

The information contained in Chapter Eleven: Highway Plans Assembly, dated May 2022, has been updated to reflect the October 2023 Errata. The errata addresses errors, changes in procedure, changes in NDOT department titles, changes in other Roadway Design Manual chapters and other reference material citations occurring since the latest publication of this chapter.

Chapter Eleven presents guidance for the design of New and Reconstructed and 3R projects; additional design guidance for 3R projects is provided in Chapter Seventeen.

Chapter Eleven

Highway Plans Assembly

This chapter pertains to the assembly and indexing of the project plans. There is also a brief description of each type of plan sheet that is to be indexed and general information that may be useful in preparing the sheets.

Refer to the current versions of the CADD Policy and the Design Process Outline (DPO) (Ref. 11.1), both of which may be found at (<https://dot.nebraska.gov/business-center/design-consultant/>), under “Design Documentation”, for information related to project plan preparation.

1. DESIGN PLANS

There are several types of project plans which occur at various stages of roadway design. The roadway designer should furnish the **Roadway Design Plans Development Unit (PDU) Highway Design Technician** with the information required to produce plans at each stage of the project. See the *DPO* (Ref. 11.1) for the plan information requirements. The various project plan types are:

- Preliminary Design Plans (used for the plan-in-hand field inspection).
- Functional Plans (required for design public hearings).
- Design Detail Plans (used to design the project right-of-way).
- Design Plans to Utilities (used to determine impacts to utilities)
- Plans for Construction (Prelim and Final PS&E Plans, the **PS&E** turn-in and contract plans).

The plans should be thoroughly checked for completeness, accuracy, and formatting by the **Highway Design Technician**, the roadway designer, the **Roadway Design Unit Head (Unit Head)**, and the **Roadway Design Plan Quality & Standards Engineer** at each of these plan stages.

The notifications of the availability of the design plans are given in EXHIBIT 11.2.

The “Roadway Base Files” (Clarity Task 5235) show the topography and roadway alignment(s) (“Planning Alignment”, Clarity Task 5240), which are plotted from either a project survey or from the as-built plans of previous projects. The survey information is given to the roadway designer and **PDU Unit Head** by the **Geodetic Survey Section** in the **Project Scoping Section** of the **Project Development Division (PDD)** before the roadway designer creates the alignment. The project is then assigned to a **Highway Design Technician** who will assist the roadway designer

in sheet creation. The existing vertical alignment for the project centerline is required if plan and profile sheets are being requested (See Section 4.L of this chapter). The roadway base files will include:

- Draft Topography file
- Location Map
- Environmental Feature file
- Title and Index sheet file
- Typical Cross-Section sheet file
- Aerial or Environmental notes and sheets files
- Horizontal alignment and control point sheet files
- General information notes and sheets files
- Plan and Profile notes and sheets files
- Utility notes and sheets files
- Special Plan notes and sheets files

1.A Preliminary Design Plans (PIH Plans) (Phase 3: Design – Activity 5300)

Preliminary Design Plans are the initial project plans sheets used to produce the “Status 30 Cost Estimate” (Clarity Task 5368) and on the “Plan-in-Hand Visit” (Clarity Task 5380). The roadway designer will create the plan set and send it to the **Highway Design Technician**, who will check the plans for quality assurance and create the sheet files as outlined in the *DPO* (Ref. 11.1, “Design Files (PIH Plans)”, Clarity Task 5354) and in the CADD Policy.

The Environmental or Aerial Sheets (See Section 4.E of this chapter) will be developed at this stage of the project.

1.B Functional Design Plans (Phase 4: Environmental Approval – Activity 5400)

Functional Design Plans are required **only** if there is a Design Public (NEPA) Hearing and for the “Status 40 Cost Estimate”. The project design should be approximately 75% to 80% complete by this milestone. The roadway designer should:

- Coordinate with the **Communications Division** regarding the information needed for the meeting as described in the *DPO* (Ref. 11.1), “Design Prep for Public Meeting”, Clarity Task Code 5338.
- Allow three months lead time to prepare the plans and exhibits for a Design Public Hearing.

1.C Design Detail Plans (Phase 5: Plan Details – Activity 5500)

Design Detail Plans show the limits-of-construction used to design the right-of-way and easements required to build the project and to determine environmental impacts. The roadway designer will incorporate the approved alterations from the Design Public Hearing, if held, and right-of-way negotiations into the design and will provide the **Highway Design Technician** with the completed plan set for a standards check as described in the *DPO* (Ref. 11.1, “Plan Details (Design Detail Files)”, Clarity Task 5532). The roadway designer will use the design plans to produce the “Status 45 Cost Estimate”, Clarity Task 5584.

1.D Design Plans to Utility Unit (Phase 6: R.O.W. – Activity 5600)

The Design Plans sent to the **Roadway Design Utility Coordinators** (see the *DPO* (Ref. 11.1), “Design Plans to Utility Unit”, Clarity Task 5614) will have sufficient detail for the **Utility Companies/Consultants** to determine if their facilities are impacted, and if so, to what extent. Large Scale (J) Sheets (See Section 4.J of this Chapter) may be included if required to provide sufficient detail.

The roadway designer will provide the latest details for, but not limited to:

- Project location map
- Horizontal alignment
- Vertical alignment
- Roadway cross-sections
- Ditches (including special ditches)
- Drainage structures
- Culvert cross-sections
- Special designs (if there is utility involvement)
- Detours, temporary roads, crossovers
- Frontage roads, side roads, etc.
- Driveways and other accesses
- Driveway culverts
- Sidewalks, bikeways, shared-use paths
- Medians, curbs & gutters, etc.
- Embankment widening for guardrail installations
- Dikes, dams, etc.
- “Do Not Disturb” environmental areas
- Wetlands mitigation
- Removals
- Lighting
- Traffic signals
- Overhead signs (including foundations)
- Bridges & pedestrian structures
- Retaining wall (approximate height and location)
- Limits of construction (from project centerline to be used)
- All above and underground utility facilities (power, telephone, pipelines, gas, cable, etc.)
- Above ground utility structures (telephone poles, power poles, telephone pedestals, power pedestals, manholes, etc.) Must have the station and offset from the centerline to be used
- Centerline crossing station of all underground pipelines

1.D.1 Pre-PS&E Plans (Phase 7: Plan Package – Activity 5700)

Pre-PS&E Plans include all plans shown in the Design Detail Plans (See Section 1.C of this chapter). The creation of the Pre-PS&E Plans starts the PS&E Turn-in process. All changes to the project since the completion of the Design Detail Plans shall be reflected in the Pre-PS&E Plans. The Pre-PS&E Plans are used by the **Materials and Research Division (M&R)**, **Traffic Engineering Division**, and the **PDD Roadside Development & Compliance Unit (RDC)** to create the PS&E Turn-in package.

1.E Plans for Construction

Plans for Construction are the plans which will be let to contract. The Plans for Construction will have any corrections made prior to submission to the **Plans, Specifications and Estimates Unit (PS&E)** in the **Construction Division (Construction)**.

PDU will create two different sets of plans for construction: a PS&E Preliminary set and a PS&E Plans set. The prelim set will not have the engineer's seals or the "Plans not Final" (PNF) cell displayed. **PDU** will place the "Preliminary" watermark on this set after its completion prior to being uploaded to OnBase. The final set will not have the "Plans Not Final (PNF) cell displayed, but it will have the engineer's seals displayed. This set will be signed by the engineer prior to being uploaded to OnBase.

1.E.1 PS&E Plans (Phase 7: Plan Package – Activity 5700)

The roadway designer will create the "PS&E Preliminary Plan Package" for **PS&E** using these plans (See the *DPO*, Ref. 11.1, "Plan Package Design Modification for PS&E", Clarity Task 5765). The roadway designer should verify that the appearance of all of the project plans (including those from the **Bridge Division (Bridge)**, **Traffic Engineering Division (Traffic Engineering)**, **Right-of-Way Division (ROW)**, **Materials and Research Division (M&R)**, etc.) is uniform and consistent, containing the information required for the construction of the project. The use of duplicate data and cross references should be avoided; this is unnecessary and only complicates the task of assembling, checking, and revising the plans. The CADD files should be locked to prevent unauthorized changes to the plans.

1.E.2 PS&E Letting Plans (Phase 8: Letting – Activity 5800)

PS&E will submit their blue-line corrections to the roadway designer to complete the corrections (See the *DPO*, Ref. 11.1, "PS&E Corrections", Clarity Task 5845). When the design plans have been submitted to **PS&E** the CADD files should be locked to prevent unauthorized changes to the contract plans (See the *DPO*, Ref. 11.1, "Blue Lines Submitted to PS&E", Clarity Task 5850).

Once the plans have been advertised for letting, **they are considered legal documents**. Between the time that a project has been advertised for letting and it is let to contract, requests to the **Roadway Design Division** for plans and/or electronic files will be forwarded to the **Highway Construction Scheduling Manager in Construction**. Changes to the plans after they have been advertised for letting must be processed as a plan revision, following the guidelines outlined in Section 7 of this chapter.

2. STANDARD PLANS, SPECIAL PLANS, AND DETAILS

The Standard/Special Plans Book (*Standard Plans*) (<https://dot.nebraska.gov/business-center/design-consultant/stand-spec-manual/>) (Ref. 11.2) contains Standard Plans, Special Plans, Standard Typical X-Sections, Standard Details, Information Plans, and Design Guides. The Standard Plans contained in the *Standard Plans* (Ref. 11.2) require the review and approval of the **Roadway Design Standard Plans Committee** and formal approval by the **Federal Highway Administration (FHWA)**. The other plan types are reviewed for approval by the **Standard Plans Committee**, with review and input from **FHWA**. This book should be referred to during the design of the project.

2.A Standard Plans

Standard Plans are plans which are in common use on a multitude of projects, such as curb inlets. Standard Plans have been reviewed by, and have received approval from, the **Nebraska Department of Transportation (NDOT)** and the **FHWA**.

The Standard Plans applicable to a particular project are listed, in numerical order, under the “Index of Sheets” on the plan set Title Sheet (See Section 4.A of this chapter). The roadway designer will provide a list of Standard Plans required for the project to **PDU**. These Standard Plans are submitted with the design plan set pdf to **PS&E**. The Standard Plans are updated periodically; it is the responsibility of the roadway designer to verify that the Standard Plan number is current.

Changes or alterations to the Standard Plans by the roadway designer are not allowed. If a designer believes that a Standard Plan needs to be changed or updated, the desired change must be brought to the attention of the **Standard Plans Committee** through the **Roadway Design Plan Quality & Standards Engineer**.

2.B Standardized Special Plans

A Standardized Special Plan may be used on multiple projects. The roadway designer will contact **PDU** or the **PDD RDC** to have the required Standardized Special Plan(s) inserted into the design plan set and into the project file. The roadway designer must verify that the Standardized Special Plans required for a project are included with the Plans for Construction sets (See Section 1.E of this chapter).

2.C Special Plans

Special Plans are plans which are either subject to frequent change or are unique to one project or location (e.g. guardrail installation plans). Certain Special Plans must be requested from the **Bridge Division Special Projects Unit** during Plan Details (See the *DPO*, Ref. 11.1, Activity 5500, “RD Request Bridge Special Plans”, Clarity Task 5516). The roadway designer should request concrete box culverts using the “Concrete Box Culvert Request Sheet”, NDOT Form 67. Retaining Walls, Headwalls, etc. may be requested using the “Custom Special Plan Request Sheet”, NDOT Form 66. Custom Special Plans must be included in the Plans for Construction sets (See Section 1.E of this chapter).

