STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	20770	1	1

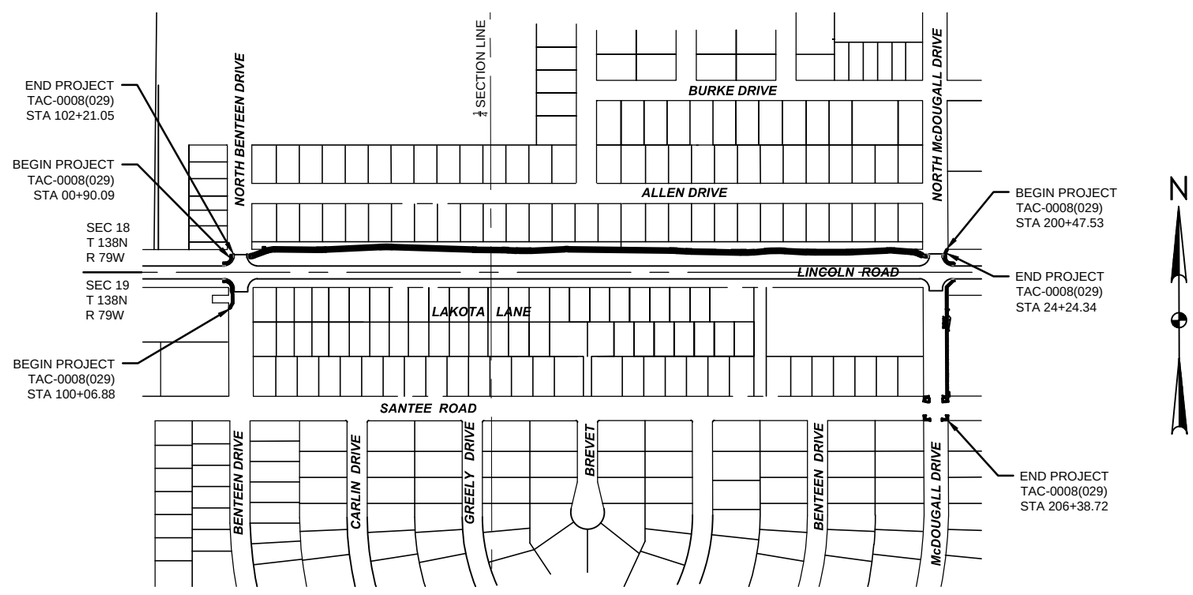
JOB #2
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

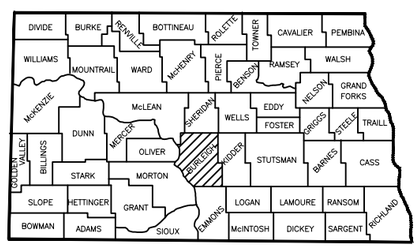
TAC-0008(029)

Lincoln, North Dakota
Benteen Drive to McDougall Drive
Grading, Hot Mix Asphalt, PCC Pavement
Curb & Gutter, Signing, Marking & Incidentals

GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT	NET MILES	GROSS MILES
TAC-0008(029)	0.595	0.595





STATE OF NORTH DAKOTA

DESIGNERS

Nick Myran, PE

AJ Welder, EI

Cameron Bencini, EI

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS 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.

NICK MYRAN, PE
ENGINEER
KLJ

DATE:

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D-101-2	NDDOT ABBREVIATIONS
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D-704-7,8	BREAKAWAY SYSTEM FOR CONSTRUCTION ZONE SIGNS
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D-754-24A	BREAKAWAY COUPLER SYSTEM FOR PERFORATED TUBES
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D-754-46	BIKE ROUTE SIGNS PUNCHING, STRINGER, AND SUPPORT LOCATION DETAILS
D-754-87	SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS FOR STREET NAME SIGNS AND 911 SIGNING
D-762-1	PAVEMENT MARKING MESSAGE DETAILS

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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EXISTING	PROPOSED	
		FIRE HYDRANT
		GATE VALVE
		CURB STOP
		BEND
		TEE
		CROSS
		REDUCER
		SANITARY MANHOLE
		CURB INLET
		CATCH BASIN (BEEHIVE)
		STORM MANHOLE
		FLARED END SECTION
		POWER POLE
		STREET LIGHT
		ELECTRICAL JUNCTION BOX
		TELEPHONE PEDESTAL
OR	OR	SIGN POST
		GUY WIRE & ANCHOR
		TREE - CONIFEROUS/DECIDUOUS
		DRAINAGE DIRECTION
		CONCRETE
		ASPHALT
		RIP-RAP
		AGGREGATE SURFACE COURSE CL 13
1680	1680	CONTOURS
		GUY POLE
		TV PEDESTAL
		SPRINKLER HEAD
		ROCK

EXISTING	PROPOSED	
E		UNDERGROUND ELECTRIC
T		UNDERGROUND TELEPHONE
G		GAS LINE
FO		UNDERGROUND FIBER OPTIC
TV		UNDERGROUND CABLE TV
E(O)		OVERHEAD ELECTRIC POWERLINE
		CURB & GUTTER (CONCRETE)
		EDGE OF ASPHALT SURFACE
		WOODEN FENCE
		BARBED WIRE FENCE
W	W	WATER MAIN
S	>>	SANITARY SEWER MAIN
		CULVERTS / STORM SEWER
		RETAINING WALL
		WETLANDS
		GRADING LIMITS
		PROPERTY LINE
		EASEMENT
		CONSTRUCTION EASEMENT
		RIGHT OF WAY
		CONTROL POINT
		PROPERTY PIN - FOUND/SET
		EDGE OF TREE CANOPY
		EROSION CONTROL BLANKET
		FIBER ROLL
		ASPHALT REMOVAL
S F	S F	SILT FENCE
		CONCRETE REMOVAL
		TREE REMOVAL

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LEGEND

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100-P01 CONSTRUCTION SCHEDULE: Burleigh County shall perform all rough grading, subgrade preparation and Aggregate Base Course installation for the shared use path as part of their Lincoln Road reconstruction project in 2015.

107-P01 HAUL ROAD RESTRICTIONS: Lincoln Road and 66th Street SE are designated haul routes within the City of Lincoln. Before submitting a proposal, contact the appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as "no haul routes".

201-P01 CLEARING & GRUBBING: All costs to salvage existing "City of Lincoln"sign and to deliver sign to Public Works, and all costs to remove features within the landscaped area southeast of the intersection of McDougall Drive and Lincoln Road shall be included in the "Clearing & Grubbing" bid item.

203-P01 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04 E.2.b, "ND T-99".

430-P01 COMMERCIAL GRADE HOT MIX ASPHALT: The Commercial Grade Hot Mix Asphalt must meet the requirements specified for Superpave FAA 40 or Superpave FAA 41.

708-P01 INLET PROTECTION-SPECIAL: This item shall consist of furnishing, installing, maintaining (cleaning), and removal of a drainage structure inlet filter assembly, consisting of a frame and filter bag to collect sediment in surface storm water runoff at locations shown on the plans or as directed by the Engineer. The inlet filter assembly shall remain in place until removal is directed by the Engineer and shall include the disposal of debris or silt that has accumulated in the bag. Periodic cleaning of the filter bag shall be incidental.

The drainage structure inlet filter shall be Wimco, Lange IPD, FLEXSTORM, or approved equal. The inlet filter assembly frame shall be rigid steel and include an overflow feature designed to allow full flow of water into the structure if the filter bag is filled with sediment. The inlet filter assembly bag shall be constructed of a polypropylene fabric with a minimum flow rate of 145 gallons per minute per square foot, and designed for a minimum silt and debris capacity of 2 cubic feet.

Inlet Protection shall be measured by the unit installed (EA), and paid for at the unit price for “Inlet Protection” complete and accepted by the Engineer.

722-P01 ADJUST MANHOLE: All manholes that need to be adjusted to the proposed grade by either adding or subtracting adjustment rings shall be paid by the "Adjust Manhole" bid item . All labor and material costs to do the work shall be included in the "Adjust Manhole" bid item.

722-P02 ADJUST INLET: All inlets that need to be adjusted to the proposed grade by either adding or subtracting adjustment rings shall be paid by the "Adjust Inlet" bid item . All labor and material costs to do the work shall be included in the "Adjust Inlet" bid item.

748-P01 CURB & GUTTER - TYPE 1: Contractor shall provide a minimum 4-inch depth of Class 5 Aggregate Base Course under all new curb and gutter. All costs associated with obtaining, hauling, placing, and compacting this material shall be included in the unit price bid for "Curb & Gutter - Type 1".

750-P01 SIDEWALK CONCRETE 4IN: All costs associated with excavation and embankment to develop grades for the concrete sidewalk along McDougall Drive from STA 202+09 to the south end of the project shall be included in the unit price for "Sidewalk Concrete 4 IN".

Contraction/dummy joints shall be provided during finishing operations with a 1/4-inch radius edging tool at maximum intervals equal to the width of the concrete section, and shall be cut-in 1/3 the depth of the concrete. Longitudinal contraction joints are not required. Expansion / isolation joints shall be provided at intervals not to exceed 100-feet and at interfaces between concrete slabs, curb and gutter, driveways and curb ramps. Such joints shall include 1/2-inch to 3/4-inch pre-molded joint filler and shall be sealed with cold applied joint sealant.

750-P02 DRIVEWAY CONCRETE 8 IN: Existing Tumbleweed parking lot gravel surfacing removed during McDougall Drive sidewalk installation shall be salvaged and stockpiled. Salvaged gravel surfacing shall be utilized to provide the gravel transition shown in the plans between the proposed 8-in concrete driveway and the existing Tumbleweed parking lot. All cost associated with salvaging and stockpiling existing aggregate surfacing and with installing gravel transition between the proposed 8-in concrete driveway and the existing Tumbleweed parking lot shall be included in the unit price bid for "Driveway Concrete 8 IN".

754-225 RESET SIGN PANEL: Remove sign panels from existing supports. Reinstall sign panels, angles, stringers, and steel channels on new supports. Provide all necessary brackets and hardware to attach sign panels, angles, stringers, and steel channels on new supports. The Engineer will measure the item "Reset Sign Panel" by the number of locations a sign or sign assembly has been reset.

762-P01 PREFORMED PATTERNED PAVEMENT MARK __IN LINE : All 6” and 24” pavement markings shall be approved by the Engineer prior to ordering. The pavement markings shall be installed using primer and as recommended by the manufacturer. The Contractor shall groove the areas to receive 6” and 24” preformed patterned pavement markings. All costs to groove the pavement markings shall be included in the price bid for “Preformed Patterned Pavement Mark _In Line”.

970-P01 BENCH: Existing concrete bench at STA 1+70 LT shall be removed and salvaged. Salvaged bench shall be reset where indicated on plans by core-drilling and epoxying new anchor bolts into the existing concrete slab and attaching bench to new anchor bolts. All work associated with removal, salvage and resetting of salvaged bench shall be paid for under the "BENCH" bid item.

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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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CONSTRUCTION NOTES

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	7/24/2015

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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: The City of Lincoln, the North Dakota Department of Transportation, and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

COMMITMENT NO. 1: Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank.

ACTION TAKEN/REQUIRED: *No wetlands will be affected by this project.*

Wetland Impacts and Mitigation

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetland*	Wetland Impacts (acres)		WETLAND MITIGATION			
									Mitigation Required		Location	Onsite Mitigation (acres)
							Temp.	Perm.	11990	USACE		
There are a number of adjacent wetlands; however no impacts are anticipated within the limits of construction.												
			Totals	0.0			0.00	0.00				TBD

COMMITMENT NO. 2: Disturbed areas would be returned to pre-construction conditions following construction.

ACTION TAKEN/REQUIRED: All disturbed areas will be re-seeded upon completion of construction to match the surrounding vegetation. BMPs will be implemented to minimize the likelihood of invasive plant species while vegetation is being established.

COMMITMENT NO. 3: Erosion control devices will be used as needed during construction.

ACTION TAKEN/REQUIRED: The Contractor shall install and maintain erosion control devices. The Contractor is required to obtain a NDPDES Permit from the North Dakota Department of Health prior to construction. As part of the NDPDES Permit, the Contractor must have a plan for erosion and sediment control during and post construction.

COMMITMENT NO. 4: Fugitive dust emissions created during construction would be minimized.

ACTION TAKEN/REQUIRED: The Contractor will implement BMPs, such as using water as a palliative, to control dust during construction as appropriate.

PERMITS REQUIRED:

NDPDES (North Dakota Pollutants Discharge Elimination System) – to be obtained by the Contractor

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LINCOLN SHARED USE PATH

BENTEEN DRIVE TO McDOUGALL DRIVE

ESTIMATED TOTAL LENGTH = 3,142 LF (0.595 Miles)

SPEC	CODE	ITEM	UNIT	QUANTITY
103	100	Contract Bond	L SUM	1
201	330	Clearing & Grubbing	L SUM	1
202	112	Removal of Concrete	SY	157
202	130	Removal of Curb & Gutter	LF	256
203	109	Topsoil	CY	260
251	200	Seeding Class II	ACRE	0.53
253	201	Hydraulic Mulch	ACRE	0.53
260	100	Silt Fence Unsupported	LF	2350
261	112	Fiber Rolls 12 IN	LF	2234
430	500	Commercial Grade Hot Mix Asphalt	TON	471
430	5828	PG-58-28 Asphalt Cement	TON	30.8
702	100	Mobilization	L SUM	1
704	100	Flagging	MHR	100
704	1000	Traffic Control Signs	UNIT	604
704	1050	Type 1 Barricades	EA	2
704	1067	Tubular Markers	EA	72
708	1540	Inlet Protection-Special	EA	4
722	6160	Adjust Inlet	EA	4
722	6200	Adjust Manhole	EA	1
748	140	Curb & Gutter- Type I	LF	256
750	115	Sidewalk Concrete 4IN	SY	470
750	120	Sidewalk Concrete 5IN Reinf	SY	56
750	1020	Driveway Concrete 8IN	SY	60
750	2115	Detectable Warning Panels	SF	96
754	110	Flat Sheet for Signs - Type XI Refl Sheeting	SF	49
754	112	Flat Sheet for Signs - Type IV Refl Sheeting	SF	14
754	206	Steel Galv Posts - Telescoping Perforated Tube	LF	221.9
754	592	Reset Sign Panel	EA	5
762	1307	Preformed Patterned Pvmt Mk 6 In Line-Grooved	LF	472
762	1325	Preformed Patterned Pvmt Mk 24 In Line-Grooved	LF	108
970	300	Bench	EA	1

Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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ESTIMATED QUANTITIES

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BASIS OF ESTIMATE

WATER

WATER REQUIRED FOR DUST CONTROL AND TO OBTAIN PROPER MOISTURE CONTENT AND COMPACTION SHALL BE INCIDENTAL.

COMMERCIAL GRADE HOT MIX ASPHALT

2.0 TON PER CUBIC YARD OF HOT BITUMINOUS PAVEMENT.

PG 58-28 ASPHALT CEMENT

6.5% PG 58-28 ASPHALT CEMENT PER TON OF HOT MIX ASPHALT.

EXCAVATION AND EMBANKMENT

EXCAVATION AND EMBANKMENT NECESSARY TO DEVELOP ROUGH GRADES FOR THE SHARED USE PATH AND FOR THE SIDEWALK, EXCEPT THAT PORTION OF THE SIDEWALK ADJACENT TO MCDOUGALL DRIVE FROM STA 202+O9 TO THE SOUTH END OF THE PROJECT, SHALL BE PROVIDED BY BURLEIGH COUNTY.

TOPSOIL

EXISTING TOPSOIL DEPTH ASSUMED TO BE 4 INCHES. LIMITS OF TOPSOIL REPLACEMENT ARE 2-FEET SOUTH OF THE EDGE OF SHARED USE PATH PAVEMENT, FROM THE NORTH EDGE OF THE SHARED USE PATH TO EXISTING GROUND TIE-IN, AND WITHIN THE EXTENTS SHOWN IN THE PLANS FOR THE SIDEWALK ADJACENT TO MCDOUGALL DRIVE FROM STA 202+09 TO THE SOUTH END OF THE PROJECT. ALL OTHER TOPSOIL SHALL BE PROVIDED BY BURLEIGH COUNTY.

SEEDING AND MULCHING

LIMITS OF SEEDING AND MULCHING ARE 2-FEET SOUTH OF THE EDGE OF SHARED USE PATH PAVEMENT, FROM THE NORTH EDGE OF THE SHARED USE PATH PAVEMENT TO EXISTING GROUND TIE-IN, AND WITHIN THE EXTENTS SHOWN IN THE PLANS FOR THE SIDEWALK ADJACENT TO MCDOUGALL DRIVE FROM STA 202+09 TO THE SOUTH END OF THE PROJECT. ALL OTHER SEEDING AND MULCHING SHALL BE PROVIDED BY BURLEIGH COUNTY.

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BASIS OF ESTIMATE

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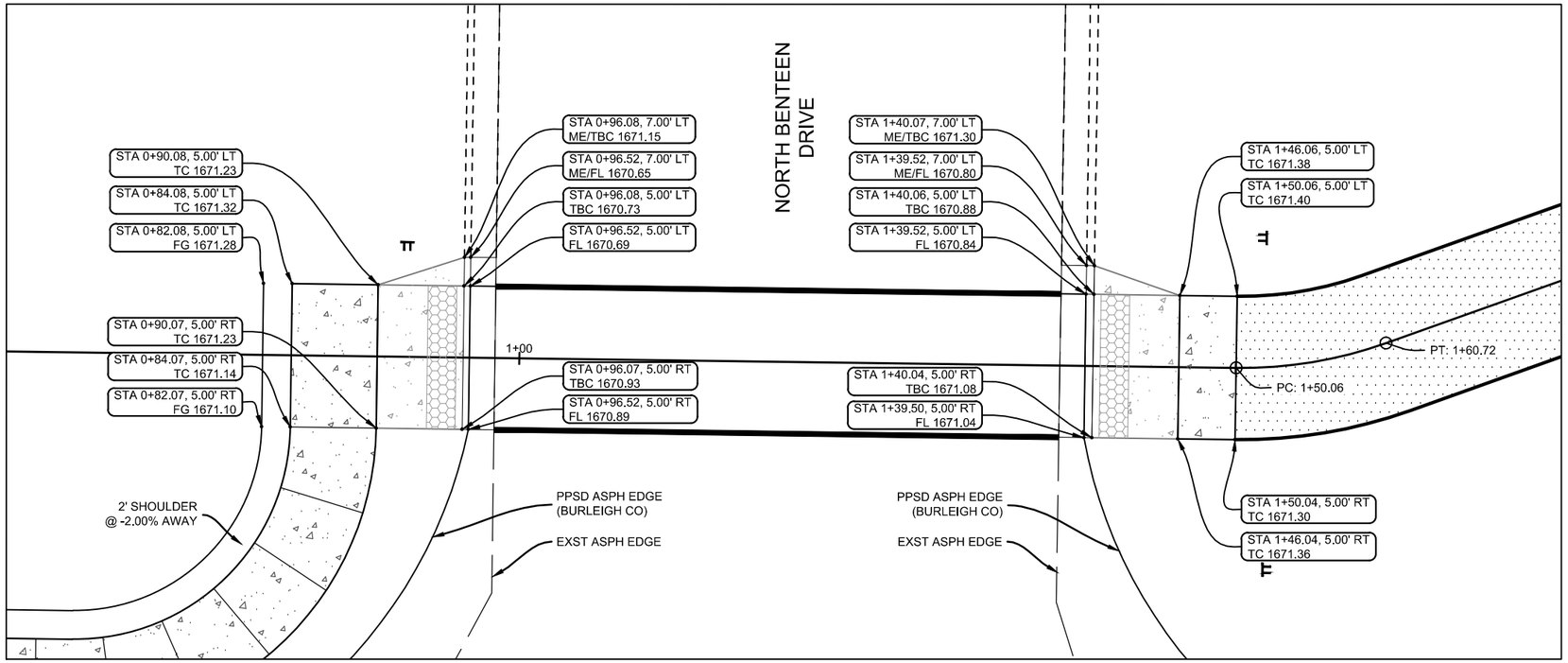
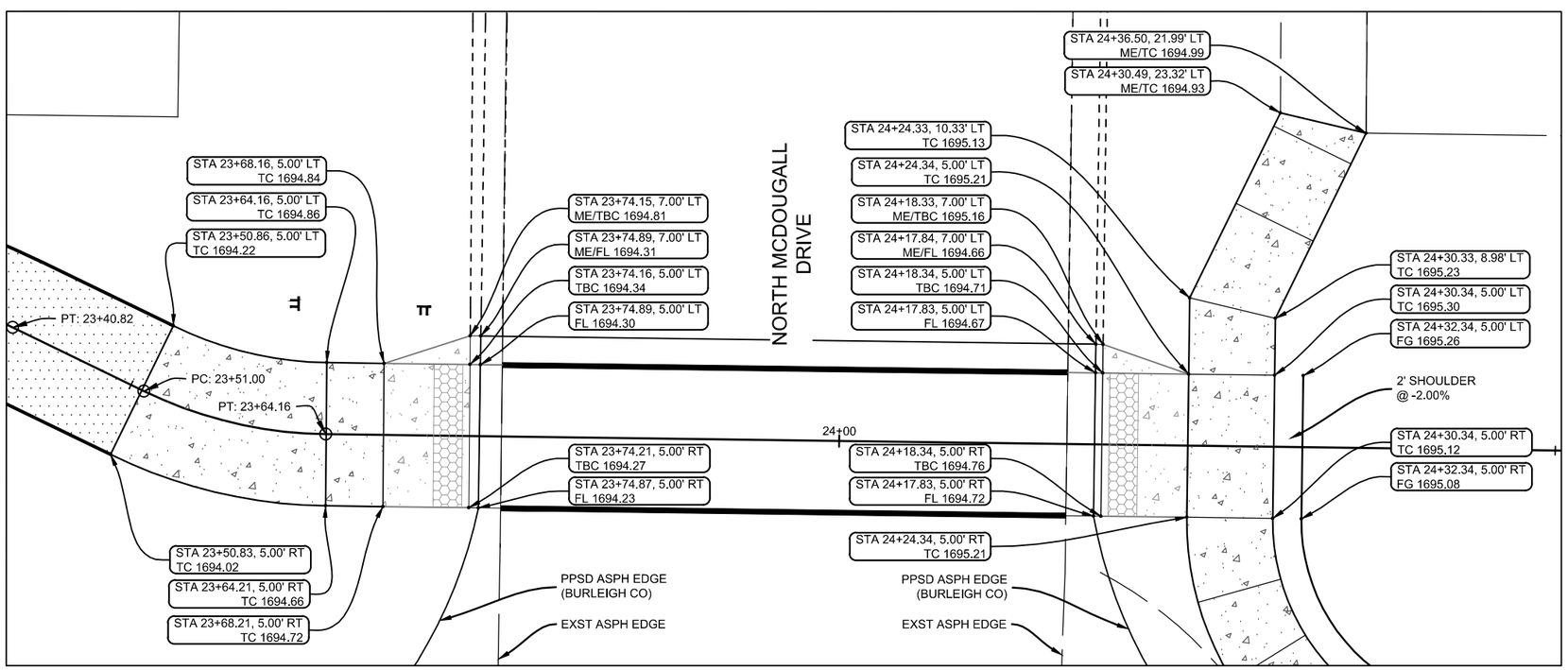
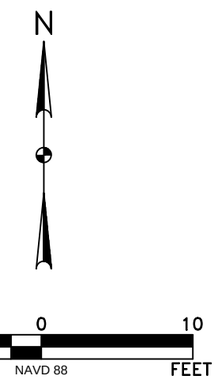


CROSSWALK AT LINCOLN ROAD & NORTH BENTEEN DRIVE



CROSSWALK AT LINCOLN ROAD & NORTH MCDOUGALL DRIVE



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DETAILS

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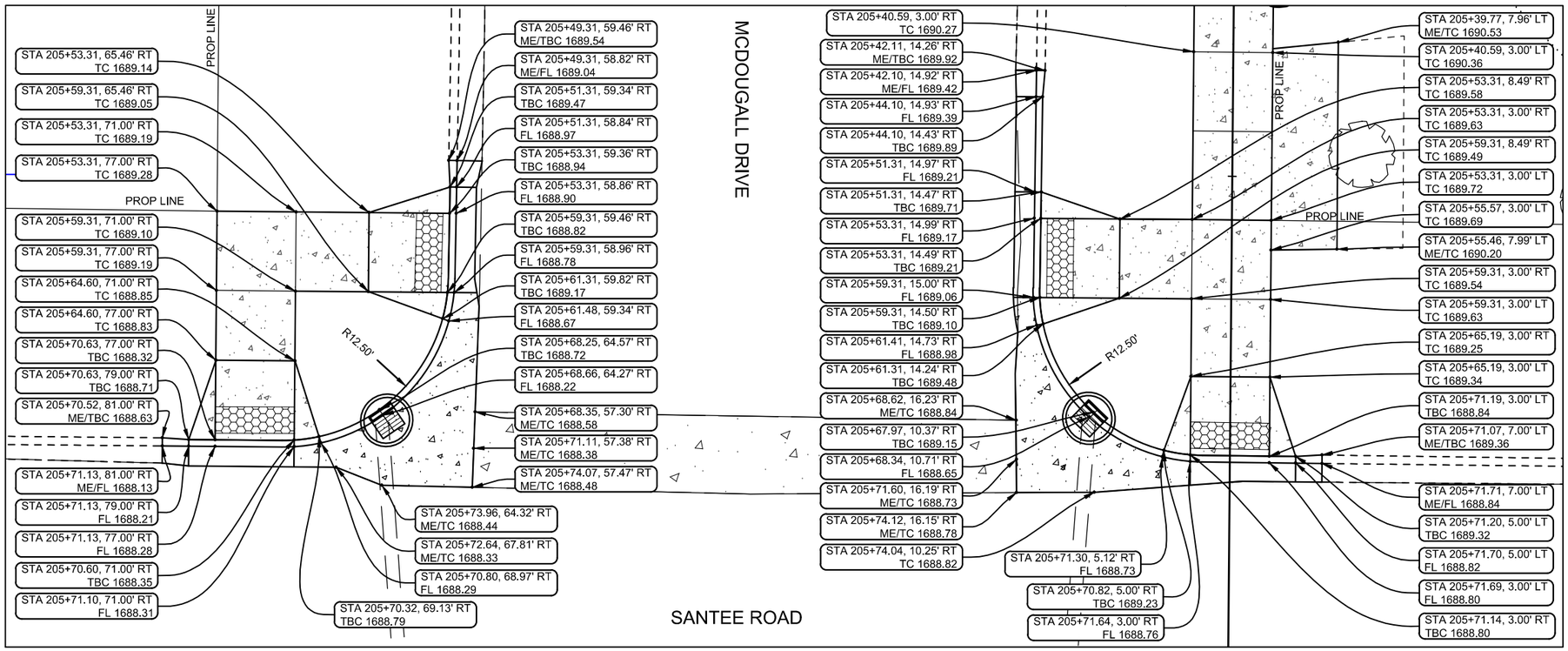
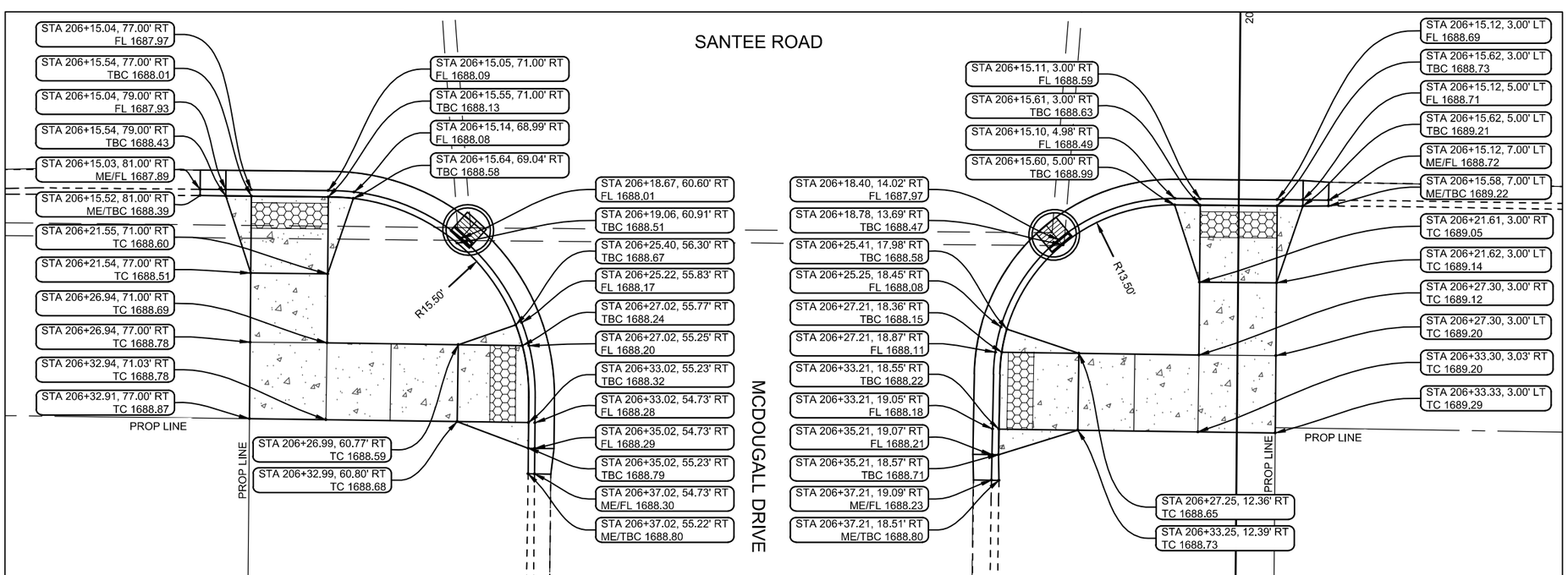
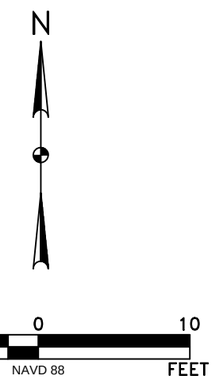


CURB RAMPS AT MCDOUGALL DRIVE & SANTEE ROAD - NORTH



CURB RAMPS AT MCDOUGALL DRIVE & SANTEE ROAD - SOUTH



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DETAILS

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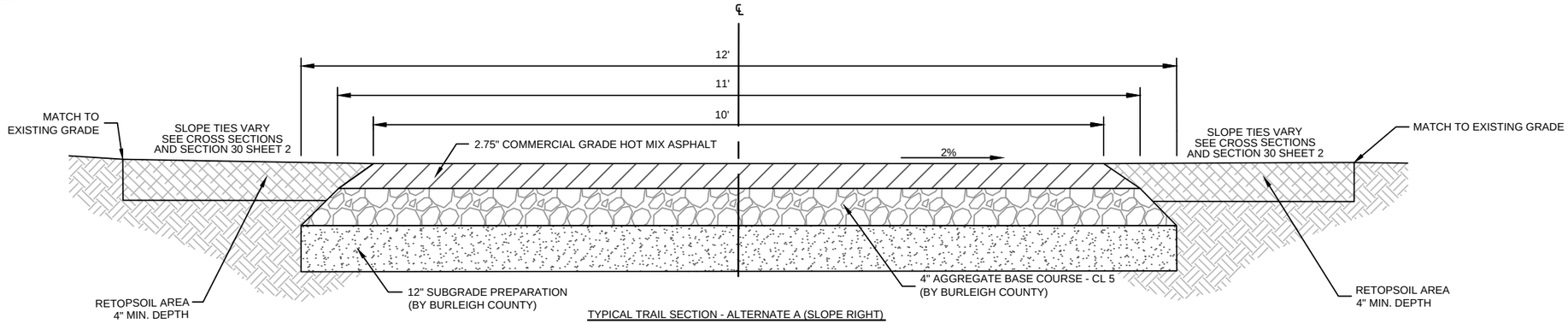
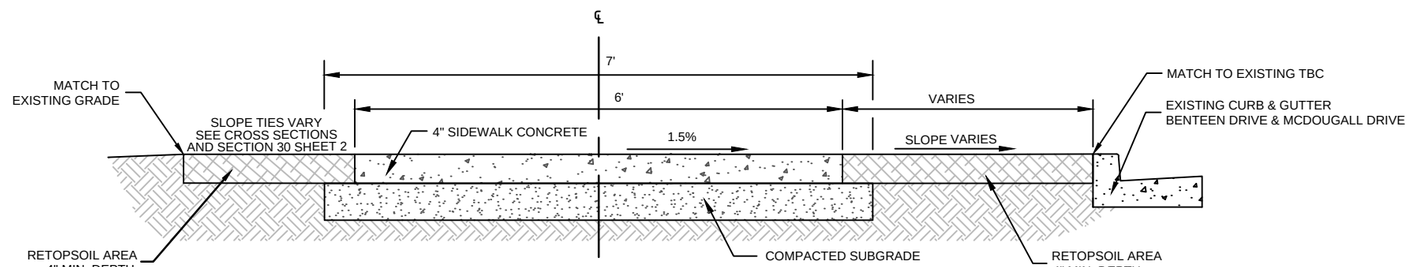


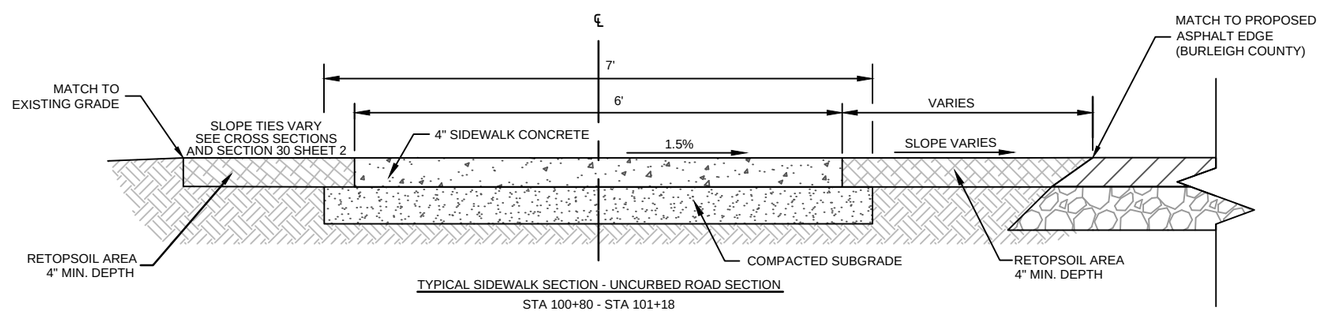
TYPICAL TRAIL SECTION - ALTERNATE A (SLOPE RIGHT)

STA 1+50 - STA 23+64



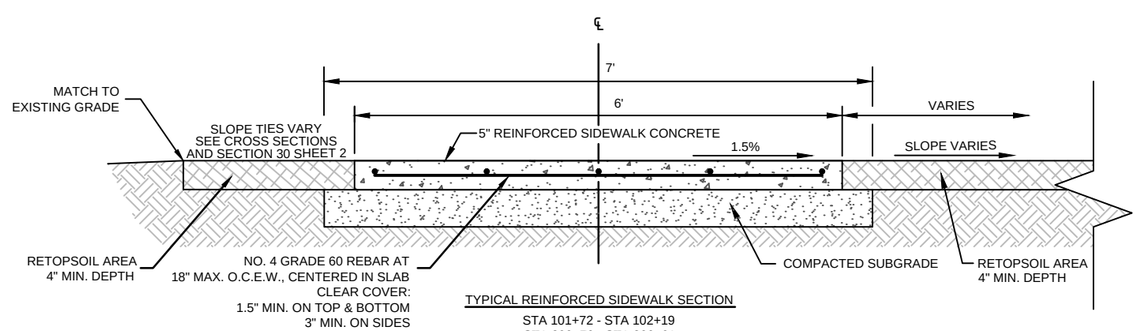
TYPICAL SIDEWALK SECTION - CURBED ROAD SECTION

STA 100+07 - STA 100+80
STA 200+47 - STA 200+67
STA 202+09 - STA 205+53



TYPICAL SIDEWALK SECTION - UNCURBED ROAD SECTION

STA 100+80 - STA 101+18
STA 101+72 - STA 102+09
STA 200+76 - STA 201+14
STA 201+68 - STA 202+09



TYPICAL REINFORCED SIDEWALK SECTION

STA 101+72 - STA 102+19
STA 200+76 - STA 200+91
STA 201+68 - STA 201+90

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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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TYPICAL SECTIONS

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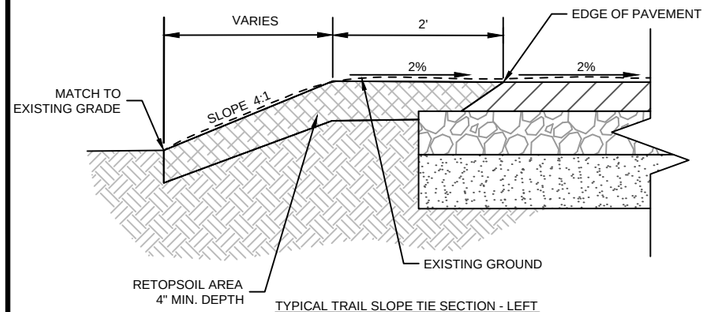
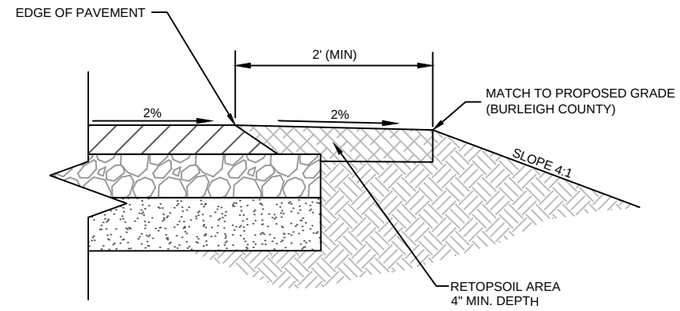
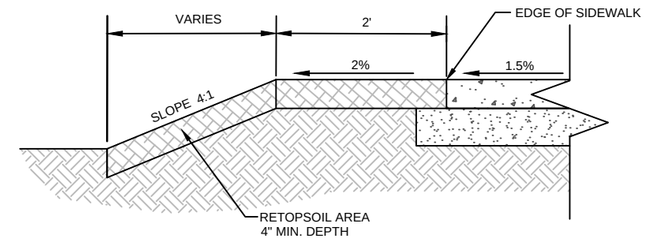
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	30	2



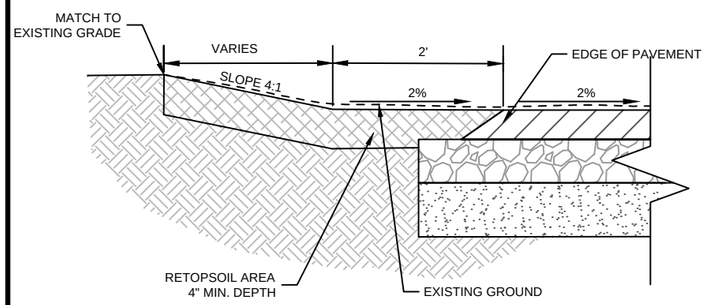
TYPICAL TRAIL SLOPE TIE SECTION - LEFT
LOCATION VARIES. SEE CROSS SECTIONS



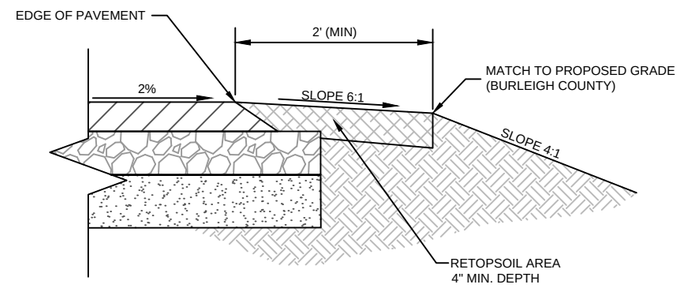
TYPICAL TRAIL SLOPE TIE SECTION - RIGHT
STA 2+05 - STA 23+64



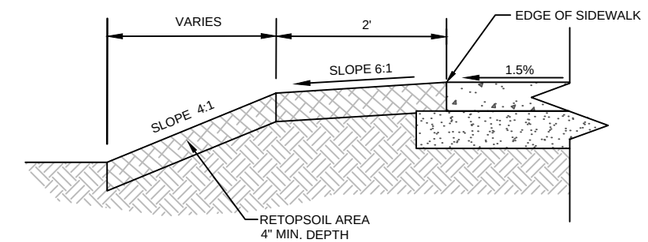
TYPICAL SIDEWALK SLOPE TIE SECTION - LEFT
STA 101+75 - STA 102+19
STA 200+67 - STA 201+11
STA 201+68 - STA 201+81



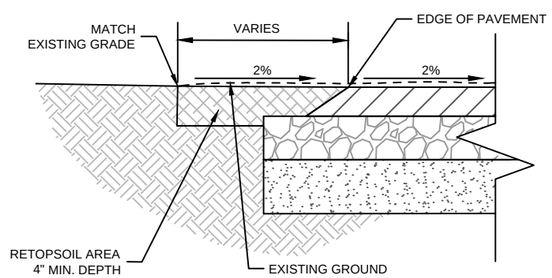
TYPICAL TRAIL SLOPE TIE SECTION - LEFT
LOCATION VARIES, SEE CROSS SECTIONS



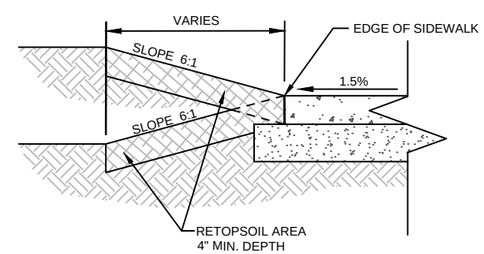
TYPICAL TRAIL SLOPE TIE SECTION - RIGHT
STA 1+50 - STA 2+00



TYPICAL SIDEWALK SLOPE TIE SECTION - LEFT
STA 100+16 - STA 101+16



TYPICAL TRAIL SLOPE TIE SECTION - LEFT
LOCATION VARIES, SEE CROSS SECTIONS



TYPICAL SIDEWALK SLOPE TIE SECTION - LEFT
STA 201+86 - STA 202+92
STA 203+34 - STA 205+53

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

TYPICAL SECTIONS

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
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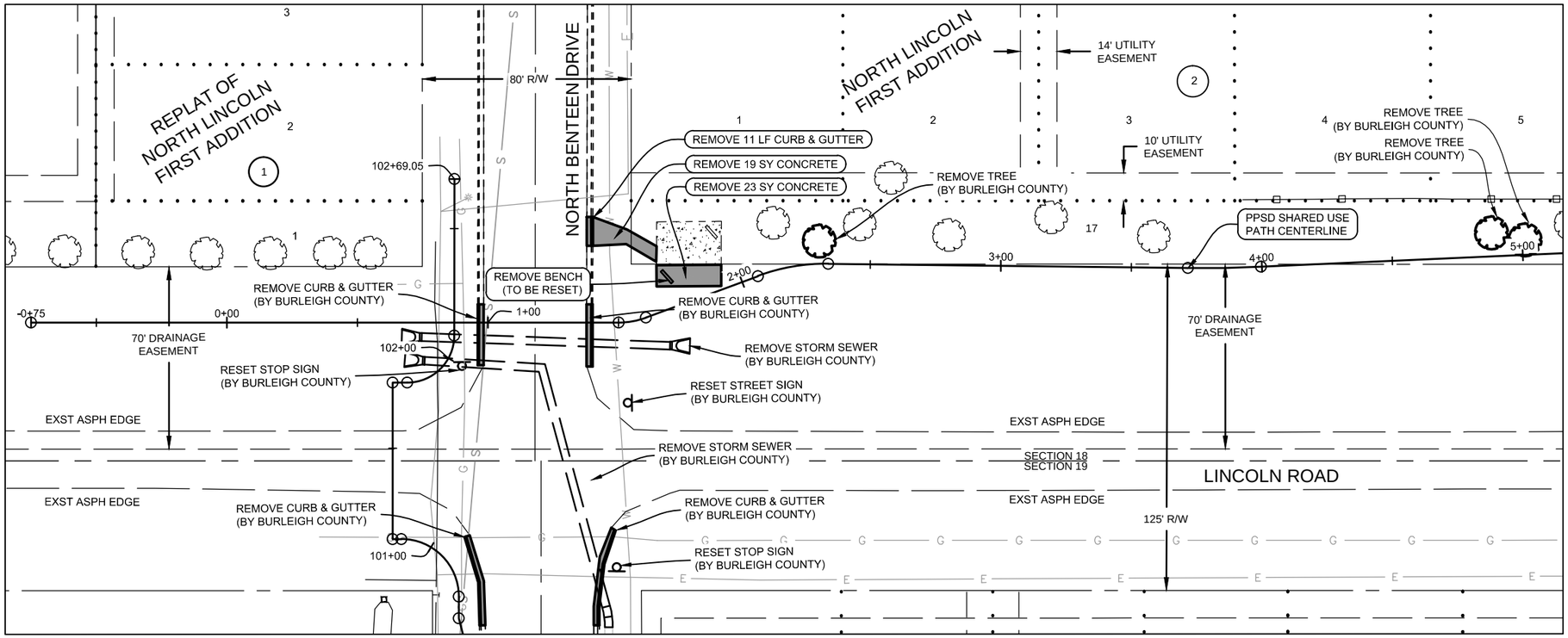
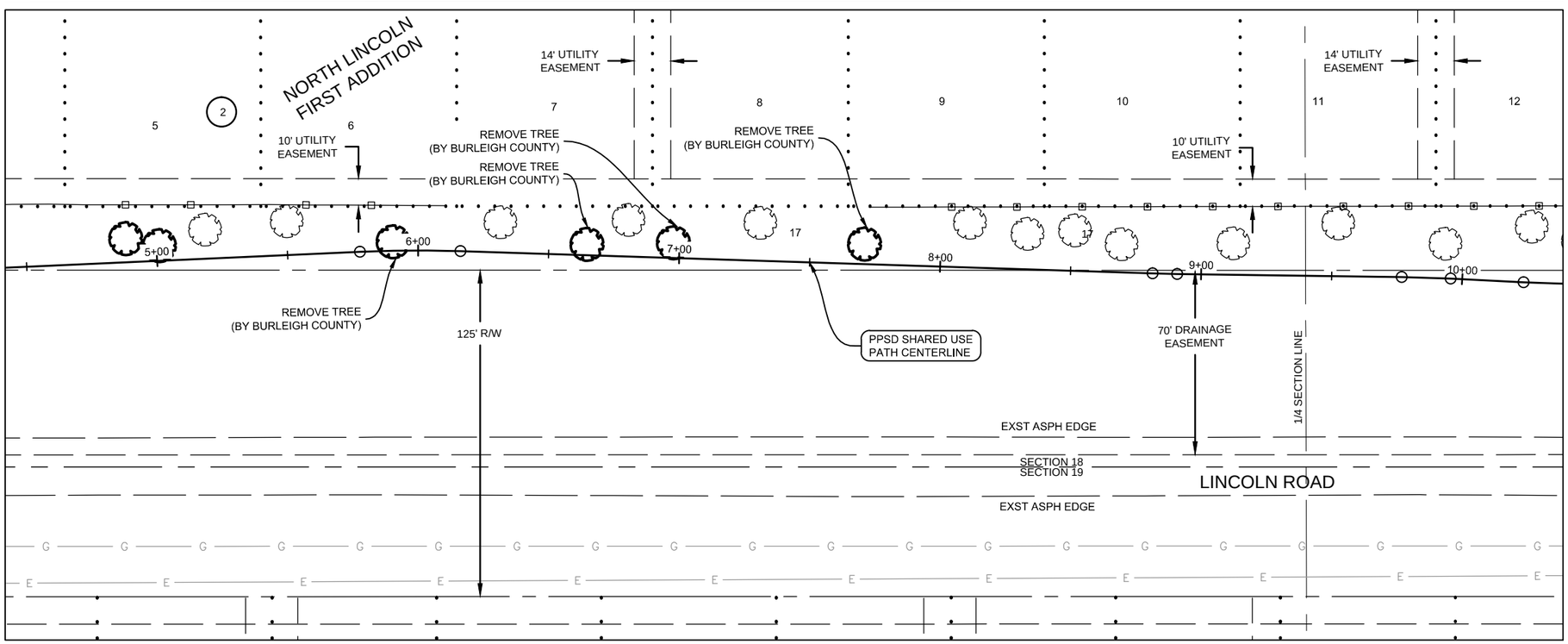
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	40	1





N

REMOVAL OF CONCRETE

STA 1+40 TO STA 1+70 =	19 SY
STA 1+70 TO STA 1+93 =	23 SY
TOTAL =	42 SY

REMOVAL OF CURB & GUTTER

STA 1+40 = 11 LF

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

EXISTING CONDITIONS & REMOVALS
STA 00+00 - STA 10+00

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CB	NAM	1413104	4/17/2015

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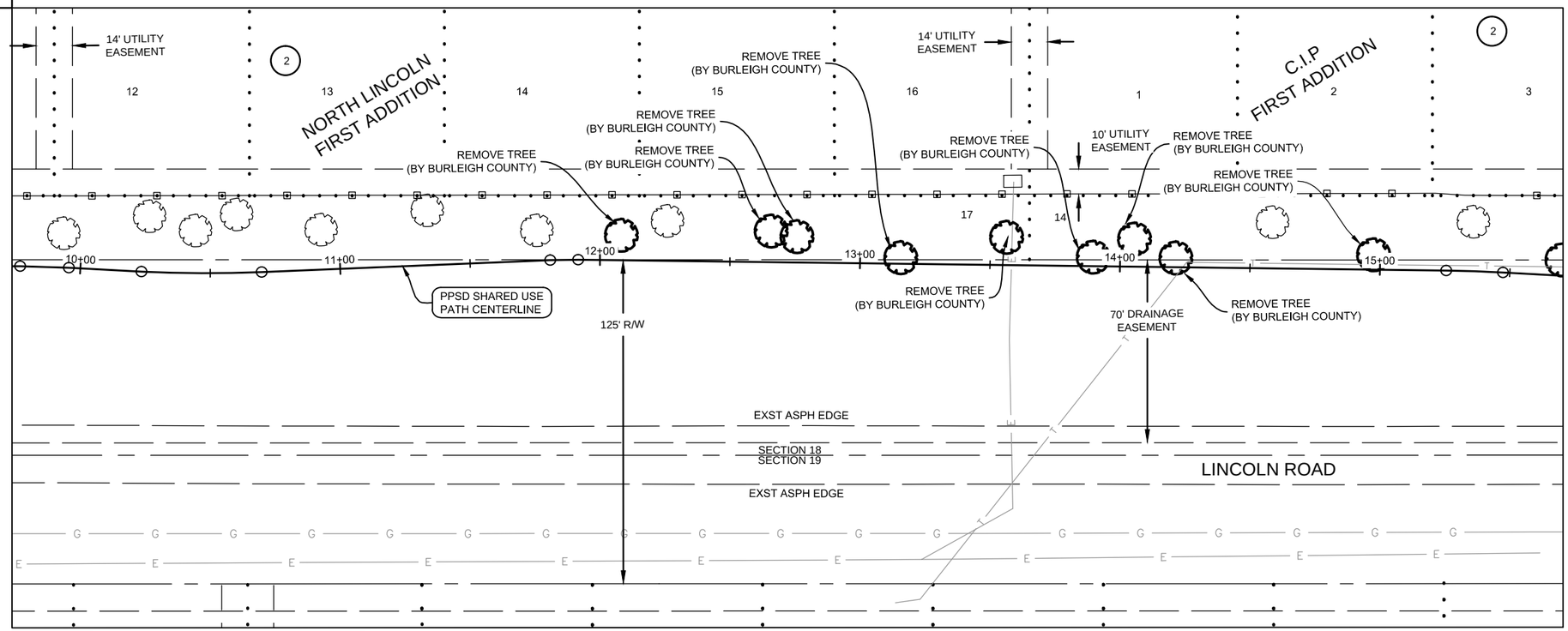
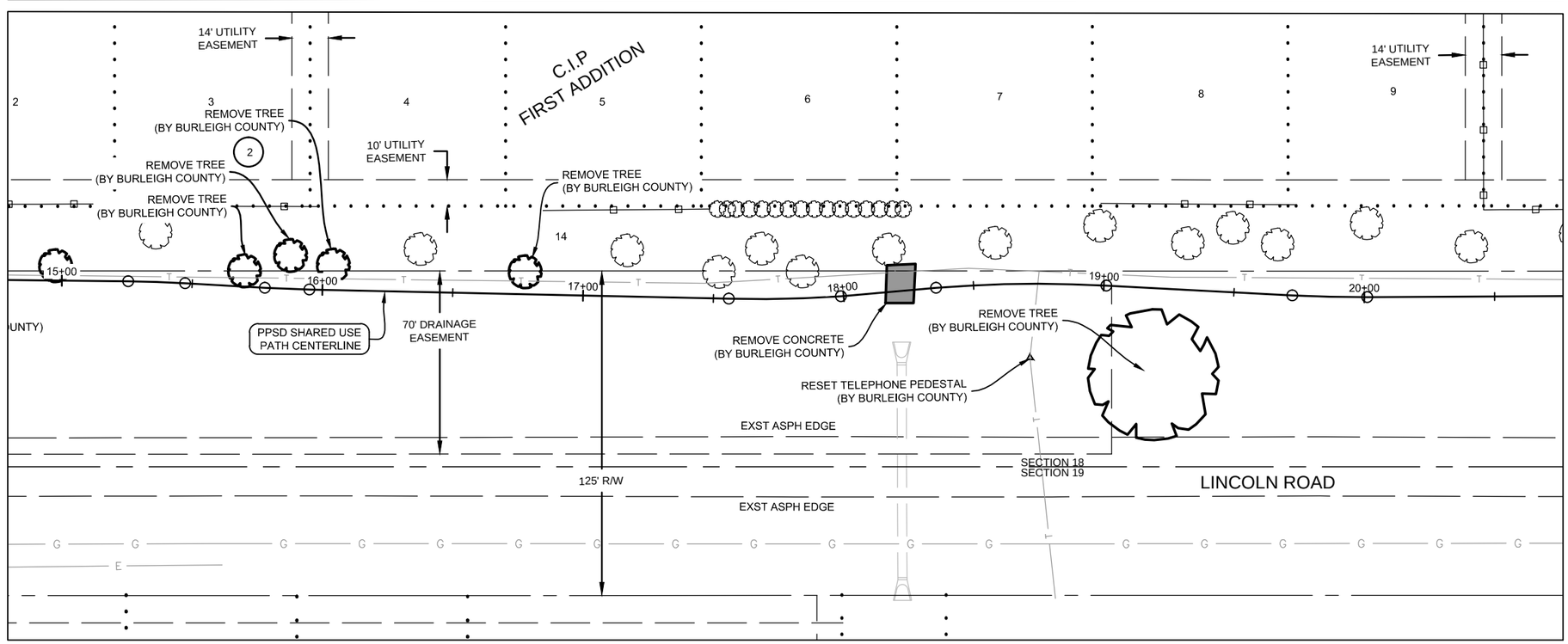
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	40	2





