

STATE OF SOUTH DAKOTA  
 DEPARTMENT OF TRANSPORTATION  
 PLANS FOR PROPOSED

Revised: 08/01/16 MD

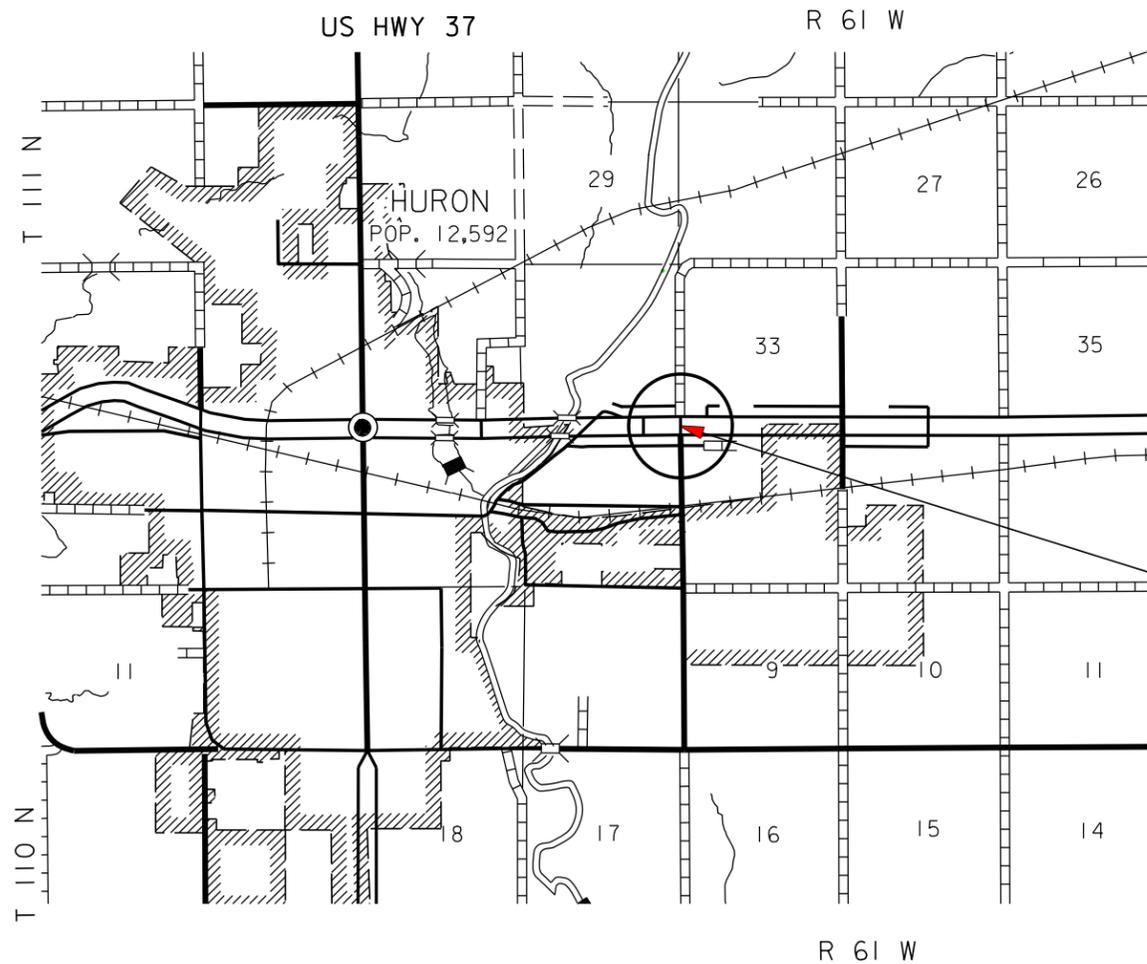
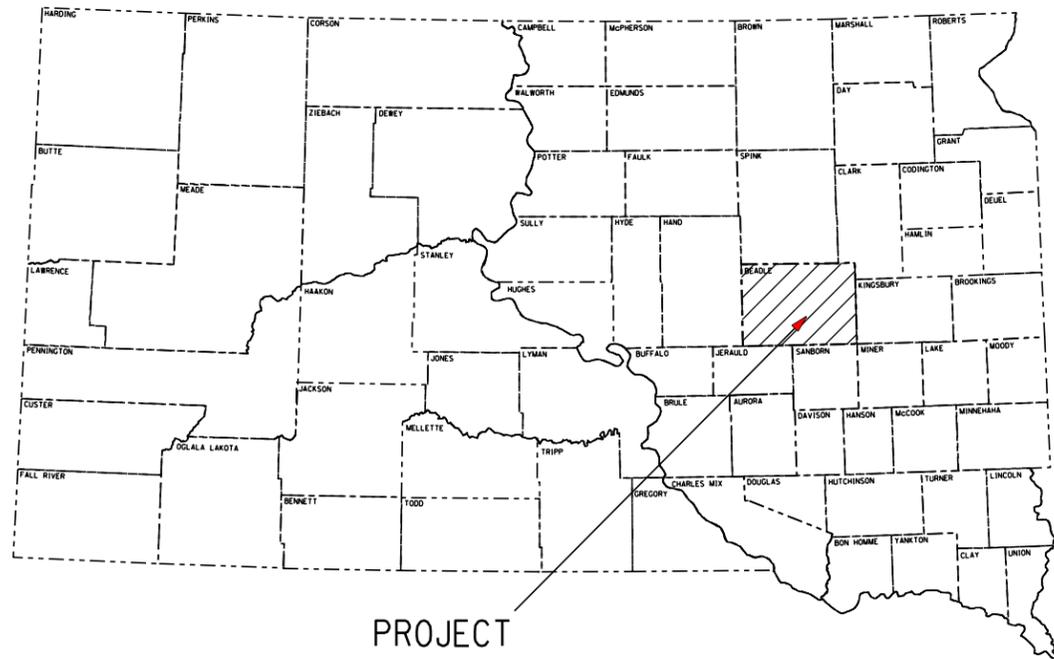
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014(205)347	1	31
Plotting Date: 08/02/2016			

**PROJECT PH 0014(205)347**  
**US HIGHWAY 14**  
**BEADLE COUNTY**

Intersection Modification  
 PCN 04TX

INDEX OF SHEETS

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Project Location:  
 014 W MRM 347.12 + 0.398 to 347.12 + 0.662  
 014 E MRM 347.12 + 0.370 to 347.12 + 0.660

DESIGN DESIGNATION (Eastbound)		DESIGN DESIGNATION (Westbound)	
ADT (2015)	1188	ADT (2015)	1188
ADT (2035)	1360	ADT (2035)	1360
DHV	408	DHV	408
D	50%	D	50%
T DHV	7.5%	T DHV	7.5%
T ADT	16.5%	T ADT	16.5%
V	55	V	55

STORM WATER PERMIT  
 None Required

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PLOT SCALE - 1:6000

PLOTTED FROM - TRAB10200

PLOT NAME - 1

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## ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0130	Remove Traffic Sign	3	Each
110E1690	Remove Sediment	1.0	CuYd
110E1693	Remove Erosion Control Wattle	10	Ft
120E0010	Unclassified Excavation	557	CuYd
120E0600	Contractor Furnished Borrow Excavation	711	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	2,334.0	Ton
320E1200	Asphalt Concrete Composite	852.0	Ton
450E5310	24" CMP Sloped End, Furnish	2	Each
450E5311	24" CMP Sloped End, Install	2	Each
450E7624	24" Steel Pipe, Furnish	54	Ft
451E5124	Bore and Jack 24" Pipe	54	Ft
462E0100	Class M6 Concrete	0.7	CuYd
480E0100	Reinforcing Steel	105	Lb
632E2510	Type 2 Object Marker Back to Back	2	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	2	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	378	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area	67	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
633E1400	Pavement Marking Paint, 4" White	1,805	Ft
633E1405	Pavement Marking Paint, 4" Yellow	1,350	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	378	Ft
633E5020	Grooving for Cold Applied Plastic Pavement Marking, Area	67	SqFt
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	6	Each
634E0010	Flagging	10.0	Hour
634E0110	Traffic Control Signs	459.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	2	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	440	Ft
634E0600	4" Temporary Pavement Marking Tape Type I	1,320	Ft
670E4122	Type L Frame and Grate Assembly	1	Each
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	30	Ft

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

## ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

#### COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

#### Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

#### COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

#### Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

#### COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

#### Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

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### COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

#### Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

- Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

- Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

**COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

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The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

**Action Taken/Required:**

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

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Plotting Date: 07/20/2016

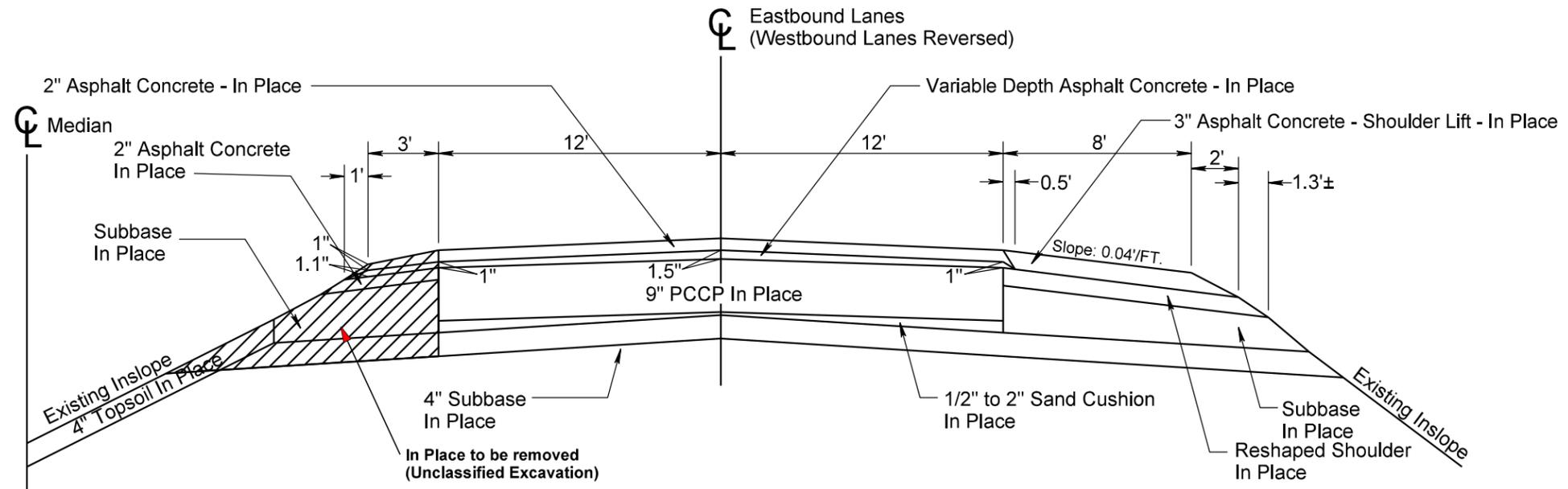
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PLOT NAME - 21

# TYPICAL REMOVAL SECTION

Eastbound Stationing  
219+64 to 226+39

Westbound Stationing  
226+84 to 233+59



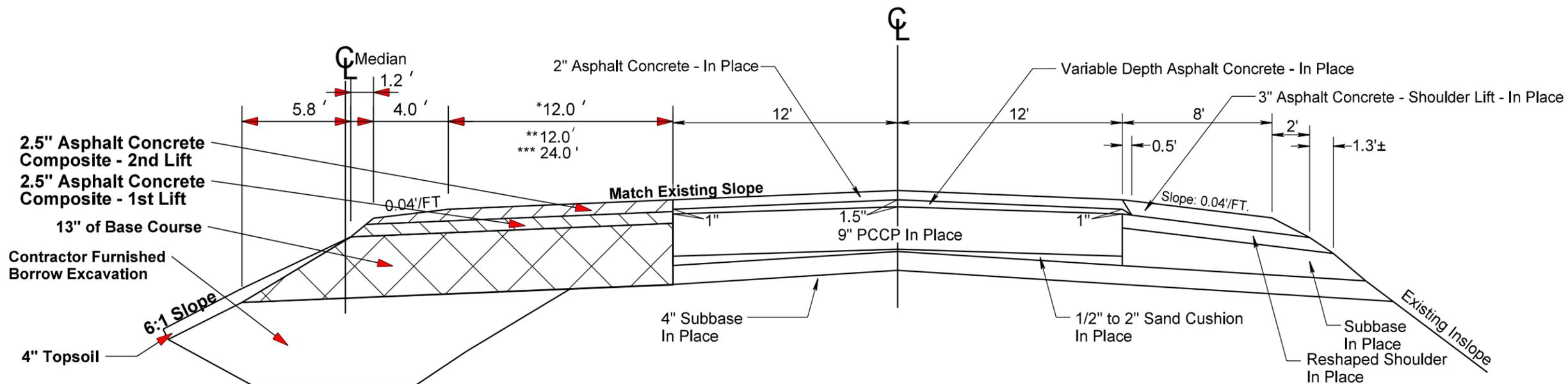
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# TYPICAL GRADING AND SURFACING SECTION

## EASTBOUND LANES

Eastbound Stationing  
221+84

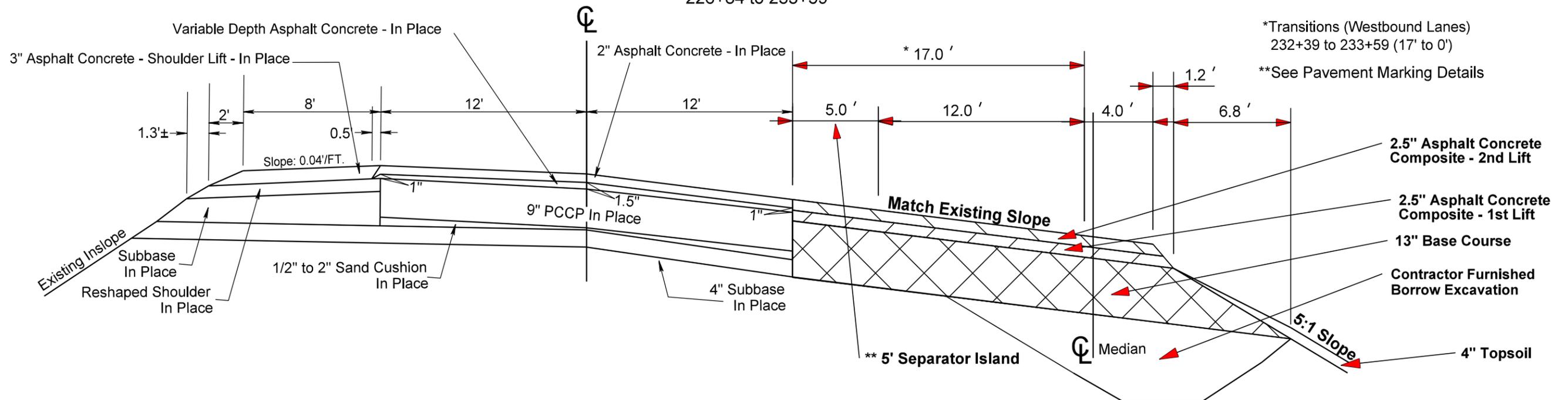


\*Transitions (Eastbound Lanes)  
219+64 to 221+84 (0' to 12')  
\*\*Transitions (Eastbound Lanes)  
221+84 to 225+39 (12' to 24')  
\*\*\*Transitions (Eastbound Lanes)  
225+39 to 226+39 (24')

# TYPICAL GRADING AND SURFACING SECTION

## WESTBOUND LANES

Westbound Stationing  
226+84 to 233+59



\*Transitions (Westbound Lanes)  
232+39 to 233+59 (17' to 0')  
\*\*See Pavement Marking Details

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**RATES OF MATERIALS**

The Estimate of Quantities is based on the following quantities of material per Station.

STA. 226+84 to 232+39

**BASE COURSE**

**Crushed Aggregate..... 193.4 Tons**

MC-70 Asphalt for Prime at the rate of 0.39 tons applied 29 feet wide. (Rate = 0.30 Gal./Sq. Yd.)

**ASPHALT CONCRETE COMPOSITE – 2.5” FIRST LIFT**

**Total..... 34.0 Tons**

**ASPHALT CONCRETE COMPOSITE – 2.5” SECOND LIFT**

**Total..... 33.1 Tons**

**SURFACING THICKNESS DIMENSIONS**

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

**SCOPE OF WORK**

Work on this project involves placement of offset left turn lanes on US14 E & W at the intersection with Custer Avenue in Huron.

**SEQUENCE OF OPERATIONS**

The project shall be completely open to unimpeded traffic during the South Dakota State Fair: August 28, 2017 to September 4, 2017.

1. Install traffic control.
2. Perform all required removals, reconstruction and placement of Asphalt Concrete Composite.
3. Place Cold Applied Plastic Pavement Markings.
4. Open new offset left turn lanes to the public.

**UTILITIES**

The Contractor shall be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor shall contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

**TRAFFIC CONTROL**

One lane of traffic in each direction shall be maintained at all times.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost of this work shall be incidental to the various contract items unless otherwise specified in the plans. Delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Work activities during non-daylight hours are subject to prior approval.

All speed limit signs shall have a five foot mounting height even when using portable supports.

Traffic Control signs, as shown in the Itemized List for Traffic Control Signs, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

During the Boring and Jacking operation, Type III Barricades are required in front of both the jacking and receiving pits as well as any equipment in the median(s).

**WATER FOR COMPACTION OF GRANULAR MATERIALS**

Cost of water for compaction of the granular material shall be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

**GRADING OPERATIONS**

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. Cost of water for embankment shall be considered incidental to the contract unit price per cubic yard for "CONTRACTOR FURNISH BORROW EXCAVATION".

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical sections shall be constructed to the limits shown on the cross sections.

If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor shall provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer. The plans quantity for "CONTRACTOR FURNISHED BORROW EXCAVATION" as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

Compaction of roadway embankment shall be by Specified Density Method.

**SHRINKAGE FACTOR:** Embankment ± 40%

**TABLE OF EXCAVATION QUANTITIES**

Station to	Station	Excavation (CuYd)	* Contractor Furnished Borrow Excavation (CuYd)	Total Excavation (CuYd)	** Waste (CuYd)
219+64	226+39	270	468	738	270
226+84	233+59	287	243	530	287
Totals:		557	711	1268	557

\* The quantities for these items are in the Estimate of Quantities under their respective bid items.

\*\* The quantities for these items are for information only.

**TABLE OF UNCLASSIFIED EXCAVATION**

Excavation	557
Total	557

**INCIDENTAL WORK, GRADING (EASTBOUND)**

Station	L/R	Remarks
227+74	L	Shape Inslope Around New Median Drain
233+50	R	See Ditch Cleanout Cross Section

**DROP INLETS (MEDIAN DRAINS)**

The plan shown quantities of the drop inlet components such as Class M6 Concrete, Reinforcing Steel, and Type L Frame and Grate Assembly will be the basis of payment for these items.

If additions or reductions to the number of drop inlets are ordered by the Engineer, payment for the components required to construct the drop inlets will be made at the contract unit prices for the components of the drop inlets.

The Type L Median Drain will be constructed in accordance the standard plate except for the two middle 10" - #3 bars. These two bars will require bending outward to receive the existing pipe.

**TABLE OF TYPE L MEDIAN DRAINS**

Station	L/R	* Class M6 Concrete (CuYd)	* Reinforcing Steel (Lb)	* Type L Frame and Grate Assembly (Each)
227+73	L	0.66	105	1
Totals:		0.66	105	1

\* The quantities for these items are in the Estimate of Quantities under their respective bid items.

**BORE AND JACK STEEL PIPE**

The Contractor shall install steel pipe at station 233+59 of the Eastbound Lane by boring and jacking the pipe through the existing highway embankment. The pipe shall be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Engineer.

As shown on the appropriate pipe cross section, some excavation of the existing roadway embankment is anticipated in order to reduce the length of the bore and jack pipe installation.

Steel pipe for boring and jacking shall meet or exceed the requirements of ASTM A139, Grade B. The pipe shall have a minimum wall thickness of 0.5 inches.

The exterior of the steel pipe shall be coated with a two component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard or an approved equal, and shall be applied in conformance with the manufacturer's recommendations.

The pipe joints shall be welded by a certified welder in accordance with Section 410.3 D. of the Specifications. After the welding has been completed, a two component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard or an approved equal shall be applied in the field to cover the exposed area.

The jacking pit shall be constructed of sufficient size to accommodate equipment and workmen. The pit walls shall be sloped or shored to comply with all applicable State and Federal regulations. The Contractor shall be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water shall not be allowed to accumulate in the jacking pit. All components of the jacking pit shall be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe shall be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section shall be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust shall be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust shall be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe shall be jacked into place without visible damage to the pipe or joint.

