Bridge Project Development Manual

Bridge Division

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Manual Notice 2023-1

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Manual: *Bridge Project Development Manual*

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Purpose

This manual provides guidance and outlines uniform procedures and policies for administering and developing projects involving bridges.

Changes

Each chapter of this manual has been updated to reflect changes to the funding subprograms covered by Category 6 funding of the Unified Transportation Program, as well as changes in funding laws.

Notable revisions to this manual include:

- The introduction of Good/Fair/Poor classifications of bridges and the removal of structurally deficient and functionally obsolete terms.
- Changes to the Highway Bridge Program (HBP) eligibility requirements and funding limitations.
- Changes to the Bridge Maintenance Improvement Program (BMIP) submittal and prioritization processes.
- The introduction of the Bridge System Safety Program (BSSP).The prioritization of full closure during construction and the use of Accelerated Bridge Construction (ABC) techniques.
- Updates to the Bridge Plans Specifications and Estimate (PS&E) Review and the Preliminary Bridge Layout Review (PBLR) policies.

Supersedes

This revision supersedes version 2018 (March 2018).

Contact

For more information about any portion of this manual, please contact the Bridge Management Section Director of the Bridge Division.

Archives

Past Manual notices are available in a PDF archive.

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Section 1: This Manual

Overview

This manual was developed to provide bridge project developers and designers with the policies and guidelines set forth by the Texas Department of Transportation (TxDOT) regarding the following:

- bridge programming and funding
- preliminary planning of bridge structures
- preparation and review of bridge layouts
- preparation and review of plans, specifications, and estimates (PS&E) for bridge projects.

This manual is subject to revision as conditions, experience, or research data warrant.

The manual is not a substitute for engineering experience, knowledge, or judgment. Special situations may call for variation from these policy requirements.

Manual Organization

The manual is organized to reflect the chronology of a bridge project from bridge funding to PS&E:

Chapter 1 provides an overview of the Bridge Project Development Manual

Chapter 2 presents bridge programming and funding policies, focusing on the factors involved with the funding and prioritizing, or programming, of bridge projects.

Chapter 3 identifies basic considerations during advanced planning of bridge projects, including general and location-specific planning considerations.

Chapter 4 describes bridge plan review processes.

Chapter 5 provides reference material, timelines, and submittal information for bridge project development.

Feedback

You may direct any questions or comments on the content of this manual to the Director of the Bridge Division, Texas Department of Transportation.

Chapter 2: Bridge Programming and Funding

Contents:

Section 1: Overview

Introduction

Bridge work administered by Texas Department of Transportation (TxDOT) includes projects for construction of new bridges and replacement, rehabilitation, repair, and maintenance of existing bridges on the public highways, roads, and streets.

Definitions

AADT – Annual Average Daily Traffic

Bridge – TxDOT operates under the definition of "bridge" as provided in Title 23, Code of Federal Regulations (CFR), Section 650.305. The CFR definition of a bridge is:

- A structure including supports erected over a depression or an obstruction, such as water, highway or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between the under copings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it includes multiple pipes where the clear distance between openings is less than half of the smaller contiguous opening.
- The definition of a bridge, including multiple pipe structures, can be found in the TxDOT Bridge Inspection Manual.

CONSTRUCT Authority – All phases of work are permitted for projects with CONSTRUCT Authority. Generally, projects with CONSTRUCT Authority are the highest ranked projects that have proposed letting dates within the next four years and are eligible to be selected for the 2- year letting schedule based on readiness. (See "Project Development Process Manual")

DEVELOP Authority – DEVELOP authority phase is for projects in the years 5 to 10 of the UTP. The District performs advanced planning, engineering, environmental studies, surveying, initial utility and right of way planning, and preliminary design. (See "Project Development Process Manual")

ENV – Environmental Affairs Division

On-system – On-system routes are on the designated state highway system. On-system bridge projects are typically funded with a combination of federal-state funds or 100% state funds.

Off-system – TxDOT defines off-system routes as those that are not part of the designated state highway system and are under the direct jurisdiction of a local government. A local government may be a county, city, other political subdivision of the state, or special District that has the authority to finance a highway improvement project. Off-system bridge projects administered by TxDOT are typically funded with a combination of federal-state-local, federal-state, and federallocal funds.

ROW – Right of Way Division

Unified Transportation Program (UTP) – The Texas Transportation Commission (Commission) and TxDOT use the Unified Transportation Program (UTP) as TxDOT's ten-year plan for transportation project development and construction.

The UTP:

- Updated annually in accordance with the Texas Administrative Code (TAC §16.105) and is approved by the Commission annually prior to August 31.
- Authorizes projects for construction, development and planning activities and includes projects involving highways, aviation, public transportation, and state and coastal waterways.
- Provides a listing of projects and programs that may be delivered from available forecasted funding over the next 10 years.
- Highway program funding categories incorporate the various programs outlined by the current federal highway bill and the state general appropriations act.

Infrastructure Investment and Jobs Act (IIJA)– The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, provides funding for highway programs and key infrastructure priorities from fiscal years 2022 through 2026. IIJA was signed into law November 15, 2021. TxDOT's Bridge Program is supported by the National Highway Performance Program (NHPP), the Surface Transportation Block Grant (STBG), and by new programs created under IIJA including the Bridge Formula Program (BFP) and the Bridge Investment Program (BIP).

However, for all TxDOT administered construction projects that include bridges, regardless of the UTP funding category, matters of bridge planning, structural design, plan development, and plans, specifications, and estimates (PS&E) review are under the purview of the Bridge Division. Additional information on the UTP and funding categories is available on TxDOT's main website or in the Transportation Planning Manual and the Transportation Programming and Scheduling Manual.

Section 2: Category 6 Funding

Overview

The Bridge Division is responsible for the management of Category 6: Structure Replacement and Rehabilitation, which address the specific purpose of replacing or rehabilitating poor and fair bridges. The Category 6 funds are distributed based on eligibility criteria and on a statewide basis. Category 6 consists of three funding programs: **Highway Bridge Program (HBP), Bridge Maintenance and Improvement Program (BMIP), and Bridge System Safety Program (BSSP)**.

- **Highway Bridge Program (HBP or Category 6 ON/OFF)** is for the rehabilitation or replacement of poor and fair bridges (see Chapter 2, Section 3).
- **Bridge Maintenance and Improvement Program (BMIP or Category 6 BMN)** is to improve physical conditions, not functionality, of on-system bridges by addressing issues affecting structural conditions before deterioration becomes irreversible, (See Chapter 2, Section 4).
- **Bridge System Safety Program (BSSP)** is targeted at improving the overall safety of Texas bridges. The BSSP consists of three subprograms: the Railroad Grade Separation Program (RGS), the Rail Replacement Program (RRP), and the Higher Risk Bridges Program (BSP). These subprograms will be discussed in further detail(See Chapter 2, Section 5

Definitions

The following are definitions for some of the common terms used when discussing eligibility throughout most of the Category 6 funding programs.

Development Authority (DA) – Authorizes the development of projects consistent with the fiscal resources. (See the Transportation Programming and Scheduling Manual for more information).

Deficiency Classification – A federal criterion that classifies a bridge as poor.

Good – Bridge condition is determined by the lowest rating of National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert). If the lowest rating is greater than or equal to 7, the bridge is classified as Good.

Fair – Bridge condition determined by the lowest rating of the National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert) are rated either 5 or 6.

Poor – Bridge condition determined by the lowest rating of the National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert) are rated less than or equal to 4.

Bridge Health Index (BHI) – Useful metric for assessing the structural health of a bridge. The index is calculated based on the condition of a bridge's structural elements and their relative importance to the structure. A value of 100 indicates the bridge is in perfect condition, and a value of 0 indicates the bridge is completely deteriorated (all elements are in Condition State 4). For the purposes of bridge management, the most important use of a BHI is to measure and/or predict a bridge's level of deterioration at a given point in time. This metric can be used alongside alternative project costs to compare the long-term cost-benefit ratio of those alternatives.

TxDOT Five-Year Rule –any bridge closed for five or more consecutive years with no corrective action taken is not eligible for Category 6 funding and should be removed from the National Bridge Inventory.

TxDOT Ten-Year Rule – a bridge must be in the National Bridge Inventory and inspected for a minimum of 10 years to be eligible for Category 6 funding.

Toll Bridges or Bridges on Toll Roads – If they meet all other eligibility requirements, existing bridges on toll highways may be eligible for Category 6 funding under certain conditions. These conditions include the following:

- The highway is publicly owned.
- Tolls are being collected to finance necessary maintenance of the facility and to pay off construction bonds (that is, tolls are not being collected in any part for profit).

Eligibility Requirements

Each Category 6 funding program has specific eligibility criteria for prioritizing and selecting projects, which will be discussed in detail (See Chapter 2, Sections 3-6). In general, the majority of the eligibility criteria are captured within the Bridge Inspection Database; therefore, a bridge must be in the Bridge Inspection Database to be considered for funding with the exception of Railroad Grade Separation (RGS) funded projects. These projects consist of highway-railroad atgrade crossings and railroad underpasses. Railroad underpasses are in the Bridge Inspection Database for documented vertical clearances over public roadways.

Programming

The Bridge Division (BRG) conducts annual program calls for each of the funding programs. The annual calls consist of validating the current fiscal year's projects plus revisiting the programming of the four future plan development years. The projects programmed within the first two years are included in the department's 12-month and 24-month letting schedules. The following three years are considered to be in the plan development stage. All projects are authorized for construction letting for their respective years, and all project letting dates are subject to change based on changing conditions, including the funding of emergency projects, fiscal funding constraints, and overall project development concerns/needs.

The Bridge Division coordinates with the Financial Management Division and the Transportation Planning and Programming Division to ensure the Category 6 approved projects are placed into

their respective work programs; fiscal funding levels are met; project work type and descriptions are aligned with the appropriate funding program; and project UTP priorities and rankings are consistent across the entire category of funds.

Development Authority for Category 6 (6DA) allows eligible Category 6 projects, that are not on the current UTP Category 6 program's five-year plan, to be authorized for plan development. These projects must be approved by the Bridge Division to be added to 6DA. Once they are ready to let (RTL), 6DA projects can be used to fill funding gaps within the current fiscal year.

Definitions For Construction Projects

- Environmental (ENV) cleared and ENV mitigation complete (cleared sufficiently to proceed into construction without delays)
- ENV permits secured (cleared sufficiently to proceed into construction without delays)
- Right of Way (ROW) cleared (cleared sufficiently to proceed into construction without delays)
- 100% PS&E (includes completed and approved schematic)

conref: Section-2-Category-6-Funding/category-6-funded-change-order-procedures.dita#GUID-ad740135-f07e-4d1e-bd9a-c3ddc9d39aa4

Section 3: Highway Bridge Program

Overview/Goal

The Highway Bridge Program (**HBP or Category 6 ON/OFF**) is a fiscally constrained funding program outlined in the UTP under Category 6: Structure Replacement and Rehabilitation. The purpose of the Highway Bridge Program is to replace or rehabilitate existing On-system and Offsystem poor bridges that are located on public highways, roads, and streets.

Eligibility Requirements

To be eligible for the Highway Bridge Program, (HBP or Category 6 ON/OFF), a bridge must meet the following requirements:

- Bridge must meet the Ten-Year Rule
- Bridge must be in Poor condition
- Bridges in fair condition will be reviewed on a case-by-case basis.

Allowable funding for HBP bridge replacement and rehabilitation projects is limited to the following Bridge Division directives:

- Eligible structure costs are broken out separately for bridges in the project estimate. Bridge Costs are the structural items (mostly TxDOT Standard Specifications 400 Items) listed separately for bridges in the project estimate. The approach roadway is the actual approach roadway called for in the plans.
- Eligible costs are based on the project estimate submitted with the final PS&E package submitted for Bridge Division prior to letting.
- Project costs beyond the eligible Category 6 ON/OFF funding limit required for the project, must come from other available funding categories.
- Though the need to maintain traffic can often be justified, full closure for replacement of an off-system bridge is the preferred process. If the Owner requires a phased replacement instead of a closure, without TxDOT District and Bridge Division agreement, then the Owner will be required to cover all the additional cost related to the phasing.
- Accelerated Bridge Construction (ABC) techniques should be considered to help lessen the required closure times on both On-system and Off-System structures.

On-System Project Funding

The entire On-System project funding is approved up to the most reasonable termination point for approach work, not to exceed 400-ft average approach roadway length (800-ft total approach length). Items not eligible for federal funding are excluded and must be funded by another funding source.

If the project limits exceed the allowable length of approach road, as described above, then the following equation (% RD/BRG) is used to determine the maximum allowable Category 6 funds for projects up 15 million dollars.

- {% Road/Bridge Equation}: {[(Bridge Costs) x 1.25] + (Mobilization + SW3P + Traffic Handling and Barricades + Removal of the Old Structure + Approach Rail + Bridge Approach Slabs)}.
- Costs are limited to no more than 25 % Road/Bridge, and not greater than 2 times the cost of the Bridge Items.