50 0 50
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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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EXISTING CONDITIONS & REMOVALS
STA 10+00 - STA 20+00

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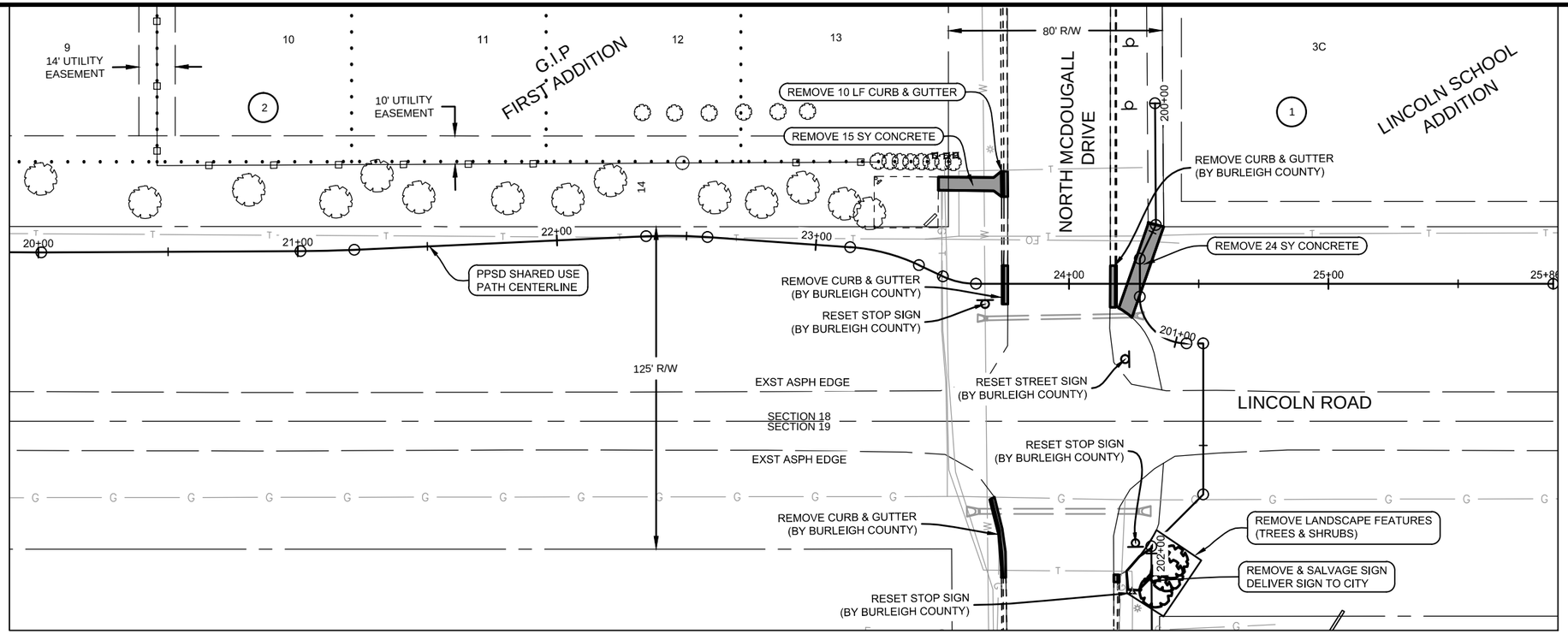
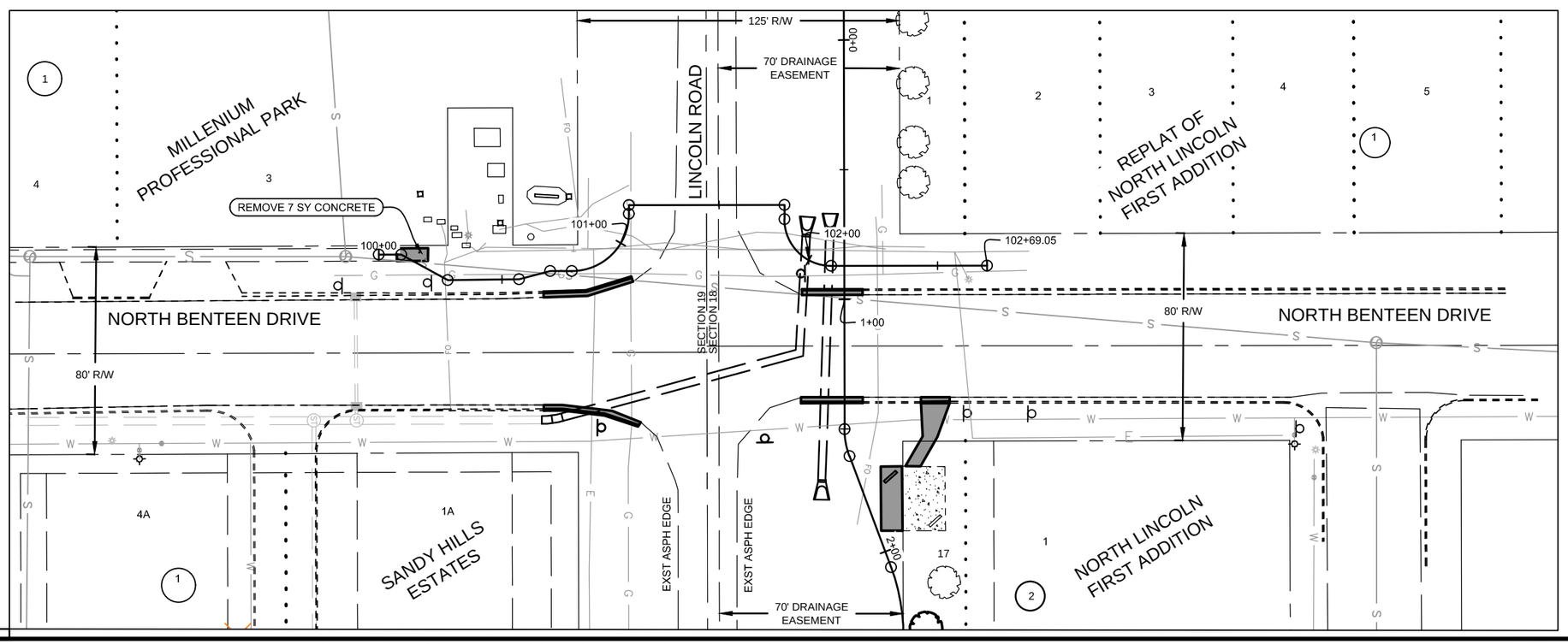
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	40	3





N

REMOVAL OF CONCRETE
STA 23+36 TO STA 23+74 = 15 SY
STA 24+19 TO STA 24+37 = 24 SY
STA 110+07 TO STA 100+18 = 7 SY
TOTAL = 46 SY

REMOVAL OF CURB & GUTTER
STA 23+74 = 10 LF

N

50 0 50
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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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EXISTING CONDITIONS & REMOVALS
STA 20+00 - STA 25+87 &
STA 100+07 - STA 102+69

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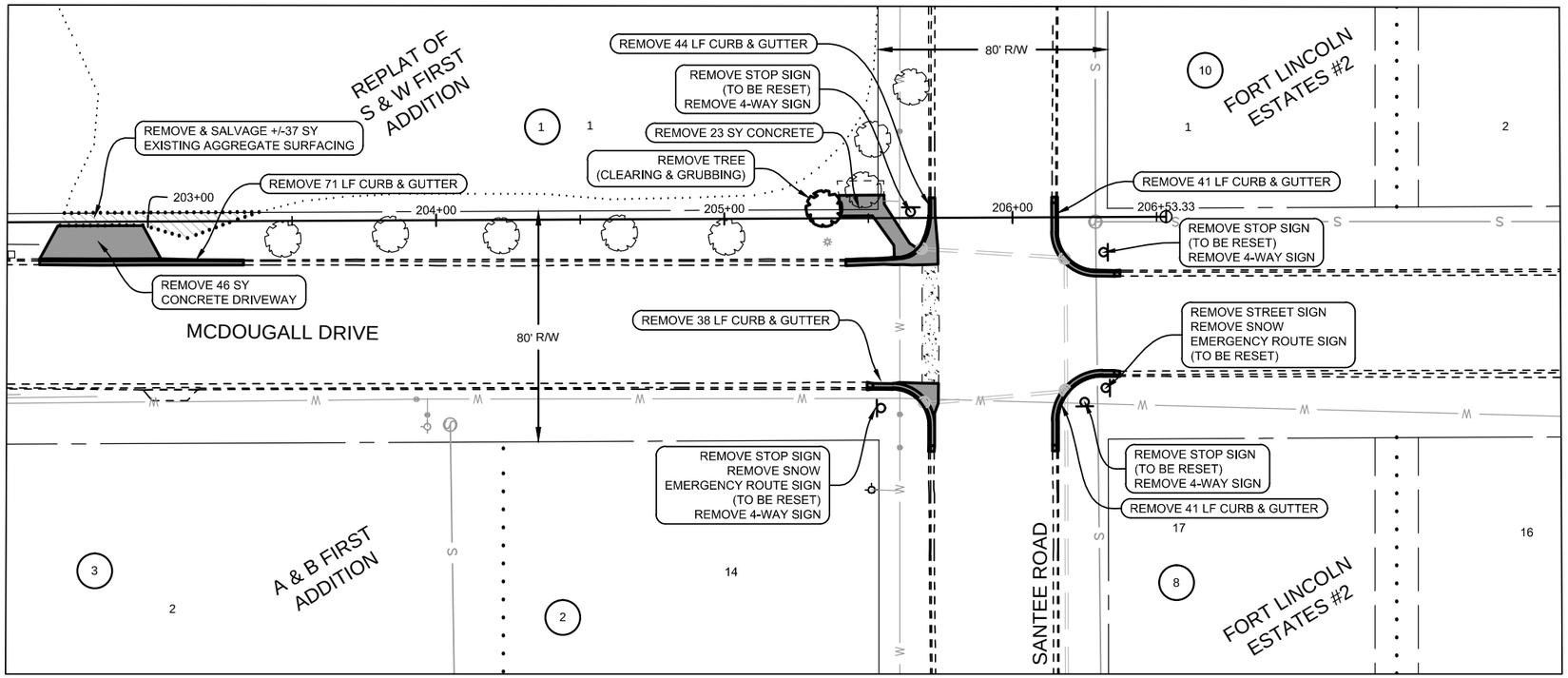
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	40	4



REMOVAL OF CONCRETE
STA 202+62 TO STA 203+044 = 46 SY
STA 205+45 TO STA 205+72 = 23 SY
TOTAL 69 SY

REMOVAL OF CURB & GUTTER
STA 202+69 RT TO STA 203+39 RT = 71 LF
STA 205+47 RT TO STA 205+78 LT = 44 LF
STA 205+54 RT TO STA 205+77 RT= 38 LF
STA 206+19 RT TO STA 206+42 RT = 41 LF
STA 206+21 LT TO STA 206+42 RT= 41 LF
TOTAL 235 LF

NOTE:
EXISTING "4-WAY" SIGNS SHALL BE REMOVED AND DISPOSED OF. ALL OTHER SIGNS REMOVED SHALL BE RESET PER SECTION 110.

N

50 0 50
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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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EXISTING CONDITIONS & REMOVALS
STA 202+69 - STA 206+60

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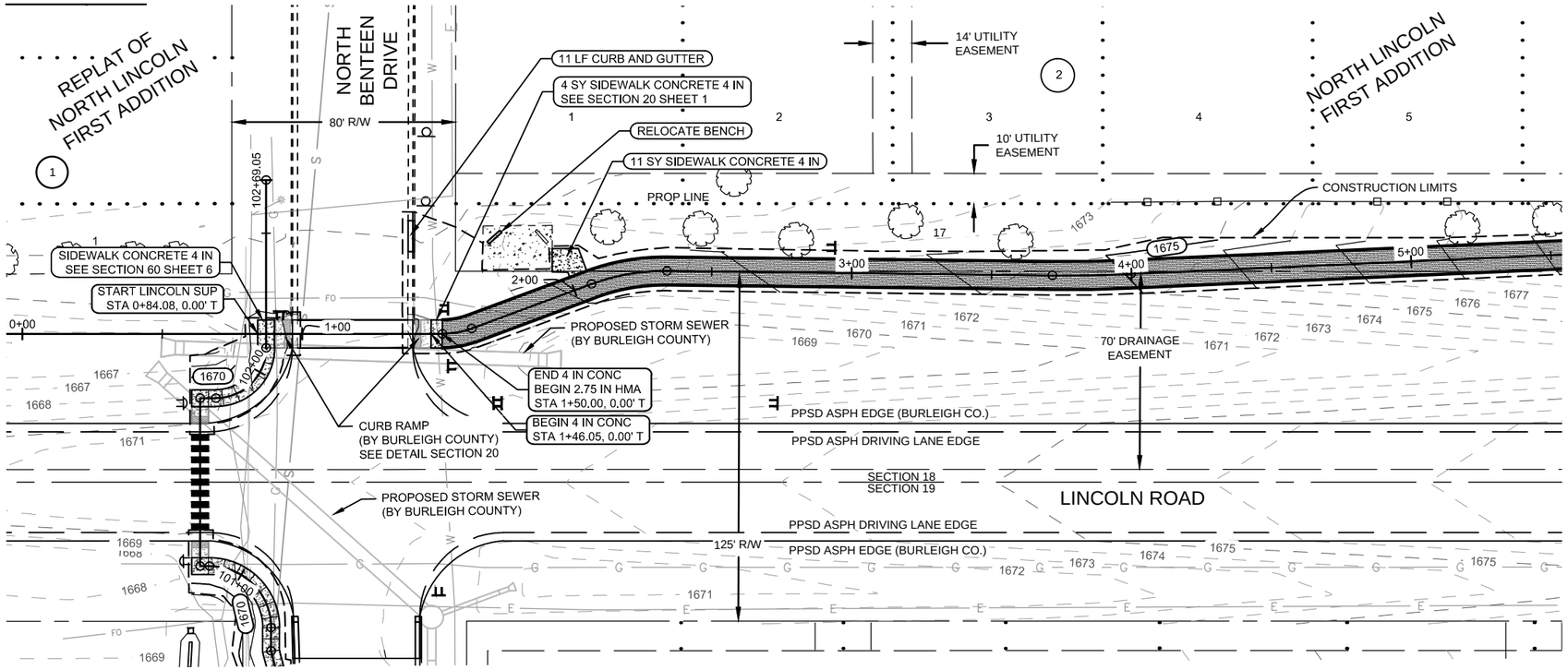
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	1



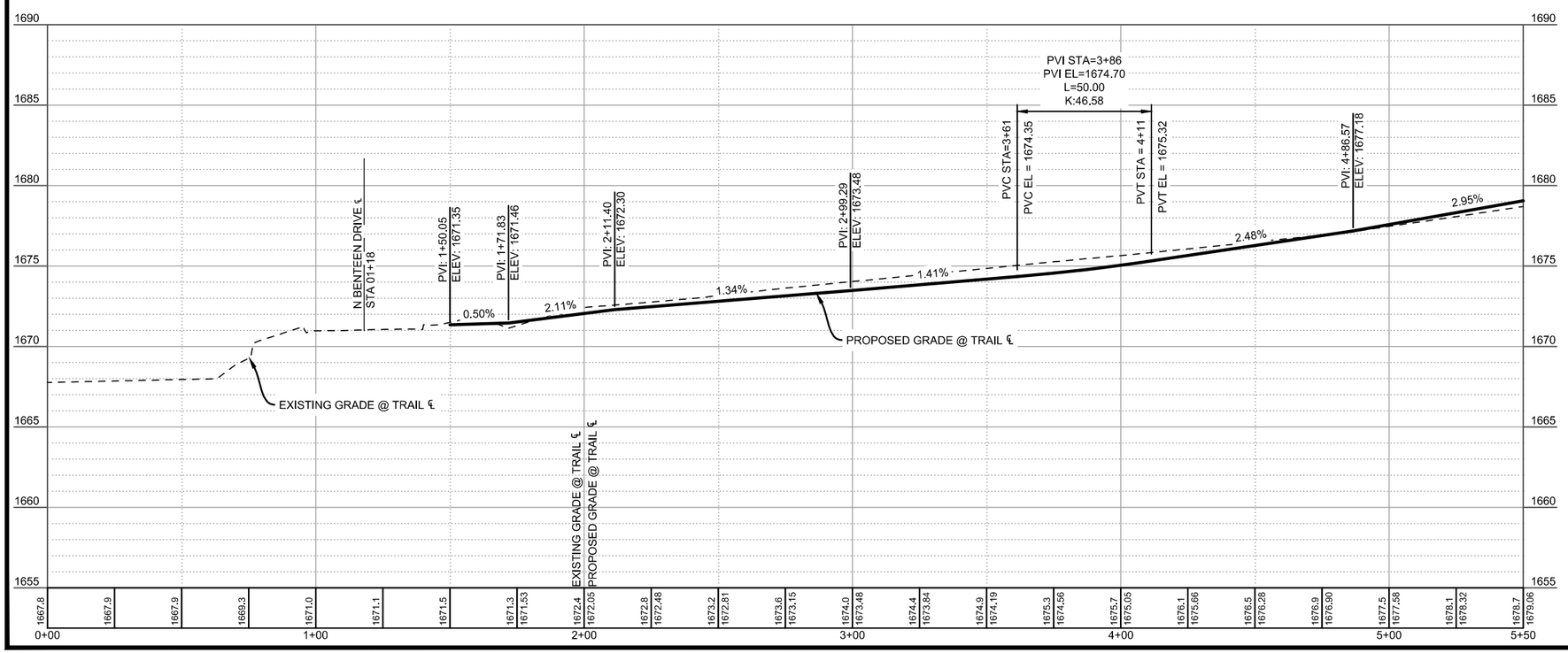
COMMERCIAL GRADE HOT MIX ASPHALT
STA 1+50 TO STA 5+00 = 75 TON

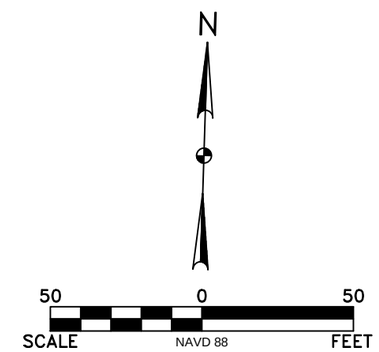
PG-58-28 ASPHALT CEMENT
STA 1+50 TO STA 5+00 = 4.9 TON

SIDEWALK CONCRETE 4 IN
STA 1+46 TO STA 1+50 = 4 SY
STA 1+95 TO STA 2+07 = 11 SY
TOTAL = 15 SY

CURB & GUTTER-TYPE 1
STA 1+40 LT = 11 LF

BENCH
STA 1+80 LT = 1 EA





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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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PLAN & PROFILE
STA 1+46 - STA 5+00

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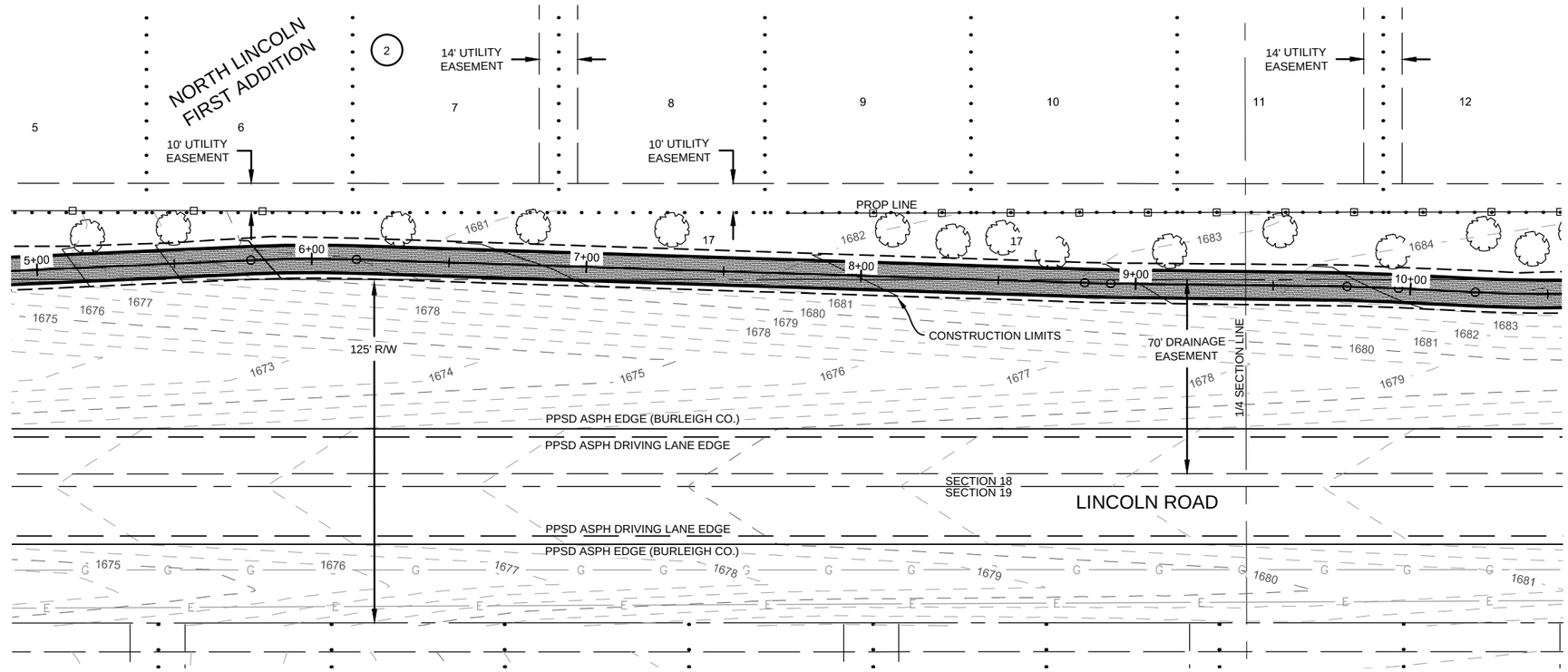
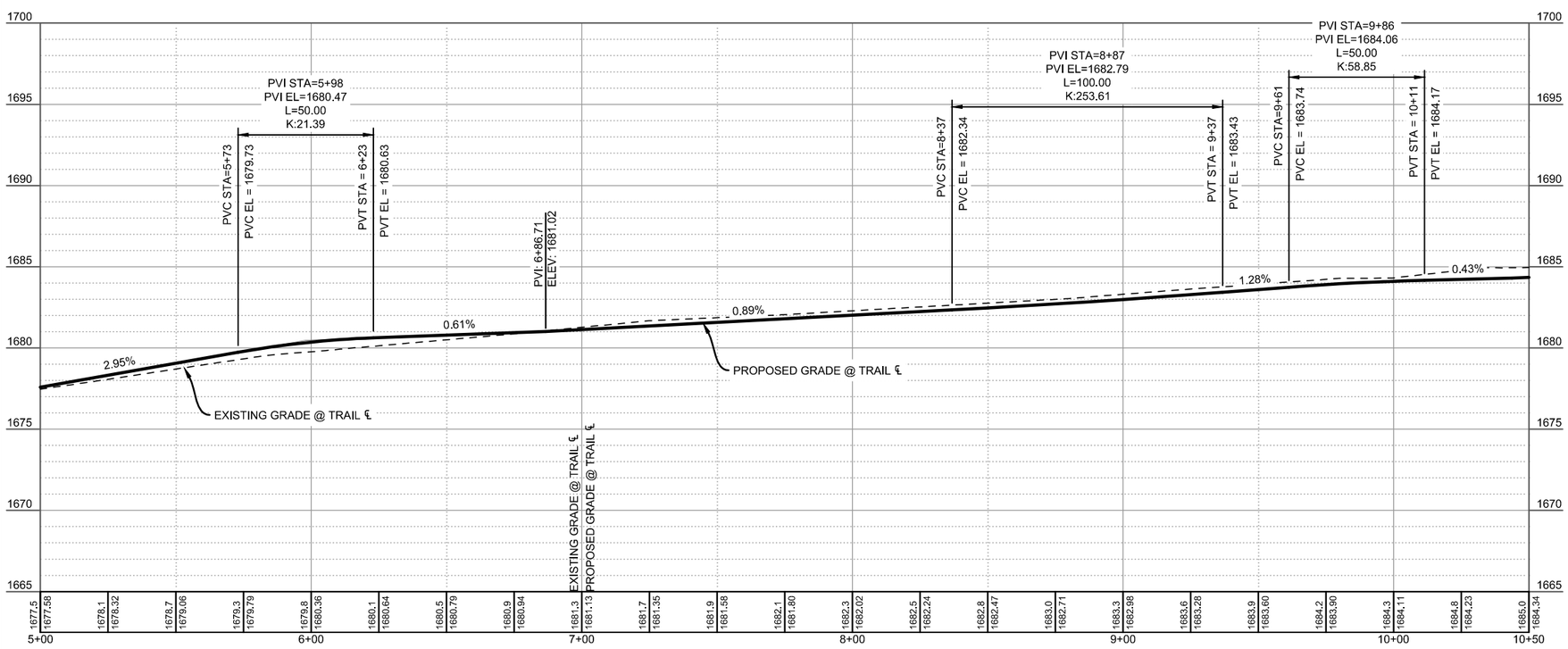
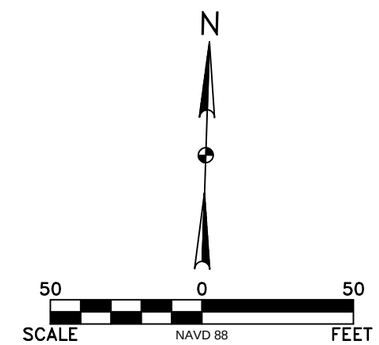
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	2

COMMERCIAL GRADE HOT MIX ASPHALT
STA 5+00 TO STA 10+00 = 107 TON

PG-58-28 ASPHALT CEMENT
STA 5+00 TO STA 10+00 = 7.0 TON







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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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PLAN & PROFILE
STA 5+00 - STA 10+00

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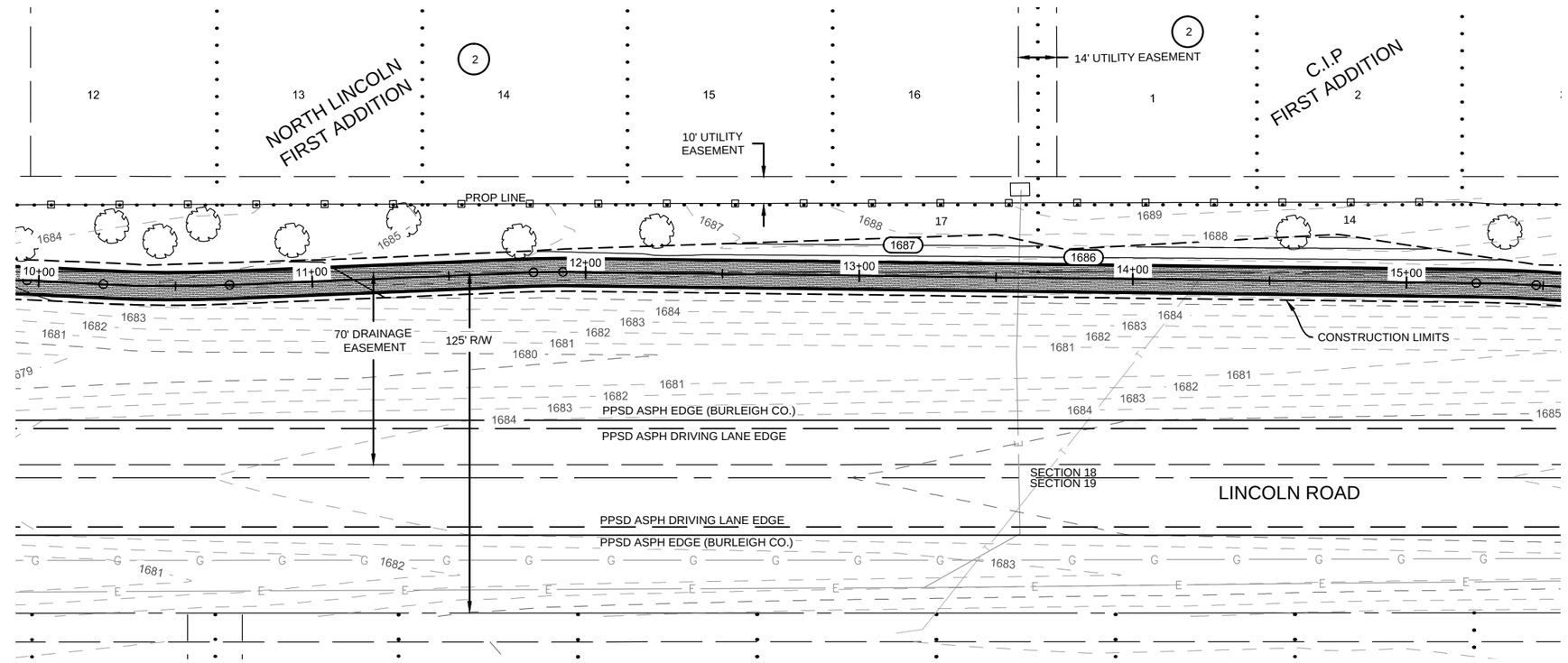
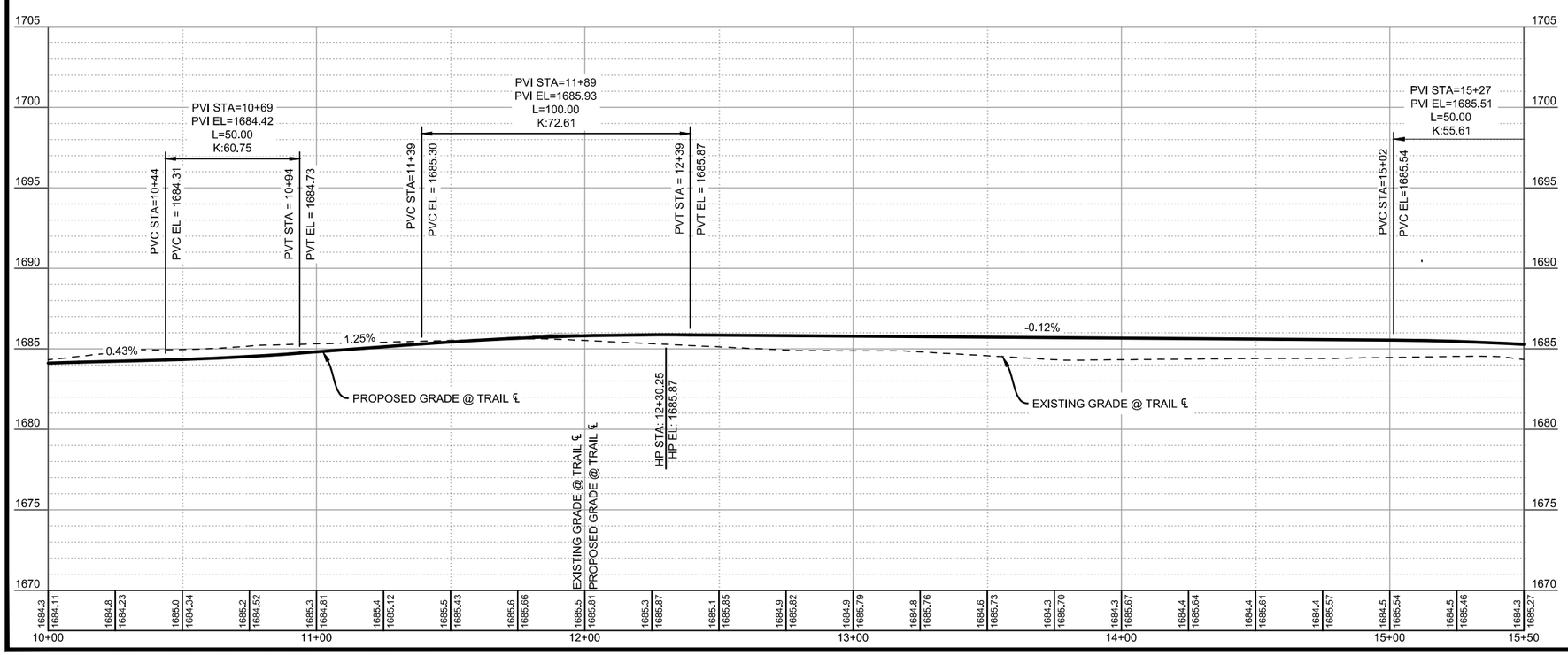
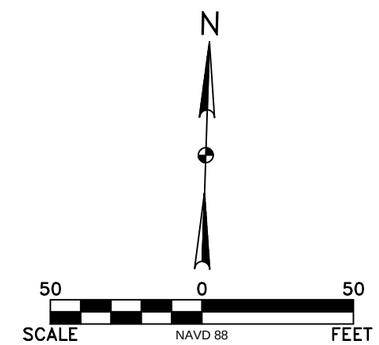
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	3





COMMERCIAL GRADE HOT MIX ASPHALT
STA 10+00 TO STA 15+00 = 107 TON

PG-58-28 ASPHALT CEMENT
STA 10+00 TO STA 15+00 = 7.0 TON



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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

PLAN & PROFILE
STA 10+00 - STA 15+00

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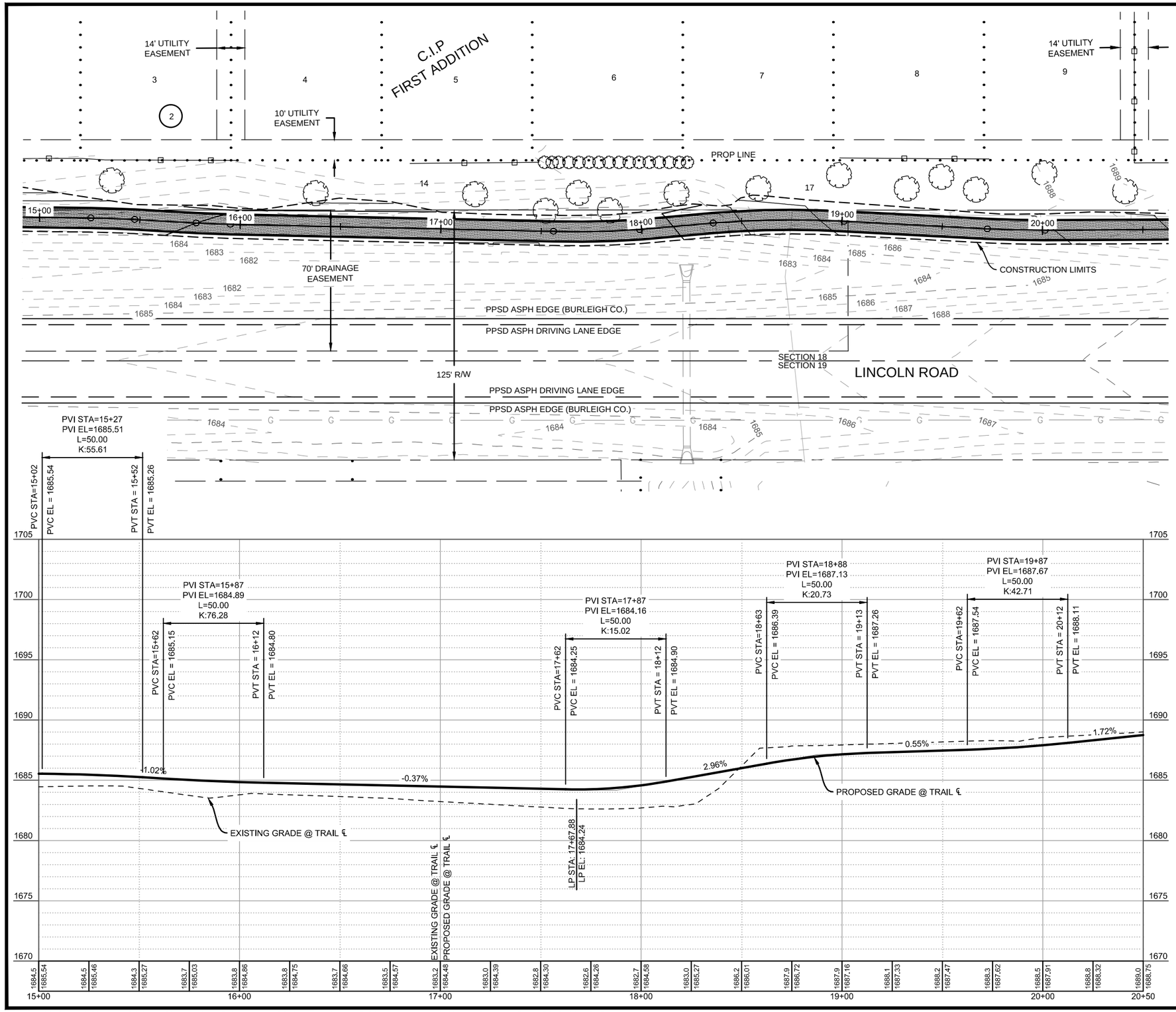
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	4



COMMERCIAL GRADE HOT MIX ASPHALT
STA 15+00 TO STA 20+00 = 107 TON

PG-58-28 ASPHALT CEMENT
STA 15+00 TO STA 20+00 = 7.0 TON

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
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PLAN & PROFILE
STA 15+00 - STA 20+00

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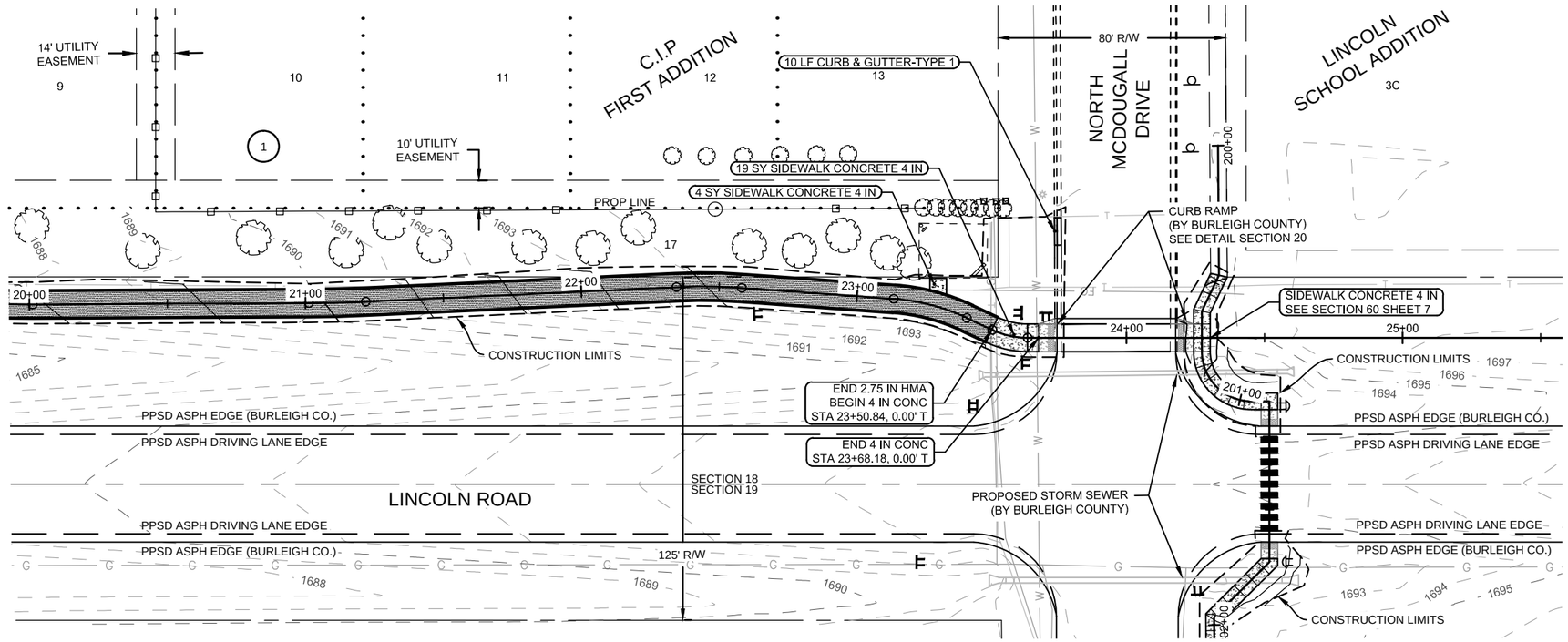
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	5

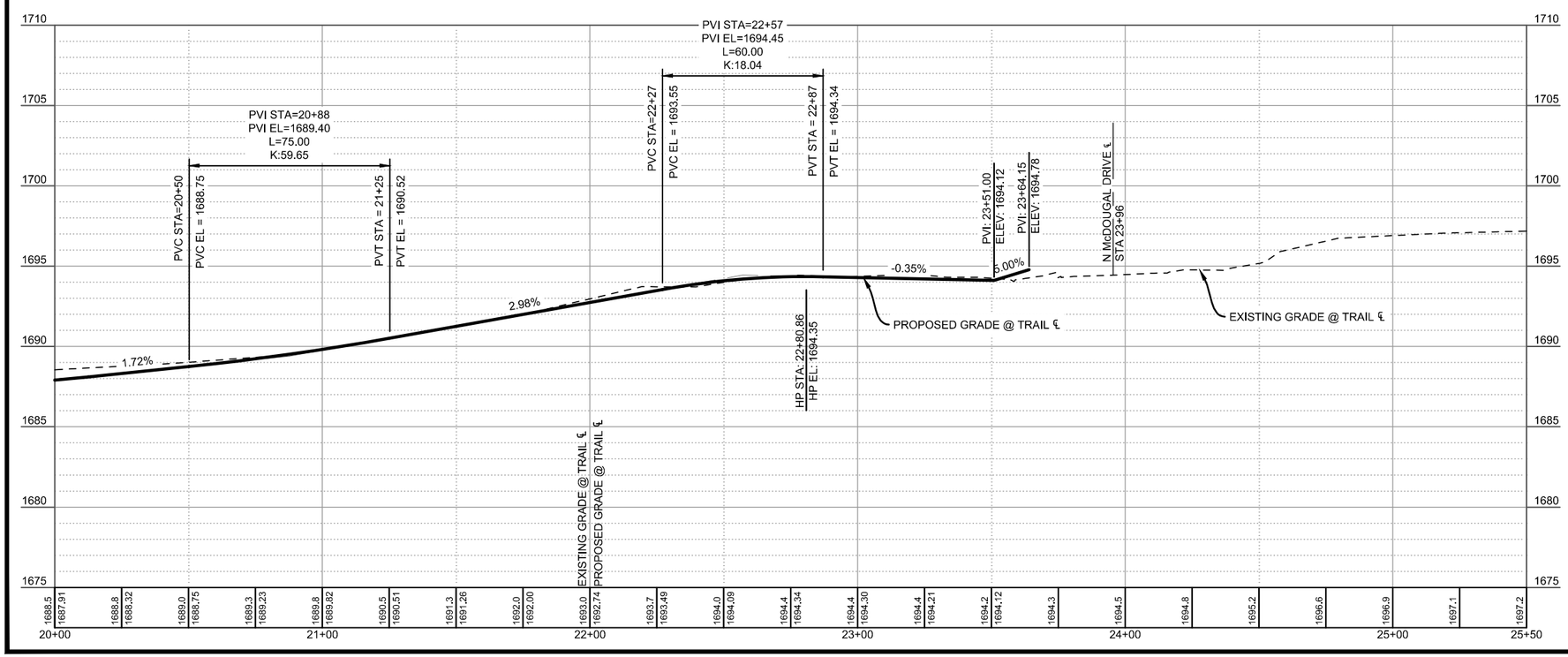


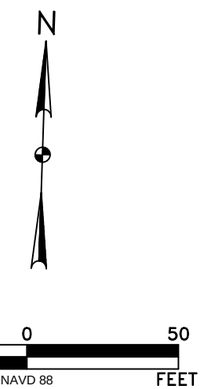
COMMERCIAL GRADE HOT MIX ASPHALT
STA 20+00 TO STA 23+51 = 75 TON

PG-58-28 ASPHALT CEMENT
STA 20+00 TO STA 23+51 = 4.9 TON

SIDEWALK CONCRETE 4 IN
STA 23+21 TO STA 23+27 = 4 SY
STA 23+51 TO STA 23+68 = 19 SY
TOTAL = 23 SY

CURB & GUTTER - TYPE 1
STA 23+75 LT = 10 LF





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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
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KLJ

PLAN & PROFILE
STA 20+00 - STA 23+75

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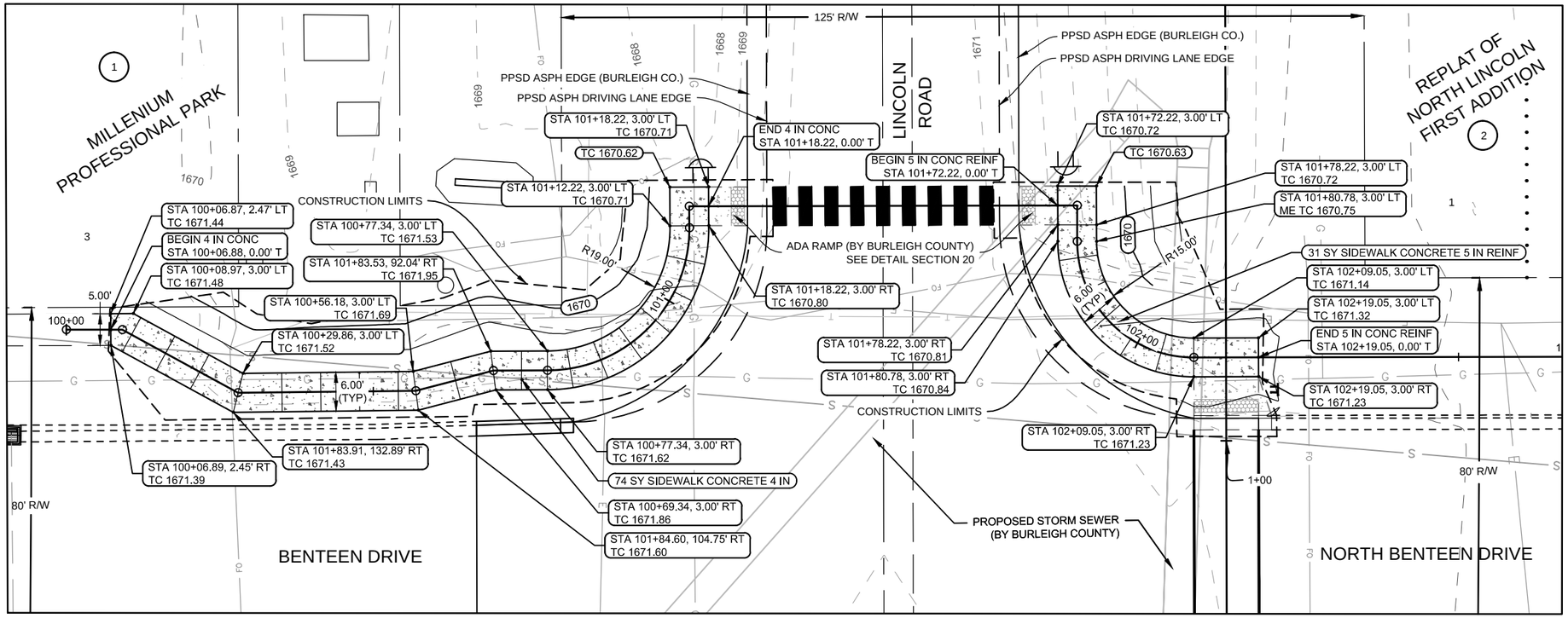
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	6



SIDEWALK CONCRETE 4 IN
STA 100+07 TO STA 101+18 = 74 SY

SIDEWALK CONCRETE 5 IN REINF
STA 101+72 TO STA 102+19 = 31 SY

N

20 0 20
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
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PLAN & PROFILE
STA 100+15 - STA 102+18

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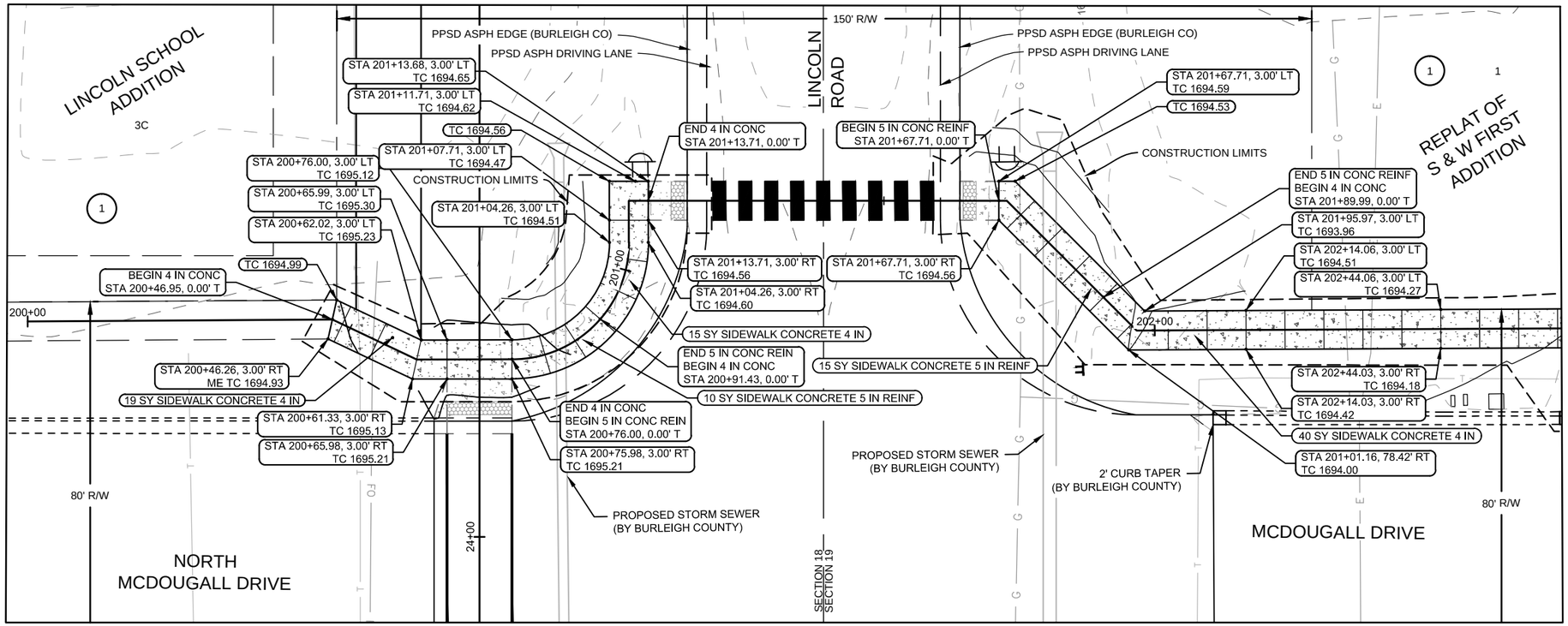
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	7



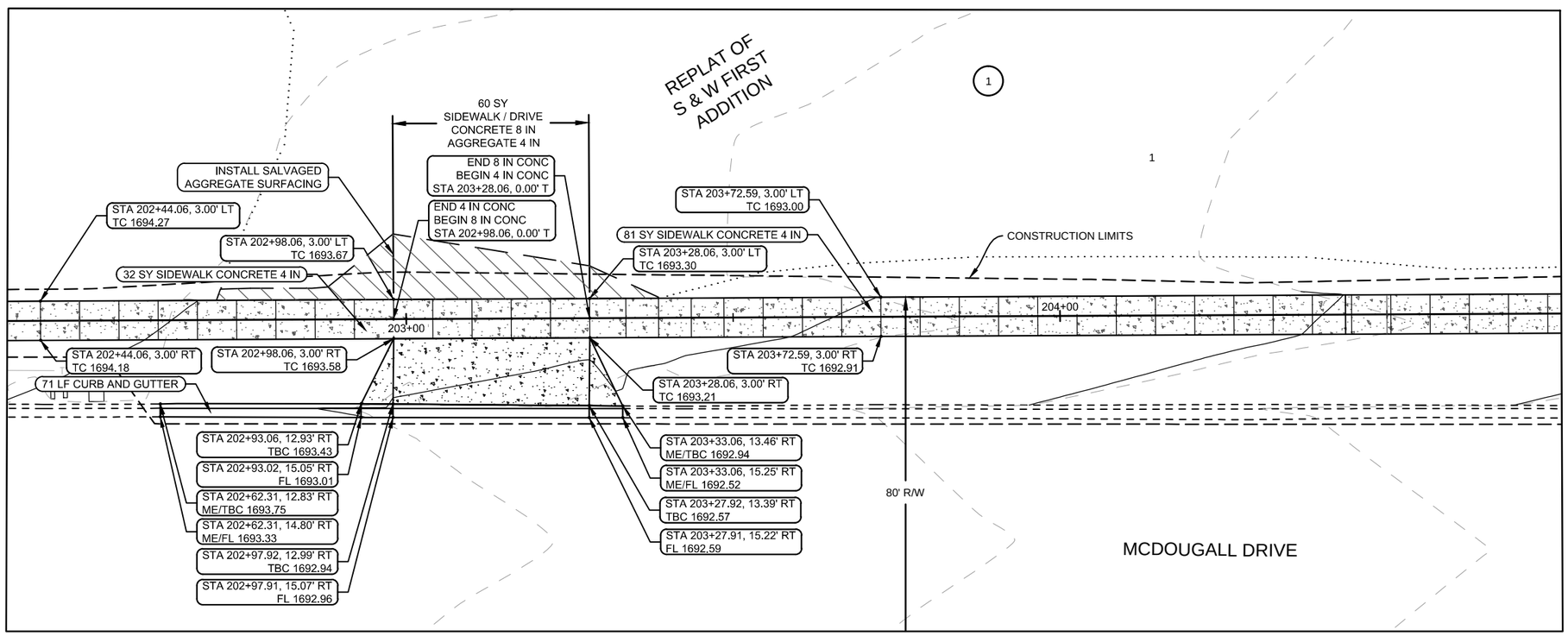
SIDEWALK CONCRETE 4 IN
STA 200+47 TO STA 200+76 = 19 SY
STA 200+91 TO STA 201+14 = 15 SY
STA 201+90 TO STA 202+50 = 40 SY
STA 202+50 TO STA 202+98 = 32 SY
STA 203+28 TO STA 204+50 = 81 SY
TOTAL = 187 SY

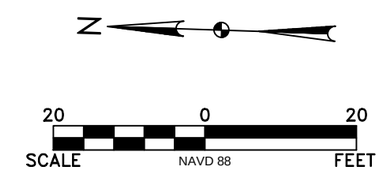
SIDEWALK CONCRETE 5 IN REINF
STA 200+76 TO STA 200+91 = 10 SY
STA 201+68 TO STA 201+90 = 15 SY
TOTAL = 25 SY

DRIVEWAY CONCRETE 8 IN
STA 203+04 TO STA 203+34 = 60 SY

CURB & GUTTER-TYPE 1
STA 202+69 RT TO STA 203+39 RT = 71 LF

NOTE
1. PROPOSED STORM SEWER BY BURLEIGH COUNTY IS SHOWN IN AN APPROXIMATE LOCATION. CONTRACTOR SHALL VERIFY ACTUAL LOCATION TO ENSURE 5" REINFORCED CONCRETE SIDEWALK EXTENDS A MINIMUM OF 5' PAST THE EDGE OF THE STORM SEWER PIPE.





