

The information contained in Chapter Eleven: Highway Plans Assembly, dated July 2006, has been updated to reflect the June 2016 Errata. The errata addresses errors, changes in procedure, changes in NDOR department titles, changes in other Roadway Design Manual chapters and other reference material citations which have occurred since the latest publication of this chapter.

## 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 CAD Policy (<http://www.nebraskatransportation.org/roadway-design/downloads.htm>), and the Design Process Outline (DPO), (Reference 11.1), (<http://www.nebraskatransportation.org/roadway-design/downloads.htm>), 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 all of the information required for the production of plans at each stage of the project, (See the Design Process Outline, Reference 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).
- Final Design Plans (used to design the project right-of-way and as **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**, and the **Roadway Design Plans Manager** at each of these plan stages.

### 1.A Base Plans

Base plans are the initial project plan sheets, showing the topography and alignment(s), plotted from either a project survey or from the as-built plans of previous projects. At the preliminary project setup meeting the design technician will be provided with all available survey information, including the horizontal alignment information and/or the as-built microfilm plans. The existing vertical alignment for the project centerline is required if plan and profile sheets are being requested, (See Section 4.J). The base plan set will include:

- A location map for all projects.
- Alignment and control point (2-H) sheet(s) for all surveyed projects, (See Section 4.F).
- The aerial, (2-W or 2-A) sheet(s) may be developed at this time if the required information is available, (See Section 4.E).
- General information (2-N) sheet(s), (See Section 4.G).

### 1.B Preliminary Design Plans

Preliminary roadway 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). Meeting "A" will be held at this time to determine the requirements for the project plans. The design technician will be provided with the necessary information, as outlined in the Design Process Outline, Activity 5300, (Reference 11.1).

Aerial sheets (2-A's or 2-W's, see Section 4.E) will usually be required and should be developed at this stage of the project.

### 1.C Functional Design Plans

Functional design plans are required for cost update 2 and for the design public hearing(s), (See the DPO (Ref. 11.1), Activity 5400, Clarity Task Codes 5428, 5446, 5434 and **EXHIBIT 'L'**). These are normally the first set of design plans that will be available for public viewing. The project design should be approximately 75% to 80% complete by this milestone. The roadway designer should:

- Allow 3 months lead time to prepare the plans and exhibits for a design public hearing.
- Provide the design technician with all required information, as described in the Design Process Outline, Activity 5400, (Reference 11.1).

### 1.D Final Design Plans

**Right-of-Way Design** uses the final 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 at the design public hearing into the design and will provide the design technician with the information necessary for the production of the final design plans, as described in the Design Process Outline, Activity 5500, Clarity Task Code 5508 (Reference 11.1). The designer will use the final design plans to produce cost update 3 (See the DPO (Ref. 11.1), Activity 5500, Clarity Task Code 5584).

These are the plans which will be let to contract. The designer will create the final plans package for the **Plans, Specifications and Estimates Unit (PS&E)** in the **Construction Division** using these plans (See the DPO (Ref. 11.1), Activity 5700, Clarity Task Code 5790). The roadway designer should ensure that the appearance of the plans is uniform and consistent, containing all of 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 final design plans shall have all corrections made prior to submission to the **PS&E Unit**. The "Plans not Final" (PNF) cell shall be removed and the "Engineer's Seal" placed on all plan sheets at this time.

Once the plans have been submitted to **PS&E**, the CADD files are locked to prevent unauthorized changes to the contract plans. The roadway designer shall contact the **Roadway Design Plans Manager** to unlock the CADD files before making the requested plan changes from the **PS&E Section** and prior to making plan revisions, (See Section 7 for further information).

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, all requests to the **Design Division** for plans and/or electronic files shall be forwarded to the **Highway Construction Scheduling Manager** in the **Construction Division**. Any changes to the plans after they have been advertised for letting must be accomplished as a plan revision, following the guidelines outlined in Section 7.

## 2. STANDARD PLANS, SPECIAL PLANS AND DETAILS

The Standard/Special Plans Book, (Reference 11.2) contains Standard Plans, Special Plans, Standard Typical X-Sections, Standard Details, Information Plans, and Design Guides. All of the plans contained in the Standard/Special Plans Book require the review and approval of the **Standard Plans Committee**. 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, **NDOR** and the **Federal Highway Administration (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). Standard plans are not submitted with the final design plan set to the **Plans, Specifications and Estimates Unit (PS&E)** in the **Construction Division**, but the roadway designer will provide them 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 are not allowed. If a change needs to be made to a standard plan, it must be brought to the attention of the **Standard Plans Committee**.

## **2.B      Standardized Special Plans**

A standardized special plan may be used on multiple projects. These plans are available from the **Roadway Design Plan Development Unit** or the **Traffic Division**. The roadway designer must ensure that all standardized special plans required for a project are included with the final design plan set, (See Section 1.E).

## **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, MSE Wall special plans, superelevation plans for interstate projects, etc.). Certain special plans must be requested from the **Bridge Division**, (e.g., concrete headwalls for culverts), and will require at least 3 weeks to prepare. Custom special plans must be included in the final design plan set, (See Section 1.E).

## **2.D      Standard Typical Cross-Sections**

The standard typical cross-sections contains 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 (2-T) sheet, (See Section 4.B), or the details may be added to a general information (2-N) sheet, (See Section 4.G). Standard typical cross-section sheets and details are available from the **Roadway Design Plan Development Unit** and must be included in the final design plan set, (See Section 1.E). Changes to the typical cross-section sheets require **Standard Plans Committee** review.

## **2.E      Standard Details**

These are details for items which are not drawn to a large enough scale to fill a plan sheet or for items which are not paid for directly. Standard details are normally placed on the general information (2-N) sheet, (See Section 4.G), the typical cross-section (2-T) sheet, (See Section 4.B), 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 joint repair, landscaping or lighting.

## **2.F      Information**

The information section of the Standard/Special Plans Book, (Reference 11.2), contains details that remain constant from project to project, such as rumble strips. These details are available from the **Roadway Design Plan Development Unit** for inclusion in the final design plan set, (See Section 1.E).

## **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 any of the design plan sets, (See Section 1).

### 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 CAD Policy. The project plans should follow the guidelines described in the Design Process Outline, (Reference 11.1) for the various project milestones. Acceptable abbreviations are listed in the Glossary.

