

NORTH DAKOTA

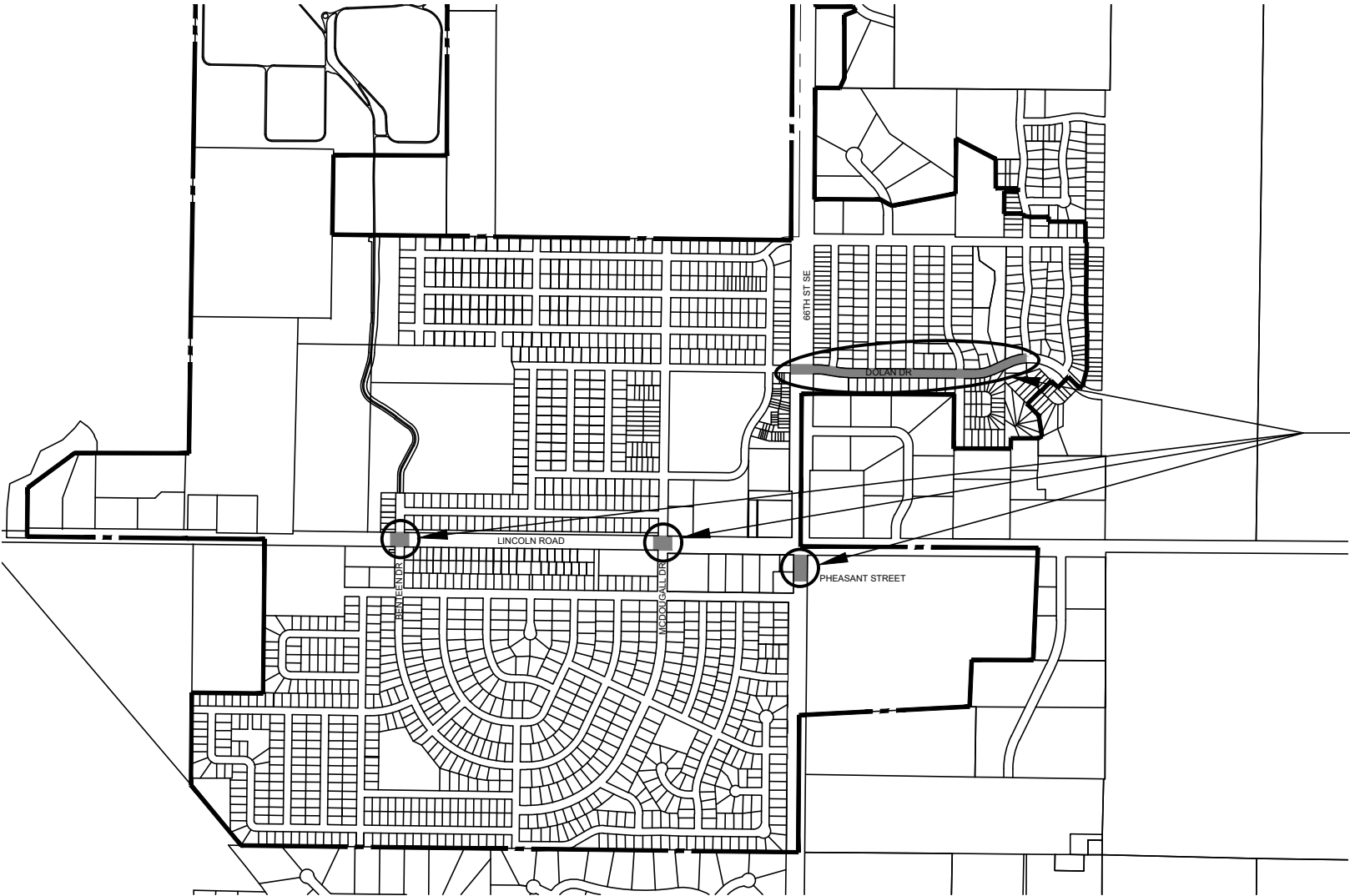
JOB # 4
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

TAU-0008(034)
Lincoln, North Dakota
Burleigh County
Sidewalk, Lighting System, Signs

Rev	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	22572	1	1

GOVERNING SPECIFICATIONS:
2020 Standard Specifications adopted by the North Dakota
Department of Transportation and the Supplemental
Specifications effective on the date the project is
advertised.

PROJECT NUMBER / DESCRIPTION	NET MILES	GROSS MILES
TAU-0008(034)	0.361	0.432



PROJECT LOCATIONS

DESIGNERS
MATTHEW SCHAIBLE, PE
NINA BONANNO, EIT
MICHAEL GALL

VERTICAL DATUM
THE NATIONAL GEODETIC VERTICAL DATUM OF 1929
(NGVD29)

HORIZONTAL DATUM
NORTH DAKOTA STATE PLANE COORDINATE SYSTEM
NAD 83 SOUTH ZONE 3302 (ADJUSTED 86)
INTERNATIONAL UNITS



PHONE: 701.354.7121
4719 SHELBURNE STREET,
SUITE 6
BISMARCK, ND 58503-5677
www.sehinc.com

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY
ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY
REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE
STATE OF NORTH DAKOTA.

APPROVED DATE 9/9/2020

MATTHEW SCHAIBLE PE, /S/
SHORT ELLIOTT HENDRICKSON, INC

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2	2	Legend	D-101-20, 21	Linestyles
4	1	Scope of Work	D-101-30, 31, 32	Symbols
6	1	Construction Notes	D-255-2	Erosion and Siltation Control Erosion Control Blanket Installation
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 <div>PHONE: 701.354.7121 4719 SHELBURNE STREET, SUITE 6 BISMARCK, ND 58503-5677 www.sehinc.com</div>	SEH Project #:	Date:	
	154870	4/4/2020	
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NMB		MRS	

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LEGEND

Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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EXISTING	
	RIGHT OF WAY
	PERMANENT EASEMENT
	PROPERTY LINE
	HORIZONTAL CONTROL POINT
	BENCHMARK
	SURVEY MARKER
	SOIL BORING
	SANITARY SEWER AND MANHOLE
	FORCE MAIN AND LIFT STATION
	SANITARY SEWER SERVICE & CLEANOUT
	WATER MAIN, HYDRANT, VALVE AND MANHOLE
	WATER SERVICE AND CURB STOP BOX
	STORM SEWER, MANHOLE AND CATCH BASIN
	CULVERT AND APRON ENDWALL
	GAS MAIN, VALVE, VENT AND METER
	HANDHOLE
	BURIED FIBER OPTIC CABLE AND MANHOLE
	BURIED PHONE CABLE, PEDESTAL AND MANHOLE
	BURIED TV CABLE, PEDESTAL AND MANHOLE
	BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
	OVERHEAD WIRE, POLE AND GUY WIRE
	LIGHT POLE
	TRAFFIC SIGNAL
	STREET NAME SIGN
	SIGN (NON STREET NAME)
	RAILROAD TRACKS
	DECIDUOUS AND CONIFEROUS TREE
	BUSH / SHRUB AND STUMP
	EDGE OF WOODED AREA
	WETLAND
	BUILDING
	FENCE (UNIDENTIFIED)
	BARBED WIRE FENCE
	CHAIN LINK FENCE
	ELECTRIC WIRE FENCE
	WOOD FENCE
	WOVEN WIRE FENCE
	PLATE BEAM GUARDRAIL
	CABLE GUARDRAIL
	POST / BOLLARD
	RETAINING WALL

PROPOSED	
	STREET CENTERLINE
	RIGHT-OF-WAY
	PERMANENT EASEMENT
	TEMPORARY EASEMENT
	CONSTRUCTION LIMITS
	SANITARY SEWER, BULKHEAD AND MANHOLE
	FORCE MAIN
	SANITARY SERVICE AND CLEANOUT
	WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
	WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
	WATER SERVICE AND CURB STOP BOX
	STORM SEWER, MANHOLE AND CATCH BASIN
	CULVERT AND APRON ENDWALL
	DRAIN TILE
	DITCH / SWALE
	RIPRAP
	STREET NAME SIGN
	SIGN (NON STREET NAME)
	RETAINING WALL

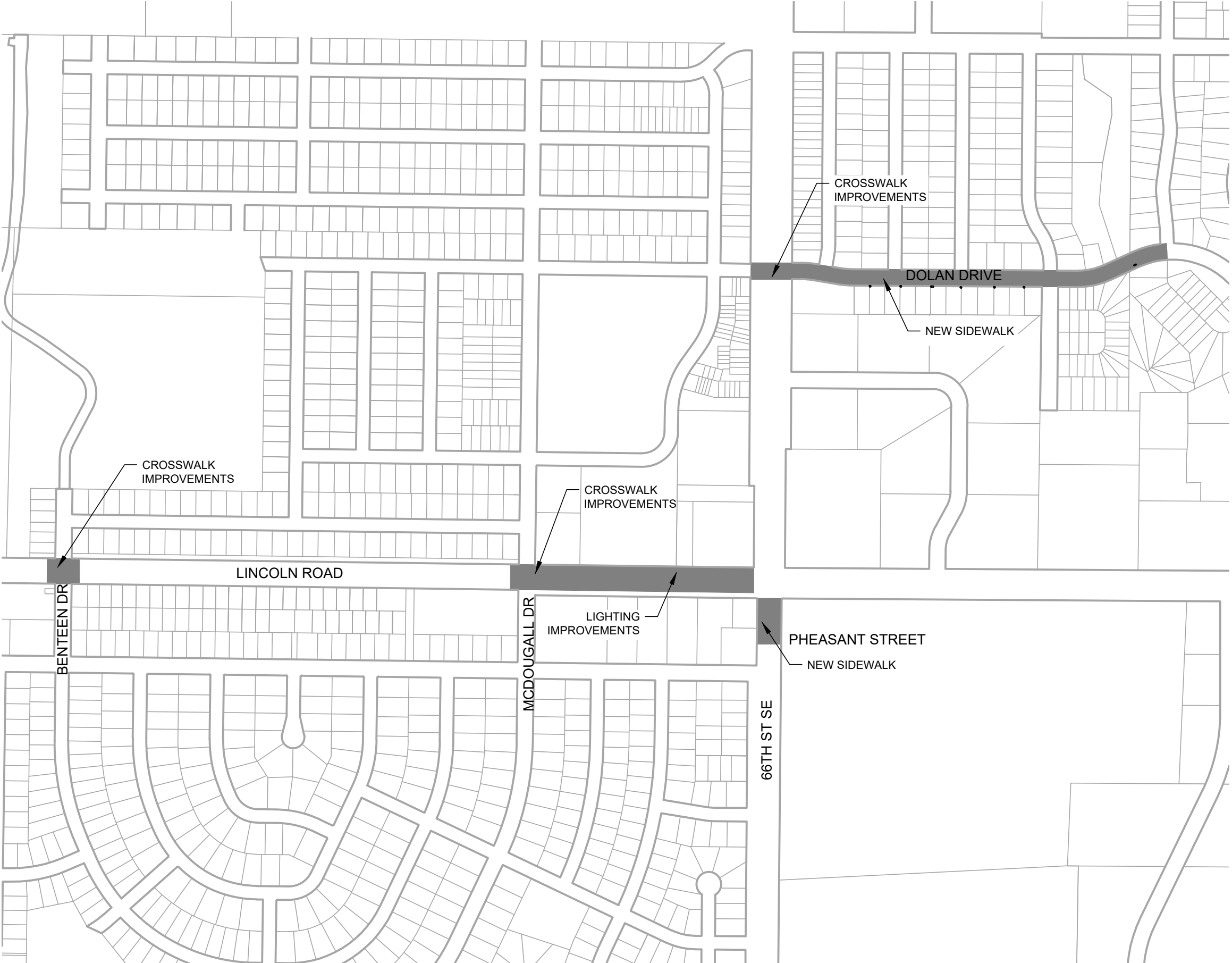
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LEGEND




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SCOPE OF WORK

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	Drawn By: MSG	Checked By: MRS

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NOTES

- 105-110

PAVEMENT SWEEPING: Sweep paved areas that were used by construction equipment or material storage prior to opening to traffic. Contractor has option to coordinate with Lincoln Public Works for utilization of vacuum or pickup type sweeper at Contractor's expense.
- 105-P01

UTILITIES: All utilities shown are for reference only. Not all utility locates were answered. It is the Contractor's responsibility to comply with specifications and locates for all utilities prior to start of work.
- 105-P02

EXISTING UTILITY LOCATIONS: Contractor shall contact all residents living adjacent to the construction of new sidewalk and inquire about existence of private utilities in the construction area. All private utilities, if disturbed, shall be restored to preconstruction condition at the Contractor's expense.
- 105-P03

RIGHT OF WAY: Contractor shall protect all survey land monuments and be responsible for all costs associated with resetting any disturbed monuments.
- 107-P01

HAUL ROAD RESTRICTIONS: Lincoln Road and 66th St SE are designated haul routes within the City of Lincoln. Before submitting a proposal, contact appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as "no haul" routes.
- 202-132

REMOVAL OF BITUMINOUS SURFACING: Include all costs for removing existing asphalt pavement full-depth in Removal of Bituminous Surfacing.
- 202-P01

ABUTTING PAVEMENT: Where new pavement will abut existing pavements, a full depth vertical saw cut shall be made along the entire length of the butt joint. Material shall be removed without damage to existing material to remain. Place all new pavement to match existing pavement for a continuous surface profile. Any damage to existing material to remain in place shall be restored to preconstruction condition at Contractor's expense. Include all labor, material, and equipment required for saw cutting in the unit bid price for "Sidewalk Concrete 4IN".
- 203-010

SHRINKAGE: 30 percent additional volume is included for shrinkage in earth embankment.
- 203-P01

TOPSOIL: Strip topsoil to a maximum depth of 8 inches. Do not perform any earthwork operations outside of ROW without obtaining landowners permission first. Stockpile topsoil outside of grading limits. Do not stockpile outside of right-of-way without obtaining landowner's permission and complying with all siting laws and permits. Do not stockpile on residential lawn areas within right-of-way. Spread topsoil evenly over finished grade between grading limits and edge of pavement. Spread all excess topsoil within 66th St. SE sidewalk grading limits.
- 203-P02

BORROW - EXCAVATION: Compaction Control for all borrow shall by Type C per Section 203.04 of the Standard Specifications. Include cost for work associated with excavation and placement as compaction control Type C under "Borrow - Excavation".
- 216-P01

WATER: The cost for water for all borrow compaction and dust control shall be included in the bid price for "Borrow - Excavation".
- 253-P01

SEEDING AND HYDRAULIC MULCH: All seeding shall be paid between planned disturbance limits shown in plans. All disturbance outside of these limits shall be seeded with either Class I or Class II seeding matching adjacent specified seeding in plans. Class I seeding has been planned at 2' wide from each edge of sidewalk along all residential lawns. All seeding is to be Hydraulic Mulched as specified in NDDOT Section 253. An additional 0.050 acres of Seeding CL II and Hydraulic Mulch have been included in associated bid items for miscellaneous construction and Rapid Flashing Beacon utility installation. All seeding outside of planned disturbance limits shall be completed at the Contractor's expense. Hydraulic Mulch and Seeding shall be paid at plan quantity.
- 302-P01

AGGREGATE BASE COURSE: Bid item shall be paid as plan quantity unless changes are made by the Engineer.

- 430-P01

PATCHING: Along 66th Street SE sidewalk installation, between STA 2+43 - STA 2+68 right-of-way boundary to 20 LF LT full width. Replace asphalt approach after installation of new sidewalk concrete matching asphalt patch to new sidewalk elevation. All grading, material, labor, equipment and incidentals shall be included in bid price for "PATCHING".
- 704-P01

TUBULAR MARKERS: Contractor shall follow Tubular Marker layout as shown on Sheet 100-3 for work done adjacent to the 66th St SE roundabout. Additional Tubular Markers were included to be used at the Contractor's discretion for work along Dolan Drive.
- 704-P02

TRAFFIC CONTROL DEVICES: Provided traffic control devices are suitable for 2 active work areas. Contractor is responsible for maintenance of traffic control devices within each work area. Provide additional devices at no additional cost to the project.

1. Standard Detail D-704-24, layout U. Existing speed limit is 35 mph, reduced speed signs will not be required.
- 750-P01

SIDEWALK CONCRETE 4IN: All excavation to construct the sidewalk to grade established by plans shall be included in the Contractor's bid price for "Sidewalk Concrete 4IN". All existing curb stops or gate valves within the new sidewalk concrete limits shall be set flush with the top of new sidewalk. All costs associated with adjusting and setting curb stops or gate valves shall be included in the price bid of "Sidewalk Concrete 4IN".
- 762-050

PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment of pavement marking items.

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4/4/2020

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GENERAL NOTES

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	ND	TAU-0008(034)	8	1

ESTIMATED QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
103	100	CONTRACT BOND	L SUM	1
202	114	REMOVAL OF CONCRETE PAVEMENT	SY	5
202	130	REMOVAL OF CURB & GUTTER	LF	20
202	132	REMOVAL OF BITUMINOUS SURFACING	SY	70
203	125	REMOVE & SALVAGE TOPSOIL	CY	388
203	140	BORROW-EXCAVATION	CY	223
251	100	SEEDING CLASS I	ACRE	0.077
251	200	SEEDING CLASS II	ACRE	0.145
253	201	HYDRAULIC MULCH	ACRE	0.222
255	102	ECB TYPE 2	SY	271
260	100	SILT FENCE UNSUPPORTED	LF	580
261	112	FIBER ROLLS 12IN	LF	350
302	120	AGGREGATE BASE COURSE CL 5	TON	257
430	2000	PACTHING	TON	8
702	100	MOBILIZATION	L SUM	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	635
704	1052	TYPE III BARRICADE	EA	6
704	1054	SIDEWALK BARRICADE	EA	1
704	1067	TUBULAR MARKERS	EA	50
748	120	CURB & GUTTER MOUNTABLE-TYPE I	LF	20
750	115	SIDEWALK CONCRETE 4IN	SY	1,205
750	1016	DRIVEWAY CONCRETE 6IN REINFORCED	SY	21
750	2115	DETECTABLE WARNING PANELS	SF	72
754	110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	26.8
754	206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	74
754	593	RESET SIGN SUPPORT	EA	1
762	135	EPOXY PVMT MK 24IN LINE-GROOVED	LF	270
770	001	LIGHTING SYSTEM	EA	1

BASIS OF ESTIMATE


AGGREGATE BASE COURSE CL 5
1.875 TON/CY

HMA PATCHING
2 TON/CY

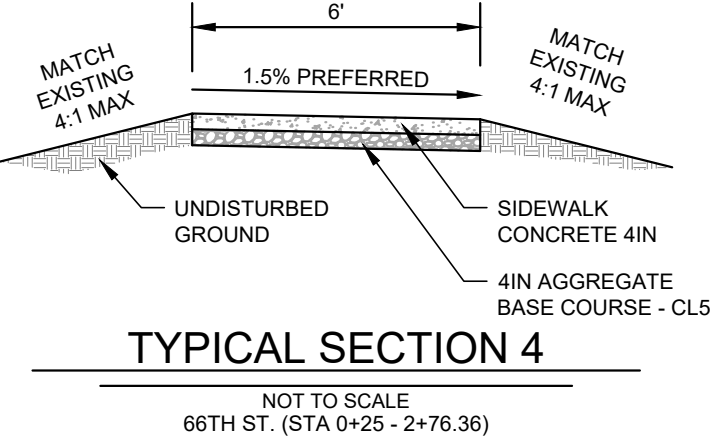
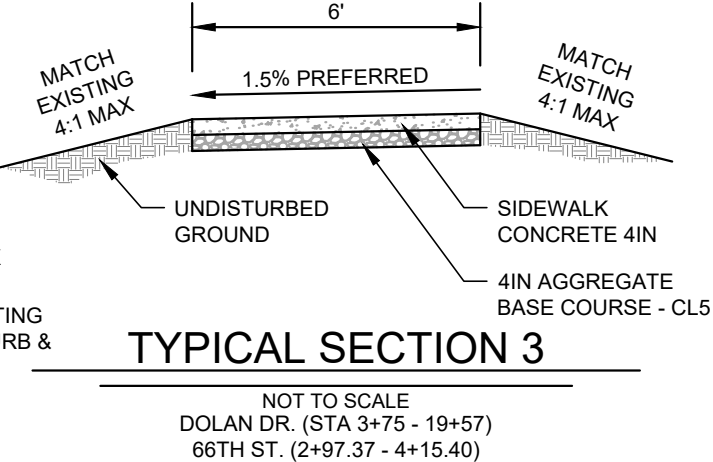
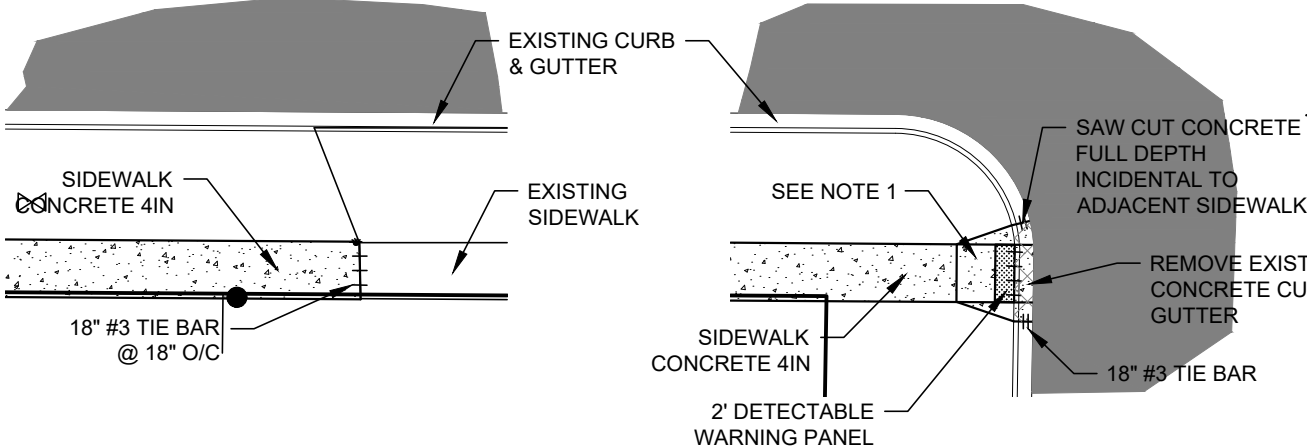
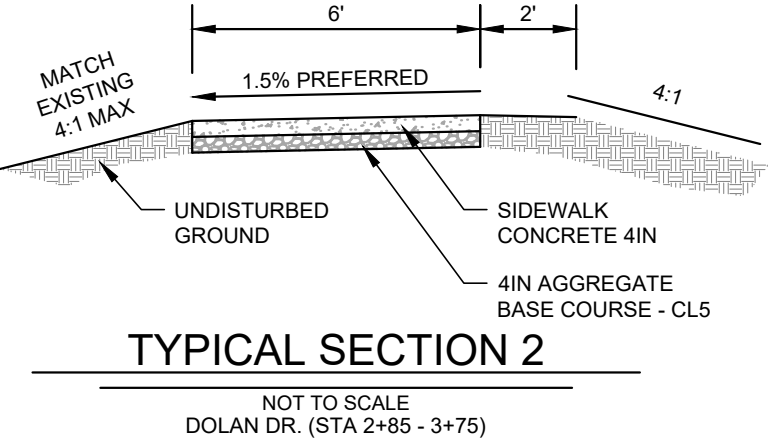
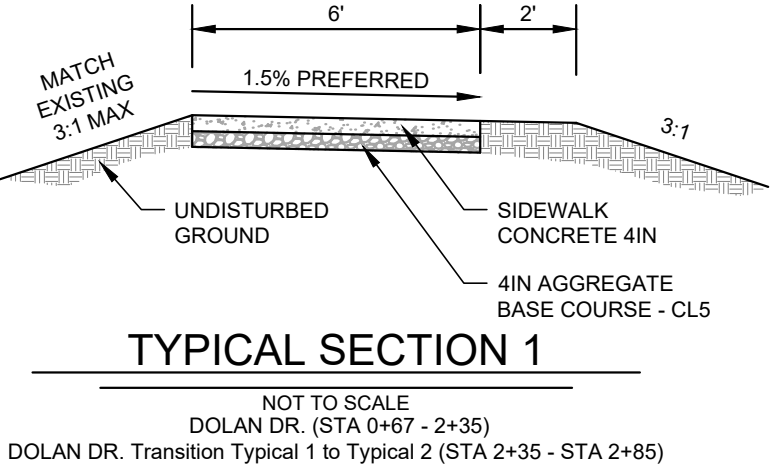
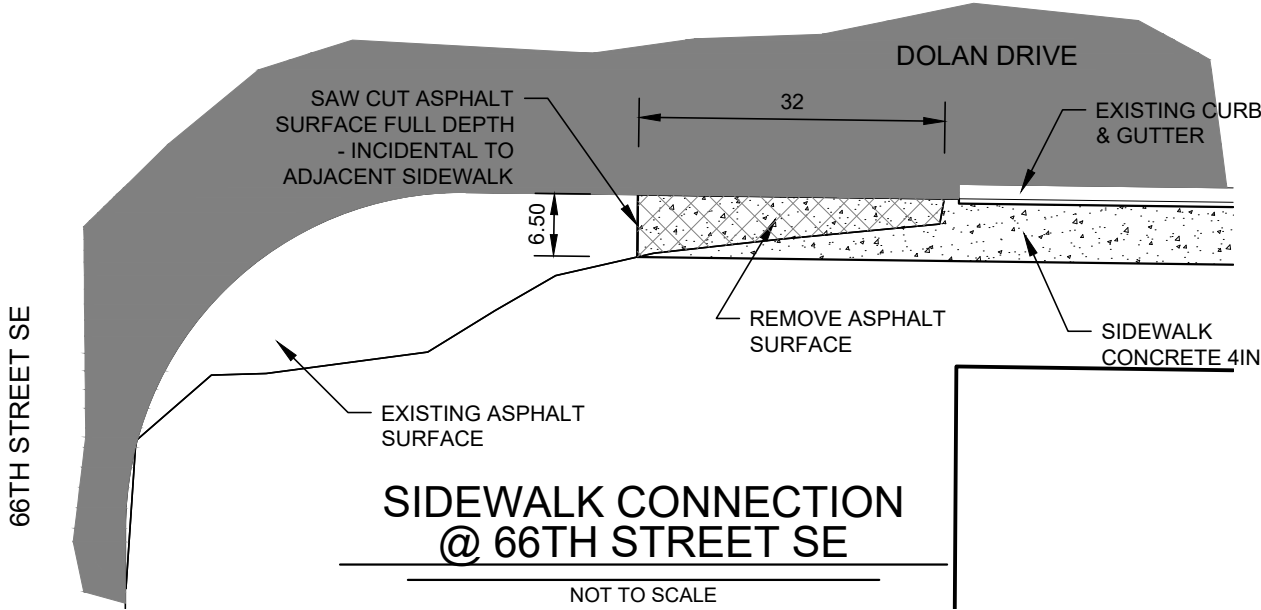
TOPSOIL
8" removal depth

SEEDING AND HYDRAULIC MULCH
Limits of Seeding Class I and Hydraulic Mulch are 2-feet north and to ROW boundary on south edge of concrete sidewalk adjacent to residential lots on Dolan Drive as identified in the plans, beginning at STA 4+10. Seeding Class II and Hydraulic Mulch are within the extents shown in the plans for the sidewalk along Dolan Drive from STA 0+67 to STA 4+10, and sidewalk adjacent to 66th St SE south of Lincoln Road.

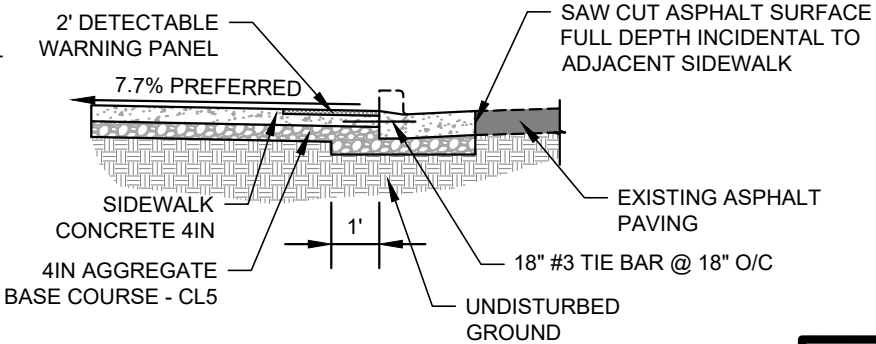
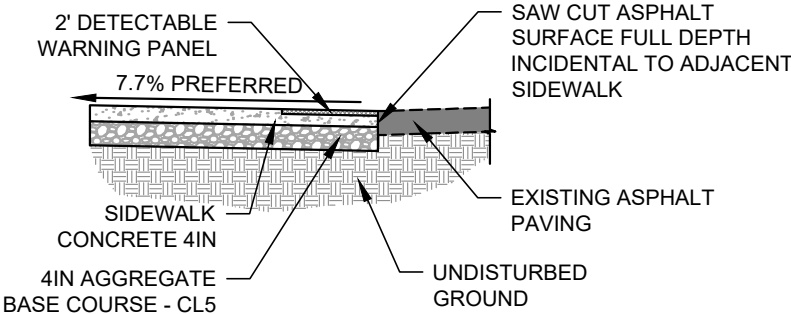
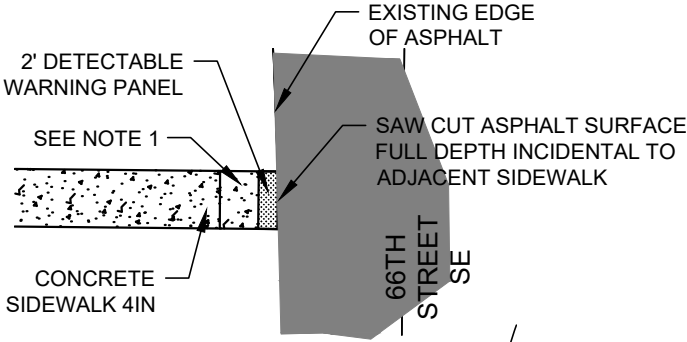
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ESTIMATED QUANTITIES & BASIS OF ESTIMATE			
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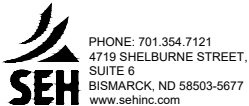


- NOTES:**
1. SIDEWALK RAMP. LONGITUDINAL SLOPE NOT TO EXCEED 8.3%, 7.7% PREFERRED. ALL CONCRETE PANELS CONTAINING A DETECTABLE WARNING PANEL SHALL FOLLOW THE SAME STANDARD.



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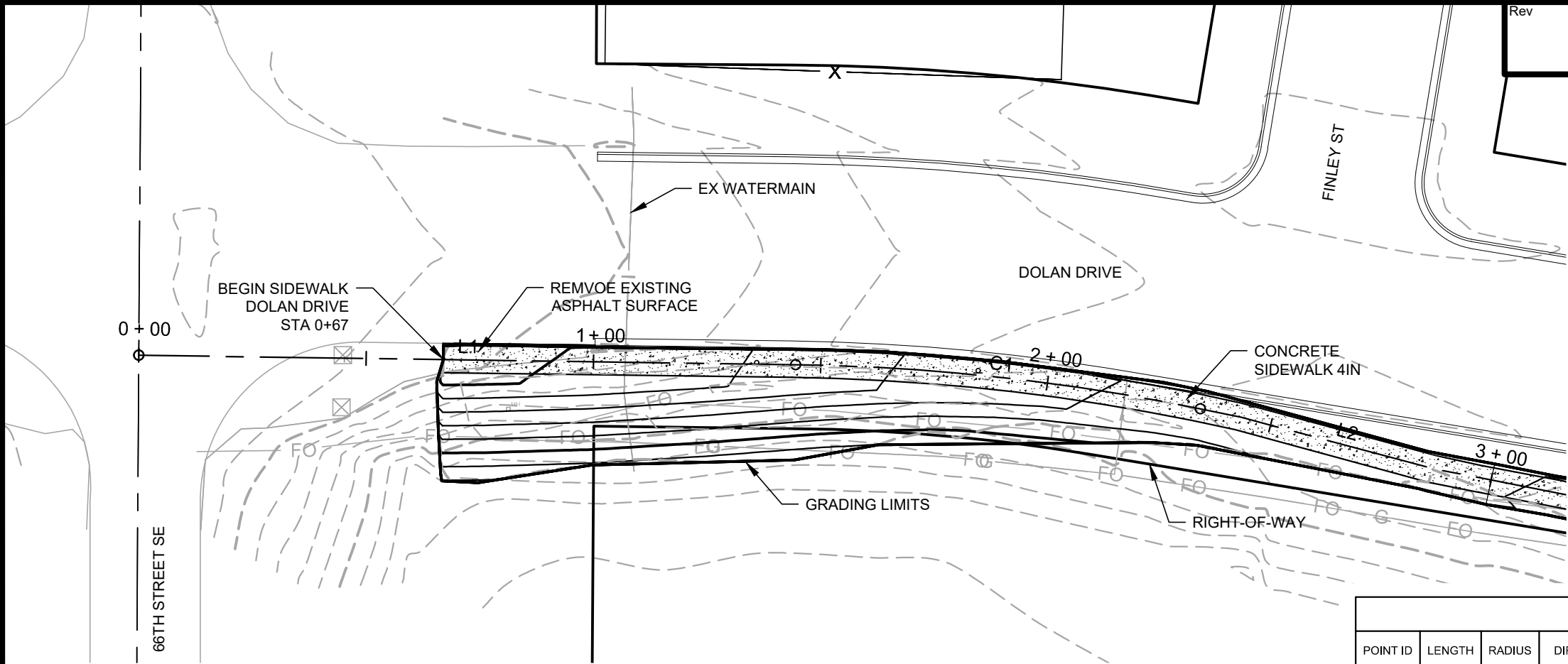
DETAILS



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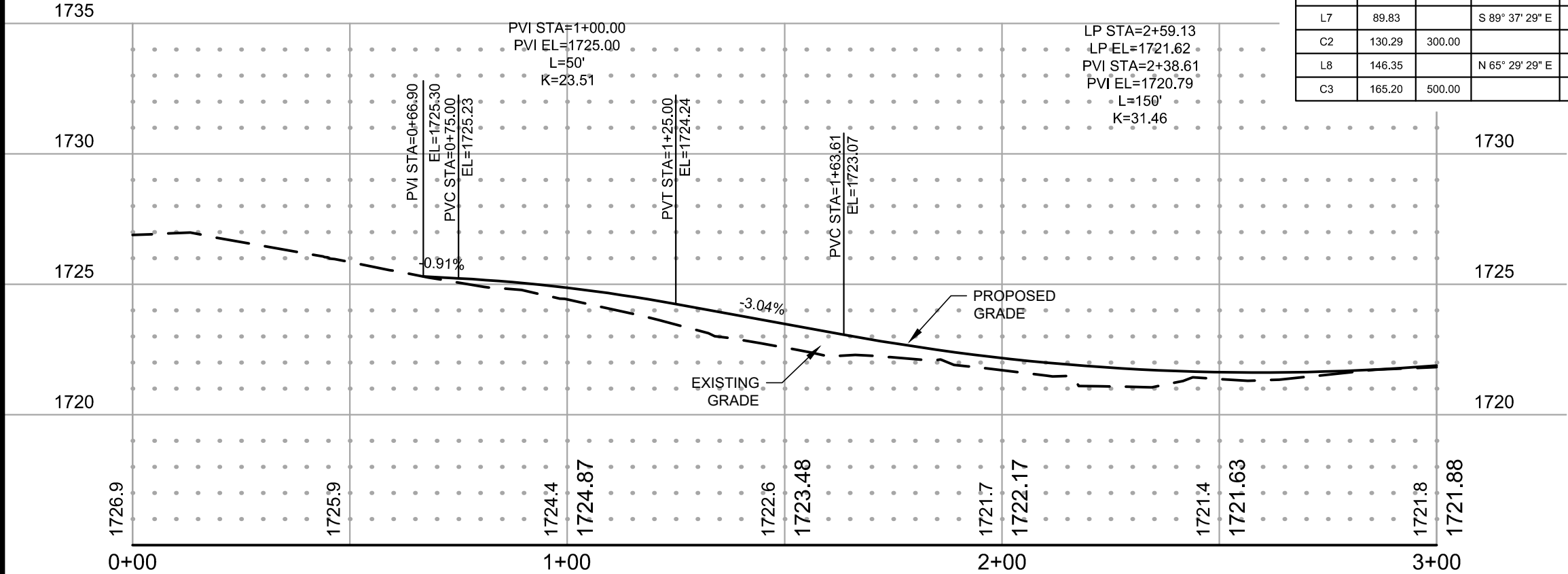
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SPEC CODE	DESCRIPTION	QUANTITY	UNIT
202 0132	REMOVAL OF BITUMINOUS SURFACING STA 0+67	16	SY
203 0125	REMOVE & SALVAGE TOPSOIL STA 0+65 to STA 3+00	77	CY
203 0140	BORROW EXCAVATION STA 0+67 to STA 3+00	142	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 0+67 to STA 3+00	33	TON
750 0115	SIDEWALK CONCRETE 4IN STA 0+67 to STA 3+00	156	SY

ALIGNMENT TABULATION - TRAIL

POINT ID	LENGTH	RADIUS	DIRECTION	START STATION	END STATION	DELTA	CHORD LENGTH	CHORD DIRECTION	PI INCLUDED ANGLE	PI STATION
L1	144.43		S 89° 10' 38" E	0+00.00	1+44.43					
C1	89.66	475.00		1+44.43	2+34.08	010° 48' 53"	89.52	S 83° 46' 12" E	169° 11' 07"	1+89.39
L2	43.59		S 75° 00' 37" E	2+43.35	2+86.93					
L3	63.01		S 78° 55' 52" E	2+86.93	3+49.95					
L4	93.58		S 85° 19' 23" E	3+49.95	4+43.52					
L5	958.48		S 89° 37' 26" E	4+43.52	14+02.00					
L6	23.00		N 85° 11' 41" E	14+02.00	14+25.00					
L7	89.83		S 89° 37' 29" E	14+25.00	15+14.83					
C2	130.29	300.00		15+14.83	16+45.12	024° 53' 02"	129.27	N 77° 56' 00" E	155° 06' 58"	15+81.02
L8	146.35		N 65° 29' 29" E	16+45.12	17+91.47					
C3	165.20	500.00		17+91.47	19+56.68	018° 55' 51"	164.45	N 74° 57' 25" E	161° 04' 09"	18+74.83



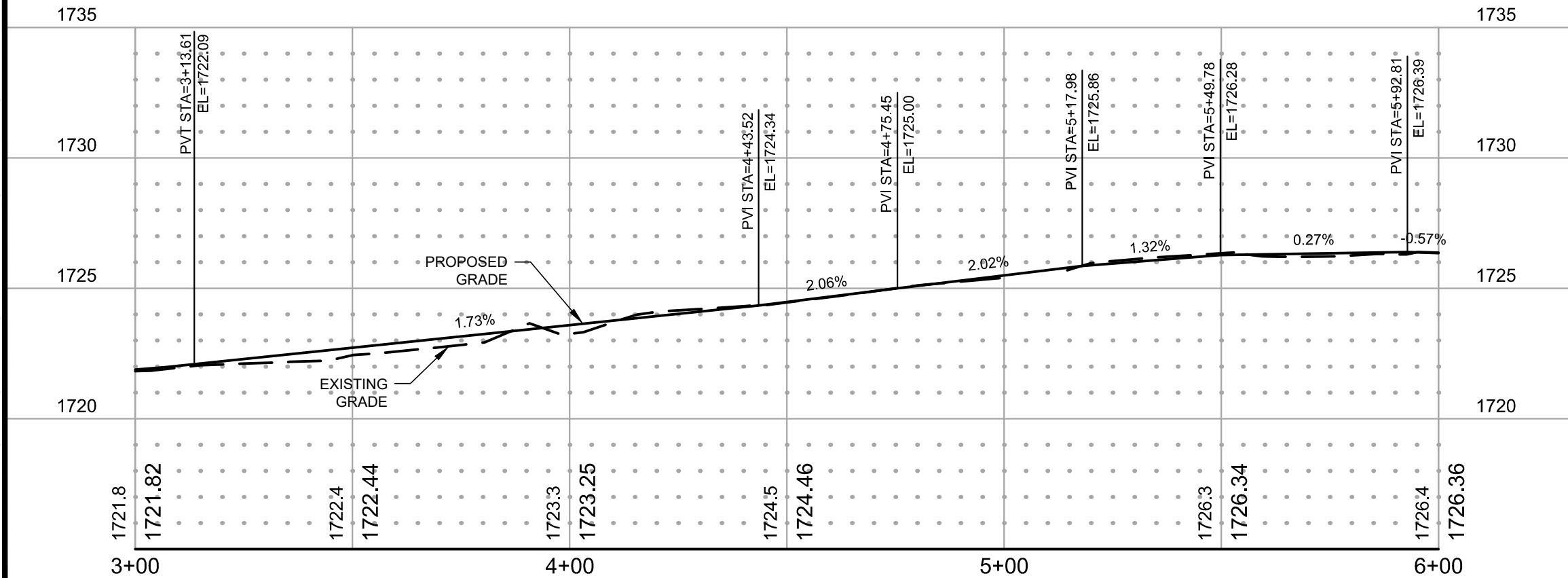
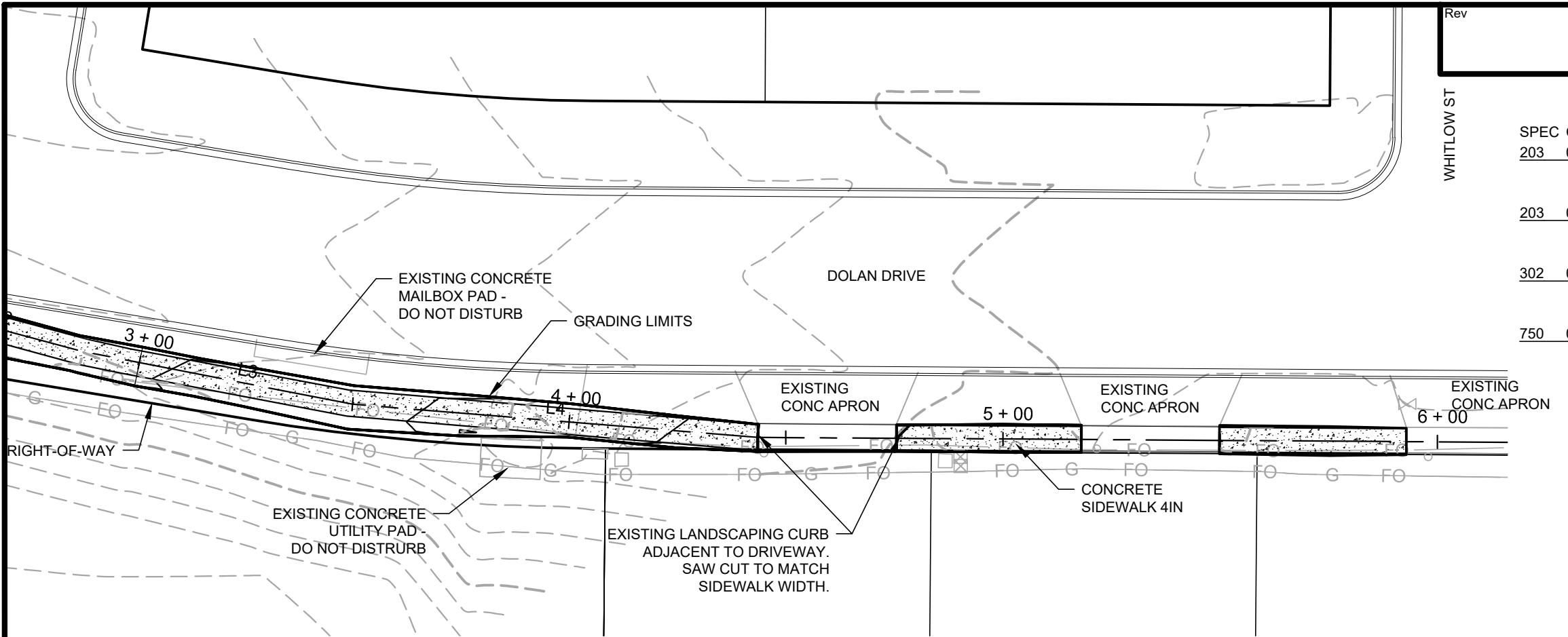
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PLAN & PROFILE



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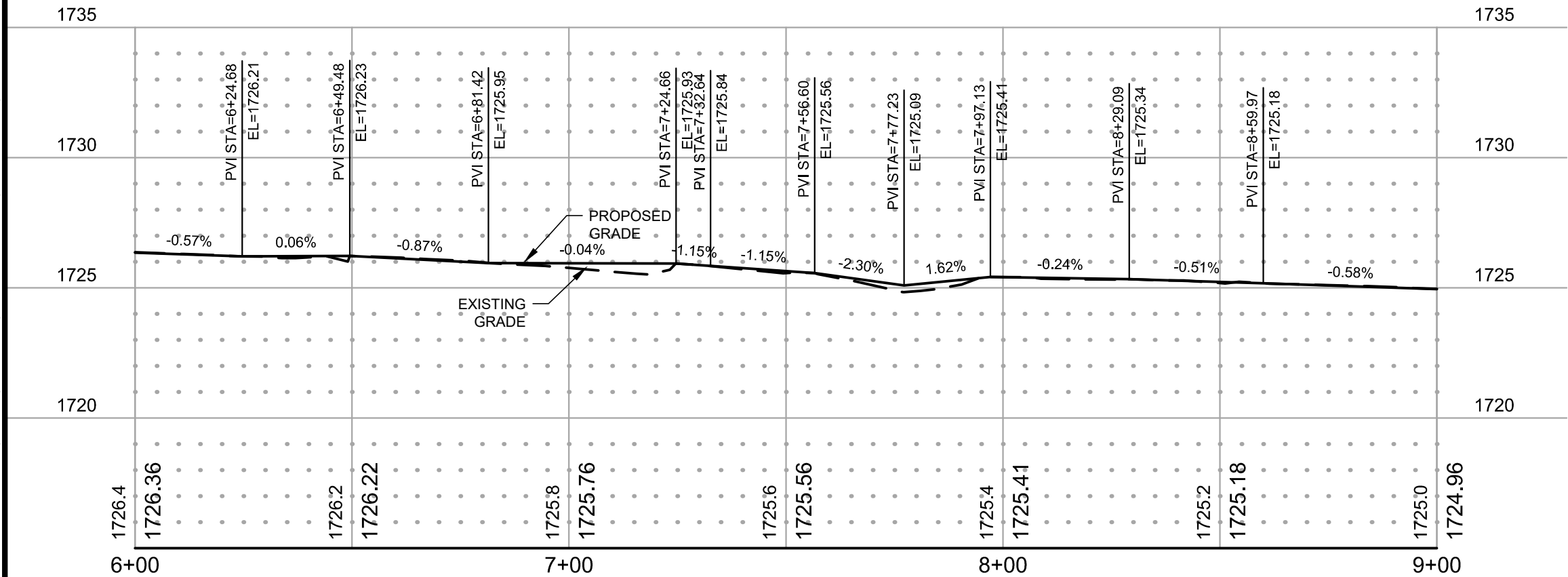
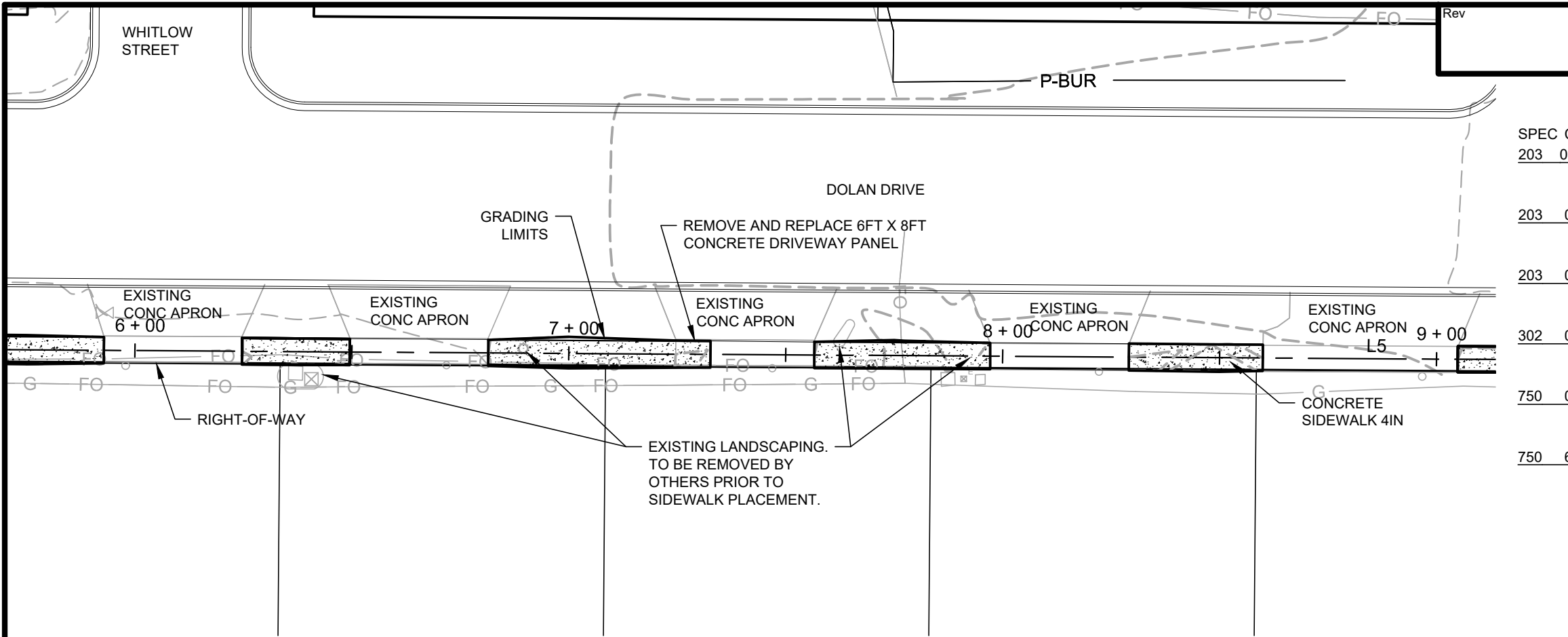
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203 0125	REMOVE & SALVAGE TOPSOIL STA 3+00 to STA 6+00	36	CY
203 0140	BORROW EXCAVATION STA 0+67 to STA 3+00	9	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 3+00 to STA 6+00	32	TON
750 0115	SIDEWALK CONCRETE 4IN STA 3+00 to STA 6+00	154	SY



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SPEC CODE	DESCRIPTION	QUANTITY	UNIT
203 0114	REMOVAL OF CONCRETE PAVEMENT STA 6+00 to STA 9+00	5	SY
203 0125	REMOVE & SALVAGE TOPSOIL STA 6+00 to STA 9+00	16	CY
203 0140	BORROW EXCAVATION STA 0+67 to STA 3+00	5	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 6+00 to STA 9+00	20	TON
750 0115	SIDEWALK CONCRETE 4IN STA 6+00 to STA 9+00	94	SY
750 6016	DRIVEWAY CONCRETE 6IN REINFORCED STA 6+00 to STA 9+00	5	SY

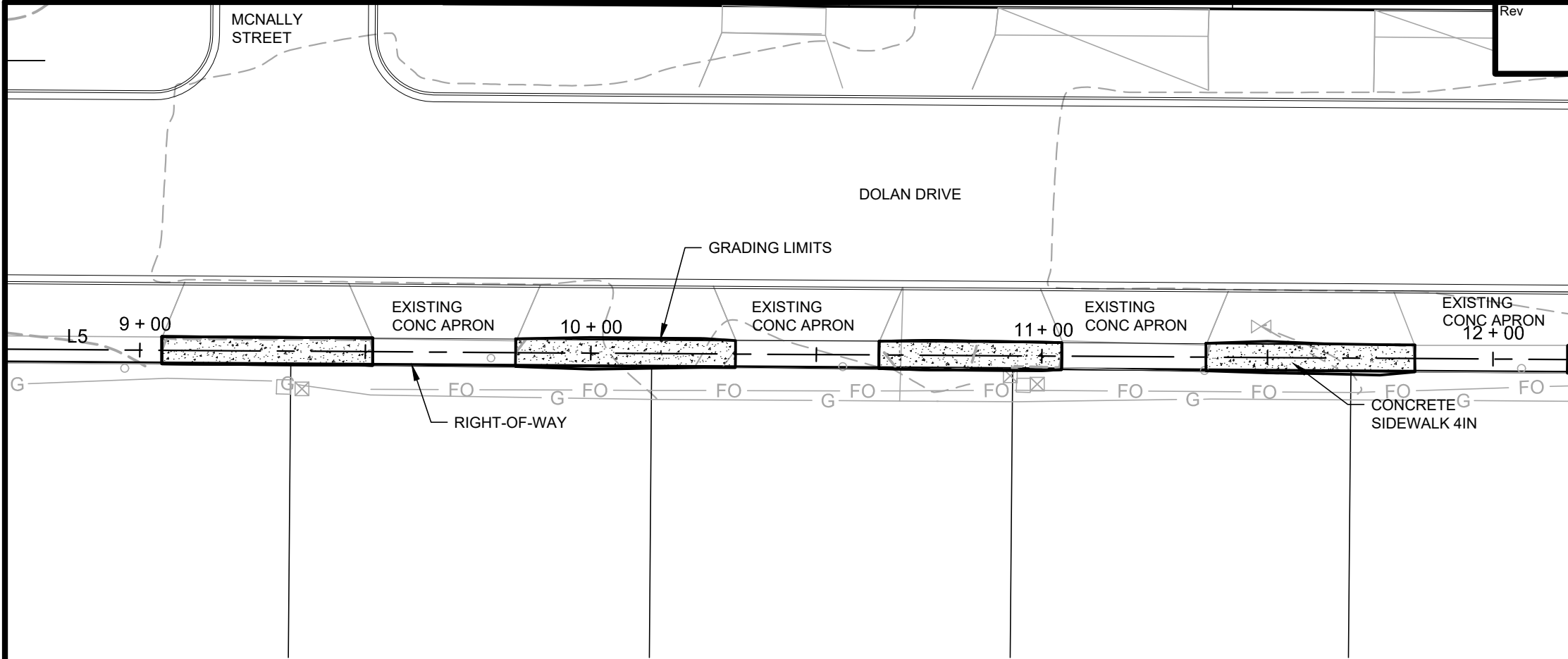


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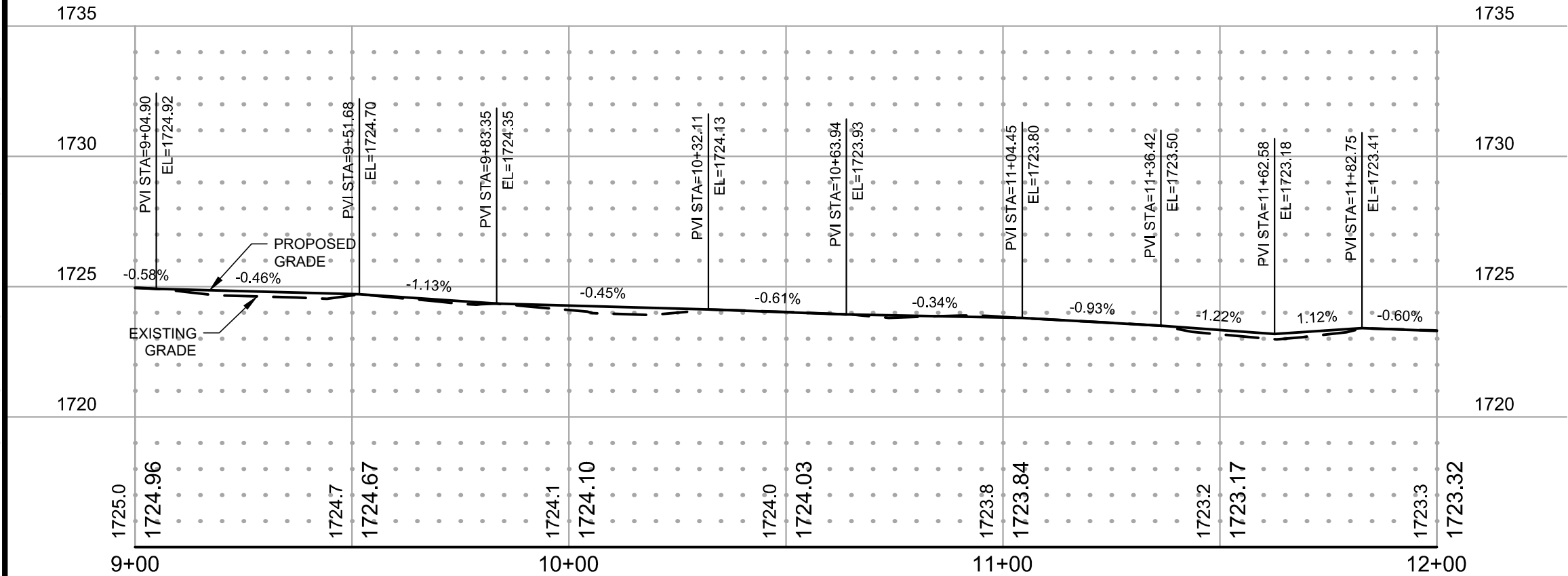
PLAN & PROFILE



