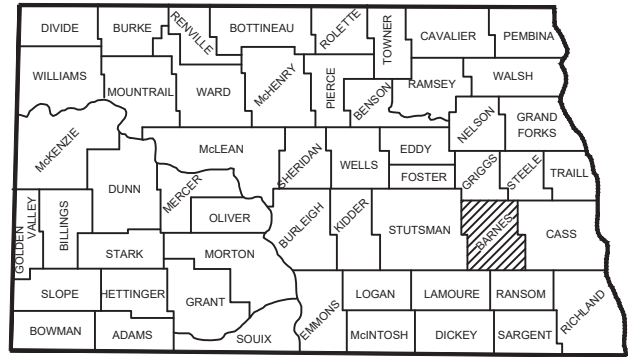


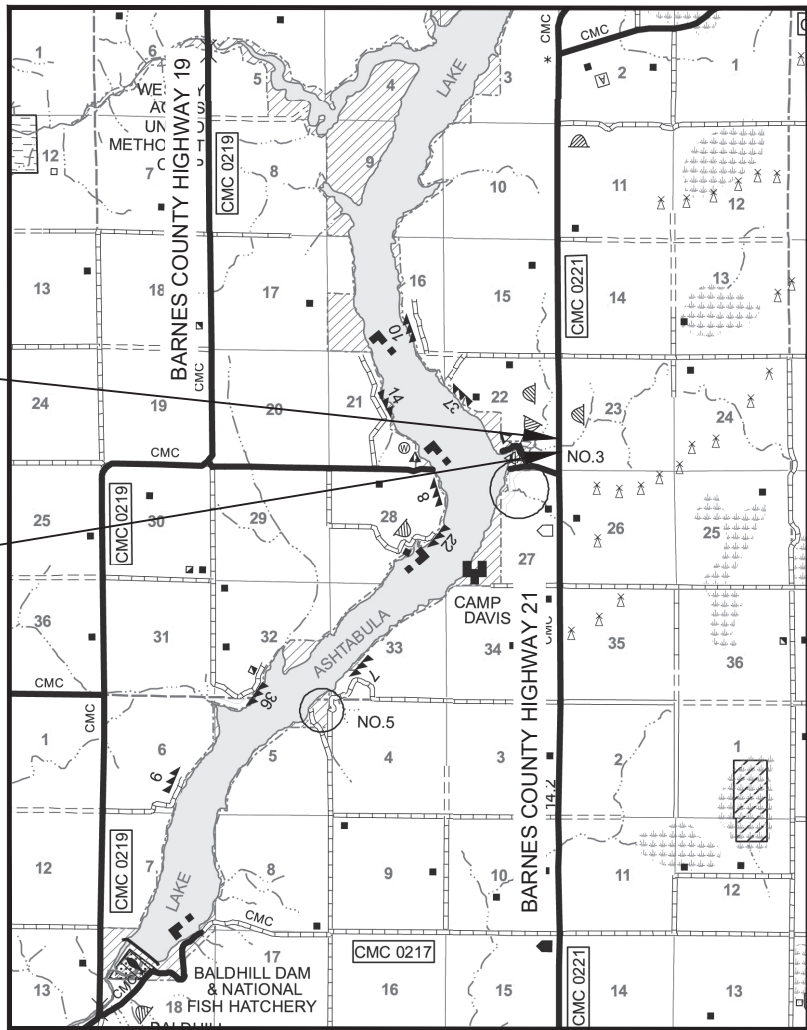


STATE OF NORTH DAKOTA  
SHOWING COUNTIES

# BARNES COUNTY, NORTH DAKOTA PLANS FOR FEDERAL AID PROJECT CERP-0221(085)

BARNES COUNTY HIGHWAY 21 (CMC 0221)  
HILL SLIDE REPAIR & 3-CABLE GUARDRAIL

Project is located on Barnes County Highway 21 (CMC 0221), beginning approximately 11 miles North of Valley City, ND and extending North approximately 0.183 miles.



RGE. 58 W.

TWP. 142 N.

TWP. 141 N.



|  |       |                |       |             |           |
|--|-------|----------------|-------|-------------|-----------|
|  | STATE | PROJECT NO.    | PCN   | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 24082 | 1           | 1         |

|                             |                                                                             |
|-----------------------------|-----------------------------------------------------------------------------|
| GOVERNING SPECIFICATIONS    | Date Published and Adopted by the North Dakota Department of Transportation |
| Standard Specifications     | 7/1/2024                                                                    |
| Supplemental Specifications | NONE                                                                        |

## PROJECT LENGTH

|                |             |                 |           |
|----------------|-------------|-----------------|-----------|
| PROJECT        | GROSS MILES | EXCEPTION MILES | NET MILES |
| CERP-0221(085) | 0.185       | 0.000           | 0.185     |
| TOTAL          | 0.185       | 0.000           | 0.185     |

## DESIGN DATA

| TRAFFIC          |      | AVERAGE DAILY |        |       | EST. 30th MAX. HR. |
|------------------|------|---------------|--------|-------|--------------------|
|                  |      | PASSENGER     | TRUCKS | TOTAL |                    |
| CURRENT TRAFFIC  | 2025 | 330           | 40     | 370   | 37                 |
| TRAFFIC FORECAST | 2045 | 365           | 45     | 410   | 41                 |

DESIGN SPEED 55 MPH  
MINIMUM SIGHT DISTANCE (STOPPING) 495 FEET

**END PROJECT CERP-0221(085)**  
Sta. 24+34 = A Point Approximately 1,433 Feet North of the Northwest Corner of Sec. 26, Twp. 142 N., Rge. 58 W.

**BEGIN PROJECT CERP-0221(085)**  
Sta. 14+59 = A Point Approximately 459 Feet North of the Northwest Corner of Sec. 26, Twp. 142 N., Rge. 58 W.

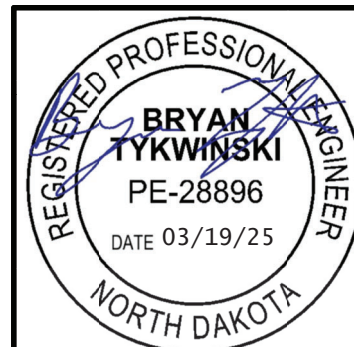
|          |                     |
|----------|---------------------|
| DESIGNER | Bryan Tykwinski, PE |
| DESIGNER | Zach Vlaminck       |
| DESIGNER | Zach Nelson, EI     |
| DESIGNER | -                   |
| DESIGNER | -                   |

PS&E Corrections Made

January 2025

Surveyed & Designed Date

March 2024/December 2024

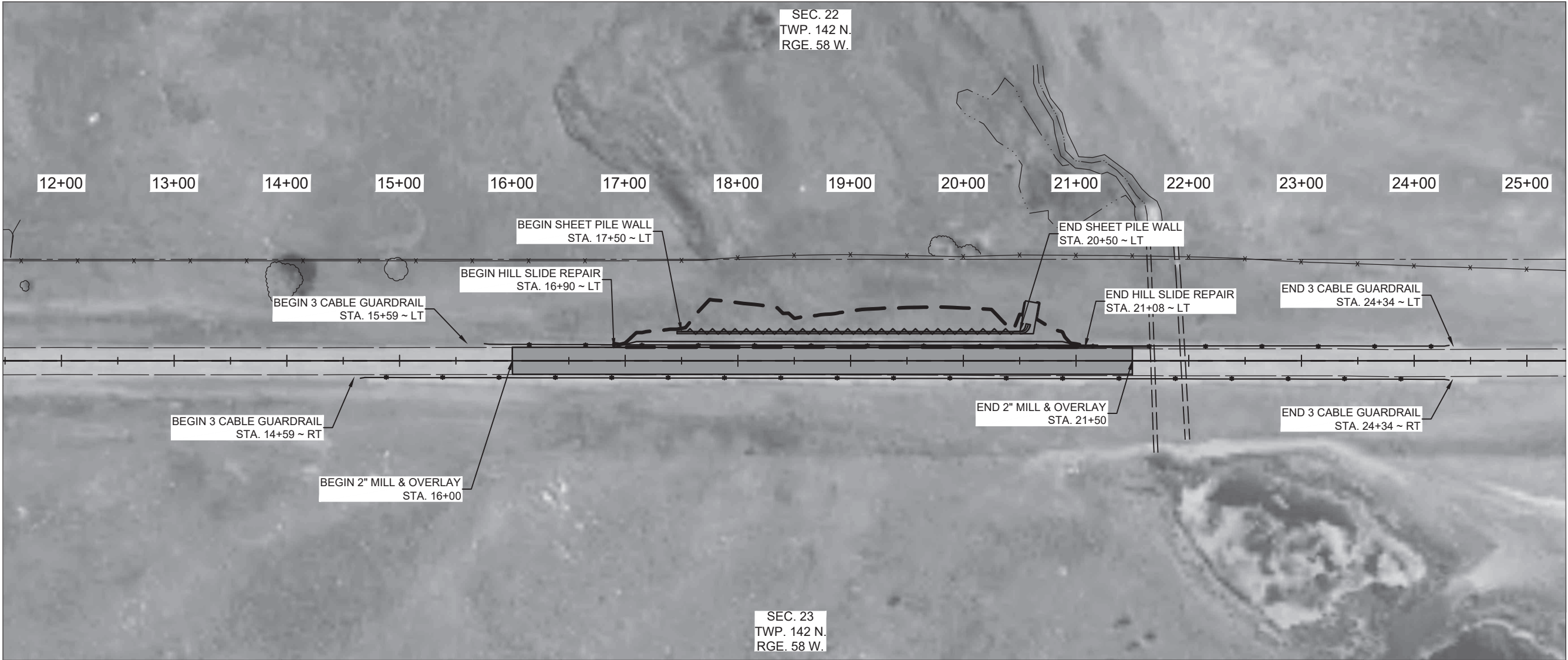


1010 4TH AVENUE SW  
VALLEY CITY, ND 58072-0937  
(701) 845-4980, FAX (855) 288-8055

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| TABLE OF CONTENTS  |                                                          |                                  |                    |                                                                      |                           | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|--------------------|----------------------------------------------------------|----------------------------------|--------------------|----------------------------------------------------------------------|---------------------------|-------|----------------|-------------|-----------|
|                    |                                                          |                                  |                    |                                                                      |                           | ND    | CERP-0221(085) | 2           | 1         |
| PLAN SECTIONS      |                                                          |                                  |                    |                                                                      | LIST OF STANDARD DRAWINGS |       |                |             |           |
| Section            | Page(s)                                                  | Description                      | Number             | Description                                                          |                           |       |                |             |           |
| 1                  | 1                                                        | Title Sheet                      | D-101-1, 2,3,4     | NDDOT Abbreviations                                                  |                           |       |                |             |           |
| 2                  | 1                                                        | Table of Contents                | D-101-20, 21       | Line Styles                                                          |                           |       |                |             |           |
| 4                  | 1                                                        | Scope of Work                    | D-101-30, 31,32,33 | Symbols                                                              |                           |       |                |             |           |
| 6                  | 1                                                        | Notes                            | D-255-2            | Erosion And Siltation Control - Erosion Control Blanket Installation |                           |       |                |             |           |
| 8                  | 1                                                        | Quantities                       | D-261-1            | Erosion Control - Fiber Roll Placement Details                       |                           |       |                |             |           |
| 10                 | 1                                                        | Basis of Estimate                | D-704-9            | Construction Sign Details - Terminal And Guide Signs                 |                           |       |                |             |           |
| 20                 | 1                                                        | General Details                  | D-704-10           | Construction Sign Details - Regulatory Signs                         |                           |       |                |             |           |
| 30                 | 1 - 2                                                    | Typical Sections                 | D-704-11, 11A      | Construction Sign Details - Warning Signs                            |                           |       |                |             |           |
| 60                 | 1                                                        | Plan & Profile                   | D-704-13           | Barricade And Channelizing Device Details                            |                           |       |                |             |           |
| 76                 | 1                                                        | Temporary Erosion Control        | D-704-15           | Road Closure Layouts                                                 |                           |       |                |             |           |
| 77                 | 1                                                        | Permanent Erosion Control        | D-704-16           | Lane Closure On A Two Lane Road Using Traffic Control Signals        |                           |       |                |             |           |
| 81                 | 1                                                        | Survey Coordinate and Curve Data | D-704-20           | Terminal And Seal Coat Sign Layouts                                  |                           |       |                |             |           |
| 100                | 1 - 3                                                    | Work Zone Traffic Control        | D-704-22           | Construction Truck And Temporary Detour Layouts                      |                           |       |                |             |           |
| 130                | 1                                                        | Guardrail                        | D-704-26           | Miscellaneous Sign Layouts                                           |                           |       |                |             |           |
| 170                | 1                                                        | Sheet Pile                       | D-704-27           | Mobile Operation (Pavement Marking)                                  |                           |       |                |             |           |
| 175                | 1 - 5                                                    | Soil Boring Logs                 | D-704-50           | Portable Sign Support Assembly                                       |                           |       |                |             |           |
| 200                | 1 - 4                                                    | Cross Sections                   | D-762-4            | Pavement Marking                                                     |                           |       |                |             |           |
|                    |                                                          |                                  | D-762-11           | Short-Term Pavement Marking                                          |                           |       |                |             |           |
| SPECIAL PROVISIONS |                                                          |                                  |                    |                                                                      |                           |       |                |             |           |
| Number             | Description                                              |                                  |                    |                                                                      |                           |       |                |             |           |
| SSP 1              | Temporary Erosion and Sediment Best Management Practices |                                  |                    |                                                                      |                           |       |                |             |           |
| SSP 3              | Local Agency Contracts                                   |                                  |                    |                                                                      |                           |       |                |             |           |
| SP 414(24)         | Commercial Grade Asphalt                                 |                                  |                    |                                                                      |                           |       |                |             |           |
| SP 515(24)         | 3 Cable Guardrail                                        |                                  |                    |                                                                      |                           |       |                |             |           |

|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 4           | 1         |



|                                               |               |                           |
|-----------------------------------------------|---------------|---------------------------|
| CERP-0221(085)<br>BARNES COUNTY, NORTH DAKOTA |               |                           |
| <div>KLJ</div> <div>SCOPE OF WORK</div>       |               |                           |
| DRWN. BY<br>ZRV                               | CHKD BY<br>BT | PROJECT NO.<br>2302-01469 |

PLAN NOTES

105-P01

UTILITIES: The vertical and horizontal utility locations shown in the plans are approximate. Plan locations should not be interpreted as exact for bidding or construction purposes. No utility relocations or adjustments are planned. All utilities on the project need to be protected and remain in existing location.

108-P01

CONTRACT TIME FOR COMPLETION: Complete all work on or before October 4<sup>th</sup>, 2025. Limit temporary traffic signal lane closure to a maximum of 30 calendar days. See note 704-P01 for project phasing and traffic control plans.

Liquidated damages will be assessed for each day beyond the traffic signal lane closure limit and each day beyond the completion date in accordance with Section 108.07 B.1.

203-385

AVERAGE HAUL: No average haul has been computed for this project.

203-P01

COMMON EXCAVATION-TYPE B: Include all costs associated with excavating, transporting and placing the material in the price bid for “COMMON EXCAVATION-TYPE B”. Payment for “COMMON EXCAVATION-TYPE B” will be paid as plan quantity. Any change to plan quantity must be approved by the Owner or Engineer.

203-P02

COMMON EXCAVATION-WASTE: Include all costs associated with excavating, transporting and disposing of the material in the price bid for “COMMON EXCAVATION-WASTE”. Payment for “COMMON EXCAVATION-WASTE” will be paid as plan quantity. Any change to plan quantity must be approved by the Owner or Engineer.

203-P02

TOPSOIL: The quantity of topsoil to be removed, salvaged and respread is based upon an assumed existing depth of 6 inches. Make arrangements for topsoil storage areas if sufficient room is not available within the right of way. No payment will be made for additional handling of topsoil that must be moved to provide additional excavation area between the proposed grading limits and the right of way. Re-spread topsoil evenly over the areas to be seeded. The bid item “TOPSOIL” includes all labor, materials, and equipment associated with stripping, stockpiling, and respreading the existing topsoil. “TOPOSIL” will be paid at plan quantity.

411-P01

MILLING PAVEMENT SURFACE: Payment for “MILLING PAVEMENT SURFACE” is based upon existing top width of 24’. Include the cost to remove the sloughs in the price bid for “MILLING PAVEMENT SURFACE”. Mill the asphalt at each end of the project so that the wearing coarse matches the existing asphalt surfacing.

All milled material is to become property of the Contractor. Include all costs for disposal of the milled material in the price bid for “MILLING PAVEMENT SURFACE”.

430-P01

COMMERCIAL GRADE HOT MIX ASPHALT: Place the hot mix asphalt as shown on the typical section. Exercise extreme care not to mark or tear the new driving surface and keep all loaded trucks off the newly placed hot mix asphalt. Any damage to the newly paved surface will be repaired at the Contractor’s expense.

430-P02

TACK COAT: Supply a tack coat the meets the requirements of Section 401.03 B “Tack Coat”. Apply the tack coat according to Section 401.04 “Construction Requirements”. Undiluted application rates are shown in the basis of estimate. Tack coat will not be measured for payment and will be included in the unit price bid for “COMMERCIAL GRADE HOT MIX ASPHALT”.

430-P03

ORDINARY COMPACTION: Compact all HMA according to Section 430.04 I 3 “Ordinary Compaction”.

704-P01

TRAFFIC CONTROL PHASING: Construct the hillside repair in the following phases:

Phase 1: Close the southbound lane and utilize temporary traffic signals to construct the widening section and install sheet pile support wall. Install delineator drums along the southbound shoulder for the entire length of the existing guardrail. Remove the lane closure and temporary signals when work directly impacting the driving lane is complete. Complete any remaining Phase 1 work utilizing temporary lane closures and flaggers.

Phase 2: Complete the mill and overlay utilizing temporary lane closures and flaggers.

Phase 3: Remove and replace the existing 3-cable guardrail. Install guardrail in accordance with Section 764.04 of the Standard Specifications. Provide temporary lane closures and flagging as needed to remove and replace 3-cable guardrail.

704-P02

TRAFFIC CONTROL FOR MILLING & BITUMINOUS PAVEMENT: Provide traffic control consisting of a temporary lane closure and flaggers.

Traffic control device quantities are based on the project length and the list below. Provide any additional devices at no additional cost to the Owner.

1. Standard D-704-15, layout A

2. Standard D-704-20, layout G & H

3. Standard D-704-22, layout K

4. Standard D-704-26, layouts EE and GG.

762-050

PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items. Apply all permanent striping at a width of 4 inches.