All On-system Projects over 15 million dollars will be evaluated on a case-by-case basis to determine the amount of Category 6 funds available, as well as any additional funding that is required to cover the funding gap.

For On-system Project, if both statements below are true, it is recommended to add an additional category of funding showing one dollar in TxDOT Connect. This will allow for easy identification of Category 6 projects that may be at risk of having a funding gap.

- Total initial estimate of the project is more than two time the bridge cost.
- The project has more than 800 feet of approach roadway work.

Off-System Project Funding

The entire Off-System project funding is approved up to the most reasonable termination point for approach work, not to exceed 150-ft average approach roadway length (300-ft total approach length). Items not eligible for federal funding are excluded and must be funded by another funding source.

If the project limits exceed the allowable length of approach road, as described above, then the following equation (% RD/BRG) is used to determine the maximum allowable Category 6 funds for projects up 15 million dollars.

- {% Road/Bridge Equation}: {[(Bridge Costs) x 1.25] + (Mobilization + SW3P + Traffic Handling and Barricades + Removal of the Old Structure + Approach Rail + Bridge Approach Slabs)}.
- Costs are limited to no more than 25 % Road/Bridge, and not greater than 2 times the cost of the Bridge Items.

All Off-System Projects over 15 million dollars will be evaluated on a case-by-case basis to determine the amount of Category 6 funds available, as well as any additional funding that is required to cover the funding gap.

Outcome of Project

Replacement or rehabilitation projects under the HBP must remove the bridge's deficiency classification. Exceptions to this requirement are off-system historic structures that meet the guidelines of the Historic Bridge Manual, or projects with approved design exceptions. See the **Roadway Design Manua**l for more information about design exceptions.

Disposition/Use of Existing Bridge

Whenever a deficient bridge is replaced or its deficiency otherwise alleviated through the use of HBP funds, the bridge shall either be dismantled or demolished.

Bridges replaced with federal funds that are identified as historically significant may be preserved for adaptive reuse with federal fund participation up to the estimated demolition cost.

See the Historic Bridge Manual for additional information.

Ineligible Work

The costs of long approach fills, causeways, connecting roadways, interchanges, ramps, and other extensive earth structures, when constructed beyond the attainable touchdown point, are not eligible under the HBP.

Statewide Prioritization and Programming

The following process is used on a yearly basis to prioritize and program HBP projects:

- Bridge Division reviews the list of programmed bridges using HBP funds and coordinates with District and the Financial Management Division to verify projects in plan development and projects that are programmed within the 24-month letting schedule.
- Bridge Division develops a list of eligible bridges for the District to review and submit for consideration for HBP funds.
- Bridge Division prioritizes the newly submitted bridges and ranks them according to their overall status:
  - Prioritizing Bridges that are:
    - Poor Condition
    - Fair Condition and Less than 26' wide (inside of rail-to-inside of rail)

- Fair Condition and Scour Critical
- Fair Condition and Short spans over water with a history of debris accumulation resulting in scour.
- Fair Condition and have either Steel or timber piles

- Consideration is given to bridges that are eligible for replacement or rehabilitation and can be included with other planned projects along the same route to take advantage of the traffic control and mobilization costs of the contractor.

- Bridges are selected in this order until funding is exhausted within the year(s) that have available funding.
- Bridges not selected for a requested fiscal year due to funding constraints, are added to the following year for consideration and prioritized until funds are exhausted.
- This process is repeated for each year of the five-year HBP program listing until funds for all fiscal programming years have been exhausted.

Bridge Division encourages bridge projects selected within the first four years be developed with an AVL date within the first two years of the program. This allows projects to be moved into the current fiscal year and be let for construction should another project be delayed.

Table 2-1: Highway Bridge Program Selection Process Schedule

Program Time	Month	Time Frame	Action Items
List Development	August	1 month	BRG develops lists of all eligible HBP projects.
Program Call	September	1 month	District selects new candidates and updates current estimates and lettings.
Project Selection	October	1 month	BRG develops list of District candidates
Selection Comments	November	2 weeks	District comments on selections
Program Call Finalized	December - January	1.5 months	BRG prepares final call list
Final list sent to FIN	January	End of month	BRG sends final HBP list to FIN.
TXDOTCONNECT Updates	February	1 month	District submits TXDOTCONNECT changes and creates new CSJs.

Administration of Off-System Highway Bridge Program Projects

When planning involves an off-system bridge project, particularly those under the Highway Bridge Program, coordination with the local government is essential.

- Prior to a project gaining CONSTRUCT authorization, the appropriate local government should be contacted, and its interest in participating in the project established.
- If the local government expresses interest in the project and the project has CONSTRUCT authorization, an appropriate Advance Funding Agreement (AFA) must be executed between the state and local government before any work, either preliminary engineering or construction, can be performed. In addition to specifying the responsibilities of the parties in the performance and funding of the work, the agreement defines the contributions of the local government for its share of the project funding responsibilities. Local government contributions must be defined in the AFA and may be in the form of advance payments (escrow payments) or work performed under the Participation Waived/Equivalent-Match Project Program (PWP/EMP). The PWP/EMP is described in more detail at the end of this section. Questions about the standard agreement form should be directed to the appropriate Bridge Division project manager.
- Funding participation levels for local governments are set in the Texas Administrative Code (TAC) and the TxDOT Project Development Process Manual. The estimated participation costs are based on the estimate of total project costs made at the time of the agreement or the execution of an amendment to the original agreement.
- For Category 6 OFF projects that are not yet CONSTRUCT-authorized, exercise judgment in communicating with the local government. Avoid expectations of imminent project construction. A project must be CONSTRUCT-authorized to be let for construction. A project cannot be let until a local government either remits escrow payments for its required participation in the project or provides a written agreement on how it will meet its participation requirement.
- The funding participation of the local government may be adjusted where the project is located within a county that meets the statutory definition of being an “economically disadvantaged county” (EDC). Such adjustments of local government participation due to EDC classification are based on applications submitted by the local government through the District office, to the Transportation Planning and Programming Division (TPP). Information on the newest EDC program list is located on TPP’s web page.
- The local match requirement for off-system bridge program projects may be waived by participation in the PWP/EMP. For participation in the program to be considered, the local government must agree to use **local funds** to perform structural or other safety improvement work on other load-carrying deficient bridges or cross-drainage structures in its jurisdiction. The work performed as part of the PWP/EMP shall prioritize repairs or strengthening of bridges on the National Bridge Inventory as identified in inspection reports, over proposed work on cross drainage structures. Such work must have a dollar value at least equivalent to the required local match participation or local participation as adjusted under the EDC provision.

The PWP/EMP requirements defined in 43 TAC Part 1 Chapter 15 Subchapter E Section 15.55(d) must be fully met in initiating and processing such a waiver. Adhere to the following sequence of events for inviting, reviewing, and approving the waiver on an authorized federal off-system bridge program project:

- The District notifies the Local Government of the availability of waivers subject to specified conditions and invites submittal of requests.
- The Local Government makes such a request.
- The District receives and considers the completed request for waiver from the Local Government according to requirements of 43 TAC Part 1 Chapter 15 Subchapter E15.55(d).
- If the request for waiver meets all requirements and approval is appropriate, the District advises the Local Government in writing of approval.
- If the request for waiver does not meet all requirements of 43 TAC Part 1 Chapter 15 Subchapter E 15.55(d) or approval is otherwise not appropriate, the District informs the Local Government, stating the reason(s) for disapproval of the waiver request.
- Execute an appropriate agreement for the project.
- The District keeps a file of all correspondence and documentation pertaining to the waiver and related equivalent-match project(s). Include in this file the subsequent documentation received from the Local Government pertaining to completion of the equivalent-match project work.
- If the District has not been notified by the Local Government that the equivalent-match work has been completed within the specified three-year period, the District inquires as to the status of the work. If it is determined that the work has not been accomplished and no significant progress has or is being made toward such accomplishment, then the five-year period for exclusion of the Local Government from such waivers may be invoked, or an extension requested from the Bridge Division.

Requests for Remedial Work on Completed Off-System Highway Bridge Program Projects (UTP Category 6 OFF)

During its post-construction service life, all bridges will eventually require maintenance. Thus, one of the provisions of the usual advanced funding agreement executed between the state and local government on these projects' states: "After the project has been completed, the local government shall accept full ownership and operate and maintain the facility authorized by the agreement for the benefit of and no charge of toll to the public."

However, there may be instances where a local government will approach the District requesting repair or other remedial action by TxDOT on a completed off-system bridge project with the local government requesting the remedial action due to poor design or design error.

The presence of design deficiency should be determined by a review of all the pertinent information and facts. This review shall include all deliverables and design notes.

Section 4: Bridge Maintenance and Improvement Program

Overview

The Bridge Maintenance and Improvement Program (BMIP) goal is to address bridge condition needs through systematic preventive maintenance to reduce life-cycle costs as well as through rehabilitation. In order to maximize the useful life of a bridge, a systematic approach for maintenance and improvement is integral to make bridge asset management effective in reducing overall life-cycle costs across the inventory.

The BMIP will improve physical conditions (not functionality) of on-system bridges by addressing all deficiencies that could limit its serviceability or longevity through continued and accelerated deterioration. Through effective preventive maintenance actions, the service life of bridges addressed by the program could be extended a minimum of 25 years, with only routine maintenance needed for the next 10 years.

Definitions

The following are definitions for some of the common terms used when discussing eligibility for the BMIP.

Bridge Preservation/Preventative Maintenance: Planned, cost-effective treatments that preserve the current condition or delays future deterioration of the condition of a bridge. Activities include, but are not limited to, element surface coating, drain cleaning and unclogging, removal of debris in and around joints, and removal of debris on bent caps and abutments.

Bridge Repair/Rehabilitation: Activities performed to restore the condition of a bridge or bridge elements. Activities include, but are not limited to, bearing adjustment, surface painting, concrete repair, structural steel repair, and structural deck overlay (**does not include asphalt overlay**).

Bridge Improvement: Activities performed to improve the as-built condition of a bridge or bridge elements. Activities include, but are not limited to, re-decking, raising of superstructure, bearing replacement, structural strengthening, cathodic protection, and channel improvement.

Eligibility Requirements

To be eligible for the BMIP (Category 6 BMN), a bridge must meet the following requirements:

- A bridge must be in Good or Fair condition (Items 58, 59, 60, or 62 rated a “5” or higher).
- A bridge in Poor condition with isolated areas of deterioration.
- Engineer’s estimate must show that proposed work to be performed will not exceed 60% of the replacement cost. The Engineer’s Estimate shall consider all repairs and improvements needed.

  - When it may not be feasible, or prudent from a cost perspective, to raise each condition rating to a 7, a written justification should be provided.
  - The justification must include an explanation of why the lower condition rating will not affect service life or long-term durability. The goal of each BMIP project is to achieve another 25 years of service life.
- Bridge Class Culvert must be in Fair condition. Culvert requests will be looked at on a case-by-case basis, as replacement is often the more economical choice.

Included Work Categories

The following specific work categories are eligible work types under BMIP funding:

- Re-decking projects when deck condition meets the BMIP criteria.
- Bridge raisings if the bridge has damage due to over-height impacts (superstructure equals 5 or 6 as a result of impact damage). Additional bridges could be included on a case-by-case basis to ensure that raising one does not move the impact problem to another bridge.
- Relief joints in concrete pavement and/or approach slab work if action helps to improve deck, substructure, or superstructure element ratings (limit of 40 feet from end of bridge).
- Approach guard fence, mow strip, safety end treatment, and transition when associated with other approved work (up to **150 ft.**.per bridge corner).
- Steel protective coatings. All painting projects under this program must use thirdparty paint inspection services provided and funded by the Materials and Tests Division.
- Post-tension repairs. Overview during implementation must be coordinated with Bridge Division to ensure inspection forces are experienced and trained in repair work.
- Installation of corrosion mitigation measures
  - cathodic protection system.
- Retrofits of two-column bents and crash-wall installation.
- Steel piling encasements

Excluded Work Categories

The following specific work categories are **not eligible** for funding under the BMIP:

- Bridge widening projects that require installation of additional substructure elements. Minor widening in conjunction with deck replacement that can be accommodated using the existing substructure will be eligible.
- Bridge replacements.

- Bridge rail replacement-only projects.
- Debris removal-only projects, although debris removal may be included when addressing other defects on the bridge through BMIP.
- Projects to address critical findings. While the Bridge Division remains available to assist District in responding to critical findings, it is not the goal of the BMIP to serve as a reactionary funding source to address such issues.

Statewide Prioritization and Programming

TxDOT's main goals for prioritizing bridges using BMIP funds is to extend the service life of bridges, as well as improve and preserve the physical condition of the State's On-system bridges. District will submit their top BMIP project priorities to the Bridge Division, then Bridge Division will program projects based on the information submitted by each District.

