

October 22, 2020

**ADDENDUM 1 – JOB 22**

TO: All prospective bidders on Projects HEN-1-194(008)000 and HEN-1-810(027)000, Job No. 22 scheduled for the November 13, 2020 bid opening.

The following plans and request for proposal revision shall be made:

Plan Revisions:

**See attached summaries from Kirk J. Hoff, P.E. dated October 15 & 21, 2020 for an explanation.**

Request for Proposal Revisions:

**Remove and replace pages 5 thru 8 of 10 of the Proposal pages located at the beginning of the Request for Proposal with pages revised 10/21/2020.**

**Bid Item Changes are summarized in the Plan Addendum Summary and Approval.**

This addendum is to be incorporated into the bidder's proposal for this project. AASHTOWare Project Bids files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> and load it into the AASHTOWare Project Bids program.



PHILLIP MURDOFF, P.E. – CONSTRUCTION SERVICES ENGINEER

80: jwj

Enclosure

## PLAN ADDENDUM SUMMARY AND APPROVAL

| PROJECT INFORMATION      |                           |                                      |
|--------------------------|---------------------------|--------------------------------------|
| <b>Project:</b>          | HEN-1-194(008)000         | <b>PCN:</b> 22440                    |
| <b>Location:</b>         | S of I-94 to Memorial Hwy |                                      |
| <b>Date:</b>             | 10/12/2020                | <b>Lead Designer:</b> Brady Haussler |
| <b>Bid Opening Date:</b> | 11/13/2020                | <b>JOB#: 22</b> <b>Addendum#:</b> 1  |

| PLAN SHEET CHANGES |       |                                                                                         |
|--------------------|-------|-----------------------------------------------------------------------------------------|
| Section            | Sheet | Description                                                                             |
| 6                  | 1-2   | Revised plan notes for traffic control to include coordination between tied projects.   |
| 8                  | 1-2   | Revised project quantities.                                                             |
| 10                 | 1     | Revised aggregate fill and WATER quantities.                                            |
| 11                 | 1     | Added aggregate fill, revised COMMON EXCAVATION-WASTE in earthwork table.               |
| 51                 | 1-4   | Revised station & offsets for jacked & bored pipe and RCP pipe items.                   |
| 60                 | 1-8   | Revised barrier quantity, stations / offset for jacked & bored pipe and RCP pipe items. |
| 76                 | 4     | Revised INLET PROTECTION-SPECIAL quantities in plan tables.                             |
| 82                 | 1     | Revised 194_CL alignment description.                                                   |
| 90                 | 1-5   | Revised 194_CL stationing and offsets in plan tables, updated aggregate qty.            |
| 130                | 1     | Revised stations and offsets.                                                           |
| 200                | 1-22  | Revised cross section earthwork tables.                                                 |

| CHANGES MADE TO BID ITEMS FOR JOB |      |                                      |       |                   |                  |
|-----------------------------------|------|--------------------------------------|-------|-------------------|------------------|
| Spec                              | Code | Description                          | Unit  | Previous Quantity | Revised Quantity |
| 203                               | 0113 | COMMON EXCAVATION-WASTE              | CY    | 1155              | 1134             |
| 216                               | 0100 | WATER                                | M GAL | 118               | 120              |
| 302                               | 0120 | AGGREGATE BASE COURSE CL 5           | TON   | 4310              | 4402             |
| 602                               | 1200 | JERSEY BARRIER FORMED OR SLIP FORMED | LF    | 3300              | 3288             |
| 708                               | 1540 | INLET PROTECTION-SPECIAL             | EA    | 38                | 37               |

### APPROVAL

Should the revisions described above be processed as a plan addendum?

  X   Yes                             No

Kirk J. Hoff /s/  
Kirk J. Hoff, P.E. – Design Engineer

10/21/2020  
Date

**BID ITEMS**

Projects: HEN-1-194(008)000 (PCN-22440), HEN-1-810(027)000 (PCN-22441), and NHU-1-810(028)000 (PCN-22863)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

| Item No. | Spec No. | Code No. | Description                      | Unit  | Approx. Quantity | Unit Price |     | Amount   |    |
|----------|----------|----------|----------------------------------|-------|------------------|------------|-----|----------|----|
|          |          |          |                                  |       |                  | \$\$\$\$   | 000 | \$\$\$\$ | 00 |
| 001      | 103      | 0100     | CONTRACT BOND                    | L SUM | 1.               |            |     |          |    |
| 002      | 107      | 0100     | RAILWAY PROTECTION INSURANCE     | L SUM | 1.               |            |     |          |    |
| 003      | 202      | 0111     | REMOVAL OF CONCRETE              | L SUM | 1.               |            |     |          |    |
| 004      | 202      | 0130     | REMOVAL OF CURB & GUTTER         | LF    | 29.              |            |     |          |    |
| 005      | 202      | 0132     | REMOVAL OF BITUMINOUS SURFACING  | SY    | 9,131.           |            |     |          |    |
| 006      | 202      | 0230     | REMOVAL OF INLETS                | EA    | 3.               |            |     |          |    |
| 007      | 203      | 0109     | TOPSOIL                          | CY    | 1,978.           |            |     |          |    |
| 008      | 203      | 0113     | COMMON EXCAVATION-WASTE          | CY    | 1,768.           |            |     |          |    |
| 009      | 216      | 0100     | WATER                            | M GAL | 201.             |            |     |          |    |
| 010      | 230      | 0320     | SUBGRADE PREPARATION-TYPE C-12IN | STA   | 57.              |            |     |          |    |
| 011      | 255      | 0102     | ECB TYPE 2                       | SY    | 272.             |            |     |          |    |
| 012      | 261      | 0112     | FIBER ROLLS 12IN                 | LF    | 45.              |            |     |          |    |
| 013      | 302      | 0120     | AGGREGATE BASE COURSE CL 5       | TON   | 7,335.           |            |     |          |    |
| 014      | 550      | 0210     | PCC PAVEMENT GRINDING            | SY    | 2,844.           |            |     |          |    |
| 015      | 550      | 3005     | CONCRETE MEDIAN PAVEMENT         | SY    | 15,310.          |            |     |          |    |
| 016      | 602      | 1130     | CLASS AE-3 CONCRETE              | CY    | 11.900           |            |     |          |    |

**BID ITEMS**

Projects: HEN-1-194(008)000 (PCN-22440), HEN-1-810(027)000 (PCN-22441), and NHU-1-810(028)000 (PCN-22863)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

| Item No. | Spec No. | Code No. | Description                           | Unit  | Approx. Quantity | Unit Price |     | Amount   |    |
|----------|----------|----------|---------------------------------------|-------|------------------|------------|-----|----------|----|
|          |          |          |                                       |       |                  | \$\$\$\$   | 000 | \$\$\$\$ | 00 |
| 017      | 602      | 1200     | JERSEY BARRIER FORMED OR SLIP FORMED  | LF    | 5,500.           |            |     |          |    |
| 018      | 602      | 1208     | CONCRETE BRIDGE BARRIER               | LF    | 20.              |            |     |          |    |
| 019      | 602      | 1250     | PENETRATING WATER REPELLENT TREATMENT | SY    | 2,813.           |            |     |          |    |
| 020      | 612      | 0115     | REINFORCING STEEL-GRADE 60            | LBS   | 452.             |            |     |          |    |
| 021      | 630      | 0100     | SAND BLASTING & PAINTING              | L SUM | 1.               |            |     |          |    |
| 022      | 630      | 0110     | SAND BLASTING & SPOT PAINTING         | SF    | 585.             |            |     |          |    |
| 023      | 630      | 0200     | PACK RUST REPAIR                      | SF    | 65.              |            |     |          |    |
| 024      | 630      | 9000     | CONTAINMENT SYSTEM                    | L SUM | 1.               |            |     |          |    |
| 025      | 650      | 0805     | DECK SPALL REPAIR                     | SF    | 41.              |            |     |          |    |
| 026      | 702      | 0100     | MOBILIZATION                          | L SUM | 1.               |            |     |          |    |
| 027      | 704      | 0100     | FLAGGING                              | MHR   | 1,200.           |            |     |          |    |
| 028      | 704      | 1000     | TRAFFIC CONTROL SIGNS                 | UNIT  | 2,528.           |            |     |          |    |
| 029      | 704      | 1052     | TYPE III BARRICADE                    | EA    | 6.               |            |     |          |    |
| 030      | 704      | 1060     | DELINEATOR DRUMS                      | EA    | 46.              |            |     |          |    |
| 031      | 704      | 1067     | TUBULAR MARKERS                       | EA    | 475.             |            |     |          |    |
| 032      | 704      | 1087     | SEQUENCING ARROW PANEL-TYPE C         | EA    | 3.               |            |     |          |    |

**BID ITEMS**

Projects: HEN-1-194(008)000 (PCN-22440), HEN-1-810(027)000 (PCN-22441), and NHU-1-810(028)000 (PCN-22863)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

| Item No. | Spec No. | Code No. | Description                                | Unit | Approx. Quantity | Unit Price |     | Amount     |    |
|----------|----------|----------|--------------------------------------------|------|------------------|------------|-----|------------|----|
|          |          |          |                                            |      |                  | \$\$\$\$\$ | 000 | \$\$\$\$\$ | 00 |
| 033      | 708      | 1540     | INLET PROTECTION-SPECIAL                   | EA   | 55.              |            |     |            |    |
| 034      | 714      | 0825     | PIPE CONC REINF 30IN CL III-STORM DRAIN    | LF   | 78.              |            |     |            |    |
| 035      | 714      | 4097     | PIPE CONDUIT 15IN-STORM DRAIN              | LF   | 441.             |            |     |            |    |
| 036      | 714      | 4166     | PIPE CONDUIT 30IN-JACKED OR BORED          | LF   | 796.             |            |     |            |    |
| 037      | 722      | 3510     | INLET-TYPE 2                               | EA   | 3.               |            |     |            |    |
| 038      | 722      | 3520     | INLET-TYPE 2 DOUBLE                        | EA   | 26.              |            |     |            |    |
| 039      | 722      | 3701     | INLET SPECIAL-TYPE 2 48IN                  | EA   | 1.               |            |     |            |    |
| 040      | 722      | 3761     | INLET SPECIAL-TYPE 2 60IN                  | EA   | 10.              |            |     |            |    |
| 041      | 754      | 0593     | RESET SIGN SUPPORT                         | EA   | 1.               |            |     |            |    |
| 042      | 754      | 1599     | REVISE OVERHEAD SIGN STR TRUSS             | EA   | 1.               |            |     |            |    |
| 043      | 764      | 0151     | REMOVE W-BEAM GUARDRAIL & POSTS            | LF   | 407.             |            |     |            |    |
| 044      | 764      | 2075     | REMOVE BOX BEAM MEDIAN BARRIER             | LF   | 519.             |            |     |            |    |
| 045      | 764      | 2079     | REMOVE BOX BEAM MEDIAN BARRIER END SECTION | EA   | 4.               |            |     |            |    |
| 046      | 764      | 9011     | ATTENUATING CRASH CUSHION TL-3             | EA   | 1.               |            |     |            |    |
| 047      | 930      | 8800     | 6.5IN EXPANSION JOINT SEAL                 | LF   | 70.              |            |     |            |    |
| 048      | 930      | 8805     | 9IN EXPANSION JOINT SEAL                   | LF   | 162.             |            |     |            |    |

**BID ITEMS**

Projects: HEN-1-194(008)000 (PCN-22440), HEN-1-810(027)000 (PCN-22441), and NHU-1-810(028)000 (PCN-22863)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

| Item No. | Spec No. | Code No. | Description              | Unit | Approx. Quantity | Unit Price |     | Amount     |    |
|----------|----------|----------|--------------------------|------|------------------|------------|-----|------------|----|
|          |          |          |                          |      |                  | \$\$\$\$\$ | 000 | \$\$\$\$\$ | 00 |
| 049      | 930      | 9223     | CRACK SEALING            | LF   | 1,540.           |            |     |            |    |
| 050      | 930      | 9647     | BARRIER END MODIFICATION | EA   | 1.               |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          |                          |      |                  |            |     |            |    |
|          |          |          | TOTAL SUM BID            |      |                  |            |     |            |    |

NOTES

|                  |       |                   |             |           |
|------------------|-------|-------------------|-------------|-----------|
| Revised 10/12/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|                  | ND    | HEN-1-194(008)000 | 6           | 1         |

- 107-115

RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at RP 197.23. The type of work that will be performed within the railroad right of way is grading, base, concrete median paving, and concrete jersey barrier installation. Direct inquiries regarding protective liability insurance to:

Rosa Martinez  
Marsh USA Inc.  
4400 Comerica Bank Tower  
1717 Main Street  
Dallas, TX 75201-7357, USA  
214-303-8519  
Rosa.M.Martinez@marsh.com

Obtain information regarding crossing number 087682D from the Federal Railroad Administration website: <http://safetydata.fra.dot.gov/Officeofsafety/>
- 202-P01

REMOVAL OF BITUMINOUS SURFACING: Removal of the existing hot bituminous pavement includes the aggregate base beneath it as shown in the plans. Removal is based on the area between edge of proposed pavement and bottom of existing aggregate sluff.
- 203-P01

EXCESS TOPSOIL & EXCAVATION: Haul excess material to an approved location outside of NDDOT right-of-way. Include costs related to hauling excess excavation and topsoil off the project in the unit price bid for "COMMON EXCAVATION-WASTE" and "TOPSOIL."
- 550-P01

STORM SEWER CASTINGS: Install storm sewer castings while the concrete is still in a plastic state and in a manner that does not create additional joints in the pavement, which were not part of the designed joint layout. Install inlet castings that are adjacent to the concrete roadway concurrently with the driving surface paving operation. Install manhole castings that lie within the limits of the concrete pavement with the paving operation. Install castings 1/4 inch to 3/8 inch below the finished pavement surface.

If installing a casting after the paving machine has passed, use vibratory methods to consolidate concrete placed or disturbed as part of the casting installation.

Include all costs in the unit price bid for "CONCRETE MEDIAN PAVEMENT."
- 602-P01

JERSEY BARRIER FORMED OR SLIP FORMED: Measure the I-194 mainline jersey median barrier walls from the beginning to the end of each wall segment installed, including overlapping portions.

Construct the barriers according to the provisions of Section 602.04, but do not use deflection joints. Make 3/4" V-grooves in all faces of the barriers at 15 foot spacings to match transverse joints in median slab.

Finish the jersey barrier walls with surface finish "D." Provide a surface finish color to match the color of the existing permanent concrete median barrier on I-194 west of the project limits.

Install vertical steel reinforcement spaced at 8" C to C. Use grade 60 steel for the reinforcing. Include the costs for all labor, equipment, and materials required to install the A1, A2, A3, and longitudinal bars in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED."

- Construct the barriers using Class AAE-3 concrete.
- Include furnishing and installing Class AAE-3 concrete, grade 60 reinforcing steel, chemical adhesive, mastic, joint sealant materials, and all other materials, equipment, and labor required to complete the installation as shown in the plans in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED."
- Include all costs associated with the saw cutting, removal, and disposal of concrete in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED."
- 704-100

TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.
- 704-P01

TRAFFIC CONTROL: Provide temporary traffic control consisting of inside shoulder closures and flagging as described. Close the inside lane and shoulder on EB and WB and maintain existing lane widths. Coordinate traffic control phasing and devices between tied projects HEN-1-810(027)000, HEN-1-194(008)000, & NHU-1-810(028)000. Take down lane closures and open all lanes to traffic when work is not anticipated on this project for the following day.

The traffic control device list was developed using the following standard drawings:

D-704-12 for 1 shoulder closures  
D-704-35 for 2 single lane closures

To operate in a manner different than what is described, provide a complete traffic control layout to the Engineer for review and approval prior to work being performed.
- 704-P02

OVERHEAD SIGN TRAFFIC CONTROL: Provide temporary traffic control for a temporary road closure and flagging during the overhead sign removal and resetting. Limit the closure to 30 minutes and complete work between 1AM and 5AM.
- 704-P03

TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:

Place the following sign assembly at the locations listed below.

Sign Assembly: Sign No. W8-17-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52P-54 to identify the distance.

Locations:

  - In advance of the drop off;
  - Spaced at each mile from the advance sign; and
  - At major intersections (CMC routes, state and US highways, and Interstate Ramps).

If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.

If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.



|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | Revised 10/12/20 | STATE                                                                                                                                                                                                                                                                                                                     | PROJECT NO.       | SECTION NO. | SHEET NO. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|-----------|
|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  | ND                                                                                                                                                                                                                                                                                                                        | HEN-1-194(008)000 | 6           | 2         |
| <div>NOTES</div>                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Sign assemblies will be measured and paid for according to Section 704 "TEMPORARY TRAFFIC CONTROL."                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 708-P01                                                                                                                                                                                                                                                                                   | INLET PROTECTION: Include all costs for installing, cleaning, removing sediment, maintaining, removing, and replacing damaged inlet protection devices in the unit price bid for "INLET PROTECTION-SPECIAL."                                                                                                                                                                                                                                                                                                                                                                                             |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 714-P01                                                                                                                                                                                                                                                                                   | PLUG PIPE – ALL TYPES AND SIZES: Plug the pipe and remove the top of the manhole to 2 feet below subgrade at the locations designated on the plans. Blow the manhole full of sand or pump full of controlled density backfill. Remove the end section of the pipe and 1 section of pipe and fill the end with topsoil. Include all costs for labor, materials, and equipment in the unit price bid for "REMOVAL OF INLETS."                                                                                                                                                                              |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 714-P02                                                                                                                                                                                                                                                                                   | PIPE CONDUIT JACKED OR BORED: Supply pipe meeting Section 830.02 F, "Smooth Wall Steel Pipe"; pipe meeting ASTM A 252, Grade 2; or pipe meeting ASTM A 53, Grade B.                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Provide pipes with a minimum wall thickness as specified in Table 830-01 of the Standard Specifications.                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 714-P03                                                                                                                                                                                                                                                                                   | PIPE CONDUIT JACKED OR BORED: The culvert consists of separate bid items for each portion: "PIPE CONC REINF 30IN CL III-STORM DRAIN" and "PIPE CONDUIT 30IN – JACKED OR BORED". The pay lengths of the pipe bid items are as shown for the type and size specified per linear foot.                                                                                                                                                                                                                                                                                                                      |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Include all costs for required materials, labor, and equipment (including connecting bands or Couplers), and restoring bore pits to pre-construction conditions in the unit price bid for "PIPE CONDUIT 30IN – JACKED OR BORED."                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 722-P01                                                                                                                                                                                                                                                                                   | REMOVE AND REPLACE INLETS: Remove the existing drain frames, grates, and risers, and modify the ends of the existing reinforced concrete outlet pipe to fit the new inlets.                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Backfill the remaining hole with CI 5 aggregate base course. Place and compact the backfill in 6-inch layers using a mechanical tamper with an appropriate sized tamping head.                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Include the costs for all labor, equipment and materials required to remove the inlets and modify existing pipes as described above in the unit price bid for "REMOVAL OF INLETS."                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| Include the costs for all labor, equipment, and materials required to install the inlets, including modifying the outlet pipe to connect to the new inlets and backfilling the remaining hole as described above in the unit price bid for "INLET - TYPE 2" and " INLET - TYPE 2 DOUBLE." |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 722-P02                                                                                                                                                                                                                                                                                   | INLETS AND MANHOLES: All new inlets except 6A have been specified with a minimum 4-foot riser height. At inlets 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, and 9A, the base elevation has been set deeper than required for the outlet storm drain conduit. Fill void between inlet base and bottom of lowest pipe with Class AE-3 concrete, and then slope the inlet bottom to drain using either Class AE-3 concrete or mortar in accordance with the details shown on standard drawings D-722-1B AND D-722-2. Include the costs to accomplish this work in the unit price bid for the respective inlet pay item. |  |                  |                                                                                                                                                                                                                                                                                                                           |                   |             |           |
| 764-P01                                                                                                                                                                                                                                                                                   | REMOVE W-BEAM GUARDRAIL & POSTS: Deliver the removed W-beam guardrail materials to the Bismarck District back lot:<br>Bismarck District Office<br>218 Airport Road<br>Bismarck, ND 58504-6003                                                                                                                                                                                                                                                                                                                                                                                                            |  |                  | Neatly stack the materials at a location designated by the Engineer. Include the cost for delivery and stacking of the removed W-beam guardrail materials in the unit price bid for "REMOVE W-BEAM GUARDRAIL & POSTS."                                                                                                    |                   |             |           |
| 764-P02                                                                                                                                                                                                                                                                                   | REMOVE BOX BEAM MEDIAN GUARDRAIL: Deliver the removed box beam guardrail and post materials to the Bismarck District back lot:<br>Bismarck District Office<br>218 Airport Road<br>Bismarck, ND 58504-6003                                                                                                                                                                                                                                                                                                                                                                                                |  |                  | Neatly stack the materials at a location designated by the Engineer.                                                                                                                                                                                                                                                      |                   |             |           |
|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  | Include the cost for delivery and stacking of the removed box beam guardrail materials in the unit price bid for "REMOVE BOX BEAM MEDIAN BARRIER."                                                                                                                                                                        |                   |             |           |
| 764-P03                                                                                                                                                                                                                                                                                   | REMOVE BOX BEAM MEDIAN BARRIER END SECTION: Deliver the removed end section materials to the Bismarck District back lot:<br>Bismarck District Office<br>218 Airport Road<br>Bismarck, ND 58504-6003                                                                                                                                                                                                                                                                                                                                                                                                      |  |                  | Neatly stack the materials at a location designated by the Engineer.                                                                                                                                                                                                                                                      |                   |             |           |
|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  | Measure the item "REMOVE BOX BEAM MEDIAN BARRIER END SECTION" by the number removed.                                                                                                                                                                                                                                      |                   |             |           |
|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  | Include the cost for delivery and stacking of the removed end section materials in the unit price bid for "REMOVE BOX BEAM MEDIAN BARRIER END SECTION."                                                                                                                                                                   |                   |             |           |
| 764-P04                                                                                                                                                                                                                                                                                   | ATTENUATING CRASH CUSHION TL-3: Install a 24" wide crash cushion at the end of the median barrier at RP 0.389. The cushion will not require a separate slab. Anchor the unit to the concrete median pavement slab in accordance with manufacturer's recommendations. Test crash cushions in accordance with MASH.                                                                                                                                                                                                                                                                                        |  |                  | Install the crash cushion on a concrete pad in accordance with the crash cushions manufacturer's recommendations, with tension strut(s), transition panels on both sides of the unit, and a Type XI yellow retroreflective sheeting on the nose. Installation the transition panels using manufacturer's recommendations. |                   |             |           |
|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                  | Include all costs for supplying and installing the concrete slab, tension strut(s), transition panels, and retroreflective sheeting in the unit price bid for "ATTENUATING CRASH CUSHION TL-3."                                                                                                                           |                   |             |           |

REGISTERED PROFESSIONAL ENGINEER  
BRADY L. HAUSSLER  
PE-27171  
10/12/20  
NORTH DAKOTA





ESTIMATE OF QUANTITIES

|       |                   |             |           |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
| ND    | HEN-1-194(008)000 | 8           | 1         |

REVISED 10/07/2020

| SPEC | CODE | ITEM DESCRIPTION                        | UNIT  | MAINLINE | TOTAL |
|------|------|-----------------------------------------|-------|----------|-------|
| ---- | ---- | -----                                   | ----  | -----    | ----- |
| 103  | 0100 | CONTRACT BOND                           | L SUM | 0.45     | 0.45  |
| 107  | 0100 | RAILWAY PROTECTION INSURANCE            | L SUM | 1        | 1     |
| 202  | 0111 | REMOVAL OF CONCRETE                     | L SUM | 1        | 1     |
| 202  | 0130 | REMOVAL OF CURB & GUTTER                | LF    | 29       | 29    |
| 202  | 0132 | REMOVAL OF BITUMINOUS SURFACING         | SY    | 5,236    | 5,236 |
| 202  | 0230 | REMOVAL OF INLETS                       | EA    | 2        | 2     |
| 203  | 0109 | TOPSOIL                                 | CY    | 1,190    | 1,190 |
| 203  | 0113 | COMMON EXCAVATION-WASTE                 | CY    | 1,134    | 1,134 |
| 216  | 0100 | WATER                                   | M GAL | 120      | 120   |
| 230  | 0320 | SUBGRADE PREPARATION-TYPE C-12IN        | STA   | 34       | 34    |
| 255  | 0102 | ECB TYPE 2                              | SY    | 197      | 197   |
| 261  | 0112 | FIBER ROLLS 12IN                        | LF    | 30       | 30    |
| 302  | 0120 | AGGREGATE BASE COURSE CL 5              | TON   | 4,402    | 4,402 |
| 550  | 3005 | CONCRETE MEDIAN PAVEMENT                | SY    | 9,037    | 9,037 |
| 602  | 1130 | CLASS AE-3 CONCRETE                     | CY    | 11.9     | 11.9  |
| 602  | 1200 | JERSEY BARRIER FORMED OR SLIP FORMED    | LF    | 3,288    | 3,288 |
| 612  | 0115 | REINFORCING STEEL-GRADE 60              | LBS   | 452      | 452   |
| 702  | 0100 | MOBILIZATION                            | L SUM | 0.45     | 0.45  |
| 704  | 0100 | FLAGGING                                | MHR   | 500      | 500   |
| 704  | 1000 | TRAFFIC CONTROL SIGNS                   | UNIT  | 1,051    | 1,051 |
| 704  | 1052 | TYPE III BARRICADE                      | EA    | 2        | 2     |
| 704  | 1060 | DELINEATOR DRUMS                        | EA    | 22       | 22    |
| 704  | 1067 | TUBULAR MARKERS                         | EA    | 221      | 221   |
| 704  | 1087 | SEQUENCING ARROW PANEL-TYPE C           | EA    | 1        | 1     |
| 708  | 1540 | INLET PROTECTION-SPECIAL                | EA    | 37       | 37    |
| 714  | 0825 | PIPE CONC REINF 30IN CL III-STORM DRAIN | LF    | 58       | 58    |
| 714  | 4097 | PIPE CONDUIT 15IN-STORM DRAIN           | LF    | 327      | 327   |
| 714  | 4166 | PIPE CONDUIT 30IN-JACKED OR BORED       | LF    | 549      | 549   |
| 722  | 3510 | INLET-TYPE 2                            | EA    | 3        | 3     |
| 722  | 3520 | INLET-TYPE 2 DOUBLE                     | EA    | 17       | 17    |
| 722  | 3701 | INLET SPECIAL-TYPE 2 48IN               | EA    | 1        | 1     |
| 722  | 3761 | INLET SPECIAL-TYPE 2 60IN               | EA    | 8        | 8     |
| 754  | 0593 | RESET SIGN SUPPORT                      | EA    | 1        | 1     |

ESTIMATE OF QUANTITIES

|       |                   |             |           |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
| ND    | HEN-1-194(008)000 | 8           | 2         |

REVISED 10/07/2020

| SPEC CODE | ITEM DESCRIPTION                                | UNIT | MAINLINE | TOTAL |
|-----------|-------------------------------------------------|------|----------|-------|
| 754       | 1599 REVISE OVERHEAD SIGN STR TRUSS             | EA   | 1        | 1     |
| 764       | 0151 REMOVE W-BEAM GUARDRAIL & POSTS            | LF   | 207      | 207   |
| 764       | 2075 REMOVE BOX BEAM MEDIAN BARRIER             | LF   | 519      | 519   |
| 764       | 2079 REMOVE BOX BEAM MEDIAN BARRIER END SECTION | EA   | 4        | 4     |
| 764       | 9011 ATTENUATING CRASH CUSHION TL-3             | EA   | 1        | 1     |
| 930       | 9647 BARRIER END MODIFICATION                   | EA   | 1        | 1     |

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/12/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 10          | 1         |

| SPEC                     | CODE | BID ITEM                                          | QTY  | UNIT |
|--------------------------|------|---------------------------------------------------|------|------|
| Use or Location          |      | Rate or Station                                   |      |      |
| 202                      | 0132 | REMOVAL OF BITUMINOUS SURFACING                   |      |      |
| Mainline Pavement        |      | Varies 13" to 15"                                 | 4751 | SY   |
| Existing Median Pavement |      | 8" Aggregate (Sta 9+32.42 to 9+74.14 (OCL194MED)) | 45   | SY   |
|                          |      | 6" Thickness (Sta 3+79.41 to 4+11.07 (OCL194MED)) | 89   | SY   |
|                          |      | - 2" HBP                                          |      |      |
|                          |      | - 4" Aggregate                                    |      |      |
|                          |      | 6" Thickness (Sta 24+05.77 to 25+47.66 (194_CL))  | 351  | SY   |
|                          |      | - 2" HBP                                          |      |      |
|                          |      | - 4" Aggregate                                    |      |      |
| 216                      | 0100 | WATER                                             |      |      |
| I-194 EB & WB Median     |      | 25 MGal/Mile for Dust Palliative                  | 16   | MGAL |
|                          |      | 20 Gal/Ton for Aggregates                         | 88   | MGAL |
|                          |      | 25 MGal/mile for Subgrade Prep                    | 16   | MGAL |
| 230                      | 0320 | SUBGRADE PREPARATION-TYPE C-12IN                  |      |      |
| I-194 EB & WB Median     |      | Sta 3+79.41 to 11+95.38 (OCL194MED)               | 8    | STA  |
|                          |      | Sta 0+00 to 25+41.04 (194_CL)                     | 26   | STA  |
| 302                      | 0120 | AGGREGATE BASE COURSE CL 5                        |      |      |
| I-194 EB & WB Median     |      | 8" Base Thickness (1.5 Ton/ CY + 25%)             | 3766 | TON  |
|                          |      | Aggregate Fill (1.5 Ton/ CY + 25%)                | 636  | TON  |
| 550                      | 3005 | CONCRETE MEDIAN PAVEMENT                          |      |      |
| I-194 EB & WB Median     |      | 8" Pavement Thickness                             | 9037 | SY   |
| 602                      | 1200 | JERSEY BARRIER FORMED OR SLIP FORMED              |      |      |
| I-194 EB & WB Median     |      | Sta 0+22 to 11+19 (194_BA1)                       | 1097 | LF   |
|                          |      | Sta 0+06 to 21+97 (194_BA3)                       | 2191 | LF   |



Basis of Estimate

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/24/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 11          | 1         |

|                                             |                |                       |
|---------------------------------------------|----------------|-----------------------|
| Common<br>Excavation<br>Waste<br>(Pay Item) | Aggregate Fill | Topsoil<br>(Pay Item) |
| CY                                          | CY             | CY                    |
| 1134                                        | 339            | 1190                  |



Earthwork Summary

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

| Begin Station / Location | End Station / Location | Offset   | Pipe Installation (Pay Item) |                                           |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|----------|------------------------------|-------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |          |                              |                                           |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |          | In                           | Bid Item                                  | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 1A                       | 1B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 1A                       | 1C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 1A                       | Sta 4+77.39            | 68.7' Rt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 71 | Reinforced Concrete Pipe - Class III (barrel length = 71 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 4+77.39              | Sta 4+76.83            | 76.7' Rt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |
| 1C                       | 1D                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 2A                       | 2B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 2A                       | 2C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 15 | Reinforced Concrete Pipe - Class III (barrel length = 15 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 2C                       | 2D                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 2A                       | Sta 11+49.77           | 62.8' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 63 | Reinforced Concrete Pipe - Class III (barrel length = 63 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 11+49.77             | Sta 11+49.72           | 68.8' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 6  | Reinforced Concrete Pipe - Class III (barrel length = 4 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over

Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

iral Rib 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.  
FES = Flared End Section  
TES = Traversable End Section



Allowable Pipe List

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

| Begin Station / Location | End Station / Location | Offset   | Pipe Installation (Pay Item) |                                           |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|----------|------------------------------|-------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |          |                              |                                           |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |          | In                           | Bid Item                                  | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 3A                       | 3B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 3A                       | Sta 2+98.80            | 71.1' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 70 | Reinforced Concrete Pipe - Class III (barrel length = 70 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 2+98.80              | Sta 2+98.82            | 77.1' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 6  | Reinforced Concrete Pipe - Class III (barrel length = 4 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |
| 4A                       | 4B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 15 | Reinforced Concrete Pipe - Class III (barrel length = 15 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 4B                       | 4C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 4A                       | Sta 5+58.89            | 64.7' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 61 | Reinforced Concrete Pipe - Class III (barrel length = 61 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 5+58.89              | Sta 5+59.48            | 70.7' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 6  | Reinforced Concrete Pipe - Class III (barrel length = 4 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |
| 5A                       | 5B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 15 | Reinforced Concrete Pipe - Class III (barrel length = 15 LF)   | 15                |                     |                                        |                              |                     |                  |     | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 5A                       | 6C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     |                  |     | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 6C                       | 6A                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 48 | Reinforced Concrete Pipe - Class III (barrel length = 48 LF)   | 15                |                     |                                        |                              |                     |                  |     | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |

Coatings: Z = Zinc

A = Aluminum

P = Polymeric (over

Corrugations: 2 = 2-2/3"x1/2"

3 = 3"x1"

5 = 5"x1"

iral Rib 3/4 = 3/4"x3/4"@7-1/2"

1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.