The boring head excavation shall be circular with a maximum diameter equal to the outside diameter of the jacking pipe plus 1 inch. The Contractor shall take whatever corrective action is necessary to prevent running, flowing, or squeezing ground conditions at the cutting face from causing large voids or significant loss of soil that may cause surface settlement.

The Contractor shall control the alignment and grade of the pipe installation to meet the following tolerances:

1. Maximum horizontal deviation from plan shown alignment shall be less than 0.15% of pipe length from the downstream end of pipe to the point of measurement.

2. Maximum vertical deviation from plan shown alignment shall be less than 0.075% of pipe length from the downstream end of pipe to the point of measurement.

All material excavated by the boring head for the pipe installation shall be disposed of by the Contractor. The excavated material from the boring pit shall be used as backfill for the pit and compacted into place to the satisfaction of the Engineer.

Steel casing shall be installed horizontally through 54 feet of embankment. The pipe will be placed through up to a 5 foot vertical depth of clay to gravel sized glacial till material. Large boulders are not anticipated to be encountered within the bore and jack envelope.

Installation of CMP ends on the steel pipe shall require the placement of a minimum of 2 welded stops at each pipe end to prevent the end from slipping off the steel pipe. The location and size will be determined in the field by the Engineer and installed by a certified welder. Stops shall be coated with a coal tar epoxy. All costs, including labor and materials for the installation of the stops shall be incidental to the contract unit price per foot for "24" STEEL PIPE, FURNISH". Alternative methods of attachment may be allowed with the approval of the Engineer.

Payment for furnishing the pipe shall be incidental to the contract unit price per foot for "24" STEEL PIPE, FURNISH".

All costs involved with boring and jacking the pipe including labor, equipment, welding, materials, disposal of waste material, constructing and backfilling the jacking pit, and excavating and backfilling the roadway embankment shall be incidental to the contract unit price per foot for "BORE AND JACK 24" PIPE".

**PERMANENT PAVEMENT MARKING**

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

All materials shall be applied as per manufacturer's recommendations.

The Contractor shall advise the Engineer a minimum of 3 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones.

The application of Permanent Pavement Marking paint may not begin until 7 calendar days following completion of final surfacing and shall be completed within 14 calendar days following completion of the final surfacing.

For each working day the application of permanent pavement marking paint remains uncompleted beyond the time limits described in the preceding paragraph, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

The liquidated damages shall apply up to the expiration of the contract time requirement in which the permanent pavement markings are required to be completed, including any formally approved time extensions. Following the expiration of the contract time requirement in which the permanent pavement markings are required to be completed, including any formally approved time extensions, liquidated damages will be assessed in accordance with Section 8.8 of the specifications.

**RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT**

The Department may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to a 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values shall be 275 mc/m<sup>2</sup>/lux for white and 170 mc/m<sup>2</sup>/lux for yellow.

**COLD WEATHER, WATERBORNE PAINT**

Waterborne paint applied after October 15 shall be formulated as cold weather, waterborne paint and shall be applied in accordance with manufacturer's recommendations, including minimum temperature requirements.

Cold weather, waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be Fastrack™ XSR manufactured by Dow, or approved equal.

980.1 A. Quantitative Requirements:

Pigment, percent by weight: 60.0 – 63.0 for white and 58.5 – 61.5 for yellow.

Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 – 63.0 for white and 56.1 – 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 51.5 minimum for yellow.

**GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING**

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving shall be vacuumed. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue from wet grooving shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue shall be included in the contract unit price per foot for "GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING".

**Groove cleaning:** Grooves must be cleaned by using high pressure compressed air (90 psi minimum). If the cold applied plastic pavement marking tape (including primer if required) does not immediately follow dry pavement grooving, the following shall apply:

Within 24 hours prior to placing the cold applied plastic pavement marking tape the groove shall be sandblasted and free of any residue or laitance. If the cold applied plastic pavement marking tape is not placed within 24 hours of sandblasting, the groove shall be re- sandblasted.

The cold applied plastic pavement marking tape shall be installed in accordance with the manufacturer's recommendations.

**TYPE 2 OBJECT MARKERS**

New object markers with new posts shall be installed on each side of the roadway on the upstream traffic-flow side of the pipe as per Standard Plate 632.10. There is a total of 1 mainline cross pipe that requires marking in this way.

All costs associated with installation of new back to back object markers shall be incidental to the contract unit price per each for "TYPE 2 OBJECT MARKER BACK TO BACK".

Type 2 Object Markers (Eastbound)	
Sta.	Type
233+59 – R	Back to Back
233+59 – L	Back to Back

**REMOVE AND REPLACE TOPSOIL**

Prior to beginning resurfacing operations, a 4" depth of topsoil shall be removed from the work limits. Following completion of resurfacing operations, topsoil shall be bladed back up the inslope to the point indicated on the typical section.

The estimated amount of topsoil to be removed and replaced is 184 CuYd.

All costs associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the contract lump sum price for "REMOVE AND REPLACE TOPSOIL".

**MYCORRHIZAL INOCULUM**

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract Lump Sum price for Erosion Control

The mycorrhizal inoculum shall be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 <a href="http://www.mycorrhizae.com">www.mycorrhizae.com</a>

**PERMANENT SEEDING**

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways.

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

**EROSION CONTROL**

The estimated area requiring erosion control is 0.40 acres. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching shall be incidental to the contract lump sum price for "EROSION CONTROL".

The limits of erosion control work will be determined by the Engineer during construction.

**EROSION CONTROL WATTLE**

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles shall remain on the project until vegetation has been established and then they shall be removed in accordance with the Engineer.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

**TABLE OF EROSION CONTROL WATTLE**

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
227+73 E	L	12	Inlet of Existing Pipe	10
233+59 E	L	12	Inlet of new Cross Pipe	10
Additional Quantity:				10
Total:				30

**FERTILIZER**

The application of fertilizer will not be required on this project.

**REMOVE, SALVAGE, RELOCATE, AND RESET TRAFFIC SIGN**

Throughout the project duration in place signing at the intersection shall be maintained at all times. The Contractor may be required to install in place signing on temporary supports. In place signing will need to be removed, relocated and reset upon completion of the work.

The Contractor shall use care in removal of these signs and posts and shall reinstall the signs and posts upon completion of the work. Signs and posts damaged during the removal and reset process, shall be replaced by the Contractor at no cost to the State of South Dakota.

All costs associated with the removing, salvaging, relocating and resetting traffic signs and posts, installing and supplying temporary sign supports shall be incidental to the contract unit price per each for "REMOVE, SALVAGE, RELOCATE, AND RESET TRAFFIC SIGN".

**TABLE OF SIGNS TO BE REMOVED AND RESET (MEDIAN CROSSOVER)**

*Sta.	Description	Action
225+98	Do Not Enter	Remove, Relocate, Reset
227+18	Do Not Enter	Remove, Relocate, Reset

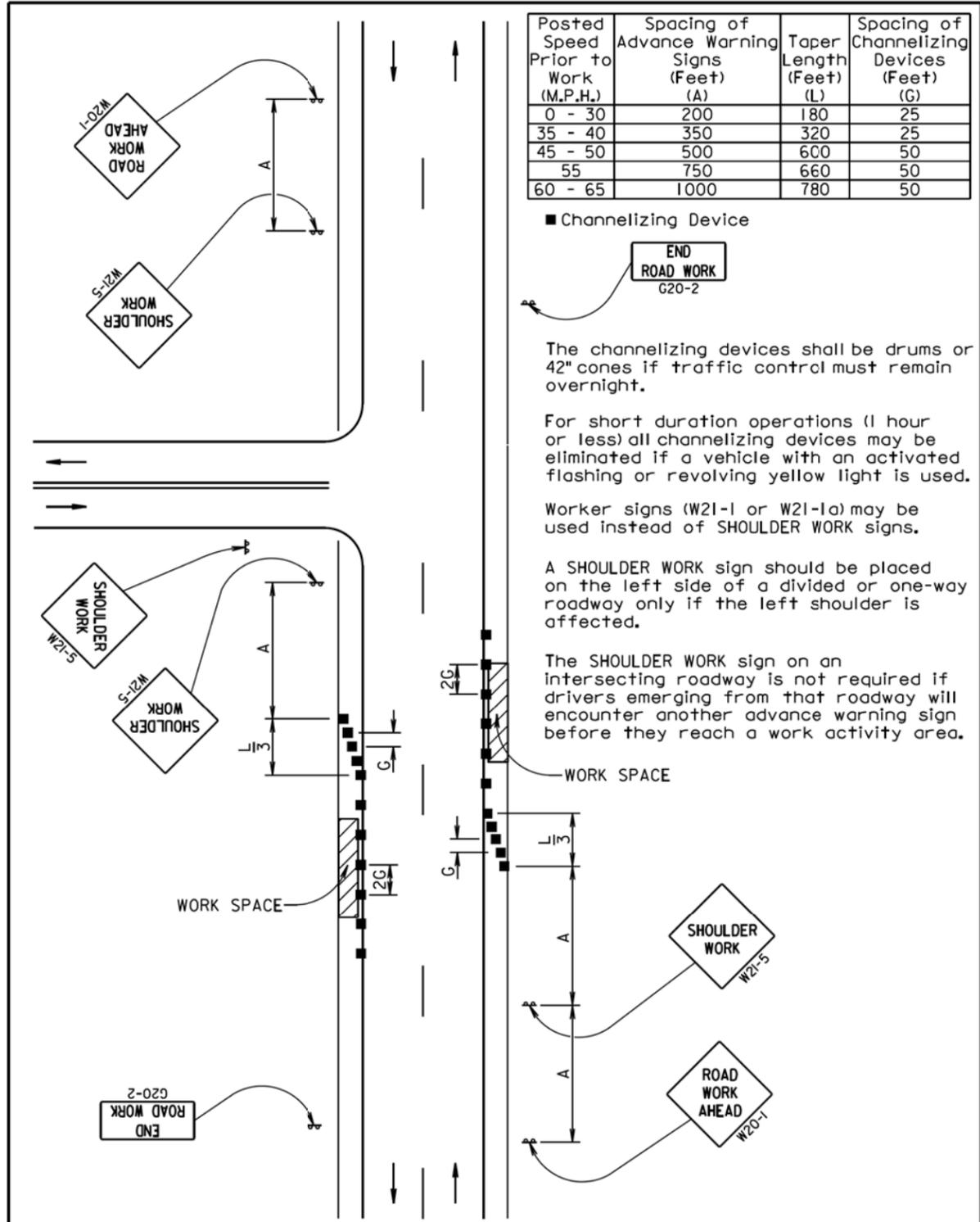
\*Stations are approximate as the survey was completed before the resurfacing in 2014.

**TABLE OF SIGNS TO BE REMOVED (MEDIAN CROSSOVER)**

*Sta.	Description	Action
226+41	One Way	Remove
226+92	One Way	Remove
227+73	Object Marker	Remove

\*Stations are approximate as the survey was completed before the resurfacing in 2014.

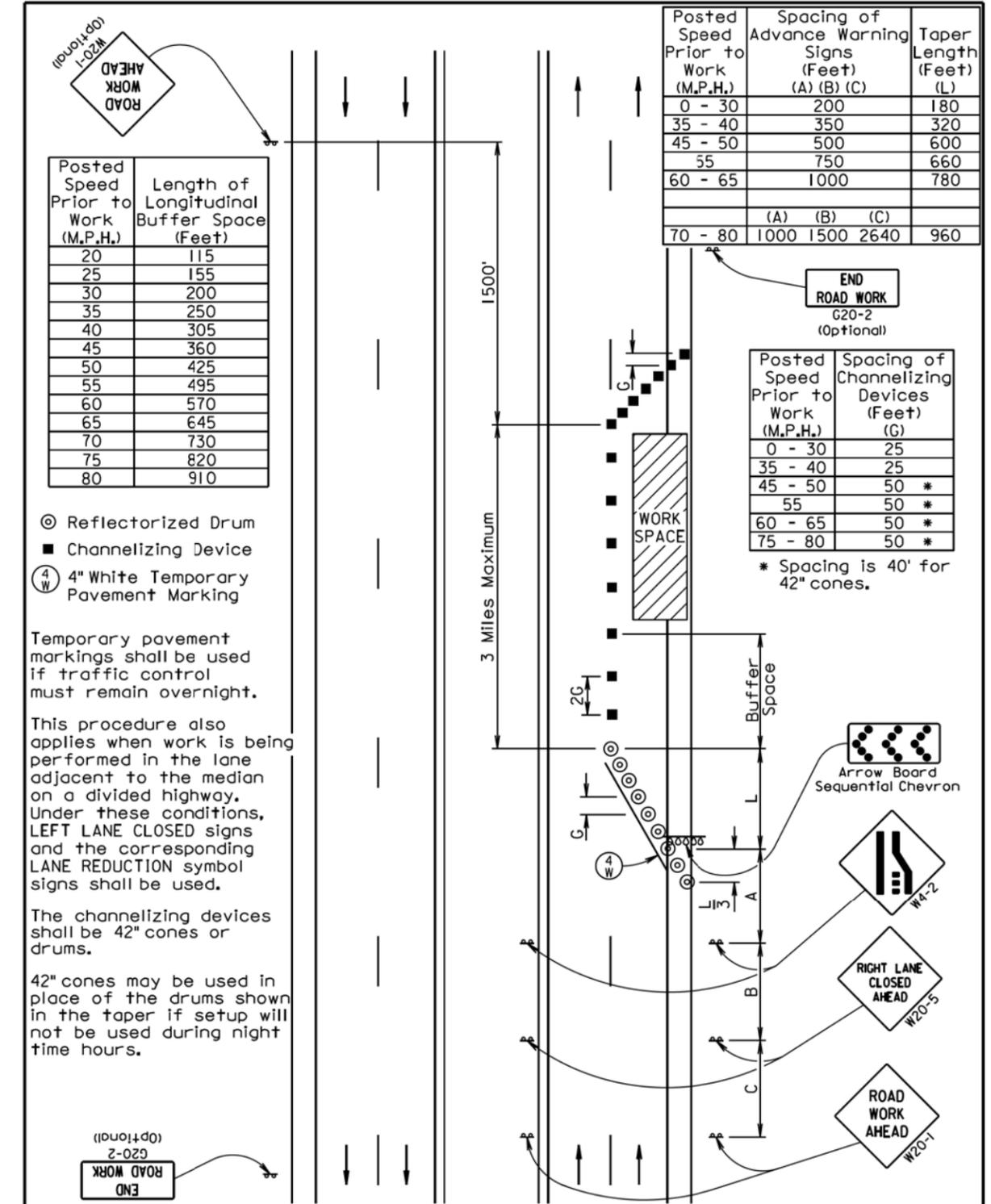
PLOT SCALE - 1:200



September 22, 2014

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS</b>	PLATE NUMBER <b>634.03</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1

PLOT NAME - 7



April 15, 2015

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER</b>	PLATE NUMBER <b>634.64</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1

PLOTTED FROM - TRAB10200

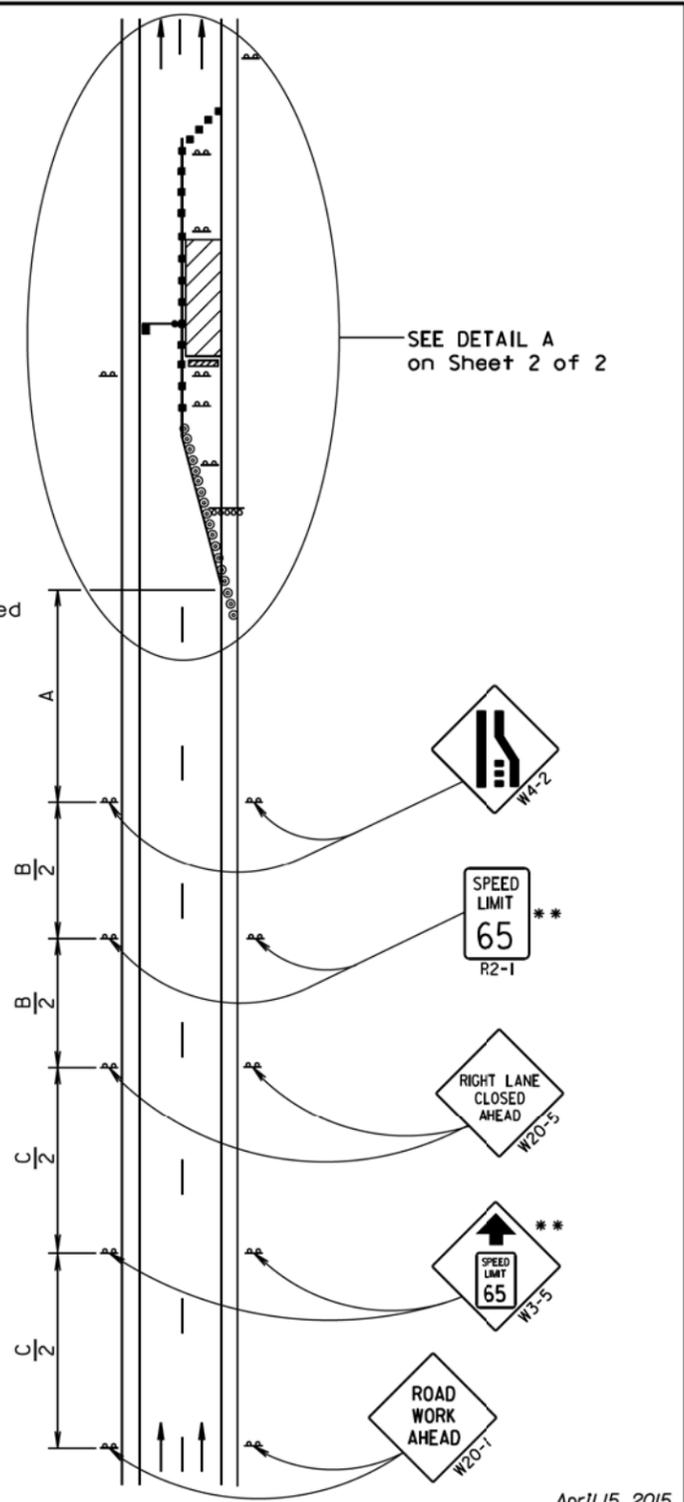
FILE - ... \EXTENDED\041XTRAFFIC.DGN

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)		
	(A)	(B)	(C)
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
	(A)	(B)	(C)
70 - 80	1000	1500	2640

- \*\* Speed appropriate for location.
- Reflectorized Drum
- Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



April 15, 2015

<b>S D D O T</b>	<b>WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS</b>	PLATE NUMBER <b>634.63</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 - 30	25	180
35 - 40	25	320
45 - 50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

- \* Spacing is 40' for 42" cones.
- \*\* Speed appropriate for location.
- \*\*\* Use speed limit designated for the condition when workers are present in the work space. Signs shall be covered or removed when workers are not present.

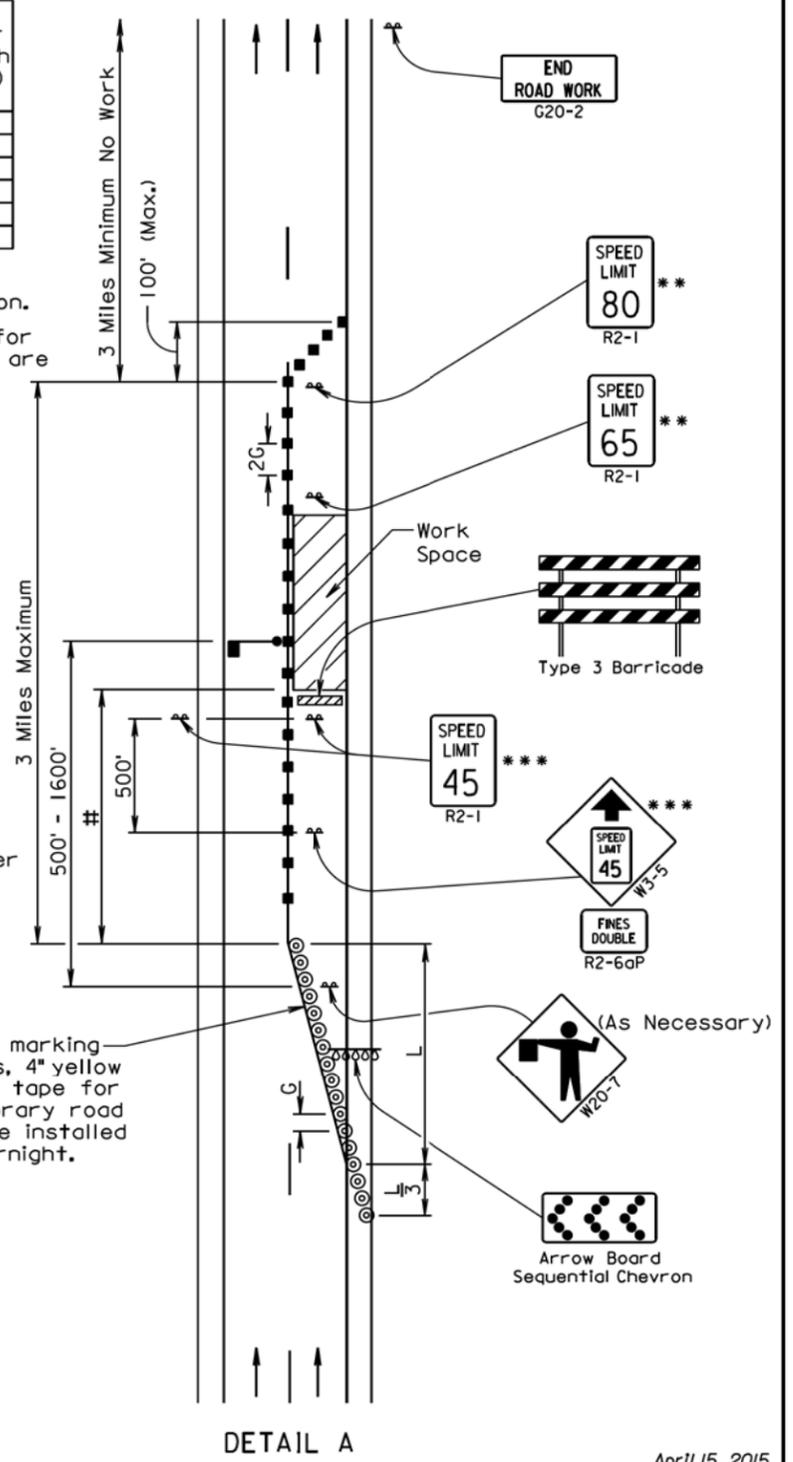
- Flagger (As Necessary)
- Reflectorized Drum
- Channelizing Device
- # The Work Space shall be a minimum of 500' from the end of the taper.

