

# **MODIFICATION AND AMENDMENT OF ENVIRONMENTAL PERMITS ON DESIGN-BUILD PROJECTS**

*Requested by:*

American Association of State Highway  
and Transportation Officials (AASHTO)

Standing Committee on Environment

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## Modification and Amendment of Environmental Permits on Design-Build Projects

### 1.0 Introduction

With increasing population across the United States, a perpetual need for infrastructure improvements, and a limited budget for such improvements, state transportation agencies have turned to alternative methods to deliver the much needed improvements to the traveling public. In 1990, the Federal Highway Administration (FHWA) established Special Experimental Project Number 14 (SEP-14) that enabled state transportation agencies to test various project contracting methods that could potentially deliver projects in a more cost-effective manner. Among the methods is the design-build project delivery method, whereby the design and construction phases of a project are combined into one contract. Design-build has become increasingly more popular as a project delivery mechanism; between 1995 and 2002, over 300 projects were proposed for design-build contracting under SEP-14 in 32 states, the District of Columbia, and the U.S. Virgin Islands. Today, the Design-Build Institute of America lists 259 ongoing civil infrastructure projects in their database.

Several studies have been completed that examine the design-build delivery method, including the 2006 FHWA report entitled *Design Build Effectiveness Study – As Required by TEA-21 Section 1307(f)*. Studies such as the 2006 FHWA Effectiveness Study and an April, 2007 study released by the University of Southern California's Keston Institute for Public Finance and Infrastructure Policy confirm the belief that implementing design-build provides the potential for projects to be delivered more efficiently, cost-effectively, and in less time than traditional design-bid-build projects. One advantage of design-build is the engagement of the creativity of the design-build team that brings value engineering and innovation to project design. Another important advantage of design-build is the engagement of the creativity of the design-build team that brings value engineering and innovation to project design.

For design-build projects, the owner and contractor must be aligned as the design-build team takes control of final design and the securing of required approvals. Generally, all conditions of acquired permits must be met by the contractor; in addition, any changes to design might potentially require a permit amendment or modification in order to proceed forward. The autonomy and creativity of the contractor helps resolve project issues and facilitates modification to the design of the project to avoid or minimize impacts. Motivated by the desire to keep costs and schedule delays to a minimum, significant coordination is necessary among the contractor, state transportation agency, and permitting agencies.

In 2005, the National Cooperative Highway Research Program (NCHRP) published the study, *Design-Build Environmental Compliance Process and Level of Detail: Eight Case Studies*, which examined the design-build project delivery approach and the practices utilized by state transportation agencies in the preparation of permits and level of design detail in advance of selecting a design-build contractor. This study is a second phase report to the 2005 NCHRP publication, focusing in greater detail upon the permitting process for design-build projects. This study is intended to assist transportation agencies in better developing and integrating



knowledge of the permitting process at the state and Federal levels, and to allow them to benefit from the best practices identified and utilized to date.

It would benefit state transportation agencies if they can better understand the potential implications and/or probable modification requirements associated with preparing and obtaining environmental permits in advance of the design-build process. In this regard, the transportation agencies would then be better equipped to effectively plan for such outcomes at the time of the initial preparation and receipt of the permits, and to address those outcomes during the design-build process. They also would be in a better position to anticipate the needs and desires of the regulatory and resource agencies responsible for permitting, approving permit amendments and modifications, and ensuring compliance with environmental commitments stated in the permits. This is especially important since the primary responsibility for preparing permit amendments/modifications and complying with environmental commitments will have been transferred from the state transportation agency to the design-build contractor.

Eight case studies have been prepared for design-build projects where major permits (e.g., Section 404 Wetlands Permits, Section 10 Navigable Water Permits, Section 401 Water Quality Certificates, and Section 9 Bridge Permits) had been required. The case studies, based on interviews with representatives of the relevant state department of transportation (DOT), design-build contractor, and regulatory/permitting agencies involved in each project, examine the permitting process as it specifically relates to design-build delivery projects.

The understanding of the practices of the eight state transportation agencies and their design-build contractors in the preparation of permit applications and subsequent modifications and/or amendments has led to the identification of several noteworthy practices. The successful techniques and lessons learned by each state DOT and others involved in the permitting processes of the eight projects are discussed in Section 4.0.

## 2.0 Identification of Eight Case Studies

Where possible, projects selected and included in the 2005 NCHRP study, *Design-Build Environmental Compliance Process and Level of Detail: Eight Case Studies*, were used for this second-phase study. Among the previous eight case studies, six were able to be considered further for this study, while two could not be considered further due to a variety of

### Overview of Federal & State Permits Included in Analysis

#### *Section 404 of the Clean Water Act*

- Issued by the Department of the Army, Corps of Engineers
- Permit for the discharge of dredged or fill material into jurisdictional wetlands or navigable waters of the United States

#### *Section 401 Water Quality Certification*

- Mandated under the Clean Water Act, but issued by state regulatory agencies
- Certification allowing the discharge of dredged or fill material into navigable waters of the U.S.

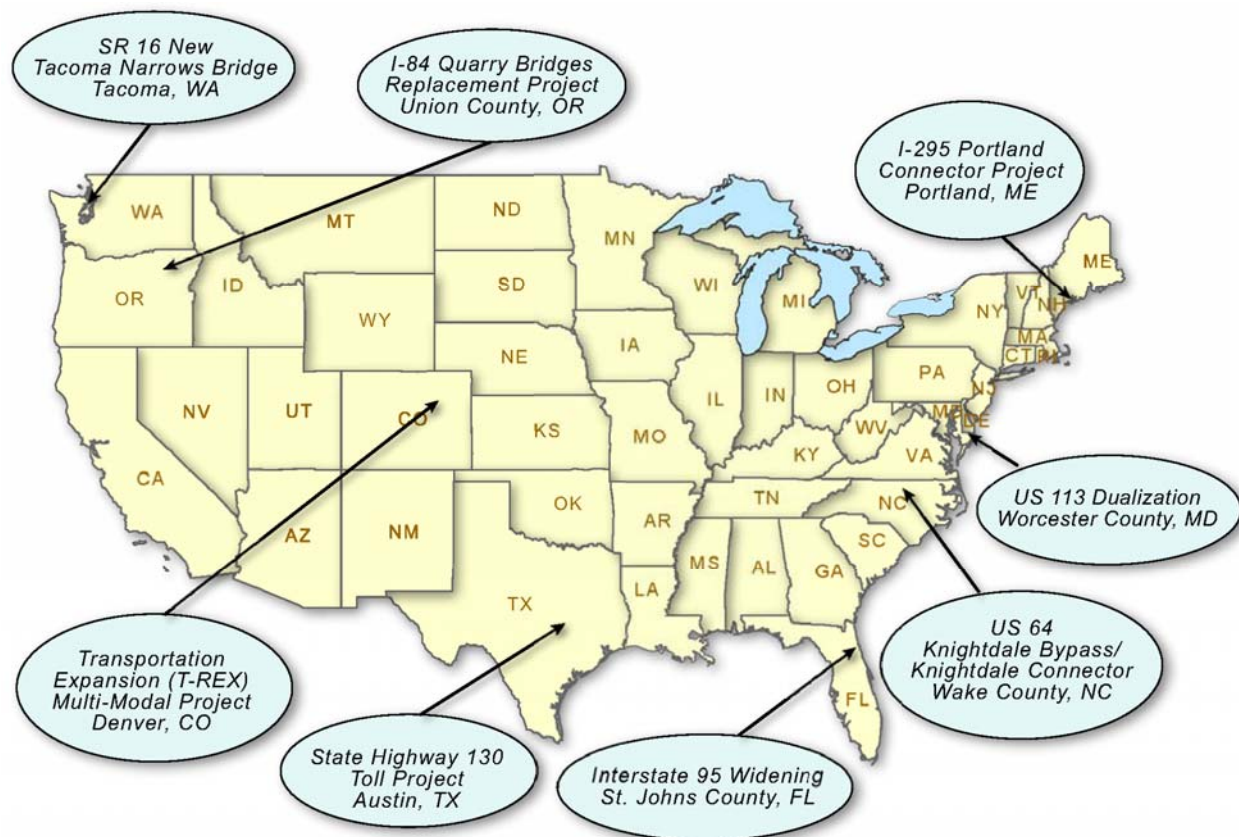
#### *Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946*

- Issued by the U.S. Coast Guard
- Permit for the construction of a new bridge or causeway, or for the modification of an existing bridge or causeway across navigable waters of the U.S.



circumstances. The Davis Dam – Kingman Highway (SR 68) Project in Arizona was eliminated from the study because of unavailability of project-related personnel to participate in the study surveys. The Widening of I-4 from SR 535 (BeeLine) to SR 528 (Sand lake Road) Project in Florida was eliminated because its permitting was relatively simple and straightforward. Two new projects were selected, one in Maine and the other in Oregon. The Maine project was chosen for its pursuit of design-build projects. The project in Oregon was selected because of an innovative bridge replacement program of the Oregon Department of Transportation (ODOT) which emphasizes a streamlined permitting process. Consequently, ODOT was awarded FHWA’s prestigious Environmental Excellence Award for Environmental Streamlining in 2005 for its Oregon Bridge Replacement Environmental Stewardship Program (OTIA III).

The eight projects shown on the following map were chosen for demonstrating successful efforts in integrating or complying with environmental permitting requirements as part of the design-build process:



1. Transportation Expansion (T-REX) Multi-Modal Project, Denver, Colorado
2. Interstate 95 Widening from Duval County Line to Flagler County Line, St. John’s County, Florida
3. Interstate 295 Connector Road, Portland, Maine
4. U.S. 113 Dualization, Worcester County, Maryland

5. U.S. 64 Knightdale Bypass and Connector (Eastern Wake Expressway), Wake County, North Carolina
6. I-84 Lower Quarry Bridges Replacement Project, Union County, Oregon
7. Texas State Highway 130 Toll Project, Austin, Texas
8. State Route 16: New Tacoma Narrows Suspension Bridge, Tacoma, Washington

### **3.0 Investigative Approach**

Each individual case study was prepared utilizing both a review of applicable permits and modifications pertaining to the project as well as questionnaires completed by project representatives. The research team requested copies of the initial Section 404 Department of the Army Permit, Section 401 Water Quality Certification (or other State equivalent), Section 10 Navigable Water Permit (if applicable), and Section 9 Bridge Permit (if applicable). Copies of any modification and/or amendment requests and approvals, and other relevant materials and correspondence were also requested. These materials and any other related environmental documentation such as environmental assessments (EAs) or Environmental Impact Statements (EISs) required by the National Environmental Policy Act (NEPA) were reviewed in detail prior to conducting individual surveys in order to gain a more complete understanding of the progression of events and issues that occurred throughout the course of the project. Information for the case studies was also gathered from the original research completed for the 2005 NCHRP study, *Design-Build Environmental Compliance Process and Level of Detail: Eight Case Studies*.

Each interview was conducted with representatives from the State DOT, the state and federal permitting agencies, the design-build contractor, and other participants as appropriate. Three separate questionnaires were developed – one for each of the entities – focusing on their individual roles, experiences, and opinions of the permitting process as it related to the design-build aspect of the project. The interviews focused on their perspectives about how well the overall permit process worked in each case, including the initial permit application and approval process, subsequent amendments and modifications, and compliance with conditions of the permit and its amendments/modifications.

The surveys designed for the State DOT and design-build contractor, although different, both included questions pertaining to the following:

- ✓ The major permits prepared in advance of initiating the design-build process for each project;
- ✓ The types and number of amendments and/or modifications to those permits that were required during the actual design-build process, and whether the need for such amendments and/or modifications were the direct result of the design-build process;
- ✓ Any specific cost, schedule or environmental compliance issues created due to the early preparation and approval of the initial permits, as well as to amendments and/or modifications required; and,
- ✓ Any specific problems dealing with the various regulatory/resource agencies during the course of the initial permit preparation and review, as well as during the course of the





design-build process and the permit amendment/modification preparation and review.

Regulatory and resource agency personnel familiar with the initial project permits and the subsequent permit amendments/modifications were asked additional questions about the design-build process regarding:

- ✓ Their ability or preference to deal with government agencies such as state transportation agencies in comparison to private firms such as design-build contractors;
- ✓ Ramifications of dealing initially with government agencies for the actual permit and then dealing later with private firms for the amendments, modifications and permits compliance;
- ✓ The viability of the design-build process in general as it relates to environmental issues and the permitting process;
- ✓ Advantages and disadvantages of permitting design-build projects; and,
- ✓ Recommendations for improving the interface of the design-build and permitting processes.

Each case study has been prepared following a uniform format, including: a discussion of the project background; an overview of the project's permit history; a discussion of the initial permitting process; discussions of the perspectives of the project participants on the initial permitting process; a discussion of the permit amendment and modification processes; discussions of the perspectives of the project participants on the permit amendment and modification processes; a discussion of conclusions that identify the significance of this case study; a summary of streamlining recommendations based on the experiences of the project participants; and a list of project participants who provided input into the particular case study.

## **4.0 *Summary of Lessons Learned***

### **4.1 *Working Relationships***

Across all projects examined, all parties involved in the permitting processes have been dedicated to the success of the project. Positive working relationships among all participants have been key elements of the success of each project. If a project were to fail, the reputations of the State transportation agencies and firms comprising the design-build contracting teams would be at jeopardy.

At project onset, several State DOTs interviewed felt a slight agency resistance to the design-build process. Since they value their good relationships with the regulatory agencies, these DOTs were concerned with maintaining these relationships and lines of communication. Based on previous experience, the DOTs are comfortable with their responsibility of acquiring the initial permitting. They know the requirements of the agencies; in turn, the agencies appreciate this familiarity as well. However, regulatory agencies also indicated their comfort in working with knowledgeable consultants, with whom they may also have developed good working relationships. Those consultants who have established good relationships with the agencies value those relationships and want to protect them as well. This is an important aspect of the design-build delivery method because the DOTs need to be assured that the agencies are



comfortable with how the project is progressing. If the regulatory agencies are comfortable, the process will go more smoothly. To keep the lines of communication open and to ensure that all involved parties have a complete understanding of the project, several DOTs felt that it would be helpful to provide more education to the agencies and municipalities regarding the design-build project delivery method.

#### **4.2 Initial Permitting Responsibility and Compliance**

Some DOTs surveyed indicated that it would be possible to hand over the responsibility of acquiring the initial permits to the contractor; however, most pointed out that the current method of having the DOT prepare the initial permits and then the design-build team handle the modifications was most efficient. It was noted by a member of a design-build team that it might be a conflict of interest to have the design-builder prepare the permits because inevitably the design-builder would end up negotiating the terms of the permit with the regulatory agency, resulting in a “hostage situation” between the contractor and the regulatory agency. Most of the design-build teams were content with having the permits in hand at the beginning of the project and were not overly anxious to have to take care of the initial permitting. On the other hand, they did indicate that completing the modifications themselves was the most efficient method. Their main concern was being able to start work immediately and not be held up by permitting. It was also noted by several design-build contractor representatives that it is preferable to have the conditions of the initial permits included in their contract documents.

Several regulatory agency participants expressed strong feelings about contractors cutting corners in the field and not complying with conditions of the permit. Assigning an independent Environmental Monitor to the project seemed to alleviate some of the agencies’ anxiety in more than one situation. Several times, USACE participants noted that they were uncomfortable issuing permits based on worst-case-scenario estimates of impacts or when given very general locations for work platforms or outfalls. Forced estimates of impacts affect the mitigation and sometimes the environmental incentives built into the contract. When impacts are adjusted according to design they appear to have met the incentives; however, in actuality, the impacts were overestimated from the beginning.

#### **4.3 Permit Modification and Amendment Responsibility**

The surveys indicated varying degrees of involvement from the DOTs during the preparation of permit amendments and modifications. While some DOTs had a great deal of oversight and review, others did not. Design-build teams felt that having the DOT as the “middleman” sometimes slowed down the process. As one design-build team member pointed out, contractors want to have control over their own project. The regulatory agencies did not seem to have much of a problem with processing modifications, nor did they feel that the design-build process led to an excessive amount of modifications as compared to a traditional design-bid-build project.

The design-build representatives interviewed expressed their interest in maintaining flexibility in the plans. Most plans were at approximately 30 percent level of design or less at the time initial permit applications were completed. This lower level of design is preferable to design-



build contractors, as maximum flexibility is thereby provided for their further development of the project designs. Regulatory agencies, in contrast, generally prefer plans submitted at a greater level of detail so permits are issued based on real impacts. In most cases, they have remained flexible in order to accommodate the tight schedules of design-build projects. However, in one project where there was a very high level of design (approximately 80 percent) at the time of submittal due to the fact that it became design-build late in the process, several permit modifications were required due to significant design changes made by the contractor team during the design-build process; this resulted in negative impacts to the project's cost and schedule. In a case such as this one, having a higher level of design at the time of the initial permit applications may make the agencies more comfortable in issuing a permit, but it may also result in the need for more modifications if the design-build team deviates significantly from the original design.

Most modifications appear to be unrelated to the design-build delivery method, and were specific to geotechnical, hydrological, or other concerns in the project's geographical area. The frequency of modifications among case studies did not reveal any patterns or generalities except that it appears that the more complicated projects had the most modifications. One situation in which the design-build contractor prepared the initial permits had only one very minor modification; it was also a rather straightforward project from an environmental perspective. Therefore, it is unclear if the primary reason that minimal modification was required for that project was due to the contractor's preparation of the initial permits or because it was a straightforward project. In another case study where the design-build contractor was responsible for obtaining permits by way of modifying permits from an earlier phase of the project, only one minor and unavoidable modification was necessary. Projects that spanned many years or were done in many phases due to their complexity generally required more modifications. For these projects, their initial permits were prepared by the DOT or a consultant hired by DOT in advance of the design-build process.

#### ***4.4 Other Issues and Suggestions***

At least in one case, the use of out-of-state contractors was a concern to regulatory agencies because of their lack of knowledge regarding local / regional issues and permitting practices. In terms of the design-build process specifically, at least one regulatory agency indicated its concern with contractors being given too much leeway by the State DOT, and the tendency of the contractors to cut corners in terms of their design practices (e.g., embankment stabilization methods, wetland crossings, side slopes, etc.) in comparison to those practices required for a typical design-bid-build project. In an attempt to save time and money on the part of the contractor, these substandard practices can have negative impacts on the environment. The regulatory agencies are accustomed to dealing with the DOTs and there is familiarity of the process and trust established between the DOT and the regulatory agencies. If a contractor is not familiar with the regulations of a particular state, this causes the agencies to be concerned. It was noted by consultants and DOTs that, in some cases, the contractors do not have a vested interest in maintaining a good relationship with the regulatory agencies if they are not locally based.

In order to facilitate communication during the permitting process, it was suggested that a single point of contact be established within all involved agencies and the contractor. Some of the regulatory agencies have designated staff to work solely on DOT projects and this seems to work well for them.

Acknowledging the importance of open communication, the representatives from the regulatory agencies appreciated efforts made by the DOTs and contractors to keep them actively involved in the project and kept apprised of any changes or updates to the project. Several states held frequent meetings with the agencies and design-build teams; in those cases, everyone seemed to be most appreciative of the opportunity to have their questions answered directly by the permitting agency or the contractor themselves. In general, those states that held multiple meetings and worked hard to maintain open lines of communication among the DOT, the contractor, and the regulatory agencies had the most successful experiences with the design-build project delivery process.

#### **4.5    *Lessons Learned***

The following summarizes the streamlining recommendations identified by the participants interviewed in the preparation of the eight case studies.