FES = Flared End Section

TES = Traversable End Section



Allowable Pipe List

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier



| Begin Station / Location | End Station / Location | Offset   | Pipe Installation (Pay Item) |                                           |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|----------|------------------------------|-------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |          |                              |                                           |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |          | In                           | Bid Item                                  | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 6A                       | 6B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     |                  |     | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 7A                       | 7B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 7A                       | 7C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 7A                       | Sta 11+39.68           | 73.9' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 66 | Reinforced Concrete Pipe - Class III (barrel length = 66 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 11+39.68             | Sta 11+39.86           | 81.9' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |
| 8A                       | 8B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 8A                       | 8C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 8A                       | Sta 14+61.66           | 76.7' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 69 | Reinforced Concrete Pipe - Class III (barrel length = 69 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 14+61.66             | Sta 14+61.21           | 84.7' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over

Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

Rib 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.

FES = Flared End Section

TES = Traversable End Section



Allowable Pipe List

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier



| Begin Station / Location | End Station / Location | Offset   | Pipe Installation (Pay Item) |                                           |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|----------|------------------------------|-------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |          |                              |                                           |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |          | In                           | Bid Item                                  | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 9A                       | 9B                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 9A                       | 9C                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 9A                       | Sta 16+95.67           | 78.3' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 73 | Reinforced Concrete Pipe - Class III (barrel length = 73 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 16+95.67             | Sta 16+94.75           | 86.3' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |
| 9E                       | 9D                     |          | 15                           | PIPE CONDUIT 15IN - STORM DRAIN           | 20 | Reinforced Concrete Pipe - Class III (barrel length = 20 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |          |                              |                                           |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |          |                              |                                           |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 9D                       | Sta 18+92.34           | 75.7' Lt | 30                           | PIPE CONDUIT 30IN -JACKED AND BORED       | 76 | Reinforced Concrete Pipe - Class III (barrel length = 76 LF)   | 30                |                     |                                        |                              |                     | -                |     | Section 20 Sheet 4  |
|                          |                        |          |                              |                                           |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 18+92.34             | Sta 18+92.34           | 83.7' Lt | 30                           | PIPE CONC REINF 30IN CL III - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     | -                | FES | Standard D-714-26   |

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over

Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

iral Rib 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.  
FES = Flared End Section  
TES = Traversable End Section

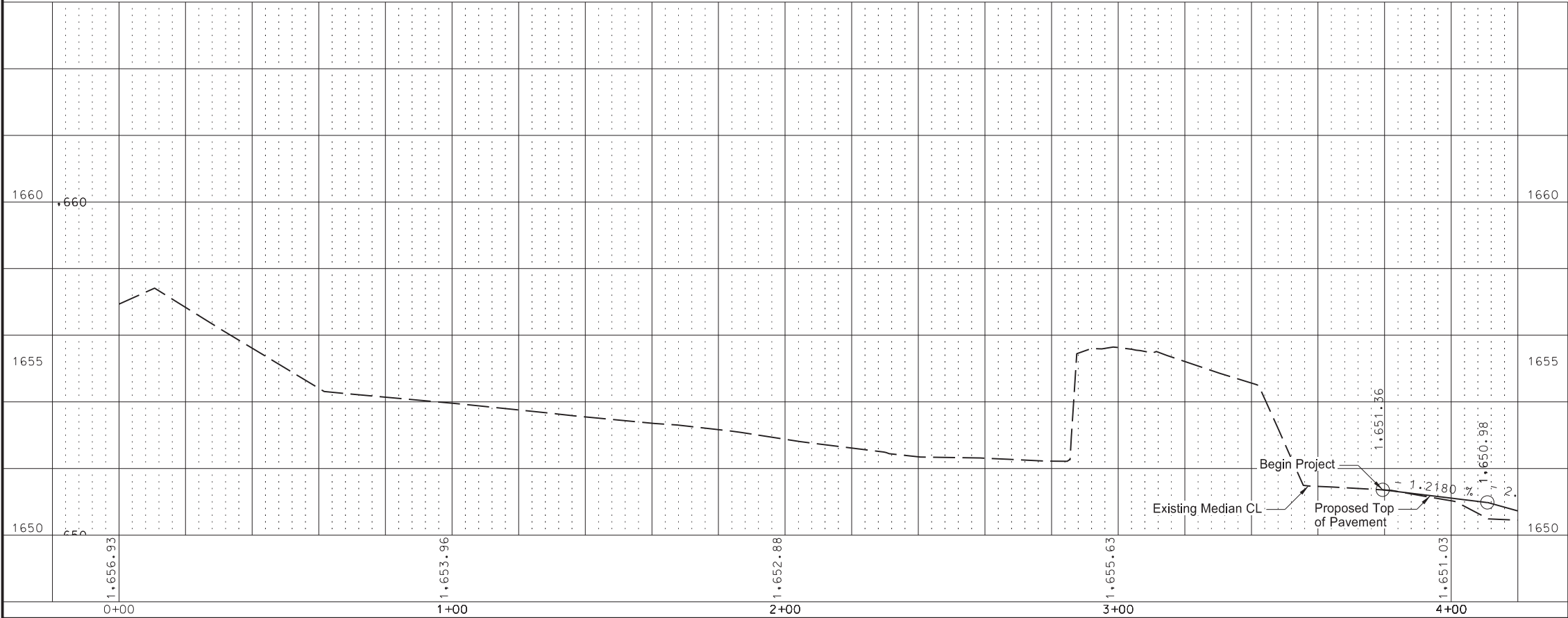
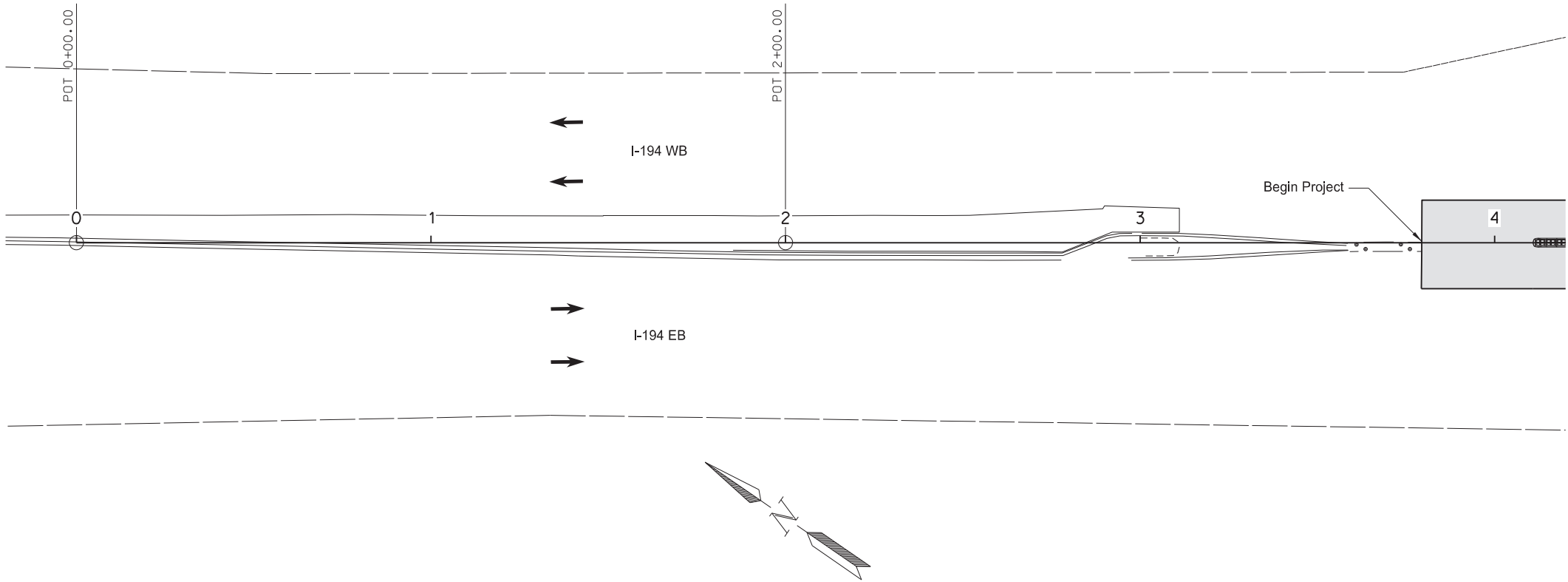


Allowable Pipe List

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 1         |



Concrete Median Pavement

Concrete Median Barrier

REGISTERED PROFESSIONAL ENGINEER

BRADY L. HAÜSSLER

PE-27171

10/12/20

NORTH DAKOTA

Plan & Profiles

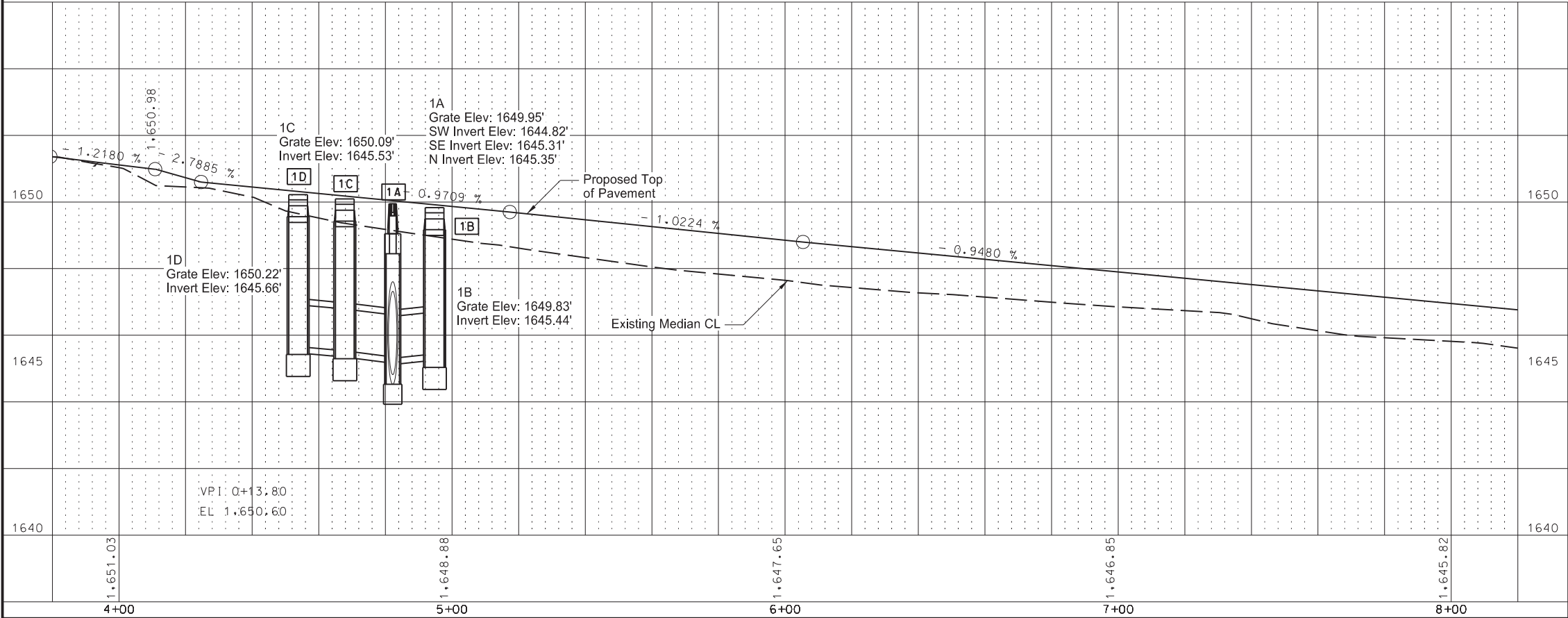
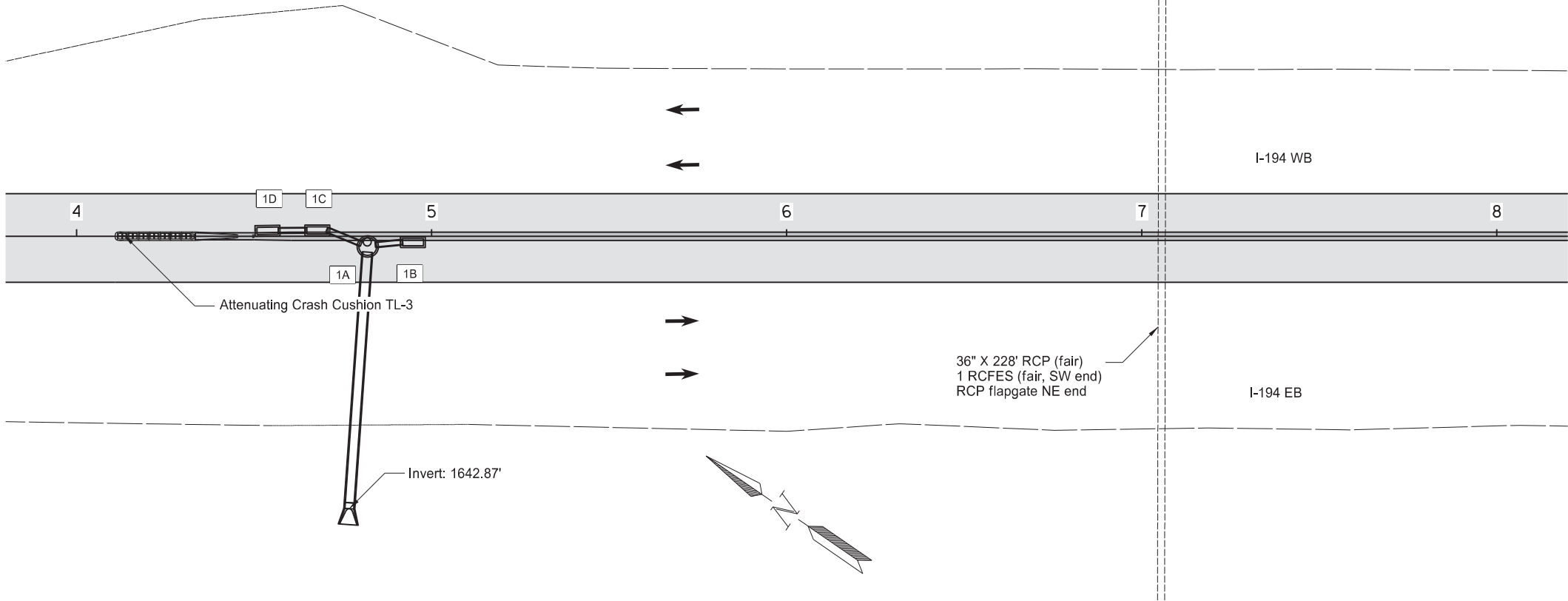
Sta 0+00 to 4+00 (OCL194MED)

I-194 - S of I-94 to Memorial Hwy

PCC Pavement & Concrete Median Barrier

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 2         |

| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 0+22 to 3+89 (194_BA1)              | 367 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 4+77.39 to 4+76.83 76.7' Rt         | 8   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 1D to 1C                                | 14  | LF   |
|           | 1C to 1A                                | 16  | LF   |
|           | 1B to 1A                                | 13  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 1A to Sta 4+77.39 68.7' Rt              | 71  | LF   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 1B, 1C, 1D                              | 3   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 1A                                      | 1   | EA   |
| 764 9011  | ATTENUATING CRASH CUSHION TL-3          |     |      |
|           | Sta 4+10.85 (OCL194MED)                 | 1   | EA   |



Concrete Median Pavement

Concrete Median Barrier

REGISTERED PROFESSIONAL ENGINEER

BRADY L. HAUSSLER

PE-27171

10/12/20

NORTH DAKOTA

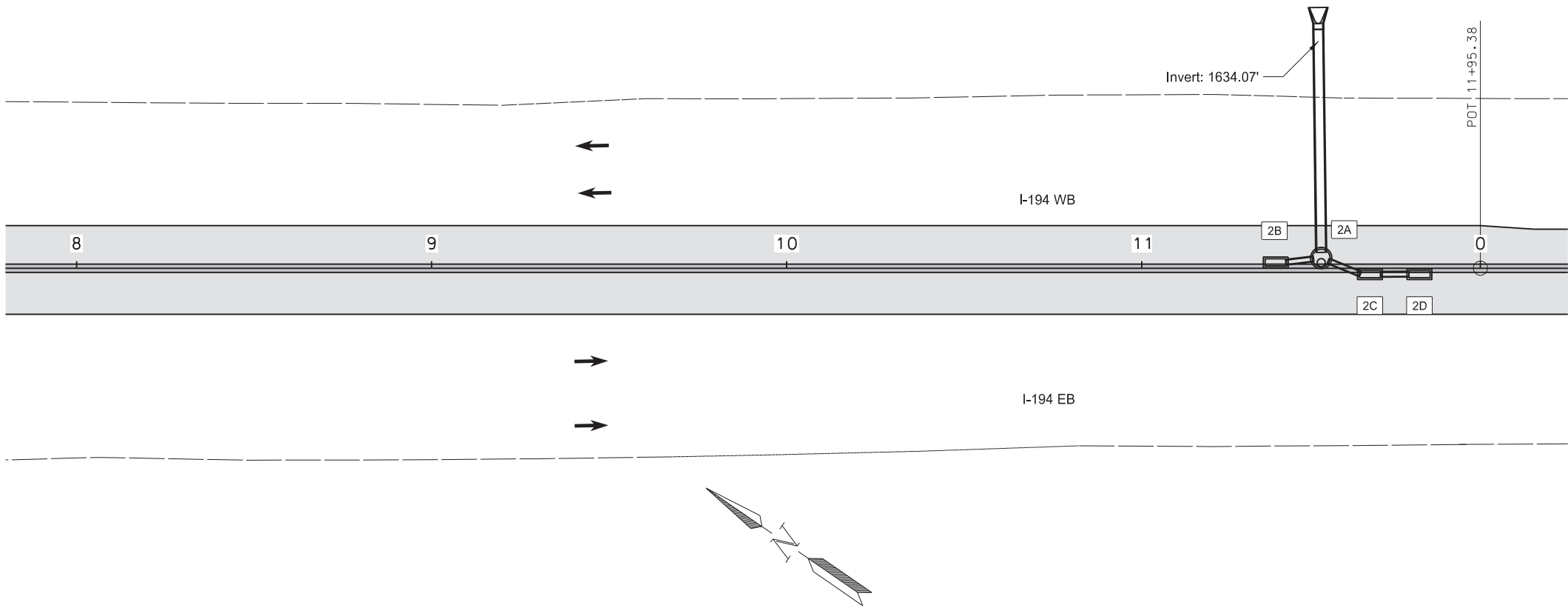
Plan & Profiles

Sta 4+00 to 8+00 (OCL194MED)

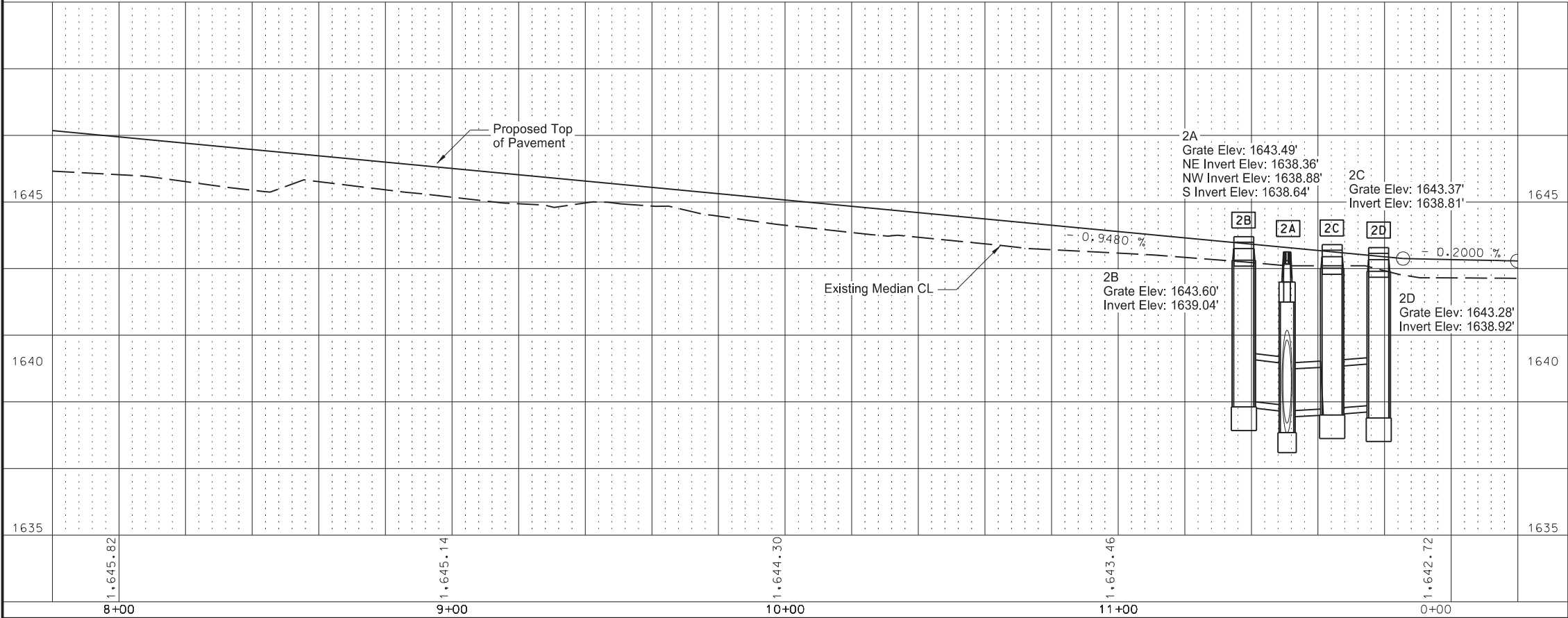
I-194 - S of I-94 to Memorial Hwy

PCC Pavement & Concrete Median Barrier

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 3         |



| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 3+89 to 7+84 (194_BA1)              | 395 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 11+49.77 to 11+49.72 68.8' Lt       | 6   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 2B to 2A                                | 13  | LF   |
|           | 2D to 2C                                | 14  | LF   |
|           | 2C to 2A                                | 15  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 2A to Sta 11+49.77 62.8' Lt             | 63  | LF   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 2B, 2C, 2D                              | 3   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 2A                                      | 1   | EA   |



|  |                          |
|--|--------------------------|
|  | Concrete Median Pavement |
|  | Concrete Median Barrier  |

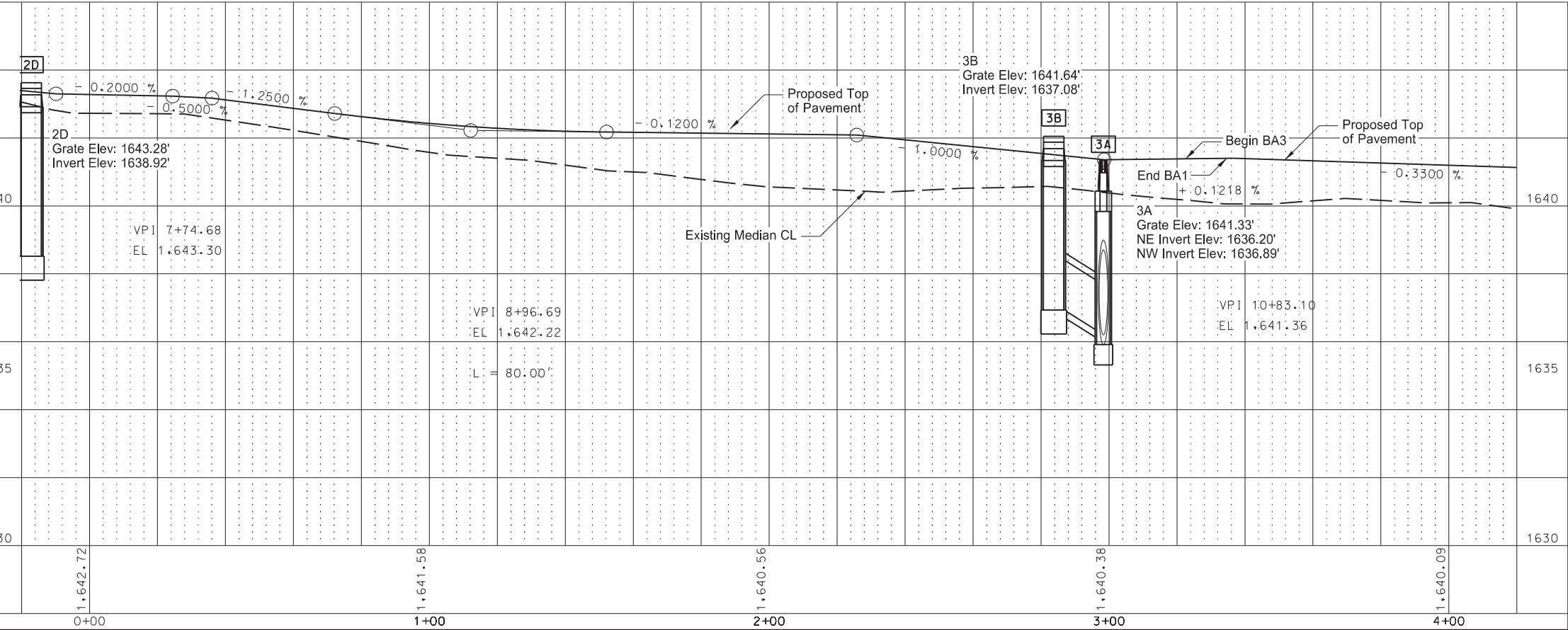
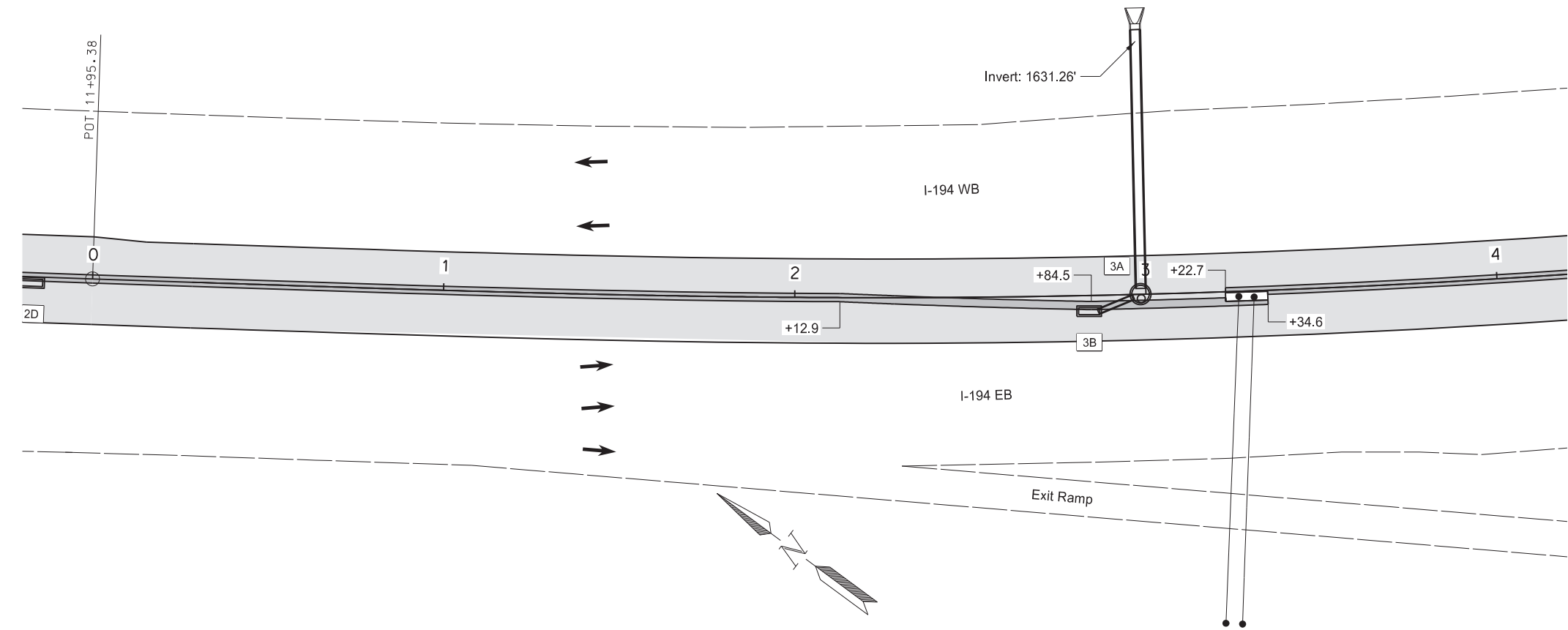


