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/](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 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:

- Base Plans (either plotted survey or base plans created from as-built project plans).
- 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).
- 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 Plans Manager (Plans Manager) at each of these plan stages.

The notifications of the availability of the design plans are given in EXHIBIT 11.2.
1.A **Base Plans (Phase 2: Planning – Activity 5200)**

Base Plans are the initial project plan sheets, showing the topography and roadway alignment(s), which are plotted from either a project survey or from the as-built plans of previous projects. The survey information is given to the Plans Manager by the Geodetic Survey Section in the Project Development Division (PDD) before the Base Plan Coordination Meeting (See the current version of the CADD Policy). The project is then assigned to a highway design technician in the Roadway Design Plans Development Unit (PDU) who will then schedule a meeting with the roadway designer to discuss plan set-up. The existing vertical alignment for the project centerline is required if plan and profile sheets are being requested (See Section 4.J of this chapter). The base plan set will include:

- A location map
- Alignment and Control Point Sheet(s) for surveyed projects (See Section 4.F of this chapter)
- The Environmental or Aerial Sheet(s) may be developed at this time if the required information is available (See Section 4.E of this chapter)
- General Information Sheet(s) (See Section 4.G of this chapter)

1.B **Preliminary Design Plans (Phase 3: Design – Activity 5300)**

Preliminary Design Plans are used to produce Cost Estimate Status Code 30 (Clarity Task 5368) and on the Plan-in-Hand field inspection (Clarity Task 5380). The Preliminary Plan Coordination Meeting will be held at this time to determine the requirements for the project plans (See the current version of the CADD Policy). The highway design technician will be provided with the necessary information as outlined in the DPO (Ref. 11.1), Clarity Task 5354, and in the CADD Policy.

The Environmental or Aerial Sheets (See Section 4.E of this chapter) will usually be required and should be developed at this stage of the project if they were not developed for the Base Plans (See Section 1.A of this chapter).

1.C **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 Cost Update 2. The project design should be approximately 75% to 80% complete by this milestone. The roadway designer should:

- Allow three months lead time to prepare the plans and exhibits for a Design Public Hearing
- Schedule the Functional Plan Coordination Meeting with PDU (See the current version of the CADD Policy).
- Provide the highway design technician with the information as described in the DPO, Activity 5400, Clarity Task Code 5338.
1.D **Design Detail and PS&E Plans (Phase 5: Plan Details – Activity 5500)**

**Right-of-Way Design (ROW Design)** uses the Design Detail Plans, showing the limits-of-construction, to design the right-of-way and easements required to build the project. The roadway designer will incorporate the approved alterations from the Design Public Hearing and right-of-way negotiations into the design and will schedule the Coordination Meeting for the PS&E Plans (See the current version of the CADD Policy), providing the highway design technician with the information necessary for the production of the design plans as described in the *DPO* (Ref. 11.1), Activity 5500, Clarity Task 5532. The roadway designer will use the design plans to produce Cost Estimate Status Code 45, Clarity Task 5584.

PS&E Plans are the plans which will be let to contract. The roadway designer will create the plans package for the *Plans, Specifications and Estimates Unit (PS&E)* in the *Construction Division (Construction)* using these plans (See the *DPO* (Ref. 11.1), Activity 5700, Clarity Task 5765). The roadway designer should verify that the appearance of the plans 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 PS&E Plans will have the corrections made prior to submission to *PS&E*. The “Plans not Final” (PNF) cell will be removed and the “Engineer's Seal” and signature will be placed on the plan sheets at this time.

*PS&E* will submit their blue-line corrections to the roadway designer who will coordinate with the highway design technician in *PDU* to complete the corrections. When the design plans have been submitted to *PS&E*, the CADD files are locked to prevent unauthorized changes to the contract plans.

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 *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 8 of this chapter.
2. STANDARD PLANS, SPECIAL PLANS, AND DETAILS

The Standard/Special Plans Book (Ref. 11.2) (http://www.roads.nebraska.gov/business-center/design-consultant/stand-spec-manual/) contains Standard Plans, Special Plans, Standard Typical X-Sections, Standard Details, Information Plans, and Design Guides. The Standard Plans contained in the Standard/Special Plan Book require the review and approval of the 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). Standard Plans are submitted with the design plan set pdf to PS&E. The roadway designer will provide a list of Standard Plans required for the project to PDU. 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 Standard Plans Engineer.

