





The information contained in Chapter Eleven: Miscellaneous Design Issues, dated December 2017, has been updated to reflect the December 2018 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. This chapter replaces Chapter Eleven: Highway Plans Assembly, dated July 2006. The Nebraska Division of the FHWA approved this chapter for use on the National Highway System and other federal projects on February 21, 2017.

## 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 version of the CADD Policy and the Design Process Outline (DPO) (Ref. 11.1), both of which may be found at (<http://www.roads.nebraska.gov/business-center/design-consultant/>), 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 design technician with the information required for the production of 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).
- Initial Footprint Plans (used as an early indicator of areas requiring special investigation).
- Preliminary Design Plans (used for the plan-in-hand field inspection).
- Functional Plans (required for design public hearings).
- Design Plans (used to design the project right-of-way and as the **PS&E** turn-in and contract plans).

The plans should be thoroughly checked for completeness, accuracy, and formatting by the 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.

### **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 squad leader in the **Roadway Design Plans Development Unit (PDU)** and then to a technician; they will then schedule a meeting with the 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 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 update 1 and on the plan-in-hand field inspection (See the *DPO* (Ref. 11.1), Activity 5300, Clarity Task Codes 5368 and 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 design technician will be provided with the necessary information as outlined in the *DPO*, Activity 5300, Clarity Task Code 5350 (Ref. 11.1), and in the CADD Policy.

Aerial sheets (See Section 4.E of this chapter) will usually be required and should be developed at this stage of the project.

### **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 (See the *DPO* (Ref. 11.1), Activity 5400, Clarity Task Codes 5428, 5446, 5435 and **EXHIBIT L**). 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 design technician with the information as described in the *DPO*, Activity 5400, Clarity Task Code 5428 (Ref. 11.1)

#### 1.D Design Plans (Phase 5: Plan Details – Activity 5500)

**Right-of-Way Design (ROW Design)** uses the design plans to design the right-of-way and easements required to build the project (See the *DPO* (Ref. 11.1), Activity 5500, Clarity Task Code 5576). The roadway designer will incorporate the decisions made regarding the input from the design public hearing and right-of-way negotiations into the design and will schedule the Coordination Meeting for PS&E Turn-in Plans (See the current version of the CADD Policy), providing the design technician with the information necessary for the production of the design plans as described in the *DPO*, Activity 5500, Clarity Task Code 5508 (Ref. 11.1). The designer will use the design plans to produce cost update 3 (See the *DPO* (Ref. 11.1), Activity 5500, Clarity Task Code 5584).

Design plans are also the plans which will be let to contract. The 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 Code 5790). 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 design 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” 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 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 design 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 (*Standard Plans*) (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 plans contained in the *Standard Plans* require the review and approval of the **Standard Plans Committee** and the **Federal Highway Administration (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 not submitted with the design plan set to **PS&E**, but the roadway designer will provide a list of standard plans required for the project. The standard plans are updated periodically; it is the responsibility of the roadway designer to verify that the standard plan number submitted to **PS&E** 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 Plan Engineer**.

### 2.B Standardized Special Plans

A standardized special plan may be used on multiple projects. The designer will contact **PDU** or the **Traffic Engineering Division (Traffic Engineering)** to have the required 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 (guardrail installation plans, superelevation plans for Interstate projects, etc.). 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 Code 5508). The designer should request concrete box culverts using the “Concrete Box Culvert Request Sheet”, Form DR-67. Retaining Walls, Headwalls, etc. may be requested using the “Custom Special Plan Request Sheet”, Form DR-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 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 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. The project plans will follow the guidelines described in the *DPO* (Ref. 11.1) for the various project milestones.

#### 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 GEOPAK 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 Libraries** (<http://www.roads.nebraska.gov/business-center/design-consultant/>) under

“NDOT MicroStation and PowerGeopak Resources”  
“Downloads”  
“Download all GEOPAK SS4 Standards”  
“Microstation” folder  
“cell” folder

The cells are shown in the Cell Book, which may be found under “Design Documentation”. These cells may change periodically.

### 3.C Standard Notes

The **Roadway Design** Construction Notes and Tabular Notes may be found at (<http://www.roads.nebraska.gov/business-center/design-consultant/>) under

- “NDOT MicroStation and PowerGeopak Resources”
  - “Downloads”
    - “Download all GEOPAK SS4 Standards”
      - “Microstation” folder
      - “cell” folder

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 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 Sheets (See Section 4.J 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 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/>) 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 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:

#### **Circular Curve**

<b>PI</b>	Point of Intersection
<b>Δ</b>	Deflection Angle
<b>T</b>	Tangent Length
<b>R</b>	Radius of Curve
<b>e</b>	Percent of slope for the full Superelevation, followed by Standard Plan Number, if applicable.
<b>PC</b>	Point of Curvature
<b>PT</b>	Point of Tangent
<b>e</b>	Alternate note location, when superelevation is added at a later time.

