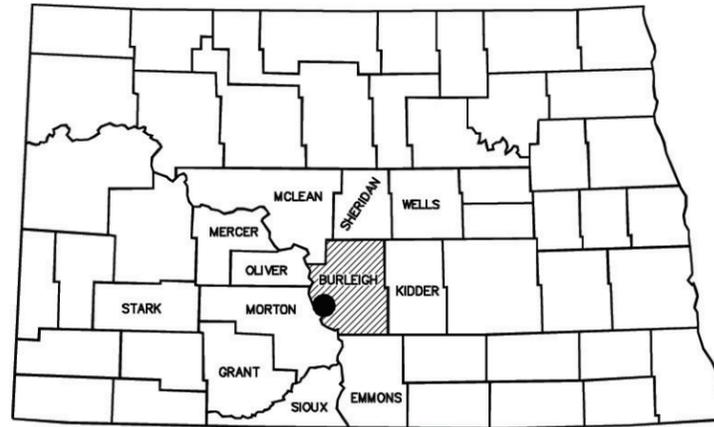


STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
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SKETCH MAP OF NORTH DAKOTA SHOWING COUNTIES

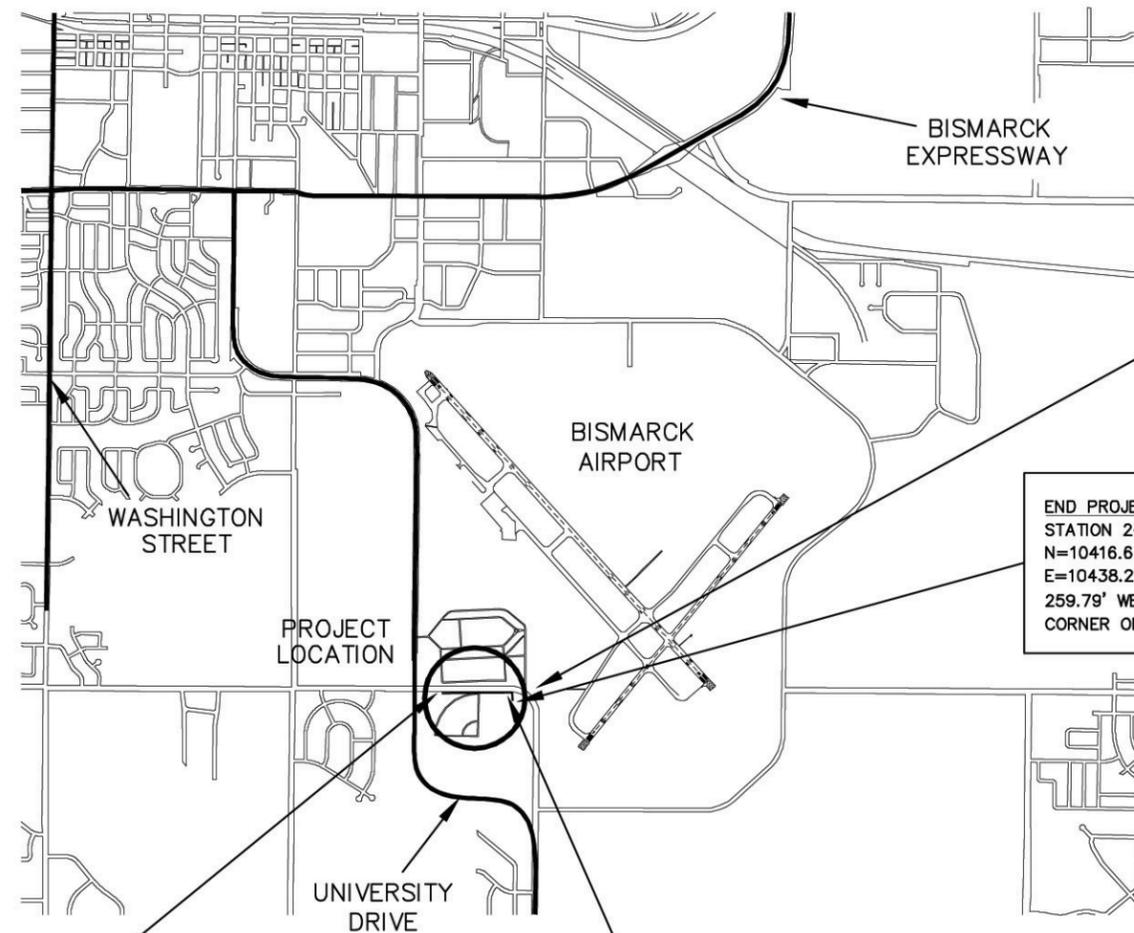
JOB #: 2
 NORTH DAKOTA
 DEPARTMENT OF TRANSPORTATION

FHWA LIMITED INVOLVEMENT
 UNITED TRIBES TECHNICAL COLLEGE
 MULTI-USE TRAIL PHASE II
 TEO-0008(028)

BURLEIGH COUNTY
 UNIVERSITY DRIVE
 BISMARCK, NORTH DAKOTA
 GRADING, SEEDING, CONCRETE MULTI-USE TRAIL

GOVERNING SPECIFICATIONS:
 Standard Specifications adopted by the North Dakota
 Department of Transportation October 2014; Standard Drawings
 currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER	DESCRIPTION	NET MILES	GROSS MILES
TEO-0008(028)		0.362	0.362



BASIS OF BEARING:
 NE CORNER OF SECTION 22, T.138N., R.80W.
 FOUND BRASS CAP
 DAW 1960
 N = 10666.42
 E = 10642.41
 EL = 1656.37 (NAVD29)

END PROJECT TEO-0008(028)
 STATION 2+15.75
 N=10416.62
 E=10438.22
 259.79' WEST, 198.28' SOUTH OF THE NE
 CORNER OF SECTION 22, T.138N., R.80W

BEGIN PROJECT TEO-0008(028)
 STATION 0+00.0
 N=8642.98
 E=10586.99
 2031.25' WEST, 54.50' SOUTH, OF THE NE
 CORNER OF SECTION 22, T.138N., R.80W

STATION 17+00.05 BACK
 EQUALS
 STATION 0+00 AHEAD

PS&E CORRECTIONS MADE: 2/12/14
 SURVEYED: 9/13/13
 DESIGNED: 2/12/14
 REVISED: 4/30/14
 REVISED: 8/15/14

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

APPROVED DATE: 8/15/2014

Jake Axtman, PLA /s/
 AXTMAN+ASSOCIATES, PC

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DESIGNERS
JACOB AXTMAN, PLA

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
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008	1	Quantities
030	1	Proposed Typical Sections
060	1-5	Plan & Profile Sheets
090	1-3	Paving Layouts
200	1-3	Cross Sections

LIST OF STANDARD DRAWINGS

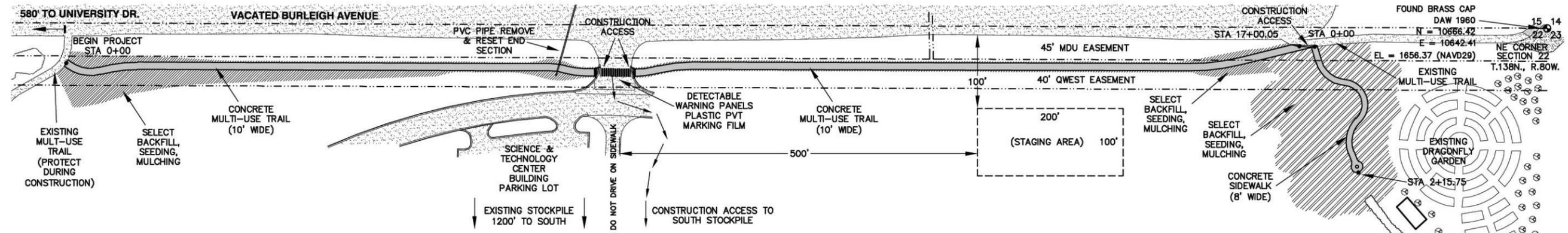
<u>STANDARD NUMBER</u>	<u>DESCRIPTION</u>
D101-01	NDDOT ABBREVIATIONS
D101-02	NDDOT ABBREVIATIONS
D101-03	NDDOT ABBREVIATIONS
D101-10	NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS
D101-20	LINESTYLES
D101-21	LINESTYLES
D101-30	SYMBOLS
D101-31	SYMBOLS
D101-32	SYMBOLS
D550-02	LONGITUDINAL JOINT DETAILS
D550-04	TRAVERSE EXPANSION JOINT DETAIL
D704-22	CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS
D708-06	EROSION CONTROL FIBER ROLL PLACEMENT DETAILS
D750-02	SIDEWALK
D750-03	CURB RAMP DETAIL
D754-24	MOUNTING DETAILS PERFORATED TUBE
D754-46	BIKE ROUTE SIGNS-PUNCHING, STRINGER, SUPPORT LOCATION DETAILS FOR REGULATORY WARNING AND GUIDE SIGNS

DESIGNERS
JACOB AXTMAN A.S.L.A.

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UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
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SCOPE OF WORK NOTES:

APPROXIMATE TRAIL LENGTH: 1920 LINEAR FEET

DO NOT DRIVE OR PARK HEAVY CONSTRUCTION EQUIPMENT ON EXISTING PARKING LOTS, ASPHALT TRAILS, OR OTHER INFRASTRUCTURE WHERE DAMAGE MAY OCCUR. A STAGING AREA HAS BEEN DEPICTED ON THIS PLAN. IF ALTERNATIVE STAGING AREAS ARE DESIRED, COORDINATE WITH LANDSCAPE ARCHITECT AND UTTC STAFF.

ALL VEGETATION AND DEBRIS REMOVED DURING CONSTRUCTION MAY BE STORED ON THE UTTC SOUTH CAMPUS SOIL STOCKPILE. THIS STOCKPILE IS LOCATED APPROXIMATELY 1200' SOUTH OF THE SCIENCE AND TECHNOLOGY CENTER PARKING LOT. USE THE EXISTING ACCESS ROUTE TO THE EAST OF THE CONCRETE SIDEWALK. DO NOT DRIVE ON SIDEWALK.

AFTER STRIPING, TOPSOIL CAN BE STOCKPILED NEAR THE EXISTING SOIL STOCKPILE TO THE SOUTH OF THE SCIENCE OR TECHNOLOGY BUILDING. IF SO DESIRED, TOPSOIL CAN BE STOCKPILED IN THE STAGING AREA, HOWEVER GRASS THAT DIES IN THIS LOCATION AS A RESULT OF STOCKPILING MUST BE SEEDED AND HYDROMULCHED AT NO ADDITIONAL COST.

CONTRACTOR SHALL USE DESIGNATED CONSTRUCTION ACCESS POINTS AND KEEP CONSTRUCTION TRAFFIC WITHIN THE SEEDING LIMITS WHENEVER POSSIBLE. ANY DAMAGE THAT OCCURS TO EXISTING GRASS STAND OUTSIDE OF THE PROPOSED SEEDING LIMITS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.

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DESIGNERS
JACOB AXTMAN A.S.L.A.

UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
SCOPE OF WORK

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
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NOTES

100-P01 UTILITIES: Contractor shall be responsible for locating all private and public utilities within the construction limits of this project. No excavation shall occur before this occurs.

ND One Call: 1-800-795-0555

100-P02 PAVEMENT SWEEPING: The Contractor shall sweep all new as well as existing pavements and work areas before opening to traffic and for final acceptance. All costs for this work shall be included incidental to the project cost.

100-P03 DESIGN HORIZONTAL ALIGNMENT: The alignment used in the design of this project runs along the proposed centerline of the shared use path. Any offsets shown are based on this design alignment.

100-P04 DESIGN VERTICAL ALIGNMENT: Minor changes in the vertical alignment may be made by Engineer during construction in order to match the shared use path to existing grade and/or to facilitate drainage.

100-P05 CONSTRUCTION STAKING/SURVEYING: Contractor shall be responsible for construction staking as needed during construction.

100-P06 SWPPP/EROSION CONTROL: Contractor shall be responsible for submitting the Notice of Intent (NOI) to be covered under the Construction General Permit (NDR10-000) required by the North Dakota Department of Health (NDDH). Contractor shall be responsible for complying with all of the permit provisions including development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall be submitted to the OWNER prior to the start of construction and will become part of the contract documents. The contractor shall be responsible for amending the SWPPP whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the potential for the discharge of pollutants to Waters of the State. The SWPPP shall also be amended if it is found to be ineffective in controlling pollutants present in stormwater. Upon meeting all of the restoration provisions of the permit, the Contractor shall submit a Notice of Termination (NOT) to the NDDH, Division of Water Quality.

201-P01 CLEARING & GRUBBING: Clearing and grubbing includes surface objects in the areas of improvement in this project. This also includes removing garbage, soil stockpiles, and other debris where necessary.

202-P01 SAW BITUMINOUS SURFACING - FULL DEPTH: Where the new pavement will abut existing pavement, a full-depth vertical saw cut shall be made along the entire length of the butt joint. The material to be removed shall then be removed without disturbing the material that is designated to remain. The new pavement shall be placed so as to match the existing pavement and provide a satisfactory surface profile as approved by the Engineer. Removal and disposal of saw cut surfacing shall be considered incidental to the line item for Saw Bituminous Surfacing - Full Depth.

203-P01 TOPSOIL: The existing topsoil within the boundary of the proposed improvements shall be removed to its full depth. The topsoil shall be stockpiled within the construction limits and respread to a depth of at least 4". Any excess topsoil that is not used on site shall be disposed of in the UTTC South Campus stockpile. Topsoil quantity was calculated assuming removal of topsoil to a depth of 4", 14' wide along the entire length of the trail and over all areas receiving borrow excavation or other improvements. Disposal in wetlands or on adjacent property without permission will not be accepted. All work as described above will be paid for at the unit bid price for "Remove & Salvage Topsoil".

203-P02 BORROW EXCAVATION: Where necessary to provide proposed grades, Borrow-Excavation shall be supplied and installed by the contractor according to NDDOT Specifications for Type 'A' Embankments. AASHTO T99 specifications shall be used for Dry Density, Moisture Content, Compaction, and other controls.

251-P01 SEEDING CLASS III: All portions of the site that are disturbed during construction and not receiving other improvements are to be seeded. Seed shall be Class III as defined by the NDDOT standard specifications. Seed shall be applied at 60 lbs/acre. Seed variety shall be 60% "Nodan" Crested Wheatgrass, 15% "Park" Kentucky Blue Grass, and 25% "Mandan 759" Pubescent Wheatgrass or approved equal. Percent live seed shall be 85% for all varieties. If seed with the specified percentage of pure live seed cannot be obtained, additional seed may be used to bring the amount of live seed up to the amount specified. All seed and seeding mixtures shall be free of all prohibited noxious weed seed and shall not contain more than 0.5% by weight of restricted noxious weed seeds. Prohibited and restricted noxious weeds shall be those classified by the state seed department. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. The quantity for seeding has been calculated to cover 4' on each side of the entire proposed trail after construction. The contractor will also be responsible for seeding any areas that are disturbed outside of this area.

253-P01 HYDRAULIC MULCH: All portions of the site that are seeded shall be hydromulched. Mulch shall be a wood cellulose fiber mulch applied with hydraulic spray equipment and applied at a rate of at least 2000 lbs. per acre. Coverage shall be uniform across all seeded areas and shall exhibit a minimum coverage of 95% of the seedbed area. All portions of the site within the construction limits that have been disturbed during construction shall be reseeded and mulched.

261-P01 FIBER ROLLS 6": Fiber rolls shall be installed where depicted on the plan and profile sheets. Follow any additional erosion control measures as defined in the SWPPP. Any repairs, such as backfilling erosion scars or resetting fiber rolls shall be considered incidental to the bid price for this item. Contractor shall remove fiber rolls after vegetative cover has been established and approved.

704-P01 TRAFFIC CONTROL: Contractor shall provide temporary traffic control measures during construction of crosswalk and curb ramps. Traffic control shall include 2 each W20-7-48 Advance Flagger Signs and 2 each W16-2-24 Distance Plaques on portable mounts. Traffic Control shall also include 10 man hours of Flagging time.

714-P01 PIPE CONC REINF 12IN CL II: Existing 12" reinforced concrete storm pipe shall be extended 16' and installed beneath proposed multi-use trail section. Contractor shall excavate around existing pipe and expose nearest joint. All joints exposed during construction shall be tied together. Provide positive drainage of at least 1% to the south following the slope of the existing pipe. Excavation around existing pipe, bedding material, and any other work associated with this item shall be considered incidental to this line item.

714-P02 REMOVE & RELAY END SECTION: Existing FES shall be removed and reset on the end of the pipe extension. FES shall be tied to the new pipe. All bedding material and other associated work associated with this reset shall be considered incidental to this line item.

750-P01 SIDEWALK CONCRETE 4 IN: Control joints shall be constructed every 10' along the 10' wide concrete multi-use trail and every 8' along the 8' wide concrete sidewalk unless otherwise shown on plans. Concrete shall be of class AE as outlined in the standard specifications except where modified herein. Fiberglass reinforcement shall be added to the concrete mix at a rate specified by the manufacturer. Air content shall be 5 to 7 percent. Compressive strength shall be 4,000 PSI at 28 days. Slump shall be a maximum of 4". One-half-inch expansion joints shall be placed at intervals not to exceed 100'.

762-P01 PAVEMENT MARKING FILM: A pedestrian crosswalk shall be installed where depicted using Plastic Pavement Marking Film conforming to Section 762.04D.2 of the standard specifications.

970-P02 BENCH: 6' steel park benches shall be provided and installed where depicted. Benches shall be powdercoated to the color provided and surface mounted with hardware provided by manufacturer. Bench location within the park shelter shall be determined in the field by the Landscape Architect. Manufacturer to provide warranty information and installation instructions to general contractor.

Thomas Steele Site Furnishings Flanagan Sales 2475 Maplewood Dr. Suite 114 St. Paul, MN 55109 Phone: 800.328.3557 Product: CRBA-6-P-color black	Dumor Site Furnishings Dakota Fence 1720 s. 12th st. Bismarck, ND 58501 Phone: (701) 258-9095 Product: 95-60 - color brown	SiteScapes Inc. Midwest Playscapes Inc. 500 N Pine Street Suite 104 Chaska, MN 55318 Phone: 800.747.1452 Product: City View cv1-1100 - slate
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ENVIRONMENTAL COMMITMENTS

United Tribes Technical College and the North Dakota Department of Transportation 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: Coordination will take place with the affected utility companies during project design.
Action Required: Contractor shall coordinate utility locates prior to beginning construction.
- Commitment No. 2: All necessary measures are to be taken to minimize fugitive dust emissions during construction.
Action Required: Complaints that arise are to be dealt with in an efficient and effective matter.
- Commitment No. 3: Noise from construction activities will be minimized.
Action Required: The Contractor shall ensure that all equipment is equipped with a recommended muffler in good working order. Noise effects will be minimized by restricting construction activities to non-early morning or late evening hours.
- Commitment No. 4: Care is to be taken to protect adjacent waterbodies.
Action Required: Contractor shall ensure that all equipment is in good working condition without oil, gas, or other potentially harmful fluid leaks. Fill material placed below the high water mark must be free of decomposable materials and persistent synthetic organic compounds (in toxic concentrations). This includes asphalt, tires, treated lumber, and construction debris. Preventative measures shall be taken to ensure siltation of waterbodies does not occur. Refer to the North Dakota Department of Health for further information.
- Commitment No. 5: Mud tracking onto adjacent roadways shall be minimized.
Action Required: Any mud, soil, or construction debris that is tracked or otherwise deposited on adjacent roadways shall be removed as soon as possible. Sweeping and cleaning of these adjacent roadways shall occur at the end of each work day as well as at project completion and before final acceptance.