The FLAGGER sign shall be used whenever there is a Flagger present.

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed when the lane is closed overnight.



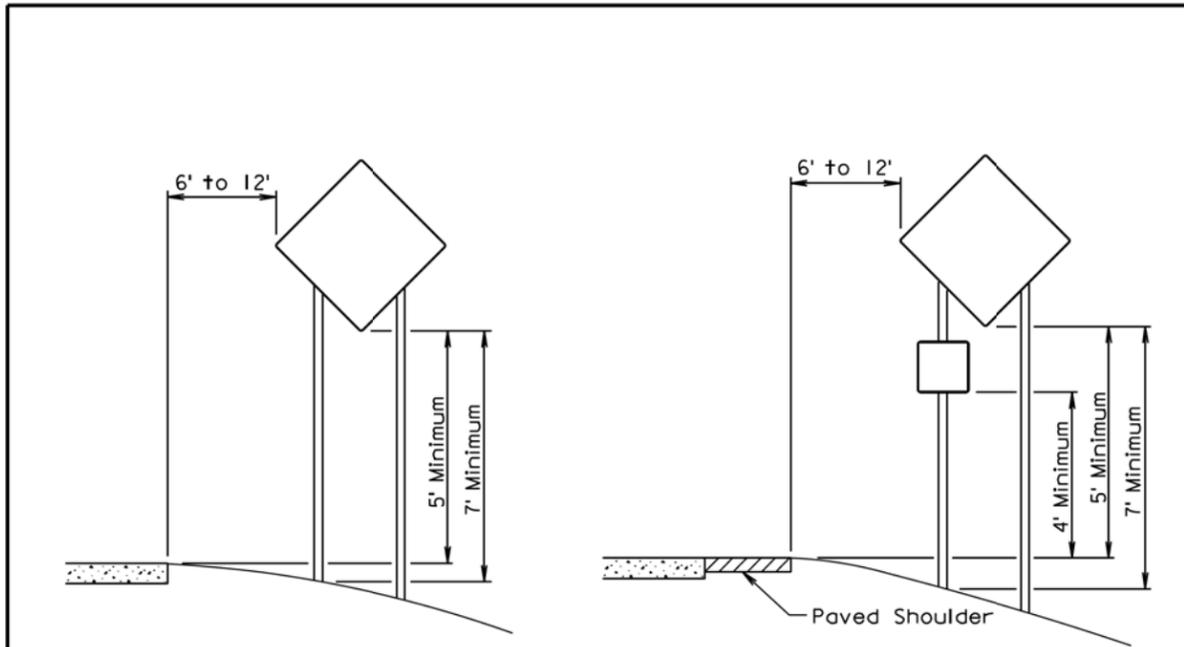
April 15, 2015

<b>S D D O T</b>	<b>WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS</b>	PLATE NUMBER <b>634.63</b>
	Published Date: 2nd Qtr. 2016	Sheet 2 of 2

PLOT SCALE - 1:200

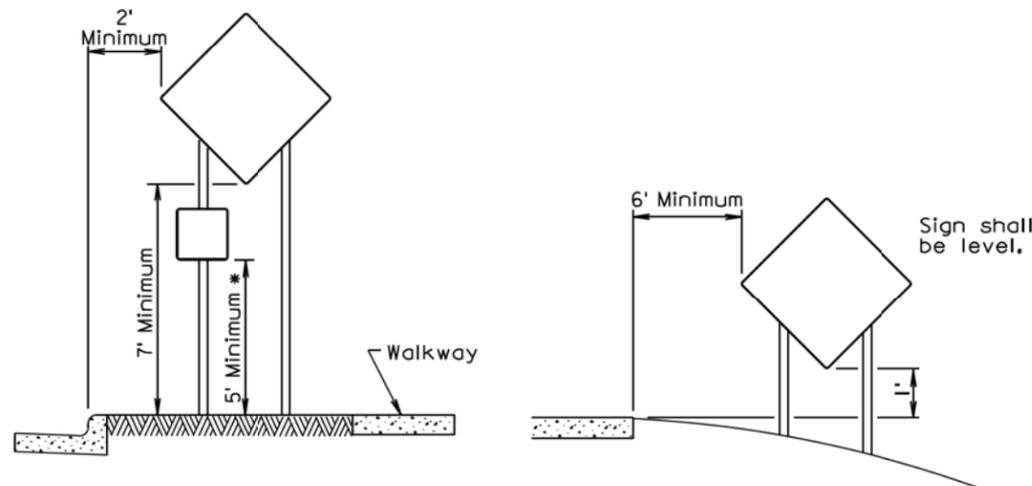
PLOT NAME - 9

FILE - ... \EXTENDED\041XTRAFFIC2.DGN



RURAL DISTRICT

RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT

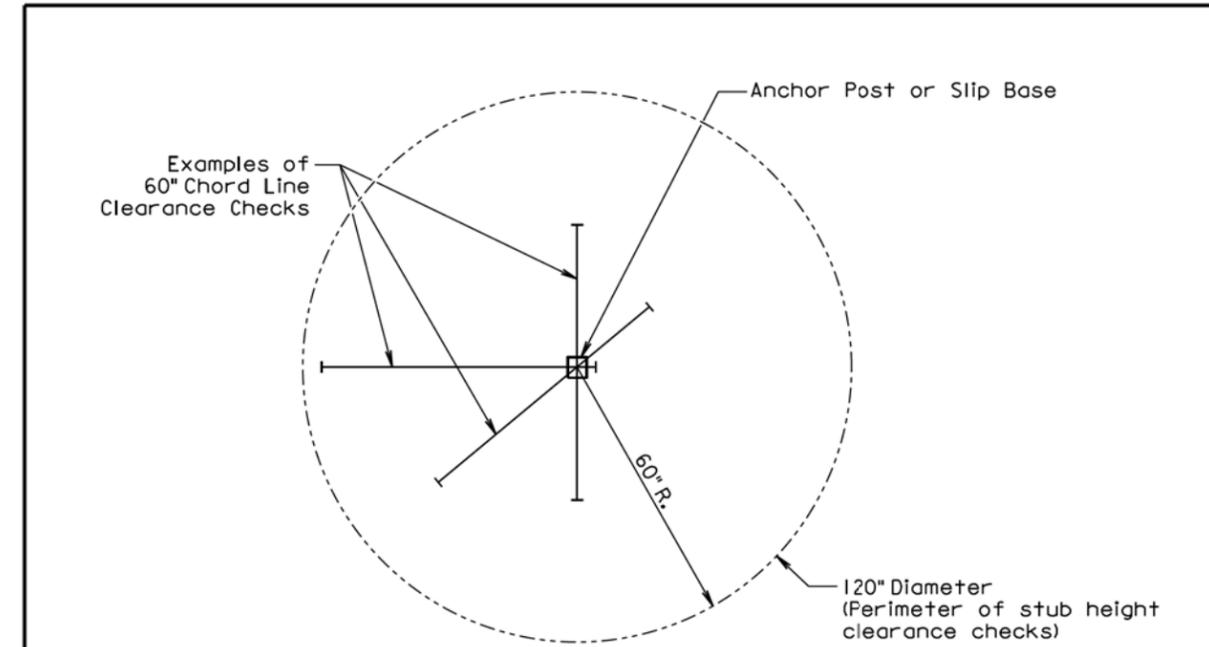
RURAL DISTRICT  
3 DAY MAXIMUM

\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

(Not applicable to regulatory signs)

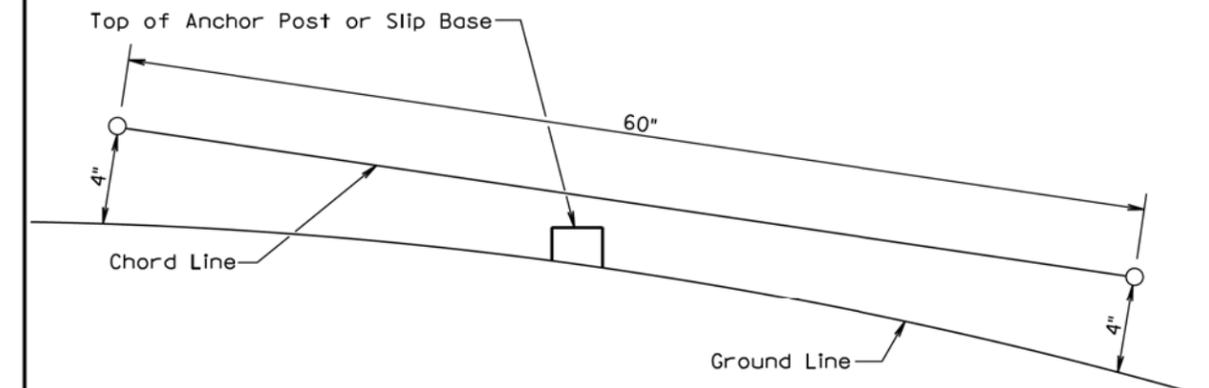
September 22, 2014

Published Date: 2nd Qtr. 2016	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 2nd Qtr. 2016	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

-PLOTTED FROM - TRAB10200

**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	4	24" x 30"	5.0	20.0
R2-1	SPEED LIMIT 55	2	24" x 30"	5.0	10.0
R2-1	SPEED LIMIT 65	1	30" x 36"	7.5	7.5
R2-6aP	FINES DOUBLE (plaque)	2	24" x 18"	3.0	6.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>459.0</b>

**TYPE 3 BARRICADES**

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	2 Each

**ARROW BOARDS**

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each

# HORIZONTAL ALIGNMENT DATA

MAINLINE (EASTBOUND)				MAINLINE (WESTBOUND)					
Type	Station		<u>Northing</u>	<u>Easting</u>	Type	Station	<u>Northing</u>	<u>Easting</u>	
POB	216+71.87		201243.505	2444915.350	POB	216+75.06	201312.700	2444918.829	
		TL=995.40	N 89°16'01" E				TL= 991.89	N 89°15'24" E	
PI	226+67.27		201256.240	2445910.671	PI	226+66.95	201325.567	2445910.638	
		TL= 47.91	N 89°39'12" E				TL= 56.93	N 89°44'11" E	
PC	227+15.18		201256.530	2445958.582	PC	227+23.88	201325.829	2445967.567	
PI	230+81.53	R = 5730.00	Delta = 7°18'59" R	201258.747	2446324.919	PI	230+61.79	R = 5730.00	Delta = 6°44'59" R
PT	234+46.88		201214.294	2446688.555	PT	233+98.91	201289.214	2446641.209	
		TL= 1.51	S 83°01'49" E				TL= 49.35	S 83°30'50" E	
PI	234+48.39		201214.110	2446690.057	PI	234+48.26	201283.639	2446690+247	
		TL= 90.84	S 83°06'06" E				TL= 98.70	S 83°22'59" E	
PI	235+39.23		201203.200	2446780.239	PI	235+46.97	201272.265	2446788.293	
		TL= 15.14	S 83°18'25" E				TL= 35.53	S 83°51'19" E	
PC	235+54.37		201201.435	2446795.280	PC	235+82.50	201268.461	2446823.624	
PI	239+29.92	R = 5730.00	Delta = 7°29'59" L	201157.665	2447168.271	PI	239+38.37	R = 5730.00	Delta = 7°06'28"
PT	243+04.40		201162.953	2447543.785	PT	242.93.33	201236.351	2447533.271	
		TL= 25.50	N 89°11'36" W				TL= 34.43	N 89°02'13"	
POE	243+29.90		201163.312	2447569.282	POE	243+27.76	201236.930	2447567.696	

Revised: 08/01/16 MD

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014 (205) 347	14	31

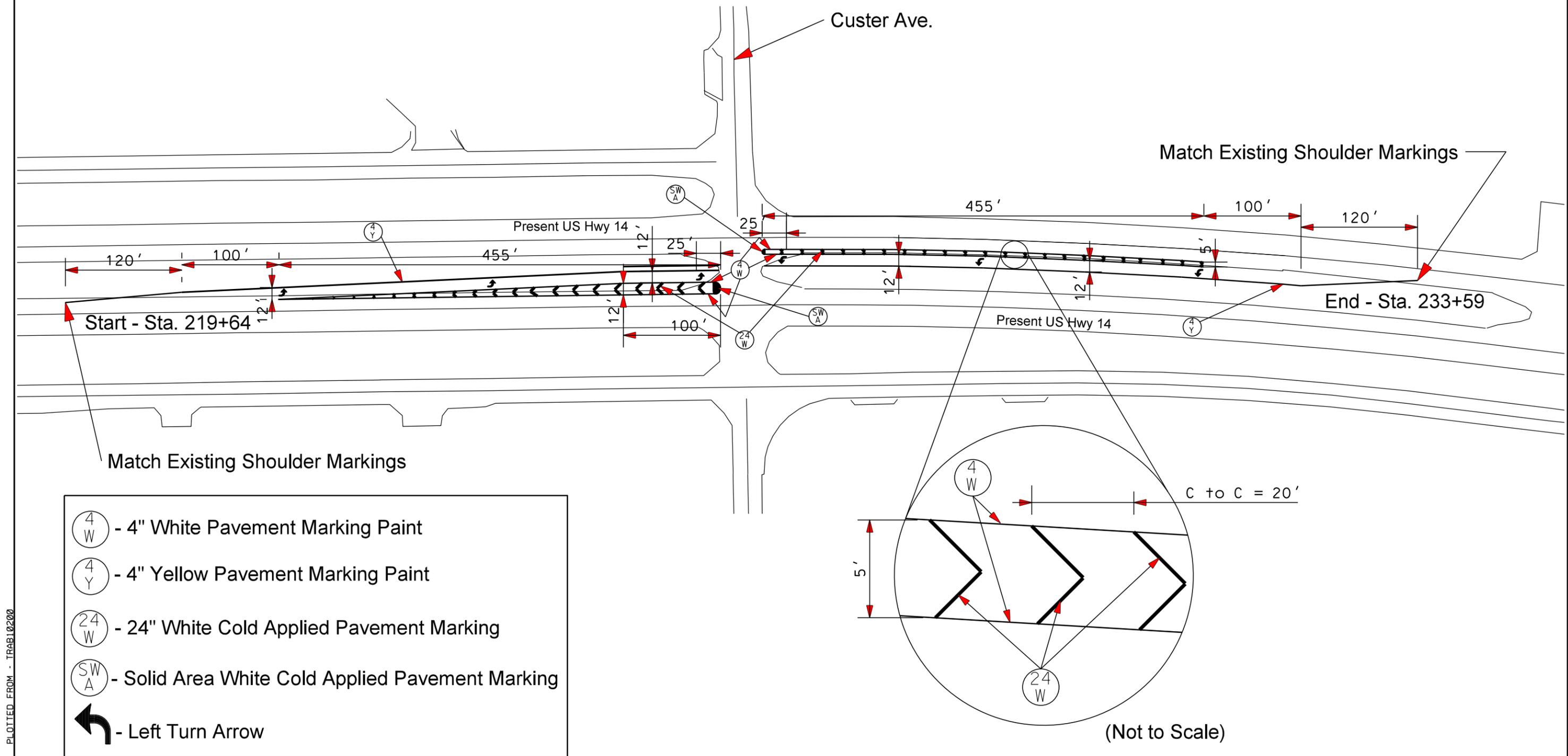
Plotting Date: 08/02/2016

# PAVEMENT MARKING DETAIL

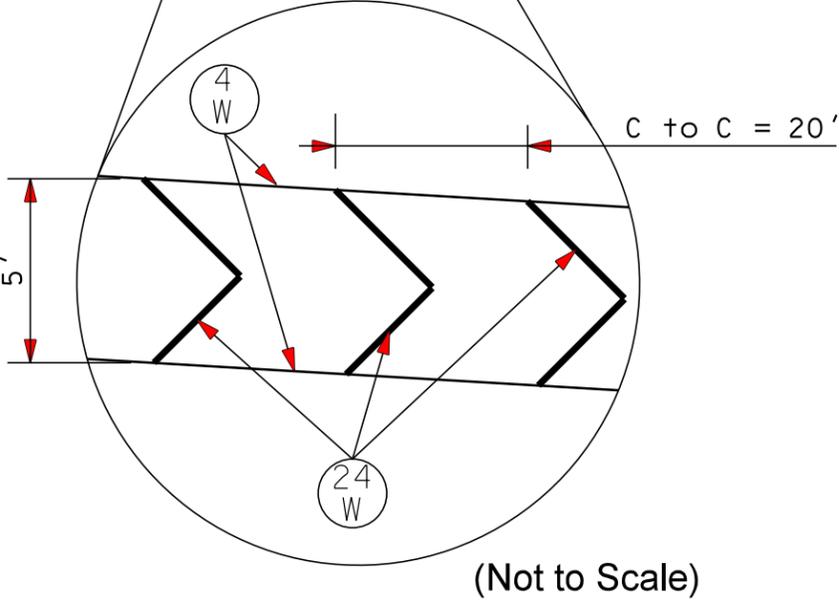


PLOT SCALE - 1:100

PLOT NAME - 2



-  - 4" White Pavement Marking Paint
-  - 4" Yellow Pavement Marking Paint
-  - 24" White Cold Applied Pavement Marking
-  - Solid Area White Cold Applied Pavement Marking
-  - Left Turn Arrow



FILE - ... \EXTENDED\PAVEMENTDETAIL(1).DGN

# CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0014(205)347	16	31

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
W461	226+20	-144 L	DJ's Travel Center	201469.353	2445862.059	1290.23

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/11); epoch 2010.00  
Geoid 12A; SF = 0.9999509256  
The elevations shown on this sheet are based on NAVD 88.

# LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014 ( 205 ) 347	17	31
Plotting Date: 06/14/2016			

PLOT SCALE - 1:200

PLOT NAME - 1

FILE - ... \PRJ\BEAD04TX\LEGEND.DGN

PLOTTED FROM - TRAB10200

Anchor		Hedge		Shrub Tree		State and National Line	
Antenna		Highway R.O.W. Marker		Sidewalk		County Line	
Approach		Interstate Close Gate		Sign Face		Section Line	
Assumed Corner		Iron Pin		Sign Post		Quarter Line	
Azimuth Marker		Irrigation Ditch		Slough Or Marsh		Sixteenth Line	
BBQ Grill/ Fireplace		Lake Edge		Spring		Property Line	
Bearing Tree		Lawn Sprinkler		Stream Gauge		Construction Line	
Bench Mark		Mailbox		Street Marker		R. O. W. Line	
Box Culvert		Manhole Electric		Subsurface Utility Exploration Test Hole		New R. O. W. Line	
Bridge		Manhole Gas		Telephone Fiber Optics		Cut and Fill Limits	
Brush		Manhole Misc		Telephone Junction Box		Control of Access	
Buildings		Manhole Sanitary Sewer		Telephone Pole		New Control of Access	
Bulk Tank		Manhole Storm Sewer		Television Cable Jct Box		Proposed ROW	
Cattle Guard		Manhole Telephone		Television Tower		(After Property Disposal)	
Cemetery		Manhole Water		Test Wells/Bore Holes			
Centerline		Merry-Go-Round		Traffic Signal			
Cistern		Microwave Radio Tower		Trash Barrel		Drainage Arrow	
Clothes Line		Misc. Line		Tree Belt			
Commercial Sign Double Face		Misc. Property Corner		Tree Coniferous		Remove Concrete Pavement	
Commercial Sign One Post		Misc. Post		Tree Deciduous		Remove Concrete Driveway Pavement	
Commercial Sign Overhead		Overhang Or Encroachment		Tree Stumps		Remove Asphalt Concrete Pavement	
Commercial Sign Two Post		Overhead Utility Line		Triangulation Station		Remove Concrete Sidewalk	
Concrete Symbol		Parking Meter		Underground Electric Line		Remove Concrete Approach Pavement	
Creek Edge		Pipe With End Section		Underground Gas Line		Remove Concrete Median Pavement	
Curb/Gutter		Pipe With Headwall		Underground High Pressure Gas Line		Remove Concrete Curb	
Curb		Pipe Without End Section		Underground Sanitary Sewer		Remove Concrete Curb and Gutter	
Dam Grade/Dike/Levee		Playground Slide		Underground Storm Sewer		Remove Concrete Gutter	
Deck Edge		Playground Swing		Underground Tank			
Ditch Block		Power And Light Pole		Underground Telephone Line		Detectable Warning	
Doorway Threshold		Power And Telephone Pole		Underground Television Cable		Pedestrian Push Button Pole	
Drainage Profile		Power Meter		Underground Water Line		and 30" x 48" Clear Space	
Drop Inlet		Power Pole		Warning Sign One Post		with 1.5% slope	
Edge Of Asphalt		Power Pole And Transformer		Warning Sign Two Post			
Edge Of Concrete		Power Tower Structure		Water Fountain			
Edge Of Gravel		Propane Tank		Water Hydrant			
Edge Of Other		Property Pipe		Water Meter			
Edge Of Shoulder		Property Pipe With Cap		Water Tower			
Elec. Trans./Power Jct. Box		Property Stone		Water Valve			
Environmental Sensitive Site		Public Telephone		Water Well			
Fence Barbwire		Railroad Crossing Signal		Weir Rock			
Fence Chainlink		Railroad Milepost Marker		Windmill			
Fence Electric		Railroad Profile		Wingwall			
Fence Misc.		Railroad R.O.W. Marker		Witness Corner			
Fence Rock		Railroad Signs					
Fence Snow		Railroad Switch					
Fence Wood		Railroad Track					
Fence Woven		Railroad Trestle					
Fire Hydrant		Rebar					
Flag Pole		Rebar With Cap					
Flower Bed		Reference Mark					
Gas Valve Or Meter		Regulatory Sign One Post					
Gas Pump Island		Regulatory Sign Two Post					
Grain Bin		Retaining Wall					
Guardrail		Riprap					
Guide Sign One Post		River Edge					
Guide Sign Two Post		Rock And Wire Baskets					
Gutter		Rockpiles					
Guy Pole		Satellite Dish					
Haystack		Septic Tank					

EBL Sta. 227+73.1 R  
Retain 18" - 65' RCP  
& Right Flared End

EBL Sta. 227+73-31.14' L  
Remove Left Flared End

EBL Sta. 227+73-31.14' L  
Install Type L Median Drain

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014 (205) 347	18	31

Plotting Date: 07/22/2016

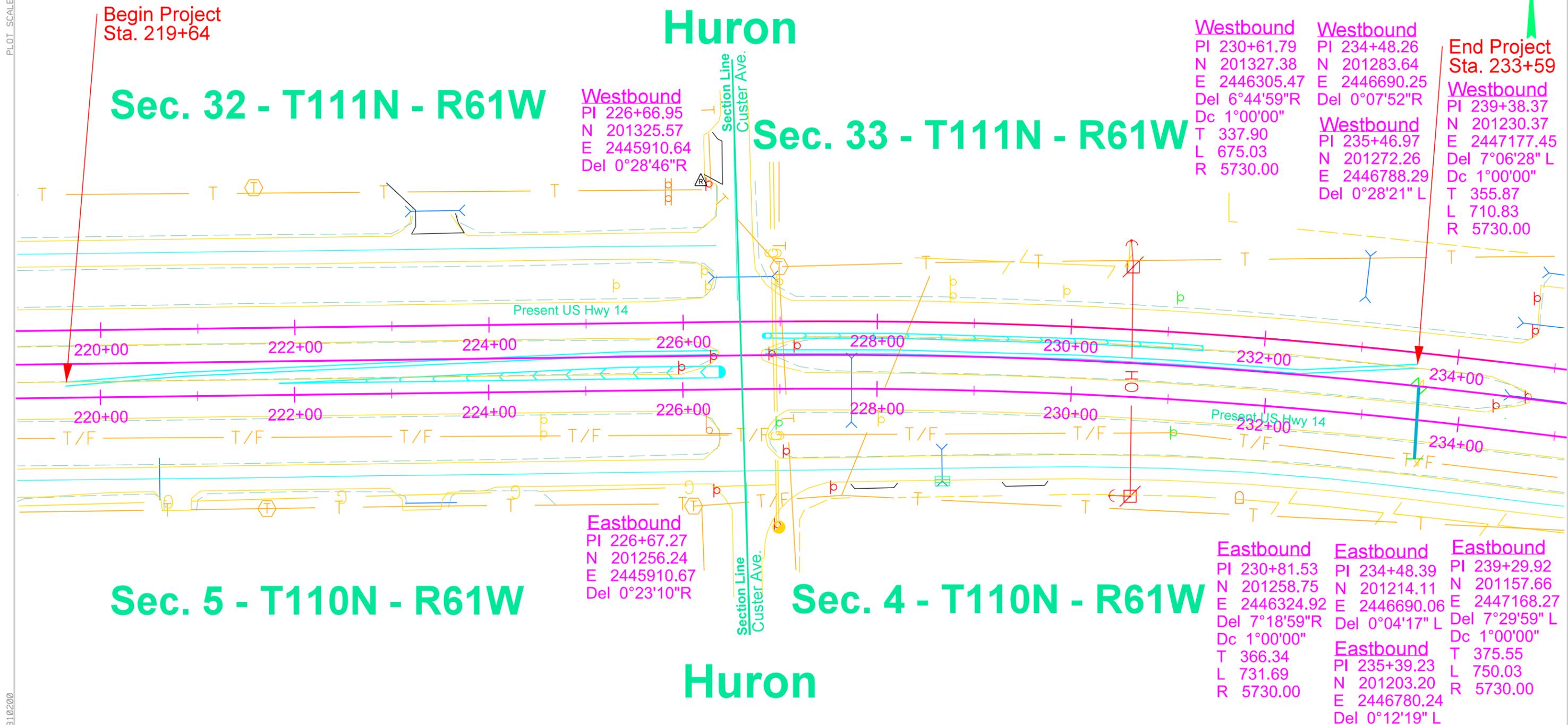
EBL Sta. 233+59  
Bore & Jack 24" - 54'  
Steel Pipe for Jacking  
and 2 CMP Sloped Ends



PLOT SCALE - 1:100

PLOT NAME - 11

FILE - ... \BEAD04TX\EXTENDED\218(1).DGN



PLOTTED FROM - TRAB10200

# INTERSECTION LAYOUT

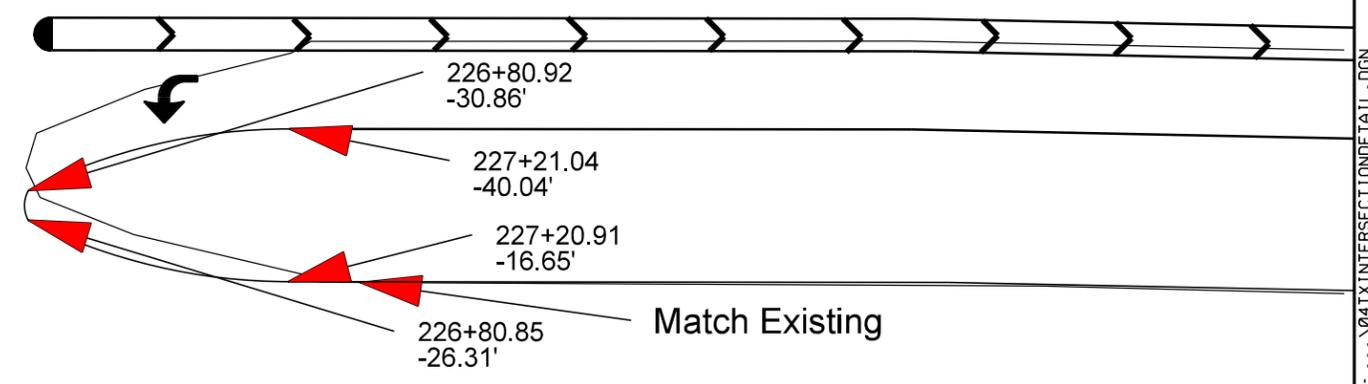
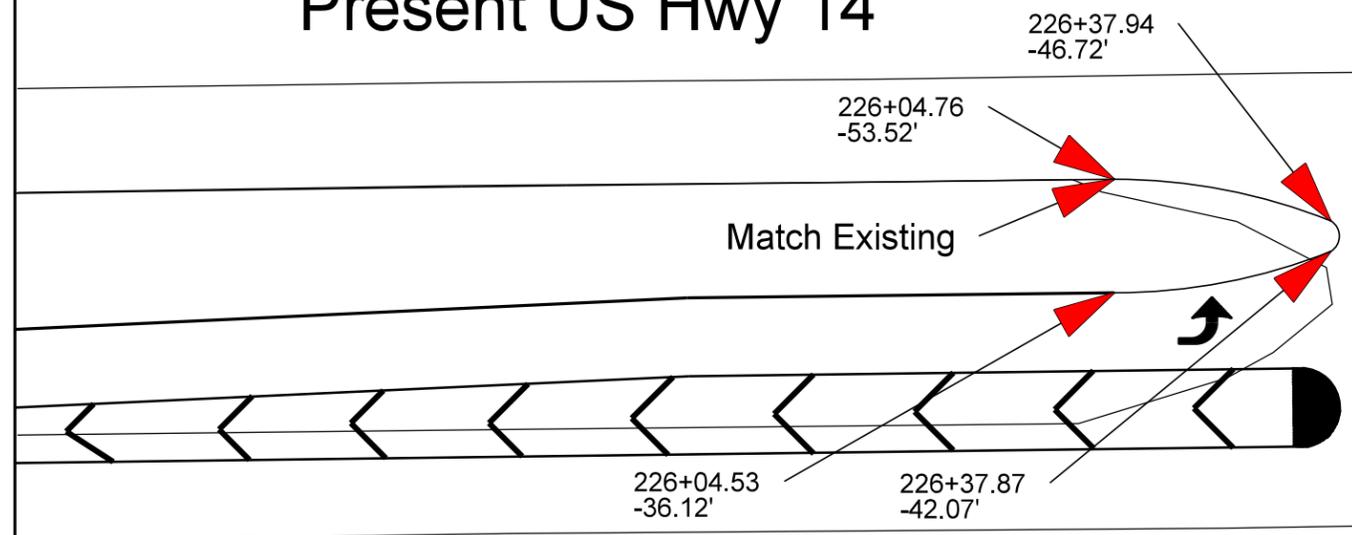
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014 ( 205 ) 347	19	31
Plotting Date: 07/20/2016			

Custer Ave.

The median of EBL is two 150' and one 2.7' radii.  
 The median on WBL is two 90' and one 4.7' radii.  
 \*All station and offset distances are determined from  
 the East Bound Alignment



Present US Hwy 14



Present US Hwy 14

PLOT SCALE - 1:28.0804

PLOTTED FROM - TRAB10200

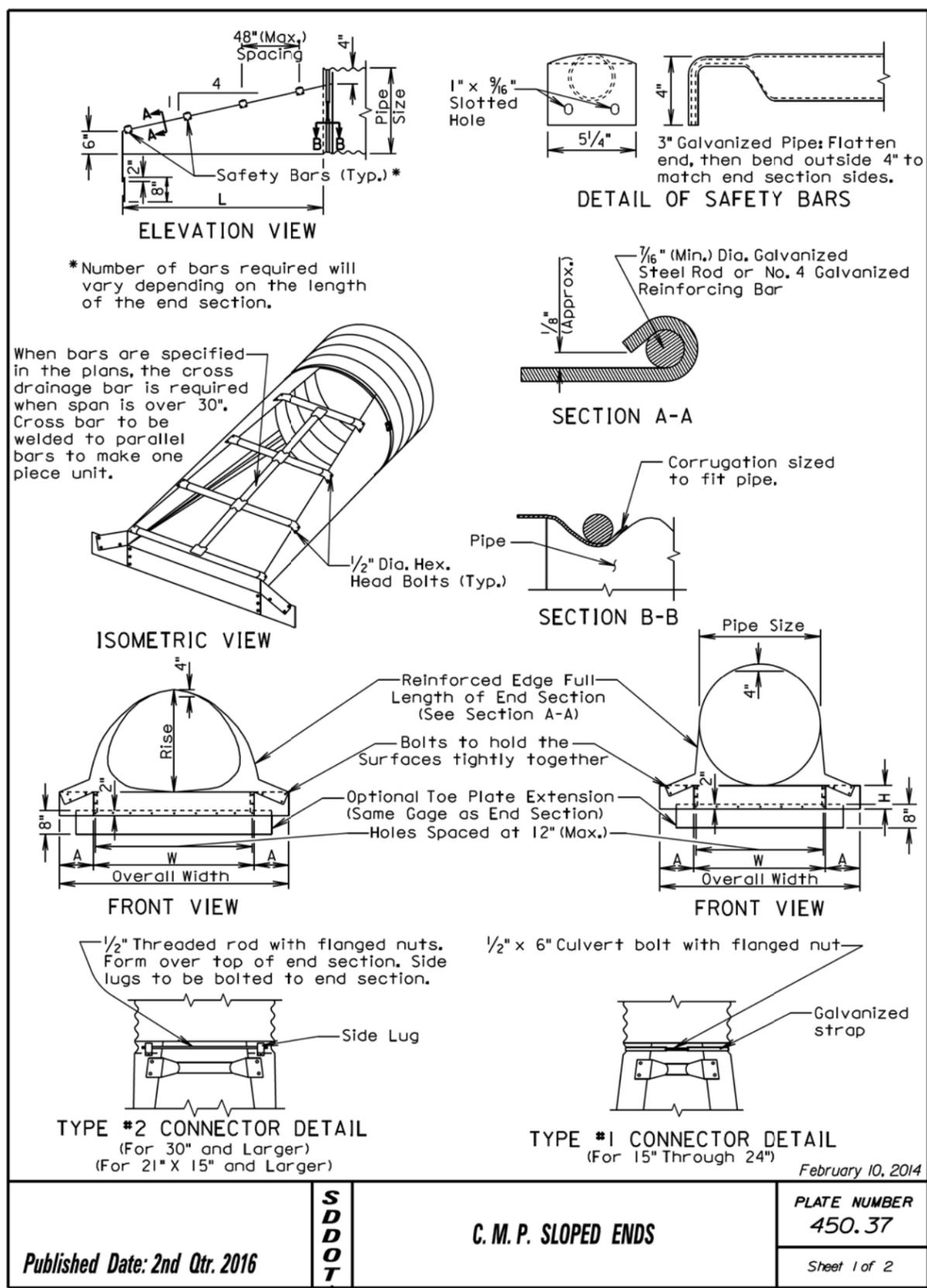
PLOT NAME - 2

FILE - ... \04TXINTERSECTIONDETAIL.DGN

PLOT SCALE - 1:200

PLOT NAME - 4

FILE - ... \EXTENDED\04\T\STOPLATES\1.DGN



ARCH C.M.P. SLOPED ENDS										
Equv. Dia. (Inch)	(Inches)		Min. Thick. Inch	Gage	Dimensions (Inches)			L Dimensions		
	Span	Rise			A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	4:1	20
21	24	18	.064	16	8	6	30	46	4:1	32
24	28	20	.064	16	8	6	34	50	4:1	40
30	35	24	.079	14	12	9	41	65	4:1	56
36	42	29	.109	12	12	9	48	72	4:1	76
42	49	33	.109	12	16	12	55	87	4:1	92
48	57	38	.109	12	16	12	63	95	4:1	112
54	64	43	.109	12	16	12	70	102	4:1	132
60	71	47	.109	12	16	12	77	109	4:1	148
72	83	57	.109	12	16	12	89	121	4:1	188

CIRCULAR C.M.P. SLOPED ENDS									
Pipe Dia. (Inch)	Min. Thick. Inch	Dimensions (Inches)					L Dimensions		
		Gage	A	H	W	Overall Width	Slope	Length (Inch)	
15	.064	16	8	6	21	37	4:1	20	
18	.064	16	8	6	24	40	4:1	32	
21	.064	16	8	6	27	43	4:1	44	
24	.064	16	8	6	30	46	4:1	56	
30	.109	12	12	9	36	60	4:1	80	
36	.109	12	12	9	42	66	4:1	104	
42	.109	12	16	12	48	80	4:1	128	
48	.109	12	16	12	54	86	4:1	152	
54	.109	12	16	12	60	92	4:1	176	
60	.109	12	16	12	66	98	4:1	200	

**GENERAL NOTES:**

Safety bars shall be attached to sloped ends over 30" in diameter only when specified in the plans.

Sloped ends shall be fabricated from galvanized steel and shall conform to the requirements of the Specifications.

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment shall be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of sloped ends shall be incidental to the bid items for the various sizes of sloped ends.

February 10, 2014

S D D O T	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
		Sheet 1 of 2
Published Date: 2nd Qtr. 2016		

S D D O T	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
		Sheet 2 of 2
Published Date: 2nd Qtr. 2016		

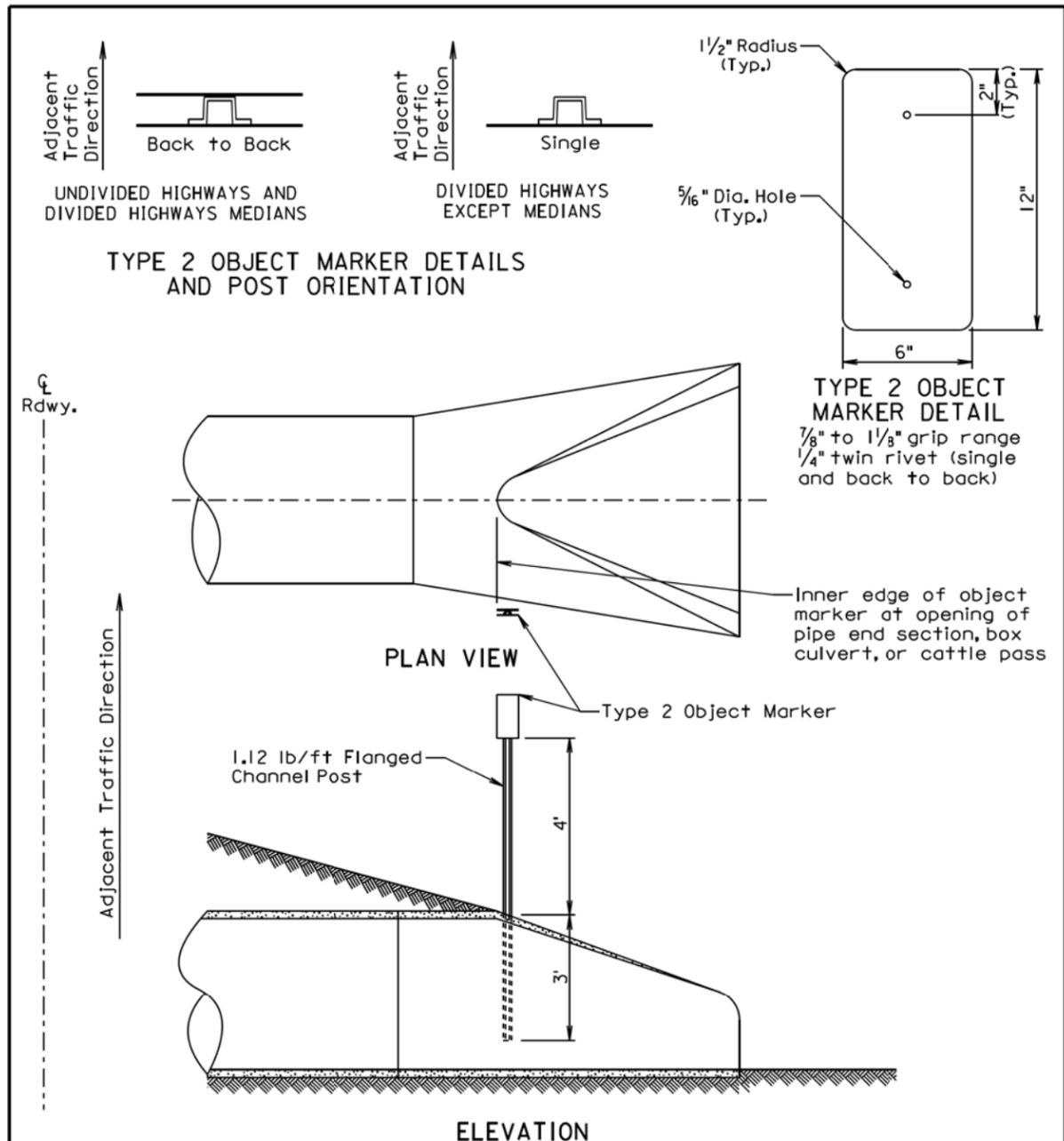
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014(205)347	21	31

