

The information contained in Chapter Thirteen: Planning and Project Development, 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 Thirteen

Planning and Project Development

1. INTRODUCTION AND GENERAL CONSIDERATIONS

Prior to the preliminary design stage a roadway project goes through extensive planning, analysis, and evaluation to assure that **NDOR** provides improvements when and where they are most needed. Among the many factors that are considered during the planning and project development stages are:

- Traffic counts and forecast evaluation.
- Needs study criteria evaluation.
- Environmental effects of the project.
- Public participation and input into the project.
- Social and economic effects of the project.
- Alternative courses of action.

The **Materials and Research Division**, the **Planning and Project Development Division** and the **Project Scheduling Section of the Program Management Division** are responsible for the planning and project development processes and for liaison with other agencies and organizations that are involved in a project. The **Communications Division** coordinates the public meetings and hearings that are part of the process.

2. PLANNING AND SCHEDULING

- The **Materials and Research Division Classification, Needs, and Pavement Management Unit** performs ongoing data collection, analysis, prioritization and evaluation involving roadway inventories, pavement condition, traffic forecasts, demographic and economic information.
- The **Project Scheduling Section of the Program Management Division** plans and programs highway improvements and then manages Clarity, which programs, schedules and monitors projects through preconstruction stages.
- The **Project Scheduling Section of the Program Management Division** develops One Year Programs and Five Year and Beyond Programs.

The factors noted in Section 1 are used to develop the highway plan for non-metropolitan areas. In metropolitan areas such as Omaha, Lincoln, and South Sioux City, transportation planning is part of the continuing, cooperative and comprehensive (3C) planning process performed by metropolitan planning organizations (MPOs) consisting of state and local government officials and citizen representatives. Transportation modeling in urban areas consists of trip generation, distribution, assignment and modal split models that forecast system needs.

3. ENGINEERING REVIEW AND LOCATION STUDIES

3.A Engineering Review

Once a project has been initiated with a "Highway Improvement Programming Request", DR Form 73, but before it has been approved, the scope of the project and the initial cost estimate (Status 10) are determined (See Chapter Twelve: Cost Estimating & Funding, Section 2).

After the DR 73 has been approved, the **Planning and Project Development Division Location Studies Section** conducts an engineering review. Engineering review is a process performed very early in the development of a project to establish the concept of work to be performed and the initial itemized cost estimate for the project (Status 20) (See Chapter Twelve: Cost Estimating & Funding, Section 2). Engineering reviews are generally performed for major, non-interstate projects such as resurfacing, major bridge work, reconstruction, relocation, etc. Usually an engineering review is not performed for safety projects, traffic signal projects or other minor engineering projects.

The engineering review summarizes the existing highway condition, pavement condition, traffic volumes, and highway classification and includes a description of the existing typical roadway section and of adjacent roadway sections. It outlines or describes the horizontal and vertical alignment geometrics. The engineering review includes a listing of any structures within the proposed project limits and their condition. It also includes a listing of historical bridges, wetland involvement, underground fuel tanks, hazardous waste locations, safety history, railroad involvement, utilities, etc.

The **Planning and Project Development Division** then reviews the existing conditions, confers with the **District Engineer** and other engineers, reviews the photolog or visits the site, if necessary, and decides upon a recommendation for the type of project to be undertaken. The engineering review and its recommendations then are circulated to the **Roadway Design Engineer**, the **District Engineer** and the **Deputy Director-Engineering** for their approval.

The engineering review provides a starting point and direction for the roadway designer. The designer must use it as a guideline but has the option of making significant scope modifications, with proper documentation and approval, as more information becomes available.

From the engineering review, the **Scoping and Utilities Section** of the **P&PD** prepares a Scoping Document, containing project data, a brief description of the proposed work and a recommendation as to the environmental classification of the proposed project, (See Section 4). This form is submitted to the **Federal Highway Administration (FHWA)** for review, comments, and concurrence in the environmental classification. Once **FHWA** environmental classification concurrence is obtained, preliminary design may proceed.

3.B Location Studies

Location studies are conducted to address social, economic, environmental and other issues associated with alternative project locations. Location studies may be conducted for specific "spot" locations, such as new bridge crossings of the Missouri River, or for longer corridors.

Corridor study projects often involve some relocation and some community bypasses. Corridor study results are published in report form. Contents of a corridor report include information similar to that in an engineering review, e.g., alignment location factors, cost estimates, etc. They may include plan and profile sheets developed from as built plans or **U.S. Geological Survey (USGS)** contour maps.

Location studies usually take from eighteen months to two years to complete. Public information meetings and a location public hearing are usually part of the study. Location studies are also circulated among various **NDOR** divisions for comment and input. Projects on new location are normally taken to the **State Highway Commission** and the **Governor** for location approval shortly after the location hearing.

4. ENVIRONMENTAL STUDIES

4.A. Environmental Classification and Documentation

The National Environmental Policy Act (NEPA) (Reference 13.1), (http://ceq.hss.doe.gov/laws_and_executive_orders/the_nepa_statute.html), specifies that all federal agencies, including the **Federal Highway Administration (FHWA)**, must protect the environment through their policies, goals and actions. The **Planning and Project Development Division** is responsible for the required research, documentation and applications for approvals and permits.

Roadway design should be coordinated with environmental impact mitigation measures. If the designer encounters potential problems during design, e.g., learns of the possible presence of an endangered species, underground fuel tank, electrical substation, wetland, channel relocation, etc., he/she should contact the **Environmental Section Manager** of the **Planning and Project Development Division**.

4.A.1 Environmental Classification

Federal regulations divide all projects into three classes, depending on their potential for impacting the environment. The three classes are:

- A. Class I Projects may significantly affect the environment and require preparation of an environmental impact statement (EIS), and the issuance of a Record of Decision (ROD) by **FHWA**. Basically, new four-lane construction on new location or projects with a significant environmental impact will be Class I projects.

When **FHWA** concurs that a project is a Class I project, the **Planning and Project Development Division** conducts a social, economic and environmental review (SEE). Issues of significant impact and possible alternatives are identified. Appropriate federal, state and local agencies are contacted for coordination and comments throughout the development of the project.

- B. Class II Projects, based on past experience, do not have a significant effect on the environment. These will include projects such as overlays, bridge replacement, lighting and various other projects with no significant impact. Class II projects, identified as categorical exclusions (CE), are divided into two groups:
- Group 1 CE - normally do not require NEPA documentation or **FHWA** approval as a CE.
 - Group 2 CE - normally do require minimal environmental documentation and **FHWA** approval of the proposed CE.
- C. Class III Projects are projects on which the significance of the effect on the environment must be determined. Class III projects require the preparation of an environmental assessment (EA) and result in a finding of no significant impact (FONSI). Class III projects that find possible significant impact are reclassified as Class I.

4.A.2 4(f) Evaluation (Publicly Owned Lands/Historic Places)

Section 4(f) of the 1966 Transportation Act (Reference 13.3), (<http://environment.fhwa.dot.gov/4f/index.asp>) applies to **U.S. Department of Transportation** agencies and projects. It limits use of the following publicly owned lands:

- public parks.
- recreation areas.
- wildlife/waterfowl refuges.
- lands having historic sites of national, state or local significance.

These lands are known as 4(f) lands.

FHWA may not approve use of 4(f) lands for roadway improvements unless *“no feasible and prudent alternative is possible and all possible planning has been done to minimize harm”*. Among the impacts that are considered in 4(f) evaluations are: amount of land to be used for the project, facilities and functions affected, noise/air pollution, visual impact, etc. The designer must contact the **Environmental Documents Unit** if any of the above listed facilities may be impacted by the project.