2.B Standardized Special Plans

A Standardized Special Plan may be used on multiple projects. The roadway designer will contact PDU or the Traffic Engineering Division (Traffic Engineering) 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 design plan set (See Section 1.D 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 approximately two months prior to PS&E turn-in during Plan Details (See the DPO (Ref. 11.1), Activity 5500, 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 design plan set (See Section 1.D 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 design plan set (See Section 1.D of this chapter).

2.E    **Information**

The Information section of the Standard/Special Plans Book (Standard Plans) (Ref. 11.2) contains details that remain constant from project to project, such as contour cultivation. These details are available from PDU for inclusion in the design plan set (See Section 1.D 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. These sheets may be found at (http://www.roads.nebraska.gov/business-center/design-consultant/) under “NDOT MicroStation and PowerGeopak Resources”
  “Downloads”
    “Download all Microstation SS4 Standards”
      “Microstation” folder
        “dgn” folder

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 the Roadway Design Division (Roadway Design) “Cell Book” (http://www.roads.nebraska.gov/business-center/design-consultant/) under “Design Documentation.”
3.C  **Standard Notes**

The *Roadway Design* Construction Notes, Standard Notes, and Tabular Notes may be found at ([http://www.roads.nebraska.gov/business-center/design-consultant/](http://www.roads.nebraska.gov/business-center/design-consultant/)).

The **Standard Notes** and **Tabular Notes**, found under “Design Documentation”, contain numerous examples of cells used for construction notes. The number to the left of the note is for identification purposes only (it is also the name of the cell). These cells will cover the majority of instances where a construction note is required but may be edited as needed.

Tabular notes are normally used on the Large Scale Plan Sheets (See Section 4.I of this chapter) or when notes are placed on a General Information Sheet (See Section 4.G of this chapter).

Individual construction notes are generally used on Plan and Profile or on “Piggyback” Plan over Plan Sheets (See Sections 4.J 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, the roadway designer or highway design technician is at liberty to create the note that is needed, keeping in mind that the construction and removal notes must conform to the “Standard Item List” ([http://www.roads.nebraska.gov/business-center/business-opp/hwy-bridge-lp/item-history/](http://www.roads.nebraska.gov/business-center/business-opp/hwy-bridge-lp/item-history/)) and must be formatted in a style similar to the approved note cells. Tabular note blocks have been set up using only three widths; if a new note must be created one of these formats will be used. The highway design technician should verify that the details and notes shown on the plans will be legible after the plans have been reduced to half size. Acceptable abbreviations for use in the construction or tabular notes are listed in the Glossary.
3.D  **Horizontal Alignment Data**

The horizontal alignment data should be represented as follows:

- 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 or 10 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 curve radius (R) will be shown to the nearest foot.
- Deflection angles are shown to the nearest minute. The other curve data are 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:

<table>
<thead>
<tr>
<th>Circular Curve</th>
<th>Spiral Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PI</strong></td>
<td>PI</td>
</tr>
<tr>
<td><strong>Δ</strong></td>
<td>Δ</td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>T</td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>R</td>
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<tr>
<td><strong>e</strong></td>
<td>e</td>
</tr>
<tr>
<td><strong>PC</strong></td>
<td>PC</td>
</tr>
<tr>
<td><strong>PT</strong></td>
<td>PT</td>
</tr>
<tr>
<td><strong>e</strong></td>
<td>e</td>
</tr>
<tr>
<td><strong>LC</strong></td>
<td>LC</td>
</tr>
<tr>
<td><strong>ΔS</strong></td>
<td>ΔS</td>
</tr>
<tr>
<td><strong>Lt</strong></td>
<td>Lt</td>
</tr>
<tr>
<td><strong>St</strong></td>
<td>St</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>E</td>
</tr>
<tr>
<td><strong>TS</strong></td>
<td>TS</td>
</tr>
<tr>
<td><strong>SC</strong></td>
<td>SC</td>
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<td><strong>CS</strong></td>
<td>CS</td>
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<tr>
<td><strong>ST</strong></td>
<td>ST</td>
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<tr>
<td><strong>e</strong></td>
<td>e</td>
</tr>
</tbody>
</table>

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

Vertical Alignment Data should be presented as follows:

- Show the profile of the existing ground line along the project centerline.
- The design profile will be placed in relation to the existing ground line.
- 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.

