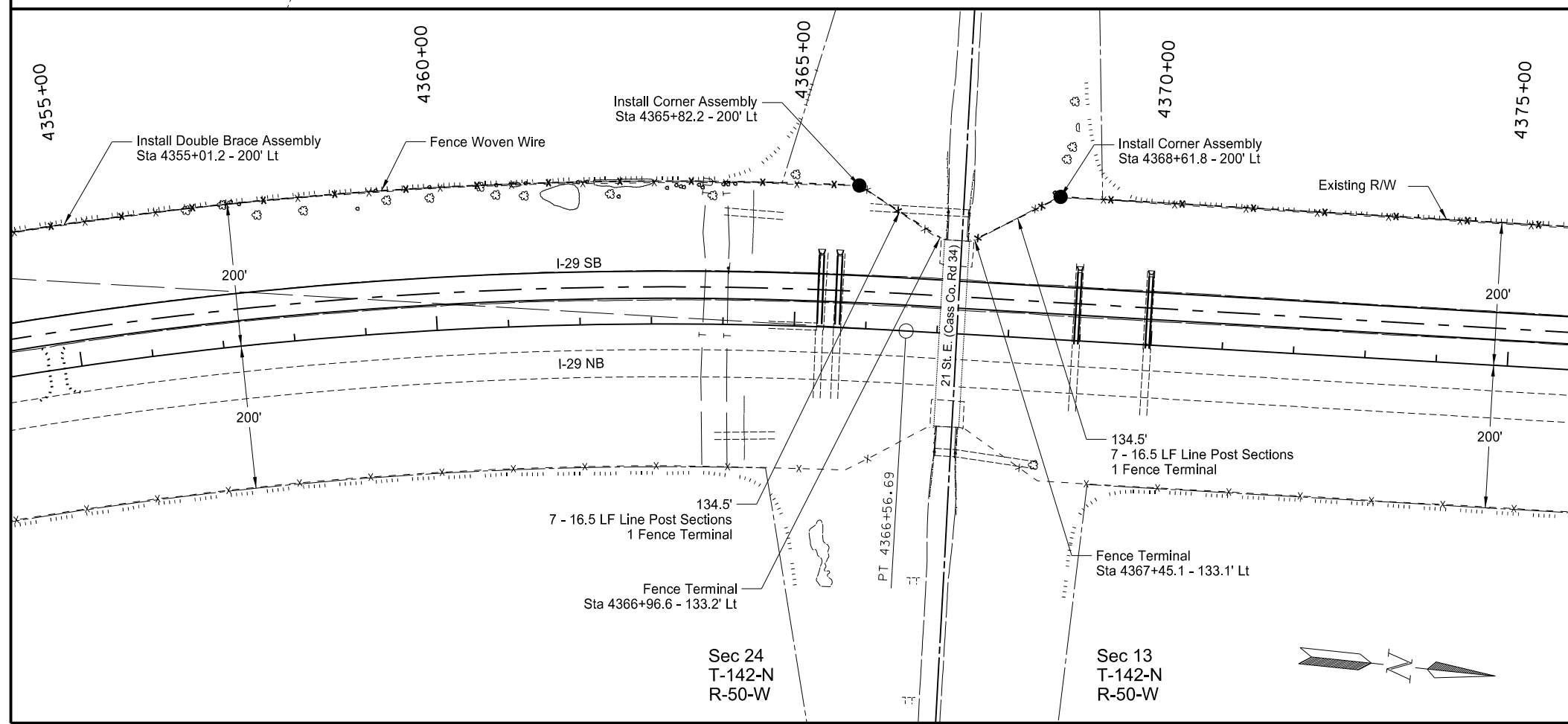
Curve C79
 PI = 4353+23.66 Simple Curve
 Delta = 27° 10' 56.08" (RT)
 Dc = 1° 00' 00.00"
 R = 5,729.58
 T = 1,385.19
 L = 2,718.22

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

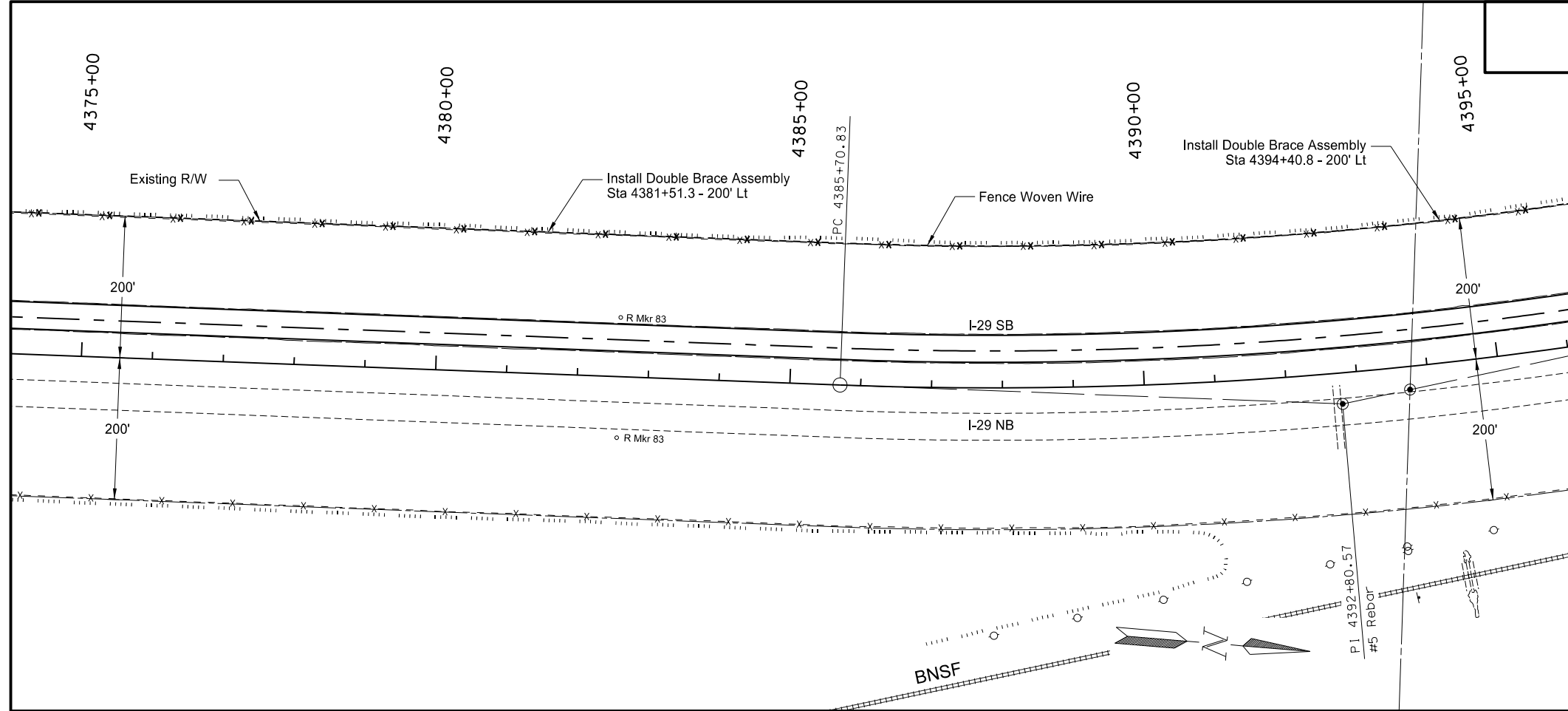
- - X Fence Woven Wire
- Corner Assembly Woven Wire



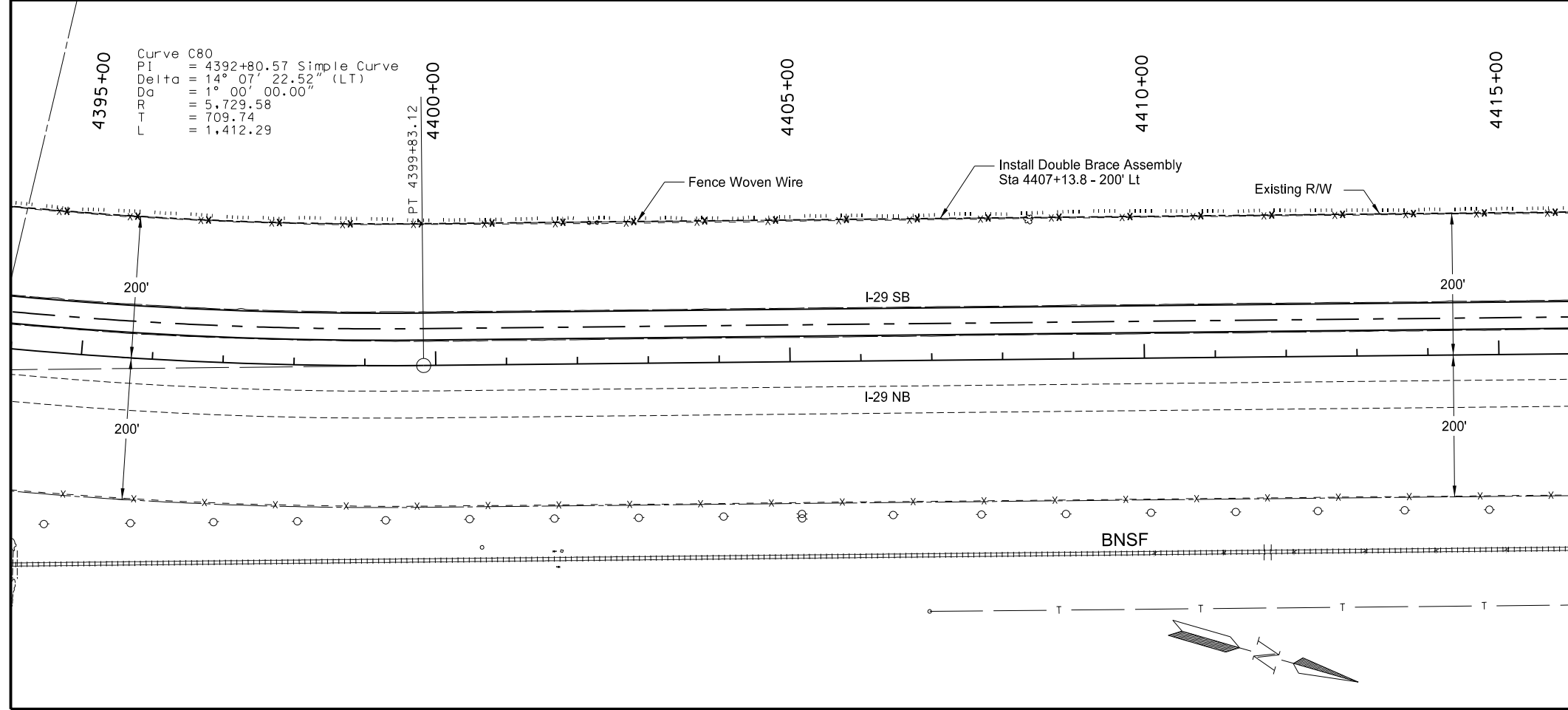
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Fencing Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4335+00 to Sta 4375+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	8



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4375+00.0 Lt to 4415+00.0 Lt	3,950	LF
	Total	3,950	LF
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4381+51.3 Lt	1	Each
	Sta 4394+40.8 Lt	1	Each
	Sta 4407+13.8 Lt	1	Each
	Total	3	Each



Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

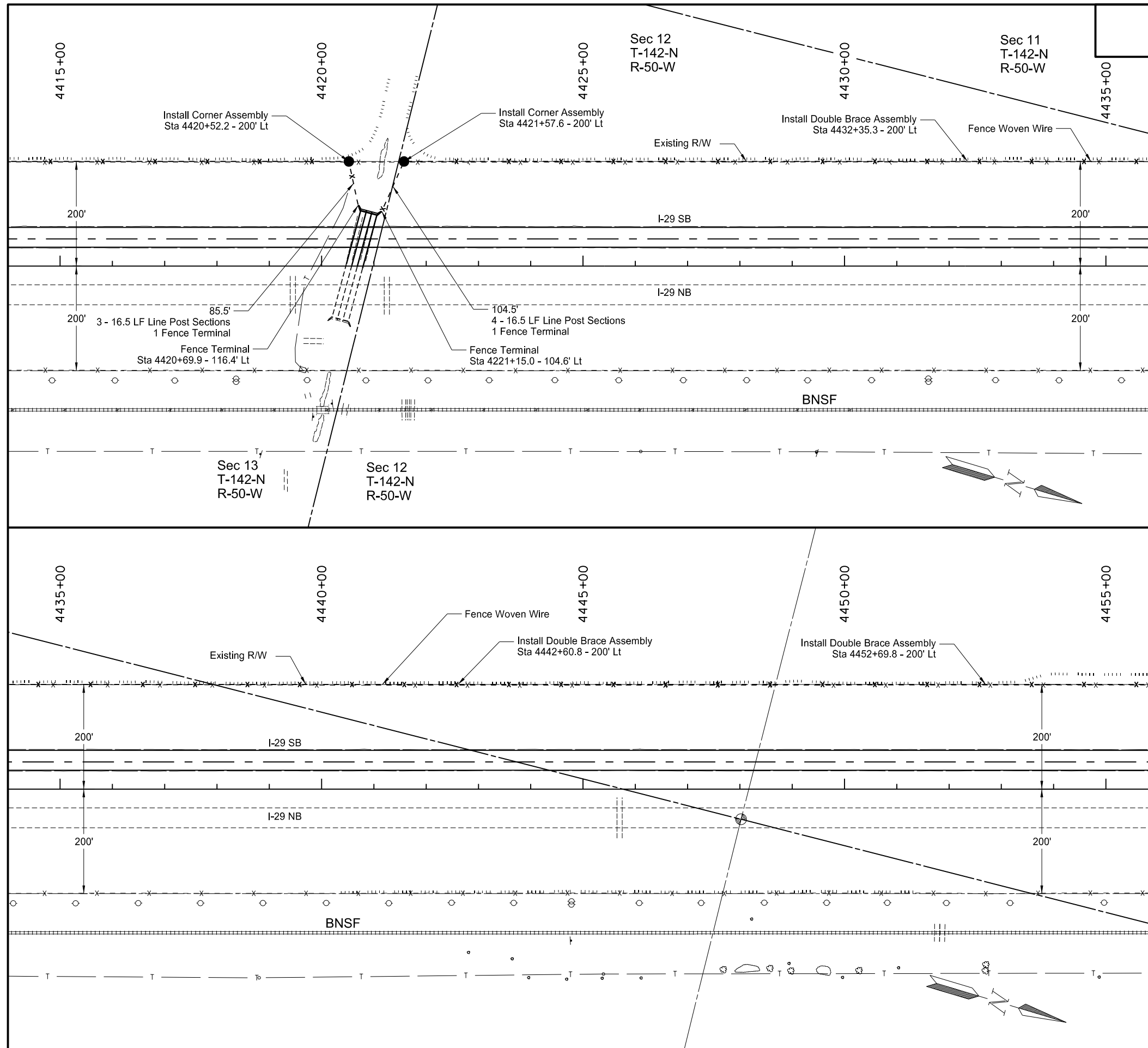
Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

- - X Fence Woven Wire
- Corner Assembly Woven Wire

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Fencing Layout
Interstate 29 - Argusville to Hunter SB
Sta 4375+00 to Sta 4415+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	9



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4415+00.0 Lt to 4420+52.2 Lt	552	LF
	Sta 4420+52.2 Lt to 4420+69.9 Lt	86	LF
	Sta 4421+15.0 Lt to 4421+57.6 Lt	105	LF
	Sta 4421+57.6 Lt to 4455+00.0 Lt	3,342	LF
	Total	4,085	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4420+52.2 Lt	1	Each
	Sta 4421+57.6 Lt	1	Each
	Total	2	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4420+69.9 Lt (Fence Terminal)	1	Each
	Sta 4421+15.0 Lt (Fence Terminal)	1	Each
	Sta 4432+35.3 Lt	1	Each
	Sta 4442+60.8 Lt	1	Each
	Sta 4452+69.8 Lt	1	Each
	Total	5	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

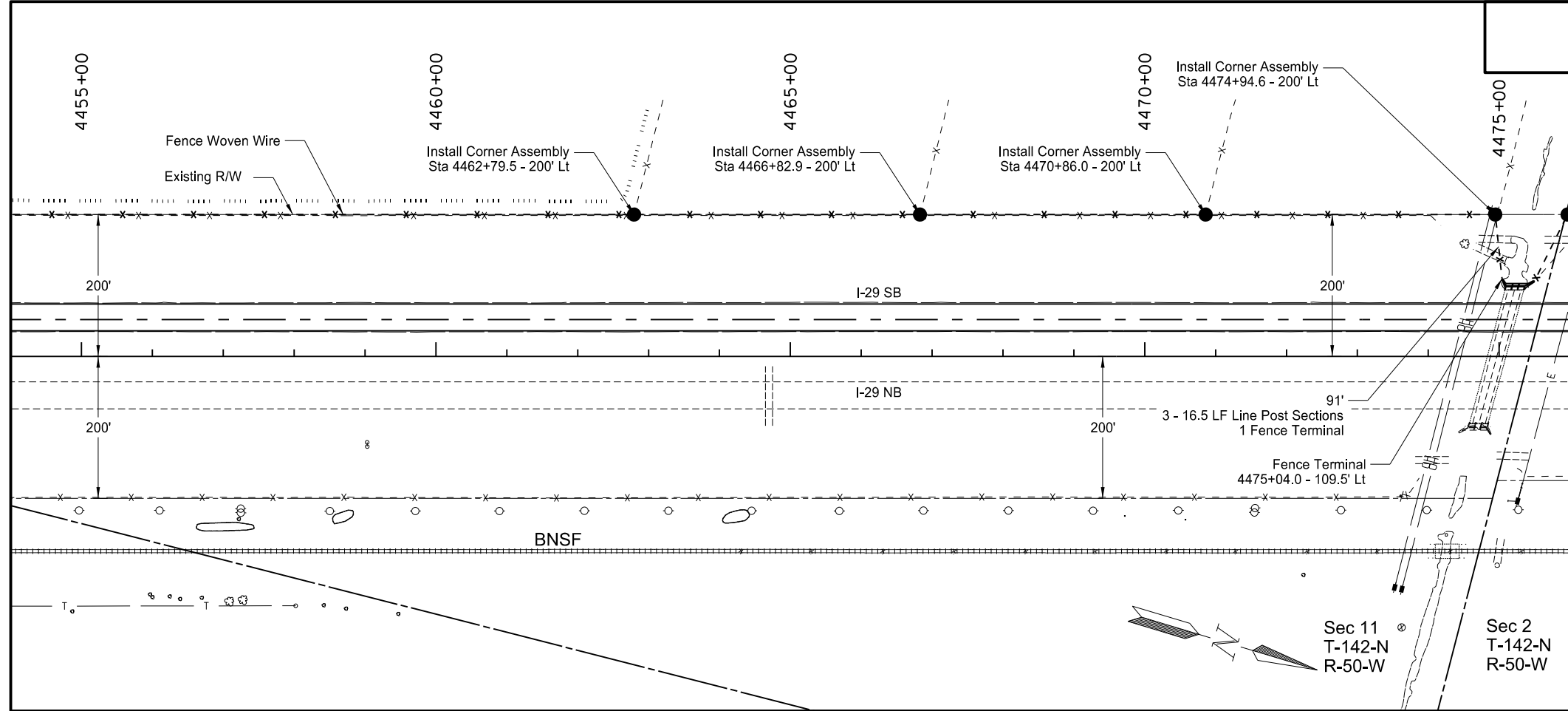
Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

—X Fence Woven Wire
● Corner Assembly Woven Wire

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Fencing Layout
Interstate 29 - Argusville to Hunter SB
Sta 4415+00 to Sta 4455+00



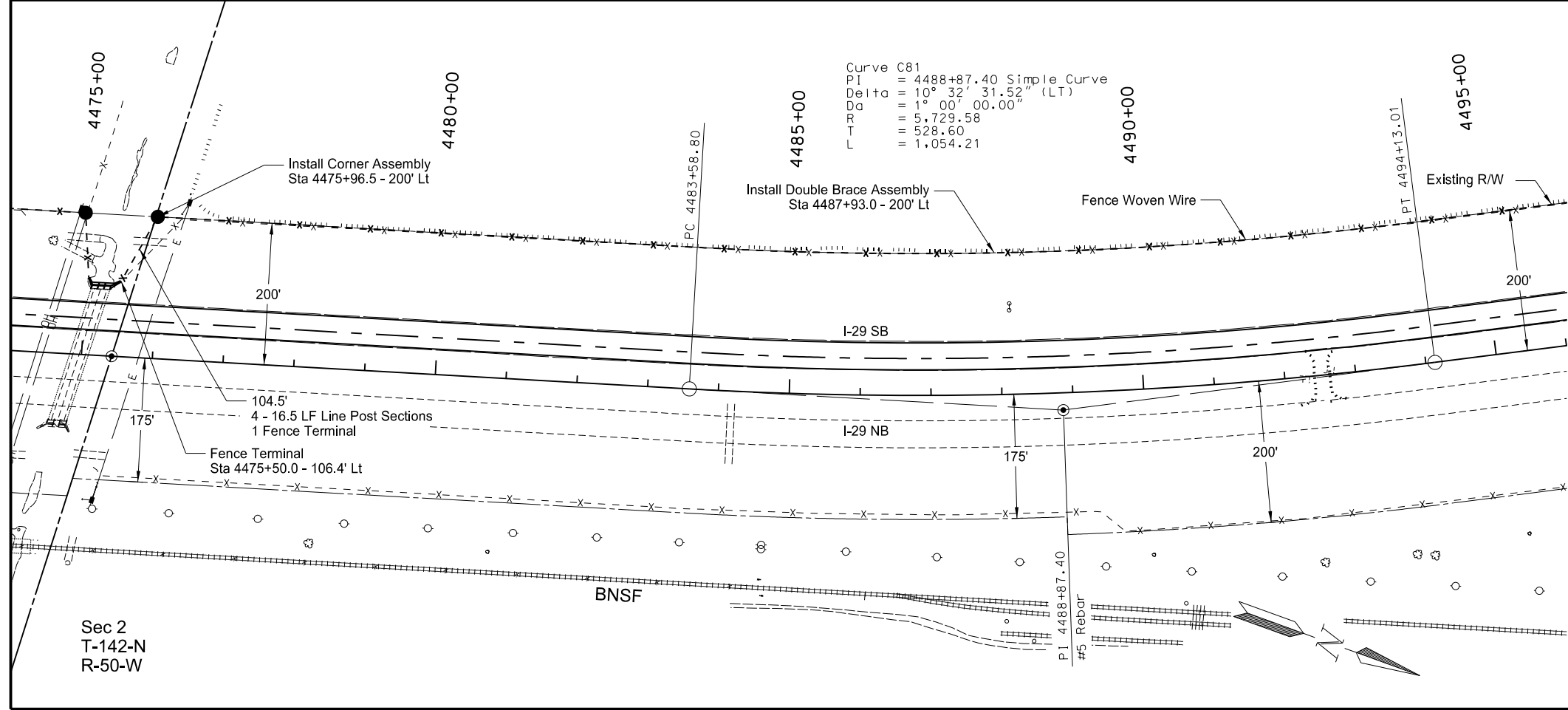
Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4455+00.0 Lt to 4462+79.5 Lt	780	LF
	Sta 4462+79.5 Lt to 4466+82.9 Lt	403	LF
	Sta 4466+82.9 Lt to 4470+86.0 Lt	403	LF
	Sta 4470+86.0 Lt to 4474+94.6 Lt	409	LF
	Sta 4474+94.6 Lt to 4475+04.0 Lt	91	LF
	Sta 4475+04.0 Lt to 4475+96.5 Lt	105	LF
Total		1,867	LF
		4,058	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4462+79.5 Lt	1	Each
	Sta 4466+82.9 Lt	1	Each
	Sta 4470+86.0 Lt	1	Each
	Sta 4474+94.6 Lt	1	Each
Total		5	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4475+04.0 Lt (Fence Terminal)	1	Each
	Sta 4475+50.0 Lt (Fence Terminal)	1	Each
	Sta 4487+93.0 Lt	1	Each
Total		3	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

- - X Fence Woven Wire
- Corner Assembly Woven Wire

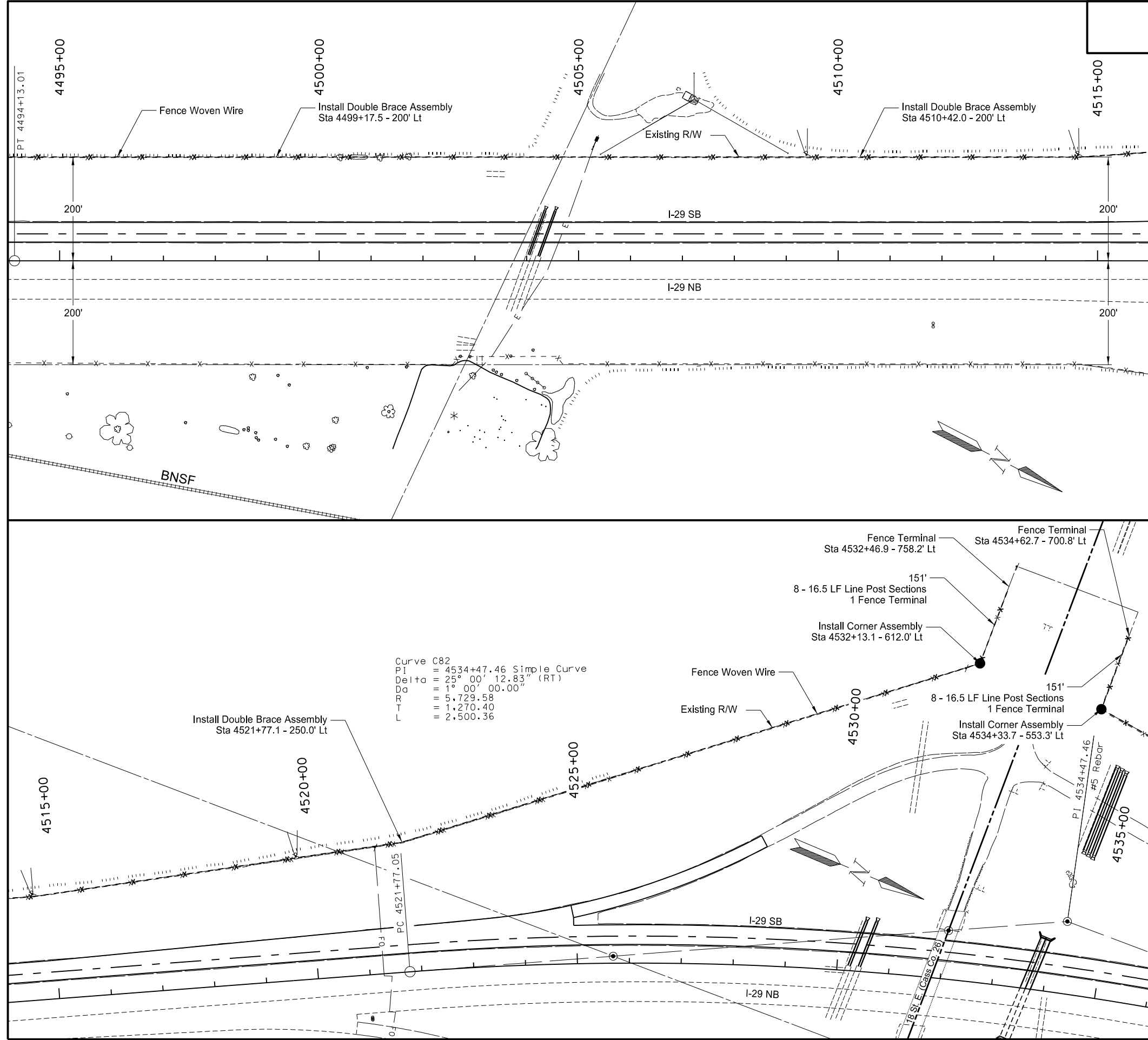


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Fencing Layout

Interstate 29 - Argusville to Hunter SB
Sta 4455+00 to Sta 4495+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	11



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4495+00.0 Lt to 4532+13.1 Lt	3,848	LF
	Sta 4532+13.1 Lt to 4532+46.9 Lt	151	LF
	Sta 4534+33.7 Lt to 4534+62.7 Lt	151	LF
	Sta 4534+33.7 Lt to 4535+00.0 Lt	78	LF
Total		4,228	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4532+13.1 Lt	1	Each
	Sta 4534+33.7 Lt	1	Each
Total		2	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4499+17.5 Lt	1	Each
	Sta 4510+42.0 Lt	1	Each
	Sta 4521+77.1 Lt	1	Each
	Sta 4532+46.9 Lt (Fence Terminal)	1	Each
	Sta 4534+62.7 Lt (Fence Terminal)	1	Each
Total		5	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

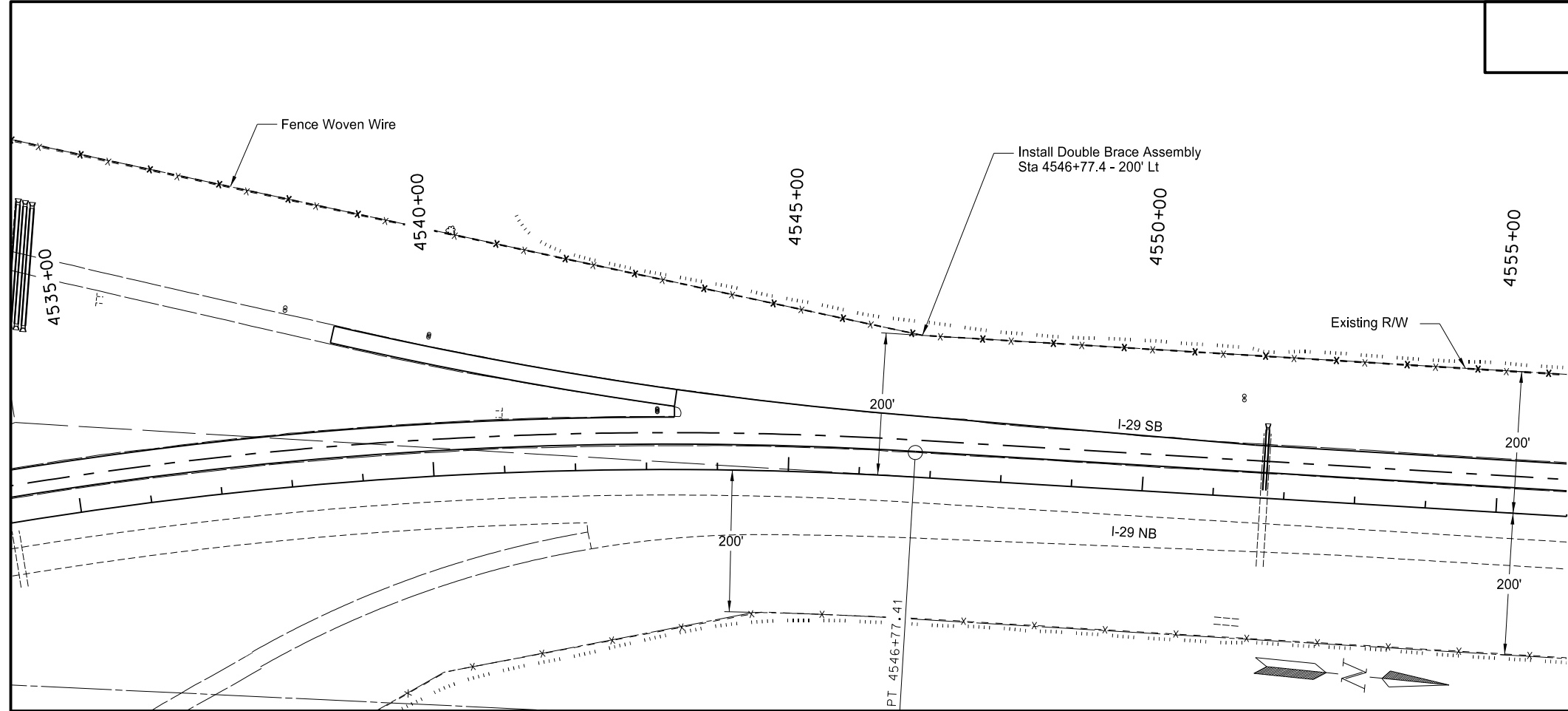
Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

- - X Fence Woven Wire
- Corner Assembly Woven Wire

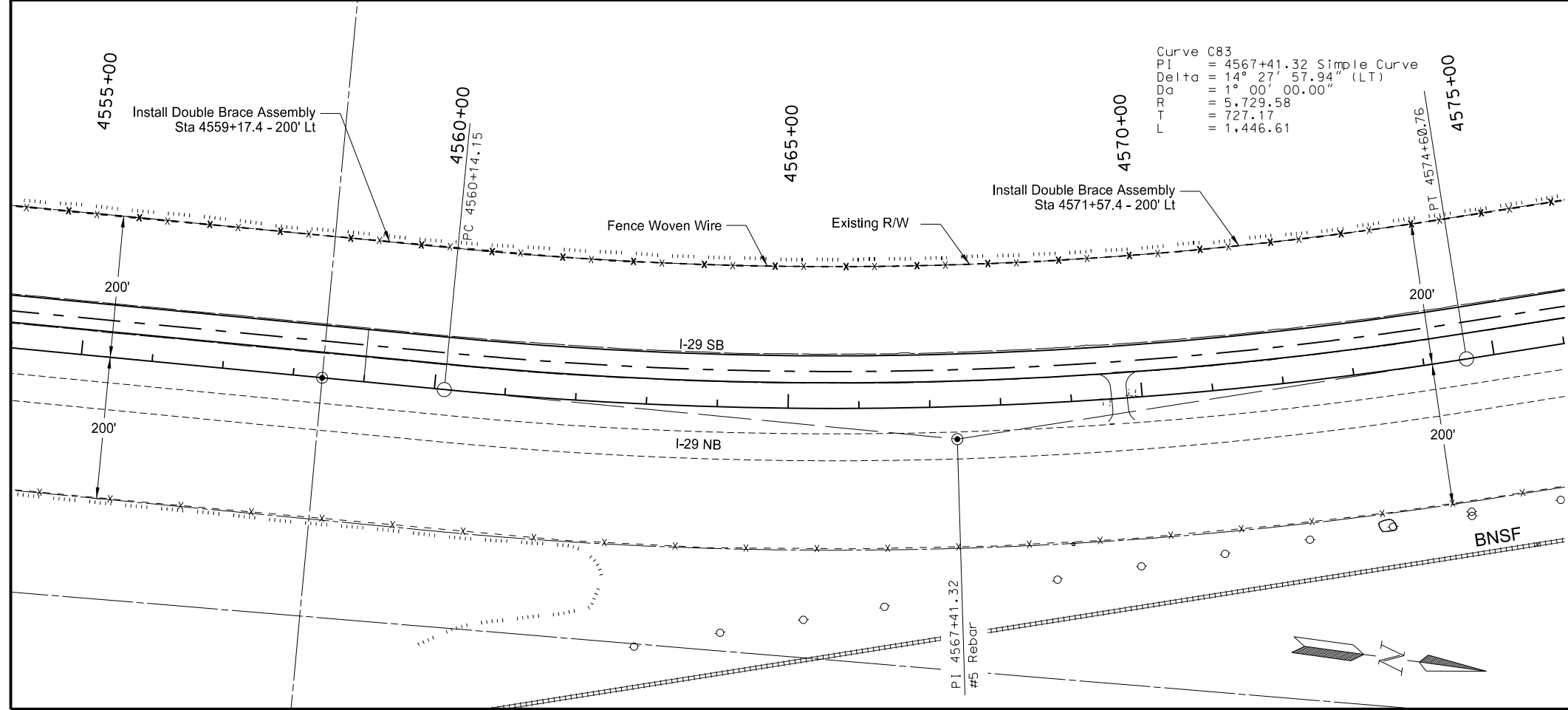
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Fencing Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4495+00 to Sta 4535+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	12



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4535+00.0 Lt to 4575+00.0 Lt	4,063	LF
	Total	4,063	LF
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4546+77.4 Lt	1	Each
	Sta 4559+17.4 Lt	1	Each
	Sta 4571+57.4 Lt	1	Each
	Total	3	Each



Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

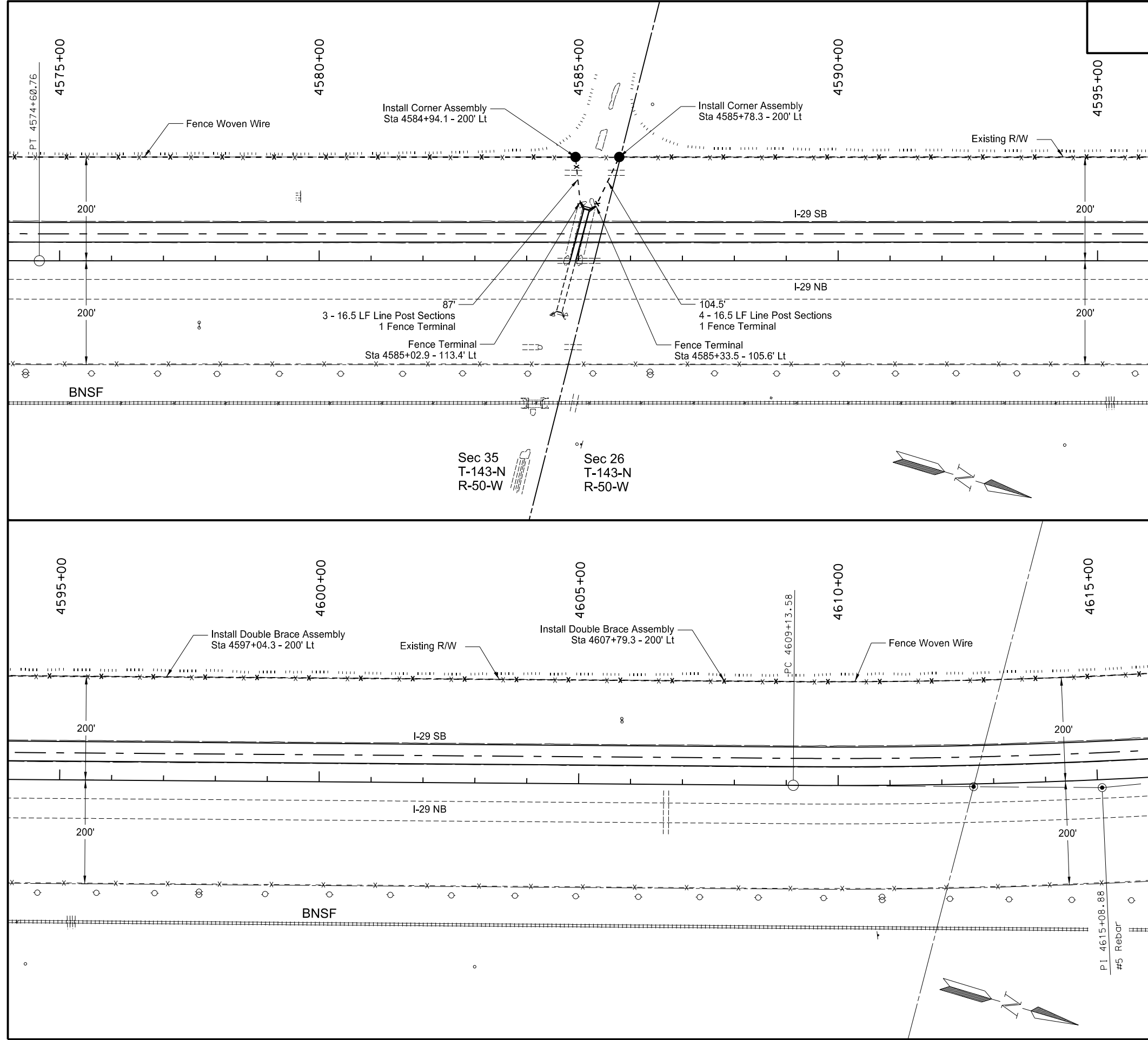
- - X Fence Woven Wire
- Corner Assembly Woven Wire

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Fencing Layout

Interstate 29 - Argusville to Hunter SB
Sta 4535+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	13



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4575+00.0 Lt to 4584+94.1 Lt	994	LF
	Sta 4584+94.1 Lt to 4585+02.9 Lt	87	LF
	Sta 4585+33.5 Lt to 4585+78.3 Lt	105	LF
	Sta 4585+78.3 Lt to 4615+00.0 Lt	2,922	LF
	Total	4,108	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4584+94.1 Lt	1	Each
	Sta 4585+78.3 Lt	1	Each
	Total	2	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4585+02.9 Lt (Fence Terminal)	1	Each
	Sta 4585+33.5 Lt (Fence Terminal)	1	Each
	Sta 4597+04.3 Lt	1	Each
	Sta 4607+79.3 Lt	1	Each
	Total	4	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

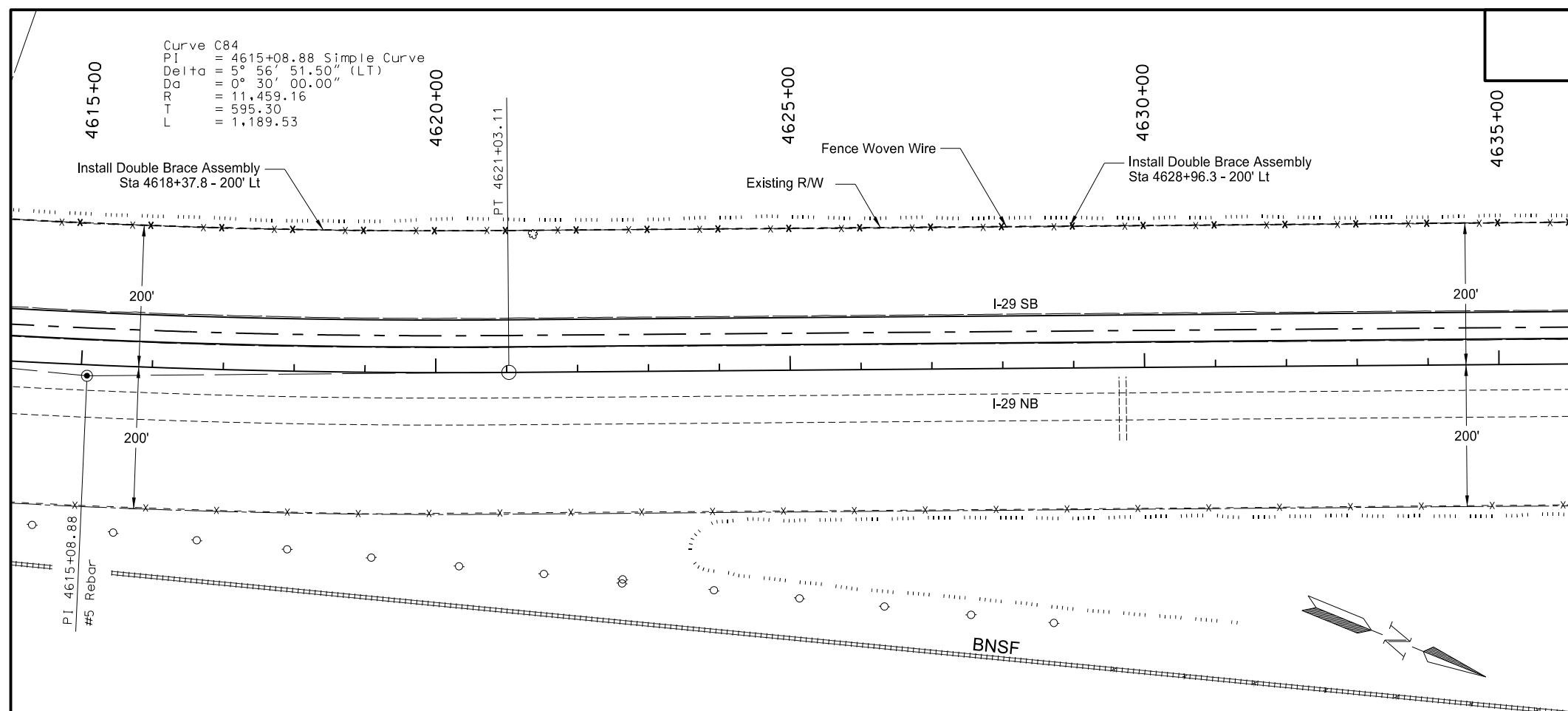
- - X Fence Woven Wire
- Corner Assembly Woven Wire

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Fencing Layout

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4615+00

Curve C84
 PI = 4615+08.88 Simple Curve
 Delta = 5° 56' 51.50" (LT)
 Da = 0° 30' 00.00"
 R = 11,459.16
 T = 595.30
 L = 1,189.53



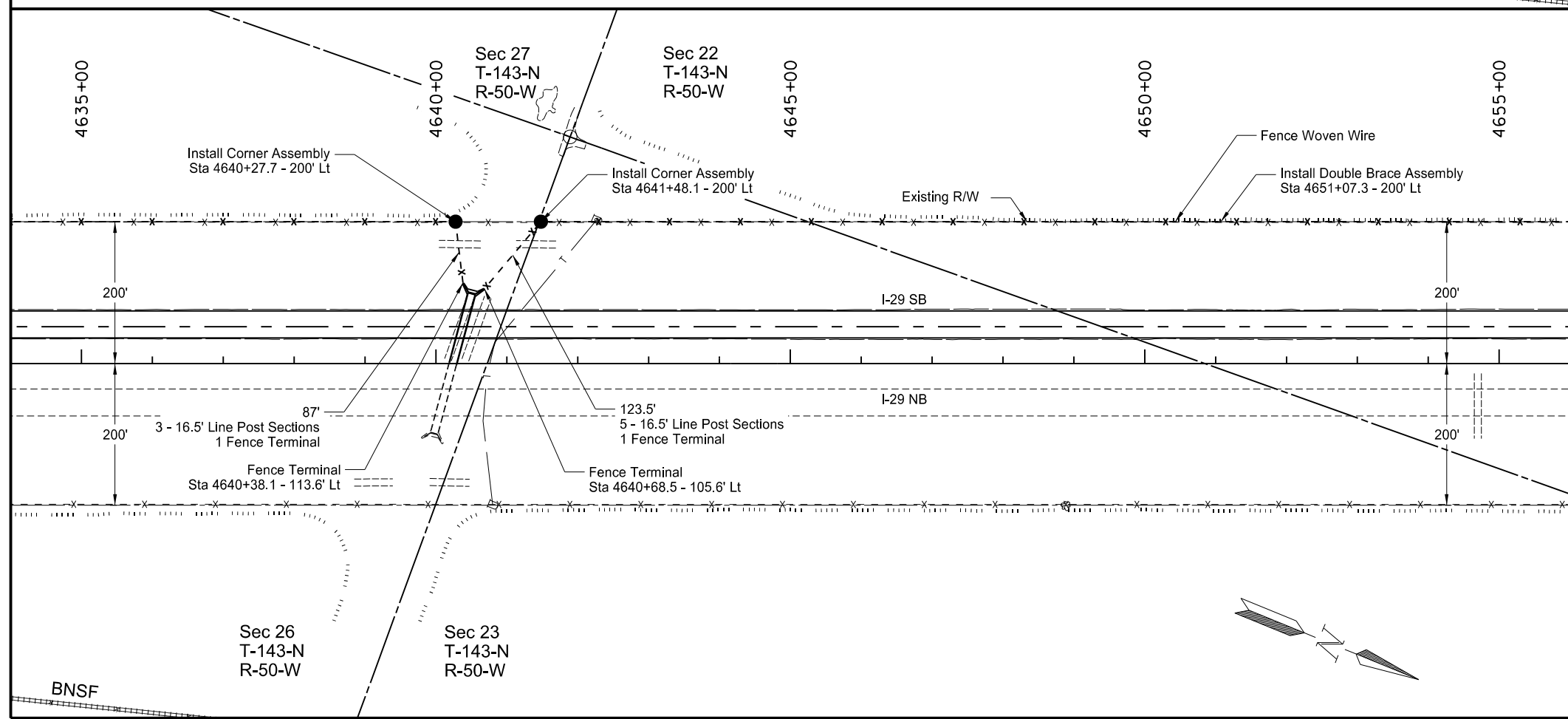
Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4615+00.0 Lt to 4640+27.7 Lt	2,517	LF
	Sta 4640+27.7 Lt to 4640+38.1 Lt	87	LF
	Sta 4640+68.5 Lt to 4641+48.1 Lt	124	LF
	Sta 4641+48.1 Lt to 4655+00.0 Lt	1,352	LF
	Total	4,080	LF
752-3120	CORNER ASSEMBLY WOVEN WIRE		
	Sta 4640+27.7 Lt	1	Each
	Sta 4641+48.1 Lt	1	Each
	Total	2	Each
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4618+37.8 Lt	1	Each
	Sta 4628+96.3 Lt	1	Each
	Sta 4640+38.1 Lt (Fence Terminal)	1	Each
	Sta 4640+68.5 Lt (Fence Terminal)	1	Each
	Sta 4651+07.3 Lt	1	Each
	Total	5	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

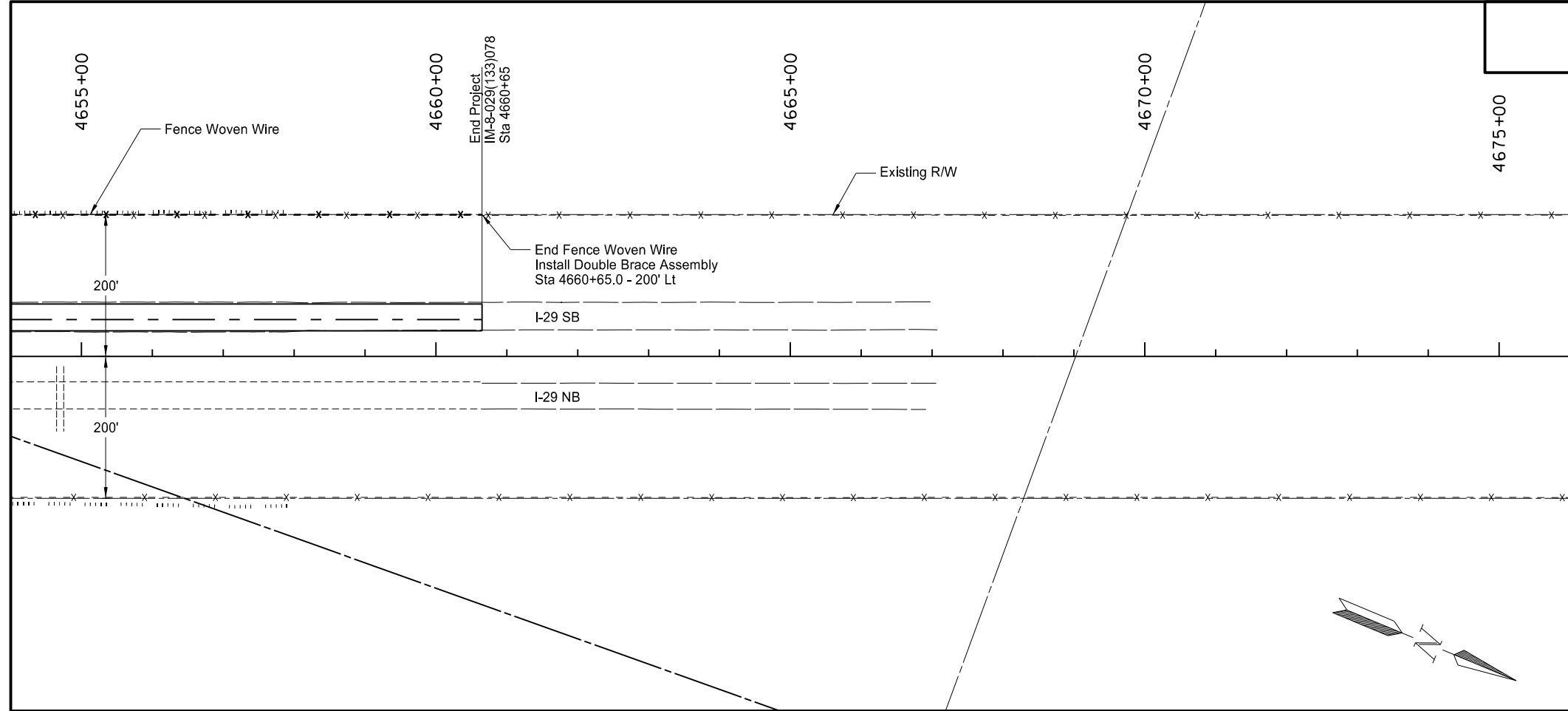
- - X Fence Woven Wire
- Corner Assembly Woven Wire



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Fencing Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4615+00 to Sta 4655+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	80	15



Item	Description	Quantity	Unit
752-0700	FENCE WOVEN WIRE		
	Sta 4655+00.0 Lt to 4660+65.0 Lt	565	LF
	Total	565	LF
752-4120	DOUBLE BRACE ASSEMBLY WOVEN WIRE		
	Sta 4660+65.0 Lt	1	Each
	Total	1	Each

Note: Double brace and corner assemblies may be adjusted at the Engineer's discretion.

Station and offset for double brace and corner assemblies are given at the 2 1/2" x 2 1/2" x 1/4" post.

Fence terminals shall be paid for as "Double Brace Assembly Woven Wire". Station and offset for fence terminals are given at the end of the fence terminal.

—X Fence Woven Wire
● Corner Assembly Woven Wire

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Fencing Layout

Interstate 29 - Argusville to Hunter SB
Sta 4655+00 to sta 4660+65

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - INTERSTATE 29 ARGUSVILLE TO HUNTER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	81	1

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS							
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET		
										CONTROL POINT DESCRIPTION							
SCL29 - INTERSTATE 29				C77		C78		NE Sec Cor Sec 22 T-143-N R-50-W		577084.79	2842371.35						
Begin	4176+22.16	527443.21	2855140.27	PI STA = 4232+36.99		PI STA = 4309+98.73		N 1/4 Cor Sec 22 T-143-N R-50-W		576963.24	2839723.90						
Sec Cor	4201+86.43	530005.18	2855031.62	Delta = 14°25'15.51" LT		Delta = 13°03'38.48" LT		NW Sec Cor Sec 22 T-143-N R-50-W		576841.68	2837076.46	Primary Control					
PC	4225+12.11	532328.99	2854938.41	Da = 1°00'00"		Da = 1°00'00"		SW Sec Cor Sec 22 T-143-N R-50-W		571547.79	2837361.94	GPS1	535224.01	2854876.59	887.34	4253+18	593 Rt
1/4 Sec Line Xing	4228+38.34	532654.41	2854916.06	R = 5,729.58'		R = 5,729.58'		S 1/4 Cor Sec 22 T-143-N R-50-W		571662.91	2840007.03	#6 Rebar w/ Alum Cap					
PI	4232+36.99	533053.29	2854909.35	T = 724.88'		T = 655.88'		E 1/4 Cor Sec 22 T-143-N R-50-W		574431.41	2842511.73	GPS2	556716.44	2848590.27	890.30	4478+78	756 Rt
PT	4239+54.21	533747.53	2854700.83	L = 1,442.10'		L = 1,306.07'		N 1/4 Cor Sec 26 T-143-N R-50-W		571896.14	2845295.71	#6 Rebar w/ Alum Cap					
Sec Line Xing	4255+52.28	535278.34	2854241.04					E 1/4 Cor Sec 26 T-143-N R-50-W		569371.41	2848084.49	GPS3	577108.57	2841783.07	893.80	4697+09	664 Rt
1/4 Sec Line Xing	4282+78.92	537889.44	2853456.78					NE Sec Cor Sec 23 T-143-N R-50-W		577333.92	2847655.06	#6 Rebar w/ Alum Cap					
PC	4303+42.85	539866.14	2852863.06	C79		C80		N 1/4 Cor Sec 23 T-143-N R-50-W		577209.36	2845013.20	GPS*29-7A	524663.72	2855691.31	904.73	NA	NA
PI	4309+98.73	540494.29	2852674.39	PI STA = 4232+36.99		PI STA = 4392+80.57		E 1/4 Cor Sec 23 T-143-N R-50-W		574674.08	2847797.18	#6 Rebar w/ Alum Cap					
PT	4316+48.92	541063.56	2852348.65	Delta = 14°25'15.51" LT		Delta = 14°07'22.52" LT		E 1/4 Cor Sec 35 T-143-N R-50-W		564079.37	2848373.45	GPS*29-8	535178.06	2854449.88	886.41	4253+96	171 Rt
1/4 Sec Line Xing	4325+20.95	541820.44	2851915.56	Da = 1°00'00"		Da = 1°00'00"		S 1/4 Cor Sec 26 T-143-N R-50-W		566608.32	2845587.90	#6 Rebar w/ Alum Cap					
PC	4339+38.47	543050.77	2851211.55	R = 5,729.58'		R = 5,729.58'		W 1/4 Cor Sec 26 T-143-N R-50-W		569133.36	2842804.78	Secondary Control					
1/4 Sec Line Xing	4339+80.05	543086.86	2851190.89	T = 724.88'		T = 709.74'		W 1/4 Cor Sec 35 T-143-N R-50-W		563856.82	2843081.15	RTK10	529939.62	2855229.14	886.81	4201+13	195 Rt
PI	4353+23.66	544253.05	2850523.59	L = 1,442.10'		L = 1,412.29'		N 1/4 Cor Sec 2 T-142-N R-50-W		561328.40	2845866.67	RTK11	531490.79	2855166.80	882.21	4216+65	195 Rt
PT	4366+56.69	545636.82	2850460.84					E 1/4 Cor Sec 13 T-142-N R-50-W		548546.13	2854308.02	RTK12	533011.39	2855066.74	882.06	4231+68	194 Rt
Sec Line Xing	4367+27.89	545707.95	2850457.61					N 1/4 Cor Sec 13 T-142-N R-50-W		551062.78	2851561.74	RTK13	534386.30	2854685.83	884.47	4245+70	169 Rt
PC	4385+70.83	547548.99	2850374.12	C81		C82		N 1/4 Cor Sec 12 T-142-N R-50-W		556340.23	2851349.07	RTK14	535765.16	2854297.63	884.89	4260+03	194 Rt
PI	4392+80.57	548258.01	2850341.97	PI STA = 4488+87.40		PI STA = 4534+47.46		E 1/4 Cor Sec 11 T-142-N R-50-W		553569.64	2848806.68	RTK15	537171.81	2853875.00	885.65	4274+71	194 Rt
1/4 Sec Line Xing	4393+72.82	548351.03	2850314.03	Delta = 10°32'31.52" LT		Delta = 25°00'12.83" RT		S 1/4 Cor Sec 2 T-142-N R-50-W		556103.04	2846057.60	RTK16	538471.00	2853484.90	886.62	4288+28	194 Rt
PT	4399+83.12	548937.74	2850137.79	Da = 1°00'00"		Da = 1°00'00"		W 1/4 Cor Sec 2 T-142-N R-50-W		558667.69	2843315.48	RTK17	539760.17	2853098.35	886.77	4301+74	195 Rt
Sec Line Xing	4420+97.92	550963.14	2849529.40	R = 5,729.58'		R = 5,729.58'		W 1/4 Cor Sec 22 T-143-N R-50-W		574199.04	2837216.27	RTK18	541054.60	2852576.72	884.85	4315+32	195 Rt
Sec Line Xing	4445+76.11	553336.56	2848816.46	T = 528.60'		T = 1,270.40'		NE Sec Cor Sec 27 T-143-N R-50-W		571778.03	2842652.12	RTK19	542234.24	2851903.01	886.34	4328+86	195 Rt
1/4 Sec Line Xing	4448+16.93	553567.20	2848747.18	L = 1,054.21'		L = 2,500.36'		NE Sec Cor Sec 26 T-143-N R-50-W		572014.25	2847939.30	RTK20	543441.89	2851223.51	885.61	4342+84	195 Rt
Sec Line Xing	4475+42.45	556177.50	2847963.09					NE Sec Cor Sec 35 T-143-N R-50-W		566728.57	2848229.67	RTK21	544810.74	2850757.07	887.14	4357+85	195 Rt
PC	4483+58.80	556959.35	2847728.23					NE Sec Cor Sec 2 T-142-N R-50-W		561430.18	2848517.23	RTK22	545902.86	2850644.04	886.29	4369+14	195 Rt
PI	4488+87.40	557465.60	2847576.16	C83		C84		NW Sec Cor Sec 2 T-142-N R-50-W		561225.58	2843216.16	RTK23	547228.12	2850583.36	885.73	4382+41	194 Rt
PT	4494+13.01	557935.48	2847334.04	PI STA = 4567+41.32		PI STA = 4615+08.88		NW Sec Cor Sec 35 T-143-N R-50-W		566488.06	2842946.14	RTK24	548581.10	2850431.35	885.46	4395+71	194 Rt
1/4 Sec Line Xing	4503+74.86	558790.49	2846893.46	Delta = 14°27'57.94" LT		Delta = 5°56'51.50" LT		SW Sec Cor Sec 2 T-142-N R-50-W		555999.93	2843419.07	All coordinates and measurements on this document derived from the International Foot definition. INITIALIZING BENCH MARK <input checked="" type="checkbox"/> NAVD-88 <input type="checkbox"/> NGVD-29 <input checked="" type="checkbox"/> GEOID 09 <input type="checkbox"/> _____ <input type="checkbox"/> GEOID 12A					
PC	4521+77.05	560392.51	2846067.96	Da = 1°00'00"		Da = 0°30'00"		SE Sec Cor Sec 2 T-142-N R-50-W		556206.15	2848696.12						
1/4 Sec Line Xing	4525+69.08	560741.53	2845888.12	R = 5,729.58'		R = 11,456.16'		W 1/4 Cor Sec 11 T-142-N R-50-W		553353.52	2843515.41						
Sec Line Xing	4532+06.65	561317.72	2845591.22	T = 727.17'		T = 595.30'		<input type="checkbox"/> Assumed Coordinates									
PI	4534+47.46	561521.80	2845486.05	L = 1,446.61'		L = 1,189.53'		<input checked="" type="checkbox"/> All coordinates on this sheet are Cass County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(OPUS), South Zone Combination Factor (cf) = 0.9998875									
NOTES:						Date Survey Completed 06/10/11						This document was originally issued and sealed by Curtis A. Skarphol, Registration Number LS- 4723 , on 07/29/15 and the original document is stored at the North Dakota Department of Transportation					

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - INTERSTATE 29 ARGUSVILLE TO HUNTER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	81	2

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS					
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
SCL29 - INTERSTATE 29				SCS85						CONTROL POINT DESCRIPTION					
PT	4546+77.41	562791.22	2845436.00	PI STA = 4688+15.68		S 1/4 Cor	Sec 11 T-142-N R-50-W	550706.98	2843611.56	Secondary Control Continued					
1/4 Sec Line Xing	4558+41.01	563953.92	2845390.16	Delta = 19°52'53.46" RT		SE Sec Cor	Sec 11 T-142-N R-50-W	550933.12	2848917.24	RTK25	549936.22	2850041.21	886.36	4409+67	195 Rt
PC	4560+14.15	564126.92	2845383.34	Da = 1°30'00"		W 1/4 Cor	Sec 13 T-142-N R-50-W	548287.57	2849015.03	RTK26	551293.61	2849634.08	887.59	4423+84	195 Rt
PI	4567+41.32	564853.53	2845354.69	R = 3,819.72'		SW Sec Cor	Sec 13 T-142-N R-50-W	545641.88	2849112.88	RTK27	552680.13	2849216.74	887.66	4438+32	195 Rt
PT	4574+60.76	565549.94	2845145.44	Ls = 260.00'		NE Sec Cor	Sec 24 T-142-N R-50-W	545899.82	2854409.81	RTK28	554103.06	2848790.15	890.26	4453+18	195 Rt
Sec Line Xing	4585+30.21	566574.17	2844837.72	Sc = 1°57'00.00"		N 1/4 Cor	Sec 24 T-142-N R-50-W	545771.98	2851760.78	RTK29	555480.54	2848375.42	887.87	4467+56	194 Rt
PC	4609+13.58	568856.72	2844151.84	Ts = 799.57'		NE Sec Cor	Sec 13 T-142-N R-50-W	551192.45	2854206.23	RTK30	556844.82	2847935.54	886.47	4481+89	166 Rt
1/4 Sec Line Xing	4612+61.02	569189.59	2844051.92	L = 1,065.43'		NE Sec Cor	Sec 12 T-142-N R-50-W	556474.31	2854002.02	RTK31	558226.38	2847403.40	884.66	4496+40	195 Rt
PI	4615+08.88	569426.84	2843980.54			E 1/4 Cor	Sec 12 T-142-N R-50-W	553833.54	2854104.08	RTK32	559606.87	2846691.45	886.90	4511+93	194 Rt
PT	4621+03.11	569976.14	2843751.08			E 1/4 Cor	Sec 2 T-142-N R-50-W	558849.17	2848603.34	RTK33	560983.27	2846333.28	887.29	4526+19	491 Rt
Sec Line Xing	4640+72.33	571793.21	2842992.10			E 1/4 Cor	Sec 24 T-142-N R-50-W	543246.31	2854514.52	RTK34	562170.49	2845768.28	887.29	4526+19	271 Rt
Sec Line Xing	4650+84.66	572727.31	2842601.89			W 1/4 Cor	Sec 24 T-142-N R-50-W	542992.09	2849215.30	RTK35	563590.17	2845599.13	887.83	4554+69	194 Rt
1/4 Sec Line Xing	1669+02.44	574404.62	2841901.21			SE Sec Cor	Sec 1 T-141-N R-50-W	524680.23	2855257.45	RTK36	565020.53	2845475.54	886.87	4568+78	194 Rt
TS	4680+16.11	575432.23	2841471.92			NE Sec Cor	Sec 7 T-141-N R-49-W	524808.88	2860420.20	RTK37	566510.46	2845060.00	891.82	4584+05	195 Rt
SC	4682+76.11	575673.24	2841374.44			N 1/4 Cor	Sec 7 T-141-N R-49-W	524743.48	2857766.94	RTK38	567832.86	2844662.71	889.72	4597+86	195 Rt
PI	4688+15.68	576170.01	2841163.73			NE Sec Cor	Sec 6 T-141-N R-49-W	530115.70	2860171.39	RTK39	569098.81	2844280.71	890.32	4611+05	195 Rt
CS	4693+41.54	576709.12	2841140.41			E 1/4 Cor	Sec 6 T-141-N R-49-W	527436.09	2860297.01	RTK40	570396.12	2843789.73	891.18	4624+77	195 Rt
ST	4696+01.54	576968.64	2841124.81			SE Sec Cor	Sec 36 T-142-N R-50-W	530005.18	2855031.62	RTK41	571723.08	2843232.25	892.60	4639+15	195 Rt
Sec Line Xing	4696+60.40	577027.43	2841121.94			W 1/4 Cor	Sec 6 T-141-N R-49-W	527326.49	2855145.23	RTK42	572901.53	2842740.19	891.12	4651+92	195 Rt
End	4712+12.74	578577.93	2841046.38			S 1/4 Cor	Sec 1 T-141-N R-50-W	524497.47	2852608.41						
						SW Sec Cor	Sec 1 T-141-N R-50-W	524314.92	2849959.48						
						W 1/4 Cor	Sec 1 T-141-N R-50-W	526943.67	2849854.08						
						NW Sec Cor	Sec 1 T-141-N R-50-W	529765.53	2849740.96						
						N 1/4 Cor	Sec 1 T-141-N R-50-W	529885.27	2852386.28						
						W 1/4 Cor	Sec 36 T-142-N R-50-W	532412.03	2849629.51						
						NE Sec Cor	Sec 36 T-142-N R-50-W	535304.49	2854819.05						
						NE Sec Cor	Sec 31 T-142-N R-49-W	535430.87	2859994.71						
						NE Sec Cor	Sec 25 T-142-N R-50-W	540592.80	2854619.23						
						E 1/4 Cor	Sec 25 T-142-N R-50-W	537948.53	2854718.98						
						W 1/4 Cor	Sec 25 T-142-N R-50-W	537700.86	2849428.15						
						NW Sec Cor	Sec 25 T-142-N R-50-W	540342.30	2849317.72						
						<input type="checkbox"/> Assumed Coordinates				All coordinates and measurements on this document derived from the International Foot definition.					
						<input checked="" type="checkbox"/> All coordinates on this sheet are Cass County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(OPUS), South Zone Combination Factor (cf) = 0.9998875									
NOTES:				Date Survey Completed 06/10/11						INITIALIZING BENCH MARK <input checked="" type="checkbox"/> NAVD-88 <input type="checkbox"/> NGVD-29 <input checked="" type="checkbox"/> GEOID 09 <input type="checkbox"/> _____ <input type="checkbox"/> GEOID 12A					

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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - INTERSTATE 29 ARGUSVILLE TO HUNTER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	81	3

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS					
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
EX 18SE				C8002		NW Sec Cor	Sec 36 T-142-N R-50-W	535058.70	2849517.81	CONTROL POINT DESCRIPTION					
Begin	0+00.00	559522.10	2846588.47	PI STA = 9+80.60		N 1/4 Cor	Sec 6 T-141-N R-49-W	530058.86	2857528.15						
PC	6+60.46	560116.58	2846300.71	Delta = 25°11'48.82" RT		W 1/4 Cor	Sec 31 T-142-N R-49-W	532654.83	2854925.34						
PI	9+80.60	560404.74	2846161.23	Da = 4°00'00"		E 1/4 Cor	Sec 31 T-142-N R-49-W	532773.29	2860083.05	REFERENCE MARKERS					
PT	12+90.39	560724.85	2846157.69	R = 1,432.39'		N 1/4 Cor	Sec 31 T-142-N R-49-W	535366.13	2857343.59	R Mkr #	NORTHING	EASTING		STATION	OFFSET
End	19+04.89	561339.32	2846150.91	T = 320.14'		N 1/4 Cor	Sec 25 T-142-N R-50-W	540458.56	2851968.90	RM*80NB	532242.40	2855028.49		4224+22	87 Rt
				L = 629.92'		N 1/4 Cor	Sec 36 T-142-N R-50-W	535184.59	2852168.29	RM*80SB	532236.29	2854858.65		4224+23	83 Lt
EX 18NE				C8005		C8006									
Begin	0+00.00	561339.32	2846150.91	PI STA = 2+47.60		PI STA = 10+56.78									
PC	1+66.42	561485.07	2846070.59	Delta = 6°29'16.00" LT		Delta = 29°56'33.72" RT									
PI	2+47.60	561556.17	2846031.41	Da = 4°00'00"		Da = 4°00'00"									
PT	3+28.61	561622.39	2845984.44	R = 1,432.39'		R = 1,432.39'									
PC	6+73.74	561903.90	2845784.78	T = 81.18'		T = 383.04'									
PI	10+56.78	562216.34	2845563.18	L = 162.19'		L = 748.57'									
PT	14+22.31	562597.67	2845527.11	C8007											
PC	14+25.64	562600.99	2845526.79	PI STA = 15+25.65											
PI	15+25.65	562700.56	2845517.38	Delta = 2°00'00.00" RT											
PT	16+25.64	562800.39	2845511.44	Da = 1°00'00"											
End	22+12.73	563386.45	2845476.58	R = 5,729.58'											
				T = 100.01'											
				L = 200.00'											
EX 18SW				C8010		C8011									
Begin	0+00.00	559574.93	2846417.25	PI STA = 13+24.18		PI STA = 19+10.40									
PC	10+39.83	560489.55	2845922.57	Delta = 22°27'22.97" LT		Delta = 23°38'31.00" RT									
PI	13+24.18	560739.67	2845787.29	Da = 4°00'00"		Da = 15°00'00"									
PT	16+01.24	560919.14	2845566.74	R = 1,432.39'		R = 381.97'									
PC	18+30.45	561063.82	2845388.94	T = 284.35'		T = 79.94'									
PI	19+10.40	561114.27	2845326.93	L = 561.41'		L = 157.61'									
PT	19+88.07	561185.36	2845290.36	C8007											
End	21+21.12	561303.68	2845229.50	PI STA = 15+25.65											
				Delta = 2°00'00.00" RT											
				Da = 1°00'00"											
				R = 5,729.58'											
				T = 100.01'											
				L = 200.00'											
NOTES:				Date Survey Completed 06/10/11		<input type="checkbox"/> Assumed Coordinates <input checked="" type="checkbox"/> All coordinates on this sheet are Cass County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(OPUS), South Zone Combination Factor (cf) = 0.9998875				All coordinates and measurements on this document derived from the International Foot definition.			This document was originally issued and sealed by Curtis A. Skarphol, Registration Number LS- 4723 , on 07/29/15 and the original document is stored at the North Dakota Department of Transportation		
						<input type="checkbox"/> NAVD-88 <input type="checkbox"/> NGVD-29				INITIALIZING BENCH MARK					
						<input checked="" type="checkbox"/> GEOID 09 <input type="checkbox"/> GEOID 12A									

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(133)078	82	1

Gardner Interchange - SW Ramp

Chain PR18SW contains:
8520 CUR C8521 CUR C8522 8523

Beginning chain PR18SW description

Point 8520 N 559,574.9322 E 2,846,417.2525 Sta 0+00.00

Course from 8520 to PC C8521 N 28° 24' 26.91" W Dist 1,039.8414

Curve Data

Curve C8521
P.I. Station 13+24.19 N 560,739.6742 E 2,845,787.2825
Delta = 22° 27' 22.15" (LT)
Degree = 4° 00' 00.00"
Tangent = 284.3512
Length = 561.4038
Radius = 1,432.3945
External = 27.9512
Long Chord = 557.8174
Mid. Ord. = 27.4162
P.C. Station 10+39.84 N 560,489.5627 E 2,845,922.5594
P.T. Station 16+01.25 N 560,919.1477 E 2,845,566.7266
C.C. N 559,808.1169 E 2,844,662.6445
Back = N 28° 24' 26.91" W
Ahead = N 50° 51' 49.05" W
Chord Bear = N 39° 38' 07.98" W

Course from PT C8521 to PC C8522 N 50° 51' 49.05" W Dist 229.2084

Curve Data

Curve C8522
P.I. Station 19+10.40 N 561,114.2749 E 2,845,326.9338
Delta = 23° 38' 31.00" (RT)
Degree = 15° 00' 00.00"
Tangent = 79.9440
Length = 157.6130
Radius = 381.9719
External = 8.2762
Long Chord = 156.4972
Mid. Ord. = 8.1007
P.C. Station 18+30.45 N 561,063.8168 E 2,845,388.9420
P.T. Station 19+88.07 N 561,185.3646 E 2,845,290.3647
C.C. N 561,360.0917 E 2,845,630.0306
Back = N 50° 51' 49.05" W
Ahead = N 27° 13' 18.05" W
Chord Bear = N 39° 02' 33.55" W

Course from PT C8522 to 8523 N 27° 13' 18.05" W Dist 133.0560

Point 8523 N 561,303.6838 E 2,845,229.5003 Sta 21+21.12

Ending chain PR18SW description

Gardner Interchange - NW Ramp

Chain PR18NW contains:
8524 CUR C8525 8526

Beginning chain PR18NW description

Point 8524 N 561,303.6838 E 2,845,229.5003 Sta 0+00.00

Course from 8524 to PC C8525 N 7° 12' 41.95" E Dist 656.9094

Curve Data

Curve C8525
P.I. Station 10+60.00 N 562,355.3022 E 2,845,362.5678
Delta = 8° 02' 55.06" (LT)
Degree = 1° 00' 00.00"
Tangent = 403.0945
Length = 804.8628
Radius = 5,729.5780
External = 14.1620
Long Chord = 804.2012
Mid. Ord. = 14.1271
P.C. Station 6+56.91 N 561,955.3965 E 2,845,311.9654
P.T. Station 14+61.77 N 562,758.3537 E 2,845,356.6797
C.C. N 562,674.6590 E 2,839,627.7130
Back = N 7° 12' 41.95" E
Ahead = N 0° 50' 13.12" W
Chord Bear = N 3° 11' 14.42" E

Course from PT C8525 to 8526 N 0° 50' 13.12" W Dist 667.6179

Point 8526 N 563,425.9003 E 2,845,346.9274 Sta 21+29.39

Ending chain PR18NW description

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Survey Data
Gardner Interchange Ramps
Interstate 29 - Argusville to Hunter SB

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(133)078	82	2

Temporary Ramp Connection - Argusville NW Ramp

Chain TEMPCON ARGNW contains:
9000 CUR C9001 CUR C9002 9003

Beginning chain TEMPCON ARGNW description

Point 9000 N 524,686.7672 E 2,855,516.8877 Sta 0+00.00

Course from 9000 to PC C9001 N 5° 52' 08.90" W Dist 1,379.3759

Curve Data

Curve C9001
P.I. Station 14+71.51 N 526,150.5651 E 2,855,366.4157
Delta = 7° 21' 38.56" (LT)
Degree = 4° 00' 00.00"
Tangent = 92.1356
Length = 184.0178
Radius = 1,432.3945
External = 2.9602
Long Chord = 183.8912
Mid. Ord. = 2.9540
P.C. Station 13+79.38 N 526,058.9124 E 2,855,375.8372
P.T. Station 15+63.39 N 526,240.2554 E 2,855,345.3298
C.C. N 525,912.4404 E 2,853,950.9513
Back = N 5° 52' 08.90" W
Ahead = N 13° 13' 47.46" W
Chord Bear = N 9° 32' 58.18" W

Curve Data

Curve C9002
P.I. Station 18+83.75 N 526,552.1076 E 2,855,272.0141
Delta = 6° 24' 01.54" (RT)
Degree = 1° 00' 00.00"
Tangent = 320.3546
Length = 640.0428
Radius = 5,729.5780
External = 8.9489
Long Chord = 639.7101
Mid. Ord. = 8.9350
P.C. Station 15+63.39 N 526,240.2552 E 2,855,345.3298
P.T. Station 22+03.44 N 526,870.1892 E 2,855,233.9195
C.C. N 527,551.5153 E 2,860,922.8436
Back = N 13° 13' 47.46" W
Ahead = N 6° 49' 45.92" W
Chord Bear = N 10° 01' 46.69" W

Point 9003 N 526,870.1892 E 2,855,233.9195 Sta 22+03.44

Ending chain TEMPCON ARGNW description

Temporary Ramp Connection - Gardner SW Ramp

Chain TEMPCON GARDSW contains:
9004 CUR C9005 CUR C9006 9007

Beginning chain TEMPCON GARDSW description

Point 9004 N 559,444.7835 E 2,846,601.3117 Sta 0+00.00

Course from 9004 to PC C9005 N 28° 24' 27.73" W Dist 1,000.0035

Curve Data

Curve C9005
P.I. Station 12+84.35 N 560,574.4795 E 2,845,990.2910
Delta = 22° 27' 21.32" (LT)
Degree = 4° 00' 00.00"
Tangent = 284.3483
Length = 561.3981
Radius = 1,432.3945
External = 27.9506
Long Chord = 557.8118
Mid. Ord. = 27.4157
P.C. Station 10+00.00 N 560,324.3712 E 2,846,125.5676
P.T. Station 15+61.40 N 560,753.9512 E 2,845,769.7375
C.C. N 559,642.9203 E 2,844,865.6554
Back = N 28° 24' 27.73" W
Ahead = N 50° 51' 49.05" W
Chord Bear = N 39° 38' 08.39" W

Course from PT C9005 to PC C9006 N 50° 51' 49.05" W Dist 490.9398

Curve Data

Curve C9006
P.I. Station 21+32.29 N 561,114.2749 E 2,845,326.9338
Delta = 23° 38' 31.00" (RT)
Degree = 14° 59' 59.99"
Tangent = 79.9440
Length = 157.6130
Radius = 381.9719
External = 8.2762
Long Chord = 156.4972
Mid. Ord. = 8.1007
P.C. Station 20+52.34 N 561,063.8168 E 2,845,388.9421
P.T. Station 22+09.95 N 561,185.3646 E 2,845,290.3647
C.C. N 561,360.0917 E 2,845,630.0306
Back = N 50° 51' 49.05" W
Ahead = N 27° 13' 18.05" W
Chord Bear = N 39° 02' 33.55" W

Course from PT C9006 to 9007 N 27° 13' 18.05" W Dist 133.0560

Point 9007 N 561,303.6838 E 2,845,229.5003 Sta 23+43.01

Ending chain TEMPCON GARDSW description

Temporary Ramp Connection - Gardner NW Ramp

Chain TEMPCON GARDNW contains:
9008 CUR C9009 9010

Beginning chain TEMPCON GARDNW description

Point 9008 N 561,303.6838 E 2,845,229.5003 Sta 0+00.00

Course from 9008 to PC C9009 N 7° 12' 41.95" E Dist 1,640.3138

Curve Data

Curve C9009
P.I. Station 17+40.94 N 563,030.8477 E 2,845,448.0487
Delta = 8° 02' 11.68" (LT)
Degree = 4° 00' 00.00"
Tangent = 100.6223
Length = 200.9145
Radius = 1,432.3945
External = 3.5299
Long Chord = 200.7498
Mid. Ord. = 3.5212
P.C. Station 16+40.31 N 562,931.0214 E 2,845,435.4171
P.T. Station 18+41.23 N 563,131.4595 E 2,845,446.6000
C.C. N 563,110.8370 E 2,844,014.3540
Back = N 7° 12' 41.95" E
Ahead = N 0° 49' 29.74" W
Chord Bear = N 3° 11' 36.11" E

Course from PT C9009 to 9010 N 0° 49' 29.74" W Dist 640.0078

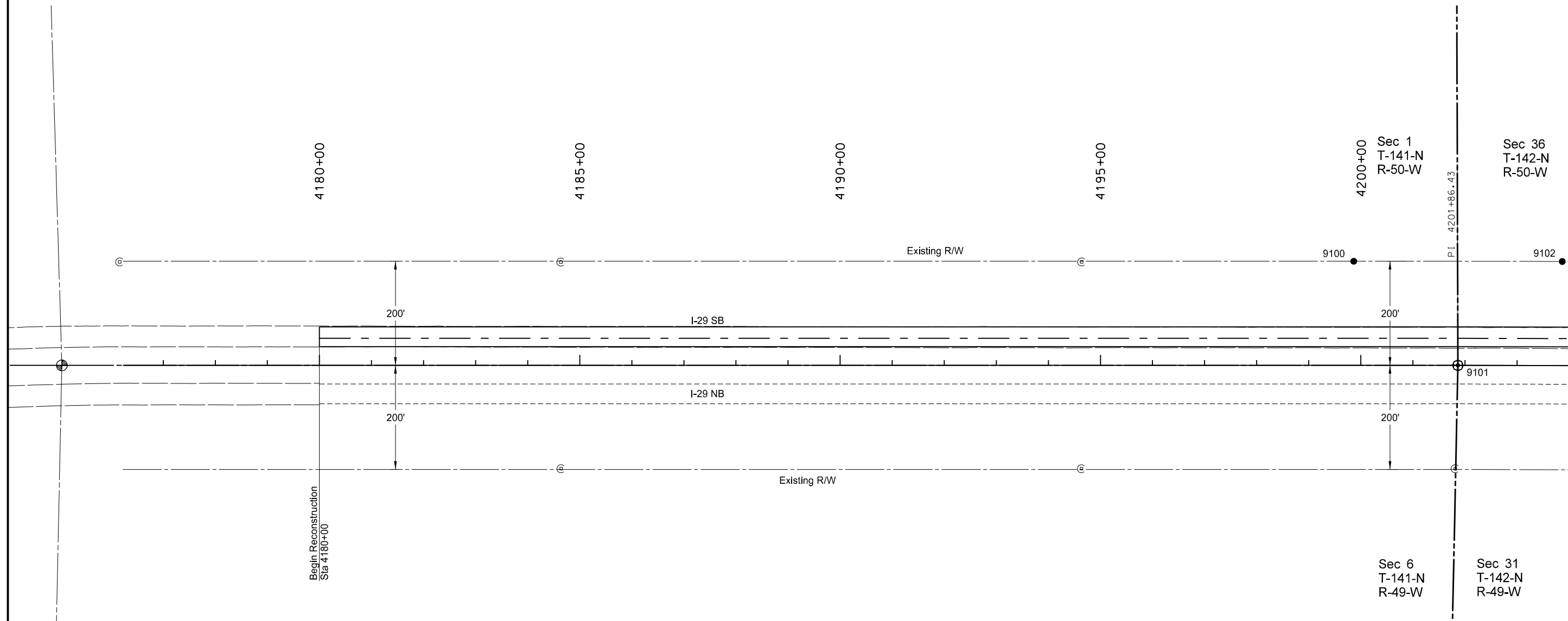
Point 9010 N 563,771.4010 E 2,845,437.3857 Sta 24+81.24

Ending chain TEMPCON GARDNW description

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Survey Data
Temporary Ramp Connections
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	3



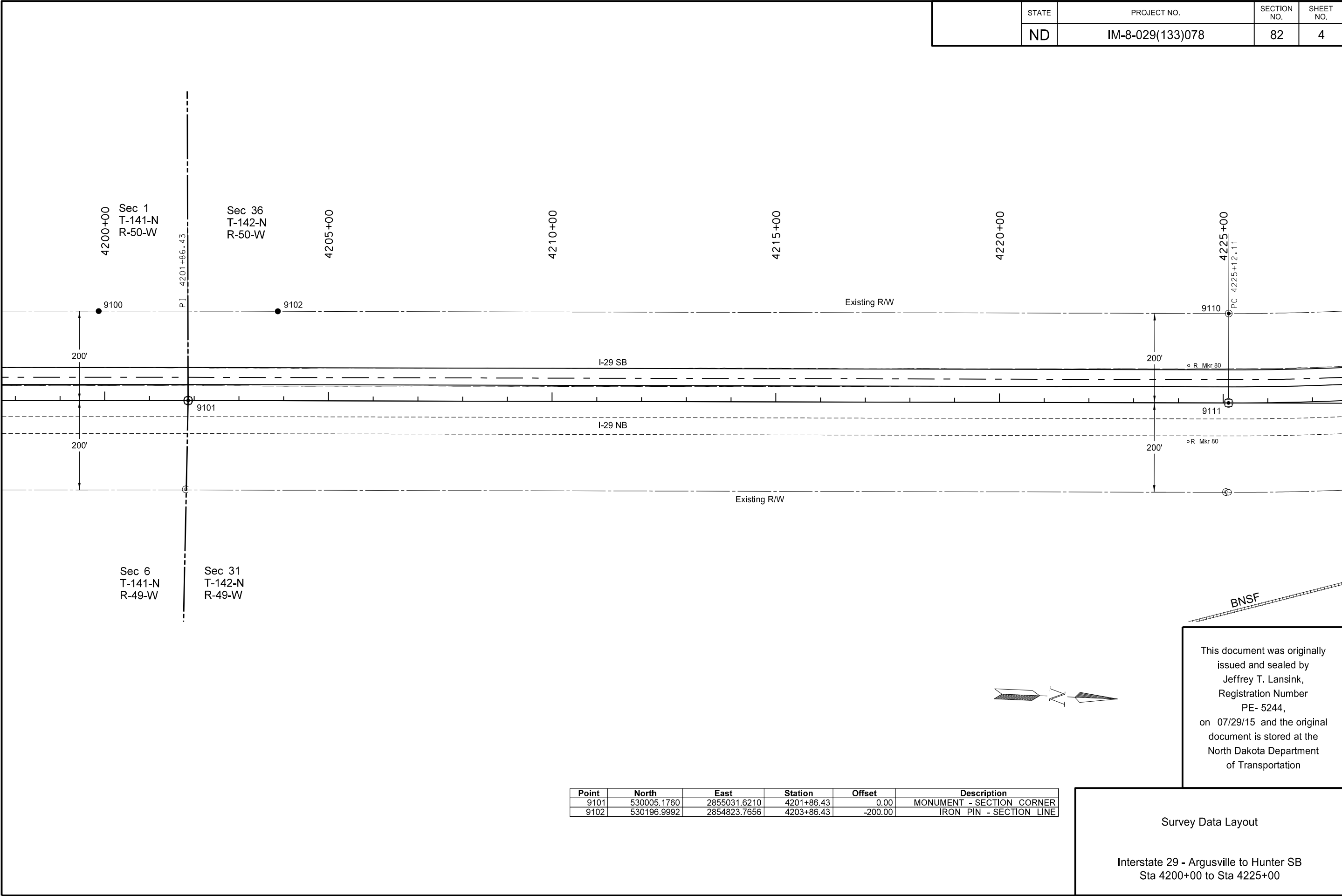
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Point	North	East	Station	Offset	Description
9100	529796.8812	2854840.2751	4199+86.43	-200.00	IRON PIN - SECTION LINE

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4180+00 to Sta 4200+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	4



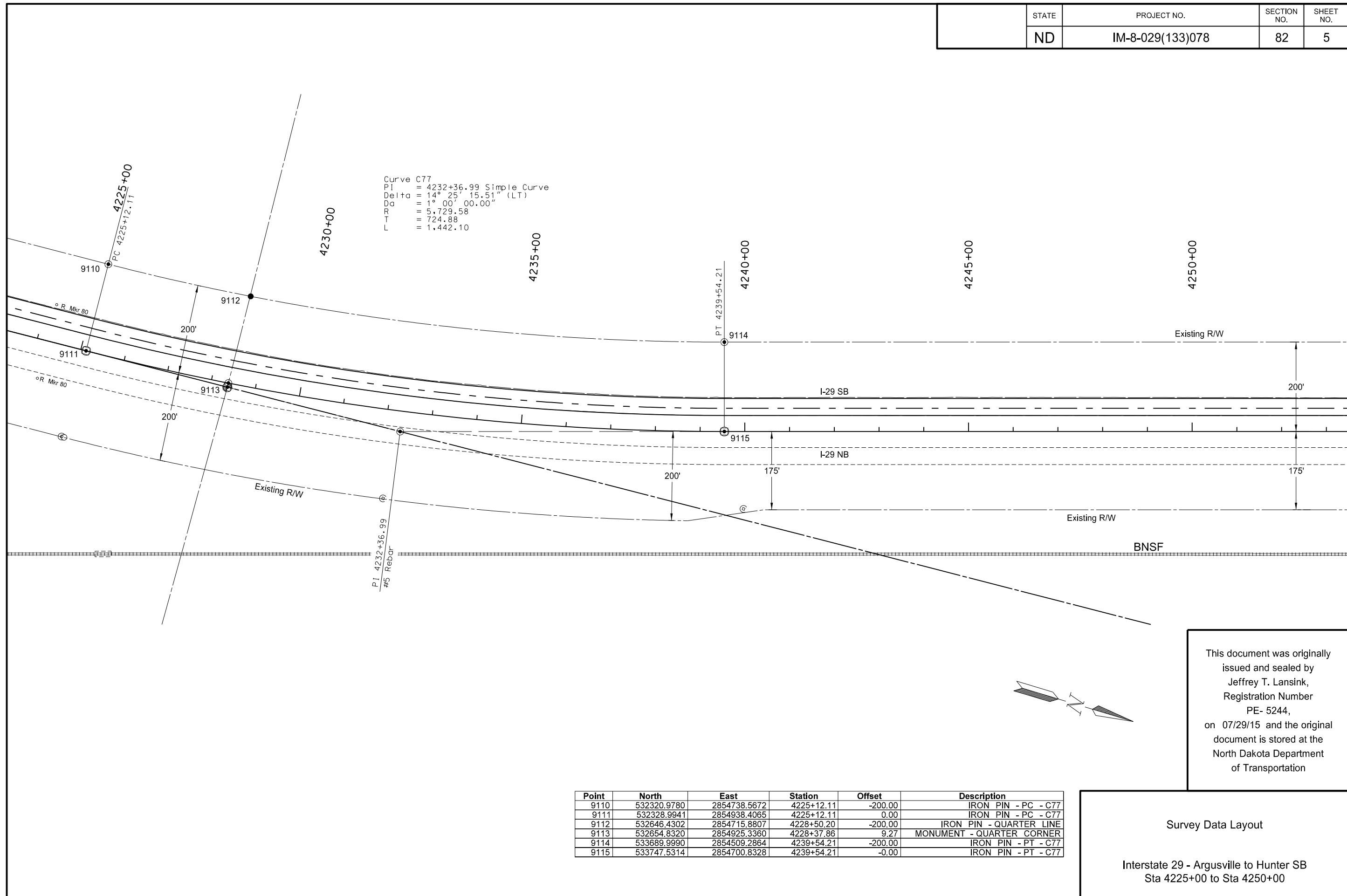
Point	North	East	Station	Offset	Description
9101	530005.1760	2855031.6210	4201+86.43	0.00	MONUMENT - SECTION CORNER
9102	530196.9992	2854823.7656	4203+86.43	-200.00	IRON PIN - SECTION LINE

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Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4200+00 to Sta 4225+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	5