Plan & Profiles

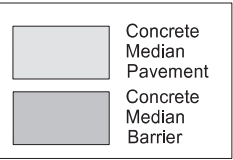
Sta 8+00 to 11+95.38 (OCL194MED)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 4         |



| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 7+84 to 11+19 (194_BA1)             | 335 | LF   |
|           | Sta 0+06 to 0+83 (194_BA3)              | 77  | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 2+98.80 to 2+98.82 77.1' Lt         | 6   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 3B to 3A                                | 16  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 3A to Sta 2+98.80 71.1' Lt              | 70  | LF   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 3B                                      | 1   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 3A                                      | 1   | EA   |



Plan & Profiles

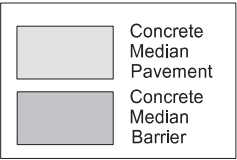
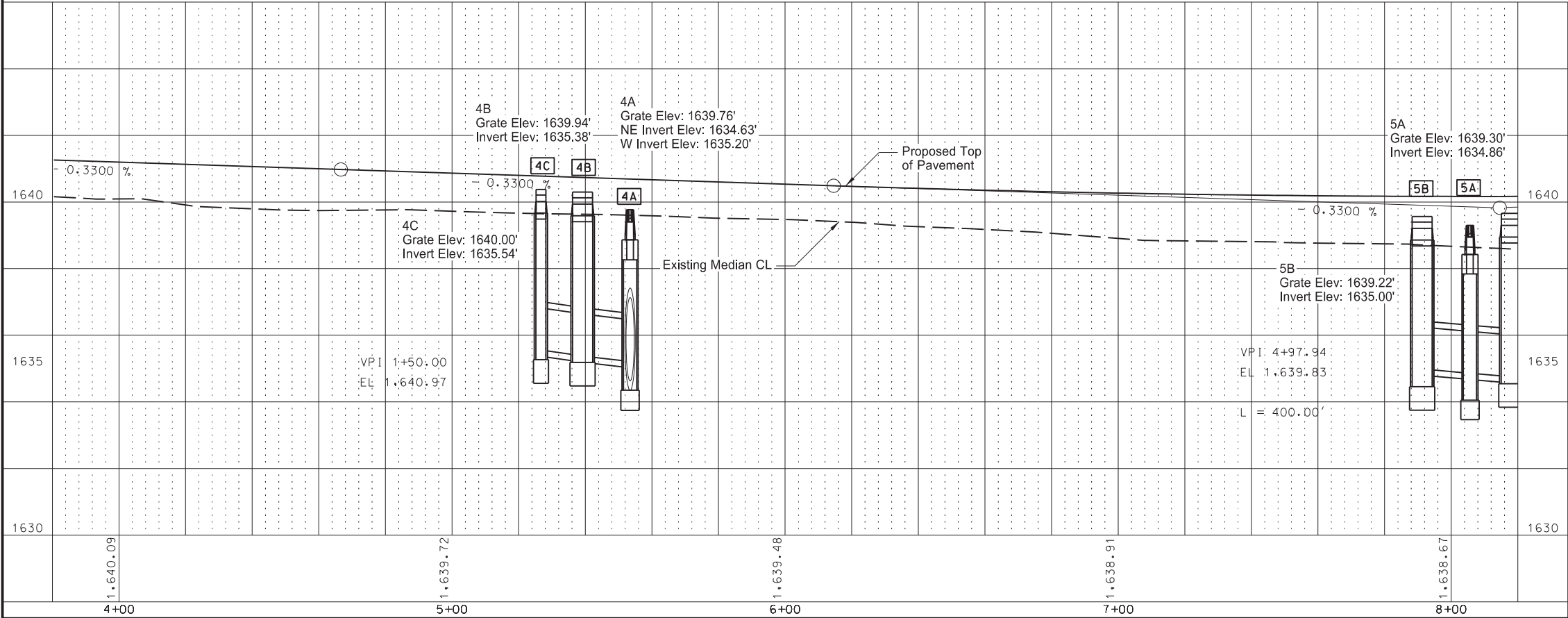
Sta 0+00 to 4+00 (194\_CL)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

Curve 194\_CL\_4  
PI = 4+20.80 Total Combination  
PI = 4+20.02 Simple Curve  
Delta = 11° 39' 10.01" (LT) Total Combination  
Delta = 7° 39' 10.72" (LT) Simple Curve  
Da = 1° 59' 59.65"  
R = 2,864.93  
L = 382.67 Simple Curve  
Ls = 200.00  
Sc = 1° 59' 59.65"  
Yc = 2.33  
Xc = 199.98  
Ts = 392.40

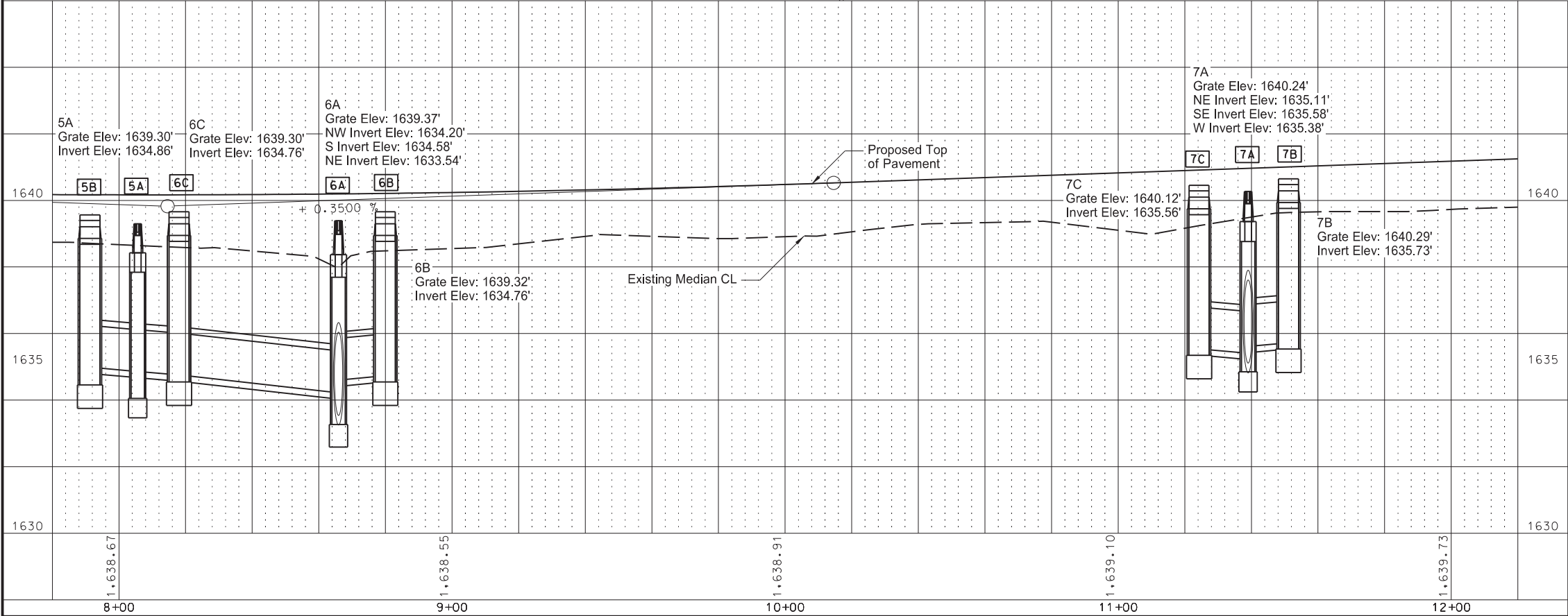
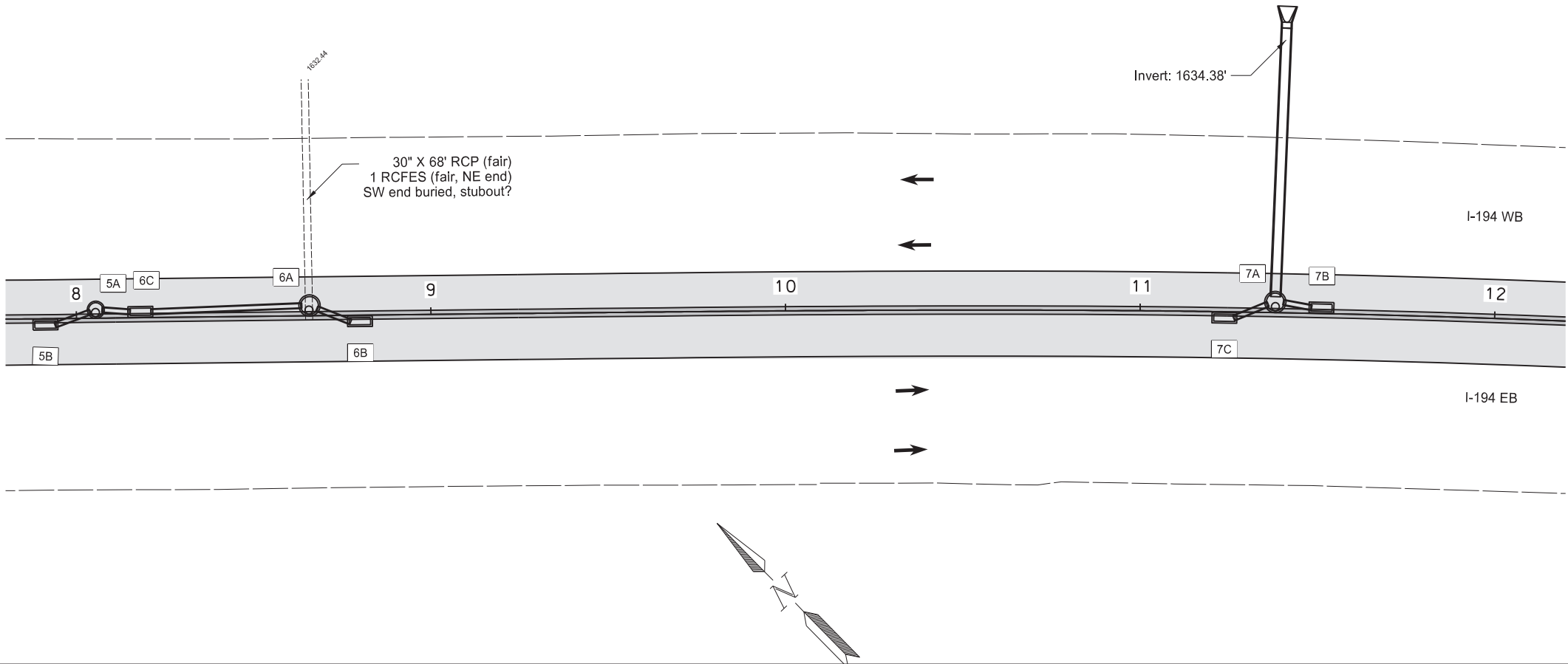
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 5         |

| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 0+83 to 4+83 (194_BA3)              | 400 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 5+58.89 to 5+59.48 70.7' Lt         | 6   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 4C to 4B                                | 13  | LF   |
|           | 4B to 4A                                | 15  | LF   |
|           | 5B to 5A                                | 15  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 4A to Sta 5+58.89 64.7' Lt              | 61  | LF   |
| 722 3510  | INLET-TYPE 2                            |     |      |
|           | 4C                                      | 1   | EA   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 4B, 5B                                  | 2   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 4A                                      | 1   | EA   |



Plan & Profiles  
Sta 4+00 to 8+00 (194\_CL)  
I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier

| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 4+83 to 8+83 (194_BA3)              | 400 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 11+39.68 to 11+39.86 81.9' Lt       | 8   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 5A to 6C                                | 13  | LF   |
|           | 6C to 6A                                | 48  | LF   |
|           | 6B to 6A                                | 16  | LF   |
|           | 7C to 7A                                | 16  | LF   |
|           | 7B to 7A                                | 14  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 7A to Sta 11+39.68 73.9' Lt             | 66  | LF   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 6B, 6C, 7B, 7C                          | 4   | EA   |
| 722 3701  | INLET SPECIAL-TYPE 2 48IN               |     |      |
|           | 5A                                      | 1   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 6A, 7A                                  | 2   | EA   |



Concrete Median Pavement

Concrete Median Barrier

REGISTERED PROFESSIONAL ENGINEER

BRADY L. HAUSSLER

PE-27171

10/12/20

NORTH DAKOTA

Plan & Profiles

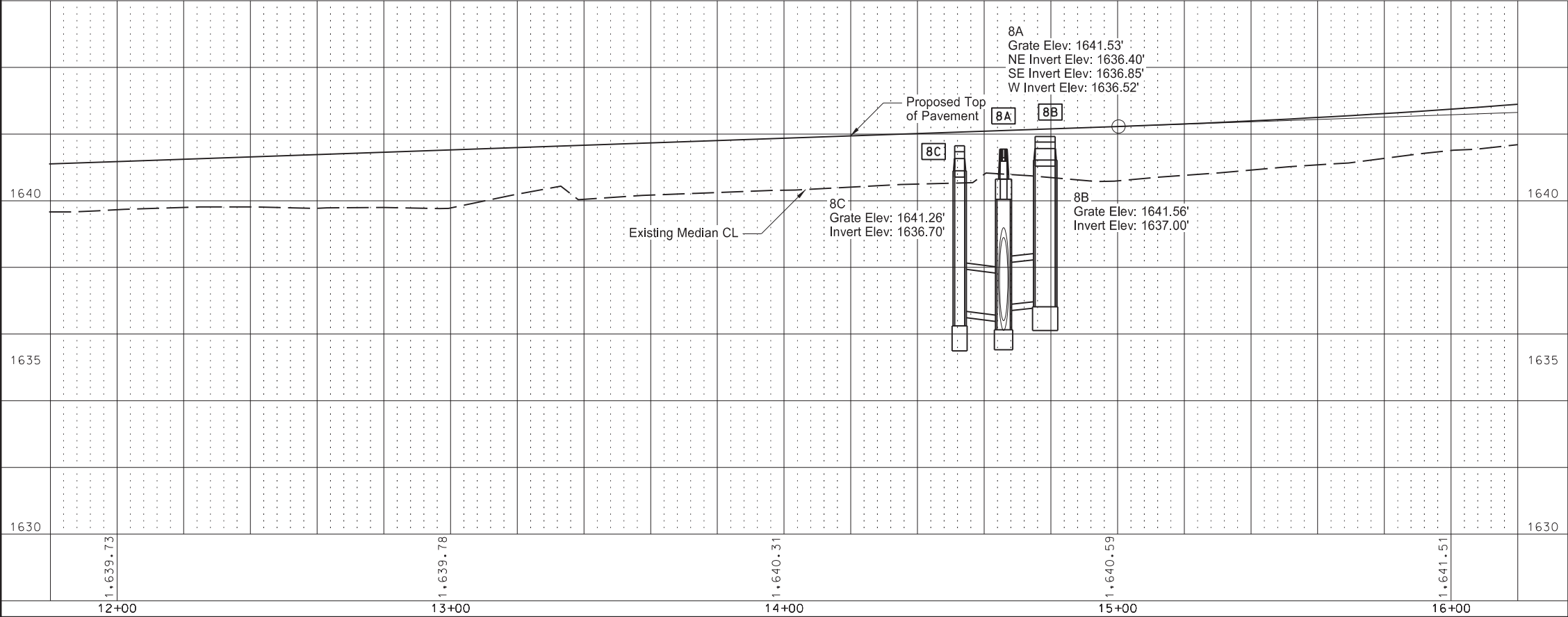
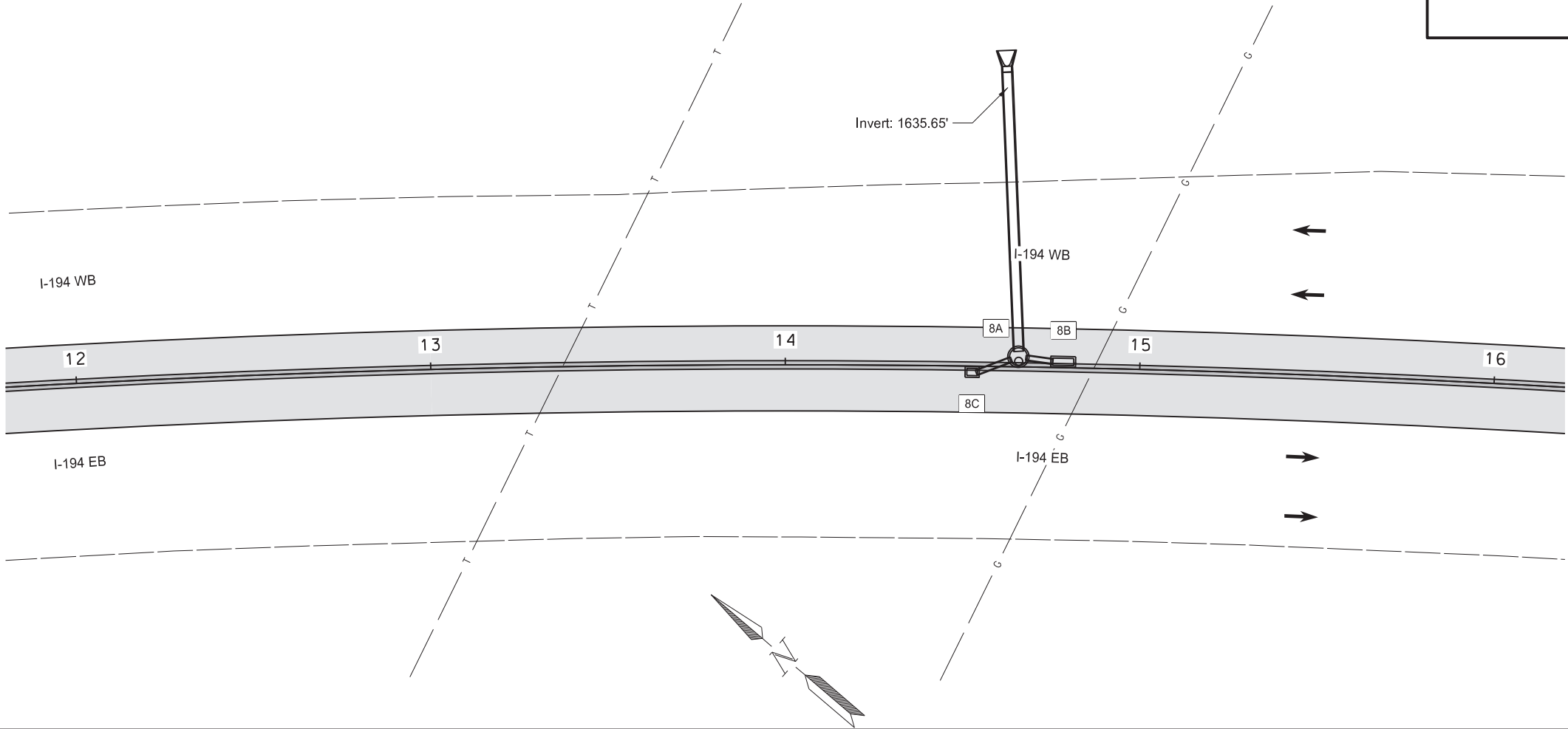
Sta 8+00 to 12+00 (194\_CL)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 60          | 7         |

| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 8+83 to 12+83 (194_BA3)             | 400 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 14+61.66 to 14+61.21 84.7' Lt       | 8   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 8C to 8A                                | 14  | LF   |
|           | 8B to 8A                                | 13  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 8A to Sta 14+61.66 76.7' Lt             | 69  | LF   |
| 722 3510  | INLET-TYPE 2                            |     |      |
|           | 8C                                      | 1   | EA   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 8B                                      | 1   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 8A                                      | 1   | EA   |



Concrete Median Pavement

Concrete Median Barrier

REGISTERED PROFESSIONAL ENGINEER

BRADY L. HAÜSSLER

PE-27171

10/12/20

NORTH DAKOTA

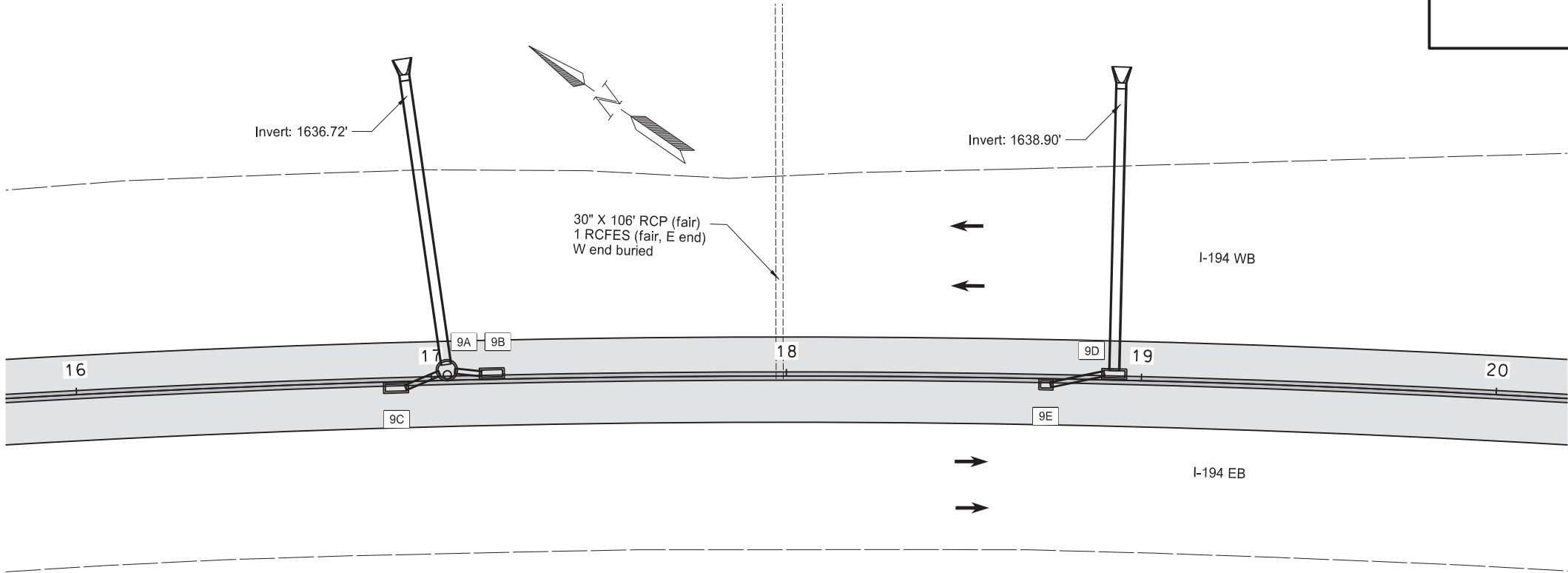
Plan & Profiles

Sta 12+00 to 16+00 (194\_CL)

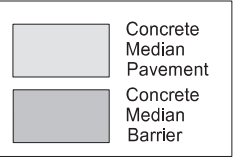
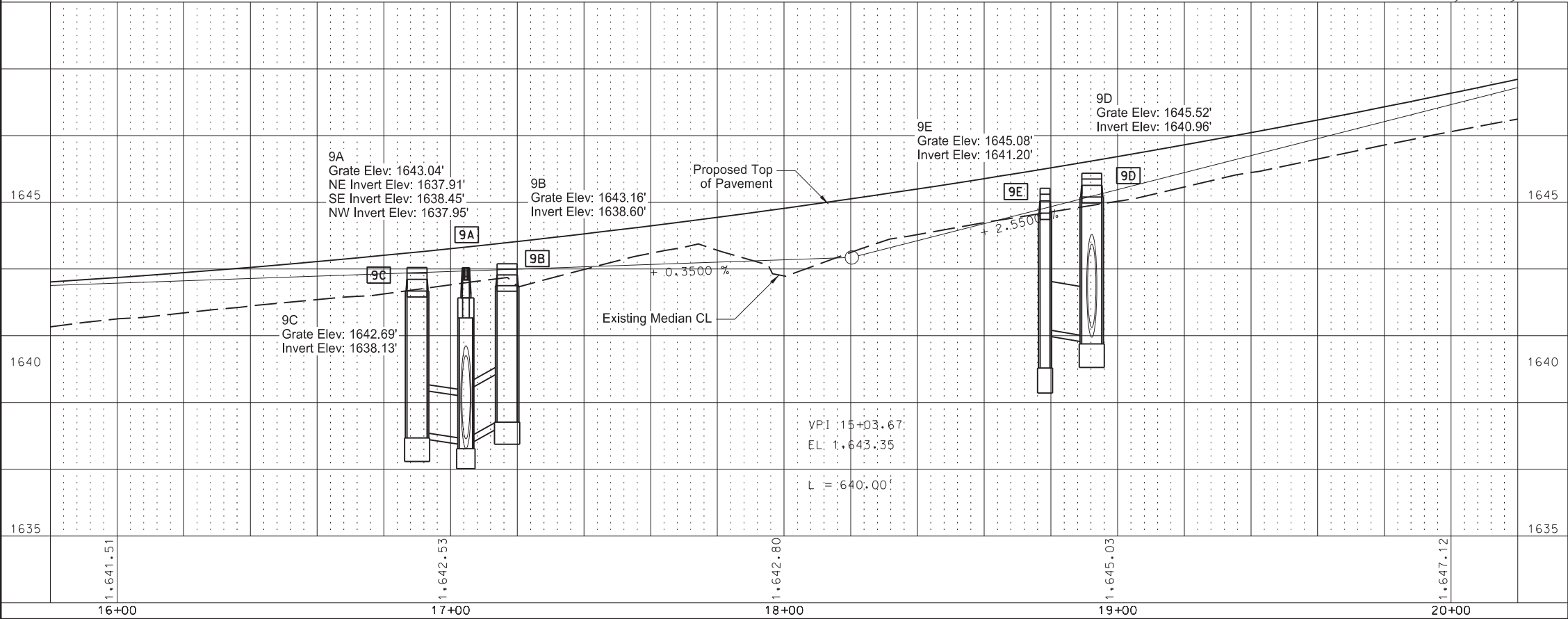
I-194 - S of I-94 to Memorial Hwy

PCC Pavement & Concrete Median Barrier





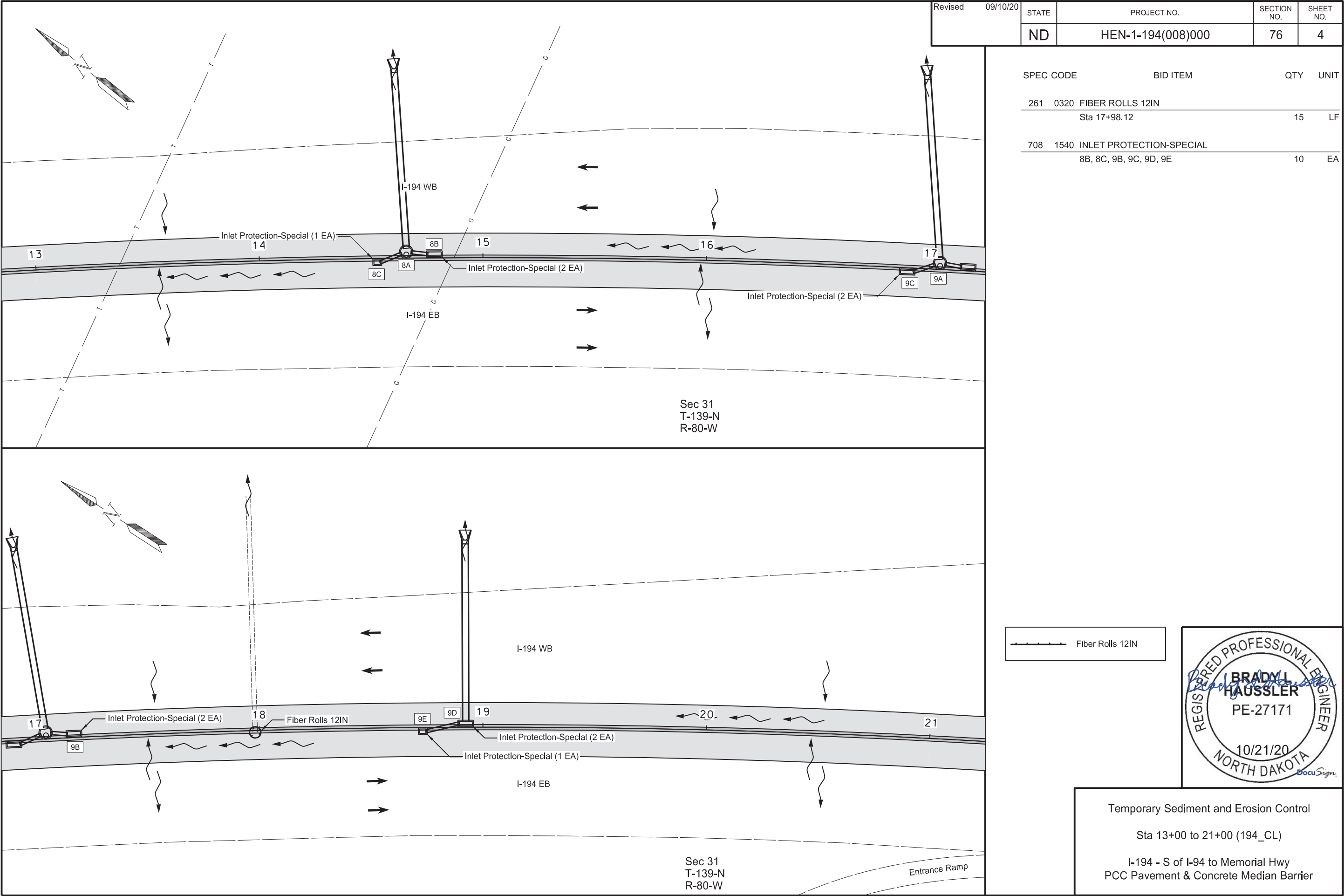
| SPEC CODE | BID ITEM                                | QTY | UNIT |
|-----------|-----------------------------------------|-----|------|
| 602 1200  | JERSEY BARRIER FORMED OR SLIP FORMED    |     |      |
|           | Sta 12+83 to 16+83 (194_BA3)            | 400 | LF   |
| 714 0825  | PIPE CONC REINF 30IN CL III-STORM DRAIN |     |      |
|           | Sta 16+95.67 to 16+94.75 86.3' Lt       | 8   | LF   |
|           | Sta 18+92.34 to 18+92.34 83.7' Lt       | 8   | LF   |
| 714 4097  | PIPE CONDUIT 15IN-STORM DRAIN           |     |      |
|           | 9C to 9A                                | 16  | LF   |
|           | 9B to 9A                                | 13  | LF   |
|           | 9E to 9D                                | 20  | LF   |
| 714 4166  | PIPE CONDUIT 30IN-JACKED OR BORED       |     |      |
|           | 9A to Sta 16+95.67 78.3' Lt             | 73  | LF   |
|           | 9D to Sta 18+92.34 75.7' Lt             | 76  | LF   |
| 722 3510  | INLET-TYPE 2                            |     |      |
|           | 9E                                      | 1   | EA   |
| 722 3520  | INLET-TYPE 2 DOUBLE                     |     |      |
|           | 9B, 9C, 9D                              | 3   | EA   |
| 722 3761  | INLET SPECIAL-TYPE 2 60IN               |     |      |
|           | 9A                                      | 1   | EA   |