#### **Spiral Curve**

<b>PI</b>	Point of Intersection
<b>Δ</b>	Deflection Angle
<b>T</b>	Tangent Length
<b>Δc</b>	Circular Deflection Angle
<b>Lc</b>	Length of Circular Curve
<b>Θs</b>	Spiral Deflection Angle
<b>Ls</b>	Length of Spiral Curve
<b>Lt</b>	Long Tangent for Spiral Curve
<b>St</b>	Short Tangent for Spiral Curve
<b>E</b>	External
<b>TS</b>	Tangent to Spiral
<b>SC</b>	Spiral to Curve
<b>CS</b>	Curve to Spiral
<b>ST</b>	Spiral to Tangent
<b>e</b>	Rate of full Superelevation followed by the Plan number, if applicable.

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

### 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).
- 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<sub>xx</sub>** - Peak flow in cfs (cubic feet per second)  
(xx = 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 a lesser degree of 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 a lesser degree of 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				
				Prelim. Design	PIH	Functional	Design (L.O.C.)	Final Plans
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 Wetlands (when applicable)	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	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.I					
J	Geometrics and Grades	PDU	See Section 4.I					X
J	Drainage	PDU	See Section 4.I				X	X
J	Construction & Removal (on separate sheets if necessary)	PDU	See Section 4.I				X	X
J	Erosion & Sediment Control w/ Wetland Areas	PDU	See Section 4.I				X	X
K	Utility Rehabilitation	Consultant	See Section 4.I					X
L	Plan and Profile or Plan Over Plan Sheets	PDU	See Section 4.J	X	X	X	X	X
M1	Traffic Control Plans	Traffic	See Section 4.K					X
M	Temporary Pavement Marking Plan	Traffic	See Section 4.K					X
M	Signing Plans	Traffic	See Section 4.K					X
N	Roadway Lighting Plans	Lighting	See Section 4.I					X
O	Intelligent Transportation Project Plans	ITS/ PDU	See Section 4.I and Chapter Fourteen: <u>Traffic</u> , Section 5					X
P	Landscaping	Project Develop.	See Section 4.I					X
Q	Earthwork Data Sheets	Designer	See Section 4.L					X
R	Drainage Structure Cross-Section Sheets	Designer	See Section 4.M	X	X	X	X	X
S	Bridge Plans (Bridge, Approach Slab, Paving Section)	Bridge	See Section 4.N					X
T	Special Plans from Bridge (CBC, etc.)	Bridge	See Section 2.C					X
U	Special Plans from Roadway (Area Inlets, Guardrail etc.)	PDU	See Sections 2.B & 2.C					X
V	Other Plans as Needed		See Section 2.C					
W1 Thru W	Right-of-Way Plans	R.O.W.	See Sect. 4.O and Chap. Fifteen: <u>Right-of-Way</u>					
	Ownership	R.O.W.	Chap. Fifteen, Sect. 2.B	X	X	X		
	Appraisal	R.O.W.	Chap. Fifteen, Sect. 2.D				X	
	PS&E Turn-in	R.O.W.	Chap. Fifteen, Sect. 2.F					X
X1 Thru X	Roadway Cross-Sections	Designer	See Section 4.P	X	X	X	X	X
Std. Plan Number	Listing of Standard Plans (not the plans themselves)	PDU	See Section 2.A					X

Exhibit 11.1 Plan Sheet Organization

#### 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 Plans (See Section 1.D of this chapter). The roadway designer is responsible for requesting this sheet and for providing the design technician with the necessary information, including:

- Project Name
- Project Number
- Control Number
- Beginning and Ending Reference Posts & Stationing
- **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 Design Plan set on the Length Sheet (Form DR-415) and the PS&E Required Sheet (Form DR-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. The design plan set B sheet details 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 final 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.
- Either the lateral obstacle clearance or the fixed obstacle clearance will be dimensioned and labeled on the typical sheet.
- The Engineer's Seal and Signature are required on the lower right hand corner of the 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. This sheet may also include:

- Compaction requirements
- Other pertinent information necessary to fully summarize the items on the project

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

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

#### **4.E Aerial Sheets (E)**

When Aerial Photo (E) Sheets 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, and mitigation sites.