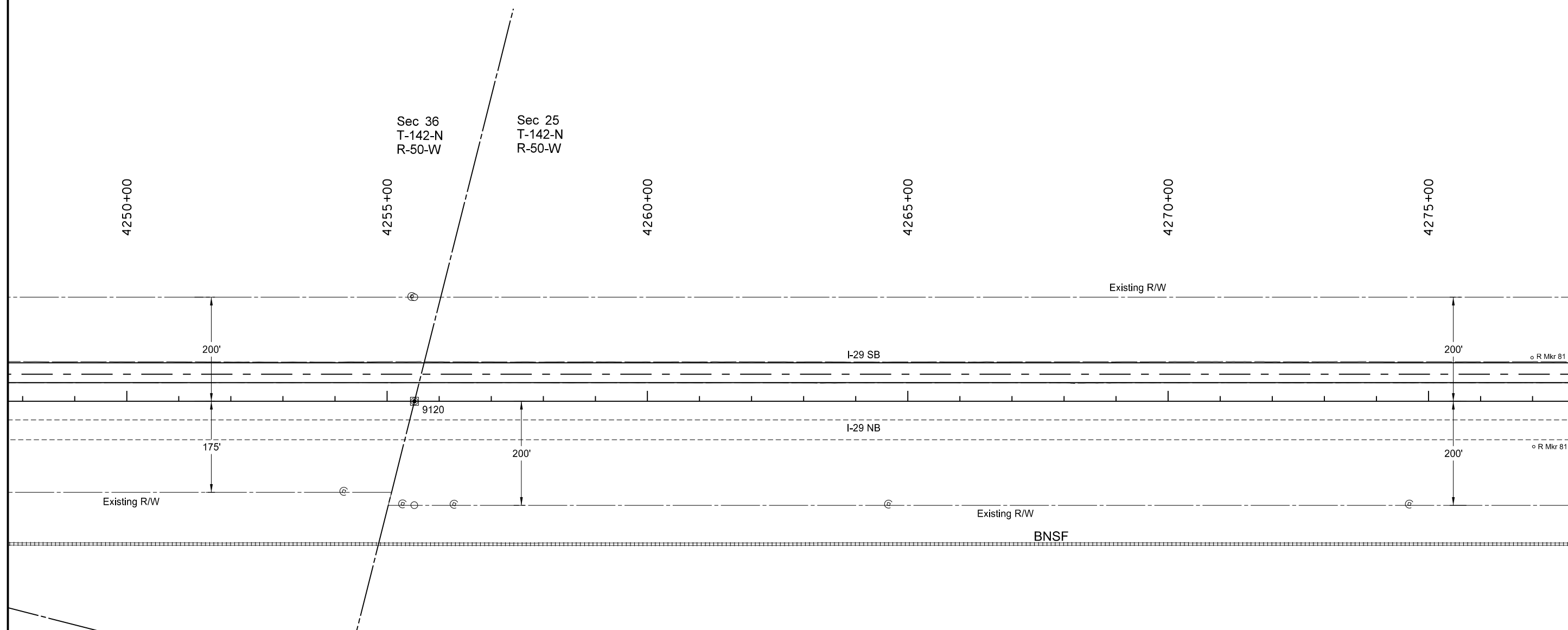
Point	North	East	Station	Offset	Description
9110	532320.9780	2854738.5672	4225+12.11	-200.00	IRON PIN - PC - C77
9111	532328.9941	2854938.4065	4225+12.11	0.00	IRON PIN - PC - C77
9112	532646.4302	2854715.8807	4228+50.20	-200.00	IRON PIN - QUARTER LINE
9113	532654.8320	2854925.3360	4228+37.86	9.27	MONUMENT - QUARTER CORNER
9114	533689.9990	2854509.2864	4239+54.21	-200.00	IRON PIN - PT - C77
9115	533747.5314	2854700.8328	4239+54.21	-0.00	IRON PIN - PT - C77

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Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4225+00 to Sta 4250+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	6

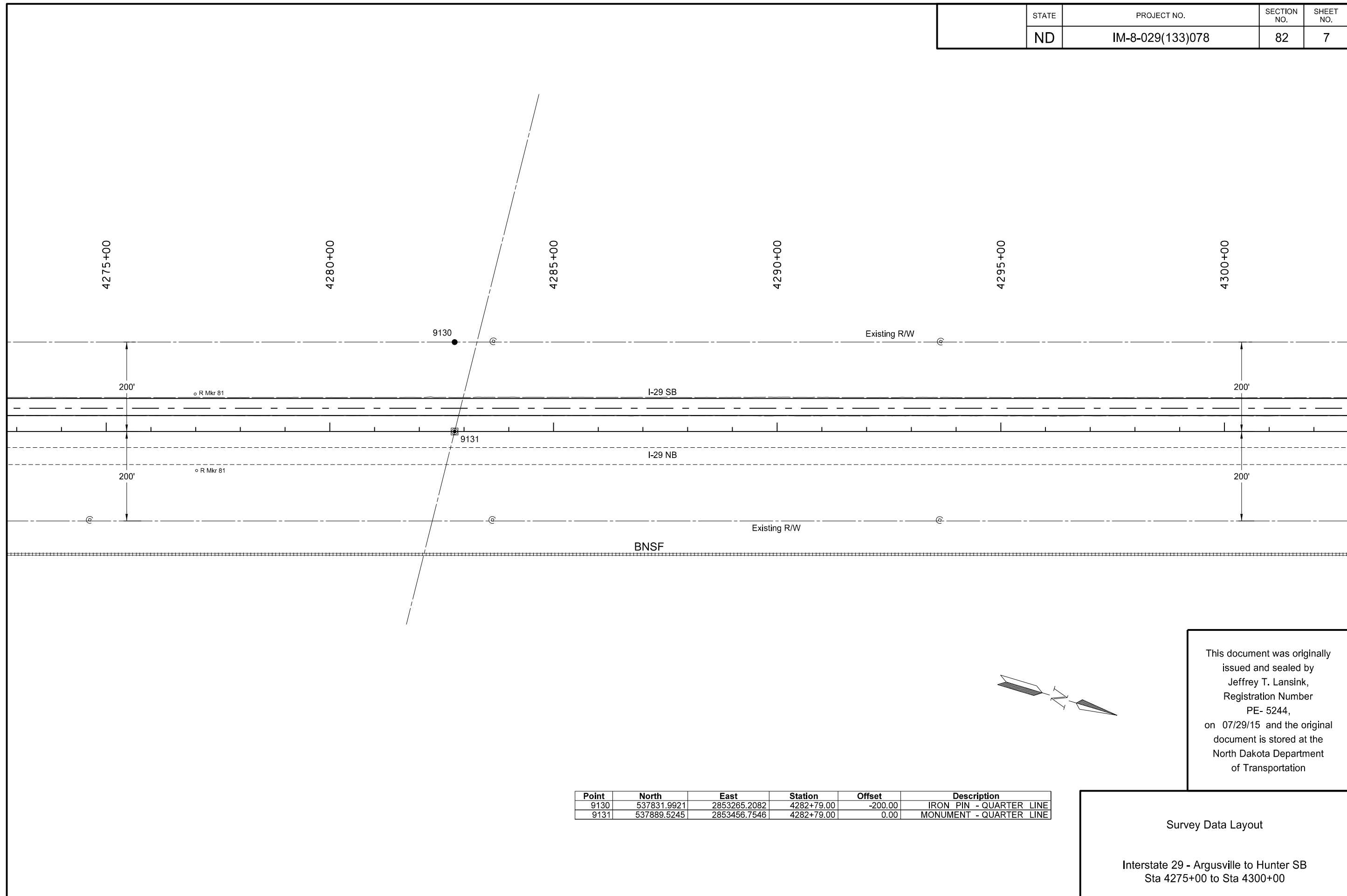


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Point	North	East	Station	Offset	Description
9120	535278.3425	2854241.0424	4255+52.58	0.00	MONUMENT - SECTION LINE

Survey Data Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4250+00 to Sta 4275+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	7



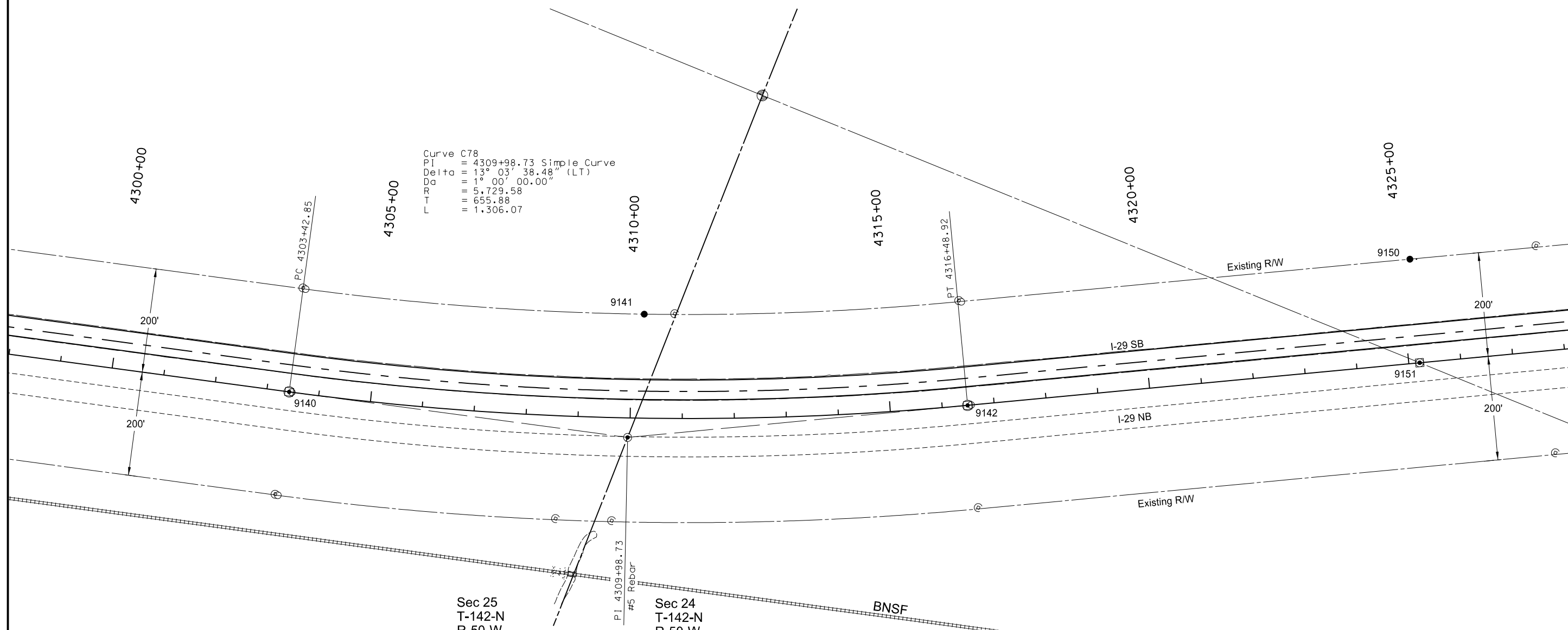
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Point	North	East	Station	Offset	Description
9130	537831.9921	2853265.2082	4282+79.00	-200.00	IRON PIN - QUARTER LINE
9131	537889.5245	2853456.7546	4282+79.00	0.00	MONUMENT - QUARTER LINE

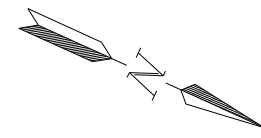
Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4275+00 to Sta 4300+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	8



Point	North	East	Station	Offset	Description
9140	539866.1391	2852863.0638	4303+42.85	0.00	IRON PIN - PC - C78
9141	540425.5320	2852445.4612	4310+24.06	-200.00	IRON PIN - SECTION LINE
9142	541063.5618	2852348.6507	4316+48.92	-0.00	IRON PIN - PT - C78

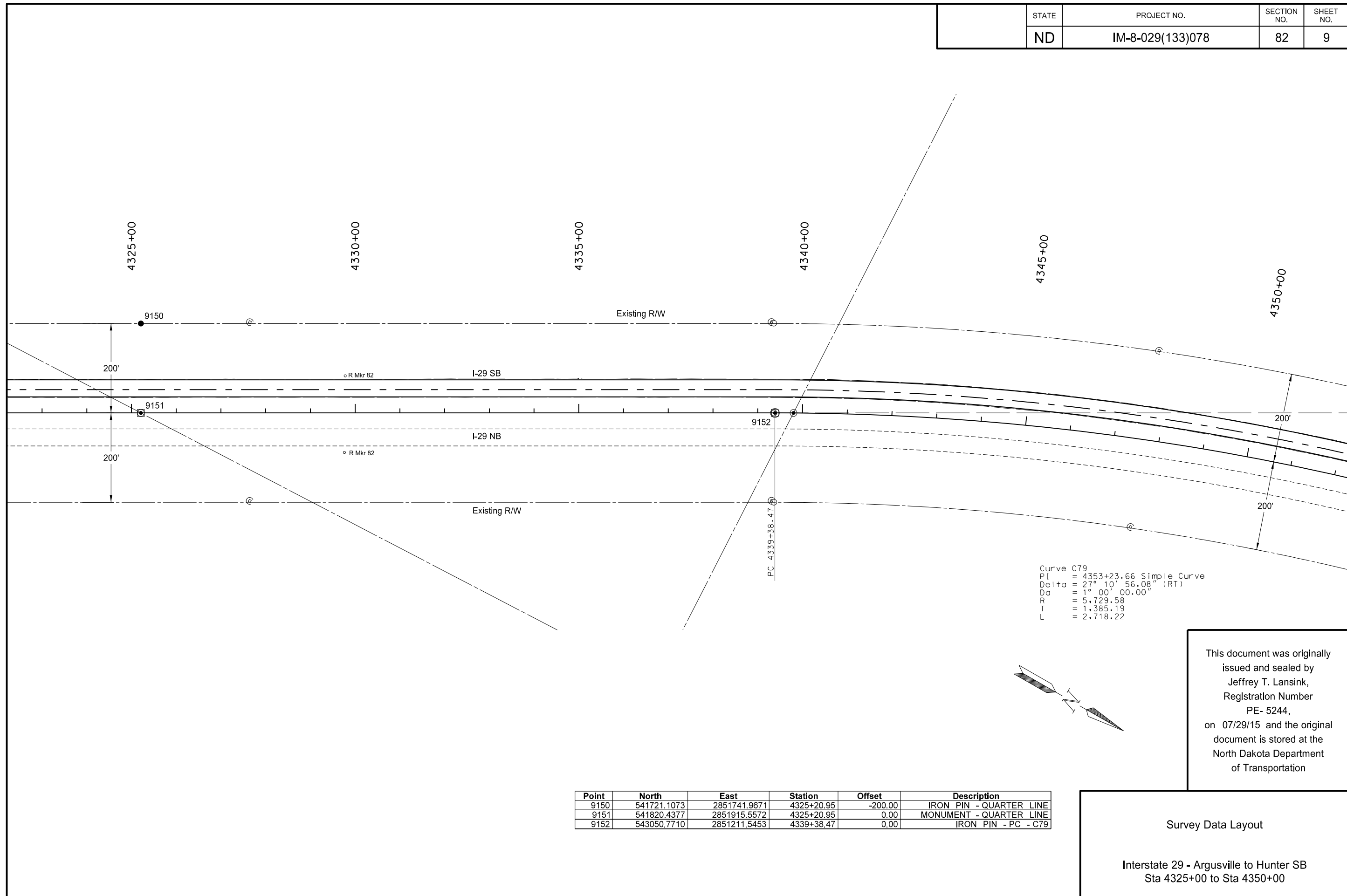


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Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4300+00 to Sta 4325+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	9



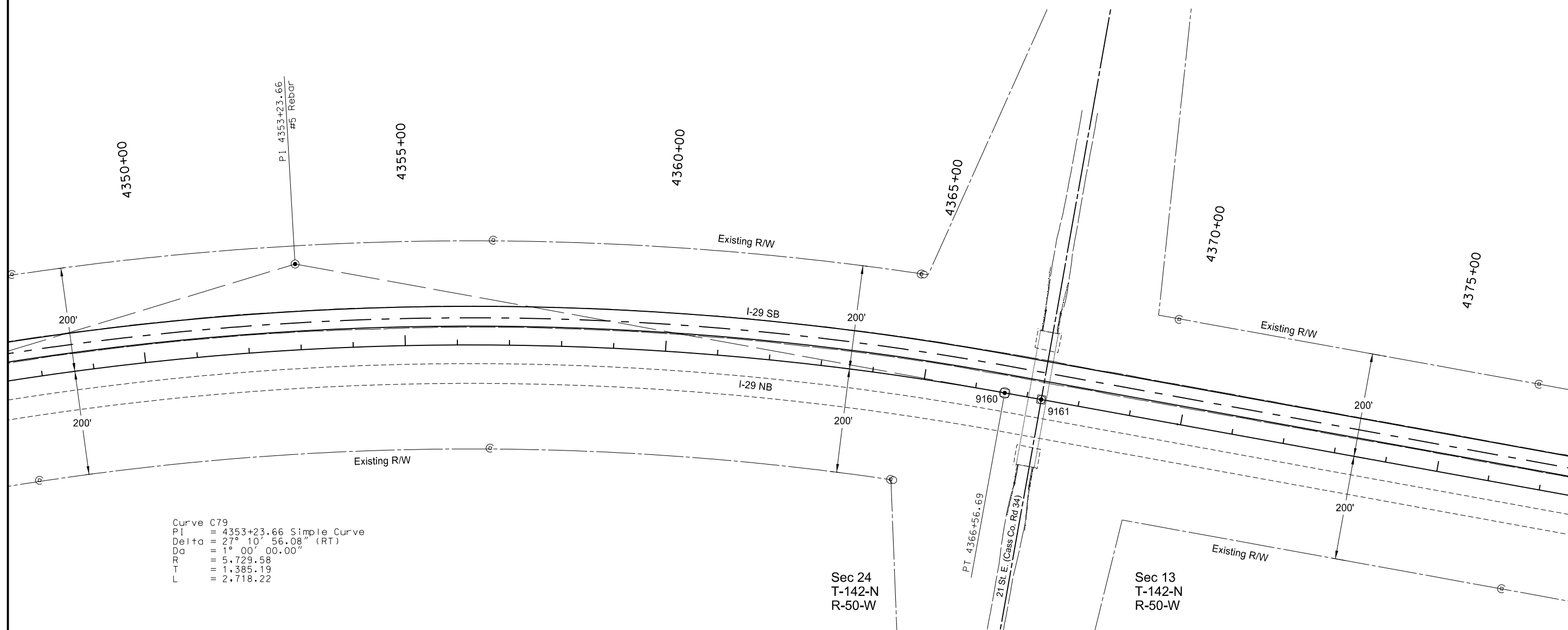
Curve C79
 PI = 4353+23.66 Simple Curve
 Delta = 27° 10' 56.08" (RT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 1,385.19
 L = 2,718.22

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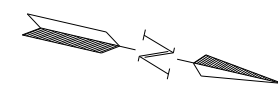
Point	North	East	Station	Offset	Description
9150	541721.1073	2851741.9671	4325+20.95	-200.00	IRON PIN - QUARTER LINE
9151	541820.4377	2851915.5572	4325+20.95	0.00	MONUMENT - QUARTER LINE
9152	543050.7710	2851211.5453	4339+38.47	0.00	IRON PIN - PC - C79

Survey Data Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4325+00 to Sta 4350+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	10



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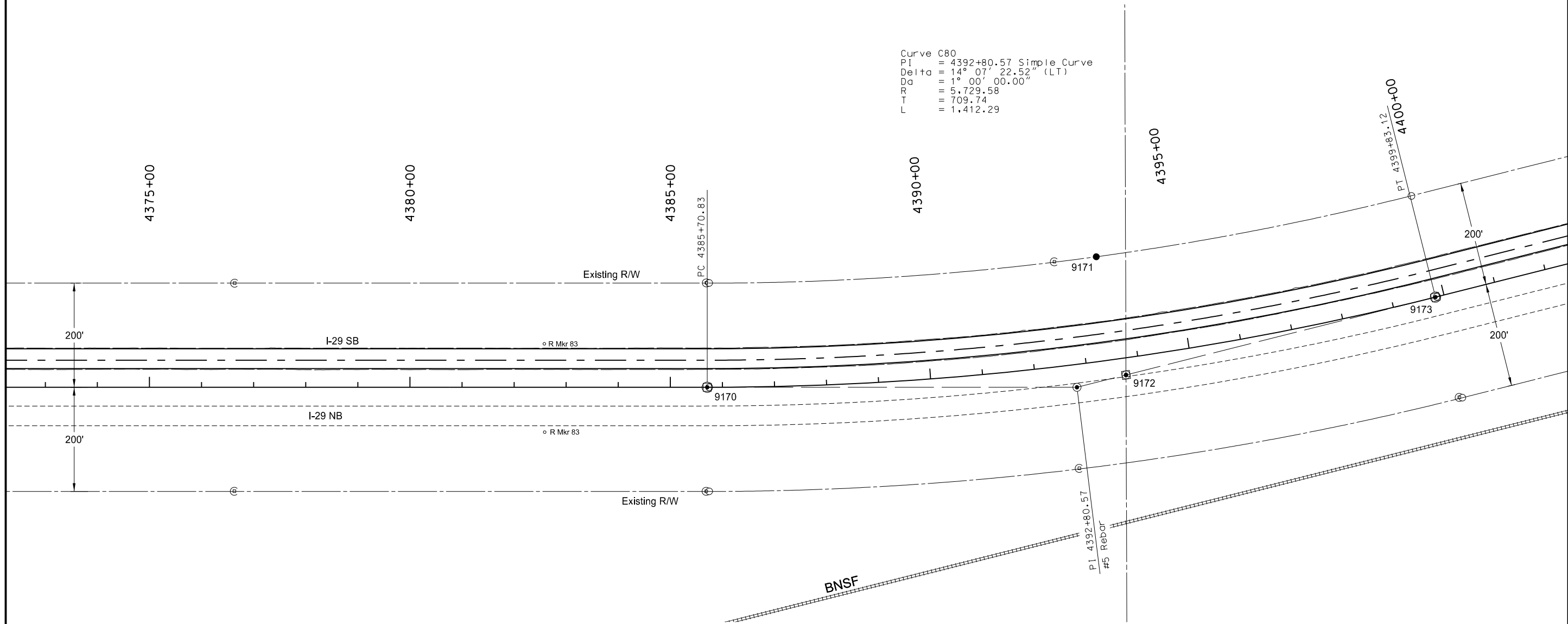
Point	North	East	Station	Offset	Description
9160	545636.8166	2850460.8368	4366+56.69	-0.00	IRON PIN - PT - C79
9161	545707.9467	2850457.6112	4367+27.89	0.00	MONUMENT - SECTION LINE

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4350+00 to Sta 4375+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	11

Curve C80
 PI = 4392+80.57 Simple Curve
 Delta = 14° 07' 22.52" (LT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 709.74
 L = 1,412.29

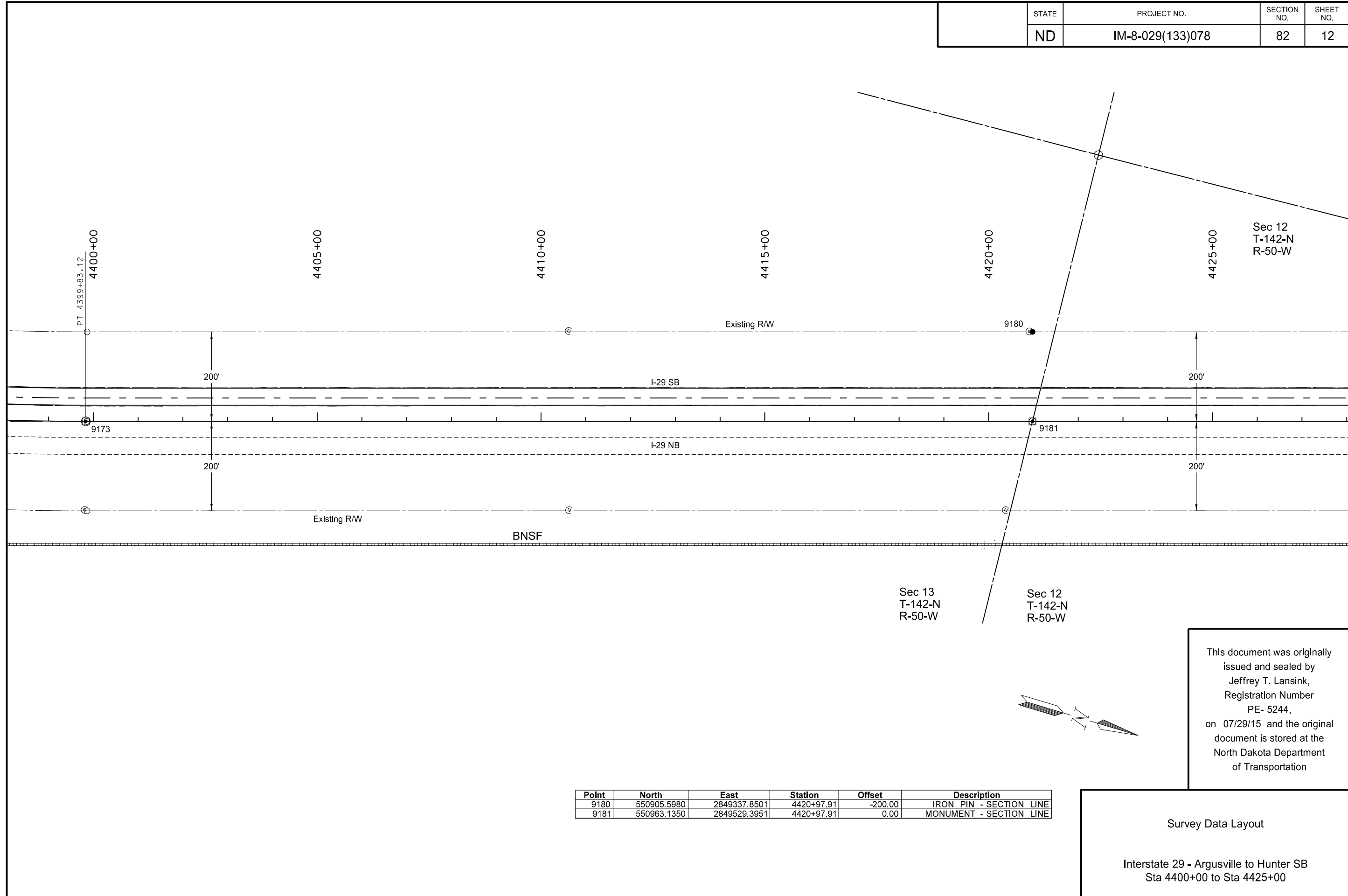


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Point	North	East	Station	Offset	Description
9170	547548.9909	2850374.1234	4385+70.83	0.00	IRON PIN - PC - C80
9171	548283.6974	2850089.8826	4393+47.04	-200.00	IRON PIN - QUARTER LINE
9172	548351.0272	2850314.0288	4393+72.82	32.65	MONUMENT - QUARTER LINE
9173	548937.7445	2850137.7887	4399+83.12	-0.00	IRON PIN - PT - C80

Survey Data Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4375+00 to Sta 4400+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	12



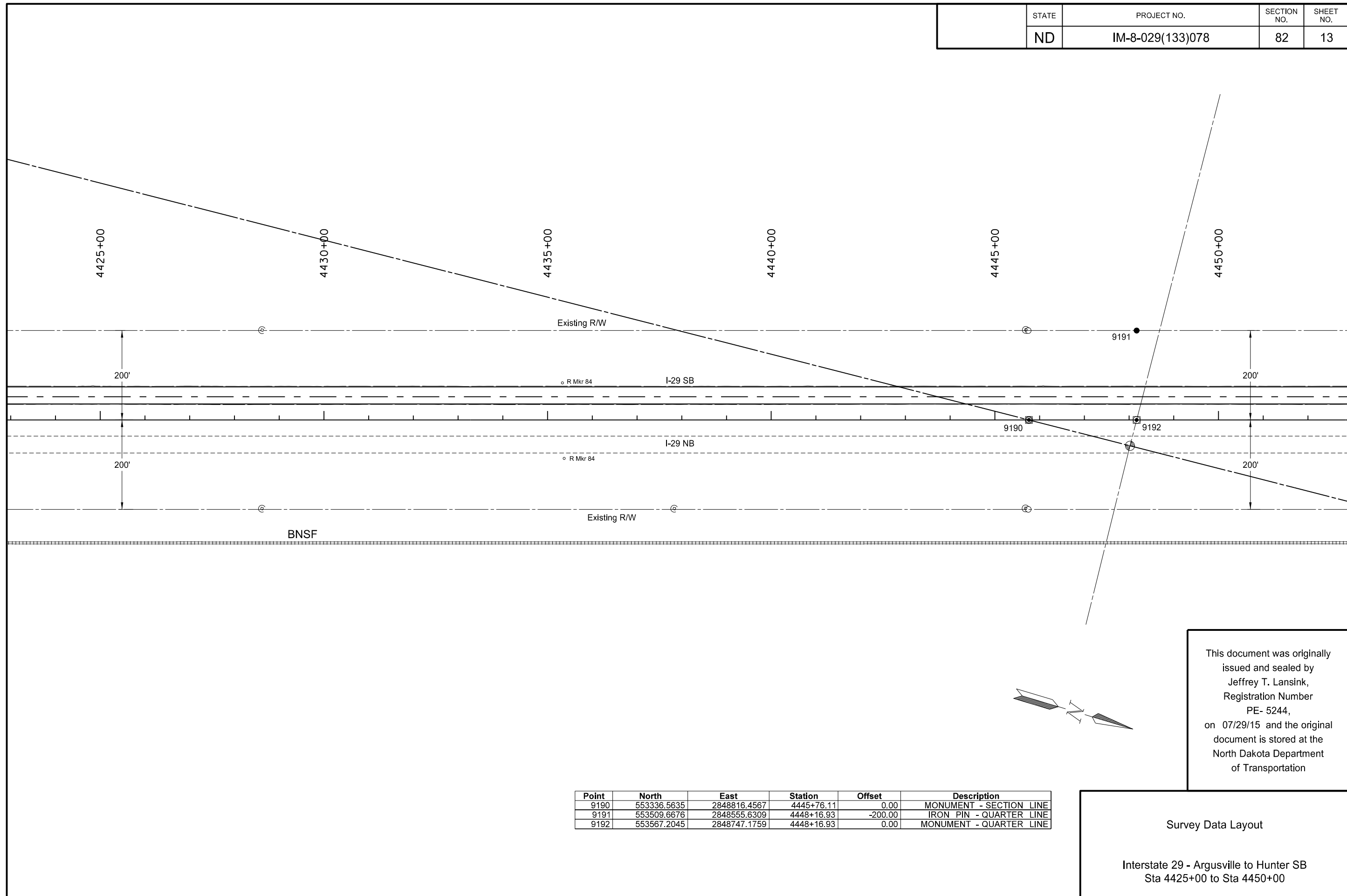
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Point	North	East	Station	Offset	Description
9180	550905.5980	2849337.8501	4420+97.91	-200.00	IRON PIN - SECTION LINE
9181	550963.1350	2849529.3951	4420+97.91	0.00	MONUMENT - SECTION LINE

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4400+00 to Sta 4425+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	13



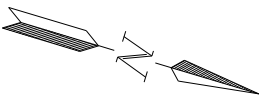
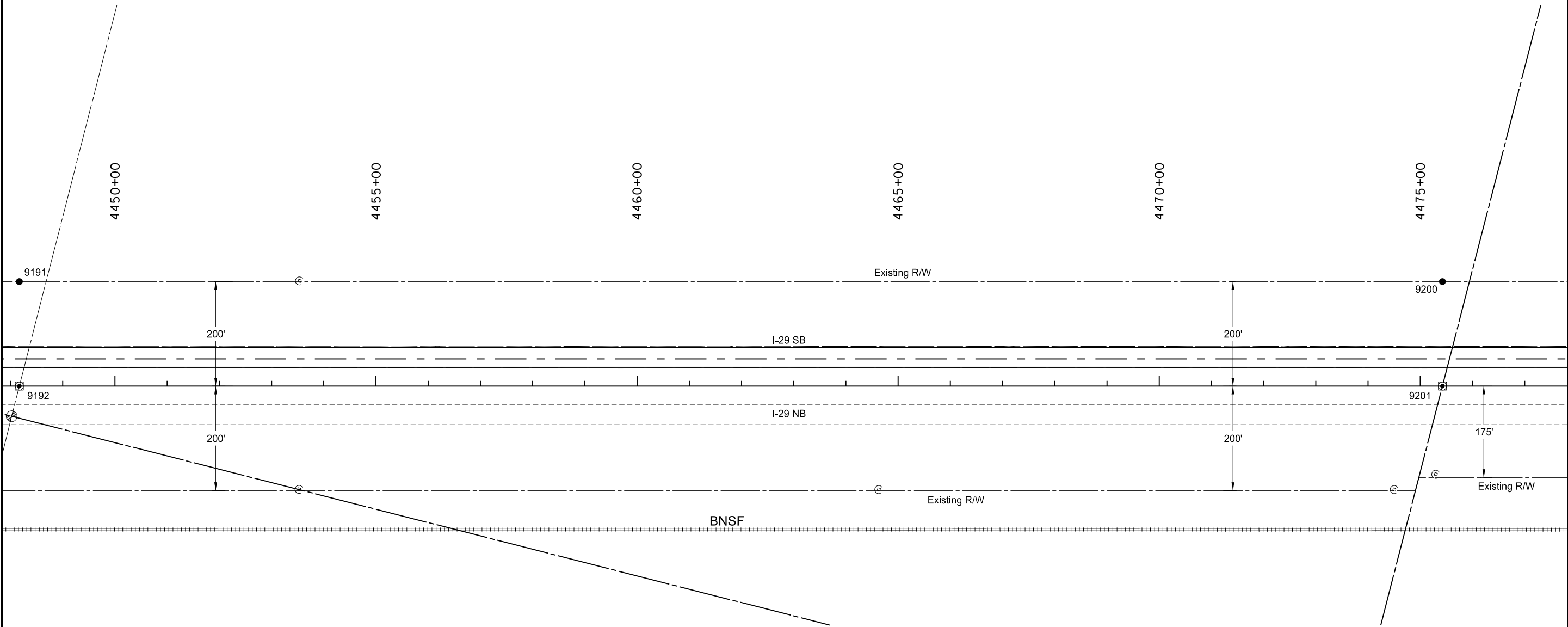
Point	North	East	Station	Offset	Description
9190	553336.5635	2848816.4567	4445+76.11	0.00	MONUMENT - SECTION LINE
9191	553509.6676	2848555.6309	4448+16.93	-200.00	IRON PIN - QUARTER LINE
9192	553567.2045	2848747.1759	4448+16.93	0.00	MONUMENT - QUARTER LINE

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Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4425+00 to Sta 4450+00

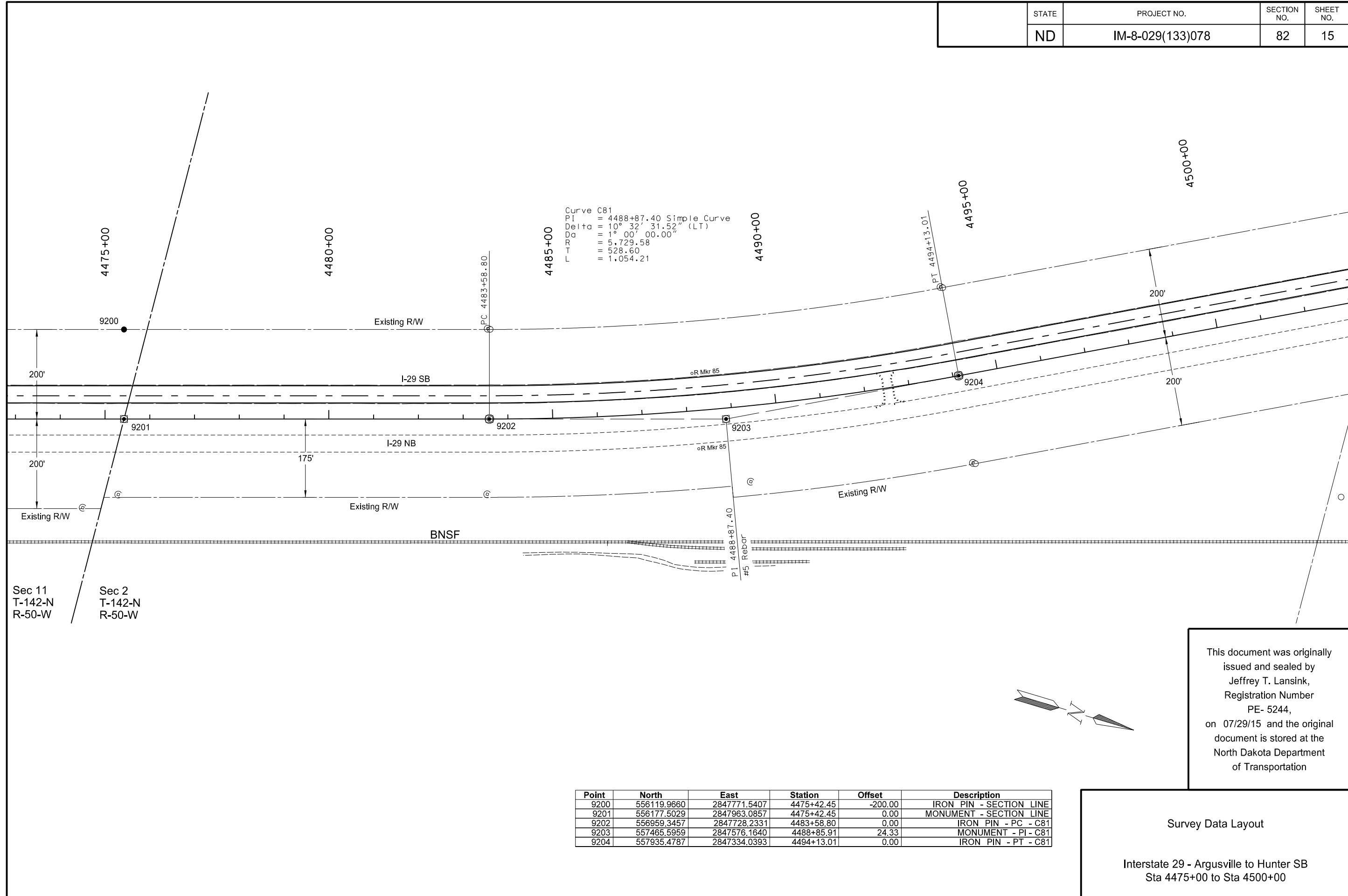
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	14



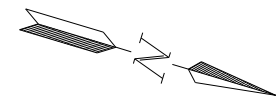
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Survey Data Layout
Interstate 29 - Argusville to Hunter SB
Sta 4450+00 to Sta 4475+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	15



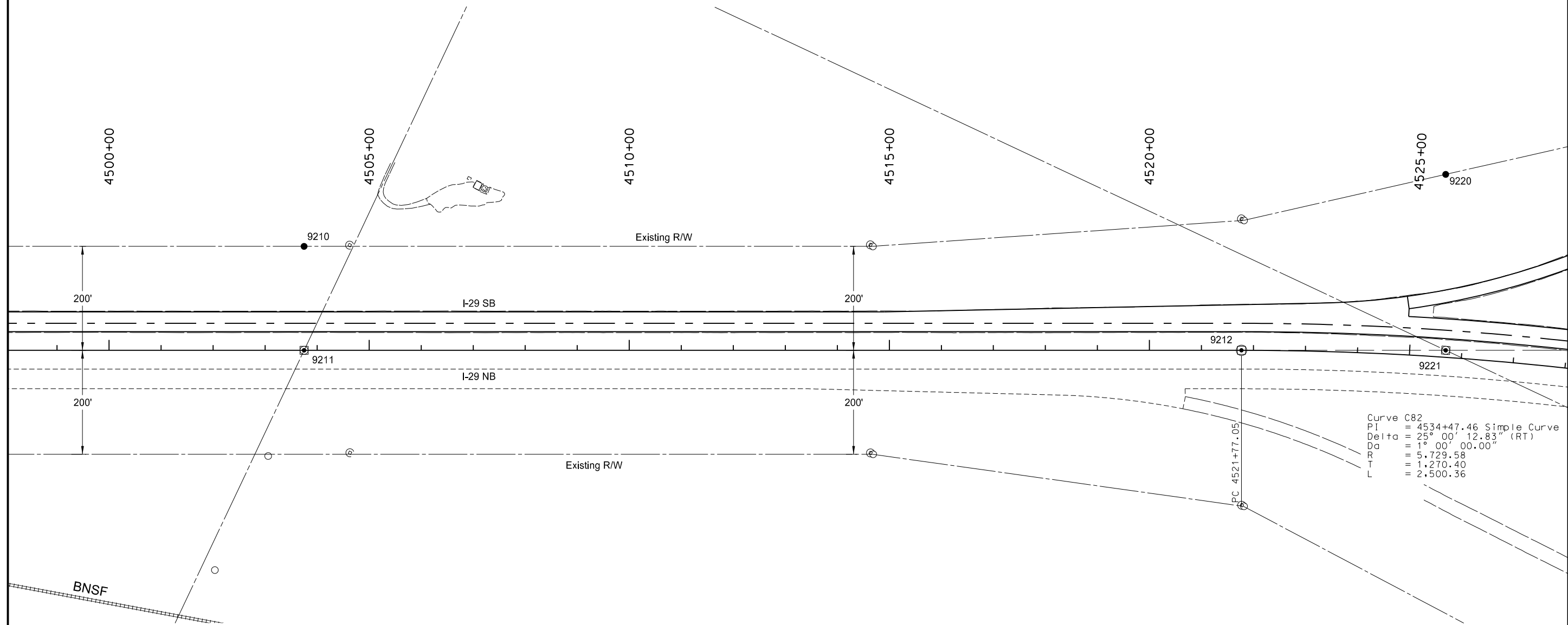
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Point	North	East	Station	Offset	Description
9200	556119.9660	2847771.5407	4475+42.45	-200.00	IRON PIN - SECTION LINE
9201	556177.5029	2847963.0857	4475+42.45	0.00	MONUMENT - SECTION LINE
9202	556959.3457	2847728.2331	4483+58.80	0.00	IRON PIN - PC - C81
9203	557465.5959	2847576.1640	4488+85.91	24.33	MONUMENT - PI - C81
9204	557935.4787	2847334.0393	4494+13.01	0.00	IRON PIN - PT - C81

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4475+00 to Sta 4500+00



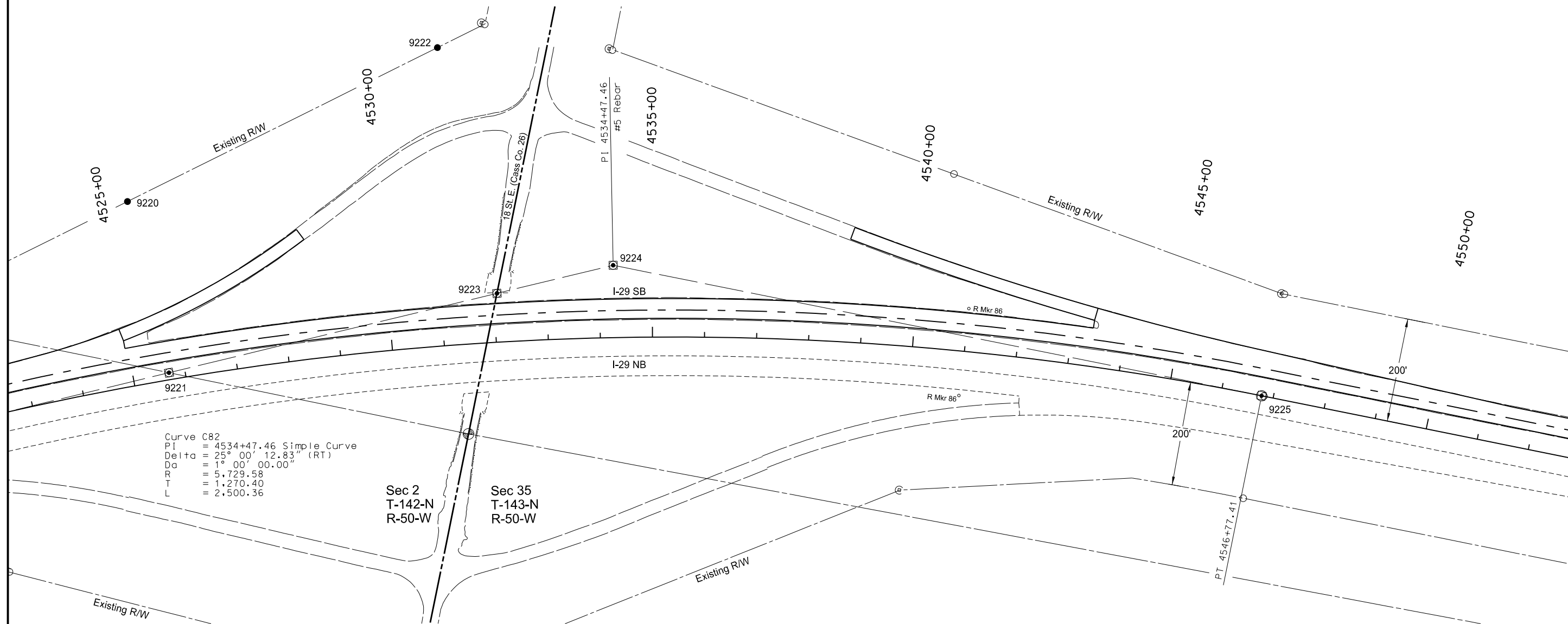
Curve C82
 PI = 4534+47.46 Simple Curve
 Delta = 25° 00' 12.83" (RT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 1,270.40
 L = 2,500.36

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Point	North	East	Station	Offset	Description
9210	558698.8782	2846715.6784	4503+74.86	-200.00	IRON PIN - QUARTER LINE
9211	558790.4886	2846893.4635	4503+74.86	0.00	MONUMENT - QUARTER LINE
9212	560392.5059	2846067.9641	4521+77.05	0.00	IRON PIN - PC - C82

Survey Data Layout
 Interstate 29 - Argusville to Hunter SB
 Sta 4500+00 to Sta 4525+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	17

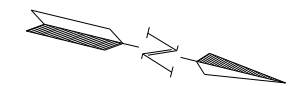


Curve C82
 PI = 4534+47.46 Simple Curve
 Delta = 25° 00' 12.83" (RT)
 Da = 1° 00' 00.00"
 R = 5,729.58
 T = 1,270.40
 L = 2,500.36

Sec 2
T-142-N
R-50-W

Sec 35
T-143-N
R-50-W

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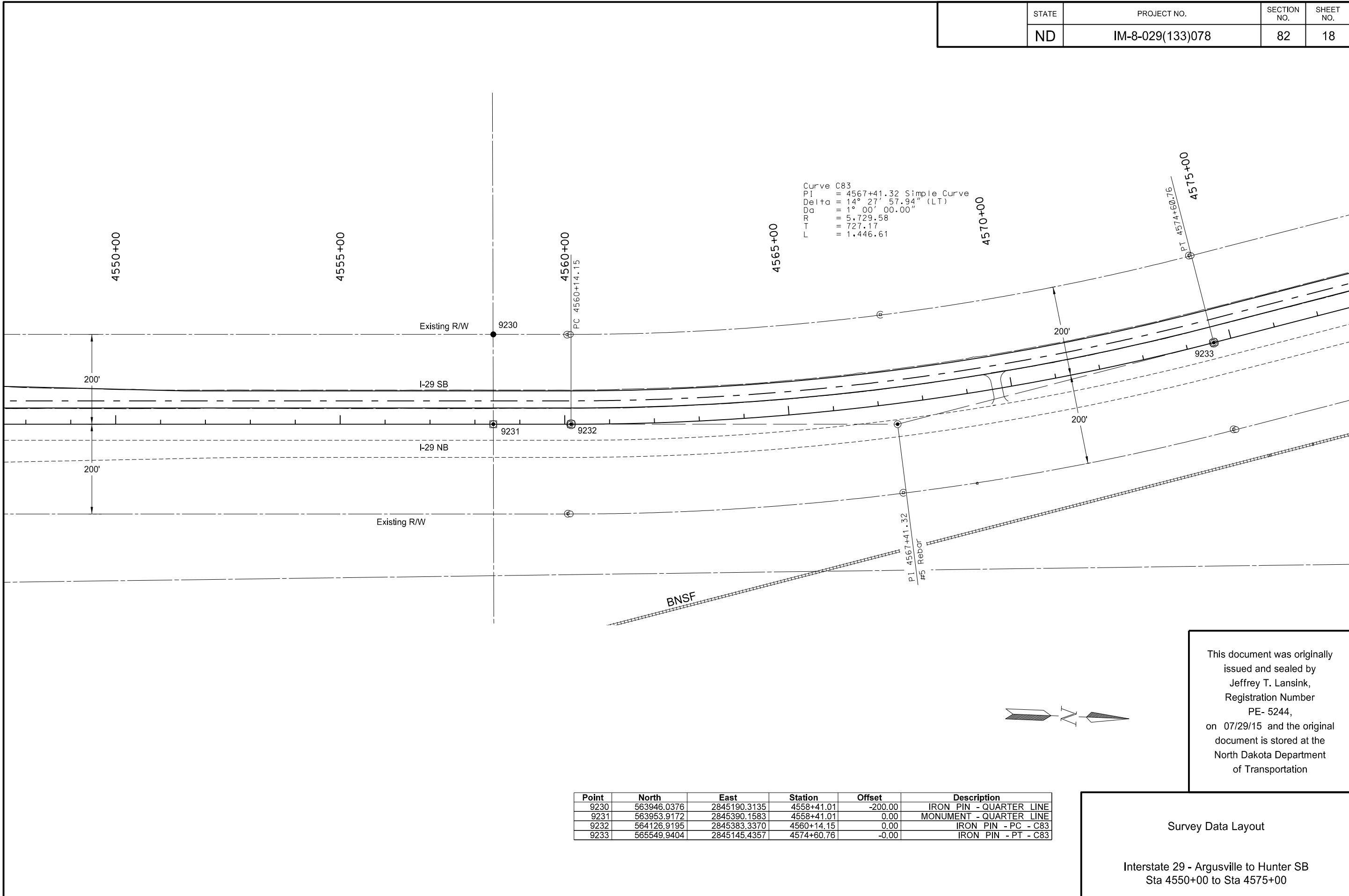


Point	North	East	Station	Offset	Description
9220	560586.4796	2845587.2179	4525+47.27	-351.18	IRON PIN - QUARTER LINE
9221	560741.5290	2845888.1169	4525+69.08	-13.43	MONUMENT - QUARTER LINE
9222	561095.1259	2845159.2410	4531+27.68	-572.49	IRON PIN - SECTION LINE
9223	561317.7165	2845591.2147	4532+06.65	-93.76	MONUMENT - SECTION LINE
9224	561521.8001	2845486.0530	4534+27.23	-139.15	MONUMENT - PI - C82
9225	562791.2176	2845436.0018	4546+77.41	-0.00	IRON PIN - PT - C82

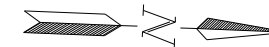
Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4525+00 to Sta 4550+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	18



Point	North	East	Station	Offset	Description
9230	563946.0376	2845190.3135	4558+41.01	-200.00	IRON PIN - QUARTER LINE
9231	563953.9172	2845390.1583	4558+41.01	0.00	MONUMENT - QUARTER LINE
9232	564126.9195	2845383.3370	4560+14.15	0.00	IRON PIN - PC - C83
9233	565549.9404	2845145.4357	4574+60.76	-0.00	IRON PIN - PT - C83

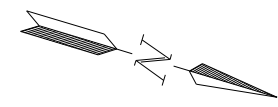
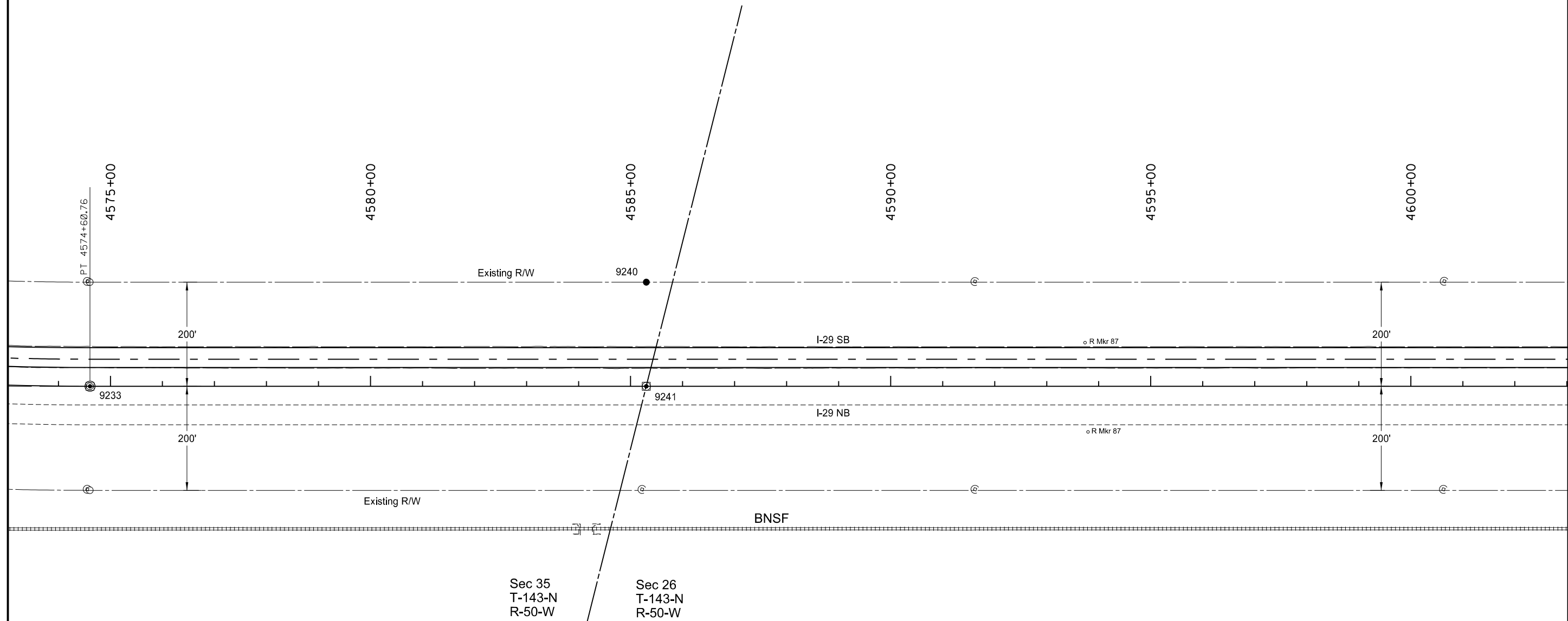


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Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4550+00 to Sta 4575+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	19

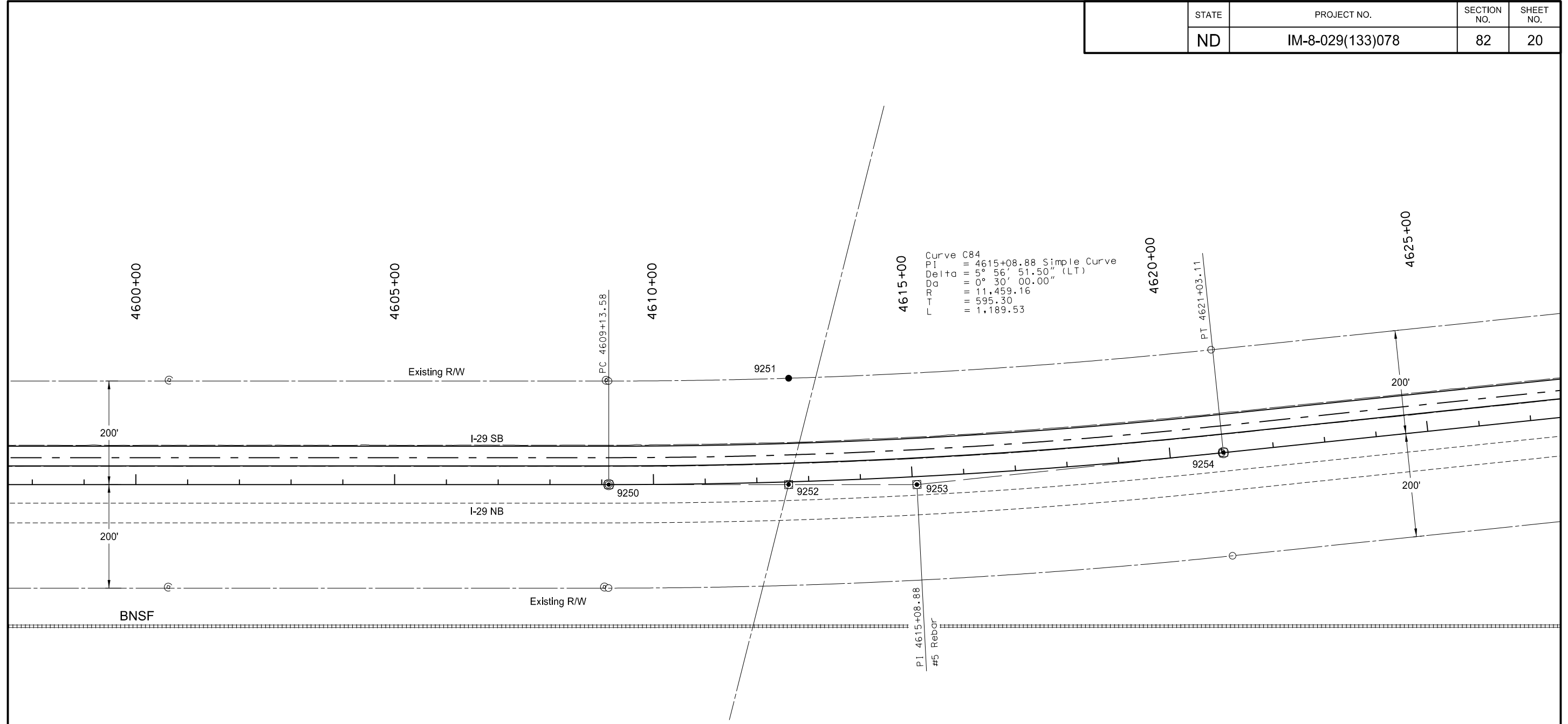


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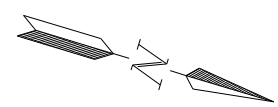
Point	North	East	Station	Offset	Description
9240	566516.6130	2844646.1452	4585+30.22	-200.00	IRON PIN - SECTION LINE
9241	566574.1654	2844837.6856	4585+30.22	0.00	MONUMENT - SECTION LINE

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4575+00 to Sta 4600+00



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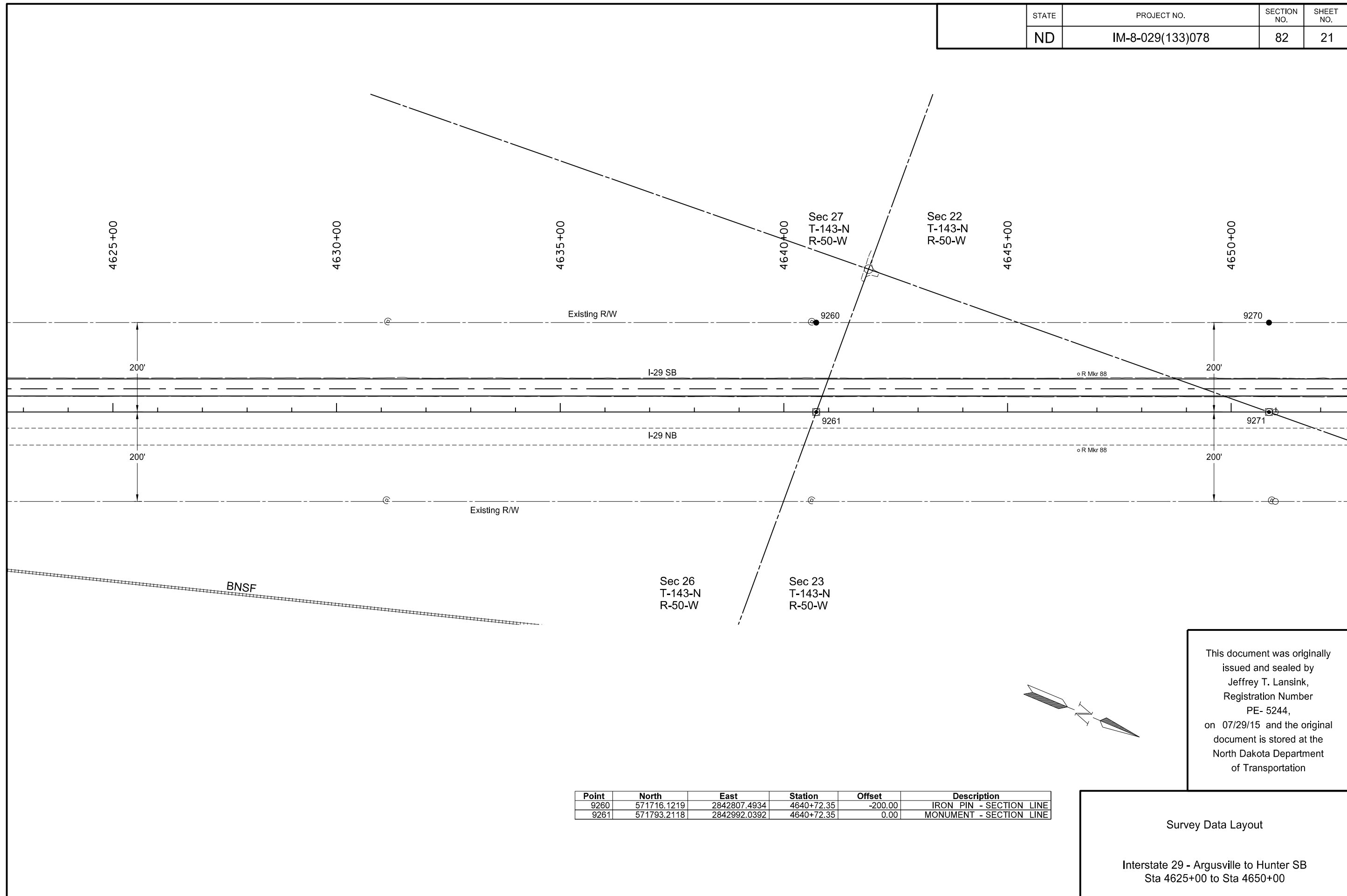


Point	North	East	Station	Offset	Description
9250	568856.7178	2844151.8443	4609+13.58	0.00	IRON PIN - PC - C84
9251	569130.4860	2843855.1487	4612+67.38	-200.00	IRON PIN - QUARTER LINE
9252	569189.5825	2844051.8280	4612+61.04	5.26	MONUMENT - QUARTER LINE
9253	569426.8365	2843980.5400	4615+08.35	15.45	MONUMENT - PI - C84
9254	569976.1358	2843751.0824	4621+03.11	0.00	IRON PIN - PT - C84

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
 Sta 4600+00 to Sta 4625+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	21



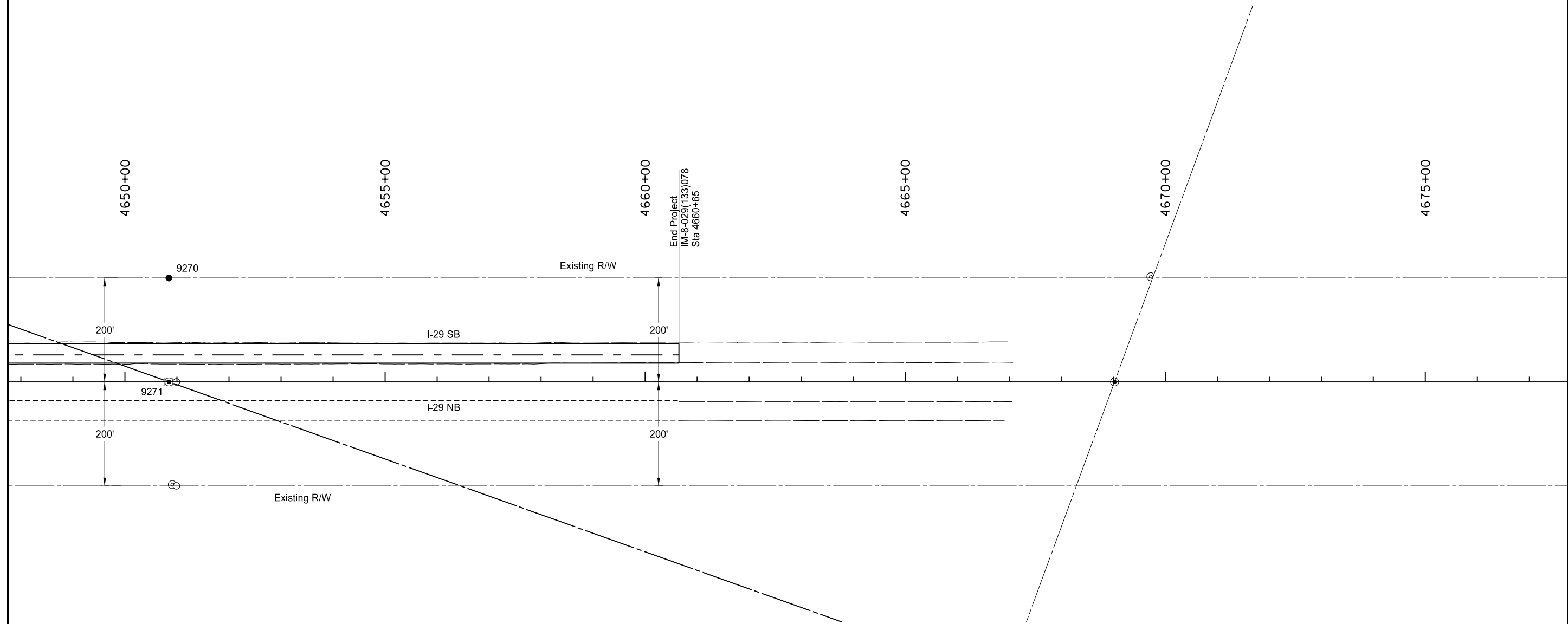
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Point	North	East	Station	Offset	Description
9260	571716.1219	2842807.4934	4640+72.35	-200.00	IRON PIN - SECTION LINE
9261	571793.2118	2842992.0392	4640+72.35	0.00	MONUMENT - SECTION LINE

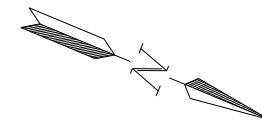
Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4625+00 to Sta 4650+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	82	22



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Point	North	East	Station	Offset	Description
9270	572650.0811	2842417.3527	4650+84.52	-200.00	IRON PIN - SECTION LINE
9271	572727.1710	2842601.8985	4650+84.52	0.00	MONUMENT - SECTION LINE

Survey Data Layout

Interstate 29 - Argusville to Hunter SB
Sta 4650+00 to Sta 4660+65

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(133)078	82	23

Station	Offset	Description	Per Standard D-720-1			Point Number
			Alignment Monument	Iron Pin R/W Monument	Iron Pin Reference Monument	
4199+86.43	-200.00	IRON PIN - SECTION LINE			x	9100
4201+86.43	0.00	MONUMENT - SECTION CORNER	x			9101
4203+86.43	-200.00	IRON PIN - SECTION LINE			x	9102
4225+12.11	-200.00	IRON PIN - PC - C77		x		9110
4225+12.11	0.00	IRON PIN - PC - C77	x			9111
4228+50.20	-200.00	IRON PIN - QUARTER LINE			x	9112
4228+37.86	9.27	MONUMENT - QUARTER CORNER	x			9113
4239+54.21	-200.00	IRON PIN - PT - C77		x		9114
4239+54.21	0.00	IRON PIN - PT - C77	x			9115
4255+52.58	0.00	MONUMENT - SECTION LINE	x			9120
4282+79.00	-200.00	IRON PIN - QUARTER LINE			x	9130
4282+79.00	0.00	MONUMENT - QUARTER LINE	x			9131
4303+42.85	0.00	IRON PIN - PC - C78	x			9140
4310+24.06	-200.00	IRON PIN - SECTION LINE			x	9141
4316+48.92	0.00	IRON PIN - PT - C78	x			9142
4325+20.95	-200.00	IRON PIN - QUARTER LINE			x	9150
4325+20.95	0.00	MONUMENT - QUARTER LINE	x			9151
4339+38.47	0.00	IRON PIN - PC - C79	x			9152
4366+56.69	0.00	IRON PIN - PT - C79	x			9160
4367+27.89	0.00	MONUMENT - SECTION LINE	x			9161
4385+70.83	0.00	IRON PIN - PC - C80	x			9170
4393+47.04	-200.00	IRON PIN - QUARTER LINE			x	9171
4393+72.82	32.66	MONUMENT - QUARTER LINE	x			9172
4399+83.12	0.00	IRON PIN - PT - C80	x			9173
4420+97.91	-200.00	IRON PIN - SECTION LINE			x	9180
4420+97.91	0.00	MONUMENT - SECTION LINE	x			9181
4445+76.11	0.00	MONUMENT - SECTION LINE	x			9190
4448+16.93	-200.00	IRON PIN - QUARTER LINE			x	9191
4448+16.93	0.00	MONUMENT - QUARTER LINE	x			9192

Station	Offset	Description	Per Standard D-720-1			Point Number
			Alignment Monument	Iron Pin R/W Monument	Iron Pin Reference Monument	
4475+42.45	-200.00	IRON PIN - SECTION LINE			x	9200
4475+42.45	0.00	MONUMENT - SECTION LINE	x			9201
4483+58.80	0.00	IRON PIN - PC - C81	x			9202
4488+85.91	24.33	MONUMENT - PI - C81	x			9203
4494+13.01	0.00	IRON PIN - PT - C81	x			9204
4503+74.86	-200.00	IRON PIN - QUARTER LINE			x	9210
4503+74.86	0.00	MONUMENT - QUARTER LINE	x			9211
4521+77.05	0.00	IRON PIN - PC - C82	x			9212
4525+47.27	-351.18	IRON PIN - QUARTER LINE			x	9220
4525+69.08	-13.43	MONUMENT - QUARTER LINE	x			9221
4531+27.68	-572.49	IRON PIN - SECTION LINE			x	9222
4532+06.65	-93.76	MONUMENT - SECTION LINE	x			9223
4534+27.23	-139.15	MONUMENT - PI - C82	x			9224
4546+77.41	0.00	IRON PIN - PT - C82	x			9225
4558+41.01	-200.00	IRON PIN - QUARTER LINE			x	9230
4558+41.01	0.00	MONUMENT - QUARTER LINE	x			9231
4560+14.15	0.00	IRON PIN - PC - C83	x			9232
4574+60.76	0.00	IRON PIN - PT - C83	x			9233
4585+30.22	-200.00	IRON PIN - SECTION LINE			x	9240
4585+30.22	0.00	MONUMENT - SECTION LINE	x			9241
4609+13.58	0.00	IRON PIN - PC - C84	x			9250
4612+67.38	-200.00	IRON PIN - QUARTER LINE			x	9251
4612+61.04	5.27	MONUMENT - QUARTER LINE	x			9252
4615+08.35	15.45	MONUMENT - PI - C84	x			9253
4621+03.11	0.00	IRON PIN - PT - C84	x			9254
4640+72.35	-200.00	IRON PIN - SECTION LINE			x	9260
4640+72.35	0.00	MONUMENT - SECTION LINE	x			9261
4650+84.52	-200.00	IRON PIN - SECTION LINE			x	9270
4650+84.52	0.00	MONUMENT - SECTION LINE	x			9271

Total Alignment Monuments = 38

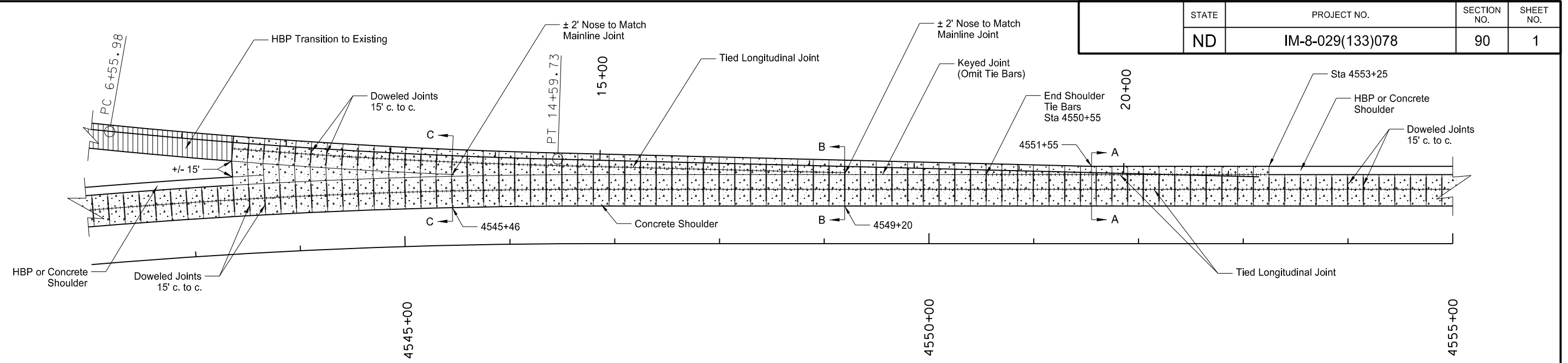
Total Iron Pin R/W Monuments = 2

Total Iron Pin Reference Monuments = 18

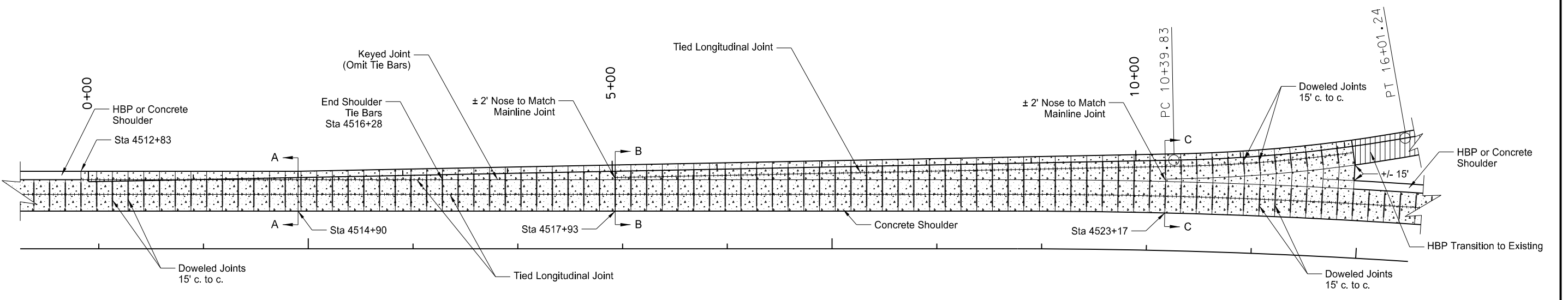
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Survey Data Tables
Interstate 29 - Argusville to Hunter SB

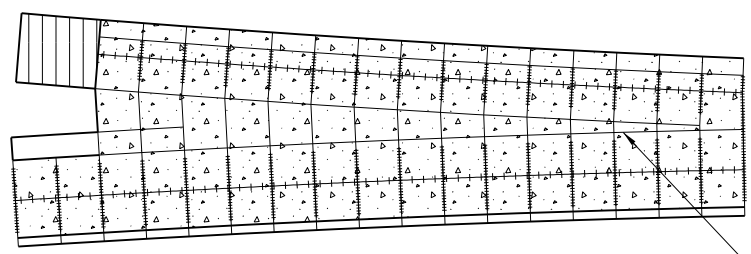
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	90	1



Exit Ramp



Entrance Ramp



Gore Area Detail

Means shall be taken to assure that no bond will exist between the ramp PCC Pavement and mainline PCC pavement by using plastic sheeting or other material approved by the engineer

Mainline and Ramps: 12IN Non-Reinf Concrete Pavement CL AE-Doweled
 Gore Area: 12IN Non-Reinf Concrete Pavement CL AE
 See Section 30 Sheet 9 for Sections A-A, B-B & C-C

	PCC Pavement
	HBP

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Gardner Interchange
Ramp Taper Layout
 Interstate 29 - Argusville to Hunter SB

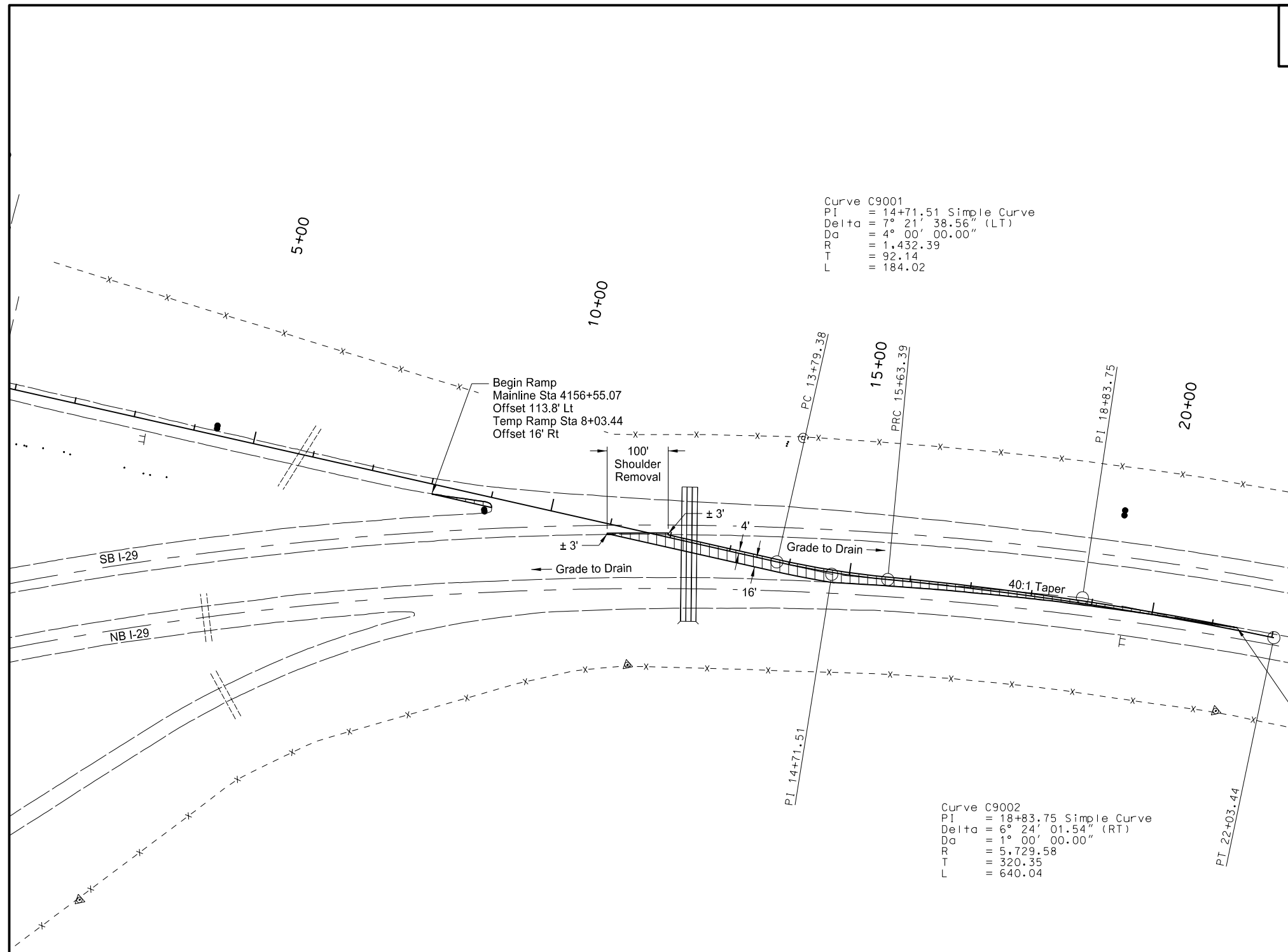
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	90	2

Item	Description	Quantity	Unit
202-0136	REMOVAL OF PAVEMENT NW Temporary Ramp Connection	33	Ton
202-0153	SAW BITUMINOUS SURFACING-FULL DEPTH NW Temporary Ramp Connection	106	LF
401-0060	PRIME COAT NW Temporary Ramp Connection	396	Gal
401-0160	BLOTTER MATERIAL CL 44 NW Temporary Ramp Connection	16	Ton
430-0500	COMMERCIAL GRADE HOT MIX ASPHALT NW Temporary Ramp Connection	251	Ton
430-5828	PG 58-28 ASPHALT CEMENT NW Temporary Ramp Connection	15	Ton

Note: See Section 30 for typical sections.


Construction materials shall not be stockpiled within the Interstate median unless it is made traversable to traffic. Materials shall either be kept outside the clear zone or made traversable.

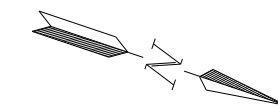
Embankment required to construct the ramps will be placed as part of previously constructed northbound project.



Curve C9001
 PI = 14+71.51 Simple Curve
 Delta = 7° 21' 38.56" (LT)
 Dc = 4° 00' 00.00"
 R = 1,432.39
 T = 92.14
 L = 184.02

Curve C9002
 PI = 18+83.75 Simple Curve
 Delta = 6° 24' 01.54" (RT)
 Dc = 1° 00' 00.00"
 R = 5,729.58
 T = 320.35
 L = 640.04

 3" Commercial Grade Hot Mix Asphalt



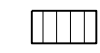
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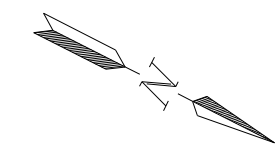
NW Temporary Ramp Connection
 Argusville Interchange
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	90	3

Item	Description	Quantity	Unit
202-0136	REMOVAL OF PAVEMENT *SW Temporary Ramp Connection	104	Ton
202-0153	SAW BITUMINOUS SURFACING-FULL DEPTH SW Temporary Ramp Connection	226	LF
401-0060	PRIME COAT SW Temporary Ramp Connection	672	Gal
401-0160	BLOTTER MATERIAL CL 44 SW Temporary Ramp Connection	27	Ton
430-0500	COMMERCIAL GRADE HOT MIX ASPHALT SW Temporary Ramp Connection	427	Ton
430-5828	PG 58-28 ASPHALT CEMENT SW Temporary Ramp Connection	26	Ton

*For information only, not a pay item.
 Note: See Section 30 for typical sections.
 Construction materials shall not be stockpiled within the Interstate median unless it is made traversable to traffic. Materials shall either be kept outside the clear zone or made traversable.
 Embankment required to construct the ramps will be placed as part of previously constructed northbound project.

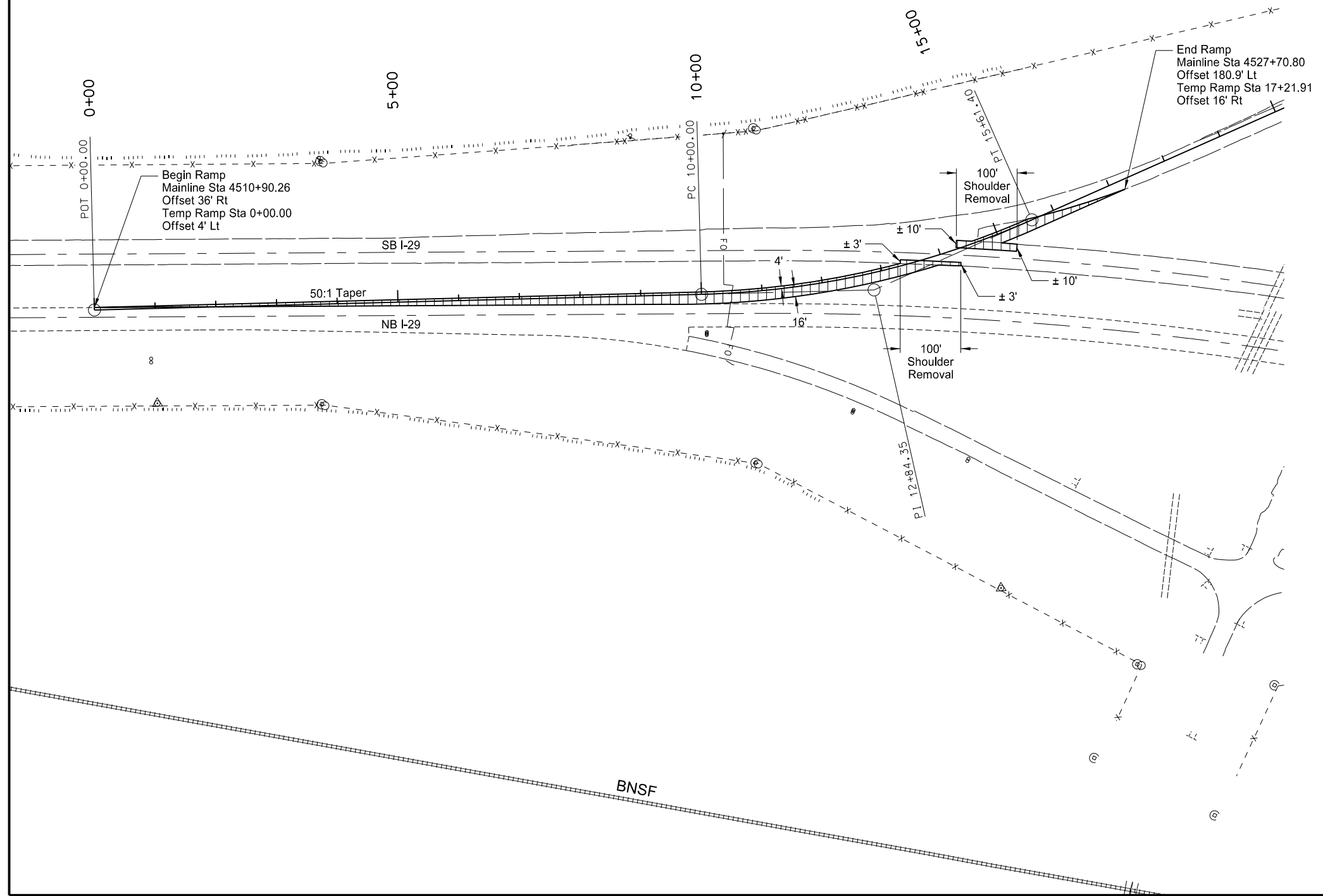
 3" Commercial Grade Hot Mix Asphalt



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SW Temporary Ramp Connection
 Gardner Interchange
 Interstate 29 - Argusville to Hunter SB

Curve C9005
 PI = 12+84.35 Simple Curve
 Delta = 22° 27' 21.32" (LT)
 Da = 4° 00' 00.00"
 R = 1,432.39
 T = 284.35
 L = 561.40



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	90	4


Item	Description	Quantity	Unit
202-0136	REMOVAL OF PAVEMENT *NW Temporary Ramp Connection	105	Ton
202-0153	SAW BITUMINOUS SURFACING-FULL DEPTH NW Temporary Ramp Connection	231	LF
401-0060	PRIME COAT NW Temporary Ramp Connection	576	Gal
401-0160	BLOTTER MATERIAL CL 44 NW Temporary Ramp Connection	23	Ton
430-0500	COMMERCIAL GRADE HOT MIX ASPHALT NW Temporary Ramp Connection	368	Ton
430-5828	PG 58-28 ASPHALT CEMENT NW Temporary Ramp Connection	22	Ton

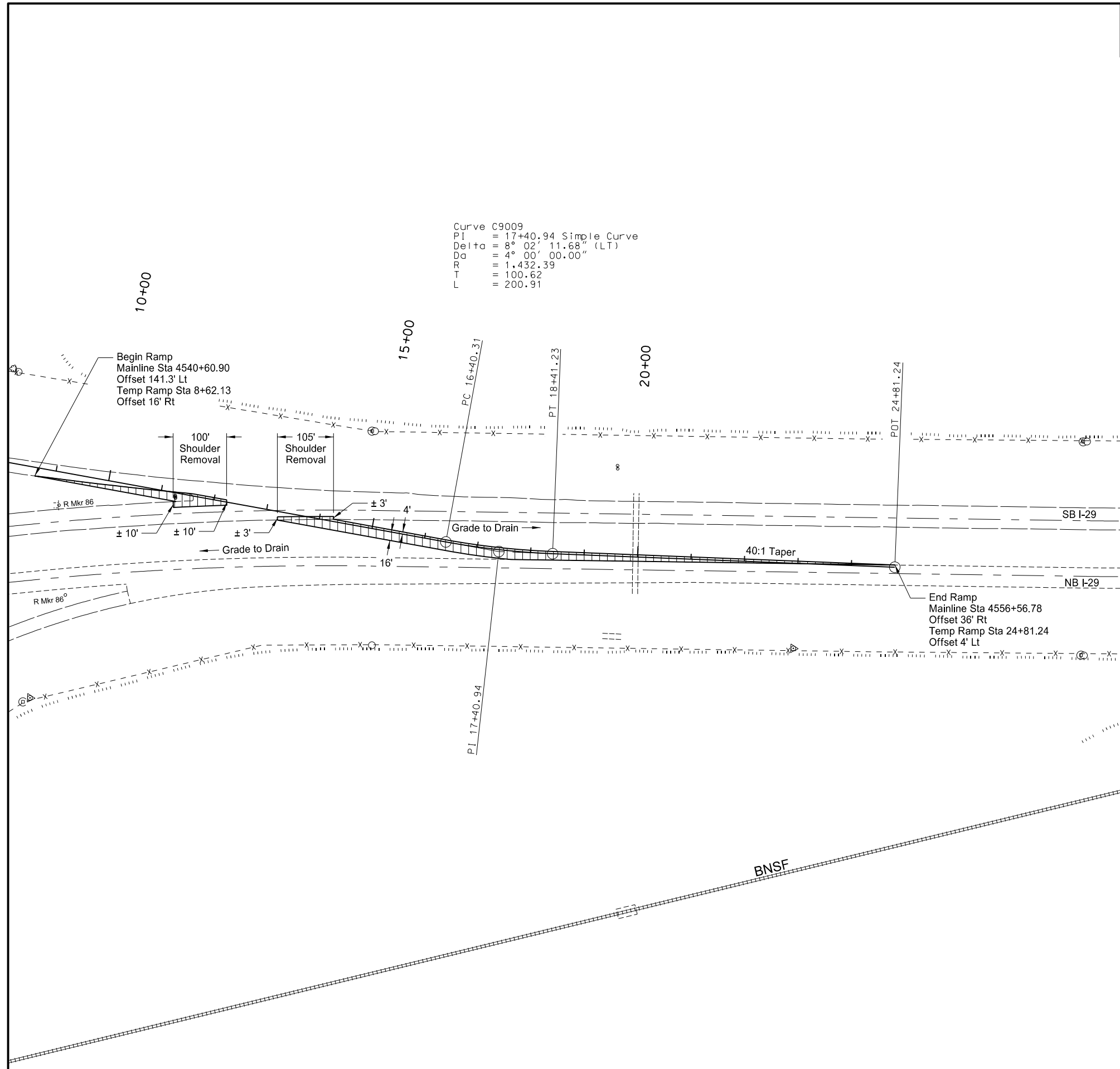
*For information only, not a pay item.

Note: See Section 30 for typical sections.

Construction materials shall not be stockpiled within the Interstate median unless it is made traversable to traffic. Materials shall either be kept outside the clear zone or made traversable.

Embankment required to construct the ramps will be placed as part of previously constructed northbound project.