4.A.3 6(f) Lands (Land Water Conservation Funds Used For Park Improvements)

In addition to 4(f) documentation, the **Planning and Project Development Division** must also determine if any improvements to the public park lands were funded with monies from Section 6(f) of the Land Water Conservation Fund Act (Reference 13.4), (<http://www.fhwa.dot.gov/wadiv/envir/section6f.cfm>), administered by the **National Park Service**. Use of areas improved with 6(f) funds for roadway projects will require coordination with the **National Park Service** and possible replacement of any lands used for the roadway project. Contact the **Environmental Documents Unit** to determine if 6(f) lands are present on the project. If 6(f) lands are present, the designer should attempt to avoid impacting them, minimize the impact if avoidance is not possible, and/or mitigate the impact.

4.B Wetlands and Section 404 Permits

Under Section 404 of the Clean Water Act, (Reference 13.5), (<http://water.epa.gov/lawsregs/guidance/wetlands/sec404.cfm>), and under Title 117 of the Nebraska Surface Water Quality Standards, (<http://www.deq.state.ne.us>), impacts to wetlands are to be avoided if possible, minimized if avoidance is not possible, and/or mitigated.

4.B.1 **Wetlands Definitions**

The **U.S. Army Corps of Engineers** and the **U.S. Environmental Protection Agency** define wetlands as follows:

“Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

Wetlands generally include swamps, marshes, bogs and similar areas.

Wetland determination is based upon an evaluation of soil type, hydrology and plants that live in the area. Situations that suggest that a wetland determination should be made include:

- Area is in a floodplain or otherwise has low spots in which water stands at or above the soil surface during the growing season (however, most wetlands lack both standing water and waterlogged soils during at least part of the growing season).
- Area has plant communities that commonly occur in areas having standing water for part of the growing season.
- Area has soils that are peats or mucks.
- Area is designated on a National Wetlands Inventory Map as being a wetland.

4.B.2 **Wetlands Procedures**

A primary goal of roadway design is to avoid wetlands as much as practicable. If this is not possible, then wetlands encroachment should be minimized. Mitigation for wetland encroachment may be required. Wetlands are replaced at a minimum rate of 1:1 or more. If any work is planned in or near a river, stream, pond or wetland, contact the **Environmental Permits Unit** in the **Planning and Project Development Division** as early as possible during project planning. The following procedures should be followed to coordinate roadway design, wetland delineation and wetland mitigation design.

1. During engineering review, the **Wetlands Biologists** will inspect the project site and delineate the wetlands on air photos (2-W sheets).
2. The **Environmental Permits Unit** drafts the wetland delineation on CADD and sends the CADD file and Waterway Permit Data Sheet to the roadway designer (EXHIBIT 13.1). This permit data sheet covers waterway permit information, historic bridges and other environmental issues.
3. The designer will use the 2-W sheets and his/her cross-sections to calculate the areas in acres (hectares) of impacted wetland for each type of wetland as delineated on the 2-W sheets (See DR Form 290, EXHIBIT 13.1).

4. At the plan-in-hand, the impact on wetlands will be discussed and alternative designs may be considered.
5. After the plan-in-hand changes, if any, have been incorporated into the project the designer completes the Waterway Permit Data Sheet using the limits of construction. The completed 2-W sheets, with the limits of construction, and Waterway Permit Data Sheet will be returned to the **Environmental Permits Unit** for preparation of the waterway permit applications.
6. If mitigation is required for a project the roadway designer and the **Environmental Permits Unit Manager** will study alternate mitigation sites and select the proper mitigation site prior to the public hearing dry run.
7. The **Environmental Permits Unit** will review the information and will send mitigation requirements, suggested mitigation sites, reconstruction sites, etc. to the designer. The designer will make final site decisions based on this information, present land use and other engineering considerations.
 - When possible, only one mitigation site should be shown on the public hearing plans.
 - When no apparent suitable mitigation site is available, public hearing plans should not show any wetland mitigation sites.
 - If mitigation will be accomplished at a wetland mitigation bank site, the bank's name and legal description should be stated at the public hearing, (See **EXHIBIT 'L'** of the Design Process Outline, Reference 13.2).
8. If mitigation is required along the project, the roadway designer designs the mitigation site area with wetland design parameters from the **Environmental Permits Unit** before the public hearing.
9. After considering public hearing inputs, the final mitigation site design is incorporated into the project plans.
10. Once the mitigation area is designed the **Roadway Design Division** sends the plan and profile sheets and the cross-sections to the **Environmental Permits Unit** for further processing.
 - Mitigation areas should be noted on the profile and on the cross-sections to assure that areas specifically designed not to drain are not changed during construction.
11. The **Environmental Permits Unit** then develops and sends to the designer an environmental summary sheet (**EXHIBIT 13.2**) that includes threatened and endangered species, specifications, special provisions, conditions, copies of the applicable permits and instructions on additional plans needed and aerials to be included in the final plans. The **Environmental Permits Unit** will also send this package to other concerned parties.
12. The roadway designer will provide the necessary pay item quantities, plans, cross-sections and other relevant information for the plans, specifications and estimates (PS&E) package.
13. The **Environmental Permits Unit Manager** will provide the 2-W sheets delineating wetlands both on and off the project, special provisions and the permit documents with conditions for the PS&E package.

Deeds for land acquired for wetlands mitigation shall be written specifying the reason for the acquisition to forestall selling this land in the future. It is the responsibility of the roadway designer to inform the **Right-Of-Way Design Division** when, and what, land is being acquired for wetlands mitigation.

Nebraska Department of Roads

WATERWAY PERMIT DATA SHEET

FIGURES ARE TO BE COMPLETED IN ACRES

DATE:

FROM:

TO: Jason Jurgens, Environmental Permits Unit Manager

Project Name:

Letting Date:

Project Number:

Delineation Date:

Control Number:

Biologist:

County:

IS THE PROJECT LOCATED IN A MAPPED
FLOODPLAIN/FLOODWAY AREA:

Yes

No

If YES, please attach Certification and Compliance with Floodplain and Floodway Regulations

Please provide the following:

- Location Map.
- 2 – ½ size copies of 2W plans (*turn on wetland feature file levels 54, 61, 62, 63 for 2W sheets submitted to EPU for Section 404 permitting*).
- Report wetland impacts (*attached*).
- Report all roadway structure crossings that will be replaced or modified (*attached*).
- Report all channel change information with applicable cross sections (*attached*).
- Provide applicable bridge/structures data sheets and/or TS&L (*Type, Span & Length*) plans provided by Bridge Division.
- Provide plans for specific features (weirs, jetties, drop structures, etc.)

Project Description: (*include existing facility, proposed improvements, design standard, etc. Please describe special features affecting delineated waterways such as weirs, jetties, drop structures, etc.*)

WETLANDS DRAFTING INFORMATION:

Wetland delineation information available by:

Project Control No./division/wetlands/_____wf.dgn

Nebraska Dept. of Roads IMPACTED WETLANDS (ACRES)		Return to: Planning & Project Development Environmental Permits Unit						
Project Name:		Control No.:						
Project No.:		Date Submitted:						
Station to Station	PEMA	PEMC	PEMF	PSSA	PFOA1	Other	Stream Channel	
							Area	Length (Ft.)
Totals		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Exhibit 13.1b Waterway Permit Data Sheet (continued)

Nebraska Department of Roads
CHANNEL CHANGES

Project Name:

Stream Name:

Project No.:

Location:

Control No.:

County:

Structure No.:

Date Submitted:

Project Station:

EXISTING CHANNEL:

Depth:

Width:

Side Slopes:

Length:

NEW CHANNEL:

Depth:

Width:

Side Slopes:

Length:

RIP-RAP REQUIRED:

Type:

Length:

Cubic Yards Below Ordinary High Water:

Purpose:

Describe Channel Shaping/Grading Activities: *(Please attach cross sections)*

Reason for Channel Change:

Attach Structure Data Sheet/TSL Plans, if applicable

Return to:
Planning and Project Development
Division
Environmental Permits Unit

Project No.:
Control No.:
Location:

**SPECIAL ENVIRONMENTAL CONDITIONS
PROJECT DEVELOPMENT SUMMARY SHEET**

WATERWAY PERMITS

	<u>Type of Permit</u>	<u>Location</u>	<u>Permit Number</u>
Sample	Nationwide #14 Floodplain Permit	between Section 13+24, T2N-R23W Section 13+24 T2N-R23W	NE 99-11158

Special Plans (to be included in final plan package):

2WA Sheets	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mitigation Plan	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Special Cross-Sections	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Others	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Special notes on plans:

None

Special provisions (see attached):

See Attachment A: Fact sheet for a Nationwide #14 permit.