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SPEC CODE	DESCRIPTION	QUANTITY	UNIT
203 0125	REMOVE & SALVAGE TOPSOIL STA 9+00 to STA 12+00	21	CY
203 0140	BORROW EXCAVATION STA 0+67 to STA 3+00	6	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 9+00 to STA 12+00	26	TON
750 0115	SIDEWALK CONCRETE 4IN STA 9+00 to STA 12+00	122	SY



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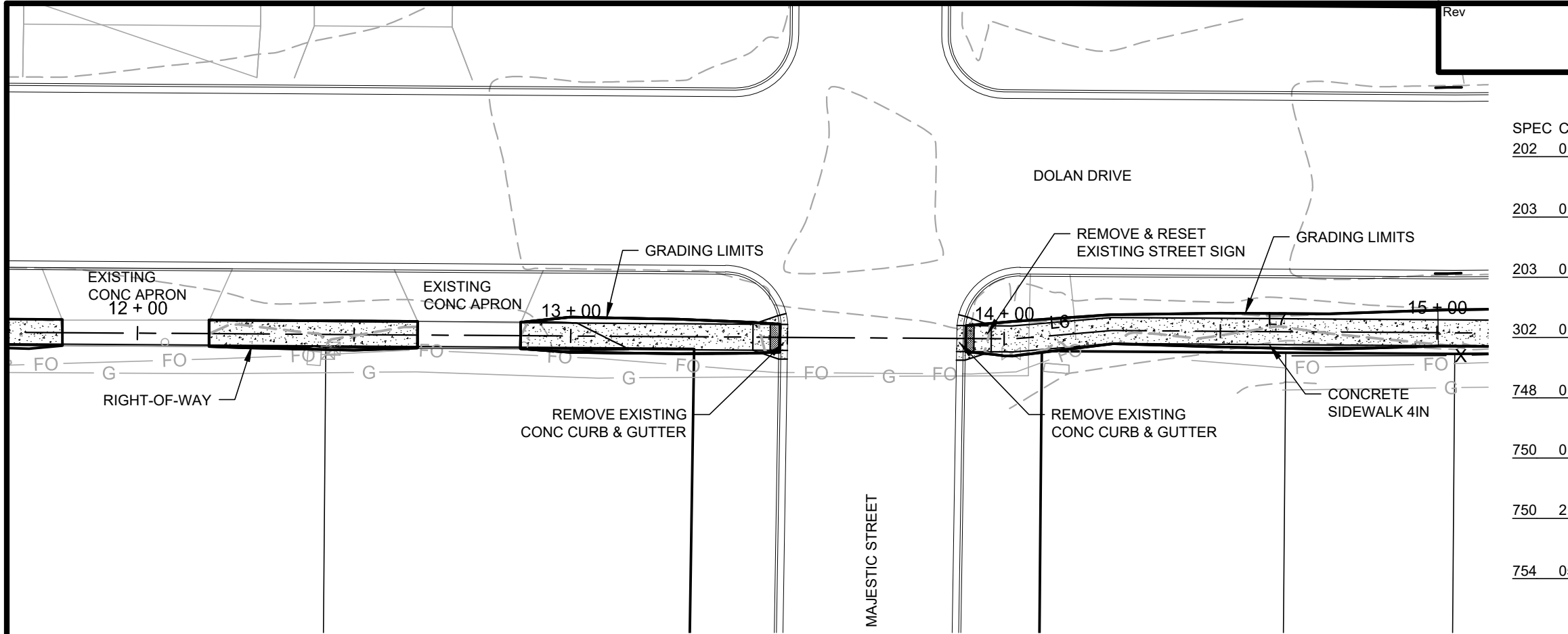
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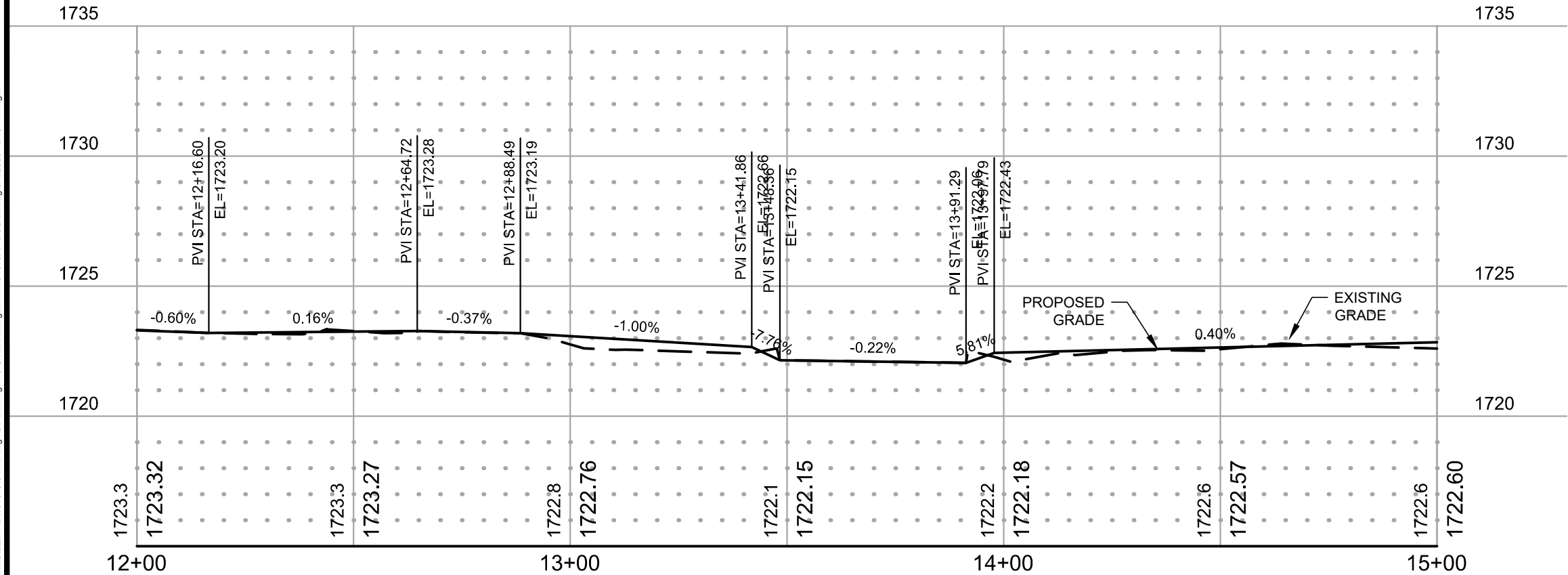
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154870	4/4/2020
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SPEC CODE	DESCRIPTION	QUANTITY	UNIT
202 0130	REMOVAL OF CURB & GUTTER Majestic St ADA Ramps	20	LF
203 0125	REMOVE & SALVAGE TOPSOIL STA 12+00 to STA 15+00	24	CY
203 0140	BORROW EXCAVATION STA 0+67 to STA 3+00	9	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 12+00 to STA 15+00	30	TON
748 0120	CURB & GUTTER MOUNTABLE-TYPE 1 Majestic St ADA Ramps	20	LF
750 0115	SIDEWALK CONCRETE 4IN STA 12+00 to STA 15+00	146	SY
750 2115	DETECTABLE WARNING PANELS Majestic St ADA Ramps	24	SF
754 0593	RESET SIGN SUPPORT Majestic St/Dolan Dr	1	EA

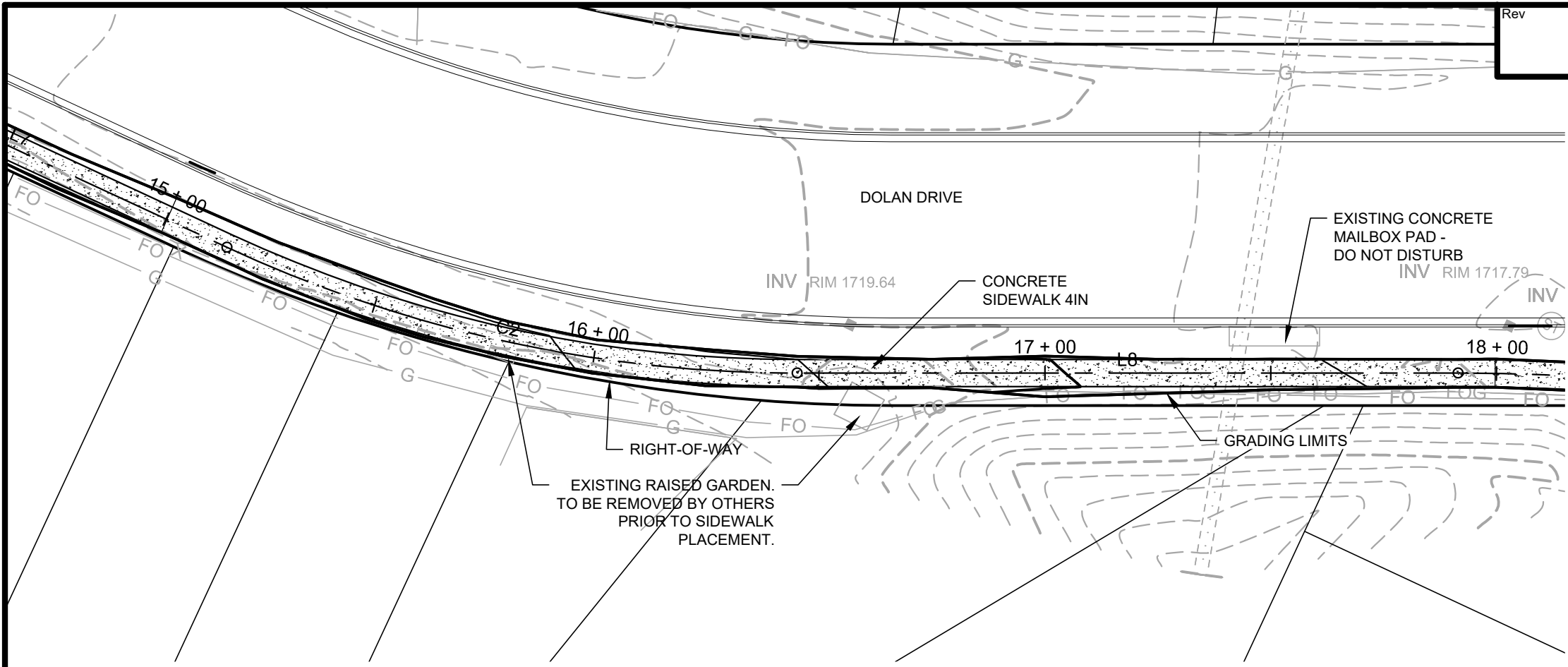


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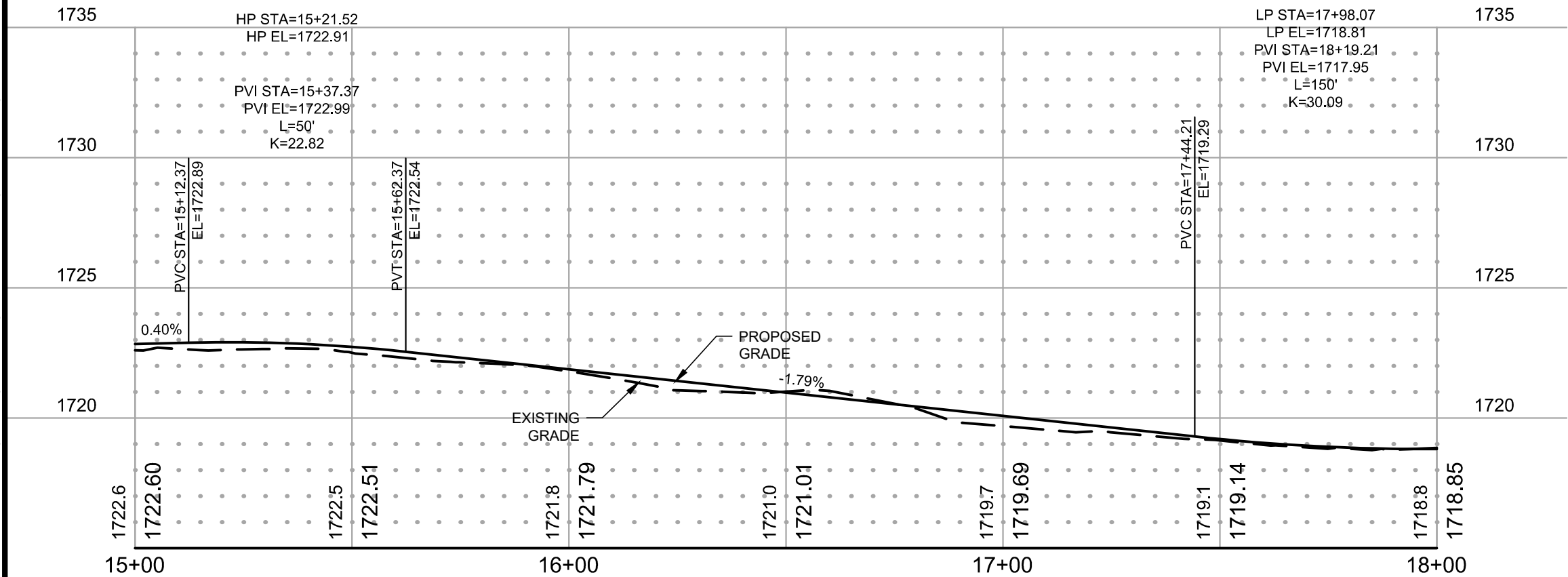


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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	60	6

SPEC CODE	DESCRIPTION	QUANTITY	UNIT
203 0125	REMOVE & SALVAGE TOPSOIL STA 15+00 to STA 18+00	40	CY
203 0140	BORROW-EXCAVATION STA 15+00 to STA 18+00	18	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 15+00 to STA 18+00	42	TON
750 0115	SIDEWALK CONCRETE 4IN STA 15+00 to STA 18+00	200	SY



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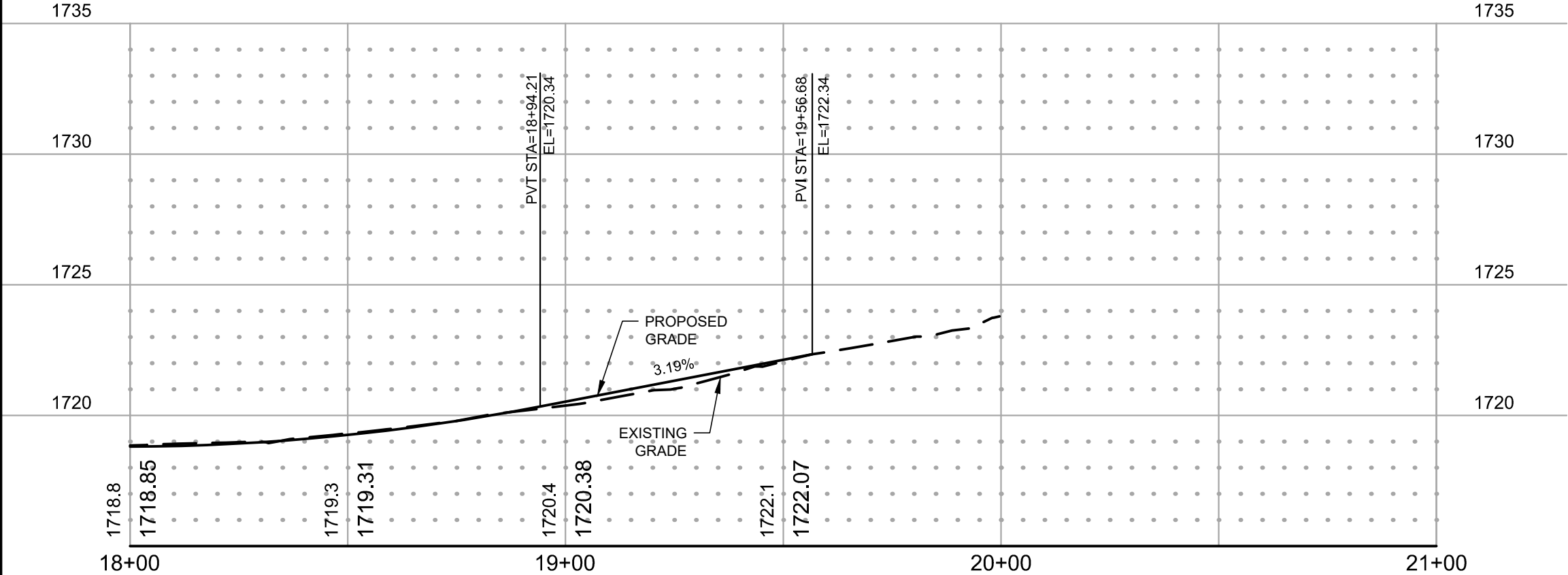
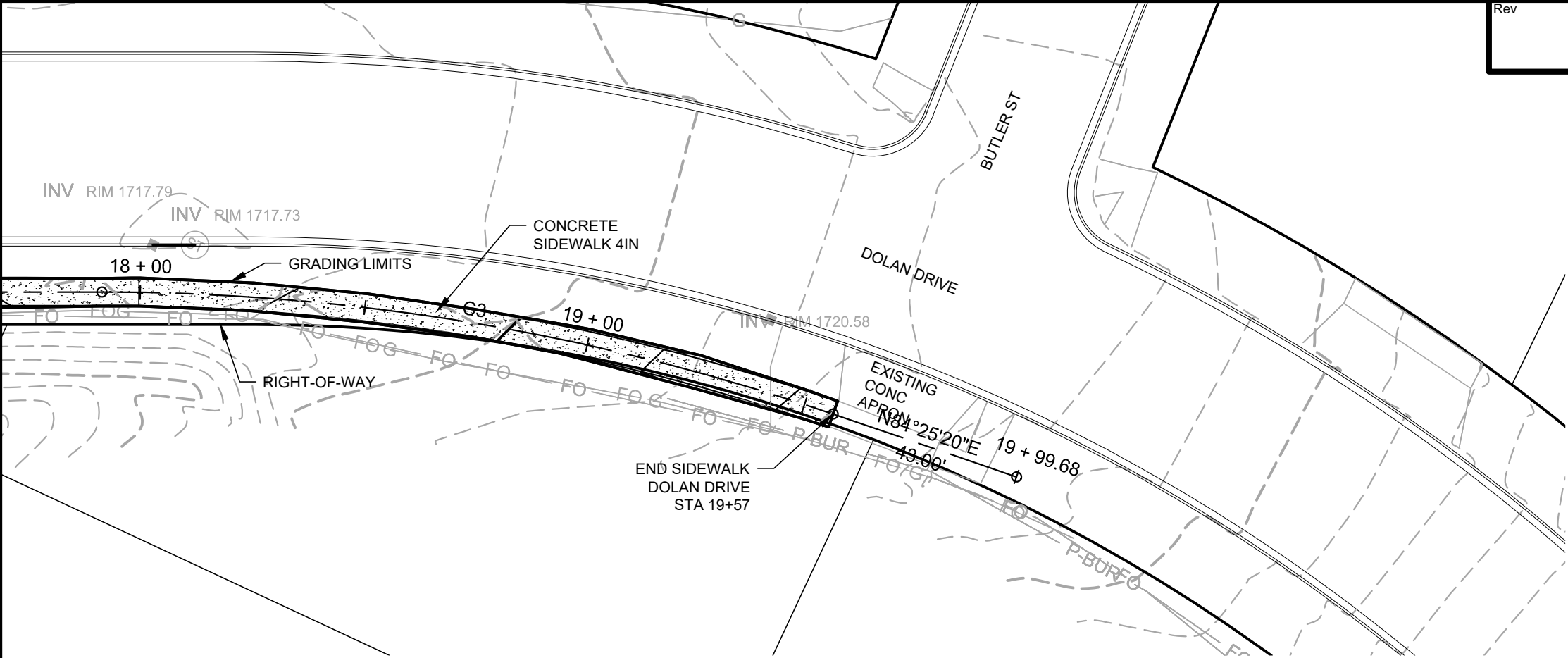
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4/4/2020

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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	60	7

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
203	0125	REMOVE & SALVAGE TOPSOIL		
		STA 18+00 to STA 19+57	20	CY
203	0140	BORROW-EXCAVATION		
		STA 18+00 to STA 19+57	3	CY
302	0120	AGGREGATE BASE COURSE CL 5		
		STA 18+00 to STA 19+57	22	TON
750	0115	SIDEWALK CONCRETE 4IN		
		STA 18+00 to STA 19+57	105	SY



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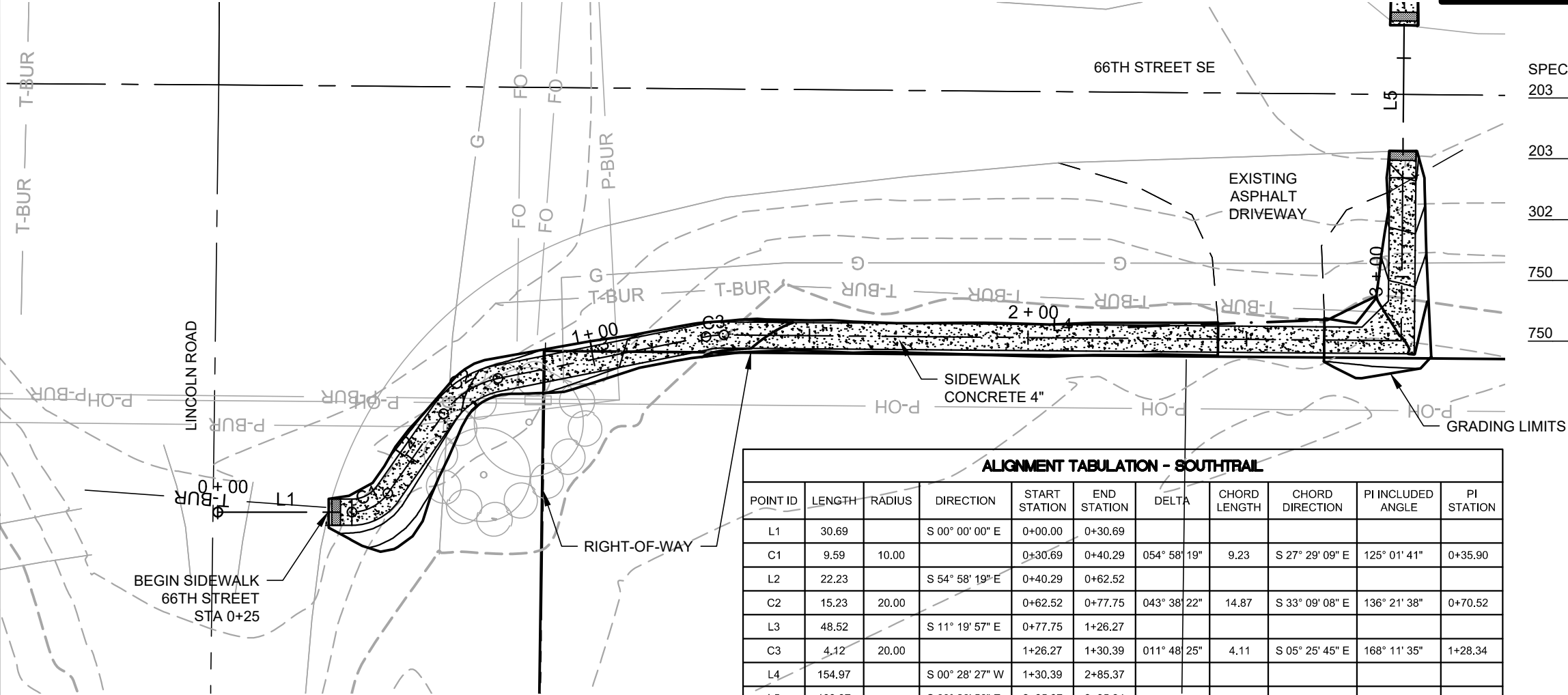
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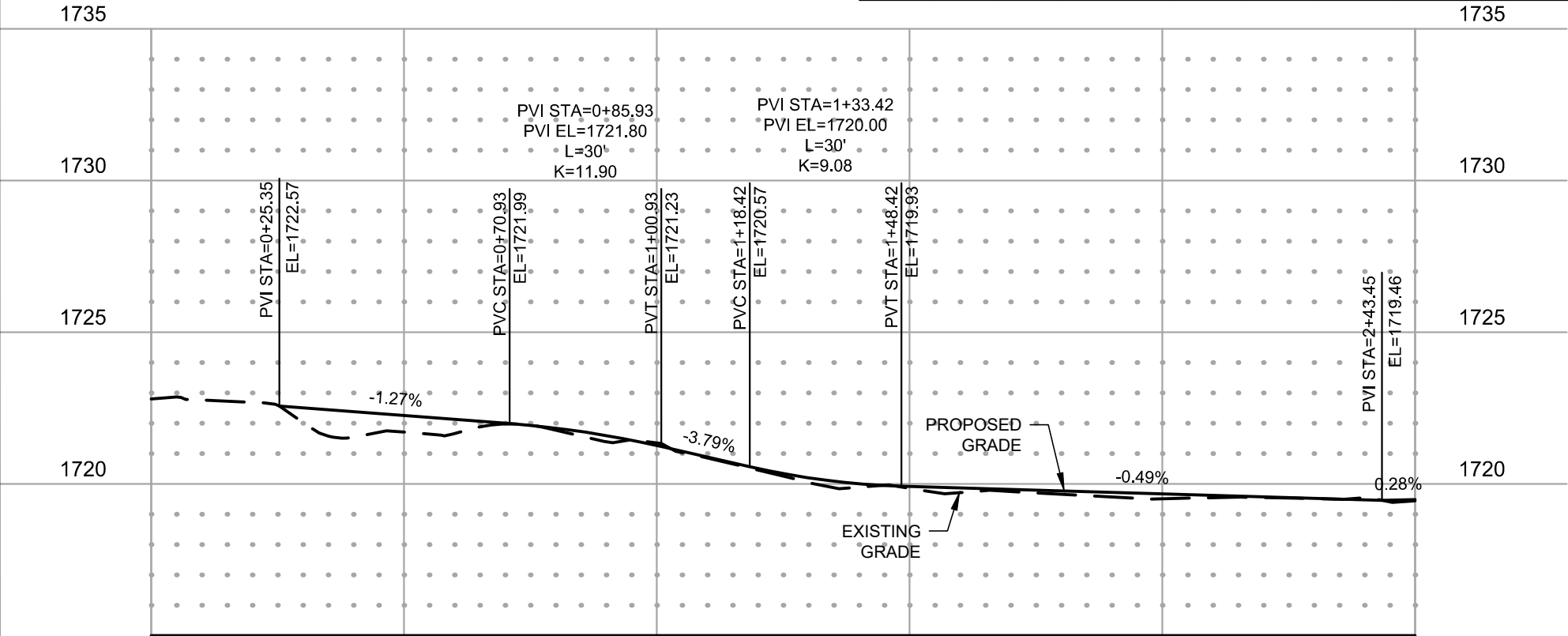
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SPEC CODE	DESCRIPTION	QUANTITY	UNIT
203 0125	REMOVE & SALVAGE TOPSOIL STA 0+25 to STA 2+43	35	CY
203 0140	BORROW-EXCAVATION STA 0+25 to STA 2+43	17	CY
302 0120	AGGREGATE BASE COURSE CL 5 STA 0+25 to STA 2+43	30	TON
750 0115	SIDEWALK CONCRETE 4IN STA 0+25 to STA 2+43	145	SY
750 2115	DETECTABLE WARNING PANELS Lincoln Rd ADA Ramps	12	SF



ALIGNMENT TABULATION - SOUTHTRAIL										
POINT ID	LENGTH	RADIUS	DIRECTION	START STATION	END STATION	DELTA	CHORD LENGTH	CHORD DIRECTION	PI INCLUDED ANGLE	PI STATION
L1	30.69		S 00° 00' 00" E	0+00.00	0+30.69					
C1	9.59	10.00		0+30.69	0+40.29	054° 58' 19"	9.23	S 27° 29' 09" E	125° 01' 41"	0+35.90
L2	22.23		S 54° 58' 19" E	0+40.29	0+62.52					
C2	15.23	20.00		0+62.52	0+77.75	043° 38' 22"	14.87	S 33° 09' 08" E	136° 21' 38"	0+70.52
L3	48.52		S 11° 19' 57" E	0+77.75	1+26.27					
C3	4.12	20.00		1+26.27	1+30.39	011° 48' 25"	4.11	S 05° 25' 45" E	168° 11' 35"	1+28.34
L4	154.97		S 00° 28' 27" W	1+30.39	2+85.37					
L5	109.97		S 89° 26' 56" E	2+85.37	3+95.34					
L6	27.86		N 00° 38' 50" E	3+95.34	4+23.19					



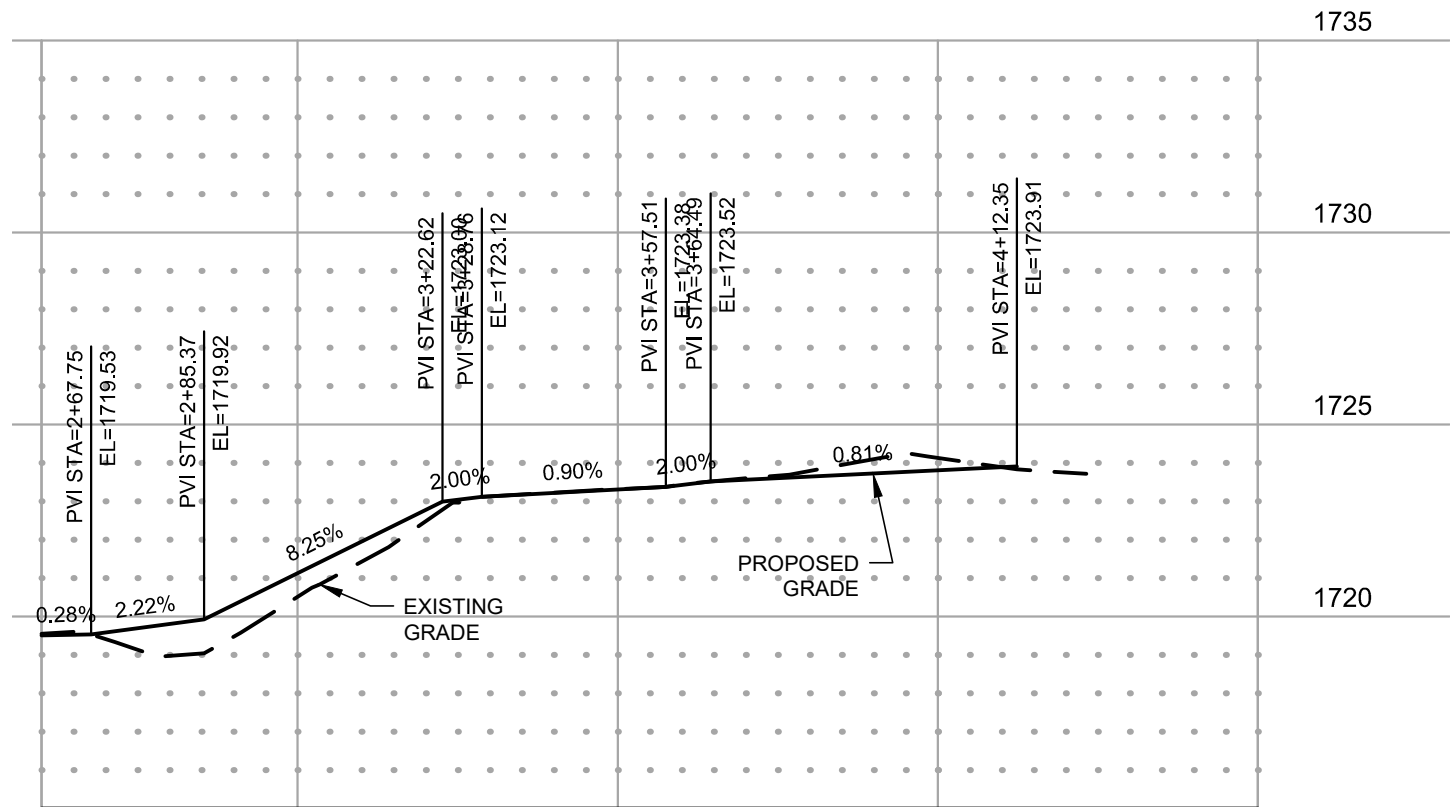
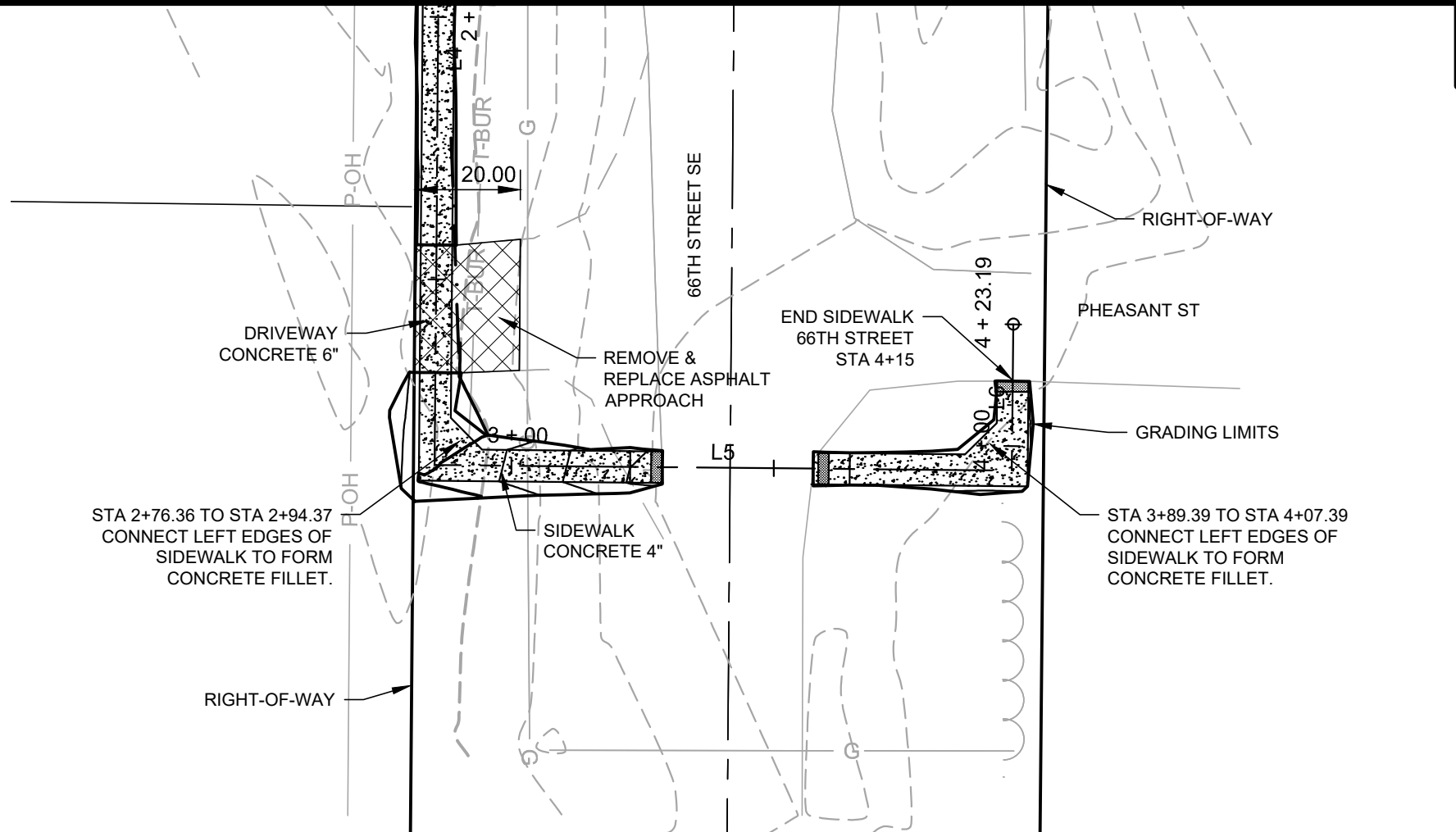
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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	60	9

SPEC CODE	DESCRIPTION	QUANTITY	UNIT
202 0132	REMOVAL OF BITUMINOUS SURFACING		
	STA 2+43 to STA 2+68	54	SY
203 0125	REMOVE & SALVAGE TOPSOIL		
	STA 2+68 to STA 4+15	22	CY
203 0140	BORROW-EXCAVATION		
	STA 2+68 to STA 4+15	14	CY
302 0120	AGGREGATE BASE COURSE CL 5		
	STA 2+43 to STA 4+15	22	TON
430 2000	PATCHING		
	STA 2+43 to STA 2+68	8	TON
750 0115	SIDEWALK CONCRETE 4IN		
	STA 2+68 to STA 4+15	83	SY
750 1016	DRIVEWAY CONCRETE 6IN REINFORCED		
	STA 2+43 to STA 2+68	16	SY
750 2115	DETECTABLE WARNING PANELS		
	66th St SE ADA Ramps	24	SF
	Pheasant St ADA Ramp	12	SF



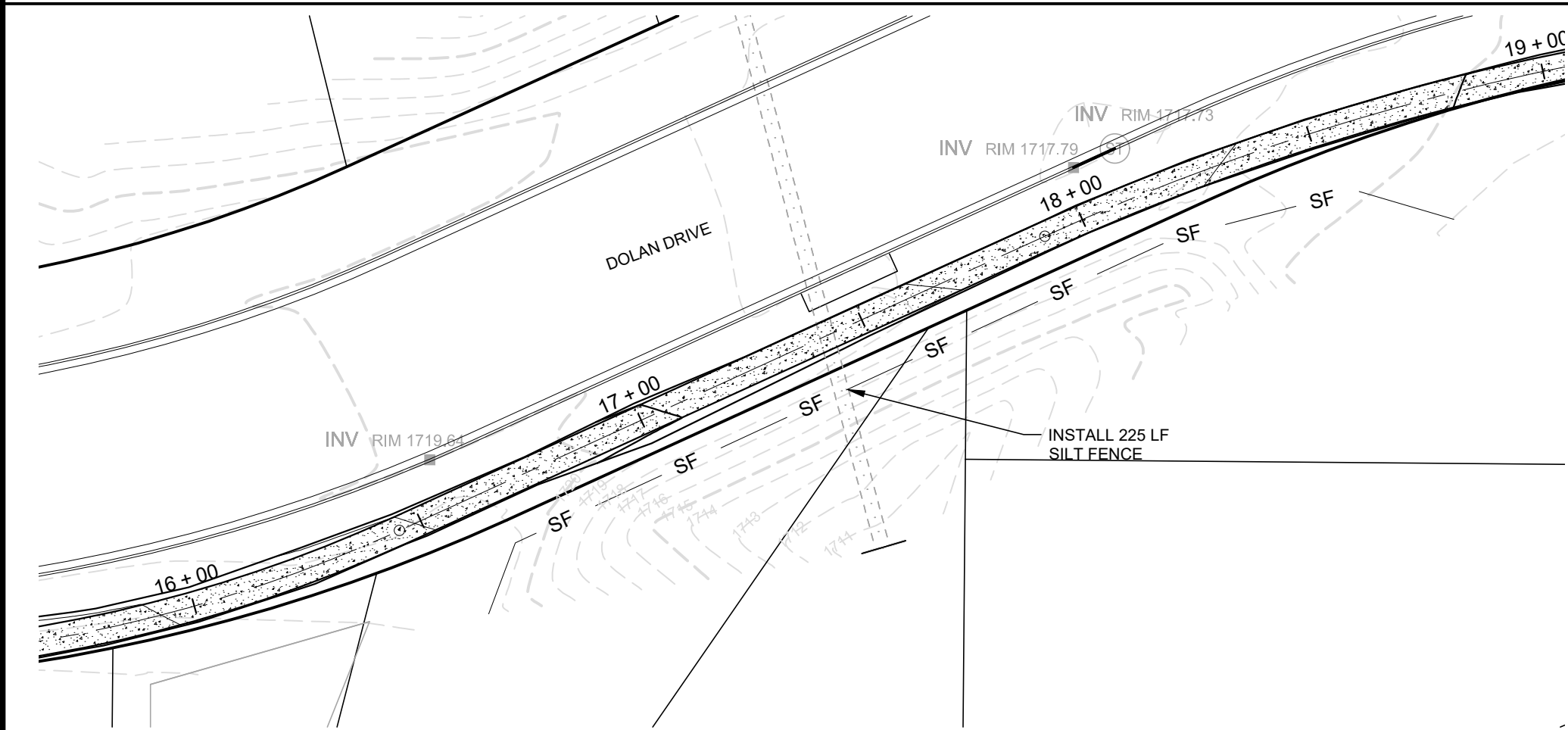
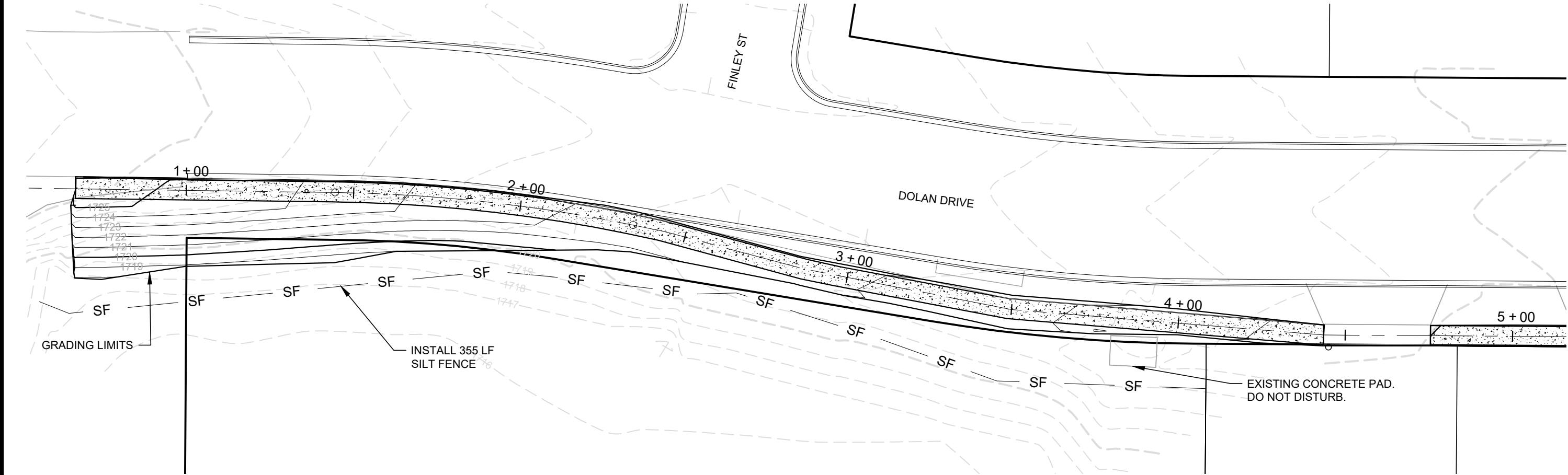
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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	76	1



SPEC CODE	DESCRIPTION	QUANTITY	UNIT
260 0100	SILT FENCE UNSUPPORTED		
	STA 0+57 to STA 4+08	355	LF
	STA 16+67 to STA 18+40	225	LF



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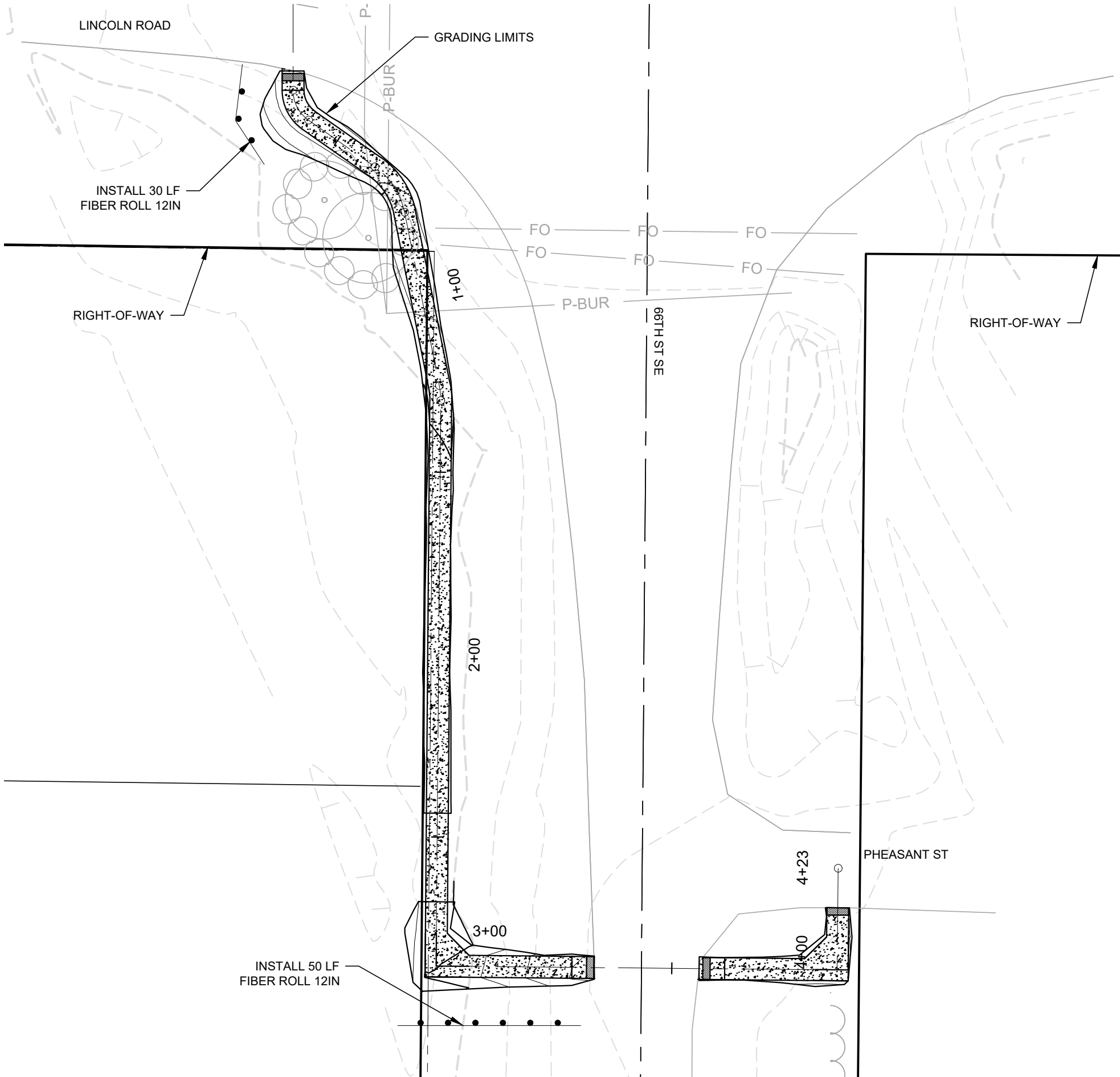


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	ND	TAU-0008(034)	76	2

SPEC CODE	DESCRIPTION	QUANTITY	UNIT
261 0112	FIBER ROLLS 12IN		
	STA 0+24 to STA 0+33	80	LF



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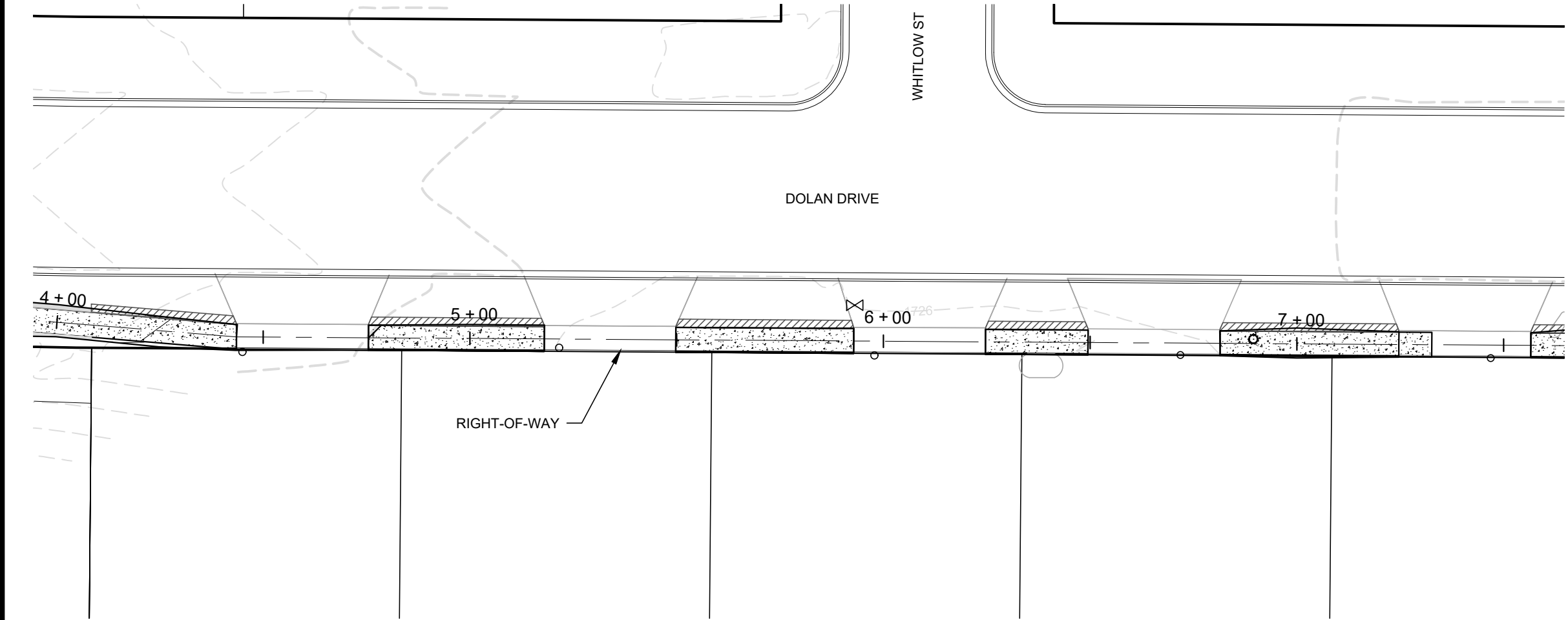
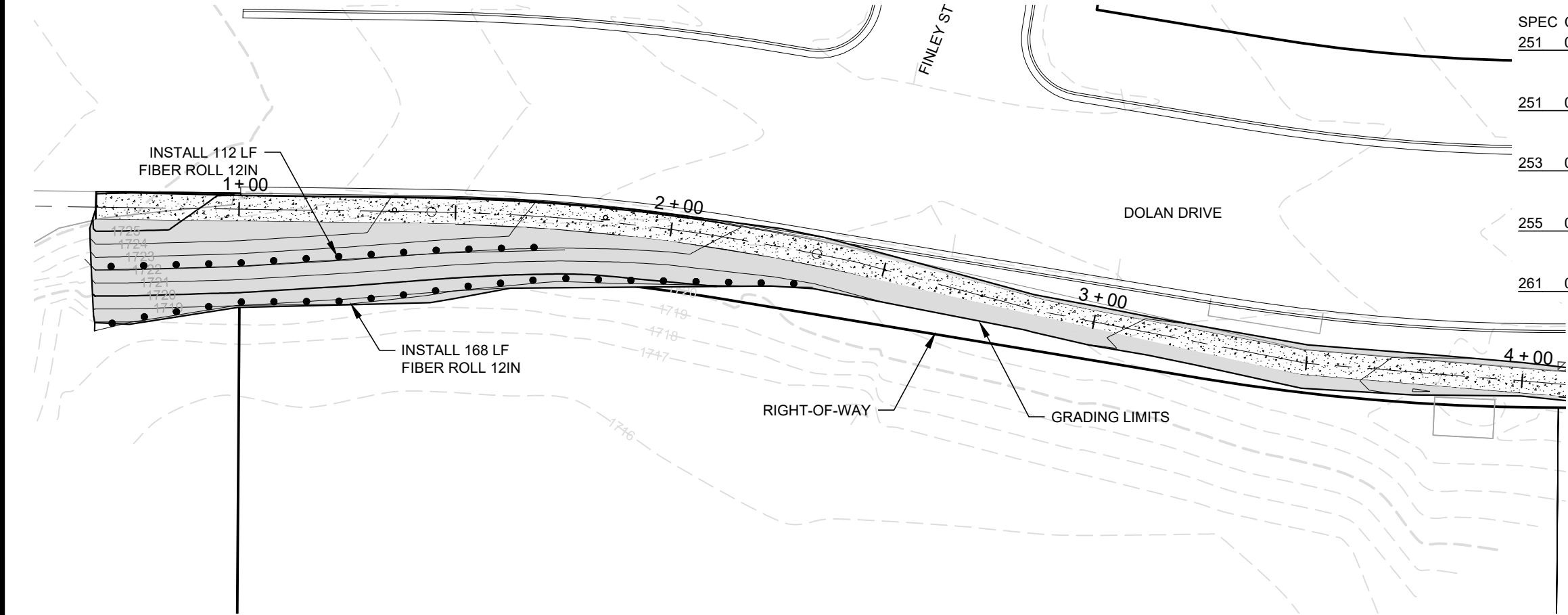




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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	77	1

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
251	0100	SEEDING CLASS I STA 4+08 to STA 7+25	0.008	AC
251	0200	SEEDING CLASS II STA 0+63 to STA 4+08	0.077	AC
253	0201	HYDRAULIC MULCH STA 0+63 to STA 7+25	0.085	AC
255	0102	ECB TYPE II STA 0+63 to STA 2+35	271	SY
261	0112	FIBER ROLLS 12IN STA 0+63 to STA 1+88	280	LF