Wetland Number	Cowardin Classification	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands	Impacts to Wetlands Temp. Perm.
NO WETLANDS PRESENT						
TOTALS:			0.00			0.00 0.00

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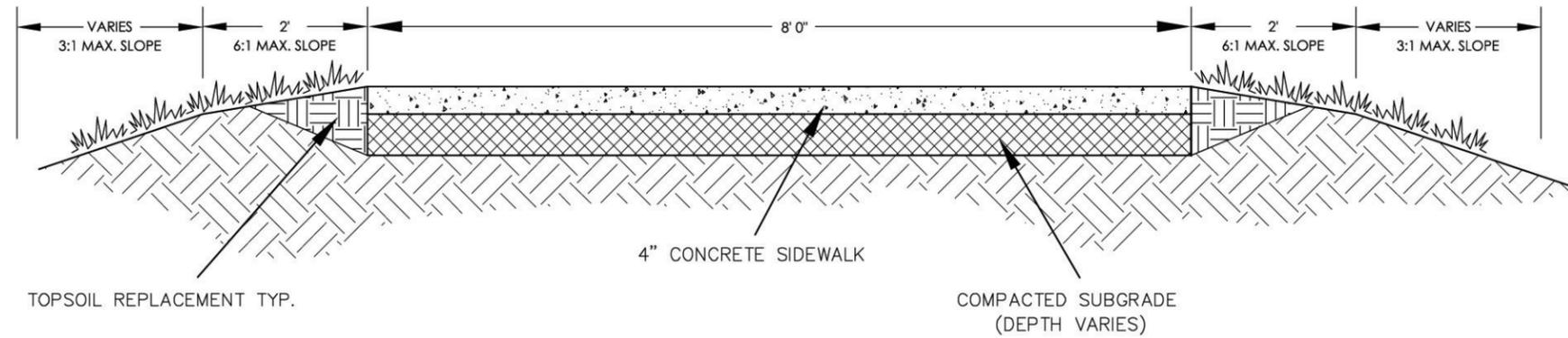
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	008	1

QUANTITIES

SPEC	CODE	UNIT	DESCRIPTION	QUANTITY
103	100	L SUM	CONTRACT BOND	1
201	330	L SUM	CLEARING & GRUBBING	1
202	130	LF	REMOVAL OF CURB & GUTTER	29.5
202	153	LF	SAW BITUMINOUS SURFACING-FULL DEPTH	49
203	126	SY	REMOVE & SALVAGE TOPSOIL	652
203	140	CY	BORROW EXCAVATION	2224
251	300	AC	SEEDING CLASS III	0.94
253	201	AC	HYDRAULIC MULCH	0.94
261	106	LF	FIBER ROLLS 6"	1303
702	100	L SUM	MOBILIZATION	1
704	1100	L SUM	TRAFFIC CONTROL	1
714	115	LF	PIPE CONC REINF 12IN CL III-STORM DRAIN	16
714	9660	EA	REMOVE & RELAY END SECTION	1
750	115	SY	SIDEWALK CONCRETE 4IN	2054
750	2115	SF	DETECTABLE WARNING PANELS	40
754	110	SF	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	3.8
754	206	LF	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	22
762	1224	LF	PLASTIC PVMT MK FILM 24IN LINE	140
970	300	EA	BENCH	1

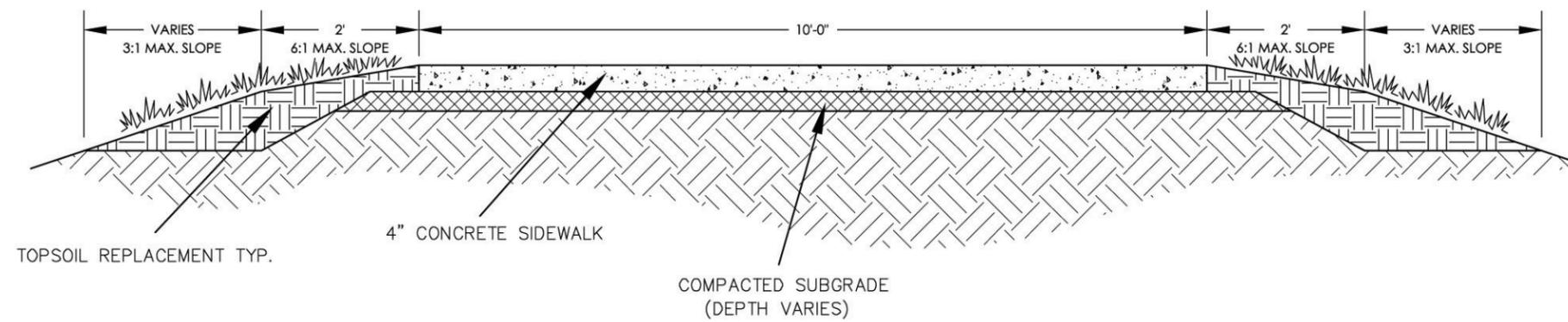
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STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	030	1



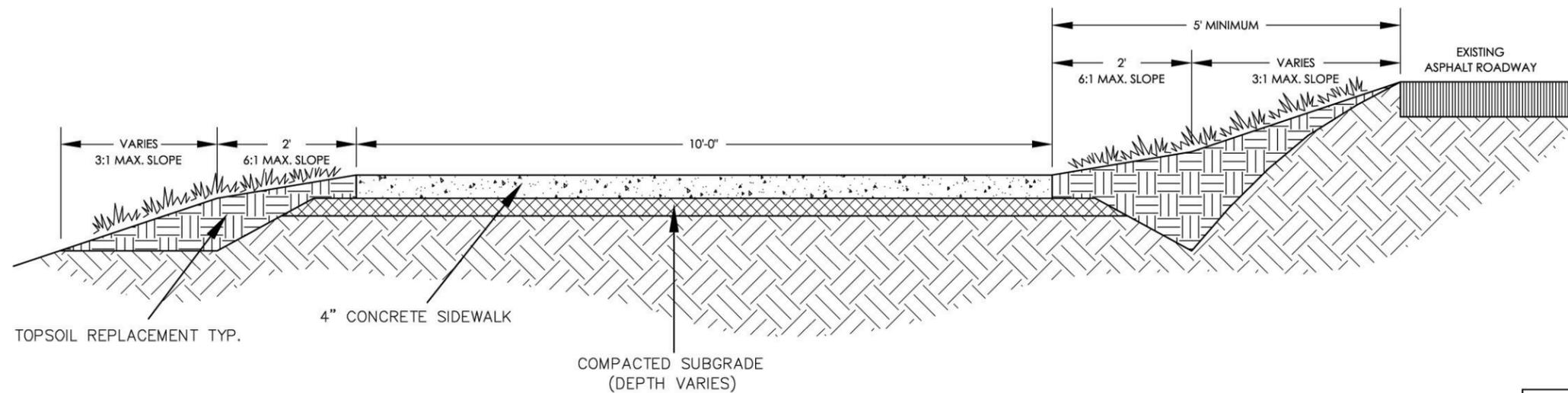
TYPICAL 4" CONCRETE SIDEWALK SECTION

SCALE 1:2



TYPICAL 4" CONCRETE MULTI-USE TRAIL SECTION

SCALE 1:2



TYPICAL 4" CONCRETE MULTI-USE TRAIL SECTION ADJACENT TO ROADWAY

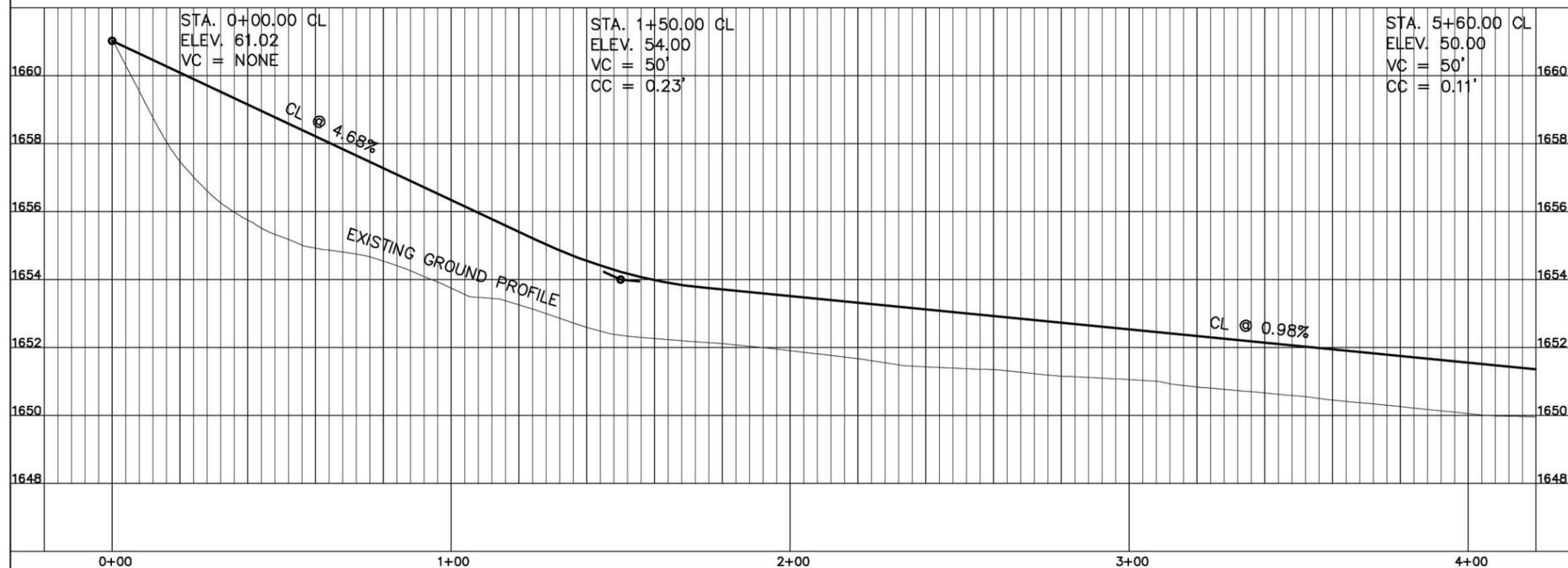
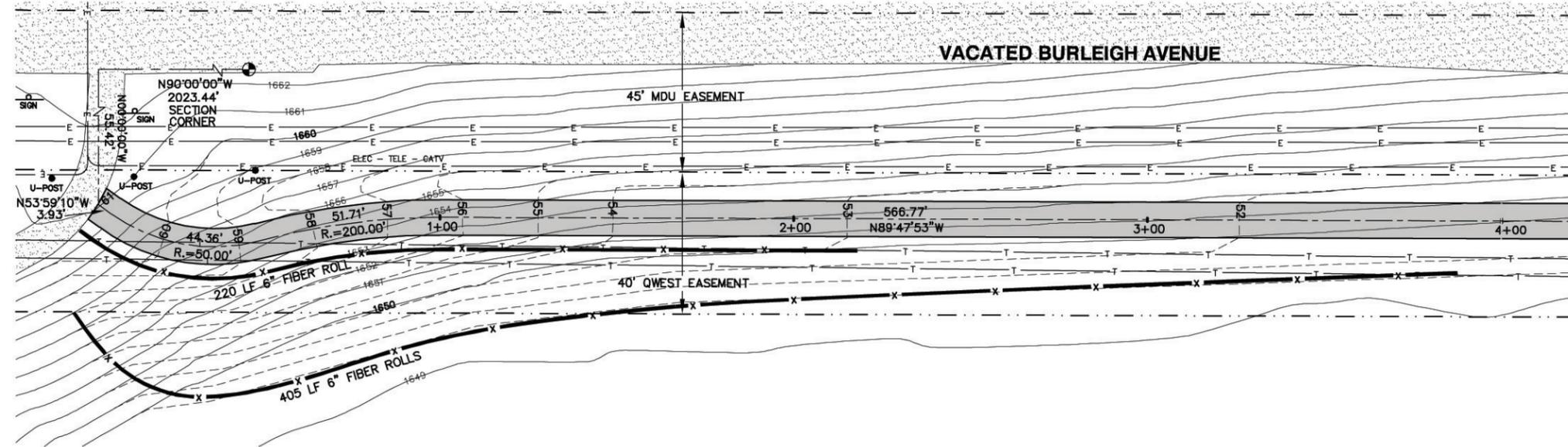
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Saw Bituminous Surfacing - Full Depth	0+00 to 0+01	12 LF
Remove & Salvage Topsoil	0+00 to 4+00	196 CY
Borrow Excavation	0+00 to 4+00	546 CY
Sidewalk Concrete 4 in	0+00 to 4+00	445 SY
Seeding	0+00 to 4+00	0.3 AC
Mulching	0+00 to 4+00	0.3 AC
Fiber Rolls 6"	0+00 to 3+80	625 LF

SCALE - 1"=40'
NGVD 29

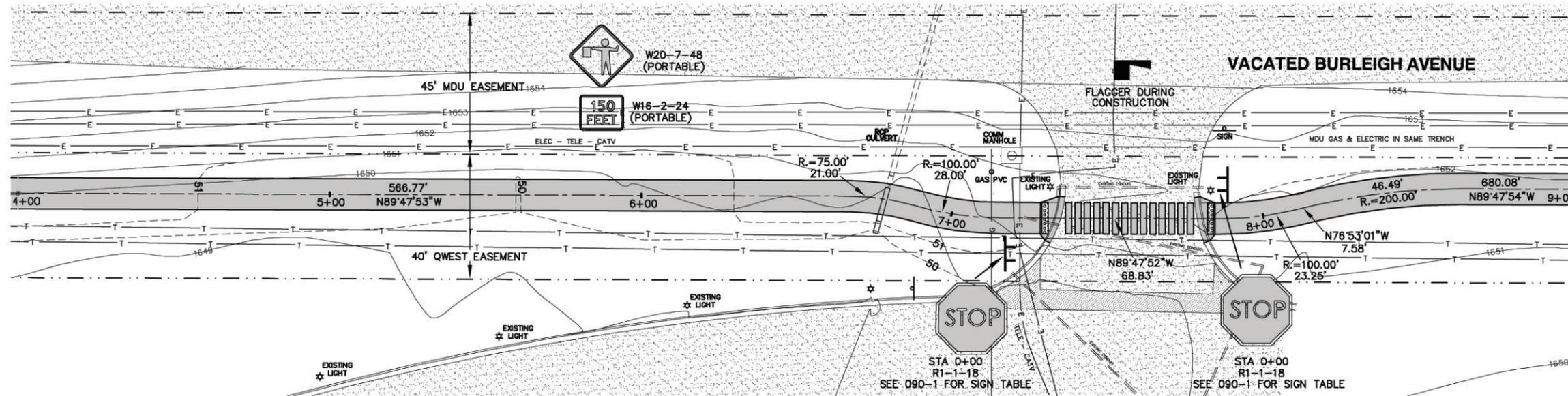


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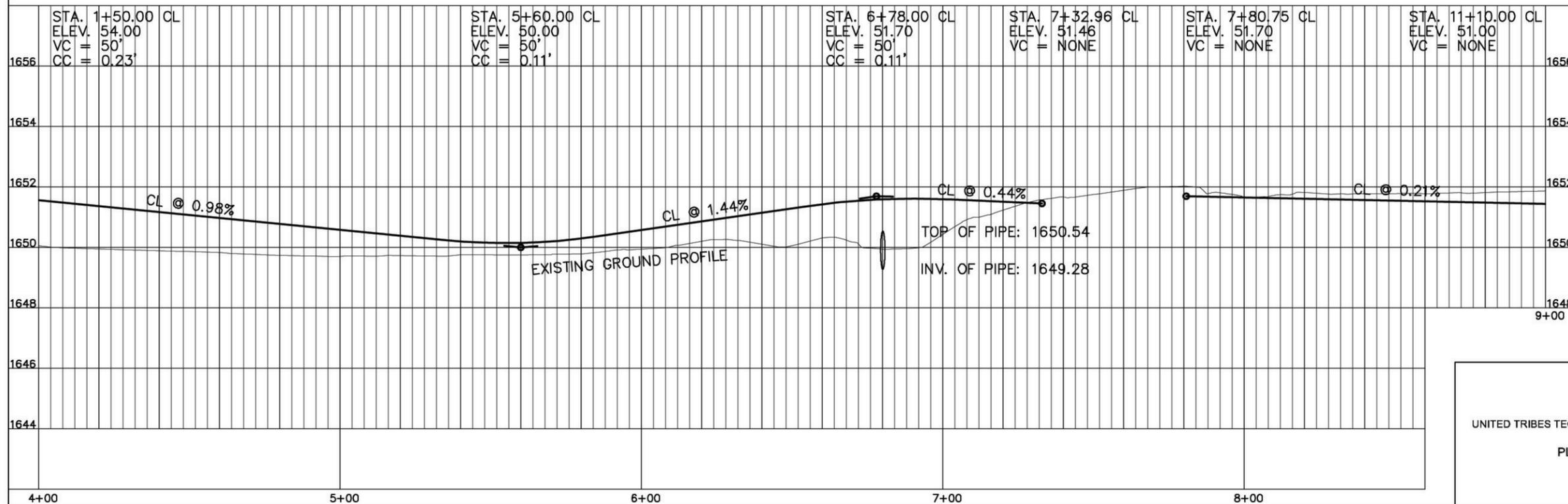
UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
PLAN & PROFILE SHEETS

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SCALE - 1"=40'
NGVD 29



Removal of Curb & Gutter	
7+33.00 to 7+34.50	15 LF
7+80.75 to 7+81.25	14.5 LF
Remove & Salvage Topsoil	
4+00 to 7+33.00	70 CY
7+81.25 to 9+00	20 CY
Borrow Excavation	
4+00 to 7+33.00	160 CY
Sidewalk Concrete 4 in	
4+00 to 7+34.50	374 SY
7+79.75 to 9+00	138 SY
Traffic Control	
5+85	LS
7+57	LS
Seeding	
4+00 to 7+33.00	0.13 AC
7+81.25 to 9+00	0.01 AC
Mulching	
4+00 to 7+33.00	0.13 AC
7+81.25 to 9+00	0.01 AC
Pipe Conc. Reinforced 12 In. CL III - Storm Drain	
6+78	16 LF
Remove & Relay End Section	
6+78	1 EA
Detectable Warning Panels	
7+29.02 to 7+31.02	20 SF
7+82.11 to 7+84.11	20 SF
Flat Sheets for Signs	
7+21	1.9 SF
7+80	1.9 SF
Steel Galv. Posts	
7+21	11 LF
7+80	11 LF
Plastic PVMT MK Film 24IN Line	
7+34.50 to 7+79.75	140 LF



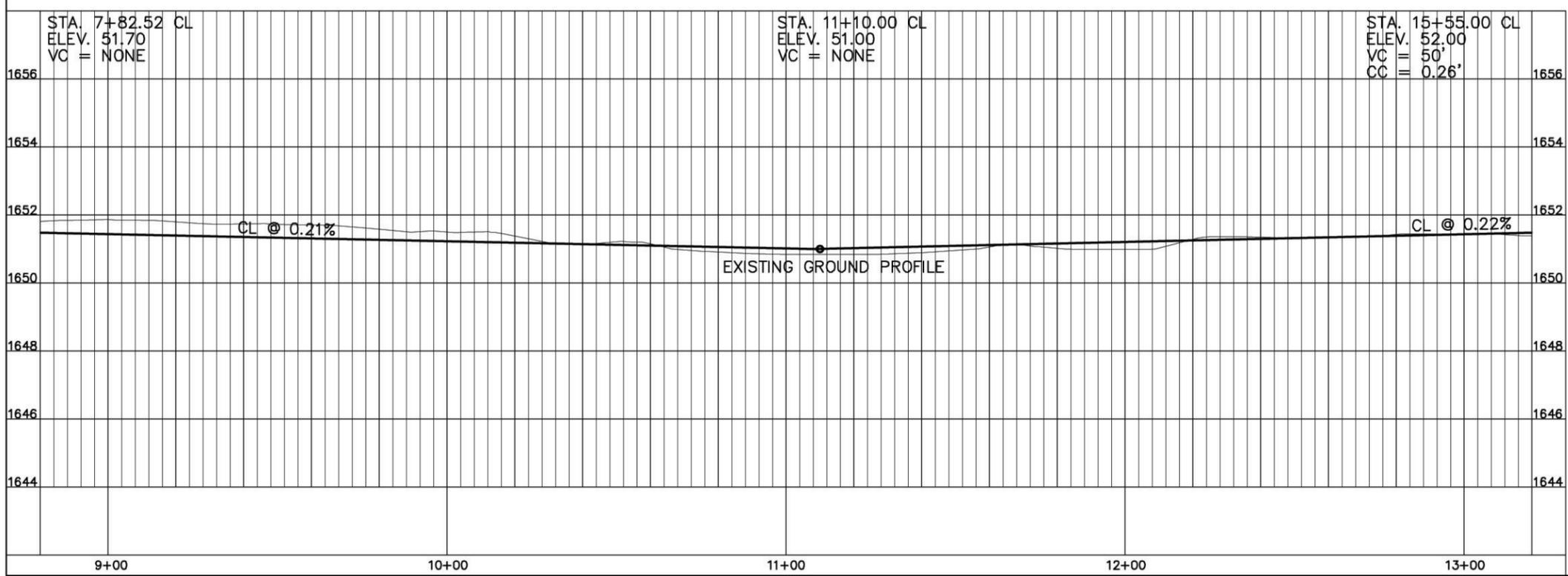
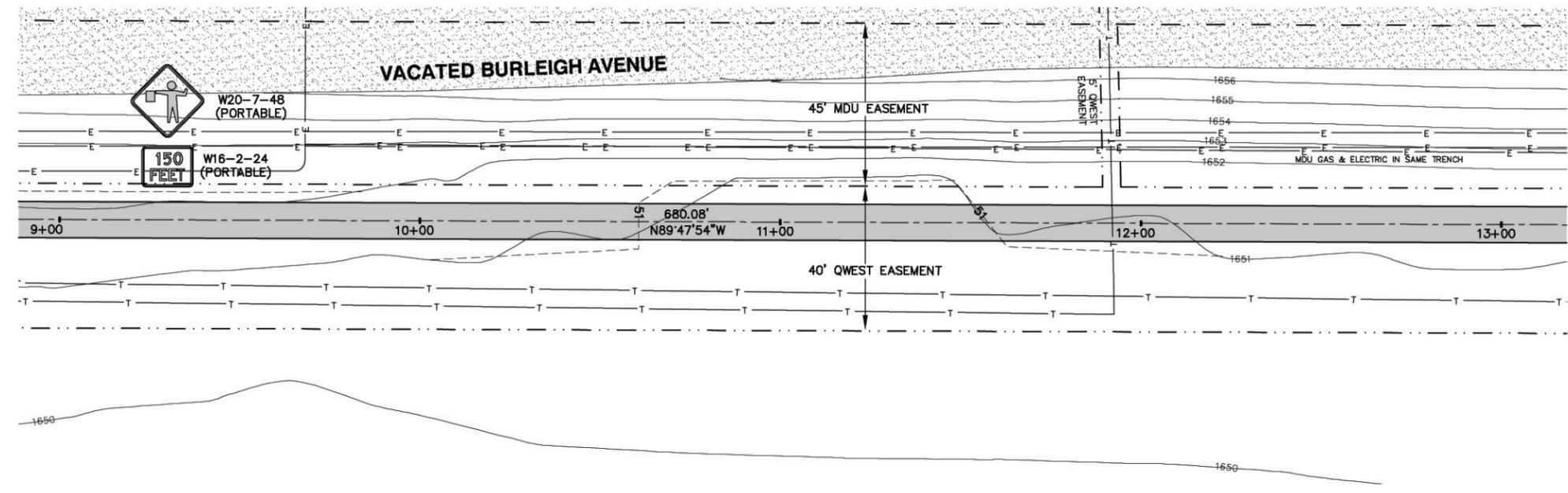
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UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
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 SCALE - 1"=40'
 NGVD 29

