ROADWAY DESIGN UNIT
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✓MOORE ✓Taylor ✓THOMAS
✓MUMFORD ✓WALLS
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✓REVIEW/DISCUSS WITH_____

MICHAEL F. EASLEY
GOVERNOR

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

HIGHWAY DESIGN BRANCH
RDY STR GEO HYD L&S PH
STF EXE SEC REC
JUL 14 2005 AM
FYI
✓Take Appropriate Action
Prepare Reply for

LYNDO TIPPETT
SECRETARY

NEW FILE: PLAN & PERM REVIEW "BRI

July 12, 2005

MEMO TO: Debbie Barbour, P.E., Director of Preconstruction
Steve DeWitt, P.E., Director of Construction
Steve Varnedoe, P.E., Chief Engineer of Operations

FROM: Len Sanderson, P.E. L Sanderson
State Highway Administrator

SUBJECT: Bridge Replacement Projects – Plan & Permit Review Process

On December 3, 2004, a change in the plan and permit review process for widening and new location projects was distributed throughout the Department. As a follow-up, the bridge replacement plan and permit review process has been developed with a goal of improving the Department's delivery of the bridge replacement program. The attached process details the major steps in the planning and design process for bridge replacement projects. "Final" designs are provided earlier in the attached process so that permit applications can be sent at an earlier time and the issuance of the permits can be removed from the project's critical path. Also, the attached process outlines the coordination that must occur to ensure the project permit drawings match the project's "final" design plans.

Please proceed with implementation of this process on all bridge replacement projects beginning with the projects to be scoped later this summer. Also, portions of this process change can be implemented for projects currently under development. The stage where the project is at within the process will determine the portion of the process to be followed. If you have any questions regarding this information, please contact Art McMillan or Phil Harris.

LAS/rda

Attachment

cc: w/attachment

Roger Sheats
Lacy Love, P.E.
Bill Rosser, P.E.
Art McMillan, P.E.
John Williamson, Jr.
Greg Thorpe, Ph.D.

Division Engineers
Calvin Leggett, P.E.
Mike Bruff, P.E.
Don Lee
Phil Harris
Bill Martin, P.E.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATOR
1536 MAIL SERVICE CENTER
RALEIGH NC 27699-1536

TELEPHONE: 919-733-7384
FAX: 919-733-9428

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Plan & Permit Review Process for Bridge Replacement Projects

Over the past several years there has been an increased effort to replace the bridges across the state using the least intrusive methods possible. This usually means replacing the bridge in its' existing location and elevation while maintaining traffic utilizing an off-site detour route. The following process change is meant to capture the majority of bridge replacement projects, which are typically short in length and narrow in scope. It is assumed that the environmental documentation will be handled with a categorical exclusion (CE), and in many cases with a programmatic CE (PCE), and the permit required will be a Nationwide Permit. In situations when this is not the case and a bridge replacement project requires an Individual Permit (IP) or a CAMA Major Permit, the bridge replacement process will follow that which is outlined in Process III of Merger '01.

Design plans and / or recommendations from Roadway, Structures, Geotechnical, Hydraulics, Roadside, Traffic Control, Utilities, Traffic Engineering, and the Division are an integral part of the permit drawings used for the Department's permit application submittal to the U.S. Army Corps of Engineers (USACE) and Division of Water Quality (DWQ). In order to improve the accuracy and coordination between the permit drawings and roadway design plans, final design plans are needed earlier in the process. In other words, there needs to be a time when design changes that occur beyond that point are the extreme and not the norm. To allow this to happen, the following changes to the project development process are recommended.

48 months prior to R/W

- **Request Uncontrolled Aerial Photography (Digital Mosaic)**

  This uncontrolled aerial photography (Digital Mosaic) is requested by Project Development & Environmental Analysis (PDEA) to allow the Natural Environment Unit (NEU) sufficient time to prepare the Natural Resource Technical Reports (NRTR). It is also used by PDEA and Roadway Design to mark the study area ("bubble") which outlines the limits for the shell mapping request.