The following scales will be used for aerial sheets:

- 1" = 200' for rural project aerial sheets
- 1" = 100' for rural project wetlands sheets or for urban projects
- 1" = 50' for a short urban project

Aerial 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)
- Photo Date
- Flight Number
- Scale
- Limits of Construction
- Edge of Pavement
- Existing culverts
- Restricted & Do Not Disturb Areas
- 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 (includes control points)
- Control point tie sheets (numbered using reference posts)
- Bench mark 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:

- A legend depicting the cells used for topographic features
- Standard notes, such as the utility note
- 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

#### **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 note for temporary surfacing. 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)
- Joints (combine with the geometrics if the longitudinal joints require geometrics)
- Grades (See Chapter Eight: Surfacing, Section 9, for additional information)
- Drainage
- Construction (combine with removal if space allows)
- Removal
- Erosion & Sediment Control and Wetland Areas
- Lighting
- Intelligent Transportation Systems
- Utility Rehabilitation
- Landscaping

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      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. 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.K      Traffic 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.L      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.

##### **4.L.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.

#### **4.M 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 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.N 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

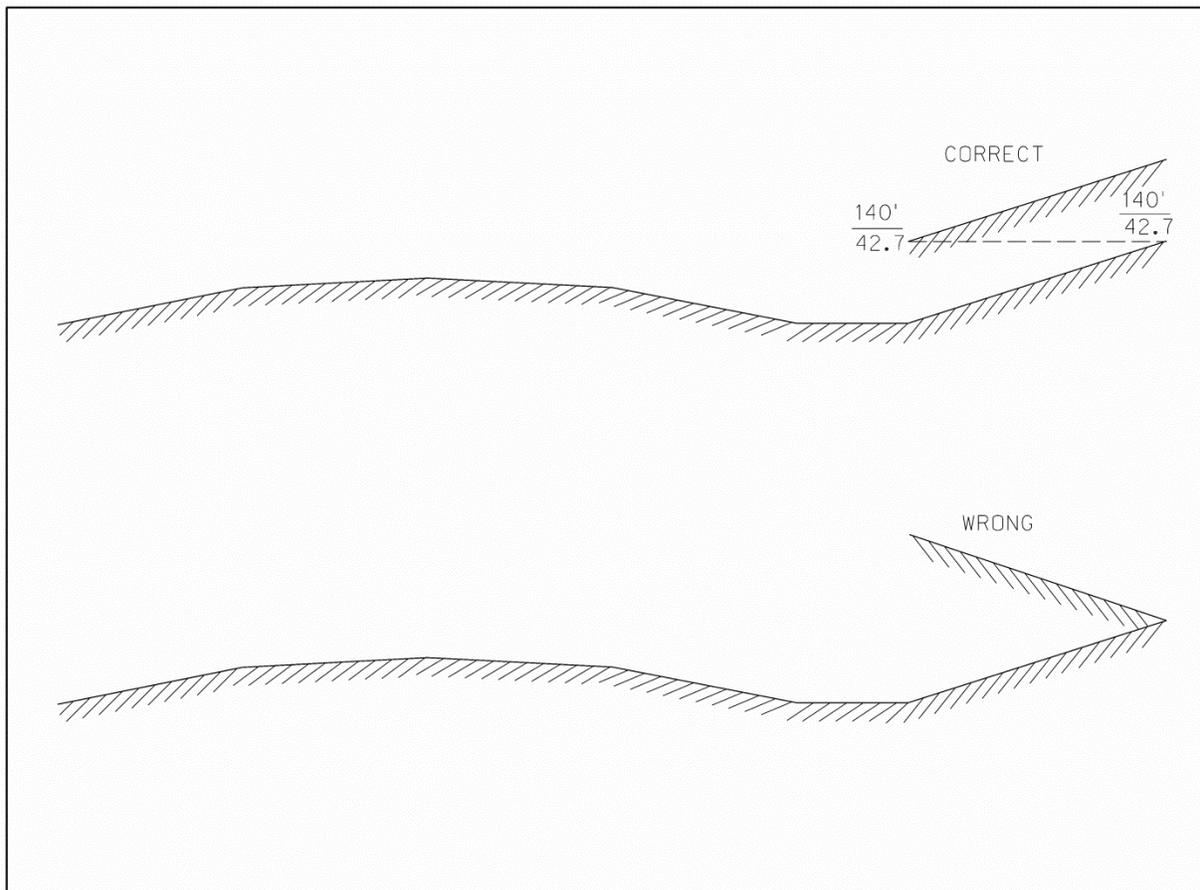
#### **4.O Right-Of-Way Plan Sheets (W)**

**Right-of-Way Design** prepares the Right-of-Way Plans (W) in stages (See Chapter Fifteen: Right-of-Way). 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); the right-of-way plans title sheet will not be included.