-  SEEDING CLASS II & HYDRAULIC MULCH
-  SEEDING CLASS I & HYDRAULIC MULCH



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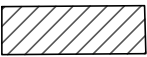
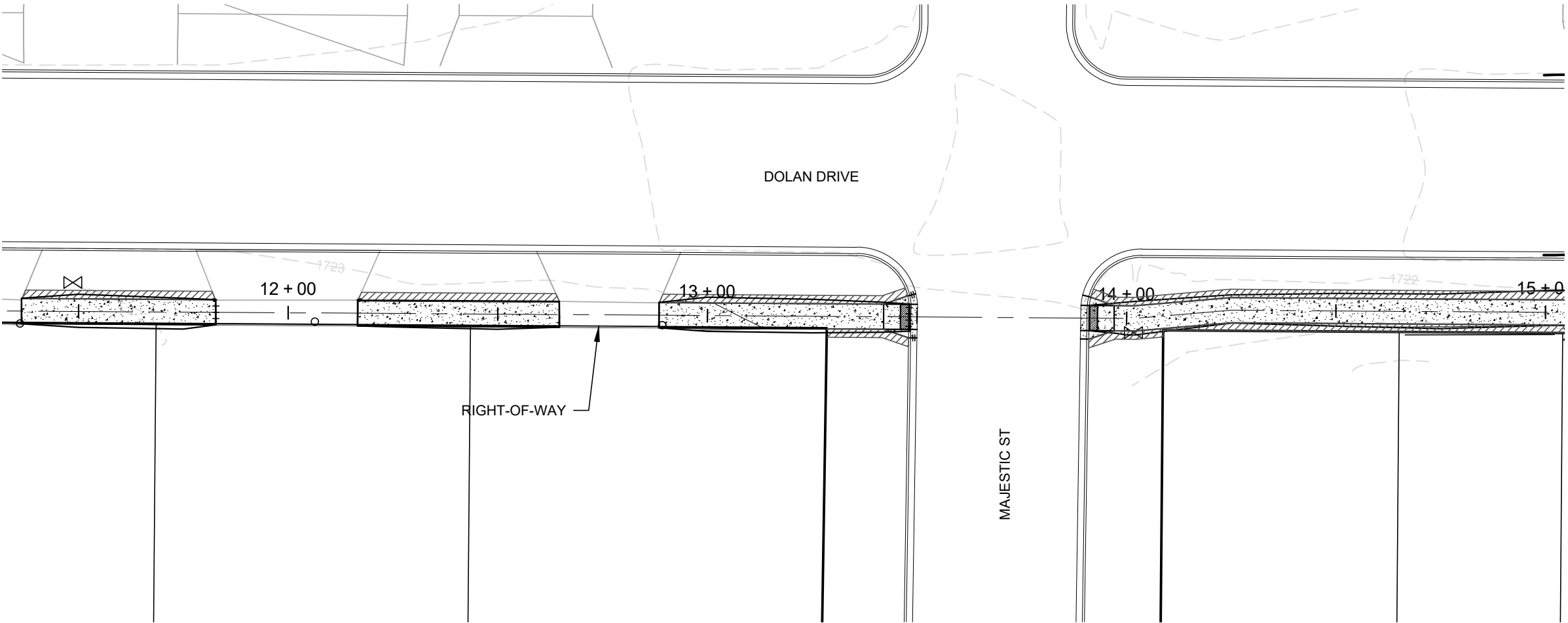
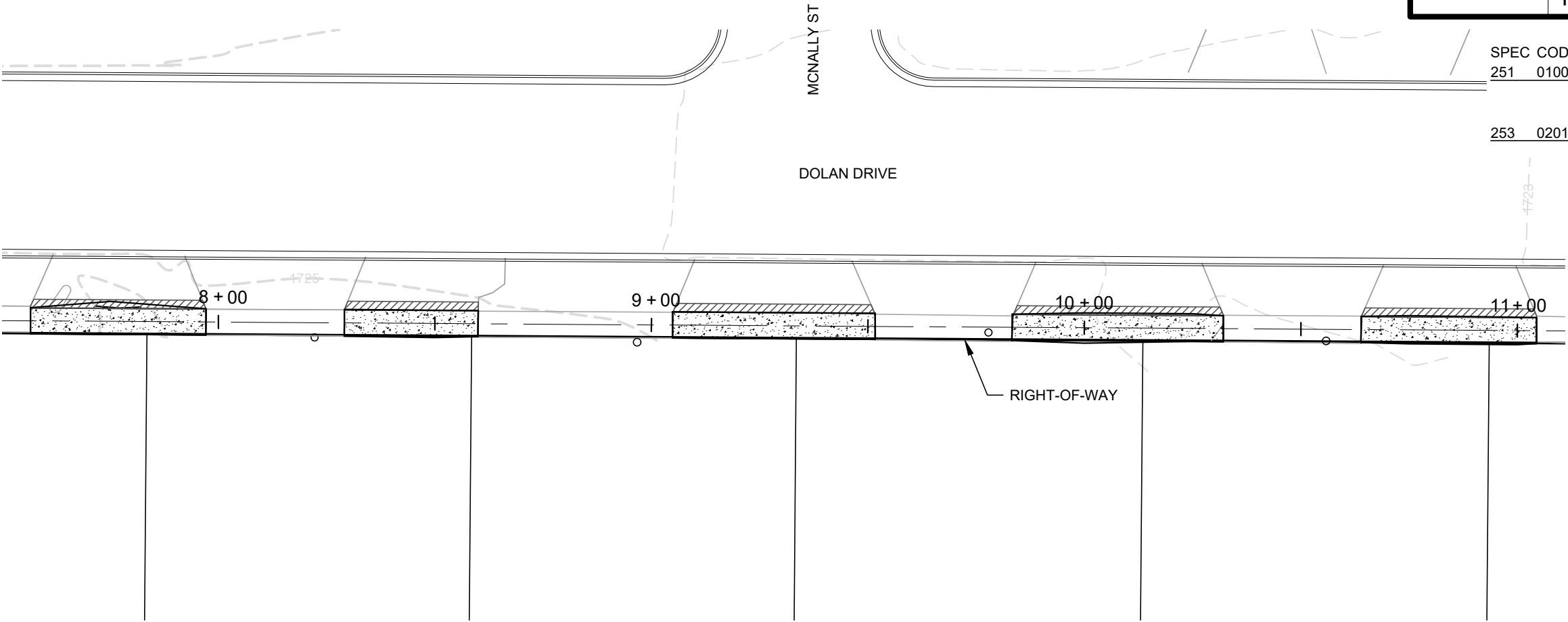
PERMANENT EROSION CONTROL LAYOUT



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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	77	2

SPEC CODE	DESCRIPTION	QUANTITY	UNIT
251 0100	SEEDING CLASS I STA 7+57 to STA 15+00	0.030	AC
253 0201	HYDRAULIC MULCH STA 7+57 to STA 15+00	0.030	AC



SEEDING CLASS I &
HYDRAULIC MULCH



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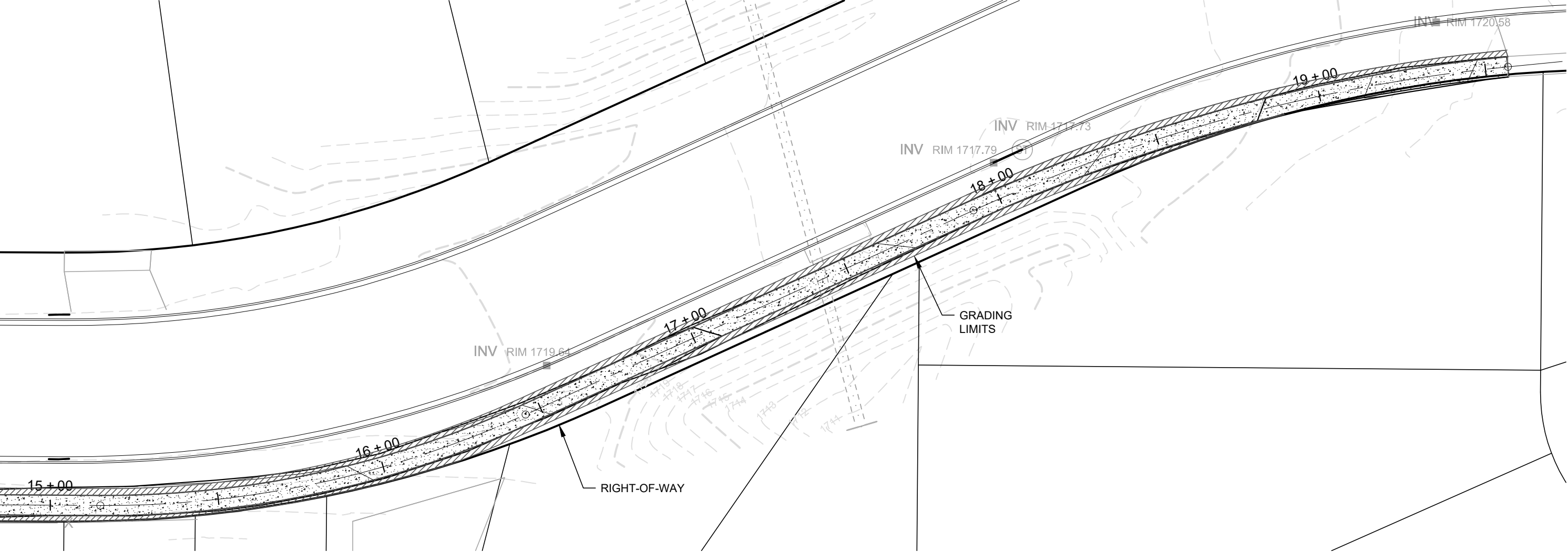
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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	77	3



SPEC CODE	DESCRIPTION	QUANTITY	UNIT
251 0100	SEEDING CLASS I		
	STA 15+00 to STA 19+57	0.039	AC
253 0201	HYDRAULIC MULCH		
	STA 15+00 to STA 19+57	0.039	AC

 SEEDING CLASS I & HYDRAULIC MULCH



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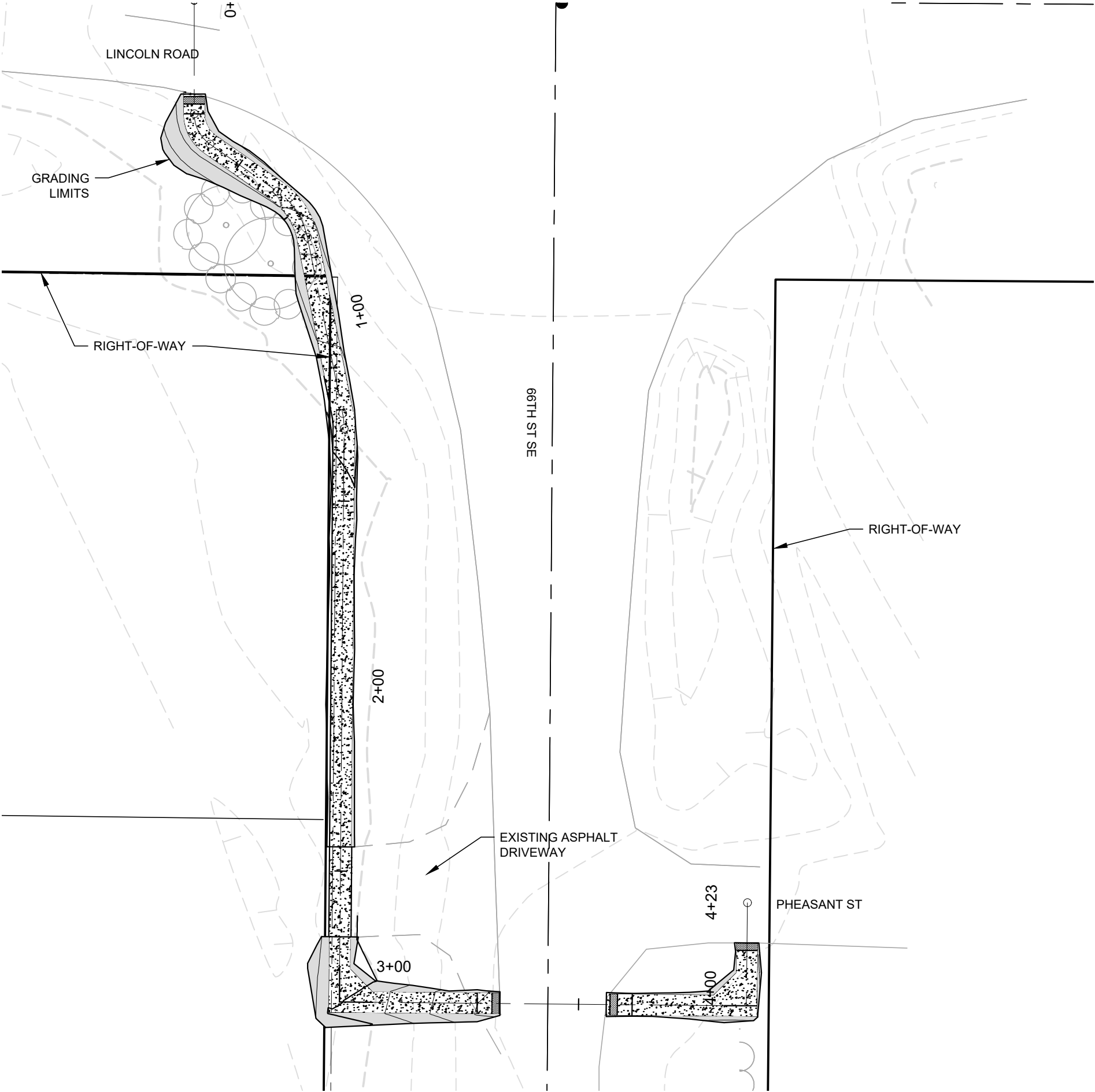
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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	77	4

SPEC CODE	DESCRIPTION	QUANTITY	UNIT
251 0200	SEEDING CLASS II		
	STA 0+25 to STA 4+15	0.018	AC
253 0201	HYDRAULIC MULCH		
	STA 0+25 to STA 4+15	0.018	AC



SEEDING CLASS II & HYDRAULIC MULCH



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	ND	TAU-0008(034)	100	2



LEGEND

- 1

ROAD
WORK
AHEAD

W20-1-48, SKID MOUNTED
- 2

END
ROAD WORK

G20-2-48, SKID MOUNTED
- 3

SHOULDER
WORK

W21-5-48, BARRICADE MOUNTED
- 4

SIDEWALK
CLOSED

R9-9-24, BARRICADE MOUNTED
- TYPE III BARRICADE



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CONSTRUCTION SIGN LAYOUT



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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	100	3

LEGEND

- 1

ROAD WORK AHEAD

W20-1-48, SKID MOUNTED
- 2

END ROAD WORK

G20-2-48, SKID MOUNTED
- 3

SHOULDER WORK

W21-5-48, SKID MOUNTED
- 4

SIDEWALK CLOSED

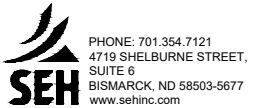
R9-9-24, BARRICADE MOUNTED
- TYPE III BARRICADE
- TUBULAR MARKER

- NOTES:
- TUBULAR MARKERS ARE SPACED 10' O.C.
 - DRIVING LANE MUST BE MAINTAINED AT 12' MINIMUM.



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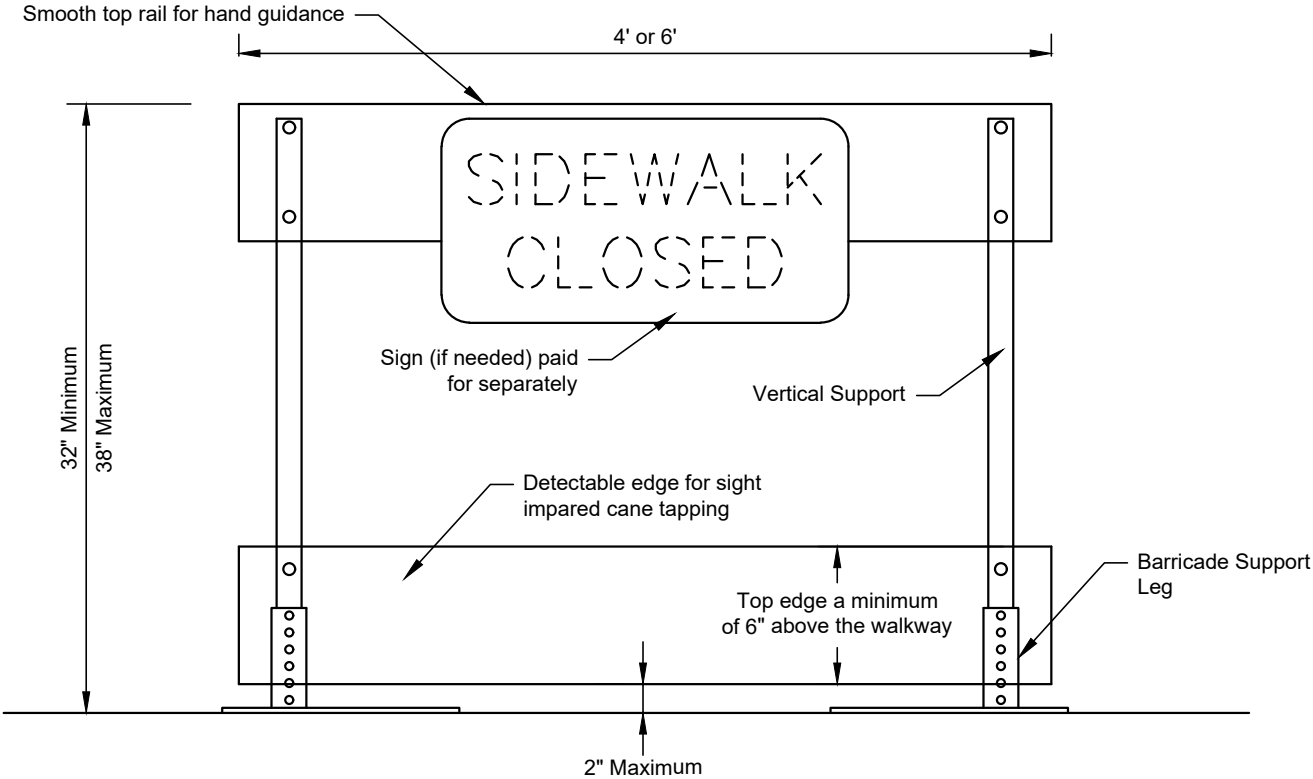
CONSTRUCTION SIGN LAYOUT



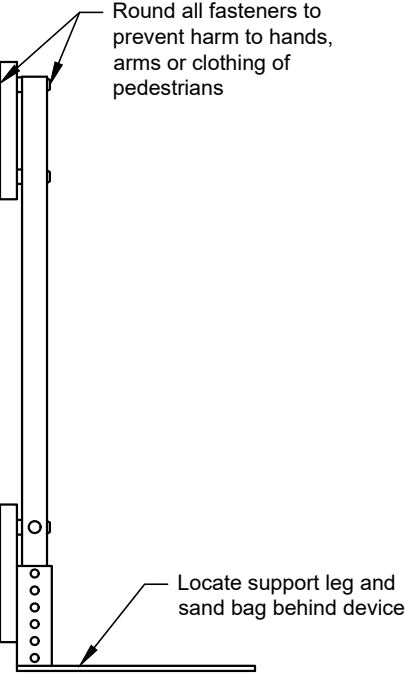
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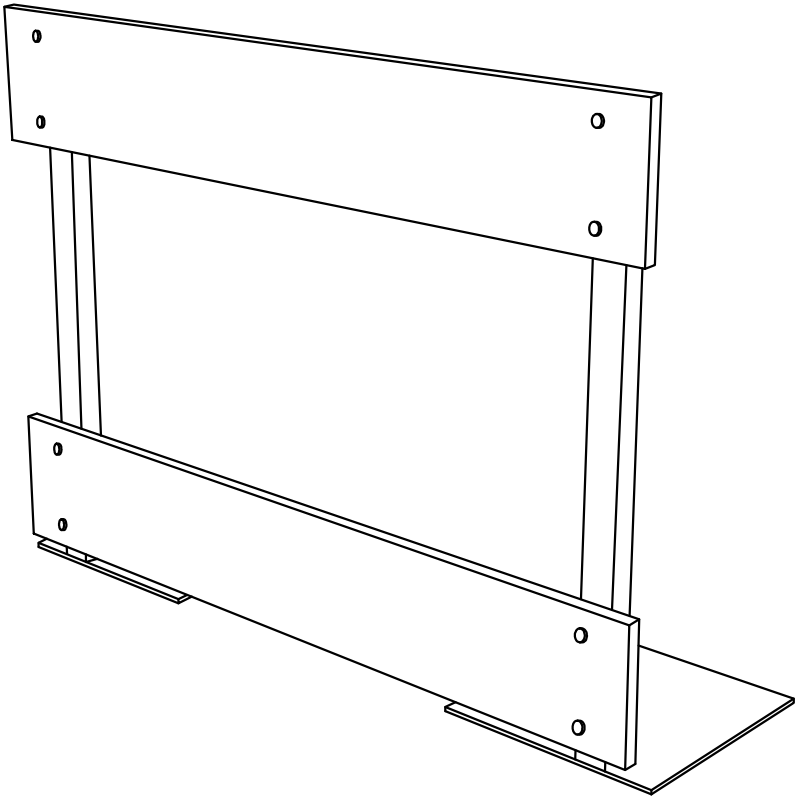
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	ND	TAU-0008(034)	100	4



Front View



End View



Perspective View

NOTES:

- Sidewalk Barricades
- 1 Provide self standing sidewalk barricade with no supports extending into the pedestrian path.
 - 2 Use orange or orange and white diagonal striped barricade panels contrasting with the walkway surface.
 - 3 Provide ADA compliant and NCHRP 350 or Mash Test Level 3 (TL3) approved sidewalk barricades.
 - 4 Include all costs to furnish, maintain and remove sidewalk barricades in the price bid for "Sidewalk Barricade".

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DETAILS



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	ND	TAU-0008(034)	110	2

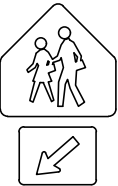
SCHOOL ADVANCED CROSSING ASSEMBLY



S1-1-30

W16-9P-24

SCHOOL CROSSING ASSEMBLY



S1-1-30

W16-7PR-24

- NOTES:**
1. INSTALL SCHOOL ADVANCED CROSSING ASSEMBLIES AND SCHOOL CROSSING ASSEMBLIES AS MARKED BY ENGINEER.
 2. ALL SIGNS SHALL HAVE FLUORESCENT YELLOW-GREEN BACKGROUND WITH BLACK LEGEND AND BORDER.



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PERMANENT SIGNS



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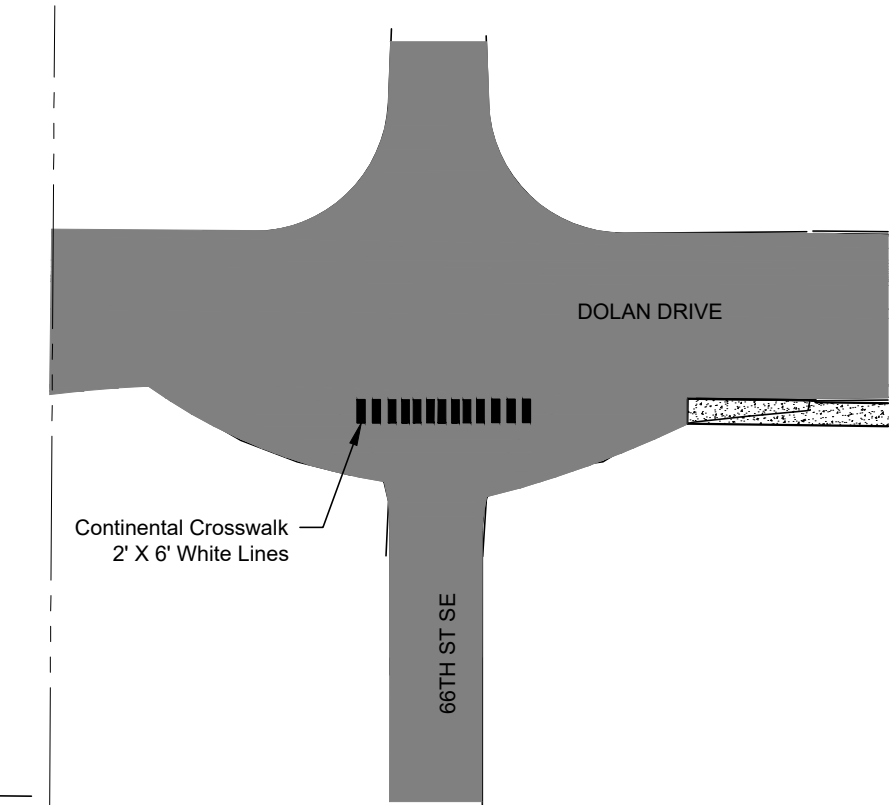
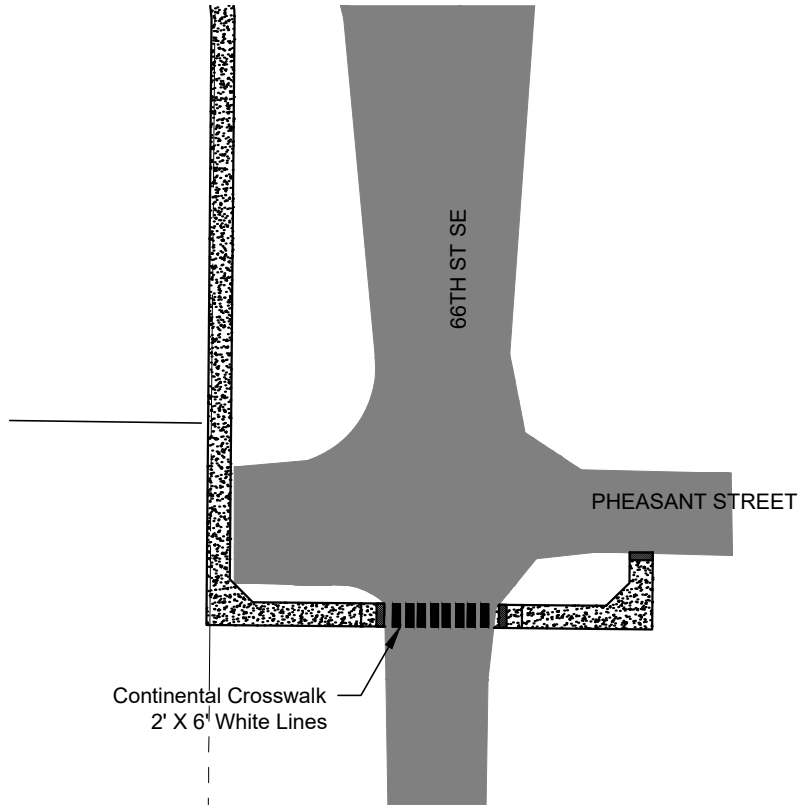
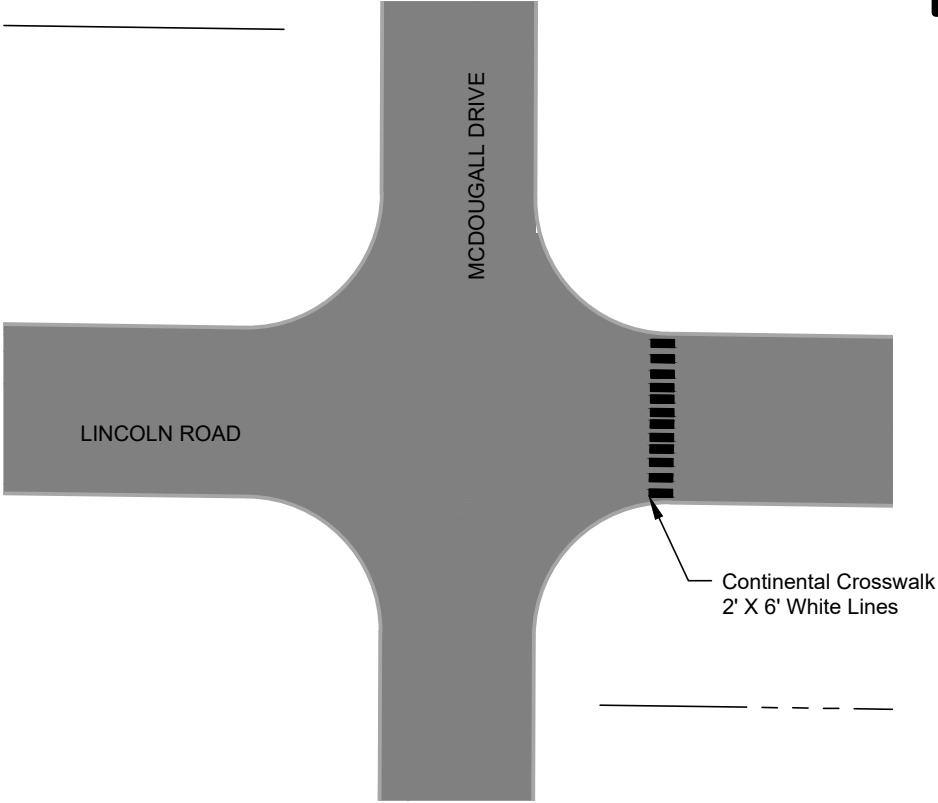
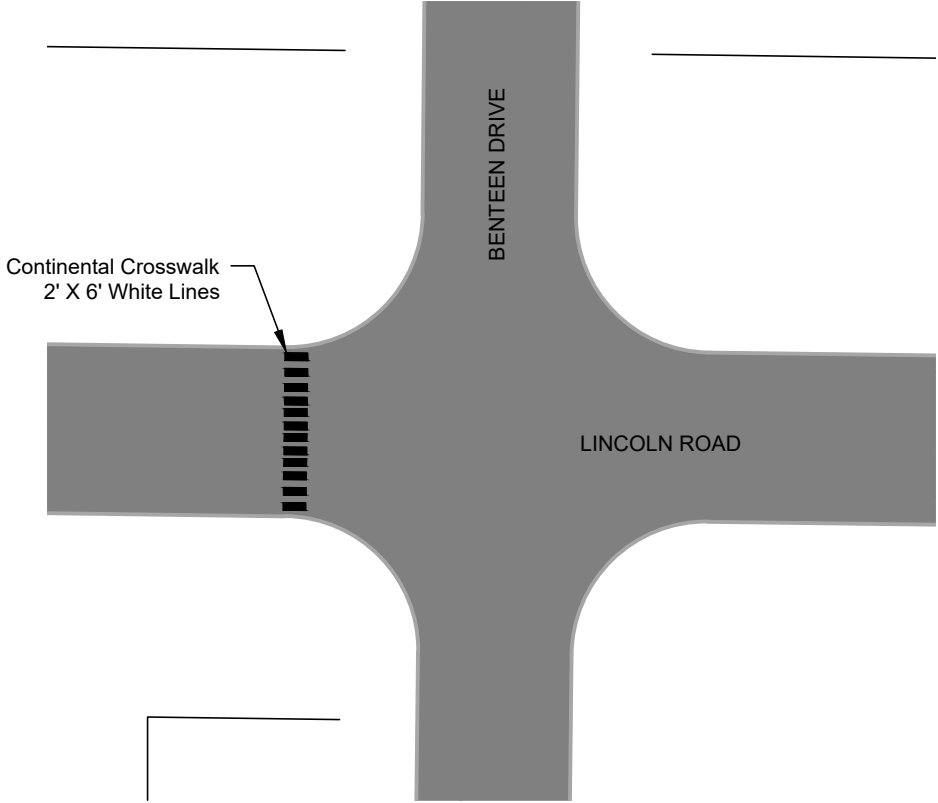
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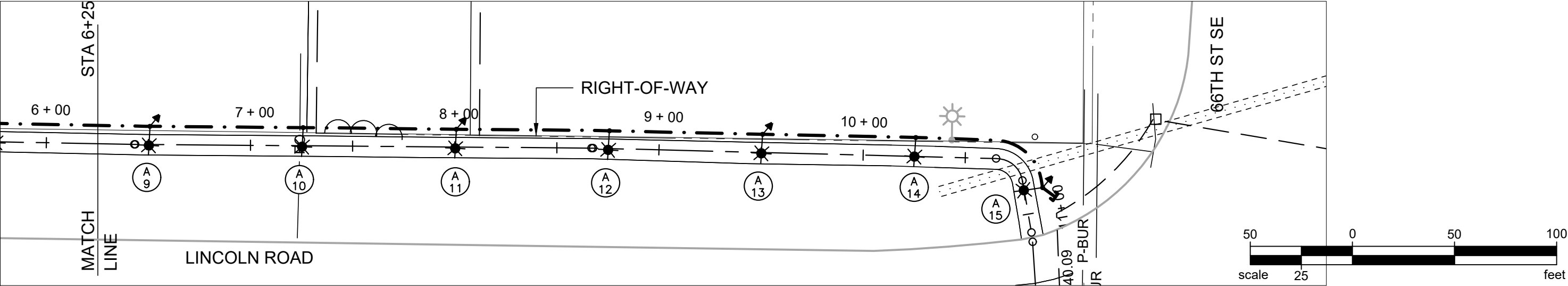
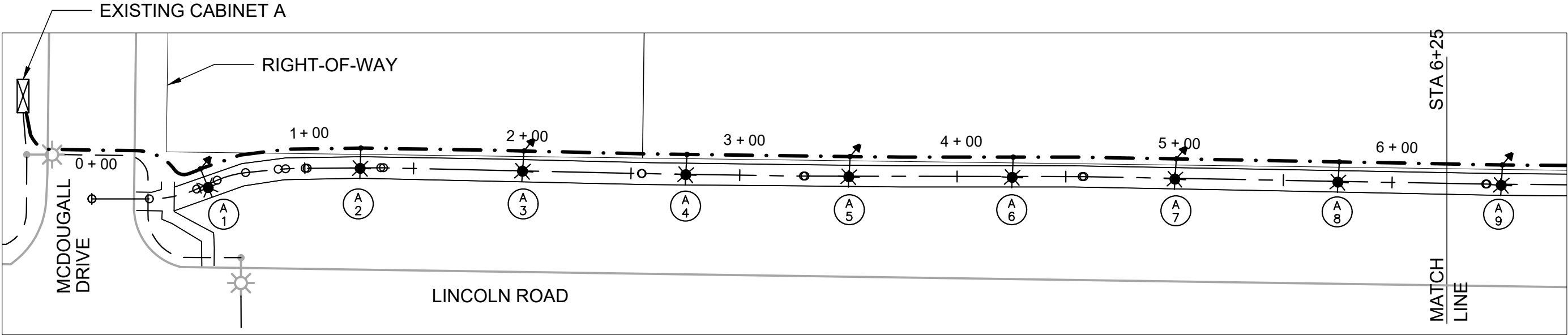
Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	120	1

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
762	0135	EPOXY PVMT MK 24IN LINE-GROOVED		
		Lincoln Rd/Benteen Dr	72	LF
		Lincoln Rd/McDougall Dr	72	LF
		66th St SE/Pheasant St	48	LF
		66th St SE/Dolan Dr	78	LF












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PAVEMENT MARKINGS			
 PHONE: 701.354.7121 4719 SHELBURNE STREET, SUITE 6 BISMARCK, ND 58503-5677 www.sehinc.com	SEH Project #:	Date:	
	154870	4/29/2020	
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LEGEND

-  LIGHTING UNIT TYPE SPECIAL
-  EXISTING LIGHTING UNIT
-  UNDERGROUND WIRING IN CONDUIT
-  EXISTING CIRCUIT IN CONDUIT
-  10' GROUND ROD
-  LIGHTING UNIT NUMBER
-  CONDUIT STUB
-  EXISTING PULLBOX
-  EXISTING CABINET

NOTES:

1. ALL CONDUIT SHALL BE 1" NMC SCHEDULE 40 UNLESS OTHERWISE NOTED.
2. PROVIDE 1" CAPPED CONDUIT STUB AS INDICATED.
3. LIGHTING UNITS SHALL BE SET BACK 4' FROM EDGE OF PATH TO CENTER OF BASE.
4. ALL CONDUCTORS SHALL BE COPPER, TYPE XHHW-2, (2)#8 & (1)#8 GND UNLESS OTHERWISE NOTED.

LIGHT LOCATIONS

LIGHT NO.	A1	A2	A3	A4	A5	A6	A7	A8
STA	0+52	1+27	2+02	2+77	3+52	4+27	5+02	5+77

LIGHT NO.	A9	A10	A11	A12	A13	A14	A15
STA	6+52	7+27	8+02	8+77	9+52	10+27	10+87

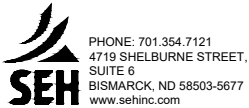
LIGHTING SYSTEM - LUMP SUM
ESTIMATED QUANTITIES FOR MAJOR ITEMS

FOR INFORMATION ONLY - CONTRACTOR SHALL CONFIRM QUANTITIES

Item No.	DESCRIPTION	UNIT	QTY
1	LIGHTING UNIT TYPE SPECIAL	EA	15
2	LIGHT FOUNDATION DESIGN SPECIAL	EA	15
3	1IN DIAMETER RIGID CONDUIT	LF	1,170
4	UNDERGROUND CONDUCTOR NO8- TYPE XHHW-2	LF	4,000
5	UNDERGROUND CONDUCTOR NO12- TYPE XHHW-2	LF	700
6	CABINET MODIFICATIONS	LSUM	1

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LIGHTING



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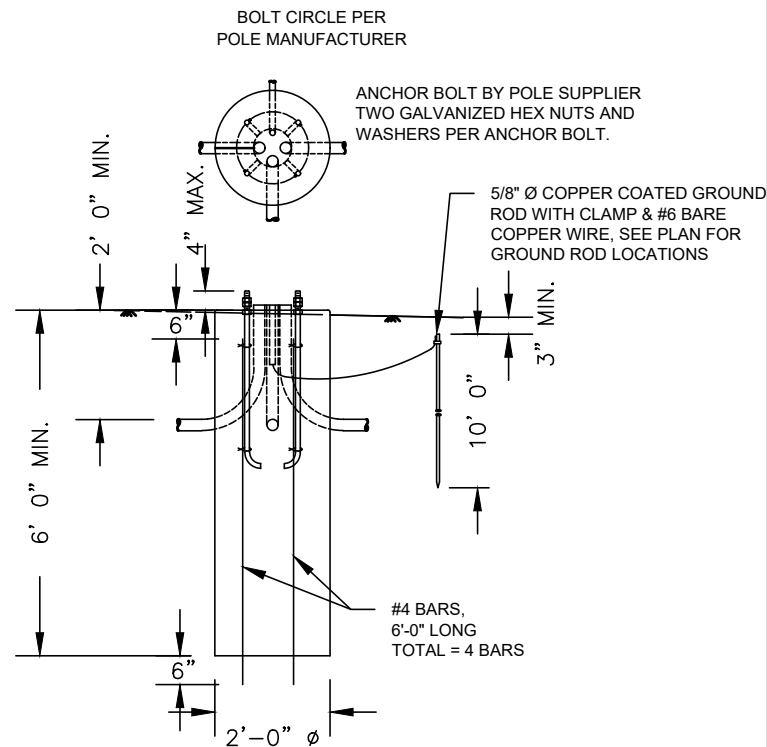
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KST

NOTES:

- THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE CONSTRUCTION OF A COMPLETE AND OPERATIONAL LIGHTING SYSTEM.
- CONTRACTOR SHALL FURNISH AS-BUILT PLANS THAT INDICATE ACCURATE LOCATIONS FOR CABLE, CONDUIT, SERVICE CABINET, LIGHT POLE, AND HANDHOLE LOCATIONS MEASURED FROM A KNOWN LOCATION.
- CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND UTILITY COORDINATION.
- ALL MATERIAL AND WORK SHALL BE IN ACCORDANCE WITH THE N.E.C. AND THE 2014 EDITION OF NDDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND AS IDENTIFIED HEREIN.
- CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH ALL OTHER PARTIES OCCUPYING THE SITE SO AS TO NOT IMPEDE OR DELAY CONSTRUCTION PROGRESS. CONTRACTOR SHALL ATTEND REGULARLY SCHEDULED CONSTRUCTION PROGRESS MEETINGS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE AMONG SUPPLIERS AND CONTRACTORS PROVIDING EQUIPMENT FOR THE PROJECT. THE COORDINATION SHALL INCLUDE, BUT NOT BE LIMITED TO, OPERATORS, POWER REQUIREMENTS, ETC. COOPERATE WITH OTHER TRADES TO AVOID INTERFERENCES IN THE INSTALLATION OF THIS WORK. INSTALL ALL EQUIPMENT AND SYSTEMS SO AS NOT TO DELAY PROGRESS OF CONSTRUCTION, AND CORRELATE WITH OTHER TRADES TO AVOID DELAY. SHOULD DIFFERENCES OF OPINION DEVELOP; THE ENGINEER'S DECISION WILL BE FINAL. CONTRACT UNIT PRICES SHALL REFLECT ALL CONSTRUCTION COSTS.
- THE CONTRACTOR SHALL SUBMIT A COMPLETE SET OF SHOP DRAWINGS FOR ALL PROPOSED EQUIPMENT TO THE OWNER AND ENGINEER FOR REVIEW. THE SUBMITTED ITEMS MUST BE APPROVED PRIOR TO COMMENCEMENT OF WORK.
- ALL MATERIALS SHALL BE UL LISTED.
- ALL CONDUIT SHALL BE 1" NMC SCHEDULE 40 UNLESS OTHERWISE NOTED. PROVIDE 1" CAPPED CONDUIT STUBS AS INDICATED.
- ALL CONDUIT SHALL BE PLACED A MINIMUM OF 24" DEEP, AND BE PLACED BY TRENCHING, PLOWING OR DIRECTIONAL BORING.
- PROTECT ADJACENT UTILITIES THAT ARE TO REMAIN.

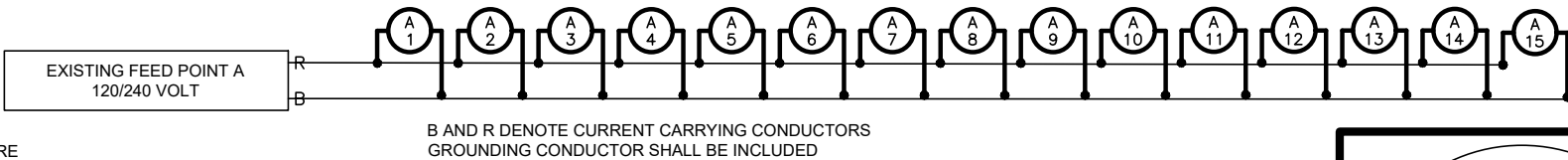
- SPLICING SHALL BE PERFORMED USING BURNDY UNITAP SPLICING HARDWARE OR APPROVED EQUAL. WIRE NUTS ARE NOT AN APPROVED METHOD OF SPLICING WITHIN POLE BASES OR PULLBOXES.
- OPERATE LUMINAIRES AT 240 VOLTS.
- PROVIDE BUSSMANN TYPE HEX-AW-DRLC-A 2-POLE FUSE HOLDER FOR EACH LUMINAIRE ON A POLE, COMPLETE WITH WATERPROOF BOOTS AND 3-AMP FUSES, IN FEED LEADS OF LUMINAIRE POLE RISER WIRES.
- ALL UNDERGROUND CONDUCTORS SHALL BE COPPER, TYPE XHHW-2, (2)#8 & (1)#8 GND UNLESS OTHERWISE NOTED.
- PROVIDE (3)#12 STRANDED XHHW-2 CONDUCTORS FROM POLE BASE TO EACH LUMINAIRE.
- PROVIDE ADEQUATE CONDUCTOR LENGTH TO ENABLE SPLICES AND FUSE HOLDERS TO BE REMOVED FROM POLE HANDHOLE FOR MAINTENANCE.
- THE CONTRACTOR SHALL COAT ALL THREADED HARDWARE WITH AN APPROVED ZINC-BASED ANTI-SEIZE COMPOUND PRIOR TO ASSEMBLY.
- FOLLOWING THE INSTALLATION OF CABLES AND CONDUCTORS, SEAL THE OPEN ENDS OF CONDUIT ENTERING CABINETS, POLE FOUNDATIONS, OR HANDHOLES USING A DUCT SEAL COMPOUND NRTL CLASSIFIED UNDER GENERAL USE TAPES.
- EXACT LOCATION OF NEW LIGHTING UNITS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- PULLBOX: QUAZITE # PG1324 BA12, POLYMER CONCRETE. COVER DESIGNED TO CARRY LIGHT TRAFFIC, MOLD "STREET LIGHTING" INTO COVER & PROVIDE DRAIN OPENING IN BOTTOM. PROVIDE 12" OF PEA GRAVEL BASE UNDER HANDHOLE.

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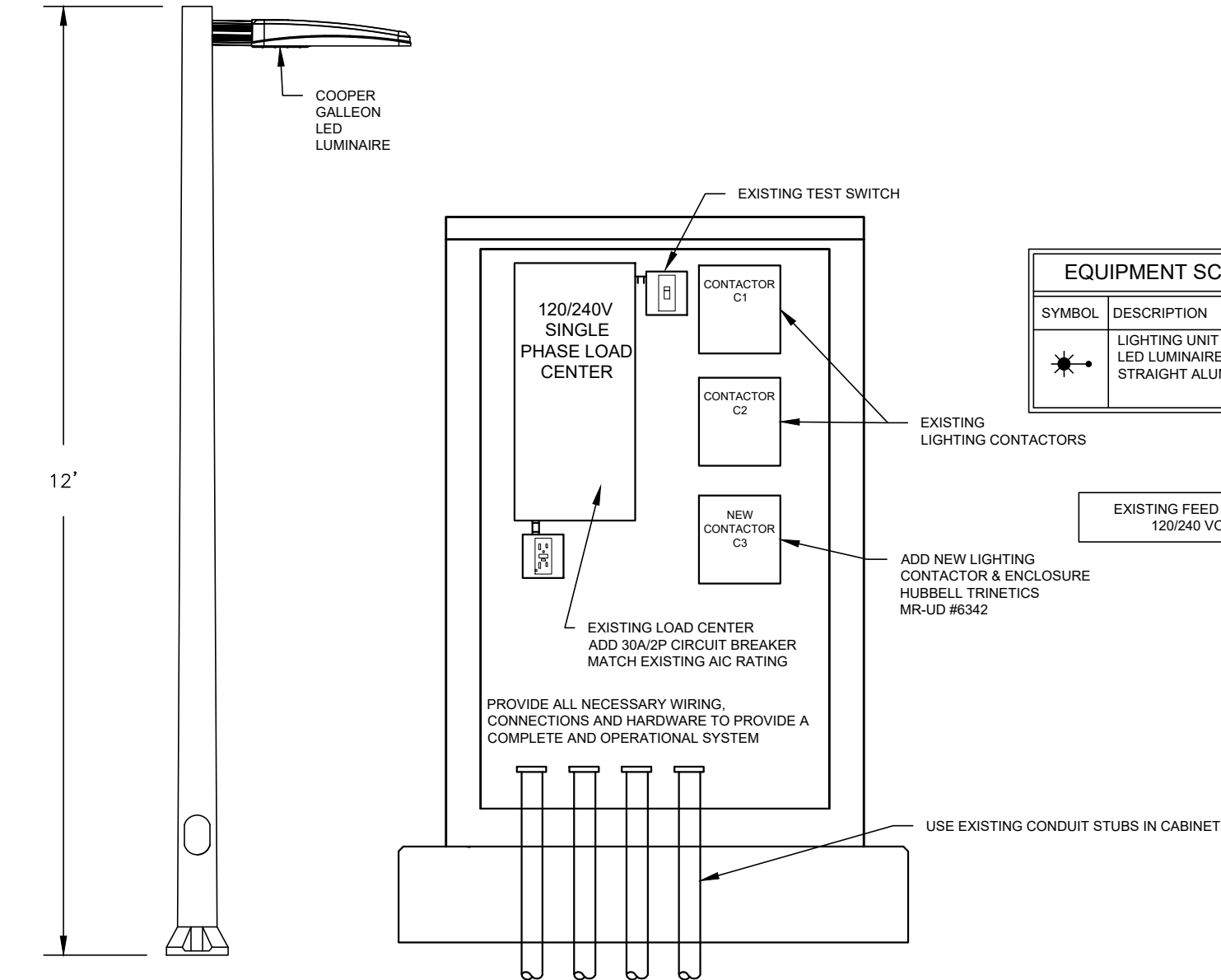


LIGHT FOUNDATION DESIGN SPECIAL DETAIL

EQUIPMENT SCHEDULE					
CONTRACTOR SHALL FURNISH EQUIPMENT IDENTIFIED IN THIS SCHEDULE AND PLAN. NO SUBSTITUTIONS ALLOWED. EQUIPMENT MUST MATCH PRODUCTS CURRENTLY MAINTAINED IN ADJACENT PROJECT, AND WITHIN CITY INVENTORY.					
SYMBOL	DESCRIPTION	LAMP SOURCE	MOUNTING	OPTICS	
	LIGHTING UNIT TYPE SPECIAL LED LUMINAIRE ON SQUARE STRAIGHT ALUMINUM POLE	59 WATT LED 3000K	12' POLE ON LIGHT FOUNDATION DESIGN SPECIAL	TYPE II	COOPER LIGHTING - LUMINAIRE: GLEON-AF-01-LED-E1-SL2-BK-7030-AHD245-TH POLE: SSA-4-T-12-W-Y-N-1