District provide:

- District Name
- Desired letting FY
- Rankings to prioritize their projects submitted
- Initial cost estimate for repairs and traffic control.
- Scope of work for each project.

- A Field Assessment must be conducted for each structure that is submitted by the District during the BMIP program call. These Field Assessments should be performed by properly trained District personnel or by a Consultant.
- The District may request assistance performing the field assessments from Bridge Division for:
  - Complex structures
  - Structures over water when the District does not have access to a boat.
  - Structure requires inspection of substructure elements below the water line.
  - Special access is required to perform the field assessment.
- These Field Assessments will be used to determine the scope of work and detailed cost estimate.
- Based on the condition assessment findings, a final project list will be set by the Bridge Division. A three-year priority listing will be developed and maintained by the Bridge Division. All project eligibilities and priorities are subject to re-evaluation and change each year, if necessary.

Table 2-2: Bridge Maintenance and Improvement Program Selection Process Schedule

Program Time	Month	Time Frame	Action Items
List Development	August	1 month	BRG updates bridge data in the Bridge Portfolio Manager
Program Call	September	1 month	District selects new candidates and updates current estimates and lettings.
Candidate Project Selection	October-December	3 months	BRG reviews candidate list from District submitted projects and reviews current project changes
Program Call Finalized Candidate List Published	December-January	End of month1.5 months	Final BMIP list sent to District and BRG PMs. BRG prepares final call
Long list sent to District and planning is started for TxDOTConnect Updates.	January	1 month End of the month	District submits TxDOTConnect changes to current BMIP projects. Final BMIP list sent to District and BRG Project Managers
Field Assessments performed by District personnel	April – September February-July	6 months	District starts working on the next years call submittal by identifying bridges and performing field assessments to acquire Pictures, Quantities, and scope of work. BRG review required.
TxDOTCONNECT Updates Program Call Finalized	September -October	2 months	Completed BMIP Field Assessment Forms are sent to their BRG-PM

Section 5: Bridge System Safety Program

Overview

The inventory of structures in Texas includes many structures that are several decades old. Most, if not all, of those structures were not designed to include the same standards as those being designed today. Also, the design engineers of that time did not have the benefit of utilizing the construction technology available today that helps to achieve longer spans in bridges. The Bridge System Safety Program will target several areas that will improve the safety of Texas drivers on and around Texas bridges through three subprograms.

The three subprograms of the **Bridge System Safety Program (BSSP)** are:

- **Higher Risk Bridges (PID Code = BSP)**
- **Rail Replacement Program (PID Code = RRP)**
- **Railroad Grade Separation Program (PID Code = RGS)**

Higher Risk Bridges Program

The Higher Risk Bridges Program is a subprogram of the BSSP that addresses those structures that have:

- Documented scour risks
- Narrow Deck – 26-ft or less in width (inside rail to inside rail) for two-way structures
- Steel or timber piling with advanced section loss
- Unprotected 2 column bents

Eligibility Requirements

- **On-system**. The Higher Risk Bridges Program will only fund the replacement or rehabilitation of on-system, TxDOT owned bridges. Bridges that are a part of a Comprehensive Development Agreement (CDA) or other non-state funded projects are not eligible.
- **Not eligible for HBP**. The Higher Risk Bridges Program will focus on addressing safety issues on On-system structures that are not currently eligible for replacement through the Highway Bridge Program criteria.
- General Condition ratings >4. The deck/superstructure/substructure/culvert ratings must be greater than 4.

Structures must meet one of the following criteria to be eligible:

- Structures with small diameter columns (33-inch diameter or less), that are exposed to truck traffic or railroad traffic without a crash protection system.
- Structures with substructure elements in the channel of a streambed, where the average span length of the structure is less than 50 ft. These structures must also have either documented scour that substantially affects the load carrying capacity or documented debris buildup during or immediately following two or more flood events.
- Structures that are Scour Critical.
- Narrow Structures. – A narrow structure is defined as a structure with Bridge Roadway Width (Item 51 from TxDOT Coding Guide) measuring 26-ft or less.
- The Bridge Division will prioritize candidate narrow structures based on
  - Deck Width
  - AADT
  - % Trucks
- Structures on the NHS that are Sub-Standard for Load Only (SSLO), meaning the bridge has good condition scores but has a load restriction.
- Direct connectors or locally owned structures over On-system facilities are not eligible for BSSP regardless of width.

Statewide Prioritization and Programming

The following process is followed on a yearly basis to prioritize and program Higher Risk Bridge projects within the BSSP:

- Bridge Division notifies District of the annual BSSP Program Call. Identification of candidate Higher Risk Bridge projects for the BSSP will occur at the same time as the annual HBP program call.
- District proposes candidate projects based on a map of suggested projects provided by Bridge Division and based on District needs. District should provide written justification for each proposed project to assist in project selection. This justification should explain why each bridge is eligible for the BSSP program.
- Bridge Division will evaluate each candidate project on a case-by-case basis. Projects with documented safety concerns related to one or more of the eligibility criteria listed in the previous section will be given priority during the selection process.
- Projects are added to the program until funding is exhausted.
- Bridge Division notifies District when project selection is complete.

Table 2-3: Bridge System Safety Program – Higher Risk Bridges Selection Process Schedule

Program Time	Month	Time Frame	Action Items
List Development	August	1 month	BRG prepares map of eligible candidate projects.
Program Call	September	1 month	District updates estimates and letting dates for ongoing projects during the program call.
Program Call	September - October	2 months	District evaluates eligible candidate projects and prepares written justifications
Selection Comments	November	2 weeks	District submits new candidate projects and accompanying written justifications
BSSP Approval	November	2 weeks	BRG selects new projects
Program Call Finalized	December - January	1.5 months	BRG prepares final call list
Final list sent to FIN	January	End of month	BRG sends final BSSP list to FIN.
TXDOTCONNECT Updates	February	1 month	District submits TXDOTCONNECT changes and creates new CSJs.

Railroad Grade Separation Program

The Railroad Grade Separation (RGS) Program is a sub-program of the Bridge System Safety Program that addresses the construction of new grade separation structures at existing at-grade highway-railroad crossings and the rehabilitation or replacement of deficient highway underpasses of railroads on the state highway system. The eligible state highway system routes must be of a classification greater than local road or rural minor collector on the functional classification scale; (i.e., they must be classified as federal-aid highways). Title 23 of the CFR Part 646 Subpart B – Railroad-Highway Projects provides federal policy and guidance on these types of projects.

Selected and prioritized highway-railroad grade separation projects are in some instances authorized in funding Category 6 RGS of the yearly Unified Transportation Program (UTP) under the CONSTRUCT level of authorization. Category 6 RGS funding is targeted for each of the following:

- new grade separation structures
- remedy of deficient railroad underpasses

Candidate projects for construction of new grade separation structures are prioritized using a cost-benefit index, while projects for railroad underpass replacement/rehabilitation are prioritized using a priority rating. The cost-benefit index and priority rating are summarized in the Statewide Prioritization and Programming section and described in detail in Chapter 10 of the Rail-Highway Operations Manual.

Eligibility Requirements

Funding for Category 6 RGS should be limited to the actual structure and any other work necessary to make the structure serviceable and consistent with Design Manual requirements. This limits Category 6 RGS funded approach roadway work, to that which is sufficient to transition the grade-line of the structure to an attainable touchdown with the existing or new approaching roadway that is at or near level grade. Roadway and other work that is outside these limitations should be funded from other categories.

These limitations should particularly control when the new or replacement structure will be constructed on a new alignment or at a new location.

Except in extraordinary situations, the existing at-grade highway-railroad crossing should be eliminated.

Statewide Prioritization and Programming

- **New Highway-Railroad Grade Separation Projects**
  - The cost-benefit index used in prioritizing new highway-railroad grade separation projects is the estimated cost in millions of dollars that would be saved in highway user cost over a 50-year design life of the new grade separation structure constructed at the existing highway-railroad crossing. The higher the estimated user cost, the higher the priority. The estimated user cost includes costs due to casualties (fatalities and injuries) and personnel and traffic equipment delay.
  - Factors used in calculating a cost-benefit index are as follows:
  - Average daily traffic
  - Number of train movements
  - Number of highway fatalities, injuries, and property damage only crashes.
  - Period (range) in years for which casualty data are available.
  - Estimated yearly costs for personnel and traffic equipment delays due to waiting for trains to pass.

The data described for cost-benefit index calculation are compiled with data from the National Safety Council, CST, the Internal Revenue Service, and the Equipment Watch Rental Rate Blue Book.

When a new highway-railroad grade separation project eliminates an existing highway-railroad crossing with an active warning device (or is ordered by a state regulatory agency to install one),

the respective railroad company is federally required to provide 5% of the project cost. See 23 CFR 646.210 for more detailed information.

- **Railroad Underpass Replacement/Rehabilitation Projects**
  - Projects for railroad underpass replacement/rehabilitation are prioritized using a priority rating or score on a numerical scale of 0 through 100. The higher the number, the less sufficient the structure for underpass highway traffic, and thus, the higher the priority for replacement/rehabilitation.
  - The attributes and relative weights used in calculating a priority rating score are as follows:
  - Vertical clearance - 50%
  - Percent trucks - 30%
  - Horizontal clearance - 15%
  - Average daily traffic - 5%
  - This rating calculation uses the Bridge Inspection Database appraisal ratings (0 through 9) for vertical and horizontal clearance. The Bridge Inspection Database also provides percent trucks and average daily traffic information.

Table 2-4: Railroad Grade Separation Program Selection Process Schedule

Program Time	Month	Time Frame	Action Items
List Development	August	1 month	BRG prepares map of eligible candidate projects.
Program Call	September	1 month	District updates estimates and letting dates for ongoing projects during the HBPprogram call.
Program Call	September - October	2 months	District evaluates eligible candidate projects
BSSP Approval Selection Comments	November	1 month	District submits new candidate projects
Program Call Finalized	December - January	1.5 months	BRG prepares final call list
Final list sent to FIN	January	End of month	BRG sends final RGS list to FIN.
TXDOTCONNECT Updates	February	1 month	District submits TXDOTCONNECT changes and creates new CSJs.

**** NOTE: Per the Rail-Highway Operations Manual, Chapter 2, 12-18 months are needed to get an agreement for an overpass from the time RRD-RSS receives the Exhibit A. 24+ months is needed for an underpass structure.***

The main steps involved in the agreement process are:

- Execution of preliminary engineering agreement (TxDOT + RR)
- Design approval by BRG + Rail Division Rail Safety Section (RRD-RSS).
- Design review by RR or RR Company's Consultant.
- Design approval by RR for both plans and theoretical 5% cost calculations.
- Estimates from RR for any track, flagging, and grade crossing work.
- Agreement reviews and signatures by RRs to RRD-RSS.
- Ex B process occurs after the agreement has been signed (100% plan approval).

Category 6 Developmental Authority (**6DA**) can be utilized to perform a feasibility study to determine the effects of changing a highway-railroad underpass structure to a highway-railroad overpass structure. Overpass structures are more desirable to the Department and the railroads. Contact your Bridge Division project manager for more information.

Rail Replacement Program

The Rail Replacement Program (**PID = RRP**) is a sub-program funded out of the Bridge System Safety Program (Category 6 BSSP)). The goal of the RRP is to improve safety on bridges and bridge-class culverts that are in good condition, but have no traffic safety features, or have traffic safety features that do not comply with the Manual for Assessing Safety Hardware (MASH).

Refer to the TxDOT Bridge Railing Manual, Section 2 - FHWA Policy on Bridge Railing Overview. This section contains a list of numerous policy memorandums and reports issued by FHWA, the American Association of State Highway Officials (AASHTO) and the National Cooperative Highway Research Program (NCHRP) regarding bridge railing safety. Federal laws have also been passed that include measures to enhance the crashworthiness of roadside features.

Eligibility Requirements

To be considered eligible for RRP funding, a bridge or bridge-class culvert must meet the following eligibility requirements:

- **On-system** – The RRP will only fund the replacement of bridge rails for On-system, TxDOT owned bridges. Bridges that are a part of a Comprehensive Development Agreement (CDA) or other non-state funded projects are not eligible. The focus of the RRP is on structures that have no other available funding options.
- **Not historic** – The coordination process required to obtain approval for rails installed on historic bridges are more complex than for other highway bridges, and design and

installation requires special consideration. Rail upgrades to historic bridges should be performed when the bridge undergoes a general restoration.