2.D Standard Typical Cross-Sections

The Standard Typical Cross-Sections are a collection of standard details, such as “Rural Intersections and Driveways” and “Joint/Pavement Repair”. Depending on the size of the detail, the information found on the Standard Typical Cross-Sections may be included in the plan package as a Typical Cross-Section Sheet (See Section 4.B of this chapter) or the details may be added to a General Information Sheet (See Section 4.G of this chapter). Standard Typical Cross-Section sheets and details are available from **PDU** and must be included in the Plans for Construction sets (See Section 1.E of this chapter).

2.E Information

The Information section of the *Standard Plans* (Ref. 11.2) contains details that remain constant from project to project, such as contour cultivation. Details from the Information section shall be placed on the General Information Sheets (See Section 4.G of this chapter). These details are available from **PDU** for inclusion in the Plans for Construction sets (See Section 1.E of this chapter).

2.F Standard Details

Standard Details are items which are not drawn to a large enough scale to fill a plan sheet or are items which may not be paid for directly. Standard Details are normally placed on the General Information Sheet (See Section 4.G of this chapter), the Typical Cross-Section Sheet (See Section 4.B of this chapter), or the guardrail installation special plan. Existing Standard Details can be used to create a plan sheet containing an assemblage of details, such as for concrete pavement repair.

2.G Design Guides

Design Guides provide details to aid the roadway designer and the **Highway Design Technician** in developing the project design and plans. These details are not generally included in the design plan sets (See Section 1 of this chapter).

3. STANDARD FORMATS

Clarity and consistency are essential to good communication. Information regarding the levels, line styles, and line weights to be used in plan preparation can be found in the current version of the CADD Policy.

3.A Plan Border Sheets

NDOT has the basic types of plan border sheets available in ProjectWise within NDOT's active workspace.

The available sheets include:

- Typical Cross-Section
- Aerial Photo
- Control Points
- General Information
- Large Scale Plans
- Plan and Profile
- "Piggyback" Plan over Plan
- Cross-Section (for Drainage Sections, etc.)

3.B Standard Symbols

Most of the symbology and patterning commonly used in the roadway design plans have been standardized and may be found in ProjectWise within NDOT's active workspace.

3.C Construction Notes

The Construction Notes and Tabular Notes contain numerous cells used for construction notes. These cells shall only be modified to fill in the underscores. Any other modification shall be approved by **PS&E**.

Tabular notes are used on the Large-Scale Sheets (See Section 4.J of this chapter) and the General Information Sheets (See Section 4.G of this chapter).

Individual construction notes are used on Plan and Profile or on "Piggyback" Plan over Plan Sheets (See Sections 4.L and 5 of this chapter). The construction notes should be framed in with a leader line drawn, except for existing pipe note descriptions. Notes for pipe culverts that are to be used in place do not need to be framed in and do not require a leader line (nor does the note need to state "Use in Place").

Occasionally a unique construction note must be used. In this situation, coordinate with **PS&E** to create the note that is needed. Acceptable abbreviations for use in the construction or tabular notes are listed in the Glossary.

3.D Horizontal Alignment Data

The horizontal alignment data for all sheets except for alignment sheet should be represented as follows:

- Represent the stationed project centerline (CL) by a solid line with tic marks, indicating a station, every 100 feet.
- Label every station that is divisible by 5 for the plan views of the 1" = 100' and 1" = 50' scales (e.g. 220, 225, 230).
- Label every station on the 1" = 20' scale (e.g. 220, 221, 222).

The alignment sheets shall show the following information:

- Represent the stationed project centerline (CL) by a solid line with tic marks, indicating a station, every 100 feet.
- Identify the horizontal curve points (PI, PC, PT, TS, SC, CS, and ST) by station.
- Label every station that is divisible by 5 for the plan views of the 1" = 100'.
- The curve radius (R) will be shown to the nearest 0.01 foot.
- Deflection angles are shown to the nearest 0.01 second. The other curve data will be shown to the nearest 0.01 foot.

The following curve data items are to be listed near the PI's in this order:

Circular Curve

PI	Point of Intersection
Δ	Deflection Angle
T	Tangent Length
R	Radius of Curve
PC	Point of Curvature
PT	Point of Tangent

Spiral Curve

PI	Point of Intersection
Δ	Deflection Angle
T	Tangent Length
Δc	Circular Deflection Angle
Lc	Length of Circular Curve
Θs	Spiral Deflection Angle
Ls	Length of Spiral Curve
Lt	Long Tangent for Spiral Curve
St	Short Tangent for Spiral Curve
E	External
TS	Tangent to Spiral
SC	Spiral to Curve
CS	Curve to Spiral
ST	Spiral to Tangent

For further information, see Chapter Three: Roadway Alignment, Section 2, of this manual.

3.E Vertical Alignment Data

Vertical Alignment Data should be presented as follows:

Profile:

- The existing ground line will be shown along the project centerline.
- The design profile will be placed in relation to the existing ground line.
- Proposed vertical alignment will not be shown in overlay areas (overlay projects are not normally drawn on plan and profile sheets unless special ditches need to be shown).

Stationing:

- Note every station along the bottom of the profile. Stationing should fall directly below the dominant vertical grid lines, for example:
150 1 2 3 4 155 6 7 8 9 160 etc.
- If required, station equations are to be clearly shown in the profile view (show a gap in the profile line, if needed).

Elevations:

- The existing centerline elevation text is placed vertically, directly above the datum elevation line and to the left side of the vertical grid line and will be given to the nearest 0.01 foot.
- The design elevation text is placed vertically, offset above the existing ground elevations and to the right of the vertical grid line and will be given to the nearest 0.01 foot.
- Reference elevations will be shown as even 10 feet intervals in the columns on each side of the profile sheet (labeled on the dominant horizontal grid lines).
- The datum elevation will be shown in the lower left corner of the profile sheet, 1 grid up from the bottom.

Vertical Curve Labeling:

- VPC's and VPT's will be indicated by a small circle (cell) on the grade line. No further information is required.
- VPI's will be indicated by a small triangle (cell) at the intersection of the dashed tangent lines. The notes for the VPI's will indicate the following:
 - VPI Sta. (normally located at a vertical grid line or VPI Sta.)
 - Elev. = (elevation at the VPI)
 - L = (length of the vertical curve)
- Tangent slope percentages will be labeled to four decimal places.

Special Ditches:

- Special ditch lengths of less than 150 feet will not be shown on the plans (See Chapter Six: The Typical Roadway Cross-Section, Section 10.B, of this manual).
- If the profile portion of the plan sheet is heavily congested, the special ditch information may be presented on the General Information Sheet in tabular form (if one profile sheet requires that the special ditch table be placed on the General Information Sheet, then the information for all special ditches shall be placed there).

For further information, see Chapter Three: Roadway Alignment, Section 3, of this manual.

3.F Drainage and Hydraulic Information

The build notes and drainage and hydraulic information will be shown in the plan set as noted below. When the hydraulic information is given, the items to be shown on the plans are:

- Q_{xx}** - Peak flow in cfs (cubic feet per second)
(xx = subscript for the design period, e.g. 50)
- DA** - Drainage Area (in acres)
- HW** - Head Water in feet above the flow line of the inlet

3.F.1 **New and Reconstructed Projects**

New Culverts: The drainage and hydraulic information is placed in the culvert construction notes on the Plan Sheets (See Sections 4.J and 4.L of this chapter) and on the Drainage Structure Cross-Sections (See Section 4.R of this chapter). This includes drop pipes and driveway culvert pipes requiring pipes larger than the standard 24-inch diameter.

Existing Culverts Used-in-Place or Extended: These culverts will be analyzed. The drainage and hydraulic information is placed in the culvert construction notes on the Plan Sheets (See Sections 4.J and 4.L of this chapter) and on the Drainage Structure Cross-Sections (See Section 4.R of this chapter). Culverts that are used in place will be noted on the culvert cross-section sheets.

3.F.2 **3R Projects**

New Culverts: The drainage and hydraulic information is placed in the culvert construction notes on the Plan Sheets (See Sections 4.J and 4.L of this chapter) and on the Drainage Structure Cross-Sections (See Section 4.R of this chapter). This includes drop pipes and driveway culvert pipes requiring pipes larger than the standard 24-inch diameter.

Existing Culverts Used-in-Place or Extended: Unless a hydraulic analysis has been completed, only build notes and culvert cross-sections will be required. If a hydraulic analysis shows that a new pipe is required, the procedure for new culverts will be followed. Culverts that are used in place will be noted on the culvert cross-section sheets.

For additional information see Chapter Seventeen: Resurfacing, Restoration and Rehabilitation (3R) Projects, Section 17, of this manual.

3.G Plan Sheet Scales

3.G.1 Urban

Plan and Profile Sheets:

Horizontal: 1" = 50'

Vertical: 1" = 10'

Design Detail Plan Sheets:

The Design Detail plan sheets are normally scaled at 1" = 20', especially if curb ramps, storm sewers, and grades are present.

For a project with less complexity, a scale of 1" = 50' may be used.

3.G.2 Rural

Plan and Profile Sheets:

Horizontal: 1" = 100'

Vertical: 1" = 10'

"Piggyback" Plan over Plan Sheets:

Rural projects are usually scaled at 1" = 100'

Large Scale Plan Sheets:

Large scale plan sheets may be prepared for rural projects to show details of construction more clearly, such as roadway/intersection geometry, raised islands, grades, etc. These large scale sheets are normally scaled at 1" = 20'; a 1" = 50' scale may be used for projects with less complexity.

4. PLAN SET ORGANIZATION

Depending on the type and scope of a specific project, each set of contract plans will contain plan sheets selected from and in the order presented in EXHIBIT 11.1.