CIRCUIT DIAGRAM



LIGHTING UNIT TYPE SPECIAL DETAIL

EXISTING CONTROL CABINET DETAIL

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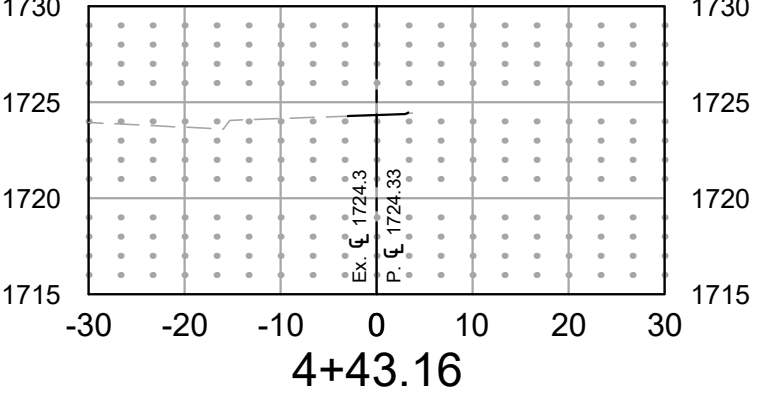
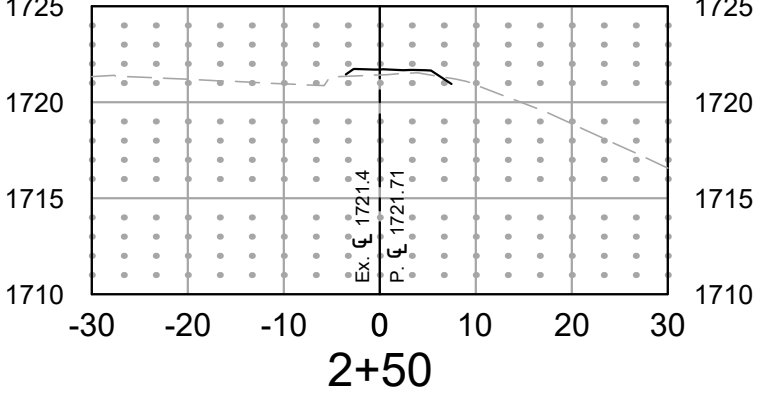
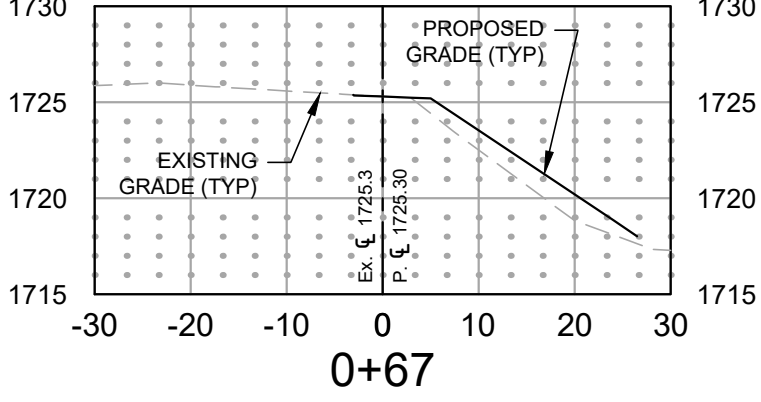
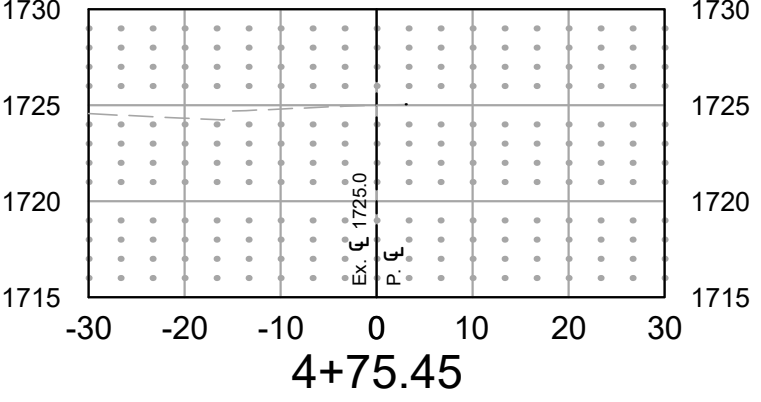
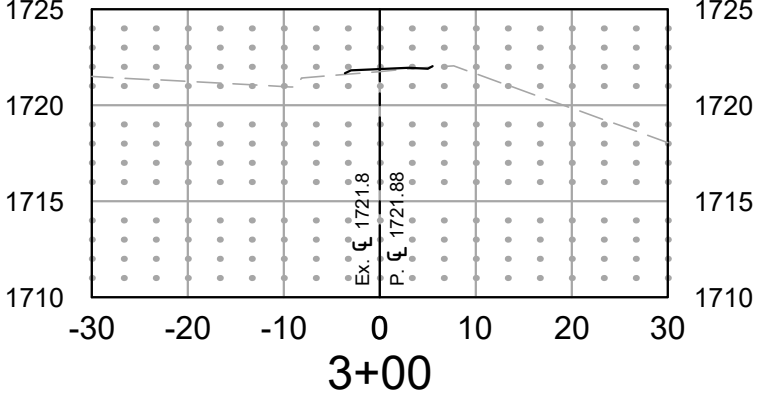
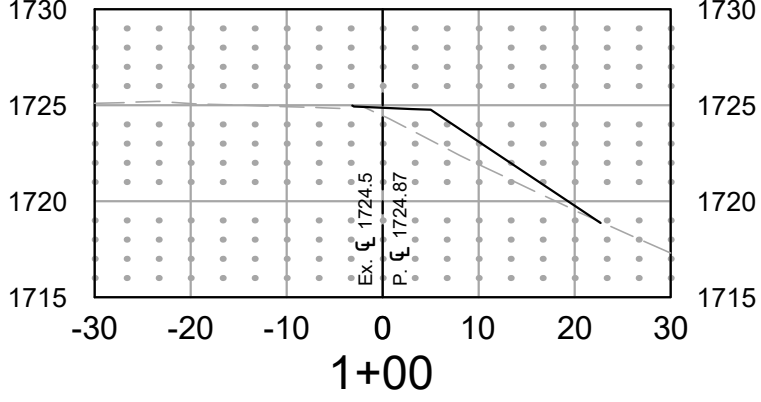
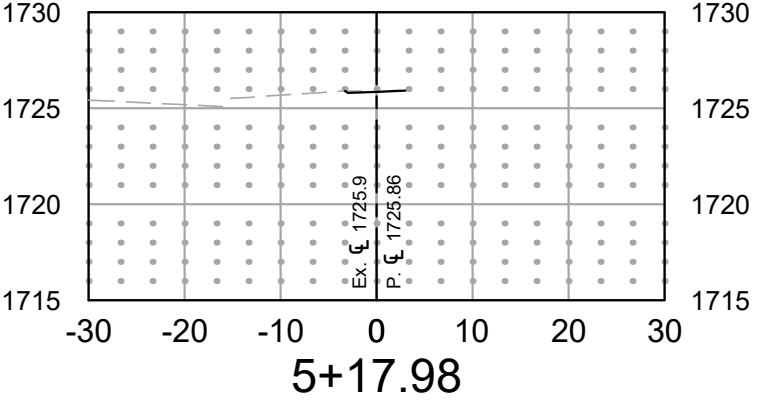
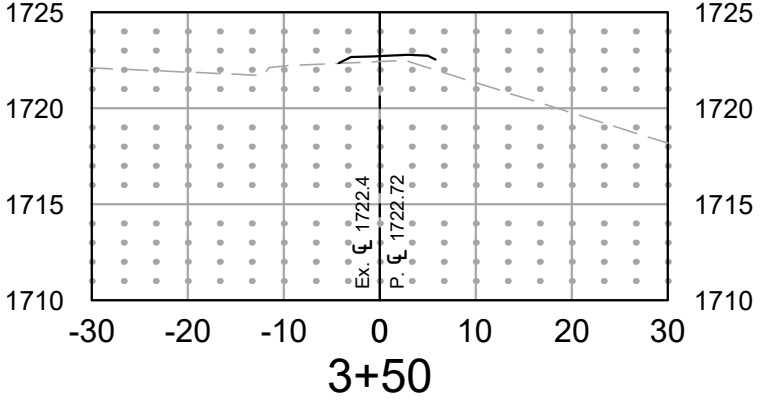
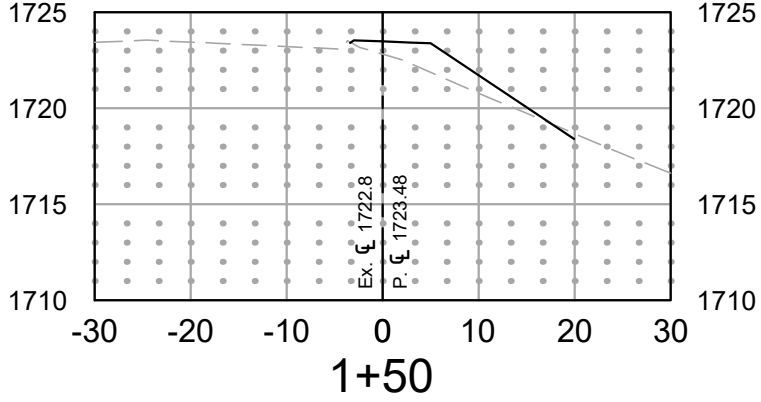
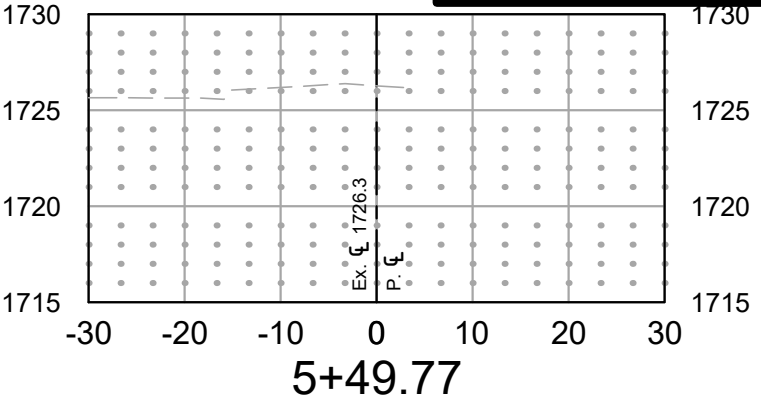
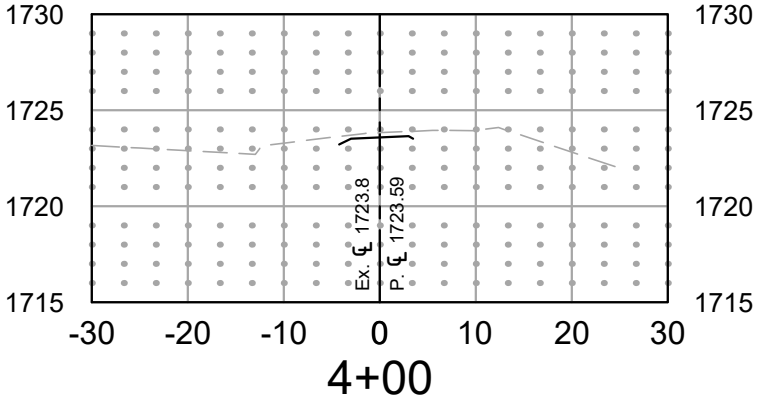
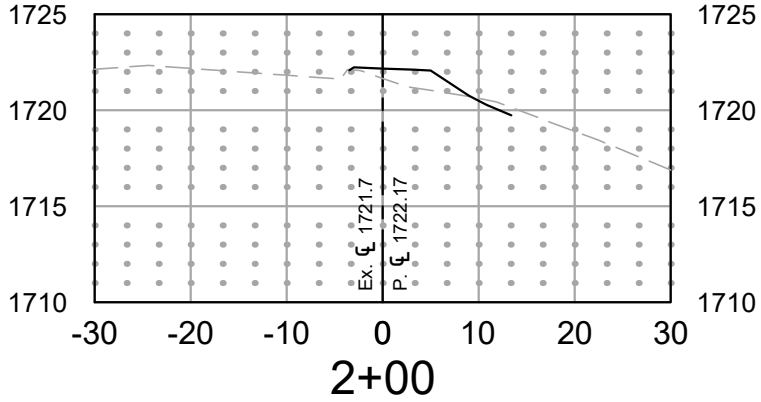
LIGHTING



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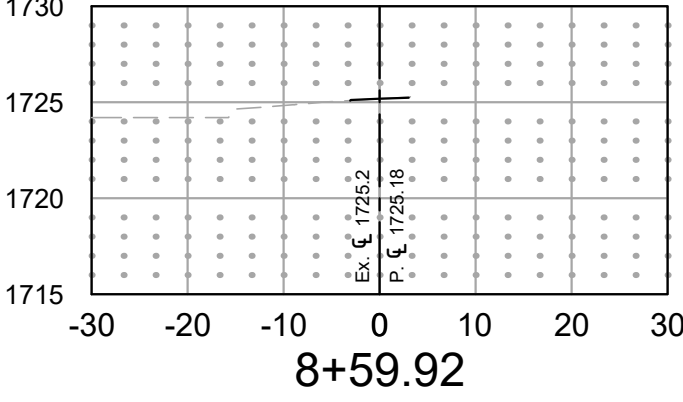
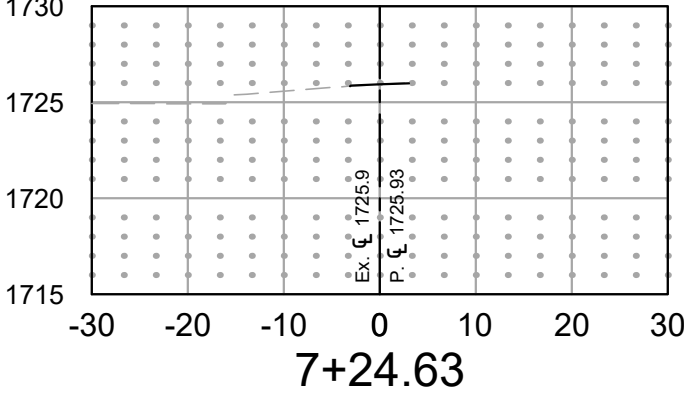
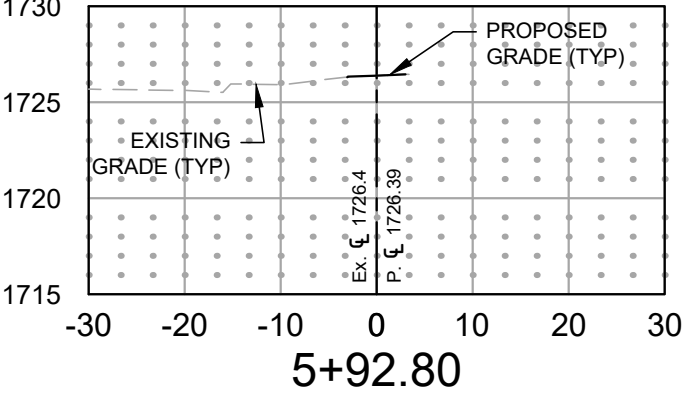
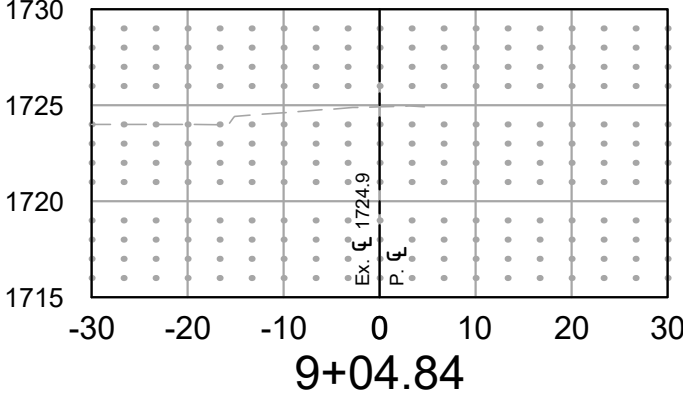
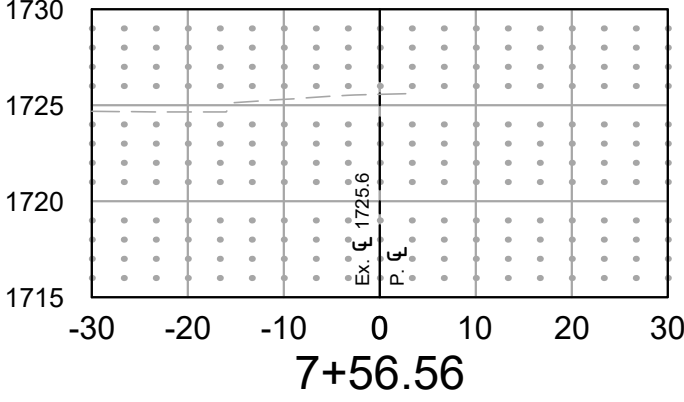
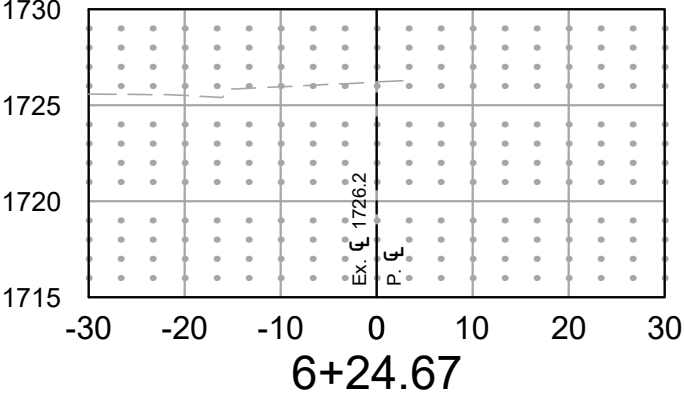
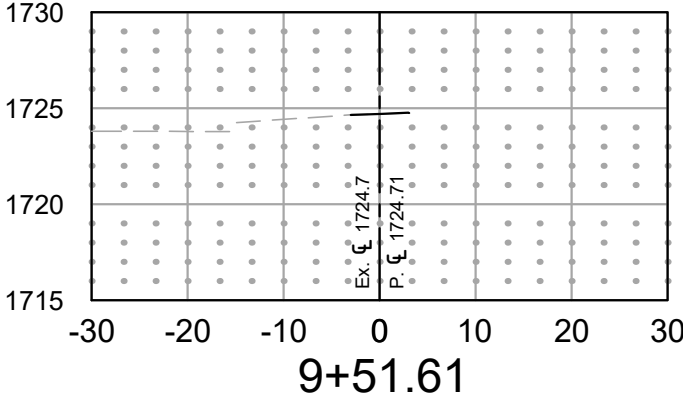
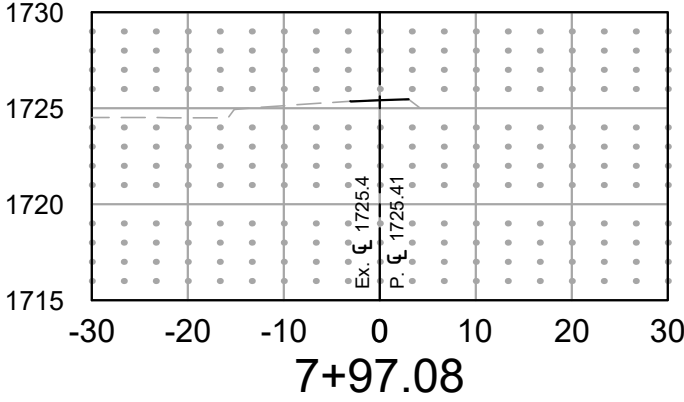
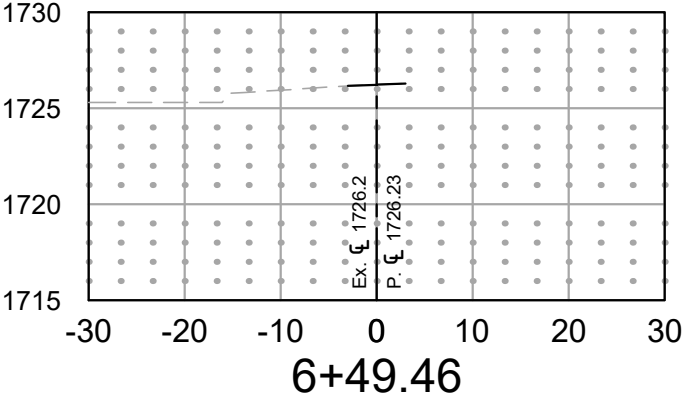
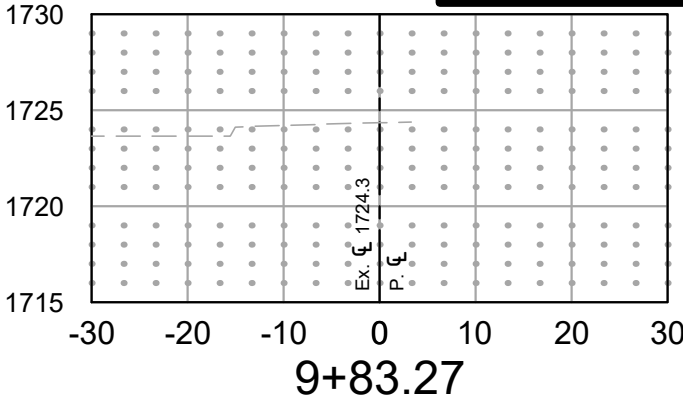
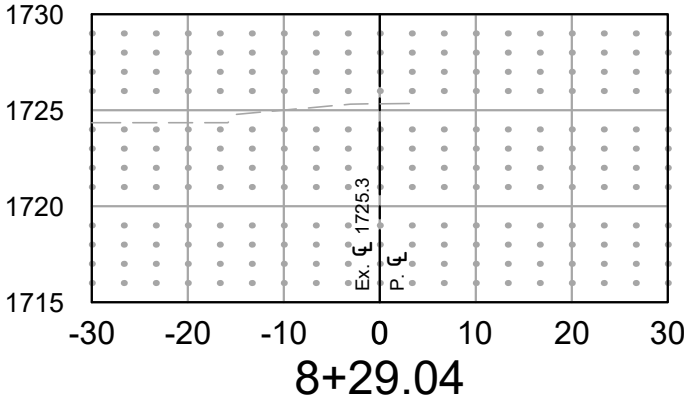
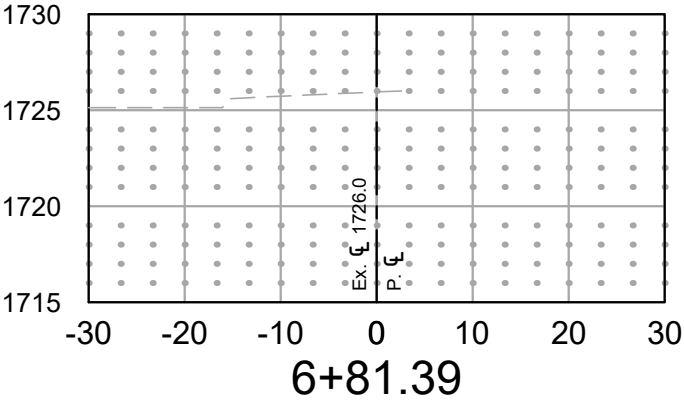
DOLAN DRIVE CROSS SECTIONS



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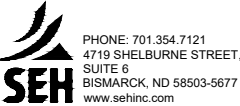
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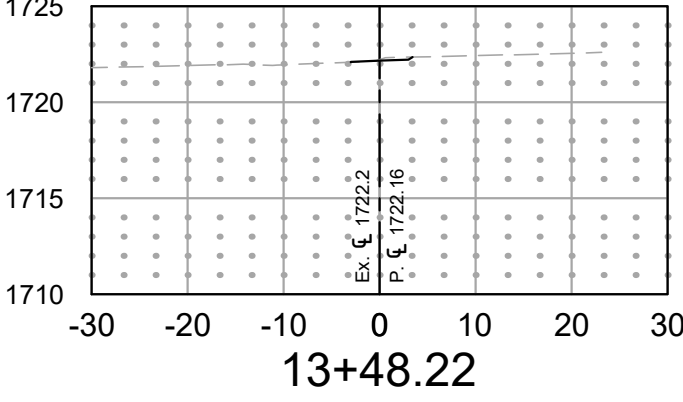
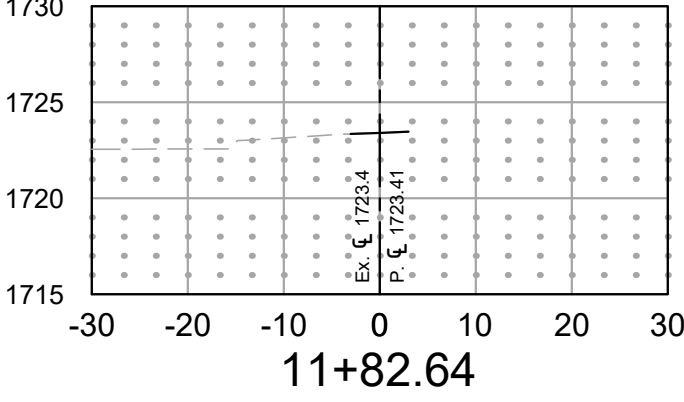
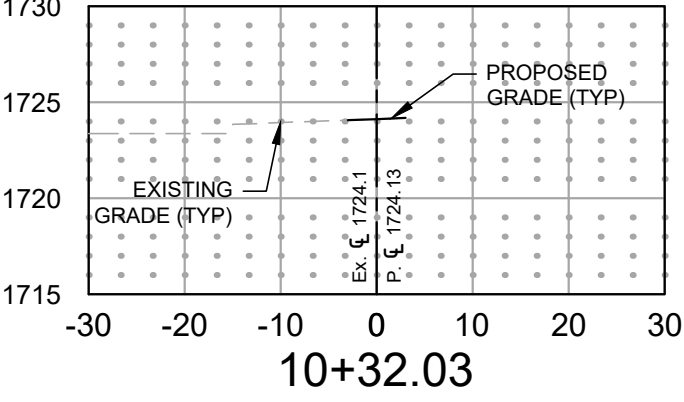
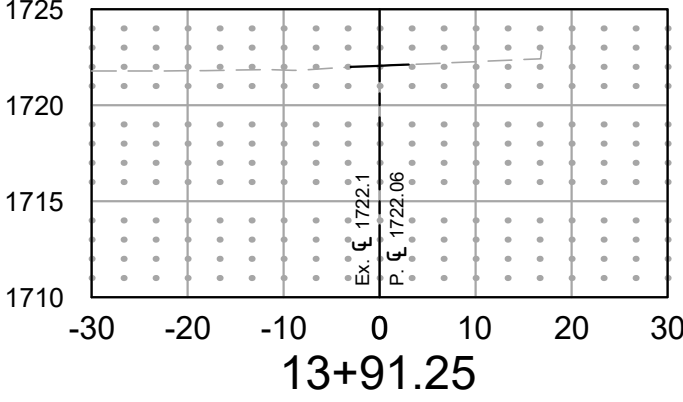
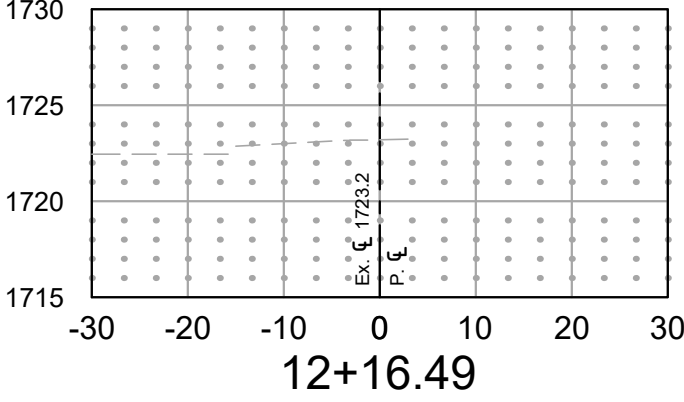
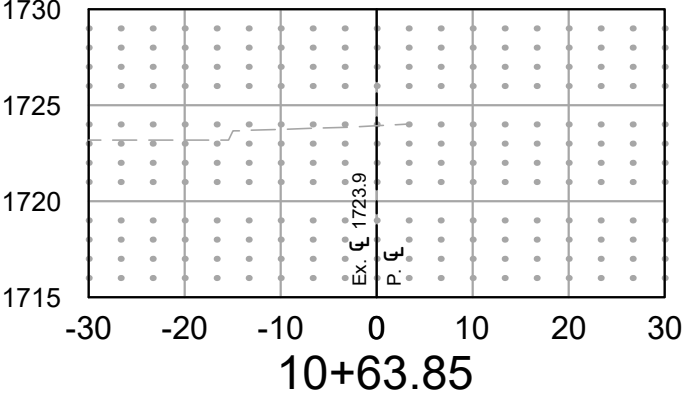
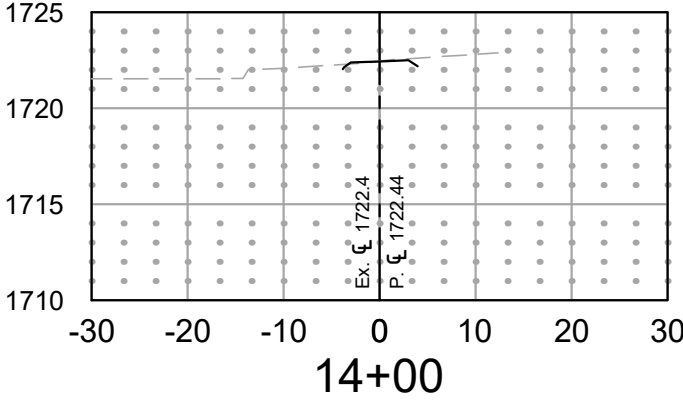
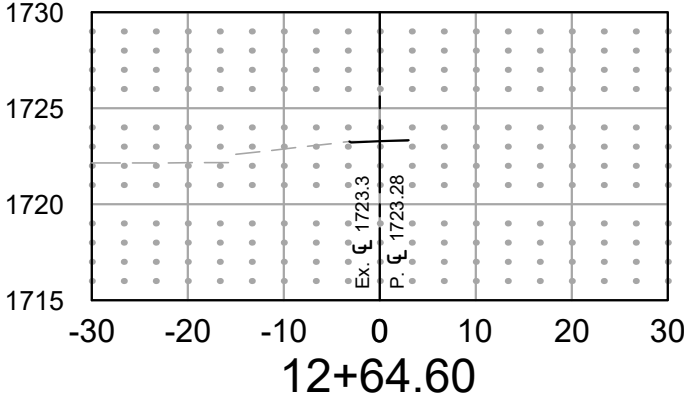
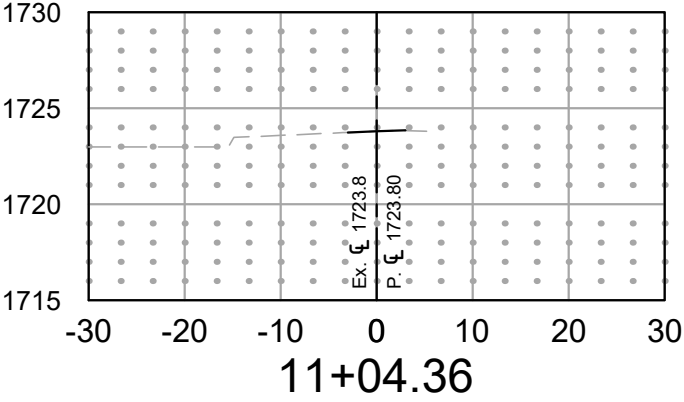
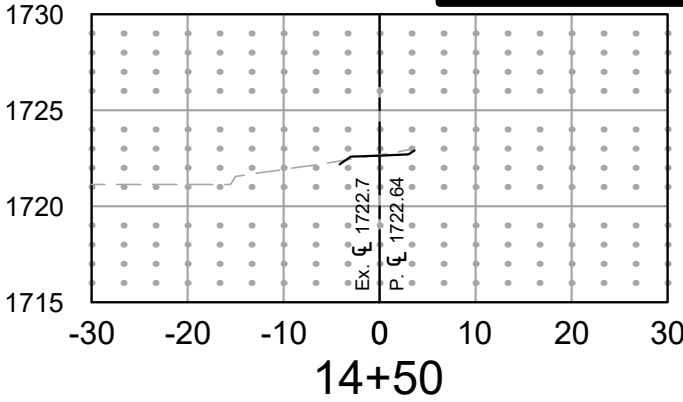
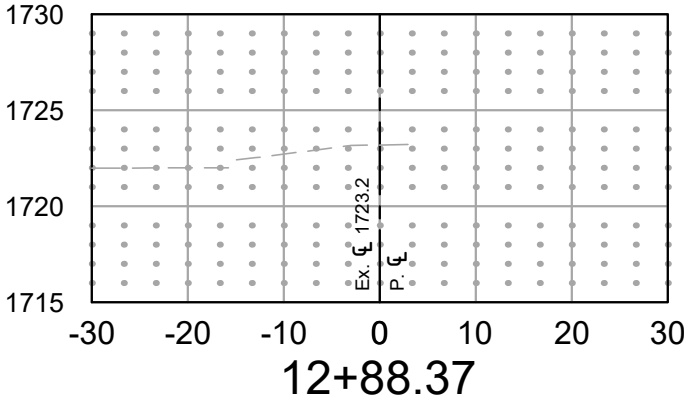
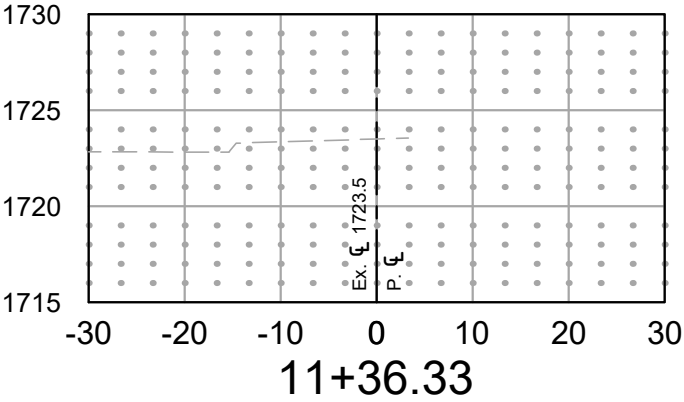
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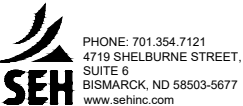
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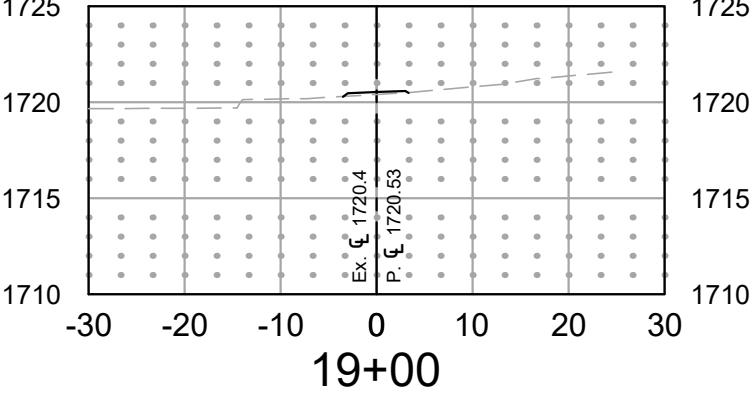
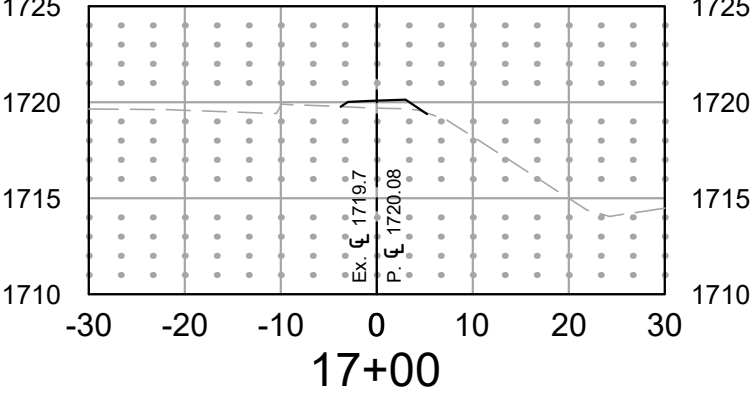
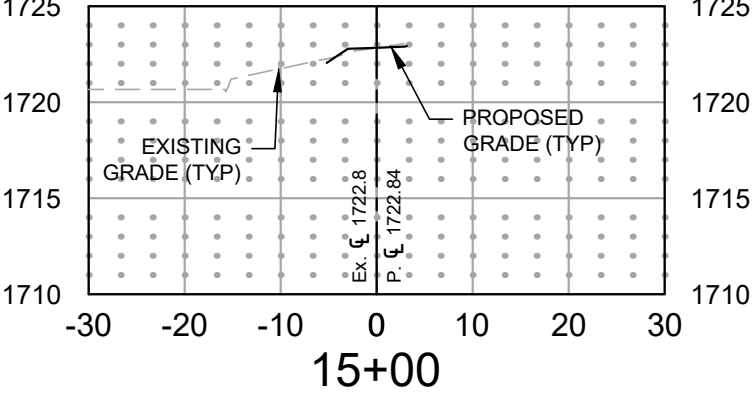
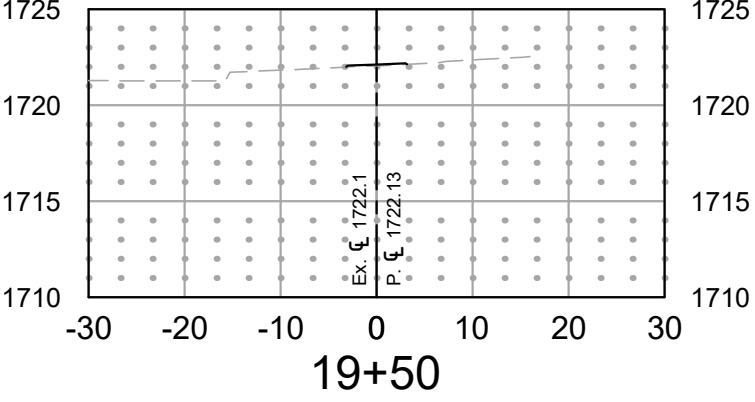
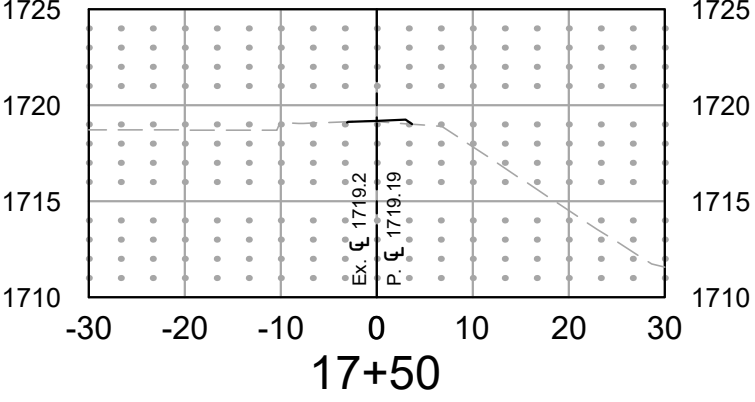
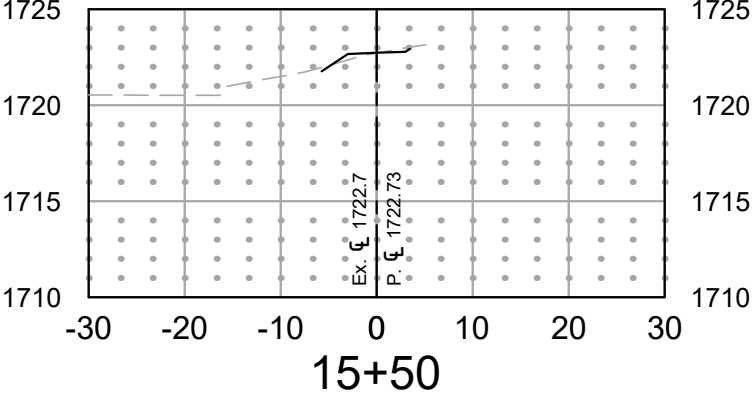
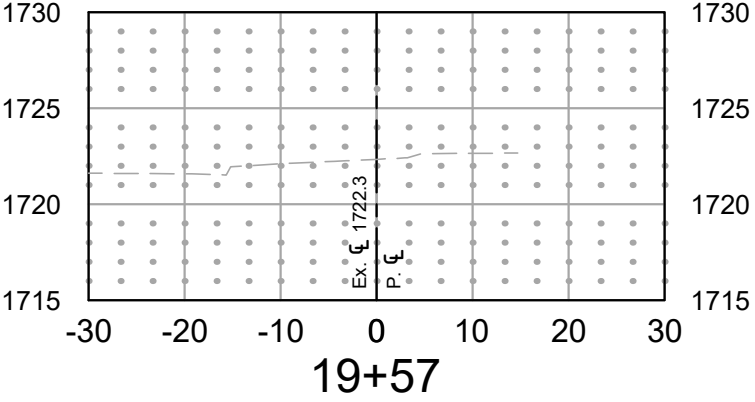
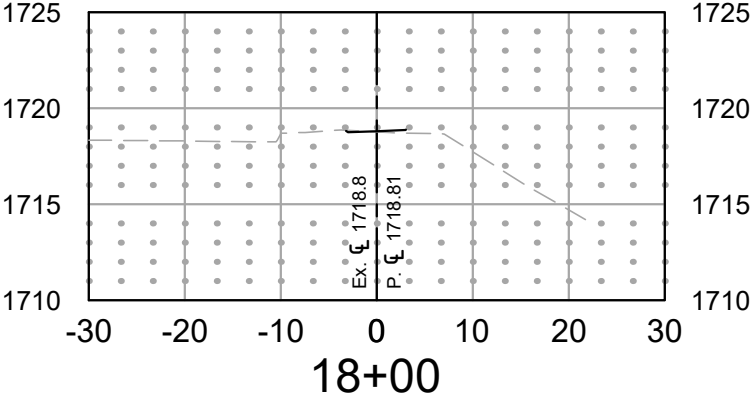
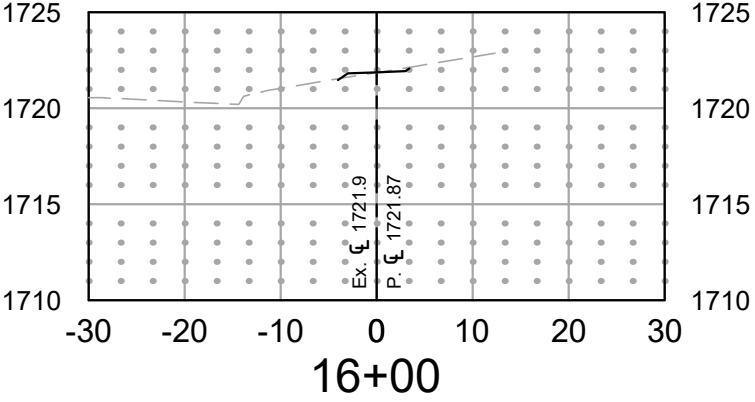
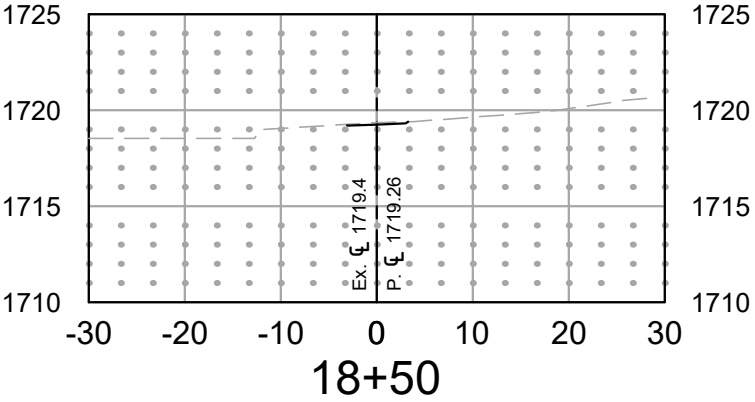
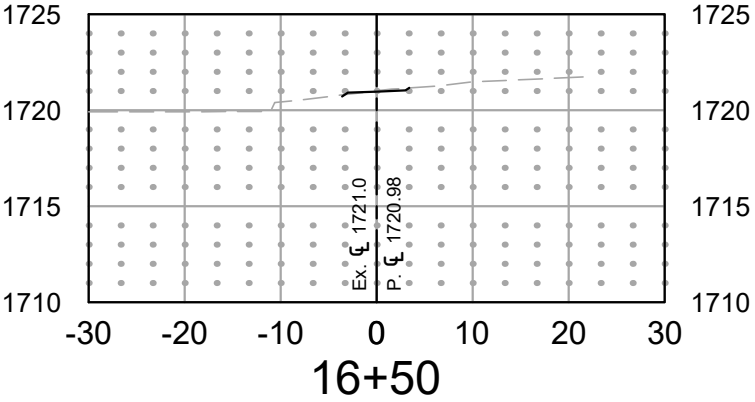
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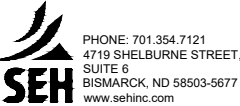
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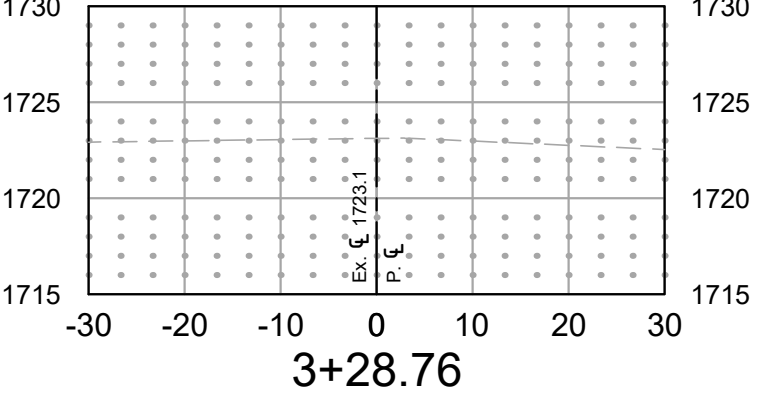
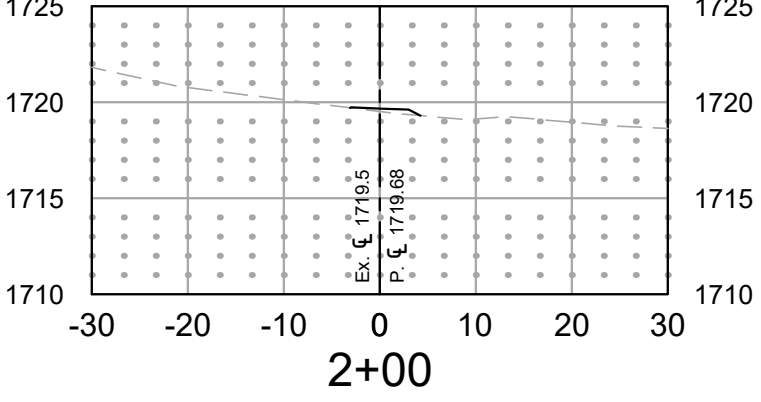
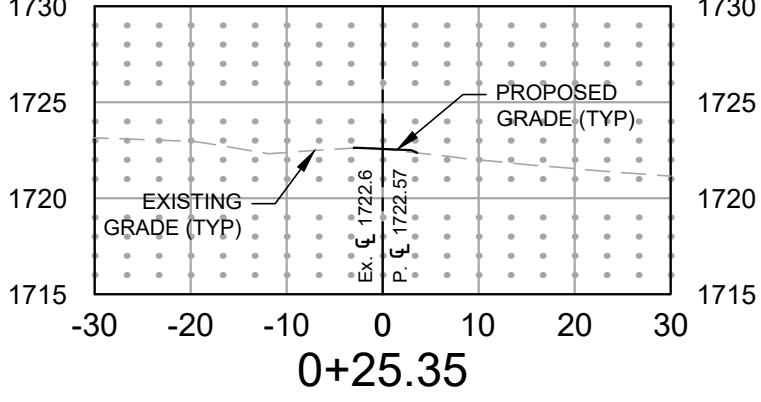
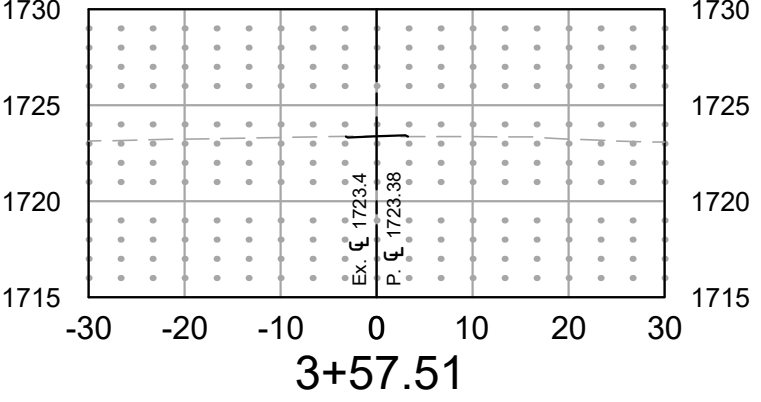
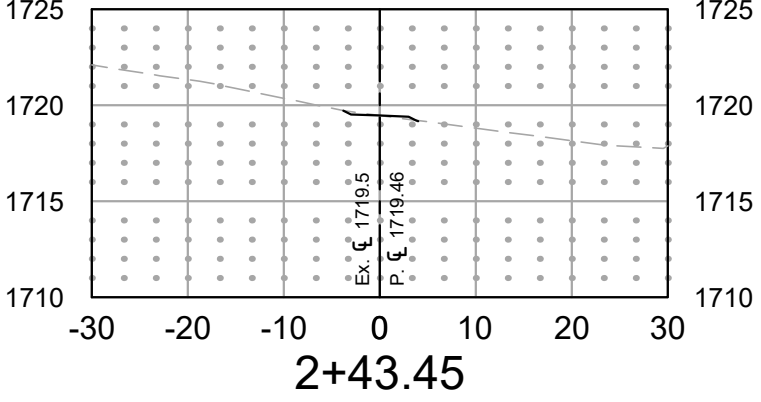
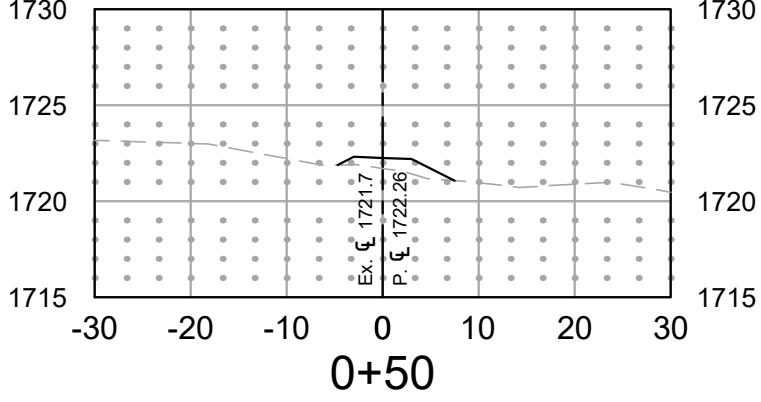
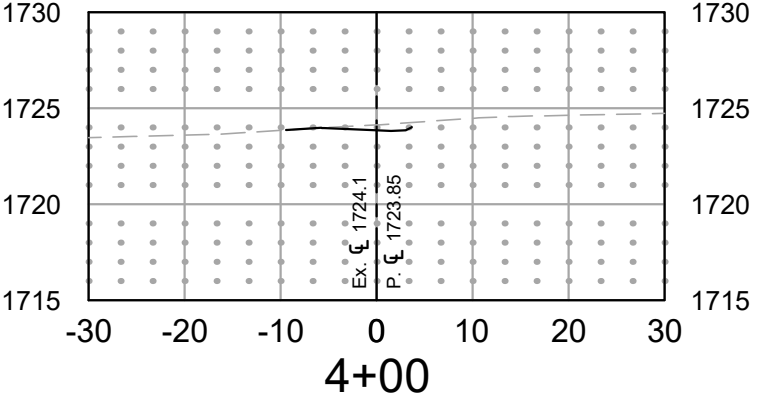
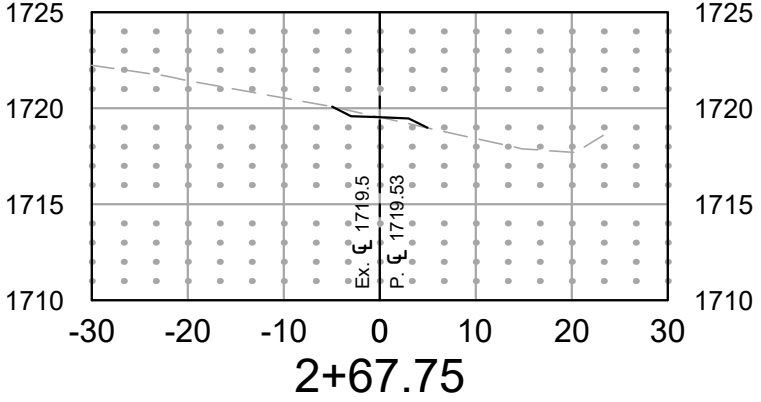
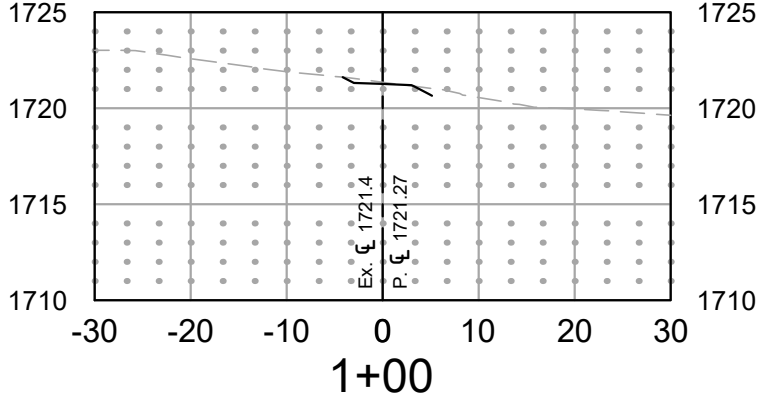
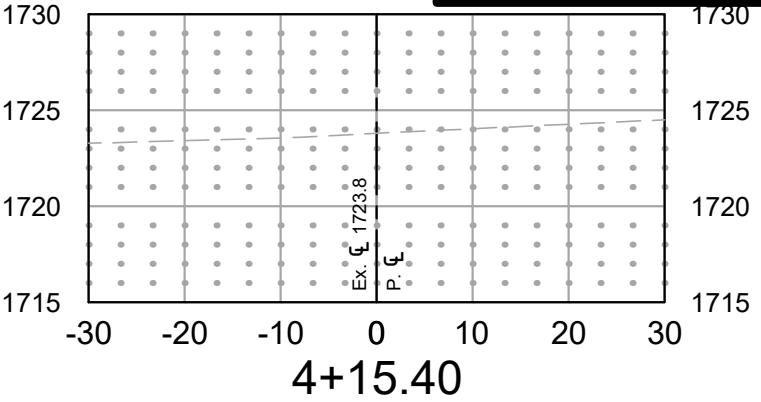
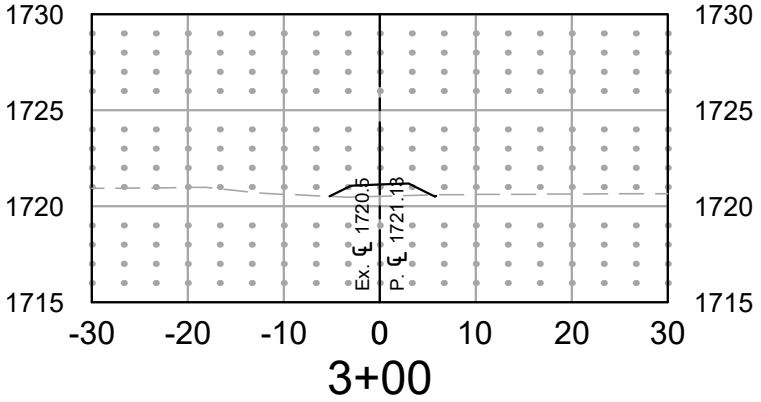
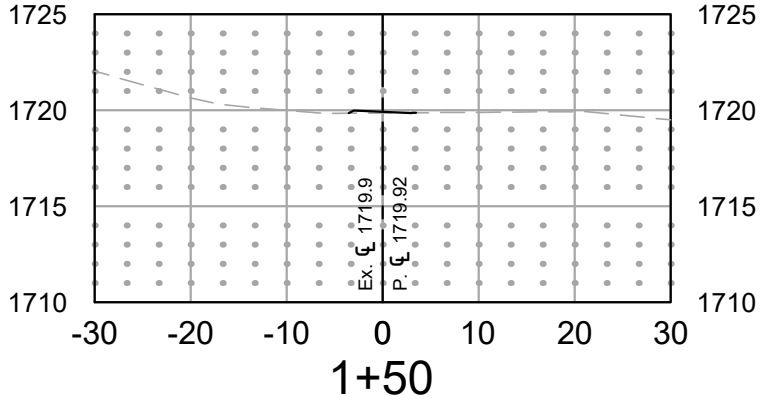
DOLAN DRIVE CROSS SECTIONS



SEH Project #:	Date:
154870	4/4/2020
Drawn By:	Checked By:
MSG	MRS

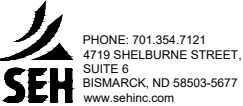
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Rev	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	TAU-0008(034)	200	5



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66TH STREET CROSS SECTIONS



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MSG	MRS

?	This is a special text character used in the labeling of existing features. It indicates a feature that has an unknown characteristic, potentially based on: lack of description, location accuracy or purpose.	Bldg	building	CSP	corrugated steel pipe	EDM	electronic distance meter
Abn	abandoned	BV	butterfly valve	CSTES	corrugated steel traversable end section	Elev or El	elevation
Abut	abutment	Byp	bypass	C	coulomb	Ellipt	elliptical
Ac	acres	C Gdrl	cable guardrail	Co	County	Emb	embankment
Adj	adjusted	Calc	calculate	Crse	course	Emuls	emulsion/emulsified
Aggr	aggregate	Cd	candela	Ct	Court	ES	end section
Ahd	ahead	CIP	cast iron pipe	Xarm	cross arm	Engr	engineer
ARV	air release valve	CB	catch basin	Xbuck	cross buck	ESS	environmental sensor station
Align	alignment	CRS	cationic rapid setting	Xsec	cross sections	Eq	equal
Al	alley	C Gd	cattle guard	Xing	crossing	Eq	equation
Alt	alternate	C To C	center to center	Xrd	Crossroad	Evgr	evergreen
Alum	aluminum	Cl or \varnothing	centerline	Crn	crown	Exc	excavation
ADA	Americans with Disabilities Act	Cm	centimeter	CF	cubic feet	Exst	existing
A	ampere	Ch	chain	M3	cubic meter	Exp	expansion
&	and	Chnlk	chain-link	M3/s	cubic meters per second	Expy	Expressway
Appr	approach	Ch Blk	channel block	CY	cubic yard	E	external of curve
Approx	approximate	Ch Ch	channel change	Cy/mi	cubic yards per mile	Extru	extruded
ACP	asbestos cement pipe	Chk	check	Culv	culvert	FOS	factor of safety
Asph	asphalt	Chsld	chiseled	C&G	curb & gutter	F	Fahrenheit
AC	asphalt cement	Cir	circle	CI	curb inlet	FS	far side
Assmd	assumed	Cl	class	CR	curb ramp	F	farad
@	at	Cl	clay	CS	curve to spiral	Fed	Federal
Atten	attenuation	Cl F	clay fill	C	cut	FP	feed point
ATR	automatic traffic recorder	Cl Hvy	clay heavy	Dd Ld	dead load	Ft	feet/foot
Ave	Avenue	Cl Lm	clay loam	Defl	deflection	Fn	fence
Avg	average	Clnt	clean-out	Defm	deformed	Fn P	fence post
ADT	average daily traffic	Clr	clear	Deg or D	degree	FO	fiber optic
Az	azimuth	Cl&gr	clearing & grubbing	DInt	delineate	FB	field book
Bk	back	Co S	coal slack	DIntr	delineator	FD	field drive
BF	back face	C Gr	coarse gravel	Depr	depression	F	fill
Bs	backsight	CS	coarse sand	Desc	description	FAA	fine aggregate angularity
Balc	balcony	Comb.	combination	Det	detail	FS	fine sand
B Wire	barbed wire	Coml	commercial	DWP	detectable warning panel	FH	fire hydrant
Barr	barricade	Compr	compression	Dtr	detour	Fl	flange
Btry	battery	CADD	computer aided drafting & design	Dia or \varnothing	diameter	Flrd	flared
Brg	bearing	Conc	concrete	Dir	direction	FES	flared end section
BI	beehive inlet	CECB	concrete erosion control blanket	Dist	distance	F Bcn	flashing beacon
Beg	begin	Cond	conductor	DM	disturbed material	FA	flight auger sample
BG	below grade	Const	construction	DB	ditch block	FL	flow line
BM	bench mark	Cont	continuous	DG	ditch grade	Ftg	footing
Bkwy	bikeway	CSB	continuous split barrel sample	Dbl	double	FM	force main
Bit	bituminous	Contr	contraction	Dn	down	Fs	foresight
Blk	block	Contr	contractor	Dwg	drawing		
Bd Ft	board feet	CP	control point	Dr	drive		
BH	bore hole	Coord	coordinate	Drwy	driveway		
BS	both sides	Cor	corner	DI	drop inlet		
Bot	bottom	Corr	corrected	D	dry density		
Blvd	Boulevard	CAES	corrugated aluminum end section	DSDS	dynamic speed display sign		
Bndry	boundary	CAP	corrugated aluminum pipe	Ea	each		
BC	brass cap	CMES	corrugated metal end section	Esmt	easement		
Brkwy	breakaway	CMP	corrugated metal pipe	E	East		
Br	bridge	CPVCP	corrugated poly-vinyl chloride pipe	EB	Eastbound		
		CSES	corrugated steel end section	Elast	elastomeric		
		CSFES	corrugated steel flared end section	EL	electric locker		
				E Mtr	electric meter		
				Elec	electric/al		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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NDDOT ABBREVIATIONS