- **Not eligible for HBP, or not Poor condition** – The RRP will focus only on On-system structures that are not currently eligible for replacement or rehabilitation. Bridges that are poor or are eligible for the Highway Bridge Program (HBP) will not be considered. Other considerations that may disqualify a structure from the RRP is the consideration of how narrow the existing structure is, and how an upgraded rail may exacerbate the issue.
- **General Condition ratings > 5** – The deck/superstructure/substructure/culvert rating must be greater than 5.
- **Non-compliant or substandard rail** – The bridge must have a non-compliant or substandard bridge rail, or have no safety feature, as indicated by the first digit "0" in Item 36, "Traffic Safety Feature" of the Bridge Inspection Database. A bridge is identified as having a non-compliant traffic safety feature if it lacks a safety feature or has a safety feature that is non-compliant per the Bridge Railing Manual . Rails that are height-deficient are also considered non-compliant but are subject to additional funding restrictions. However, the RRP will not fund work required to address heightdeficient rails where the deficiency is due to the overuse of overlay on bridge decks. These height deficiencies should be addressed by the District. Refer to the TxDOT Bridge Railing Manual for more information.

Some additional situations affecting eligibility for RRP funds are described below:

- **Compliant safety shapes not meeting FHWA test level requirements** – If the bridge rail is a compliant safety shape, but the test level of the rail shape does not meet the posted speed of the roadway, then this rail replacement is eligible for RRP funding. RRP will also fund replacement of rails which do not meet the required FHWA minimum for a TL-3 designation on NHS bridges.
- **Bridge rails coded "1" in the Bridge Inspection Database** – Any bridge rails marked as a "1" in the first digit of Item 36 are not eligible for the program. If there is a question as to validity of the Bridge Inspection Database coding, please refer to the TxDOT Bridge Railing Manual, Chapter 4, Section 2, Table 4-2. If a discrepancy with the as-built condition and Bridge Inspection Database coding is discovered, please coordinate with the District Bridge Inspection coordinator to have the database updated. Please utilize the **Rail Identification Guide** to properly identify the existing bridge rail.
- **Economic benefit** – Conditions for candidate bridges will be evaluated to determine if retrofitting a new bridge rail is economically justified.

Funding

The RRP funding per bridge project will include the cost for replacing the entire **non-compliant bridge rail** plus the cost of **safety end treatments, transitions, mow strips, and MBGF**, not to exceed **150 feet per corner**. All other associated costs will need to be funded by a different category of funding. If the total length of approach rail exceeds **600 LF per bridge**, then a nonCategory 6 funding will be required to cover the total additional approach rail cost. For

culverts, the program will fund construction of a safety end treatment (SET) or MBGF if it is the more appropriate choice for the location. All other costs associated with RRP projects are the responsibility of the District {Mobilization, Traffic Control, SW3P, etc.}.

Rail replacement projects should be coordinated to coincide with other projects using traffic control that encompass the limits of the bridge, or traffic control costs will be funded with a source other than Category 6.

Funding and policy for the RRP is supported by IIJA and 23 CFR 133(b)(15), which states that eligible projects include highway and transit safety infrastructure improvements and programs.

Statewide Prioritization and Programming

Statewide prioritization and programing will be based on:

- Bridges with damaged bridge rails or frequently impacted rails are the highest RRP priority. Evidence of repeated collisions or significant impacts needs to be brought to BRG's attention for funding review. BRG wants to ensure that significantly damaged substandard rails are not repaired in kind; therefore, if **10 percent or 75 feet**, whichever is least, of the entire bridge rail is damaged, all of the railing should be replaced with a compliant rail. The intent of this guidance is to discourage repairs to non-compliant rail due to lack of maintenance funds. A newer rail will help save maintenance funds because it will fare better in a vehicular collision, and it will be of standard construction, which is easier to repair.
- Bridges with Average Annual Daily Traffic (AADT) greater than or equal to 10,000 vehicles per day (vpd) and on bridges that are on the National Highway System (NHS).
- Bridges with high impact frequencies, but AADT lower than 10,000 vpd will be considered by BRG for inclusion in the RRP on a case-by-case basis.
- Bridges with design or posted speeds, whichever is higher, of 50 mph and greater.

The Bridge Division will prioritize candidate projects based on the below criteria and with input from the District. The criteria to prioritize RRP projects are as follows:

- Rating 1 -- Rail damage is >= 10% of bridge rail or 75 ft. (whichever is the least)
- Rating 2 -- AADT >= 10,000 vpd
- Rating 3 -- On the NHS and the posted/design speed >= 50 mph
- Rating 4 -- Not on the NHS and the posted/design speed >= 50 mph
- Rating 5 -- AADT < 10,000 and with an accident history (case-by-case basis)

The RRP has an annual call for project consideration. Projects are programmed for four years at a time. The first two years of projects are included in the department's 24-month letting schedule with the following two years in a plan development stage. All of these projects are authorized for construction letting for their respective years. All project letting dates are subject to change based on changing conditions, fiscal funding constraints, or emergency projects.

Table 2-5: Rail Replacement Program Selection Process Schedule

Program Time	Month	Time Frame	Action Items
List Development	August	1 month	BRG prepares map of eligible candidate projects.
Program Call	September	1 month	District updates estimates and letting dates for ongoing projects during the program call.
Program Call	September - October	2 months	District evaluates eligible candidate projects and prepares written justifications
Selection Comments	November	2 weeks	District submits new candidate projects and accompanying written justifications
Program Call Finalized	December - January	1.5 months	BRG prepares final call
Final list sent to FIN	January	End of month	BRG sends final RRP list to FIN.
TXDOTCONNECT Updates	February	1 month	District submits TXDOTCONNECT changes and creates new CSJs.

Section 6: Bridges Not Funded by TxDOT

Bridges Not Funded by TxDOT

Bridges not funded by TxDOT but crossing TxDOT right-of-way must meet TxDOT design criteria. In these cases, the Bridge Division negotiates agreements between the State and the owner. The Bridge Project Manager, in conjunction with the District, will coordinate a satisfactory agreement setting forth the financial responsibility and commitments of each party involved. The maintenance of those structures and liability of each party are handled through other agreements such as the Municipal Maintenance Agreements or other agreements identified in Chapter 3 of this manual.

Submit the Preliminary Bridge Layouts to Bridge Division for review and comment. Submit the PS&E to the Design Division in accordance with the usual PS&E and construction letting processes.

Chapter 3: Advanced Planning

Contents:

Section 1: General Considerations

New Bridges

There are many factors that should be considered in advanced planning for new bridge projects, including:

- Superstructure type - span lengths, superstructure depth
- Vertical clearance
- Horizontal geometry
- Substructure
- Hydraulics
- Speed of construction
- Need for detours or phased construction
- Aesthetics
- Economics
- Accelerated Bridge Construction (ABC)

Modification of Existing Structures

Modifications such as widening, strengthening, or raising a structure are often required to meet increasing traffic demands at existing bridges. Modifications of bridge projects funded by any category of funding may occur only after an analysis of the following:

- Field Assessment by District personnel that have completed the TxDOT inspection training, Safety Inspection of In Service Bridges, to verify the current condition of the structure -or-
- signed and sealed appraisal of the structural adequacy and condition of the existing structure by a professional engineer licensed in the State of Texas. Approval of all proposed work is required from Bridge Division prior to developing plans for modifying an existing structure
- An economic study of replacement versus modification
- A study of the method and handling of traffic during construction

Appraising the Existing Structure

Use the following procedure to determine the structural adequacy and condition of the existing structure:

- Perform a load rating in accordance with the Bridge Inspection Manual for all structures in Fair or Good condition or if the bridge plans indicate a design less than HL-93, and provide a signed and sealed copy of the load rating to the District to be added to the Bridge Inspection Management System. At a minimum, the bridge must have a Rating Factor of 1.0 at the Operating Rating level for Specialized Hauling Vehicles, Emergency Vehicles, Design load of HS-20 or HL-93 design load, and any other truck loads added to the TxDOT Bridge Inspection Manual, and must have condition ratings as follows:
  - Item 58 (Deck) – Rating greater than or equal to 4
  - Item 59 (Superstructure) – Rating greater than or equal to 5
  - Item 60 (Substructure) – Rating greater than or equal to 5
  - Item 62 (Bridge-class Culvert) – Rating greater than or equal to 5

    Do not widen and/or rehabilitate a bridge if load posting would still be required after work is completed, except for the historically significant bridges discussed later in this chapter.
- Perform a field assessment. The field assessment must be performed by a person who has successfully completed the bridge inspection training.
- Submit the field assessment report, after it has been signed and sealed by a registered professional engineer in the State of Texas, to the Bridge Division project manager. The Bridge Division Field Operations Section Director will also consider the following factors in determining whether to rehabilitate or replace a structure:
  - Load Rating
  - Condition of the bridge as determined by the Field Assessment
  - Type of structure
  - Intended use (average daily traffic, percent of truck traffic, location, etc.)
- Updated hydrologic and hydraulic analyses, including a scour analysis, are required for all bridge widening, bridge replacement, and roadway profile modifications that may adversely affect the flood plain, even if no structural modifications are necessary

Plan development can continue only if the Bridge Division concurs with the scope of work proposed in the field assessment form. These criteria apply to all bridge types, including bridgeclass culverts. Replace bridges with a load capacity that cannot be economically strengthened to a Rating Factor of 1.0 – Operating Rating, for all load rating trucks in the TxDOT Bridge Inspection Manual

Field Assessment

The field assessment form and associated site visit are required to determine all structural deficiencies that prohibit a reasonable service life with normal maintenance. Inspect the condition of the foundation, substructure, and components of the superstructure. Starting this process with a

desk review of the files located in AssetWise is recommended before performing the site visit. **The desk review is not a substitute for visiting the bridge and performing a thorough inspection to identify the scope of work and most importantly to determine accurate quantities related to each type of repair**.

- While at the bridge check for the following deficiencies:
  - Settlement of the foundation
  - Spalling, cracking, or deterioration of the concrete and corrosion of the reinforcing steel in the substructure.
  - Deterioration in steel protective systems (paints or coatings) and corrosion/section loss in the structural steel elements.
  - Movement or rotation of the abutments due to approach slab or pavement movement.
  - Any damage or defects of the beams or girders and bearings
  - Unsound concrete, cracking, delamination, efflorescence, and corrosion of the reinforcing steel in the top and bottom of the deck.
  - Deterioration of the overlay due to defects or damage in the underlying concrete.
- Photographs of the following:
  - Bridge ends
  - Bridge elevations
  - Bridge approaches
  - Problem areas (Take a few pictures showing each type of deficiency/repair location that will be referenced in the Working Drawings/Plans. There is no need to include a picture of every location in the field assessment form.)
  - Views upstream and downstream, if applicable
- After Completing the field assessment:
  - A review and analysis of the extent of the deficiencies and the feasibility of repair.
  - Replacement at some point in the future is usually recommended if a 20-year remaining service life cannot be predicted.
    - **(future = once the bridge becomes eligible for replacement)**
  - A review of the hydraulic adequacy, if applicable.
  - If there are concerns of whether to repair or replace the deck, Bridge Division is available to help with Non-Destructive Testing (NDT) to help determine the extent of the damage, repair quantity calculations, and the associated cost estimate.

Maintaining Traffic During Construction

Identify the traffic control needs of the project prior to the development of the bridge layouts. Communication between the engineer responsible for traffic control and the design engineer is critical during the preparation of the bridge layouts and during development of the construction sequencing process.

The District's desired approach (ABC, phased, detour/temporary crossing structures, or temporary bridge structures) must be submitted in writing as part of the Preliminary Bridge Layout Review (PBLR). Although the need to maintain traffic can often by justified, full closure with ABC should generally be considered as the first option. Category 6 funding will be used to cover the additional costs for options other than ABC, only with written approval from the Bridge Management Section Director. It is crucial that these discussions occur early in the planning of a project.

- **Accelerated Bridge Construction** – Accelerated bridge construction techniques should be considered for every bridge project. Accelerated bridge construction can be a more cost-effective option with less disruption to traffic than lengthy detours or temporary construction.
    - Projects using Accelerated Bridge Construction techniques require early coordination between traffic control engineers and bridge designers to ensure an appropriate balance between cost and acceptable closure times.
- **Phased Construction** – Replacing an existing bridge with a new bridge may require phased construction. Keeping lanes of the existing bridge open during the first phase of construction of the new bridge can be a cost-effective means of maintaining minimum traffic needs. Use of phased construction must be identified early in plan development and have a written justification showing that it is justified in lieu of ABC.
- **Detour/Temporary Crossing Structures** – If a project must maintain traffic during a bridge replacement project, detours will only be allowed where an economic justification shows that **Accelerated Bridge Construction (ABC)** is more expensive and neither ABC nor phased construction are feasible.
- **Temporary bridge structures are <u>not</u> a common element in most bridge projects**. Careful coordination between the bridge designer, traffic control engineer, environmental coordinator, and the bridge project manager should occur early in the process to properly design these structures.
- **Category 6 funding for temporary structures or detours must be approved by the Bridge Management Section**. Economic justification, including consideration of accelerated bridge construction techniques is required as an alternative to temporary detours.

If the project allows the contractor to provide the temporary bridge for a project, the plans **<u>must</u>** include certain items:

- The required number and width of traffic lanes and the required design loading.
- The alignment of the temporary structure.

- Any special requirements, such as limits on fill, right-of-way, or other environmental restrictions.