Plotting Date: 07/20/2016

PLOT SCALE - 1:200

PLOT NAME - 5

FILE - ... \EXTENDED\04TXSTOPLATES2.DGN



**GENERAL NOTES:**

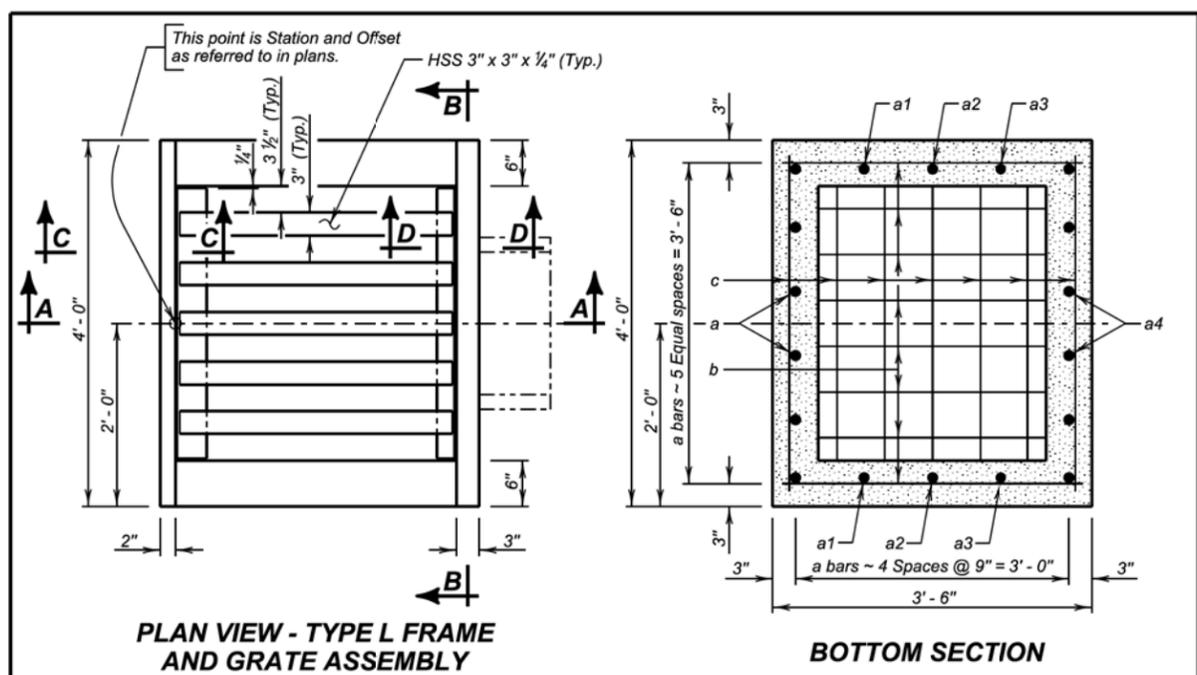
The type 2 object markers and the 1.12 lb/ft flanged channel posts shall be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object markers shall be in conformance with Specification Section 632.5 B.

June 26, 2015

Published Date: 2nd Qtr. 2016	S D D O T	<b>TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES</b>	PLATE NUMBER 632.10
			Sheet 1 of 1

-PLOTTED FROM - TRAB10200



**PLAN VIEW - TYPE L FRAME AND GRATE ASSEMBLY**

**BOTTOM SECTION**

ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu. Yd.	0.35	0.24 H
Reinforcing Steel	Lb.	87.51	12.02 H
Type L Frame and Grate Assembly	Each	1	

RC ARCH	PIPE DISPLACEMENT REDUCTIONS		
	DIAMETER (Inches)	Wall T (Inches)	CLASS M6 CONCRETE (Cu. Yd.)
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
	18	2 1/2	0.05
	24	3	0.09

**SPECIFICATIONS:**

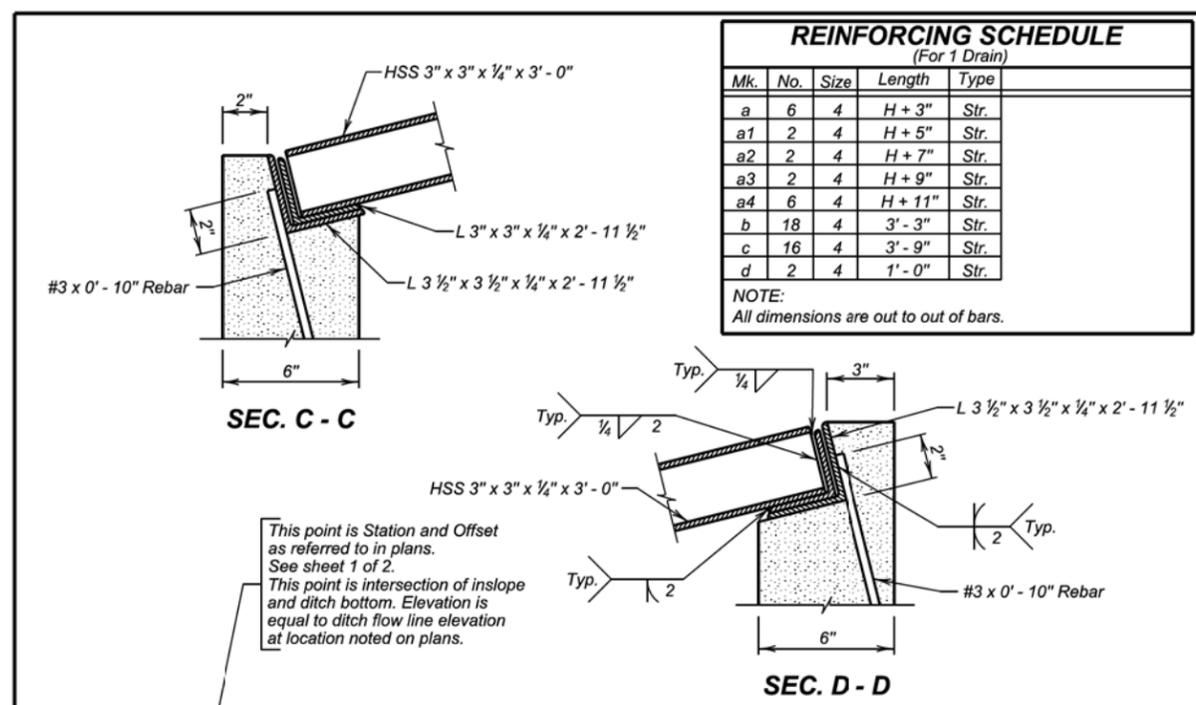
- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**GENERAL NOTES:**

- The dimension H is in feet.
- Design Live Load: HL-93.
- Reduce total quantities of concrete by the amount of concrete displaced by the pipe. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.
- Cut and bend reinforcing steel during construction as necessary to accommodate pipe outlet. All reinforcing steel shall conform to ASTM A615 Grade 60.
- All Concrete shall be Class M6.
- All angles shall conform to ASTM A36. Tubes shall conform to ASTM A500 Grade B.
- All exposed edges shall be chamfered 1/4 inch.
- Use 1 1/2 inch clear cover on all reinforcing steel except as shown.
- After welding is complete, galvanize the frame and grate assembly in accordance with AASHTO M111 (ASTM A123). For information only, the estimated weight of the frame and grate assembly is 198 pounds.
- Type L Median Drain shall be paid for at the contract unit price per each or by the individual bid items as shown in the plans, which shall be full compensation for furnishing all materials and labor including necessary excavation and backfill required to construct one complete drain.
- The location and size of pipe outlet from the drain shall be as noted on cross section sheets.

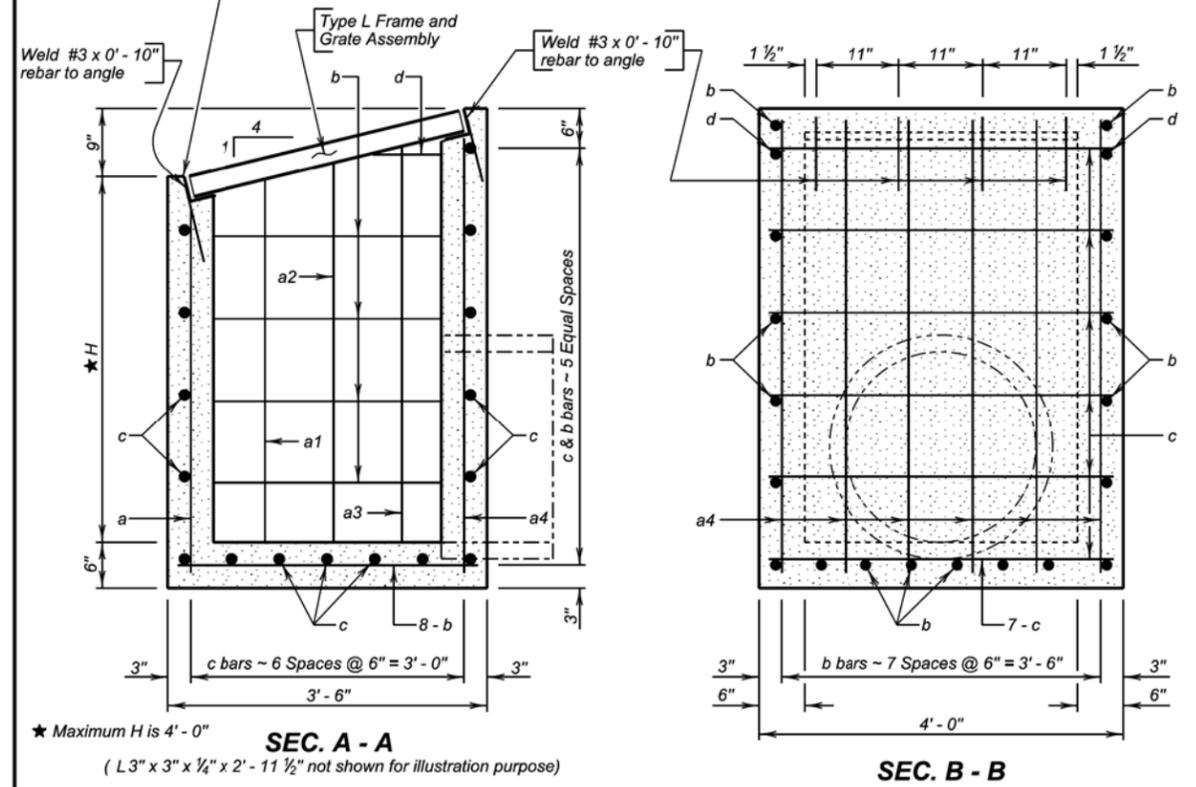
June 26, 2015

<b>S D D O T</b>	<b>TYPE L MEDIAN DRAIN For 4:1 INSLOPE</b>	PLATE NUMBER <b>670.61</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 2



REINFORCING SCHEDULE (For 1 Drain)				
Mk.	No.	Size	Length	Type
a	6	4	H + 3"	Str.
a1	2	4	H + 5"	Str.
a2	2	4	H + 7"	Str.
a3	2	4	H + 9"	Str.
a4	6	4	H + 11"	Str.
b	18	4	3'-3"	Str.
c	16	4	3'-9"	Str.
d	2	4	1'-0"	Str.

NOTE:  
All dimensions are out to out of bars.



**SEC. A - A**  
★ Maximum H is 4'-0"  
(L 3" x 3" x 1/4" x 2'-11 1/2" not shown for illustration purpose)

**SEC. B - B**

June 26, 2015

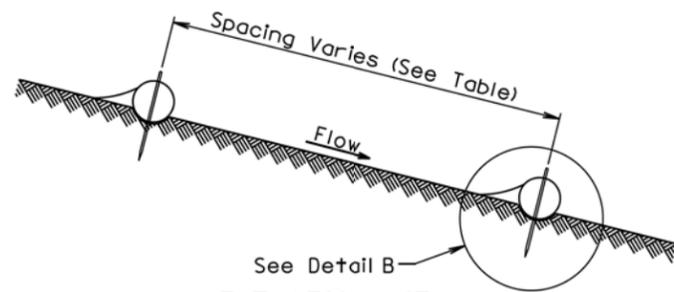
<b>S D D O T</b>	<b>TYPE L MEDIAN DRAIN For 4 : 1 INSLOPE</b>	PLATE NUMBER <b>670.61</b>
	Published Date: 2nd Qtr. 2016	Sheet 2 of 2

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB10200

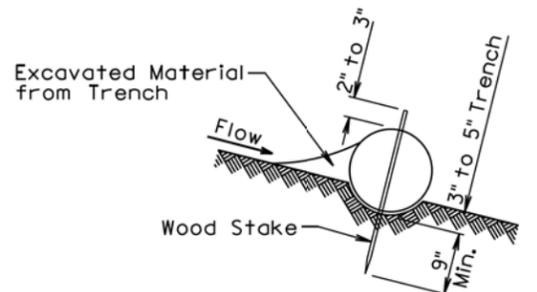
PLOT NAME - 3

FILE - ... \EXTENDED\041XSTOPLATES.DGN

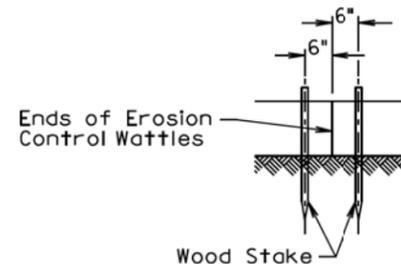


ELEVATION VIEW  
CUT OR FILL SLOPE INSTALLATION

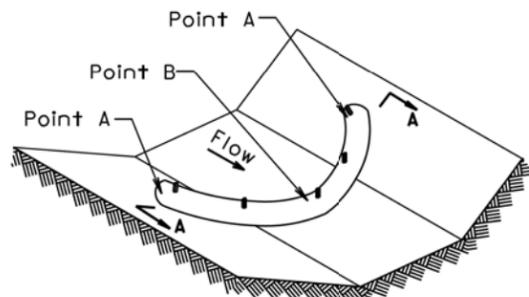
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



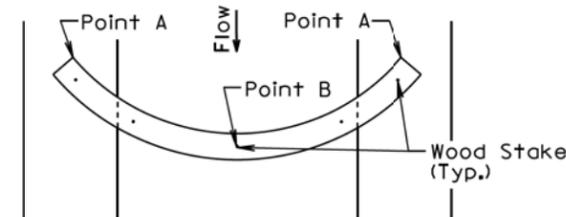
DETAIL B  
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

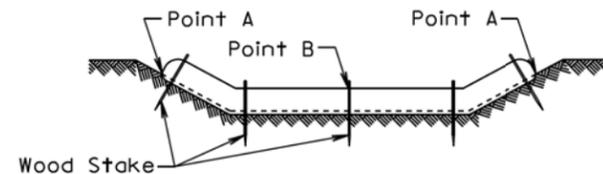


ISOMETRIC VIEW  
DITCH INSTALLATION



PLAN VIEW  
DITCH INSTALLATION

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

December 23, 2004

<b>S D D O T</b>	<b>EROSION CONTROL WATTLE</b>	PLATE NUMBER <b>734.06</b>
		Sheet 1 of 2