Sheet Number & Order	Plan Sheet (As Required)	Created By	Sheet Description	Sheets Required for Plan Sets				
				PH	Functional *	Design Detail	Utility Plans	PS&E
A	Title Sheet	PDU	See Section 4.A	X	X	X	X	X
B	Typical Cross-Sections	PDU	See Section 4.B	X	X	X	X	X
C	Summary of Quantities	PDU	See Section 4.C					X
D	Summary of Soil and Materials Survey Information	M&R	See Section 4.D					X
E	Aerial Sheets including Environmental Items (when applicable) includes Sensitive Areas	PDU	See Section 4.E	X	X	X	X	X
F	Horizontal Alignment and Control Points	PDU	See Section 4.F	X	X	X	X	X
G	General Information Sheets (Access Cross Sheets, includes Restricted Areas)	PDU	See Section 4.G	X	X	X	X	X
H	Phasing Plans	PDU	See Section 4.H	X	X	X	X	X
J1 Thru J	Large Scale Plans:	PDU	See Section 4.J					
J	Geometrics and Grades	PDU	See Section 4.J			X	X	X
J	Fencing	PDU	See Section 4.J			X	X	X
J	Drainage	PDU	See Section 4.J			X	X	X
J	Joints	PDU	See Section 4.J			X	X	X
J	Construction & Removal (on separate sheets if necessary)	PDU	See Section 4.J			X	X	X
J	Sidewalks and Curb Ramps	PDU	See Section 4.J			X	X	X
K	Utility Relocation	Consultant/ Designer/ Municipality	See Section 4.K			X	X	X
L	Plan and Profile or Plan Over Plan Sheets	PDU	See Section 4.L	X	X	X	X	X
M	Traffic Plans	Traffic	See Section 4.M					X
N	Roadway Lighting Plans	Lighting/PDU	See Section 4.N				X	X
O	Intelligent Transportation Project Plans	ITS/PDU	See Section 4.O and Chapter Fourteen: Traffic, Section 5				X	X
P	SWPPP & Landscaping and Erosion Control & Sediment Control w/Wetland Areas, includes Restricted Areas	Project Develop.	See Section 4.P			X	X	X
Q	Earthwork Data Sheets	Designer	See Section 4.Q					X
R	Drainage Structure Cross-Section Sheets	Designer	See Section 4.R	X	X	X	X	X
S	Bridge Plans (Bridge, Approach Slab, Paving Section)	Bridge	See Section 4.S					X
T	Special Plans from Bridge (CBC, etc.)	Bridge	See Sections 2.C & 4.T					X
U	Special Plans from Roadway (Area Inlets, Guardrail etc.)	Designer/PDU	See Sections 2.B, 2.C & 4.U					X
V	Other Plans as Needed		See Section 2.C & 4.V					
W1 Thru W	Right-of-Way Plans	R.O.W.	See Sect. 4.W and Chap. Fifteen: <u>Right-of-Way</u>					
	Ownership	R.O.W.	Chap. Fifteen, Sect. 2.B	X	X			
	Appraisal	R.O.W.	Chap. Fifteen, Sect. 2.D			X	X	
	PS&E Turn-in	R.O.W.	Chap. Fifteen, Sect. 2.F					X
X1 Thru X	Roadway Cross-Sections	Designer	See Section 4.X	X	X	X	X	X
Std. Plans	Standard Plans	PDU	See Section 2.A					X

* Functional Plans are only required if a Design Public Hearing will be held.

Exhibit 11.1 Plan Set Sheet Organization

Clarity Task 5317: Plan-In-Hand Plan Distribution

Include location map & typical section (use "Preliminary Plans" cell)

Please note any substantial changes from the Engineering Review on the plans transmittal letter and the notice of plans availability.

Print four half-size plans for use on the Plan-In-Hand field inspection

Notify the following that the Roadway Design PIH Plan Set is available in OnBase and give file location (Distribute/notify 2 weeks prior to PIH. Railroad personnel need 5 weeks' notice to attend PIH)

NDOT Division of Aeronautics (*if near an airport, See Chapter Ten, Section 3, of this manual*)

Division Head

Bridge

Division Engineer

Communications

Public Involvement Coordinator/Highway Commission Secretary

Construction

Highway Construction Scheduling Manager

District (*Include location of PCM 30 Minutes*)

District Engineer

District Construction Engineer

Operations and Maintenance Manager

Project Delivery Engineer

Project Manager

Highway Archeologist

Local Assistance

Rail Highway Liaison Manager (*if applicable*)

Materials & Research

Division Engineer

Geotechnical Engineer

Pavement Design Engineer

Assistant Pavement Design Engineer

Pavement Designer

Project Development

Environmental Section Manager

Technical Resources Unit Supervisor

Environmental Documents Unit Manager

Environmental Project Manager

Roadside Development & Compliance Unit Supervisor

Scoping Section Engineer

Project Scheduling & Program Management

Division Engineer

Program Analyst

Program Coordinator

Right-Of-Way

Design Engineer

Project Manager

Designer

Roadway Design

PDU Unit Head

ITS/Lighting Unit Head

Utilities Unit Head

Utilities Coordinator

Strategic Planning

Highway Traffic Data Collection Supervisor

Traffic Engineering (*Include location of PCM 30 Minutes*)

Division Engineer

Optional Notifications/Distributions (if applicable)

Notify the following that the Plan Set is available in OnBase and give file location

FHWA (only on Interstate New and Reconstruction or on FHWA Risk Based Projects for Design)

Division Administrator

Engineering & Operations Team Leader

Transportation Engineer

Transmit Plans

City (1 – ½ size plan)

County (1 – ½ size plan)

Other

Clarity Task 5380: Plan-In-Hand Visit

Invite to the Plan-in-Hand

1. **Bridge** - Bridge Personnel (if bridges on project)
2. **R.O.W.** - R.O.W. Designer, ROW Design Engineer, & ROW Project Manager (if buying ROW)
3. **Materials & Research** – Geotechnical Engineer
4. **District** – DE, DCE, Operations & Maintenance Manager, Project Manager
5. **Local Assistance** - Rail Highway Liaison Manager
(RR personnel need 5 weeks advance notice to attend PIH)
6. **Project Development** - Wetlands Coordinator, Roadside Development & Compliance Unit Manager, Technical Resources Unit Supervisor, Environmental Analyst Supervisor and, if applicable, the Environmental Section Manager (New or Reconstructed projects only)
7. **Project Development** – Assigned Environmental Project Manager (if applicable) Please verify your Project Manager in Clarity before sending invitations.
8. **Project Development** – T&E Biologist (if applicable)
9. **Project Development** - Scoping Engineer
10. **Roadway Design** - Utilities Coordinator through Utilities Unit Head
11. **FHWA** – Division Administrator (only Interstate New and Reconstruction or RBP projects)
12. **City** and/or **County** Personnel (if impacted)

Exhibit 11.2 Distribution/Notification of Plans Availability (Continued)

Clarity Task 5428: Functional Design

(Public Hearing Plans) (use cell "Preliminary Plans")

Print two full and two half-size plans to take to the Public Hearing

Notify the following that the Roadway Design Functional Design Plan Set is available in OnBase and give file location

Roadway Design

Plan Quality & Standards Engineer
Utilities Unit Head
Utilities Coordinator

District

Construction Office
District Construction Engineer
Project Manager

Impacted Divisions (*if a major change was made to the PIH plans*)

(Example: a major change in the grade line - notify the Geotechnical Engr. in M&R)

Traffic Engineering

Division Engineer

Local Assistance Division

Rail Highway Liaison Manager
(Verify that the X-secs. show the existing RR ROW & location of the rails)

PDD

Environmental Section Manager
Scoping Engineer

Project Scheduling and Program Management

Program Coordinator

Optional Notifications/Distributions (*if applicable*)

Notify the following that the Plan Set is available in OnBase and give file location

FHWA (*if a major change was made to the PIH plans. Only on Interstate New and Reconstruction or on FHWA Risk Based Projects for Design*)

Division Administrator
Engineering & Operations Team Leader
Transportation Engineer

Transmit Plans

City (1 – ½ size plan)

County (1 – ½ size plan)

Other

Note: Notify **District**, **PDD Scoping Engineer** and **Rail Highway Liaison Manager** 5 weeks prior to Public Hearing as applicable

Exhibit 11.2 Distribution/Notification of Plans Availability (Continued)

Clarity Task 5576: Design Detail Review

Include Location map & typical section (use cell "Preliminary Plans")

Keep one half-size copy available in Design, stamp as "Design L.O.C. Plans"

Notify the following that the Design Details (L.O.C.) Plan Set is available in OnBase and give file location

Highway Archaeologist

Aeronautics (*if near an airport, See Chapter Ten, Section 3, of this manual*)

Division Head

Roadway Design

Plan Quality & Standards Engineer

Utilities Unit Head

Utilities Coordinator

ITS/Lighting Unit Head

District

Construction Office

District Construction Engineer

Project Manager

Bridge

Division Engineer

Traffic Engineering

Division Engineer

Right-of-Way

R.O.W. Design Engineer

Materials & Research

Division Engineer

Geotechnical Engineer

Pavement Design Engineer

Assistant Pavement Design Engineer

Local Assistance (*Verify that the X-secs. show the existing RR ROW & location of the rails*)

Rail Highway Liaison Manager

Project Development

Environmental Section Manager

Scoping Section Engineer

Roadside Development & Compliance Unit Manager

Technical Resources Unit Supervisor

Construction Division

Highway Construction Scheduling Manager

PSS Scheduling & Program Management

Project Scheduling/Program Coordinator

Optional Notifications/Distributions (*if applicable*)

Notify the following that the Plan Set is available in OnBase and give file location

FHWA (*Only on Interstate New and Reconstruction or on FHWA Risk Based Projects for Design*)

Division Administrator

Transmit Plans

City (1 – ½ size plan)

County (1 – ½ size plan)

Other

Exhibit 11.2 Distribution/Notification of Plans Availability (Continued)

Clarity Task 5614: Design Plans to Utility Unit (See Section 1.D of this Chapter)

Notify the following that the Roadway Design Utility Plan Set is available in OnBase and give file location

Roadway Design

Utilities Unit Head
Utilities Coordinator

PSS Scheduling & Program Management

Project Scheduling/Program Coordinator

NOTE: If there are changes to the design after the **Plans Package Submittal (Clarity Task 5790)** to **PS&E** was sent out, a notification of change will be sent to the **Utility Unit Head** and to any impacted **Divisions (ROW, Wetlands/PDD - Environmental Section, District - DCE & PM, etc.)**. This note or e-mail should include the Project Name & Control Number, a brief description of the change, location, effect on the project, and the anticipated time updated plans will be available. If the change impacts the ROW and/or may impact the utilities, the designer will meet with the **Utility Coordinator** to determine if another plan set is required.

Exhibit 11.2 Distribution/Notification of Plans Availability (Continued)

4.A Title Sheet (A)

PDU prepares, and updates, a Title (A) Sheet for use with the Preliminary Design (PIH) Plans (See Section 1.A of this chapter), the Design Detail Plans (See Section 1.C of this chapter), and for the Plans for Construction (See Section 1.E of this chapter). The roadway designer is responsible for providing the **Highway Design Technician** with the necessary information and its location in OnBase:

