CHAPTER 18

PLANS ASSEMBLY

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INTRODUCTION

This chapter provides information on highway construction plan assembly. This information is necessarily broad because of differences that exist in the preparation of each plan set due to the type and complexity of work required by the project. At times it may be applicable to vary the format noted in this Chapter based on unique or special projects. Request to modify the format should be submitted to the SDDOT Responsible Manager for review and approval prior to plan development and assembly.

Information mentioned throughout the chapter can be accessed from the Department web site at the following addresses:

Bid Items:
https://apps.sd.gov/HC70SBI/main.aspx

Downloadable Files:
https://dot.sd.gov/doing-business/engineering/design-services/downloadable-files

Standard Plates:
https://apps.sd.gov/HP20StandardPlates/

Information regarding specific drafting procedures used in the Office of Road Design to create the different sheets and accompanying electronic documents (PDF) mentioned in the chapter, can be found in the CADD Procedures Manual located at the following address:

https://dot.sd.gov/doing-business/engineering/design-services/forms-manuals

All full-sized plan sheets should conform to the standard 11” x 17” size. The drawing area should be centered on the sheet to create an equal top and bottom border. The side borders should allow a minimum of 1/2” from the edge of the sheet to accommodate binding requirements. All plans will be printed front and back at final printing to conserve paper.

Generally, plan sheets will be developed using the following scaling criteria. Deviation from these standards must be approved by the Responsible Manager.

- Rural Projects – those projects outside municipal corporate limits – 1”=200’
- Suburban locations – those portions of projects that are on the fringe of municipal development, where a rural scale would be too small and the urban scale would not show enough adjacent property or topography information – 1”=100’
- Urban Projects – those projects inside municipal corporate limits, or developed areas – 1”=40’

SECTION METHOD

Typically a set of plans will be comprised of sections, with each section pertaining to a certain type of work. Each section will have a title sheet showing the title of the section, a general layout of the project (similar to the layout map on sheet 1), begin and end project notes showing station only, north arrow, and an index of sheets included in the section. The project title sheet will serve as the title sheet for Section A.

Each sheet will have a block in the upper right corner showing the project number, sheet number, and total number of sheets. The sheet number and total number of sheets shown on the project title sheet will be 1 with the total number of sheets in the entire plan set. The sheet number and total number of sheets in each section will be numbered with the letter of the section and the number of the sheet. For example, the title sheet for Section B would be numbered B1 with the total number of sheets in Section B.

Sections B through S will have sheets containing the estimate of quantities table and any notes and tables pertaining to that section. These sections will also include any Standard Plates relating to the work described in that section. For information on printing standard plates refer to the Office of Road Design's CADD Procedures Manual under "Supplemental Information - Electronic Plans (How to create a PDF)".

Copies of the note sheets with notes and tables for Sections B, D, H, L, and M can be downloaded from the Downloadable Files page on the Department web site.

Following is a list of sections in a typical plan set showing order of plan sheets within each section. Detailed descriptions of the sheets follow the list.

Title Sheet (Sheet 1)

Section A: Estimate of Quantities and Environmental Commitments
Estimates accumulated from the separate Sections (beginning on Sheet A1)
Environmental Commitments

Section B: Grading Plans
Section Title Sheet (Sheet B1)
Estimate with General Notes and Tables (Sheets B2 through B#)
Pipe Quantities
Fence Quantities
Pavement, Curb and Gutter, and Sidewalk Quantities
Borrow Pit Information Layout
Typical Grading Sections
Horizontal Alignment Data
Control Data
Subsurface Utility Locations
Legend
Right of Way and Easement Ownership Tables (if required)

Plan and Profile Sheets (ROW Layout Sheets, if used, are to be inserted between the Plan and Profile Sheets)
Pavement Removal Layout
Curb and Gutter Layout
Curb Ramp Layout
Storm Sewer Layout
Guardrail Layout
Special Detail Sheets (Ramp Gore, Junction Boxes, Retaining Walls, etc.)
Standard Plates

Section C: Traffic Control Plans
Section Title Sheet (Sheet C1)
Estimate with General Notes and Tables (Sheets C2 through C#)
Traffic Control Layout
Special Detail Sheets
Standard Plates

Section D: Erosion and Sediment Control Plans
Section Title Sheet (Sheet D1)
Estimate with General Notes and Tables (Sheets D2 through D#)
Storm Water Pollution Prevention Plan (SWPPP) Checklist
Erosion and Sediment Control Plan Sheets
Special Detail Sheets
Standard Plates

Section E: Structure Plans
Section Title Sheet (Sheet E1)
Estimate with General Notes and Tables (Sheets E2 through E#)
Structure Detail Sheets
Special Detail Sheets
Standard Plates

Section F: Surfacing Plans
Section Title Sheet (Sheet F1)
Estimate with General Notes and Tables (Sheets F2 through F#)
Pit Information Sheets
Typical Surfacing Sections
Pavement Layout Sheets
Special Detail Sheets
Standard Plates

Sections G and I-K: Special Sections as Needed

Section H: Landscaping Plans
Section Title Sheet (Sheet H1)
Estimate with General Notes and Tables (Sheets H2 through H#)
Landscaping Layout Sheets
Special Detail Sheets

Standard Plates

Section L: Signal and Lighting Plans
Section Title Sheet (Sheet L1)
Estimate with General Notes and Tables (Sheets L2 through L#)
Conduit and Cable Quantities
Existing Signal Layout Sheets
Signal Layout Sheets
Conduit Layout Sheets
Signal Timings Sheets
Wiring Diagram Sheets (Signals & Lighting)
Special Detail Sheets
Standard Plates

Section M: Pavement Marking Plans
Section Title Sheet (Sheet M1)
Estimate with General Notes and Tables (Sheets M2 through M#)
Pavement Marking Layout Sheets
Special Detail Sheets
Standard Plates

Section S: Permanent Signing Plans
Section Title Sheet (Sheet S1)
Estimate with General Notes and Tables (Sheets S2 through S#)
Permanent Signing Table
Signing Layout Sheets
Sign Detail Sheets
Special Detail Sheets
Standard Plates

Section U: Existing Utility Information
Section Title Sheet (Sheet U1)
General Notes (Sheets U2 through U#)
Subsurface Utility Locations
Utility Layout Sheets

Section X: Cross Sections
Section Title Sheet (Sheet X1)
Cross Section Sheets (Sheets X2 through X#)

Section Z: Pipe Sections
Section Title Sheet (Sheet Z1)
Pipe Section Sheets (Sheets Z2 through Z#)

Title Sheet

The title sheet (Figures 18-2 thru 18-6) contains the following information: Note: General layout and places to be left blank are shown in Figure 18-1.

- Title Block: contains the project identification number, highway number, county, construction or maintenance activity, and the PCN (Project Control Number).

- State Map: shows the county highlighted with the project location circled.

- Layout Map: includes north arrow; section, township, and range information; station where section lines intersect construction line; station equations; and exceptions. The layout map should include reference points to other highways, nearby cities, and other landmarks to identify the actual project location.

- Begin and End Notes: shows project stationing equated to stationing from last major construction project along with that project's project number, distance from nearest quarter or section corner, and mile reference marker (MRM). Urban projects may provide distance from nearest street intersection where quarter and section corners are not set. Project limits on major grading/surfacing projects shall reflect the surfacing/resurfacing limits. Project limits on non-grading/surfacing projects (curb ramps, lighting, fencing, slope flattening, etc.) shall reflect the limits of the work being done. If a significant portion of a project includes non-grading/surfacing work, include that portion in the project limits.

- Design Designation: Traffic Census Data are obtained from the Roadway Information System. Information should be updated as the design progresses and when sent to Bid Letting. The design designation includes the following for each roadway and/or interstate ramp on the project:

    - current year average annual daily traffic (AADT) (show total AADT for divided highways)
    - future 20 year AADT beyond anticipated year of construction (use numbers from corridor/planning studies if available – future volumes may be beyond 20-year projections)
    - design hour volume (DHV, 30th highest hour of the year)
    - direction distribution in predominate direction of travel (D)
    - truck percentage of design hour volume (DHV T%)
    - truck percentage of current year AADT (AADT T%)
    - design speed (V) (show station or MRM if more than one for project)

- Storm Water Permit: shows Major Receiving Body of Water (Stream or Lake) affected, Area Disturbed (area contained within actual cut and fill limits), and Total Project Area (all areas bounded by either the Right Of Way and/or permanent and temporary easements). Include borrow and option borrow areas in each of these calculations. Areas are typically shown to the nearest acre. For milling and overlay projects, only the areas of exposed soil (cut and fill limits, plus easements, less curb to curb area of roadway within these limits) will be calculated. If this area is less than

1 acre, **no** 'Storm Water Permit' will be required. This will be shown on the Title Sheet adjacent to the Heading. i.e. (None Required). Additionally, Latitude/Longitude coordinates to the 4th decimal place (0.0000) in positive/negative decimal degrees, will be attached to this note.

- Striping Diagram: (generally not used in urban applications) shows the length and approximate location of any no passing zones for rural 2-lane highways. Include the following note by the striping diagram:

  > This striping diagram is for informational purposes only. Actual striping for passing/no passing zones should be determined by field verified procedures.

- Length: includes the gross length (length from beginning to end of project, adjusted for all equations), the length of exceptions (length inside project where no work is done), and the net length (gross length minus length of exceptions). If independent alignments are encountered on a divided highway, use the average length of the independent alignments.

- Index of Sections: shows which sections are included in the plan set and is located in the upper right corner.

Section A: Estimate of Quantities and Environmental Commitments

- Estimate of Quantities and Environmental Commitments (Figure 18-A1): includes a copy of the estimate of quantities table from each section, the Standard Specifications note, an index of sheets included in Section A, and the environmental commitments. Copies of the Section A sheets can be downloaded from the Downloadable Files page of the Department web site. Bid item numbers, descriptions, and units can be found on the Bid Items page of this web site. SDDOT plan preparers will use the CDBS to prepare this table.

Section B: Grading Plans

- Section Title Sheet (Figures 18-B1 and 18-B2): will also show the location of any borrow or option borrow pits with a note showing pit number and land description. This information should correspond with that on the borrow pit information layout sheets.

- Pipe Quantities (Figure 18-B3a): shows location, size, type, and length of pipe being installed along with any end treatments, transitions, tees, crosses, wyes, bends, or elbows.

- Fence Quantities (Figure 18-B3b): shows location, type, and length of fence being installed; quantity of 2 and 3 post panels; size and type of gates; and length of fence being removed. An explanation of any Modifications is also provided.

- Pavement, Curb and Gutter, and Sidewalk Quantities (Figure 18-B3c): shows location, type, and quantity of item being installed. Items shown in this table include curb and gutter, fillet sections, median pavement, approach pavement, driveway pavement, sidewalk, and detectable warnings.

- Borrow Pit Information Layout (Figure 18-B4): contains the following information: pit owner, location, quantity and average depth of borrow material and topsoil available, dead haul, layout with contours, typical section(s), and preliminary data from test holes. Cross section sheets for the borrow pits may also be included. Information shown on the borrow cross sections is similar to that for the cross sections in Section X. The Region Materials Engineer provides these sheets.

- Typical Grading Sections (Figure 18-B5 and Figure 18-B5a): shows the centerline of roadway, width of subgrade, depth of undercut, roadway cross slope (shown as ft/ft), cut and fill slopes (shown as ratio, e.g. 4:1), depth of topsoil inside and outside of the right of way, point where elevation is referred to on profile sheets, surfacing when the profile is finished grade (typically urban projects), and any transitions. Show the width of each lane. Asterisks should be provided on the section to transition each lane separately. Divided highway projects should include typical grading sections for both directions of travel with the above information included for each roadway.

- Horizontal Alignment Data (Figure 18-B6): shows information such as station and coordinates (northing and easting) for Points of Intersection (PI), Points of Curve (PC), and Points of Tangent (PT); tangent length and bearing between PI and PI, PI and PC, and PT and PI; curve radius and delta angles; epoch; geoid model; and the scale factor and NAD information needed to convert grid distances to ground distances.

- Control Data (Figure 18-B7): shows control point and benchmark information such as point number, station, offset, description, coordinates (northing and easting), elevation, epoch, geoid model, and the scale factor and NAD information needed to convert grid distances to ground distances.

- Subsurface Utility Locations (Figure 18-B8): shows information such as test hole identification number, station, offset, finding, existing ground and utility elevation, utility depth, coordinates (northing and easting), test hole owner identification number code legend, epoch, geoid model, and the scale factor and NAD information needed to convert grid distances to ground distances. This sheet would be included in plans for more complex urban projects when a subsurface utility location survey is provided.

- Legend (Figure 18-B9): shows the existing topography symbology and the line styles used for state, county, section, quarter, sixteenth, property, construction, right of way lines, cut and fill limits and control of access. This sheet also contains other various line styles and symbology that can be found within Section B.

  A copy of the Pipe Quantities, Fence Quantities, Pavement, Curb and Gutter, and Sidewalk Quantities, Horizontal Alignment, Control Data, Subsurface Utility Locations, and Legend sheets can be downloaded from the Downloadable Files page on the Department web site.

- Right of Way and Easement Ownership Table: is typically provided when there is not enough room on the plan sheet to show the right of way and easement information. Refer to Chapter 9 – Right of Way for examples.

- Plan Sheet (Figures 18-B10 through 18-B12): information shown includes, but is not limited to, the following:

  - north arrow,
  - notes for removal of pipe, structures, drop inlets, guardrail, entrances (if more than 100' from existing entrance on rural projects and if new entrance does not overlap existing entrance on urban projects), etc.,
  - notes for installation of pipe, structures, drop inlets, guardrail, mailboxes, bank and channel protection gabions, fence, gates, etc.,
  - existing topography,
  - section, quarter, sixteenth, property, existing and proposed Right of Way lines,
  - width of existing and proposed Right of Way,
  - begin and end project notes similar to what is shown on the section title sheet figures,
  - Section, Township, and Range information,
  - landowner information (name and parcel number),
  - horizontal alignment information (PI station and deflection, mainline and diversion curve data, stationing, and bearing),
  - new topography (pipe, structures, ditch blocks, drainage arrows*, entrances, median crossovers, drop inlets, guardrail, curb and gutter, sidewalk, fence, fence posts, gates, etc.),
  - temporary easements (label station and offset),
  - temporary easement notes (showing Parcel number, station range, left or right, and area).

* Drainage arrows are to be placed on plan sheets to represent the general flow of runoff based on the project design as follows:

Urban Project

- Inside Mainline Curb & Gutter
    - minimum of 3 pairs of drainage arrows (L & R of centerline) near the gutter line on the left, middle and right side of plan sheet
    - additional drainage arrows depending on location of crest or sag vertical curves to show change of direction of runoff
- Outside Mainline Curb & Gutter
    - Intersecting Streets – minimum of 1 pair of drainage arrows (each side of street) to show if runoff drains away or towards mainline
    - Private Property – Typically drainage arrows are not placed behind curb and gutter unless there is a special condition.
- Storm Sewer Outlet and/or Mainline Culverts – drainage arrows showing direction of flow at outlet end of pipe

Rural Project

- Place a minimum of 3 pairs of drainage arrows (L & R of centerline) at the bottom of the cut ditch and/or outside the worklimits of a fill slope
- Inside Work Limits
    - additional drainage arrows depending on location of crest or sag vertical curves and/or special ditches to show change of direction of runoff
- Outside Work Limits
    - Intersecting Roads – minimum of 1 pair of drainage arrows (each side of road) to designate if runoff drains away or towards mainline
- Mainline Culverts – drainage arrows showing direction of flow at outlet end of pipe

The order of stationing included in removal, install, and temporary easement notes should consist of the back station followed by the ahead station.

Plan Layout Examples (Figure 18-B11a) provides guidance for plan sheets that include referenced structures and tabled notes.

When right of way photos are not used for a grading project, the legal description and permanent right of way taking are included on the plan sheet. Refer to Chapter 9 – Right of Way for an example combination construction and right-of-way plan sheet.

- Profile Sheet (Figures 18-B13 through 18-B16): information shown includes, but is not limited to, the following:

  - station of begin work, balance points, and end work,
  - earthwork equations (refer to Chapter 8 - Earthwork for equation format),
  - mainline, option borrow, borrow, and dead haul quantities,
  - note indicating which pit the borrow or option borrow shall be obtained from,
  - note regarding what shall be done with waste material,
  - notes for ditch blocks showing station, side, and elevation,
  - notes for entrances, intersecting roads, median crossovers, and drives showing station, side, and finished width (refer to Chapter 12 – Intersections for standard widths),
  - vertical curve data (PVI station and elevation, length of curve, percent grade into and out of curve, and K value),
  - original ground profile,
  - design profile,
  - special ditch grades (DGPI station and elevation, side, and percent grade),
  - profile view of cross pipe with inlet and outlet elevations and overtopping data (refer to Chapter 11 - Drainage for overtopping information),
  - profile view of downspouts with inlet and outlet elevations,
  - profile view and hydraulic data for structures (box culverts and bridges),
  - storm sewer (drop inlets, flow line elevations into and out of drop inlets, size and type of pipe, and percent grade of pipe between drop inlets),
  - benchmark information (number, elevation, description, and station and offset),
  - design profile elevations every 100’ for rural and 20’ for urban projects,
  - spline curves (if any),
  - and insets for any intersecting road or detour profiles.

  Divided highway projects should include profile sheets split for both directions of travel with the above information included for each roadway.

- Pavement Removal Layout (Figure 18-B16a): information shown includes, but is not limited to, the following:

  - north arrow,
  - horizontal alignment stationing and bearings,
  - plan view similar to Section B Plan Sheet showing location and type of pavement removal,
  - existing topography (limited to items that correspond with pavement being removed),
  - and mainline and side street names.

- Curb and Gutter Layout (Figure 18-B17): information shown includes, but is not limited to, the following:

  - north arrow,
  - note below heading stating:

    All curb and gutter shown on this sheet is Type __ except as noted.
    All sidewalk is __' wide except as noted.

  - width and center station of driveways,
  - change in curb line denoted by circled number,
  - note corresponding to circled number showing station and offset, change in curb line (e.g., Begin Str C & G), and top of curb elevation,
  - dimension of all curved curb and gutter except fillet sections,
  - sidewalk,
  - dimensions of sidewalks that aren't the standard width specified in the note below the heading,
  - surfacing limit and type noted behind driveways and fillet section of streets,
  - openings and/or ramps showing detectable warnings where required (refer to 651 series Standard Plates),
  - and mainline and side street names.

- Curb Ramp Layout (Figure 18-B17a and Figure 18-B17b): information shown includes, but is not limited to, the following:

  - north arrow,
  - note below the heading stating:

    * Turning Space with 1.5% slope
    ** Curb Ramp with 7.5% slope and 1.5% cross slope

  - symbols corresponding to those in the note below the heading (e.g., * for the Turning Space),
  - slope of curb ramp when significantly different than slope shown on standard plate,
  - note for the surface material between directional curb ramps (e.g., grass, concrete, landscaping rock, etc.),
  - 15' length dimensions for ramps/sidewalks that cannot match existing grades within 15' at 8.3% or 5%, respectively,
  - at a minimum, the annotation of 2 stations of the alignment,
  - sidewalk,
  - and mainline and side street names.

Elements specific to Curb Ramp Layout for Reconstruction Projects (Figure 18-B17a) are as follows:

- o center of detectable warning denoted by circled number,
- o and note corresponding to circled number showing station and offset and type of curb ramp.

Elements specific to Curb Ramp Layout for ADA Projects (Figure 18-B17b) are as follows:

- o change in curb line, begin and end of ramp slope, and back of turning space denoted by circled number,
- o note corresponding to circled number showing station and offset, change in curb line (e.g., Begin Str C & G), center of detectable warning and type of curb ramp, and top of curb elevation,
- o station and offset of beginning, ending, and deflections of sidewalk,
- o and note below heading stating:

All curb and gutter shown on this sheet is Type __ except as noted.
All sidewalk is __' wide except as noted.

- Guardrail Layout (Figure 18-B18): information shown includes, but is not limited to, the following:

  - o north arrow,
  - o structure number and MRM,
  - o begin or end bridge,
  - o width of structure, driving lanes, and shoulders,
  - o dimension and label types of guardrail (labels should correspond with standard bid item descriptions),
  - o label PI and flare rate if guardrail is flared,
  - o and show additional embankment and surfacing if necessary.

  Refer to Chapter 10 – Roadside Safety and the 629 and 630 series Standard Plates for additional information concerning guardrail.

- Special Detail Sheets: are primarily for any details that are not covered by a standard plate or differ from project to project. These details may include Ramp Gore Layout (Figure 18-B19), Intersection Layout (Figure 18-B20), Junction Box and Manhole Layout (Figure 18-B21), Retaining Wall Layout (Figure 18-B22), Joint Trench Layout (Figure 18-B27), etc.

- Standard Plates: are to be included for each specific item incorporated into the construction for each individual project. They are to be used as posted on the web and are not to be intermingled with any other details or amended in any way. Where half sheets are blank; the blank side should be oriented on the left for easier readability when the sheets are bound.

- Alternate Plan or Profile Sheets: in some situations, the complexity of details and concentration of notes on the plan and/or profile sheets makes it difficult to read or display different elements. Additional plan and profile sheets may be incorporated as a means to more clearly illustrate the project's design.

    - Plan Sheet - The ROW Layout (Figure 18-B24) can be utilized to contain all of the ROW notes; (i.e. labeling ROW lots and lines, ROW width, landowner information, temporary easement station and offset, and temporary easement notes) thus removing them from the preceding plan sheet. Refer to the Plan Sheet without ROW Notes (Figure 18-B23) when using the ROW Layout.

    - Profile Sheet – The Storm Sewer Layout (Figure 18-B26) can be utilized when there is extensive storm sewer detail and it becomes difficult to label flow lines and pipe grades on the profile sheet in a manner that they can be understood. Refer to the Urban Profile (Figure 18-B25) when using the Storm Sewer Layout.

Section C: Traffic Control Plans

The examples shown are for illustrative purposes only and are not intended to be used as a standard format. Contact the appropriate Region or Area office for any standard notes and sheet format.

- Traffic Control Layouts (Figures 18-C3 through 18-C5): Graphically show construction sequence and the location of fixed and temporary traffic control devices.

The Region or Area office provides these sheets.

Section D: Erosion and Sediment Control Plans

- Section Title Sheet (Grading, Figure 18-D1): will also show the location of any borrow or option borrow pits (as in Section B Title)

- Section Title Sheet (Resurfacing plans, Figure 18-D2): will also show drainage arrows, a legend, and the following note:

    > Symbols in the Legend that apply to this project are to be shown on this Title Sheet to update the SWPPP.

- Storm Water Pollution Prevention Plan (SWPPP) Checklist (Figure 18-D4): the checklist is included in the Section D – Erosion Control Notes document that can be downloaded from the Downloadable Files page on the Department web site.

- Erosion and Sediment Control Plan Sheet (Figure 18-D6): information shown includes, but is not limited to, the following:

  - Legend and Symbology for temporary and permanent erosion control measures (shown on first Erosion and Sediment Control Plan sheet),
  - north arrow,
  - install notes for each type of erosion and sediment control showing station, description, and quantity,
  - and plan view similar to Section B showing location and type of erosion and sediment control.

Section E: Structure Plans

The examples shown are for illustrative purposes only. Contact the Office of Bridge Design for any standard notes and sheet format.

- Section Title Sheet (Figure 18-E1): will also show the location of structures showing structure number and description.

Section F: Surfacing Plans

The examples shown are for illustrative purposes only. Contact the Office of Materials and Surfacing - Surfacing Plans, for any standard notes and sheet format.

Section H: Landscaping Plans

- Landscaping Layout (Figure 18-H3): shows the quantity and type of landscaping along with a Plant List that includes the common name, botanical name, quantity, planted size, mature size, spacing, and any remarks.

Section L: Signal and Lighting Plans

- Conduit and Cable Quantities (Figure 18-L3): shows the quantity of conduit and cable that is needed between two points in the plan set, such as between two junction boxes or between a junction box and signal pole.

  A copy of the Conduit and Cable Quantities can be downloaded from the Downloadable Files page on the Department web site.

- Existing Signal Layout (Figure 18-L4): shows the existing signal layout along with any tables showing remove or salvage quantities.

- Signal Layout (Figure 18-L5): shows proposed signal layout with station and offset to each pole, location of signal heads on the mast arms, and an estimate of quantities table that includes the symbol and description of the items shown in the layout.

- Conduit Layout (Figure 18-L6): shows location of junction boxes, meter sockets, wood utility poles, electrical service cabinets, traffic signal controller, conduit and cable from the signals to the controller (labeled with number and size of cable and size and type of conduit) and conduit and cable from the luminaires to the electrical service cabinet (labeled with number and size of cable and size and type of conduit). Station and offset are shown for luminaires, detector loops and signal pole footings. An estimate of quantities table is shown for Signals on the respective sheet of the Conduit Layout Sheet in which the signals are located, whereas the estimate of quantities table for Lighting is shown on the first sheet of the Conduit Layout Sheets. The estimate of quantity tables include the symbol and description of the items shown.

- Signal Timings (Figure 18-L7): shows the green, yellow, and red intervals and flash display for the signal head; flash time; cycle length; and movements and timing for each phase.

- Wiring Tables (Figure 18-L8 for Signals): shows the pole numbers, cable size, cabinet terminal, cable conductor number, cable conductor color, pole conductor color, head terminal, head number and phase number.

- Wiring Diagram (Figure 18-L9 for Lighting): shows the wire connections from the power source at the electrical service cabinet to the luminaires.

Section M: Pavement Marking Plans

- Pavement Marking Layout (Figure 18-M3): shows the location of edge lines, lane lines, directional arrows, crosswalks, stop bars, and railroad crossings. The width and color are indicated by the appropriate symbol. A legend showing the symbol and description can be found on Standard Plate 633.01.

Section S: Permanent Signing Plans

The examples shown are for illustrative purposes only and are not intended to be used as a standard format. Contact the Region or Area office for any standard notes and sheet format. The Region or Area office provides the following sheets.

- Permanent Signing Table (Figure 18-S3): shows sign information such as location (shown as MRM), width, height, sign number (found in the Manual of Uniform Traffic Control Devices Standard Highway Signs manual), direction facing traffic, material type, sign area, sheeting type, description of sign, and post information such as length, size, type, and quantity.

  The Standard Highway Signs manual can be found at the following internet address:

  http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm

- Sign Details (Figure 18-S4): shows graphic detail of sign with sign dimensions; background, legend, and border type and color; and letter spacing.

Section U: Existing Utility Information

- Subsurface Utility Locations (Figure 18-U2 and Figure 18-U2A): shows information such as test hole identification number, station, offset, finding, existing ground and utility elevation, utility depth, coordinates (northing and easting), test hole owner identification number code legend, epoch, geoid model, and the scale factor and NAD information needed to convert grid distances to ground distances. This sheet would be included in plans for more complex urban projects when a subsurface utility location survey is provided.

- Utility Layout Sheets (Figure 18-U3 and Figure 18-U3A): information shown includes, but is not limited to, the following:

  - north arrow,
  - existing topography,
  - Section, quarter, sixteenth, property, existing and proposed Right of Way lines,
  - new topography (pipe, structures, ditch blocks, entrances, drop inlets, curb and gutter, sidewalk, etc)
  - test hole numbers
  - test hole owner identification number legend

Section X: Cross Sections

Cross sections shall be shown a minimum of every 100 feet for rural projects (Figure 18-X2) and every 50 feet for urban projects (Figure 18-X3) or mountainous terrain (Figure 18-X4). Cross sections should be plotted in reverse order with stationing decreasing from sheet to sheet and from top to bottom of each sheet. Information shown on the cross sections includes, but is not limited to:

- Slopes: label any slope (fill, inslope, ditch bottom, or backslope) different from that shown on the Typical Grading Sections.

- Offsets and Elevations: are shown for centerline (elevation only), subgrade shoulders, and catch points (where proposed ground line intersects existing ground line). Subgrade elevations are shown on rural projects and finish grade elevations are shown on urban projects.

- Special Ditch Grades: label ditch grade PI elevations along with any intermediate ditch grade elevations.

- Intersecting Roads, Entrances, and Ditch Blocks: draw intersecting roads on all cross sections within the limits of the intersection and entrances and ditch blocks on the nearest cross section. Include notes for entrances, intersecting roads, median crossovers, and drives showing station, side, and finished width and notes for ditch blocks showing station, side, and elevation. Refer to Standard Plates 120.01 and 120.02 for more information regarding intersecting roads, entrances, and ditch blocks.

- Drop Inlets and Storm Sewer: draw drop inlets to top of wall elevations, flow line and top thickness of reinforced concrete pipe, and flow line and top of corrugated metal pipe. Refer to 670 series Standard Plates for drop inlet details. If the storm sewer is parallel to the mainline, its location is shown on each cross section along with the flow line elevation. Include pipe and drop inlet installation notes similar to those found on the plan sheets in Section B.

- Muck and Unstable Material Excavation: areas of muck and unstable material excavation are cross-hatched and hatched respectively. Refer to Chapter 8 – Earthwork for definitions of muck and unstable material excavation.

Section Z: Pipe Sections

Pipe sections shall be shown for all mainline pipe (Figures 18-Z2 through 18-Z6) and all approach pipe (Figure 18-Z7). Pipe sections should be plotted with stationing increasing from sheet to sheet and from bottom to top of each sheet. Information shown on the pipe sections includes, but is not limited to, the following:

- existing ground line and proposed ground line,
- pipe with correct type of ends,
- pipe installation notes showing station to the nearest foot, skew if any, pipe size, pipe length to the nearest even foot (not including ends), pipe class or gauge, type of end, and center to center spacing of multiple pipe,
- bank and channel protection gabions, including install note,
- inlet and outlet offset and elevation (cross pipe only),
- approach pipe showing finished grade elevation (allows for fill height to be determined from mainline finished grade),
- skewed pipe shall have station, offset, and elevation for each extreme end.

Refer to Section B – Design of the CADD Procedures Manual for details on how to create the pipe sections.

NON-SECTION METHOD

Generally, a set of plans using the Non-Section Method will be assembled in the following order (refer to Section Method for sheet descriptions):

- Title Sheet (Figure 18-NSM1)
- Estimate of Quantities and Environmental Commitments (Figure 18-NSM2)
- General Notes and Tables (including Grading, Surfacing, Traffic Control, Erosion and Sediment Control, Pavement Marking, Lighting and Traffic Signals, and Permanent Signing)
- Borrow Pit Information Layout
- Typical Grading Sections
- Typical Surfacing Sections
- Traffic Control
- Erosion and Sediment Control
- Horizontal Alignment Data
- Control Data
- Legend
- Plan and Profile Sheets
- ROW Layout (if used, is inserted between the Plan and Profile Sheets)
- Pavement Removal Layout (if required)
- Curb and Gutter Layout (if required)
- Curb Ramp Layout (if required)
- Pavement Layout (if required)
- Pavement Marking Layout (if required)
- Roadway Lighting and Traffic Signal Sheets (if required)
- Permanent Signing Sheets (if required)
- Special Detail Sheets (if required)
- Standard Plates
- Structure Sheets from Office of Bridge Design
- Cross Sections
- Pipe Sections

The Non-Section method would be used on projects like “stand alone” Lighting and Signal Replacement, multi-use paths, or other similar projects not requiring the involvement of all of the generally used Sections to any great extent. The designer will determine what method will be employed. The assembly listed above would indicate the order of necessary sheets, not to say that all of these sheets will be necessary.

STAGES OF PLANS

A detailed checklist for the Preliminary Design Inspection, Public Hearing, Landowner Meeting, and Final Design Inspection plan stages can be downloaded from the Downloadable Files page on the Department web site. All plans will be stored and delivered as an Adobe PDF file.

Preliminary Design Inspection, Landowner Meeting, and Final Design Inspection (Figures 18-SOP1 through 18-SOP3)

Section B plan and profile sheets, Section D layout sheets, and Section L signal and/or conduit layout sheets will be provided in color. These will be sent to all persons involved in the preliminary and final design inspections. Color plans may also be similarly shared as necessary at landowner meetings for Section B plan and profile sheets. The background "**Not for Construction"** will be affixed on all sheets in the PDF file and remain there until '**Release to Bid Letting**'.

Pre-release to Right of Way Office
After changes have been completed from the Final Design Inspection; the Plans will be forwarded to the Right of Way Office for a preliminary review. Changes and corrections will be recommended.

Release to Right of Way/Utilities
Plans for release to the Right of Way Program and Office of Utilities will include changes made resulting from the **Pre-release** review. A revision date and the initials of the person who made the revision (Rev ##/##/#### ABC) shall be included in the upper right corner below the title block if revisions that may affect the right of way appraisal and/or negotiation process are needed after release to Right of Way. These are not cumulative and only the most recent revision date and initial is required. Once a revision is added to the plans it is not removed when released to Bid Letting. The background "Not for Construction" may be removed by the ROW program from their Adobe PDF file during ROW Negotiations.

Final Plans for Review
All sections are compiled as if ready for letting. All quantities should be finalized and included in the estimate of quantities tables.

Release to Bid Letting
Adjustments and corrections are made according to review comments and any Right of Way changes. The background "**Not for Construction"** will be removed prior to this release. After the release to Bid Letting; any revisions made to the plans shall bear a revision date and initials of the person who made the revisions. The revised plan sheet will be sent to the Bid Letting Office accompanied by a letter explaining the revision, so that the updated plan sheet can become a part of the final plans.

CONSTRUCTION ROUNDING GUIDELINES

ITEM	100	50	10	2	1	0.1	0.01	0.001	0.0001
PROJECT LENGTH							Feet	Miles	
AREA DISTURBED					Acre				
PIPE Take Out					Station & Offset* (Ft)				
Install				(Ft)	Station - Rural Offset* - Rural	Elevation - Rural	Station - Urban Offset - Urban Elevation – Urban		
FENCE Remove/Install ROW, Temporary, & Chain Link					Station (Ft)				
BENCH MARKS & CONTROL POINTS					Station & Offset		Elevation, Northing, & Easting		
EXCAVATION Unclassified, Rock, Undercut, Muck, Borrow, Select Topping, Etc.					(CuYd)				
HAUL Dead, Borrow, Option Borrow	(CuYdSta)								
TOPSOIL					Station (CuYd)				
WATER Embankment, Granular Material, Vegetation					Rate – Gallon	(MGal)			
OBLITERATE OLD ROAD					Station (Sta)		[Sta]		
ROADWAY SHAPING Ordinary & Heavy								(Mile)	
CULVERT UNDERCUT Box & Pipe					(CuYd)				

* Offset needed for approach pipe only
** 0.01' at property line
*** Vertical Curves: **Station** and **Elevation** may vary to match existing elevation for improvement types such as shoulder widening
Length: 50' intervals Rural, 10' intervals Urban & Suburban

(Unit) denotes quantity rounding according to Standard Specifications
[Unit] denotes quantity rounding in table

CONSTRUCTION ROUNDING GUIDELINES

ITEM	100	50	10	2	1	0.1	0.01	0.001	0.0001
ENTRANCES **INTERSECTING ROADS & STREETS** **ALLEYS/DRIVES**					Station Station - Rural Station	Station - Urban			
APPROACH PAVEMENT Remove					Station & Offset	(SqYd)			
Install						(SqYd)	Station & Offset		
BARRIER & MEDIAN PAVEMENT & FILLET SECTIONS						(SqYd)	Station, Offset, & Elev. [SqYd]		
CURB & GUTTER Remove					Station & Offset (Ft)	[Ft]			
Install					(Ft)	[Ft]	Station, Offset, & Elev.		
SIDEWALK Remove					Station & Offset	SqYd			
Install					(SqFt)	[SqFt]	Station & Offset		
DROP INLETS, MANHOLES, ETC. Remove					Station & Offset (Ft)				
Install							Station, Offset, & FL Elev.		
CONCRETE FOR INCIDENTAL CONST. Class M6 & Controlled Density Fill						(CuYd)	[CuYd]		
REINFORCING STEEL					(Lb)				
REFURBISH MAILBOX					Station & Offset				

* Offset needed for approach pipe only
** 0.01' at property line
*** Vertical Curves: **Station** and **Elevation** may vary to match existing elevation for improvement types such as shoulder widening
Length: 50' intervals Rural, 10' intervals Urban & Suburban

(Unit) denotes quantity rounding according to Standard Specifications
[Unit] denotes quantity rounding in table

CONSTRUCTION ROUNDING GUIDELINES

ITEM	100	50	10	2	1	0.1	0.01	0.001	0.0001
3 CABLE & BEAM GUARDRAIL Remove					Station & Offset (Ft)				
Install					(Ft)	Station & Offset			
BANK & CHANNEL PROTECTION GABIONS					Station & Offset	(CuYd)			
UNDERDRAINS Porous Backfill Underdrain Pipe					(Ft)	(Ton)			
WEIGHT Riprap, Salvage Material, Granular Material, Etc.						(Ton)			
DRAINAGE AREAS					Acre		SqMi		
PERMANENT RIGHT OF WAY					SqFt - Urban		Station & Offset Acre - Rural		
TEMPORARY EASEMENTS					Station & Offset** SqFt - Urban & Suburban	Acre - Rural & Suburban			
PROFILE SHEET Vertical Curves*** Special Ditch Storm Sewer Vertical Control Ditch Block Overtop Info		Station	Station – Rural & Surburan		Station - Urban Station & Offset Station Flow - cfs	Elevation Elevation	Elevation Elevation Elevation		Grade Grade Grade
CROSS SECTIONS							Centerline, Top of Curb & FL Elev.		
PIPE SECTIONS INLET & OUTLET FLOW LINES					Station (if skew) Offset - Rural	Elevation - Rural	Offset - Urban Elevation – Urban		

* Offset needed for approach pipe only
** 0.01' at property line
*** Vertical Curves: **Station** and **Elevation** may vary to match existing elevation for improvement types such as shoulder widening
Length: 50' intervals Rural, 10' intervals Urban & Suburban

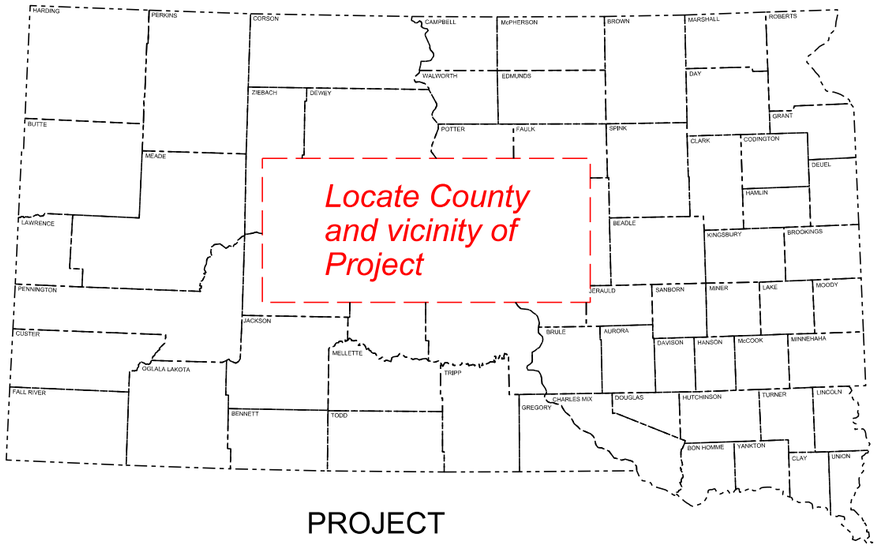
(Unit) denotes quantity rounding according to Standard Specifications
[Unit] denotes quantity rounding in table

CONSTRUCTION ROUNDING GUIDELINES

ITEM	100	50	10	2	1	0.1	0.01	0.001	0.0001
SEEDING					(Lb)				
FERTILIZING							(Ton)		
MULCHING Grass Hay, Straw, Fiber, or Bonded Fiber Matrix						(Ton)			
SODDING					(SqYd)				
SURFACE ROUGHENING						(Acre)			
SILT FENCE Install, Remove, & Repair Mucking					(Ft) (CuYd)				
EROSION CONTROL BLANKET Standard & High Velocity					(SqYd)				
EROSION CONTROL Interceptor Ditch, Floating Silt Curtain, Wattle, Temp. Slope Drain, & Triangular Silt Barrier					(Ft)				
PERMANENT SIGNING Signs Tube, Channel, Steel, & Wood Posts Concrete Footings						(SqFt) (Ft) (Ft)			
PAVEMENT MARKING Cold Applied Plastic Cold Applied Plastic, Area Paint					(Ft) (SqFt) (Gal)				
LUMINAIRE & SIGNAL FOOTINGS						(Ft)			

* Offset needed for approach pipe only
** 0.01' at property line
*** Vertical Curves: **Station** and **Elevation** may vary to match existing elevation for improvement types such as shoulder widening
Length: 50' intervals Rural, 10' intervals Urban & Suburban

(Unit) denotes quantity rounding according to Standard Specifications
[Unit] denotes quantity rounding in table



PROJECT

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT _____
___ HIGHWAY __
_____ COUNTY

TYPE OF CONSTRUCTION *(Description of Work)*

PCN ___ *(Project Control Number)*

Leave this area Blank for Bid Letting Office

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	_____	___	___

Plotting Date: 12/06/2017 _____

(Project Number)

INDEX OF SECTIONS
OR
INDEX OF SHEETS
(for non-section method)

Clipped Area of County or City Map showing Project limits and exceptions

DESIGN DESIGNATION

AADT (__)	____
AADT (__)	____
DHV	___
D	___%
DHV T%	___%
AADT T%	___%
V	__mph

STORM WATER PERMIT

Major Receiving Body of Water:
Area Disturbed:
Total Project Area:
Approx. Begin Lat,Long:

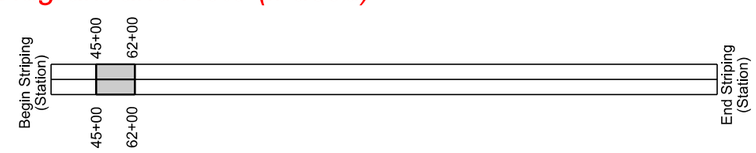
Alternate note if disturbed area is less than 1.0 acre.

STORM WATER PERMIT
(None Required)

Striping Diagram and Note (if used)

This striping diagram is for informational purposes only. Actual striping for passing/no passing zones should be determined by field verified procedures.

Passing
No Passing



Gross Length	_____ Feet	____ Miles
Length of Exceptions	_____ Feet	___ Miles
Net Length	_____ Feet	____ Miles

Leave This Area Blank, for Bid Letting Number

Figure 18-1 General Title Sheet Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-BRF 0014(32)424	1	220

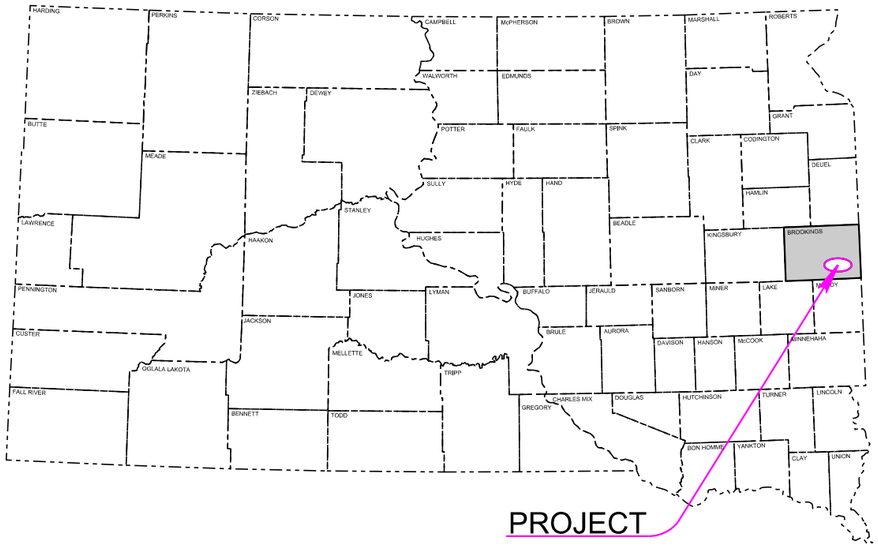
Plotting Date: 03/24/2021

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT NH-BRF 0014(32)424
US HIGHWAY 14
BROOKINGS COUNTY

GRADING, STRUCTURES & INTERIM SURFACING
PCN 2643



INDEX OF SECTIONS

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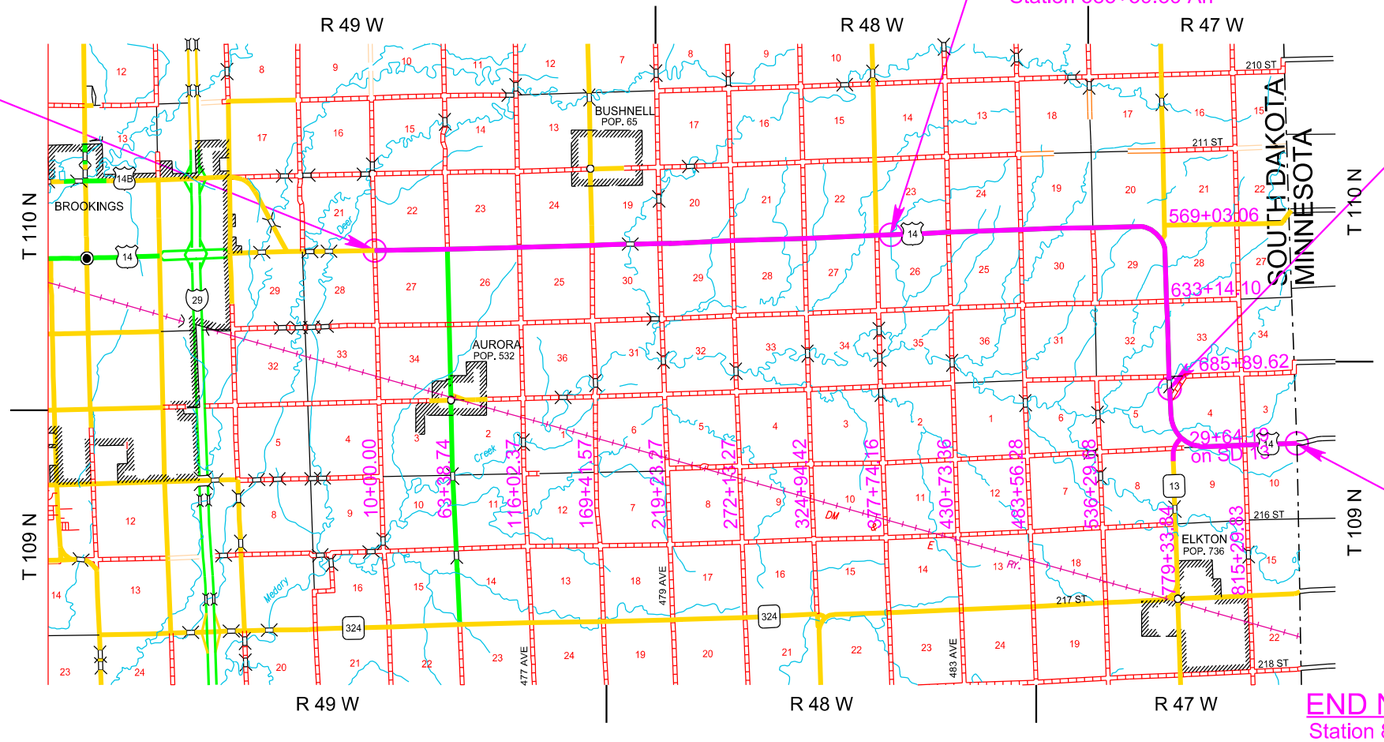
Section B: Grading Plans
Section C: Traffic Control Plans
Section D: Erosion and Sediment Control Plans
Section E: Structure Plans
Section F: Surfacing Plans
Section G: to Section K: Special Sections
Section L: Signal and Lighting Plans
Section M: Pavement Marking Plans
Section S: Permanent Signing Plans
Section X: Cross Sections
Section Z: Pipe Sections

EQUATION
Station 383+40.09 Bk=
Station 383+39.39 Ah

EQUATION
Station 691+38.12 Bk=
Station 691+37.99 Ah

BEGIN NH-BRF 0014(32)424
Station 10+00.00 = Station 194+46.30
on NRM 82 located at the southwest corner
of Section 22 - Township 110 North -
Range 49 West of the 5th PM
MRM 424.00+0.603



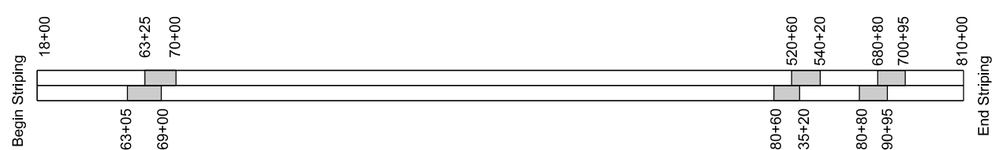
END NH-BRF 0014(32)424
Station 815+29.83 = Station 724+94.70
on FAP 276A located at 25.26 feet North
of the southeast corner of Section 3 -
Township 109 North - Range 47 West of the 5th PM
MRM 439.86+0.000

DESIGN DESIGNATION

AADT (2020)	1272
AADT (2043)	1307
DHV	190
D	60%
DHV T%	4.1%
AADT T%	9.1%
V	70 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Medary Creek
Area Disturbed: 378 Acres
Total Project Area: 520 Acres
Approx. Begin Lat,Long: 44.0185, -103.2496



This striping diagram is for informational purposes only. Actual striping for passing/no passing zones should be determined by field verified procedures.

Gross Length	80530.10 Feet	15.251 Miles
Length of Exceptions	0.00 Feet	0.000 Miles
Net Length	80530.10 Feet	15.251 Miles

Figure 18-2 Title Sheet (Section Method Rural)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0015(25)86	1	382

Plotting Date: 03/24/2021

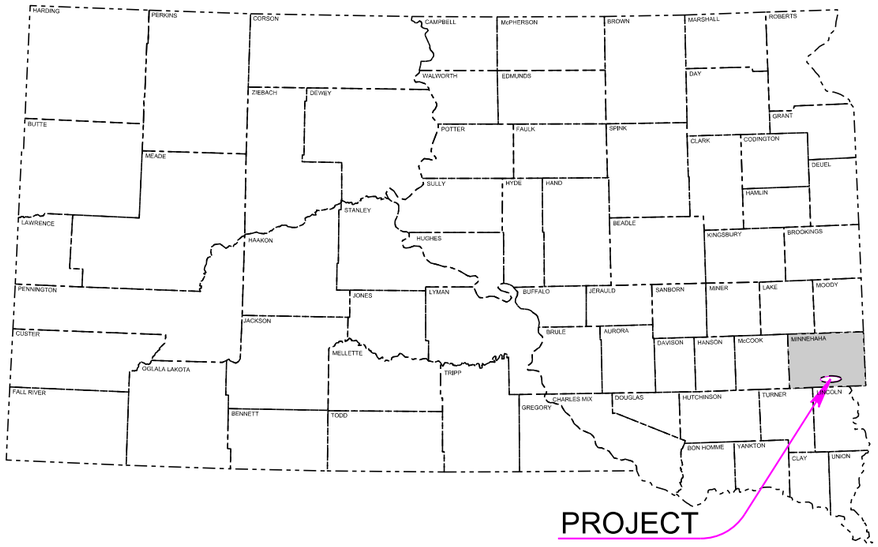
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P 0115(25)86
SD HIGHWAY 115
MINNEHAHA COUNTY

GRADING, C&G, STORM SEWER, STRUCTURE, ROADWAY LIGHTING, SIGNALS & PCC PAVEMENT

PCN 3150



INDEX OF SECTIONS

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Section B: Grading Plans
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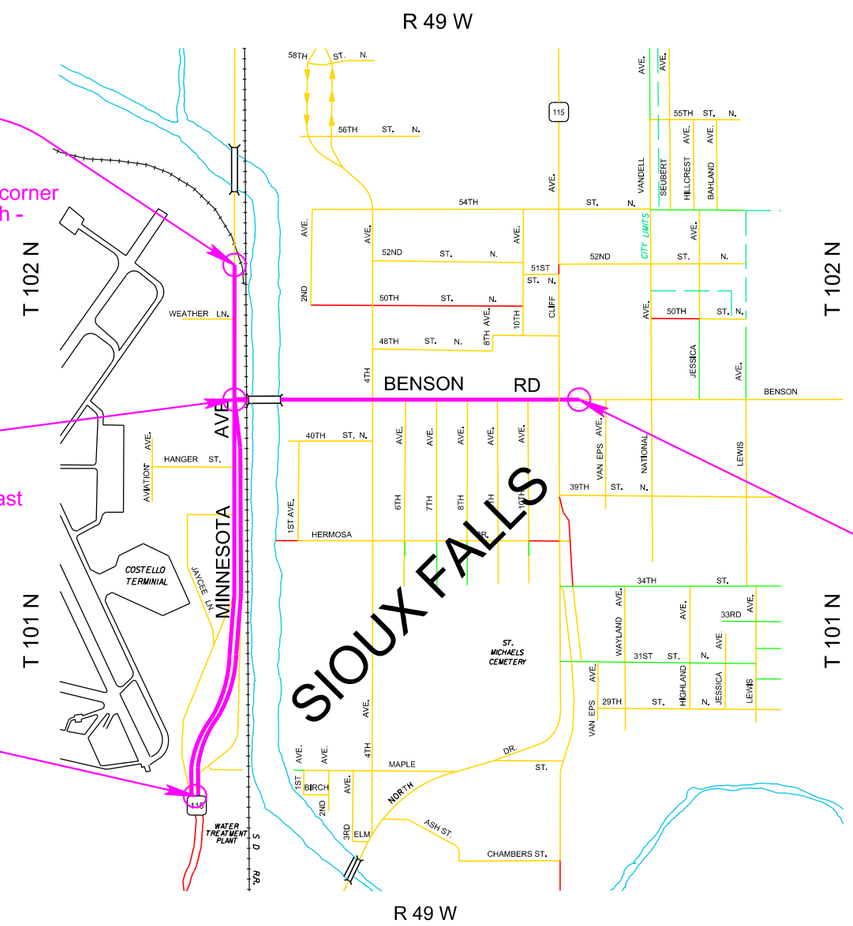
Section G: Gatewell and Drainage Channel Plans
Section L: Signal and Lighting Plans
Section M: Pavement Marking Plans
Section X: Cross Sections

END P 0015(25)86
MINNESOTA AVE
Station 88+00.00
Located 1528.71 feet North and 670.62 feet East of the southwest corner of Section 33 - Township 102 North - Range 49 West of the 5th PM

BEGIN P 0015(25)86
BENSON RD
Station 00+00.00
Located 26 feet North and 670.62 feet East of the southwest corner of Section 33 - Township 102 North - Range 49 West of the 5th PM

BEGIN P 0015(25)86
MINNESOTA AVE
Station 10+00.00 = 71+74.11 on F 055-1(5)
Located 872.32 feet South and 231.01 feet East of the northwest corner of Section 9 - Township 101 North - Range 49 West of the 5th PM

END P 0015(25)86
BENSON RD
Station 48+46.00
Located 0.69 feet North and 250.58 feet East of the southeast corner of Section 33 - Township 102 North - Range 49 West of the 5th PM



MINNESOTA AVE.

DESIGN DESIGNATION	S. OF BENSON RD	N. OF BENSON RD	BENSON RD
AADT (2020)	12,055	7,230	6,830
AADT (2044)	14,780	8,865	8,375
DHV	1,522	915	863
D	50%	50%	50%
DHV T%	1.3%	1.3%	1.3%
AADT T%	2.9%	2.9%	2.9%
V	40 mph	40 mph	40 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Big Sioux River
Area Disturbed: 38 Acres
Total Project Area: 54 Acres
Approx. Begin Lat,Long: 43.6019, -96.7113

	MINNESOTA AVE.		BENSON ROAD	
Gross Length	7800.00 Feet	1.477 Miles	4846.00 Feet	0.918 Miles
Length of Exceptions	0.00 Feet	0.000 Miles	0.00 Feet	0.000 Miles
Net Length	7800.00 Feet	1.477 Miles	4846.00 Feet	0.918 Miles

Figure 18-3 Title Sheet (Section Method Urban)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0034(143)44	1	238

Plotting Date: 03/24/2021

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P 0034(143)44
SD HIGHWAY 34
MEADE COUNTY

STRUCTURES, APPROACH GRADING,
AC SURFACING & ROW PLANS

PCN 02AB

INDEX OF SECTIONS

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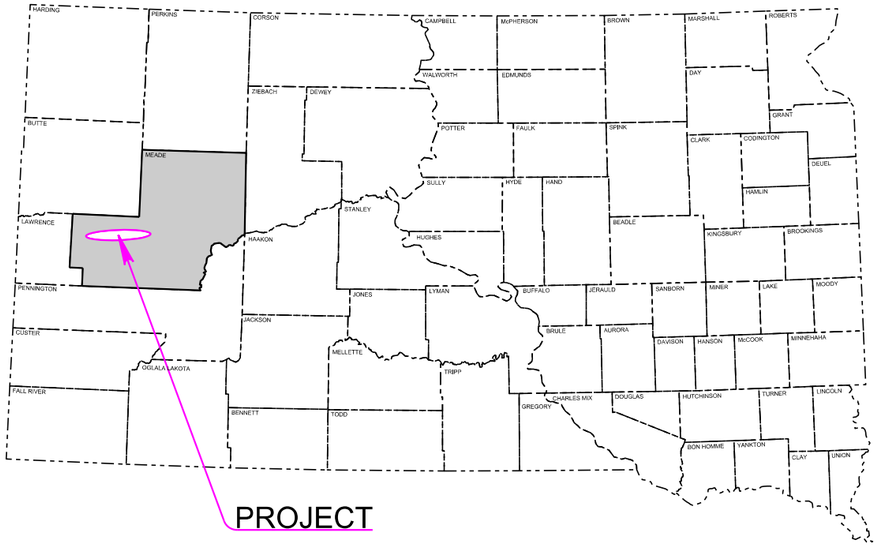
Section E: Structure Plans
Section F: Surfacing Plans
Section M: Pavement Marking Plans
Section S: Permanent Signing Plans
Section X: Cross Sections
Section Z: Pipe Sections



BEGIN GRADING

Str No 47-230-373
Station 220+50.00 = Station 1137+93.60
on F 242(15) located 317.70 feet South and
1541.00 feet West of the northeast corner of
Section 11 - Township 6 North - Range 8 East
of the BHM
MRM 57.00+0.883

END P 0034(143)44

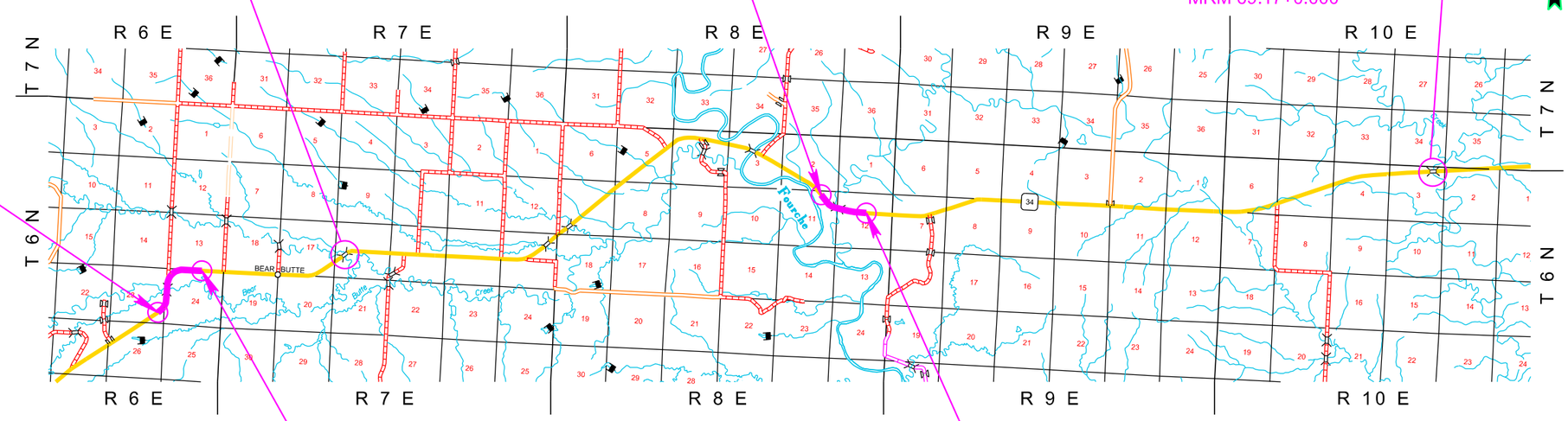
Str No 47-338-361
MRM 69.17+0.000

Str No 47-142-386

MRM 48.26+0.000

BEGIN P 0034(143)44
BEGIN GRADING

Str No 47-110-394
Station 10+00.00 = Station 412+40.20 on
F 242(12) located 754.70 feet North and
1138.30 feet West of the southeast corner of
Section 23 - Township 6 North - Range 6 East
of the BHM
MRM 44.00+0.261



END GRADING

Str No 47-110-394
Station 77+00.00 = Station 488+22.91 on F 242(12)
located 2002.90 feet West of the southeast corner of
Section 13 - Township 6 North - Range 6 East
of the BHM
MRM 45.00+0.456

END GRADING

Str No 47-230-373
Station 262+00.00 = Station 113+56.40 on
F 242(15) located 1834.00 feet South and
2179.50 feet East of the northwest corner of
Section 12 - Township 6 North - Range 8 East
of the BHM
MRM 58.26+0.382

DESIGN DESIGNATION

	MRM 44.85 & 48.26	MRM 58.26 & 69.17
AADT (2020)	755	700
AADT (2043)	930	865
DHV	140	130
D	50%	50%
DHV T%	3.1%	3.3%
AADT T%	6.8%	7.3%
V	65 mph	65 mph

STORM WATER PERMIT	(MRM 44.85)	(MRM 48.26)	(MRM 58.26)	(MRM 69.17)
Major Receiving Body of Water:	Bear Butte Creek	Spring Creek	Four Mile Creek	Elm Creek
Area Disturbed:	32 Acres	3 Acres	17 Acres	5 Acres
Total Project Area:	45 Acres	6 Acres	26 Acres	9 Acres
Approx. Begin Lat,Long:	44.4697,-103.3473	44.4802,-103.2829	44.4991,-103.1045	44.5159,-102.8878

	MRM 44.85		MRM 58.26	
Gross Length	6700.00 Feet	1.269 Miles	4150.00 Feet	0.786 Miles
Length of Exceptions	0.00 Feet	0.000 Miles	0.00 Feet	0.000 Miles
Net Length	6700.00 Feet	1.269 Miles	4150.00 Feet	0.786 Miles

Figure 18-4 Title Sheet for Multiple Location Projects

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	1	225

Plotting Date: 03/24/2021

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

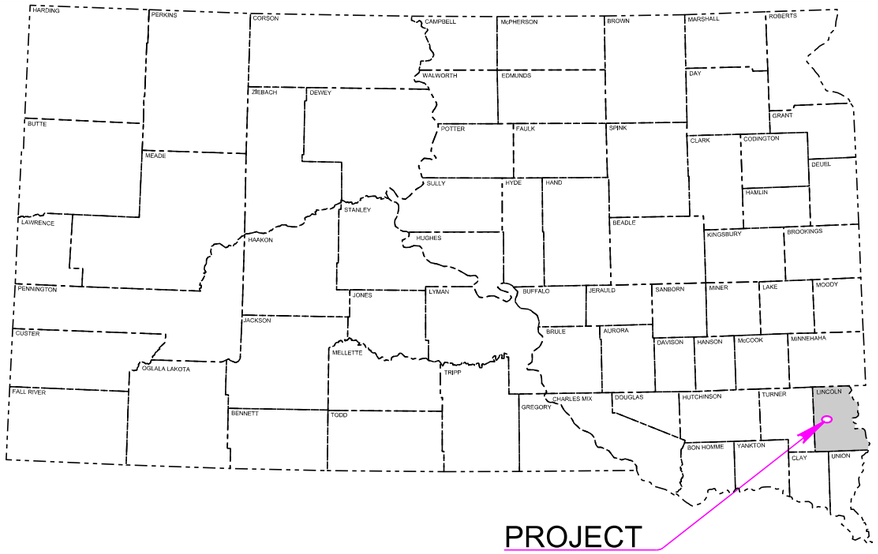
PLANS FOR PROPOSED

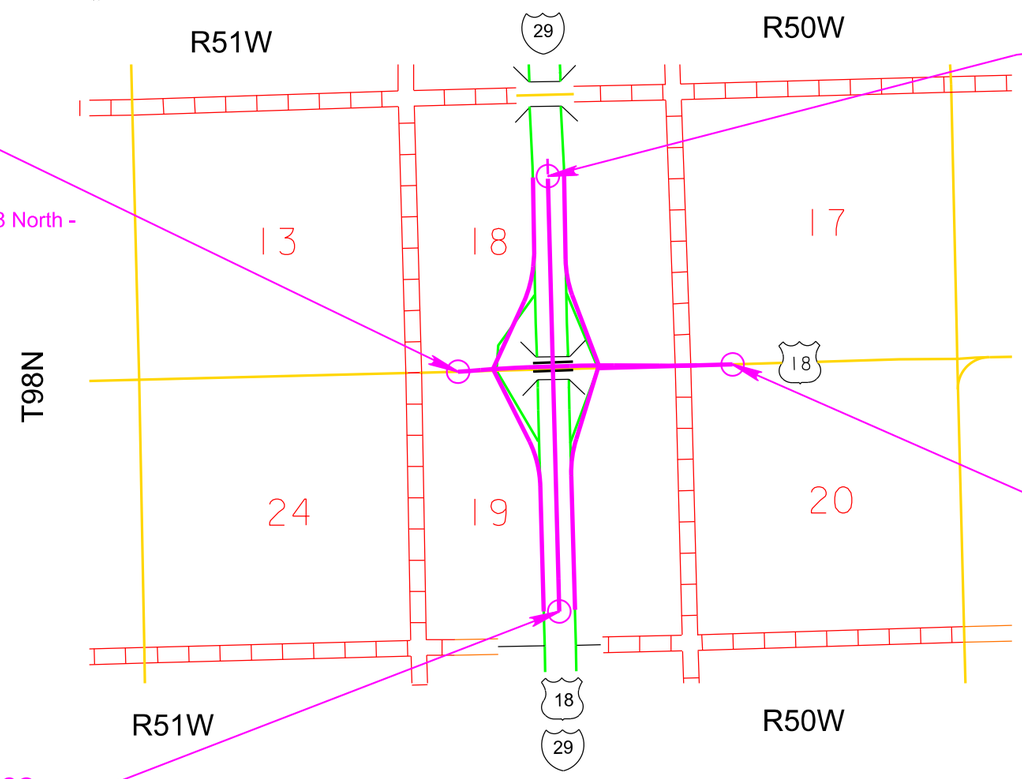
PROJECT IM 0292(74)62
INTERSTATE 29
LINCOLN COUNTY