 3" Commercial Grade Hot Mix Asphalt



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NW Temporary Ramp Connection
Gardner Interchange
Interstate 29 - Argusville to Hunter SB

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED					TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO.							
			1	2	3	4	5			
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)						6		
G20-1a-60	60"x24"	ROAD WORK NEXT ___ MILES						34		
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)						26		
G20-2a-48	48"x24"	END ROAD WORK	2	4	8	8	8	19	152	
G20-4-36	36"x18"	PILOT CAR FOLLOW ME						18		
G20-10-108	108"x48"	CONTRACTOR SIGN	1	1	2	2	2	64	128	
G20-50a-72	72"x36"	ROAD WORK NEXT ___ MILES RT & LT ARROWS						37		
G20-52a-72	72"x24"	ROAD WORK NEXT ___ MILES RT or LT ARROW						30		
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT	2	4	4	4	4	59	236	
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 ARROW RIGHT or LEFT				3	3	23	69	
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)						7		
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)						7		
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)						7		
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)						7		
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)						7		
R1-1-48	48"x48"	STOP						32		
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back		3	2	2	2	5	15	
R1-2-60	60"x60"	YIELD		1	4	3	4	4	29	
R2-1-48	48"x60"	SPEED LIMIT ___	6	13	24	29	24	29	1131	
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	2	5	8	21	8	21	210	
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT						35		
R4-1-48	48"x60"	DO NOT PASS	2	4	4	24	4	24	936	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL				2	2	39	78	
R5-1-48	48"x48"	DO NOT ENTER						35		
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT						13		
R7-1-12	12"x18"	NO PARKING						11		
R10-6-24	24"x36"	STOP HERE ON RED						16		
R11-2-48	48"x30"	ROAD CLOSED				9	9	28	252	
R11-2a-48	48"x30"	STREET CLOSED						28		
R11-3a-60	60"x30"	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY						31		
R11-3c-60	60"x30"	STREET CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY						31		
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC						31		
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW				2	2	35	70	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW				2	2	35	70	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW						35		
W1-6-48	48"x24"	LARGE ARROW	1	2				26	52	
W3-1-48	48"x48"	STOP AHEAD SYMBOL						35		
W3-2-48	48"x48"	YIELD AHEAD	1	4	3	4	4	35	140	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL						35		
W3-4-48	48"x48"	BE PREPARED TO STOP						35		
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	2	4	4	4	4	35	140	
W4-1R-48	48"x48"	TRAFFIC MERGING FROM RIGHT	1	4	3	4	4	35	140	
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL	2	4	4	4	4	35	140	
W4-3-48	48"x48"	ADDED LANE				1	1	35	35	
W5-1-48	48"x48"	ROAD NARROWS						35		
W5-4-48	48"x48"	RAMP NARROWS						35		
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE						35		
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW						35		
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL				20	20	35	700	
W8-1-48	48"x48"	BUMP						35		
W8-3-48	48"x48"	PAVEMENT ENDS						35		
W8-7-48	48"x48"	LOOSE GRAVEL						35		
W8-9a-48	48"x48"	SHOULDER DROP-OFF						35		
W8-11-48	48"x48"	UNEVEN LANES						35		
W8-12-48	48"x48"	NO CENTER STRIPE						35		
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY						35		
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or ___ FT.						35		
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ___ FT.						35		
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 SYMBOL						35		
W13-1-24	24"x24"	MPH ADVISORY SPEED PLATE (Mounted on warning sign post)				4	4	11	44	
W13-4-36	36"x36"	ON RAMP						17		
W13-4-48	48"x60"	RAMP ARROW	2					39	78	
W14-3-48	48"x36"	NO PASSING ZONE						23		
W16-2p-30	30"x24"	DISTANCE PLAQUE-500 FT				1	1	12	12	
W20-1-48	48"x48"	ROAD WORK AHEAD or ___ FT or ___ MILE	2	5	8	8	8	35	280	
W20-2-48	48"x48"	DETOUR AHEAD or ___ FT						35		
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or ___ FT.						35		
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or ___ FT.						35		
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or ___ FT.	2	4	8	8	4	35	280	
W20-7a-48	48"x48"	FLAGGING SYMBOL		3	2	2	2	35	105	
W20-7k-24	24"x18"	FEET (Mounted on warning sign post)						10		

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED					TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO.							
			1	2	3	4	5			
W20-8-48	48"x48"	STREET CLOSED							35	
W20-51-48	48"x48"	EQUIPMENT WORKING							35	
W20-52-54	54"x12"	NEXT ___ MILES (Mounted on warning sign post)					20	20	12	240
W21-1a-48	48"x48"	WORKERS SYMBOL							35	
W21-2-48	48"x48"	FRESH OIL							35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ___ FT							35	
W21-5-48	48"x48"	SHOULDER WORK							35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED							35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or ___ FT.							35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD							35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or ___ FT.							35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY							35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK							35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)							11	

SPECIAL SIGNS										
CONSIGN	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED					TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO.							
			1	2	3	4	5			
Consign 1	90"x42"	Argusville 1 Mile					1	1	53	53
Consign 2	108"x30"	Argusville & Exit Arrow					1	1	55	55
Consign 3	72"x24"	Exit 78					2	2	22	44
Consign 4	66"x54"	Exit 78 & Gore Arrow					1	1	51	51
Consign 5	72"x42"	Gardner 1 Mile					1	1	47	47
Consign 6	96"x30"	Gardner & Exit Arrow					1	1	46	46
Consign 7	72"x24"	Exit 85					2	2	22	44
Consign 8	66"x54"	Exit 85 & Gore Arrow					1	1	51	51

SPEC & CODE									
SPEC & CODE	DESCRIPTION	UNIT	QUANTITY					TOTAL QUANTITY	
			BY PHASE NO.						
			1	2	3	4	5		
704-1000	TRAFFIC CONTROL SIGNS								6240

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY					TOTAL QUANTITY
			BY PHASE NO.					
			1	2	3	4	5	
704-0100	FLAGGING	MHR					1250	1875
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH						
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH						
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH						
704-1045	ATTENUATION DEVICE-TYPE B-75	EACH					2	2
704-1050	TYPE I BARRICADES	EACH						
704-1051	TYPE II BARRICADES	EACH						
704-1052	TYPE III BARRICADES	EACH				12	52	68
704-1060	DELINEATOR DRUMS	EACH	35	217	42	107	34	217
704-1065	TRAFFIC CONES	EACH						
704-1067	TUBULAR MARKERS	EACH				1132	39	1107
704-1070	DELINEATOR	EACH					225	225
704-1072	FLEXIBLE DELINEATORS	EACH					674	674
704-1080	STACKABLE VERTICAL PANELS	EACH					96	96
704-1081	VERTICAL PANELS - BACK TO BACK	EACH						
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH						
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH						
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	1	2	2			2
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH					2	2
704-1095	TYPE B FLASHERS	EACH						
704-1500	OBLITERATION OF PVMT MK	SF					4524	4524
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF						
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH					79	79
762-0200	RAISED PAVEMENT MARKERS	EACH					24395	24395
762-0420	SHORT TERM 4IN LINE - TYPE R	LF						
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF					55080	55080
762-1500	OBLITERATION OF PVMT MK	SF						
772-2110	FLASHING BEACON - POST MOUNTED	EACH					2	2

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
<http://www.dot.nd.gov/>

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Traffic Control Devices List
Interstate 29-Argusville to Hunter SB

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO. 6	7			
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)				6	
G20-1a-60	60"x24"	ROAD WORK NEXT ___ MILES				34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)				26	
G20-2a-48	48"x24"	END ROAD WORK	5	2	5	19	95
G20-4-36	36"x18"	PILOT CAR FOLLOW ME				18	
G20-10-108	108"x48"	CONTRACTOR SIGN	1	1	1	64	64
G20-50a-72	72"x36"	ROAD WORK NEXT ___ MILES RT & LT ARROWS				37	
G20-52a-72	72"x24"	ROAD WORK NEXT ___ MILES RT or LT ARROW				30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT	2		2	59	118
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 ARROW RIGHT or LEFT				23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)				7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)				7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)				7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)				7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)				7	
R1-1-48	48"x48"	STOP	1		1	32	32
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back	3		3	5	15
R1-2-60	60"x60"	YIELD				29	
R2-1-48	48"x60"	SPEED LIMIT ___	9	18	18	39	702
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	1	6	6	10	60
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT				35	
R4-1-48	48"x60"	DO NOT PASS	6		6	39	234
R4-7-48	48"x60"	KEEP RIGHT SYMBOL				39	
R5-1-48	48"x48"	DO NOT ENTER				35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT				13	
R7-1-12	12"x18"	NO PARKING				11	
R10-6-24	24"x36"	STOP HERE ON RED				16	
R11-2-48	48"x30"	ROAD CLOSED				28	
R11-2a-48	48"x30"	STREET CLOSED				28	
R11-3a-60	60"x30"	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY				31	
R11-3c-60	60"x30"	STREET CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY				31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC				31	
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW				35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW				35	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW				35	
W1-6-48	48"x24"	LARGE ARROW				26	
W3-1-48	48"x48"	STOP AHEAD SYMBOL				35	
W3-2-48	48"x48"	YIELD AHEAD				35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL				35	
W3-4-48	48"x48"	BE PREPARED TO STOP				35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	4	6	6	35	210
W4-1R-48	48"x48"	TRAFFIC MERGING FROM RIGHT				35	
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL	6		6	35	210
W4-3-48	48"x48"	ADDED LANE				35	
W5-1-48	48"x48"	ROAD NARROWS				35	
W5-4-48	48"x48"	RAMP NARROWS	6		6	35	210
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE				35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW				35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL				35	
W8-1-48	48"x48"	BUMP				35	
W8-3-48	48"x48"	PAVEMENT ENDS				35	
W8-7-48	48"x48"	LOOSE GRAVEL				35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF				35	
W8-11-48	48"x48"	UNEVEN LANES				35	
W8-12-48	48"x48"	NO CENTER STRIPE				35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY				35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or ___ FT.				35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ___ FT.				35	
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 SYMBOL				35	
W13-1-24	24"x24"	MPH ADVISORY SPEED PLATE (Mounted on warning sign post)	6		6	11	66
W13-4-36	36"x36"	ON RAMP	3		3	17	51
W13-4-48	48"x60"	RAMP ARROW	3		3	39	117
W14-3-48	48"x36"	NO PASSING ZONE				23	
W16-2p-30	30"x24"	DISTANCE PLAQUE-500 FT				12	
W20-1-48	48"x48"	ROAD WORK AHEAD or ___ FT or ___ MILE	6	6	6	35	210
W20-2-48	48"x48"	DETOUR AHEAD or ___ FT				35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or ___ FT.				35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or ___ FT.				35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or ___ FT.	6		6	35	210
W20-7a-48	48"x48"	FLAGGING SYMBOL	3		3	35	105
W20-7k-24	24"x18"	___ FEET (Mounted on warning sign post)				10	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO. 6	7			
W20-8-48	48"x48"	STREET CLOSED				35	
W20-51-48	48"x48"	EQUIPMENT WORKING				35	
W20-52-54	54"x12"	NEXT ___ MILES (Mounted on warning sign post)	4		4	12	48
W21-1a-48	48"x48"	WORKERS SYMBOL				35	
W21-2-48	48"x48"	FRESH OIL				35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ___ FT				35	
W21-5-48	48"x48"	SHOULDER WORK				35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED	4		4	35	140
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or ___ FT.	4		4	35	140
W21-6a-48	48"x48"	SURVEY CREW AHEAD				35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or ___ FT.				35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY				35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK				35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)				11	

SPECIAL SIGNS

CONSIGN	SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
Consign 1	90"x42"	Argusville 1 Mile			53
Consign 2	108"x30"	Argusville & Exit Arrow			55
Consign 3	72"x24"	Exit 78			22
Consign 4	66"x54"	Exit 78 & Gore Arrow			51
Consign 5	72"x42"	Gardner 1 Mile			47
Consign 6	96"x30"	Gardner & Exit Arrow			46
Consign 7	72"x24"	Exit 85			22
Consign 8	66"x54"	Exit 85 & Gore Arrow			51

SPEC & CODE

CODE	DESCRIPTION	TOTAL UNITS
704-1000	TRAFFIC CONTROL SIGNS	3037

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO.		TOTAL QUANTITY
			6	7	
704-0100	FLAGGING	MHR	300		300
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH			
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH			
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH			
704-1045	ATTENUATION DEVICE-TYPE B-75	EACH			
704-1050	TYPE I BARRICADES	EACH			
704-1051	TYPE II BARRICADES	EACH			
704-1052	TYPE III BARRICADES	EACH	1		1
704-1060	DELINEATOR DRUMS	EACH	98	106	106
704-1065	TRAFFIC CONES	EACH			
704-1067	TUBULAR MARKERS	EACH	78		78
704-1070	DELINEATOR	EACH			
704-1072	FLEXIBLE DELINEATORS	EACH			
704-1080	STACKABLE VERTICAL PANELS	EACH			
704-1081	VERTICAL PANELS - BACK TO BACK	EACH			
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH			
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH			
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	3		3
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH			
704-1095	TYPE B FLASHERS	EACH			
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF			
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH			
762-0200	RAISED PAVEMENT MARKERS	EACH			
762-0420	SHORT TERM 4IN LINE - TYPE R	LF			
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF			
762-1500	OBLITERATION OF PVMT MK	SF			
772-2110	FLASHING BEACON - POST MOUNTED	EACH			

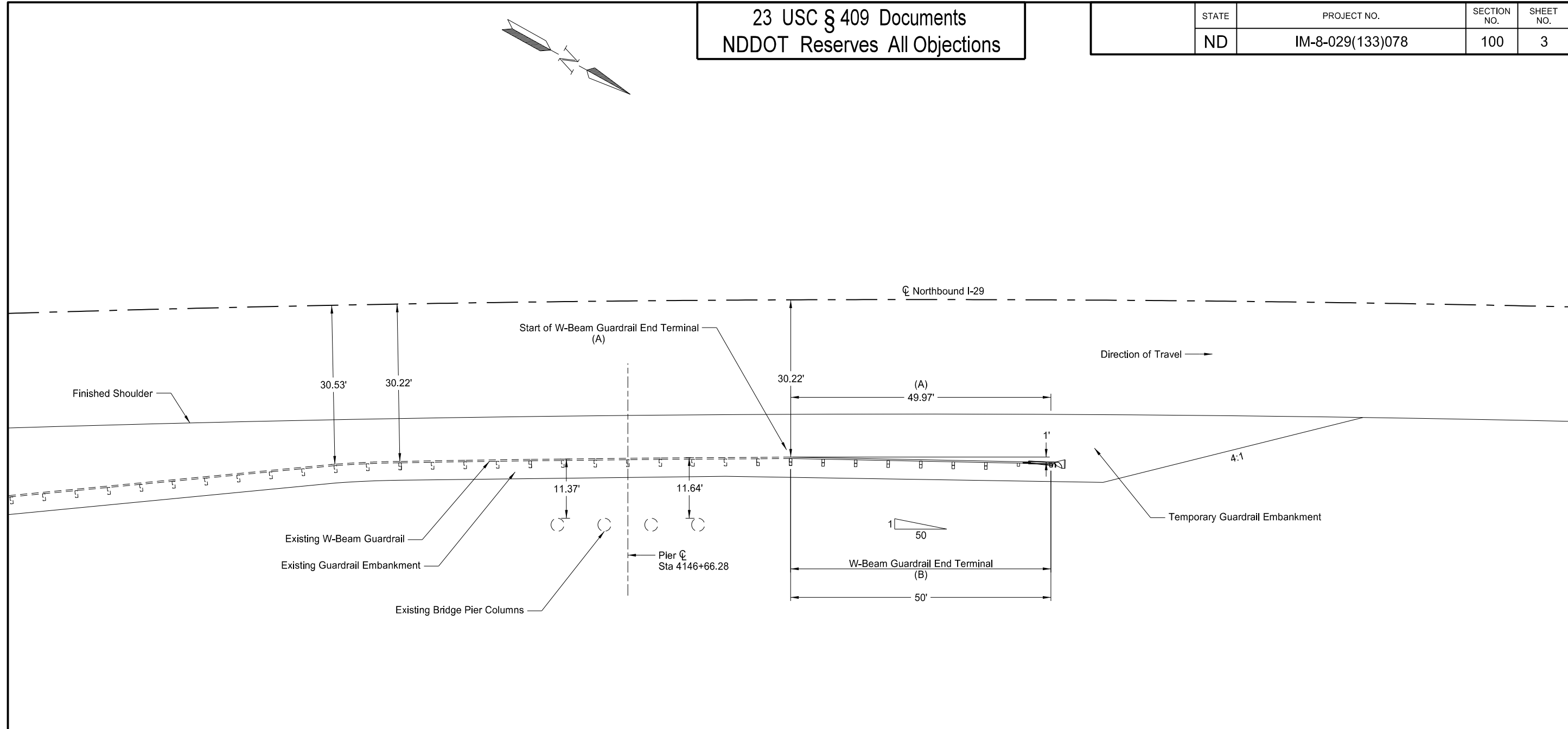
NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
<http://www.dot.nd.gov/>

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Traffic Control Devices List
Interstate 29-Argusville to Hunter SB

23 USC § 409 Documents
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	3



W-Beam Guardrail End Terminal (A)(B)
 Argusville Interchange 1 EA

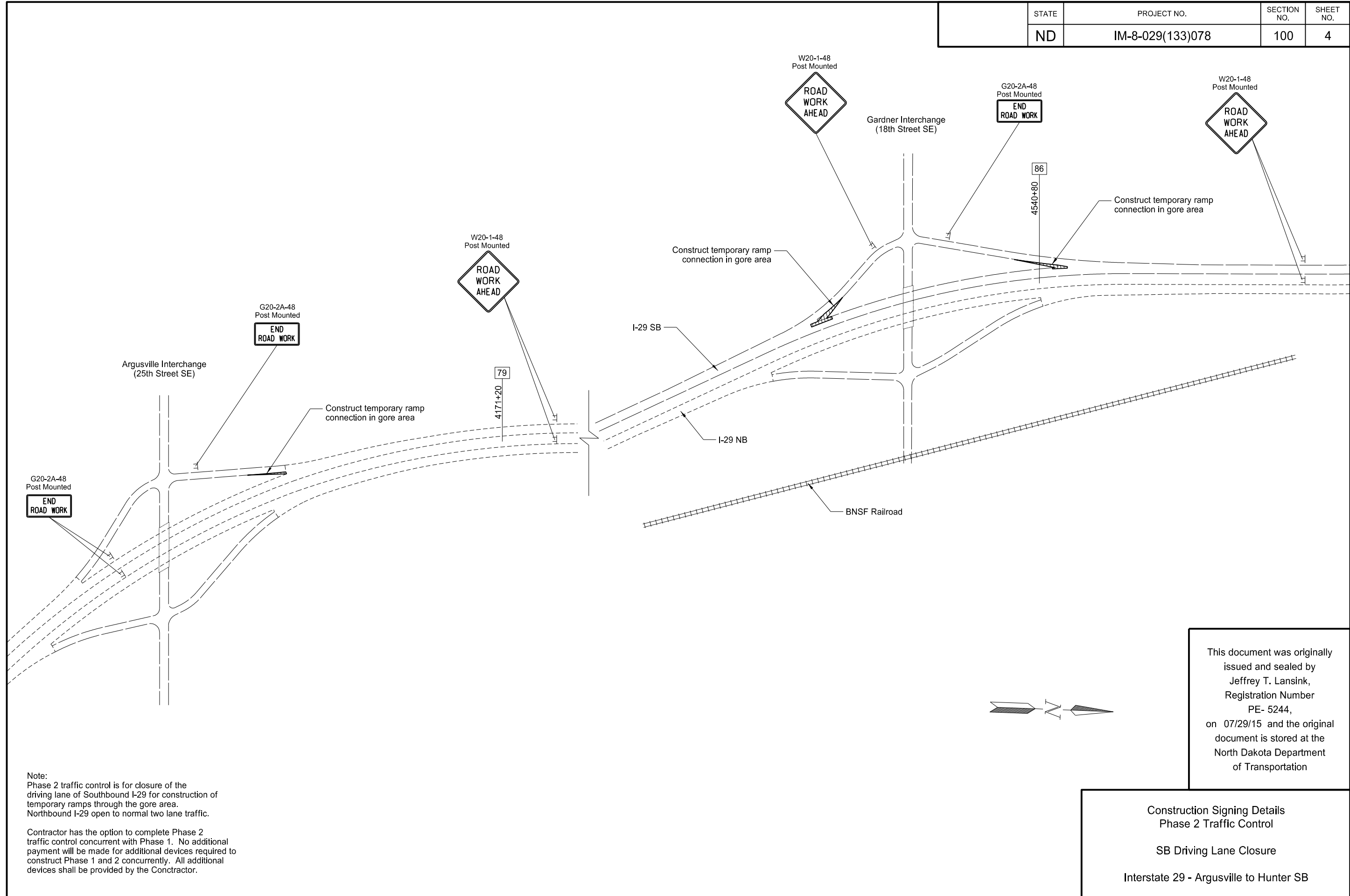
Notes

- (A) SCOPE OF WORK: Work consists of removing existing W-beam flared end section, installing temporary guardrail embankment, and installing W-beam guardrail end terminal.
- W-beam guardrail end terminal shall be removed and original W-beam flared end section replaced during Phase 7 traffic control.
- All cost for removal of existing W-beam flared end section, installation of temporary guardrail embankment, and installation of W-beam guardrail end terminal shall not be paid separately, but shall be included in the price bid for "W-Beam Guardrail End Terminal".
- (B) An SKT or FLEAT end terminal shall be installed at this location.
- If the FLEAT is to be installed, the flare rate shown on Standard Drawing D-764-6 shall be used. Any additional fill material required to allow for installation of the FLEAT shall be at the contractor's expense.
- If the SKT end terminal is to be installed, a 50:1 taper shall be used for this end terminal.

This document was originally issued and sealed by Adam R. Walker Registration Number PE- 5845, on 07/29/15 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 1 Traffic Control
 Argusville Interchange
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	4



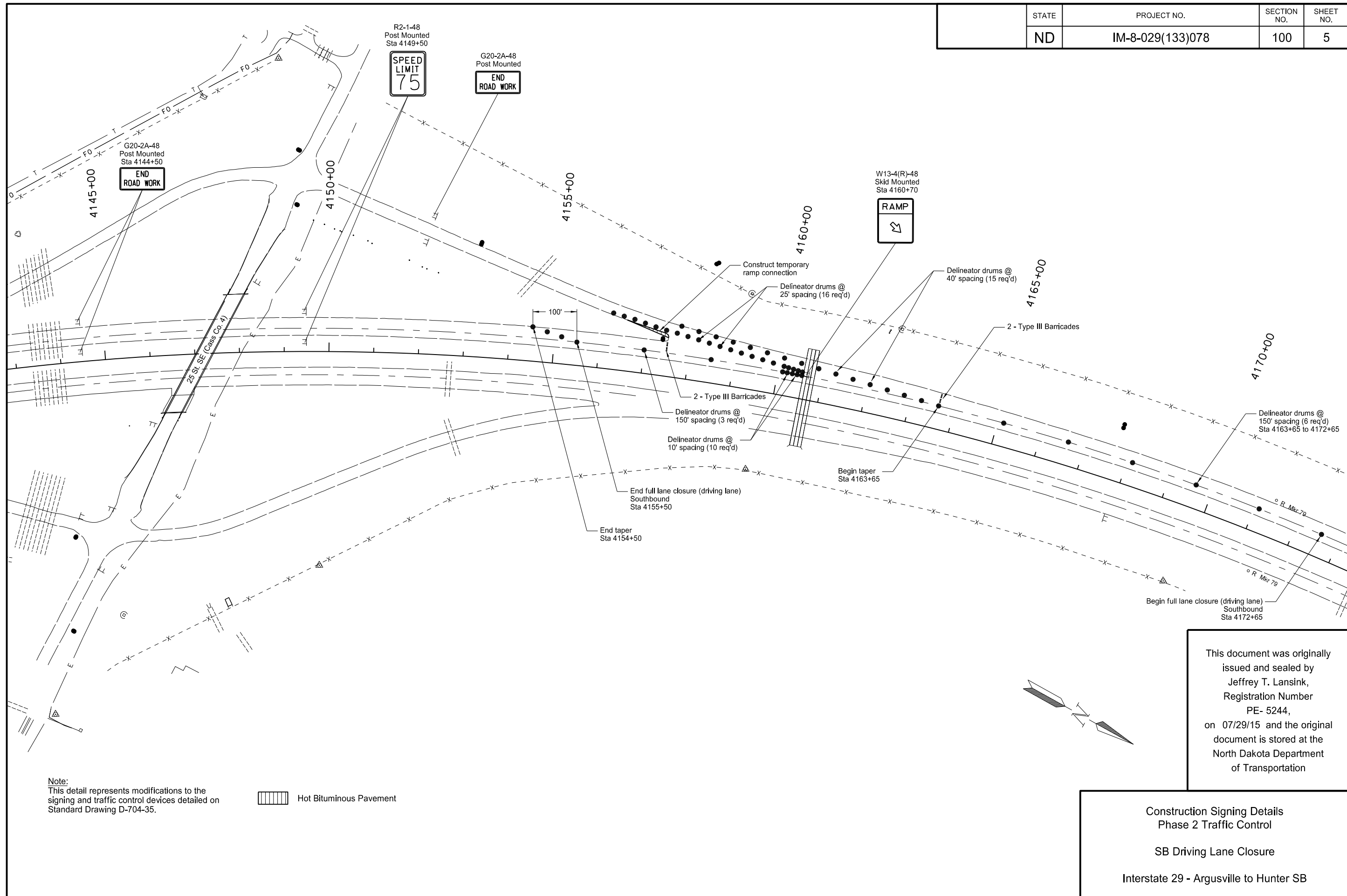
Note:
 Phase 2 traffic control is for closure of the driving lane of Southbound I-29 for construction of temporary ramps through the gore area. Northbound I-29 open to normal two lane traffic.

Contractor has the option to complete Phase 2 traffic control concurrent with Phase 1. No additional payment will be made for additional devices required to construct Phase 1 and 2 concurrently. All additional devices shall be provided by the Contractor.


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Construction Signing Details
 Phase 2 Traffic Control
 SB Driving Lane Closure
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	5



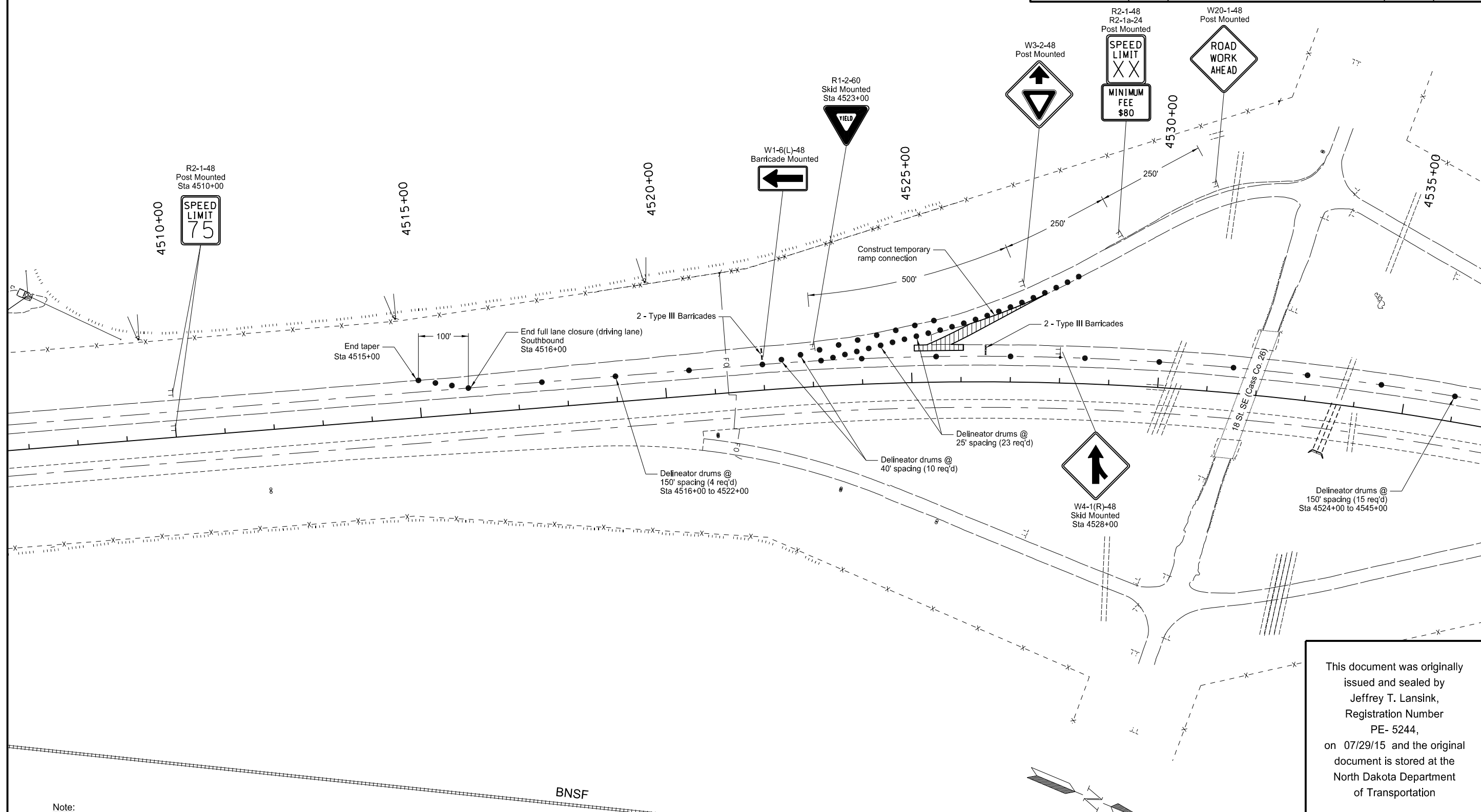
Note:
This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-35.

 Hot Bituminous Pavement

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Construction Signing Details
Phase 2 Traffic Control
SB Driving Lane Closure
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	6



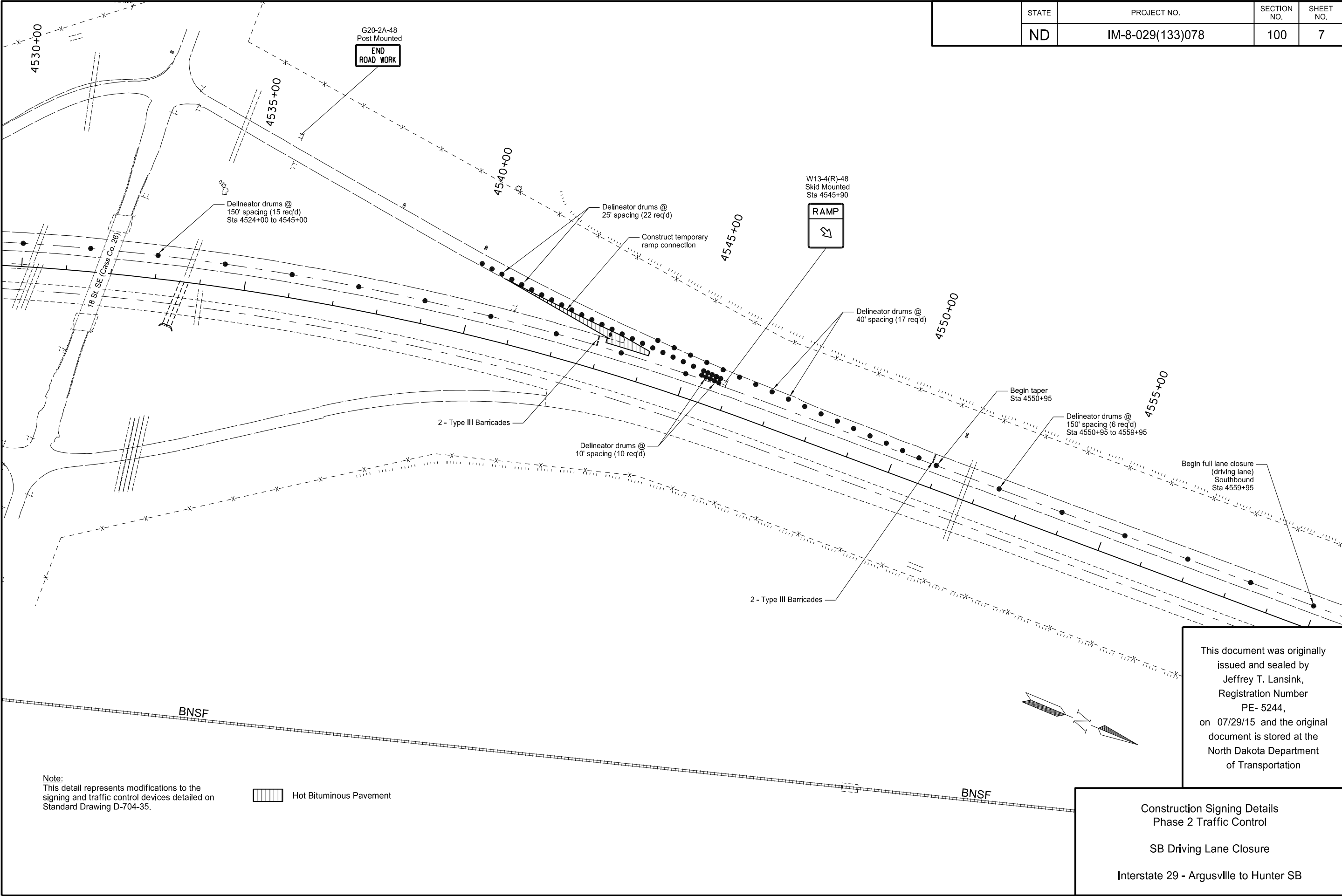
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Construction Signing Details
Phase 2 Traffic Control
SB Driving Lane Closure
Interstate 29 - Argusville to Hunter SB

Note: This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-35.

Hot Bituminous Pavement

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	7



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Construction Signing Details
Phase 2 Traffic Control

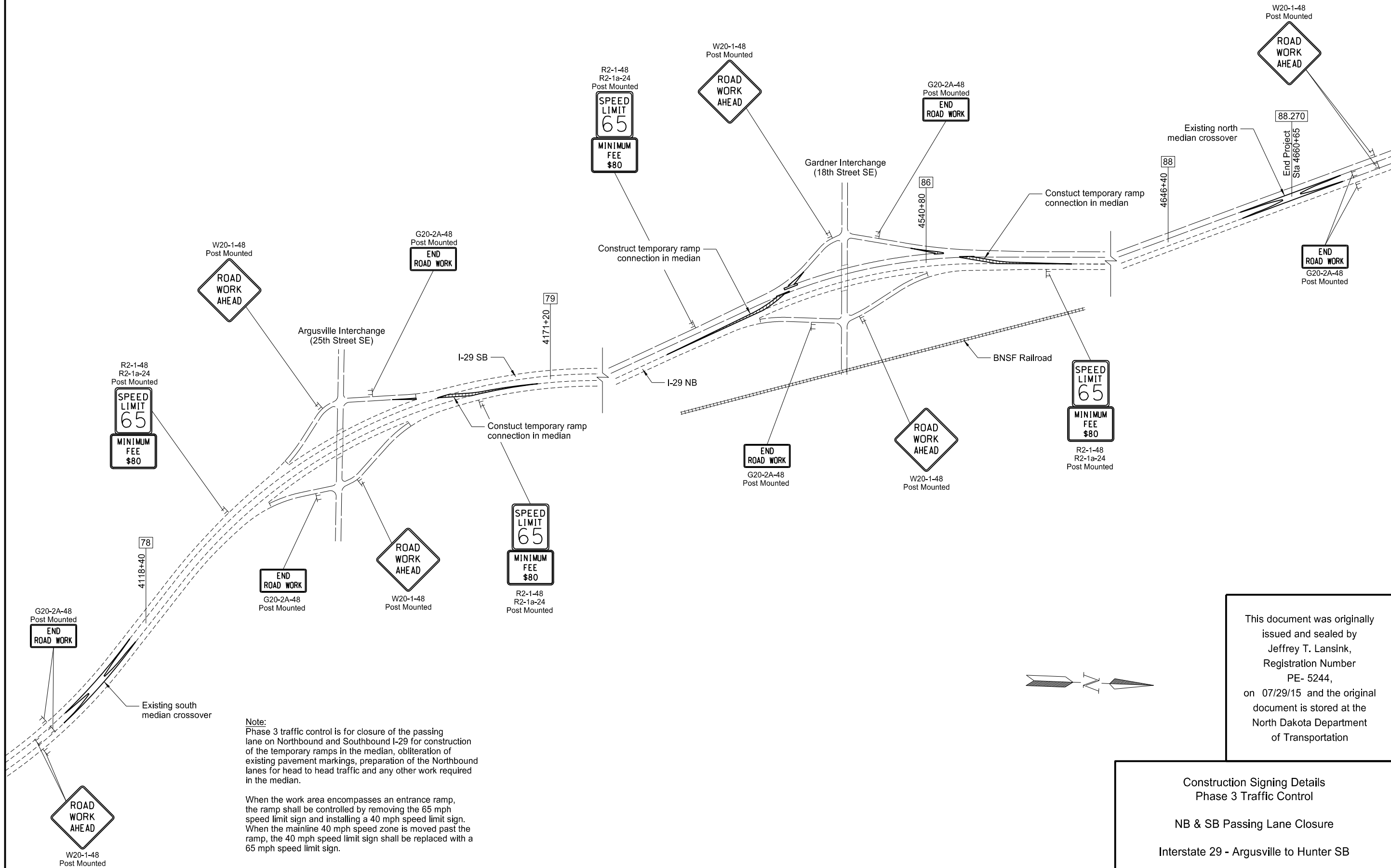
SB Driving Lane Closure

Interstate 29 - Argusville to Hunter SB

Note:
This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-35.

Hot Bituminous Pavement

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	8



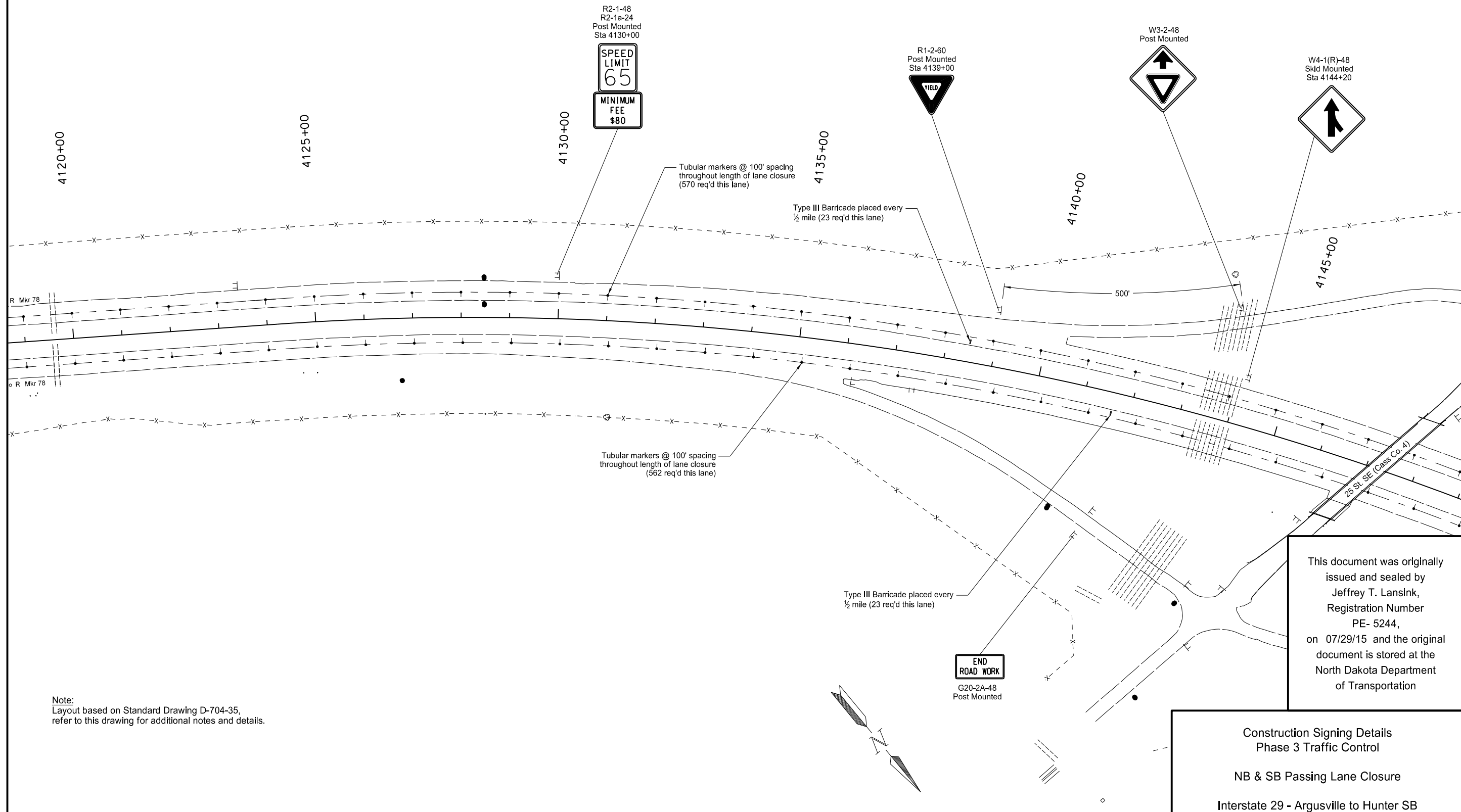
Note:
Phase 3 traffic control is for closure of the passing lane on Northbound and Southbound I-29 for construction of the temporary ramps in the median, obliteration of existing pavement markings, preparation of the Northbound lanes for head to head traffic and any other work required in the median.

When the work area encompasses an entrance ramp, the ramp shall be controlled by removing the 65 mph speed limit sign and installing a 40 mph speed limit sign. When the mainline 40 mph speed zone is moved past the ramp, the 40 mph speed limit sign shall be replaced with a 65 mph speed limit sign.

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Construction Signing Details
Phase 3 Traffic Control
NB & SB Passing Lane Closure
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	9

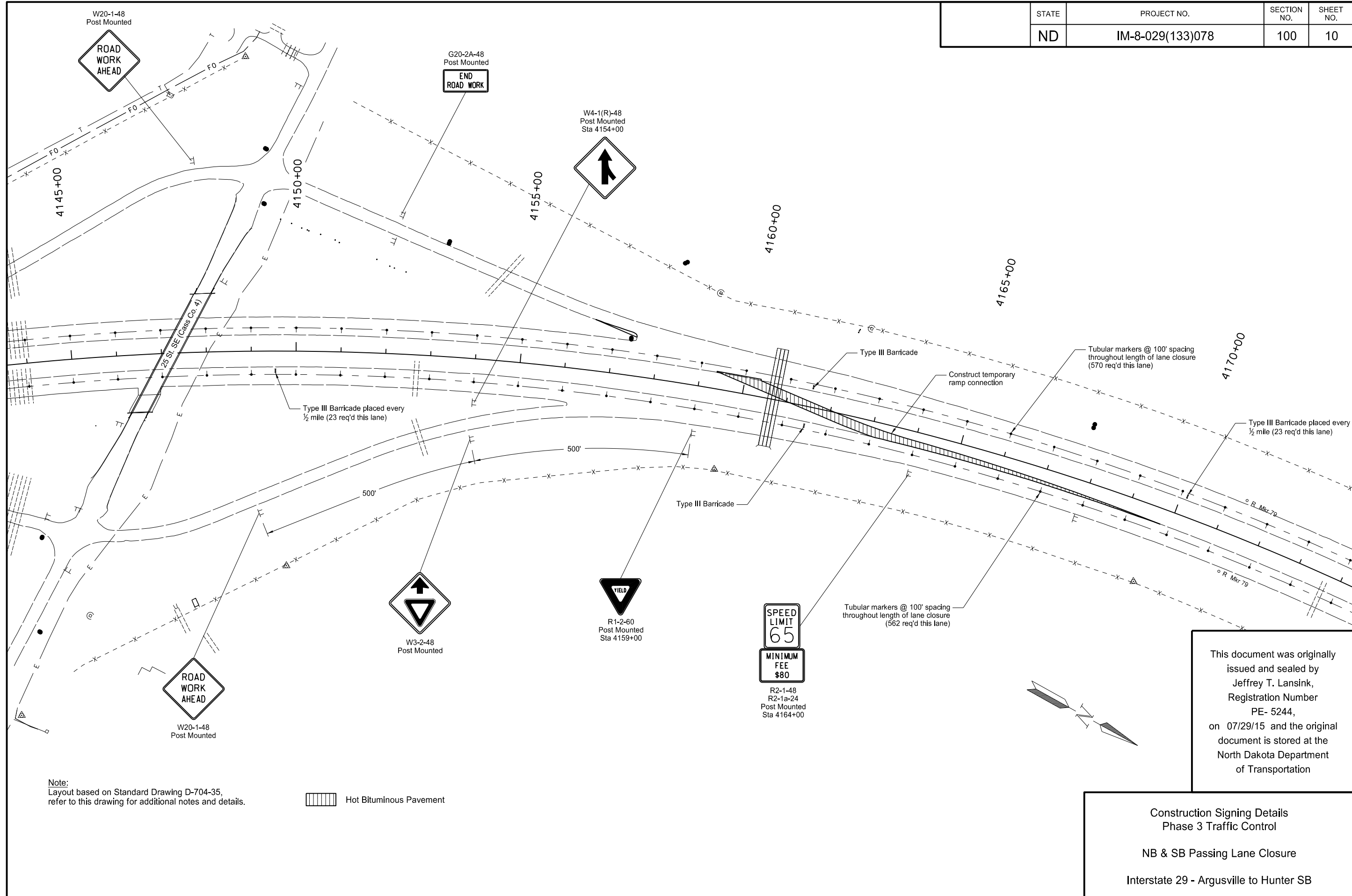


Note:
Layout based on Standard Drawing D-704-35,
refer to this drawing for additional notes and details.

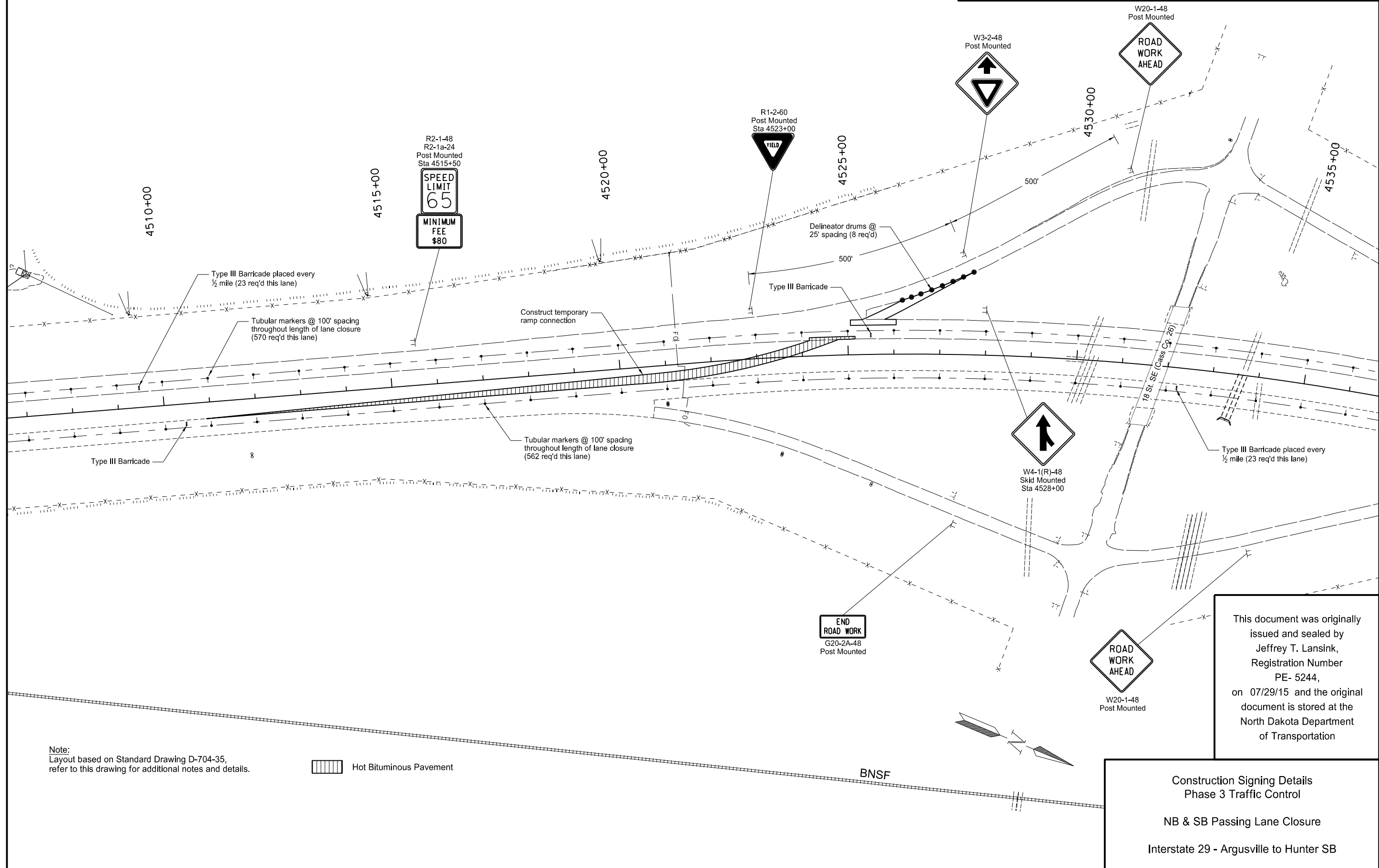
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Construction Signing Details
Phase 3 Traffic Control
NB & SB Passing Lane Closure
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	10



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	11



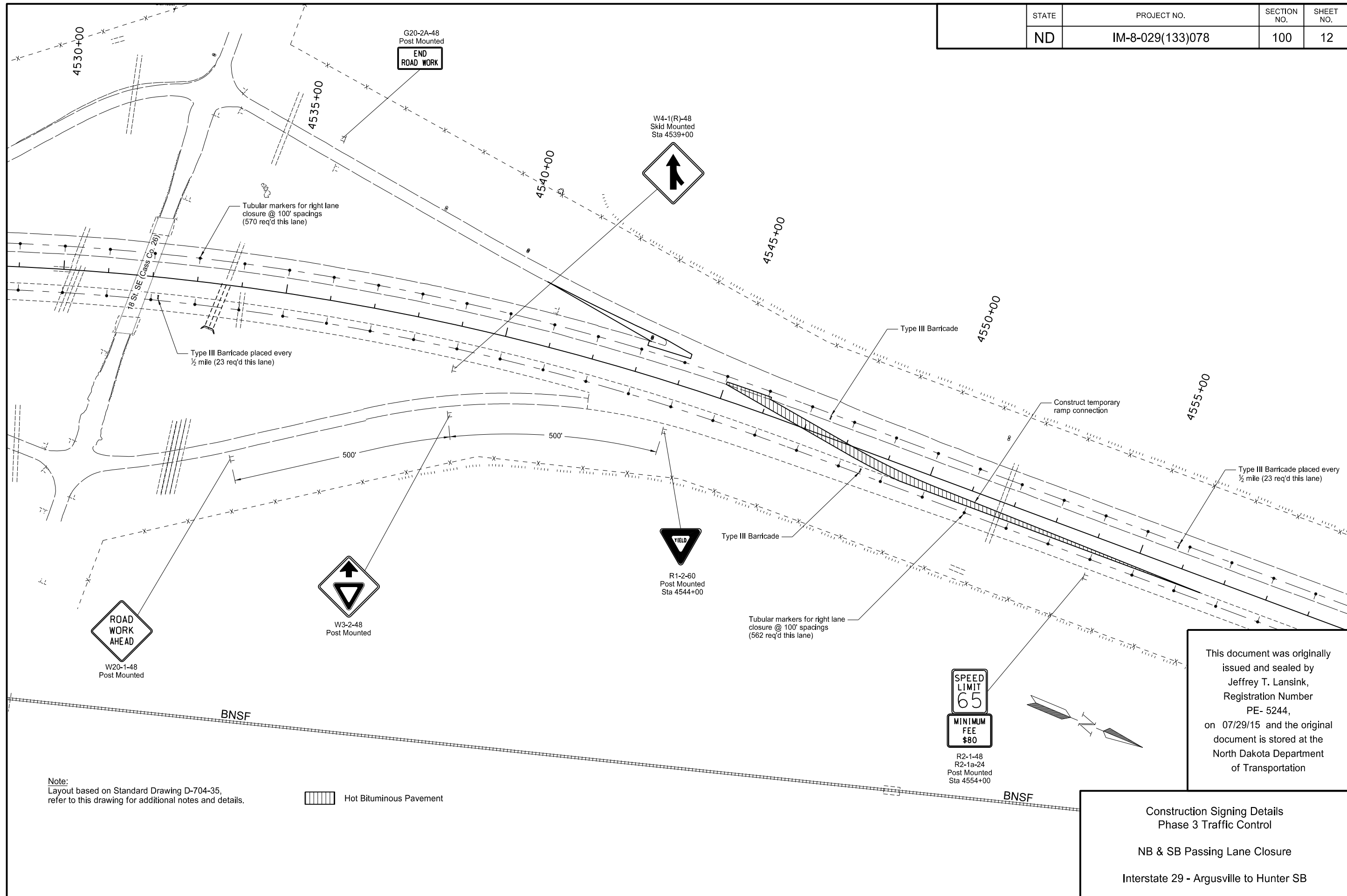
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Construction Signing Details
Phase 3 Traffic Control
NB & SB Passing Lane Closure
Interstate 29 - Argusville to Hunter SB

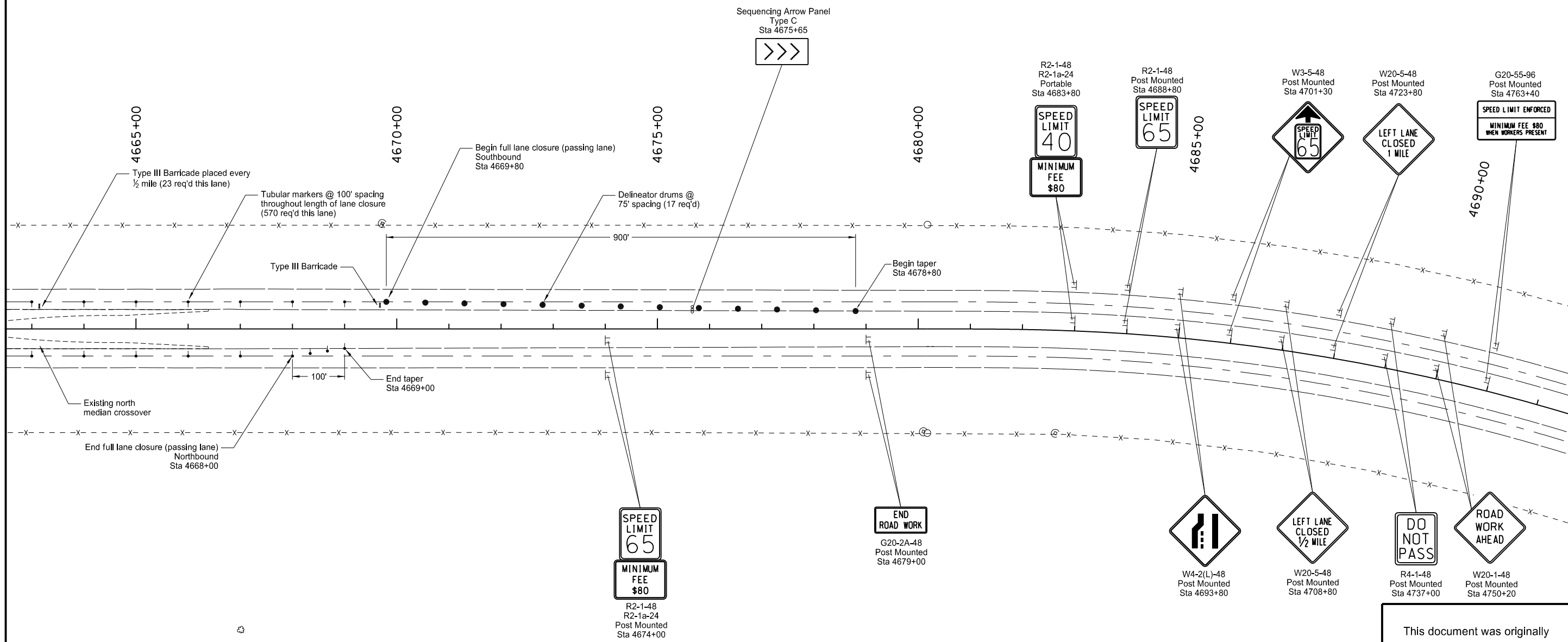
Note:
Layout based on Standard Drawing D-704-35,
refer to this drawing for additional notes and details.

 Hot Bituminous Pavement

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	12



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	13



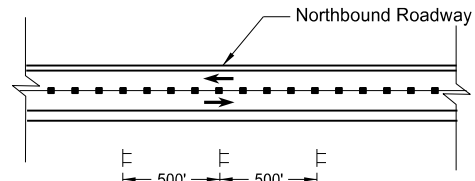
Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

The 40 mph speed limit sign shall be moved as the work area moves through the construction zone. When flaggers are present, the 40 mph speed limit sign and a portable 65 mph speed limit sign shall be spaced at 500' in advance of the flagging sign. A 65 mph speed limit sign shall be placed at the end of the work area to reestablish the speed limit. Upon completion of the work day or when workers are not present, the 65 mph speed limit, 40 mph speed limit, and the Minimum Fee \$80 sign shall be covered or removed.

Layout based on Standard Drawing D-704-35, refer to this drawing for additional notes and details.

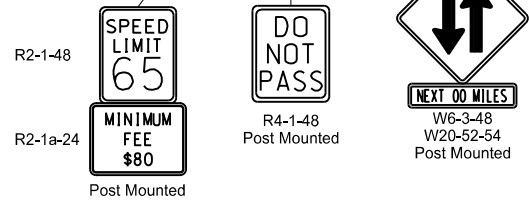
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Construction Signing Details
Phase 3 Traffic Control
NB & SB Passing Lane Closure
Interstate 29 - Argusville to Hunter SB

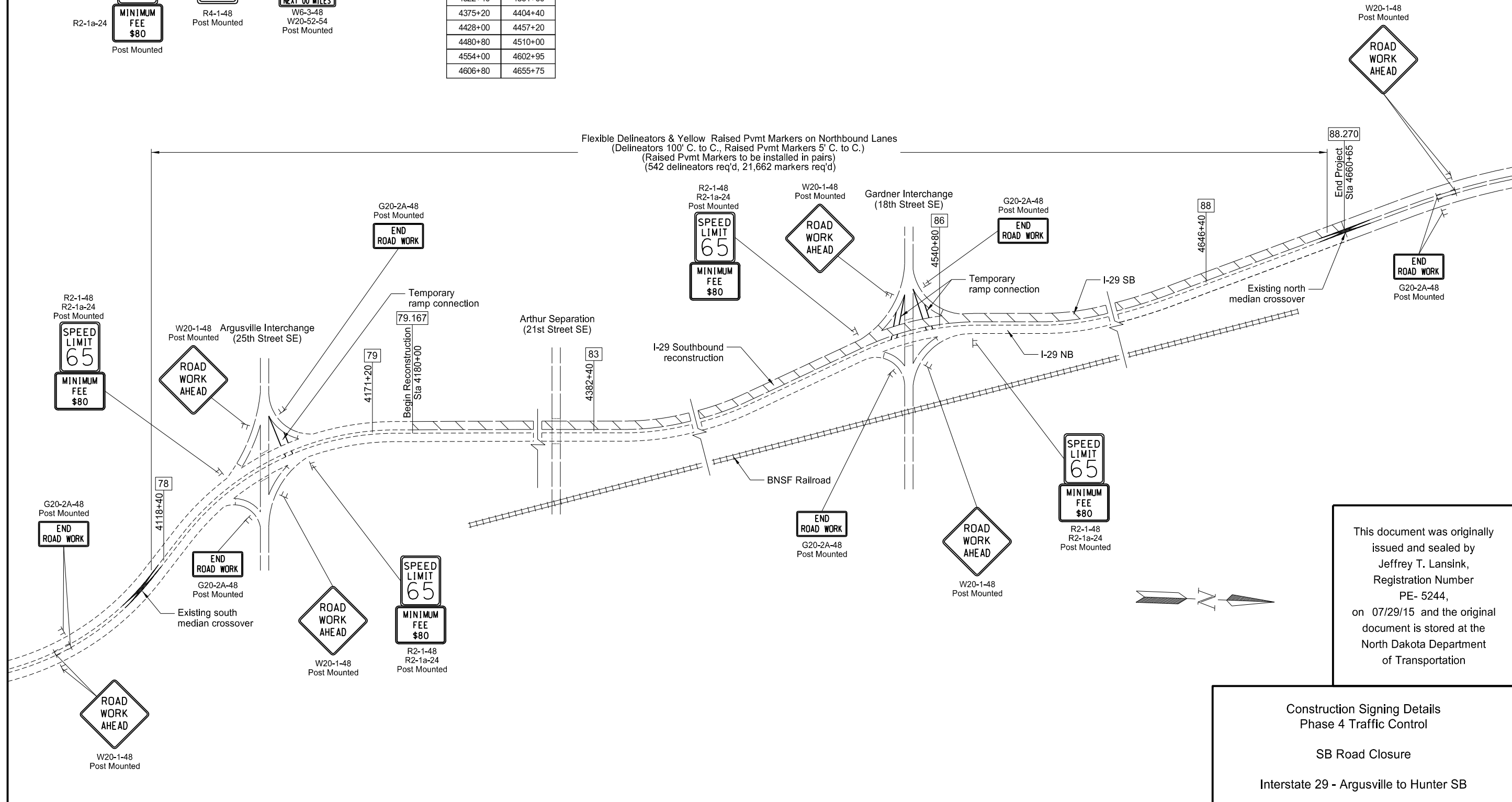


Sign grouping to be installed along the Northbound lanes during head to head traffic at the stations shown in the table below. Northbound lane signs shall be installed on the driving lane facing south and Southbound signs shall be installed on the passing lane facing north (signs for Northbound lanes are shown to the left, stations listed below correspond to the stationing of the speed limit sign).

Northbound	Southbound
4115+25	4140+40
4164+00	4193+20
4216+80	4246+00
4269+60	4298+80
4322+40	4351+60
4375+20	4404+40
4428+00	4457+20
4480+80	4510+00
4554+00	4602+95
4606+80	4655+75



Note:
Phase 4 traffic control is for the closure of the Southbound lanes of Interstate 29 for reconstruction and diverting traffic to head to head travel on the Northbound lanes of Interstate 29.



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Construction Signing Details
Phase 4 Traffic Control

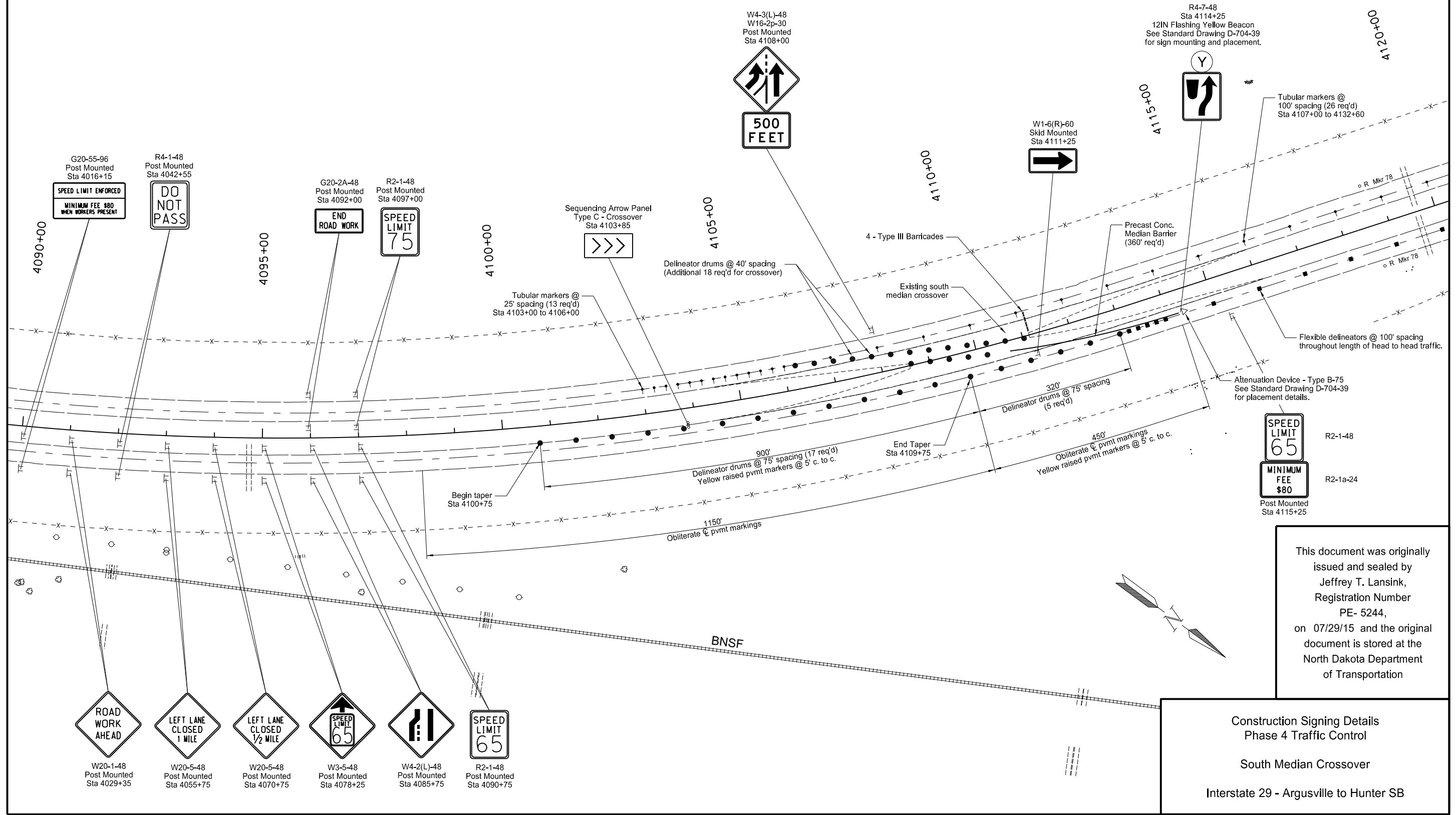
SB Road Closure

Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	15

Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-39. Refer to this drawing for additional notes and details.

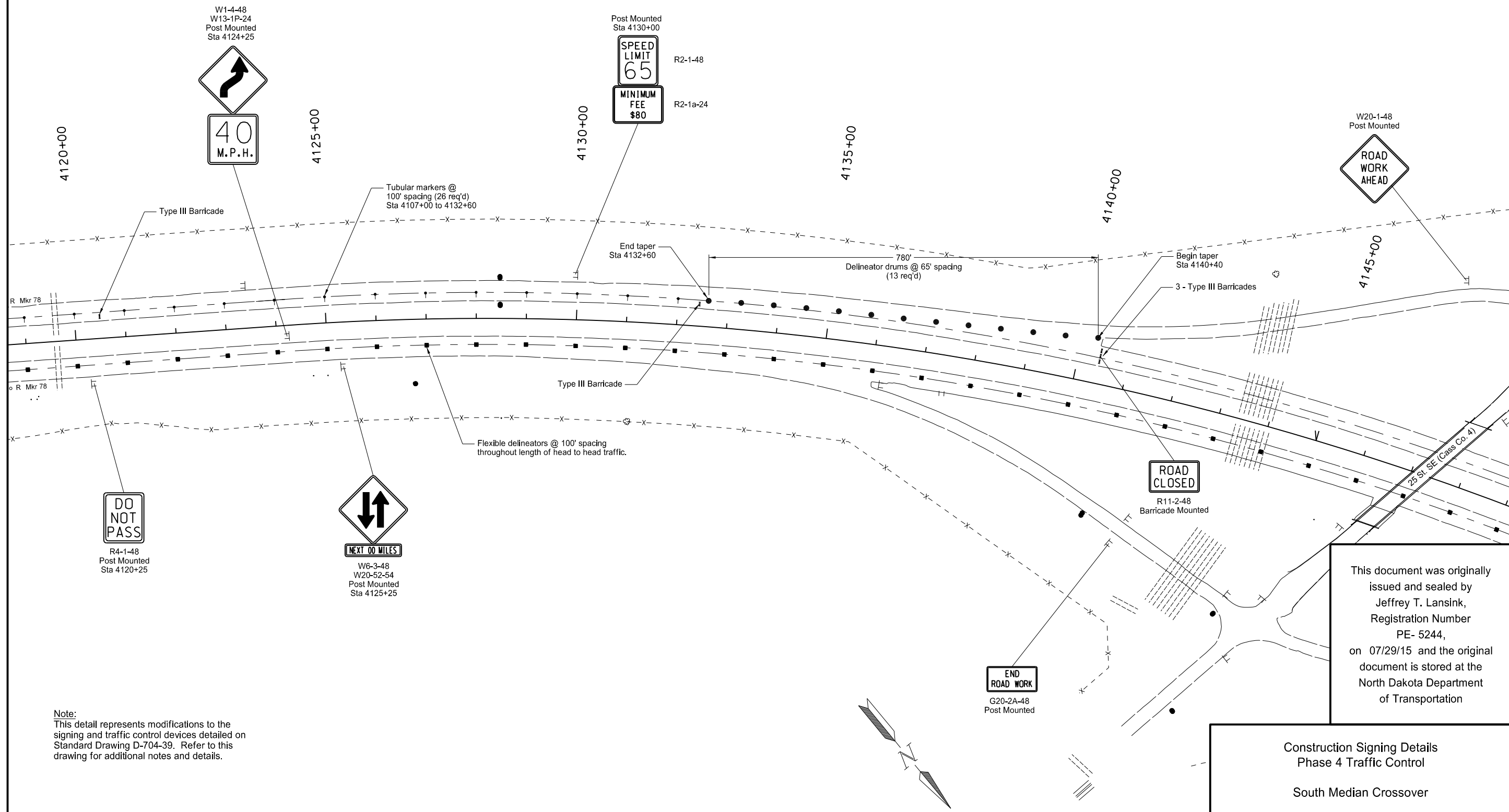


SPEED LIMIT 65
R2-1-48
MINIMUM FEE \$80
R2-1a-24
Post Mounted
Sta 4115+25

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Construction Signing Details
Phase 4 Traffic Control
South Median Crossover
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	16

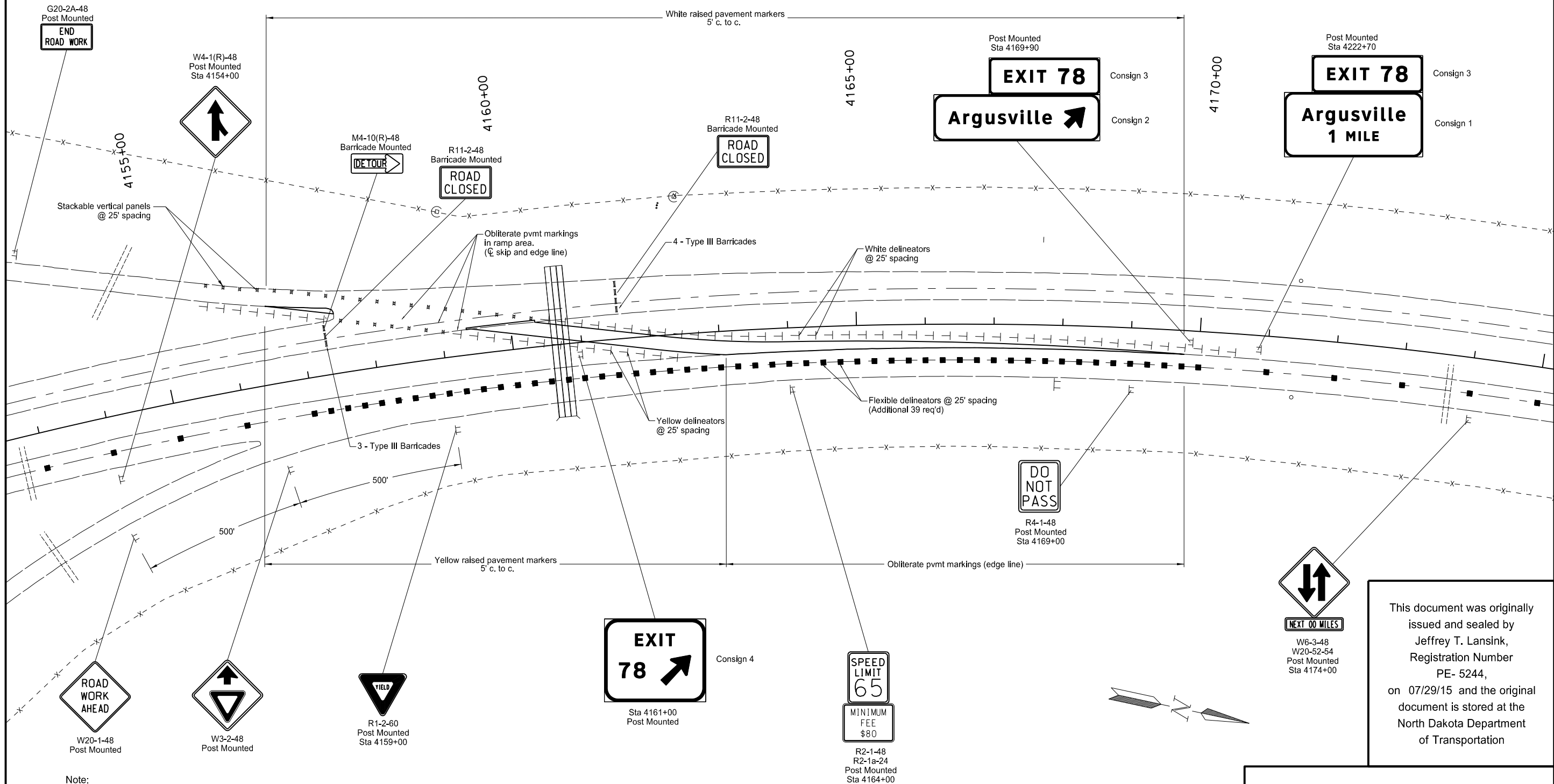


Note:
 This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-39. Refer to this drawing for additional notes and details.

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Construction Signing Details
 Phase 4 Traffic Control
 South Median Crossover
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	17

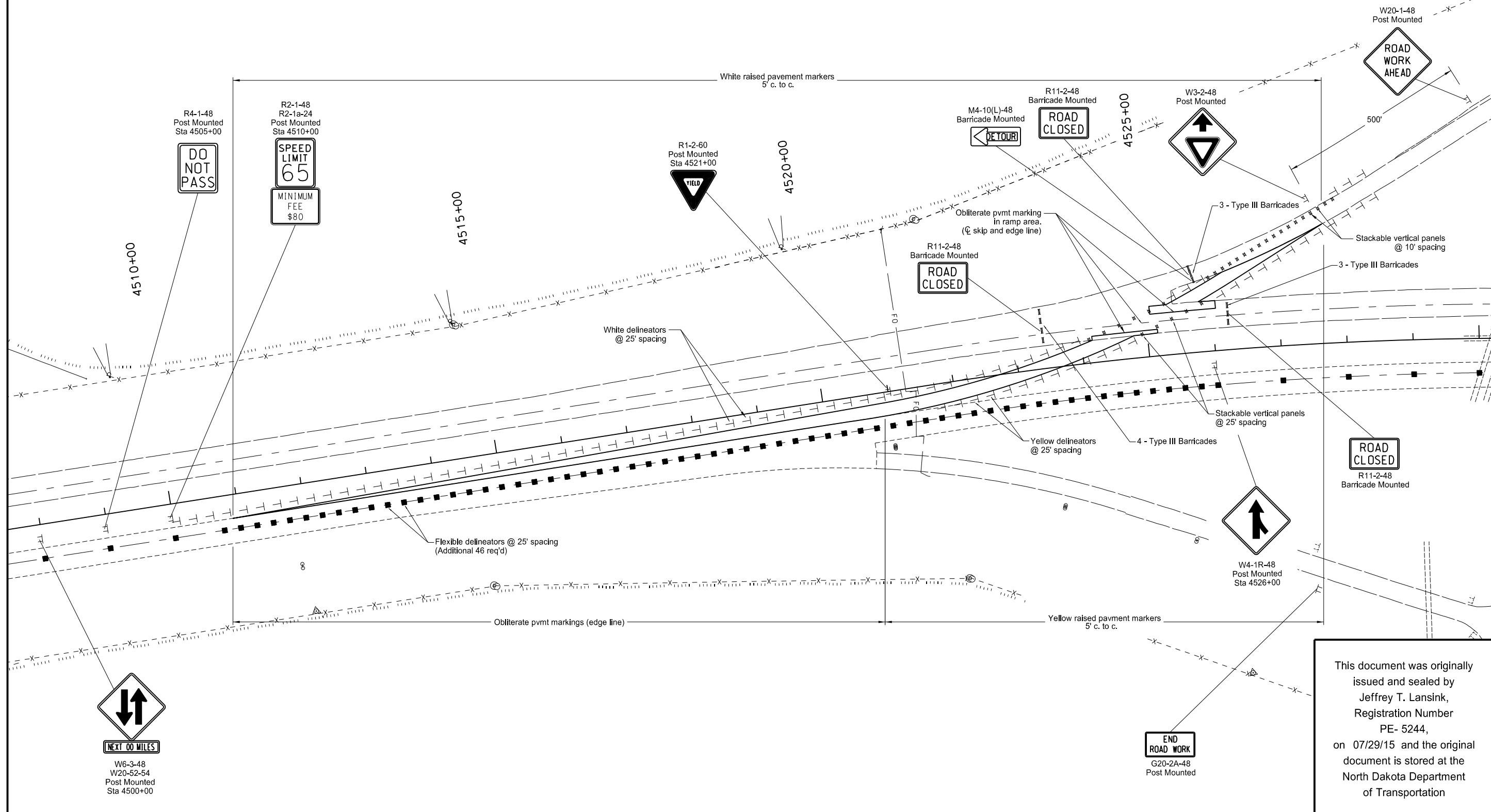


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Construction Signing Details
Phase 4 Traffic Control
Temporary Ramp - Argusville Interchange
Interstate 29 - Argusville to Hunter SB

Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

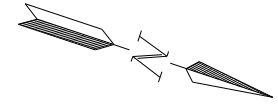
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	18



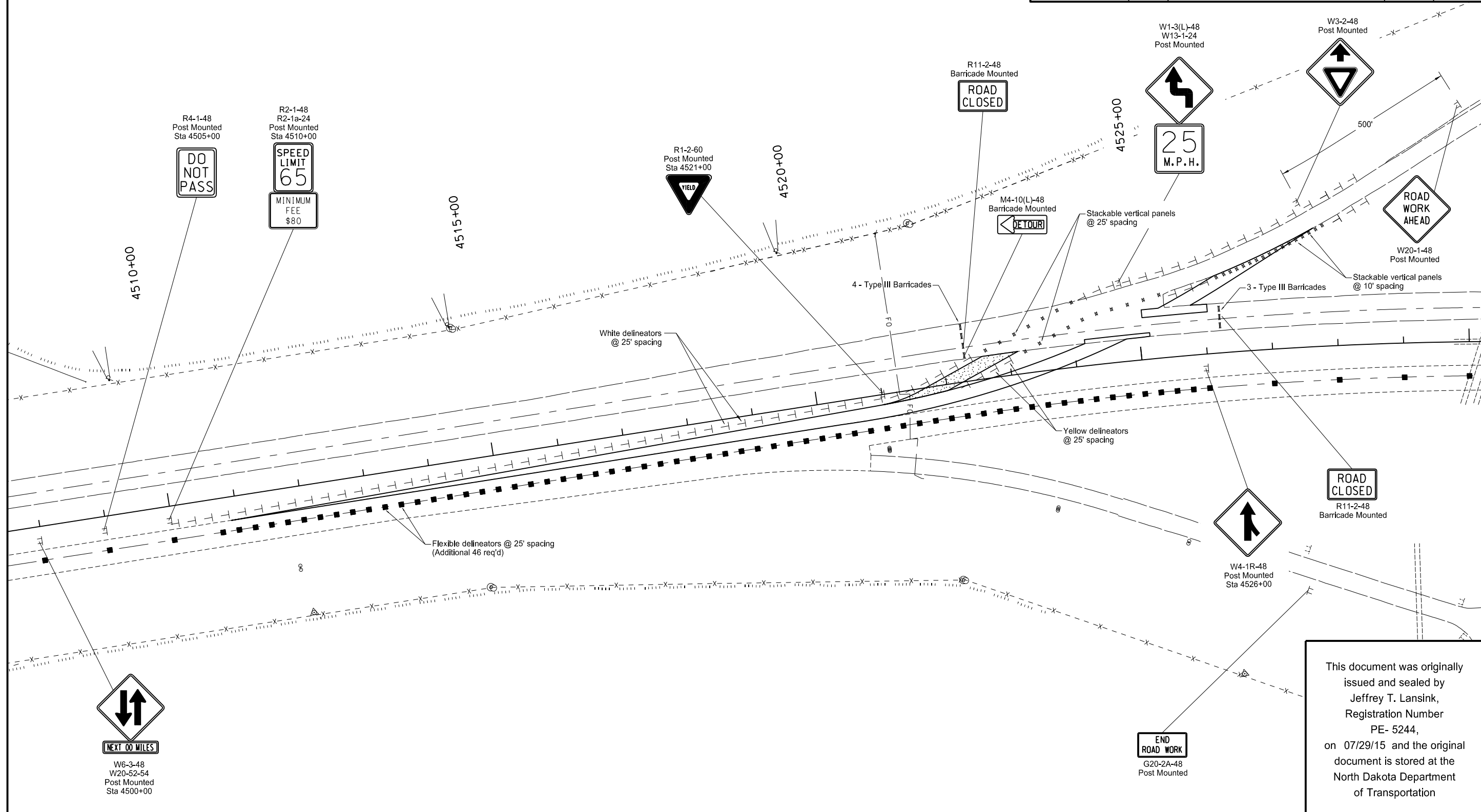
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Construction Signing Details
Phase 4 Traffic Control
Temporary Ramp - Gardner Interchange
Interstate 29 - Argusville to Hunter SB

Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	19



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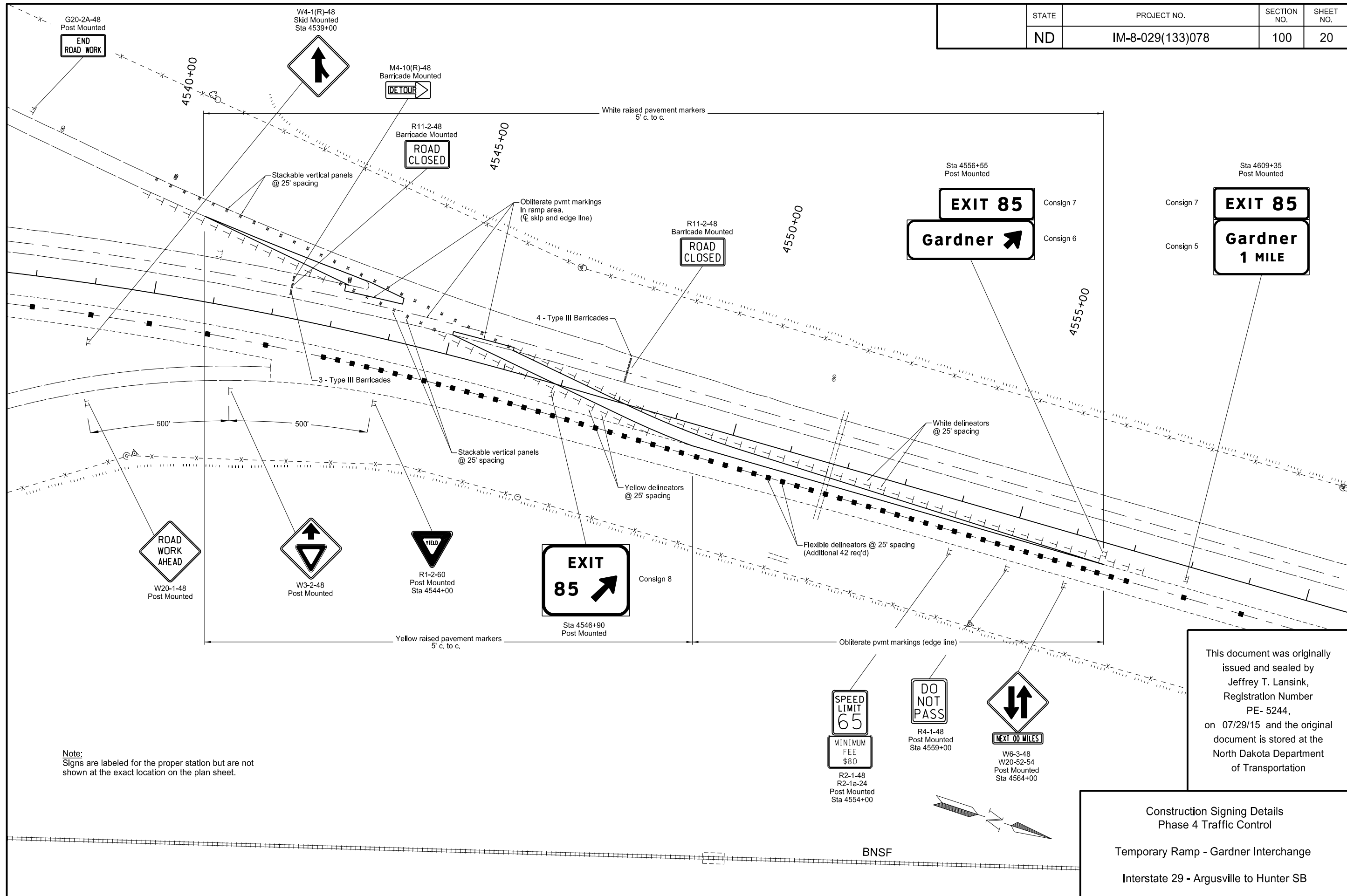
Construction Signing Details
Phase 4 Traffic Control
Temporary Bypass - Gardner Interchange
Interstate 29 - Argusville to Hunter SB

Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

Traffic control devices required for temporary bypass shall be obtained from the temporary ramp connection.

 Aggregate Surfacing

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	20

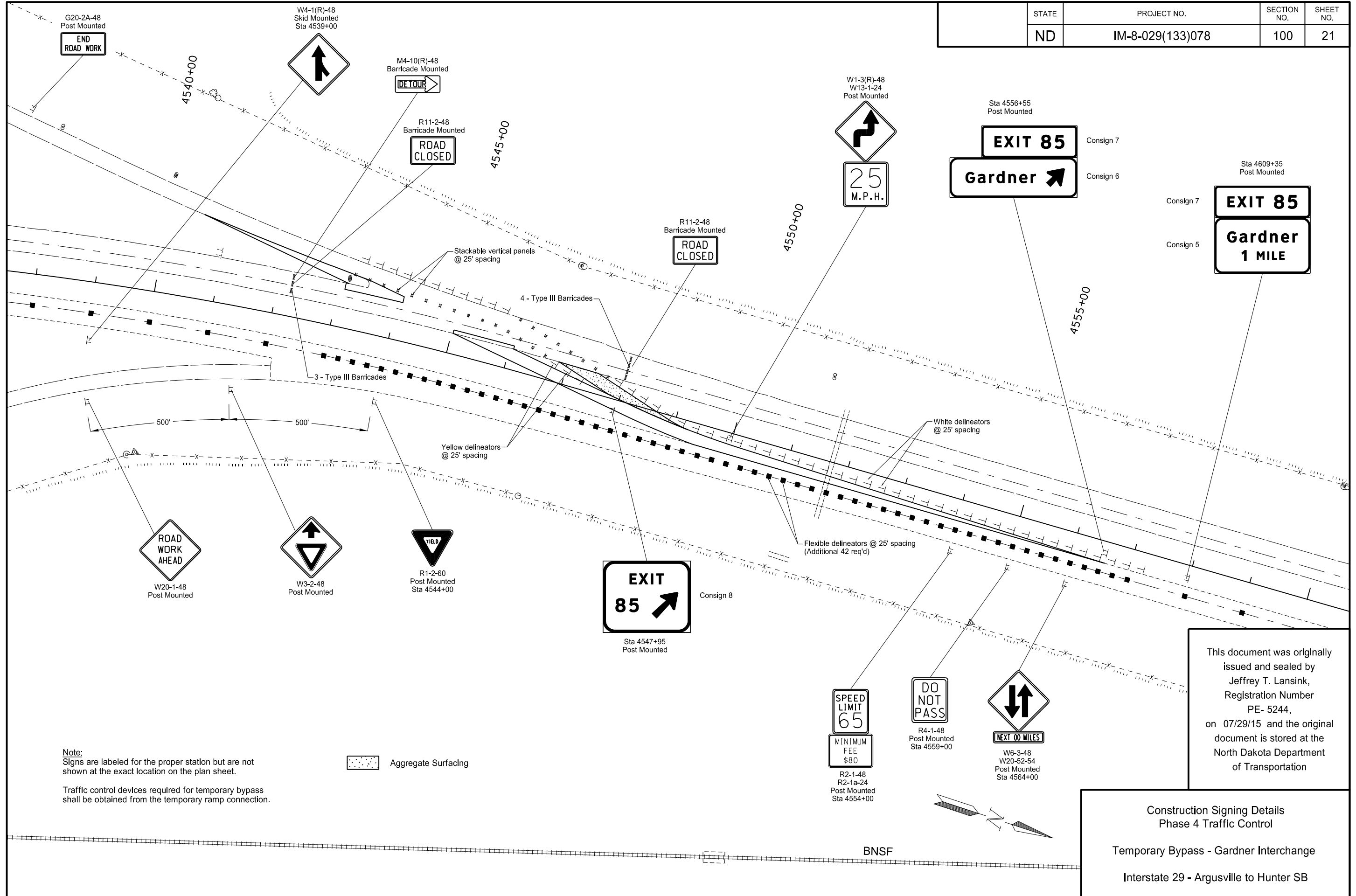


Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

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Construction Signing Details
Phase 4 Traffic Control
Temporary Ramp - Gardner Interchange
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	21



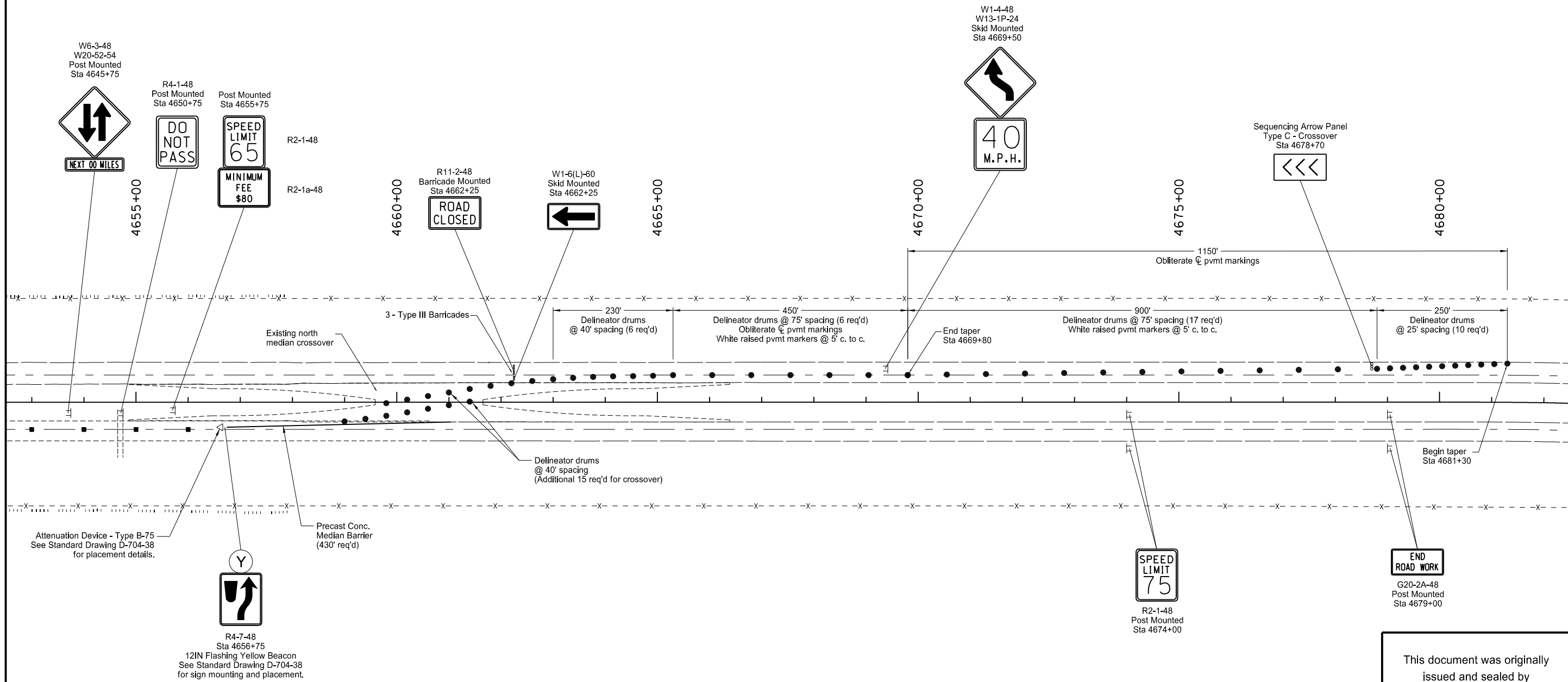
Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.
Traffic control devices required for temporary bypass shall be obtained from the temporary ramp connection.

Aggregate Surfacing

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Construction Signing Details
Phase 4 Traffic Control
Temporary Bypass - Gardner Interchange
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	22

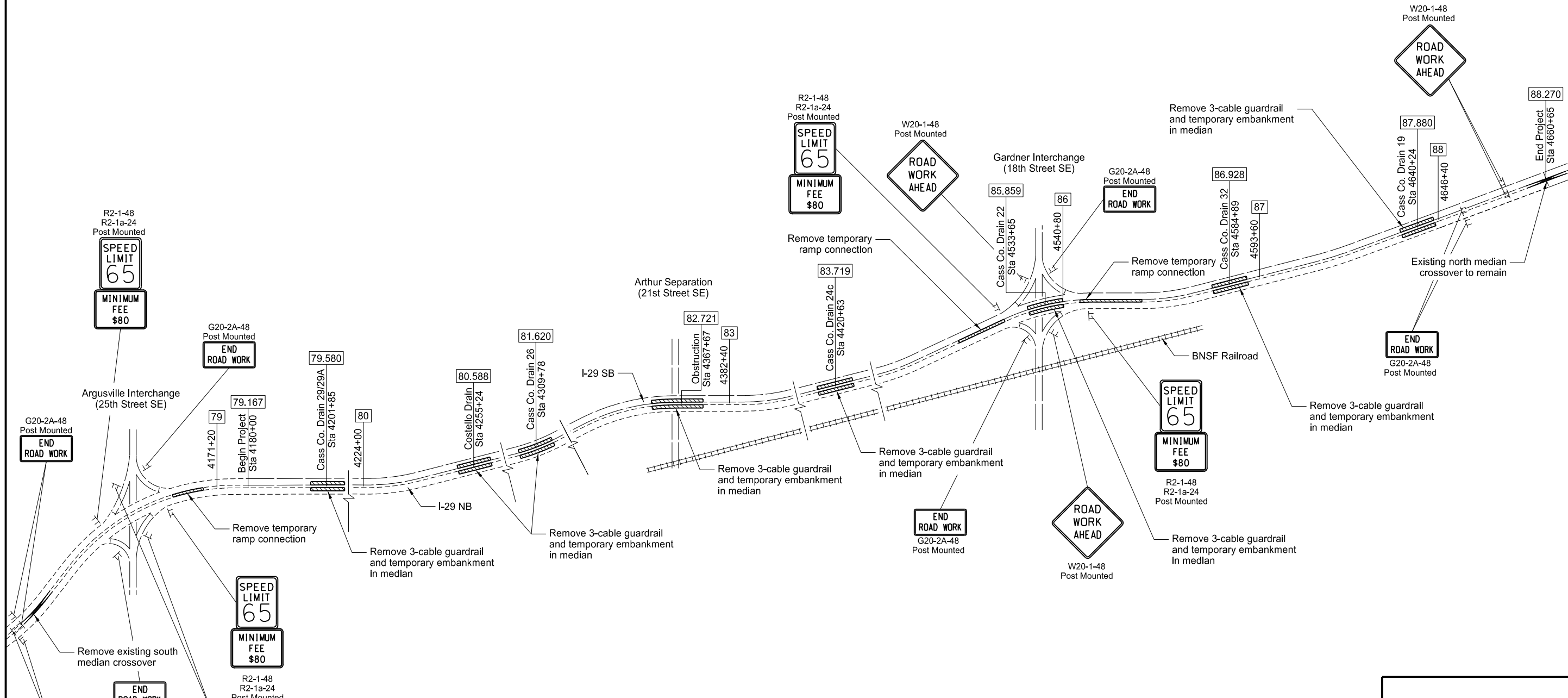


Note:
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.
Layout based on Standard Drawing D-704-38. Refer to this drawing for additional notes and details.

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Construction Signing Details
Phase 4 Traffic Control
North Median Crossover
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	25

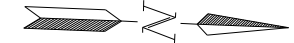


Note:
Phase 5 traffic control is for closure of the passing lane on Northbound and Southbound I-29 for removal of 3-cable guardrail, temporary ramp connections, south median crossover, and temporary embankment in the median.

When the work area encompasses an entrance ramp, the ramp shall be controlled by removing the 65 mph speed limit sign and installing a 40 mph speed limit sign. When the mainline 40 mph speed zone is moved past the ramp, the 40 mph speed limit sign shall be replaced with a 65 mph speed limit sign.

Yield (R1-2-60) signs shall be installed along the entrance ramps at the Argusville and Gardner Interchanges. A Yield Ahead (W3-2-48) sign shall be installed 500' in advance of the Yield (R1-2-60) sign. Refer to Phase 3 traffic control for stationing of Yield (R1-2-60) signs.