Published Date: 2nd Qtr. 2016

**GENERAL NOTES:**

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

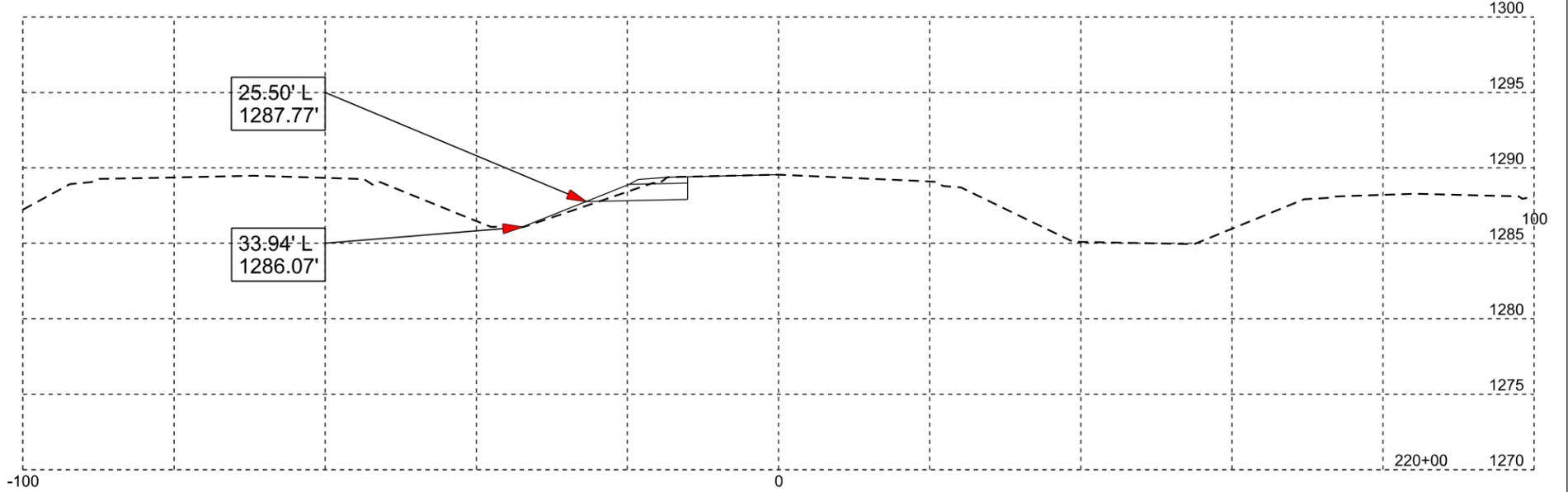
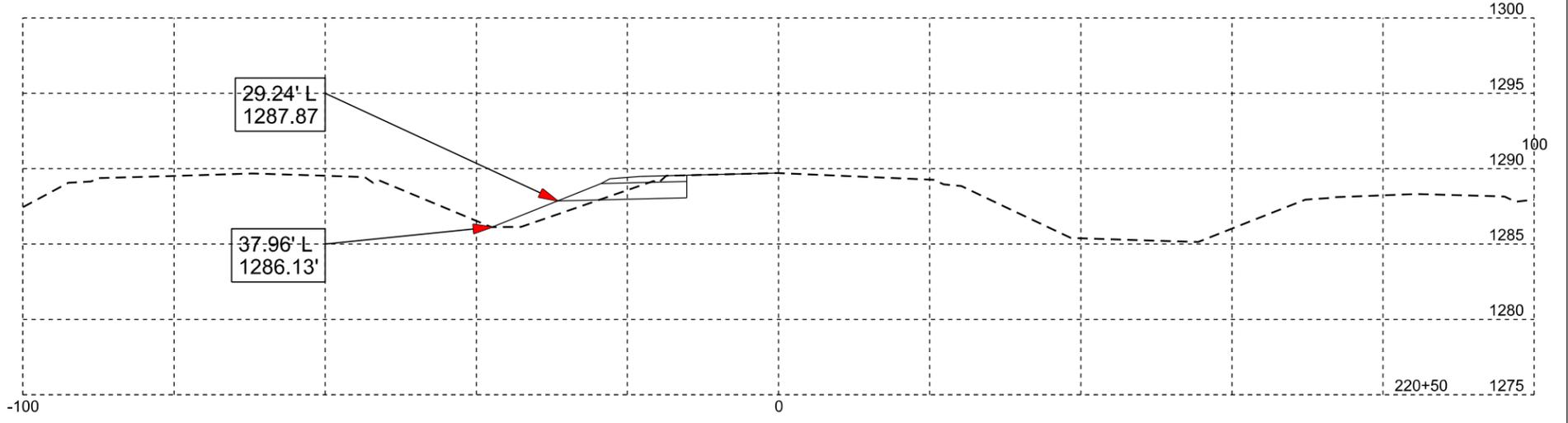
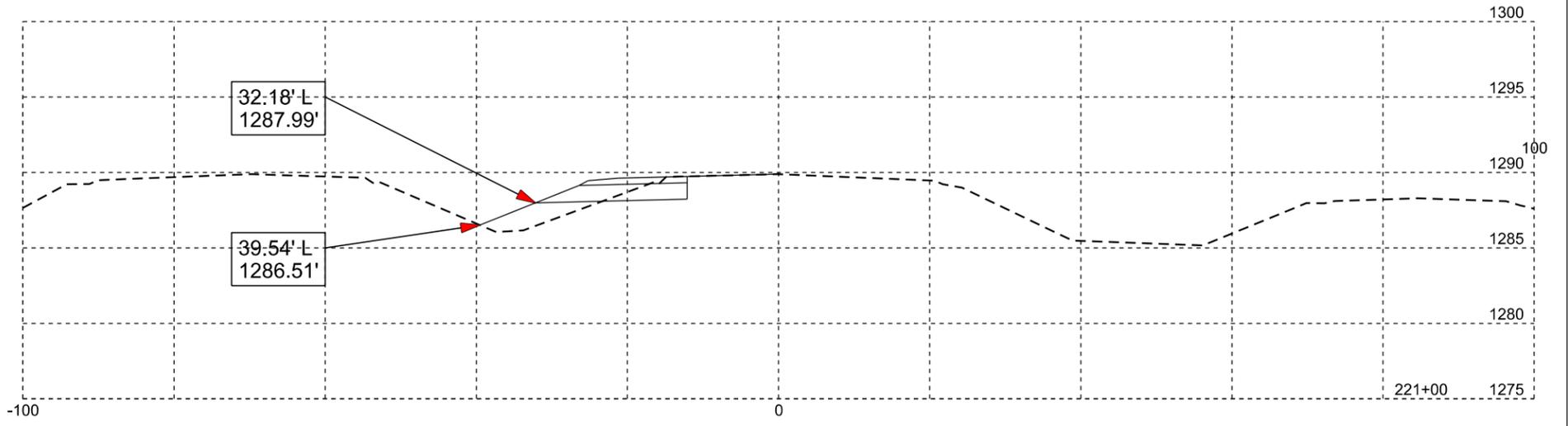
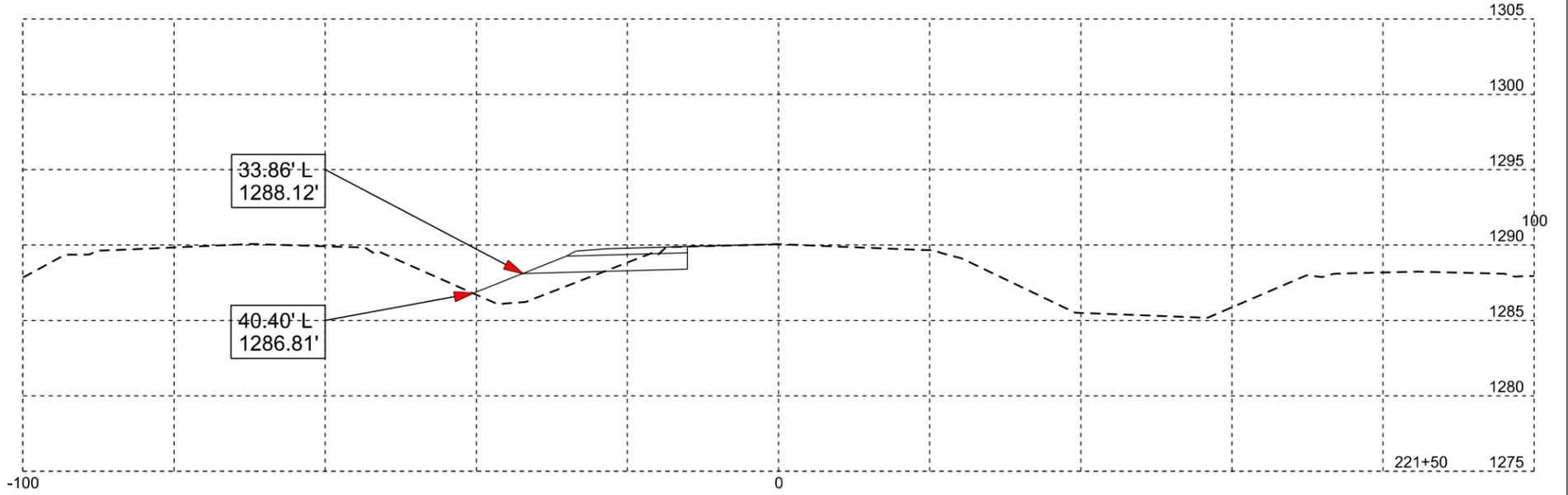
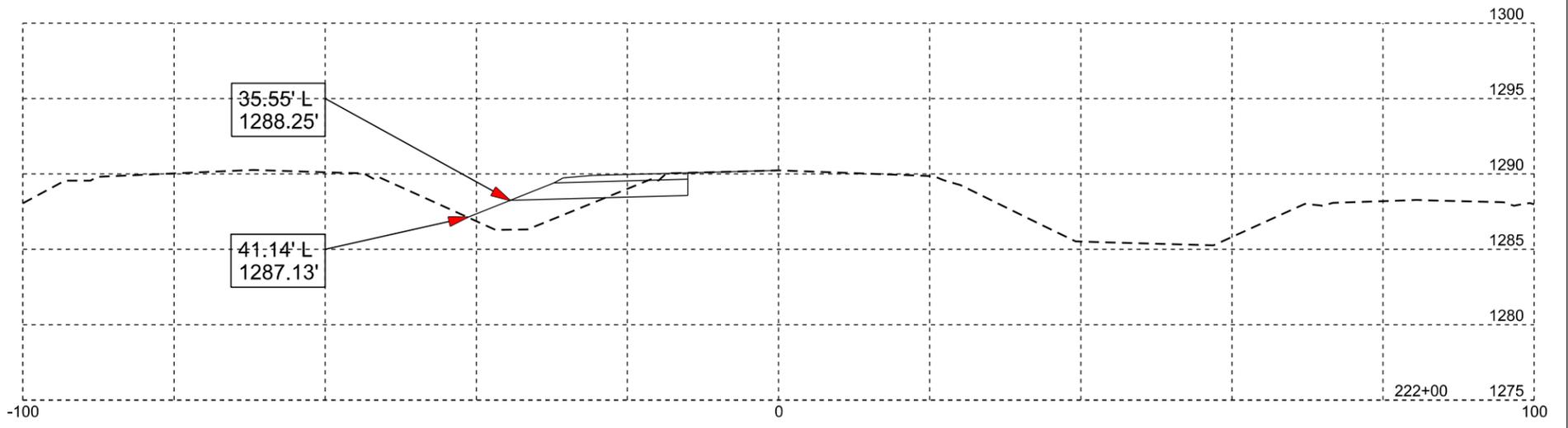
All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004

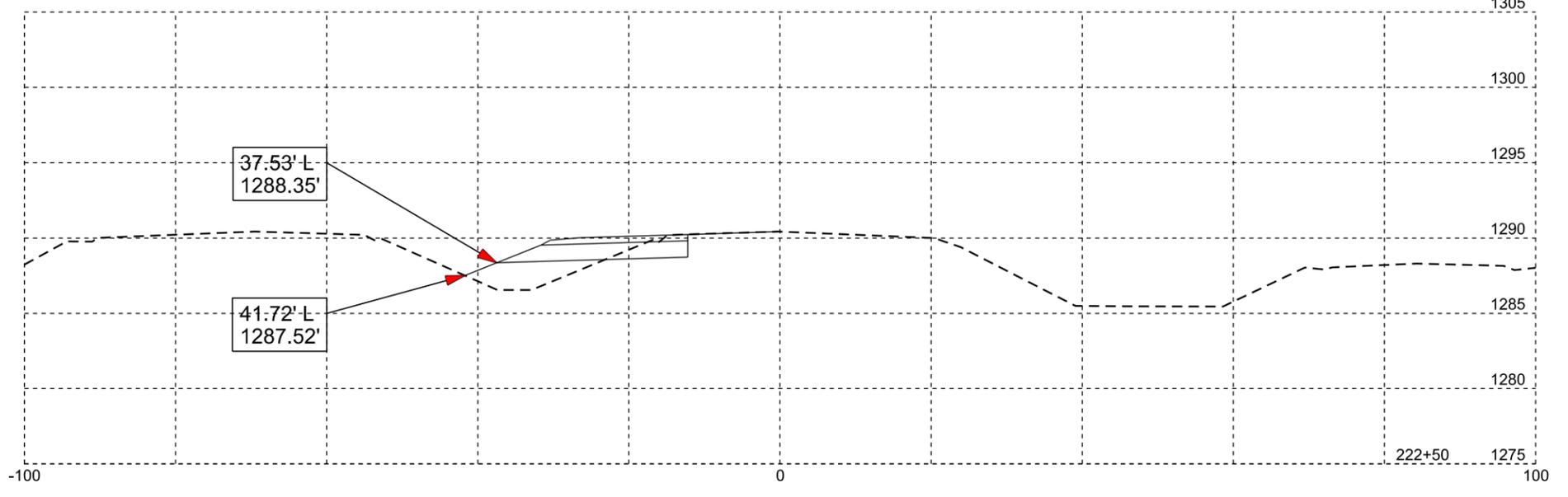
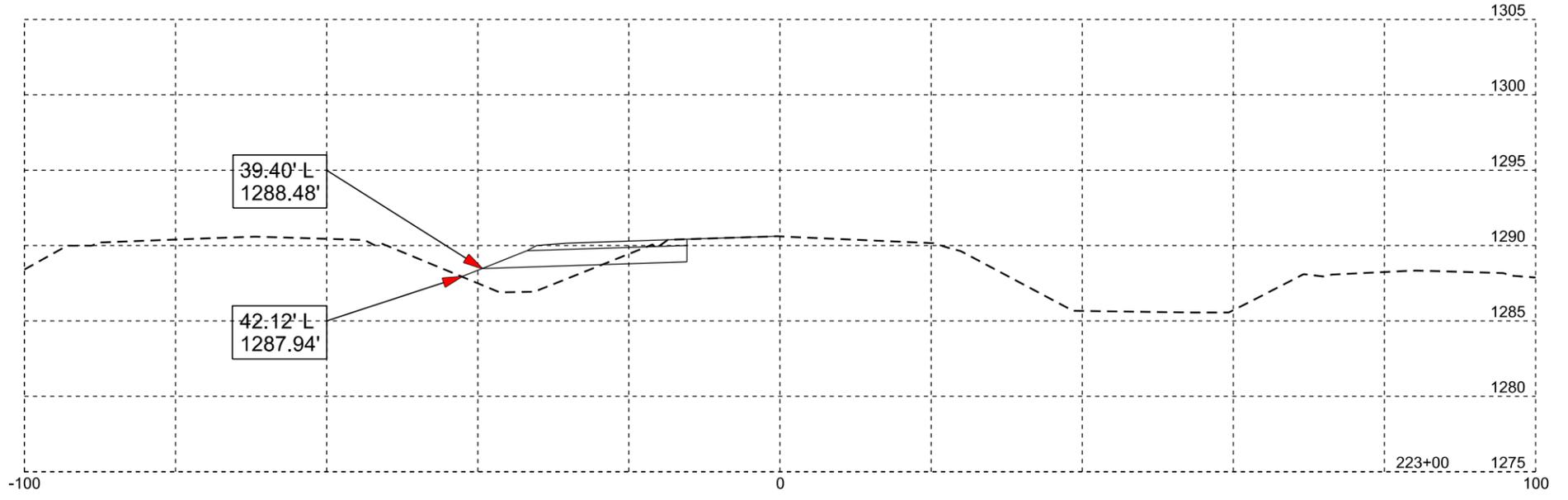
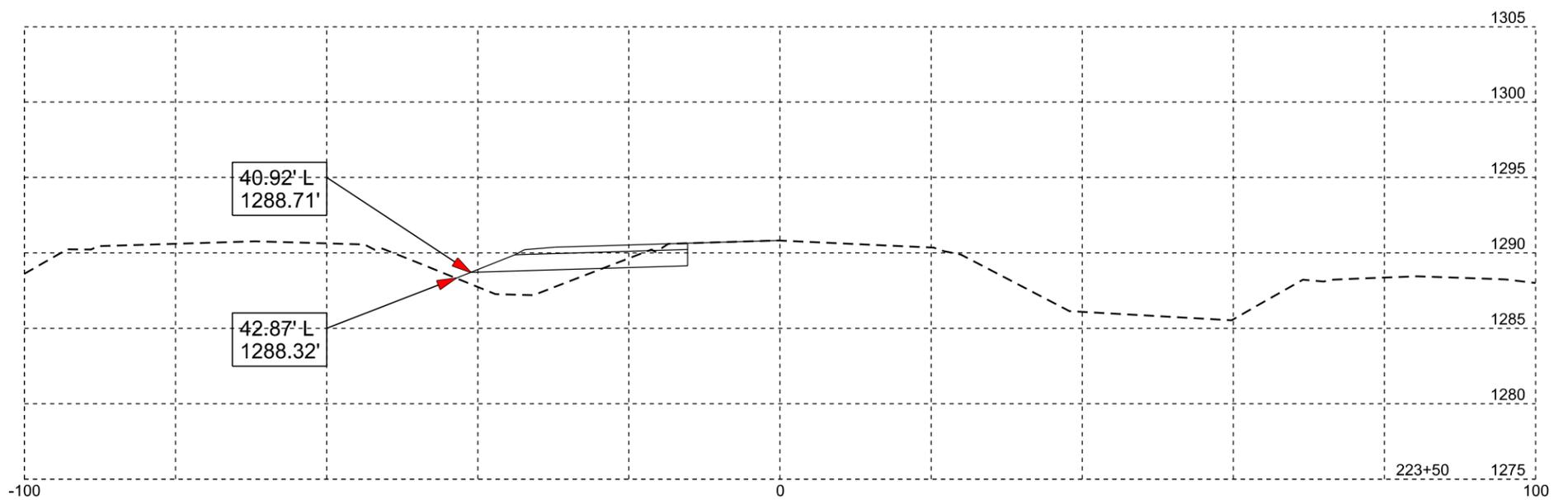
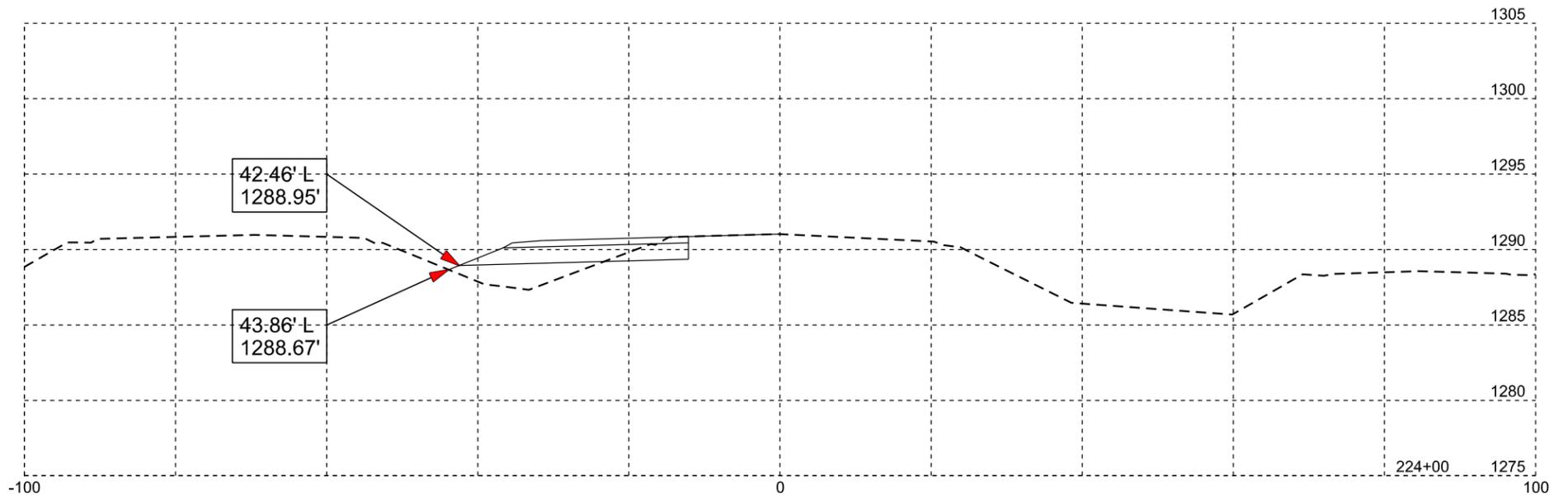
<b>S D D O T</b>	<b>EROSION CONTROL WATTLE</b>	PLATE NUMBER <b>734.06</b>
		Sheet 2 of 2