- The existing elevation text is placed vertically, directly above the datum elevation line and to the left side of the vertical grid line.
- The existing centerline elevations (provided by the survey) will be given to the nearest 0.1 foot.
- The existing centerline elevations will be recorded at each station, every 100 feet. The elevations of the essential breaking points are also required.
- The design elevation text is placed vertically, offset above the existing ground elevations and to the right of the vertical grid line.
- The design elevation will be given to the nearest 0.01 foot.
- The design elevations are to be recorded at each station on the profile sheets. Through a vertical curve profile, the design elevations will be recorded at intervals of 50 feet.
- 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.
- The station equations are to be clearly shown in the profile view (show a gap in the profile line, if needed).
- Tangent slope percentages will be labeled to four decimal places.
- 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).
- 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 in chart form (if one sheet requires that you use the special ditch chart, it should be used for all special ditches).
- PC’s and PT’s will be indicated by a small circle (cell) on the grade line. No further information is required.
- PI’s will be indicated by a small triangle (cell) at the intersection of the dashed tangent lines. The notes for the vertical PI’s will indicate the following:
  
  - PI Sta. (normally located at a vertical grid line or PI Sta.)
  - Elev. = (elevation at the vertical PI)
  - L = (length of the vertical curve)
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\(\text{xx}\)** - Peak flow in cfs (cubic feet per second)
  \(\text{xx} = \text{subscript for the design period, e.g. 50 yr.}\)
- **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.I and 4.J of this chapter) and on the Culvert Cross-Sections (See Section 4.M 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 and the drainage and hydraulic information is placed in the culvert construction notes on the Plan Sheets (See Sections 4.I and 4.J of this chapter) and on the Culvert Cross-Sections (See Section 4.M of this chapter).

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.I and 4.J of this chapter) and on the Culvert Cross-Sections (See Section 4.M 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 will be required (a hydraulic analysis is not required unless there is a known problem). If a hydraulic analysis shows that a new pipe is required, the procedure for new culverts will be followed.
3.G Plan Sheet Scales

3.G.1 Urban

Plan and Profile Sheets:

Horizontal: 1” = 50’  Vertical: 1” = 10’

Large Scale Plan Sheets:

The large scale 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.
<table>
<thead>
<tr>
<th>Sheet Number &amp; Order</th>
<th>Plan Sheet (As Required)</th>
<th>Created By</th>
<th>Sheet Description</th>
<th>Prelim. Design</th>
<th>PP</th>
<th>Functional *</th>
<th>Design/Detail</th>
<th>Utility Plans</th>
<th>PS&amp;E</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Title Sheet</td>
<td>PDU</td>
<td>See Section 4.A</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>Typical Cross-Sections</td>
<td>PDU</td>
<td>See Section 4.B</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C</td>
<td>Summary of Quantities</td>
<td>PDU</td>
<td>See Section 4.C</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>D</td>
<td>Summary of Soil and Materials Survey Information</td>
<td>M&amp;R</td>
<td>See Section 4.D</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>E</td>
<td>Environmental or Aerial Sheets including Wetlands (when applicable)</td>
<td>PDU</td>
<td>See Section 4.E</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>F</td>
<td>Horizontal Alignment and Control Points</td>
<td>PDU</td>
<td>See Section 4.F</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>G</td>
<td>General Information Sheets</td>
<td>PDU</td>
<td>See Section 4.G</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>H</td>
<td>Phasing Plans</td>
<td>PDU</td>
<td>See Section 4.H</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>J_</td>
<td>Large Scale Plans:</td>
<td>PDU</td>
<td>See Section 4.I</td>
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<tr>
<td>J_</td>
<td>Geometrics and Grades</td>
<td>PDU</td>
<td>See Section 4.I</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>J_</td>
<td>Fencing</td>
<td>PDU</td>
<td>See Section 4.I</td>
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<td>X</td>
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<tr>
<td>J_</td>
<td>Drainage</td>
<td>PDU</td>
<td>See Section 4.I</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>J_</td>
<td>Joints</td>
<td>PDU</td>
<td>See Section 4.I</td>
<td>X</td>
<td>X</td>
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<tr>
<td>J_</td>
<td>Construction &amp; Removal (on separate sheets if necessary)</td>
<td>PDU</td>
<td>See Section 4.I</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>J_</td>
<td>Sidewalks and Curb Ramps</td>
<td>PDU</td>
<td>See Section 4.I</td>
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<td>X</td>
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<tr>
<td>J_</td>
<td>Erosion &amp; Sediment Control w/ Wetland Areas</td>
<td>PDU</td>
<td>See Section 4.I</td>
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<td>X</td>
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<tr>
<td>K_</td>
<td>Utility Rehabilitation</td>
<td>Consultant</td>
<td>See Section 4.J</td>
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</tr>
<tr>
<td>L_</td>
<td>Plan and Profile or Plan Over Plan Sheets</td>
<td>PDU</td>
<td>See Section 4.K</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>M_1</td>
<td>Traffic Control Plans</td>
<td>Traffic</td>
<td>See Section 4.L</td>
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<td>M_</td>
<td>Temporary Pavement Marking Plan</td>
<td>Traffic</td>
<td>See Section 4.L</td>
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<tr>
<td>M_</td>
<td>Signing Plans</td>
<td>Traffic</td>
<td>See Section 4.L</td>
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<td>O_</td>
<td>Intelligent Transportation Project Plans</td>
<td>Operation s/ PDU</td>
<td>See Section 4.N and Chapter Fourteen: Traffic, Section 5</td>
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<td>X</td>
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<td>Landscaping</td>
<td>Project Develop.</td>
<td>See Section 4.O</td>
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<tr>
<td>Q_</td>
<td>Earthwork Data Sheets</td>
<td>Designer</td>
<td>See Section 4.P</td>
<td></td>
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<td>R_</td>
<td>Drainage Structure Cross-Section Sheets</td>
<td>Designer</td>
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<td>X</td>
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<td>Bridge Plans (Bridge, Approach Slab, Paving Section)</td>
<td>Bridge</td>
<td>See Section 4.R</td>
<td>X</td>
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<td>T_</td>
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<td>Bridge</td>
<td>See Section 2.C</td>
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<td>Special Plans from Roadway (Area Inlets, Guardrail etc.)</td>
<td>Designer/ PDU</td>
<td>See Sections 2.B &amp; 2.C</td>
<td>X</td>
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<td>V_</td>
<td>Other Plans as Needed</td>
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<td>See Section 2.C</td>
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<td>W_</td>
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<td>R.O.W.</td>
<td>Chap. Fifteen, Sect. 2.D</td>
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<td>W_</td>
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<td>R.O.W.</td>
<td>Chap. Fifteen, Sect. 2.F</td>
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<td>Designer</td>
<td>See Section 4.P</td>
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<td>X</td>
<td>X</td>
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* 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
- 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

Operations – ITS Engineer (if Intelligent Transportation System installations/impacts)
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: 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 5434: Functional Plans
(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
  PDU Plans Manager
  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 Plans
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 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
  Highway Design Plans Manager
  Utilities Unit Head
  Utilities Coordinator
  Lighting Unit Head
District
  Construction Office
  District Construction Engineer
  Project Manager
Bridge
  Division Engineer
Traffic Engineering
  Division Engineer
  Assistant Traffic 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
Operations – ITS Engineer (If Intelligent Transportation System installations/impacts)
  Division Administrator
FHWA (Only on Interstate New and Reconstruction or on FHWA Risk Based Projects for Design)

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 4.J.1 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 PS&E Plan Package Submittal (Clarity Task 5790) 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: 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 the coordinator requires another plan set.