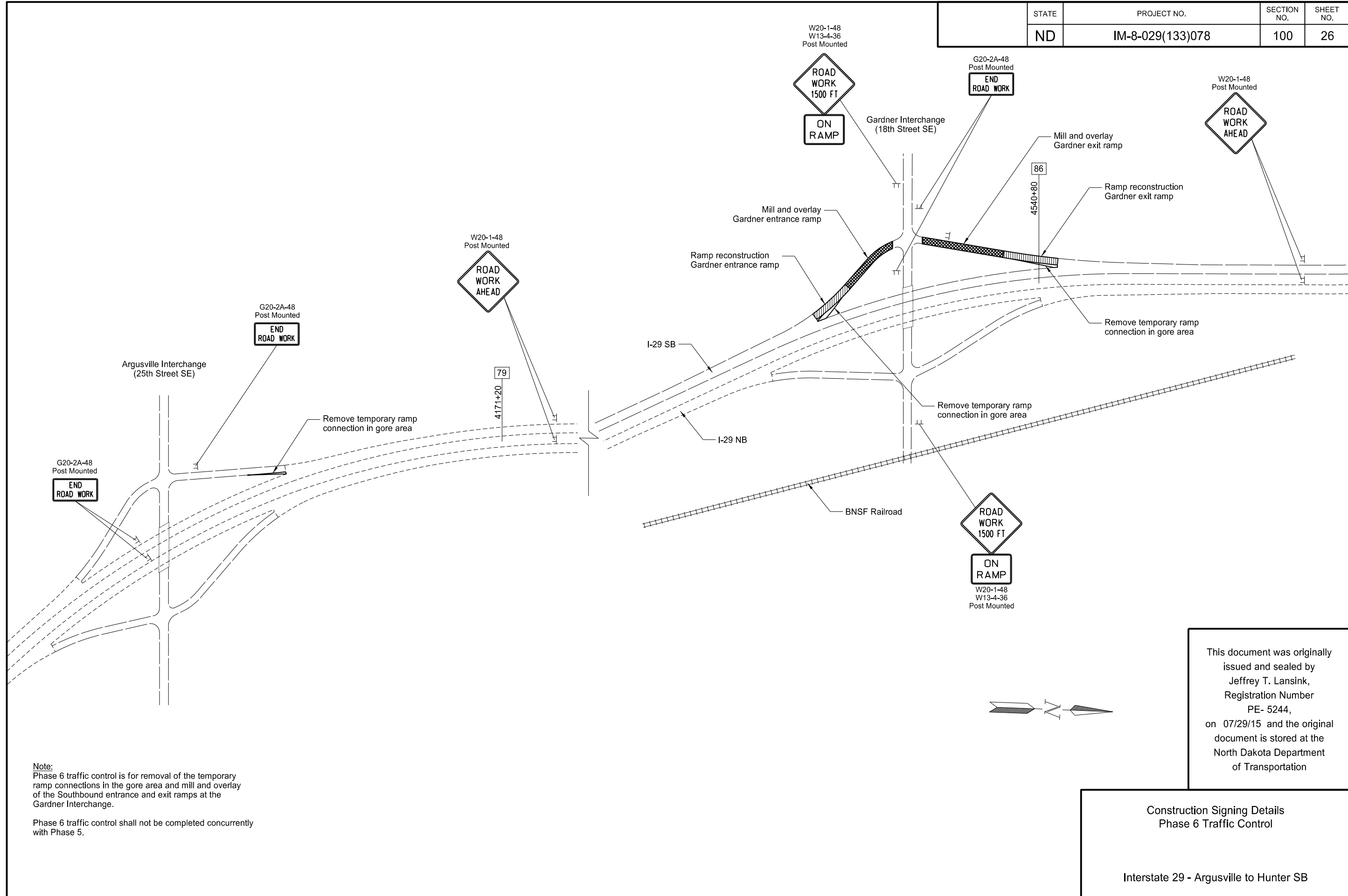
Merging traffic (W4-1R-48) signs shall be installed in advance of the Argusville and Gardner Interchange entrance ramps. Refer to Phase 3 traffic control for stationing of W4-1R-48 signs.



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Jeffrey T. Lansink,
Registration Number
PE- 5244,
on 07/29/15 and the original document is stored at the
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Construction Signing Details
Phase 5 Traffic Control
NB & SB Passing Lane Closure
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	26

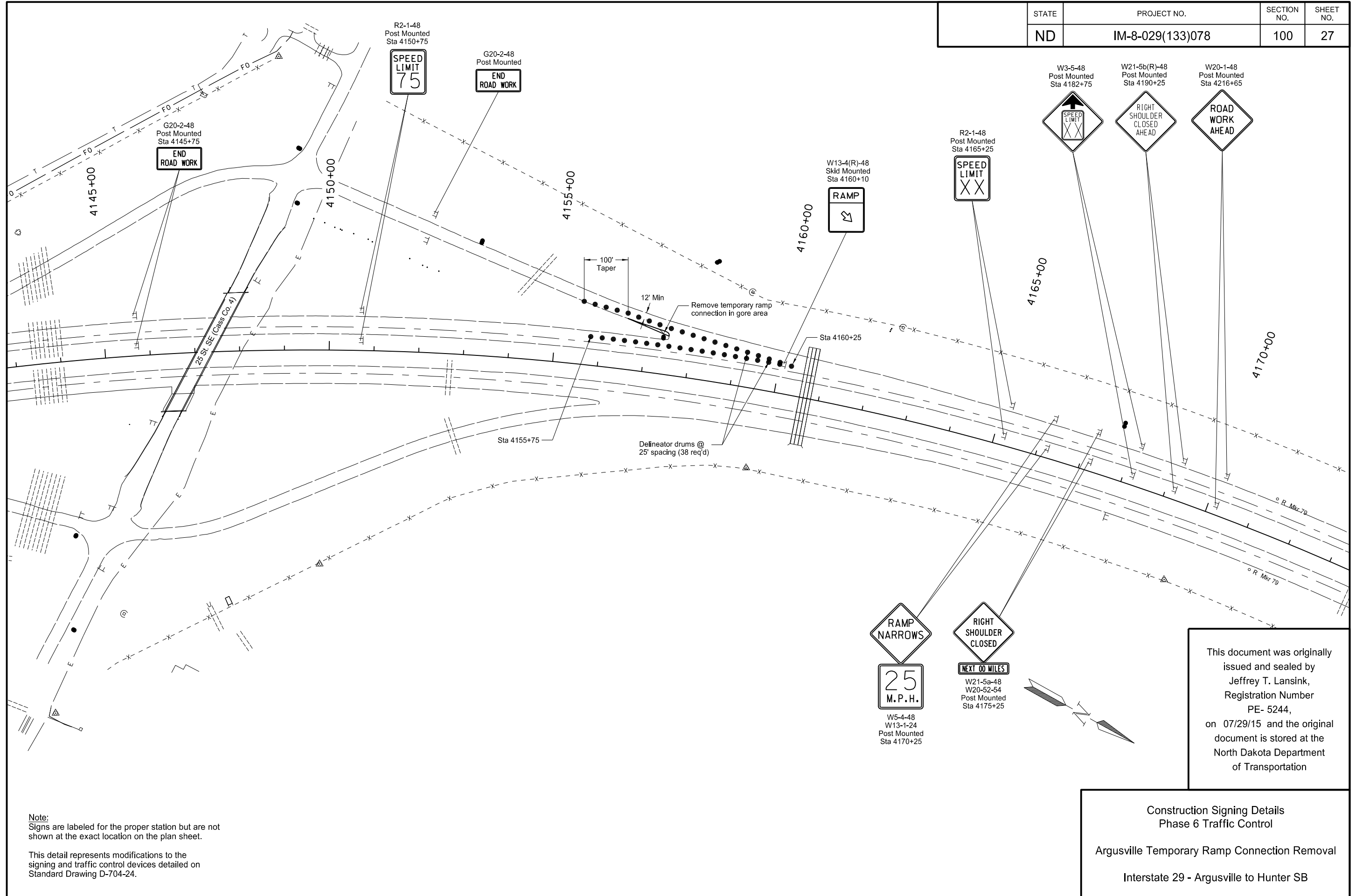


Note:
Phase 6 traffic control is for removal of the temporary ramp connections in the gore area and mill and overlay of the Southbound entrance and exit ramps at the Gardner Interchange.
Phase 6 traffic control shall not be completed concurrently with Phase 5.

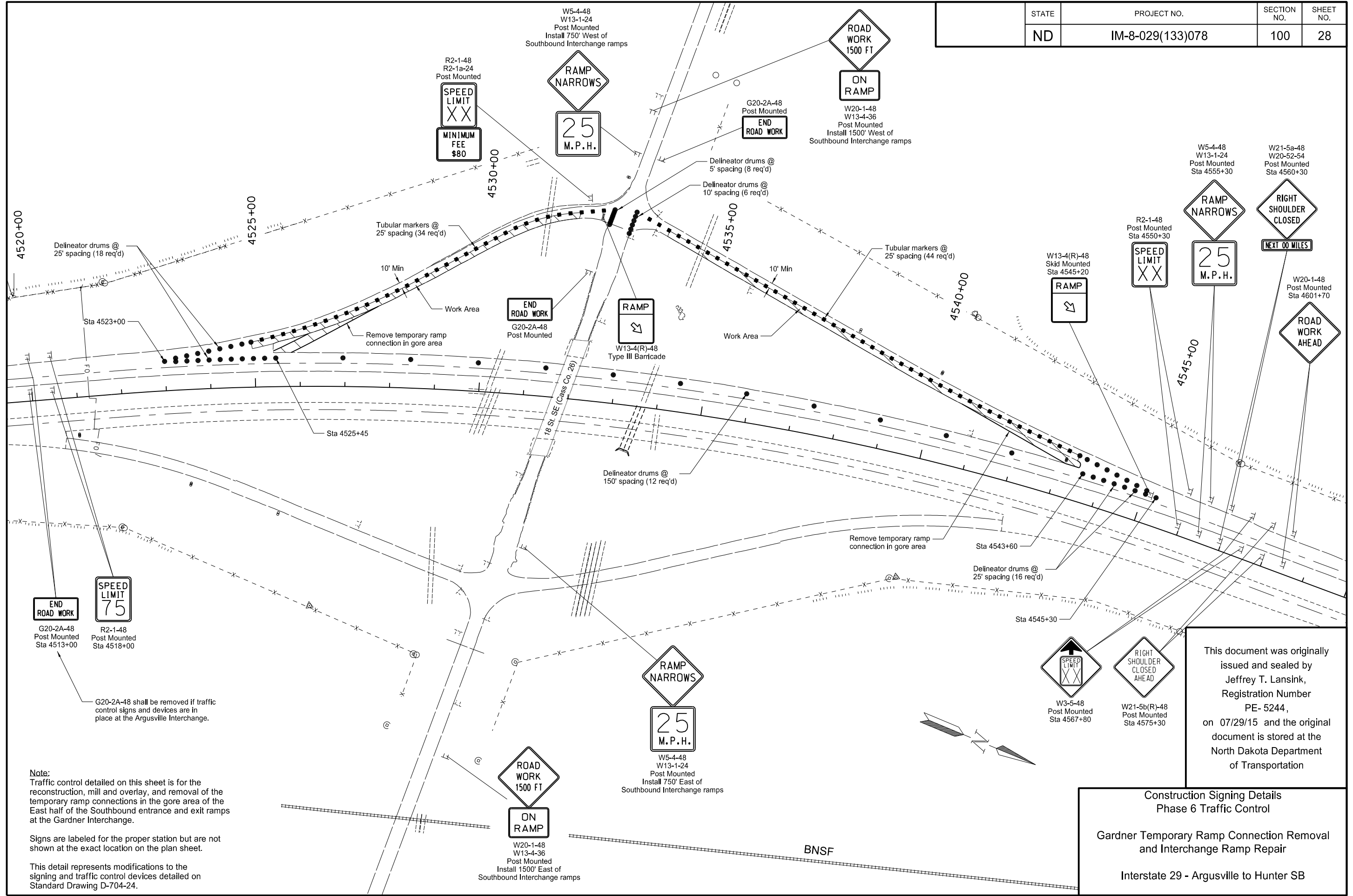
This document was originally issued and sealed by Jeffrey T. Lansink, Registration Number PE- 5244, on 07/29/15 and the original document is stored at the North Dakota Department of Transportation

Construction Signing Details
Phase 6 Traffic Control
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	27



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	28



Note:
 Traffic control detailed on this sheet is for the reconstruction, mill and overlay, and removal of the temporary ramp connections in the gore area of the East half of the Southbound entrance and exit ramps at the Gardner Interchange.

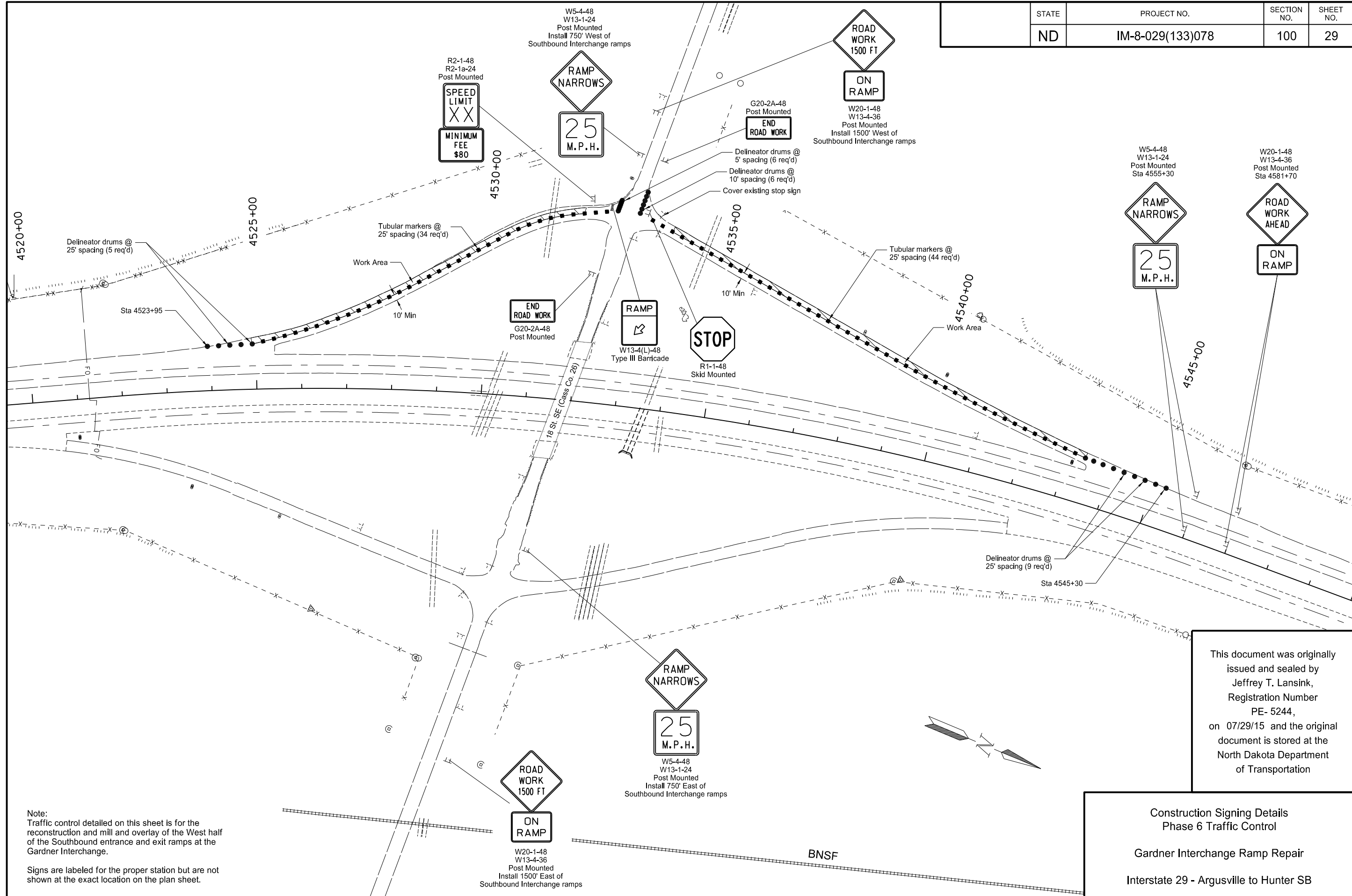
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

This detail represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-24.

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Construction Signing Details
 Phase 6 Traffic Control
 Gardner Temporary Ramp Connection Removal and Interchange Ramp Repair
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	29



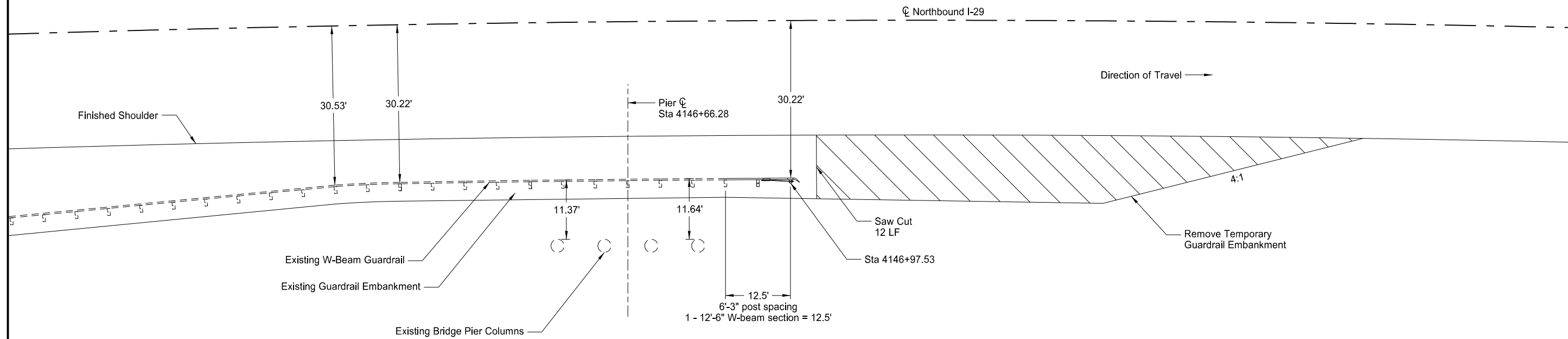
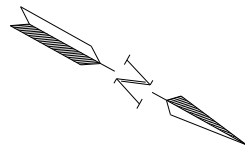
Note:
Traffic control detailed on this sheet is for the reconstruction and mill and overlay of the West half of the Southbound entrance and exit ramps at the Gardner Interchange.
Signs are labeled for the proper station but are not shown at the exact location on the plan sheet.

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Construction Signing Details
Phase 6 Traffic Control
Gardner Interchange Ramp Repair
Interstate 29 - Argusville to Hunter SB

23 USC § 409 Documents
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	30



Notes

- (A) SCOPE OF WORK: Work consists of removing temporary W-beam guardrail end terminal, removing temporary guardrail embankment, and installing original W-beam flared end section.
- All cost for removal of temporary W-beam guardrail end terminal, removal of temporary guardrail embankment, and installation of flared end treatment shown on Standard Drawing D-764-14 shall not be paid separately, but shall be included in the price bid for "W-Beam Guardrail".

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Argusville Interchange Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

23 USC § 409 Documents
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	31

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES											
W-BEAM GUARDRAIL AT OBSTRUCTIONS											
LOCATION	(A) 5/8" ϕ x 18" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 1-1/4" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 10" LONG GUARDRAIL BOLT	(A) 6" x 8" x 14" TIMBER BLOCK	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) W-BEAM END SECTION (FLARED)	(A) BCT CABLE ASSEMBLY AND BEARING PLATE	(A) BCT ANCHOR PLATE	(A) BCT TERMINAL POST	(A) 5/8" ϕ x 1-1/2" LONG HEX HEAD BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4146+85.03 to 4146+97.53 Rt	2	12	1	1	1	1	1	1	1	1	8
Total	2	12	1	1	1	1	1	1	1	1	8

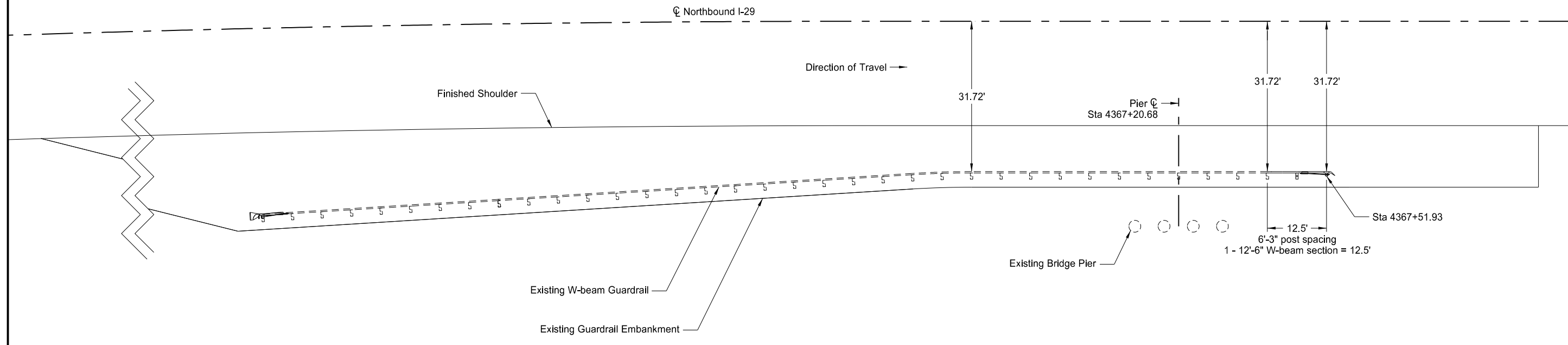
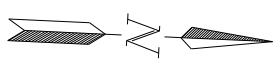
W-Beam Guardrail
 Sta 4146+85.03 to 4146+97.53 Rt 12.5 LF

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

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Argusville Interchange Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	32



Notes
 (A) SCOPE OF WORK: Work consists of removing existing end treatment section and installing W-beam guardrail.
 All cost for removal of existing end treatment section shall not be paid separately, but shall be included in the price bid for "W-Beam Guardrail".

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Arthur Separation Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES											
W-BEAM GUARDRAIL AT OBSTRUCTIONS											
LOCATION	(A) 5/8" ϕ x 18" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 1-1/4" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 10" LONG GUARDRAIL BOLT	(A) 6" x 8" x 14" TIMBER BLOCK	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) W-BEAM END SECTION (FLARED)	(A) BCT CABLE ASSEMBLY AND BEARING PLATE	(A) BCT ANCHOR PLATE	(A) BCT TERMINAL POST	(A) 5/8" ϕ x 1-1/2" LONG HEX HEAD BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4367+39.43 to 4367+51.93 Rt	2	12	1	1	1	1	1	1	1	1	8
Total	2	12	1	1	1	1	1	1	1	1	8

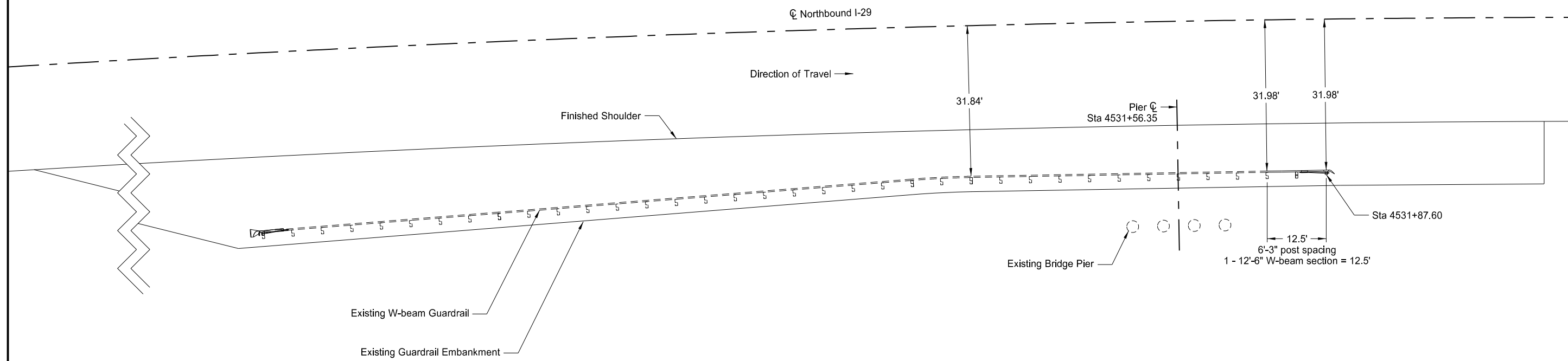
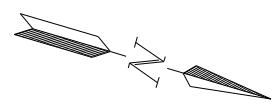
W-Beam Guardrail
 Sta 4367+39.43 to 4367+51.93 Rt 12.5 LF

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

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Arthur Separation Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	100	34



Notes
 (A) SCOPE OF WORK: Work consists of removing existing end treatment section and installing W-beam guardrail.
 All cost for removal of existing end treatment section shall not be paid separately, but shall be included in the price bid for "W-Beam Guardrail".

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Gardner Interchange Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES											
W-BEAM GUARDRAIL AT OBSTRUCTIONS											
LOCATION	(A) 5/8" ϕ x 18" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 1-1/4" LONG GUARDRAIL BOLT	(A) 5/8" ϕ x 10" LONG GUARDRAIL BOLT	(A) 6" x 8" x 14" TIMBER BLOCK	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) W-BEAM END SECTION (FLARED)	(A) BCT CABLE ASSEMBLY AND BEARING PLATE	(A) BCT ANCHOR PLATE	(A) BCT TERMINAL POST	(A) 5/8" ϕ x 1-1/2" LONG HEX HEAD BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4531+75.10 to 4531+87.60 Rt	2	12	1	1	1	1	1	1	1	1	8
Total	2	12	1	1	1	1	1	1	1	1	8

W-Beam Guardrail
 Sta 4531+75.10 to 4531+87.60 Rt 12.5 LF

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

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W-Beam Guardrail Layout
 Outside Pier Protection
 Phase 7 Traffic Control
 Gardner Interchange Guardrail Replacement
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	IM-8-029(133)078	110	1

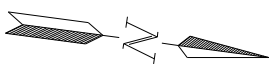
Sta/RP	Sign/Assembly No.	Flat Sheet For Signs		Panel For Signs		Overlay Panel		Galv Steel Post Standard Pipe			Galv Steel Post W-Shape Posts			Max Post Len LF	Post Space FT	Revise Fuse Joint EA	Std Pipe Fdn			W-Shape Pile LF	Remove Sign Fdns		Reset Sign Panel EA	Reset Sign Support EA	Stub Post EA	Multi Dir Base EA	Comments	
		IV SF	XI SF	IV SF	XI SF	IV SF	XI SF	1st LF	2nd LF	Size	1st LF	2nd LF	3rd LF				Dia FT	Dep FT	Vol CY		Conc Fdn EA	W-Shape Pile EA						
Interstate 29 Mainline																												
4483+18 Lt																						2						
4499+90 Lt	SA A		20.0					15.1		5				23.7				1.8	6.5	0.6								
4509+90 Lt	SA B	11.7						14.5		3.5				18.1				1.3	5.5	0.3								
4541+84 Lt	SN 3			79.8				18.4	18.4	6				19.8	5.5			1.8	10.5	1.9								
4551+36 Lt	SN 5			23.8										7.5														
4579+65 Lt																					2							
4605+83 Lt	SN 5			23.8										6.0														
Sub Total		11.7	20.0	127.4	0.0	0.0	0.0	Total 66.5				Total 0.0								2.7	0	4	0	0	0	0	0	0
NW Ramp																												
4535+61 Lt	SA D							12.5		3.5				21.3				1.3	4.5	0.2		1		1				
4538+12 Lt	SN 1			18.8						W4x13	12.5	13.2		36.8	3.8							28	2					
4540+04 Lt	SN 2			43.8						W4x13	13.7	14.8		18.5	6.3							28						
Sub Total		0.0	0.0	62.6	0.0	0.0	0.0	Total 12.5				Total 54.2								0.2	56	3	0	1	0	0	0	0
SE Ramp																												
4529+85 Rt	SA C							13.3		3.5				16.6				1.3	5.5	0.3		1		1				1
Sub Total		0.0	0.0	0.0	0.0	0.0	0.0	Total 13.3				Total 0.0								0.3	0	1	0	1	0	0	0	1
Grand Total		11.7	20.0	190.0	0.0	0.0	0.0	Total 92.3				Total 54.2								3.2	56	8	0	2	0	0	0	1

Basis of Estimate
Sign Support Lengths

The sign support lengths have been calculated using the following vertical clearances:

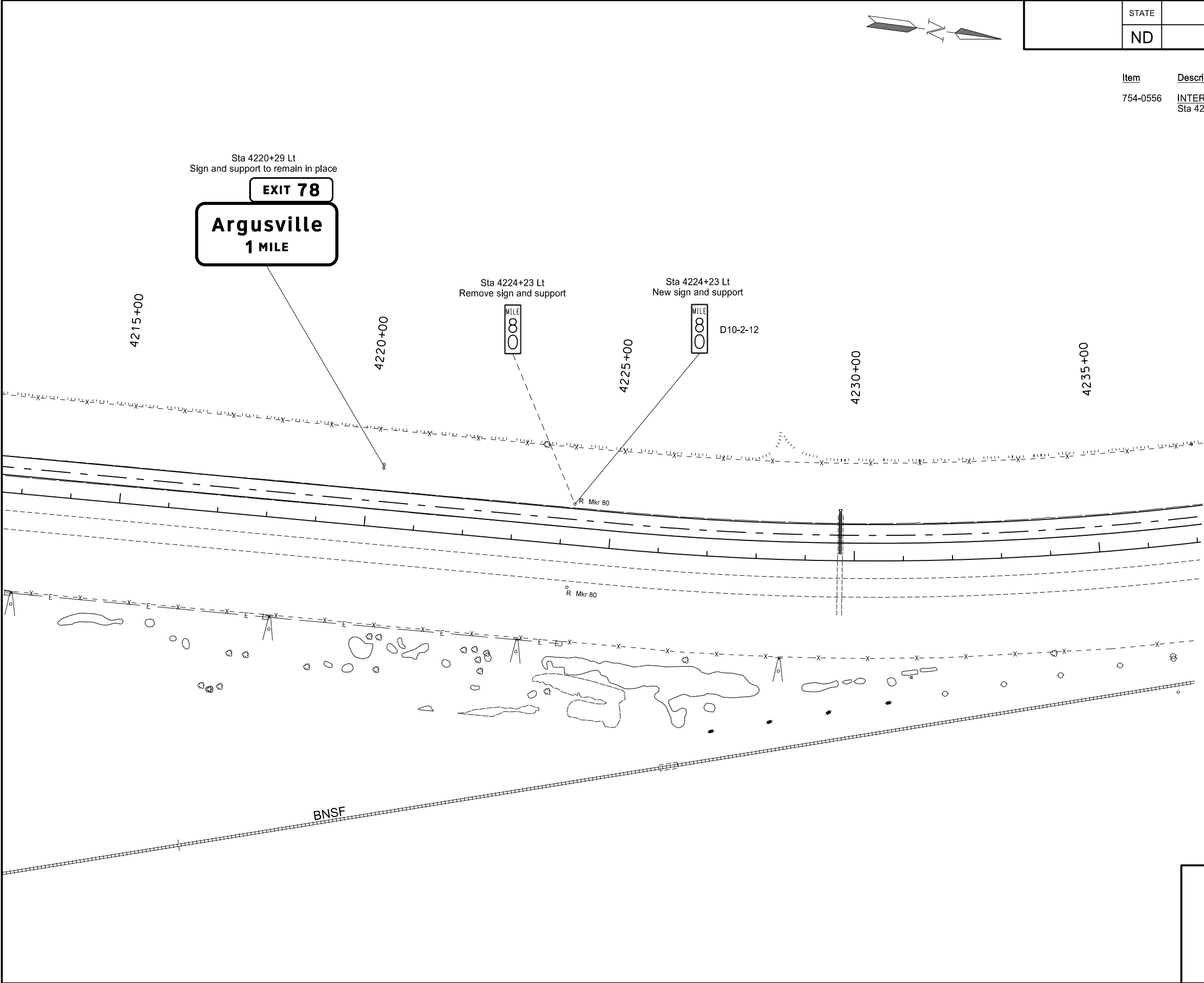
Urban/rural expressway and freeway - 84" (Offset - 60")

<p>This document was originally issued and sealed by Jeffrey T. Lansink, Registration Number 5244, on 10/21/2015 and the original document is stored at the North Dakota Department of Transportation</p>	<p>Sign Summary Round Steel Pipe and W-Shape</p> <p>Interstate 29 - Argusville to Hunter SB</p>
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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	2

Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4224+23 Lt	1	EA

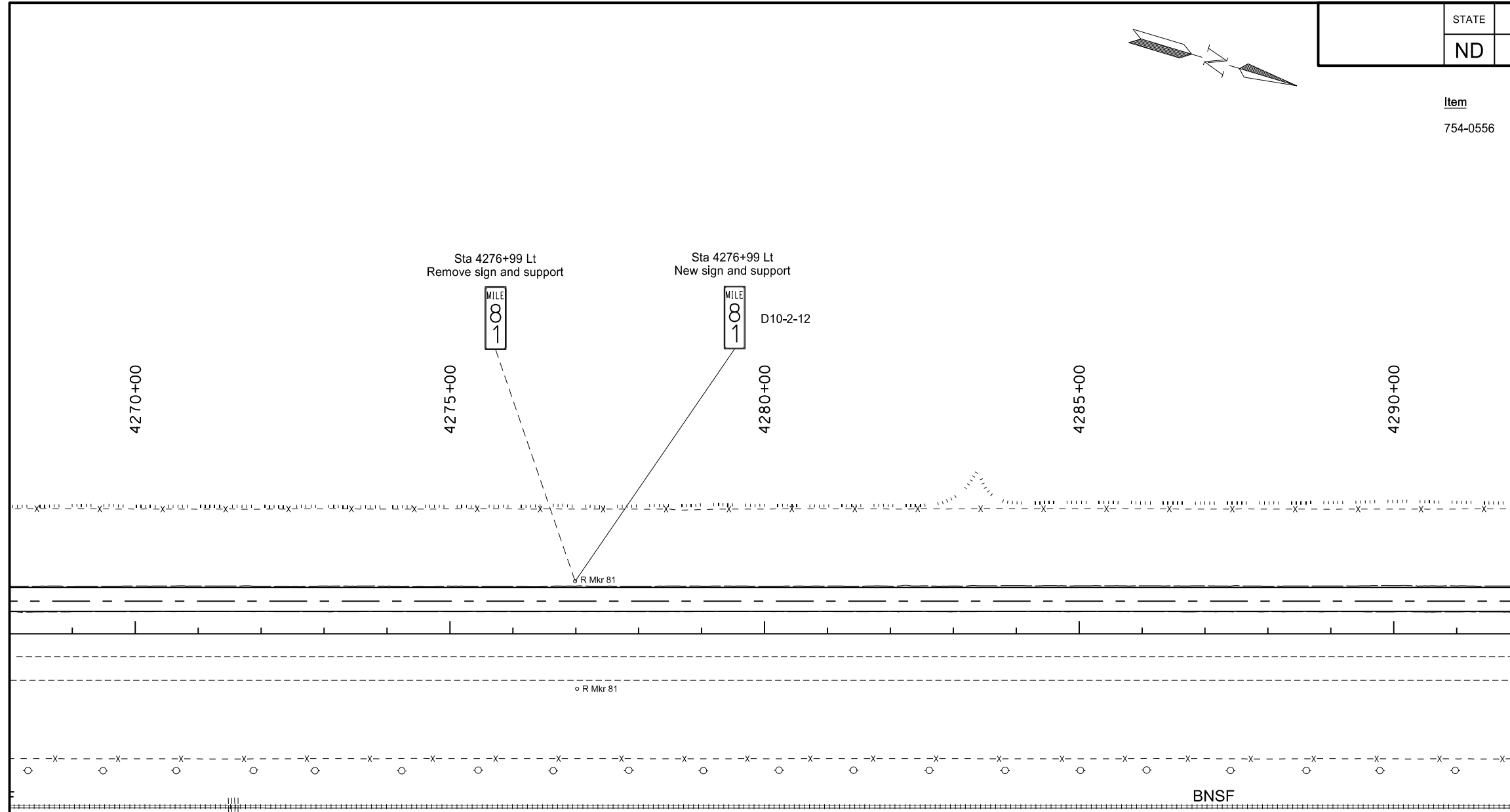
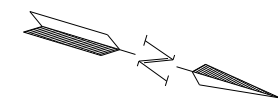


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Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	3

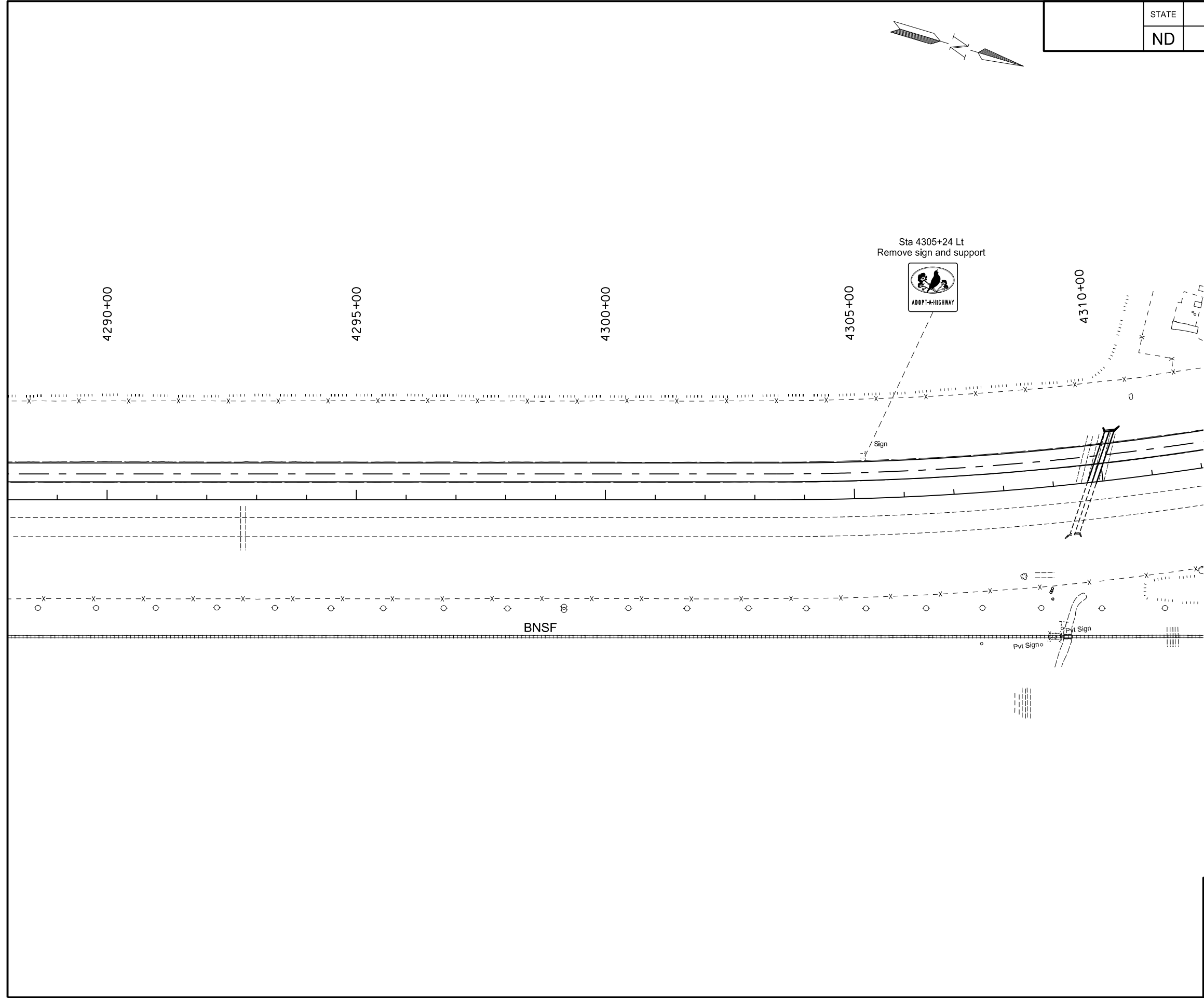
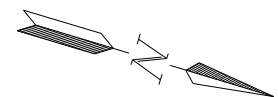
Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4276+99 Lt	1	EA



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Signing
Interstate 29 - Argusville to Hunter SB

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(133)078	110	4

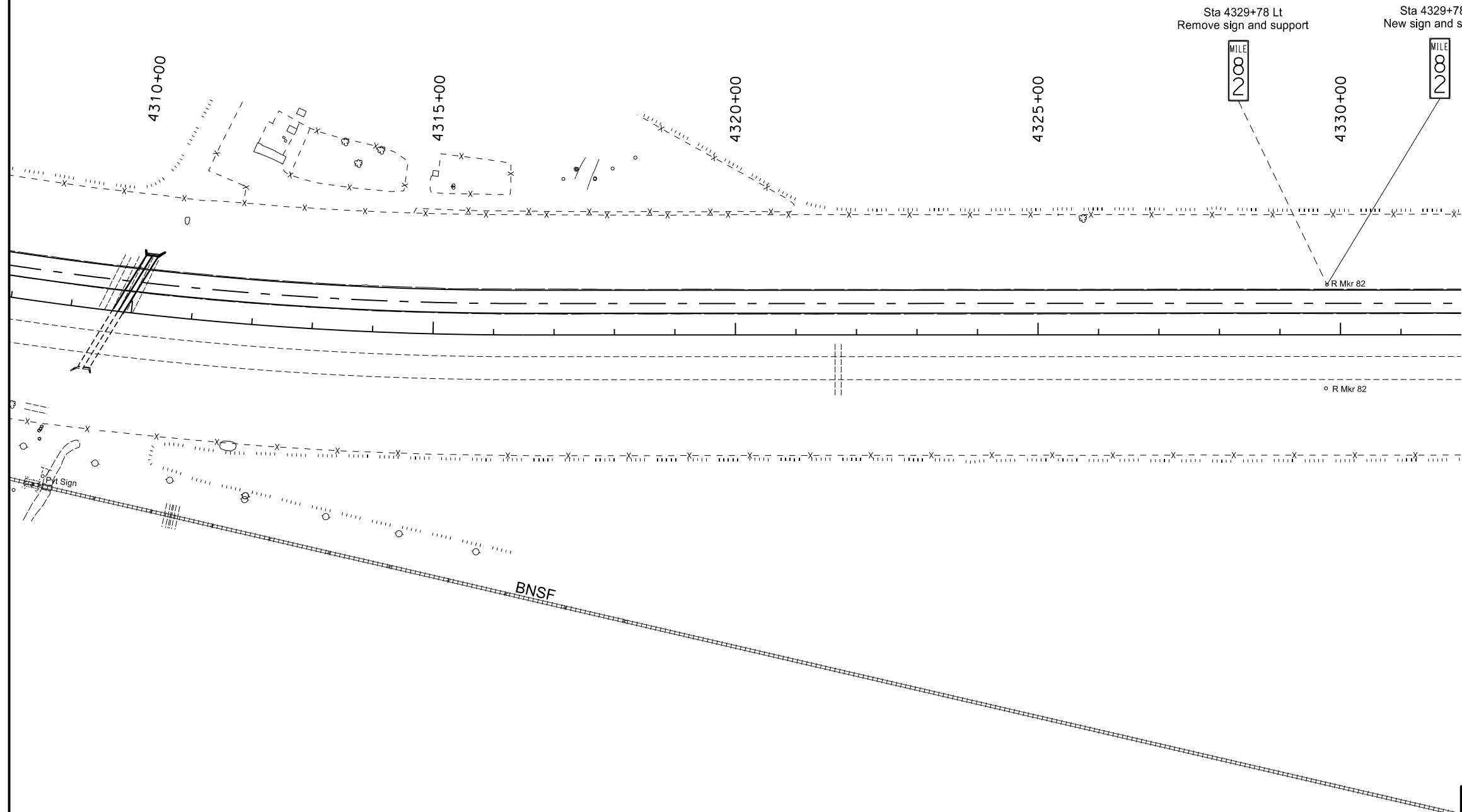
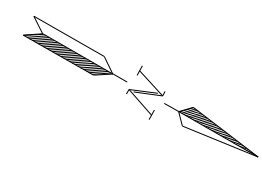


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Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	5

Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4329+78 Lt	1	EA

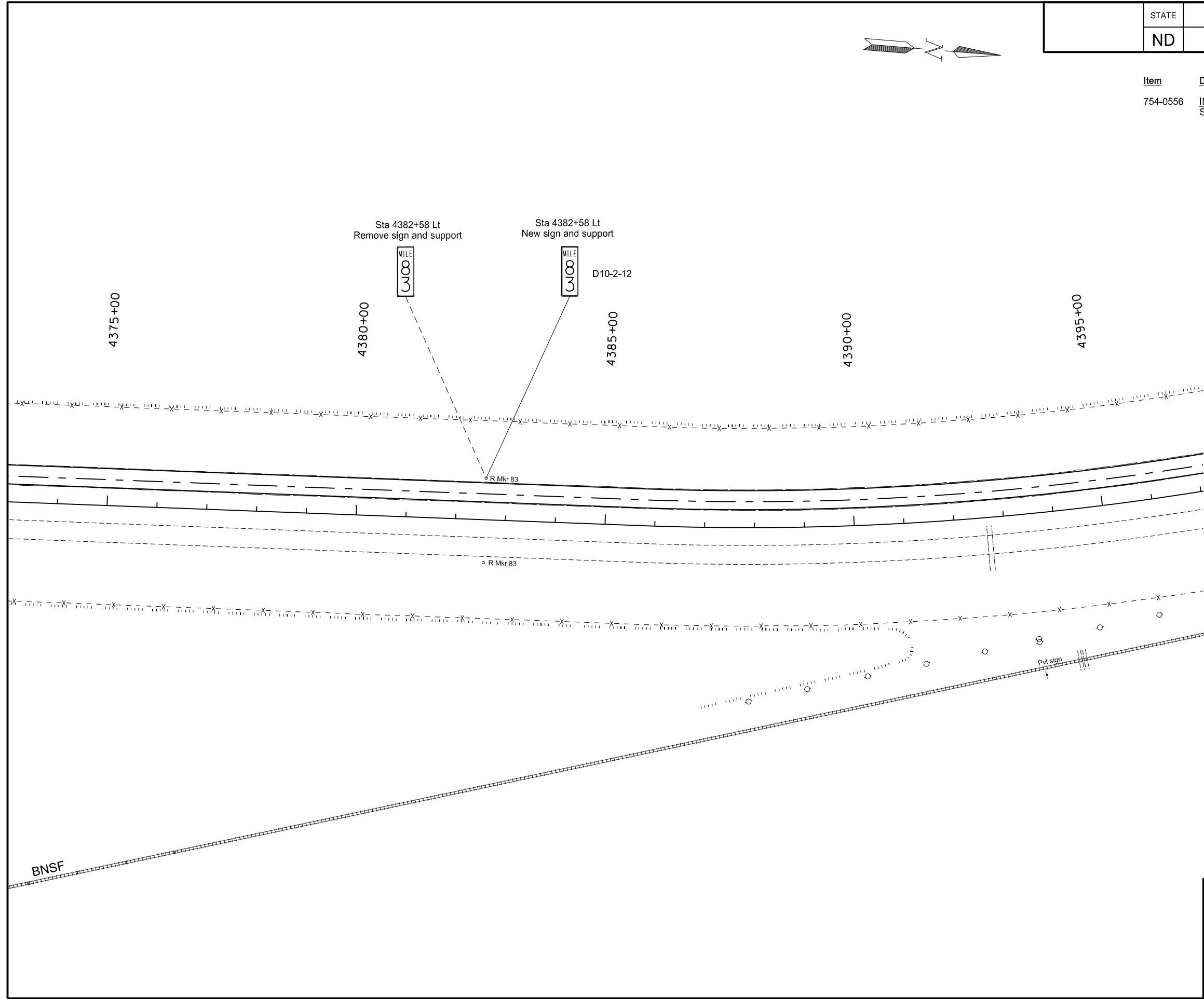


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Signing
Interstate 29 - Argusville to Hunter SB

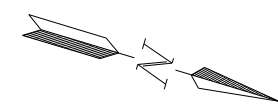
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	6

Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4382+58 Lt	1	EA



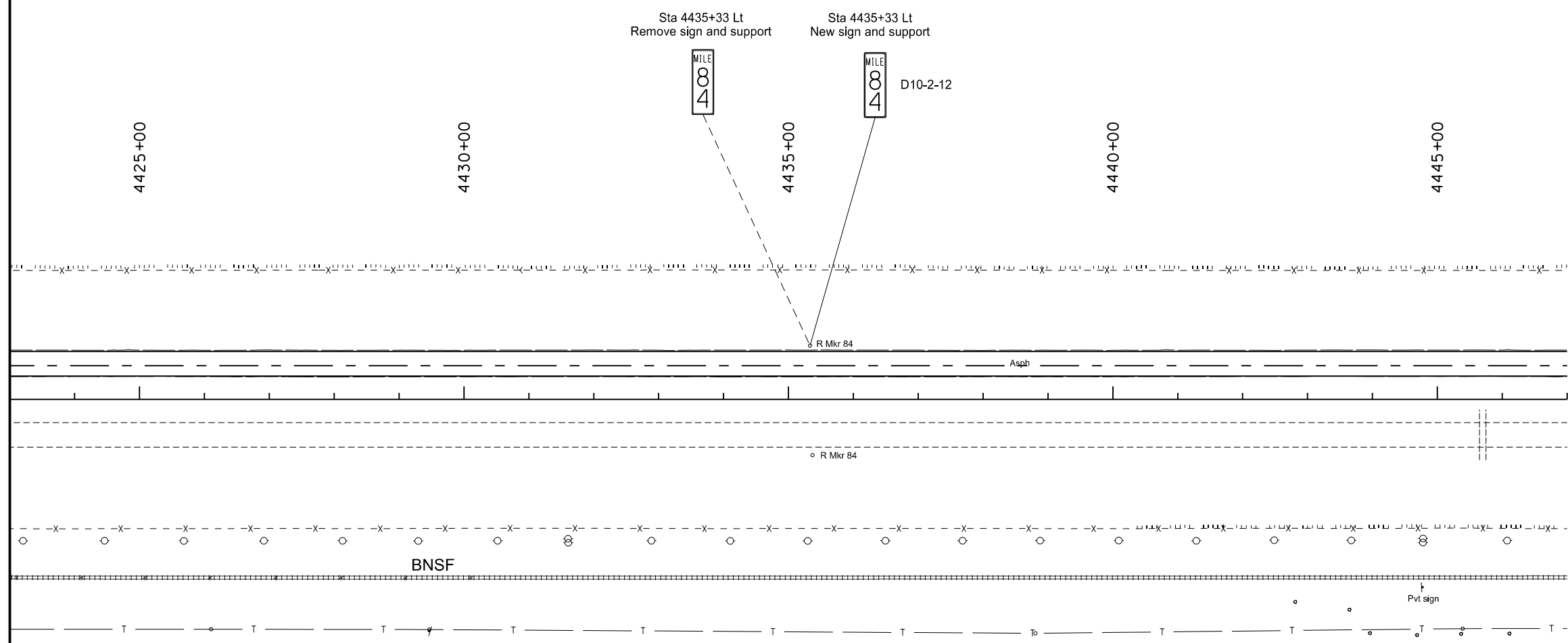
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Signing
Interstate 29 - Argusville to Hunter SB



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	7

Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4435+33 Lt	1	EA



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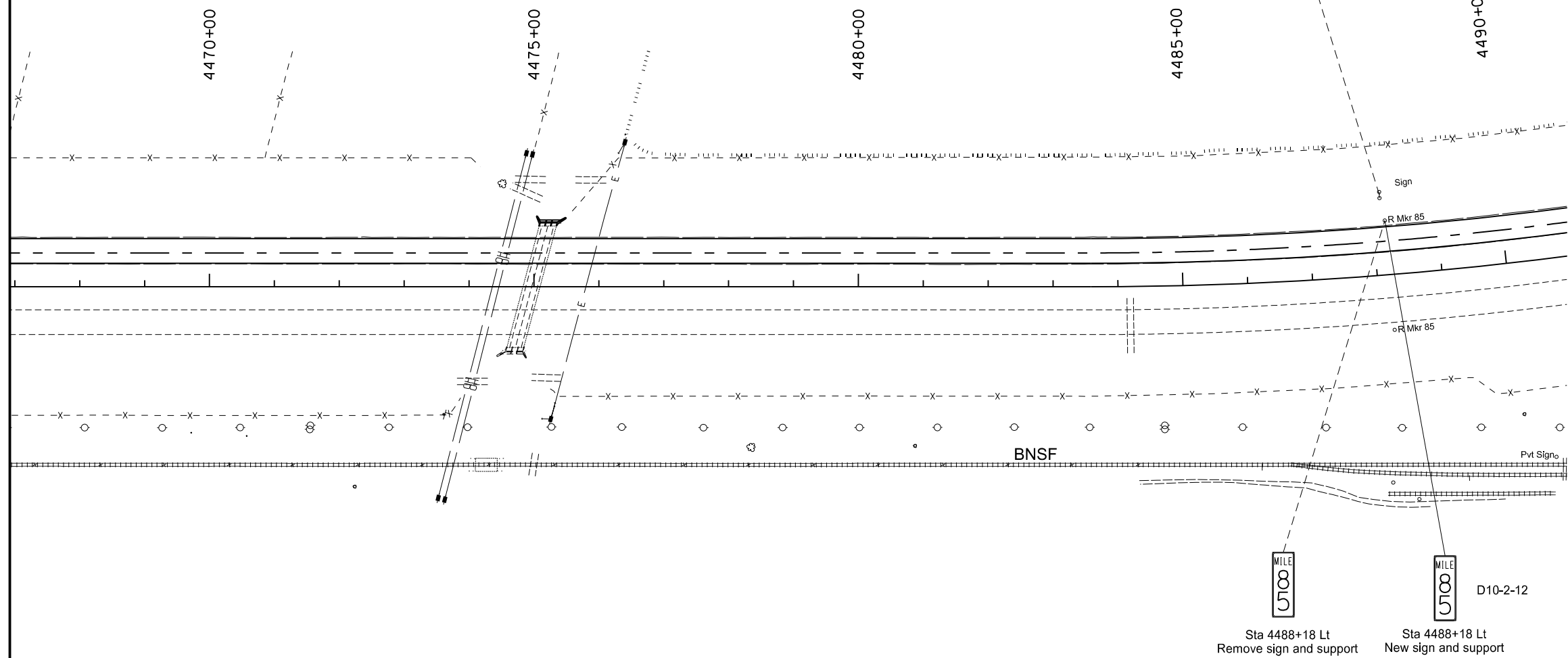
Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	8

Item	Description	Quantity	Unit
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4488+18 Lt	1	EA
754-1104	REMOVE SIGN FOUNDATION Sta 4483+18 Lt	2	EA

Argusville 6
Fargo 19
Sioux Falls 256

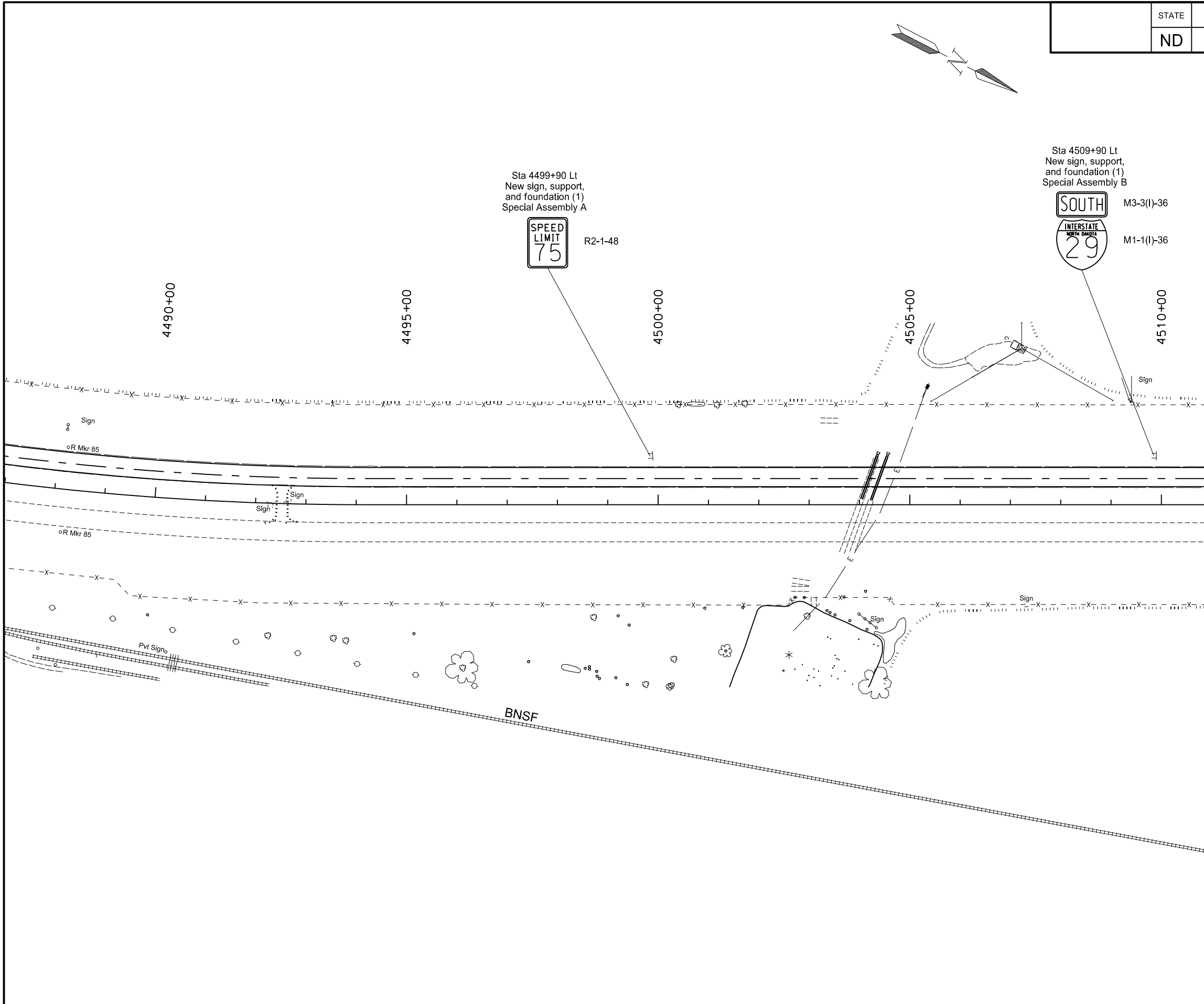
Sta 4483+18 Lt
 Remove sign, support,
 and foundations (2)



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Signing
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	9



Sta 4499+90 Lt
New sign, support,
and foundation (1)
Special Assembly A



R2-1-48

Sta 4509+90 Lt
New sign, support,
and foundation (1)
Special Assembly B



M3-3(I)-36

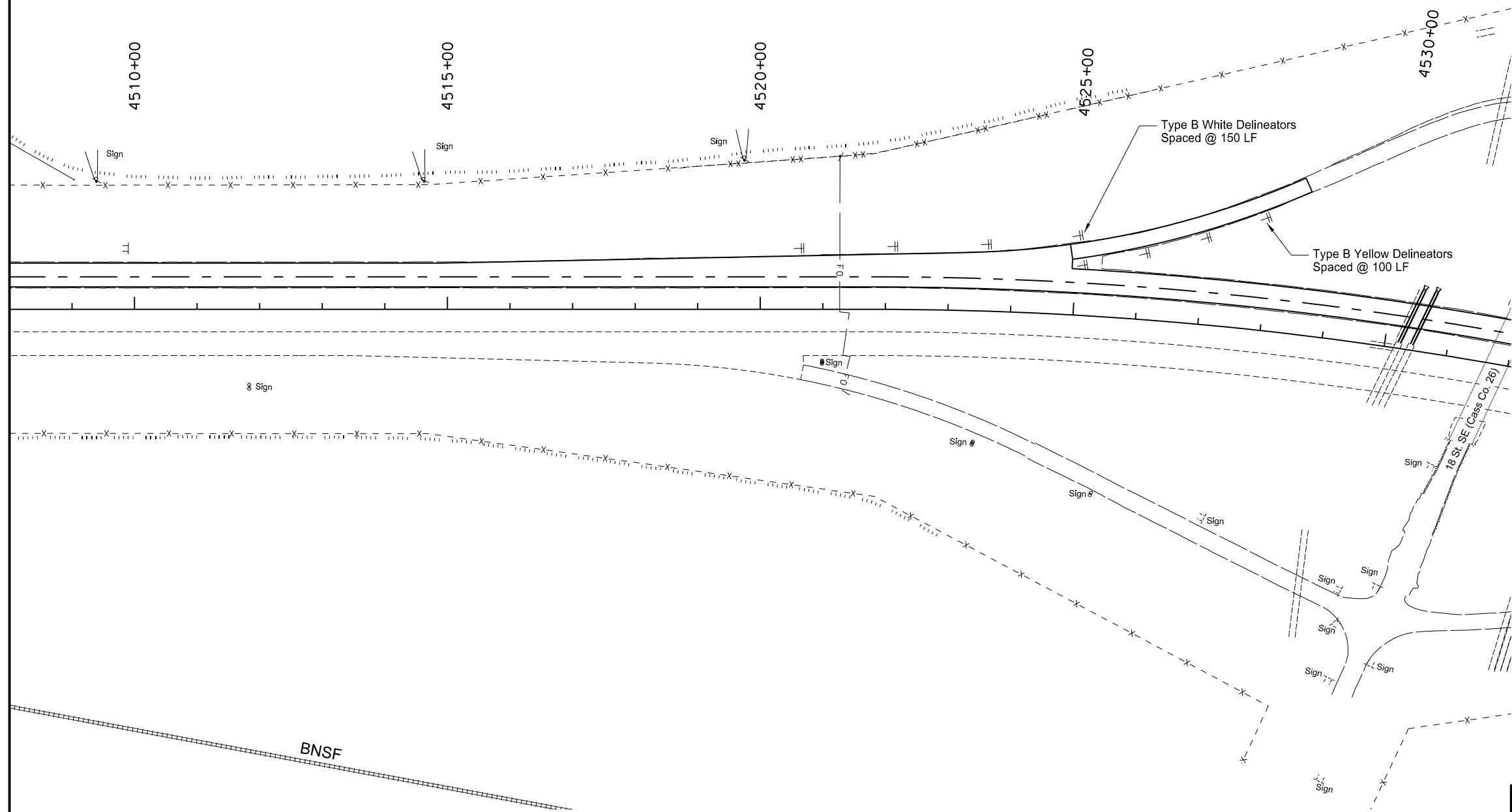
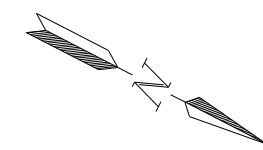
M1-1(I)-36

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Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	10

Item	Description	Quantity	Unit
754-0196	DIAMOND GRADE DELINEATORS - TYPE B		
	White	4	EA
	Yellow	4	EA

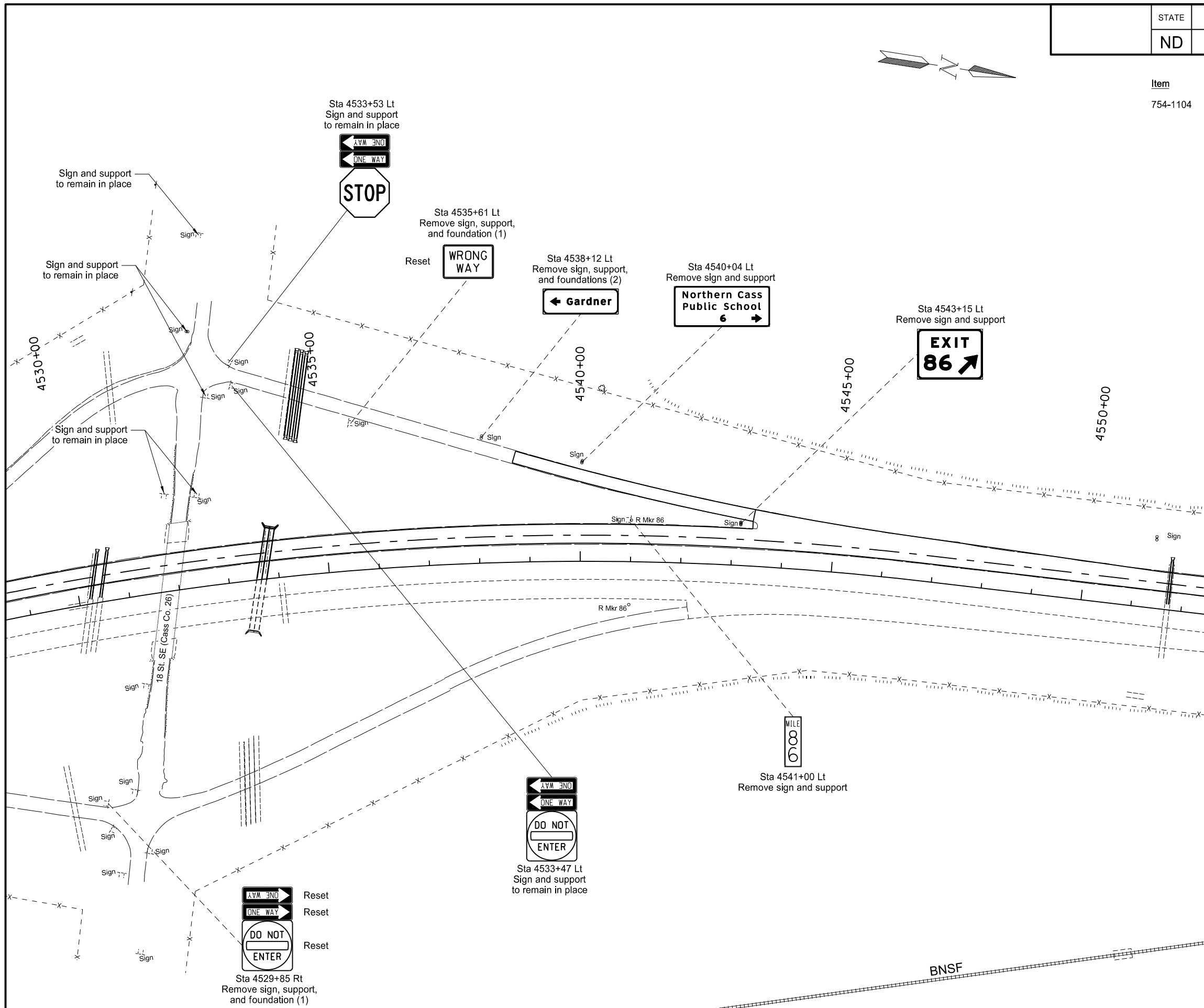


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Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	11

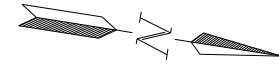
Item	Description	Quantity	Unit
754-1104	REMOVE SIGN FOUNDATION		
	Sta 4529+85 Rt	1	EA
	Sta 4535+61 Lt	1	EA
	Sta 4538+12 Lt	2	EA



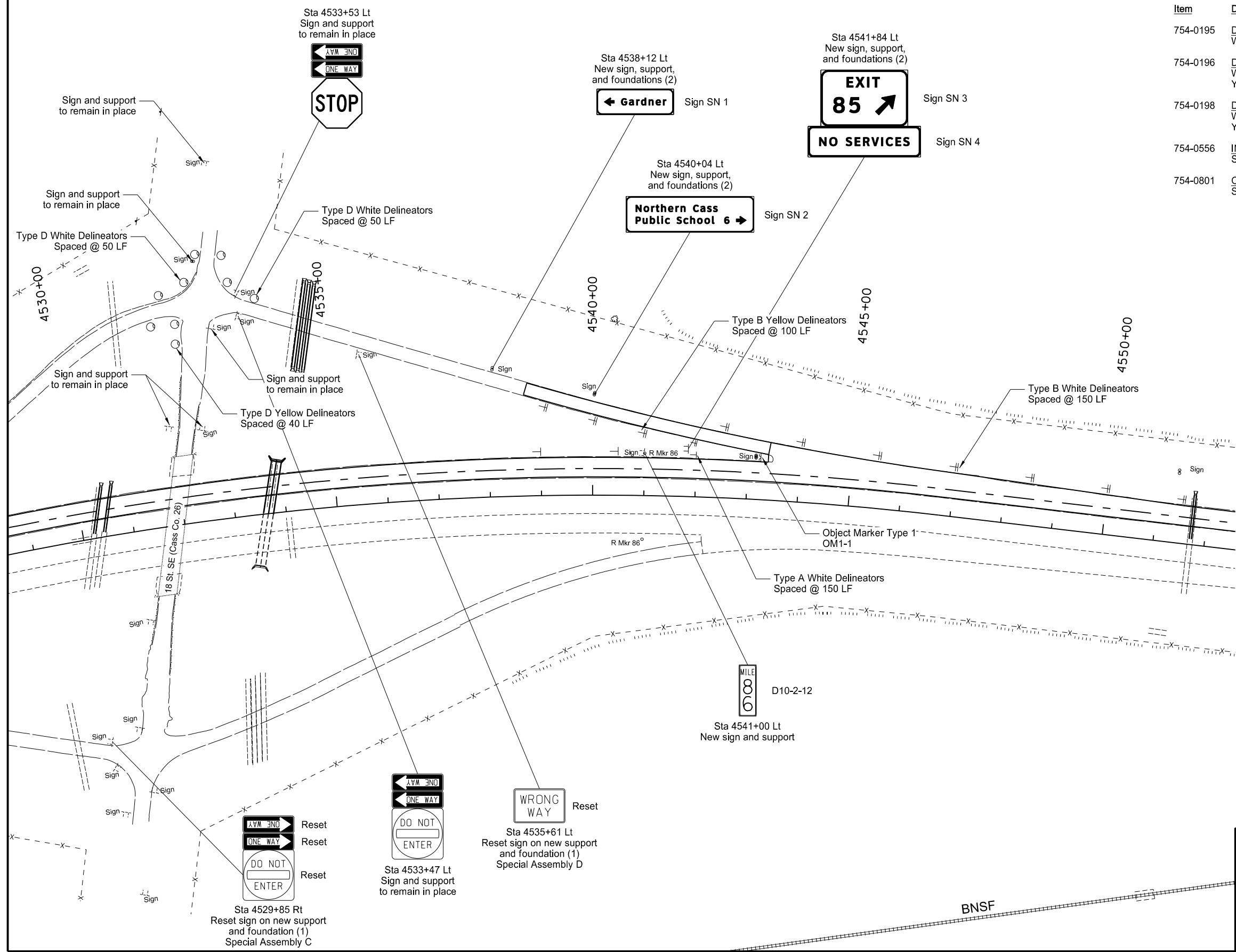
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Signing Removals
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	12



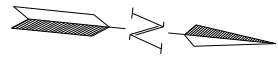
Item	Description	Quantity	Unit
754-0195	DIAMOND GRADE DELINEATORS - TYPE A White	3	EA
754-0196	DIAMOND GRADE DELINEATORS - TYPE B White Yellow	7 4	EA EA
754-0198	DIAMOND GRADE DELINEATORS - TYPE D White Yellow	6 3	EA EA
754-0556	INTERSTATE MILE POSTS - TYPE B Sta 4541+00 Lt	1	EA
754-0801	OBJECT MARKERS - TYPE I Sta 4543+25 Lt	1	EA



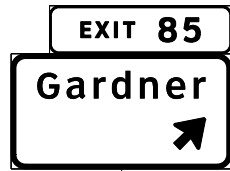
This document was originally issued and sealed by Jeffrey T. Lansink, Registration Number PE- 5244, on 10/21/15 and the original document is stored at the North Dakota Department of Transportation

Signing
New or Reset
Interstate 29 - Argusville to Hunter SB

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-029(133)078	110	13



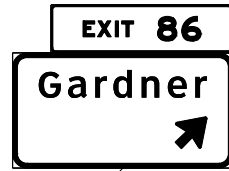
Sta 4551+36 Lt
Sign and support
to remain in place



Sign SN 5
Remain

4550+00

Sta 4551+36 Lt
Sign and support
to remain in place



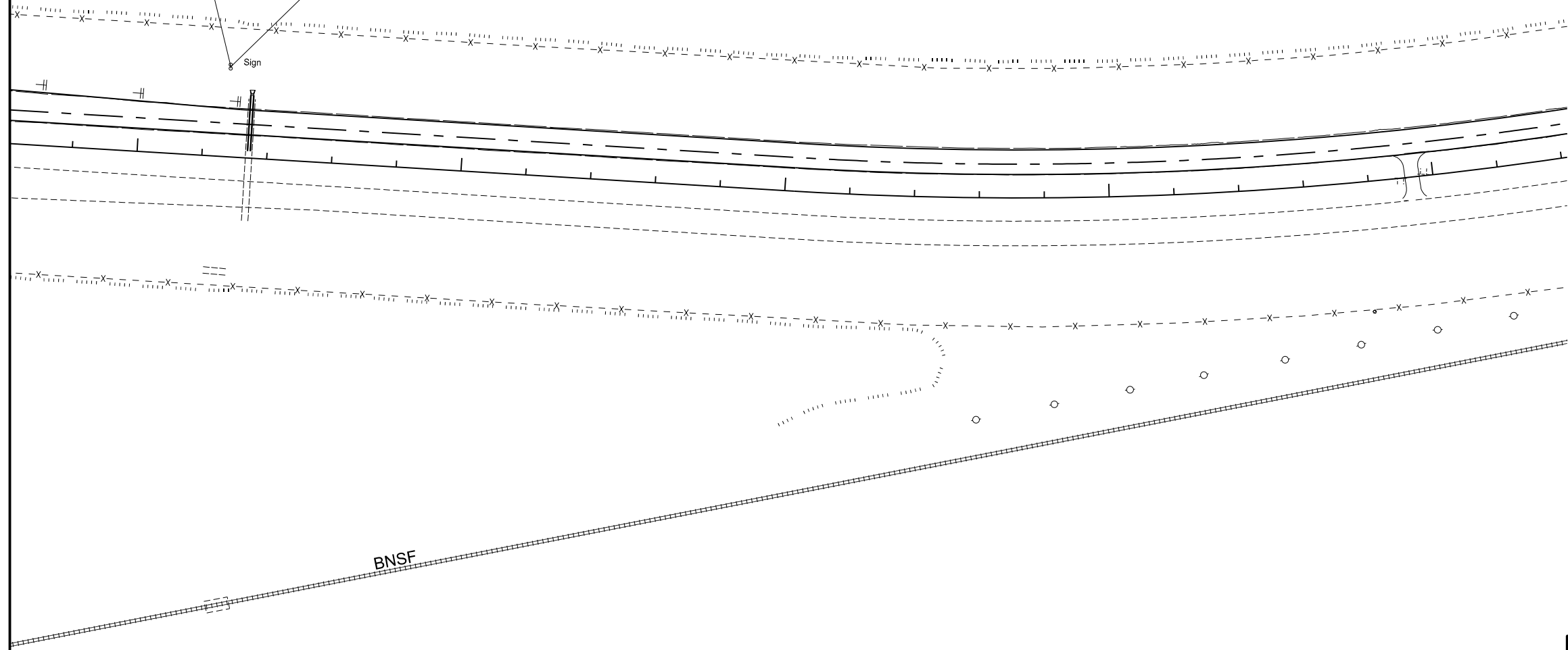
Remove
Remain

4555+00

4560+00

4565+00

4570+00

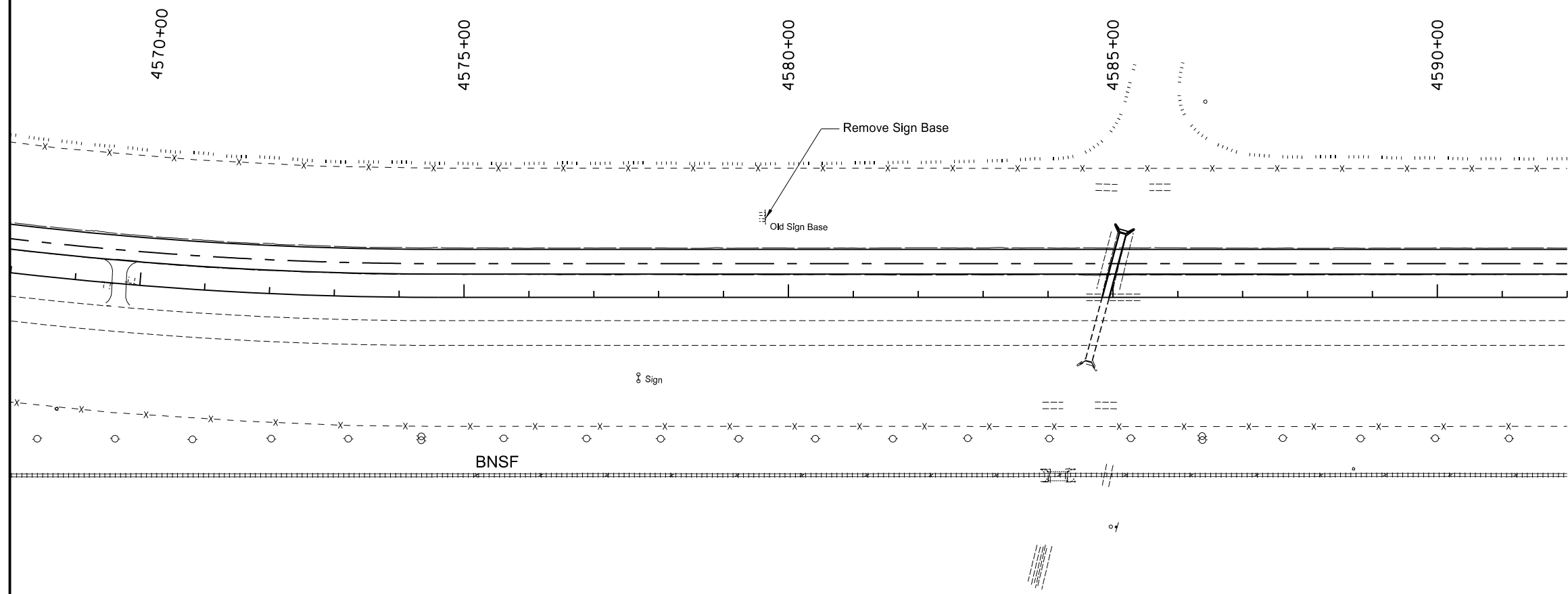
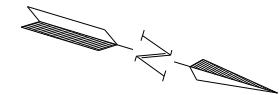


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Signing
Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	14

Item	Description	Quantity	Unit
754-1104	REMOVE SIGN FOUNDATION Sta 4579+65 Lt	2	EA

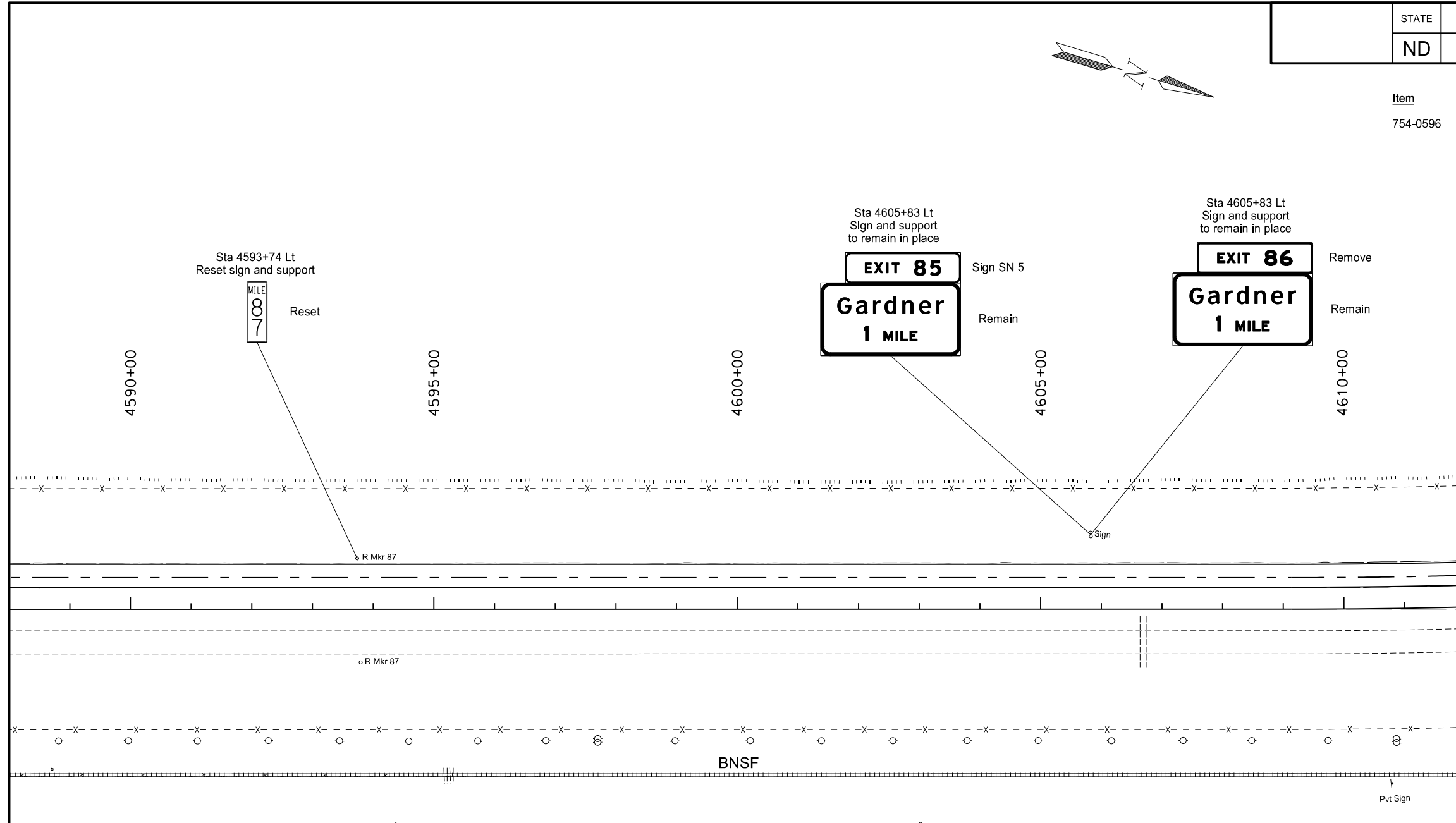


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Signing
Interstate 29 - Argusville to Hunter SB

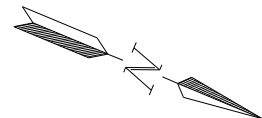
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	15

Item	Description	Quantity	Unit
754-0596	RESET MILE POST Sta 4593+74 Lt	1	EA



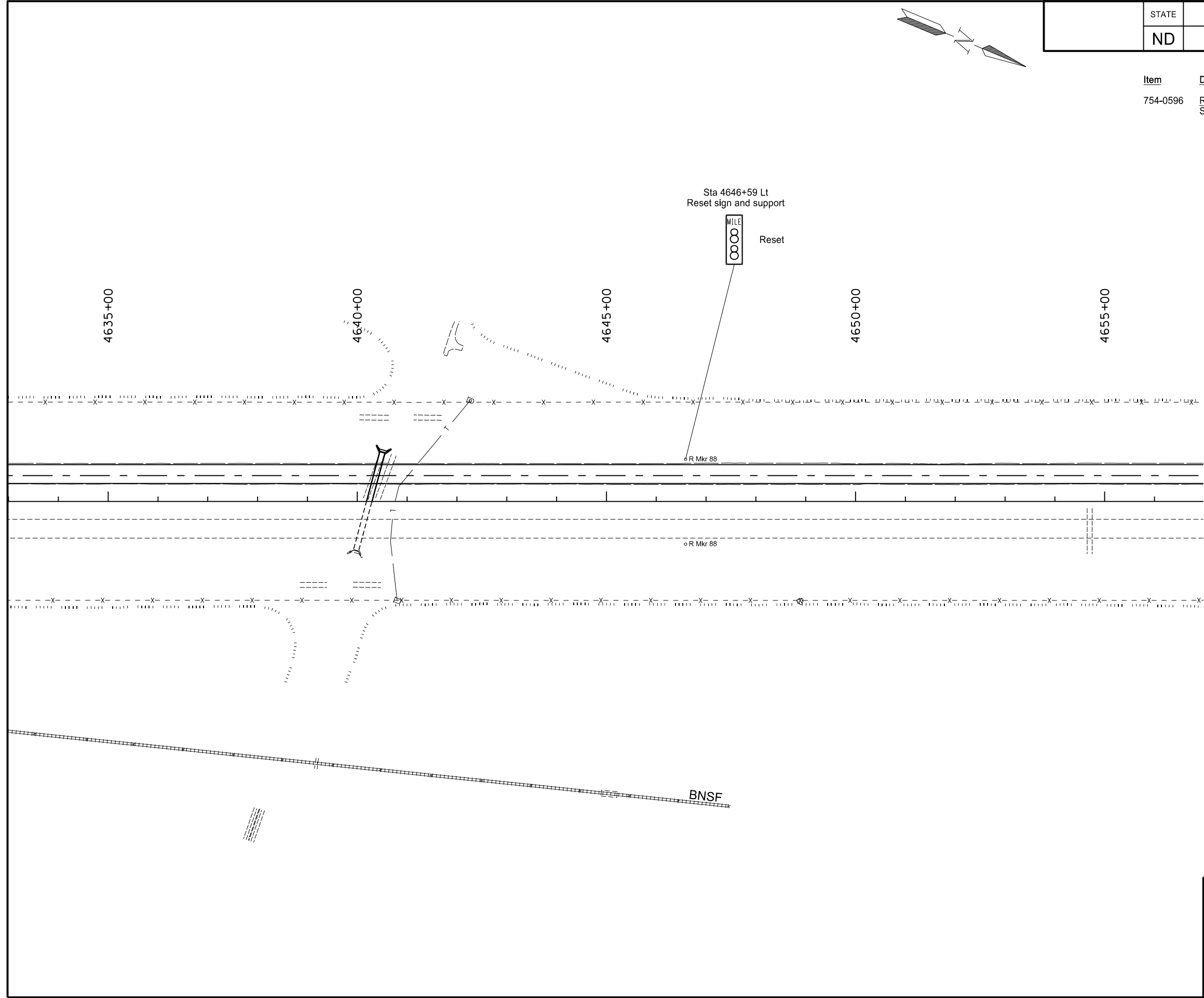
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Signing
Interstate 29 - Argusville to Hunter SB



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	16

Item	Description	Quantity	Unit
754-0596	RESET MILE POST Sta 4646+59 Lt	1	EA



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Signing
Interstate 29 - Argusville to Hunter SB

SIGN NUMBER	SN 1
WIDTH x HEIGHT	7'-6" x 2'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: Type IV Reflective COLOR: Green
LEGEND/BORDER	TYPE: Type IV Reflective COLOR: White
SYMBOL	X Y WID HT ANGLE
ARDD	8.6 10.3 9.4 12 180

STATION(S): 4538+12 Lt

AREA: 18.8 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

LETTER POSITION (X)													LENGTH	SIZE	SERIES
G	a	r	d	n	e	r							52.8	8/6.5	ClearviewHwy-5-W
28.6	37.8	46.3	52	60.9	69.1	77.7									

SIGN NUMBER	SN 2
WIDTH x HEIGHT	12'-6" x 3'-6"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: Type IV Reflective COLOR: Green
LEGEND/BORDER	TYPE: Type IV Reflective COLOR: White
SYMBOL	X Y WID HT ANGLE
ARDD	129.1 9.3 9.4 12 0

STATION(S): 4540+04 Lt

AREA: 43.8 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

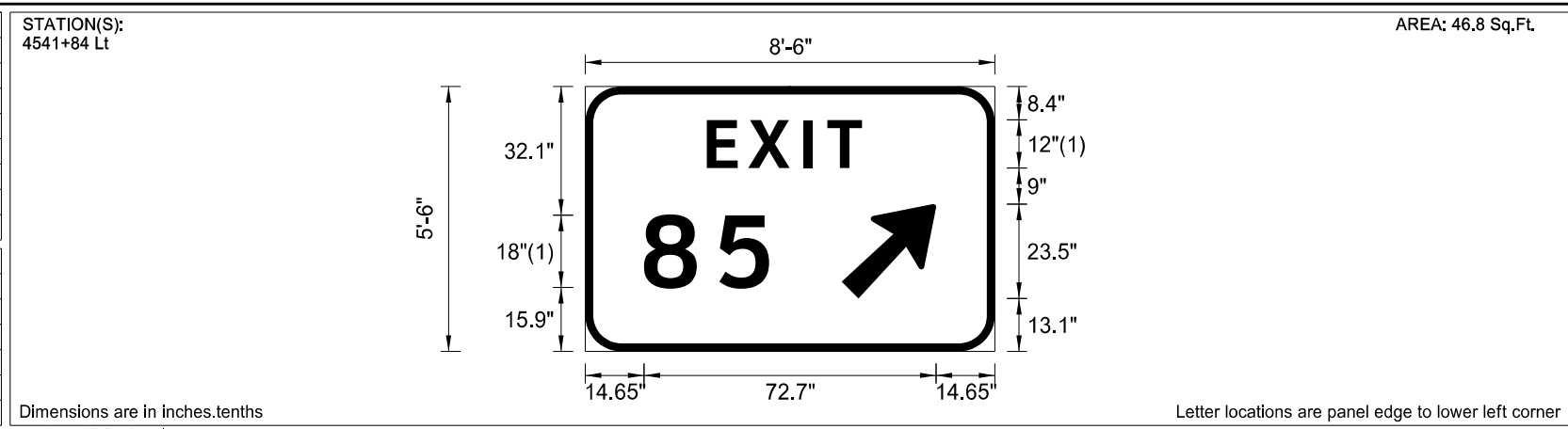
LETTER POSITION (X)													LENGTH	SIZE	SERIES
N	o	r	t	h	e	r	n		C	a	s	s	95.9	8/6.5	ClearviewHwy-5-W
11.3	20.7	29.6	34.8	41.2	49.4	58	64	69.6	78.8	87.2	95.1	102.1			
P	u	b	l	i	c		S	c	h	o	o	l	92.2	8/6.5	ClearviewHwy-5-W
11.3	19.6	28.1	36.6	41.4	45.8	51.3	59.4	67.4	75.2	83.5	92.1	101			
6													5.8	8	ClearviewHwy-5-W
115.3															

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Signing Details

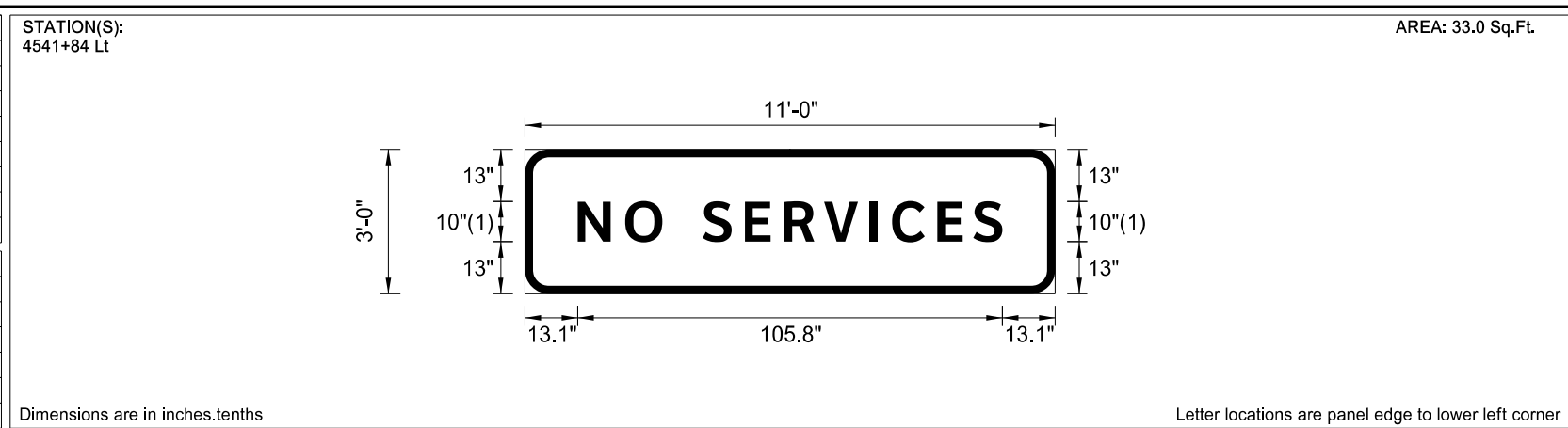
Interstate 29 - Argusville to Hunter SB

SIGN NUMBER	SN 3
WIDTH x HEIGHT	8'-6" x 5'-6"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	9"
MOUNTING	Ground
BACKGROUND	TYPE: Type IV Reflective COLOR: Green
LEGEND/BORDER	TYPE: Type IV Reflective COLOR: White
SYMBOL	X Y WID HT ANGLE
ARGORE	63.8 13.1 18.3 30 45



LETTER POSITION (X)											LENGTH	SIZE	SERIES
E	X	I	T								38.6	12	ClearviewHwy-5-W
30.3	40.6	54.3	60.3										
8	5										31.2	18	ClearviewHwy-5-W
14.6	33.4												

SIGN NUMBER	SN 4
WIDTH x HEIGHT	11'-0" x 3'-0"
BORDER WIDTH	2" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: Type IV Reflective COLOR: Blue
LEGEND/BORDER	TYPE: Type IV Reflective COLOR: White
SYMBOL	X Y WID HT ANGLE



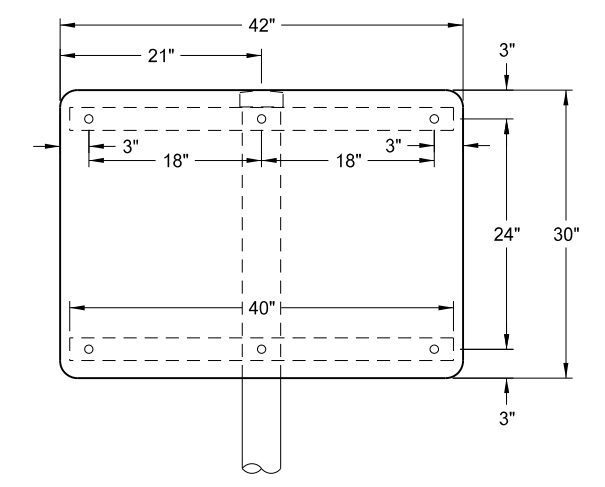
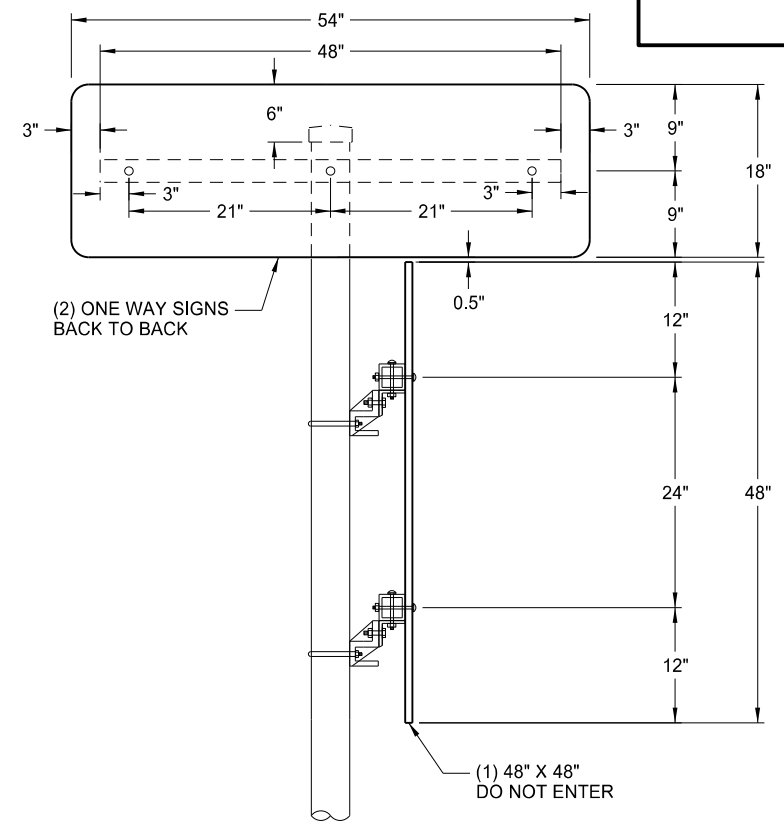
LETTER POSITION (X)											LENGTH	SIZE	SERIES
N	O	S	E	R	V	I	C	E	S		105.8	10	ClearviewHwy-5-W
13.1	25	44.3	54.8	64.6	74.5	85.8	91.4	102.6	111.6				

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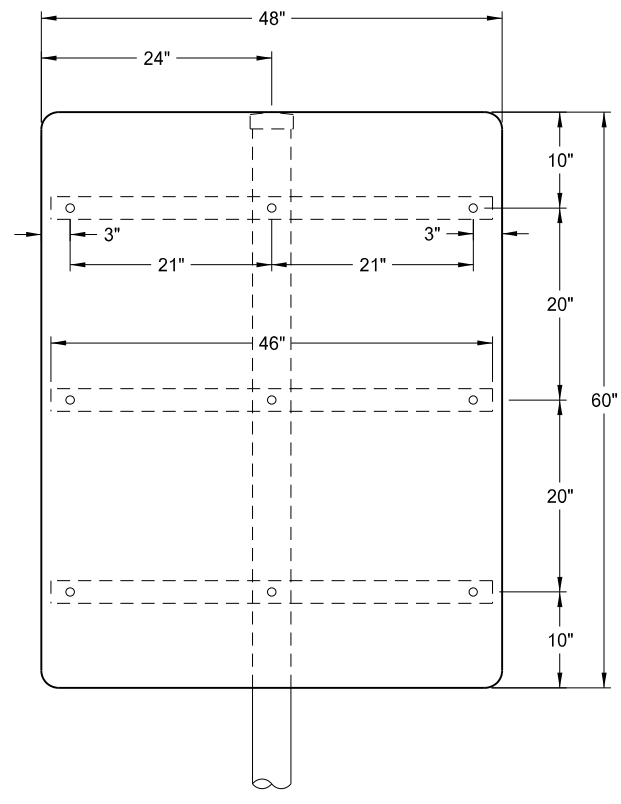
Signing Details

Interstate 29 - Argusville to Hunter SB

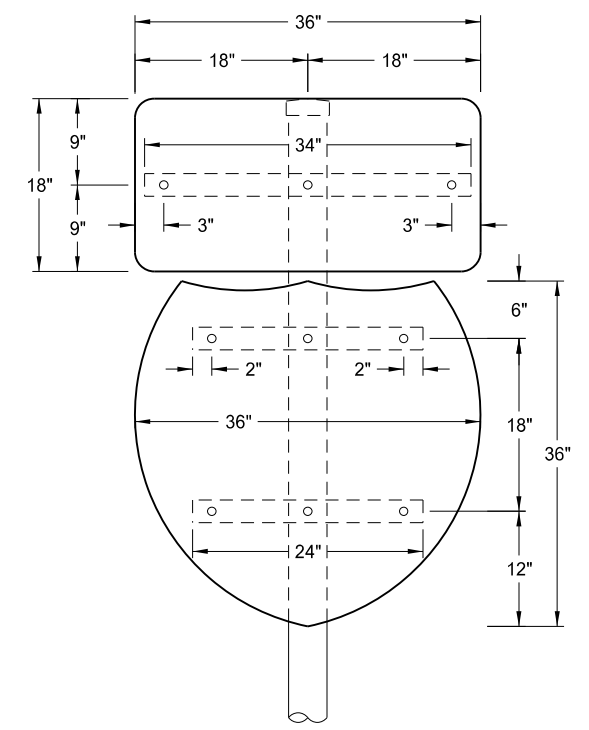
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	110	20



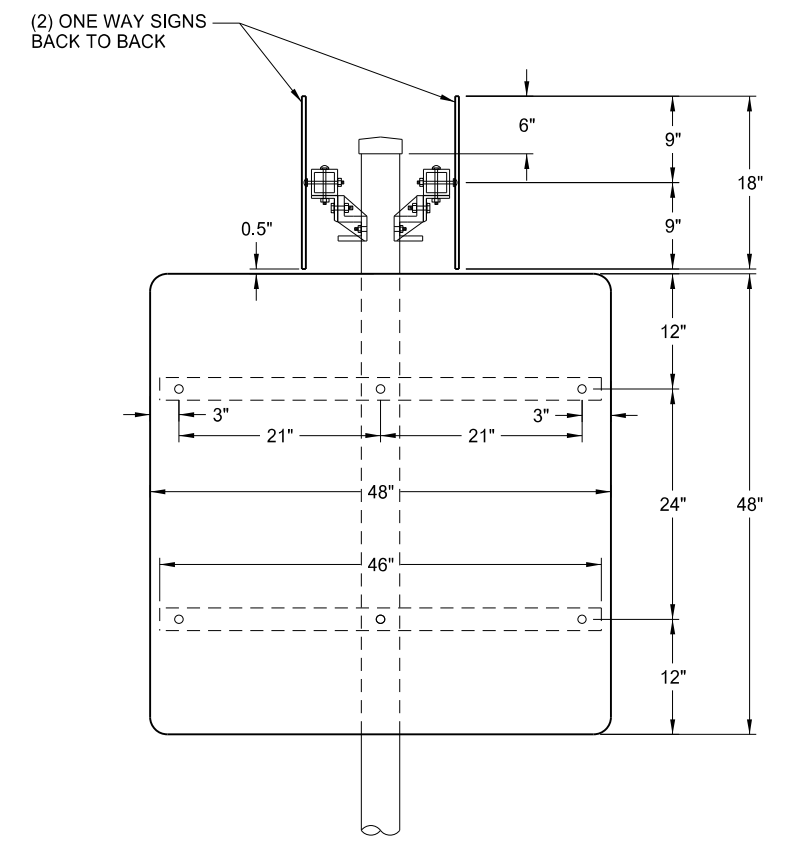
Special Assembly D
(Round Steel Pipe)
Sta 4535+61 Lt



Special Assembly A
(Round Steel Pipe)
Area: 20.00 SF
Sta 4499+90 Lt



Special Assembly B
(Round Steel Pipe)
Area: 11.70 SF
Sta 4509+90 Lt



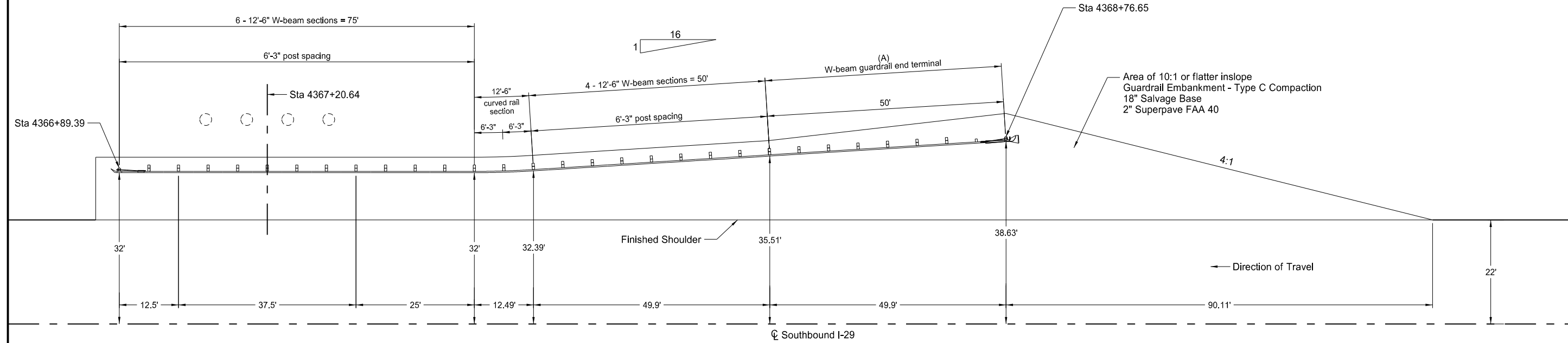
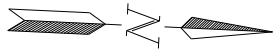
Special Assembly C
(Round Steel Pipe)
Sta 4529+85 Rt

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Sign Assemblies
Interstate 29 - Argusville to Hunter SB

23 USC § 409 Documents
NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	130	1



(A) The W-beam guardrail end terminal to be installed at this location shall be a FLEAT.