764-P01

3-CABLE GUARDRAIL: Install 3-Cable Guardrail post a minimum of 3’ from existing post locations and in accordance with SP 515(24).

764-P02

REMOVAL OF 3-CABLE GUARDRAIL: Salvage and deliver all existing wood posts and reflective plates to the Barnes County Highway Department at 1525 12<sup>th</sup> Street NW, Valley City. Coordinate delivery with Jamie Smith, Barnes County Highway Superintendent, 701-845-8508.

772-P01

TEMPORARY TRAFFIC SIGNALS: Install a signal-controlled lane closure for two lane roadways as shown in Section 100 and Standard D-704-16. Submit any modifications to the Engineer prior to the preconstruction conference for approval. Coordinate with the utility company to obtain an electrical source to operate the signals or provide generators for electrical service. Solar powered traffic signals may be used. Include all costs associated with installing, operating, and maintaining the traffic signals as well as all pavement marking masking or obliteration required for the lane closure in the unit price bid for “LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL”.

If generators are utilized place them outside the taper, unless the generator and signals are part of a trailer mounted unit.

Place any poles and all equipment outside the roadway. Place power conductors a minimum of 6 inches below the ground. Upon completion of the signal-controlled portion of the project, remove all equipment and restore disturbed ground. Include all costs necessary to install, operate, and remove the portable signal system in the price bid for “LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL”.

Calibrate timing plan to actual traffic behavior. This may require adjustments during peak traffic periods and for harvest season in the fall. Notify the Engineer upon operation of the system and for approval of any signal adjustments. Set the initial signal timing as shown below:

|            |       |        |       |        |     |    |
|------------|-------|--------|-------|--------|-----|----|
| Northbound | Green | Yellow | Red   |        |     |    |
| Southbound | Red   |        | Green | Yellow | Red |    |
| Time (sec) | 27    | 3      | 30    | 27     | 3   | 30 |

CERP-0221(085)

BARNES COUNTY, NORTH DAKOTA

KLJ

DRWN. BY  
ZN

PLAN NOTES

CHKD. BY  
BJT

PROJECT NO.  
2302-01469

REGISTERED PROFESSIONAL ENGINEER

BRYAN TYKWIŃSKI

PE-28896

DATE 03/19/25

NORTH DAKOTA

3/19/2025

10:34:16 AM

bryan tykwinski

K:\Projects\County\ND\Barnes\2302-01469\_24082\_ER\_HillslideNorth\CAD\Design\Plans\2302-01469\_006NT\_001.doc

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| Estimated Quantities |      |                                              |       |           |  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|----------------------|------|----------------------------------------------|-------|-----------|--|-------|----------------|-------------|-----------|
|                      |      |                                              |       |           |  | ND    | CERP-0221(085) | 8           | 1         |
| SPEC                 | CODE | ITEM DESCRIPTION                             | UNIT  | Mainline: |  |       |                |             | TOTAL     |
| 103                  | 0100 | CONTRACT BOND                                | L SUM | 1         |  |       |                |             | 1         |
| 203                  | 0102 | COMMON EXCAVATION-TYPE B                     | CY    | 160       |  |       |                |             | 160       |
| 203                  | 0109 | TOPSOIL                                      | CY    | 215       |  |       |                |             | 215       |
| 203                  | 0113 | COMMON EXCAVATION-WASTE                      | CY    | 199       |  |       |                |             | 199       |
| 203                  | 0138 | COMMON EXCAVATION-SUBCUT                     | CY    | 23        |  |       |                |             | 23        |
| 216                  | 0100 | WATER                                        | M GAL | 29        |  |       |                |             | 29        |
| 251                  | 0200 | SEEDING CLASS II                             | ACRE  | 0.2       |  |       |                |             | 0.2       |
| 251                  | 2000 | TEMPORARY COVER CROP                         | ACRE  | 0.2       |  |       |                |             | 0.2       |
| 253                  | 0101 | STRAW MULCH                                  | ACRE  | 0.2       |  |       |                |             | 0.2       |
| 255                  | 0103 | ECB TYPE 3                                   | SY    | 978       |  |       |                |             | 978       |
| 256                  | 0200 | RIPRAP GRADE II                              | CY    | 23        |  |       |                |             | 23        |
| 261                  | 0112 | FIBER ROLLS 12IN                             | LF    | 870       |  |       |                |             | 870       |
| 261                  | 0113 | REMOVE FIBER ROLLS 12IN                      | LF    | 443       |  |       |                |             | 443       |
| 302                  | 0120 | AGGREGATE BASE COURSE CL 5                   | TON   | 111       |  |       |                |             | 111       |
| 411                  | 0105 | MILLING PAVEMENT SURFACE                     | SY    | 1465      |  |       |                |             | 1465      |
| 430                  | 0500 | COMMERCIAL GRADE HOT MIX ASPHALT             | TON   | 208       |  |       |                |             | 208       |
| 622                  | 6760 | STEEL SHEET PILING                           | SF    | 11100     |  |       |                |             | 11100     |
| 702                  | 0100 | MOBILIZATION                                 | L SUM | 1         |  |       |                |             | 1         |
| 704                  | 0100 | FLAGGING                                     | MHR   | 400       |  |       |                |             | 400       |
| 704                  | 1000 | TRAFFIC CONTROL SIGNS                        | UNIT  | 1023      |  |       |                |             | 1023      |
| 704                  | 1018 | LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL | EA    | 1         |  |       |                |             | 1         |
| 704                  | 1052 | TYPE III BARRICADE                           | EA    | 2         |  |       |                |             | 2         |
| 704                  | 1060 | DELINEATOR DRUMS                             | EA    | 75        |  |       |                |             | 75        |
| 704                  | 1067 | TUBULAR MARKERS                              | EA    | 25        |  |       |                |             | 25        |
| 709                  | 0155 | GEOSYNTHETIC MATERIAL TYPE RR                | SY    | 35        |  |       |                |             | 35        |
| 748                  | 0141 | CURB & GUTTER-TYPE 1 SPECIAL                 | LF    | 316       |  |       |                |             | 316       |
| 762                  | 0420 | SHORT TERM 4IN LINE-TYPE R                   | LF    | 2700      |  |       |                |             | 2700      |
| 762                  | 0426 | SHORT TERM 24IN LINE-TYPE R                  | LF    | 24        |  |       |                |             | 24        |
| 762                  | 0430 | SHORT TERM 4IN LINE-TYPE NR                  | LF    | 1380      |  |       |                |             | 1380      |
| 762                  | 1104 | PVMT MK PAINTED 4IN LINE                     | LF    | 690       |  |       |                |             | 690       |
| 764                  | 0115 | 3-CABLE GUARDRAIL                            | LF    | 1850      |  |       |                |             | 1850      |
| 764                  | 2020 | REMOVE 3-CABLE GUARDRAIL & POSTS             | LF    | 1822      |  |       |                |             | 1822      |

|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 10          | 1         |

| HIGHWAY 21                                         |       |                                                      |       |     |                                                            |
|----------------------------------------------------|-------|------------------------------------------------------|-------|-----|------------------------------------------------------------|
| MILL & OVERLAY<br>TYPICAL SECTION<br>(0.104 MILES) |       | INSLOPE WIDENING<br>TYPICAL SECTION<br>(0.079 MILES) |       |     |                                                            |
| QUANTITY<br>PER MILE                               | WIDTH | QUANTITY<br>PER MILE                                 | WIDTH |     |                                                            |
| -                                                  | -     | 784                                                  | 5.0'  | TON | Aggregate Base Course CL 5 (1.875 Tons/CY)                 |
| 14,080                                             | 24.0' | -                                                    | -     | SY  | Milling Pavement Surface (2";2.667 SY/LF)                  |
| 986                                                | 24.0' | 205                                                  | 5.0'  | GAL | Tack Coat (0.07 Gal/SY) Incidental to Commercial Grade HMA |
| 1,607                                              | 24.0' | 324                                                  | 5.0'  | TON | Commercial Grade HMA (2.0 Tons/CY)                         |

| PAVEMENT MARKING - HIGHWAY 21               |    |            |    |      |                       |
|---------------------------------------------|----|------------|----|------|-----------------------|
| DESCRIPTION                                 |    |            |    | UNIT | QUANTITY PER LOCATION |
| 4" Yellow No Passing Zone (Solid Line)      |    |            |    |      |                       |
| Sta. 16+00                                  | To | Sta. 21+50 | LT | LF   | 550                   |
| SubTotal (Yellow)                           |    |            |    | LF   | 550                   |
|                                             |    |            |    |      |                       |
| 4" Yellow Center Lines (10' Line, 30' Skip) |    |            |    |      |                       |
| Sta. 16+00                                  | To | Sta. 21+50 |    | LF   | 140                   |
| SubTotal (Yellow)                           |    |            |    | LF   | 140                   |
| Total (Yellow)                              |    |            |    | LF   | 690                   |
|                                             |    |            |    |      |                       |
| Total Pavement Marking Paint                |    |            |    | LF   | 690                   |

| SLIDE FULL DEPTH REPAIR                        |           |      |
|------------------------------------------------|-----------|------|
| DESCRIPTION                                    | QUANTITIY | UNIT |
| Common Excavation-Subcut                       | 23        | CY   |
| Aggregate Base Course CL 5 (1.875 Tons/CY)     | 28        | TON  |
| Tack Coat (Incidental to Commercial Grade HMA) | 3         | GAL  |
| Commercial Grade HMA                           | 15        | TON  |

| EARTHWORK SUMMARY |                 |                              |                                              |                                             |                                      |                            |                        |
|-------------------|-----------------|------------------------------|----------------------------------------------|---------------------------------------------|--------------------------------------|----------------------------|------------------------|
| Earthwork         |                 |                              |                                              |                                             | Topsoil <sup>2</sup>                 |                            |                        |
| Location          | Excavation (CY) | Embankment <sup>1</sup> (CY) | 203 0102<br>Common<br>Excavation-Type B (CY) | 203 0113<br>Common<br>Excavation-Waste (CY) | 203 0109<br>Topsoil<br>Stripped (CY) | Topsoil<br>Embankment (CY) | Excess<br>Topsoil (CY) |
|                   | A               | B                            | C = B                                        | D                                           | F                                    | G                          | H = F - G              |
| Barnes Hwy 21     | 359             | 160                          | 160                                          | 199                                         | 215                                  | 164                        | 51                     |

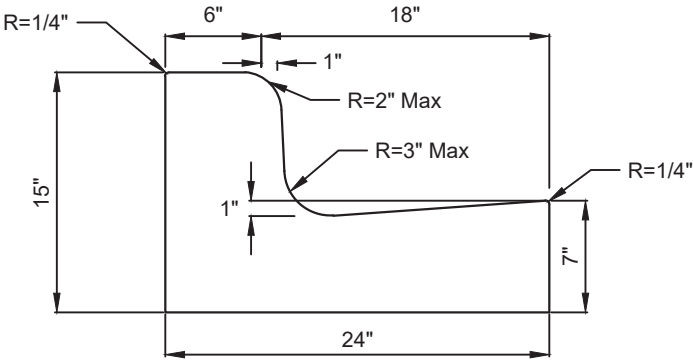
- 1) Embankment quantities include 35% for shrinkage.
- 2) Topsoil quantities based on 6" stripping and 6" respreading. Excess topsoil shall be uniformly spread on the site within the ROW.

|                            |                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------|
| Aggregate Base Course CL 5 | 1.875 Ton/CY (Shrinkage and Compaction)                                                   |
| Seeding                    | All disturbed areas within the right of way minus hard surfaces.                          |
| Mulching                   | Provided for temporary cover crop                                                         |
| Water                      | 25 M Gal/Site for Dust Palliative<br>10 Gal/CY for Embankment<br>20 Gal/TON for Aggregate |

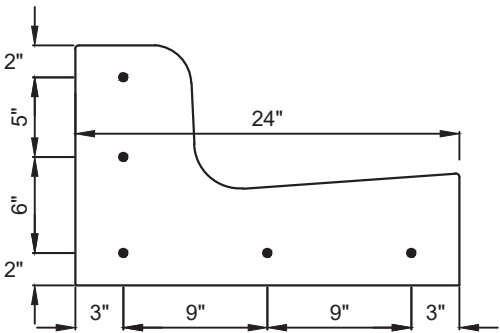


| CERP-0221(085)<br>BARNES COUNTY, NORTH DAKOTA |               |                           |
|-----------------------------------------------|---------------|---------------------------|
|                                               |               | BASIS OF ESTIMATE         |
| DRWN. BY<br>ZRV                               | CHKD BY<br>BT | PROJECT NO.<br>2302-01469 |

|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 20          | 1         |

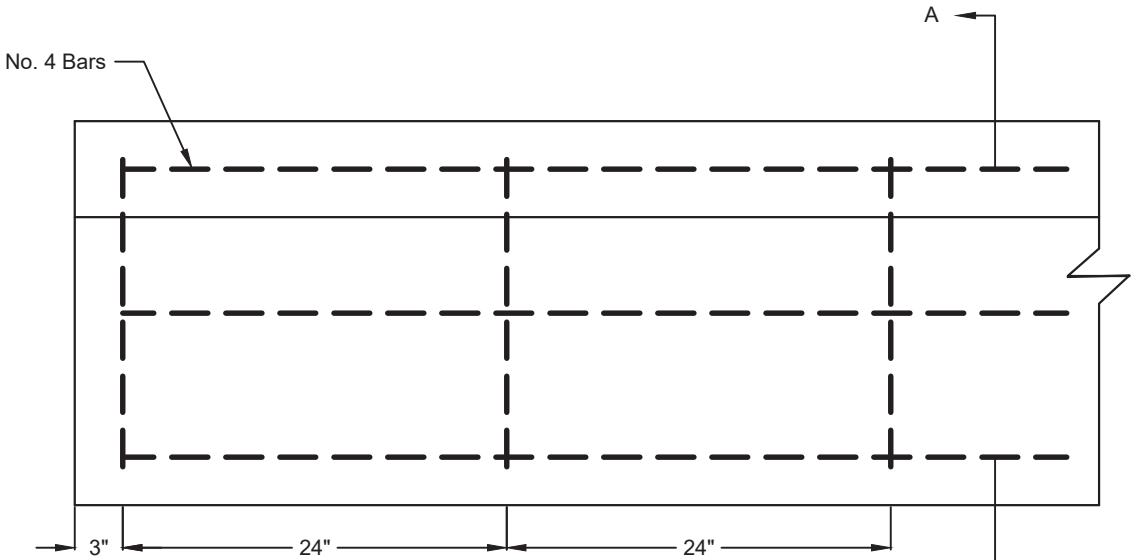


Curb & Gutter-Type 1 Special

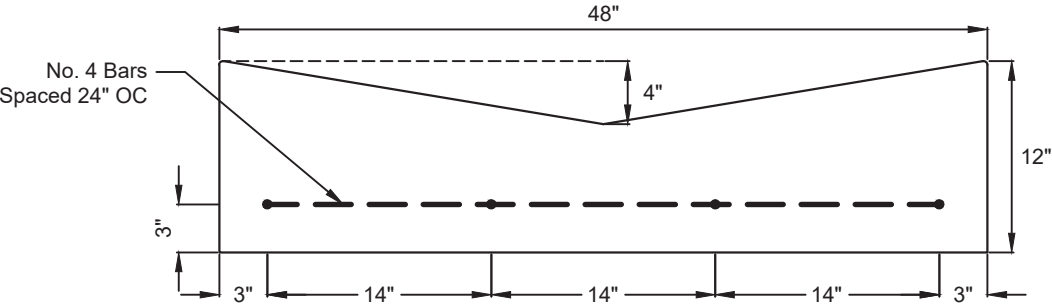


Section A-A

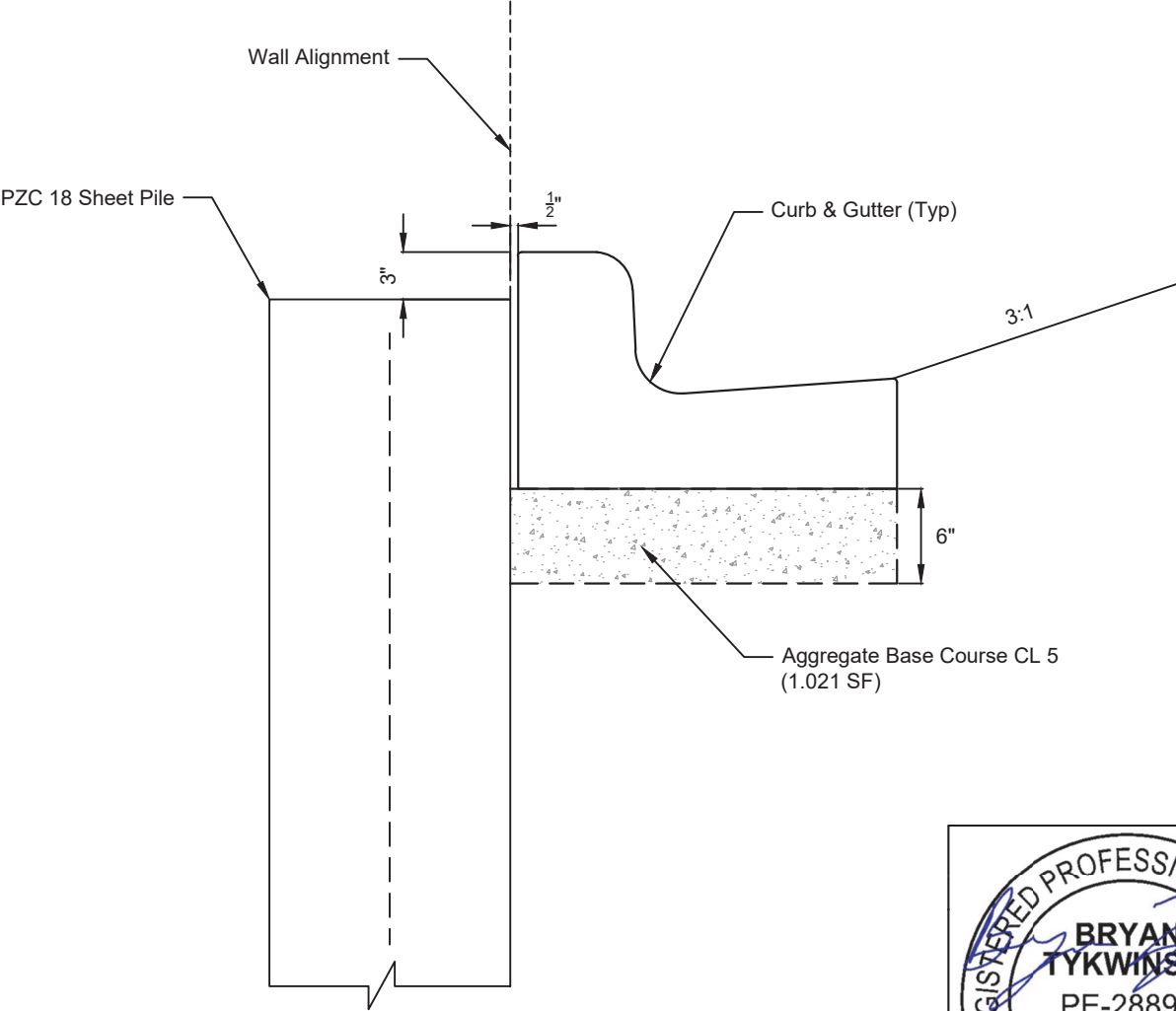
- Notes:
1. Joint Spacing: Use a 10' max joint spacing for Curb & Gutter and Valley Gutter.
  2. Transition full height Curb & Gutter to Valley Gutter over a minimum of 4'.
  3. Include all costs associated with the transition to Valley Gutter and the Valley Gutter in the price bid for "Curb & Gutter-Type 1 Special". Valley Gutter will be paid for as LF of "Curb & Gutter-Type 1 Special". Place 6" of compacted Aggregate under the Valley Gutter.