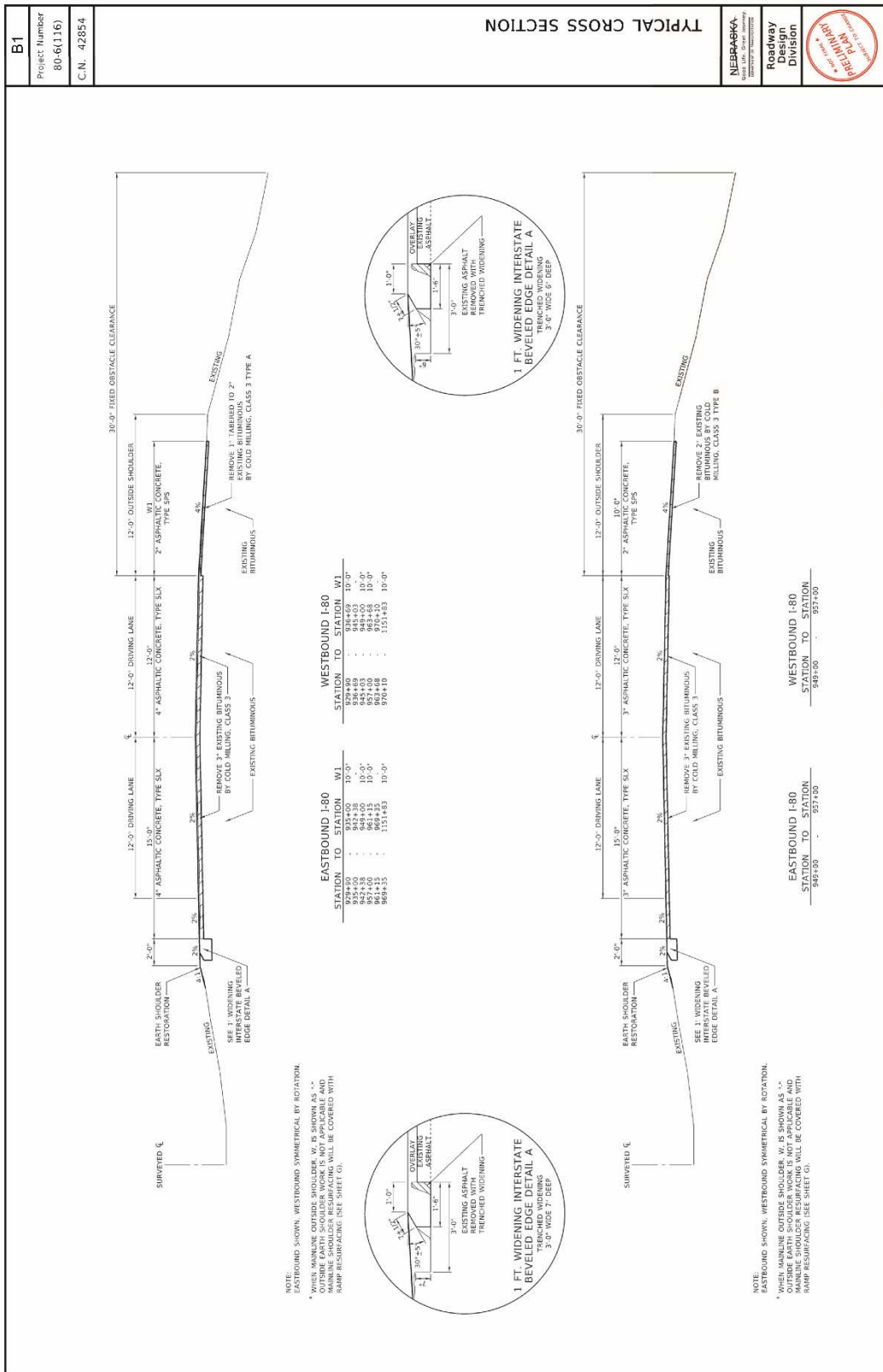
- Beginning and Ending Reference Posts & Stationing
- Recycling Note (from **M&R**, Clarity Phase 7: Plan Package)
- Traffic Data
- **FHWA** Oversight Stamp (if Risk Based Project, See Section 7 of this chapter)

4.B The Typical Cross-Section Sheets (B)

Generic Typical Cross-Section (B) Sheets are required for the Preliminary Design Plans (See Section 1.A of this chapter). The Preliminary Design Plans B sheet(s) may be created using the preliminary pavement design thickness from **M&R** and the appropriate typical section for the project design standard, as developed from the Nebraska Minimum Design Standards (MDS) (Ref. 11.3) (<https://dot.nebraska.gov/media/1z1n5kmb/nac-428-rules-regs-nbcs.pdf>) and/or as shown in Chapter Six: The Typical Roadway Cross-Section. B Sheet details for subsequent design plan sets will be developed by **PDU** from information submitted by the roadway designer and/or **M&R**.

The typical sections of the through highway should be shown first, followed by subsequent typical sections in the order that they appear along the through roadway. Details (such as transitions, feathers, inlays, grading and/or surfacing under guardrail, etc.), will be included on the Plans for Construction B sheet(s) (See Section 1.E of this chapter). The cross-section view of the roadway should show the following:

- The profile grade point (unless it is located at the roadway centerline) at the finished grade elevation.
- Types, thickness, and widths of surfacing materials.
- Slopes and dimensions necessary to define the typical section. Slope hinge points will be defined on surfacing sections as well as grading sections.
- The location or station range of the road to which the typical section applies will be shown directly below the section.
- The notes pertinent to the specific typical section.
- A note referencing the applicable standard plans.
- The type of sealant to be used on concrete projects.
- The Lane Width, Shoulder Width, and either the Horizontal Clear Zone or the Fixed Obstacle Clearance will be dimensioned and labeled on the typical sheet (See EXHIBIT 11.3).



EASTBOUND I-80

STATION TO STATION

948+00 TO 957+00

WESTBOUND I-80

STATION TO STATION

945+00 TO 957+00

Exhibit 11.3 Typical Cross-Section (B) Sheet

4.C Summary of Quantities Sheets (C)

PDU creates tables for the Summary of Quantities (C) Sheet(s) from the project AASHTOWare quantities, after **PS&E** has reviewed the Design Plans. The C sheet shows separate summaries for each group of pay items included in the project. The types and grades of asphalt cement, emulsified asphalt, or asphaltic oil will also be shown. This sheet may also include:

- Compaction requirements (if there is no Soils and Materials Survey Information (D) Sheet)
- Tack Coating requirements
- Joint Repair Tables
- Other pertinent information necessary to fully summarize the items on the project

4.D Soil and Materials Survey Information Sheets (D)

Soil boring information, test data, and compaction requirements will be shown on the Soil and Materials Survey Information (D) Sheets, provided by **M&R**.

4.E Environmental or Aerial Sheets (E)

When Environmental or Aerial (E) Sheets (herein after called Environmental) are included in the plan set, they will cover the entire station range of the project. If wetlands are present on a project, the E sheets will show the delineated wetlands, impacted wetlands, sensitive areas, and mitigation sites.

The following scales will be used for Environmental sheets:

- 1" = 100' for rural and urban projects
- 1" = 50' for a short urban project
- 1" = 20' for a bridge project or an intersection project

The Begin Station for each sheet shall start at a major station (100+00, 105+00, 110+00, etc.). The stationing and scale of each sheet, as well as the order of sheets, usually match that of the Plan, Plan over Plan, or Plan and Profile Sheets (See Section 4.L of this chapter).

Environmental Sheets should show the following information:

- The stationed project centerlines
- Stationing ties for intersecting centerlines
- North Arrow
- Project Number
- Control Number
- Aerial Date
- Flight Information
- Limits of Construction (lines only)
- Proposed Edge of Pavement
- Existing culverts
- Sensitive & Do Not Disturb Areas
- Wetland Legend

4.F Alignment and Control Point Data Sheets (F)

Alignment and Control Point (F) Sheets are prepared by **PDU** and may contain three separate sets of information:

- Alignment design data, with stations and coordinates (X, Y, and azimuth)
- Control Point Data
 - Note on sheet – “Control Point tie information available on request”
- Benchmark information

4.G General Information Sheets (G)

General Information (G) Sheets may be used to reduce the amount of information shown on other plan sheets. Information normally placed on these sheets includes, but is not limited to:

- A legend depicting the cells used for topographic features
- Standard notes
- Culvert pipe legend (if required)
- Earthwork tabular notes
- Sketches of surfaced driveways and intersections (including quantities for each)
- Detour routes (but not temporary roads)
- Mailbox and mailbox turnout information
- Standard details, such as dikes or riprap for scour holes
- Standard notes for sensitive and restricted areas
- Rumble Strip Tabular
- Superelevation Information and additional asphalt quantities for correction
- Access crossing
- Special Ditch Chart
- Other (see Section 2.E)

4.H Phasing Plan Sheets (H)

Phasing Plan (H) Sheets show construction phasing, temporary construction, and the completed construction. Normally, the only construction note that should appear on the phasing plans would be a tabular build note for temporary surfacing, and geometrics when required. Phasing for drainage items is shown on the Drainage Structure Cross-Section sheets (See Section 4.R of this chapter).

4.J Large Scale Plan Sheets (J)

Large Scale Plan (J) Sheets (50 or 20) are normally used for urban, expressway, or Interstate projects. J sheets may also be prepared for rural projects to show details of construction more clearly, such as roadway/intersection geometry, raised islands, grades, etc. The J sheets may consist of a combination of the following sheet sets, depending on the type and complexity of the project:

- Geometrics (combine with grades if space allows)
- Surfacing Elevations and Grades (See Section 4.J.1 of this chapter)
- Fencing
- Drainage
- Joints (combine with the geometrics if the longitudinal joints require geometrics)
- Construction (combine with removal if space allows)
- Removal
- Sidewalks and Curb Ramps

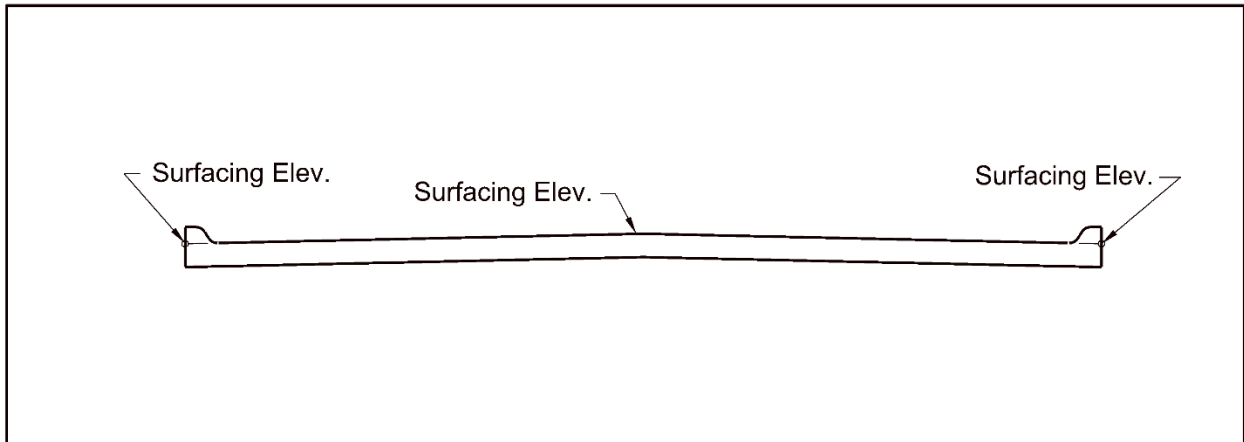
If the construction and removal notes are to be combined on one set of plans, the notes will be kept separate. The removal notes are placed on the upper half of the sheet and the construction notes are placed on the lower half of the sheet. For some less complex urban projects the drainage, construction, and removal notes may be combined into one set of plans. Information regarding existing conditions will be in all caps in the tabular notes.