STRUCTURE, GRADING, PCC PAVEMENT,
INTERCHANGE LIGHTING, PAVEMENT MARKING,
PERMANENT SIGNING & ROW PLANS
PCN 035A

INDEX OF SECTIONS

Section A: Estimate of Quantities and Environmental Commitments
Section B: Grading Plans
Section C: Traffic Control Plans
Section D: Erosion and Sediment Control Plans
Section E: Structure Plans
Section F: Surfacing Plans
Section L: Signal and Lighting Plans
Section M: Pavement Marking Plans
Section S: Permanent Signing Plans
Section X: Cross Sections
Section Z: Pipe Sections





BEGIN IM 0292(74)62
Station 23+93.02
located 39.53 feet North and
895.06 feet East of the southwest
corner of Section 18 - Township 98 North -
Range 50 West of the 5th PM

BEGIN IM 0292(74)62
Station 700+66.65 = Station 700+66.65 on I-29-2(1)62
located 2443.43 feet South and 2371.23 feet
West of the northeast corner of Section 18 -
Township 98 North - Range 50 West of the 5th PM
MRM 62.56+0.407

END IM 0292(74)62
Station 70+90.00 = Station 28+83.92 on F 016-2(1)
located 16.41 feet North and 404.69 feet East
of the southwest corner of Section 17 -
Township 98 North - Range 50 West of the 5th PM
MRM 438.33+0.470

END IM 0292(74)62
Station 769+45.50 = Station 769+45.50 on I-29-2(4)55
located 464.13 feet North and 2663.63 feet East
of the southwest corner of Section 19 -
Township 98 North - Range 50 West of the 5th PM
MRM 61.00+0.607

US 18 DESIGN DESIGNATION		I 29 DESIGN DESIGNATION	
AADT (2020)	3635	AADT (2020)	9460
AADT (2044)	4198	AADT (2044)	10926
DHV	563	DHV	1213
D	50%	D	50%
DHV T%	6.1%	DHV T%	9.8%
AADT T%	13.5%	AADT T%	21.6%
V	65 MPH	V	75 MPH

RAMP A DESIGN DESIGNATION		RAMP B DESIGN DESIGNATION	
AADT (2020)	1590	AADT (2020)	660
AADT (2044)	2476	AADT (2044)	1028
DHV	248	DHV	103
D	100%	D	100%
DHV T%	10%	DHV T%	10%
AADT T%	10%	AADT T%	10%

RAMP C DESIGN DESIGNATION		RAMP D DESIGN DESIGNATION	
AADT (2020)	585	AADT (2020)	1370
AADT (2044)	911	AADT (2044)	2133
DHV	91	DHV	213
D	100%	D	100%
DHV T%	10%	DHV T%	10%
AADT T%	10%	AADT T%	10%

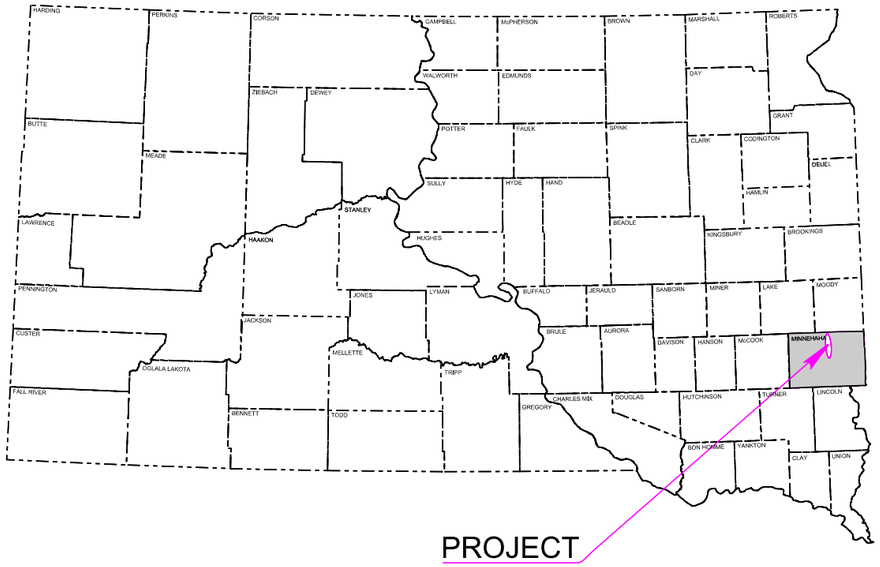
Gross Length	15477.81 Feet	2.931 Miles
Length of Exceptions	0.00 Feet	0.000 Miles
Net Length	15477.81 Feet	2.931 Miles

STORM WATER PERMIT
Major Receiving
Body of Water: Tributary to Big Sioux River
Area Disturbed: 48 Acres
Total Project Area: 95 Acres
Approx. Begin Lat,Long: 43.3013, -96.8031

Figure 18-5 Title Sheet for Interchange Projects

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0115(47)102	1	233

Plotting Date: 03/24/2021



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P 0115(47)102
SD HIGHWAY 115
MINNEHAHA COUNTY

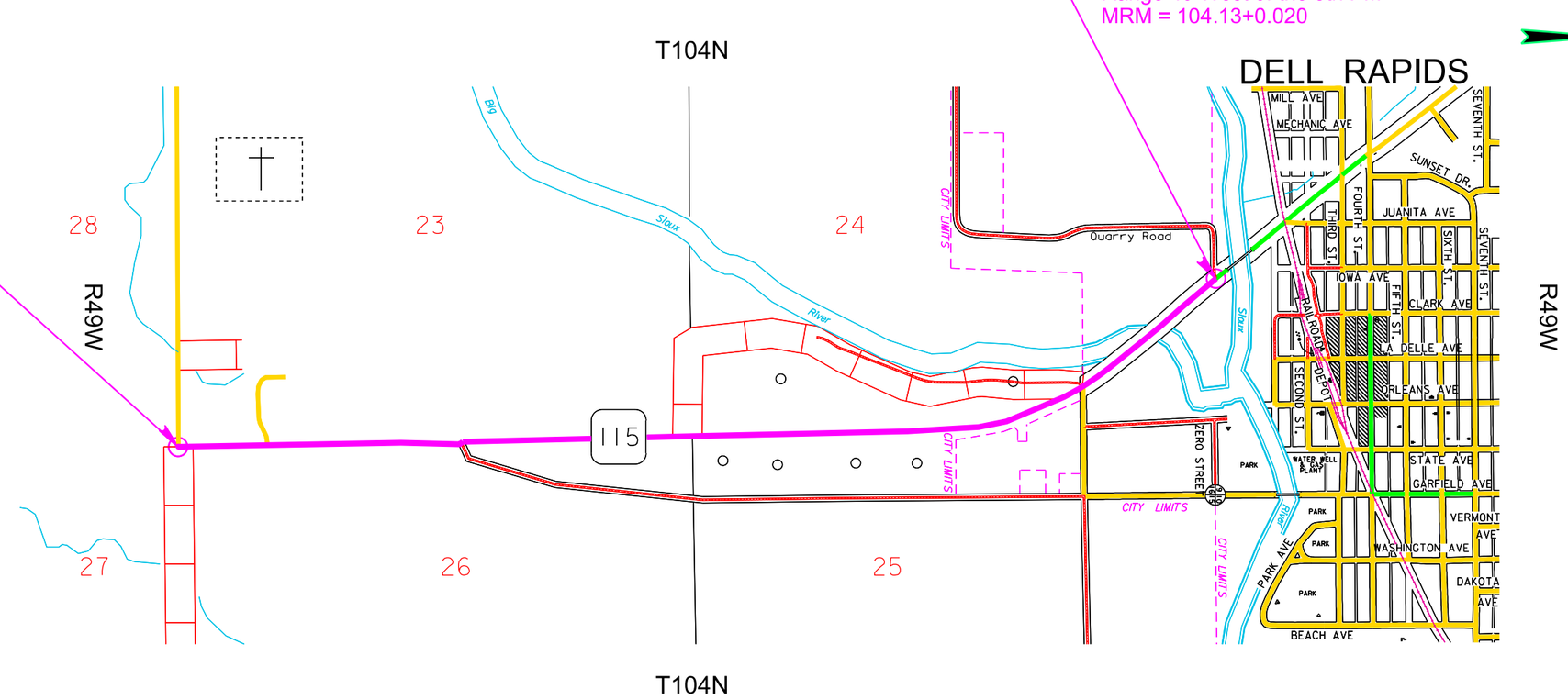
GRADING, LIGHTING, STRUCTURE
& PCC SURFACING
PCN 025C

INDEX OF SECTIONS

Section A:	Estimate of Quantities and Environmental Commitments
Section B:	Grading Plans
Section C:	Traffic Control Plans
Section D:	Erosion and Sediment Control Plans
Section E:	Structure Plans
Section F:	Surfacing Plans
Section L:	Signal and Lighting Plans
Section M:	Pavement Marking Plans
Section S:	Permanent Signing Plans
Section X:	Cross Sections
Section Z:	Pipe Sections

END P 0115(47)102
Station 122+15.00 = Station 123+65.68
on F 12(8) located 67.65 feet North and
2278.83 feet West of the southeast
corner of Section 9 - Township 104 North -
Range 49 West of the 5th PM
MRM = 104.13+0.020

BEGIN P0115(47)102
Station 10+42.68 =
Station 235+38.00 on F 12(8) located
0.06 feet North and 4.70 feet West of the
northeast corner of Section 27 -
Township 104 North - Range 49 West
of the 5th PM
MRM = 102.00+0.050



T104N

DESIGN DESIGNATION

AADT (2020)	3536
AADT (2043)	5654
DHV	639
D	51%
DHV T%	2%
AADT T%	15%
V	70 mph from 10+42 to 59+00
	60 mph from 59+00 to 102+50
	40 mph from 102+50 to 122+15

STORM WATER PERMIT
Major Receiving
Body of Water: Big Sioux River
Area Disturbed: 27 Acres
Total Project Area: 51 Acres
Approx. Begin Lat,Long: 43.7899 , -96.7098

Gross Length	11172.32 Feet	2.116 Miles
Length of Exceptions	0.00 Feet	0.000 Miles
Net Length	11172.32 Feet	2.116 Miles

Figure 18-6 Title Sheet for Projects with Multiple Design Speeds

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 3804(16)256	A1	A8

Plotting Date: 04/03/2019

Section B – Grading

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E3210	Construction Staking	8.853	Mile
009E3230	Grade Staking	15.476	Mile
009E3245	Final Cross Section Survey	7.394	Mile
009E3280	Slope Staking	7.394	Mile
009E3290	Structure Staking	2	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	23,481	Ft
110E0730	Remove Beam Guardrail	518	Ft
110E7530	Remove Cattle Pass for Reset	40	Ft
110E7540	Remove Cattle Pass End Section for Reset	2	Each
120E0010	Unclassified Excavation	379,804	CuYd
120E0600	Contractor Furnished Borrow	44,971	CuYd
120E1000	Muck Excavation	9,296	CuYd
120E2000	Undercutting	62,756	CuYd
120E6100	Water for Embankment	5,272.5	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	53,243.0	Ton
421E0100	Pipe Culvert Undercut	52	CuYd
450E0122	18" RCP Class 2, Furnish	38	Ft
450E0130	18" RCP, Install	38	Ft
450E0142	24" RCP Class 2, Furnish	60	Ft
450E0150	24" RCP, Install	60	Ft
450E0182	36" RCP Class 2, Furnish	78	Ft
450E0190	36" RCP, Install	78	Ft
450E2028	36" RCP Flared End, Furnish	2	Each
450E2029	36" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	4	Each
450E2201	24" RCP Sloped End, Install	4	Each
450E2304	18" RCP Safety End, Furnish	4	Each
450E2307	18" RCP Safety End, Install	4	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4739	12" CMP 16 Gauge, Furnish	50	Ft
450E4740	12" CMP, Install	50	Ft
450E4759	18" CMP 16 Gauge, Furnish	1,970	Ft
450E4760	18" CMP, Install	1,970	Ft
450E4769	24" CMP 16 Gauge, Furnish	324	Ft
450E4770	24" CMP, Install	324	Ft
450E4779	30" CMP 16 Gauge, Furnish	70	Ft
450E4780	30" CMP, Install	70	Ft
450E4789	36" CMP 16 Gauge, Furnish	220	Ft
450E4790	36" CMP, Install	220	Ft
450E4799	42" CMP 3x1 16 Gauge, Furnish	104	Ft
450E4800	42" CMP, Install	104	Ft
450E5010	18" CMP Elbow, Furnish	5	Each
450E5011	18" CMP Elbow, Install	5	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5203	12" CMP Flared End, Furnish	2	Each
450E5204	12" CMP Flared End, Install	2	Each
450E5211	18" CMP Flared End, Furnish	1	Each
450E5212	18" CMP Flared End, Install	1	Each
450E5223	36" CMP Flared End, Furnish	10	Each
450E5224	36" CMP Flared End, Install	10	Each
450E5306	18" CMP Sloped End, Furnish	4	Each
450E5307	18" CMP Sloped End, Install	4	Each

Section B – Grading (Cont.)

Bid Item Number	Item	Quantity	Unit
450E5310	24" CMP Sloped End, Furnish	4	Each
450E5311	24" CMP Sloped End, Install	4	Each
450E5406	18" CMP Safety End, Furnish	42	Each
450E5407	18" CMP Safety End, Install	42	Each
450E5410	24" CMP Safety End, Furnish	6	Each
450E5411	24" CMP Safety End, Install	6	Each
450E5414	30" CMP Safety End, Furnish	2	Each
450E5417	30" CMP Safety End, Install	2	Each
450E5427	42" CMP Safety End with Bars, Furnish	2	Each
450E5429	42" CMP Safety End, Install	2	Each
450E5509	18" CMP Arch 16 Gauge, Furnish	36	Ft
450E5510	18" CMP Arch, Install	36	Ft
450E5539	36" CMP Arch 16 Gauge, Furnish	162	Ft
450E5540	36" CMP Arch, Install	162	Ft
450E5814	36" CMP Arch Flared End, Furnish	6	Each
450E5815	36" CMP Arch Flared End, Install	6	Each
450E6006	18" CMP Arch Safety End, Furnish	2	Each
450E6007	18" CMP Arch Safety End, Install	2	Each
560E5003	5'x7' Reinforced Concrete Cattle Pass, Furnish	8.0	Ft
560E5004	5'x7' Reinforced Concrete Cattle Pass, Install	8.0	Ft
560E5100	Reset Reinforced Concrete Cattle Pass	40.0	Ft
560E5101	Reset Reinforced Concrete Cattle Pass End Section	2	Each
600E0300	Type III Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	23,950	Ft
620E0510	Type 1 Temporary Fence	4,705	Ft
620E1020	2 Post Panel	111	Each
620E1030	3 Post Panel	12	Each
720E1015	Bank and Channel Protection Gabion	53.5	CuYd
900E0010	Refurbish Single Mailbox	6	Each
900E0012	Refurbish Double Mailbox	9	Each

Section C – Traffic Control

Bid Item Number	Item	Quantity	Unit
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
004E0040	Maintenance of Traffic	Lump Sum	LS
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
634E0010	Flagging	1,200	Hour
634E0020	Pilot Car	300	Hour
634E0100	Traffic Control	3,746	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	26.700	Mile

INDEX OF SHEETS

A1 and A2 — Estimate of Quantities for Sections B, C, D, E, F, M, and S

A3 to A8 — Environmental Commitments

Section D – Erosion and Sediment Control

Bid Item Number	Item	Quantity	Unit
110E1700	Remove Silt Fence	638	Ft
230E0010	Placing Topsoil	49,676	CuYd
730E0100	Cover Crop Seeding	28.0	Bu
730E0200	Type A Permanent Seed Mixture	1,998	Lb
732E0100	Mulching	278.0	Ton
734E0102	Type 2 Erosion Control Blanket	2,378	SqYd
734E0103	Type 3 Erosion Control Blanket	9,694	SqYd
734E0154	12" Diameter Erosion Control Wattle	2,530	Ft
734E0510	Shaping for Erosion Control Blanket	6,790	Ft
734E0602	Low Flow Silt Fence	1,350	Ft
734E0604	High Flow Silt Fence	1,200	Ft
734E0610	Mucking Silt Fence	708	CuYd
734E0620	Repair Silt Fence	638	Ft

Section E – Structure

Str. No. 41-116-088
Alternate A

Bid Item Number	Item	Quantity	Unit
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	287	CuYd
421E0200	Box Culvert Undercut	318	CuYd
460E0120	Class A45 Concrete, Box Culvert	675.5	CuYd
480E0100	Reinforcing Steel	138,419	Lb
700E0210	Class B Riprap	400.0	Ton
831E0110	Type B Drainage Fabric	568	SqYd

SPECIFICATIONS

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

Figure 18-A1 Estimate of Quantities and Environmental Commitments

SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 3063(5)54	B1	B58

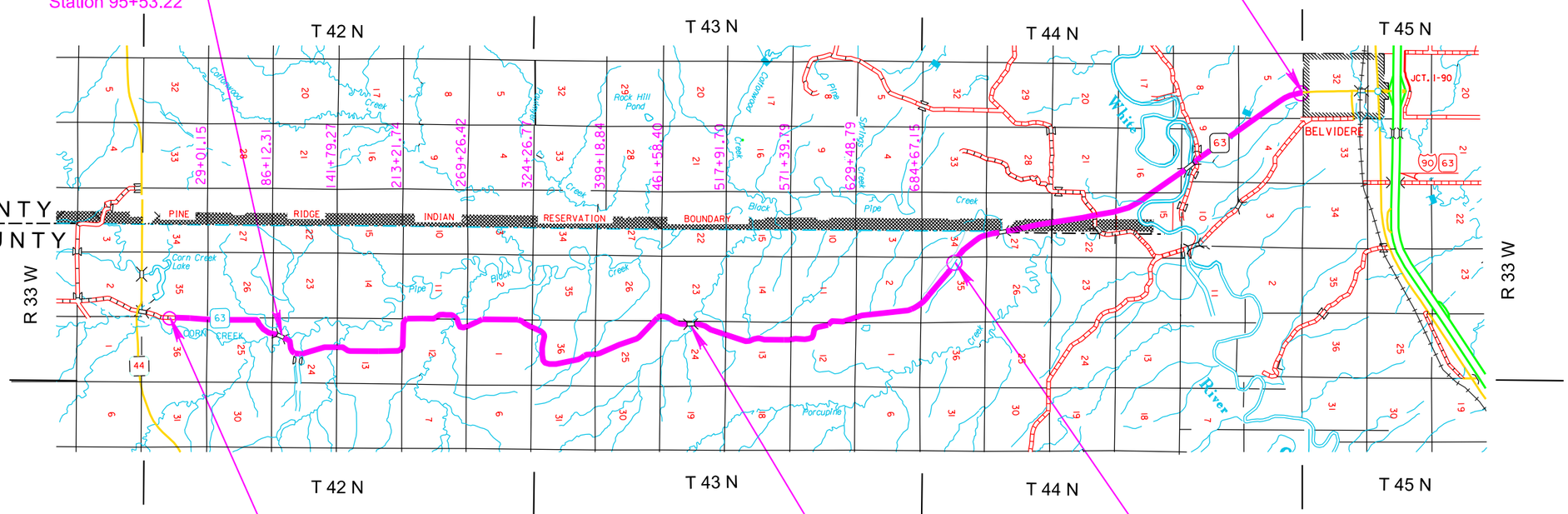
Plotting Date: 12/06/2017

INDEX OF SHEETS

B1 General Layout with Index
B2-B7 Estimate With General Notes and Tables
B8 Pipe Quantities
B9 Fence Quantities
B10 Typical Grading Sections
B11-B13 Horizontal Alignment Data
B14-B16 Control Data
B17 Legend
B18-B44 Plan and Profile Sheets
B45-B58 Standard Plates

END P 3063(5)54
END RESURFACING
Station 702+00

EXCEPTION
Station 94+13.22 to
Station 95+53.22



BEGIN P 3063(5)54
BEGIN GRADING & GRAVEL SURFACING
Station 10+00

EXCEPTION
Station 488+94.53 to
Station 490+28.03

END GRADING & GRAVEL SURFACING
BEGIN RESURFACING
Station 702+00

Figure 18-B1 Section Title Sheet (Rural)

SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0115(25)86	B1	B138

Plotting Date: 01/31/2019

INDEX OF SHEETS

B1	General Layout with Index
B2-B4	Estimate with General Notes & Tables
B5	Pipe Quantities
B6	Fence Quantities
B7	Borrow Pit Information Layout
B8-B11	Typical Grading Sections
B12	Horizontal Alignment Data
B13	Control Data
B14	Subsurface Utility Locations
B15	Legend
B16-B34	Plan and Profile Sheets
B35-B53	Pavement Removal Layout
B54-B72	Curb and Gutter Layout
B73-B91	Curb Ramp Layout
B92-B110	Storm Sewer Layout
B111-B115	Special Detail Sheets
B116-B138	Standard Plates

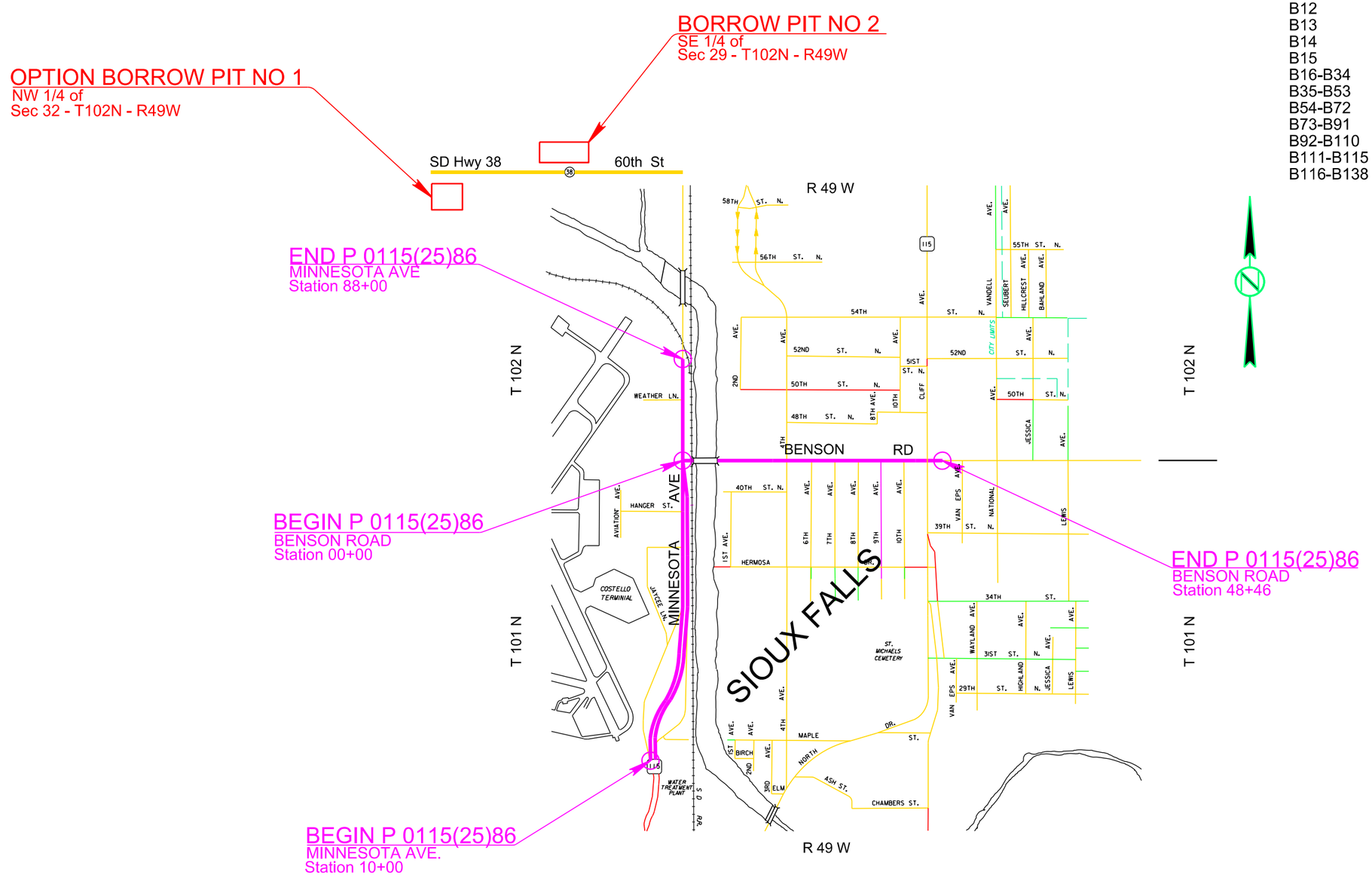


Figure 18-B2 Section Title Sheet (Urban)

SECTION B ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E3210	Construction Staking	8.853	Mile
009E3230	Grade Staking	15.476	Mile
009E3245	Final Cross Section Survey	7.394	Mile
009E3280	Slope Staking	7.394	Mile
009E3290	Structure Staking	2	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	23,481	Ft
110E0730	Remove Beam Guardrail	518	Ft
110E7530	Remove Cattle Pass for Reset	40	Ft
110E7540	Remove Cattle Pass End Section for Reset	2	Each
120E0010	Unclassified Excavation	379,804	CuYd
120E0600	Contractor Furnished Borrow	44,971	CuYd
120E1000	Muck Excavation	9,296	CuYd
120E2000	Undercutting	62,756	CuYd
120E6100	Water for Embankment	5,272.5	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	53,243.0	Ton
421E0100	Pipe Culvert Undercut	52	CuYd
450E0122	18" RCP Class 2, Furnish	38	Ft
450E0130	18" RCP, Install	38	Ft
450E0142	24" RCP Class 2, Furnish	60	Ft
450E0150	24" RCP, Install	60	Ft
450E0182	36" RCP Class 2, Furnish	78	Ft
450E0190	36" RCP, Install	78	Ft
450E2028	36" RCP Flared End, Furnish	2	Each
450E2029	36" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	4	Each
450E2201	24" RCP Sloped End, Install	4	Each
450E2304	18" RCP Safety End, Furnish	4	Each
450E2307	18" RCP Safety End, Install	4	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4739	12" CMP 16 Gauge, Furnish	50	Ft
450E4740	12" CMP, Install	50	Ft
450E4759	18" CMP 16 Gauge, Furnish	1,970	Ft
450E4760	18" CMP, Install	1,970	Ft
450E4769	24" CMP 16 Gauge, Furnish	324	Ft
450E4770	24" CMP, Install	324	Ft
450E4779	30" CMP 16 Gauge, Furnish	70	Ft
450E4780	30" CMP, Install	70	Ft
450E4789	36" CMP 16 Gauge, Furnish	220	Ft
450E4790	36" CMP, Install	220	Ft
450E4799	42" CMP 3x1 16 Gauge, Furnish	104	Ft
450E4800	42" CMP, Install	104	Ft
450E5010	18" CMP Elbow, Furnish	5	Each
450E5011	18" CMP Elbow, Install	5	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5203	12" CMP Flared End, Furnish	2	Each
450E5204	12" CMP Flared End, Install	2	Each
450E5211	18" CMP Flared End, Furnish	1	Each
450E5212	18" CMP Flared End, Install	1	Each
450E5223	36" CMP Flared End, Furnish	10	Each
450E5224	36" CMP Flared End, Install	10	Each
450E5306	18" CMP Sloped End, Furnish	4	Each
450E5307	18" CMP Sloped End, Install	4	Each

SECTION B ESTIMATE OF QUANTITIES (CONTINUED)

Bid Item Number	Item	Quantity	Unit
450E5310	24" CMP Sloped End, Furnish	4	Each
450E5311	24" CMP Sloped End, Install	4	Each
450E5406	18" CMP Safety End, Furnish	42	Each
450E5407	18" CMP Safety End, Install	42	Each
450E5410	24" CMP Safety End, Furnish	6	Each
450E5411	24" CMP Safety End, Install	6	Each
450E5414	30" CMP Safety End, Furnish	2	Each
450E5417	30" CMP Safety End, Install	2	Each
450E5427	42" CMP Safety End with Bars, Furnish	2	Each
450E5429	42" CMP Safety End, Install	2	Each
450E5509	18" CMP Arch 16 Gauge, Furnish	36	Ft
450E5510	18" CMP Arch, Install	36	Ft
450E5539	36" CMP Arch 16 Gauge, Furnish	162	Ft
450E5540	36" CMP Arch, Install	162	Ft
450E5814	36" CMP Arch Flared End, Furnish	6	Each
450E5815	36" CMP Arch Flared End, Install	6	Each
450E6006	18" CMP Arch Safety End, Furnish	2	Each
450E6007	18" CMP Arch Safety End, Install	2	Each
560E5003	5'x7' Reinforced Concrete Cattle Pass, Furnish	8.0	Ft
560E5004	5'x7' Reinforced Concrete Cattle Pass, Install	8.0	Ft
560E5100	Reset Reinforced Concrete Cattle Pass	40.0	Ft
560E5101	Reset Reinforced Concrete Cattle Pass End Section	2	Each
600E0300	Type III Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	23,950	Ft
620E0510	Type 1 Temporary Fence	4,705	Ft
620E1020	2 Post Panel	111	Each
620E1030	3 Post Panel	12	Each
720E1015	Bank and Channel Protection Gabion	53.5	CuYd
900E0010	Refurbish Single Mailbox	6	Each
900E0012	Refurbish Double Mailbox	9	Each

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

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

Special ditch grades and other sections of the roadway different than the typical section(s) shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Temporary fence and/or permanent fence shall be placed ahead of the grading operation unless otherwise directed by the Engineer.

A copy of the soils profile is available for review at the Pierre Region and Pierre Area offices.

TYPE III FIELD LABORATORY

Substitution of a cellular telephone for the hard-wired touch-tone telephone is not allowed, as state personnel need the ability to download information over direct phone lines. The phone is intended for state personnel usage only. Contractor personnel are prohibited from using this phone unless pre-approved by the Project Engineer. The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items shall be incidental to the contract unit price per each for “Type III Field Laboratory”.

The Engineer may allow a Type II lab to be supplied until such time the Engineer determines the Type III lab is required. If the Engineer allows a temporary Type II lab to be furnished, no additional payment for that lab will be made. The laboratory shall not be removed from the project until released by the Engineer.

UTILITIES

Fiber optic cable exists along the project. The approximate location is shown in the plans.

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are suppose to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor’s expense.

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 ⅔-inch X ½-inch corrugations for 36-inch and smaller round pipe and 42-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch X 1-inch corrugations for 42-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

Figure 18-B3 Estimate of Quantities with General Notes and Tables

TABLE OF PIPE QUANTITIES

STATE OF SOUTH DAKOTA	NH 14B(170)232 NH 0014(203)232	SHEET	TOTAL SHEETS
		B11	B111

Plotting Date: 01/31/2019

	Reinforced Concrete											Corrugated Metal																Pipe Transition		
	Circular				Circular Sloped End				Circular Flared End			Circular Pipe				Circular Sloped End			Circular Flared End			Circular Safety End			Circular Elbow			Round RCP to CMP Transition		
	18" Cl 2	24" Cl 2	30" Cl 2	36" Cl 2		24"	30"			36"		18" 16 Ga	24" 16 Ga	36" 16 Ga			24"		18"	24"	36"		36"		24" 15°	36" 7.5°	36" 35°	24" Outlet		36" Outlet
Station to Station/Offet L & R	Ft	Ft	Ft	Ft		Each	Each			Each		Ft	Ft	Ft			Each		Each	Each	Each		Each		Each	Each	Each	Each		Each
22+50-40.13' R to 22+50-40.13' L	78																													
22+50-40.13' L to 25+37-40.13' L	276																													
24+34-140' R to 24+50-85' R																														
25+37-40.13' R to 25+37-40.13' L		78																												
25+37-40.13' L to 26+87-40.13' L	138																													
25+20-71.13' R to 25+37-40.13' R		28				1																								
*26+87-40.13' L to 26+74-83' L		44																												
26+87-75.13' R to 26+87-40.13' R		26					1																							
26+87-40.13' R to 29+50-40.13' R		252																												
29+50-40.13' R to 29+50-40.13' L	78																													
29+50-40.13' L to 32+50-40.13' L			290																											
32+50-40.13' L to 34+50-40.13' L			190																											
32+50-40.13' R to 32+50-40.13' L		78																												
32+50-85' R to 32+50-40.13' R		42																												
34+50-40.13' R to 34+50-40.13' L	78																													
34+50-40.13' L to 35+58-40.13' L				98																										
35+58-40.13' R to 35+58-40.13' L	78																													
35+58-40.13' L to 37+00-40.13' L	132																													
*35+58-40.13' L to 35+58-123' L				82																										
37+00-51.13' R to 37+00-40.13' L	88																													
41+57-68.09' R to 41+57-40.13' R		20				1																								
41+57-40.13' R to 41+57-40.13' L		78																												
41+57-40.13' L to 43+50-40.13' L		182																												
43+50-40.13' R to 43+50-40.13' L	78																													
43+50-40.13' L to 45+50-40.13' L		190																												
45+50-40.13' R to 45+50-40.13' L		78																												
45+50-71.12' R to 45+50-40.13' R		24				1																								
*45+50-40.13' L to 45+97-87' L		58				1																								
45+50-40.13' R to 46+36.6-37.67' R	80																													
46+36.6-37.67' R to 47+98.33-37.67' R	160																													
53+97-71.81' R to 53+97-40.13' R				22						1																				
53+97-40.13' R to 53+97-40.13' L				78																										
*53+97-40.13' L to 53+97-83.96' L														30							1						2			1
59+50-65.72' R to 59+50-37.67'R		22				1																								
59+50-37.67' R to 59+50-37.67' L		74																												
*59+50-37.67' L to 59+50-88.83' L													40							1					2			1		
61+53-64.62' R to 61+53-37.67' R		20				1																								
61+53-37.67' R to 61+53-37.67' L		74																												
*61+53-37.67' L to 61+53-73.72' L		30				1																								
65+03													20				2													
Airport Road																														
0+90.25-36.32 R' R to 0+88.20-50.12' R	18																													
101+50 **(North Traffic Diversion)**												40							2											
106+50 **(North Traffic Diversion)**														74							1		1			2				
Total:	1282	1398	480	280		7	1			1		40	60	104			2		2	1	2		1		2	2	2	1		1

* Pipes denoted with an asterisk(*) indicate that the entire length or a portion of the pipe requires watertight joints in accordance with the STORM SEWER plan note

Figure 18-B3a Pipe Quantities

TABLE OF FENCE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(42)171	B5	B85

Plotting Date: 12/19/2019

Station to Station		Side (L/R)	Right-of-Way Fence Type 2 (Ft)	Type 3 (Ft)	Type 3M (Modified) (Ft)	Type 6 (Ft)	Type 6M (Modified) (Ft)	Temporary Fence Type 1 (Ft)		Post Panels 2 Post (Each)	3 Post (Each)	Gates (for informational purposes only) Barb Wire 24' (Each)	Barb Wire 32' (Each)	Barb Wire 36' (Each)	Woven Wire 24' (Each)	Woven Wire 32' (Each)	Fence Reset (Ft)	Fence Remove (Ft)	
20+35	46+37	L	2602					2000		18	4	1	1						
47+03	99+29	L	5226					2600		4	8	1	1						
99+95	139+32	L	3937					1000		4	8	1							
139+32	152+19	L				1287		400		1	3								
152+85	204+56	L				5171		1900		6	5					1			
** 205+22	257+08	L					5186	200		5	7		2						
337+11	416+45	L	7516					1100		2	17	2	1						
8+20(XR442)	469+03	L	3204					2600		15	5	1							
484+66	521+36	L		3670				2300		15	7	3		1					
525+80	548+06	L	2226					1700		4	2							48000	
16+40	20+34	R															394		
20+35	46+37	R	2602					1700		11	3								
91+10	99+33	R	823					300			4								
99+98	149+72	R				4974		4200		6	4				2				
159+50	204+58	R				4508		3200		9	6				1	1			
311+06	363+60	R	5254					3100		10	4	1							
** 416+93	469+03	R			5210			3700		7	5		1						
* 469+70	472+70	R					300			2									
486+62	488+61	R				199				2									
488+44	495+18	R		674				700		4	1	1							
1+68(XR521)	574+14	R	6046					5200		7	8	1	2					22000	
		TOTALS:	39436	4344	5210	16139	5486	37900		132	101	12	8	1	3	2	394	70000	

Post Type and Sequence:

Right-of-way fence shall be constructed using alternate wood and steel posts except as noted.

* 3 Steel-1 Wood

** All Steel

Figure 18-B3b Fence Quantities

PAVEMENT, CURB & GUTTER, & SIDEWALK QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 14B(170)232 NH 0014(203)232	B11	B157

Plotting Date: 08/27/2019

		Concrete Curb and Gutter			Concrete Gutter	Approach Pavement	Concrete Sidewalk	Detectable Warning																	
		Type B	Type F	Type FL	Type P	PCC		Type 1																	
		68	68	68	8"	8"	4"																		
Station to Station		Ft	Ft	Ft	Ft	SqYd	SqFt	SqFt																	
Walmart Entrance to 4th Street/Airport Rd																									
10+17.59-54.18' R	10+24.37-60.15' R	9.1					259.2	10.0																	
10+89.20-61.75' R	10+97.58-48.78' R	15.5					441.6	10.0																	
19+15.46-36.67' R	0+92.41-30.33' R (Airport Rd)		98.8				2813.9	16.0																	
0+92.41-30.33' R (Airport Rd)	1+58.97-30.23' R (Airport Rd)	66.6					1896.7																		
4th Street to Southgate																									
20+10.23-87.54' L	20+70.35-36.01' L		86.0				368.8	24.0																	
20+70.35-36.01' L	25+46.14-36.00' L		473.6				2031.7																		
25+46.14-36.00' L	25+91.51-84.28' L		74.1				318.0	10.0																	
25+91.51-84.28' L	25+87.94-135.00' L		50.8				217.9																		
20+41.13-104.25' R	20+99.80-36.00' R		102.3				180.6	10.0																	
20+99.80-36.00' R	25+60.29-36.00' R		462.6				817.3																		
25+60.29-36.00' R	25+94.89-68.57' R		52.5				92.8	10.0																	
25+94.89-68.57' R	25+95.36-75.66' R		7.1				12.6																		
20+70.00 L	23+60.00 L			290.1			512.5																		
23+60.00 L	24+20.00 L			61.2			108.0																		
24+20.00 L	25+44.16 L			124.0			219.1																		
20+70.00 R	23+63.47 R			293.9			519.2																		
23+63.47 R	24+20.81 R			58.6			103.7																		
24+20.81 R	25+44.23 R			123.4			218.0																		
Southgate to Brookstone																									
26+24.55-137.36' L	26+26.43-107.64' L		29.8				132.1																		
26+26.43-107.64' L	26+51.40-47.97' L		65.8				291.3	10.0																	
26+51.40-47.97' L	26+77.96-36.00' L		29.9				132.6																		
26+77.96-36.00' L	28+92.19-36.00' L		213.2				943.9																		
28+92.19-36.00' L	37+94.78-36.00' L		902.6				3995.8																		
37+94.78-36.00' L	38+38.47-70.21' L		59.8				264.7	10.0																	
38+38.47-70.21' L	38+47.19-105.52' L		36.4				161.2																		
26+34.72-73.09' R	26+69.34-36.00' R		57.0				236.2	10.0																	
26+69.34-36.00' R	28+92.19-36.00' R		223.9				927.6																		
28+92.19-36.00' R	35+84.95-36.00' R		692.8				2870.8																		
35+84.95-36.00' R	36+54.95-47.00' R		70.9				293.7																		
36+54.95-47.00' R	37+98.65-47.00' R		143.7				595.7																		
37+98.65-47.00' R	38+20.39-56.33' R		24.3				100.8	10.0																	
38+20.39-56.33' R	38+40.97-99.22' R		48.4				200.8																		
26+65.00 L	28+50.00 L			185.0			766.5																		
	Subtotal:	91.2	4006.3	1136.2	0.0	0.0	23045.3	130.0																	

Figure 18-B3c Pavement, Curb and Gutter, and Sidewalk Quantities

BORROW PIT INFORMATION LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0115(25)86	B5	B70

Plotting Date: 05/19/2015

PIT NO. 1

PROJECT NO. P 0115(25)86 COUNTY Minnehaha

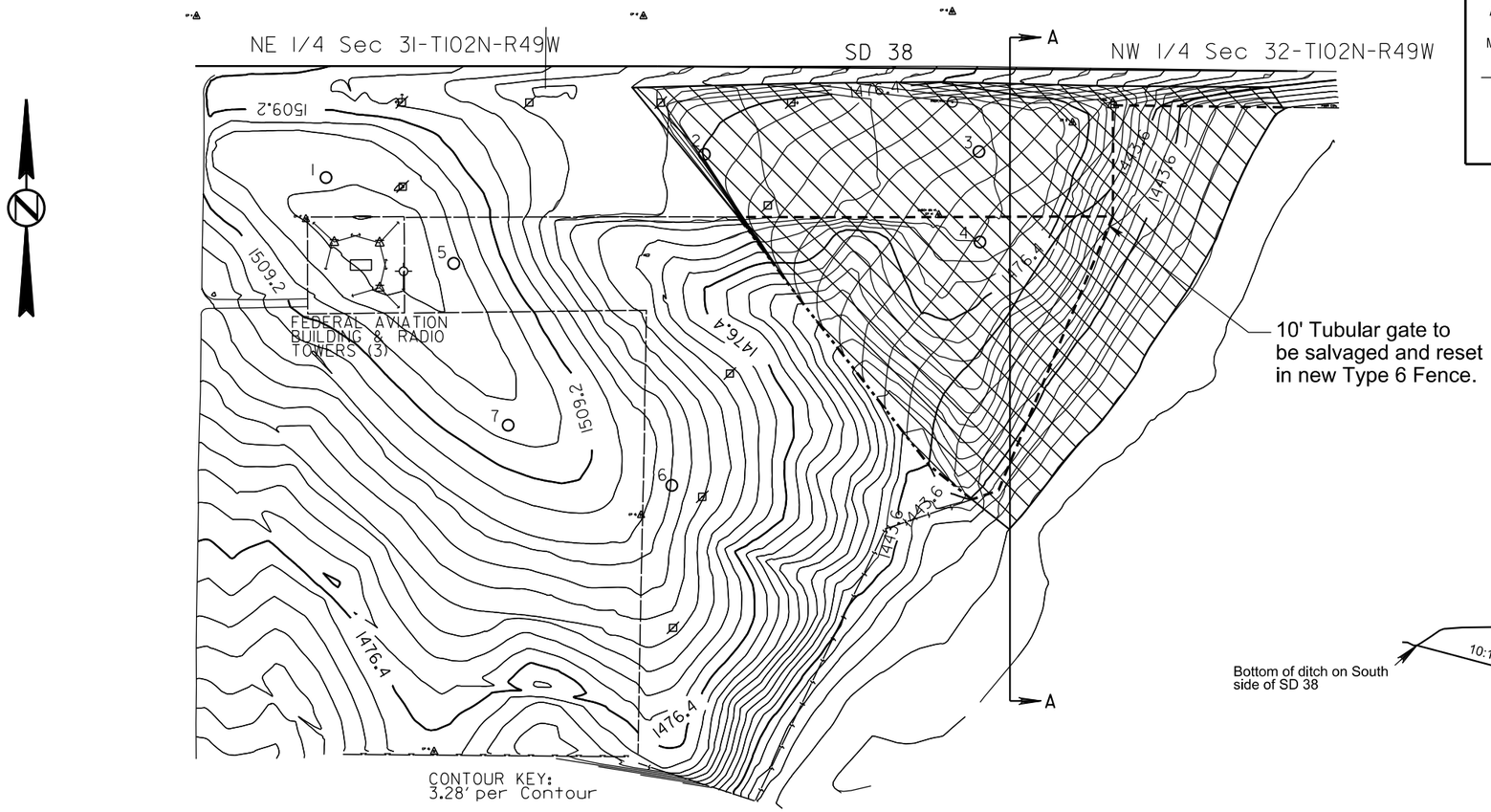
LOCATION NE57/64Sec31&NW 57/64Sec32 TOWNSHIP 102 N RANGE 49 W

PIT OWNER S. Falls Reg Airport Auth ADDRESS 2801 Jaycee Lane

AVERAGE DEPTH OF MATERIAL 27' AVERAGE DEPTH OF TOPSOIL 3 inches

MATERIAL AVAILABLE 200000+ CU. YDS. ESTIMATED CU. YDS. OF TOPSOIL 10000

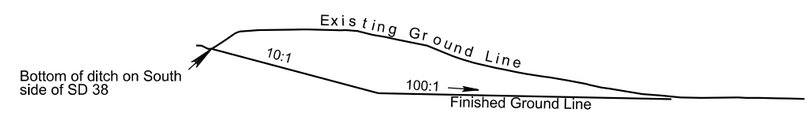
9561' DEADHAUL TO STATION 88+00



PIT AREA
11.1 ACRES

Fence to be Removed

Type 6 Fence
To Be Installed



SECTION A-A

PRELIMINARY DATA

HOLE #	1	2	3	4	4	4	4	5	6	6	6	7
DEPTH	0-27.0'	0-27.0'	0-27.0'	1.0-14.0'	14.0-17.0'	17.0-20.0'	20.0-26.0'	0.5-27.0'	0.5-4.0'	4.0-24.0'	24.0-27.0'	0.3-27.0'
wt. cu. ft.	77.3	75.5	78.8	81.5	82.1	92.5	82.4	78.5	74.9	76.1	89.0	75.5
% passing 3/8	100.0		99.2	98.8	99.6	99.1	100.0			100.0	99.4	
% passing #4	99.8	100.0	98.7	98.1	98.4	94.9	99.3	100.0	100.0	99.8	96.3	100.0
% passing #10	99.4	99.2	97.5	96.9	93.4	87.9	96.8	99.7	99.2	99.4	91.8	99.9
% coarse sand	3.8	2.6	5.1	3.3	37.1	18.1	12.2	1.4	1.6	0.8	28.5	0.4
% fine sand	12.1	8.1	14.0	9.1	27.5	23.2	25.0	5.4	1.2	3.0	26.1	2.0
% silt	54.7	61.7	36.5	50.6	13.3	21.1	25.7	66.0	71.6	68.8	15.9	70.5
% clay	28.8	26.8	41.9	33.9	15.5	25.5	33.9	26.9	24.8	26.8	21.3	27.0
% passing #40	95.6	96.6	92.4	93.6	56.3	69.8	84.6	98.3	97.6	98.6	63.3	99.5
% passing #200	83.5	88.5	78.4	84.5	28.8	46.6	59.6	92.9	96.4	95.6	37.2	97.5
% coarse & fine	sand 15.9	10.7	19.1	12.4	64.6	41.3	37.2	6.8	2.8	3.8	54.6	2.4
liquid limit	38.7	38.0	51.6	41.4	30.7	37.7	41.2	37.3	39.2	38.7	34.1	37.7
liquid plastic limit	17.1	18.0	19.1	18.6	14.1	15.0	17.0	19.3	21.5	20.4	15.4	20.9
P.I.	21.6	20.0	32.5	22.8	16.6	22.7	24.2	18.0	17.7	18.3	18.7	16.8
texture classification	1	1	2	2	6	5	4	1	1	1	5	1
HRB	A-6 (13)	A-6 (12)	A-7-6 (19)	A-7-6 (13)	A-2-6 (1)	A-6 (6)	A-7-6 (11)	A-6 (11)	A-6 (11)	A-6 (11)	A-6 (2)	A-6 (11)

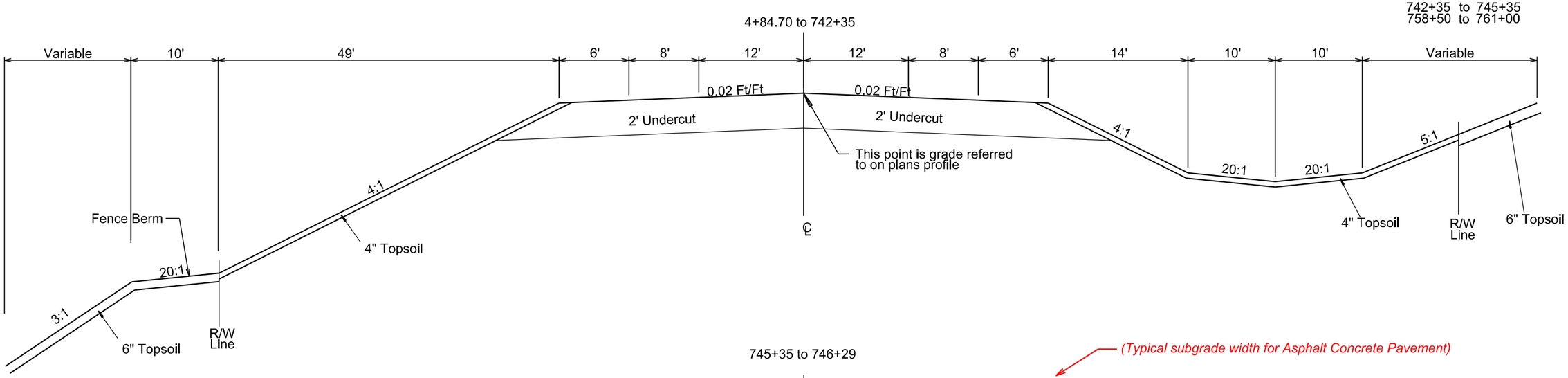
Figure 18-B4 Borrow Pit Information Layout

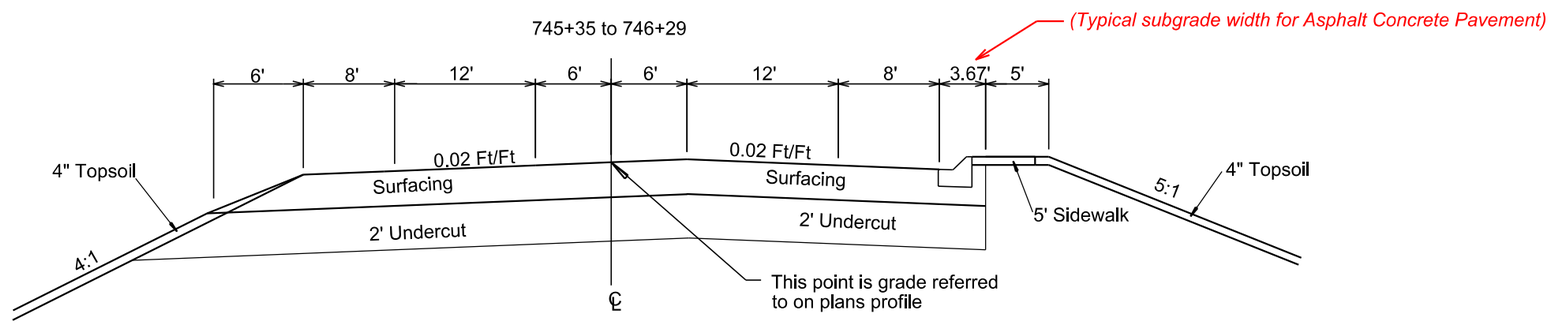
TYPICAL GRADING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0115(25)86	B8	B70

Plotting Date: 05/19/2015

Transitions:
742+35 to 745+35
758+50 to 761+00





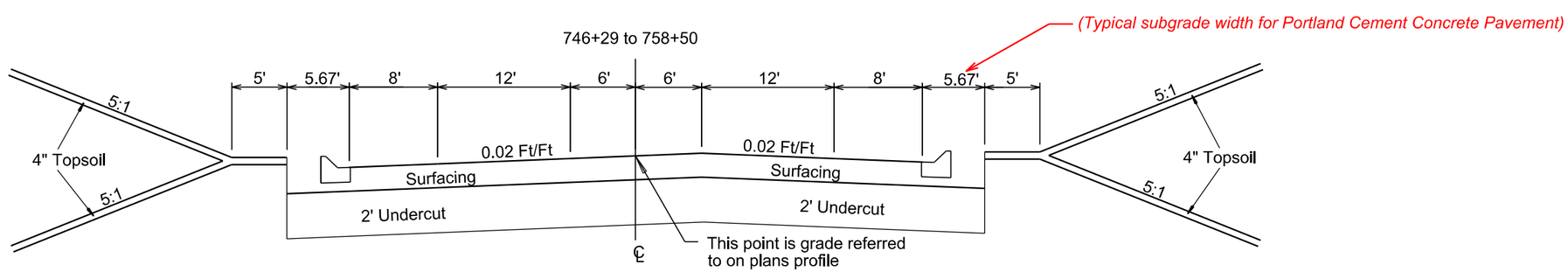


Figure 18-B5 Typical Grading Sections

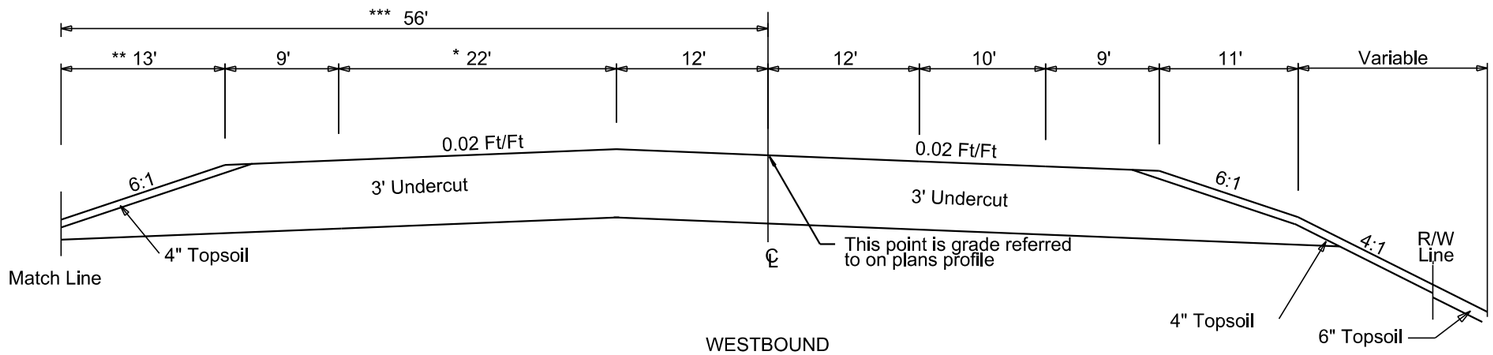
TYPICAL GRADING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0019(31)73	B8	B126

Plotting Date: 12/19/2019

EASTBOUND

10+00.00 to 262+12.95



Transitions:

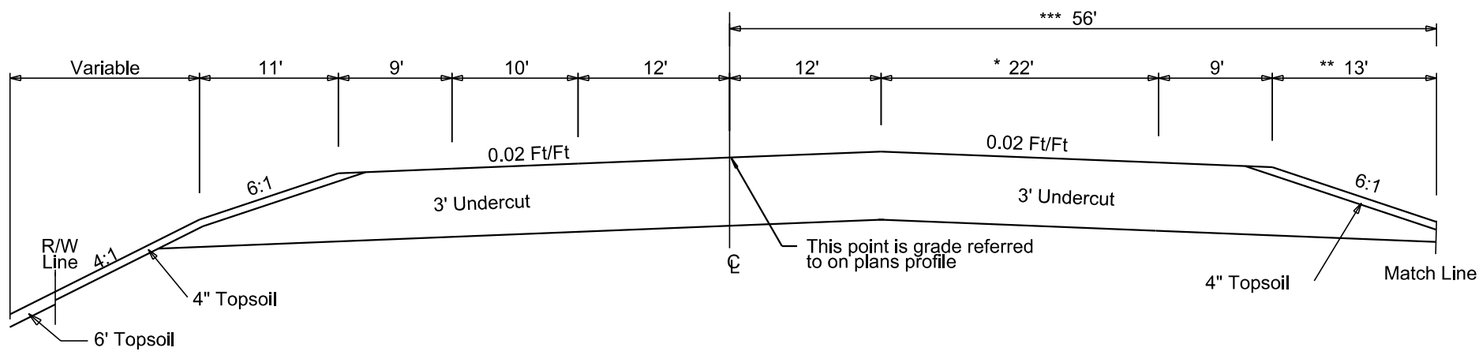
* 10+00 to 22+00 - 4'
22+00 to 22+50 - 4' to 6'
22+50 to 24+65 - 6'
24+65 to 25+15 - 6' to 22'
252+17.57 to 252+67.57 - 22' to 6'

** 10+00 to 25+15 - Variable
252+17.57 to 252+67.57 - 22' to 6'

*** 10+00 to 25+15 - Variable
252+17.57 to 262+12.30 - Variable

WESTBOUND

10+00.00 to 265+77.66



Transitions:

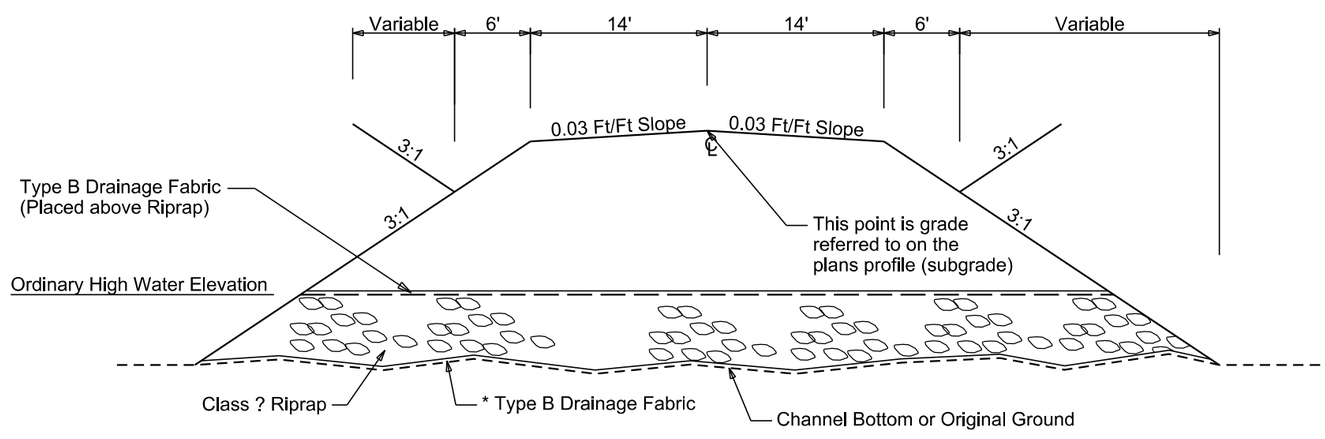
* 10+00 to 22+00 - 4'
22+00 to 22+50 - 4' to 6'
22+50 to 24+50 - 6'
24+50 to 25+00 - 6' to 22'
251+85.34 to 252+35.34 - 22' to 6'
252+35.34 to 265+77.66 - 6'

** 10+00 to 25+00 - Variable
** 251+85.34 to 252+77.66 - Variable

*** 10+00 to 21+50 - Variable
*** 251+85.34 to 265+77.66 - Variable

Traffic Diversions

1074+00 to 1084+00 ML - 0+00 to 11+81.94 Diversion



* Place Type B Drainage Fabric under all Riprap and any embankment that is placed in wetland areas as shown in Section B.

Figure 18-B5a Typical Grading Sections (Divided Highway)

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0212(104)282	B25	B85

MAINLINE

Type	Station			Northing	Easting
POB	0+00			389374.764	2224335.658
		TL= 6437	N 89°20'07" E		
PI	64+37			389449.444	2230772.538
		TL= 6949	N 89°22'28" E		
PI	133+87			389525.318	2237721.575
		TL= 3660	N 89°22'35" E		
PI	170+47			389565.161	2241381.800
		TL= 1628	N 89°25'30" E		
PI	186+75			389581.500	2243009.606
		TL= 2923	N 89°18'35" E		
PC	215+98			389616.717	2245932.579
PI	221+30	R = 148000	Delta = 0°24'42" R	389623.122	2246464.196
PT	226+62			389625.708	2246995.846
		TL= 4816	N 89°43'17" E		
PC	274+78			389649.132	2251812.141
PI	281+20	R = 67000	Delta = 1°05'56" L	389652.256	2252454.614
PT	287+63			389667.701	2253096.908
		TL= 2614	N 88°37'21" E		
PC	313+77			389730.532	2255709.849
PI	318+75	R = 123000	Delta = 0°27'52" R	389742.514	2256208.158
PT	323+73			389750.457	2256706.547
		TL= 5128	N 89°05'13" E		
PC	375+02			389832.180	2261834.139
PI	380+05	R = 88000	Delta = 0°39'21" L	389840.206	2262337.723
PT	385+09			389853.996	2262841.183
		TL= 833	N 88°25'52" E		
PC	393+42			389876.791	2263673.444
PI	398+05	R = 85000	Delta = 0°37'28" R	389889.474	2264136.492
PT	402+68			389897.109	2264599.651
		TL= 232	N 89°03'20" E		
PC	405+00			389900.934	2264831.643
PI	410+00	R = 72100	Delta = 0°47'41" R	389909.177	2265331.683
PT	415+00			389910.483	2265831.789
		TL= 444	N 89°51'01" E		
PC	419+44			389911.643	2266276.067
PI	424+46	R = 75000	Delta = 0°45'56" L	389912.951	2266777.154
PT	429+47			389920.955	2267278.178
		TL= 1256	N 89°05'05" E		
PI	442+02			389941.009	2268533.527
		TL= 4399	N 89°01'42" E		
PI	486+02			390015.613	2272932.309
		TL= 1770	N 89°02'07" E		
PI	503+71			390045.412	2274701.707
		TL= 8138	N 89°10'06" E		
PI	585+09			390163.513	2282838.404
		TL= 7700	N 89°15'19" E		
PI	662+09			390263.582	2290537.923
		TL= 5300	N 89°28'00" E		
POE	715+09			390312.905	2295837.329

SD HWY 45

Type	Station			Northing	Easting
POB	488+00			388421.874	2230784.299
		TL= 1028	N 0°36'17" W		
POE	498+28			389449.455	2230773.455

Cross Road at Sta. 345+12.78-L

Type	Station			Northing	Easting
POB	0+00			389804.562	2258846.244
		TL= 419	N 0°23'58" W		
POE	4+19			390223.722	2258843.323

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/96); Geoid 03; SF = 0.99987869

Figure 18-B6 Horizontal Alignment Data

CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0018(152)53	B12	B67

Plotting Date: 11/28/2018

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP8			SDDOT 3.5 Inch Aluminum Disk In Concrete	367258.7004	1169429.1095	3385.39
BM 30			Rebar & Guards	366566.2341	1170211.4726	3378.52
BM 31			Rebar & Guards	365725.2897	1170857.1732	3365.35
BM32			Rebar & Guards	364839.6091	1171537.9405	3366.27
BM33			Rebar & Guards	363898.1086	1172262.6585	3400.26
BM34			Rebar & Guards	363564.1087	1172518.1119	3389.55
BM35			Rebar & Guards	362630.9551	1173236.0234	3343.90
CP9			NGS Aluminum Disk In Concrete Monument	362418.0908	1173147.3386	3342.93
BM35A			USGS Brass Disk In Concrete. Marked "Gaging"	362229.3930	1173540.9148	3326.09
BM36			Rebar & Guards	361798.4381	1173874.6379	3325.45
BM37			Rebar & Guards	360957.8244	1174519.3744	3321.84
BM38			Rebar & Guards	360121.4473	1175161.9789	3325.59
BM39			Rebar & Guards	359281.1932	1175792.2214	3343.75
CP10			SDDOT 3.5 Inch Aluminum Disk In Concrete	359152.8200	1175629.3975	3344.13
BM40			Rebar & Guards	358299.6501	1176196.9913	3347.90
BM41			Rebar & Guards	357236.0612	1176402.8027	3342.96
BM42			Rebar & Guards	356224.9593	1176584.9288	3310.45
BM43			Rebar & Guards	355191.0177	1176612.8032	3299.81
BM44			Rebar & Guards	354135.2226	1176572.0452	3299.89
CP11			SDDOT 3.5 Inch Aluminum Disk In Concrete	354043.9304	1176369.9278	3294.33
BM45			Rebar & Guards	353083.3374	1176532.2037	3313.66
BM46			Rebar & Guards	352028.6396	1176490.9822	3291.97
BM47			Rebar & Guards	350970.0062	1176545.8533	3253.86
BM48			Rebar & Guards	349413.3645	1176798.4462	3252.43
CP12			Steel Pipe With Rod In Sleeve	348835.8932	1176698.2724	3253.22
BM49			Rebar & Guards	348353.4532	1176987.8963	3254.70
BM50			Rebar & Guards	347365.4433	1177287.7597	3257.91
BM51			Rebar & Guards	346396.4301	1177738.6241	3267.49
BM52			Rebar & Guards	345525.3865	1178300.3094	3269.21
BM53			Rebar & Guards	344720.4514	1178956.0693	3273.15
CP13			SDDOT 3.5 Inch Aluminum Disk In Concrete	343884.4160	1179395.8989	3280.37
BM54			Rebar & Guards	343888.1321	1179648.8827	3293.79
BM55			Rebar & Guards	343105.9744	1180300.3225	3318.91
BM56			Rebar & Guards	342486.2186	1180818.5599	3334.24
BM57			Rebar & Guards	341677.1726	1181492.1446	3320.45
BM58			Rebar & Guards	340877.4671	1182158.0806	3354.50
BM59			Rebar & Guards	339996.2090	1182894.0621	3338.21
CP14			SDDOT 3.5 Inch Aluminum Disk In Concrete	339867.2766	1182740.6861	3334.71
BM60			Rebar & Guards	339201.7260	1183539.4707	3294.64
BM61			Rebar & Guards	338607.7016	1184048.8794	3301.15
BM62			Rebar & Guards	337782.8815	1184736.6517	3301.72
BM63			Rebar & Guards	336993.4242	1185393.7342	3305.04

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96); epoch 2002.00
Geoid 03; SF = 0.99976647
The elevations shown on this sheet are based on NAVD 88.