Curb & Gutter Reinforcing



Valley Gutter Detail<sup>3</sup>



Sheet Pile & Curb & Gutter Detail



CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA

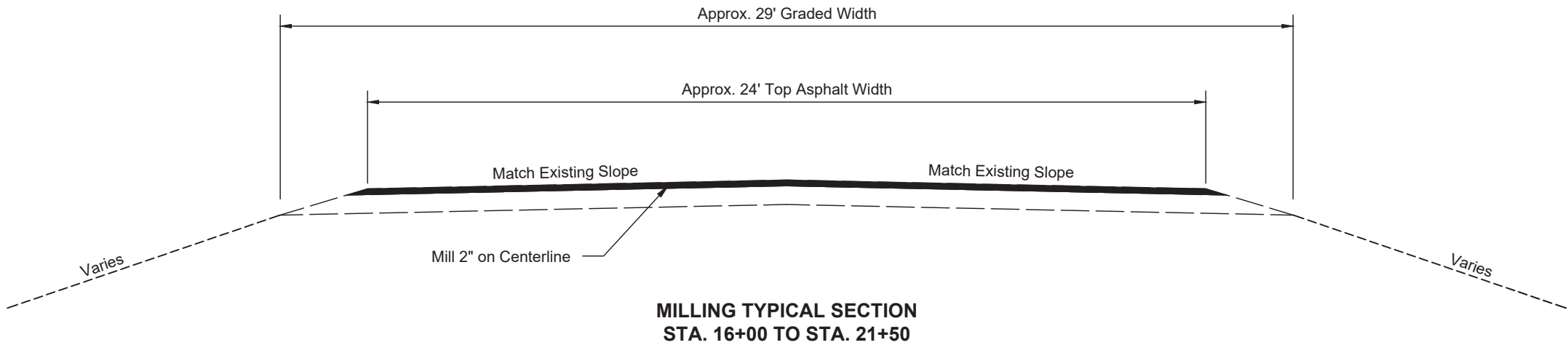
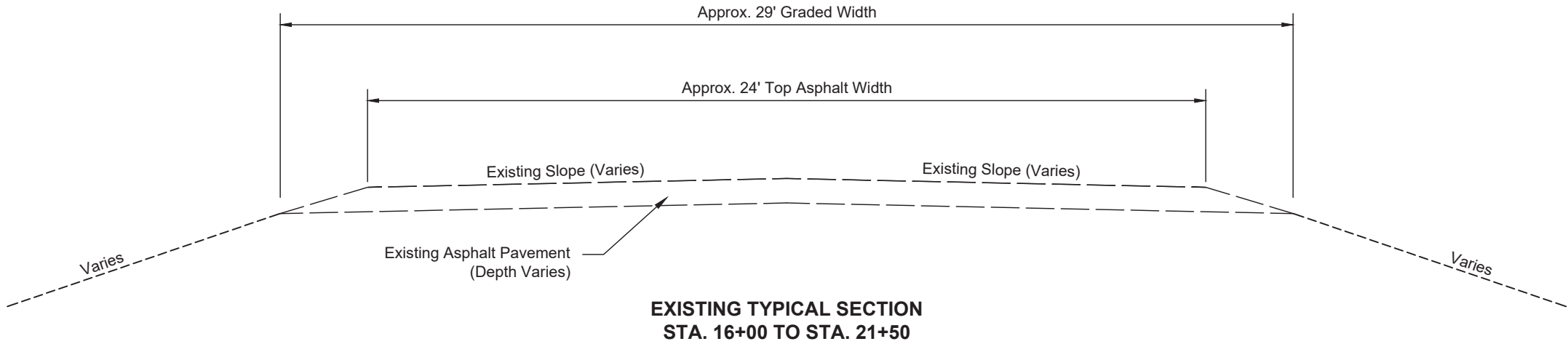
GENERAL DETAILS

DRWN. BY  
ZBN

CHKD BY  
BJT

PROJECT NO.  
2302-01469

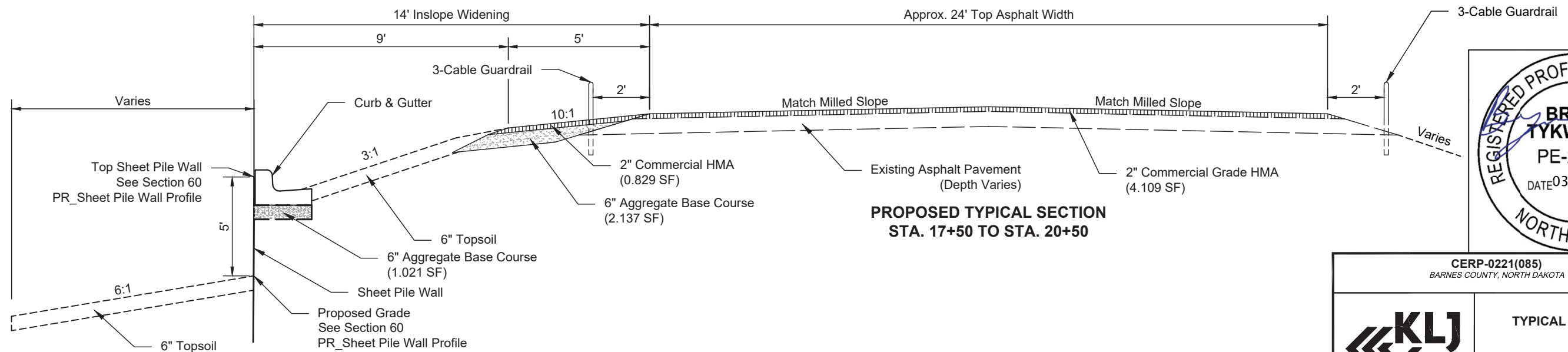
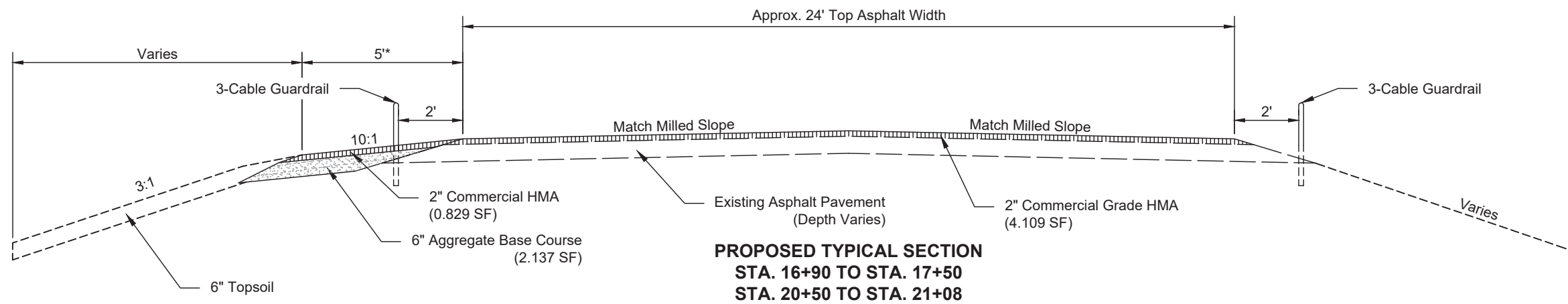
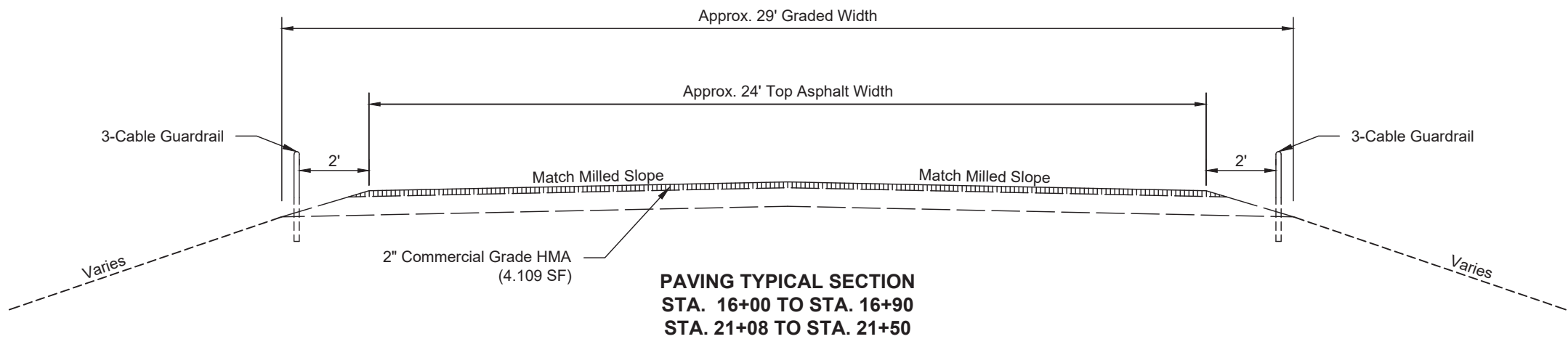
|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 30          | 1         |



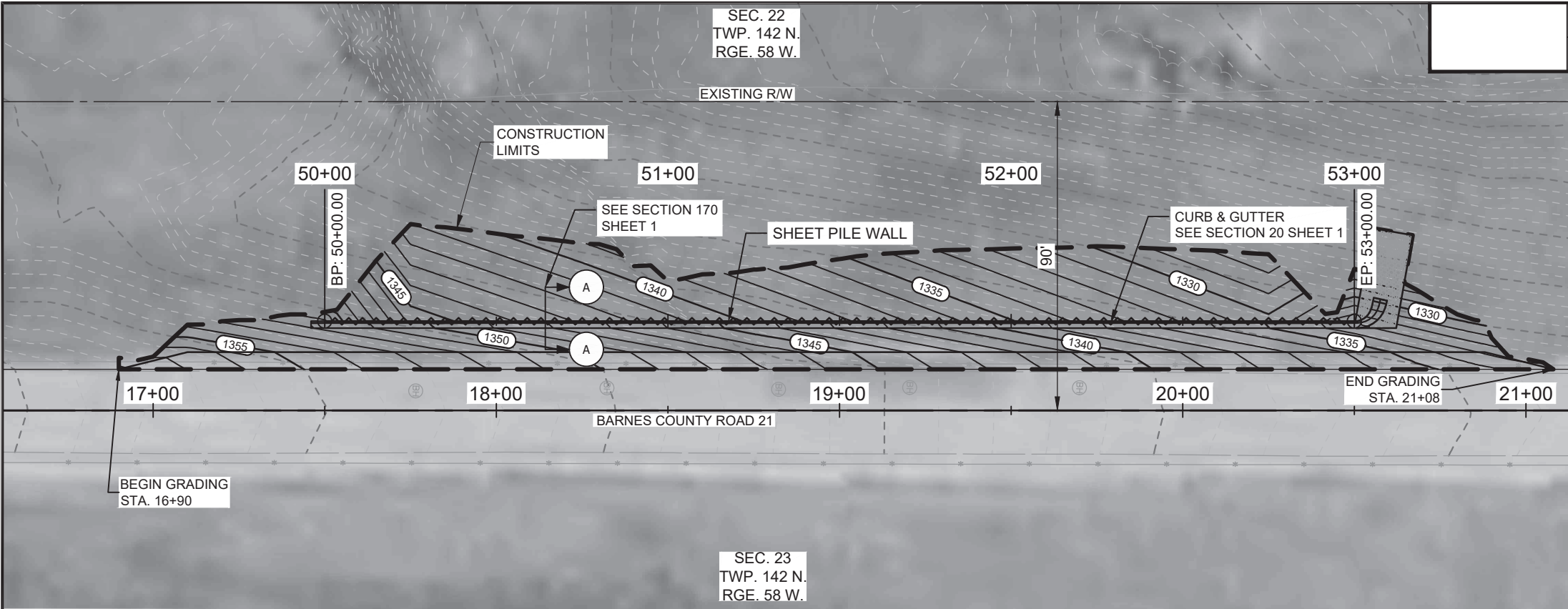
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|-----------------------------------------------|----------------|---------------------------|
| CERP-0221(085)<br>BARNES COUNTY, NORTH DAKOTA |                |                           |
|                                               |                | TYPICAL SECTIONS          |
| DRWN. BY<br>ZBN                               | CHKD BY<br>BJT | PROJECT NO.<br>2302-01469 |

\*Transition width 0' to 5' from Sta. 16+90 to Sta. 17+10 and  
5' to 0' from Sta. 20+88 to Sta. 21+08.

| STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|-------|----------------|-------------|-----------|
| ND    | CERP-0221(085) | 30          | 2         |

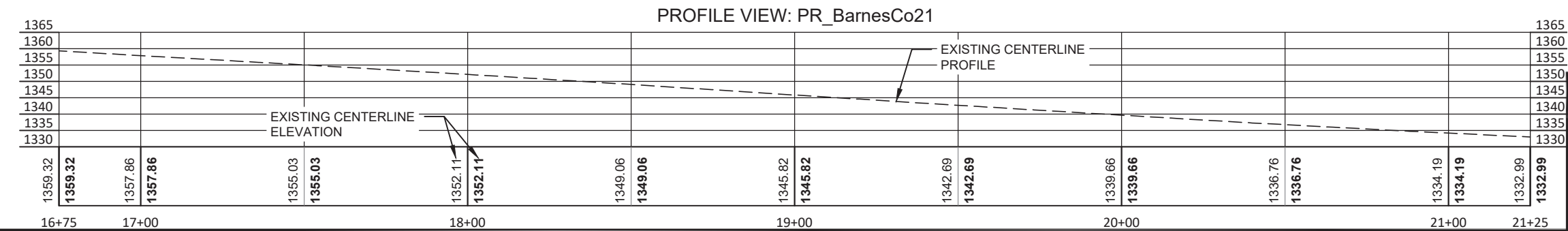
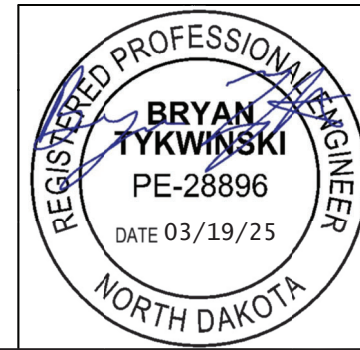
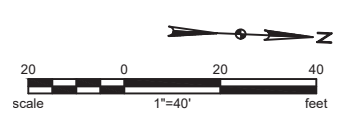
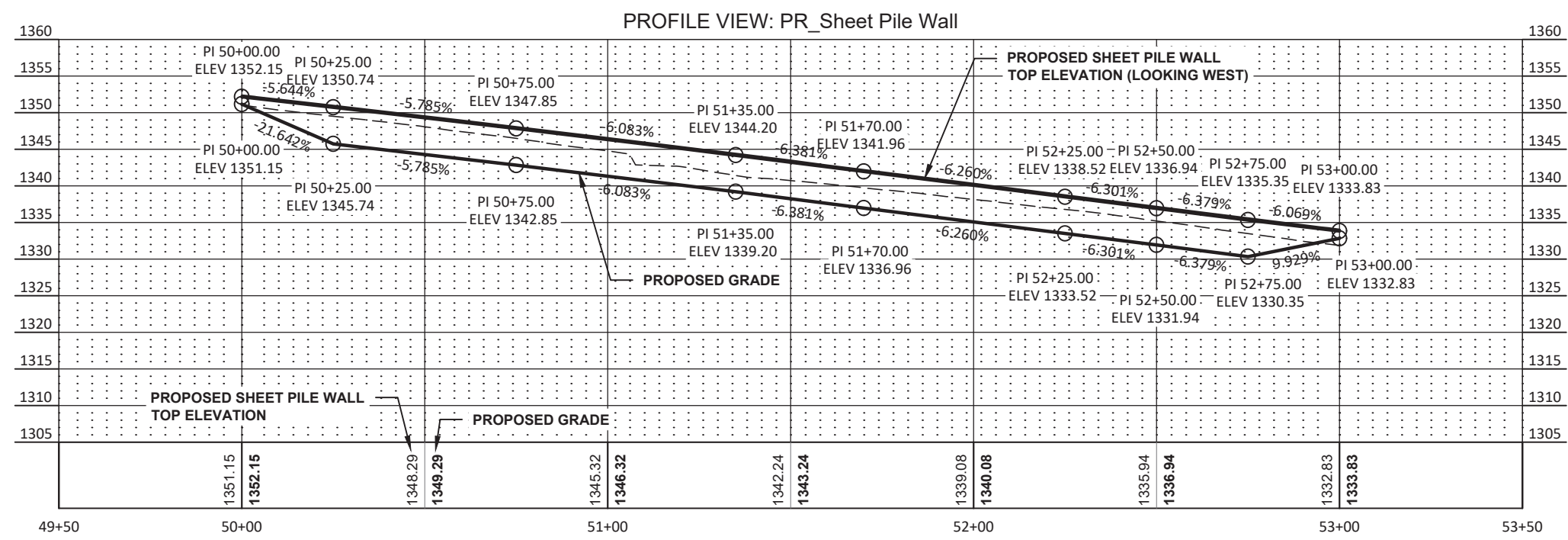


| CERP-0221(085)<br>BARNES COUNTY, NORTH DAKOTA |                |                           |
|-----------------------------------------------|----------------|---------------------------|
| <b>KLJ</b>                                    |                |                           |
| TYPICAL SECTIONS                              |                |                           |
| DRWN. BY<br>ZBN                               | CHKD BY<br>BJT | PROJECT NO.<br>2302-01469 |



| STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|-------|----------------|-------------|-----------|
| ND    | CERP-0221(085) | 60          | 1         |

| SPEC | CODE | BID ITEM                                               | QTY | UNIT |
|------|------|--------------------------------------------------------|-----|------|
| 302  | 0120 | AGGREGATE BASE COURSE CL 5<br>STA 17+46 TO STA 20+56   | 45  | TON  |
| 748  | 0141 | CURB & GUTTER-TYPE 1 SPECIAL<br>STA 17+46 TO STA 20+56 | 316 | LF   |



CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA

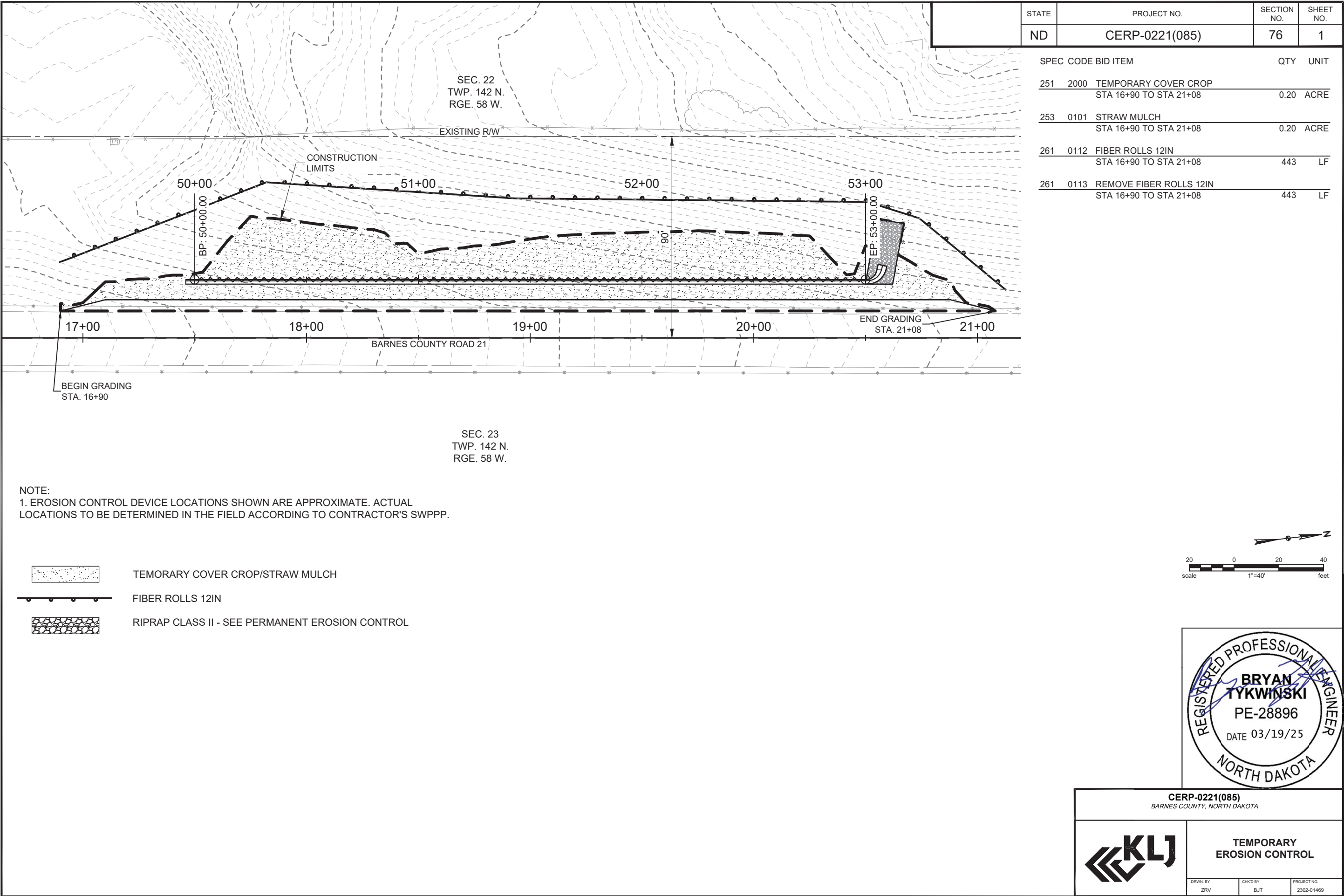


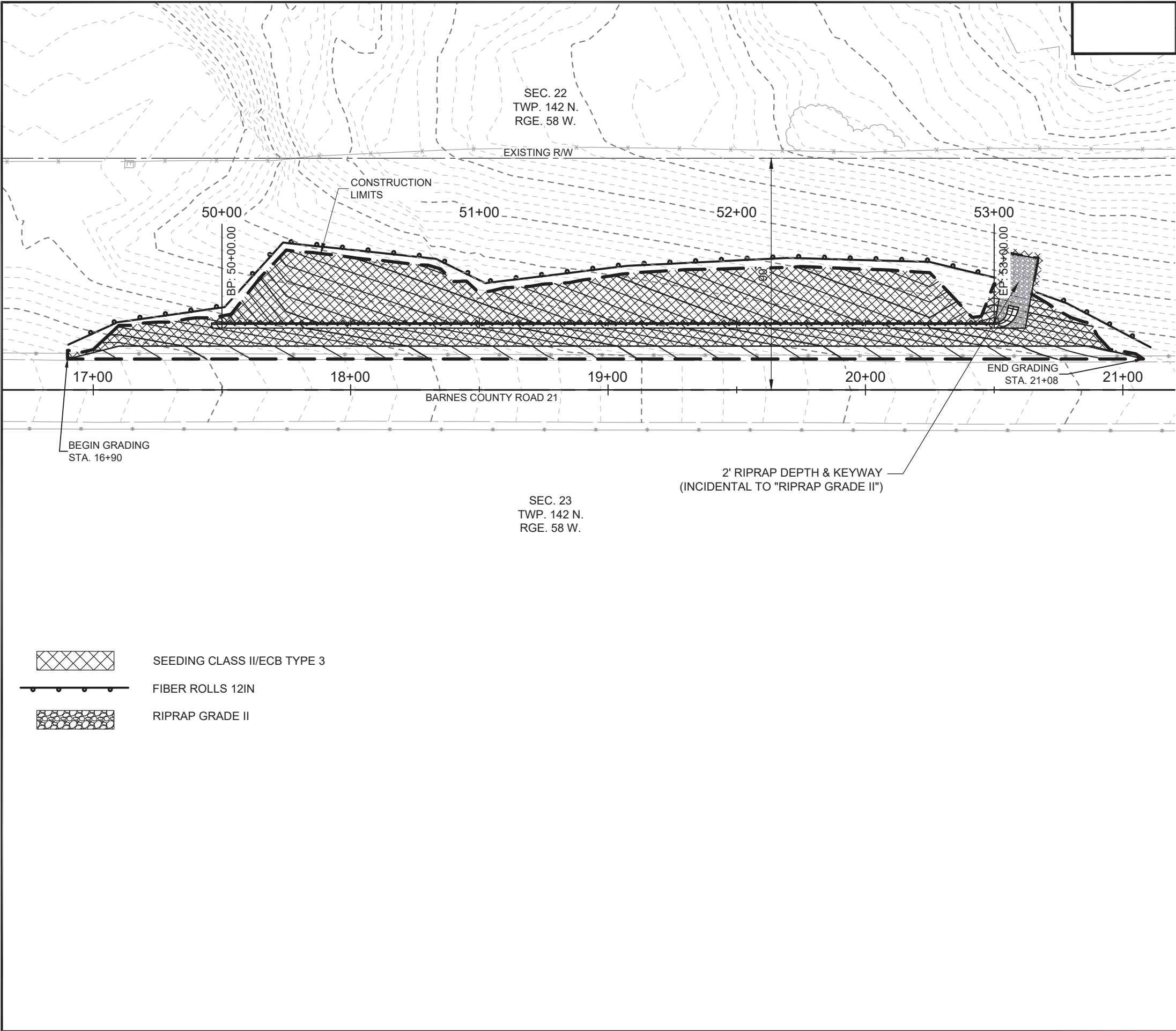
PLAN & PROFILE  
STA. 17+00 TO 20+50

DRWN BY  
ZRV

CHKD BY  
BJT

PROJECT NO.  
2302-01469





| STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|-------|----------------|-------------|-----------|
| ND    | CERP-0221(085) | 77          | 1         |

| SPEC | CODE | BID ITEM                                                | QTY  | UNIT |
|------|------|---------------------------------------------------------|------|------|
| 251  | 0200 | SEEDING CLASS II<br>STA 16+90 TO STA 21+08              | 0.20 | ACRE |
| 255  | 0103 | ECB TYPE 3<br>STA 16+90 TO STA 21+08                    | 978  | SY   |
| 256  | 0200 | RIPRAP GRADE II<br>STA 16+90 TO STA 21+08               | 23   | CY   |
| 261  | 0112 | FIBER ROLLS 12IN<br>STA 16+90 TO STA 21+08              | 427  | LF   |
| 709  | 0155 | GEOSYNTHETIC MATERIAL TYPE RR<br>STA 16+90 TO STA 21+08 | 35   | SY   |

SEEDING CLASS II/ECB TYPE 3

FIBER ROLLS 12IN

RIPRAP GRADE II

20 0 20 40  
scale 1"=40' feet

REGISTERED PROFESSIONAL ENGINEER  
BRYAN TYKWINSKI  
PE-28896  
DATE 03/19/25  
NORTH DAKOTA

CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA

PERMENANT  
EROSION CONTROL

DRWN BY: ZRV  
CHKD BY: BJT  
PROJECT NO.: 2302-01469



| STATE     | PROJECT NO.           | SECTION NO. | SHEET NO. |
|-----------|-----------------------|-------------|-----------|
| <b>ND</b> | <b>CERP-0221(085)</b> | <b>100</b>  | <b>1</b>  |

| SIGN<br>NUMBER | SIGN<br>SIZE | DESCRIPTION                                                        | AMOUNT<br>REQUIRED |   | TOTAL<br>AMOUNT<br>REQUIRED | UNITS<br>PER<br>AMOUNT | UNITS<br>SUB<br>TOTAL |
|----------------|--------------|--------------------------------------------------------------------|--------------------|---|-----------------------------|------------------------|-----------------------|
|                |              |                                                                    | BY PHASE NO.       |   |                             |                        |                       |
|                |              |                                                                    | 1                  | 2 |                             |                        |                       |
| E5-1-48        | 48"x48"      | EXIT GORE                                                          |                    |   |                             | 35                     |                       |
| G20-1-60       | 60"x24"      | ROAD WORK NEXT __ MILES                                            |                    | 2 | 2                           | 28                     | 56                    |
| G20-1b-60      | 60"x24"      | NO WORK IN PROGRESS (Sign and installation only)                   |                    |   |                             | 18                     |                       |
| G20-2-48       | 48"x24"      | END ROAD WORK                                                      | 2                  | 2 | 2                           | 26                     | 52                    |
| G20-4-36       | 36"x18"      | PILOT CAR FOLLOW ME (Mounted to back of pilot car)                 |                    | 1 | 1                           | 18                     | 18                    |
| G20-4b-36      | 36"x30"      | WAIT FOR PILOT CAR                                                 |                    |   |                             | 18                     |                       |
| G20-50a-72     | 72"x36"      | ROAD WORK NEXT __ MILES RT & LT ARROWS                             |                    |   |                             | 43                     |                       |
| G20-52a-72     | 72"x24"      | ROAD WORK NEXT __ MILES RT or LT ARROW                             | 1                  | 1 | 1                           | 36                     | 36                    |
| G20-55-96      | 96"x48"      | SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT       | 2                  |   | 2                           | 59                     | 118                   |
| M1-1-36        | 36"x36"      | INTERSTATE ROUTE MARKER (Post and installation only)               |                    |   |                             | 11                     |                       |
| M1-4-24        | 24"x24"      | U.S. ROUTE MARKER (Post and installation only)                     |                    |   |                             | 10                     |                       |
| M1-5-24        | 24"x24"      | STATE ROUTE MARKER (Post and installation only)                    |                    |   |                             | 10                     |                       |
| M3-1-24        | 24"x12"      | NORTH (Mounted on route marker post)                               |                    |   |                             | 7                      |                       |
| M3-2-24        | 24"x12"      | EAST (Mounted on route marker post)                                |                    |   |                             | 7                      |                       |
| M3-3-24        | 24"x12"      | SOUTH (Mounted on route marker post)                               |                    |   |                             | 7                      |                       |
| M3-4-24        | 24"x12"      | WEST (Mounted on route marker post)                                |                    |   |                             | 7                      |                       |
| M4-8-24        | 24"x12"      | DETOUR (Mounted on route marker post)                              |                    |   |                             | 7                      |                       |
| M4-9-30        | 30"x24"      | DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT                        |                    |   |                             | 15                     |                       |
| M4-10-48       | 48"x18"      | DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)         |                    |   |                             | 7                      |                       |
| M5-1-21        | 21"x15"      | ADVANCE TURN ARROW RT or LT(Mounted on route marker post)          |                    |   |                             | 7                      |                       |
| M5-1-30        | 30"x21"      | ADVANCE TURN ARROW RT or LT(Mounted on route marker post)          |                    |   |                             | 9                      |                       |
| M6-1-21        | 21"x15"      | DIRECTIONAL ARROW RT or LT (Mounted on route marker post)          |                    |   |                             | 7                      |                       |
| M6-1-30        | 30"x21"      | DIRECTIONAL ARROW RT or LT (Mounted on route marker post)          |                    |   |                             | 9                      |                       |
| M6-3-21        | 21"x15"      | DIRECTIONAL ARROW UP (Mounted on route marker post)                |                    |   |                             | 7                      |                       |
| R1-1-48        | 48"x48"      | STOP                                                               |                    |   |                             | 32                     |                       |
| R1-2-60        | 60"x60"      | YIELD                                                              |                    |   |                             | 29                     |                       |
| R2-1-36        | 36"x48"      | SPEED LIMIT __ (Portable only)                                     |                    |   |                             | 30                     |                       |
| R2-1-48        | 48"x60"      | SPEED LIMIT __                                                     | 4                  | 4 | 4                           | 39                     | 156                   |
| R2-1aP-24      | 24"x18"      | MINIMUM FEE \$80 (Mounted on Speed Limit post)                     | 2                  | 2 | 2                           | 10                     | 20                    |
| R3-2-48        | 48"x48"      | NO LEFT TURN                                                       |                    |   |                             | 35                     |                       |
| R4-1-48        | 48"x60"      | DO NOT PASS                                                        |                    |   |                             | 39                     |                       |
| R4-7-48        | 48"x60"      | KEEP RIGHT                                                         |                    |   |                             | 39                     |                       |
| R5-1-48        | 48"x48"      | DO NOT ENTER                                                       |                    |   |                             | 35                     |                       |
| R6-1-54        | 54"x18"      | ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)       |                    |   |                             | 14                     |                       |
| R7-1-12        | 12"x18"      | NO PARKING ANY TIME                                                |                    |   |                             | 11                     |                       |
| R10-6-24       | 24"x36"      | STOP HERE ON RED                                                   | 2                  |   | 2                           | 16                     | 32                    |
| R11-2-48       | 48"x30"      | ROAD CLOSED (Mounted on barricade)                                 |                    |   |                             | 12                     |                       |
| R11-2a-48      | 48"x30"      | STREET CLOSED (Mounted on barricade)                               |                    |   |                             | 12                     |                       |
| R11-3a-60      | 60"x30"      | ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)   |                    |   |                             | 15                     |                       |
| R11-3c-60      | 60"x30"      | STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade) |                    |   |                             | 15                     |                       |
| R11-4a-60      | 60"x30"      | STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)               |                    |   |                             | 15                     |                       |
| W1-3-48        | 48"x48"      | REVERSE TURN RIGHT or LEFT                                         |                    |   |                             | 35                     |                       |
| W1-4-48        | 48"x48"      | REVERSE CURVE RIGHT or LEFT                                        | 1                  |   | 1                           | 35                     | 35                    |
| W1-4b-48       | 48"x48"      | TWO LANE REVERSE CURVE RIGHT or LEFT                               |                    |   |                             | 35                     |                       |
| W1-6-48        | 48"x24"      | ONE DIRECTION LARGE ARROW                                          |                    |   |                             | 26                     |                       |
| W3-1-48        | 48"x48"      | STOP AHEAD                                                         |                    |   |                             | 35                     |                       |
| W3-3-48        | 48"x48"      | SIGNAL AHEAD                                                       | 2                  |   | 2                           | 35                     | 70                    |
| W3-4-48        | 48"x48"      | BE PREPARED TO STOP                                                |                    | 2 | 2                           | 35                     | 70                    |
| W3-5-48        | 48"x48"      | SPEED REDUCTION AHEAD                                              | 2                  | 2 | 2                           | 35                     | 70                    |
| W4-2-48        | 48"x48"      | LANE ENDS RIGHT or LEFT                                            |                    |   |                             | 35                     |                       |
| W5-1-48        | 48"x48"      | ROAD NARROWS                                                       |                    |   |                             | 35                     |                       |
| W5-8-48        | 48"x48"      | THRU TRAFFIC RIGHT LANE                                            |                    |   |                             | 35                     |                       |
| W5-9-48        | 48"x48"      | ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW                       |                    |   |                             | 35                     |                       |
| W6-3-48        | 48"x48"      | TWO WAY TRAFFIC                                                    |                    |   |                             | 35                     |                       |
| W8-1-48        | 48"x48"      | BUMP                                                               |                    | 2 | 2                           | 35                     | 70                    |
| W8-3-48        | 48"x48"      | PAVEMENT ENDS                                                      |                    |   |                             | 35                     |                       |
| W8-7-48        | 48"x48"      | LOOSE GRAVEL                                                       |                    |   |                             | 35                     |                       |
| W8-11-48       | 48"x48"      | UNEVEN LANES                                                       |                    |   |                             | 35                     |                       |
| W8-12-48       | 48"x48"      | NO CENTER LINE                                                     |                    |   |                             | 35                     |                       |
| W8-17-48       | 48"x48"      | SHOULDER DROP-OFF SYMBOL                                           |                    |   |                             | 35                     |                       |
| W8-53-48       | 48"x48"      | TRUCKS ENTERING HIGHWAY                                            |                    |   |                             | 35                     |                       |
| W8-54-48       | 48"x48"      | TRUCKS ENTERING AHEAD or __ FT or __ MILE                          |                    |   |                             | 35                     |                       |
| W8-55-48       | 48"x48"      | TRUCKS CROSSING AHEAD or __ FT or __ MILE                          |                    |   |                             | 35                     |                       |
| W8-56-48       | 48"x48"      | TRUCKS EXITING HIGHWAY                                             |                    |   |                             | 35                     |                       |
| W9-3a-48       | 48"x48"      | CENTER LANE CLOSED SYMBOL                                          |                    |   |                             | 35                     |                       |
| W13-1P-30      | 30"x30"      | __ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)        |                    |   |                             | 14                     |                       |
| W14-3-64       | 64"x48"      | NO PASSING ZONE                                                    |                    |   |                             | 28                     |                       |
| W16-2P-30      | 30"x24"      | __ FEET PLAQUE (Mounted on warning sign post)                      |                    |   |                             | 10                     |                       |
| W20-1-48       | 48"x48"      | ROAD WORK AHEAD or __ FT or __ MILE                                | 2                  | 2 | 2                           | 35                     | 70                    |
| W20-2-48       | 48"x48"      | DETOUR AHEAD or __ FT or __ MILE                                   |                    |   |                             | 35                     |                       |
| W20-3-48       | 48"x48"      | ROAD or STREET CLOSED AHEAD or __ FT or __ MILE                    |                    |   |                             | 35                     |                       |
| W20-4-48       | 48"x48"      | ONE LANE ROAD AHEAD or __ FT or __ MILE                            | 2                  |   | 2                           | 35                     | 70                    |
| W20-5-48       | 48"x48"      | RIGHT or CENTER or LEFT LANE CLOSED AHEAD or __ FT or __ MILE      |                    |   |                             | 35                     |                       |
| W20-7-48       | 48"x48"      | FLAGGER                                                            |                    | 2 | 2                           | 35                     | 70                    |
| W20-8-18       | 18"x18"      | STOP - SLOW PADDLE Back to Back                                    |                    | 2 | 2                           | 5                      | 10                    |
| W20-52P-54     | 54"x12"      | NEXT __ MILES (Mounted on warning sign post)                       |                    |   |                             | 12                     |                       |
| W21-1-48       | 48"x48"      | WORKERS                                                            |                    |   |                             | 35                     |                       |
| W21-2-48       | 48"x48"      | FRESH OIL                                                          |                    |   |                             | 35                     |                       |
| W21-3-48       | 48"x48"      | ROAD MACHINERY AHEAD or __ FT or __ MILE                           |                    |   |                             | 35                     |                       |
| W21-5-48       | 48"x48"      | SHOULDER WORK                                                      |                    |   |                             | 35                     |                       |
| W21-5a-48      | 48"x48"      | RIGHT or LEFT SHOULDER CLOSED                                      |                    |   |                             | 35                     |                       |
| W21-5b-48      | 48"x48"      | RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or __ MILE            |                    |   |                             | 35                     |                       |