D-101-2

Fnd	found	ID	inside diameter	Mkg	marking	PMT	pad mounted transformer
Fdn	foundation	Inst	instrument	MA	mast arm	Pg	pages
Frac	fractional	Intchg	interchange	Matl	material	Pntd	painted
Frwy	freeway	Intmdt	intermediate	Max	maximum	Pr	pair
Frt	front	Intscn	intersection	MC	meander corner	Pnl	panel
FF	front face	Inv	invert	Meas	measure	Pk	park
F Disp	fuel dispenser	IM	iron monument	Mdn	median	PK	Parker-Kalon nail
FFP	fuel filler pipes	I Pn	Iron Pin	MD	median drain	Pa	pascal
FLS	fuel leak sensor	IP	iron Pipe	MC	medium curing	PSD	passing sight distance
Furn	furnish/ed	Jt	joint	M	mega	Pvmt	pavement
Gal	gallon	J	joule	Mer	meridian	Ped	pedestal
Galv	galvanized	Jct	junction	M	meter	Ped	pedestrian
Gar	garage	K	kelvin	M/s	meters per second	PPP	pedestrian pushbutton post
Gs L	gas line	Kn	kilo newton	M	mid ordinate of curve	Pen.	penetration
G Reg	gas line regulator	Kpa	kilo pascal	MGS	Midwest Guardrail System	Perf	perforated
GMV	gas main valve	Kg	kilogram	Mi	mile	Per.	perimeter
G Mtr	gas meter	Kg/m3	kilogram per cubic meter	MM	mile marker	PL	pipeline
GSV	gas service valve	Km	kilometer	MP	mile post	PI	place
GVP	gas vent pipe	K	Kip(s)	MI	milliliter	P&P	plan & profile
GV	gate valve	LS	Land Surveyor (licensed)	Mm	millimeter	PL	plastic limit
Ga	gauge	LSIT	Land Surveyor In Training	Mm/hr	millimeters per hour	P Cap	plastic cap
Geod	geodetic	Ln	lane	Min	minimum	PI or \overline{P}	plate
GIS	Geographical Information System	Lg	large	Misc	miscellaneous	Pt	point
G	giga	Lat	latitude	Mon	monument	PCC	point of compound curve
GPS	Global Positioning System	Lt	left	Mnd	mound	PC	point of curve
Gov	government	L	length of curve	Mtbl	mountable	PI	point of intersection
Grd	graded/grade	Lens	lenses	Mtd	mounted	PRC	point of reverse curvature
Gr	gravel	Lvl	level	Mtg	mounting	PT	point of tangent
Grnd	ground	LB	level book	Mk	muck	POC	point on curve
GWM	ground water monitor	Lving	leveling	Mun	municipal	POT	point on tangent
Gdrl	guardrail	Lht	light	N	nano	PE	polyethylene
Gtr	gutter	LP	light pole	NGS	National Geodetic Survey	PVC	polyvinyl chloride
H Plg	H piling	Ltg	lighting	NS	near side	PCC	Portland Cement concrete
Hdwl	headwall	Lig Co	lignite coal	Neop	neoprene	Lb or #	pounds
Ha	hectare	Lig Sl	lignite slack	Ntwk	network	PP	power pole
Ht	height	LF	linear foot	N	newton	Preempt	preemption
HI	height of instrument	Liq	liquid	N	North	Prefab	prefabricated
Hel	helical	LL	liquid limit	NE	North East	Prfmd or Pref	preformed
H	henry	L	litre	NW	North West	Prep	preperation
Hz	hertz	Lm	loam	NB	Northbound	Press.	pressure
HDPE	high density polyethylene	Loc	location	No. or #	number		
HM	high mast	LC	long chord	Obsc	obscure(d)		
HP	high pressure	Long.	longitude	Obsn	observation		
HPS	high pressure sodium	Lp	loop	Ocpd	occupied		
Hwy	highway	LD	loop detector	Ocpy	occupy		
Hor	horizontal	Lm	lumen	Off Loc	office location		
HBP	hot bituminous pavement	Lum	luminaire	O/s	offset		
HMA	hot mix asphalt	L Sum	lump sum	OC	on center		
Hr	hour(s)	Lx	lux	C	one dimensional consolidation		
Hyd	hydrant	Mb	mailbox	OC	organic content		
Ph	hydrogen ion content	ML	main line	Orig	original		
Id	identification	M Hr	man hour	O To O	out to out		
In or "	inch	MH	manhole	OD	outside diameter		
Incl	inclinometer tube	Mkd	marked	OH	overhead		
IMH	inlet manhole	Mkr	marker				

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NDDOT ABBREVIATIONS

D-101-3

PRV	pressure relief valve	Sc	scoria	St	street	Vert	vertical
Prestr	prestressed	Sec	seconds	SPP	structural plate pipe	VC	vertical curve
Pvt	private	Sec	section	SPPA	structural plate pipe arch	VCP	vitrified clay pipe
PD	private drive	SL	section line	Str	structure	V	volt
Prod.	production/produce	Sep	separation	Subd	subdivision	Vol	volume
Prog	programmed	Seq	sequence	Sub	subgrade	Wkwy	walkway
Prop.	property	Serv	service	Sub Prep	subgrade preperation	W	water content
Prop Ln	property line	Sh	shale	Ss	subsoil	WGV	water gate valve
Ppsd	proposed	Sht	sheet	SE	superelevation	WL	water line
PB	pull box	Shtng	sheeting	SS	supplement specification	WM	water main
Qty	quantity	Shldr	shoulder	Supp	supplemental	WMV	water main valve
Qtr	quarter	Sw or Sdwk	sidewalk	Surf	surfacing	W Mtr	water meter
Rad or R	radius	S	siemens	Surv	survey	WSV	water service valve
RR	railroad	SD	sight distance	Sym	symmetrical	WW	water well
Rlwy	railway	SN	sign number	SI	systems international	W	watt
Rsd	raised	Sig	signal	Tan	tangent	Wrng	wearing
RTP	random traverse point	Si Cl	silt clay	T	tangent (semi)	Wb	weber
Rge or R	range	Si Cl Lm	silty clay loam	TS	tangent to spiral	WIM	weigh in motion
RC	rapid curing	Si Lm	silty loam	Tel	telephone	W	west
Rec	record	Sgl	single	Tel B	Telephone Booth	WB	westbound
Rcy	recycle	SRCP	slotted reinforced concrete pipe	Tel P	telephone pole	Wrng	wiring
RAP	recycled asphalt pavement	SC	slow curing	Tv	television	W/	with
RPCC	recycled portland cement concrete	SS	slow setting	Temp	temperature	W/o	without
Ref	reference	Sm	small	Temp	temporary	WC	witness corner
R Mkr	reference marker	S	South	TBM	temporary bench mark	WGS	world geodetic system
RM	reference monument	SE	South East	T	tesla	Z	zenith
RP	reference point	SW	South West	T	thinwall tube sample		
Refl	reflectorized	SB	Southbound	T/mi	tons per mile		
RCB	reinforced concrete box	Sp	spaces	Ts	topsoil		
RCES	reinforced concrete end section	Spcl	special	Twp or T	township		
RCFES	reinforced concrete flared end section	SA	special assembly	Traf	traffic		
RCTES	reinforced concrete traversable end section	SP	special provisions	TSCB	traffic signal control box		
RCP	reinforced concrete pipe	G	specific gravity	Tr	trail		
RCPS	reinforced concrete pipe sewer	Spk	spike	Transf	transformer		
Reinf	reinforcement	SC	spiral to curve	TB	transit book		
Res	reservation	ST	spiral to tangent	Trans	transition		
Rs	residence	SB	split barrel sample	TT	transmission tower		
Ret	retaining	SH	sprinkler head	TES	traversable end section		
Rev	reverse	SV	sprinkler valve	Trans	transverse		
Rt	right	Sq	square	Trav	traverse		
R/W	right of way	SF	square feet	TP	traverse point		
Riv	river	Km2	square kilometer	Trtd	treated		
Rd	road	M2	square meter	Trmt	treatment		
Rdbd	road bed	SY	square yard	Qc	triaxial compression		
Rdwy	roadway	Stk	stake	TERO	tribal employment rights ordinance		
RWIS	roadway weather information system	Std	standard	Tpl	triple		
Rk	rock	N	standard penetration test	TP	turning point		
Rt	route	Std Specs	standard specifications	Typ	typical		
Salv	salvage(d)	Sta	station	Qu	unconfined compressive strength		
Sd	sand	Sta Yd	station yards	Ugrnd	underground		
Sdy Cl	sandy clay	Stm L	steam line	USC&G	US Coast & Geodetic Survey		
Sdy Cl Lm	sandy clay loam	SEC	steel encased concrete	USGS	US Geologic Survey		
Sdy Fl	sandy fill	SMA	stone matrix asphalt	Util	utility		
Sdy Lm	sandy loam	SSD	stopping sight distance	VG	valley gutter		
San	sanitary sewer line	SD	storm drain	Vap	vapor		

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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

702COM
ACCENT
AGASSIZ WU
AGC
All PI
ALL SEAS WU
AMOCO PI
AMRDA HESS
AT&T
B PAW
BAKER ELEC
BASIN ELEC
BEK TEL
BELLE PL
BLM
BNSF
BOEING
BRNS RWD
BURK-DIV ELEC
BURL WU
Cable One
CABLE SERV
CAP ELEC
CASS CO ELEC
CASS RWU
CAV ELEC
CBLCOM
CENEX PL
CENT PL WATER DIST
CENT PWR ELEC
COE
CONS TEL
CONT RES
CPR
D O E
DAK CARR
DAK CENT TEL
DAK RWD
DGC
DICKY R NET
DICKY RWU
DICKY TEL
DNRR
DOME PL
DVELEC
DVMW
ENBRDG
ENVENTIS
FALK MNG
FHWA
G FKS-TRL WD
GETTY TRD & TRAN
GLDN W ELEC
GRGS CO TEL
GTR RAMSEY WD

702 Communications
Accent Communications
Agassiz Water Users Incorporated
Associated General Contractors of America
Alliance Pipeline
All Seasons Water Users Association
Amoco Pipeline Company
Amerada Hess Corporation
AT&T Corporation
Bear Paw Energy Incorporated
Baker Electric
Basin Electric Cooperative Incorporated
Bek Communications Cooperative
Belle Fourche Pipeline Company
Bureau of Land Management
Burlington Northern Santa Fe Railway
Boeing
Barnes Rural Water District
Burke-Divide Electric Cooperative
Burleigh Water Users
Cable One
Cable Services
Capital Electric Cooperative Incorporat
Cass County Electric Cooperative
Cass Rural Water Users Incorporated
Cavalier Rural Electric Cooperative
Cablecom Of Fargo
Cenex Pipeline
Central Pipe Line Water District
Central Power Electric Cooperative
Corps of Engineers
Consolidated Telephone
Continental Resource Inc
Canadian Pacific Railway
Department Of Energy
Dakota Carrier Network
Dakota Central Telephone
Dakota Rural Water District
Dakota Gasification Company
Dickey Rural Networks
Dickey Rural Water Users Association
Dickey Telephone
Dakota Northern Railroad
Dome Pipeline Company
Dakota Valley Electric Cooperative
Dakota, Missouri Valley & Western
Enbridge Pipelines Incorporated
Enventis Telephone
Falkirk Mining Company
Federal Highway Administration
Grand Forks-trail Water District
Getty Trading & Transportation
Golden West Electric Cooperative
Griggs County Telephone
Greater Ramsey Water District

GT PLNS NAT GAS
HALS TEL
IDEA1
INT-COMM TEL
KANEB PL
KEM ELEC
KOCH GATH SYS
LKHD PL
LNGDN RWU
LWR YELL R ELEC
MCKNZ CON
MCKNZ ELEC
MCKNZ WRD
MCLEOD
MCLN ELEC
MCLN-SHRDN R WAT
MDU
MID-CONT CABLE
MIDSTATE TEL
MINOT CABLE
MINOT TEL
MISS VALL COMM
MISS W W S
MNKOTA PWR
MOR-GRAN-SOU ELEC
MOUNT-WILLI ELEC
MRE LBTY TEL
MUNICIPAL
MUNICIPAL
N CENT ELEC
N VALL W DIST
ND PKS & REC
ND TEL
NDDOT
NDSU SOIL SCI DEPT
NEMONT TEL
NODAK R ELEC
NOON FRMS TEL
NPR
NSP
NTH PRAIR RW
NTHN BRDR PL
NTHN PLNS ELEC
NTHWSTRN REF
NW COMM
NWRWD
ONEOK
OSHA
OTTR TL PWR
P L E M
POLAR COM
PVT ELEC
QWEST
R&T W SUPPLY

Great Plains Natural Gas Company
Halstad Telephone Company
Idea1
Inter-Community Telephone Company
Kaneb Pipeline Company
Kem Electric Cooperative Incorporated
Koch Gathering Systems Incorporated
Lakehead Pipeline Company
Langdon Rural Water Users Incorporated
Lower Yellowstone Rural Electric
McKenzie Consolidated Telcom
McKenzie Electric Cooperative
McKenzie County Water Resource District
McLeod USA
McLean Electric Cooperative
McLean-Sheridan Rural Water
Montana-dakota Utilities
Mid-Continent Cable
Midstate Telephone Company
Minot Cable Television
Minot Telephone Company
Missouri Valley Communications
Missouri West Water System
Minnkota Power
Mor-gran-sou Electric Cooperative
Mountrail-williams Electric Cooperative
Moore & Liberty Telephone
City Water And Sewer
City Of '.....'
North Central Electric Cooperative
North Valley Water District
North Dakota Parks And Recreation
North Dakota Telephone Company
North Dakota Department of Transportation
NDSU Soil Science Department
Nemont Telephone
Nodak Rural Electric Cooperative
Noonan Farmers Telephone Company
Northern Plains Railroad
Northern States Power
Northern Prairie Rural Water Association
Northern Border Pipeline
Northern Plains Electric Cooperative Incorporated
Northwestern Refinery Company
Northwest Communication Cooperation
Northwest Rural Water District
Oneok gas
Occupational Safety and Health Administration
Otter Tail Power Company
Prairielands Energy Marketing
Polar Communications
Private Electric
Qwest Communications
R & T Water Supply Association

RED RIV TEL
RESVTN TEL
ROBRTS TEL
R-RIDER ELEC
RRVW
S CENT REG WD
S E W U
SCOTT CABLE
SHERDN ELEC
SHEYN VLY ELEC
SKYTECH
SLOPE ELEC
SOURIS RIV TELCOM
ST WAT COMM
STATE LN WATER
STER ENG
STUT RWU
SW PL PRJ
T M C
TCI
TESORO HGH PLNS PL
TRI-CNTY WU
TRL CO RWU
UNTD TEL
UPPR SOUR WUA
US SPRINT
USAF MSL CABLE
USFWS
USW COMM
VRNDRY ELEC
W RIV TEL
WEB
WILLI RWA
WILSTN BAS PL
WLSH RWD
WOLVRTN TEL
XLENER
YSVR

Red River Rural Telephone
Reservation Telephone
Roberts Company Telephone
Roughrider Electric Cooperative
Red River Valley & Western Railroad
South Central Regional Water District
South East Water Users Incorporated
Scott Cable Television Dickinson
Sheridan Electric Cooperative
Sheyenne Valley Electric Cooperative
Skyland Technologies Incorporated
Slope Electric Cooperative Incorporated
Souris River Telecommunications
State Water Commission
State Line Water Cooperative
Sterling Energy
Stutsman Rural Water Users
Southwest Pipeline Project
Turtle Mountain Communications
TCI of North Dakota
Tesoro High Plains Pipeline
Tri-County Water Users Incorporated
Traill County Rural Water Users
United Telephone
Upper Souris Water Users Association
U.S. Sprint
U.S.A.F. Missile Cable
US Fish and Wildlife Service
U.S. West Communications
Verendrye Electric Cooperative
West River Telephone Incorporated
W. E. B. Water Development Association
Williams Rural Water Association
Williston Basin Interstate Pipeline Company
Walsh Water Rural Water District
Wolverton Telephone
Xcel Energy
Yellowstone Valley Railroad

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Existing Topography

	Existing Ground Void
	Existing Cemetary Boundary
	Existing Box Culvert Bridge
	Existing Concrete Surface
	Existing Drainage Structure
	Existing Gravel Surface
	Existing Riprap
	Existing Dirt Surface
	Existing Asphalt Surface
	Existing Tie Point Line
	Existing Railroad Centerline
	Existing Guardrail Cable
	Existing Guardrail Metal
	Existing Edge of Water
	Existing Fence
	Existing Railroad
	Existing Field Line
	Exst Flow
	Existing Curb
	Existing Valley Gutter
	Existing Driveway Gutter
	Existing Curb and Gutter
	Existing Mountable Curb and Gutter

	Existing 3-Cable w Posts
	Site Boundary
	Existing Berm, Dike, Pit, or Earth Dam
	Existing Ditch Block
	Existing Tree Boundary
	Existing Brush or Shrub Boundary
	Existing Retaining Wall
	Existing Planter or Wall
	Existing W-Beam Guardrail with Posts
	Existing Railroad Switch
	Gravel Pit - Borrow Area
	Existing Wet Area-Vegetation Break

Proposed Topography

	3-Cable w Posts
	Flow
	Fence
	Remove Line
	Wall
	Retaining Wall (Plan View)
	W-Beam w Posts

Existing Utilities

	Existing Electrical
	Existing Fiber Optic Line
	Existing TV Fiber Optic
	Existing Gas Pipe
	Existing Overhead Utility Line
	Existing Power
	Existing Fuel Pipeline
	Existing Undefined Above Ground Pipe Line
	Existing Sanitary Sewer
	Existing Sanitary Force Main
	Existing Storm Drain
	Existing Storm Drain Force Main
	Existing Culvert
	Existing Telephone Line
	Existing TV Line
	Existing Water or Steam Line
	Existing Under Drain
	Existing Slotted Drain
	Existing Conduit
	Existing Conductor
	Existing Down Guy Wire Down Guy
	Existing Underground Vault or Lift Station

Proposed Utilities

	24 Inch Pipe
	Reinforced Concrete Pipe
	Under Drain
	Edge Drain

Traffic Utilities

	Conductor
	Fiber Optic
	Existing Loop Detector
	Existing Double Micro Loop Detector
	Micro Loop Detector Double
	Existing Micro Loop Detector
	Micro Loop Detector
	Signal Head with Mast Arm
	Existing Signal Head with Mast Arm

Sign Structures

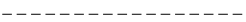
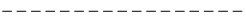




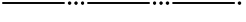






	Existing Overhead Sign Structure
	Existing Overhead Sign Structure Cantilever
	Overhead Sign Structure Cantilever

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09-23-16	Added and Revised Items, Organized by Functional Groups

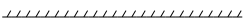








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Line Styles

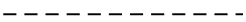
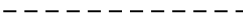
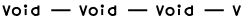
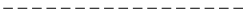




Right Of Way

	Easement
	Existing Easement
	Right of Way
	Existing Right of Way
	Existing Right of Way Railroad
	Existing Right of Way Not State Owned
	Existing Government Lot Line
	Existing Adjacent Block Lines
	Existing Adjacent Lot Lines
	Existing Adjacent Property Line
	Existing Adjacent Subdivision Lines
	Sight Distance Triangle Line
	Dimension Leader


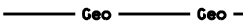





Boundary Control

	Existing City Corporate Limits or Reservation Boundary
	Existing State or International Line
	Existing Township
	Existing County
	Existing Section Line
	Existing Quarter Section Line
	Existing Sixteenth Section Line
	Existing Centerline
	Tangent Line


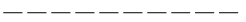
Cross Sections and Typicals

	Existing Ground
	Existing Topsoil (Cross Section View)
	Existing Ground Void (Not Surveyed)
	Existing Concrete
	Existing Aggregate (Cross Section View)
	Existing Curb and Gutter (Cross Section View)
	Existing Asphalt (Cross Section View)
	Existing Reinforcement Rebar

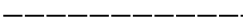
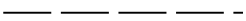
Geotechnical

	D	Geotextile Fabric Type D
	Geo	Geogrid
	R	Geotextile Fabric Type R
	R	Geotextile Fabric Type R1
	RR	Geotextile Fabric Type RR
	S	Geotextile Fabric Type S
		Subgrade Reinforcement


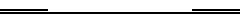

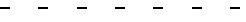


Countours

	Depression Contours
	Supplemental Contour

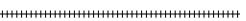


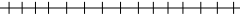
Profile

	Subgrade, Subcut or Ditch Grade
	Topsoil Profile



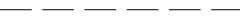


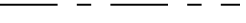
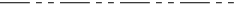


Striping

	Centerline Pavement Marking
	Barrier with Centerline Pavement Marking
	Barrier Pavement Marking
	Stripe 4 IN Dotted Extension White
	Stripe 8 IN Dotted Extension White
	Stripe 8 IN Lane Drop

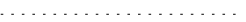



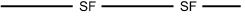

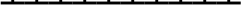
Pavement Joints

	Doweled Joint
	Tie Bar 30 Inch 4 Foot Center to Center
	Tie Bar 18 Inch 3 Foot Center to Center
	Tie Bar at Random Spacing



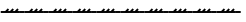
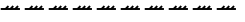
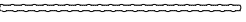
Bridge Details

	Hidden Object
	Small Hidden Object
	Large Hidden Object
	Phantom Object
	Centerline Main
	Centerline
	Existing Ground (Details)
	Existing Conditions
	Sheet Piling

Erosion Control

	Limits of Const Transition Line
	Bale Check
	Rock Check
	S Floating Silt Curtain
	SF Silt Fence
	Excavation Limits
	Fiber Rolls

Environmental

	Wetland Mitigation
	Existing Wetland Easement USFWS
	Existing Wetland Jurisdictional
	Existing Wetland
	Tree Row

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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



























































































	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	Cairn or Stone Circle		Flexible Delineator		Existing Sanitary Cleanout		Existing Pole Mounted Feed Point
	Video Detection Camera		Flexible Delineator Type A		Existing Concrete Foundation		Existing Railroad Frog
	Storm Drain Cap or Stub		Flexible Delineator Type B		Existing Traffic Signal Controller		Existing Snow Gate 18
	Corrugated Metal End Section 18 Inch		Flexible Delineator Type C		Existing Pad Mounted Signal Controller		Existing Snow Gate 28
	Corrugated Metal End Section 24 Inch		Flexible Delineator Type D		Existing Sixteenth Section Corner		Existing Snow Gate 40
	Corrugated Metal End Section 30 Inch		Flexible Delineator Type E		Existing Quarter Section Corner		Existing Headwall
	Corrugated Metal End Section 36 Inch		Delineator Type A		Existing Section Corner		Existing Pedestrian Head with Number
	Corrugated Metal End Section 42 Inch		Delineator Type A Reset		Existing Railroad Crossbuck		Existing Signal Head
	Corrugated Metal End Section 48 Inch		Delineator Type B		Existing Satellite Dish		Existing Sprinkler Head
	Concrete Foundation		Delineator Type B Reset		Existing Fuel Dispensers		Existing Fire Hydrant
	Ground Connection Conductor		Delineator Type C		Existing Flexible Delineator Type A		Existing Catch Basin Drop Inlet
	Neutral Connection Conductor		Delineator Type D		Existing Flexible Delineator Type B		Existing Curb Inlet
	Phase 1 Connection Conductor		Delineator Type E		Existing Flexible Delineator Type C		Existing Manhole Inlet
	Phase 2 Connection Conductor		Delineator Drums		Existing Flexible Delineator Type D		Existing Junction Box
	Traffic Cone		Spot Elevation		Existing Flexible Delineator Type E		
	Signal Controller		Existing Access Control Arrow		Existing Delineator Type A		
	Pad Mounted Signal Controller		Existing Artifact		Existing Delineator Type B		
	Alignment Data Point		Existing Flashing Beacon		Existing Delineator Type C		
	Emergency Vehicle Detector		Existing Benchmark		Existing Delineator Type D		

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
















































D-101-31

	Existing Light Standard		Existing Manhole with Valve Water		Existing Telephone Pole		Existing Undefined Manhole
	Existing High Mast Light Standard 10 Luminaire		Existing Water Manhole		Existing Wood Pole		Existing Undefined Pull Box
	Existing High Mast Light Standard 3 Luminaire		Existing Mile Post Type A		Existing Post		Existing Undefined Pedestal
	Existing High Mast Light Standard 4 Luminaire		Existing Mile Post Type B		Existing Pedestrian Push Button Post		Existing Undefined Valve
	Existing High Mast Light Standard 5 Luminaire		Existing Mile Post Type C		Existing Control Point CP		Existing Undefined Pipe Vent
	Existing High Mast Light Standard 6 Luminaire		Existing Reference Marker		Existing Control Point GPS-RTK		Existing Gas Valve
	Existing High Mast Light Standard 7 Luminaire		Existing RW Marker		Existing Control Point TRI		Existing Water Valve
	Existing High Mast Light Standard 8 Luminaire		Existing Utility Marker		Existing Reference Marker Point NGS		Existing Fuel Pipe Vent
	Existing High Mast Light Standard 9 Luminaire		Iron Monument Found		Existing Pull Box		Existing Gas Pipe Vent
	Existing Overhead Sign Structure Load Center		Iron Pin R/W Monument		Existing Intelligent Transportation Pull Box		Existing Sanitary Pipe Vent
	Existing Luminaire		Existing Object Marker Type I		Existing Water Pump		Existing Storm Drain Pipe Vent
	Existing Light Standard Luminaire		Existing Object Marker Type II		Existing Slotted Reinforced Concrete Pipe		Existing Water Pipe Vent
	Existing Federal Mailbox		Existing Object Marker Type III		Existing RR Profile Spot		Existing Weather Station
	Existing Private Mailbox		Existing Electrical Pedestal		Existing Fuel Leak Sensors		Existing Ground Water Well Bore Hole
	Existing Meander Section Corner		Existing Telephone Pedestal		Existing Highway Sign		Existing Windmill or Tower
	Existing Meter		Existing Fiber Optic Telephone Pedestal		Existing Miscellaneous Spot		Existing Witness Corner
	Existing Electrical Manhole		Existing TV Pedestal		Existing Lighting Standard Pole		Flashing Beacon
	Existing Gas Manhole		Existing Fiber Optic TV Pedestal		Existing Traffic Signal Standard		Flagger
	Existing Sanitary Manhole		Existing Fuel Filler Pipes		Existing Transformer		Pipe Mounted Flasher
	Existing Sanitary Force Main Manhole		Existing Traverse PI Aerial Panel		Existing Large Evergreen Tree		Sanitary Force Main with Valve
	Existing Sanitary Manhole with Valve		Existing Pole		Existing Small Evergreen Tree		
	Existing Storm Drain Manhole		Existing Power Pole		Existing Large Tree		
	Existing Force Main Storm Drain Manhole		Existing Power Pole with Transformer		Existing Small Tree		
	Existing Force Main Storm Drain Manhole with Valve				Existing Tree Trunk		
	Existing Telephone Manhole				Existing Pad Mounted Traffic Signal Control Box		

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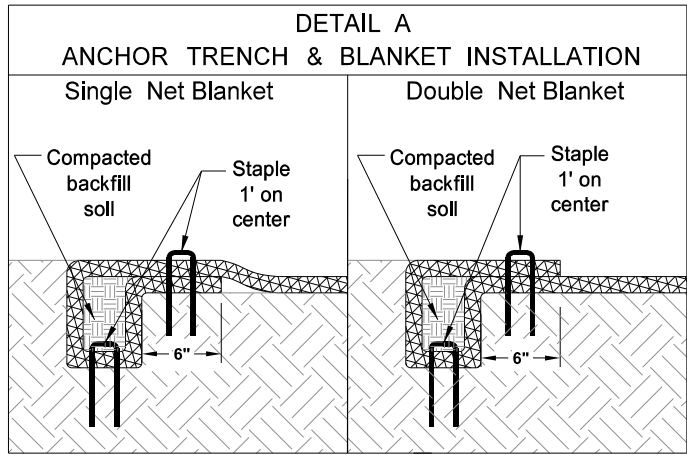
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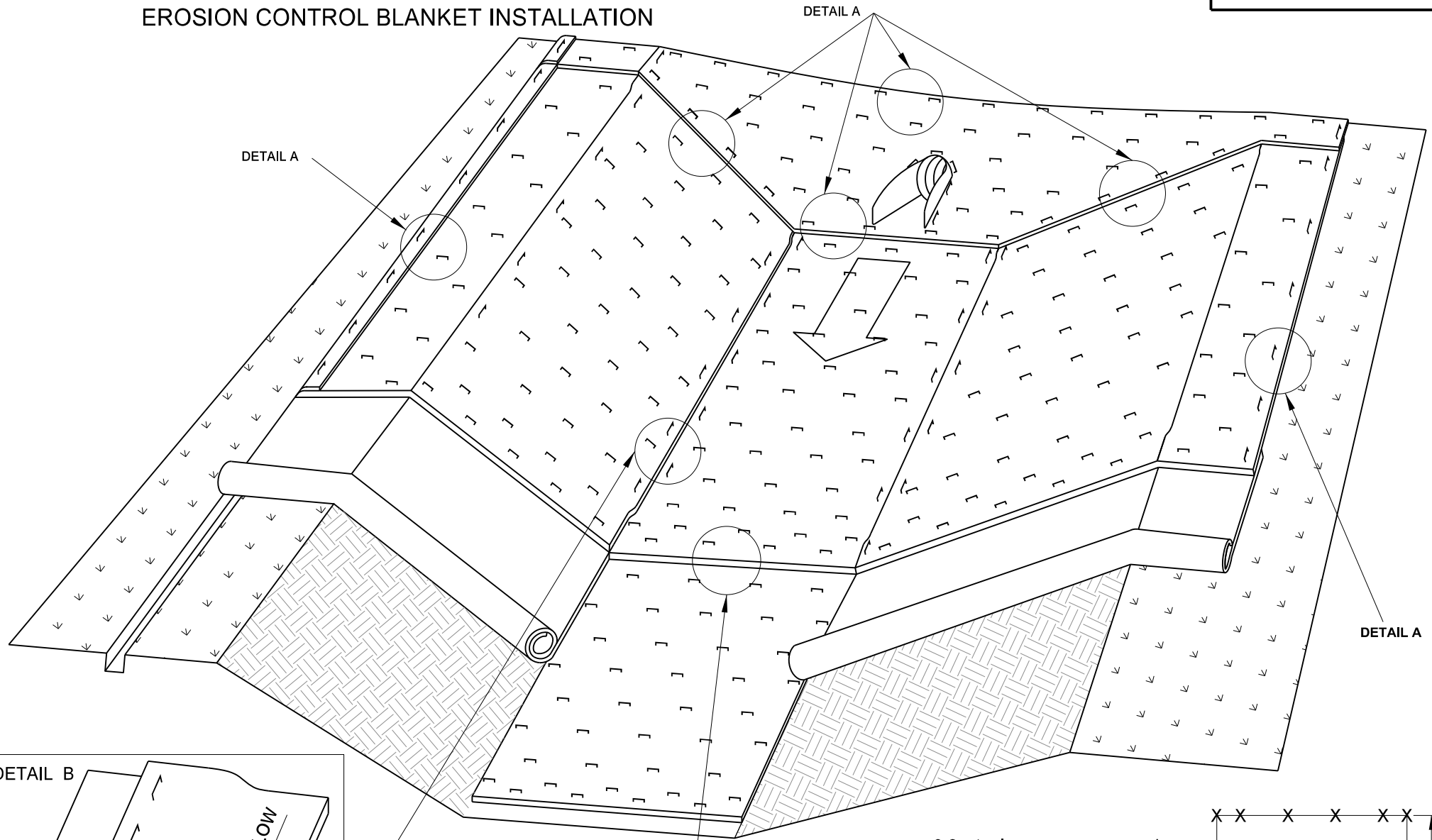
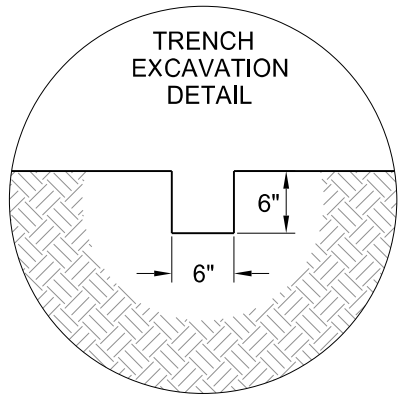
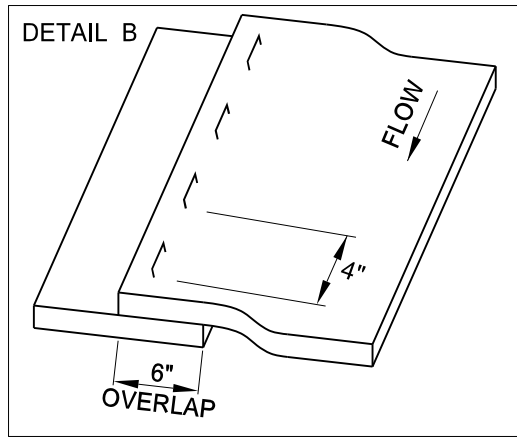
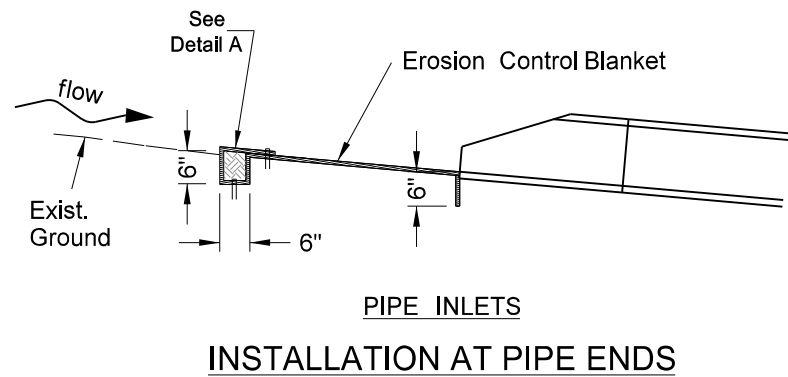
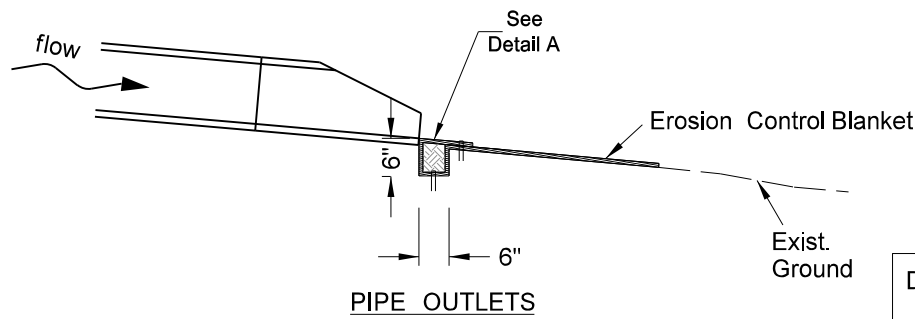
	Pad Mounted Feed Point		Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type I		Reinforced Concrete End Section 48 Inch									
	Pipe Mounted Feed Point with Pad		Light Standard 150 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type II		Reinforced Concrete End Section 54 Inch									
	Pole Mounted Feed Point		Light Standard 175 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type III		Reset Right of Way Marker									
	Headwall		Light Standard 200 Watt High Pressure Sodium Vapor Luminaire		Caution Mode Arrow Panel		Reset USGS Marker									
	Double Headwall with Vegetation Barrier		Light Standard 250 Watt High Pressure Sodium Vapor Luminaire		Back to Back Vertical Panel Sign		Right of Way Markers									
	Single Headwall with Vegetation Barrier		Light Standard 310 Watt High Pressure Sodium Vapor Luminaire		Double Direction Arrow Panel		Riser 30 Inch									
	Pole Mounted Head		Light Standard 35 Watt High Pressure Sodium Vapor Luminaire		Left Directional Arrow Panel		Continuous Split Barrel Sample									
	Sprinkler Head		Light Standard 400 Watt High Pressure Sodium Vapor Luminaire		Right Directional Arrow Panel		Flight Auger Sample									
	Fire Hydrant		Light Standard 50 Watt High Pressure Sodium Vapor Luminaire		Sequencing Arrow Panel		Split Barrel Sample									
	Inlet Type 1		Light Standard 70 Watt High Pressure Sodium Vapor Luminaire		Truck Mounted Arrow Panel		Thinwall Tube Sample									
	Inlet Type 2		Light Standard 700 Watt High Pressure Sodium Vapor Luminaire		Power Pole		Highway Sign									
	Double Inlet Type 2		Manhole		Wood Pole		SNOW GATE 18 FT									
	Inlet Grate Type 2		Manhole 48 Inch		Pedestrian Push Button Post		SNOW GATE 28 FT									
	Junction Box		Sanitary Force Main Manhole		Property Corner		SNOW GATE 40 FT									
	High Mast Light Standard 10 Luminaire		Sanitary Sewer Manhole		Pull Box		Standard Penetration Test									
	High Mast Light Standard 3 Luminaire		Storm Drain Manhole		Intelligent Transportation Pull Box		Transformer									
	High Mast Light Standard 4 Luminaire		Storm Drain Manhole with Inlet		Sanitary Pump		Inclinometer Tube									
	High Mast Light Standard 5 Luminaire		Reset Mile Post		Storm Drain Pump		Underdrain Cleanout									
	High Mast Light Standard 6 Luminaire		Mile Post Type A		Reinforced Pavement		Excavation Unit									
	High Mast Light Standard 7 Luminaire		Mile Post Type B		Reinforced Concrete End Section 15 Inch		Water Valve									
	High Mast Light Standard 8 Luminaire		Mile Post Type C		Reinforced Concrete End Section 18 Inch	<table><tr><th colspan="2">NORTH DAKOTA DEPARTMENT OF TRANSPORTATION</th></tr><tr><td colspan="2">07-01-14</td></tr><tr><th colspan="2">REVISIONS</th></tr><tr><th>DATE</th><th>CHANGE</th></tr><tr><td></td><td></td></tr></table>	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		07-01-14		REVISIONS		DATE	CHANGE		
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REVISIONS																
DATE	CHANGE															
	High Mast Light Standard 9 Luminaire		Right of Way Marker		Reinforced Concrete End Section 24 Inch											
	Relocate Light Standard		Tubular Marker		Reinforced Concrete End Section 30 Inch											
	Overhead Sign Structure Load Center		Alignment Monument		Reinforced Concrete End Section 36 Inch											
	Light Standard 100 Watt High Pressure Sodium Vapor Luminaire		Iron Pin Reference Monument		Reinforced Concrete End Section 42 Inch											

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07-01-14		
REVISIONS		
DATE	CHANGE	

EROSION AND SILTATION CONTROL
EROSION CONTROL BLANKET INSTALLATION

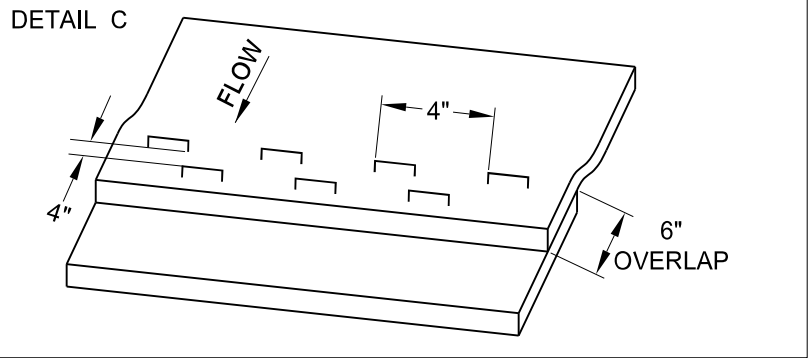
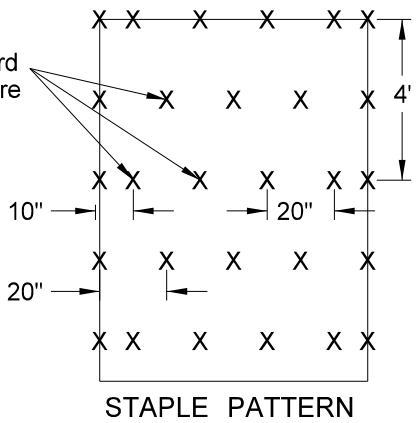


NOTE:
If a Single Net Blanket is used the side with the netting should be on the top once the blanket is installed.



BLANKET LAYOUT
CHANNEL OR SLOPE INSTALLATION

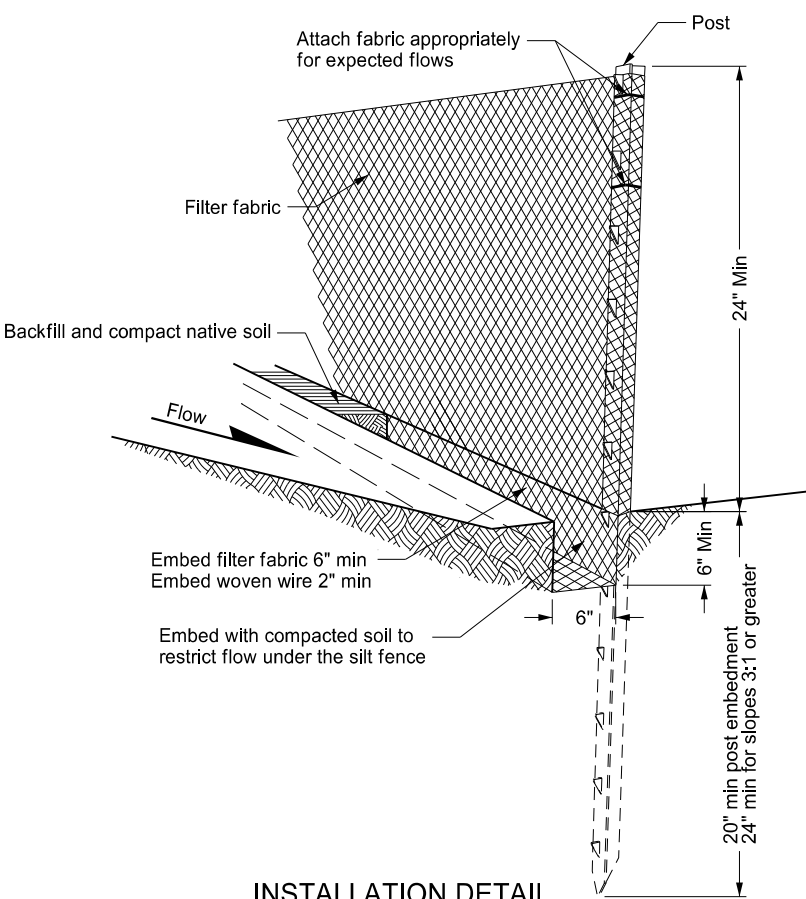
3.8 staples per square yard
using 8-inch 11 gauge wire
"u" staples.



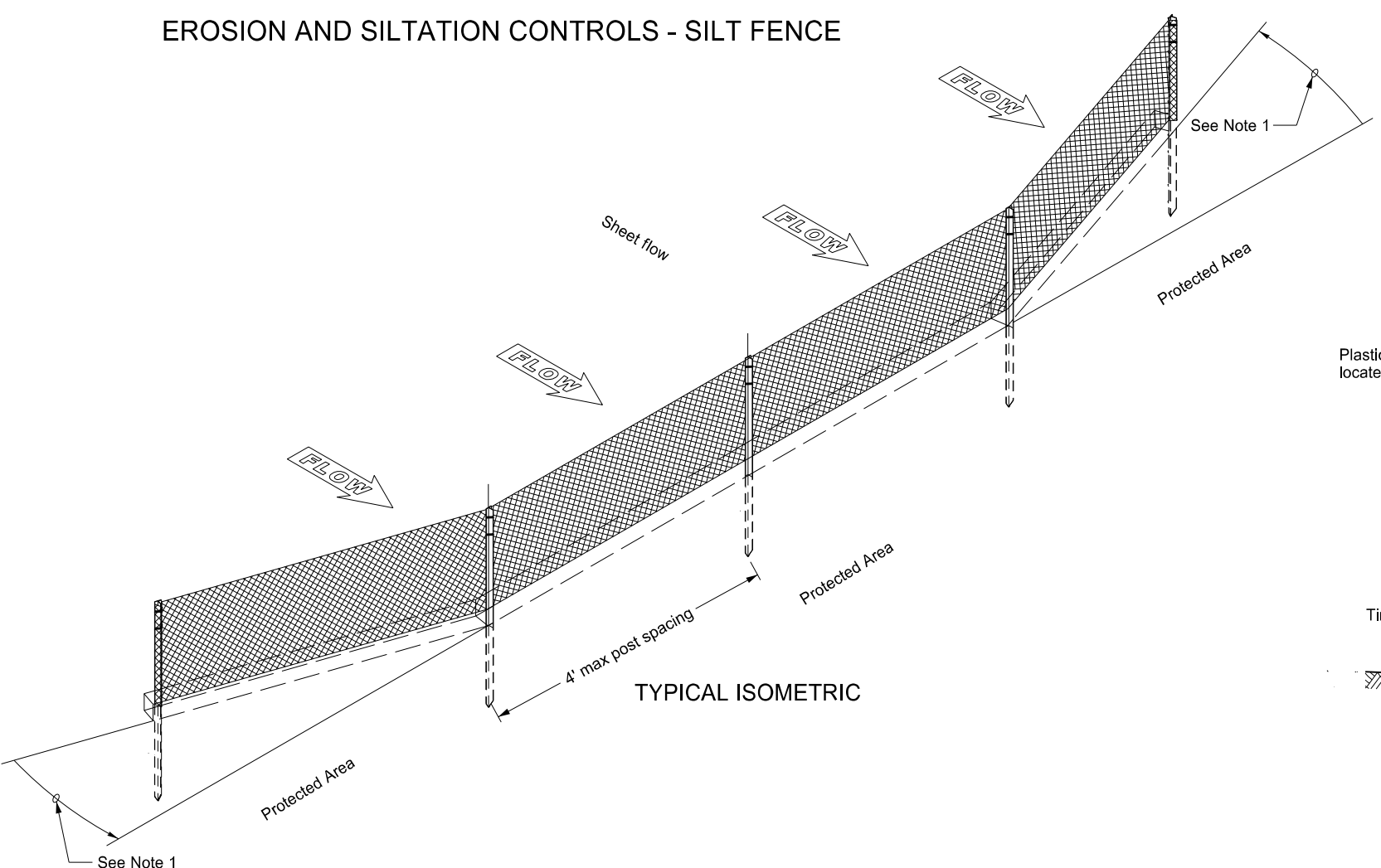
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
REVISIONS	
DATE	CHANGE
06-26-14	Changed standard drawing number from D-708-S to D-255-2.
07-27-15	Changed installation details such as trench depth and overlap dimensions.
08-27-19	New Design Engineer PE Stamp.

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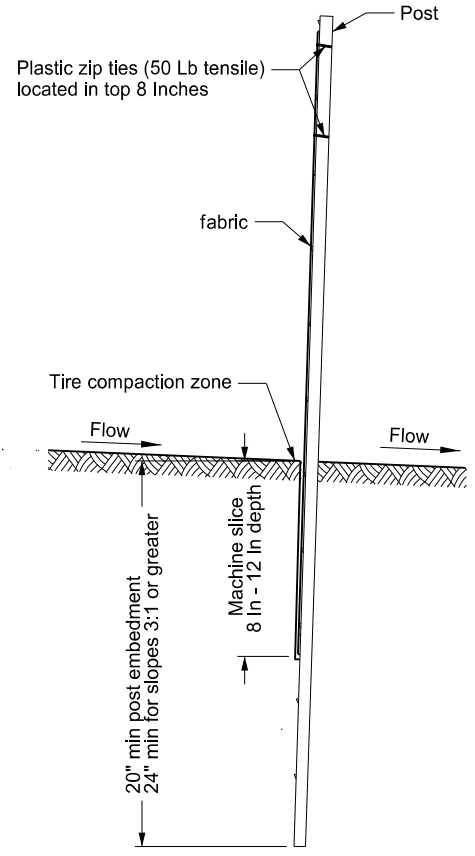
EROSION AND SILTATION CONTROLS - SILT FENCE



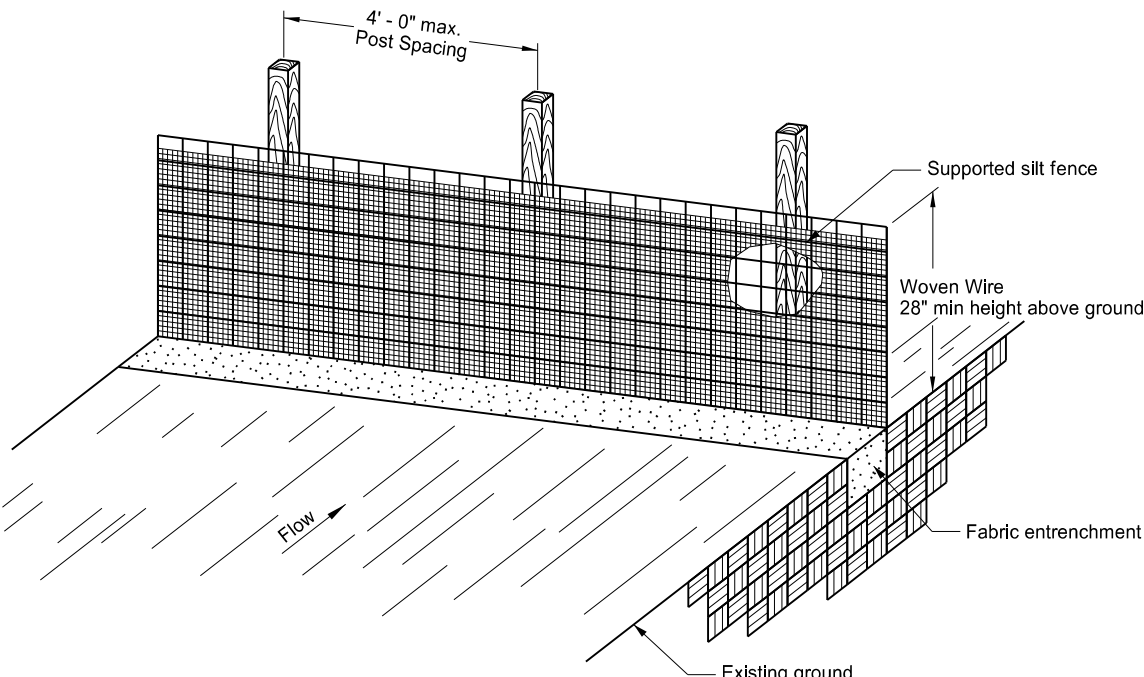
INSTALLATION DETAIL



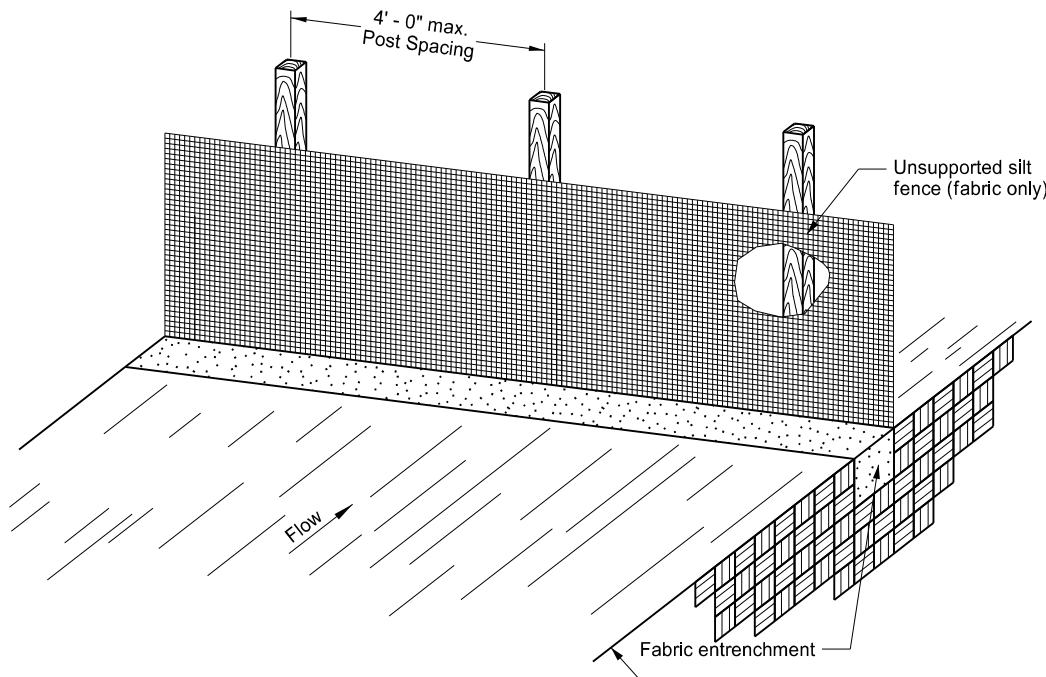
TYPICAL ISOMETRIC



MACHINE SLICED SILT FENCE



SILT FENCE SUPPORTED



SILT FENCE UNSUPPORTED

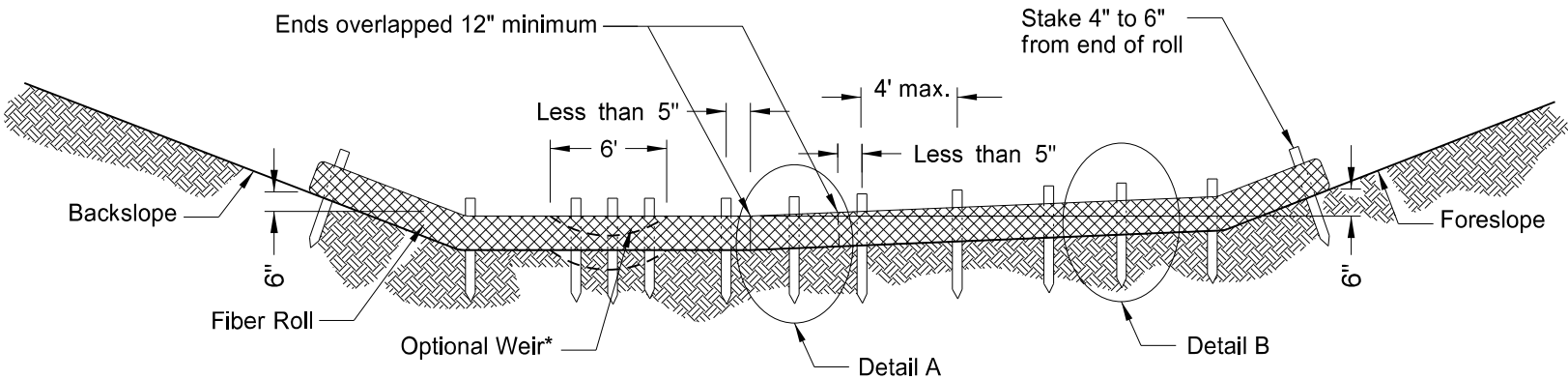
- NOTES:
1. Install the ends of the silt fence to point slightly upslope to prevent sediment from flowing around the ends of the fence.
 2. Place splices outside low spots.
 3. Install silt fencing parallel to contour lines.
 4. Do not embed silt fence when placed in standing water.
 5. Silt fence material does not need to reach the top of woven wire support.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
REVISIONS	
DATE	CHANGE
06-26-14	Standard drawing resulted from splitting standard D-708-2.
06-27-16 08-27-19	Revised details & added new ones. New Design Engineer PE Stamp.