#### 3.A Downloadable Plan Border Sheets

NDOR has the basic types of plan border sheets available for downloading (in .dgn format). These sheets may be found at (<http://www.nebraskatransportation.org/roadway-design/downloads.htm>) under MICROSTATION STANDARDS – Design Files. The available sheets include:

- Typical Cross-Section (2-T)
- Aerial Photo (2-A/2-W)
- Control Points (2-H)
- General Information (2-N)
- Large Scale Plans (2-L)
- 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 Cell Libraries**, (<http://www.nebraskatransportation.org/roadway-design/downloads.htm>). These cells may change periodically.

#### 3.C Standard Notes

The **Roadway Design Division Construction Notes** and **Tabular Notes**, (<http://www.nebraskatransportation.org/roadway-design/downloads.htm>), contain numerous examples of cells 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 most instances where a construction note is required, but may be edited as needed.

Tabular notes are normally used on the large scale (2-L) sheets, (See Sections 3.F and 4.I), or when notes are placed on a general information (2-N) sheet, (See Section 4.G).

Individual construction notes are generally used on plan and profile sheets, (See Section 4.J). The construction notes should always 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 all

construction and removal notes must conform to the Standard Pay Item Listing, (<http://www.nebraskatransportation.org/letting/bid-item-history-info.htm>), 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 sizes should be used. The design technician should insure that all details and notes shown on the plans will be legible after the plans have been reduced to half size.

### 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 ft. (100 m).
- Identify the horizontal curve points, (i.e. 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' (1:1000 m) and 1" = 50' (1:500 m) scales, (e.g., 220, 225, 230).
- Label every station number on the 1" = 20' (1:200 m) scale, (e.g., 220, 221, 222).
- The curve radius (R) shall be shown to the nearest ft. (m).
- Deflection angles are calculated to the nearest minute. All other curve data are calculated to the nearest 0.01 ft. or (0.001 m).
- List all curve data as shown below near the PI's.

The following curve data items are to be shown 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 2.

### 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.
- Note every station along the bottom of the profile. Stationing should always 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 elevation shall be given to the nearest 0.1 ft. (0.01 m), reflecting the centerline elevations provided by the survey.
- Ground line elevations will be recorded at each station, every 100 ft. (25 m). 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 proposed design elevation shall be given to the nearest 0.01 ft. (0.001 m).
- The proposed design elevations are to be recorded at each station on all profile sheets. Through a vertical curve profile, the proposed design elevations are to be recorded at intervals of 50 ft. (25 m).
- Record reference elevations as even 10 ft. (5 m) intervals in the columns on each side of the profile sheet, (labeled on the dominant horizontal grid lines).
- Note the datum elevation in the lower left corner of the profile sheet, 1-grid up from the bottom.
- All station equations are also to be clearly shown in the profile view, (show a gap in the profile line, if needed).
- The design profile shall be placed in relation to the existing ground line.
- Tangent slope percentages shall 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 ft., (46 m) will not be shown on the plans, (See Chapter Six: The Typical Roadway Cross-Section, Section 10.B).
- If the profile area of the sheet is heavily congested it is possible to show the special ditch information in chart form, (if one sheet requires that you use the special ditch chart, it should be used for all of the special ditches shown of the profile sheets).
- 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      Plan Sheet Scales**

#### **3.F.1      Urban**

##### Plan and Profile Sheets:

Horizontal: 1" = 50' (1:500 metric)    Vertical: 1" = 10' (1:100 metric)

##### Large Scale (2L) Plan Sheets:

The large scale plan sheets are normally scaled at 1" = 20' (1:200 metric), especially if curb ramps, storm sewers, and grades are present.

For a project with a lesser degree of complexity a scale of 1" = 50' (1:500 metric) may be used.

#### **3.F.2      Rural**

##### Plan and Profile Sheets:

Horizontal: 1" = 100' (1:1000 metric)    Vertical: 1" = 10' (1:100 metric)

##### "Piggyback" Plan over Plan Sheets:

Rural projects are usually scaled at 1" = 100' (1:1000 metric).

##### Large Scale (2-L) Plan Sheets:

Large scale plan sheets may be prepared for rural projects to show details of construction more clearly, such as major intersections, raised islands, geometrics, grades, etc. These large scale sheets are normally scaled at 1" = 20' (1:200 metric), a 1" = 50' (1:500 metric) 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 given in EXHIBIT 11.1.

Sheet Number & Order	Plan Sheet	Created By	Sheet Description	Sheets Required for Plan Sets			
				P.I.H.	Functional	L.O.C.	PS&E
1	Preliminary Title Sheet	Plans	See Section 4.A.1	X	X	X	
1	Title Sheet	PS&E	See Section 4.A				X
2-T	Typical Cross-Sections	Plans	See Section 4.B	X	X	X	X
2-S	Summary of Quantities	PS&E	See Section 4.C				X
2-K	Summary of Soil and Materials Survey Information (if required)	M & R	See Section 4.D				X
2-W	Wetlands Sheets (if required)	Plans	See Section 4.E	X	X	X	X
2-A	Aerial Photo Sheets (If project doesn't include wetlands)	Plans	See Section 4.E	X	X	X	X
2-H	Horizontal Alignment and Control Points	Plans	See Section 4.F	X	X	X	X
2-N	General Information Sheet (if required)	Plans	See Section 4.G	X	X	X	X
2-P	Phasing Plans (if required)	Plans	See Section 4.H	X	X	X	X
2-L1 Thru 2-L_	Large Scale Plans (as required):	Plans	See Section 4.I				
2-L_	Geometrics and Grades	Plans	See Section 4.I				X
2-L_	Drainage	Plans	See Section 4.I			X	X
2-L_	Construction (and Removals, if space available)	Plans	See Section 4.I			X	X
2-L_	Removals (if separate sheets required)	Plans	See Section 4.I			X	X
2-L_	Erosion Control	Plans	See Section 4.I			X	X
3*	Plan and Profile Sheets (or Resurfacing Plan Sheets)	Plans	See Section 4.J	X	X	X	X
*	Traffic Control Plan	Traffic	See Section 4.K				X
*	Temporary Pavement Marking Plan (if required)	Traffic	See Section 4.K				X
*	Roadway Lighting Plans (if required)	Lighting	See Section 4.I				X
*	Landscaping (if required)	Planning & Project Develop.	See Section 4.I				X
*	Earthwork Data Sheets	Designer	See Section 4.L				X
*	Drainage Structure Cross-Section Sheets	Designer	See Section 4.M	X	X	X	X
SP*	Bridge and Special Plans (as required):						
SP 1	Deck Steel Girder Bridge-Widening	Bridge	See Section 4.N				X
SP 2	Concrete Slab Bridge-Widening	Bridge	See Section 4.N				X
SP 1C	Guardrail Special Plans ** and Installation Plan	Plans	See Sections 2.B & 2.C				X
SP 2C	Superelevation Plan (if Std. Plan not used)	Plans	See Section 2.C				X
SP 3C	Reinforced Conc. Box Culv. (if Std. Plan not used)	Bridge	See Section 2.C				X
SP 4C	Mailbox Support Post **	Plans	See Section 2.B				X
SP 5C	Mailbox Turnout **	Plans	See Section 2.B				X
SP_C	Other	Plans	See Section 2.C				X
R-1 Thru R-_	Right-of-Way Plans	R.O.W. Design	See Section 4.O and Chap. Fifteen: <u>Right-of-Way</u>				
	Ownership		Chap. Fifteen, Section 2.B	X	X		
	Appraisal		Chap. Fifteen, Section 2.D			X	
	PS&E Turn-in		Chap. Fifteen, Section 2.F				X
X-1 Thru X-_	Roadway Cross-Sections	Designer	See Section 4.P	X	X	X	X
	Listing of Standard Plans (not the plans themselves)	PS&E	See Section 4.Q				X