Remove & Salvage Topsoil	
9+00 to 13+00	69 CY
Borrow Excavation	
9+00 to 13+00	12 CY
Sidewalk Concrete 4 in	
9+00 to 13+00	445 SY
Seeding	
9+00 to 13+00	0.1 AC
Mulching	
9+00 to 13+00	0.1 AC
Traffic Control	
9+32	LS



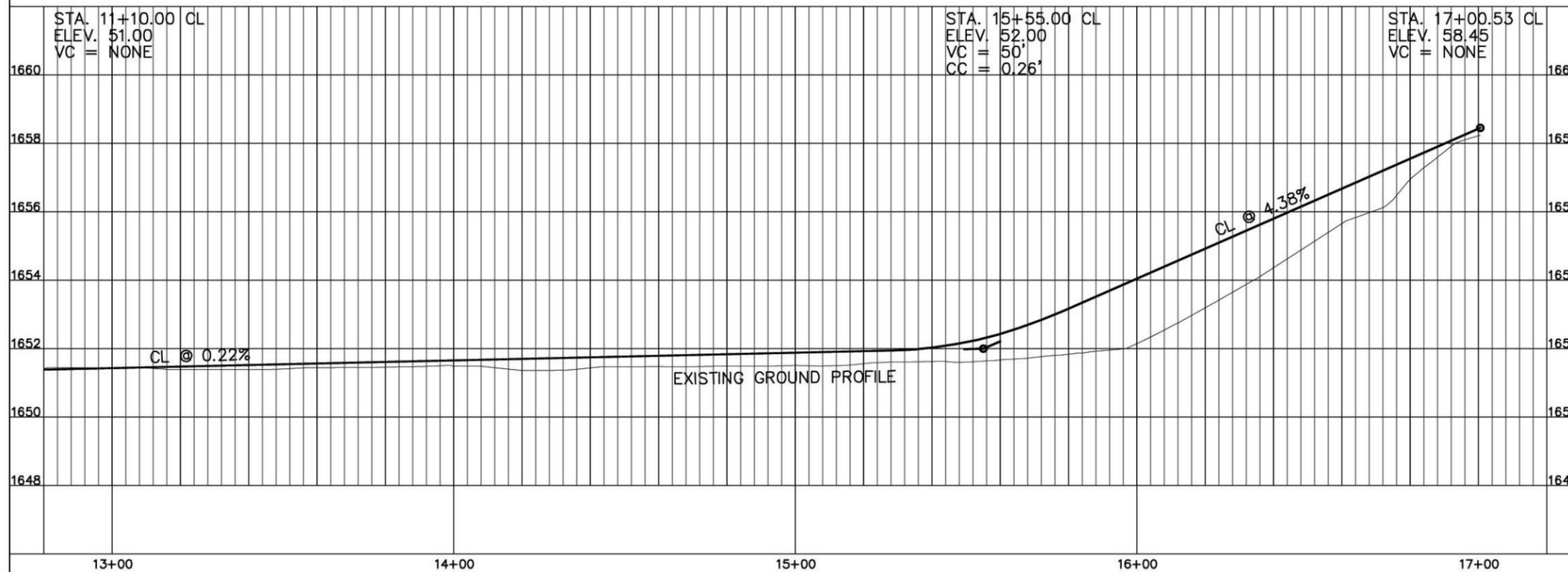
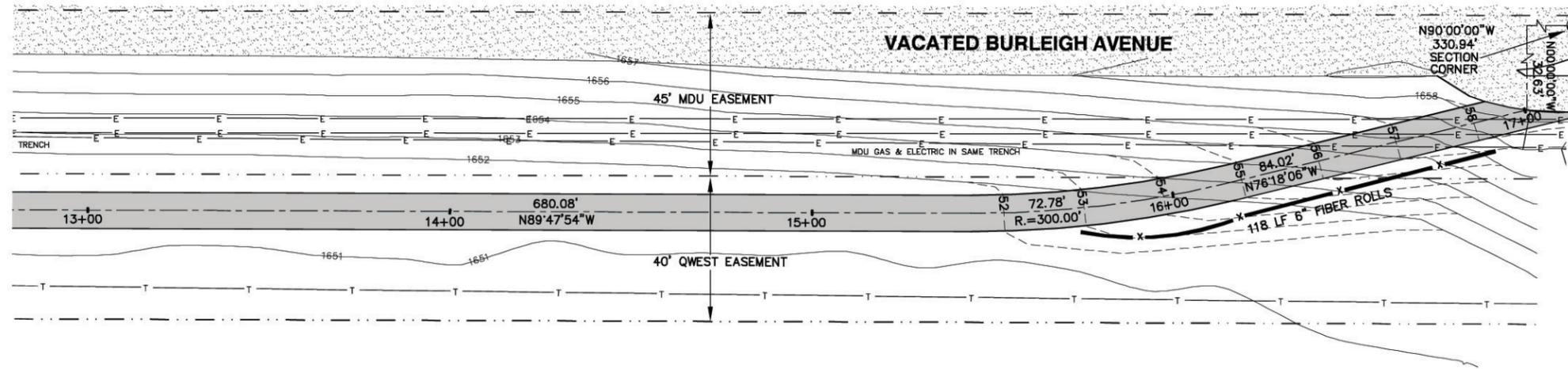
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UNITED TRIBES TECHNICAL COLLEGE MULT-USE TRAIL - PHASE II
 PLAN & PROFILE SHEETS

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
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 SCALE - 1"=40'
 NGVD 29

Saw Bituminous Surfacing - Full Depth	17+02.3 to 17+00.5	37 LF
Remove & Salvage Topsoil	13+00 to 17+00.5	97 CY
Borrow Excavation	13+00 to 17+00.5	246 CY
Sidewalk Concrete 4 in	13+00 to 17+00.5	447 SY
Seeding	13+00 to 17+00.5	0.12 AC
Mulching	13+00 to 17+00.5	0.12 AC
Fiber Rolls 6"	15+75 to 16+80	118 LF

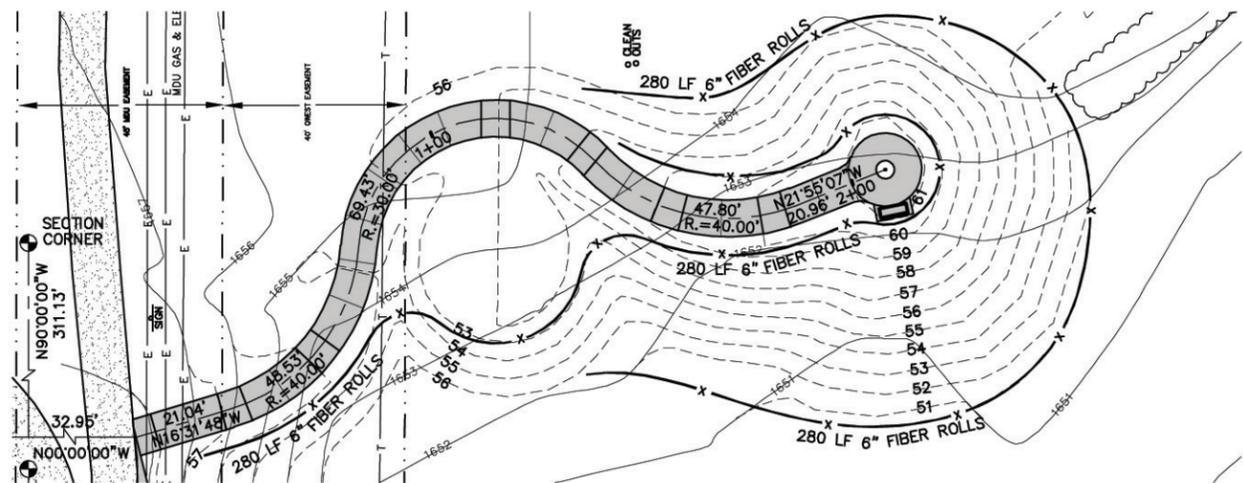


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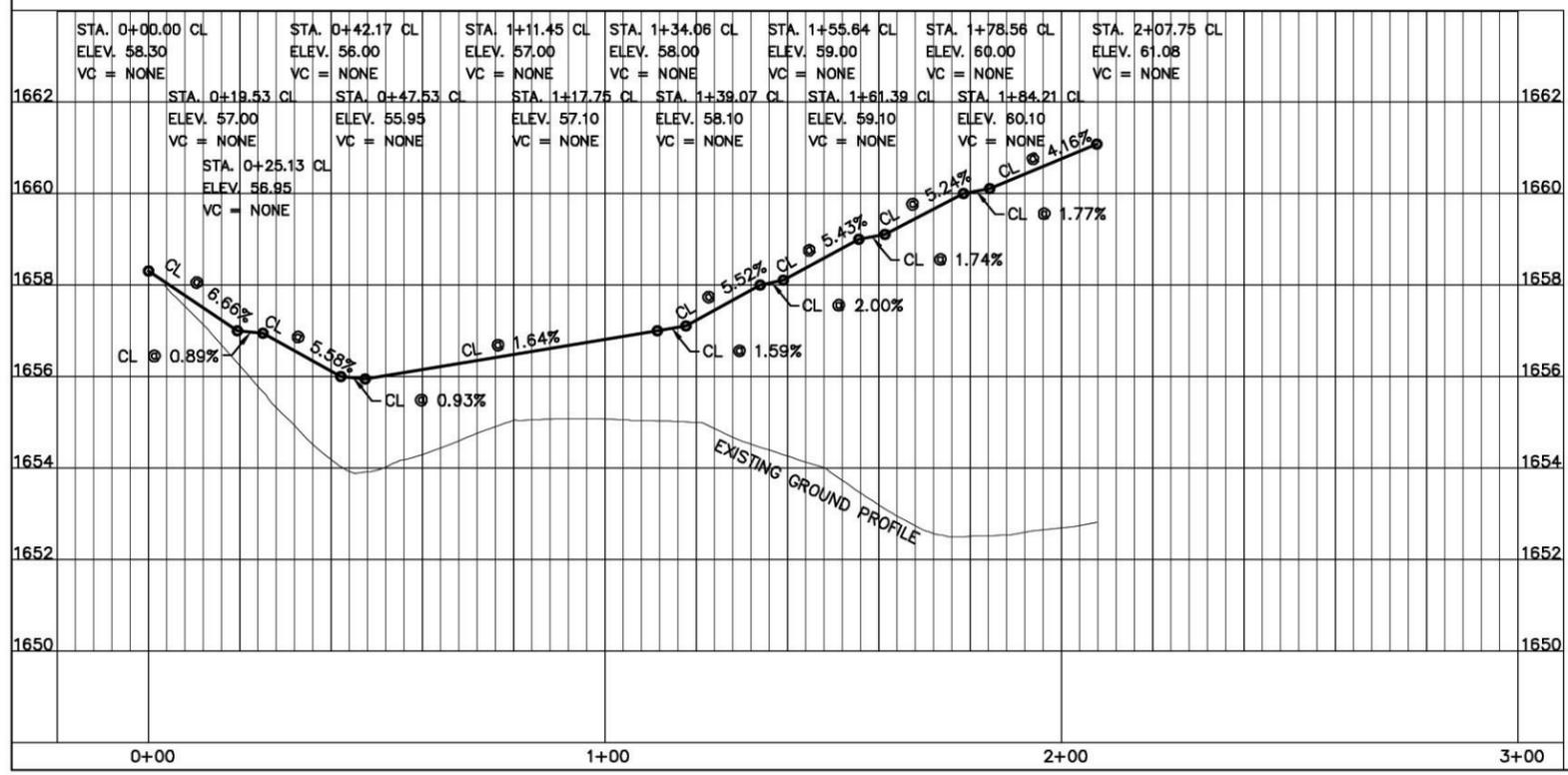
UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
 PLAN & PROFILE SHEETS

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	060	5


 SCALE - 1"=40'
 NGVD 29



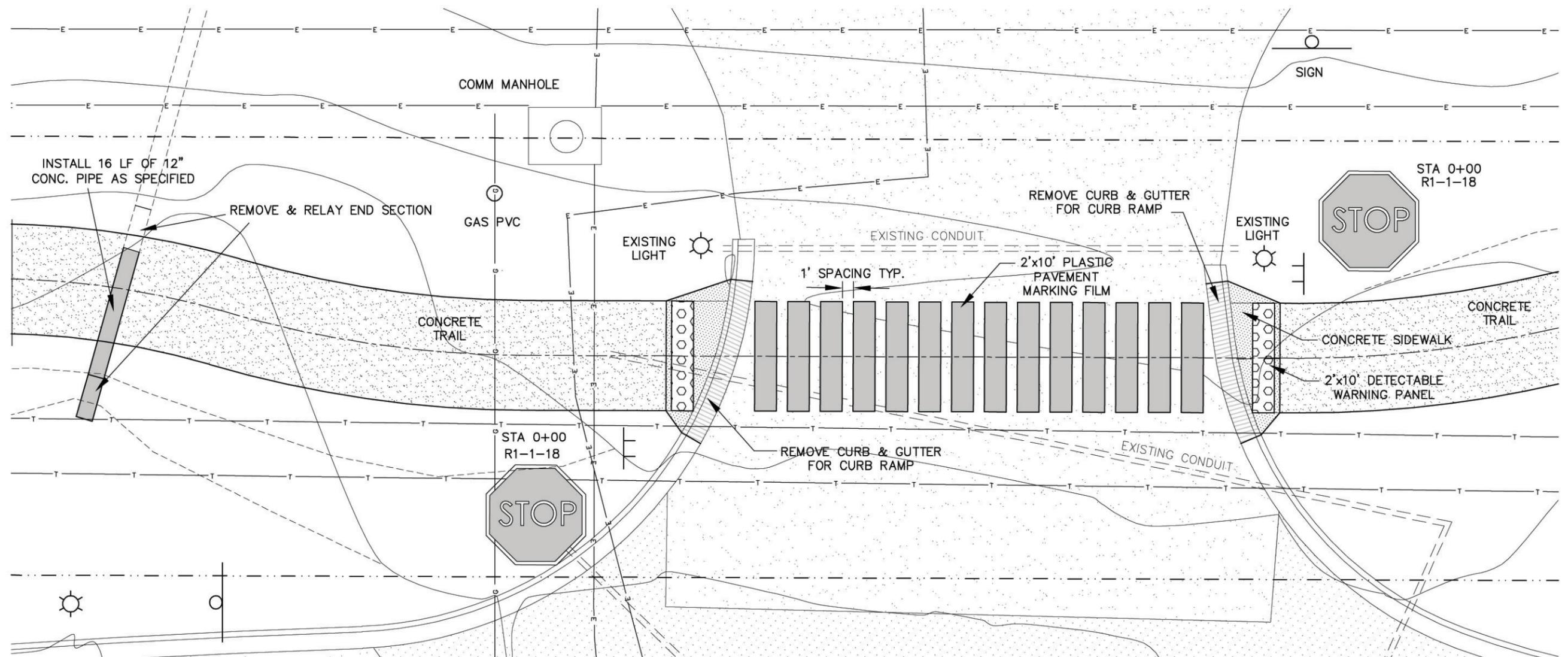
Remove & Salvage Topsoil	
0+00 to 2+15.75	200 CY
Borrow Excavation	
0+00 to 1+97	1260 CY
Sidewalk Concrete 4 in	
0+00 to 2+15.75	205 SY
Fiber Rolls 6" (OPTION 1)	
0+13.00 to 2+15.75	560 LF
Bench	
2+07.75	1 EA
Seeding	
0+00 to 2+48	0.28 AC
Mulching	
0+00 to 2+48	0.28 AC



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STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	090	1

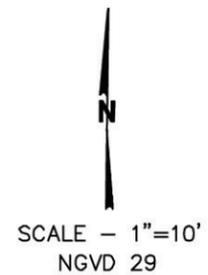


PAVING LAYOUT PLAN 1

SCALE 1:10

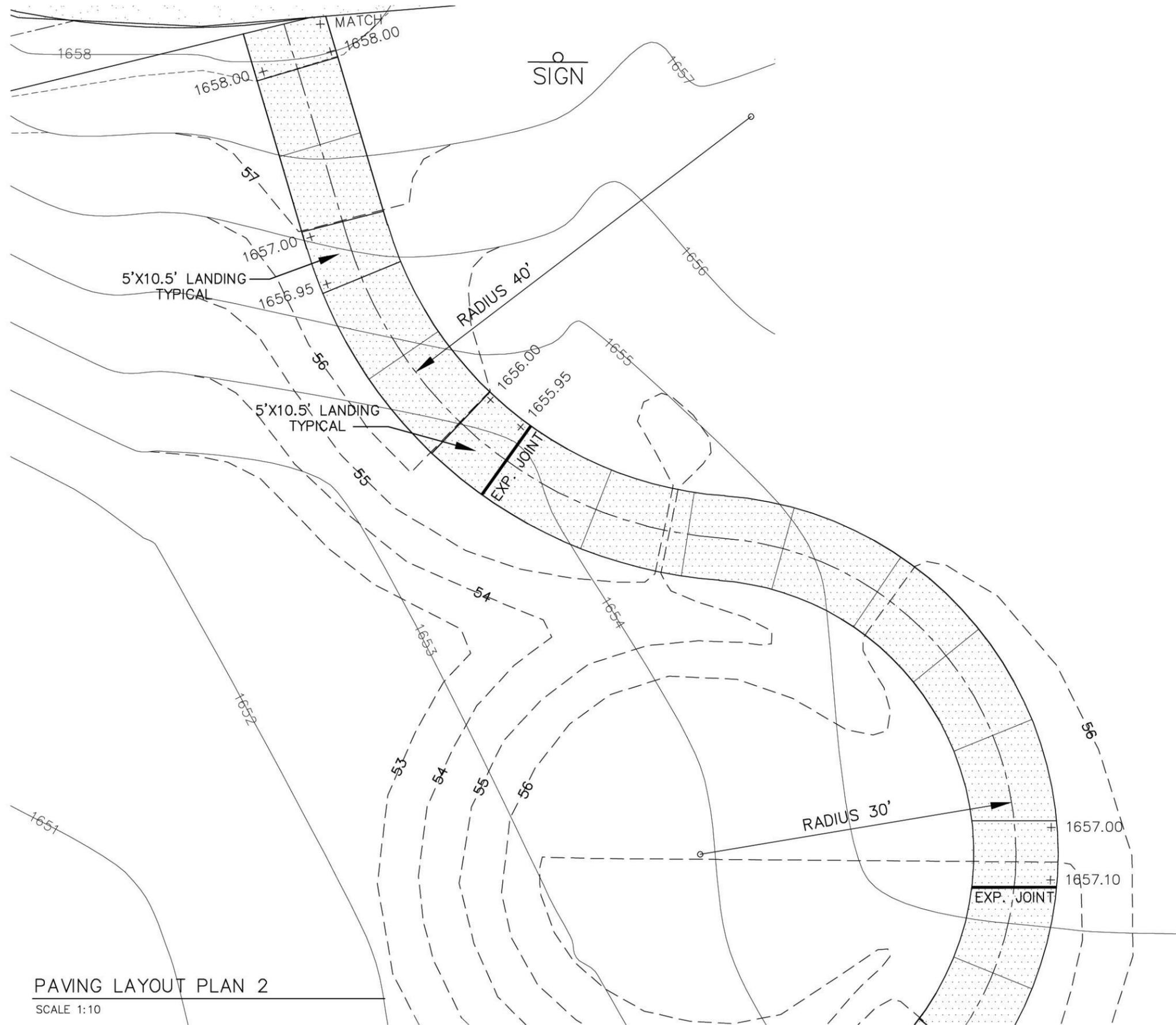
PERMANENT SIGNING

STATION	SIGN NUMBER	DESCRIPTION	FLAT SHEET FOR SIGNS		SIGN SUPPORT LENGTH				ANCHOR UNIT			
			TYPE IV (SF)	TYPE XI (SF)	1ST (LF)	2ND (LF)	3RD (LF)	4TH (LF)	SIZE (IN)	LENGTH (LF)	SIZE (IN)	NO.
0+11	R1-1-18	STOP		1.9	7				2X2	4	2.25X2.25	1
0+11	R1-1-18	STOP		1.9	7				2X2	4	2.25X2.25	1
		TOTALS		3.8	14					8		2