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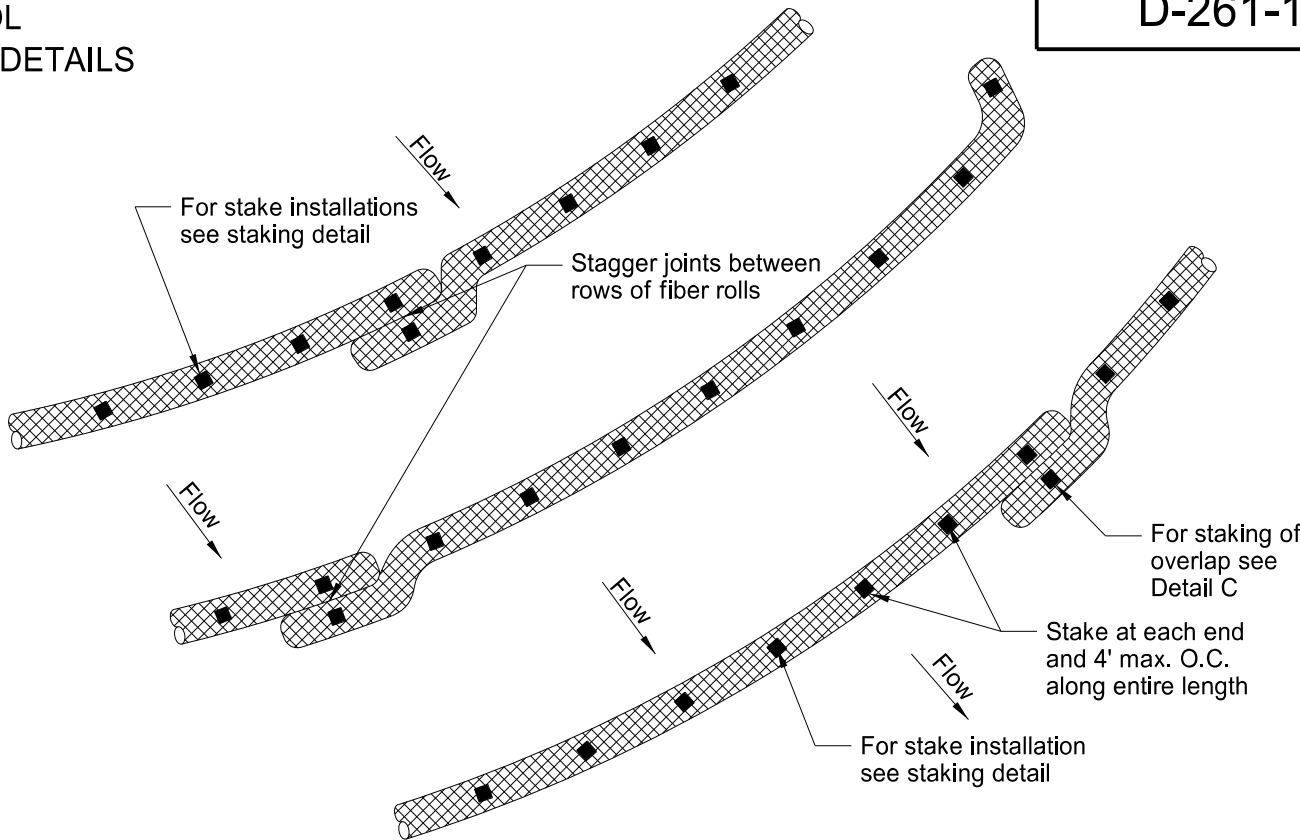
EROSION CONTROL
FIBER ROLL PLACEMENT DETAILS

D-261-1

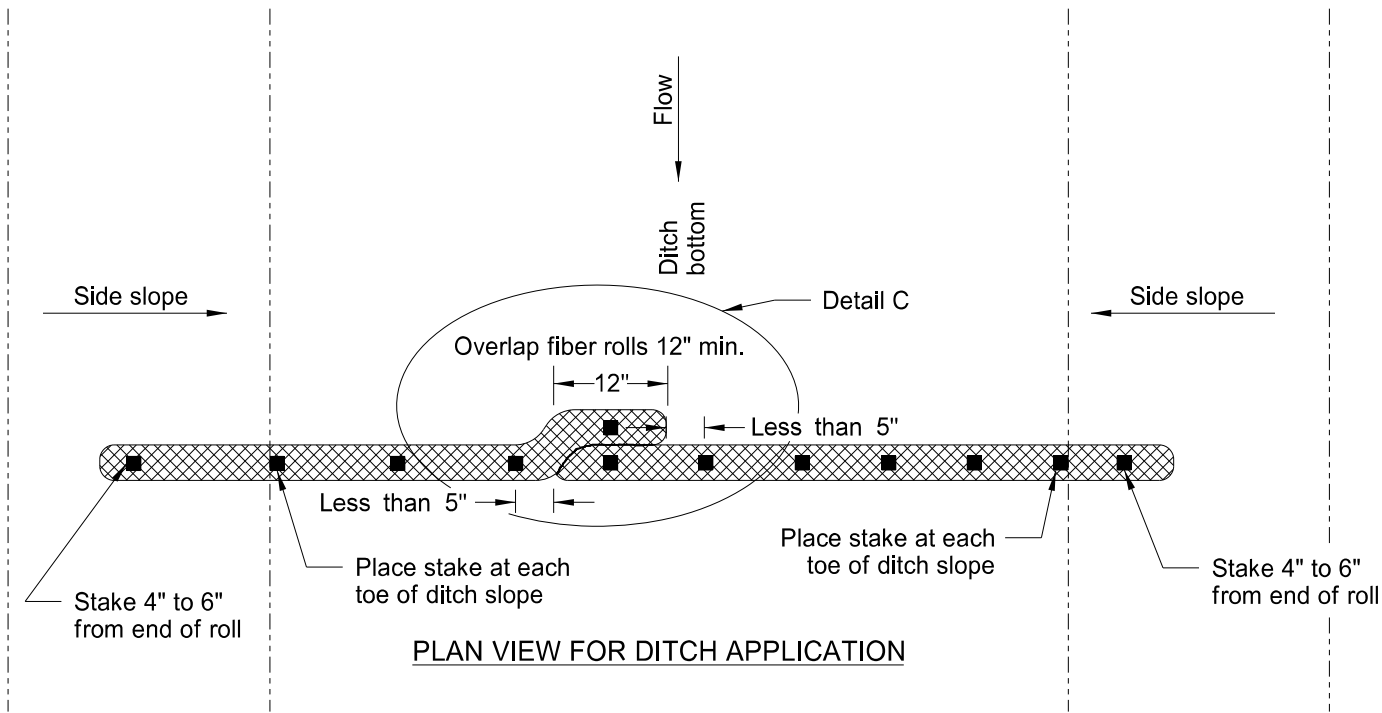


*Optional Weir. Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber roll enough to prevent water from backing up on adjacent property. Do not use 20-inch fiber rolls in flat areas where there is potential for water to back up on adjacent property.

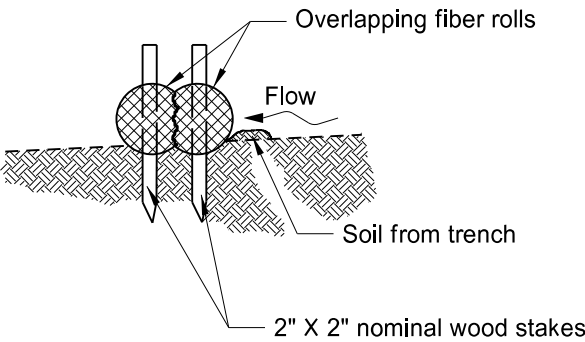
12 OR 20 INCH FIBER ROLL - DITCH BOTTOM



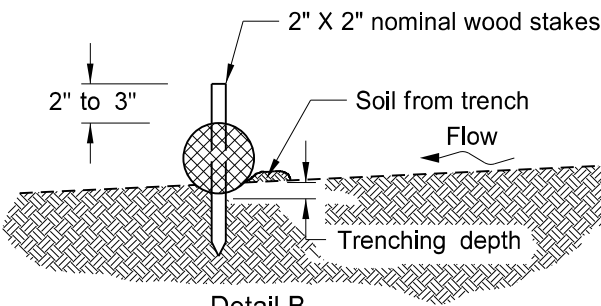
PLAN VIEW FOR SLOPE APPLICATION



PLAN VIEW FOR DITCH APPLICATION



Detail A
Fiber Roll Overlapping Staking Detail



Detail B
Fiber Roll Staking Detail

FIBER ROLL DIAMETER	NOMINAL STAKE SIZE	MINIMUM STAKE LENGTH	MINIMUM TRENCH DEPTH	MAXIMUM TRENCH DEPTH
6"	2" x 2"	18"	2"	2"
12"	2" x 2"	24"	2"	3"
20"	2" x 2"	36"	3"	5"

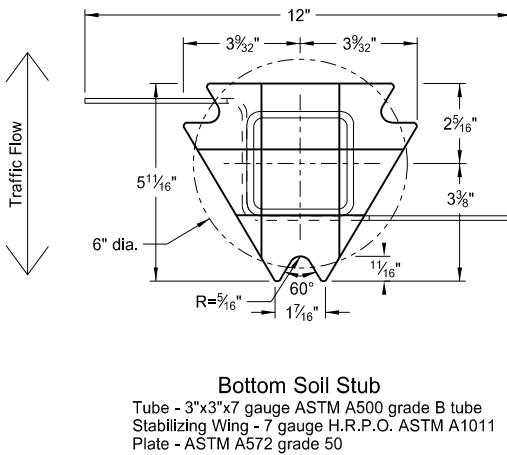
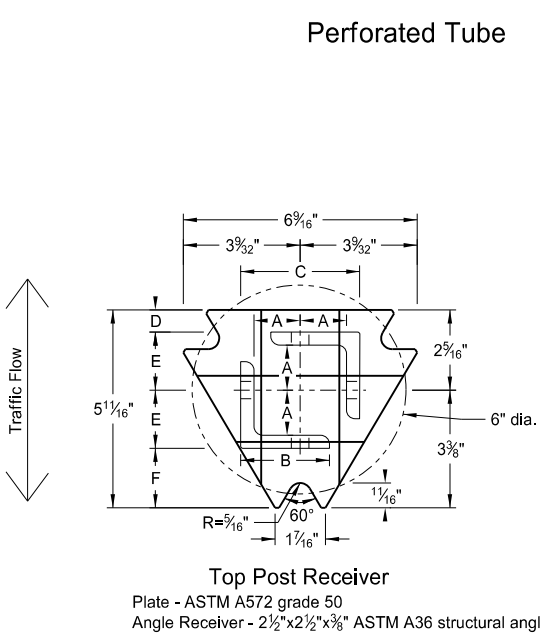
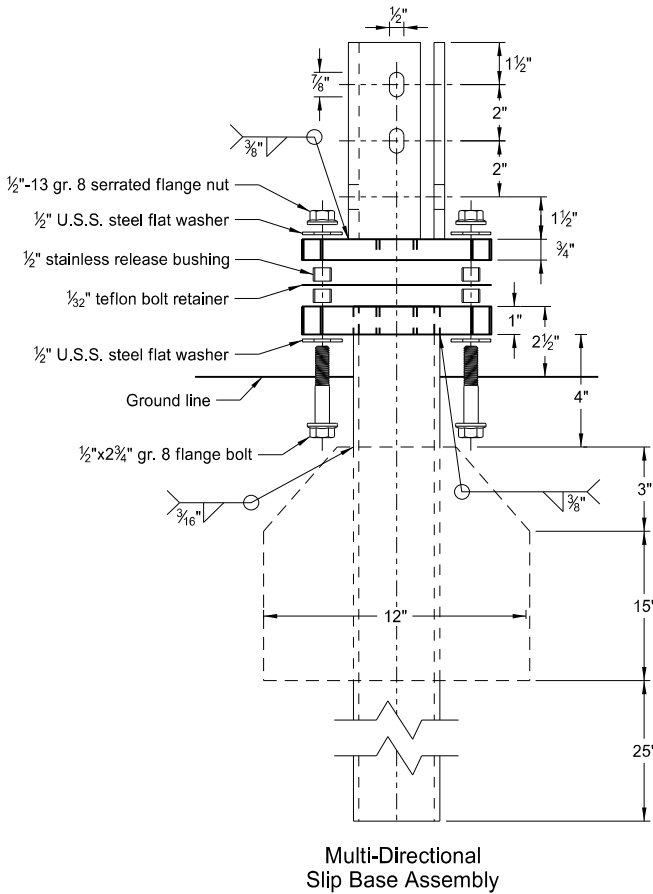
NOTE: Runoff must not be allowed to run under or around roll.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-18-10	
REVISIONS	
DATE	CHANGE
06-10-13	Added plan view for ditch and slope application. Added table with values for stake and trench dimensions.
10-04-13	Revised fiber roll overlap detail.
06-26-14	Changed standard drawing number from D-708-7 to D-261-1.
08-27-19	New Design Engineer PE Stamp

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Perforated Tube

- Notes:
1. Torque slip base bolts as specified by manufacturer.
 2. Use anchor with 43.9 KSI yield strength and 59.3 KSI tensile strength.
 3. Provide 4" vertical clearance for anchor or breakaway base. Measure the 4"x60" measurement above and below post location and back and ahead of post.
 4. In concrete sidewalk, use same anchor without wings.
 5. Provide more than 7' between the first and fourth posts of a four post sign.

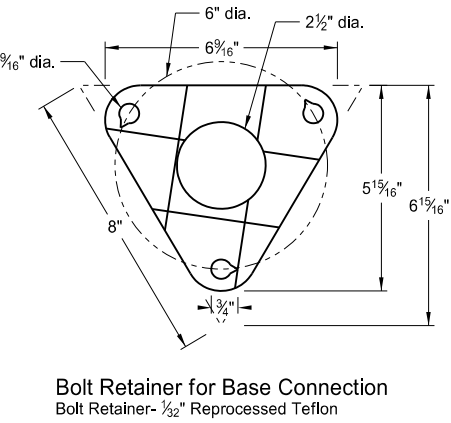
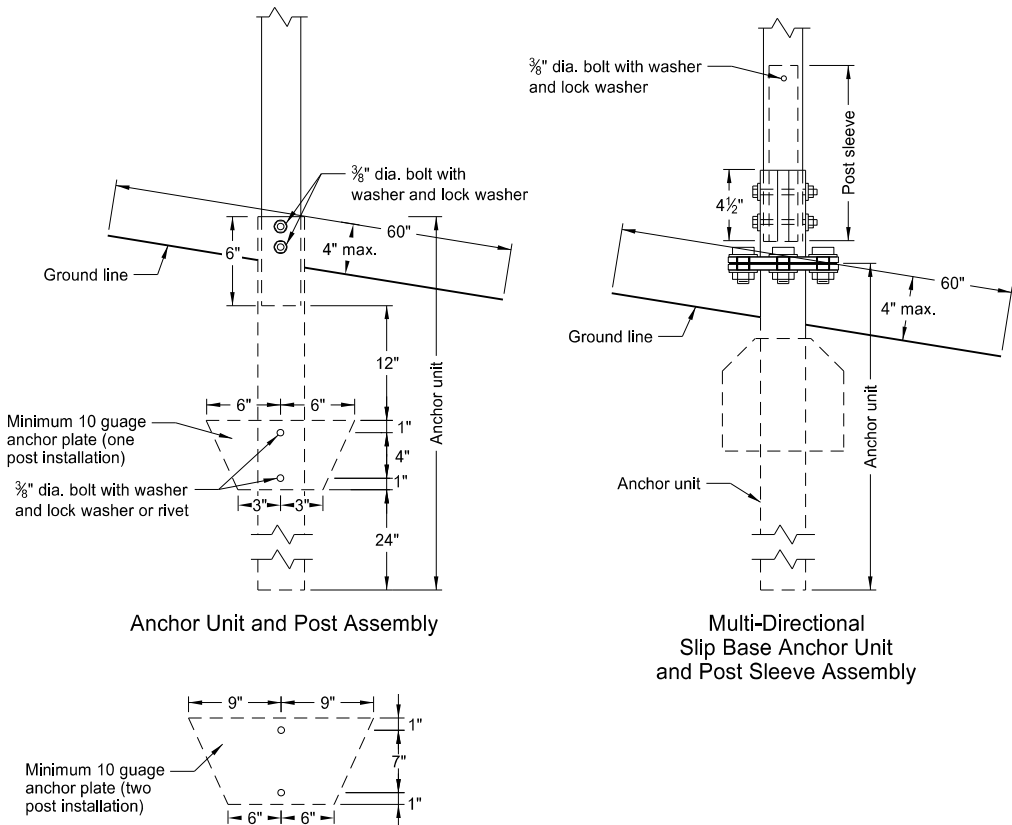


Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thick-ness Gauge	Sleeve Size in.	Wall Thick-ness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	
2	2 1/2	12			Yes	
2	2 1/4	10	2	12	Yes	
2	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/2	12			Yes	
3 & 4	2 1/2	10			Yes	
3 & 4	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/4	12	2	12	Yes	
3 & 4	2 1/2	10	2 3/16	10	Yes	

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 5/16"	2 1/2"	3 1/2"	2 5/32"	1 3 3/64"	1 7/8"
2 1/2"x10 ga.	1 3/32"	2 1/2"	3 5/16"	5/8"	1 2 1/32"	1 3/4"

- (A) Use breakaway base when support is placed in weak soils. Engineer determines if soils are weak.
- (B) For additional wind load, insert the 2 3/8"x10 ga. into 2 1/2"x10 ga.



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17 10-03-19	Updated to active voice New Design Engr PE Stamp

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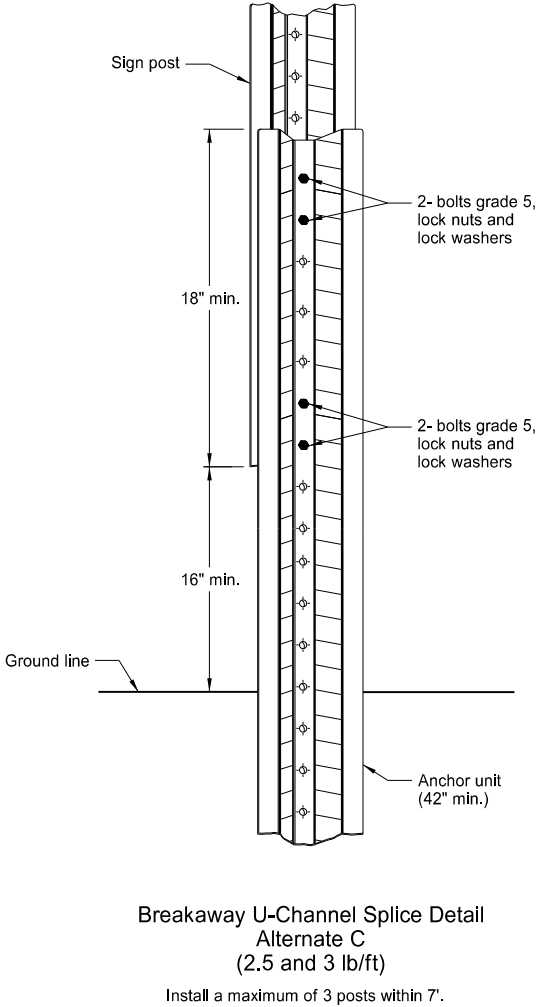
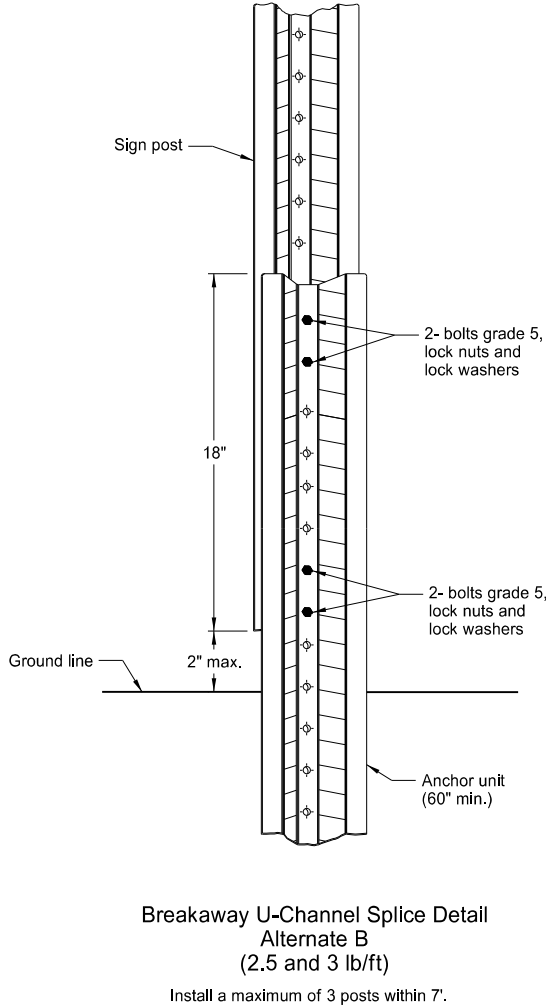
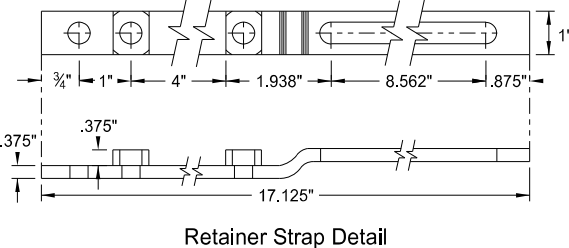
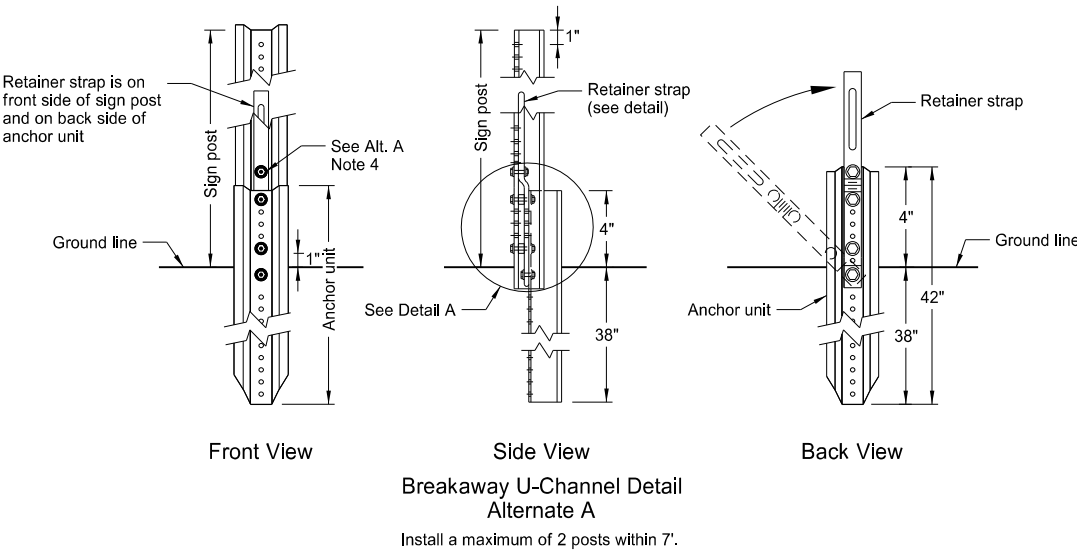
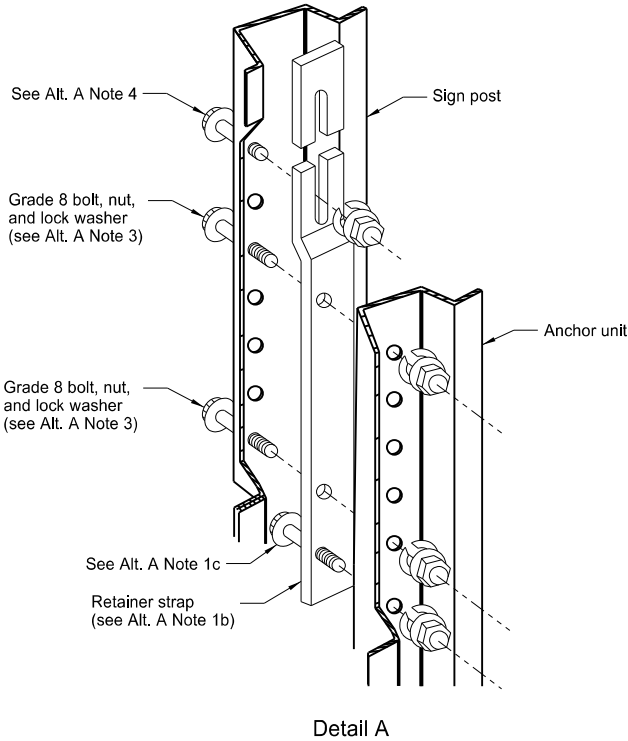
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U-Channel Post



Alternate A Steps of Installation:

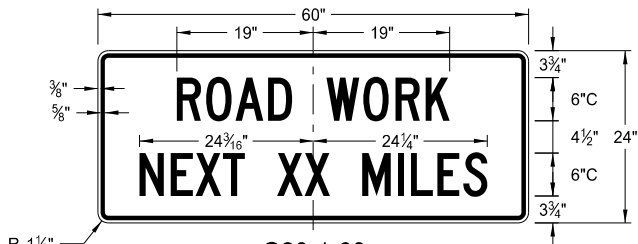
- a) Drive anchor unit to within 12" of ground level.
b) Establish proper assembly by lining up bottom hole of retainer strap with 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
- a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
- a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
b) Alternately tighten two connector bolts.
- Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
- Properly nest base post, strap, and sign post. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17 10-03-19	Updated to active voice New Design Engr PE Stamp

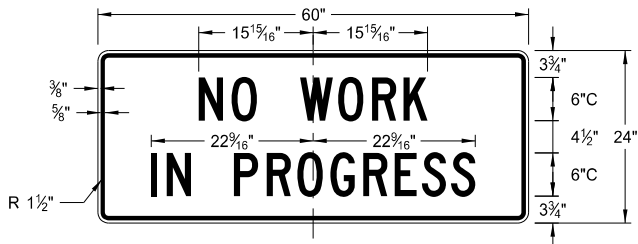
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CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS

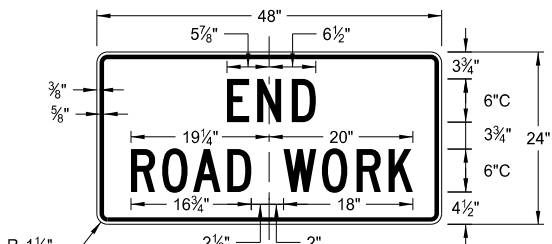
D-704-9



G20-1-60
Legend: black (non-refl)
Background: orange



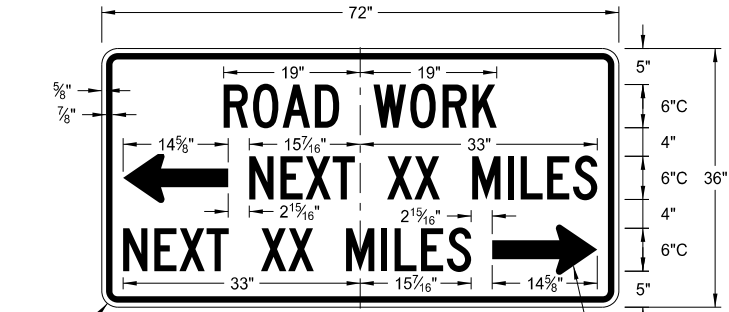
G20-1b-60
Legend: black (non-refl)
Background: orange



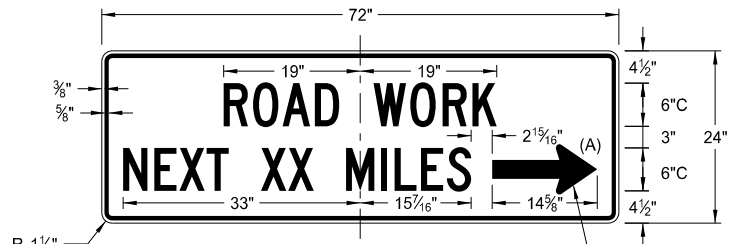
G20-2-48
Legend: black (non-refl)
Background: orange



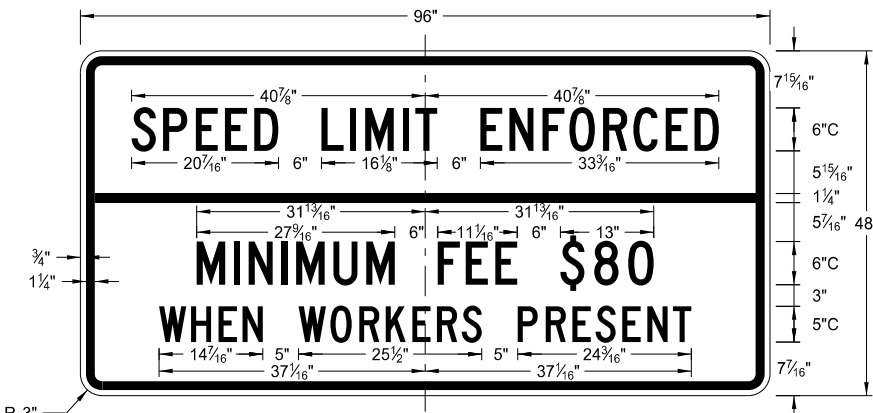
G20-4b-36
Legend: black (non-refl)
Background: orange



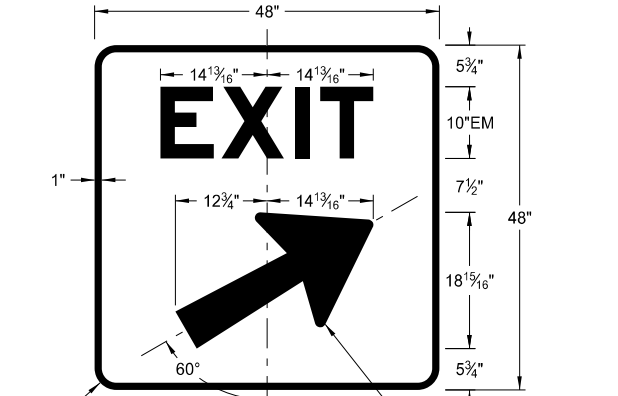
G20-50a-72
Legend: black (non-refl)
Background: orange



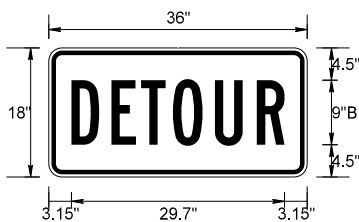
G20-52a-72
Legend: black (non-refl)
Background: orange



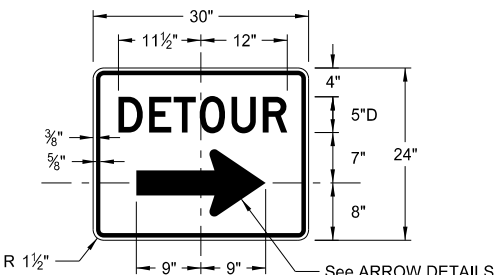
G20-55-96
Legend: black (non-refl)
Background: orange



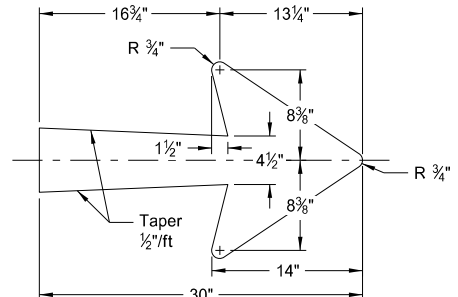
E5-1(L or R)-48
Legend: white
Background: green (orange optional)



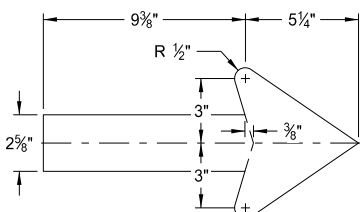
M4-8-36
Legend: black (non-refl)
Background: orange



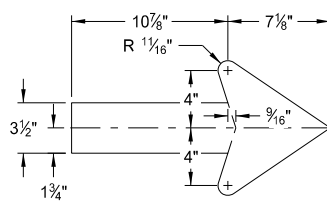
M4-9(L or R)-30 & M4-9-30
Legend: black (non-refl)
Background: orange



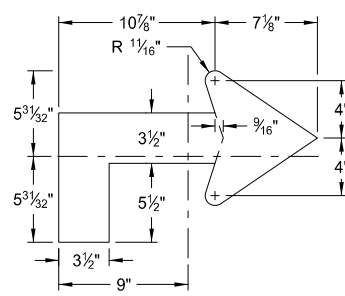
E5-1-48



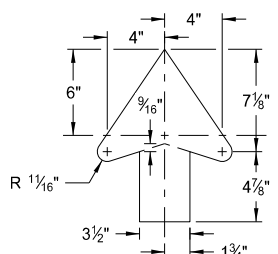
G20-50a-72
G20-52a-72



M4-9(L or R)-30
Right or Left



M4-9(L or R)-30
Advanced Right or Left



M4-9-30
Straight

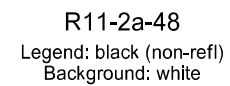
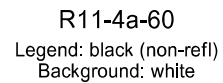
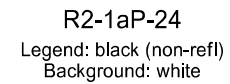
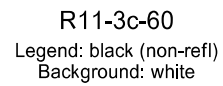
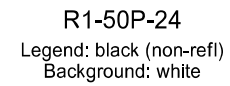
ARROW DETAILS

NOTES:

(A) Arrow may be right or left of the legend to indicate construction to the right or left.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17 10-03-19	Added sign & background color New Design Engineer PE Stamp

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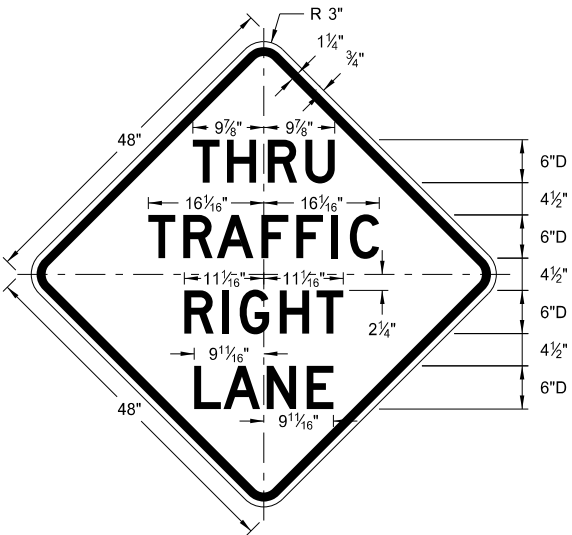


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17 10-03-19	Revised sign number New Design Engineer PE Stamp

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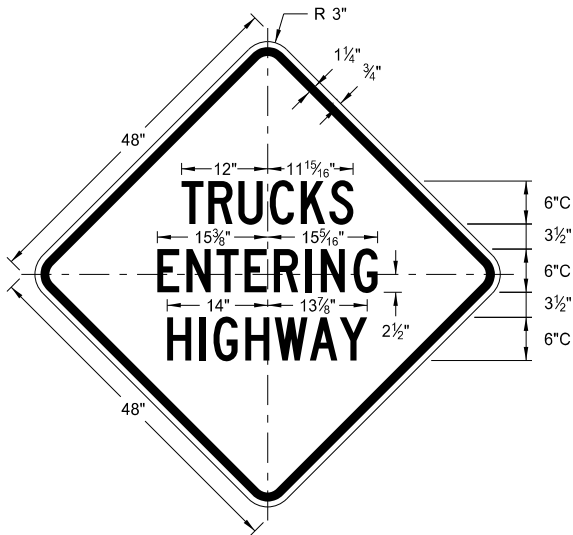
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

D-704-11



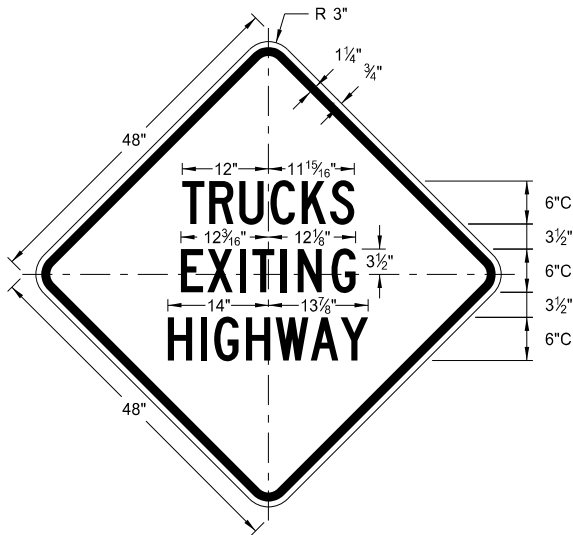
W5-8-48

Legend: black (non-refl)
Background: orange



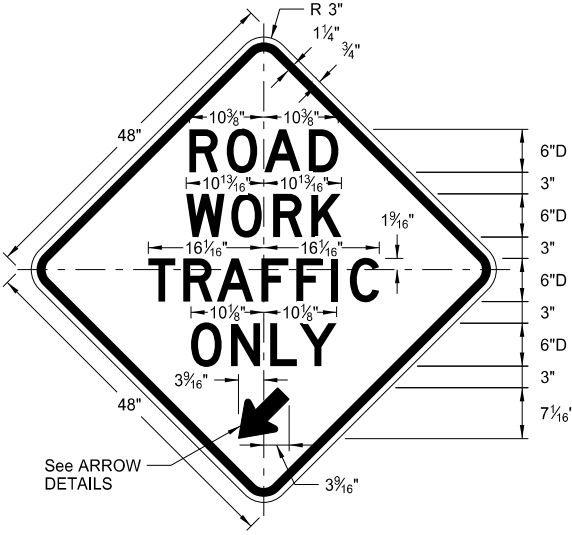
W8-53-48

Legend: black (non-refl)
Background: orange



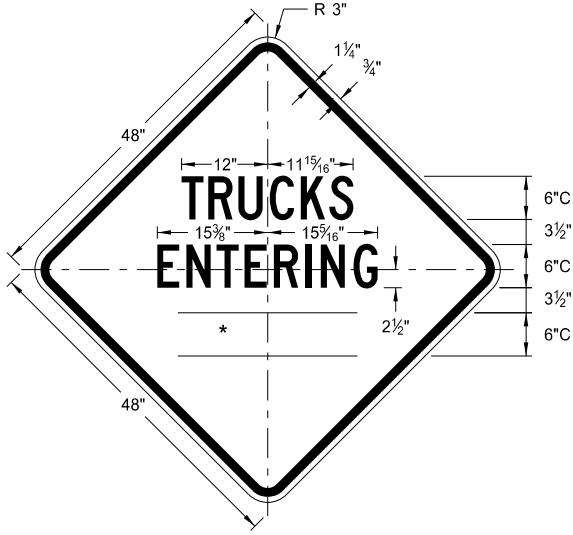
W8-56-48

Legend: black (non-refl)
Background: orange



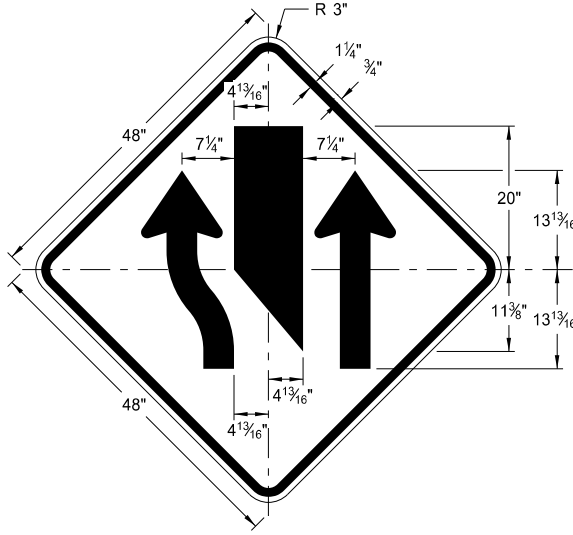
W5-9-48

Legend: black (non-refl)
Background: orange



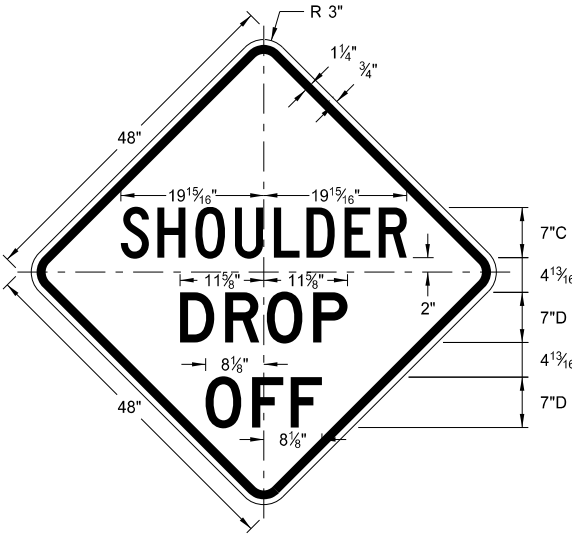
W8-54-48

Legend: black (non-refl)
Background: orange



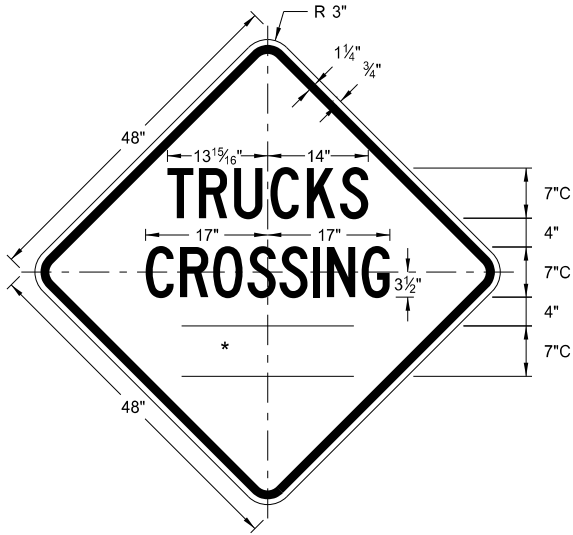
W9-3a-48

Legend: black (non-refl)
Background: orange



W8-9a-48

Legend: black (non-refl)
Background: orange

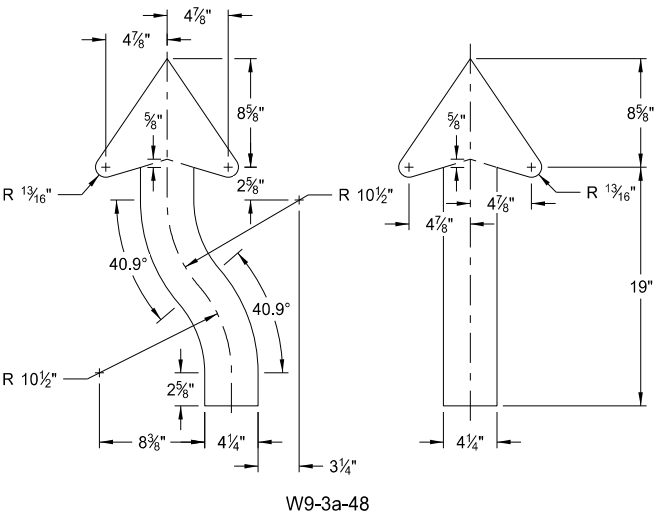
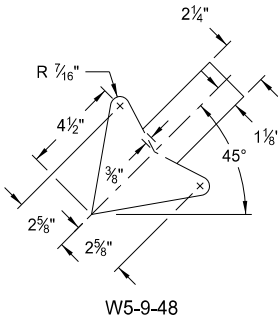


W8-55-48

Legend: black (non-refl)
Background: orange

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
1/2 MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES

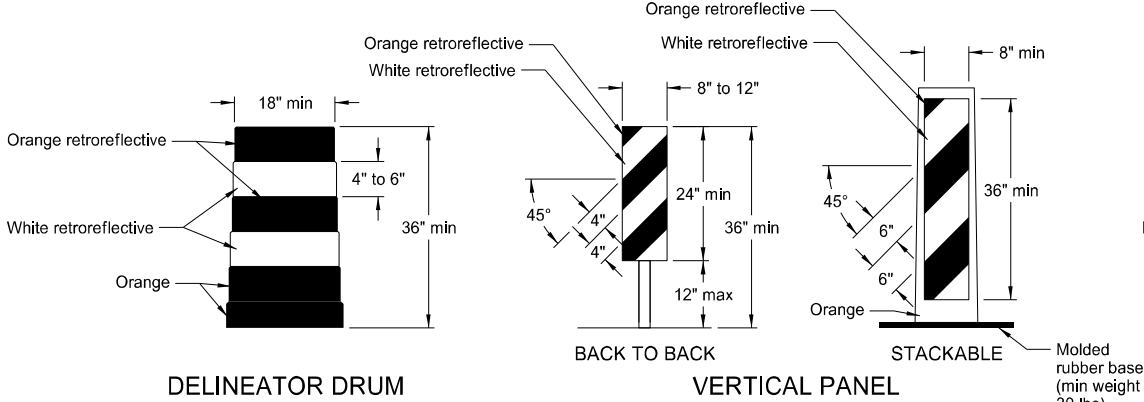


ARROW DETAILS

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17	Updated sign number
5-31-18	Revised sign and arrow details
10-03-19	New Design Engineer PE Stamp

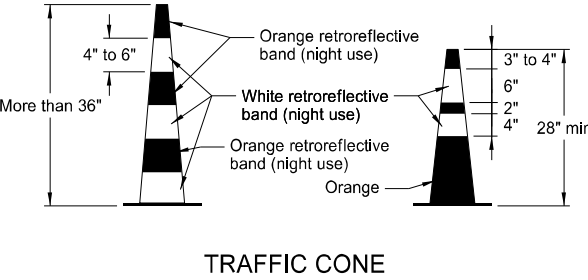
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BARRICADE AND CHANNELIZING DEVICE DETAILS

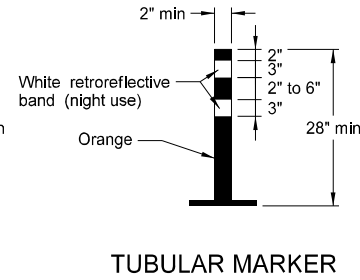


Provide horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide for drum markings. Use a minimum of two orange and two white stripes with the top stripe being orange for each drum. Do not exceed 3" nonretroreflectORIZED spaces between the horizontal orange and white stripes. Avoid placement of stripes on drum ribs or indentations. Use closed top drums that will not allow collection of debris. Do not place ballast on the top of drum.

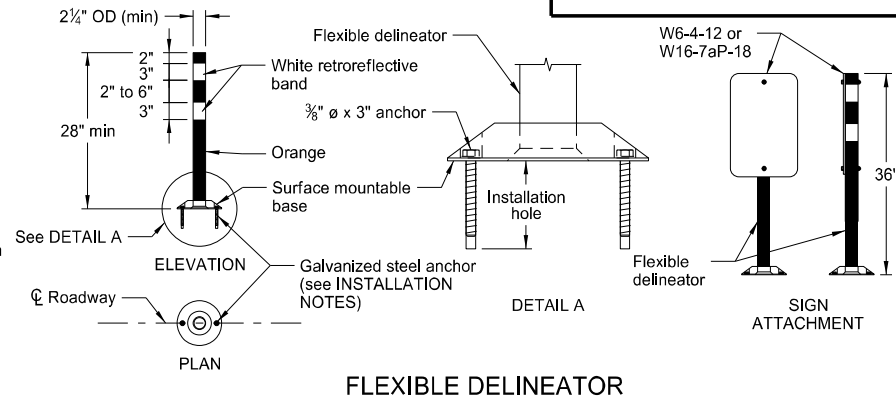
Provide alternating orange and white retroreflective stripes, sloping downward in direction vehicular traffic is to pass. Place retroreflective sheeting on both sides of panel with a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, use a stripe width of 6 inches.



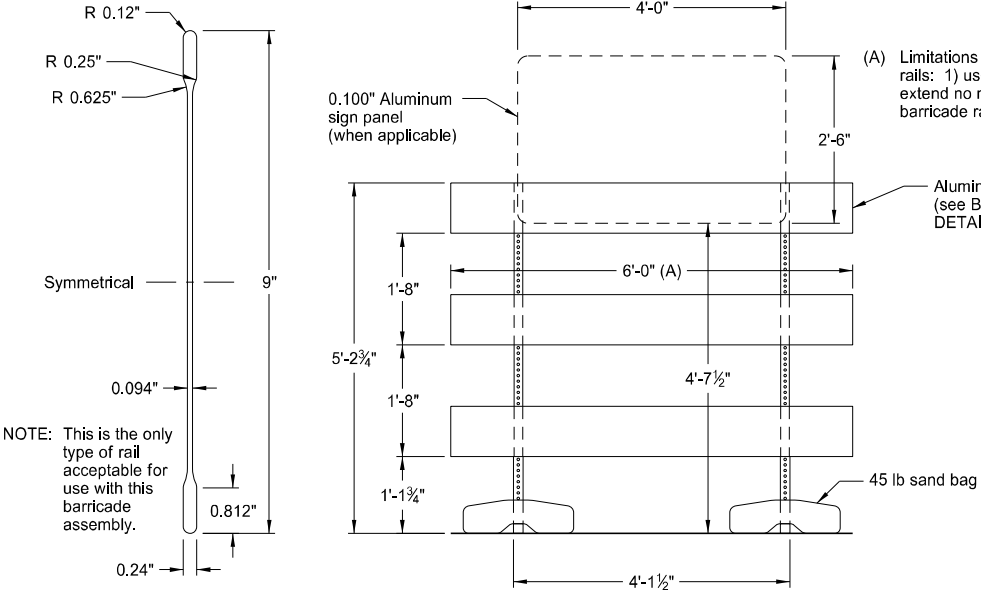
Provide retroreflectORIZATION of cones more than 36" in height by alternating orange and white retroreflective stripes. Use a minimum of two orange and two white stripes for each cone with the top stripe being orange. Use maximum 3" nonretroreflectORIZED space between the orange and white stripes.



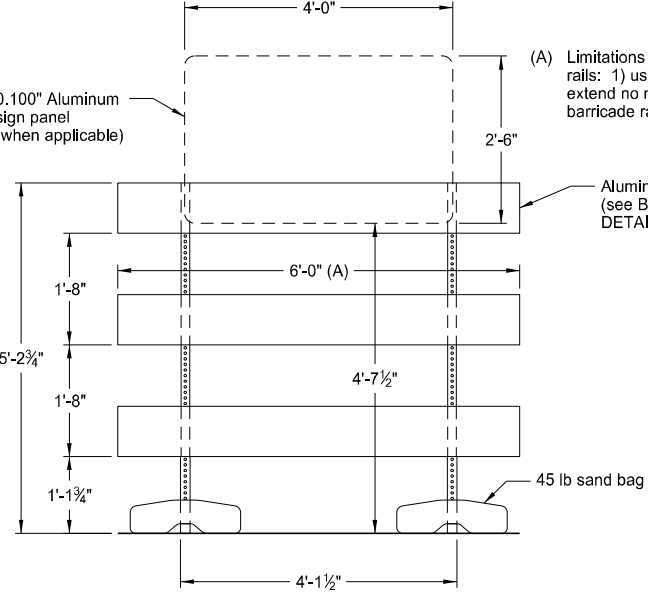
Provide retroreflectORIZATION of tubular markers more than 42" in height by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



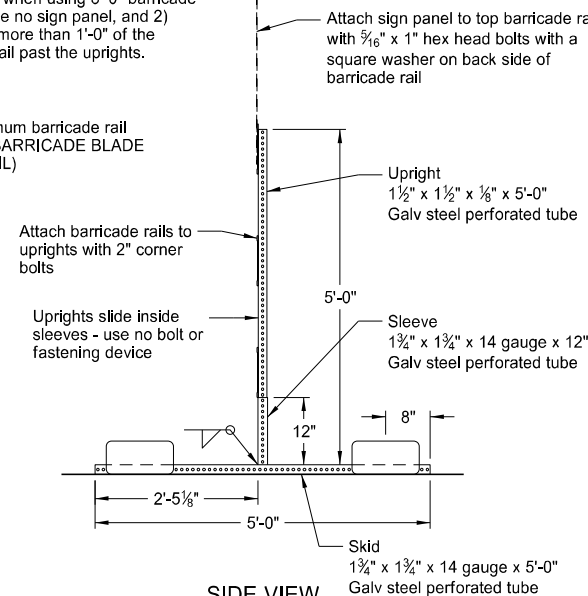
- INSTALLATION NOTES:
1. Drill installation holes to diameter and depth required by manufacturer's specifications.
 2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
 3. In lieu of bolted down base, use an 8" x 8" butyl pad or hot melt butyl. Remove butyl as close as possible to pavement surface.