##### *State DOTs*

- State DOTs should generally acquire initial permits because they are already familiar with the requirements of agencies.
- Regulatory agencies and local and regional governing bodies should be properly informed of the design-build project delivery method.
- Maintaining good relationships with permitting agencies is essential.

##### *Design-Build Contractors*

- Contractors should have more direct access to permitting agencies.
- There should be an expedited review time for design-build projects.
- Dedicated points of contact help streamline the permitting and modification/amendment process.
- Contractors preparing modifications is considered to be most efficient.
- Approval of permits based on a lesser level of design provides increased flexibility for contractors.

##### *Regulatory Agencies*

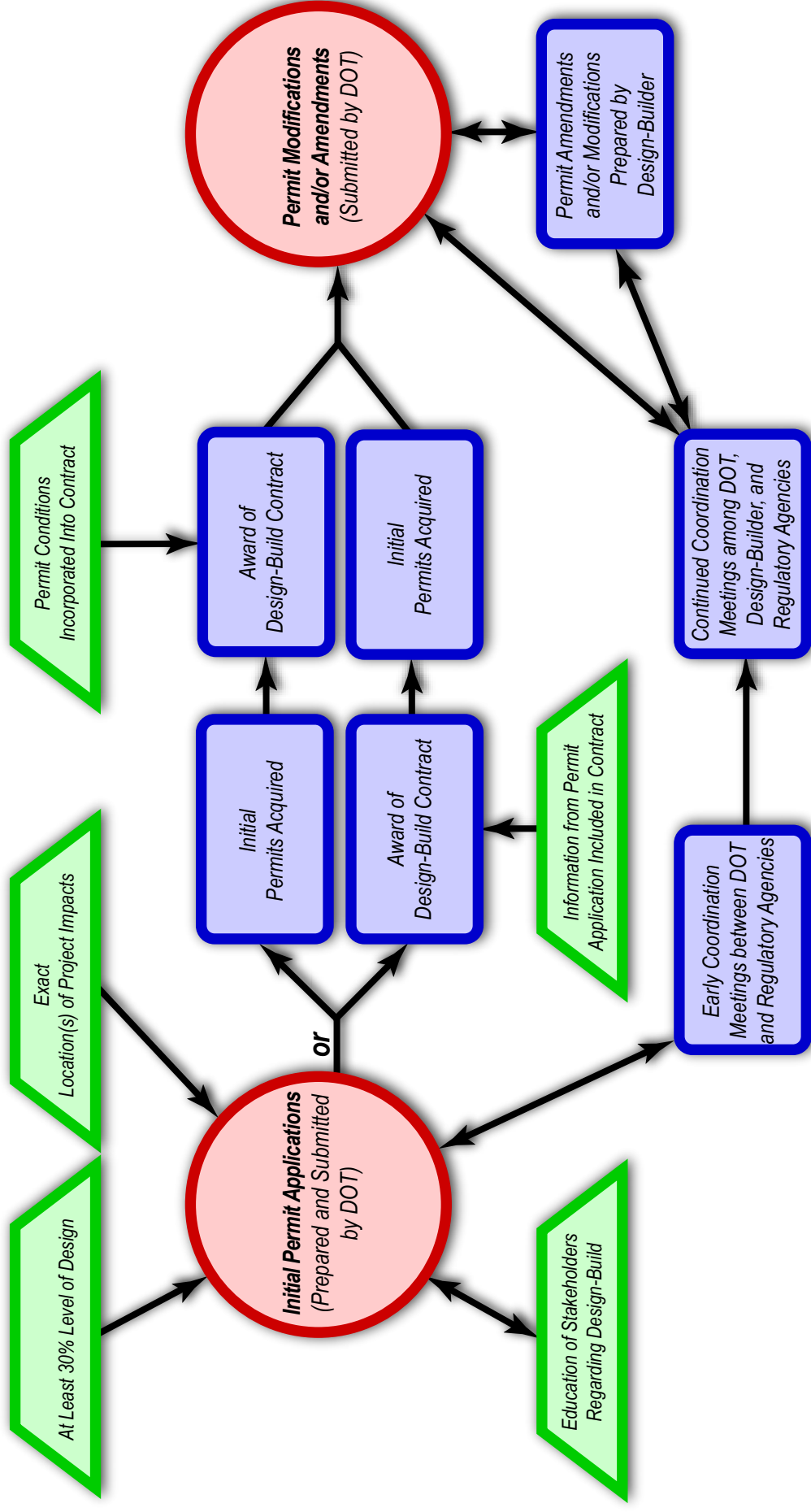
- To avoid needing to base permits on hypothetical or estimated impacts, permit application packages should be submitted with more detailed plans and exact locations of project impacts.

- Points of contact should be established within the DOT, contractor, and agency.
- There should be early coordination and frequent and regular meetings throughout the project.
- There should be open communication.
- The permit and all conditions should be incorporated into the design-build contract.
- There is a preference to work with the DOT because of established relationships.
- Contractors should be monitored to ensure that they do not cut corners.

As presented in the above lists of effective practices identified by each of the major groups of participants in the design-build process, some of the suggested practices differ according to the specific group making the recommendation, and perspectives and preferences between the different groups may conflict. For instance, the design-build contractors have generally identified their preference for a lesser level of design prepared prior to their involvement, including permits previously approved at that lesser level of design. In contrast, most of the regulatory agencies have specifically identified that the lesser level of design that has been used in the past for approving the initial permits has been problematic from their perspective, and prefer that more detailed plans are used for the initial permit submittals. The use of plans prepared to a greater level of detail would thereby allow the agencies to avoid basing their approvals on hypothetical or estimated worst-case assessment of impacts.

The flow chart shown on the following page outlines the permitting processes deemed most successful for the eight design-build projects examined. As the diagram shows, initial permitting is best prepared and submitted by the DOT; any required amendments or modifications would be prepared by the contractor and submitted by the DOT. Throughout the permitting process, there should be regular meetings with the regulatory agencies to ensure adequate project coordination at all stages. Other factors can affect processes followed in the acquisition of required permits and approvals to move forward with specific projects and no one method is perfect for all circumstances. For example, for low-risk or simpler projects, initial permitting may be acquired by the contractor in order to expedite the design-build process. However, the flow chart depicted in the diagram can serve as a foundation for determining how to proceed with individual projects.

# Permitting Process for Design-Build Projects



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University of Southern California, Keston Institute for Public Finance and Infrastructure Policy. *The Impacts of Design-Build on the Public Workforce*. April 2007.



## *Appendix*

### *Individual Case Studies*

1. Transportation Expansion (T-REX) Multi-Modal Project  
Denver, Colorado
2. Interstate 95 Widening from Duval County Line to Flagler County Line  
St. John's County, Florida
3. Interstate 295 Connector Road  
Portland, Maine
4. U.S. 113 Dualization  
Worcester County, Maryland
5. U.S. 64 Knightdale Bypass and Connector (Eastern Wake Expressway)  
Wake County, North Carolina
6. I-84 Lower Quarry Bridges Replacement Project  
Union County, Oregon
7. Texas State Highway 130 Toll Project  
Austin, Texas
8. State Route 16: New Tacoma Narrows Suspension Bridge  
Tacoma, Washington





## **Transportation Expansion (T-REX) Multi-Modal Project Colorado Department of Transportation / Regional Transportation District Denver, Colorado**

### **Project Background**

In the decade between 1985 and 1995, traffic on Colorado's interstates increased 43 percent. The Colorado Department of Transportation (CDOT), the Regional Transportation District (RTD), and the Denver Regional Council of Governments initiated the Southeast Corridor Major Investment Study in April 1995. In 1997, the study recommended a multi-modal alternative to meet the mobility needs in the corridor, while preserving and enhancing community character.



In 2000, a year before the Transportation Expansion (T-REX) Project construction began, a Texas-based institute that studies traffic issues identified the metro Denver area as the seventh most congested metropolitan area in the United States, and the I-25/I-225 interchange was identified as the 14th busiest interchange in the country.

The T -REX project is a \$1.67 billion venture that has transformed the way people in the metro Denver area travel along the southeast corridor of Interstate 25 (I-25) and Interstate 225 (I-225) since its opening in November 2006. T-REX was a five-year design-build project that added 19 miles of light rail and improved 17 miles of highway through southeast Denver, Aurora, Greenwood Village, Centennial, and Lone Tree in Colorado.

The project was the result of a unique collaboration between CDOT, the RTD (which is responsible for transit service in the metro Denver area), the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA).

The 19 miles of T-REX double-track light rail connects to the existing system at Broadway in

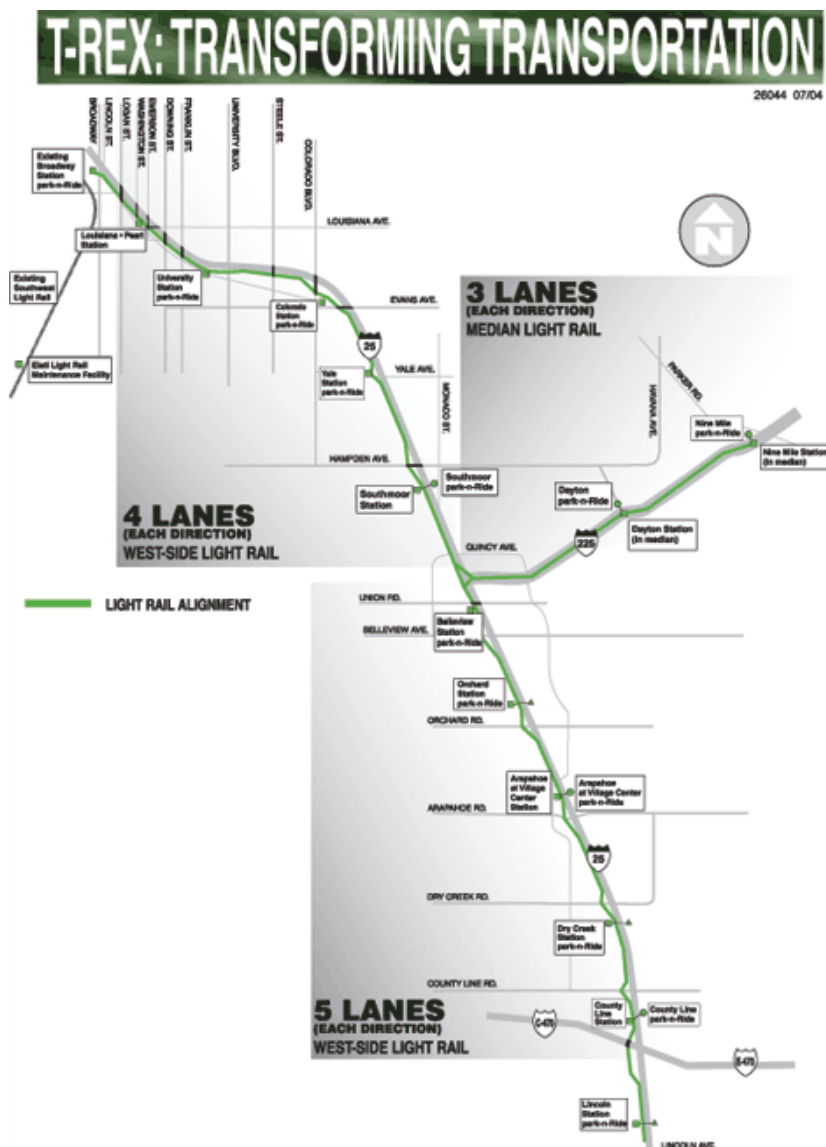
Denver and extends along the west side of I-25 to Lincoln Avenue in Douglas County and in the median of I-225 from I-25 to Parker Road in Aurora. Twelve of the 13 stations have park-and-ride lots, providing a total of 6000 parking spaces. On I-25, T-REX adds one through lane in each direction from Logan Street to I-225 (for a total of four lanes each way) and two through lanes in each direction from I-225 to the C470/E470 interchange (for a total of five lanes each way). On I-225, T-REX adds one through lane in each direction from Parker Road in Aurora to I-25 (for a total of three lanes each way).

T-REX also reconstructed eight interchanges (including I-25/I-225), reconstructed and/or widened numerous bridges, and improved ramps and acceleration/deceleration lanes. By combining light rail, highway, bike, pedestrian and other transit options, the project uses a multi-modal approach to address many of the region's traffic problems.

From early in the project, Carter & Burgess, Inc. served as the Program Management Consultant on the T-REX Project. Carter & Burgess provided oversight of all aspects of the project, acting as the owner's representative for the entire process. They worked with CDOT and RTD to help select Southeast Corridor Constructors (SECC) as the design-build contractor. SECC was committed to complete construction well ahead of the initial January 2008 estimated completion date. Construction of T-REX began in Fall 2001 and all aspects of the project were completed by the end of November 2006, significantly ahead of schedule.

### Permit History

Both the Section 401 Water Quality Certificate (WQC) (issued July 18, 2000) and Section 404 Clean Water Act Wetlands Permit (issued September 5, 2000) were acquired by CDOT before the design-build contractor, SECC, was selected. Both permit applications were submitted on



May 15, 2000. The initial Section 401 WQC and Section 404 Permit were prepared and submitted by CDOT as one application package based on 30 percent preliminary engineering design. The design-build contractor, including its several team members, had no input in the initial permitting process.

There were two permit amendments to the Section 404 Permit throughout the course of the project, both of which were prepared by the design-build contractor and submitted by CDOT.

***Permit History Timeline***

May 2000 – Section 401 WQC & Section 404 Permit Applications  
July 2000 – Section 401 Certification Granted  
September 2000 – Section 404 Permit Granted  
June 2001 – Award of Design-Build Contract  
December 2001 – Section 404 Amendment No. 1 Requested (Approved January 2002)  
October 2004 – Section 404 Amendment No. 2 Requested (Approved December 2004)  
November 2006 – Completion of Construction

These amendments were necessary for work activities not covered by the initial permits. The first amendment was requested in December, 2001 and approved on January 8, 2002; the second was requested in October, 2004, and approved on December 20, 2004. There were no amendments to the Section 401 WQC.

The T-REX project was initially expected to impact 0.63 acres of jurisdictional wetlands; by project completion, it

impacted only an additional 0.0057 acres of wetlands. The wetlands impacts were mitigated through the purchase of credits at a wetlands mitigation bank at a minimum rate of 1:1.

Covered by the Section 404 Permit were temporary impacts to jurisdictional Waters of the U.S. During construction only, an estimated 1,355 cubic yards of fill material were temporarily placed in South Platte River, Goldsmith Gulch, and Cherry Creek. In addition, 200 cubic yards of grouted riprap were placed in South Platte River.

The project also required a Degradation Permit from the U.S. Fish and Wildlife Service for a nest take. Other required permits for construction, such as the air quality and storm water permits, were prepared and acquired by the design-builder. These other permits are not specifically covered within this case study.

### **Initial Permitting**

The initial Section 401 WQC and the Section 404 Permit were required in order for the design-build process to advance. The expedited schedule due to the design-build process and high profile of the project allowed for the permit applications to be submitted at an earlier stage than with the standard design-bid-build process.

The Section 401 WQC is the responsibility of the Water Quality Control Division of the Colorado Department of Public Health and Environment (CDPHE); however, the State of Colorado utilizes the signed Section 404 Permit application as part of its request for a Section 401 WQC. The Section 401 WQC was issued in July of 2000, prior to the issuance of the Section 404 Permit by the U.S. Army Corps of Engineers (USACE) as required in Colorado.





The wetland delineation prepared by CDOT in support of the Section 404 Permit application was fairly general and specific locations of wetlands and other jurisdictional waters and potential impacts were uncertain. Once the design-build team was mobilized, they were required to do additional research and field reconnaissance to determine the specific locations of jurisdictional waters.

### **Project Participants' Perspectives of the Initial Permitting Process**

#### ***DOT Perspective***

T-Rex was CDOT's first experience with a design-build project. The concept was relatively new in Colorado and there was a steep learning curve involved. Despite the newness of design-build, the project managers at CDOT understood the permitting process very well, especially the Section 404 process, and knew what to expect from the regulatory agencies. This knowledge enabled them to work with the USACE to submit the initial permit application early and have the permits in place before the design-build contract was awarded. Early pre-application meetings were held and various alternatives were reviewed. This successful beginning of the process paved the way for future streamlined amendment/modification submittals.



I-25/I-225 Interchange under Construction: Girder Placement at I-25/I-225 Interchange



Rendering of New I-25/I-225 Interchange

#### ***Design-Build Contractor Perspective***

Since the permits were already in place by the time the design-build contractor was on board, SECC and its team had no input in the initial permitting process. Once their contract was awarded, SECC needed to perform more detailed investigations regarding the location of the jurisdictional waters that would potentially be impacted by the project.

For early construction items, the contractor had two months to acquire all additional necessary permits, e.g., Construction Dewatering, Air Quality/Dust Control, and National Pollutant Discharge Elimination System. Their contract was awarded on July 1, 2001 and groundbreaking took place on September 1, 2001. The representative for SECC noted the advantage to acquiring permits so close to construction in that there is less chance that the permits would be off the mark and require changes.

## ***Regulatory Agencies Perspective***

The representative for the USACE that had been involved in the actual permitting for this project had worked with several design-build projects prior to the T-Rex Project with CDOT.

*“Single-point responsibility streamlines the process, generally makes for good communication, gives all parties the “big picture”, and relies on effective institutional memory of project details.”*

*-- Scott Franklin, USACE*

Understanding the nature of the design-build delivery process, the USACE worked with CDOT from the outset of the project to streamline the process and set up a cooperative

working relationship. Initial permitting went smoothly to enable both the Section 404 Permit and Section 401 WQC to be acquired by CDOT before the design-build contract was awarded.

## **Modifications and Amendments**

The T-REX project required two amendments/modifications to the Section 404 permit. Both amendments were prepared by the design-builder, as per their contract. The first one, requested within six months of the award of the design-build contract, was the result of a change in the location of the South Platte River sewer outfall that was part of the project. The second amendment was the result of a change in the final design of a storm sewer outfall that caused a small amount of wetland impact. This amendment was requested three years into the project.

Neither amendment had any cost or schedule implications. The first amendment required additional work to modify the design drawings. For both amendments, the design-build contractor worked very closely with CDOT. The cooperative nature of the process allowed the project to move forward and permit clearances to be obtained without the need for additional significant NEPA evaluation or regulatory scrutiny. Impacts to wetlands were mitigated through the purchase of wetlands credits at a mitigation bank.

During the design-build process, the contractor was dissuaded from working directly with the USACE unless authorized to do so by CDOT. Except when technical information better understood by the contractor needed to be relayed to the USACE, CDOT functioned as the contact to the USACE. This worked to the project's benefit as there were specific individuals established as the go-to personnel from the USACE and CDOT to maintain a smooth and streamlined process. The T-REX project had the benefit of one specific individual assigned to the project from the USACE.

## **Project Participants' Perspectives of the Modifications and Amendments**

### ***DOT Perspective***

As this was the first design-build project for CDOT, a representative of CDOT acknowledges the helpfulness and responsiveness of the USACE during the permitting process. Although the USACE initially questioned the two permit amendments, the agencies worked cooperatively to move the project forward.

*“It is a balance of CDOT to ensure both permit and environmental compliance while the contractor is trying to move forward with construction.”*

*– Jim Paulmeno, CDOT*

The CDOT representative suggests that, for future projects, some of the “rules of engagement” be laid out beforehand with the permitting agencies through a Memorandum of Understanding or some other means. This would ensure that all involved parties are educated at the onset about the design-build process, their involvement, and what to expect with likely permit modifications.

### ***Design-Build Contractor Perspective***

Despite the need for additional work to identify exact locations of jurisdictional waters, a representative from SECC found it more efficient for CDOT to have prepared the initial permits and the contractor to prepare any necessary amendments.