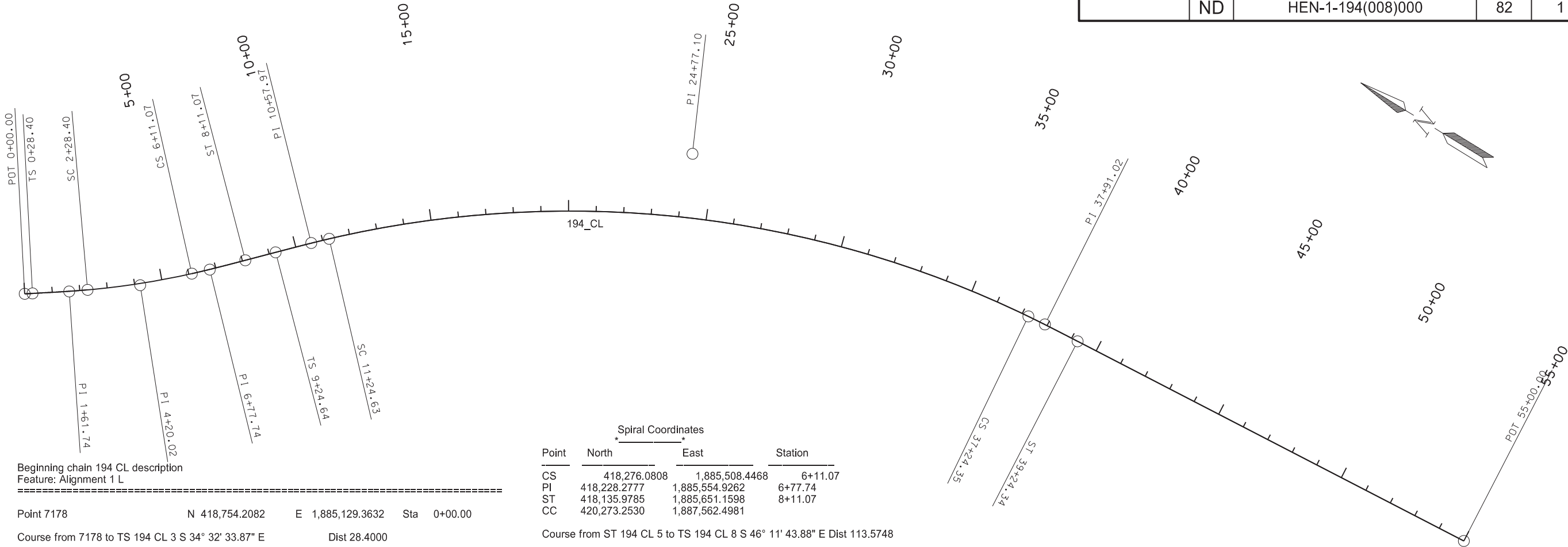


Plan & Profiles

Sta 16+00 to 20+00 (194\_CL)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier





Beginning chain 194 CL description  
Feature: Alignment 1 L

Point 7178N 418,754.2082E 1,885,129.3632Sta 0+00.00

Course from 7178 to TS 194 CL 3 S 34° 32' 33.87" EDist 28.4000

Spiral 194 CL 3Type 1Spiral Element

|       |                    |    |          |      |                    |
|-------|--------------------|----|----------|------|--------------------|
| Angle | 1° 59' 59.65" (LT) | P  | 0.5817   | BK   | S 34° 32' 33.87" E |
| LS    | 200.0000           | K  | 99.9959  | AH   | S 36° 32' 33.52" E |
| R     | 2,864.9300         | LT | 133.3418 | CB   | S 35° 12' 33.73" E |
| YS    | 2.3268             | ST | 66.6744  | Defl | 0° 39' 59.86"      |
| XS    | 199.9756           | LC | 199.9892 | Deg  | 1° 59' 59.65"      |

| Spiral Coordinates |              |                |         |  |
|--------------------|--------------|----------------|---------|--|
| Point              | North        | East           | Station |  |
| TS                 | 418,730.8151 | 1,885,145.4666 | 0+28.40 |  |
| PI                 | 418,620.9809 | 1,885,221.0742 | 1+61.74 |  |
| SC                 | 418,567.4138 | 1,885,260.7735 | 2+28.40 |  |
| CC                 | 420,273.2530 | 1,887,562.4981 |         |  |

| Curve Data     |         |                    |                  |                  |
|----------------|---------|--------------------|------------------|------------------|
| Curve 194 CL 4 |         |                    |                  |                  |
| P.I. Station   | 4+20.02 | N 418,413.4646     | E ,885,374.8673  |                  |
| Delta          | =       | 7° 39' 10.72" (LT) |                  |                  |
| Degree         | =       | 1° 59' 59.65"      |                  |                  |
| Tangent        | =       | 191.6188           |                  |                  |
| Length         | =       | 382.6677           |                  |                  |
| Radius         | =       | 2,864.9300         |                  |                  |
| External       | =       | 6.4010             |                  |                  |
| Long Chord     | =       | 382.3833           |                  |                  |
| Mid. Ord.      | =       | 6.3867             |                  |                  |
| P.C. Station   |         | 2+28.40            | N 418,567.4138   | E 1,885,260.7735 |
| P.T. Station   |         | 6+11.07            | N 418,276.0808   | E 1,885,508.4468 |
| C.C.           |         | N 420,273.2530     | E 1,887,562.4981 |                  |
| Back           | =       | S 36° 32' 33.52" E |                  |                  |
| Ahead          | =       | S 44° 11' 44.24" E |                  |                  |
| Chord Bear     | =       | S 40° 22' 08.88" E |                  |                  |

Spiral 194 CL 5Type 2Spiral Element

|       |                    |    |          |      |                    |
|-------|--------------------|----|----------|------|--------------------|
| Angle | 1° 59' 59.65" (LT) | P  | 0.5817   | BK   | S 44° 11' 44.24" E |
| LS    | 200.0000           | K  | 99.9959  | AH   | S 46° 11' 43.88" E |
| R     | 2,864.9300         | LT | 133.3418 | CB   | S 45° 31' 44.03" E |
| YS    | 2.3268             | ST | 66.6744  | Defl | 0° 39' 59.86"      |
| XS    | 199.9756           | LC | 199.9892 | Deg  | 1° 59' 59.65"      |

| Spiral Coordinates |              |                |         |  |
|--------------------|--------------|----------------|---------|--|
| Point              | North        | East           | Station |  |
| CS                 | 418,276.0808 | 1,885,508.4468 | 6+11.07 |  |
| PI                 | 418,228.2777 | 1,885,554.9262 | 6+77.74 |  |
| ST                 | 418,135.9785 | 1,885,651.1598 | 8+11.07 |  |
| CC                 | 420,273.2530 | 1,887,562.4981 |         |  |

Course from ST 194 CL 5 to TS 194 CL 8 S 46° 11' 43.88" E Dist 113.5748

Spiral 194 CL 8Type 1Spiral Element

|       |                    |    |          |      |                    |
|-------|--------------------|----|----------|------|--------------------|
| Angle | 1° 29' 59.57" (RT) | P  | 0.4363   | BK   | S 46° 11' 43.88" E |
| LS    | 199.9900           | K  | 99.9927  | AH   | S 44° 41' 44.31" E |
| R     | 3,819.8300         | LT | 133.3315 | CB   | S 45° 41' 44.04" E |
| YS    | 1.7450             | ST | 66.6677  | Defl | 0° 29' 59.85"      |
| XS    | 199.9763           | LC | 199.9839 | Deg  | 1° 29' 59.84"      |

| Spiral Coordinates |              |                |          |  |
|--------------------|--------------|----------------|----------|--|
| Point              | North        | East           | Station  |  |
| TS                 | 418,057.3621 | 1,885,733.1275 | 9+24.64  |  |
| PI                 | 417,965.0701 | 1,885,829.3536 | 10+57.97 |  |
| SC                 | 417,917.6792 | 1,885,876.2437 | 11+24.63 |  |
| CC                 | 415,231.0375 | 1,883,160.9061 |          |  |

| Curve Data     |          |                     |                  |  |
|----------------|----------|---------------------|------------------|--|
| Curve 194 CL 9 |          |                     |                  |  |
| P.I. Station   | 24+77.10 | N 416,956.2718      | E 1,886,827.4908 |  |
| Delta          | =        | 38° 59' 40.55" (RT) |                  |  |
| Degree         | =        | 1° 29' 59.84"       |                  |  |
| Tangent        | =        | 1,352.4700          |                  |  |
| Length         | =        | 2,599.7155          |                  |  |
| Radius         | =        | 3,819.8300          |                  |  |
| External       | =        | 232.3640            |                  |  |
| Long Chord     | =        | 2,549.8313          |                  |  |
| Mid. Ord.      | =        | 219.0396            |                  |  |
| P.C. Station   | 11+24.63 | N 417,917.6792      | E 1,885,876.2437 |  |
| P.T. Station   | 37+24.35 | N 415,610.4915      | E 1,886,961.8423 |  |
| C.C.           |          | N 415,231.0375      | E 1,883,160.9061 |  |
| Back           | =        | S 44° 41' 44.31" E  |                  |  |
| Ahead          | =        | S 5° 42' 03.76" E   |                  |  |
| Chord Bear     | =        | S 25° 11' 54.04" E  |                  |  |

Spiral 194 CL 10Type 2Spiral Element

|       |                    |    |          |      |                   |
|-------|--------------------|----|----------|------|-------------------|
| Angle | 1° 29' 59.57" (RT) | P  | 0.4363   | BK   | S 5° 42' 03.76" E |
| LS    | 199.9900           | K  | 99.9927  | AH   | S 4° 12' 04.19" E |
| R     | 3,819.8300         | LT | 133.3315 | CB   | S 4° 42' 04.04" E |
| YS    | 1.7450             | ST | 66.6677  | Defl | 0° 29' 59.85"     |
| XS    | 199.9763           | LC | 199.9839 | Deg  | 1° 29' 59.84"     |

| Spiral Coordinates |              |                |          |  |
|--------------------|--------------|----------------|----------|--|
| Point              | North        | East           | Station  |  |
| CS                 | 415,610.4915 | 1,886,961.8423 | 37+24.35 |  |
| PI                 | 415,544.1535 | 1,886,968.4650 | 37+91.02 |  |
| ST                 | 415,411.1803 | 1,886,978.2326 | 39+24.34 |  |
| CC                 | 415,231.0375 | 1,883,160.9061 |          |  |

Course from ST 194 CL 10 to 7179 S 4° 12' 04.19" EDist 1,575.6620

Point 7179N 413,839.7521E 1,887,093.6632Sta 55+00.00

Ending chain 194 CL description

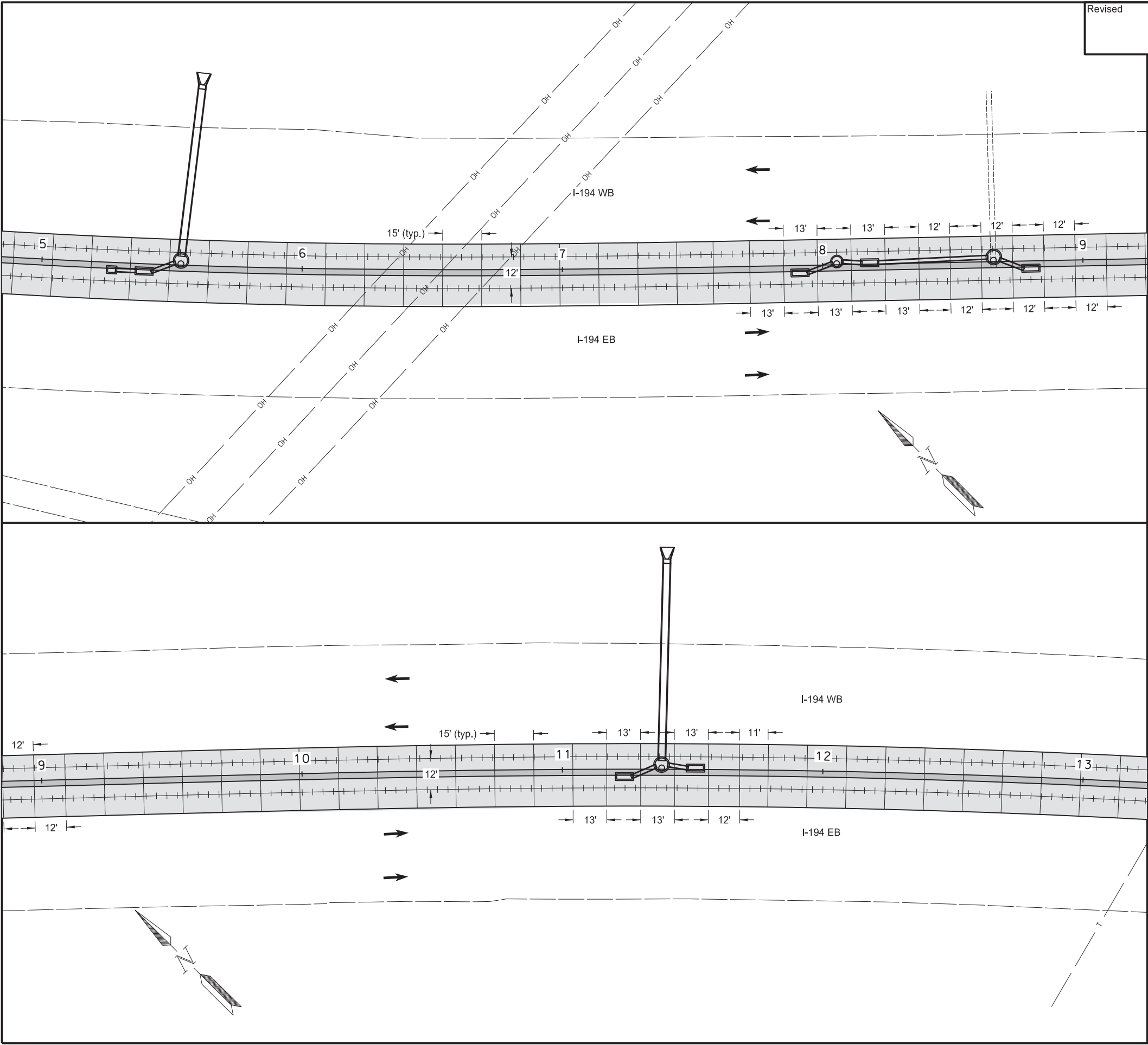


Survey Data Layout

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier







|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/11/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 90          | 3         |

| SPEC CODE | BID ITEM                   | QTY  | UNIT |
|-----------|----------------------------|------|------|
| 302 0120  | AGGREGATE BASE COURSE CL 5 |      |      |
|           | Sta 5+00 to 13+00 (194_CL) | 1038 | TON  |
| 550 3005  | CONCRETE MEDIAN PAVEMENT   |      |      |
|           | Sta 5+00 to 13+00 (194_CL) | 2133 | SY   |

|  |                          |
|--|--------------------------|
|  | Untied Joint             |
|  | Tied Joint               |
|  | Concrete Median Pavement |
|  | Concrete Median Barrier  |

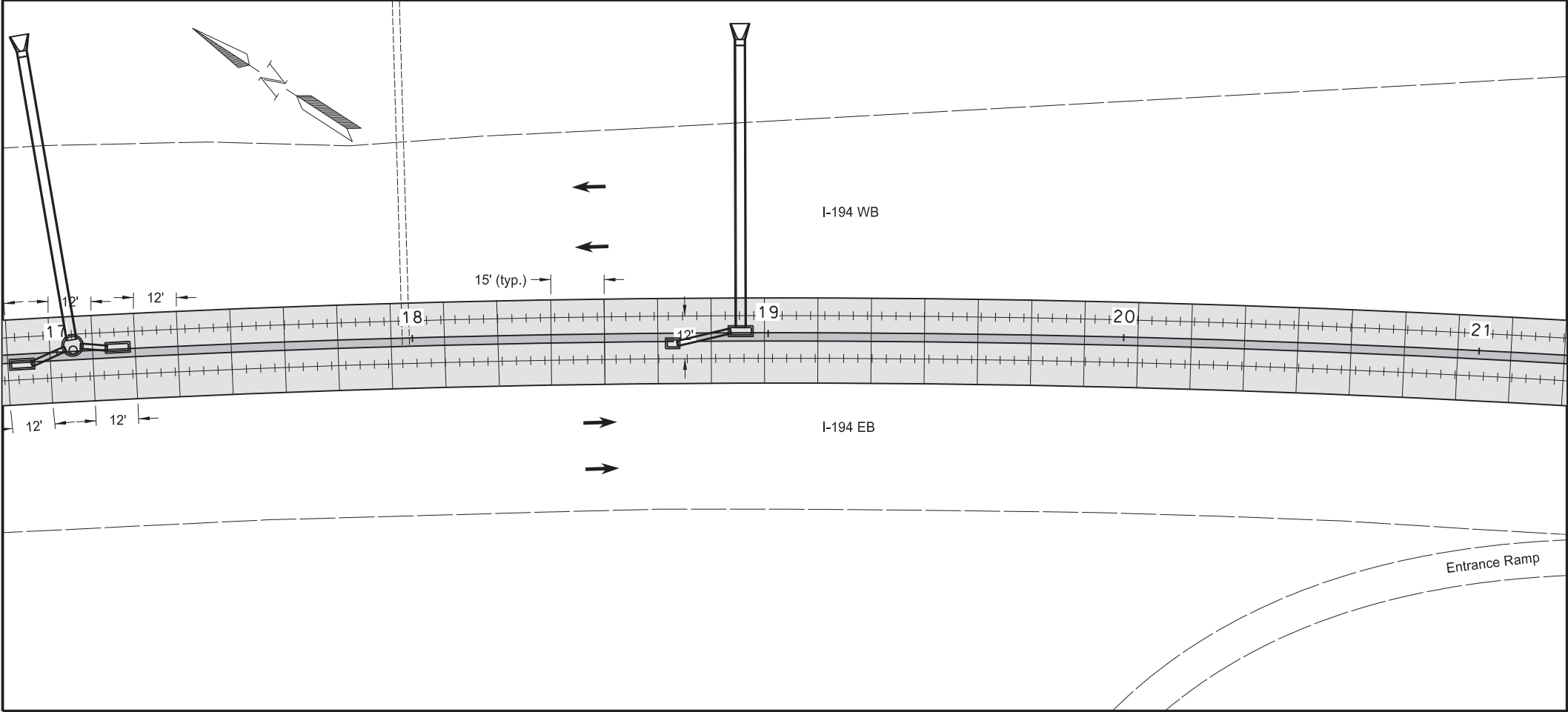
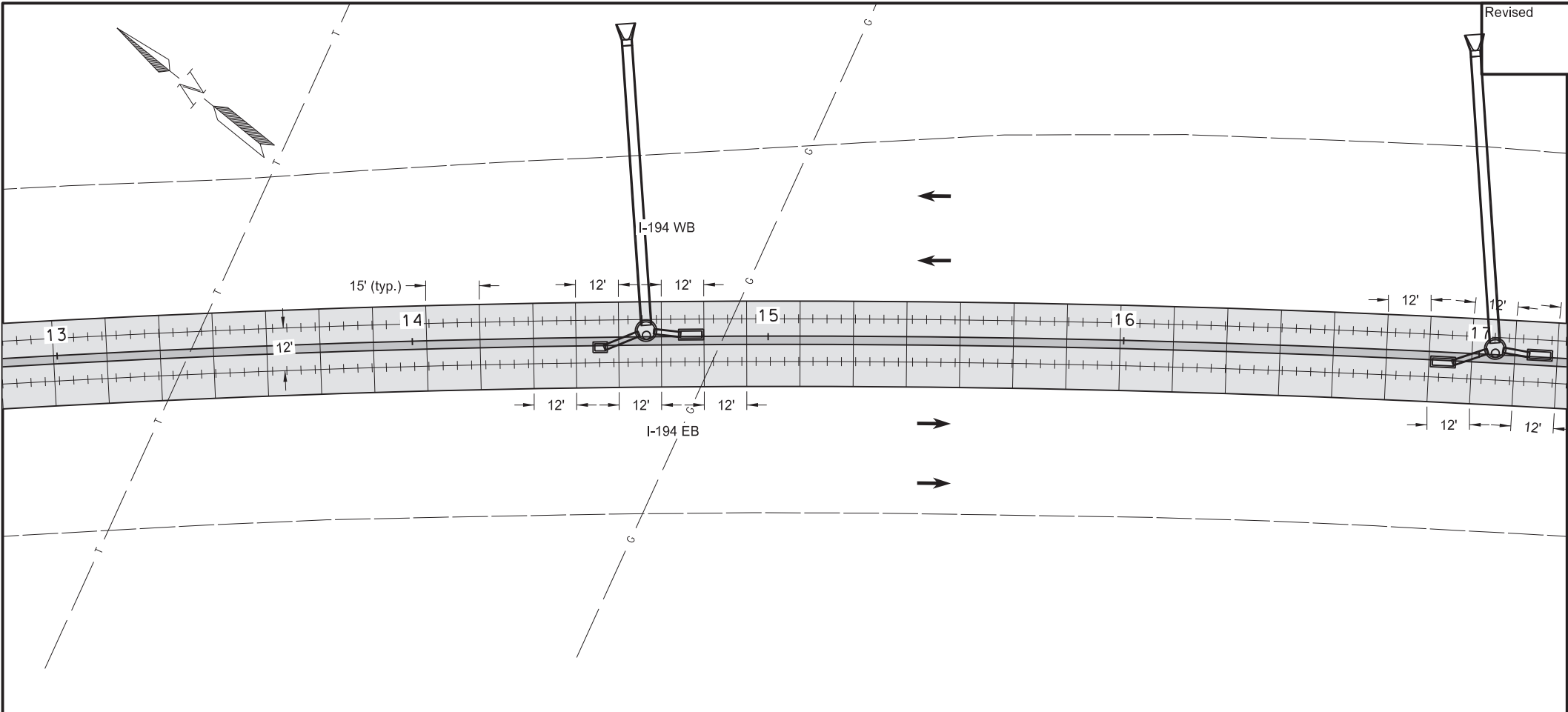


Paving Layouts

Sta 5+00 to 13+00 (194\_CL)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier





|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/11/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 90          | 4         |

| SPEC CODE | BID ITEM                    | QTY  | UNIT |
|-----------|-----------------------------|------|------|
| 302 0120  | AGGREGATE BASE COURSE CL 5  |      |      |
|           | Sta 13+00 to 21+00 (194_CL) | 1038 | TON  |
| 550 3005  | CONCRETE MEDIAN PAVEMENT    |      |      |
|           | Sta 13+00 to 21+00 (194_CL) | 2133 | SY   |

|  |                          |
|--|--------------------------|
|  | Untied Joint             |
|  | Tied Joint               |
|  | Concrete Median Pavement |
|  | Concrete Median Barrier  |

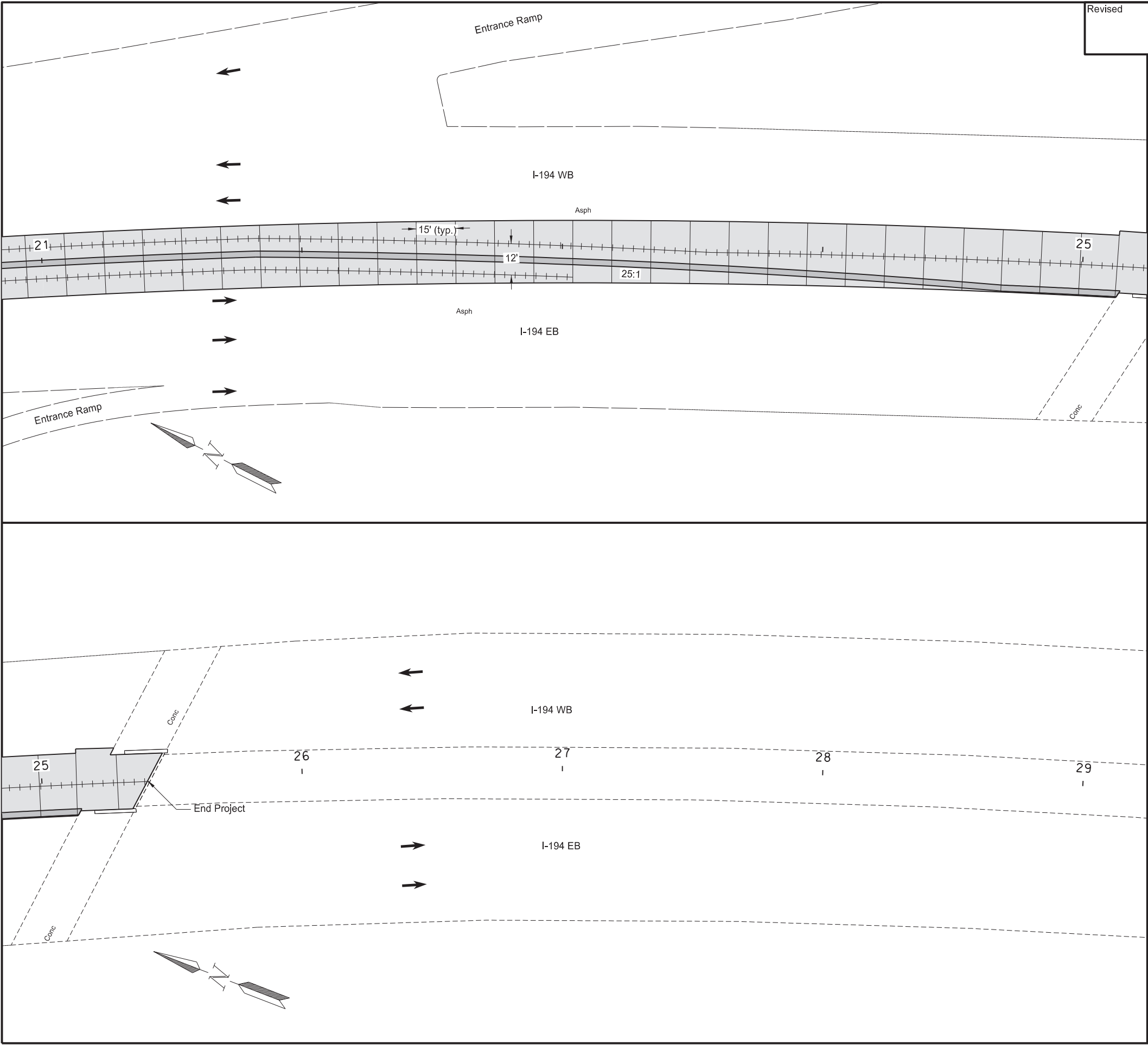


Paving Layouts

Sta 13+00 to 21+00 (194\_CL)

I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier





|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/11/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 90          | 5         |

| SPEC CODE | BID ITEM                       | QTY  | UNIT |
|-----------|--------------------------------|------|------|
| 302 0120  | AGGREGATE BASE COURSE CL 5     |      |      |
|           | Sta 21+00 to 25+41.04 (194_CL) | 569  | TON  |
| 550 3005  | CONCRETE MEDIAN PAVEMENT       |      |      |
|           | Sta 21+00 to 25+41.04 (194_CL) | 1170 | SY   |

|  |                          |
|--|--------------------------|
|  | Untied Joint             |
|  | Tied Joint               |
|  | Concrete Median Pavement |
|  | Concrete Median Barrier  |