Special conditions (see attached):

See Attachment B: The Corps of Engineers Authorization.

Additional comments:

See Attachment C: Floodplain permit from _____ City/County.

This project was delineated for the presence of wetlands on _____. Mandatory criteria, as defined in the 1987 Corps of Engineers Wetlands Delineation Manual, were used for wetland determinations. These findings were based on hydric soil, wetland plant, and wetland hydrology information gathered during this on-site evaluation.

Environmental Permits Unit Manager (Signature & Date)

Project No.:
Control No.:
Location:

HISTORIC SITES

Historic bridges Yes No

Special provisions (See Attached):

Additional comments:

Environmental Section Manager *(Signature & Date)*

OTHER ENVIRONMENT ISSUES

Special conditions:

Special notes on plans:

Additional comments:

Environmental Section Manager *(Signature & Date)*

4.B.3 Public Notification of Wetland Mitigation

It is **NDOR's** intent to make the public aware of wetland issues as early in the life of a project as is feasible. To that end **NDOR** has adopted the following policy regarding public notification of wetland mitigation:

- A. Public information meetings held for Engineering Reviews or Location Studies
 1. A preliminary determination of wetlands will be done on aerial photos for use in the development of alternative concepts.
 2. Information about the anticipated impact to wetlands will be made available to the public, either on handout material or on the displays. The wetland impact will be described as either major (more than 3 acres (1.2 hectares)) or minor (less than 3 acres (1.2 hectares)).
- B. Major projects on new alignments that have a corridor study and hearing.
 1. Location Hearing
 - a. The Location Studies Engineer provides avoidance analysis and preliminary estimate of wetland impacts to the Environmental Permits Unit.
 - b. The Environmental Permits Unit biologist returns the required mitigation area and potential mitigation sites.
 - c. At the location hearing, existing wetlands and potential mitigation sites that are truly feasible are shown.
 2. Before Plan-In-Hand
 - a. The designer sends updated wetland impacts, based on limits of construction, to the Environmental Permits Unit (4 weeks prior to plan-in-hand). Include revised avoidance analysis if impacted wetlands are different from corridor study.
 - b. The Environmental Permits Unit biologist sends the designer updated mitigation areas and prioritized mitigation sites.
 3. During Plan-In-Hand
 - a. The preferred mitigation site is decided upon.
 4. After Plan-In-Hand
 - a. The designer notifies the Environmental Permits Unit of the preferred mitigation site and continues design. (Include in plan-in-hand report.)
 5. Design Hearing
 - a. The preferred mitigation site is shown.
 - b. Show existing wetlands and other alternate mitigation sites, if they are truly feasible.
 - c. The public hearing notice will include a location map with preferred site and other potential sites shown.
- C. Design Hearing Held and Corridor Hearing Not Held
 1. Before Plan-In-Hand
 - a. For a project with proposed new alignments, the designer sends avoidance analysis and estimated wetland impact based on limits of construction, to the Environmental Permits Unit. (Four weeks prior to plan-in-hand.)
 - b. The Environmental Permits Unit biologist sends the designer required mitigation areas and prioritized mitigation sites.
 2. During Plan-In-Hand
 - a. The preferred mitigation site is decided upon.

3. After Plan-In-Hand
 - b. The designer notifies the Environmental Permits Unit of the preferred mitigation site and continues design. (Include in plan-in-hand.)
 4. Design Hearing
 - a. The preferred mitigation site is shown.
 - b. Show existing wetlands and other alternate mitigation sites, if they were truly feasible.
 - c. The public hearing notice will include a location map with preferred site and other potential sites shown.
- D. Design Hearing Not Held and Three Acres (1.2 Hectares) or More Mitigation Required
1. Before Plan-In-Hand
 - a. The designer sends avoidance analysis and estimated wetland impacts, based on limits of construction, to the Environmental Permits Unit. (Four weeks prior to plan-in- hand.)
 2. During Plan-In-Hand
 - a. The preferred mitigation site is decided upon.
 3. After Plan-In-Hand
 - a. The designer notifies the Environmental Permits Unit of the preferred mitigation site and continues design (Include in plan-in-hand report.)
 4. Hold Wetlands Information Meeting
 - a. The preferred mitigation site is shown.
 - b. Show existing wetlands and other alternate mitigation sites, if they were truly feasible.
 - c. The public information meeting notice will include a location map with preferred site and other potential sites shown.
- E. Design Hearing Not Held and Less Than Three Acres of Mitigation Required
1. Before Plan-In-Hand
 - a. The designer sends avoidance analysis and estimated wetland impacts, based on limits of construction, to the Environmental Permits Unit. (Four weeks prior to plan-in- hand.)
 - b. The Environmental Permits Unit biologist sends the designer the required mitigation area and prioritized mitigation sites.
 2. During Plan-In-Hand
 - a. The preferred mitigation site is decided upon.
 3. After Plan-In-Hand
 - a. The designer notifies the Environmental Permits Unit of the preferred mitigation site and continues designing. (Include in plan-in-hand report.)
 - b. A location map with the preferred site and other potential sites will be sent to local newspapers with a note that **NDOR** will be mitigating the loss of wetlands due to the construction of pending Project No. _____.
For more information contact _____.
- F. If wetland mitigation is handled by taking credit from a wetland bank, specific wetland information meetings are not necessary.

4.B.4 Section 404 Permits

Section 404 of the Clean Water Act (Reference 13.5) requires that anyone interested in depositing dredged or fill material into waters of the United States, including wetlands, must receive authorization for such activities through permitting from the **U.S. Army Corps of Engineers**. Activities in wetlands for which permits may be required include: placement of fill material, ditching activities, levee and dike construction, mechanized land clearing, land leveling, most road construction and dam construction.

The **Corps of Engineers** issues three types of permits: individual, regional and nationwide (NWP) general permits. An individual permit is required when a project is not exempted from regulation and is of a scope and magnitude that it does not fall under the other two categories. Regional and nationwide permits are issued for projects that have minimal environmental impacts. In evaluating a permit application, the **Corps of Engineers** analyzes the following factors:

- Conservation
- Economics
- Aesthetics
- General environmental concerns
- Historic values
- Fish and wildlife values
- Flood damage prevention
- Land use, navigation
- Recreation
- Water supply and water quality
- The needs and welfare of the people

For an individual permit on new alignments, the **Corps of Engineers** will require alternatives analysis. Impacts for alternate alignments must be calculated and retained in the project file by the designer. Required alternatives analysis includes:

- What was done to avoid wetlands impacts?
- What was done to minimize wetlands impacts?

Erosion control is a condition of the Section 404 permit, (See Chapter Two: Erosion and Sediment Control of the Drainage Design and Erosion Control Manual, Reference 13.6). Plans must include control of water (and siltation due to runoff) into any water body including wetlands. The **Planning and Project Development Division** will identify any location where roadway runoff or other non-point source pollution may adversely impact sensitive water resources such as water supply reservoirs, ground water recharge areas, high quality streams and threatened and endangered aquatic species.

The **Planning and Project Development Division** submits the necessary applications for Section 404 permits.