Environmental Concerns

FHWA is responsible for assuring that the projects it funds do not have significant environmental impacts, or if they do, that appropriate action is taken. The following Environmental Affairs Division assessments, listed in order of investigative detail from least to most, may be requested:

- Categorical Exclusion (CE)
- Environmental Assessment (EA)
- Finding of No Significant Impacts (FONSI)
- Environmental Impact Statement (EIS)

The Environmental Affairs Division (ENV) supports the District environmental coordinator. The environmental coordinator conducts assessments and works closely with the Bridge Division project manager when evaluating environmental concerns. This coordination should occur as early as possible in the project development process. The Environmental Permits, Issues, and Commitments (EPIC) sheet is initiated in the District, in the preliminary project development stage, to ensure that all environmental issues are addressed. To obtain information concerning access to the Texas Environmental Compliance Oversight System (Texas ECOS) and EPIC, contact ENV. Such concerns may include the following:

- Proximity to Hazardous Sites
- Hazardous Paint Asbestos
- Hydraulic Impacts
- Wetlands Impact Storm Water Runoff Mitigation of Environmental Impacts. Historically Significant Bridges, Property, and Archeological Coordination. Accessibility/ADA Considerations

Section 2: Considerations Based on Bridge Location

International Bridges

The following aspects must be accounted for when planning an international bridge:

- The Texas Transportation Commission must approve an international bridge application.
- A Presidential Permit must be acquired.
- The International Boundary and Water Commission must approve the project.
- Coordination is necessary with Mexican governmental agencies, designers, and contractors.

Section 201.612 of the Texas Transportation Code requires an entity authorized to construct or finance the construction of an international bridge over the Rio Grande to obtain approval from the Texas Transportation Commission (Commission) prior to seeking a Presidential Permit for construction. Title 43 TAC, Sections 15.70-15.76, specifies the process by which applicants submit an application.

In order to comply with the rules requiring approval by the Texas Transportation Commission of an international bridge prior to requesting a Presidential Permit and to provide the 120-day response time required by legislation, TxDOT has designated the Transportation Planning and Programming Division (TPP) as the department liaison for international bridge applications.

Bridges with Adjacent States

In crossings of the Red River and the Sabine River where they form the boundaries between Texas and Oklahoma, Arkansas, Louisiana, or New Mexico, the Bridge Division project manager serves as negotiator for necessary agreements between the states. Bridges shared with adjacent states are listed in the table below, along with the state responsible for each bridge.

Table 3-1: Responsibility for Bridges with Adjacent States

Responsibl e State	Location	Highway	TX District	AR District	LA District	OK District
Texas	New Boston/ Forman	TX 8/AK 41	ATL	03		
Texas	Joaquin/ Logansport	US 84 EB & WB	LFK		04	
Texas	Toledo Bend Reservoir	TX 21/LA 6	LFK		08	
Texas	Burkville/Burr Ferry	TX 63/LA 8	BMT		08	

Table 3-1: Responsibility for Bridges with Adjacent States

Responsibl e State	Location	Highway	TX District	AR District	LA District	OK District
Texas	Orange/Vinton	IH 10	BMT		07	
Texas	Sabine Lake	TX 82/LA 82	BMT		07	
Texas	Oklaunion/ Davidson	US 70 / US 183	WFS			05
Texas	Burkburnett/ Randlett	IH 44/US 277/281 NB	WFS			07
Texas	Gainesville/ Marietta	US 77 NB & SB/IH 35	WFS			07
Texas	Denison/ Durant	US 75 NB & SB	PAR			02
Texas	Clarksville/ Idabel	TX 37	PAR			02
Texas	Illinois Bend/ Courtney	TX FM 677/ OK SH 89	WFS			07
Texas	Dekalb/Idabel	US 259	ATL			02
Arkansas	Texarkana/ Ashdown	US 59 SB	ATL	03		
Louisiana	Newton/ Merryville	US 190	BMT		07	
Louisiana	Deweyville/ Starks	TX 12/LA 12	BMT		07	
Oklahoma	Quanah/El Dorado	TX 6/OK 6	CHS			05
Oklahoma	Burkburnett/ Randlett	IH 44/US 277/281 SB	WFS			07
Oklahoma	Clay/Waurika	TX 79/OK 79 (Main)	WFS			07
Texas	Clay/Waurika	TX 79/OK 79 (Relief)	WFS			07
Oklahoma	Ringgold/ Terral	US 81	WFS			07
Oklahoma	Whitesboro/ Madill	US 377	PAR			02
Oklahoma	Vernon/Altus	US 283	WFS			05

Table 3-1: Responsibility for Bridges with Adjacent States

Responsibl e State	Location	Highway	TX District	AR District	LA District	OK District
Oklahoma	Bonham/ Durant	TX 78/OK 78	PAR			02
Oklahoma	Paris/Hugo	US 271 NB & SB	PAR			02
Oklahoma	Grayson/Bryan	Carpenter's Bluff (Off)	PAR			
Oklahoma	2.8 mi N of FM 680	Hollis Rd (Off)	CHS			
NB = Northbound SB = Southbound Off = Off-System						

Although each state is responsible for a specific bridge, the costs for design, construction, maintenance, and inspection are shared between the two states. The cost of the bridge approaches, however, is the responsibility of the state in which they are located.

The responsible state prepares the PS&E, processes the letting of the project for construction, and provides routine and major maintenance for the bridge after it is constructed. Each state shares in 50% of the cost of design, construction, and major maintenance expenses.

Planning a bridge project with an adjacent state requires the following actions in this sequential order:

- The project must meet federal requirements if federal funds are used to finance the project.
- The project must be on the State Transportation Improvement Plan (STIP) of each state.
- The project must be on the Unified Transportation Program (UTP).
- A Commission minute order authorizing the State of Texas to enter into an agreement with another state is necessary whenever a bridge is constructed at a new location, when a bridge is being replaced, or when a major rehabilitation project (such as redecking or widening) is planned.

Agreements

An agreement between the responsible state (**"Managing Party"**) and the partner state (**"Contributing Party"**) is required prior to planning for the construction of a new bridge at a new location, for replacing an existing bridge, for performing inspections, or for conducting Bridge Maintenance that will cost more than $5,000 dollars. The responsible state for each bridge located on the border between Texas and another state is defined in Table 3-1.

- The Bridge Division project managers coordinate the negotiations with the other state and prepare and process the agreement for execution when Texas is the responsible state.
- As stated in the TAC Title 43, Part 1, Chapter 15, Subchapter E, Rule 15.55, for off-system bridges, local cost participation is not required for a bridge connecting Texas with a neighboring state.
- The governor of Texas must execute all new bridge project agreements between Texas and another state.

Plan Development

The responsible state (Table 3-1) will prepare preliminary and final plans, specifications, and estimates of cost subject to the approval of the State of Texas and FHWA.

- Each state will pay one-half of the cost of the bridge, as well as the full amount of its respective approach roadway costs on its respective side of the state line.
- A separate control-section-job (CSJ) number for the bridge and each approach (three total) is required.
- For federally funded projects with state oversight, a Federal Project Authorization and Agreement (FPAA) must be signed before obligation of preliminary engineering funds.
- Each state will, at no cost to the other state, secure necessary right-of-way, relocate all utilities, and identify and remove all known hazardous materials to accommodate that portion of the project on the respective side of each state.
- Bank protection, jetties, or similar work required to protect the bridge or its approaches or to hold the river channel to its present course will be considered as a part of maintenance of each bridge, whether such work may be located wholly in one state or the other.
- The project must be environmentally cleared.

Letting

The responsible state (Table 3-1) prepares the PS&E, processes the letting of the project for construction, and provides routine and major maintenance for the bridge after it is constructed.

- For federally funded projects with state oversight, a Federal Project Authorization and Agreement (FPAA) must be signed before obligation of project funds. In addition, a state Letter of Authority (LOA) must be signed before letting. For federally funded projects with federal oversight, each state must obtain its own LOA from Federal Highway Administration (FHWA) and provide participating adjacent states with a copy at least three weeks before letting.

- Any prospective bidder who is qualified under the requirements of either state will be considered by the other state as being qualified and eligible to bid on the project and will be provided with proposals upon request.
- At a time to be agreed upon by the parties, and subject to the approval of FHWA, the project shall be publicly advertised for bids. The project must be advertised in accordance with federal requirements as well as the laws of both states. Each state shall issue public notice of advertisement that bids are to be received on the project. The responsible state shall provide the adjacent state with a copy of the legal advertisement, the number of days specified in the agreement, prior to the proposed letting date for publishing in the state official journal.
- Copies of the bid tabulations for all bids received shall be provided to the adjacent state for review.
- Both the Texas Transportation Commission and the highway authority of the other state must approve award of the contract.

Construction

The responsible state (Table 3-1) prepares the PS&E, processes the letting of the project for construction, and provides routine and major maintenance for the bridge after it is constructed.

- The adjacent state will reimburse the responsible state for the design costs and engineering costs for the adjacent state's share on a monthly progressive estimate basis expressed in certified invoices furnished by the responsible state.
- All invoices received by TxDOT will be directed to the respective TxDOT Area Engineer (AE) for review of work progress.
- The responsible state will transmit to the State of Texas appropriate documentation of the services provided by the responsible state. Funds requested from the State of Texas for services provided by responsible state shall be made available within 30 days from receipt of the request.
- Once approved by the TxDOT AE, the invoice will be sent to the Financial Management Division for processing.
- The construction contract and required personnel for all construction engineering and supervision will be administered by the responsible state.
- Final acceptance of the project shall be subject to both states.

Post-Construction

After completion of the project, it shall be operated and maintained by both states for use by the public without charge or toll.

- Each party shall maintain the roadway approaches to its respective end of the bridge.

- Each state shares in 50% of the cost of design, construction, and major maintenance expenses, except that each state is 100% responsible for costs associated with design, construction, and maintenance of the respective bridge approaches of each state. The responsible state provides routine maintenance at no cost to the other state. “Routine maintenance” is defined as maintenance cost that is less than $5,000. “Major maintenance” is defined as maintenance cost that is $5,000 or more. for its concurrence before performing any major maintenance work.
- When Bridge maintenance work is performed the responsible state must contact the other state to determine what type funding agreement is required {Advanced Funding Agreement (AFA) or a Cooperative Endeavor Agreement (CEA) are two examples}to define each states responsibility and timeline for payment. These agreements are reviewed by the governor’s office and signed by either the Governor or whomever the Governor has delegated signature authority

Federally Funded Off-System Bridges

As a rule, off-system bridge projects administered by TxDOT have federal fund participation. Most of these projects consist of replacement or rehabilitation of poor bridges funded with a combination of federal-local or federal-state-local funds, with the federal funds administered through TxDOT’s Highway Bridge Program. However, TxDOT does administer a relatively small number of other off-system bridge construction projects with federal funding from the Surface Transportation Program (STP).

Coordinate with the local government when planning off-system bridge projects, particularly when using funds from the Highway Bridge Program. An appropriate agreement between the State and local government must be executed before any work can be performed on an offsystem project funded from the Highway Bridge Program. In addition to specifying the responsibilities of the two parties in the performance and funding of the work, the agreement provides for advance payments by the local government of its share of the project funding responsibilities. The agreement also allows a local government to use equivalent-match projects as payment toward its share of project funding.

The current standard agreements may be obtained from the Contract Services Division standard contracts web page. If you need assistance accessing this web page, which is internal to TxDOT, please contact the TxDOT District office with which you are working, or the Bridge Division project manager. **Title 43 TAC, Sections 15.52 and 15.55** provides more information about the Off-State System Highway Bridge Program agreements and cost participation.

Off-system bridges with adjacent states are funded 100% by a combination of federal and state funds, or 100% by state funds. No local government contribution on the Texas side of the bridge is required.

Overhead Sign Supports

Do not locate overhead sign supports on bridges, if possible. If such location is required, indicate on the bridge layouts a cantilever-type overhead sign support (COSS) founded on a bent cap or on an isolated concrete column on drilled shaft, or an overhead sign bridge (OSB) attached directly to the bridge superstructure. The location of any overhead sign support on bridges requires special design by the Bridge Division.

If overhead support for a dynamic message sign (DMS) is required, determine the appropriate DMS type and its attachment details before completing the detailed project design. Consider whether walkways or light fixtures are required. Configure the DMS on the truss to minimize the horizontal offset between the DMS and the truss. Mount the DMS on a Balanced Tee-type COSS or on an OSB. Do not mount the DMS on a single cantilever-type COSS. Mounting a DMS on an OSB requires a special OSB design by the Bridge Division in addition to the attachment design required if the DMS is to extend over a bridge.

Position sign support brackets for retrofit of signs along existing rails at bridge overpasses such that the bottom edge of the sign panel and support bracket do not encroach on the existing vertical clearance of the bridge.