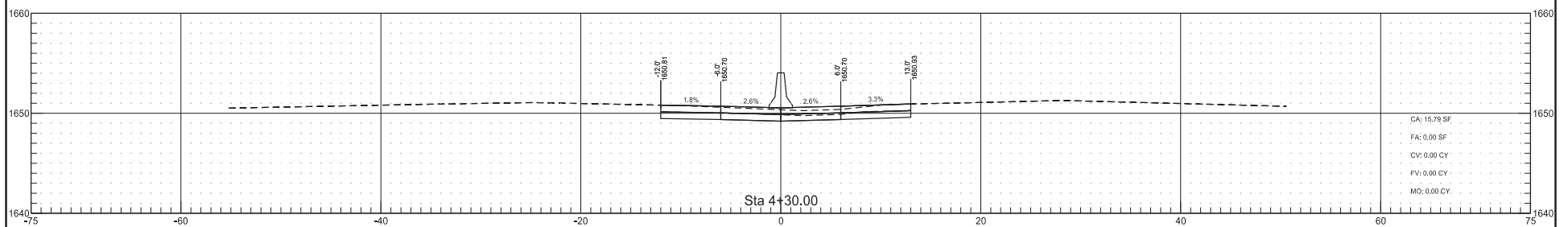
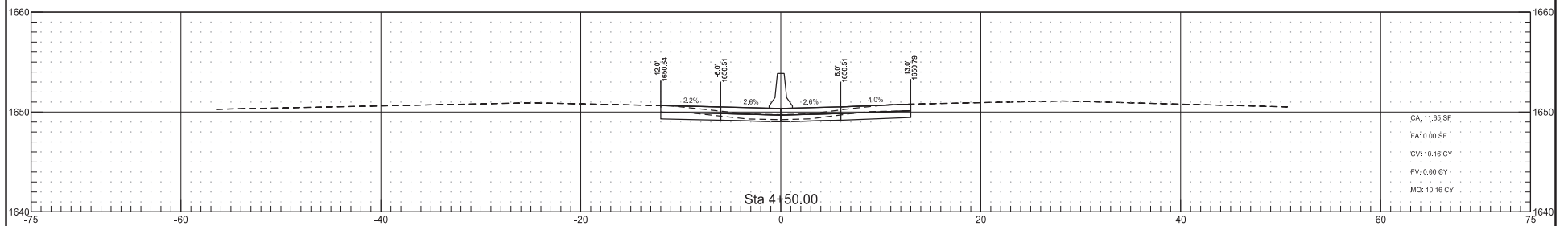
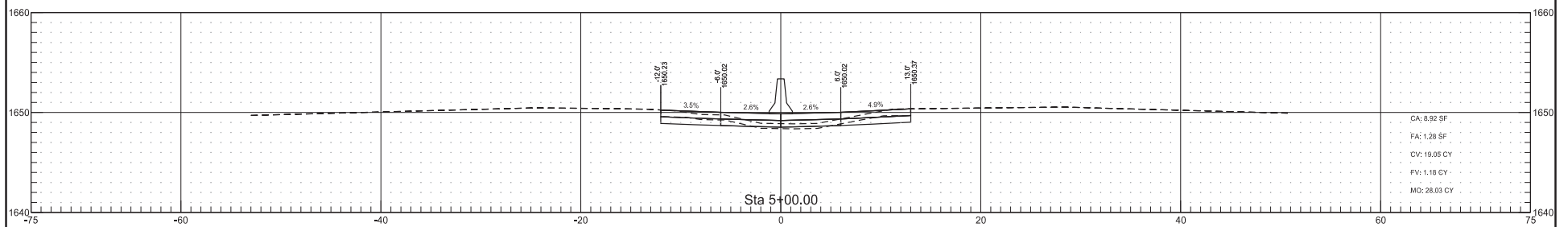
Paving Layouts

Sta 21+00 to 29+00 (194\_CL)

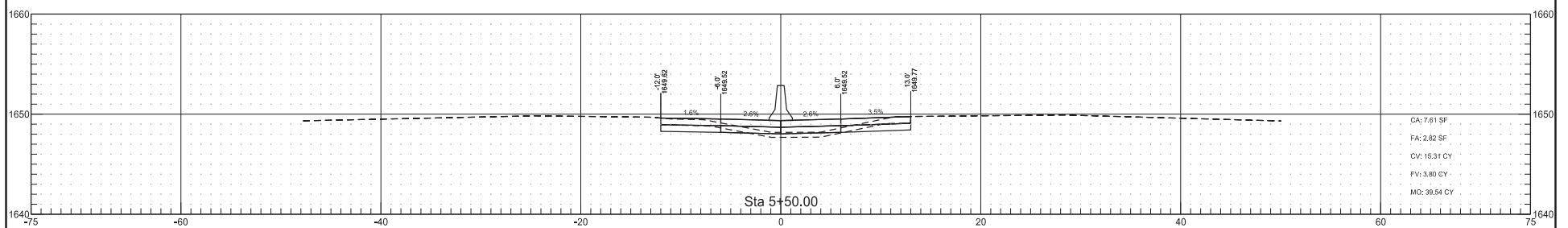
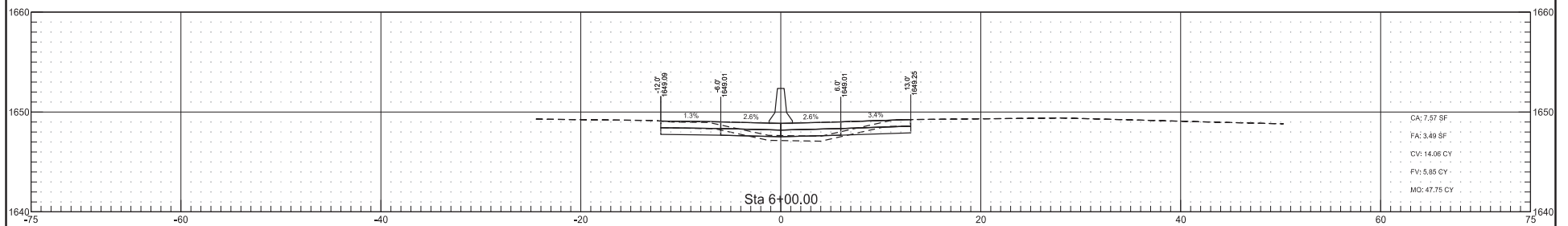
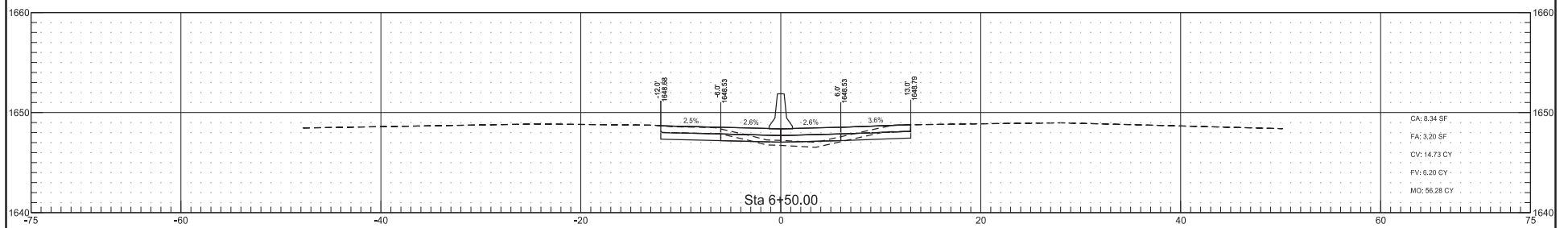
I-194 - S of I-94 to Memorial Hwy  
PCC Pavement & Concrete Median Barrier



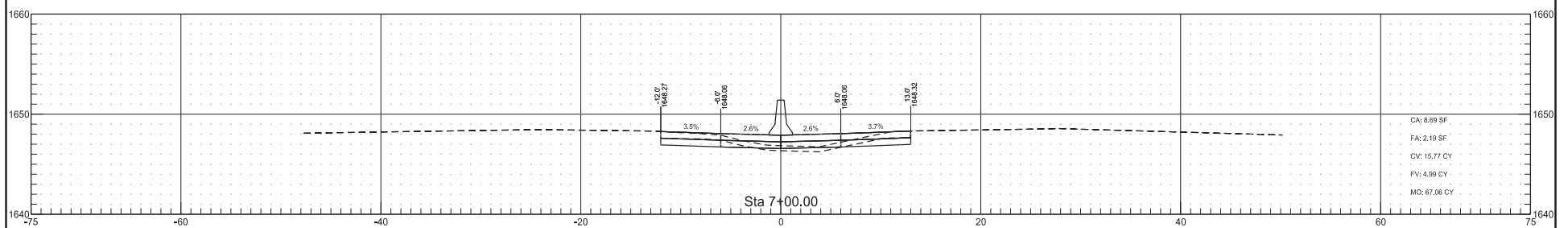
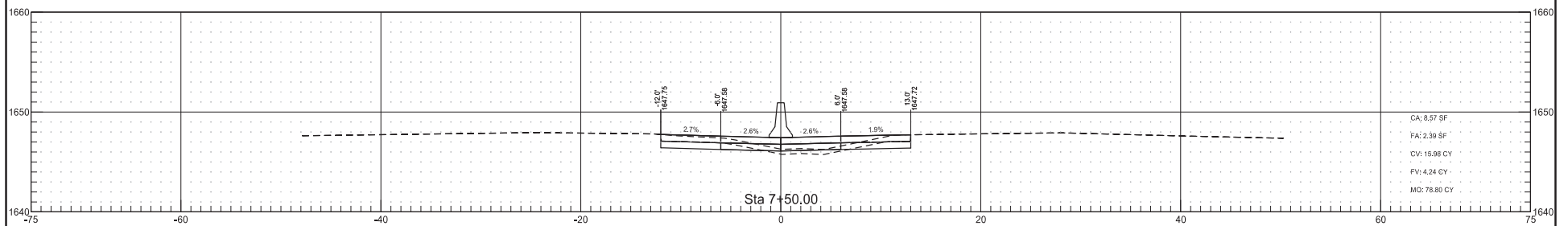
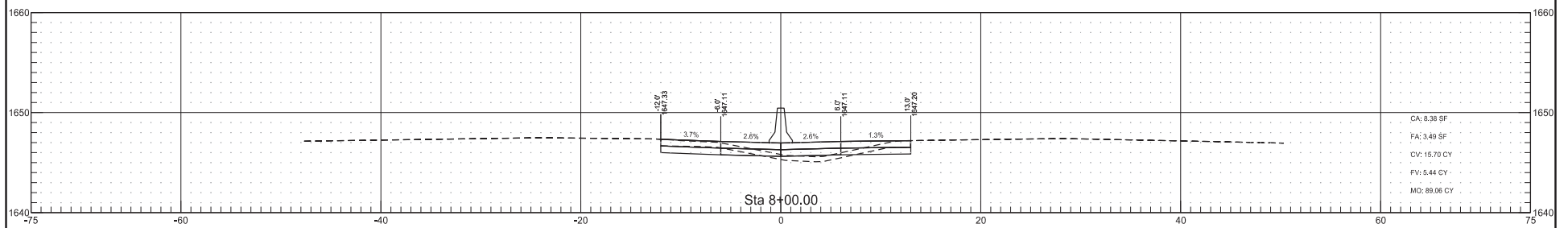
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 1         |



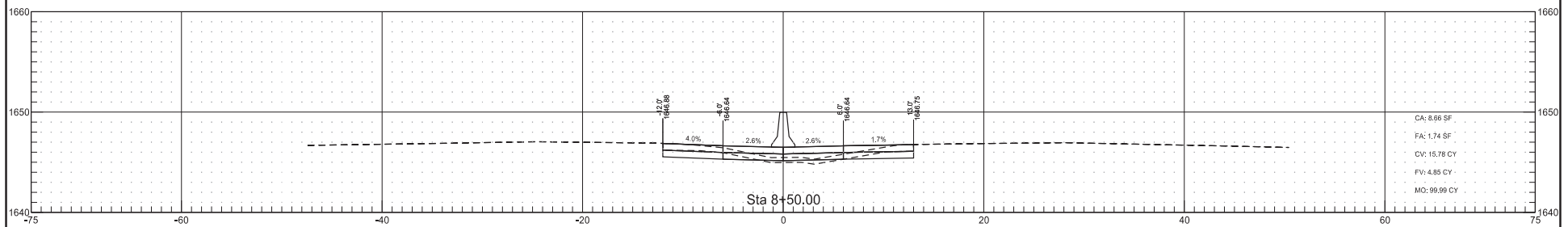
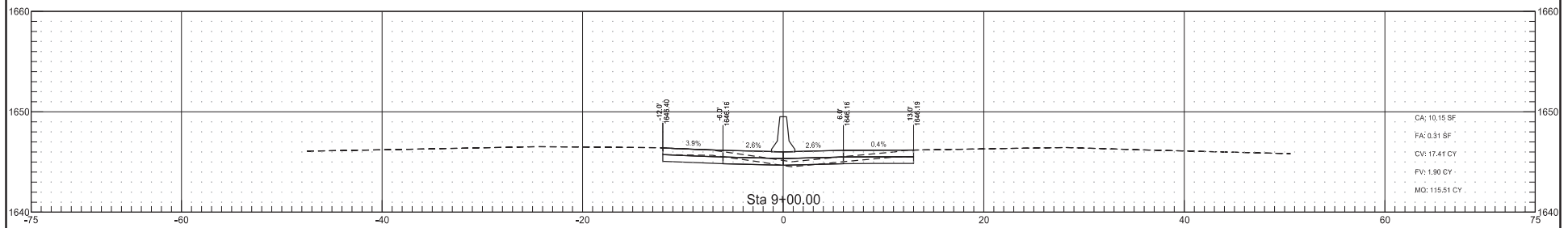
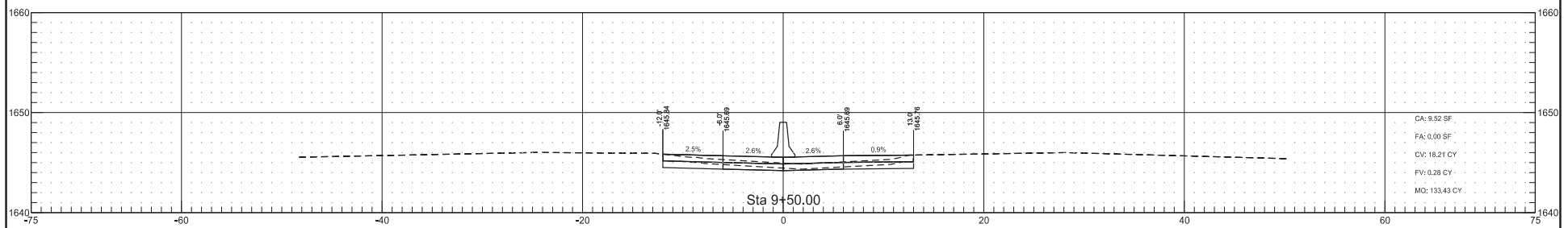
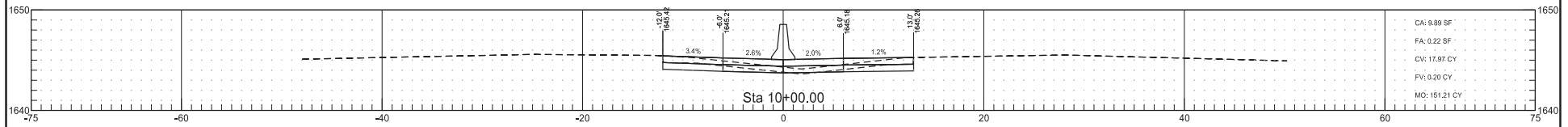
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 2         |



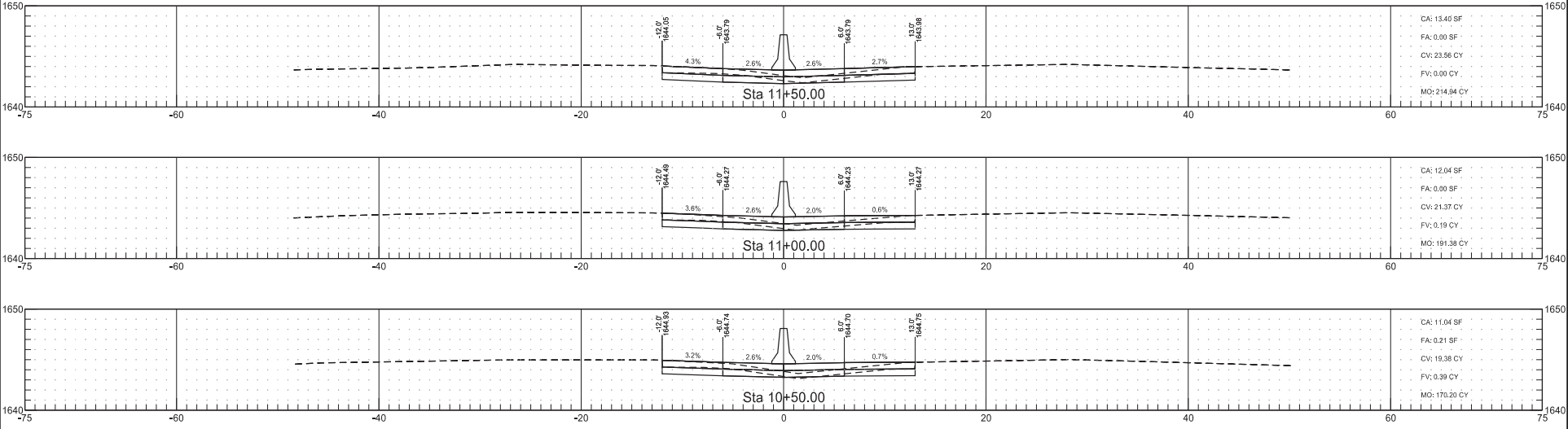
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 3         |



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 4         |

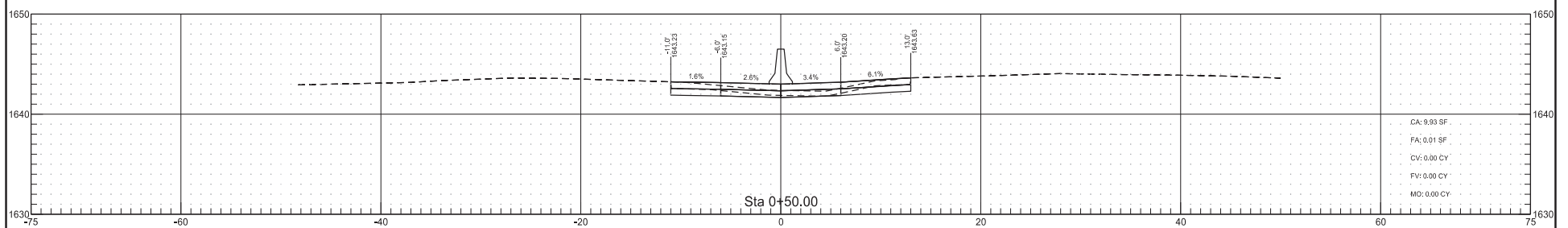
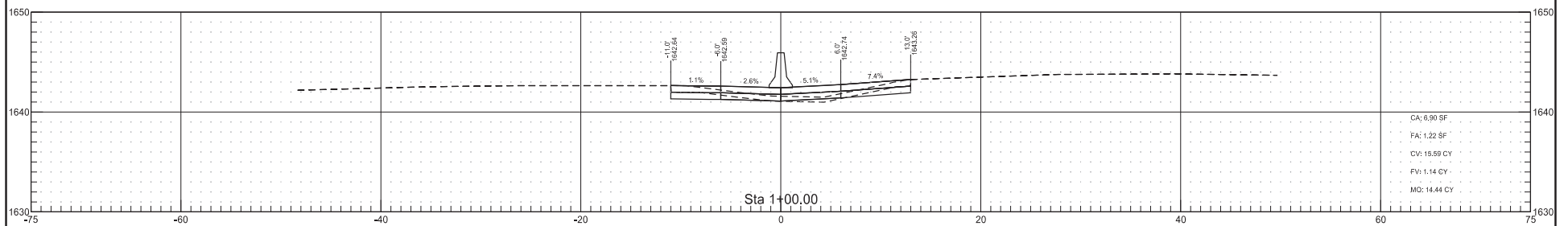
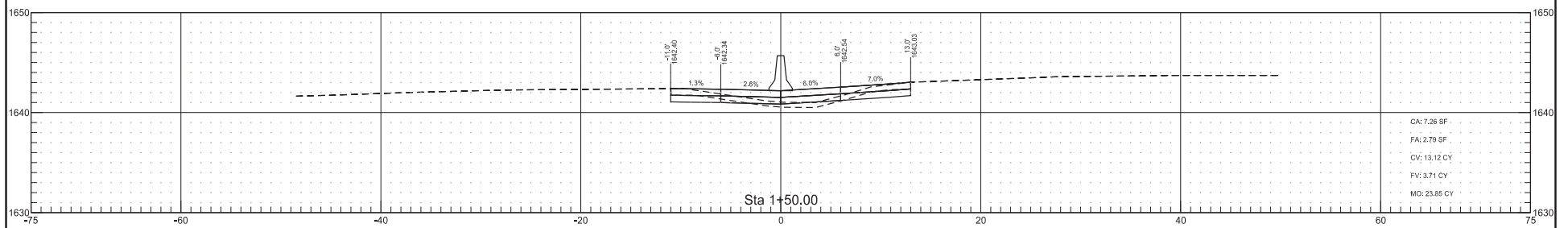


|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 5         |

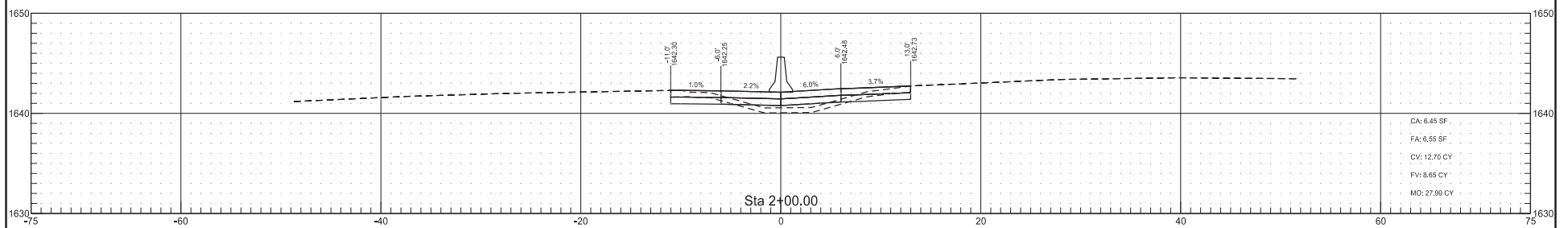
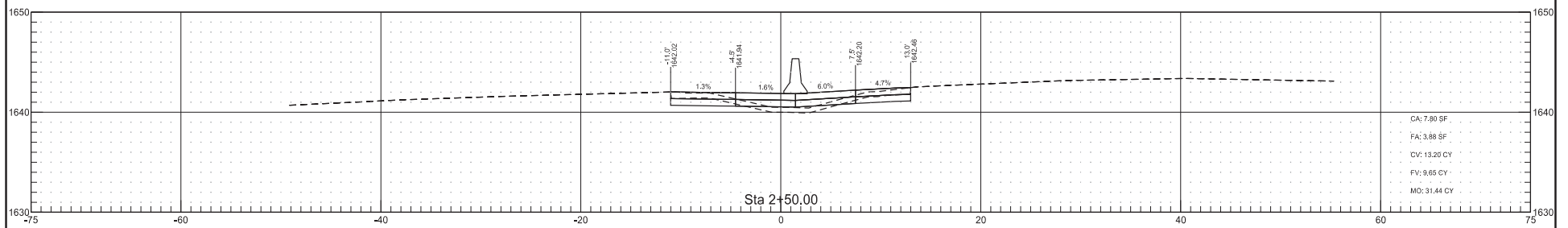
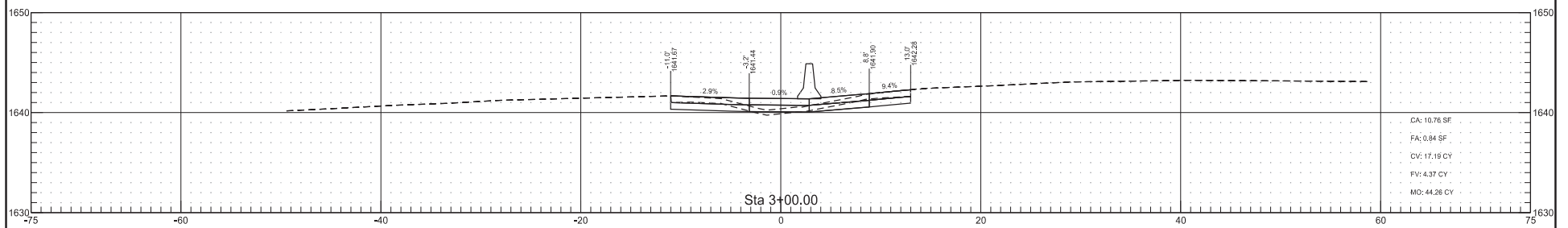




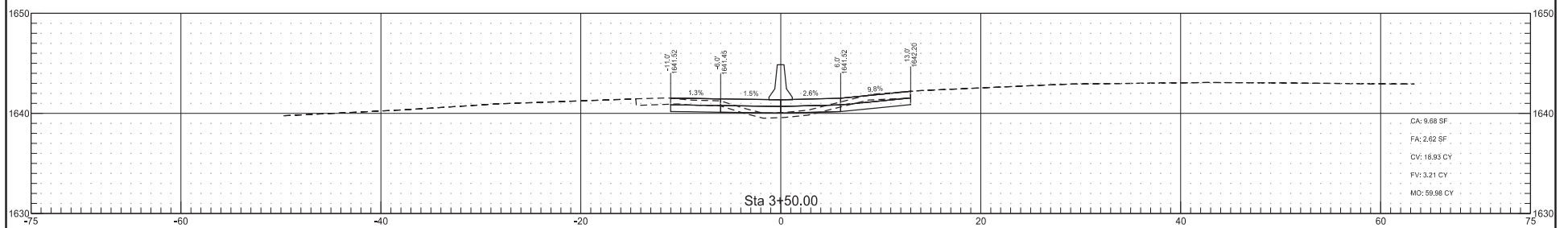
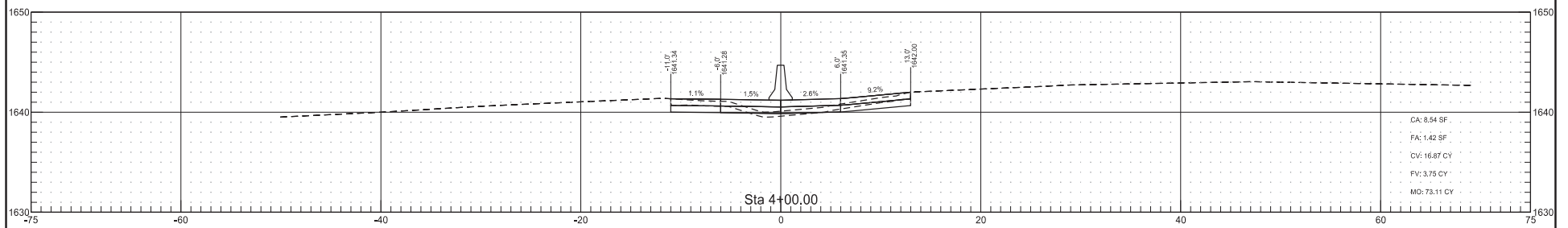
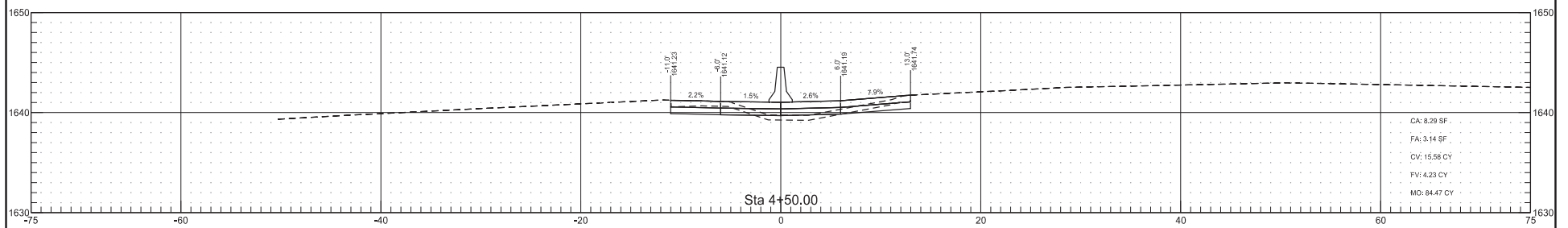
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 6         |



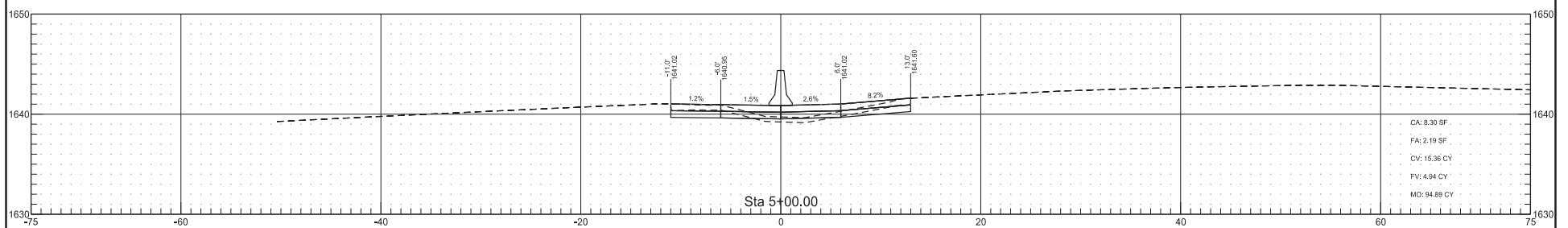
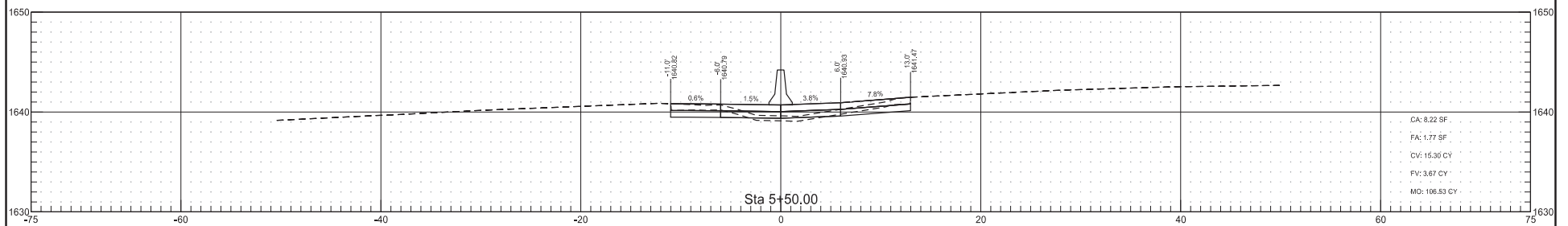
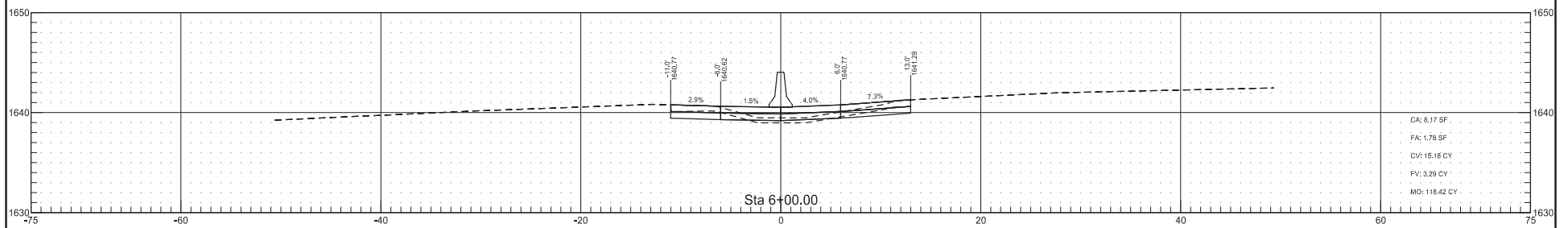
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 7         |