4.J.1 **Concrete Surfacing Elevations and Grades**

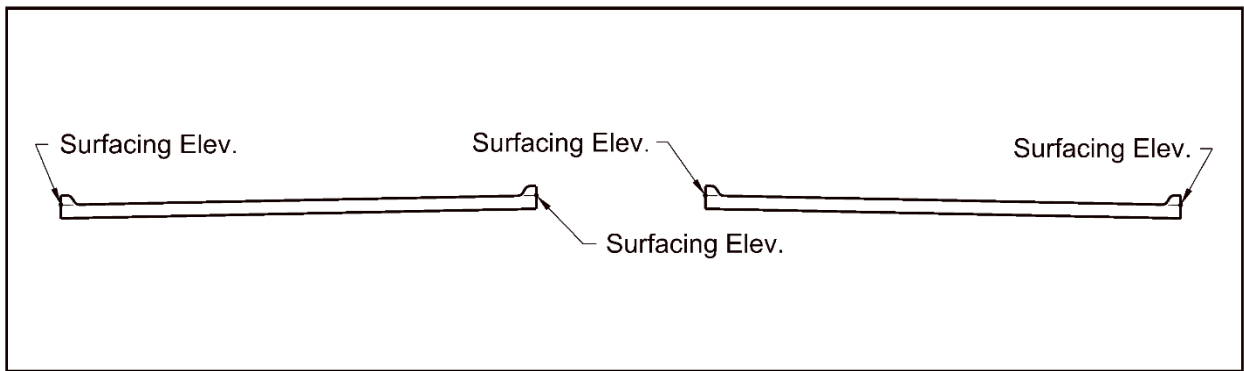
The roadway designer will provide concrete surfacing elevations for New and Reconstructed projects. The elevations should be provided at 25-foot intervals for the following locations:

- Municipal Undivided - Surfacing elevations should be shown at the centerline, at any breaks in the cross slope, and at the intersection of the back of curb and the projected pavement cross slope (See [EXHIBIT 11.4](#)).
- Municipal Divided - Surfacing elevations should be shown at locations where the back of curb and the projected pavement cross slope intersect and at any breaks in the cross slope (See [EXHIBIT 11.4](#)).
- Median Breaks at Intersections - Surfacing elevations should be shown at locations where the intersection of the pavement cross slope and the back of curb would normally be for the roadway section (Grade Line) (See [EXHIBIT 11.4](#)).
- Rural – Surfacing elevations should be shown at the profile grade point at 50-foot intervals on vertical curves and 100-foot intervals on tangent sections.

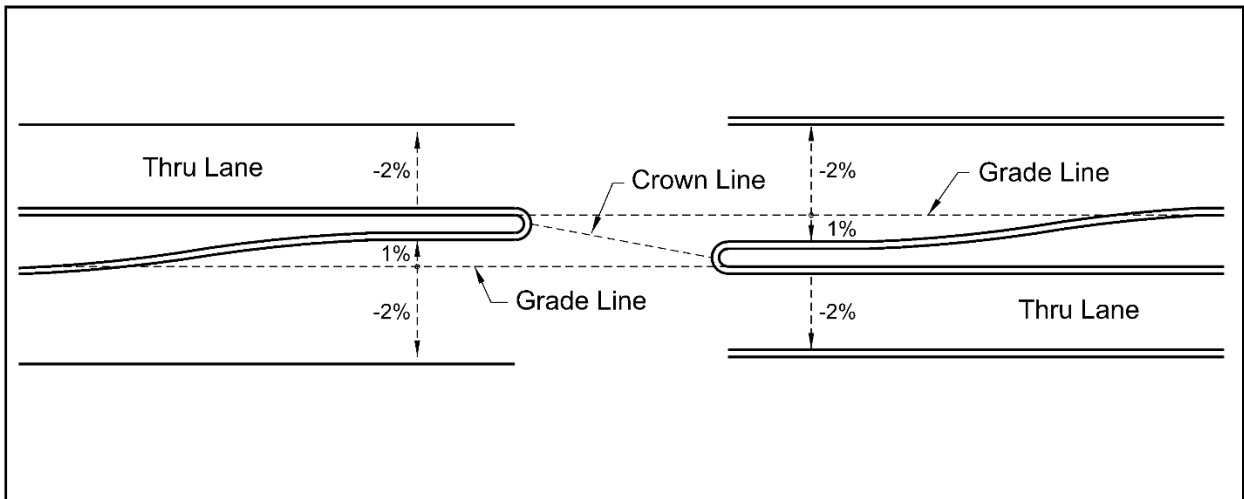
Whenever there is a deviation from the typical roadway cross-section the grade elevation should be shown. For example, when the gutterline is rolled in a flat profile section for drainage purposes the change in grade elevations will be indicated.



Municipal Undivided



Municipal Divided



Intersections

Exhibit 11.4a Surfacing Elevations

4.K Utilities Plan Sheets (K)

When a project impacts utilities, requiring their relocation or rehabilitation, **Utility Companies/Consultants**, coordinating with the **Utilities Unit**, will provide **Roadway Design** with the required Utility Rehabilitation Plan (K) Sheets in a large-scale format (50 or 20 scale). For additional information see Section 1.D of this chapter.

4.L Plan, Plan over Plan, or Plan and Profile Sheets (L)

(L) Sheets are presented based on the scope of the entire project. 3R projects are usually presented on Plan over Plan sheets, which are split sheets showing a plan view of the project on both the top and bottom half. The pavement strategy of these projects do not require an existing or proposed profile to be provided. New and Reconstructed projects are presented and Plan and Profile sheets, which are split sheets showing the plan view of the project on the top half of the sheet and the project profile below, including special ditches and special ditch tabular notes. 3R projects may also include Plan and Profile sheets if there is pavement replacement or a bridge replacement included in the project.

Individual construction notes on the (L) Sheets should be written vertically, right side up. The length of the note box should be uniform throughout the length of the project. The notations will be written so that they read from either the bottom or the right side of the sheet.

The Begin Station for each sheet shall start at a major station (100+00, 105+00, 110+00, etc.). The stationing and scale of each sheet, as well as the order of sheets, usually match that of the Environmental or Aerial Sheets (See Section 4.E of this chapter).

4.M Traffic Plan Sheets (M)

Traffic Engineering will provide the roadway designer with the required Traffic Plan (M) Sheets, including the “Traffic Control Plan”, the “Temporary Pavement Marking Plan”, and the required traffic control devices (such as, signs, signals, pavement markings, delineators, traffic detector loops, etc.). **Traffic Engineering** will also provide the roadway designer with a listing of the standard plans required for the project (See Section 2.A of this chapter).

4.N Roadway Lighting Plan Sheets (N)

When a project includes lighting, the **ITS/Lighting Unit** in **Roadway Design** is responsible for the Roadway Lighting (N) Plan Sheets. The **ITS/Lighting Unit** will also provide a list of standard plans required for the project (See Section 2.A of this chapter).

4.O Intelligent Transportation System (ITS) Project Plan Sheets (O)

When a project includes the provision of new and/or impacts to existing ITS elements (e.g. traffic sensors, fiber optic cables, Interstate autogates, traffic cameras), the **ITS/Lighting Unit**, in coordination with the roadway designer, will provide **PDU** with the necessary information to create the ITS Project Plan (O) Sheets. ITS project plans will be presented on large-scale sheets (50 or 20 scale).

4.P SWPPP, Landscaping, and Erosion & Sediment Control Plan Sheets (P)

PDD RDC may work with **PDU** in the creation of the SWPPP, Landscaping, and Erosion & Sediment Control (P) Plan Sheets (which includes Wetland Areas, Restricted Areas, tree plantings, flower bed arrangements, etc.). The SWPPP, Landscaping, and Erosion & Sediment Control plans (which includes Wetland Areas and Restricted Areas) will be presented on large-scale sheets (50 or 20).

4.Q Earthwork Data Sheets (Q)

Earthwork Data (Q) Sheets consist of the computer-generated computations showing the cumulative project earthwork, station by station. Earthwork balance points should be shown for New and Reconstructed projects. For additional information see Chapter Seven: Earthwork of this manual.

4.R Drainage Structure Cross-Section Sheets (R)

The roadway designer is responsible for producing the Drainage Cross-Section Sheets (R). Projects with culvert work or grading activities project-wide shall show a cross-section for all highway culverts, including existing highway culverts that are used in place. For storm sewer pipes, flumes, ditch drop pipes and driveway culvert pipes, a cross-section shall only be shown if it is new or if there is a proposed modification to an existing structure. These cross-sections shall be drawn along the flow line of the structure. Where cross-section slope lines and the drainage structure would extend beyond sheet limits, the slope line should be broken and indented, showing the break points by elevation and offset distance from the centerline (See [EXHIBIT 11.5](#)). The preferred scale for the cross-section is 1" = 10'. Scales of 1" = 5' or 1" = 20' may be used as circumstances dictate.

Cross-sections for highway culverts that are used in place shall show the existing ground line, the proposed cross-section of the road with annotations, the prelim note with the description of the existing structure, and a use in place note. The existing culvert shall not be shown.

Cross-sections for new or modified drainage structures shall show the proposed cross-section of the road with annotations, the construction notes, the hydraulic information (See Section 3.F of this chapter), and all drainage items (culvert pipes, box culverts, storm and sanitary sewers, curb inlets, manholes, flared-end-sections, headwalls, etc.). If an existing box culvert is being extended, the roadway designer should include a table listing the thickness of the existing culvert top, floor, and walls. The quantities within the construction notes will correspond to the items tabulated in the Summary of Quantities Sheets (See Section 4.C of this chapter) and in the construction and removal notes (See Sections 4.J and 4.L of this chapter), as shown in the plans.

Drainage Cross-Section (R) Sheets for skewed culverts, storm sewer, or other complex drainage structures may include a plan view of the culvert for information only. The plan view shall show a north arrow, the alignment stationing and the drainage structure shown in the cross section. If applicable, the drainage structures shall be labeled to match the Design Detail (J) Sheets (See Section 4.J of this chapter). The plan view does not need to be drawn to scale and shall be labeled "Not to Scale" in this case.

4.S Bridge Plans (S)

Bridge provides the roadway designer with the Bridge Plans (S) for each project, as needed.

For uniformity and consistency, the bridge plans will consist of:

- Layout Sheet
- Geology and Pile Layout
- Substructure Details
- Superstructure Details
- Girder Layout
- Cross-Sections and Deck
- Approach Slabs
- Slope Protection

4.T Bridge Special Plans (T)

Bridge provides the roadway designer with certain Special Bridge Plans (T) for each project, as needed, including but not limited to:

- Box Culverts
- Headwalls
- Non-standard Concrete Collars
- Pier Protection

4.U Roadway Special Plan Sheets (U)

PDU prepares a Roadway Special Plans Sheet, which consists of guardrail special plans (See Section 2.C of this chapter), standard special plans (See Section 2.B of this chapter), retaining wall plans, and other special plans

4.V Other Plans as Needed (V)

PDU may prepare (V) Plan Sheets for any plans/details which are not accommodated by the other plan sheet types.

4.W Right-Of-Way Plan Sheets (W)

Right-of-Way Design prepares the Right-of-Way Plans (W) in stages (See Chapter Fifteen: Right-of-Way of this manual). The design plan set submitted to **PS&E** (See Section 1.E of this chapter) will include a set of right-of-way “PS&E Plans” (See Chapter Fifteen: Right-of-Way, Section 2.F, of this manual); the right-of-way plans title sheet will not be included.

4.X Roadway Cross-Sections (X)

The roadway designer is responsible for creating the Roadway Cross-Sections (X). Projects with grading activities shall show cross-sections at all locations along the project with grading activities, as well as additional locations as needed (See Chapter Seven: Earthwork, Section 3.D, of this manual). Cross-sections shall show the existing ground line, proposed pavement, proposed grading and annotation labels. Cross-sections should label existing right-of-way as well as proposed right-of-way, when applicable.

Cross-sections should not overlap each other. Where cross-section slope lines would extend beyond sheet limits, the slope line should be broken and indented, showing the break points by elevation and offset distance from the centerline (See EXHIBIT 11.5).

Roadway Cross-Section (X) sheets can be produced to read from the bottom or right side. The cross-sections are arranged by station with the lowest station at the bottom of the sheet and the highest station at the top. The scale of the cross-section shall be consistent across a single sheet.