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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

PLAN & PROFILE
STA 200+46 - STA 204+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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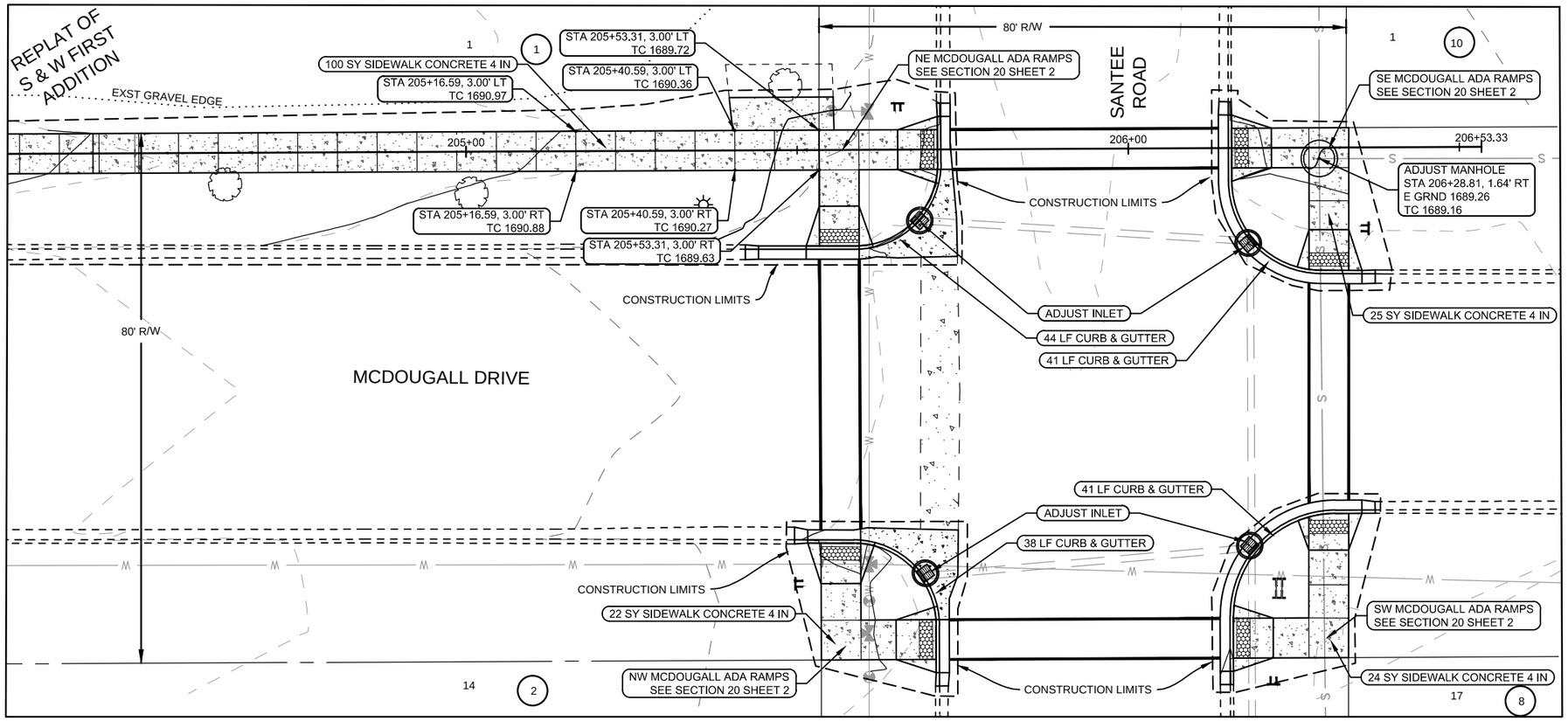

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	60	8

ADJUST INLET
STA 205+75 RT = 1 EA
STA 205+75 RT= 1 EA
STA 206+25 RT = 1 EA
STA 206+25 RT= 1 EA
TOTAL = 4 EA

ADJUST MANHOLE
STA 205+75 RT = 1 EA

SIDEWALK CONCRETE 4 IN
STA 204+50 TO STA 205+76 = 100 SY
STA 205+58 RT TO STA 205+76 RT = 22 SY
STA 206+21 LT TO STA 206+38 RT = 25 SY
STA 206+21 RT TO STA 206+38 RT = 24 SY
TOTAL 171 SY

CURB & GUTTER-TYPE 1
STA 205+47 RT TO STA 205+78 LT = 44 LF
STA 205+54 RT TO STA 205+77 RT= 38 LF
STA 206+19 RT TO STA 206+42 RT = 41 LF
STA 206+21 LT TO STA 206+42 RT= 41 LF
TOTAL = 164 LF

DETECTABLE WARNING PANEL
STA 205+58 RT TO STA 205+64 RT = 12 SF
STA 205+58 RT TO STA 205+64 RT = 12 SF
STA 205+78 TO STA 205+80 = 12 SF
STA 205+78 RT TO STA 205+80 RT = 12 SF
STA 206+21 TO STA 206+23 = 12 SF
STA 206+21 RT TO STA 206+23 RT = 12 SF
STA 206+32 TO STA 206+38 = 12 SF
STA 206+32 RT TO STA 206+38 RT = 12 SF
TOTAL = 96 SF

N

20 0 20
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

PLAN & PROFILE
STA 204+50 - STA 206+42

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CB	NAM	1413104	4/17/2015

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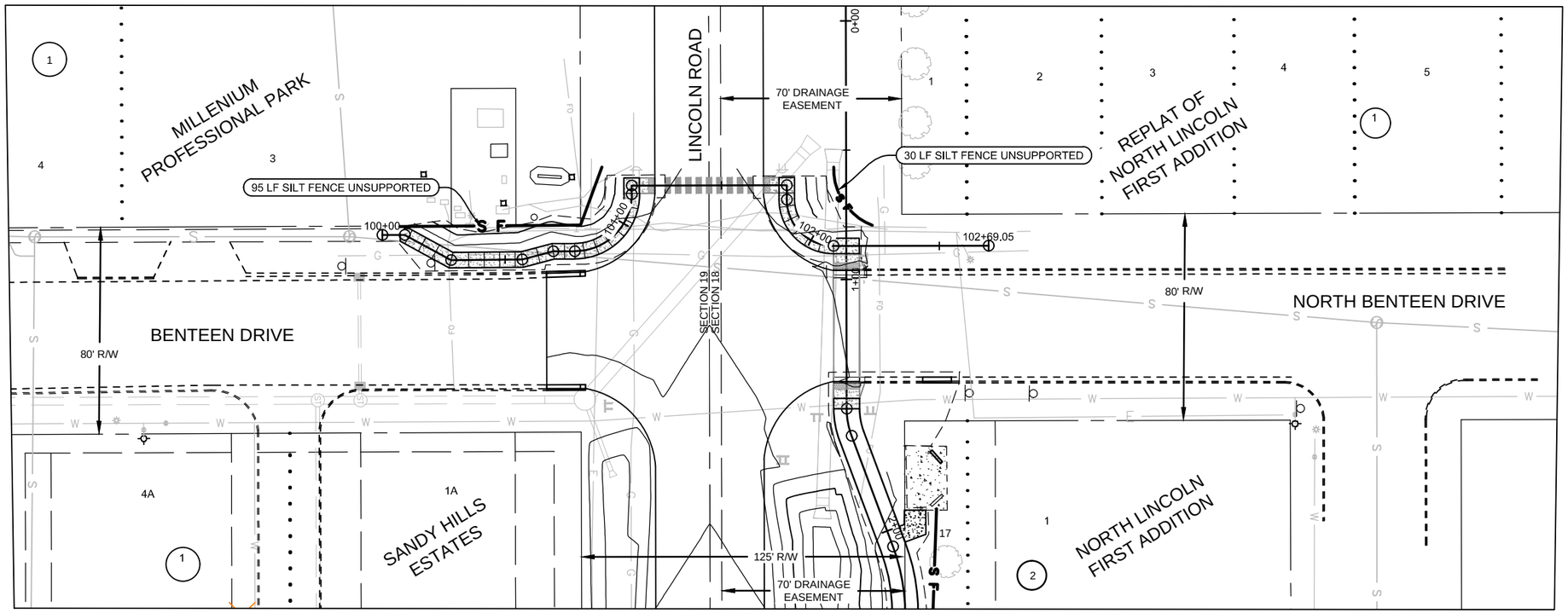
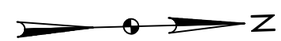
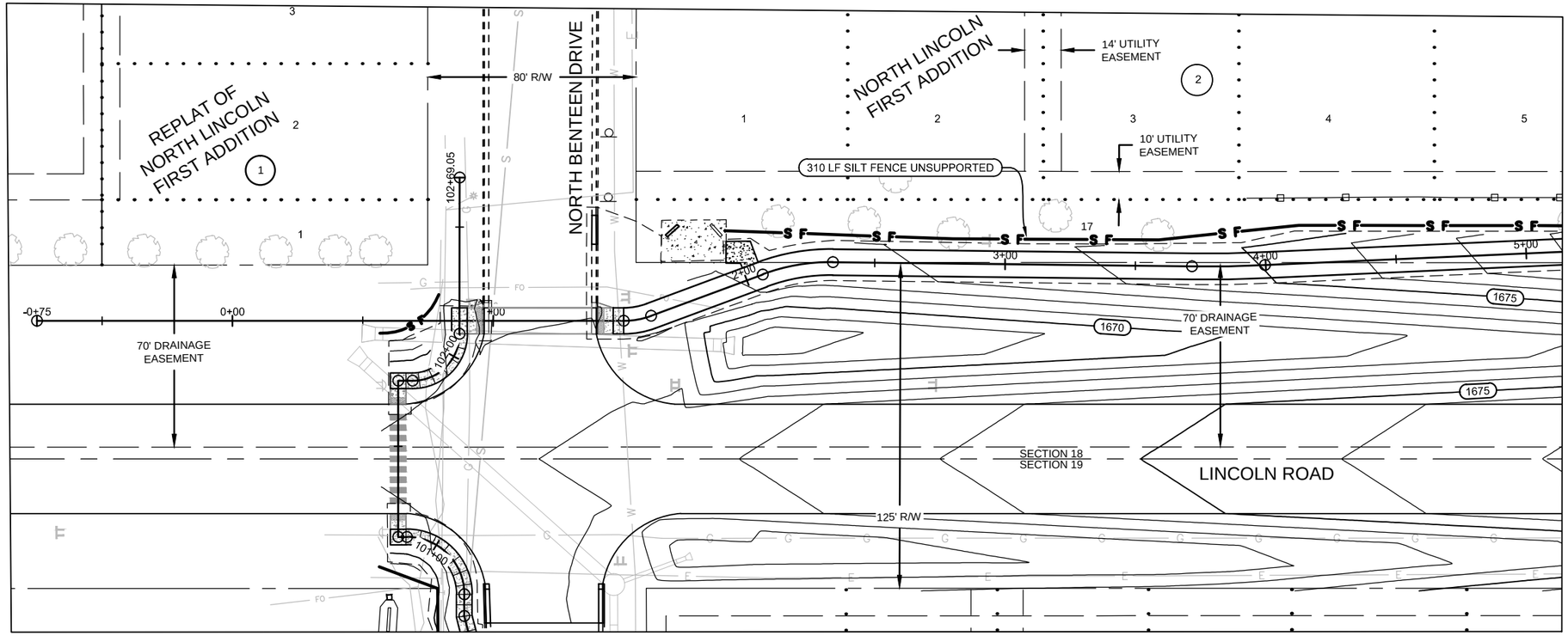
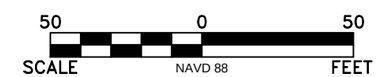
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	76	1

SILT FENCE UNSUPPORTED
STA 100+07 TO STA 101+15 = 95 LF
STA 102+09 TO STA 102+24 = 30 LF
STA 2+00 TO STA 5+00 = 310 LF
TOTAL = 435 LF









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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

TEMPORARY
EROSION CONTROL
STA 100+00 TO 102+69
STA 0+00 - STA 5+00

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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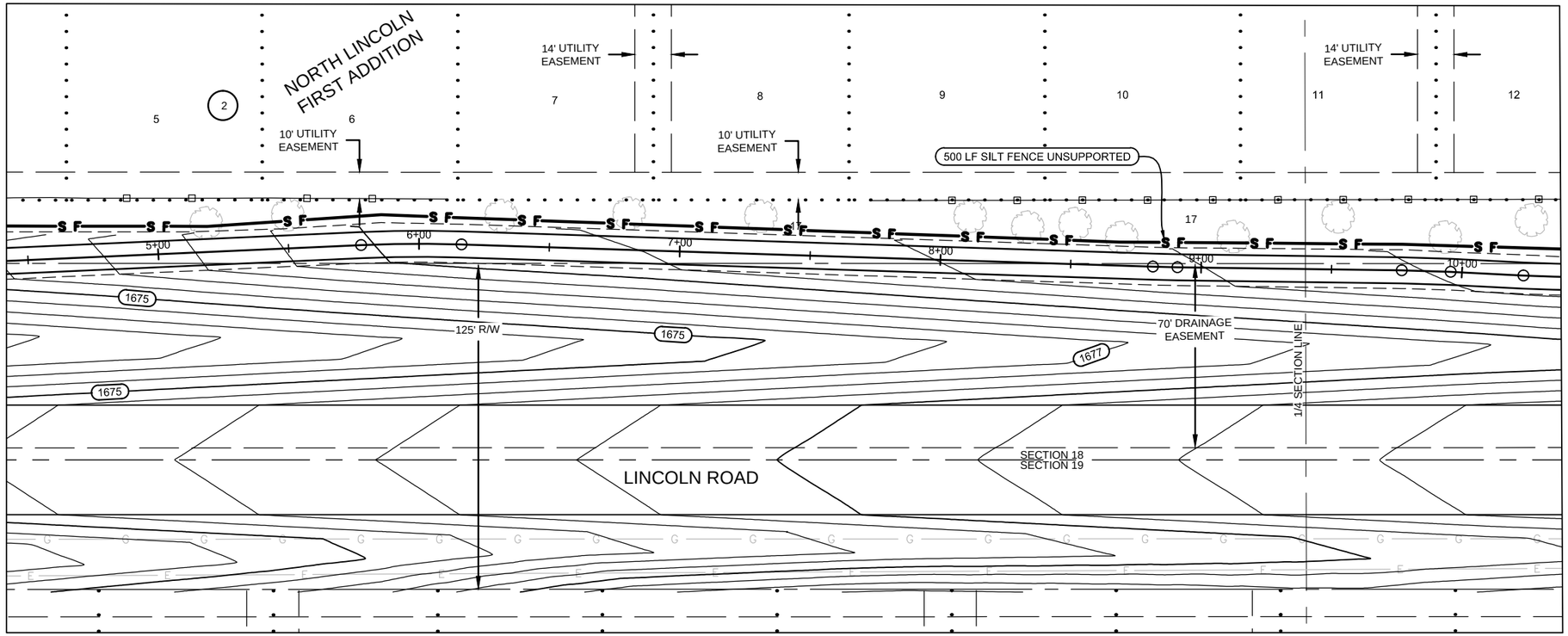
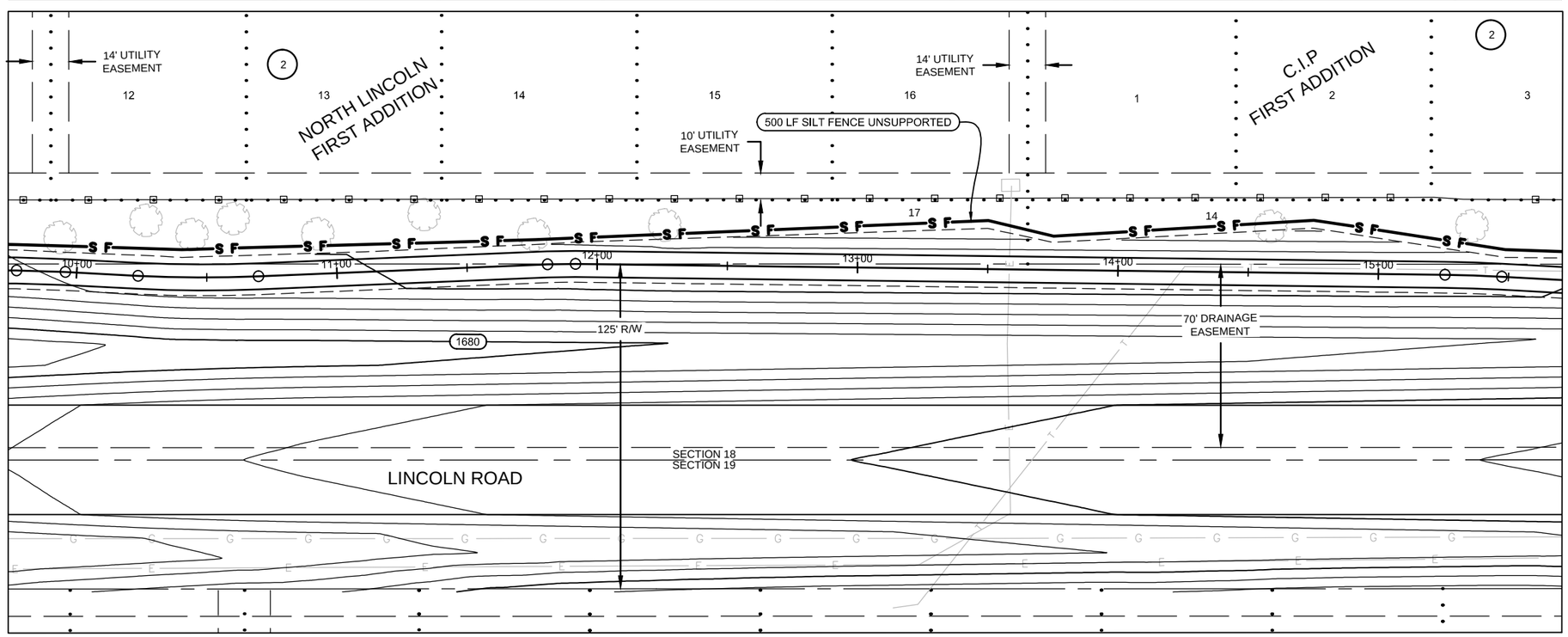
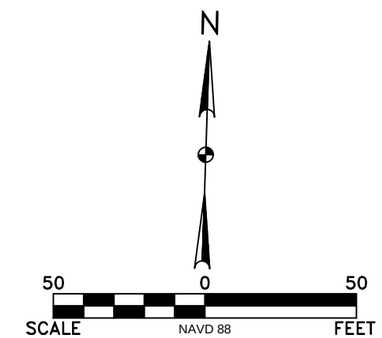
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	76	2





SILT FENCE UNSUPPORTED
STA 5+00 TO STA 10+00 = 500 LF
STA 10+00 TO STA 15+00 = 500 LF
TOTAL = 1,000 LF



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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

TEMPORARY
EROSION CONTROL
STA 5+00 - STA 15+00

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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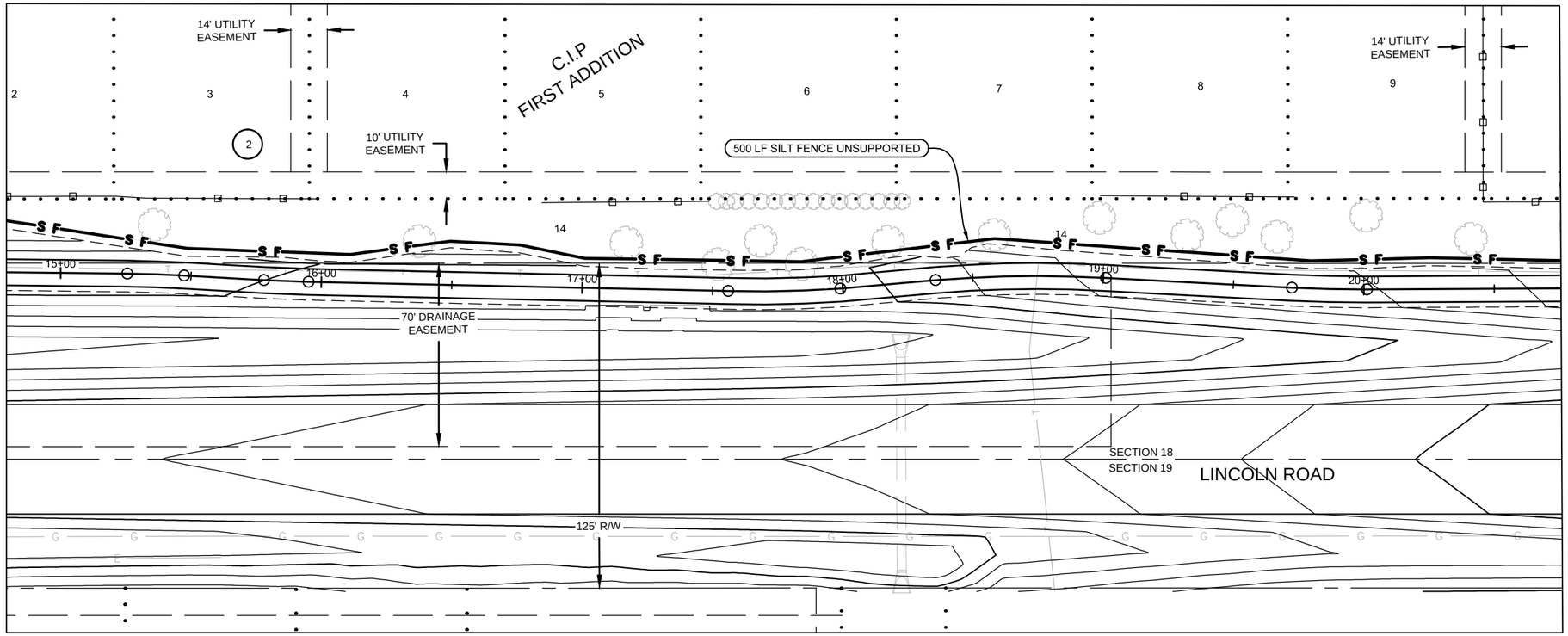
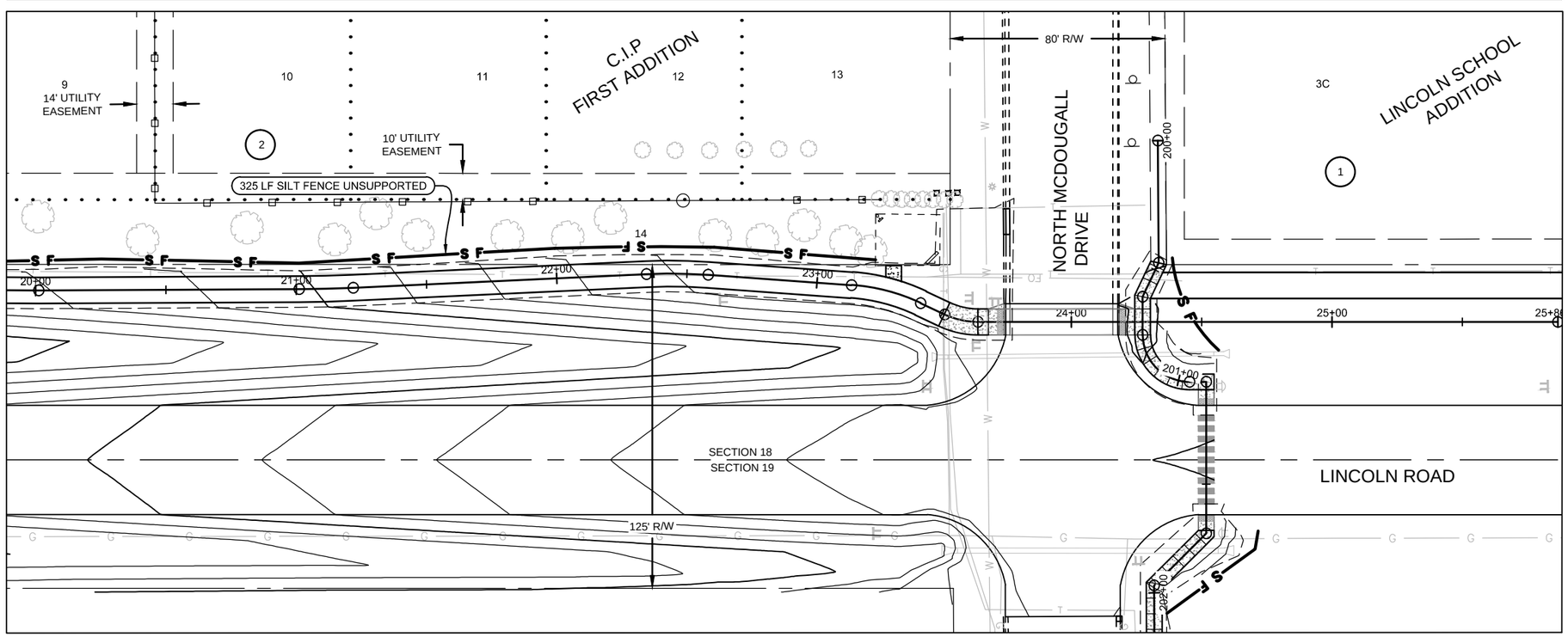
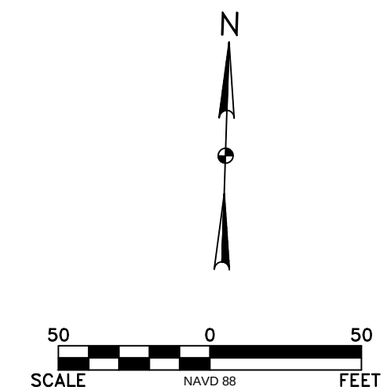
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	76	3

SILT FENCE UNSUPPORTED
STA 15+00 TO STA 20+00 = 500 LF
STA 20+00 TO STA 23+20 = 325 LF
TOTAL = 825 LF







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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

TEMPORARY
EROSION CONTROL
STA 15+00 - STA 24+68

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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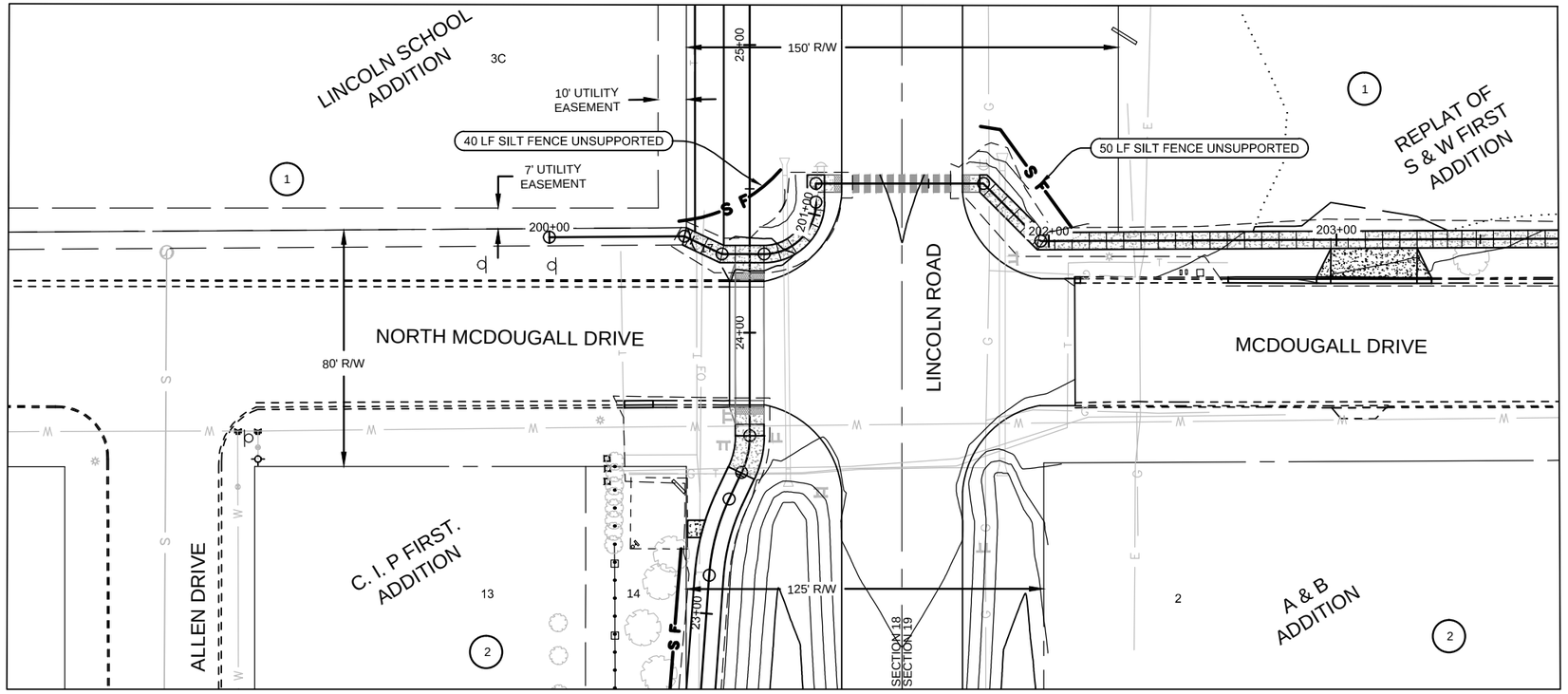
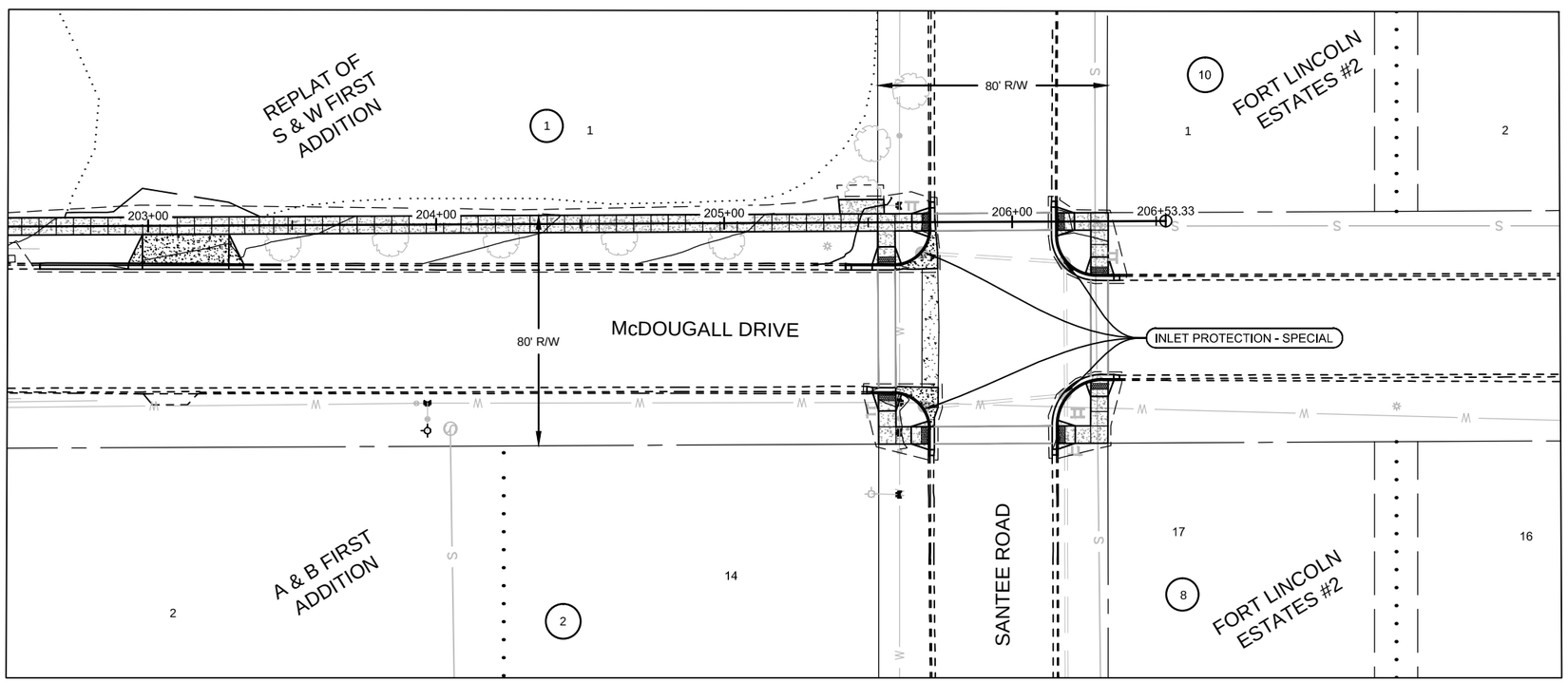
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	76	4





SILT FENCE UNSUPPORTED
STA 200+45 LT TO STA 201+11 LT= 40 LF
STA 201+68 LT TO STA 202+08 LT= 50 LF
TOTAL = 90 LF

INLET PROTECTION-SPECIAL
STA 205+71 RT = 1 EA
STA 205+ 71 RT = 1 EA
STA 206+19 RT = 1 EA
STA 206+19 RT = 1 EA
TOTAL = 4 EA

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

TEMPORARY
EROSION CONTROL
STA 200+00 - STA 206+58

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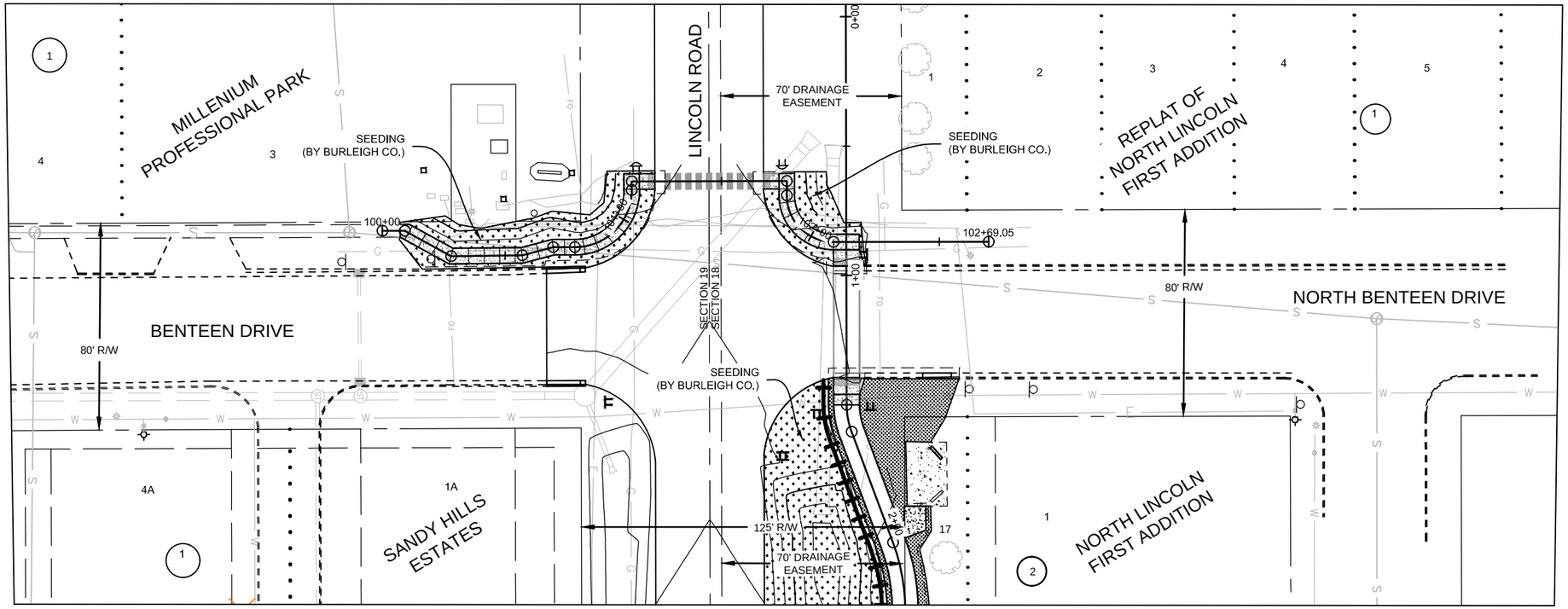
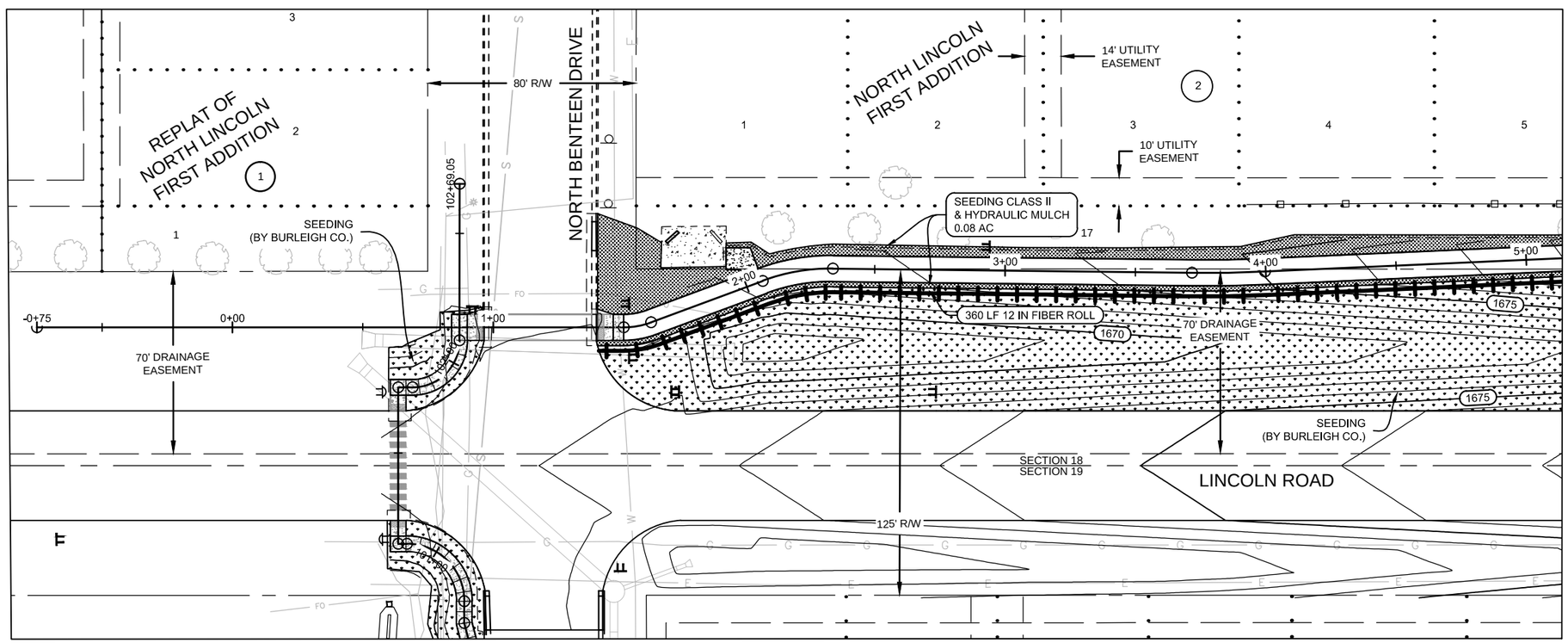
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	77	1





SEEDING CLASS II
STA 1+40 TO STA 5+00 = 0.08 AC

HYDRAULIC MULCH
STA 1+40 TO STA 5+00 = 0.08 AC

FIBER ROLL 12 IN
STA 1+40 RT TO STA 5+00 RT = 360 LF

NOTES
1. CONTRACTOR SHALL SEED & MULCH ONLY THE FIRST TWO FEET SOUTH OF THE TRAIL BETWEEN STA 1+40 TO STA 23+75. BURLEIGH COUNTY SHALL SEED & MULCH THE REST OF THE DITCH.
2. FIBER ROLL SHALL BE INSTALLED 3' SOUTH OF TRAIL FROM STA 1+40 TO STA 23+75.

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

PERMANENT
EROSION CONTROL
STA 0+00 - STA 5+00

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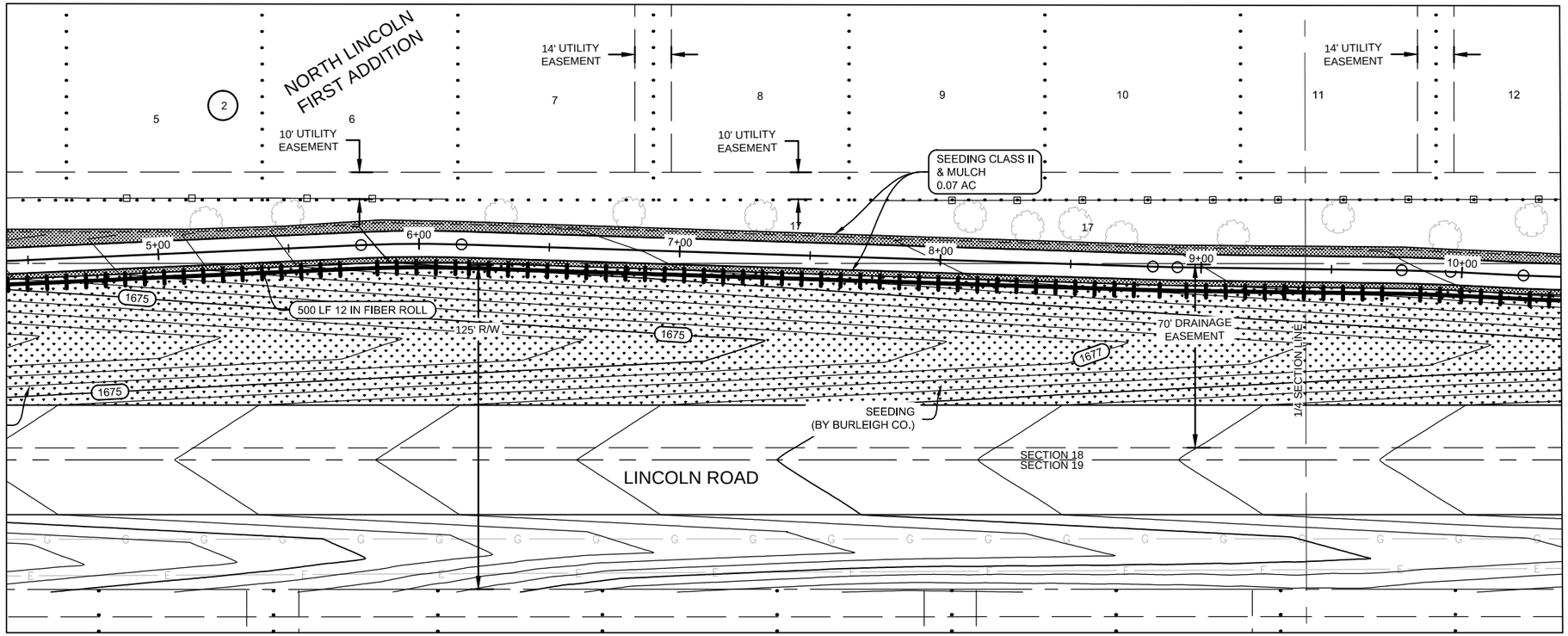
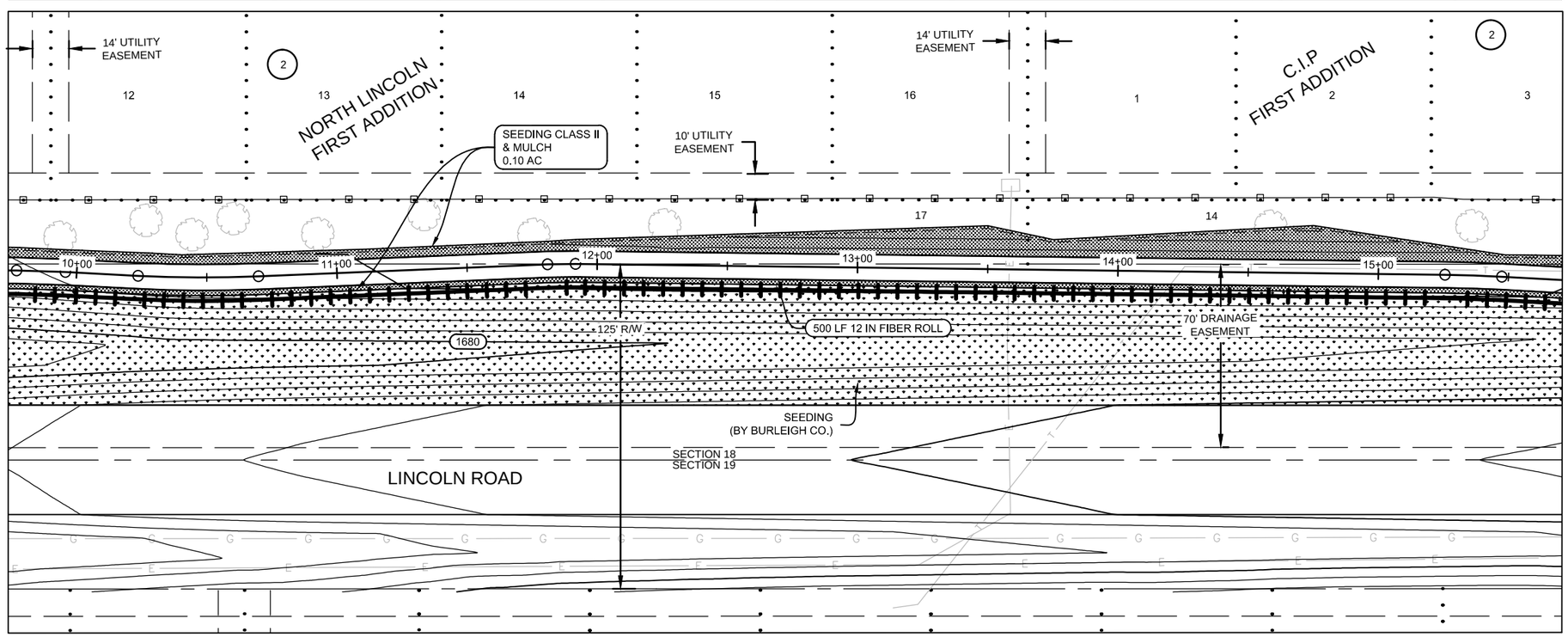
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	77	2





SEEDING CLASS II
STA 5+00 TO STA 10+00 = 0.07 AC
STA 10+00 TO STA 15+00 = 0.10 AC
TOTAL = 0.17 AC

HYDRAULIC MULCH
STA 5+00 TO STA 10+00 = 0.07 AC
STA 10+00 TO STA 15+00 = 0.10 AC
TOTAL = 0.17 AC

FIBER ROLL 12 IN
STA 5+00 TO STA 10+00 = 500 LF
STA 10+00 TO STA 15+00 = 500 LF
TOTAL = 1,000 LF

NOTES
1. CONTRACTOR SHALL SEED & MULCH ONLY THE FIRST TWO FEET SOUTH OF THE TRAIL BETWEEN STA 1+40 TO STA 23+75. BURLEIGH COUNTY SHALL SEED & MULCH THE REST OF THE DITCH.
2. FIBER ROLL SHALL BE INSTALLED 3' SOUTH OF TRAIL FROM STA 1+40 TO STA 23+75.

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

PERMANENT
EROSION CONTROL
STA 5+00 - STA 15+00

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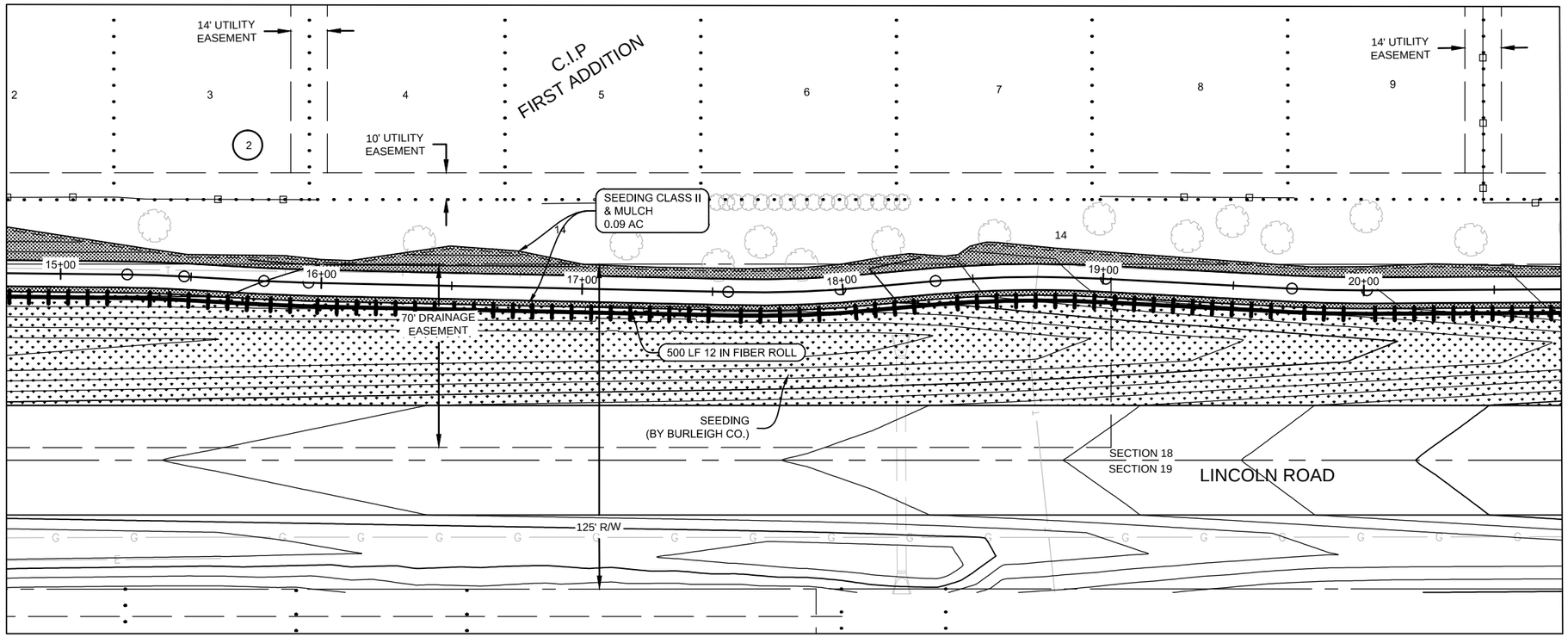
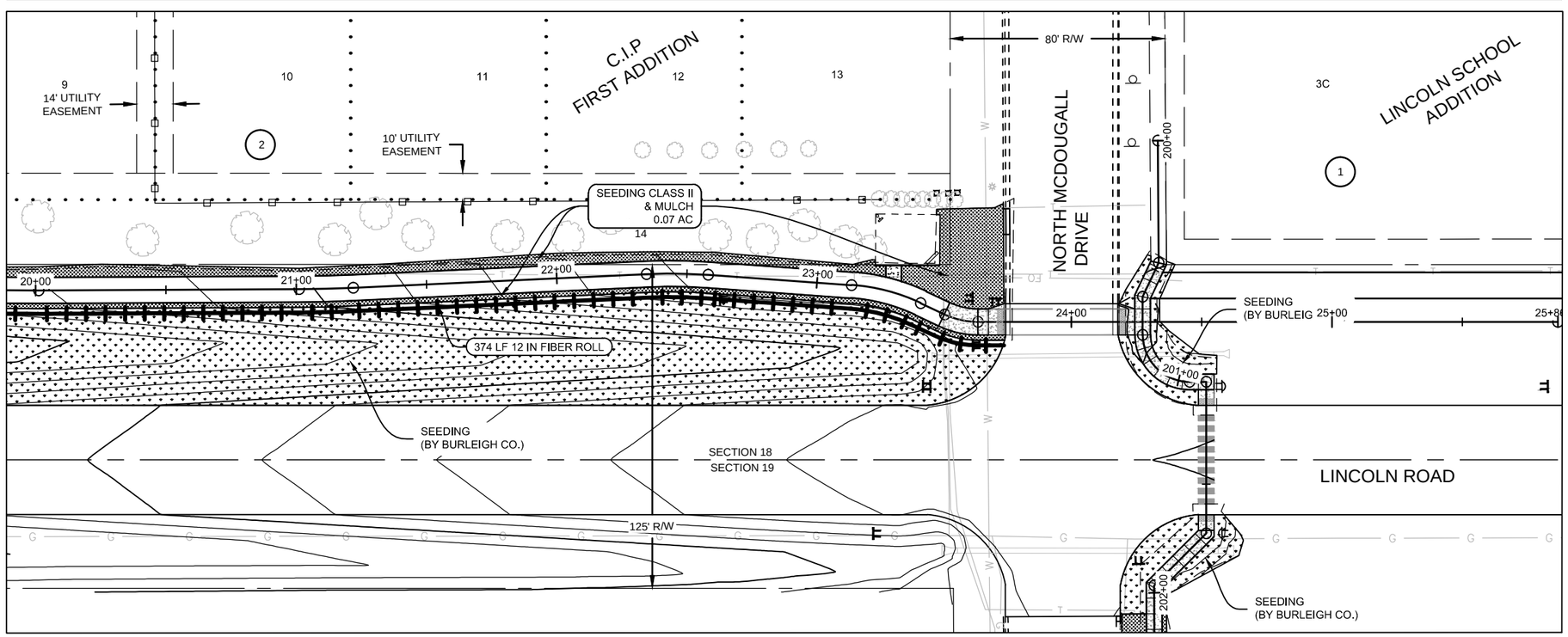
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	77	3





SEEDING CLASS II
STA 15+00 TO STA 20+00 = 0.09 AC
STA 20+00 TO STA 23+74 = 0.07 AC
TOTAL = 0.16 AC

HYDRAULIC MULCH
STA 15+00 TO STA 20+00 = 0.09 AC
STA 20+00 TO STA 23+74 = 0.07 AC
TOTAL = 0.16 AC

FIBER ROLL 12 IN
STA 15+00 TO STA 20+00 = 500 LF
STA 20+00 TO STA 23+74 = 374 LF
TOTAL = 874 LF

NOTES
1. CONTRACTOR SHALL SEED & MULCH ONLY THE FIRST TWO FEET SOUTH OF THE TRAIL BETWEEN STA 1+40 TO STA 23+75. BURLEIGH COUNTY SHALL SEED & MULCH THE REST OF THE DITCH.
2. FIBER ROLL SHALL BE INSTALLED 3' SOUTH OF TRAIL FROM STA 1+40 TO STA 23+75.