\* The first Plan and Profile Sheet shall be Sheet Number 3. The following Sheets, through the Special Plan Sheets, shall be numbered with separate sequential whole numbers except for the Standard Plans, which are packaged separately.

\*\* Standard Special Plans, which are available from the **Design Plan Development Unit**.

**Exhibit 11.1 Plan Sheet Organization**

#### 4.A Title Sheet

The **Plans, Specifications and Estimates Unit (PS&E)** in the **Construction Division** prepares the title sheet for the letting plans. The roadway designer is required to furnish **PS&E** with all of the necessary information on Form S-539-R (the Project Length Sheet) and the PS&E Required Sheet, (DR Form 280).

##### 4.A.1 **Preliminary Title Sheet**

The **Roadway Design Plan Development Unit** can prepare a preliminary title sheet for use with the preliminary design plans, (See Section 1.B), the functional design plans, (See Section 1.C), and the limits of construction plans, (See Section 1.D). The roadway designer is responsible for requesting this sheet and for providing the design technician with all of the necessary information, including:

- Project Name.
- Project Number.
- Control Number.
- Beginning and Ending Reference Posts & Stationing.
- **FHWA** Full Oversight Stamp (if Project of Division Interest).

#### 4.B Typical Cross Section Sheets (2-T)

Generic typical cross-section (2-T) sheets are required for the preliminary design plans, (See Section 1.B). The preliminary design plans 2-T sheet(s) may be created using the preliminary pavement design thickness (from the **Materials and Research Division**) and the appropriate typical section for the project design standard as copied from the Nebraska Minimum Design Standards, (Reference 11.3), (<http://www.transportation.nebraska.gov/gov-aff/gov-aff-design-standards.html>).

The final design plan set 2-T sheet details will be developed by the **Roadway Design Plan Development Unit** from information submitted by the roadway designer and/or the **Materials and Research Division**.

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 appear on the final 2-T 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.
- All 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 lateral obstacle clearance or the fixed obstacle clearance needs to 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 (2-S)

PS&E creates tables for the summary of quantities (2-S) sheet(s) from the project quantities, which are submitted by the roadway designer. The summary of quantities (2-S) 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 should also be shown. This sheet may also include:

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

#### 4.D Soil and Materials Survey Information Sheets (2-K)

Soil boring information and test data will be shown on the soil and materials survey information (2-K) sheets, provided by the **Materials and Research Division**.

#### 4.E Aerial Sheets (2-W or 2-A's)

2-W sheets are aerial photo sheets showing the delineated wetlands, impacted wetlands, and mitigation sites. 2-A sheets are aerial photo sheets for a project that does not have wetlands. If wetlands are present on a project all of the aerial sheets for the project will be 2-W sheets. When aerial photo sheets are included in the plan set, they shall cover the entire station range of the project.

The following scales are generally used for aerial sheets:

- 1"=200' (1:2000 metric) for rural project 2-A sheets.
- 1"=100' (1:1000 metric) for rural project 2-W sheets or for urban projects.
- 1"=50' (1:500 metric) for a short urban project.

Aerial Photo Sheets should show the following information:

- All 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.

#### **4.F Alignment and Control Point Sheets (2-H)**

Alignment and control point (2-H) sheets are prepared by the **Roadway Design Plan Development Unit** 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 (2-N)**

These 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.
- Standard details, such as dikes or riprap for scour holes.
- Sketches of surfaced driveways and intersections, (including quantities for each).
- Detour routes (but not temporary roads).

#### **4.H Phasing Plan Sheets (2-P)**

Phasing plan (2-P) 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 are shown on the drainage cross section sheets, (See Section 4.M).

#### **4.I Large Scale Plan Sheets (2-L)**

Large scale plan (2-L) sheets are normally used for urban, expressway or interstate projects. They may also be prepared for rural projects to show details of construction more clearly, such as major intersections, raised islands, geometrics, grades, etc. The large scale plan (2-L) sheets may consist of any 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 Control.
- Lighting.
- Landscaping.

If the construction and removal notes are to be combined on one set of plans, the notes should 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 all be combined into one set of plans. All information regarding existing conditions shall be in capital letters in the tabular notes.

#### **4.J Plan and Profile Sheets**

Normally rural projects are presented on plan and profile sheets, which are split sheets showing the plan view of the project on the top half of the sheet and the project profile below. All 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. All notations should be written so that they read from the bottom or the right side of the sheet.

#### **4.K Traffic Sheets**

The **Traffic Engineering Division** will provide the roadway designer with all of the required traffic plans, including the "Traffic Control Plan", the "Temporary Pavement Marking Plan", and all 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 all standard plans required for the project (See Section 2.A).

#### **4.L Earthwork Data Sheets**

Earthwork sheets are 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 should not show a balance factor, any adjusted quantities or a mass ordinate. For additional information see Chapter Seven: Earthwork, Section 1.A.

##### **4.L.1 Earthwork Notations**

Earthwork balance points should be shown for all New and Reconstructed Projects. The earthwork should be shown as a tabular note on the general information (2-N) sheet, (See Section 4.G). Examples of earthwork tabular notes may be found in the Tabular Notes, (See Section 3.C). For additional information see Chapter Seven: Earthwork, Section 1.A.4.