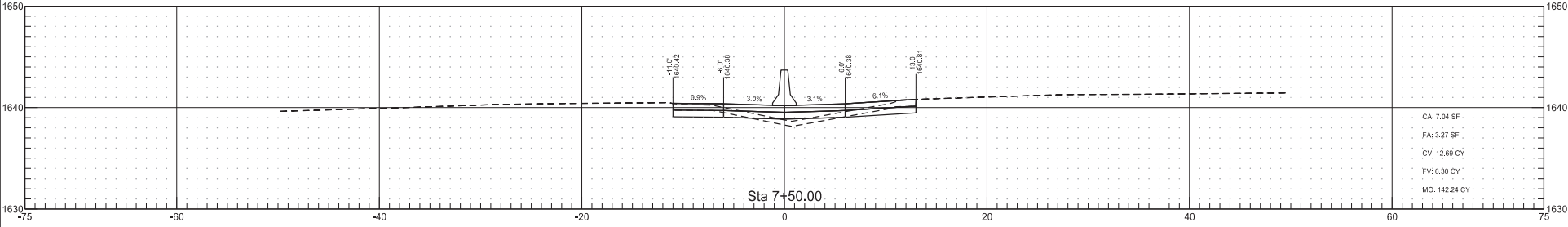
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 8         |



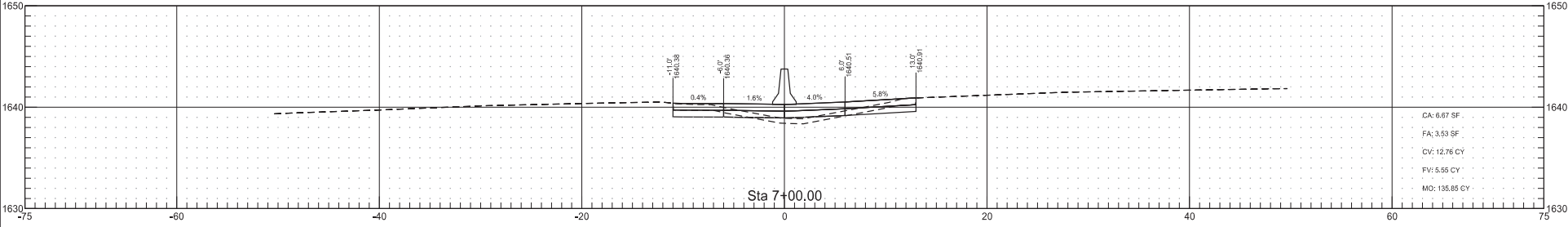
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 9         |



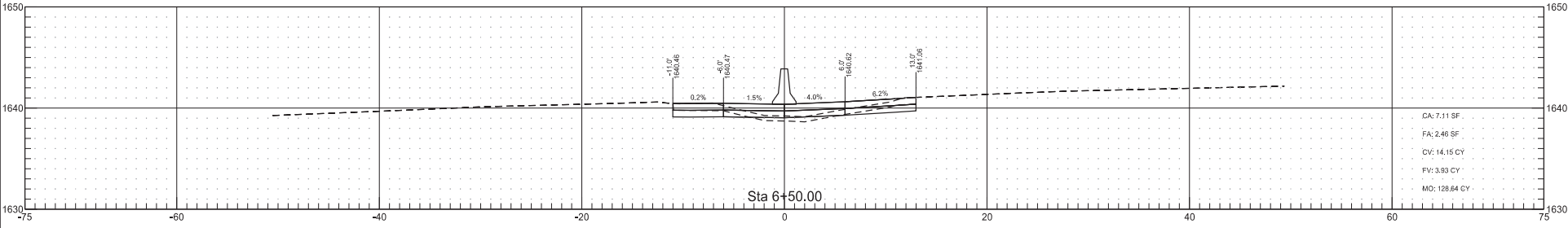
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 10        |



CA: 7.04 SF  
 FA: 3.27 SF  
 CV: 12.69 CY  
 FV: 6.30 CY  
 MO: 142.34 CY

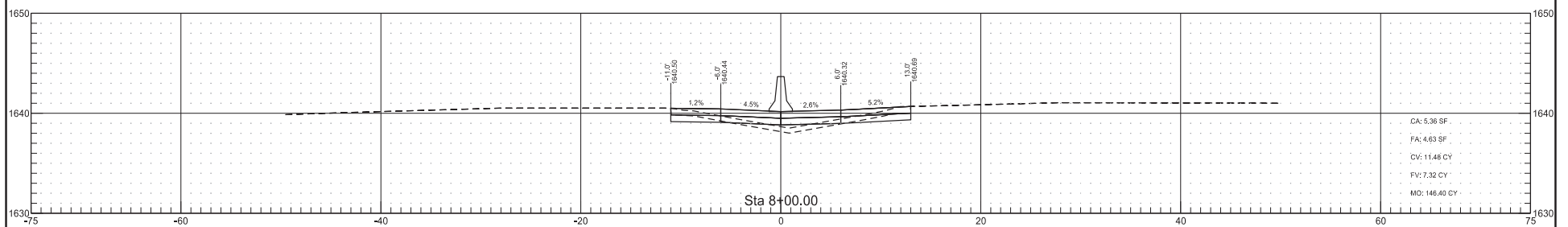
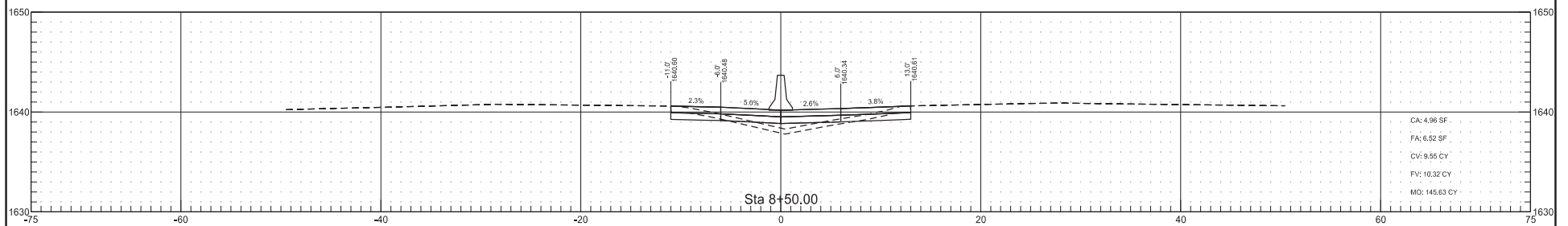
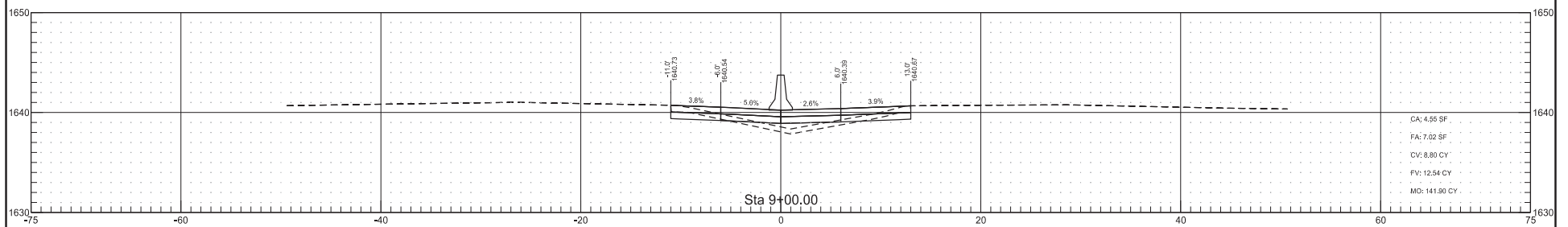


CA: 6.67 SF  
 FA: 3.53 SF  
 CV: 12.76 CY  
 FV: 5.55 CY  
 MO: 135.85 CY

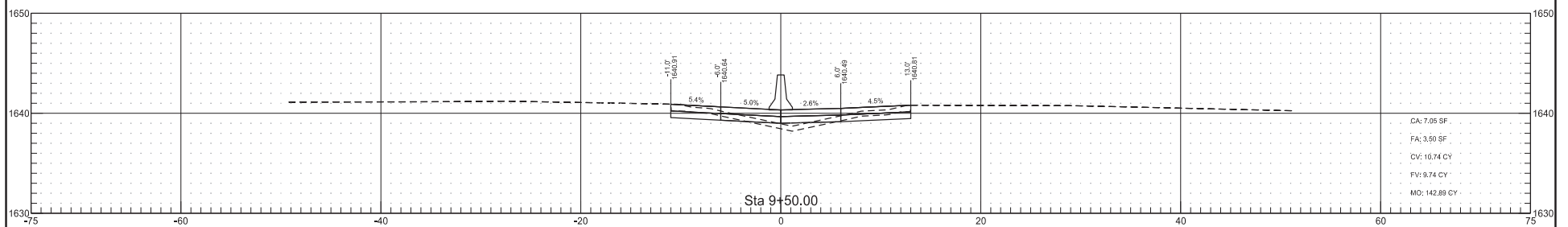
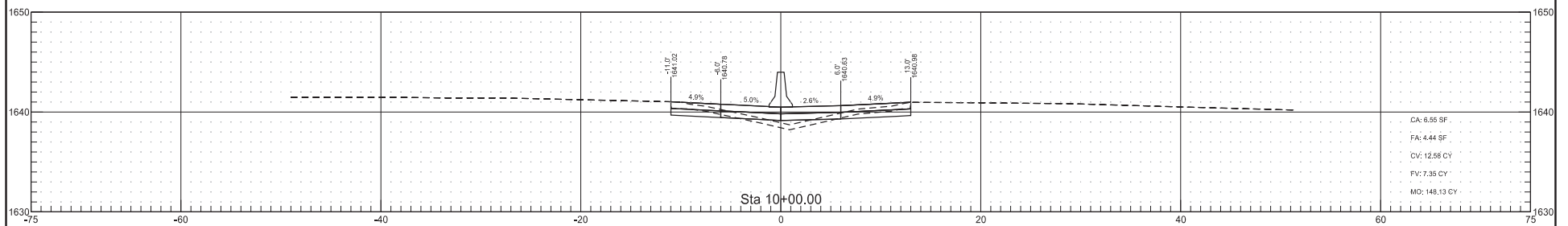
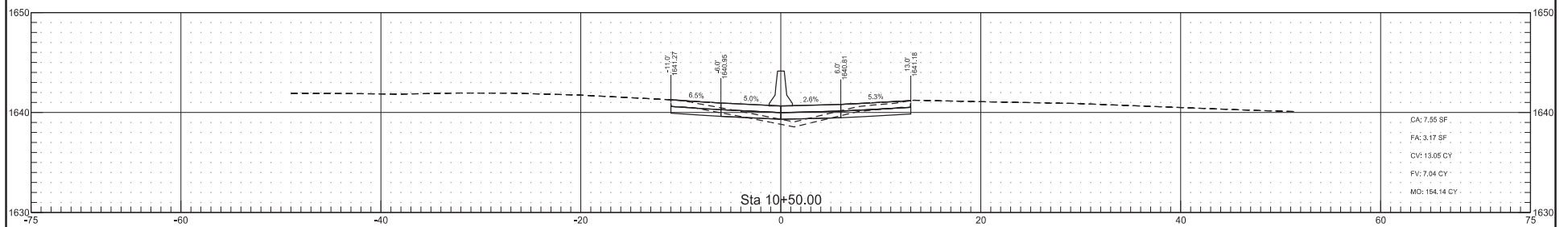


CA: 7.11 SF  
 FA: 2.46 SF  
 CV: 14.15 CY  
 FV: 3.93 CY  
 MO: 128.64 CY

|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 11        |

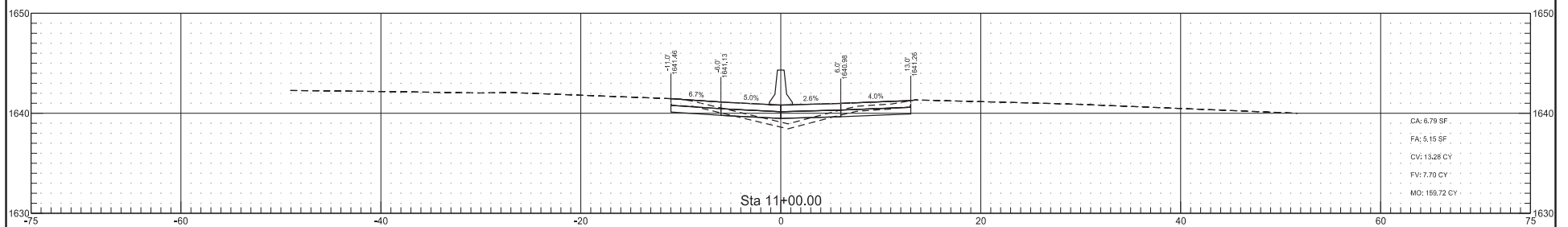
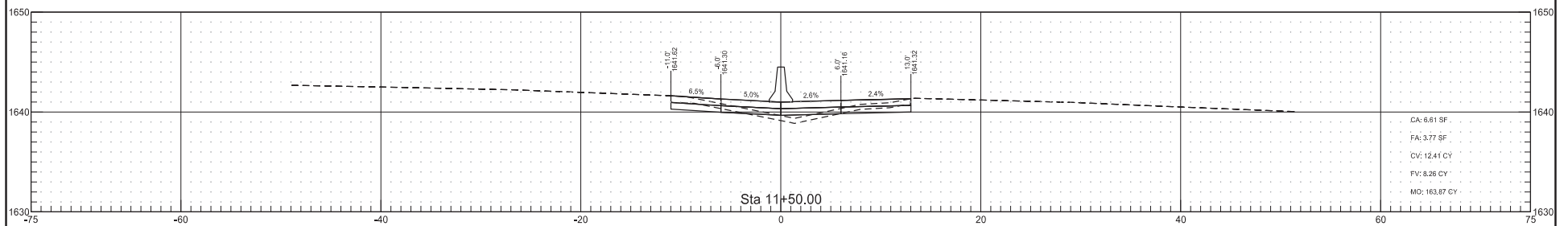
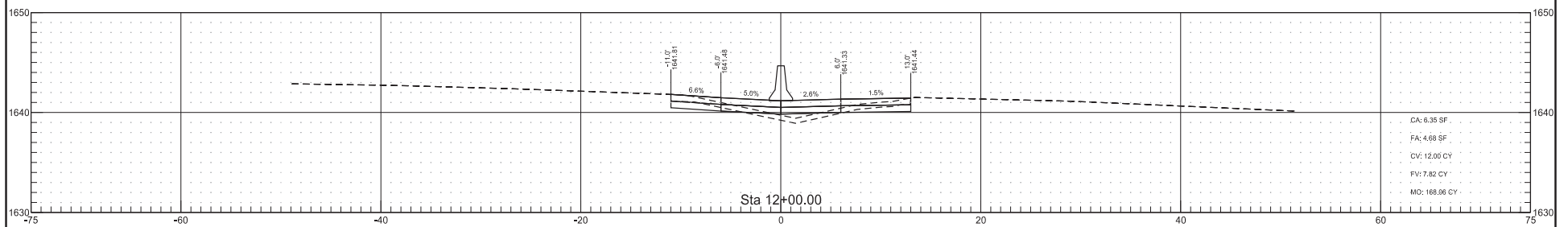


|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 12        |

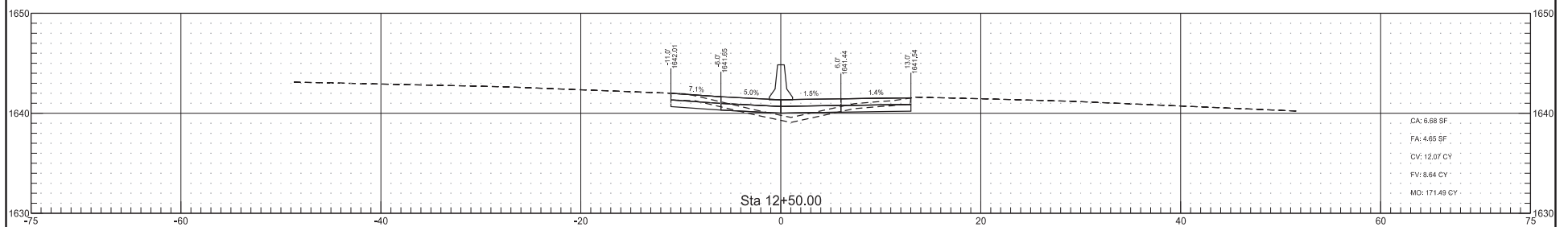
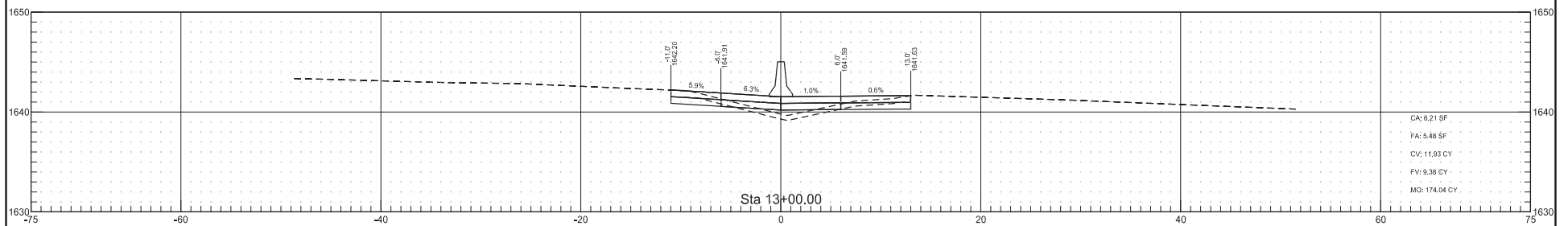
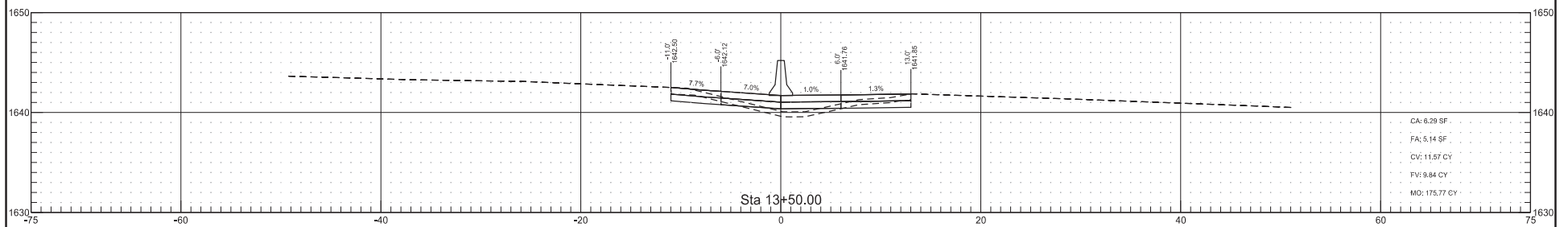




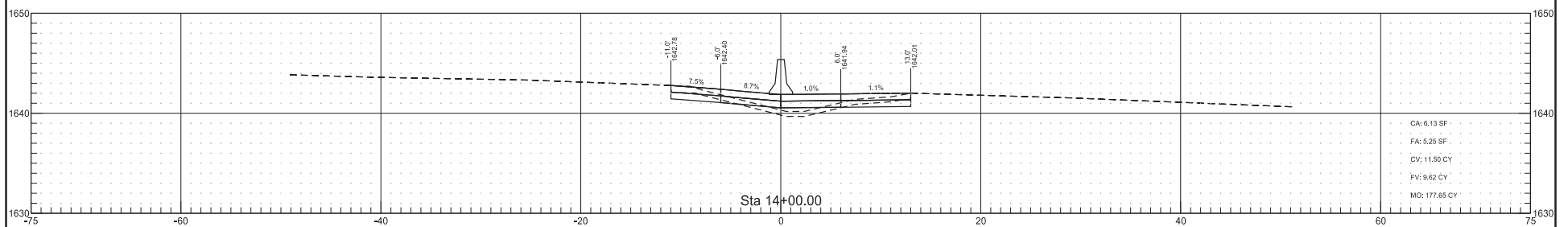
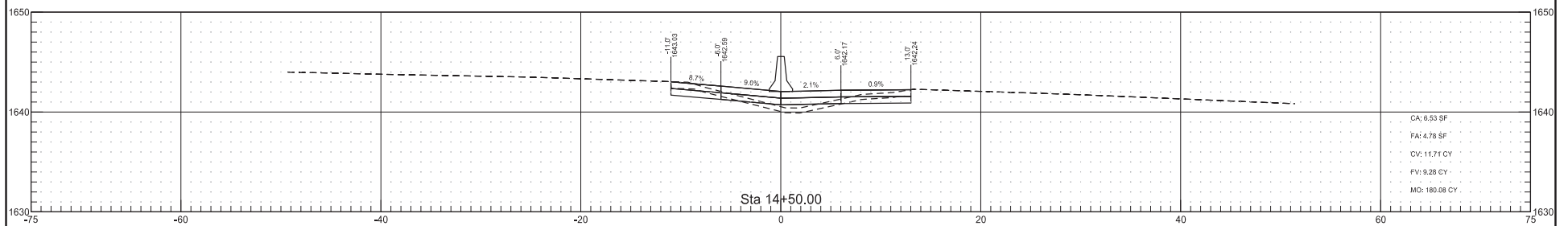
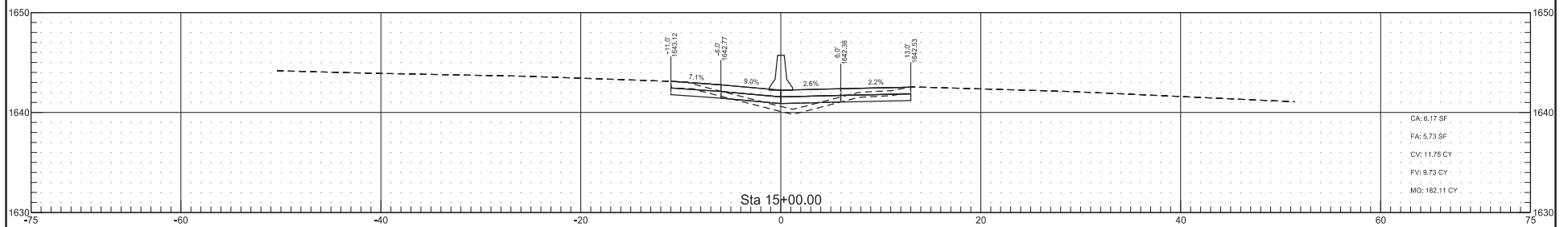
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 13        |



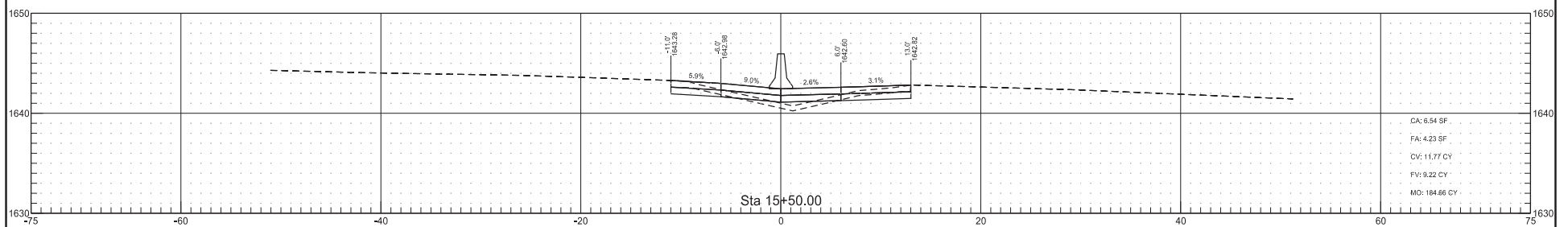
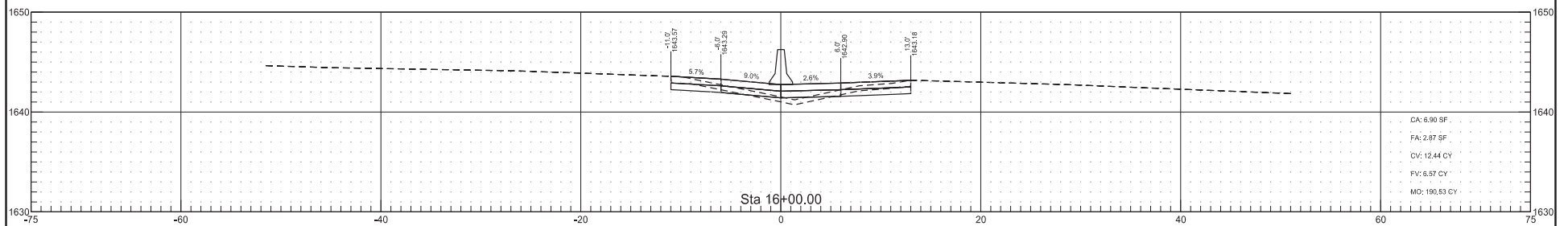
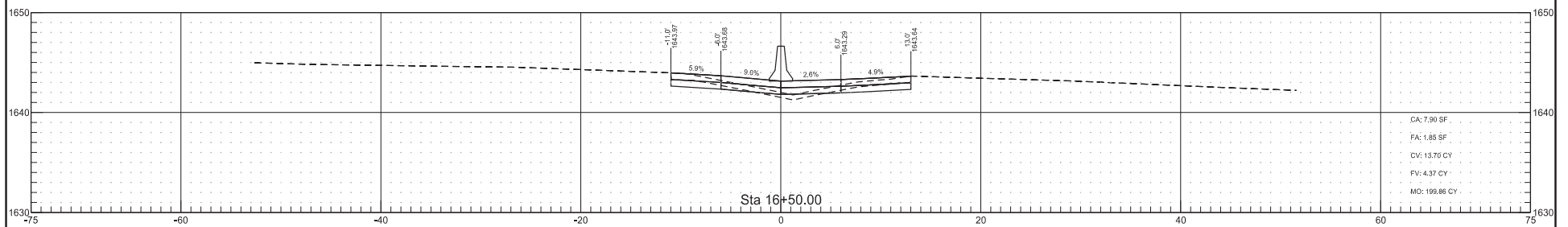
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 14        |



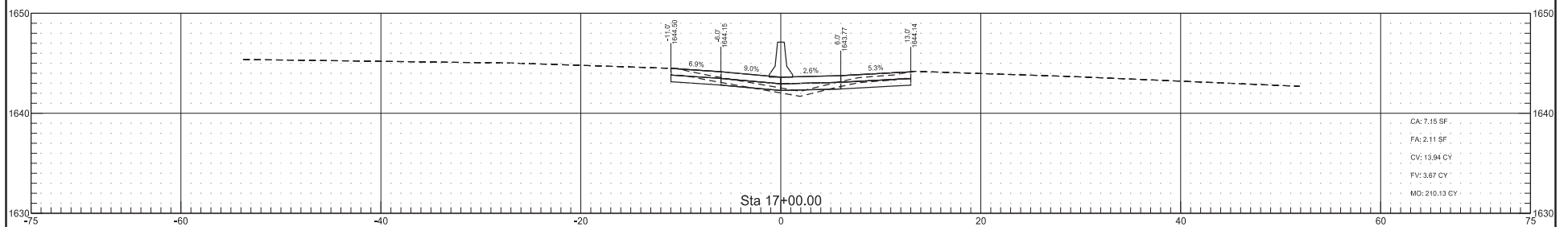
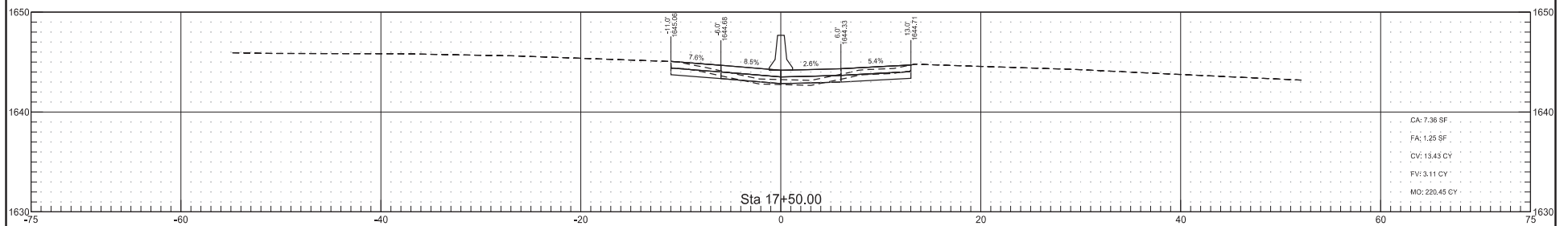
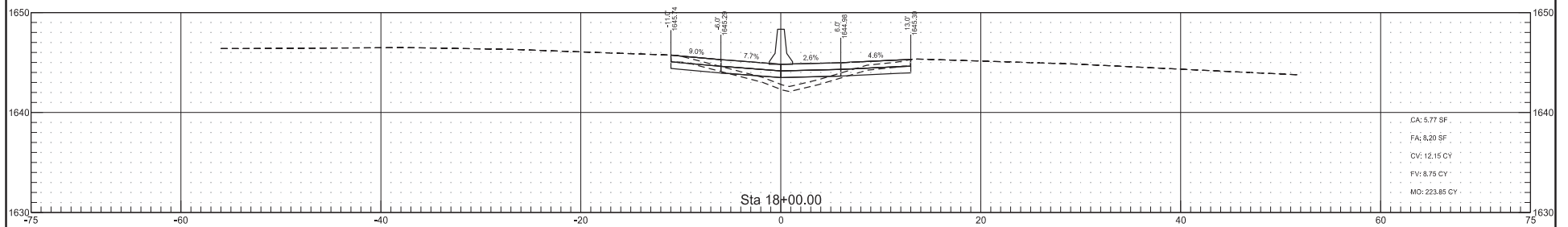
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 15        |