With the design-build process, most permits are obtained close to the time of construction; therefore, there is less need for any modifications to those prepared later in the design process. The two amendments to the Section 404 permit were the results of changes to 30 percent engineering design.

*“There was a lot of high-level interest in the project being built on time and within budget.”  
– Dan Ryan, SECC*

The design-build contractor found it to be beneficial that staff from CDOT, the contractors, the city, and the county be co-located in project offices. In addition, state government personnel were also welcome to work from the office and often did. The co-location enabled project team members to build cooperative working relationships and work together on a regular basis. It was a benefit to have this open communication when the schedule pressures were so large.

### ***Regulatory Agencies Perspective***

The USACE representative indicated that much of the success of the permitting process was due to several pre-application meetings and CDOT’s clear understanding of the Section 404 Permit procedures. The meetings were helpful both before the initial permit application as well as for each of the two permit amendments. The Section 404 process has inherent time constraints such as public notice and comment time frames and delays from other peripheral permits.

The USACE representative found that the single-point responsibility aspect of the permitting process helped to streamline the project’s progression.

### **Conclusions**

The design and construction of the T-REX project was completed in five and a half years, more than a year ahead of schedule. The initial permits were acquired by CDOT prior to the award of the design-build contract in June of 2001. This allowed the design-build team to immediately move forward with the project as soon as the team was given its Notice to Proceed. The design-build team was responsible for any necessary permit amendments and/or modifications, a task written into their contract.



Once the design-build contractor was brought on board, their environmental team needed to perform more detailed wetland investigations to determine the exact locations of the areas of impact. As it turned out, there was essentially no change in the amount of impacted wetlands from that indicated in the initial permit application package; rather, the changes were more related to location.

The two Section 404 amendments were prepared by the design-builder and submitted by CDOT. Minimal direct communication existed between the USACE and the design-build team unless authorized by CDOT, as the vast majority of the communication was between the single points of contact at the USACE and CDOT. Through final design, one of the two amendments modified the total amount of wetlands impacted; the other amendment was for a project design change with no impact on wetlands. Wetland impacts increased by less than one percent over the course of project design and construction. Working with CDOT and the USACE, the design-build team modified project details to avoid as much of the jurisdictional waters within the project area as possible.

The project progressed at a rapid pace in a very organized manner. Major project staff from the design-build team, CDOT, and other involved agencies were co-located in one main project office, while three additional satellite offices were set up for the field personnel. Project protocol was established at the onset of the project to ensure that the process progressed smoothly.

#### ***Stakeholder/Public Participation***

The extensive public participation program began at the outset of the project. The public was educated about light rail and the design-build process. Two-way communication strategies, whereby the public's comments and concerns were addressed regularly, achieved consensus among the public and helped the community develop ownership and pride in the T-Rex project.

A project website was developed to keep the public informed of the elements of the project, the schedule, public information events and other ways to get involved, and provide maps and photographs of the project. As the project progressed through construction, information on construction elements, roadway and lane closures, and other elements of public concern were relayed through the website.

### **Streamlining Recommendations**

Based on the input received from the major groups of participants (i.e., CDOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible.

#### **CDOT:**

- DOT should work closely with the USACE from project inception through construction.
- All involved parties should continue to educate each other regarding the process.
- Advantage when early permit acquisition is performed to move project forward.
- Consensus from the public is very helpful.
- Recommends that parties establish "rules of engagement" through a Memorandum of Understanding or some other means.





**Design-Builder – SECC:**

- Team-building through co-location of project personnel from various firms and agencies is useful.
- Assignment of specific go-to contact individuals is helpful in keeping project focused.
- Recommends that DOT complete more detailed wetlands delineation for initial permit application package.

**Regulatory Agency – USACE:**

- Single-point responsibility streamlines the process.
- Educate involved individuals on the design-build and permitting processes.
- Ensure that project designers meet with regulatory personnel early in the process to understand the constraints they will face.

**Project Participants Interviewed**

Jim Paulmeno, Planning & Environmental Manager  
Colorado Department of Transportation

Daniel Ryan, Environmental Compliance Manager  
Southeast Corridor Constructors – Kiewit Companies

Scott Franklin, Water Resource Engineer/Section 404 Permit Project Manager  
US Army Corps of Engineers, Denver Regulatory Office

John Hranac, Surface Water Specialist  
Water Quality Control Division, Colorado Department of Public Health and Environment

Craig Carter, Environmental Project Manager for T-REX  
Carter & Burgess, Inc.

## Florida I-95 Widening (Duval County Line to Flagler County Line) Florida Department of Transportation St. Johns County, Florida

### Project Background

In the fall of 2004, District Two of the Florida Department of Transportation (FDOT) completed the widening of 35 miles of Interstate 95 from four to six lanes in St. Johns County, Florida in order to improve level of service, traffic operations, and meet current safety criteria and other requirements. The Project corridor runs the entire length of St. Johns County from the Duval County line to the Flagler County line. For construction purposes, the Project was broken down into three separate design-build segments, all of which essentially proceeded concurrently:



- *Northern segment*, from the Duval County line to just south of International Golf Parkway.
- *Central segment*, from just south of International Golf Parkway to just south of S.R. 207.
- *Southern segment*, from just south of S.R. 207 to the Flagler County line.

The Northern segment was designed and built by the team of Parsons Transportation Group and Superior Construction Company, both of Jacksonville, Florida. The contract was awarded on March 15, 2002 and construction was completed on the Northern segment on September 17, 2004. The Central segment was awarded to the team of Connelly &

Wicker of Jacksonville, Florida and Anderson Columbia Company, Inc. of Lake City, Florida, on March 15, 2002 and was completed on September 25, 2004. The Southern segment team was comprised of Jacobs Civil, Inc. of Jacksonville, Florida and Ranger Construction Company

of Daytona Beach, Florida. The contract was awarded on May 3, 2002 and construction was completed on November 11, 2004.

### **Permit History**

The permits were prepared in advance of the design-build process by FDOT. Prior to the division of the overall 35-mile-long project into three segments for construction, the project had originally been divided in half in order to help FDOT obtain project approval from the permitting agencies with regards to wetlands and water quality. There were two sets of permits pursued and ultimately approved, one for the northern half of the project and one for the southern half. The construction plans were developed to 30 percent level of design and the drainage plans were developed to 80 percent level of design at the time of the permit application.

#### ***Permit History Timeline Northern Half***

August 2000 – Environmental Resource Permit  
Acquired  
September 2001 – Section 404 Permit Acquired  
March 2002 – Award of Design-Build Contract  
June 2002 – Approval of Environmental Resource  
Permit Amendment  
July 2002 – Approval of Section 404 Modification  
2003 – Six Environmental Resource Permit  
Modifications Approved  
September 2004 – Completion of Construction

In the area of Florida where the three separate construction segments were located, the responsibility for managing and regulating water supply, water quality, flood protection, floodplain management and natural systems lies with the St. John River Water Management District (SJRWMD). The SJRWMD serves all or part of 18 Florida counties in the northeastern part of Florida, using the watershed approach to management.

Under the authority of the Clean Water Act, 33 U.S.C. sections 1341 and 1362, authority is designated to the Florida Department of Environmental Protection (DEP) for certifying compliance with applicable state water quality standards for federal licenses or permits issued by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.

#### ***Permit History Timeline Southern Half***

August 2001- Environmental Resource Permit  
Acquired  
September 2001- Section 404 Permit Acquired  
May 2002- Award of Design-Build Contract  
May 2002- Approval of Environmental Resource  
Permit Amendment  
November 2004- Completion of Construction

The Florida DEP has delegated concurrent authority to issue, deny or waive water quality certifications to a District created under section 373.069 F.S. The SJRWMD issues an Environmental Resource Permit (ERP) under the Environmental Resource and Surface Water Permitting Program. This program combines the former wetland dredge and fill permit issued by the Florida DEP and the Management and Storage of Surface Waters permit issued by the

water management districts. The goal of the program is to protect water resources through regulation of activities affecting surface waters, floodplains and wetlands. The program includes permit application, review, compliance activities, outreach to the regulated public, rule development and wetland data collection. According to the DEP, either an ERP or a Section 401 Water Quality Certification (WQC) is required, but not both.



Responsibility for protection of wetlands and the waters of the United States under Section 404 in the project area is the Jacksonville District USACE.

### **Initial Permitting**

#### **Northern Permitting Section**

The permit applications for the northern half (including the Northern segment and a portion of the Central construction segments) were prepared by the firm of Reynolds, Smith and Hills, Inc. (RS&H) and submitted by FDOT prior to the award of contract. An ERP was issued to FDOT by SJRWMD, authorizing the “widening of Interstate 95 from a rural, four-lane divided highway to a rural, six-lane divided highway within northern St. Johns County”, on August 8, 2000.

The Section 404 permit was issued for the northern half of the project in September 2001. It authorized FDOT, who was the permittee, to place clean fill material over 8.44 acres of waters of the United States (wetlands) in conjunction with the expansion of I-95 between the Duval County Line and State Route 16. The permit was valid through September, 2006. Special conditions included compliance with the conditions of the ERP.

#### **Southern Permitting Section**

The permit applications for the southern half of the project (including the Southern and a portion of the Central construction segments) were prepared by the former Quinn and Associates (now Volkert and Associates) and submitted by FDOT. The southern half’s ERP was issued on August 7, 2001 and authorized construction of a stormwater management system to serve the widening of Interstate 95 from State Route 16 south to the Flagler County Line in specified locations of St. Johns County.

The Section 404 permit was issued for the southern half of the project in September of 2001. It authorized FDOT to place clean fill over 24.07 acres of wetlands in conjunction with the I-95 expansion from State Route 16 south to the Flagler County Line, which was valid until September 2006.

### **Project Participants’ Perspectives of the Initial Permitting Process**

#### ***DOT Perspective***

FDOT secured two separate environmental consultants to prepare the initial permits for both initial project sections in advance of the three design-build contracts being advertised and awarded. As mentioned previously, RS&H was the consultant for the northern section permits and Quinn and Associates was the consultant for the southern section permits. FDOT has indicated that they used basically the same procedure in this project for preparing the permits as they would with a typical Design-Bid-Build project, since this was the first attempt at design-build in Florida. FDOT has also indicated that unless a low-risk project that is very straightforward is involved, it is preferable that the DOT deal with the permits so that the





design-build contractor can have the permit in-hand at the time of the contract award. FDOT feels that this saves time and money because they know what the agency wants and it leads to less risk for the contractor. The time required to obtain the initial permitting is “built into the process” so that the permit is ready when the contract is awarded. FDOT experienced no major problems in dealing with the agencies during the initial permit application in this design-build project, except that a more expedited agency review process to reflect the tighter design-build schedule would have been preferred.

### ***Design-Builder Perspective***

The representative from Connelly & Wicker, who was responsible for the engineering of the Central construction segment, also felt that FDOT’s early preparation of the permits resulted in positive impacts to the project in terms of cost and schedule. For example, it allowed the contractor to begin work immediately, and gave them the flexibility to only modify the permit where necessary. It was felt that this process works especially well in low-bid situations such as design-build. The Northern construction segment’s design-build engineer agreed that the early acquisition of the permits allowed the construction to begin work early without major problems.



### ***Regulatory Agency Perspective***

The regulatory agencies indicated an appreciation of the expertise of the environmental consultants in the preparation of the initial permits, because of their familiarity with environmental issues, as opposed to working strictly with the DOT engineers. From the agency perspective, they did not notice much of a procedural difference between permitting a design-build project and permitting for a traditional design-bid-build. The Corps stated that they recognize that avoidance and minimization alternatives can be limited with regards to highway projects. Consequently, mitigation can become a main focus; however, where practicable, the use of bridges and the narrowest-possible footprints are encouraged to avoid and/or minimize impacts to waters of the United States.

## **Modifications and Amendments**

### **Northern Permitting Section**

An amended and more specific ERP was issued on June 11, 2002, depicting sections, townships and ranges where work was permitted. This permit was then modified six times

during 2003, after the two design-build teams were already on board. The modifications were due to increased wetland impacts and changes to drainage and retention pond design, which were not uncommon issues according to FDOT. Each modification was made and submitted by the relevant design-build engineer, depending on whether the design change occurred in the Northern construction segment or the Central construction segment.

The Section 404 permit issued for the northern half was only modified once, and that was because of an increase in impacts due to the FDOT's inability to obtain certain parcels of land as a conservation easement from the State of Florida, prior to the selection of the contractor. This modification was prepared by FDOT, since the issue occurred prior to the award of the contract. The modification documents that the designs were changed to reflect this situation and resulted in an additional 1.1 acres of wetland impacts. The USACE determined the impacts to the environment as a result of this modification to be minor and granted the request on July 10, 2002.

### **Southern Permitting Section**

The ERP for the initial southern section was only modified once due to the elimination of nine retention pond liners, and a change in their elevations. The modification was prepared by the Southern construction segment design-build engineer and submitted directly to the SJRWMD on April 4, 2003. The permit was modified as requested, on May 2, 2003.

There were no modifications required for the Section 404 permit during the design-build phase.

### **Project Participants' Perspectives of the Modifications and Amendments**

#### ***DOT perspective***

With the exception of the Section 404 permit modification in the initial northern section which was submitted and approved prior to the design-build phase, all permit modifications were submitted directly to the relevant regulatory agency by the relevant design-build team, with little or no interaction from FDOT.

#### ***Design-Builder Perspective***

The modifications were prepared by the respective design-build teams for this project. Connelly & Wicker, Inc. handled the bulk of the modifications for the Central construction segment and dealt directly with the agencies when doing so, with the exception of the right-of-way issue, which was handled directly by FDOT. C&W's representative felt that having the design-build team prepare the modifications is the most efficient method. This allows the design-builder to determine the feasibility of doing a modification, taking into consideration time and cost. This way, the contractor can modify where it makes sense.

*"Ultimately, the contractor wants control of the project and wants to build ... time and cost will determine the feasibility of doing a modification."  
– Andy Cummings, C&W*



C&W's representative felt that they had a great working relationship with FDOT, that there was great understanding and continuity in reviewers and that FDOT was very helpful and proactive, all of which aided in the preparation of modifications.

The design-build engineer for the Northern construction segment noted that the modifications were prepared for the contractors' convenience, not due to required revisions or amendments. Consequently, they felt that it would be less efficient to have the DOT prepare the modifications, unless they are required due to errors in the original permit process.

### ***Regulatory Agency Perspective***

The USACE's main concern was with mitigation and noted that they did not have a problem approving modification requests as long as adequate mitigation was in place. They expressed that this project did not stand out as any different than a traditional Design-Bid-Build project from a permitting perspective. The SJRWMD's experience with design-build projects has been very limited aside from the subject project, but they did suggest that the applicant should gather as much wetland data as possible prior to applying for a permit. Presenting this data at a pre-application meeting might also be helpful.



### **Conclusions**

Both FDOT and the design-build contractors agree that it is best for the DOT to prepare the permits in advance of the design-build contract phase for several reasons: 1) the process involves less risk and is more cost-efficient this way; 2) the DOT has more experience dealing directly with the regulatory agencies; and 3) the process allows the design-build team to begin work immediately.

Both FDOT and the design-build contractors also agree that the design-build team should be responsible for preparing any necessary modifications. The design-build contractors felt that having the DOT prepare the modifications could result in delays, since the contractor knows what they need to do and it makes more sense for them to be doing the modifications; the contractor also only needs to modify where necessary since time and costs will determine if a modification is feasible. The contractor was pleased to have the responsibility associated with this design-build project and prefers to be in control of their project.



#### **Stakeholder/Public Participation**

The FDOT engineers felt that everyone involved in the process was satisfied with the outcome of the project. They perceived that the Contractors were pleased to have greater level of responsibility and be more in charge of their respective contracts.

FDOT felt that the project proceeded in a way very similar to a traditional Design-Bid-Build project and that there was not much of a difference from a stakeholder perspective or from a public standpoint.

The FDOT felt that simpler projects are better suited for the design-build contractors to acquire their own permits from the outset. Their main concern was with agency review times being too long and conflicting with the schedule.

From the permitting perspective, the USACE felt that there is not much of a difference between a design-build and a traditional design-bid-build transportation project and stressed that their main concern is with mitigation. They did note that the extensive knowledge of RS&H and Quinn and Associates, who were hired by FDOT to obtain the initial permits, was appreciated. At the regional permitting level, there seemed to be some discomfort in basing permits on hypothetical data. The SJRWMD recommends a pre-application meeting so that

the agency can base its comments on real data, and that the contractor gather as much topographical and wetlands data as possible prior to submitting an application.

#### **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., DOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible.

##### **FDOT:**

- Prefer to see shorter agency response times to reflect the tighter schedule of Design-Build projects.

##### **Design-Builder – Connelly & Wicker:**

- DOT should acquire all required right-of-way ahead of time, as the design-build team is not as well equipped to handle certain issues such as right-of-way acquisition.

##### **Regulatory Agency – St. John River Water Management District:**

- Pre-application meetings are recommended so that agency staff can base comments on concrete data instead of hypothetical situations. The low level of design associated with design-build requires that wetland impacts be estimated for mitigation prepared according to those estimates. Agencies are consistently uncomfortable with basing permits on estimated impacts.
- The applicant should gather as much data as possible prior to submittal regarding existing topography and wetlands.



### **Project Participants Interviewed**

Kathy Thomas, District Consultant Design Engineer  
Florida Department of Transportation

Jeff Williams, Construction Project Manager  
Florida Department of Transportation

Bill Craig, St. Augustine Resident Engineer  
Florida Department of Transportation

Christine Wentzel, Senior Regulatory Scientist  
St. John River Water Management District

Mark Evans, Biologist and Project Manager  
U.S. Army Corps of Engineers, Jacksonville District

Andy Cummings, Senior Vice President  
Connelly & Wicker, Inc.

Rich VanSickle, Design Engineer  
*Formerly of Parsons Transportation Group*



## Interstate 295 Connector Road Maine Department of Transportation Portland, Cumberland County, Maine

### Project Background

In 1995, a study prepared by the Portland Area Comprehensive Transportation Committee documented the need for a connector road between Veterans Circle / Route 1 and I-295

northbound at the Congress Street interchange along Portland's active waterfront area. Before the construction of this project, traveling from Veterans Circle northbound to I-295 required use of the local streets, which contributed to congested roads and intersections.

The waterfront area is home to a large break-bulk handling operation and several other industrial uses that had to direct their truck trips along the local roads. While Portland's waterfront was growing as a shipping and tourist destination, the lack of a connection contributed to an increase in traffic and travel time, and a decrease in the quality of life in the downtown area.

The I-295 Connector Road (referred to as the Portland



Connector project) was Maine DOT's first design-build project. The 2003 contract was awarded to a team of four companies led by Cianbro Corporation, and including Shaw Brothers Construction, Inc., The Louis Berger Group, Inc., and S.W. Cole Engineering, Inc.

The Connector project included the elimination of Veterans Circle and the construction of three new signalized intersections to the east of the new connector road, as well as three new bridges along the nearly one mile new Connector Road running along the Fore River waterfront. The project also resulted in the creation of more than a mile of new multi-use Portland Trails incorporated into the new roadway and serving to complete a network of trails in the Portland

area. The connector and these trails opened the previously inaccessible area of waterfront known as the Fore River North Area. This area was formerly used as an industrial dumping ground during the 1900s and the soils were contaminated requiring extensive remediation. This project allowed for paved access to, and restoration and productive re-use of this Brownfield site. The completed project was open to the public in November of 2005, just two years after the award of the design-build contract, and approximately two years ahead of schedule.

### **Permit History**

The permits were prepared by Maine DOT in advance of the design-build process.