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 Plans (See Section 1.B of this chapter), the Functional Design Plans (See Section 1.C of this chapter), and for the Design Detail and PS&E Plans (See Section 1.D of this chapter). The roadway designer is responsible for requesting this sheet and for providing the highway design technician with the necessary information and its location in OnBase:

- Project Name
- Project Number
- Control Number
- Beginning and Ending Reference Posts & Stationing
- Recycling Note (from the Materials and Research Division)
- FHWA Oversight Stamp (if Project of Division Interest, See Section 8 of this chapter)

The roadway designer will furnish PDU with the necessary information for the PS&E Plan set on the Length Sheet (NDOT Form 415) and the PS&E Required Sheet (NDOT Form 280).

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

Generic Typical Cross-Section (B) Sheets are required for the Preliminary Design Plans (See Section 1.B of this chapter). The Preliminary Design Plans B sheet(s) may be created using the preliminary pavement design thickness from the Materials and Research Division (M&R) and the appropriate typical section for the project design standard, as developed from the Nebraska Minimum Design Standards (MDS) (Ref. 11.3) [http://dot.nebraska.gov/media/5593/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 PS&E Plan B sheet(s). 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 113).
- The Engineer’s Seal and Signature are required on the lower right-hand corner of the sheet.
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 quantities, which are submitted by the roadway designer, 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. The roadway designer will inform the highway design technician of the location of this information in OnBase. This sheet may also include:

- Compaction requirements (if there is no Soils and Materials Survey Information 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

Environmental Sheets should show the following information:

- The stationed project centerlines
- Stationing ties for intersecting centerlines
- North Arrow
- Project Name (on the first sheet only)
- Project Number
- Control Number
- County Name(s) (on the first sheet only)
- Aerial Date
- Flight Information
- Limits of Construction (lines only)
- Edge of Pavement
- Existing culverts
- Sensitive & Do Not Disturb Areas
- Wetland Legend
4.F **Alignment and Control Point 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) (includes control points tabular and GeoPak Alignment Information Tab)
- Control Point tie sheets
- 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, such as the utility note
- 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

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 cross-section sheets (See Section 4.M of this chapter).

4.I **Large Scale Plan Sheets (J)**

Large Scale Plan (J) Sheets 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)
- Grades (See Chapter Eight: Surfacing, Section 9, of this manual for additional information)
- 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
- Erosion & Sediment Control (which includes Wetland Areas and Restricted Areas)
If the construction and removal notes are to be combined on one set of plans, the notes will be kept separate. For example, place the removal notes on the upper half of the sheet and the construction notes 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 capital letters in the tabular notes.

4.J Utility Rehabilitation 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.

4.J.1 Roadway Design Plans to the Utility Unit (Clarity Task 5614)

The roadway designer will request that PDU plot the Utilities Plans. The plans sent to the Utility Coordinators will have sufficient detail for the Utility Companies/Consultants to determine the impact to facilities. Include J Sheets (See Section 4.I) if necessary 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
4.K Plan and Profile Sheets (L)

Rural projects are usually presented on Plan and Profile (L) 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 tables. Individual construction notes on a plan and profile sheet should be written vertically. 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.

4.L 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.M Roadway Lighting Plan Sheets (N)

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

4.N 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 Operations Division, 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.

4.O Landscaping Plan Sheets (P)

The Roadside Development & Compliance Unit in the Project Development Division will work with PDU in the creation of Landscaping (P) Plan Sheets (e.g. tree plantings, flower bed arrangements). Landscaping plans will be presented on large-scale sheets.
4.P Earthwork Data Sheets (Q)

Earthwork Data (Q) Sheets consist of the computer-generated computations showing the cumulative project earthwork, station by station. If the pay item for the project is “Earthwork Measured in Embankment”, the earthwork data sheets will not show a balance factor, adjusted quantities, or a mass ordinate. For additional information see Chapter Seven: Earthwork of this manual.