**4.P Roadway Cross-Sections (X)**

The roadway designer is responsible for creating the Roadway Cross-Sections (X), which are usually computer generated sheets using GeoPak. 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 11.2](#)).



**Exhibit 11.2 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, and dated by a Professional Engineer in accordance with the Engineers and Architects Regulation Act (Neb. Statute Sections 81-3401 to 81-3455). 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. Engineers will not sign the plan sheets until the required plan changes have been processed by **PDU** and checked by **PS&E**.

## 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 8½" x 11" 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 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). After the project letting, the plan sheets for active projects are returned to the **Roadway Design** vault (except for the bridge plans) and may only be removed for printing or to make revisions to the plans. 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. Once the requested revisions have been made to the plans, the revisions will be sent to the **Environmental Section** of **PDD** for review. The plans are then returned to **Construction**, noting that they have been reviewed by the **Environmental Section**, and the CADD files are locked to prevent unauthorized changes to the contract plans. The roadway designer will contact the **Plans Manager** to unlock the CADD files prior to making plan revisions (if the **Plans Manager** is not available, the designer should contact the **Business Technology Support Unit** to unlock the CADD files).

For plan revisions prepared by **Roadway Design**, the 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
- 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)**
- **Plans Manager** (responsible for unlocking CADD files)
- **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 stake-holders 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, regardless of whether the changes are made in **Roadway Design** or 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**, as long as the **Unit Head** and **ADE** are consulted about the design of the proposed revisions **before** they are finalized. If **Roadway Design** authorizes or transmits a plan revision to the **District** by fax, phone, or e-mail, the seal and signature of the responsible P.E. in **Roadway Design** will be affixed to the transmittal, which will then be scanned and sent to the **District**.

## 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 Projects of Division Interest (PoDIs) selected for **Construction** oversight (the 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 PoDIs 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 PoDIs 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 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 11.3) 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, 2016 through \_\_\_\_\_, FHWA Transportation Engineer" (or whoever at **FHWA** did the approval).

## 8.B Revision Procedures

The roadway designer may mark-up corrections on prints of the plans for the revised work and give the corrections to **PDU**. The approved revisions will be made, printed on full size sheets, and returned to the roadway designer, along with the marked-up work sheets.

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
- The summary of quantities sheet – the responsible engineer's seal and signature is required but the **Specification Engineer's** signature is not required

The roadway designer will submit the *original full size plan sheets* and the revised full size plans to **Construction**, along with a letter written to the **Construction Engineer** (see [EXHIBIT 11.3](#)) 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.

**Construction** is responsible for returning the revised plan sheets to the roadway design vault.

Date: January 11, 2017

To: Mike Ondrak (Highway Construction Manager, Construction Division)

From: Brian Johnson (Roadway Design Unit Head)

Subject: Plan Revision R3 for Project 80-9(832)  
Dated April 20, 2012  
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, 2016 through Pritesh Mehta (Transportation Engineer)

### 8.B.1 Revised Sheet

If a project plan sheet was created in CADD, the revisions will be made in the CADD files. Revisions to the project plans should be made in the original sheet file wherever feasible. The original information that is to be revised must be retained, **do not** eliminate an original item. The change will be crossed out, so as to remain 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 **Construction Engineer**, See Section 8.B of this chapter). The revision symbols and revision dates will be shown as follows:

 09 SEPT 06

### 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 No. 43A would be placed immediately following original sheet No. 43, 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:

 **ADDED SHEET** 09 SEPT 06

The revision date shall correspond with the date on the letter to the **Construction Engineer**, 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. The revision symbol, deleted sheet note, and date (corresponding with the date on the letter to the **Construction Engineer**, See Section 8.B of this chapter), will be noted at the top right-hand corner of the sheet (See EXHIBIT 11.4).

#### 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 **Construction Engineer**, 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 **Construction Engineer** (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). 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 **Construction Engineer**, 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 11.7](#)). 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.