#### **4.M Drainage Structure Cross-Section Sheets**

The roadway designer is responsible for producing the drainage structure cross-section sheets. All drainage items; culvert pipes, box culverts, storm and sanitary sewers, curb inlets, manholes, flared-end-sections, headwalls, etc., will be shown on the drainage cross-section 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 and quantities for the structure. The notes and quantities shall correspond to the items tabulated in the summary of quantities (2-S) sheets, (See Section 4.C), and in the construction and removal notes, (See Section 4.I), as shown in the plans.

The preferred scale for the drainage cross-section sheet is 1" = 10' (1:100 metric), although scales of 1" = 5' (1:50 metric) or 1" = 20' (1:200 metric) may be used as circumstances dictate. The horizontal and vertical scales used should be consistent throughout the individual drainage structure cross-section sheets. The scale used will be shown near the sheet identification block in the upper right hand corner of the sheet.

#### **4.N Bridge Plan Sheets**

The **Bridge Division** provides the roadway designer with the bridge special plans for each project, as needed. The special plan number for a bridge structure, excluding bridge-size box culverts, will not have a C following the special plan number. All other special plans will have the letter C following the number, (See EXHIBIT 11.1).

For uniformity and consistency, the bridge plans should be received in the following order:

1. Layout Sheet
2. Geology and Pile Layout
3. Substructure Details
4. Superstructure Details
5. Girder Layout
6. Cross-Sections and Deck
7. Slope Protection
8. Approach Slabs

#### **4.O Right-Of-Way Plan Sheets (R-1 Thru R-\*)**

**Right of-Way Design** prepares the right-of-way plans in stages, (See Chapter Fifteen: Right-of-Way). The final design plan set submitted to **PS&E**, (See Section 1.E), 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-1 Thru X-\*)**

The roadway designer is responsible for the roadway cross-sections, 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).

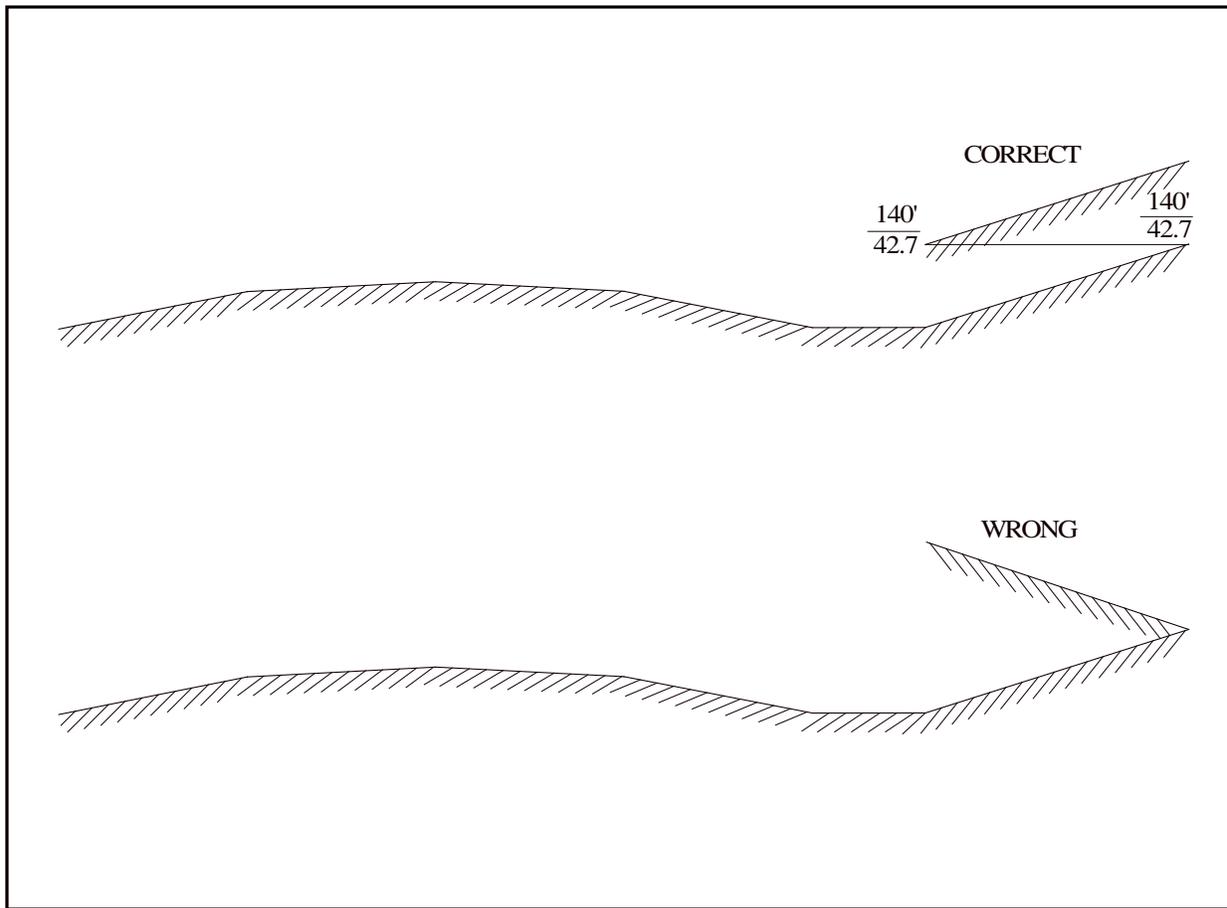


Exhibit 11.2 Roadway Cross-Section Break Lines

## 5. RESURFACING PROJECTS

Resurfacing projects are most often shown as plan view over plan view, or “piggyback sheets”. A resurfacing project may be drawn on plan and profile sheets, (See Section 4.J), 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 (2-N) sheet, (See Section 4.G).

## 6. PROFESSIONAL ENGINEER SEAL AND SIGNATURE

Projects to be let to bids by the **Nebraska Dept. of Roads** require the pages of the design plans to be sealed, signed, and dated by a Professional Engineer, with a valid license, in accordance with the Engineers and Architects Regulation Act, (Neb. Statute Sections 81-3401 to 81-3455, (<http://uniweb.legislature.ne.gov/laws/browse-chapters.php?chapter=81>)). 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.

## 7. REVISIONS TO PROJECT

Once the project plans have been let to contract, **they are legal documents**. After the project letting, the plan sheets for all active projects are returned to the **Roadway Design Division** design vault (except for the bridge plans) and may only be removed for printing or to make revisions to the plans. Any changes to the plans must follow the Revision Procedures given in Section 7.A.