Do not mount a closed-circuit television (CCTV) on a tube protruding from an OSB or a COSS because of wind or traffic-induced vibrations. These vibrations may be more pronounced when the OSB or COSS is mounted directly to a bridge superstructure.

Utility Structures

Interstate Highways. Where it would be more economical to carry utility lines across a freeway in a tunnel or on a bridge rather than in separately trenched and encased crossings, refer to TxDOT's Utility Accommodation Rules and provide a separate structure for the utility crossing. Such a structure may serve a joint purpose as a utility and pedestrian facility and/or sign support. In providing a utility tunnel or bridge, the following conditions shall be met:

- Isolate mutually hazardous utilities, such as fuels and electric energy, by compartmentalizing or by auxiliary encasement of incompatible carriers.
- Conform the utility tunnel or utility bridge structure design, appearance, location, bury, earthwork, and markings to the culvert and bridge practices of the department.
- Where a pipeline on or in a utility structure is encased, the casing must be effectively opened or vented at each end to prevent possible build-up of pressure and to detect leakage of gases or fluids.
- Take additional protective measures where a casing is not provided for a pipeline on or in a utility structure, such as employing a higher factor of safety in the design, construction, and testing of the pipeline, than would normally be required for cased construction.

- Communication and electric power lines must be suitably insulated, grounded, and preferably carried to a manhole located beyond the backwall of the structure. Insulate carrier and casing pipe from electric power line attachments.
- Install shut-off valves, preferably automatic, in lines at or near ends of utility structures unless segments of the lines can be insulated by other sectionalizing devices within a reasonable distance.
- Each Utility carried on the structure shall have an agreement with the State. Utility companies must agree that any maintenance, servicing, or repair of the utility lines will be their responsibility

Non-interstate Highways. If utility lines have their own easement and it would be more economical to the department, adjust the lines across a highway by use of a utility tunnel or bridge. Where the utility lines are on a public right-of-way by sufferance and the adjustment of the utility is the sole responsibility of the private or public utility company, the department may permit the provision of a utility structure without cost to the department provided the same conditions outlined for Interstate Highways and all other pertinent requirements are met. If a structure is to serve as a joint utility-pedestrian crossing or a joint utility-sign support structure, the department will participate to the extent necessary for accommodation of pedestrians and highway signs only.

Section 3: Agreements and Permits

Permits

The following permits should be reviewed before making engineering decisions related to bridge design:

- **U.S. Army Corps of Engineers** – Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) empowers the Corps of Engineers (COE) to regulate all work on structures other than bridges or causeways that affect the course, condition, or capacity of navigable waters of the United States. This term includes those waters defined as navigable by the U.S. Coast Guard (USCG) but may also include rivers that were historically navigable or that with modification may be available for future use to transport interstate commerce. The determination of navigability will be made by each COE District engineer and is available upon request.
- **U.S. Coast Guard** – Section 9 of the Rivers and Harbors Act of 1899 empowers the United States Coast Guard (USCG) to regulate the construction of bridges and causeways within or across navigable waterways as determined by that agency. This regulation includes the approval of plans and the issuance of permits. FHWA, however, has the authority to determine if a USCG permit is not required.
- **Environmental Protection Agency** – *The Environmental Protection Agency (EPA)* administers, and issues permits for non-point source pollutants associated with industrial activities (construction) and Municipal Separate Storm Sewer Systems (MS4) permits. For further information, contact ENV for details on requirements for permits and the most current agreements.
- **Mexico** – Presidential Permits are required to convey permission for construction and maintenance of facilities connecting the United States with Mexico. Multiple TxDOT Offices and Divisions are involved in the Presidential Permit process.

Information, requirements, and coordinating division for each of these permits can be found online in the TxDOT Project Development Process Manual.

Agreements

The following agreements shall be reviewed when making engineering decisions related to bridge design:

- **Railroad** – The Rail Division's Rail Safety Section (RRD-RSS) is the Department's Office of Primary Responsibility for railroad issues, and it works closely with the District and Bridge Division project manager in preparation of state-railroad agreements involving structures.

- **International Boundary and Water Commission (IBWC)** – IBWC has jurisdiction along the boundary between the United States and Mexico. Submit work proposed within the flood plain and adjacent to the main channel of the Rio Grande where it forms the international boundary between the United States and Mexico to IBWC for its review and approval before any work is done. Submit preliminary notifications and plans of proposed work and facilities at appropriate times to the Bridge Division project manager for processing with the IBWC. Licenses or agreements will be prepared when appropriate for highways crossing or encroaching upon the IBWC flood control facilities along the Rio Grande.
- **Natural Resources Conservation Service** – The Natural Resources Conservation Service (NRCS) can construct reservoirs that may affect our highways. The NRCS always operates with a local sponsor, and where the floodwater-impeding structures built by this agency affect our highways, the local sponsor bears the cost of raising, relocating, or protecting our highways. The Bridge Division project manager, assisted by the District, will negotiate for a satisfactory settlement.
- **Navigation District, Water District, Irrigation District, Water and River Authorities** - Where the State, Navigation District, Water District, Irrigation District, or Water and River Authority undertake construction that affects the rights of another, the Bridge Division project manager negotiates a satisfactory agreement setting forth the financial responsibility and commitments of each party involved.
- **Cities or Counties**
  - For bridges within the boundaries of a city, yet under the jurisdiction of TxDOT (on-state system), the two entities must negotiate a Municipal Maintenance Agreement to determine and fix the respective responsibilities of the department and the local government for maintenance, control, supervision, and regulation of these designated state highways. Municipal Maintenance Agreements are coordinated through the Maintenance Division.
  - Agreements between the State and a city or a county are also necessary when dealing with historically significant bridges and the city or county is the bridge owner. Examples of such agreements can be found in the Historic Bridge Manual.
- **Louisiana, Arkansas, Oklahoma, New Mexico** - Where either Texas or an adjoining state undertakes construction along the Texas border that affects the rights of the other, the Bridge Division project manager negotiates a satisfactory agreement setting forth the financial responsibility and commitments, including maintenance and liability, of each party involved.

Information, requirements, and coordinating division for each of these agreements can be found online in the TxDOT Project Development Process Manual.

Section 4: Utility Attachments

Attachment to Bridges

To every extent possible, do not attach utility lines to bridges and separation structures because the proliferation of such lines and their maintenance constitutes a hazard to traffic and complicates widening or repair. TxDOT must review and approve all attachment methods and designs to ensure that they do not compromise the structural integrity of the bridge or the intended function of the guard fence and are not located in such a manner as to interfere with the traveling public or cause a safety concern. TxDOT is responsible for the safe design, installation, and maintenance of everything located within state highway ROW.

Exceptions

Where other arrangements for a utility line to span an obstruction are not feasible, the department may consider the attachment of such line to a bridge structure. Any exceptions that are permitted will be handled in accordance with the conditions set forth in **Title 43 TAC, Section 21.35 and 21.37 (relating to utility structures)** and other pertinent requirements contained therein. Each such attachment will be considered on an individual basis and permission to attach will not be considered as establishing a precedent for granting of subsequent requests for attachment.

Office of Primary Responsibility

The Bridge Division is the Office of Primary Responsibility for all utility attachments. The executed attachment agreements will be housed in the Bridge Inspection Database under the corresponding structure number.

TxDOT enters into agreements for utility attachments to on-system bridges only. Utility attachments to off-system bridges are handled by the owner of the bridge, usually a county or city government.

Guidelines

Per the **Utility Accommodation Rules §21.37(e)**, "(1) The attachment of utility lines to bridges and grade separation structures is prohibited if other locations are feasible and reasonable. (2) Where other arrangements for a utility line to span an obstruction are not feasible, the utility may submit a request to the District for attachment of the line to a bridge structure through a bridge attachment agreement. Each attachment will be considered on an individual basis, and permission to attach will not be considered as establishing a precedent for granting of subsequent requests for attachment."

The following guidelines govern attachment of utilities to bridges.

Communication Lines

When it is impractical to carry a self-supporting communication line across a stream or other obstruction, the department may permit the attachment of the line to a bridge. If approved on existing bridges, the line must be enclosed in a conduit and so located on the structure as not to interfere with stream flow, traffic, or routine maintenance operations. When a request is made before construction of a bridge, if approved, suitable conduits may be provided in the structure if the utility bears the cost of all additional work and materials involved.

If it is the department's responsibility to provide for the adjustment of communications lines or conduits to accommodate the construction of a highway and the adjustment provides for the placement of communications conduits in a bridge, the department will allow a reasonable number of spare conduits in the structure if the spares are placed at the time of construction and the telephone company bears the cost of the spare conduits.

Gas or Fuel Lines

No gas or liquid fuel lines may be attached to a bridge or grade separation structure without the specific approval of the TxDOT Executive Director.

Power Lines

Power lines are not permitted on bridges under any condition with the exception of low-voltage distribution lines where the cost of independent facilities to carry these lines would be prohibitive. For this requirement, low-voltage lines must carry 600 volts or less.

Utility Pipelines

When a municipality or utility company requests permission to attach a pipeline to a proposed bridge prior to construction, and the added load is sufficient to require an increase in the strength of the structure or use of more costly materials or type of construction, the utility owner is required to pay for the increase in cost.

When a utility company requests permission to attach a pipeline to an existing bridge, sufficient information should be furnished to allow a stress analysis to determine the effect of the added load on the structure. Other details of the proposed attachment as they affect safety and maintenance should also be presented. If the bridge structure is not of adequate strength to carry the increased weight or forces within a factor of safety, permission will not be granted.

Temporary Water Lines or Saltwater Pipelines

Temporary water lines are sometimes requested to be attached to bridges by companies in the oil and gas industry. When a company requests permission to attach a temporary water line to an existing bridge, sufficient information should be furnished to perform a stress analysis to determine the effect of the added load on the structure. Other details that affect safety and maintenance of the proposed attachment should also be presented. Details of the proposed attachment to the bridge should be signed and sealed by a Texas registered professional engineer. If the bridge structure is not of adequate strength to carry the increased weight or forces within a factor of safety, permission will not be granted.

Requests for Attachments

The following outlines the process for requesting utility attachments to structures:

- Requests originate from the utility company with an application to the District Engineer.
- For attachments to structures within active projects, the District Engineer reviews requests, and if approved, forwards requests for attachment along with recommendations to the Bridge Division project manager for review and concurrence. The submission must include adequate justification, including details and an estimate for an independent utility crossing.
- If the attachment is allowed, the Bridge Division project manager prepares a suitable agreement and forwards it to the District for partial execution with the utility company. Modification of the structural details to accommodate the utility and cost is the utility engineer's responsibility.
- The Bridge Division project manager coordinates the submission with the District. In addition, use and occupancy agreement forms are required as cited in Title 43 TAC, Section 21.52 (relating to Forms–General) and Title 43 TAC, Section 21.54 (relating to Use and Occupancy Agreement Forms).

Attachment Locations

Recommended attachment locations are on the overhang, as close as possible to the outside beam, or behind the outside beam. Behind the outside beam is preferred. Hanging lines on the outside of the beams is not aesthetically pleasing and may be subject to vandalism. Attachments to water crossing structures should be placed on the downstream side where exposure to high water is less likely.

Do not attach to any bridge rail or rail hardware, including anchor bolts. This will eliminate the need to get the owner of the attachment involved when bridge rail repair is performed.

Do not hang lines from the bottom of beams. This decreases freeboard and increases the likelihood of damage.

Coordinating the Agreement

The District engineer can approve a utility attachment and submit the request, with District recommendation, directly to the Bridge Division project manager. The Bridge Division project manager coordinates the request with assistance from the Design Section and the Right of Way Division. The Design Section conducts a structural review and a review of the details. The Bridge Division project manager works with the District permit coordinator to review the agreement and send for full execution.

On-System Projects

The Federal Highway Administration (FHWA) has specified that on-system projects must adhere to the Utility Accommodation Rules (UAR) codified as Title 43 TAC Sections 21.31-21.57. Sometimes full compliance with the UAR is unattainable. In such cases an exception must be certified by the District director of Transportation Planning and Development and authorized by the Right of Way Division director using the form entitled Certification for Utility

Accommodation Requests for exceptions will be considered only when it is shown that extreme hardship or unusual conditions provide justification and when compensating or alternative measures can be taken in keeping with the intent of these sections. All exception requests made to the District must be fully documented with design data, cost comparisons, and other pertinent information. For more information, refer to the Right of Way Utilities Manual and the Local Government Projects Policy Manual.

Off-System Projects

Off-system projects should comply with the UAP when possible; however, off-system projects may utilize local codes, policies, and customary practices when representing the public's best interests. If local codes, policies, or practices are used instead of the UAP, a Utility Accommodation Policy Declaration form must be completed and included with the utility agreement.

Although there is no initial fee or rental charge, attachments will be made at no cost to the state. All expenses will be the responsibility of the utilities. Any additional cost due to modification of the bridge structure to accommodate the attachment must be borne by the utility company. This cost or method of determining the cost will be established in advance and shown in the agreement.