42 months prior to R/W

- **Receive Uncontrolled Aerial Photography (Digital Mosaic)**

  Photogrammetry submits the aerial photography to PDEA and the Roadway Design Unit.

36 months prior to R/W

- **"Start Of Study"** - *begin project data collection*

  PDEA will initiate the project data collection process and they will provide the Hydraulics Unit with a list of projects that need to be scoped.

- **Request Shell Mapping and Begin NRTR**

  Coinciding with the "Start of Study" and also with the beginning of Photogrammetry's flying season (preferably between October thru December), PDEA will provide Photogrammetry with a list of bridge projects to request shell mapping. The Natural Environment Unit (NEU) will also be provided with the same list so that they can begin the Natural Resource Technical Reports (NRTR), including the mapping of wetlands and streams.

  Note – if the location of the project dictates that certain studies for the NRTR need to be started sooner to allow the project to stay on schedule, some portions of the NRTR work can start 5 to 6 months sooner upon receipt of the uncontrolled aerial photography (Digital Mosaic).

- **Planning by Private Engineering Firm (PEF)**

  If a PEF is to be utilized for the planning document & NRTR preparation, they should be under contract by this time.

30 months prior to R/W

- **Submittal of NRTR**

  NEU will complete the NRTR and submit to PDEA (Planning) and the Hydraulics Unit. Electronic mapping of wetlands and streams will be submitted to the Roadway Design and Hydraulics Units.

24 months prior to R/W

- **Receive Shell Mapping ~~and Digital Mosaic~~**

  Photogrammetry delivers shell mapping ~~and digital mosaic~~ to Roadway Design and PDEA.

- **Preliminary Hydraulic Recommendation Letter**

  The Hydraulics Unit sends their preliminary hydraulic recommendation letter to the Roadway Design Unit and cc's PDEA.

- **Roadway Design Begins Preliminary Design of Alternatives**

  Upon receipt of the Hydraulics' recommendation letter and shell mapping, Roadway Design can begin their preliminary designs of the obvious alternatives; i.e. (1) replace in-place with off-site detour, (2) replace utilizing slight re-alignment, and / or (3) replace in-place with on-site detour. The first two alternatives listed are the more desirable options because on-site detours are typically discouraged. Roadway Design, PDEA, Hydraulics, and Division should coordinate their efforts to ensure that the proper alternatives are investigated.

22 months prior to R/W

- **Right of Way & Final Plan Preparation by PEF**

  If a PEF is to be utilized for the right of way and final plan preparation, the contract work should begin at this time.

21 months prior to R/W

- **Preliminary Designs of Alternatives by Roadway Design are completed**

  Once Roadway Design has completed the preliminary designs of the alternatives, a **request for final surveys** can be made. The survey request "footprint" should be large enough to include all the alternatives studied.

  At the time the survey request is sent out, a request should also be sent to the Geotechnical Unit for **preliminary subsurface information.** This will typically be just a few soil borings at the location of the proposed bridge. Obtaining this information prior to the scoping meeting will aid the overall discussion of an alternative selection.

  The Roadway Design Unit will prepare both of these requests.

18 months prior to R/W

- **Scoping / Alternative Selection Meeting**

  The main purpose of the scoping meeting will be to select a preferred alternative. If a new alternative is introduced during the scoping, it should be discussed to see if it merits investigation.

  In addition to alternative selection, the scoping meeting will be the forum to discuss on-site vs. off-site detour routes. A Division representative is encouraged to attend or submit comments / recommendations regarding this issue. If the Division requests an on-site detour, an off-site detour alternative with an accelerated construction schedule should also be studied, if practical.

  During the scoping meeting, the appropriate attendees should determine if the project is a good candidate to be handled by the Bridge Maintenance Unit under a bridge purchase order contract (BPOC) and if the planning document can be prepared as a programmatic CE (PCE).

- **Receipt of final surveys**

  Around the time the scoping meeting is held Roadway Design should be receiving final surveys from the Location & Surveys Unit.