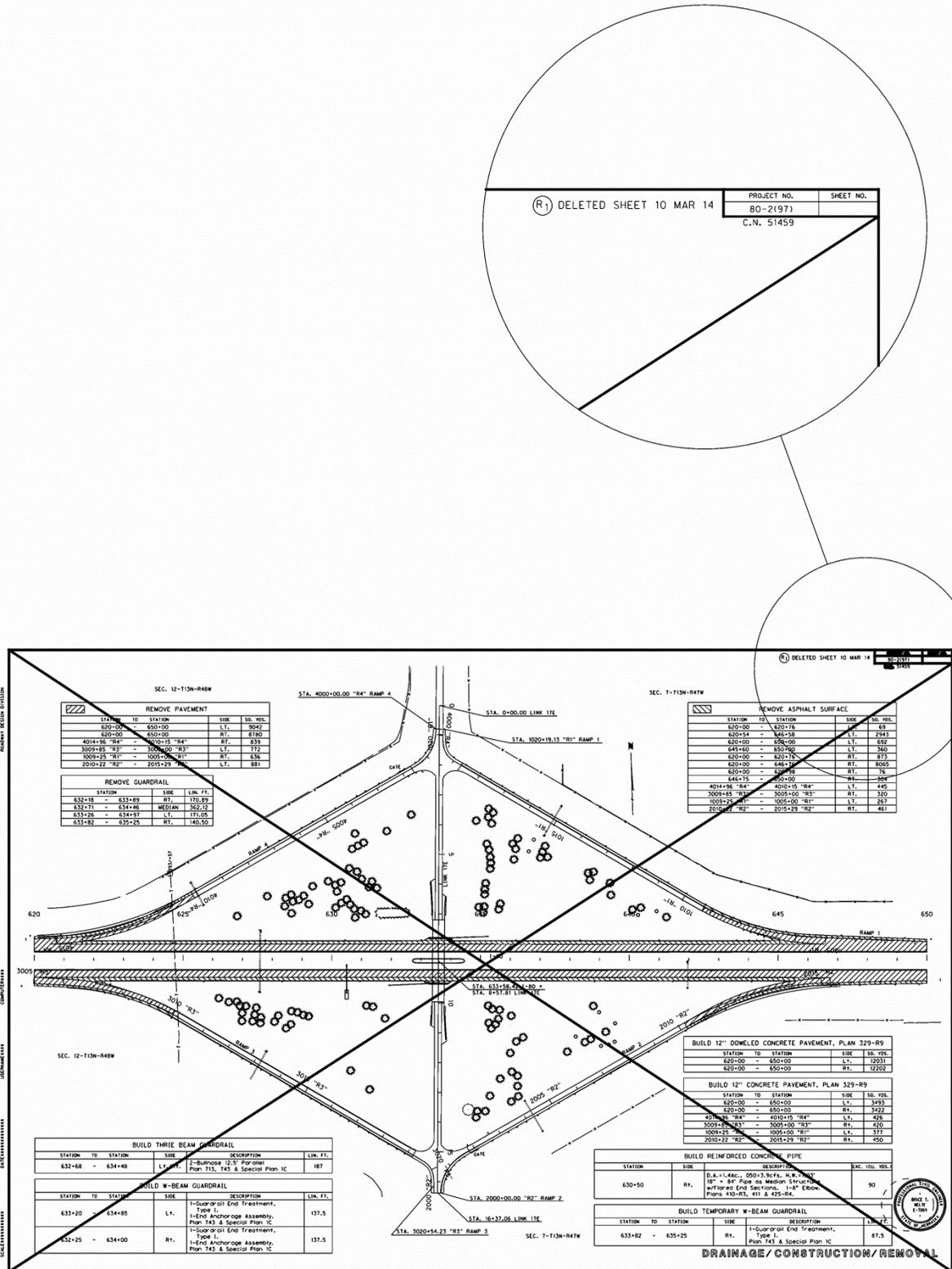
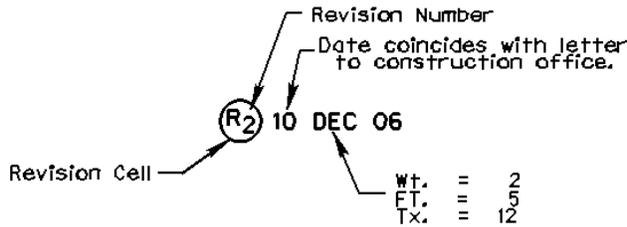