Plans were at approximately 30 percent level of design at the time of permitting. This project was approved under a Section 404 Programmatic General Permit (PGP) from the U.S. Army Corps of Engineers (USACE). The project was determined to be of the non-reporting Category 1 level of USACE review, which means that this project was considered to have minimal impact and was eligible for the permit without screening, provided all other authorizations are obtained to qualify the project as a Category 1.

The Maine Department of Environmental Protection (DEP) issued a Natural Resources Protection Act (NRPA) Freshwater Wetland Alteration Water Quality Certification (WQC) which includes Section 401 certification at the Tier 1 level for the Portland Connector project. This project received “Permit-by-Rule” review at the State level, under the NRPA, a Maine State Law, which covers very minimal impact projects done under specific conditions. An entity proposing to do work that qualifies for Permit-by-Rule is required to file notice with the Maine DEP instead of preparing an individual permit application. If the applicant is not contacted within 14 days, the permit is approved and the permit is valid for two to three years. This particular permit included four standard conditions addressing administrative matters and erosion control.

### **Initial Permitting**

The Section 404 PGP and the State WQC applications were prepared by the Maine DOT prior to the award of the Design-Build contract in 2003. The project was eligible to be permitted under the PGP used by the New England District of the USACE which covers activities that include “work and structures that are located in, or that affect, navigable waters of the United States.



The USACE authorization under the PGP allowed the placement of “fill in freshwater wetlands adjacent to the Fore River at Portland, Maine in order to construct a new connector road between I-295 and Route 1 to provide local traffic relief”. The permit states that approximately 0.15 acres of wetlands will be impacted by this project, which was signed on November 13, 2002.

***Permit History Timeline***

November 2002 – Section 404 Permit Granted  
February 2003 – Section 401 Certification  
Granted  
2003 – Award of Design-Build Contract  
June 2003 through May 2004 –Permit  
Modification Submittals & Approvals  
November 2005 – Completion of Construction

The project was issued a NRPA (401) WQC from Maine DEP on February 28, 2003, prior to the award of contract, for the construction of a new two-lane connector road and bikeway from I-295 to Commercial Street in Portland for the purpose of improving access to I-295 from Route 1 at Veterans Circle, and to create access to multimodal opportunities within Portland. It approved the filling of 6,835 square feet of freshwater wetland.

## **Project Participants’ Perspectives of the Initial Permitting Process**

### ***DOT perspective***

The Section 404 PGP and the State WQC were prepared in advance of the design-build process by the Maine DOT. The permit applications were based on the Environmental Assessment (EA) prepared pursuant to the National Environmental Policy Act (NEPA) which identified wetlands based on the National Wetland Inventory and field surveys. The plans were at a 30 percent level of design when the applications were submitted and the footprint was already established in the EA; therefore, according to the DOT, it made sense for them to acquire the permit in advance of the award of contract.

Maine DOT stated that they preferred to hold the responsibility for the permits at that point and not hand it over to the contractor. They noted some initial resistance from the agencies, possibly due to unfamiliarity with the design-build process. However, the early preparation of the permits resulted in a time savings of approximately 18 months and opened the possibility of restoring the Brownfield site simultaneously.

### ***Design-Builder Perspective***

The Louis Berger Group, Inc. (Berger) was involved in the eventual preparation of the permit modifications. Berger staff involved in the modification process felt that having the DOT prepare the initial permits was the most efficient way to approach the project. Berger staff noted that due to the aggressive schedule of a design-build project, if the permits were not prepared ahead of time, it would make things more difficult for the contractor. Berger staff also felt that there was greater regulatory cooperation with DOT as the applicant because of the close working relationship that has been established over the years between the DOT and the agencies.





### ***Regulatory Agency Perspective***

From the regulatory agency perspective, the USACE noticed the desire and the expectation for an expedited review process for the permit application. The USACE preferred working with the DOT because of the years of experience they have working together on projects and the working relationship they have developed. However, it was noted that they would not have been disinclined to work directly with a consultant in the permitting process. There were no compliance issues with the Section 404 permit.

The Maine DEP contributor felt that DOT was good about dealing with the issues in advance via interagency meetings which allowed concerns to be addressed early on in the process. DEP staff interviewed noticed the rushed schedule as well, and noted that there were some compliance issues with the water quality certification permit concerning erosion control, resulting from a lack of due diligence on the part of the design-builder in regards to erosion control methods.

*“When responsibility gets handed over to the contractor, the regulators get caught in the middle and there is a disconnect.”  
– Maine DEP*

### **Modification and Amendments**

The two modifications to the WQC and the one amendment to the Section 404 permit were prepared jointly by the DOT and the design-build team. After the contractor prepared the engineering details and the mitigation package for wetland impact, the modification packages were organized and submitted by DOT. Both Maine DOT and the contractor participated in the presentation of the modification to the agencies during meetings.

The Section 404 PGP was amended only once. This amendment was necessary to address the filling of an additional 0.2 acres to allow the construction of a toe berm to prevent slope failure, which according to the DOT was an unforeseen geotechnical issue, and was not related to the fact that it was a design-build project. The amendment was approved in a letter to Maine DOT dated February 27, 2004.

The WQC was modified for the first time on June 27, 2003 to cover an additional 1,625 square feet of fill to be placed in freshwater wetlands at the project site, bringing the total wetland impacts associated with the Connector project at that point to 41,460 square feet. The second modification to the WQC for the Connector project was issued on May 24, 2004 for impacts associated with the construction of the previously-mentioned toe berm. It authorized the filling of an additional 8,095 square feet of freshwater wetlands in a wetland of special significance located within 250 feet of the Fore River, a coastal wetland. To compensate for this impact, Maine DOT proposed to create approximately 22,550 square feet of freshwater wetland adjacent to the impacted site. The proposed mitigation was approved and the permit was modified, requiring Maine DOT to complete construction and final planting for compensation by June 15, 2005.



## **Project Participants' Perspectives of the Modifications and Amendments**

### ***DOT perspective***

When an issue arose in the field where it was evident that design changes and/or modifications would be necessary during the design-build phase, Maine DOT and the design-build team met with the regulatory agencies to let them know what to expect in terms of modifications. This process also allowed for the agencies to express any concerns they had and for the DOT to get agency input on how to approach the issue so that the process could run more smoothly. Meeting with the agencies saved time because the modifications had less of a chance of being “kicked back” multiple times. DOT felt that the agencies were very open to them during the process and they had developed a good working relationship that followed through from the early phases of the project.

### ***Design-Builder Perspective***

Berger, who also helped develop the Wetland Mitigation Plan, assisted DOT in preparing the permit modification because it involved additional wetland mitigation. Berger's representative felt that the process of identifying members of the regulatory agencies up front and making it known that modifications will likely be required worked well for this project.



Portland Connector, looking east from I-295

### ***Regulatory Agency Perspective***

The USACE felt that there was not a substantial difference between permitting a Design-build project and a traditional Design-Bid-Build project. The Maine DEP noted that amendments and modifications are generally not seen in a traditional Design-Bid-Build project. However, a full geotechnical study was not done for this project during the initial permitting phase, and subsequently a modification was required.



### **Stakeholder/Public Participation**

This was Maine DOT's first Design-Build project and they wanted to be up-front with the community and the stakeholders and the regulatory agencies about the process. Maine DOT noted concern from the municipalities that the contractor would be "running the show" in a Design-Build project and that the DOT would not be as involved.

In addition to the public hearings associated with the EA, public meetings were also held during the actual Design-Build contract to discuss the design, traffic control during construction, schedule and overall information on the project and the contractors were present to address concerns that the community had regarding traffic, commuting and parking.

By the time the construction began, the contractor had already developed a relationship with the stakeholders, enabling the process to run more smoothly. Everyone involved with this project gave positive feedback on the DOT's approach and willingness to address all concerns early on in the process.

### **Conclusions**

The Maine DOT's representative felt that a major advantage to the design-build process is that it requires team work. Everyone needs to come into the process with an open mind and an open schedule. The representative felt that the process allowed DOT and contractors to learn about the way each other works and about each other's obligations. They were able to develop a great working relationship as a result of the design-build process because the contract was a lump sum contract, making it in everyone's best interest to work together to build the most efficient and economical project. If this had been a typical project, explains DOT's representative, the designers and the environmental department would have moved on to other projects after the award of contract, but in this situation, everyone was still on board and made the Connector a priority.

Maine DOT's representative explained that the design-build process was more work than they thought it would be, especially having to hold so many meetings with the agencies and the design-build team. However, the nature of the process allowed them to coordinate with everyone in ways that traditional projects do not allow and this was an

advantage to them. Overall it was a very positive experience; the project was completed on budget and on schedule and, according to the DOT representative, the public is pleased with the outcome. Although the Portland Connector was Maine DOT's first design-build project, a total of three design-build projects have since been completed within the state.

### **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., DOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible.

#### **Maine DOT:**

- More education is needed for municipalities and agencies regarding design-build.
- Design-build should be site-specific, and there needs to be familiarity with the site for a successful project.



**Design-Builder – Berger:**

- More participation by the resource agencies during the “partnering process” and “partnering meetings”

**Regulatory Agency – Maine DEP:**

- Incorporate the conditions of the permit into the contract.

**Regulatory Agency – USACE:**

- Identify all stakeholders up front and engage them in planning well in advance of design and placement. Bring them all to the table early and often and get their input at all milestones in the process.

**Project Participants Interviewed**

Shawn Smith, Highway Program Project Manager  
Maine Department of Transportation

Jay Clement, Senior Project Manager  
U.S. Army Corps of Engineers, New England District

Doug Burdick, Environmental Scientist  
Maine Department of Environmental Protection

Dale Spaulding, Vice President  
The Louis Berger Group, Inc.

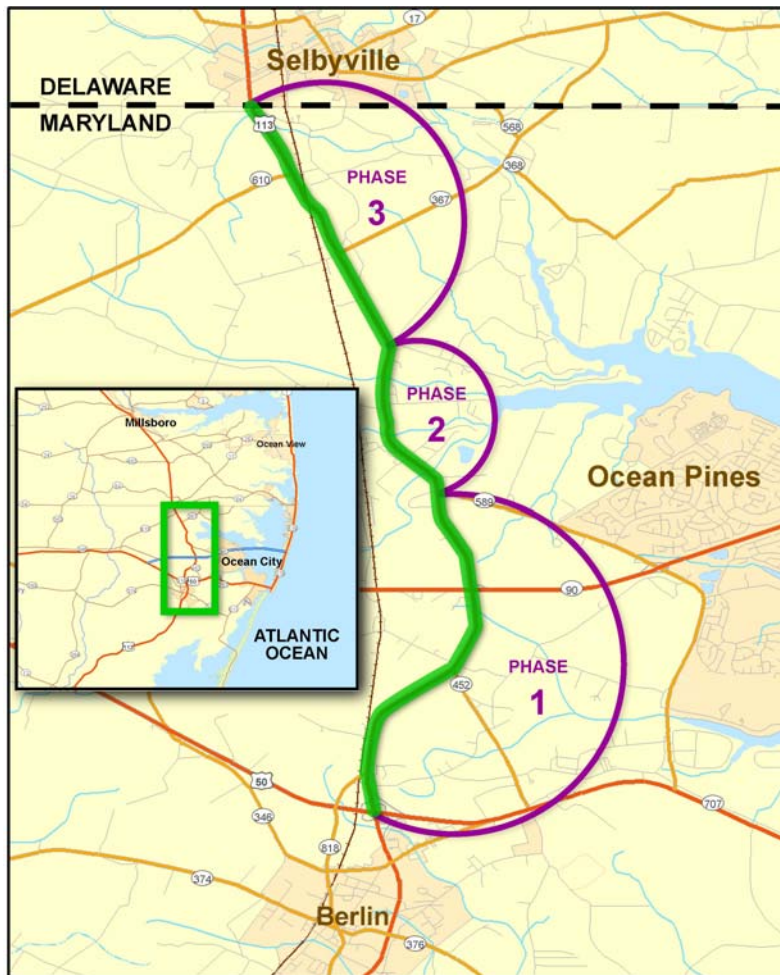


## **U.S. 113 Dualization Maryland State Highway Administration Worcester County, Maryland**

### **Project Background**

Beginning in the late 1990s, Maryland State Highway Administration (SHA) initiated the replacement of over twenty miles of U.S. 113, a major north-south artery in Worcester County, Maryland. U.S.113 serves both local traffic on the Delmarva Peninsula and through traffic between Virginia and Delaware. Significant growth in year-round population, coupled with summer vacation beach traffic, had resulted in a rising number of fatal accidents on the highway. SHA decided that the fastest way to meet the public need for a safer highway was through the design-build method of delivery.

The project was divided into a Northern (discussed here) and Southern Study Area. While construction continues on the Southern Study Area portion, the Northern Study Area construction was completed in Fall of 2003. The Northern Study Area of the U.S. 113 Dualization Project totals 7.5 miles in length and follows an alignment from Berlin, MD north to the Maryland-Delaware line. In order to expedite the project, SHA decided that two of the contract sections within the Northern Study Area would be advanced as design-build projects. The two portions of the project that became design-build contracts are referred to as Phase I North and Phase III North. Phase II North was advanced as a more traditional Design-Bid-Build contract.



Plans were prepared to a 30 percent level of design when the design-build contracts were awarded. The Phase I North design-build contract was awarded to the team of R.E. Pierson Construction Co., Inc., and Century Engineering, Inc.; construction began on March 8, 1999 and was completed on June 13, 2000. The Phase III North portion was awarded to Johnson,

Mirmiran and Thompson, Inc.; construction began in November of 2001 and was completed in November 2003.

### **Permit History**

The Section 401 and Section 404 permit approvals were obtained by the SHA in advance of the design-build process. The original Section 404 permit included impacts from this Northern Study Area of the project as well as future impacts from the Southern Study Area of the project,

#### ***Permit History Timeline***

September 1998 – Section 404 Permit Granted  
(Corridor-wide for Northern and Southern Study Areas)  
December 1998 – Section 401 Certification Granted  
(Phase I)  
March 1999 – Award of Design-Build Contract Phase I North  
March 1999 through February 2002 – Permit  
Modification Submittals and Approvals  
June 2000 – Completion of Construction Phase I North  
November 2001- Construction began on Phase III North  
November 2003- Construction complete on Phase III North

one portion of which was also pursued as a design-build project and is currently open to the public. The other phases in the Southern Study Area are currently in various stages of design. The 404 permit also specified a requirement for an on-site environmental monitor to act as an agency “conduit” and to help facilitate the acquisition of modifications while keeping the agencies informed.

The Maryland Department of the Environment Water Management Administration (DOE) issued a Section 401 Water Quality Certification for

Nontidal Wetlands and Waterways to the Maryland SHA for Phase I North of the US 113 dualization project. Each of the subsequent Northern Phases were permitted by way of a “modification of authorization” to this original permit.

Whereas the Water Quality Certification was modified only once for each of the three northern phases of the project, the Section 404 permit was modified nine times according to specific design changes that occurred during the design-build phase. According to SHA, the modifications were primarily for temporary impacts within the Pocomoke River, Newport Bay, and Isle of Wight watersheds in Worcester County, Maryland.

### **Initial Permitting**

The FEIS was the application for the Section 404 permit which is then modified for each project along the US 113 corridor. The initial Section 404 permit was issued on September 30, 1998 and allows for impacts to the entire project area including all three northern construction phases, as well as the future southern dualization project extending approximately 16 miles to the south of the Phase I North portion. It describes the Northern Study area as “just north of the intersection of US 113 and US 50 to the Maryland/Delaware state line” and notes that the “typical highway construction will include two 12-foot lanes, 34-foot median with guardrail, 10-foot outside shoulders, and 20 feet of roadside grading” and goes on to list exceptions in that design at 10 wetland sites. The original Section 404 permit authorized the fill of approximately 27 acres of nontidal wetlands and 1,975 linear feet of stream for dualization of US 113 from MD 394 north to the Delaware State Line.





The permit included five general conditions, and 36 special conditions. Special condition number 29 required that the SHA retain a qualified, independent, contracted environmental monitor to oversee construction and assure that permit conditions are met. Special conditions also required pre-construction meetings between the agencies, contractors and SHA to provide an opportunity to review and discuss the final construction plans and permit conditions. Plans for each of the subsequent phases were to be submitted to the U.S. Army Corps of Engineers (USACE) for review and approval 90 days prior to the projected start of construction. Specific to the design-build process, special condition number 34 denoted an agreement between USACE and SHA to a two-week turnaround time for review and approval of construction plans for Phase I North. For each subsequent phase, (Phase II North and Phase III North), plans were required to be submitted to USACE from SHA 90 days prior to the start of construction.

Unlike the Section 404 permit, the Water Quality Certification issued by the Maryland DOE covered only Phase I North of the construction. This permit, issued on December 9, 1998 validated the Section 404 permit issued by the USACE. The initial Water Quality Certification issued authorized construction of 2.93 miles of four-lane divided highway and a stormwater management pond. This work was permitted to impact 5.87 acres of forested non-tidal wetlands, 1.3 acres of emergent non-tidal wetlands, 1.97 acres of farmed non-tidal wetlands, 12.67 acres of non-tidal wetland buffers and 390 linear feet of Waters of the U.S. Mitigation required the creation of 67.5



U.S. 113 Worcester County, Maryland

acres of forested/scrub-shrub/emergent non-tidal wetlands for Phase I North. Five general conditions and five special conditions were part of this permit addressing issues of stormwater and in-water work periods. This permit was then amended for each northern phase to include impacts from that phase and extend the permit to cover that area.

### **Project Participants' Perspectives of the Initial Permitting Process**

#### ***DOT perspective***

The initial permit applications were prepared by STV Inc., a consultant under contract with Maryland SHA. The permits were acquired in advance of the design-build process using the FEIS as the benchmark for impacts defined. As the projects were defined in more detail, SHA obtained a modification which typically results in equal to or less impacts. This was the first project for SHA that used a combined NEPA/404 process.



The permit was based on disturbance within the right-of-way, rather than disturbance due to the projected actual alignment, which allowed for a “conservative, yet arbitrary” estimate of permanent impacts. The permit application was submitted by the SHA’s Environmental Programs Division.

An on-site environmental monitor was required as a condition of the Section 404 permit approval. SHA speculated that this might be due to some initial apprehension on the part of the agencies regarding the design-build process. However, SHA felt that the requirement for an environmental monitor resulted in a great resource during the design-build phase; SHA is now voluntarily using an environmental monitor on a regular basis for projects.

### ***Design-Builder Perspective***

The engineering consulting firm of Johnson, Mirmiran & Thompson (JMT) prepared the permit modifications for Phase III North of this project as part of the design-build team. JMT’s contributor felt that having the permits in hand when the design-build contract was initially awarded allowed for a more efficient process because it allows construction to begin immediately. JMT’s representative also noted that the early receipt of permits allowed SHA to handle the mitigation arrangements, which the contractor appreciated. JMT’s contributor believes that there were only positive impacts to the project cost and schedule as a result of the early preparation of the permit because it provided well-defined parameters for the engineers. Specifically, the permit special conditions dictated the minimization efforts required at each wetland/stream crossing, such as 2:1 sideslopes with guardrail and reduced median widths.

### ***Regulatory Agencies Perspective***

The USACE feels that they have a good working relationship with the SHA’s Environmental Programs Division, which according to SHA, works as a “clearinghouse” for all permit submissions, and that they generally prefer to work with them in the preparation of permits. The permit was based on a worst-case-scenario since plans were not at the level of design at which permits are generally applied for. The USACE required an independent environmental monitor to be on site as a condition of the Section 404 permit. The USACE was pleased with the work of the environmental monitor and felt that the monitor was on top of everything.