17 months prior to R/W

- **FOR BPOC PROJECTS ONLY - Design info submitted to PDEA**

  If the project is determined to be a BPOC, Roadway Design should submit their preliminary design and construction cost estimate to PDEA for preparation of the PCE.

16 months prior to R/W

- **"Green Sheet" commitments**

  PDEA submits preliminary "Green Sheet" commitments to the Roadway Design Unit, Hydraulics Unit, Structure Design Unit, the Division, NEU, and the Human Environment Unit (HEU).

- **Public Involvement**

  If a public hearing or citizens' informational workshop is needed, it should be held around this time. Typically, this is rare for bridge replacement projects.

- **Roadway Design submits design to Hydraulics Unit**

  The Roadway Design prepares design using final survey information and submits plans to the Hydraulics Unit. At this same time, Roadway Design will also prepare and submit a request for roadway subsurface information from the Geotechnical Unit.

- **Structure Recommendations plans**

  The Roadway Design Unit submits structure recommendation plans to the Structure Design Unit.

- **Request for Final Pavement Design**

  Roadway Design Unit submits request for final pavement design to the Pavement Management Unit.

- **FOR BPOC PROJECTS ONLY - Review of draft PCE and transfer of data to BMU**

  On BPOC projects, PDEA will circulate the draft PCE for review and comments. Upon review of the draft PCE, Roadway Design will transfer the CADD preliminary design files and copies of pertinent project documents to the Bridge Maintenance Unit (BMU). Roadway Design should retain some information on the project in the event unforeseen design issues arise that need addressing, i.e. Section 7 issues, FHWA comments, etc.

14 months prior to R/W

- **Submittal of Draft Bridge Span Layout**

  The Hydraulics Unit submits a draft bridge span layout to the Structure Design Unit and the Geotechnical Unit. Structure Design will coordinate with the Bridge Construction Engineers and the Division Construction Engineers for recommendations regarding constructability issues.

- **Design info submitted to PDEA**

  Roadway Design submits design and construction cost estimate to PDEA.

- **FOR BPOC PROJECTS ONLY - PCE completed by PDEA**

  The PCE is finalized by PDEA.

12 months prior to R/W

- **Final Drainage Design Complete**

  The Hydraulics Unit submits both the drainage recommendations for inclusion into Roadway Design's plans and the bridge / culvert survey reports to the Structure Design Unit, the Roadway Design Unit, the Geotechnical Unit, and the Division Construction Engineer (DCE).

11 months prior to R/W

- **Preliminary Bridge General Drawings**

  Structure Design completes preliminary bridge general drawings and submits request for Geotechnical Unit to begin structure subsurface investigation.

- **Submittal of Roadway Subsurface Recommendations**

  Geotechnical Unit submits completed roadway subsurface recommendations to the Roadway Design Unit.

9 months prior to R/W

- **Categorical Exclusion (CE) Document Completed by PDEA**

6 months prior to R/W

- **Geotech Completes Structure Foundation Investigation**

  The Geotechnical Unit completes their structure foundation investigation and they submit their recommendations to the Structure Design Unit. Structure Design will coordinate with the Bridge Construction Engineers and the Division Construction Engineers for recommendations regarding the structure foundation.

- **Establish Date, Time, and Place for CFI**

  The Roadway Design Unit will contact the DCE to establish the date, time, and place for the CFI. This will help ensure that the field inspection is held in a timely fashion and avoid scheduling conflicts with the DCE.

4 months prior to R/W

- **Plans Distributed for CFI**

  The Roadway Design Unit will distribute the roadway plans to the appropriate units (just as it is being done in the current process).

  Roadway Design prepares or gathers the following items for submittal to the DCE:

  1. Roadway Design plans
  2. Cover letter with date, time, & location of field inspection
  3. "Green Sheet" commitments
  4. Field Inspection questions
  5. Preliminary bridge general drawings
  6. Work bridge or causeway recommendations
  7. Foundation recommendations

  The Division Construction Engineer (DCE), the Bridge Construction Engineer (BCE), the Roadway Construction Engineer (RCE), and the Division Environmental Officer (DEO) should conduct a detail review of the plans prior to the CFI.