Notice should be given when plan revisions are anticipated. Any division that is has produced plans for a project needs to be made aware of any changes or revisions that another division may make to the plans. For example, if a roadway project requires a bridge revision, the **Bridge Division** must inform the **Roadway Design Division, Right-of-Way, Traffic**, and any other involved divisions that they are initiating a revision to the plans.

### 7.A Revision Procedures

Once the **PS&E** requested changes have been made to the final plans, the plans are returned to **PS&E** and the CADD files are locked to prevent unauthorized changes to the contract plans. The roadway designer shall contact the **Roadway Design Plans Manager** to unlock the CADD files prior to making plan revisions, (if the **Roadway Design Plans Manager** is not available, the designer should contact the **Roadway Design Computer Systems Unit** to unlock the CADD files).

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

After **Roadway Design 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. All 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 *all original full size plan sheets* and the revised full size plans to the **Construction Division**, 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 shall correspond to the date on the revised sheets. If **FHWA** approval is required for the revision, the approval date and the **FHWA Engineer** approving the revision shall be noted in the letter.

The **Construction Division** is responsible for returning the revised plan sheets to the roadway design vault. The roadway designer is responsible for keeping the roadway design vault staff informed of the plan status through the checkout card system.

Date: \_\_\_\_\_  
 To: Construction Engineer  
 From: Designer \_\_\_\_\_  
 Thru: Design Unit Head \_\_\_\_\_  
 Subject: Plan Revision for Project \_\_\_\_\_  
 C.N. \_\_\_\_\_

The following plan revisions (R1) have been made:

- There are changes to the project's earthwork, roadway alignment, and geometry.
- The pay item "Lay and Remove Culvert Pipe" was added to the project.
- The quantities for pay items 10" Conc. Pavement, Foundation Course (Temp.) 6", Foundation Course (Bitum.) 4", and Subgrade Preparation have been changed.

The following plan sheets have been changed:

- Revise Sheets 1, 2S1, 2S2, 2N1, 2L1, 2L2, 3, 5 thru 8, 11 and 12.
- Delete Sheets 10, 23, and X14 thru X22.
- Add Sheets 23A, and X14A thru X18A

<u>ITEM</u>	<u>OLD</u> <u>QUANTITY</u>	<u>NEW</u> <u>QUANTITY</u>	<u>QUANTITY</u> <u>DIFFERENTIAL</u>
10" Conc. Pavement	46,930.00 SY	43,955.00 SY	-2,975.00 SY
Foundation Course (Temp.) 6"	9,091.00 SY	6,823.00 SY	-2,268.00 SY
Foundation Course (Bitum.) 4"	48,856.00 SY	43,955.00 SY	-4,901.00 SY
Subgrade Preparation	46,695.00 SY	52,511.00 SY	+5,816.00 SY
Lay and Remove Culv. Pipe	-----	96.00 LF	+96.00 SY

Exhibit 11.3 Example Revision Letter

### 7.A.1 Revised Sheet

If a project plan sheet was created in CADD, the revisions will be made in the CADD files. All revisions to the project plans should be made in the original sheet file wherever practical. All original information that is to be revised must be retained, **never** eliminate an original item. The change shall be crossed out, so as to remain legible, and the revised information added.

A quantity or line of text that is to be revised will be shown with a single line through the text, (i.e., ~~text~~). The original text should never be erased or edited. The new, revised text will be written in near proximity to the original text, along with revision number, (R1). This revision symbol will be used to point out each change on a revised sheet.

Revised sheets will be depicted with 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 7.A). The revision symbols and revision dates will be shown as follows:

 09 SEPT 06

### 7.A.2 Added Sheet

Revisions so extensive as to preclude their being made on the original sheet should be made on a new added sheet. This will be placed immediately after the original sheet, and 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, (i.e., 6C), but the sheet number will change.

The following designation will be placed on all added sheets:

 *ADDED SHEET 09 SEPT 06*

The revision date shall correspond with the date on the letter to the **Construction Engineer**, See Section 7.A.

### 7.A.3 Deleted Sheet

Sheets which are to be cancelled, voided, or deleted from the plans will remain in their position within the plan set and a large "X" shall be placed across the sheet. The revision symbol, deleted sheet, and date, (corresponding with the date on the letter to the **Construction Engineer**, See Section 7.A), shall be noted at the top right-hand corner of the sheet, (See EXHIBIT 11.4).

#### 7.A.4 Quantity and/or Pay Item Changes

All 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 7.A), 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 shall be detailed in the letter to the **Construction Engineer**, (See Section 7.A). The funding source(s) of the pay items should also be specified, (See Chapter Twelve: Cost Estimating & Funding, Section 1.B). When plan revisions add pay items which are not already in the plans or that in any way create the need for a special provision, the special provision shall be submitted as part of the letter to the **Construction Engineer**, along with the revised plan sheets.

#### 7.A.5 Detail Sheet

Deleted details should have a box drawn around them and an "X" drawn from corner to corner and 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.