Exhibit 11.4 Deleted Sheet





PROJECT NO.	SHEET NO.
80-9(823)	252

C.N. 12450

- (R1) 12 SEP 05
- (R2) 10 DEC 06

### SUMMARY OF QUANTITIES

PROJECT NO.	SHEET NO.
80-9(823)	252

C.N. 12450  
 12 SEP 05  
 10 DEC 06

#### CULVERT ITEMS GROUP 4

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
REMOVE INLET	16.000	EACH
REMOVE JUNCTION BOX	8.000	EACH
CAST IRON COVER AND FRAME	155.000	LB
CAST IRON MANHOLE AND FRAME	6,550.000	LB
APPROX EXISTING STRUCTURE	2.000	EQ
TAPPING EXISTING PIPE	1.000	EACH
REMOVE FLARED-END SECTION	51.000	EACH
REMOVE AND SALVAGE FLARED-END SECTION	6.000	EACH
REMOVE HEADWALL FROM CULVERTS	21.000	EACH
REMOVE CULVERT PIPE	95.000	LF
PREPARATION OF STRUCTURE AT STA. 2184+00	1.000	EACH
PREPARATION OF STRUCTURE AT STA. 2184+08	1.000	EACH
PREPARATION OF STRUCTURE AT STA. 2202+47	1.000	EACH
PREPARATION OF STRUCTURE AT STA. 2222+09	1.000	EACH
ELEVATION FOR PIPE, PIPE-BOX CULVERTS, AND HEADWALLS	4,310.000	CY
EXCAVATION FOR BOX CULVERTS	189.000	CY
CLASS 478-2000 OR A3-2000 CONCRETE FOR BOX CULVERT	137.000	CY
CLASS 478-2000 CONCRETE FOR INLET AND JUNCTION BOX	19.000	CY
CLASS 478-2000 OR A3-2000 CONCRETE FOR CONCRETE CULLARS	10.000	CY
CLASS 478-2000 CONCRETE FOR SLAB	10.000	CY
REINFORCING STEEL FOR BOX CULVERT	13,851.000	LB
REINFORCING STEEL FOR INLET AND JUNCTION BOX	1.000	LB
REINFORCING STEEL FOR CULLARS	134.000	LB
REINFORCING STEEL FOR SLAB	150.000	LB
18" FLARED-END SECTION	38.000	EACH
24" FLARED-END SECTION	11.000	EACH
30" FLARED-END SECTION	6.000	EACH
36" FLARED-END SECTION	1.000	EACH
18" SLOPE FLARED-END SECTION	6.000	EACH
INSTALL 30" RAIN CULVERT CONCRETE FLARED-END SECTION	4.000	EACH
CULVERT MANHOLE	2.000	EACH
AREA THREE SEGMENT FILTER	25.000	EACH
18" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	594.000	LF
24" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	82.000	LF
30" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	50.000	LF
36" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	147.000	LF
48" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	202.000	LF
60" CULVERT PIPE, TYPE 2, 3, 4, 5, 7 OR 8	251.000	LF
18" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	1,188.000	LF
24" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	214.000	LF
30" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	40.000	LF
36" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	114.000	LF
48" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	136.000	LF
60" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	202.000	LF
18" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	126.000	LF
24" ALUMINUM CULVERT PIPE, TYPE 2, 3, 4 OR 5	110.000	LF

#### CULVERT ITEMS GROUP 4A

CONCRETE BOX CULVERT AT STA. 2084+31

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
REMOVAL OF UNSUITABLE MATERIAL	28,327.000	CY
EXCAVATE MATERIAL	18,281.000	CY
NON-REINFORCED CONCRETE	3,794.000	EQ
CULVERT CLEARING AT STA. 2084+31	1.000	EACH
PREPARATION OF STRUCTURE AT STA. 2084+31	1.000	EACH
EXCAVATION FOR BOX CULVERTS	2,452.000	CY
BRICKLAYER MATERIAL FOR BOX CULVERT	5,483.000	CY
TEMPORARY BRICKING AT STA. 2084+31	1.000	LS
CLASS 478-2000 OR A3-2000 CONCRETE FOR BOX CULVERT	1,031.190	CY
REINFORCING STEEL FOR BOX CULVERT	43,301.000	LB
REBARTING	1.000	LS

#### SIGNING ITEMS GROUP 8C

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
REMOVE SIGN	11.000	EACH
TYPE B SIGN	1,041.000	SF
STRUCTURAL STEEL FOR SIGN SUPPORTS	7,800.000	LB
3/4" SIGN SUPPORT FOOTING	12.000	EACH
3/4" SIGN SUPPORT FOOTING	8.000	EACH
3/4" SIGN SUPPORT FOOTING	4.000	EACH