4.B.5 Section 10 of the Rivers and Harbors Act

Structures or work affecting navigable waters of the U.S. are regulated under Section 10 of the Rivers and Harbors Act of 1899 as amended (Reference 13.7), (<http://water.epa.gov/lawsregs/guidance/wetlands/sect10.cfm>). In Nebraska, only the Missouri River is considered a navigable river. If required, the **Environmental Permits Unit** will obtain a Section 10 permit from the **U.S. Army Corps of Engineers**.

4.B.6 Channel Changes

When a channel change is required to meet project objectives, site conditions should be evaluated early in the design process. Channel width and length, vegetation, ponding, existing erosion control measures, etc. should be noted and the new channel should be designed so as to equal or better these conditions. The **Environmental Permits Unit** of the **Planning and Project Development Division** should be notified of the proposed channel change as soon as possible in order to determine mitigation, special conditions, and to get the necessary outside agencies involved at the beginning of the project. This will benefit **NDOR** in the permitting process.

The **Nebraska Department of Environmental Quality** and the **United States Army Corps of Engineers** typically requires the following conditions for channel changes for Nationwide (404) Permits:

1. A 30 ft. (9.1 m) minimum width buffer strip of native vegetation on each side of the channel, starting at the top of the bank and measuring outward.
2. In some cases 2:1 tree and shrub replacement, planted in the buffer strip.
3. Construction of a channel wide enough so that the new stream bottom area is equal to or greater than that of the channel to be filled and the cross-sectional area of the new channel is equal to or greater than that of the old channel.
4. New channel banks should be sloped no steeper than 3:1, (2:1 if certified by an engineer).
5. Channel length shall be equal to or greater than that of the channel to be filled if the total channel length is less than 100 ft. (30.5 m) (net loss).
6. No more than 300 ft. (91.4 m) of channel can be impacted.

If these conditions cannot be met, meet with the **Environmental Permits Unit Manager** as soon as possible because an individual 404 permit will be required, increasing the time required for the permit process.

The **United States Army Corps of Engineers** also requires that any channel change designed without a grade control structure must have a registered engineer verify, in writing, that a grade control structure is not required. The following example statement has been accepted by **Planning and Project Development** and by the **Army Corps of Engineers** as fulfilling this requirement:

“I have determined that the channel change from Station 252 +/- 50 Rt. to Station 253 +/- Rt. does not require a grade control structure.”

A copy of this transmittal shall be kept in the project file.

Deeds for land acquired for channel changes shall be written specifying the reason for the acquisition to forestall selling this land in the future. It is the responsibility of the roadway designer to inform the **Right-Of-Way Design Division** when, and what, land is being acquired for channel changes.

4.B.6.a Bridge Channel Work

The pay limits provided for channel work as a **Bridge Division** pay item will be from ROW to ROW (or as specified on the Bridge Data Sheet) and from centerline of abutment to centerline of abutment, (See EXHIBIT 13.3). Payment for channel work (and riprap) beyond the Bridge Plan quantity limits may be paid for as either Excavation (Established Quantity) or Earthwork Measured in Embankment. Excavation (Established Quantity) will be provided if the greatest earthwork net volume is excavation while Earthwork Measured in Embankment will be used if the greatest net volume is in fill. The Roadway Designer will coordinate with the **Bridge Designer** to decide how the work will be shown in the plans and how the limits of payment will apply.

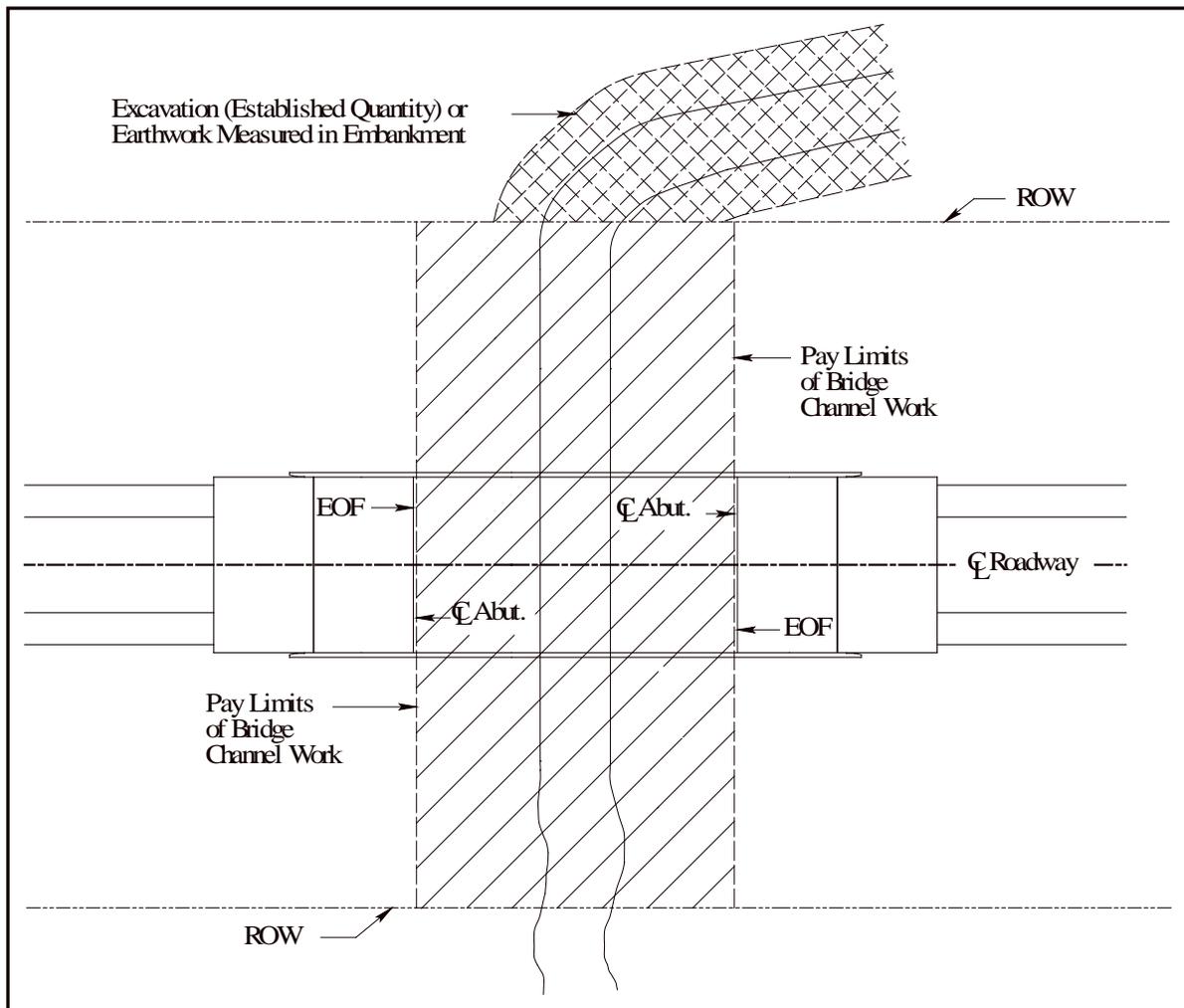


Exhibit 13.3 Pay Limits for Bridge Channel Work

4.B.7 Floodplains

The **Federal Emergency Management Agency (FEMA)** administers the National Flood Insurance Program (NFIP). **FEMA** has established regulations for the modification of floodways and floodplains.

There can be no surcharge or increase of the 100-year flood profile resulting from highway construction in floodway (See the Drainage Design and Erosion Control Manual, (Reference 13.6), Chapter One: Drainage, Section 5.C). If an area is mapped **FEMA** zone A or a flood fringe area on a Flood Insurance Rate Map (FIRM) and there is a local (**Town, City or County**) designated regulating authority, **NDOR** must obtain a Floodplain/Floodway permit if construction activities occur in the mapped area. To apply for the permit a “No-Rise” certificate is required along with the application. For bridge construction activities in the mapped area the **Bridge Division** provides a “No-Rise” certificate and a bridge data sheet. For roadway construction activities in the mapped area **Roadway Design** provides a “No-Rise” certificate and a memo explaining the construction activities. Refer to References 13.8 through 13.12 for further guidance.