N

50 0 50
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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

PERMANENT
EROSION CONTROL
STA 15+00 - STA 24+68

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CB	NAM	1413104	4/17/2015

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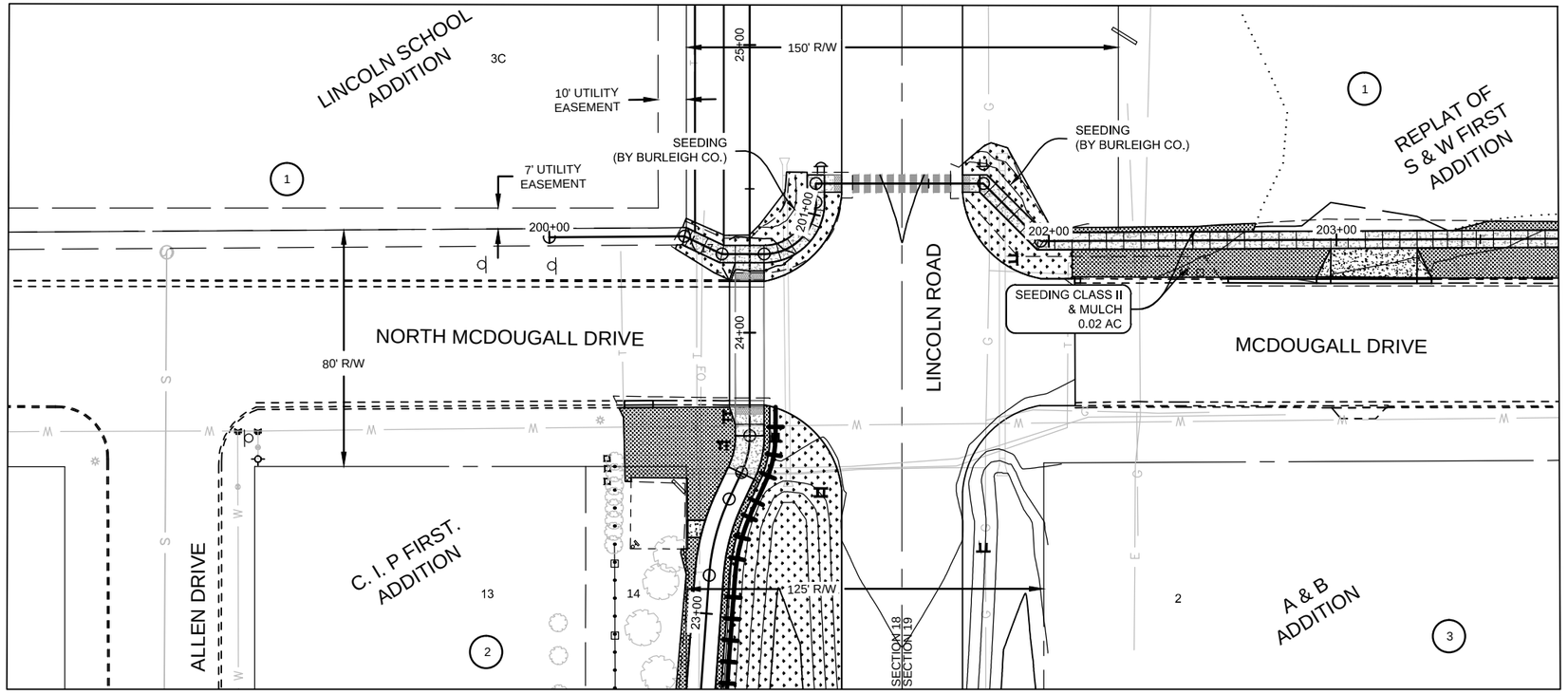
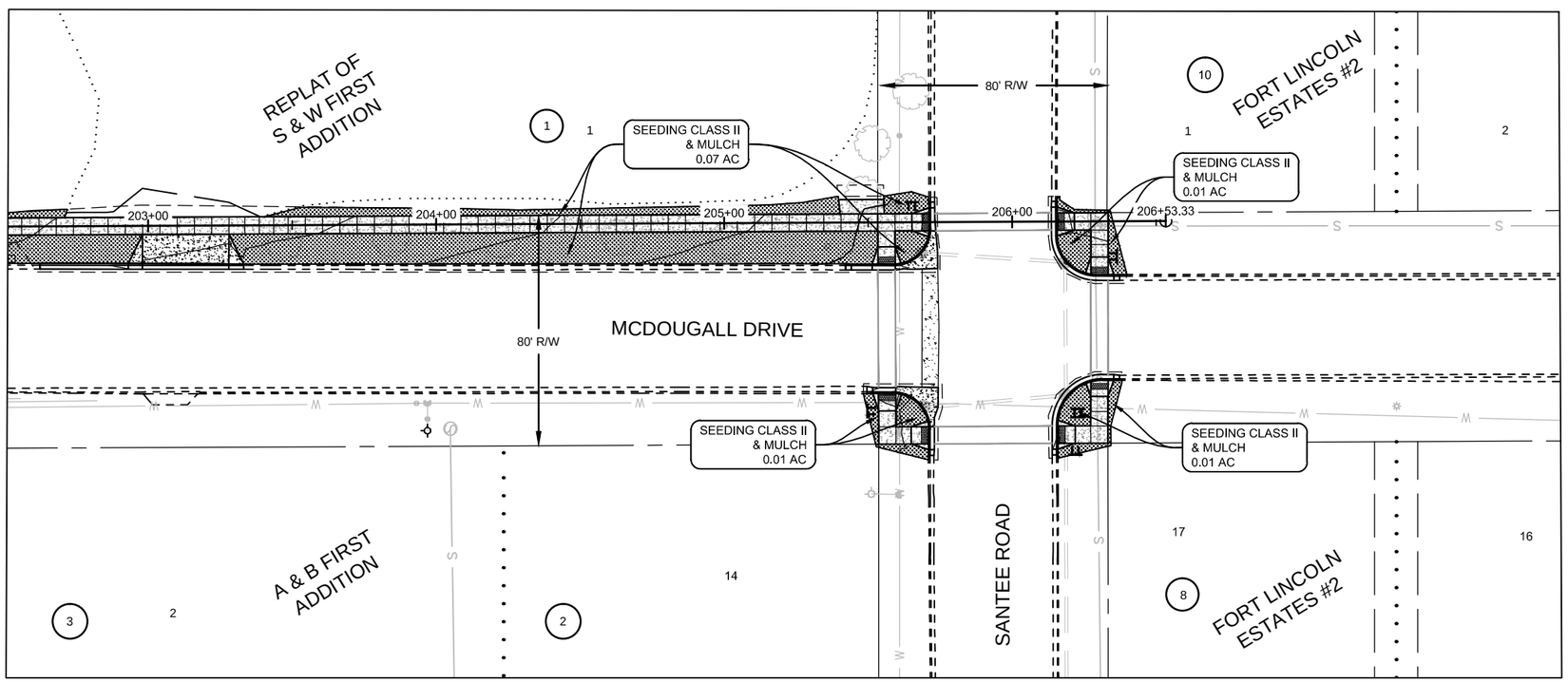
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	77	4





SEEDING CLASS II
STA 202+09 TO STA 202+99 = 0.02 AC
STA 203+29 TO STA 205+72 = 0.07 AC
STA 205+49 RT TO STA 205+71 RT = 0.01 AC
STA 206+17 RT TO STA 206+39 RT = 0.01 AC
STA 206+35 LT TO STA 206+40 RT = 0.01 AC
TOTAL = 0.12 AC

HYDRAULIC MULCH
STA 202+09 TO STA 202+99 = 0.02 AC
STA 203+29 TO STA 205+72 = 0.07 AC
STA 205+49 RT TO STA 205+71 RT = 0.01 AC
STA 206+17 RT TO STA 206+39 RT = 0.01 AC
STA 206+35 LT TO STA 206+40 RT = 0.01 AC
TOTAL = 0.12 AC

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

PERMANENT
EROSION CONTROL
STA 200+00 - STA 206+58

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING	BEARING
LINCOLN TRAIL				
BP	-0+75	400,945.47	1,917,677.10	S 89° 14' 11.02" E
PC	1+50.06	400,942.47	1,917,902.14	
PI	1+55.45	400,942.40	1,917,907.52	N 70° 24' 41.28" E
PT	1+60.72	400,944.20	1,917,912.60	
PC	2+06.45	400,959.54	1,917,955.68	
PI	2+20.35	400,964.20	1,917,968.78	S 88° 35' 24.29" E
PT	2+33.94	400,963.85	1,917,982.67	
PC	3+71.63	400,960.47	1,918,120.33	
PI	3+85.66	400,960.12	1,918,134.35	N 88° 11' 48.37" E
PT	3+99.67	400,960.56	1,918,148.36	
PC	5+77.82	400,966.17	1,918,326.42	
PI	5+97.07	400,966.77	1,918,345.66	S 87° 23' 32.96" E
PT	6+16.31	400,965.90	1,918,364.90	
PC	8+81.46	400,953.83	1,918,629.78	
PI	8+86.18	400,953.62	1,918,634.49	S 88° 28' 24.83" E
PT	8+90.89	400,953.49	1,918,639.20	
PC	9+76.84	400,951.20	1,918,725.12	
PI	9+86.23	400,950.95	1,918,734.50	S 86° 19' 16.72" E
PT	9+95.62	400,950.35	1,918,743.88	
PC	10+23.60	400,948.56	1,918,771.80	
PI	10+46.71	400,947.07	1,918,794.86	N 88° 23' 09.25" E
PT	10+69.79	400,947.72	1,918,817.97	
PC	11+80.89	400,950.85	1,918,929.02	
PI	11+86.28	400,951.01	1,918,934.41	S 88° 31' 39.56" E
PT	11+91.66	400,950.87	1,918,939.79	
PC	15+25.51	400,942.29	1,919,273.53	
PI	15+36.44	400,942.01	1,919,284.46	S 86° 01' 26.45" E
PT	15+47.36	400,941.25	1,919,295.36	
PC	15+78.00	400,939.13	1,919,325.92	
PI	15+86.54	400,938.53	1,919,334.44	S 87° 58' 50.62" E
PT	15+95.08	400,938.23	1,919,342.97	
PC	17+56.00	400,932.56	1,919,503.80	
PI	17+77.52	400,931.80	1,919,525.30	N 86° 11' 34.86" E
PT	17+99.01	400,932.90	1,919,546.79	
PC	18+35.69	400,935.72	1,919,583.36	
PI	18+68.39	400,937.84	1,919,615.99	S 86° 13' 55.72" E
PT	19+00.99	400,935.69	1,919,648.62	
PC	19+72.47	400,930.99	1,919,719.94	
PI	19+86.84	400,930.05	1,919,734.28	S 89° 31' 30.06" E
PT	20+01.20	400,929.93	1,919,748.65	
PC	21+01.13	400,929.10	1,919,848.58	
PI	21+11.48	400,929.02	1,919,858.93	N 88° 06' 09.44" E
PT	21+21.83	400,929.36	1,919,869.28	
PC	22+34.45	400,933.09	1,919,981.83	
PI	22+46.29	400,933.48	1,919,993.67	S 85° 07' 05.37" E
PT	22+58.11	400,932.47	1,920,005.47	
PC	23+13.32	400,927.77	1,920,060.47	
PI	23+27.22	400,926.59	1,920,074.33	S 64° 06' 26.10" E
PT	23+40.82	400,920.52	1,920,086.84	
PC	23+51.00	400,916.07	1,920,096.00	
PI	23+57.69	400,913.15	1,920,102.02	S 89° 14' 11.00" E
PT	23+64.16	400,913.06	1,920,108.71	
EP	25+86.66	400,910.09	1,920,331.19	

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING	BEARING
BENTEEN SIDEWALK				
BP	100+00.00	400,763.98	1,917,832.07	N00° 48' 21.19" E
PI	100+06.88	400,770.86	1,917,832.16	N19° 14' 52.75" E
PI	100+27.29	400,790.12	1,917,838.89	N00° 45' 45.01" E
PC	100+79.46	400,842.30	1,917,839.58	
PI	101+01.46	400,864.29	1,917,839.88	N89° 14' 11.02" W
PT	101+14.02	400,864.59	1,917,817.88	
PI	101+17.35	400,864.63	1,917,814.55	N00° 45' 48.98" E
PI	101+69.35	400,916.63	1,917,815.24	S89° 14' 11.02" E
PC	101+72.35	400,916.59	1,917,818.24	
PI	101+94.35	400,916.29	1,917,840.24	N00° 45' 43.90" E
PT	102+06.91	400,938.29	1,917,840.53	
EP	102+36.91	400,968.29	1,917,840.93	

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING	BEARING
McDOUGALL SIDEWALK				
PI	200+00.00	400,981.73	1,920,178.65	S 00° 23' 04.45" W
PI	200+46.95	400,934.79	1,920,178.34	S 26° 08' 20.44" W
PI	200+61.33	400,921.87	1,920,172.00	S 00° 43' 52.54" W
PC	200+76.00	400,907.21	1,920,171.81	
PI	200+93.99	400,889.22	1,920,171.58	S 89° 14' 11.02" E
PT	201+04.26	400,888.98	1,920,189.57	
PI	201+10.71	400,888.89	1,920,196.02	S 00° 45' 50.30" W
PI	201+68.95	400,830.66	1,920,195.25	S 45° 45' 49.68" W
PI	201+97.22	400,810.94	1,920,174.99	S 00° 29' 27.29" W
PI	206+53.33	400,354.85	1,920,171.08	

BASIS OF SURVEY

ALL CONTOURS, ELEVATIONS AND COORDINATES FOR THE PROJECT ARE BASED ON NAD 1983 STATE PLANE COORDINATE SYSTEM, NORTH DAKOTA SOUTH 3302 ZONE (1996 ADJUSTMENT), INTERNATIONAL FEET, AND NAVD-88.

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

ALIGNMENT TABLE

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	81	2

ALIGNMENT CURVE DATA

LINCOLN TRAIL

	C1	C2	C3	C4
PI STA	1+55.45	2+20.35	3+85.66	5+97.07
DELTA	20° 21' 07.70"	20° 59' 54.43"	3° 12' 47.34"	4° 24' 38.67"
DA	190° 59' 09.36"	76° 23' 39.74"	11° 27' 32.96"	11° 27' 32.96"
R	30.00	75.00	500.00	500.00
T	5.39	13.90	14.02	19.26
L	10.66	27.49	28.04	38.49
LC	10.60	27.33	28.04	38.48

	C5	C6	C7	C8
PI STA	8+86.18	9+86.23	10+46.71	11+86.28
DELTA	1° 04' 51.87"	2° 09' 08.11"	5° 17' 34.03"	3° 05' 11.19"
DA	11° 27' 32.96"	11° 27' 32.96"	11° 27' 32.96"	28° 38' 52.40"
R	500.00	500.00	500.00	200.00
T	4.72	9.39	23.11	5.39
L	9.43	18.78	46.19	10.77
LC	9.43	18.78	46.17	10.77

	C9	C10	C11	C12
PI STA	15+36.44	15+86.54	17+77.52	18+68.39
DELTA	2° 30' 13.11"	1° 57' 24.17"	4° 55' 40.86"	7° 28' 57.46"
DA	11° 27' 32.96"	11° 27' 32.96"	11° 27' 32.96"	11° 27' 32.96"
R	500.00	500.00	500.00	500.00
T	10.93	8.54	21.52	32.70
L	21.85	17.08	43.01	65.30
LC	21.85	17.08	42.99	65.25

	C13	C14	C15	C16
PI STA	19+86.84	21+11.48	22+46.29	23+27.22
DELTA	3° 17' 34.35"	2° 22' 20.49"	6° 46' 45.19"	21° 00' 39.27"
DA	11° 27' 32.96"	11° 27' 32.96"	28° 38' 52.40"	76° 23' 39.74"
R	500.00	500.00	200.00	75.00
T	14.37	10.35	11.85	13.91
L	28.74	20.70	23.66	27.50
LC	28.73	20.70	23.65	27.35

	C17			
PI STA	23+57.69			
DELTA	25° 07' 44.90"			
DA	190° 59' 09.36"			
R	30.00			
T	6.69			
L	13.16			
LC	13.05			

ALIGNMENT CURVE DATA

BENTEEN & McDOUGALL SIDEWALKS

	C18	C19	C20
PI STA	100+99.33	101+98.78	200+93.99
DELTA	89° 59' 55.50"	90° 00' 00.18"	89° 58' 03.57"
DA	260° 26' 07.31"	318° 18' 35.60"	318° 18' 35.60"
R	22.00	18.00	18.00
T	22.00	18.00	17.99
L	34.56	28.27	28.26
LC	31.11	25.46	25.45

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	DESCRIPTION
536870912	401005.138	1916325.018	1661.145	CP1
536871835	400751.747	1921250.793	1721.506	CHK102
536871836	400914.278	1916034.243	1666.39	SEC COR
536872345	400843.819	1921326.875	1724.515	SEC COR
536873226	400989.458	1916002.271	1661.016	PROP COR
536873227	400865.851	1915997.297	1663.702	CITY BISMK MRKR
536874421	400965.247	1919721.534	1687.589	PROP COR
536874422	400963.089	1919871.538	1691.438	PROP COR
536874456	400819.595	1919339.696	1687.389	PROP COR
536874460	400969.116	1919421.441	1688.689	PROP COR
536874470	400821.256	1919208.635	1687.369	PROP COR
536874500	400823.943	1918946.567	1686.635	PROP COR
536874583	400989.765	1917910.888	1669.33	PRP COR

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

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ALIGNMENT TABLE
& SURVEY CONTROL POINTS

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)		6	
G20-1a-60	60"x24"	ROAD WORK NEXT __ MILES		34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)		26	
G20-2a-48	**48"x24"**	**END ROAD WORK**	**8**	**19**	**152**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME		18	
G20-10-108	108"x48"	CONTRACTOR SIGN		64	
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS		37	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW		30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT		59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT		23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)		7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)		7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)		7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)		7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)		7	
R1-1-48	48"x48"	STOP		32	
R1-1a-18	**18"x18"**	**STOP and SLOW PADDLE Back to Back**	**2**	**5**	**10**
R1-2-60	60"x60"	YIELD		29	
R2-1-48	48"x60"	SPEED LIMIT __		39	
R2-1a-24	24"x18"	MINIMUM FEE $80 (Mounted on Speed Limit post)		10	
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT		35	
R4-1-48	48"x60"	DO NOT PASS		39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT		13	
R7-1-12	12"x18"	NO PARKING		11	
R9-9-30	**24" X 12"**	**SIDEWALK CLOSED (MOUNTED ON TYPE 1 BARRICADES)**	**2**	**11**	**22**
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED		28	
R11-2a-48	48"x30"	STREET CLOSED		28	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC		31	
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW		35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-6-48	48"x24"	LARGE ARROW		26	
W3-1-48	48"x48"	STOP AHEAD SYMBOL		35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL		35	
W3-4-48	**48"x48"**	**BE PREPARED TO STOP**	**2**	**35**	**70**
W3-5-48	48"x48"	SPEED REDUCTION AHEAD		35	
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL		35	
W8-1-48	48"x48"	BUMP		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF		35	
W8-11-48	48"x48"	UNEVEN LANES		35	
W8-12-48	48"x48"	NO CENTER STRIPE		35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY		35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or __ FT.		35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT.		35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL		35	
W13-1-24	24"x24"	__ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)		11	
W13-4-48	48"x60"	RAMP ARROW		39	
W14-3-48	48"x36"	NO PASSING ZONE		23	
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**8**	**35**	**280**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT.		35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT.		35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or __ FT.		35	
W20-7a-48	**48"x48"**	**FLAGGING SYMBOL**	**2**	**35**	**70**
W20-7k-24	24"x18"	__ FEET (Mounted of warning sign post)		10	
W20-8-48	48"x48"	STREET CLOSED		35	
W20-51-48	48"x48"	EQUIPMENT WORKING		35	
W20-52-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)		12	
W21-1a-48	48"x48"	WORKERS SYMBOL		35	
W21-2-48	48"x48"	FRESH OIL		35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT		35	
W21-5-48	48"x48"	SHOULDER WORK		35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED		35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT.		35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD		35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT.		35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY		35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK		35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)		11	

SPECIAL SIGNS

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**604**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	**FLAGGING**	**MHR**	**100**
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH	
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH	
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH	
704-1050	**TYPE I BARRICADES**	**EACH**	**2**
704-1051	TYPE II BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	
704-1060	DELINEATOR DRUMS	EACH	
704-1065	TRAFFIC CONES	EACH	
704-1067	**TUBULAR MARKERS**	**EACH**	**72**
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH	
704-1095	TYPE B FLASHERS	EACH	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
752-0911	TEMPORARY SAFETY FENCE	LF	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	
762-1500	OBLITERATION OF PVMT MK	SF	
772-2110	FLASHING BEACON - POST MOUNTED	EACH	

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

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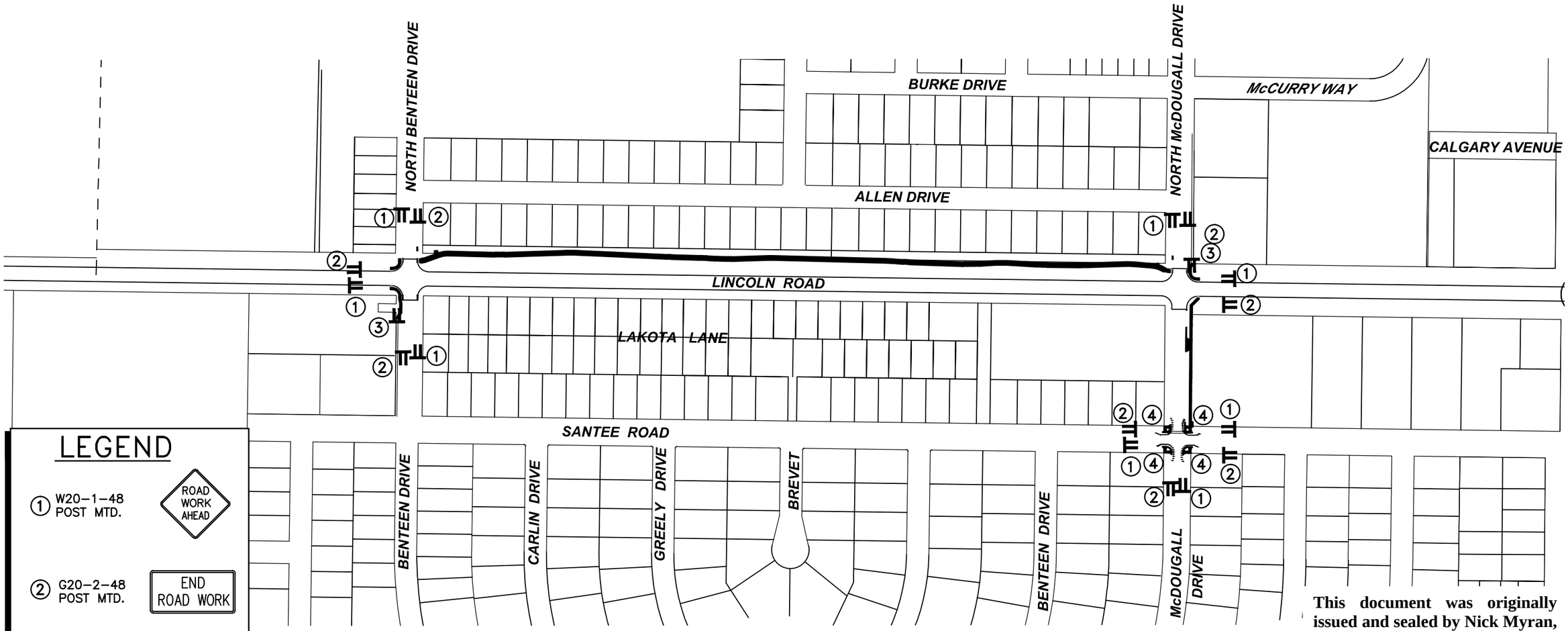
Traffic Control Devices List

LINCOLN SHARED USE PATH

CITY OF LINCOLN

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	100	2



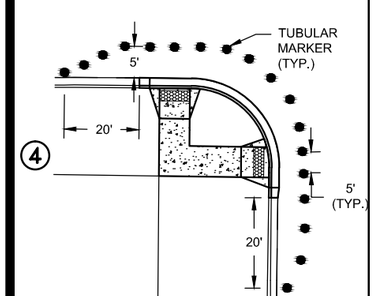
LEGEND

① W20-1-48 POST MTD. — ROAD WORK AHEAD

② G20-2-48 POST MTD. — END ROAD WORK

③ R9-9-30 BARRICADE MTD. — SIDEWALK CLOSED

④



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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

WORK ZONE
TRAFFIC CONTROL

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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Apr 15, 2015 – 9:25am – P:\City\ND\Lincoln\1413104–Lincoln\BG16–LincolnSchool–TAPGrantApplication\CAD\ConstDwgs\1413104–BG16–100–TrafficControlSummary.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	TAC-0008(029)	110	1

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	Sign Support Length 2nd LF	Sign Support Length 3rd LF	Sign Support Length 4th LF	Support Size	Max Post Len LF	Sleeve Length 1st LF	Sleeve Length 2nd LF	Sleeve Length 3rd LF	Sleeve Length 4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
101+20. Lt	W11-2			8.3	12.6				2.5 x 2.5 12 ga	12.9						1	4	3 x 3 7 ga				SA A, Mount with W16-9P-24
1+52 Rt	R5-3		3.5	4.0	11.0				2.25 x 2.25 12 ga	11.1						1	4	2.5 x 2.5 12 ga				SA B, Mount with D11-1-24 and M4-14-12
1+53 Lt	D11-1		3.5		9.2				2 x 2 12 ga	15.9						1	4	2.25 x 2.25 12 ga				SA D, Mount with M4-6-12
2+59 Lt	W1-4L	102		2.3	9.8				2 x 2 12 ga	17.8						1	4	2.25 x 2.25 12 ga				
2+74 Rt	W11-2			8.3	12.6				2.5 x 2.5 12 ga	12.9						1	4	3 x 3 7 ga				SA A, Mount with W16-9P-24
22+89 Rt	W1-4R	102		2.3	9.8				2 x 2 12 ga	17.8						1	4	2.25 x 2.25 12 ga				
23+53 Rt	W11-2			8.3	12.6				2.5 x 2.5 12 ga	12.9						1	4	3 x 3 7 ga				SA A, Mount with W16-9P-24
23+61 Lt	R5-3		3.5	4.0	11.0				2.25 x 2.25 12 ga	11.1						1	4	2.5 x 2.5 12 ga				SA B, Mount with D11-1-24 and M4-14-12
23+63 Rt	D11-1		3.5		9.5				2 x 2 12 ga	15.9						1	4	2.25 x 2.25 12 ga				SA D, Mount with M4-6-12
201+16 Lt	W11-2			8.3	12.6				2.5 x 2.5 12 ga	12.9						1	4	3 x 3 7 ga				SA A, Mount with W16-9P-24
205+50 Rt	R1-1			0.8	12.2				2.25 x 2.25 12 ga	13.4	3.3				2 x 2 12 ga	1	4	3 x 3 7 ga	1		1	SA E, Mount with R1-3P-18 and snow emergency route
205+66 Lt	R1-1			0.8	10.7				2.5 x 2.5 12 ga	12.5						1	4	3 x 3 7 ga	1			SA C, Mount with R1-3P-18
206+22 Rt	R1-1			0.8	10.7				2.5 x 2.5 12 ga	12.5						1	4	3 x 3 7 ga	1			SA C, Mount with R1-3P-18
206+23 Rt	St				10.2				2 x 2 12 ga	10.8						1	4	2.25 x 2.25 12 ga	1			SA F, Reset street and emergency snow route signs
206+37 Rt	R1-1			0.8	10.7				2.5 x 2.5 12 ga	12.5						1	4	3 x 3 7 ga	1			SA C, Mount with R1-3P-18
Sub Total			14.0	49.0		**Total**	164.9									**Total**	60		5	0	1	
Grand Total			14.0	49.0		**Total**	164.9									**Total**	60		5	0	1	

Basis of Estimate
Sign Support Lengths

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

Areas where parking and/or pedestrian movement will occur - 84"
Bike route - 60"

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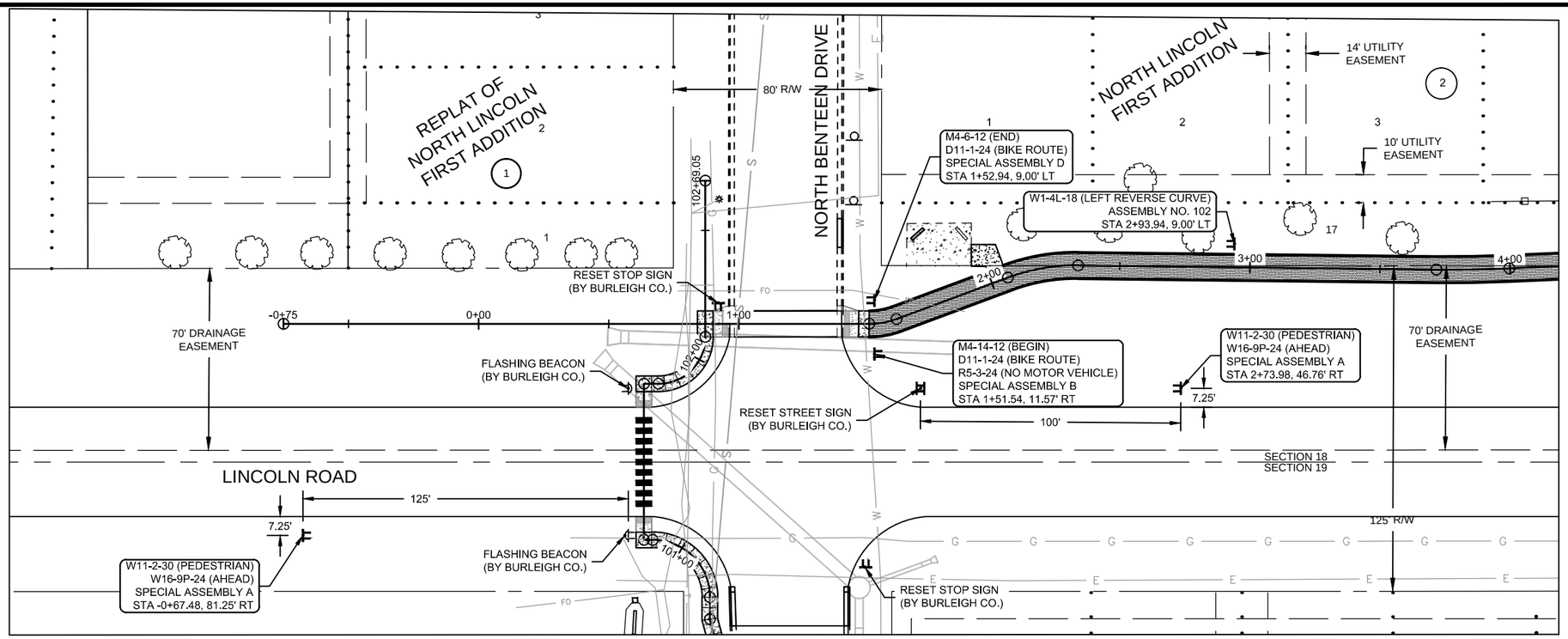
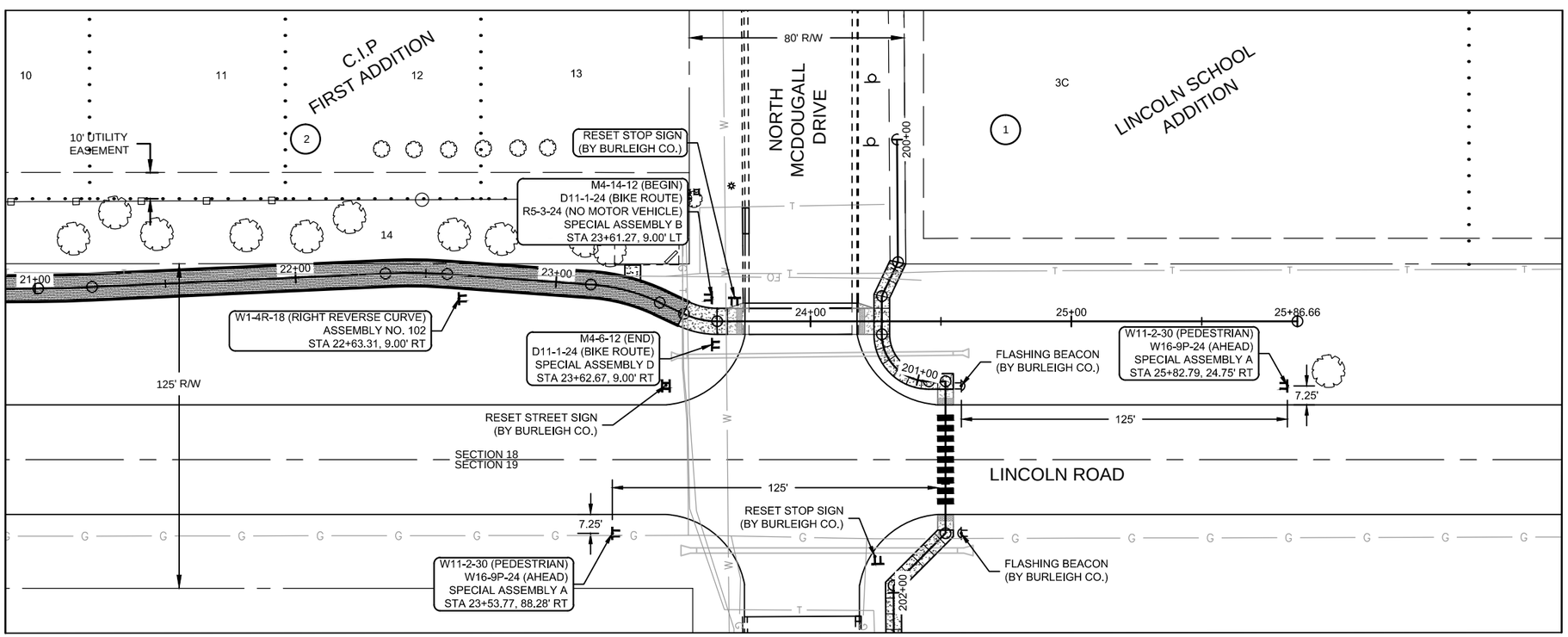
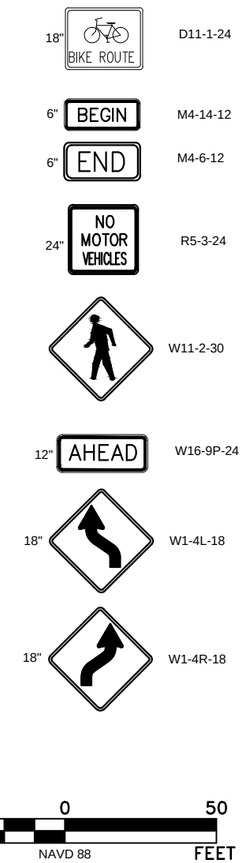
Sign Summary
Perforated Tube

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	110	2







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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

Sta -0+75 to Sta 4+00
Sta 21+00 to Sta 25+87
SIGN PLAN

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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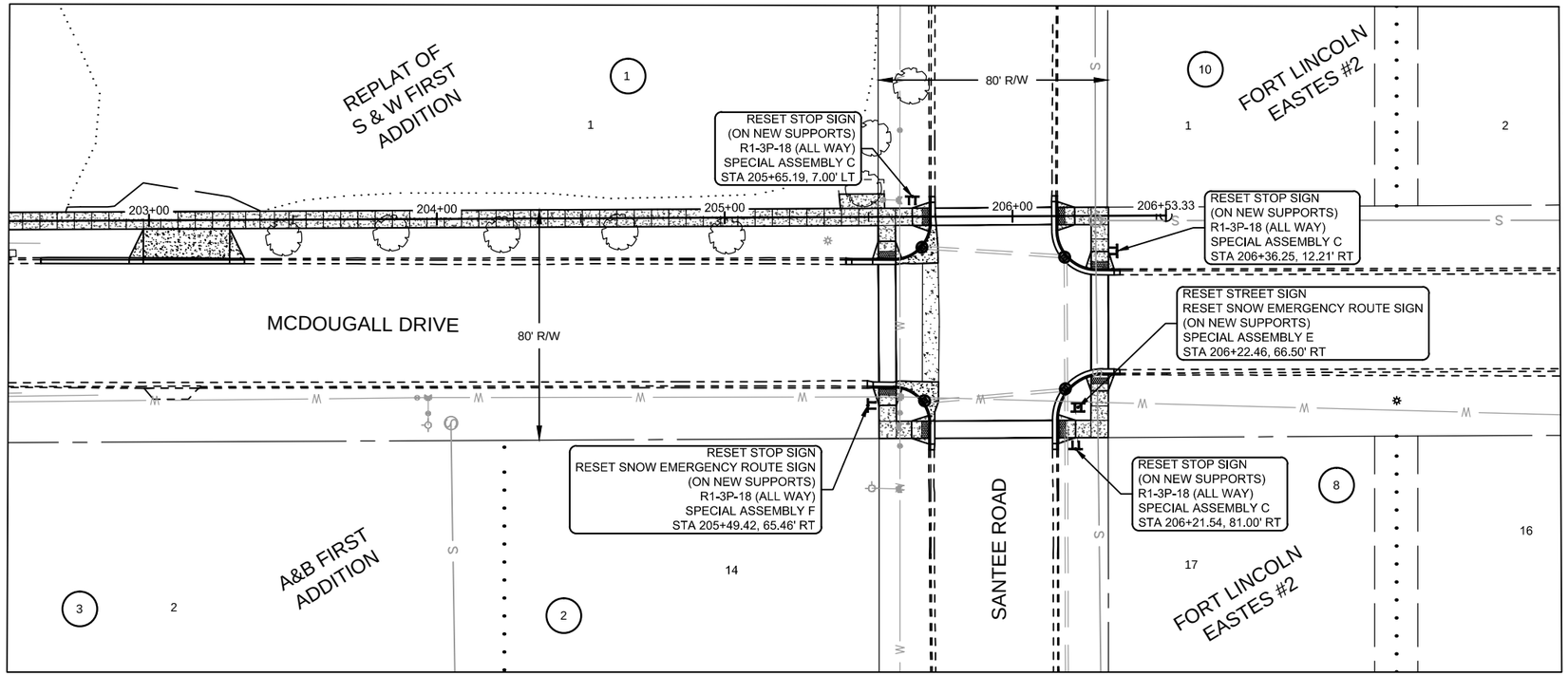
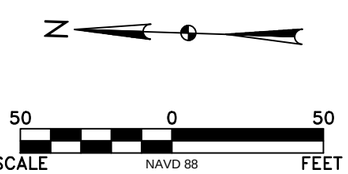
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	110	3



RESET SIGN PANEL

STA 205+49 RT =	1 EA
STA 205+65 LT =	1 EA
STA 206+36 LT =	1 EA
STA 206+22 RT =	1 EA
STA 206+22 RT =	1 EA
TOTAL =	5 EA



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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

Sta 203+00 to Sta 206+53
SIGN PLAN

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CB	NAM	1413104	4/17/2015

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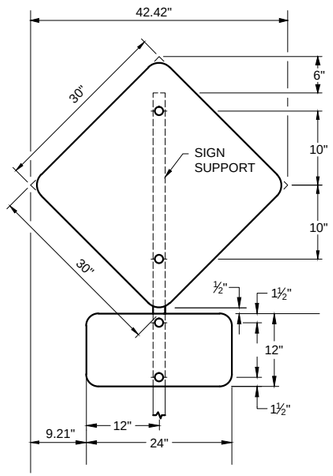
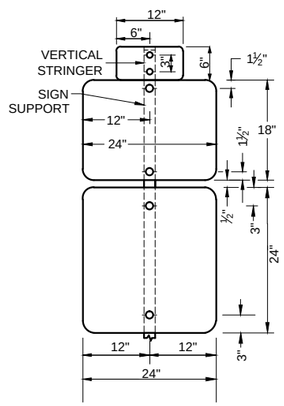
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	110	4



1 POST
SPECIAL ASSEMBLY A



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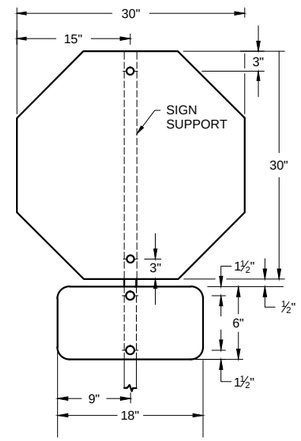

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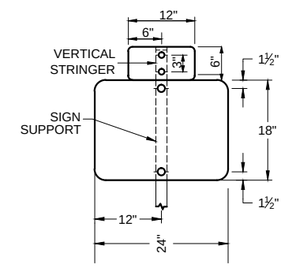
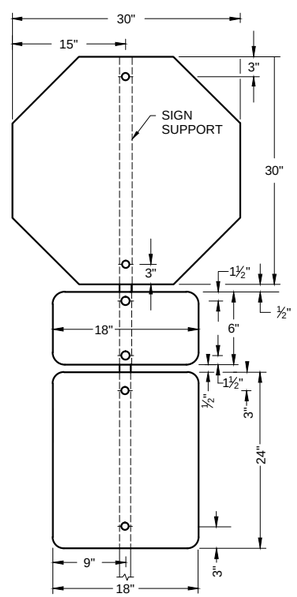
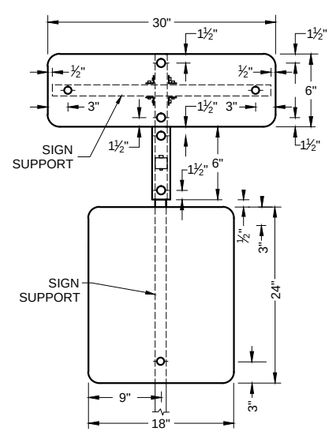
SPECIAL ASSEMBLY C



1 POST
SPECIAL ASSEMBLY D



1 POST
SPECIAL ASSEMBLY E
SEE NOTE 5



1 POST
SPECIAL ASSEMBLY F
SEE NOTE 6

NOTES:

1. SEE STANDARD D-754-25 FOR MOUNTING DETAILS.
2. THE MINIMUM SIGN BACKING MATERIAL THICKNESS SHALL BE 0.100 INCH.
3. PERFORATED SQUARE TUBE STRINGER SHALL BE $1\frac{3}{4}$" X $1\frac{3}{4}$ ".
4. ALL HOLES SHALL BE PUNCHED ROUND FOR 3/8 " BOLT.
5. SPECIAL ASSEMBLY E: "SNOW EMERGENCY ROUTE" SIGN SHALL BE INSTALLED TO FACE EAST.
6. SPECIAL ASSEMBLY F: "SNOW EMERGENCY ROUTE" SIGN SHALL BE INSTALLED TO FACE NORTH.

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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

SPECIAL SIGN ASSEMBLY DETAIL

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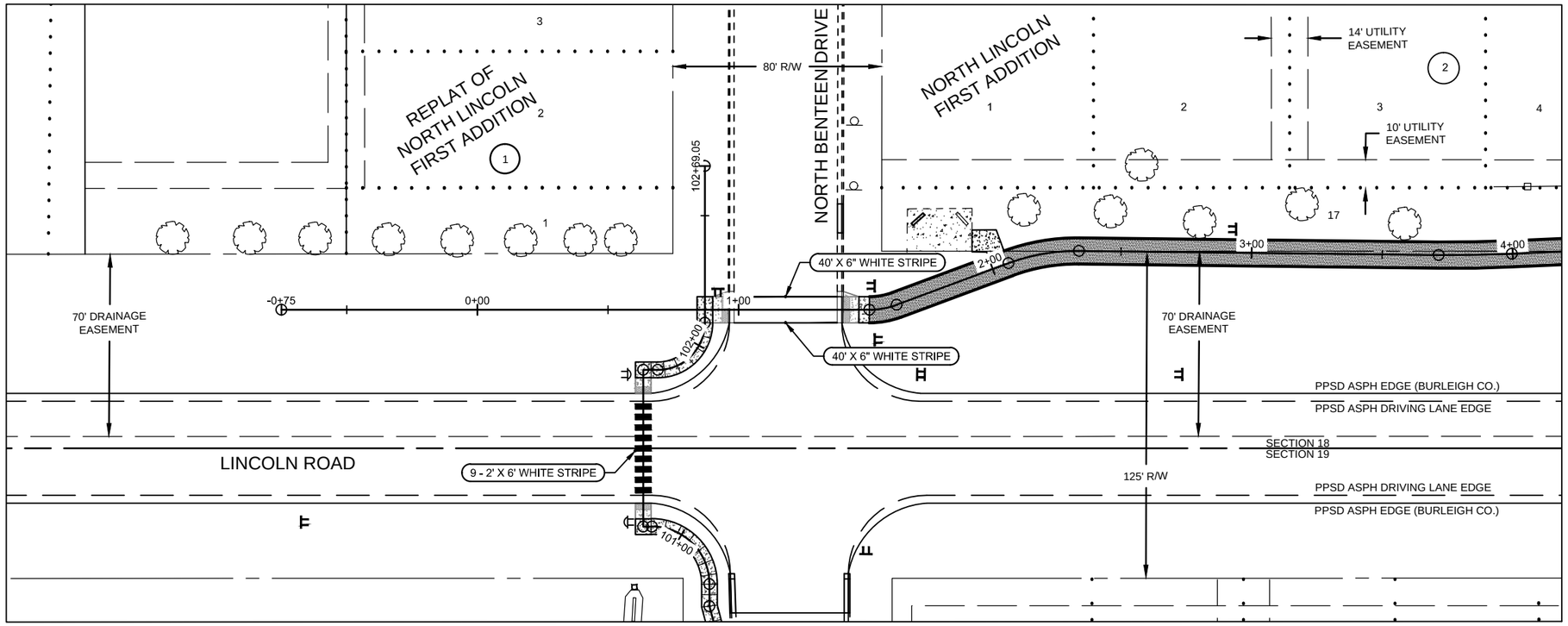
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	120	1

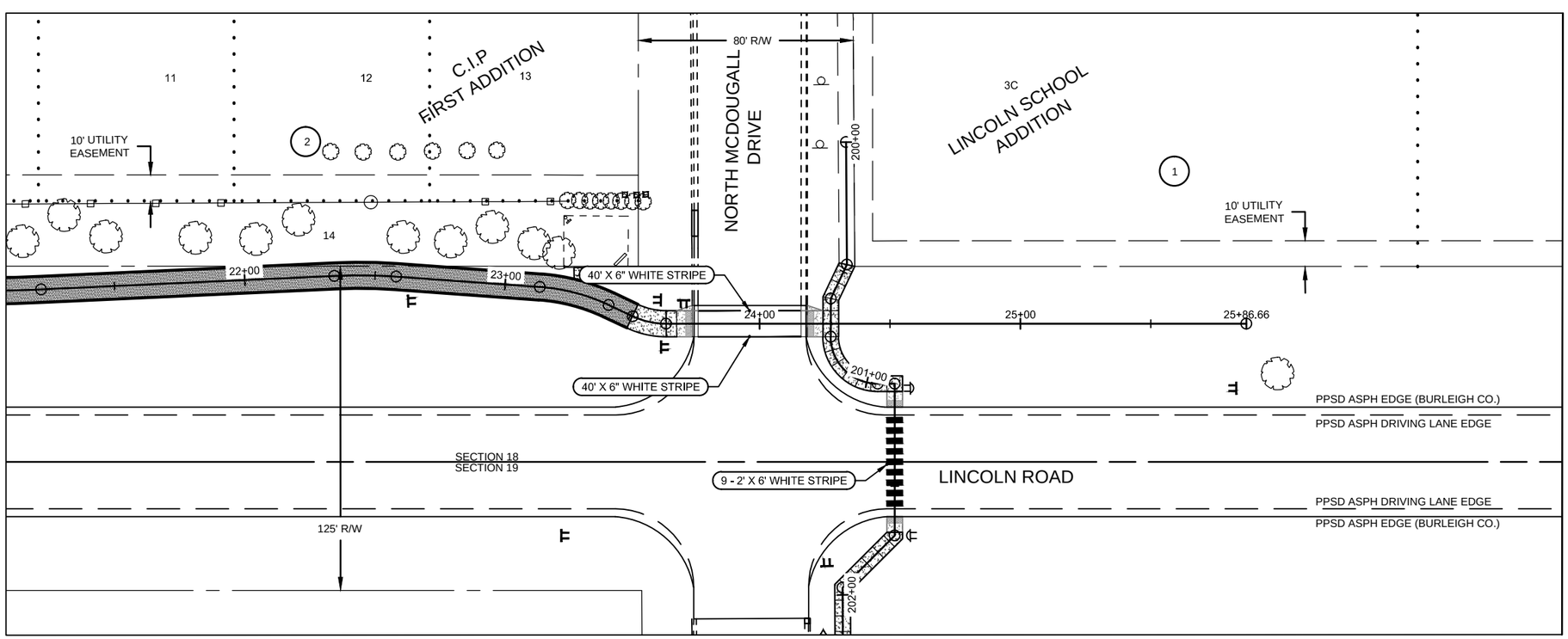


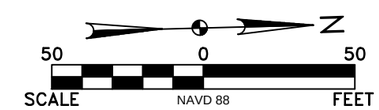
PREFORMED PATTERNED PVMT MK 6 IN LINE-GROOVED

STA 0+98 LT TO STA 1+38 LT =	40 LF
STA 0+98 RT TO STA 1+38 RT =	40 LF
STA 23+74 LT TO STA 24+18 LT =	40 LF
STA 23+74 RT TO STA 24+18 RT =	40 LF
TOTAL =	160 LF

PREFORMED PATTERNED PVMT MK 24 IN LINE-GROOVED

STA 0+61 RT TO STA 0+67 RT =	54 LF
STA 24+49 RT TO STA 24+55 RT =	54 LF
TOTAL =	108 LF





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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