Figure 18-B7 Control Data

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH-NH-EM 0081(30)155	B28	B151

Plotting Date: 07/08/2016

SUBSURFACE UTILITY LOCATIONS
QUALITY LEVEL A

Subsurface utility explorations were done at the following locations. The information below states what was located in the specified areas. This table is provided to aid the Contractor during construction and does not substitute or replace the requirements of SD One Call. All information is approximate and the Contractor shall verify all utility locations before construction in those areas as mandated in SDCL 49-7A.

Test Hole	Station	Offset	Finding	Existing Ground Elev.	Utility Depth (Ft.)	Utility Elevation	Northing	Easting
13-2	13+42.13	20.74' L	2 - 2" Poly	4724.25	2.38	4721.87	214283.590	990906.212
9-22	13+47.34	15.55' R	4" Steel	4724.76	2.95	4721.81	214250.685	990922.365
14-30	13+58.09	20.39' L	2 -1.5" and 5" DBC	4723.75	2.90	4720.85	214288.121	990920.494
9-23	13+81.58	18.49' L	4" Steel	4723.30	3.20	4720.10	214294.779	990941.674
5-1ee	14+28.49	14.69' L	12" PVC	4722.76	5.70	4717.06	214312.631	990982.651
9-2x	15+90.23	19.05' R	4" Steel	4717.78	2.50	4715.28	214406.668	991117.618
9-2x	15+90.24	19.68' R	2" Steel	4717.79	3.85	4713.94	214406.362	991118.169
9-2y	17+04.11	24.44' R	4" Steel	4714.78	2.65	4712.13	214518.348	991163.769
14-28a	19+69.91	29.59' R	2 - 1.5" DBC	4710.04	4.45	4705.59	214791.084	991108.464
9-2w	20+24.00	6.55' L	4" Steel	4710.60	3.30	4707.30	214818.025	991049.260
6-3a	20+33.84	36.70' L	4" PVC	4711.77	2.90	4708.87	214810.511	991018.450
1-27	20+33.86	36.98' L	4" PVC	4711.87	3.30	4708.57	214810.386	991018.199
14-26a	20+33.95	37.65' L	2 -1.5" DBC and 4" PVC	4711.96	2.85	4709.11	214810.106	991017.577
8-15a	20+33.98	37.29' L	4" PVC and 2" PVC	4712.00	2.85	4709.15	214810.322	991017.865
5-1cc	20+50.75	2.57' L	12" PVC	4710.71	3.00	4707.71	214842.866	991038.552
1-27b	21+25.97	21.83' L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
14-27b	21+25.97	21.83' L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
6-3b	21+25.97	21.83' L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
8-15b	21+25.97	21.83' L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
13-1b	21+26.87	29.61' L	1.5" Poly	4709.71	0.60	4709.11	214893.330	990975.473
13-1c	22+61.12	27.69' L	1.5" Poly	4706.26	0.60	4705.66	215008.463	990906.400
1-27c	22+63.09	21.54' L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
14-27c	22+63.09	21.54' L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
6-3c	22+63.09	21.54' L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
8-15c	22+63.09	21.54' L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
1-27d	23+42.95	21.54' L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
14-27d	23+42.95	21.54' L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
6-3d	23+42.95	21.54' L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
8-15d	23+42.95	21.54' L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
13-1d	23+43.29	27.73' L	1.5" Poly	4704.18	0.60	4703.58	215078.291	990863.094
5-34b	24+26.72	7.29' L	12" PVC	4709.46	5.65	4703.81	215162.450	990839.014
9-20	24+27.61	12.21' L	4" Steel	4709.10	3.25	4705.85	215161.267	990834.153
13-1e	24+60.27	35.94' L	1.5" Poly	4701.95	0.30	4701.65	215184.551	990799.250
14-27e	24+60.70	29.52' L	Buried Cable	4702.18	3.20	4698.98	215187.132	990805.144

Test Hole Owner Identification Number Codes (First number denotes utility ownership)

1 = Black Hills Power, 2 = City of Deadwood Electric, 3 = City of Deadwood Sanitary, 5 = City of Deadwood Water, 6 = Wide Open West / Knology, 7 = Lead / Deadwood Sanitary District, 8 = MidContinent Communications, 9 = Montana Dakota Utilities, 13 = South Dakota Network, 14 = Century Link / Qwest

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/96); epoch 2002.00; Geoid 03; SF = 0.99979051 The elevations shown on this sheet are based on NAVDD 88.

Figure 18-B8 Subsurface Utility Locations

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS

Anchor
Antenna
Approach
Assumed Corner
Azimuth Marker
BBQ Grill/ Fireplace
Bearing Tree
Bench Mark
Box Culvert
Bridge
Brush/Hedge
Buildings
Bulk Tank
Cattle Guard
Cemetery
Centerline
Cistern
Clothes Line
Concrete Symbol
Control Point
Creek Edge
Curb/Gutter
Curb
Dam Grade/Dike/Levee
Deck Edge
Ditch Block
Doorway Threshold
Drainage Profile
Drop Inlet
Edge Of Asphalt
Edge Of Concrete
Edge Of Gravel
Edge Of Other
Edge Of Shoulder
Electric Transformer/Power Junction Box
Fence Barbwire
Fence Chainlink
Fence Electric
Fence Miscellaneous
Fence Rock
Fence Snow
Fence Wood
Fence Woven
Fire Hydrant
Flag Pole
Flower Bed
Gas Valve Or Meter
Gas Pump Island
Grain Bin
Guardrail
Gutter
Guy Pole
Haystack
Highway ROW Marker
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler

Mailbox
Manhole Electric
Manhole Gas
Manhole Miscellaneous
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Miscellaneous Line
Miscellaneous Property Corner
Miscellaneous Post
Overhang Or Encroachment
Overhead Utility Line — OH —
Parking Meter
Pedestrian Push Button Pole
Pipe With End Section
Pipe With Headwall
Pipe Without End Section
Playground Slide
Playground Swing
Power And Light Pole
Power And Telephone Pole
Power Meter
Power Pole
Power Pole And Transformer
Power Tower Structure
Propane Tank
Property Pipe
Property Pipe With Cap
Property Stone
Public Telephone
Railroad Crossing Signal
Railroad Milepost Marker
Railroad Profile
Railroad ROW Marker
Railroad Signs
Railroad Switch
Railroad Track
Railroad Trestle
Rebar
Rebar With Cap
Reference Mark
Regulatory Sign One Post
Regulatory Sign Two Post
Retaining Wall
Riprap
River Edge
Rock And Wire Baskets
Rockpiles
Satellite Dish
Septic Tank
Shrub Tree
Sidewalk
Sign Face
Sign Post
Slough Or Marsh
Spring

Stream Gauge
Street Marker
Subsurface Utility Exploration Test Hole
Telephone Fiber Optics — T/F —
Telephone Junction Box
Telephone Pole
Television Cable Jct Box
Television Tower
Test Wells/Bore Holes
Traffic Sign Double Face
Traffic Sign One Post
Traffic Sign Two Post
Traffic Signal
Trash Barrel
Tree Belt
Tree Coniferous
Tree Deciduous
Tree Stumps
Triangulation Station
Underground Electric Line — P —
Underground Gas Line — G —
Underground High Pressure Gas Line — HG —
Underground Sanitary Sewer — S —
Underground Storm Sewer — S —
Underground Tank
Underground Telephone Line — T —
Underground Television Cable — TV —
Underground Water Line — W —
Water Fountain
Water Hydrant
Water Meter
Water Tower
Water Valve
Water Well
Weir Rock
Windmill
Wingwall
Witness Corner

State and National Line
County Line
Section Line
Quarter Line
Sixteenth Line
Property Line
Construction Line
ROW Line
New ROW Line
Cut and Fill Limits
Control of Access
New Control of Access
Proposed ROW (After Property Disposal)

Drainage Arrow

Remove Concrete Pavement
Remove Concrete Driveway Pavement
Remove Asphalt Concrete Pavement
Remove Concrete Sidewalk
Remove Concrete Median Pavement
Remove Concrete Curb and/or Gutter

Detectable Warning
Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope

Figure 18-B9 Legend

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS

Plotting Date: 11/28/2018 Rev 11/19/2018 JHD

Retain Pipe Notes

Drop Inlet Retain Note/Table

Pipe Take Out Notes

Miscellaneous Take Out Notes

Drop Inlet Take Out Note/Table

Pipe Install Notes

Miscellaneous Install Notes

Remove and Reset Notes

North Arrow

Drop Inlet Install Note/Table

Horizontal Alignment Data

List of Mailboxes
Refurbish

Section-Township-Range

Landowners

Clip Bound Area
(viewable topog and row)
30 Stations Rural
15 Stations Suburban
6 Stations Urban

Do Not Disturb Notes

Outlet Ditch Notes

Eliminate Entrance Notes

Fence Notes

Drainage Arrows

Retain Entrance Notes

Construction Alignment

Drainage Arrows

Fence Notes

Eliminate Entrance Notes

Outlet Ditch Notes

Do Not Disturb Notes

Retain Entrance Notes

Landowners

Section-Township-Range

(Continue)

Multiple Install

& Take Out Tables

(If more space is needed)

Horizontal Alignment Data

Note:All notes should be located vertically in-line with the appropriate station where possible.

Temporary Easement Notes

Figure 18-B10 General Plan Note Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0079(02)26 NH 0018(111)44	B16	B86

Plotting Date: 09/26/2019 Rev 11/19/2018 JHD

242+97 L
Retain 36"-54' RCP
Skewed 27° LHF
with Headwalls

243+73 L
Retain Ent

242+48 (58 ac)
Install 48"-144' RCP
Skewed 25° LHF
& 2 Sloped Ends

242+10-81' R
Install Bank and Channel
Protection Gabions (12.0 CuYd)
and Type B Drainage Fabric
(34 SqYd)

245+22-212' L
Remove and Reset Cattle Guard

245+60-65' R
Take Out 24"-52' RCP
(Incidental Work, Grading)

244+92-183' L
Take Out 12"-30' CMP
(Incidental Work, Grading)

246+16-198' L
Install 20' Cattle Guard with
Precast Foundation &
24' By-pass gate

246+71 (34 ac)
Install 24"-14' RCP
& 1 Sloped End

0+58 (xr246)
Install 24"-70' CMP
Skewed 18° RHF
& 2 Safety Ends

246+71 L
Retain 24"-74' RCP
& 1 End Section

246+71 L
Take Out 1 End Section
(Incidental Work, Grading)

253+55 (4 ac)
Install 24"-94' RCP
& 2 Sloped Ends

253+55 R
Install Bank and Channel
Protection Gabions (4.5 CuYd)
and Type B Drainage Fabric
(15 SqYd)

254+00 L
Take Out 4' x 6' RCBC
Cattle Pass
(Incidental Work, Structure)
(See Section E)

254+00
Alternate A
Install 9' x 8' Box Culvert
Cattle Pass (C.I.P.)
Alternate B
Install 9' x 8' Box Culvert
Cattle Pass (Precast)
(See Section E)

254+93 (29 ac)
Install 24"-120' RCP
& 1-18"-24" Increaser
& 1-18" on 24" x 6' RCP Tee
at 254+93-50' L
& 1-24" RC Bend (5°)
& 1 Sloped End

254+93 L
Retain 18"-94' RCP
& 1 End Section

254+93 L
Take Out 1 End Section
(Incidental Work, Grading)

254+55-50' L
Install 18"-22' RCP
& 1 Safety End
(Between Inlet & Tee)

254+93 R
Install Bank and Channel
Protection Gabions (4.5 CuYd)
and Type B Drainage Fabric
(15 SqYd)

256+90 (35 ac)
Install 24"-144' RCP
(24' L & 120' R)
& 2 Sloped Ends

256+90 (35 ac)
Reset 24"-90' RCP Arch

256+90
Remove 24"-90' RCP Arch
for Reset

256+90 L
Take Out 2 End Sections
(Incidental Work, Grading)

259+30 to 260+28-50' L
Install 18"-92' RCP
& 1 Safety End
(Between Inlet & Tee)

260+28 (6 ac)
Install 24"-104' RCP (6' & 98')
& 1-18"-24" Increaser
& 1-18" on 24" x 6' RCP Tee
at 260+28-50' L
& 1 Sloped End

260+28 L
Retain 18"-76' RCP
& 1 End Section

260+28 L
Take Out 1 End Section
(Incidental Work, Grading)

259+72-150' L
Install 18"-86' CMP
& 2 Safety Ends

268+47-136' L
Install 60"-8' RCP
& 1 Flared End

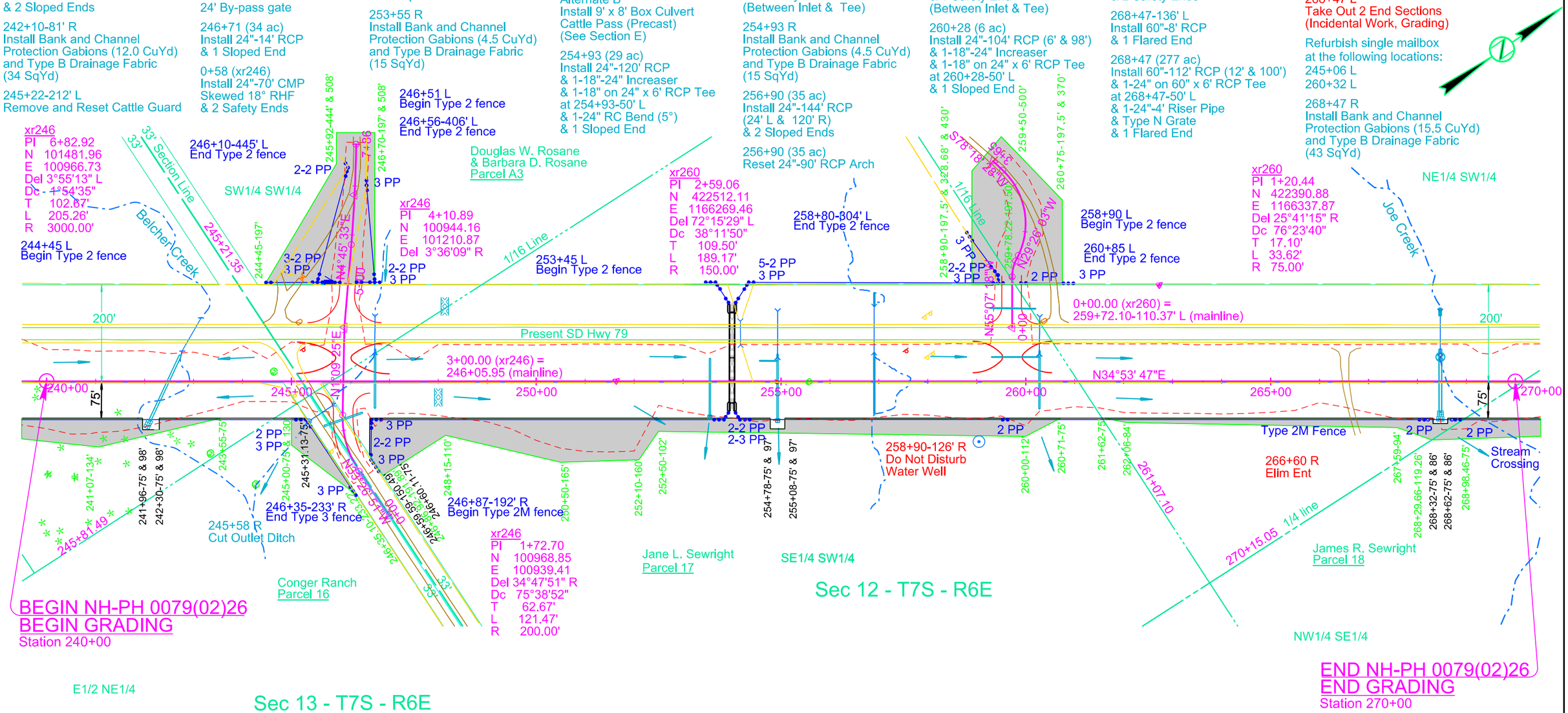
268+47 (277 ac)
Install 60"-112' RCP (12' & 100')
& 1-24" on 60" x 6' RCP Tee
at 268+47-50' L
& 1-24"-4' Riser Pipe
& Type N Grate
& 1 Flared End

268+47 L
Retain 60"-84' RCP

268+47 L
Take Out 2 End Sections
(Incidental Work, Grading)

Refurbish single mailbox
at the following locations:
245+06 L
260+32 L

268+47 R
Install Bank and Channel
Protection Gabions (15.5 CuYd)
and Type B Drainage Fabric
(43 SqYd)



Parcel 16
245+00 to 246+35.10 R
Temporary Easement containing
0.1 ac, more or less

Parcel 17
246+59.59 to 260+71 R
Temporary Easement containing
1.6 ac, more or less

Parcel 17
258+90 to 260+75 L
Temporary Easement containing
0.9 ac, more or less

Parcel 17
261+62 to 268+98.46 R
Temporary Easement containing
0.3 ac, more or less

Parcel 18
268+29.66 to 276+85 R
Temporary Easement containing
0.6 ac, more or less

Parcel A3
244+45 to 246+70 L
Temporary Easement containing
1.0 ac, more or less

Parcel A3
258+90 to 259+78.22 L
Temporary Easement containing
0.1 ac, more or less

Figure 18-B11 Rural Plan Sheet

Typical Bridge Layout Also illustrates placement of drop inlets, downspouts, and median drain. This is a clip copy from an existing projects plan sheet and the Profile Figure 18-B14a illustrates this bridge as should be shown on the profile sheets.

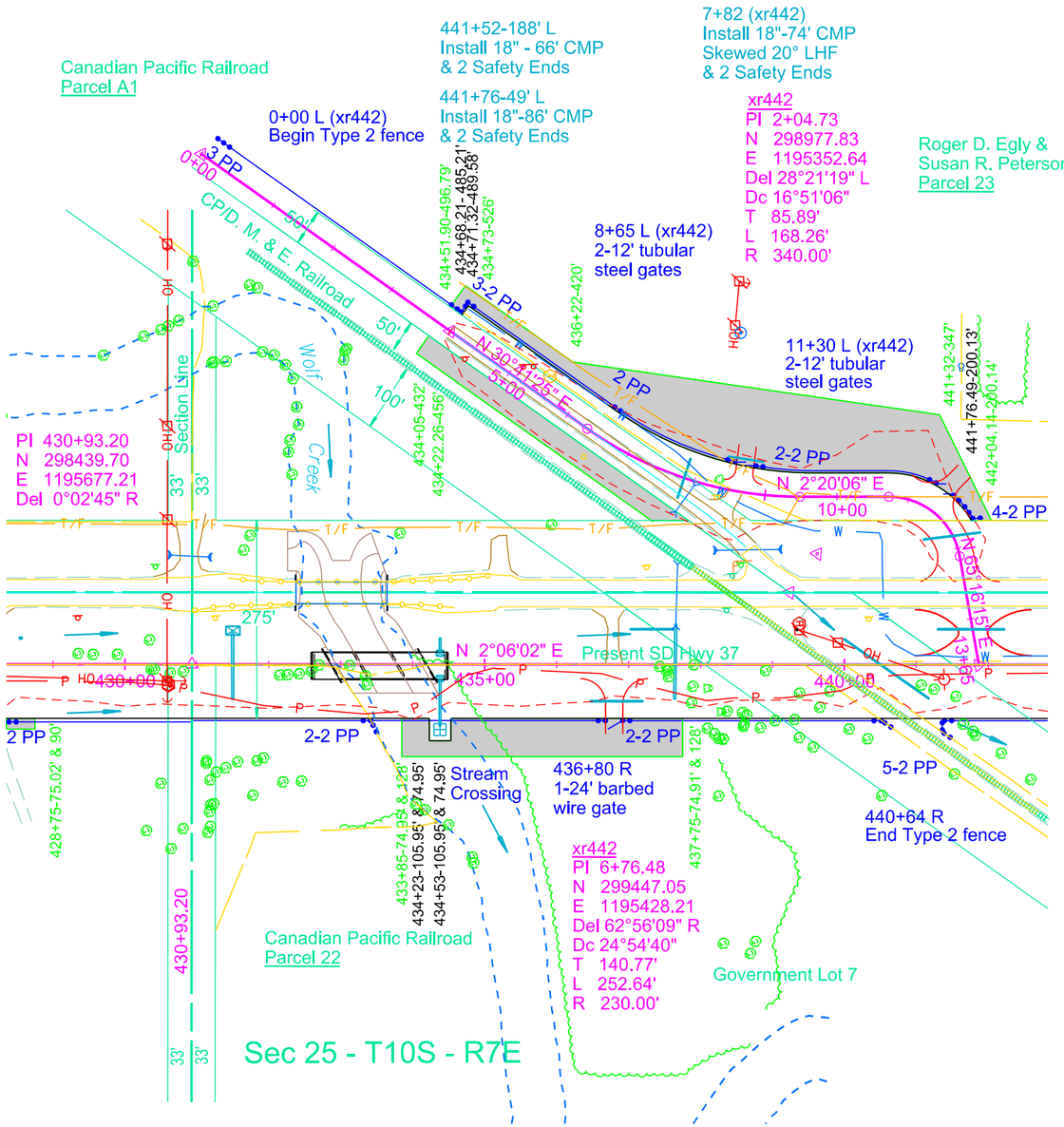
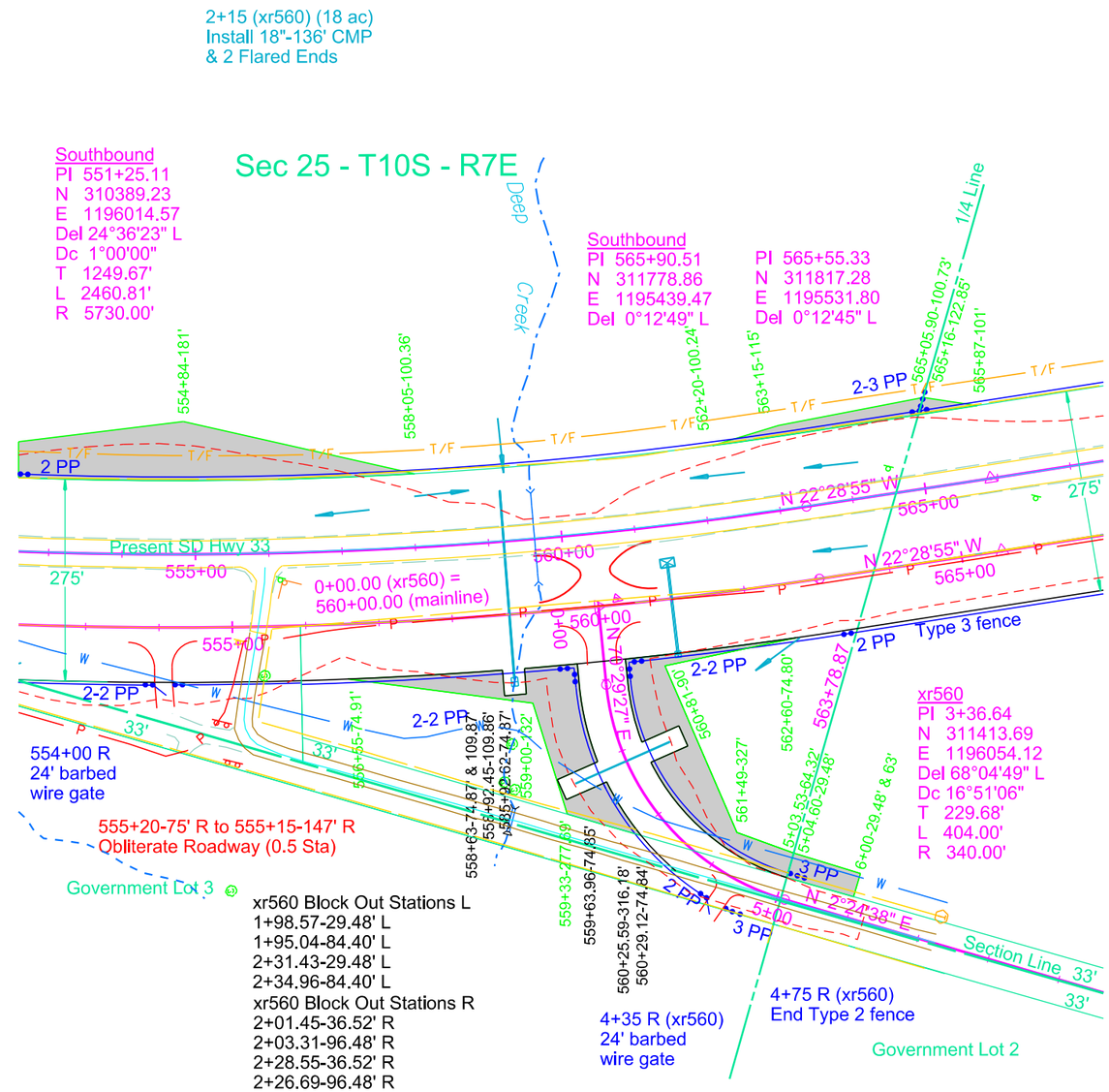


Illustration of the layout of a Typical Intersecting Road, showing the placement of a table to organize the notes required for the purchase of right of way. A table may be used when the density of notes inhibits the readability of the same when placed in the conventional manner. This is a clip copy from an existing projects plan sheet.



Parcel A1
434+05 to 437+83.14 L
Temporary Easement containing
0.3 ac, more or less

Parcel 22
433+85 to 437+75 R
Temporary Easement containing
0.5 ac, more or less

Parcel 23
434+51.90 to 442+04.14 L
Temporary Easement containing
1.3 ac, more or less

Parcel 30
565+05.90 to 565+87 L
(South Bound)
Temporary Easement containing
0.1 ac, more or less

Parcel 30
5+03.53 to 6+00 L (xr560)
Temporary Easement containing
0.1 ac, more or less

Figure 18-B11a Plan Layout Examples

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0014(116)228 & P-PH 0034(12)209	B16	B86

19+73-31' R to 19+98-37' R
Take Out 10"-25' RCP
(Incidental Work, Grading)

19+98-37' R to 19+99-57' R
Take Out 10"-19' RCP
(Incidental Work, Grading)

19+73.00-31.67' R to 19+98.50-58.00' R
Install 18"-44' RCP
(14', 16', & 14' Str Pipe)
& 2-45° RC Bends
(Between Drop Inlets)

19+98.50-58.00' R to 20+37.30-58.00' R
Install 18"-38' RCP
(Between Drop Inlet & Manhole)

20+46-56' R to 20+46-38' R
Take Out 10"-19' RCP
(Incidental Work, Grading)

20+46-38' R to 20+71-31' R
Take Out 10"-25' RCP
(Incidental Work, Grading)

20+37-59' R to 20+38-24' R
Take Out 18"-34' RCP
(Incidental Work, Grading)

19+98.50-58.00' R to 62.01' R
Install 18"-4' RCP
(Between Manhole & Existing Pipe)

19+98-37' R to 20+38-24' R
Take Out 12"-40' RCP
(Incidental Work, Grading)

20+38-24' R
Take Out Manhole
with Frame & Cover
(Incidental Work, Grading)

Take Out 10"x10"x12"
RC Wye Sections
at the following locations:
(Incidental Work, Grading)
19+98-37' R
20+46-38' R

20+38-24' R to 20+46-38' R
Take Out 12"-16' RCP
(Incidental Work, Grading)

20+46-38' R to 22+11-24' R
Take Out 18"-174' RCP
(Incidental Work, Grading)

22+10-23' L
Take Out 60° Bend
(Incidental Work, Grading)

21+94-31' L to 22+10-23' L
Take Out 18"-18' RCP
(Incidental Work, Grading)

22+10-23' L to 22+11-24' R
Take Out 12"-48' RCP
(Incidental Work, Grading)

22+11-24' R
Take Out 18"x12"x12"
Cross Tee
(Incidental Work, Grading)

22+11-24' R to 22+11-32' R
Take Out 12"-8' RCP
(Incidental Work, Grading)

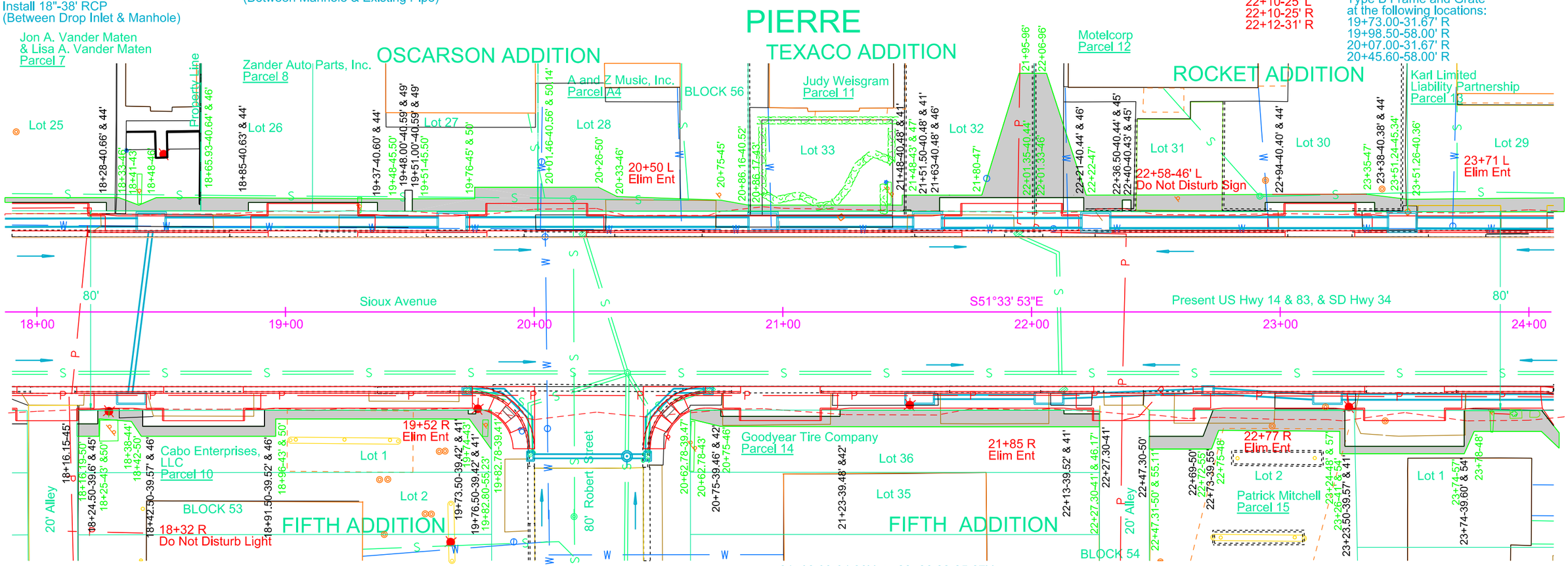
22+11-24' R to 24+42-24' R
Take Out 18"-232' RCP
(Incidental Work, Grading)

Install 18"x 45° RC Bends
at the following locations:
19+78.50-42.50' R
19+87.60-31.67' R
20+45.60-42.50' R
20+56.40-31.67' R

Remove Drop Inlets
with Frame and Grate
at the following locations:
19+73-31' R
19+99-57' R
20+00-40' R
20+20-25' L
20+20-31' L
20+46-56' R
20+50-40' R
20+71-31' R
21+94-31' L
22+10-25' L
22+10-25' R
22+12-31' R

22+71.00-31.67' R
Install 3' X 4' Type B Drop Inlet
with 6" Concrete Collar and
Type B Frame and Grate

Install 2' X 3' Type B Drop Inlets
with 6" Concrete Collar and
Type B Frame and Grate
at the following locations:
19+73.00-31.67' R
19+98.50-58.00' R
20+07.00-31.67' R
20+45.60-58.00' R



18+40.00-34.17' R to 18+46.00-34.92' L
Install 18"-66' RCP
(Between Drop Inlets)

18+46.00-34.92' L to 19+70.00-34.92' L
Install 36"-114' RCP
(Between Drop Inlets)

19+70.00-34.92' L to 20+92.00-34.92' L
Install 42"-112' RCP
(Between Drop Inlets)

20+37.27-58.00' R
Install 48" RC Precast Manhole
with Type A7 Framed Cover
& 2-27" Dia x 2"Adjusting Rings
(See Detailed Drawing)

20+37.27-58.00' R to 20+45.60-58.00' R
Install 18"-6' RCP
(Between Manhole & Drop Inlet)

20+45.60-58.00' R to 20+70.00-31.67' R
Install 18"-44' RCP
(14' , 16' , & 14' Str Pipe
and 2-45° Bends)
(Between Drop Inlets)

20+92.00-34.92' L to 21+62.00-34.92' L
Install 42"-60' RCP
(Between Drop Inlets)

21+62.00-34.92' L to 22+26.00-35.67' L
Install 42"-56' RCP
(Between Drop Inlets)

21+55.00-34.17' R to 22+07.00-34.17' R
Install 18"-42' RCP
(Between Drop Inlets)

22+07.00-34.17' R to 22+71.00-31.67' R
Install 18"-58' RCP
(Between Drop Inlets)

22+71.00-31.67' R to 23+19.00-34.17' R
Install 24"-42' RCP
(Between Drop Inlets)

22+26.00-35.67' L to 23+49.00-35.67' L
Install 48"-114' RCP
(Between Drop Inlet)

23+49.00-35.67' L to 24+26.00-35.67' L
Install 48"-68' RCP
(Between Drop Inlet)

23+19.00-34.17' R to 24+22.00-34.17' R
Install 24"-98' RCP
(Between Drop Inlet & RC Bend)

Install 7' X 11' Type S Drop Inlet
Base and Precast Concrete
Type S Drop Inlet Lid
at the following locations:
18+46.00-35.67' L
19+67.00-35.67' L
20+92.00-35.67' L
21+58.00-35.67' L
22+26.00-35.67' L
23+49.00-35.67' L

Install 4' X 11' Type S Drop Inlet
Base and Precast Concrete
Type S Drop Inlet Lid
at the following locations:
18+38.00-34.17' R
21+55.00-34.17' R
22+07.00-34.17' R
23+19.00-34.17' R

Parcel 8
18+65.93 to 19+48.00 L
Temporary Easement containing
244 sq ft, more or less

Parcel 8
19+51.00 to 20+01.46 L
Temporary Easement containing
367 sq ft, more or less

Parcel 10
18+16.15 to 19+82.80 R
Temporary Easement containing
737 sq ft, more or less

Parcel A4
20+01.46 to 20+86.17 L
Temporary Easement containing
547 sq ft, more or less

Parcel 11
20+86.16 to 22+01.35 L
Temporary Easement containing
960 sq ft, more or less

Parcel 12
22+01.16 to 23+51.26 L
Temporary Easement containing
1336 sq ft, more or less

Parcel 13
23+51.24 to 24+51.24 L
Temporary Easement containing
484 sq ft, more or less

Parcel 14
20+62.78 to 22+27.31 R
Temporary Easement containing
937 sq ft, more or less

Parcel 15
22+47.31 to 24+12.18 R
Temporary Easement containing
1088 sq ft, more or less

Figure 18-B12 Urban Plan Sheet

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS

Plotting Date: 07/08/2015

Revision Date and Initials

Station
Begin Work

Earthwork Balance Notes

Inset for
Intersecting Roads
&
Traffic Diversions

Intersecting Roads, Entrances, and Drives

Ditch Blocks

Vertical Curve Data

Elevations

Elevations

Profiles

Ditch Grades and Pipes

Hydraulic Data
for Structures

Overtopping Data
for Pipe

NOTE: All notes should be located vertically in-line with the appropriate station where possible.

Control Points Location,
Elevation, and Description

Profile Elevations

Control Points Location,
Elevation, and Description

Stations

Figure 18-B13 General Profile Note Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0183(19)61	B66	B103

Plotting Date: 11/27/2018 Rev 11/19/2018 JHD

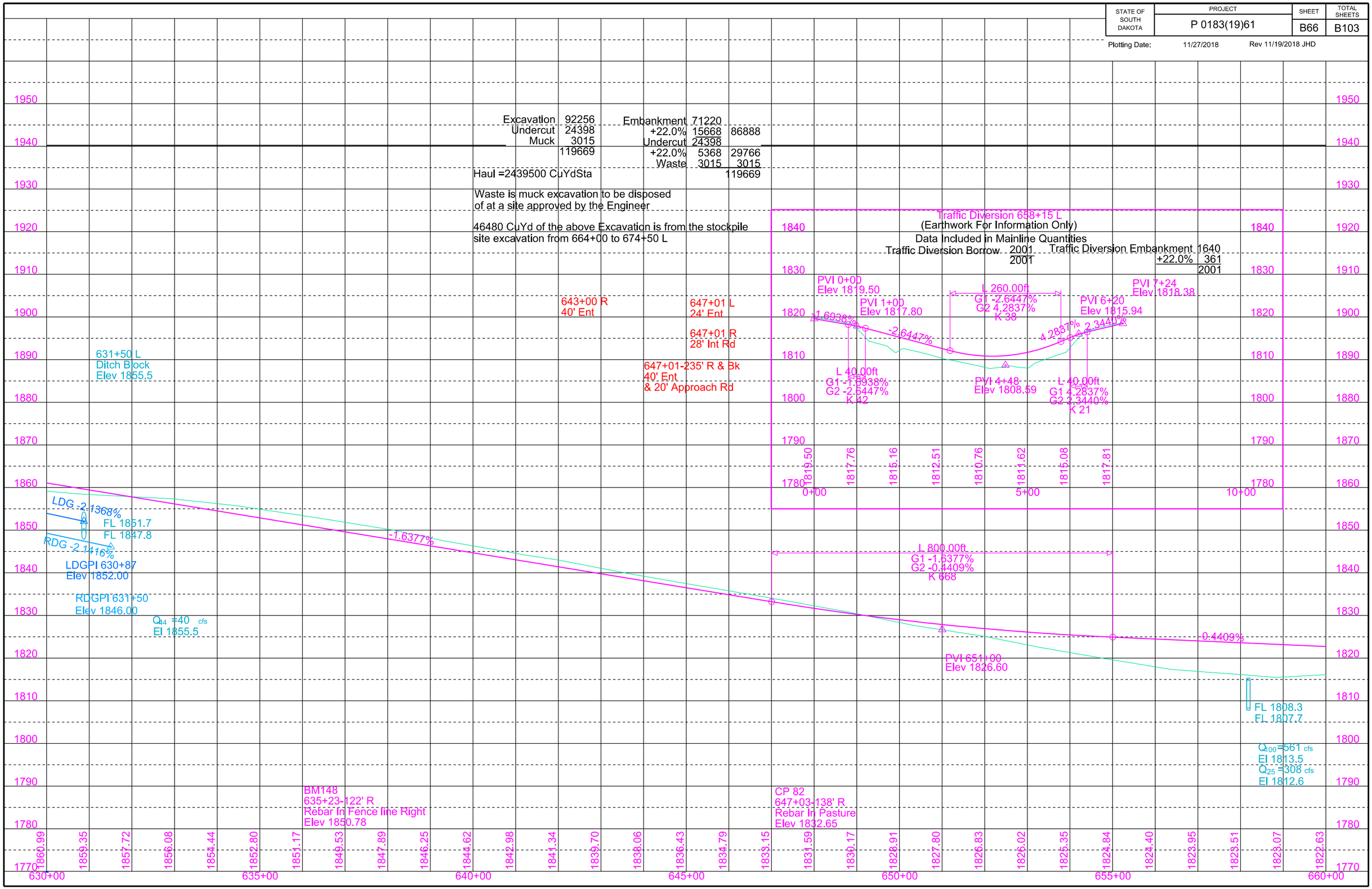


Figure 18-B14 Rural Profile with Traffic Diversion Inset

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0385(15)0	B81	B138

Plotting Date: 11/26/2018 Rev 11/19/2018 JHD

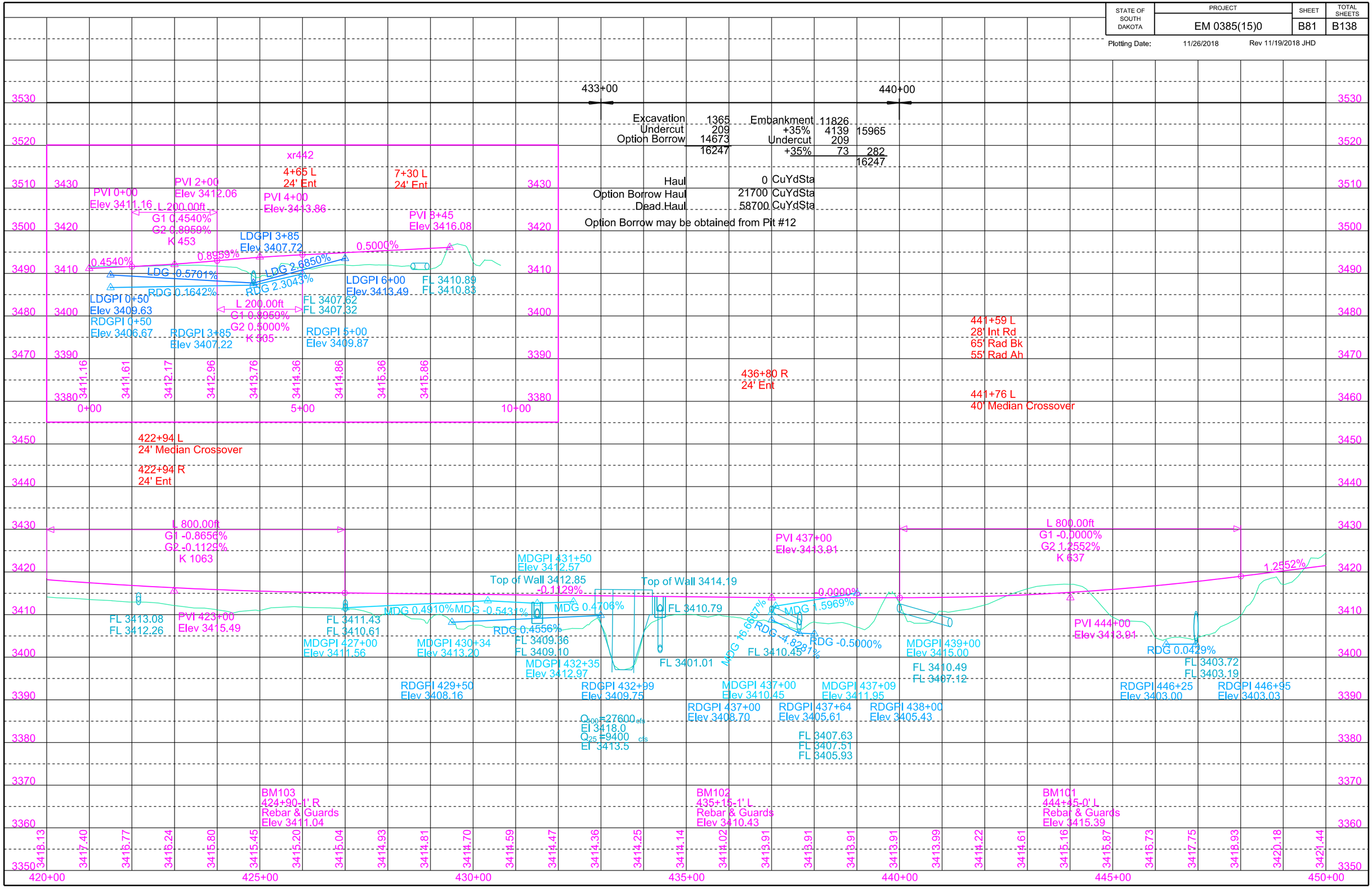


Figure 18-B14a Rural Profile with Bridge and Intersecting Road

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0019(31)73	B28	B37

Plotting Date: 10/20/2015

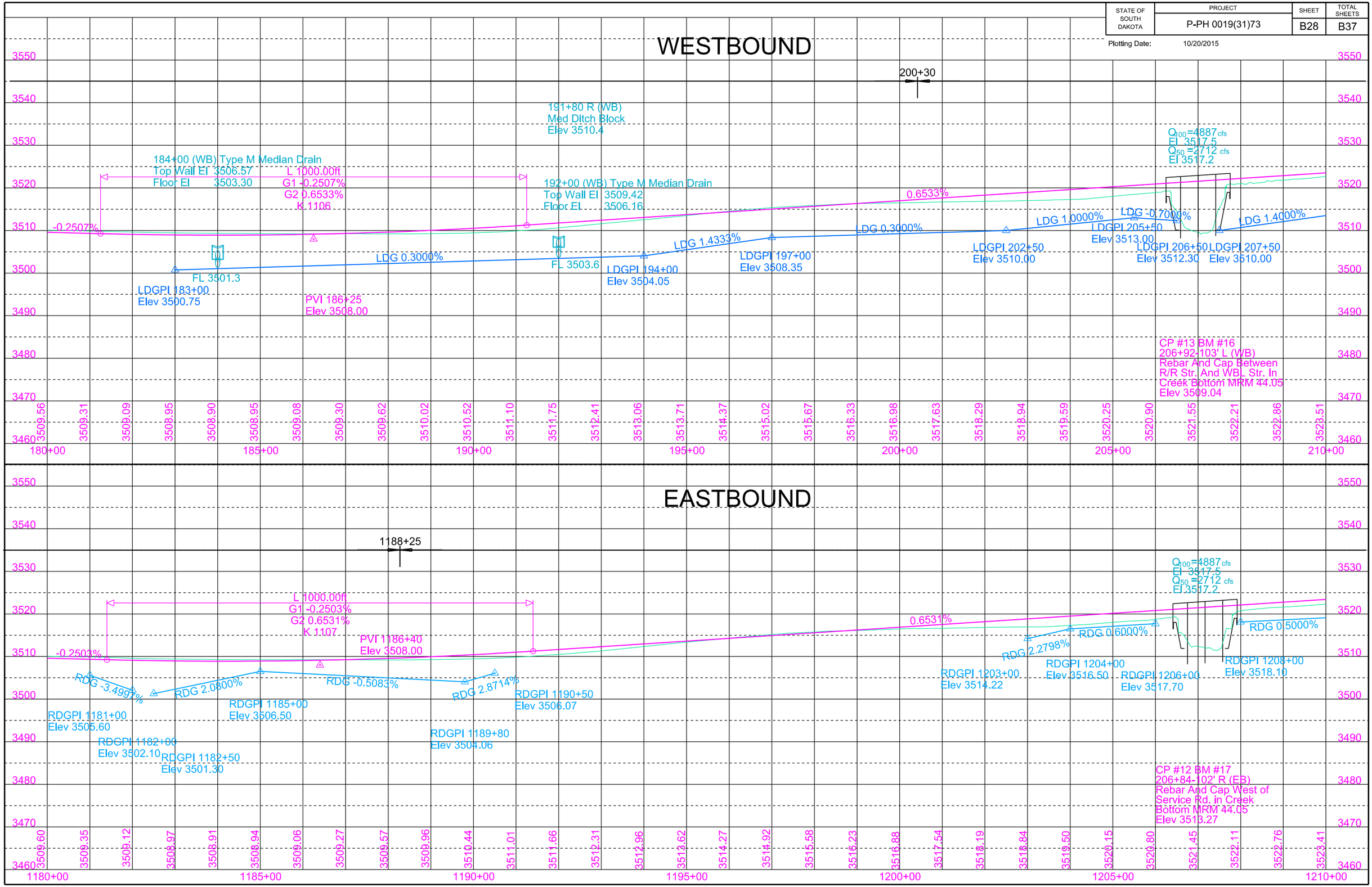


Figure 18-B14b Rural Profile for Divided Highway

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(02)26	B16	B116

Plotting Date: 01/31/2019

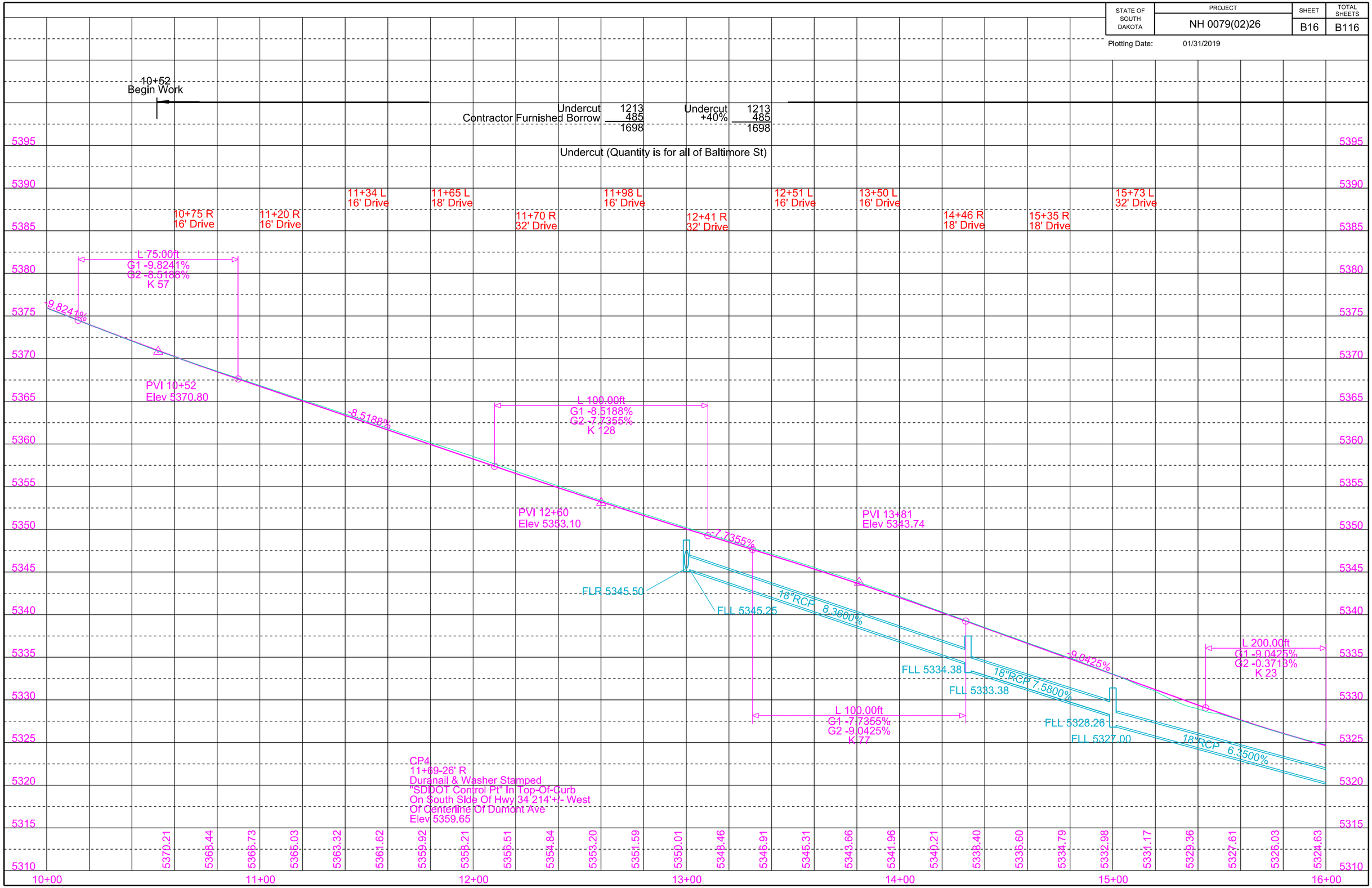


Figure 18-B15 Urban Profile Sheet

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH0014(116)228	B16	B86

Plotting Date: 03/24/2016

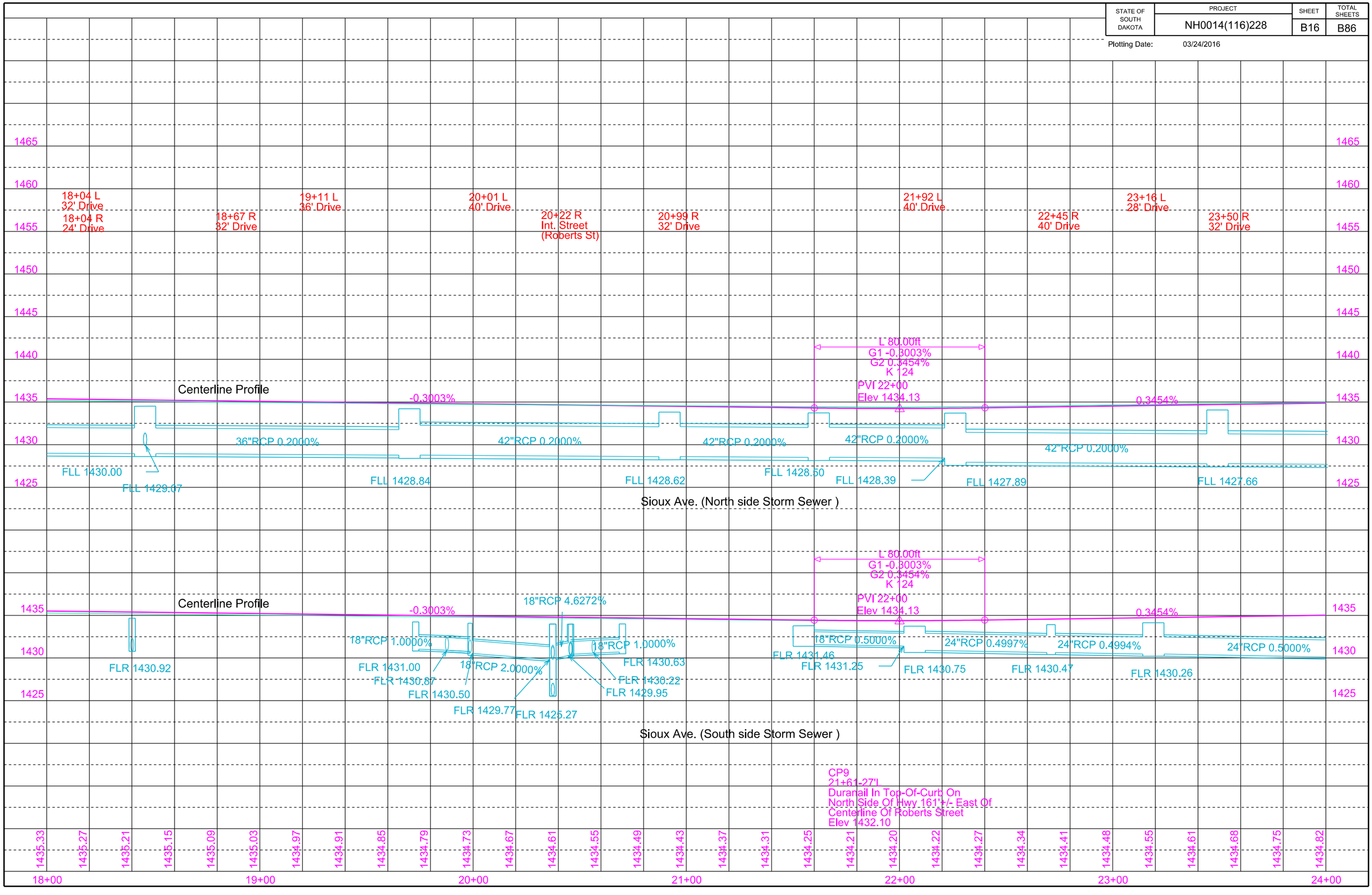


Figure 18-B16 Urban Profile with Divided Storm Sewer

PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0046(48)365	B52	B100

Plotting Date: 08/07/2017

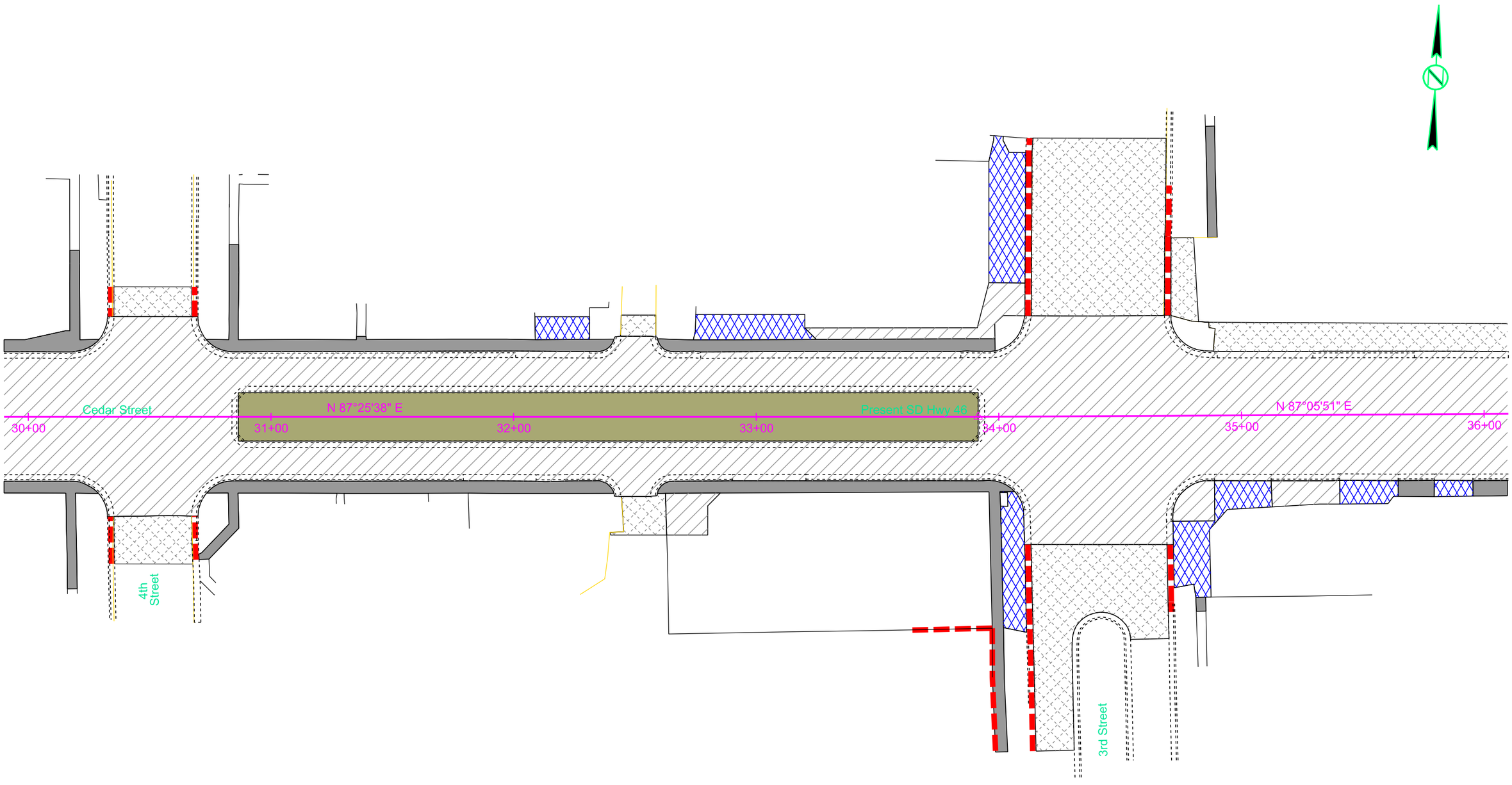


Figure 18-B16a Pavement Removal Layout

CURB AND GUTTER LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	B28	B133

Plotting Date: 11/26/2018

Note: All curb and gutter shown on this sheet is Type B68 and all gutter is Type P8 except as noted.
All curbside sidewalk is 6' wide and all boulevard sidewalk is 5' wide except as noted.