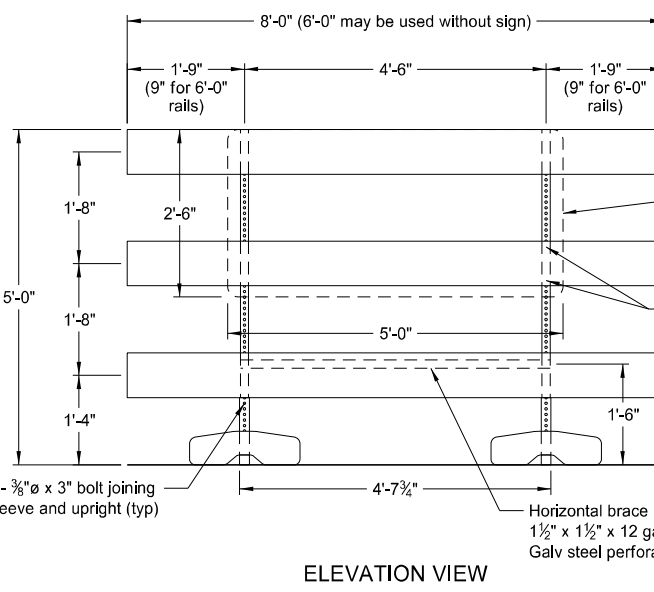
BARRICADE BLADE DETAIL



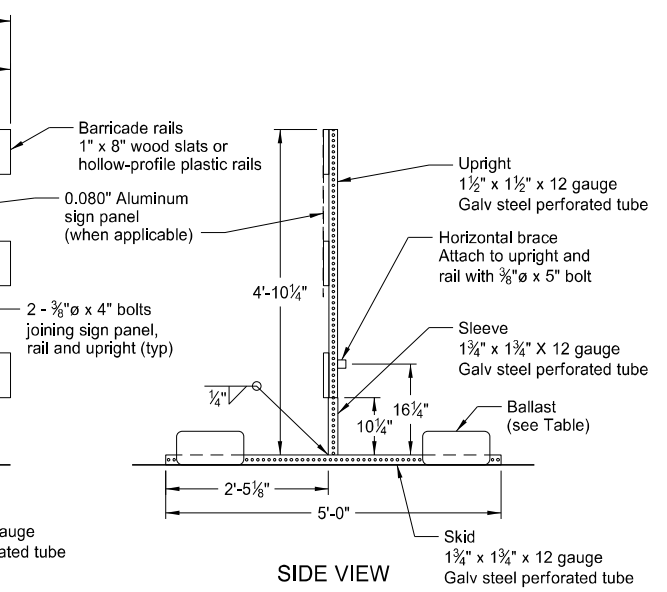
BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)



BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)

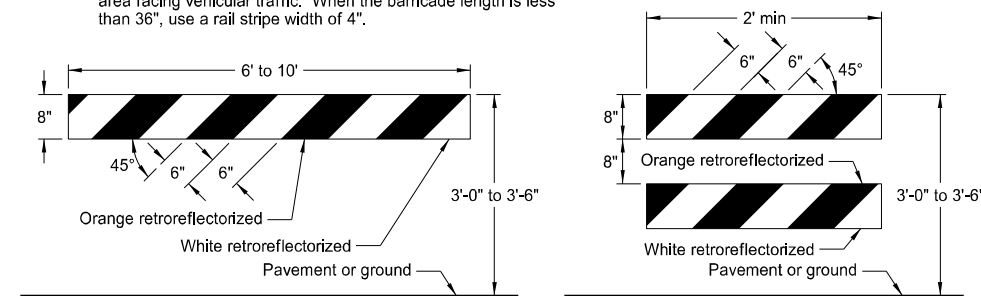


ELEVATION VIEW



SIDE VIEW

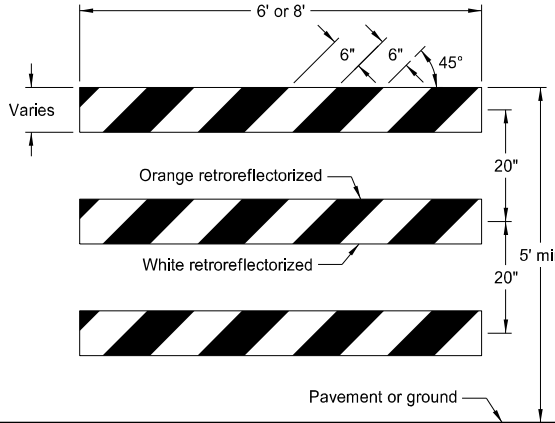
NOTE: For barricade markings use alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Place retroreflective sheeting on both sides of the rails with a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", use a rail stripe width of 4".



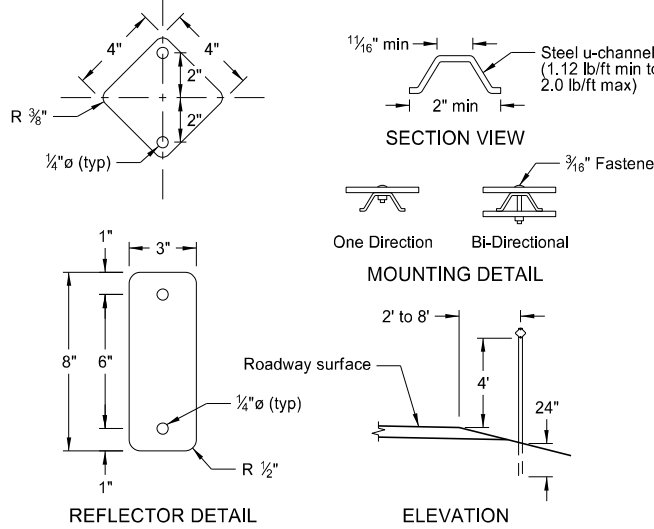
TYPE I BARRICADE

TYPE II BARRICADE

BARRICADE RAIL DETAILS



TYPE III BARRICADE



REFLECTOR DETAIL

ELEVATION

DELINEATORS

MINIMUM BALLAST (For each side of barricade support)

Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

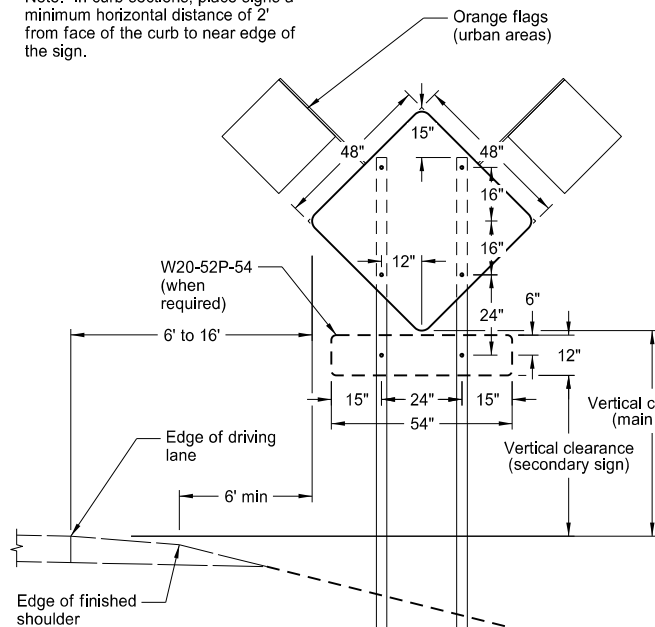
Note: Number of sandbags based on a wind speed of 55 MPH. Sandbags assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
9-27-17 11-01-19	Updated to active voice Revised details for Flexible Delineator

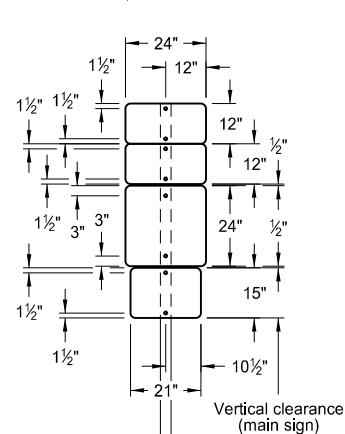
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

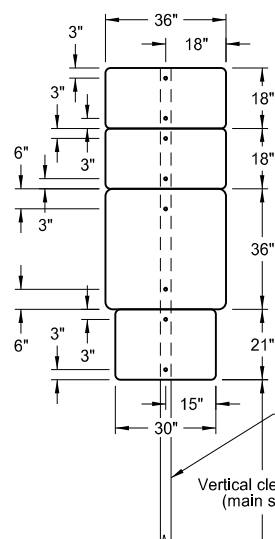
Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



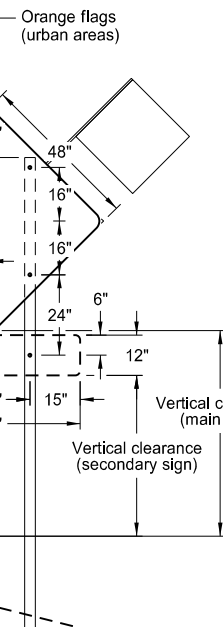
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



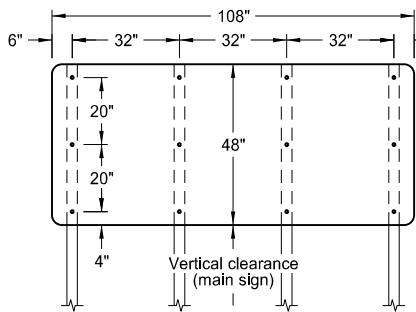
24" x 24"
ROUTE MARKER
ASSEMBLY



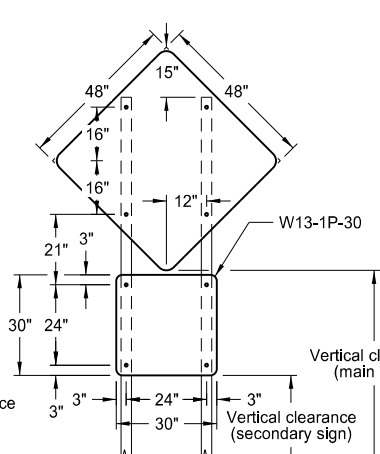
36" x 36"
ROUTE MARKER
ASSEMBLY



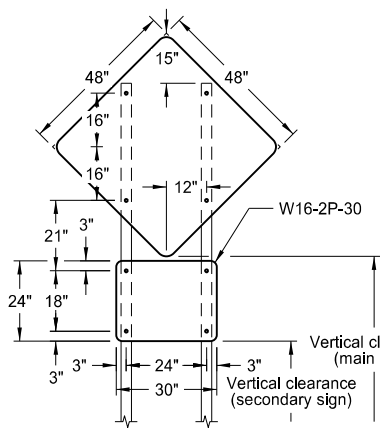
18" x 18"
DIAMOND SIGN



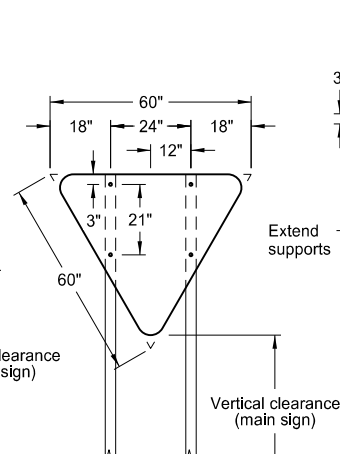
108" x 48" SIGN



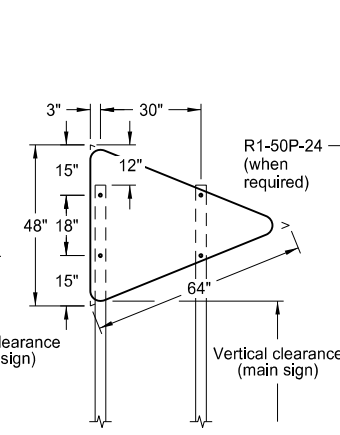
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



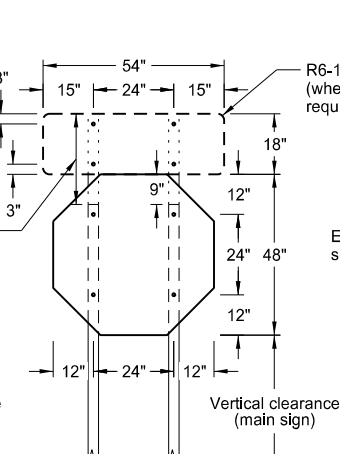
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



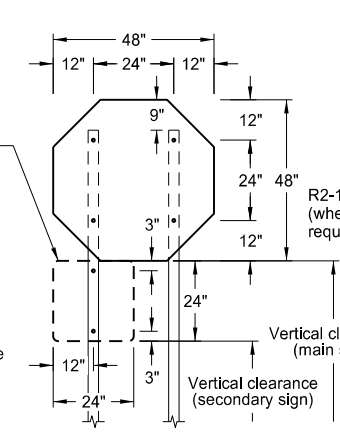
R1-2-60 - YIELD SIGN



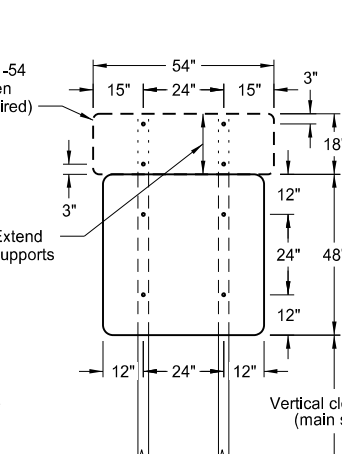
W14-3-64 - PENNANT SIGN



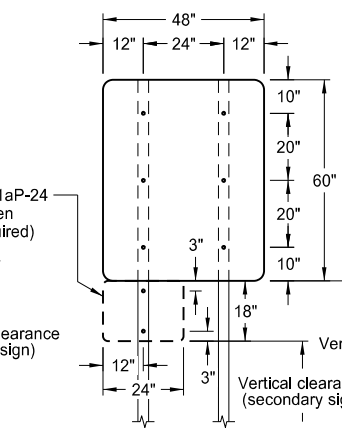
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



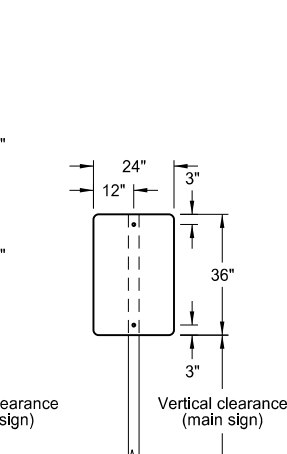
R1-1-48 - STOP SIGN
(with R1-50P-24 sign as required)



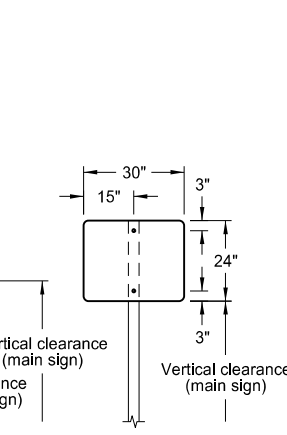
48" x 48" SIGN
(with R6-1-54 sign as required)



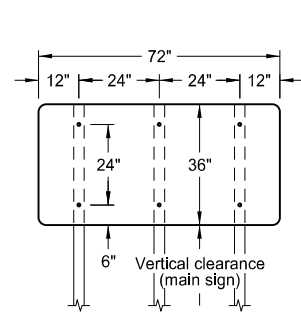
48" x 48" SIGN
(with R2-1aP-24 sign as required)



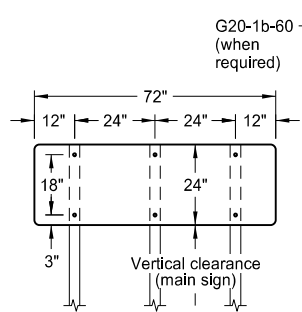
24" x 36" SIGN



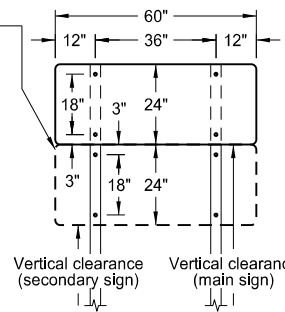
30" x 24" SIGN



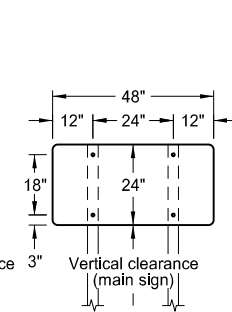
72" x 36" SIGN



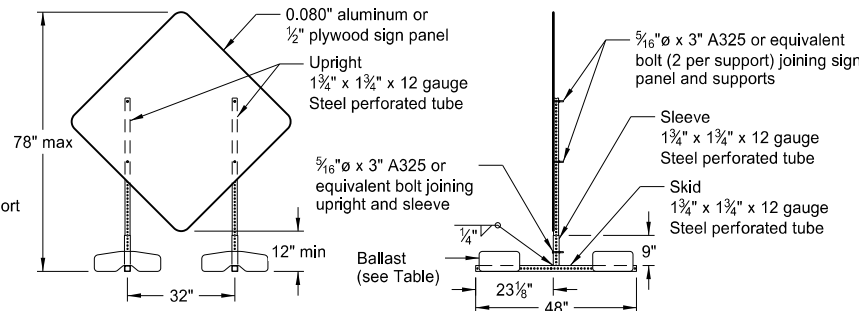
72" x 24" SIGN



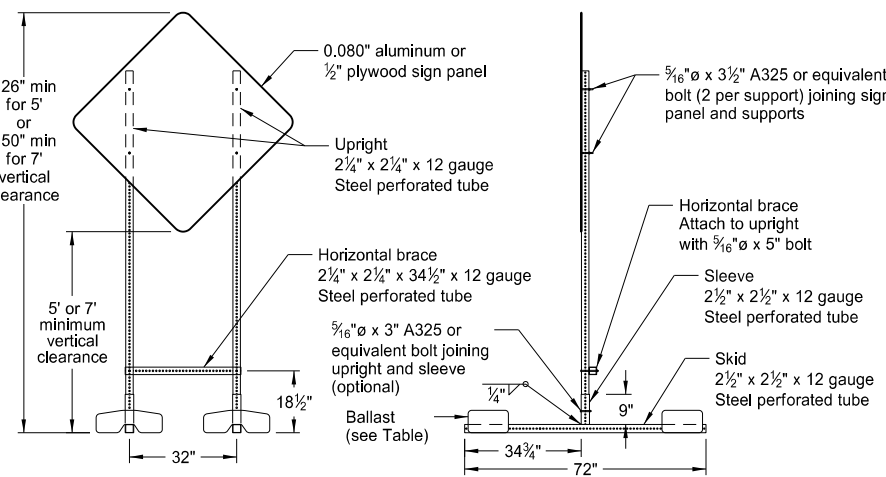
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

1. Sign Supports: Galvanize or paint supports. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes based on a wind speed of 55 MPH.

Place signs over 50 square feet on 2½" x 2½" perforated tube supports as a minimum.

Do not attach guy wires to sign supports. Attach wind beams behind sign panels when used with u-posts.
2. Sign Panels: Provide sign panels made of 0.100" aluminum, ½" plywood, or other approved material, except where noted. Punch all holes round for ⅝" bolts.
3. Alternate Messages: Install and remove alternate message signs on reflectorized plate (without borders) as required. (i.e. "Left" and "Right" message on lane closure sign)
4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background
Interstate Business Loop - white legend on green background
US and State - black legend on white background
County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.). In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance stated above.

Provide a minimum clearance of 7'-0" from the ground at the post for signs with an area exceeding 50 square feet.

6. Portable Signs: Provide portable signs that meet the vertical clearance stated above when it is necessary to place signs within the pavement surface.

Use of low-mounting height (minimum 12" vertical clearance) portable signs for 5 days or less, is allowed as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. Use of R9-8 through R9-11a series, W1-6 through W1-8 series, M4-10, and E5-1 is allowed for longer than 5 days.

Restrict signs mounted on portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT details to a maximum surface area of 16 square feet.

MINIMUM BALLAST
(For each side of sign support base)

Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

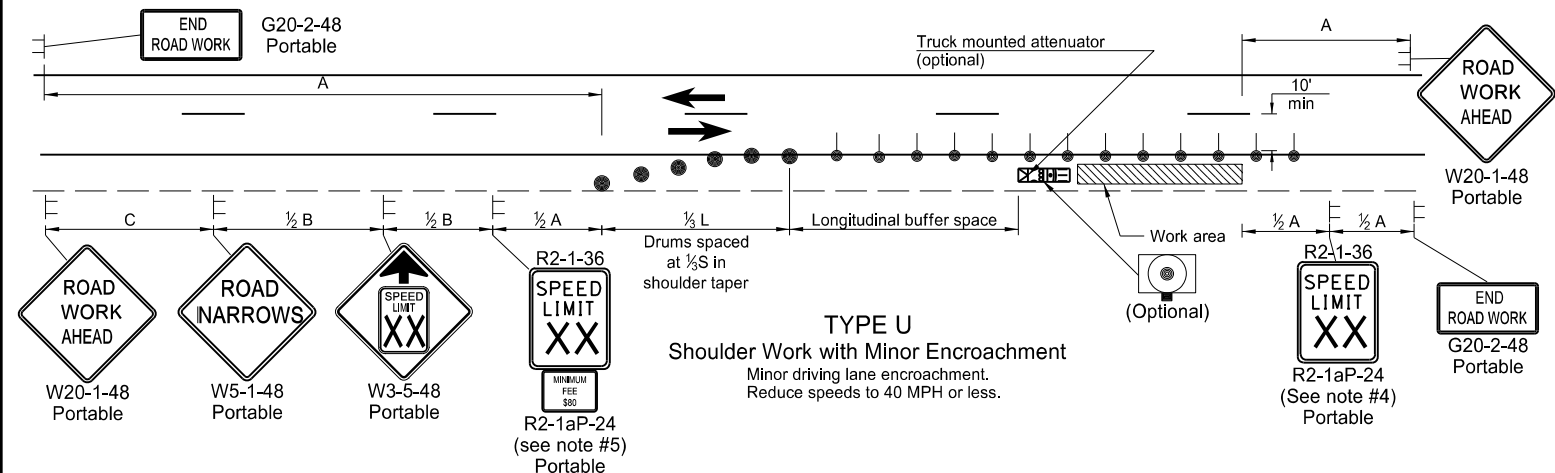
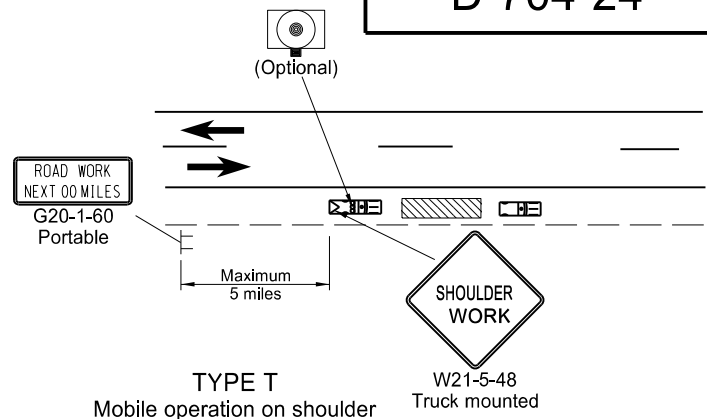
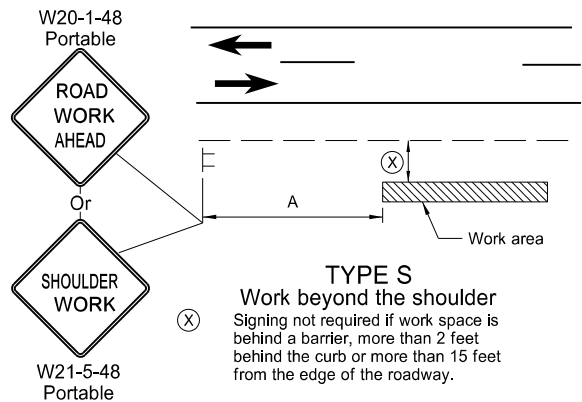
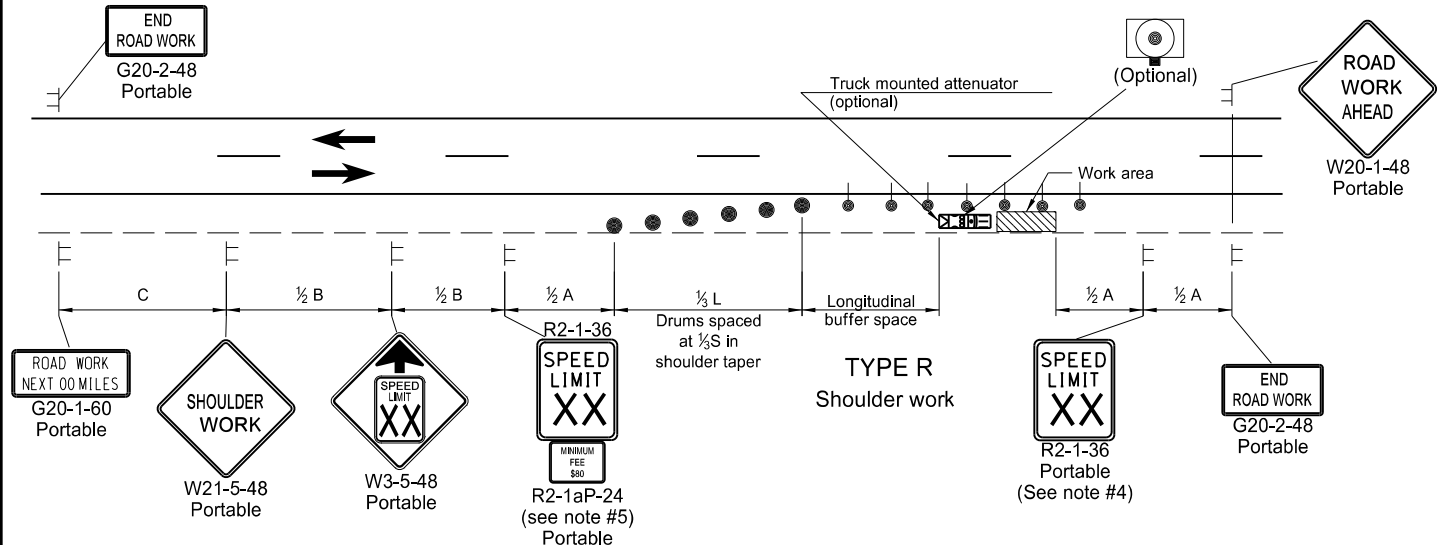
Note: The number of sandbags are based on a wind speed of 55 MPH. Place sandbags at or near the ends of skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6
9-27-17	Updated to active voice
11-01-19	Revised 60"x24" sign detail

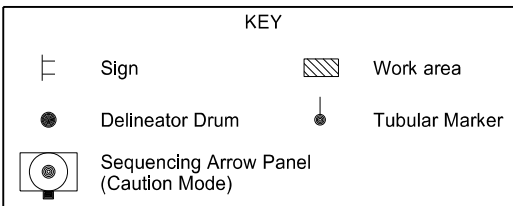
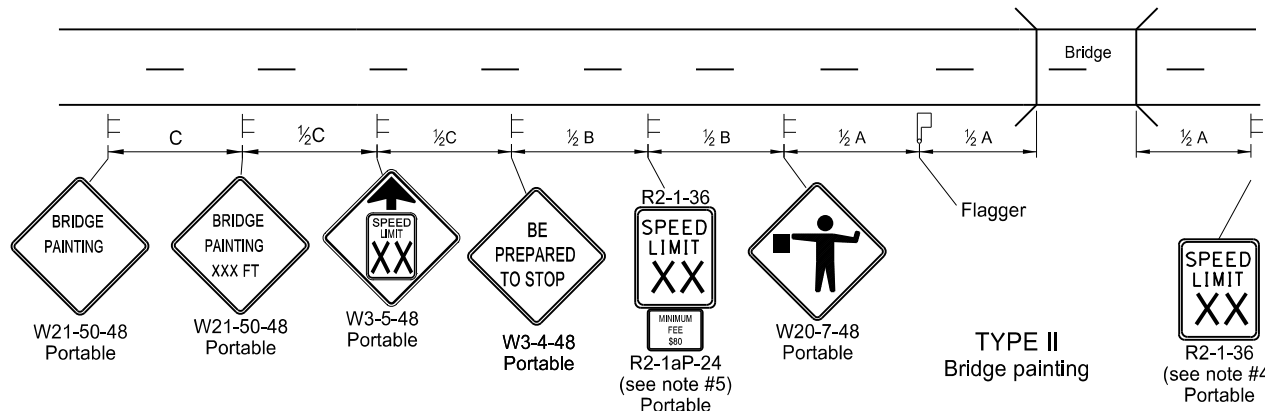
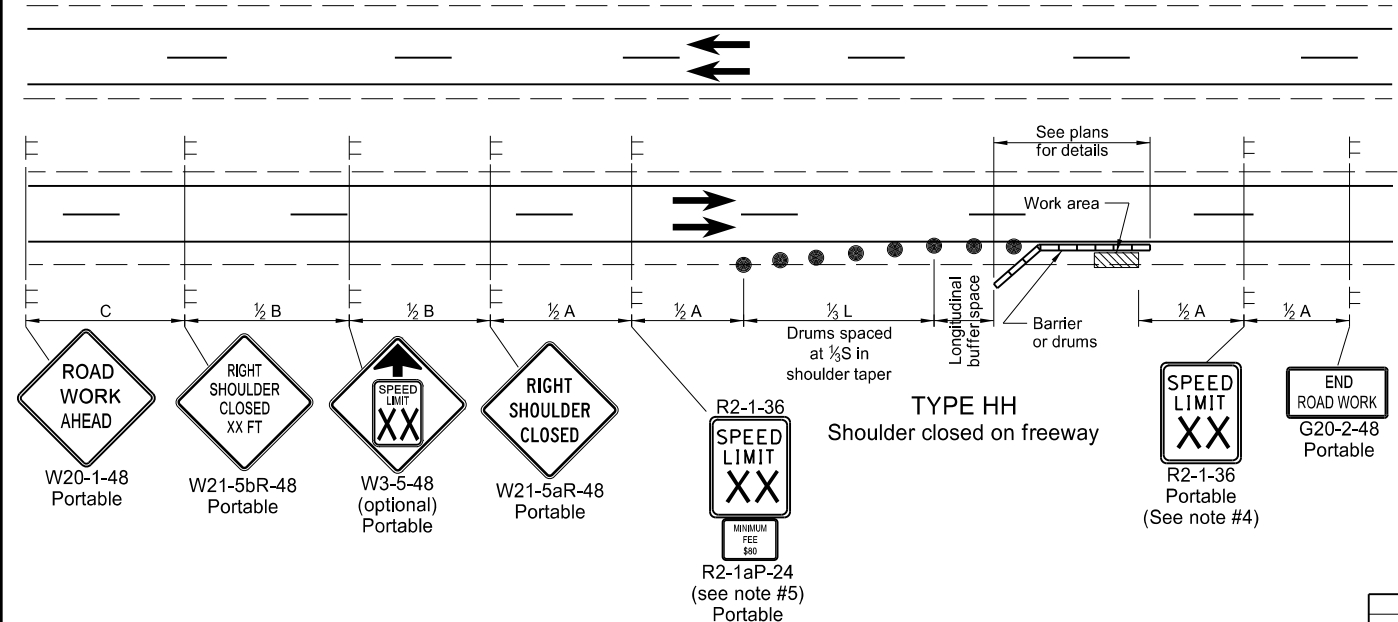
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Kirk J Hoff,
Registration Number
PE-4683,
on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

SHOULDER CLOSURES AND BRIDGE PAINTING LAYOUTS



- Notes
- Variables
 - S = Numerical value of speed limit or 85th percentile.
 - W = The width of the taper in feet.
 - L = Minimum length of taper, $S \times W$ for freeways, expressways, and all other roads with speeds of 45 mph or greater, or $W \times S^2 / 60$ for urban, residential, and other streets with speeds of 40 mph or less.
 - Space delineator drums for tapering traffic at dimension "S". Space delineator drums or tubular markers for tangents at 2 times "S".
 - Sequencing Arrow Panels
 - Use Type A on roadways with slow moving traffic speeds and low volume (25 mph or less and 750 ADT or less).
 - Use Type B on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).
 - Use Type C on roadways with high traffic speeds and volumes (over 40 mph or over 5000 ADT).
 - Re-establish speed limit. Determine exact speed limit in the field, dependent on location and conditions.
 - Determine the reduced speed limit based on the in-place speed limit before construction. Where speed reductions exceed 30 MPH, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at $\frac{1}{2}B$.
 - Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
 - Cover existing speed limit signs within a reduced speed zone.
 - As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
 - Recommend 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.



ADVANCE WARNING SIGN SPACING				
Road Type	Distance Between Signs			
	A	B	C	
Urban - Low Speed (30 mph or less)	150	150	150	
Urban - Low Speed (over 30 to 40 mph)	280	280	280	
Urban - High Speed (over 40 mph to 50 mph)	360	360	360	
Rural - High Speed (over 50 mph to 65 mph)	720	720	720	
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200	
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640	
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500	

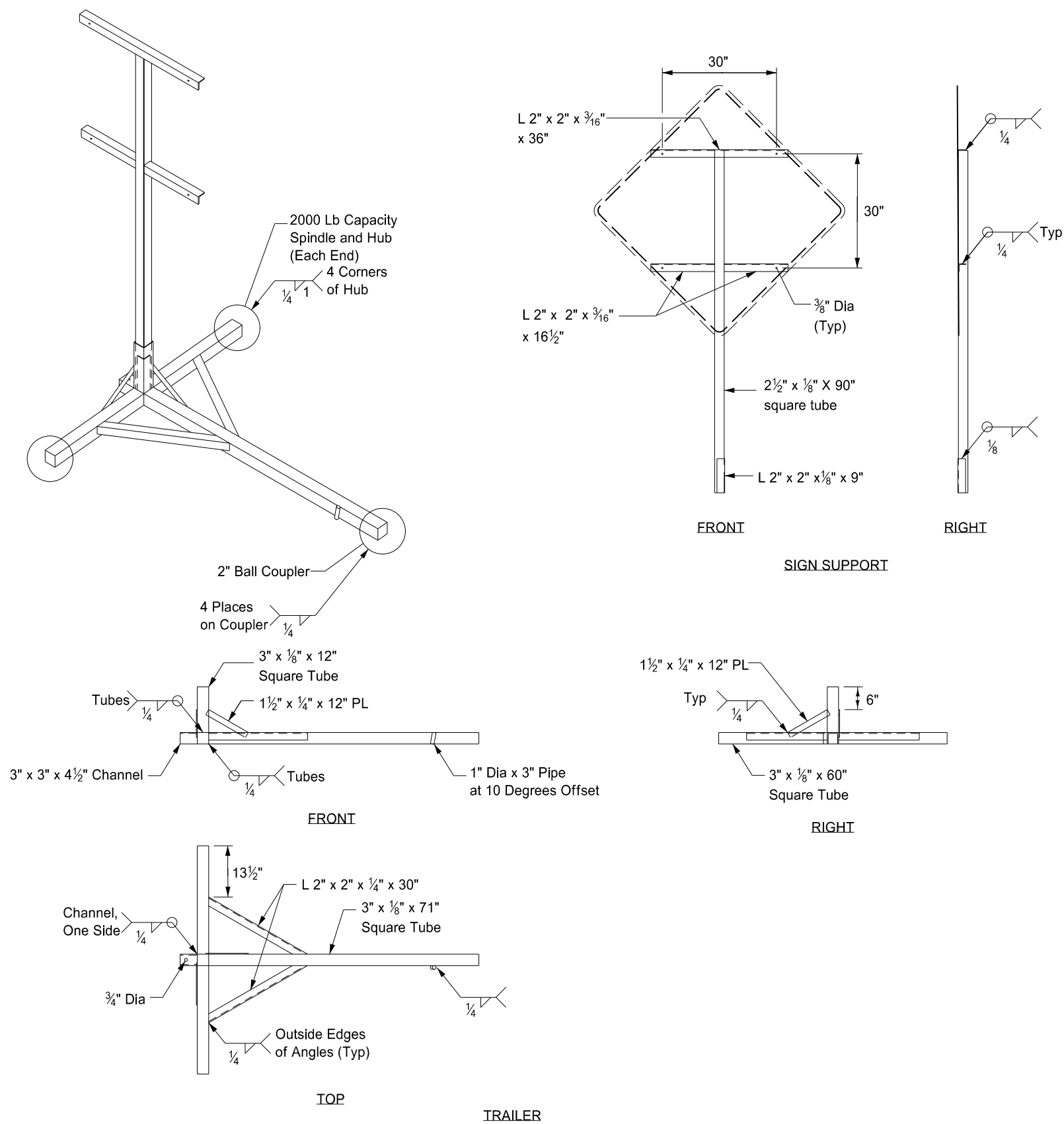
Longitudinal Buffer Space	
Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
8-17-17 11-01-19	Updated notes & revised signs Revised drum spacing & signs nos.

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PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50



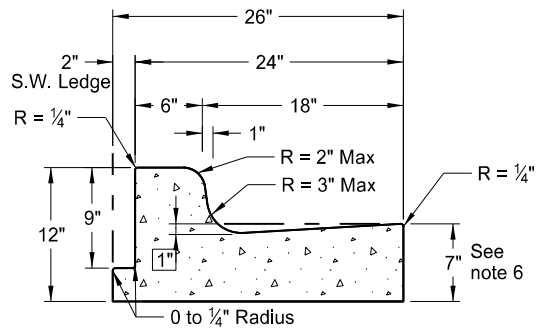
Notes:

1. The maximum weight of the assembly is 250 pounds.
2. Use a 14" wheel and tire.
3. Automotive and equipment axle assemblies may not be used for trailer-mounted sign supports.
4. Other NCHRP 350 crash tested assemblies are acceptable.

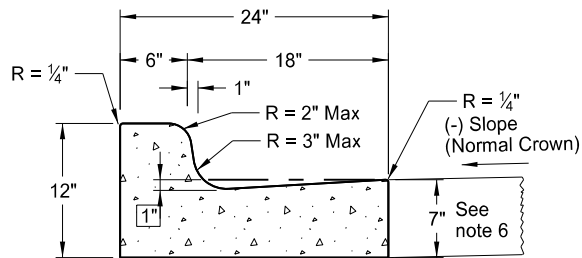
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-23-10	
REVISIONS	
DATE	CHANGE

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PE- 2930 ,
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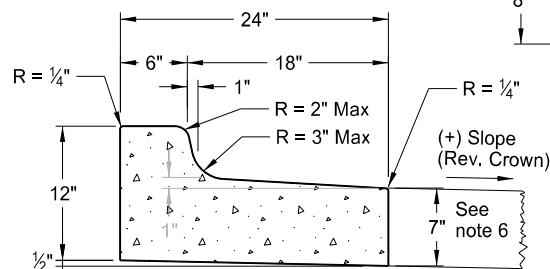
Curb & Gutter and Valley Gutter



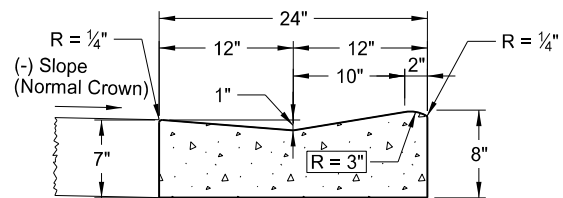
Curb & Gutter Type 1 (Sec. A & B)
Adjacent to Concrete Sidewalk,
Median, or Parking Lot.
(Sec. A shown. See Sec B for
additional details.)



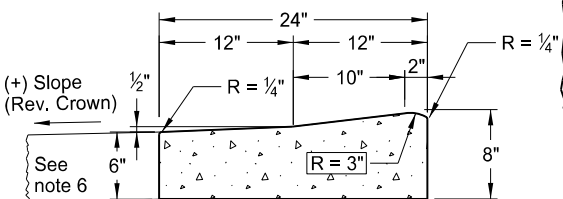
Curb & Gutter Type 1 (Sec. A)



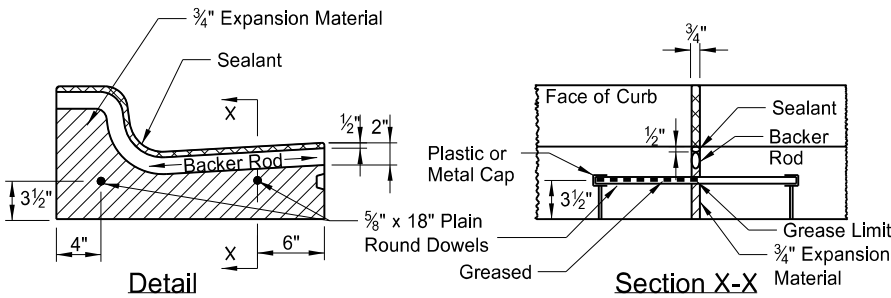
Curb & Gutter Type 1 (Sec. B)



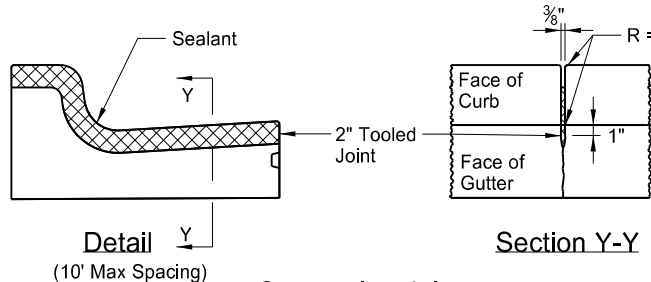
Mountable Curb & Gutter Type 1 (Sec. A)



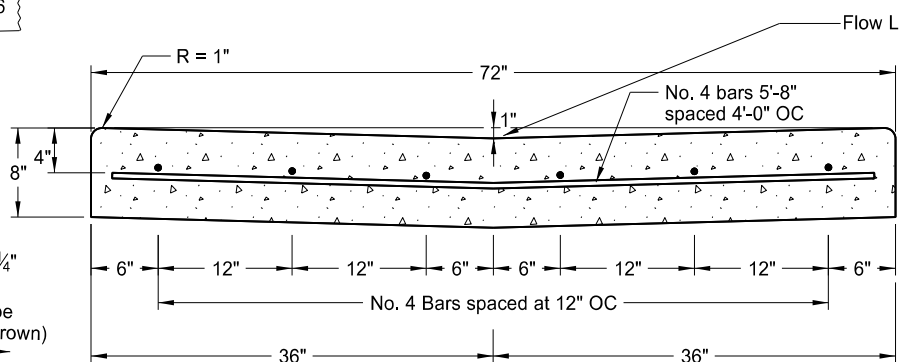
Mountable Curb & Gutter Type 1 (Sec. B)



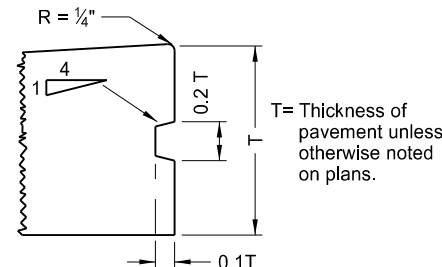
Isolation Joint



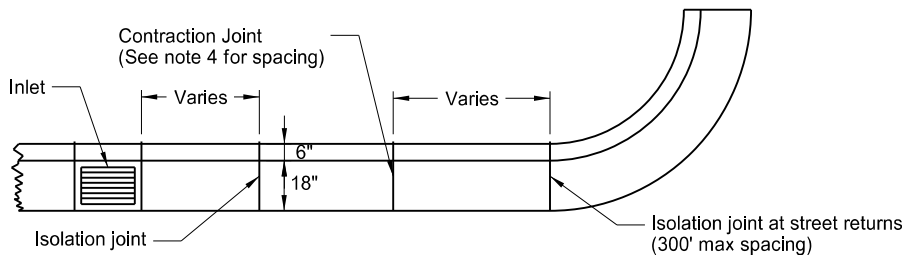
Contraction Joint



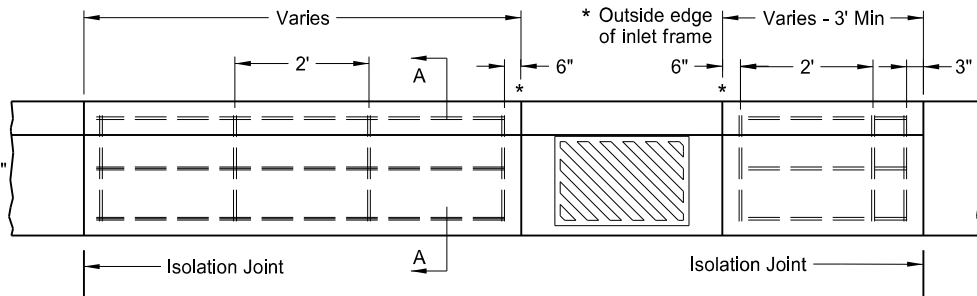
72" Concrete Valley Gutter Detail



Keyway Detail for Curb & Gutter
(To be used with PCC Pavement and Drives)

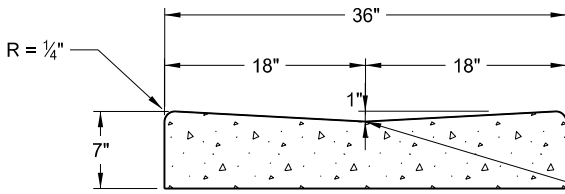


Joint Location Detail

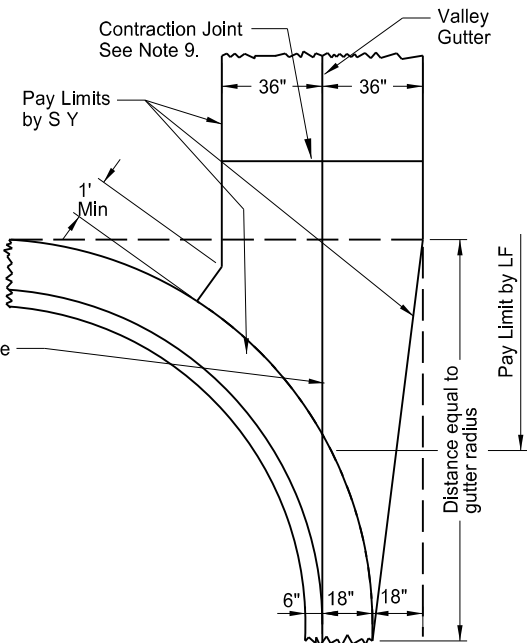


Curb & Gutter Reinforcing at Inlets

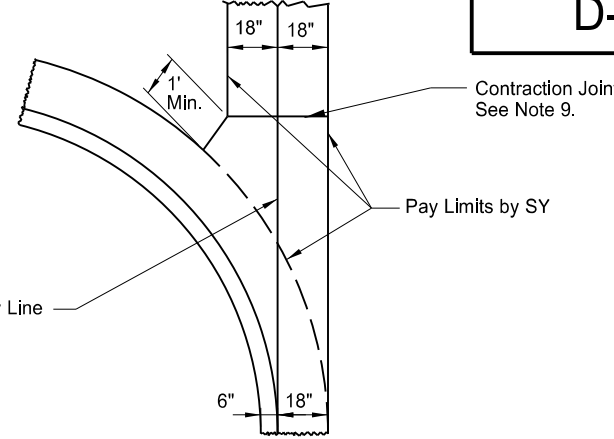
NOTE: Use #4 deformed reinforcing bars without splices. Include all costs for reinforcing bars at inlet locations (even inlets located on radii) in the price bid for "Curb and Gutter - Type 1." Extend reinforcement to the second joint (rebar placed through the first joint) in cases where the 3' min. panel length cannot be obtained.



36" Concrete Valley Gutter Detail



72" Concrete Valley Gutter Plan



36" Concrete Valley Gutter Plan

NOTES:

1. Use Curb and Gutter Type 1 (Sec. A & B). Use section "A" with (-) pavement slopes and section "B" with (+) pavement slopes.
2. Contraction Joints: Tool the Curb & Gutter 2" as shown on the contraction joint details.
3. Isolation Joints: Use 3/4" expansion joint filler for isolation joint material. Form the backer rod and joint sealant opening with a pre-cut piece of wood or other material approved by the engineer. Dowel supports are not required on the second pour at a cold joint. Install plastic or metal caps and greased dowels in the cold joint for the second pour.
4. Joint Spacing: For hot bituminous pavements use a 10' max joint spacing for the curb and gutter with panels on each side of the inlets. For concrete pavements match the joint spacing for the curb and gutter to the pavement joint on PCC Pavements (approximately 15' spacing.)
5. Joint sealing: Seal contraction and isolation joints as shown in the details. Use joint sealant for contraction joints that conforms to section 826.02B. Use sealant for expansion joints specified in note 3 above. Tool and install sealant in accordance with the manufacturer's recommendations.
6. Face of Gutter Depth: For hot bituminous pavement use 7" gutter depth as shown. For PCC pavements, match the gutter depth to the depth of adjacent PCC pavement or to construct a 7" depth as shown.
7. Tie curb and gutter to abutting PCC pavement with No. 3 bars, 1'-6" in length, spaced at 4' centers.
8. On street returns and other locations where new curb and gutter ends and does not abut existing curb and gutter, taper the last two (2) feet of the curb from 6" in height to 0". Install a 1/2" premolded full depth isolation joint, the same shape as the curb and gutter just ahead of the taper. Install an 18" tie bar across the joint.
9. Valley Gutter Joints: Form, saw, or score 1/8" min. to 3/8" max. width contraction joints (a minimum 2" depth) at approx 10' intervals. Seal the joints with hot poured elastic type joint sealer (Section 826.02A.2 of the Standard Specifications.) Include all costs for the joint and sealant in the price bid for Valley Gutter.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-7-2013	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engr PE Stamp.

This document was originally
issued and sealed by
Kirk J Hoff,
Registration Number
PE- 4683,
on 8-27-19 and the original
document is stored at the
North Dakota Department
of Transportation

SIDEWALK

D-750-2

NOTES:

1. Curb ramp and detectable warning panel layouts for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Vary transverse contraction joint spacing from 4' to 6' to create approximate square panels.

Use longitudinal contraction joints when sidewalk width is 8' or greater, and space at half the sidewalk width.

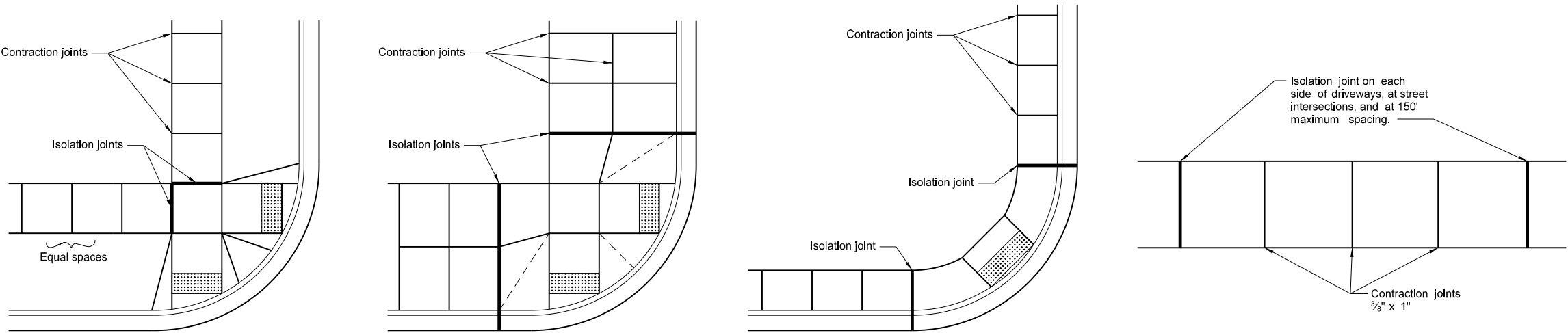
Saw or groove contraction joints to a minimum depth of 1/3 the depth of the concrete.

When sidewalk is adjacent to curb & gutter, vary the sidewalk joint spacing to match curb & gutter joints.

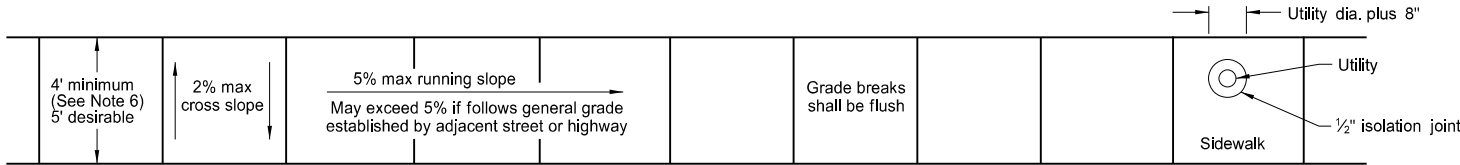
Use isolation joints between separate concrete pours, or between old and new concrete.
3. Include all costs for labor, equipment, and material necessary to construct contraction and isolation joints in the price bid for sidewalk concrete.
4. Use 4" sidewalk concrete thickness unless otherwise specified.
5. Use 4" base material thickness unless otherwise specified. Include all costs for labor and materials necessary to place the base material in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."

Modify existing ground slope with landscaping as needed. If not possible, such as adjacent buildings, use a vertical curb as shown in the detail below. The Engineer will measure curb at the unit price bid for "Curb - Type I" per lineal foot.
6. Sidewalk Width & Grade: Provide a continuous 4' min clear width pedestrian access route with max 2% concrete cross slope, excluding flares. The width of the curb cannot be counted as part of the pedestrian access route.

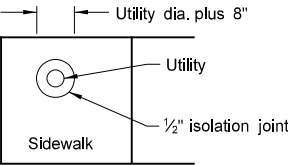
When clear width of pedestrian access routes is less than 5.0', provide passing spaces at a maximum of 200' with a minimum size of 5.0' by 5.0'.



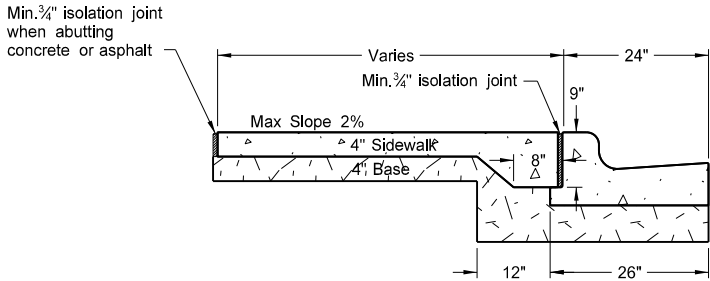
Typical Joint Layouts



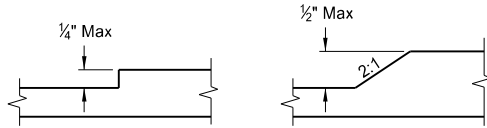
Sidewalk Width and Grade



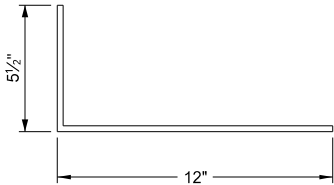
Utility Blockout



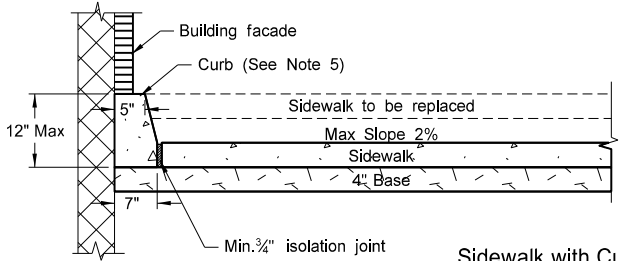
Sidewalk Detail
(Installed adjacent to curb and gutter)



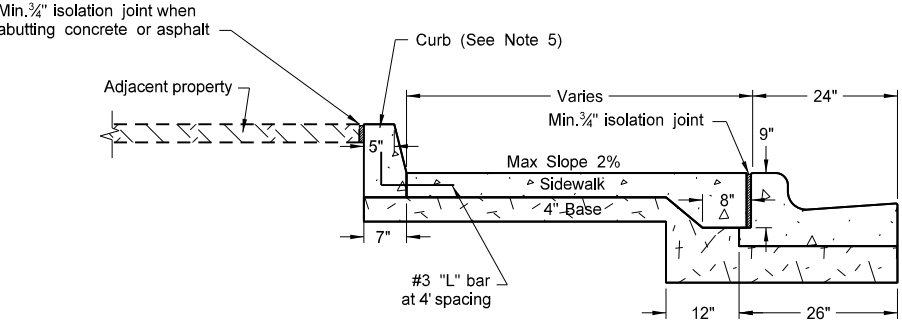
Vertical Discontinuities
(As needed for utility covers, vaults, grating, etc..)