[illegible]

## SPECIAL SIGNS

[illegible]

## SPEC & CODE

|          |                       |             |      |
|----------|-----------------------|-------------|------|
| 704-1000 | TRAFFIC CONTROL SIGNS | TOTAL UNITS | 1023 |
|----------|-----------------------|-------------|------|

[illegible]

**NOTE:**  
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.  
<http://www.dot.nd.gov/>



## Traffic Control Devices List

1

ROAD WORK AHEAD

W20-1-48  
Post Mounted

2

SPEED LIMIT ENFORCED

MINIMUM FEE \$80  
WHEN WORKERS ARE PRESENT

G20-55-96  
Post Mounted

3

SPEED LIMIT

XX

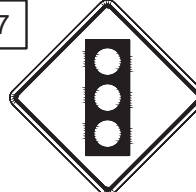
W3-5-48  
Post Mounted

5



W1-4-48  
Post Mounted

7



W3-3-48  
Post Mounted

9

ONE LANE ROAD AHEAD

W20-4-48  
Post Mounted

4

SPEED LIMIT

25

R2-1-48  
Post Mounted

6

MINIMUM FEE \$80

R2-1aP-24  
Post Mounted

8

END ROAD WORK

G20-2-48  
Post Mounted

10

STOP HERE ON RED

R10-6-24  
Post Mounted

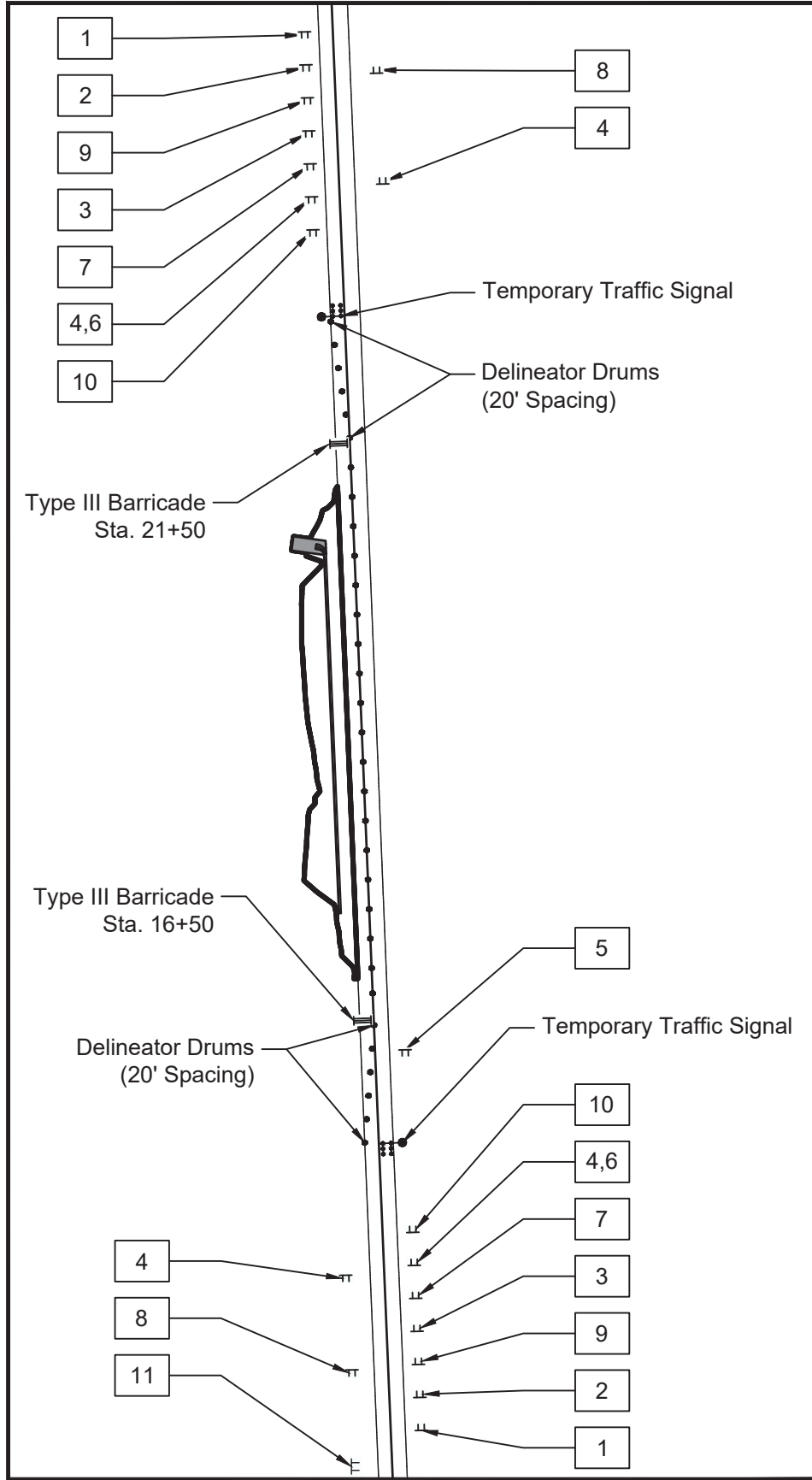
11

ROAD WORK NEXT 00 MILES

G20-52a-72  
Post Mounted

- Note:
- See Standard Drawing D-704-16 for sign spacing and Type R Pavement Marking.
  - Delineator Drums spaced at 25' unless otherwise marked.

The sign layout as shown is for general information purposes only. The contractor will be required to conform to MUTCD and the Standard Drawings when installing the traffic control signing.



|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 100         | 2         |

| SPEC | CODE | BID                                 | ITEM | QTY   | UNIT |
|------|------|-------------------------------------|------|-------|------|
| 762  | 0430 | SHORT TERM 4IN LINE-TYPE NR         |      |       |      |
|      |      | STA 9+75 TO STA 14+75 DBL YELLOW    |      | 1,000 | LF   |
|      |      | STA 15+50 TO STA 22+50 SINGLE WHITE |      | 700   | LF   |
|      |      | STA 23+25 TO STA 28+25 DBL YELLOW   |      | 1,000 | LF   |
| 762  | 0426 | SHORT TERM 24IN LINE-TYPE R         |      |       |      |
|      |      | STA 14+75 WHITE                     |      | 12    | LF   |
|      |      | STA 23+25 WHITE                     |      | 12    | LF   |



REGISTERED PROFESSIONAL ENGINEER

BRYAN TYKWINSKI

PE-28896

DATE 03/19/25

NORTH DAKOTA



CERP-0221(085)

BARNES COUNTY, NORTH DAKOTA

TRAFFIC CONTROL SIGNING LAYOUT

PHASE 1

DRWN. BY

ZRV

CHKD BY

BJT

PROJECT NO.

2302-01469

|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 100         | 3         |



W20-1-48  
Post Mounted



G20-2-48  
Post Mounted



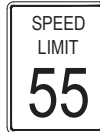
W3-5-48  
Post Mounted



R2-1-48  
R2-1aP-24  
Post Mounted



G20-52a-72  
Post Mounted



R2-1-48  
Post Mounted



R2-1-48  
Post Mounted



R2-1-48  
R2-1aP-24  
Post Mounted



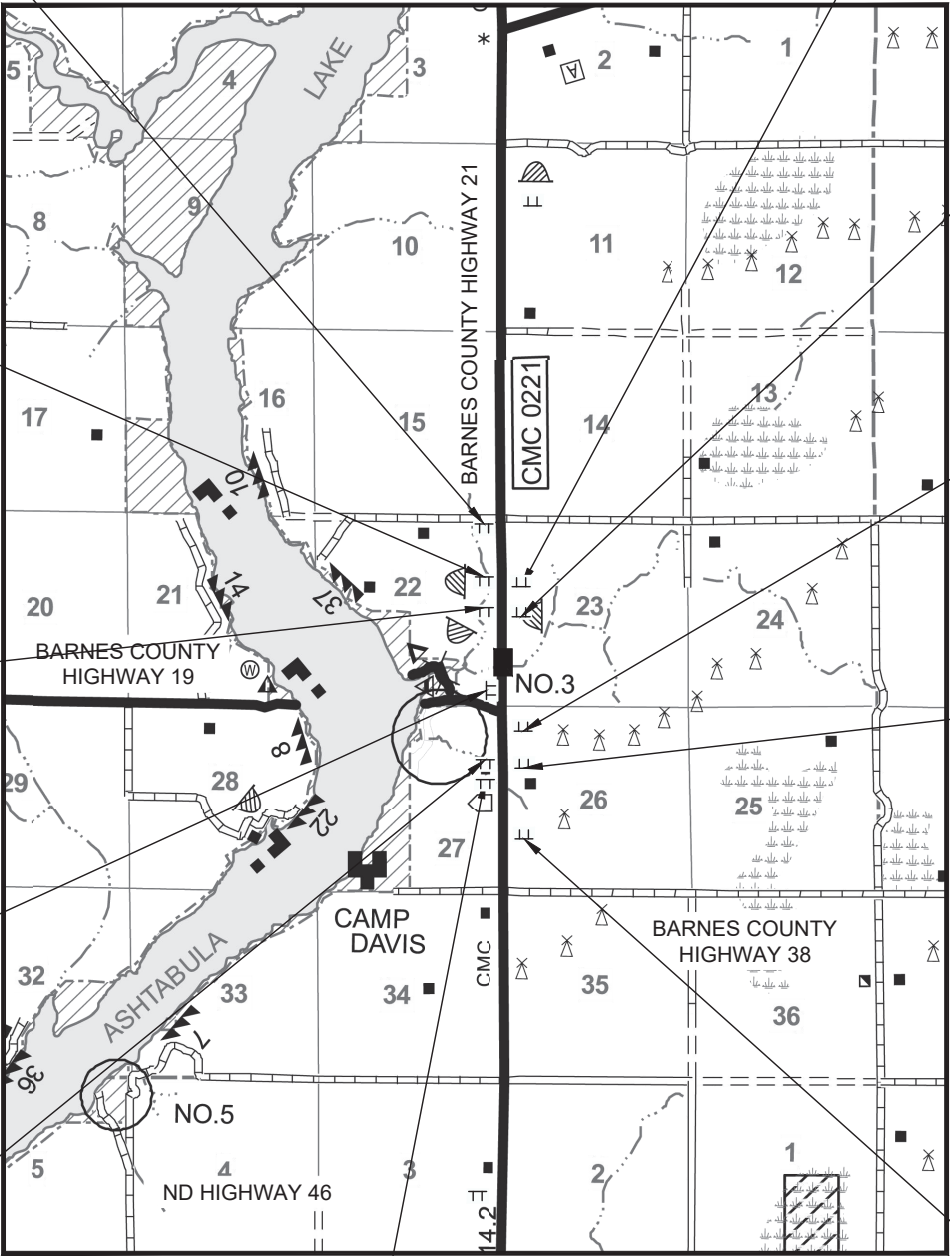
W3-5-48  
Post Mounted



W20-1-48  
Post Mounted



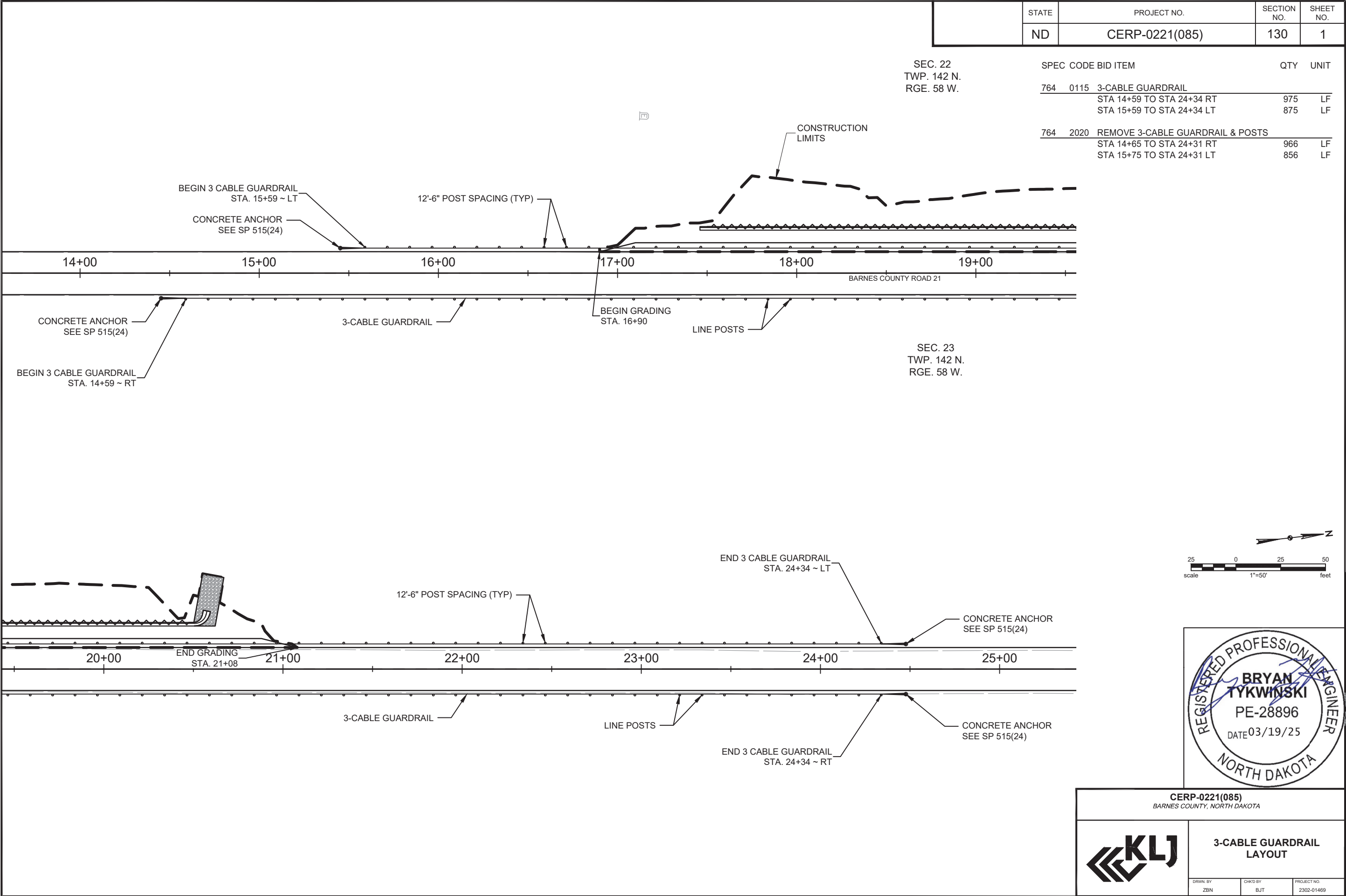
G20-2-48  
Post Mounted



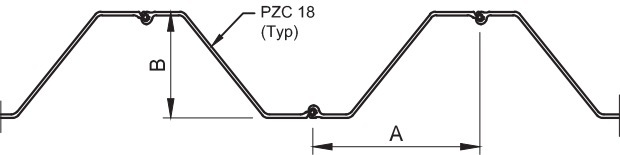
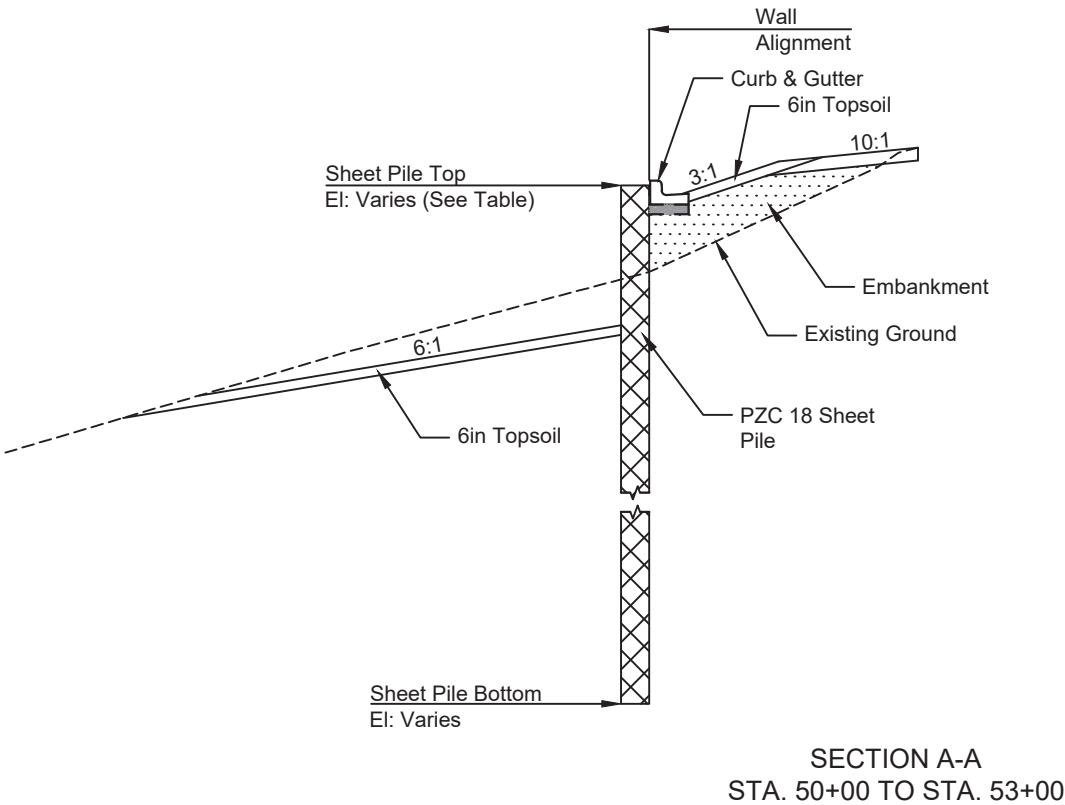
TRAFFIC CONTROL  
SIGNING LAYOUT  
PHASE 2 & 3

|                 |                |                           |
|-----------------|----------------|---------------------------|
| DRWN. BY<br>ZRV | CHKD BY<br>BJT | PROJECT NO.<br>2302-01469 |
|-----------------|----------------|---------------------------|