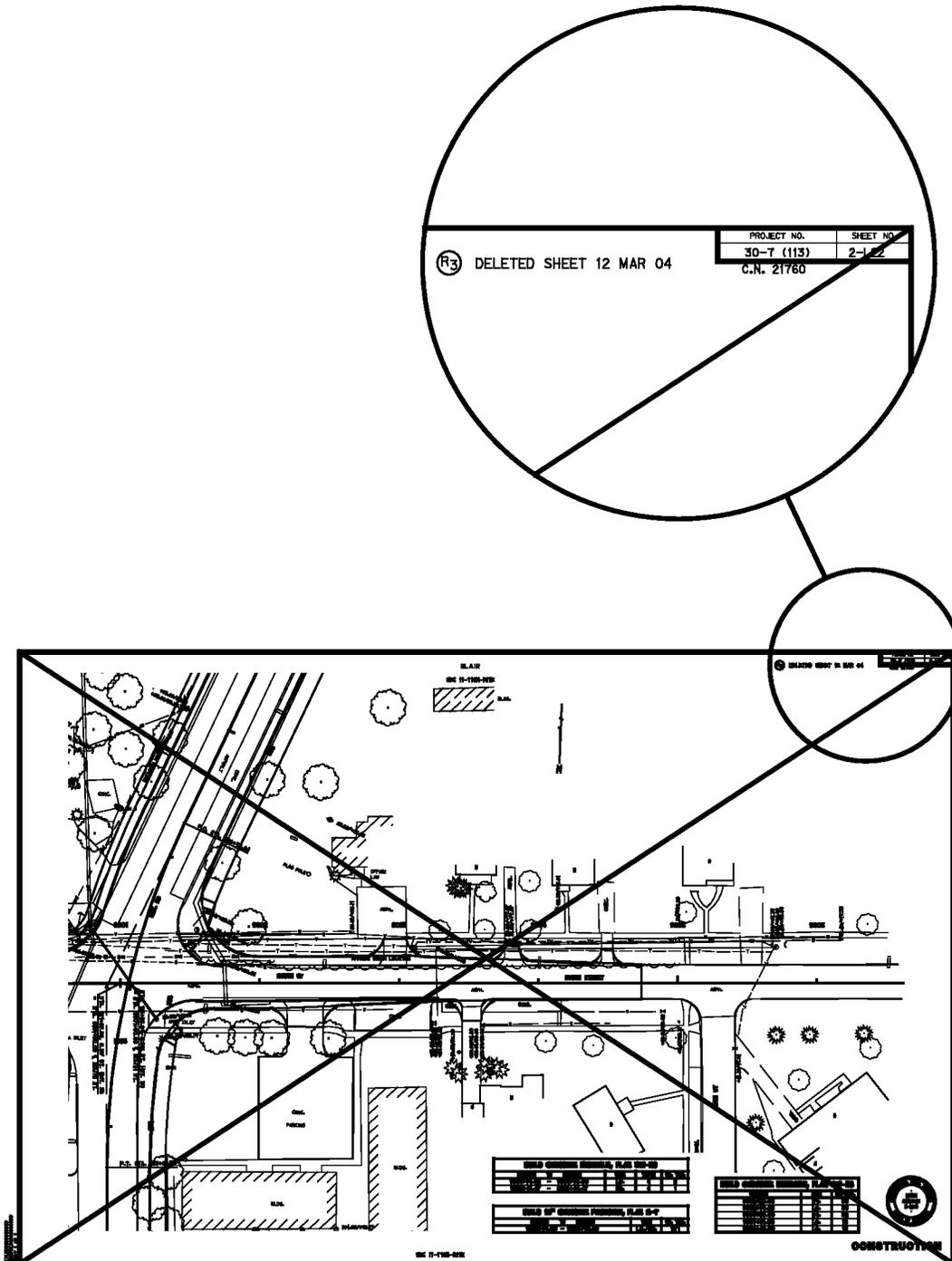


Exhibit 11.4 Deleted Sheet

**Revision Number**

**Revision Cell**

**Date coincides with letter to construction office.**

**R<sub>2</sub> 10 DEC 06**

Wt. = 2  
 FT. = 5  
 Tx. = 12

PROJECT NO.	SHEET NO.
NH-80-9(823)	1
▲ CONTROL NO. 12450	
▲ CONTROL NO.	
■ CONTROL NO.	

R<sub>1</sub> 12 SEP 05  
 R<sub>2</sub> 10 DEC 06

PROJECT NO.	SHEET NO.
NH-80-9(823)	1
▲ CONTROL NO. 12450	
▲ CONTROL NO.	
■ CONTROL NO.	

THE 1987 EDITION OF THE NEBRASKA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, AS AMENDED, SPECIFICATIONS DATED JULY 12, 2005, AND THE SPECIAL PROVISIONS APPLY TO THIS PROJECT.

THE WORK ON THIS PROJECT CONSISTS OF GROUPS:  
 1-PAVING, 14-AGE WALLS, 3-CONCRETE PAVEMENT, 4-CULVERTS, 40-CULVERTS, 5-SEEDING, 40-BRIDGES, 7-CORROSION, 15-FENCING, 40-ELECTRICAL, 80-SEEDING, 6-10-GENERAL.

GROUPS INCLUDED IN THE LETTING OF JULY 21, 2005:  
 1, 1A, 3, 4, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

GROUPS INCLUDED IN THE LETTING OF \_\_\_\_\_:

**STATE OF NEBRASKA  
 DEPARTMENT OF ROADS**

**PLANS FOR CONSTRUCTION**

**WEST OF MAHONEY  
 TO RUFF ROAD  
 CASS & SARPY COUNTIES**

REFERENCE POST NO. 429+70 TO REFERENCE POST NO. 429+70  
 EXCEPTIONS FROM STA. TO STA.  
 TOTAL NET LENGTH OF PROJECT: 21,500.00 FEET 3.995 MILES

**INDEX OF SHEETS**

SHEET NO.

1 TITLE PAGE  
 2 INDEX OF SHEETS  
 21-216 TYPICAL CROSS SECTIONS  
 251-252 SUMMARY OF QUANTITIES  
 2K1-2K4 SUMMARY OF SOILS & GEOTECHNICAL INFORMATION  
 2H1-2H5 METLANDS  
 2N1-2N5 GENERAL INFORMATION & DETOUR LOCATION MAP

**CONVENTIONAL SIGNS**

**R.O.W. LEGEND**

**DESIGN DEFINITION**

TRAFFIC  
 YEAR: 2005  
 ADT: 40,000  
 DWT: 8,000  
 DESIGN SPEED: 55  
 TERRAIN: HILLS

U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 APPROVED: \_\_\_\_\_  
 FOR REGION ADMINISTRATOR: \_\_\_\_\_ DATE: \_\_\_\_\_

**INDEX OF SHEETS**

SHEET NO.

1 TITLE PAGE\*

2 INDEX OF SHEETS  
 21-216 TYPICAL CROSS SECTIONS  
 251-252 SUMMARY OF QUANTITIES  
 2K1-2K4 SUMMARY OF SOILS & GEOTECHNICAL INFORMATION  
 2H1-2H5 METLANDS  
 2N1-2N5 GENERAL INFORMATION & DETOUR LOCATION MAP

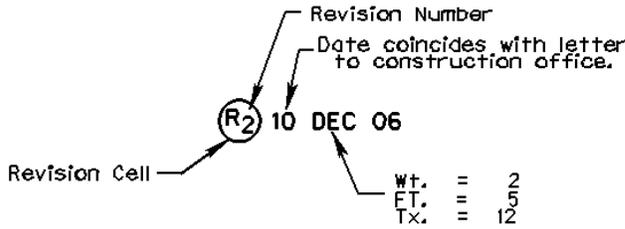
**Revision Cell Only**

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

This Seal needs a Revision Cell along with a Note below that states the Original date the Plan was signed only for first revision.

\* The title page, under the Index of sheets, does not need to be identified as a revised sheet unless the project length or something similar has changed.