Sta 0+00 to Sta 24+68
STRIPING PLAN

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CB	NAM	1413104	4/17/2015

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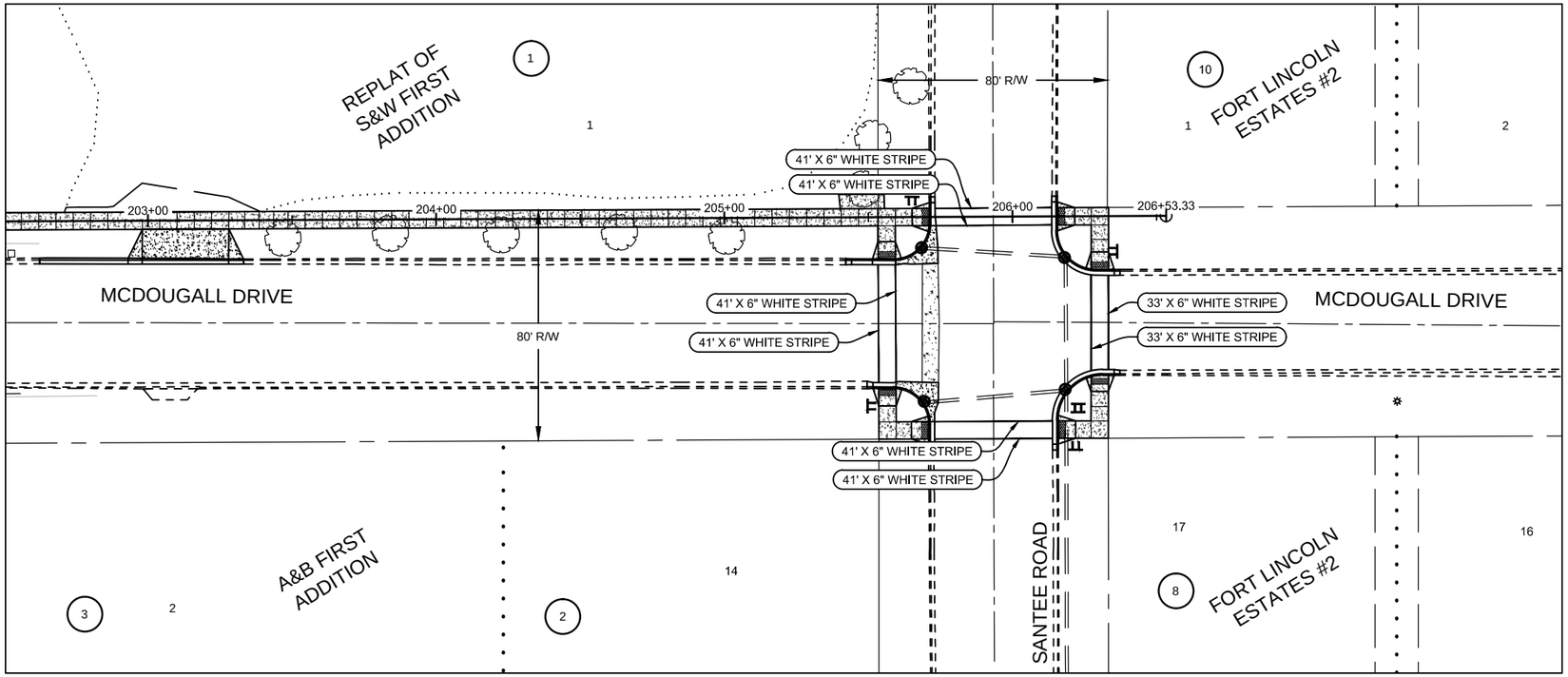
Apr 16, 2015 – 10:27am – P:\City\ND\Lincoln\1413104-Lincoln\BG16-LincolnSchool-TAPGrantApplication\CAD\ConstDwgs\1413104-BG16-120-PermStriping.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	120	2



PREFORMED PATTERNED PVMT MK 6 IN LINE-GROOVED
STA 205+53 RT = 41 LF
STA 205+59 RT = 41 LF
STA 205+74 LT TO STA 206+15 LT = 41 LF
STA 205+74 RT TO STA 206+15 RT = 41 LF
STA 205+74 RT TO STA 206+15 RT = 41 LF
STA 205+74 RT TO STA 206+15 RT = 41 LF
STA 206+27 RT = 33 LF
STA 206+33 RT = 33 LF
TOTAL = 312 LF

N

50 0 50
SCALE NAVD 88 FEET

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

Sta 205+53 to Sta 206+33
STRIPING PLAN

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CB	NAM	1413104	4/17/2015

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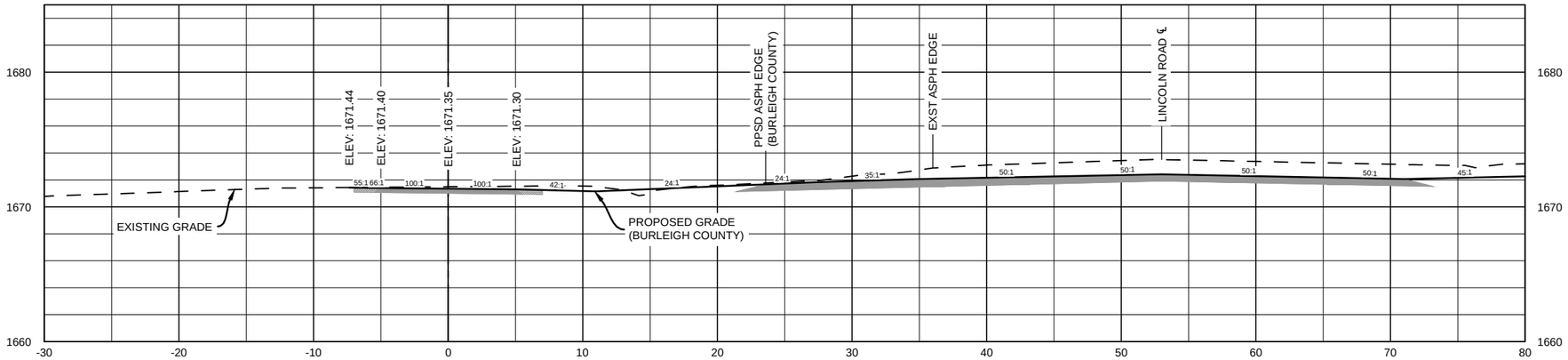
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	1

STA = 1+50.00



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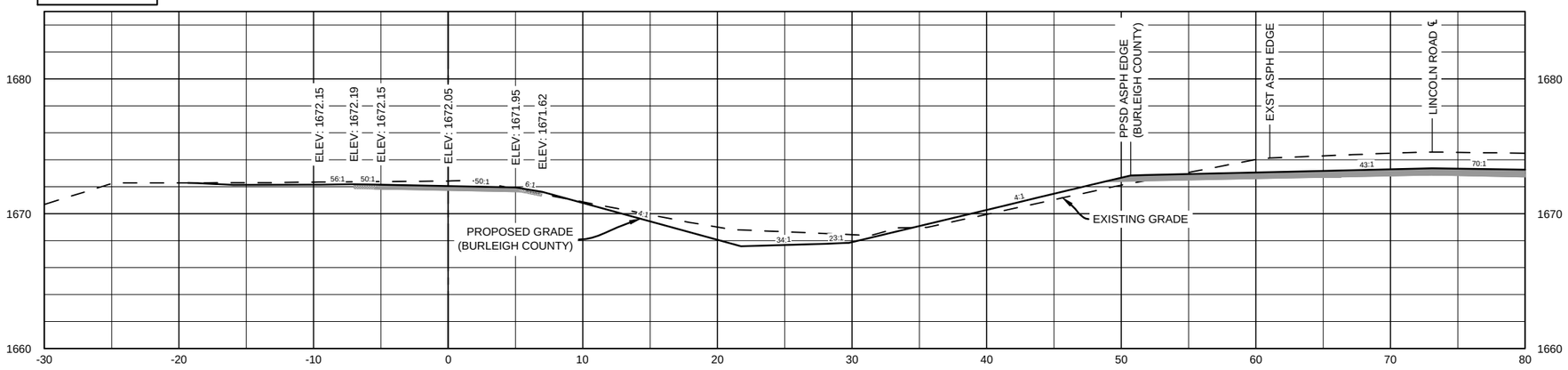

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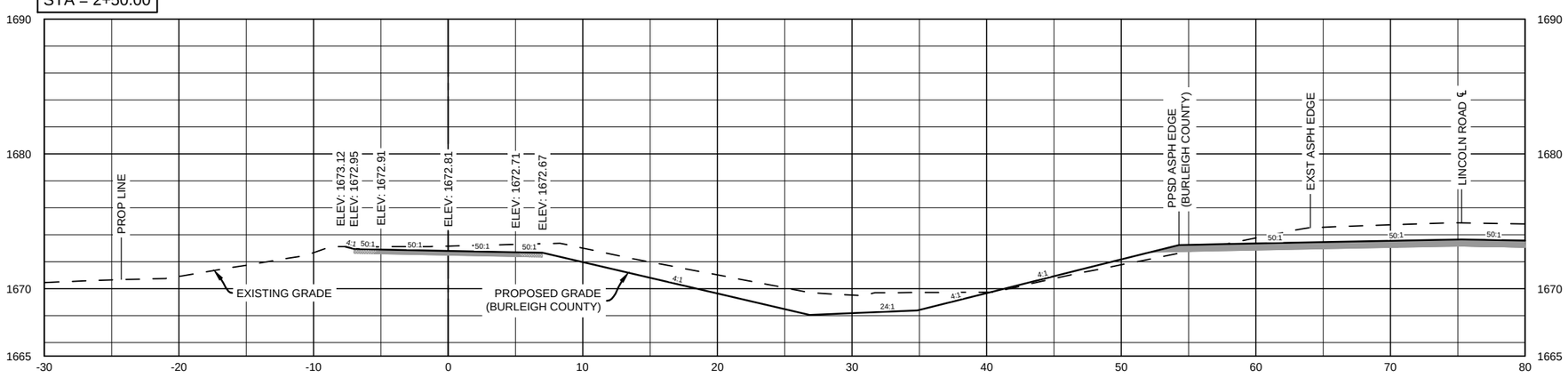

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 1+50 - STA 2+50

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CB	NAM	1413104	4/17/2015

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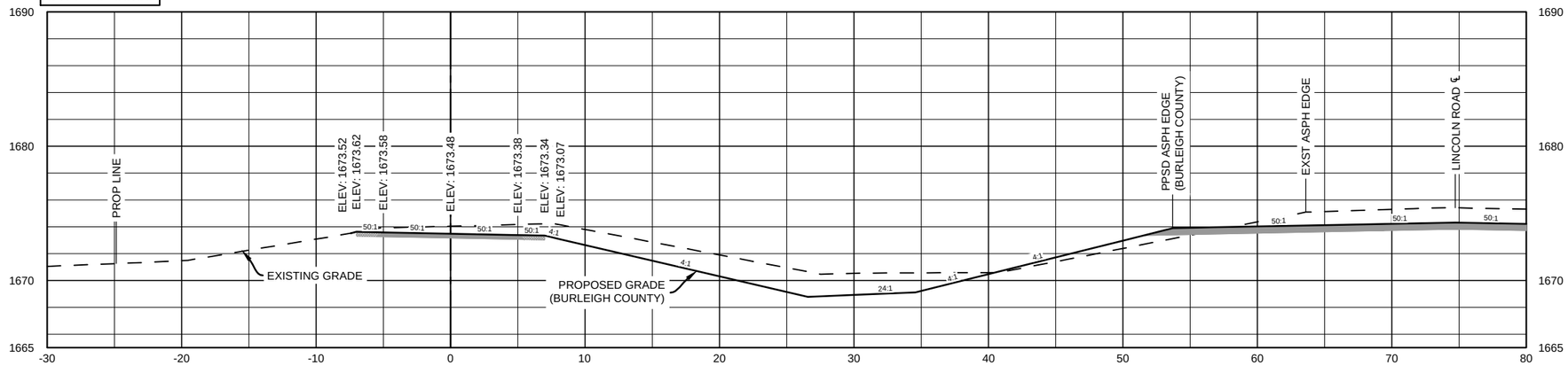
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	2

STA = 3+00.00



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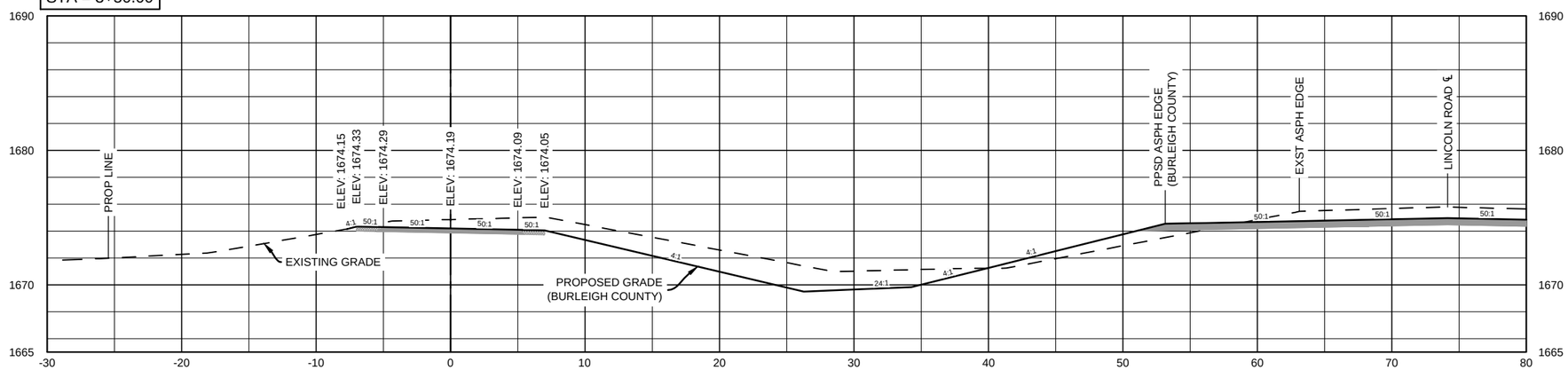

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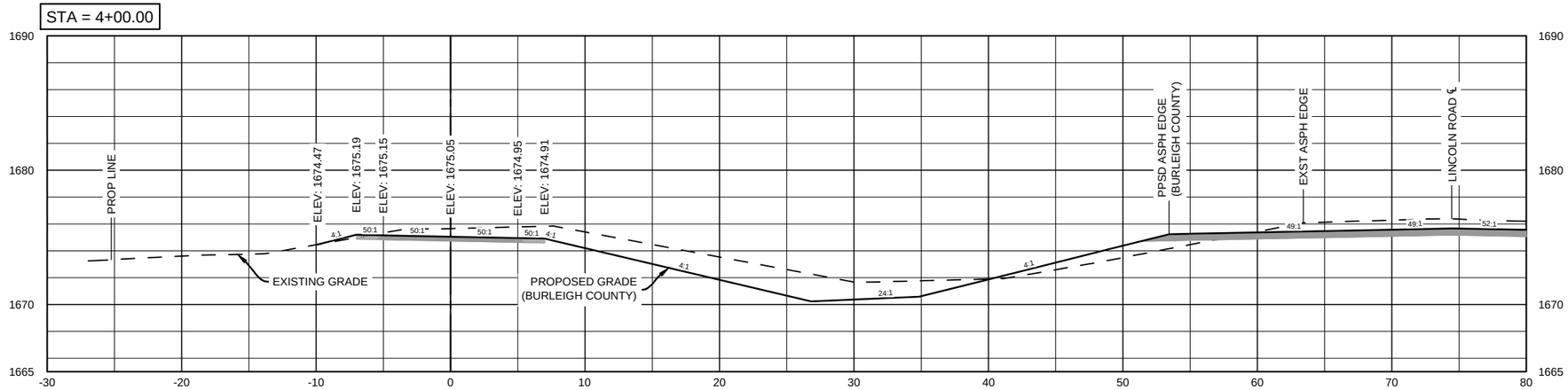

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 3+00 - STA 4+00

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CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	3

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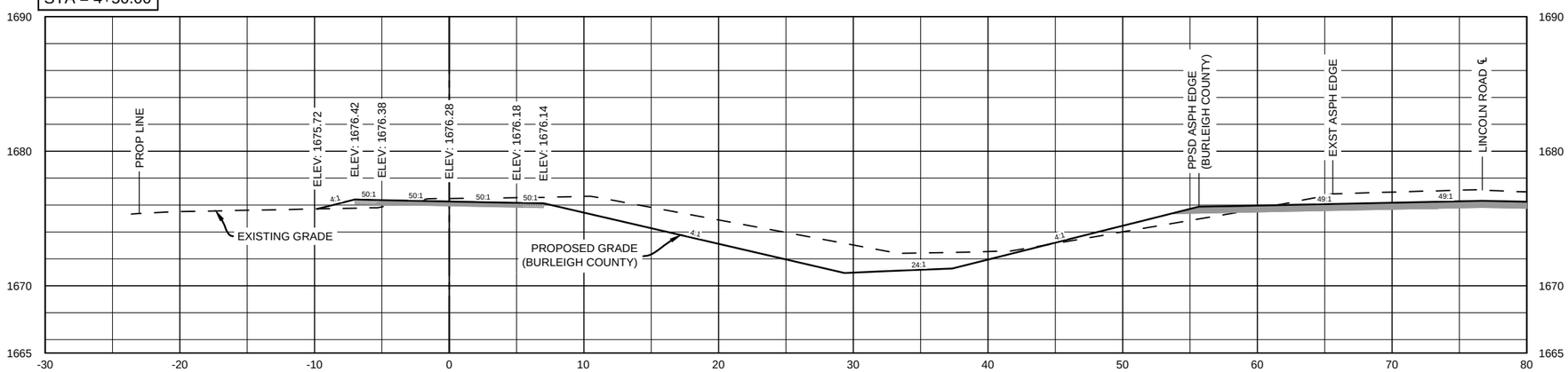

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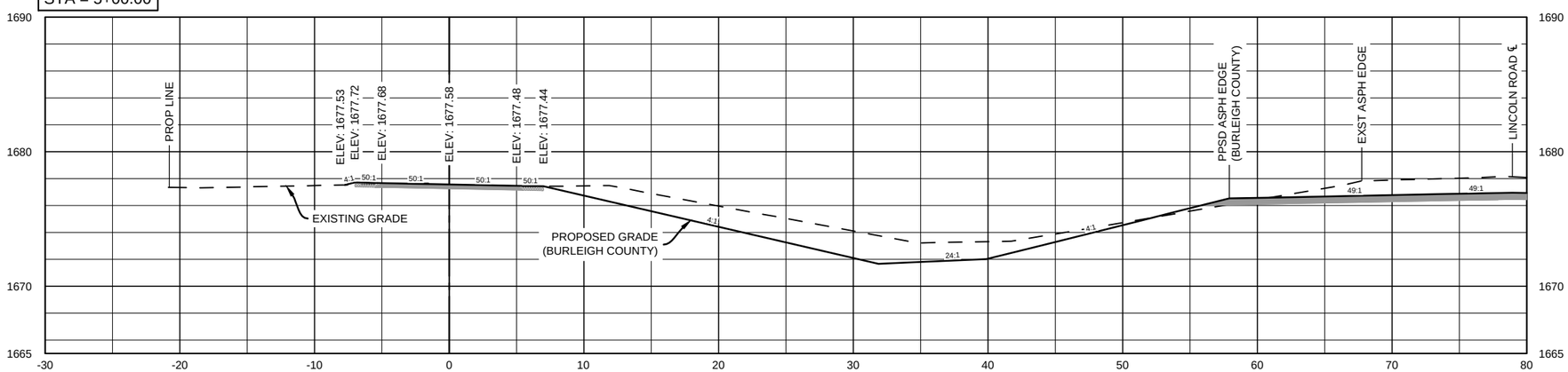

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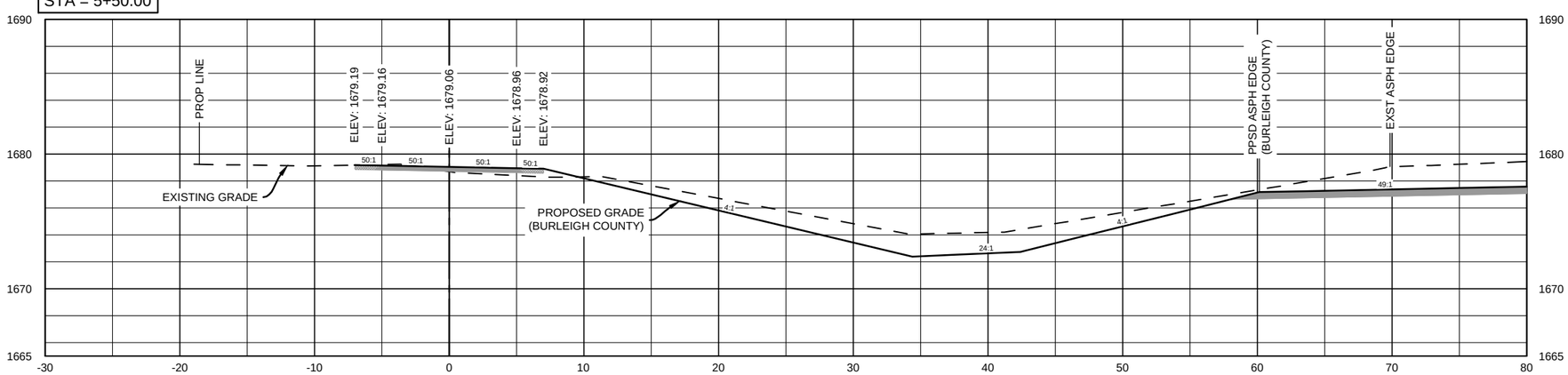

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LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 4+50 - STA 5+50

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Apr 15, 2015 – 9:29am – P:\City\ND\Lincoln\1413104–Lincoln\BG16–LincolnSchool–TAPGrantApplication\CAD\ConstDwgs\1413104–BG16–200–Sections.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	4

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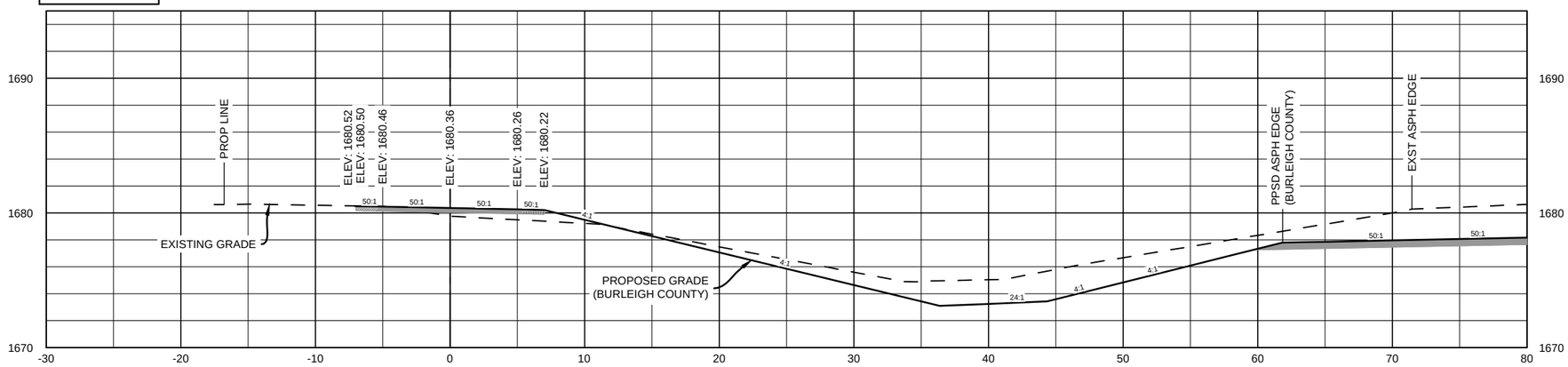

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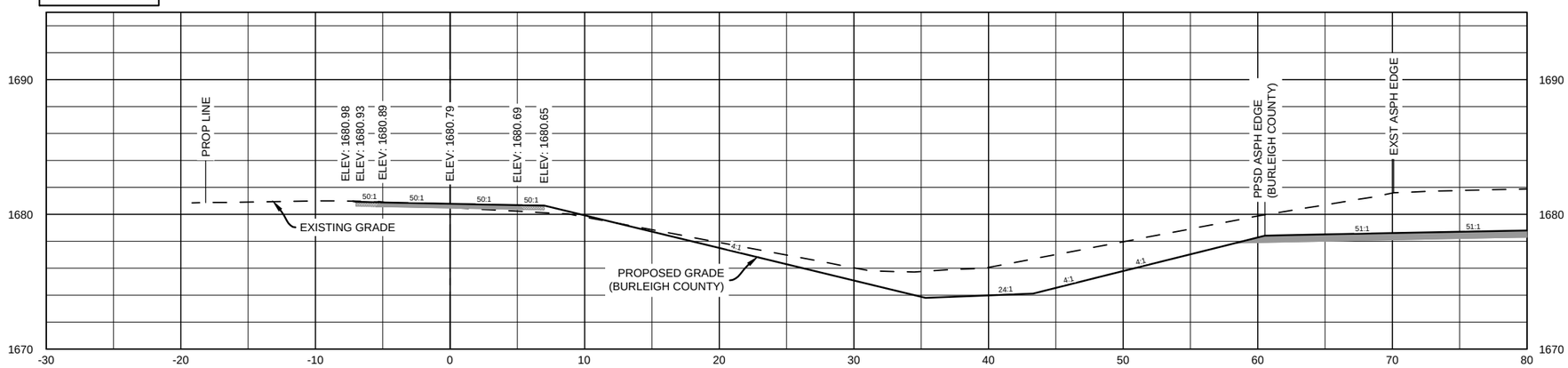

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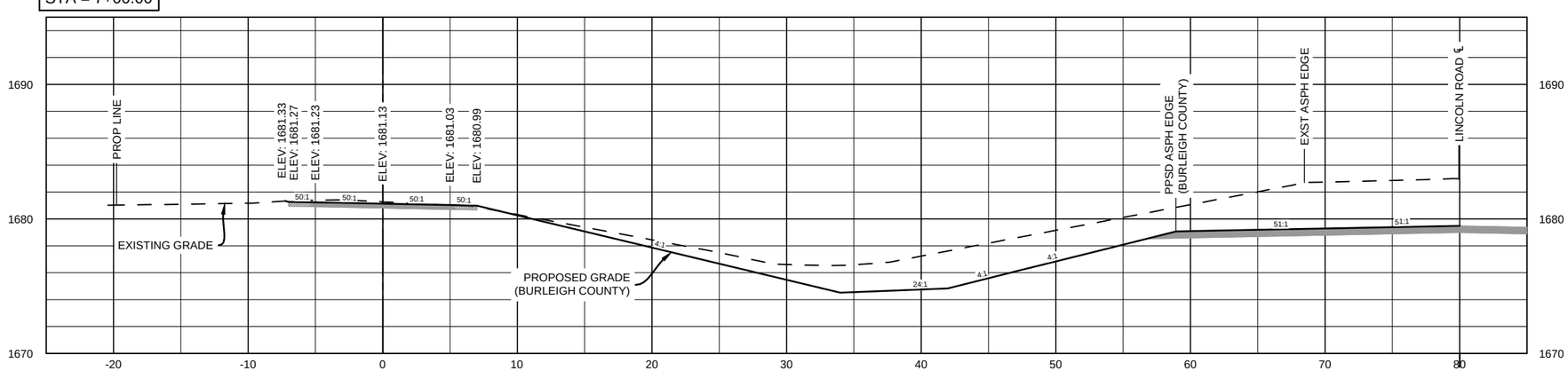

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 6+00 - STA 7+00

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CB	NAM	1413104	4/17/2015

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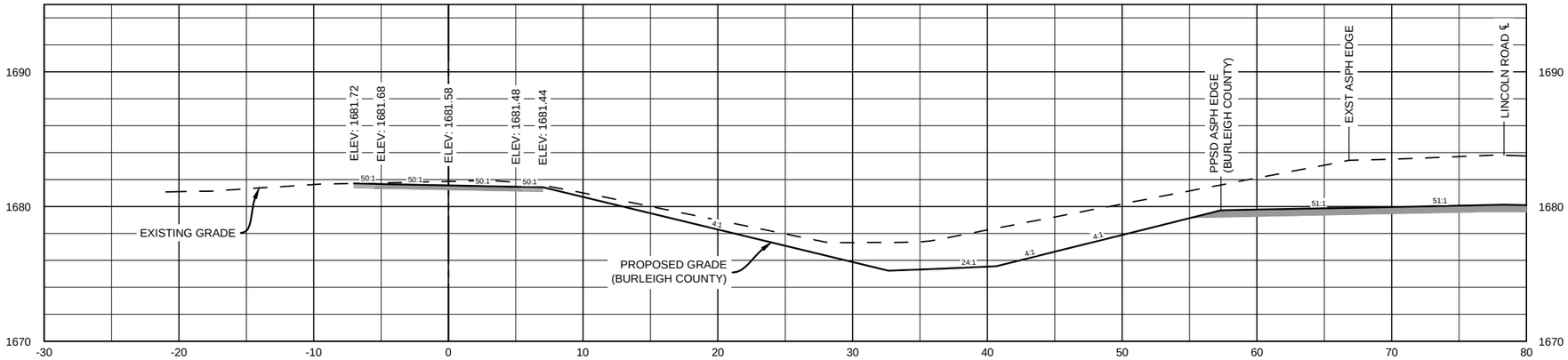
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	5

STA = 7+50.00



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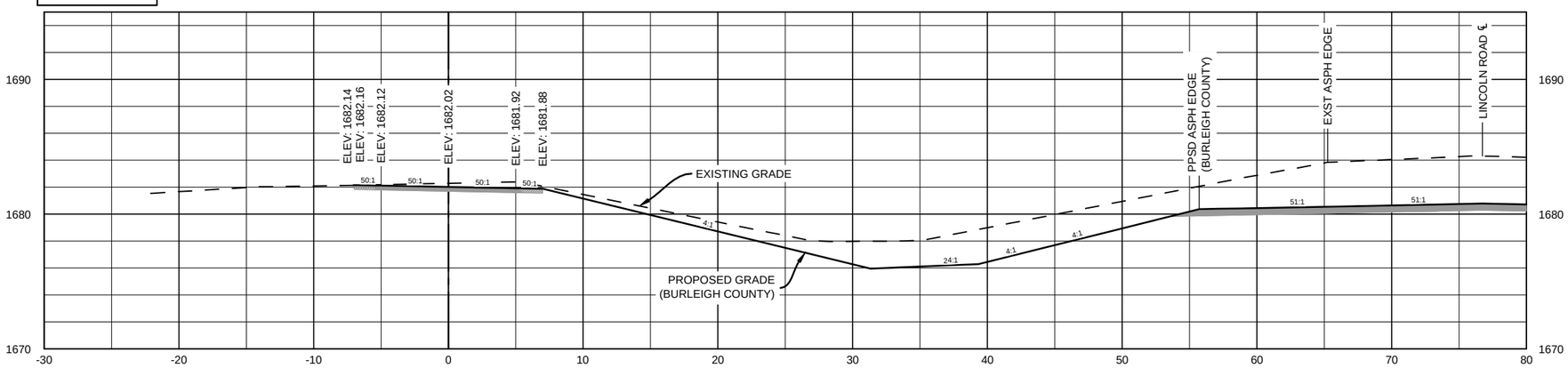

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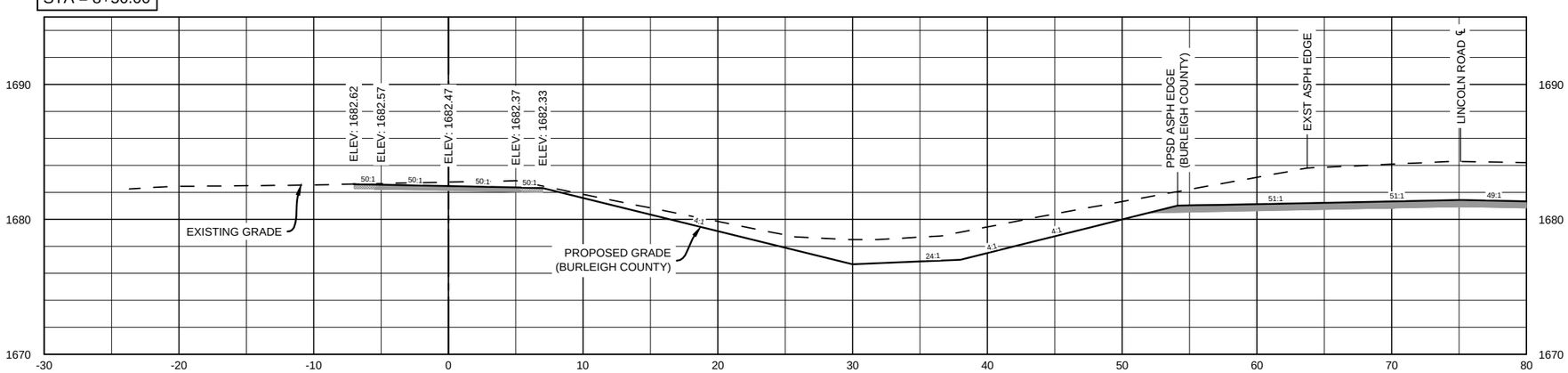

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 7+50 - STA 8+50

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CB	NAM	1413104	4/17/2015

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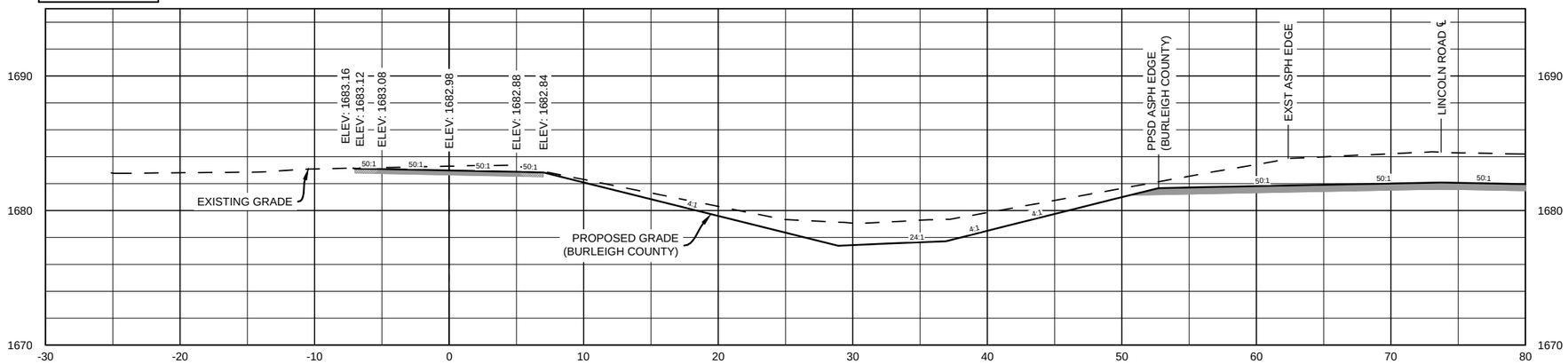
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	6

STA = 9+00.00



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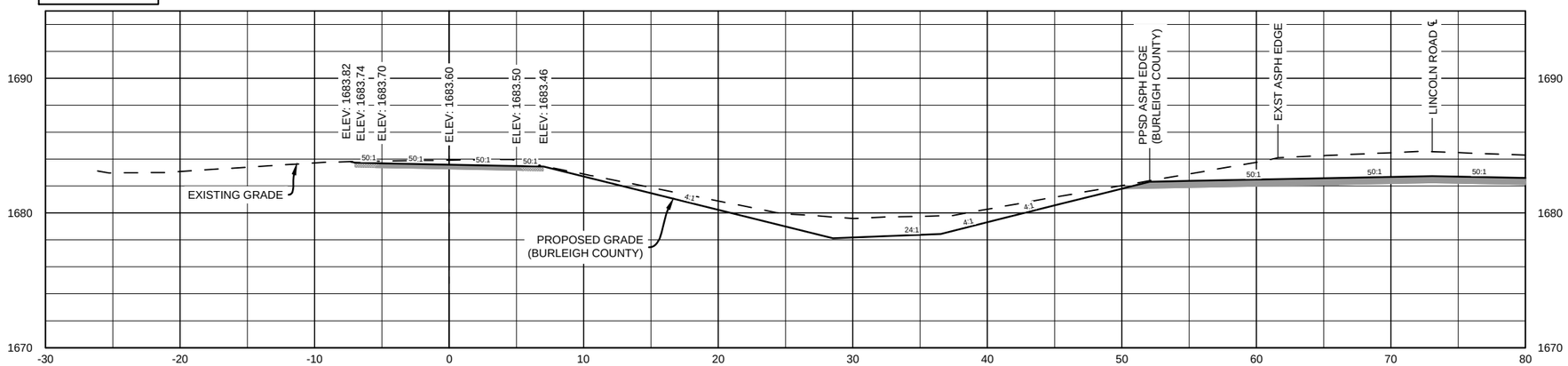

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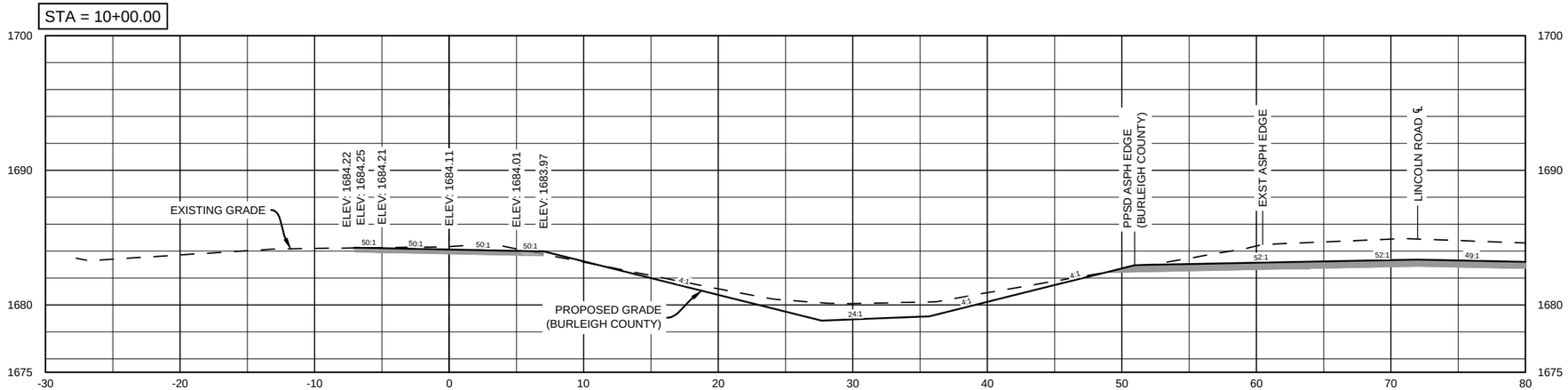

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 9+00 - STA 10+00

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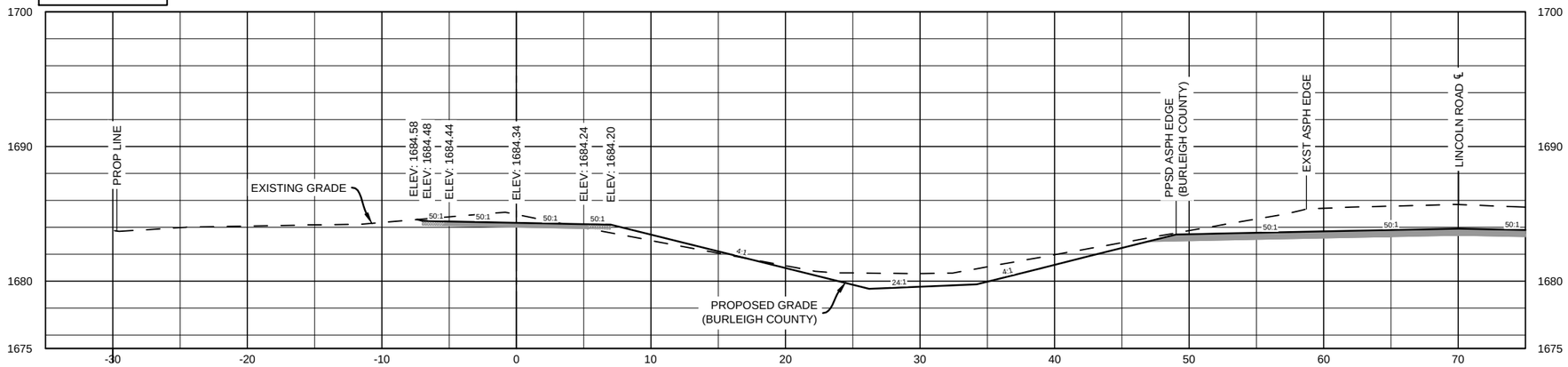
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	7

STA = 10+50.00



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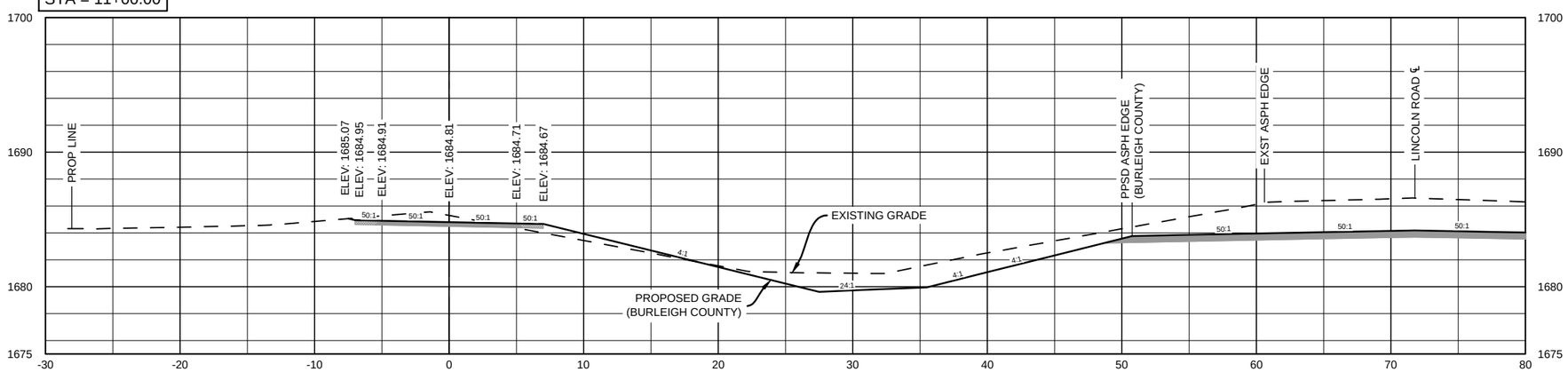

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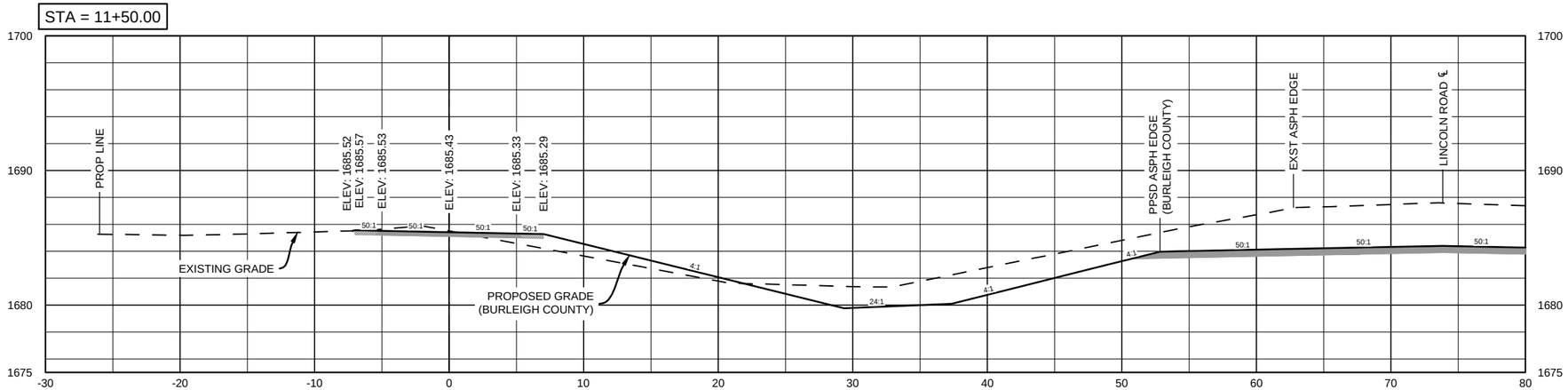

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 10+50 - STA 11+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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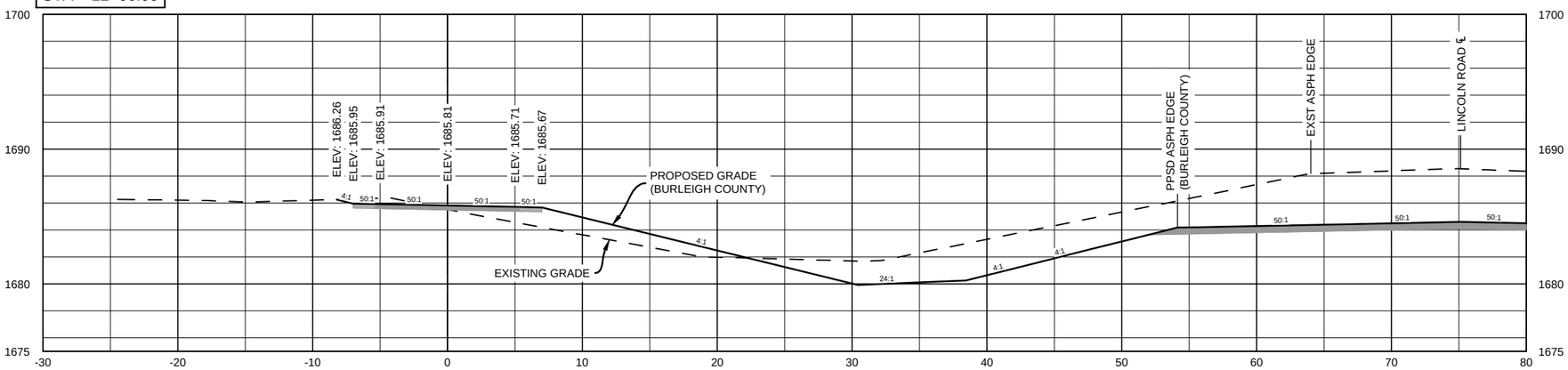
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	8

STA = 12+00.00



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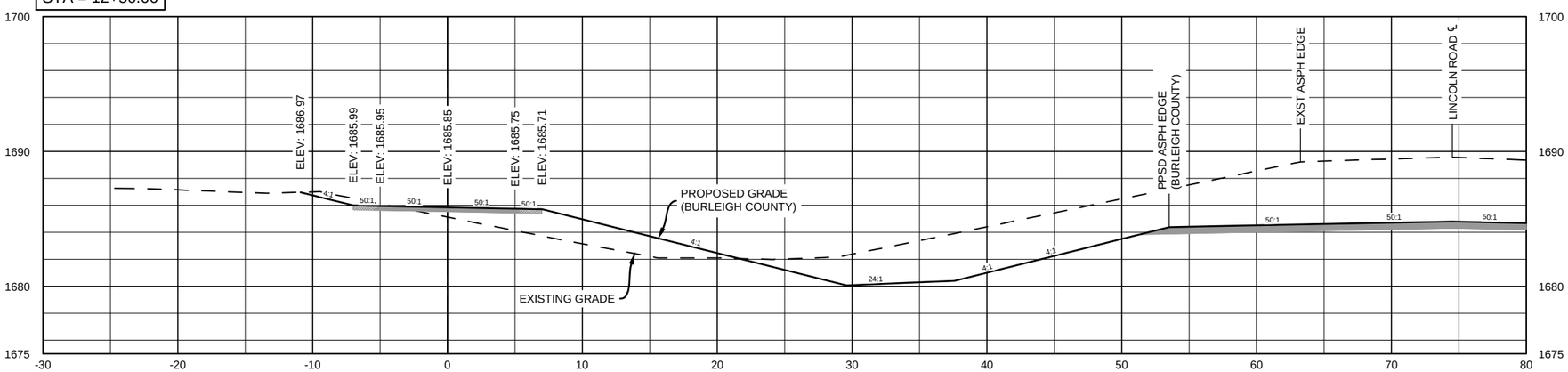

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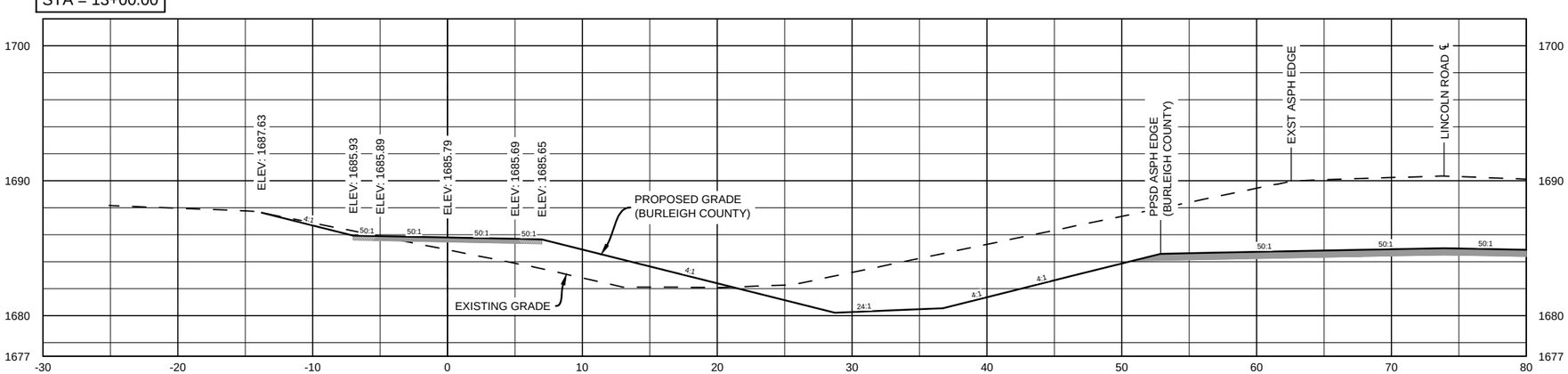

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

CROSS SECTIONS
STA 12+00 - STA 13+00

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CB	NAM	1413104	4/17/2015

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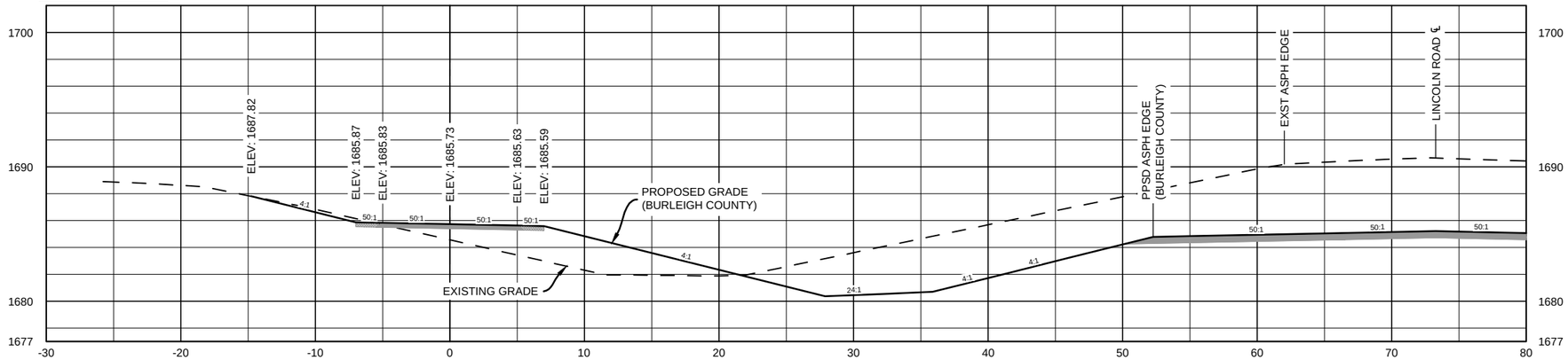
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	9

STA = 13+50.00



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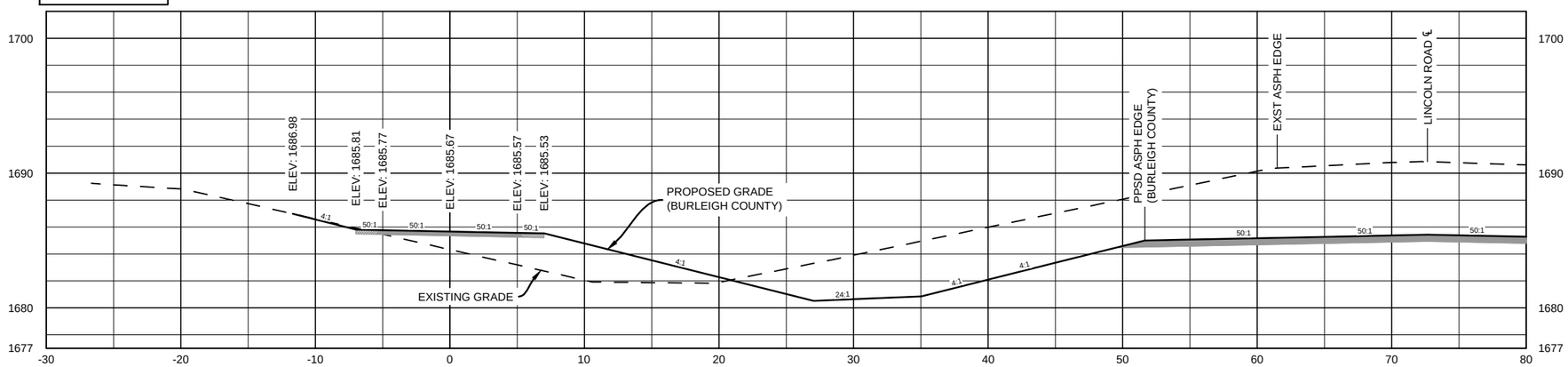