  If necessary, a special on site meeting should be held between Structure Design, Hydraulics, the BCE, and the DCE to discuss and determine bridge access and removal details. The Structure Design Project Engineer should take the lead in setting up this meeting and schedule it such that both the BCE and DCE have no other scheduling conflicts. Ideally, this meeting should be held just prior to or the day of the CFI.

- **Location & Design Approval Letter**

  The Human Environment Unit (HEU) will verify that the design on the plans matches the planning document (typically a CE or a PCE), the planning document has been completed, and there has been adequate public involvement. Upon verification, HEU will prepare the L&D Approval Letter for the State Highway Design Engineer's signature. This letter is needed before obtaining right of way authorization.

3 months prior to R/W

- **Combined Field Inspection Held**

  The combined field inspection will be the **final** opportunity to discuss constructability issues prior to preparation of the permit application package. The Bridge Construction and Roadway Construction Engineer (or one of their representatives) should be in attendance. The NEU Permit Specialist should also be invited.

  During the combined field inspection, Division, Structure Design, and Roadside Environmental need to finalize the following constructability issues:

1. Construction method of the proposed bridge, such as top down construction, use of a temporary bridge, causeways, etc. and any needed temporary easements.
2. Method of removing the superstructure and substructure on the existing bridge and any needed temporary easements.
3. Construction sequence of box culverts, location of diversion channels, and any needed temporary easements for their tie-ins to the streams.
4. Constructability issues with cross pipes such as bury depths, diversion channels, and any temporary easements.

At this stage of the project, the Roadway Design Project Engineer, the Structure Design Project Engineer, the Hydraulic Design Project Engineer, and the DCE should have enough information to make the determination whether or not the project should be withheld from the 13 month let list.

1 ½ to 2 months prior to R/W

- **Request for R/W Authorization submitted to the B.O.T**

  The cutoff date to get a project on the B.O.T agenda is roughly one month prior to the B.O.T meeting. The B.O.T. meetings are typically at the beginning of each month. Plan submittals to the Right of Way Branch occur on the 3rd Friday of each month. The goal is to have obtained B.O.T. approval for the R/W Authorization prior to the Right of Way Branch receiving the plans. Upon receipt of plans, they can begin work immediately.

- **Bridge construction details - Access and Removal**

  The Structure Design Unit will provide to the Hydraulics Unit the details for (1) temporary access for construction of the proposed bridge and (2) removal of the existing bridge.

0 months prior to R/W / 12 months prior to Letting

- ROADWAY DESIGN PLANS ARE SUBMITTED TO THE RIGHT OF WAY BRANCH

11 months prior to Letting

- **Begin permit application / plan consistency review process**

  NEU will request final permit drawings and half-size roadway plans from the Hydraulics Unit and the Roadway Design Unit, and the utility permitting plans from Project Services Utility Section. They will also request structure impact data from the Structure Design Unit.

  After the Hydraulics Unit and the Roadway Design Unit receives a request for the final permit drawings and half-size plans, Hydraulics will submit electronic copies of the permit drawings and impact summaries to the Roadway Design Unit for a consistency review.

10 months prior to Letting

- **Final permit drawings submitted to NEU**

  After the consistency review, the Roadway Design Unit sends a hard copy half-size set of roadway construction plans to the Hydraulics Unit. Upon receipt of the roadway plans, the Hydraulics Unit will submit them along with the final permit drawings to NEU.

  At this point, **no changes** should occur on the roadway construction plans that will affect the environmentally sensitive areas (ESA).

- **Utility permitting plans submitted to NEU**

  Project Services Utility Section will provide plans to NEU.

  At this point, **no changes** should occur beyond the footprint of the proposed utility corridor that will affect the ESAs as shown on the utility permitting plans.