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STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	090	2

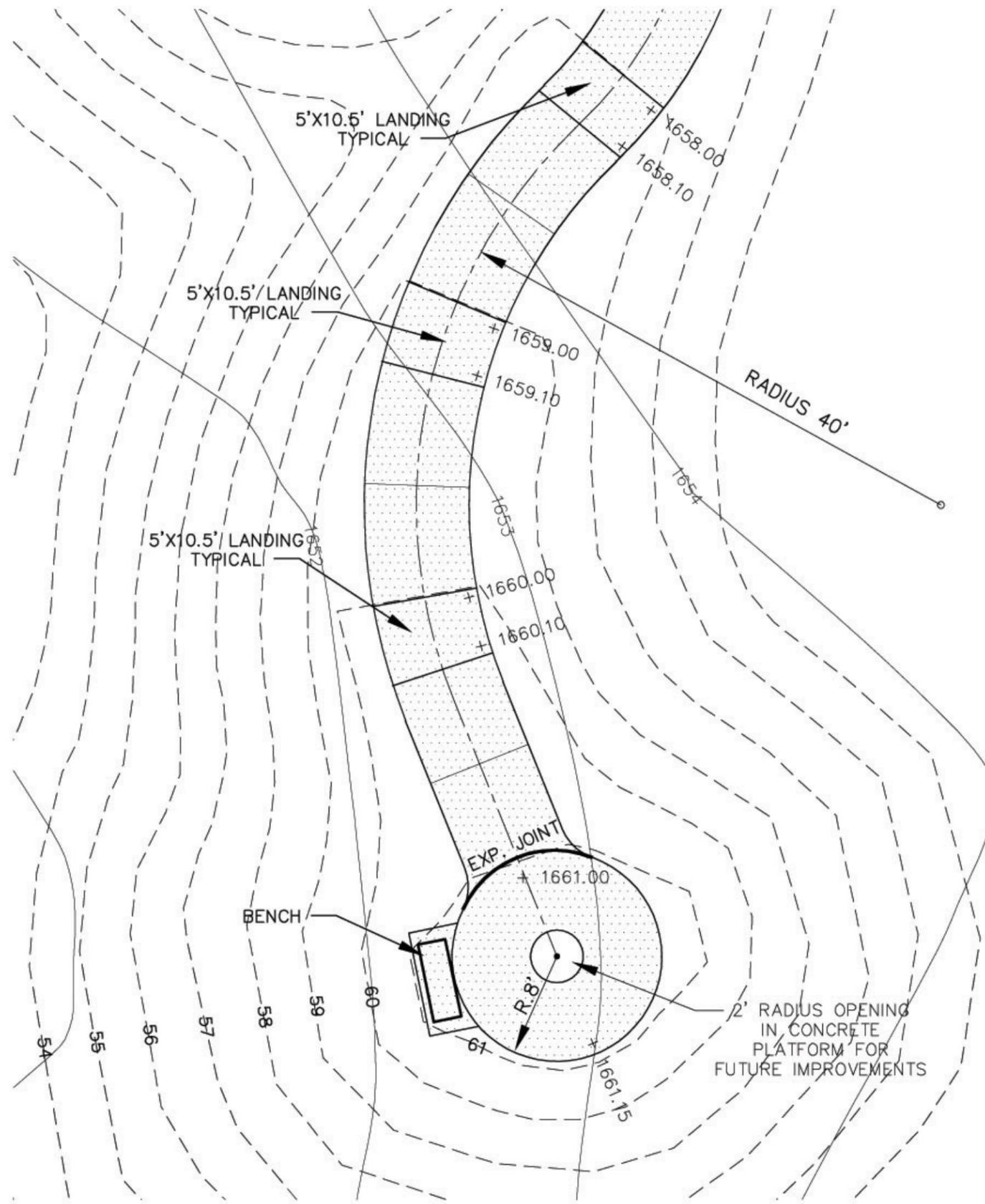


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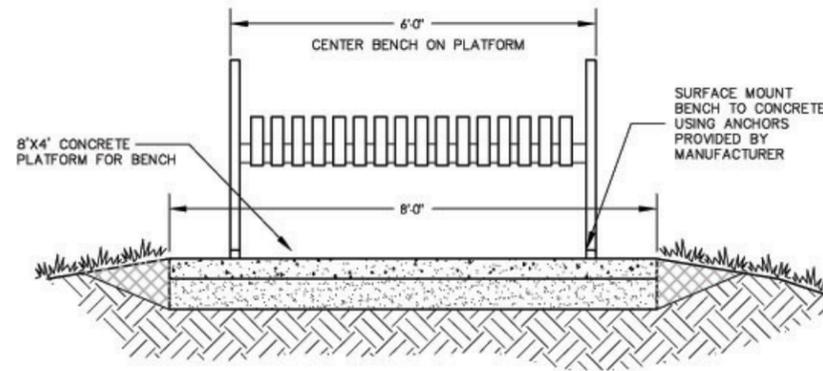
PAVING LAYOUT PLAN 2
SCALE 1:10

UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
PAVING LAYOUTS

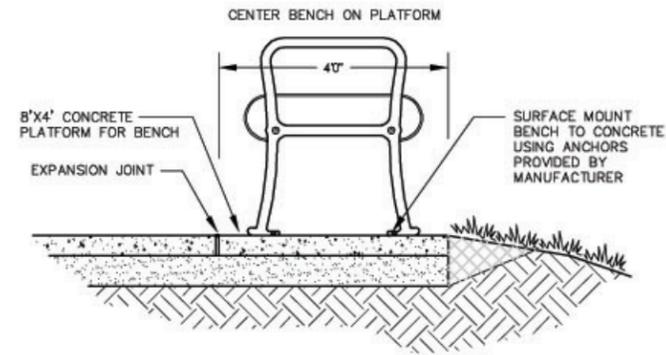
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	090	3



DETAIL PLAN 3
SCALE 1:10

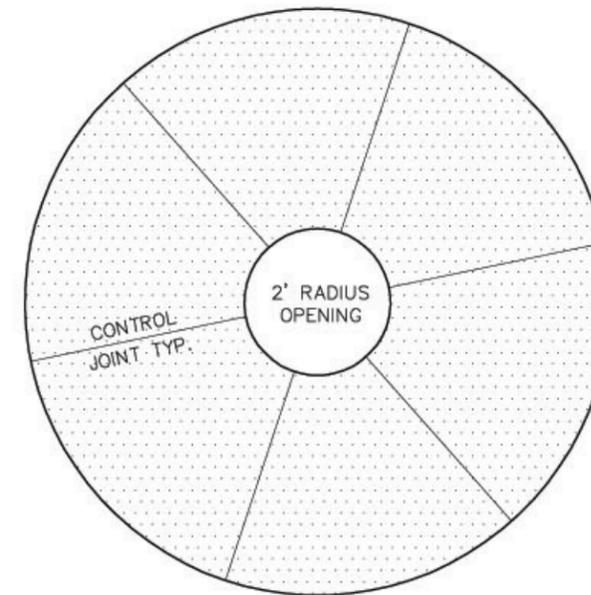


BENCH DETAIL 1
SCALE 1:3



BENCH DETAIL 2
SCALE 1:3

NOTE: CONCRETE PLATFORM FOR BENCH IS INCLUDED IN THE QUANTITY FOR CONCRETE SIDEWALK 4 IN.



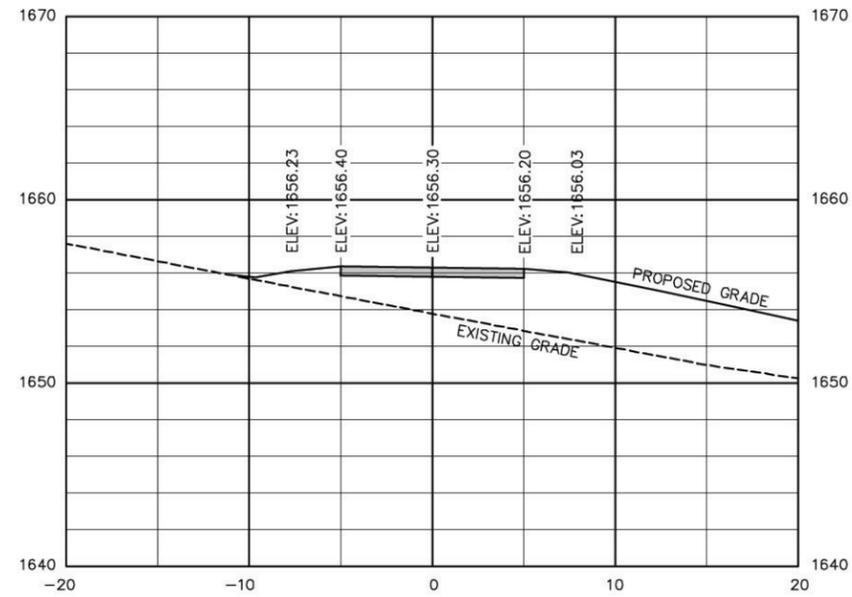
JOINTING DETAIL
SCALE 1:5

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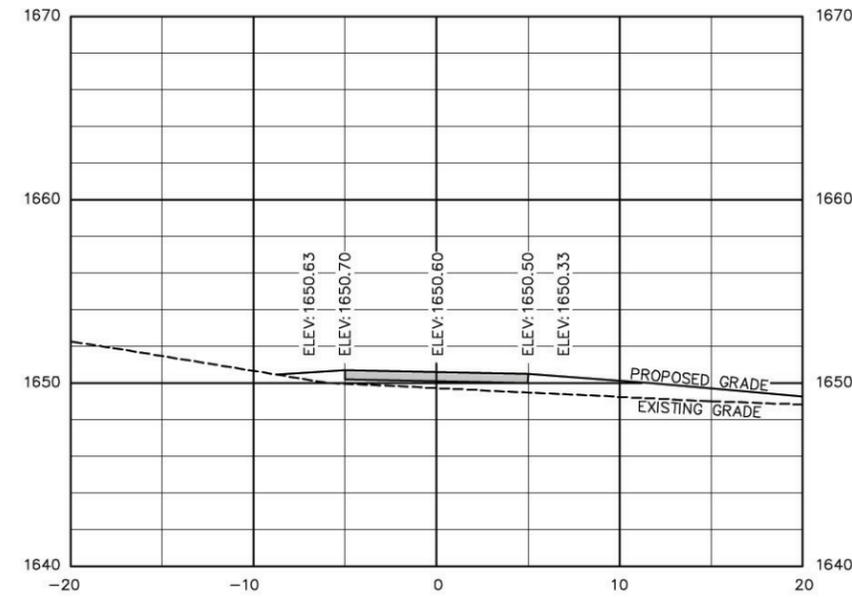
UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
PAVING LAYOUTS

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	200	1

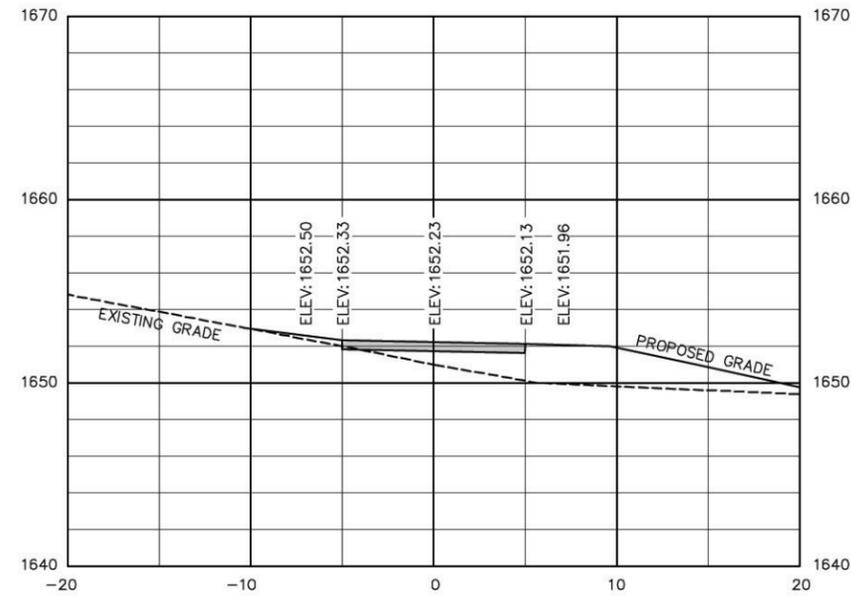
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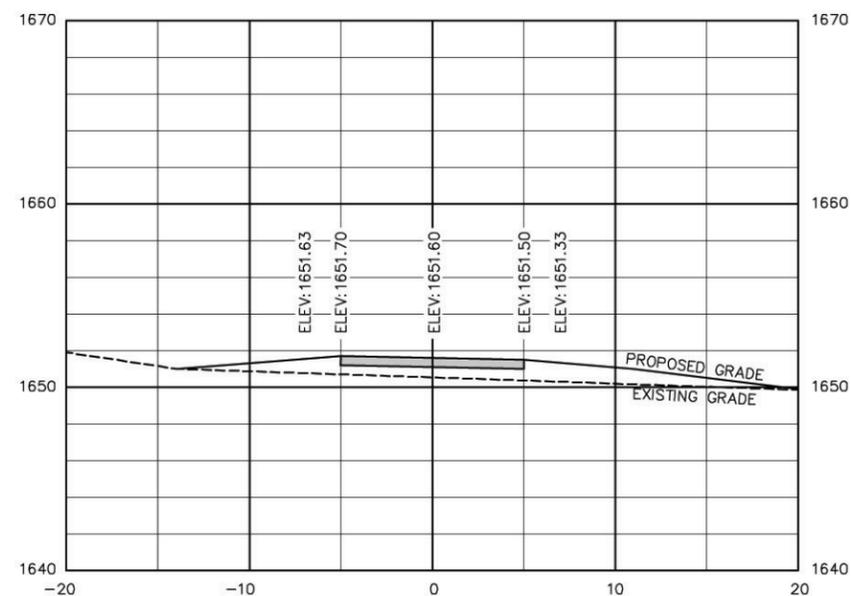
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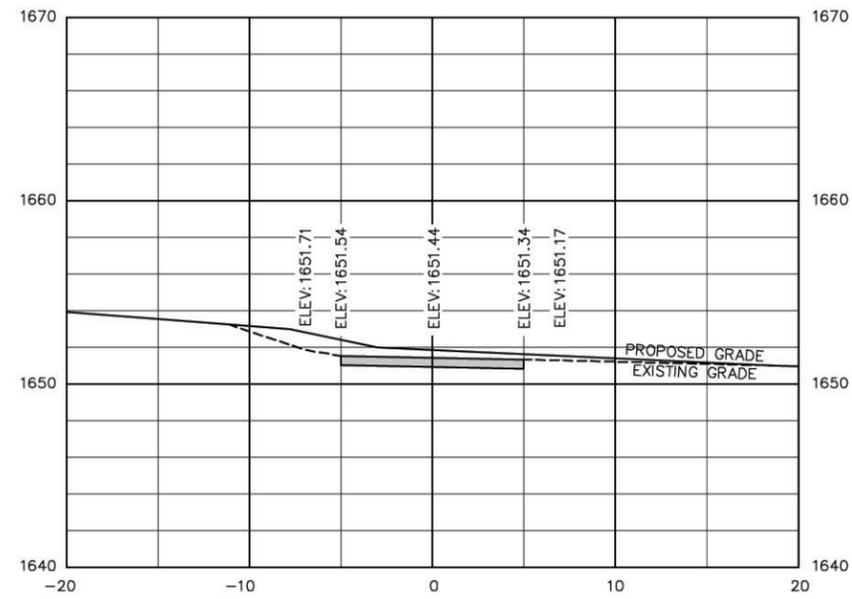
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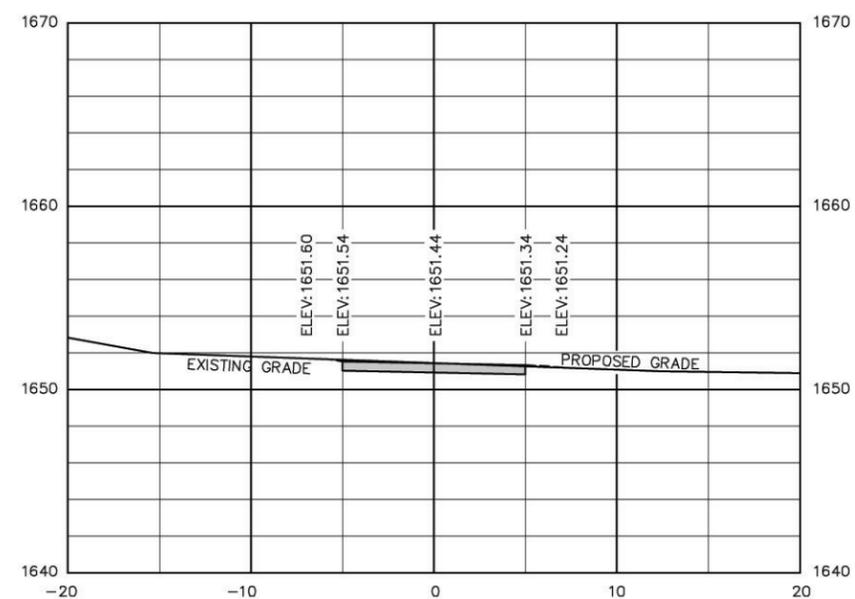
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STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	TEO-0008(028)	19986	200	2