### **Modifications and Amendments**

The Section 404 permit had nine modifications prepared and approved between 1999 and 2002. These modifications included: specification of timelines for mitigation plan activities; amendments to special conditions; and a request for review and approval of the Southern Waterway Mitigation Plan. For each modification, the project was reevaluated by the USACE and subsequently found to be “not contrary to the public interest,” resulting in approved modifications. The first three modifications addressed the mitigation plan for both the Northern and Southern Study areas, as well as additional impacts to wetlands in Phase I North. Three of the modifications pertained directly to Phase II North, and three were related to Phase III North, for a total of nine modifications to this permit. Upon detailed review of the modifications, it appears that the USACE was rather flexible regarding the establishment of



Cypress wetland mitigation site, Worcester County, Maryland

dates in the initial Section 404 permit. Many of the modifications amended the special conditions of the original permit to include dates for mitigation. Modifications were necessary each time plans were reviewed or reevaluated for each phase of the project. Had those plans been available at the time of permit application, including the exact amount of impacts to wetlands, it can be assumed that the result would have been fewer modifications.

The Section 401 Water Quality Certification was only modified once Phase II North and Phase II North. It was by way of these modifications that

the permit was extended to cover impacts resulting from Phases II and III, since the initial permit only covered impacts in Phase I from Deer Park Drive to MD Route 589. The Phase III modification, which was prepared by JMT, authorized the completion of the dualization of U.S. Route 113 from Jarvis Road (the terminus of Phase II) to the Delaware State Line. The modification included an expanded right-of-way to accommodate stormwater management needs and the establishment of service roads as well as the construction of a new box culvert at Carey Branch. This final modification to the permit allowed for additional temporary and permanent impacts (from what was originally stated in the Phase I permit) to Nontidal wetlands, emergent wetlands, farmed Nontidal wetlands and waters of the United States. Additionally, it authorized the widening and paving of U.S. 113 and construction of additional lanes for safety purposes, resulting in an additional 3,700 square feet of wetland buffer. This modification also extended the expiration date of the permit.

## **Project Participants' Perspectives of the Modifications and Amendments**

### ***DOT Perspective***

SHA's representative felt that they had an excellent working relationship with the design-build contractors, and that the contractors were very diligent about sitting down with SHA before any design changes and subsequent modifications were made. From the SHA representative's perspective, there were no negative cost or schedule implications as a result of the required amendments and modifications. The additional time that was involved in having these meetings and preparing the modifications was built into the contract, and the contractor was made aware that modifications will need to be done. In hindsight, however, SHA's representative felt that having the contractor prepare both the initial permit as well as the modifications might actually have made for a more efficient process.

### ***Design-Builder Perspective***

JMT's environmental specialist prepared the modifications for Phase III of the project. From his perspective, his role was strictly administrative, as he was not in the field, but design changes came to him and he was then to review the design to ensure compliance with the permit special conditions and submit the proper paperwork. He would have preferred to have had more direct agency contact instead of having to go through the SHA for every question or detail and felt that this slowed down the process in some instances. However, it was agreed that multiple points of contacts for each of the construction phases would have likely resulted in increased confusion and lack of continuity for the overall project. JMT's specialist noted that sometimes environmental incentives offered by the SHA as part of the contract are not always worthwhile, especially when the cost of avoiding the environmental impact may well exceed the award offered as the incentive. Although he noted that this was JMT's first experience with design-build projects, subsequent experience with other SHA design-build projects shows improvements in the methods of estimating impacts and incorporating environmental protection methods into the permits.

### ***Regulatory Agency Perspective***

From the USACE's perspective, the design-build process is generally considered to be somewhat disruptive because throughout the course of a project, updated designs and modifications to permits are requested and USACE staff have to drop the current projects that they are working on to review this new information on the design-build project because of the expedited schedule of design-build. The USACE felt that a higher level of design might lead to fewer modifications since permits are based on a worst-case scenario and impacts are often overestimated, which is inefficient since the impact needs to be fine-tuned later on.

The USACE's main concern was with the design-build contractor cutting corners and being given too much leeway with the designs. He noted that they often take shortcuts to save time and money and that this can be harmful to the environment. JMT and SHA representatives both acknowledged that the USACE has these concerns and reservations about design-build.

### **Conclusions**

The SHA representative felt that the process used for this project, whereby the SHA acquires the permits and the design-build contractor modifies them, was somewhat redundant and they would eventually like to see more of the responsibility handed over directly to the contractor. SHA's representative expressed some concern over how the agencies would feel about this, and how the contractor would handle the time-consuming issues that are usually absorbed by the SHA, such as public comment periods. SHA's representative seemed hopeful that perhaps at some point in the future, the responsibility could be shifted.

JMT's specialist felt that the process of having the SHA prepare the initial permit was efficient, and that it might be a conflict of interest if the design-build team was involved in the permit acquisition process. JMT's specialist would have liked to have had more direct access to the agencies in order to avoid having SHA as the middleman, but with the understanding that SHA

(as the owner) has the ultimate responsibility. JMT's specialist felt that the design-build process was very advantageous by way of time and cost savings. He suggested that although the level of design may be lower in design-build, there is a trend toward providing more detailed engineering in environmentally sensitive areas in the initial level of design and also specifying avoidance and minimization measures that need to be incorporated in the final design in the permits. It was pointed out that the regulatory agencies are very concerned that design-build projects over-estimate the impacts initially, with the understanding that the contractor will avoid and minimize impacts later in the process.

The USACE representative's overall concern was that contractors are cutting corners in the field. Although the advantage to design-build is that the projects are completed faster, the downside is that the process is intensive and somewhat overwhelming, taking away from productivity (on the permitting side) and allowing the contractors too much leeway. It was suggested that SHA should have a more selective process regarding which projects are allowed to proceed as design-build. It was also suggested that the level of design be higher, otherwise the permit must be based on the worst-case scenario.

#### **Stakeholder/Public Involvement**

SHA felt that stakeholder involvement was improved as a result of this project. This project was well funded and supported by local and elected officials and citizen groups. Prior to the start of this project, many fatalities had occurred in the community, and led to the forming of a group called CRASH, which was very active in organizing attendance at a 1997 public hearing on the dualization, resulting in over 500 people attending to voice their support for improving the highway. The public was very supportive and the SHA wanted to meet public demand by proceeding with the project as Design-Build.

Design and construction practices resulted in the Project receiving several awards, including: the 2000 Award of Excellence by the Maryland Quality Initiative; the 2001 Special Recognition Award for Quality in a Small Project by the National Partnership for Highway Quality (NPHQ); and the 2001 Achievement Award by the Consulting Engineers Council of Maryland.

Design-build projects represent about 5 to 10 percent of Maryland's highway program. To date, approximately 16 projects have been completed using design-build.

### **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., DOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible:

#### **SHA:**

- Provide more responsibility to the design-build contractor.

#### **Design-Builder – JMT:**

- More direct agency contact by the design-build contractor is preferable.



**Regulatory Agency – USACE:**

- A more selective process for deciding design-build should be employed.
- The design-build contractor should take USACE advice.
- The design-build contractor should stop taking environmentally harmful shortcuts.
- Permits should be based on a higher level of design than is used for design-build contracts.

**Project Participants Interviewed**

John Zanetti, Transportation Engineering Manager  
Maryland State Highway Administration

Steve Elinsky, Biologist  
USACE, Baltimore District

Steve Dawson  
Maryland Department of Environment

Harry Canfield, Environmental Specialist  
Johnson, Mirmiran & Thompson



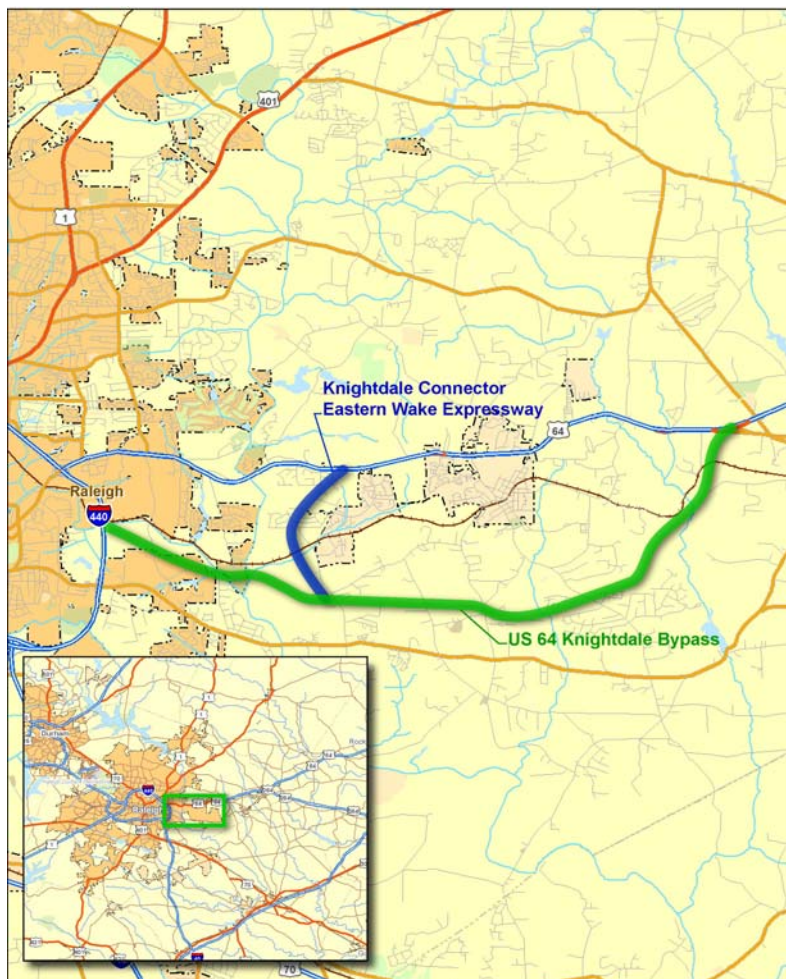


## **U.S. Route 64 Bypass and Connector (Eastern Wake Expressway), Knightdale, Wake County, North Carolina**

### **Project Background**

An increase in commercial development within the U.S. Route 64 corridor in the 1990s exacerbated the traffic congestion traditionally caused by commuters living in eastern Wake County and beyond. The North Carolina Department of Transportation (NCDOT) successfully relieved this congestion with the construction of two design-build projects; the Bypass road south and parallel to U.S. Route 64, and the Eastern Wake Expressway Connector road for additional access to Knightdale.

The Bypass was designed as a new 9.6-mile, six-lane controlled access freeway with eight interchanges, multiple overpasses, and service roads. The majority of the Bypass, including 23 structures, was constructed using a design-build contract. The Bypass project began at the west end at the I-440 Raleigh Beltline between existing U.S. 64 and Poole Road, and continued in a southeasterly direction, crossing the Neuse River along the way. This alignment now provides commuters with a direct route to North Raleigh, Cary, Research Triangle Park, and the future Outer Loop Expressway. The Bypass design-build contract was awarded to North Carolina Constructors, a joint venture of HBG Flatiron of Longmont, Colorado and Lane Construction Company of Meriden, Connecticut, on June 6, 2002.



The Connector Project, also known as the Eastern Wake Expressway, was designed as 1.47 miles of six-lane, controlled access freeway with a variable median highway on new right-of-way, including interchanges and overpasses. The Connector Project began at the then-proposed Bypass project in the south end, at a location just east of the Hodge Road interchange, and

extended northward to the proposed interchange at existing U.S. Route 64 between Hodge Road and Lynnwood Road. The Connector contract was awarded to Barnhill Contracting Company (Barnhill) in October 2003.

### **Permit History**

This project took place within the Neuse River watershed. The Neuse River was designated as being one of the most threatened rivers in North America in 1995, 1996, and 1997. Its borders are located entirely within North Carolina and the entire watershed covers 6,192 acres, including an important estuary, eventually flowing into the Albemarle and Pamlico Sounds.

Water quality of the Neuse has been threatened by intensive livestock operations and wastewater discharge in North Carolina. Of the 3.5 million acres that comprise the Neuse Basin, 48,000 acres are state parks, 110,000 acres are game lands held by the Wildlife Resources Commission, and 58,000 acres are National Forest.

The permits were prepared for the Bypass by NCDOT in advance of the design-build process. Utilizing information presented in a single 1998

Environmental Impact Statement (EIS) prepared for both projects, impacts were considered for both the Bypass and the Connector. However, the permits were based on plans specifically submitted for the Bypass project only, and were conditional upon plans for the Connector being submitted at a later time. Once the Connector plans were produced during the design-build phase, the Connector permits were then prepared by the contractor as a major modification to the Bypass permits, and were reviewed and submitted by NCDOT.

There were six modifications made to the Bypass permit and two for the Connector during the design-build phase. Modifications to both the Section 401 and the Section 404 approvals reflected changes in project design and consequent increases in wetland impacts. Permit extensions were also requested through modification submittals.

### **Initial permitting**

#### ***Bypass***

The Bypass project was already prepared to approximately an 80 percent level of roadway design when it was awarded to North Carolina Constructors on June 6, 2002. According to NCDOT, this project was originally intended to be a traditional Design-Bid-Build project and, as a result, the plans were quite advanced at the time of the design-build contract award. The

#### ***Permit History Timeline Bypass Project***

October 2001 – Submittal of Section 404 Permit  
& Section 401 Cert. Applications  
April 2002 – Section 404 Permit and Section  
401 Certification Granted  
June 2002 – Award of Design-Build Contract  
2003 through 2006 – Six Permit Modifications  
Requested and Approved  
July 2005 – Completion of Construction

#### ***Permit History Timeline Connector Project***

October 2003 – Award of Design-Build  
Contract  
May 2004 – Submittal of Section 404 Permit  
& Section 401 Cert. Applications  
July 2004 – Section 401 Certification Granted  
August 2004 – Section 404 Permit Granted  
November 2005 – Approval of First Permit  
Modification  
July 2005 – Completion of Construction

high level of design may have complicated the overall permitting process undertaken by NCDOT, since the permits were based on advanced designs prepared by the NCDOT; when the design-build contractor came on board and changed the designs, multiple modifications to the permits were required. NCDOT applied for the Section 401 and Section 404 permits on October 19, 2001 and made addendums to the applications on November 9, 2001 and April 2, 2002, both prior to their respective approvals later in April 2002.

The initial Section 401 Water Quality Certification (WQC) issued by North Carolina Department of Environment and Natural Resources' Division of Water Quality (NCDWQ), authorized the placement of fill into 12.95 acres of jurisdictional wetlands, 9,560 linear feet of streams and 40.56 acres of protected Neuse River Riparian Buffers. Mechanized clearing was permitted in 0.2 acres of jurisdictional wetlands. It dictated that any additional impacts to wetlands, streams or buffers would require additional compensatory mitigation. The approval was contingent upon eventual compliance with 17 conditions that addressed sediment and erosion control, channel relocation work and details of compensatory mitigation.



Bridge 4 construction - NCDOT

The restoration, creation, preservation, and/or enhancement of 5,801 linear feet of stream channel and 83.75 acres of Neuse River Riparian Buffers were required to compensate for impacts. In-lieu fee payment to the Wetland Restoration Fund was also an option. These conditions were also required to be incorporated into the Section 404 permit.

The Section 404 permit authorized the discharge of dredged and fill material into waters of the United States and specified that the Bypass and the Connector would cross the Neuse River, Crabtree Creek, Mango Creek, Poplar Creek, Marks Creek, unnamed tributaries and adjacent wetlands in the area "generally south" of Knightdale, North Carolina. The initial permit details a requirement for mitigation of 6.5 acres of unavoidable impacts to wetlands, with 13 acres of restored wetlands at designated mitigation sites. An additional 28.6 acres of wetlands preservation was required at another site to mitigate impacts to 6.5 acres of additional wetlands within the project area. Mitigation for 1,321 linear feet of stream channel impacts required relocation equivalent to the amount impacted, and 6,254 linear feet of unavoidable impacts to an important stream required payment of almost \$3,500,000 to the North Carolina Ecosystem Enhancement Program (NCEEP) and an additional 83.75 acres of stream buffer mitigation in the upper Neuse River basin. Payment was required prior to the start of construction.

## ***Connector***

The Connector project was developed to a 25 to 30 percent level of roadway design by the time it was awarded to Barnhill Contracting Company in October of 2003. An application to modify the existing Section 401 and 404 approvals previously issued for the Bypass project was prepared and submitted to the respective agencies to cover the Connector portion of the project; this modification request was prepared by HDR, on behalf of Barnhill, and submitted by NCDOT on May 11, 2004. Approvals were obtained in July 2004 and August 2004 for the Section 401 Certification and the Section 404 permit, respectively.

## **Project Participants' Perspectives of the Initial Permitting Process**

### ***DOT Perspective***

The Bypass Project was one of North Carolina's first design-build projects, and so provided a learning experience for everyone involved. The permitting was very complex for this project and further complicated by the fact that the decision to go design-build came late in the design process. NCDOT prepared the initial permits for the Bypass, and they felt that this did not result in any negative impacts to the project cost or schedule. However, as is current practice, it is NCDOT's opinion that it would have been more efficient to have the design-build contractor prepare the permits from the outset and to provide a level of roadway design around 25 to 30 percent at the time of the contract award. This level is low enough to allow for fine tuning and efficiency, but high enough to allow the public hearing, comments, and permit processes to proceed. This level of design gives NCDOT a good idea of what the challenges associated with the project will be, while allowing room for flexibility in design and construction. It is now common practice for NCDOT to provide a much lower level of design and rely on the design-build team to prepare the permit applications based on their final design.

### ***Design-Builder Perspective***

The Sungate Design Group, the hydraulic engineer for the Bypass project's design-build contractor, felt that the early preparation of the permits by NCDOT had a negative impact on the project's design schedule and costs. The project became a design-build very late in the process; therefore, the designs were nearly complete when the contract was awarded. Once the contract was awarded, the team needed to modify much of the drainage design due to changes in the roadway design and associated drainage modifications.

As Barnhill's hydraulic engineer for the Connector project, HDR felt that it would have been more efficient to have had the design-build contractor prepare the initial permits for this project. HDR's representative also felt that since impacts had to be estimated to ensure adequate mitigation, this interfered with the environmental incentives that were written into the contract and it increased mitigation costs for this particular project. The result is that the decreased impacts appear as reductions when really they were just overestimated to begin with.

HDR's representative explained that from his perspective, projects should always be designed to reduce impacts and care should be taken to avoid and minimize impacts regardless of





incentives. In general, it was felt that having the design-build team prepare the permits for a design-build project would result in fewer, if any, modifications. Concurring with Sungate, HDR's representative explains that the design-build team would inevitably have to make changes to the design once any design-build project is awarded. HDR's contributor expressed that the point of design-build is to build an economical and efficient project, and to accomplish this, the design-build team would need to refine designs according to the contractor's strengths, experience and other circumstances.

### ***Regulatory Agencies Perspective***

The U.S. Army Corps of Engineers (USACE) and the DWQ representatives both indicated their preference for working directly with the DOT in the permitting process because of familiarity. According to these agencies, the DOT knows what is required and expected for these approvals, and they have an existing working relationship with the agencies. Additionally, the agencies indicated that the contractors, as in this case, are sometimes from out of state, and therefore, are unfamiliar with their specific requirements; as a result, the agencies believe that it makes more sense for them to work with the DOT. Both agencies feel strongly that the DOT has the ultimate responsibility for whatever happens, including violations, regardless of who prepares the paperwork. For this reason, although the contractor prepared the permit applications and modifications for these projects, the NCDOT was heavily engaged in the review and submittal of the applications.