- **Structure impact data submitted to NEU**

  The Structure Design Unit will submit the structure impact data to NEU.

SPECIAL NOTE

After the permit drawings, roadway plans, and utility permitting plans are submitted to NEU, any requests that affect the permit drawings should be minimized. If it is necessary to revise the design and it affects the permit drawings, the requesting party will be required to submit a schedule change if the changes require a movement in the proposed letting date. The schedule change should include an explanation of the need for the design change in the ESA. Also, plan changes should be coordinated with the Utility sections to avoid further impacts that could affect the ESAs.

8 ½ months prior to Letting

- **Draft permit application circulated for internal review**

  NEU will complete the draft permit application and submit to the following units to ensure completeness and accuracy: Hydraulics, Roadway Design, Structure Design, Geotechnical, Utilities Coordination, Project Services Utilities Section, Roadside Environmental, Division, and Construction. (All comments should be submitted to NEU within two weeks of receipt of the draft permit application.)

7 months prior to Letting

- **Permit Applications Submitted to Agencies**

  After NEU has reviewed and resolved all comments, they will submit the final permit application to the USACE and DWQ.

14 weeks prior to Letting

- **Plans turned in for Letting**

10 weeks (2 ½ months) prior to Letting

- **Permits received by NEU**

7 weeks prior to Letting

- **Let List finalized and permits received by Project Services Contract Office.**

Letting

PLAN / PERMIT PROCESS FLOW CHART FOR BRIDGE REPLACEMENT PROJECTS

MONTHS PRIOR TO R/W	OLD BARCHART CODES	MILESTONE	RESPONSIBLE GROUP
48			
		Request uncontrolled aerial photography (Digital Mosaic)	PDEA
42			
		PDEA and Roadway Design receive uncontrolled aerial photography (Digital Mosaic) of bridge location	PHOTO
		For PEF Projects *- RFP for bridge group planning document preparation submitted for advertisement*	PDEA
36			
		"Start of Study" - begin project data collection process	PDEA
		Provide Hydraulics with list of projects to be scoped	PDEA
	TSPS	Request shell mapping	PDEA
		Start of NRTR Report, including mapping of wetlands and streams	NEU
		For PEF Projects *- Private Engineering firm should be under contract for planning document & NRTR preparation*	PDEA
30			
		NEU submits NRTR to PDEA (Planning) & Hydraulics	NEU
		Electronic mapping of wetland & streams submitted to Roadway Design & Hydraulics	NEU
24			
	FSPS	Photogrammetry delivers shell mapping ~~& digital mosaic~~ to Roadway Design & PDEA	PHOTO
		Preliminary Hydraulics Recommendations letter sent to Roadway Design with cc's to PDEA	HYDRAULICS
		Begin Preliminary Designs of Alternatives	ROADWAY

PLAN / PERMIT PROCESS FLOW CHART FOR BRIDGE REPLACEMENT PROJECTS

22		***For PEF Projects*** *- begin process of preparing PEFs contract for R/W & Final plan preparation*	ROADWAY - CONSULTANT COORD.
21			
		Preliminary Designs of Alternatives completed	ROADWAY
	TLOC	Final Survey Request Submitted to Location & Surveys	ROADWAY
		Request Geotechnical Unit obtain preliminary subsurface information in general location of structure	ROADWAY
18			
		Scoping / Alternative Selection Meeting	PDEA / ROADWAY
		BPOC - determine if project is a good candidate for BMU	PDEA / ROADWAY/BMU
	FLOC	Final Surveys submitted to Roadway Design	LOC. & SURVEYS
		For PEF Projects *- PEF's contract for R/W & Final plan preparation should executed and approved*	ROADWAY - CONSULTANT COORD.
17			
		FOR BPOC PROJECTS ONLY - submit preliminary design and construction cost estimate to PDEA	ROADWAY
16		Preliminary "Green Sheet" commitments sent to Roadway Design, Hydraulics, Structure Design, Division, HEU, & NEU	PDEA
	CIW	Public Involvement - citizens' informational workshop or public hearing (not typical on bridge replacements)	PDEA
		FOR BPOC PROJECTS ONLY - distribute draft PCE for review / transfer design data to BMU	PDEA / ROADWAY
	THYD	Design plans submitted to Hydraulics Unit	ROADWAY
	SREC	Structure Recommendation Plans submitted to Structure Design Unit	ROADWAY
		Request roadway subsurface information from Geotech	ROADWAY
		Final Pavement Design request sent to Pavement Management	ROADWAY