4.P.1 Earthwork Notations

Earthwork balance points should be shown for New and Reconstructed projects. The earthwork is usually presented as a tabular note on the General Information Sheet (See Section 4.G of this chapter). Examples of earthwork tabular notes may be found in the Tabular Notes (See Section 3.C of this chapter). For additional information see Chapter Seven: Earthwork, Section 1.A.2, of this manual.

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

The roadway designer is responsible for producing the Drainage Structure Cross-Section (R) Sheets. Drainage items (culvert pipes, box culverts, storm and sanitary sewers, curb inlets, manholes, flared-end-sections, headwalls, etc.) will be shown on the R sheets (cross-sections are normally not required for driveway culvert pipes). These cross-sections will be drawn along the flow line of the structure, accompanied by the construction notes, the hydraulic information (See Section 3.F of this chapter), and quantities for the structure. 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 construction notes and quantities 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.I and 4.J of this chapter), as shown in the plans.

The preferred scale for the R sheet is 1” = 10’ although scales of 1” = 5’ or 1” = 20’ may be used as circumstances dictate. The horizontal and vertical scales used should be consistent throughout the individual R sheets. The scale used will be shown near the sheet identification block in the upper right-hand corner of the sheet.

4.R Bridge Plans (S) and Bridge Special Plans (T)

The Bridge Division (Bridge) provides the roadway designer with the Bridge Plans (S) and certain special plans (T) (e.g. Concrete Box Culverts, Stairs) 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.S **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.D 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.T **Roadway Cross-Sections (X)**

The roadway designer is responsible for creating the Roadway Cross-Sections (X), which are usually computer-generated sheets. The cross-section scales should be consistent throughout the plan set and should be placed near the sheet identification block, in the upper right-hand corner of the sheet.

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 11.4**).

The text should be distinct and legible.

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**Exhibit 11.4** Roadway Cross-Section Break Lines
5. RESURFACING, RESTORATION AND REHABILITATION (3R) PROJECTS

3R projects are most often shown as plan view over plan view (piggyback) sheets. A resurfacing project may be drawn on Plan and Profile Sheets (See Section 4.J of this chapter) if there are special ditches on the project, the use of plan and profile sheets for resurfacing projects can be avoided by placing a special ditch chart on the General Information Sheet (See Section 4.G of this chapter).

6. 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 transmits the pdf to PS&E to be checked.

7. 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, Lighting). Substantial changes to the project (e.g. a change in roadway grade impacting drainage and right-of-way) will usually result in the project being withdrawn from the letting. Changes typically will not be made to the plans at this time but will be handled as a plan revision after the project has been let to contract (See Section 8 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 the Right-of-Way Division.

8. 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 Section in PDD 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 8.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
- 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 8.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.

Plan revisions must be signed and sealed by a Professional Engineer (P.E.). The Unit Head and ADE will be informed of the changes to the plans when 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. 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.
8.A Federal Oversight Projects

Under the terms of MAP-21 (http://www.fhwa.dot.gov/map21/) and the NDOT/FHWA Stewardship & Oversight Agreement (http://roads.nebraska.gov/media/6796/steward-oversight-agr.pdf), 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 Plans Manager 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 8.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.

8.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 11.5) 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).
8.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 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 11.5) noting which sheets have been revised, added, or deleted. The letter must give an explanation of 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:

<table>
<thead>
<tr>
<th>Group</th>
<th>Item</th>
<th>Old Quantity</th>
<th>New Quantity</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Crushed Rock Surface Course</td>
<td>37,725.000</td>
<td>37,181.000</td>
<td>-544.000 SY</td>
</tr>
<tr>
<td>3</td>
<td>13” Doweled Concrete</td>
<td>434,563.000</td>
<td>436,602.000</td>
<td>+2,039.000 SY</td>
</tr>
<tr>
<td>3</td>
<td>10” Concrete Pavement</td>
<td>7,663.000</td>
<td>4,490.000</td>
<td>-3,176.000 SY</td>
</tr>
<tr>
<td>3</td>
<td>Foundation Course, 6”</td>
<td>437,465.000</td>
<td>439,504.000</td>
<td>+2,039.000 SY</td>
</tr>
<tr>
<td>4</td>
<td>18” Culvert Pipe Type 2, 3, 4, 5, 6, 7, or 8</td>
<td>31.000</td>
<td>631.000</td>
<td>+600.00000 LF</td>
</tr>
</tbody>
</table>