### **Modifications and Amendments**

#### ***Bypass***

In several cases, when modifications were necessary, they were prepared as a package for both the Section 401 and the Section 404 approvals. For the Bypass project, the Section 401 WQC was modified five times over the course of three years while the Section 404 permit was modified three times. The modifications were due to changes in the project and stormwater design and subsequent additional impacts to buffers or wetlands, many of which were minor. The modifications were prepared by Sungate Design Group for the Contractor. They were submitted by NCDOT in the form of a letter to the agencies, describing the changes made and accompanied by new design drawings and charts of changes in impacts as appropriate. Once the actual modifications were received from the agencies by NCDOT, a letter to the contractor's engineer summarized the terms of the newly modified permit.

There was also one permit violation in the Bypass portion where unauthorized temporary fill was placed in a wetland. According to the USACE, the contractor proceeded to place temporary fill into a wetland for access to a bridge site before a modification was prepared for additional temporary impacts to wetlands. NCDOT prepared a modification once it was realized that the temporary fill had been placed, and although this modification was eventually approved, a fine was levied upon the NCDOT.





## Connector

At the time of the initial permit acquisition for the Bypass, the Connector's designs were very preliminary and did not include hydraulic design, so once the design-build contract was awarded and the designs progressed to a greater level of detail, an application was prepared by HDR to modify the Bypass permit to include impacts resulting from the Connector portion of the project. Although it was considered a modification, this was essentially a complete permit application which requested modification of both the Section 401 and the Section 404 approvals; this modification request was submitted on May 11, 2004. There was only one modification made for the Connector after this request.

The application for the Connector project (which was made in the form of a modification to the Bypass permit) specifically stated that this was a pilot project for the design-build team preparing the permits and noted that one of the goals of having the design-build team prepare the modification was to "better integrate the design, environmental review, and construction aspects of transportation projects". The modification also stated that as part of its preparation, the design-build team received constant input from their engineering and environmental staff and that many of the contractors were involved in its preparation as well, resulting in what the team believed to be a practical set of designs that should minimize the need for changes. In addition, the involvement of the contractors in the permitting process affords the regulatory agencies the opportunity to ask specific construction questions of the contractor, and in turn, the contractors gain a much broader appreciation for the permitting process and implications.



2003 Construction - NCDOT

The mitigation for the Connector project had been included in the original (Bypass) permit application and was coordinated with the mitigation for the Bypass. According to the application, the proposed plans for the Connector resulted in a decrease of 0.16 acres of permanent wetland impacts from what was projected in that initial permit. Stream impacts increased and required an additional payment to the NCEEP.

The modification request was granted by NCDWQ on July 6, 2004 and authorized an increase in temporary impacts of 0.03 acres of jurisdictional wetlands, an increase in impacts to jurisdictional streams of 266 linear feet, an increase in impacts to other

surface waters of 1.27 acres and a reduction in impacts to the Neuse River Riparian Buffers of 43,723 square feet and reduction in permanent impacts to jurisdictional wetlands by .16 acres. The USACE issued a modified permit to NCDOT on August 23, 2004 and authorized impacts for the Connector in the amount of 3.46 acres of wetlands, 3.54 acres of ponds and 551 linear feet of stream.

Subsequent to that approval, the Connector portion of the project only required one other modification on November 3, 2005 for a 1,012 square foot increase in the buffer impacts related to a mechanized clearing to enable pipe installation after construction.

## **Project Participants' Perspectives of the Modifications and Amendments**

### ***DOT Perspective***

NCDOT's representative felt that having the design-build team prepare the modifications was the most cost-effective and efficient method and that it minimized misunderstandings. NCDOT worked hard to ensure full disclosure between themselves and the design-build team and to assist in any way they could. Although the modifications were prepared by the contractor's team, NCDOT arranged status meetings, reviewed the modification requests and presented them to the agencies on behalf of the contractor. This was done because NCDOT felt it was important for the agencies to see consistency in the process.

### ***Design-Builder Perspective***

Sungate worked with the Bypass team in the preparation of the modifications to the Bypass permits, which were then submitted to NCDOT for review and submittal to the regulatory agencies. The time and effort required in preparing so many modifications was not included in the original design-build scope and ended up negatively impacting the project's design schedule and cost. Although the Bypass was a difficult project with many modifications, the engineer felt that the regulatory agencies were very patient and helpful and made time to meet with the design-build team in the field on several occasions to discuss issues.

The Connector was permitted via a large modification to the Bypass permit and was prepared by the design-build team's hydraulic engineer, HDR Engineering, who prepared the modification package and one additional modification. Even though the overall permitting was complicated, HDR's representative felt that the process went rather smoothly on the Connector and that there was a great working relationship with the DOT.

### ***Regulatory Agencies Perspective***

The USACE representative suggests that the DOT needs to emphasize to the contractors that what is written in the permits overrides any other on-site interpretations, stressing that if additional work needs to be done, it may not proceed without permit in hand. The USACE and the NCDWQ felt that the Bypass permit violation was a direct result of miscommunications between the DOT and the design-build team, and that it was complicated by the fact that the contractor was not local.

*"A drawback to the Design-Build process may be that the DOT ends up having less control over the design, and has to respond to the contractor rather than guide the contractor through the project."  
– Wilmington District USACE*

## **Conclusions**

The NCDOT now utilizes the Merger '01 Process in design-build projects. Initiated in May 2001 and finalized in May 2005, the Merger '01 process “provides a forum for appropriate agency representatives to discuss and reach consensus on ways to facilitate meeting the regulatory requirements of Section 404 of the CWA during the NEPA/SEPA decision-making phase of transportation projects” (*source: NCDOT website*). There are seven Concurrence Point meetings under this process, the final two of which are attended by the design-build team. NCDOT and the regulatory agencies feel that the contractor’s participation in these meetings is critical, so that the design-build team can directly answer any questions the regulatory agencies might have.

Sungate has worked with NCDOT on several design-build projects since this one, and are advocates of the Merger '01 Process. The contributor noted that the concurrence meetings are very valuable because this is the mechanism by which the contractors get feedback from the agencies, and it allows them to feel more included in the permitting process. Both design-build teams for the subject projects felt that more direct access to the agencies and a more expedited review time might have helped to streamline the process. The Merger '01 Process is intended, in part, to address these general views.

Both regulatory agencies emphasized that this was a learning process for all that were involved and that NCDOT has drastically improved its design-build procedures since these projects were implemented. Under Merger '01, the agencies really appreciate having the contractor’s attendance at the concurrency meetings because it gives them an opportunity to ask construction related questions in lieu of relying on DOT assumptions regarding likely construction methods.

## **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., DOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible.

### **NCDOT:**

- Design-build contractor should prepare permits in the future.
- A lower level of design (25 to 30 percent) allows for fine tuning, efficiency and flexibility.
- Early contractor participation is critical.

### ***Stakeholder/Public Perspective***

NCDOT felt that overall, the Design-Build nature of the Bypass and Connector project improved stakeholder perspective because of their ability to meet the public demand. They believe that a majority of the stakeholders involved had a relatively good comfort level with the process and felt that it was a success.

NCDOT decided to pursue this project as a Design-Build project in order to meet the public demand for this road and, ultimately, so that demand could be met in a timely fashion. This completed project reduced commute times by 15-20 minutes as well as improved emergency response times. NCDOT felt that although the public may not have realized that the project was Design-Build, they did notice that it was finished quickly.



**Design-Builder – HDR Engineering and Sungate Design Group:**

- Prefer that design-build contractor prepares permits.
- More contractor access to agencies is preferable.
- Permitting and designing should be considered hand-in-hand.
- DOT should be available as a resource to design-build teams.
- Expedited agency review time.

**Regulatory Agency – USACE:**

- DOT needs to emphasize that they are ultimately responsible for permits and their modifications and compliance.
- It would be beneficial if contractors were involved early in the process.

**Project Participants Interviewed**

Virginia Mabry, Bypass Project Design Manager  
North Carolina Department of Transportation

Eric Alsmeyer, Regulatory Project Manager  
U.S. Army Corps of Engineers, Wilmington District

John Hennessy, Environmental Supervisor  
North Carolina Department of Environment and Natural Resources, Division of Water Quality

Jonathan Henderson, Senior Project Manager  
HDR Engineering

Josh Dalton, Project Engineer  
Sungate Design Group

## **I-84 Quarry Bridges Replacement Oregon Department of Transportation La Grande, Union County, Oregon**

### **Project Background**

The Upper and Lower Quarry Eastbound and Westbound bridges span the Grande Ronde River and two Union Pacific Railroad tracks in Union County, Oregon. Constructed in the late 1950s and early 1960s, the four bridges became structurally and functionally obsolete and they were unable to handle the heavy traffic volumes and commercial loads traveling locally and regionally throughout Oregon.

The deterioration of the bridges was primarily attributed to the increased weight in commercial loads that have been experienced since the 1960s. Poor sufficiency ratings (34.2 to 51.0) resulted in weight restrictions of 100,000 pounds, which necessitated heavier loads to be detoured along steep, winding secondary mountain highways and through six communities. The outcome of these detours included: increased congestion in the communities; decreased public safety; and additional stress to the secondary highways of the detour route.

This project replaced the original four bridges with modern bridges capable of supporting the loads, and with a design that has less of an impact on the aquatic environment of the river. The lower impact design has fewer and longer bridge spans, resulting in reduced long-term impact to the river environment; the new bridges also follow the same alignments as the previous bridges.

The design-build contract for this bridge replacement project was awarded in January 2003 to a team comprised of HDR Engineering and Max J. Kuney Construction. Construction was completed on November 11, 2004. The level of design was approximately 10 percent when the contract was awarded.





## **Permit History**

The Upper and Lower Quarry Bridges were permitted separately and then combined for construction. The application was prepared after the award of contract, during the design-build process. A Joint Permit Application (JPA) was prepared by the consulting firm of Mason, Bruce & Girard (MB&G) as a member of the design-build team; on behalf of Max J. Kuney Construction, which was named as the applicant, with Oregon Department of Transportation (ODOT) named as the property owner. This particular JPA allows both the Section 404 Permit for the Portland District of the U.S. Army Corps of Engineers (USACE) as well as a General Authorization (GA) for Certain Transportation Related Structures from the then State of Oregon Division of State Lands (now referred to as Department of State Lands) to be applied for simultaneously.



Original Lower Quarry Bridges

Both bridge replacements received separate authorizations under Nationwide Permit (NWP) Numbers 14, 27 and 33 and a General Authorization from the Division of State Lands. Section 401 Water Quality Certification was received through a blanket issuance by the Oregon Department of Environmental Quality (DEQ) under NWP 14. Although issued in April of 2003, the NWPs do not become effective until consultation had taken place with U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) under the

Endangered Species Act (ESA) and the respective agencies issue their Biological Opinions (BO).

One of the major permitting issues associated with this project was the fact that the Grande Ronde River supports several runs of anadromous fish species listed as threatened under the ESA, including Snake River Steelhead Trout, Snake River Chinook Salmon and Columbia River Bull Trout. Since in-water work had the potential to affect these threatened species, consultation was required with NMFS and USFWS.

## **Initial Permitting**

The March 3, 2003 JPA for the Lower Quarry Bridges described the project as the “replacement of the two existing I-84 Lower Quarry bridges over the Grande Ronde River” and estimated 25,500 cubic yards of fill associated with the project, 1,605 of which are associated with wetlands or are below the ordinary high water line. The permanent fill was expected to

impact only 0.16 acre. The project was granted a GA from the Division of State Lands (DSL), and fell under the USACE's NWP Numbers 14, 27 and 33. The application indicated that the estimated start time of the project was June 15, 2003 and the estimated completion date was September 15, 2004.

On April 22, 2003, a letter from the USACE verifying that the Lower Quarry Bridges project was authorized under NWPs was sent to ODOT and Max J. Kuney Construction. The project was authorized under: NWP No. 14 for linear transportation projects; NWP No. 27 for stream and wetland restoration; and, NWP No. 33 for temporary construction, access and dewatering, upon completion of consultation under ESA. Impacts included permanent impacts to 0.162 acres and temporary impacts to 0.453 acres of waters of the United States. Accompanying the letter were three sets of conditions under which the activity must be conducted, including conditions for the Portland District USACE's NWP and conditions for compliance with Section 401 of the Clean Water Act from the DEQ.

#### ***Permit History Timeline***

January 2003 – Award of Design-Build Contract  
March 2003 – Application of Section 401WQC & Section 404 Permit  
April 22, 2003 – Lower bridges project authorized Under USACE Nationwide Permits Numbers 14, 27, and 33.  
April 23, 2003- Upper bridges project authorized under USACE NWP 14,27 and 33.  
November 2004 – Completion of Construction (Lower Quarry Bridges)  
December 2004 – Completion of Construction (Upper Quarry Bridges)

According to USACE, at the time this NWP was verified, DEQ had issued a blanket 401 Certification for certain Nationwide Permits, including NWP No. 14. No further coordination was required with DEQ as long as conditions of the Section 401 are met under the Section 404 permit. Therefore, no hard copy Section 401 certification was issued for this project.

The JPA was prepared by MB&G and submitted to the USACE and DSL on March 24, 2003. Replacement of the Upper Quarry Bridges was authorized under NWP 14, 27 and 33 in a letter dated April 23, 2003. Activities were to include permanent impacts to 0.138 acres and temporary impacts to 0.643 acres of waters of the United States. The three sets of conditions attached to the authorization letter were identical to those for the Lower Quarry Bridges authorization.

### **Project Participants' Perspectives of the Initial Permitting Process**

#### ***DOT perspective***

Initial permits were prepared by the design-build team after the award of the contract, with no ODOT oversight. Each potential contractor had designs prepared and ready in advance of the contract award so that when the contract was awarded, the level of design would be 30 percent and the permits could be acquired. ODOT's representative felt that the 30 percent level of design was an appropriate level for the proposal phase of the contracting process. However, it was also noted that the low level of design may not have provided the level of detail expected by the regulatory agencies. It was explained that the agencies are used to seeing ODOT put a



good amount of detail into the permits, and that the permit application submitted by the design-build team was not very detailed; however, the permits were issued.



Demolition of old Quarry Bridges - courtesy of ODOT

ODOT's representative felt that the permitting issues on this project were low-risk since the new bridges followed the same alignment as the old bridges, so they could transfer the responsibility of the permits to the design-build team. The constructed contract did contain sufficient performance measures and best management practices that established conditions for the permit applications. However, in cases when the permit is acquired ahead of time by ODOT, it is included in the contract and then ODOT has the authority to enforce the permits. When the design-build team acquires the permits, the permit becomes a "contract" between the contractor and the regulatory agency. ODOT becomes a third party to that obligation, and as such, some leverage is lost in managing the contract. Fortunately, the

construction contract had good conservation and avoidance measures in it so the design-build team was provided with boundaries. However, even when the responsibility is in the hands of the design-build team, such as on this project, as owner, ODOT will still be required to deal with any issues.

### ***Design-Builder Perspective***

MB&G's representative, responsible for preparing the initial permit application, indicated that having the design-build team prepare the permits had a negative impact on the project costs because they really had to "scramble" to get the permits on time. They were, however, able to acquire the permits in six months instead of the usual one year, so this ended up positively impacting the schedule. Theoretically, having the design-build team handle the permitting would allow for collaboration between the designers and contractors during meetings in the design phase and the possibility of building an environmentally sound project. However, in this case, the contractor was not able to implement innovative construction methods that they had proposed to ODOT in their proposal.



Debris pile from demolition - courtesy of ODOT



The RFP contained provisions for both technical scoring points and monetary rewards for environmental excellence. Striving for Oregon's Environmental Excellence Award, the design-build contractor proposed the construction of a debris containment platform that would span the river just below the bridge and catch the demolition debris. In the end, this innovation was not physically or mechanically possible, and was not used. This increased the temporary impacts from what was originally projected because instead of using the platform, the river had to be filled one half at a time, to catch the debris.

The MB&G representative felt that the contractor really "pushed the limits" with this project, especially during the time before the in-water work extension was approved and early demolition work resulted in a violation of the NWP conditions when debris fell into the water. This violation really tested the trust that the agencies had in the project and put the project under intense scrutiny.

Additionally, the strict timeline of this project strained the relationship that the consultant has established with the agencies. "Agencies don't respond well to pressure, especially from

*"ODOT needs to critically reevaluate this issue and give up ownership (responsibility) only in areas where their long-term and far-reaching interests are not affected".  
– Jon Adkins, formerly of MB&G*

private industries" explained the representative from MB&G. The result was that ODOT was caught in the middle because they delegated a lot of responsibility and were not happy with how

the design-build contractor handled that responsibility. From the MB&G representative's perspective, the contractor did not keep ODOT well informed.

### ***Regulatory Agencies Perspective***

In Oregon, the USACE has designated staff that work specifically on ODOT projects. Section 214 of the Water Resources Development Act allows the USACE to receive funds from non-federal governmental agencies to dedicate project managers to their projects, sometimes called "WRDA Section 214 Project Managers". The USACE representative involved with this project was not available for interview, but the current USACE's designated project manager for ODOT projects was willing to discuss design-build for the purposes of this study.

The USACE representative indicated that in April 2004, ODOT contracted a private-sector firm known as Oregon Bridge Delivery Partners (OBDP), which is a joint venture between HDR Engineering, Inc. and Fluor Enterprises Inc., to provide day-to-day support to the Oregon Transportation Investment Act's (OTIA III) State Bridge Delivery Program by serving as "liaisons" between the contractors who are preparing the permits for projects, and the permitting agencies. OBDP works to make sure that the design-build contractor understands and can meet criteria necessary for permit preparation and approval.

Currently the USACE has a Regional General Permit for ODOT Bridge Repair and Replacement in effect as part of the OTIA III program. This permit covers bridges that are ODOT-delivered and delivered by OTIA III and OBDP as part of the bridge program.

No perspective on the part of the DSL is included herein, as a representative of that agency was not available.

### **Modifications and Amendments**

No official modifications were necessary for this project. This may or may not be a result of the fact that the design-build team prepared the initial permits themselves and it may or may not be specifically attributed to the fact that this was a relatively straightforward project. The cause can not be definitively ascertained, based on the focus of the research performed for this case study.

However, in-water work extensions were requested by MB&G to begin work earlier than July 1 and to extend work past the October 15 deadline. According to MB&G's representative, this type of extension is neither unusual nor specific to design-build. However, the teams were able to anticipate the need for these extensions much earlier than in a traditional project due to the fact that the contractor was responsible for obtaining the initial permitting. To request an extension, MB&G prepared a "project change form" which describes the change and provides a brief analysis of impacts to regulated resources. This form is routed to all relevant agencies for signatures and then placed in the project file. Because of ODOT's marginal role in the preparation of permits and the extension request, no comments were necessary regarding the modification process for this project.

The standard in-water work period for the Grande Ronde River is from July 1 to October 15. MB&G submitted an extension request on April 21, 2003 to do in-water work from June 15-June 30 in 2003 and 2004. This request rolled back the date of in-water work from July 1 to June 15. However, on June 25, 2003, the USACE issued a notice of non-compliance to ODOT regarding a violation that occurred on or about June 14. Demolition work outside and adjacent to the regulated area had begun on the Upper Quarry bridge deck prior to ODOT and the contractor receiving approval of the extension and completing consultation with NMFS. This would not have been a problem except that debris had fallen into the river, resulting in a violation of several of the conditions of the NWP including the in-water work period. Since work was not permitted in water at this time, the debris had to be removed from the river by hand, and improved erosion control and containment measures were installed at the site as required by the NWP. ODOT took this opportunity to stress that they were working towards developing a policy paper to address the management of design-build projects with respect to USACE permit issues, as they anticipated future design-build bridge replacement projects.