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W-beam Guardrail Layout
Outside Pier Protection

Arthur Separation
RP 82.709

Interstate 29 - Argusville to Hunter SB

23 USC § 409 Documents
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	130	2

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES													
W-BEAM GUARDRAIL AT OBSTRUCTIONS													
LOCATION	(A) 5/8" ø x 18" LONG GUARDRAIL BOLT	(A) 5/8" ø x 1-1/4" LONG GUARDRAIL BOLT	(A) 5/8" ø x 10" LONG GUARDRAIL BOLT	(A) 6" x 8" x 14" TIMBER BLOCK	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W- BEAM RAIL SECTION	(A) REFLECTORIZED PANELS	(A) W-BEAM END SECTION (FLARED)	(A) BCT CABLE ASSEMBLY AND BEARING PLATE	(A) BCT ANCHOR PLATE	(A) BCT TERMINAL POST	(A) 5/8" ø x 1-1/2" LONG HEX HEAD BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4366+89.39 to 4368+76.65	22	92	1	22	22	10	1	7	1	1	1	1	8
Total	22	92	1	22	22	10	1	7	1	1	1	1	8

W-Beam Guardrail
 Sta 4366+89.39 to 4368+26.70 Lt 137.5 LF

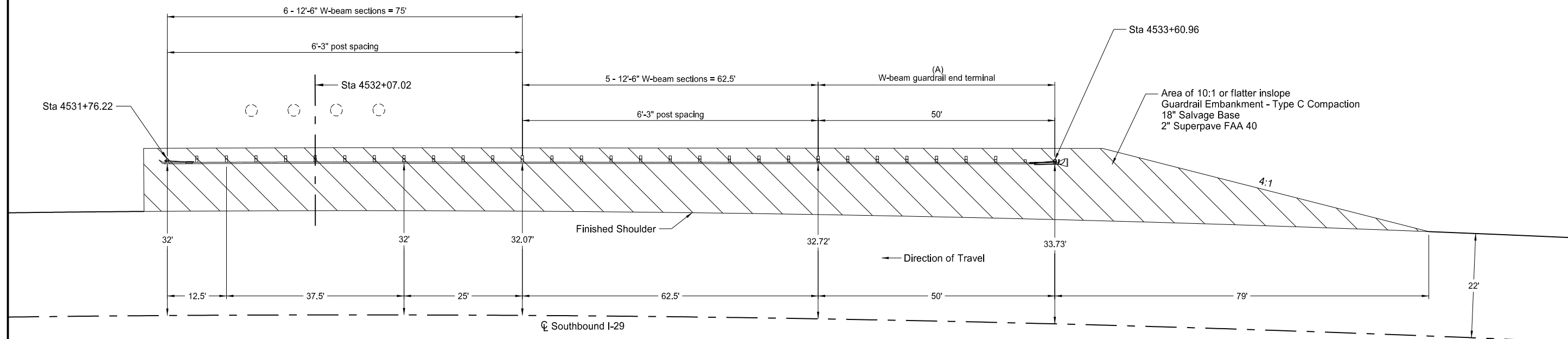
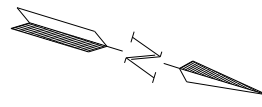
W-Beam Guardrail End Terminal
 Sta 4368+26.70 to 4368+76.65 Lt 1 EA

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

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W-beam Guardrail Layout
 Outside Pier Protection
 Arthur Separation
 RP 82.709
 Interstate 29 - Argusville to Hunter SB

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	130	3



(A) The W-beam guardrail end terminal to be installed at this location shall be a SKT

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W-beam Guardrail Layout
 Outside Pier Protection
 Gardner Interchange
 RP 85.826
 Interstate 29 - Argusville to Hunter SB

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES													
W-BEAM GUARDRAIL AT OBSTRUCTIONS													
LOCATION	(A) 5/8" ø x 18" LONG GUARDRAIL BOLT	(A) 5/8" ø x 1-1/4" LONG GUARDRAIL BOLT	(A) 5/8" ø x 10" LONG GUARDRAIL BOLT	(A) 6" x 8" x 14" TIMBER BLOCK	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W- BEAM RAIL SECTION	(A) REFLECTORIZED PANELS	(A) W-BEAM END SECTION (FLARED)	(A) BCT CABLE ASSEMBLY AND BEARING PLATE	(A) BCT ANCHOR PLATE	(A) BCT TERMINAL POST	(A) 5/8" ø x 1-1/2" LONG HEX HEAD BOLT
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 4531+76.22 to 4533+60.96	22	92	1	22	22	11	0	7	1	1	1	1	8
Total	22	92	1	22	22	11	0	7	1	1	1	1	8

W-Beam Guardrail
 Sta 4531+76.22 to 4533+11.70 Lt 137.5 LF

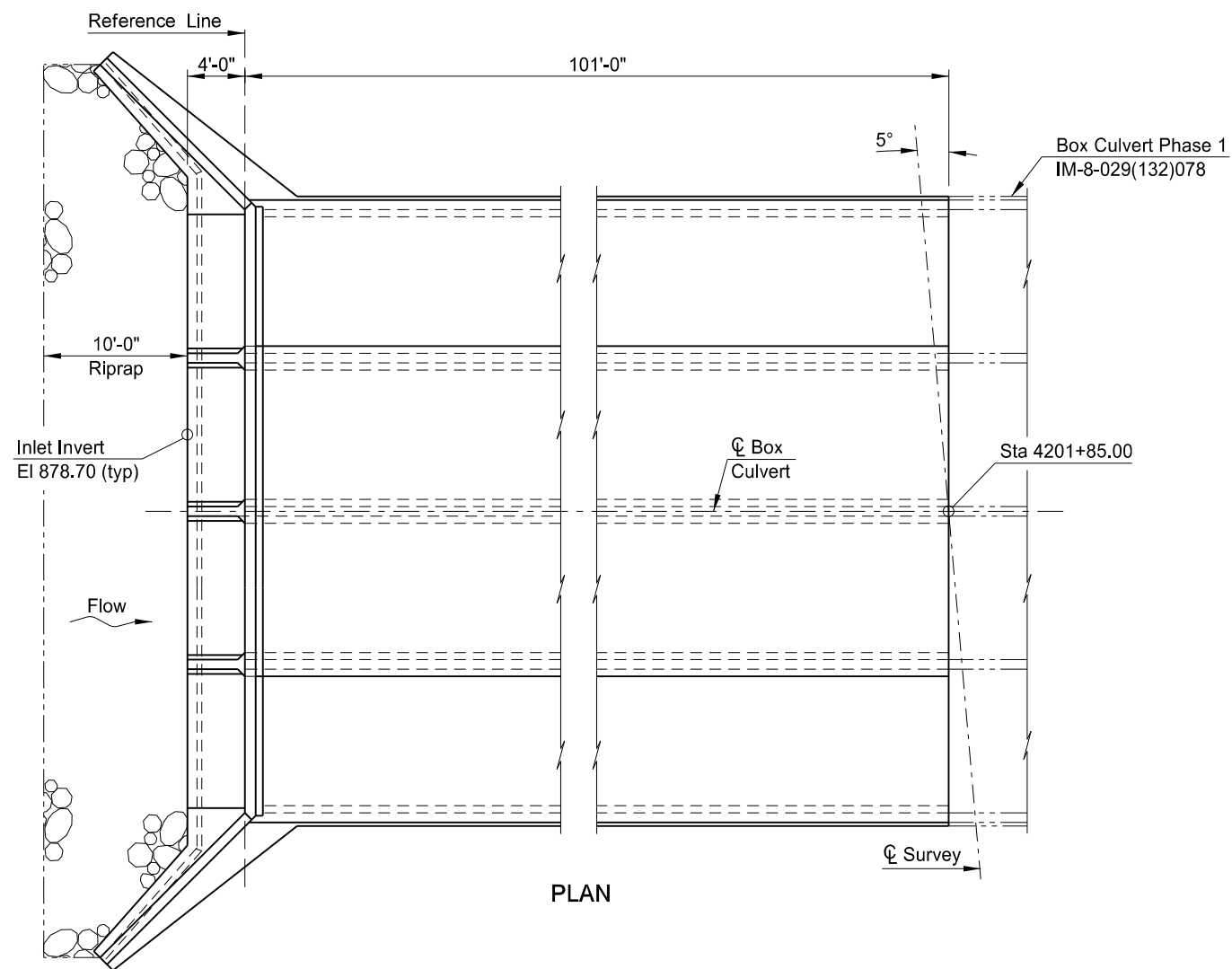
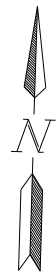
W-Beam Guardrail End Terminal
 Sta 4533+11.70 to 4533+60.96 Lt 1 EA

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

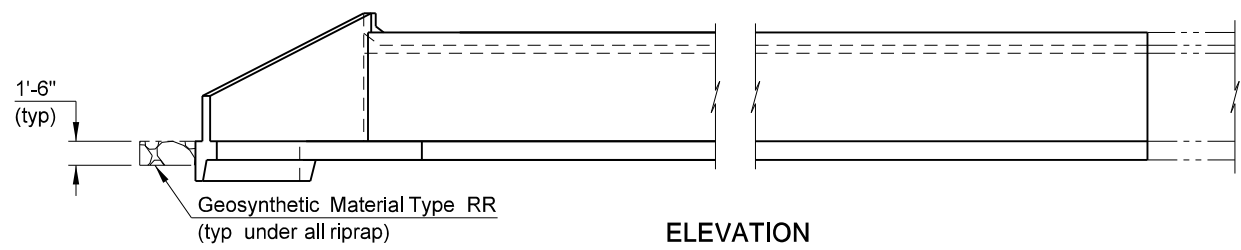
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W-beam Guardrail Layout
 Outside Pier Protection
 Gardner Interchange
 RP 85.826
 Interstate 29 - Argusville to Hunter SB

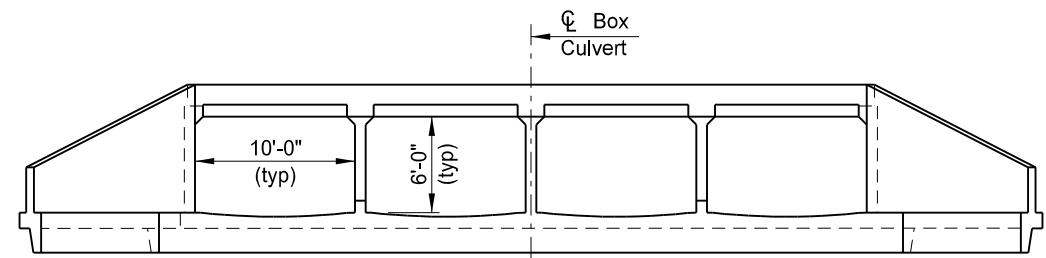
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	1



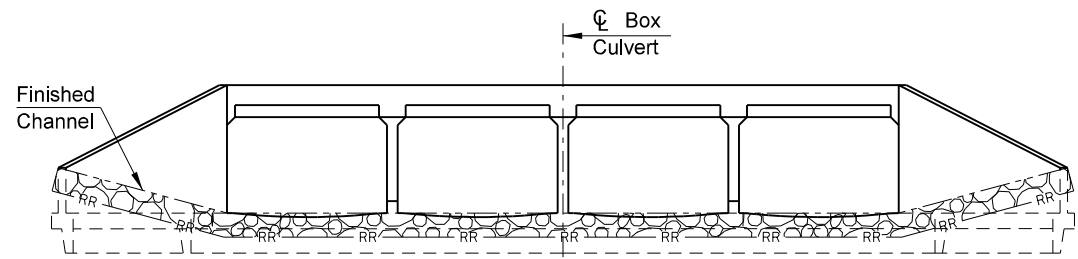
PLAN



ELEVATION



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW

DESIGN STRENGTHS:

f_c = 3,000 psi ~ Class AE-3 Concrete
f_y = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

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HYDRAULIC DATA:

Drainage Area	22.7	sq mi
Stream Gradient	0.001277	ft/ft
Design Frequency	50	yr
Design Discharge	1044	cfs
Design Headwater Stage	888.1	ft
Design Tailwater Stage	887.5	ft
Velocity Through Culvert	4.1	fps
100-Year Frequency Discharge	1272	cfs
100-Year Frequency Headwater	888.5	ft
Overtopping Stage	889.0	ft
Overtopping Discharge	1585	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
		BOX CULVERT EXCAVATION	EA	1
		FOUNDATION FILL	CY	1,464
		FOUNDATION PREPARATION-BOX CULVERT	EA	1
		RIPRAP GRADE II	CY	35
		CLASS AE-3 CONCRETE-BOX CULVERT	CY	354.3
		REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	56,589
		GEOSYNTHETIC MATERIAL TYPE R1	SY	560
		GEOSYNTHETIC MATERIAL TYPE RR	SY	70

SPECIAL PROVISION

SP 4(14) | MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

COUNTY DRAIN 29/29A

**REINFORCED CONCRETE
QUAD BOX CULVERT LAYOUT**

CLEAR SPAN 4 x 10' CLEAR HEIGHT 6'
MAXIMUM FILL 5'

PROJECT: IM-8-029(133)078
STATION: 4201+85.00
CASS COUNTY

DATE: 08/07/14 Terrence R. Udland
BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	2

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new quadruple barrel 10' x 6' x 101'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

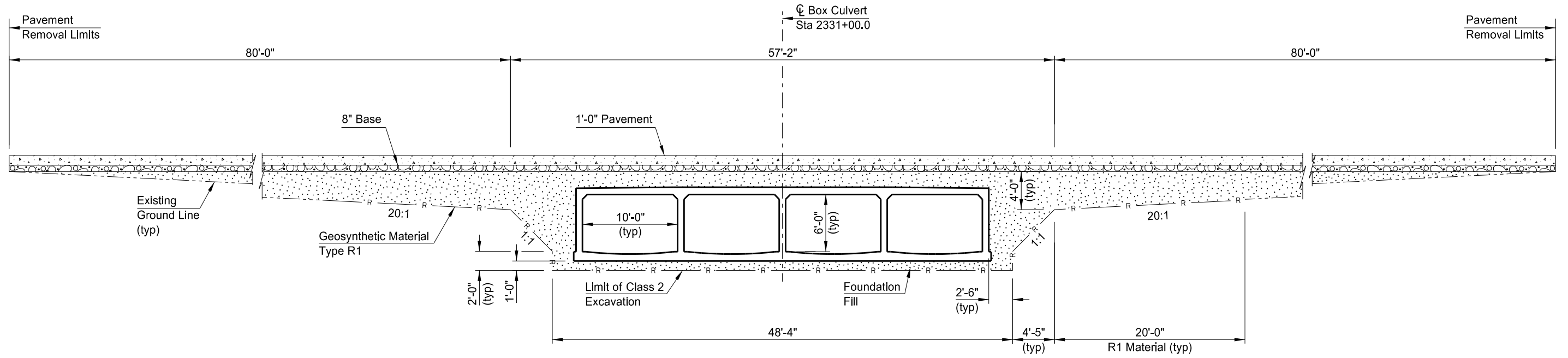
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	3



(SHOWING SECTION ALONG \bar{C} ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

NOTE:

The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

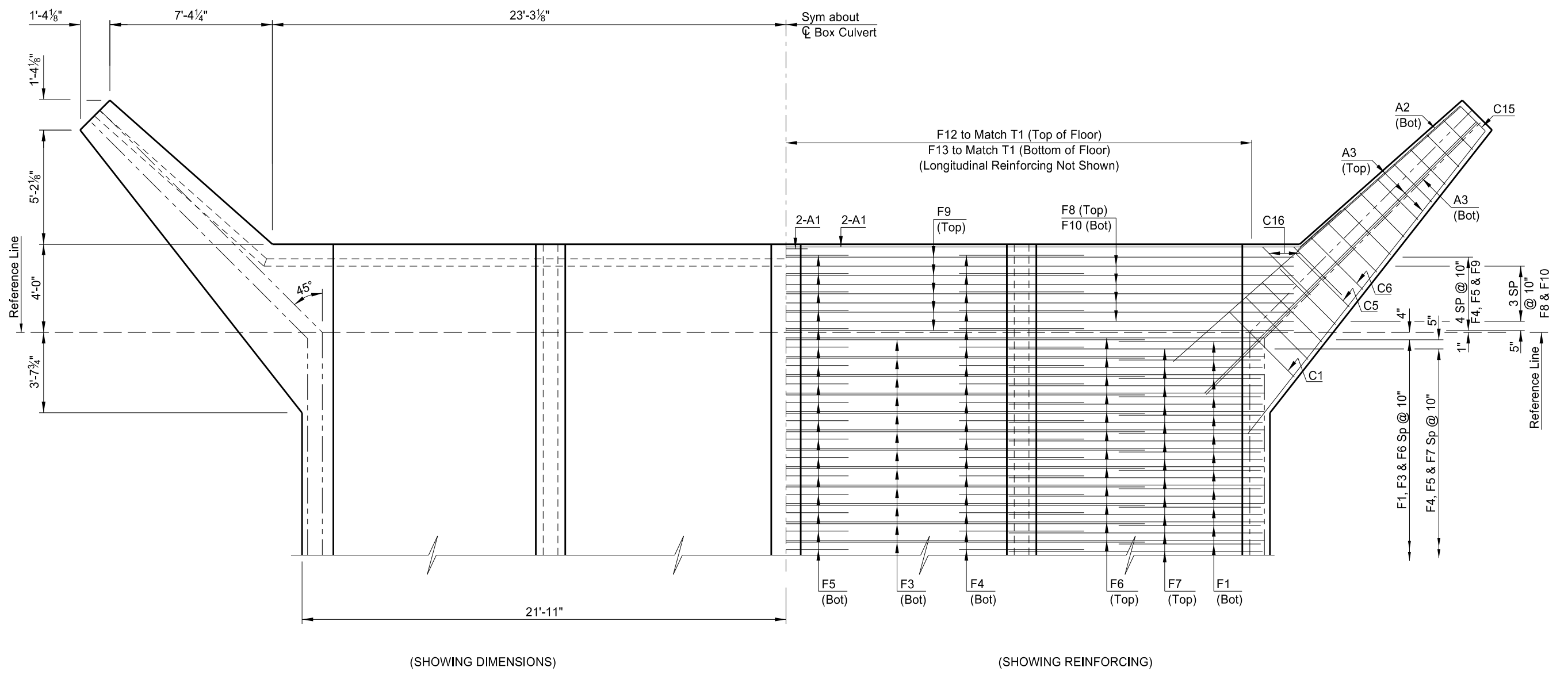
The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of \bar{C} Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

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COUNTY DRAIN 29/29A

EXCAVATION & FOUNDATION FILL DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	5



(SHOWING DIMENSIONS)

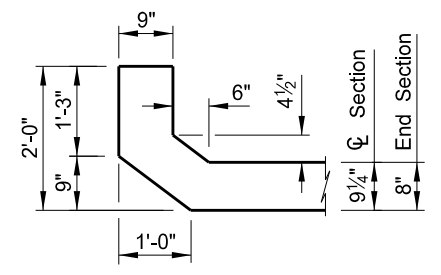
(SHOWING REINFORCING)

FLOOR PLAN

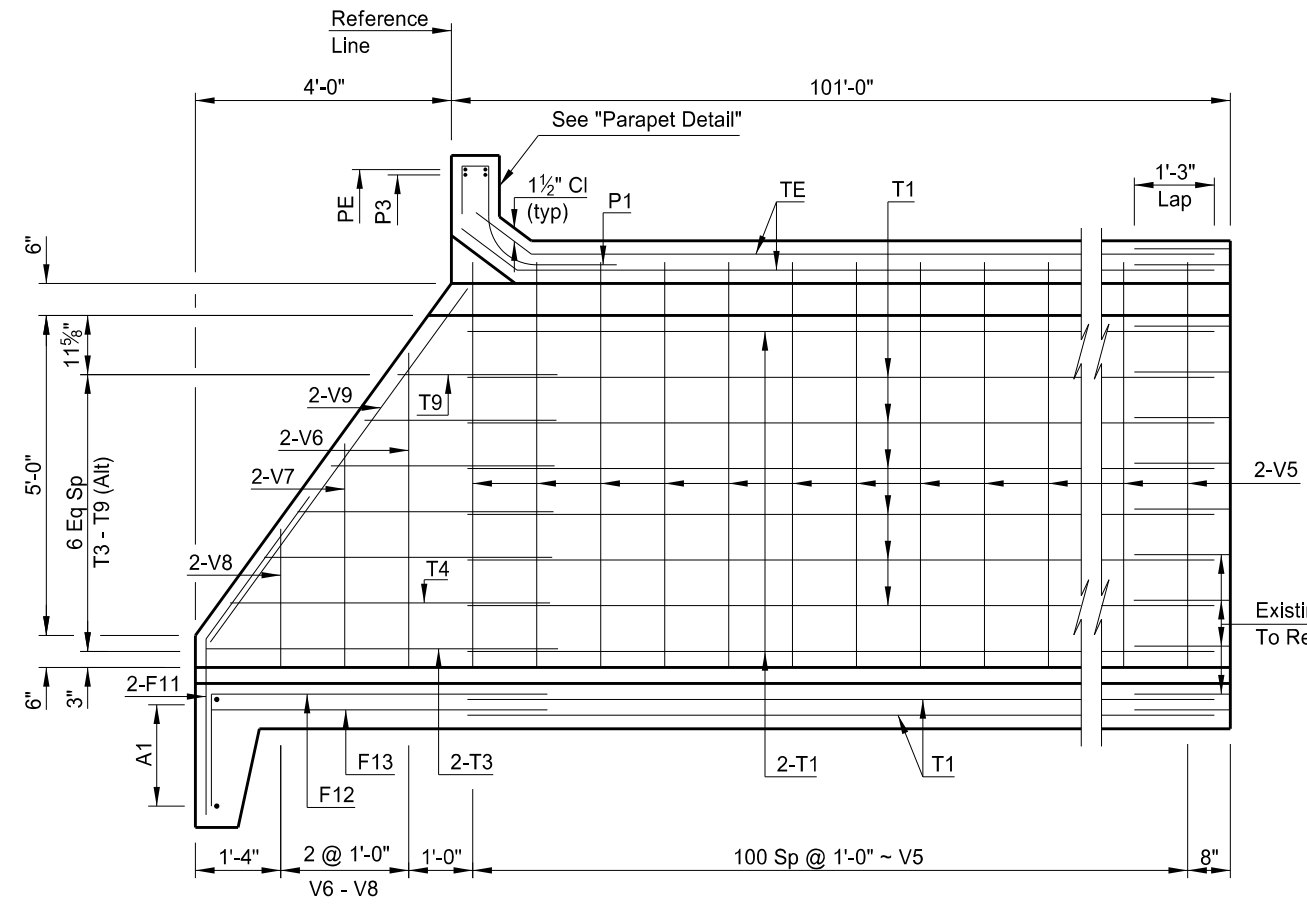
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COUNTY DRAIN 29/29A
FLOOR DETAILS

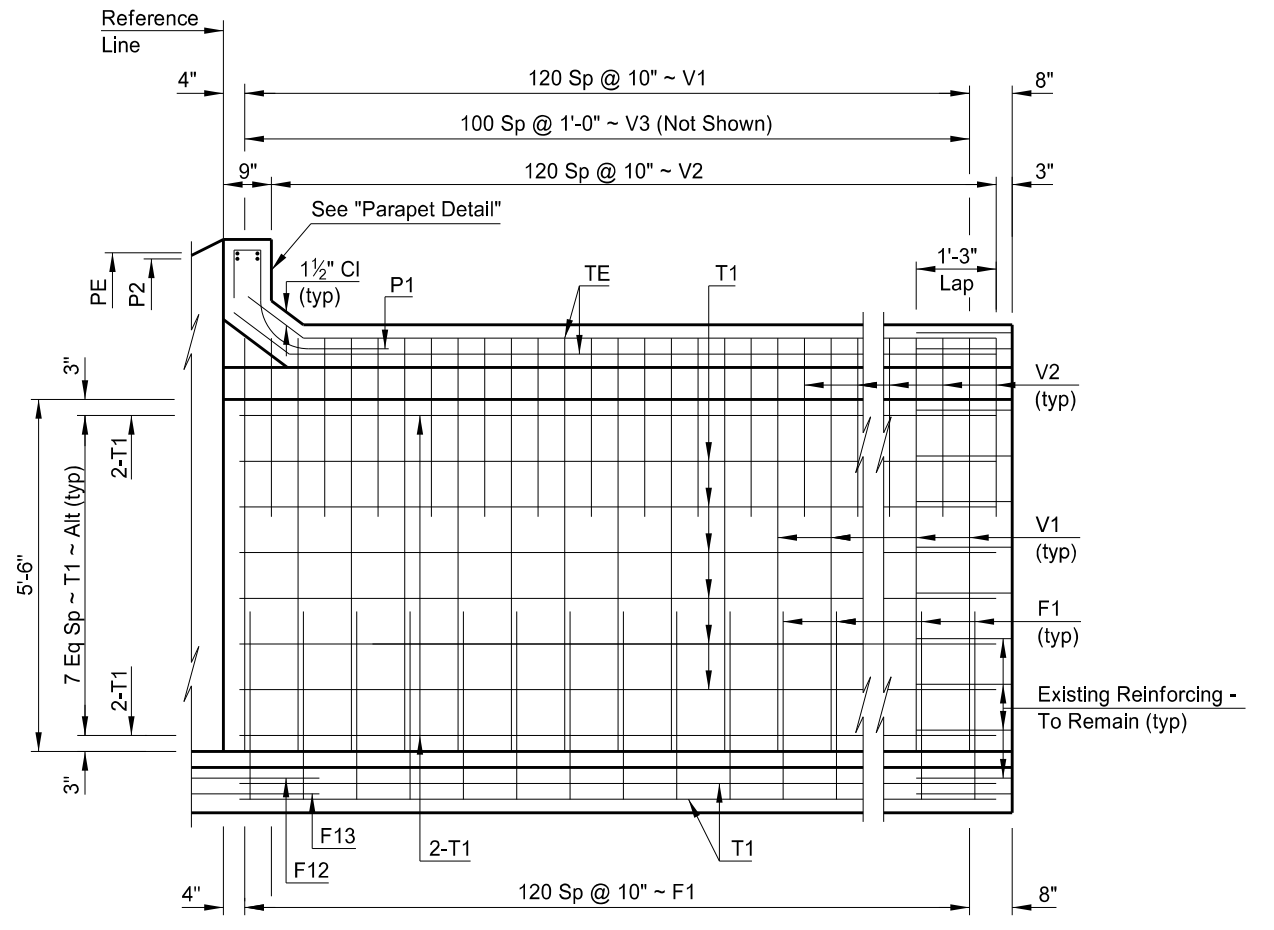
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	6



PARAPET DETAIL



INNER WALL



OUTER WALL

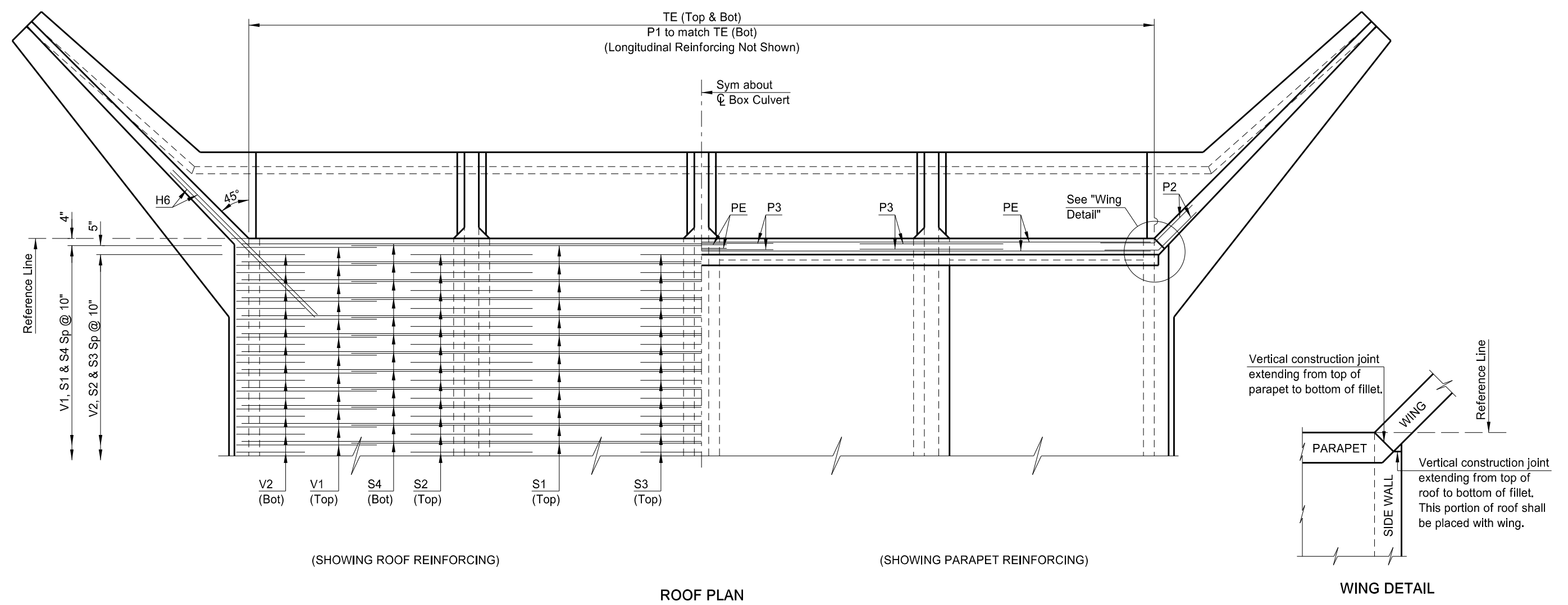
LONGITUDINAL SECTIONS

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COUNTY DRAIN 29/29A

WALL SECTIONS & PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	7



ROOF PLAN

WING DETAIL

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CONTRY DRAIN 29/29A

ROOF DETAILS

BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	5	2	8'-9"	BENT	V1	4	242	12'-8"	BENT
W2	5	2	8'-5"	BENT	V2	5	242	5'-8"	BENT
W3	4	2	8'-0"	BENT	V3	4	202	6'-4"	STR.
W4	4	2	7'-7"	BENT	V5	4	606	6'-4"	STR.
W5	4	2	7'-3"	BENT					
W6	4	2	6'-11"	BENT	F1	5	242	9'-8"	BENT
W7	4	2	6'-6"	BENT	F3	5	121	32'-6"	STR.
W8	4	2	6'-2"	BENT	F4	5	252	5'-8"	STR.
W9	4	2	5'-10"	BENT	F5	4	126	5'-8"	STR.
W10	4	2	5'-5"	BENT	F6	5	121	43'-4"	STR.
W11	4	2	5'-1"	BENT	F7	5	242	11'-6"	STR.
W12	4	2	4'-9"	BENT					
W13	4	2	4'-4"	BENT	S1	5	121	32'-6"	STR.
W14	4	2	4'-0"	BENT	S2	6	242	5'-8"	STR.
					S3	6	121	5'-8"	STR.
					S4	7	121	42'-8"	STR.
C1	4	2	10'-2"	BENT					
C2	4	2	9'-10"	BENT					
C3	4	2	9'-6"	BENT	T1	4	108	101'-9"	STR.
C4	4	2	9'-0"	BENT					
C5	4	2	8'-8"	BENT	TE	4	73	102'-1"	BENT
C6	4	2	9'-8"	BENT					
C7	4	2	9'-4"	BENT					
C8	4	2	9'-0"	BENT					
C9	4	2	8'-6"	BENT					
C10	4	2	8'-2"	BENT					
C11	4	2	7'-10"	BENT					
C12	4	2	7'-6"	BENT					
C13	4	2	7'-2"	BENT					
C14	4	2	6'-10"	BENT					
C15	4	2	6'-4"	BENT					
C16	4	4	5'-1"	BENT					
H1	6	8	14'-8"	STR.					
H2	4	8	13'-9"	STR.					
H3	4	4	11'-11"	STR.					
H4	4	4	7'-9"	STR.					
H5	4	42	6'-0"	BENT					
H6	6	4	9'-6"	STR.					
O1-O10	4	2 SETS	52'-1"	STR.					
A1	6	4	26'-9"	BENT					
A2	6	2	9'-10"	STR.					
A3	6	8	17'-5"	STR.					
P1	4	44	4'-7"	BENT					
P2	6	4	5'-0"	BENT					
P3	6	6	6'-8"	STR.					
PE	6	4	22'-0"	STR.					
V6	4	6	4'-11"	STR.					
V7	4	6	3'-6"	STR.					
V8	4	6	2'-2"	STR.					
V9	6	6	6'-10"	STR.					
F8	5	4	46'-0"	STR.					
F9	5	5	46'-0"	STR.					
F10	5	4	46'-0"	STR.					
F11	6	6	5'-6"	BENT					
F12	4	29	7'-0"	BENT					
F13	4	29	5'-3"	STR.					
T3	4	6	5'-6"	STR.					
T4-T9	4	3 SETS	22'-6"	STR.					

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	8

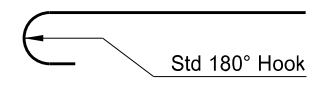
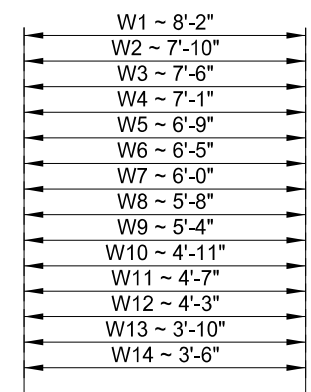
NOTE:

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.

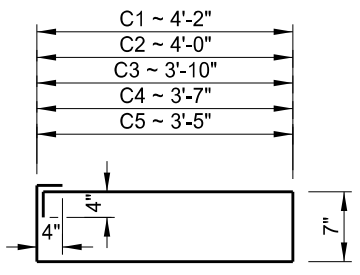
CONCRETE FORMULAS	
ENTIRE FLOOR	"L" x 1.35905 + 11.68796 = 149.0 CY
TWO OUTSIDE WALLS & 2 WINGS	"L" x 0.27160 + 3.73672 = 31.2 CY
INSIDE WALLS	"L" x 0.40741 + 0.96297 = 42.1 CY
ENTIRE ROOF	"L" x 1.29668 + 1.06455 = 132.0 CY
TOTAL	"L" x 3.33474 + 17.45220 = 354.3 CY

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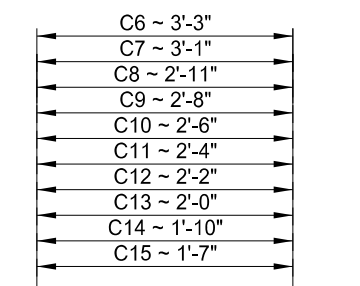
QUANTITIES	
CLASS AE-3 CONCRETE	354.3 CY
REINFORCING STEEL	56,589 LBS
COUNTY DRAIN 29/29A	
REINFORCING BAR LIST	



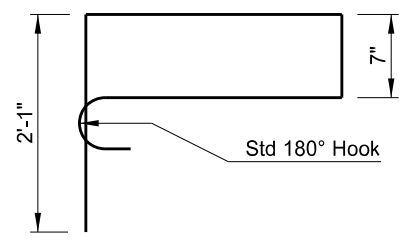
W1 - W14



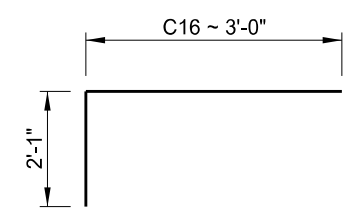
C1 - C5



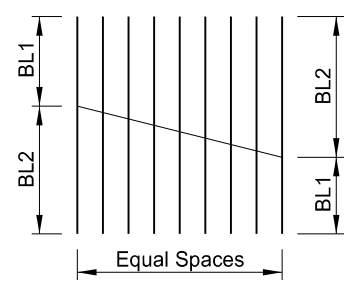
C6 - C15



C6 - C15



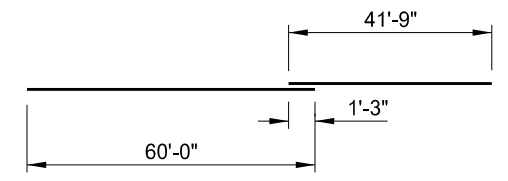
C16



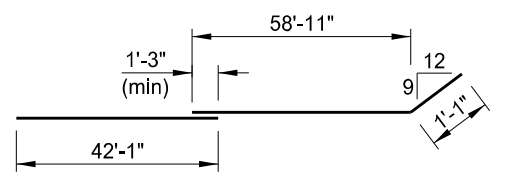
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-10	52'-1"	2'-9"	7'-8"	9
T4-T9	22'-6"	2'-6"	5'-0"	5

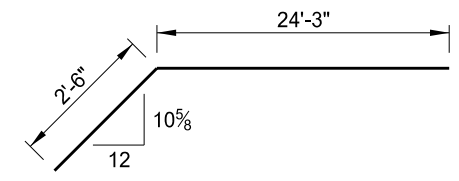
BAR CUTTING DETAILS



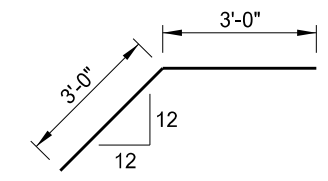
T1



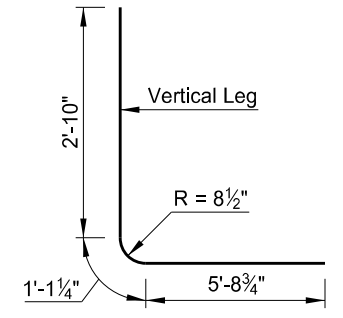
TE



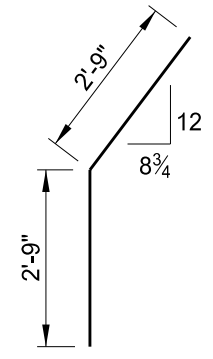
A1



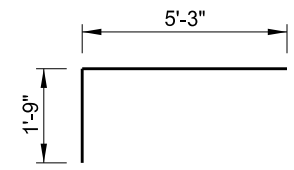
H5



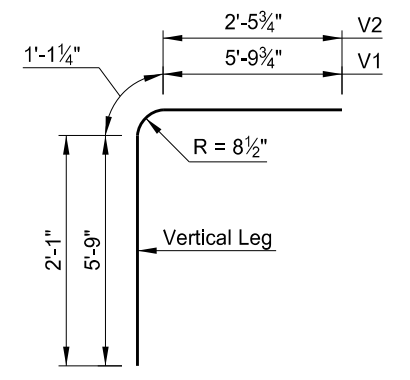
F1



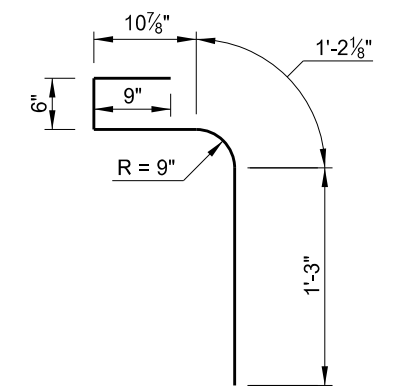
F11



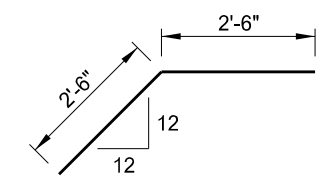
F12



V1 & V2



P1



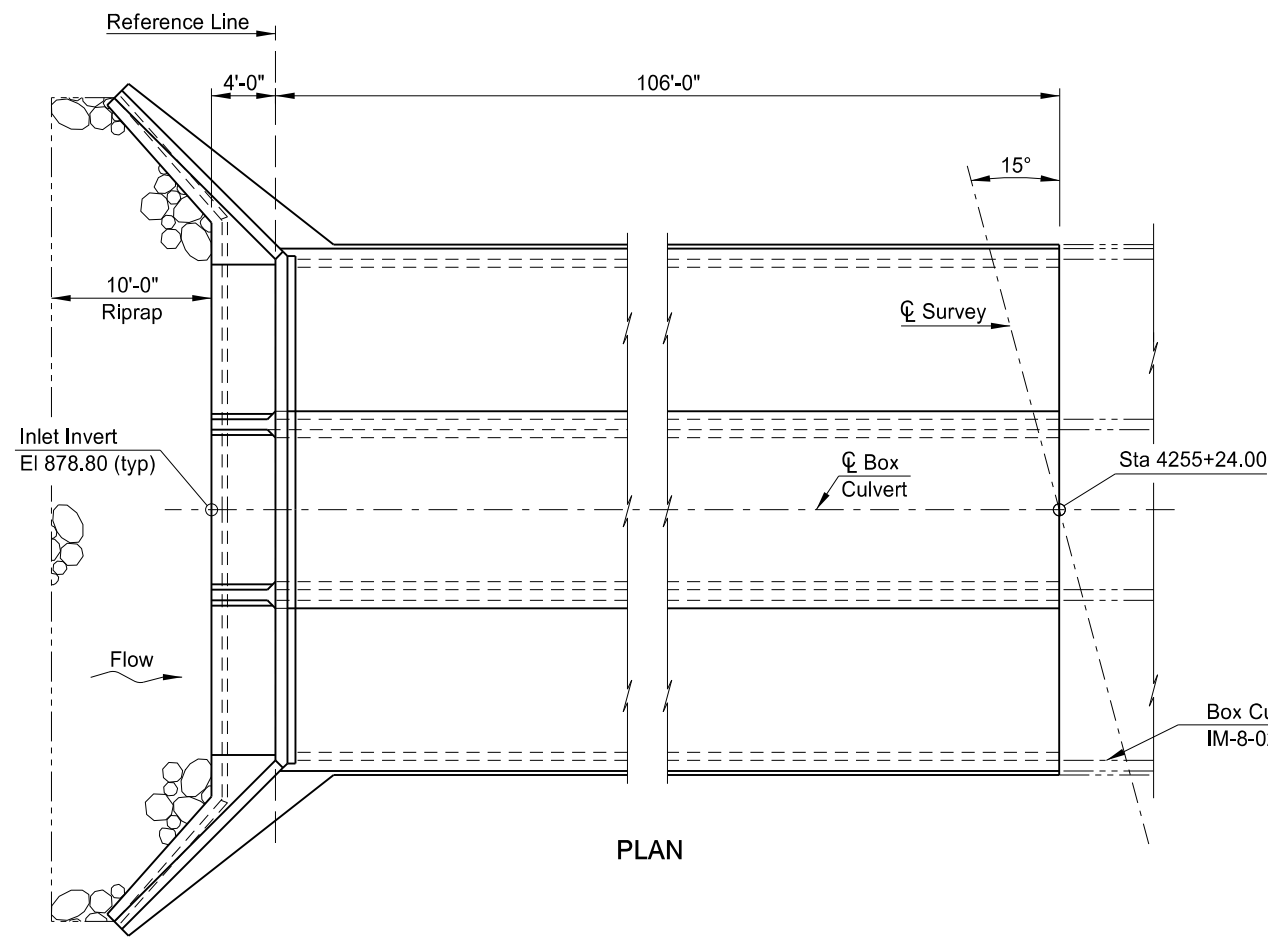
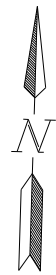
P2

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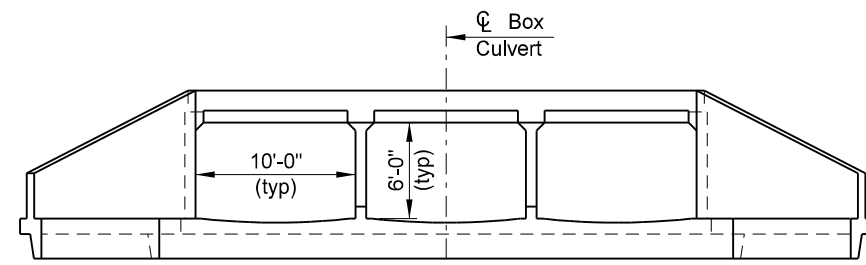
COUNTY DRAIN 29/29A

BAR DETAILS

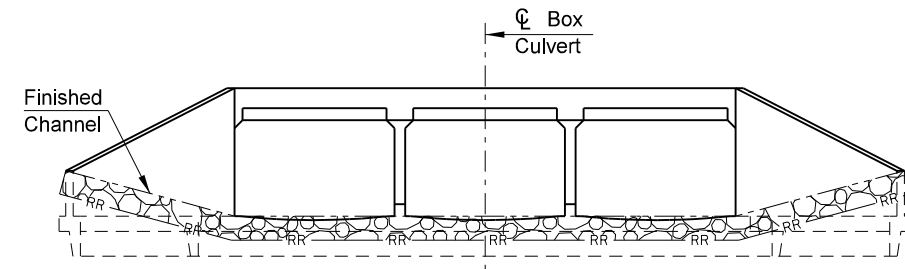
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	10



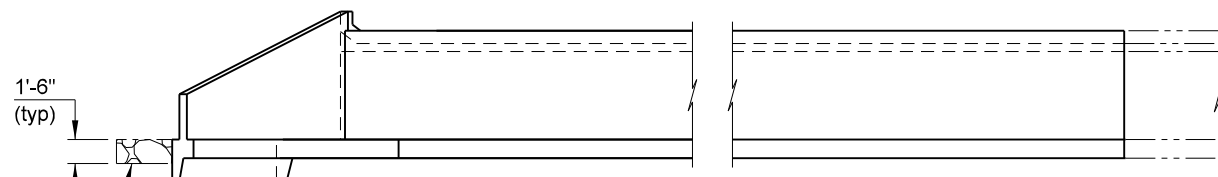
PLAN



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW



Geosynthetic Material Type RR
(typ under all riprap)

ELEVATION

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HYDRAULIC DATA:

Drainage Area	9.0	sq mi
Stream Gradient	0.0028	ft/ft
Design Frequency	50	yr
Design Discharge	521	cfs
Design Headwater Stage	887.8	ft
Design Tailwater Stage	887.6	ft
Velocity Through Culvert	2.8	fps
100-Year Frequency Discharge	624	cfs
100-Year Frequency Headwater	888.0	ft
Overtopping Stage	889.0	ft
Overtopping Discharge	1125	cfs

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel
Load & Resistance Factor Design

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,388
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	30
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	281.8
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	45,398
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	515
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	60

SPECIAL PROVISION

SP 4(14) | MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

COSTELLO DRAIN

REINFORCED CONCRETE
TRIPLE BOX CULVERT LAYOUT
CLEAR SPAN 3 x 10' CLEAR HEIGHT 6'
MAXIMUM FILL 5'

PROJECT: IM-8-029(133)078
STATION: 4255+24.00
CASS COUNTY

08/07/14 DATE Terrence R. Udland BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	11

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new triple barrel 10' x 6' x 106'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

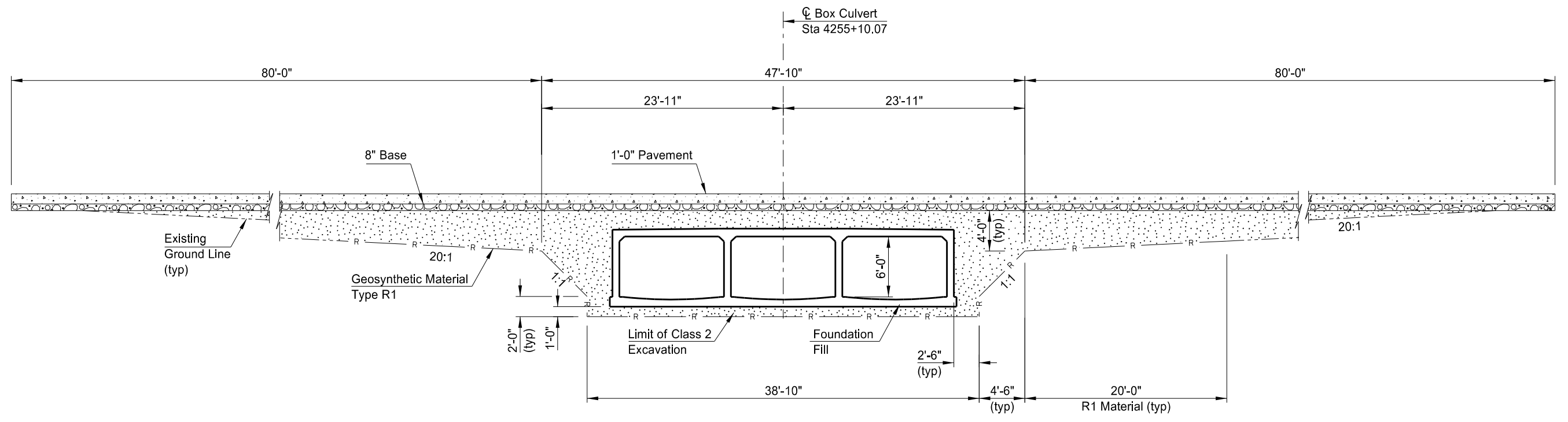
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
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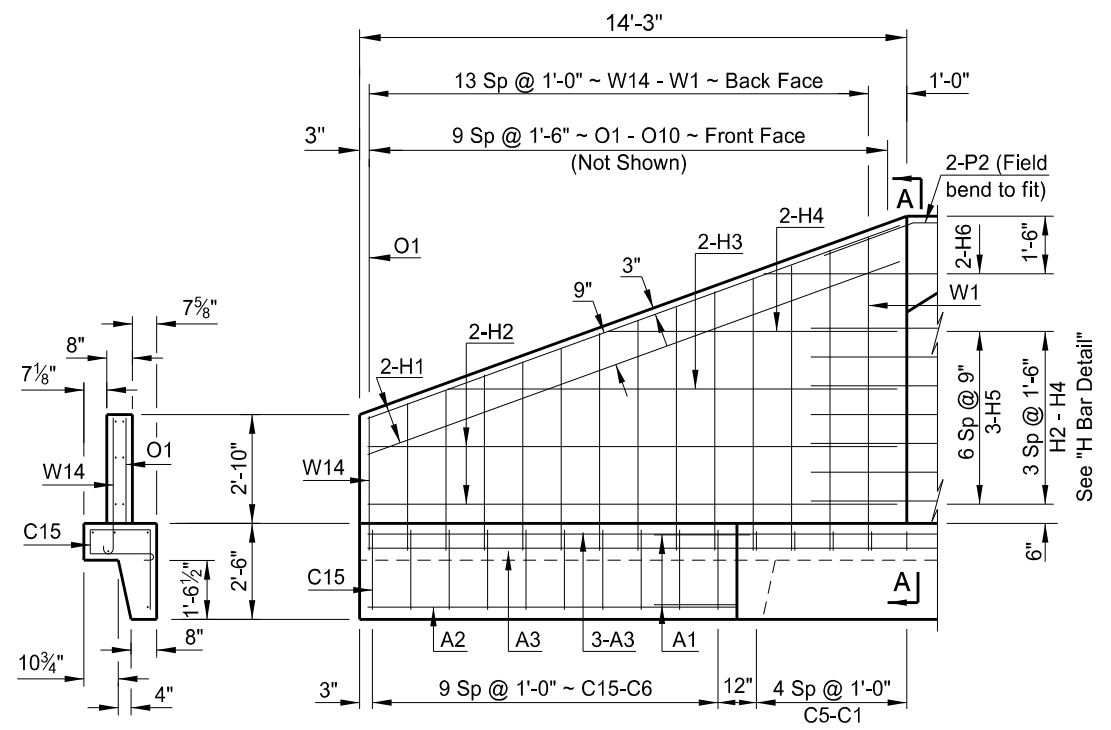
(SHOWING SECTION ALONG \bar{C} ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

NOTE:
 The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.
 The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of \bar{C} Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

COSTELLO DRAIN

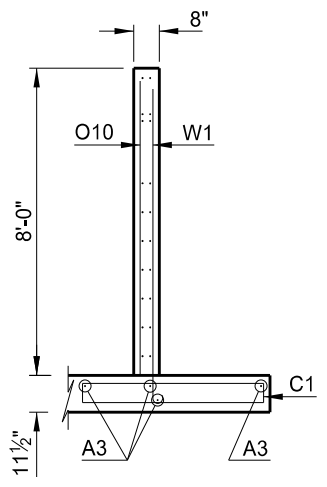
**EXCAVATION & FOUNDATION
 FILL DETAIL**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	13

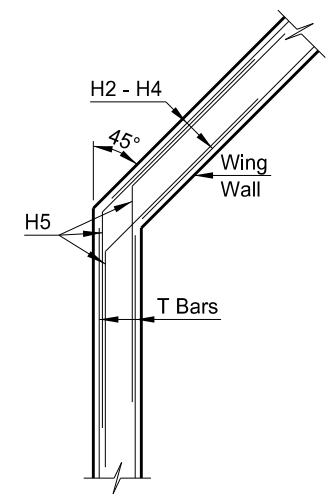


END VIEW

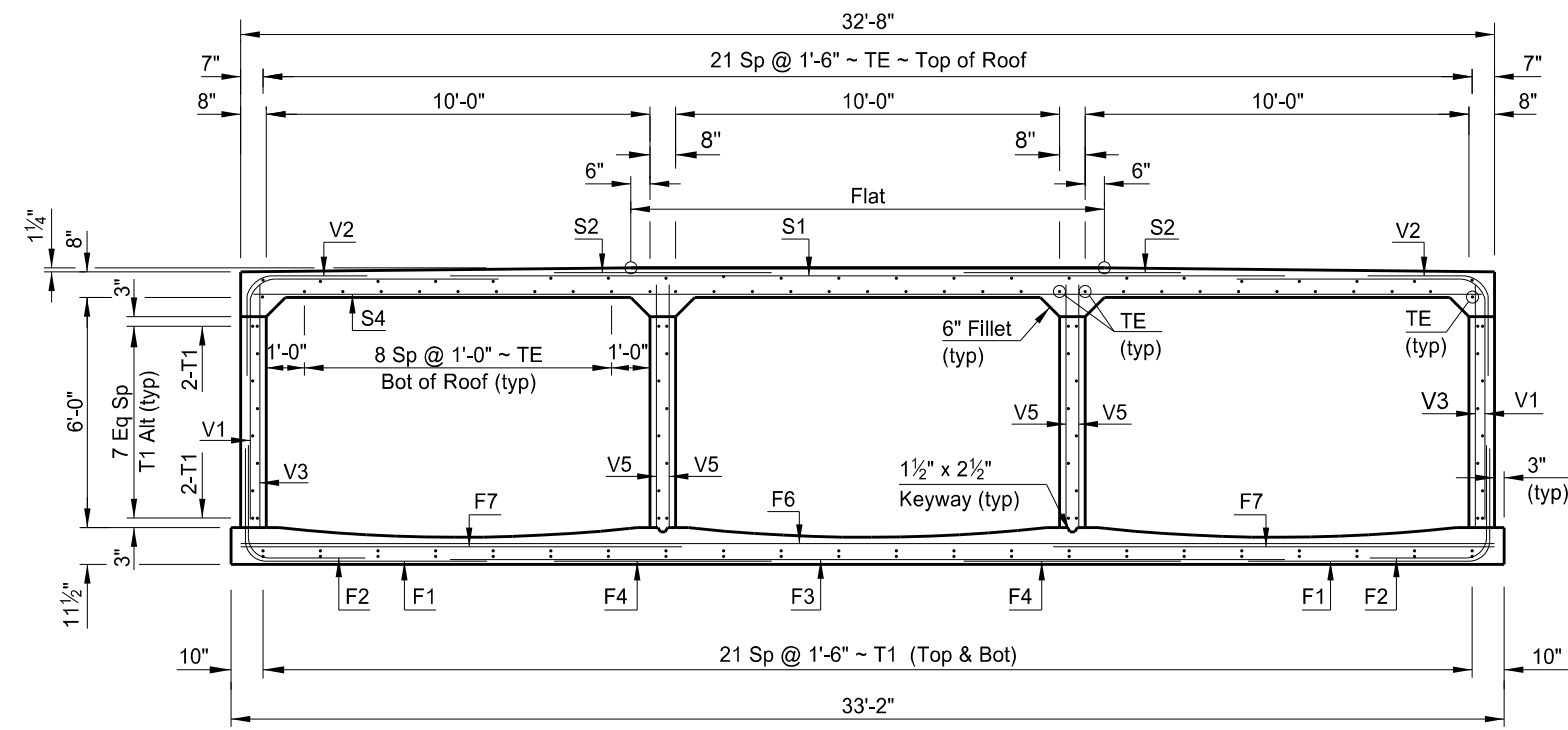
WING ELEVATION



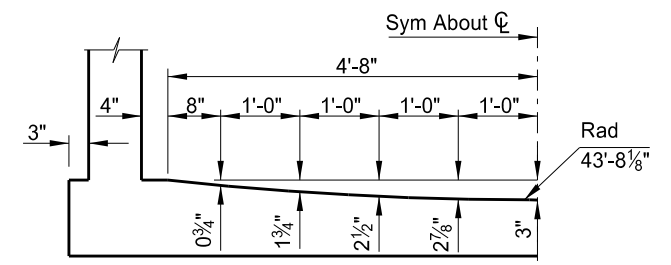
A-A



H BAR DETAIL



SECTION OF BARREL

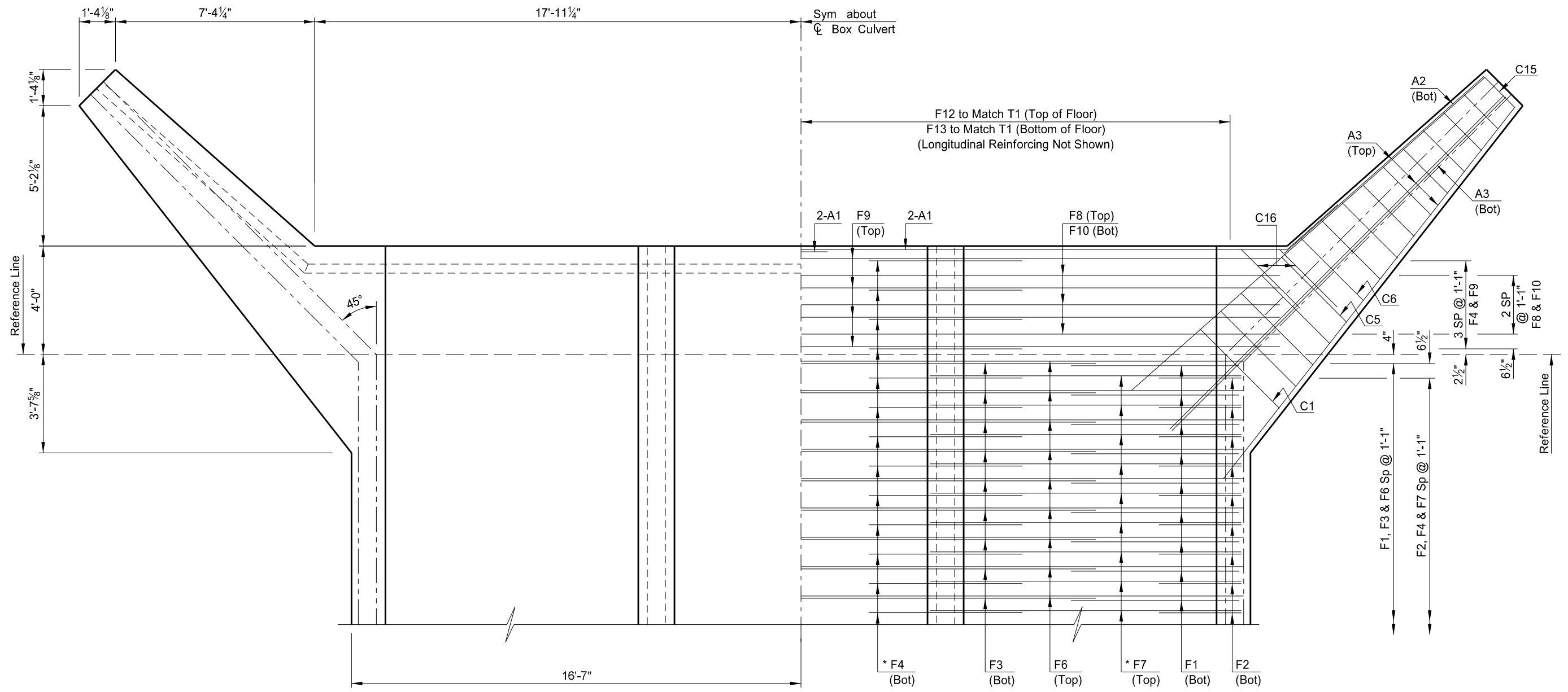


CURVED FLOOR OFFSETS

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COSTELLO DRAIN
 BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	14



(SHOWING DIMENSIONS)

(SHOWING REINFORCING)

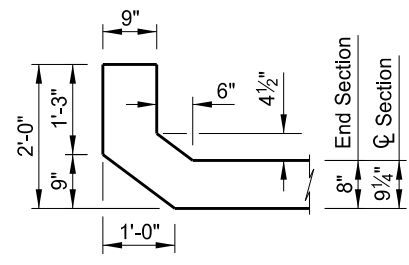
FLOOR PLAN

* One additional F4 and F7 bar to match one F2 bar spaced at 10". See "Outer Wall" detail on Dwg 29-080.588-6.

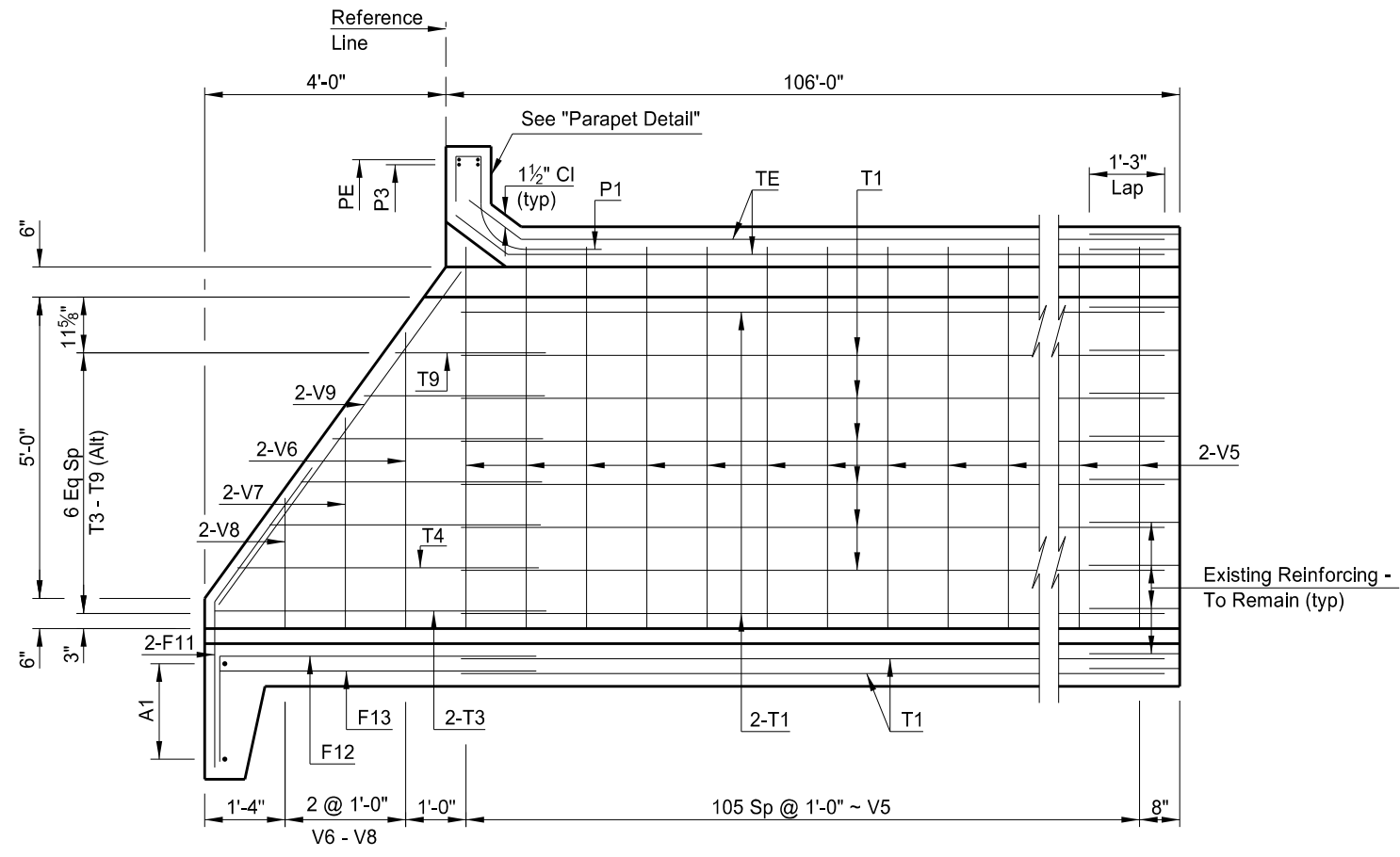
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COSTELLO DRAIN
FLOOR DETAILS

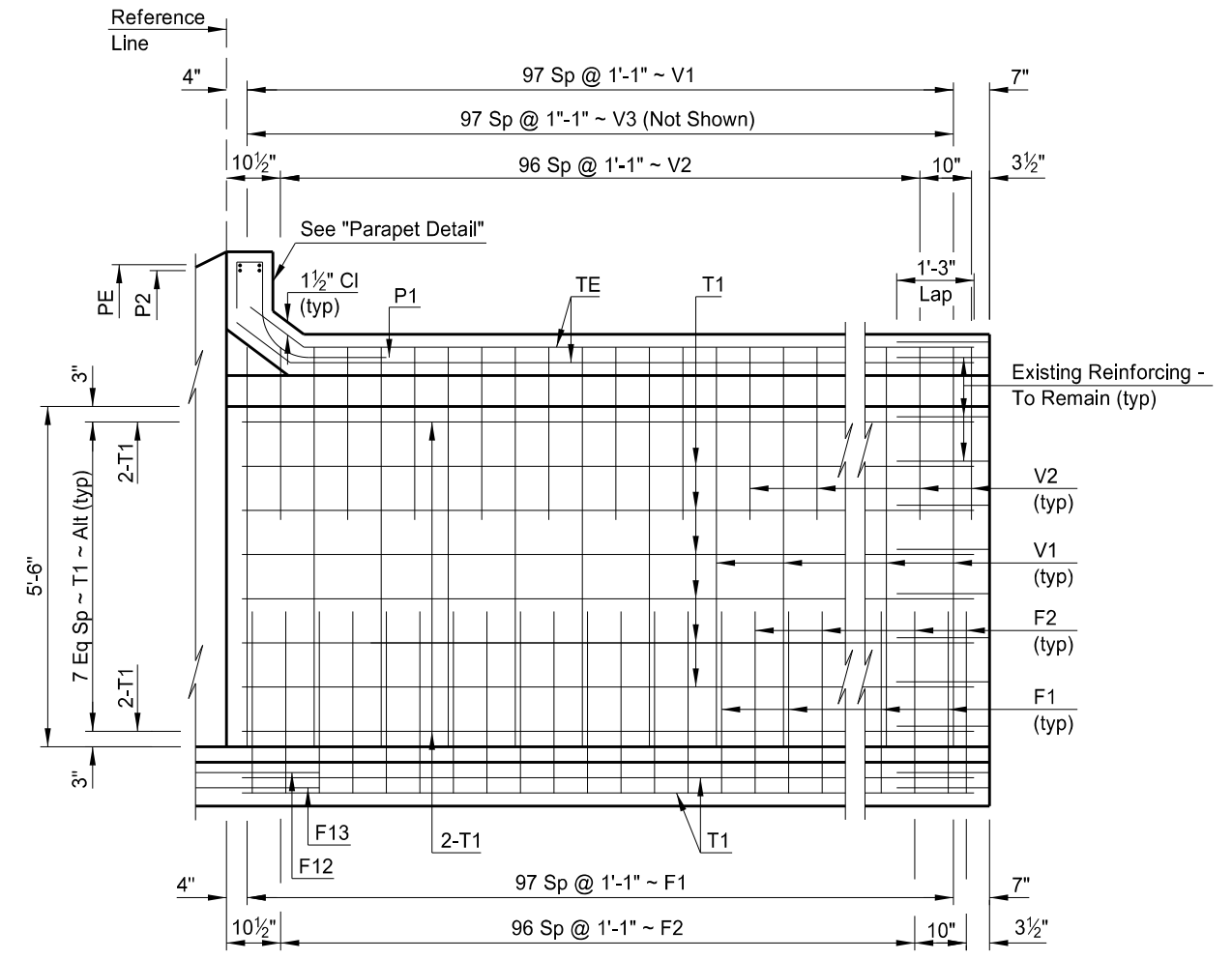
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	15



PARAPET DETAIL



INNER WALL



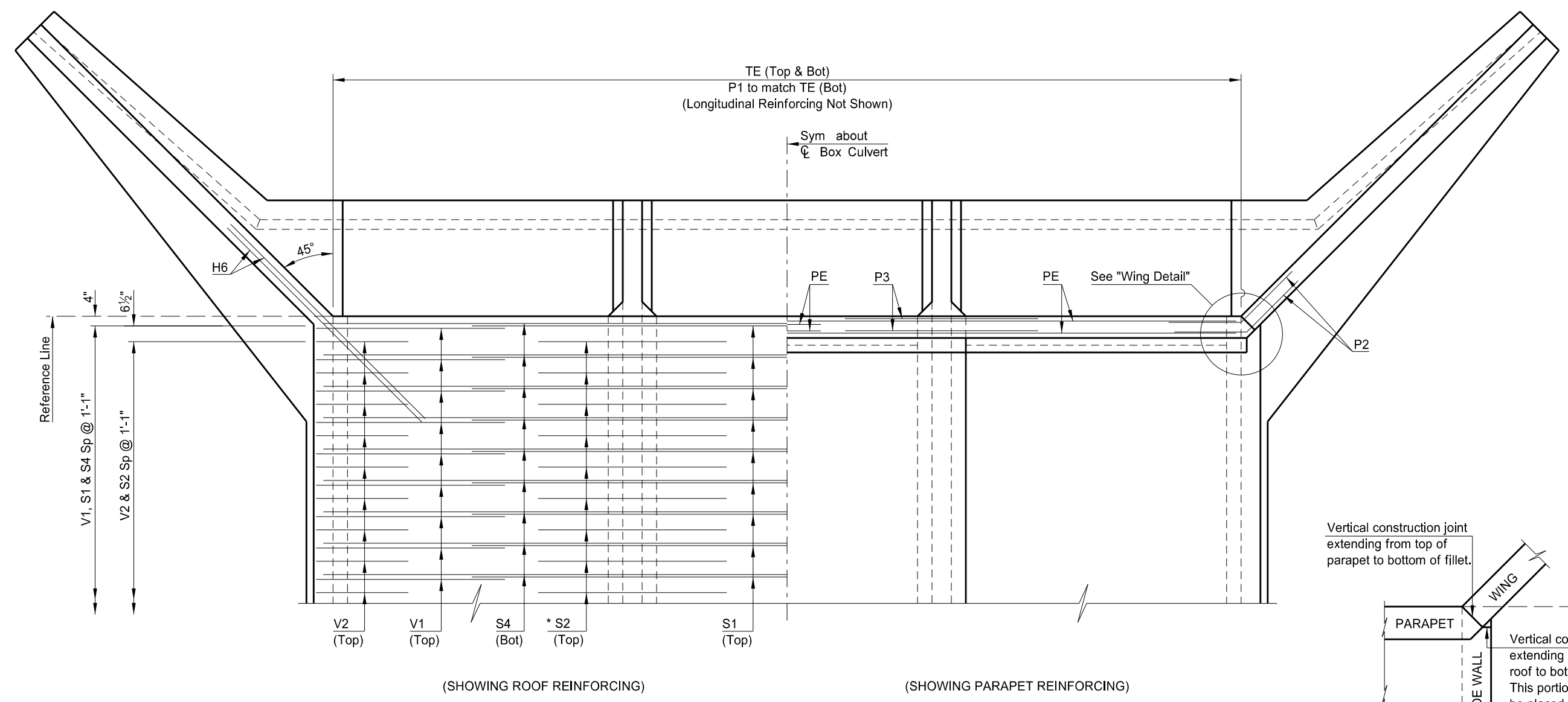
OUTER WALL

LONGITUDINAL SECTIONS

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COSTELLO DRAIN
WALL SECTIONS & PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	16



* One additional S2 bar to match one V2 bar spaced at 10". See "Outer Wall" detail on Dwg 29-080.588-6.

ROOF PLAN

WING DETAIL

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COSTELLO DRAIN

ROOF DETAIL

BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	5	2	8'-9"	BENT	V1	5	196	12'-8"	BENT
W2	5	2	8'-5"	BENT	V2	5	196	5'-8"	BENT
W3	4	2	7'-11"	BENT	V3	4	196	6'-4"	STR.
W4	4	2	7'-7"	BENT	V5	4	424	6'-4"	STR.
W5	4	2	7'-3"	BENT					
W6	4	2	6'-10"	BENT	F1	4	196	9'-0"	BENT
W7	4	2	6'-6"	BENT	F2	4	196	5'-9"	BENT
W8	4	2	6'-2"	BENT	F3	5	98	21'-9"	STR.
W9	4	2	5'-9"	BENT	F4	6	204	5'-8"	STR.
W10	4	2	5'-5"	BENT	F6	5	98	32'-8"	STR.
W11	4	2	5'-1"	BENT	F7	6	196	11'-6"	STR.
W12	4	2	4'-8"	BENT					
W13	4	2	4'-4"	BENT	S1	6	98	21'-9"	STR.
W14	4	2	4'-0"	BENT	S2	7	196	6'-6"	STR.
					S4	8	98	32'-0"	STR.
C1	4	2	10'-0"	BENT					
C2	4	2	9'-8"	BENT					
C3	4	2	9'-4"	BENT	T1	4	84	106'-9"	STR.
C4	4	2	8'-10"	BENT					
C5	4	2	8'-6"	BENT	TE	4	55	107'-1"	BENT
C6	4	2	9'-7"	BENT					
C7	4	2	9'-3"	BENT					
C8	4	2	8'-11"	BENT					
C9	4	2	8'-5"	BENT					
C10	4	2	8'-1"	BENT					
C11	4	2	7'-9"	BENT					
C12	4	2	7'-5"	BENT					
C13	4	2	7'-1"	BENT					
C14	4	2	6'-7"	BENT					
C15	4	2	6'-3"	BENT					
C16	4	4	5'-1"	BENT					
H1	6	8	14'-8"	STR.					
H2	4	8	13'-9"	STR.					
H3	4	4	11'-11"	STR.					
H4	4	4	7'-9"	STR.					
H5	4	42	6'-0"	BENT					
H6	6	4	9'-6"	STR.					
O1-O10	4	2 SETS	52'-1"	STR.					
A1	6	4	21'-5"	BENT					
A2	6	2	9'-10"	STR.					
A3	6	8	17'-5"	STR.					
P1	4	33	4'-7"	BENT					
P2	6	4	5'-0"	BENT					
P3	6	4	6'-8"	STR.					
PE	6	4	16'-8"	STR.					
V6	4	4	4'-11"	STR.					
V7	4	4	3'-6"	STR.					
V8	4	4	2'-2"	STR.					
V9	6	4	6'-10"	STR.					
F8	5	3	35'-4"	STR.					
F9	6	4	35'-4"	STR.					
F10	5	3	35'-4"	STR.					
F11	6	4	5'-6"	BENT					
F12	4	22	7'-0"	BENT					
F13	4	22	5'-3"	STR.					
T3	4	4	5'-6"	STR.					
T4-T9	4	2 SETS	22'-6"	STR.					

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
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NOTE:

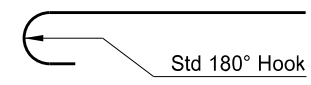
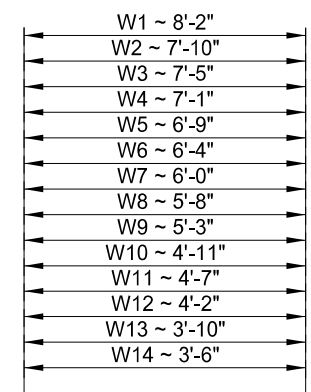
Unless construction requirements dictate otherwise, the Contractor has the option to construct the box culvert using construction joints or as one continuous unit. If construction joints are used, the longitudinal bar lengths may be adjusted, but a minimum lap length of 1'-3" must be maintained.

CONCRETE FORMULAS	
ENTIRE FLOOR	"L" x 1.00427 + 9.72854 = 116.2 CY
TWO OUTSIDE WALLS & 2 WINGS	"L" x 0.27160 + 3.73672 = 32.5 CY
INSIDE WALLS	"L" x 0.27160 + 0.64198 = 29.4 CY
ENTIRE ROOF	"L" x 0.97055 + 0.80220 = 103.7 CY
TOTAL	"L" x 2.51803 + 14.90944 = 281.8 CY

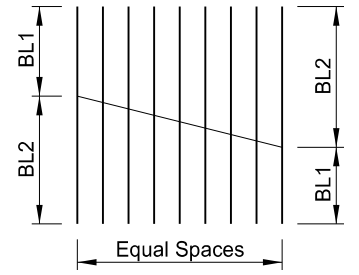
QUANTITIES	
CLASS AE-3 CONCRETE	281.8 CY
REINFORCING STEEL	45,398 LBS

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COSTELLO DRAIN
REINFORCING BAR LIST



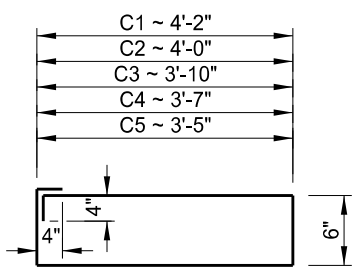
W1 - W14



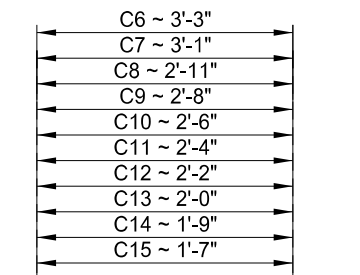
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-10	52'-1"	2'-9"	7'-8"	9
T4-T9	22'-6"	2'-6"	5'-0"	5

BAR CUTTING DETAILS



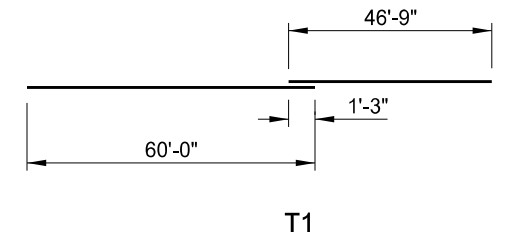
C1 - C5



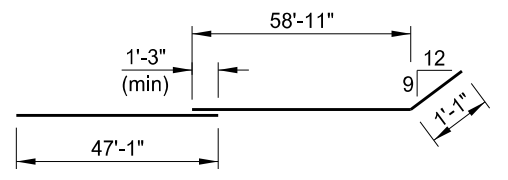
C6 - C15



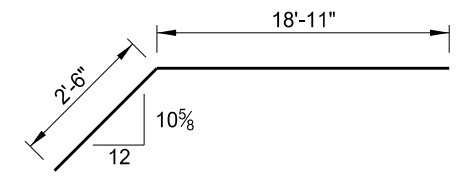
C16



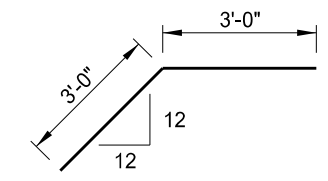
T1



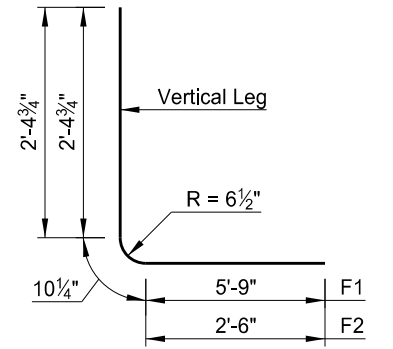
TE



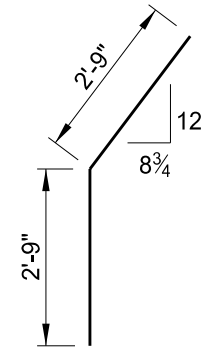
A1



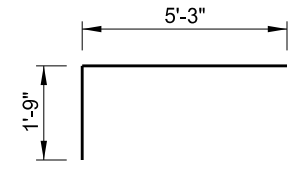
H5



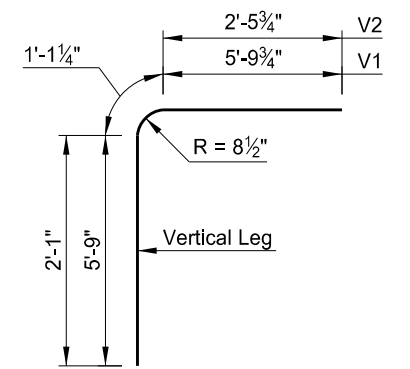
F1 & F2



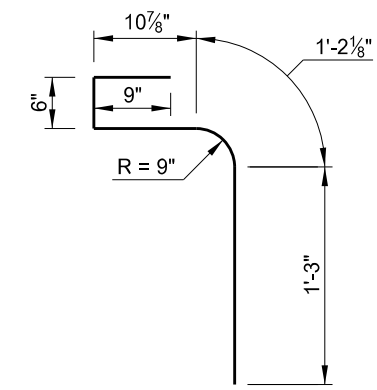
F11



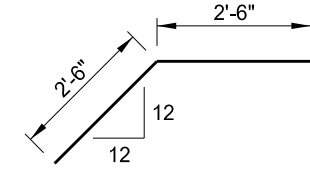
F12



V1 & V2



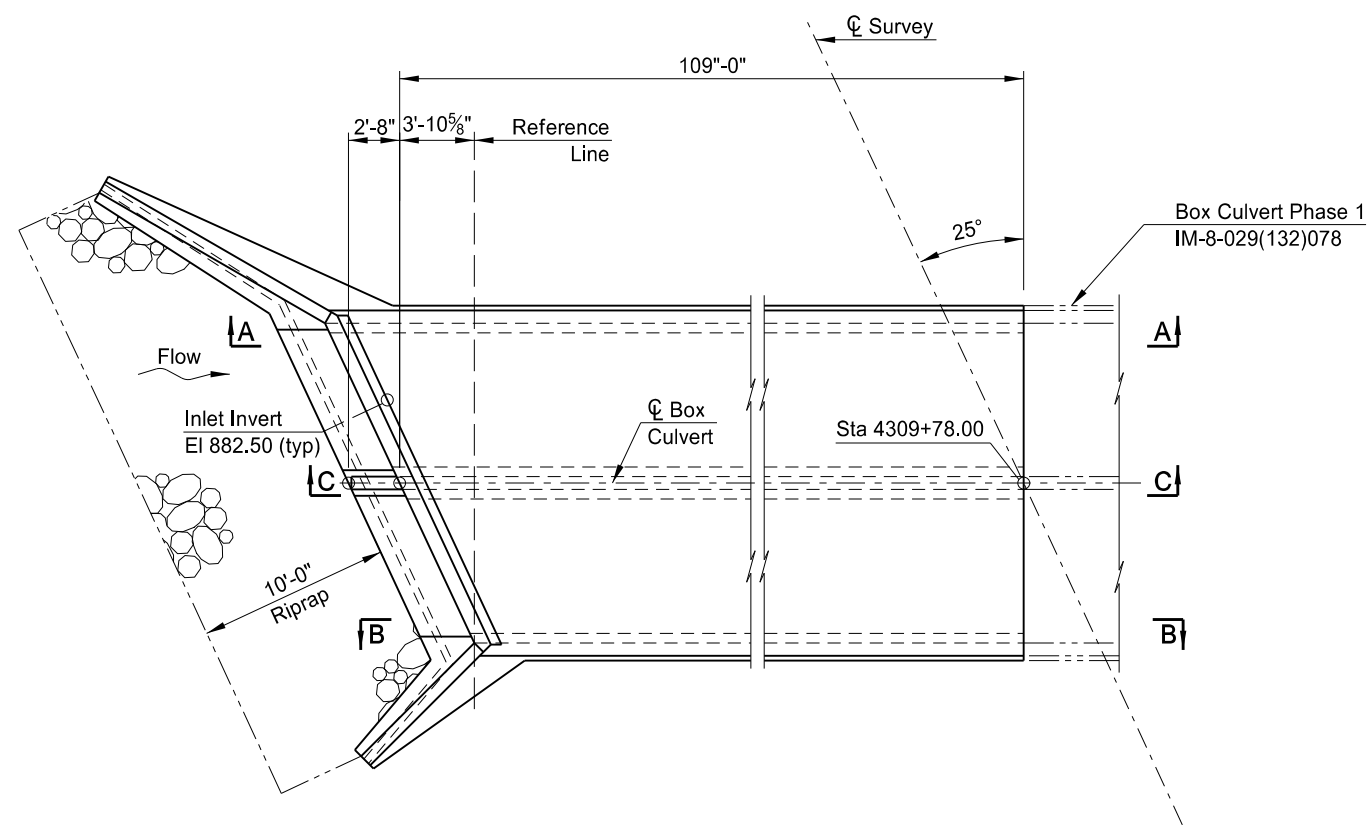
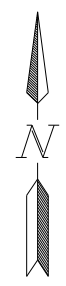
P1



P2

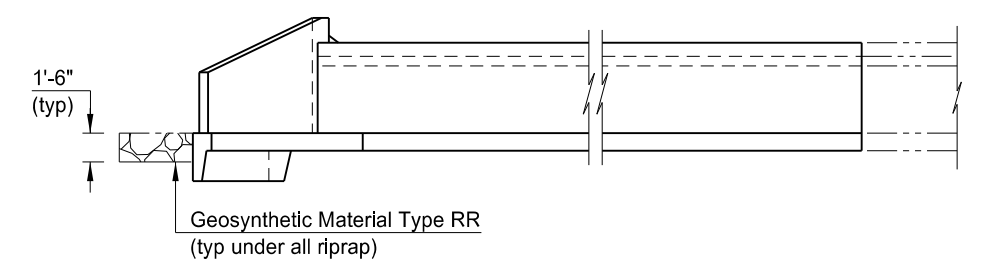
COSTELLO DRAIN
BAR DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	19

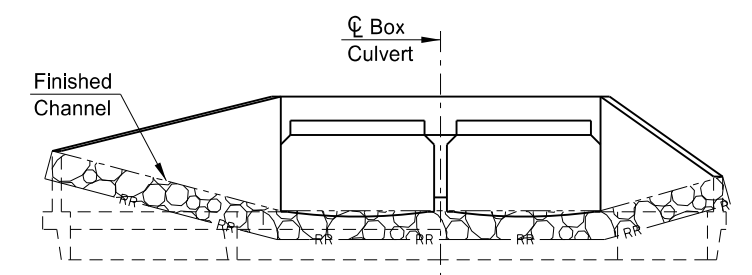


PLAN

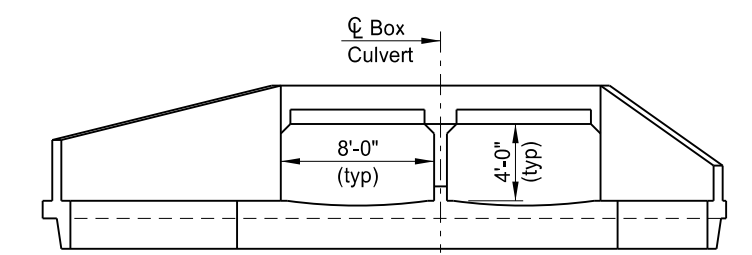
NOTE:
See Dwg 29-081.620-10 for Sections A-A, B-B & C-C.