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

FHWA concurred on December 30, 2020 through FHWA Transportation Engineer

Exhibit 11.5 Example Revision Letter
8.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 8.B of this chapter). The revision symbols and revision dates will be shown as follows:

8.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:

The revision date shall correspond with the date on the letter to the Highway Construction Scheduling Manager, See Section 8.B of this chapter.
8.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 8.B of this chapter), will be noted at the top right-hand corner of the sheet (See EXHIBIT 11.6).

DELETED SHEET 11 JAN 2021

8.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 8.B of this chapter) will appear at the top right-hand corner of the summary of quantities sheets (See EXHIBIT 11.6).

Changes in quantities resulting from the revision will be detailed in the letter to the Highway Construction Scheduling Manager (See Section 8.B of this chapter). The funding source(s) of the pay items will also be specified (See Chapter Twelve: Cost Estimating & Funding, Section 5, 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.

8.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 11.9). 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 Revised Title Sheet
## SUMMARY OF QUANTITIES

### CULVERT ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot; CULVERT PIPE, TYPE 2, L or R</td>
<td>2,154,000</td>
<td>LF</td>
</tr>
<tr>
<td>24&quot; CULVERT PIPE, TYPE 2, L or R</td>
<td>40,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 1, R or A</td>
<td>174,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 1, L or K</td>
<td>56,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 4, R or S</td>
<td>254,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 4, L or A</td>
<td>252,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 1, A or R</td>
<td>254,000</td>
<td>LF</td>
</tr>
<tr>
<td>36&quot; CULVERT PIPE, TYPE 2, 1, L or S</td>
<td>252,000</td>
<td>LF</td>
</tr>
</tbody>
</table>

### FENCING ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOBILIZATION</td>
<td>1,000</td>
<td>LS</td>
</tr>
<tr>
<td>ROADWAY FENCE</td>
<td>21,937,000</td>
<td>LF</td>
</tr>
<tr>
<td>END POSTS</td>
<td>30,000</td>
<td>EACH</td>
</tr>
<tr>
<td>FULL POSTS</td>
<td>1,000</td>
<td>EACH</td>
</tr>
<tr>
<td>CORNER POSTS</td>
<td>66,000</td>
<td>EACH</td>
</tr>
<tr>
<td>TEMPORARY FENCE</td>
<td>3,000,000</td>
<td>LF</td>
</tr>
</tbody>
</table>

### SIGNING ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL ITEMS</td>
<td>1,000</td>
<td>EACH</td>
</tr>
</tbody>
</table>

---

**Exhibit 11.8 Revised Summary Sheet**
SPECIAL END SHOE SHALL BE 10 GAUGE STEEL AND GALVANIZED IN ACCORDANCE WITH ASTM A93 OR ASTM A123 WITH COATING CLASS 250.

Exhibit 11.9 Revised Detail Sheet
8.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.

<table>
<thead>
<tr>
<th>Revisions</th>
<th>PROJECT HAS BEEN AWARDED &amp; LET TO CONTRACT:</th>
<th>PROJECT HAS BEEN REJECTED OR WITHDRAWN FROM A LETTING:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revised Sheets will read:</td>
<td>(R1) DD MMM YY</td>
<td>(R1) DD MMM YY</td>
</tr>
<tr>
<td>Added Sheets will read:</td>
<td>(R1) Added Sheet DD MMM YY</td>
<td>(R1) Revised Sheet DD MMM YY</td>
</tr>
<tr>
<td>Deleted Sheets will read:</td>
<td>(R1) Deleted Sheet DD MMM YY</td>
<td>Will not be included with the project</td>
</tr>
</tbody>
</table>

8.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
9. REFERENCES

11.1 Nebraska Department of Transportation, Design Process Outline (DPO), Current Edition (https://dot.nebraska.gov/business-center/design-consultant/)