1 83+27-17.50'L
End Str C & G
Begin Type P Gutter
TC Elev 4571.16 (Theor)

2 83+51-17.50'L
End Type P Gutter
Begin Str C & G
TC Elev 4570.72 (Theor)

3 84+10.99-17.50'L
End Str C & G
Begin 267.5' Rad C & G
TC Elev 4569.73

4 84+44.78-17.50' L
End 267.5' Rad C & G
Begin 15' Rad Fillet
TC Elev 4569.24

5 84+58.04-17.50' L
Begin Valley Gutter

6 85+29.63-32.50'L
End 15' Rad Fillet
Begin Str C & G
TC Elev

7 84+58.09-49.50' L
End Str C & G
TC Elev 4570.40 ± (Theor)

8 84+94.00-49.50' L
Begin Str C & G
TC Elev 4569.90 ± (Theor)

9 84+94.00-32.50' L
End Str C & G
Begin 15' Rad Fillet
TC Elev 4568.88 (Theor)

10 84+94.00-17.50' L
End Valley Gutter

11 85+09.00-17.50' L
End 15' Rad Fillet
Begin Str C & G
TC Elev 4568.51

12 85+25.00-17.50' L
End Str C & G
Begin Str C & G
TC Elev 4568.35 (Theor)

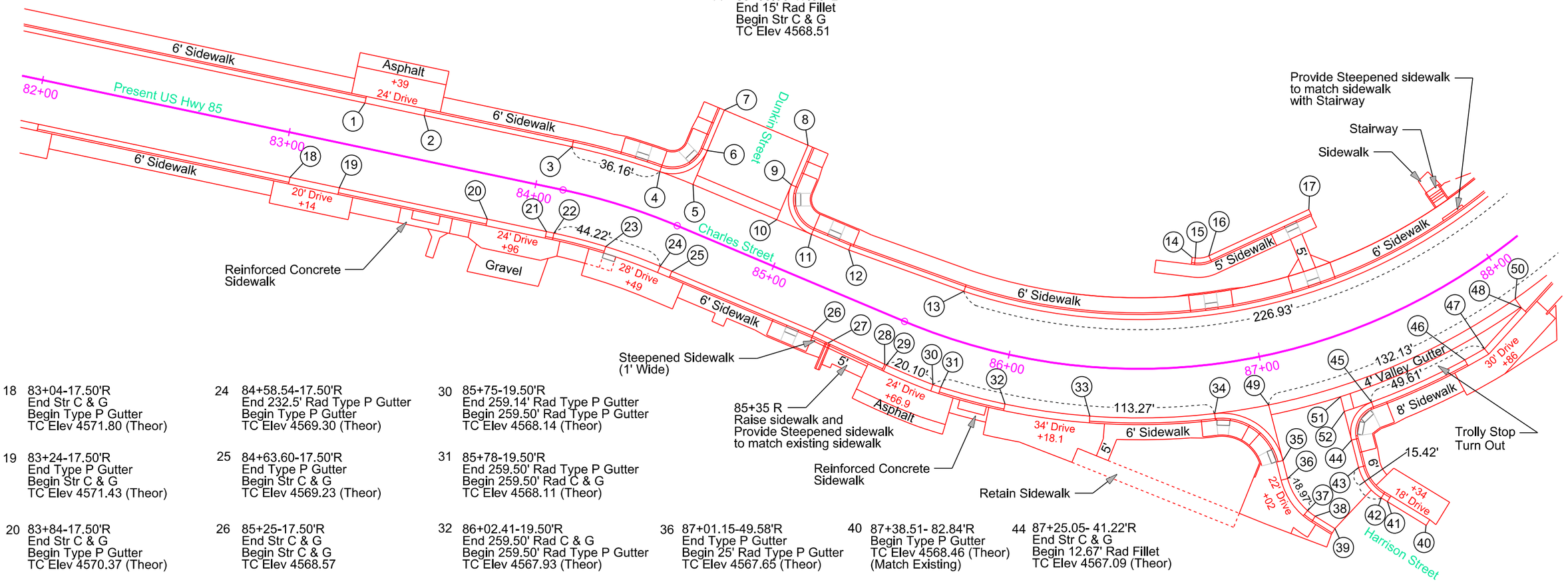
13 85+75.00-19.50' L
End Str C & G
Begin 220.5' Rad C & G
TC Elev 4567.92

14 86+77.66-42.96'L
Begin Str Type B66 C & G
TC Elev 4568.58
(Match Existing)

15 86+79.12-42.68'L
End Str Type B66 C & G
Begin 10' Rad Type B66 C & G
TC Elev 4568.56

16 86+85.75-42.85'L
End 10' Rad Type B66 C & G
Begin Str Type B66 C & G
TC Elev 4568.43

17 87+39.30-50.80'L
End Str Type B66 C & G
TC Elev 4568.04
(Match Existing)



18 83+04-17.50'R
End Str C & G
Begin Type P Gutter
TC Elev 4571.80 (Theor)

19 83+24-17.50'R
End Type P Gutter
Begin Str C & G
TC Elev 4571.43 (Theor)

20 83+84-17.50'R
End Str C & G
Begin Type P Gutter
TC Elev 4570.37 (Theor)

21 84+08-17.50'R
End Type P Gutter
Begin Str C & G
TC Elev 4569.99 (Theor)

22 84+10.99-17.50'R
End Str C & G
Begin 232.5' Rad C & G
TC Elev 4569.94 (Theor)

23 84+33.86-17.50'R
End 232.5' Rad C & G
Begin 232.5' Rad Type P Gutter
TC Elev 4569.62 (Theor)

24 84+58.54-17.50'R
End 232.5' Rad Type P Gutter
Begin Type P Gutter
TC Elev 4569.30 (Theor)

25 84+63.60-17.50'R
End Type P Gutter
Begin Str C & G
TC Elev 4569.23 (Theor)

26 85+25-17.50'R
End Str C & G
Begin Str C & G
TC Elev 4568.57

27 85+31.70- 19.77'R
Sidewalk Drain

28 85+55.73-18.73'R
End Str C & G
Begin Type P Gutter
TC Elev 4568.30 (Theor)

29 85+56.39-18.76'R
End Type P Gutter
Begin 259.14' Rad Type P Gutter
TC Elev 4568.29 (Theor)

30 85+75-19.50'R
End 259.14' Rad Type P Gutter
Begin 259.50' Rad Type P Gutter

31 85+78-19.50'R
End 259.50' Rad Type P Gutter
Begin 259.50' Rad C & G
TC Elev 4568.11 (Theor)

32 86+02.41-19.50'R
End 259.50' Rad C & G
Begin 259.50' Rad Type P Gutter
TC Elev 4567.93 (Theor)

33 86+33.88-19.50'R
End 259.50' Rad Type P Gutter
Begin 259.50' Rad C & G
TC Elev 4567.69 (Theor)

34 86+79.76-19.50'R
End 259.50' Rad C & G
Begin 25' Rad Fillet
TC Elev 4567.34 (Theor)

35 87+00.85-42.19'R
End 25' Rad Fillet
Begin Type P Gutter
TC Elev 4567.56 (Theor)

36 87+01.15-49.58'R
End Type P Gutter
Begin 25' Rad Type P Gutter
TC Elev 4567.65 (Theor)

37 87+05.23-63.72'R
End 25' Rad Type P Gutter
Begin 25' Rad C & G
TC Elev 4567.88 (Theor)

38 87+07.15-66.53'R
End 25' Rad C & G
Begin Str C & G
TC Elev 4567.93 (Theor)

39 87+12.15-73.17'R
End Str C & G
TC Elev 4568.08
(Match Existing)

40 87+38.51- 82.84'R
Begin Type P Gutter
TC Elev 4568.46 (Theor)
(Match Existing)

41 87+29.90- 68.85'R
End Type P Gutter
Begin Str C & G
TC Elev 4567.90 (Theor)

42 87+28.44- 66.64'R
End Str C & G
Begin 20' Rad C & G
TC Elev 4567.80 (Theor)

43 87+24.57- 52.40'R
End 20' Rad C & G
Begin Str C & G
TC Elev 4567.37

44 87+25.05- 41.22'R
End Str C & G
Begin 12.67' Rad Fillet
TC Elev 4567.09 (Theor)

45 87+35.82- 29.50'R
End 12.67' Rad Fillet
Begin 269.50' Rad C & G
TC Elev 4566.82 (Theor)

46 87+72-29.50'R
End 269.50' Rad C & G
Begin 269.50' Rad Type P Gutter
TC Elev 4566.00 (Theor)

47 87+80-29.50'R
End 269.50' Rad Type P Gutter
Begin Str Type P Gutter
TC Elev 4565.82 (Theor)

48 87+99.00- 23.88'R
End Type P Gutter
Begin Str Special C & G
TC Elev 4565.25 (Theor)

49 86+99.83- 19.50'R
Begin 259.50' Rad
Valley Gutter

50 87+99.00-19.50'R
End 259.5' Rad Valley Gutter
Begin 259.50' Rad Special C & G

51 87+25.90- 23.50'R
Begin Str Valley Gutter

52 87+25.60- 29.50'R
End Str Valley Gutter

Figure 18-B17 Curb and Gutter Layout

CURB RAMP LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	B52	B138

Plotting Date: 08/27/2019

* Turning Space with 1.5% slope
** Curb Ramp with 7.5% slope and 1.5% cross slope

1 85+02.64-20.19'L
Center Type 3
Curb Ramp

2 85+26.06-28.65'L
Center Type 3
Curb Ramp

3 85+72.65-29.70'L
Center Type 3
Curb Ramp

4 86+04.06-22.19'L
Center Type 3
Curb Ramp

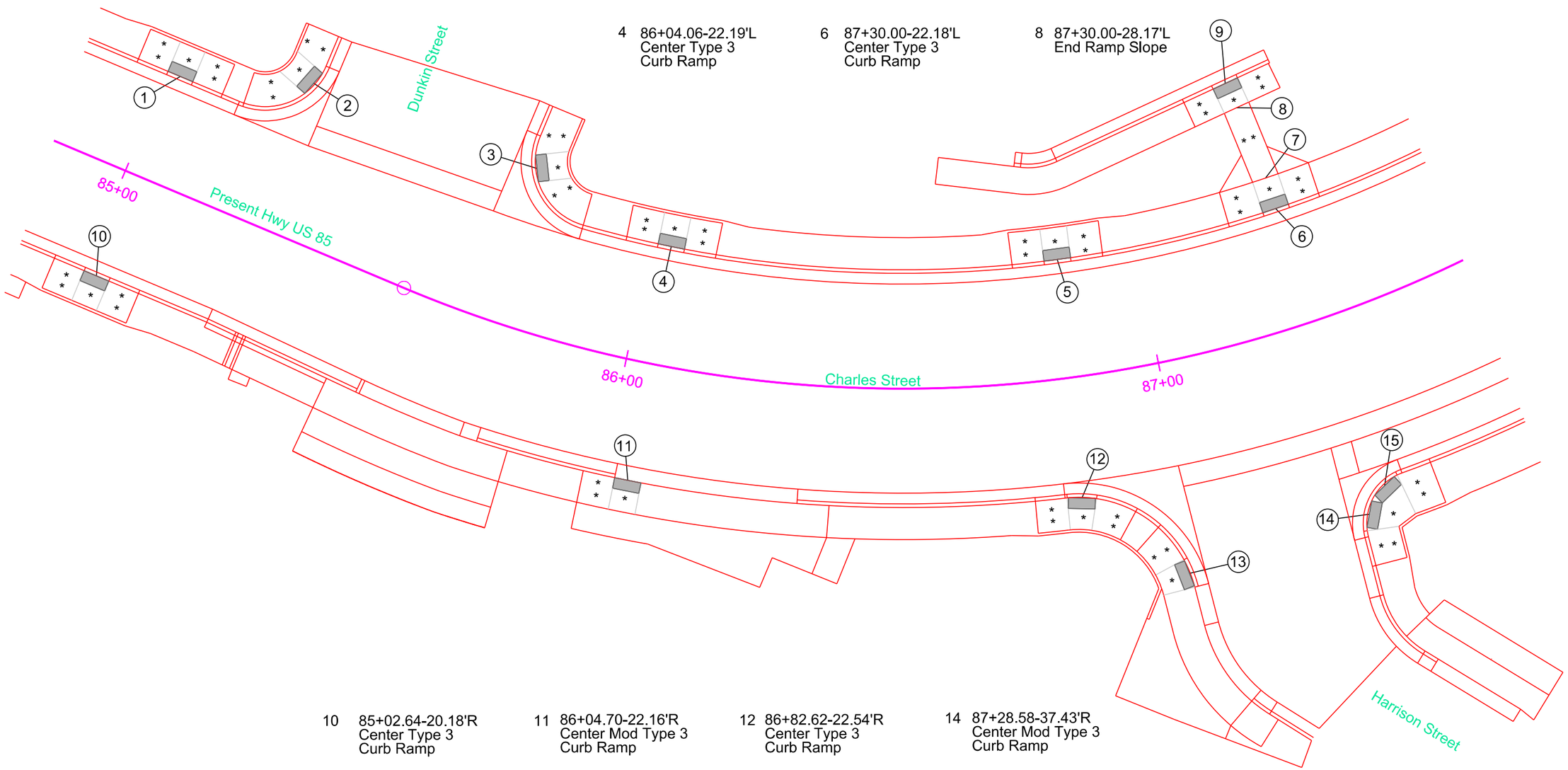
5 86+83.84-22.19'L
Center Type 3
Curb Ramp

6 87+30.00-22.18'L
Center Type 3
Curb Ramp

7 87+30-28.17'L
Begin Ramp Slope

8 87+30.00-28.17'L
End Ramp Slope

9 87+28.18-47.29'L
Center Type 3
Curb Ramp



10 85+02.64-20.18'R
Center Type 3
Curb Ramp

11 86+04.70-22.16'R
Center Mod Type 3
Curb Ramp

12 86+82.62-22.54'R
Center Type 3
Curb Ramp

13 86+98.18-39.61'R
Center Mod Type 3
Curb Ramp

14 87+28.58-37.43'R
Center Mod Type 3
Curb Ramp

15 87+32.39-33.33'R
Center Mod Type 3
Curb Ramp

Figure 18-B17a Curb Ramp Layouts for Reconstruction Projects

CURB RAMP LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0034(145)327	B38	B62

Plotting Date: 01/25/2018

* Turning Space with 1.5% slope
** Curb Ramp with 7.5% slope and 1.5% cross slope
Note: All curb and gutter shown on this sheet is Type B68 except as noted.
All sidewalk is 5' wide except as noted.

1 2+45.75-25.04' L
Begin 15' Rad C & G
TC Elev (Match Existing)

2 2+48.77-29.65' L
Center of Detectable Warning
& Type 1 Curb Ramp

3 2+54.11-31.08' L
End 15' Rad C & G
TC Elev (Match Existing)

4 2+44.39-35.59' L
End Ramp Slope

5 2+41.42-39.61' L
Back of Turning Space

6 2+91.44-38.71' L
Begin 17' Rad C & G
TC Elev (Match Existing)

7 2+99-30.27' L
Center of Detectable Warning
& Type 3 Curb Ramp

8 3+05.85-24.04' L
End 17' Rad C & G
TC Elev (Match Existing)

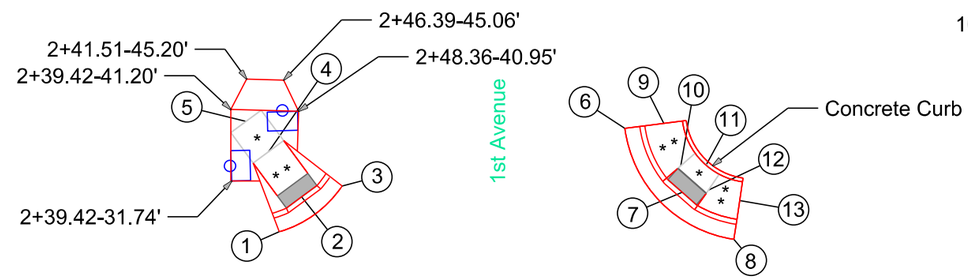
9 2+96.57-39.36' L
Begin Ramp Slope

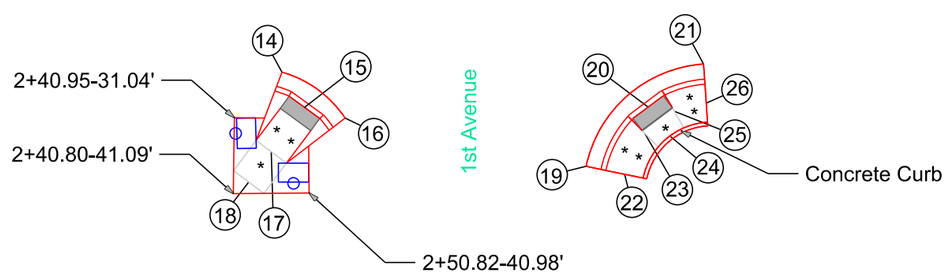
10 2+98.84-33.77' L
End Ramp Slope

11 3+02.19-33.89' L
Back of Turning Space

12 3+02.49-30.56' L
Begin Ramp Slope

13 3+06.60-29.16' L
End Ramp Slope





14 2+47.23-25.04' R
Begin 15' Rad C & G
TC Elev (Match Existing)

15 2+50.16-29.71' R
Center of Detectable Warning
& Type 1 Curb Ramp

16 2+55.57-31.10' R
End 15' Rad C & G
TC Elev (Match Existing)

17 2+45.82-35.54' R
End Ramp Slope

18 2+42.83-39.55' R
Back of Turning Space

19 2+87.39-37.48' R
Begin 17' Rad C & G
TC Elev (Match Existing)

20 2+95.56-29.66' R
Center of Detectable Warning
& Type 3 Curb Ramp

21 3+02.88-23.98' R
End 17' Rad C & G
TC Elev (Match Existing)

22 2+92.45-38.53' R
Begin Ramp Slope

23 2+95.14-33.13' R
End Ramp Slope

24 2+98.44-33.47' R
Back of Turning Space

25 2+99.03-30.22' R
Begin Ramp Slope

26 3+03.24-29.14' R
End Ramp Slope

Figure 18-B17b curb Ramp Layouts for ADA Projects

GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 29-2(9)62	B16	B86

Plotting Date: 05/19/2015

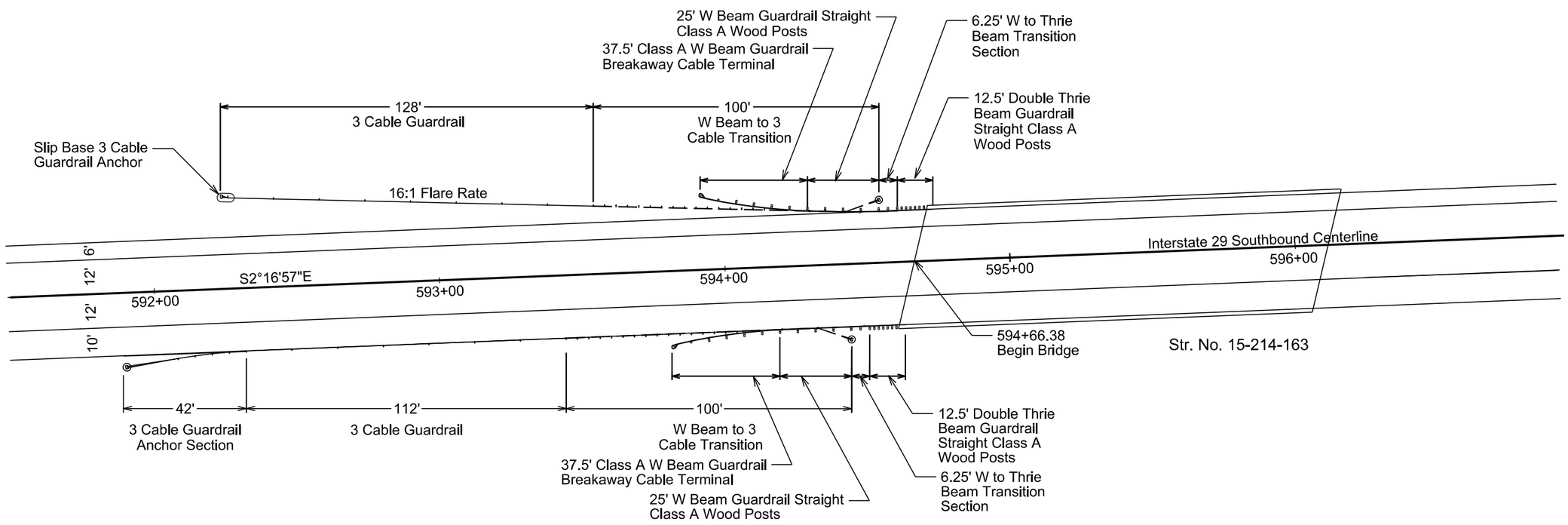


Figure 18-B18 Guardrail Layout

RAMP GORE LAYOUT

RAMP P & Q

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0235(2)0	B16	B86

Plotting Date: 05/19/2015

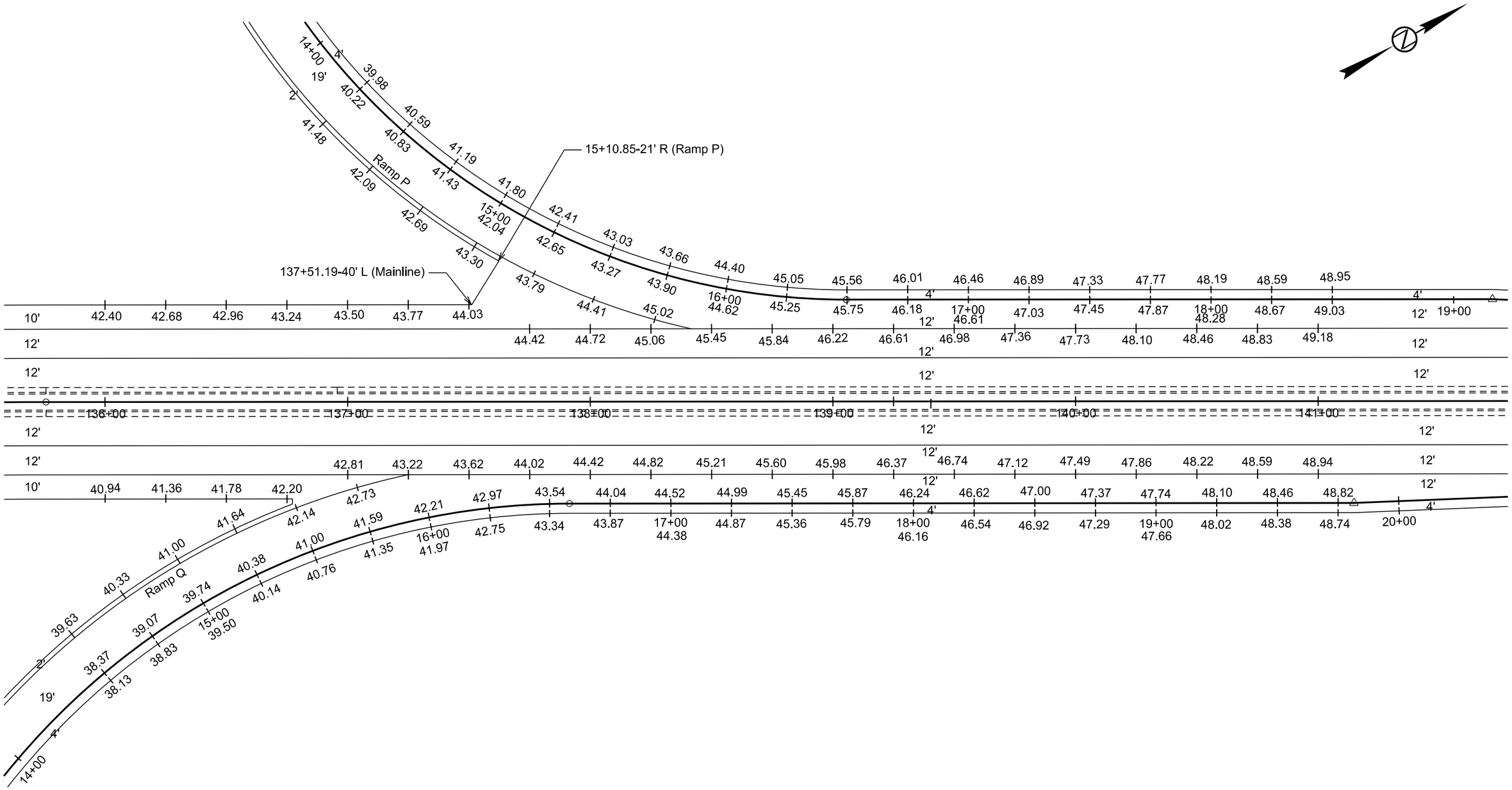


Figure 18-B19 Ramp Gore Layout

INTERSECTION LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(0)156	B18	B186

Plotting Date: 12/06/2017

1 92+03.68-117.48' R (Truck Route)

2 91+18.74-121' R (Truck Route)
85' Rad Point

3 91+18.75-36' R (Truck Route)

4 89+26.45-36' L (Truck Route)

5 89+26.43-308.85' L (Truck Route)
273' Rad Point

6 91+99.07-289.39' L (Truck Route)

7 90+44.51-37.6' L (Truck Route)

8 90+46.51-30' L (Truck Route)

9 91+87.89-30' L (Truck Route)

91+95.01-35.78' L (Truck Route)

11 91+89.87-174.24' L (Truck Route)

12 92+00.29-173.85' L (Truck Route)

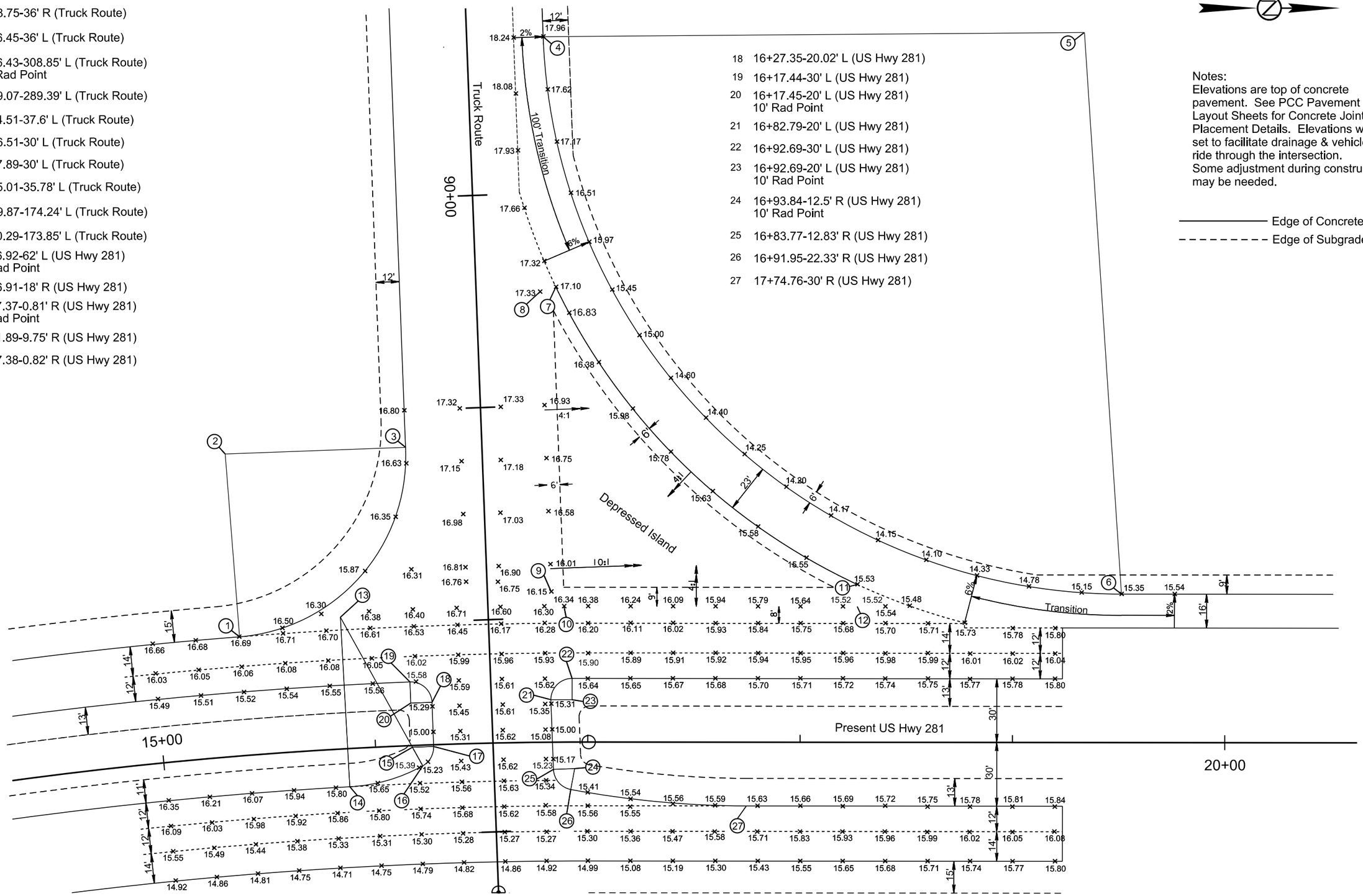
15+86.92-62' L (US Hwy 281)
80' Rad Point

14 15+86.91-18' R (US Hwy 281)

15 16+17.37-0.81' R (US Hwy 281)
10' Rad Point

16 16+21.89-9.75' R (US Hwy 281)

17 16+27.38-0.82' R (US Hwy 281)



18 16+27.35-20.02' L (US Hwy 281)

19 16+17.44-30' L (US Hwy 281)

20 16+17.45-20' L (US Hwy 281)
10' Rad Point

21 16+82.79-20' L (US Hwy 281)

22 16+92.69-30' L (US Hwy 281)

23 16+92.69-20' L (US Hwy 281)
10' Rad Point

24 16+93.84-12.5' R (US Hwy 281)
10' Rad Point

25 16+83.77-12.83' R (US Hwy 281)

26 16+91.95-22.33' R (US Hwy 281)

27 17+74.76-30' R (US Hwy 281)

Notes:
Elevations are top of concrete pavement. See PCC Pavement Layout Sheets for Concrete Joint Placement Details. Elevations were set to facilitate drainage & vehicle ride through the intersection. Some adjustment during construction may be needed.

Edge of Concrete Pavement

Edge of Subgrade

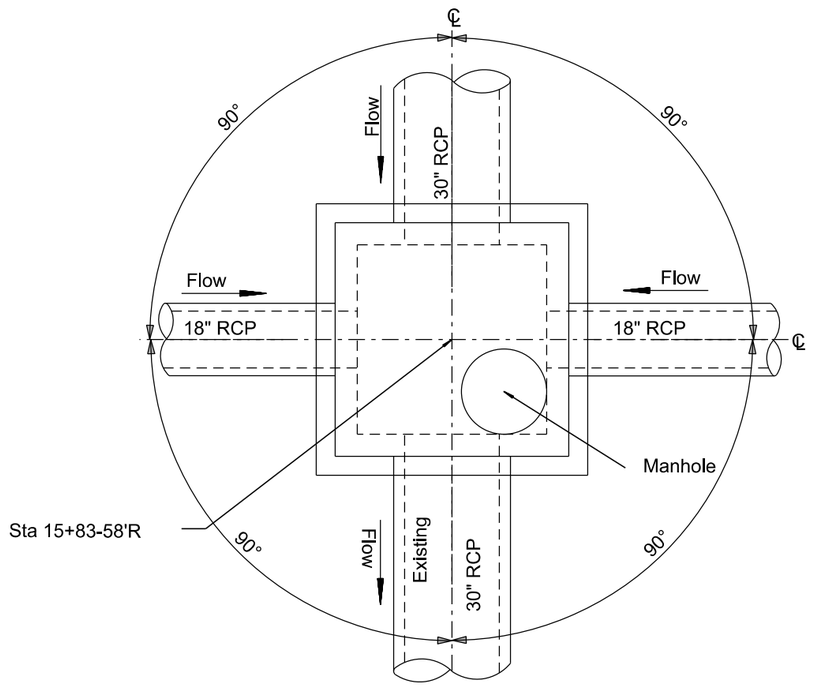
Figure 18-B20 Intersection Layout

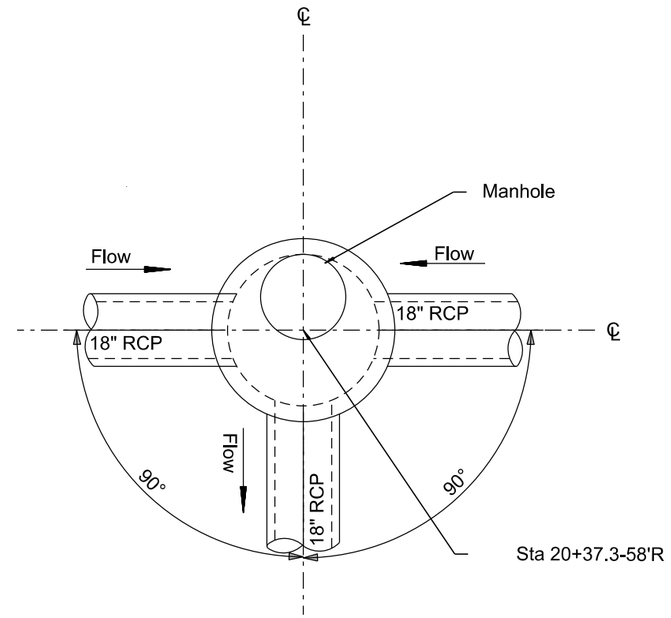
JUNCTION BOX AND MANHOLE LAYOUT

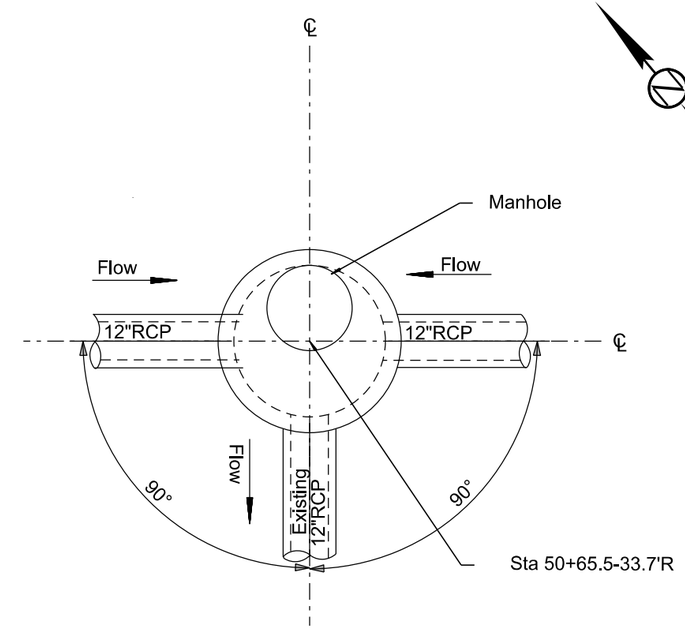
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0014(116)228 & P-PH 0034(12)209	B32	B26

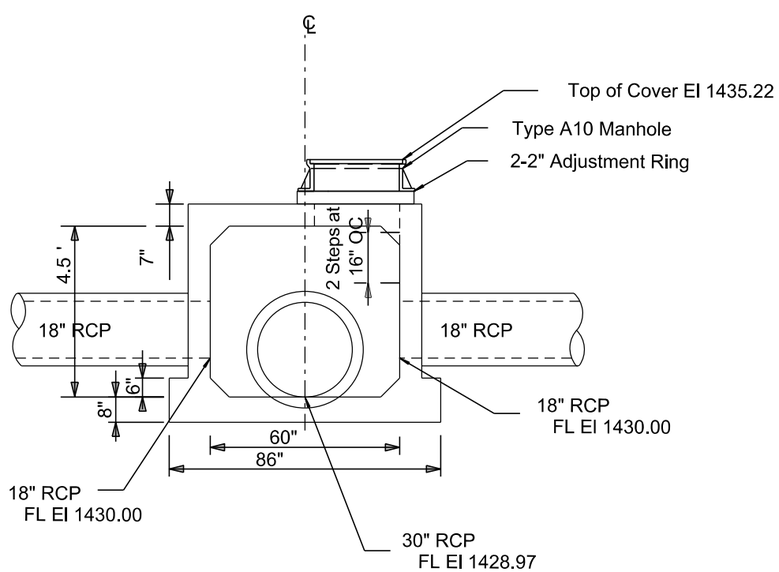
Plotting Date: 01/31/2019

Increasing Stationing

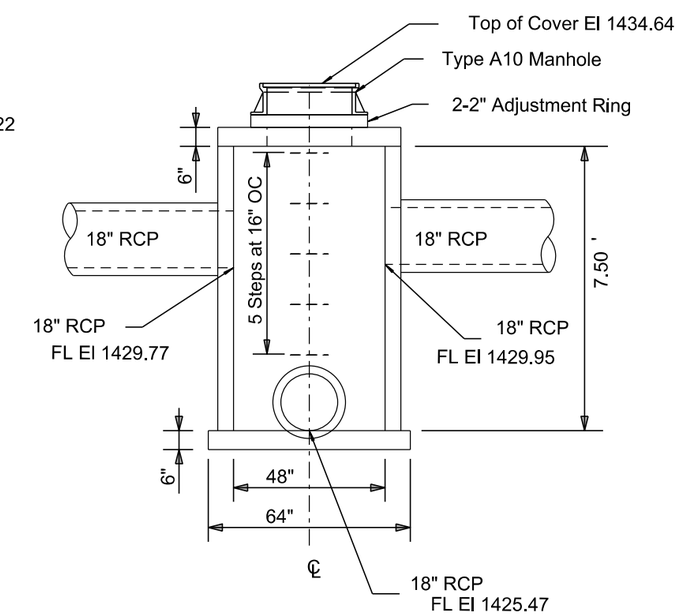




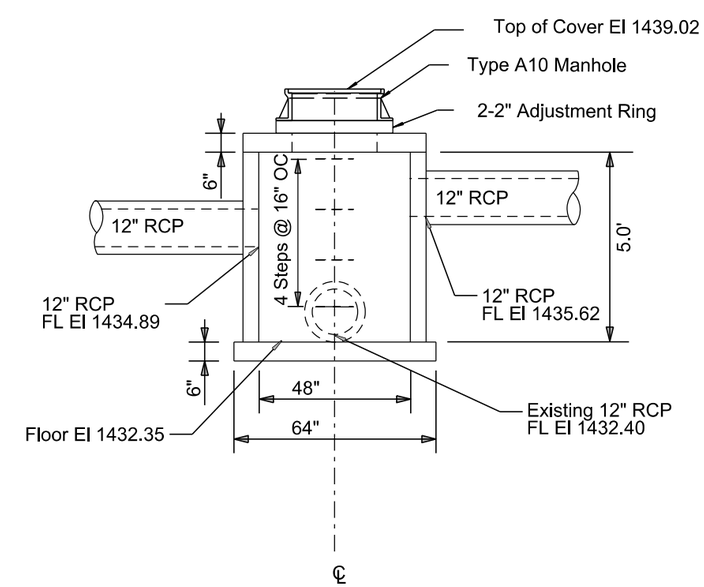




Sta. 15+83-58'R
5'x 5' Junction Box



Sta. 20+37.3-58'R
48" Manhole



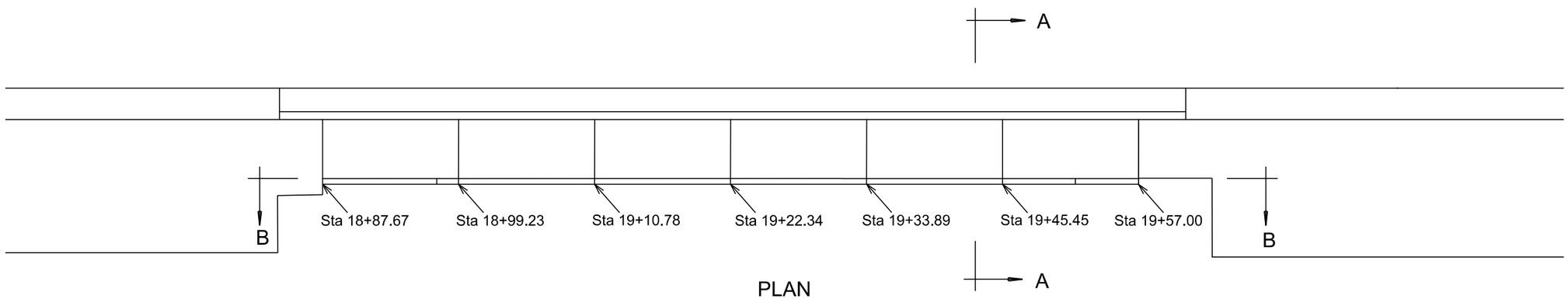
Sta. 50+65.5-33.7'R
48" Manhole

Figure 18-B21 Junction Box and Manhole Layout

RETAINING WALL LAYOUT

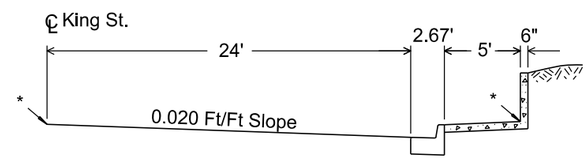
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	F-0050(40)232 P-BRF 0035(14)215	B28	B26

Plotting Date: 01/31/2019



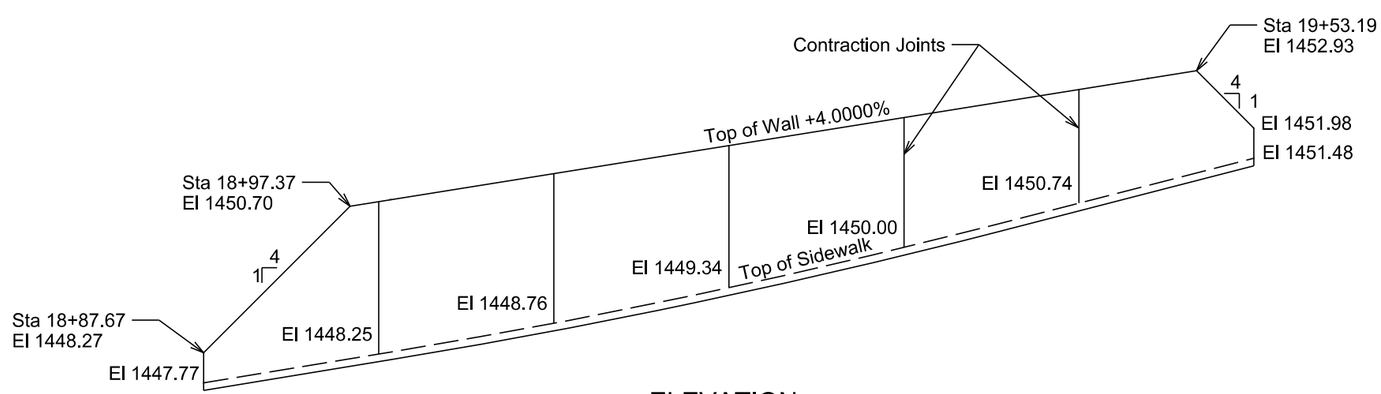
PLAN

Details of Type "C" Retaining Wall



* Elevations are the same

SEC A-A



ELEVATION
SEC B-B

BM #5 Elev 1443.26
Spike in Light Pole 27.2'L
Sta 17+48

BM #6 Elev 1462.76
Spike in Light Pole 27.2'R
Sta 21+16

Figure 18-B22 Retaining Wall Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0012(89)289	B23	B86

Plotting Date: 12/01/2017 Rev July 29,2008 SB

Take Out 30" Clay Pipe
at the following locations:
(Incidental Work, Grading)
22+09-10' R to 25+74-10' R
25+74-10' R to 28+97-9' R

Take Out 15" Clay Pipe
at the following locations:
(Incidental Work, Grading)
22+09-10' R to 22+08-21' L
22+08-72' R to 22+09-10' R
22+08-21' L to 22+08-133' L
25+74-10' R to 25+74-73' L
25+74-10' R to 25+75-73' L

Take Out 12" RCP
at the following locations:
(Incidental Work, Grading)
21+55-30' R to 21+65-48' L
21+55-30' L to 22+07-21' L
21+86-54' R to 21+87-39' R
21+87-39' R to 21+17-41' R
22+09-10' R to 22+21-56' R
22+08-21' L to 22+42-30' L
22+42-30' L to 22+46-74' L
25+28-31' L to 25+74-10' R
25+55-47' R to 25+83-47' R
25+74-10' R to 25+83-47' R
25+74-10' R to 26+08-31' L

Remove Drop Inlets
at the following locations:
21+65-49' L
22+47-74' L
21+86-54' R
22+22-56' R
25+28-32' L
26+08-33' L
25+54-47' R
25+84-47' R

Install 48" Precast Manholes
and Special Manhole Frame and Lid
at the following locations:
22+08.39-56.23' R
25+74.10-56.28' R
25+74.65-48.96' L

Remove Manholes
at the following locations:
22+08-21' L
22+09-10' R
25+74-10' R

Install 7' X 11' Type S Drop Inlet Base
and Precast Concrete Type S Drop
Inlet Lid at the following locations:
21+57.50-35.67' R
22+50.66-35.67' R
24+43.60-35.67' R
25+32.98-35.67' R
26+11.71-35.67' R

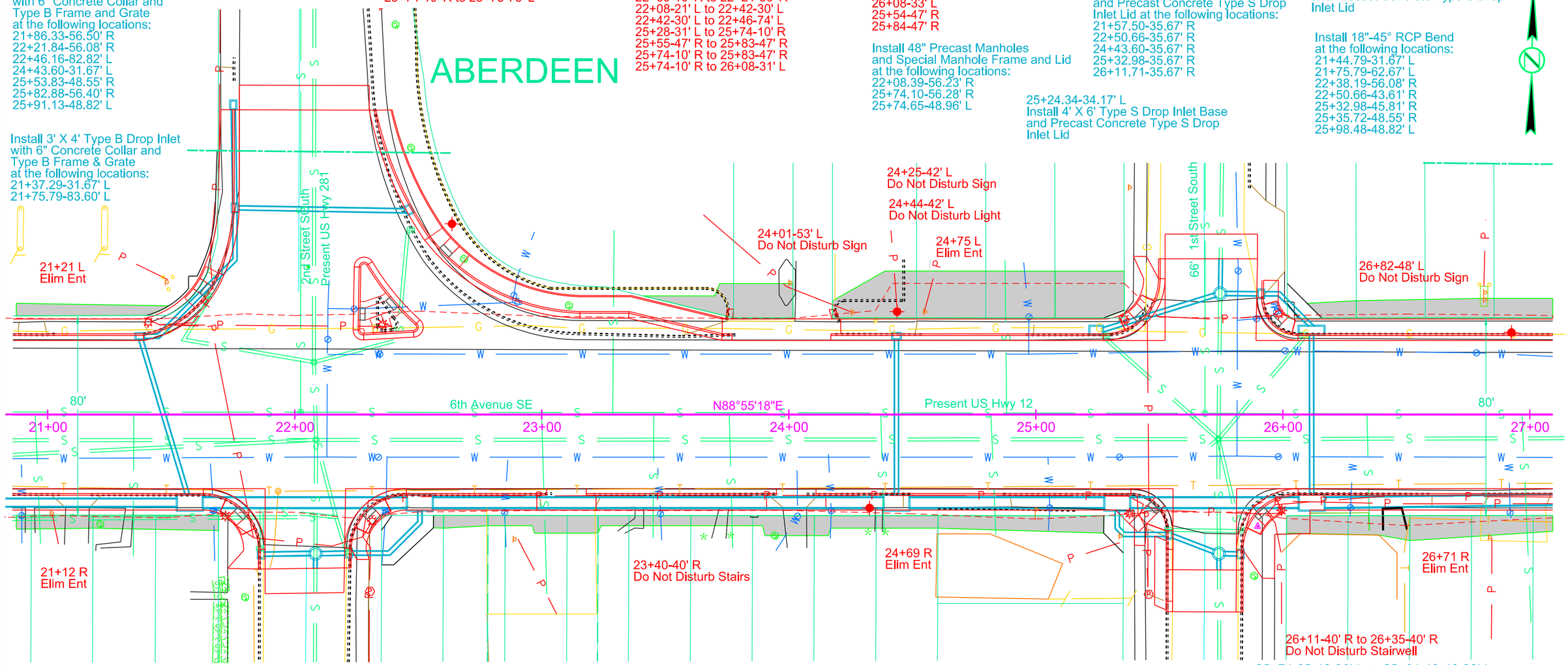
26+11.63-34.17' L
Install 4' X 11' Type S Drop Inlet Base
and Precast Concrete Type S Drop
Inlet Lid

Install 18"-45° RCP Bend
at the following locations:
21+44.79-31.67' L
21+75.79-62.67' L
22+38.19-56.08' R
22+50.66-43.61' R
25+32.98-45.81' R
25+35.72-48.55' R
25+98.48-48.82' L

25+24.34-34.17' L
Install 4' X 6' Type S Drop Inlet Base
and Precast Concrete Type S Drop
Inlet Lid

Install 2' X 3' Type B Drop Inlet
with 6" Concrete Collar and
Type B Frame and Grate
at the following locations:
21+86.33-56.50' R
22+21.84-56.08' R
22+46.16-82.82' L
24+43.60-31.67' L
25+53.83-48.55' R
25+82.88-56.40' R
25+91.13-48.82' L

Install 3' X 4' Type B Drop Inlet
with 6" Concrete Collar and
Type B Frame & Grate
at the following locations:
21+37.29-31.67' L
21+75.79-83.60' L



21+37.29-31.67' L to 21+57.50-35.67' R
Install 24"-66' RCP
(Between Drop Inlets)

21+37.29-31.67' L to 21+44.79-31.67' L
Install 24"-4' RCP
(Between Drop Inlet & Bend)

21+44.79-31.67' L to 21+75.79-62.67' L
Install 24"-40' RCP
(Between Bends)

21+57.50-35.67' R to 22+50.66-35.67' R
Install 48"-84' RCP
(Between Drop Inlets)

21+75.79-62.67' L to 21+75.79-83.60' L
Install 24"-18' RCP
(Between Bend & Drop Inlet)

21+75.79-83.60' L to 22+46.16-82.82' L
Install 18"-68' RCP
(Between Drop Inlets)

21+75.79-83.60' L to 21+75.13-125.29' L
Install 24"-40' RCP
(Between Drop Inlet & Existing Drop)

21+86.33-56.50' R to 22+08.39-56.23' R
Install 18"-20' RCP
(Between Drop Inlet & Manhole)

22+08.39-56.23' R to 22+08.30-62.10' R
Install 15"-4' RCP
(Between Manhole & Existing)

22+08.39-56.23' R to 22+21.84-56.08' R
Install 18"-12' RCP
(Between Manhole & Drop Inlet)

22+21.84-56.08' R to 22+38.19-56.08' R
Install 18"-14' RCP
(Between Drop Inlet & Bend)

22+38.19-56.08' R to 22+50.66-43.61' R
Install 18"-14' RCP
(Between Bends)

22+50.66-43.61' R to 22+50.66-35.67' R
Install 18"-4' RCP
(Between Bend & Drop Inlet)

22+50.66-35.67' R to 24+43.60-35.67' R
Install 48"-184' RCP
(Between Drop Inlets)

24+43.60-31.67' L to 24+43.60-35.67' R
Install 18"-64' RCP
(Between Drop Inlets)

24+43.60-35.67' R to 25+32.98-35.67' R
Install 48"-72' RCP
(Between Drop Inlets)

25+24.34-34.17' L to 25+74.65-48.96' L
Install 18"-50' RCP
(Between Drop Inlet & Manhole)

25+32.98-35.67' R to 26+11.71-35.67' R
Install 48"-78' RCP
(Between Drop Inlets)

25+32.98-35.67' R to 25+32.98-45.81' R
Install 18"-6' RCP
(Between Drop Inlet & Bend)

25+35.72-48.55' R to 25+53.83-48.55' R
Install 18"-16' RCP
(Between Bend & Drop Inlet)

25+53.83-48.55' R to 25+74.10-56.28' R
Install 18"-18' RCP
(Between Drop Inlet & Manhole)

25+74.10-56.28' R to 25+82.88-56.40' R
Install 18"-6' RCP
(Between Manhole & Drop Inlet)

25+74.10-56.28' R to 25+74.08-62.95' R
Install 15"-6' RCP
(Between Manhole & Existing)

25+74.65-48.96' L to 25+91.13-48.82' L
Install 18"-14' RCP
(Between Manhole & Drop Inlet)

25+74.65-48.96' L to 25+74.89-63.14' L
Install 15"-14' RCP
(Between Manhole & Existing)

25+91.13-48.82' L to 25+98.48-48.82' L
Install 18"-6' RCP
(Between Drop Inlet & Bend)

26+11.71-35.67' R to 26+11.63-34.17' L
Install 18"-66' RCP
(Between Drop Inlets)

26+11.71-35.67' R to 29+34.91-31.67' R
Install 48"-316' RCP
(Between Drop Inlets)

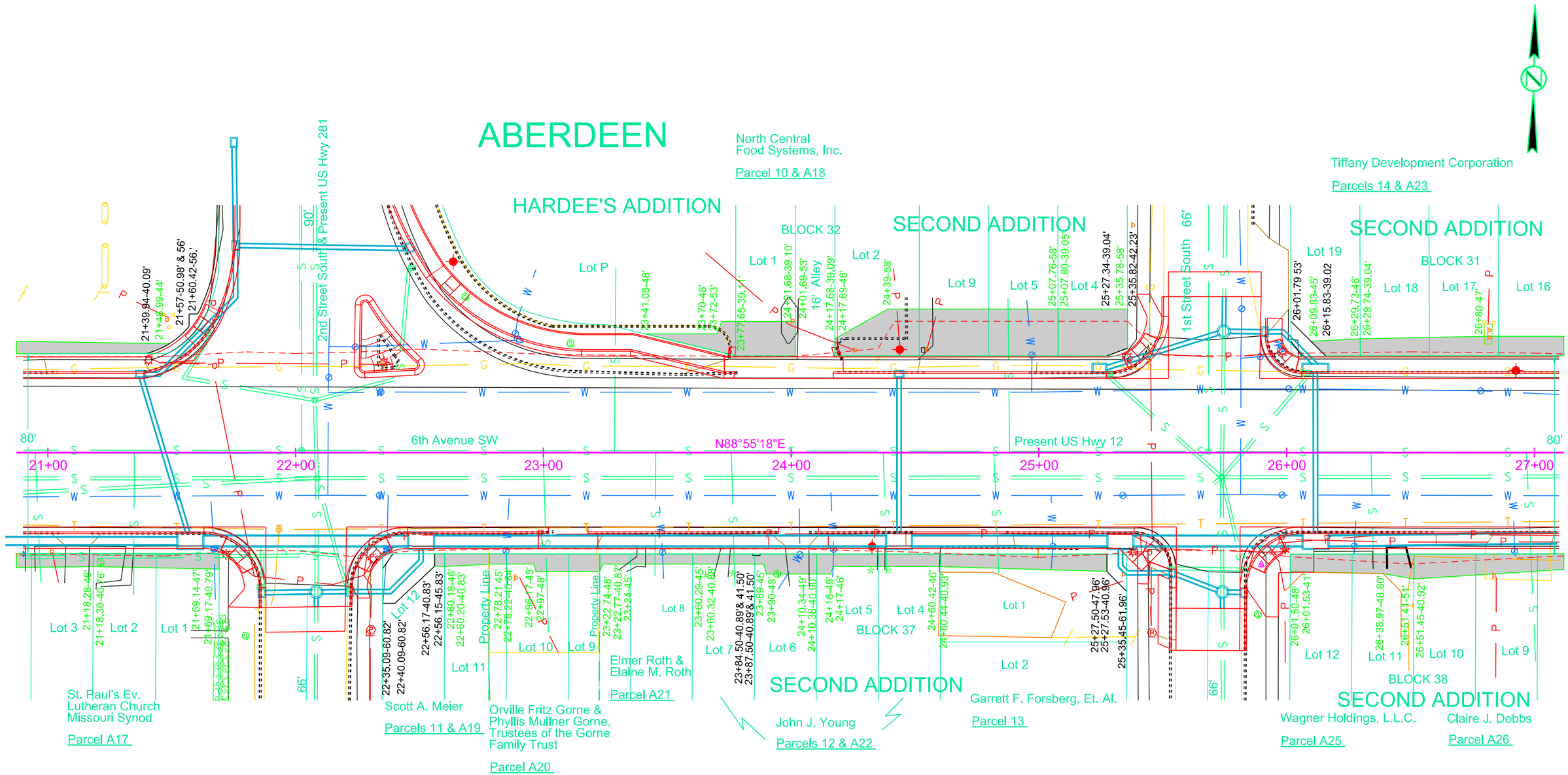
25+98.48-48.82' L to 26+11.63-34.17' L
Install 18"-18' RCP
(Between Bend & Drop Inlet)

Figure 18-B23 Plan Sheet without ROW Notes

ROW LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0012(89)289	B20	B86

Plotting Date: 12/01/2017



Parcel A19
22+60.18 to 22+78.22 R
Temporary Easement containing
84 sq ft, more or less

Parcel A18
24+17.68 to 25+07.80 L
Temporary Easement containing
1577 sq ft, more or less

Parcel A17
21+18.28 to 21+69.17 R
Temporary Easement containing
291 sq ft, more or less

Parcel A20
22+78.21 to 23+22.77 R
Temporary Easement containing
263 sq ft, more or less

Parcel A18
23+41.08 to 24+01.69 L
Temporary Easement containing
530 sq ft, more or less

Parcel 13
24+60.42 to 25+27.53 R
Temporary Easement containing
405 sq ft, more or less

Parcel A25
26+01.50 to 26+51.45 R
Temporary Easement containing
390 sq ft, more or less

Parcel A23
26+29.73 to 27+43.39 L
Temporary Easement containing
870 sq ft, more or less

Parcel 11
22+56.15 to 22+60.20 R
Temporary Easement containing
20 sq ft, more or less

Parcel A21
23+22.74 to 23+60.32 R
Temporary Easement containing
157 sq ft, more or less

Parcel 12
23+60.29 to 24+10.38 R
Temporary Easement containing
287 sq ft, more or less

Parcel A22
24+10.34 to 24+60.44 R
Temporary Easement containing
273 sq ft, more or less

Parcel 10
25+07.76 to 25+35.82 L
Temporary Easement containing
518 sq ft, more or less

Parcel 14
26+09.83 to 26+29.74 L
Temporary Easement containing
111 sq ft, more or less

Parcel A26
26+51.41 to 27+51.29 R
Temporary Easement containing
881 sq ft, more or less

Figure 18-B24 ROW Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0012(89)289	B16	B86

Plotting Date: 01/31/2019

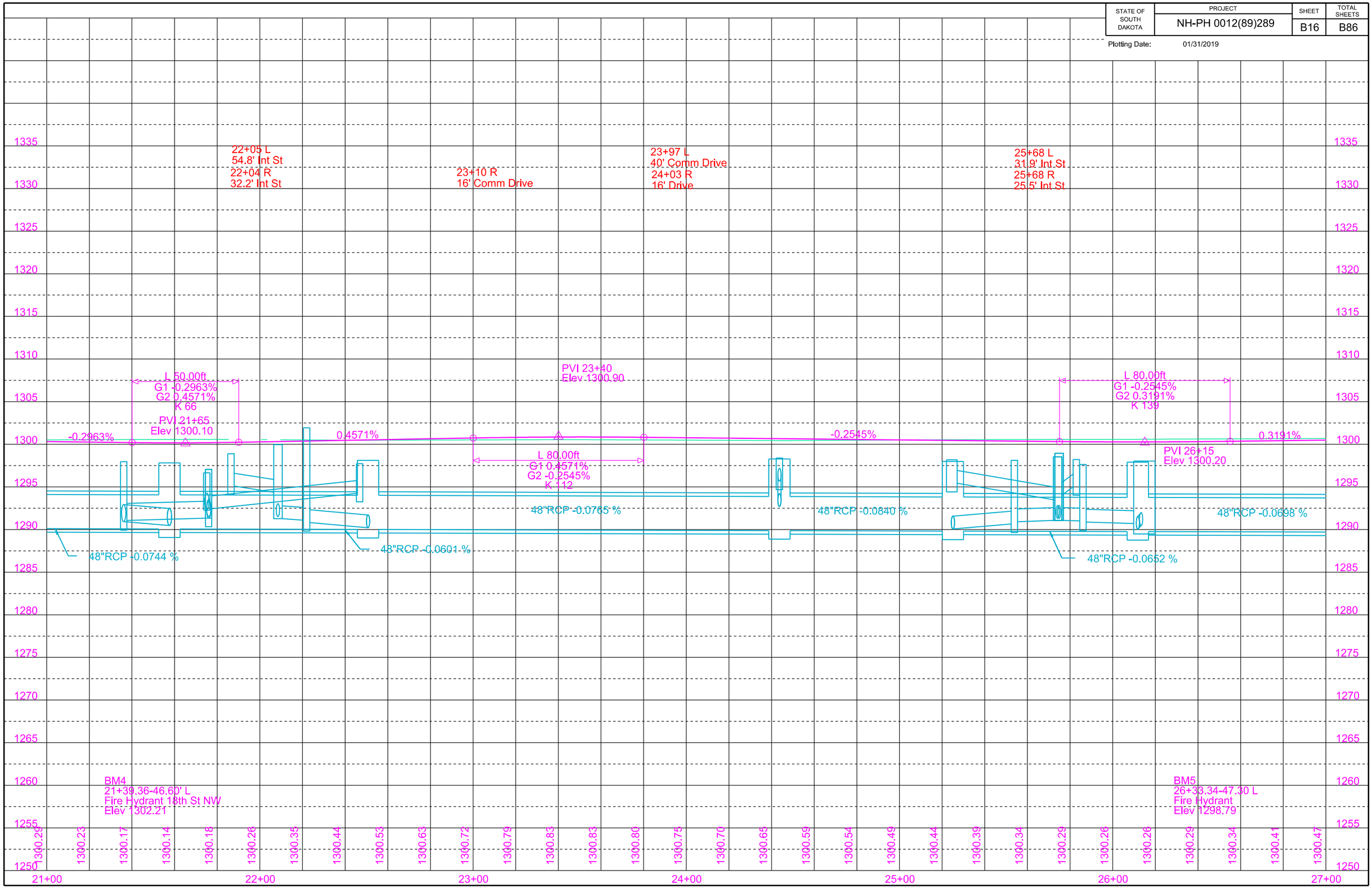


Figure 18-B25 Urban Profile wihen using Storm Sewer Layout

STORM SEWER LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0012(89)289	B36	B86

Plotting Date: 05/19/2015

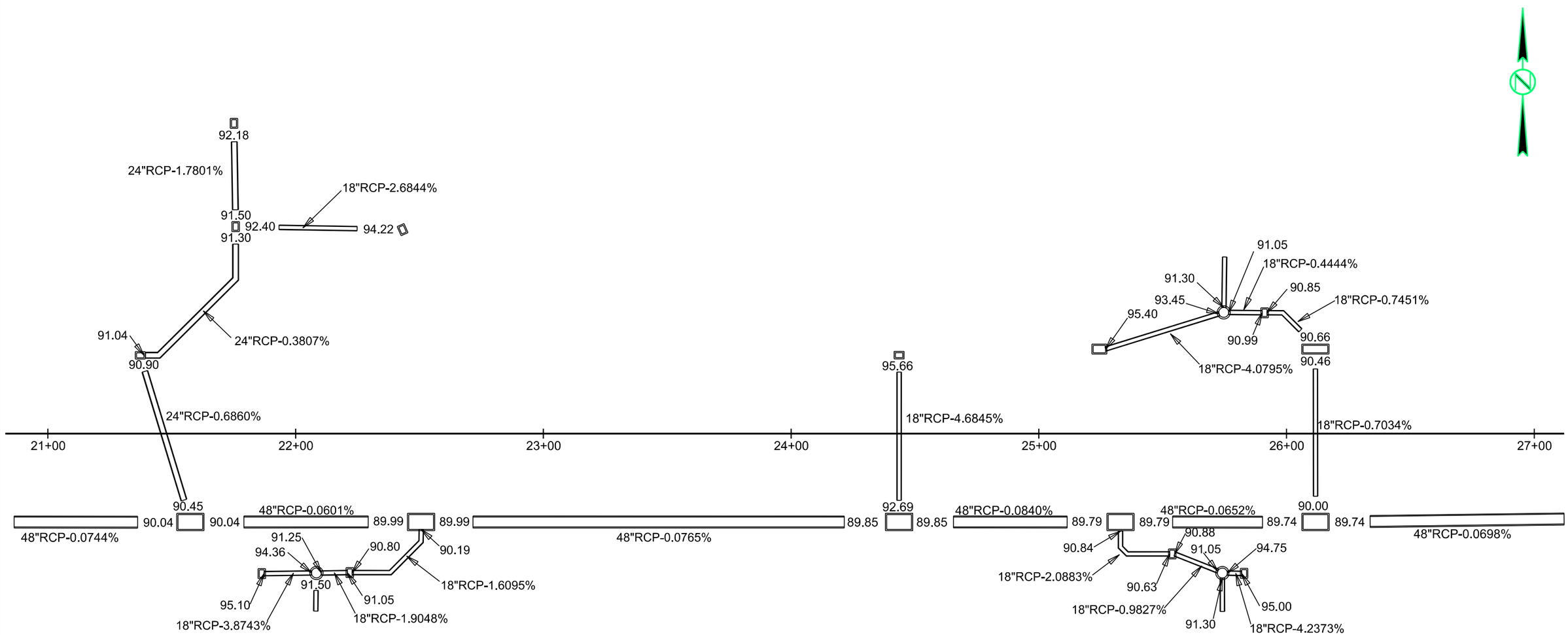
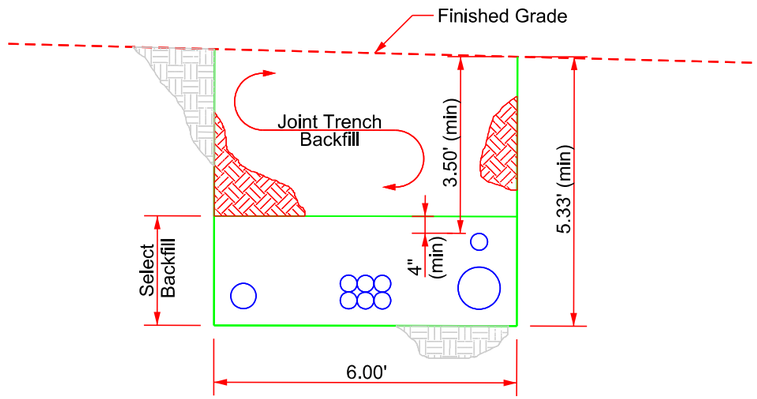


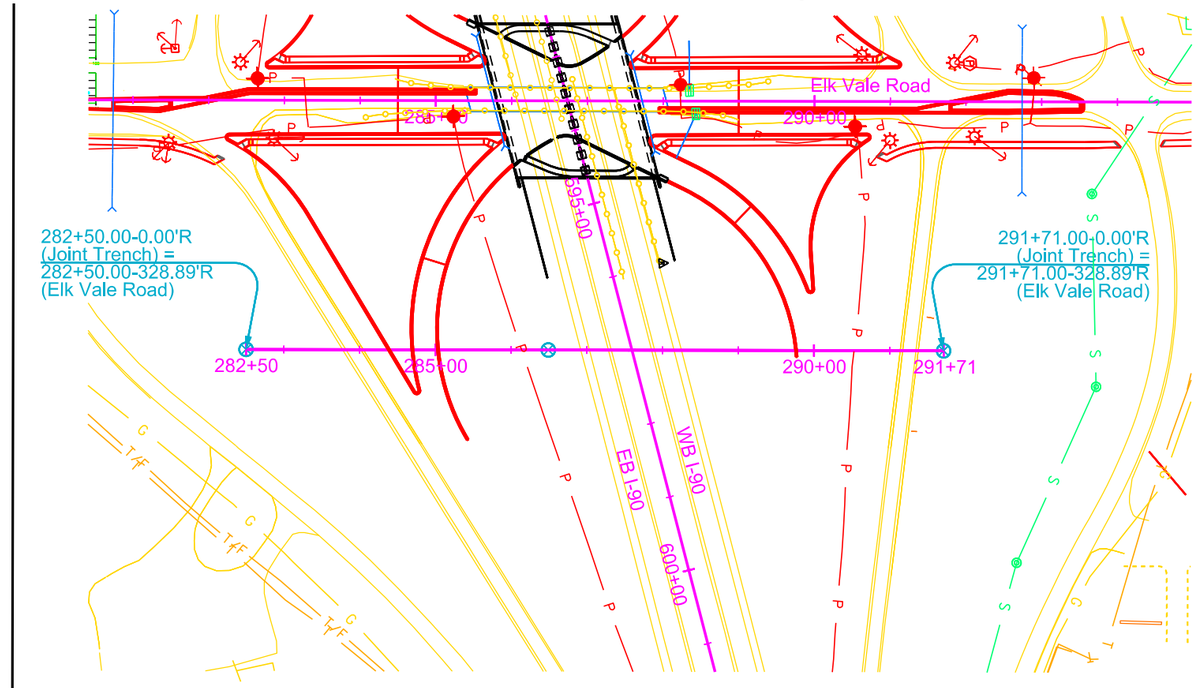
Figure 18-B26 Storm Sewer Layout

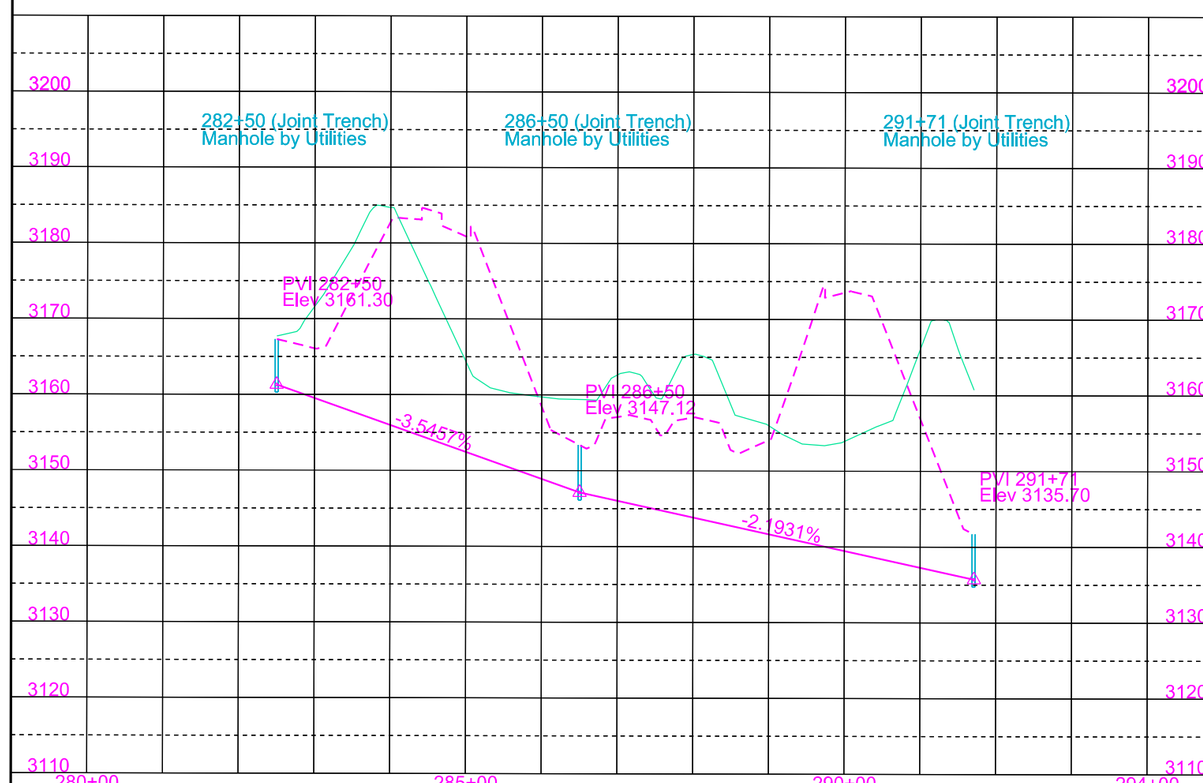
JOINT TRENCH LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0902(39)61	B30	B124

Plotting Date: 05/19/2015







Utility Contact Information

Montana Dakota Utilities
Rick Himmelspach (Main Contact for Group)
718 Steele Avenue
P.O. Box 1060
Rapid City, SD 57709
605-390-5073 (Cell)
605-355-4031 (Office)
605-335-4036 (Fax)

Midcontinent Communications
Terry Hofer
605-209-2113 (Cell)
605-342-1870 Ext. 123 (Office)

Qwest Communications
Roy Boone Keith Nelson
605-390-3378 (Cell) 605-484-2667 (Cell)
605-394-4598 (Office) 605-394-4720 (Office)

West River Electric
Mike Letcher Dan Muth
605-381-0289 (Cell) 605-381-6461 (Cell)
605-393-1500 (Office) 605-393-1500 (Office)

Prairie Wave Communications
Norm Bunch
605-381-5585 (Cell)
605-721-2779 (Office)

The Contractor shall excavate the joint trench as detailed herein. Before starting the joint trench excavation, an excavation plan conforming to OSHA requirements shall be submitted for approval by the Contractor.