Exhibits attached to the request should include drawings showing location, type, size, and weight of the line, attachment details, and safety features. Exposed portions of an attachment must be of non-corrosive material or must be protected from corrosion by an acceptable method such as hotdipped galvanizing, if appropriate. Pipelines and conduits must not impede the flow of water through a structure or the movement of traffic, either pedestrian or vehicular, and must be located so as not to interfere with routine maintenance operations.

Maintenance of Utility Attachments

Maintenance of utility attachments to a bridge is the responsibility of the utilities. Installation and maintenance of utility attachments will be conducted so as not to inconvenience or interfere with highway traffic and will comply with governing laws and TxDOT regulations and policies. During attachment installation or maintenance, all traffic controls should comply with the Texas Manual on Uniform Traffic Control Devices for Streets and Highways.

Submittals

Exhibits submitted by the District to the Bridge Division project manager should include the following:

- Details on how the line is attached to the bridge -- (Utility Attachment Exhibit A)
- Show proposed location of attachment on elevation view of bridge layout
- Show specific detail of attachment to bridge with appropriate notes to the contractor
- The Utility Attachment Exhibit A must be signed and sealed by a licensed professional engineer
- Identification of control, section, and original job number of the bridge if possible
- National Bridge Inventory (NBI) number of the bridge
- Copies of bridge layout and pertinent details of existing bridge as-built plans (if available)

United States Geologic Survey – Stream Gauging Stations

The Bridge Division project manager must approve requests by the United States Geologic Survey or other public or private agencies for gauging stations to be located on or near highway stream crossing bridges. These requests are handled by permit after approval is received from the District. A stipulation of the agreement is that the gauging equipment will be removed upon 30 days' notice when it is necessary to widen, repair, or reconstruct the bridge. Notify the bridge project manager of any proposed work that will require removal or relocation of a gauging station.

Accordingly, the only reasons that USGS would not be granted access would be situations such as pending maintenance, widening, repair, or removal of the structure which would also negatively affect the gauging station. The proper procedure for requesting a location agreement is:

- USGS selects a gauge location and then determines whether or not the location is on TxDOT ROW. County, city, and private roads are not TxDOT controlled; USGS must contact the entity that owns the structure.
- USGS determines which TxDOT District is responsible for the structure by going to the TxDOT website (www.txdot.gov) or contacting the TxDOT Bridge Division's project manager for assistance.
- USGS contacts the TxDOT District office with information identifying the structure. The contact at the TxDOT District office should be either the District bridge engineer or the District hydraulics engineer. The TxDOT engineer will contact the appropriate area engineer and maintenance supervisor for coordination.
- The TxDOT District office will provide USGS the as-built drawings of the respective bridge within 10 working days of USGS's request at no charge.

- USGS supplies the details for attachment of a gauging station to the selected TxDOT structure. The detail sheets shall be signed and sealed by a Texas licensed professional engineer. Proof of insurance is neither required nor requested because USGS is a function of the U.S. Government Department of the Interior.
- The TxDOT District bridge engineer will forward the request and attachment detail sheets to the Bridge Division project manager for processing. A copy of the agreement, signed by the TxDOT Bridge Division director, will be forwarded to USGS for its files within 10 working days of receiving the respective District's approval of the attachment details.

These procedures apply to any attachment by USGS to any TxDOT structure or within its ROW, regardless of how minor the attachment may be.

Texas Water Development Board

The Bridge Division project manager must review and approve requests by the Texas Water Development Board for water quality stations to be located on or near highway stream crossing bridges. These requests are handled by permit after approval is received from the District. A stipulation of the agreement is that the station will be removed upon 30 days' notice when it is necessary to widen, repair, or reconstruct the bridge. Notify the Bridge Division project manager of any proposed work that will require removal or relocation of a Texas Water Development Board water quality station.

Counties and Municipalities

When either the state or a local government wishes to place an attachment to a structure within the other's right of way, the Bridge Division project manager will coordinate the agreement process with assistance from the Design Division and the Right of Way Division. A satisfactory agreement will set forth the financial responsibility and commitments, including maintenance and liability, of each party involved.

Chapter 4: Bridge Plan Review Processes

Contents:

Section 1: Preliminary Bridge Layout Review

Overview

Preliminary bridge layout review (PBLR) and approval is required for *all bridges with federal funding*, regardless of funding category, and for all bridges crossing TxDOT right of way before any detail work is performed. A Hydraulics & Hydrology (H&H) Drainage Analysis Report must be submitted with each PBLR. If the bridge crosses a waterway, the H&H Drainage Analysis Report must include the required scour evaluation.

The review typically takes two weeks from the date of submittal but may depend on the complexity and the number of bridges in the submittal.

The layout is reviewed by the following:

- Design Division
  - Hydraulics Section
  - Project Development Support Section
- Bridge Division
  - Bridge Design Section
  - Bridge Management Section
  - Field Operations Section - Construction and Maintenance Branch
  - Field Operations Section – Geotechnical Branch
- Others including Federal Highway Administration (FHWA), railroad, if required
- The Bridge Management Section will keep a record of all layouts that are submitted, should further questions arise during plan development. The layout will be approved when all comments are addressed.
- The Federal Highway Administration (FHWA) requires review and approval of the preliminary bridge layout when they have oversight.
- If a railroad is involved, the layout (Railroad Exhibit A of the railroad agreement) is sent to the railroad company for their review and approval.

District should refer to the PBLR and PS&E Review Standard Operating Procedures for information on: requirements, level of review, estimations of review time, and bridge cost estimation. If the bridge is programmed for Category 6 funding, verify that it is eligible for one of the three funding programs listed in Chapter 2 of this manual.

Refer to the Bridge Detailing Guide for Preliminary Bridge Layout criteria, Completed Bridge Layout criteria, and typical layouts. Complete and submit the Information Sheet for Structural

Design (Form 2252) with all preliminary layouts for projects to be designed by the Bridge Division.

The preliminary bridge layout submittal process is as follows:

- The District Bridge Engineer must approve preliminary layouts prior to submission
- The layout is submitted to the Bridge Division's PS&E Review Branch for approval.
- Email the submittal of PBLR folder link in ProjectWise to BRG_PD_PSE@txdot.gov
- Email Subject: PBLR, CSJ, County
- The layout is approved when Division review comments are resolved.
- Begin work on bridge detail sheets only after receiving final approval of the bridge layouts from the Bridge Division.

Layout Approval Information

In addition to the requirements shown in the Bridge Detailing Guide, the following information is necessary for layout approval.

Stream Crossings

- Submit the scour analysis envelope and calculated scour depth with the preliminary bridge layout. Do not show the envelope on the bridge layout, as it should be a separate sheet.
- Submit H&H Drainage Analysis Report, Drainage Area Map, Hydraulic Data Sheet, and Bridge Scour Data Sheet.

Bridge Widenings – Include the following in the layouts:

- Existing bridge widths and lengths
- Width of existing bridge to remain and width of widening shown on plan view and typical section
- Existing foundations, channel profile of existing conditions, and extents of documented scour
- Submit H&H, if adding substructure elements
- Updated scour analysis
- Appropriate thickness of asphalt level-up coarse shown on the transverse section, if applicable

If stage construction is required and written justification has been accepted by Bridge Division, refer to stage construction requirements below.

Phased Construction

Show stage construction geometry and sequence on the bridge layouts, including proposed lane widths and temporary rail locations for each stage. Include existing bridges and foundation locations on the layouts. Use additional sheets if necessary.

Railroad Overpasses/Underpasses

For railroad overpasses or underpasses, submit the preliminary bridge layout to the Bridge Division, and submit Railroad Exhibit A to the Rail Division's Rail Safety Section (RRD-RSS). Exhibit A includes the preliminary bridge layout and additional plan sheets required to obtain railroad company approval. See "Railroad Exhibit A Submission Requirements" later in this chapter for additional information. The preliminary bridge layout should place emphasis on the following items:

- Location of railroad tracks and right-of-way
- Intersecting mileposts of railroad and stations of roadway center lines
- Railroad milepost marker and Department of Transportation crossing identification number
- Elevation at top of rail
- Vertical and horizontal clearances from center line of track
- Railroad track profile
- Direction of increasing railroad milepost
- Proper title block indicating Railroad Exhibit A
- Indication if grade-separation structure eliminates a highway-railroad at-grade crossing with active warning signals
- Location of crash walls, if required
- The Railroad Requirements for Bridge Construction sheets

Interchanges and Complex or Unusual Projects

Provide accurate geometric information on the plan and profile for roadways beneath structures for complicated designs such as braided ramps or interchanges. This information is vital to structural design because the types of bents required, such as straddle, single column, offset columns, etc., depend on the geometry of underlying roadways.

Retaining Walls

Preliminary layouts for retaining walls are required when the maximum height exceeds 25 ft. Submit preliminary layouts for walls and slopes undergoing certain types of ground-stability improvement measures for review. Such measures include the following:

- Removing and replacing more than 5 ft. of soil.
- A requirement for earth reinforcements exceeding 70% of the wall height.

- Use of dynamic compaction, wick drains, stone columns, geo-piers, surcharging, or other measures to improve ground below walls or embankments.

Include justification in the preliminary submission for ground improvement, including soil testing and analysis leading to the decision to use ground-improvement techniques, as well as analysis of the ground improvement itself.

Bridge Division Submission Requirements

Submit all structures to be let under a single project as one submittal to ensure uniformity of design and eliminate duplication of standards. Submittal requirements for typical bridge layouts and those involving a railroad are listed below.

The transmittal e-mail from the District to the Bridge Division's PS&E Review Branch must contain the following information:

- District (both letting District and designing District, if different)
- County
- CSJ
- Facility carried and feature crossed
- Ready-to-let date and proposed letting date
- Project type (new construction, rehabilitation, replacement, widening, etc.)
- Bridge designer (District, division, consultant)
- Point-of-contact information
- Request for review
- Any relevant information that the division may need to complete its review
- Preliminary bridge layout
- Typical sections sheet
- Construction sequence sheet
- Drainage Area Map and Hydraulic Sheet
- H&H Drainage Analysis Report and HEC RAS models for more complex hydraulic models
- The H&H Drainage Analysis Report, Drainage Area Map, Hydraulic Data Sheet, and Bridge Scour Data Sheet for all span bridges over a stream crossing.
- Plan and profile sheets showing the project limits and the completed original of Form 1002 (p. 3 of 3) for all projects funded by Category 6.

- A map view of the project illustrating the relationship of the roadways if the project is an interchange, or an interchange exists within the vicinity
- The Railroad Exhibit A plan sheets, if applicable. Exhibit A must also be submitted to the Rail Division's Rail Safety Section.

Federal Compliance Submission Requirements

The Federal Highway Administration (FHWA) requires TxDOT to submit preliminary structural layouts to FHWA for review and approval as follows.

The Bridge Division submits to the FHWA Texas Division for approval of all preliminary structural layouts for all bridges, major geotechnical features, and major hydraulic structures on projects for which FHWA has retained oversight. A list of these projects is available from the Design Division.

For all other projects, the FHWA Texas Division and the FHWA Headquarters Office of Bridge Technology approve preliminary documents for unusual bridges and structures, including the following:

- Difficult or unique foundations
- New or complex designs with unique operational or design features
- Bridges with span lengths greater than 600 ft.
- Cable-stayed or suspension bridges
- Bridge types that deviate from AASHTO specifications
- All vehicular tunnels
- Bridges with major supporting elements of ultra-high strength materials
- Geotechnical structures featuring new or complex wall systems or ground improvement systems
- Hydraulic structures involving complex stream stability measures
- Designs or design techniques that are atypical or unique

Include the following items in the preliminary documents for unusual bridges and structures submitted by TxDOT to FHWA:

- Description of structure-related environmental concerns and suggested mitigation
- Studies of bridge types and span arrangements
- Approach span-bridge layout plans and profile sheets
- Controlling vertical and horizontal clearance requirements
- Roadway geometry

- Design specifications used
- Special design criteria
- Special provisions
- Cost estimates
- Hydraulic and scour design studies and reports showing scour prediction and related mitigation
- Geotechnical studies and reports and information on substructure and foundation types

Railroad Exhibit A Submission Requirements

If a railroad is involved, Railroad Exhibit A is sent to the railroad company for preliminary review and approval of the bridge project. Railroad Exhibit A is included in the agreement that must be negotiated between TxDOT and the railroad company. The Rail Division's Rail Safety Section (RRD-RSS) is the sole point of contact and Office of Primary Responsibility for all matters relating to agreements with the railroad companies. They are responsible for the submittal of all Exhibits needed in the execution of the various types of railroad agreements, including Exhibit A drawings for structures. The District office submits Railroad Exhibit A drawings to the RRD-RSS at least 18 months prior to the scheduled contract letting date to allow adequate time for negotiations and processing with the railroad company.

Requirements for the preparation of Railroad Exhibit A, as well as the policy and practices concerning highway-railroad grade separation structures, can be found in the Rail-Highway Operations Manual.