PLAN / PERMIT PROCESS FLOW CHART FOR BRIDGE REPLACEMENT PROJECTS

14		Draft Bridge Span Layout submitted to Structure Design & Geotech.	HYDRAULICS
		Coordinate with Bridge Construction Engineer and the DCE concerning bridge span layout	STRUCTURES
	PDS	Design & construction cost estimate submitted to PDEA	ROADWAY
		FOR BPOC PROJECTS ONLY - PCE completed	PDEA
12			
	FHYD	Final drainage designs submitted to Roadway Design	HYDRAULICS
		Bridge / Culvert Survey Reports submitted to Structure Design, Roadway Design, Geotech, & the DCE	HYDRAULICS
11			
		Preliminary Bridge General Drawings completed	STRUCTURES
		Request final structure subsurface investigation from Geotech	STRUCTURES
		Roadway subsurface information submitted to Roadway Design	GEOTECH
9			
	CE	Planning Document completed	PDEA
6			
		Roadway Design calls the DCE to set up the date, time, & place for the CFI	ROADWAY
		Structure foundation recommendations sent to Structure Design	GEOTECH
		Coordinate with the BCE and the DCE concerning structure foundation	STRUCTURES

PLAN / PERMIT PROCESS FLOW CHART FOR BRIDGE REPLACEMENT PROJECTS

4		Plans distributed for CFI	ROADWAY
		On site meeting between Structures, Hydraulics, BCE, & DCE to discuss access / removal details (if needed)	STRUCTURES
		Location & Design Approval letter sent to State Highway Design Engineer for signature	HEU
3	CFI	Hold Combined Field Inspection	ROADWAY / DCE
1.5 to 2			
		Request for R/W authorization submitted to BOT	PROG DEV
		Hydraulics provided final details for temporary access and removal of existing bridge	STRUCTURES
0 months prior to R/W / 12 months prior to letting	R/W	Submit plans to Right of Way Branch	ROADWAY

PLAN / PERMIT PROCESS FLOW CHART FOR BRIDGE REPLACEMENT PROJECTS

MONTHS PRIOR TO LET		MILESTONE	RESPONSIBLE GROUP
11			
		Request is made for final permit drawings & 1/2 size plans from Hydraulics and Roadway	NEU
		Request is made for structure impact data from Structure Design Unit	NEU
		Request is made for utility permitting plans from Project Services Utility Section	NEU
		Roadway Design and Hydraulics begin plan / permit consistency review	ROADWAY, HYDRAULICS
10			
		After plan / permit consistency review between Hydraulics & Roadway, 1/2 size plans & permit drawings are sent to NEU	HYDRAULICS
		Structure impact data submitted to NEU	STRUCTURES
		Utility permitting plans provided to NEU	PROJECT SERVICES UTILITY SECTION
8 1/2		Draft permit application is circulated for internal review to Hydraulics, Roadway, Structures, Geotech, Utilities Coord., PS Utilities, Roadside Env., Division, & Construction (**Note** - comments should be submitted to NEU within **2 weeks** of receipt of the draft permit application)	NEU
7		Permit Application submitted to Agencies (USACE & DWQ)	NEU
14 weeks		Plans turned into Project Services Contract Office for letting	ROADWAY & OTHERS
10 weeks (2 1/2 mo.)		Permits received by NEU	NEU
7 weeks		Let List finalized and permits received by Project Services Contract Office	PROJECT SERVICES CONTRACT OFFICE
0	LET	Project Letting	PROJECT SERVICES CONTRACT OFFICE