Conduit, piping, wiring and manholes shall be furnished and installed by the Utilities. The installation of these facilities shall coincide with the sequencing of grading operations as detailed in Section C. Each sequence of installation shall begin at mainline centerline and progress out to the end manholes. Seven (7) days will be allowed for facilities installation per grading operation sequence.

The Contractor shall backfill the joint trench as per the Standard Specifications. Select backfill furnished and stockpiled by the Utilities shall be used in and around the Utility facilities to a height of 4" above the highest conduit, pipe or wire. A representative from the Utilities shall be present to observe the backfilling of the select backfill material. The remainder of the trench shall be backfilled with native material or as specified elsewhere in the plans.

The Contractor shall contact the Utilities to schedule and coordinate the joint trench work.

Joint trench excavation and backfill shall be paid for at the contract unit price per cubic yard of Unclassified Excavation and shall include all costs for material, labor and equipment necessary to complete the work, not provided by the Utilities. An estimated 7,207 CuYd of joint trench excavation has been included in the Unclassified Excavation quantities. An additional 1,939 CuYd of Out-of-Balance Excavation from Dyess Avenue will need to be used.

Figure 18-B27 Joint Trench Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(11)48	C1	C26

Plotting Date: 01/31/2019

C1 General Layout
C2-4 Estimate With Notes
C5 Fixed Signing
C6 Crossover Signing
C7 Approches, Sideroads, Temporary Access
C8-C11 Standard Plates

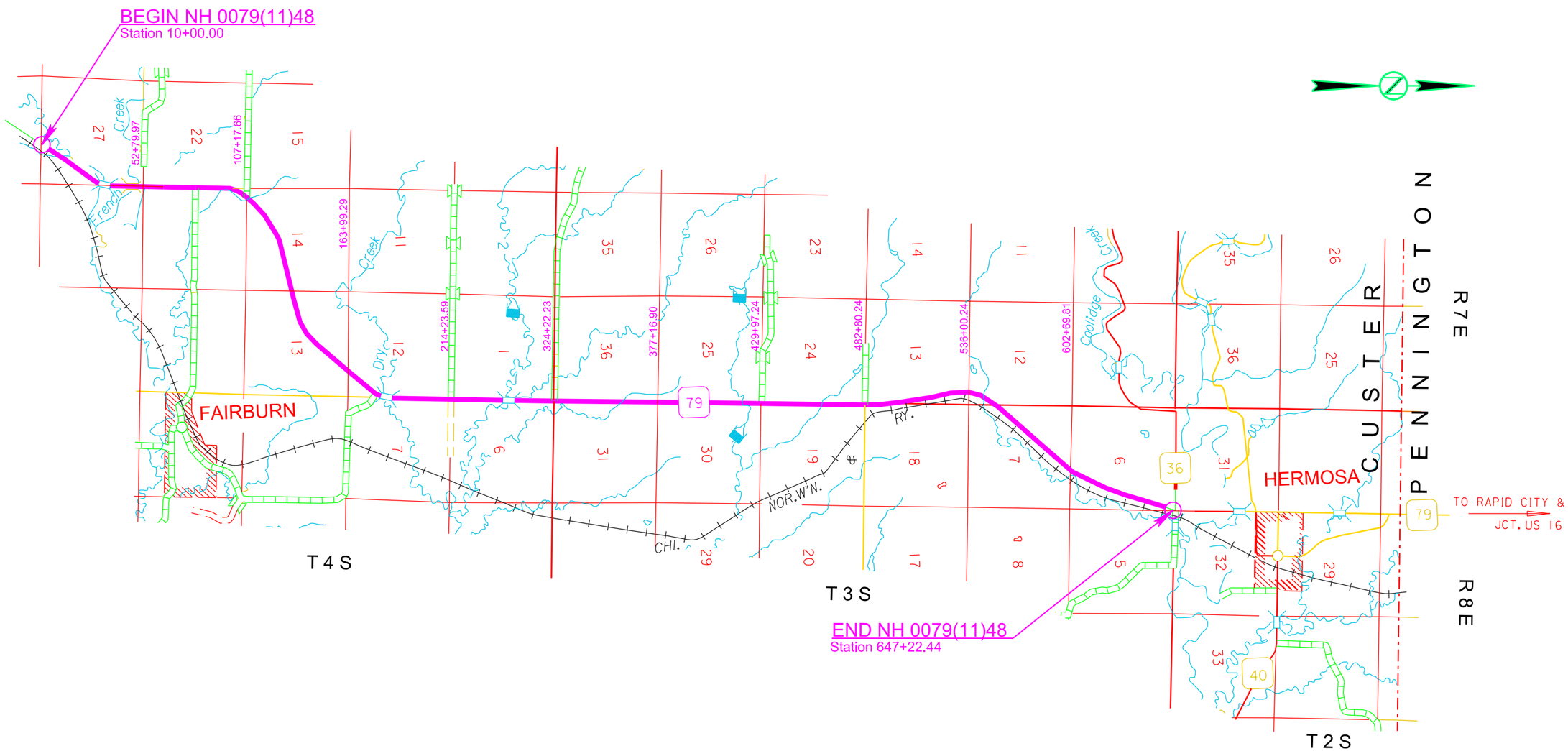


Figure 18-C1 Section Title Sheet

SECTION C ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
632E2000	4"x4" Amber Delineator with 1.12 Lb/Ft Post	217	Each
632E3525	Install State Furnished Sign	5,920.0	SqFt
633E1300	Pavement Marking Paint, White	263	Gal
633E1305	Pavement Marking Paint, Yellow	97	Gal
634E0010	Flagging	500.0	Hour
634E0110	Traffic Control Signs	8,824.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0330	Temporary Raised Pavement Markers	19,000	Ft
634E0560	Remove Pavement Marking, 4" or Equivalent	2,000	Ft

SEQUENCE OF OPERATIONS

Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review a minimum of two weeks prior to potential implementation. An alternate sequence of operations may be allowed when the proposed changes meet the Department's intent for traffic control and sequencing of the work.

SEQUENCE OF OPERATIONS – YEAR 2002

The Contractor will select the location where grading activities commence and may work more than one area at a time as long as Section 120 of the Standard Specifications is adhered to.

Traffic will be maintained on a hard surfaced road at all times with the exception of the pipe installation at Station 627+00. In this area the traffic will be allowed to run on a primed surface for up to four days. The traffic shall then be restored to existing lanes with the asphalt concrete surfacing restored.

Grading operations will be allowed up to the existing shoulder, maintaining 4:1 or flatter inslopes and 3:1 or flatter backslopes at all times.

Complete southbound structure station 50+85.

SEQUENCE OF OPERATIONS – YEAR 2003

No work will be allowed on existing Highway SD79 from Station 10+00 to Station 305+00 until traffic is moved onto the new SB/NB grade in this area. The contractor may work up to the edge of the existing surfacing for crossover work.

Grading operations will be allowed up to the existing shoulder, maintaining a 3:1 slope or flatter on all cut and/or fill slopes except as required to maintain drainage and/or a minimum finished subgrade width of 38'. The use of 2:1 slopes are expected at the following locations: The southbound median fill slope station 186+00 to 188+00 and the northbound cut slope from the existing lanes station 205+00 to 234+00. Any other locations the contractor requests the temporary use of 2:1 slopes will require the approval of the Engineer. All locations requiring 2:1 slopes will require additional delineation consisting of channelizing devices placed @ 25' spacing.

Complete grading, gravel and asphalt surfacing in the southbound lanes from station 10+00 to 211+00 and station 253+00 to 305+00. Complete grading, gravel, asphalt surfacing and pavement marking in the northbound lanes station 195+00 to 257+00. At no time shall traffic be allowed to run on a dirt grade.

Complete grading, gravel, asphalt surfacing and pavement marking of median crossovers at station 10+00, 200+00, 253+00, and 305+00.

Place traffic on newly constructed southbound lanes station 10+00 to 200+00, northbound lanes station 200+00 to 253+00, southbound lanes station 253+00 to 305+00, and return to existing lanes.

Once traffic is placed on the newly constructed northbound lanes from station 200+00 to 253+00 sixty calendar days will given for the completion of the southbound lanes station 200+00 to 253+00. The day count will end when all grading, gravel, asphalt surfacing and pavement marking in the southbound lanes is complete from station 10+00 to station 305+00 and traffic is placed entirely on the new southbound grade. Liquidated damages will be assessed in accordance with section 8.7 of the Standard Specifications for each day beyond the sixty calendar days traffic is not entirely on the southbound lanes from station 10+00 to 305+00.

Place traffic on newly constructed southbound lanes station 10+00 to 305+00.

Remove crossovers at station 200+00 and 253+00.

Construct northbound structure and asphalt approach paving station 50+85.

Construct grading, gravel and asphalt surfacing in the northbound lanes station 77+00 to 115+00, station 162+00 to 195+00, and station 257+00 to 266+00.

Complete pipe installation and asphalt patching station 268+51 and 2-9' x 8' RCBC and asphalt patching station 299+50.

Restore traffic to existing northbound lanes.

Remove crossover at station 305+00.

TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC

Traffic control shall be according to the Standard Specifications, applicable MUTCD standards, and all plan requirements.

The Contractor will be required to maintain traffic in accordance with section 4.4 of the standard specifications.

Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Hours of darkness are defined as one-half hour after sunset until one-half hour before sunrise.

Existing pavement marking which conflicts with the desired traffic patterns detailed in traffic control layouts in the plans shall be removed by the Contractor unless otherwise shown. The cost of permanent marking removal shall be at the contract unit price per foot for Remove Pavement Marking, 4" or Equivalent.

The Contractor shall repair any damage to the shoulders, median, or ditch due to the Contractor's operations to the satisfaction of the Engineer, at no expense to the State.

Certified flaggers, properly attired, and preceded by W20-7a FLAGGER symbol signs are required where work activity and/or equipment presents a hazard to the workers, a hazard to the through traffic, or encroaches into a lane open to traffic.

Two way traffic shall be maintained at all times. Highway 79 traffic shall not be stopped at any time. A 22 ft. minimum width driving surface will be required for two-way traffic.

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

All materials and equipment shall be stored a minimum distance of 30 feet from the traveled lanes during non-work hours.

Non-applicable traffic control devices shall be removed and stored as near as possible to the right-of-way line.

Storage of vehicles and equipment shall be as near the right-of-way as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall designate an employee whose responsibility is the maintenance of traffic, 24 hours a day and 7 days a week. The person so designated must have training and experience in the field of construction traffic control and be knowledgeable about the Manual on Uniform Traffic Control Devices (MUTCD). The cost of the traffic control person shall be incidental to the contract lump sum price for Traffic Control Miscellaneous. The employee selected must be approved by the Engineer. The name, phone number, and location of person(s) shall be provided to the SD Department of Transportation, SD Highway Patrol, county sheriff's department and the local city police department.
The Contractor will be assessed a payment deduction of $100.00 for non-conformance with Traffic Control requirements that are not corrected within 2 hours of notification to the contractor. Any infraction not corrected within an additional 2 hours may be considered an additional infraction. The Engineer will inform the Contractor of each infraction of the above provisions for which the assessed deduction will be invoked. Other Traffic Control Plan requirement violations as noted by the Engineer are also subject to price adjustments

Figure 18-C2 Estimate of Quantities with General Notes and Tables

CONSTRUCTION SEQUENCE

10+00 TO 302+00

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(11)47	C5	C12

Plotting Date: 11/26/2018

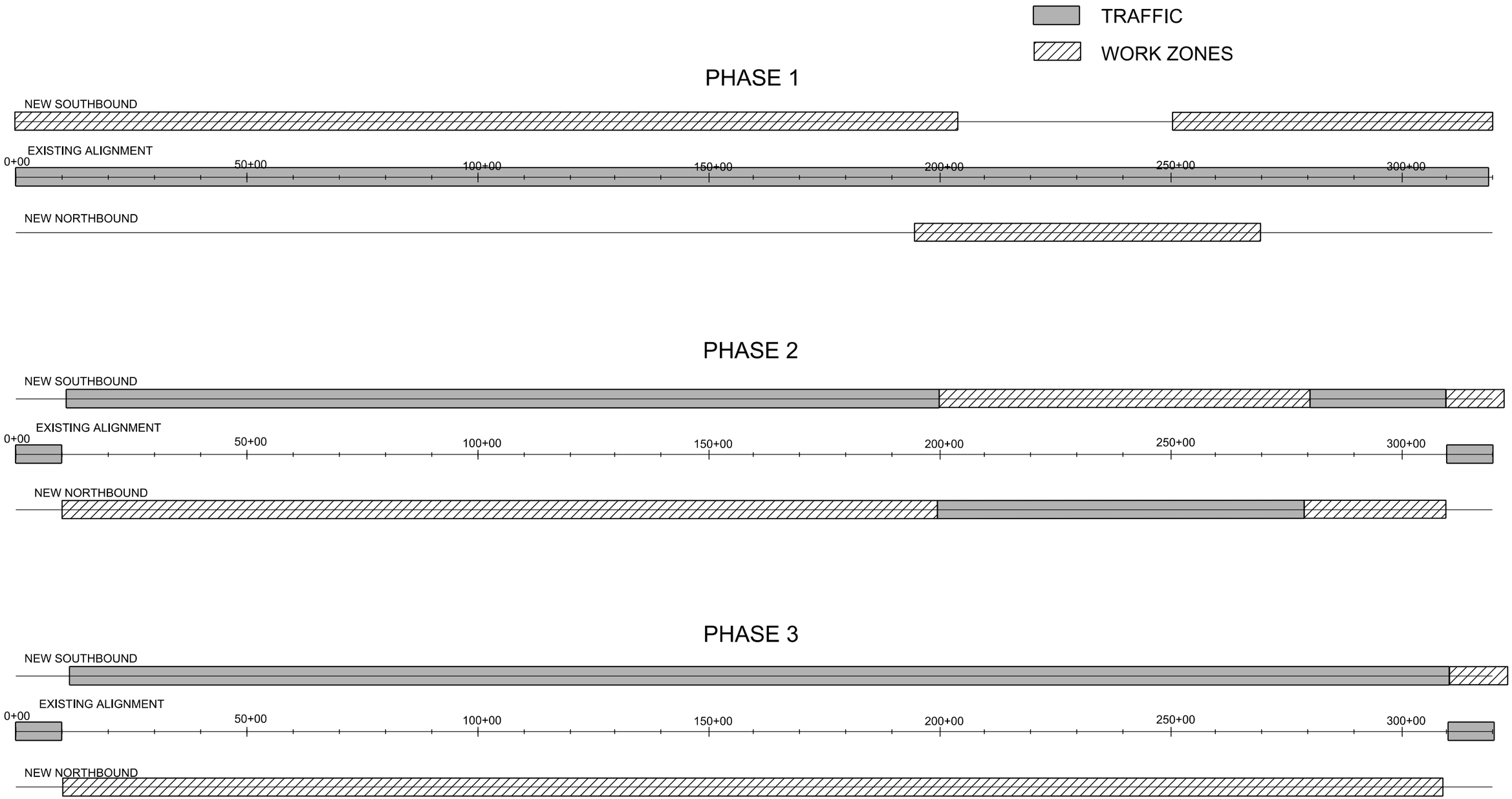


Figure 18-C3 Construction Sequence

Fixed Signing

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(11)47	C5	C11

Plotting Date: 10/18/2012

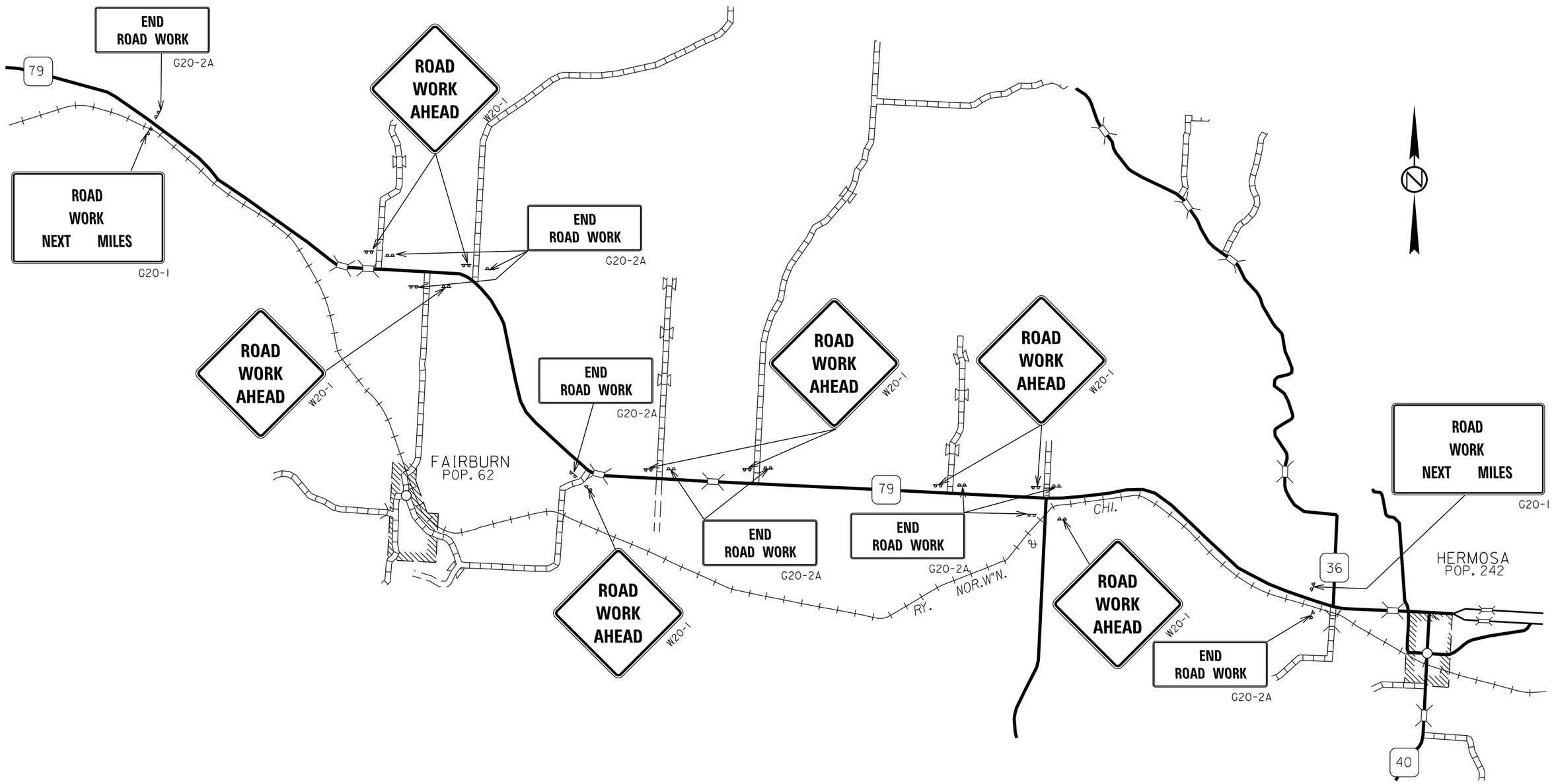
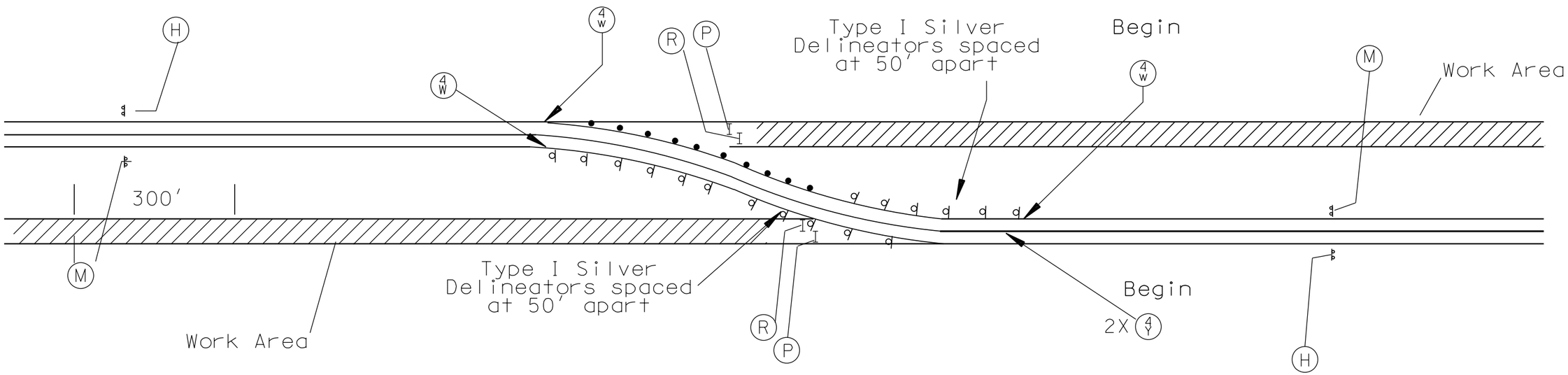


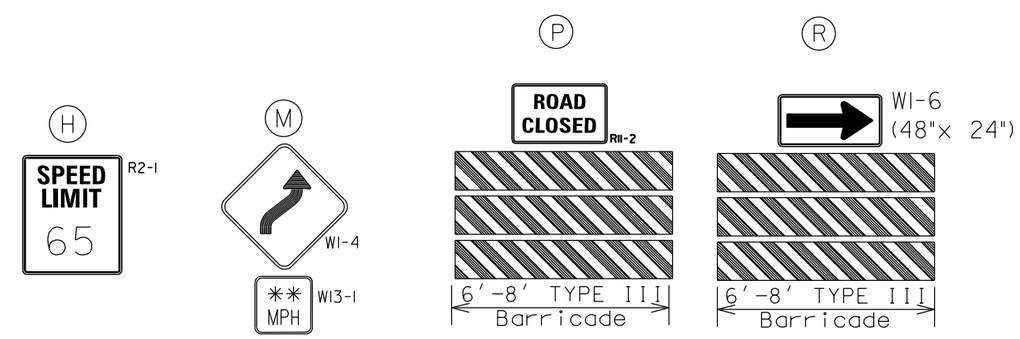
Figure 18-C4 Fixed Signing

Crossover Signing

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(11)47	C5	C11

Plotting Date: 02/01/2019





** NEED AND SAFE SPEED TO BE DETERMINED AT THE SITE

Pavement markings no longer applicable shall be removed or obliterated as soon as practicable. Interim markings shall be used as necessary.

Figure 18-C5 Crossover Signing

SECTION D: EROSION AND SEDIMENT CONTROL PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0212(93)295	D1	D30

Plotting Date: 05/19/2015

INDEX OF SHEETS

D1 General Layout with Index
D2-D4 Estimate with General Notes and Tables
D5-D7 Storm Water Pollution Prevention Plan (SWPPP) Checklist
D8-D26 Erosion and Sediment Control Plan Sheets
D27-D30 Standard Plates

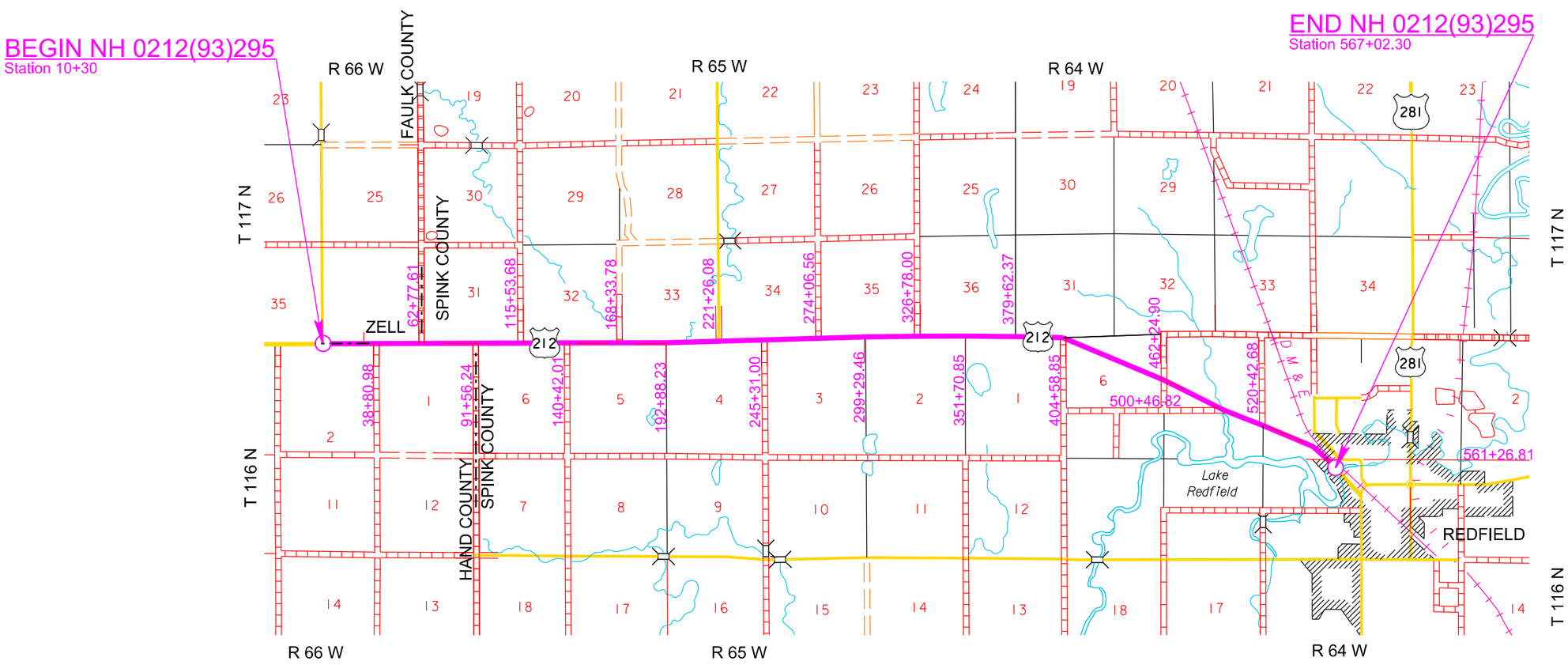


Figure 18-D1 Section Title Sheet (Grading)

SECTION D: EROSION AND SEDIMENT CONTROL PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0018(138)45	D1	D9

Plotting Date: 05/22/2015

LEGEND

- Drainage Arrows
- VB Vegetated Buffer Strips
- CE Stabilized Construction Entrances
- TS Topsoil Stockpiles
- M On-Site Construction Material Storage Areas
- D Dumpster or other Trash and Debris Containers
- V Vehicle and Equipment Parking, Fueling, and Maintenance Areas
- CP Concrete Plant Sites
- CW Concrete Washouts
- AP Asphalt Plant Sites
- WP Work Platform
- B Borrow Areas
- SK Spill Kit

Symbols in the Legend that apply to this project are to be shown on this Title Sheet to update the SWPPP.

INDEX OF SHEETS

D1 General Layout with Index
D2-D4 Estimate with General Notes and Tables
D5-D7 Stormwater Pollution Prevention Plan Checklist
D8 Standard Drawing
D9 Standard Plate

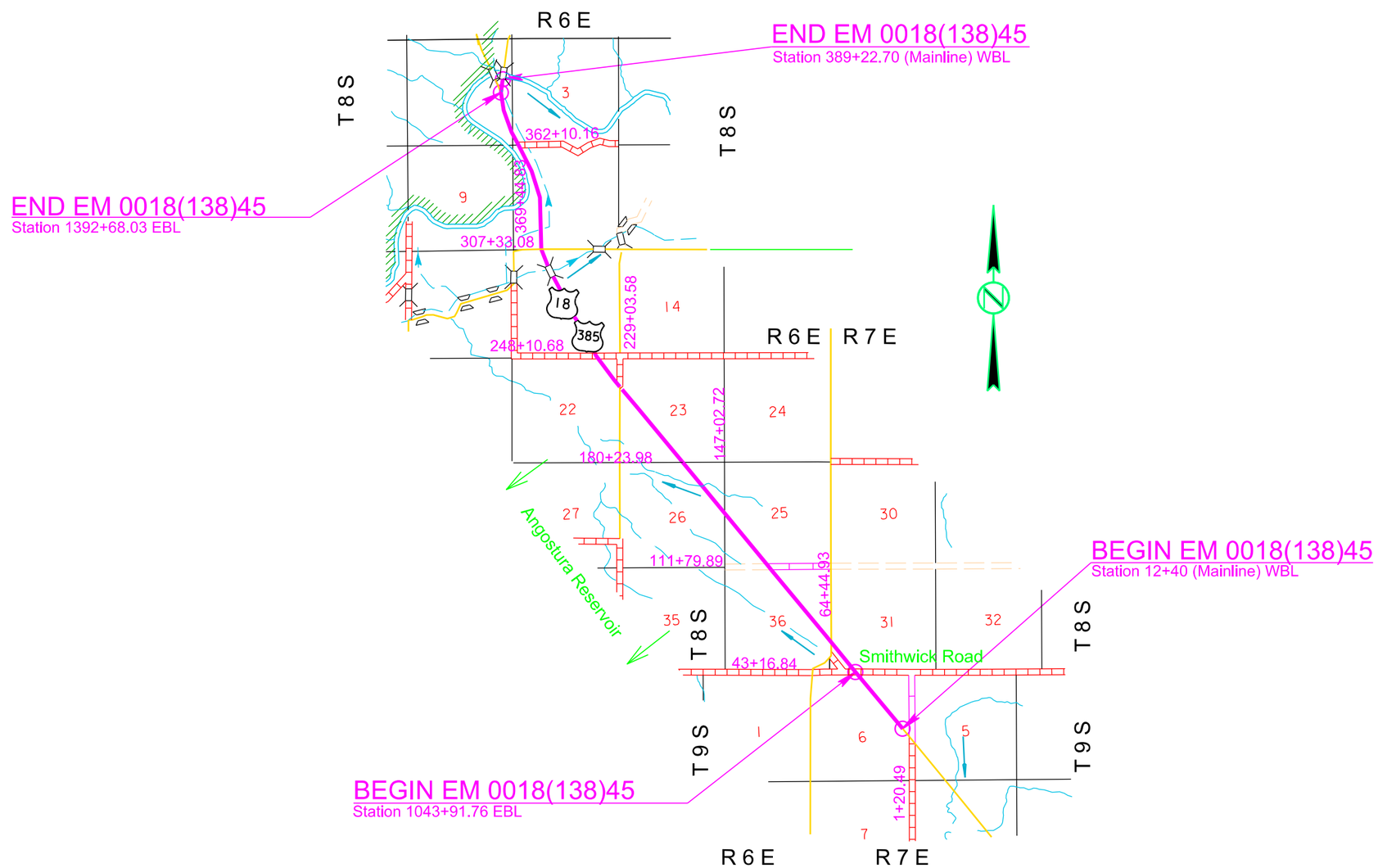


Figure 18-D2 Section Title Sheet (Resurfacing)

SECTION D ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1693	Remove Erosion Control Wattle	75	Ft
110E1700	Remove Silt Fence	8 092	Ft
230E0010	Placing Topsoil	92 076	CuYd
730E0100	Cover Crop Seeding	7	Bu
730E0202	Type B Permanent Seed Mixture	2 916	Lb
730E0251	Special Permanent Seed Mixture 1	213	Lb
731E0200	Fertilizing	8.8	Ton
732E0100	Mulching	420	Ton
734E0100	Standard Erosion Control Blanket	7 437	SqYd
734E0110	High Velocity Erosion Control Blanket	442	SqYd
734E0154	12" Diameter Erosion Control Wattle	75	Ft
734E0510	Shaping for Erosion Control Blanket	4 650	
734E0602	Low Flow Silt Fence	6 062	Ft
734E0604	High Flow Silt Fence	2 052	Ft
734E0610	Mucking Silt Fence	2 248	CuYd
734E0620	Repair Silt Fence	2 023	Ft

CONTOUR LINES

The contour lines as shown in the erosion and sediment control plan details depict the original ground contours.

CRITICAL AREAS

The location(s) labeled in the plan sheets are environmentally sensitive areas. Extra measures should be taken to ensure proper water quality standards. Additional quantities of Low Flow Silt Fence, High Flow Silt Fence, Erosion Control Wattles, and Hay or Straw Mulch have been added for temporary erosion control measures. No additional payment will be made for Critical Areas.

RAPID STABILIZATION

These areas are environmentally sensitive and are denoted in the plans to make all aware of sensitive areas during construction. Areas of Rapid Stabilization shall be installed within 48 hours. No additional payment will be made for items requiring Rapid Stabilization.

PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements. The topsoil thickness for the option borrow pits shall be as stated on the option borrow pit sheets.

The estimated amount of topsoil to be placed is as follows:

Station to	Station	Topsoil (CuYd)
10+00 (BEGIN)	30+00	2899
30+00	60+00	3128
60+00	90+00	3706
90+00	120+00	2620
120+00	150+00	2448
150+00	180+00	2106
180+00	210+00	2312
210+00	232+00 (BEGIN EXCEPTION)	1913
281+00 (END EXCEPTION)	300+00	2716
300+00	330+00	3231
330+00	360+00	3631
360+00	390+00	3717
390+00	420+00	3892
420+00	450+00	3743
450+00	480+00	6476
480+00	510+00	4991
510+00	540+00	6150
540+00	570+00	3169
570+00	600+00	3484
600+00	630+00	3677
630+00	645+67.23 (END)	1473
	Subtotal:	71482
	Option Borrow Pit No. 1	2778
	Option Borrow Pit No. 2	7116
	Option Borrow Pit No. 3	1157
	Option Borrow Pit No. 4	9543
	Subtotal:	20594
	Total:	92076

DRILLS

In addition to the drills specified in Section 730 of the Standard Specifications, other types of drills including no-till drills will be allowed as long as the seed is planted at a depth of ¼" to ½" .

FERTILIZING

A commercial fertilizer with a minimum guaranteed analysis of 18-46-0, 11-52-0, or an approved alternate fertilizer, shall be applied to all areas designated for permanent seeding. The application rate of fertilizer shall be 100 pounds per acre.

PERMANENT SEEDING

The areas to be seeded comprise of all newly graded areas within the project limits except for the top of roadways, temporary easements under cultivation, and Option Borrow Pit No. 4.

All permanent seed shall be planted in the topsoil at a depth of ¼" to ½".

All seed broadcast must be raked or dragged in (incorporated) within the top ¼" to ½" of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

South Dakota native grown seed is an acceptable alternative to any of the seed varieties listed below. South Dakota native grown seeds used as an alternative shall conform to the same specification and requirements for that individual seed type.

Type B Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	9
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	5
Indiangrass	Holt, Tomahawk	1
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	1
Slender Wheatgrass	Adanac, Pryor, Primar, Revenue	2
	Total:	18

Special Permanent Seed Mixture 1
(Option Borrow Pit No.4)

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Smooth Bromegrass	Common	9
Western Wheatgrass	Flintlock, Rodan, Rosana	4
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Slender Wheatgrass	Adanac, Primar, Revenue, Pryor	2
	Total:	18

Figure 18-D3 Estimate of Quantities with General Notes and Tables

STORM WATER POLLUTION PREVENTION PLAN

*(The numbers right of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES)*

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☒ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 160 **(4.2 1.b.)**
- **Total Area To Be Disturbed** 111 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 60
- **Soil Properties:** AASHTO Soil Classification A6 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Spring Creek, Cow Creek, Missouri River **(4.2 1.e.)**

❖ **ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)**

(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)

- **Special sequencing requirements (**see sheet).
- **Install stabilized construction entrance(s).**
- **Install perimeter protection where runoff sheets from the site.**
- **Install channel and ditch bottom protection.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install utilities, storm sewers, curb and gutter.**
- **Install inlet and culvert protection after completing storm drainage and other utility installations.**
- **Complete final grading.**
- **Complete final paving and sealing of concrete.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities**.

❖ **EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))**

(Check all that apply)

- **Stabilization Practices (See Detail Plan Sheets)**
  - ☒ Temporary or Permanent Seeding
  - ☐ Sodding
  - ☐ Planting
  - ☒ Mulching (Straw or Cellulose Fiber)
  - ☒ Erosion Control Blankets or Mats
  - ☐ Vegetation Buffer Strips
  - ☐ Roughened Surface (e.g. tracking)
  - ☒ Gabions-Gabion Mattress
  - ☐ Other
- **Structural Temporary Erosion and Sediment Controls**
  - ☒ Silt Fence
  - ☐ Straw Bale Check
  - ☐ Temporary Berm
  - ☐ Temporary Slope Drain
  - ☒ Straw Wattles or Rolls
  - ☐ Diversion Channels/Swales
  - ☐ Channel Liners (TRM)
  - ☐ Stone Rip Rap Sheet
  - ☐ Rock Check Dams
  - ☐ Sediment Traps/Basins
  - ☐ Inlet Protection
  - ☐ Outlet Protection
  - ☐ Surface Inlet Protection
  - ☐ Curb Inlet Protection
  - ☐ Stabilized Construction Entrances
  - ☐ Other
- **Wetland Avoidance**

  Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☐ No ☒ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.
- **Storm Water Management (4.2 2.b., (1) and (2))**

  Storm water management will be handled by temporary controls outlined in Section 3 above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.
- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**

    All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
  - **Hazardous Waste**

    All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
  - **Sanitary Waste**

    Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**

- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- **Maintenance and Inspection Practices(Continued)**
  - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^1/_3$ of the height of the silt fence.
  - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
  - Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
  - All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
  - Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
  - The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**

The following non-storm water discharges are anticipated during the course of this project (check all that apply).

- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☐ Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

- ☐ Concrete and Portland Cement
- ☒ Detergents
- ☒ Paints
- ☒ Metals
- ☒ Bituminous Materials
- ☒ Petroleum Based Products
- ☒ Cleaning Solvents
- ☒ Wood
- ☐ Cure
- ☐ Texture
- ☒ Chemical Fertilizers
- ☐ Other

Figure 18-D4 Storm Water Pollution Prevention Plan (SWPPP) Checklist

EROSION AND SEDIMENT CONTROL LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0065(04)21	D11	D19

Plotting Date: 11/27/2018

SYMBOLOGY FOR BEST MANAGEMENT PRACTICES

- STORM WATER DISCHARGE POINT
- LOW FLOW SILT FENCE
- HIGH FLOW SILT FENCE
- SILT TRAP
- SEDIMENT CONTROL AT INLET WHEN SURFACING IS IN PLACE
- TEMPORARY SEDIMENT BARRIER
- TEMPORARY WATER BARRIER
- FLOATING SILT CURTAIN
- SEDIMENT FILTER BAGS
- TRIANGULAR SILT BARRIERS
- EROSION CONTROL WATTLES
- EROSION BALES
- SURFACE ROUGHENING
- SOIL STABILIZER / TEMPORARY MULCH / DUST CONTROL
- CUT INTERCEPTOR DITCH
- TEMPORARY SLOPE DRAIN
- SEDIMENT CONTROL AT INLET BEFORE PLACEMENT OF SURFACING
- HYDRAULIC STRAW MULCH / FIBER MULCHING / BONDED FIBER MATRIX / FIBER REINFORCED MATRIX
- ROCK CHECK DAM
- SODDING
- TYPE 1 EROSION CONTROL BLANKET
- TYPE 2 EROSION CONTROL BLANKET
- TYPE 3 EROSION CONTROL BLANKET
- TYPE 4 EROSION CONTROL BLANKET
- TYPE 1 TURF REINFORCEMENT MAT
- TYPE 2 TURF REINFORCEMENT MAT
- TYPE 3 TURF REINFORCEMENT MAT
- SYNTHETIC CHANNEL PROTECTION
- (TS) TOPSOIL STOCKPILES
- (B) BORROW AREAS
- (CE) STABILIZED CONSTRUCTION ENTRANCES
- (CW) CONCRETE WASHOUTS
- (BS) VEGETATED BUFFER STRIPS
- (AP) ASPHALT PLANT SITE
- (CP) CONCRETE PLANT SITE
- (M) ON-SITE CONSTRUCTION MATERIAL STORAGE AREAS
- (SK) SPILL KIT
- (WP) WORK PLATFORM
- (TP) PORTABLE TOILET
- (V) VEHICLE AND EQUIPMENT PARKING, FUELING, AND MAINTENANCE AREAS
- (D) DUMPSTER OR OTHER TRASH AND DEBRIS CONTAINERS

BEST MANAGEMENT PRACTICES

BEST MANAGEMENT PRACTICES (BMP'S) SHOULD BE USED THROUGHOUT CONSTRUCTION. TO REMIND CONTRACTORS AND FIELD PERSONNEL THAT BMP'S FOR WATER QUALITY SHOULD BE UTILIZED THROUGHOUT THE CONSTRUCTION PROCESS, THE SYMBOLOGY IS COLORED AS FOLLOWS:

RED BMPS ARE TO BE INSTALLED BEFORE EARTH MOVING ACTIVITES COMMENCE. RED BMPS ARE USED FOR PERIMETER CONTROL. THEY PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING FROM ANOTHER SITE. THEY MAY ALSO DETER WATER AWAY FROM OR AROUND THE SITE. THEY MAY BE LEFT IN PLACE AND MAINTAINED FOR THE REMAINDER OF CONSTRUCTION OR UNTIL VEGETATION HAS REACHED 70% OF THE BACKGROUND LEVEL.

BLUE BMPS ARE TO BE INSTALLED DURING CONSTRUCTION. BLUE BMPS ARE USED FOR TEMPORARY STABILIZATION. THEY PREVENT EROSION DURING CONSTRUCTION. THEY MAY ALSO BE SEDIMENT CONTROLS UTILIZED AFTER DRAIN PIPES AND STORM SEWERS ARE IN PLACE. THEY MAY BE LEFT IN PLACE AND MAINTAINED FOR THE REMAINDER OF CONSTRUCTION OR UNTIL VEGETATIONHAS REACHED 70% OF THE BACKGROUND LEVEL. SOME YELLOW BMPS WILL BE REMOVED OR REPLACED DURING CONSTRUCTION.

GREEN BMPS ARE TO BE INSTALLED WHEN GRADING IS COMPLETE. GREEN BMPS ARE USED FOR FINAL STABILIZATION. THEY ARE PERMANENT EROSION CONTROL MEASURES THAT ARE NOT REMOVED.

IF THE CONTRACTOR OR ENGINEER DECIDE TO USE ADDITIONAL BEST MANAGEMENT PRACTICES OR LABEL THE LOCATIONS OF THEM THEY SHOULD USE THE SYMBOLOGY SHOWN. OTHER BEST MANAGEMENT PRACTICES FOR WHICH THERE IS NO SYMBOLOGY INCLUDE:

PERMANENT SEEDING IS DONE BEFORE THE APPLICATION OF ALL TYPES OF MULCHING AND HYDRAULICALLY APPLIED SOIL MULCHES AND MATRIXS. PERMANENT GRASS HAY/ STRAW MULCH IS NOT SHOWN ON PLAN SHEETS, BUT IT CAN BE ASSUMED THAT ALL AREAS THAT ARE NOT ROADWAYS ON RURAL PROJECTS WILL BE SEEDED THEN MULCHED. AREAS WHERE AN ALTERNATE TO GRASS HAY /STRAW MULCH IS USED WILL BE SHOWN WITH THE APPROPRIATE SYMBOLOGY.

SEDIMENT BASINS UTILIZED DURING CONSTRUCTION WILL BE SHOWN ON PLAN SHEETS AND IN SECTION X.

GEOTEXTILE FABRIC USUALLY SUPPLEMENTS OTHER BMPS, BUT IT MAY BE USED TO TEMPORARILY COVER AREAS FOR EROSION PROTECTION UNTIL IT IS PERMENANTLY INSTALLED.

STREET SWEEPING SHOULD BE DONE AS NEEDED TO KEEP SEDIMENT ON ROADWAYS FROM LEAVING THE SITE.

DEWATERING AND SEDIMENT COLLECTING IS SHOWN ON A DETAIL SHEET WHEN IT IS NEEDED. DEWATERING WITHOUT SEDIMENT COLLECTING DOES NOT HAVE A DETAIL, JUST A DETAILED NOTE. SEDIMENT LADEN WATER SHOULD NEVER BE PUMPED OFF THE SITE.

GABIONS AND RIP RAP AT PIPE AND CULVERT OUTLETS ARE DETAILED IN SECTION B.

PROJECT PHASING

PROJECT PHASING MAY BE ONE OF THE MOST IMPORTANT BMPS. DURING PHASING REMEMBER THE FOLLOWING:

ALWAYS INSTALL PERIMETER CONTROLS BEFORE BEGINNING EARTH MOVING ACTIVITIES.

DO NOT DISTURB MORE AREA THAN WHAT IS NEEDED TO COMPLETE EACH PHASE OF CONSTRUCTION.

IF POSSIBLE CONSTRUCT SEDIMENT BASINS AND STABILIZE THEM BEFORE BEGINNING ROADWAY GRADING.

TEMPORARILY STABILIZE AREAS THAT WILL NOT BE TOUCHED WITHIN 14 DAYS.

PERMANENTLY STABILIZE AREAS WHEN GRADING IN THAT AREA IS COMPLETE. PERMANENT STABILIZATION CAN BE COMPLETED IN PHASES AND DOES NOT HAVE TO WAIT UNTIL THE WHOLE ROADWAY HAS BEEN CONSTRUCTED.

CONTINUALLY MAINTAIN ALL SEDIMENT CONTROLS AND MONITOR AREAS WHERE EROSTION CONTROL HAS BEEN INSTALLED.

Figure 18-D5 Erosion Control Legend Sheet

EROSION AND SEDIMENT CONTROL PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0065(04)214	D11	D19

Plotting Date: 11/26/2018 Rev 11/19/2018 JHD

PERIMETER CONTROL

Install Low Flow Silt Fence
at the following locations:
30+00 to 32+50 L Just inside easement 260 Ft
30+00 to 36+50 R Just inside easement 700 Ft
34+50 to 35+00 L Just inside easement/ROW 75 Ft
41+00 to 45+00 L Just inside easement 375 Ft
41+00 to 43+00 R Just inside easement 215 Ft
46+30 to 47+60 L Just inside easement 260 Ft
50+50 to 56+60 L Just inside easement 570 Ft

Install High Flow Silt Fence
at the following locations:
41+00 L Across ditch 75 Ft
Div. 9+00 L At pipe inlet 30 Ft

Install Floating Silt Curtain
at the following locations:
Approximately 37+50 Along shoreline below abutment 300 Ft
Approximately 38+50 Along shoreline under bridge 200 Ft

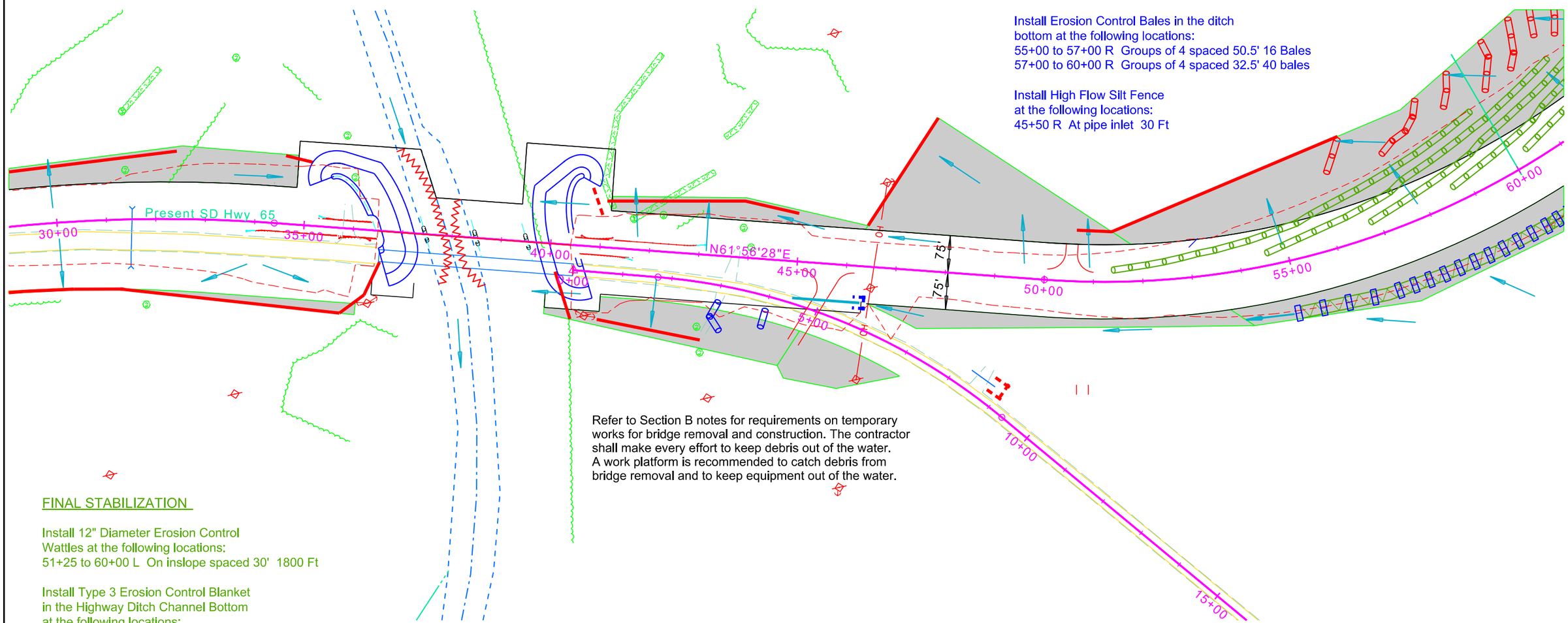
Install 12" Diameter Erosion Control
Wattles at the following locations:
56+00 to 60+00 L Space 40' on inslope outside worklimits 300 Ft

TEMPORARY STABILIZATION

Install 12" Diameter Erosion Control
Wattles at the following locations:
43+50 to 44+50 R Ditch channel spaced 100' 150 Ft

Install Erosion Control Bales in the ditch
bottom at the following locations:
55+00 to 57+00 R Groups of 4 spaced 50.5' 16 Bales
57+00 to 60+00 R Groups of 4 spaced 32.5' 40 bales

Install High Flow Silt Fence
at the following locations:
45+50 R At pipe inlet 30 Ft



Refer to Section B notes for requirements on temporary works for bridge removal and construction. The contractor shall make every effort to keep debris out of the water. A work platform is recommended to catch debris from bridge removal and to keep equipment out of the water.

FINAL STABILIZATION

Install 12" Diameter Erosion Control
Wattles at the following locations:
51+25 to 60+00 L On inslope spaced 30' 1800 Ft

Install Type 3 Erosion Control Blanket
in the Highway Ditch Channel Bottom
at the following locations:
35+00 to 37+00 Around rip rap abutment 270 SqYd
39+75 to 41+00 Around rip rap abutment 270 SqYd
55+00 to 60+00 R Ditch channel 890 SqYd

Figure 18-D6 Erosion and Sediment Control Plan Sheet

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

Section E: Structure Plans

INDEX OF SHEETS -

Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E32	Str. No. 48-250-185 319' - 0'' Prestressed Girder Bridge
Sheet E33	36'' C.M.P. Thrust Block
Sheet E34 to E48	Str. No. 48-252-172 12' x 12' Box Culvert
Sheet E49 to E58	Str. No. 48-281-111 12' x 12' Box Culvert
Sheet E59 to E87	Str. No. 48-283-108 469' - 0'' Prestressed Girder Bridge

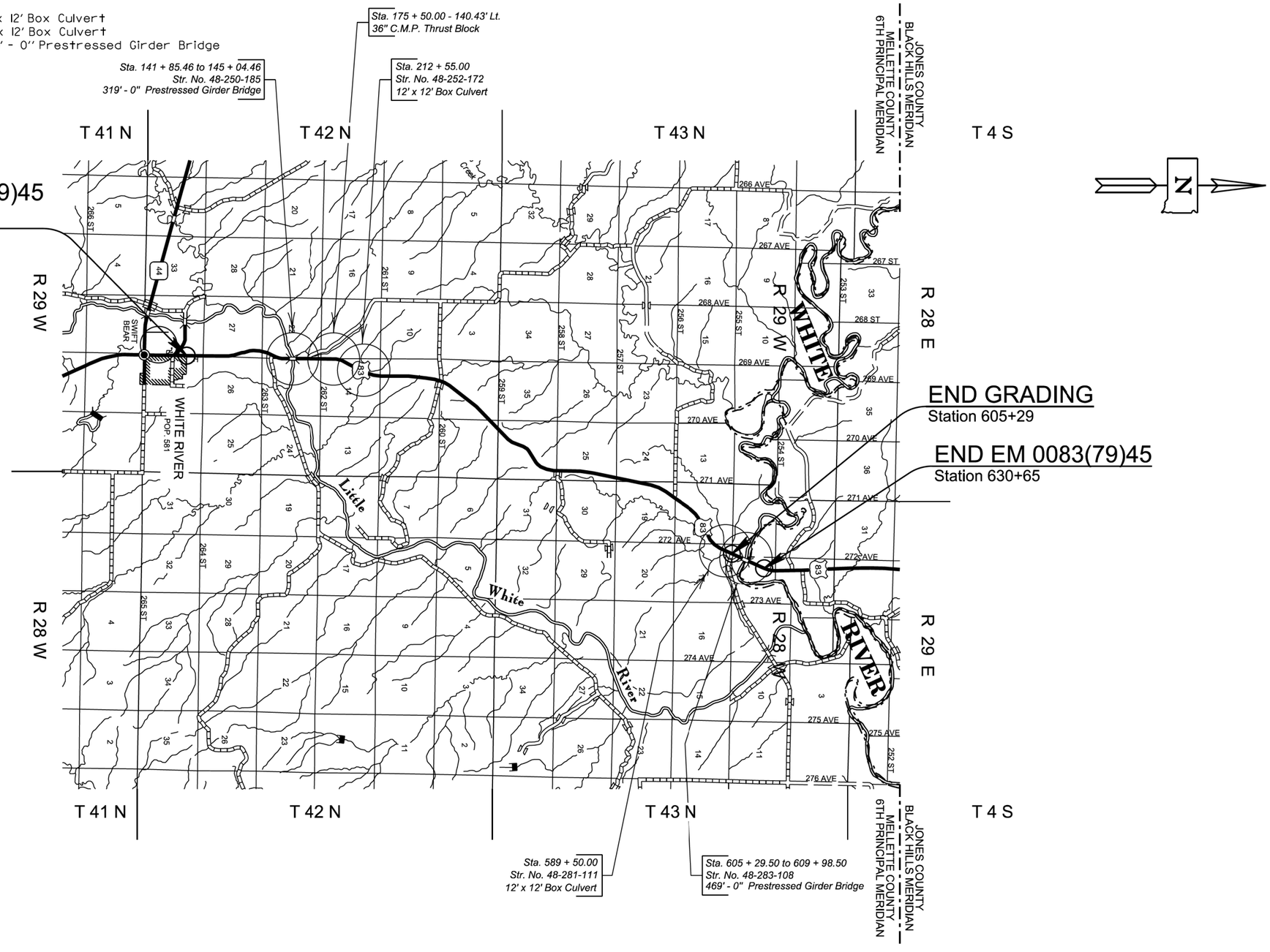


Figure 18-E1 Section Title Sheet

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

SECTION E – ESTIMATE OF STRUCTURE QUANTITES

Str. No. 48-250-185

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	1,414.0	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
420E0100	Structure Excavation, Bridge	23	CuYd
430E0200	Bridge End Embankment	1,773	CuYd
430E0300	Granular Bridge End Backfill	118.7	CuYd
430E0510	Approach Slab Underdrain Excavation	5.0	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	457.1	CuYd
460E0050	Class A45 Concrete, Bridge	207.5	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	41.9	SqYd
465E0100	Class A45 Concrete, Drilled Shaft	149.4	CuYd
465E0200	Drilled Shaft Excavation	148.0	CuYd
465E0400	Crosshole Sonic Log (CSL) Test	2	Each
465E1074	74" Permanent Casing	15.0	Ft
480E0100	Reinforcing Steel	103,622	Lb
480E0200	Epoxy Coated Reinforcing Steel	100,259	Lb
480E0518	No. 18 Rebar Splice	52	Each
510E0300	Preboring Pile	459	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	45	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	680	Ft
560E8063	63" Minnesota Shape Prestressed Concrete Beam	1,579	Ft
680E0040	4" Underdrain Pipe	266	Ft
680E2500	Porous Backfill	30.2	Ton
700E0310	Class C Riprap	7,131.3	Ton
831E0110	Type B Drainage Fabric	5,841	SqYd

36'' C.M. P. Thrust Block, Str. No. 48-252-172, & Str. No. 48-281-111

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	567	CuYd
421E0200	Box Culvert Undercut	1,401	CuYd
421E1000	Footing Undercut	1	CuYd
460E0120	Class A45 Concrete, Box Culvert	1,562.0	CuYd
460E0380	Install Dowel in Concrete	26	Each
462E0100	Class M6 Concrete	1.9	CuYd
480E0100	Reinforcing Steel	244,510	Lb
700E0310	Class C Riprap	714.4	Ton
831E0110	Type B Drainage Fabric	578	SqYd

Str. No. 48-283-108

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	2,084.4	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
420E0100	Structure Excavation, Bridge	765	CuYd
430E0200	Bridge End Embankment	1,326	CuYd
430E0300	Granular Bridge End Backfill	110.4	CuYd
430E0510	Approach Slab Underdrain Excavation	6.9	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	688.2	CuYd
460E0050	Class A45 Concrete, Bridge	480.9	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	41.9	SqYd
465E0100	Class A45 Concrete, Drilled Shaft	366.8	CuYd
465E0200	Drilled Shaft Excavation	393.6	CuYd
465E1050	50" Permanent Casing	96.0	Ft
480E0100	Reinforcing Steel	250,327	Lb
480E0200	Epoxy Coated Reinforcing Steel	132,423	Lb
510E0300	Preboring Pile	200	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	115	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	735	Ft
560E8054	54" Minnesota Shape Prestressed Concrete Beam	2,786	Ft
680E0040	4" Underdrain Pipe	266	Ft
680E2500	Porous Backfill	30.8	Ton
700E0310	Class C Riprap	7,082.8	Ton
831E0110	Type B Drainage Fabric	5,410	SqYd

INCIDENTAL WORK, STRUCTURE (As needed)

Figure 18-E2 Estimate of Quantities and General Notes and Tables

SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0079(08)33	F1	F6

Plotting Date: 05/19/2015

INDEX OF SHEETS

F1	General Layout w/Index
F2	Estimate w/General Notes & Table
F3	Typical Sections
F4-F6	Pavement Layout Sections

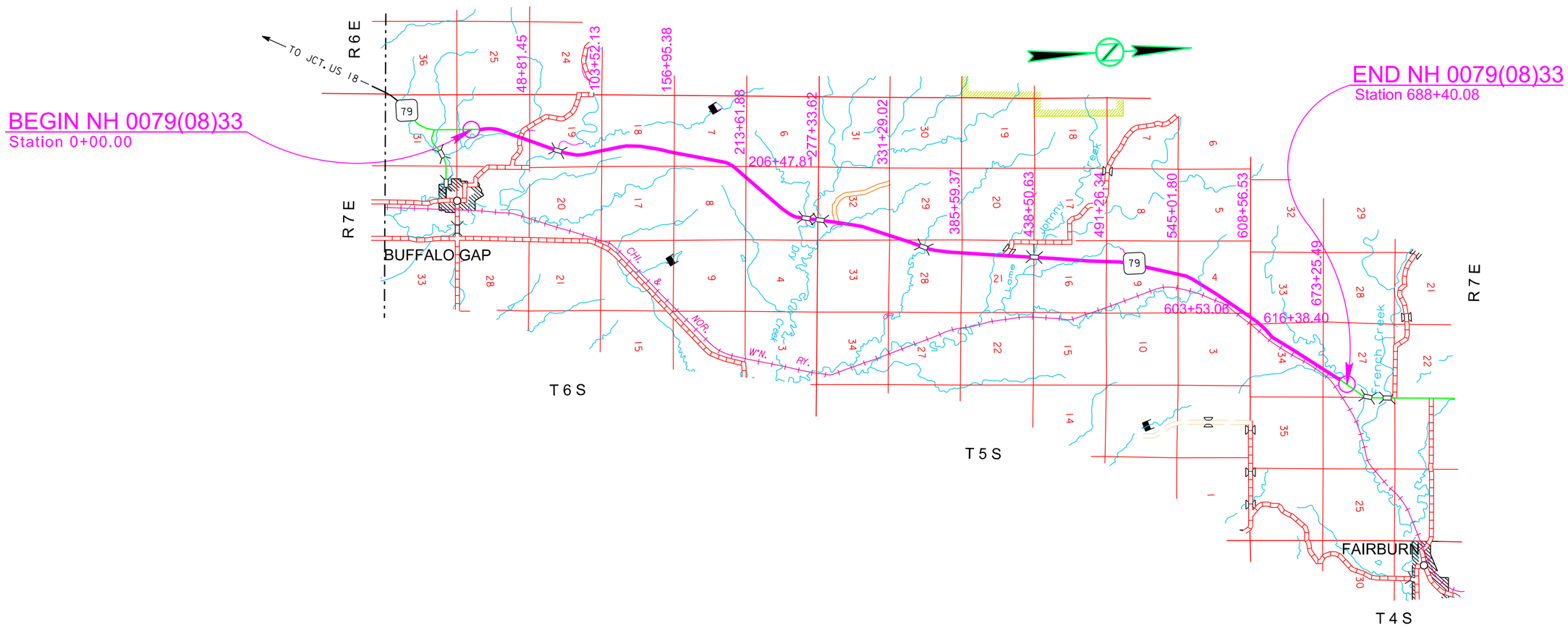


Figure 18-F1 Section Title Sheet

SECTION F – ESTIMATE OF QUANTITIES

BID ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT
260E1010	Base Course	1 396	Ton
260E3010	Gravel Surfacing	3 545	Ton
320E1200	Asphalt Concrete Composite	686	Ton

SURFACING THICKNESS DIMENSIONS

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

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

WATER FOR COMPACTION

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

BASE COURSE

Base Course shall be furnished by the Contractor.

GRAVEL SURFACING

Gravel Surfacing shall be furnished by the Contractor.

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete shall be furnished by the Contractor.

Mineral aggregate for the Asphalt Concrete shall conform to the requirements of the Standard Specifications for Class E, Type 1.

Asphalt Concrete may be obtained from a hot plant producing asphalt concrete for the SDDOT in accordance to Class Q, low, medium or high volume traffic, asphalt concrete specifications. All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 64-28 Asphalt Binder. The asphalt binder content may be adjusted by the Engineer.

The Contractor shall provide a Job-Mix Formula to the Bituminous Engineer with supporting mix design data prior to production.

ASPHALT BINDER

Permissible modifiers for the specified SHRP Performance Graded Asphalt Binder are Styrene-Butadiene Rubber (SBR) or Styrene-Butadiene-Styrene Rubber (SBS). Certified test results for the asphalt binder and modifier shall be provided for each load shipped to the project. The modifier shall be added at an approved blending plant.

SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true with a vertical face. No separate pavement shall be made for sawing.

TABLE OF QUANTITIES

	Base Course	Gravel Surfacing	Asphalt Concrete Composite
Location	Ton	Ton	Ton
6 Entrances	---	180.0	---
19 Entrances with 24' Public Access Median Crossovers	---	2272.7	---
2 Intersecting Roads with 24' Public Access Median Crossovers	---	241.7	---
4 Intersecting Roads with 24' Public Access Median Crossovers	---	547.2	---
Lame Johnny Road Sta. 437+05 L. - Sta. 0+00 to 5+00	---	303.4	---
Miscellaneous Areas	1396	---	686
Total	1396	3545.0	686

The tonnage shown above for Gravel Surfacing is based on a compacted depth of 4 inches.

The tonnage shown above for Base Course and Asphalt Concrete Composite is shown on the typical section for Miscellaneous Areas.