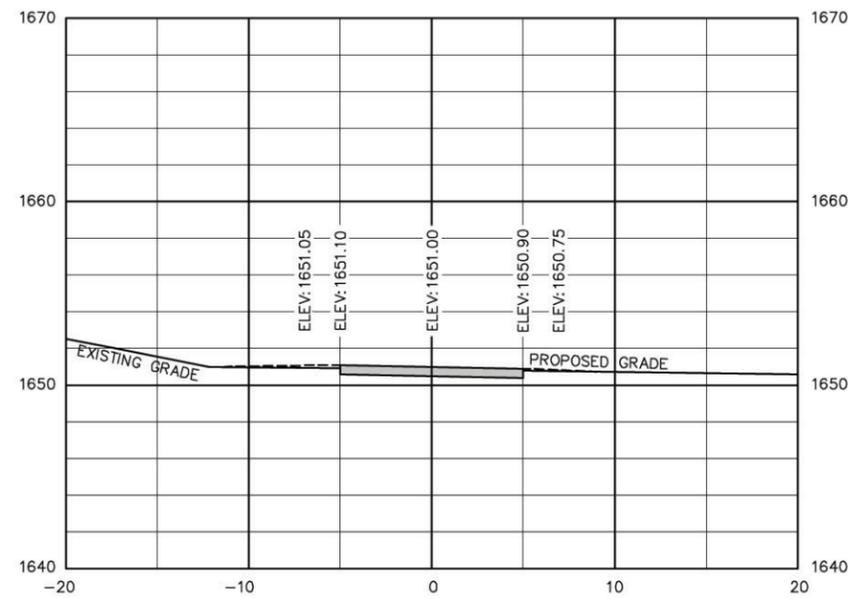
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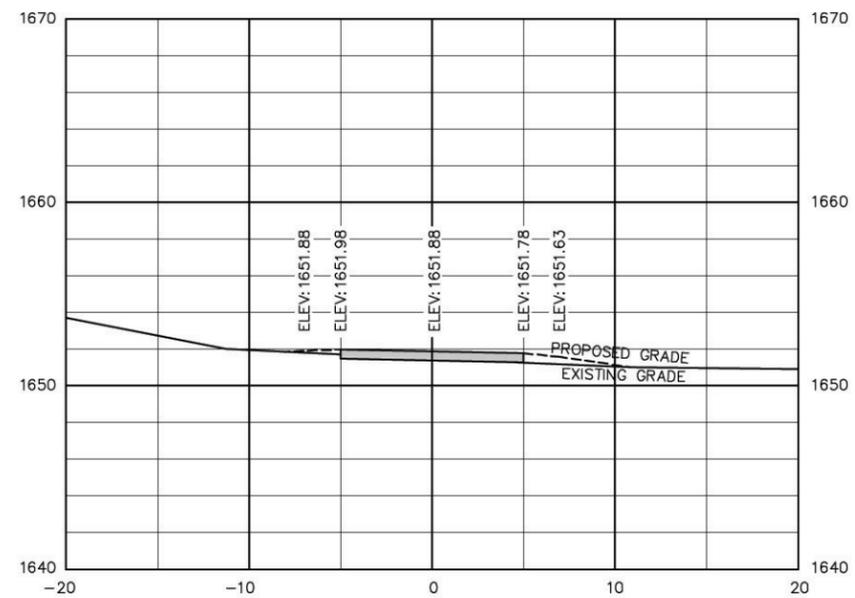
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STA = 11+00.00



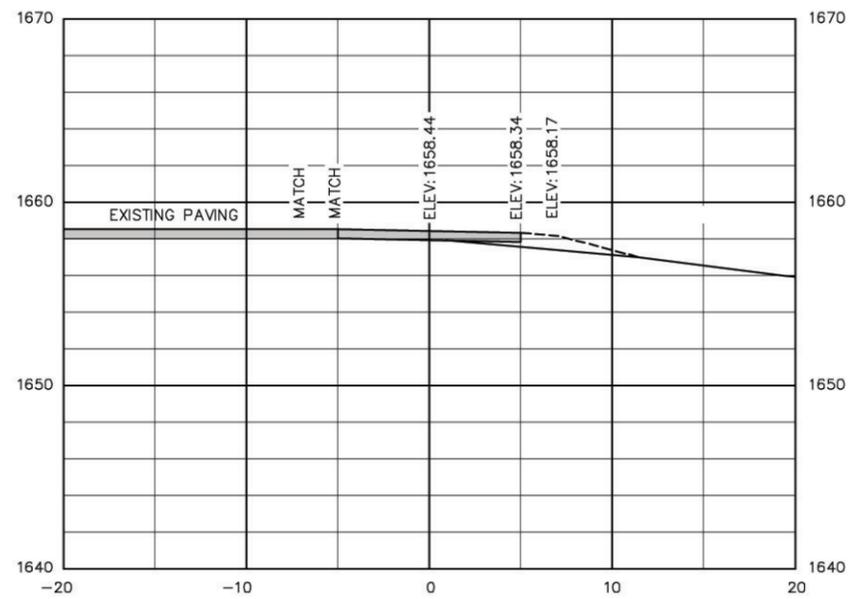
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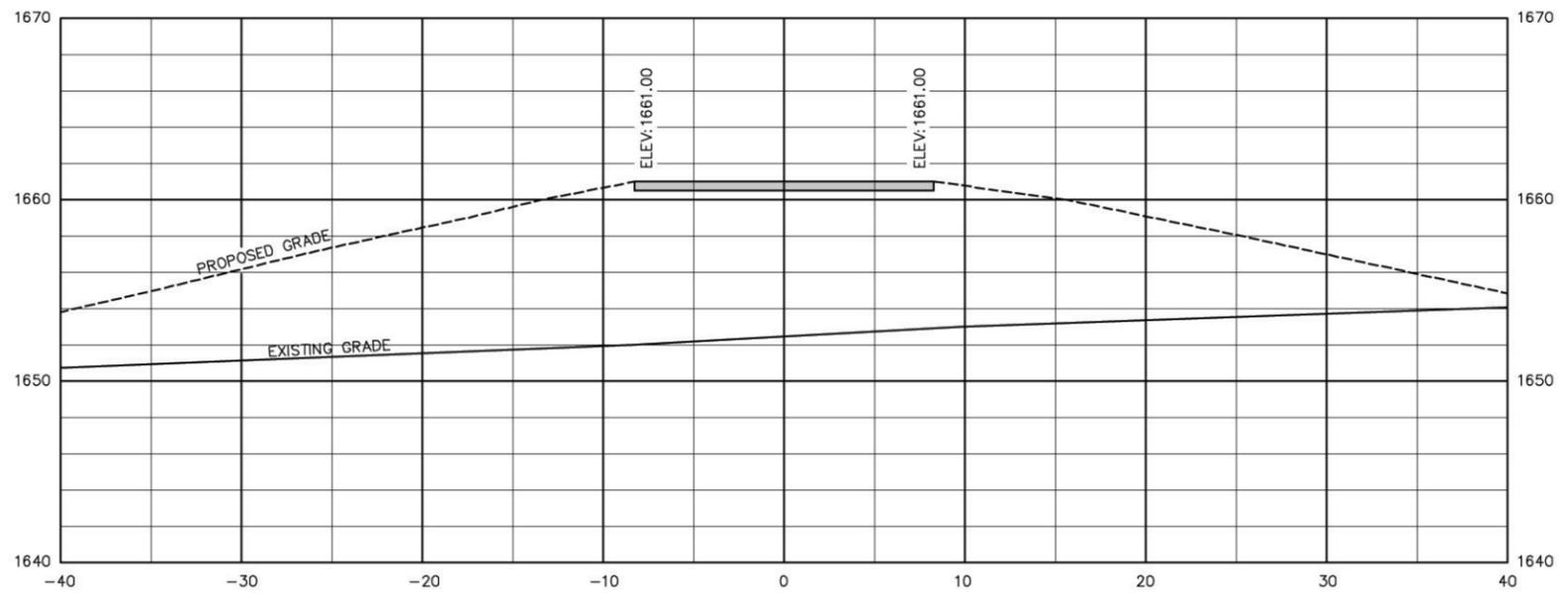
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ND	TEO-0008(028)	19986	200	3

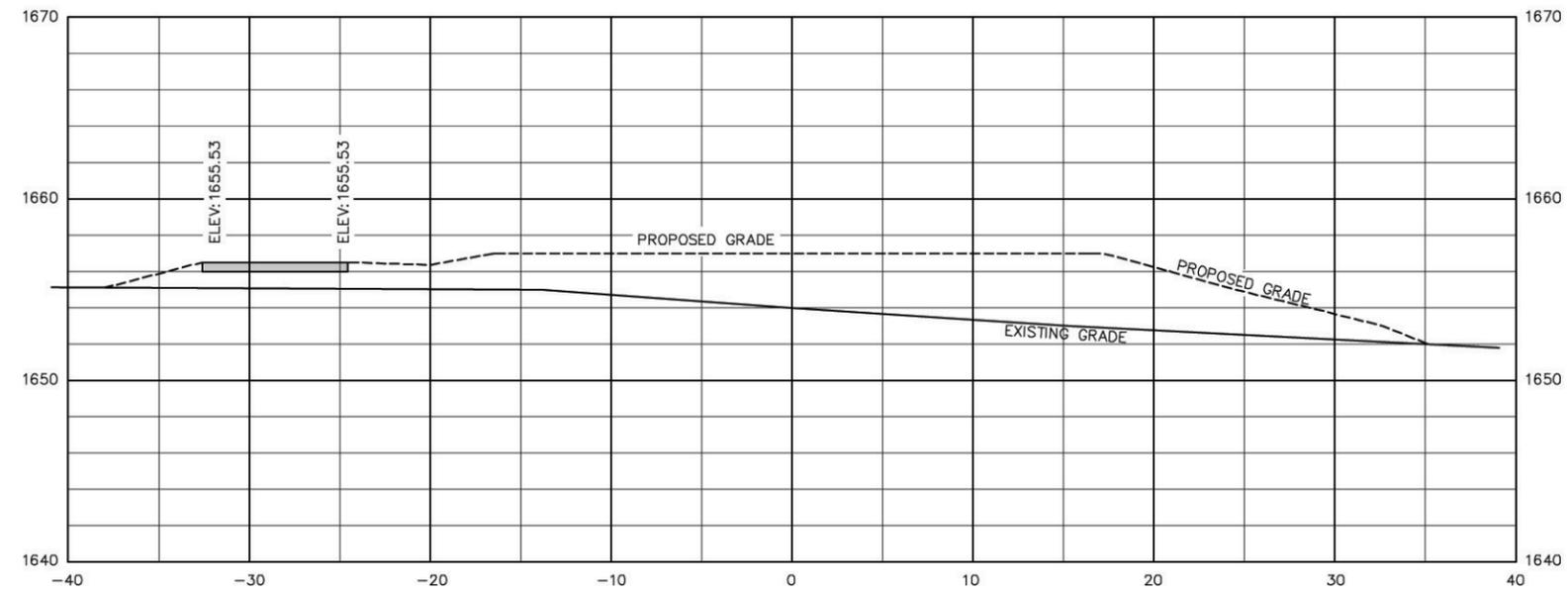
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STA = 2+00.00



STA = 1+00.00



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UNITED TRIBES TECHNICAL COLLEGE MULTI-USE TRAIL - PHASE II
CROSS SECTIONS

NDDOT ABBREVIATIONS

? 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
 Cl or C 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
 DInt delineate
 DIntr 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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM	702 Communications	GT PLNS NAT GAS	Great Plains Natural Gas Company	RED RIV TEL	Red River Rural Telephone
ACCENT	Accent Communications	HALS TEL	Halstad Telephone Company	RESVTN TEL	Reservation Telephone
AGASSIZ WU	Agassiz Water Users Incorporated	IDEA1	Idea1	ROBRTS TEL	Roberts Company Telephone
AGC	Associated General Contractors of America	INT-COMM TEL	Inter-Community Telephone Company	R-RIDER ELEC	Roughrider Electric Coop
All PI	Alliance Pipeline	KANEB PL	Kaneb Pipeline Company	RRVW	Red River Valley & Western Railroad
ALL SEAS WU	All Seasons Water Users Association	KEM ELEC	Kem Electric Cooperative Incorporated	RSR ELEC	R.S.R. Electric Cooperative
AMOCO PI	Amoco Pipeline Company	KOCH GATH SYS	Koch Gathering Systems Incorporated	S E W U	South East Water Users Incorporated
AMRDA HESS	Amerada Hess Corporation	LKHD PL	Lakehead Pipeline Company	SCOTT CABLE	Scott Cable Television Dickinson
AT&T	AT&T Corporation	LNGDN RWU	Langdon Rural Water Users Incorporated	SHERDN ELEC	Sheridan Electric Cooperative
B PAW	Bear Paw Energy Incorporated	LWR YELL R ELEC	Lower Yellowstone Rural Electric	SHEYN VLY ELEC	Sheyenne Valley Electric Cooperative
BAKER ELEC	Baker Electric	MCKNZ CON	McKenzie Consolidated Telcom	SKYTECH	Skyland Technologies Incorporated
BASIN ELEC	Basin Electric Cooperative Incorporated	MCKNZ ELEC	McKenzie Electric Cooperative	SLOPE ELEC	Slope Electric Cooperative Incorporated
BEK TEL	Bek Communications Cooperative	MCKNZ WRD	McKenzie County Water Resource District	SOURIS RIV TELCOM	Souris River Telecommunications
BELLE PL	Belle Fourche Pipeline Company	MCLEOD	McLeod USA	ST WAT COMM	State Water Commission
BLM	Bureau of Land Management	MCLN ELEC	McLean Electric Cooperative	STATE LN WATER	State Line Water Cooperative
BNSF	Burlington Northern Santa Fe Railway	MCLN-SHRDN R WAT	McLean-Sheridan Rural Water	STER ENG	Sterling Energy
BOEING	Boeing	MDU	Montana-dakota Utilities	STUT RWU	Stutsman Rural Water Users
BRNS RWD	Barnes Rural Water District	MID-CONT CABLE	Mid-Continent Cable	SW PL PRJ	Southwest Pipeline Project
BURK-DIV ELEC	Burke-Divide Electric Cooperative	MIDSTATE TEL	Midstate Telephone Company	T M C	Turtle Mountain Communications
BURL WU	Burleigh Water Users	MINOT CABLE	Minot Cable Television	TCI	TCI of North Dakota
Cable One	Cable One	MINOT TEL	Minot Telephone Company	TESORO GHG PLNS PL	Tesoro High Plains Pipeline
CABLE SERV	Cable Services	MISS W W S	Missouri West Water System	TRI-CNTY WU	Tri-County Water Users Incorporated
CAP ELEC	Capital Electric Cooperative Incorporat	MNKOTA PWR	Minnkota Power	TRL CO RWU	Traill County Rural Water Users
CASS CO ELEC	Cass County Electric Cooperative	MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative	UNTD TEL	United Telephone
CASS RWU	Cass Rural Water Users Incorporated	MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative	UPPR SOUR WUA	Upper Souris Water Users Association
CAV ELEC	Cavalier Rural Electric Cooperative	MRE LBTY TEL	Moore & Liberty Telephone	US SPRINT	U.S. Sprint
CBLCOM	Cablecom Of Fargo	MUNICIPAL	City Water And Sewer	USAF MSL CABLE	U.S.A.F. Missile Cable
CENEX PL	Cenex Pipeline	MUNICIPAL	City Of '.....'	USFWS	US Fish and Wildlife Service
CENT PL WATER DIST	Central Pipe Line Water District	N CENT ELEC	North Central Electric Cooperative	USW COMM	U.S. West Communications
CENT PWR ELEC	Central Power Electric Cooperative	N VALL W DIST	North Valley Water District	VRNDRY ELEC	Verendrye Electric Cooperative
COE	Corps of Engineers	ND PKS & REC	North Dakota Parks And Recreation	W RIV TEL	West River Telephone Incorporated
CONS TEL	Consolidated Telephone	ND TEL	North Dakota Telephone Company	WEB	W. E. B. Water Development Association
CONT RES	Continental Resource Inc	NDDOT	North Dakota Department of Transportation	WILLI RWA	Williams Rural Water Association
CPR	Canadian Pacific Railway	NDSU SOIL SCI DEPT	NDSU Soil Science Department	WILSTN BAS PL	Williston Basin Interstate Pipeline Company
D O E	Department Of Energy	NEMONT TEL	Nemont Telephone	WLSH RWD	Walsh Water Rural Water District
DAK CARR	Dakota Carrier Network	NODAK R ELEC	Nodak Rural Electric Cooperative	WOLVRTN TEL	Wolverton Telephone
DAK CENT TEL	Dakota Central Telephone	NOON FRMS TEL	Noonan Farmers Telephone Company	XLENER	Xcel Energy
DAK RWD	Dakota Rural Water District	NPR	Northern Plains Railroad	YSVR	Yellowstone Valley Railroad
DGC	Dakota Gasification Company	NSP	Northern States Power		
DICKEY R NET	Dickey Rural Networks	NTH PRAIR RW	Northern Prairie Rural Water Association		
DICKEY RWU	Dickey Rural Water Users Association	NTHN BRDR PL	Northern Border Pipeline		
DICKEY TEL	Dickey Telephone	NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated		
DNRR	Dakota Northern Railroad	NTHWSTRN REF	Northwestern Refinery Company		
DOME PL	Dome Pipeline Company	NW COMM	Northwest Communication Cooperation		
DVELEC	Dakota Valley Electric Cooperative	ONEOK	Oneok gas		
DVMW	Dakota, Missouri Valley & Western	OSHA	Occupational Safety and Health Administration		
ENBRDG	Enbridge Pipelines Incorporated	OTTR TL PWR	Otter Tail Power Company		
ENVENTIS	Enventis Telephone	P L E M	Prairielands Energy Marketing		
FALK MNG	Falkirk Mining Company	POLAR COM	Polar Communications		
FHWA	Federal Highway Administration	PVT ELEC	Private Electric		
G FKS-TRL WD	Grand Forks-traill Water District	QWEST	Qwest Communications		
GETTY TRD & TRAN	Getty Trading & Transportation	R&T W SUPPLY	R & T Water Supply Association		
GLDN W ELEC	Golden West Electric Cooperative	RAMSEY R SEW	Ramsey Rural Sewer Association		
GRGS CO TEL	Griggs County Telephone	RAMSEY RW	Ramsey Rural Water Association		
		RAMSEY UTIL	Ramsey County Rural Utilities		

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NDDOT ABBREVIATIONS

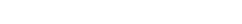
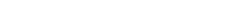
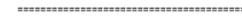
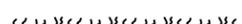
D-101-2

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

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Line Styles

	Subgrade Reinforcement		Existing Railroad Switch		Sheet Piling
	Existing Down Guy Wire Down Guy		Overhead Sign Structure Cantilever		W-Beam w Posts
	Existing Fence		24 Inch Pipe		Existing W-Beam Guardrail with Posts
	Existing Railroad		Reinforced Concrete Pipe		Exst Wet Area-Vegetation Break
	Existing Sanitary Sewer		Signal Head with Mast Arm		Existing Wetland Delineated
	Existing Sanitary Force Main		Existing Signal Head with Mast Arm		
	Existing Storm Drain		Tie Bar at Random Spacing		
	Existing Storm Drain Force Main		3-Cable w Posts		
	Fence		Existing 3-Cable w Posts		
	Silt Fence		Site Boundary		
	Existing Field Line		Fiber Rolls		
	Exst Flow		Doweled Joint		
	Flow		Tie Bar 30 Inch 4 Foot Center to Center		
	Existing Culvert		Tie Bar 18 Inch 3 Foot Center to Center		
	Existing Curb		Existing Berm, Dike, Pit, or Earth Dam		
	Existing Valley Gutter		Existing Ditch Block		
	Existing Driveway Gutter		Depression Contours		
	Existing Curb and Gutter		Existing City Corporate Limits or Reservation Boundary		
	Existing Mountable Curb and Gutter		Gravel Pit - Borrow Area		
	Existing Double Micro Loop Detector		Existing Tree Boundary		
	Micro Loop Detector Double		Tree Row		
	Existing Overhead Sign Structure		Existing Brush or Shrub Boundary		
	Existing Micro Loop Detector		Existing Retaining Wall		
	Micro Loop Detector		Existing Planter or Wall		
	Existing Overhead Sign Structure Cantilever		Retaining Wall (Plan View)		

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NDDOT ABBREVIATIONS

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

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

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07-01-14	
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Symbols

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
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Symbols

D-101-32

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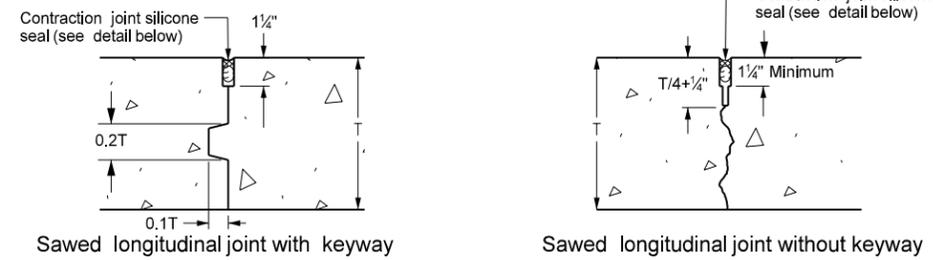
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE

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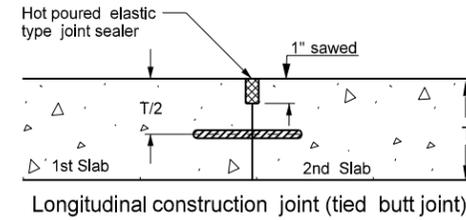
LONGITUDINAL JOINT DETAILS

D-550-2

UNTIED JOINTS (silicone seal)

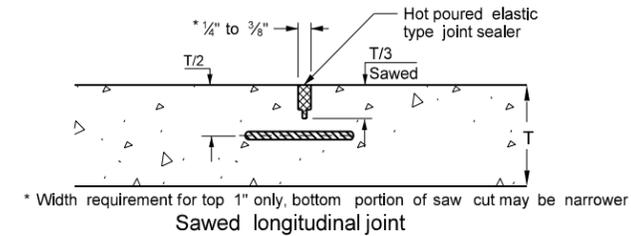
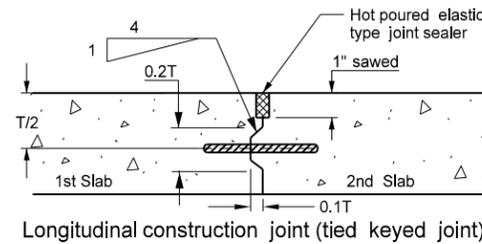
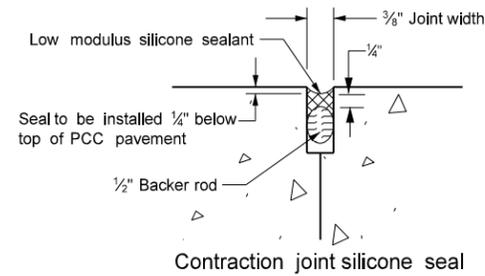


TIED JOINTS (hot poured elastic seal)



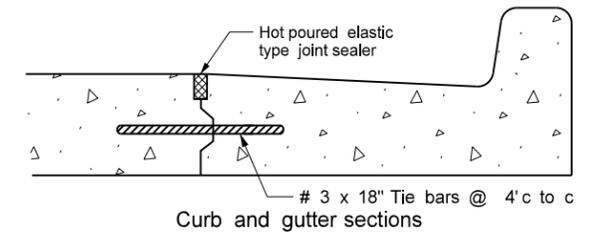
Notes:

1. The hot poured elastic type joint sealer shall be in accordance with Section 826.02A.2 of the Standard Specifications.
2. The longitudinal joint and seal shall be included in the price bid for the P.C.C. pavement.
3. Tie bars shall not be placed within 18 inches of a transverse skewed joint.
4. Where tie bars are installed bent and later straightened, Grade 40 steel shall be used.
5. Tie bar spacing can be increased up to 10% to facilitate construction.
6. Tie Bars shall be at a 48 inch maximum spacing.
7. A "Warp" joint is a sawed joint or a construction joint with a keyway.
8. A "Butt joint" is a construction joint with no keyway.