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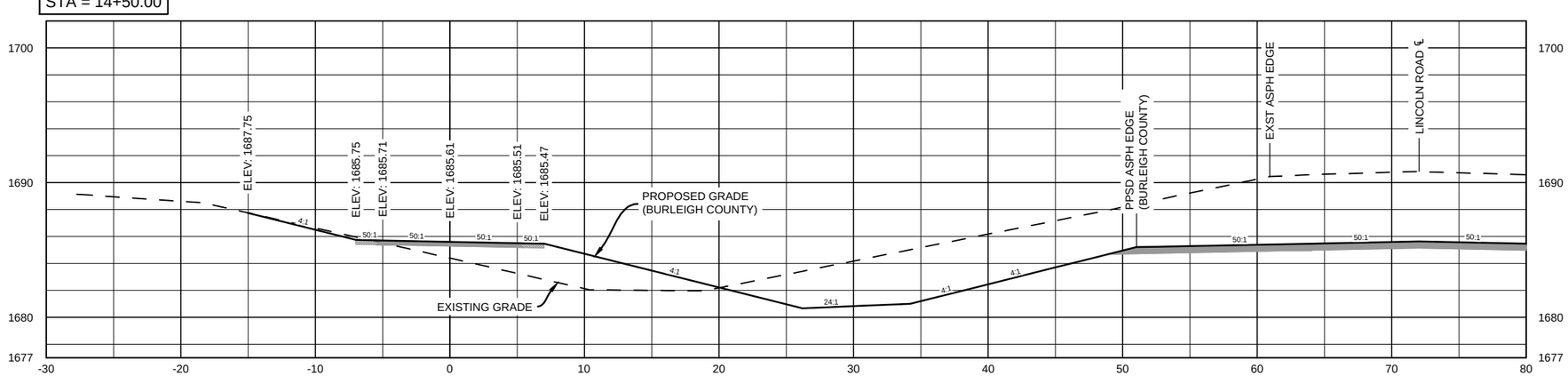

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 13+50 - STA 14+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
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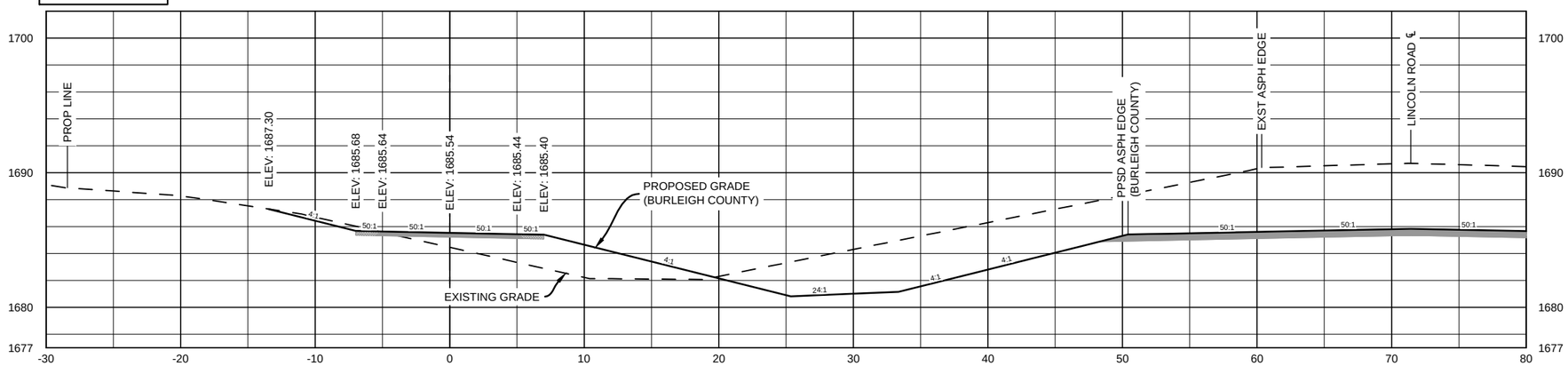
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	10

STA = 15+00.00



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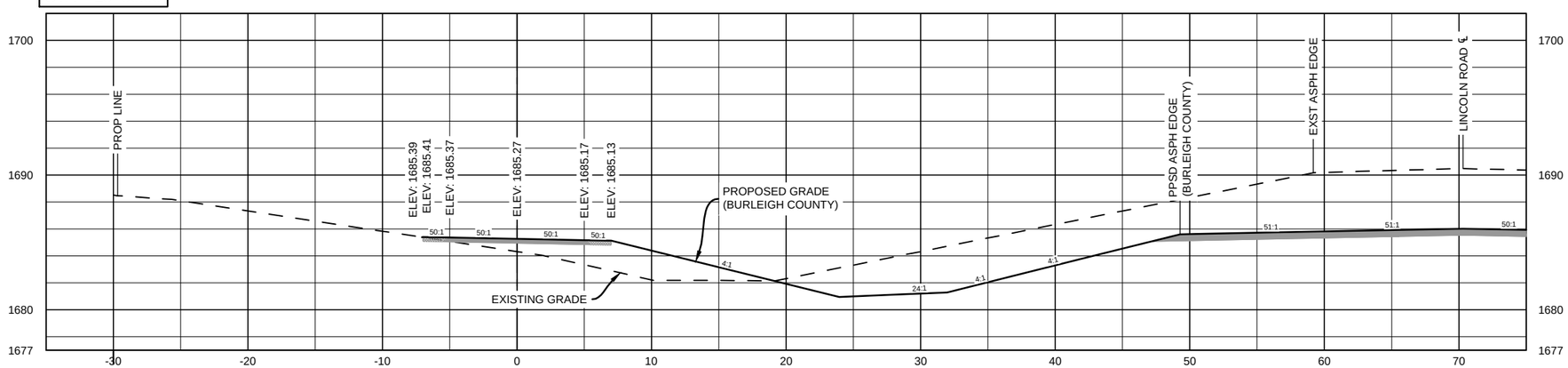

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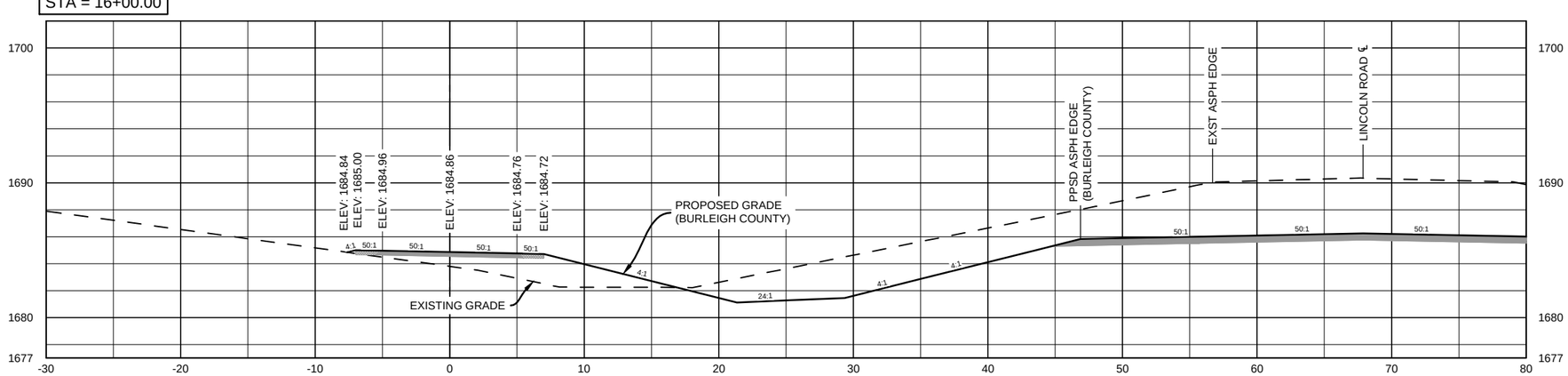

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 15+00 - STA 16+00

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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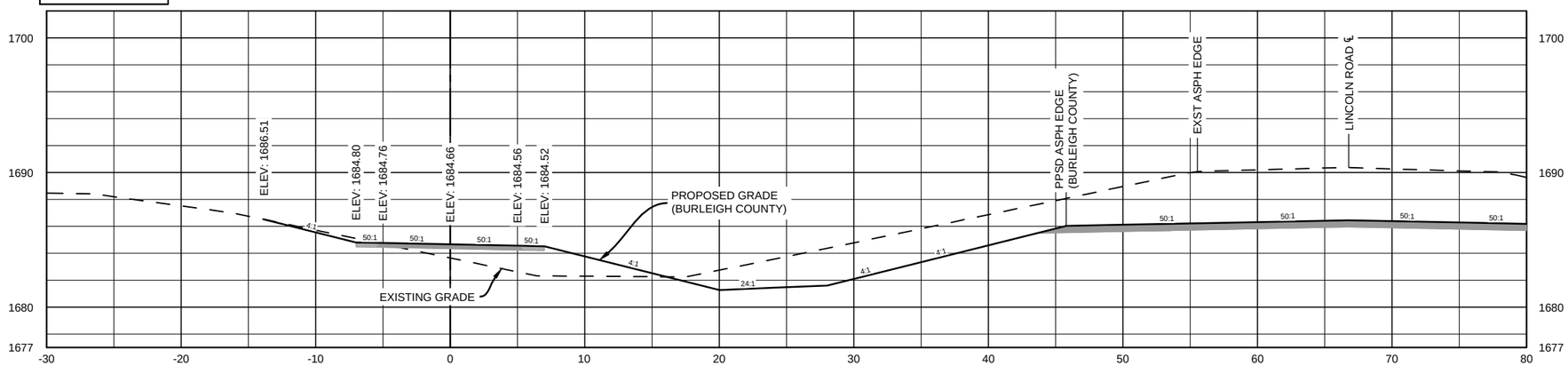
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	11

STA = 16+50.00



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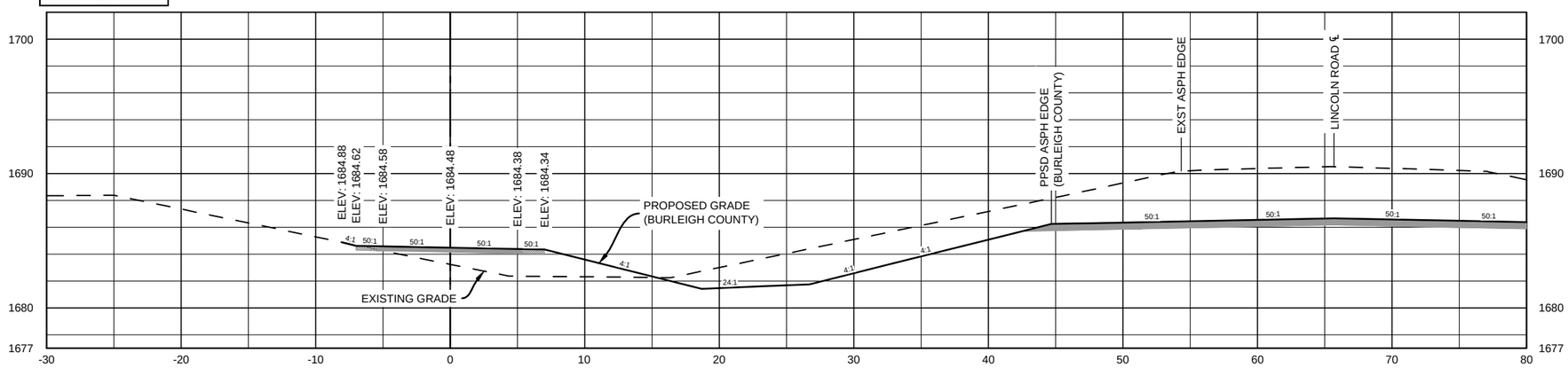

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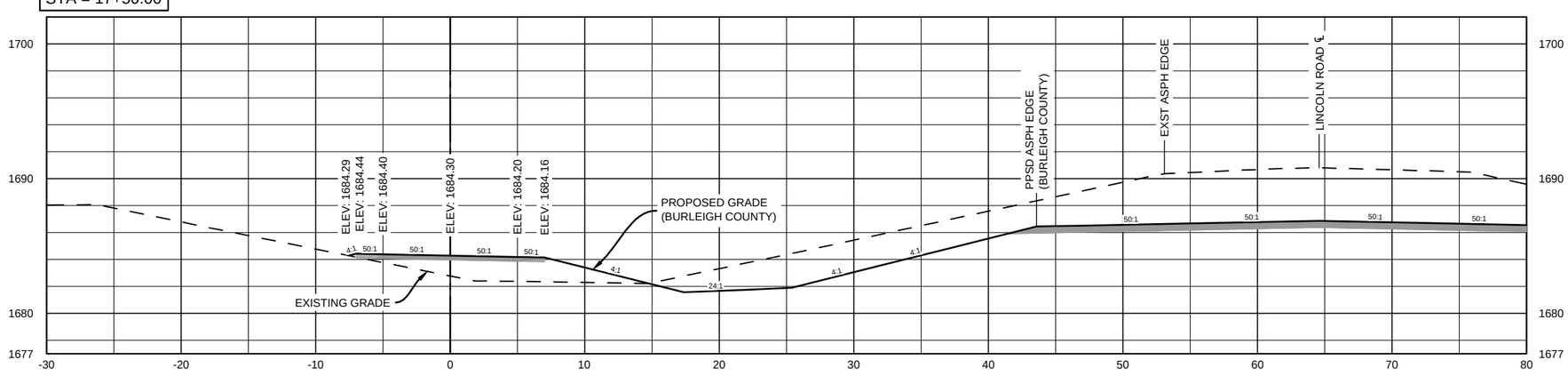

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 16+50 - STA 17+50

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	12

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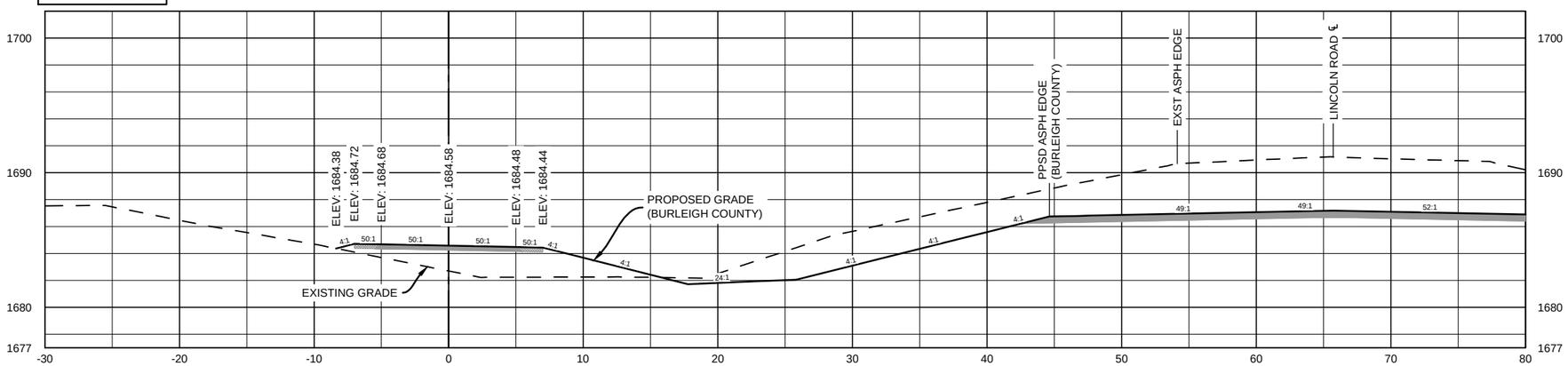

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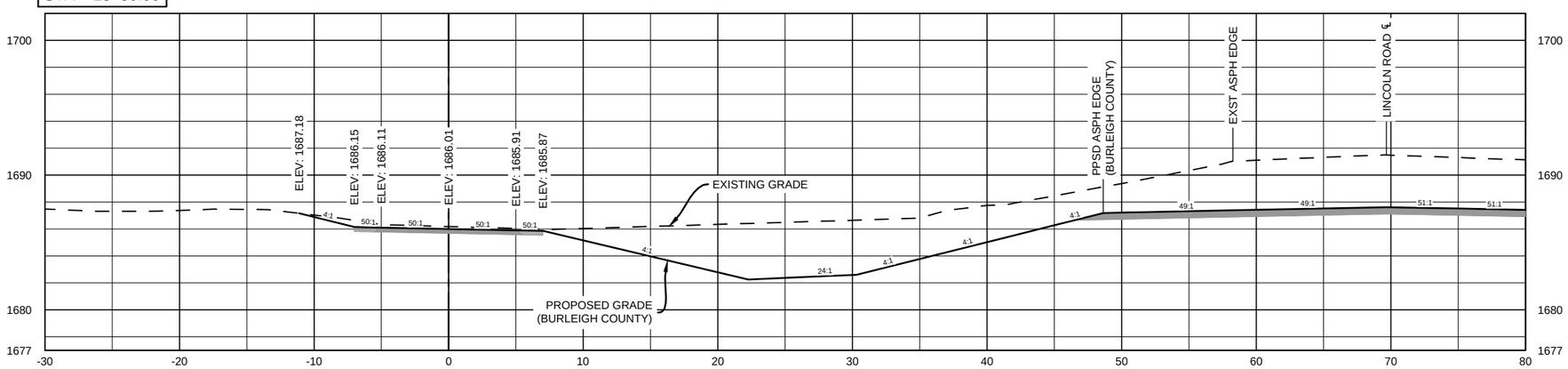

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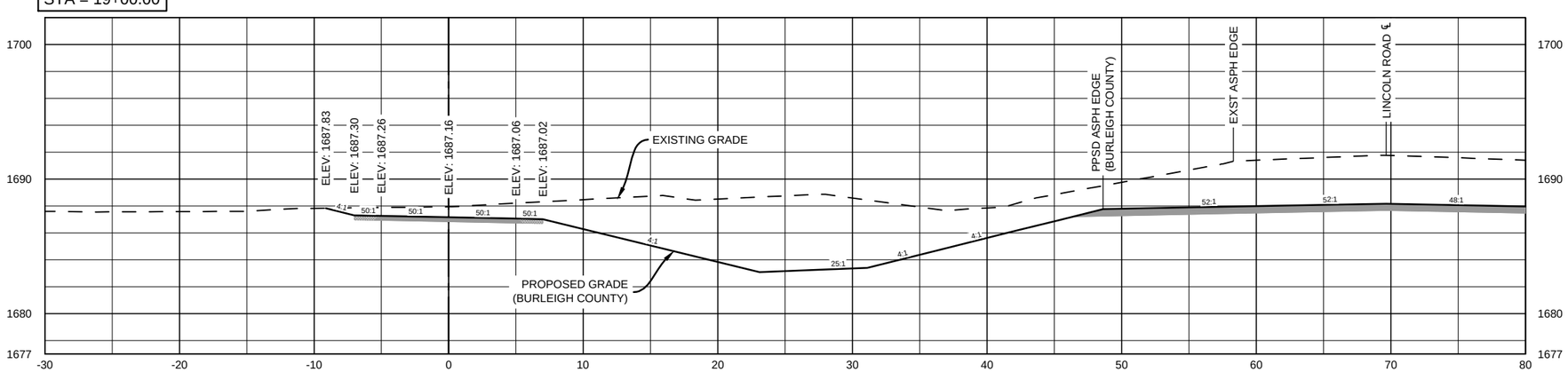

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 18+00 - STA 19+00

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	13

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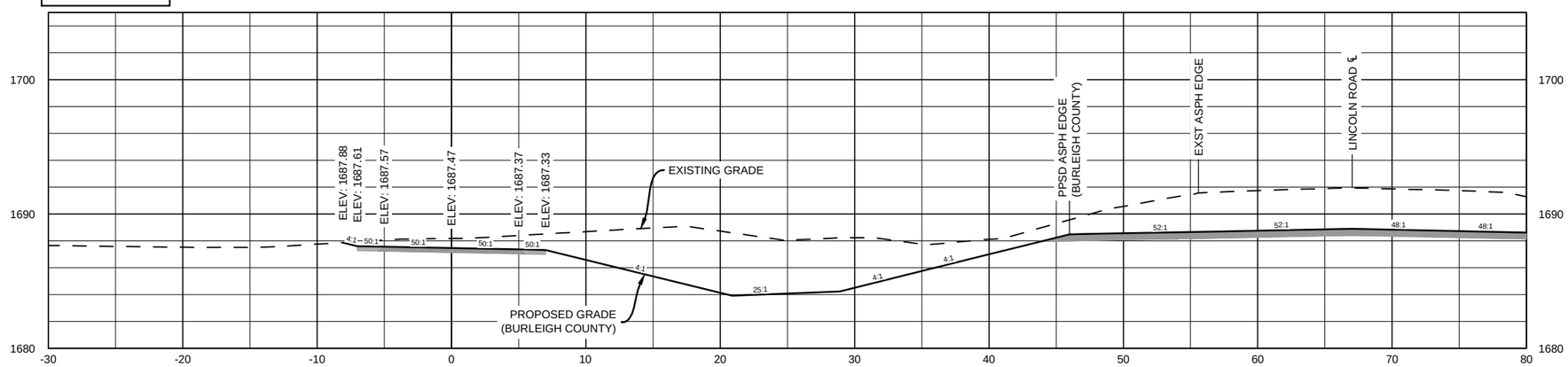

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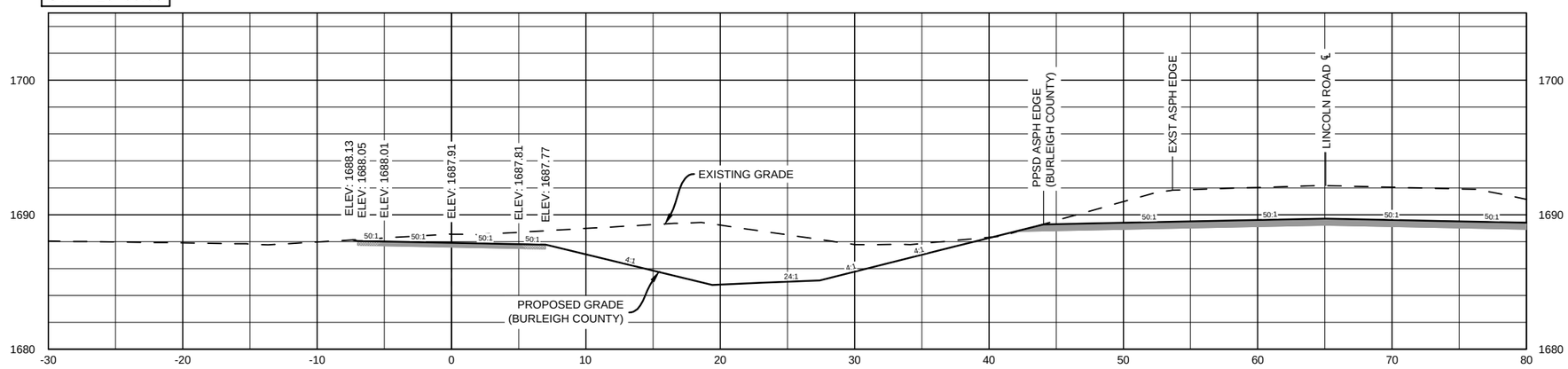

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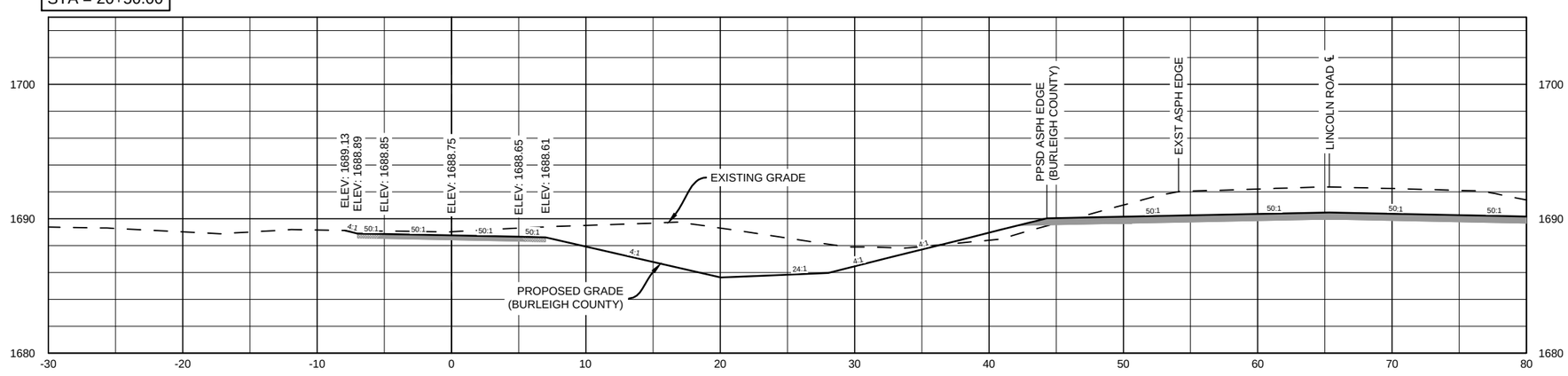

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 19+50 - STA 20+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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Apr 15, 2015 – 9:30am – P:\City\ND\Lincoln\1413104–Lincoln\BG16–LincolnSchool–TAPGrantApplication\CAD\ConstDwgs\1413104–BG16–200–Sections.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	14

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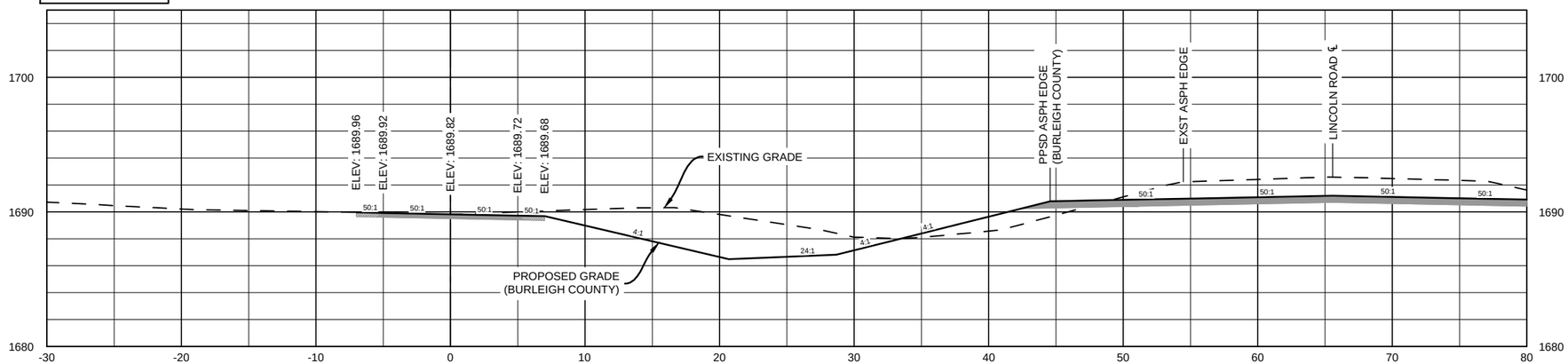

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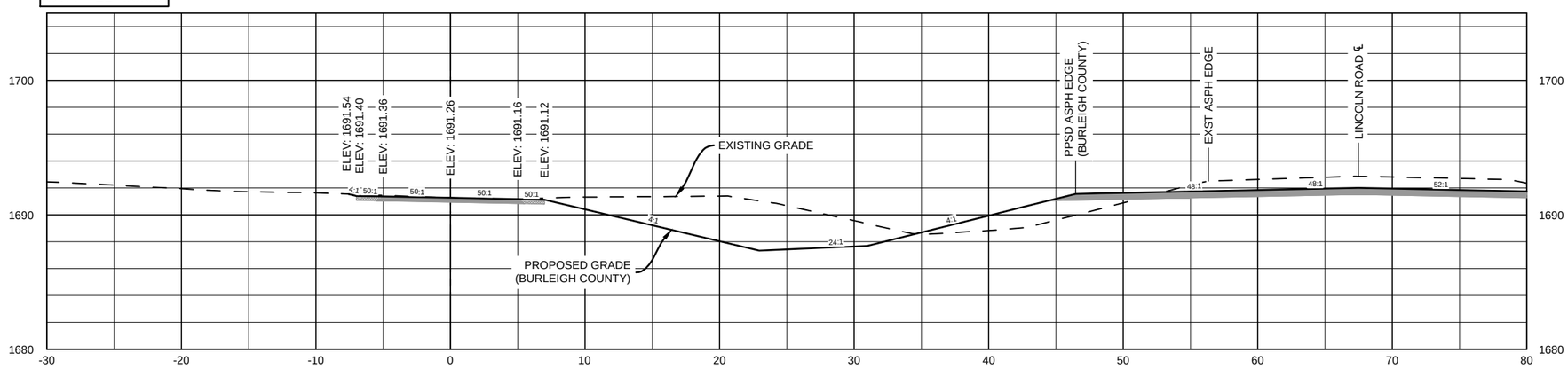

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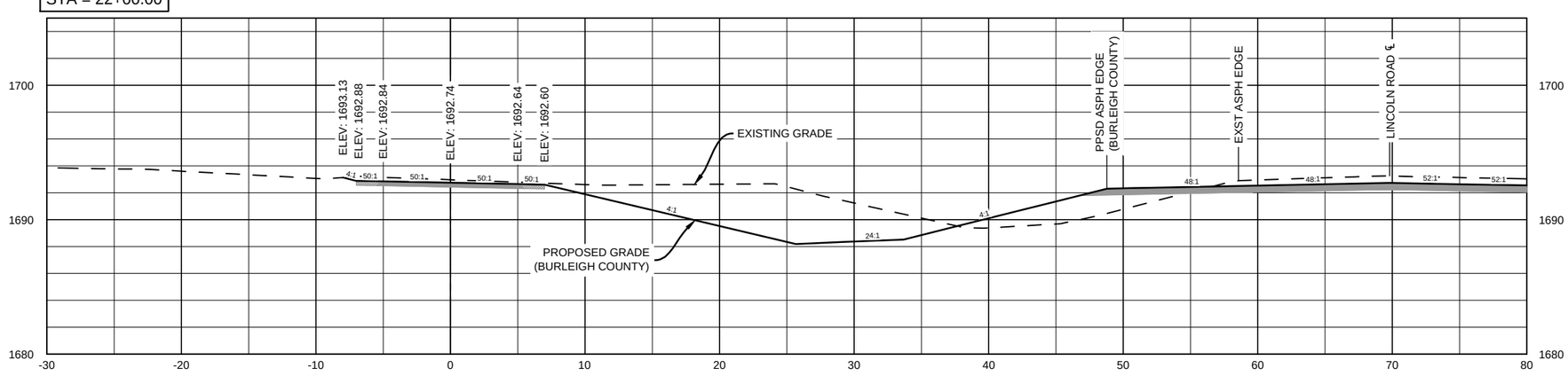

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 21+00 - STA 22+00

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	15

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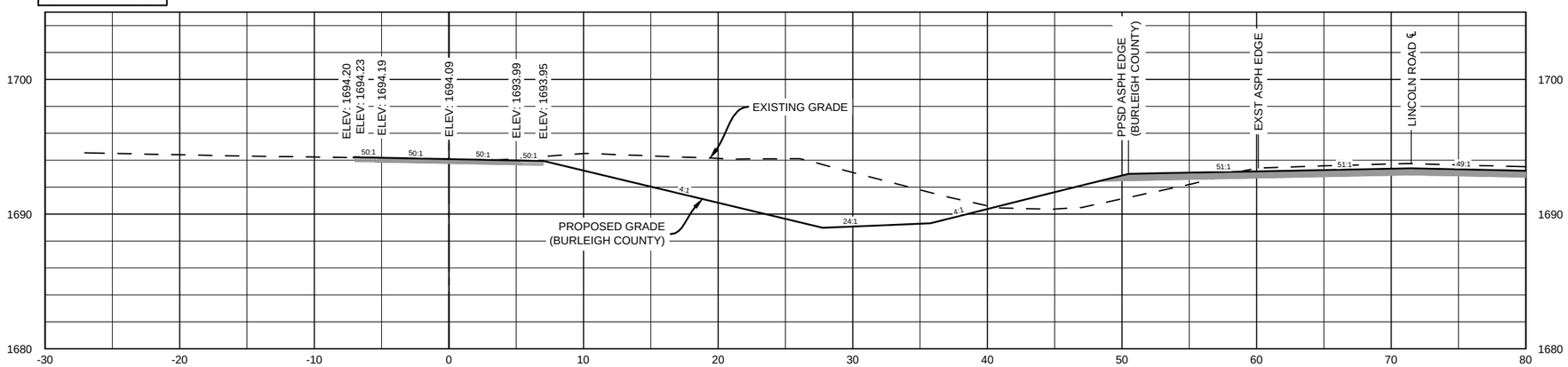

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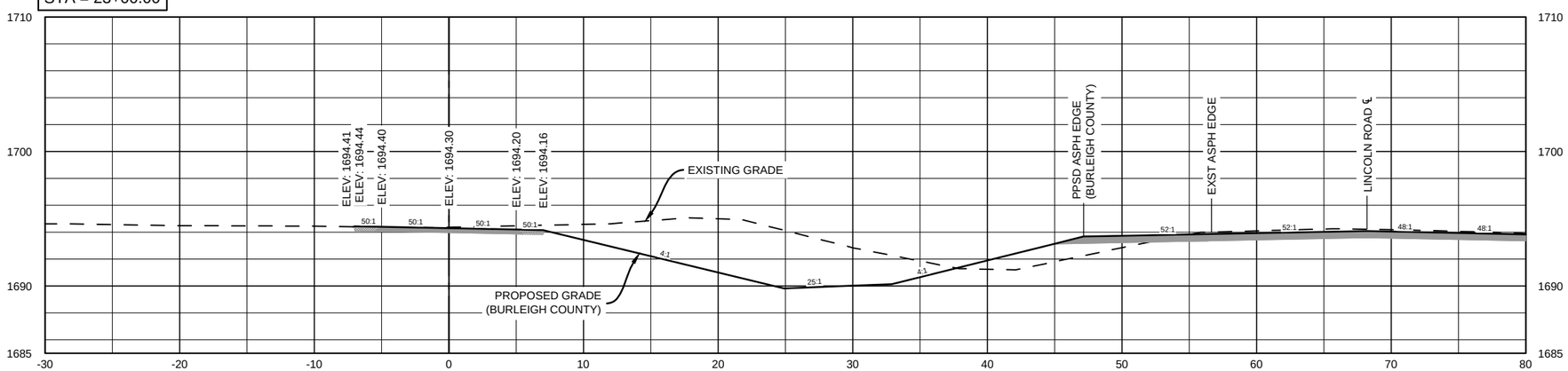

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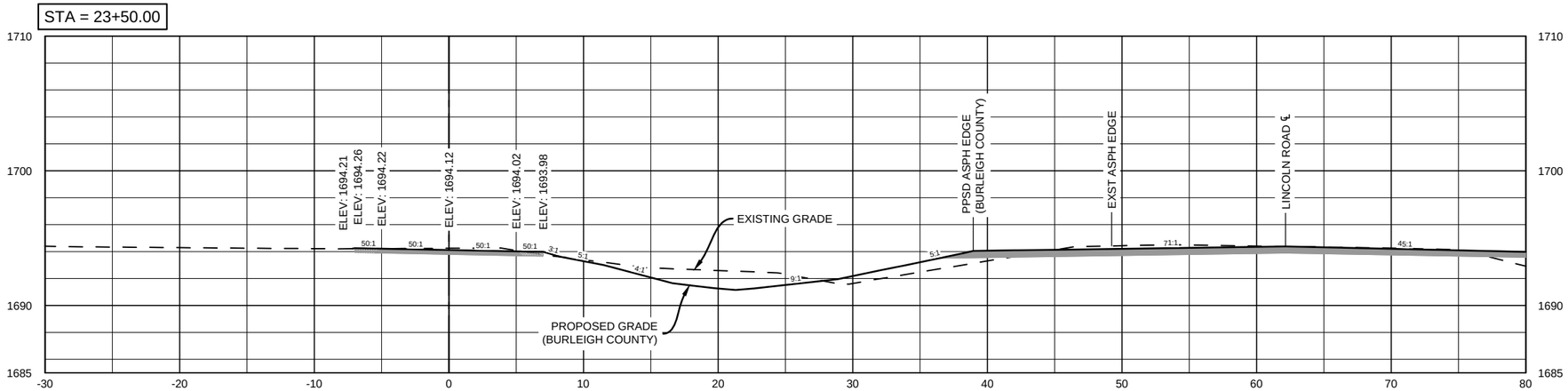

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 22+50 - STA 23+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	16

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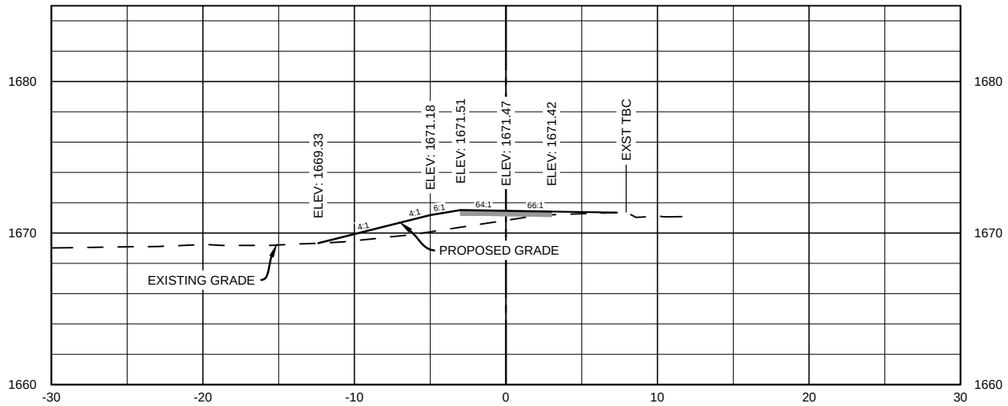

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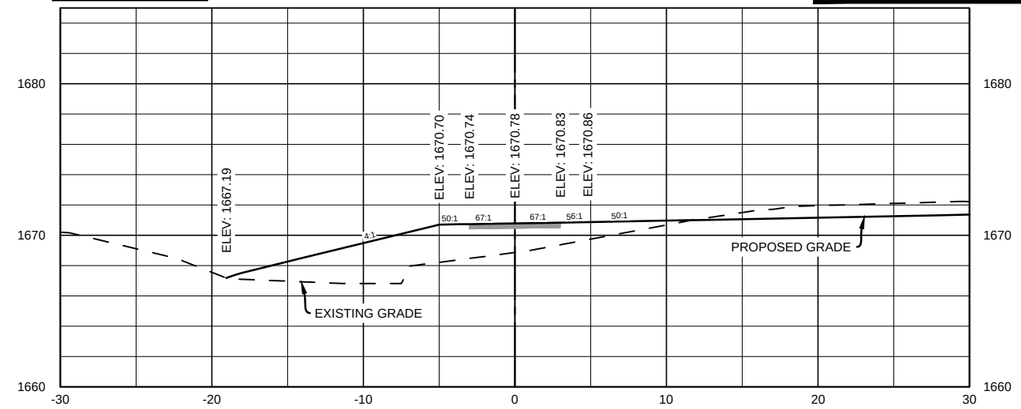

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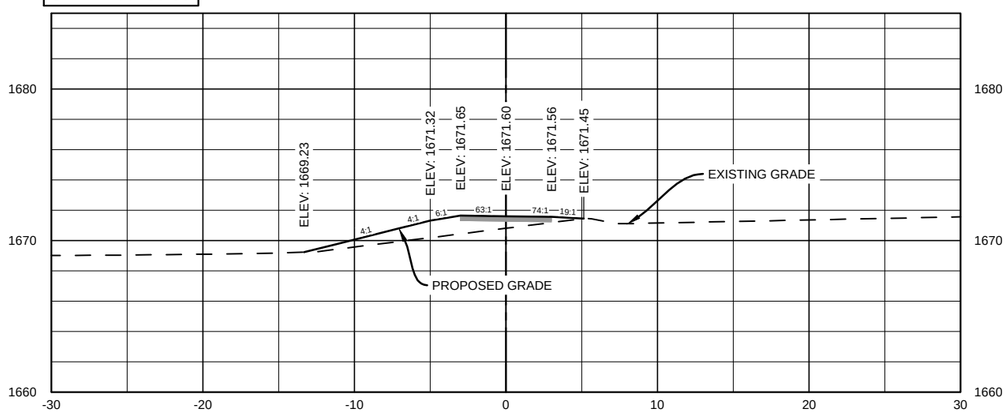

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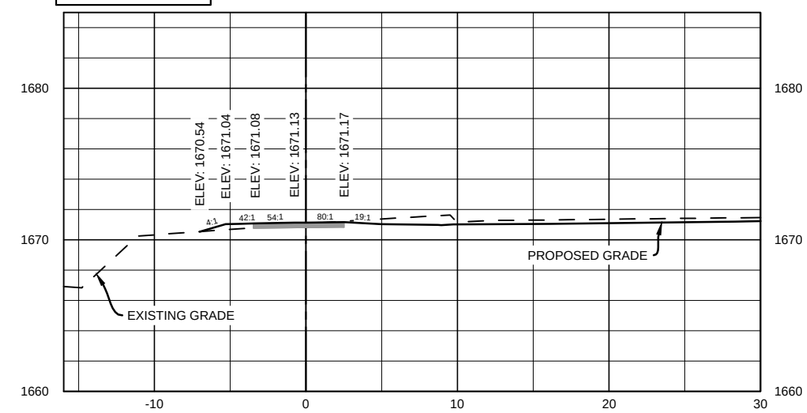

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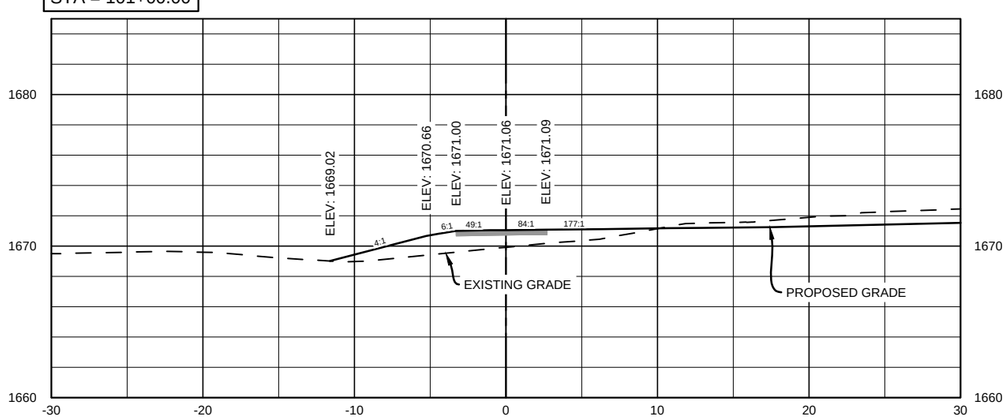

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 100+25 - STA 102+05

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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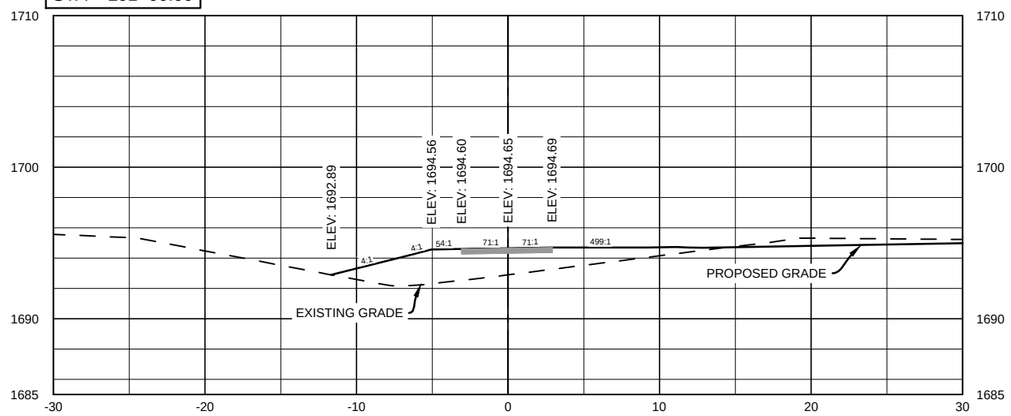
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	17

STA = 201+00.00



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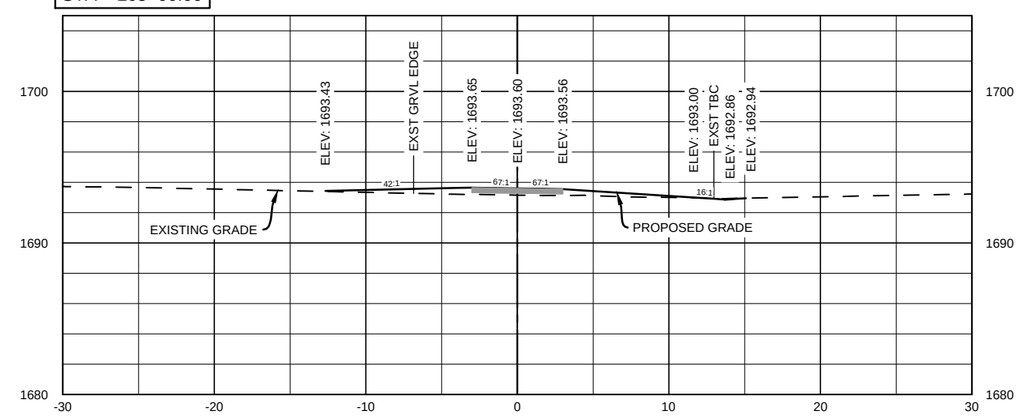

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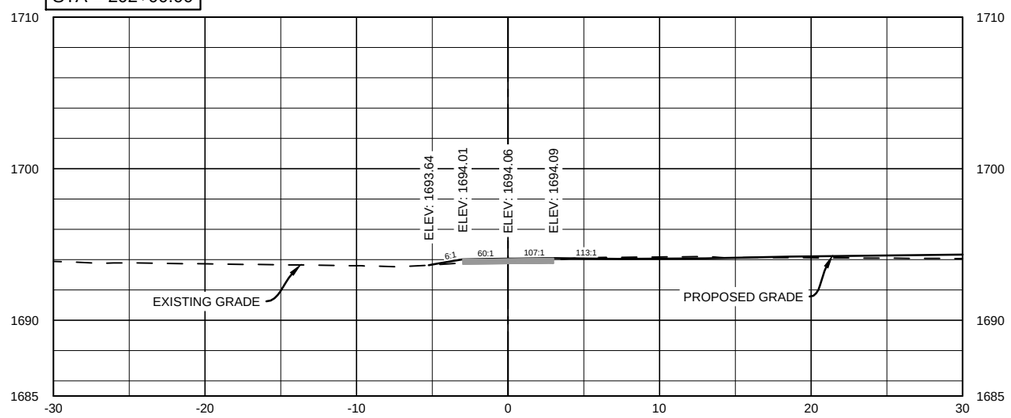

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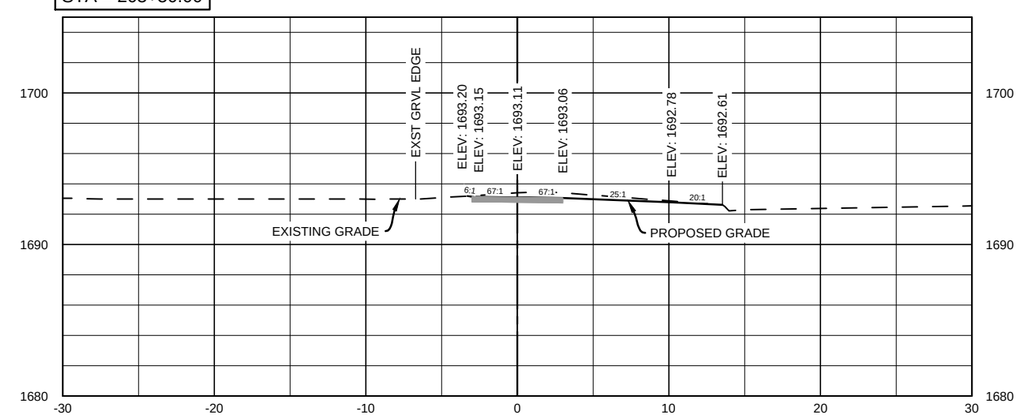

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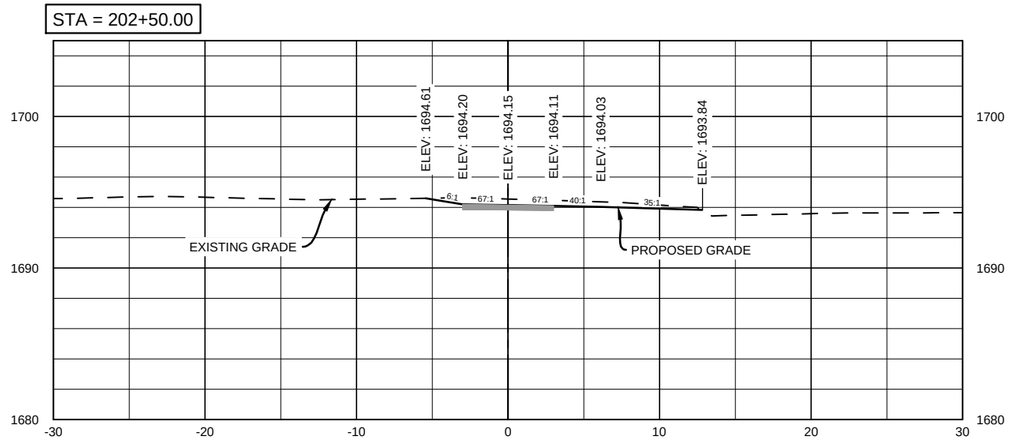

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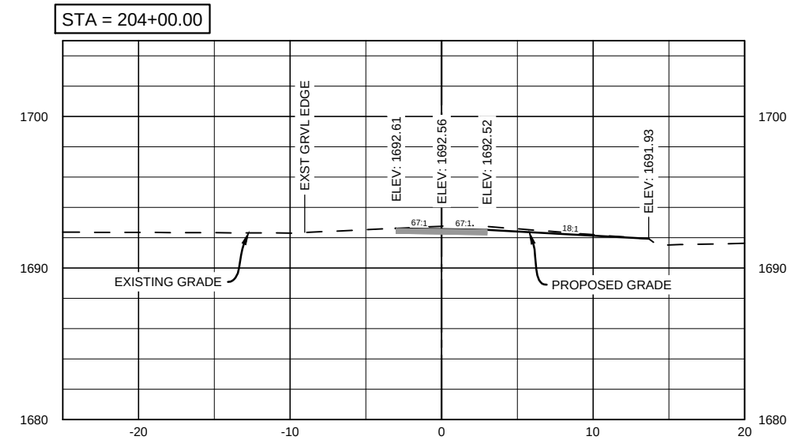

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 201+00 - STA 204+00

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	TAC-0008(029)	200	18

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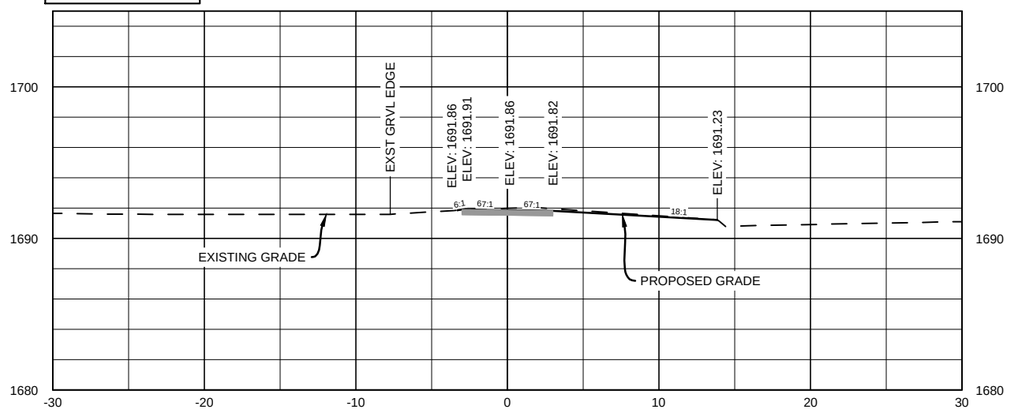

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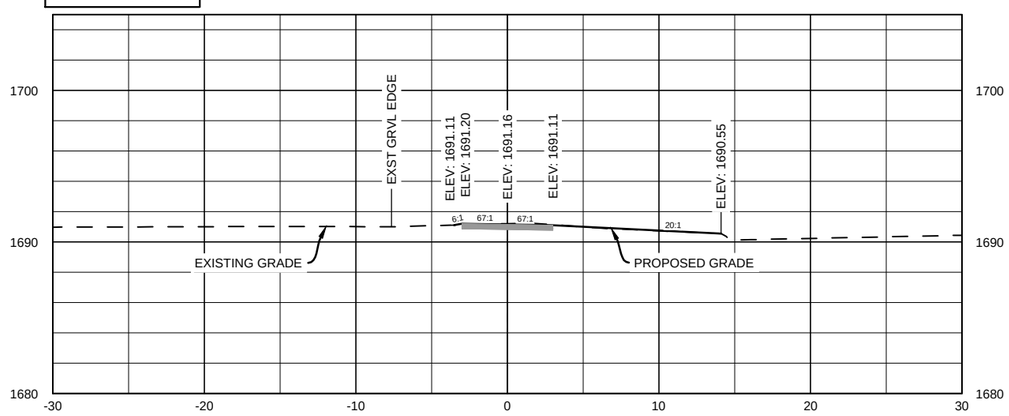

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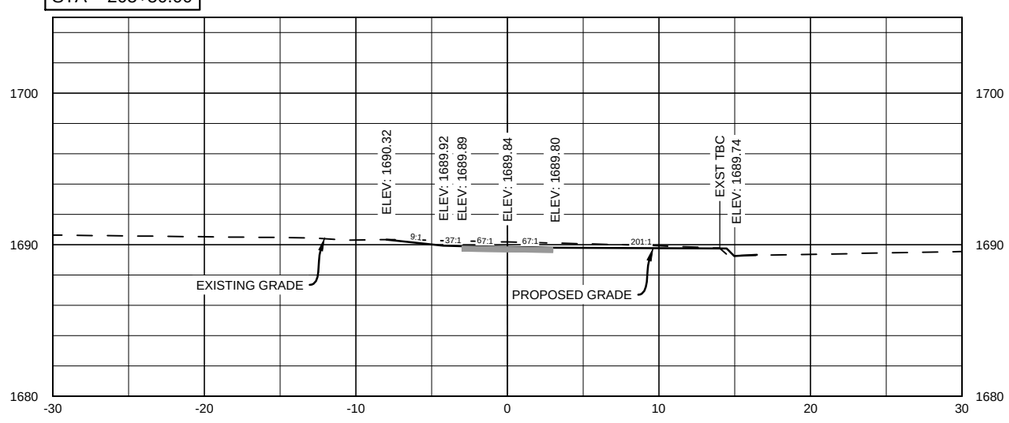