Figure 18-F2 Estimate of Quantities with General Notes and Tables

SECTION H: LANDSCAPING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(80)397 P 2115(39)	H1	H11

Plotting Date: 02/01/2019

INDEX OF SHEETS

H1	General Layout with Index
H2-H3	Estimate With General Notes & Tables
H4-H10	Typical Grading Sections
H11	Planting Details

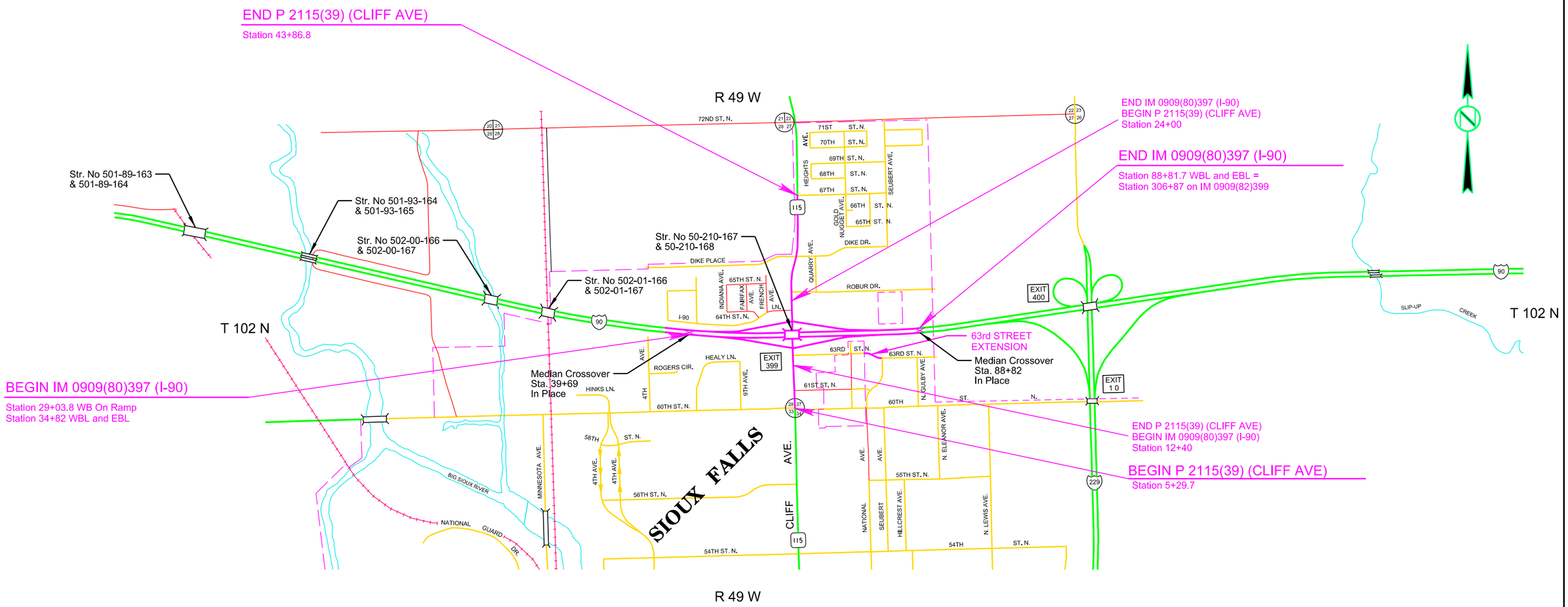


Figure 18-H1 Section Title Sheet

SECTION H ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
650E2100	Special Concrete Curb and Gutter	400	Ft
730E0251	Special Permanent Seed Mixture 1	53	Lb
732E0550	Fiber Reinforced Matrix	20,625	Lb
735E0100	Perennial Plant, Furnish and Plant	5,208	Each
735E1205	1 Gallon Deciduous Shrub, Furnish and Plant	42	Each
735E1510	1 Gallon Coniferous Shrub, Furnish and Plant	358	Each
735E2204	4' Deciduous Tree, Furnish and Plant	18	Each
735E5010	1 Gallon Ornamental Grass, Furnish and Plant	628	Each
900E5156	3" Depth Shredded Bark Mulch	5,300.0	SqYd
900E5430	Irrigation System	Lump Sum	LS

GENERAL PLANTING NOTES

All plants, trees, and shrubs shall conform to or exceed minimum quality standards as defined by the American Nursery and Landscaping Association, current edition of American Standard for Nursery Stock, and shall be purchased from a Landscape Nursery. Plants, trees, and shrubs furnished shall be of the same genus, species, cultivar, and size as specified in the plans. Species and variety may be substituted only by the approval of the Engineer. Each plant, tree, and shrub shall have an identification label. The 4' deciduous trees listed in the plans should also have a minimum of 1 ½" caliper (1 ½" diameter) trunk.

All plants, trees, and shrubs shall bear the same relationship to the finished grade as the plant's original grade before digging. All plants, trees, and shrubs shall be planted in accordance with all the drawings and specifications included in the plans.

Planting locations for each individual species shall be identified prior to planting. The Engineer shall assign someone to ensure that plants do not have excessive root growth circling the root-ball. Root-bound plants will be rejected. Location shall be approved by the Engineer prior to installation. All plants, trees, and shrubs shall be fertilized. Within 2 hours after being planted, plants, trees, and shrubs shall be watered to thoroughly saturate the backfill soil as this provides settlement and filling of voids in the backfill. As soon as the initial planting is completed, the Engineer shall visually inspect plants, trees, and shrubs for health, vigor, and condition, and shall at that time accept or reject them.

The Contractor shall provide a one year warranty for all plants, trees, and shrubs. After one year from initial planting, the Engineer shall make an inspection and dead, unhealthy, or otherwise not acceptable plants, trees, and shrubs shall be replaced by the Contractor at no additional cost to the State.

All costs for furnishing, handling, storing, fertilizing, and planting the plants, trees, and shrubs including the materials, equipment, labor, preparation of the ground, initial watering if irrigation system is not in place, cleanup of the planted areas, and the warranty, shall be incidental to the contract unit price per each for the corresponding "Plant, Tree, and Shrub, Furnish and Plant" bid item.

SHREDDED BARK MULCH

Shredded pine or cedar bark mulch shall be placed at a thickness of 3 inches in all planting beds after plants are planted. All costs for furnishing, handling, and placing the shredded bark mulch including the materials, equipment, labor, and incidentals necessary shall be incidental to the contract unit price per square yard for " 3" Depth Shredded Bark Mulch".

MAINTENANCE NOTES

Some of the perennial plants included in these plans will require the removal of dead material. The recommended time of removal is in the late winter or early spring before new growth. Cut dead material off 8" above the ground.

Areas planted with Special Permanent Seed Mixtures 1 and 2 will also need removal of dead material in the late winter or early spring. Mow Mixture 1 no lower than 8" and mow Mixture 2 no lower than 4". Mixture 2 may be mowed more often to control weed growth, especially during establishment, but shouldn't need to be mowed more than once or twice a year after that. The best time to plant both mixes is mid May to late June.

Special Permanent Seed Mixture 1 is compatible with Plateau herbicide. After plants begin to emerge, this herbicide can be used to control weed growth.
Do not mow this mixture more than once a year during late winter or early spring.

Do not fertilize areas seeded with Special Permanent Seed Mixture 1. This mix is predominately wildflowers. Wildflowers do best on soils with low fertility where they do not have to compete with grasses. This mix will take longer to establish and green up because it will do a majority of active growing during the summer.

Special Permanent Seed Mixture 2 takes 21-28 days to establish and Special Permanent Seed Mixture 1 will take longer—up to a year or longer depending on the dormancy of the seeds.

Plants may be fertilized if they begin to lose their vigor. Keep in mind most of these plants will do well without fertilizer.

FIBER REINFORCED MATRIX

Fiber reinforced matrix shall be applied to the areas that are seeded with Special Permanent Seed Mixtures 1 and 2. Fiber reinforced matrix shall not be placed in channels. Areas designated for fiber reinforced matrix application do not require a grass hay or straw mulch application. Fiber reinforced matrix is effective upon application. The application rate is 3,000 pounds per acre on the islands and 3,500 lbs/acre on the interstate inslopes.

All costs for furnishing and applying the fiber reinforced matrix including hauling, materials, equipment, labor, and incidentals necessary shall be paid for at the contract unit price per pound for "Fiber Reinforced Matrix".

The fiber reinforced matrix shall be from the list below:

Product	Manufacturer
Flexterra FGM, CocoFlex ET-FGM	Profile Products LLC Buffalo Grove, IL Phone: 1-800-508-8681 www.profileproducts.com
Flex Guard	Mat, Inc. Floodwood, MN Phone: 1-888-477-3028 www.matinc.biz

DRILLS

In addition to the drills specified in Section 730 of the Standard Specifications, other types of drills including no-till drills will be allowed as long as the seed is planted at a depth of ¼" to ½" .

PERMANENT SEEDING

Seed the ramp gore areas with Special Permanent Seed Mixture 1.

All seed shall be inoculated with a minimum of 4 varieties of arbuscular mycorrhiza (AM) fungi known to have a symbiotic relationship with the grasses in each seed mixture. The inoculated seed shall provide 100,000 propagules of AM fungi per acre seeded. Seed inoculant shall be incidental to the price per pound of seed.

This seed mix should not be planted any deeper than 1/8" to1/4". The best methods for seeding this mix include drop seeding or broadcast seeding. No-till drilling may be used if seeding into a cover crop.

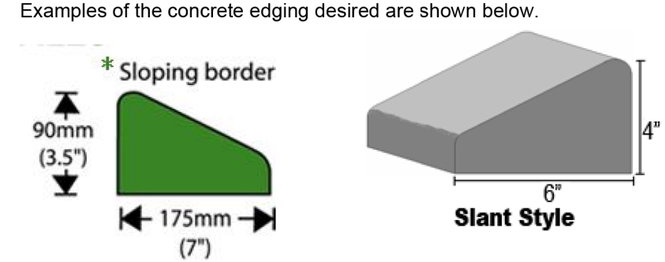
Special Permanent Seed Mixture 1 shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Blue Grama	Bad River, Willis	2.5
Sideoats Grama	Pierre, Butte, Killdeer, Trailway	3.0
Little Bluestem	Badlands, Itasca	3.5
Indiangrass	Tomahawk, Holt	0.3
Buffalograss	Bowie, Cody	0.2
Wildflowers	See mixture below*	0.5
	Total:	10

*Wildflowers			
Black-Eyed Susan	18%	Purple Prairieclover	16%
Blue Flax	4%	White Prairieclover	5%
Illinois Bundleflower	5%	Perennial Lupine	6%
Indian Blanket	2%	Purple Coneflower	5%
Blanket Flower	2%	Common Milkweed	6%
Partridge Pea	5%	Lance Leaved Coreopsis	2%
Showy Tick Trefoil	5%	Prairie Coneflower	5%
Plains Coreopsis	4%	Leadplant	10%

SPECIAL CONCRETE CURB AND GUTTER / CONCRETE EDGING

Concrete edging shall be installed where shown on the plan sheets. Examples of the concrete edging desired are shown below.



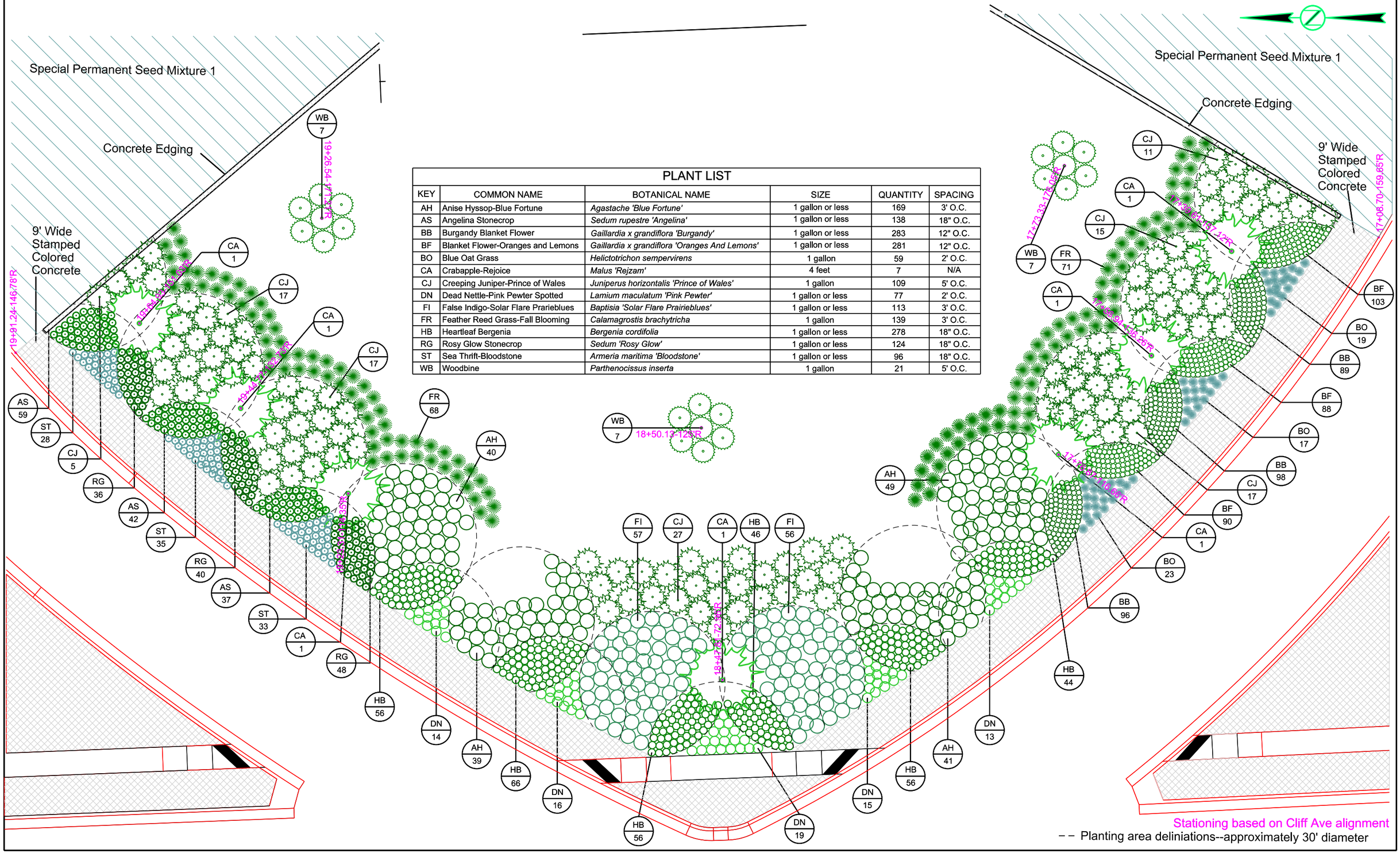
Concrete edging shall taper down on the edges so that the top of the barrier is level with the pavement it joins into on the bridge berms. All costs for installing concrete edging including materials, equipment, and labor shall be incidental to the contract unit price per foot for "Special Concrete Curb and Gutter".

Figure 18-H2 Estimate of Quantities with General Notes and Tables

EASTERN BRIDGE BERM PLANTING PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(80)397 P 2115(39)	H6	H11

Plotting Date: 02/01/2019



PLANT LIST

KEY	COMMON NAME	BOTANICAL NAME	SIZE	QUANTITY	SPACING
AH	Anise Hyssop-Blue Fortune	*Agastache 'Blue Fortune'*	1 gallon or less	169	3' O.C.
AS	Angelina Stonecrop	*Sedum rupestre 'Angelina'*	1 gallon or less	138	18" O.C.
BB	Burgandy Blanket Flower	*Gaillardia x grandiflora 'Burgandy'*	1 gallon or less	283	12" O.C.
BF	Blanket Flower-Oranges and Lemons	*Gaillardia x grandiflora 'Oranges And Lemons'*	1 gallon or less	281	12" O.C.
BO	Blue Oat Grass	*Helictotrichon sempervirens*	1 gallon	59	2' O.C.
CA	Crabapple-Rejoice	*Malus 'Rejzam'*	4 feet	7	N/A
CJ	Creeping Juniper-Prince of Wales	*Juniperus horizontalis 'Prince of Wales'*	1 gallon	109	5' O.C.
DN	Dead Nettle-Pink Pewter Spotted	*Lamium maculatum 'Pink Pewter'*	1 gallon or less	77	2' O.C.
FI	False Indigo-Solar Flare Prarieblues	*Baptisia 'Solar Flare Prairieblues'*	1 gallon or less	113	3' O.C.
FR	Feather Reed Grass-Fall Blooming	*Calamagrostis brachytricha*	1 gallon	139	3' O.C.
HB	Heartleaf Bergenia	*Bergenia cordifolia*	1 gallon or less	278	18" O.C.
RG	Rosy Glow Stonecrop	*Sedum 'Rosy Glow'*	1 gallon or less	124	18" O.C.
ST	Sea Thrift-Bloodstone	*Armeria maritima 'Bloodstone'*	1 gallon or less	96	18" O.C.
WB	Woodbine	*Parthenocissus inserta*	1 gallon	21	5' O.C.

Figure 18-H3 Landscaping Layout

SECTION L: SIGNAL AND LIGHTING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L1	L36

Plotting Date: 08/11/2015

INDEX OF SHEETS

L1	General Layout w/Index
L2-L6	Estimate w/General Notes and Tables
L7-L10	Existing Signal & Signal Layout
L11-L23	Conduit Layouts
L24-L25	Signal Timing
L26-L29	Wire Diagrams
L30-L36	Standard Plates

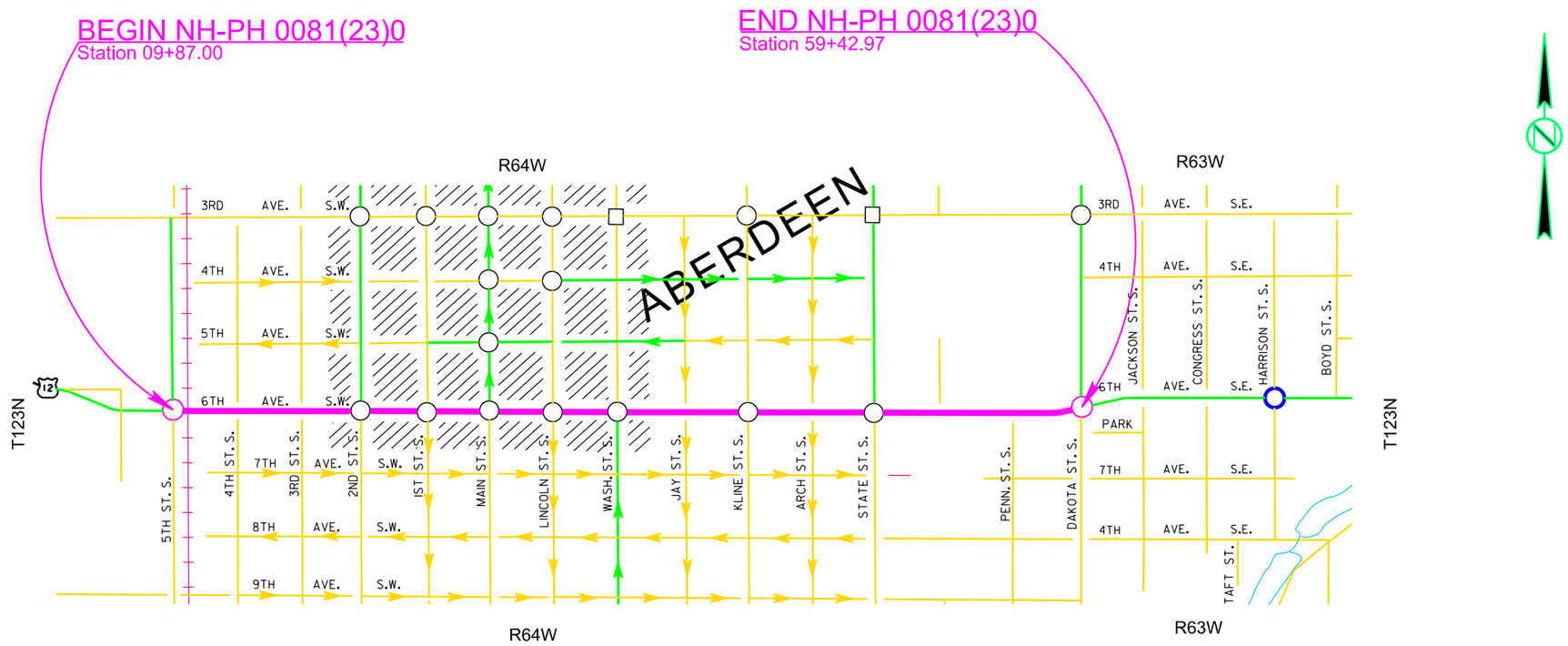


Figure 18-L1 Section Title Sheet

SECTION L ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1520	Remove Signal Equipment	Lump Sum	LS
110E1540	Remove Light Footing	47	Each
250E0010	Incidental Work	Lump Sum	LS
635E0040	Breakaway Base Luminaire Pole with Arm, 40' Mounting Height	58	Each
635E0900	Decorative Luminaire Pole	49	Each
635E2020	Signal Pole with 20' Mast Arm	1	Each
635E2030	Signal Pole with 30' Mast Arm	1	Each
635E2040	Signal Pole with 40' Mast Arm	1	Each
635E2120	Signal Pole with 20' Mast Arm and Luminaire Arm	1	Each
635E2130	Signal Pole with 30' Mast Arm and Luminaire Arm	2	Each
635E2135	Signal Pole with 35' Mast Arm and Luminaire Arm	1	Each
635E2140	Signal Pole with 40' Mast Arm and Luminaire Arm	2	Each
635E2145	Signal Pole with 45' Mast Arm and Luminaire Arm	3	Each
635E2150	Signal Pole with 50' Mast Arm and Luminaire Arm	1	Each
635E2155	Signal Pole with 55' Mast Arm and Luminaire Arm	1	Each
635E2165	Signal Pole with 65' Mast Arm and Luminaire Arm	1	Each
635E2520	Wood Utility Pole	6	Each
635E3330	Roadway Luminaire, 250 Watt with Photoelectric Cell	70	Each
635E3460	Decorative Luminaire, 400 Watt with Photoelectric Cell	49	Each
635E4030	3 Section Vehicle Signal Head	51	Each
635E4050	5 Section Vehicle Signal Head	19	Each
635E5020	2' Diameter Footing	604	Ft
635E5030	3' Diameter Footing	154	Ft
635E5318	18" Diameter Junction Box	120	Each
635E5324	24" Diameter Junction Box	8	Each
635E5400	Electrical Service Cabinet	10	Each
635E5430	Traffic Signal Controller	6	Each
635E5500	Meter Socket	10	Each
635E5530	Preformed Detector Loop	67	Each
635E5540	Sawed-In Detector Loop	18	Each
635E5550	Detector Unit	31	Each
635E5560	Emergency Vehicle Preemption Unit	8	Each
635E5570	Optical Detector	16	Each
635E5900	Pedestrian Push Button	26	Each
635E5920	Pedestrian Signal Head	36	Each
635E5930	Pedestrian Crossing Sign	26	Each
635E7500	Remove & Reset Luminaire Pole	2	Each
635E8020	2" Rigid Galvanized Steel Conduit	110	Ft
635E8120	2" Rigid Conduit, Schedule 40	20 230	Ft
635E8130	3" Rigid Conduit, Schedule 40	200	Ft
635E8140	4" Rigid Conduit, Schedule 40	375	Ft
635E8220	2" Rigid Conduit, Schedule 80	7 850	Ft
635E8230	3" Rigid Conduit, Schedule 80	2 450	Ft
635E9012	1/C #2 AWG Copper Wire	29 140	Ft
635E9014	1/C #4 AWG Copper Wire	38 690	Ft
635E9016	1/C #6 AWG Copper Wire	11 400	Ft
635E9023	3/C #12 AWG Copper Wire	2 295	Ft
635E9024	1/C #14 AWG Copper Wire	6 900	Ft
635E9050	4/C #20 AWG Copper Wire	1 155	Ft
635E9502	2/C #14 AWG Copper Tray Cable, K2	195	Ft
635E9504	4/C #14 AWG Copper Tray Cable, K2	2 845	Ft
635E9507	7/C #14 AWG Copper Tray Cable, K2	2 880	Ft
635E9512	12/C #14 AWG Copper Tray Cable, K2	705	Ft
635E9524	24/C #14 AWG Copper Tray Cable, K2	2 915	Ft
635E9600	#16 AWG Copper Twisted Shielded Pair	4 090	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	5 460	Ft
635E9948	48 Strand Fiber Optic Cable	10 300	Ft

SHOP DRAWINGS AND CATALOG CUTS

The Contractor shall transmit shop drawings and/or catalog cuts, design calculations, and letters of certification for Traffic Signal Poles, Roadway Lighting Poles, Luminaires, and Signal Equipment to the Traffic Design Engineer for approval, rather than furnishing them to the Project Engineer. A copy of the transmittal letter shall be furnished to the Project Engineer. The address is as follows:

Traffic Design Engineer
Office of Road Design
700 East Broadway
Pierre, SD 57501-2586

Phone: (605) 773-3433
FAX: (605) 773-6608

SUPPLYING AS BUILT PLANS

If the traffic signal systems or roadway lighting systems are constructed different than what is stated in the plans, the Contractor shall supply as built plans to the Engineer and a copy shall be sent to the Traffic Design Engineer. The as built plans shall include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

REMOVE SIGNAL EQUIPMENT

Signal equipment indicated on the Existing Signal Layouts shall be removed. The signal equipment shall be delivered to the City of Yankton. The Contractor shall notify the City 5 days before delivery of removed signal equipment. The City contact is Dave Haas (605) 661-0000.

All work involved in removal and delivery of the existing signal equipment shall be incidental to the contract lump sum price for Remove Signal Equipment.

REMOVE LIGHT FOOTING

Footings of Existing Light Poles L1 – L49 indicated on Conduit Layout Sheets L18 thru L36 shall be removed by the Contractor. All costs for removing the footings of existing light poles shall be incidental to the contract unit price per each for Remove Light Footing.

REMOVE & RESET LUMINAIRE POLE

Existing light poles EL49 & EL50 indicated on sheet L36 of L56 shall be removed and reset by the Contractor. The Contractor shall reconnect EL 49 & EL50 to the existing circuit leading to the power source.

All work involved in removing, resetting, wiring and quantities for rewiring the existing light poles shall be incidental to the contract unit price per each for Remove & Reset Luminaire Pole.

REMOVE LIGHT POLE

Existing light poles shall be removed by NWPS. The Contractor is responsible for maintaining roadway lighting during construction; therefore, the Contractor shall contact NWPS to coordinate the removal of the existing light poles. The NWPS contact is Brad Wenandean (605) 668-4609.

POLES

A statement is required, signed by a Professional Engineer Registered in the State of South Dakota, certifying that the pole designs conform to all plan and specification requirements.

Decorative Luminaire poles (K99 & L0-L47) shall be 14 Ft. Holophane North Yorkshire Series - Model #NY 14/20 CI/PP-RS/GFI/WPC-BA24H/1/BO-EB/BO.

New poles shall be weathering steel. Galvanizing shall be in accordance with AASHTO Specification M111 (ASTM A123). Steel pole material shall be in accordance with ASTM A36, A242, A570, A572, A607 or A595 Grade A or B. A595 material shall be limited to a 3/8 inch maximum thickness. Steel pole material with a thickness of 1/2 inch to 2 inches, shall satisfy Charpy V-Notch toughness test requirements of 15 ft. lb. at 40 degrees F. The SDDOT Office of Bridge Design shall be contacted for Charpy impact requirements for steel pole material thickness greater than 2 inches.

Design and fabrication shall be in accordance with the current edition of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals", interim specifications and plan details. Cantilever traffic signal supports, including anchor bolts, shall be designed for fatigue in accordance with Fatigue Importance Category III without galloping.

BREAKAWAY BASES

A statement is required, signed by a Registered Professional Engineer in the State of South Dakota, certifying that the breakaway base devices meet the design requirements, including breakaway and structural adequacy, of the "AASHTO Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals". The physical testing procedures outlined in Section 8 of the Fifth Edition of the Aluminum Association's "Specifications for Aluminum Structures" may be used to establish service limits for structural adequacy certification of aluminum breakaway transformer bases and frangible couplings. If requested, test data of production samples to support the certification shall be provided.

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
K99, L0-L47	2' - 0"	4' - 0"	1' - 8"	33' - 9"	8-#7 x 3' - 6"
L48-L104	2' - 0"	7' - 0"	1' - 8"	49' - 6"	8-#7 x 6' - 6"
B4	2' - 0"	9' - 0"	1' - 8"	60' - 0"	8-#7 x 8' - 6"
B2, C2	3' - 0"	9' - 0"	2' - 8"	95' - 9"	14-#8 x 8' -6"
A1, A3, B1, B3, C3, E2, E4, F2	3' - 0"	10' - 0"	2' - 8"	104' - 3"	14-#8 x 9' -6"
A2, C1, C4, E3	3' - 0"	11' - 0"	2' - 8"	112' - 6"	14-#8 x 10' -6"
A4	3' - 0"	12' - 0"	2' - 8"	120' - 9"	14-#8 x 11' -6"

Figure 18-L2 Estimate of Quantities with General Notes and Tables

CONDUIT AND CABLE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L6	L36

Plotting Date: 08/11/2015

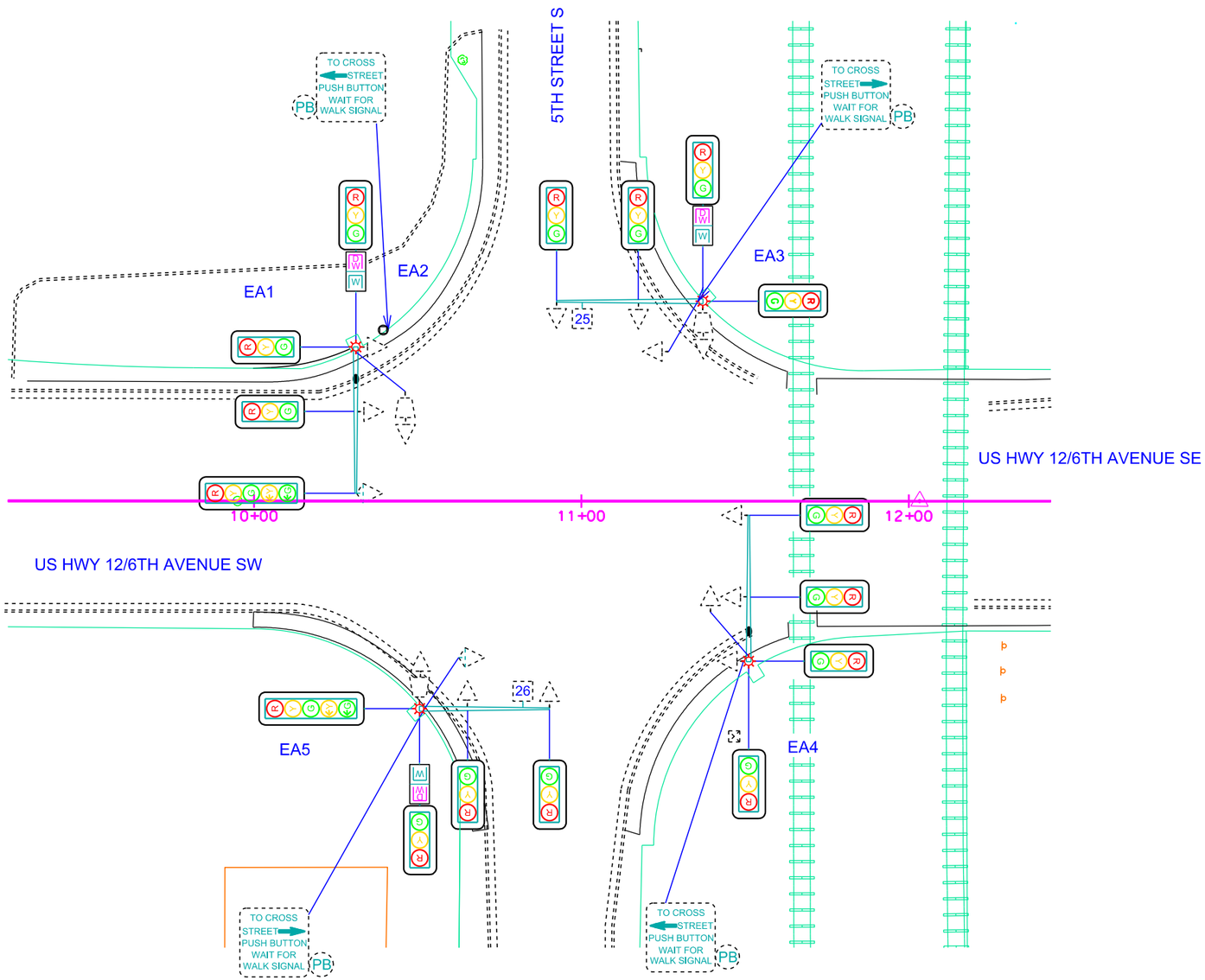
Location to Location		Rigid Conduit: Rigid Galvanized Steel 2" Ft	Rigid Galvanized Steel 3" Ft	Rigid Galvanized Steel 4" Ft	Schedule 40 2" Ft	Schedule 40 4" Ft	Schedule 80 2" Ft	Schedule 80 3" Ft	Copper Wire 1/C #4 AWG Ft	Copper Wire 1/C #6 AWG Ft	Copper Wire 1/C #14 AWG Ft	Copper Tray Cable, K2 #14 2/C Ft	Copper Tray Cable, K2 #14 4/C Ft	Copper Tray Cable, K2 #14 7/C Ft	Copper Tray Cable, K2 #14 12/C Ft	Copper Tray Cable, K2 #14 19/C Ft	Copper Tray Cable, K2 #14 24/C Ft	Twisted Shielded Pair #16 AWG Ft	Pole and Bracket Cable 2/C #10 AWG Ft	48 Strand Fiber Optic Cable Ft	Preemption Cable Ft	Audible Pedestrian Cable Ft
5TH STREET S																						
JA1	Service Cabinet				180				560													
JA1	Controller			25					80				105	105			105	130			105	
JA1	PA3				25								30									
JA1	A3				20									25			25				25	
JA1	JA2				50													105				
JA1	JA3							105						110			110	110			110	
JA1	JA5		130											270			270	270			270	
JA3	PA4				25								30									
JA3	A4				20									25			25				25	
JA3	JA4				75													80				
JA5	PA2				30								35									
JA5	A2				20									25			25				25	
JA5	JA6							95						100			100	200			100	
JA6	PA1				20								25									
JA6	A1				20									25			25				25	
JA6	JA7				35													75				
Signal Pole	A1												115	70					65		65	
Signal Pole	A2												160	15					65		60	
Signal Pole	A3												120	75					65		70	
Signal Pole	A4												175	15					65		65	
Ped PB Pole	PA1												10									
Ped PB Pole	PA2												10									
Ped PB Pole	PA3												10									
Ped PB Pole	PA4												10									
	Subtotal:	0	130	25	520	0	0	200	640	0	0	0	835	860	0	0	685	970	260	0	945	0

Figure 18-L3 Conduit and Cable Quantities

EXISTING SIGNAL LAYOUT
US HWY 12/6TH AVENUE & 5TH STREET S

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L7	L36

Plotting Date: 11/27/2018



REMOVE FOR RESET	
KEY	ITEM
	LED BLANKOUT SIGN (25,26)

SALVAGE SIGNAL EQUIPMENT	
KEY	ITEM
	Pedestal Signal Pole (EA2)
	Signal Pole W/40' Mast Arm (EA5)
	SIGNAL POLE W/45' MAST ARM (EA3)
	Signal Pole W/45' Mast Arm & Lumin Ext (EA1,EA4)
	Roadway Luminaire, 400W With P.E. (EA1,EA4)
	3 Section Vehicle Signal Head
	5 Section Vehicle Signal Head
	Traffic Signal Controller
PB	Pedestrian Push Button
	Pedestrian Signal Head
TO CROSS STREET PUSH BUTTON WAIT FOR WALK SIGNAL	Pedestrian Crossing Sign

ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
	Salvage Signal Equipment	LUMP SUM	LS
	Remove Signal Pole Footing (EA1-EA4)	4	EACH

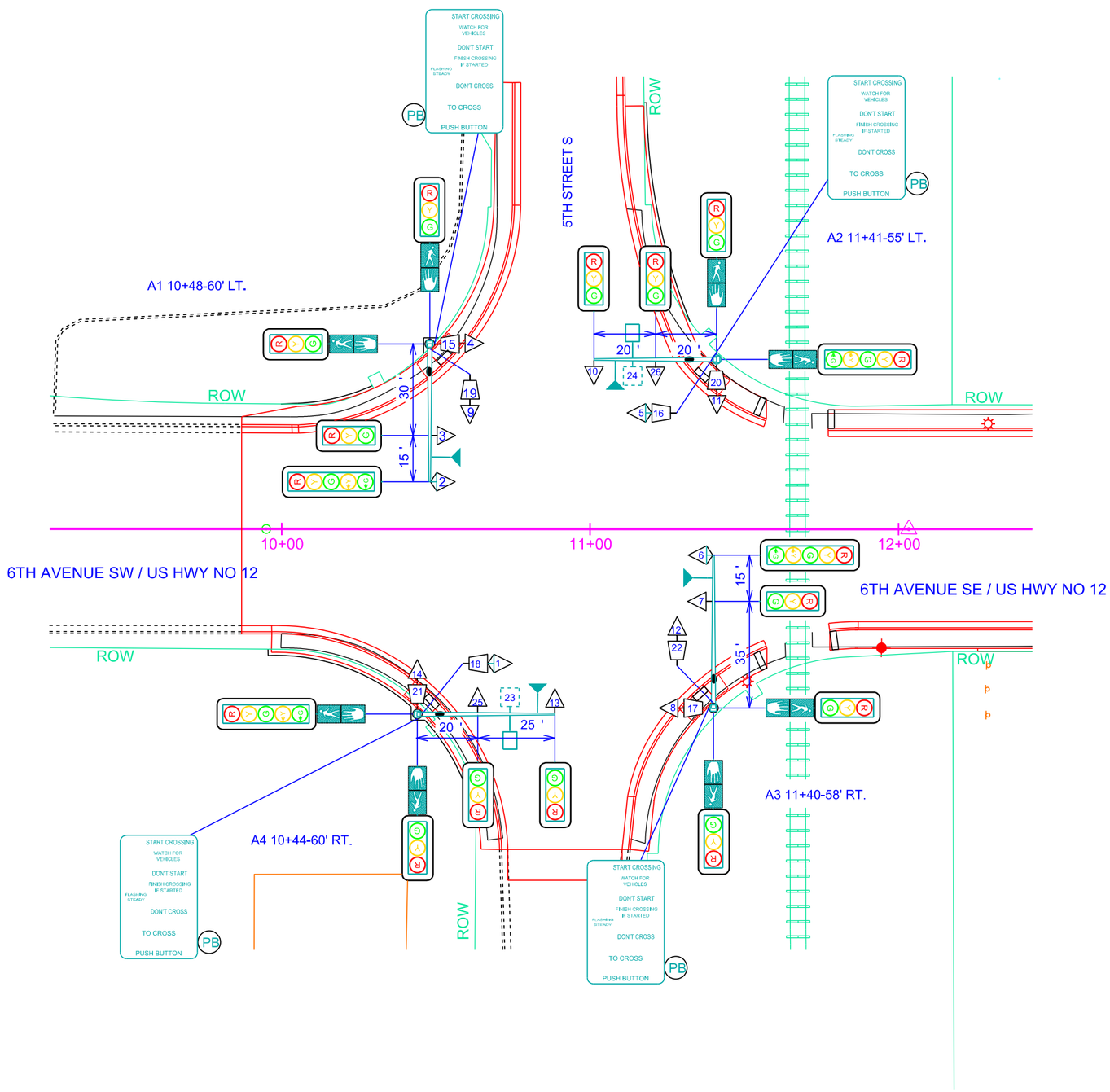
Figure 18-L4 Existing Signal Layout

SIGNAL LAYOUT

US HWY NO 12 & 5TH STREET S

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L9	L56

Plotting Date: 11/28/2018



ESTIMATE OF QUANTITIES

KEY	ITEM	UNIT	EST QUANT
	INSTALL SIGNAL POLE W/40' MAST ARM & LUMIN EXT W/8' ARM & 50' MT HT (A2)	EACH	1
	INSTALL SIGNAL POLE W/45' MAST ARM & LUMIN EXT W/8' ARM & 50' MT HT (A1,A4)	EACH	2
	INSTALL SIGNAL POLE W/50' MAST ARM & LUMIN EXT W/8' ARM & 50' MT HT (A3)	EACH	1
	3 SECTION VEHICLE SIGNAL HEAD (3,4,7-14,25,26)	EACH	12
	5 SECTION VEHICLE SIGNAL HEAD (1,2,5,6)	EACH	4
	PEDESTRIAN SIGNAL HEAD (15-22)	EACH	8
PB	PEDESTRIAN PUSH BUTTON	EACH	4
	PEDESTRIAN SIGN (R10-3B)	EACH	4
	RDY LUMINAIRE WITH 400W P.E.	EACH	4
	OPTICAL DETECTOR	EACH	4
	EMERGENCY VEHICLE PREEMPTION UNIT (4-CHANNEL)	EACH	1
	RELOCATE SIGNAL EQUIPMENT	LS	LUMP SUM

RELOCATE SIGNAL EQUIPMENT

KEY	ITEM
	LED BLANKOUT SIGN (23,24)

Figure 18-L5 Signal Layout

CONDUIT LAYOUT

US HWY 85 & CEMETERY STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	L29	L50

Plotting Date: 11/27/2018

ESTIMATE OF QUANTITIES (SIGNAL)

KEY	ITEM	EST QUANT	UNIT
	2' DIAMETER FOOTING (A2)	6	FT
	3' DIAMETER FOOTING (A1,A3,A4)	26	FT
	TYPE 2 ELECTRICAL JUNCTION BOX (JA2,JA4-JA6)	4	EACH
	TYPE 3 ELECTRICAL JUNCTION BOX (JA1,JA3)	2	EACH
	ELECTRICAL SERVICE CABINET	1	EACH
	GALVANIZED STEEL UTILITY POLE NOT A BID ITEM	1	EACH
M	METER SOCKET NOT A BID ITEM	1	EACH
	TRAFFIC SIGNAL CONTROLLER	1	EACH
	PREFORMED DETECTOR LOOP (E1-E2,N1-N4,S1,W1-W2)	9	EACH
	DETECTOR UNIT	5	EACH
2" SCH 40	2" RIGID CONDUIT, SCHEDULE 40	570	FT
4" SCH 40	4" RIGID CONDUIT, SCHEDULE 40	15	FT
3" SCH 80	3" RIGID CONDUIT, SCHEDULE 80	165	FT
#4	1/C #4 AWG COPPER WIRE	190	FT
#6	1/C #6 AWG COPPER WIRE	750	FT
	2/C #14 AWG COPPER TRAY CABLE, K2	80	FT
4/C	4/C #14 AWG COPPER TRAY CABLE, K2	1,170	FT
	5/C #14 AWG COPPER TRAY CABLE, K2	70	FT
7/C	7/C #14 AWG COPPER TRAY CABLE, K2	160	FT
19/C	19/C #14 AWG COPPER TRAY CABLE, K2	115	FT
24/C	24/C #14 AWG COPPER TRAY CABLE, K2	290	FT
TSP	#16 AWG COPPER TWISTED SHIELDED PAIR	730	FT
	2/C #10 AWG COPPER POLE & BRACKET CABLE	120	FT

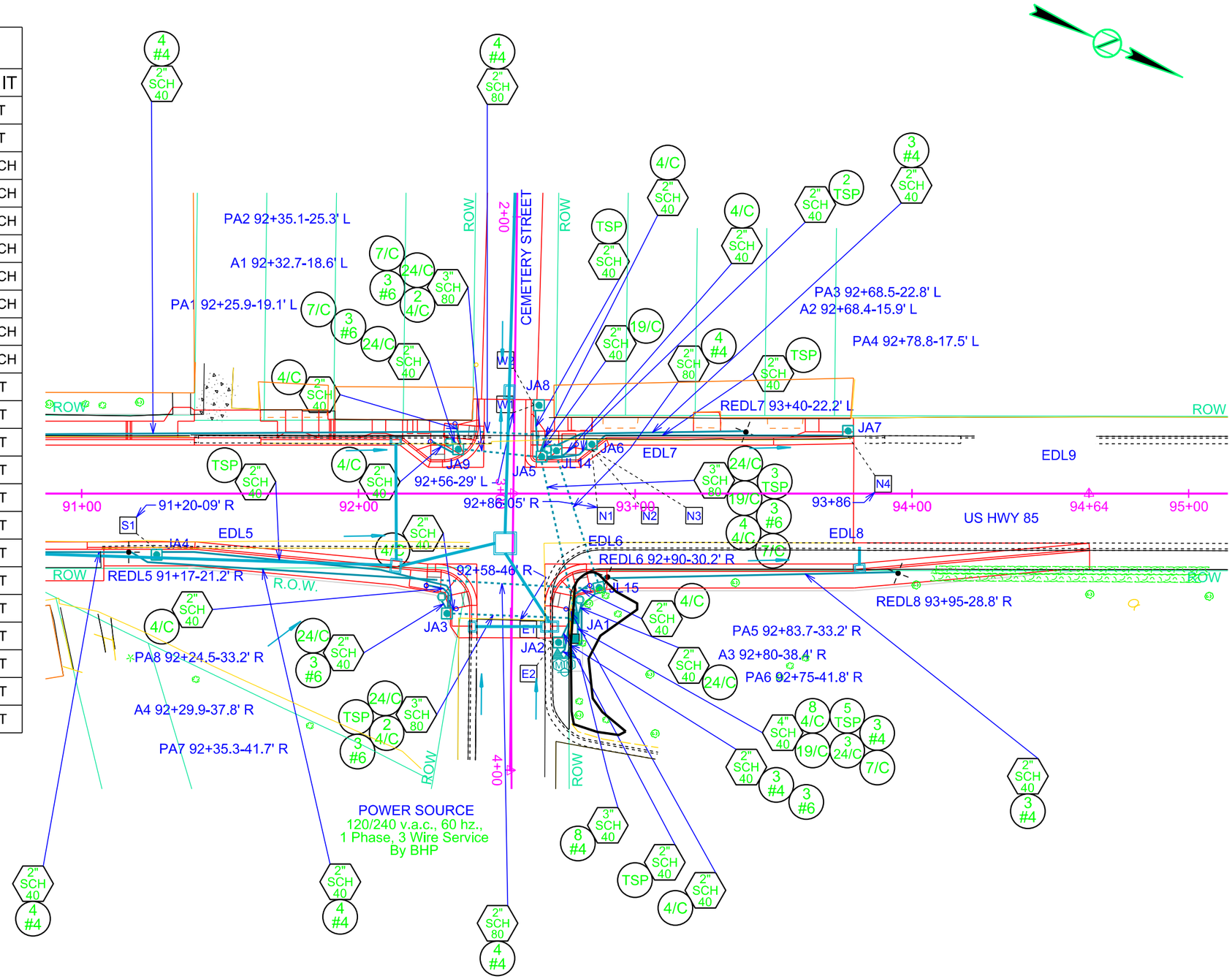


Figure 18-L6 Conduit Layout

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L7	L56

Plotting Date: 09/29/2020

SIGNAL TIMING

US HWY 14 / 6TH STREET & 22ND AVENUE

BASIC INTERVALS								
Phase	1	2	3	4	5	6	7	8
Movement	WBLT	EB	NBLT	SB	EBLT	WB	SBLT	NB
Lag	X						X	
Min Green	5	10	5	10	5	10	5	10
Extension	3	3.5	3	3	3	3.5	3	3
Max 1	18	28	20	19	15	31	16	23
Max 2								
Time Before								
Time to Reduce								
Minimum Gap								
Yellow	4	4	4	4	4	4	4	4
All Red	3	1.5	3	1.5	3	1.5	3	1.5
Walk		10		10		10		10
Ped Clearance		31		32		31		32
Recall		SOFT				SOFT		
Prog Flash Ind	R	Y	R	R	R	Y	R	R
Start Up Ø		X				X		

PREEMPTION				
Plan	3	4	5	6
Calls Ø	3 & 8	4 & 7	5 & 2	6 & 1
Output	CH13R	CH14R	CH15R	CH16R

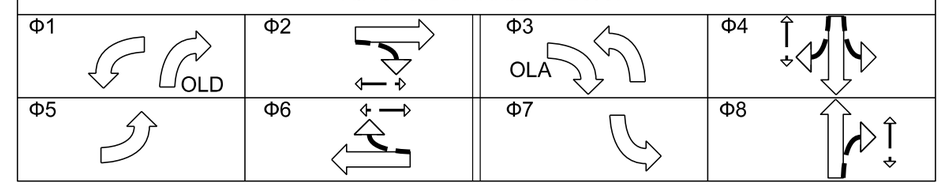
WEEKLY PROGRAM							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Timing Plan	2	1	1	1	1	1	2

SPLIT PATTERNS										
	Φ1	Φ2	Φ3	Φ4	Φ5	Φ6	Φ7	Φ8		
Coord Phase		X				X				
Pattern (C/S/O)	Split	Split	Split	Split	Split	Split	Split	Split	Cycle Length	Offset
1/1/1	15	20	14	21	12	23	14	21	70	62
2/1/1	15	23	14	25	13	25	14	25	77	25
1/2/2	15	23	16	16	15	23	13	19	70	1
3/1/1	21	25	15	18	15	31	13	20	79	36
1/3/3	16	23	14	17	14	25	14	17	70	44

TIMING PLAN 1	
Time of Day (TOD)	Pattern (C/S/O)
05:30 - 07:30	1/1/1
07:30 - 08:45	2/1/1
08:45 - 16:45	1/2/2
16:45 - 18:30	3/1/1
18:30 - 02:30	1/3/3
02:30 - 05:30	FLASH

TIMING PLAN 2	
Time of Day (TOD)	Pattern (C/S/O)
05:30 - 07:30	1/1/1
07:30 - 08:45	2/1/1
08:45 - 16:45	1/2/2
16:45 - 18:30	3/1/1
18:30 - 02:30	FREE
02:30 - 05:30	FLASH

RING AND BARRIER DESIGN



OVERLAP DEFINITONS
OLA = 3 + 2 - 2P
OLD = 1 + 8 - 8P

DETECTOR TABLE															
		Phase (Call/ Call Locking/ Extend)												Controller Settings	
Local Detector	Controller Detector #	1	2	3	4	5	6	7	8	9	10	11	12	Extend	Delay (Second)
W1-W3	1		E			C/E									2
W4-W6	2		E			C/E									2
W7-W9	3		C/E				E								10
W10-W11	4		CL/E				E								
E1-E3	5	C/E					E								2
E4-E6	6	C/E					E								2
E7-E8	7		E				CL/E								
S1-S3	8			C/E					E						2
S4-S6	9			C/E					E						2
S7-S9	10				E				C/E						
S10-S12	11				E				C/E						
S13-S15	12				E				C/E						10
N1-N3	13				E			C/E							2
N4-N6	14				C/E				E						
N7-N9	15				C/E				E						10

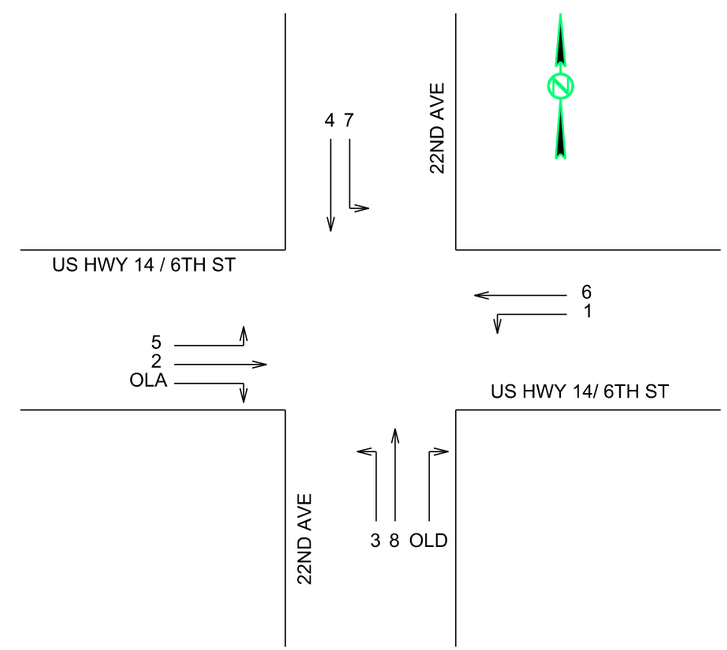


Figure 18-L7 Signal Timing

TRAFFIC SIGNAL WIRING TABLES

US HWY 12 & Brown County 14

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS

Plotting Date: 09/29/2020

POLE: B1 CABLE SIZE: 24/C

CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	ø
6R	Red	R	R	1	6
6Y	Orange	O	Y	1	6
6G	Blue	BL	G	1	6
N	Black	BK	N	1	6
6R	Red/Black	R	R	2	6
6Y	Orange/Black	O	Y	2	6
6G	Blue/Black	BL	G	2	6
N	Brown/Black	BK	N	2	6
6R	Red/Blue	R	R	3	6
6Y	Orange/Blue	O	Y	3	6
6G	Blue/Orange	BL	G	3	6
N	Black/Orange	BK	N	3	6
1R	Red/Orange	R	RA	11	1
1Y	Orange/Red	O	YA	11	1
9Y	Yellow	Y	FYA	11	1
1G	Blue/Red	BL	GA	11	1
N	Black/Red	BK	N	11	1
	Brown				
	Yellow/Black				
	Yellow/Red				
	Brown/Red				
	Black/Blue				
	Yellow/Blue				
	Brown/Blue				

POLE: B2 CABLE SIZE: 19/C

CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	ø
8R	Red	R	R	4	8
8Y	Orange	O	Y	4	8
8G	Blue	BL	G	4	8
N	Black	BK	N	4	8
8R	Red/Black	R	R	5	8
8Y	Orange/Black	O	Y	5	8
8G	Blue/Black	BL	G	5	8
N	Black/Red	BK	N	5	8
5R	Red/Blue	R	RA	12	5
5Y	Orange/Red	O	YA	12	5
11Y	Yellow	Y	FYA	12	5
5G	Blue/Red	BL	GA	12	5
N	Black/Blue	BK	N	12	5
	Brown				
	Yellow/Black				
	Brown/Black				
	Yellow/Red				
	Brown/Red				
	Orange/Blue				

POLE: B3 CABLE SIZE: 24/C

CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	ø
2R	Red	R	R	6	2
2Y	Orange	O	Y	6	2
2G	Blue	BL	G	6	2
N	Black	BK	N	6	2
2R	Red/Black	R	R	7	2
2Y	Orange/Black	O	Y	7	2
2G	Blue/Black	BL	G	7	2
N	Black/Red	BK	N	7	2
2R	Red/Blue	R	R	8	2
2Y	Orange/Blue	O	Y	8	2
2G	Blue/Orange	BL	G	8	2
N	Black/Orange	BK	N	8	2
5R	Red/Orange	R	RA	13	5
5Y	Orange/Red	O	YA	13	5
11Y	Yellow	Y	FYA	13	5
5G	Blue/Red	BL	GA	13	5
N	Black/Blue	BK	N	13	5
	Brown/Black				
	Brown				
	Yellow/Black				
	Yellow/Red				
	Brown/Red				
	Yellow/Blue				
	Brown/Blue				

POLE: B4 CABLE SIZE: 19/C

CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	ø
4R	Red	R	R	9	4
4Y	Orange	O	Y	9	4
4G	Blue	BL	G	9	4
N	Black	BK	N	9	4
4R	Red/Black	R	R	10	4
4Y	Orange/Black	O	Y	10	4
4G	Blue/Black	BL	G	10	4
N	Black/Red	BK	N	10	4
1R	Red/Blue	R	RA	14	1
1Y	Orange/Red	O	YA	14	1
9Y	Yellow	Y	FYA	14	1
1G	Blue/Red	BL	GA	14	1
N	Black/Blue	BK	N	14	1
	Brown				
	Yellow/Black				
	Brown/Black				
	Yellow/Red				
	Brown/Red				
	Orange/Blue				

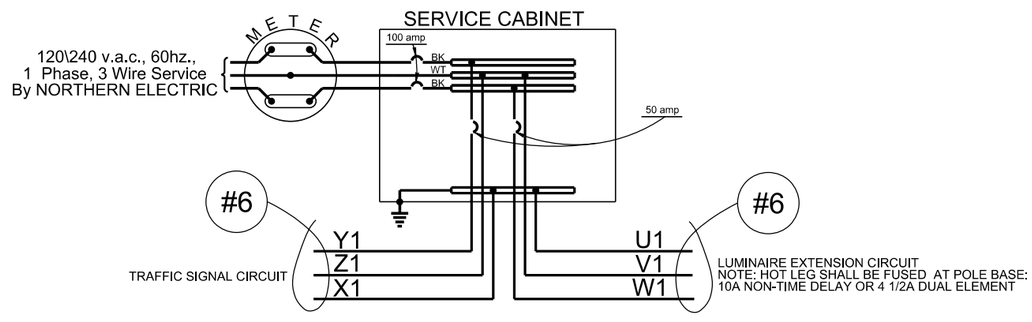
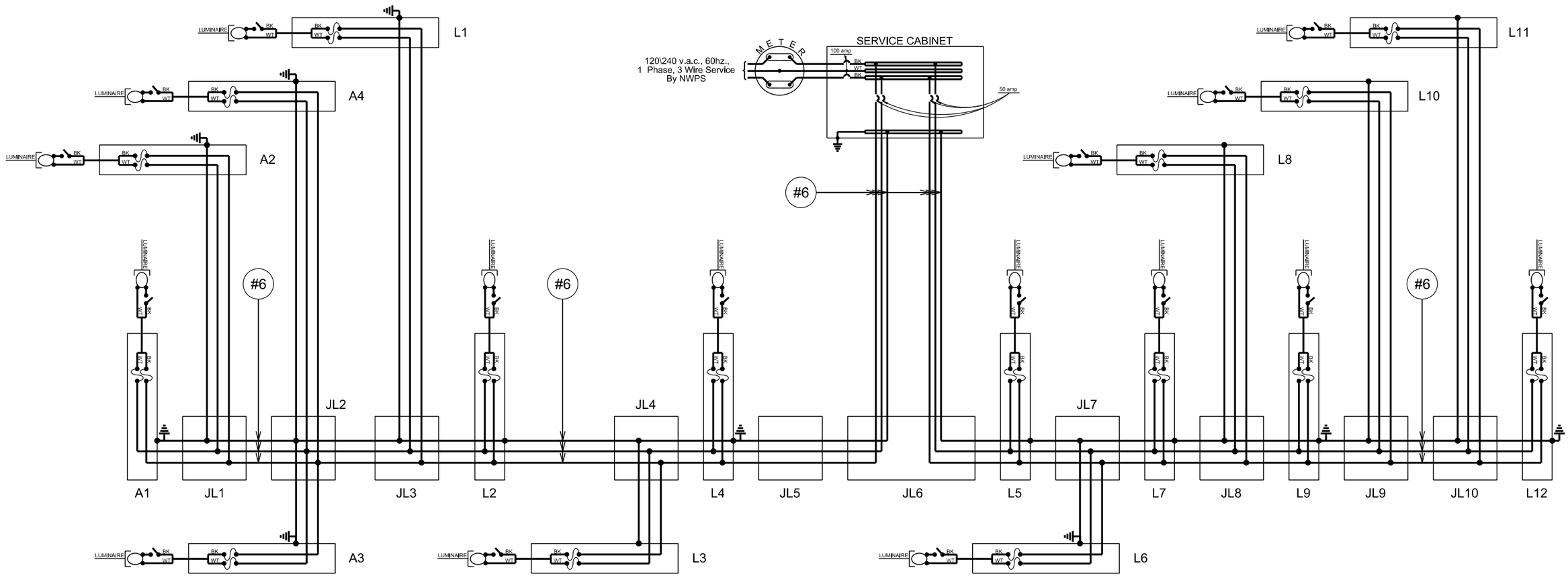


Figure 18-L8 Wiring Tables for Signals

WIRING DIAGRAM
US HWY 12/6TH AVENUE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	L28	L36

Plotting Date: 08/11/2015



NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

LEGEND:

FUSE: 6 amp. Non-Time Delay
or
2 8/10 amp. Dual Element

LUMINAIRE: 400 watt High Pressure Sodium Lamp

Figure 18-L9 Wiring Diagram for Lighting

SECTION M: PAVEMENT MARKING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	M1	M15

Plotting Date: 06/01/2016

INDEX OF SHEETS

M1 General Layout w/Index
M2 Estimate of Quantities and Plan Notes
M3-M14 Pavement Marking Layouts
M15 Standard Plates

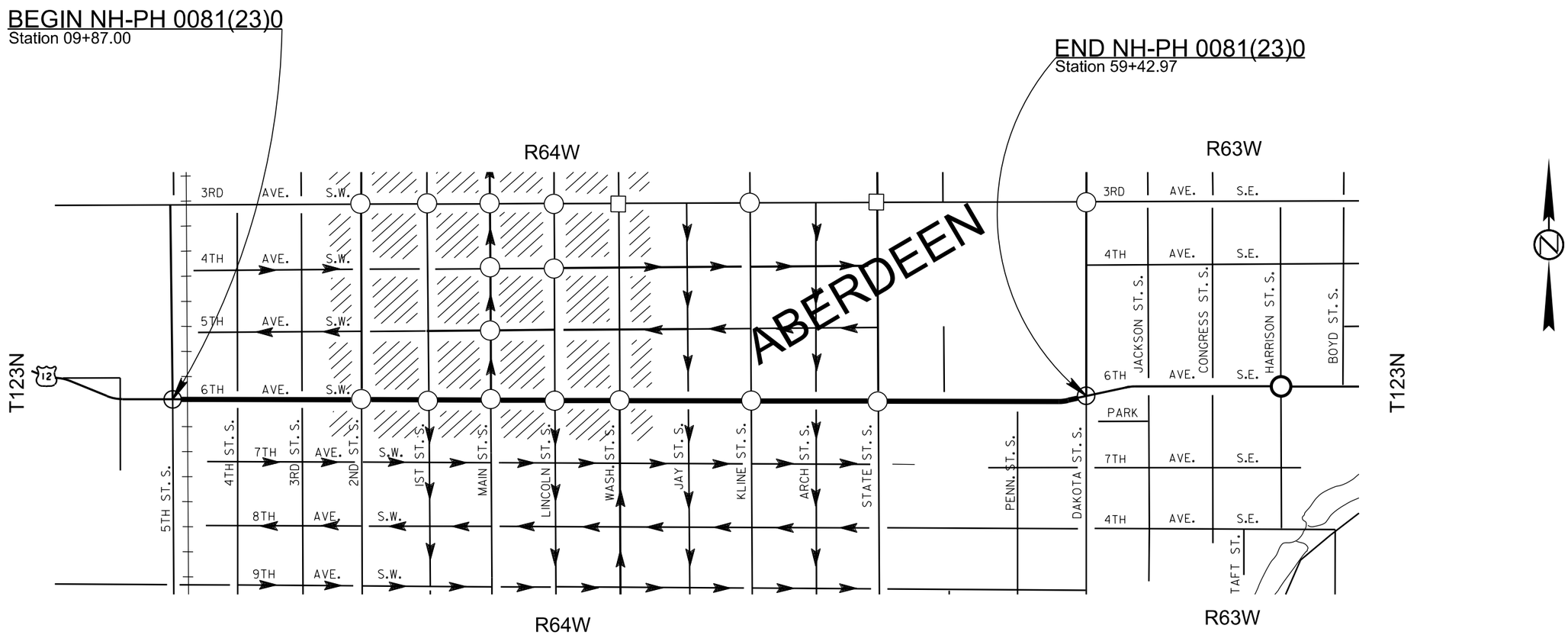


Figure 18-M1 Section Title Sheet

SECTION M ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E0010	Cold Applied Plastic Pavement Marking, 4" *(White 25 800', Yellow 22 100')*	47 900	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24" *(White 3 900', Yellow 90')*	3 990	Ft
633E0035	Cold Applied Plastic Pavement Marking, Area *(Yellow)*	15	SqFt
633E0040	Cold Applied Plastic Pavement Marking, Arrow *(Left 82, Right 13)*	95	Each
633E0055	Cold Applied Plastic Pavement Marking, Railroad Crossing	4	Each
633E5000	Groove Pavement for Pavement Marking, 4"	47 900	Ft
633E5015	Groove Pavement for Pavement Marking, 24"	3 990	Ft
633E5020	Groove Pavement for Pavement Marking, Area	15	SqFt
633E5025	Groove Pavement for Pavement Marking, Arrow	93	Each
633E5040	Groove Pavement for Pavement Marking, Railroad Crossing	4	Each

PAVEMENT MARKING

The pavement marking material shall be as defined in Section 983 of the Specifications.