The sign layout as shown is for general information purposes only. The contractor will be required to conform to MUTCD and the Standard Drawings when installing the traffic control signing.



|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 170         | 1         |



| A             | B                   |               |                  |                       |          |                       |                       |       |
|---------------|---------------------|---------------|------------------|-----------------------|----------|-----------------------|-----------------------|-------|
| Nominal Width | Wall Depth (Height) | Web Thickness | Flange Thickness | Area                  | Weight   | Moment of Inertia     | Section Modulus       | Grade |
| (in)          | (in)                | (in)          | (in)             | (in <sup>2</sup> /ft) | (lbs/ft) | (in <sup>4</sup> /ft) | (in <sup>3</sup> /ft) | (Ksi) |
| 25.00         | 15.25               | 0.375         | 0.375            | 14.82                 | 50.4     | 532.2                 | 69.8                  | 50    |

| Station  | Northing  | Easting    | PVI Elevation |
|----------|-----------|------------|---------------|
| 50+00.00 | 531653.17 | 2590685.69 | 1352.15       |
| 50+25.00 | 531678.15 | 2590684.66 | 1350.74       |
| 50+75.00 | 531728.11 | 2590682.59 | 1347.85       |
| 51+35.00 | 531788.06 | 2590680.10 | 1344.20       |
| 51+70.00 | 531823.03 | 2590678.65 | 1341.96       |
| 52+25.00 | 531877.98 | 2590676.37 | 1338.52       |
| 52+50.00 | 531902.96 | 2590675.34 | 1336.94       |
| 52+75.00 | 531927.94 | 2590674.30 | 1335.35       |
| 53+00.00 | 531952.92 | 2590673.27 | 1333.83       |

- NOTES:
1. Install a sheet pile wall using a PZC-18 sheet pile section or equivalent along the wall alignment and grades shown in the Wall Plan & Profile. Cut the top of sheet pile to match the profile grade of the wall. When grading in temporary access take care not to damage roadway embankment. Do not store materials or equipment on the roadway.
  2. Site access for construction of the wall is responsibility of the Contractor. Any additional site preparation and/or temporary shoring will be considered incidental to the item being installed.
  3. A minimum length, per sheet, of 37 feet must be installed by driving or vibrating method.
  4. Refer to Braun Intertec Geotechnical Evaluation Report Dated October 28, 2024 for additional information.



| QUANTITIES   |           | CERP-0221(085)<br>BARNES COUNTY, NORTH DAKOTA                                         |                           |                 |                           |
|--------------|-----------|---------------------------------------------------------------------------------------|---------------------------|-----------------|---------------------------|
| Sheet Piling | 11,100 SF |  | RETAINING WALL<br>DETAILS |                 |                           |
|              |           |                                                                                       |                           |                 |                           |
|              |           |                                                                                       |                           |                 |                           |
|              |           |                                                                                       |                           |                 |                           |
|              |           |                                                                                       | DRWN. BY<br>ZRV           | CHK'D BY<br>BJT | PROJECT NO.<br>2302-01469 |



LOG OF BORING

| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                                                       |        | BORING: B-01<br>LOCATION: Captured with RTK GPS. STA 19+69.44<br>DATUM: WGS 84<br>LATITUDE: 47.097955 LONGITUDE: -98.001375 |                       |      |                                    |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------|------|------------------------------------|
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                                                   |        | START DATE: 03/08/24                                                                                                        | END DATE: 03/08/24    |      |                                    |
| SURFACE ELEVATION: 1341.3 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                                                    |        | SURFACING: Bituminous                                                                                                       | WEATHER: Clear        |      |                                    |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials<br>(Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)                                      | Sample | Blows<br>(N-Value)<br>Recovery                                                                                              | q <sub>p</sub><br>tsf | MC % | Tests or Remarks                   |
|                                                                                                                                  |             | FAT CLAY (CH), brown, moist, very stiff, iron oxide staining (GLACIAL TILL)<br><br>With Sand seams from 34 to 36 feet | 35     | 4-7-10<br>(17)<br>16"                                                                                                       |                       | 25   | LL=63, PL=21, PI=42                |
|                                                                                                                                  |             |                                                                                                                       | 40     | 10-12-12<br>(24)<br>14"                                                                                                     |                       | 30   |                                    |
| 1298.3<br>43.0                                                                                                                   |             | PIERRE FORMATION, SHALE, gray, decomposed, very soft, hand deformed sample classified as "Fat Clay (CH)"              | 45     | 7-8-12<br>(20)<br>16"                                                                                                       |                       | 28   | LL=74, PL=24, PI=50                |
| 1290.3<br>51.0                                                                                                                   |             | END OF BORING<br><br>Boring then backfilled with auger cuttings                                                       | 50     | 10-11-12<br>(23)<br>18"                                                                                                     |                       | 28   | Water not observed while drilling. |



LOG OF BORING

| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                                                     |        | BORING: B-01<br>LOCATION: Captured with RTK GPS. STA 19+69.44<br>DATUM: WGS 84<br>LATITUDE: 47.097955 LONGITUDE: -98.001375 |                       |      |                                                            |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------|------|------------------------------------------------------------|
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                                                 |        | START DATE: 03/08/24                                                                                                        | END DATE: 03/08/24    |      |                                                            |
| SURFACE ELEVATION: 1341.3 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                                                  |        | SURFACING: Bituminous                                                                                                       | WEATHER: Clear        |      |                                                            |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials<br>(Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)                                    | Sample | Blows<br>(N-Value)<br>Recovery                                                                                              | q <sub>p</sub><br>tsf | MC % | Tests or Remarks                                           |
| 1340.1<br>1.2                                                                                                                    |             | FILL: LEAN CLAY with SAND (CL), trace Gravel, brown, moist<br>FILL: SILT with SAND (ML), trace Gravel, brown, moist |        | AU<br>8-7-7<br>(14)<br>16"                                                                                                  |                       |      |                                                            |
|                                                                                                                                  |             |                                                                                                                     | 5      | 7-7-10<br>(17)<br>16"                                                                                                       |                       | 20   |                                                            |
|                                                                                                                                  |             |                                                                                                                     |        | 6-8-8<br>(16)<br>18"                                                                                                        |                       |      |                                                            |
|                                                                                                                                  |             |                                                                                                                     | 10     | TW                                                                                                                          |                       | 22   | LL=32, PL=25, PI=7<br>P200=76%<br>DD=103 pcf<br>WD=125 pcf |
|                                                                                                                                  |             |                                                                                                                     |        | 4-6-9<br>(15)<br>18"                                                                                                        |                       | 20   |                                                            |
| 1327.3<br>14.0                                                                                                                   |             | FILL: LEAN CLAY with SAND (CL), trace Gravel, brownish gray, moist<br>With iron oxide staining from 14 to 16 feet   | 15     | 5-5-7<br>(12)<br>16"                                                                                                        |                       |      |                                                            |
| 1323.3<br>18.0                                                                                                                   |             | FILL: SILT with SAND (ML), brown, moist                                                                             | 20     | TW                                                                                                                          |                       | 24   | P200=88%<br>DD=82 pcf<br>WD=101 pcf                        |
| 1318.3<br>23.0                                                                                                                   |             | FILL: CLAYEY SAND with GRAVEL (SC), brown, moist<br>With iron oxide staining from 24 to 26 feet                     | 25     | 3-3-3<br>(6)<br>10"                                                                                                         |                       |      |                                                            |
| 1312.3<br>29.0                                                                                                                   |             | LEAN CLAY (CL), with roots, trace Sand, dark brown, moist (BURIED TOPSOIL)                                          | 30     | TW                                                                                                                          |                       | 20   | LL=40, PL=17, PI=23<br>OC=4%                               |
| 1309.3<br>32.0                                                                                                                   |             | Continued on next page                                                                                              |        |                                                                                                                             |                       |      |                                                            |

CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA



B-01 BORING LOG



LOG OF BORING

|                                                                                                                                  |             |                                                                                                                                          |        |                                                                                                                             |                    |      |                     |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|------|---------------------|
| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                                                                          |        | BORING: B-02<br>LOCATION: Captured with RTK GPS. STA 19+20.47<br>DATUM: WGS 84<br>LATITUDE: 47.097819 LONGITUDE: -98.001373 |                    |      |                     |
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                                                                      |        | START DATE: 03/08/24                                                                                                        | END DATE: 03/08/24 |      |                     |
| SURFACE ELEVATION: 1344.5 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                                                                       |        | SURFACING: Bituminous roadway                                                                                               | WEATHER: Clear     |      |                     |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)                                                            | Sample | Blows (N-Value) Recovery                                                                                                    | q <sub>p</sub> tsf | MC % | Tests or Remarks    |
| 1344.0                                                                                                                           |             | BITUMINOUS, 6 inches                                                                                                                     |        | AU                                                                                                                          |                    |      |                     |
| 0.5                                                                                                                              |             | FILL: CLAYEY SAND (SC), trace Gravel, brown, moist                                                                                       |        | 8-6-7 (13) 18"                                                                                                              |                    | 24   |                     |
| 1343.6                                                                                                                           |             | FILL: SILT with SAND (ML), brown, moist                                                                                                  |        | 4-7-9 (16) 16"                                                                                                              |                    |      |                     |
| 0.9                                                                                                                              |             |                                                                                                                                          | 5      | 6-6-7 (13) 16"                                                                                                              |                    | 24   |                     |
|                                                                                                                                  |             |                                                                                                                                          | 10     | 5-7-7 (14) 16"                                                                                                              |                    |      |                     |
|                                                                                                                                  |             |                                                                                                                                          |        | 6-6-10 (16) 18"                                                                                                             |                    | 21   |                     |
|                                                                                                                                  |             | Possible roots from 14 to 16 feet                                                                                                        | 15     | 5-6-7 (13) 16"                                                                                                              |                    | 18   | P200=68%            |
| 1326.5                                                                                                                           |             |                                                                                                                                          | 20     | 3-2-3 (5) 14"                                                                                                               |                    | 19   | P200=49%            |
| 18.0                                                                                                                             |             | FILL: CLAYEY SAND (SC), trace Gravel, brown, moist                                                                                       |        | 4-4-6 (10) 8"                                                                                                               |                    | 18   | OC=2%               |
| 1319.5                                                                                                                           |             | LEAN CLAY (CL), few roots, dark brown, moist (BURIED TOPSOIL)                                                                            | 25     | 4-4-6 (10) 10"                                                                                                              |                    | 29   | LL=61, PL=19, PI=42 |
| 25.0                                                                                                                             |             | FAT CLAY with SAND (CH), trace Gravel, brown, moist, stiff (GLACIAL TILL) With iron oxide staining and mineralization from 29 to 31 feet | 30     |                                                                                                                             |                    |      |                     |
| 1316.5                                                                                                                           |             |                                                                                                                                          |        |                                                                                                                             |                    |      |                     |
| 28.0                                                                                                                             |             |                                                                                                                                          |        |                                                                                                                             |                    |      |                     |
| 1312.5                                                                                                                           |             |                                                                                                                                          |        |                                                                                                                             |                    |      |                     |
| 32.0                                                                                                                             |             |                                                                                                                                          |        |                                                                                                                             |                    |      |                     |



LOG OF BORING

|                                                                                                                                  |             |                                                                                                                     |        |                                                                                                                             |                    |      |                                    |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|------|------------------------------------|
| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                                                     |        | BORING: B-02<br>LOCATION: Captured with RTK GPS. STA 19+20.47<br>DATUM: WGS 84<br>LATITUDE: 47.097819 LONGITUDE: -98.001373 |                    |      |                                    |
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                                                 |        | START DATE: 03/08/24                                                                                                        | END DATE: 03/08/24 |      |                                    |
| SURFACE ELEVATION: 1344.5 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                                                  |        | SURFACING: Bituminous roadway                                                                                               | WEATHER: Clear     |      |                                    |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)                                       | Sample | Blows (N-Value) Recovery                                                                                                    | q <sub>p</sub> tsf | MC % | Tests or Remarks                   |
|                                                                                                                                  |             | FAT CLAY (CH), trace Gravel, brown to gray, moist, stiff (GLACIAL TILL) With iron oxide staining from 34 to 36 feet | 35     | 5-5-6 (11) 18"                                                                                                              |                    | 33   |                                    |
| 1306.5                                                                                                                           |             |                                                                                                                     |        | 5-9-11 (20) 18"                                                                                                             |                    | 26   | LL=70, PL=22, PI=48                |
| 38.0                                                                                                                             |             | PIERRE FORMATION, SHALE, gray, moist, decomposed, very soft, hand deformed sample classified as "Fat Clay (CH)"     | 40     | 8-10-13 (23) 18"                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                     | 45     |                                                                                                                             |                    |      |                                    |
| 1298.5                                                                                                                           |             | END OF BORING                                                                                                       |        |                                                                                                                             |                    |      |                                    |
| 46.0                                                                                                                             |             | Boring then backfilled with auger cuttings                                                                          |        |                                                                                                                             |                    |      | Water not observed while drilling. |
|                                                                                                                                  |             |                                                                                                                     | 50     |                                                                                                                             |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                     | 55     |                                                                                                                             |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                     | 60     |                                                                                                                             |                    |      |                                    |

CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA



B-02 BORING LOG

|                |                |                           |
|----------------|----------------|---------------------------|
| DRWN BY<br>ZRV | CHKD BY<br>BJT | PROJECT NO.<br>2302-01469 |
|----------------|----------------|---------------------------|

|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 175         | 3         |



## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

| Project Number B2400867       |             |                                                                                             |        |                          | B-03                                          |      |                     |
|-------------------------------|-------------|---------------------------------------------------------------------------------------------|--------|--------------------------|-----------------------------------------------|------|---------------------|
| Geotechnical Evaluation       |             |                                                                                             |        |                          | LOCATION: Captured with RTK GPS. STA 18+82.26 |      |                     |
| CERP-0221(085) PCN 24082      |             |                                                                                             |        |                          | DATUM: WGS 84                                 |      |                     |
| County Highway 21             |             |                                                                                             |        |                          | LATITUDE: 47.097715 LONGITUDE: -98.001369     |      |                     |
| Valley City, North Dakota     |             |                                                                                             |        |                          | WEATHER: Clear                                |      |                     |
| DRILLER: C.Gorman             |             | LOGGED BY: K.Dragos                                                                         |        | START DATE: 03/07/24     |                                               |      |                     |
| SURFACE ELEVATION: 1346.8 ft  |             | RIG: 7508                                                                                   |        | METHODOLOGY: 3 1/4" HSA  |                                               |      |                     |
| SURFACING: Bituminous roadway |             | WEATHER: Clear                                                                              |        |                          |                                               |      |                     |
| Elev./ Depth ft               | Water Level | Description of Materials<br>(Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)            | Sample | Blows (N-Value) Recovery | q <sub>s</sub> tsf                            | MC % | Tests or Remarks    |
| 1346.2                        |             | BITUMINOUS, 6 inches                                                                        |        | AU                       |                                               |      |                     |
| 0.6                           |             | APPARENT AGGREGATE BASE, 6 inches                                                           |        |                          |                                               |      |                     |
| 1345.6                        |             | FILL: CLAYEY SAND (SC), browr, moist                                                        |        | 10-7-8 (15) 12"          |                                               | 22   |                     |
| 1.2                           |             | FILL: SILT with SAND (ML), brown, moist                                                     |        | 5-7-9 (16) 14"           |                                               |      |                     |
| 1344.8                        |             |                                                                                             |        | 6-8-11 (19) 18"          |                                               | 23   |                     |
| 2.0                           |             |                                                                                             |        | 6-8-10 (18) 16"          |                                               |      |                     |
|                               |             | Brown and gray from 12 to 15 feet                                                           |        | 6-6-9 (15) 16"           |                                               | 24   |                     |
|                               |             |                                                                                             |        | 6-6-6 (12) 14"           |                                               | 23   |                     |
| 1331.8                        |             | LEAN CLAY with SAND (CL), trace roots, brown and gray, moist, stiff (GLACIAL TILL)          |        |                          |                                               |      |                     |
| 15.0                          |             |                                                                                             |        |                          |                                               |      |                     |
| 1328.8                        |             | SANDY FAT CLAY (CH), trace Gravel, brown, moist, hard (GLACIAL TILL)                        |        | 5-50/5" (REF) 11"        |                                               | 22   | LL=76, PL=23, PI=53 |
| 18.0                          |             |                                                                                             |        |                          |                                               |      |                     |
|                               |             | POORLY GRADED SAND with SILT (SP-SM), brown, moist, medium dense to loose (GLACIAL OUTWASH) |        | 6-6-7 (13) 14"           |                                               |      |                     |
| 1322.8                        |             |                                                                                             |        | 2-2-3 (5) 10"            |                                               |      |                     |
| 24.0                          |             |                                                                                             |        |                          |                                               |      |                     |
|                               |             | With iron oxide staining from 29 to 31 feet                                                 |        |                          |                                               |      |                     |
|                               |             |                                                                                             |        |                          |                                               |      |                     |
|                               |             | Continued on next page                                                                      |        |                          |                                               |      |                     |