Additional in-water work extensions were requested by MB&G to extend the work period from October 15 to October 31. These requests were submitted on September 9, 2004 and October 3, 2004 in order to allow for the removal of work bridge sections on both the Upper and Lower Quarry Bridges.

### **Conclusions**

ODOT's representative felt that the most efficient way of handling permits on a design-build project is to look at the situation on a case by case basis. A lot depends on the time frame,





schedule and the complexity of the project. This project was considered to be a good project to have the design-build team take the lead on the permits because of the conservation and avoidance measures built into the contract, which provided the contractor with boundaries. If there are certain construction methods that are desired, they should be incorporated into the contract so that it is possible to “mold” what the permit application will look like. According to ODOT’s representative, contractors cannot be expected to voluntarily exceed the contract requirements, as they have limited time and money and will only do the minimum required.

MB&G’s representative feels that it would be less efficient for ODOT to prepare the permits because the whole point of design-build is to be innovative. If ODOT prepares the permits, they have greater control over the process, but it defeats the purpose of design-build. Additionally, ODOT is used to working on a specific time frame, and the contractor wants to move faster than that. MB&G’s representative believes that consultants, such as those on design-build teams, can be more flexible to these time frames, and having consultants prepare the permit can result in fewer modifications.

As a streamlining suggestion, MB&G’s representative suggested that the State obtain programmatic permits for similar design-build projects that lay out performance standards ahead of time that are flexible as well as prescriptive. This way the contractor knows what is expected of them. The Regional General Permit for ODOT Bridge Repair and Replacement under OTIA III was identified as a good example of this.

One of the disadvantages of design-build is that the schedule puts a lot of pressure on those preparing and reviewing the permits. The fact that design-build projects are fixed-price contracts means that when unexpected issues or modifications arise, it results in a cost increase and it becomes necessary for the contractor to internalize those costs. This can result in the contractor needing and/or wanting to cut corners to save money. With design-build, the contractor has an incentive to bid low and make environmentally-friendly promises, although the consultants and subcontractors hired by the contractor get caught in the middle when promises are not met and it strains agency relationships; this emphasizes the point that there are philosophical differences between the consultant and the contractor because, unlike the contractor, the consultant has an interest in maintaining a good relationship with the agencies while the emphasis of the contractor is controlling costs.

**Stakeholder/Public  
Involvement**

According to ODOT’s representative, this project is located in a somewhat remote part of Eastern Oregon, significantly outside of any major population centers. Therefore, there was limited public interest in the project, even though there were several public meetings and a stakeholder outreach effort.

The USACE representative suggested that one of the ways in which the design-build process might help streamline the permitting process is by making sure that the design-build team knows the USACE’s needs up front. An advantage of design-build is that there can be early coordination and the agency can be involved at the onset of the project. However, a disadvantage of design-build is that the time frame of the project usually does not correspond with the timeline of the agency.

## **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., ODOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a Design-Build project are streamlined as much as possible:

- Consider time frame, schedule, and complexity of each project on a case by case basis.
- Incorporate contract provisions, performance measures, and BMPs application into the contract to “mold” the permit.
- Obtain programmatic design-build permits with performance standards.
- Anticipate agency needs in advance through early coordination.

## **Project Participants Interviewed**

Mark Hanson, Manager of Bridge, Geology and Environmental Sections  
Oregon Department of Transportation

Dominic Yballe, Regulatory Project Manager  
U.S. Army Corps of Engineers, Portland District

Jon Adkins, former Project Manager and Level IV Scientist  
*formerly of* Mason, Bruce & Girard, Inc. (MB&G)

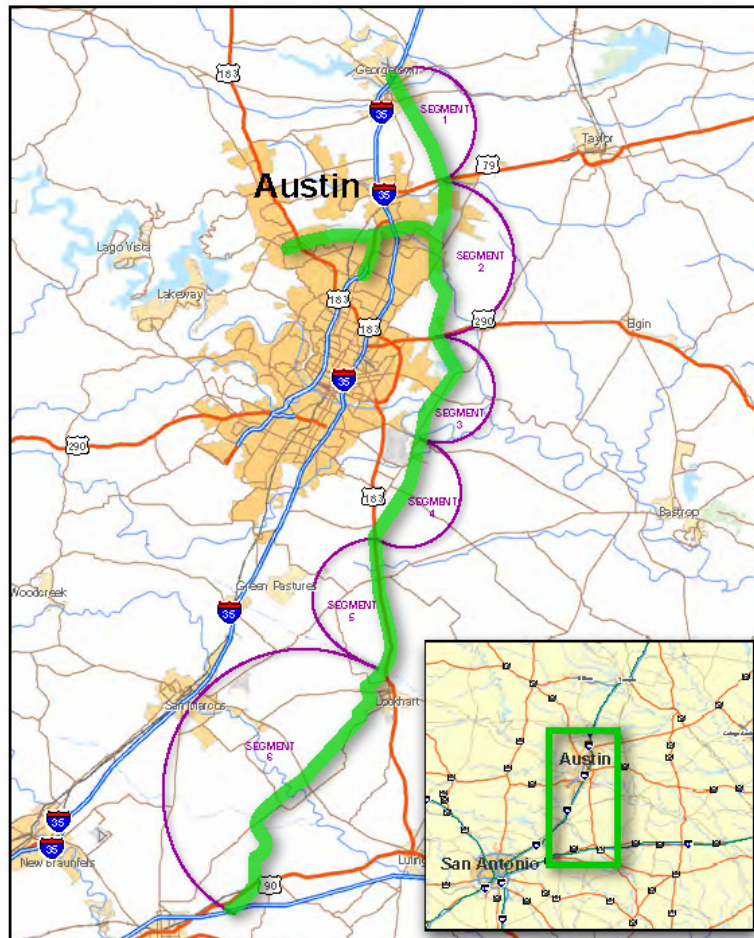
## Texas State Highway 130 Texas Department of Transportation Austin, Texas

### Project Background

As Central Texas has grown, so has its traffic congestion. The Texas State Highway (SH) 130 Project, a project of the Austin District of the Texas Department of Transportation (TxDOT), is intended to relieve traffic in the area by creating a transportation alternative to Interstate 35 (I-35). The new SH 130, which includes the first four of six project segments and 15 project sections, will be a 49-mile toll road extending from I-35 north of Georgetown southward to US 183 southeast of Austin, passing through Williamson and Travis Counties. Segments 5 and 6, encompassing an additional 41 miles, will be constructed as additional funding and right-of-way becomes available.

The first four segments of the SH 130 Project comprise the largest element of the Central Texas Turnpike System Project. The first four segments of SH 130 will be a four-lane roadway with toll facilities and major interchanges at I-35, US 79, SH 45 North, US 290, and SH 71. Segments 1 and 2 are already in operation, opening in late 2006, almost a year ahead of schedule. Segments 3 and 4 are scheduled to be open to traffic in September and December of 2007, respectively. The design of SH 130 also includes limited and discontinuous frontage roads.

The design-build contractor for all segments of the SH 130 Project is Lone Star Infrastructure, a consortium of several engineering and construction firms. SH 130 is the State of Texas' first project to be developed under a Comprehensive Development Agreement, allowing the design-build project delivery method, enabling the work of property acquisition, design, and construction to be undertaken simultaneously.



## **Permit History**

The SH 130 Project required an individual permit for stream and wetland impacts under Section 404 of the Clean Water Act from the Fort Worth District of the U.S. Army Corps of Engineers (USACE). Also, a Section 401 Water Quality Certification (WQC) was required from the Texas Commission on Environmental Quality. Both the Section 404 and Section 401 permits were processed together for the entire 90-mile length of the SH 130 project and acquired on July 17, 2002. The Section 404 Permit allowed TxDOT to discharge approximately 78,000 cubic yards of dredged and fill material into 20.6 acres of waters of the United States in association with the construction of SH 130. The permit indicated that compensation for adverse impacts to the aquatic environment would be mitigated through the enhancement and creation of 63 acres of waters of the U.S. on approximately 175 acres of streamside and floodplain habitat. An additional 90 acres of stream and streamside mitigation areas would be purchased to compensate for any additional impacts.

The design-build contract was awarded in February, 2002, and the contractor received a Notice to Proceed on July 8, 2002, in anticipation of the acquisition of the permits.

The project has required a total of 16 Section 404 Permit and Section 401 WQC modifications for the first 49 miles of roadway. Modifications submitted were based on two Special Conditions of the permit. First, the USACE had to review and approve the detailed design for each jurisdictional crossing prior to construction to demonstrate that the design preserved the existing stream dynamics. Secondly, modifications were required when the design resulted in an increase in impacts of more than 50 linear feet or 1/10 acre over what was initially submitted. The first modification, requested in September 2003, resulted from the need to incorporate temporary impacts into the permit. Other modifications that followed were the result of the design review and changes, such as alignment modifications, elimination of retaining walls, and expansion of drainage easements.

### ***Permit History Timeline***

October 2001 – Submittal of Section 404 & Section 401 Permit Applications  
February 2002 – Award of Design-Build Contract  
July 2002 – Design-Build Contractor Notice-to-Proceed  
July 2002 – Section 404 Permit & Section 401 Certification Granted  
September 2003 through June 2006 – Section 404 and Section 401 Modifications Requested and Approved  
December 2006 – Completion of Construction of Segments 1 and 2  
Late 2007 – Expected Completion of Construction of Segments 3 and 4

## **Initial Permitting**

The initial Section 404 Permit and Section 401 Certification application was prepared and submitted to the USACE by TxDOT as one package. Both approvals were required in order for the design-build process to advance. The expedited schedule allowed for the permit application to be submitted with the project at less than 10 percent design. The initial permit application submittal identified 2.64 acres of wetland impacts, estimated based on aerial photographs, as right-of-entry was not acquired by TxDOT in advance of the submittal. Initially, impacts to





18.06 acres of waters of the United States (12.16 acres of stream channels and 5.9 acres of perennial ponds) were estimated. Approximately 54 acres of riparian habitat were also estimated to be impacted by the project.

When the combined Section 404 Permit and Section 401 WQC application was prepared, the details of the permit application package were shared with the prospective design-build contractors. The permit application package was prepared during the design-build contractor procurement process. Within two weeks of the selected contractor being given notice to proceed, the permit application was approved and the Section 401 and 404 permits were acquired by TxDOT.

## **Project Participants' Perspectives of the Initial Permitting Process**

### ***DOT Perspective***

TxDOT prepared and submitted the initial Section 401 permit and Section 404 WQC application package without any input from the prospective design-build contractors. In addition, the permit applications were prepared with the project at only 10 percent design. Right-of-entry to the property potentially impacted was not yet obtained, and wetland and other jurisdictional water impacts were not based on field reconnaissance, but rather, only on existing aerial photography. Going into the process, TxDOT was aware that it was likely that the project's impacts to jurisdictional waters would be different than initially estimated.

*"When explained to resource agencies how Design-Build works, they get things done faster. They know they would hold up progress if they sit on their reviews."  
— Jon Geiselbrecht, TTA/TxDOT*

A representative of TxDOT indicated that, in hindsight, it would have been preferable to have had a greater level of design detail before the initial permit application was submitted. Nevertheless, TxDOT appreciated the USACE's willingness to approve the permit early with limited design so that they could initiate the project. This flexibility was essential for the progression of the job.

### ***Design-Build Contractor Perspective***

A representative of Hicks & Company, one of the firms comprising Lone Star Infrastructure, indicated that it would have been beneficial if the prospective design-build contractors were allowed to sit in on some of the early discussions between the permitting agencies and TxDOT in order to be better informed of some of the



Construction of SH130 Direct Connection to I-35



commitments being made on behalf of the contractor. Although the Notice-to-Proceed was not granted until days before the Section 404 Permit and Section 401 WQC were acquired, the permit application was submitted to the USACE prior to the award of the contract. Despite being the selected design-build Team, key information about the permit conditions was available to Lone Star Infrastructure at bid time. For example, more submittal requirements turned out to be necessary than were outlined in the permit; this change in procedure resulted in some minor cost impacts. However, once the contractor was on board, everyone involved in the project worked together to move the project forward.

### ***Regulatory Agencies Perspective***

The USACE division responsible for the SH 130 project had limited experience with the design-build delivery approach prior to this project; the SH 130 Project was only the second such project with which the local office had dealt. The agency's first design-build project revealed a weakness in the permitting process, i.e., a lack of sufficient communication and knowledge of time constraints related to the design-build process that was easily resolved with this project. With the SH 130 project, dedicated points of contact were in place to maintain coordination and move the project forward.

### **Modifications and Amendments**

As mentioned above, a total of 16 Section 404 Permit and Section 401 WQC modifications were required for the SH 130 project. TxDOT was responsible for all clearances and submitted all modifications prepared by the contractor. As project design changed and more detailed information became available, permit modifications were necessary to move the project forward to construction.



Construction of SH130 Bridge over Colorado River

As design progressed, it was decided that retaining walls proposed during preliminary design were to be eliminated during final design. These design changes prompted permit modifications. Other changes in design that led to permit amendments/modifications included the alignment adjustments and the expansion of drainage easements. In addition to design changes, permit modifications were required when more detailed information about existing potentially impacted wetlands and waters of the U.S. became available once right-of-

entry within and adjacent to the project's required right-of-way was granted after the acquisition of the initial permit and the design-builder was mobilized.

The first Section 404 permit modification request included information regarding temporary impacts to jurisdictional waters that were not included in the initial permit application. The first modification request also asked for concurrence regarding the change in jurisdictional status of several crossings. Subsequent permit modifications changed the acreage of impacts to jurisdictional waters, sometimes raising the acreage and sometimes lowering it; however, in the end, there was a net increase of 4.9 acres of impacted jurisdictional waters. The project ultimately impacted 15.49 acres of streams, 6.65 acres of open waters, and 3.36 acres of wetlands.

Each permit modification request was submitted by TxDOT, although the packages were prepared by the design-build contractor. During the permitting process, as design changed and permit modification requests were submitted, TxDOT, the USACE, and the design-build contractor met regularly to maintain communication and share an understanding of the relevant issues, potential impacts, and possible solutions. This allowed the modification processes to proceed smoothly with minimal impact on project schedule.

### **Project Participants' Perspectives of the Modifications and Amendments**

#### ***DOT Perspective***

The TxDOT representative noted that the flexibility of the USACE was key to progressing the project. The USACE allowed the initial permit to be approved with only 10 percent design in order to move the job forward. Although some review times were longer than expected and construction depended on the USACE's approval of project changes, the frequent team meetings and design-build nature of the project prompted the USACE to move faster in their reviews.

For any segment of the project to move forward to construction, a detailed 90 percent design was ultimately required to be submitted to and approved by the USACE. Since the initial permit was approved based on 10 percent design, substantial changes in impacts to jurisdictional waters resulted as design was modified and completed. The frequent need to submit design packages and await the approval of the USACE resulted in some impact to the cost borne by the design-builder, but there was no delay incurred to the project.

The TxDOT representative indicated that another strategy that moved the project forward despite the several permit modifications was the Environmental Management System required by the contractor. The Environmental Management System mandated the contractor to keep track of all impacts to jurisdictional waters. Design sheets were prepared with all jurisdictional issues delineated, thus maintaining organization and enabling any required permit modifications to be submitted quickly and as complete as possible.

#### ***Design-Build Contractor Perspective***

The design-build contractor appreciated the streamlined nature of the permitting process. The representative from Hicks & Company described the relationship as a “collaborative

*“Design-Build is a streamlined process because everyone is pulling in the same direction.”*  
– Jason Buntz, Hicks & Company



partnership”. All parties were involved in the decision-making and everyone was pulling in the same direction. With traditional design-bid-build, the permitting process does not receive as much attention and there is less flexibility in the willingness to negotiate through the issues.

The feeling of the representative from Hicks & Company is that the permitting process is not necessarily set up for design-build projects, as design is constantly changing before and during construction. This leaves very little float for major changes involving permit clearances. The contractor found that the permitting agencies’ review time sometimes presented challenges to the design-build team to overcome any potential delays and deliver the project on time. However, the collaborative nature of the SH 130 project enabled this to not be as much of a deterrent.

### ***Regulatory Agencies Perspective***

The representative from USACE agrees that communication must be clear among all involved parties for a project to be successful, especially if the project is delivered through the design-build method. Because of this clear communication, there were no delays to the project schedule on the SH 130 Project. The USACE representative stated that the commenting agencies need to realize that delays in responding frequently results in the loss of momentum and requires time to get reacquainted with the project-specific details.

The design-build delivery method does require a certain amount of buy-in among all stakeholders, rather than just between the USACE and the original applicant (TxDOT). All involved parties were willing to learn the process, understand the project requirements, and put in the additional effort to keep communication lines open.

*“Design-Build does represent a particular amount of buy-in from the stakeholders that is different from traditional projects ... it puts more responsibility of all stakeholders to have a successful project – not just the original applicant”*  
– David Madden, USACE

The USACE representative also noted that the detail-oriented nature of TxDOT’s project manager was paramount to the project’s success. He provided project alternatives and made reports available that cross-referenced accurately.

### **Conclusions**

The first two segments of the SH 130 Project were completed and opened to the public within four and a half years from the contractor’s Notice-to-Proceed. The multiple Section 404 permit modifications were not a hindrance in any way to the project schedule. In addition, the fact that there was insufficient detail associated with the initial wetlands delineation performed by TxDOT in order to secure the Section 404 permit did not interfere with the progress of final design and early construction items.

For the SH 130 Project, the design-build contractor was selected and awarded its contract well in advance of the acquisition of the Section 404 Permit and Section 401 Water Quality Certification, although the applications for those approvals were submitted prior to the award of the design-build contract. However, Notice-to-Proceed was not granted until less than two



weeks before the permit was acquired. The design-build team was not involved in any way in the preparation of the permit and application; more importantly, as they were already selected before the permit was granted, they had limited information about the permit conditions when they were preparing their proposal and cost estimates.

The project required a total of 16 Section 404 Permit and Section 401 WQC modifications. Most of these were for changes to jurisdictional water impacts associated with design changes. TxDOT handled all permit modifications to progress the project without delay. A single individual from TxDOT was responsible for the coordination of each modification among TxDOT, the design-build contractor, the USACE, and all other involved agencies, which worked out well for this project because of the detail-oriented nature of the individual.

The stakeholder and public buy-in was apparent from project onset. The progressive public relations program set up by the design-build team helped push the project along. Regular meetings were held with all involved agencies, governmental bodies, land owners, and community groups to keep communication lines open.

### **Streamlining Recommendations**

Based on the input received from the major groups of participants (i.e., TxDOT, design-build contractor, and Regulatory Agencies), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible.

#### **TxDOT:**

- Early submittal of initial permit with more detailed level of design should occur.
- Regular meetings with all stakeholders, including other agencies, should occur.
- Progressive public relations program is necessary.
- USACE flexibility is preferable.
- An Environmental Management System should be used to keep track of all jurisdictional water issues.

#### ***Stakeholder/Public Participation***

The design-build contractor developed and ran a very progressive public participation program. The project personnel were regularly communicating with land owners, community groups, and state, local, and federal agencies.

A project website has kept the public informed of all milestones. The website is providing project information and schedule, ways for members of the public to get involved and offer their comments, and regular updates on roadway detour plans as construction progresses.

#### **Design-Builder – Lone Star Infrastructure:**

- Design-build proposers should be informed of issues and conditions regarding initial permits before they bid on job or before RFP is released in advance of initial permit application.
- There should be a statutory review time for Section 404 submittals.



**Regulatory Agency – USACE:**

- Stakeholder buy-in is key to success.
- Use of detail-oriented contact person at DOT is desirable.
- Open lines of communication should be maintained.