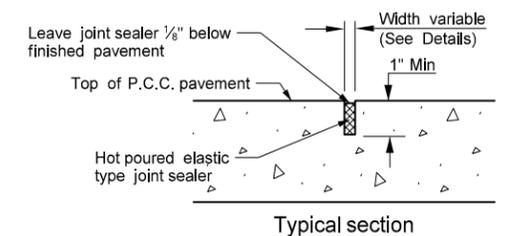


TIEBAR SPACINGS (In)

DIST TO FREE EDGE (FT)	BAR SIZE	GRADE STEEL	TIEBAR SPACINGS (In)																																																				
			# 3 BAR						# 4 BAR						# 5 BAR						# 6 BAR																																		
			GRADE 40				GRADE 60				GRADE 40				GRADE 60				GRADE 40				GRADE 60				GRADE 40				GRADE 60																								
			24"						30"						24"						36"						30"						42"						36"						48"										
			4	6	8	10	4	6	8	10	12	14	8	10	12	14	16	8	10	12	14	16	22	24	10	12	14	16	22	24	10	12	14	16	22	24	10	12	14	16	19	22	24	10	12	14	16	19	22	24					
6"	WARP		48	39	29	24	48	48	44	35	29	25	48	42	35	30	26	48	48	48	45	39	28	26	48	48	47	41	30	27	48	48	48	48	45	41	48	48	48	48	48	43	39	48	48	48	48	48	48	48					
	BUTT		37	27			48	42	31	25			37	29	24			48	44	37	32	27			46	39	33	29			48	48	48	43	32	29	48	48	48	48	35	30	27	48	48	48	48	48	45	41					
8"	WARP		48	37	28		48	48	42	33	28	24	48	39	33	28	24	48	48	48	42	37	27	24	48	48	44	38	28	25	48	48	48	48	42	38	48	48	48	48	47	40	37	48	48	48	48	48	48	48					
	BUTT		39	26			44	39	29			35	27				48	48	47	41	30	27		44	36	31	27			48	48	47	41	30	27	48	48	45	39	33	28	26	48	48	48	48	48	48	42	39					
8 1/2"	WARP		48	35	26		48	48	39	31	26		47	37	31	26		48	48	47	40	35	25		48	48	42	36	26	24	48	48	48	48	40	36	48	48	48	48	44	38	35	48	48	48	48	48	48	48					
	BUTT		37	24			48	37	27			33	26				48	40	33	28	25			41	34	29	25			48	48	44	39	28	25	48	48	42	37	31	26	24	48	48	48	48	47	40	37						
9"	WARP		48	33	25		48	48	37	30	25		44	35	29	25		48	48	44	38	33	24		48	46	39	34	25		48	48	48	48	38	34	48	48	48	48	42	36	33	48	48	48	48	48	48	48					
	BUTT		35				48	35	26			31	25				47	37	31	27			39	32	27	25			48	48	42	37	27	24	48	48	42	37	27	24	48	47	40	35	29	25	48	48	48	48	44	38	35		
9 1/2"	WARP		48	31			48	47	35	28			42	34	28	24		48	48	42	36	31			48	44	37	33	24		48	48	48	48	36	33	48	48	48	48	40	34	31	48	48	48	48	48	48	48					
	BUTT		33				48	33	25			29	24				45	36	29	25			37	31	26	24			48	46	40	35	25		48	45	38	33	28	24	48	48	48	48	48	48	42	36	33						
10"	WARP		45	30			48	45	34	27			40	32	26			48	48	40	34	30			48	42	36	31			48	48	47	34	31			48	48	48	45	38	33	30	48	48	48	48	48	48	48				
	BUTT		32				48	32	24			28					42	34	28	24			35	29	25			48	44	38	33	24		48	42	36	32	27		48	48	48	48	40	34	31	48	48	48	48	48	48	40	34	31
10 1/2"	WARP		43	28			48	43	32	26			38	31	25			48	46	38	33	28			48	40	34	30			48	48	48	45	32	30	48	48	48	43	36	31	28	48	48	48	48	48	48	47	43				
	BUTT		30				46	30				27					40	32	27				34	28	24			48	42	36	32			48	40	35	30	25		48	48	48	46	38	33	30	48	48	48	48	46	38	33	30	
11"	WARP		41	27			48	41	31	24			48	44	36	31	27		48	48	44	36	31	27		46	38	32	28			48	48	47	41	34	28	48	48	47	41	34	30	27	48	48	48	48	48	48	48	45	41		
	BUTT		29				44	29				25					39	31	25				32	27				48	40	35	30			46	39	33	29	24		48	48	48	44	37	31	29	48	48	48	48	44	37	31	29	
11 1/2"	WARP		39	26			48	39	29			35	28				48	42	35	30	26			44	36	31	28			48	48	47	41	30	27	48	48	45	40	33	28	26	48	48	48	48	48	48	43	39					
	BUTT		27				42	27				25					37	30	25				31	25				46	39	33	29			45	37	32	28			48	48	48	42	35	30	27	48	48	48	42	35	30	27		
12"	WARP		38	25			48	38	28			33	27				48	40	33	29	25			42	35	30	26			48	48	45	39	28	26	48	48	43	38	32	27	25	48	48	48	48	48	48	41	38					
	BUTT		27				40	27				35	28				35	28					29	25				44	37	32	27			42	35	30	27			48	48	45	40	34	29	26	48	48	48	45	40	34	29	26	
12 1/2"	WARP		36	24			48	36	27			32	26				48	39	32	27	24			40	33	29	25			48	48	43	38	27	25	48	48	41	36	30	26	24	48	48	48	48	48	46	40	36					
	BUTT		25				38	25				34	27				34	27					28					42	35	30	27			41	34	29	25			48	48	44	38	32	28	25	48	48	44	38	32	28	25		
13"	WARP		35				48	35	26			31	25				47	37	31	26				39	32	28	24			48	48	42	36	26	24	48	47	40	35	29	25		48	48	48	48	44	38	35						
	BUTT		25				37	25				33	26				33	26					27					41	34	29	25			39	33	28	25			48	48	42	37	31	27	24	48	48	42	37	31	27	24		
13 1/2"	WARP		34				48	34	25			30	24				45	36	30	25				37	31	27			48	47	40	35	25		48	45	38	34	28	24		48	48	48	48	43	37	34							
	BUTT		24				35	24				32	25				32	25					26					38	32	27	24			38	32	27	24			48	47	40	35	30	26	23	48	48	42	37	31	27	24		
14"	WARP		32				48	32	24			29					43	35	29	25				36	30	26			48	45	39	34	24		48	43	37	32	27			48	48	48	48	41	35	32							
	BUTT		32				34					30	25				30	25					25					38	32	27	24			36	30	26				48	46	39	34	29	25		48	46	39	34	29	25			
14 1/2"	WARP		31				47	31				28					42	33	28	24				35	29	25			48	44	37	33	24		48	42	36	31	26			48	48	48	47	40	34	31							
	BUTT		33				47	31				28					29						25					37	31	26				35	29	25				48	44	38	33	28	24		48	44	38	33	28	24			



JOINT SEALER DETAILS

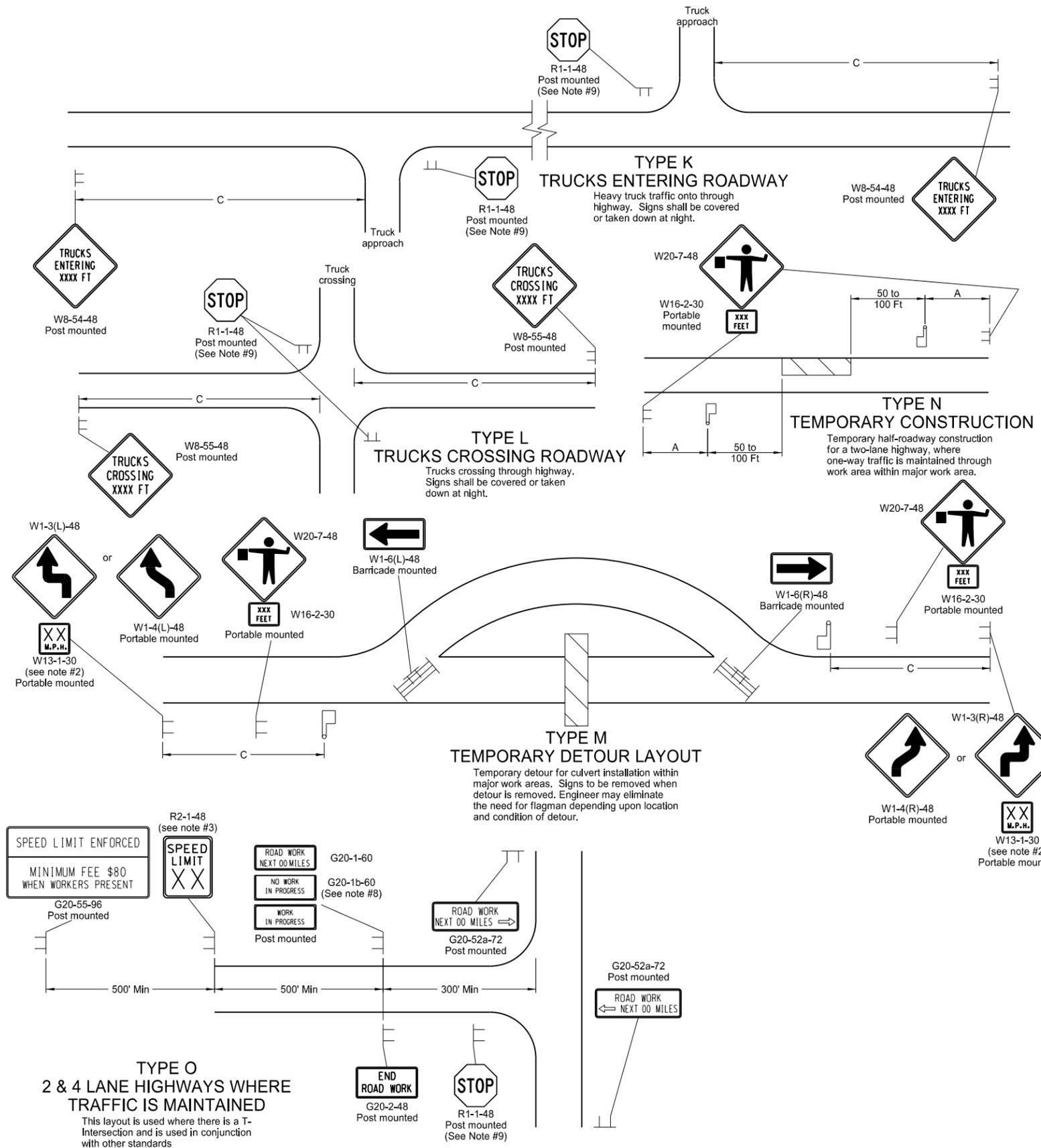


NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-15-2010	
REVISIONS	
DATE	CHANGE
10/23/2012	Expanded Tie Bar Table

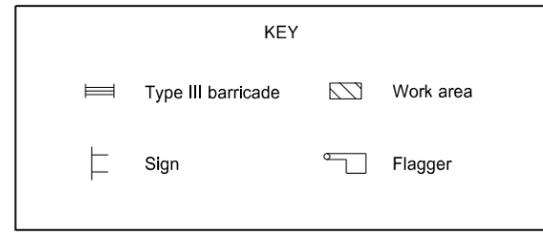
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CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

D-704-22



- Notes
1. Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies. Where necessary, safe speed to be determined by the Engineer.
 2. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
 3. When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
 4. Existing speed limit signs within a reduced speed zone shall be covered. Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the engineer.
 5. The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
 6. The contractor shall install the G20-1b-60 sign when work is suspended for winter.
 7. If existing stop sign is in place, a 48" stop sign is not required.
 8. G20-55-96 sign is not required if this standard is part of other traffic control layouts with this sign or the work is less than 15 days.

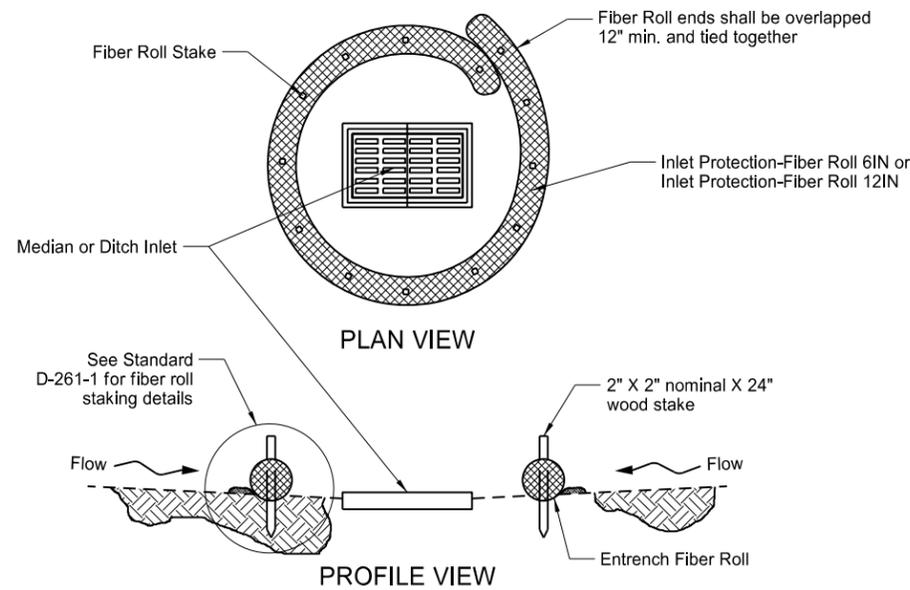


Road Type	ADVANCE WARNING SIGN SPACING		
	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway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

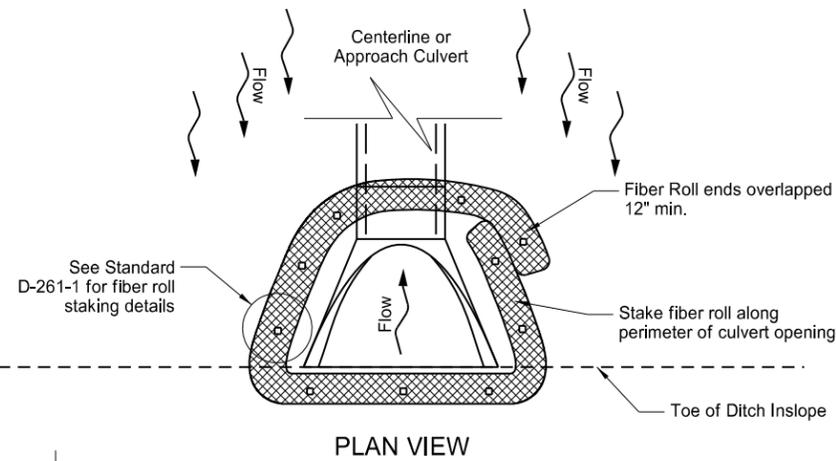
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION 9-27-13	
REVISIONS	
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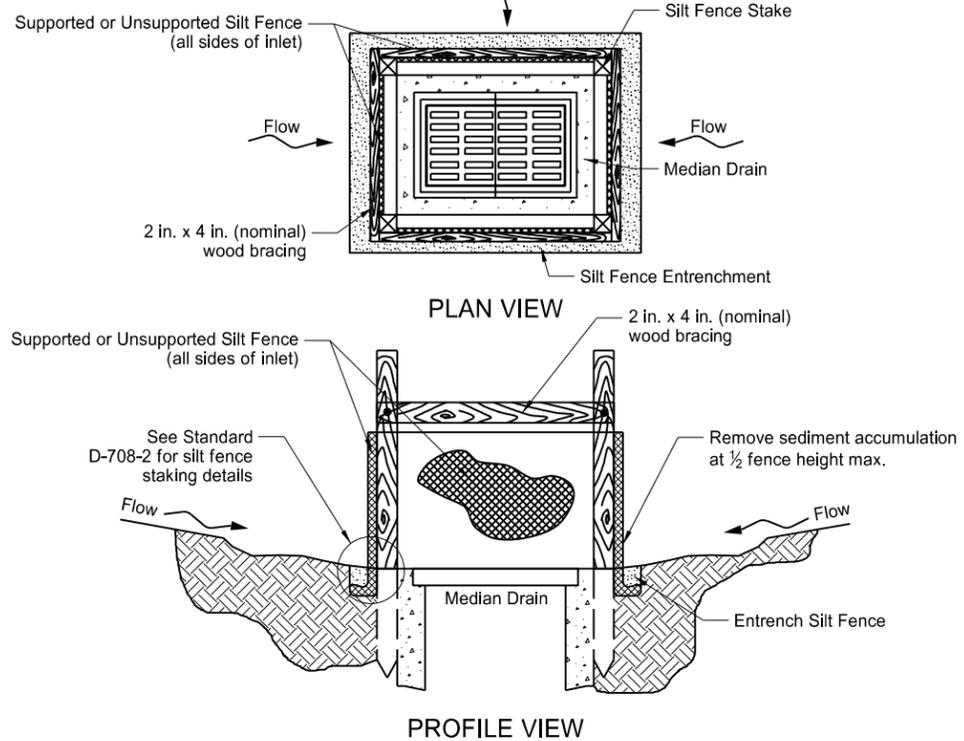
EROSION AND SILTATION CONTROLS
MEDIAN OR DITCH INLET PROTECTION