Exhibit 11.5 Revised Title 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

DATE: 05-20-2005  
 BY: [Signature]

#### CULVERT ITEMS GROUP 4

ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS	MOBILIZATION	1.000	LS
REMOVE INJECT ON BOX	16.000	EACH	REMOVE OF UNSATURABLE MATERIAL	26,327.000	CY
CAST IRON COVER AND FRAME	2.000	EACH	RAINFALL WATER AL	18,357.000	CY
TAPPING EXISTING STRUCTURE	156.000	LF	NON-REINFORCED CONCRETE	3,706.000	CY
TAPPING EXISTING PIPE	6,526.000	LB	CULVERT CLEANOUT	1.000	EACH
REMOVE HEADWALLS FROM CULVERTS	1.000	EACH	AT STA. 204+01		
REMOVE AND SALVAGE FLARED-END SECTION	21.000	EACH	PREPARATION OF STRUCTURE	1.000	EACH
REMOVE HEADWALLS FROM CULVERTS	1.000	EACH	EXCAVATION FOR BOX CULVERTS	2,452.000	CY
PREPARATION OF STRUCTURE	96.000	EACH	BRICKLAY BASKET FOR BOX CULVERT	5,823.000	CY
AT STA. 218+00			TEMPORARY SHORING	1.000	LS
AT STA. 218+00			EXCAVATION FOR BOX CULVERTS	1,031.190	CY
AT STA. 222+00			CLASS 418-3000 OR 40-3000 CONCRETE FOR BOX CULVERT	65,351.000	LB
AT STA. 222+00			REINFORCING STEEL FOR BOX CULVERT	1.000	LS
REINFORCING STEEL FOR BOX CULVERTS	4,210.000	LB			
EXCAVATION FOR BOX CULVERTS	4,210.000	CY			
CLASS 418-3000 CONCRETE FOR TAILLET AND JUNCTION BOX	127,500.000	CY			
CLASS 418-3000 CONCRETE FOR CONCRETE COLLARS	16,770.000	CY			
REINFORCING STEEL FOR BOX CULVERT	13,851.000	LB			
REINFORCING STEEL FOR TAILLET AND JUNCTION BOX	134.000	LB			
REINFORCING STEEL FOR SLAB	38.000	LB			
30" FLARED-END SECTION	11.000	EACH			
30" FLARED-END SECTION	1.000	EACH			
18" SAFETY FLARED END SECTION	4.000	EACH			
INSTALL 18" METAL FLARED-END SECTION	4.000	EACH			
INSTALL 30" ROUND CONCRETE FLARED-END RESTLIN	2.000	EACH			
CULVERT SAFETY	1.000	CT			
18" CULVERT PIPE, TYPE 2, 3, 4 OR 5	394.000	LF			
24" CULVERT PIPE, TYPE 2, 3, 4 OR 5	25.000	LF			
30" CULVERT PIPE, TYPE 2, 3, 4 OR 5	54.000	LF			
36" CULVERT PIPE, TYPE 2, 3, 4 OR 5	24.000	LF			
42" CULVERT PIPE, TYPE 2	147.000	LF			
36" ROUND CONCRETE CULVERT PIPE, TYPE 2	354.000	LF			
18" CULVERT PIPE, TYPE 2, 3, 4 OR 5	1,148.000	LF			
24" CULVERT PIPE, TYPE 2, 3, 4 OR 5	2,124.000	LF			
30" CULVERT PIPE, TYPE 2, 3, 4 OR 5	66.000	LF			
36" CULVERT PIPE, TYPE 2, 3, 4 OR 5	114.000	LF			
42" CULVERT PIPE, TYPE 2, 3, 4 OR 5	36.000	LF			
48" CULVERT PIPE, TYPE 2, 3, 4 OR 5	234.000	LF			
54" CULVERT PIPE, TYPE 2, 3, 4 OR 5	256.000	LF			
60" CULVERT PIPE, TYPE 2, 3, 4 OR 5	126.000	LF			
	115.000	LF			

#### CULVERT ITEMS GROUP 4A

CONCRETE BOX CULVERT AT STA. 204+01

ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS	MOBILIZATION	1.000	LS
REMOVE OF UNSATURABLE MATERIAL	26,327.000	CY	RAINFALL WATER AL	18,357.000	CY
NON-REINFORCED CONCRETE	3,706.000	CY	CULVERT CLEANOUT	1.000	EACH
CULVERT CLEANOUT	1.000	EACH	AT STA. 204+01		
PREPARATION OF STRUCTURE	1.000	EACH	EXCAVATION FOR BOX CULVERTS	2,452.000	CY
EXCAVATION FOR BOX CULVERTS	2,452.000	CY	BRICKLAY BASKET FOR BOX CULVERT	5,823.000	CY
BRICKLAY BASKET FOR BOX CULVERT	5,823.000	CY	TEMPORARY SHORING	1.000	LS
TEMPORARY SHORING	1.000	LS	EXCAVATION FOR BOX CULVERTS	1,031.190	CY
EXCAVATION FOR BOX CULVERTS	1,031.190	CY	CLASS 418-3000 OR 40-3000 CONCRETE FOR BOX CULVERT	65,351.000	LB
CLASS 418-3000 OR 40-3000 CONCRETE FOR BOX CULVERT	65,351.000	LB	REINFORCING STEEL FOR BOX CULVERT	1.000	LS
REINFORCING STEEL FOR BOX CULVERT	1.000	LS			

#### SIGNING ITEMS GROUP 8C

ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS	MOBILIZATION	1.000	LS
REMOVE SIGN	1.000	EACH	REMOVE SIGN	1.000	EACH
TYPE B SIGN	1,000	EA	STRUCTURAL STEEL FOR SIGN SUPPORTS	1,488.000	LB
STRUCTURAL STEEL FOR SIGN SUPPORTS	1,488.000	LB	30" SIGN SUPPORT FOOTING	15.000	EACH
30" SIGN SUPPORT FOOTING	15.000	EACH	30" SIGN SUPPORT FOOTING	6.000	EACH
30" SIGN SUPPORT FOOTING	6.000	EACH	30" SIGN SUPPORT FOOTING	4.000	EACH