ELEVATION



(SHOWING FINISHED SECTION)
END VIEW



(SHOWING DIMENSIONS)
END VIEW

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HYDRAULIC DATA:

Drainage Area	5.6	sq mi
Stream Gradient	0.001207	ft/ft
Design Frequency	50	yr
Design Discharge	369	cfs
Design Headwater Stage	887.5	ft
Design Tailwater Stage	886.4	ft
Velocity Through Culvert	5.8	fps
100-Year Frequency Discharge	439	cfs
100-Year Frequency Headwater	888.4	ft
Overtopping Stage	889.5	ft
Overtopping Discharge	565.0	cfs

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel
Load & Resistance Factor Design

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,105
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	20
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	149.0
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	22,361
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	405
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	40

SPECIAL PROVISION	
SP 4(14)	MIGRATORY BIRD TREATY ACT
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
COUNTY DRAIN 26 25° SKEW REINFORCED CONCRETE TRIPLE BOX CULVERT LAYOUT CLEAR SPAN 2 x 8' CLEAR HEIGHT 4' MAXIMUM FILL 5'	
PROJECT: IM-8-029(133)078 STATION: 4309+78.00 CASS COUNTY	
08/07/14	Terrence R. Udland
DATE	BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	20

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new double barrel 8' x 4' x 109'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

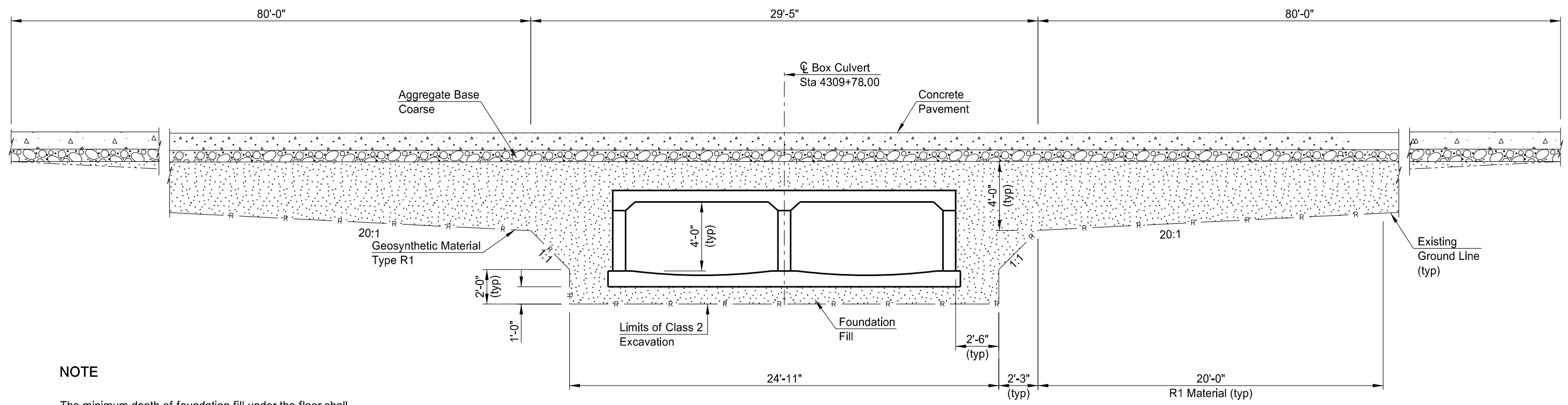
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	21



NOTE

The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

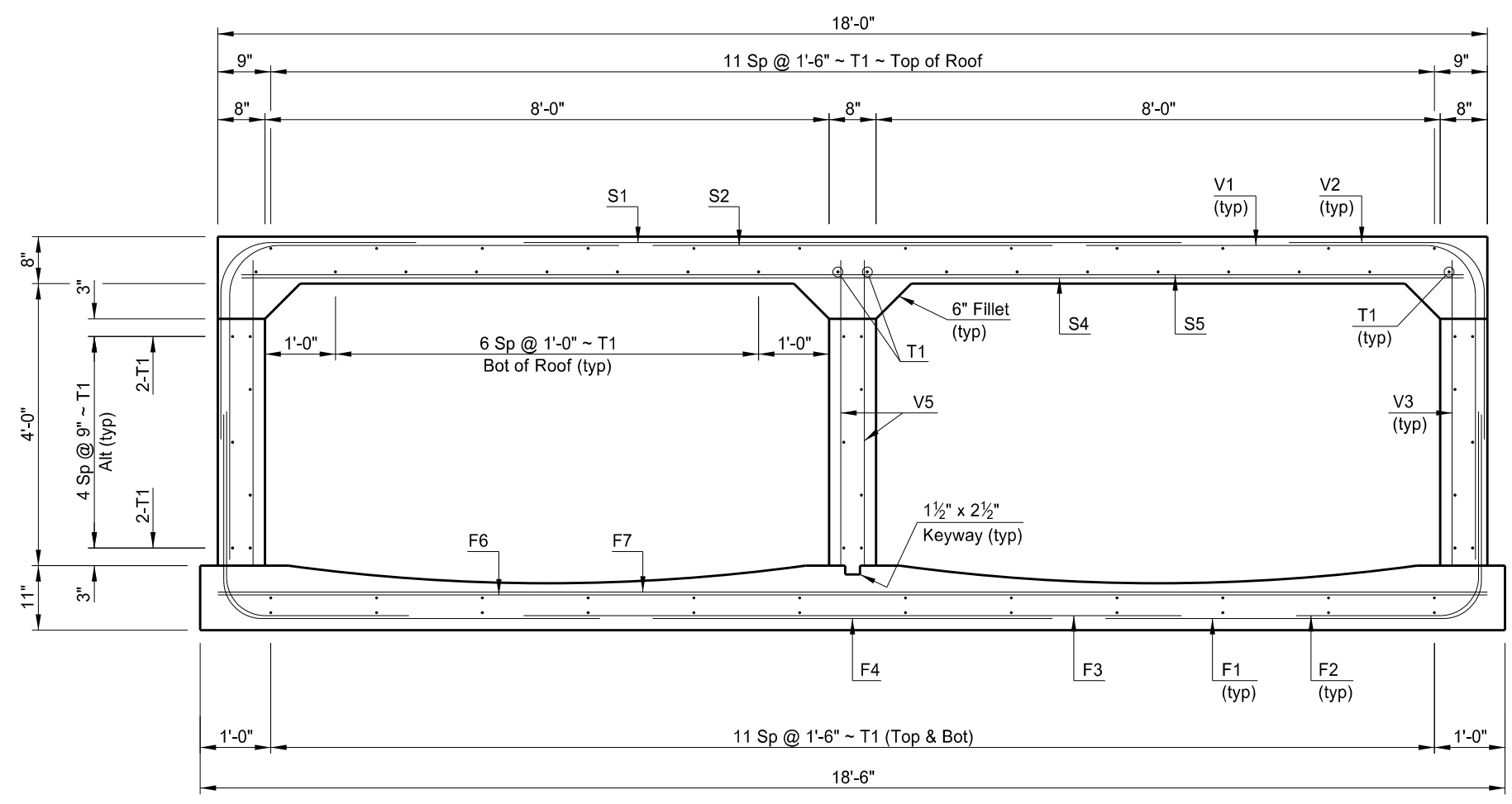
The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of \bar{C} Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

(SHOWING SECTION ALONG \bar{C} ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

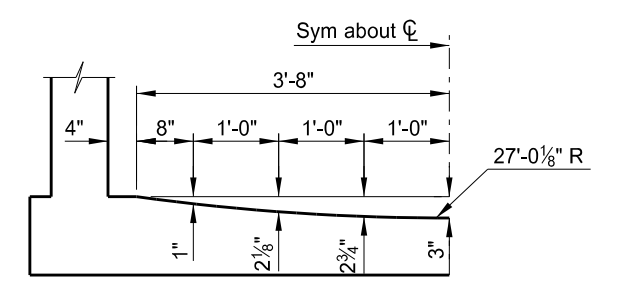
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COUNTY DRAIN 26
 EXCAVATION & FOUNDATION
 FILL DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	22



SECTION OF BARREL

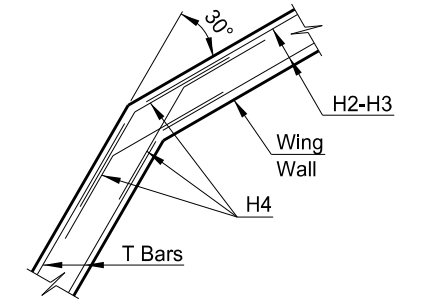


CURVED FLOOR OFFSETS

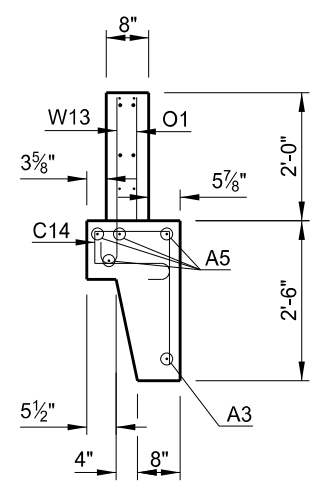
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COUNTY DRAIN 26
 BARREL SECTION

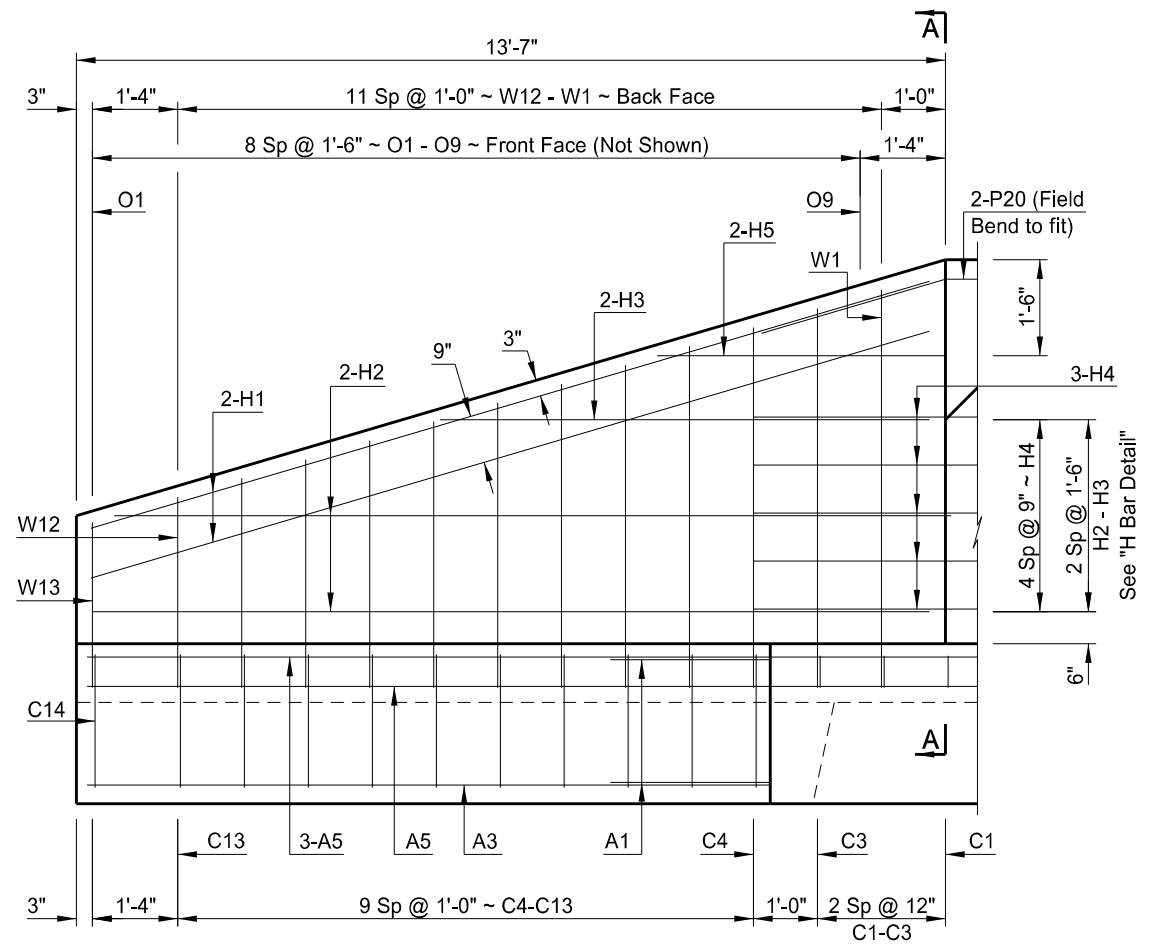
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	23



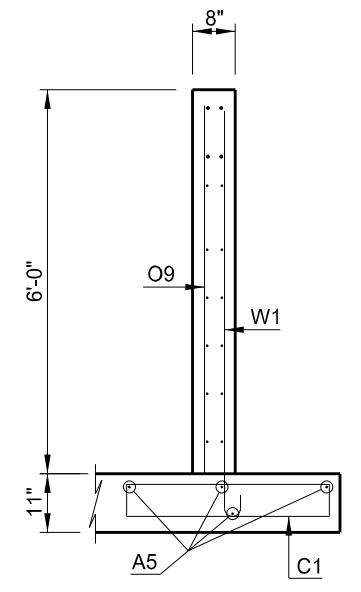
H BAR DETAIL



END VIEW



LONG WING ELEVATION

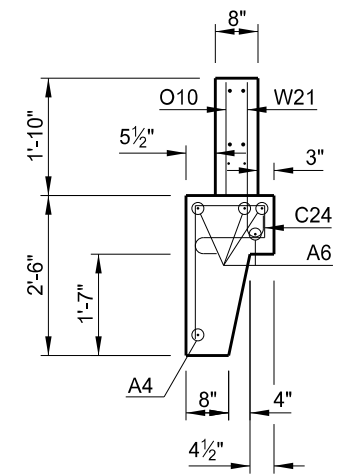
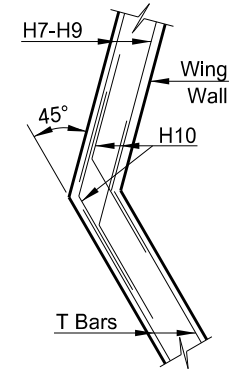
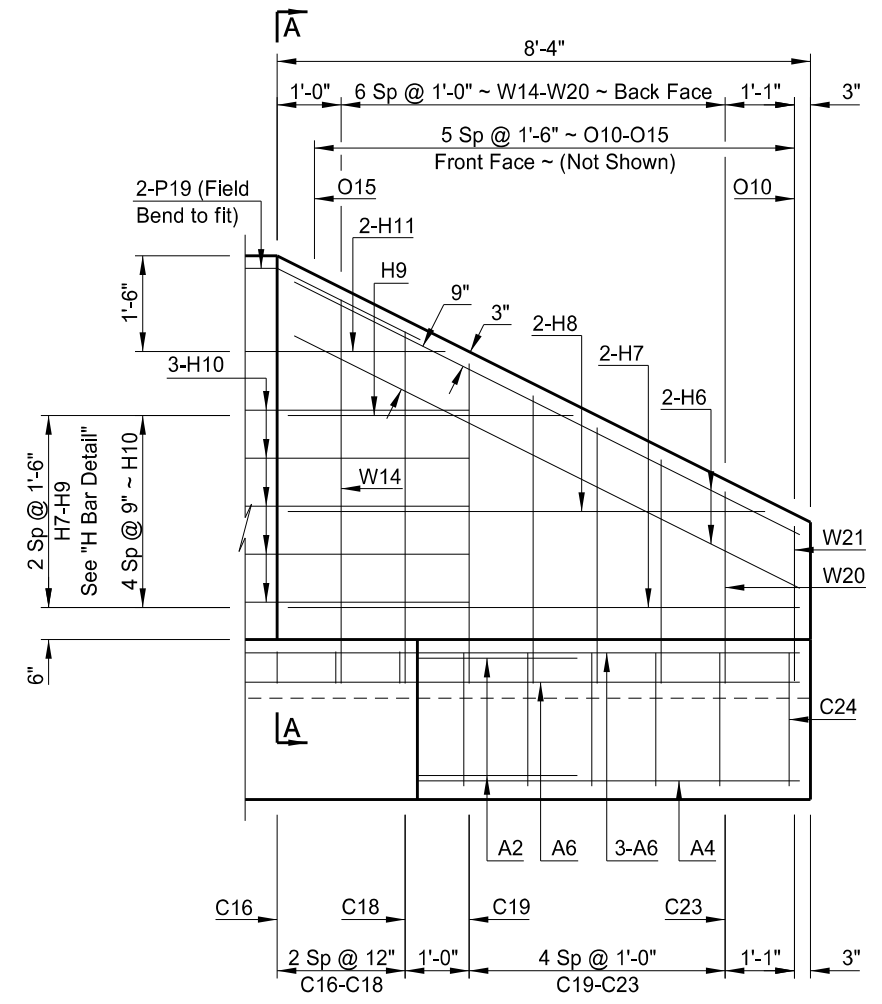
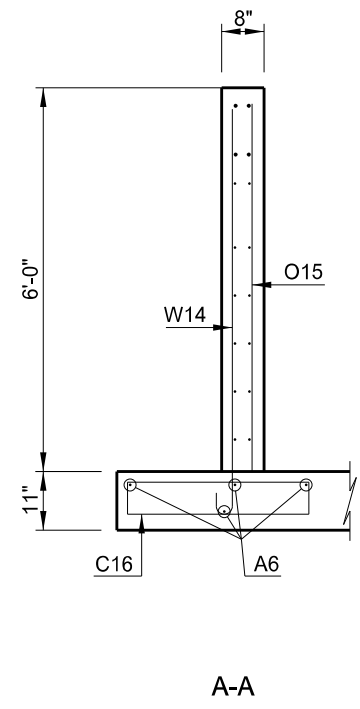


A-A

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COUNTY DRAIN 26
LONG WING DETAILS

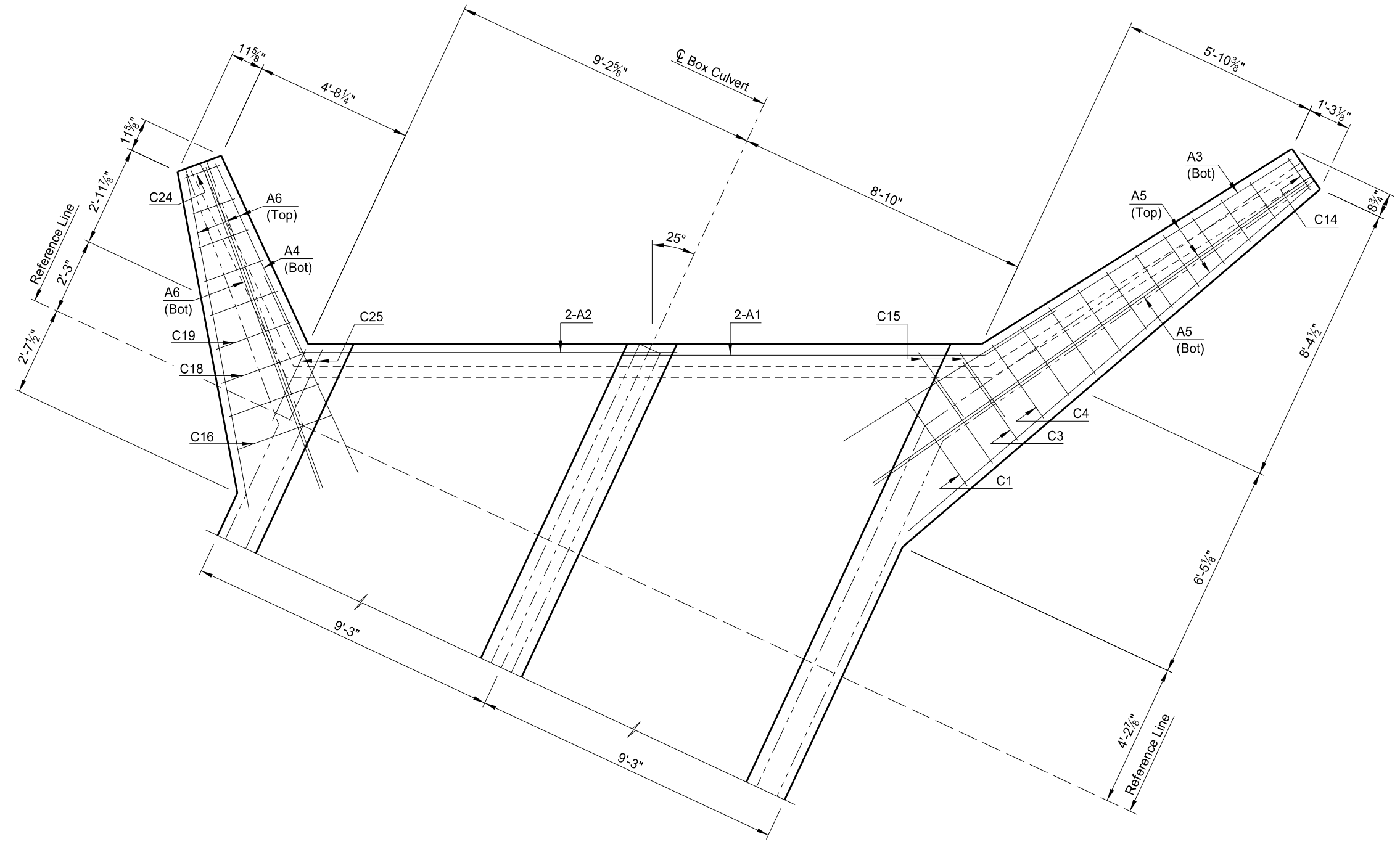
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	24



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COUNTY DRAIN 26
SHORT WING DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	25



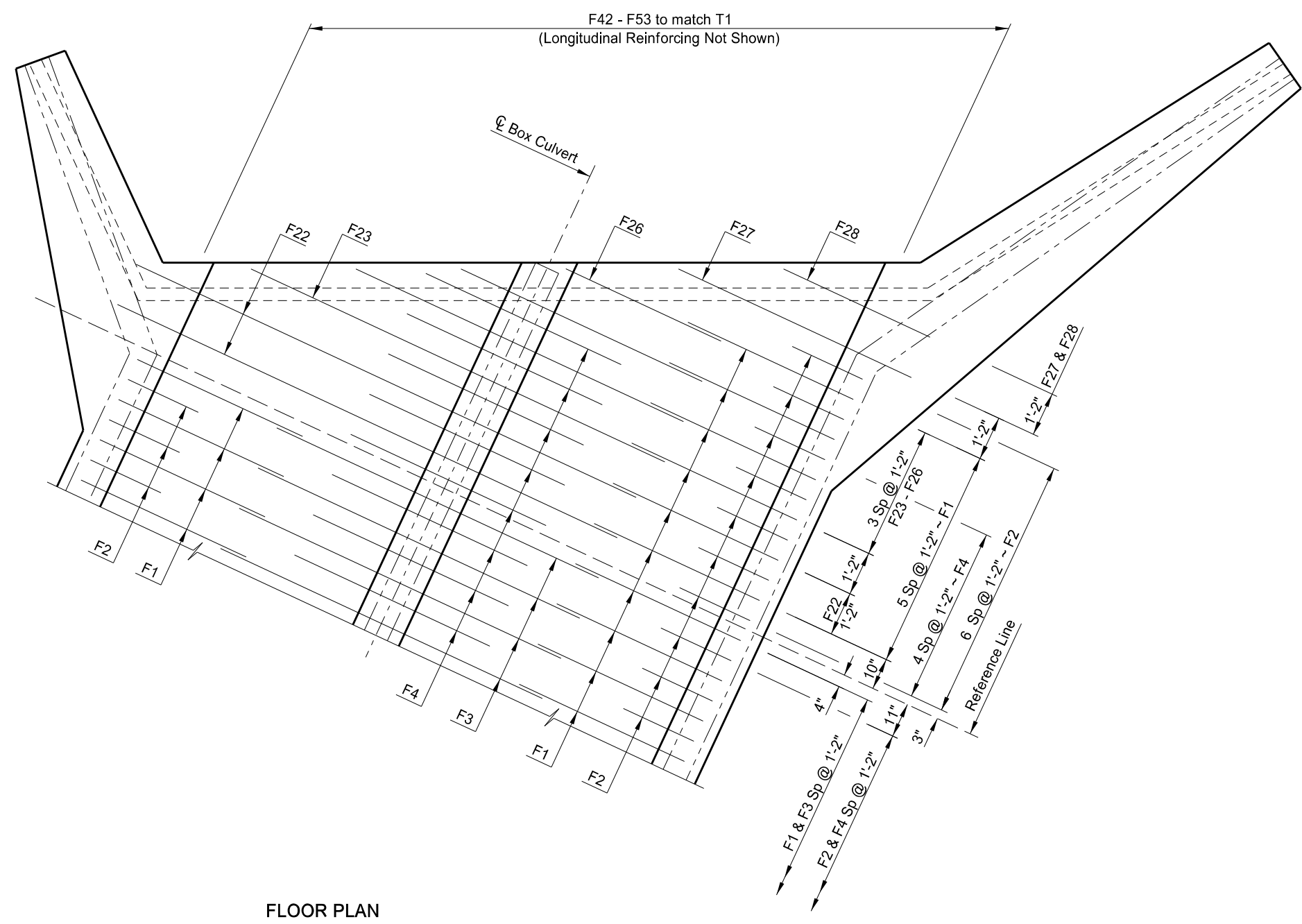
FLOOR PLAN

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COUNTY DRAIN 26

FLOOR DETAIL

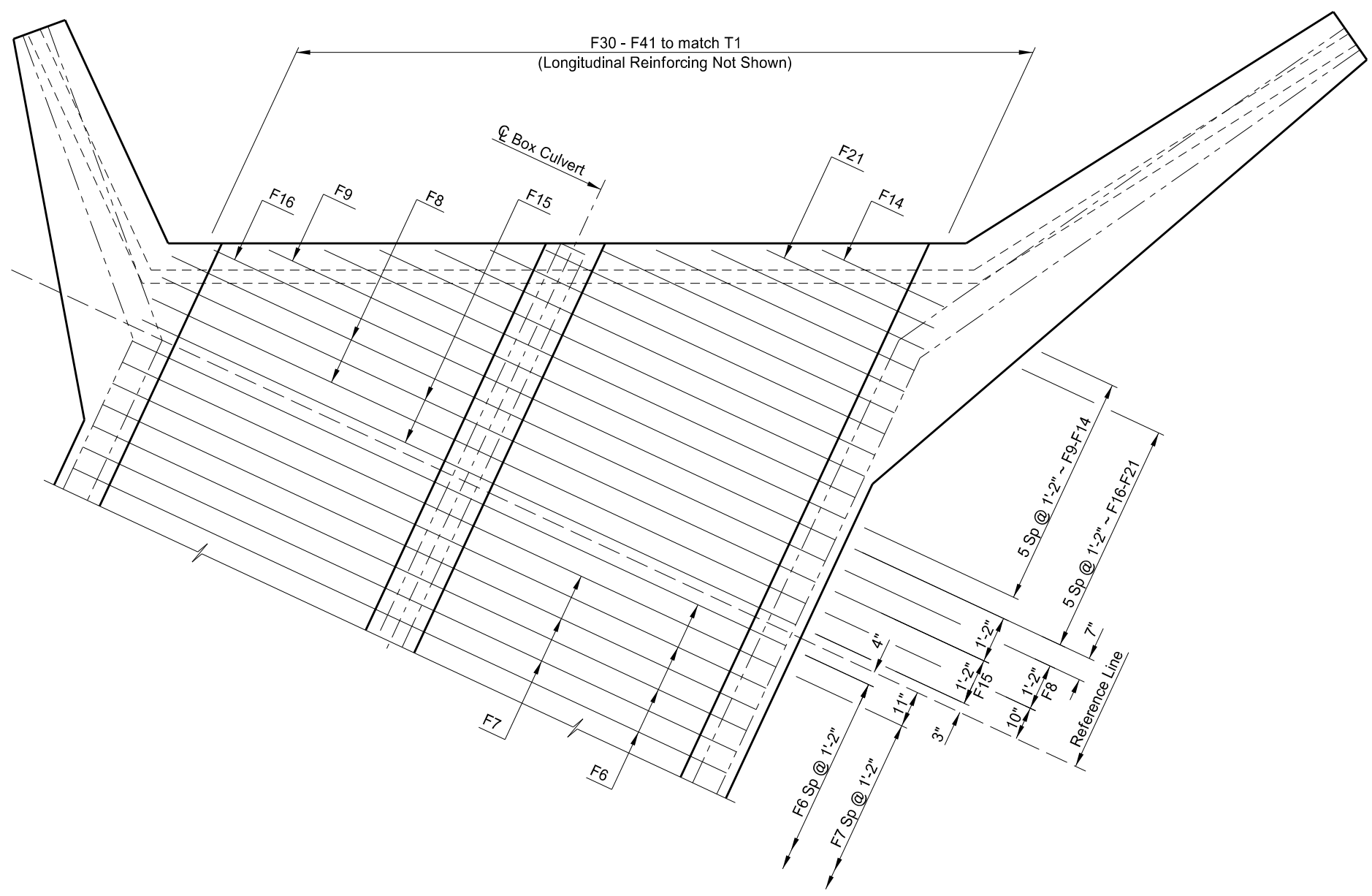
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	26



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COUNTY DRAIN 26
(SHOWING BOTTOM MAT REINFORCING)
FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	27

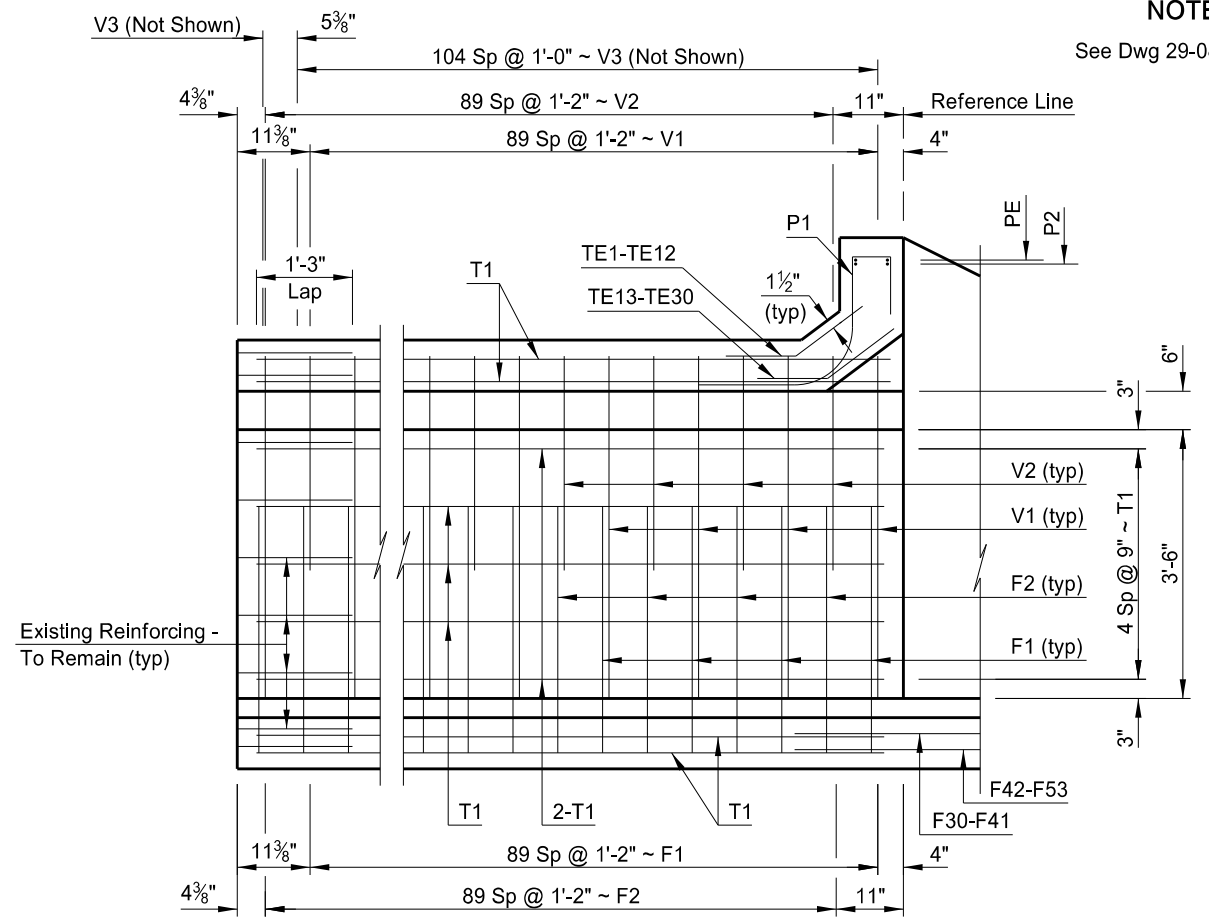


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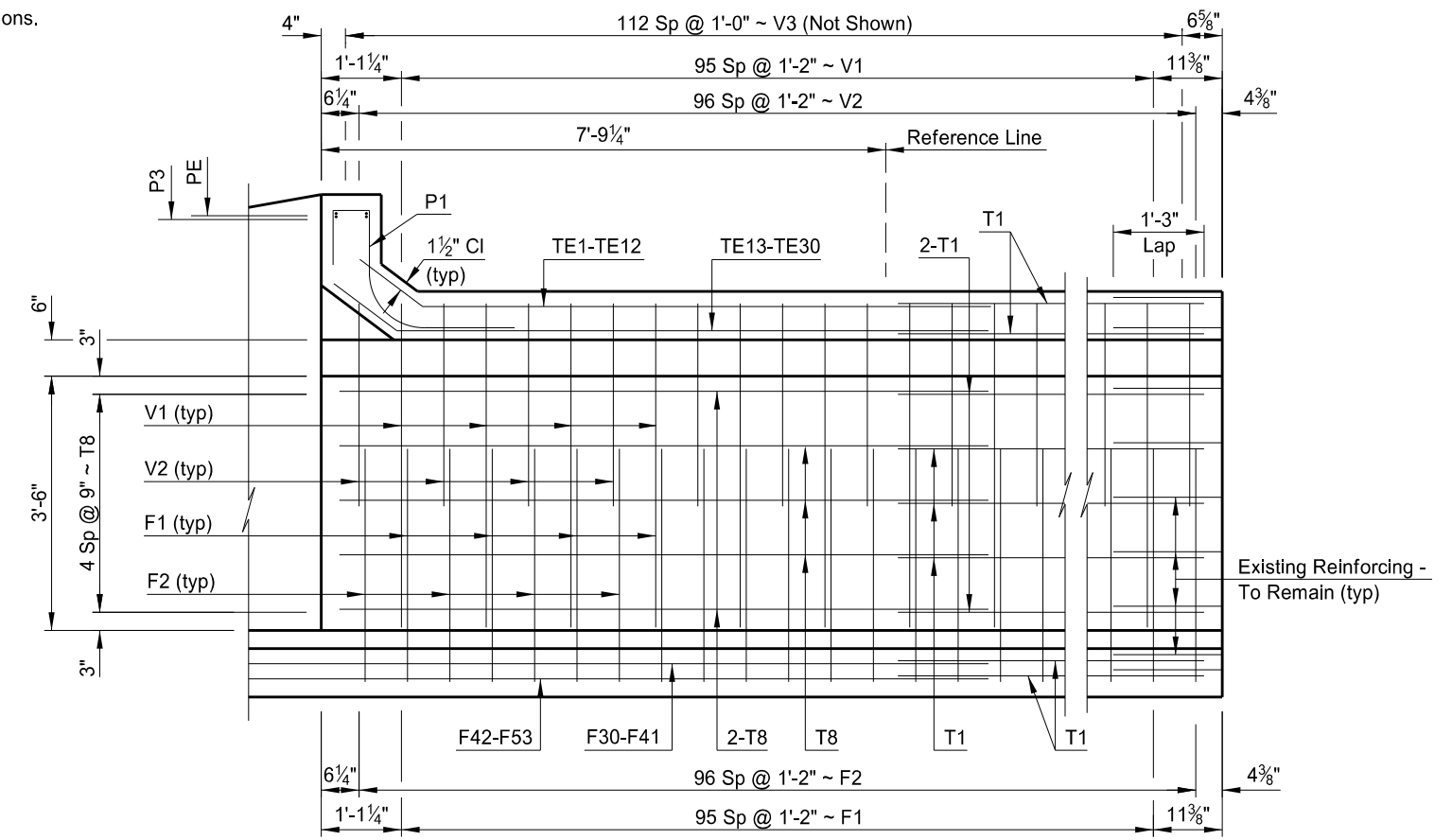
COUNTY DRAIN 26
 (SHOWING TOP MAT REINFORCING)
 FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	28

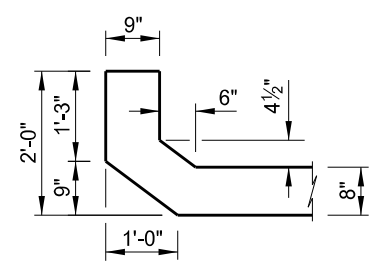
NOTE:
See Dwg 29-081.620-1 for cut sections.



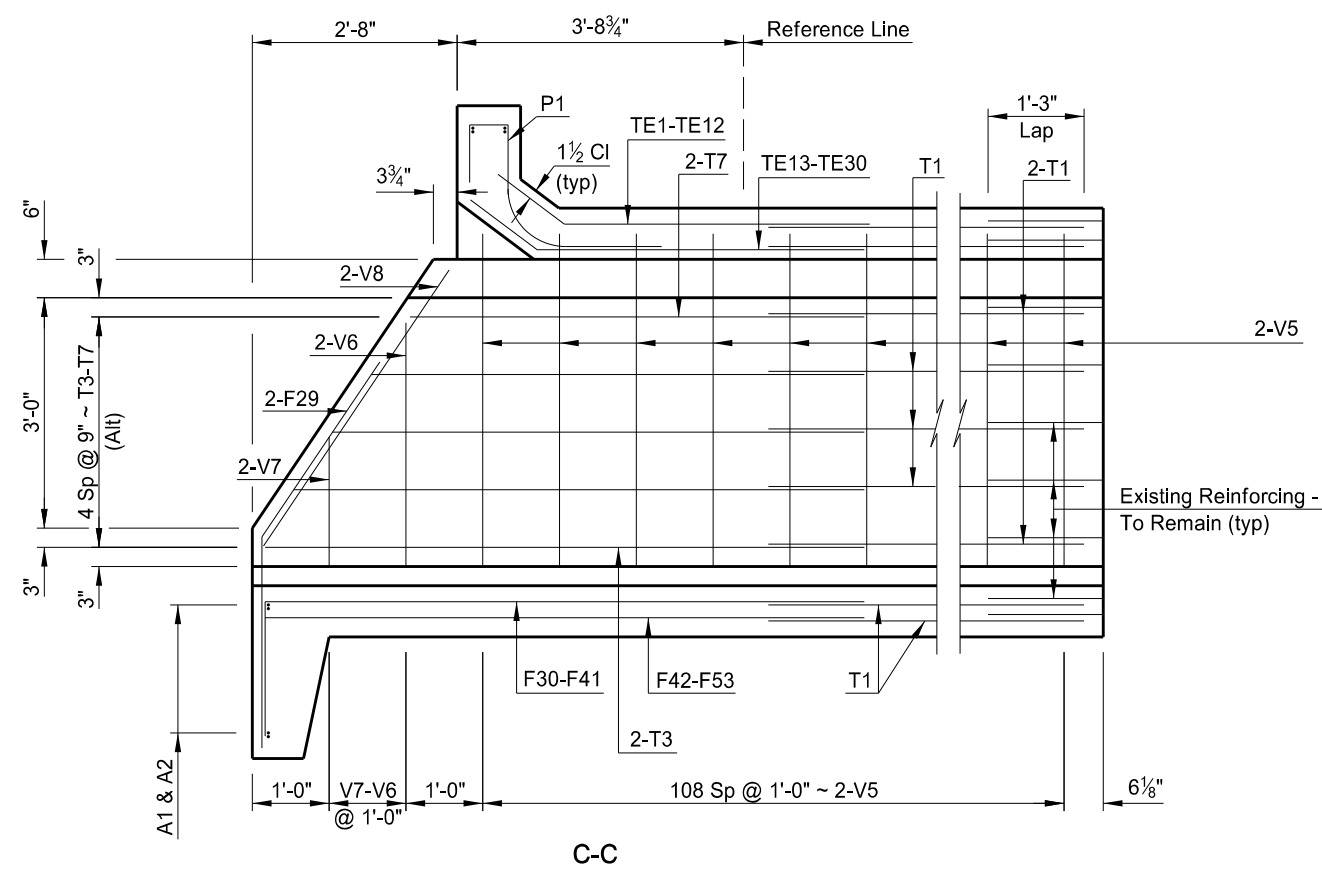
B-B



A-A



PARAPET DETAIL

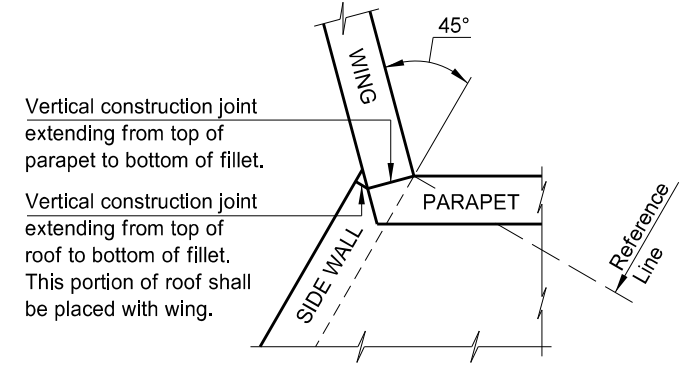


C-C

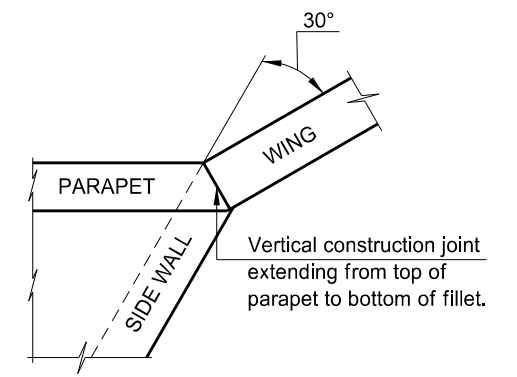
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COUNTY DRAIN 26
OUTSIDE & INNER WALL DETAIL & PARAPET DETAIL

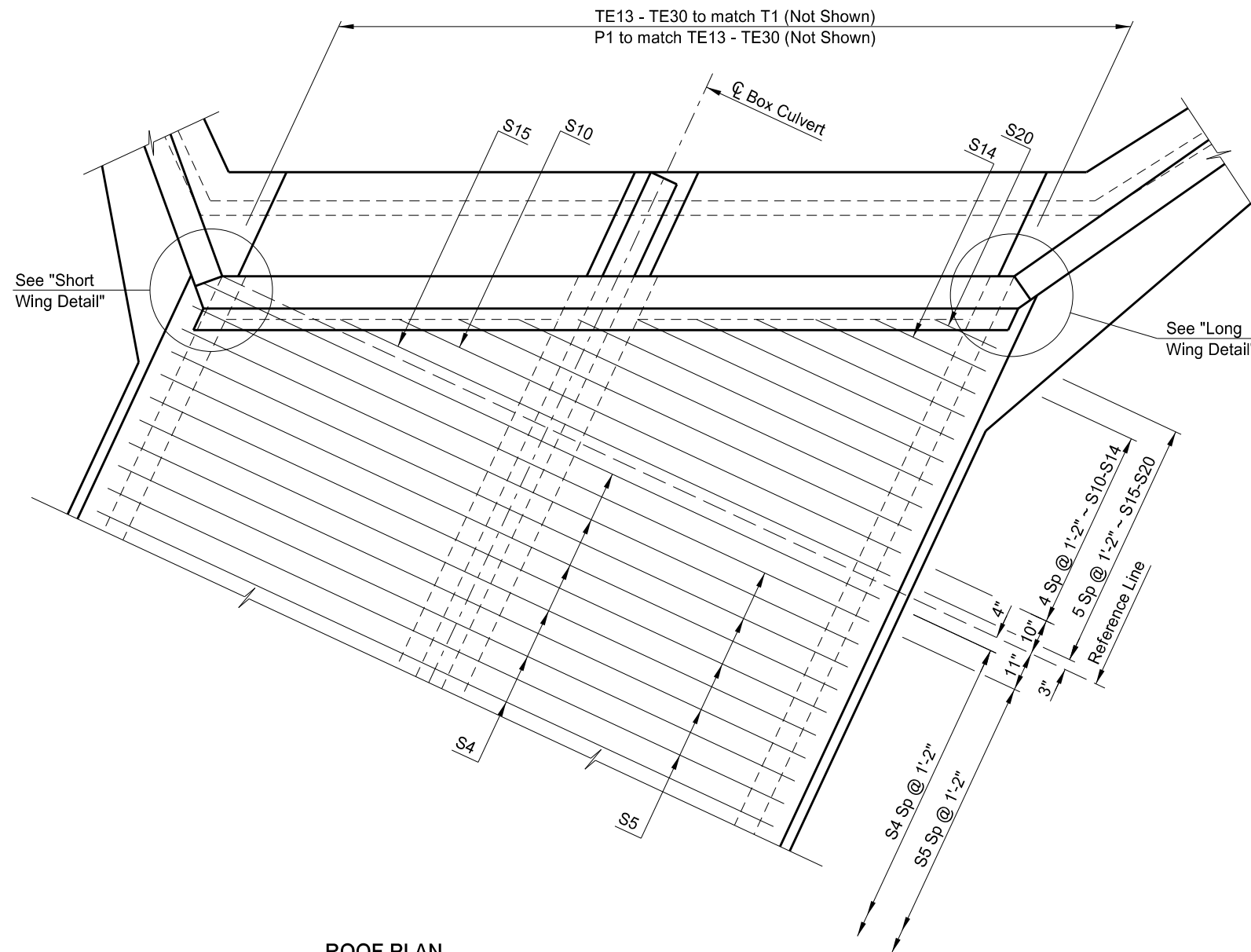
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	29



SHORT WING DETAIL



LONG WING DETAIL

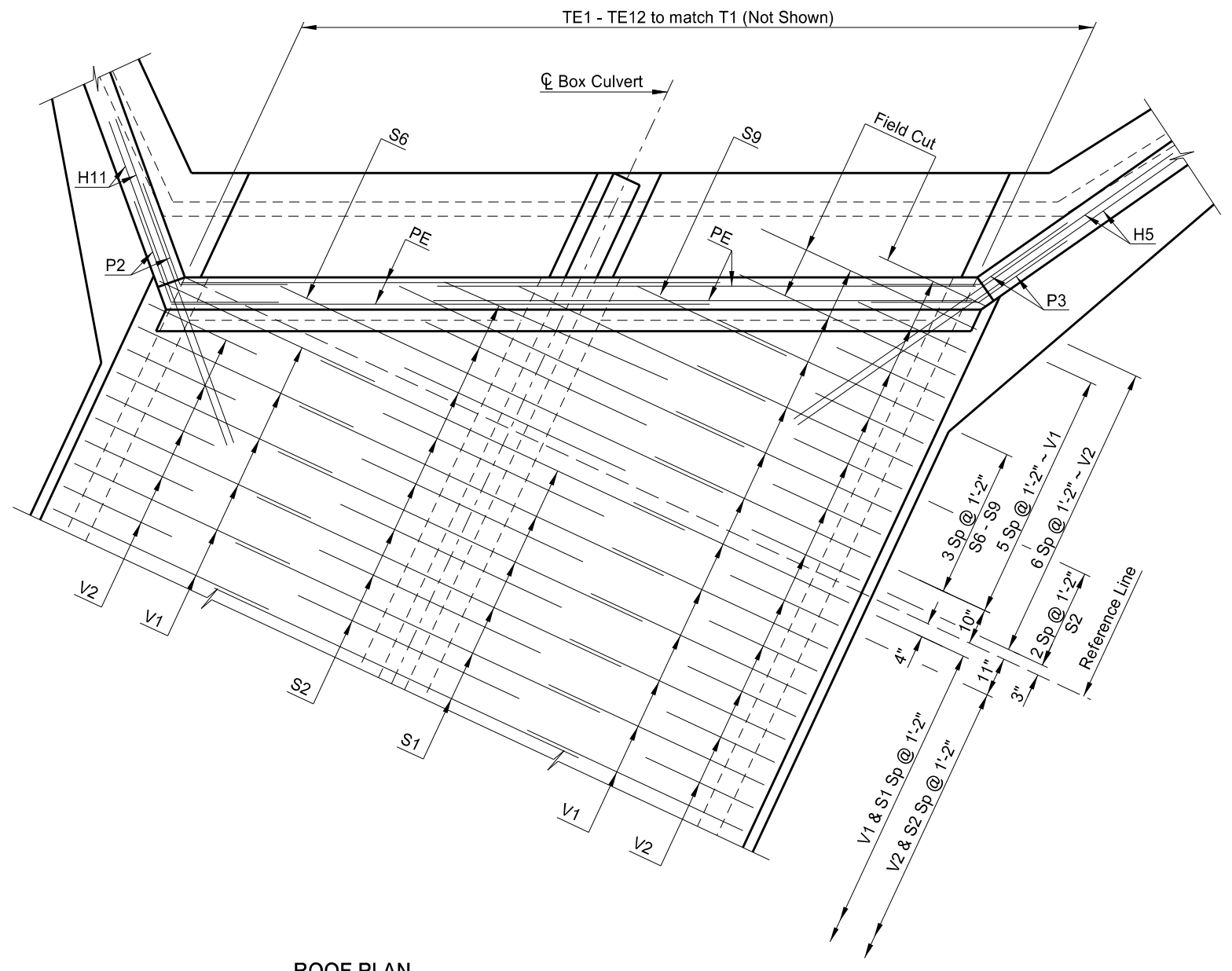


ROOF PLAN

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COUNTY DRAIN 26
(SHOWING BOTTOM MAT REINFORCING)
ROOF DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	30



ROOF PLAN

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COUNTY DRAIN 26
 (SHOWING ROOF TOP MAT & PARAPET REINFORCING)
 ROOF DETAIL

BAR LIST (CONSTANT)					BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	4	1	6'-8"	BENT	A1	6	2	13'-3"	BENT	V1	4	186	9'-8"	BENT
W2	4	1	6'-5"	BENT	A2	6	2	13'-8"	BENT	V2	5	187	5'-3"	BENT
W3	4	1	6'-1"	BENT	A3	6	1	10'-9"	STR.	V3	4	219	4'-4"	STR.
W4	4	1	5'-10"	BENT	A4	6	1	6'-1"	STR.	V5	4	218	4'-4"	STR.
W5	4	1	5'-6"	BENT	A5	6	4	15'-8"	STR.					
W6	4	1	5'-3"	BENT	A6	6	4	7'-10"	STR.	F1	4	186	8'-0"	BENT
W7	4	1	4'-11"	BENT						F2	4	187	5'-3"	BENT
W8	4	1	4'-8"	BENT	P1	4	18	4'-7"	BENT	F3	4	90	9'-4"	STR.
W9	4	1	4'-4"	BENT	P2	6	2	5'-0"	BENT	F4	6	95	5'-8"	STR.
W10	4	1	4'-1"	BENT	P3	6	2	5'-0"	BENT	F6	5	90	18'-0"	STR.
W11	4	1	3'-9"	BENT	PE	6	4	12'-6"	STR.	F7	4	90	18'-0"	STR.
W12	4	1	3'-6"	BENT										
W13	4	1	3'-1"	BENT	V6	4	2	3'-2"	STR.	S1	6	90	9'-4"	STR.
					V7	4	2	1'-8"	STR.	S2	6	93	5'-8"	STR.
C1	4	1	8'-0"	BENT	V8	6	2	4'-3"	STR.	S4	6	90	17'-4"	STR.
C2	4	1	7'-8"	BENT						S5	5	90	17'-4"	STR.
C3	4	1	7'-4"	BENT	F8	5	2	18'-0"	STR.					
C4	4	1	8'-5"	BENT	F9-F14	5	1 SET	57'-6"	STR.	T1	4	75	105'-11"	STR.
C5	4	1	8'-1"	BENT	F15	4	2	18'-0"	STR.					
C6	4	1	7'-11"	BENT	F16-F21	4	1 SET	65'-0"	STR.					
C7	4	1	7'-7"	BENT	F22	4	2	14'-6"	STR.					
C8	4	1	7'-3"	BENT	F23-F26	4	1 SET	33'-0"	STR.					
C9	4	1	6'-11"	BENT	F27	4	1	6'-9"	STR.					
C10	4	1	6'-9"	BENT	F28	4	1	4'-3"	STR.					
C11	4	1	6'-5"	BENT	F29	6	2	5'-6"	BENT					
C12	4	1	6'-1"	BENT	F30-F41	4	1 SET	116'-0"	BENT					
C13	4	1	5'-9"	BENT	F42-F53	4	1 SET	95'-0"	STR.					
C14	4	1	5'-5"	BENT										
C15	4	2	4'-5"	BENT	S6-S9	6	1 SET	30'-4"	STR.					
					S10-S14	6	1 SET	39'-2"	STR.					
H1	6	4	13'-8"	STR.	S15-S20	5	1 SET	47'-0"	STR.					
H2	4	4	13'-1"	STR.										
H3	4	2	7'-8"	STR.	T3	4	2	7'-10"	STR.					
H4	4	15	6'-0"	BENT	T4-T6	4	1 SET	20'-9"	STR.					
H5	6	2	10'-9"	STR.	T7	4	2	5'-11"	STR.					
					T8	4	7	9'-1"	STR.					
O1-O9	4	1 SET	33'-0"	STR.										
					TE1-TE12	4	1 SET	68'-0"	BENT					
W14	4	1	6'-6"	BENT	TE13-TE30	4	1 SET	105'-0"	BENT					
W15	4	1	6'-0"	BENT										
W16	4	1	5'-6"	BENT										
W17	4	1	5'-0"	BENT										
W18	4	1	4'-6"	BENT										
W19	4	1	4'-0"	BENT										
W20	4	1	3'-6"	BENT										
W21	4	1	2'-11"	BENT										
C16	4	1	7'-10"	BENT										
C17	4	1	7'-4"	BENT										
C18	4	1	7'-0"	BENT										
C19	4	1	7'-11"	BENT										
C20	4	1	7'-5"	BENT										
C21	4	1	6'-11"	BENT										
C22	4	1	6'-5"	BENT										
C23	4	1	5'-11"	BENT										
C24	4	1	5'-3"	BENT										
C25	4	2	4'-5"	BENT										
H6	6	4	8'-10"	STR.										
H7	4	2	7'-11"	STR.										
H8	4	2	7'-5"	STR.										
H9	4	2	4'-5"	STR.										
H10	4	15	6'-0"	BENT										
H11	6	2	8'-0"	STR.										
O10-O15	4	1 SET	21'-9"	STR.										

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	31

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	"L" X	0.53747 + 4.88655	= 63.5 CY
TWO OUTSIDE WALLS & 4 WINGS	"L" X	0.17284 + 2.10816	= 20.9 CY
INSIDE WALLS	"L" X	0.08642 + 0.14623	= 9.6 CY
ENTIRE ROOF	"L" X	0.50000 + 0.54508	= 55.0 CY
TOTAL	"L" X	1.29673 + 7.68602	= 149.0 CY

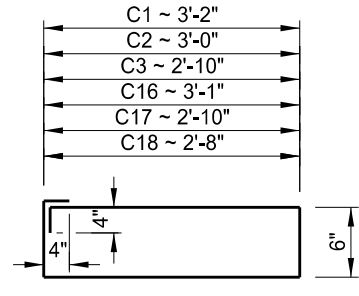
QUANTITIES

CLASS AE-3 CONCRETE	149.0 CY
REINFORCING STEEL	22,361 LBS

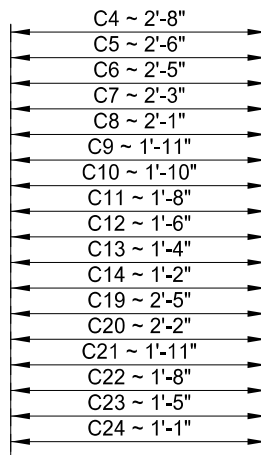
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COUNTY DRAIN 26

REINFORCING BAR LIST



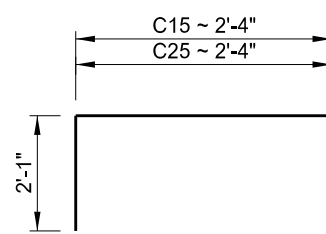
C1 - C3 & C16 - C18



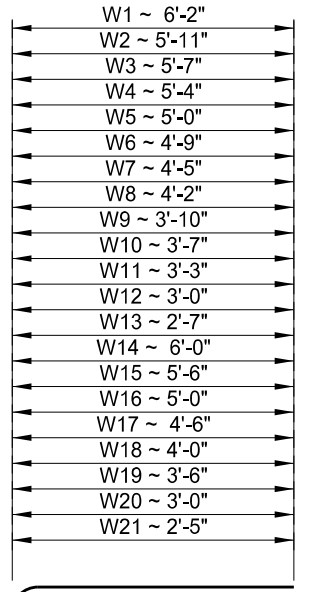
C4 - C14 & C19 - C24



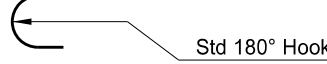
Std 180° Hook



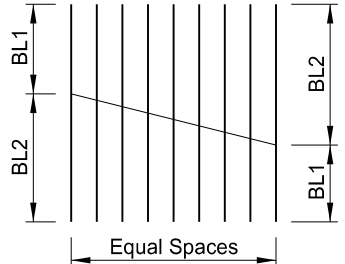
C15 & C25



W1 - W21



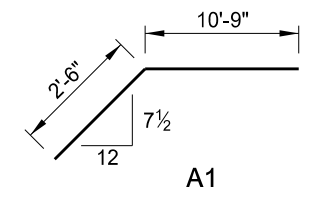
Std 180° Hook



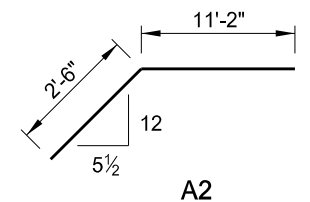
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O9	33'-0"	1'-11"	5'-5"	8
O10-O15	21'-9"	1'-9"	5'-6"	5
F9-F14	57'-6"	3'-4"	15'-10"	5
F16-F21	65'-0"	4'-7"	17'-1"	5
F23-F26	33'-0"	4'-6"	12'-0"	3
F42-F53	95'-0"	4'-1"	11'-9"	11
S6-S9	30'-4"	3'-10"	11'-4"	3
S10-S14	39'-2"	2'-10"	12'-10"	4
S15-S20	47'-0"	1'-7"	14'-1"	5
T4-T6	20'-9"	6'-5"	7'-5"	2

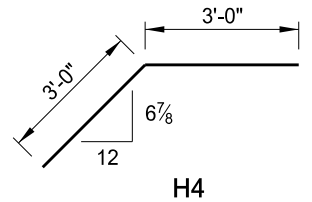
BAR CUTTING DETAILS



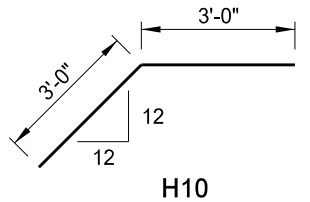
A1



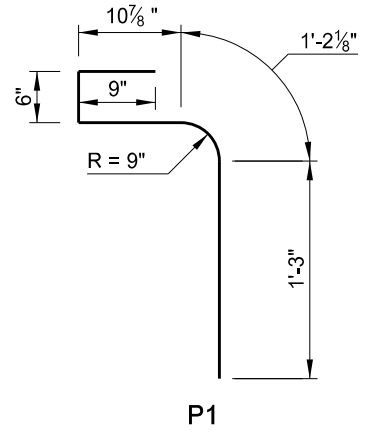
A2



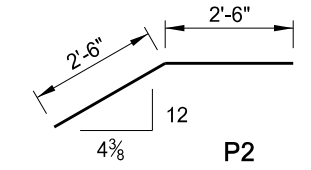
H4



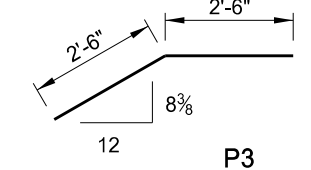
H10



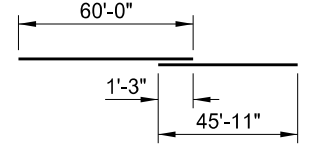
P1



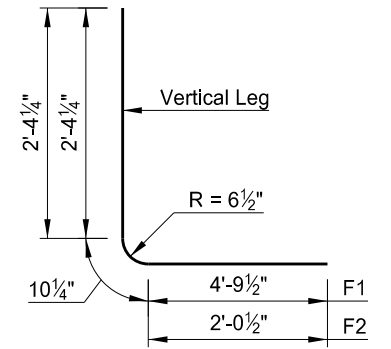
P2



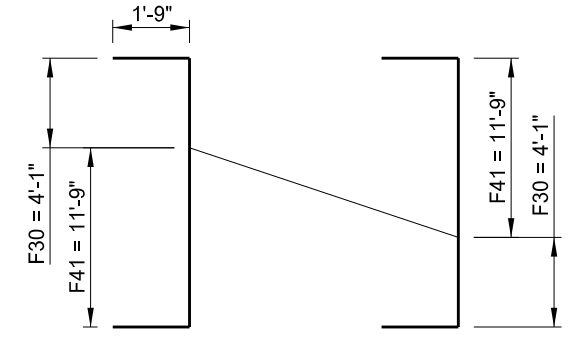
P3



T1

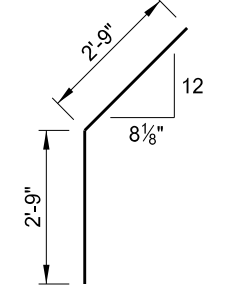


F1 & F2

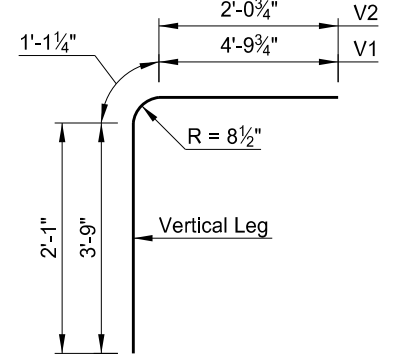


F30 - F41

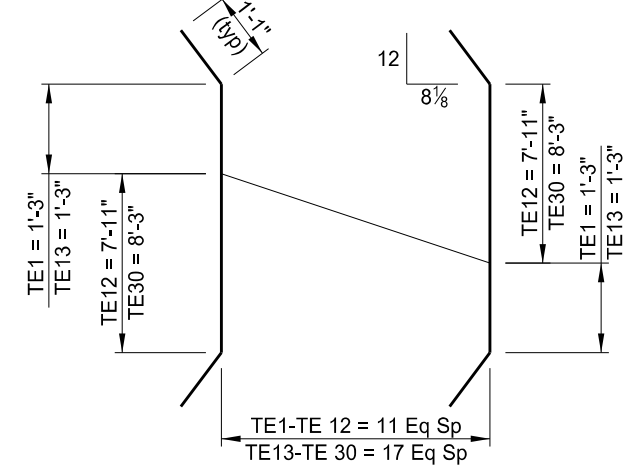
2 SETS SHOWN
1 SET REQUIRED
LENGTH 1 SET = 116'-0"



F29



V1 & V2



TE1 - TE12
TE13 - TE30

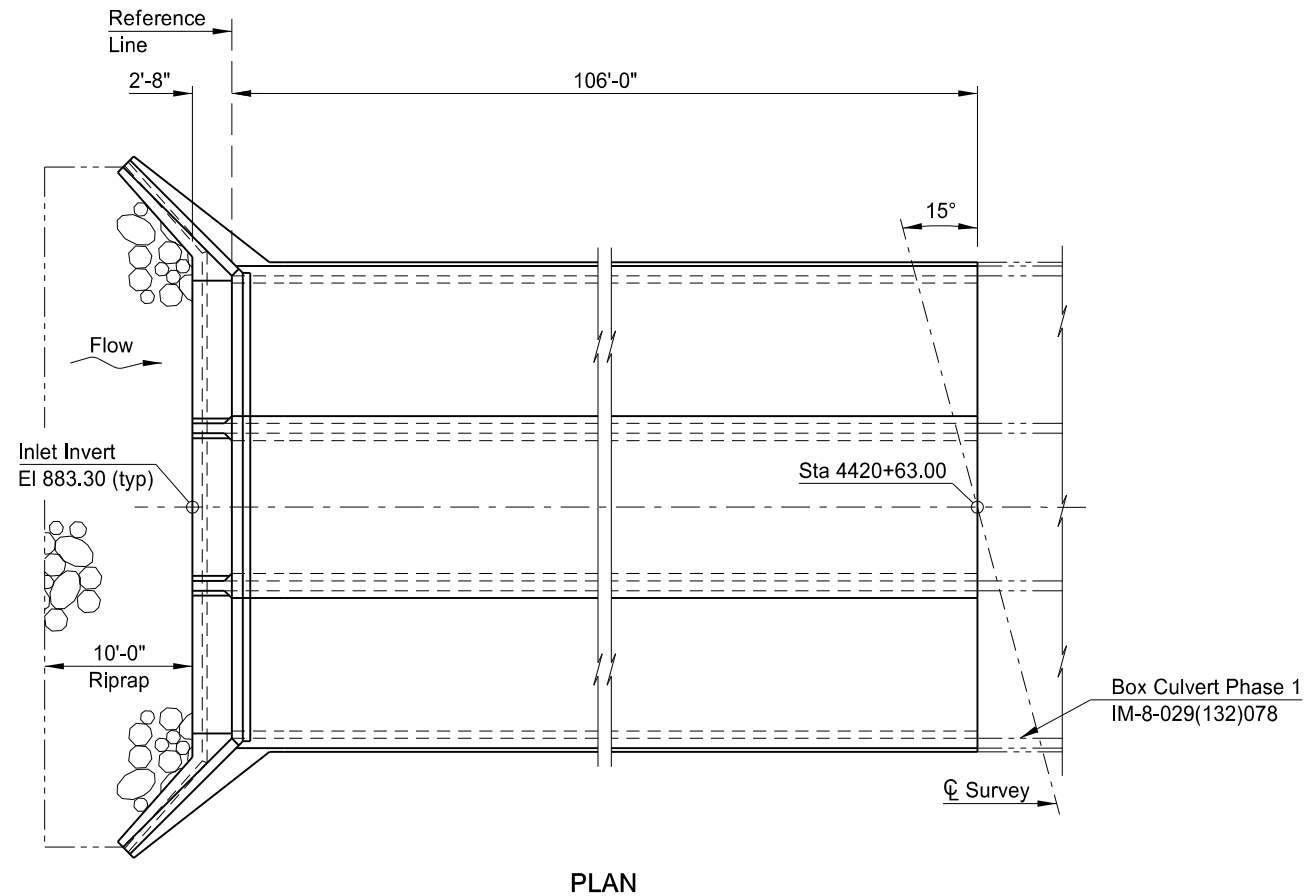
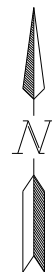
2 SETS SHOWN
1 SET REQUIRED
LENGTH 1 SET TE1-TE12 = 68'-0"
LENGTH 1 SET TE13-TE30 = 105'-0"

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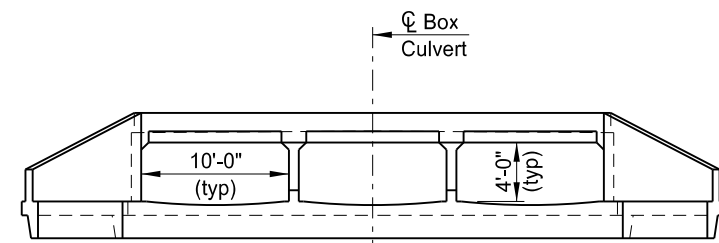
COUNTY DRAIN 26

BAR DETAILS

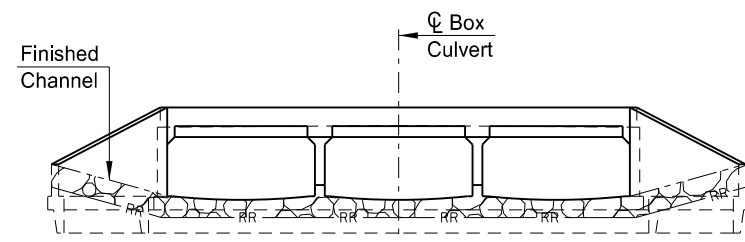
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	33



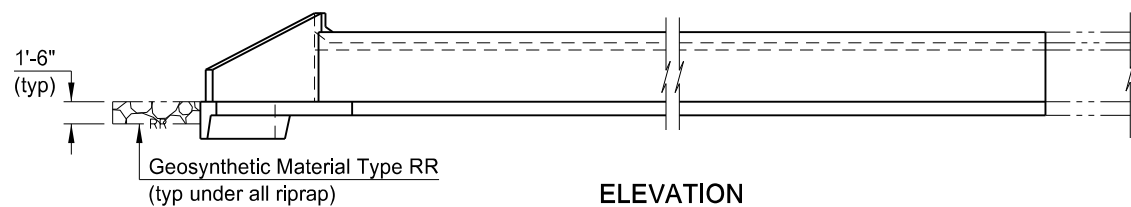
PLAN



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW



ELEVATION

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

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HYDRAULIC DATA:

Drainage Area	5.1	sq mi
Stream Gradient	0.000538	ft/ft
Design Frequency	50	yr
Design Discharge	385	cfs
Design Headwater Stage	889.3	ft
Design Tailwater Stage	889.0	ft
Velocity Through Culvert	3.2	fps
100-Year Frequency Discharge	461	cfs
100-Year Frequency Headwater	889.9	ft
Overtopping Stage	889.9	ft
Overtopping Discharge	470	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,135
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	25
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	253.0
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	43,071
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	470
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	50

SPECIAL PROVISION

SP 4(14) | MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

COUNTY DRAIN 24C

REINFORCED CONCRETE
TRIPLE BOX CULVERT LAYOUT

CLEAR SPAN 3 x 10' CLEAR HEIGHT 4'
MAXIMUM FILL 5'

PROJECT: IM-8-029(133)078
STATION: 4420+63.00
CASS COUNTY

08/07/14 DATE Terrence R. Udland BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	34

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new triple barrel 10' x 4' x 106'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

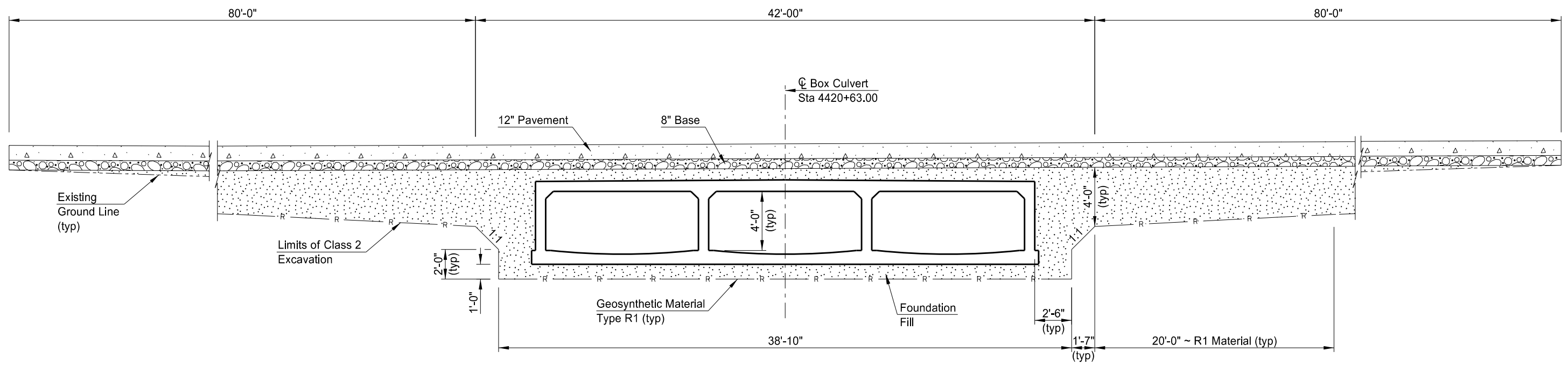
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	35



(SHOWING SECTION ALONG \bar{C} ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

NOTE

The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

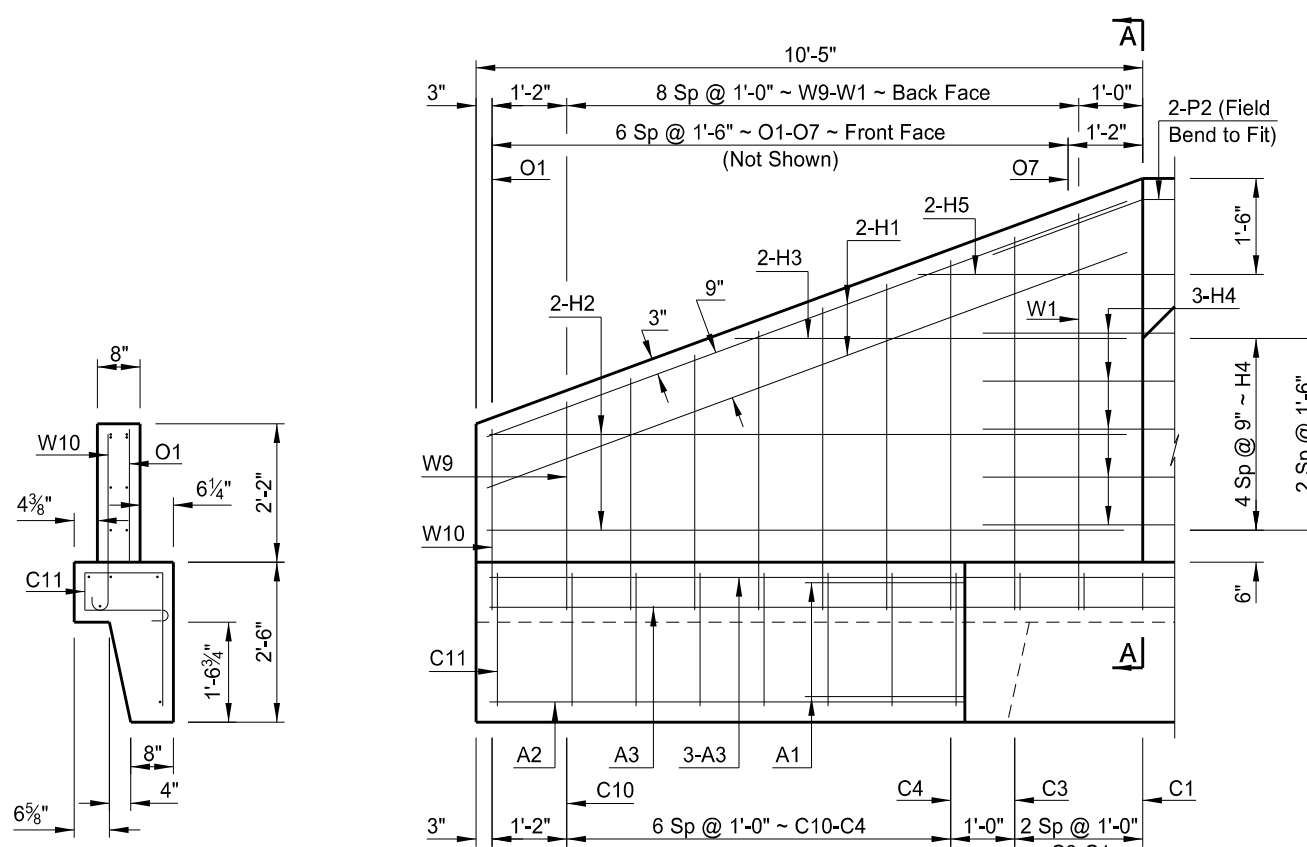
The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of \bar{C} Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

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COUNTY DRAIN 24C

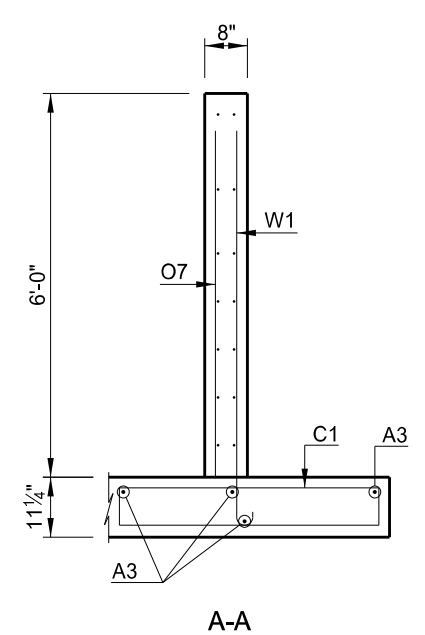
EXCAVATION & FOUNDATION
 FILL DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	36

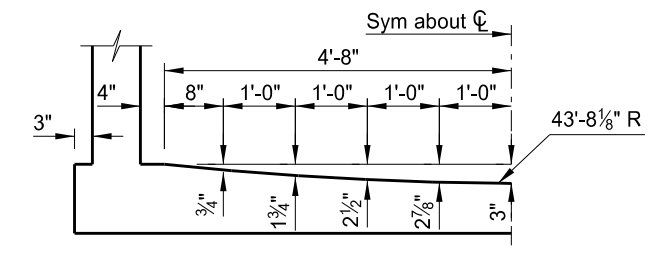


END VIEW

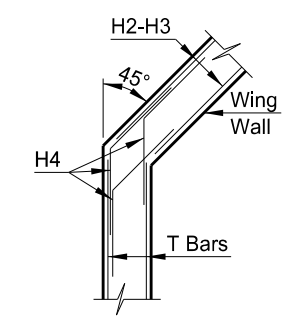
WING ELEVATION



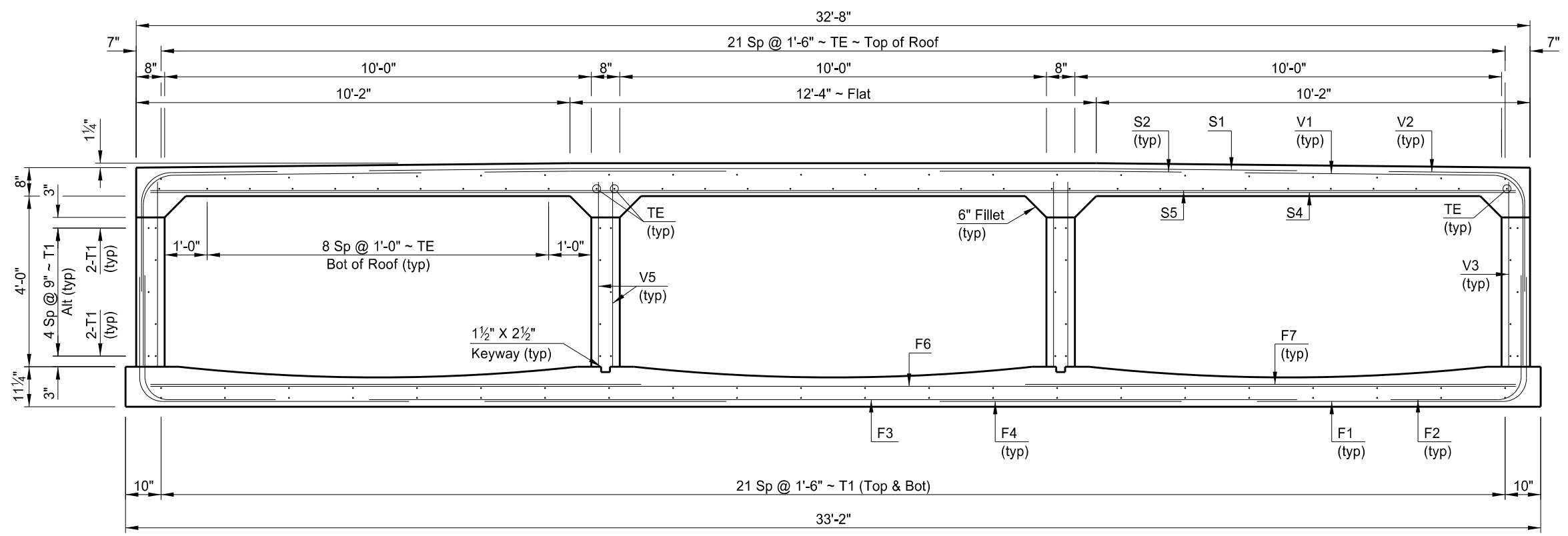
A-A



CURVED FLOOR OFFSETS



H BAR DETAIL



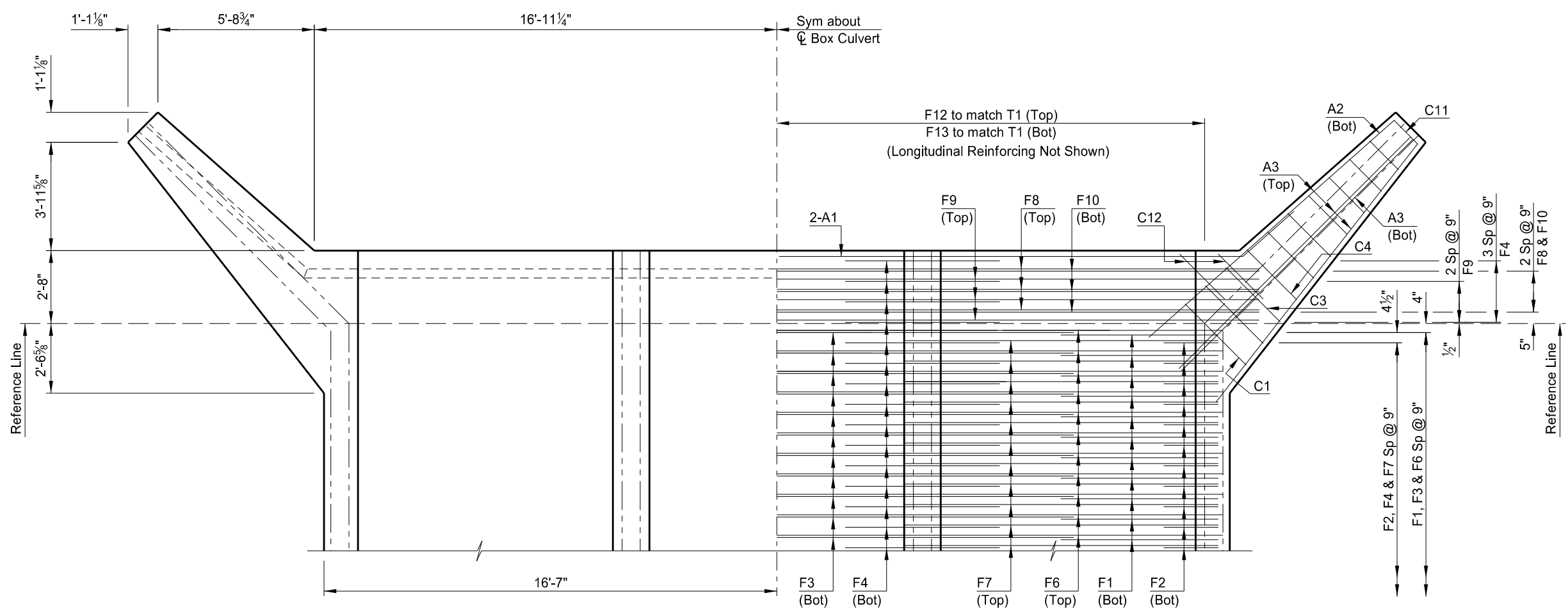
SECTION OF BARREL

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COUNTY DRAIN 24C

BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	37



(SHOWING DIMENSIONS)

(SHOWING REINFORCING)

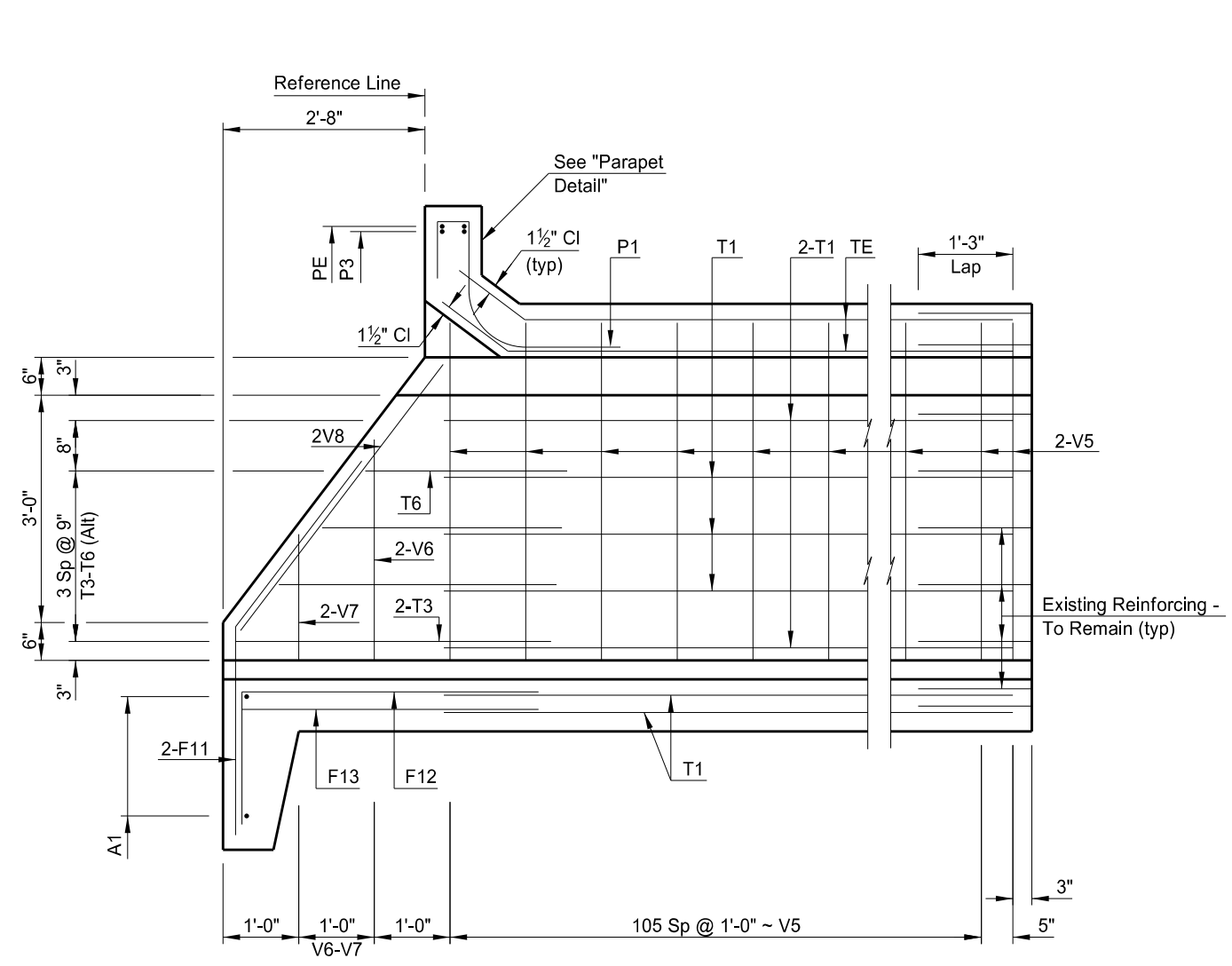
FLOOR PLAN

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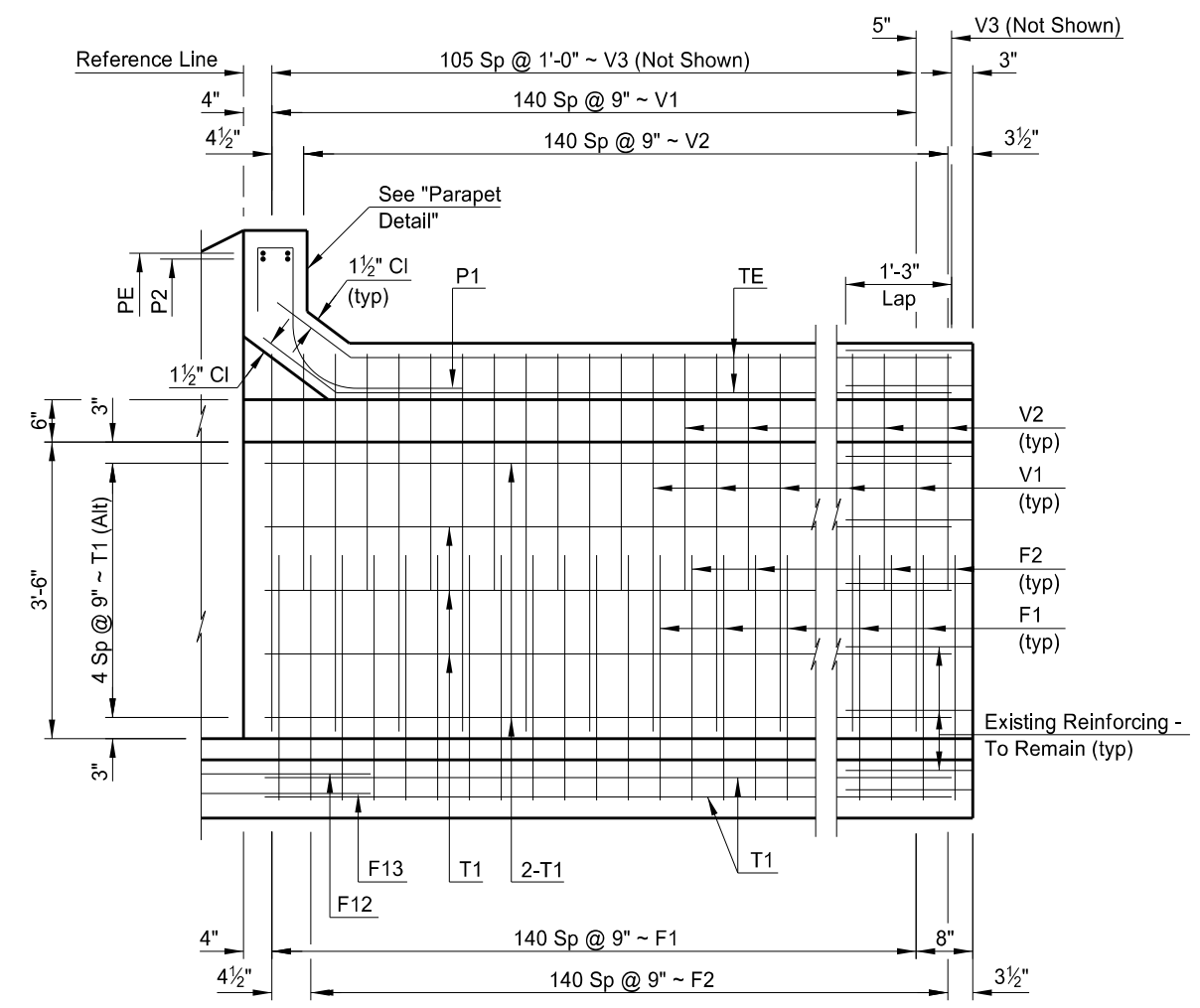
COUNTY DRAIN 24C

FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	38

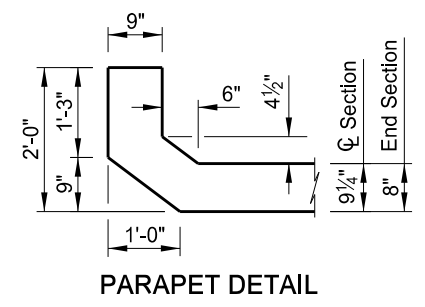


INNER WALL



OUTER WALL

LONGITUDINAL SECTIONS

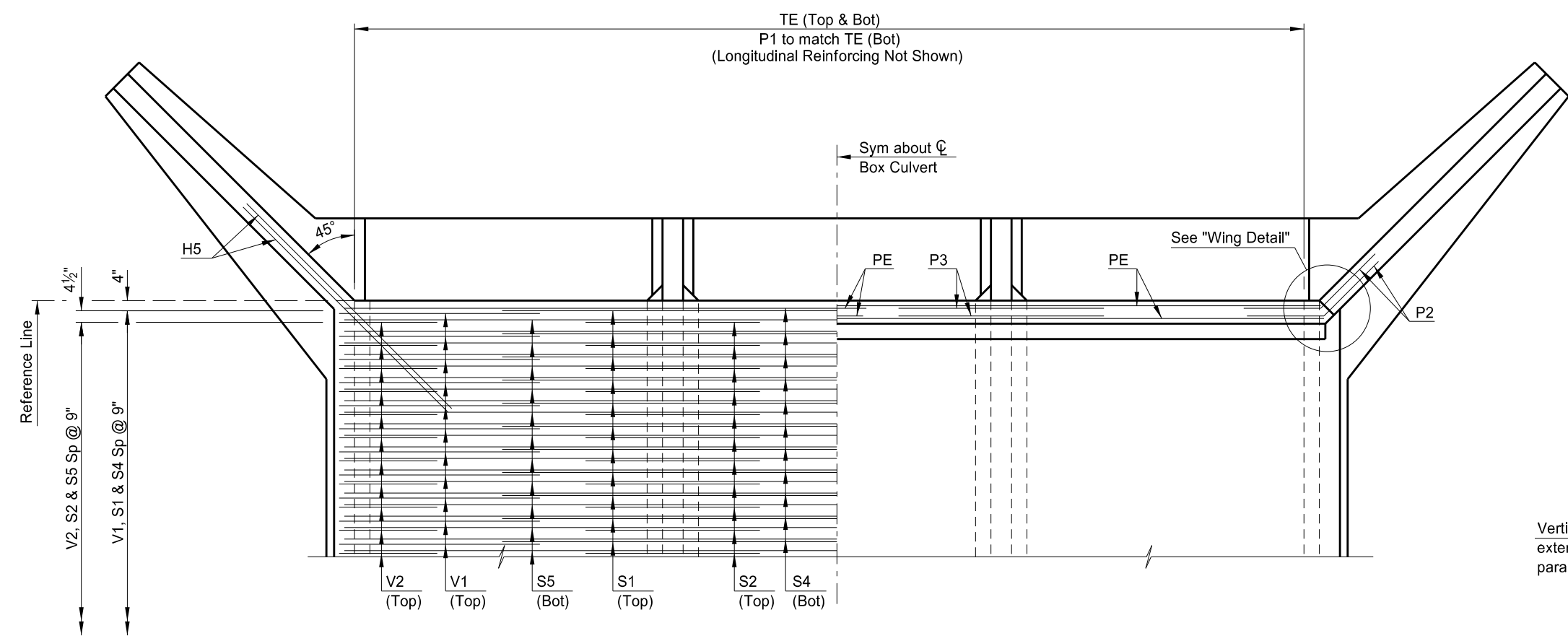


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COUNTY DRAIN 24C

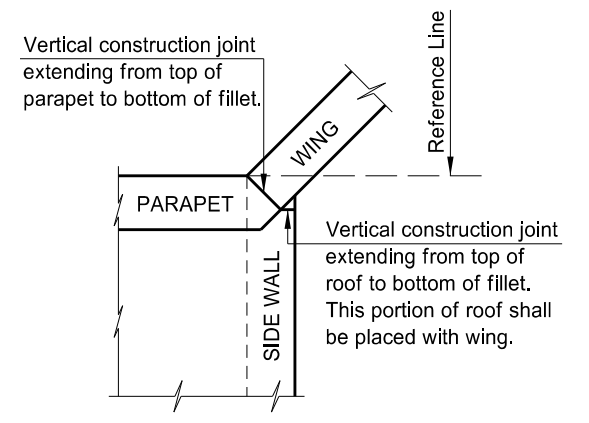
WALL DETAILS & PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	39



(SHOWING ROOF REINFORCING) (SHOWING PARAPET REINFORCING)

ROOF PLAN

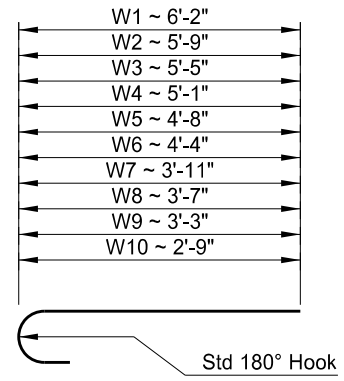


WING DETAIL

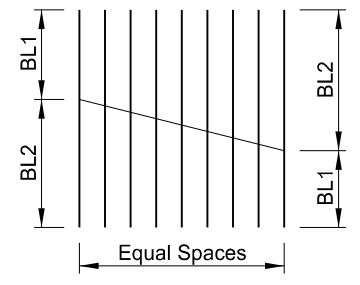
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COUNTY DRAIN 24C

ROOF DETAILS



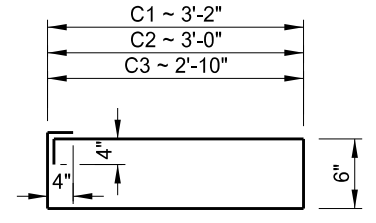
W1-W10



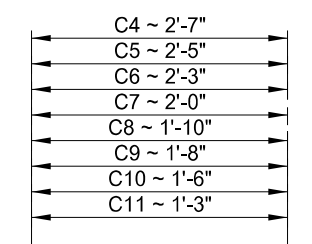
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O7	26'-3"	2'-1"	5'-5"	6
T4-T6	9'-6"	2'-8"	3'-8"	2

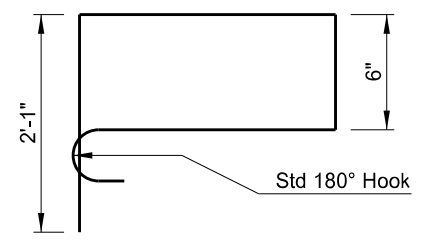
BAR CUTTING DETAILS



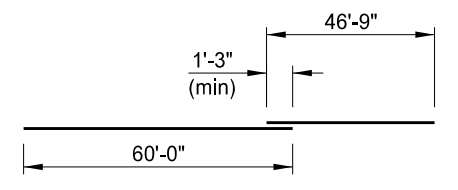
C1 - C3



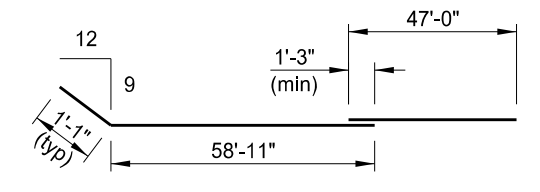
C4 - C11



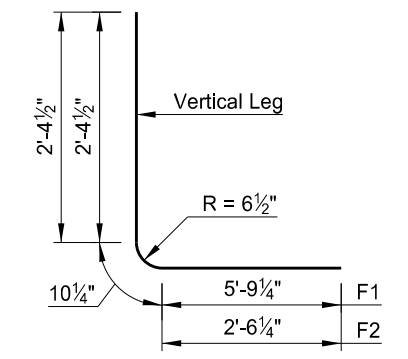
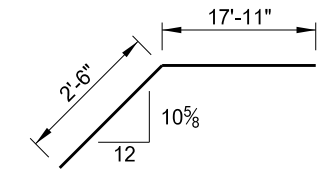
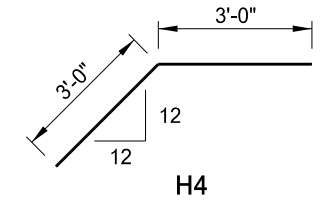
C12



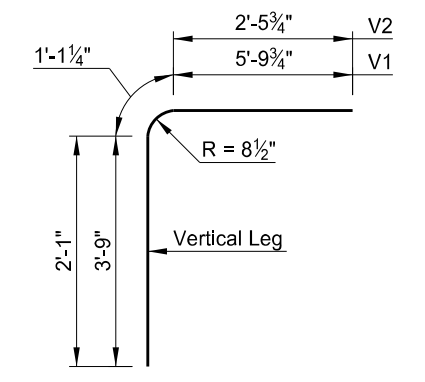
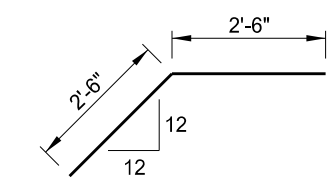
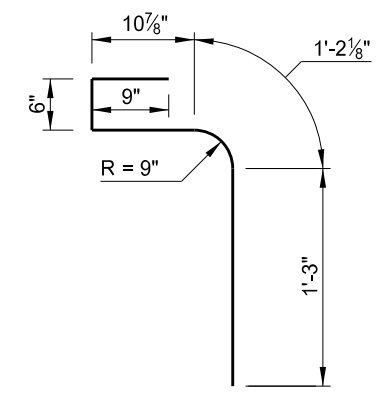
T1



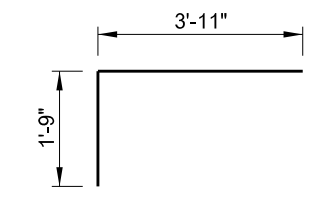
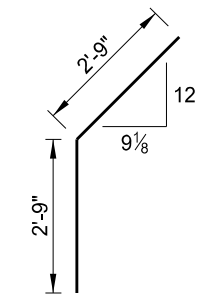
TE



F1 & F2



V1 & V2

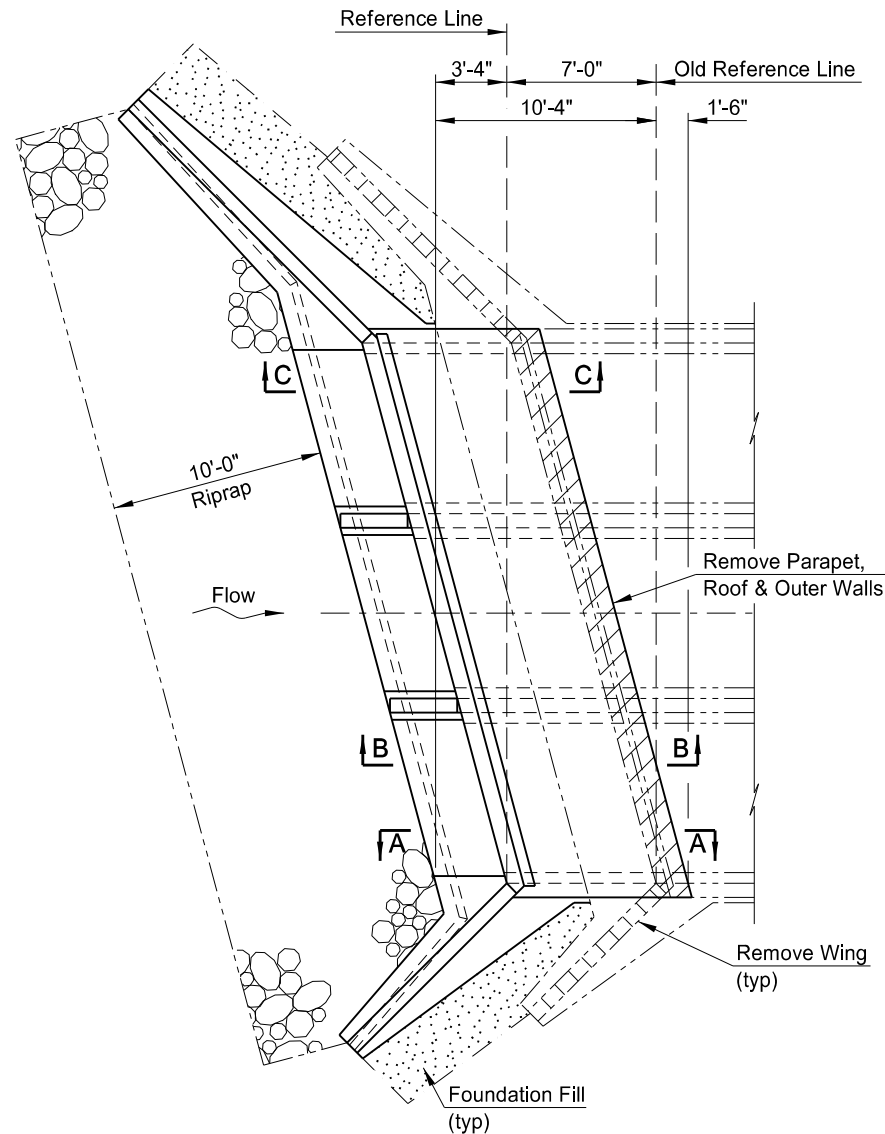
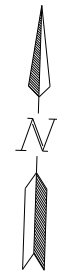


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COUNTY DRAIN 24C

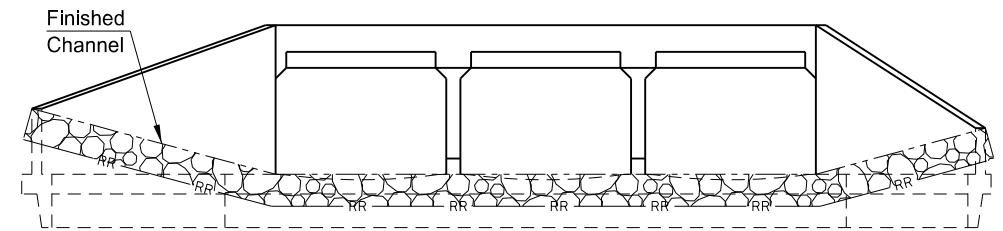
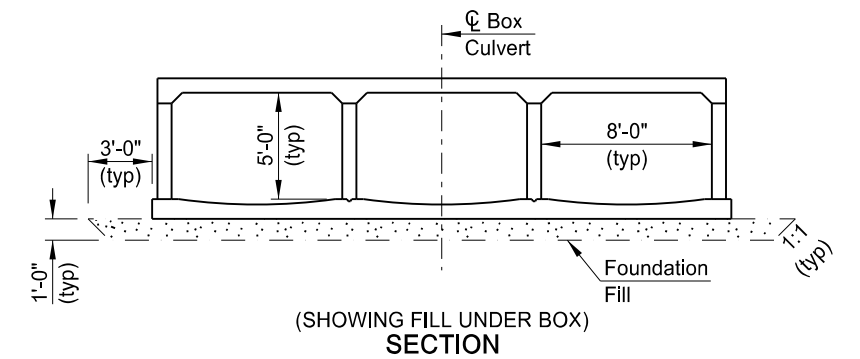
BAR DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	42



PLAN

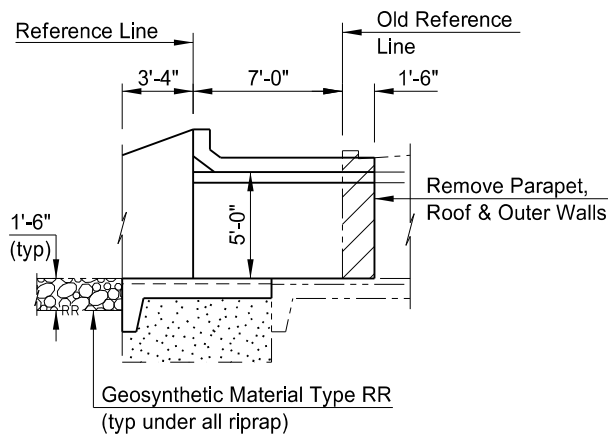
NOTE:
See Dwg 29-084.749-8 for Sections A-A, B-B & C-C.



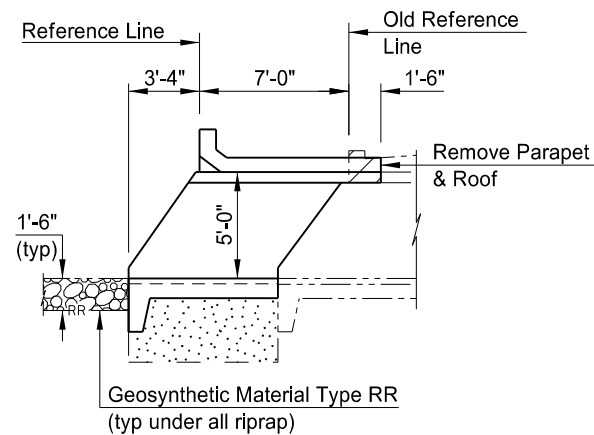
NOTE:
The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box extension shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

DESIGN STRENGTHS:
f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel
Load & Resistance Factor Design

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C-C



B-B

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0101	REMOVAL OF CONCRETE	EA	1
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	20
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	25
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	24.0
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	3,502
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	50

SPECIAL PROVISION	
SP 4(14)	MIGRATORY BIRD TREATY ACT
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION DRAINAGE DITCH 15 MI N OF US 81 15° SKEW REINFORCED CONCRETE TRIPLE BOX CULVERT LAYOUT CLEAR SPAN 3 x 8' CLEAR HEIGHT 5' MAXIMUM FILL 5'	
PROJECT: IM-8-029(133)078 STATION: 4474+97.00 CASS COUNTY	
08/07/14	Terrence R. Udland BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	43

NOTES

100 SCOPE OF WORK: Work at this site consists of extending a triple barrel 8' x 5' reinforced concrete box culvert 7'-0" on the west end.

202 REMOVAL OF CONCRETE: Remove portions of existing culvert end where extension is to be attached. Remove 1'-6" of existing concrete to expose the existing reinforcing steel at the parapet and outside walls at the vertical junction with the wing. Remove existing wing walls in entirety. Rebar protruding from the floor under the wing walls shall be cut flush with the top surface of the floor. Leave existing floor and cutoff walls in place.

If the existing wall and roof thicknesses are different than the new thicknesses, the inner surfaces shall be flush and the exterior surfaces tapered in the first 1'-6" of the barrel.

The Contractor shall complete and submit SFN 17987 Asbestos Notification of Demolition and Renovation to the North Dakota Department of Health 10 days prior to beginning the removal of concrete.

210 EXCAVATION: All excavation required to build the box culvert shall be included in the bid for "Class 2 Excavation-Box Culvert."

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

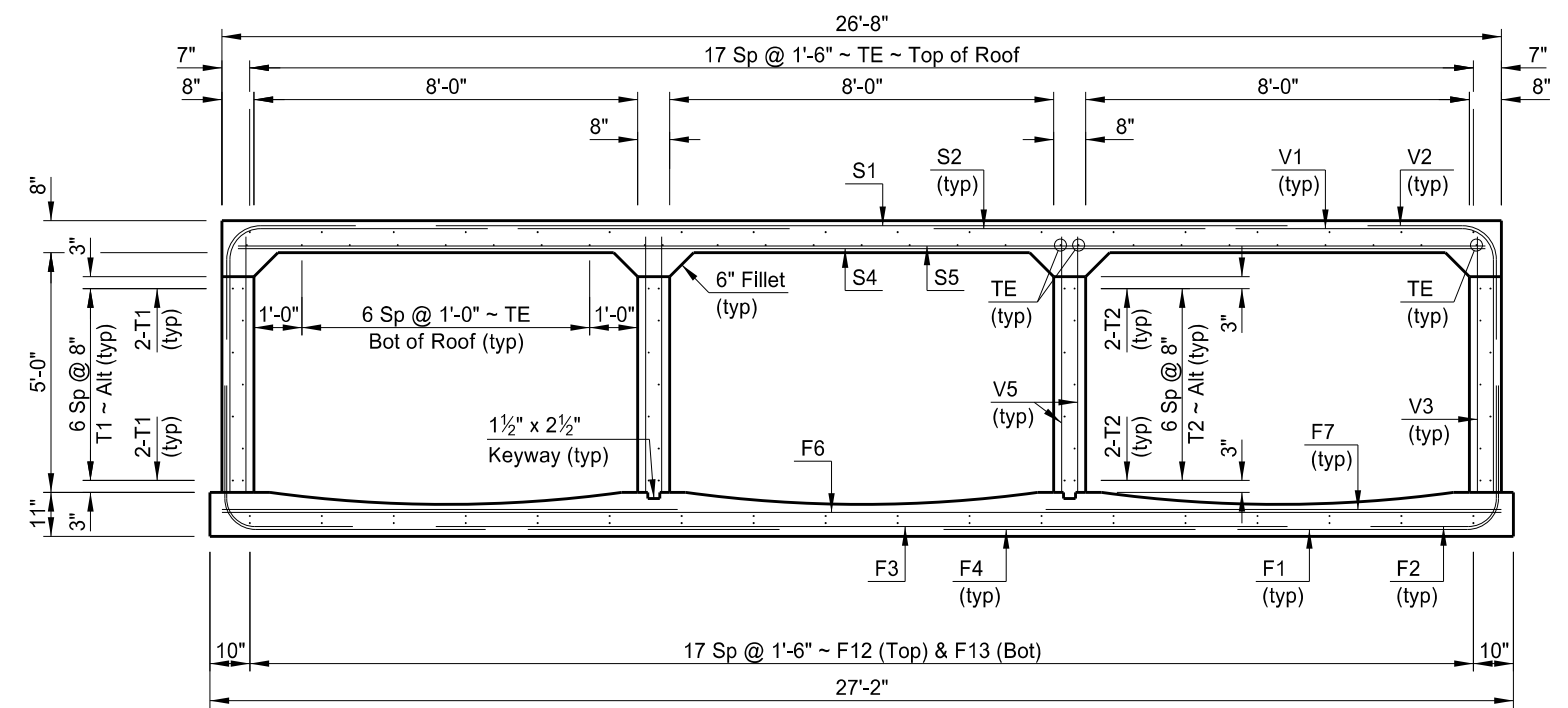
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

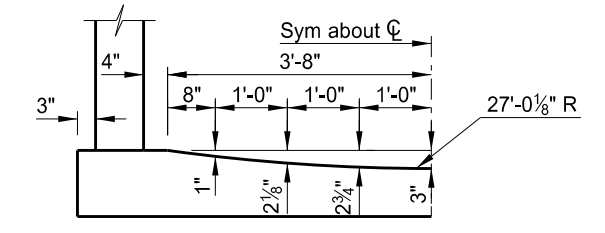
Dimensions of bent bars are given out to out. All bends conform to A.C.I. Standards unless indicated otherwise.

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SECTION OF BARREL



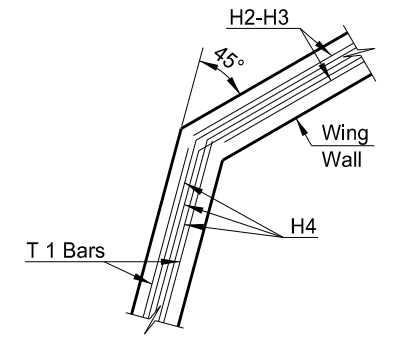
CURVED FLOOR OFFSETS

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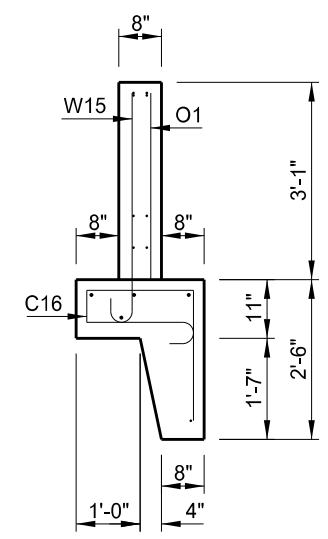
DRAINAGE DITCH
15 MI NO OF US 81

BARREL SECTION

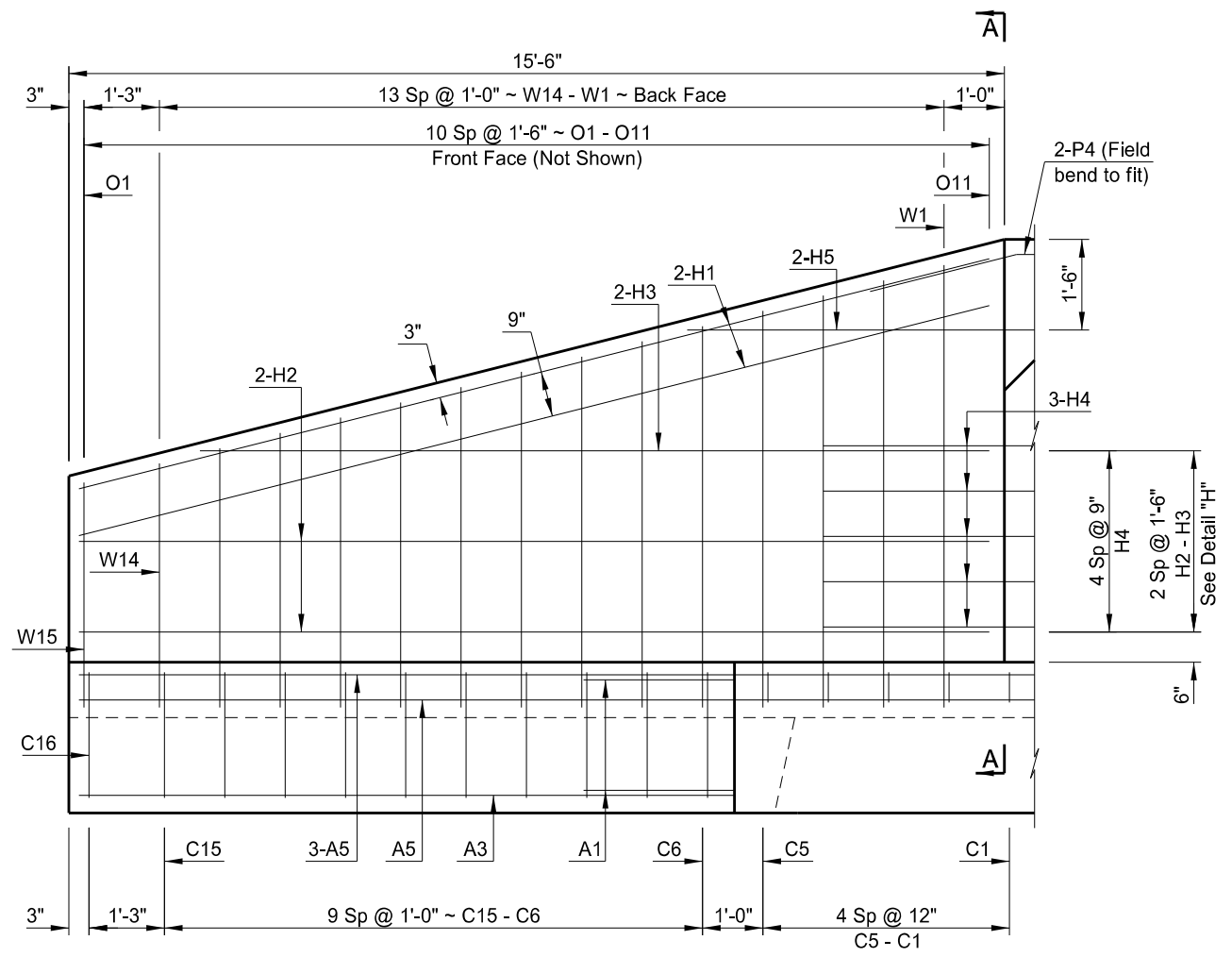
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	45



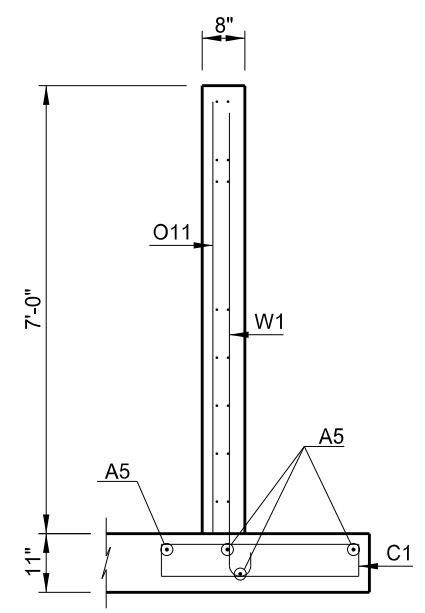
H BAR DETAIL



END VIEW



LONG WING ELEVATION



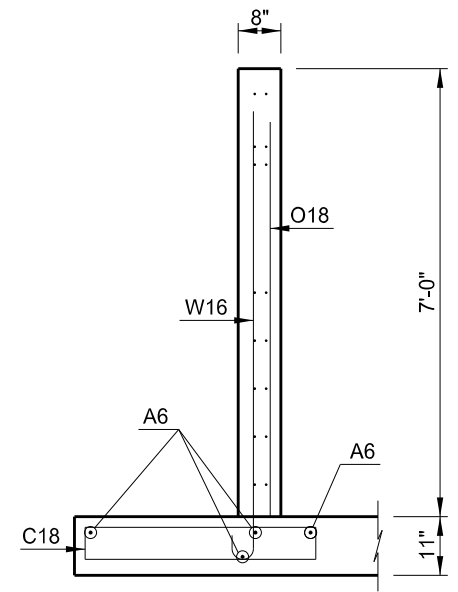
A-A

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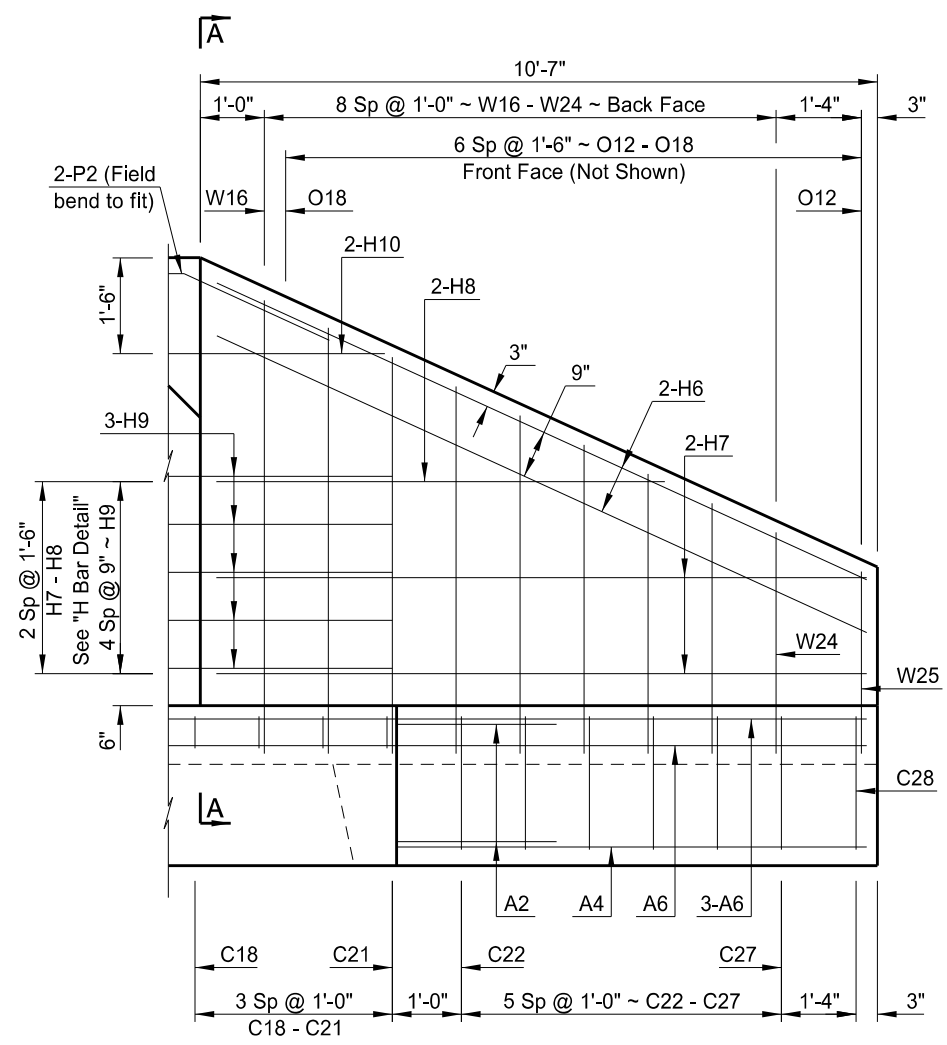
**DRAINAGE DITCH
15 MI N OF US 81**

LONG WING DETAILS

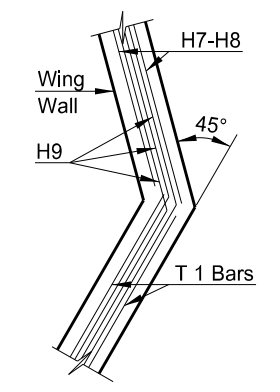
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ND	IM-8-029(133)078	170	46



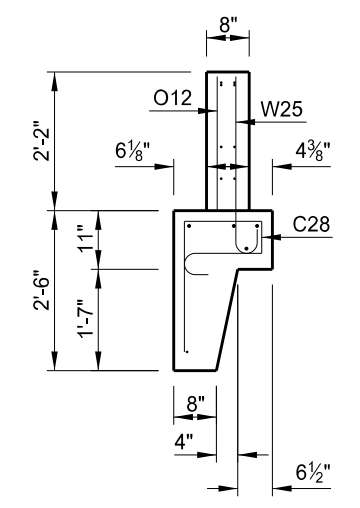
A-A



SHORT WING ELEVATION



H BAR DETAIL



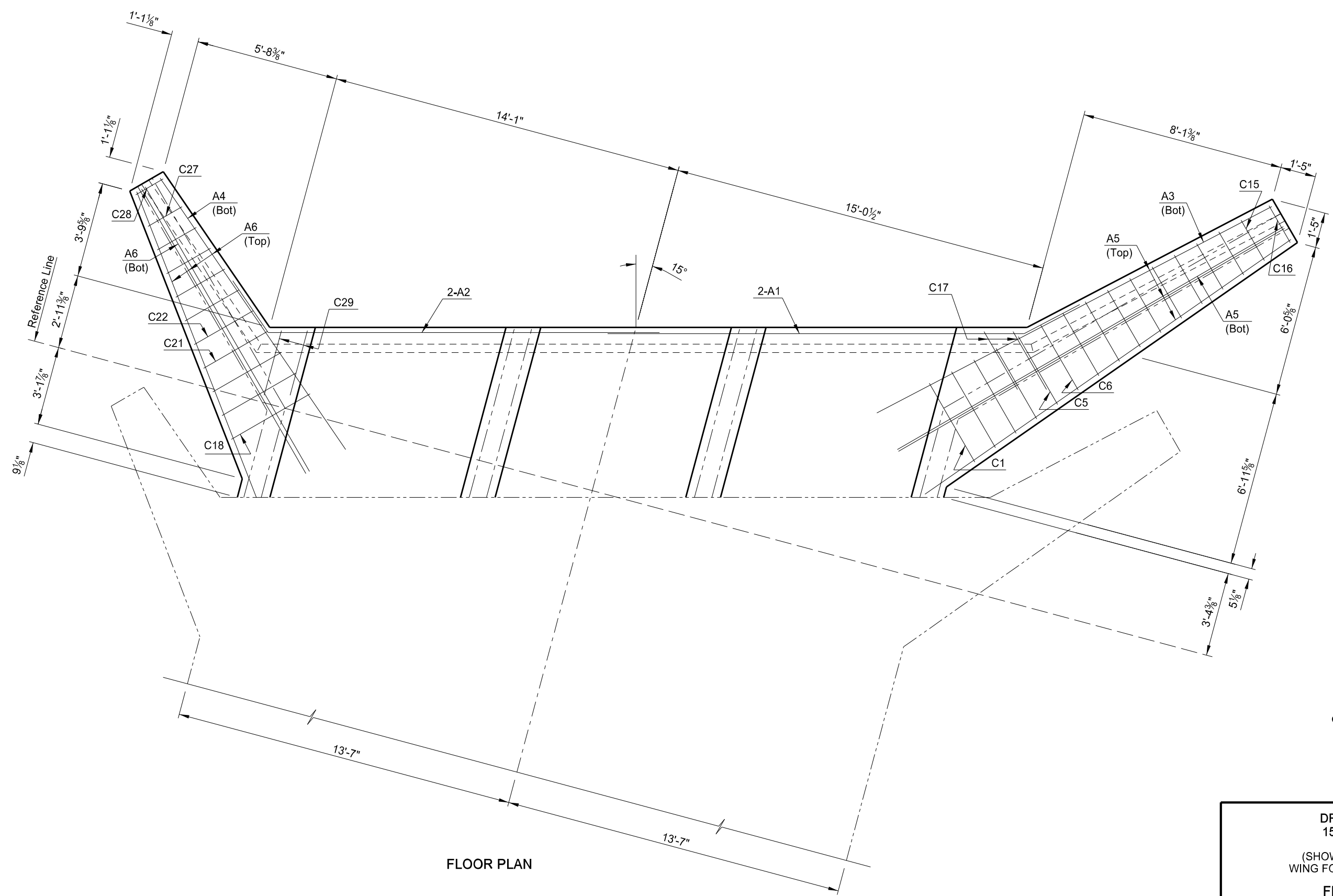
END VIEW

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DRAINAGE DITCH
15 MI N OF US 81

SHORT WING DETAILS

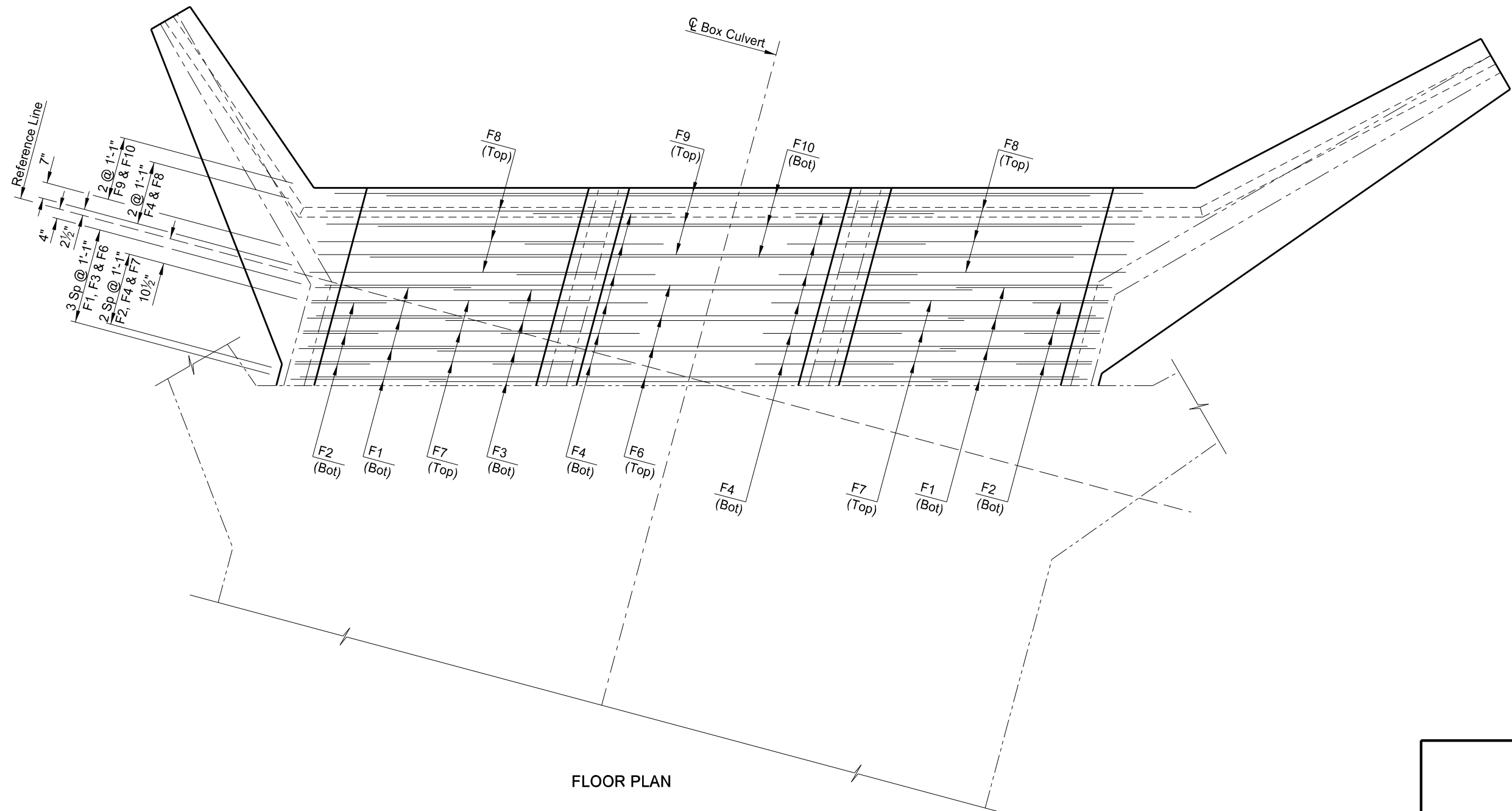
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
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DRAINAGE DITCH
15 MI N OF US 81
 (SHOWING DIMENSIONS &
 WING FOOTING REINFORCING)
FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	48



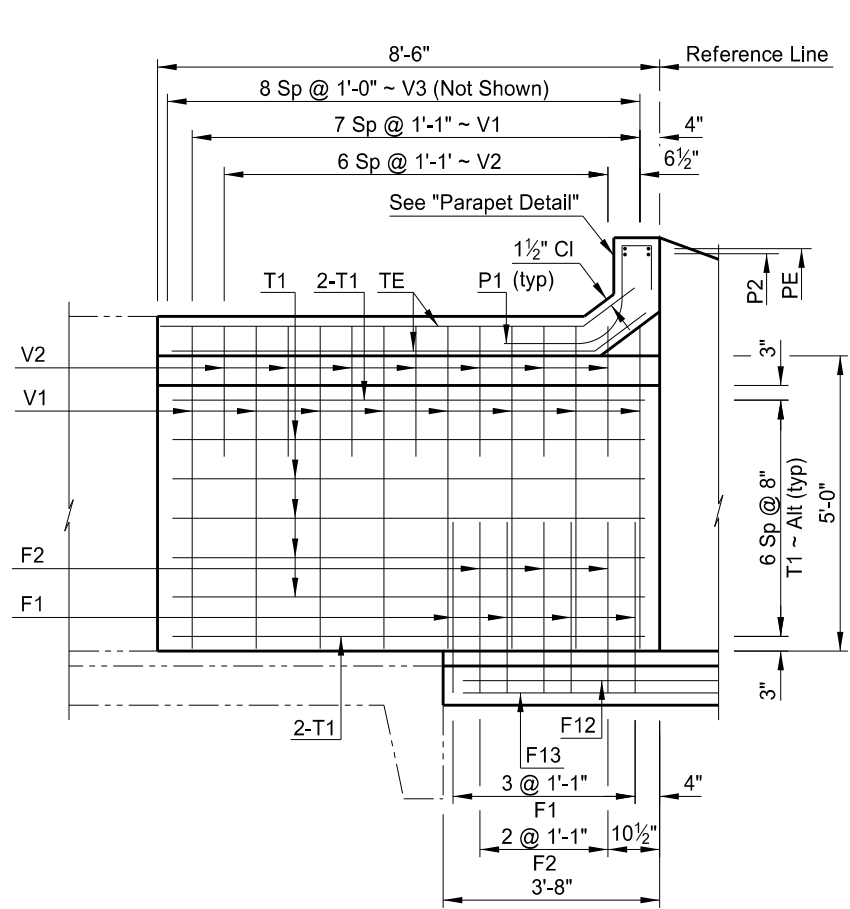
FLOOR PLAN

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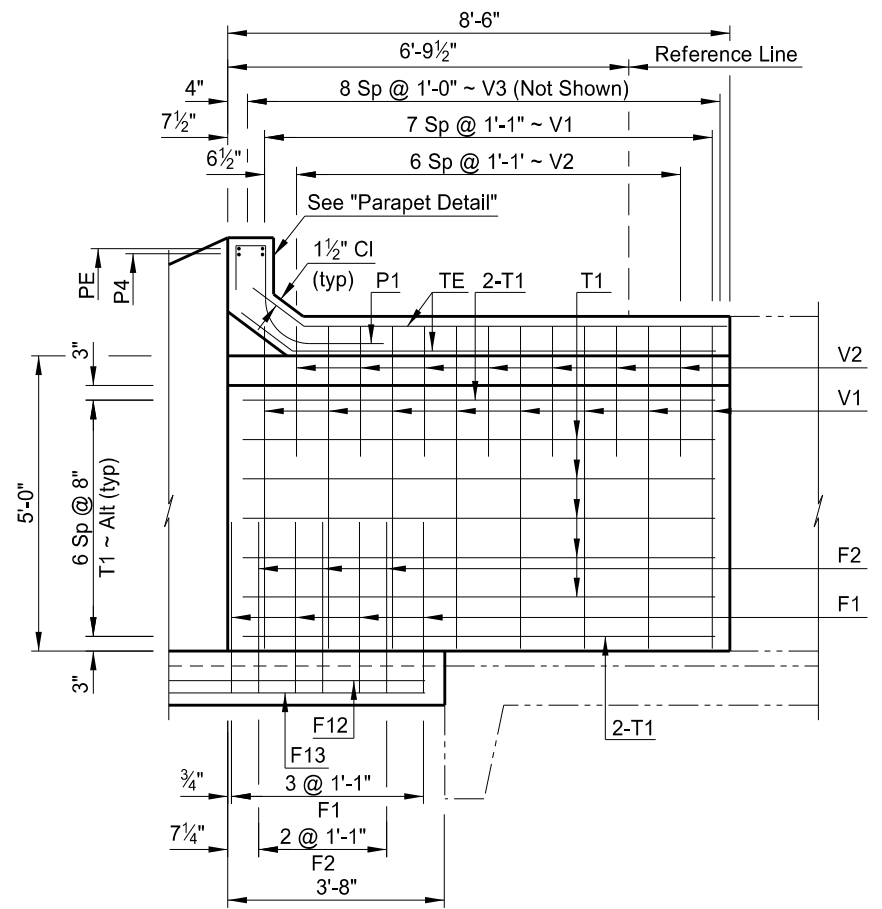
DRAINAGE DITCH
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FLOOR DETAIL

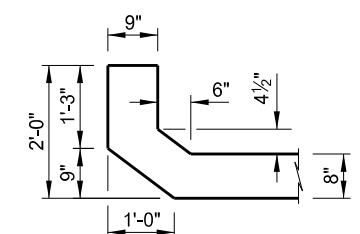
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
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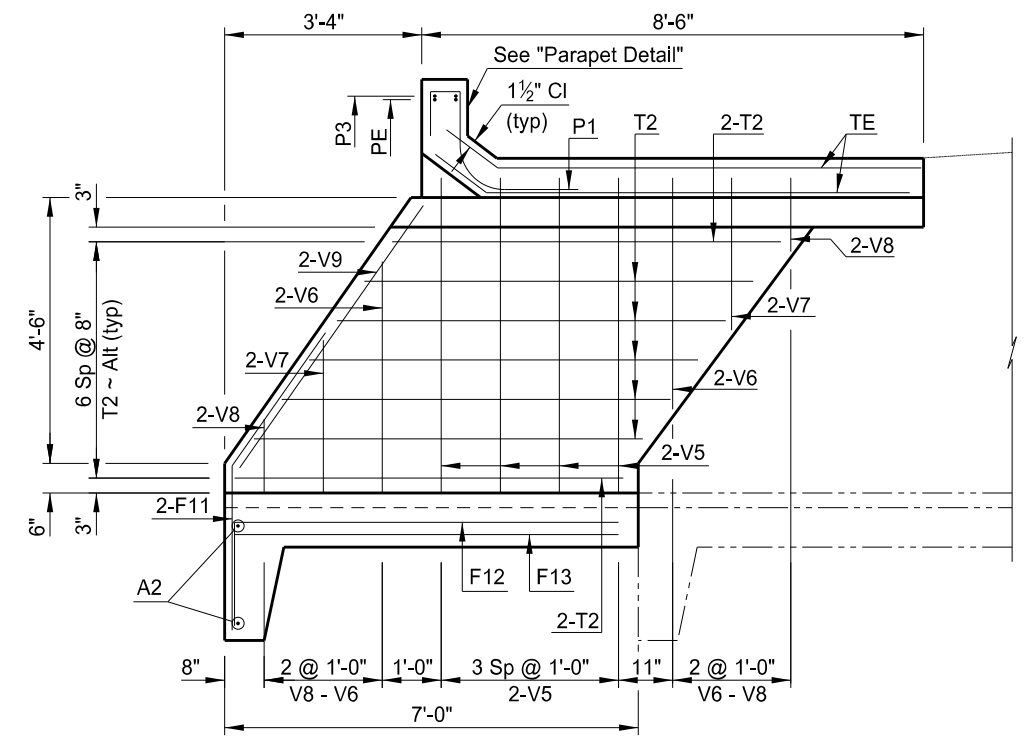
A-A
OUTER WALL



C-C
OUTER WALL



PARAPET DETAIL



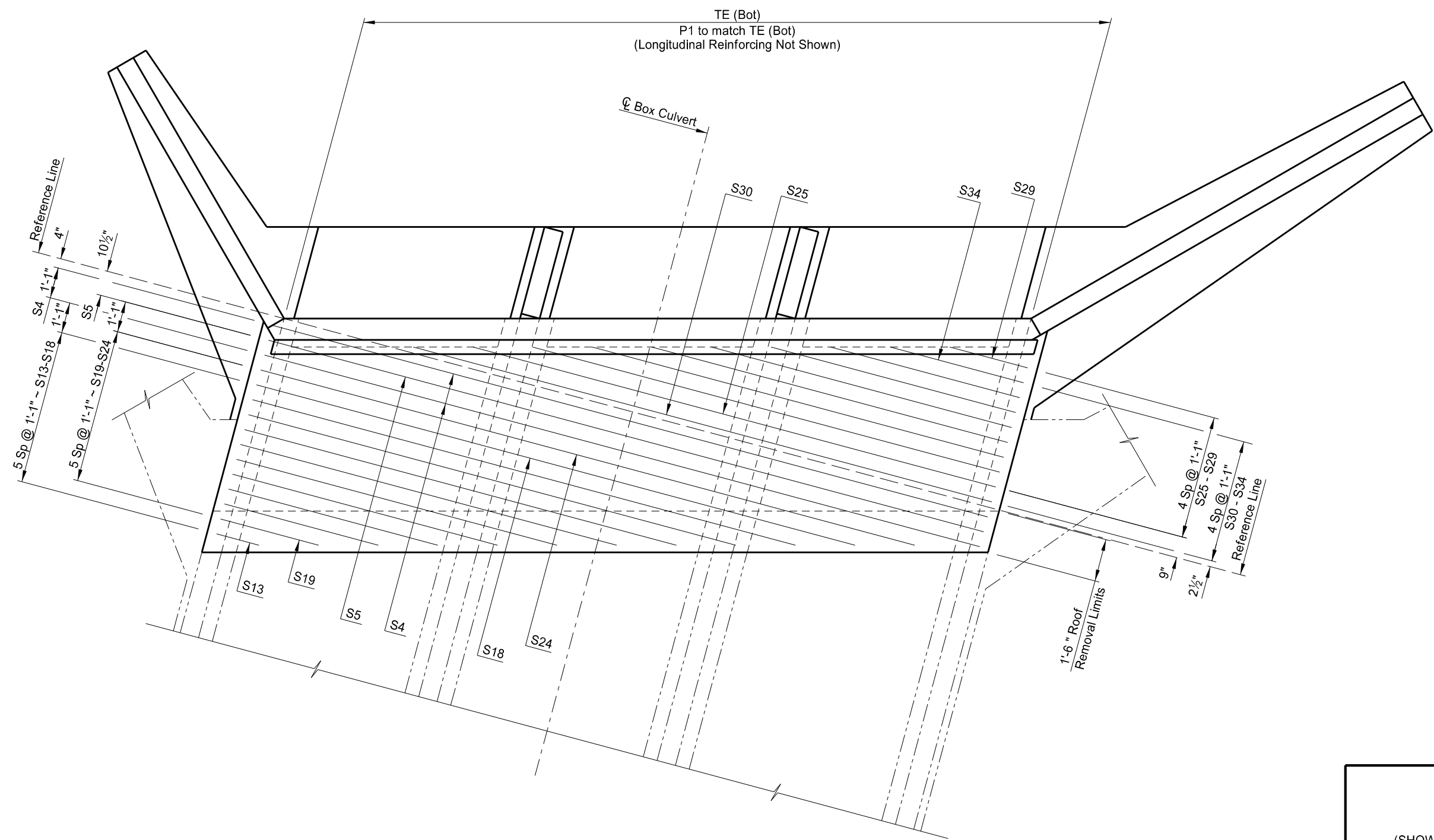
B-B
INNER WALL

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DRAINAGE DITCH
15 MI N OF US 81

WALL DETAILS &
PARAPET DETAIL

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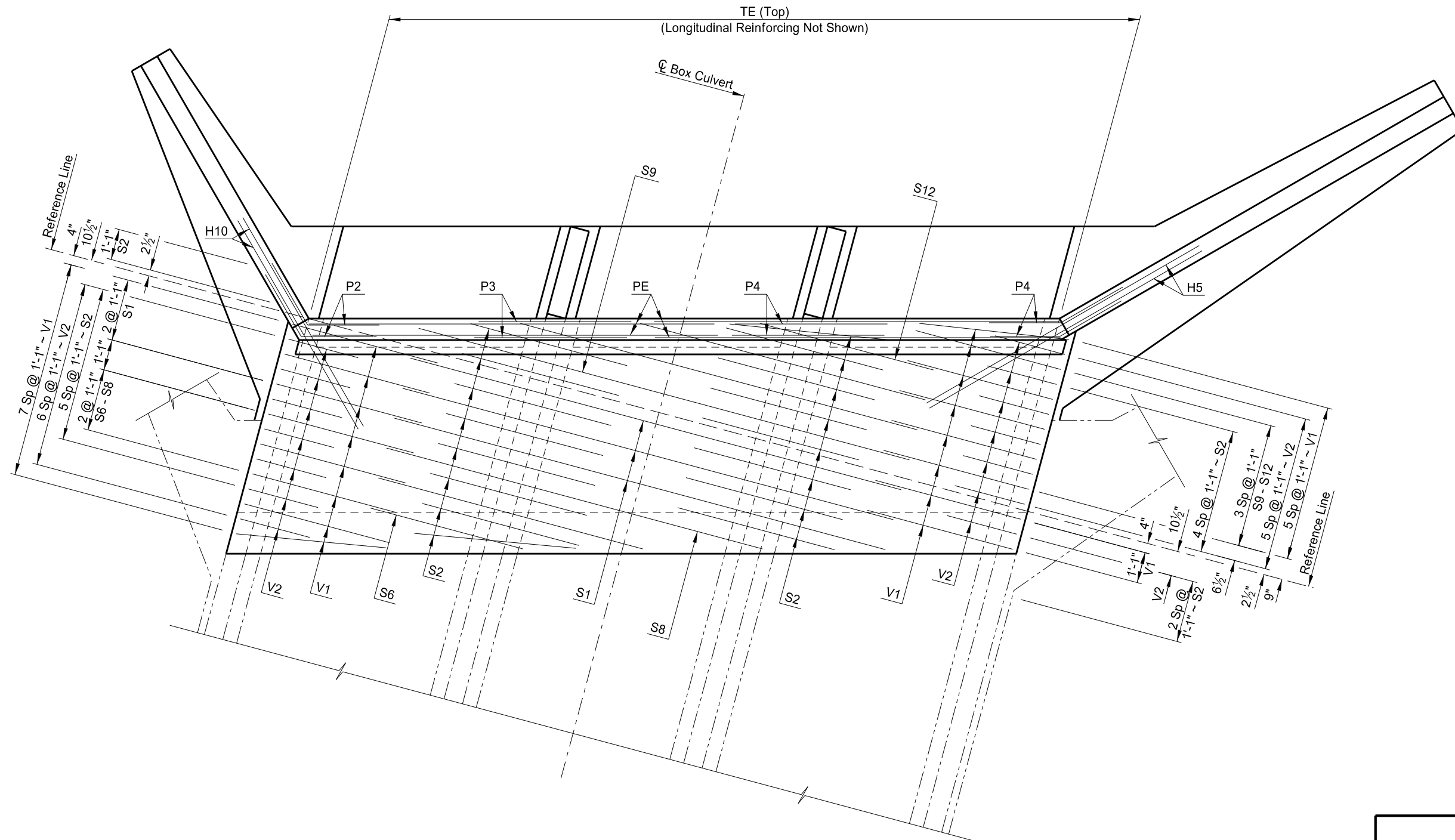


(SHOWING BOTTOM MAT REINFORCING)
ROOF PLAN

**DRAINAGE DITCH
 15 MI N OF US 81**
 (SHOWING BOTTOM MAT REINFORCING)
ROOF DETAILS

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(SHOWING TOP MAT REINFORCING)
ROOF PLAN

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**DRAINAGE DITCH
15 MI N OF US 81**

(SHOWING TOP MAT & PARAPET REINFORCING)
ROOF DETAILS

BAR LIST (CONSTANT)					BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	4	1	7'-9"	BENT	H6	6	4	11'-2"	STR.	V1	4	16	10'-6"	BENT
W2	4	1	7'-6"	BENT	H7	4	4	10'-2"	STR.	V2	4	14	4'-6"	BENT
W3	4	1	7'-3"	BENT	H8	4	2	7'-0"	STR.	V3	4	18	5'-4"	STR.
W4	4	1	7'-0"	BENT	H9	4	15	6'-0"	BENT	V5	4	16	5'-4"	STR.
W5	4	1	6'-9"	BENT	H10	6	2	8'-5"	STR.					
W6	4	1	6'-6"	BENT						F1	4	8	8'-2"	BENT
W7	4	1	6'-3"	BENT	O12-O18	4	2 SETS	28'-11"	STR.	F2	4	6	5'-4"	BENT
W8	4	1	6'-0"	BENT						F3	4	4	18'-5"	STR.
W9	4	1	5'-9"	BENT	A1	6	2	19'-1"	BENT	F4	5	12	4'-11"	STR.
W10	4	1	5'-6"	BENT	A2	6	2	18'-1"	BENT	F6	5	4	27'-8"	STR.
W11	4	1	5'-3"	BENT	A3	6	1	11'-0"	STR.	F7	4	6	9'-10"	STR.
W12	4	1	5'-0"	BENT	A4	6	1	7'-6"	STR.					
W13	4	1	4'-9"	BENT	A5	6	4	17'-9"	STR.	S1	5	3	17'-9"	STR.
W14	4	1	4'-6"	BENT	A6	6	4	13'-1"	STR.	S2	6	16	5'-8"	STR.
W15	4	1	4'-2"	BENT						S4	6	2	26'-0"	STR.
					P1	4	27	4'-7"	BENT	S5	5	1	26'-0"	STR.
C1	4	1	8'-10"	BENT	P2	6	2	5'-0"	BENT					
C2	4	1	8'-8"	BENT	P3	6	4	5'-4"	STR.	TE	4	45	8'-3"	BENT
C3	4	1	8'-4"	BENT	P4	6	2	5'-0"	BENT	T1	4	18	8'-0"	STR.
C4	4	1	8'-2"	BENT	PE	6	4	14'-2"	STR.	T2	4	18	6'-7"	STR.
C5	4	1	7'-10"	BENT										
C6	4	1	9'-1"	BENT	V6	4	8	3'-11"	STR.					
C7	4	1	8'-9"	BENT	V7	4	8	2'-7"	STR.					
C8	4	1	8'-7"	BENT	V8	4	8	1'-3"	STR.					
C9	4	1	8'-3"	BENT	V9	6	4	5'-7"	STR.					
C10	4	1	8'-1"	BENT										
C11	4	1	7'-9"	BENT	F8	4	6	9'-10"	STR.					
C12	4	1	7'-7"	BENT	F9	5	3	27'-8"	STR.					
C13	4	1	7'-3"	BENT	F10	4	3	24'-1"	STR.					
C14	4	1	7'-1"	BENT	F11	6	4	5'-6"	BENT					
C15	4	1	6'-9"	BENT	F12	4	18	8'-4"	BENT					
C16	4	1	6'-5"	BENT	F13	4	18	6'-7"	STR.					
C17	4	2	4'-9"	BENT										
					S6-S8	5	1 SETS	28'-8"	STR.					
H1	6	4	15'-6"	STR.	S9-S12	5	1 SETS	48'-2"	STR.					
H2	4	4	15'-1"	STR.	S13-S18	6	1 SETS	69'-9"	STR.					
H3	4	2	12'-11"	STR.	S19-S24	5	1 SETS	81'-9"	STR.					
H4	4	15	6'-0"	BENT	S25-S29	6	1 SETS	54'-7"	STR.					
H5	6	2	11'-11"	STR.	S30-S34	5	1 SETS	64'-7"	STR.					
O1-O11	4	1 SETS	53'-8"	STR.										
W16	4	1	7'-7"	BENT										
W17	4	1	7'-1"	BENT										
W18	4	1	6'-8"	BENT										
W19	4	1	6'-2"	BENT										
W20	4	1	5'-9"	BENT										
W21	4	1	5'-3"	BENT										
W22	4	1	4'-10"	BENT										
W23	4	1	4'-4"	BENT										
W24	4	1	3'-11"	BENT										
W25	4	1	3'-3"	BENT										
C18	4	1	8'-10"	BENT										
C19	4	1	8'-4"	BENT										
C20	4	1	8'-0"	BENT										
C21	4	1	7'-6"	BENT										
C22	4	1	8'-7"	BENT										
C23	4	1	8'-1"	BENT										
C24	4	1	7'-7"	BENT										
C25	4	1	7'-1"	BENT										
C26	4	1	6'-9"	BENT										
C27	4	1	6'-3"	BENT										
C28	4	1	5'-7"	BENT										
C29	4	2	4'-9"	BENT										

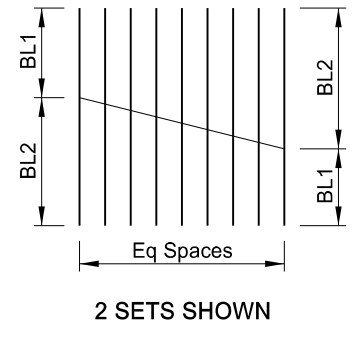
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
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CONCRETE QUANTITIES (ONE END)	
ENTIRE FLOOR	10.4 CY
TWO OUTSIDE WALLS & 4 WINGS	5.0 CY
INSIDE WALL	1.6 CY
ENTIRE ROOF	7.0 CY
TOTAL	24.0 CY

QUANTITIES	
CLASS AE-3 CONCRETE	24.0 CY
REINFORCING STEEL	3,502 LBS

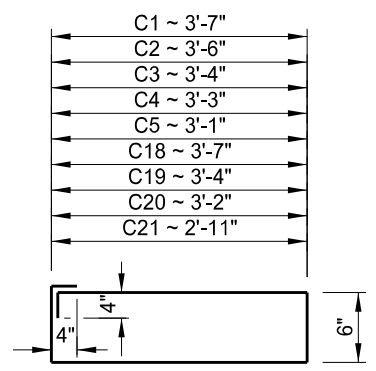
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DRAINAGE DITCH 15 MI N OF US 81
REINFORCING BAR LIST

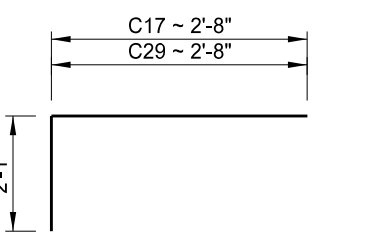


MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O11	53'-8"	3'-0"	6'-9"	10
O12-O18	28'-11"	2'-1"	6'-2"	6
S6-S8	28'-8"	5'-6"	13'-7"	2
S9-S12	48'-2"	6'-0"	18'-1"	3
S13-S18	69'-9"	1'-6"	21'-9"	5
S19-S24	81'-9"	3'-6"	23'-9"	5
S25-S29	54'-7"	2'-10"	19'-0"	4
S30-S34	64'-7"	4'-10"	21'-0"	4

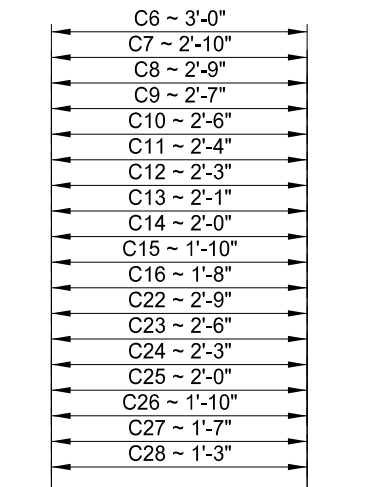
BAR CUTTING DETAILS



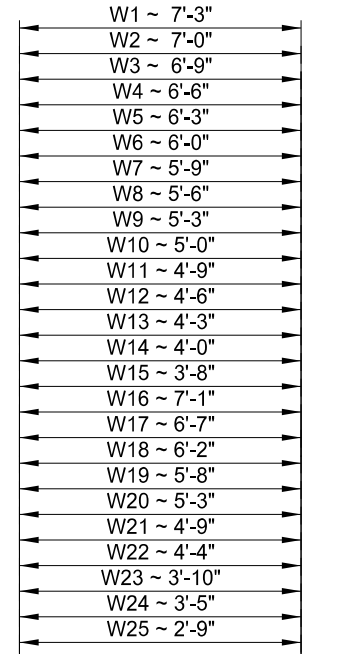
C1 - C5
C18 - C21



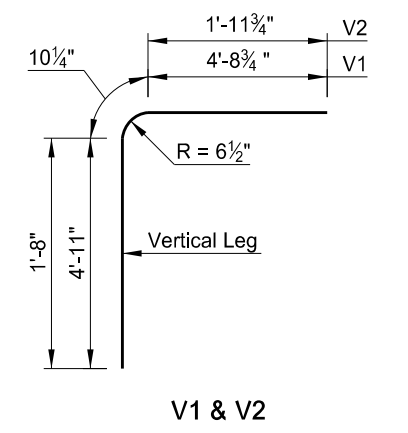
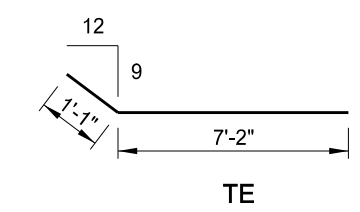
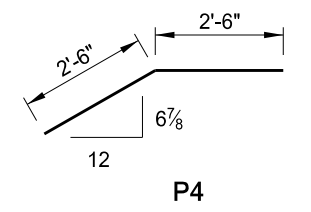
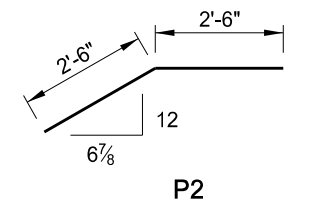
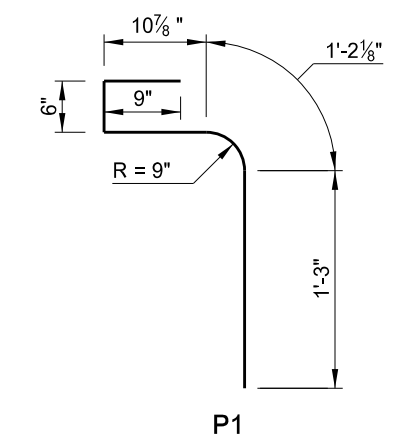
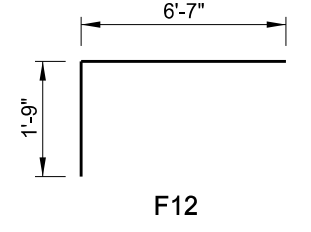
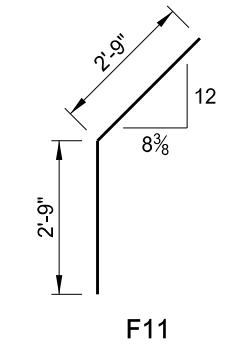
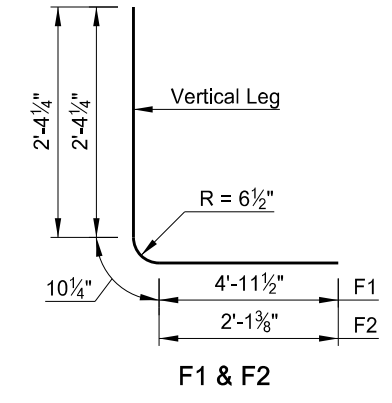
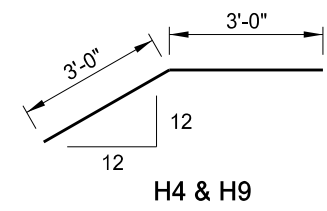
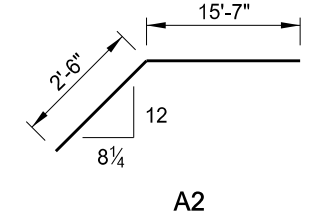
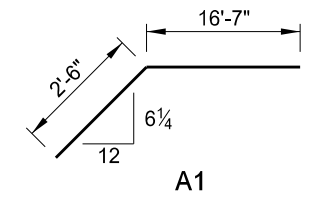
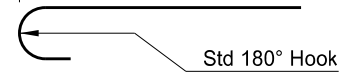
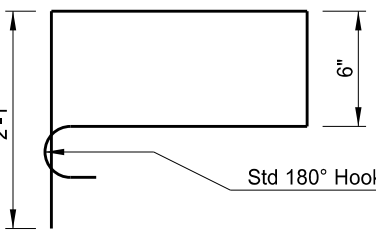
C17 - C29



C6 - C16
C22 - C28



W1 - W25

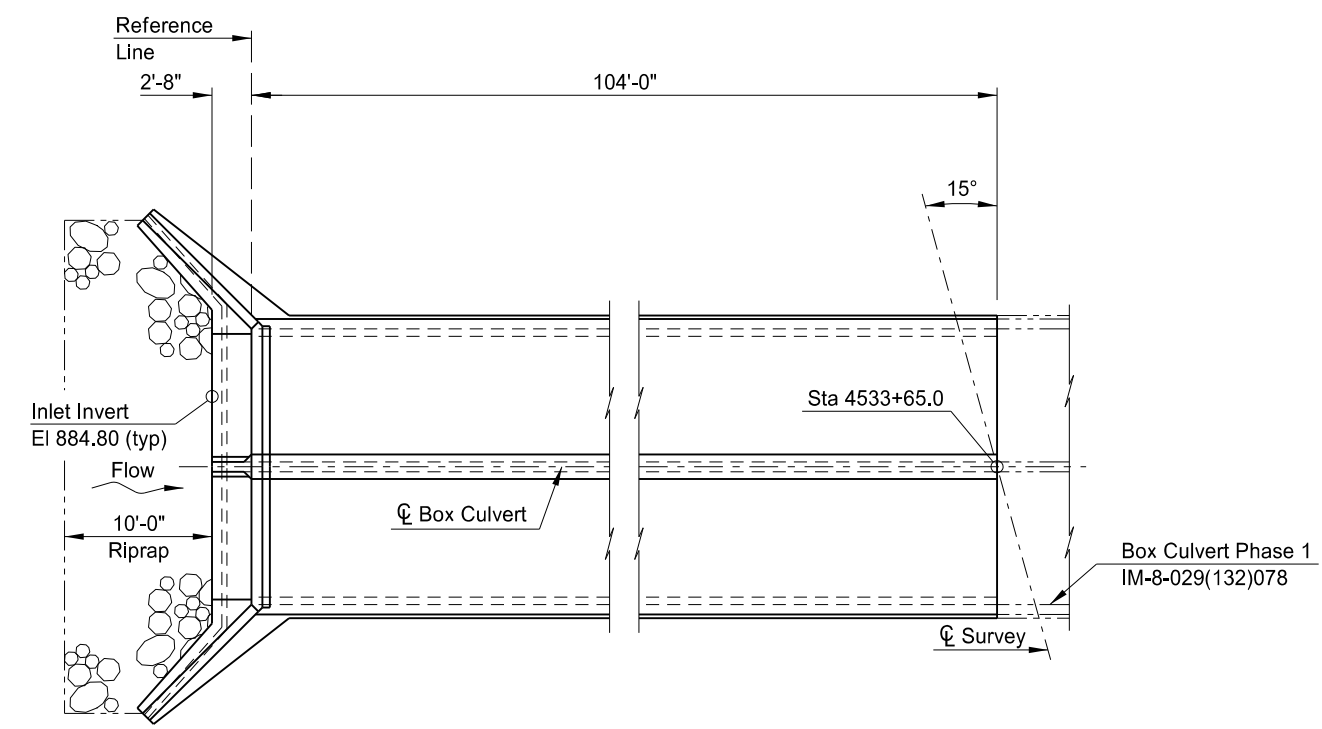


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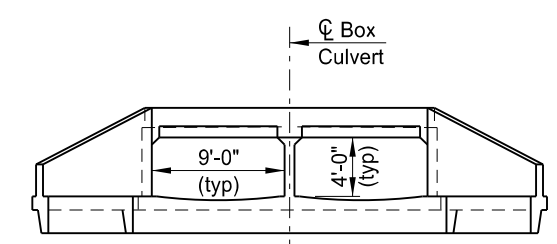
DRAINAGE DITCH
15 MI M OF US 81

BAR DETAILS

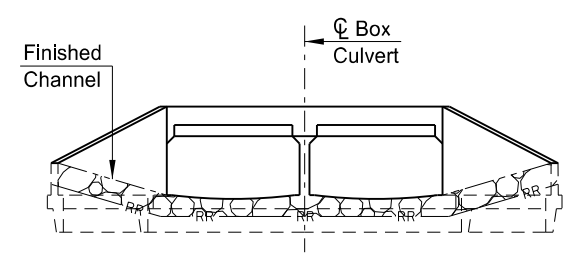
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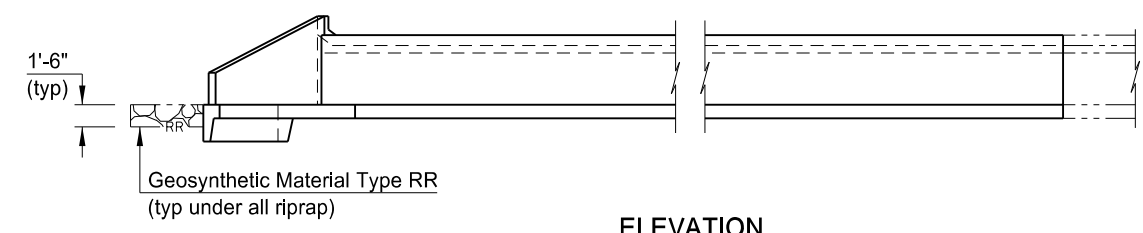
PLAN



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW



ELEVATION

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

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HYDRAULIC DATA:

Drainage Area	3.3	sq mi
Stream Gradient	0.00025	ft/ft
Design Frequency	50	yr
Design Discharge	297	cfs
Design Headwater Stage	892.1	ft
Design Tailwater Stage	890.8	ft
Velocity Through Culvert	3.4	fps
100-Year Frequency Discharge	354	cfs
100-Year Frequency Headwater	892.5	ft
Overtopping Stage	892.5	ft
Overtopping Discharge	300	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,050
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	20
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	155.1
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	31,244
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	400
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	40

SPECIAL PROVISION

SP 4(14) | MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

COUNTY DRAIN 22

**REINFORCED CONCRETE
DOUBLE BOX CULVERT LAYOUT**
CLEAR SPAN 2 x 9' CLEAR HEIGHT 4'
MAXIMUM FILL 5'

PROJECT: IM-8-029(133)078
STATION: 4533+65.00
CASS COUNTY

DATE: 08/07/14 Terrence R. Udland
BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	55

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new double barrel 9' x 4' x 104'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

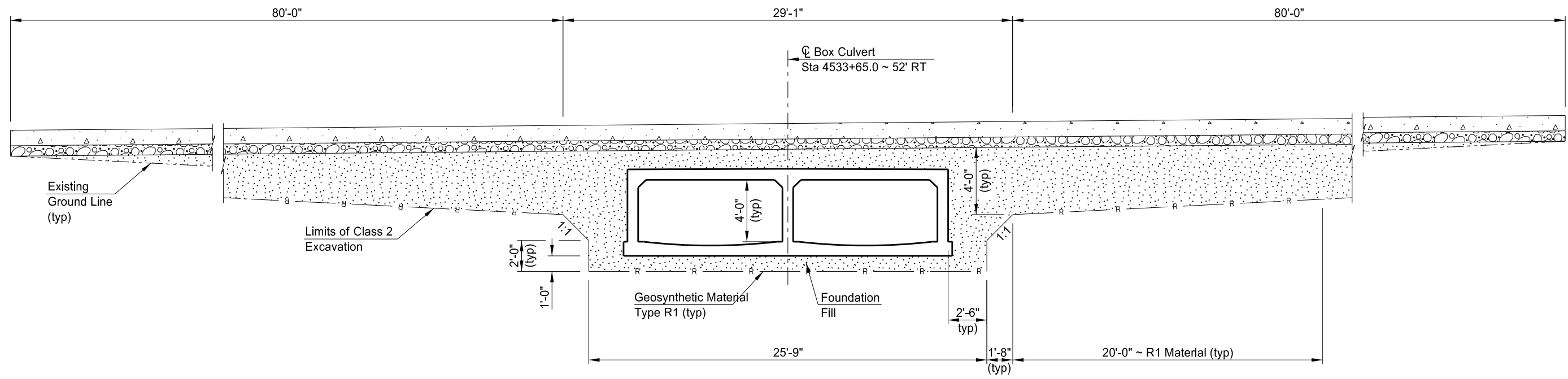
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	56



(SHOWING SECTION ALONG CL ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

NOTE:

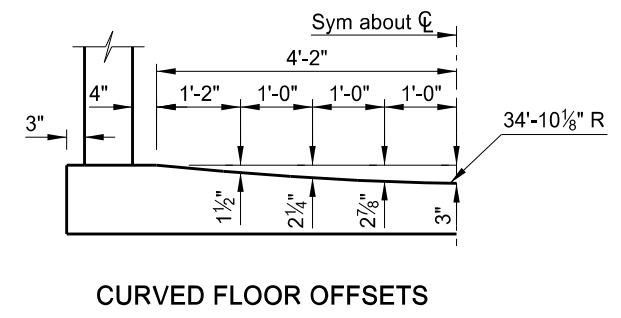
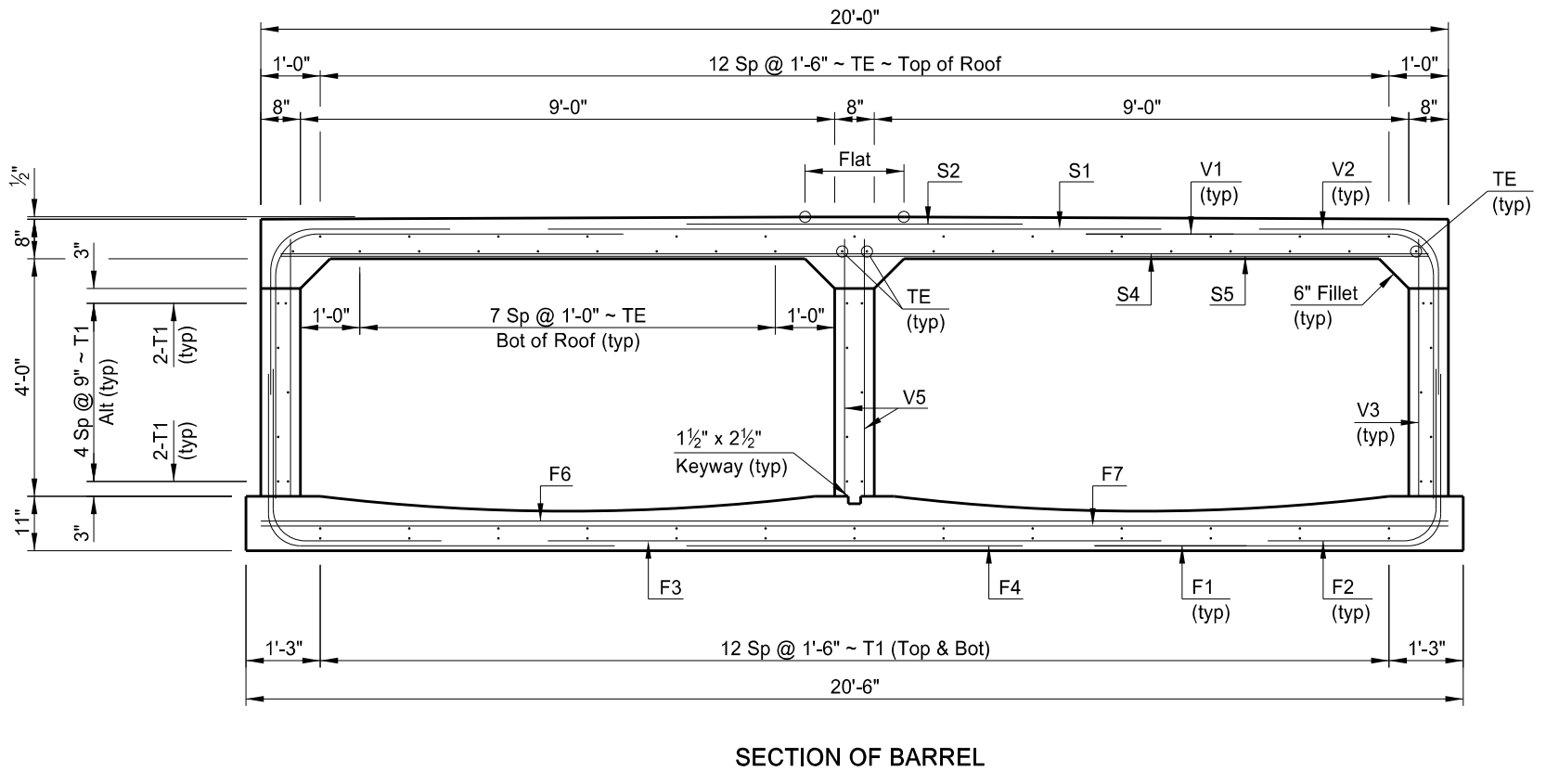
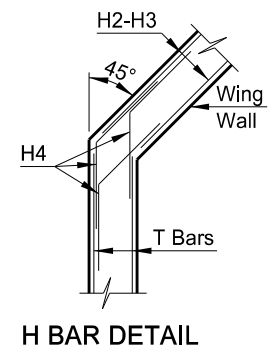
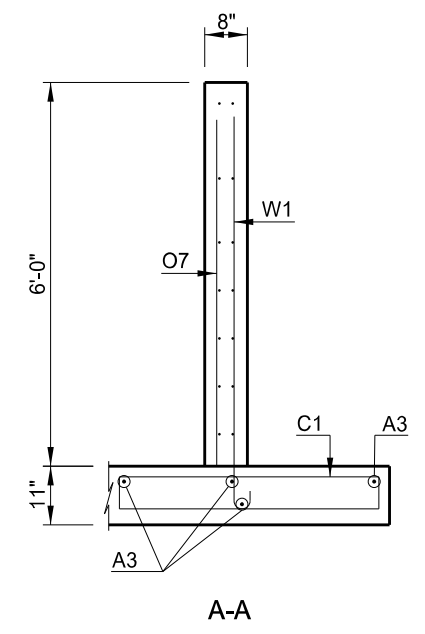
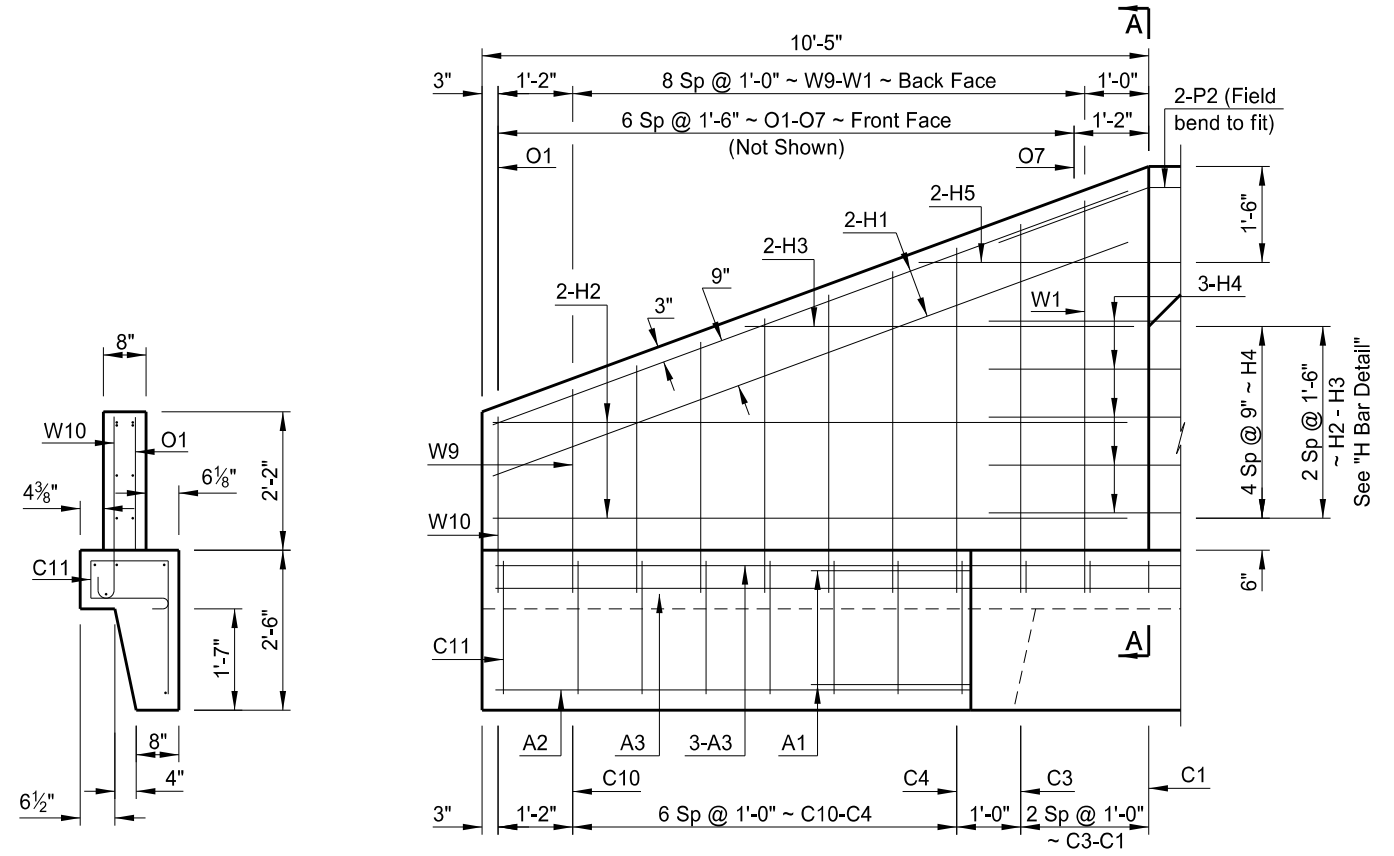
The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of CL Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

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COUNTY DRAIN 22
 EXCAVATION & FOUNDATION
 FILL DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	57

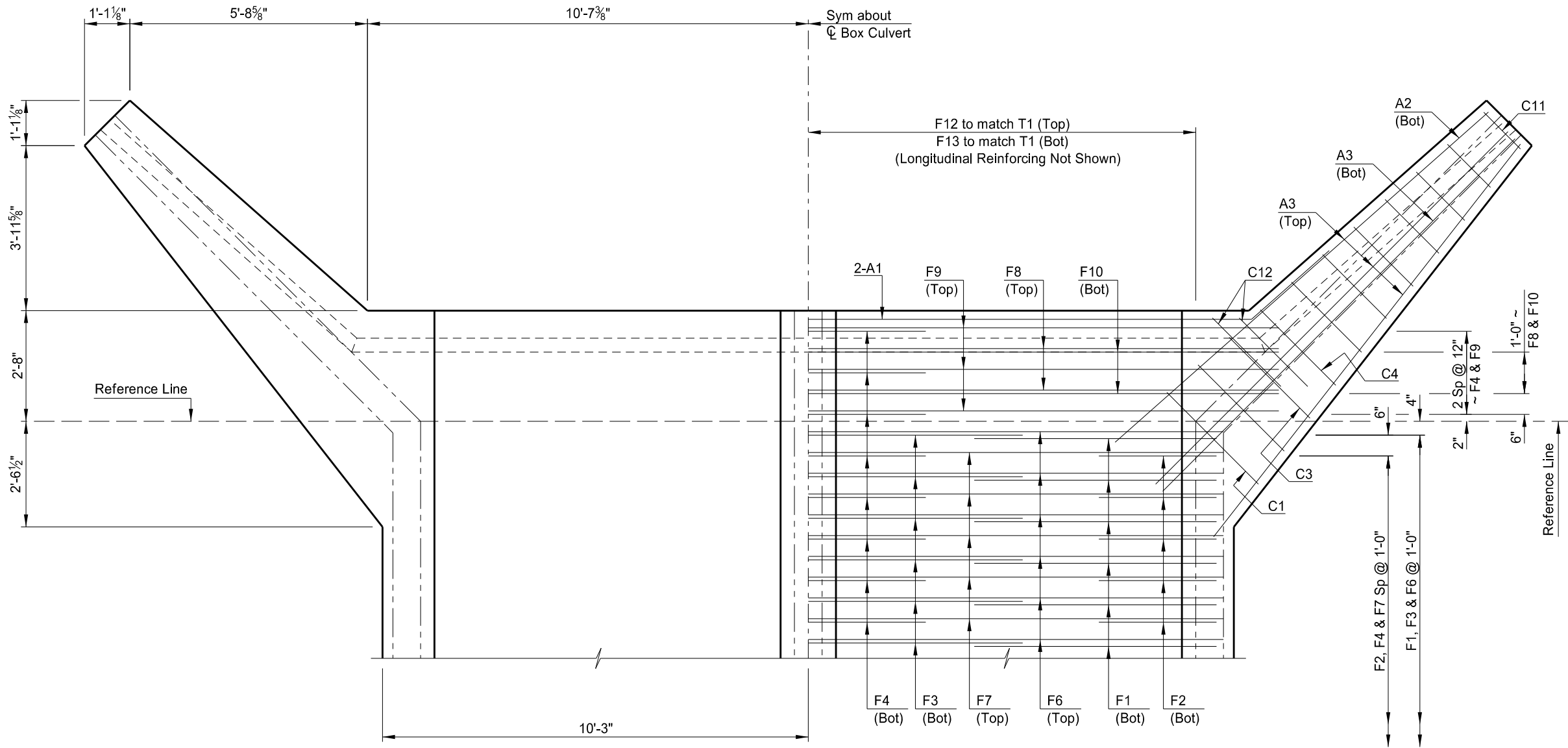


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COUNTY DRAIN 22

BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	58



(SHOWING DIMENSIONS)

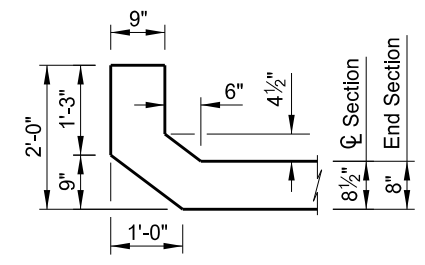
(SHOWING REINFORCING)