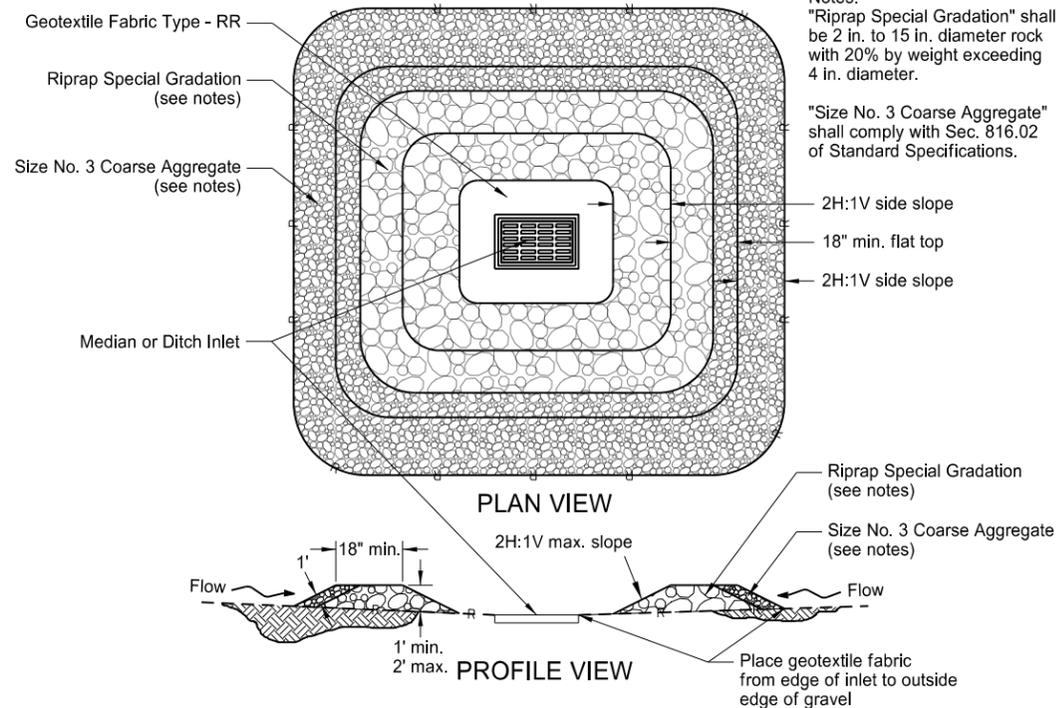
FIBER ROLL PROTECTION (MEDIAN OR DITCH INLET)



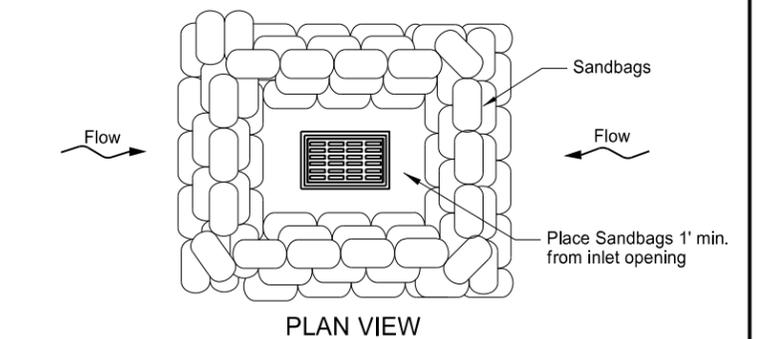
FIBER ROLL PROTECTION (INLET OF CULVERT)



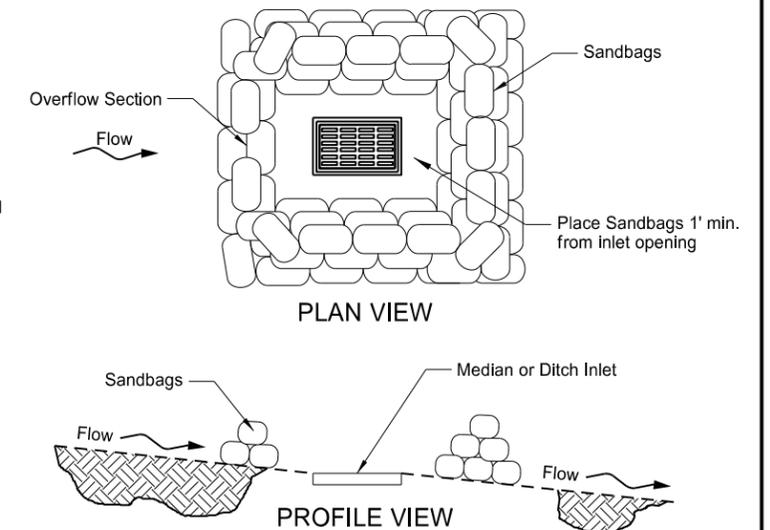
SILT FENCE PROTECTION (MEDIAN OR DITCH INLET)



GRAVEL INLET PROTECTION (MEDIAN OR DITCH INLET)



SANDBAG PROTECTION (LOW POINT)



SANDBAG PROTECTION (ON SLOPE)

Notes:
"Riprap Special Gradation" shall be 2 in. to 15 in. diameter rock with 20% by weight exceeding 4 in. diameter.
"Size No. 3 Coarse Aggregate" shall comply with Sec. 816.02 of Standard Specifications.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-03-13	
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06-26-14	Updated reference to standard drawing number for fiber roll staking details.

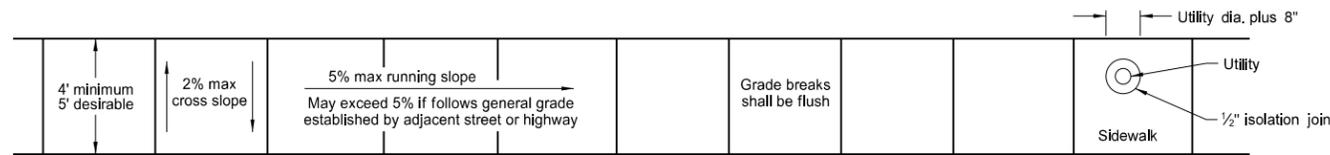
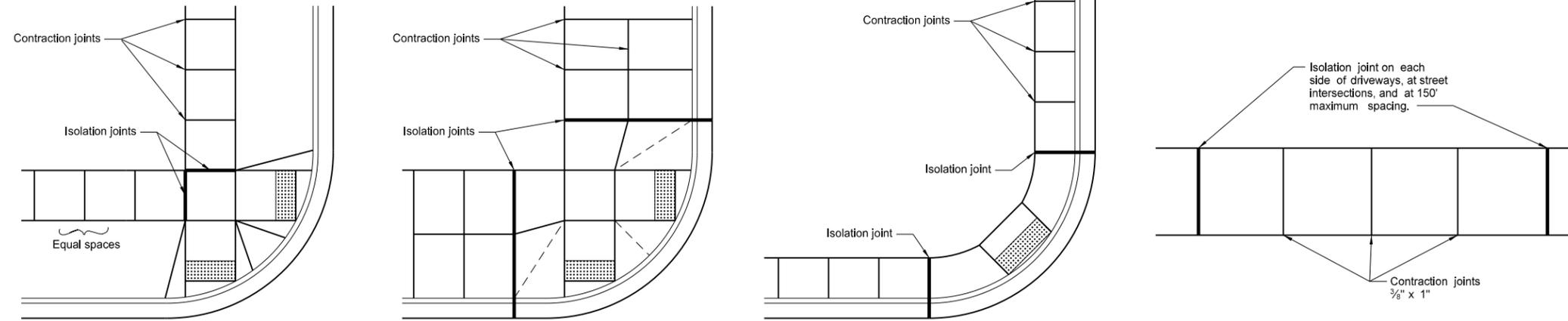
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SIDEWALK

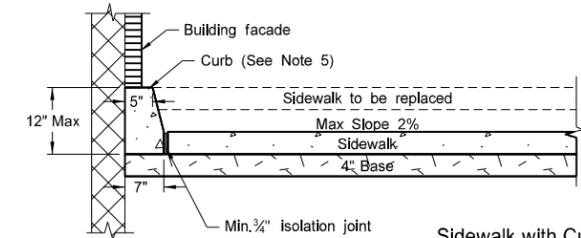
D-750-2

NOTES:

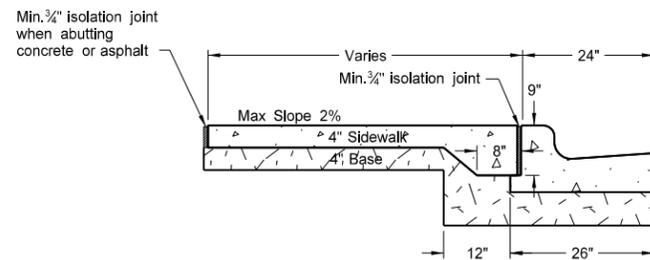
1. Curb ramp and detectable warning panel layouts are for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Transverse contraction joint spacing shall vary from 4' to 6' to create approximate square panels. Longitudinal contraction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



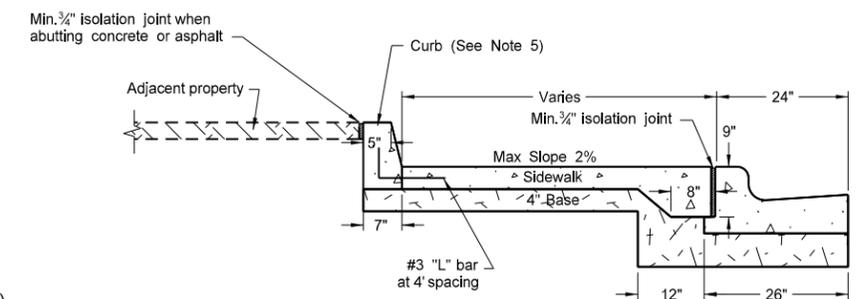
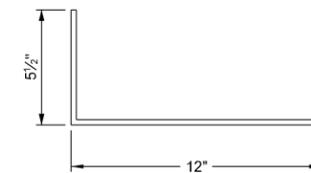
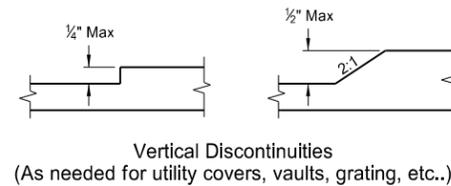
Utility Blockout



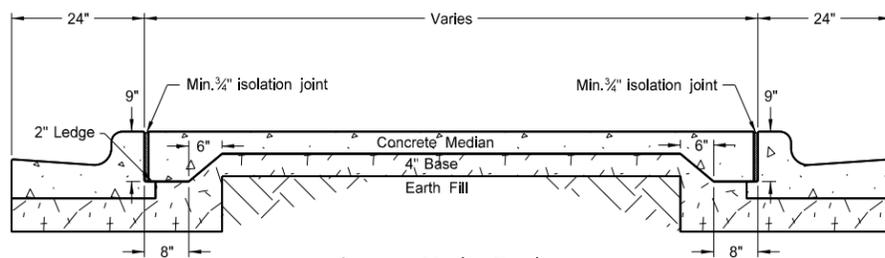
Sidewalk with Curb Detail (Building face application)



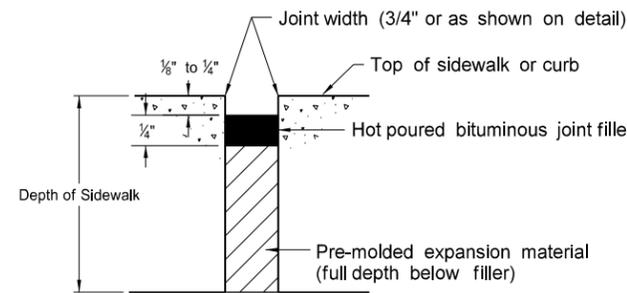
Sidewalk Detail (Installed adjacent to curb and gutter)



Sidewalk with Curb Detail (Adjacent property application)



Concrete Median Detail



Typical Isolation Joint Seal (longitudinal and transverse)

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CURB RAMP DETAILS

D-750-3

+More Right of Way

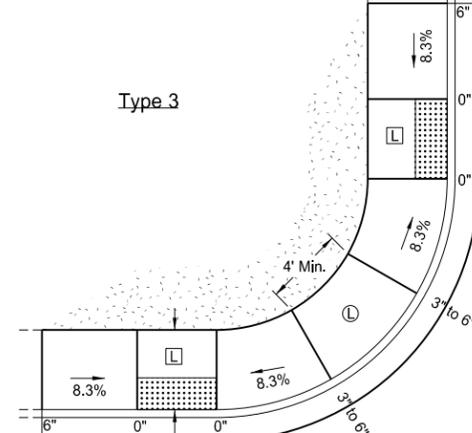
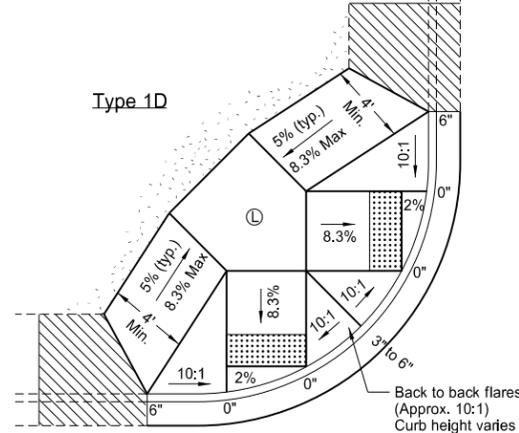
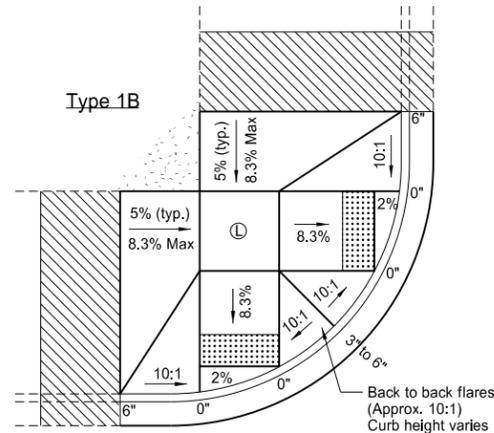
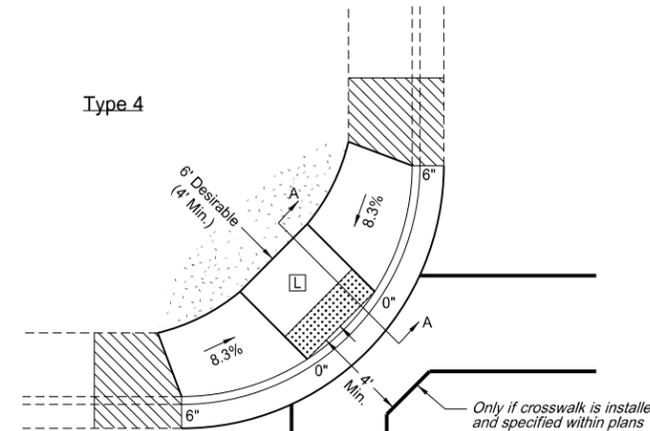
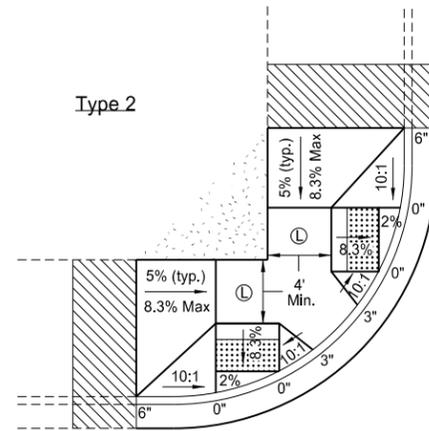
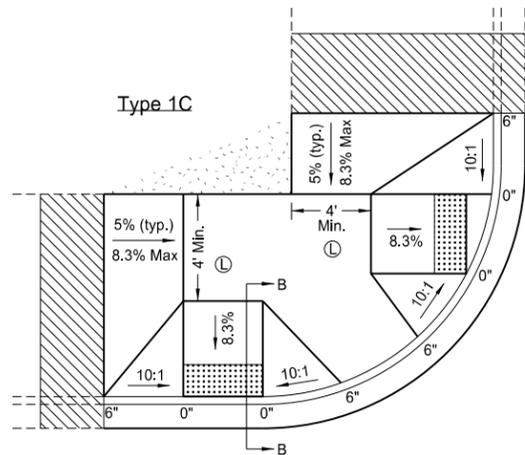
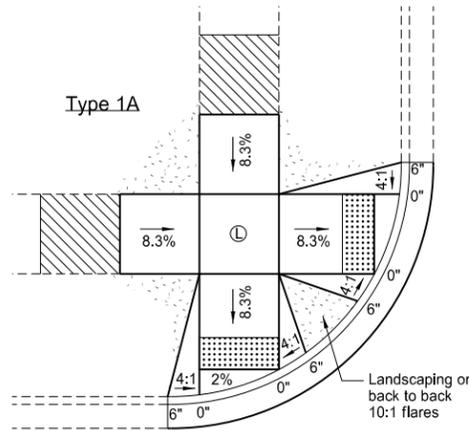
Less Right of Way

NOTES:

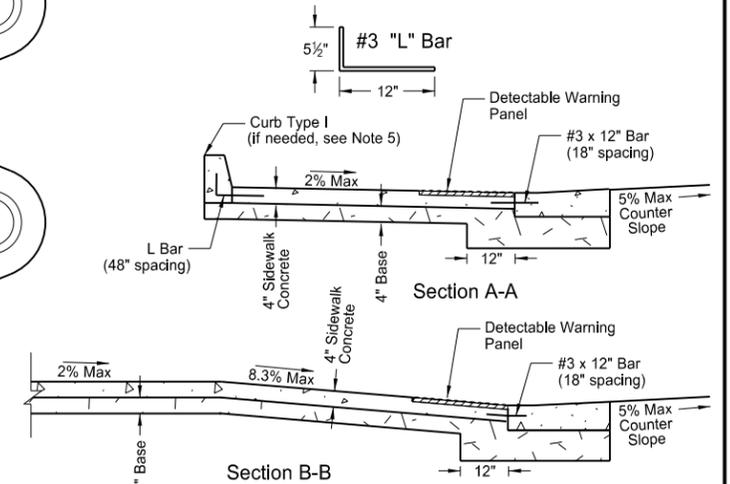
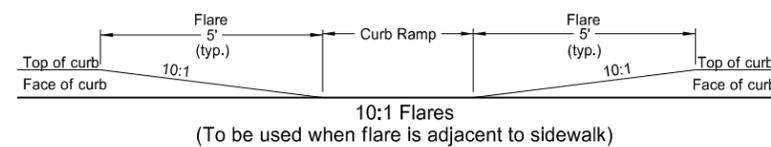
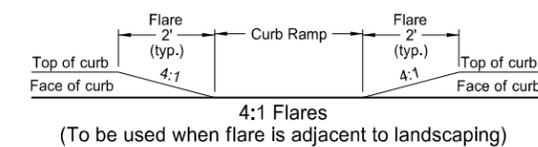
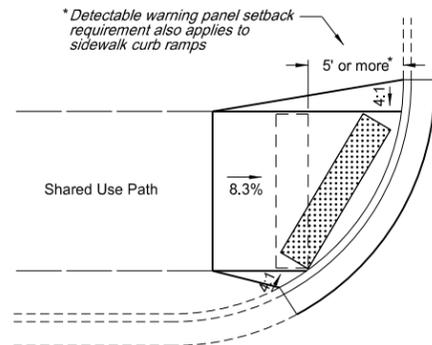
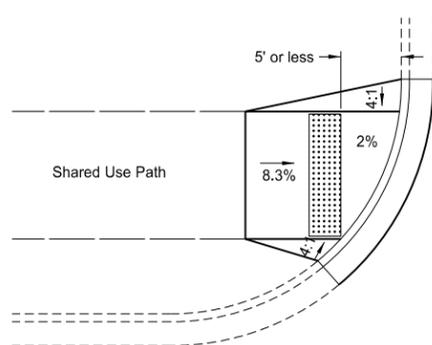
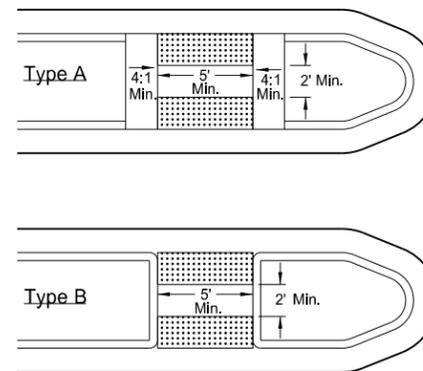
- Ramp width is defined as the useable portion of the ramp, excluding flares if used.
Curb ramp width should match the existing sidewalk width. 4' width minimum.
Ramp width for shared-use paths should match the existing shared use path width.
Ramp length shall be maximum of 15'.
- Landings shall be a minimum of 4' x 4' and shall have a max 2% slope in any direction. Landings are desirably 5' x 5' or larger.
- 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.
- The pedestrian access route shall be continuous 4' min. width. Max 2% cross slope applies to all concrete, excluding flares.
- 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
- : Lower Landing
- 0", 3", or 6" : Curb Height
- 8.3% : All slopes shown are max grades. Flatter slopes may be used.