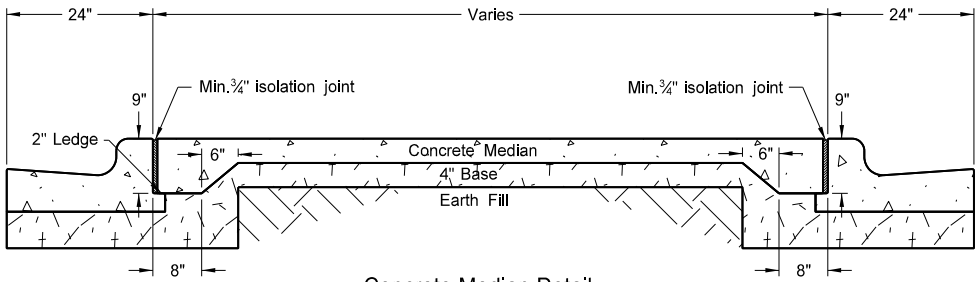
"L" Bar Detail
#3 Bar



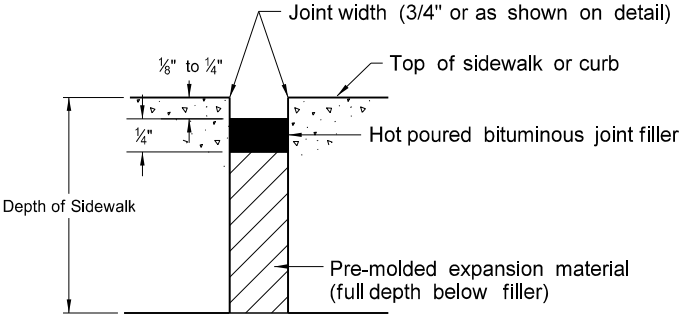
Sidewalk with Curb Detail
(Building face application)



Sidewalk with Curb Detail
(Adjacent property application)



Concrete Median Detail




Typical Isolation Joint Seal
(longitudinal and transverse)


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
09-05-18	Added sidewalk details for width and grade and passing lane requirements.
08-27-19	New Design Engineer PE Stamp.


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Kirk J Hoff,
Registration Number
PE- 4683,
on 08/27/19 and the original document is stored at the North Dakota Department of Transportation


D-750-3


1. Ramp width is the useable portion of the ramp, excluding flares. Match curb ramp width to existing sidewalk width (4' minimum or 5' for island ramps.) Match ramp width to existing shared use path width. Maximum ramp length is 15'.
2. Desirable turning space size is 5' x 5' or larger with a minimum size of 4' x 4'. The maximum slope for turning spaces is 2% in any direction.
3. Match detectable warning panel width to ramp width. Radical panels are allowed. Place detectable warning panel within the lower turning space.
4. Provide a continuous 4' minimum width pedestrian access route with max 2% concrete cross slope, excluding flares.
5. Modify existing ground slope with landscaping, as needed. If not possible, such as adjacent buildings, use a vertical curb as shown in the detail below. The Engineer will measure curb at the unit price bid for "Curb - Type I" per lineal foot.
6. Islands: If the grade of the island curb ramp is less than 2%, provide a minimum distance of 2' between warning panels. If the grade of the island curb ramp is steeper than 2%, provide a turning space between the ramps.

 : Detectable Warning Panel

 : Landscaping

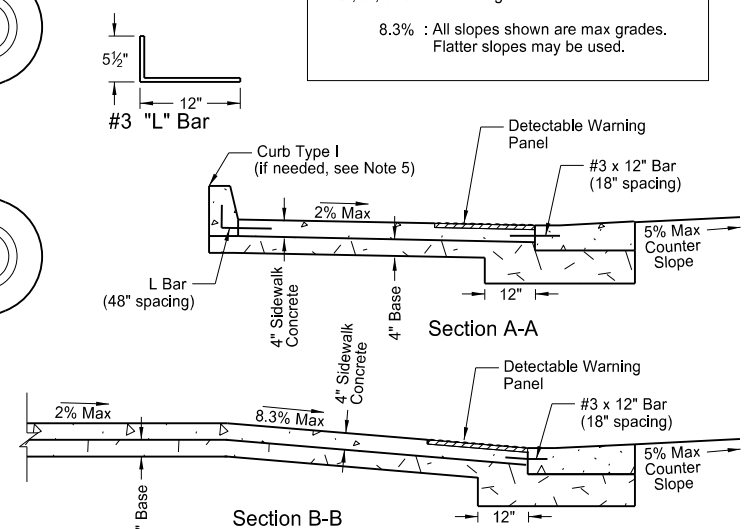
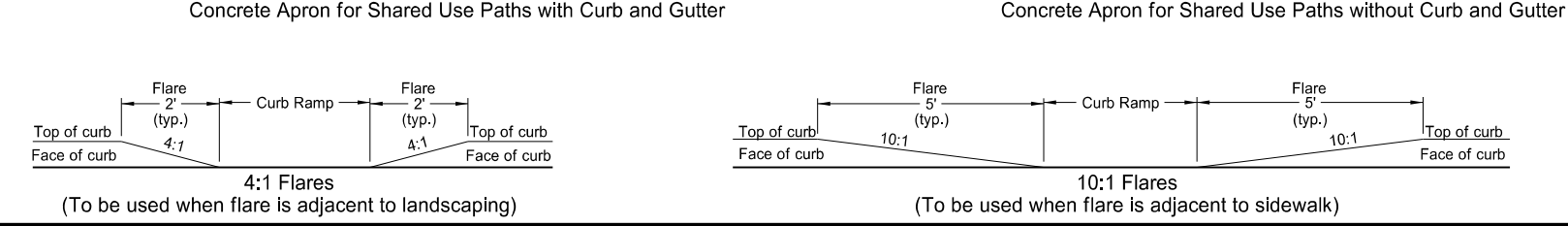
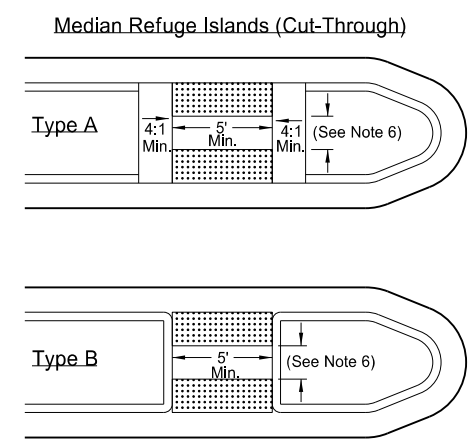
 : Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.

 : Upper Turning Space

 : Lower Turning Space

0", 3", or 6" : Curb Height

8.3% : All slopes shown are max grades. Flatter slopes may be used.

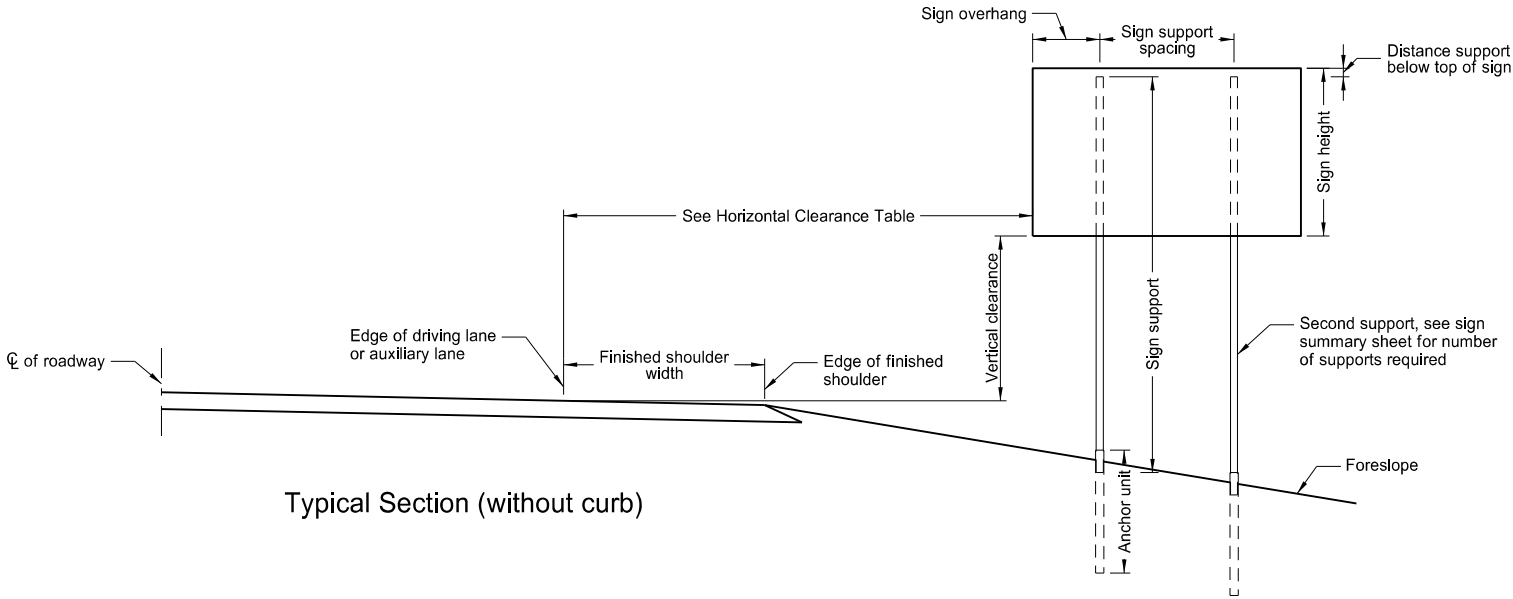


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
09-05-18	Revised Notes, Revision for Turning Space, Added Passing Space Requirements, Turned Detectable Warning Panel

This document was originally
issued and sealed by
Roger Weigel,
Registration Number
PE-2930,
on 09-05-2018 and the original
document is stored at the
North Dakota Department
of Transportation

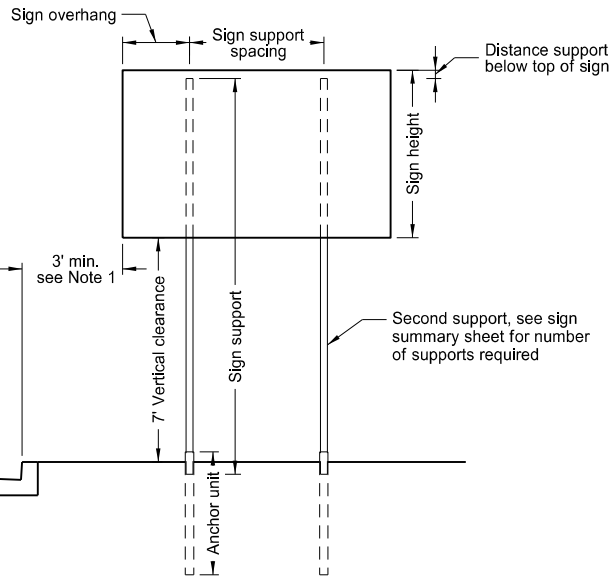
Notes:

1. Curbed Roadways: Use a 3' clearance from face of the curb except where right of way or sidewalk width is limited; Use a minimum 2' clearance. Increase the horizontal clearance if required to maintain a minimum sidewalk clear width of 4' from the sign support, not including any attached curb.
2. Minimum vertical clearance: Provide at least 5' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane at the side of the road in rural districts. Provide at least 7' clearance to the bottom of the sign, where parking or pedestrian movements occur.
- Install signs on expressways a minimum height of 7'.
- Install adopt-a-highway signs on Freeways at least 7' above the edge of the driving lane.
- Maximum vertical clearance is 6" greater than the minimum vertical clearance.
3. Offset signs: Use a vertical clearance of 5' above the edge of the driving lane for signs placed 30 feet or more from the edge of the traveled way.
4. Provide a horizontal clearance from edge of shared use path to edge of sign of 3', except where width is limited. Provide a minimum clearance of 2'.

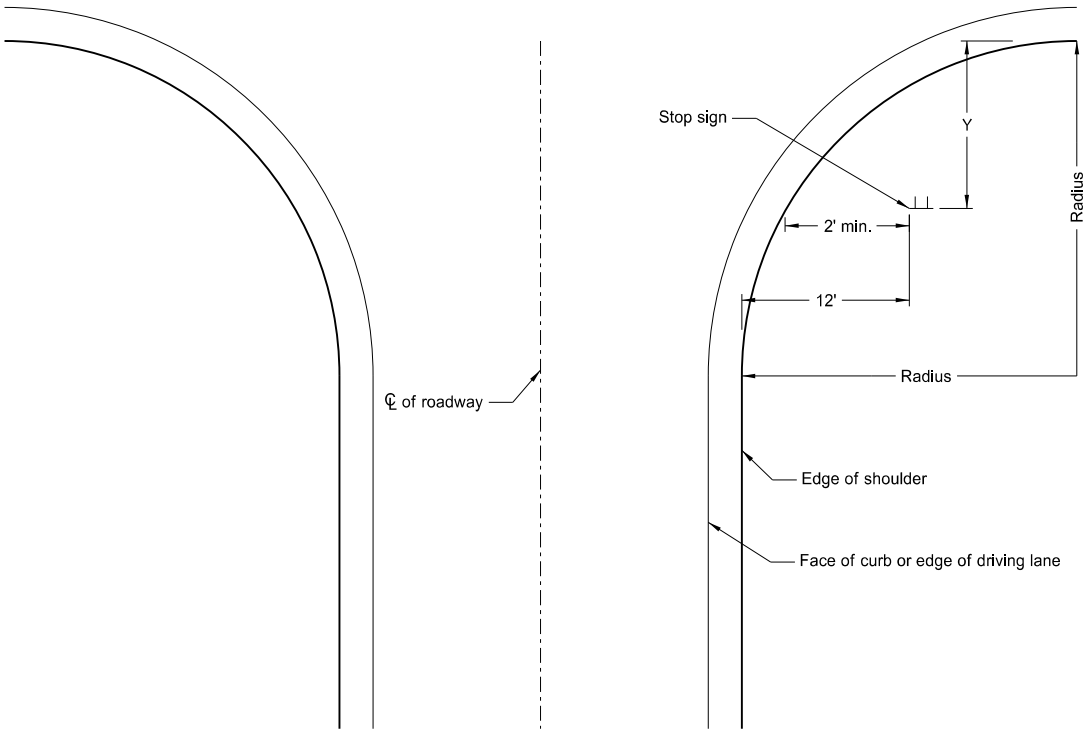


Typical Section (without curb)

Horizontal Clearance Table	
Shoulder Width ft	Offset ft
0 to 2	16
>2 to 4	18
>4 to 6	20
>6 to 8	22
>8 to 10	24

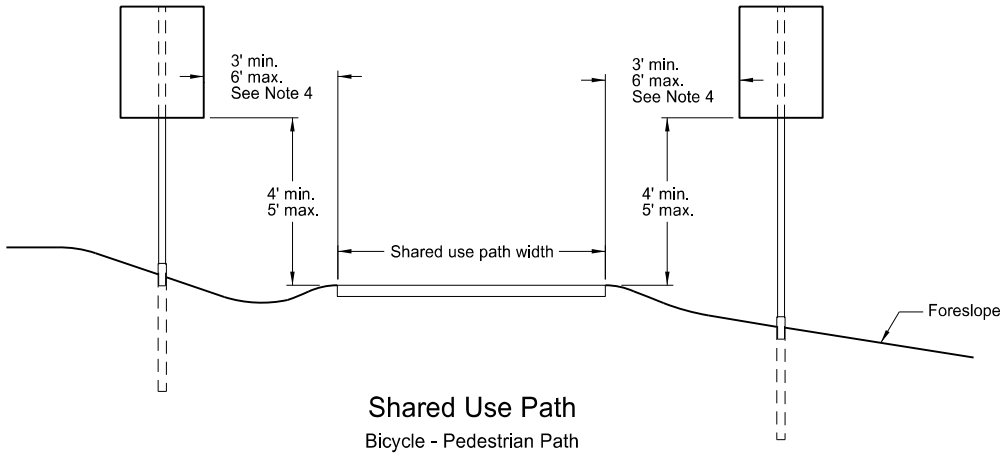


Typical Section (with curb)
Residential or Business District



Stop Sign Location
Wide Throat Intersection
Use layout for the placement of "Stop" signs.

Radius ft.	Y-max. ft.	Y-min. ft.
40	50	15
45	50	18
50	50	21
55	50	25
60	50	28
65	50	32
70	50	35
75	50	39
80	50	43



Shared Use Path
Bicycle - Pedestrian Path

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
7-8-14	Revised note 2, added note 4.
8-30-18	Updated notes to active voice.
8-29-19	New Design Engineer PE Stamp.

This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE- 4683,
on 8/29/19 and the original document is stored at the North Dakota Department of Transportation

Breakaway Coupler System
for Perforated Tubes

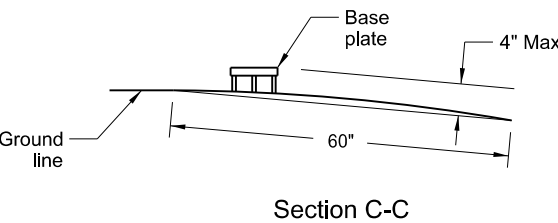
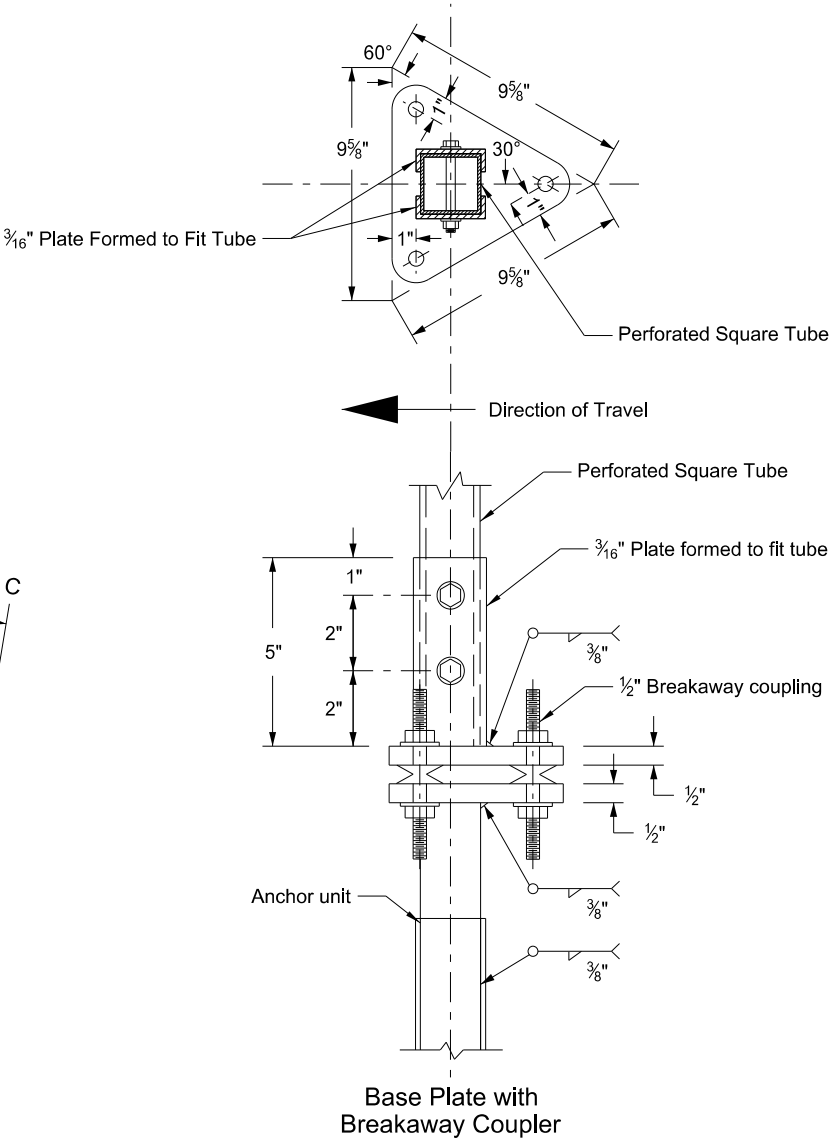
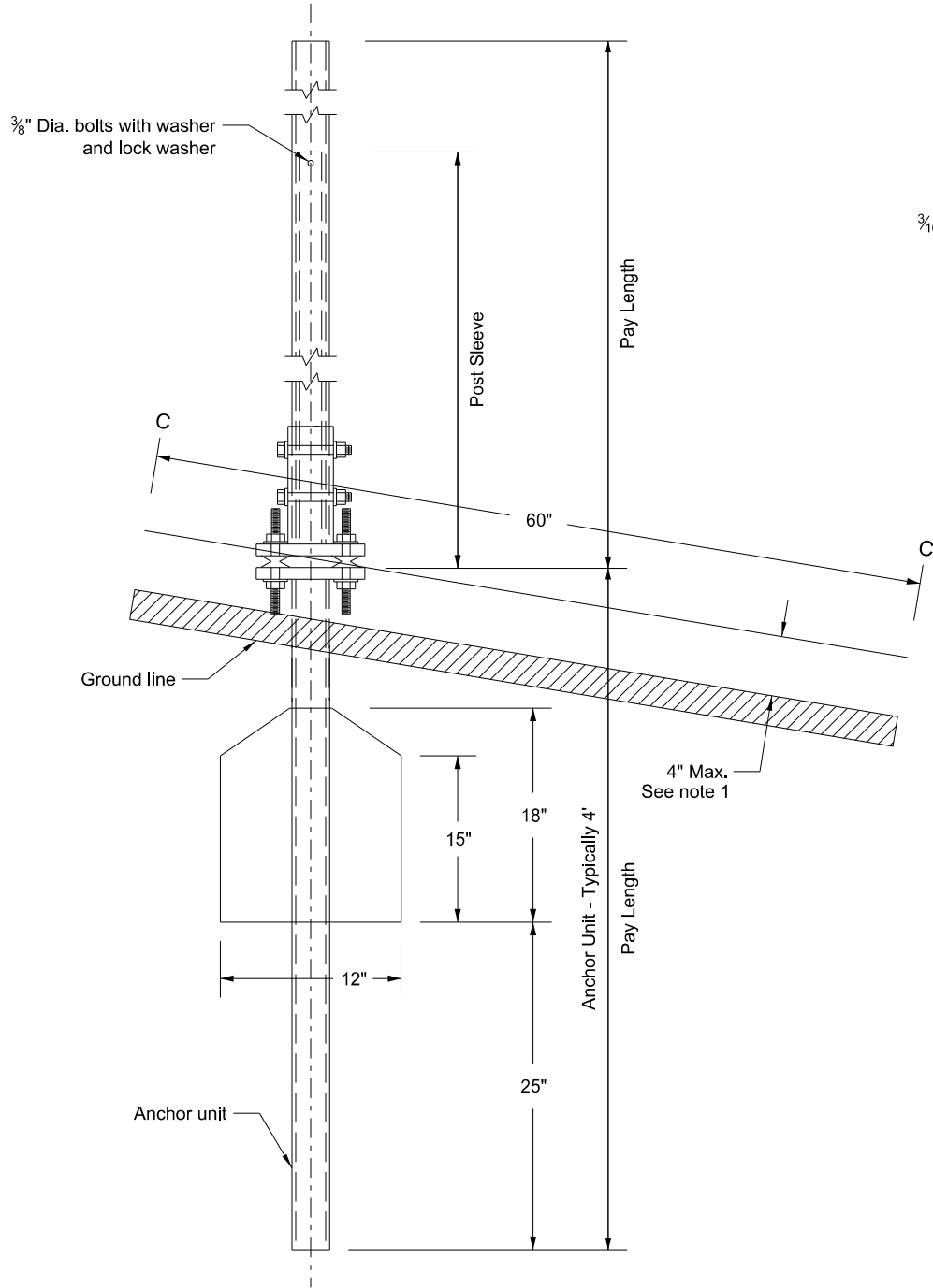
Notes:

1. 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement is above and below post location and also back and ahead of post.
2. Use anchor unit of the same size and specification as the post.
3. Provide a minimum 8' distance between the first and fourth post on four post signs.
4. Use the breakaway base system on standard D-754-24 or the breakaway coupling system manufactured from material meeting the requirements of ASTM A325 fasteners with the special requirements specified by DENT BREAKAWAY IND., INC. which meets the test requirements of NCHRP Report 350.

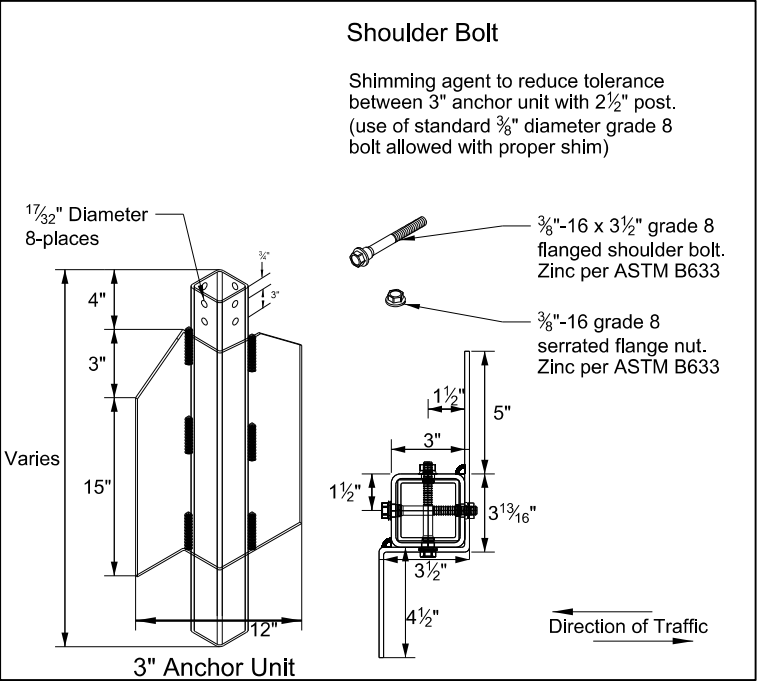
Number of Posts	Telescoping Perforated Tube						
	Post Size In.	Wall Thick-ness Gauge	Sleeve Size In.	Wall Thick-ness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Guage
1	2	12			No	2¼	12
1	2¼	12			No	2½	12
1	2½	12			(B)	3(C)	7
1	2½	10			Yes		7
1	2¼	12	2	12	Yes		7
1	2½	12	2¼	12	Yes		7
2	2½	10			Yes		7
2	2¼	12	2	12	Yes		7
2	2½	12	2¼	12	Yes		7
3 & 4	2½	12			Yes		7
3 & 4	2½	10			Yes		7
3 & 4	2½	12	2¼	12	Yes		7
3 & 4	2¼	12	2	12	Yes		7
3 & 4	2½	10	2¾	10	Yes		7

(B) - 2½" 12 gauge posts do not need breakaway bases unless support is placed in boggy, wet, or loose soil areas.

(C) - 3" anchor unit

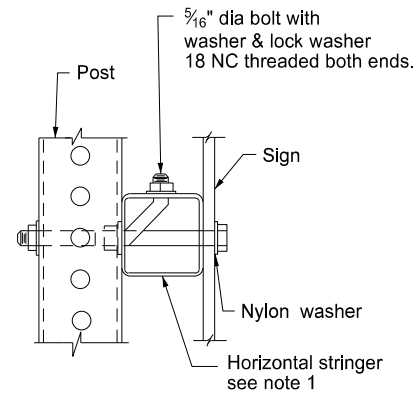


Max protection of the stub post is 4" above a 60" chord aligned radially to the center line of the highway and connecting any point, within the length of the chord, on the ground surface on one side of the support to a point in the ground surface on the other side.

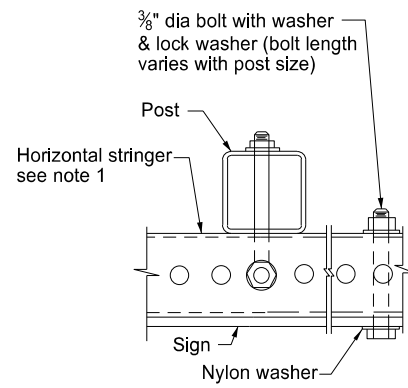


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 8/30/19 and the original document is stored at the North Dakota Department of Transportation
10-3-2013		
REVISIONS		
DATE	CHANGE	
8-30-18 8-30-19	Updated notes to active voice. New Design Engr PE Stamp.	

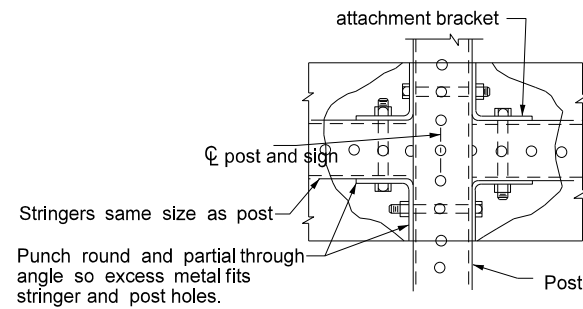
Mounting Details Perforated Tube



Side View



Top View

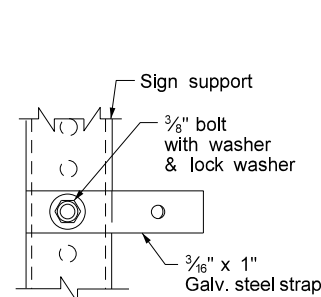


STREET NAME SIGNS AND ONE WAY SIGNS
SINGLE POST ASSEMBLY
ONE STRINGER OR BACK TO BACK MOUNTING

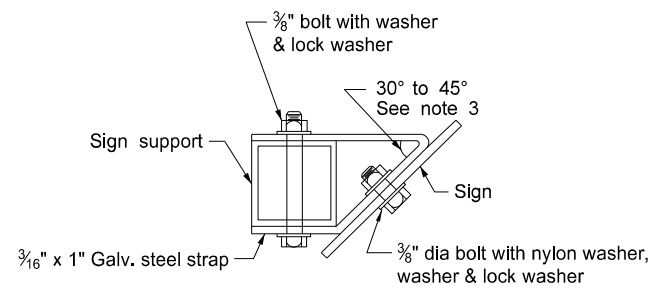
Note:

1. Horizontal stringers - Use perforated tubes or $1\frac{3}{4}$ " x $\frac{3}{16}$ " thick, 1.08 lbs./ft aluminum or 3.16 lbs./ft steel z bar stringers.
2. Use minimum outside diameter $\frac{15}{16}$ " $\pm \frac{1}{16}$ " and 10 gauge thick metal washers on sign face.
3. Place No Parking signs with directional arrows at a 30 to 45 degree angle with the line of traffic flow. Turning the support to the correct angle for No Parking signs requiring the above angles is allowed. If the No Parking sign is placed with another sign that requires placement at a 90 degree angle with the line of traffic flow, use the detailed angle strap to mount the No Parking sign. Use flat washers and lock washers with all nylon washers.
4. Punching the sign backing and placing the bolt through the sign, the stringer and the post is allowed in lieu of using the bent bolt to attach the post to the stringer.
5. 4" vertical clearance of anchor or breakaway base. The 4" x 60" measurement is above and below post location and also back and ahead of post.

STRINGER MOUNTING (WITH STRINGER IN FRONT OF POST)

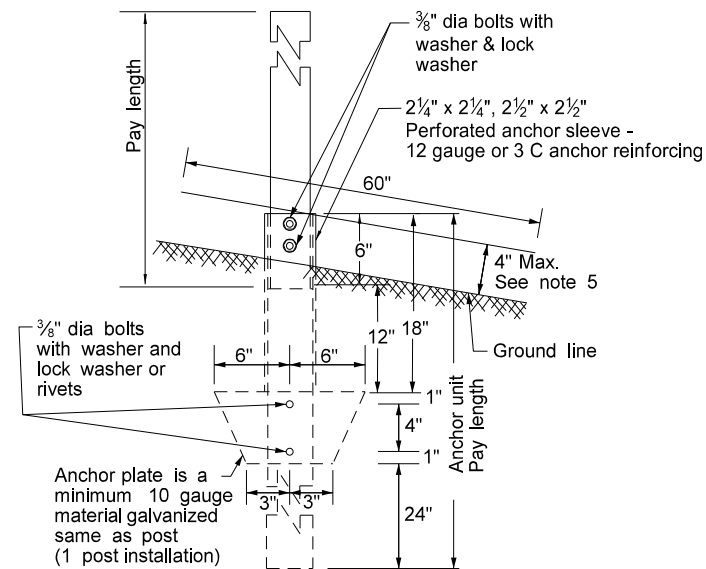


Side View

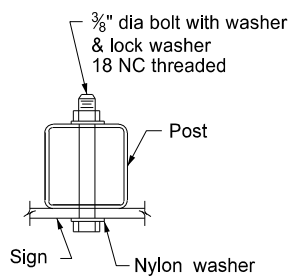


Top View

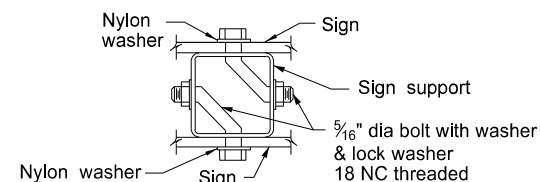
STRAP DETAIL



ANCHOR UNIT AND POST ASSEMBLY

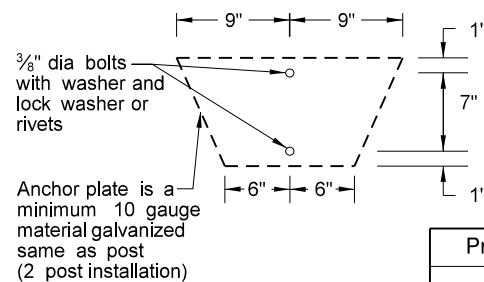


BOLT MOUNTING



Top View

BACK TO BACK MOUNTING



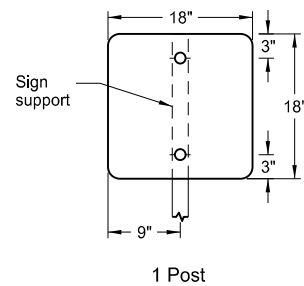
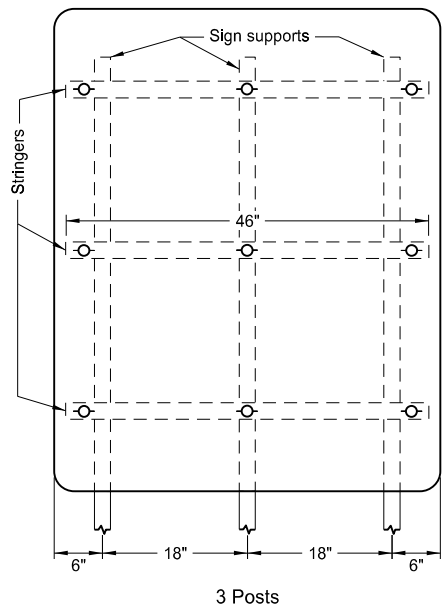
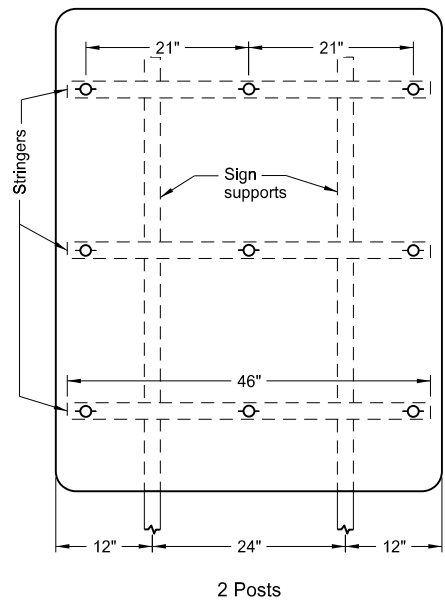
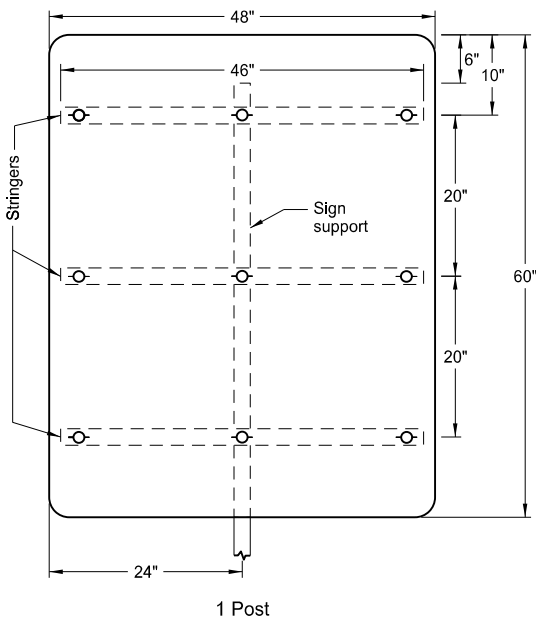
Properties of Telescoping Perforated Tubes						
Tube Size In.	Wall Thickness In.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. ⁴	Cross Sect. area In. ²	Section Modulus In. ³
1½ x 1½	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2¼ x 2¼	0.105	12	2.773	0.561	0.695	0.499
2¾ ₁₆ x 2¾ ₁₆	0.135	10	3.432	0.605	0.841	0.590
2½ x 2½	0.105	12	3.141	0.804	0.803	0.643
2½ x 2½	0.135	10	4.066	0.979	1.010	0.783

The 2 $\frac{3}{16}$ " size 10 gauge is shown as 2.19" size on the plans.
The 2 $\frac{1}{2}$ " size is shown as 2.51" size on the plans.

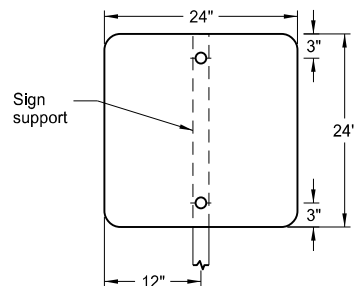
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-6-09	
REVISIONS	
DATE	CHANGE
7-8-14	Revised Note 3.
8-30-18	Updated notes to active voice.
8-30-19	New Design Engr PE Stamp.

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 Registration Number
 PE- 4683 ,
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 of Transportation

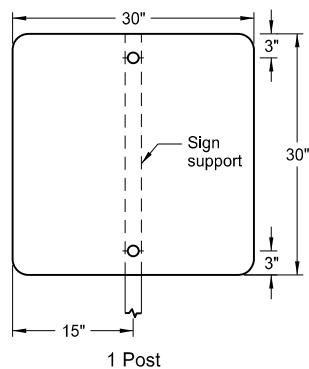
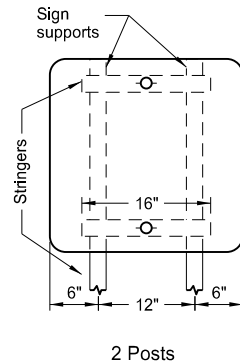
SIGN PUNCHING, STRINGER AND SUPPORT LOCATION
DETAILS REGULATORY, WARNING AND GUIDE SIGNS



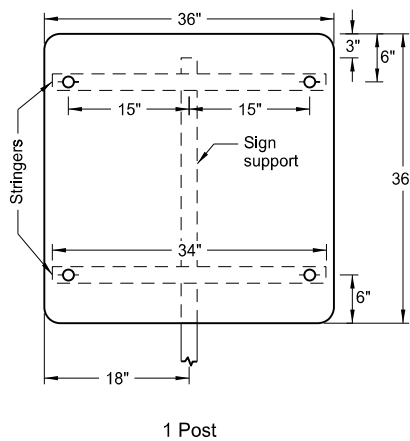
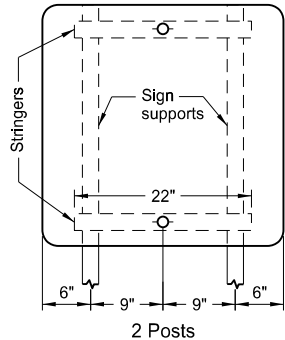
Assembly No. 13



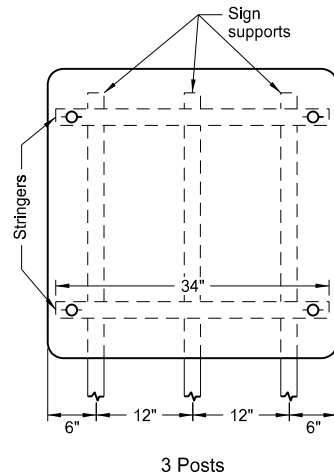
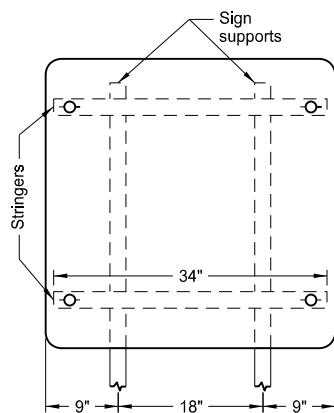
Assembly No. 14



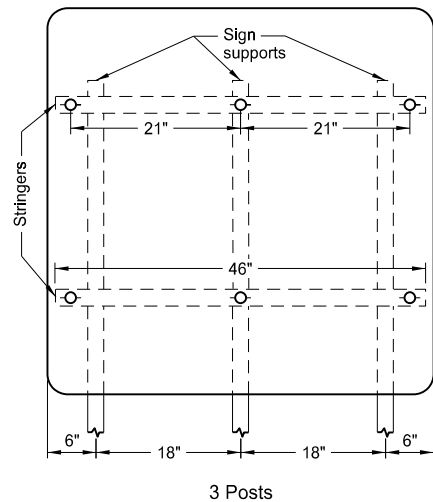
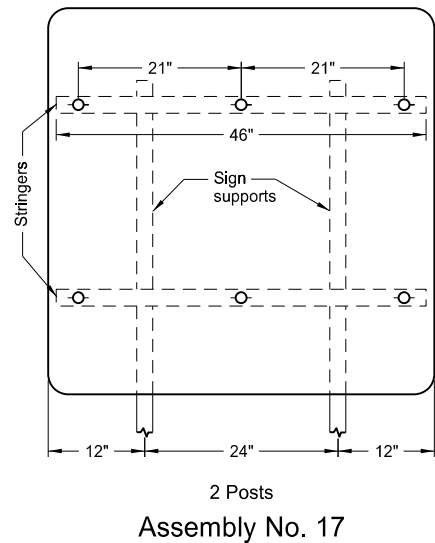
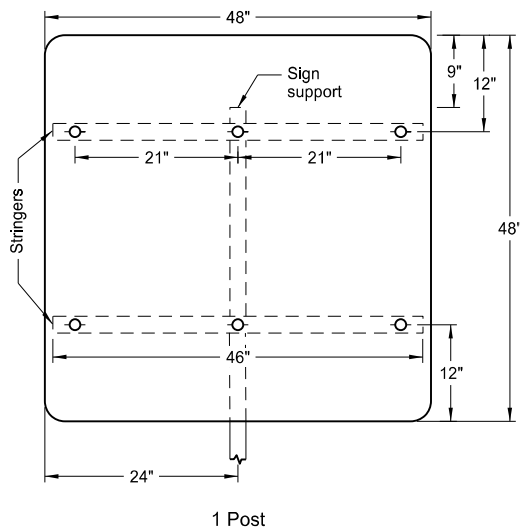
Assembly No. 15



Assembly No. 16



- Notes:
1. Use 0.100 inch minimum thickness sign backing material.
 2. Use 1½" x 1½" perforated square tube stringers.
 3. Punch holes round for ⅜" bolt.

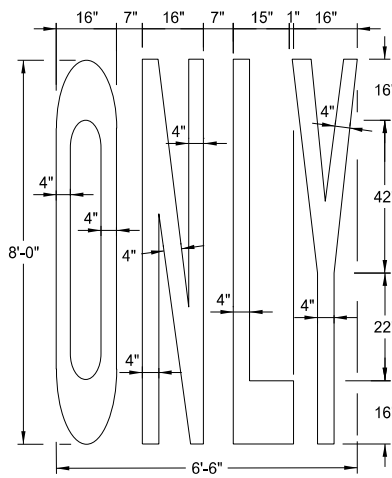


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE
8-30-18	Updated to active voice & changed Assembly 16 post spacing.
8-30-19	New Design Engineer PE Stamp.

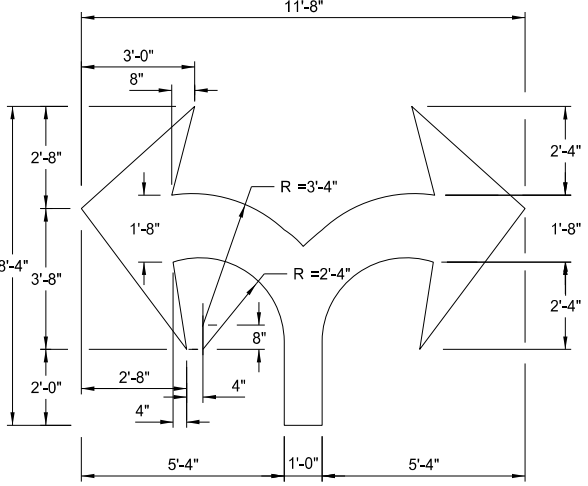
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Registration Number
PE- 4683,
on 8/30/19 and the original document is stored at the
North Dakota Department
of Transportation

Pavement Marking Message Details

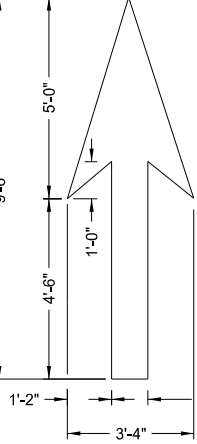
D-762-1



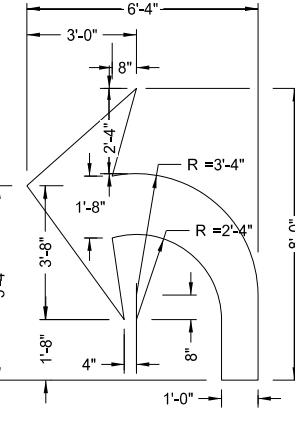
22 S. F.



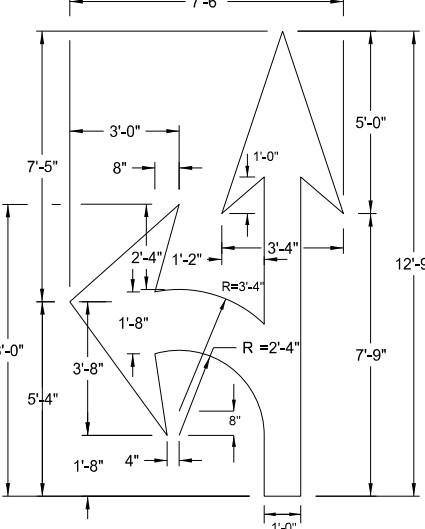
29 S. F.



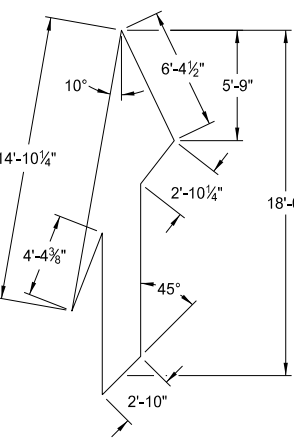
12 S. F.



16 S. F.

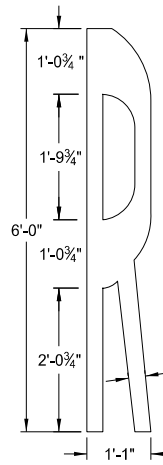


27 S. F.

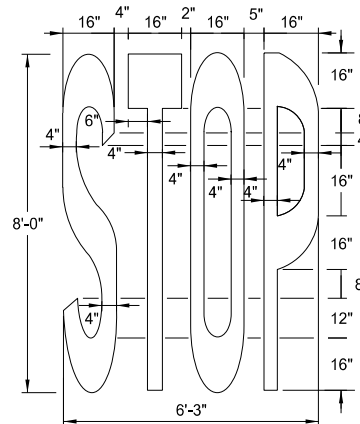


41 S. F.

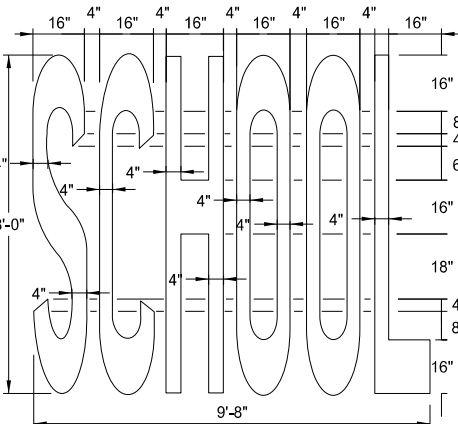
Note: Rotate merge arrow 20° from edge of roadway.



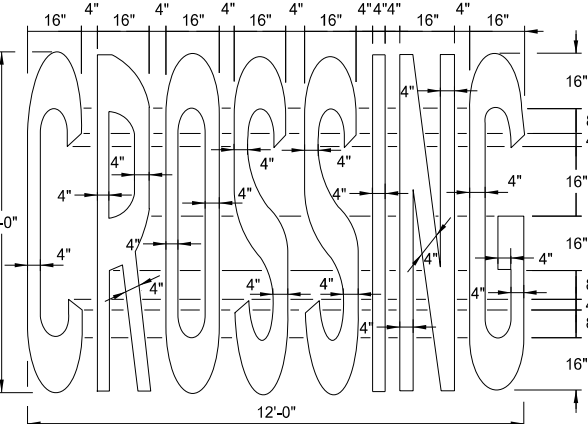
4 S. F.



22 S. F.



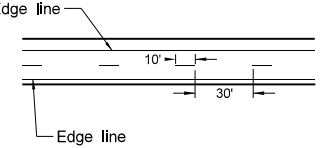
34.5 S. F.



46 S. F.

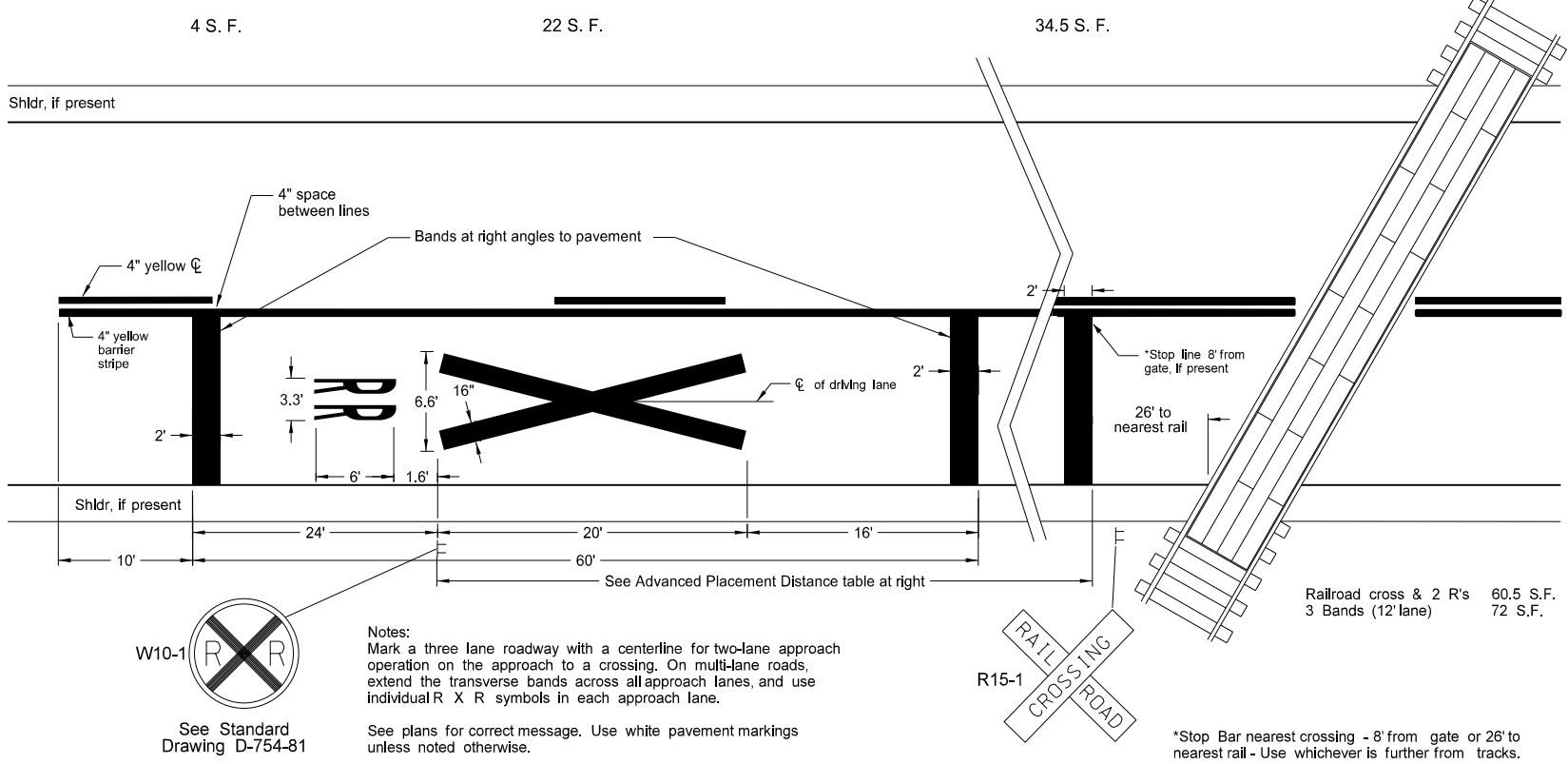
Speed Limit	Chevron Width	Chevron Spacing 45° to Traffic
0-25 mph	8"	5'
30-40 mph	8"	15'
45 mph and above	12"	25'

Chevron Crosshatching Table



Centerline Pavement Marking Skip Spacing Detail

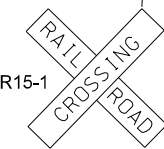
Advance Placement Distance for Railroad Warning Signs	
Posted or 85th Percentile Speed	Advance Distance
20 mph	min. 100 ft
25 mph	min. 100 ft
30 mph	min. 100 ft
35 mph	min. 100 ft
40 mph	125 ft
45 mph	175 ft
50 mph	250 ft
55 mph	325 ft
60 mph	400 ft
65 mph	475 ft
70 mph	550 ft



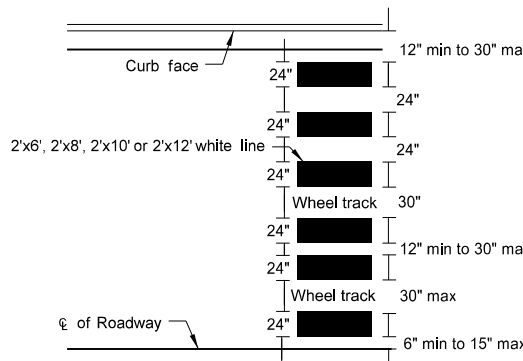
See Standard Drawing D-754-81

Notes:
Mark a three lane roadway with a centerline for two-lane approach operation on the approach to a crossing. On multi-lane roads, extend the transverse bands across all approach lanes, and use individual R X R symbols in each approach lane.

See plans for correct message. Use white pavement markings unless noted otherwise.



*Stop Bar nearest crossing - 8' from gate or 26' to nearest rail - Use whichever is further from tracks.



Continental Crosswalk Detail

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-6-11	
REVISIONS	
DATE	CHANGE
10-17-17 08-27-19 01-28-2020	Updated to active voice. New Design Engineer PE Stamp. Revised min Stop Bar distance to rail.

This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE-4683,
on 1/28/2020 and the original document is stored at the
North Dakota Department
of Transportation