FLOOR PLAN

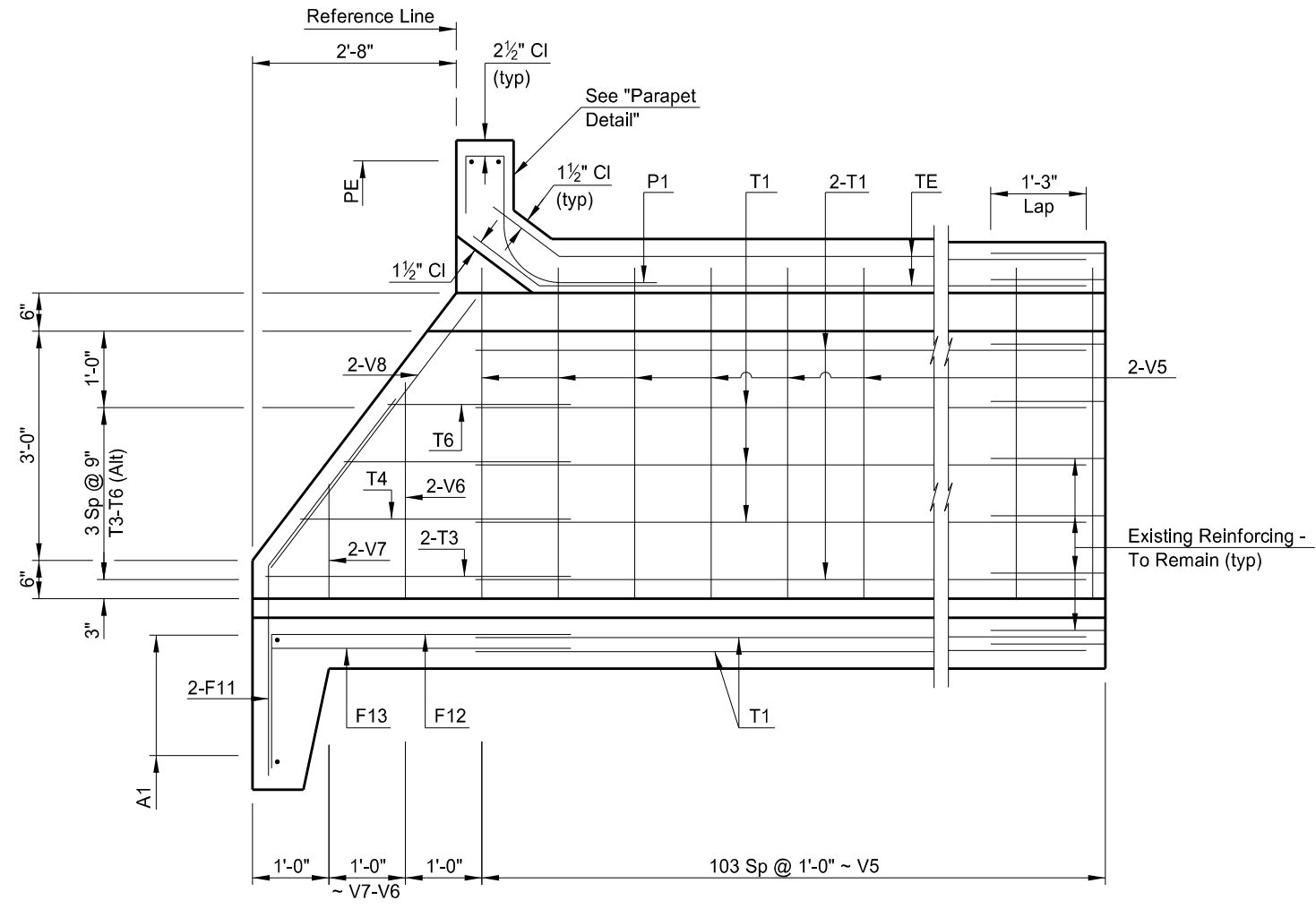
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COUNTY DRAIN 22
FLOOR DETAILS

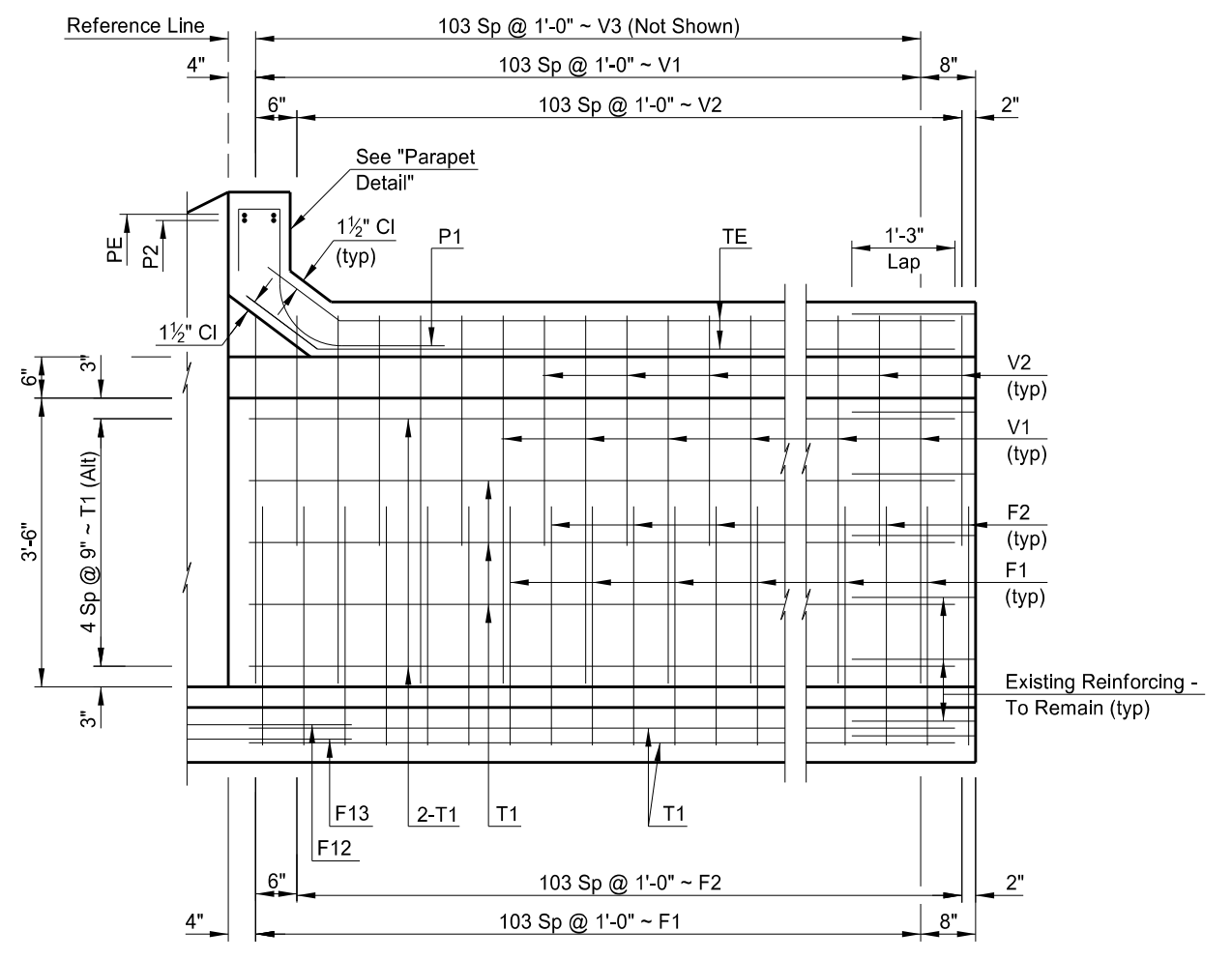
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	59



PARAPET DETAIL



INNER WALL



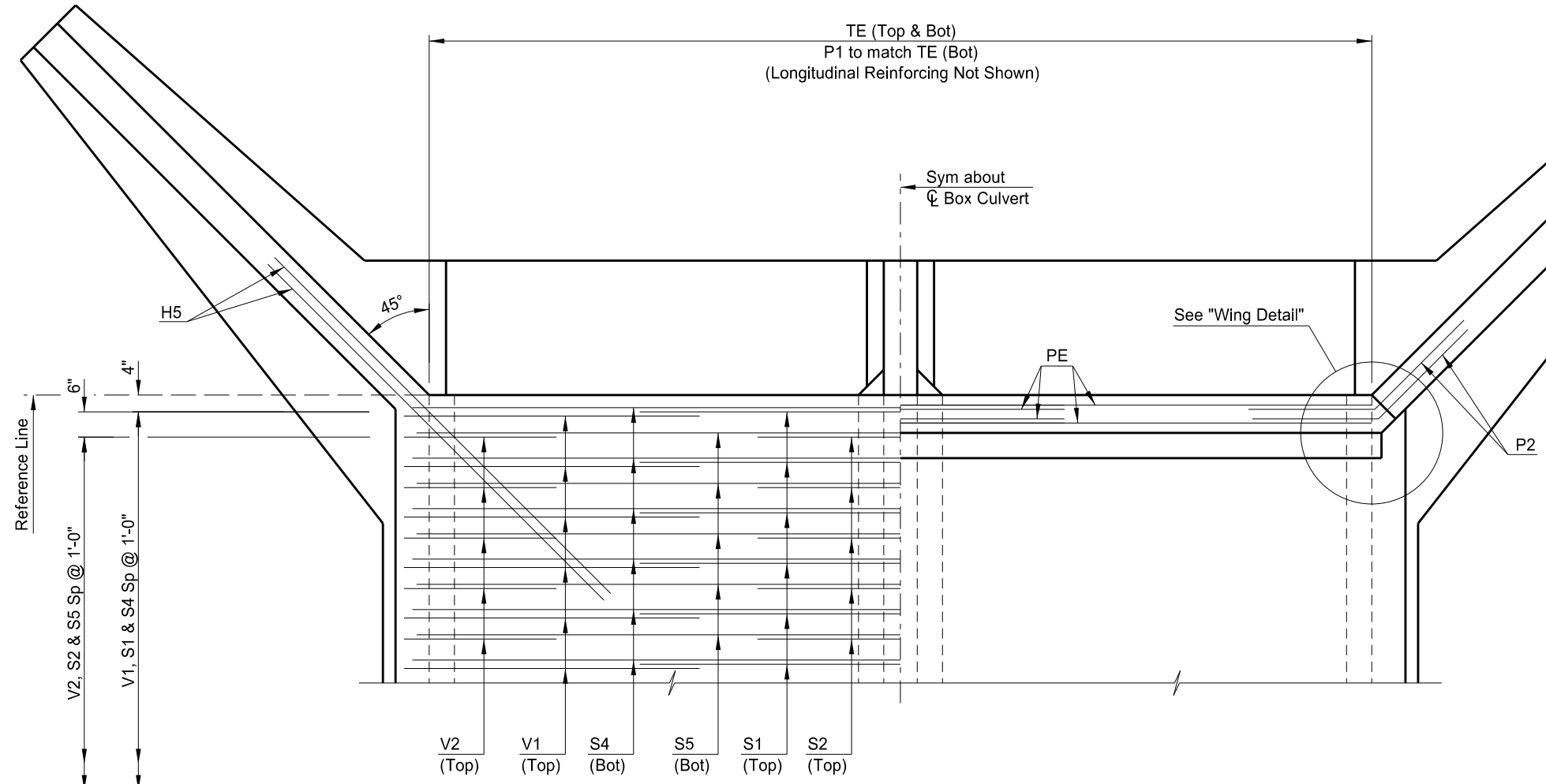
OUTER WALL

LONGITUDINAL SECTIONS

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COUNTY DRAIN 22
WALL DETAILS & PARAPET DETAIL

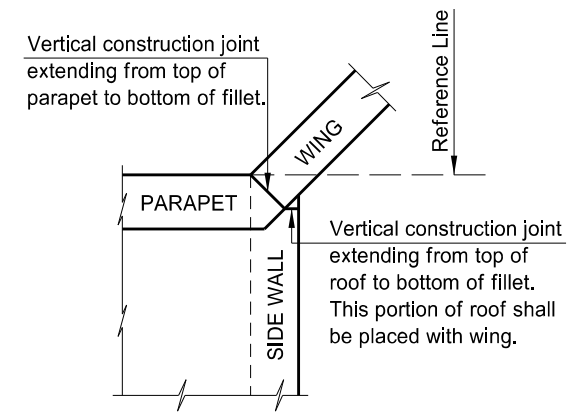
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	60



(SHOWING ROOF REINFORCING)

(SHOWING PARAPET REINFORCING)

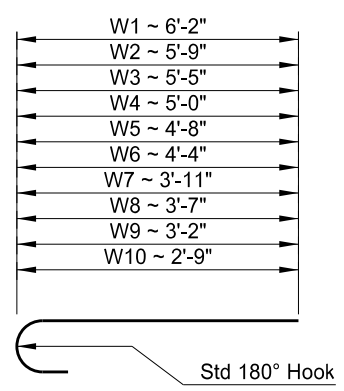
ROOF PLAN



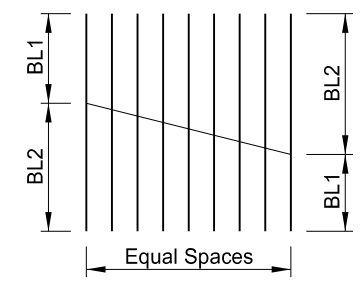
WING DETAIL

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COUNTY DRAIN 22
ROOF DETAILS



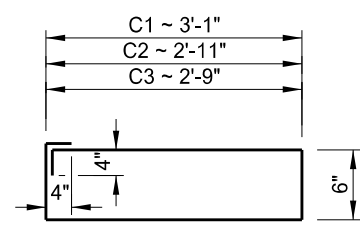
W1-W10



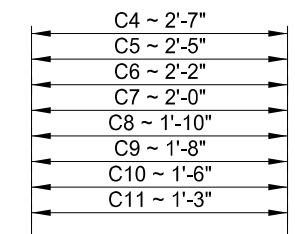
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O7	26'-3"	2'-1"	5'-5"	6
T4-T6	9'-0"	2'-5"	3'-7"	2

BAR CUTTING DETAILS



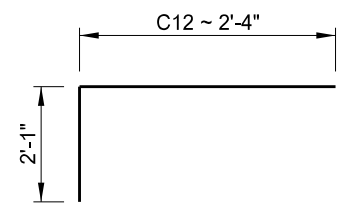
C1 - C3



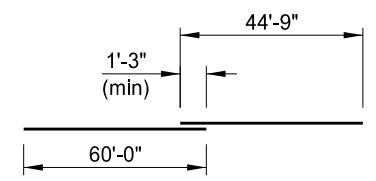
C4 - C11



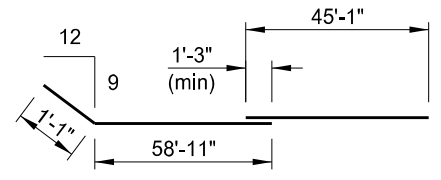
C4 - C11



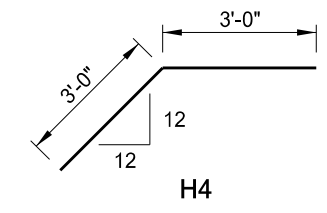
C12



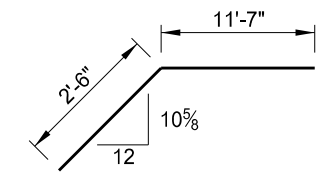
T1



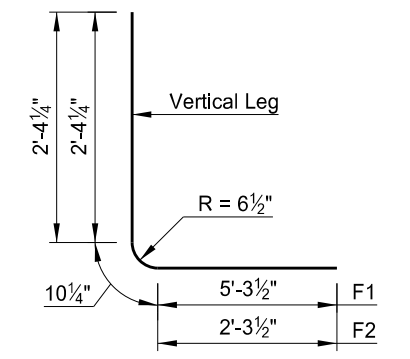
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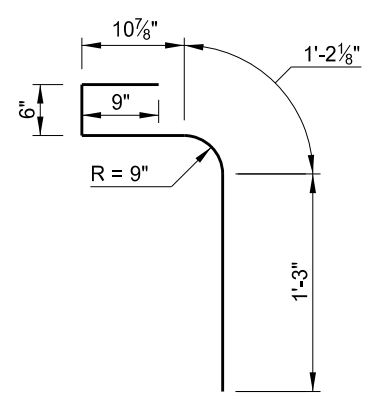
H4



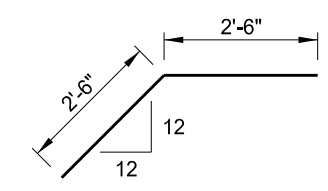
A1



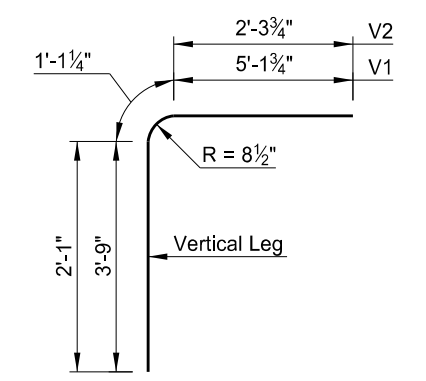
F1 & F2



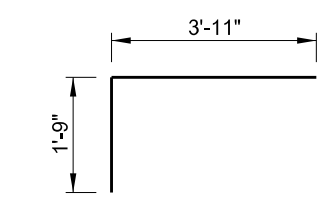
P1



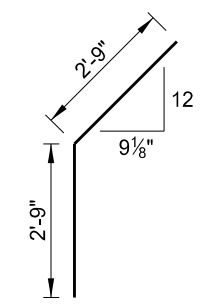
P2



V1 & V2



F12

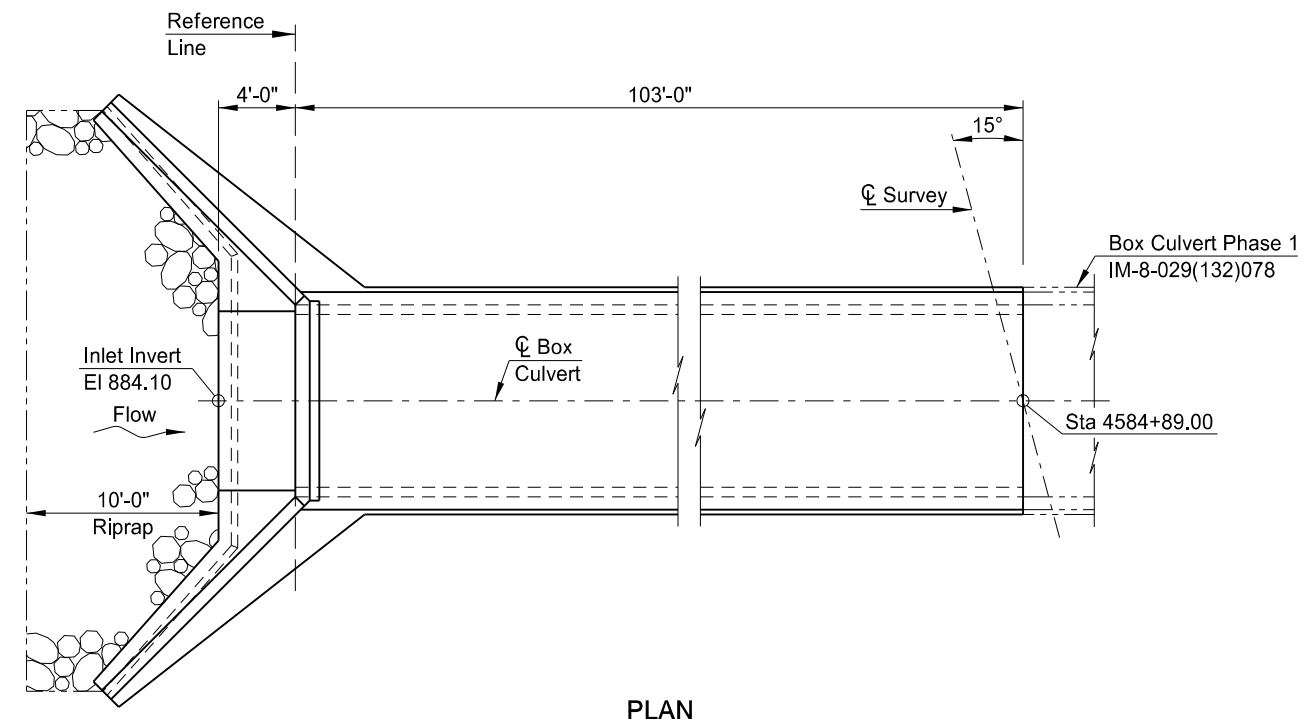


F11

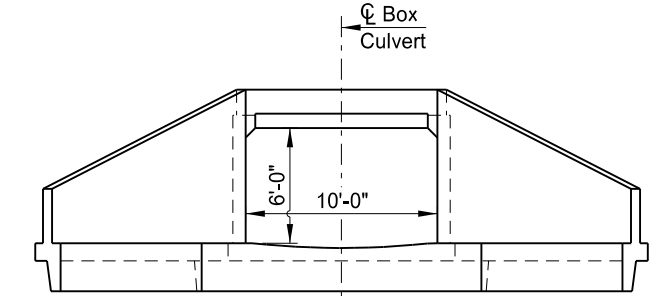
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COUNTY DRAIN 22
BAR DETAIL

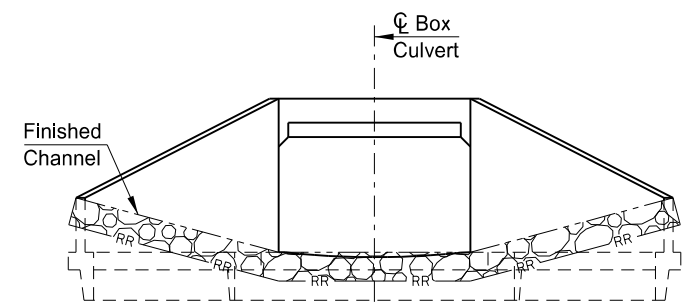
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	63



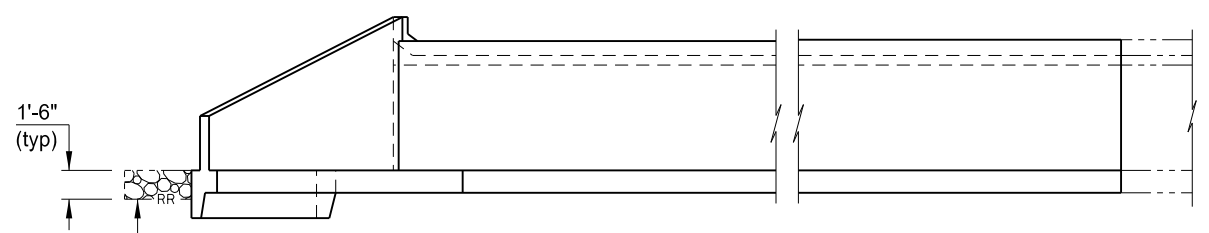
PLAN



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW



ELEVATION

HYDRAULIC DATA:

Drainage Area	4.0	sq mi
Stream Gradient	0.002462	ft/ft
Design Frequency	50	yr
Design Discharge	321	cfs
Design Headwater Stage	891.2	ft
Design Tailwater Stage	890.3	ft
Velocity Through Bridge	5.4	fps
100-Year Frequency Discharge	383	cfs
100-Year Frequency Headwater	892.3	ft
Overtopping Stage	892.5	ft
Overtopping Discharge	405	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,090
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	15
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	105.7
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	18,813
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	380
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	30

DESIGN STRENGTHS:

f_c = 3,000 psi ~ Class AE-3 Concrete
f_y = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

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SPECIAL PROVISION	
SP 4(14)	MIGRATORY BIRD TREATY ACT
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
COUNTY DRAIN 32	
REINFORCED CONCRETE SINGLE BOX CULVERT LAYOUT	
CLEAR SPAN 1 x 10' CLEAR HEIGHT 6' MAXIMUM FILL 5'	
PROJECT: IM-8-029(133)078 STATION: 4584+89.00 CASS COUNTY	
DATE	BRIDGE ENGINEER
08/07/14	Terrence R. Udland

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	64

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new single barrel 10' x 6' x 103'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

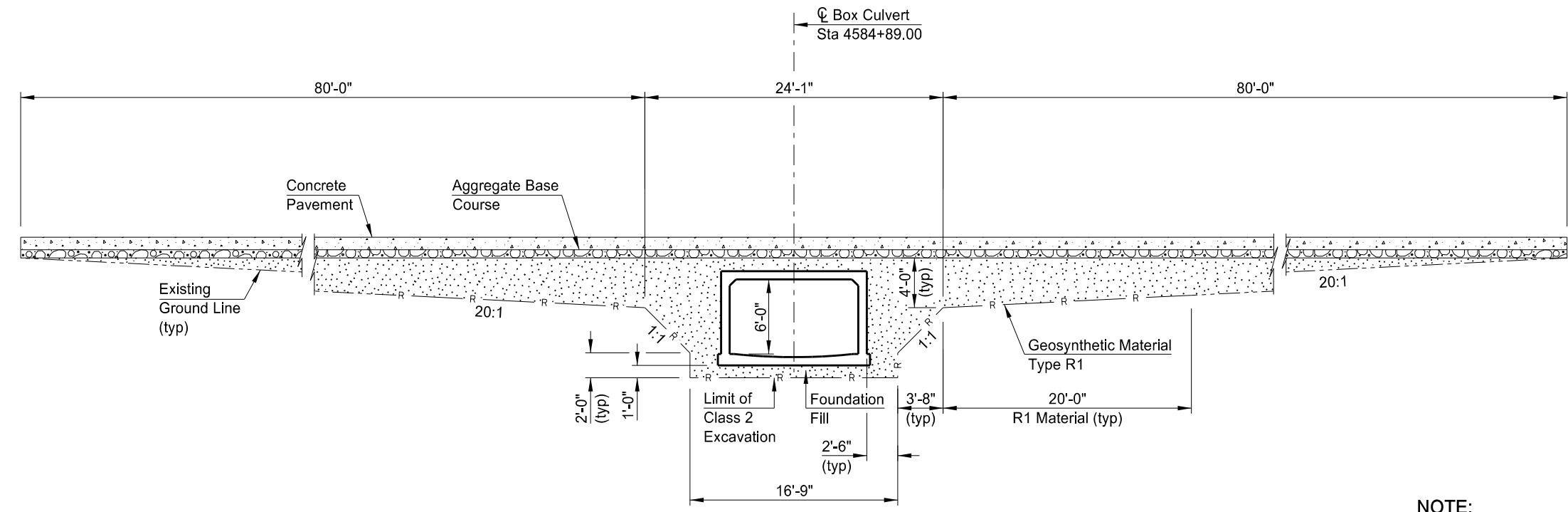
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	65



(SHOWING SECTION ALONG ϕ ROADWAY)
**FABRIC PLACEMENT AND FOUNDATION FILL
 THROUGH EXISTING EMBANKMENT**

NOTE:

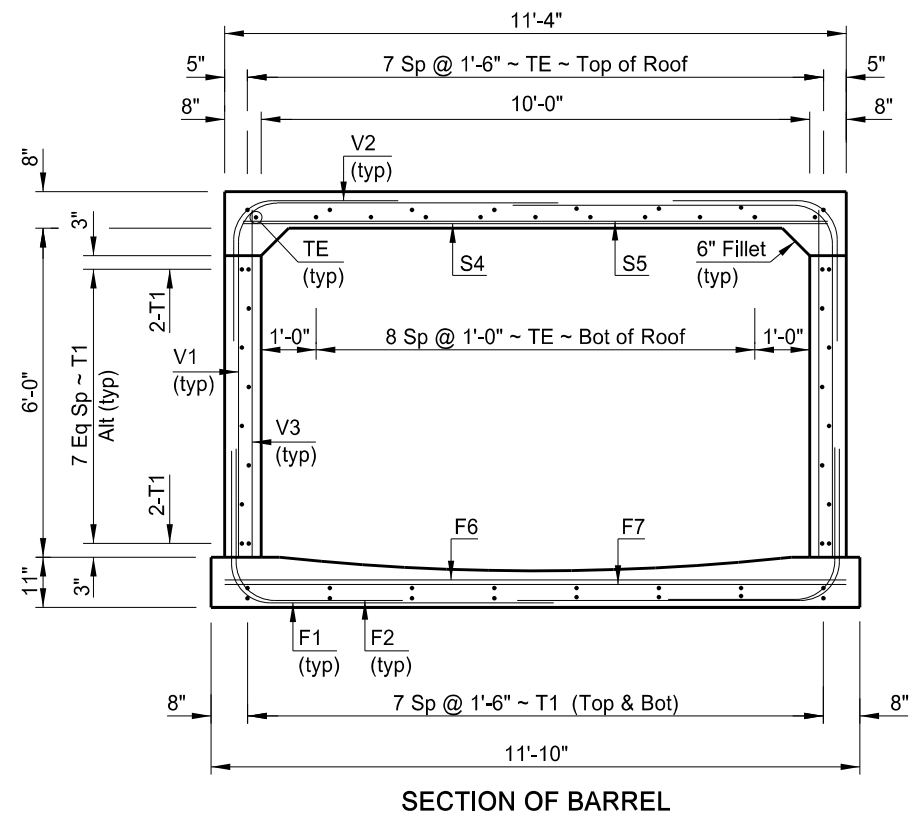
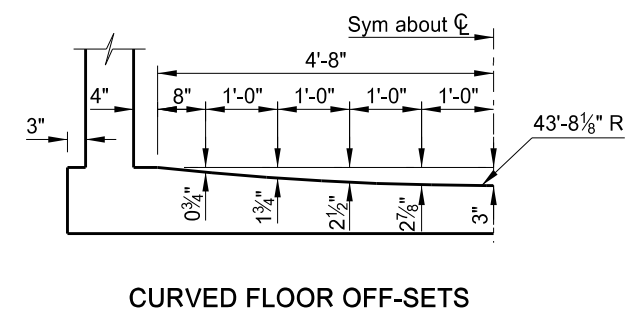
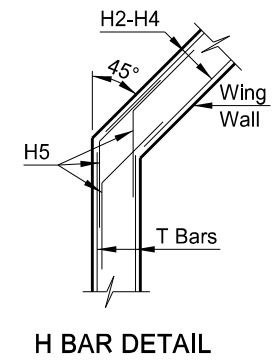
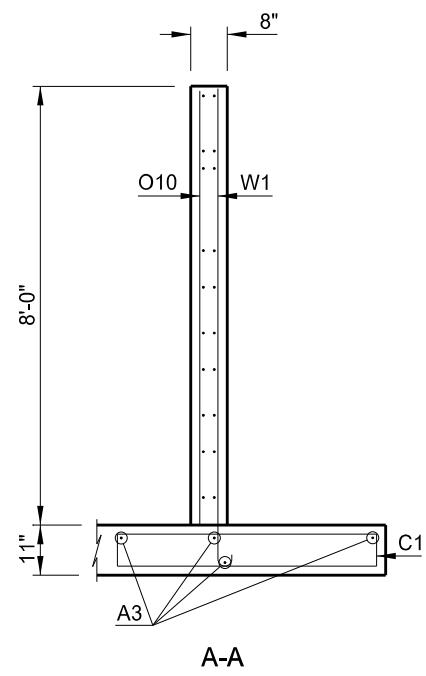
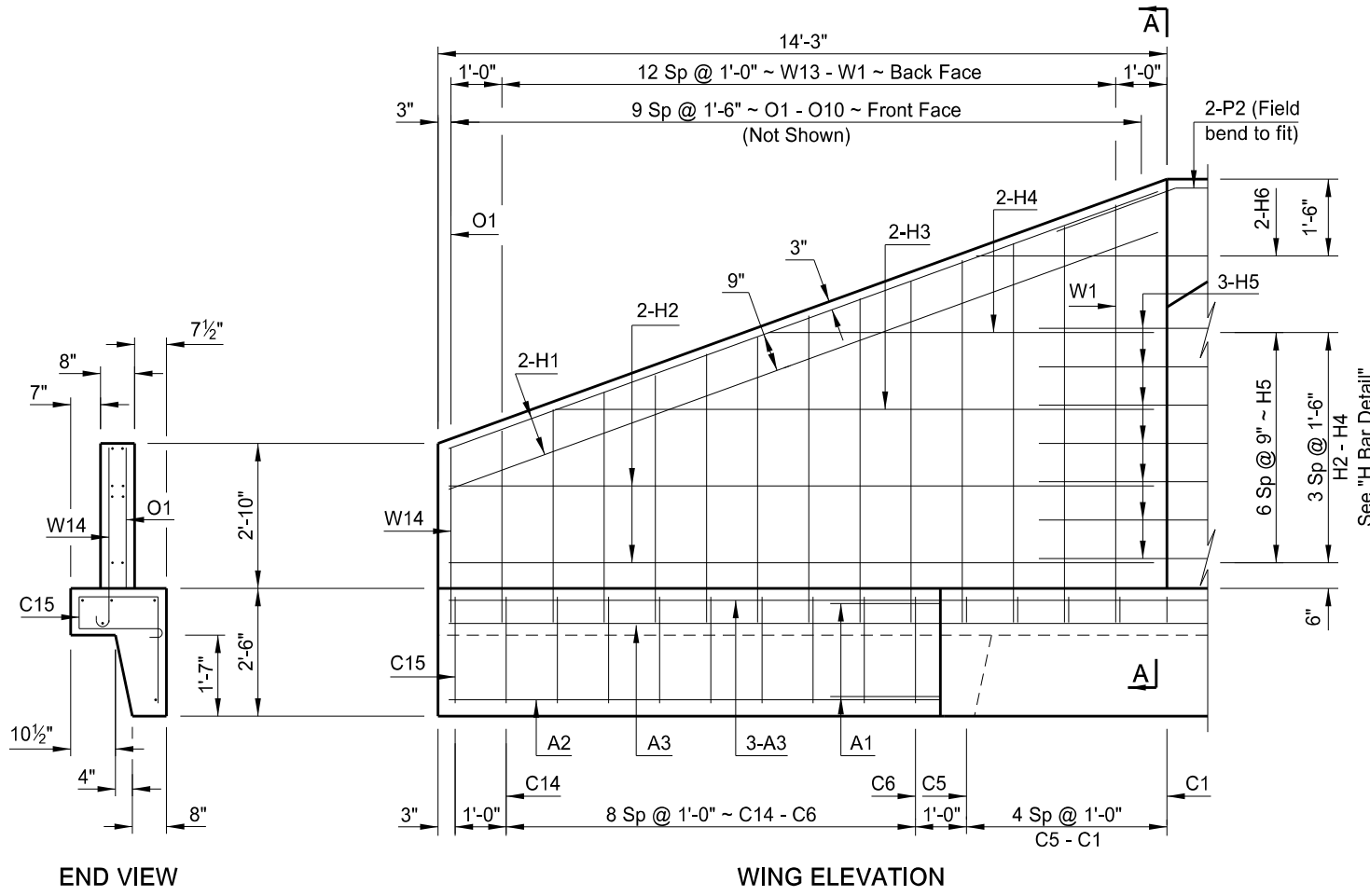
The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of ϕ Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

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COUNTY DRAIN 32
 EXCAVATION & FOUNDATION FILL DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	66

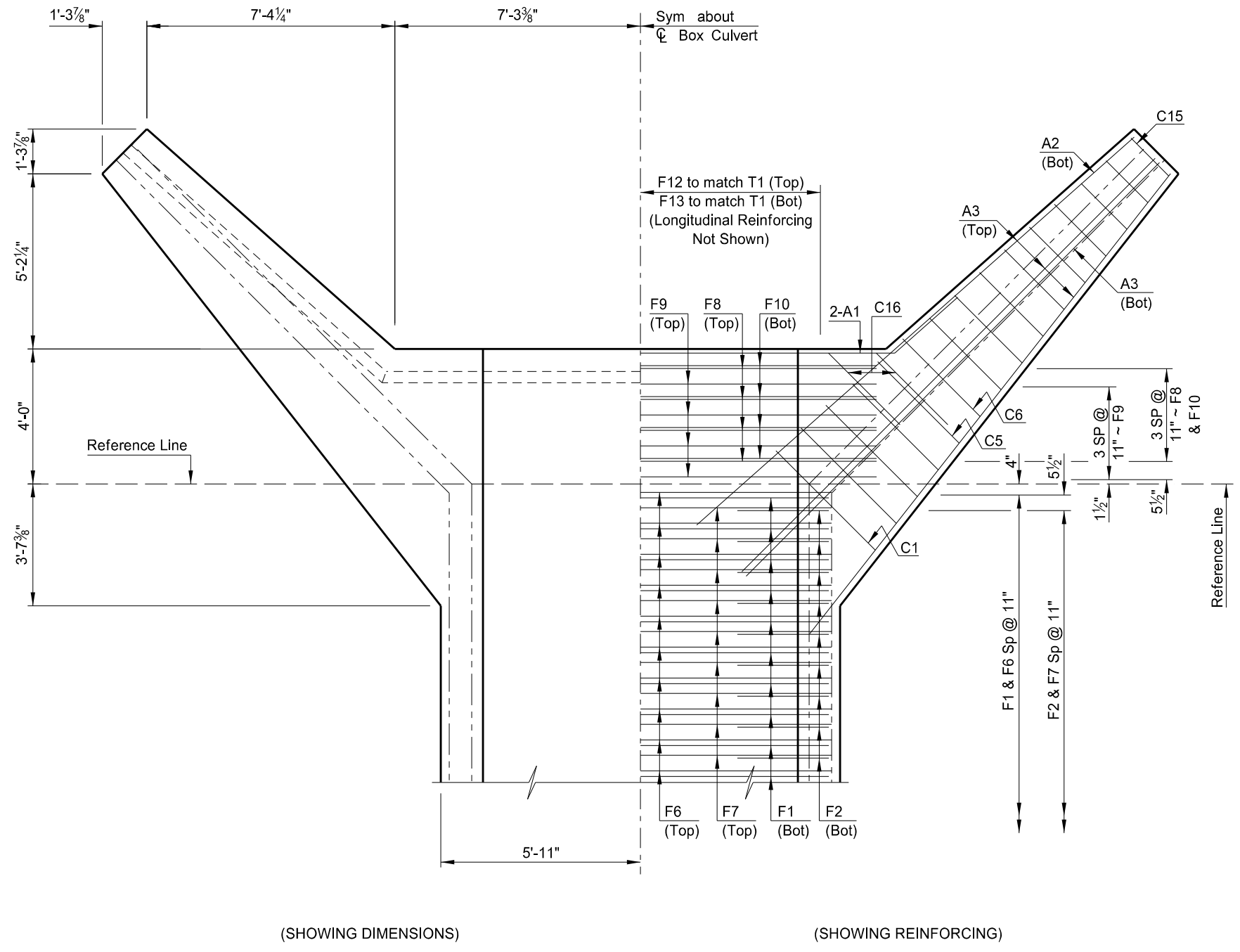


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COUNTY DRAIN 32

BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	67



(SHOWING DIMENSIONS)

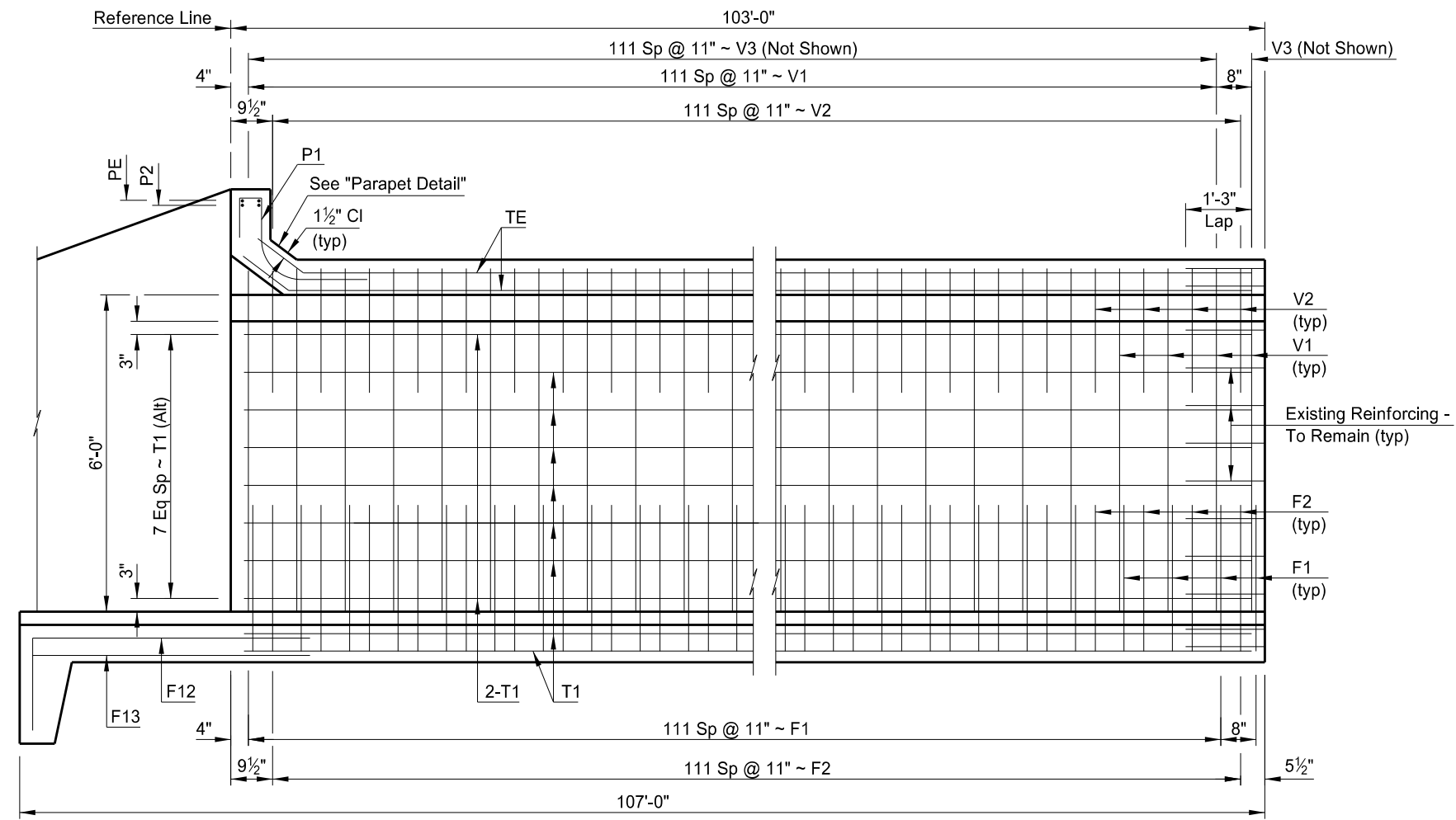
(SHOWING REINFORCING)

FLOOR PLAN

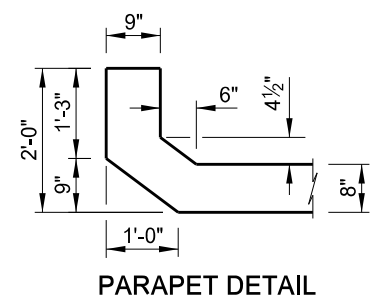
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COUNTY DRAIN 32
FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	68



LONGITUDINAL SECTION

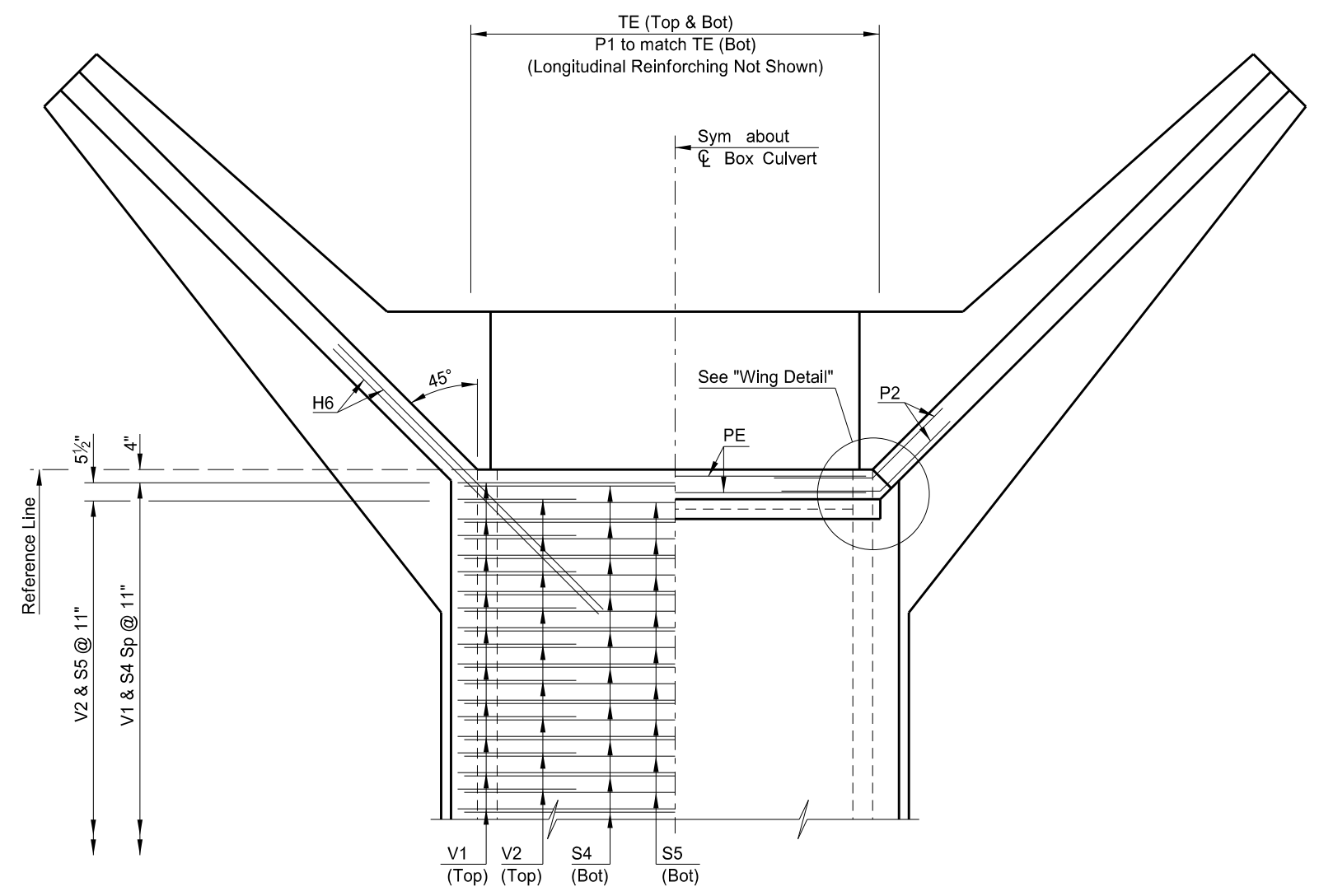


PARAPET DETAIL

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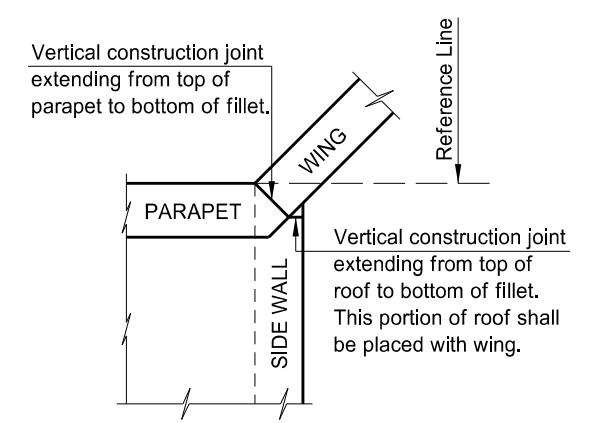
COUNTY DRAIN 32
WALL DETAIL & PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	69



(SHOWING ROOF REINFORCING) (SHOWING PARAPET REINFORCING)

ROOF PLAN



WING DETAIL

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COUNTY DRAIN 32
ROOF DETAILS

BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	5	2	8'-9"	BENT	V1	4	226	12'-0"	BENT
W2	5	2	8'-4"	BENT	V2	5	224	5'-3"	BENT
W3	4	2	7'-11"	BENT	V3	4	226	6'-4"	STR.
W4	4	2	7'-7"	BENT					
W5	4	2	7'-2"	BENT	F1	4	226	8'-4"	BENT
W6	4	2	6'-10"	BENT	F2	5	224	5'-6"	BENT
W7	4	2	6'-6"	BENT	F6	6	113	11'-4"	STR.
W8	4	2	6'-1"	BENT	F7	6	112	11'-4"	STR.
W9	4	2	5'-9"	BENT					
W10	4	2	5'-4"	BENT	S4	6	113	10'-8"	STR.
W11	4	2	5'-0"	BENT	S5	5	112	10'-8"	STR.
W12	4	2	4'-8"	BENT					
W13	4	2	4'-3"	BENT	T1	4	36	103'-9"	STR.
W14	4	2	3'-11"	BENT	TE	4	19	104'-1"	BENT
C1	4	2	10'-0"	BENT					
C2	4	2	9'-8"	BENT					
C3	4	2	9'-4"	BENT					
C4	4	2	8'-10"	BENT					
C5	4	2	8'-6"	BENT					
C6	4	2	9'-7"	BENT					
C7	4	2	9'-1"	BENT					
C8	4	2	8'-9"	BENT					
C9	4	2	8'-5"	BENT					
C10	4	2	8'-1"	BENT					
C11	4	2	7'-9"	BENT					
C12	4	2	7'-5"	BENT					
C13	4	2	6'-11"	BENT					
C14	4	2	6'-7"	BENT					
C15	4	2	6'-3"	BENT					
C16	4	4	5'-1"	BENT					
H1	6	8	14'-8"	STR.					
H2	4	8	13'-9"	STR.					
H3	4	4	11'-8"	STR.					
H4	4	4	7'-6"	STR.					
H5	4	42	6'-0"	BENT					
H6	6	4	9'-6"	STR.					
O1-O10	4	2 SETS	52'-1"	STR.					
A1	6	4	10'-9"	BENT					
A2	6	2	9'-10"	STR.					
A3	6	8	17'-4"	STR.					
P1	4	11	4'-7"	BENT					
P2	6	4	5'-0"	BENT					
PE	6	2	9'-6"	STR.					
F8	6	4	14'-0"	STR.					
F9	6	4	14'-0"	STR.					
F10	4	4	14'-0"	STR.					
F12	4	8	7'-0"	BENT					
F13	4	8	5'-3"	STR.					

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	70

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.

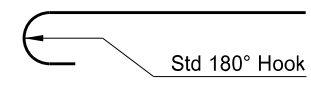
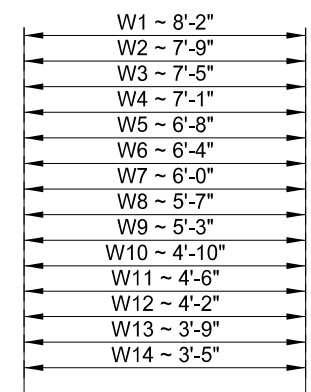
CONCRETE FORMULAS	
ENTIRE FLOOR	"L" x 0.34410 + 5.96743 = 41.4 CY
TWO OUTSIDE WALLS & TWO WINGS	"L" x 0.27160 + 3.73672 = 31.7 CY
ENTIRE ROOF	"L" x 0.31379 + 0.28089 = 32.6 CY
TOTAL	"L" x 0.92949 + 9.98504 = 105.7 CY

QUANTITIES	
CLASS AE-3 CONCRETE	105.7 CY
REINFORCING STEEL	18,813 LBS

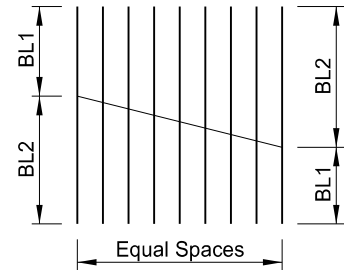
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COUNTY DRAIN 32

REINFORCING BAR LIST



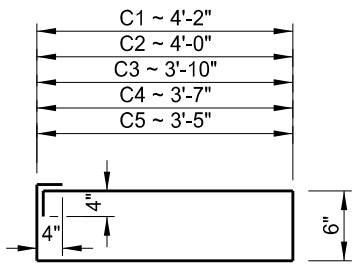
W1 - W14



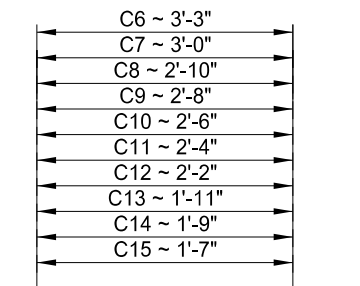
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-10	52'-1"	2'-9"	7'-8"	9

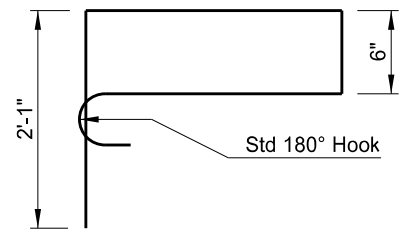
BAR CUTTING DETAILS



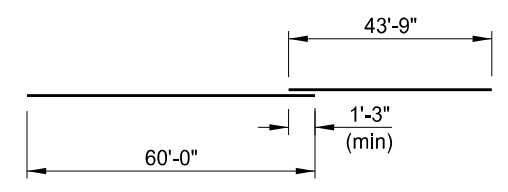
C1 - C5



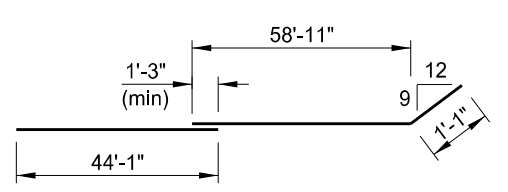
C6 - C15



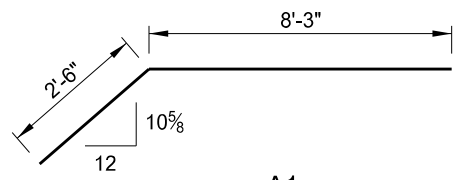
C16



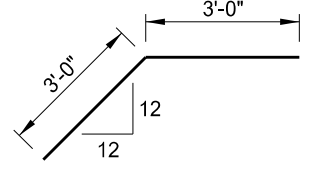
T1



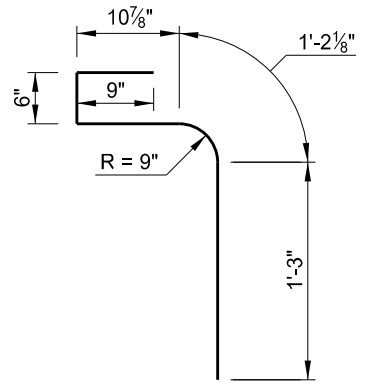
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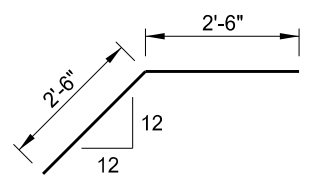
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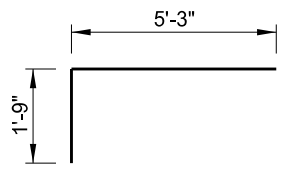
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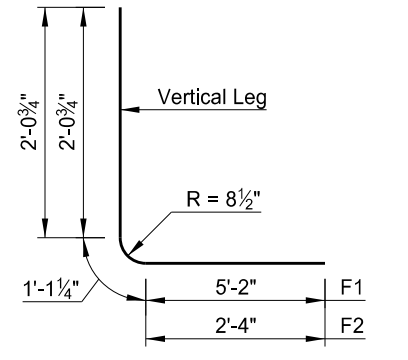
P1



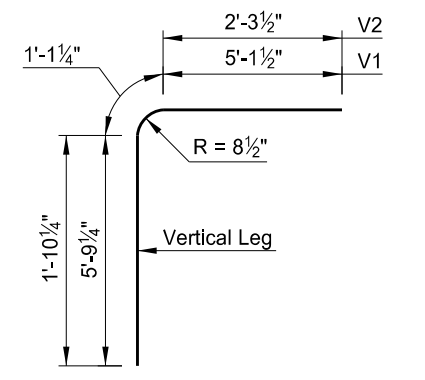
P2



F12



F1 & F2

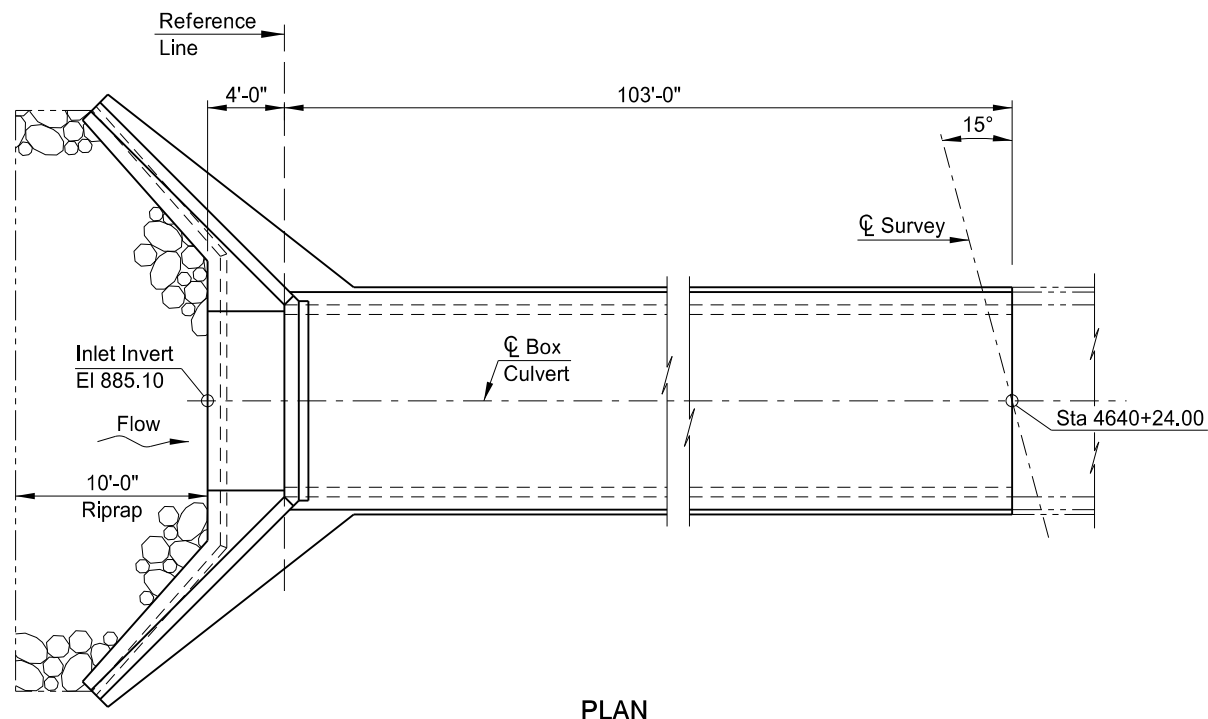


V1 & V2

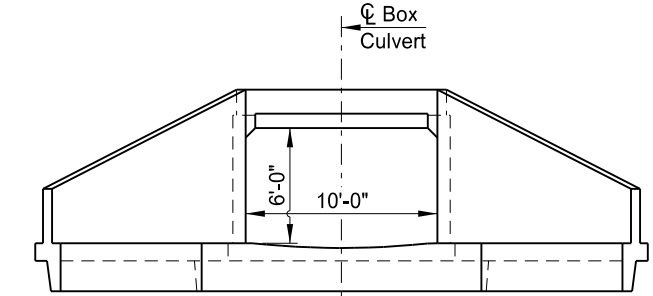
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COUNTY DRAIN 32

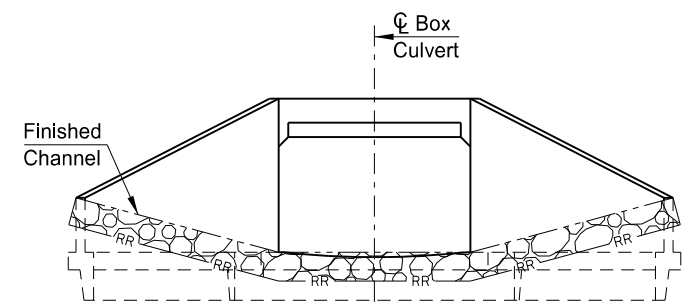
BAR DETAILS



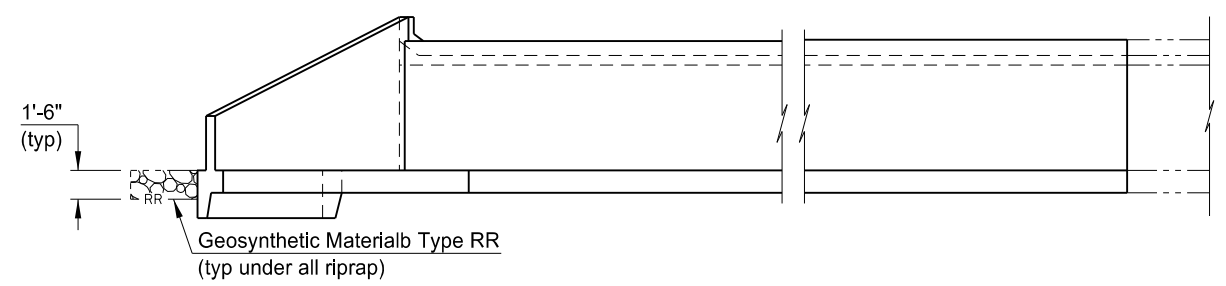
PLAN



(SHOWING DIMENSIONS)
END VIEW



(SHOWING FINISHED SECTION)
END VIEW



ELEVATION

DESIGN STRENGTHS:
 $f'_c = 3,000$ psi ~ Class AE-3 Concrete
 $f_y = 60,000$ psi ~ Reinforcing Steel
 Load & Resistance Factor Design

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HYDRAULIC DATA:

Drainage Area	3.9	sq mi
Stream Gradient	0.001479	ft/ft
Design Frequency	50	yr
Design Discharge	344	cfs
Design Headwater Stage	893.3	ft
Design Tailwater Stage	892.3	ft
Velocity Through Bridge	5.7	fps
100-Year Frequency Discharge	413	cfs
100-Year Frequency Headwater	894.3	ft
Overtopping Stage	894.3	ft
Overtopping Discharge	400	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	1,150
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	15
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	105.7
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	18,813
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	395
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	30

SPECIAL PROVISION	
SP 4(14)	MIGRATORY BIRD TREATY ACT
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
COUNTY DRAIN 19	
REINFORCED CONCRETE SINGLE BOX CULVERT LAYOUT	
CLEAR SPAN 1 x 10' CLEAR HEIGHT 6' MAXIMUM FILL 5'	
IM-8-029(133)078 STATION: 4640+24.00 CASS COUNTY	
08/07/14	Terrence R. Udland
DATE	BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	73

NOTES

100 SCOPE OF WORK: Work at this site consists of building a new single barrel 10' x 6' x 103'-0" reinforced concrete box culvert under the southbound I-29 roadway.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3, "Fine Aggregate."

602 CONCRETE: The following elements of each section shall be cast 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

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

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: The transverse and vertical bars shall be placed nearest the surface. The longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

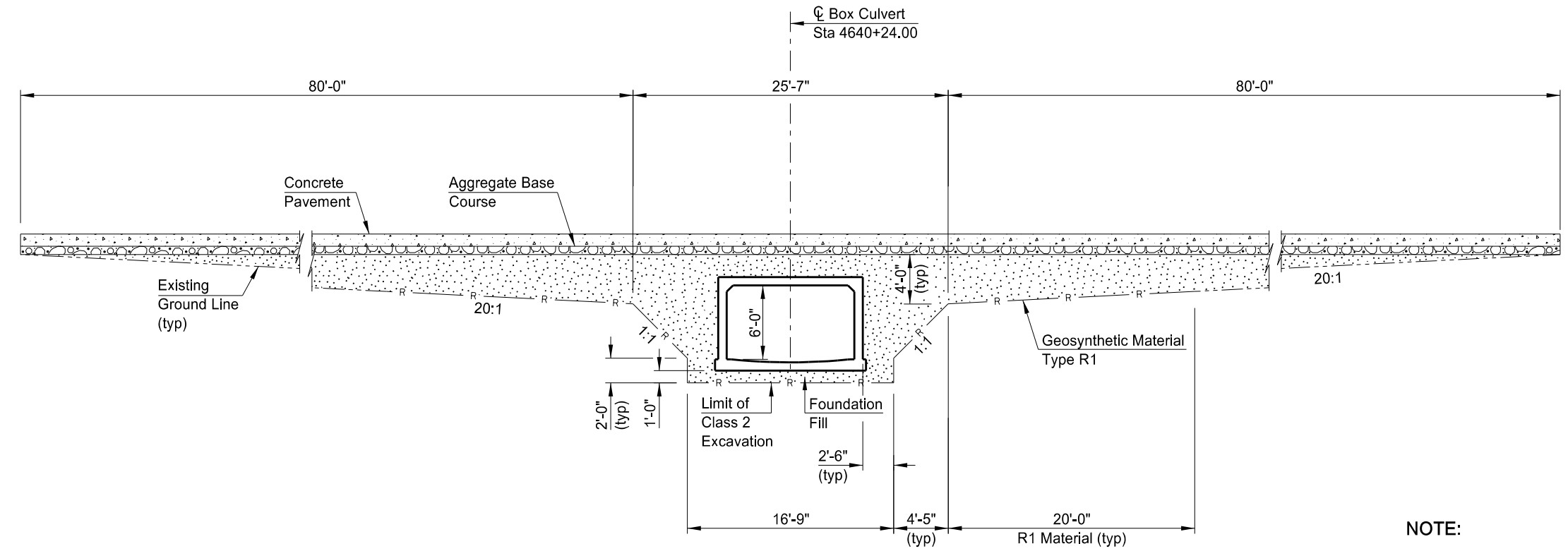
The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2½" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

709 GEOSYNTHETIC MATERIAL – TYPE R1: The Contractor shall install one continuous piece of fabric to meet the required longitudinal length indicated in the plans. If transverse seaming is necessary the seam shall be sewn.

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	74



(SHOWING SECTION ALONG C ROADWAY)

FABRIC PLACEMENT AND FOUNDATION FILL THROUGH EXISTING EMBANKMENT

NOTE:

The minimum depth of foundation fill under the floor shall be 1'-0". All unsound material under the box shall be removed and replaced with foundation fill. The depth required shall be determined by the Engineer.

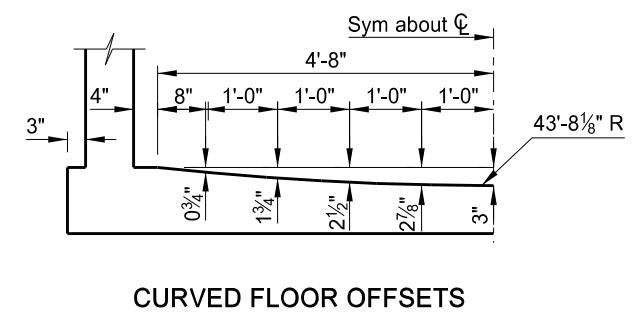
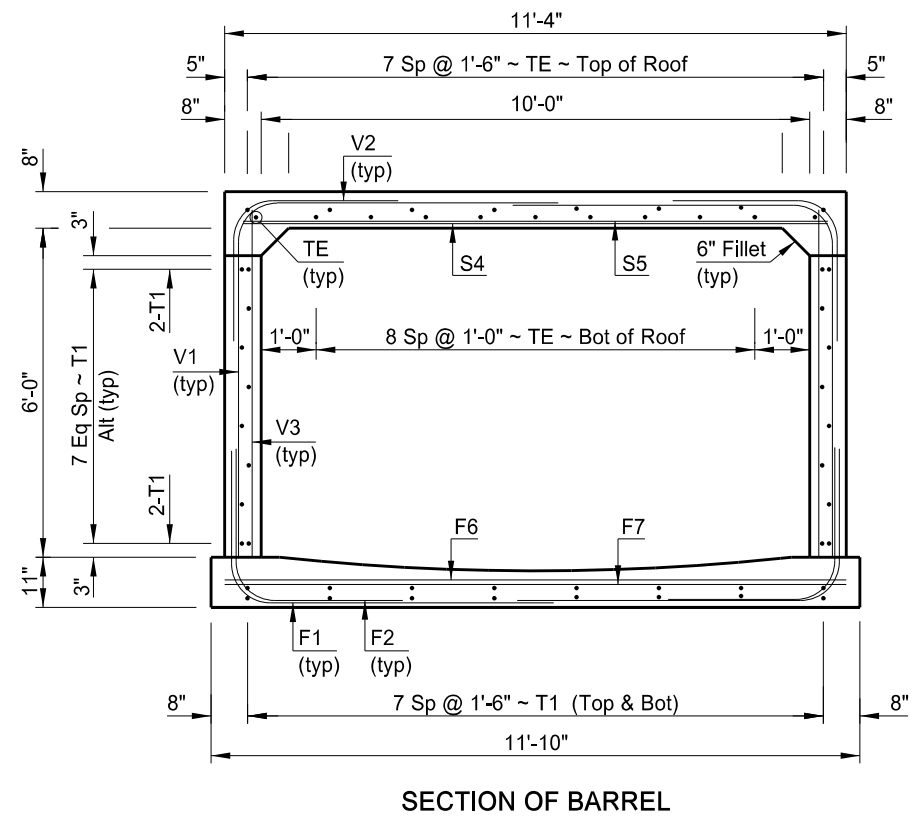
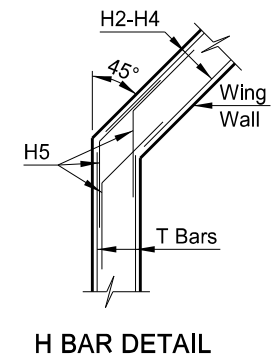
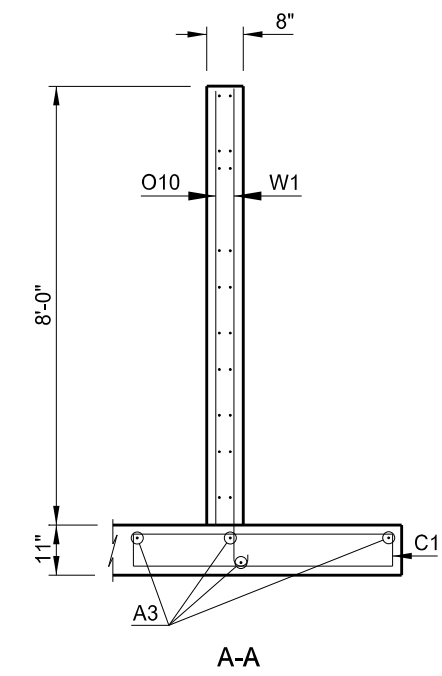
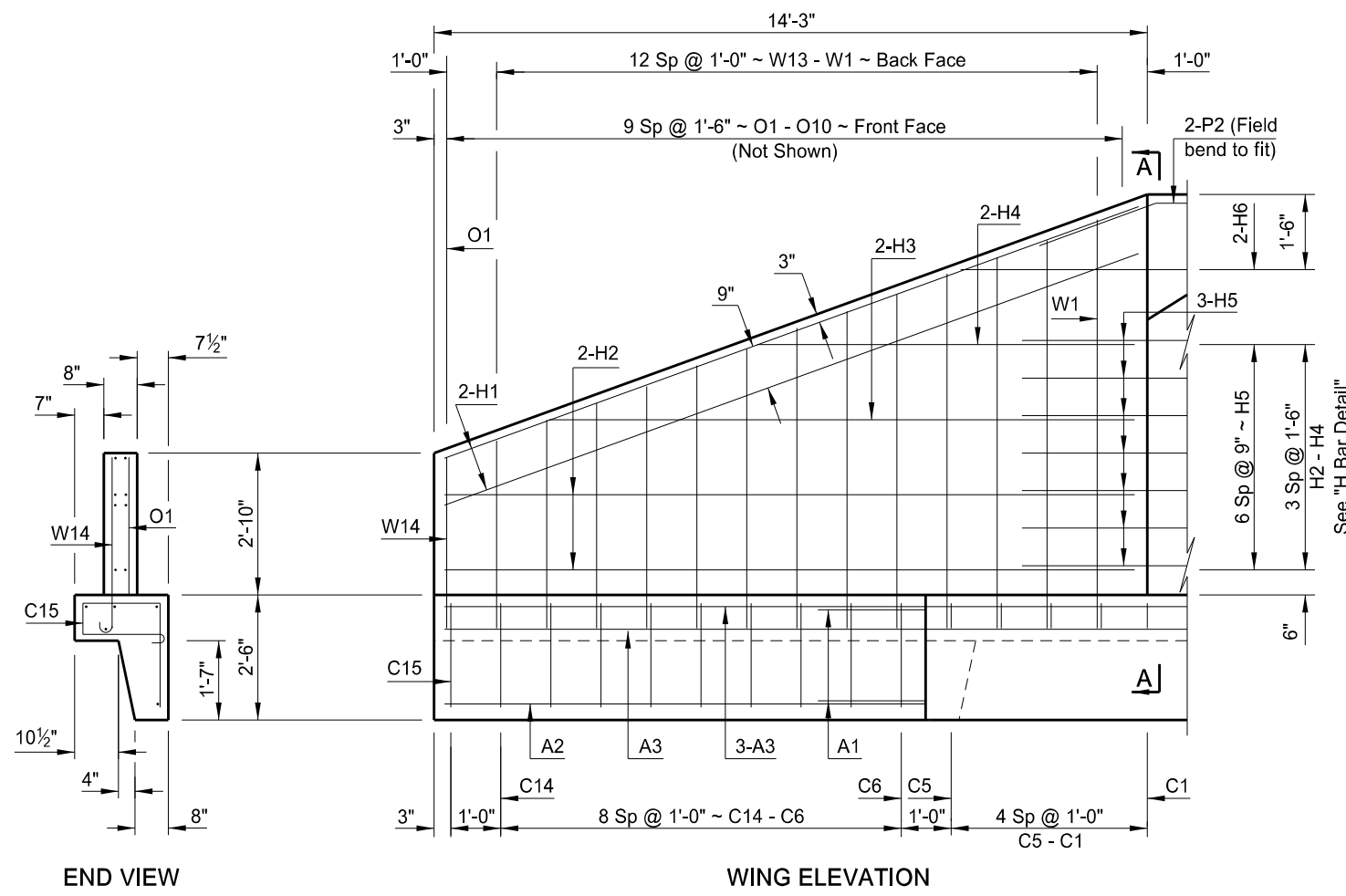
The R1 material and foundation fill shown shall extend 19.5' Lt & 28.5' Rt of C Roadway. Only the foundation fill under the floor shall extend to the end of the apron.

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COUNTY DRAIN 19

EXCAVATION & FOUNDATION FILL DETAIL

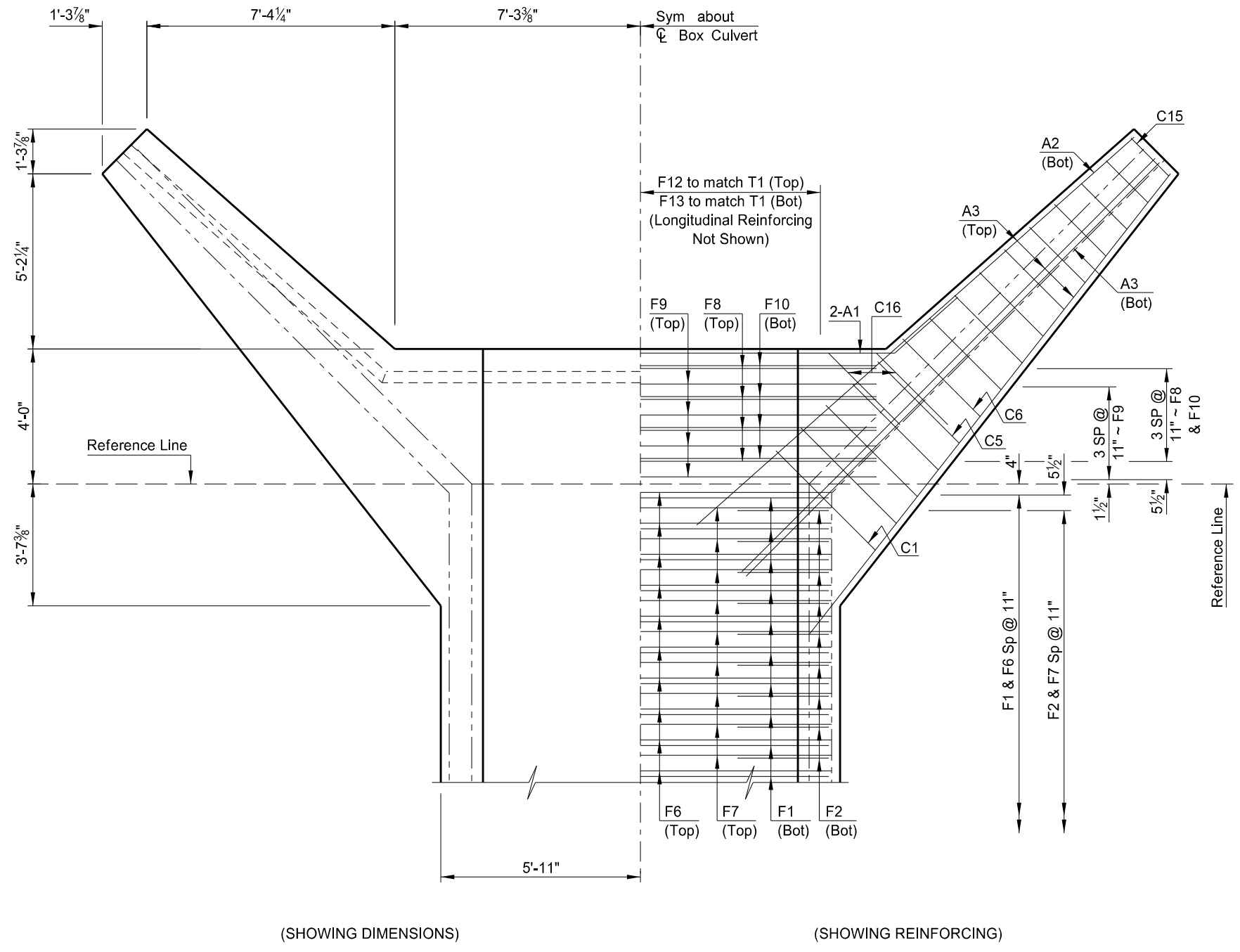
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	75



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COUNTY DRAIN 19
 BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	76



(SHOWING DIMENSIONS)

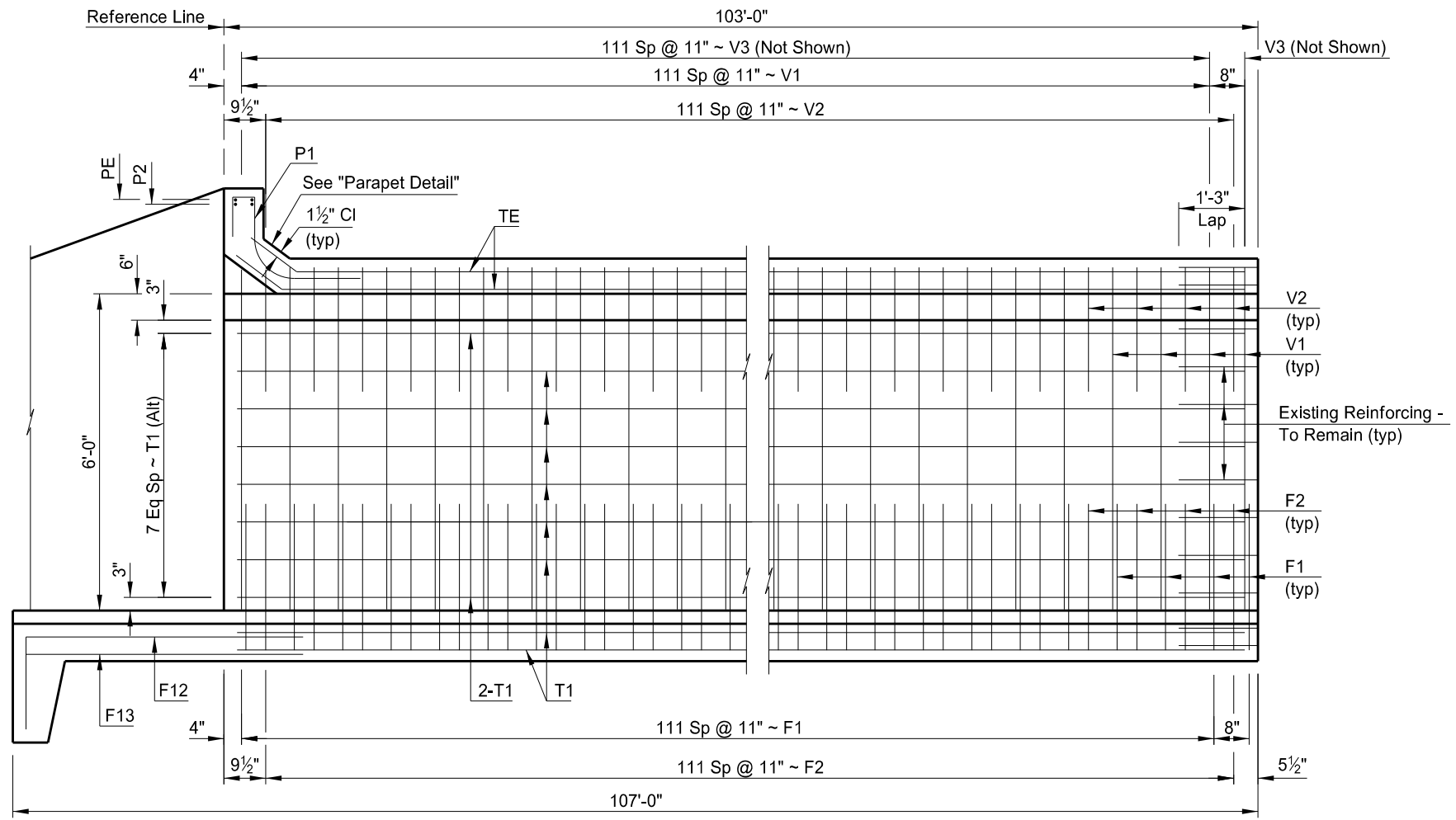
(SHOWING REINFORCING)

FLOOR PLAN

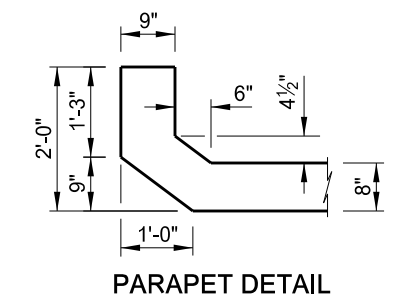
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COUNTY DRAIN 19
FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	77



LONGITUDINAL SECTION

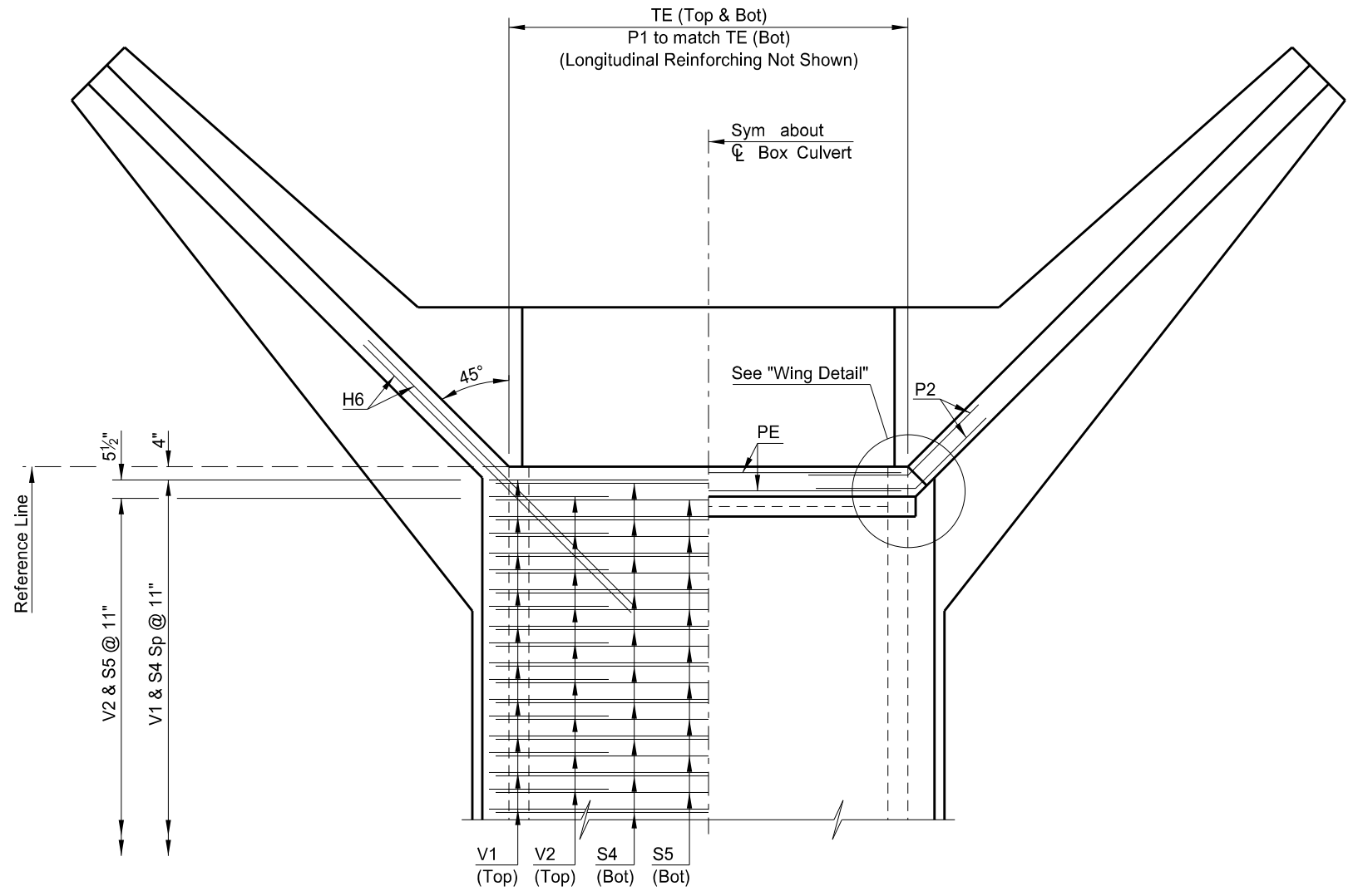


PARAPET DETAIL

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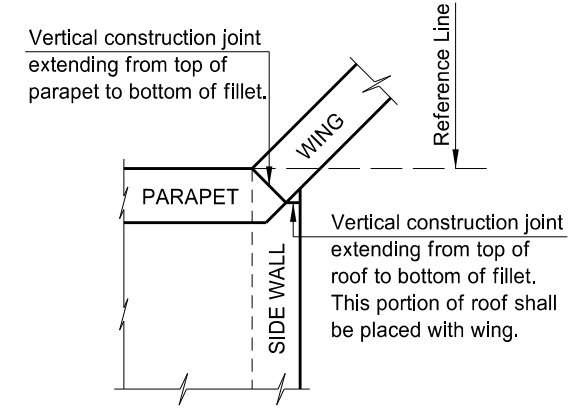
COUNTY DRAIN19
WALL SECTIONS & PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	78



(SHOWING ROOF REINFORCING) (SHOWING PARAPET REINFORCING)

ROOF PLAN



WING DETAIL

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COUNTY DRAIN 19
ROOF DETAILS

BAR LIST (CONSTANT)					BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE
W1	5	2	8'-9"	BENT	V1	4	226	12'-0"	BENT
W2	5	2	8'-4"	BENT	V2	5	224	5'-3"	BENT
W3	4	2	7'-11"	BENT	V3	4	226	6'-4"	STR.
W4	4	2	7'-7"	BENT					
W5	4	2	7'-2"	BENT	F1	4	226	8'-4"	BENT
W6	4	2	6'-10"	BENT	F2	5	224	5'-6"	BENT
W7	4	2	6'-6"	BENT	F6	6	113	11'-4"	STR.
W8	4	2	6'-1"	BENT	F7	6	112	11'-4"	STR.
W9	4	2	5'-9"	BENT					
W10	4	2	5'-4"	BENT	S4	6	113	10'-8"	STR.
W11	4	2	5'-0"	BENT	S5	5	112	10'-8"	STR.
W12	4	2	4'-8"	BENT					
W13	4	2	4'-3"	BENT	T1	4	36	103'-9"	STR.
W14	4	2	3'-11"	BENT	TE	4	19	104'-1"	BENT
C1	4	2	10'-0"	BENT					
C2	4	2	9'-8"	BENT					
C3	4	2	9'-4"	BENT					
C4	4	2	8'-10"	BENT					
C5	4	2	8'-6"	BENT					
C6	4	2	9'-7"	BENT					
C7	4	2	9'-1"	BENT					
C8	4	2	8'-9"	BENT					
C9	4	2	8'-5"	BENT					
C10	4	2	8'-1"	BENT					
C11	4	2	7'-9"	BENT					
C12	4	2	7'-5"	BENT					
C13	4	2	6'-11"	BENT					
C14	4	2	6'-7"	BENT					
C15	4	2	6'-3"	BENT					
C16	4	4	5'-1"	BENT					
H1	6	8	14'-8"	STR.					
H2	4	8	13'-9"	STR.					
H3	4	4	11'-8"	STR.					
H4	4	4	7'-6"	STR.					
H5	4	42	6'-0"	BENT					
H6	6	4	9'-6"	STR.					
O1-O10	4	2 SETS	52'-1"	STR.					
A1	6	4	10'-9"	BENT					
A2	6	2	9'-10"	STR.					
A3	6	8	17'-4"	STR.					
P1	4	11	4'-7"	BENT					
P2	6	4	5'-0"	BENT					
PE	6	2	9'-6"	STR.					
F8	6	4	14'-0"	STR.					
F9	6	4	14'-0"	STR.					
F10	4	4	14'-0"	STR.					
F12	4	8	7'-0"	BENT					
F13	4	8	5'-3"	STR.					

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-8-029(133)078	170	79

NOTE:

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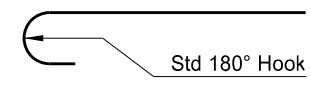
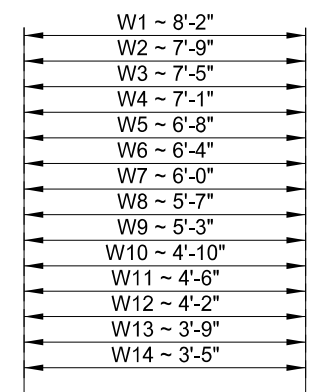
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QUANTITIES	
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REINFORCING STEEL	18,813 LBS

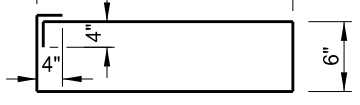
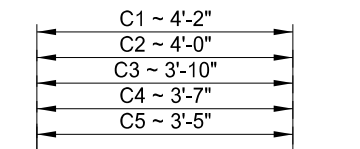
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COUNTY DRAIN 19

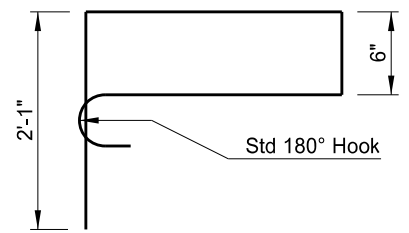
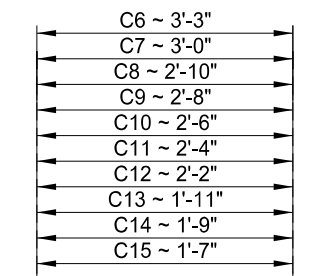
REINFORCING BAR LIST



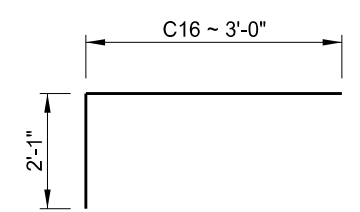
W1 - W14



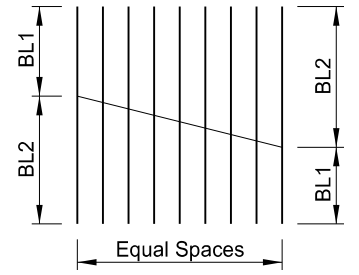
C1 - C5



C6 - C15



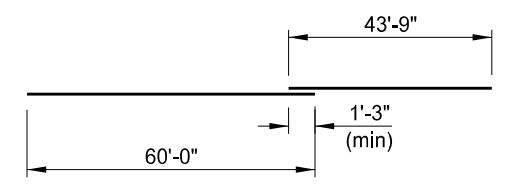
C16



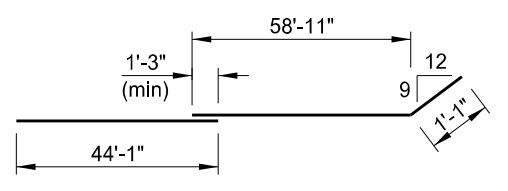
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-10	52'-1"	2'-9"	7'-8"	9

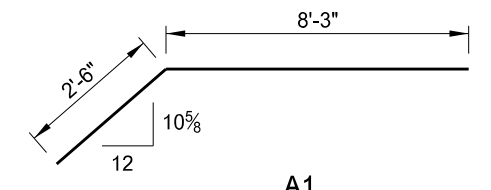
BAR CUTTING DETAILS



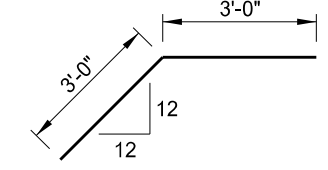
T1



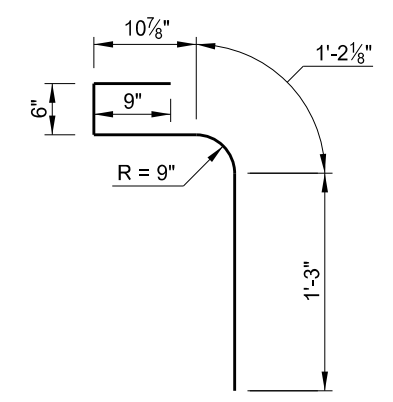
TE



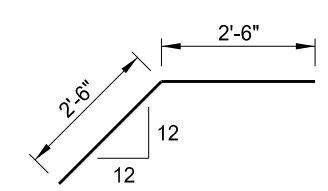
A1



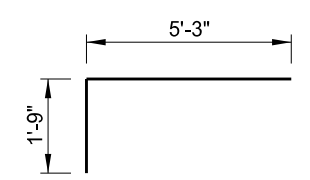
H5



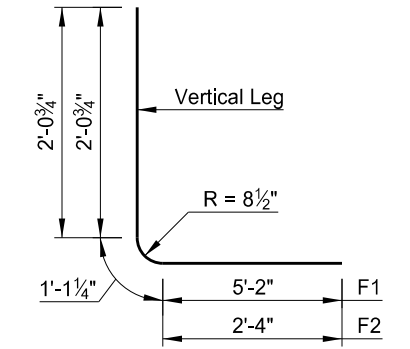
P1



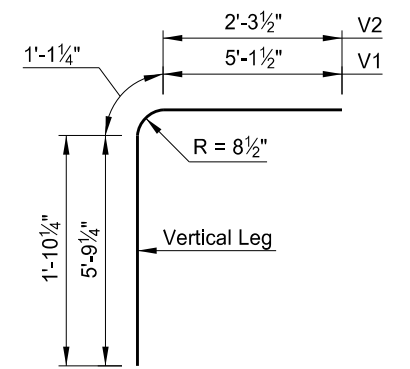
P2



F12



F1 & F2



V1 & V2

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COUNTY DRAIN 19

BAR DETAILS