Section 2: Bridge PS&E Review

Overview

The Bridge Division can provide a 30%, 60%, 90%, and/or 100% PS&E review for any bridge project where the designer has specific questions or concerns related to funding eligibility or structural design. A bridge project is defined as any project which includes bridge class structures.

All steel bridge design plan sheets must be submitted to the Bridge Division for review. These reviews will occur at all major project stages, including **PBLR, 30%, 60%, 90% and 100% submittals**. At each milestone submittal, submit the steel bridge plans for review via ProjectWise in the District, Design Projects, CSJ, Design, Plan Review, and appropriate % folder.

A completed scour summary sheet (**Form 2605 or 2606**) is only required after the foundations are designed for stream crossings. Zero observed scour may be assumed for the as-built condition in order to complete the form.

District should refer to the ***PBLR and PS&E Review Standard Operating Procedures*** for information on the review time, level of review, and items reviewed. The submitted PS&E is reviewed by the following Bridge Division sections and branches, as applicable at the given percentage of the PS&E development:

- Bridge Management Section
- Field Operations Section – Construction and Maintenance Branch
- Field Operations Section – Geotechnical Branch
- Design Section
- A Bridge Division project manager reviews the PS&E for Category 6 eligibility and funding levels, if applicable.

The Bridge Division PS&E submittal process is as follows:

- The District Bridge Engineer must approve PS&E prior to submission.
- The PS&E is submitted to the Bridge Division, Bridge Management Section for review.
- Email the submittal to **BRG_PD_PSE@txdot.gov**.
- Email Subject: **XX%, PS&E, CSJ, County**
- Division review comments are uploaded to ProjectWise for District consideration.

Please refer to the PS&E Review and Processing Schedule to ensure timely reviews and sufficient time for revisions. The PS&E Review and Processing Schedule for the current and upcoming fiscal years can be found on the Finance Division's internal Letting Management page. Letting Schedules showing projects scheduled to let in the current and upcoming fiscal years are located on both TxDOT's external web page and the Bridge Division's internal Bridge Management web page.

NOTE: Access to the internal website is available only to TxDOT personnel. If you need assistance accessing these internal documents, please contact the District with which you are working, or the Bridge Division, Bridge Management Section.

Preparing accurate plans, specifications, and estimates (PS&E) is essential to preventing delayed letting dates. For information on PS&E preparation, refer to the PS&E Preparation Manual, which contains general requirements for PS&E. Requirements specific to projects containing structural items are provided below to further assist in PS&E preparation.

Plans

For projects with bridge plans, follow these preparation guidelines.

- Obtain preliminary bridge layout approval prior to any percent PS&E submittal. Include preliminary retaining wall layouts with this submittal when necessary. See Section 1 of this chapter for more information.
- Ensure information on the title sheet corresponds with information on Design and Construction Information System (DCIS) and TxDOTCONNECT.
- Include the most current standards. All standards used must be clearly listed on the index of sheets even if unavailable at the time of submission.
- All modified (MOD) and special (SPL) standards must be signed and sealed by the responsible engineer. Include a brief description of the modifications, typically shown in the Revisions area of the title block.
- Show all hydraulic documentation correctly in the final plans as required by the Hydraulic Design Manual and the PS&E Preparation Manual. Hydraulic comments based on the preliminary submissions must be addressed prior to submitting next stage of PS&E.
- For projects involving a highway-railroad grade separation, an executed railroad agreement is required prior to letting. On federal oversight projects, send a copy of the agreement to the Federal Highway Administration (FHWA). Further information concerning railroad agreements can be found in Chapter 4 of this manual.

Specifications

For guidance related to specifications, including requesting new special specifications or special provisions, please refer to the Design Division PS&E Preparation Manual.

Request for reviews for bridge specifications should be submitted to the BRG_PD_PSE@txdot.gov inbox.

Estimates

Follow the process outlined in Design Division's PS&E Preparation Manual, Chapter 4, Estimate. The window titled "Proposed Bridge"in the Location tab of TxDOTCONNECT, should be filled out for every bridge type structure that will have any type of work performed. Ensure that the Estimate tab of TxDOTCONNECT has 'Bridge' in the Category of Work column and NBI in NBI column.

All bid items pertaining to each bridge or bridge-class culvert, or a span structure must be broken out and listed separately.

Cost estimates are reviewed at regular meetings between District personnel and the Bridge Project Manager to keep all estimates updated across all 25 Districts. These updates are used to determine whether to delay or accelerate projects to meet the fiscal year allocation. Each District provides cost estimates to the Bridge Project Manager.

- A written justification is required for any project cost estimate increase greater than 20% of the approved funding amount in Bridge Division's portfolio manager.
- The written justification for cost increases greater than 20% must be approved by Bridge Division before the estimate can be entered into TxDOTCONNECT.
- Project cost increases over 20% from the initial cost estimates may require alternate funding sources or may need to be delayed to a later fiscal year.
- ***All Project moves within the current fiscal year will require an email from District leadership (TPD or higher), stating the reason(s) why the project will not make the original letting date.***

Final PS&E

Districts are responsible for the preparation, final review, and submission of the ready-to-let bridge PS&E package. Once the District Engineer has signed and sealed the bridge project, the plans will be submitted to the Design Division to process for letting.

It is imperative to enter information correctly on the TxDOTCONNECT, Proposed Bridge window, Location tab, which updates the BCI screen, so that staff can calculate the unit cost data for all bridge projects and to ensure federal reimbursement on any federally participating bridge projects. Please contact the Bridge Division's Bridge Management Section if you have any questions.

Section 3: Bridge Cost Information Review

conref: Section-3-Bridge-Cost-Information-Review/overview.dita#GUID-103769b5-ff55-4ad9-be54-2f052fa7dfa1

Guidelines for BCI Screen Entry

Cost estimates for bridge and bridge-class culvert work are shown on the TxDOTCONNECT Location tab, Proposed Bridge window corresponding with BCI on DCIS P4 screen. The Bridge Cost Information data is used to determine the cost per square foot (unit cost) of the bridge. This information is also used to determine the unit cost for a particular type of bridge, which is used by bridge designers to select the type of superstructure most economical for a particular location, and to prepare estimates for similar bridge projects.

As mentioned above, the Bridge Cost Information is important data that is used to ensure bridge funding and provide good estimates for funding allocations; therefore, it is important that the Bridge Cost Information data is accurate. For more detailed information about how to enter this data, please use the pertinent memoranda on the internal Bridge Division Bridge Management web page https://crossroads.dot.state.tx.us/BRG/Pages/pd-index.aspx

The following information is required on the Proposed Bridge and subsequently BCI screen for all bridge projects:

- Type of bridge work (replacement, new, widening, rehabilitation, maintenance, repair, and removal)
- Permanent Structure Number (PSN), commonly referred to as the National Bridge Inventory (NBI) number. Include the existing (old) NBI for replacement projects.
- On or off state system
- Type of bridge
- Deck area
- Cost percentage
- Bridge length

Detailed step-by-step instructions can be found on the internal Bridge Division Bridge Management web page.

Assessment of Bridge-Class Structure Deck Area

Enter the deck area into the mainframe Bridge Cost Information estimate for every bridge-class structure. TxDOT must be able to calculate the unit price of various bridge-class structures in order

to seek adequate reimbursement from FHWA. To achieve this accuracy, BRG has developed a uniform method for all District to follow when calculating the deck area (sq. ft.) of a bridge-class structure. These instructions demonstrate how to enter the bridge deck area into the Bridge Cost Information (BCI), card type 12, so that only the relevant bridge item costs are attributed to the bridge portion of the project.

Examples of bridge deck calculations are available on the Bridge Division's internal Bridge Management web page.

Roadway Items Excluded from Bridge Item Estimate

To calculate the unit cost of a bridge project accurately, the bid items need to be divided in the appropriate manner. FHWA provides the proper breakout of bridge items from roadway items at https://www.fhwa.dot.gov/bridge/nbi/uc_criteria.pdf

Do not include the following items in the bridge item section of the estimate:

- Mobilization
- Demolition of existing structure (Item 496)
- Bridge approach slabs (only include in the bridge items if the approach slab is integral with the abutment)
- Stream channel work such as riprap, slope paving
- Earthwork relating to channel excavation
- Clearing and grubbing
- Retaining walls not attached to, or not for the protection of, the abutments
- Guardrail transitions to bridges
- Maintenance and protection of traffic
- Detour costs
- Signing and marking
- Lighting
- Electrical Conduit
- Inlet frames and grates
- Field office
- Construction engineering items
- Training
- Right-of-way
- Utility relocations

- Contingencies Include the following item with the bridge items section of the estimate:

Include the following item with the bridge items section of the estimate:

- Riprap if needed for abutment protection *only*

The most current federal requirements can be found also on the Bridge Division internal Bridge Management web page.

If you need assistance accessing any of the internal website documents referenced in this chapter, please contact the District with which you are working, or the Bridge Division Bridge Management Section.

Chapter 5: Bridge Project Development Reference Information

Contents:

Section 1: Requests for Development of Bridge and Geotechnical Work

Design Detail Requests

Submit all structures to be let under a single project as one submittal to ensure uniformity of design and eliminate duplication of standards. Submittal requirements for typical bridge layouts, and bridge layouts involving a railroad, are listed below. See Section 1 of this Chapter for the typical bridge project submission schedule.

The transmittal e-mail from the District to the Bridge Division project manager must contain the following information:

- District (both letting District and designing District, if different)
- County
- CSJ
- Facility carried and feature crossed
- Ready-to-let date and proposed letting date
- Project type (new construction, rehabilitation, replacement, widening, etc.)
- Point-of-contact information
- Pertinent, completed e-form:
  - For bridge details, complete Form 2252 “Information Sheet for Structural Design” and select “Bridge Project” at the top of the form.
  - For traffic structures, complete Form 2252 “Information Sheet for Structural Design” and select “TRF Structures Project” at the top of the form.
  - For bridge rail details, complete Form 2448 “Information Sheet for Bridge Railing Upgrades, Retrofits & Repairs.”
  - For geotechnical details, complete Form 2627 “Information Sheet for Geotechnical Design.” The Geotech form includes requests for borings, retaining walls, slope failures, and foundations.
- Approved preliminary bridge layout
- Soil boring data (either on layout or separate sheet)
- Typical sections sheet
- Construction sequence sheet
- A map view of the project illustrating the relationship of the roadways if the project is an interchange, or an interchange exists within the vicinity
- Existing bridge as-builts if relevant

Table 5-1: Specific Geotechnical Project Development Schedule

Work Type	Small Scale	Large Scale	Specialty/Other
Borings: Bridge	All bridge lengths – 4 months		
Borings: Retaining Wall	All bridge lengths – 4 months		
Foundation Design#	L < 400 ft.; 1 Month	L > 400 ft.; 2 Months	L > 400 ft. Single Column Bents, Designed for Lateral Loading, Etc.; 3 to 4 Months
Slope Stability Analysis**	L < 150 ft.; 1-2 Months	L > 150 ft.; 2-4 Months	
Retaining Wall Design*	H < 20 ft.; L < 350 ft. 4 months plus the Retaining Wall Design time.	H < 20 ft.; 350 ft. < L < 1000 ft. 4 months plus the Retaining Wall Design time.	Total Time for Retaining Wall Detail Sheets = Retaining Wall Borings (4 months) + Wall Design time (project specific).
MSE Wall	1 Month	1.5 Months	2 Months
Concrete Block Wall	1 Month	1.5 Months	2 Months
Sheet Pile	2 Months	2 Months	2 Months
Soil Nail	1.5 Months	2 Months	3 Months
Tie-Back	2 Months	2.5 Months	3 Months
Drilled Shaft	2 Months	2.5 Months	3 Months

Section 2: Other Relevant Information

National Bridge Inventory (NBI) Number

The NBI number is a 15-digit number or alpha-numeric string that uniquely identifies each bridge and typically contains information about the location of the bridge. This may also be referred to as a bridge's structure ID or permanent structure number (PSN). NBI numbers must be unique to each structure; they cannot be changed after a bridge is added to the inventory, nor can they be reused when a bride is replaced. Bridges that are being widened or rehabilitated retain their PSNs.

The assignment of NBI numbers for new and replacement structures depends on whether the bridge is on-system or off-system.

On-system numbers

NBI numbers for on-system bridges are managed centrally by the Bridge Division. To obtain an NBI number for a new or replacement structure, District personnel submit a request through TxDOT's Permanent Structure Number (PSN) web application. For additional information on this system and how to submit a request, refer to the PSN User Guide (available on the Bridge Division's intranet site).

Off-system numbers

NBI numbers for off-system bridges are managed by each individual District. To obtain an NBI number for a new or replacement structure, work with the District bridge office. For additional guidance on the assignment of off-system NBI numbers, refer to the Bridge Division's Guide for Assigning Off-System Bridge IDs (available on the Bridge Division's intranet site).