#### ELECTRICAL ITEMS GROUP 8B

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
LOWVOLT CONTROL CENTER, TYPE #	1.000	EACH
1 1/2" INCH CONDUIT 18 FEET	1,800.000	LF
1 1/2" INCH CONDUIT UNDER ROADWAY	30.000	LF
STREET LIGHTING CABLE, NCL 2 GGE	3,200.000	LF
STREET LIGHTING CABLE, NCL 2 GGE	1,820.000	LF
RELOCATE STREET LIGHTING MAST	8.000	EACH
TEMPORARY LIGHTING SYSTEM EC-1	1.000	EACH
TEMPORARY LIGHTING SYSTEM EC-2	1.000	EACH
TEMPORARY LIGHTING SYSTEM EC-3	1.000	EACH
TEMPORARY LIGHTING SYSTEM EC-4	1.000	EACH
TEMPORARY LIGHTING SYSTEM EC-5	1.000	EACH
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM EC-1	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM EC-2	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM EC-3	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM EC-4	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM EC-5	442.000	DAY

#### GENERAL ITEMS GROUP 10

ITEM	QUANTITY	UNITS
MOVILLAGE OF TEMPORARY TRAFFIC CONTROL DEVICES	516.000	ORAT
BARICADE, TYPE 11	104,550.000	ORAT
TEMPORARY SIGN DAY	85,335.000	ORAT
TEMPORARY SIGN DAY	2,472.000	EACH
CONTRACTOR FURNISHED SIGN DAY	145,218.000	EACH
PAVEMENT MARKING REMOVAL	8,478.000	EACH
TEMPORARY PAVEMENT MARKING, TYPE PAINT	200,000.000	LF
TEMPORARY PAVEMENT MARKING SURFACE PREPARATION	200,000.000	LF
FLARE	80,000.000	DAY
INSTALL CONCRETE PROTECTION BARRIER	58.000	DAY
TEMPORARY GLASS SCREEN	22,108.000	LF
RELOCATE EXISTING PROTECTION BARRIER	27,400.000	LF
RELOCATE EXISTING BARRIER SYSTEM	5.000	EACH
RELOCATE EXISTING BARRIER SYSTEM	5.000	EACH
RELOCATE EXISTING BARRIER SYSTEM	5.000	EACH
FIELD OFFICE	1.000	LS
MOBILIZATION	1.000	LS
CONSTRUCTION STAKING AND SURVEYING	1.000	LS
RENTAL OF LOADER, FULLY OPERATED	210.000	HOUR
RENTAL OF MOTOR GRADER, FULLY OPERATED	210.000	HOUR
RENTAL OF DUMP TRUCK, FULLY OPERATED	210.000	HOUR
RENTAL OF SKID LOADER, FULLY OPERATED	210.000	HOUR
RENTAL OF CHALKER MANEUVER HYDRAULIC EXCAVATOR, FULLY OPERATED	530.000	LF
CONTRACTOR SIGN	1,000.000	LF
TEMPORARY SILT CHECK	500.000	LF
TEMPORARY SILT CHECK	1,500.000	LF
TEMPORARY SILT CHECK	500.000	LF
TEMPORARY MASH	4.000	TON

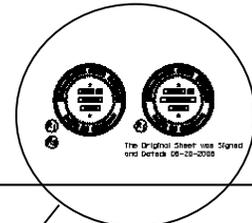
#### FENCING ITEMS GROUP 7B

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
RIGHT-OF-WAY FENCE	21,937.000	LF
END POSTS	36.000	EACH
PULL POSTS	1.000	EACH
CORNER POSTS	66.000	EACH
TEMPORARY FENCE	3,000.000	LF

18" CULVERT PIPE, TYPE 2, 5, 7 OR 8	2,134.000	LF
24" CULVERT PIPE, TYPE 2, 5, 7 OR 8	40.000	LF
30" CULVERT PIPE, TYPE 2, 5, 7 OR 8	174.000	LF
36" CULVERT PIPE, TYPE 2, 5, 7 OR 8	36.000	LF
18" CULVERT PIPE, TYPE 3, 4, 5 OR 6	244.000	LF
48" CULVERT PIPE, TYPE 2, 3, 4 OR 5	252.000	LF
54" CULVERT PIPE, TYPE 2, 3, 4 OR 5	126.000	LF
60" CULVERT PIPE, TYPE 2, 3, 4 OR 5	110.000	LF

#### FENCING ITEMS GROUP 7B

ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS
RIGHT-OF-WAY FENCE	21,937.000	LF
END POSTS	36.000	EACH
PULL POSTS	1.000	EACH
CORNER POSTS	66.000	EACH
TEMPORARY FENCE	3,000.000	LF