Median Refuge Islands (Cut-Through)

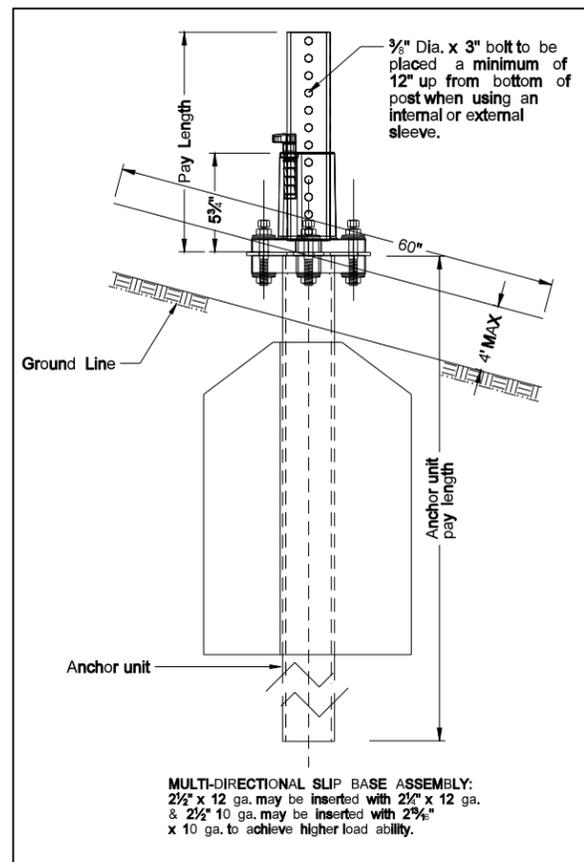
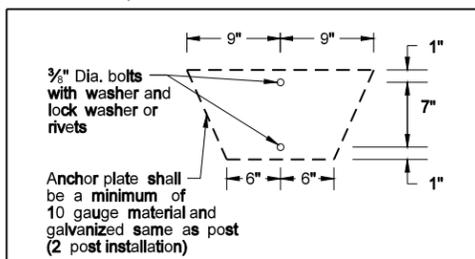


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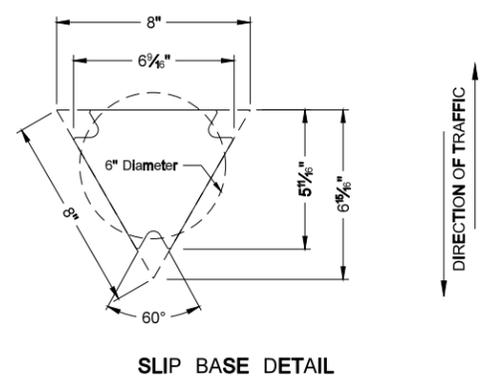
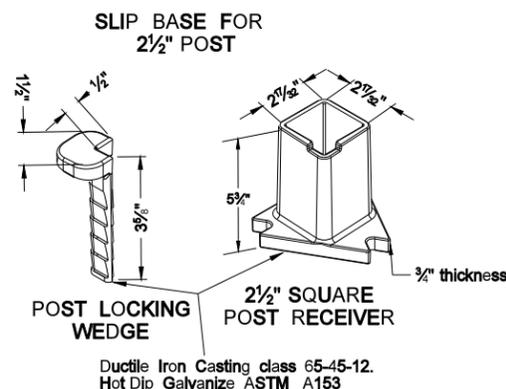
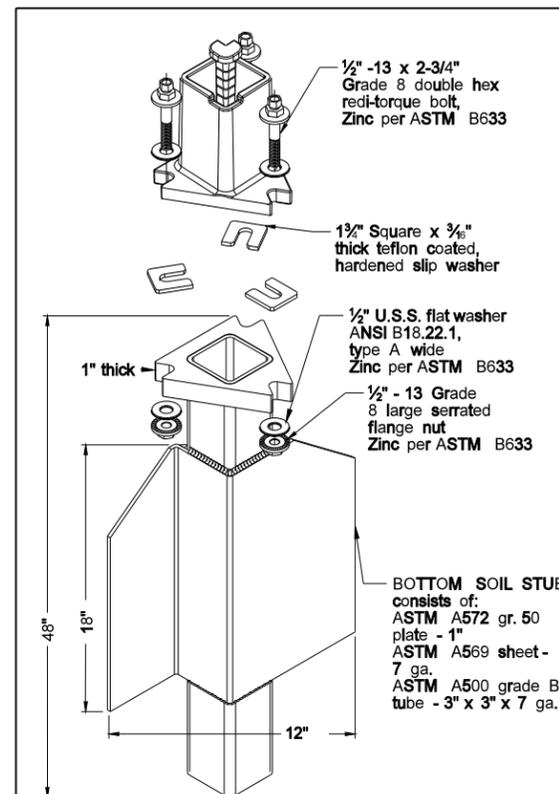
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Number of Posts	Telescoping Perforated Tube						
	Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Gauge
1	2	12			No	2 1/2	12
1	2 1/2	12			No	2 1/2	12
1	2 1/2	12			(B)	3(C)	7
1	2 1/2	10			Yes		7
1	2 1/2	12	2 1/2(D)	12	Yes		7
1	2 1/2	12	2 1/2	12	Yes		7
2	2 1/2	10			Yes		7
2	2 1/2	12	2 1/2(D)	12	Yes		7
2	2 1/2	12	2 1/2	12	Yes		7
3 & 4	2 1/2	12			Yes		7
3 & 4	2 1/2	10			Yes		7
3 & 4	2 1/2	12	2 1/2	12	Yes		7
3 & 4	2 1/2	12	2 1/2(D)	12	Yes		7
3 & 4	2 1/2	10	2 1/2	10	Yes		7

(B) - The 2 1/2", 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) - 2 1/2" x 12 ga. x 18" minimum length external sleeve required.



Mounting Details Perforated Tube

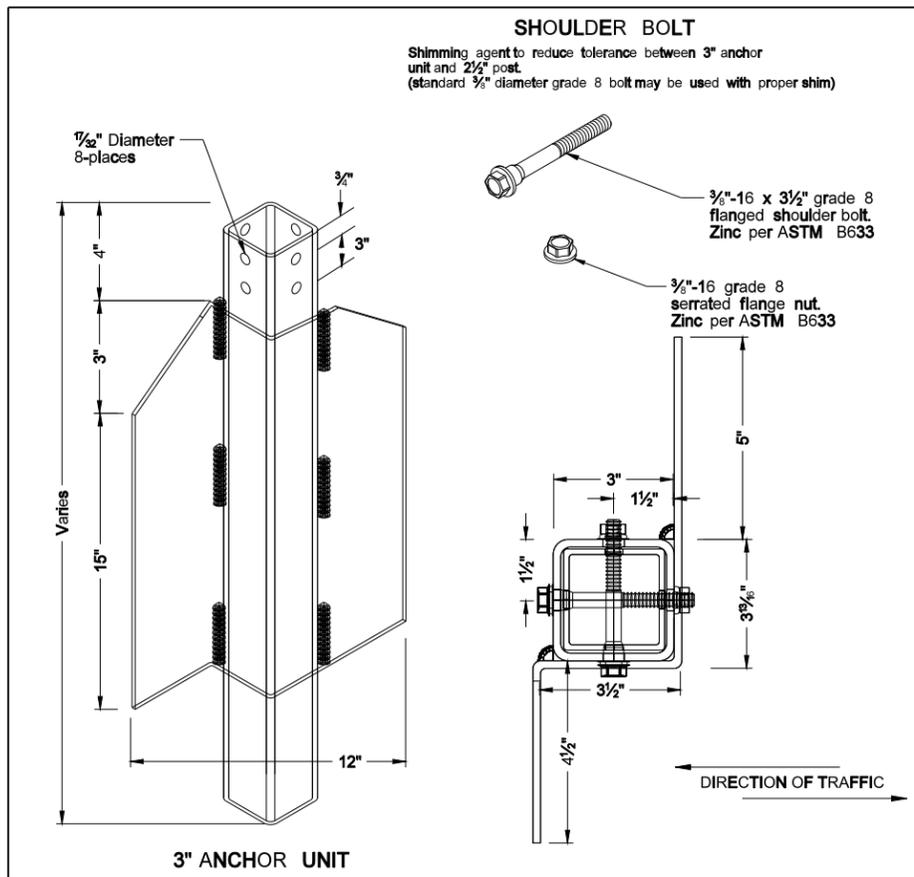
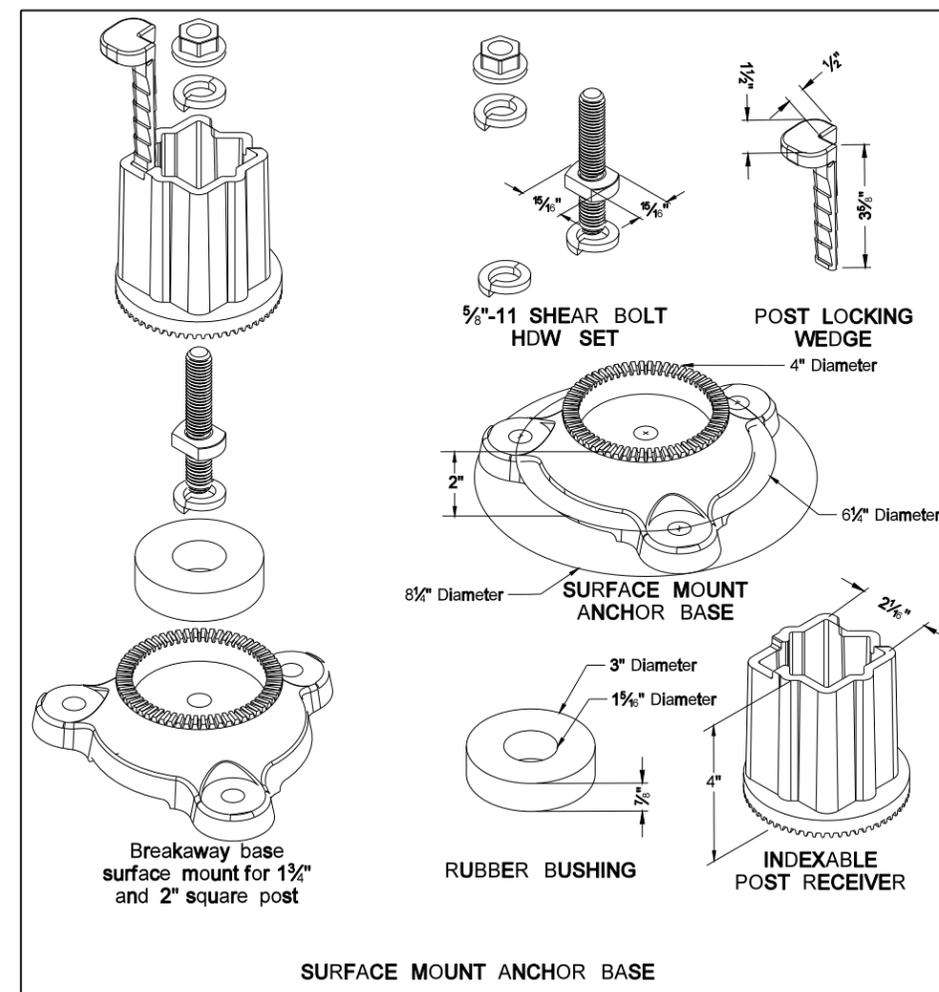


Properties of Telescoping Perforated Tubes							
Tube Size In.	Wall Thickness in.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. ⁴	Cross Sect. Area In. ²	Section Modulus In. ³	
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172	
2 x 2	0.105	12	2.416	0.372	0.590	0.372	
2 1/2 x 2 1/2	0.105	12	2.773	0.561	0.695	0.499	
2 3/4 x 2 3/4	0.135	10	3.432	0.605	0.841	0.590	
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643	
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.783	

The 2 3/4" size 10 gauge is shown as 2.19" size on the plans; The 2 1/2" size is shown as 2.51" size on the plans.

NOTE:

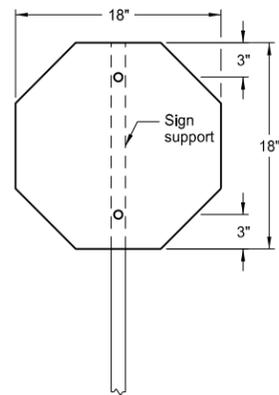
- 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.
- Anchor material shall be 7 gauge H.R.P.O. Commercial quality ASTM A569 and 3" x 3" x 7" gauge ASTM A500 grade B. Anchor shall have a yield strength 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 otherwise noted.
- When used in concrete sidewalk, anchor shall be the same concept without the wings.
- Four post signs shall have over 8" between the first and fourth posts.
- Installation procedures as per manufacturers recommendation.
- Concrete fasteners for surface mount breakaway base shall be a minimum 1/2" diameter x 4" grade 8.



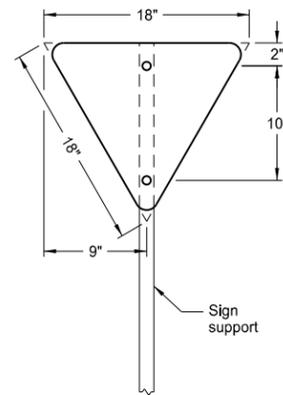
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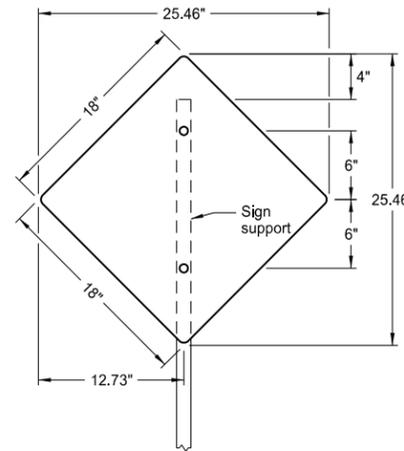
BIKE ROUTE SIGNS
PUNCHING, STRINGER AND SUPPORT LOCATION DETAILS FOR
REGULATORY, WARNING AND GUIDE SIGNS



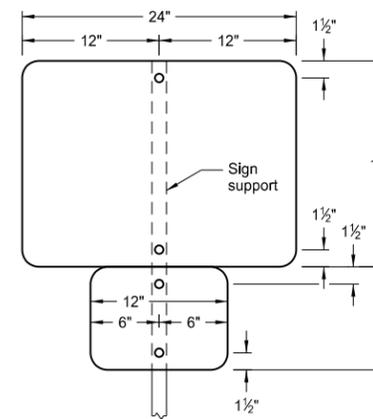
1 Post
Assembly No. 100



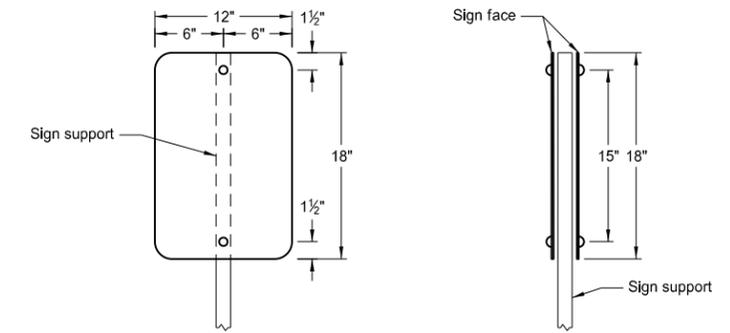
1 Post
Assembly No. 101



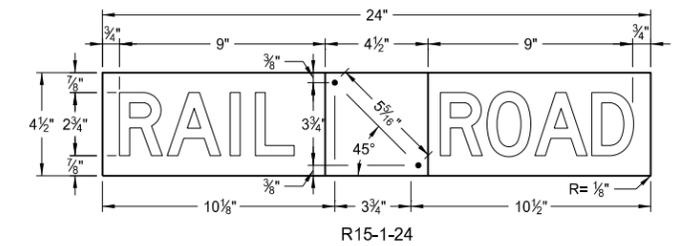
1 Post
Assembly No. 102



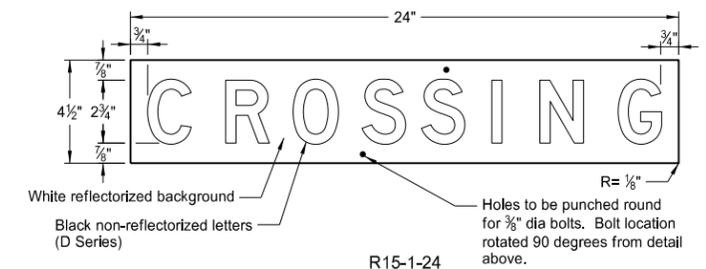
1 Post
Assembly No. 103



1 Post
back to back
Assembly No. 104

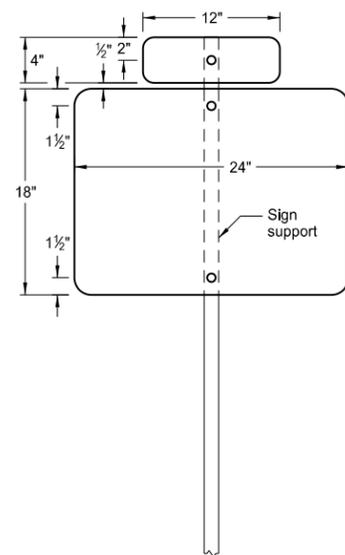
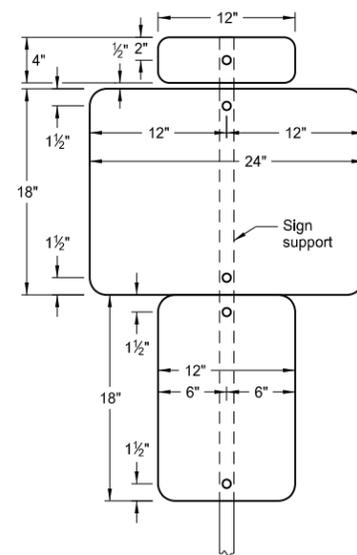


R15-1-24

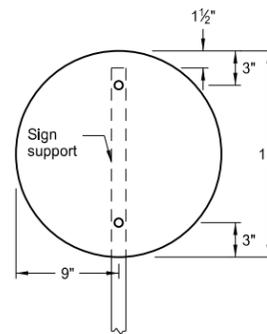
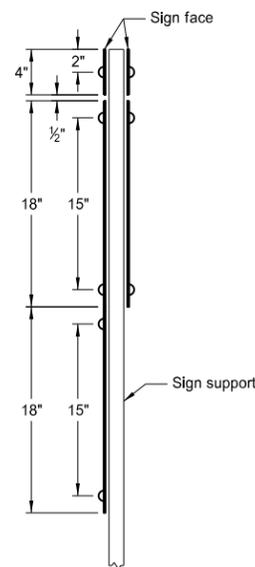


White reflectorized background
Black non-reflectorized letters
Holes to be punched round for 3/8" dia bolts. Bolt location rotated 90 degrees from detail above.

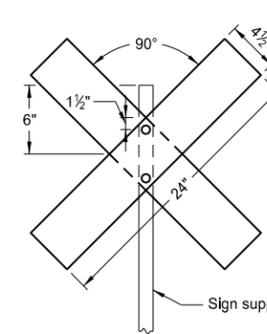
R15-1-24
Railroad Crossing Sign Details



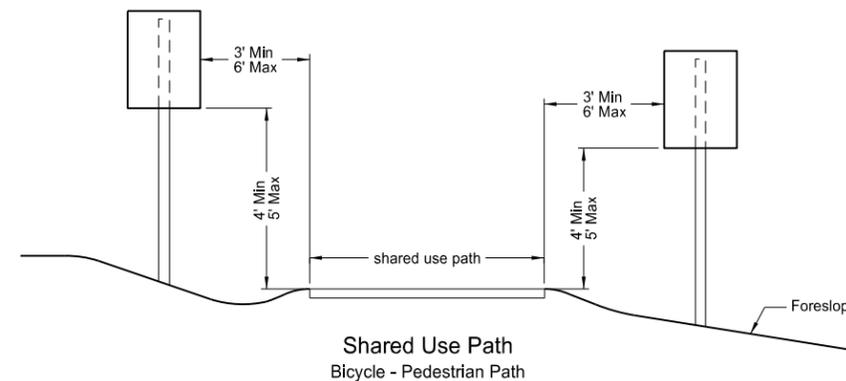
1 Post
back to back
Assembly No. 105



1 Post
Assembly No. 106



1 Post
Assembly No. 107



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 3/8" bolt.

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