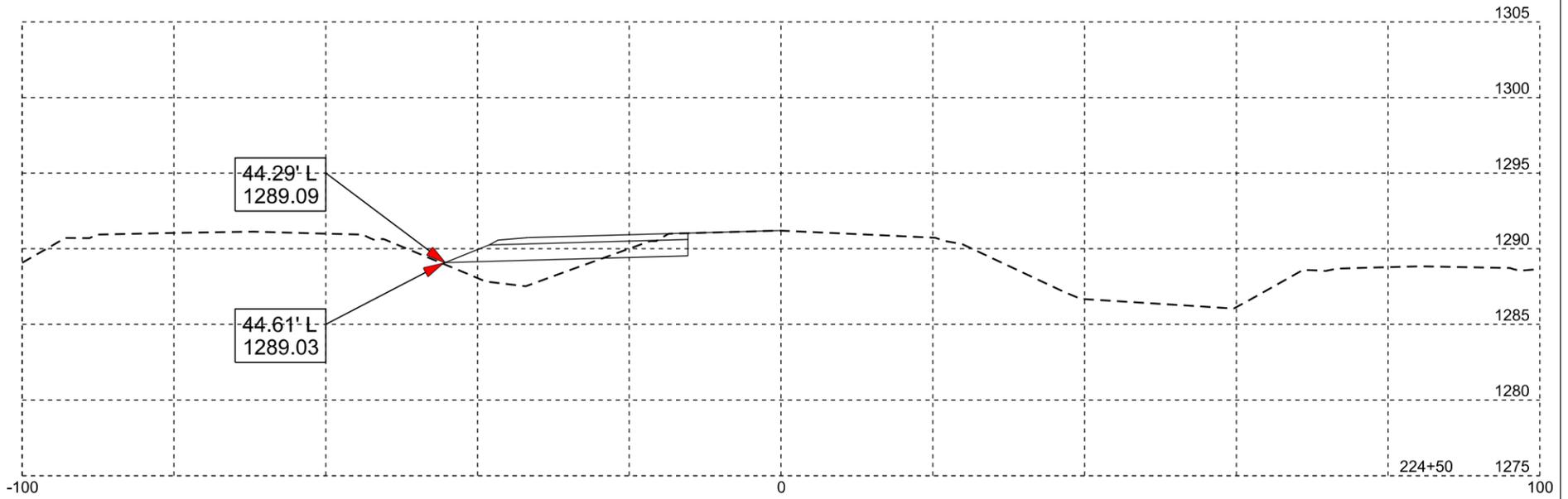
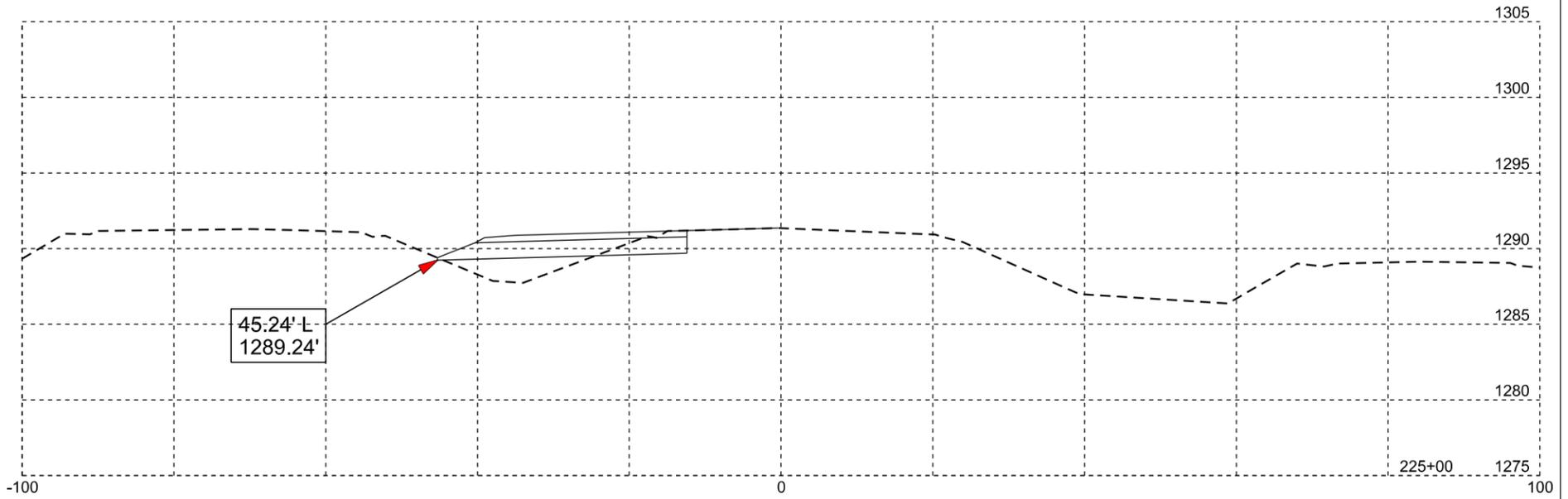
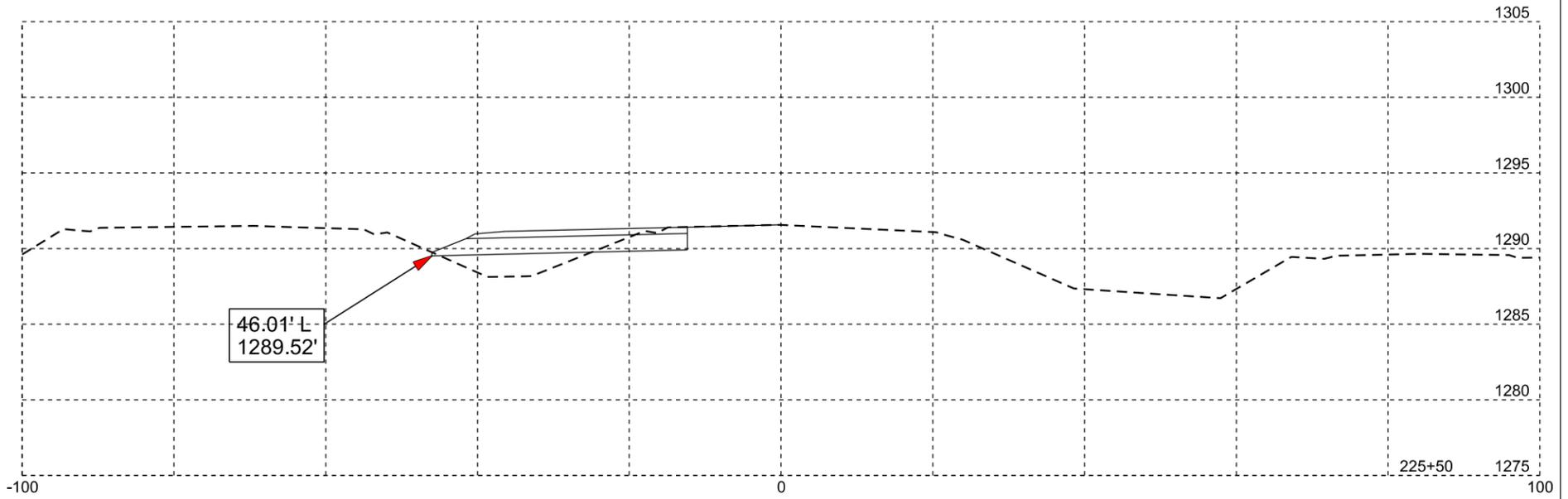
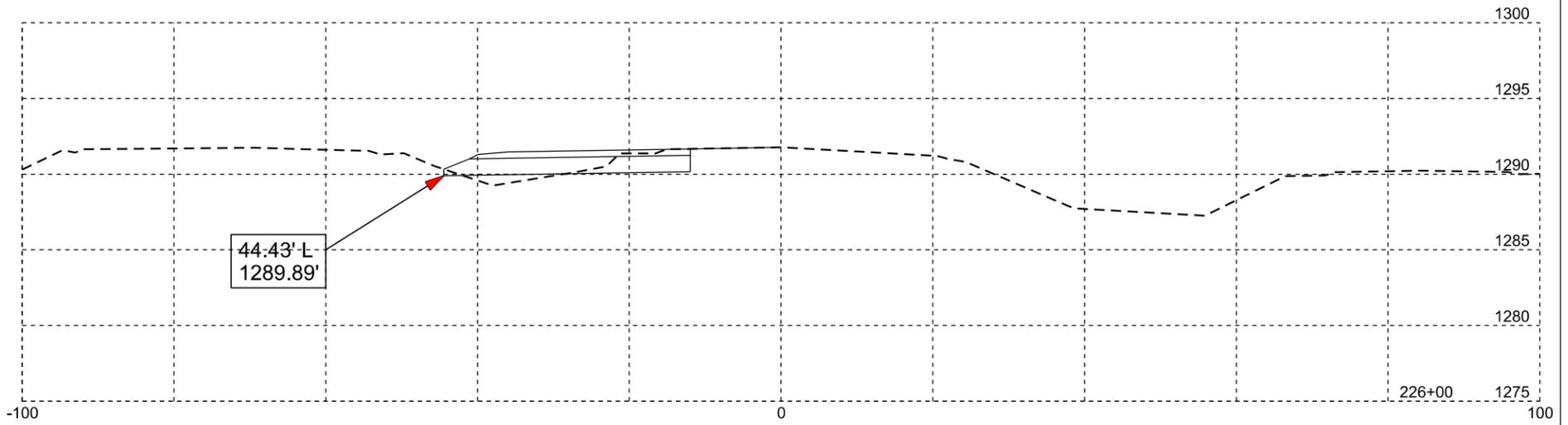
Published Date: 2nd Qtr. 2016



Plotting Date: 07/22/2016

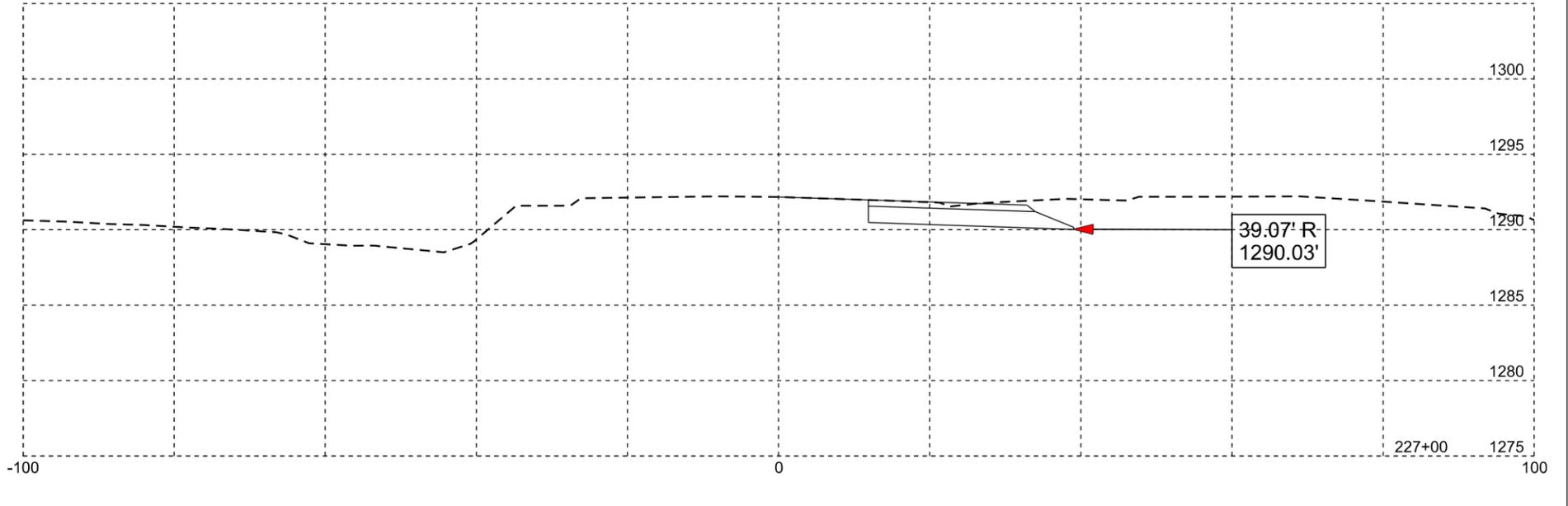
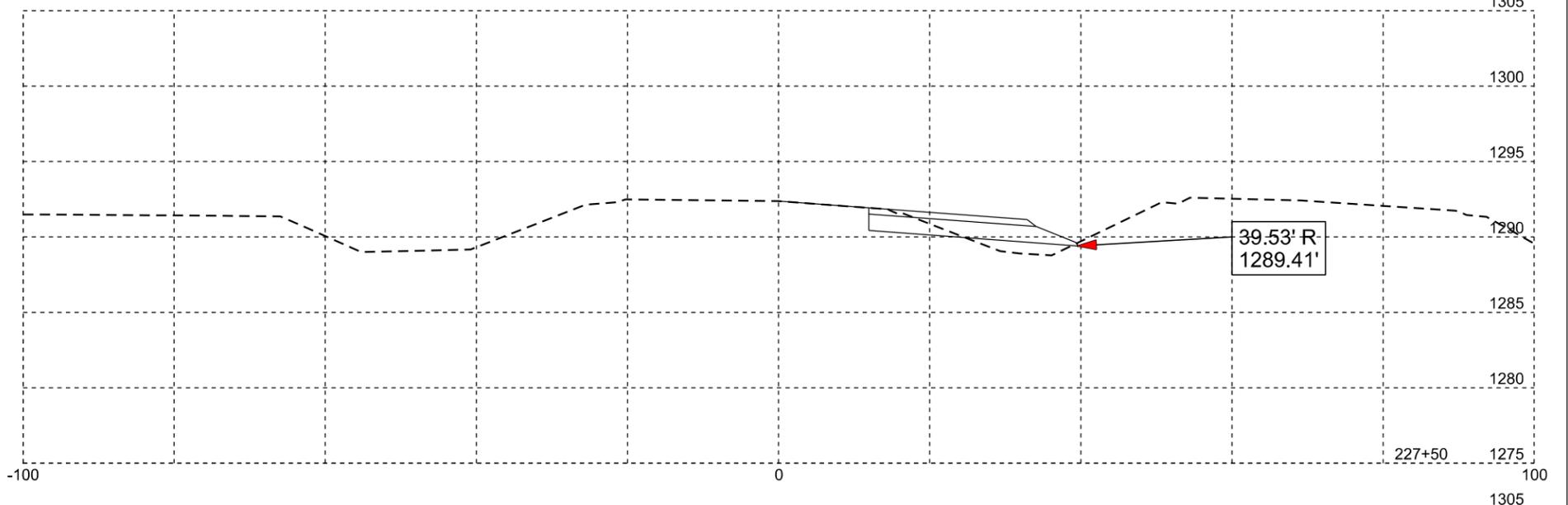
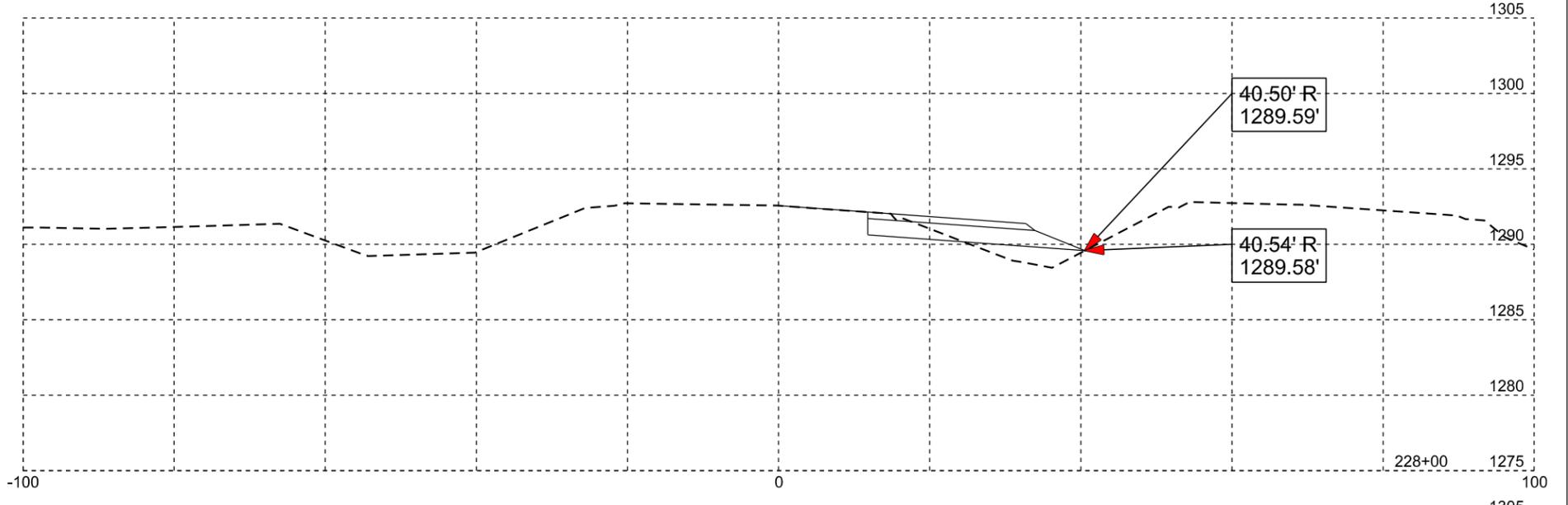
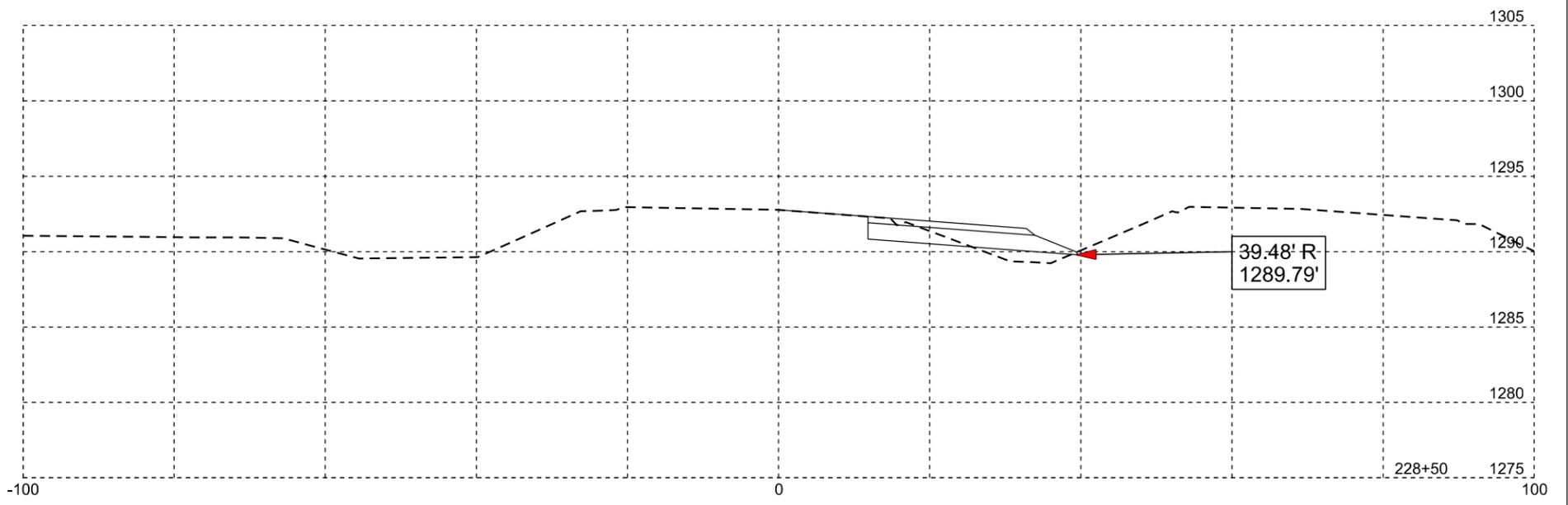
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	PH 0014(205)347	26	31