The Original Sheet was Signed and Dated: 05-20-2005

FIRST REVISION ONLY

SEAL OF RESPONSIBLE ENGINEER AND REVISION CELL

Exhibit 11.6 Revised Summary Sheet

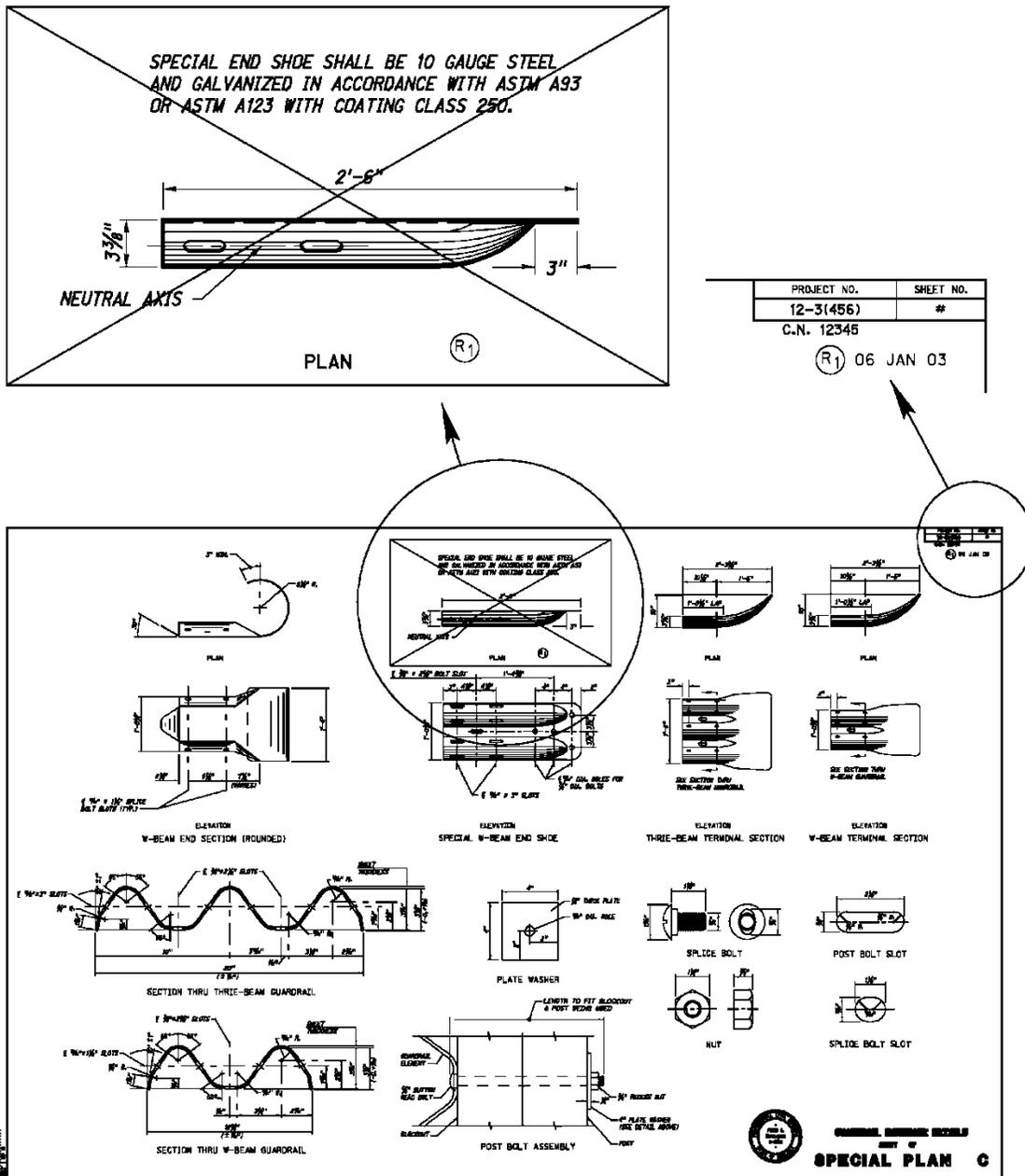


Exhibit 11.7 Revised Detail Sheet

**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 returned to the **PS&E Unit**.

If 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 (4) 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 **PDU**.

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

**8.C.1 Title Sheet (Project Has Been Rejected or Withdrawn From a Letting)**

The **PS&E Unit** 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 (<http://www.roads.nebraska.gov/business-center/design-consultant/>)
- 11.2 Nebraska Department of Transportation, Standard/Special Plans Book (Standard Plans), Current Edition. (<http://www.roads.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. (<http://dot.nebraska.gov/media/5593/nac-428-rules-regs-nbcs.pdf>)