4.B.8 Water Quality

NDOR must comply with federal regulations related to water quality including the Clean Water Act (Reference 13.5) and the Safe Drinking Water Act (Reference 13.13), (<http://www.epa.gov/safewater/sdwa/sdwa.html>). A Water Quality Certificate must be obtained from the **NDEQ**.

The **Planning and Project Development Division** will also research impacts of the project on any areas designed as principal or sole-source aquifers under Section 1424(e) of the Land Water Conservation Fund Act, (Reference 13.4). If a rest area with a point source discharge is proposed as part of the project, the **Planning and Project Development Division** will also obtain a Section 402 permit (Procedures for Coordinating Highway Encroachments on Floodplains with Federal Emergency Management Agency, Reference 13.8), (<http://environment.fhwa.dot.gov/guidebook/vol1/doc6d.pdf>).

4.C Air Quality

The Clean Air Act (Reference 13.14), (<http://www2.epa.gov/laws-regulations/summary-clean-air-act>), was passed to protect and enhance the quality of the nation's air resources. The **Environmental Protection Agency** has established air quality standards that must be followed. The **Noise and Air Section** of the **Planning and Project Development Division** will make all necessary air quality evaluations. Air analysis will be made for projects where the traffic exceeds 15,000 vehicles in the year of construction or 30,000 vehicles in the design year.

4.D Noise

Noise is defined as unwanted sound. Vehicles generate noise, and designers should work with the noise analyst to evaluate expected noise levels and measures to reduce traffic noise levels through location and design features. Sometimes embankment design and design features may serve to reduce noise levels. Criteria have been developed to analyze anticipated noise levels to determine if additional noise abatement measures should be incorporated into design. Noise

sensitive areas, e.g., residences, businesses, schools, parks, etc., should be noted in the early project stages for both developed and undeveloped lands for which development is planned, designed and programmed. The designer should work with the **Noise and Air Section** of the **Planning and Project Development Division** if noise levels are expected to be a problem.

Noise levels should be considered during design of alignment, cross-section, earthwork balance and right-of-way. Sometimes natural barriers from the terrain may be effective noise barriers. Noise barrier structures should be located outside of the lateral obstacle clearance zone if practicable. Stopping sight distance should be maintained. Some noise barrier designs incorporate concrete safety shapes. Barriers should begin or terminate at least 200 ft. (60.0 m) from the nose of gore areas. Refer to **American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets** (Reference 13.15), Chapter 4, for further information.

4.E Wildlife Issues

Transportation agencies are responsible for recognizing potential conflicts between wildlife and transportation facilities and for minimizing those conflicts during all phases of roadway development. The **Planning and Project Development Division** coordinates wildlife and habitat studies and will notify the **Roadway Design Division** of project-related concerns. The designer should consider the effects of roadway design on wildlife habitat and incorporate appropriate measures in project design.

Direct impacts on wildlife by roadway development stem from the disturbance of essential habitat components such as key forage areas, nesting sites, breeding grounds and essential escape cover. The Migratory Bird Act (<http://www4.law.cornell.edu/uscode/16/ch7.html>) protects nesting bird habitat. Tree removal cannot be done during primary nesting season, (from April 1 through July 15), without a survey to check for nesting activity. If the tree removal activity will disrupt nesting, a permit must be obtained. The contractor shall be responsible for the nesting survey and for obtaining the permit. Wildlife also may be disturbed by interruptions of migration paths and highway mortality. The placement of fencing should take into consideration any restrictions it will have on animal movement. Any use of or modification to water bodies that may impact wildlife will also be included in any environmental documentation, (See Section 4.A).

The **Planning and Project Development Division** provides early project coordination with the **Nebraska Game and Parks Commission** to identify endangered species concerns for use in design, copies of the determination will be provided to the designer. An endangered species is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. If endangered or threatened species are concerns on a project, the **Environmental Permits Unit** will work with the designer to avoid or minimize impacts. If, at a public meeting/hearing or during other design activities, concerns are raised regarding the presence of endangered species, contact the **Environmental Permits Unit** of the **Planning and Project Development Division**.

AASHTO's A Design Guide for Wildlife Protection and Conservation for Transportation Facilities (Reference 13.16) provides additional information, terms and concerns of the biological community.

4.F Social, Economic, and Environmental Impacts

As part of the social, economic and environmental review (SEE) for Class I and Class III projects (See Section 4) the following social impacts are considered:

1. Changes in community or neighborhood identity, such as splitting neighborhoods, isolating ethnic groups, separating residents from community facilities such as police and fire protection, school districts, churches, businesses, etc.
2. Travel patterns, accessibility, transit captives such as elderly, handicapped, non-drivers, pedestrian, bicyclists, etc.
3. Relocation impacts (See Chapter Twelve: Cost Estimating & Funding, Section 4.B.4).
4. Impacts on the handicapped and minorities.
5. Economic impacts both for the region as well as adjacent highway-related and other businesses, etc.

Executive Order 12898 covers Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (2/11/94), (<http://www.hud.gov/offices/fheo/FHLaws/EXO12898.cfm>). FHWA has developed policies and procedures to use in complying with this Executive Order. Any project with Federal funding will require NDOR, through the NEPA process, to identify and address disproportionately high and adverse effects on minority and low-income populations. In design, avoidance, minimization, and/or mitigation must be considered for disproportionately high and adverse effects. Public involvement opportunities must be provided to the affected populations for proper alternative consideration. The **Planning and Project Development Division** will notify the **Roadway Design Division** when Environmental Justice issues must be addressed.

4.G Archeological and Historical Features

Section 106 of the National Historic Preservation Act of 1966 (Reference 13.17), (<http://www.achp.gov/nhpa.html>), requires an investigation be made for possible impacts of transportation projects on historic or archeological resources. A determination is necessary if any historic or archeological resources that are on or may be eligible to be on the National Register of Historic Places will be adversely impacted.

NDOR works with the **State Historic Preservation Officer (SHPO)** to evaluate sites to determine if they should be preserved or if they may be researched only, without the need for preservation. Historic sites may be bridges, buildings, neighborhoods, farmsteads, sites where significant events occurred, etc. If historic sites are present, the designer should coordinate with the **Environmental Documents Unit Supervisor**.

4.H Hazardous Materials

4.H.1 Materials Prohibited or Restricted as Fill Materials

The **U.S. Army Corps of Engineers** has issued generic prohibitions of use of certain materials as fill in waters of the **United States** as defined by the Clean Water Act (33 U.S.C. 1344) (Reference 13.5). The following materials are prohibited or restricted as fill materials in waters of the United States within the regulatory boundaries of the **Omaha District of the Corps of Engineers**:

1. Vehicle bodies, farm machinery and metal junk including appliances, containers and barrels (including plastic barrels).
2. The use of small aggregate, in the form of streambed material, for bank stabilization and erosion control below the ordinary high water mark of a waterbody or wetland when the material to be discharged is removed from a stream or river for such purpose. Small aggregate, from any source, placed below the ordinary high water mark of a waterbody or wetland when the proposed project will be unstable and subject to frequent failure.
3. The use of old or used asphalt as a fill material and the use of asphalt in general for bank stabilization or erosion control.
4. The use of organic debris (properly anchored trees and treetops are excluded).
5. Biodegradable building materials including wood debris, sheetrock, roofing materials, and chemically treated materials subject to leaching when placed in an aquatic environment. The use of clean brick and broken concrete will continue to be allowed on a case-by-case basis. Broken concrete should be free of exposed rebar and old asphalt.
6. Tires shall be prohibited unless placed in the form of a mat or other design and anchored to preclude entering the waterway.