**Project Participants Interviewed**

Jon Geiselbrecht, Turnpike Environmental Coordinator  
Texas Department of Transportation, Austin District

Jason Buntz, Environmental Compliance Manager  
Hicks & Company/Lone Star Infrastructure

David Madden, Regulatory Project Manager  
U.S. Army Corps of Engineers. Fort Worth District



## **New Tacoma Narrows Suspension Bridge and Replacement Washington State Department of Transportation Tacoma, Pierce County, Washington**

### **Project Background**

To accommodate the growing problem of congestion on State Route (SR) 16 in Washington State, the Washington State Department of Transportation (WSDOT) is nearing completion on the construction of a higher capacity bridge in order to enhance the ability of people and freight to move safely within the corridor between the urban Puget Sound area and the Olympic Peninsula. Located eight miles west of Tacoma, the Tacoma Narrows Channel is one of the

narrowest waterways in Puget Sound and the most likely location to bridge the waterway.



The first suspension bridge built at that site, known as “Galloping Gertie,” opened to traffic in 1940 and collapsed in a windstorm four months later, the remains of which were placed on the National Register of Historic Places in 1992 to protect the bridge from salvagers. In 1950, a second Tacoma Narrows Bridge opened to traffic atop Gertie’s foundations, and that bridge continues to carry about 90,000 vehicles per day over the waterway today. As the bridge was built to accommodate 60,000 vehicles a day, existing rush hour traffic substantially exceeds both the roadway and bridge capacity. Planners estimate that by the year 2020, the total vehicles using the Tacoma Narrows Bridge will increase to 120,000 per day.

In late 2000, an agreement to finance, develop and operate the Tacoma Narrows Bridge Project was finalized between WSDOT and United Infrastructure Washington (UIW). UIW was a joint venture of Bechtel and Kiewit and was formerly known as United Infrastructure Company (UIC). In 2002, WSDOT took over the project to better serve the needs of the public, and the joint venture of Bechtel and Kiewit renegotiated a contract with WSDOT and became known as Tacoma Narrows Constructors (TNC). In September 2002, WSDOT signed notices to proceed

with both TNC and TransCore, L.P. (toll supplier and operator) and final design and construction began.

Currently, WSDOT is building a new parallel suspension bridge south of the existing bridge, and renovating the existing bridge by seismically upgrading it and resurfacing the bridge deck. The new bridge estimated opening day is July 15, 2007, and at that time, all eastbound and westbound traffic will be diverted onto the new bridge and renovations will begin on the old bridge. The existing bridge will be resurfaced and reconfigured to provide two westbound general-purpose lanes and one westbound HOV lane, and will also include seismic improvements to comply with current codes. When the Project is complete, the new bridge will carry eastbound traffic only, with two 12-foot wide general-purpose lanes and one 12-foot wide HOV lane, each with 10-foot wide shoulders. The new bridge will also include a 10-foot wide barrier-separated path for bicycles and pedestrians. The new bridge's towers and caissons are being constructed to accommodate a future lower deck that could hold additional roadway capacity or light rail. According to the Washington DOT, the entire project is expected to reach "Project Substantial Completion" by February 28, 2008.

### **Permit History**

United Infrastructure Washington, (UIW) was initially responsible for financing and permitting for the project. MCK Environmental was hired to acquire the local, state and federal permits required for the project. In 2002, when the WSDOT officially took over as owner of the project, they inherited all of the already-acquired permits. Therefore the initial permitting was not done by WSDOT or their consultant, but by a consultant hired by UIW.

UIW's consultant, MCK Environmental, prepared the permits for this project in advance of the issuance of the Notice to Proceed to the design-build team. Utilizing the Joint Aquatic Resources Permit Application (JARPA) process that is commonly used in Washington State, the Section 401 Water Quality Certification (WQC), the Section 404 Nationwide Permit and the Section 9 Bridge Permit were applied for simultaneously along with several other required permits.

#### ***Permit History Timeline***

April 2000 – Joint Aquatic Resources Permit Application (JARPA)  
June 2000 – Revised JARPA  
Late 2000 – Award of Design-Build Contract  
January 2001 – Section 401 Certification Granted  
March 2001 – Section 9 Bridge Permit Granted  
April 2001 – USACE Nationwide Permit 15 Granted  
May 2001 – USACE Nationwide Permits 7, 18 & 33 Granted  
September 2002 – Project Taken Over by WSDOT  
2003 through Present – Permit Modifications Submitted and Approved  
February 2008 – Expected Date of Construction Completion

The project was authorized by the USACE under Nationwide Permit (NWP) Nos. 7, 15, 18 and 33. The NWP 15 for construction of the bridge itself was issued first, while the NWPs 7, 18 and 33, which were issued for the construction of ancillary parts of the project such as outfalls and a construction pier, were authorized approximately one month later. These permits were all acquired prior to the start of construction in 2002.



## **Initial Permitting**

The final JARPA was submitted April 5, 2000. Preparation of a State Environmental Policy Act (SEPA) Addendum to describe additional construction methods and mitigation measures and an addendum to the Endangered Species Act (ESA) Biological Analysis (BA) resulted in preparation and submittal of the revised JARPA on June 16, 2000. Two JARPA supplements were issued on October 9, 2000 and October 17, 2000 to account for changes in construction scope/methods.

A WQC was issued for this project on January 8, 2001 by Washington State Department of Ecology (Ecology). The permit authorizes construction of a second Tacoma Narrows Bridge parallel to and south of the existing bridge and a reconfiguration and seismic upgrade of the existing bridge, including new interchanges and a toll plaza. Construction included four concrete batch plants, stormwater treatment facilities, three temporary docks, construction of an access road and a materials conveyor system going down the bluffs on both sides of the Narrows. For purposes of this permit, the applicants were considered to be UIW and WSDOT.

A letter from the Seattle District Corps of Engineers notifying WSDOT that this project will be covered under NWP 15 was received on April 20, 2001. NWP 15 authorizes the discharge of dredged and fill material incidental to the construction of Coast Guard approved bridges. The NWP 15 for this project specifically authorized excavation of 110,000 cubic yards of bottom material for two caisson locations, the disposal of that material in Commencement Bay (an open water disposal site), construction of two bridge piers from 136,000 cubic yards of cast-in-form concrete with 116,000 cubic yards of concrete below the mean high water mark, and the placement of 45,000 cubic yards of rock riprap around each of the caisson sites after construction is completed.

A separate letter dated May 17, 2001 authorized this project under NWP 7, 18, and 33. NWP 7 addresses outfall structures and maintenance, and authorized the lengthening of one outfall and the installation of two others. NWP 18 is in regards to minor discharges, and authorized 250 square feet of fill in a particular wetland on the Tacoma side of the project. NWP 33 is for temporary construction, access and dewatering, and it authorized three temporary construction piers and their associated conveyors, specifying that they must be removed upon project completion.

This project was not issued a brand new Section 9 Bridge Permit. Instead the original Section 9 Bridge permit, issued by the USCG on March 10, 1942 and amended on May 5, 1947 for the construction of the second Tacoma Narrows Bridge, and December 9, 1990 for upgrades, was amended to cover the new project. The current amended permit in effect is dated March 5, 2001 and it is for the construction of a new bridge across the Tacoma Narrows. The permit requires notification of the start of construction and monthly reports until construction is finished, including drawings showing what work has been completed at that time, and a letter providing information about any activities that could affect waterway use.



## **Project Participants' Perspectives of the Initial Permitting Process**

### ***DOT Perspective***

The original permits were issued to UIW and not to WSDOT since the project began as a Public-Private Partnership. Once WSDOT took over the project, the permits were re-issued with WSDOT as the lead agency. WSDOT's representative felt that having MCK Environmental acquire permits in advance of the design-build process allowed the cost risk to UIW to be minimized because permit conditions and requirements were known. The early acquisition of permits occurred during the early design/development phase during which right-of-way acquisition, permitting, financial plan development and contract preparation were all taking place simultaneously. This allowed the contractor to quickly proceed with construction. The consultant's approach, however, was different than WSDOT's traditional approach to obtaining permits. The permits were issued on the basis of worst-case-scenarios because of the 10 to 30 percent level of design at the time. The mitigation also was based on a worst-case-scenario. WSDOT's representative noted that delaying the permits to a later time frame might have resulted in reduced mitigation, though likely would have extended the schedule.

### ***Design-Builder Perspective***

MCK Environmental, working on behalf of UIW, was able to obtain the permits for this project in just over a year. MCK Environmental's representative feels that acquiring permits ahead of time had a positive impact in that the design-build team was able to modify design plans to save costs. The team was able to anticipate environmental compliance issues because of the fact that they were able to sit down with the agencies while preparing the permits and incorporate performance-based measures into the permits. Both MCK Environmental and WSDOT representatives noted hesitation on the part of the regulatory agencies in regards to the low level of design at the time of the permit applications. In order to deal with this, MCK Environmental and the design-build legal team came up with a strategy which required more meetings to address the expected agency skepticism. Through these strategic meetings, the regulatory agencies were educated on the contract mechanism of design-build in order to assure them that the contractor is not trying to cut corners. Several times MCK Environmental went back to the team and indicated that more detail (e.g., dimensions, number of pilings, anchor placement locations and construction methods) on certain elements such as in-water elements of the project would be needed in the design before the agencies could issue the permits. MCK Environmental's representative also felt that the resulting mitigation cost commitments for unavoidable loss of aquatic habitat (e.g., payment to Washington Department of Fish and Wildlife to create rock fish habitat) were low relative to what other projects in Puget Sound have spent on compensatory mitigation.

### ***Regulatory Agencies Perspective***

The USACE representative agreed that the low level of design caused delays in the process. Specifically, at issue was a Washington plant species called Eelgrass *Zostera*

*"The Corps needed more than [project] intent to write a permit. We needed size, configuration, and location. We did not want to hold up the early work on the bridge, but we could not worship at the altar of a Design-Build process whose only creed was 'We want to put a sort of pier and outfalls somewhere near Gig Harbor ... or maybe Tacoma.'"*  
– Jack Kennedy, USACE



*Marina*, which is a blooming underwater grass that provides food, habitat and shore stabilization for many species of fish, including endangered salmon, shellfish and invertebrates that support the economy of the state. The USACE representative felt that the design-build team was not initially providing enough information on impacts to the eelgrass. Additionally, the team was not being specific as to where they planned to locate a concrete batch plant and this held up the permit as well. The agency representative stressed that the team needs to be more specific about their plans when they apply for a permit. Design and location took about a year to evolve with enough specificity to get permits. Once that happened, the permitting proceeded quickly.

Ecology's representative noted that the permits were issued based on a worst-case-scenario, which created a lot more work for its staff both before and after permitting. It was also noted that by not knowing all of the issues up front, more time is required and the workload is increased during permitting and during construction when modifications may be necessary.

The USCG usually specifies in the actual permit that a project is design-build in nature, which then establishes minimal acceptable clearances. However, this project's permit did not specify that it was design-build. The USCG's representative explained that the main concern is with navigability, and the design-build method of delivery does not affect the bridge permit in the same way as the other environmental permits. Vertical and horizontal clearances are not negotiable unless increases in clearances are proposed, since waterways must be kept accessible for navigation. However, the lower level of design associated with design-build permitting can affect the bridge permit in that it is contingent upon Section 401 and Coastal Zone Management Act approvals. Vague impacts could hold up those permits and, in turn, hold up the bridge permit. The USCG representative had no preference regarding working with consultants or the DOT, as long as they are familiar with the process.

### **Modifications and Amendments**

On April 20, 2005, an extension of the Section 401 WQC was requested by WSDOT due to the "magnitude of the project" and the fact that the WQC was issued in January 2001, in advance of UIW's notice to proceed issued in September 2002. The extension was also requested because the JARPA must be updated after 5 years if construction had not been completed. Completion of the project was not expected until February 2008. Additionally, the bridge permit needed to be extended and USCG was holding the permit pending Ecology's determination of the WQC. On July 3, 2006, a condition of the Section 401 WQC was amended to require that the applicant will submit a Water



Tower Construction (courtesy of WSDOT website)



Quality Monitoring and Protection Plan to Ecology for review and approval prior to conducting painting, cleaning, concrete grinding and/or any other over-water or in-water work that has the potential to impact waters of the State. The original condition required only that the applicant submit a long-term maintenance manual. The subsequent Water Quality Monitoring Plan for Deck Section Rinsing was submitted in June 2006.

In May 2004, TNC requested a modification made to Special Condition 5 of NWP 15, to allow the disposal of dredge material into Commencement Bay to occur twenty four hours a day from June 16, 2004 through August 31, 2004 and disposal twenty four hours a day at the Ketron/Anderson Island site from June 1, 2004 through June 15, 2004. Disposal had previously been limited to daylight hours only. The modification was approved on May 28, 2004 and stressed that tribal fisheries activities were to be taken into consideration at these sites and if the disposal affected fisheries activities, the authorization would be rescinded.

A modification and time extension for NWP Nos. 7, 15, 18 and 33 was requested by WSDOT on February 9, 2006. The modification was a request to place additional fill into 0.066 acres of wetlands and provide in-lieu fee mitigation. The modification was authorized through a letter on March 18, 2006.

A request for an extension of the Coast Guard Bridge permit was made on March 5, 2003 by WSDOT to extend the permit to eight years instead of five.

### **Project Participants' Perspectives of the Modifications and Amendments**

#### ***DOT Perspective***

Amendment requests to the Section 401 WQC were prepared by WSDOT, as were time extension requests and one of the modification requests to the NWP. According to WSDOT's representative, they continued to rely on the expertise of MCK Environmental in the preparation of the modification requests. The remaining NWP modification requests were prepared by TNC with review by WSDOT prior to submittal. WSDOT's representative noted that federal agencies really wanted to work directly with WSDOT on the amendments. The amendments or modifications that were required were generally due to revisions in work methods and the design-build team worked hard to keep regulatory agencies informed of upcoming work or modifications through the regularly scheduled task meetings.

There was good communication and flow of information which helped to keep the project and regulatory agencies on track. The contractual responsibility for obtaining and complying with the permits rested with the design-builder, though WSDOT was able to provide review and support as appropriate. WSDOT noted that the permit modifications required very responsive timelines from permitting agencies, which stressed the workloads of the agencies. WSDOT's representative felt strongly about ensuring that the contractor was aware of the environmental ethic held by WSDOT and the State of Washington, and that they take compliance very seriously and value their established relationships with the permitting agencies. WSDOT wanted to be sure that the contractor was able to meet the spirit of the law and use a proactive approach during construction.



### ***Design-Builder Perspective***

One modification to the NWP was prepared by TNC. No perspective on the part of TNC is available, however, as they did not participate in the survey.

### ***Regulatory Agencies Perspective***

The USACE's representative felt that the design-build process led to a higher likelihood of having to do modifications because of the lack of detail available in the initial permit. Having been involved in at least three design-build projects, the USACE representative suggested that drawings need to be more detailed than they were in the permit in regards to understanding wetland impacts. He explained that design drawings often will detail things that are completely irrelevant to the USACE, such as the size of rebar being used. What the USACE is interested in seeing is the shadow and the footprint of the structures, and the area of impact. This might allow the process to run more smoothly.

Ecology's representative suggested that the contractors have one point of contact within its team with whom the regulators can coordinate; it was also suggested that the contractors offer to pay for an Ecology point of contact to coordinate and work together to expedite the amendments or modifications that may be needed. This project has been "riddled" with extra requests that required approvals and situations that were time intensive.

The USCG's representative noted that the modification for this project was required because construction was pushed back by about a year. Normally permittees are given 3 years to start a project from the issuance of the permit, and five years to finish it. This project was extended to eight years to allow for completion.

### **Conclusions**

Although this project is unique in that it began as a private project and was later transferred to WSDOT, it encountered many of the same issues as when WSDOT prepares the initial permits in advance of the design-build process. The low level of design caused hesitation among the regulatory agencies which was later alleviated by keeping an open line of communication and by meeting frequently with all parties involved. However, the modifications were relatively minor, considering the magnitude of the project, which may be tied to the fact that the permits were prepared by the design-build team's consultant.

Generally speaking, regulatory agencies do not seem to be in favor of permitting based on a worst-case-scenario, although from WSDOT's perspective, it accelerated the permitting process. WSDOT noted considerable "push back" from the agencies, but felt that as the project progressed, the relationship improved. WSDOT's representative stated that early acquisition of permits will not run smoothly without good data. WSDOT's representative suggests focusing on performance-based expectations to ensure compliance. Impacts, compliance and stewardship need to be demonstrated early on to meet agency concerns.



MCK Environmental's representative stressed that what made this project successful was that the relationship between the agency and the design-build team stayed respectful, and the design-build project manager was present at all critical agency meetings to listen and answer questions, and make timely decisions. The close coordination and sharing of information both ways was critical in meeting everyone's goals associated with permitting. Benefits of the design-build process are that it gets everyone, even the project designers thinking about environmental issues, such as in-water impacts. The process offers a sense of integrated teamwork between designers and consultants rather than the traditional handing off of designs. Having the contractor "at the table" along with the agencies and the consultants and meeting on a regular schedule had a positive impact on the project, rather than just meeting on an as-needed basis such as in the traditional Design-Bid-Build process.

The USACE's representative was adamant about the design-build team needing to be more specific about what they want to do and making requests clear to the agency. It was suggested that informal communications be held ahead of time when applying for permits so that the regulatory agency can be prepared for what is anticipated in a project and understand the issues from the outset. It was also suggested that clarifying permit drawings to show only environmental and wetland impacts when submitting to the USACE is a way to streamline the process. This applies to anyone preparing permits, as the USACE's representative had no preference regarding who they work with, and they always consider WSDOT to be the applicant anyway.

Ecology's representative felt that a benefit to having the permits prepared based on a worst-case-scenario is that not a lot of changes have been required. There were compliance issues with other permits, but those were based on a lack of best management practices by the contractor. Design-build and permitting based on a worst-case-scenario creates a lot of unknowns and extra work for the agency. One benefit of Design-Build, however, is that the team knows what they are going to build, so agencies do not have to look at so many options. They suggest having early coordination and having the contractor available to go over construction techniques as well as identifying a point of contact within the design-build team and arranging a point of contact at Ecology to expedite permit matters.

The USCG representative pointed out that the needs of design-build conflict with the needs of the agencies for permitting. "Agencies want specifics" the USCG representative explains, "project owners want flexibility". They want to be able to be innovative in the field and use techniques and methods as they see fit. They don't know what the impacts will be at the time of permit application, but the agencies need to see impacts. The USCG representative suggests finding the agency or issue that is going to present the greatest obstacle, and then deal with them first to clear up issues before holding interagency meetings.

### **Streamlining Recommendations**

Based on the input received from the three major groups of participants (i.e., WSDOT, Regulatory Agencies, and consultant), the following suggestions have been offered as methods to ensure that the environmental permitting aspects of a design-build project are streamlined as much as possible:



- Close agency coordination is important both before permitting and during project.
- Frequent meetings with contractors and agencies are necessary.
- Clear and specific details and requests to agencies should be provided
- Identify one point of contact for contractor and one for agency.

### **Project Participants Interviewed**

Linea Laird, Tacoma Narrows Bridge Project Manager  
Washington State Department of Transportation

Jack Kennedy, Regulatory Project Manager  
U.S. Army Corps of Engineers, Seattle District

Austin Pratt, Bridge Administrator  
U.S. Coast Guard, Thirteenth District

Loree Randall, Federal Permit Manager  
Washington State Department of Ecology

Kerry Carroll, Federal Permit Manager  
Washington State Department of Ecology

Tracey McKenzie, sole proprietor  
MCK Environmental (at the time of this design- build project, Ms. McKenzie was with a different firm)