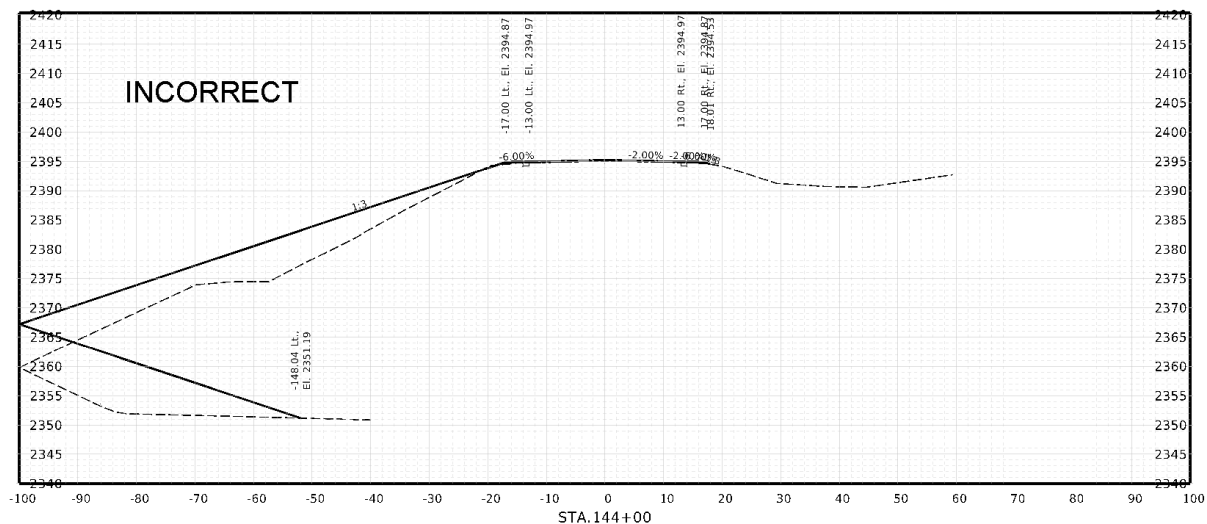
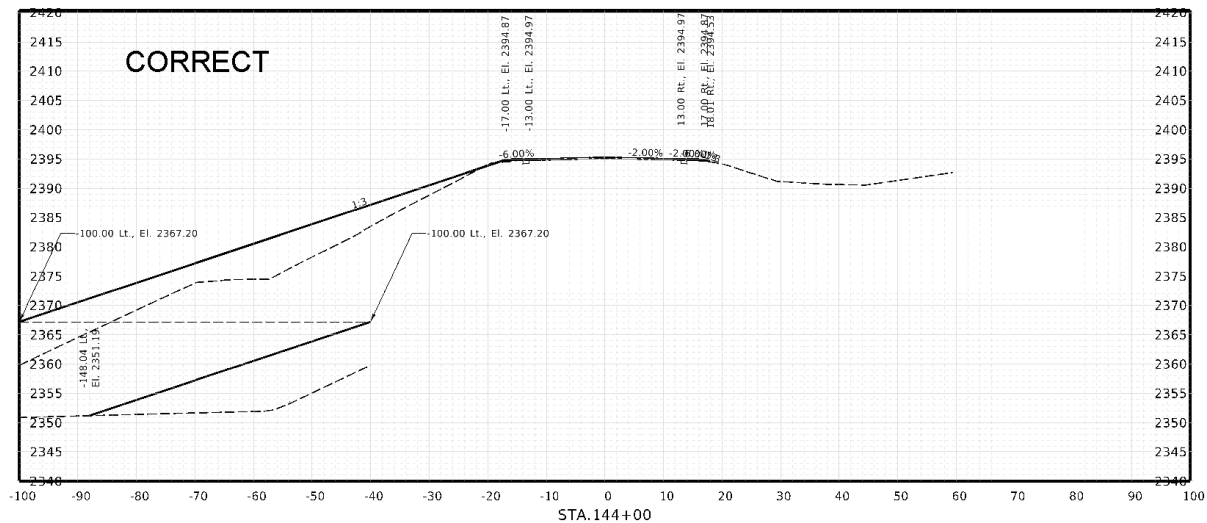


Exhibit 11.5 Roadway Cross-Section Break Lines

5. PROFESSIONAL ENGINEER SEAL AND SIGNATURE

Projects which are to be let to bids by **NDOT** shall have the pages of the design plans sealed, signed (allowing the text on the seal to be read), and dated by a Professional Engineer in accordance with the Engineers and Architects Regulation Act (Neb. Revised Statutes Sections 81-3401 to 81-3455) ([The Nebraska Engineers and Architects Regulation Act | State of Nebraska Board of Engineers and Architects](#)). The license must be issued by the **Nebraska Board of Engineers and Architects** and shall be valid the year the project is let to contract. The engineer will sign the plan sheets before **PDU** compiles the pdf for turn-in to **PS&E**. The Engineer's Seal and Signature are typically placed on the lower right-hand corner of the sheet.

6. ADDENDUMS TO A PROJECT

After a set of plans has been advertised for letting, relatively minor items which impact the bids on a project (e.g. an incorrect quantity or a previously unknown or overlooked culvert pipe) will be handled with an addendum to the project. The addendum is a separate sheet, created by **Construction**, which is posted with the project plans detailing the change in quantities and, if required, including a detail of the item in question. If a detail is required it will be created by the responsible **Division/Section/Unit** (e.g. **Bridge, Roadway Design, ITS/Lighting**). Substantial changes to the project (e.g. a change in roadway grade impacting drainage and right-of-way) may result in the project being withdrawn from the letting. Changes to the plans typically will not be made at this time but will be handled as a plan revision after the project has been let to contract (See Section 7 of this chapter). If the addendum relates to a **Roadway Design** item, the roadway designer will coordinate the change with **Construction** and with any other **Divisions/Sections/Units** impacted by the change, for example a temporary easement may be required from **ROW**.

7. REVISIONS TO A PROJECT

Once the project plans have been executed, **they are legal documents** (executed means that both parties, **Contractor** and **NDOT**, have signed the contract). Revisions cannot be processed and dated until after the execution date; a plan revision may be prepared prior to the execution date but cannot be dated and returned to **Construction** until after the execution date.

All plan revisions after bid letting must include an environmental review statement. The roadway designer will coordinate all revision work with the **Environmental Project Manager** in the **Environmental Project Management Unit** of the **PDD Environmental Section** to determine whether the work in the plan revision will require additional environmental review. The **Environmental Project Manager** will provide the roadway designer with notification confirming (a) that additional environmental review will not be required or (b) that work on the revision may proceed with noted stipulations.

Only after environmental review and approval, the roadway designer will copy the CADD files to make the plan revisions (refer to the CADD Policy). The roadway designer will contact **PDU** and work with them to finish the revision. **PDU** will create a new pdf, including the revision, to be placed in ProjectWise for roadway designer/**Unit Head** review. Revisions on federally funded projects may require **FHWA** review and approval (See Section 7.A of this chapter). The pdf can be electronically signed by engineer.

The roadway designer will inform the **Highway Construction Scheduling Manager**, noting that the revised plans have been reviewed by the **Environmental Section**. After review and concurrence by the **Highway Construction Scheduling Manager** and the pdf is digitally signed by **Unit Head**, the revised CADD files are locked to prevent unauthorized changes to the contract plans.

For plan revisions prepared by **Roadway Design**, the roadway designer will send a notification (which can be an e-mail) detailing the proposed revision to the **Assistant Design Engineer (ADE)** and the **Unit Head**. The notification should include the following information:

- Project Name & Number
- Control Number
- Revision Number
- R.O.W. Tract Numbers affected
- A brief description of the changes
- An approximate completion date for the revision

If the **ADE** approves of the proposed revision the **Unit Head** will forward the notification to the following:

- **Environmental Section**
- **District Engineer (DE)**
- **District Construction Engineer (DCE)**
- **Construction Engineer**
- **District Project Manager**
- **Bridge** (if applicable)
- **Traffic Engineering**
- **ROW Design Engineer**
- **Utilities Unit ADE**
- **FHWA** (on federal oversight projects, See Section 7.A of this chapter)
- Other affected **Divisions/Sections/Units**

This notification alerts project stakeholders that a change is being made and allows for plan changes from different divisions to be consolidated into one plan revision.

The **Unit Head** and **ADE** will be informed of changes to the plans when those changes are made in the **District**. The **ADE** will decide whether a plan change should be handled with a change order or as a plan revision. Plan revisions *must* be signed and sealed by a Professional Engineer (P.E.). The **DE** or the **DCE** may assume the responsibility to seal and sign plan revisions processed in the **District** if the **Unit Head** and **ADE** are consulted about the design of the proposed revisions **before** they are finalized.

7.A Federal Oversight Projects

Under the terms of MAP-21 (<https://www.fhwa.dot.gov/map21/>) and the NDOT/FHWA Stewardship & Oversight Agreement (<https://dot.nebraska.gov/business-center/fhwa/>), **FHWA** will exercise oversight for plan revisions on federal-aid projects as follows:

1. Revisions for Risk Based Projects (RBPs) selected for **Construction** oversight (the roadway designer should check Clarity for the project status) which are on the National Highway System (NHS) shall have **FHWA** approval to proceed *before* the plan revisions are made (the **Unit Head** is responsible for informing the **Roadway Design Plan Quality & Standards Engineer** when **FHWA** approval has been received). The processed plan revisions must be approved by **NDOT** and must then be approved by **FHWA** as outlined in Section 7.A.1 of this chapter.
2. Revisions for RBPs selected for **Construction** oversight which are not on the NHS will be sent to the appropriate **FHWA Transportation Engineer** for review and comment but will be approved by **NDOT**.
3. All other federal-aid projects, regardless of location, will be approved by **NDOT**.

7.A.1 **FHWA Plan Revision Approval Process**

For RBPs selected for **Construction** oversight which are on the NHS, the plan sheets affected by the revision will be sent to **FHWA** as a pdf with the “DRAFT PLAN REVISION X” cell, in red, placed in the upper right corner of the draft plan revision pdf. A draft copy of the revision letter will be attached with the plan pdfs (See EXHIBIT 11.6) and **FHWA** will be informed that the revisions have been reviewed by the **Environmental Section** of **PDD**. Additional coordination may be required between **FHWA** and the **Environmental Section** of **PDD** as is necessary for the re-evaluation of the NEPA document. The plan sheets and document may be e-mailed to **FHWA** if possible; larger revisions will be sent to **FHWA** on a recordable data medium. After an **FHWA** approval e-mail has been received, full size plans and the approved plan revision letter will be attached with the plans to **Construction**. The letter is the same as the request letter sent to **FHWA**, except that a line is placed at the bottom citing **FHWA** approval, such as “**FHWA** concurred on May 24, 2021, through _____, **FHWA Transportation Engineer**” (or whoever at **FHWA** did the approval).

7.B Revision Procedures

The roadway designer may mark-up corrections on a pdf of the plans for the revised work and give the corrections to **PDU**. The approved revisions will be made. Two pdfs will be placed in the e-plans folder (a revised sheets only pdf and a pdf of the entire project).