The **Location Studies Unit** of the **Planning and Project Development Division** will obtain proper authorization from the **U.S. Army Corps of Engineers** for any discharge of dredged or fill material into a water of the **United States**.

4.H.2 Guidelines for Handling Petroleum Tanks/Leaks on Construction Projects

The Resource Conservation and Recovery Act (RCRA) (Reference 13.18), (<http://www4.law.cornell.edu/uscode/42/ch82.html>), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (Reference 13.19), (<http://www4.law.cornell.edu/uscode/42/ch103.html>), regulate hazardous waste sites. The locations of permitted and non-regulated hazardous waste sites should be identified.

On federal-aid highway projects, **FHWA** expects early investigation of all potential hazardous waste/petroleum sites to preclude costly delays. An initial site assessment should be done, as early as possible in the project development stages, to identify any known or potential waste site within the project limits.

For projects where no significant excavation is involved and a paper review of the tank sites reveals no problems, **NDOR** will not perform on-site drilling and testing. For projects with major excavation in the vicinity of fuel tanks, site drilling and testing may be required with the results incorporated into the EIS, (See Section 4.A.1).

During the on-site engineering review of projects, the locations of active and inactive fuel stations should be noted. Any stations converted to other uses should be flagged for follow-up. Once preliminary design is begun and the design is roughed out, the designer can request that the **Location Studies Unit** of the **Planning and Project Development Division** make a paper review of any fuel tank locations. The following activities will be included in the paper review:

1. Plans will be checked to see that the tank fill pipes/gas pumps are shown. A fill pipe is usually but not always directly over the tank. Vent pipes are almost always remotely located.
2. Cross-sections will be checked for cuts and fills, presence of storm sewer pipe, longitudinal or cross pipes. Even if the old grade line is matched, excavation may be needed for pavement widening, storm sewer pipes, or modern ditch sections.
3. The amount of right-of-way and its impact on existing tanks will be reviewed.
4. The **Fire Marshall's Office** will be contacted to find out tank registrations, approximate ages and sizes, when the sites were last inspected, and the results of any precision (tightness) testing.
5. The **NDEQ** will be contacted for sites on the active spill/leak list.
6. City Hall and long time residents may be contacted for history.
7. The CERCLA map will also be checked.

Upon completion of this review, the **Location Studies Unit** will write a memo to the **Roadway Design Division** (and **FHWA**, as appropriate, for the EIS) summarizing their findings.

In some cases, contaminated soil is not anticipated. In other cases, where questions remain, on-site drilling and testing may be needed. In those cases, the **Location Studies Unit** of the **Planning and Project Development Division** will request that the **Materials and Research Division** arrange testing. The **Materials and Research Division** will send a report to the **Planning and Project Development Division** which is then forwarded to the **Roadway Design Division** and, if necessary, to **FHWA**.

4.H.3 Guidelines for Handling Contaminated Soils on Highway Right-of-Way

Sometimes unanticipated contaminated soils are encountered during construction activities. **Nebraska Department of Environmental Quality** has issued guidelines for handling petroleum-contaminated soils from an excavation or construction activity (e.g., during a trenching operation). The soils may be temporarily removed within the area of contamination and subsequently redeposited back into the excavation and contaminated area under the following conditions:

1. The placement of underground equipment, such as a storm sewer line, cannot be allowed to act as a conduit for further migration of the contamination.
2. Impervious geological features, such as clay silt, cannot be punctured so as to open a path for contamination to migrate into an aquifer.
3. Cross-contamination of stacked fill material that expands the area of contamination cannot be allowed, i.e., the soil should not be stirred.
4. Migration of contamination from storm runoff due to the stockpiling of consolidated excavated soil cannot be allowed. The material shall be redeposited at the end of the day or be covered with plastic cover until it is redeposited.
5. Inversion of the layers of contamination in the replaced soil is not allowed. The contaminated soil needs to be placed back in the trench at the same layer from which it came.

These **NDEQ** guidelines do not apply to mass grading operations (e.g., cut and fill) in which contaminated soils are encountered. If contaminated soils are found during a mass grading operation, these soils need to be kept separate from the "clean" soils as recommended by **NDEQ**. Special handling will be needed.

5. LIAISON WITH OTHER AGENCIES AND ORGANIZATIONS

5.A Agreements

Intergovernmental agreements outlining the scope and participation of all parties will be executed for projects involving other units of government. The **Agreements Unit** in the **Planning and Project Development Division** prepares all agreements, except relinquishment agreements. Prior to the public hearing, covenant relinquishment agreements are prepared by the **Materials and Research Division** (See the *DPO* (Ref. 13.2), Activity 5400, Clarity Task Code 5434). Final relinquishment agreements are prepared prior to plans submittal to the **Plans, Specifications and Estimates Section (PS&E)**. **Roadway Design** may provide input for exhibits and/or displays which may be needed for the agreements.

5.B Federal Agencies

Ordinarily, **FHWA** is the lead federal agency for **NDOR** contact. However, **NDOR** may also work with the **U.S. Environmental Protection Agency**, **U.S. Army Corps of Engineers**, **U.S. Fish and Wildlife Service**, **National Park Service**, **Federal Emergency Management Agency**, **U.S. Forest Service**, **Bureau of Land Management**, **Bureau of Indian Affairs**, the **Architectural and Transportation Barriers Compliance Board (Access Board)** and other federal agencies. The **Planning and Project Development Division** serves as liaison with these agencies.

5.C Other State Agencies

NDOR works with many state agencies including the **Nebraska State Historical Society**, the **Natural Resource Commission**, the **Game and Parks Commission**, etc. In addition, the **Department of Environmental Quality** issues water quality certification, the **Advisory Council on Historic Preservation** works with **NDOR** on historic site issues, and the **Paleontological and Archaeological Highway Salvage Program** addresses archeological issues.

5.D Local and Regional Agencies

The **Planning and Project Development Division** coordinates with **MPOs** (Metropolitan Planning Organizations) in metropolitan areas, and the **Government Affairs Division** coordinates with city and county governments, natural resource districts, etal.

5.E Public Participation and Input

Federal Policy requires public involvement in the development of transportation plans. The public participates in the planning process through the **State Highway Commission**, the **Board of Public Roads Classifications and Standards** and through other committees, meetings and hearings. In addition, information about transportation plans, projects and programs is disseminated through the public media and through mailings to interested organizations and individuals such as the **Nebraska Highway Coalition**, the **American Automobile Association**, the **Nebraska Motor Carriers Association**, etc.

Types of public meetings that are held by the **Roadway Design Division** are: public information meetings, city officials meetings, pre-hearings, location public hearings, and design public hearings. (See the Design Process Outline, Reference 13.2, **EXHIBIT 'C'**).

Communication between **NDOR** and the public is an important ongoing activity coordinated by the **Public Hearings Officer** in the **Communications Division**. Depending upon the nature of the project, several types of contact may be made during the course of a project.

The **Public Hearings Officer** publishes notices of opportunity for hearings in general circulation newspapers in project areas to provide general information about the proposed projects to the general public and also to provide them the opportunity to submit a written request to **NDOR** to hold a public hearing. If no requests are submitted, **NDOR** may notify **FHWA** that no requests were received and that hearing requirements were thus satisfied.

5.F Consultants

Consultants are hired to assist **NDOR** on various projects. The **Agreements and Consultant Services Section** of the **Planning and Project Development Division** provides liaison with consultants, including:

- Participating in the selection of and negotiation with consultants.
- Maintaining certification records of consultants.
- Reviewing consultant billings.

Engineers who work in the **Consultant Design Units** in the **Roadway Design Division** will be responsible for day to day business contacts with consultants including transmittal of data, progress inspections and meetings as set out in the scope of work. This does not include authorization to change the scope of work for the project, to exceed the agreed upon project cost or to extend the completion date. These authorizations come from the **Agreements Engineer**. If a change in scope of work is necessary, it should be discussed with the **Agreements Engineer** and that office will prepare a supplemental agreement for the additional cost. If a time extension is necessary, the **Agreements Engineer** will ask the consultant to provide a written extension request and will discuss this with the appropriate Division for approval of the time extension.