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Revision	Date	Description

LINCOLN SHARED USE PATH
CITY OF LINCOLN
LINCOLN, NORTH DAKOTA

KLJ

CROSS SECTIONS
STA 204+50 - STA 205+50

DRWN. BY	CHK'D BY	PROJECT NO.	DATE
CB	NAM	1413104	4/17/2015

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NDDOT ABBREVIATIONS

D-101-1

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

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NDDOT ABBREVIATIONS

D-101-2

FFP	fuel filler pipes
FLS	fuel leak sensor
Furn	furnish/ed
Gal	gallon
Galv	galvanized
Gar	garage
Gs L	gas line
G Reg	gas line regulator
GMV	gas main valve
G Mtr	gas meter
GSV	gas service valve
GVP	gas vent pipe
GV	gate valve
Ga	gauge
Geod	geodetic
GIS	Geographical Information System
G	giga
GPS	Global Positioning System
Gov	government
Grd	graded/grade
Gr	gravel
Grnd	ground
GWM	ground water monitor
Gdrl	guardrail
Gtr	gutter
H Plg	H piling
Hdwl	headwall
Ha	hectare
Ht	height
HI	height of instrument
Hel	helical
H	henry
Hz	hertz
HDPE	high density polyethylene
HM	high mast
HP	high pressure
HPS	high pressure sodium
Hwy	highway
Hor	horizontal
HBP	hot bituminous pavement
Hr	hour(s)
Hyd	hydrant
Ph	hydrogen ion content
Id	identification
In or "	inch
Incl	inclinometer tube
IMH	inlet manhole
ID	inside diameter
Inst	instrument
Intchg	interchange
Intmdt	intermediate
Intscn	intersection
Inv	invert
IM	iron monument
I Pn	Iron Pin

IP	iron Pipe
Jt	joint
J	joule
Jct	junction
K	kelvin
Kn	kilo newton
Kpa	kilo pascal
Kg	kilogram
Kg/m3	kilogram per cubic meter
Km	kilometer
K	Kip(s)
LS	Land Surveyor (licensed)
LSIT	Land Surveyor In Training
Ln	lane
Lg	large
Lat	latitude
Lt	left
L	length of curve
Lens	lenses
Lvl	level
LB	level book
Lvlng	leveling
Lht	light
LP	light pole
Ltg	lighting
Lig Co	lignite coal
Lig Sl	lignite slack
LF	linear foot
Liq	liquid
LL	liquid limit
L	litre
Lm	loam
Loc	location
LC	long chord
Long.	longitude
Lp	loop
LD	loop detector
Lm	lumen
Lum	luminaire
L Sum	lump sum
Lx	lux
ML	main line
M Hr	man hour
MH	manhole
Mkd	marked
Mkr	marker
Mkg	marking
MA	mast arm
Matl	material
Max	maximum
MC	meander corner
Meas	measure
Mdn	median
MD	median drain
MC	medium curing

M	mega
Mer	meridian
M	meter
M/s	meters per second
M	mid ordinate of curve
Mi	mile
MM	mile marker
MP	mile post
Ml	milliliter
Mm	millimeter
Mm/hr	millimeters per hour
Min	minimum
Misc	miscellaneous
Mon	monument
Mnd	mound
Mtbl	mountable
Mtd	mounted
Mtg	mounting
Mk	muck
Mun	municipal
N	nano
NGS	National Geodetic Survey
NS	near side
Neop	neoprene
Ntwk	network
N	newton
N	North
NE	North East
NW	North West
NB	Northbound
No. or #	number
Obsc	obscure(d)
Obsn	observation
Ocpd	occupied
Ocpy	occupy
Off Loc	office location
O/s	offset
OC	on center
C	one dimensional consolidation
OC	organic content
Orig	original
O To O	out to out
OD	outside diameter
OH	overhead
PMT	pad mounted transformer
Pg	pages
Pntd	painted
Pr	pair
Pnl	panel
Pk	park
PK	Parker-Kalon nail
Pa	pascal
PSD	passing sight distance
Pvmt	pavement
Ped	pedestal

Ped	pedestrian
PPP	pedestrian pushbutton post
Pen.	penetration
Perf	perforated
Per.	perimeter
PL	pipeline
Pl	place
P&P	plan & profile
PL	plastic limit
Pl	plate
Pt	point
PCC	point of compound curve
PC	point of curve
PI	point of intersection
PRC	point of reverse curvature
PT	point of tangent
POC	point on curve
POT	point on tangent
PE	polyethylene
PVC	polyvinyl chloride
PCC	Portland Cement concrete
Lb or #	pounds
PP	power pole
Preempt	preemption
Prefab	prefabricated
Prfmd	preformed
Prep	preperation
Press.	pressure
PRV	pressure relief valve
Prestr	prestressed
Pvt	private
PD	private drive
Prod.	production/produce
Prog	programmed
Prop.	property
Prop Ln	property line
Ppsd	proposed
PB	pull box

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NDDOT ABBREVIATIONS

D-101-3

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

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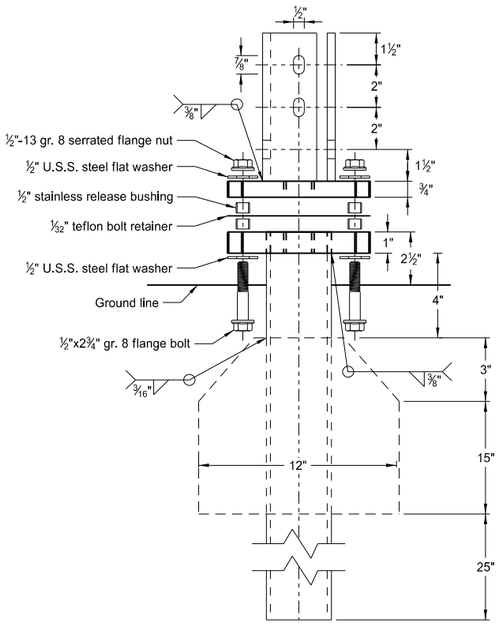
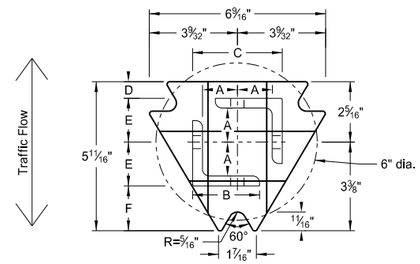
BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-7

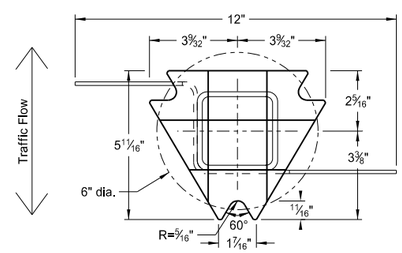
Perforated Tube



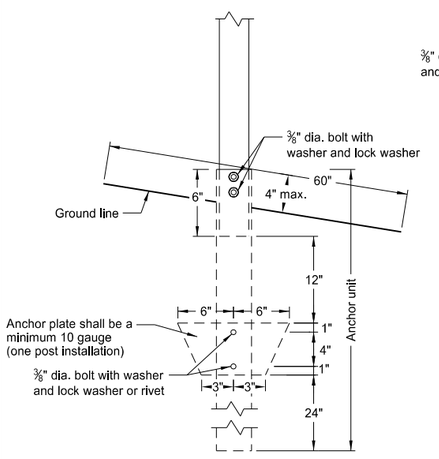
Multi-Directional
Slip Base Assembly



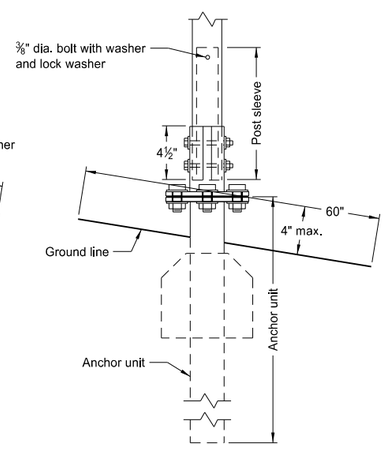
Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2½"x2½"x⅜" ASTM A36 structural angle



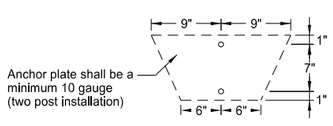
Bottom Soil Stub
Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50

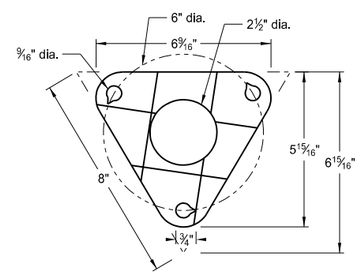


Anchor Unit and Post Assembly



Multi-Directional
Slip Base Anchor Unit
and Post Sleeve Assembly





Bolt Retainer for Base Connection
Bolt Retainer- 1/32" Reprocessed Teflon

Notes:

1. Slip base bolts shall be torqued as specified by the manufacturer.
2. Anchor shall have a yield strength of 43.9 KSI and tensile strength of 59.3 KSI.
3. The 4" vertical clearance is required for the anchor or breakaway base. The 4"x60" measurement shall be made above and below post location and also back and ahead of the post.
4. When used in concrete sidewalk, anchor shall be same except without the wings.
5. Four post signs shall have over 7' between the first and the fourth posts.

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	2¼
1	2¼	12			No	2½
1	2½	12			(A)	3
1	2½	10			Yes	
1	2¼	12	2	12	Yes	
1	2½	12	2¼	12	Yes	
2	2	12			No	2¼
2	2¼	12			No	2½
2	2½	12			Yes	
2	2½	12			Yes	
2	2¼	10	2	12	Yes	
2	2½	12	2¼	12	Yes	
3 & 4	2½	12			Yes	
3 & 4	2½	10			Yes	
3 & 4	2½	12	2¼	12	Yes	
3 & 4	2¼	12	2	12	Yes	
3 & 4	2½	10	2 3/16	10	Yes	

(A) The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak.

(B) The 2 3/16"x10 ga. may be inserted into 2½"x10 ga. for additional wind load.

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}
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
2 3/16 x 2 3/16	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	4.006	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 9/64"	2½"	3 1/32"	25/32"	1 33/64"	1⅞"
2½"x10 ga.	1 9/32"	2½"	3 5/16"	⅝"	1 21/32"	1¾"

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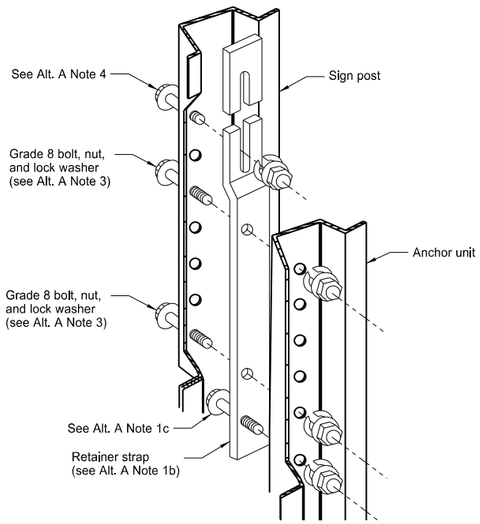
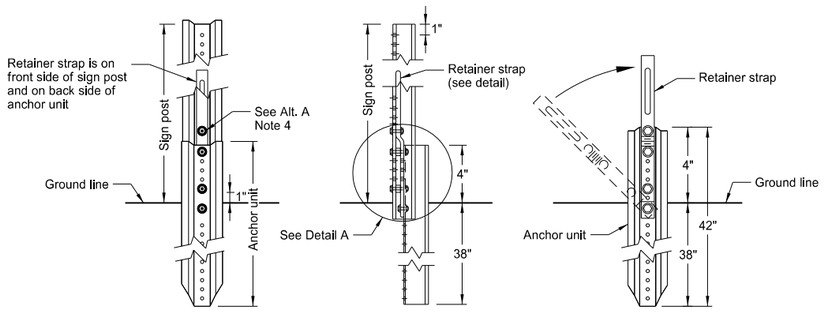
BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-8

U-Channel Post



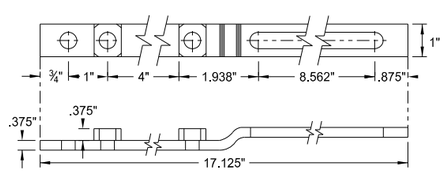
Detail A



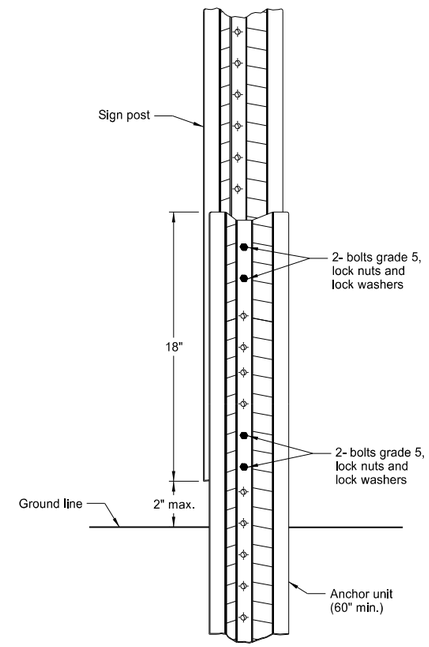
Front View | Side View | Back View

Breakaway U-Channel Detail
Alternate A

A maximum of 2 posts shall be installed within 7'.

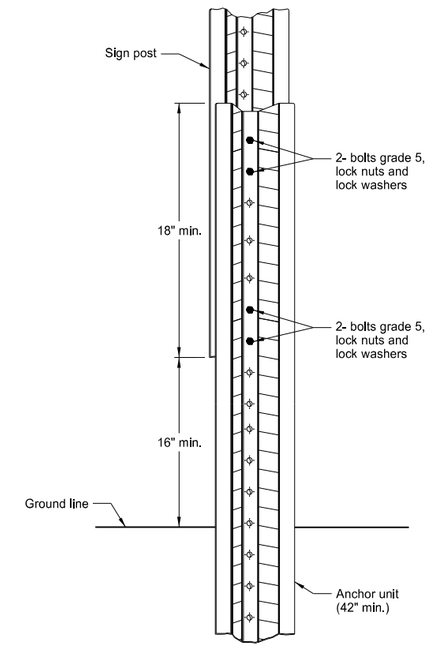


Retainer Strap Detail



Breakaway U-Channel Splice Detail
Alternate B
(2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.



Breakaway U-Channel Splice Detail
Alternate C
(2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.

Alternate A Steps of Installation:

1. a) Drive anchor unit to within 12" of ground level.
   b) Proper assembly established by lining up the bottom hole of retainer strap with the 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.
2. a) Drive anchor unit to 4" above ground.
   b) Rotate strap to vertical position.
3. 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.
4. Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
5. The base post, strap and sign post shall be properly nested. 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.

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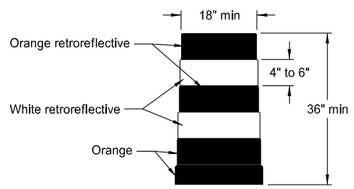
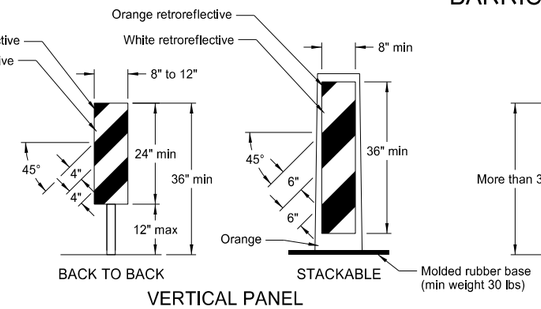
BARRICADE AND CHANNELIZING DEVICE DETAILS

D-704-13



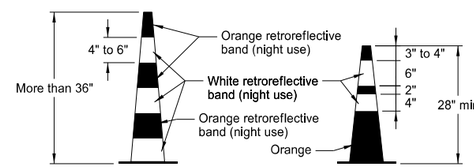
DELINEATOR DRUM

The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectorized spaces between the horizontal orange and white stripes shall not exceed 3" wide. Stripes shall not be placed on ribs or indentations in the drum. Drums shall have closed tops that will not allow collection of construction debris or other debris. Ballast shall not be placed on the top of a drum.



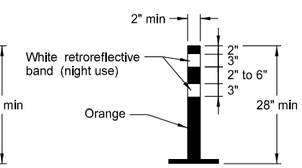
VERTICAL PANEL

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward in the direction vehicular traffic is to pass. Retroreflective sheeting shall be placed on both sides of panel and shall have 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, a stripe width of 6 inches shall be used.



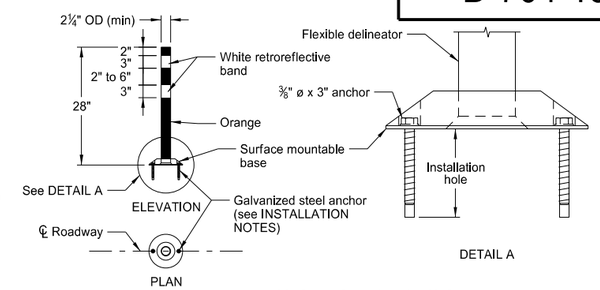
TRAFFIC CONE

Retroreflectorization of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectorized space between the orange and white stripes shall not exceed 3" wide.



TUBULAR MARKER

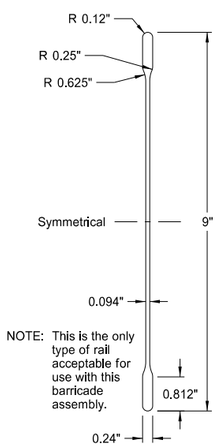
Retroreflectorization of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



FLEXIBLE DELINEATOR

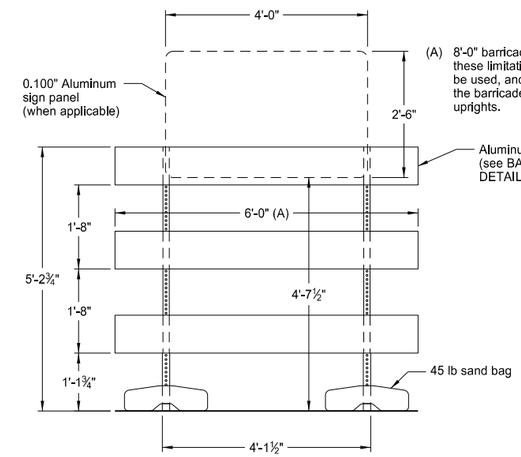
INSTALLATION NOTES:

1. Drill installation holes to diameter and depth as 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, the contractor may use an 8" x 8" butyl pad or hot melt butyl. Butyl shall be removed as close as possible to pavement surface.



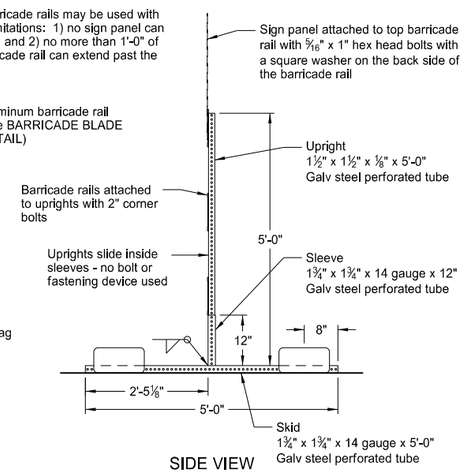
NOTE: This is the only type of rail acceptable for use with this barricade assembly.

BARRICADE BLADE DETAIL



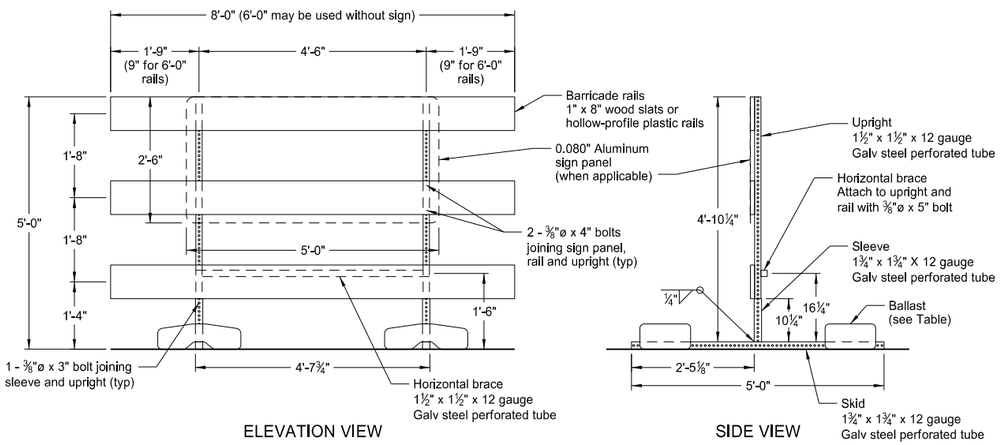
(A) 8'-0" barricade rails may be used with these limitations: 1) no sign panel can be used, and 2) no more than 1'-0" of the barricade rail can extend past the uprights.

ELEVATION VIEW



SIDE VIEW

BARRICADE ASSEMBLY DETAIL
(Aluminum Barricade Rails)

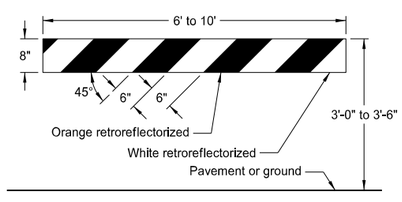


ELEVATION VIEW

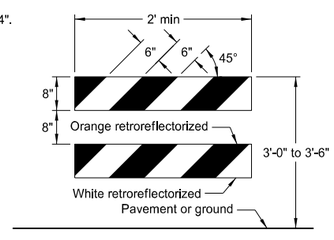
SIDE VIEW

BARRICADE ASSEMBLY DETAIL
(Wood or Plastic Rails)

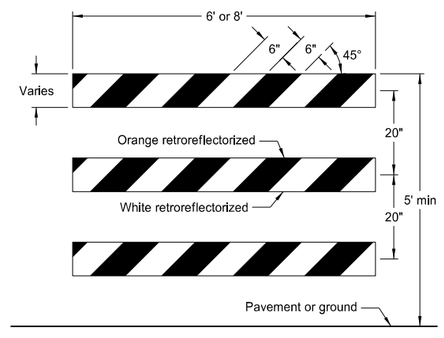
NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", the rail stripe width shall be 4".



TYPE I BARRICADE

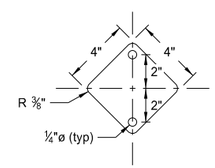


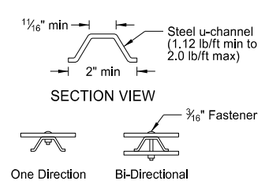
TYPE II BARRICADE

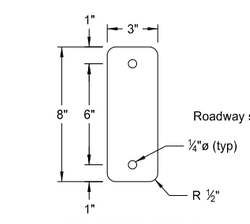


TYPE III BARRICADE

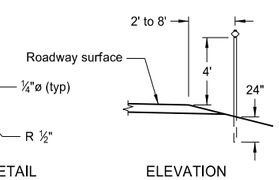
BARRICADE RAIL DETAILS







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: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE

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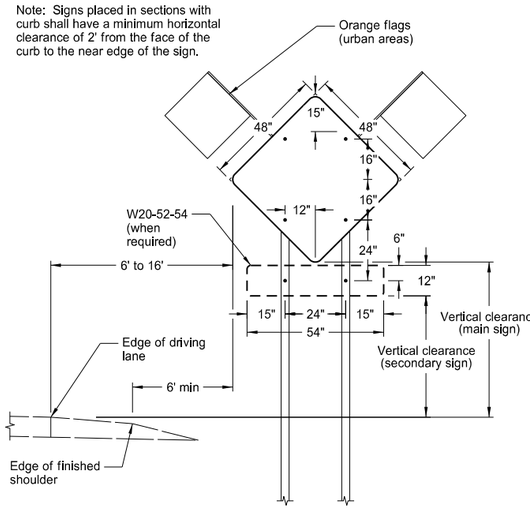
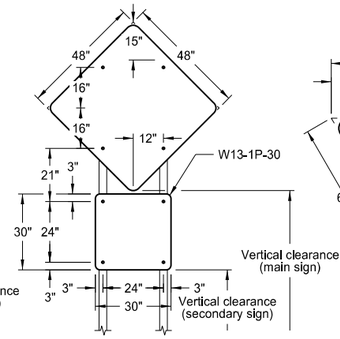
CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

D-704-14

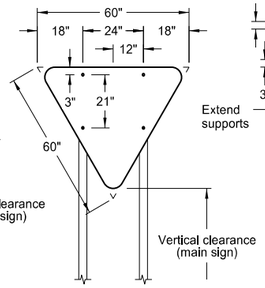
Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



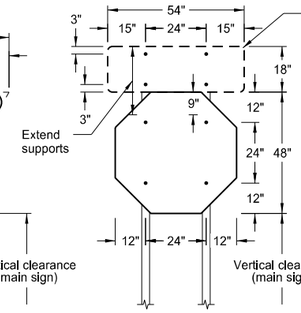
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



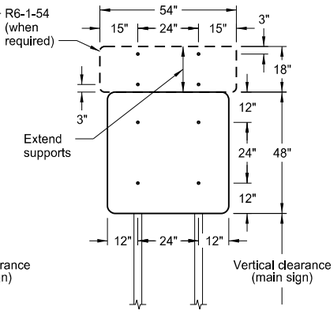
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



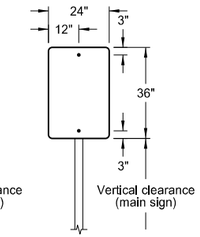
R1-2-60 - YIELD SIGN



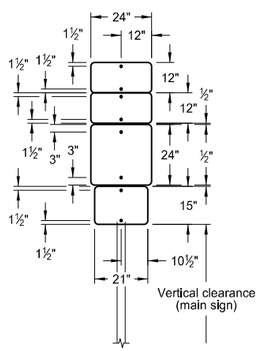
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



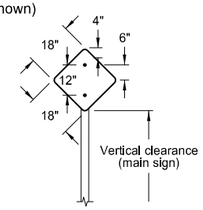
48" x 48" SIGN
(with R6-1-54 sign as required)



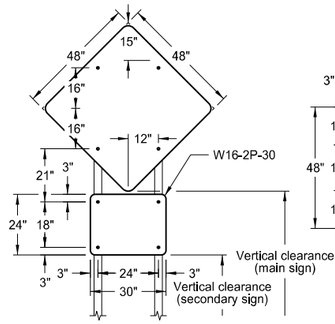
24" x 36" SIGN



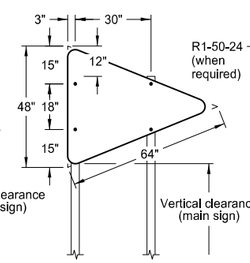
24" x 24"
ROUTE MARKER
ASSEMBLY



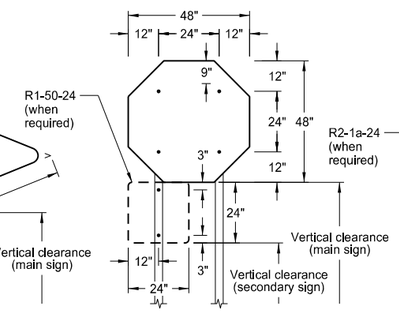
18" x 18"
DIAMOND SIGN



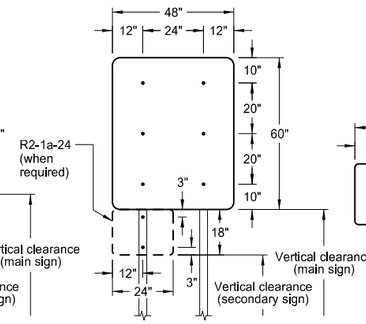
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



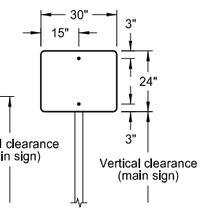
W14-3-64 - PENNANT SIGN



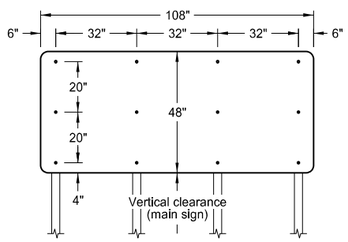
R1-1-48 - STOP SIGN
(with R1-50-24 sign as required)



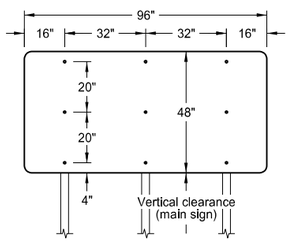
48" x 48" SIGN
(with R2-1a-24 sign as required)



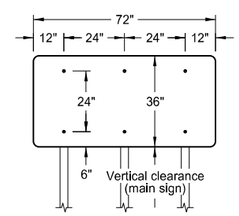
30" x 24" SIGN



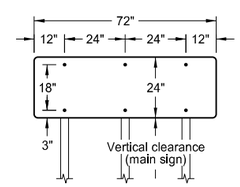
108" x 48" SIGN



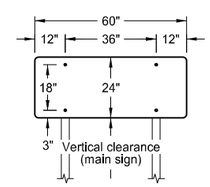
96" x 48" SIGN



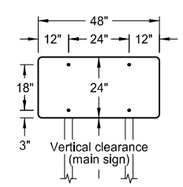
72" x 36" SIGN



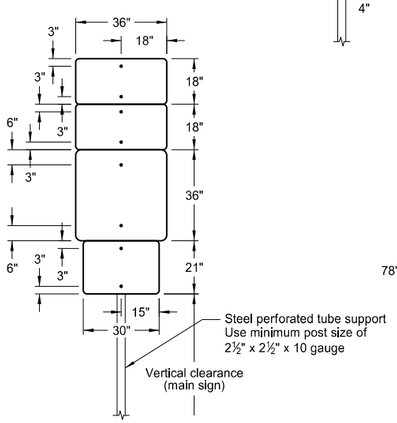
72" x 24" SIGN



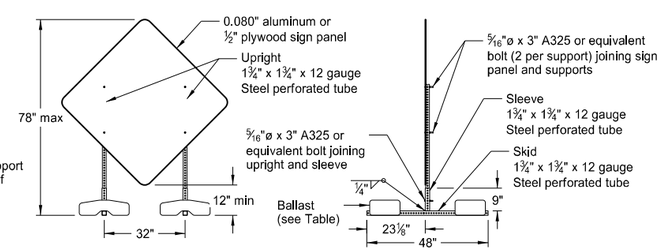
60" x 24" SIGN



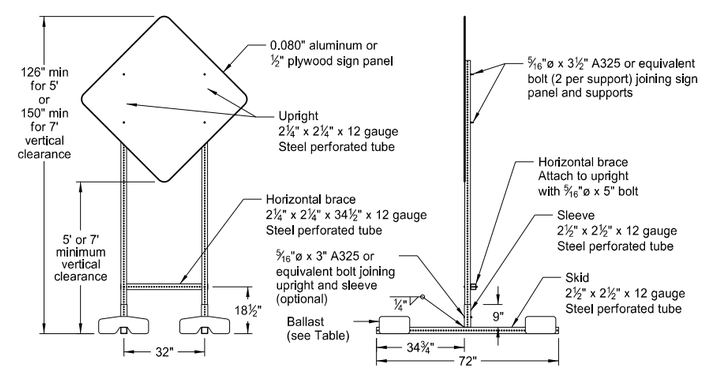
48" x 24" SIGN



36" x 36"
ROUTE MARKER
ASSEMBLY



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

1. Sign Supports: Supports shall be galvanized or painted. 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, the minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes are based on a wind speed of 55 MPH.

   Signs over 50 square feet should be installed on 2½" x 2½" perforated tube supports as a minimum.

   Guy wires shall not be attached to sign supports. Wind beams may be attached to u-posts behind the sign panels.

2. Sign Panels: Provide sign panels made of 0.100" aluminum, ½" plywood, or other approved material, except where noted. All holes to be punched round for ⅜" bolts.

3. Alternate Messages: The signs that have alternate messages may have these alternate messages placed on a reflectorized plate (without a border) and installed and removed as required. (i.e. "Left" and "Right" message on a 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 as stated above.

   Large signs having an area exceeding 50 square feet shall have a minimum clearance of 7'-0" from the ground at the post.

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

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

   Signs mounted to the portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT Details shall have 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. The sandbags are assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6.

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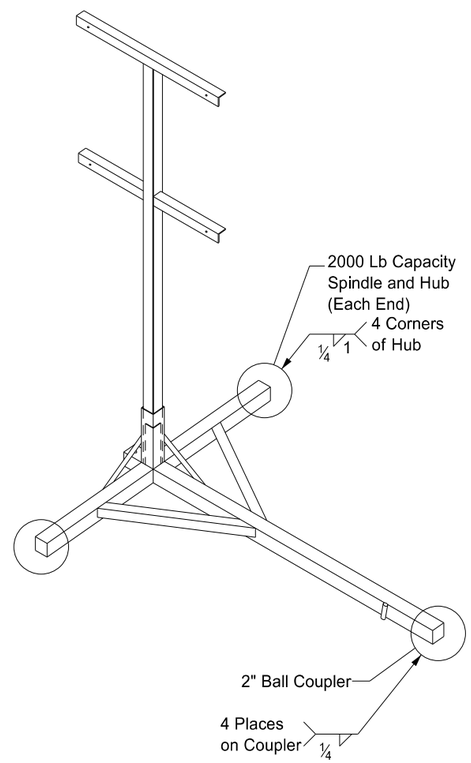
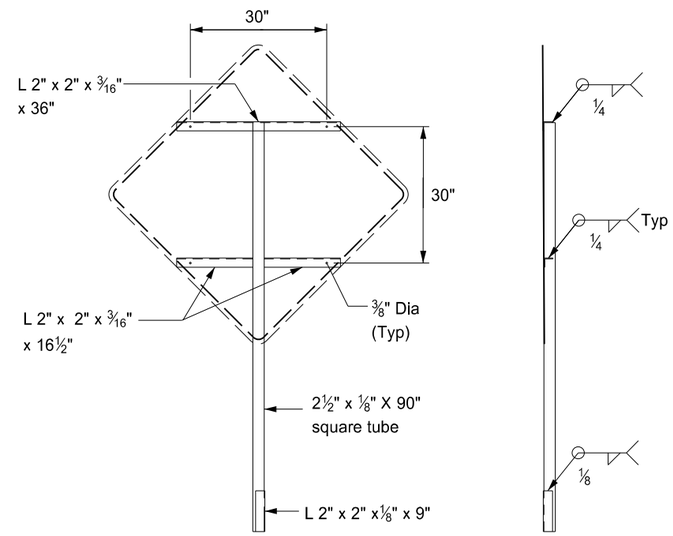
PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50

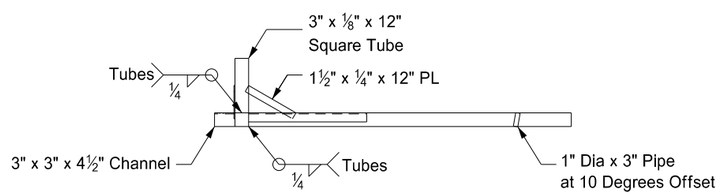




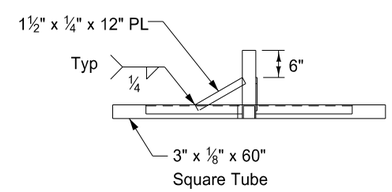
FRONT

RIGHT

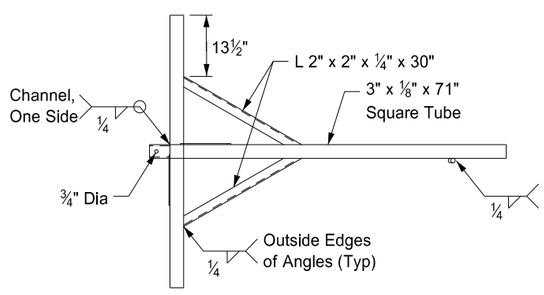
SIGN SUPPORT



FRONT



RIGHT



TOP

TRAILER

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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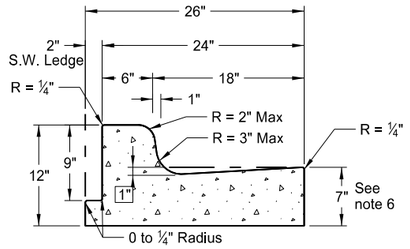
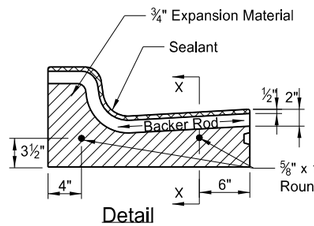
Curb & Gutter and Valley Gutter

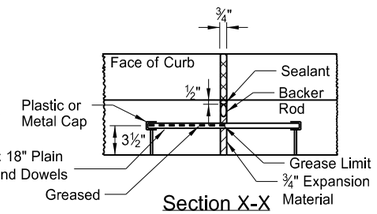
D-748-1



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

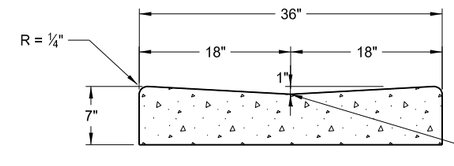


Detail

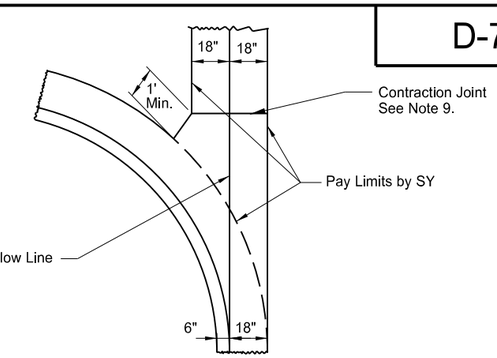


Section X-X

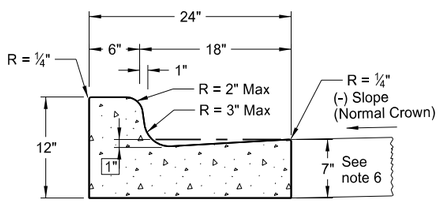
Isolation Joint



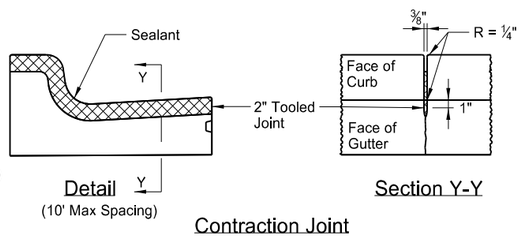
36" Concrete Valley Gutter Detail



36" Concrete Valley Gutter Plan



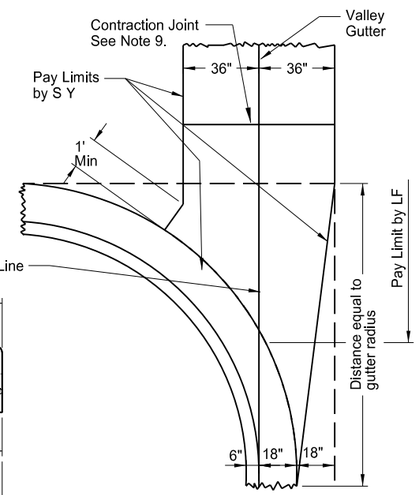
Curb & Gutter Type 1 (Sec. A)



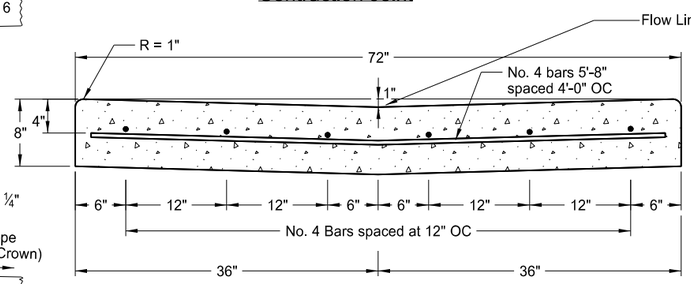
Detail
(10' Max Spacing)

Section Y-Y

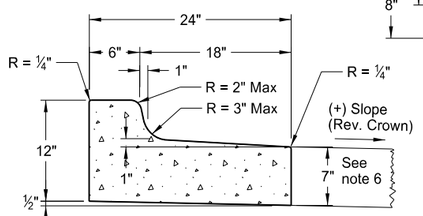
Contraction Joint



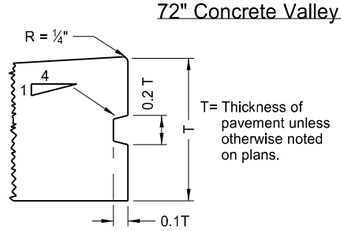
72" Concrete Valley Gutter Plan



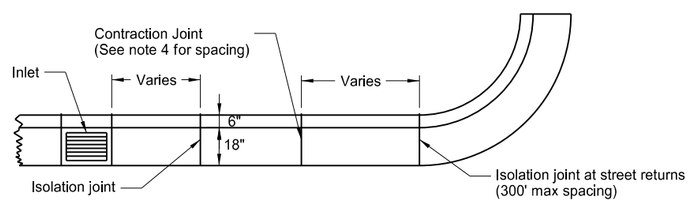
72" Concrete Valley Gutter Detail



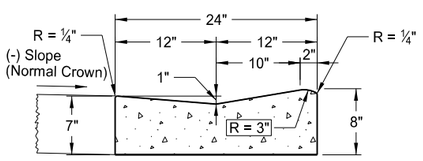
Curb & Gutter Type 1 (Sec. B)



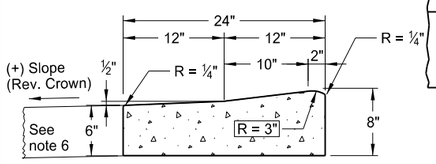
Keyway Detail for Curb & Gutter
(To be used with PCC Pavement and Drives)



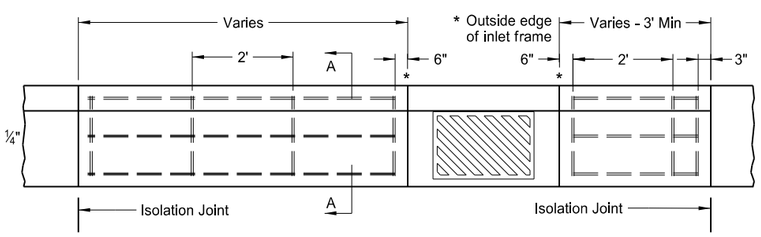
Joint Location Detail



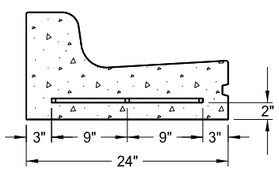
Mountable Curb & Gutter Type 1 (Sec. A)



Mountable Curb & Gutter Type 1 (Sec. B)



Curb & Gutter Reinforcing at Inlets



Section A-A

NOTES:

1. Curb and Gutter Type 1 (Sec. A & B) to be used. Section "A" to be used with (-) pavement slopes and section "B" to be used with (+) pavement slopes.
2. Contraction Joints: Tool the Curb & Gutter 2" as shown on the contraction joint details.
3. Isolation Joints: Isolation joint material shall be 3/4" preformed expansion joint filler conforming to the standard specifications. The opening for the backer rod and joint sealant shall be formed by 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, plastic or metal caps and greased dowels shall be installed in the cold joint for the second pour.
4. Joint Spacing: For hot bituminous pavements the joint spacing for the curb and gutter shall be 10' max. with the panels on each side of the inlets. For concrete pavements the joint spacing for the curb and gutter shall match the pavement joint on PCC Pavements of approximately 15' spacing.
5. Joint sealing: All contraction and isolation joints shall be sealed as shown in the details. The joint sealant for contraction joints shall conform to section 826.02B.The sealant for expansion joints shall be as specified in note 3 above. The sealant shall be tooled and installed in accordance with the manufacturer's recommendations.
6. Depth of Face of Gutter: For hot bituminous pavement the depth of gutter shall be 7" as shown. For PCC pavements, the Contractor has the option to match the depth of gutter to the depth of the adjacent PCC pavement or to construct a 7" depth as shown.
7. When the curb and gutter abuts PCC pavement, it shall be tied to the PCC pavement. The tie bar shall consist of a No. 3 bar, 1'-6" in length spaced 4' center to center.
8. On street returns and other locations where the new curb and gutter ends and does not abut existing curb and gutter, the end two (2) feet of the curb shall be tapered from 6" in height to 0". A 1/2" premolded isolation joint which is full depth and the same shape as the curb and gutter shall be installed just ahead of the taper. An 18" tie bar shall be installed across the joint.
9. Valley Gutter Joints: Contraction joints are required at approx. 10' intervals. The contraction joints shall be ⅛" min. to ⅜" max. in width. The joints shall be formed by sawing or scoring to a minimum depth of 2". The joint sealant shall be a hot poured elastic type joint sealer in accordance with Section 826.02A.2 of the Standard Specifications. The joint and sealant shall be included in the price bid for Valley Gutter.

NOTE: All bars shall be #4 deformed reinforcing bars. Splices will not be permitted. Reinforcing bars at inlet locations will not be paid for separately, but shall be included in the price bid for "Curb and Gutter - Type 1." This includes inlets located on radii. The reinforcement shall be extended to the second joint (rebar placed through the first joint) in cases where the 3' min. panel length cannot be obtained.

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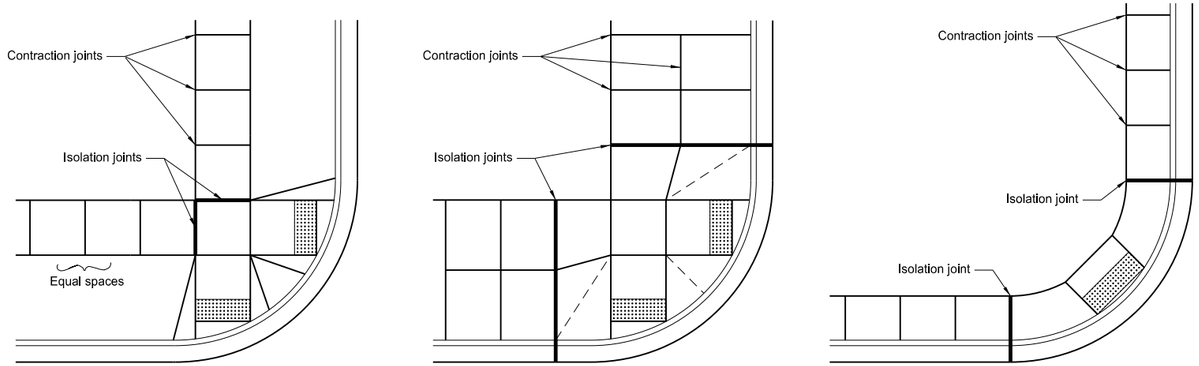
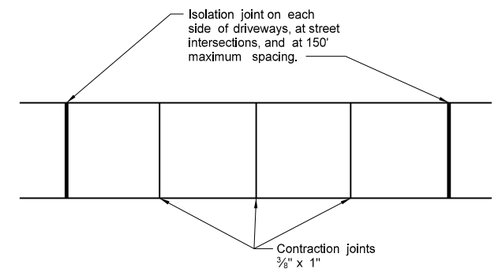
SIDEWALK

D-750-2



Typical Joint Layouts



NOTES:

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

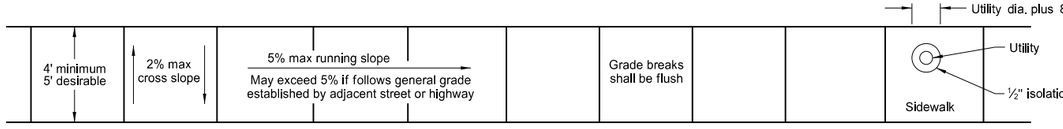
   Longitudinal contraction joints shall be used where the sidewalk width is 8' or greater, and shall be spaced at half the sidewalk width.

   The contraction joints may be sawed or a grooved joint, and shall be a minimum of 1/3 the depth of the concrete.

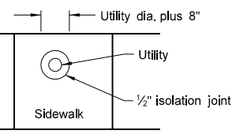
   When the sidewalk is adjacent to the curb & gutter, the sidewalk joint spacing shall be varied to match up with the curb & gutter joints.

   Isolation joints should also be used between seperately poured concretes, or between old and new concrete.

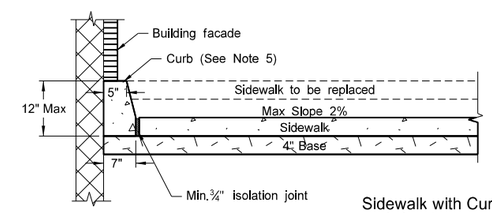
   The cost for all labor, equipment, and material necessary to construct contraction and isolation joints shall be included in the price bid for sidewalk concrete.
3. 4" sidewalk concrete thickness to be used unless otherwise specified in the plans.
4. 4" base material thickness to be used unless otherwise specified in the plans. All labor and materials necessary to place the base material shall be included in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."
5. Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.



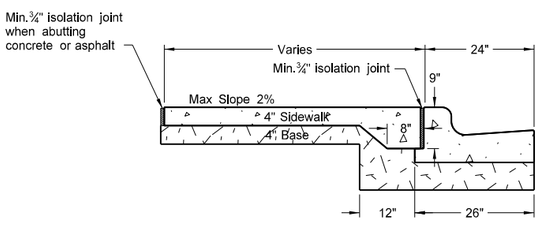
Sidewalk Width and Grade



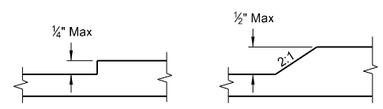
Utility Blockout



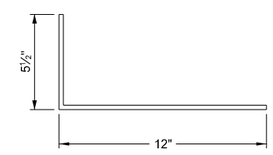
Sidewalk with Curb Detail
(Building face application)



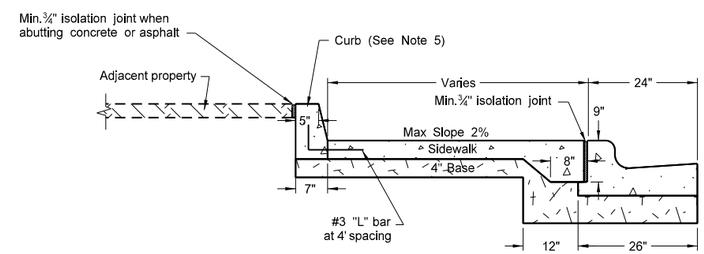
Sidewalk Detail
(Installed adjacent to curb and gutter)



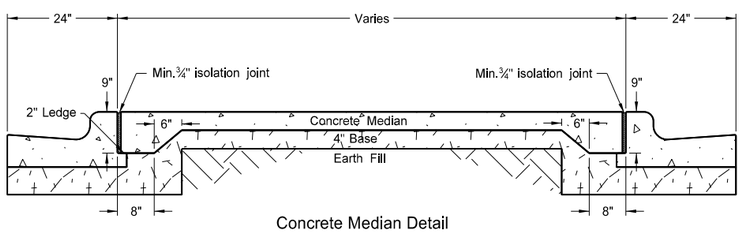
Vertical Discontinuities
(As needed for utility covers, vaults, grating, etc..)