#### ELECTRICAL ITEMS GROUP 8B

ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
MOBILIZATION	1.000	LS	MOBILIZATION	1.000	LS
LIGHTING CONTROL CENTER, TYPE B	1.000	EACH	1 1/2-INCH CONDUIT 18' MINIMUM	1,800.000	LF
1 1/2-INCH CONDUIT 18' MINIMUM	1,800.000	LF	1 1/2-INCH CONDUIT UNDER ROADWAY	30.000	LF
1 1/2-INCH CONDUIT UNDER ROADWAY	30.000	LF	STREET LIGHTING CABLE, 2" SIZE	3,200.000	LF
STREET LIGHTING CABLE, 2" SIZE	3,200.000	LF	STREET LIGHTING CABLE, 1/2" & 3/4"	1,400.000	LF
STREET LIGHTING CABLE, 1/2" & 3/4"	1,400.000	LF	WALKWAY STREET LIGHTING BAY	9.000	EACH
WALKWAY STREET LIGHTING BAY	9.000	EACH	TEMPORARY LIGHTING SYSTEM	1.000	EACH
TEMPORARY LIGHTING SYSTEM	1.000	EACH	TEMPORARY LIGHTING SYSTEM	1.000	EACH
TEMPORARY LIGHTING SYSTEM	1.000	EACH	TEMPORARY LIGHTING SYSTEM	1.000	EACH
TEMPORARY LIGHTING SYSTEM	1.000	EACH	OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	222.000	DAY	OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	222.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	222.000	DAY	OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	114.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	114.000	DAY	OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	60.000	DAY
OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	60.000	DAY	OPERATION AND MAINTENANCE OF TEMPORARY LIGHTING SYSTEM	482.000	DAY

#### GENERAL ITEMS GROUP 10

ITEM	QUANTITY	UNITS	ITEM	QUANTITY	UNITS
SURVEILLANCE OF TEMPORARY TRAFFIC CONTROL DEVICES	816.000	DAY	BARRELS, TYPE 11	168,280.000	BAULT
BARRELS, TYPE 11	168,280.000	BAULT	BARRELS, TYPE 11E	45,236.000	BAULT
BARRELS, TYPE 11E	45,236.000	BAULT	TEMPORARY SIGN DAY	2,412.000	EACH
TEMPORARY SIGN DAY	2,412.000	EACH	CONTRACTOR FURNISHED SIGN DAY	8,478.000	EACH
CONTRACTOR FURNISHED SIGN DAY	8,478.000	EACH	TEMPORARY PAYMENT MARKING, TYPE PAINT	206,000.000	LF
TEMPORARY PAYMENT MARKING, TYPE PAINT	206,000.000	LF	TEMPORARY PAYMENT MARKING SURFACE PREPARATION	40,000.000	LF
TEMPORARY PAYMENT MARKING SURFACE PREPARATION	40,000.000	LF	FLASHING ARROW PANEL	158.000	DAY
FLASHING ARROW PANEL	158.000	DAY	FLASHING ARROW PANEL	50.000	DAY
FLASHING ARROW PANEL	50.000	DAY	INSTALL CONCRETE PROTECTION BARRIER	25,148.000	LF
INSTALL CONCRETE PROTECTION BARRIER	25,148.000	LF	TEMPORARY ORACLE SYSTEM	22,100.000	LF
TEMPORARY ORACLE SYSTEM	22,100.000	LF	PRECAST CONCRETE PROTECTION BARRIER	27,440.000	LF
PRECAST CONCRETE PROTECTION BARRIER	27,440.000	LF	PRECAST CONCRETE PROTECTION BARRIER	5.000	EACH
PRECAST CONCRETE PROTECTION BARRIER	5.000	EACH	PORTAL BARRIER SYSTEM	1.000	LF
PORTAL BARRIER SYSTEM	1.000	LF	FIELD OFFICE	1.000	EACH
FIELD OFFICE	1.000	EACH	TRAINING	4,000.000	ROUR
TRAINING	4,000.000	ROUR	MOBILIZATION	1.000	LS
MOBILIZATION	1.000	LS	CONSTRUCTION STAKING AND SURVEYING	1.000	LS
CONSTRUCTION STAKING AND SURVEYING	1.000	LS	RENTAL OF MOTOR GRADERS, FULLY OPERATED	210.000	ROUR
RENTAL OF MOTOR GRADERS, FULLY OPERATED	210.000	ROUR	RENTAL OF DUMP TRUCKS, FULLY OPERATED	210.000	ROUR
RENTAL OF DUMP TRUCKS, FULLY OPERATED	210.000	ROUR	RENTAL OF SOIL LOADERS, FULLY OPERATED	210.000	ROUR
RENTAL OF SOIL LOADERS, FULLY OPERATED	210.000	ROUR	RENTAL OF CRANES HEATED HYDRAULIC EXCAVATOR, FULLY OPERATED	250.000	ROUR
RENTAL OF CRANES HEATED HYDRAULIC EXCAVATOR, FULLY OPERATED	250.000	ROUR	CONTRACTOR UTILIZATION	1,000.000	LF
CONTRACTOR UTILIZATION	1,000.000	LF	TEMPORARY SILT CHECK	500.000	LF
TEMPORARY SILT CHECK	500.000	LF	TEMPORARY SILT CHECK	1,300.000	LF
TEMPORARY SILT CHECK	1,300.000	LF	TEMPORARY SILT CHECK	500.000	LF
TEMPORARY SILT CHECK	500.000	LF	TEMPORARY M&M	4.000	TON

#### FENCING ITEMS GROUP 7B

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

#### FENCING ITEMS GROUP 7B

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

PROFESSIONAL CIVIL ENGINEER  
 BRIAN L. JOHNSON  
 E-8609

PROFESSIONAL CIVIL ENGINEER  
 MICHAEL H. STOLTENBERG  
 E-6905

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



**7.B Revising a Project Which Has Been Rejected or Withdrawn From A Letting**

A project will be returned to the **PS&E Unit** if it has been rejected or withdrawn from a letting.

Most of the project sheets will be revised in the same manner as if the project had been let, with three (3) exceptions:

- Added sheets only; 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).
- 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 the **Roadway Design Plan Development Unit**.

	<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

**7.B.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 that has been rejected or withdrawn from a letting. A project that has been rejected or withdrawn from a letting will have one of these notations by the group block; these comments will not be identified with a revision symbol:

- No bids received
- Withdrawn
- Rejected

**8. REFERENCES**

- 11.1 Nebraska Department of Roads, Design Process Outline, Current Edition  
(<http://www.nebraskatransportation.org/roadway-design/downloads.htm>)
- 11.2 Nebraska Department of Roads, Standard/Special Plans Book, Current Edition.
- 11.3 Board of Public Roads Classifications and Standards, Nebraska Minimum Design Standards, Current Edition.  
(<http://www.transportation.nebraska.gov/gov-aff/gov-aff-design-standards.html>)