The **Agreements Engineer** should be informed of design public hearings so he/she can be prepared to have the consultant ready to go on final design. The **Agreements Engineer** will set up the scope of work and be in charge of the negotiations. Following a design public hearing, the negotiations will be completed so the consultant will be ready for final design as soon as approval is received from the **State Highway Commission** and **Governor**.

5.G Railroads

(Map at <http://www.nebraskatransportation.org/maps/misc-maps/railroad.pdf>)

Many roadways in Nebraska are in close proximity to railroads. The roadway designer for any roadway project that is near a railroad (within 300 ft. (100 meters) from the centerline of the nearest track) should inform the **Railroad Liaison Office** in the **Rail and Public Transportation Division** as early as possible. The designer should complete the DR form 95 and forward it with plans to the **Railroad Liaison Office**.

The applicable railroad company will review design issues such as earthwork and drainage near the railroad. Railroad insurance, purchased by the contractor, will be required for work within 50 ft. (15 m) of the centerline of the outside tracks. The roadway designer needs to estimate the percentage of work done in each group of work within the 50 ft. (15 m) limit for insurance purposes. The roadway designer will provide cost estimates for all of these items. If the project is a major project which will involve a viaduct or overpass, the railroad will need to be involved in discussions in the early planning stages. Roadway designers may also initiate safety improvements with improved crossing design and may expand the project by possible consolidation of nearby crossings. See Chapter Chapter Ten: Miscellaneous Design Issues, Section 1 and Chapter Twelve: Cost Estimating & Funding, Section 1.A.5 for further information.

Any changes in design, such as adding a safety section, may change the level of involvement with the railroad. The **Railroad Liaison Office** should be informed of changes of this nature immediately.

6. UTILITIES

6.A Utility Liaison

Highway construction projects frequently require the revision and relocation of utilities. The **Utilities Unit** of the **Planning and Project Development Division** is responsible for providing liaison with public and privately owned utilities. This includes:

- Reviewing plans and performing field inspections to determine utility ownership and identify potential conflicts.
- Providing utility input to help determine the most satisfactory and economical location or design adjustments versus utility adjustments.
- Requesting input from utility companies and reviewing and approving their plans, specifications and estimates.
- Coordinating with municipalities for the rehabilitation of their owned and operated utilities on highway projects.
- Reviewing utility billings and submitting them for payment and subsequent audit review.

It is the responsibility of the roadway designer to work with the **Utilities Unit** in identifying and resolving utility conflicts. As soon as the designer identifies a possible conflict, he/she should meet with the **Utilities Unit** to determine the best rehabilitation procedure. If utility relocation is required, the **Utilities Unit** will notify the utility owner.

The **Utilities Unit** submits preliminary design plans, received from the roadway designer, to the utility owners at the time of plan-in-hand, for the identification of any utilities not shown on the plans. When the **Utilities Unit** sends plans to the utility owners on a project, they will furnish the **Roadway Design Division** with a memo indicating when and to whom the plans were sent. At the plan-in-hand it is important that the roadway designer notes any utilities not located on the plans and identifies any potential conflicts. As right-of-way appraisal plans are nearing completion, the **Utilities Unit** sends right-of-way and limits of construction plans to the utility owners for preparing utility rehabilitation plans and cost estimates. Throughout the development of the project it is very important that the roadway designer notifies the **Utility Coordinator** whenever design changes occur. This will enable proper coordination with the affected utility owners (See "Utility Rehabilitation Negotiations", Reference 13.20). Failure to inform the **Utilities Unit** of design changes may result in a utility relocating their facility and then being informed they will have to move again because they are still in conflict with the proposed construction. This could result in a delay to the contractor and additional expense to the state.

6.B Utility Rehabilitation Plan Review

The **Utilities Unit** will submit utility rehabilitation plans, as the utility owners return them, to the **Roadway Design Unit Head** for review unless the utility work is minor. The **Utilities Coordinator** will have previously reviewed the plans and will indicate any comments from his/her review. The **Roadway Design Unit Head** and/or designer will review the plans and return them to the **Utilities Coordinator** with any comments regarding the plans on the transmittal letter received from utilities.

6.C City/County Utility Cost Reimbursement

Responsibility for determining cost sharing to relocate city utilities is also a joint effort by both the **Utilities Unit** and the **Roadway Design Division**. However, any financial commitment to a city for a utility relocation shall be submitted by the **Utilities Unit** in agreement form. Reimbursable costs represent the eligible non-betterment expenditures of the utility required to install, revise, and/or relocate utilities. Municipally owned utility facility non-betterment relocation costs are 100% reimbursable whether they are on public or private right-of-way inside the corporate limits. Outside the corporate limits the eligible reimbursement is based on the right-of-way/private easement criteria.

Not all utility relocation costs are reimbursable. Utilities located within existing state right-of-way that must be moved for a project are not eligible for reimbursement and the utility owner must bear the cost of the relocation expense. If a utility line is outside of existing state right-of-way and additional right-of-way is to be acquired, necessitating relocation of the utility, the relocation expense is reimbursable. The utility may stay within the new right-of-way but must obtain a permit to occupy state right-of-way. The **Right-of-Way Division** maintains a computerized listing of all utility permits by utility type. Designers may consult this listing to assist in determining utility locations. To access this listing in the CICS1 program:

1. Click on the "Mainframe Sessions" icon on your computer desktop.
2. Enter CICS1 by entering CI and your DR# and password.
3. Select 2 – "Dept. of Roads".
4. Select 5 – "IHI Integrated Highway Inventory System".
5. Select 22 – "Use and Occupancy Permits".
6. Select 2 – "Query".
7. Select 3 – "Use and Occupancy Permit by Hwy/Cnty/Type/Status Query".
8. Enter the highway # and a reference post range (county, type and status may be left blank).

On all projects, especially federal-aid projects not on the state highway system, the **District Project Manager** shall notify the **Roadway Design Division** or **Secondary Roads Unit** and the proper city or county officials (if necessary) if utility work, not originally anticipated, is required during construction. If the utility work is eligible for reimbursement and the **City/County** wants federal aid, the **City/County** should contact the **Urban Design Engineer** or the **Government Affairs Manager**. The **District Project Manager** will coordinate with the utility involved to expedite the utility work to minimize delays to the construction contractor.

6.D Utility Accommodation on State Highway Right-of-Way

Utilities are permitted to occupy public highway right-of-way at the discretion of **NDOR**. On state highways, **NDOR** is responsible for regulating utility right-of-way occupancy. All requests to place utilities within state right-of-way are submitted to the **Utilities Unit**. See a [Policy for Accommodating Utilities on State Highway Right-of-Way](http://www.nebraskatransportation.org/projdev/docs/utilaccom.pdf), (Reference 13.21), (<http://www.nebraskatransportation.org/projdev/docs/utilaccom.pdf>) for additional information.

Any underground utility facility that crosses a drainage course within the right-of-way must be installed a minimum of 4 ft. (1.2 m) below the flow line of the drainage structure or drainage course, whichever is lower. Underground utility lines that cannot be installed with minimum

cover due to natural conditions or conflict with other utilities may be required to protect the lines with suitable bridging, concrete slab, casing or other appropriate means. Utility route and line markers shall be placed on the right-of-way line identifying the name, address, and telephone number of the utility owner in case of emergency.