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 16        |



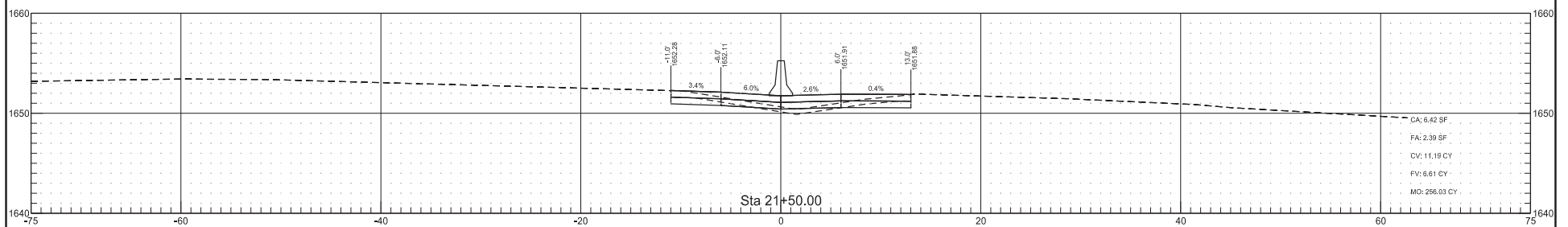
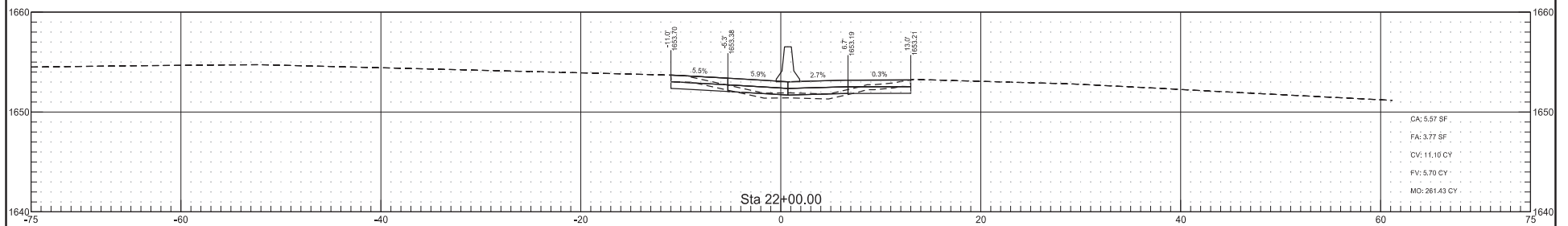
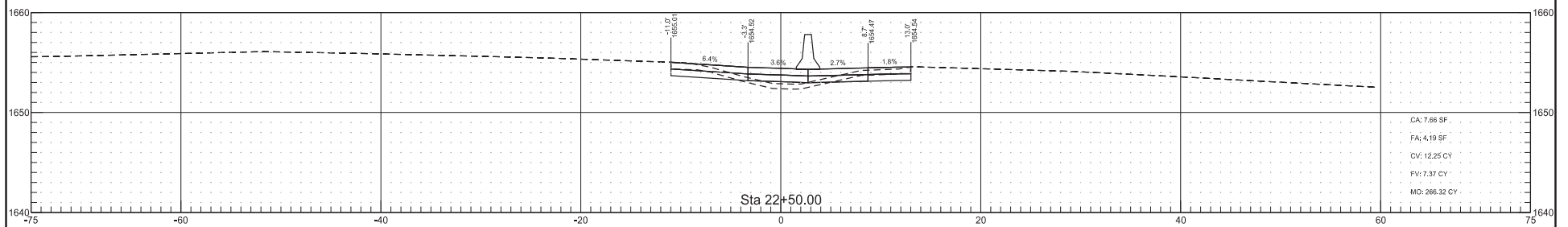
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 17        |





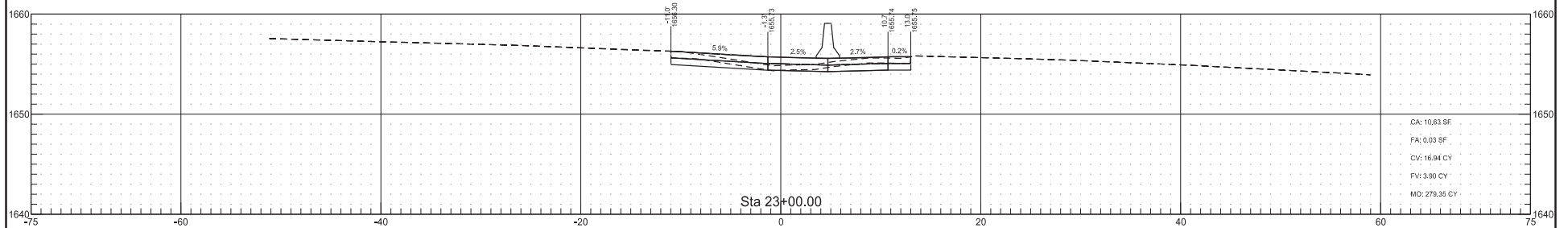
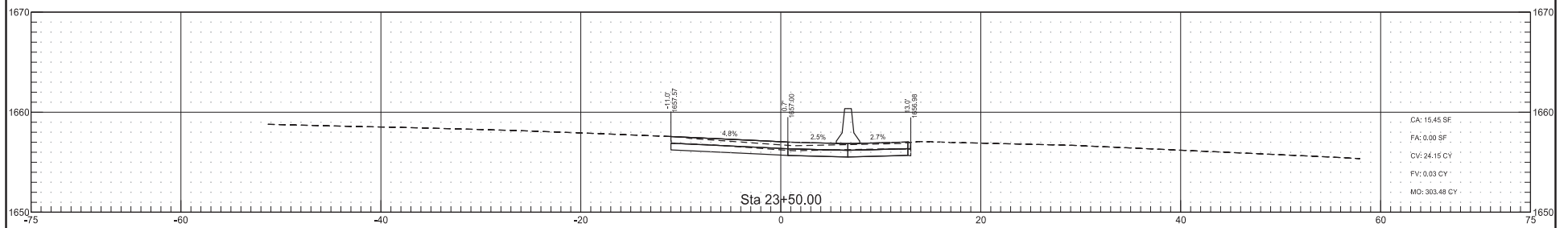
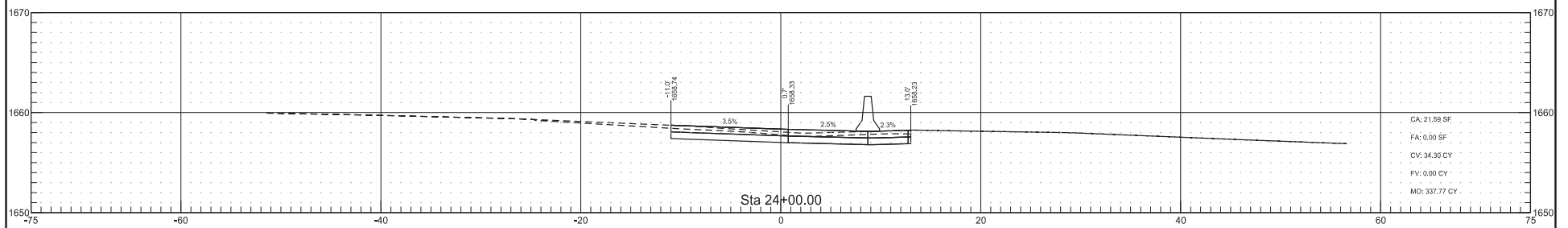


|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 20        |

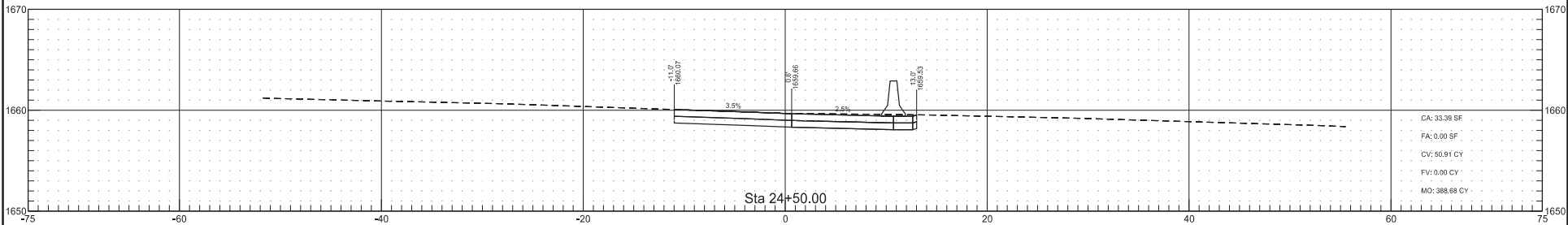




|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 21        |



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/23/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-194(008)000 | 200         | 22        |



### PLAN ADDENDUM SUMMARY AND APPROVAL

| PROJECT INFORMATION      |                                    |                                      |
|--------------------------|------------------------------------|--------------------------------------|
| <b>Project:</b>          | HEN-1-810(027)00                   | <b>PCN:</b> 22441                    |
| <b>Location:</b>         | Memorial Hwy to McKenzie Dr –EB/WB |                                      |
| <b>Date:</b>             | 10/12/2020                         | <b>Lead Designer:</b> Brady Haussler |
| <b>Bid Opening Date:</b> | 11/13/2020                         | <b>JOB#: 22</b> <b>Addendum#:</b> 1  |

| PLAN SHEET CHANGES |                   |                                                                                       |
|--------------------|-------------------|---------------------------------------------------------------------------------------|
| Section            | Sheet             | Description                                                                           |
| 2                  | 1                 | D-704-34A added.                                                                      |
| 6                  | 1-2               | Revised plan notes for traffic control to include coordination between tied projects. |
| 11                 | 1                 | Added aggregate fill column & information to earthwork quantity table.                |
| 40                 | 1-4               | Updated partial stations and project call outs.                                       |
| 51                 | 1-2               | Station & offsets revised for jacked & bored pipe and RCP pipe items.                 |
| 60                 | 3-5               | Station & offsets revised for jacked & bored pipe and RCP pipe items.                 |
| 76                 | 1                 | Removed duplicate invert information.                                                 |
| 200                | 2, 3, 4,<br>6, 14 | Removed miscellaneous lines not part of proposed or existing cross sections.          |

| CHANGES MADE TO BID ITEMS FOR JOB |      |                                 |      |                   |                  |
|-----------------------------------|------|---------------------------------|------|-------------------|------------------|
| Spec                              | Code | Description                     | Unit | Previous Quantity | Revised Quantity |
| NA                                | NA   | No changes to bid items for job | NA   | NA                | NA               |

#### APPROVAL

Should the revisions described above be processed as a plan addendum?

  X   Yes                             No

Kirk J. Hoff /s/  
Kirk J. Hoff, P.E. – Design Engineer

10/15/2020  
Date

| TABLE OF CONTENTS |         |                                  |                  |                                                                                           | Revised                   | 10/6/2020 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|-------------------|---------|----------------------------------|------------------|-------------------------------------------------------------------------------------------|---------------------------|-----------|-------|-------------------|-------------|-----------|
|                   |         |                                  |                  |                                                                                           |                           |           | ND    | HEN-1-810(027)000 | 2           | 1         |
| PLAN SECTIONS     |         |                                  |                  |                                                                                           | LIST OF STANDARD DRAWINGS |           |       |                   |             |           |
| Section           | Page(s) | Description                      | Number           | Description                                                                               |                           |           |       |                   |             |           |
| 1                 | 1       | Title Sheet                      | D-101-1, 2, 3    | NDDOT Abbreviations                                                                       |                           |           |       |                   |             |           |
| 2                 | 1       | Table of Contents                | D-101-10         | NDDOT Utility Company and Organization Abbreviations                                      |                           |           |       |                   |             |           |
| 4                 | 1       | Scope of Work                    | D-101-20, 21     | Line Styles                                                                               |                           |           |       |                   |             |           |
| 6                 | 1 - 2   | Notes                            | D-101-30, 31, 32 | Symbols                                                                                   |                           |           |       |                   |             |           |
| 8                 | 1       | Quantities                       | D-101-40         | Cross Section Legend                                                                      |                           |           |       |                   |             |           |
| 10                | 1       | Basis of Estimate                | D-261-1          | Erosion Control - Fiber Roll Placement Details                                            |                           |           |       |                   |             |           |
| 11                | 1       | Data Tables                      | D-550-2          | Longitudinal Joint Details                                                                |                           |           |       |                   |             |           |
| 20                | 1 - 5   | General Details                  | D-704-5          | Construction Sign Detail                                                                  |                           |           |       |                   |             |           |
| 30                | 1 - 4   | Typical Sections                 | D-704-9          | Construction Sign Details - Terminal And Guide Signs                                      |                           |           |       |                   |             |           |
| 40                | 1 - 4   | Removals                         | D-704-10         | Construction Sign Details - Regulatory Signs                                              |                           |           |       |                   |             |           |
| 50                | 1       | Inlet and Manhole Summary        | D-704-11         | Construction Sign Details - Warning Signs                                                 |                           |           |       |                   |             |           |
| 51                | 1 - 2   | Allowable Pipe List              | D-704-12         | Shoulder Closure Tapers                                                                   |                           |           |       |                   |             |           |
| 60                | 1 - 6   | Plan & Profile                   | D-704-13         | Barricade And Channelizing Device Details                                                 |                           |           |       |                   |             |           |
| 76                | 1 - 2   | Temporary Erosion Control        | D-704-14         | Construction Sign Punching And Mounting Details                                           |                           |           |       |                   |             |           |
| 77                | 1 - 2   | Permanent Erosion Control        | D-704-34A        | Traffic Control System Lane Shift Between A Lane Closure And An Opposite Lane Closure     |                           |           |       |                   |             |           |
| 81                | 1       | Survey Coordinate and Curve Data | D-704-35         | Sign Layout For One Lane Closure - Interstate System                                      |                           |           |       |                   |             |           |
| 82                | 1 - 2   | Survey Data Layouts              | D-704-50         | Portable Sign Support Assembly                                                            |                           |           |       |                   |             |           |
| 90                | 1 - 4   | Paving Layouts                   | D-708-6          | Erosion And Siltation Controls - Median Or Ditch Inlet Protection                         |                           |           |       |                   |             |           |
| 100               | 1       | Work Zone Traffic Control        | D-714-1          | Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)                           |                           |           |       |                   |             |           |
| 130               | 1 - 3   | Guardrail                        | D-714-26         | Transverse Mainline Pipe Installation Detail - Pipes 4 Feet or Less Below Top of Subgrade |                           |           |       |                   |             |           |
| 170               | 1 - 2   | Bridges and Box Culverts         | D-722-1B         | Inlet - Special                                                                           |                           |           |       |                   |             |           |
| 200               | 1 - 15  | Cross Sections                   | D-722-2          | Inlet - Type 2                                                                            |                           |           |       |                   |             |           |
|                   |         |                                  | D-722-5          | Manhole Details                                                                           |                           |           |       |                   |             |           |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NOTES            |       |                   |             |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------|-------------------|-------------|
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Revised 10/12/20 | STATE | PROJECT NO.       | SECTION NO. |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  | ND    | HEN-1-810(027)000 | 6           |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |       |                   | 1           |
| 202-P01 | REMOVAL OF BITUMINOUS SURFACING: Removal of the existing hot bituminous pavement includes the aggregate base beneath it. Removal is based on the area between edge of proposed pavement and bottom of existing aggregate sluff.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |       |                   |             |
| 203-P01 | EXCESS TOPSOIL & EXCAVATION: Haul excess material to an approved location outside of NDDOT right-of-way. Include costs related to hauling excess excavation and topsoil off the project in the unit price bid for "COMMON EXCAVATION-WASTE" and "TOPSOIL."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |       |                   |             |
| 550-P01 | REMOVAL OF SIGNS: Remove signs in the median at Sta 40+06 and Sta 45+46 as shown in the plans. Include all costs in the unit price bid for "CONCRETE MEDIAN PAVEMENT."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |       |                   |             |
| 550-P02 | STORM SEWER CASTINGS: Install storm sewer castings while the concrete is still in a plastic state and in a manner that does not create additional joints in the pavement, which were not part of the designed joint layout. Install inlet castings that are adjacent to the concrete roadway concurrently with the driving surface paving operation. Install manhole castings that lie within the limits of the concrete pavement with the paving operation. Install castings 1/4 inch to 3/8 inch below the finished pavement surface.<br><br>If installing a casting after the paving machine has passed, use vibratory methods to consolidate concrete placed or disturbed as part of the casting installation.<br><br>Include all costs in the unit price bid for "CONCRETE MEDIAN PAVEMENT."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |       |                   |             |
| 602-P01 | JERSEY BARRIER FORMED OR SLIP FORMED: Measure the ND 810 mainline jersey median barrier walls from the beginning to the end of each wall segment installed, including overlapping portions.<br><br>Construct the barriers according to the provisions of Section 602.04, but do not use deflection joints. Make 3/4" V-grooves in all faces of the barriers at 15 foot spacings to match transverse joints in median slab.<br><br>Finish the jersey barrier walls with surface finish "D." Provide a surface finish color to match the color of the existing permanent concrete median barrier on ND 810 at the beginning and end of the project limits.<br><br>Install vertical steel reinforcement spaced at 8" C to C. Use grade 60 steel for the reinforcing. Include the costs for all labor, equipment, and materials required to install the A1, A2, and longitudinal bars in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED."<br><br>Construct the barriers using Class AAE-3 concrete.<br><br>Include furnishing and installing Class AAE-3 concrete, grade 60 reinforcing steel, chemical adhesive, mastic, joint sealant materials, and all other materials, equipment, and labor required to complete the installation as shown in the plans in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED."<br><br>Include all costs associated with the saw cutting, removal, and disposal of concrete in the unit price bid for "JERSEY BARRIER FORMED OR SLIP FORMED." |                  |       |                   |             |
| 704-100 | TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |       |                   |             |
| 704-P01 | TRAFFIC CONTROL: Provide temporary traffic control consisting of inside shoulder closures and flagging as described. Close the inside lane and shoulder on EB and WB and maintain existing lane widths. Coordinate traffic control phasing and devices between tied projects HEN-1-810(027)000, HEN-1-194(008)000, & NHU-1-810(028)000. Take down lane closures and open all lanes to traffic when work is not anticipated on this project for the following day.<br><br>The traffic control device list was developed using the following standard drawings:<br><br>D-704-12 for 1 shoulder closures<br>D-704-35 for 2 single lane closures<br><br>To operate in a manner different than what is described, provide a complete traffic control layout to the Engineer for review and approval prior to work being performed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |       |                   |             |
| 704-P02 | TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:<br><br>Place the following sign assembly at the locations listed below.<br><br>Sign Assembly: Sign No. W8-17-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52P-54 to identify the distance.<br><br>Locations: <ul style="list-style-type: none"><li>In advance of the drop off;</li><li>Spaced at each mile from the advance sign; and</li><li>At major intersections (CMC routes, state and US highways, and Interstate Ramps).</li></ul> If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.<br><br>If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.<br><br>Sign assemblies will be measured and paid for according to Section 704 "TEMPORARY TRAFFIC CONTROL."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |       |                   |             |
| 708-P01 | INLET PROTECTION: Include all costs for installing, cleaning, removing sediment, maintaining, removing, and replacing damaged inlet protection devices in the unit price bid for "INLET PROTECTION-SPECIAL."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |       |                   |             |
| 714-P01 | PIPE CONDUIT JACKED OR BORED: Supply pipe meeting Section 830.02 F, "Smooth Wall Steel Pipe"; pipe meeting ASTM A 252, Grade 2; or pipe meeting ASTM A 53, Grade B.<br><br>Provide pipes with a minimum wall thickness as specified in Table 830-01 of the Standard Specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |       |                   |             |
| 714-P02 | PIPE CONDUIT JACKED OR BORED: The culvert consists of separate bid items for each portion: "PIPE CONC REINF 30IN CL III-STORM DRAIN" and "PIPE CONDUIT 30IN – JACKED OR BORED". The pay lengths of the pipe bid items are as shown for the type and size specified per linear foot.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |       |                   |             |



NOTES

|                  |       |                   |             |           |
|------------------|-------|-------------------|-------------|-----------|
| Revised 10/12/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|                  | ND    | HEN-1-810(027)000 | 6           | 2         |

Include all costs for required materials, labor, and equipment (including connecting bands or Couplers), and restoring bore pits to pre-construction conditions in the unit price bid for "PIPE CONDUIT 30IN – JACKED OR BORED."

722-P01 REMOVE INLETS: Remove the existing drain frames, grates, and risers, and modify the ends of the existing reinforced concrete outlet pipe to fit the new inlets.

Backfill the remaining hole with CI 5 aggregate base course. Place and compact the backfill in 6-inch layers using a mechanical tamper with an appropriate sized tamping head.

Include the costs for all labor, equipment and materials required to remove the inlets as described above in the unit price bid for "REMOVAL OF INLETS."

Include the costs for all labor, equipment, and materials required to install the inlets, including modifying the outlet pipe to connect to the new inlets, edge drain modification, and backfilling the remaining hole as described above in the unit price bid for "INLET - TYPE 2 DOUBLE."

722-P02 INLETS AND MANHOLES: All new inlets except 11A have been specified with a minimum 4-foot riser height. At inlets 10A, 11A, and 12A, base elevations have been set deeper than required for the outlet storm drain conduit. Fill void between inlet base and bottom of lowest pipe with Class AE-3 concrete, and then slope the inlet bottom to drain using either Class AE-3 concrete or mortar in accordance with the details shown on standard drawings D-722-1B and D-722-2. Include the costs to accomplish this work in the unit price bid for the respective inlet pay item.

764-P01 REMOVE W-BEAM GUARDRAIL & POSTS: Deliver the removed W-beam guardrail materials to the Bismarck District back lot:

Bismarck District Office  
218 Airport Road  
Bismarck, ND 58504-6003

Neatly stack the materials at a location designated by the Engineer.

Include the cost for delivery and stacking of the removed W-beam guardrail materials in the unit price bid for "REMOVE W-BEAM GUARDRAIL & POSTS."



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 09/10/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-810(027)000 | 11          | 1         |

| Common<br>Excavation<br>Waste<br>(Pay Item) | Topsoil<br>(Pay Item) | Aggregate Fill |
|---------------------------------------------|-----------------------|----------------|
| CY                                          | CY                    | CY             |
| 634                                         | 788                   | 170            |



Earthwork Summary

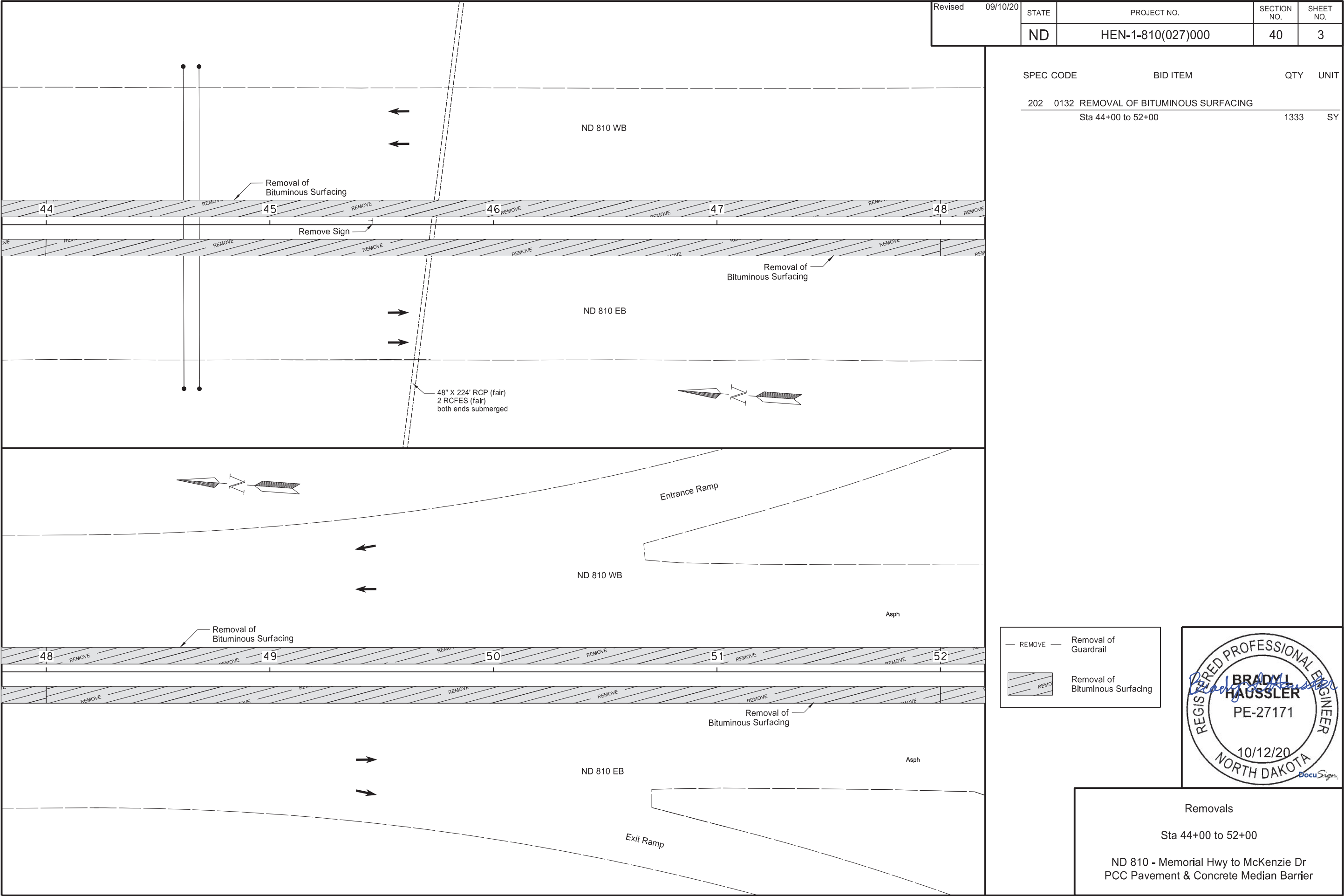
ND 810 - Memorial Hwy to McKenzie Dr  
PCC Pavement & Concrete Median Barrier













| Begin Station / Location | End Station / Location | Offset    | Pipe Installation (Pay Item) |                                          |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|-----------|------------------------------|------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |           |                              |                                          |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |           | In                           | Bid Item                                 | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 10C                      | 10B                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 10B                      | 10A                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 15 | Reinforced Concrete Pipe - Class III (barrel length = 15 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 10A                      | Sta 38+07.33           | 103.8' Rt | 30                           | PIPE CONDUIT 30IN - JACKED AND BORED     | 86 | Reinforced Concrete Pipe - Class III (barrel length = 86 LF)   | 30                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 38+07.33             | Sta 38+07.43           | 109.8' Rt | 30                           | PIPE CONC REINF 30IN CLIII - STORM DRAIN | 6  | Reinforced Concrete Pipe - Class III (barrel length = 4 LF)    | 30                |                     |                                        |                              |                     |                  | FES | Standard D-714-26   |
| 11C                      | 11B                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 14 | Reinforced Concrete Pipe - Class III (barrel length = 14 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 11B                      | 11A                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 16 | Reinforced Concrete Pipe - Class III (barrel length = 16 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 11A                      | 11D                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 13 | Reinforced Concrete Pipe - Class III (barrel length = 13 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over Zinc)

Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.  
FES = Flared End Section  
TES = Traversable End Section