After **Unit Head** review, the registered engineer responsible for the revision shall re-seal (or seal, if not the original engineer), sign, and date the revised sheet. Revised sheets that have a signature block will require a new signature with the following exceptions:

- The revised title sheet – the revision symbol and a note stating the original date that the **Specification Engineer** in **Construction** signed the plan are required for only the first revision (**Unit Head** signature is required for all revisions)
- The summary of quantities sheet – the responsible engineer's seal and signature is required but the **Specification Engineer's** signature is not required
- Deleted sheets are not signed by anyone

PDU will send an e-mail to the responsible engineer who will then contact **Construction**, including an electronic letter written to the **Highway Construction Scheduling Manager** (See [EXHIBIT 11.6](#)) noting which sheets have been revised, added, or deleted. The letter must explain each change to the plans resulting from the revision; the date on the revision letter will correspond to the date on the revised sheets. The designer will also e-mail the **Highway Project Manager** in **Construction** with a justification/reason for the revisions.

Date: January 11, 2021

To: Highway Construction Scheduling Manager, Construction Division

From: Roadway Design Unit Head

Subject: Plan Revision R3 for Project 80-9(832)
Dated November 20, 2020
Project Location: Greenwood to Mahoney
C.N. 12450A

Attached are full-size revised sheets for the above mentioned project.

This plan revision is required for the following reasons:

1. Phasing changes for cross-over which ties into the Waverly to Greenwood project, 80- 9(842), CN 12469. Previous cross-over did not account for that project being let. The cross-over surfacing was revised from 10" concrete to 13" doweled concrete due to the extended time frame of use during the two projects.

The following plan sheets were revised: 1, 2, C1, & C2.

The following CN 12450A sheets were added: H19A, H30A, & 66A.

The following CN 12450A sheets were deleted: H19, H30, & 66.

Quantity Changes are listed below:

<u>Group</u>	<u>Item</u>	<u>Old Quantity</u>	<u>New Quantity</u>	<u>Differential</u>
3	Crushed Rock Surface Course	37,725.000	37,181.000	-544.000 SY
3	13" Doweled Concrete	434,563.000	436,602.000	+2,039.000 SY
3	10" Concrete Pavement	7,663.000	4,490.000	-3,176.000 SY
3	Foundation Course, 6"	437,465.000	439,504.000	+2,039.000 SY
4	18" Culvert Pipe Type 2, 3, 4, 5, 6, 7, or 8	31.000	631.000	+600.0000 LF

This revision has been reviewed by the Environmental Section of the Project Development Division.

FHWA concurred on December 30, 2020 through FHWA Transportation Engineer

7.B.1 Revised Sheet

Revisions to the project plans should be made in the original sheet file. The original information that is to be revised must be retained, **do not** eliminate an original item. The change will be crossed out, while remaining legible, and the revised information added.

A quantity or line of text which is to be revised will be shown with a single line through the text (~~text~~). The original text will not be erased or edited. The new text will be written in near proximity to the original text, along with the revision number (R1). This revision symbol will be used to point out each change on a revised sheet.

Revised sheets will have the revision symbols and revision dates in their upper right corners (the revision date shall correspond with the date on the letter to the **Highway Construction Scheduling Manager**, See Section 7.B of this chapter). The revision symbols and revision dates will be shown as follows:

R₁ 11 JUL 22

7.B.2 Added Sheet

Revisions which are so extensive as to preclude their being made on the original plan sheet will be made on a new added sheet. This sheet will be placed immediately after the original sheet and will be differentiated by the addition of a letter to the sheet number. For example, added sheet L43A would be placed immediately following original sheet L43, which will then be retained in the plan set as a deleted sheet.

On special plan sheets, the plan number will remain the same (e.g. 6C) but the sheet number will change.

The following designation will be placed on the added sheets:

R₁ ADDED SHEET 11 JUL 22

The revision date shall correspond with the date on the letter to the **Highway Construction Scheduling Manager**, See Section 7.B of this chapter.

7.B.3 Deleted Sheet

Sheets which are to be cancelled, voided, or deleted from the plans will remain in their location within the plan set and a large “X” will be placed across the sheet without covering the sheet number. The revision symbol, deleted sheet note, and date (corresponding with the date on the letter to the **Highway Construction Scheduling Manager**, See Section 7.B of this chapter), will be noted at the top right-hand corner of the sheet (See [EXHIBIT 11.7](#)).



7.B.4 Quantity and/or Pay Item Changes

Quantity changes will be added to or subtracted from the quantity shown on the summary of quantities sheets. The revision symbol will be used to point out each change and the symbol and date (corresponding with the date on the letter to the **Highway Construction Scheduling Manager**, See Section 7.B of this chapter) will appear at the top right-hand corner of the summary of quantities sheets (See [EXHIBIT 11.10](#)).

Changes in quantities resulting from the revision will be detailed in the letter to the **Highway Construction Scheduling Manager** (See Section 7.B of this chapter). The funding source(s) of the pay items will also be specified (See Chapter Twelve: [Cost Estimating & Funding](#), Section 2, of this manual). When plan revisions add pay items which are not already in the plans or that create the need for a special provision, the special provision will be submitted as part of the letter to the **Highway Construction Scheduling Manager**, along with the revised plan sheets.

7.B.5 Detail Sheet

Deleted details should have a box drawn around them, an “X” drawn from corner to corner, and will be labeled (within the block) with the revision balloon (R1). (See [EXHIBIT 11.11](#)). There are times when this would not be the most appropriate method, such as when text for one sketch may overlap within the block area of adjoining sketches.

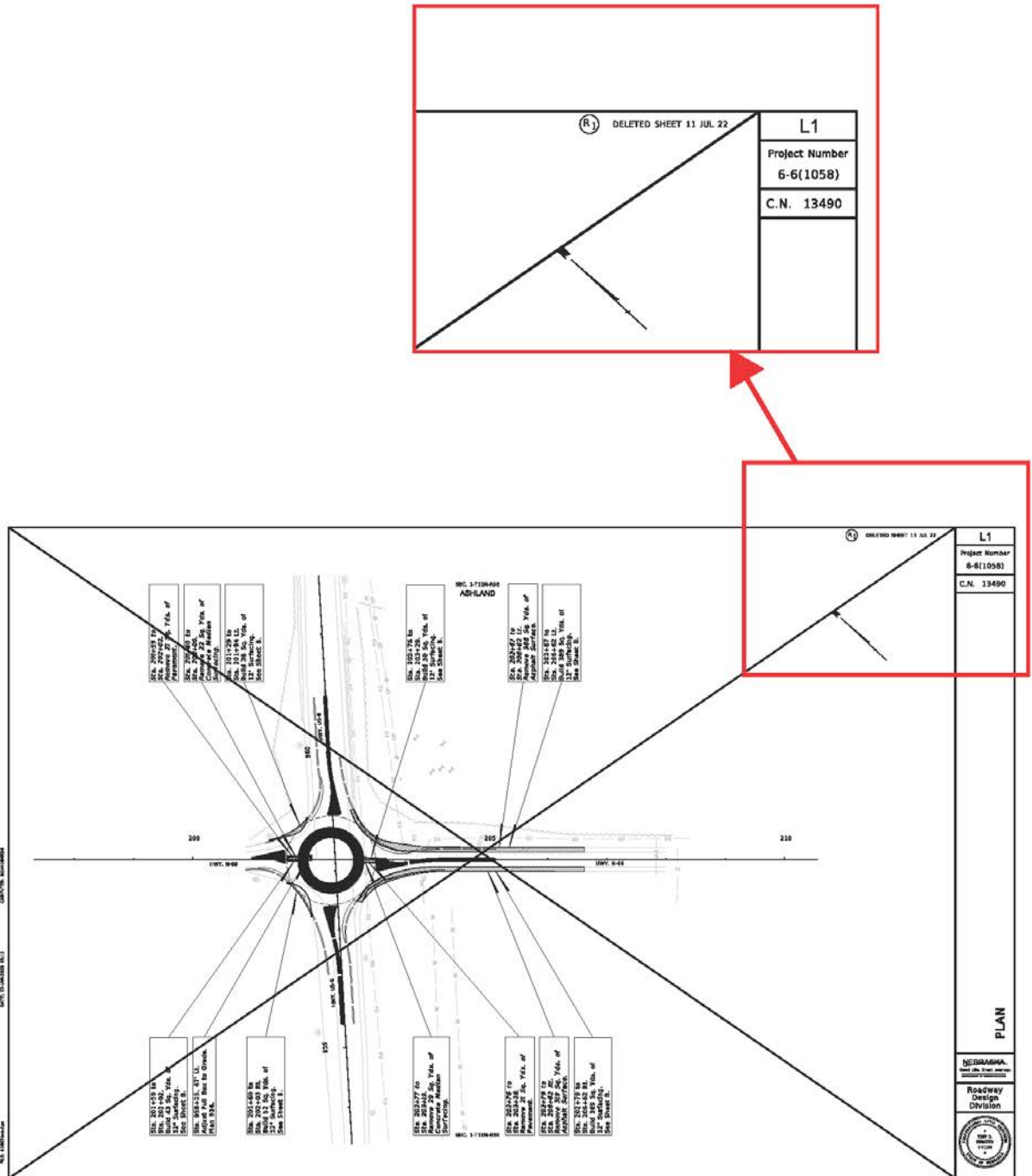


Exhibit 11.7 Deleted Sheet

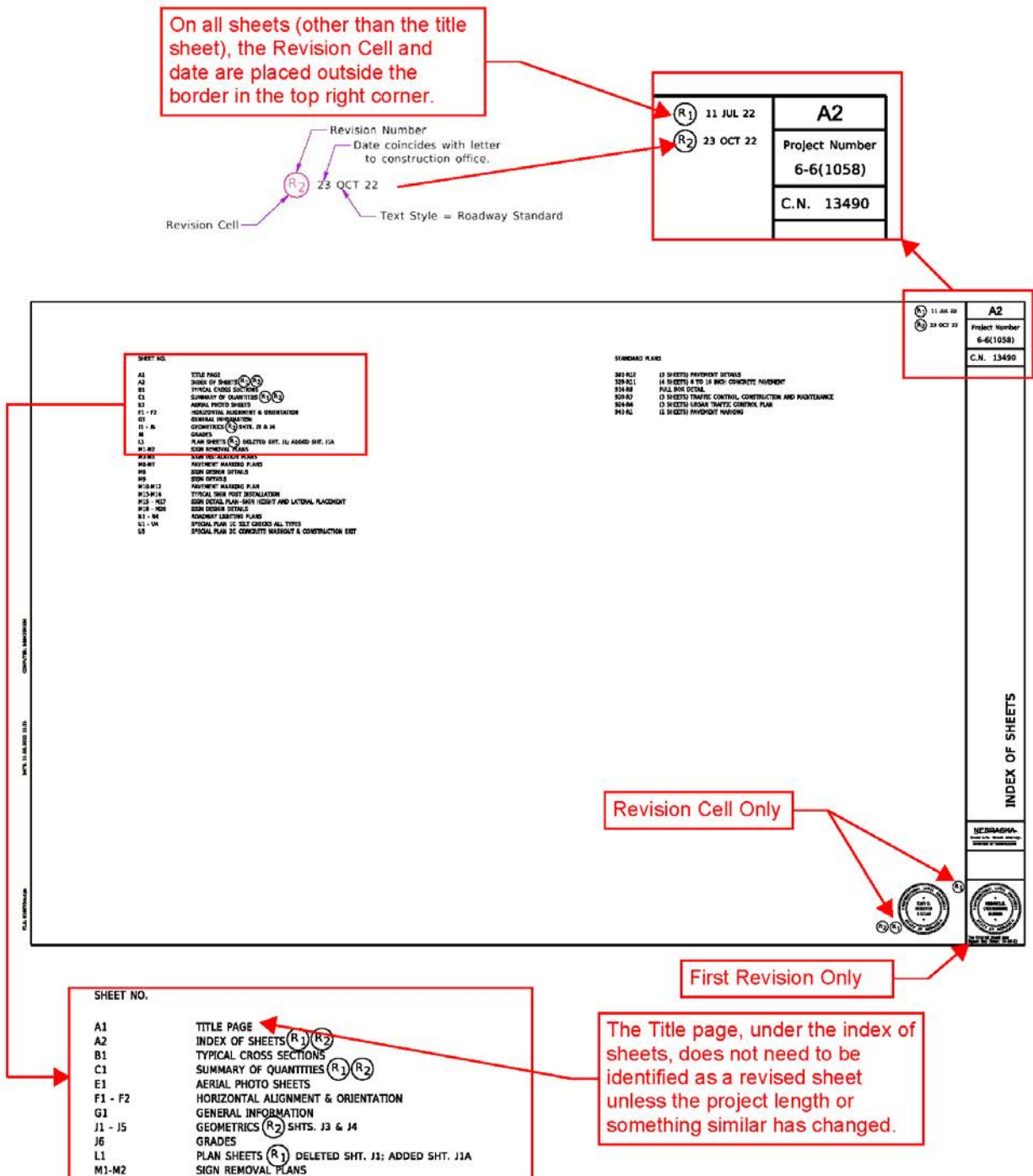


Exhibit 11.8 Revised Index Sheet

On the Title Sheet, the Revision Cell and date are placed in the border.