GROOVE PAVEMENT FOR PAVEMENT MARKING

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

Figure 18-M2 Estimate of Quantities with General Notes and Tables

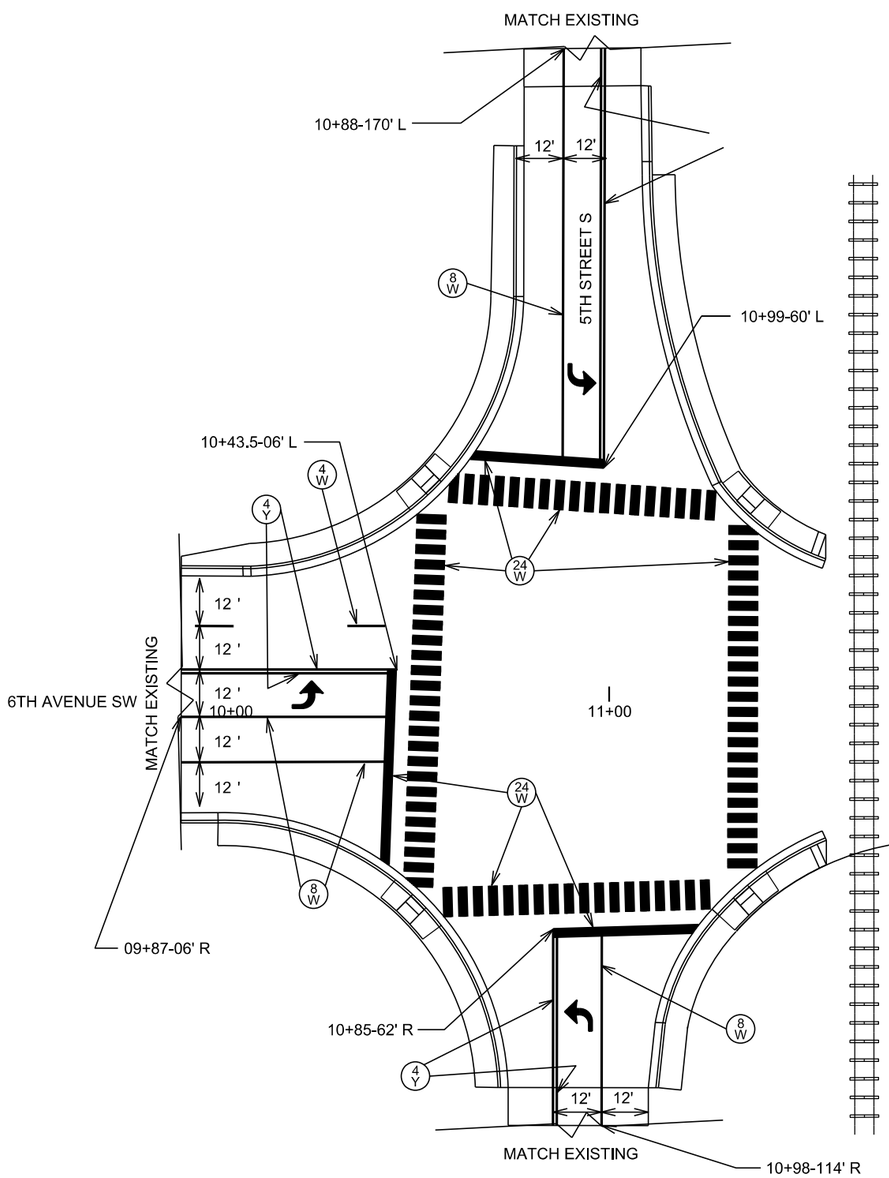
PAVEMENT MARKING LAYOUT
US HWY 12

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0081(23)0	M3	M15

Plotting Date: 11/27/2018

ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
4 W	Cold Applied Plastic Pavement Marking, 4" White	1,670	FT
4 Y	Cold Applied Plastic Pavement Marking, 4" Yellow	12,065	FT
8 W	Cold Applied Plastic Pavement Marking, 8" White	4'655	FT
24 W	Cold Applied Plastic Pavement Marking, 24" White	5,550	FT
	Cold Applied Plastic Pavement Marking, Arrow Left - 57, Right - 5, Thru - 1	63	EACH
	Cold Applied Plastic Pavement Marking, Combination Arrow Thru/Left - 4	4	EACH
	Cold Applied Plastic Pavement Marking, Railroad Crossing	3	EACH
	Grooving For Cold Applied Plastic Pavement Marking, 4"	13,735	FT
	Grooving For Cold Applied Plastic Pavement Marking, 8"	4,655	FT
	Grooving For Cold Applied Plastic Pavement Marking, 24"	5,550	FT
	Grooving For Cold Applied Plastic Pavement Marking, Arrow Left - 57, Right - 5, Thru - 1	63	SQFT
	Grooving For Cold Applied Plastic Pavement Marking, Combination Arrow Thru/Left - 4	4	EACH
	Grooving For Cold Applied Plastic Pavement Marking, Railroad Crossing	3	EACH



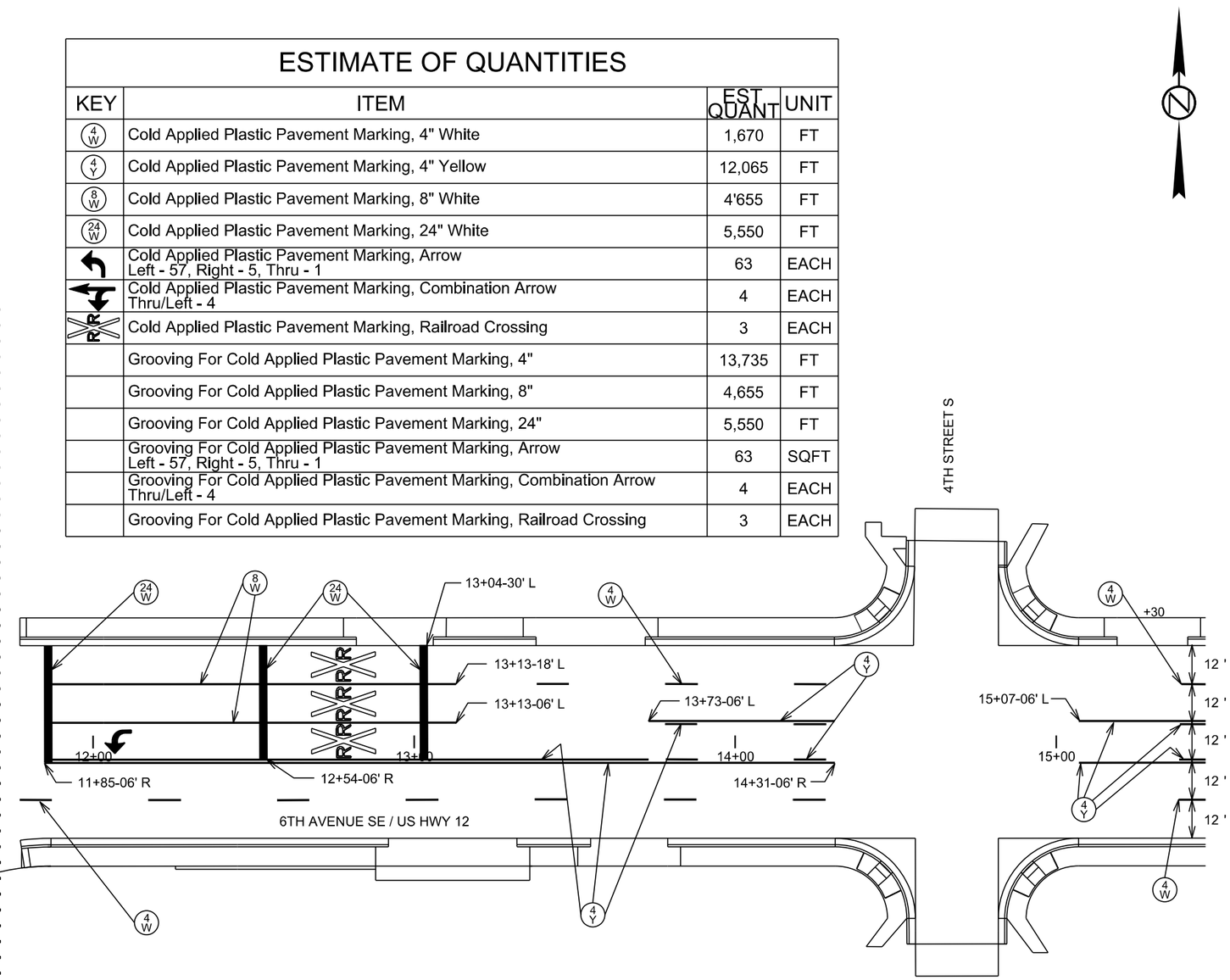


Figure 18-M3 Pavement Marking Layout

SECTION S: PERMANENT SIGNING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0034(29)211	S1	S18

Plotting Date: 05/19/2015

INDEX OF SHEETS

S1 General Layout w/ Index
S2 Est. of Quant. and Notes
S3-S8 Sign Tables
S9-S18 Standard Plates

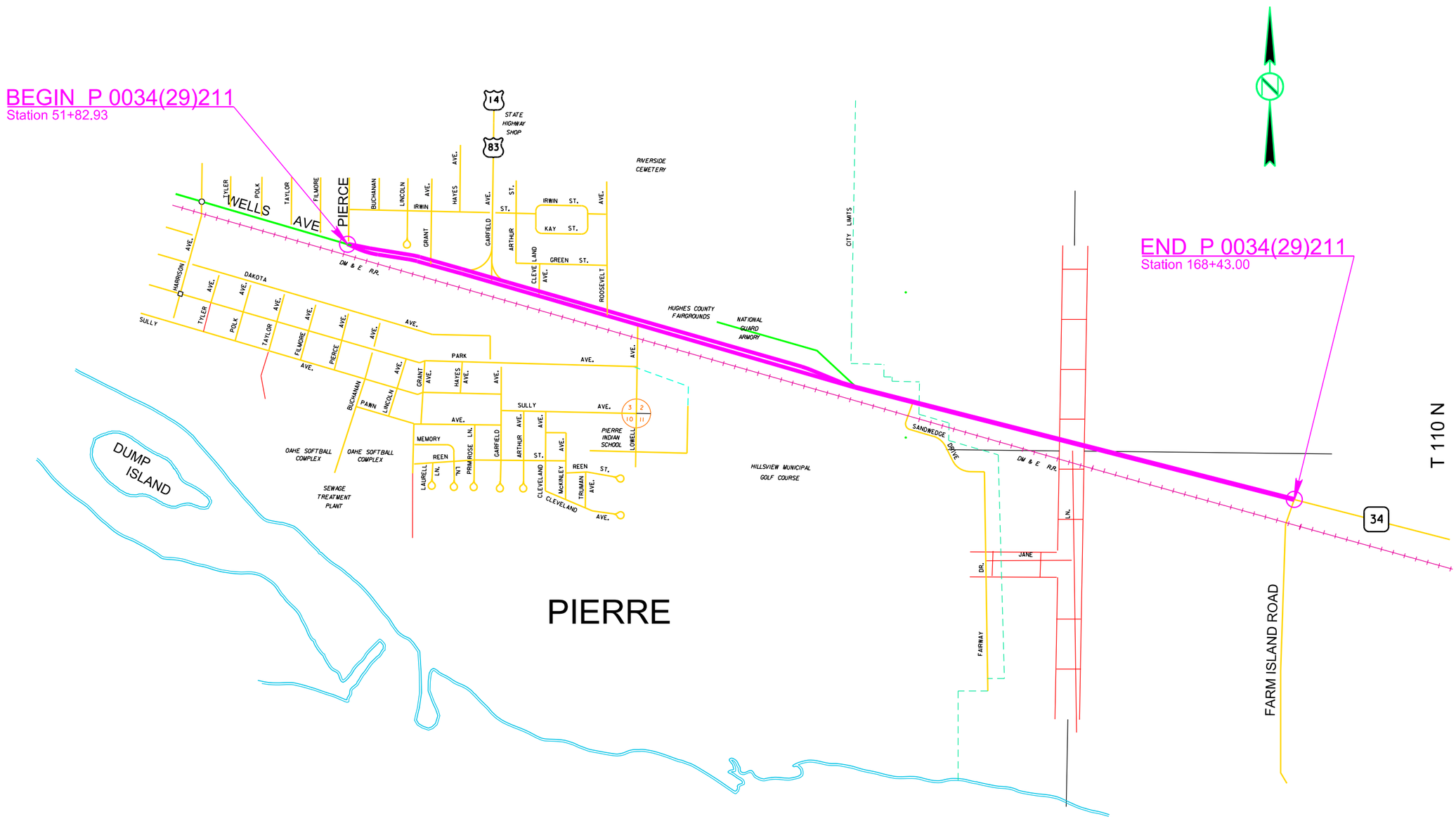


Figure 18-S1 Section Title Sheet

SECTION S ESTIMATE OF QUANTITIES

BID ITEM NUMBER	DESCRIPTION	QUANTITY	UNIT
632E1320	2.0"x2.0" Perforated Tube Post	1507.3	Ft
632E1340	2.5"x2.5" Perforated Tube Post	584.3	Ft
632E2022	Type I White Delineator Back to Back with 1.12 Lb/Ft Post	1026	Each
632E2028	4" Tubular White Delineator with 1.12 Lb/Ft Post	100	Each
632E2540	Flexible Object Marker Post	118	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy Type III	1069.3	SqFt
632E3204	Flat Aluminum Sign, Nonremovable Copy Type IV	148	SqFt
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	281	Each

PERMANENT SIGNING

The Contractor shall furnish all signs, posts, stiffeners, bases, hardware, and labor for installation of permanent signs in size, type, and quantity as shown in these plans and/or as required by the Engineer.

All existing signs, posts, and hardware removed as per these plans remain property of the State of South Dakota and shall be transported to the Deadwood Maintenance Yard by the Contractor. The Contractor shall notify the Engineer two days prior to time of delivery to the Maintenance Yard so correct placement for storage and inventory of materials can be made upon receipt.

The Contractor shall provide all labor and equipment necessary to install permanent signing, remove existing signs, and reset existing signs as detailed in these plans and/or as required by the Engineer. Payment for furnishing and installing permanent signs will be paid for at the contract unit price for each type of sign based on sheeting requirements per square foot of sign. All signs shall have Type III or Type IV sheeting as noted on the sign detail sheets or these notes. Payment for new signposts, hardware, bases, and labor will be made at the contract unit price per foot for **2" x 2" and 2 ½" x 2 ½" PERFORATED TUBULAR POST**. See breakaway post details regarding posts, hardware, bases, and footings. Measurement of post lengths for payment will be for above ground post lengths as field measured. The sign post contract items shall include post bases and all hardware. The lengths of the posts in the sign tables are approximate lengths only. The post lengths shall be verified by the Contractor. The Contractor is urged to cut posts to length on job site after site by site verification of post length.

The Contractor shall use Telespar brand (or equals) posts and bases on all new standard highway signs as approved by the Engineer. All post materials shall conform to Section 982 of the Standard Specifications, and be in accordance with ASTM specifications. Signs designated as requiring a 2 ½" sign post base shall have a 3 foot long base assembly with a shear breakaway base (slip base anchor) connecting the base to the signpost.

The length of the post shall not exceed the minimum length needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off. All posts shall by accompanied by Certificates of Compliance and shall meet all safety standards as set forth in the current edition of the Manual on Uniform Traffic Control Devices.

Locations of all new signs and all relocated signs are shown in the plans at MRMs (Mileage Reference Markers) for reference only. Final placement of permanent signs will be determined by the Engineer. New MRMs, No Pass Zones, and Curve signs, where needed, will be staked in the field by the Engineer. Included in the quantities for **FLAT ALUMINUM SIGNS/NON-REMOVABLE COPY TYPE IV** are 6 W1-6 large arrows (48"x24" = 8 ft^2) and 6 W1-8 chevrons (30"x36" = 7.5 ft^2). The need for the advisory speed plates, large arrows, and chevrons shall be determined by the Engineer.

PERFORATED TUBE POST

Payment for 2" x 2" and 2 ½" x 2 ½" perforated tube post shall include all cost for labor, equipment, and materials necessary to complete the following work:

1. Furnish all posts, stiffeners, breakaway bases, soil stabilizers, and hardware.
2. Assembly and installation of breakaway base sign supports as per details shown in these plans and Standard Plate 634.84.
3. Assembly of sign(s) to sign post as per erection details for Highway Signs as shown in these plans.
4. Installation of signpost and sign(s).
5. Signs calling for reinforced post as indicated in the Remarks column of the table of Permanent Signing shall have a 2 ¼" tubular post installed and bolted inside the 2 ½" sign post. Length of the 2 ¼" post shall extend from the base to a minimum of the bottom of the sign.

REMOVE, SALVAGE, RELOCATE & RESET TRAFFIC SIGN

The Contractor shall remove signs, posts, and bases for reset as shown in the table for **Permanent Signing**. All existing posts, bases, and signs listed in the table that are scheduled for **Removal** shall be dismantled and delivered to the Deadwood Maintenance Yard. All bolts, nuts, and washers shall be placed in individual 5-gallon pails. Backing materials shall be separated from the signs and may be reused at the Contractor's discretion. Non-threaded connections (rivets) shall be cut when necessary to reduce sign sections to a 4' x 6' maximum size. Wooden posts shall be carefully removed to avoid damage and cleaned of excess dirt and neatly stockpiled separate from the steel posts. All existing Delineators shall be removed and salvaged. All cost for labor and equipment necessary to remove, dismantle, and deliver signs and delineators to the Maintenance Yard shall be incidental to in the contract unit price per each for **REMOVE, SALVAGE, RELOCATE & RESET TRAFFIC SIGN**.

HARDWARE

Aluminum U-Channel stiffeners shall be used on all standard highway signs greater than 36" in width and shall conform to Alloy 6063-T6 or 6061-T6. The U-Channel shall be 2 inches in width and free of holes. The U-Channel stiffeners shall also be used to connect various signs and perforated tube posts together so that an entire sign can be erected as a single installation. Stiffeners may be fastened to signs by use of 1/4" drive rivets. Installation of the stiffeners shall be incidental to other contract items.

A 3/8" diameter straight bolt(Grade 8) shall be used in all breakaway shear bases for the 2 ½" perforated tube posts. All other perforated tube signpost material shall be fastened with 5/16" diameter corner bolts(Grade 2).

All perforated tube signposts shall have a soil stabilizer attached to the base. Soil stabilizers shall be a MPJ Sign Wedge manufactured by MPJ Enterprises, Inc., 304 Spring Ave. N., Lake Preston, SD 57249 or equal as approved by the Engineer.

Slip Base Anchors for use with the 2 ½" posts shall be Telespar Slip Base Anchor brand or equal meeting the requirements of NCHRP Report 350.

FURNISH & INSTALL FLAT ALUMINUM SIGNS / NON-REMOVABLE COPY TYPE III & TYPE IV

Measurement of sign areas will include payment for the entire sign blank before trimming for rounded corners. The square unit measurement for each sign shall be as shown in the table of **Permanent Signing**. This payment for signs designated as **Flat Alum.** under the **New Sign** colum in the table of **Permanent Signing** shall include all labor, equipment, and materials to complete the work and shall be paid for at the contract unit price per square foot for **FLAT ALUMINUM SIGN / NON-REMOVABLE COPY TYPE III** and **FLAT ALUMINUM SIGN / NON-REMOVABLE COPY TYPE IV**.

SHEETING REQUIREMENTS

All signs in the table for **Permanent Signing** that call for Type III sheeting shall have hi-intensity encapsulated lens reflectorized legend, border and background, Type III as per AASHTO designation M 268-84 (1990) and M 268-921. All signs in the table for **Permanent Signing** that call for Type IV sheeting shall have micro-cube corner prismatic reflectorized background and vinyl, non-reflectorized border and legend, Type IV as per SDDOT designation.

FLEXIBLE OBJECT MARKER POST

The Contractor shall furnish and install yellow flexible object marker posts at the end of each mainline cross pipe within the project limits and at the end of the no pass zones as indicated in the table of **Permanent Signing**. Those posts used as the end of no pass zone markers shall have two 3"x6" black vinyl sheeting attached to the top of the post one facing each direction of on coming traffic. The end of no pass zone markers shall be mounted approximately 1 foot from the R.O.W. line. This post must be clearly visible from the driving lane. If topography or obstructions block the visibility of the post from the driving lane, the post may be moved transversely until such point it is visible but not exceed the minimum offset of the standard highway delineation. The flexible object marker post shall extend 4 feet from ground line to top of post and shall be driven with or without a separate base a minimum of 18 inches into the ground. The post shall have a minimum one-dimensional width of 4 inches. Payment for labor, equipment, and materials to install new posts and remove existing posts and deliver to the Deadwood Maintenance Yard shall be incidental to the contract unit price per each for **FLEXIBLE OBJECT MARKER POST**.

Figure 18-S2 Estimate of Quantities with General Notes and Tables

PERMANENT SIGNING - Highway 385

EXISTING MRM	NEW MRM	SIGN								POST					DESCRIPTION	REMARKS
		Width (in)	Height (in)	Number	Facing Traffic	New Sign	Remove Existing	Square Footage	Sheeting Type	New Post	Length (ft)	Size (in)	#	Shear Slip Base		
115.00R + 0.000	SAME	60	24	ADO-5	NORTHBOUND	No	Yes			Yes	10.3	###	2	Yes	ADOPT A HIGHWAY LITTER CONTROL COURTESY OF	Remove & Reset on New Post @ Existing Location
115.00R + 0.000	SAME	60	18	ADO-3		No	Yes			No					EMPLOYEES OF WILD BILLS CAMPGROUND	Remove & Reset on New Post @ Existing Location
115.00R + 0.000	SAME	30	30	ADO-6		No	Yes			No					LITTER CREW AHEAD - Hinged	Remove & Reset on New Post @ Existing Location
115.00R + 0.000	SAME	4.5	18		NORTHBOUND	Flat Alum.	Yes	0.6	III	No					MRM 115	Install New Sign on New Post @ Existing Location
115.00R + 0.000	SAME	4.5	18		SOUTHBOUND	Flat Alum.	Yes	0.6	III	No					MRM 115	Install New Sign on New Post @ Existing Location
115.00L + 0.005	115.00L + 0.000	60	24	ADO-5	SOUTHBOUND	No	Yes			Yes	9.8	###	2	Yes	ADOPT A HIGHWAY LITTER CONTROL COURTESY OF	Remove & Reset on New Post @ Existing Location
115.00L + 0.005	115.00L + 0.000	60	12	ADO-2		No	Yes			No					BOONDOCKS EMPLOYEES	Remove & Reset on New Post @ Existing Location
115.00L + 0.005	115.00L + 0.000	30	30	ADO-6		No	Yes			No					LITTER CREW AHEAD - Hinged	Remove & Reset on New Post @ Existing Location
115.00R + 0.034	SAME	30	24	I-3E	NORTHBOUND	Flat Alum.	Yes	5.0	III	Yes	9.5	2	1	No	BEAR BUTTE CREEK	Install New Sign on New Post @ Existing Location
115.00R + 0.034	115.00R + 0.037	30	30	W11-6	NORTHBOUND	Flat Alum.	Yes	6.3	III	Yes	11.0	2	1	No	Snowmobile Crossing Symbol - Hinged	Install New Sign on New Posts @ Existing Location
115.00R + 0.034	SAME	24	12	W16-2a		Flat Alum.	Yes	2.0	III	No					750 FEET	Install New Sign Below Sign Above
115.00L + 0.044	SAME	30	24	I-3E	SOUTHBOUND	Flat Alum.	Yes	5.0	III	Yes	9.5	2	1	No	BEAR BUTTE CREEK	Install New Sign on New Post @ Existing Location
115.00L + 0.116	SAME	30	30	R1-1	EASTBOUND	Flat Alum.	Yes	5.2	III	Yes	10.0	2	1	No	STOP	Install New Sign on New Post @ Existing Location
NONE	115.00R + 0.120	48	24	W1-7	EASTBOUND	Flat Alum.	Yes	8.0	III	Yes	9.5	2	2	No	Large Arrow - Dbl. Head	Install New Sign on New Posts @ New Location
115.00R + 0.118	SAME	30	30	W11-6	NORTHBOUND	Flat Alum.	Yes	6.3	III	Yes	11.0	2	1	No	Snowmobile Crossing Symbol - Hinged	Install New Sign on New Posts @ Existing Location
NONE	115.00R + 0.118	24	12	W16-7p		Flat Alum.	Yes	2.0	III	No					45 Deg. Arrow Left and Down	Install New Sign Below Sign Above
115.00R + 0.142	SAME	24	30	R2-5a	NORTHBOUND	Flat Alum.	Yes	5.0	III	Yes	10.0	2	1	No	REDUCED SPEED AHEAD	Install New Sign on New Post @ Existing Location
115.00L + 0.187	SAME	30	30	W11-6	SOUTHBOUND	Flat Alum.	Yes	6.3	III	Yes	10.0	2	1	No	Snowmobile Crossing Symbol - Hinged	Install New Sign on New Posts @ Existing Location
NONE	115.00L + 0.187	24	12	W16-7p		Flat Alum.	Yes	2.0	III	No					45 Deg. Arrow Left and Down	Install New Sign Below Sign Above
115.00L + 0.199	SAME	24	30	R2-1	SOUTHBOUND	Flat Alum.	Yes	5.0	III	Yes	10.0	2	1	No	SPEED LIMIT 55	Install New Sign on New Post @ Existing Location
115.00R + 0.199	SAME	24	30	R2-1	NORTHBOUND	Flat Alum.	Yes	5.0	III	Yes	10.0	2	1	No	SPEED LIMIT 45	Install New Sign on New Post @ Existing Location
115.00L + 0.214	SAME	72	18	D9-10F	SOUTHBOUND	No	Yes			Yes	9.0	2	2	No	0.9 BLACK HILLS HIDEAWAY B & B →	Remove & Reset on New Post @ Existing Location
115.00L + 0.290	SAME	30	30	W11-6	SOUTHBOUND	Flat Alum.	Yes	6.3	III	Yes	11.0	2	1	No	Snowmobile Crossing Symbol - Hinged	Install New Sign on New Posts @ Existing Location
115.00L + 0.290	SAME	24	12	W16-2a		Flat Alum.	Yes	2.0	III	No					750 FEET	Install New Sign Below Sign Above
115.00R + 0.262	NONE	30	30	W1-2R	NORTHBOUND	No	Yes			No					Right Curve Arrow	Remove & Stockpile for Recycle
115.00R + 0.315	NONE				NORTHBOUND					No					End of No Passing Zone Marker	Remove Existing Wood Post
115.00R + 0.467	NONE	48	36	W14-3	SOUTHBOUND	No	Yes			No					NO PASSING ZONE	Remove & Stockpile for Recycle
115.00L + 0.481	SAME	30	30	R1-1	EASTBOUND	No	Yes			No					STOP	Remove & Stockpile for Recycle
NONE	115.00R + 0.538	30	30	W1-5L	NORTHBOUND	Flat Alum.	No	6.3	III	Yes	13.0	2	1	No	Winding Road Left	Install New Sign on New Post @ New Location (See notes for curve signs)
NONE	115.00R + 0.538	24	18	W7-3a		Flat Alum.	No	3.0	III	No					NEXT 2 MILES	Install New Sign Below Sign Above
NONE	115.00R + 0.538	18	18	W13-1		Flat Alum.	No	2.3	III	No					Advisory Speed ** MPH	Install New Sign Below Sign Above
115.00R + 0.596	NONE	30	30	W1-2L	NORTHBOUND	No	Yes			No					Left Curve Arrow	Remove & Stockpile for Recycle
115.00R + 0.596	NONE	18	18	W13-1		No	Yes			No					Advisory Speed 40 MPH	Remove & Stockpile for Recycle
115.00L + 0.655	115.00L + 0.642	48	36	W14-3	NORTHBOUND	No	Yes			Yes	10.5	2	2	No	NO PASSING ZONE	Remove & Reset on New Post @ New Location (See notes for NPZ signs)
115.00R + 0.717	NONE	48	24	W1-6	NORTHBOUND	No	Yes			No					Large Arrow	Remove & Stockpile for Recycle
115.00R + 0.777	SAME	36	36	W2-2	NORTHBOUND	No	Yes			Yes	10.5	2	2	No	Side Road Symbol - 90 Degrees	Remove & Reset on New Post @ Existing Location
115.00R + 0.777	SAME	24	18	W2-2b		No	Yes			No					HIDDEN APPROACH	Remove & Stockpile for DOT Reuse
115.00L + 0.795	115.00L + 0.869				SOUTHBOUND				Vinyl	Yes	5.5	4	1	No	End of No Passing Zone Marker	Remove Existing Wood Post & Install New Flexible End of Zone Marker
115.00R + 0.829	115.00R + 0.784				NORTHBOUND				Vinyl	Yes	5.5	4	1	No	End of No Passing Zone Marker	Remove Existing Wood Post & Install New Flexible End of Zone Marker
115.00R + 0.833	NONE	48	24	W1-6	SOUTHBOUND	No	Yes			No					Large Arrow	Remove & Stockpile for Recycle
115.00R + 0.908	NONE	30	30	W1-2R	NORTHBOUND	No	Yes			No					Right Curve Arrow	Remove & Stockpile for Recycle
115.00L + 0.995	NONE	30	30	W1-2R	SOUTHBOUND	No	Yes			No					Right Curve Arrow	Remove & Stockpile for Recycle
116.00R + 0.000	SAME	4.5	18		NORTHBOUND	Flat Alum.	Yes	0.6	III	Yes	6.0	2	1	No	MRM 116	Install New Sign on New Posts @ Existing Location
116.00R + 0.000	SAME	4.5	18		SOUTHBOUND	Flat Alum.	Yes	0.6	III	Yes	6.0	2	1	No	MRM 116	Install New Sign on New Posts @ Existing Location
NONE	116.00L + 0.027	48	24	W1-7	WESTBOUND	Flat Alum.	Yes	8.0	III	Yes	9.5	2	2	No	Large Arrow - Dbl. Head	Install New Sign on New Posts @ New Location
115.00R + 0.030	SAME	30	30	R1-1	WESTBOUND	Flat Alum.	Yes	5.2	III	Yes	10.0	2	1	No	STOP	Install New Sign on New Post @ Existing Location
116.00R + 0.037	SAME	36	36	W6-3C	NORTHBOUND	No	Yes			Yes	12.0	2	2	No	WATCH FOR TURNING VEHICLES	Install New Sign on New Posts @ Existing Location
116.00R + 0.037	SAME	18	18	W13-1		No	Yes			No					Advisory Speed 30 MPH	Remove & Stockpile for Recycle
NONE	116.00R + 0.073	48	36	W14-3	SOUTHBOUND	Flat Alum.	Yes	5.6	III	Yes	10.5	2	2	No	NO PASSING ZONE	Install New Sign on New Post @ New Location (See notes for NPZ signs)
116.00R + 0.112	NONE	30	30	W1-2L	NORTHBOUND	No	Yes			No					Left Curve Arrow	Remove & Stockpile for Recycle

Figure 18-S3 Permanent Signing

SIGN DETAIL

SIGN NUMBER	R20-1
WIDTH x HEIGHT	2'-6" x 2'-0"
BORDER WIDTH	0.625"
CORNER RADIUS	1.5"
MOUNTING	GROUND
BACKGROUND	TYPE: HIGH INTENSITY
	COLOR: WHITE
LEGEND/BORDER	TYPE: VINYL
	COLOR: BLACK

SYMBOL	X	Y	WID	HT

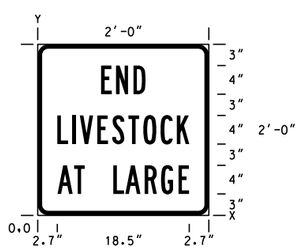
DIMENSIONS IN INCHES

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT																								HT LEN
16.0 B	X	L	I	V	E	S	T	O	C	K	X													5.0
	3.4	2.6	1.4	3.1	2.6	2.9	2.6	3.0	2.9	2.2	3.4													23.1
8.0 B	X	A	T	X	L	A	R	G	E	X														5.0
	3.5	2.9	1.9	5.0	2.1	3.4	2.9	3.1	1.9	3.5														23.1
3.0 B	X	N	E	X	T	X	5	X	M	I	L	E	S	X										3.0
	4.6	1.8	1.6	1.7	1.1	3.0	1.3	3.0	2.0	0.9	1.6	1.6	1.3	4.6										20.8

SIGN DETAIL



SIGN NUMBER	R20-2
WIDTH x HEIGHT	2'-0" x 2'-0"
BORDER WIDTH	0.625"
CORNER RADIUS	1.5"
MOUNTING	GROUND
BACKGROUND	TYPE: HIGH INTENSITY
	COLOR: WHITE
LEGEND/BORDER	TYPE: VINYL
	COLOR: BLACK

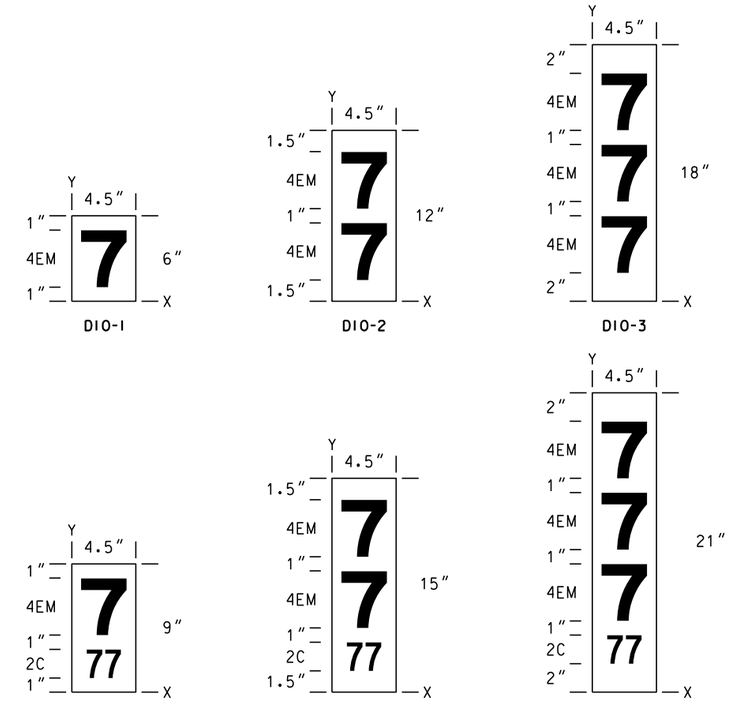
SYMBOL	X	Y	WID	HT

DIMENSIONS IN INCHES

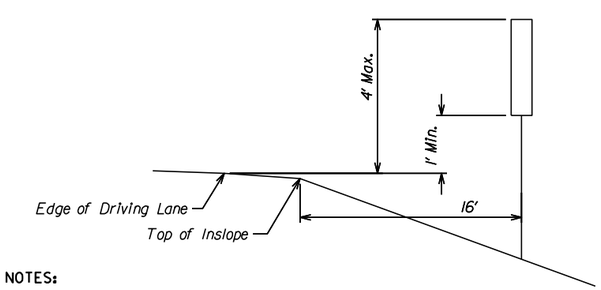
SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT																								HT LEN
17.0 B	X	E	N	D	X																			4.0
	8.9	2.1	2.4	1.7	8.9																			6.2
10.0 B	X	L	I	V	E	S	T	O	C	K	X													4.0
	2.7	2.1	1.1	2.4	2.1	2.3	2.1	2.4	2.3	1.8	2.7													18.5
3.0 B	X	A	T	X	L	A	R	G	E	X														4.0
	2.8	2.3	1.5	4.0	1.7	2.7	2.3	2.4	1.5	2.8														18.5



PROFILE VIEW



GENERAL NOTES:

BACKGROUND SHALL BE HIGH INTENSITY GREEN.
LEGEND SHALL BE HIGH INTENSITY WHITE.
SIGNS SHALL HAVE SQUARED CORNERS WITH NO BORDER.

SIGN LOCATIONS SHALL BE STAKED BY THE ENGINEER.

November 28, 2001

SDDOT	**NON-INTERSTATE MILEAGE REFERENCE MARKERS TYPICAL LAYOUT**	PLATE NUMBER SPECIAL Sheet 1 of 1

Figure 18-S4 Sign Details

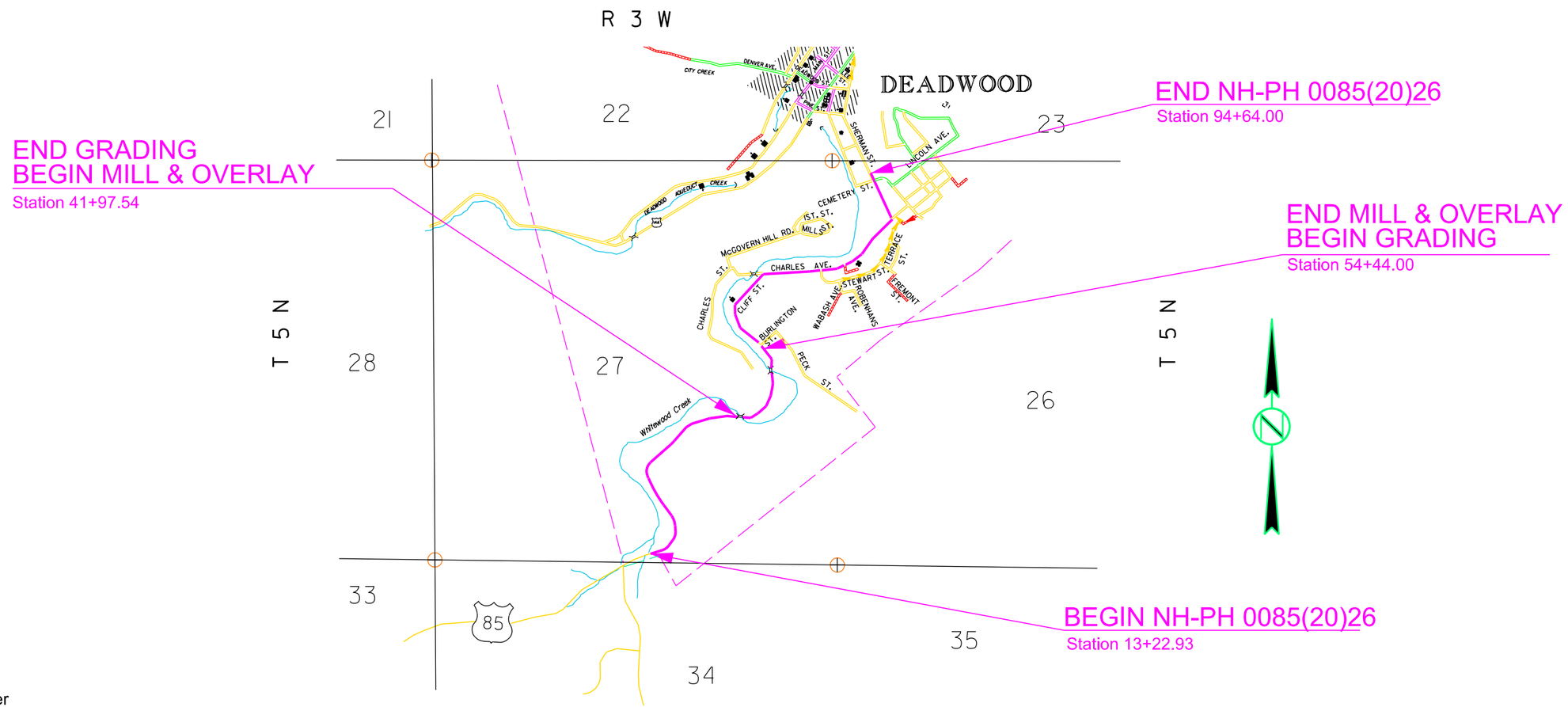
SECTION U: EXISTING UTILITY INFORMATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	U1	U23

Plotting Date: 08/24/2017

INDEX OF SHEETS

U1	General Layout With Index
U2	General Notes
U3-U7	Subsurface Utility Locations
U8-U23	Utility Layouts



1 = Black Hills Power
2 = City of Deadwood Electric
3 = City of Deadwood Sanitary
5 = City of Deadwood Water
6 = Knology / Wide Open West (WOW)
7 = Lead / Deadwood Sanitary District
8 = MidContinent Communications
9 = Montana Dakota Utilities
13 = South Dakota Network
14 = Qwest / Century Link

Figure 18-U1 Section Title Sheett

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	U2	U23

Plotting Date: 06/21/2016

SUBSURFACE UTILITY LOCATIONS
QUALITY LEVEL A

Subsurface utility explorations were done at the following locations. The information below states what was located in the specified areas. This table is provided to aid the Contractor during construction and does not substitute or replace the requirements of SD One Call. All information is approximate and the Contractor shall verify all utility locations before construction in those areas as mandated in SDCL 49-7A.

Test Hole	Station	Offset	Side	Finding	Existing Ground Elev.	Utility Depth in Ft.	Utility Elevation	Northing	Easting
13-2	13+42.13	20.74'	L	2 - 2" Poly	4724.25	2.38	4721.87	214283.590	990906.212
9-22	13+47.34	15.55'	R	4" Steel	4724.76	2.95	4721.81	214250.685	990922.365
14-30	13+58.09	20.39'	L	2 -1.5" and 5" DBC	4723.75	2.90	4720.85	214288.121	990920.494
9-23	13+81.58	18.49'	L	4" Steel	4723.30	3.20	4720.10	214294.779	990941.674
5-1ee	14+28.49	14.69'	L	12" PVC	4722.76	5.70	4717.06	214312.631	990982.651
9-2x	15+90.23	19.05'	R	4" Steel	4717.78	2.50	4715.28	214406.668	991117.618
9-2x	15+90.24	19.68'	R	2" Steel	4717.79	3.85	4713.94	214406.362	991118.169
9-2y	17+04.11	24.44'	R	4" Steel	4714.78	2.65	4712.13	214518.348	991163.769
14-28a	19+69.91	29.59'	R	2 - 1.5" DBC	4710.04	4.45	4705.59	214791.084	991108.464
9-2w	20+24.00	6.55'	L	4" Steel	4710.60	3.30	4707.30	214818.025	991049.260
6-3a	20+33.84	36.70'	L	4" PVC	4711.77	2.90	4708.87	214810.511	991018.450
1-27	20+33.86	36.98'	L	4" PVC	4711.87	3.30	4708.57	214810.386	991018.199
14-26a	20+33.95	37.65'	L	2 -1.5" DBC and 4" PVC	4711.96	2.85	4709.11	214810.106	991017.577
8-15a	20+33.98	37.29'	L	4" PVC and 2" PVC	4712.00	2.85	4709.15	214810.322	991017.865
5-1cc	20+50.75	2.57'	L	12" PVC	4710.71	3.00	4707.71	214842.866	991038.552
1-27b	21+25.97	21.83'	L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
14-27b	21+25.97	21.83'	L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
6-3b	21+25.97	21.83'	L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
8-15b	21+25.97	21.83'	L	Buried Cable	4710.08	3.30	4706.78	214896.655	990982.561
13-1b	21+26.87	29.61'	L	1.5" Poly	4709.71	0.60	4709.11	214893.330	990975.473
13-1c	22+61.12	27.69'	L	1.5" Poly	4706.26	0.60	4705.66	215008.463	990906.400
1-27c	22+63.09	21.54'	L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
14-27c	22+63.09	21.54'	L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
6-3c	22+63.09	21.54'	L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
8-15c	22+63.09	21.54'	L	Buried Cable	4706.48	3.20	4703.28	215013.378	990910.592
1-27d	23+42.95	21.54'	L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
14-27d	23+42.95	21.54'	L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
6-3d	23+42.95	21.54'	L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
8-15d	23+42.95	21.54'	L	Buried Cable	4705.06	3.20	4701.86	215081.258	990868.536
13-1d	23+43.29	27.73'	L	1.5" Poly	4704.18	0.60	4703.58	215078.291	990863.094
5-34b	24+26.72	7.29'	L	12" PVC	4709.46	5.65	4703.81	215162.450	990839.014
9-20	24+27.61	12.21'	L	4" Steel	4709.10	3.25	4705.85	215161.267	990834.153
13-1e	24+60.27	35.94'	L	1.5" Poly	4701.95	0.30	4701.65	215184.551	990799.250
14-27e	24+60.70	29.52'	L	Buried Cable	4702.18	3.20	4698.98	215187.132	990805.144

Test Hole Owner Identification Number Codes (First number denotes utility ownership)

1 = Black Hills Power, 2 = City of Deadwood Electric, 3 = City of Deadwood Sanitary, 5 = City of Deadwood Water, 6 = Wide Open West / Knology, 7 = Lead / Deadwood Sanitary District, 8 = MidContinent Communications, 9 = Montana Dakota Utilities, 13 = South Dakota Network, 14 = Century Link / Qwest

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/96) epoch 2002.00; Geoid 03 SF = 0.99979051
The elevations shown on this sheet are based on NAVD 88.

Figure 18-U2 Subsurface Utility Locations with Test Hole Owner Number Codes

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0014(177)421 IM 0295(40)132	U2	U18

Plotting Date: 06/21/2016

SUBSURFACE UTILITY LOCATIONS
QUALITY LEVEL A

Subsurface utility explorations were done at the following locations. The information below states what was located in the specified areas. This table is provided to aid the Contractor during construction and does not substitute or replace the requirements of SD One Call. All information is approximate and the Contractor shall verify all utility locations before construction in those areas as mandated in SDCL 49-7A.

Baseline Alignment: Mainline (US HWY 14/6th Street)

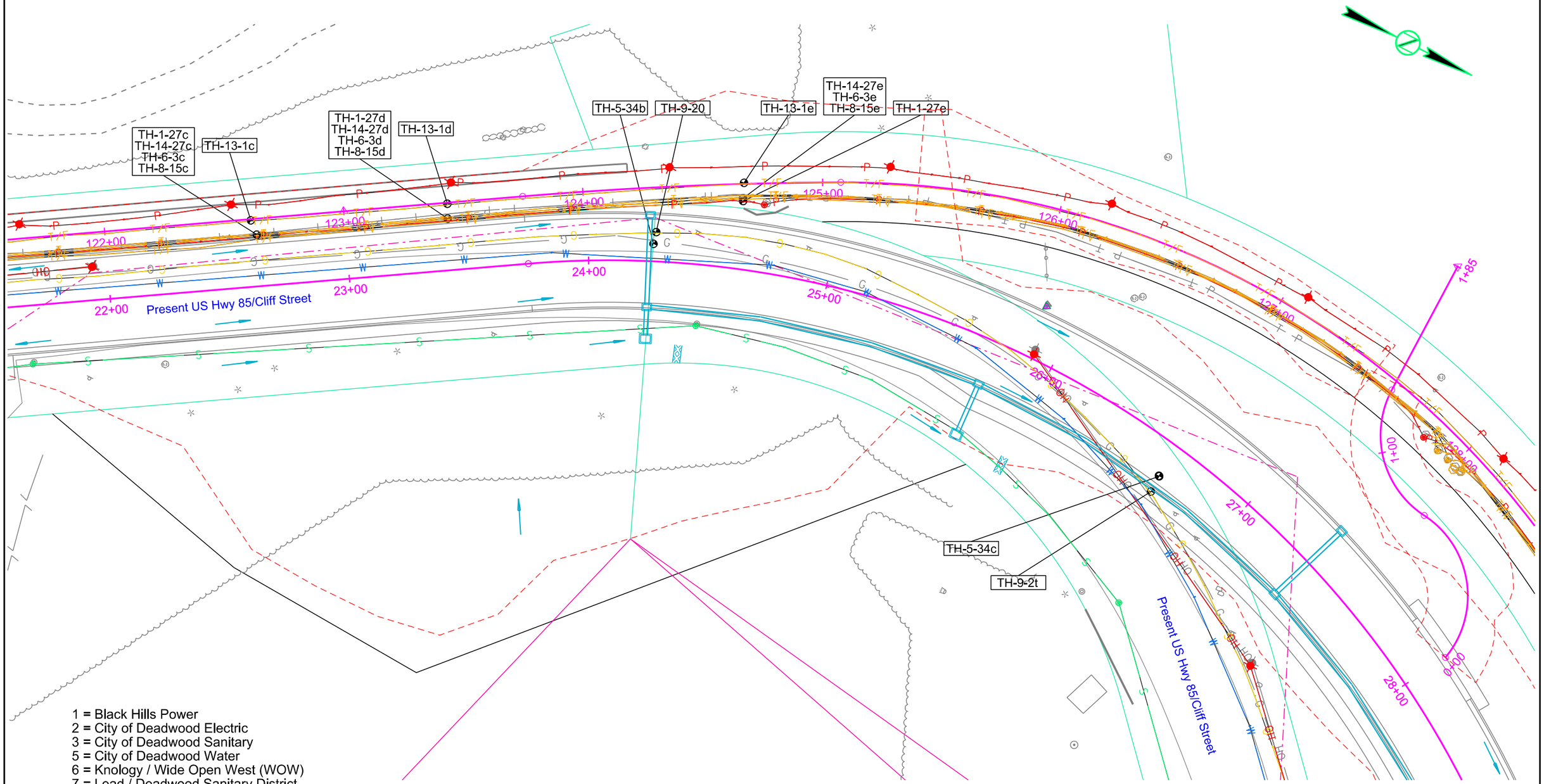
Test Hole	Station	Offset	Side	Finding	Existing Ground Elev.	Utility Depth in Ft.	Utility Elevation	Northing	Easting
TH64	49+80.94	43.50	R	Single Conduit	1656.88	3.71	1653.17	191118.58	2813871.88
TH76	50+42.94	35.49	R	2” Power	1659.11	4.25	1654.86	191129.26	2813933.71
TH63	52+68.79	47.71	R	Single Conduit	1663.51	2.74	1660.77	191127.75	2814159.52
TH8	53+00.14	51.07	L	1” Fiber Optic	1664.17	2.50	1661.67	191227.64	2814187.18
TH25	53+09.00	77.77	L	6” Water	1664.96	8.95	1656.01	191254.63	2814195.16
TH65	53+38.30	39.73	L	4” Natural Gas	1665.17	3.47	1661.70	191217.59	2814225.88
TH9	53+38.70	49.05	L	4” Natural Gas	1664.98	6.65	1658.33	191226.92	2814225.98
TH67A	53+44.69	39.14	L	Unknown	1664.88	2.38	1662.50	191217.20	2814232.30
TH67B	53+45.75	39.72	L	8” Natural Gas	1664.92	5.96	1658.96	191217.81	2814233.35
TH40	53+51.09	46.39	R	Concrete Duct	1665.23	4.49 – 5.95	1660.74 – 1659.28	191131.91	2814241.33
TH39	53+53.72	50.26	L	Concrete Duct	1665.19	6.69 – 8.04	1658.50 – 1657.15	191228.59	2814241.04
TH66	53+53.76	40.15	L	Concrete Duct	1665.30	4.55 – 6.03	1660.75 – 1659.27	191218.49	2814241.38
TH68	53+57.00	40.28	L	Fiber Optic Conduit	1665.37	4.55 – 6.03	1660.82 – 1659.34	191218.72	2814244.63
TH86	54+75.33	104.48	R	4” Duct	1664.74	3.18	1661.56	191077.59	2814367.75
TH87	55+08.44	104.33	R	4” Duct	1665.50	2.78	1662.72	191078.98	2814401.26
TH24	59+11.01	125.96	L	2” Natural Gas	1673.16	4.05	1669.11	191334.47	2814788.28
TH18	63+36.98	144.61	L	2” Natural Gas	1674.82	3.30	1671.52	191388.96	2815211.43
TH20	63+58.79	564.38	L	1.5" Fiber Optic	1671.37	4.30	1667.07	191809.14	2815199.28
TH19	63+75.10	144.83	L	2” Natural Gas	1674.85	3.83	1671.02	191392.30	2815249.74
TH46	67+18.65	137.25	R	2" Conduit	1673.33	3.39	1669.94	191134.78	2815612.12
TH45	67+20.22	127.34	R	Width x Depth, Concrete filled.	1675.02	3.46 – 4.34	1671.56 – 1670.68	191144.77	2815613.09
TH43	67+36.10	149.44	L	2” Natural Gas	1673.99	5.24	1668.75	191422.00	2815612.87
TH48	67+78.54	140.06	R	2" Conduit	1673.10	3.81	1669.29	191135.35	2815671.62
TH21	67+80.97	554.69	L	1.5” Fiber Optic	1670.12	3.50	1666.62	191829.17	2815635.56
TH47	67+85.09	129.72	R	Fiber Optic Conduit	1673.82	3.63 – 4.39	1670.19 – 1669.43	191146.04	2815677.59
TH44	68+12.94	151.83	L	2” Natural Gas	1672.24	5.07	1667.17	191428.71	2815689.80
TH26	88+83.35	108.28	R	2” Gas	1647.51	5.45	1642.06	191283.68	2817771.44
TH27	89+07.61	128.46	R	2” Power	1642.39	3.35	1639.04	191264.87	2817796.77
TH69	91+50.93	117.62	R	1” Power	1646.48	2.64	1643.84	191289.18	2818039.12
TH70	92+69.25	141.11	R	2” Natural Gas	1637.77	2.00	1635.77	191272.19	2818158.23
TH30	92+74.15	121.88	R	6” Water	1642.47	6.35	1636.12	191291.64	2818162.08
TH77	96+23.90	117.69	R	Fiber Optic Conduit	1635.52	3.25 – 4.41	1632.27 – 1631.11	191311.79	2818509.59
TH51	96+24.78	119.74	R	3-2" Conduit	1635.13	3.27 – 4.01	1631.86 – 1631.12	191309.73	2818510.55
TH49	96+31.31	110.16	L	Concrete Duct	1636.54	2.93 – 4.07	1633.61 – 1632.47	191539.75	2818508.18
TH50	96+87.84	154.53	L	3-2" Conduit	1635.51	8.35	1627.16	191586.22	2818563.30
TH52	97+13.45	136.21	R	3-2" Conduit	1634.55	7.88	1626.67	191296.58	2818599.31

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/1996) epoch 2002.00; Geiod 03 SF = 0.99994679
The elevations shown on this sheet are based on NAVD 88.

Figure 18-U2A Subsurface Utility Locations with Generic Test Hole Numbers

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0085(20)26	U10	U23

Plotting Date: 11/28/2018



1 = Black Hills Power
2 = City of Deadwood Electric
3 = City of Deadwood Sanitary
5 = City of Deadwood Water
6 = Knology / Wide Open West (WOW)
7 = Lead / Deadwood Sanitary District
8 = MidContinent Communications
9 = Montana Dakota Utilities
13 = South Dakota Network
14 = Qwest / Century Link

Figure 18-U3 Utility Layout Sheet with Utility Owner Number Legend

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 0014(177)421 IM 0295(40)132	U7	U18

Plotting Date: 06/21/2016

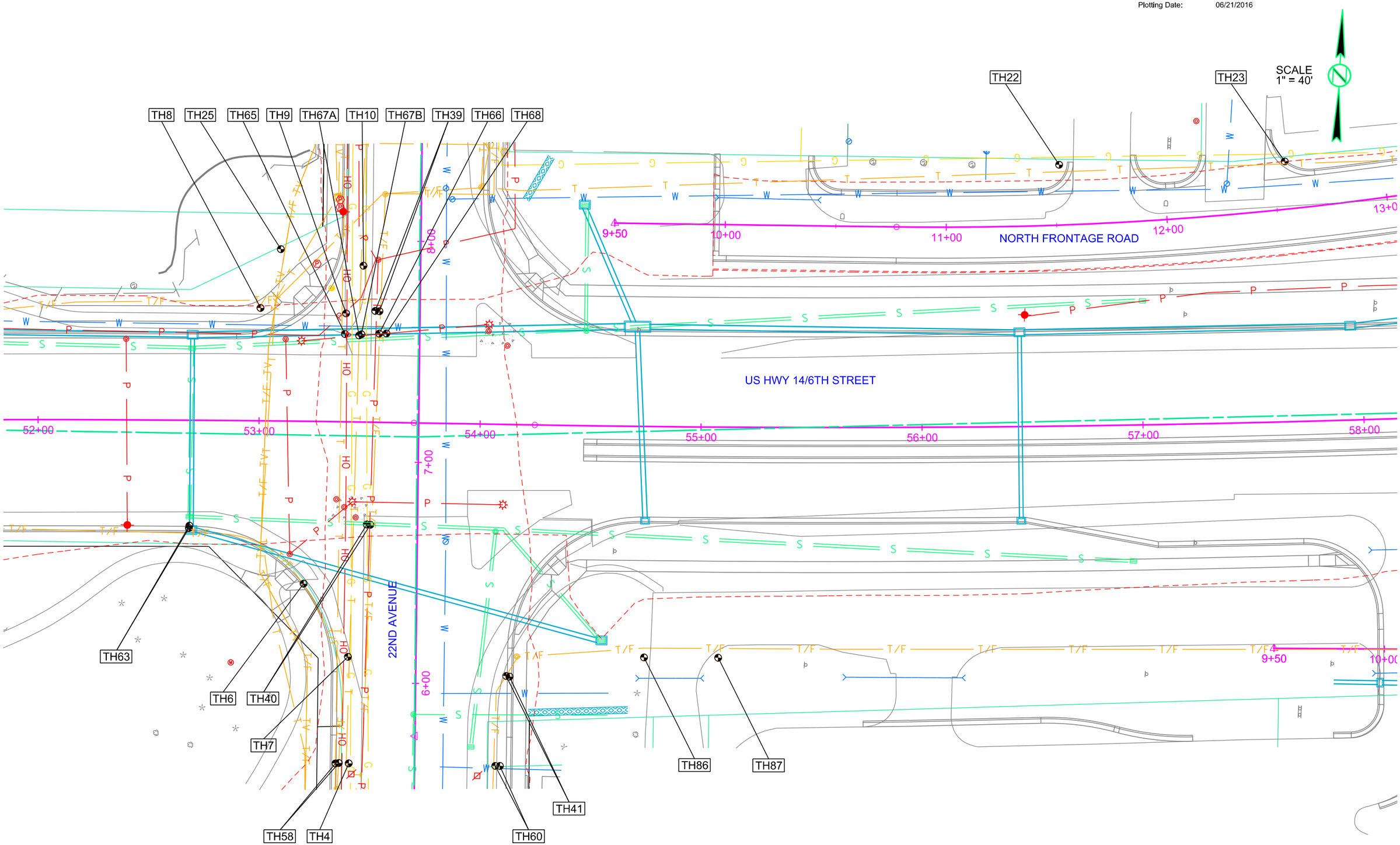


Figure 18-U3A Utility Layout Sheet

SECTION X: CROSS SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-BRF 0012(103)303	X1	X22

Plotting Date: 05/19/2015

INDEX OF SHEETS

X1 General Layout with Index
X2-X22 Cross Sections

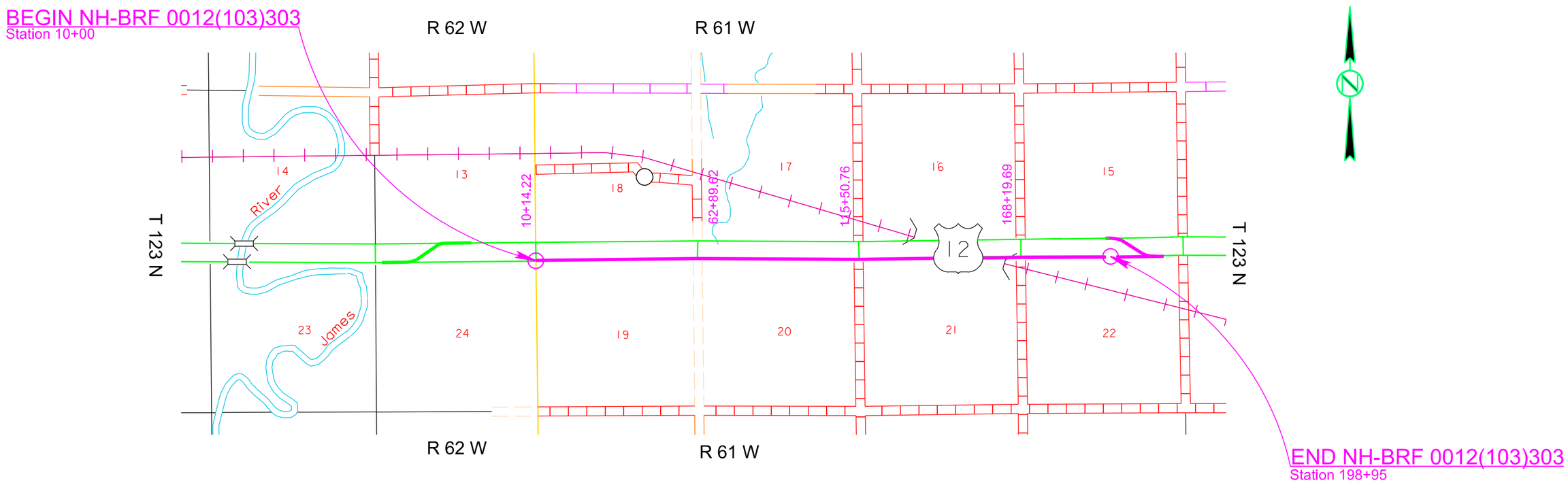


Figure 18-X1 Section Title Sheet

Plotting Date: 11/26/2018

Rev 05/20/2014 JRF

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-BRF 0012(103)303	X12	X22

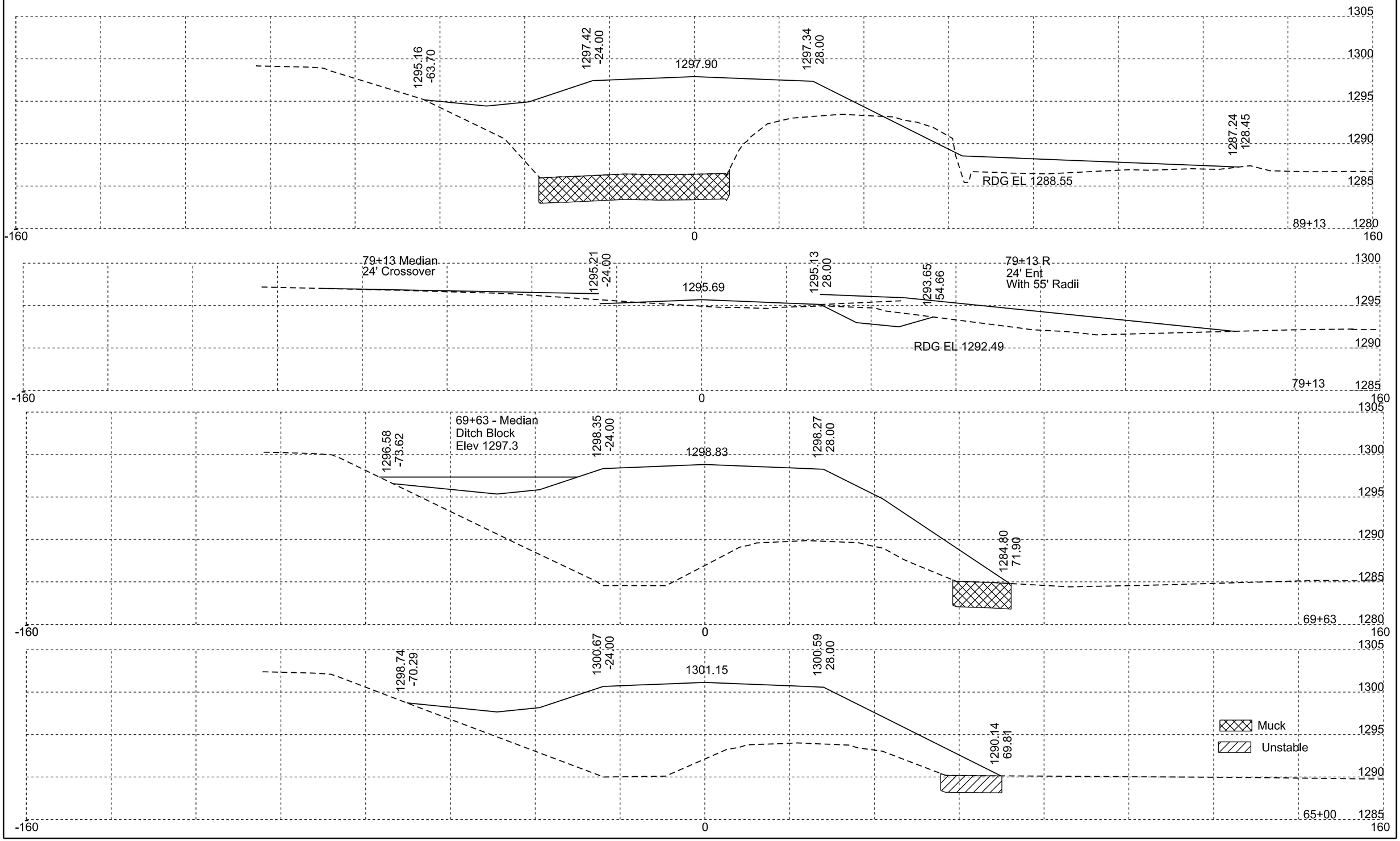
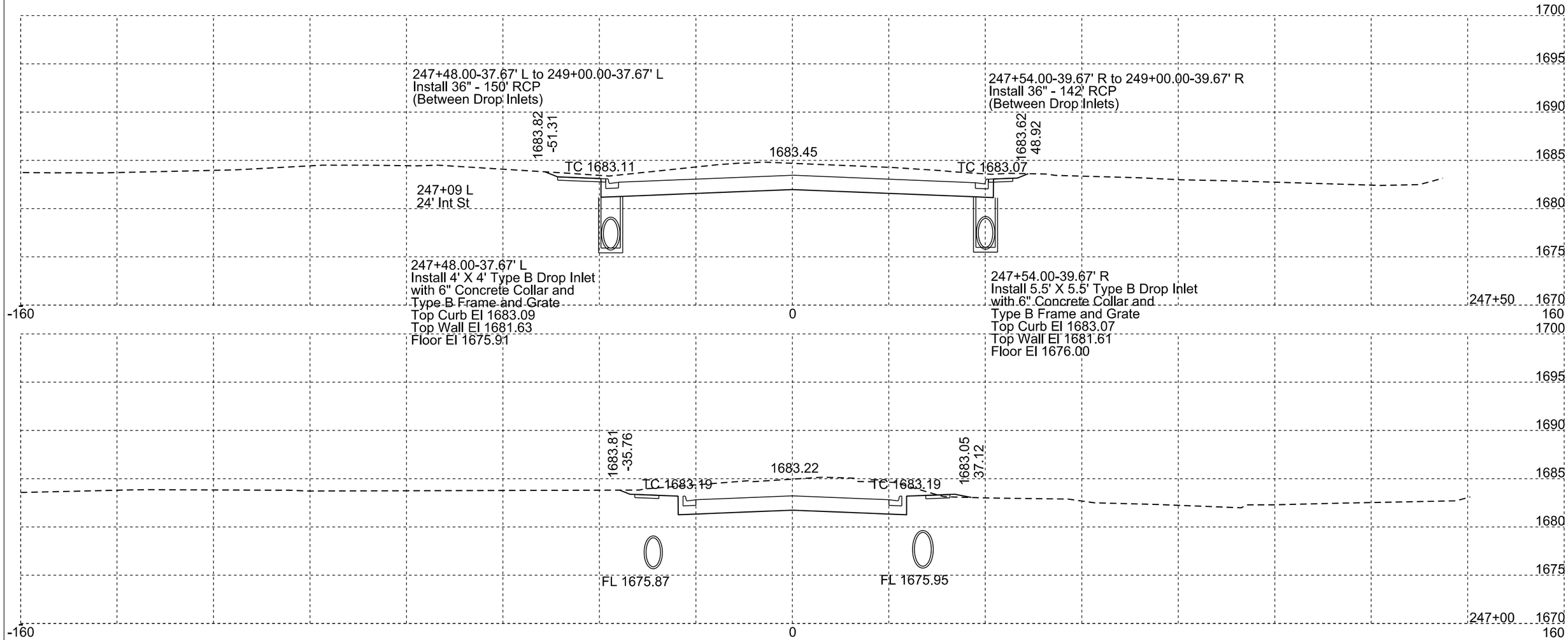