6.D.1 Aerial Lines

Aerial electrical power and communication lines constructed within the public right-of-way must be constructed in accordance with the current National Electric Safety Code (Reference 13.22). The alignment of the overhead lines shall be as near the right-of-way line and parallel to the highway centerline as is practicable, ignoring minor irregularities in the right-of-way line. Joint use of utility poles is encouraged to avoid placing additional poles within the right-of-way. All poles and anchors shall conform to the following horizontal clearances:

1. In rural areas, all rigid poles and anchors must be located beyond lateral obstacle clearance, right-of-way permitting, (See Nebraska Minimum Design Standards, Reference 13.23), (<http://www.transportation.nebraska.gov/gov-aff/gov-aff-design-standards.html>). If sufficient right-of-way is not available, **NDOR** may require the use of breakaway design or a regrading of the right-of-way.
2. On urban or suburban highways with 45 mph (70 km/h) or lower speed limits and rural cross-sections, all rigid poles and anchors shall be located at least 15 ft. (4.5 m) from the edge of the traveled way, preferably near the right-of-way line.
3. On city, town and urban highways with curbed sections, rigid poles and anchors may be located at the back of the sidewalk or at a minimum of 6 ft. (1.8 m) back of the curb where feasible.
4. Exceptions to these clearances may be made where curbside parking is permitted or where poles and anchors can be placed at locations behind guardrails, beyond deep ditches or on top of high banks, or at other similar locations that would not present additional hazards to the traveling public.

Poles located closer than the limits shown above should contain breakaway bases or other breakaway characteristics to permit the pole to collapse upon sharp impact or should be shielded. If poles are in urban conditions with high pedestrian traffic, breakaway bases should not be used (See the Roadside Design Guide, Reference 13.24).

The following vertical clearances for utilities above the traveled way are required:

1. Aerial lines with 750 volts or less shall have a minimum clearance of 18 ft. (4.5 m) above the traveled way (the minimum clearance shall be measured from the high point of the roadway, including the turf shoulders).
2. Installation of aerial lines within and crossing public highway right-of-way and having 750 or more volts of electrical power shall comply with the regulations in Reference 12.6 for vertical clearances and conductor sizes.

Longitudinal utility occupancy inside the fenced right-of-way of an interstate or freeway is considered only as a "last resort" when no other feasible route can be followed by the utility facility or when such utility facility exclusively serves a highway facility. Specific details for each installation will be determined at the time the utility occupancy is authorized.

New aerial installations should be avoided at scenic locations and will be considered only if installation in alternative locations is unusually difficult and unreasonably costly, where installing the line underground is not technically or economically feasible, or if the installation can be made in such a manner that adequate attention to the visual qualities of the area will be addressed.

6.D.2 Underground Electrical Power and Communication Lines

Underground electrical power and communication lines constructed within highway right-of-way shall conform to the current electrical safety regulations (National Electric Safety Code, Reference 13.22) and the current Nebraska Standard Specifications for Highway Construction (Reference 13.25), (<http://www.nebraskatransportation.org/ref-man/specbook-2007.pdf>)

- In villages and cities, the preferred location of parallel underground electrical power and communication lines installation is near the right-of-way line. They may be installed under the shoulder, however this may cause possible conflicts with future construction.
- On highways in villages and cities without sufficient right-of-way or a suitable location for underground lines outside of the traveled way, lines may be placed under the surfacing if it is determined to be in the best interest of the traveling public.
- Installations of underground electrical power and communication lines may occupy a position near the toe of the fill slope or the top of back slope if insufficient right-of-way exists or if topography prohibits placement near the right-of-way line. **NDOR** shall designate the specific location of such facilities and any additional conditions concerning the right-of-way occupancy.
- All manholes shall be placed outside of the traveled way where possible, and shall not protrude more than 4 in. (102 mm) above the surrounding ground or shall comply with the horizontal clearances listed in Section 6.D.1.
- Underground electrical power and communication lines within right-of-way with large cut and fill sections shall be placed at or near the toe of the fill or top of back slope.
- Installation of underground electrical power and communication lines under the traveled portion of an existing highway must be performed by jacking, tunneling or dry boring from the toe of the fill slope to the toe of the opposite fill slope.
- The utility shall be placed at a minimum depth of 4 ft. (1.2 m) below the bottom elevation of the parallel road ditch or, in the absence of ditches, the minimum depth of cover of 3 ft. (0.9 m) below the elevation of the natural ground. Additional cover may be required to protect the traveling public.
- In areas with scenic designation, new underground utility installations may be permitted where they do not require extensive removal or alteration of trees or other natural features visible to the highway user or do not impair the visual quality of the lands being traversed.

6.D.3 Pipelines

Pipelines include sewer, water, gas, petroleum products, chemicals and irrigation lines. Approved materials for the construction of pipelines shall include cast iron, ductile iron, steel pipe with protective coating, vitrified clay, concrete, specially treated concrete, composite pipe (truss pipe), copper pipe and flexible pipe with some restrictions. Pipeline and casing construction within highway right-of-way shall conform to current appropriate standards.

- The preferred location of pipeline installation parallel to the highway is near the right-of-way line.
- Installations within villages and cities may require the use of shoulders or driving lanes and should take into consideration the provisions discussed for underground electrical and communication lines in Section 6.D.2.
- Where insufficient right-of-way or topographic features prevent pipeline installation near the right-of-way line, pipelines may be installed near the toe of the fill or top of back slope at locations designated by **NDOR**.
- Pipelines located within right-of-way with large cut or fill sections shall be placed at or near the toe of the fill or top of back slope.
- All manholes and shutoffs shall be placed outside of the traveled way where possible, and shall not protrude more than 4 in. (102 mm) above the surrounding ground or shall comply with the horizontal clearances listed in Section 6.D.1.
- The minimum depth of earth cover over pipelines shall be 3 ft. (0.9 m) unless polyvinyl chloride (PVC) pipe is used. PVC pipelines carrying liquids shall be installed a minimum depth of 5 ft. (1.5 m). PVC pipelines carrying natural gas shall be installed a minimum depth of 3 ft. (0.9 m), however additional cover may be required.
- Backfill of pipeline trenches shall conform to the standard specifications (Nebraska Specifications for Highway Construction, Reference 13.25).
- All pipelines attached to structures shall be placed in a neat manner beneath the structure's floor and inside of the outer girders or beams or in cells specifically designed for the installation.

6.D.4 Water Mains

Water mains shall be laid at least 10 ft. (3 m) horizontally from any existing or proposed storm sewer, sanitary sewer, or sanitary sewer force main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 ft. (3 m) separation, the **Nebr. Dept. of Health** may allow deviation on a case-by-case basis, if supported by data from the designer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer or at such an elevation that the bottom of the water main is at least 18 in. (0.45 m) above the top of the sewer.

Water mains crossing storm sewers, sanitary sewers, or sanitary sewer force mains shall be laid to provide a minimum vertical distance of 18 in. (0.45 m) between the outside of the water main and the outside of the sewer. This shall be the case whether the water main is above or below the sewer. At crossings, one full length of water pipe shall be located so that both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.

The **Nebr. Dept. of Health** must specifically approve any variance from the requirements of these instructions when it is impossible to obtain the specified separation distances. Where sewers are being installed and these instructions cannot be met, the sewer materials shall be water main pipe or equivalent and shall be pressure tested to ensure water tightness.

Water pipe shall not pass through or come into contact with any part of a sewer manhole. For additional information see Recommended Standards for Water Works, (Reference 13.26), (<http://www.leafocean.com/test/10statepreface.html>).

7. REFERENCES

- 13.1 National Environmental Policy Act of 1969: 42 U.S.C. 4321-4347, 23 CFR 771 Environmental Impact and Related Procedures, 40 CFR 1500-1508 Council on Environmental Quality Regulations.
(http://ceq.hss.doe.gov/laws_and_executive_orders/the_nepa_statute.html)
- 13.2 Nebraska Department of Roads, Design Process Outline, Current Edition.
(<http://www.nebraskatransportation.org/roadway-design/downloads.htm>)
- 13.3 Section 4(f), U.S. Department of Transportation Act of 1966.
(<http://environment.fhwa.dot.gov/4f/index.asp>)
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