B2400867 Braun Intertec Corporation Print Date:10/28/2024 B-03 page 1 of 2



## LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

| <b>Project Number B2400867</b><br><b>Geotechnical Evaluation</b><br><b>CERP-0221(085) PCN 24082</b><br><b>County Highway 21</b><br><b>Valley City, North Dakota</b> |             |                                                                                             |               |                               | BORING: <b>B-03</b>                           |                       |                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------|---------------|-------------------------------|-----------------------------------------------|-----------------------|------------------------------------|
|                                                                                                                                                                     |             |                                                                                             |               |                               | LOCATION: Captured with RTK GPS. STA 18+82.26 |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             |               |                               | DATUM: WGS 84                                 |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             |               |                               | LATITUDE: 47.097715                           | LONGITUDE: -98.001369 |                                    |
| DRILLER: C.Gorman                                                                                                                                                   |             | LOGGED BY: K.Dragos                                                                         |               | START DATE: 03/07/24          | END DATE: 03/07/24                            |                       |                                    |
| SURFACE ELEVATION: 1346.8 ft                                                                                                                                        | RIG: 7508   | METHOD: 3 1/4" HSA                                                                          |               | SURFACING: Bituminous roadway | WEATHER: Clear                                |                       |                                    |
| Elev./ Depth ft                                                                                                                                                     | Water Level | Description of Materials<br>(Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)            | Sample        | Blows (N-Value) Recovery      | q <sub>p</sub> tsf                            | MC %                  | Tests or Remarks                   |
| 1300.8<br>46.0                                                                                                                                                      |             | POORLY GRADED SAND with SILT (SP-SM), brown, moist, medium dense to loose (GLACIAL OUTWASH) | 35            | 6-8-13<br>(21)<br>16"         |                                               |                       | Water not observed while drilling. |
|                                                                                                                                                                     |             |                                                                                             | 40            | 6-9-14<br>(23)<br>18"         |                                               |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             | 45            | 7-10-14<br>(24)<br>18"        |                                               |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             | END OF BORING |                               |                                               |                       |                                    |
|                                                                                                                                                                     |             | Boring then backfilled with auger cuttings                                                  |               |                               |                                               |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             | 50            |                               |                                               |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             | 55            |                               |                                               |                       |                                    |
|                                                                                                                                                                     |             |                                                                                             | 60            |                               |                                               |                       |                                    |

B2400867 Braun Intertec Corporation Print Date:10/28/2024 B-03 page 2 of 2

|                                                                                       |                               |                               |
|---------------------------------------------------------------------------------------|-------------------------------|-------------------------------|
| <b>CERP-0221(085)</b><br><i>BARNES COUNTY, NORTH DAKOTA</i>                           |                               |                               |
|  | <b>B-03 BORING LOG</b>        |                               |
|                                                                                       | <small>DRWN BY</small><br>ZRV | <small>CHKD BY</small><br>BJT |



LOG OF BORING

| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                      |        | BORING: B-04<br>LOCATION: Captured with RTK GPS. STA 18+32.2<br>DATUM: WGS 84<br>LATITUDE: 47.097577 LONGITUDE: -98.001369 |                    |      |                  |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------|--------------------|------|------------------|
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                  |        | START DATE: 03/08/24                                                                                                       | END DATE: 03/08/24 |      |                  |
| SURFACE ELEVATION: 1350.0 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                   |        | SURFACING: Bituminous                                                                                                      | WEATHER: Clear     |      |                  |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)        | Sample | Blows (N-Value) Recovery                                                                                                   | q <sub>p</sub> tsf | MC % | Tests or Remarks |
| 1349.4<br>0.6                                                                                                                    |             | BITUMINOUS                                                                           |        | AU                                                                                                                         |                    |      |                  |
| 1348.8<br>1.2                                                                                                                    |             | FILL: CLAYEY SAND (SC), dark brown, moist<br>FILL: SILT with SAND (ML), brown, moist |        | 10-7-9<br>(16)<br>14"                                                                                                      |                    | 21   |                  |
|                                                                                                                                  |             |                                                                                      | 5      | 7-7-7<br>(14)<br>16"                                                                                                       |                    |      |                  |
|                                                                                                                                  |             |                                                                                      |        | 5-5-9<br>(14)<br>10"                                                                                                       |                    | 22   |                  |
|                                                                                                                                  |             |                                                                                      | 10     | 4-3-4<br>(7)<br>10"                                                                                                        |                    |      |                  |
|                                                                                                                                  |             |                                                                                      |        | 2-2-5<br>(7)<br>10"                                                                                                        |                    | 22   |                  |
|                                                                                                                                  |             |                                                                                      | 15     | 3-3-4<br>(7)<br>8"                                                                                                         |                    |      |                  |
| 1332.0<br>18.0                                                                                                                   |             | FAT CLAY (CH), brown to gray, moist, stiff to hard (GLACIAL TILL)                    |        | 3-4-6<br>(10)<br>14"                                                                                                       |                    | 40   |                  |
|                                                                                                                                  |             |                                                                                      | 25     | 50/2"<br>(REF)<br>0"                                                                                                       |                    |      |                  |
| 1318.0<br>32.0                                                                                                                   |             |                                                                                      | 30     | 15-13-10<br>(23)<br>3"                                                                                                     |                    | 27   |                  |



LOG OF BORING

| Project Number B2400867<br>Geotechnical Evaluation<br>CERP-0221(085) PCN 24082<br>County Highway 21<br>Valley City, North Dakota |             |                                                                                                                 |        | BORING: B-04<br>LOCATION: Captured with RTK GPS. STA 18+32.2<br>DATUM: WGS 84<br>LATITUDE: 47.097577 LONGITUDE: -98.001369 |                    |      |                                    |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------|--------------------|------|------------------------------------|
| DRILLER: C.Gorman                                                                                                                |             | LOGGED BY: K.Dragos                                                                                             |        | START DATE: 03/08/24                                                                                                       | END DATE: 03/08/24 |      |                                    |
| SURFACE ELEVATION: 1350.0 ft                                                                                                     | RIG: 7508   | METHOD: 3 1/4" HSA                                                                                              |        | SURFACING: Bituminous                                                                                                      | WEATHER: Clear     |      |                                    |
| Elev./ Depth ft                                                                                                                  | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)                                   | Sample | Blows (N-Value) Recovery                                                                                                   | q <sub>p</sub> tsf | MC % | Tests or Remarks                   |
|                                                                                                                                  |             | PIERRE FORMATION, SHALE, gray, moist, decomposed, very soft, hand deformed sample classified as "Fat Clay (CH)" |        | 8-9-11<br>(20)<br>14"                                                                                                      |                    | 25   |                                    |
|                                                                                                                                  |             |                                                                                                                 | 35     |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 |        | 12-16-24<br>(40)<br>18"                                                                                                    |                    |      |                                    |
| 1309.0<br>41.0                                                                                                                   |             | END OF BORING                                                                                                   |        |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             | Boring then backfilled with auger cuttings                                                                      |        |                                                                                                                            |                    |      | Water not observed while drilling. |
|                                                                                                                                  |             |                                                                                                                 | 40     |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 |        |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 | 45     |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 |        |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 | 50     |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 |        |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 | 55     |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 |        |                                                                                                                            |                    |      |                                    |
|                                                                                                                                  |             |                                                                                                                 | 60     |                                                                                                                            |                    |      |                                    |

CERP-0221(085)  
BARNES COUNTY, NORTH DAKOTA



B-04 BORING LOG

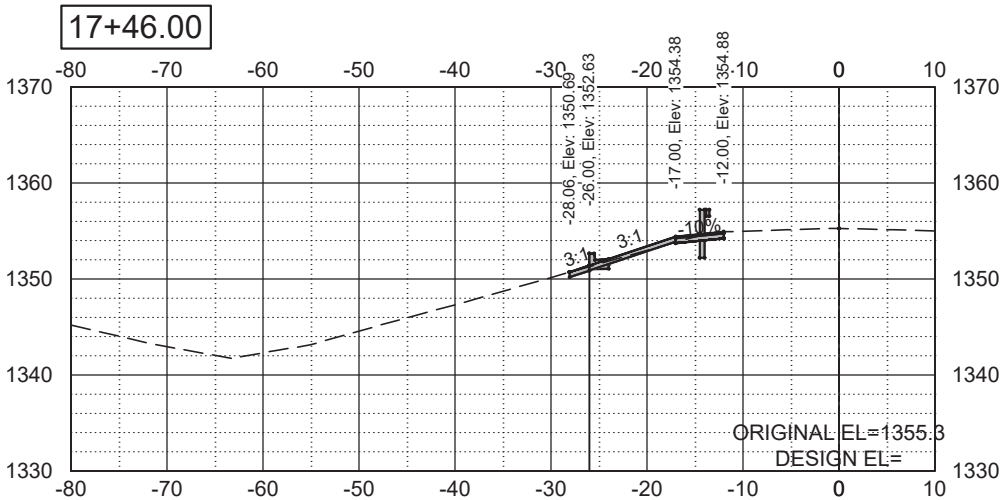
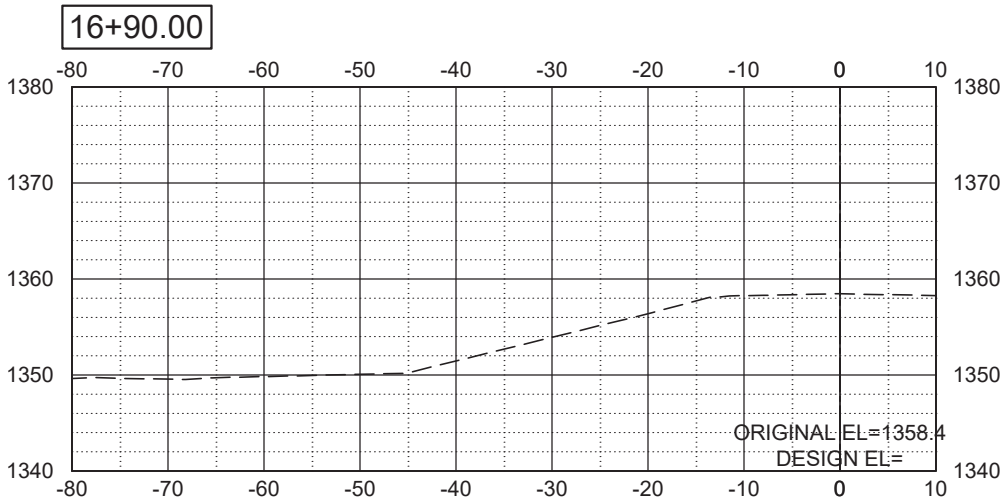
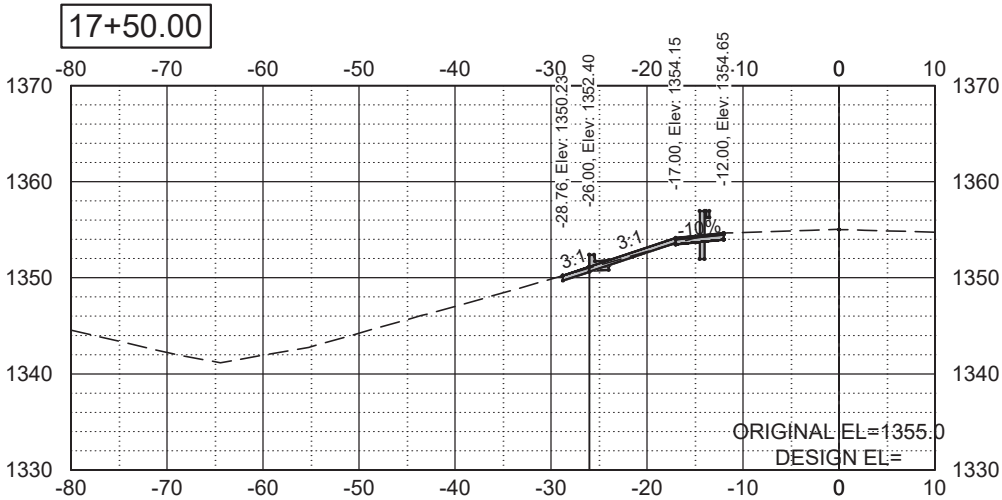
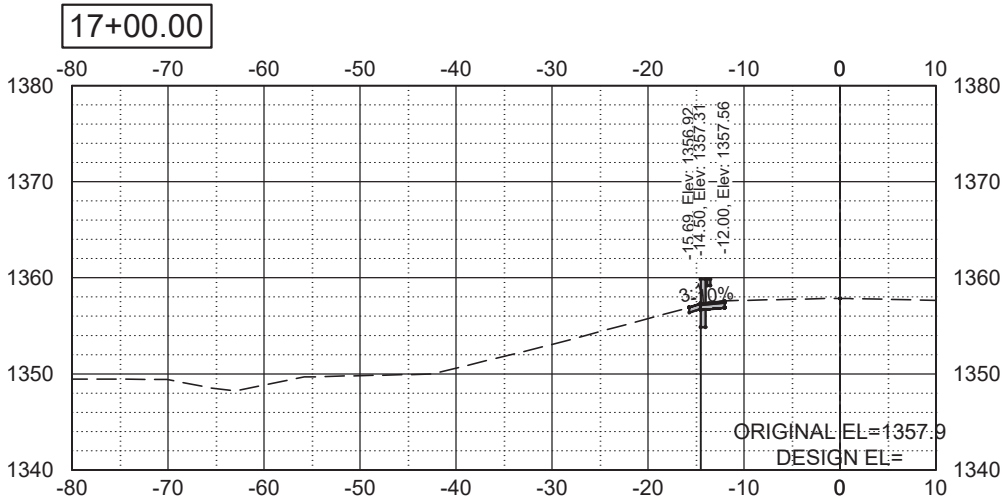
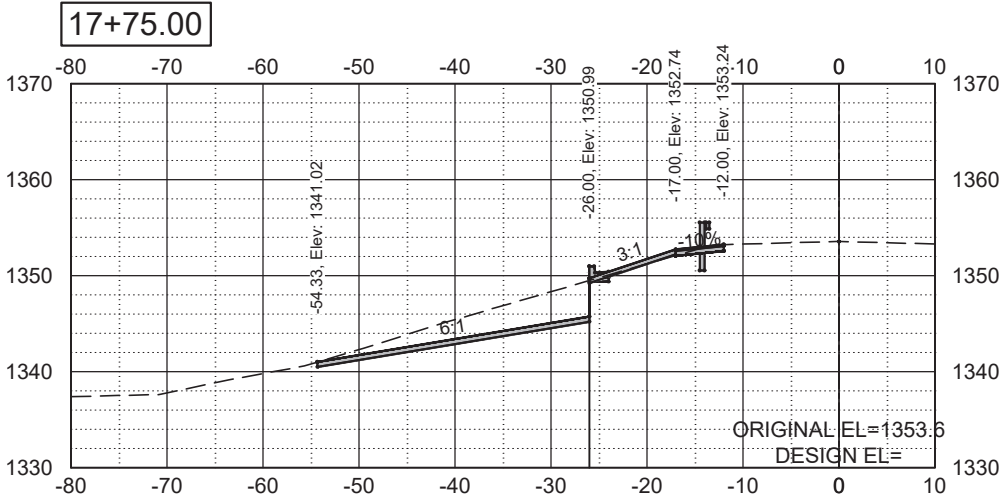
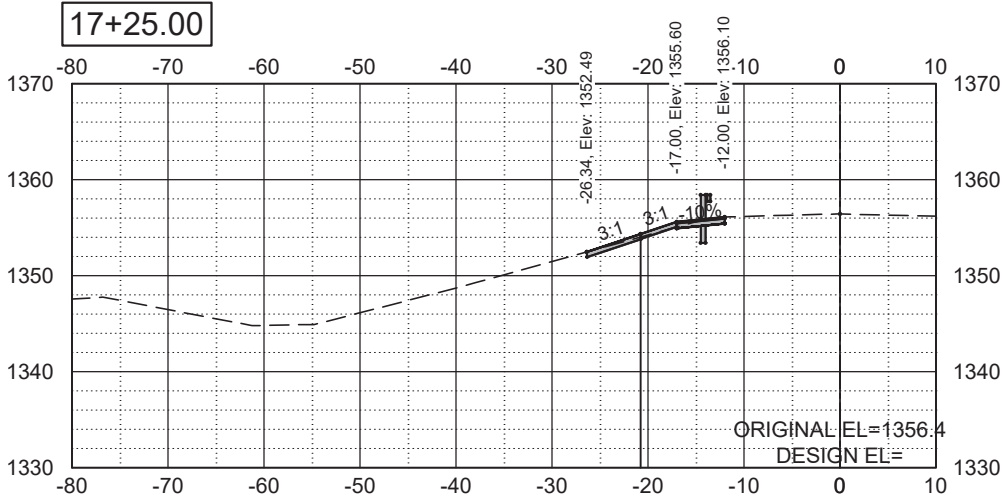
|                |                |                           |
|----------------|----------------|---------------------------|
| DRWN BY<br>ZRV | CHKD BY<br>BJT | PROJECT NO.<br>2302-01469 |
|----------------|----------------|---------------------------|