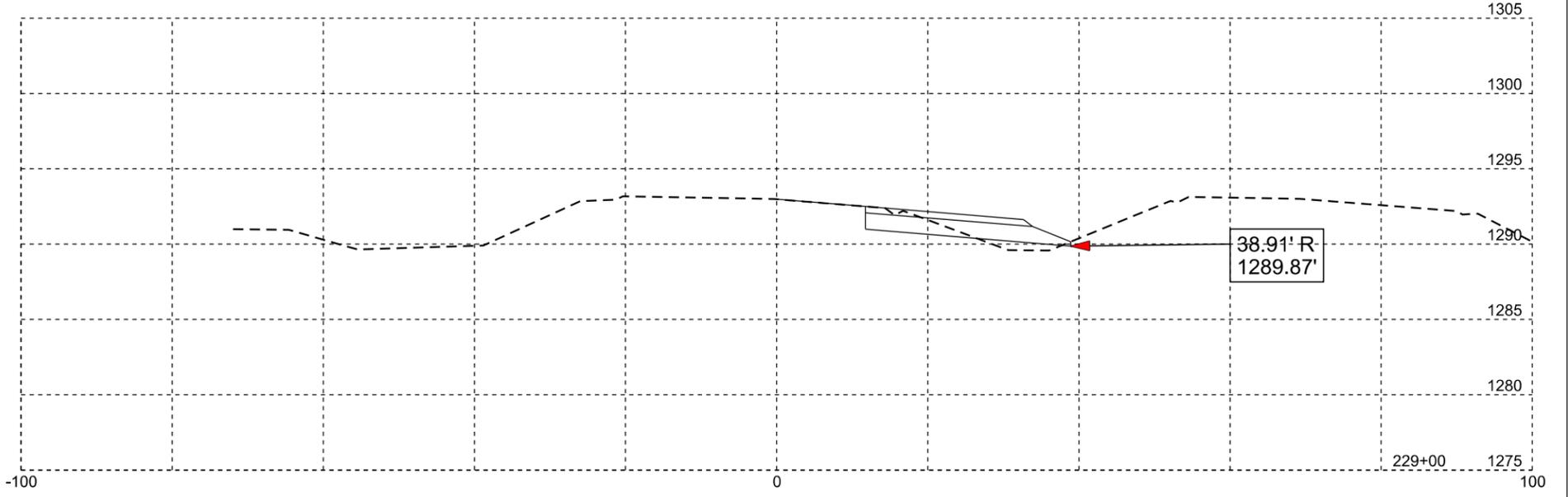
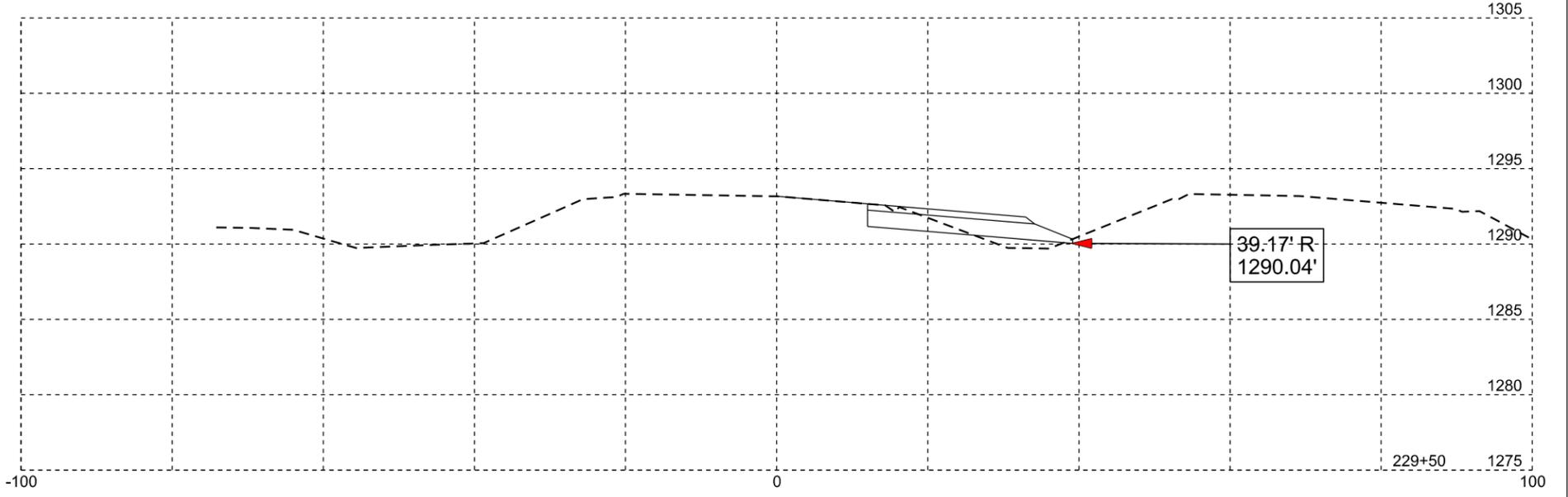
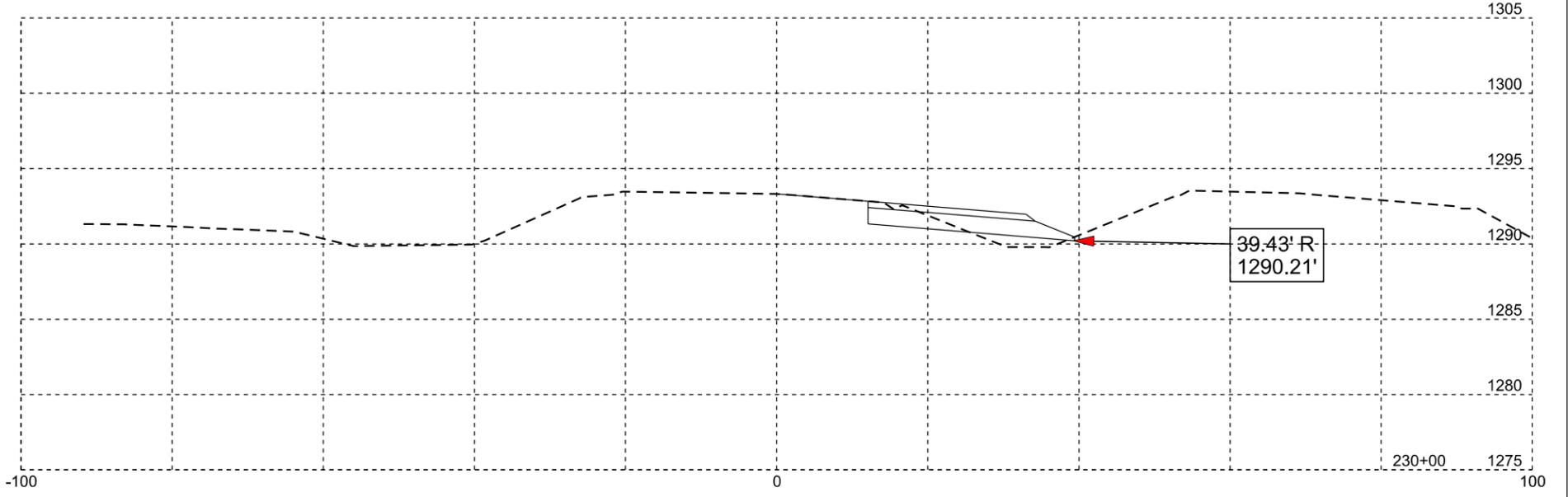
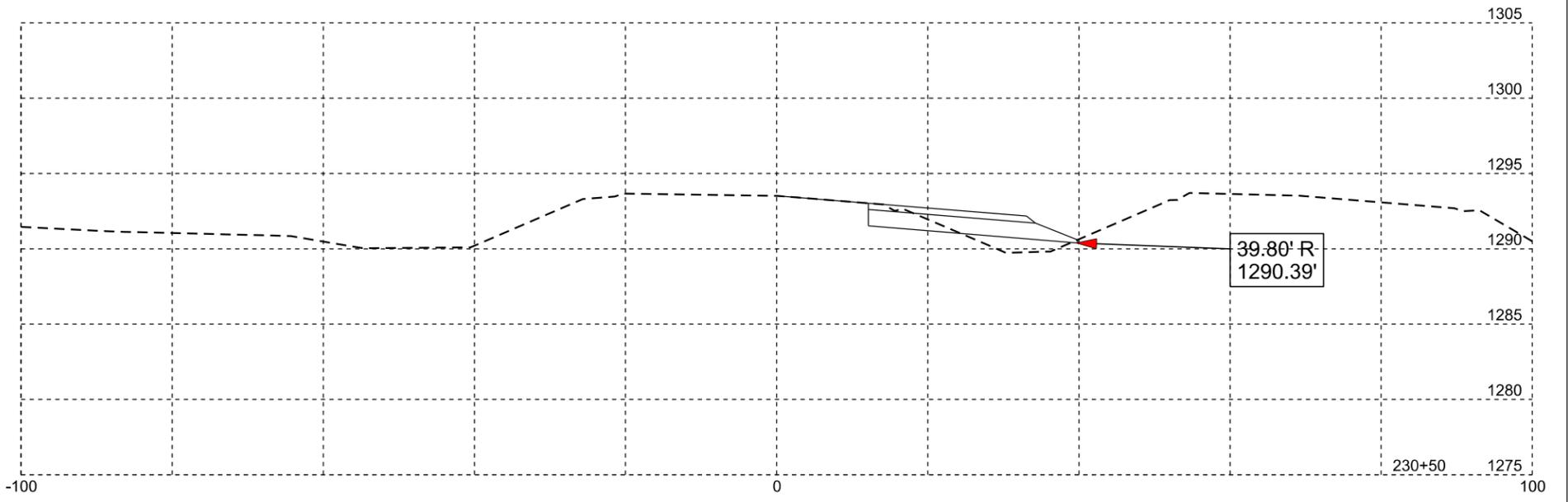
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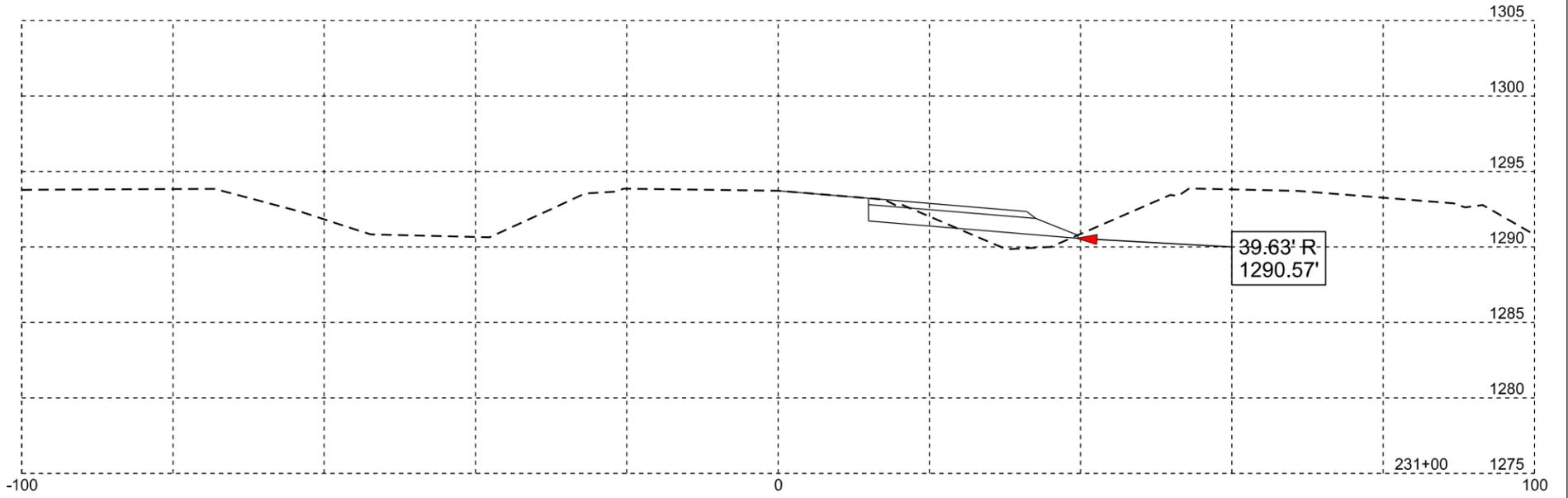
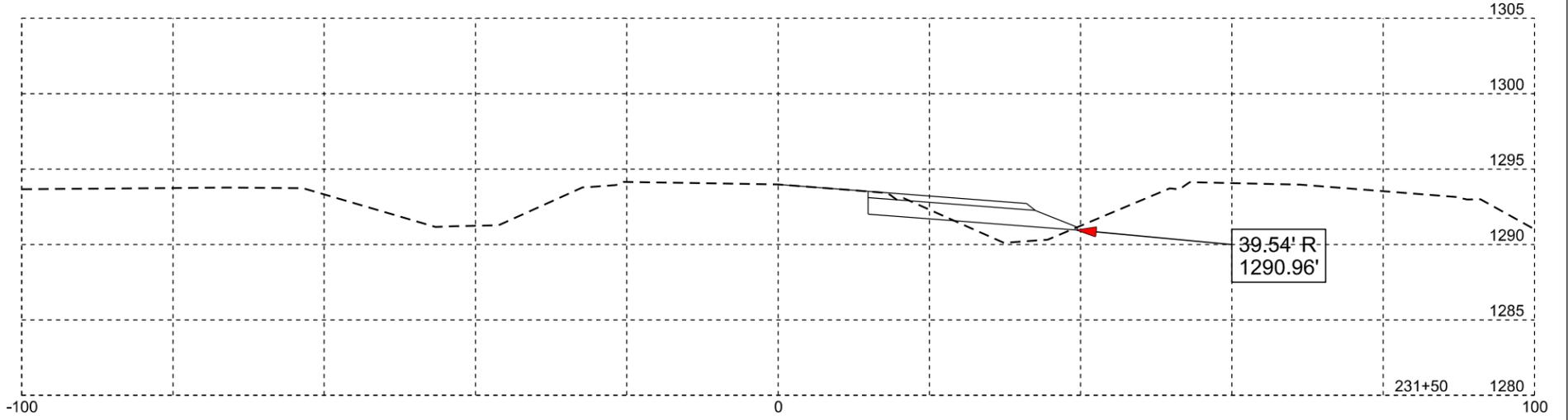
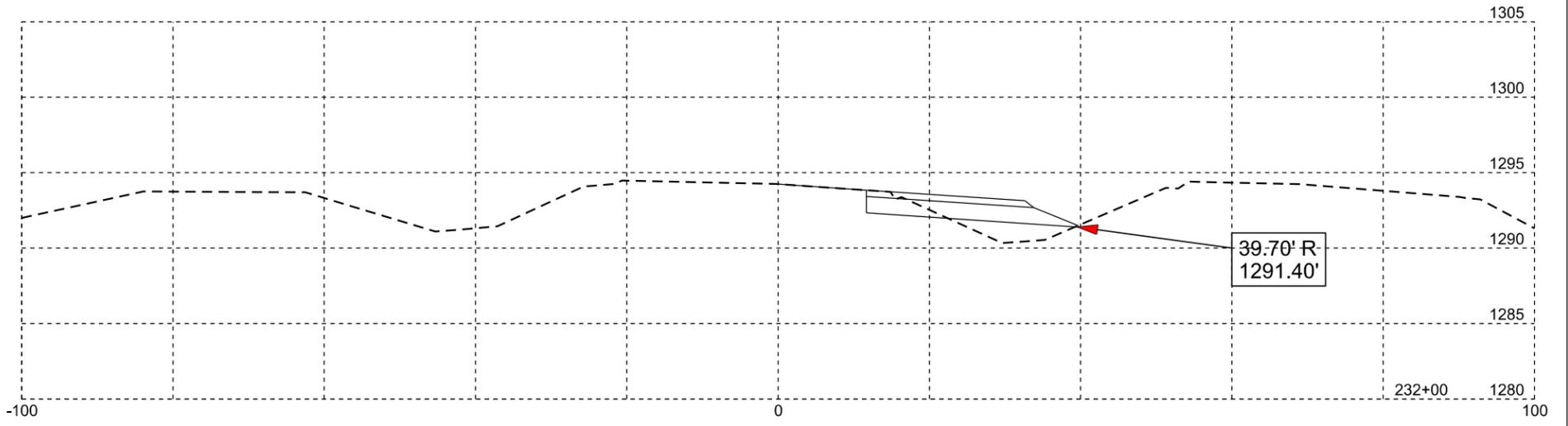
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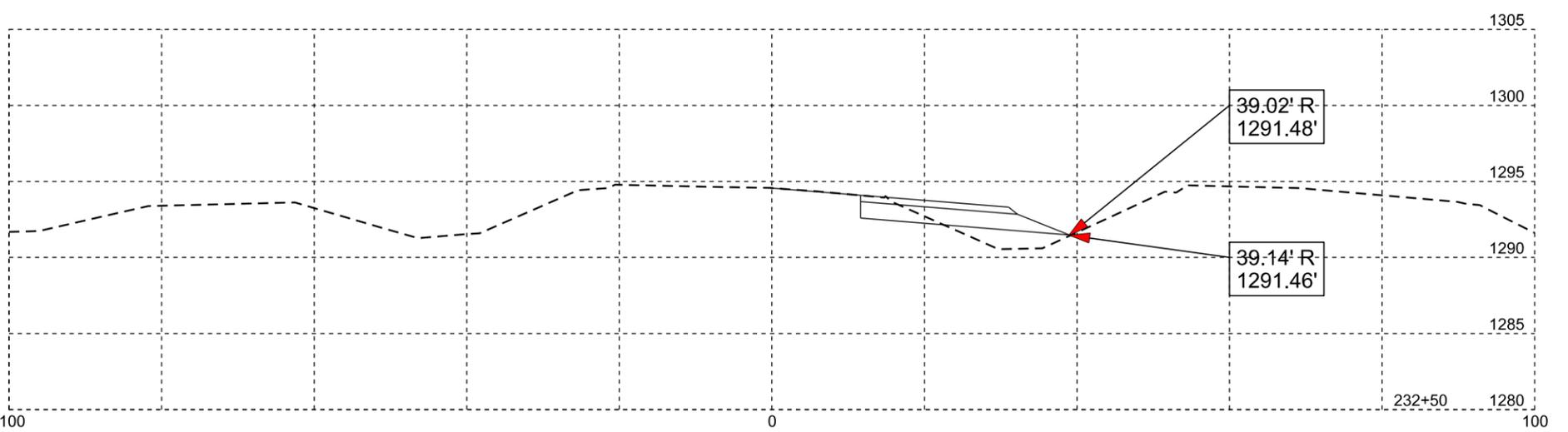
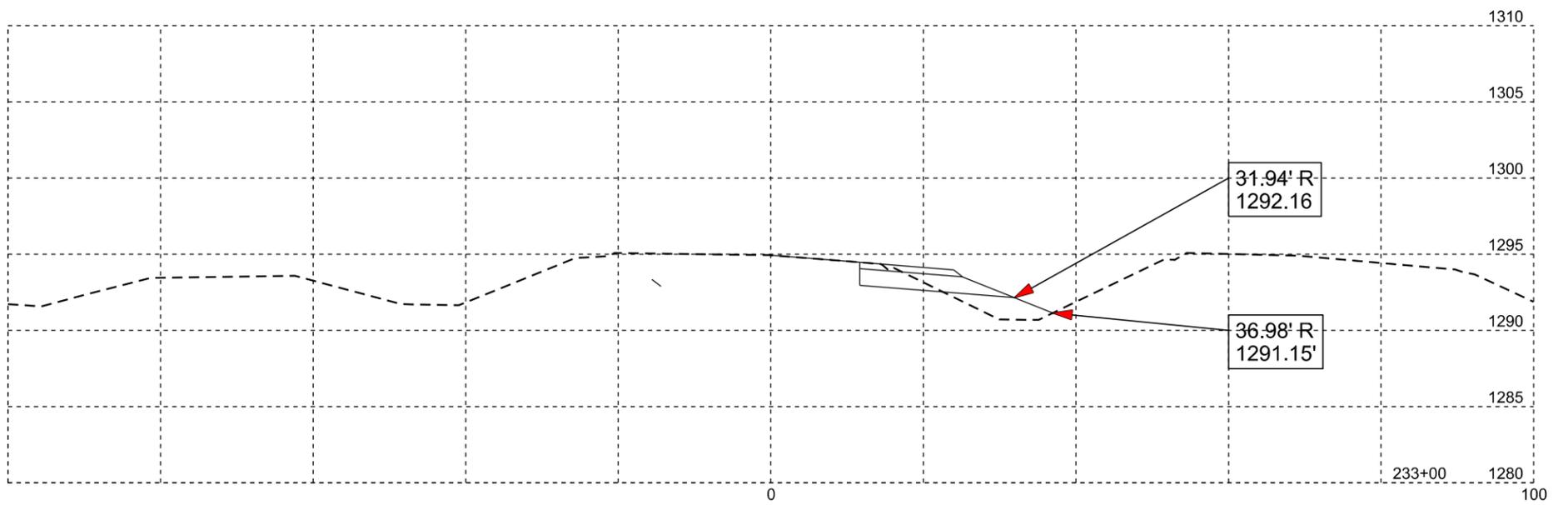
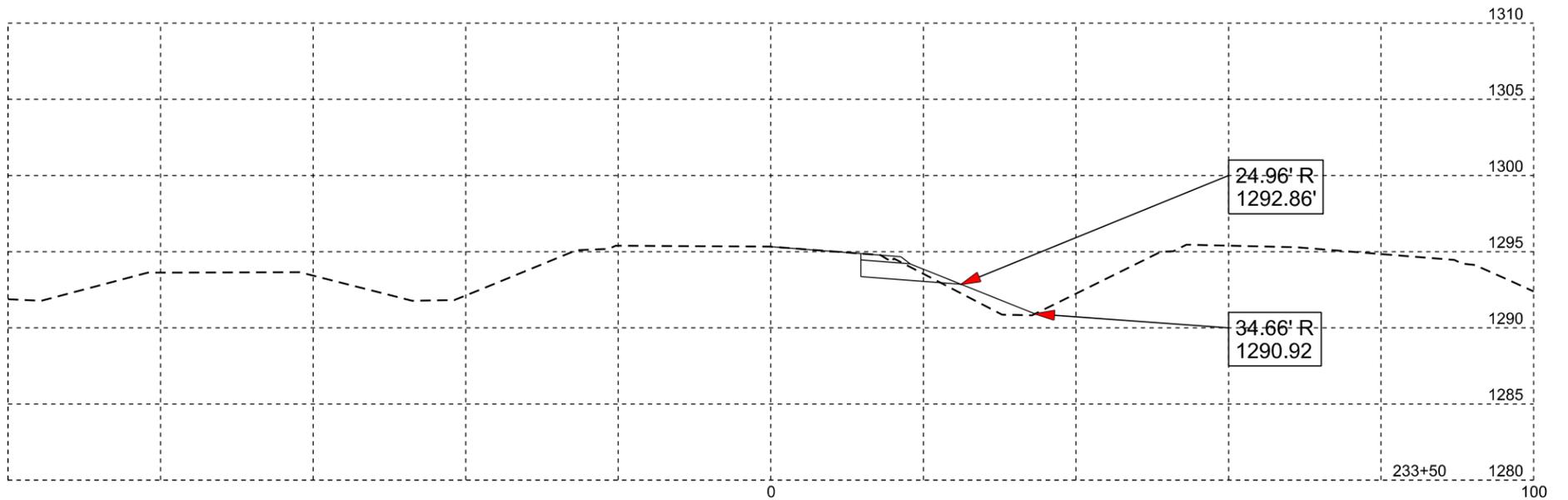


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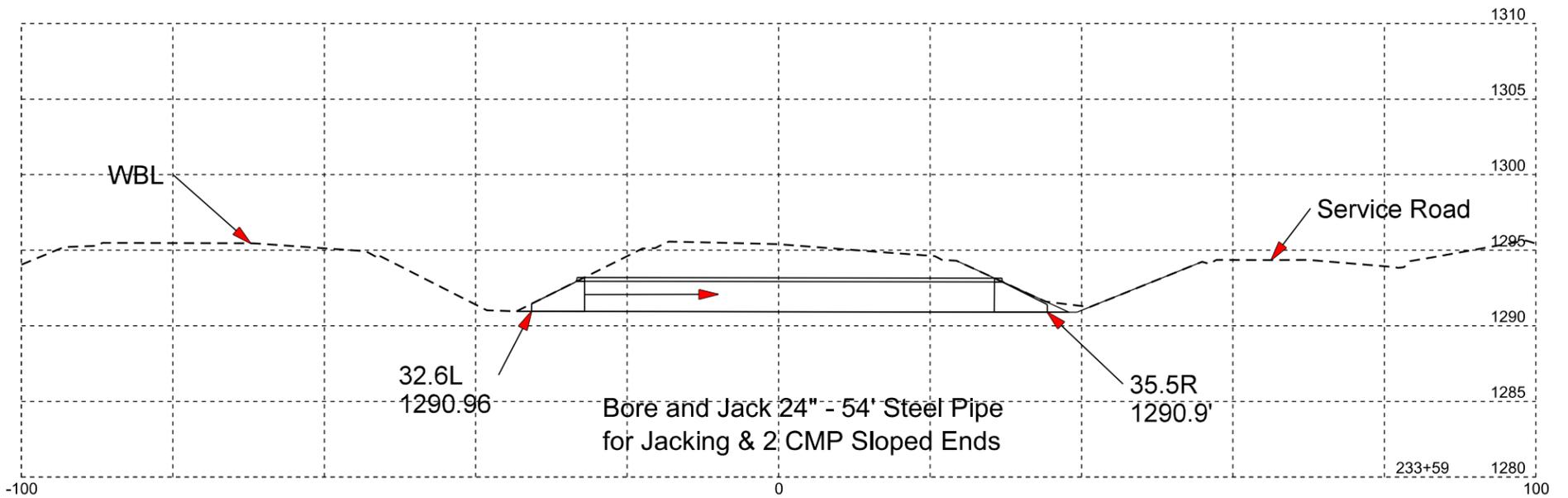
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# EBL



## Ditch Clean-out