Allowable Pipe List

ND 810 - Memorial Hwy to McKenzie Dr  
PCC Pavement & Concrete Median Barrier

| Begin Station / Location | End Station / Location | Offset    | Pipe Installation (Pay Item) |                                          |    | Allowable Material                                             | Required Diameter | Steel Pipe Coatings | Steel Pipe Corrugations or Spiral Ribs | Steel Pipe Minimum Thickness | G Fabric (Pay Item) | (*) End Sections |     | Applicable Backfill |
|--------------------------|------------------------|-----------|------------------------------|------------------------------------------|----|----------------------------------------------------------------|-------------------|---------------------|----------------------------------------|------------------------------|---------------------|------------------|-----|---------------------|
|                          |                        |           |                              |                                          |    |                                                                |                   |                     |                                        |                              |                     | Begin            | End |                     |
|                          |                        |           | In                           | Bid Item                                 | LF |                                                                | In                | Type                |                                        | In                           | SY                  | EA               | EA  |                     |
| 12A                      | Sta 44+27.98           | 72.6' Lt  | 30                           | PIPE CONDUIT 30IN - JACKED AND BORED     | 73 | Reinforced Concrete Pipe - Class III (barrel length = 73 LF)   | 30                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 44+27.98             | Sta 44+28.17           | 80.6' Lt  | 30                           | PIPE CONC REINF 30IN CLIII - STORM DRAIN | 8  | Reinforced Concrete Pipe - Class III (barrel length = 6 LF)    | 30                |                     |                                        |                              |                     |                  | FES | Standard D-714-26   |
| 12A                      | 12B                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 21 | Reinforced Concrete Pipe - Class III (barrel length = 21 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |
| 13A                      | Sta 46+43.31           | 102.5' Lt | 30                           | PIPE CONDUIT 30IN - JACKED AND BORED     | 88 | Reinforced Concrete Pipe - Class III (barrel length = 88 LF)   | 30                |                     |                                        |                              |                     | -                |     | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Smooth Wall Steel Pipe                                         | 30                |                     |                                        |                              |                     |                  |     |                     |
| Sta 46+43.31             | Sta 46+43.60           | 108.5' Lt | 30                           | PIPE CONC REINF 30IN CLIII - STORM DRAIN | 6  | Reinforced Concrete Pipe - Class III (barrel length = 4 LF)    | 30                |                     |                                        |                              |                     |                  | FES | Standard D-714-26   |
| 13A                      | 13B                    |           | 15                           | PIPE CONDUIT 15IN - STORM DRAIN          | 21 | Reinforced Concrete Pipe - Class III (barrel length = 21 LF)   | 15                |                     |                                        |                              |                     | -                | -   | Standard D-714-26   |
|                          |                        |           |                              |                                          |    | Polymeric Coated Corrugated Steel (2-2/3" x 1/2" Corrugations) | 15                | P                   | 1/2                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 3/4" Rib @ 7-1/2")   | 15                | P                   | 3/4                                    | 0.064                        |                     |                  |     |                     |
|                          |                        |           |                              |                                          |    | Polymeric Coated Spiral Rib Steel (3/4" x 1" Rib @ 11-1/2")    | 15                | P                   | 1                                      | 0.064                        |                     |                  |     |                     |

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over Zinc)

Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

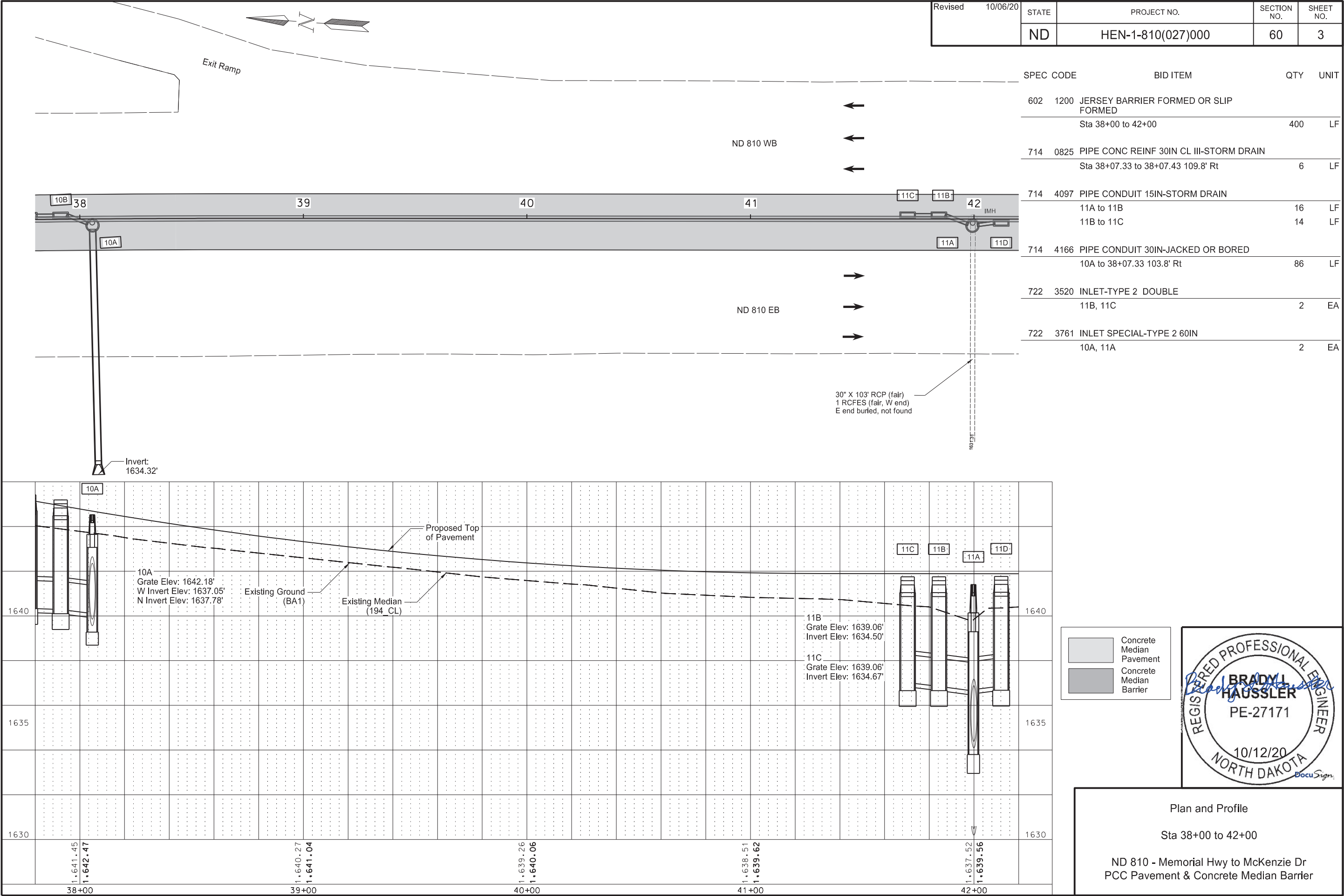
Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

(\*) End sections are measured and paid for separately for pipe extensions.  
FES = Flared End Section  
TES = Traversable End Section



Allowable Pipe List

ND 810 - Memorial Hwy to McKenzie Dr  
PCC Pavement & Concrete Median Barrier



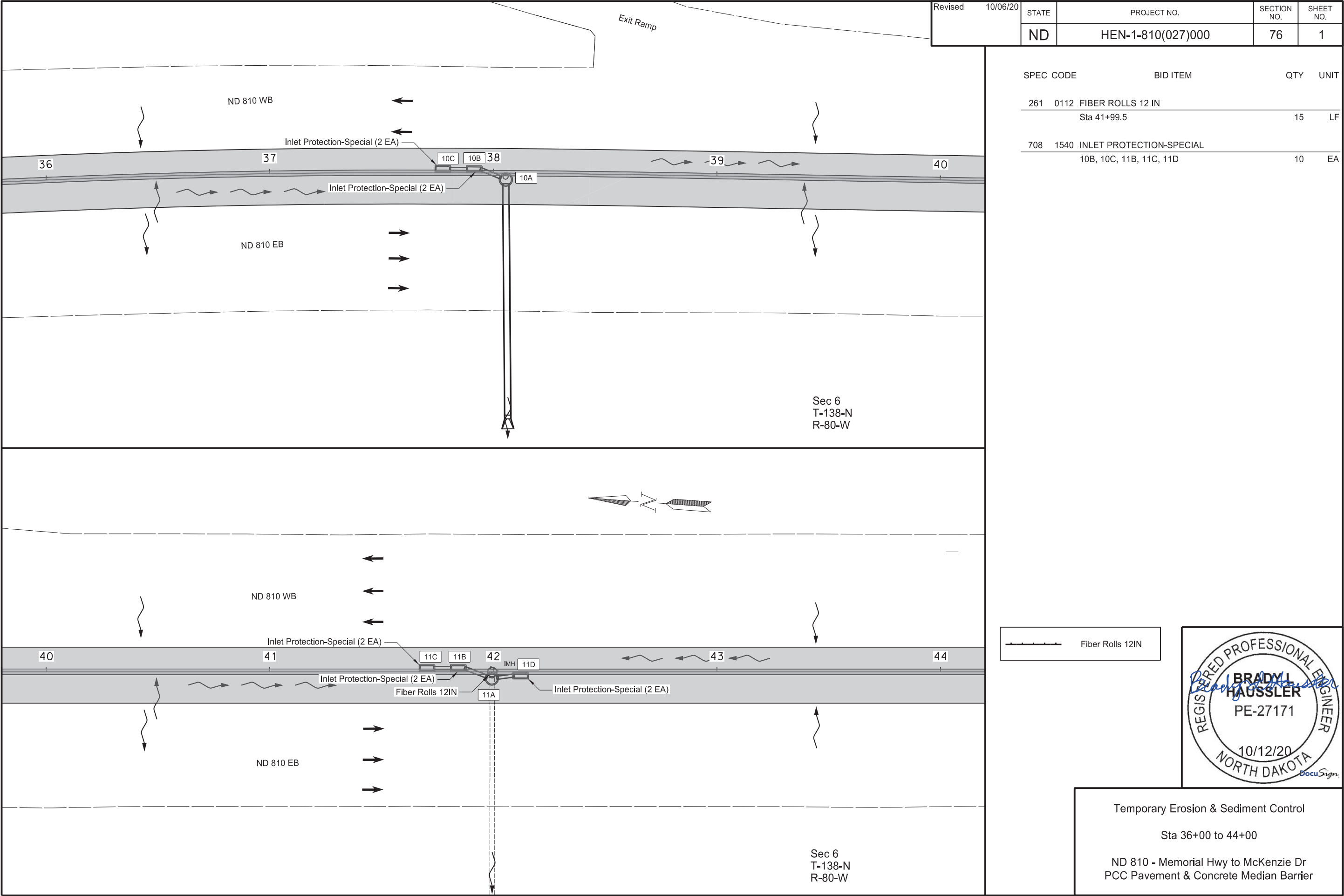




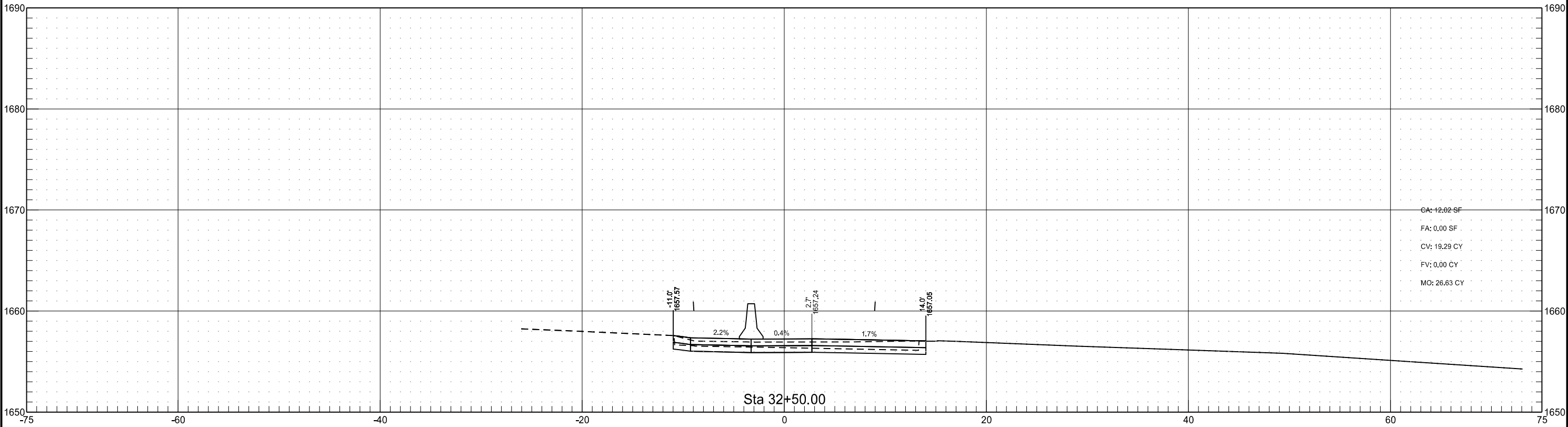
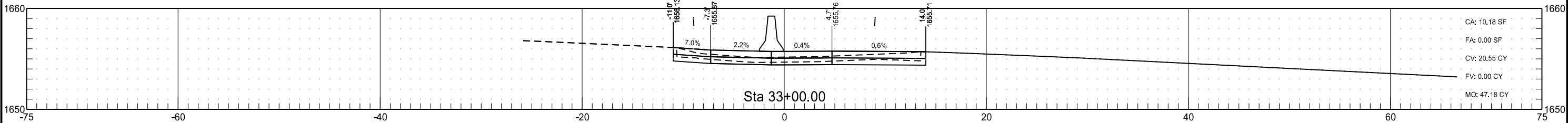




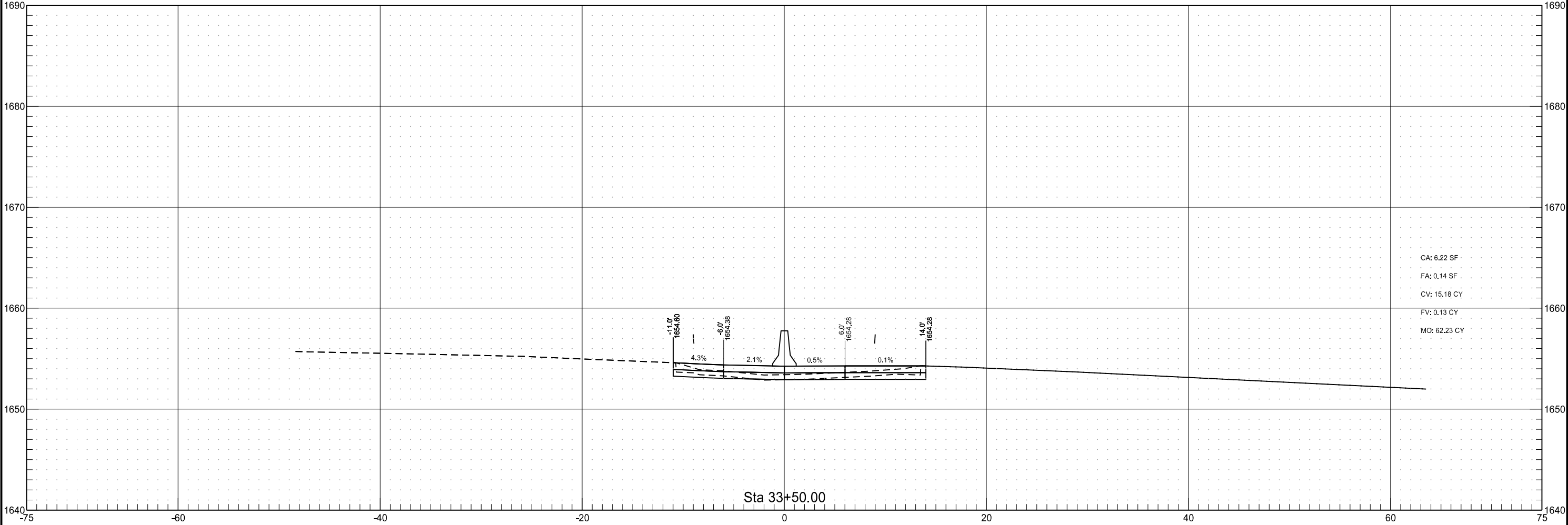




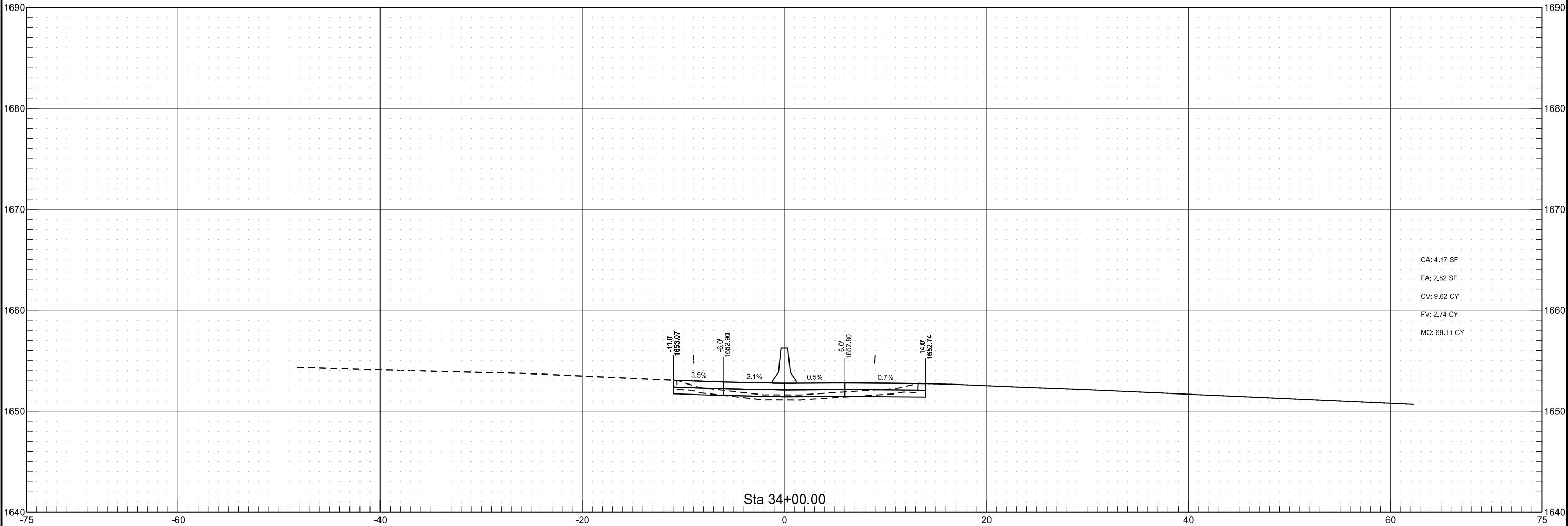
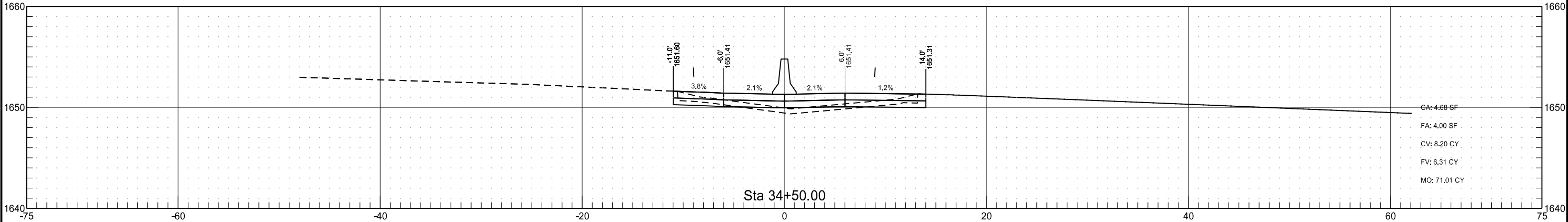
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-810(027)000 | 200         | 2         |



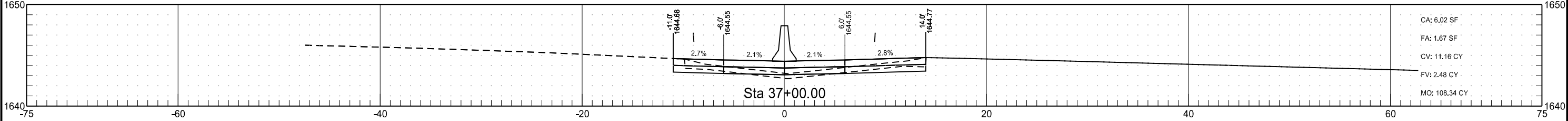
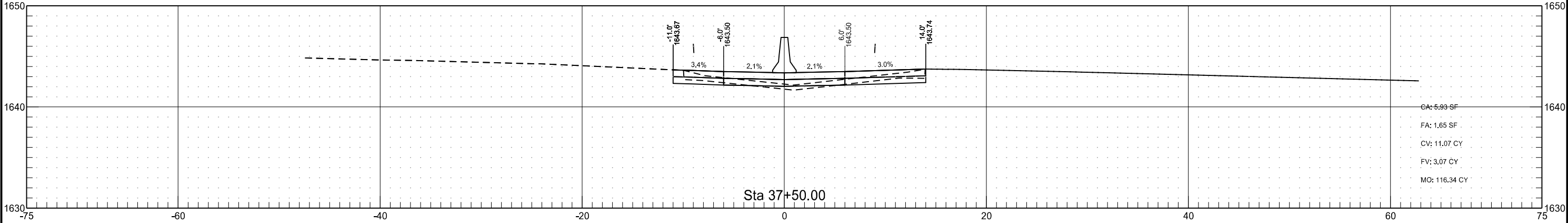
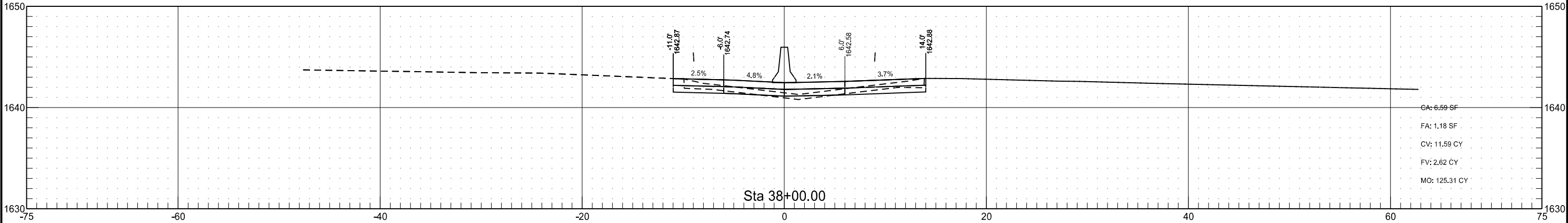
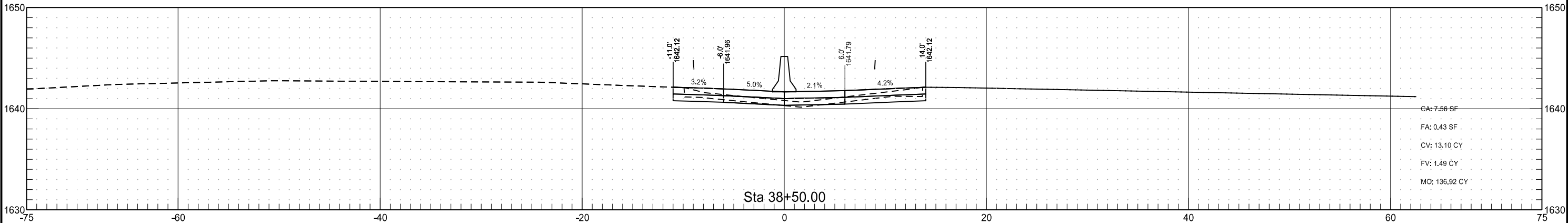
|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-810(027)000 | 200         | 3         |

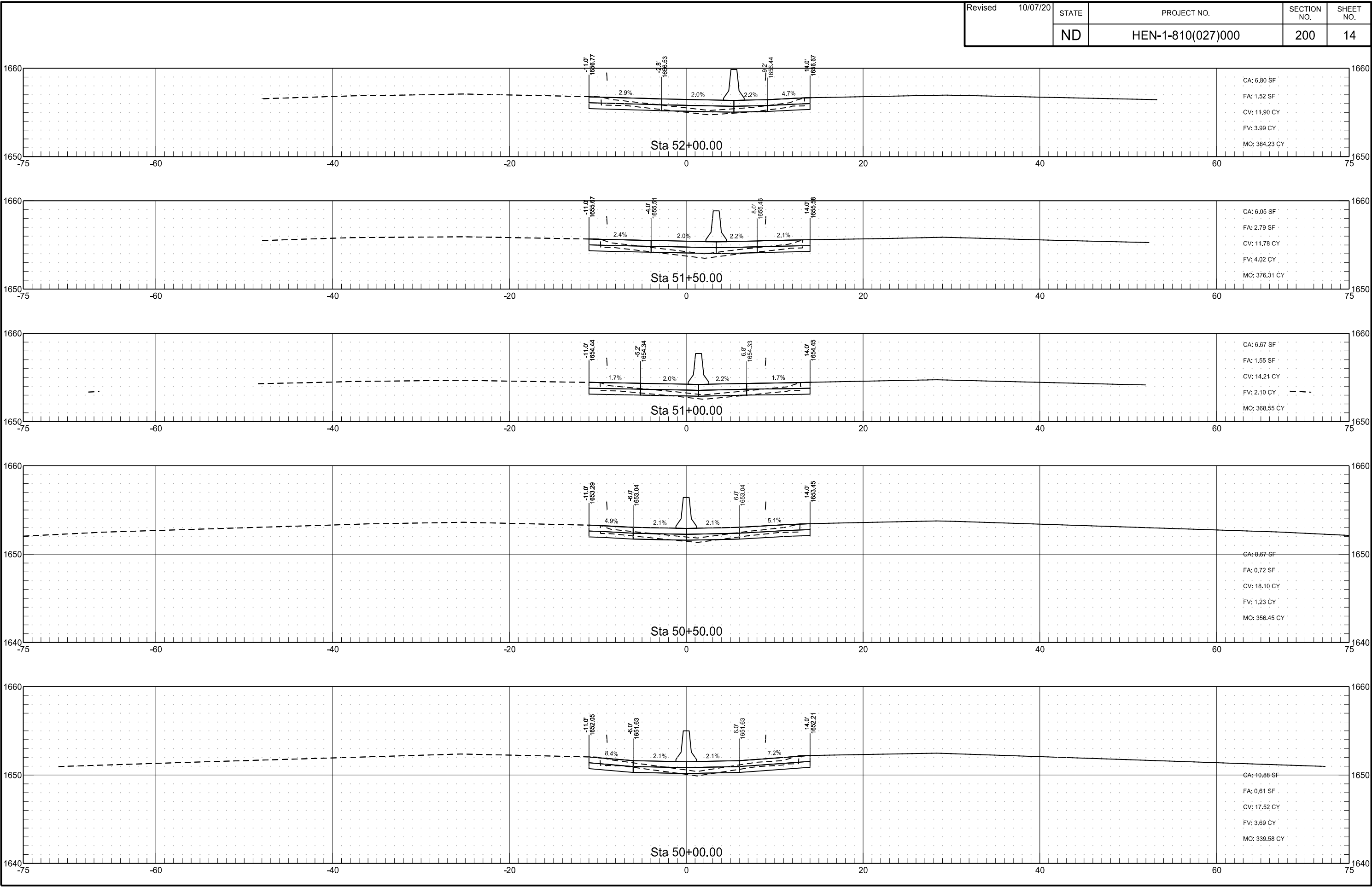


|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-810(027)000 | 200         | 4         |



|         |          |       |                   |             |           |
|---------|----------|-------|-------------------|-------------|-----------|
| Revised | 10/07/20 | STATE | PROJECT NO.       | SECTION NO. | SHEET NO. |
|         |          | ND    | HEN-1-810(027)000 | 200         | 6         |

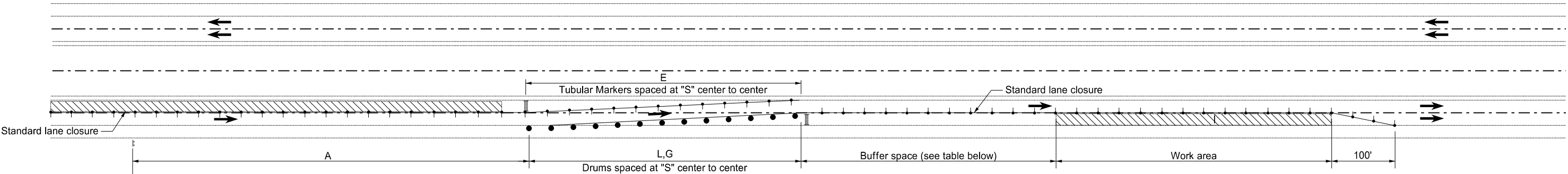






TRAFFIC CONTROL SYSTEM  
LANE SHIFT BETWEEN A LANE CLOSURE AND AN OPPOSITE LANE CLOSURE

D-704-34A



W1-4L-48  
Post Mounted

| QUANTITIES                       |         |
|----------------------------------|---------|
| TYPE III BARRICADES              | 2 Each  |
| DELINEATOR DRUMS                 | 13 Each |
| TUBULAR MARKERS                  | 13 Each |
| RAISED PAVEMENT MARKERS (White)  | Varies  |
| OBLITERATION OF PAVEMENT MARKING | Varies  |

| KEY |                    |
|-----|--------------------|
|     | Work area          |
|     | Type III barricade |
|     | Traffic Direction  |
|     | Delineator drum    |
|     | Tubular markers    |
|     | Sign               |

| LEGEND |                                                                  |
|--------|------------------------------------------------------------------|
| E      | Obliteration of pavement marking (10' line, 30' skip centerline) |
| G      | Raised pavement markers (white) 5' ctrs.                         |

- Notes
- Variables
    - S = Numerical value of posted speed limit, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.
    - W = Width of offset in feet.
    - L = Taper length in feet. Speeds 40 mph or less  $L=WS^2/60$ . Speeds 45 mph or greater  $L= WS$ .
  - Place signs and barricade on roadway on moveable assemblies.
  - Cover existing speed limit signs within reduced speed zones.
  - Upon approval, the Engineer will measure obliterated or covered pavement marking as Obliteration of Pavement Marking.
  - As an option, use portable sign supports in lieu of post mounted sign in accordance with NDDOT Standard Drawing D-704-14.
  - Place "Minimum Fee \$80" signs below speed limit signs when placing traffic control devices to reduce speed.
  - When duration of work is 14 days or less, obliteration of pavement marking (10' line, 30' skip, centerline) and raised pavement markers are not required.

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

\* Posted speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.

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

| NORTH DAKOTA<br>DEPARTMENT OF TRANSPORTATION |                         |
|----------------------------------------------|-------------------------|
| 10-26-2012                                   |                         |
| REVISIONS                                    |                         |
| DATE                                         | CHANGE                  |
| 9-27-17                                      | Updated to active voice |
| 11-01-19                                     | Clarified work zone     |

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