CROSS-SECTIONS



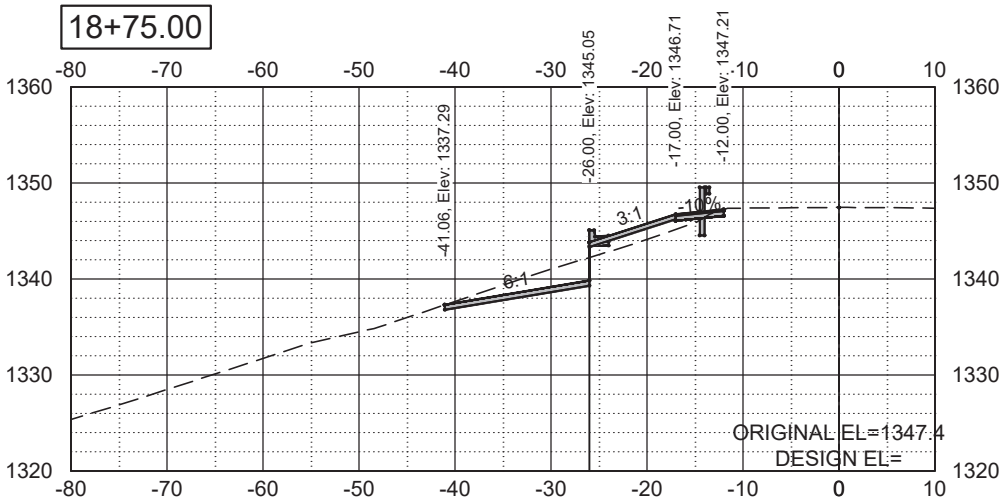
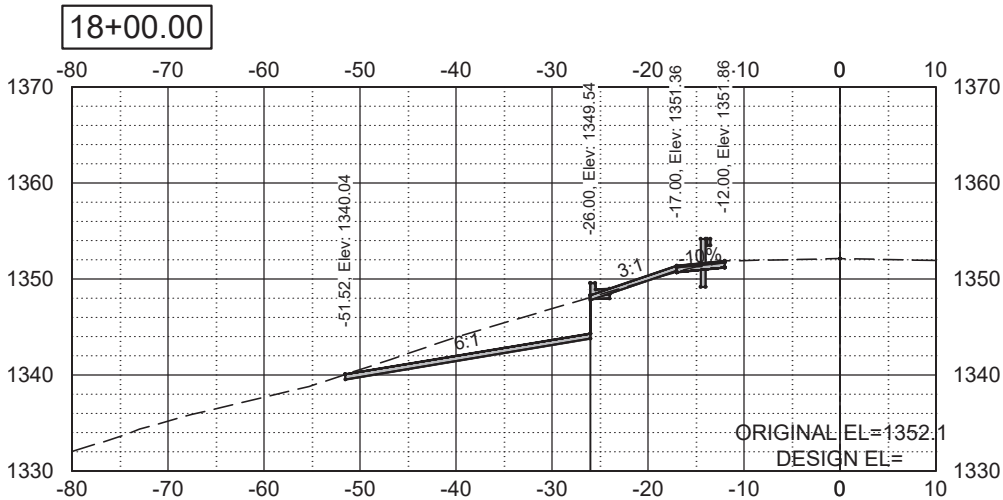
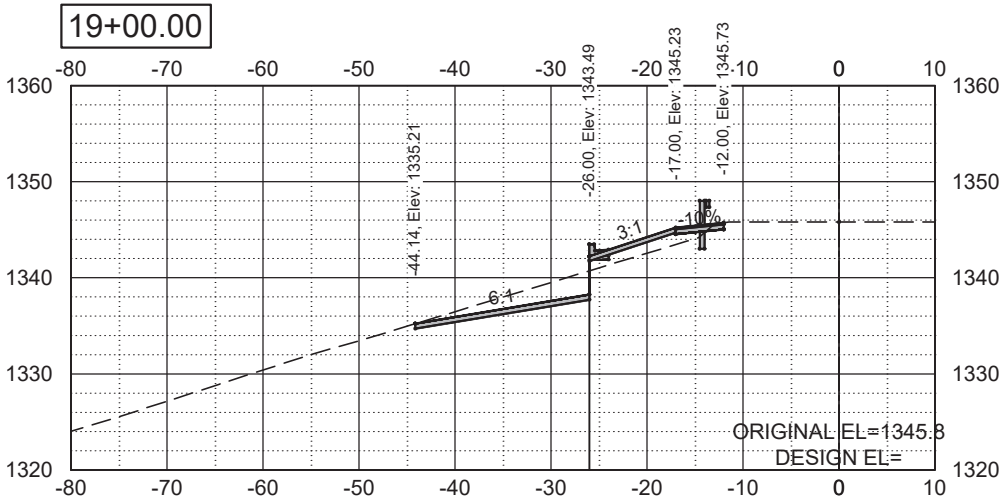
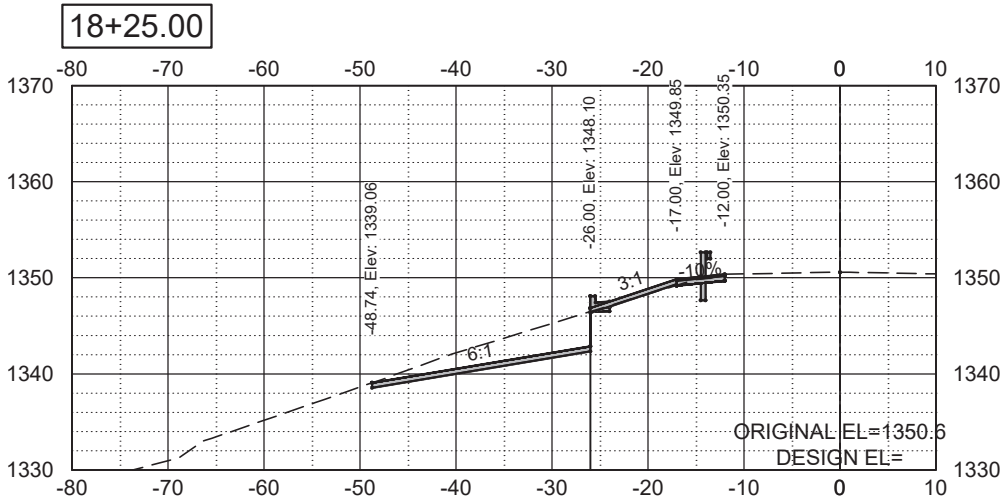
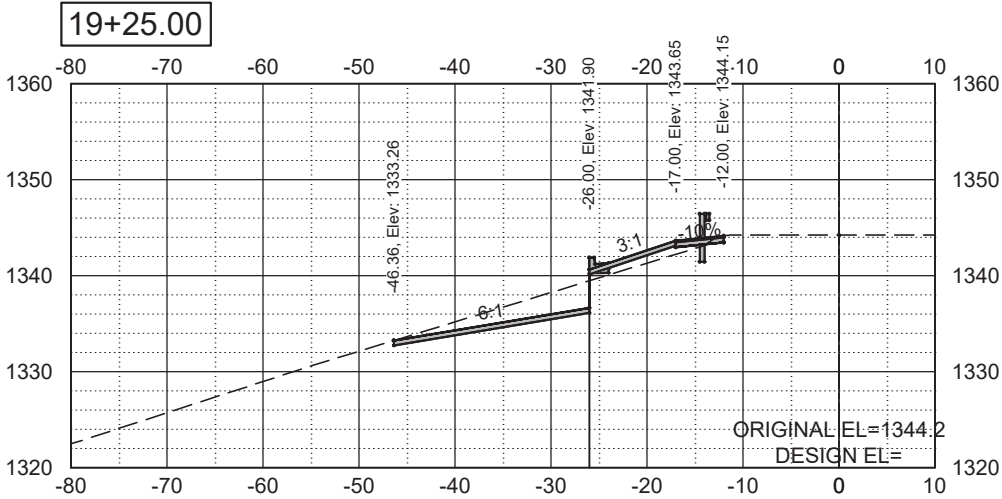
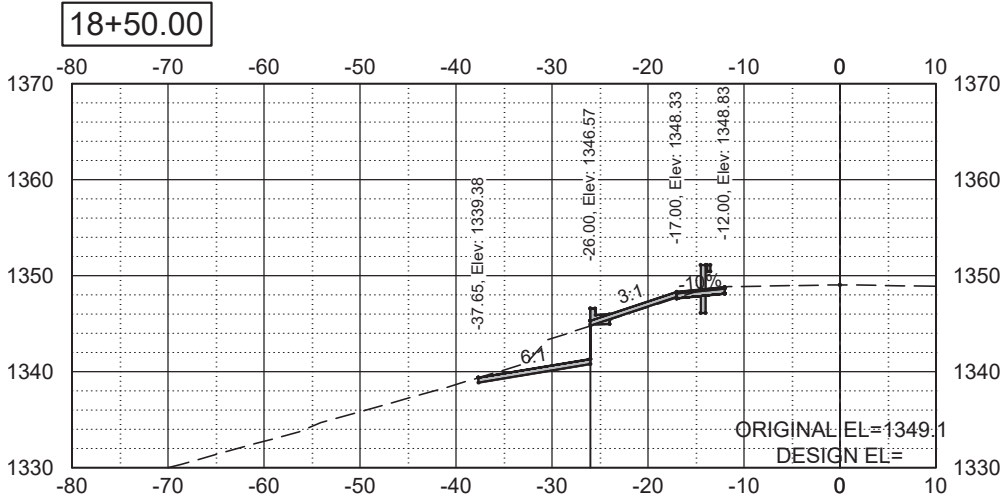
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|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 200         | 1         |



CROSS-SECTIONS

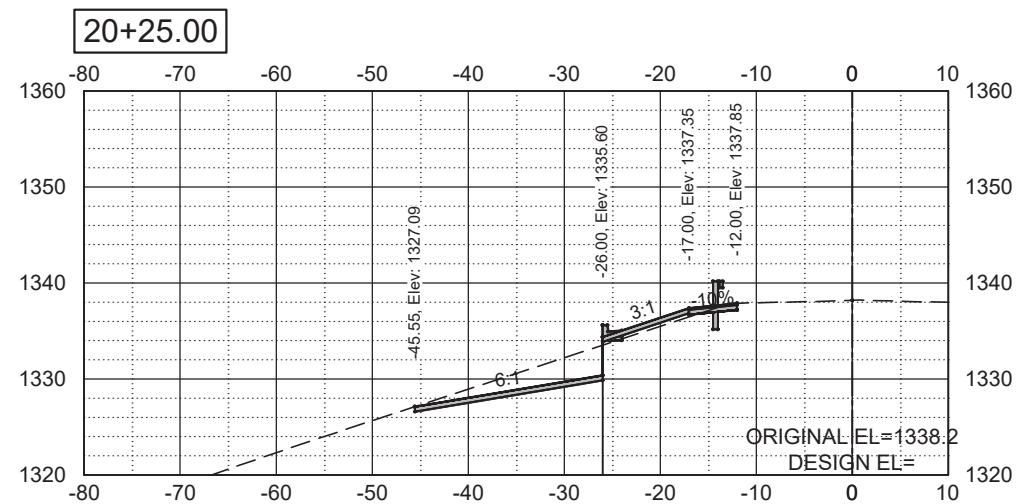
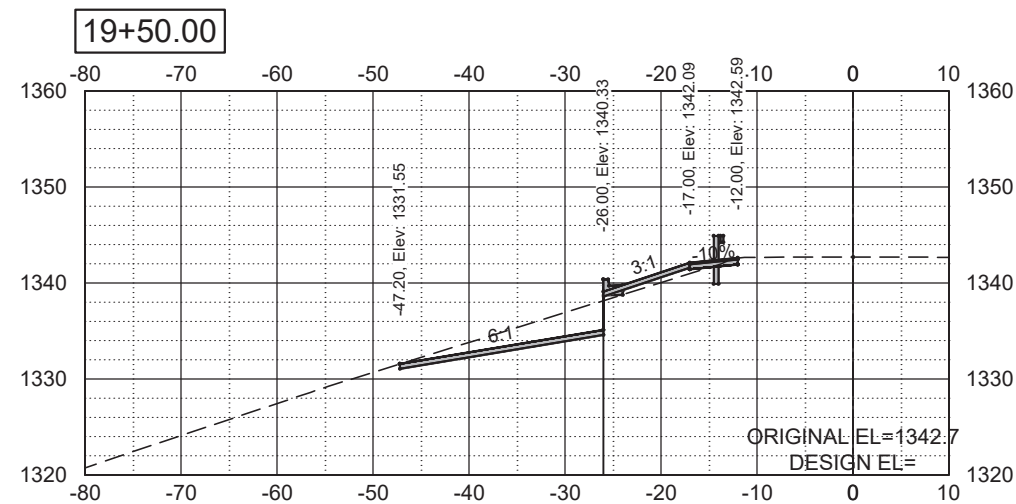
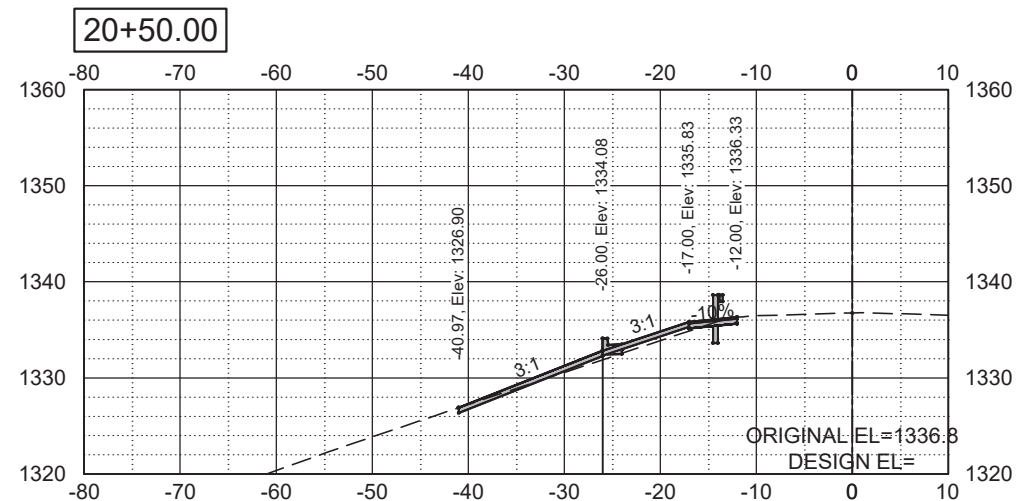
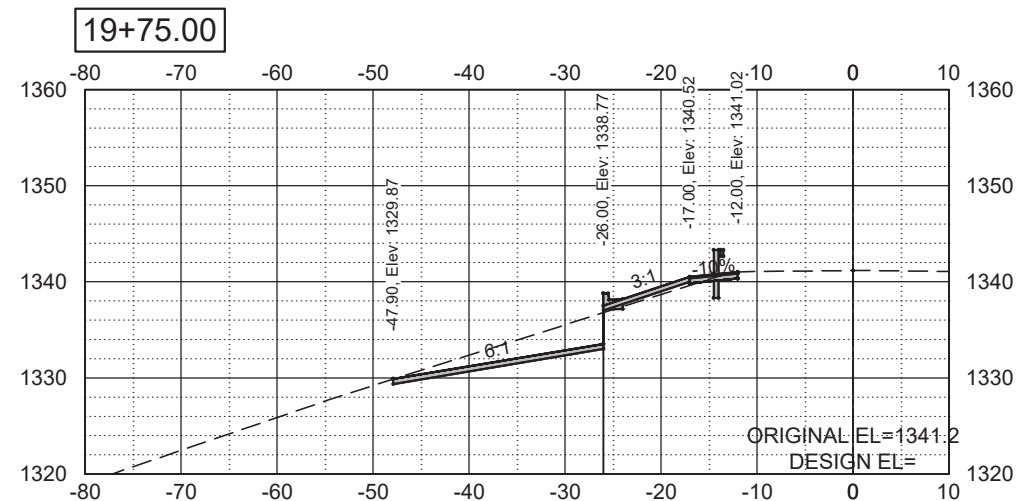
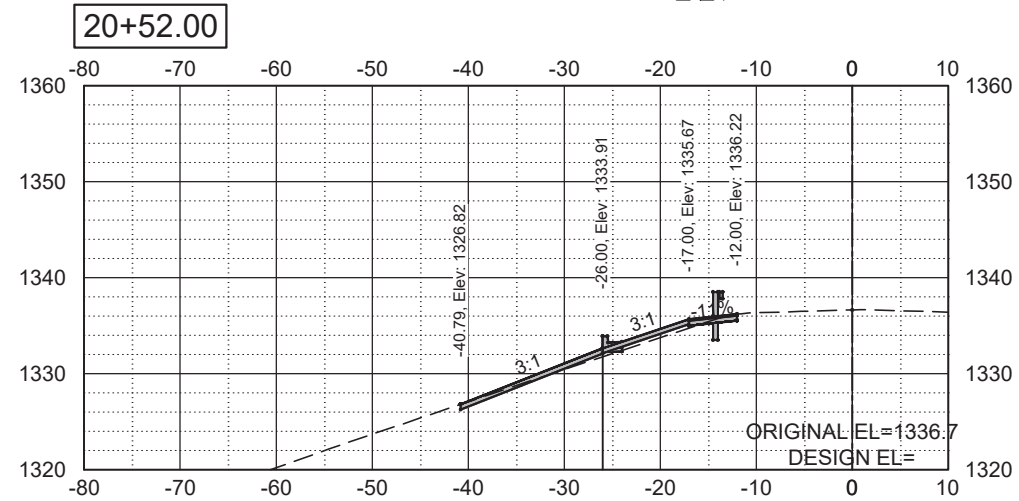
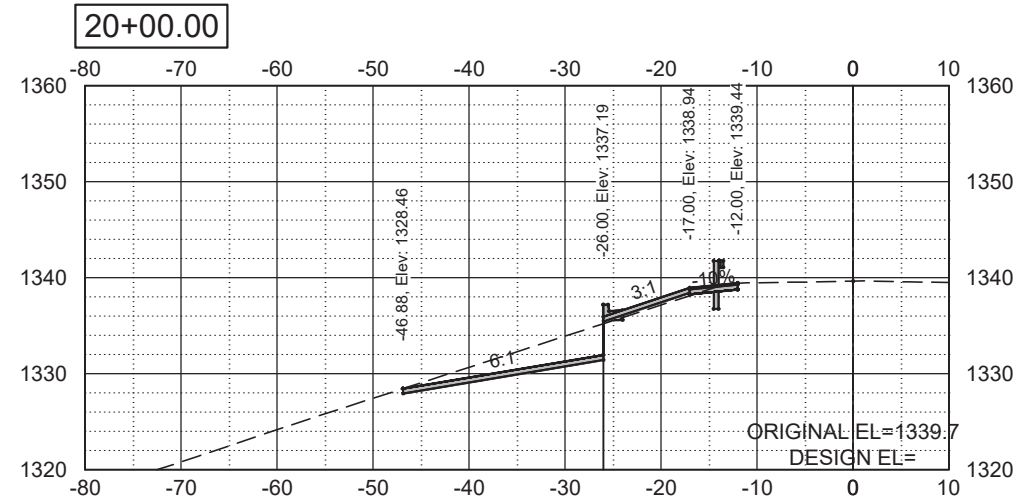


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|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 200         | 2         |





|       |                |             |           |
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| STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
| ND    | CERP-0221(085) | 200         | 3         |



CROSS-SECTIONS



|  |       |                |             |           |
|--|-------|----------------|-------------|-----------|
|  | STATE | PROJECT NO.    | SECTION NO. | SHEET NO. |
|  | ND    | CERP-0221(085) | 200         | 4         |