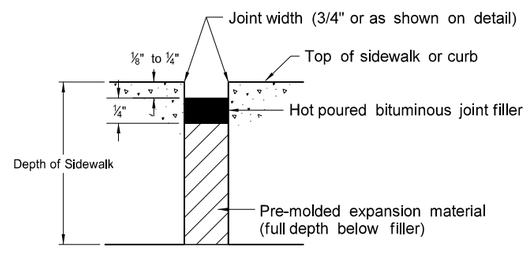
"L"Bar Detail
#3 Bar



Sidewalk with Curb Detail
(Adjacent property application)



Concrete Median Detail



Typical Isolation Joint Seal
(longitudinal and transverse)

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-26-13	
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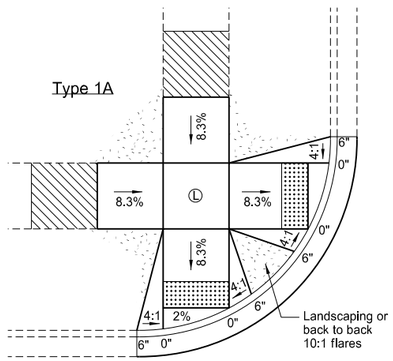
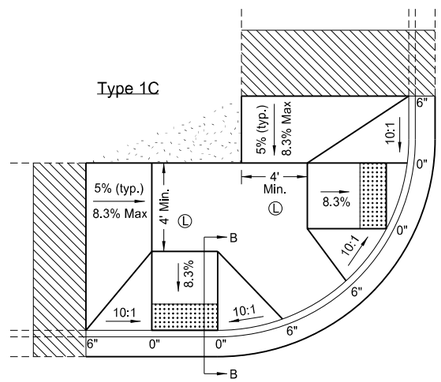
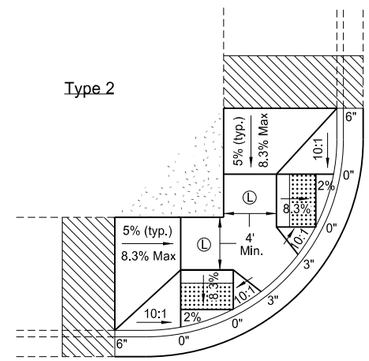
CURB RAMP DETAILS

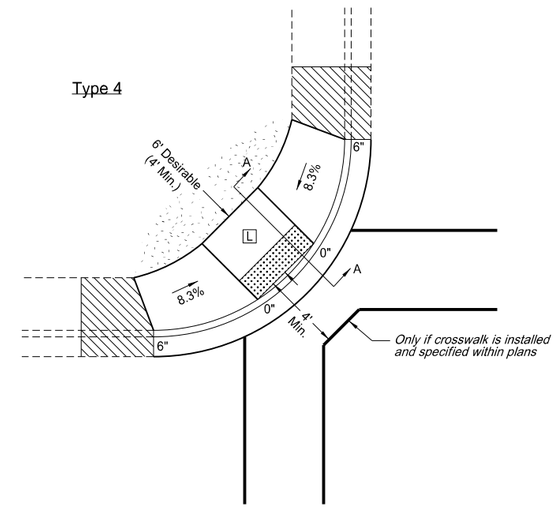
D-750-3

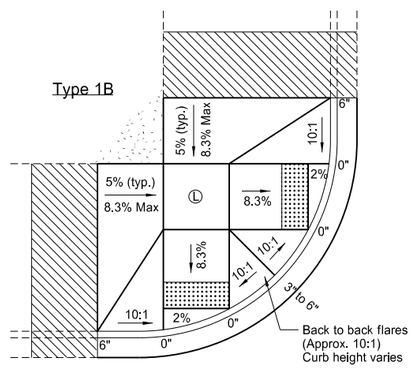
+More Right of Way ⟷ Less Right of Way-

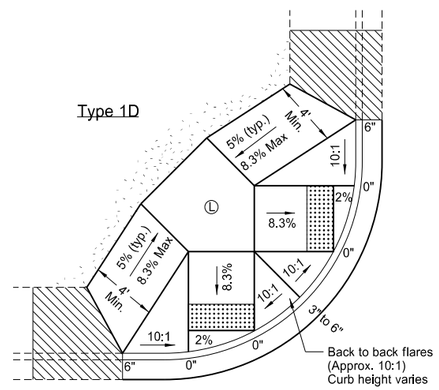


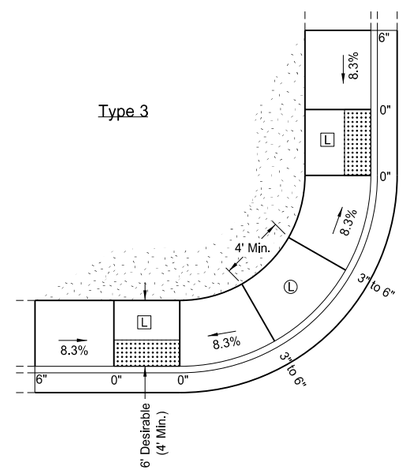




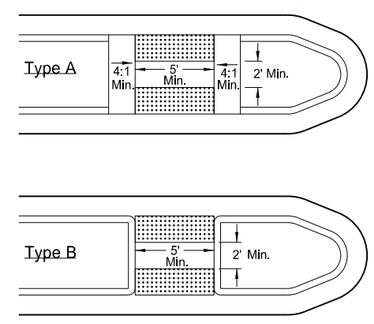








Median Refuge Islands (Cut-Through)



NOTES:

1. Ramp width is defined as the useable portion of the ramp, excluding flares if used.

   Curb ramp width should match the existing sidewalk width. 4' width minimum.

   Ramp width for shared-use paths should match the existing shared use path width.

   Ramp length shall be maximum of 15'.

2. Landings shall be a minimum of 4' x 4' and shall have a max 2% slope in any direction. Landings are desirably 5' x 5' or larger.

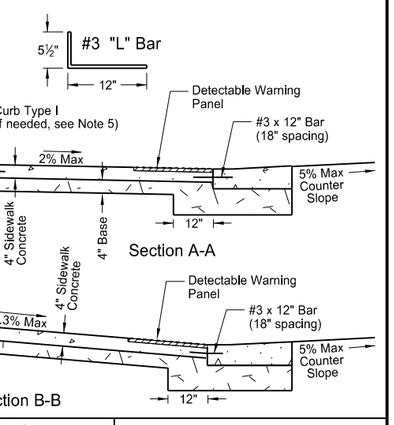
3. Detectable warning panels shall match the ramp width. Radial panels may also be used. The detectable warning panel may be located within the lower landing.

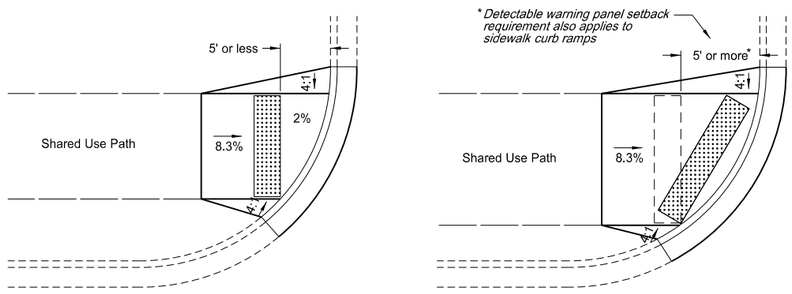
4. The pedestrian access route shall be continuous 4' min. width. Max 2% cross slope applies to all concrete, excluding flares.

5. Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

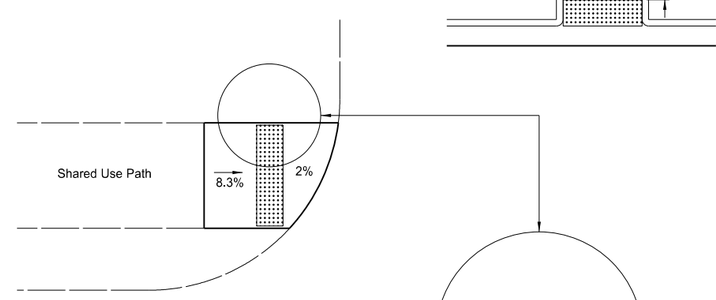
LEGEND:

- : Detectable Warning Panel
- : Landscaping
- : Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.
- Ⓛ : Upper Landing
- L : Lower Landing
- 0", 3", or 6" : Curb Height
- 8.3% : All slopes shown are max grades. Flatter slopes may be used.

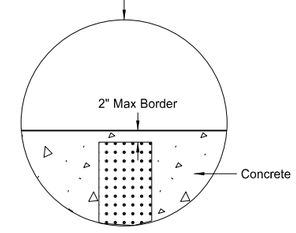


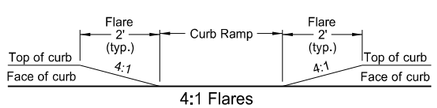


Concrete Apron for Shared Use Paths with Curb and Gutter

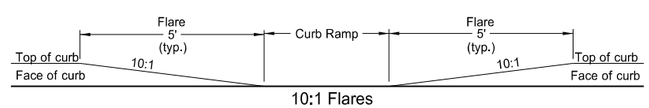


Concrete Apron for Shared Use Paths without Curb and Gutter





4:1 Flares
(To be used when flare is adjacent to landscaping)



10:1 Flares
(To be used when flare is adjacent to sidewalk)

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PERFORATED TUBE ASSEMBLY DETAILS

D-754-23

Notes:

1. Curbed Roadways: The clearance from the face of the curb should be 3' except where right of way or sidewalk width is limited, a minimum clearance of 2' shall be provided. The horizontal clearance may need to be increased to maintain a minimum sidewalk clear width of 4' from the sign support, not including any attached curb.

2. Minimum vertical clearance: Signs installed at the side of the road in rural districts shall be at least 5' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane. Where parking or pedestrian movements occur, the clearance to the bottom of the sign shall be at least 7'.

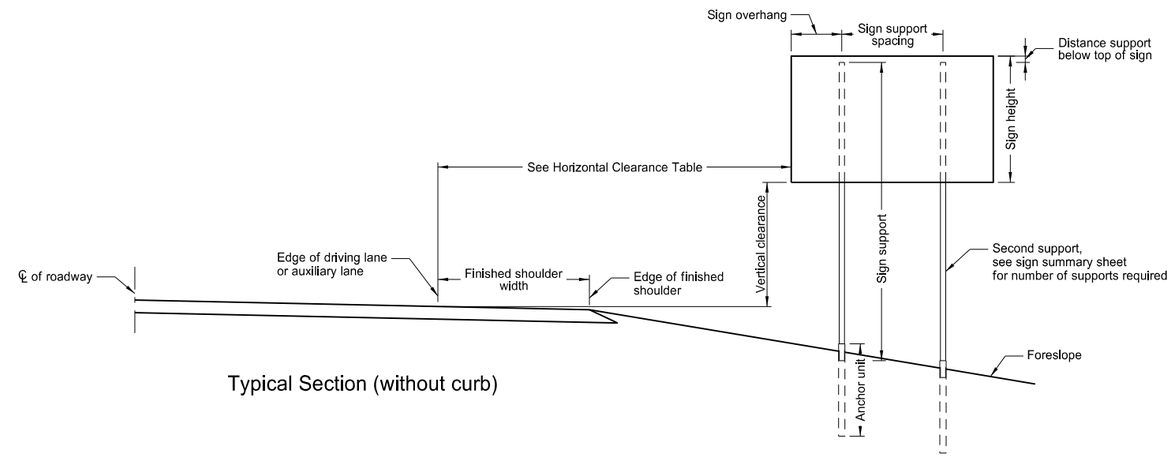
   Signs on expressways shall be installed with a minimum height of 7'.

   Adopt-a-highway signs installed on Freeways shall be at least 7' above the edge of the driving lane.

   The vertical clearance shall have a maximum height of 6" above the vertical clearance specified above.

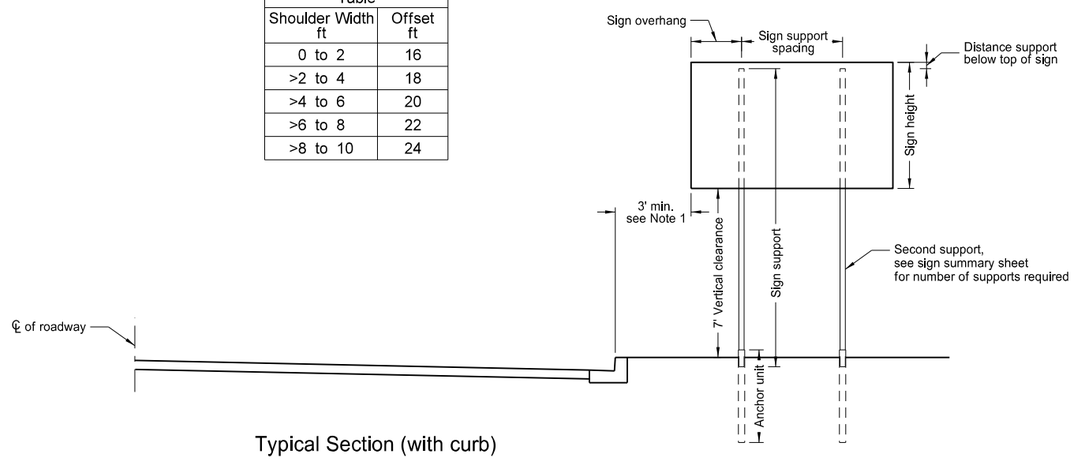
3. Offset signs: Where signs are placed at least 30 feet or more from the edge of the traveled way, the height to the bottom of such sign shall be 5' above the edge of the driving lane.

4. The clearance from edge of shared use path to edge of sign should be 3' except where width is limited, a minimum clearance of 2' shall be provided.



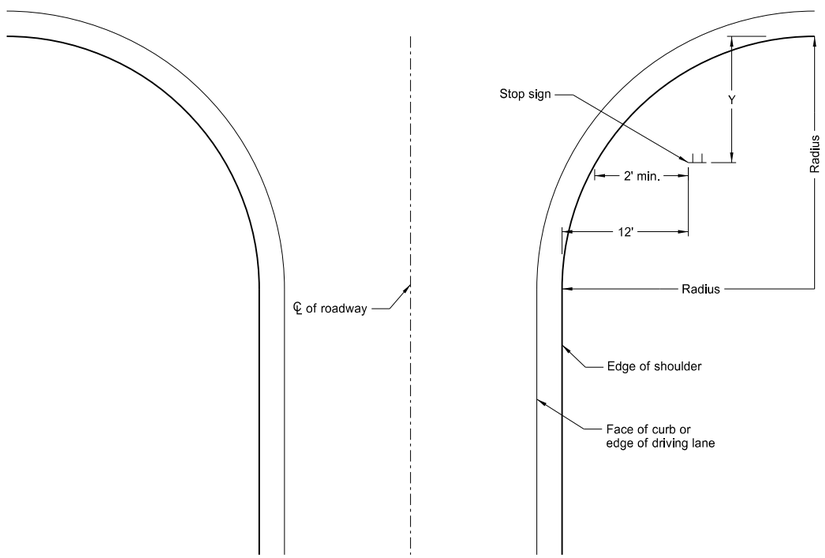
Typical Section (without curb)

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)

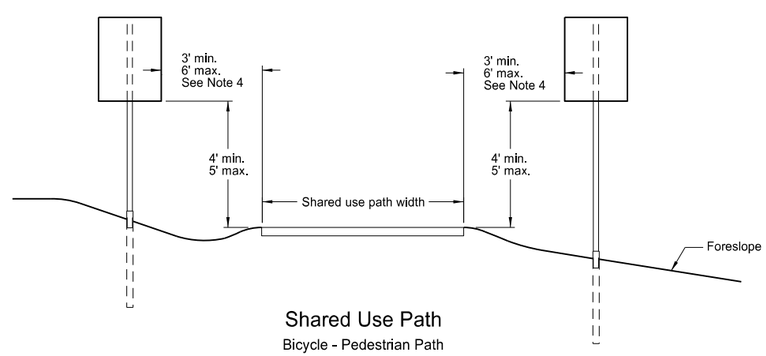
Residential or Business District



Stop Sign Location
Wide Throat Intersection

This layout is to be used 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.

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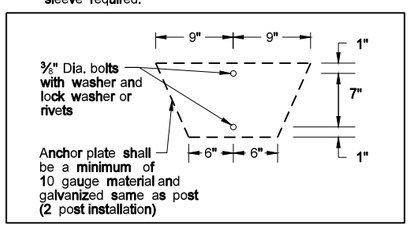
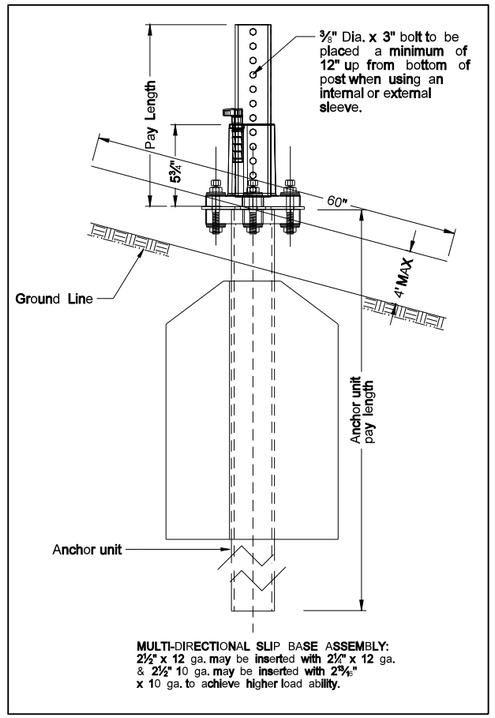
Mounting Details Perforated Tube

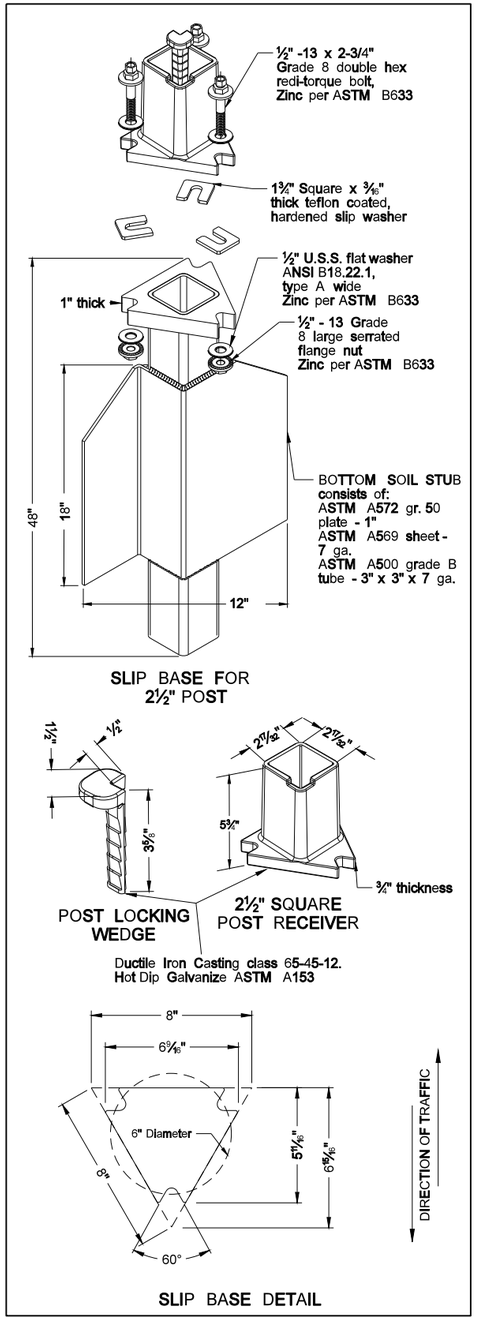
D-754-24

Number of Posts	Telescoping Perforated Tube: Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Gauge
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	2½(D)	12	Yes		7
1	2½	12	2¼	12	Yes		7
2	2½	10			Yes		7
2	2¼	12	2½(D)	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	2½(D)	12	Yes		7
3 & 4	2½	10	2 3/16	10	Yes		7

(B) - The 2½", 12 gauge posts do not need breakaway bases when placed in standard soils, but require a shim as specified by the manufacturer. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.
(C) - 3" anchor unit
(D) - 2½" x 12 ga. x 18" minimum length external sleeve required.





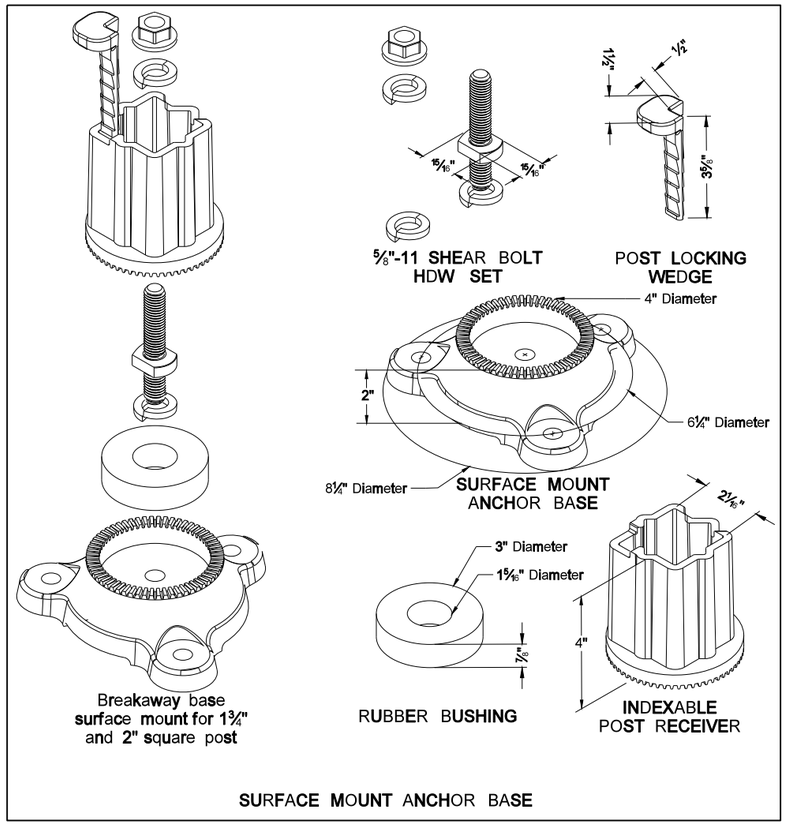


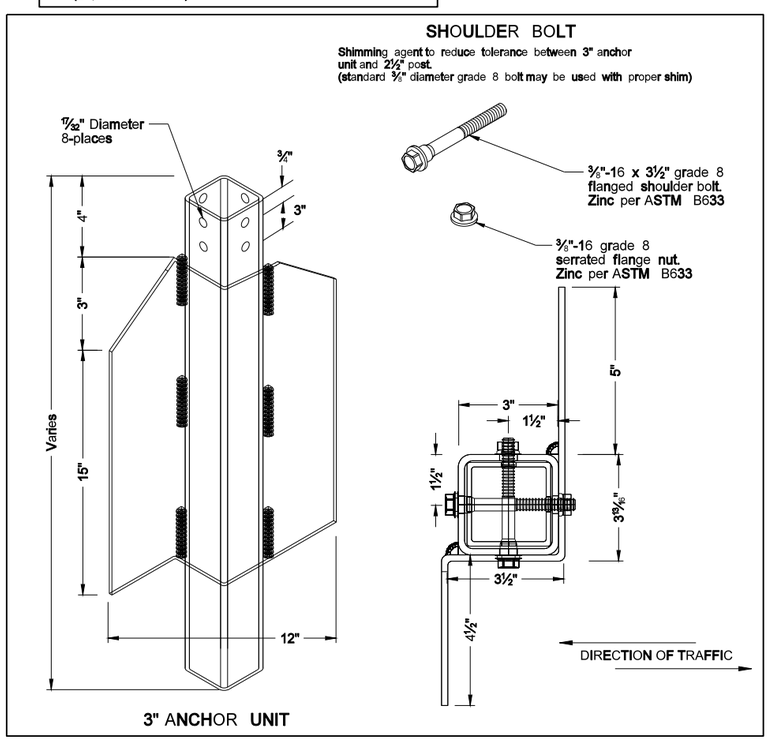
Properties of Telescoping Perforated Tubes						
Tube Size In.	Wall Thickness in.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia in.⁴	Cross Sect. Area in.²	Section Modulus in.³
1½ x 1½	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2¼ x 2¼	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	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	4.006	0.979	1.010	0.783

The 2 3/16" size 10 gauge is shown as 2.19" size on the plans; The 2½" size is shown as 2.51" size on the plans.

NOTE:

1. 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.
2. Anchor material shall be 7 guage H.R.P.O. Commmercial quality ASTM A569 and 3" x 3" x 7" guage ASTM A500 grade B. Anchor shall have a yield strength 43.9 KSI and tensile strength of 59.3 KSI. Anchor shall be hot dipped galvanized per ASTM A123/153. All tolerances on anchor unit and slip base bottom assembly are +/- 0.005" unless ortherwise noted.
3. When used in concrete sidewalk, anchor shall be the same concept without the wings
4. Four post signs shall have over 8' between the first and fourth posts.
5. Installation procedures as per manufacturers recommendation.
6. Concrete fasteners for surface mount breakaway base shall be a minimum ½" diameter x 4" grade 8.





NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-6-09	
REVISIONS	
DATE	CHANGE

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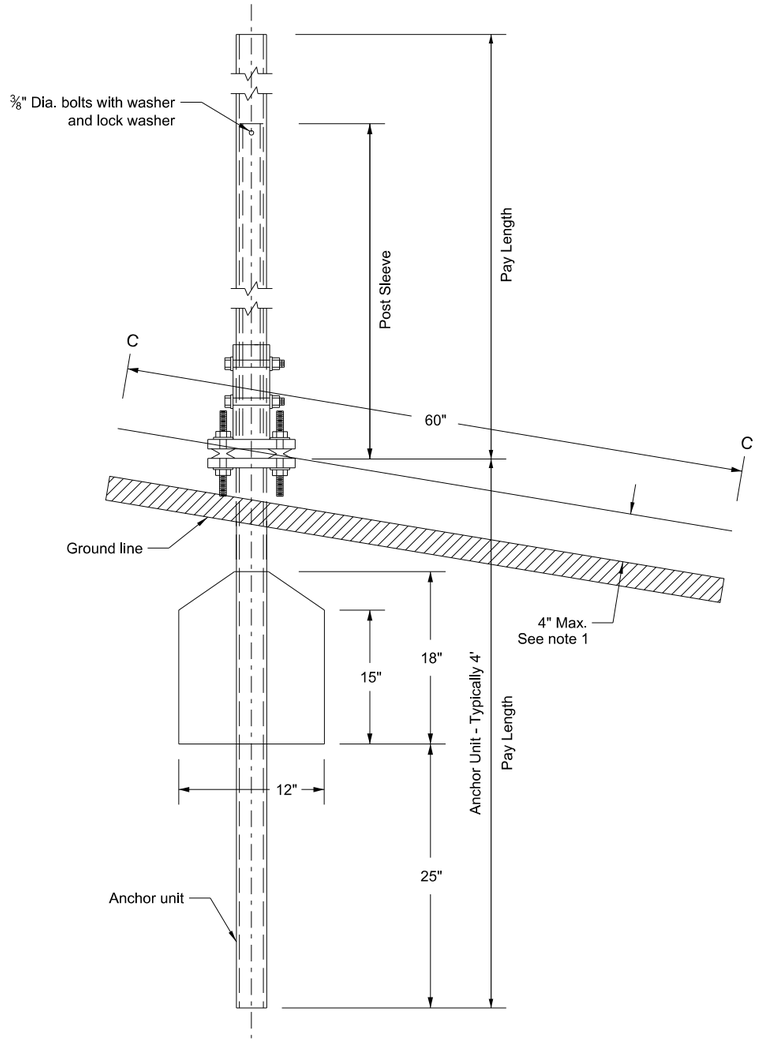
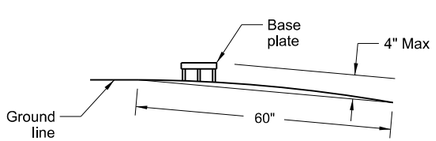
Breakaway Coupler System for Perforated Tubes

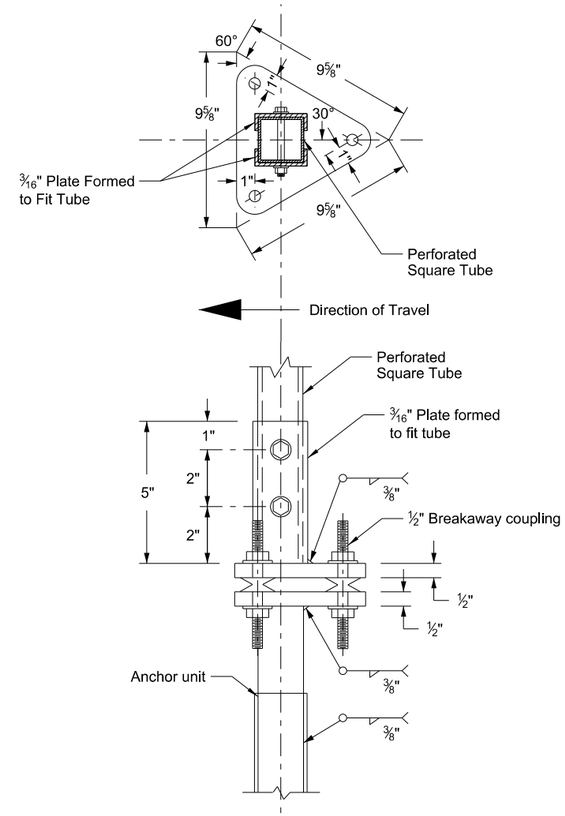
D-754-24A



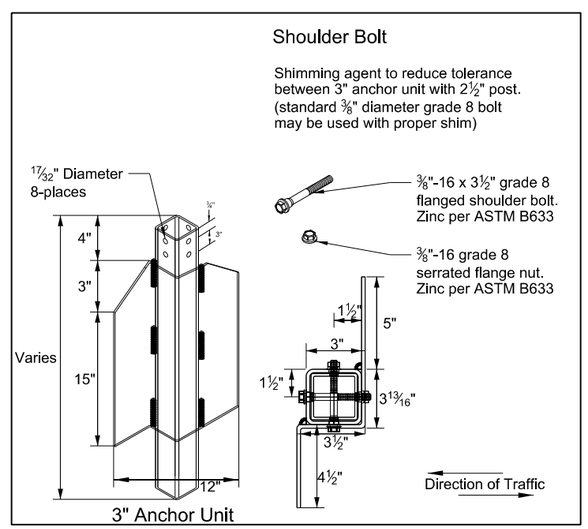


Section C-C

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.



Base Plate with Breakaway Coupler



3" Anchor Unit

Notes:

1. 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.
2. Anchor unit shall be the same size as the post and shall have the same specification as the post.
3. Four post signs shall have over 8' between the first and fourth post.
4. In lieu of the breakaway base system on standard D-754-24 the breakaway coupling system may be used. The breakaway coupler system shall be manufactured from material meeting the requirements of ASTM A325 fasteners with the special requirements as 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	2 3/16	10	Yes		7

(B) - The 2½" 12 gauge posts do not need breakaway bases when placed in standard soils. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.

(C) - 3" anchor unit

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-2013	
REVISIONS	
DATE	CHANGE

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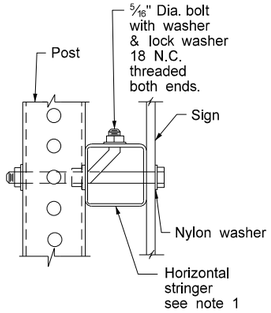
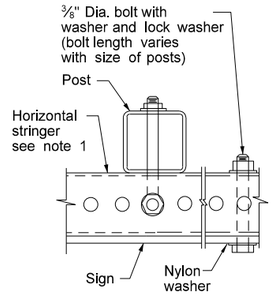
Mounting Details Perforated Tube

D-754-25

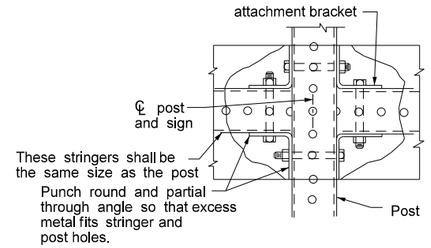


Side View

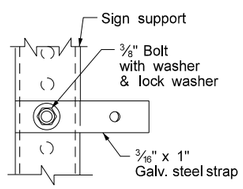


Top View

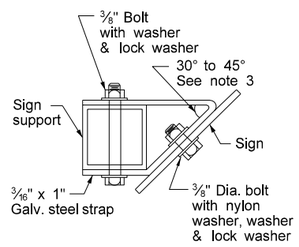
STRINGER MOUNTING
(WITH STRINGER IN FRONT OF POST)



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

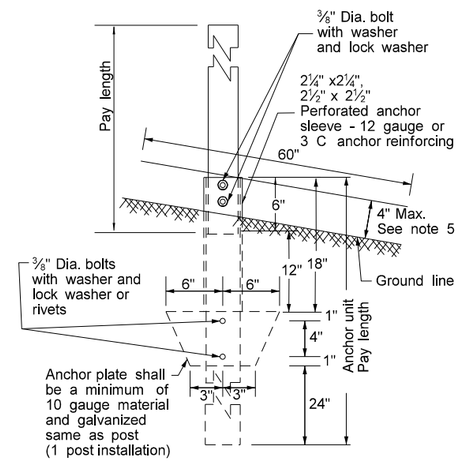


Side View



Top View

STRAP DETAIL



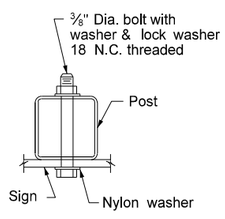
ANCHOR UNIT AND
POST ASSEMBLY

Note:

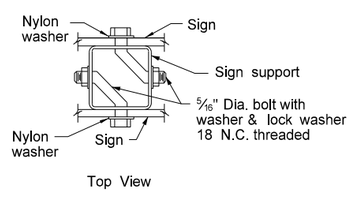
1. Horizontal stringers - In lieu of perforated tubes, the contractor may substitute z bar stringers. The z bar stringers shall be 1¾" x 3/16" thick, 1.08 lbs./ft aluminum or 3.16 lbs./ft steel.
2. Metal washers used on sign face shall have a minimum outside diameter of 15/16" ± 1/16" and 10 gauge thickness.
3. No Parking Signs: All no parking signs with directional arrows shall be placed at a 30 to 45 degree angle with the line of traffic flow. No parking signs required at the above angles may have the support turned to the correct angle. If the no parking sign is placed with another sign that has to be placed at a 90 degree angle with the line of traffic flow, the detailed angle strap should be used to mount the no parking sign. Flat washers and lock washers shall be used with all nylon washers.
4. In lieu of using the bent bolt to attach the post to the stringer, the contractor may choose to punch the sign backing and place the bolt through the sign, the stringer and the post.
5. 4" vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.

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 Thick-ness Gauge
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	2½(D)	12	Yes		7
1	2½	12	2¼	12	Yes		7
2	2½	10			Yes		7
2	2¼	12	2½(D)	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	2½(D)	12	Yes		7
3 & 4	2½	10	2 3/16	10	Yes		7

(B) - The 2½", 12 gauge posts do not need breakaway bases when placed in standard soils, but require a shim as specified by the manufacturer. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.
(C) - 3" anchor unit
(D) - 2½" x 12 ga. x 18" minimum length external sleeve required.

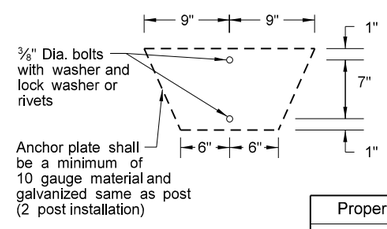


BOLT MOUNTING



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
2 3/16 x 2 3/16	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	4.006	0.979	1.010	0.783

The 2 3/16" size 10 gauge is shown as 2.19" size on the plans.
The 2½" 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

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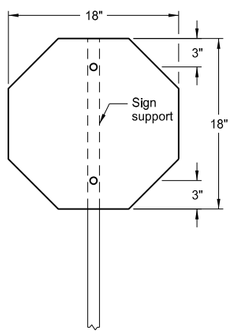
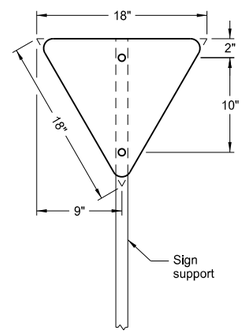
D-754-46

BIKE ROUTE SIGNS
PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS FOR REGULATORY, WARNING AND GUIDE SIGNS



1 Post
Assembly No. 100



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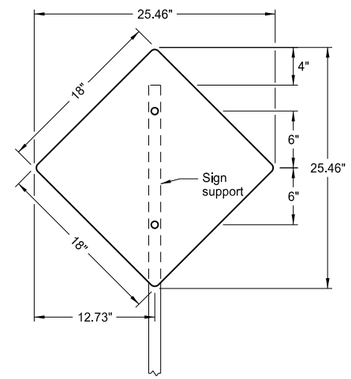
Assembly No. 101



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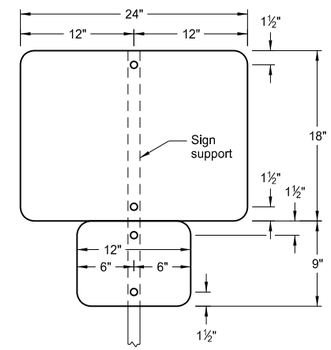
Assembly No. 102



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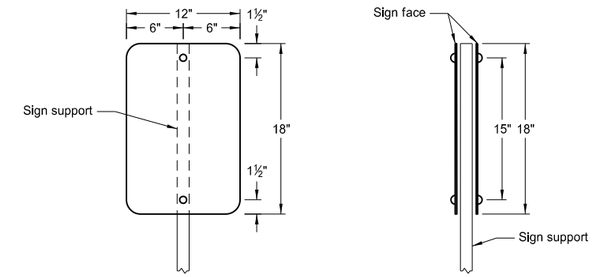
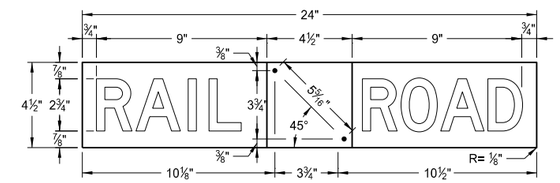
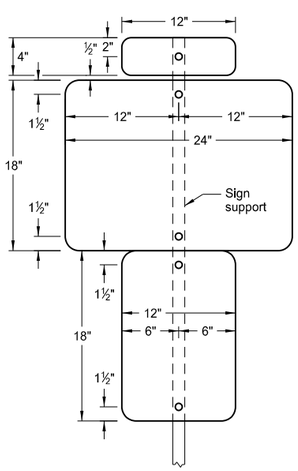
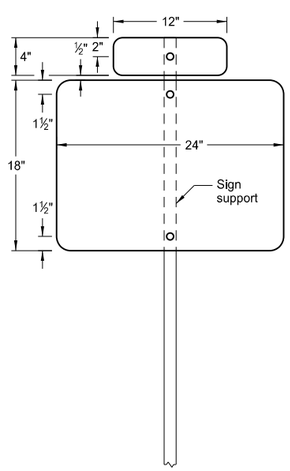


1 Post
back to back
Assembly No. 104

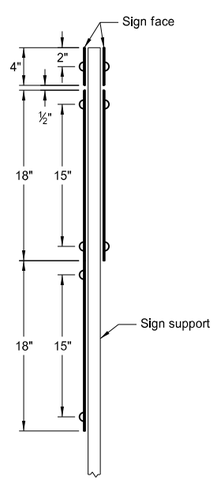


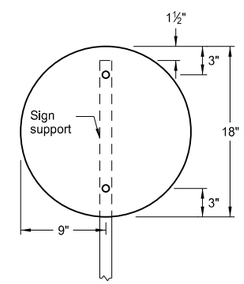
R15-1-24





1 Post
back to back
Assembly No. 105





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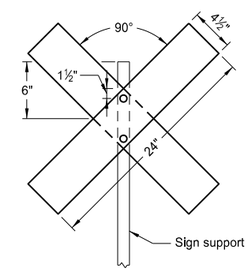
Assembly No. 106



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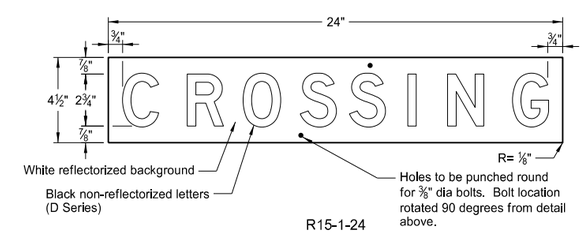
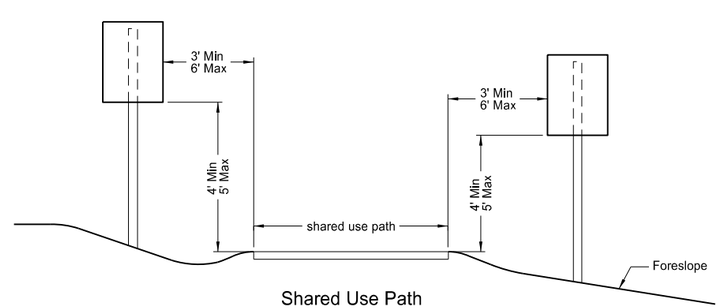
Assembly No. 107



R15-1-24
Railroad Crossing Sign Details



Shared Use Path
Bicycle - Pedestrian Path

Notes:

1. The minimum sign backing material thickness shall be 0.100 inch.

2. All holes shall be punched round for ⅜" bolt.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-22-12	
REVISIONS	
DATE	CHANGE

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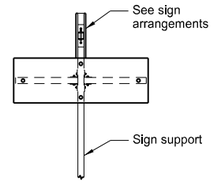
SIGN PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS FOR STREET NAME SIGNS AND 911 SIGNS

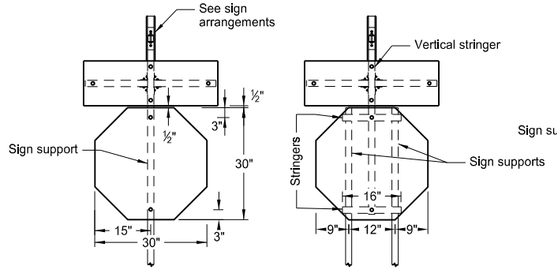
D-754-87

A - Single sign
B - Single sign back to back
C - Single sign each direction
D - Single sign one direction, back to back other direction
E - Back to back both directions



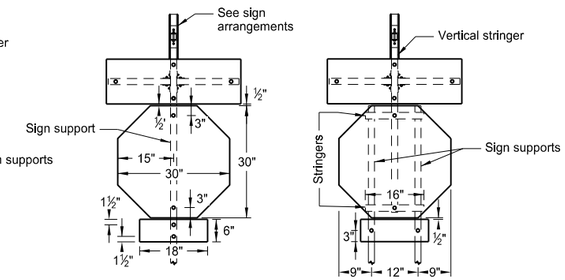
1 Post

Special Assembly 1 (A, B, C, D or E)



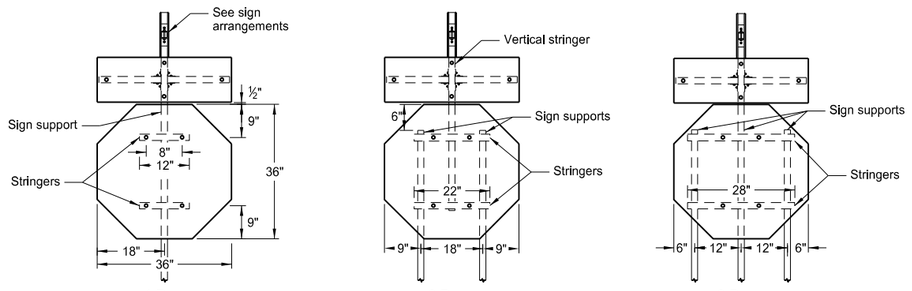
1 Post 2 Posts

Special Assembly 2 (A, B, C, D or E)



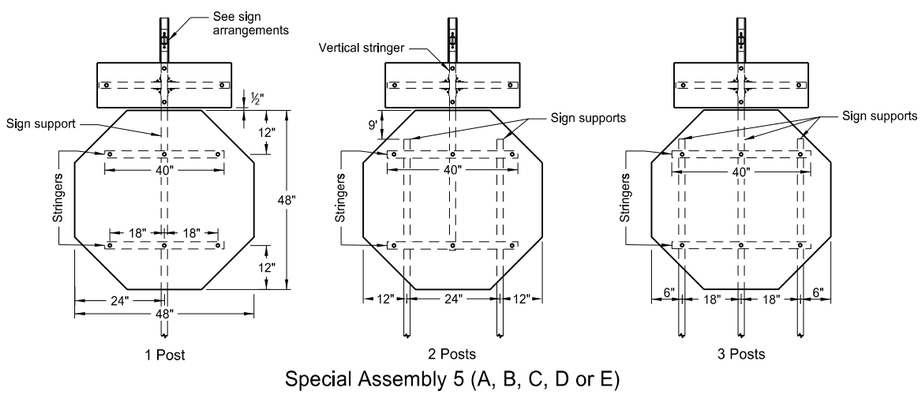
1 Post 2 Posts

Special Assembly 3 (A, B, C, D or E)



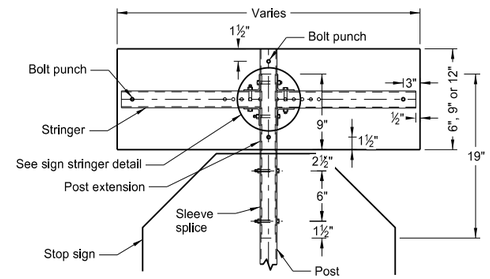
1 Post 2 Posts 3 Posts

Special Assembly 4 (A, B, C, D or E)



1 Post 2 Posts 3 Posts

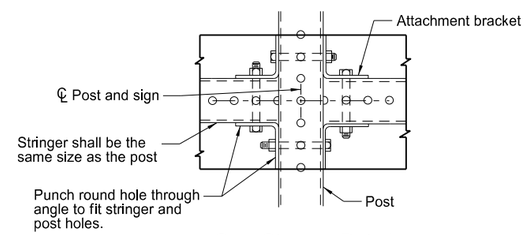
Special Assembly 5 (A, B, C, D or E)



Front View

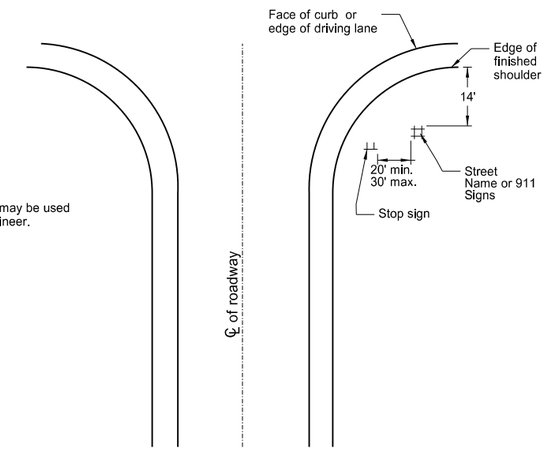
Sleeve Splice Detail

Note: The splice method may be used upon approval of the engineer.



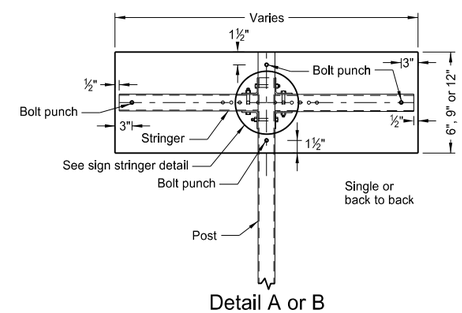
Sign Stringer Detail

Note: See Standard Drawing D-754-86 for 911 support information and sign layout details.

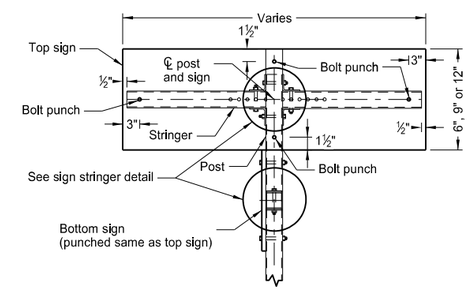


Intersection Layout

Note: This layout is to be used for street name signs or 911 signs that are used with Special Assembly 1 .

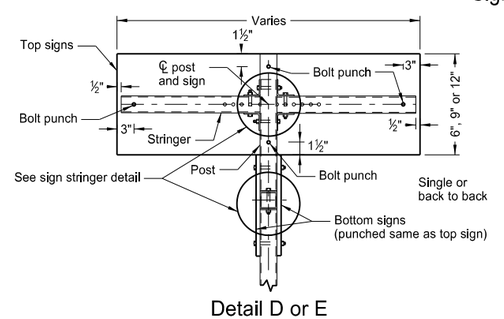


Detail A or B



Detail C

Sign Arrangements



Detail D or E

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
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DATE	CHANGE

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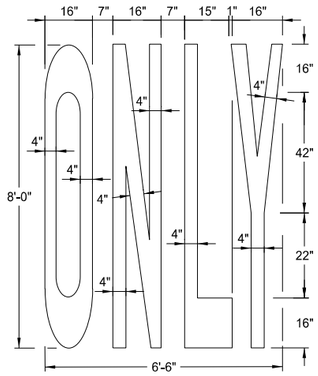
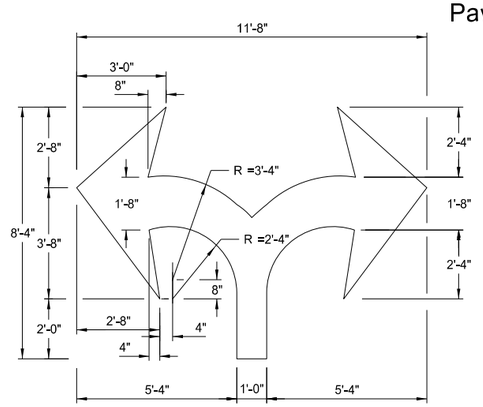
Pavement Marking Message Details

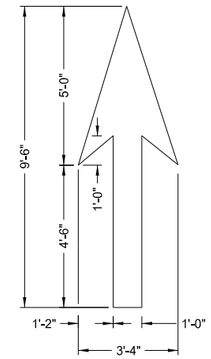
D-762-1



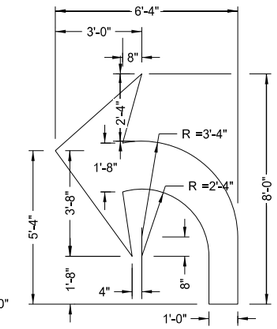
22 S. F.



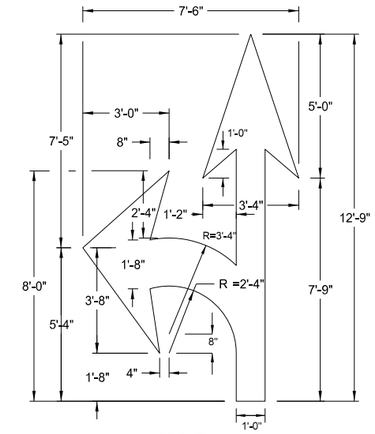
29 S. F.



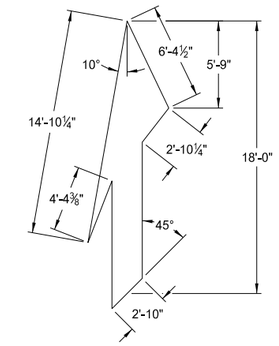
12 S. F.



16 S. F.

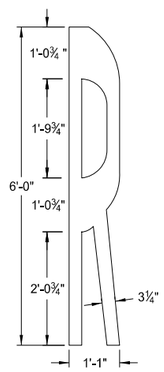


27 S. F.

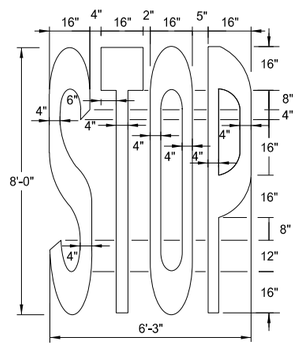


41 S. F.

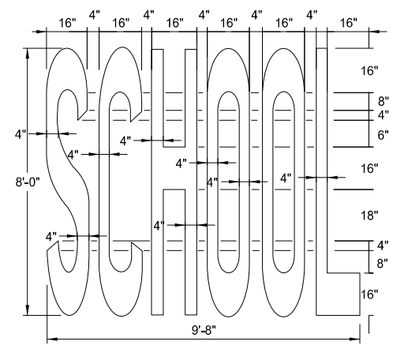
Note:
The merge arrow shall be rotated 20° from the edge of the roadway.



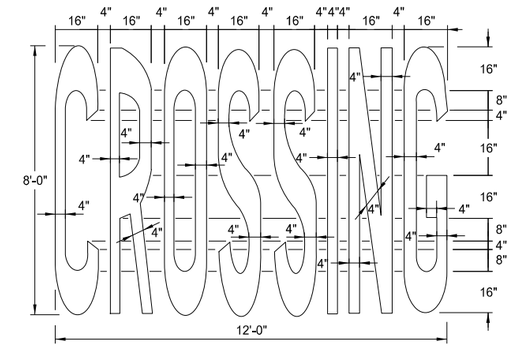
4 S. F.



22 S. F.



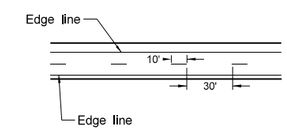
34.5 S. F.



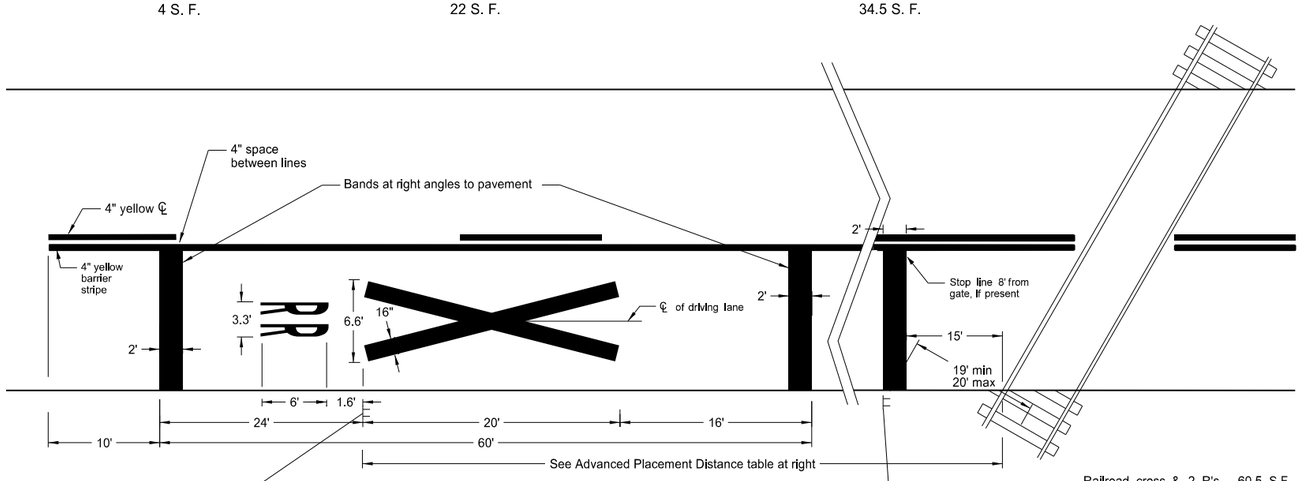
46 S. F.

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



Railroad cross & 2 R's 60.5 S.F.
3 Bands (12' lane) 72 S.F.

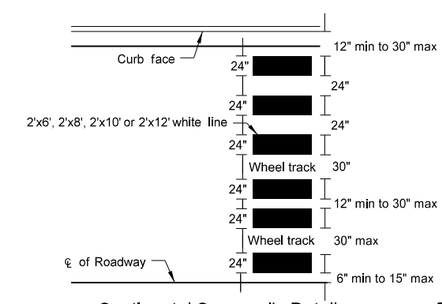
W10-1

See Standard Drawing D-754-81

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

See plans for correct message. All pavement markings shall be white unless noted otherwise.

R15-1



Continental Crosswalk 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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

12-6-11

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This document was originally issued and sealed by Roger Weigel, Registration Number PE- 2930, on 12/06/11 and the original document is stored at the North Dakota Department of Transportation