Revision Number

Date coincides with letter to construction office.

Revision Cell

23 OCT 22

Text Style = Roadway Standard

A1
Project Number MISC-6-6(1058)
C.N. 13490
▲ C.N.
▲ C.N.
■ C.N.
(R ₁) 11 JUL 22
(R ₂) 23 OCT 22

STATE OF NEBRASKA
 DEPARTMENT OF TRANSPORTATION
 PLANS FOR CONSTRUCTION
ASHLAND PILOT PROJECT
 SAUNDERS COUNTY

THE WORK ON THIS PROJECT CONSISTS OF GROUPS	
1 - CONCRETE PAVEMENT 1 - GENERAL	
3 - RETAINING & 10 - GENERAL	
A. GROUPS 1, 3, 5, 10 ARE INCLUDED	
IN THE LETTERING OF JUNE 26, 2022	
A. GROUPS ARE INCLUDED	
IN THE LETTERING OF	
B. GROUPS ARE INCLUDED	
IN THE LETTERING OF	

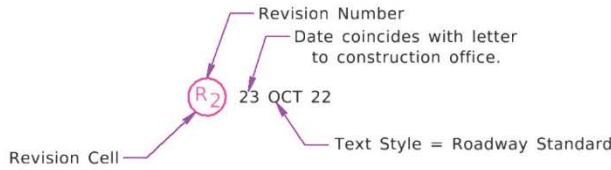
DESIGN ESTIMATION	
TRAFFIC AVE. 154	
YEAR: 2022	2022
ADT: 3535	3840
DMU: 451	451
P: 3.5%	3.5%

DESIGN ESTIMATION	
TRAFFIC AVE. 846	
YEAR: 2022	2022
ADT: 1158	1202
DMU: 340	353
P: 1.8%	2.0%

Revision Cell Only

First Revision Only.

Exhibit 11.9 Revised Title Sheet



R1	11 JUL 22	C1
R2	23 OCT 22	
		Project Number
		C.N.

R1	11 JUL 22	C1
R2	23 OCT 22	
		Project Number
		C.N.

GROUP	ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
GRADING ITEMS GROUP 1	MOBILIZATION	1.000	LS	MOBILIZATION	1.000	LS	BARRETTAGE, TYPE II	1,200.000	BEAV
	ROADWAY GRADING	4,320	S/S	REMOVE GUARDRAIL	175.000	L/F	BARRETTAGE, TYPE III	1,750.000	BEAV
	REMOVE ASPHALT SURFACE	1,213.000	SF	BRIDGE APPROACH SECTIONS	4.000	CASH	TEMPORARY SIGN BAY	1,400.000	LA03
CULVERTS ITEMS GROUP 4	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	SLASH BAY	23,375.000	W/CH
	INSTALLATION	1.000	LS	CONCRETE AND FRACTION	4.000	W/CH	TEMPORARY PAVEMENT MARKING REMOVAL	3,604.000	L/F
	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	PAVEMENT MARKING RESTORE	2,185.000	L/F
SEEDING ITEMS GROUP 5	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	TEMPORARY PAVEMENT MARKING, TYPE "FAST"	4,152.000	L/F
	INSTALLATION	1.000	LS	CONCRETE AND FRACTION	4.000	W/CH	LONG-DURATION PAVEMENT MARKING, TYPE "PERMANENT"	1,185.000	L/F
	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	PAVEMENT MARKING, TYPE "FAST"	145.000	BEAV
BRIDGE AT STATION 213+70.00 ITEMS GROUP 6	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	PAVEMENT MARKING, TYPE "FAST"	145.000	BEAV
	INSTALLATION	1.000	LS	CONCRETE AND FRACTION	4.000	W/CH	PAVEMENT MARKING, TYPE "FAST"	145.000	BEAV
	REMOVE EXISTING	50.000	LF	CONCRETE AND FRACTION	4.000	W/CH	PAVEMENT MARKING, TYPE "FAST"	145.000	BEAV

SUMMARY OF QUANTITIES

EPHY COATED REINFORCING STEEL	4,905,000	LB
F2PC PILING	600,000	LF
TEMPORARY BRIDGE SHORING	18,000	SK
CONCRETE PATCHING	175,000	SF
GRANULAR BACKFILL	452,000	CY
CONCRETE SURFACE MILLING		

NEW ITEM

SEAL OF RESPONSIBLE ENGINEER AND REVISION CELL

REVISION CELL ONLY

The Original Sheet was
 Issued on Date: 04-28-22

FIRST REVISION ONLY

Exhibit 11.10 Revised Summary Sheet

X	CONCRETE (CU. YDS.)	STEEL (LBS.)	X	CONCRETE (CU. YDS.)	STEEL (LBS.)
2'-0"	0.7	49	5'-0"	2.4	96
2'-6"	0.8	64	5'-6"	1.5	107
3'-0"	0.9	85	6'-0"	1.8	111
3'-6"	1.0	76	6'-6"	1.7	123
4'-0"	1.1	80	7'-0"	1.8	127
4'-6"	1.3	92	7'-6"	1.9	138

THE MINIMUM X VALUE ALLOWED FOR 15" DIA. PIPE IS 2'-0"
 THE MINIMUM X VALUE ALLOWED FOR 18" DIA. PIPE IS 2'-3"
 THE MINIMUM X VALUE ALLOWED FOR 24" DIA. PIPE IS 2'-9"
 THE MAXIMUM SIZE PIPE THAT MAY BE USED IS 24" DIA.

X	CONCRETE (CU. YDS.)	STEEL (LBS.)	X	CONCRETE (CU. YDS.)	STEEL (LBS.)
2'-3"	0.75	55	5'-0"	1.4	96

THE MINIMUM X VALUE ALLOWED FOR 15" DIA. PIPE IS 2'-0"
 THE MINIMUM X VALUE ALLOWED FOR 18" DIA. PIPE IS 2'-3"
 THE MINIMUM X VALUE ALLOWED FOR 24" DIA. PIPE IS 2'-9"
 THE MAXIMUM SIZE PIPE THAT MAY BE USED IS 24" DIA.

23 OCT 22
1 OF 1

Project Number
C.N.

1 OF 1
SPECIAL PLAN _C

AREA INLET WITH BAR
ROADWAY DESIGN

DESIGNED BY: [Signature]
CHECKED BY: [Signature]

DATE: 23-OCT-2022
SCALE: AS SHOWN

CONCRETE
STEEL

PLAN VIEW
CONCRETE ANCHOR INSERT DETAIL

ELEVATION
ORIENTATION

END VIEW
BAR PLATE DETAIL

DETAIL A
DETAIL B

DETAIL C
DETAIL D

DETAIL E
DETAIL F

DETAIL G
DETAIL H

DETAIL I
DETAIL J

DETAIL K
DETAIL L

DETAIL M
DETAIL N

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DETAIL Q
DETAIL R

DETAIL S
DETAIL T

DETAIL U
DETAIL V

DETAIL W
DETAIL X

DETAIL Y
DETAIL Z

DETAIL AA
DETAIL AB

DETAIL AC
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DETAIL AE
DETAIL AF

DETAIL AG
DETAIL AH

DETAIL AI
DETAIL AJ

DETAIL AK
DETAIL AL

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DETAIL AN

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DETAIL AP

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DETAIL AT

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DETAIL AV

DETAIL AW
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DETAIL AY
DETAIL AZ

DETAIL BA
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DETAIL CL

DETAIL CM
DETAIL CN

DETAIL CO
DETAIL CP

DETAIL CQ
DETAIL CR

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DETAIL CT

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DETAIL CW
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DETAIL DC
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7.C Revising a Project Which Has Been Rejected or Withdrawn from a Letting

A project which has been rejected or withdrawn from a letting will be retained by the **PS&E Unit**.

If a project which has been rejected or withdrawn from a letting requires a revision, the project sheets will be revised in the same manner as if the project had been let, with four exceptions:

- Added sheets that are replacing a deleted sheet; in the upper right-hand corner of the sheet, where the revision is dated, note as follows: (R1) Revised Sheet DD MMM YY, (Day, Month, Year).
- Added sheets that are not replacing a deleted sheet: in the upper right-hand corner of the sheet, where the revision is dated, note as follows: (R1) Added Sheet DD MMM YY, (Day, Month, Year).
- Deleted sheets will be pulled from the plan set and will not be printed with the project.
- The revised title sheet and summary of quantities sheet(s) **will** be re-signed and dated by the **Specifications Engineer**, using the date provided by **Construction**.

	PROJECT HAS BEEN AWARDED & LET TO CONTRACT:	PROJECT HAS BEEN REJECTED OR WITHDRAWN FROM A LETTING:
Revised Sheets will read:	(R1) DD MMM YY	(R1) DD MMM YY
Added Sheets will read:	(R1) Added Sheet DD MMM YY	(R1) Revised Sheet DD MMM YY
Deleted Sheets will read:	(R1) Deleted Sheet DD MMM YY	Will not be included with the project

7.C.1 Title Sheet (Project Has Been Rejected or Withdrawn from a Letting)

PDU is responsible for revising the title sheet for a project which has been rejected or withdrawn from a letting. A project which has been rejected or withdrawn from a letting will have one of these notations by the group block; these comments will not be identified with a revision symbol:

- No bids received
- Withdrawn
- Rejected

8. REFERENCES

- 11.1 Nebraska Department of Transportation, Design Process Outline (DPO), Current Edition (<https://dot.nebraska.gov/business-center/design-consultant/>)
- 11.2 Nebraska Department of Transportation, Standard/Special Plans Book (Standard Plans), Current Edition. (<https://dot.nebraska.gov/business-center/design-consultant/stand-spec-manual/>)
- 11.3 Board of Public Roads Classifications and Standards, Nebraska Minimum Design Standards (MDS), Current Edition. (<https://dot.nebraska.gov/media/1z1n5kmb/nac-428-rules-regs-nbcs.pdf>)