Figure 18-X2 Rural Cross Sections

Plotting Date: 05/01/2018

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH 2050(01)408	X24	X48



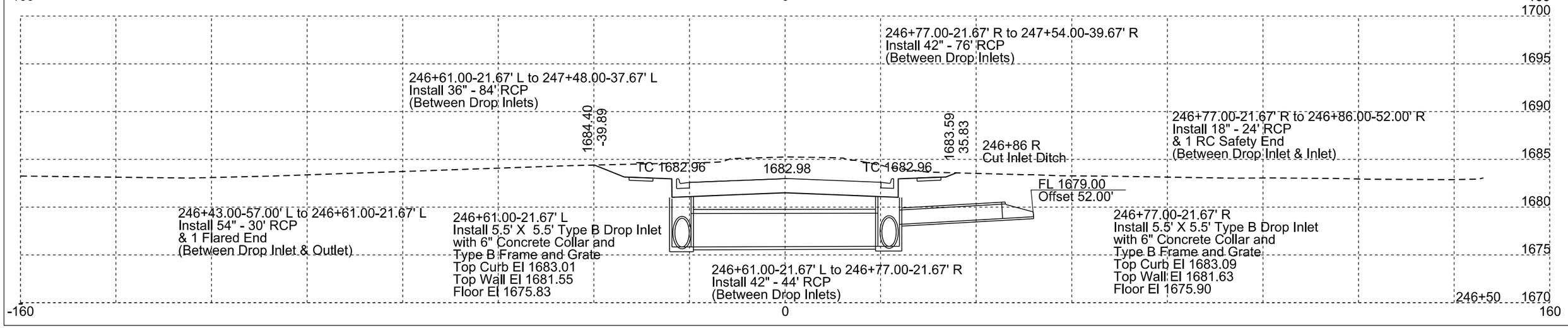
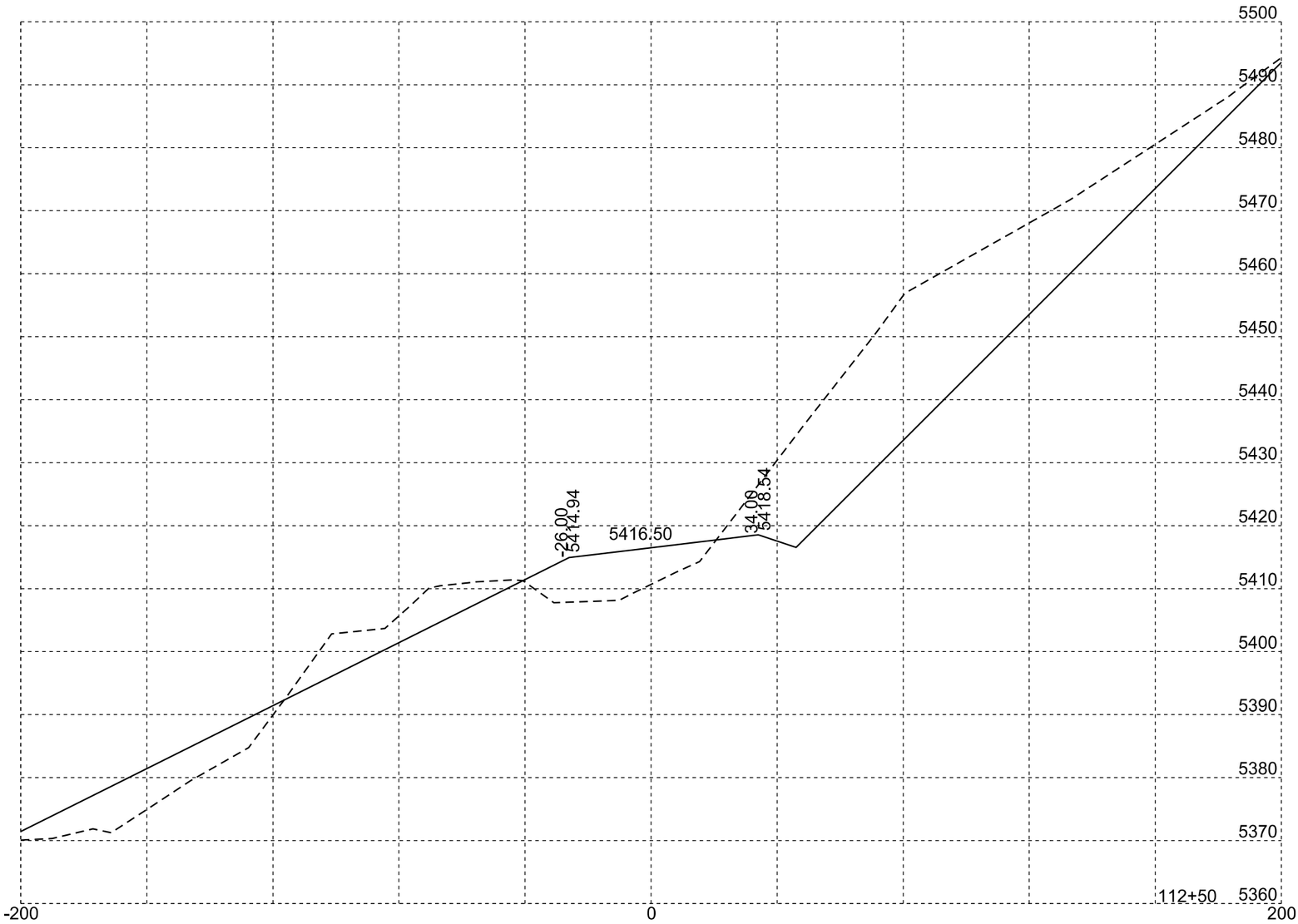
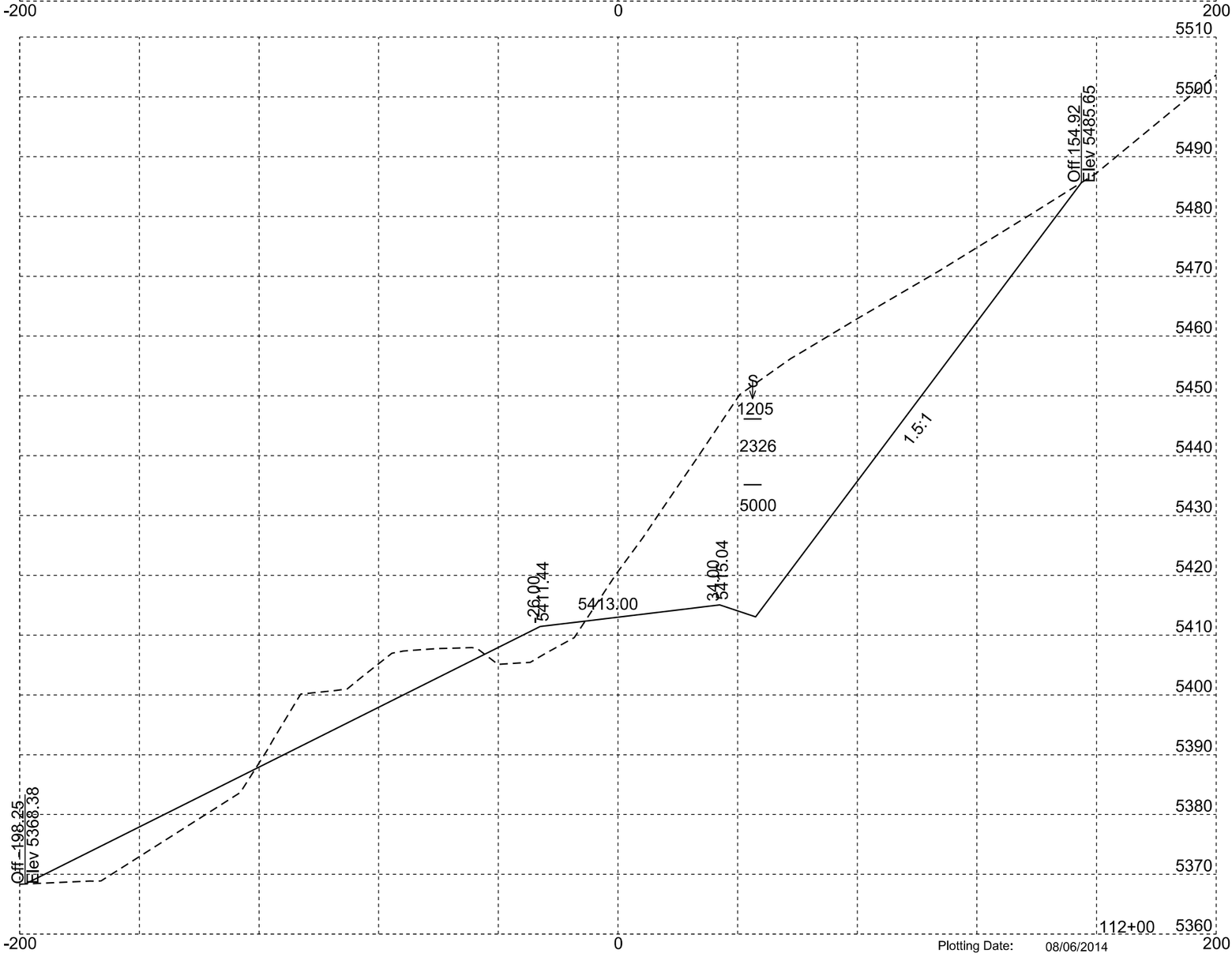


Figure 18-X3 Urban Cross Sections





Plotting Date: 08/06/2014

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-BRF 0385(14)115	X18	X22

Figure 18-X4 Mountainous Cross Sections

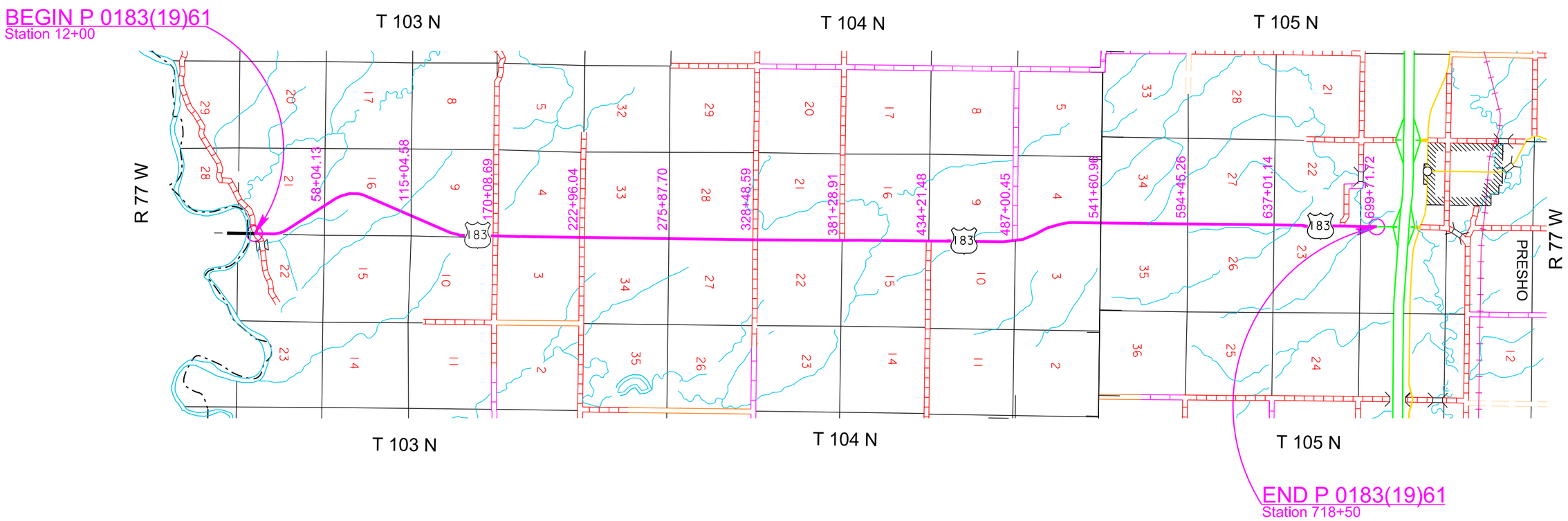
SECTION Z: PIPE SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0183(19)61	Z1	Z39

Plotting Date: 05/19/2015

INDEX OF SHEETS

Z1 General Layout with Index
Z2-Z31 Mainline Pipe Sections
Z32-Z39 Approach Pipe Sections



Section Title Sheet

Figure 18-Z1

Plotting Date: 11/03/2017

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0014(32)424	Z2	Z68

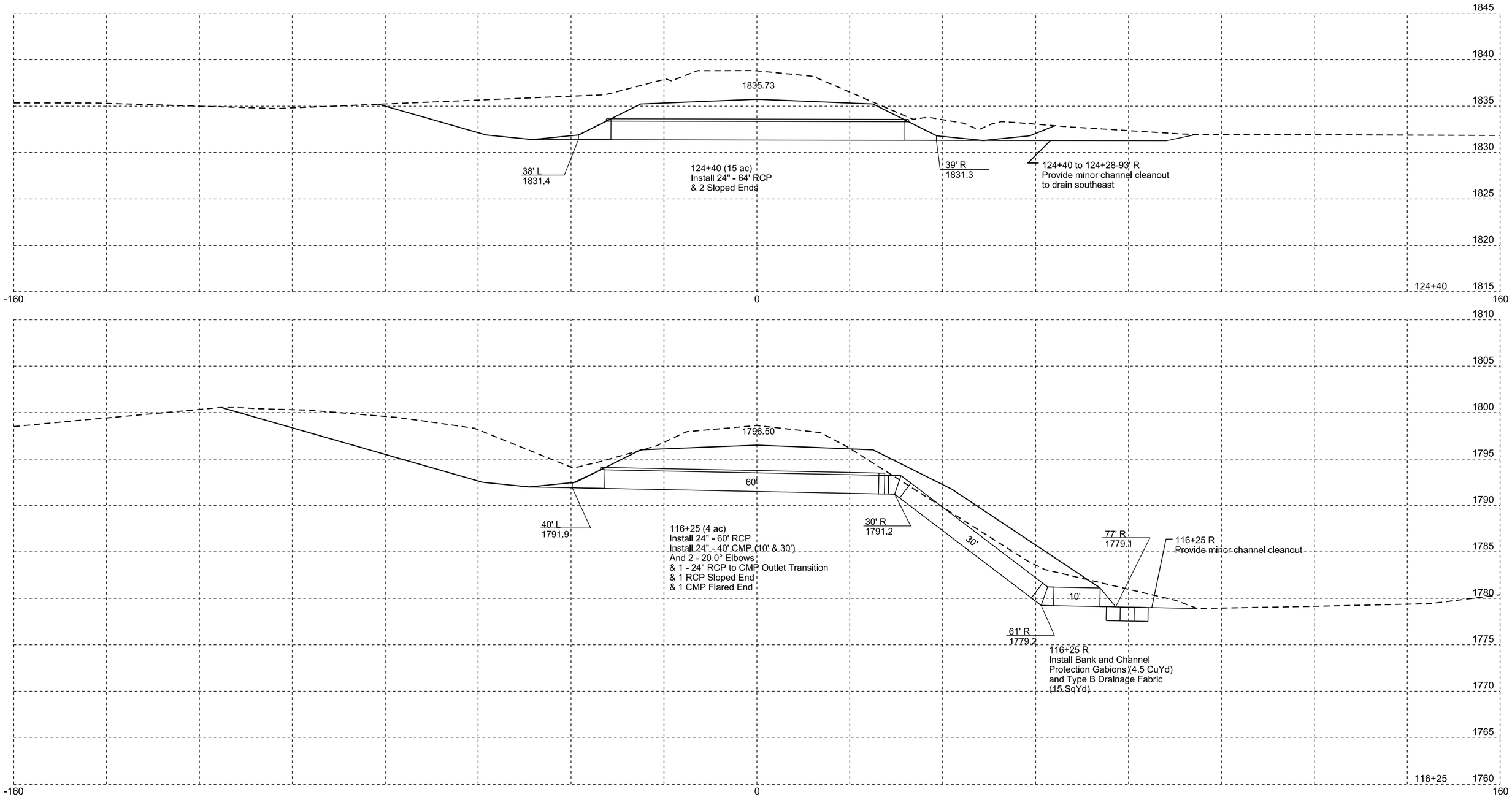
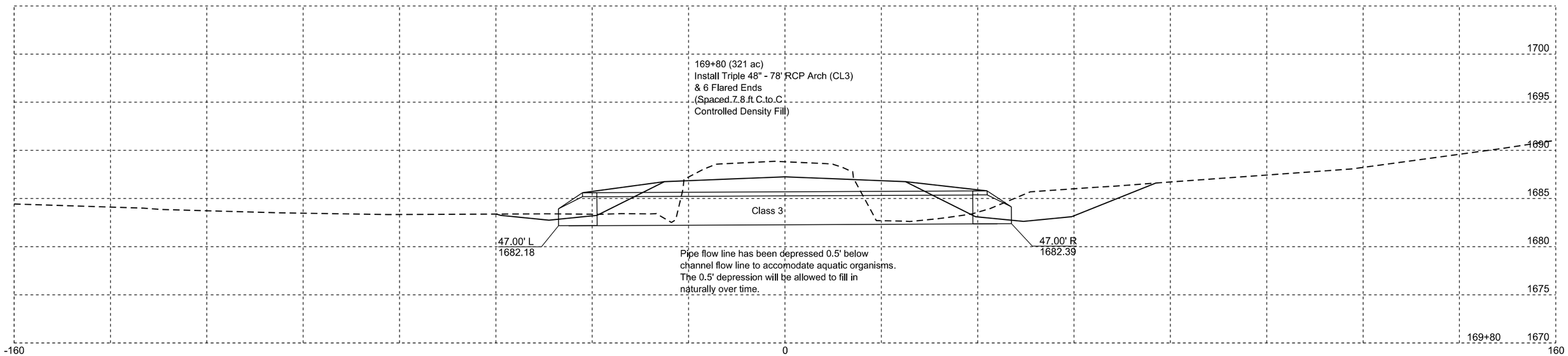


Figure 18-Z2 Mainline Pipe Sections

Plotting Date: 11/29/2018

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0014(32)424	Z12	Z68



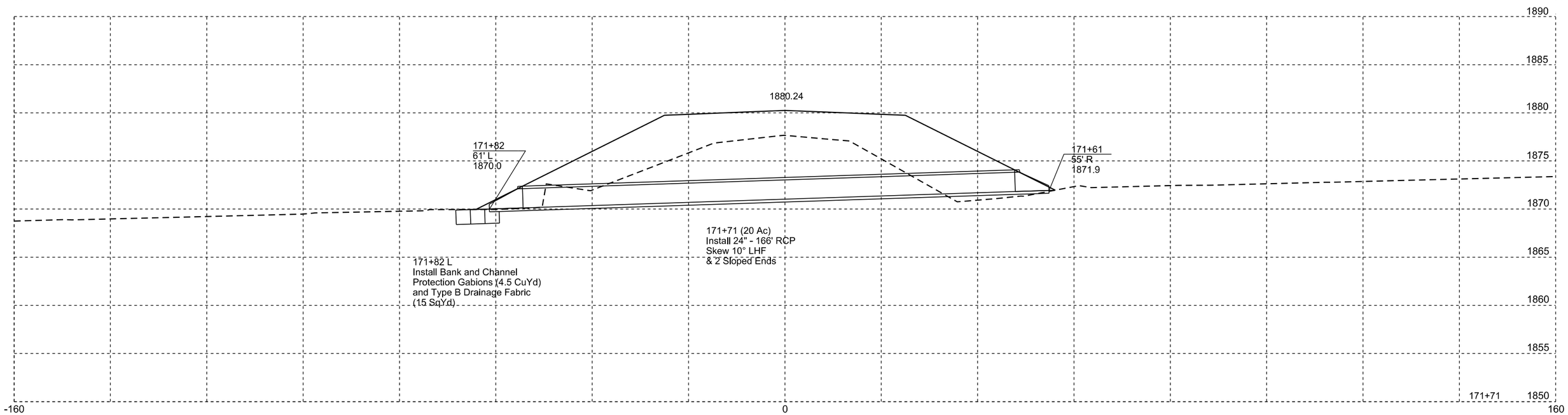
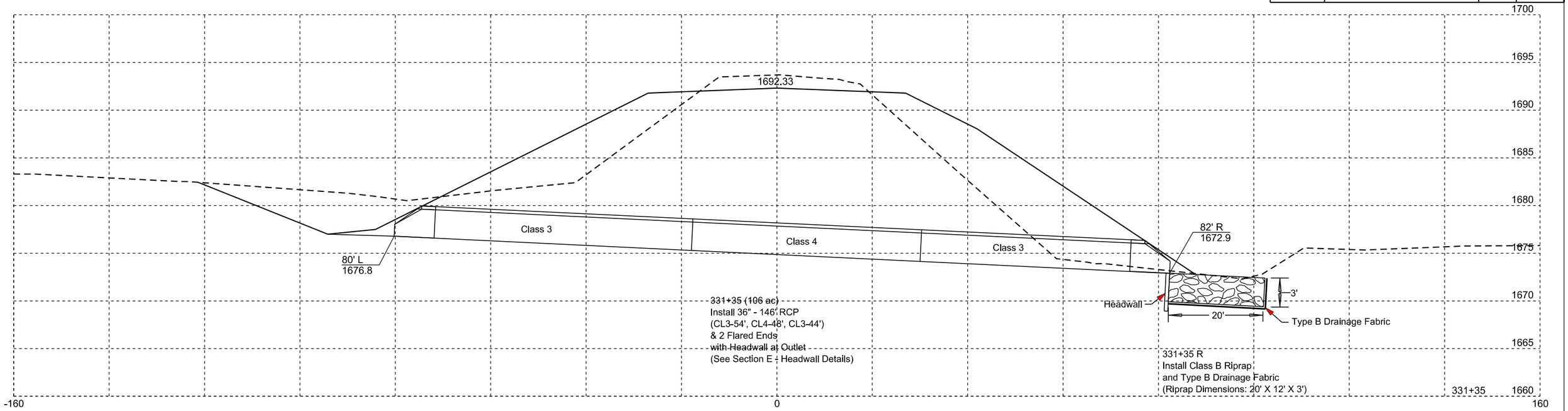


Figure 18-Z3 Mainline Pipe Sections

Plotting Date: 07/03/2018
Rev. 05/20/2014 JRF

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P-PH 0019(31)73	Z14	Z62



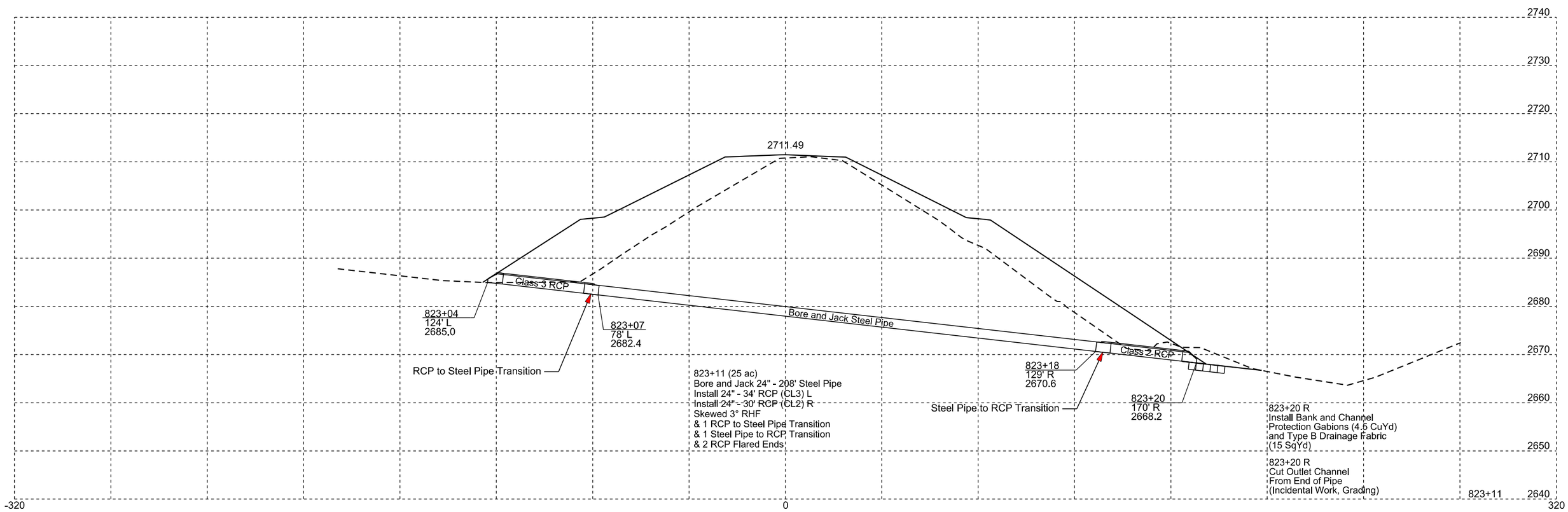
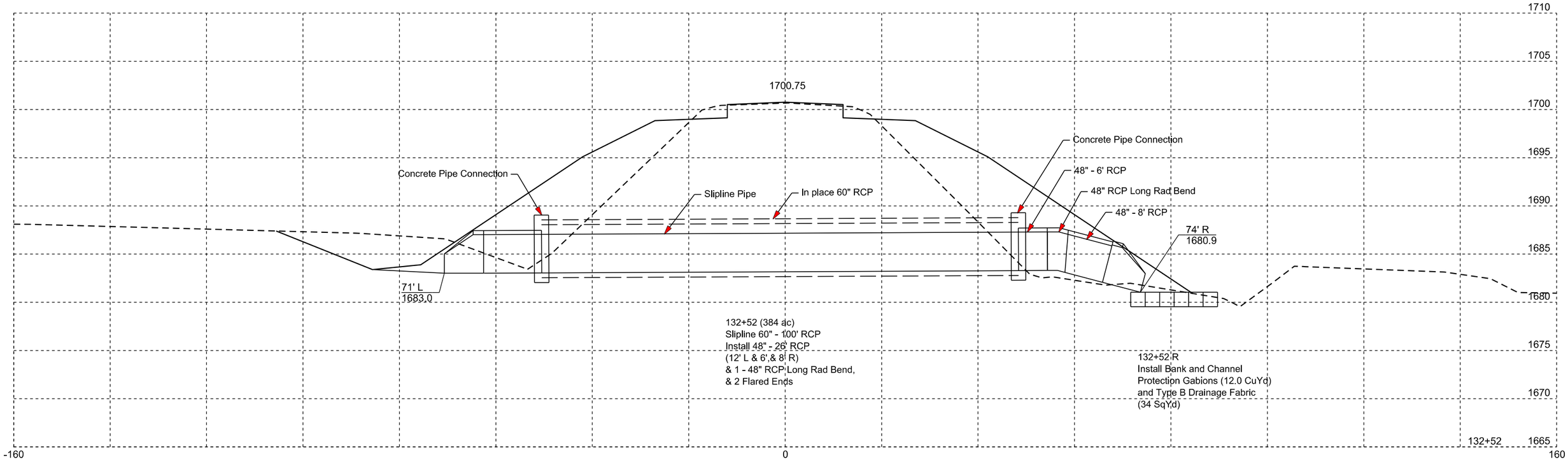


Figure 18-Z4 Mainline Pipe Sections

Plotting Date: 12/06/2017

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P-PH 0019(31)73	Z7	Z62



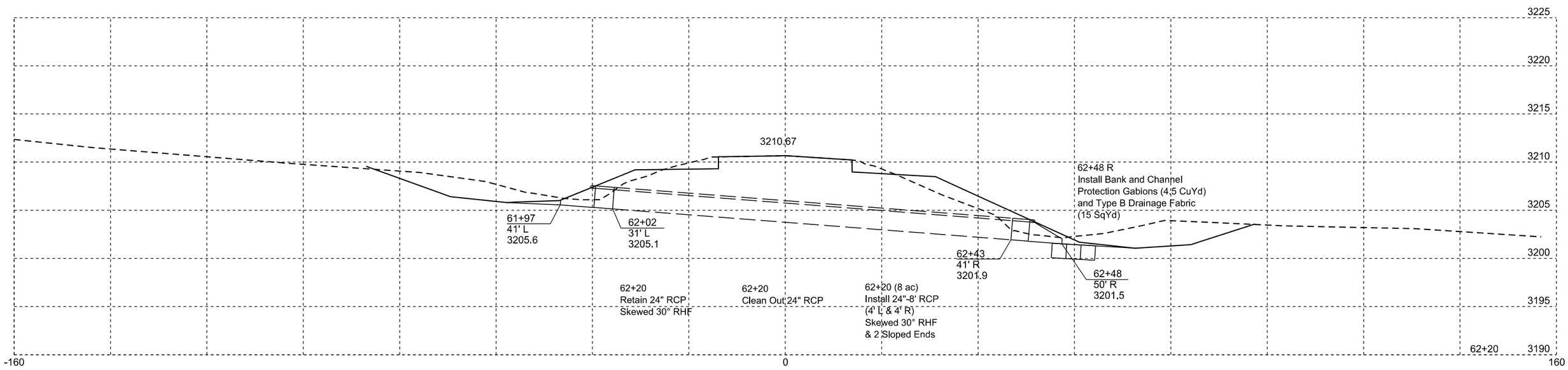
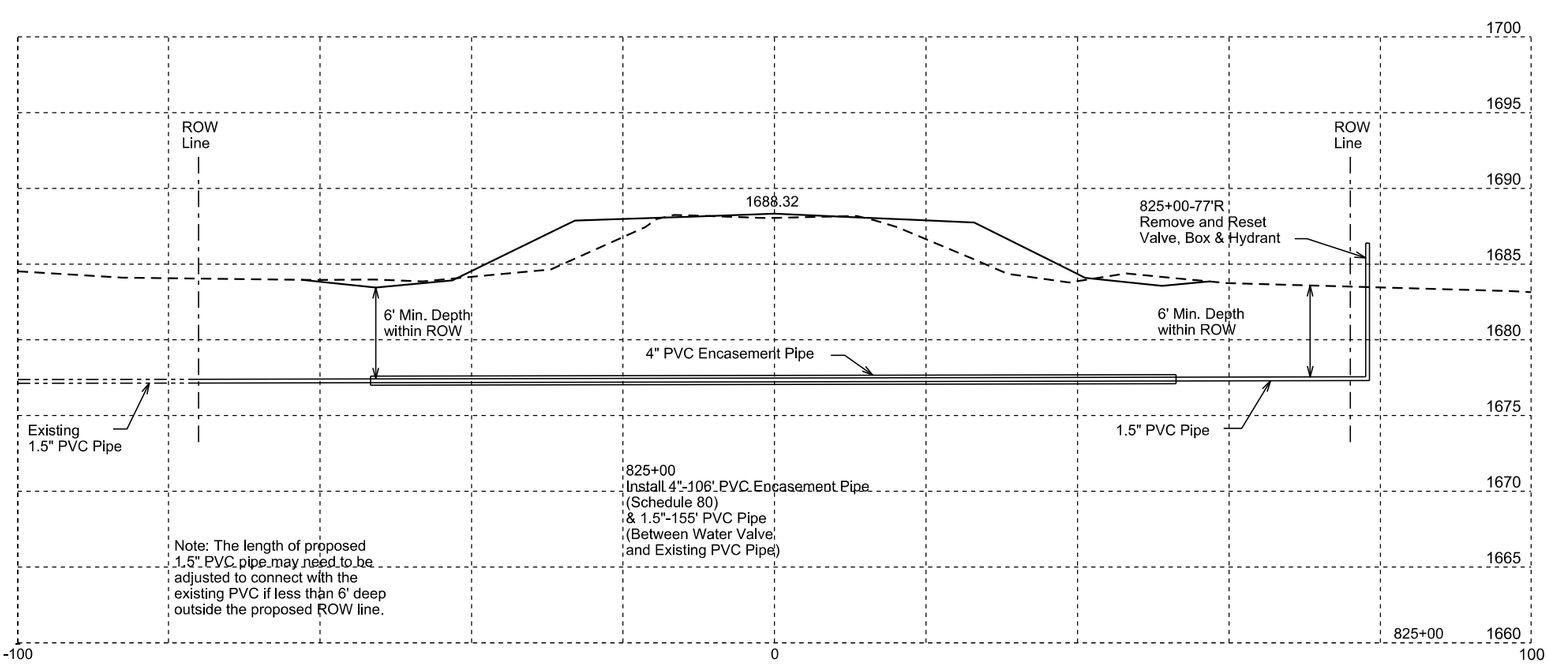


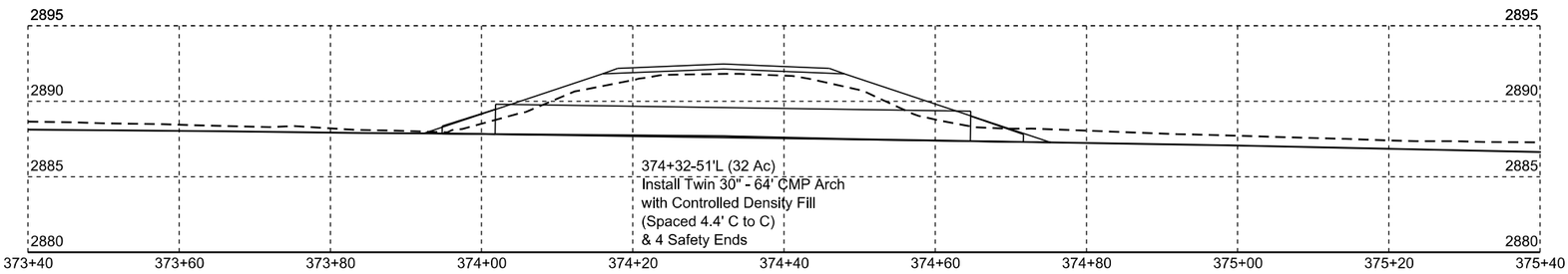
Figure 18-Z5 Mainline Pipe Section

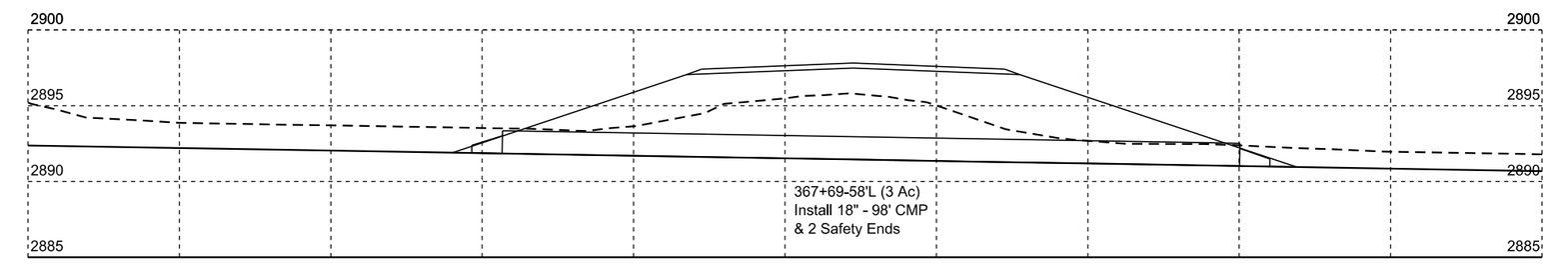


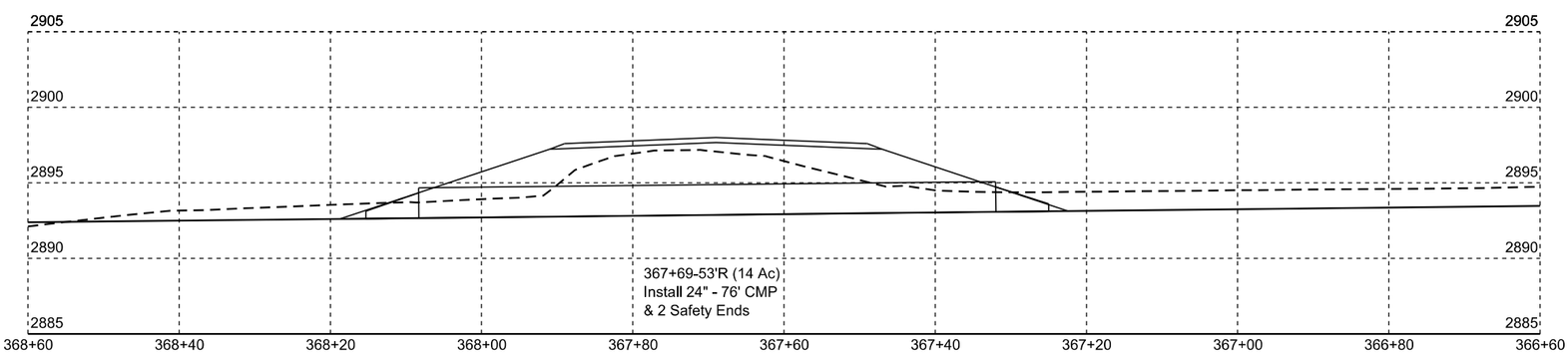
Plotting Date: 05/26/2015

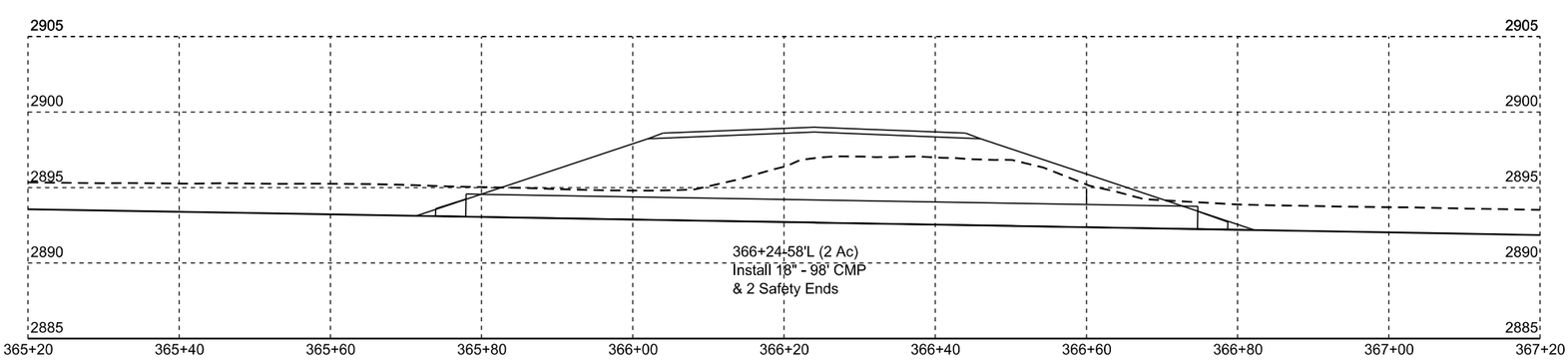
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0083(56)212	Z15	Z24

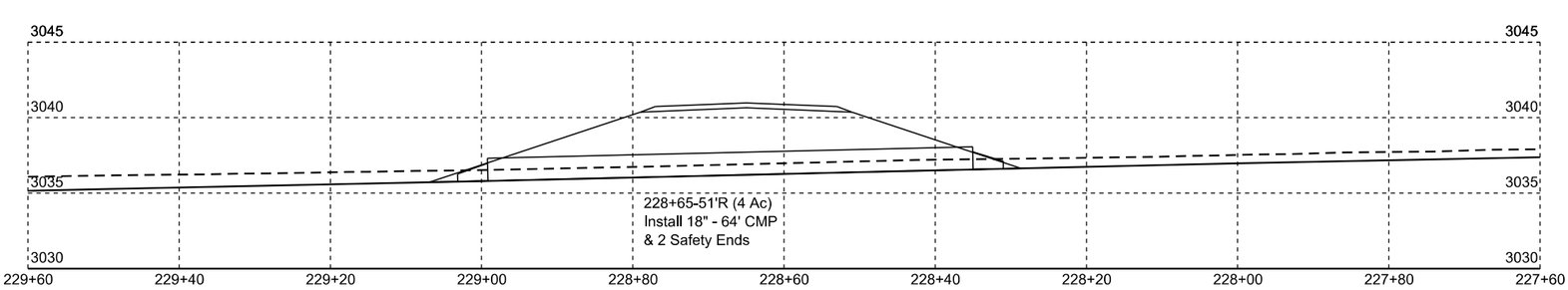
Figure 18-Z6 Mainline Pipe Sections

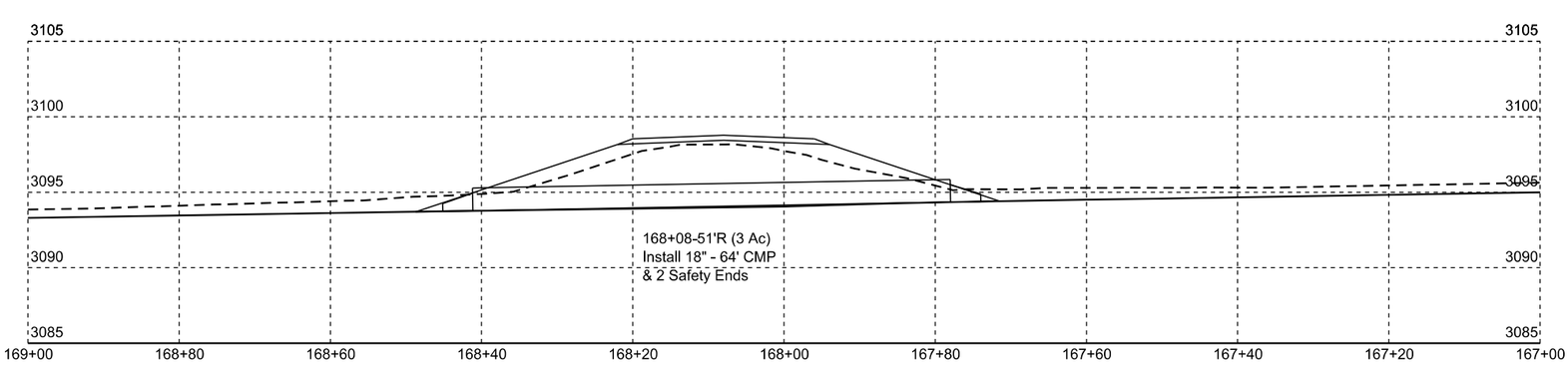












Plotting Date: 05/26/2015

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-PH 0034(159)39	Z18	Z19

Figure 18-Z7 Approach Pipe Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0012(88)290, PH 2277(2) & PH 0281(66)197	1	62

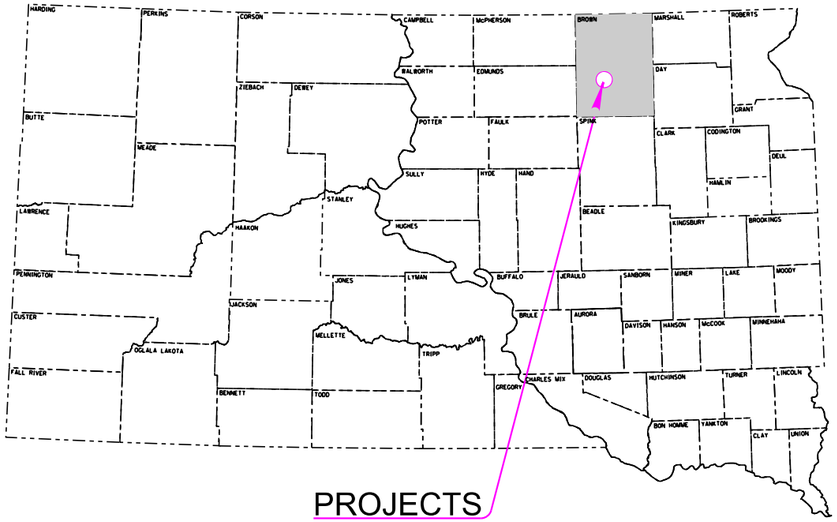
Plotting Date: 11/21/2017

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECTS PH 0012(88)290, PH 2277(2) & PH 0281(66)197 US HIGHWAYS 12 & 281 BROWN COUNTY

TRAFFIC SIGNALS & ROADWAY LIGHTING
PCN 6144, 5678 & 6529



1	Title Sheet
2	Estimate of Quantities and Environmental Commitments
3-6	Plan Notes
7-15	Traffic Control
16	PH 0012(88)290 Typical
17	Plan Notes
18	Cross Section
19	PCC Pavement Layout
20	Pavement Marking Layout
21	Existing Signal Layout
22	Signal Layout
23	Conduit Removal Layout
24	Conduit Layout
25	Signal Timing Diagram
26	Wiring Diagram
27	PH 2277(2) Existing Signal Layout
28	Signal Layout
29	Conduit Layout
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32-44	PH 0281(66)197 Luminaire layout
45-46	Wiring Diagram
47-62	Standard Plates

PROJECT PH 0281(66)197

R 64 W

R 63 W

T 12 N

ABERDEEN

PROJECT PH 2277(2)

PROJECT PH 0012(88)290

R 64 W

R 63 W

DESIGN DESIGNATION
PH 0012(88)290

AADT (1999)	26020
AADT (2019)	32670
DHV	3342
D	50%
DHV T%	2.1%
AADT T%	4.6%

DESIGN DESIGNATION
PH 2277(2)

AADT (1999)	23920
AADT (2019)	30030
DHV	3153
D	50%
DHV T%	2.0%
AADT T%	4.3%

STORM WATER PERMIT
(None Required)

Figure 18-NSM1 Title Sheet (Non-Section Method)

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0012(88)290, PH 2277(2) & PH 0281(66)197	2	62

Plotting Date: 05/21/2015

Bid Item Number	Item	PH 2277(2)	PH 0012(88)290	PH 0281(66)197	Quantity	Unit
009E0010	Mobilization	*	*	*	Lump Sum	LS
110E0300	Remove Concrete Curb and Gutter	91	0	0	91	Ft
110E1140	Remove Concrete Sidewalk	165	0	0	165	SqYd
110E1520	Remove Signal Equipment	0	Lump Sum	0	Lump Sum	LS
120E0010	Unclassified Excavation	100	0	0	100	CuYd
120E6200	Water for Granular Material	1.0	0	0	1.0	MGal
250E0010	Incidental Work	*	*	*	Lump Sum	LS
260E2010	Gravel Cushion	81.5	0	0	81.5	Ton
380E0080	9.5" Non-reinforced PCC Pavement	91.4	0	0	91.4	SqYd
380E3540	8" PCC Approach Pavement	38	0	0	38	SqYd
380E6000	Dowel Bar	41	0	0	41	Each
380E6110	Insert Steel Bar in PCC Pavement	32	0	0	32	Each
450E0122	18" RCP Class 2, Furnish	18	0	0	18	Ft
450E0130	18" RCP, Install	18	0	0	18	Ft
633E0010	Cold Applied Plastic Pavement Marking, 4" (Yellow 575')	575	0	0	575	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8" (White 100')	100	0	0	100	Ft
633E0025	Cold Applied Plastic Pavement Marking, 12" (White 120')	120	0	0	120	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24" (White 40' Yellow 20')	60	0	0	60	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	2	0	0	2	Each
633E5000	Groove Pavement for Pavement Marking, 4"	575	0	0	575	Ft
633E5005	Groove Pavement for Pavement Marking, 8"	100	0	0	100	Ft
633E5010	Groove Pavement for Pavement Marking, 12"	120	0	0	120	Ft
633E5015	Groove Pavement for Pavement Marking, 24"	60	0	0	60	Ft
633E5025	Groove Pavement for Pavement Marking, Arrow	2	0	0	2	Each
634E0010	Flagging	25	25	0	50	Hour
634E0100	Traffic Control	573	573	286	1 432	Unit
634E0120	Traffic Control, Miscellaneous	*	*	*	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	1	1	3	Each
635E0150	Breakaway Base Luminaire Pole with Twin Arms, 50' Mounting Height	0	0	26	26	Each
635E2030	Signal Pole with 30' Mast Arm	0	1	0	1	Each
635E2035	Signal Pole with 35' Mast Arm	0	1	0	1	Each
635E2036	Signal Pole with 35' & 10' Mast Arm and Luminaire Arm	0	1	0	1	Each
635E2038	Signal Pole with 35' & 25' Mast Arm and Luminaire Arm	0	1	0	1	Each
635E2135	Signal Pole with 35' Mast Arm and Luminaire Arm	0	1	0	1	Each
635E2140	Signal Pole with 40' Mast Arm and Luminaire Arm	0	1	0	1	Each
635E2155	Signal Pole with 55' Mast Arm and Luminaire Arm	0	1	0	1	Each
635E2520	Wood Utility Pole	0	1	2	3	Each
635E3340	Roadway Luminaire, 400 Watt with Photoelectric Cell	0	2	52	54	Each
635E4030	3 Section Vehicle Signal Head	0	18	0	18	Each
635E4050	5 Section Vehicle Signal Head	0	10	0	10	Each
635E5020	2.0' Diameter Footing	0	0	260	260	Ft
635E5025	2.5' Diameter Footing	0	75	0	75	Ft
635E5318	18" Diameter Junction Box	0	7	4	11	Each
635E5324	24" Diameter Junction Box	0	1	0	1	Each
635E5400	Electrical Service Cabinet	0	1	2	3	Each
635E5430	Traffic Signal Controller	0	2	0	2	Each
635E5500	Meter Socket	0	1	0	1	Each
635E5540	Sawed-In Detector Loop	0	19	0	19	Each
635E5550	Detector Unit	0	6	0	6	Each

Bid Item Number	Item	PH 2277(2)	PH 0012(88)290	PH 0281(66)197	Quantity	Unit
635E5560	Emergency Vehicle Preemption Unit	0	3	0	3	Each
635E5570	Optical Detector	0	6	0	6	Each
635E5900	Pedestrian Push Button	0	8	0	8	Each
635E5920	Pedestrian Signal Head	0	12	0	12	Each
635E5930	Pedestrian Crossing Sign	0	8	0	8	Each
635E7530	Relocate Signal Equipment	0	Lump Sum	0	Lump Sum	LS
635E8120	2" Rigid Conduit, Schedule 40	0	385	6 500	6 885	Ft
635E8130	3" Rigid Conduit, Schedule 40	0	85	0	85	Ft
635E8140	4" Rigid Conduit, Schedule 40	0	50	0	50	Ft
635E8220	2" Rigid Conduit, Schedule 80	0	0	400	400	Ft
635E8230	3" Rigid Conduit, Schedule 80	0	500	0	500	Ft
635E9012	1/C #2 AWG Copper Wire	0	0	7 500	7 500	Ft
635E9013	1/C #3 AWG Copper Wire	0	0	6 900	6 900	Ft
635E9014	1/C #4 AWG Copper Wire	0	1660	0	1 660	Ft
635E9016	1/C #6 AWG Copper Wire	0	1 800	7 300	9 100	Ft
635E9050	4/C #20 AWG Copper Wire	0	270	0	270	Ft
635E9403	3/C #12 AWG Copper Tray Cable, K2	0	540	0	540	Ft
635E9502	2/C #14 AWG Copper Tray Cable, K2	0	120	0	120	Ft
635E9504	4/C #14 AWG Copper Tray Cable, K2	0	630	0	630	Ft
635E9507	7/C #14 AWG Copper Tray Cable, K2	0	1 025	0	1 025	Ft
635E9526	26/C #14 AWG Copper Tray Cable, K2	0	800	0	800	Ft
635E9600	#16 AWG Copper Twisted Shielded Pair	0	990	0	990	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	0	260	3 485	3 745	Ft
650E0080	Type B68 Concrete Curb and Gutter	63	0	0	63	Ft
650E0095	Type B69.5 Concrete Curb and Gutter	14	0	0	14	Ft
650E4680	Type P8 Concrete Gutter	60	0	0	60	Ft
651E0040	4" Concrete Sidewalk	387	0	0	387	SqFt
670E1010	2' x 3' Type B Drop Inlet	1	0	0	1	Each
670E1200	Type B Frame and Grate Assembly	1	0	0	1	Each
670E5305	4'X6.5' Drop Inlet Cover	1	0	0	1	Each
670E5400	Precast Drop Inlet Collar	1	0	0	1	Each

Quantities marked with * have funding prorated according to low bid.

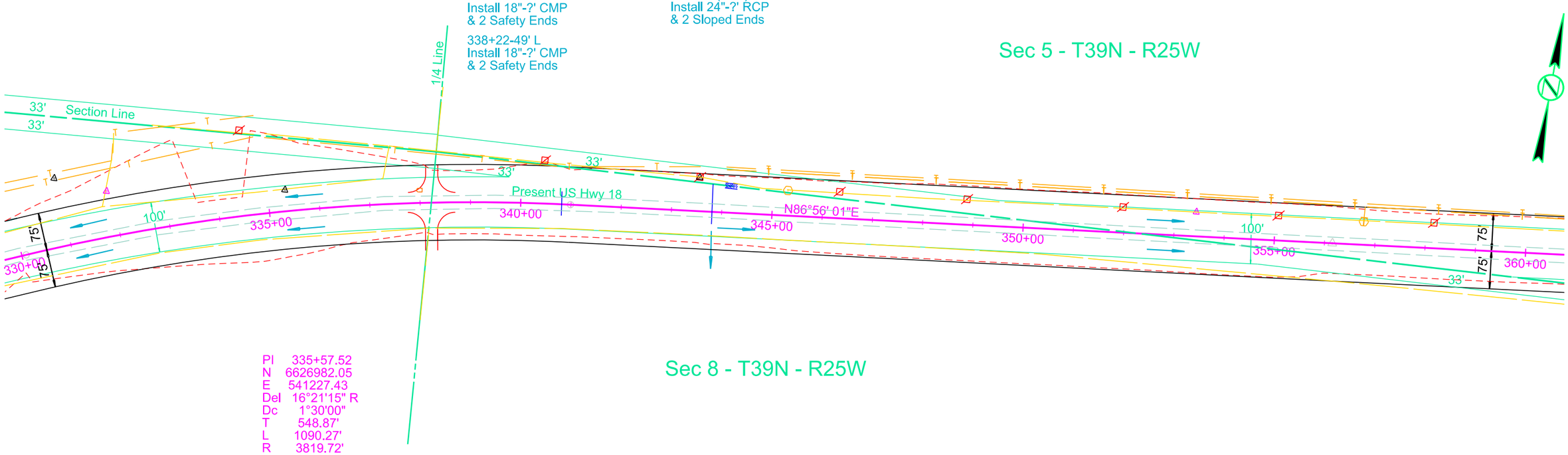
SPECIFICATIONS

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

Figure 18-NSM2 Estimate of Quantities and Environmental Commitments

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0018(104)223	B20	B36

Plotting Date: 11/26/2018



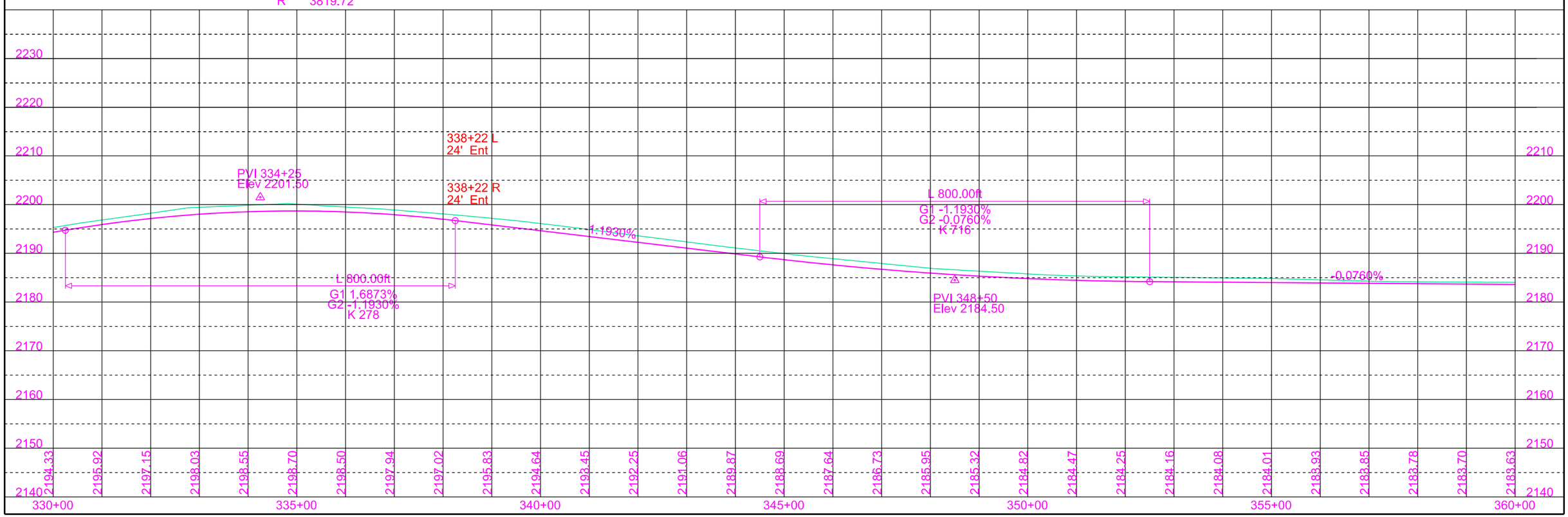


Figure 18-SOP1 Preliminary Design Inspection

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0018(104)223	B20	B36

Plotting Date: 11/26/2018

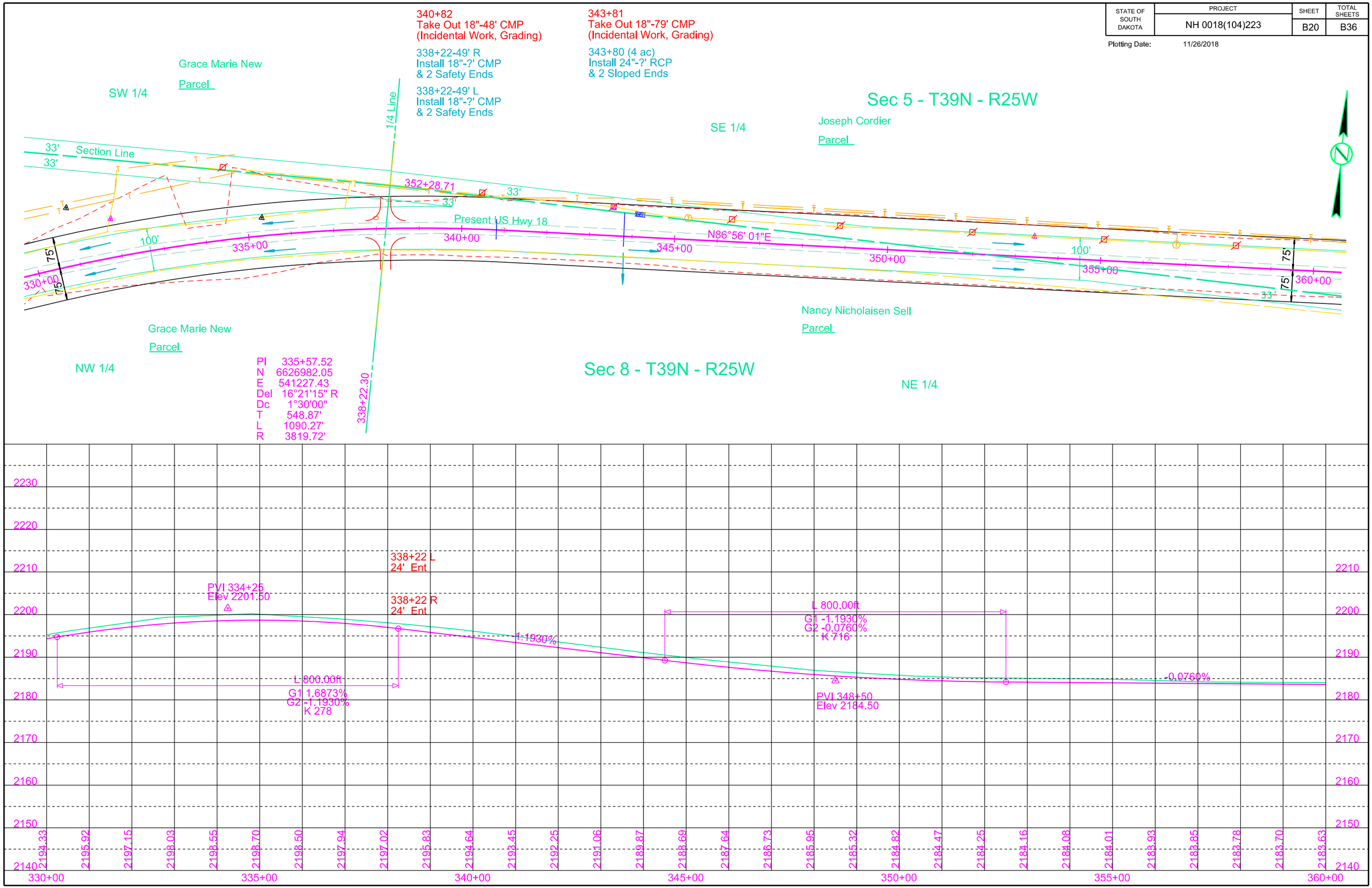


Figure 18-SOP2 Landowner Meeting

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0018(104)223	B20	B36

Plotting Date: 11/26/2018

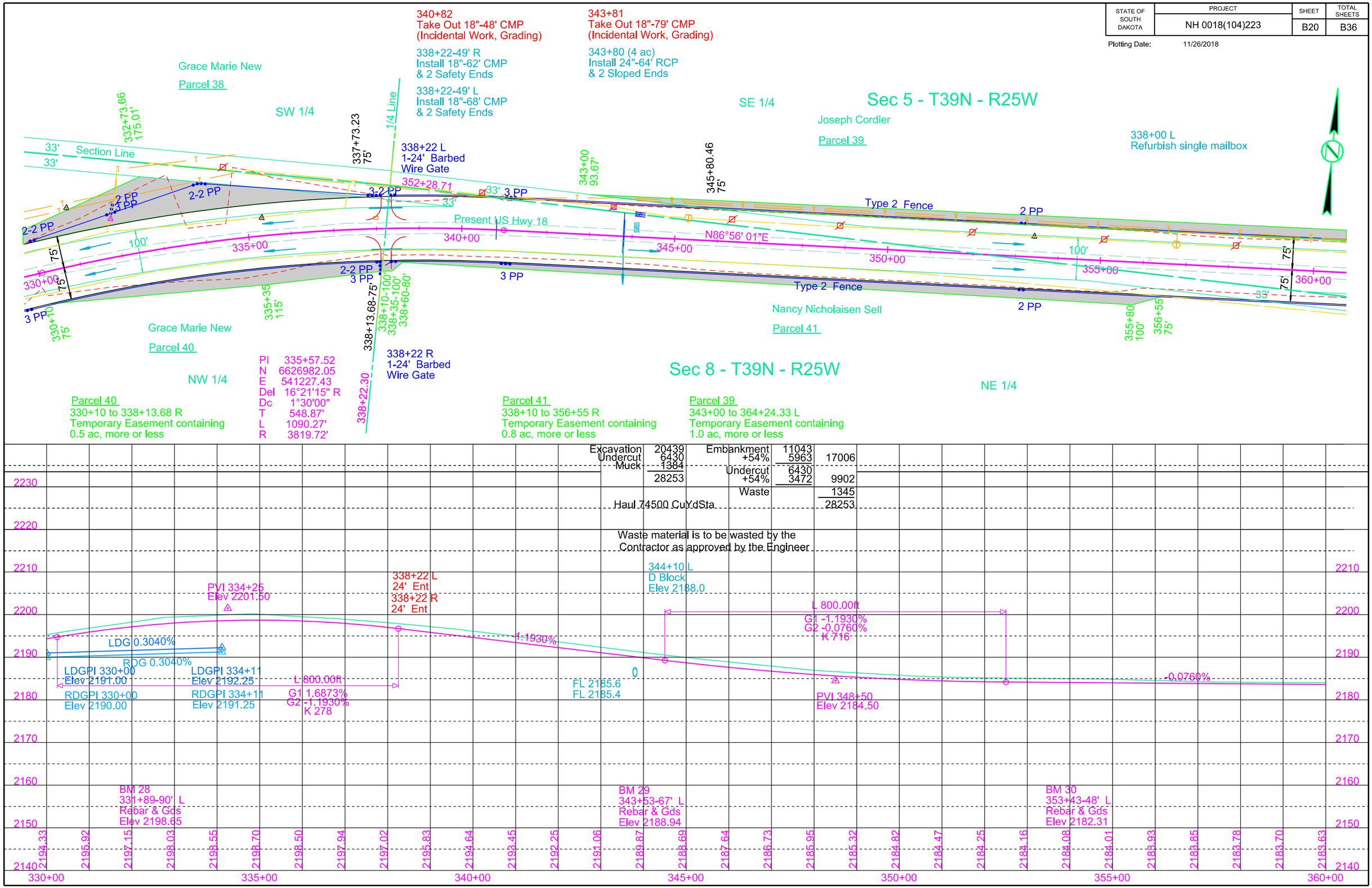


Figure 18-SOP3 Final Design Inspection