

Highway Bridge Program

Improving the Safety of Texas Bridges



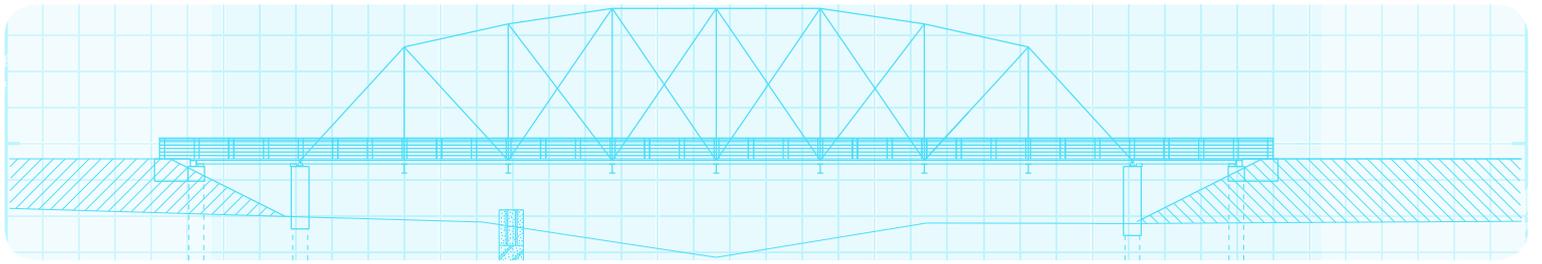
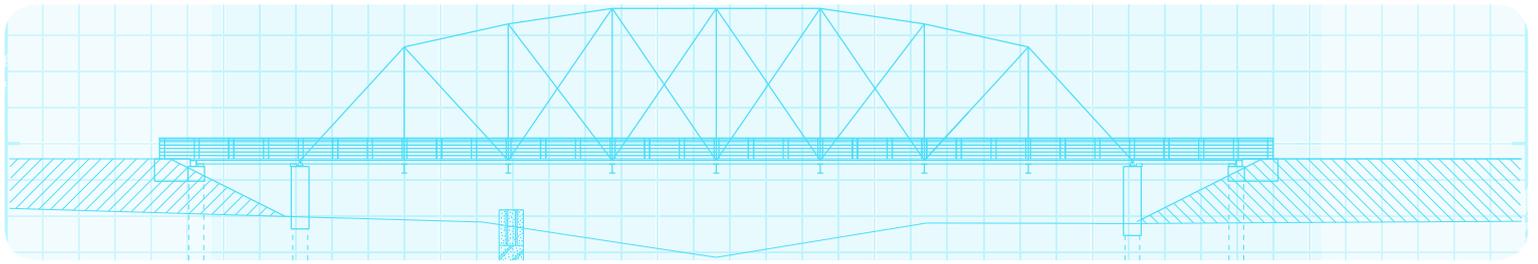


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bridge [brij] noun, verb, bridged, bridging, adjective

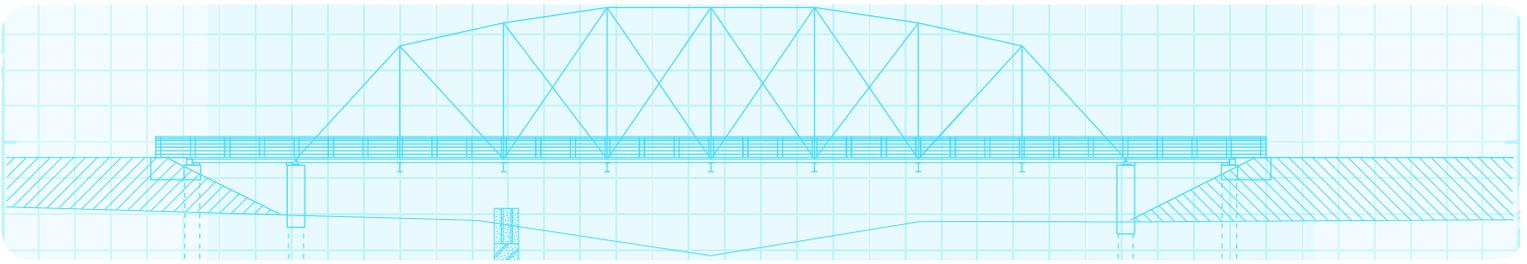
1. noun: A structure erected over a depression or an obstruction, such as water, a highway, or a railway, that carries traffic and has an opening of more than 20 feet between faces of abutments.

Introduction

The Highway Bridge Program, or HBP, is a federal program established in 1978 to provide for the repair and replacement of both on- and off-system highway bridges. The purpose of the program is to increase the safety of highway bridges nationwide. The impetus was a tragic 1967 bridge collapse in West Virginia that killed 46 people. Over the next 11 years, Congress passed a law creating a national bridge inspection program and began funding the replacement and repair of deficient bridges on the Federal-aid highway system.

Bridge projects are selected and programmed in four-year cycles that run continuously. This means that each year, a new four-year program is established, made up of the previous three years of already programmed bridges, plus additional bridges now able to be programmed in the fourth year.

The success of the program is due to the participation of many entities throughout the program's several processes, including: TxDOT's Bridge Division, TxDOT districts, county and city officials, and the Federal Highway Administration (FHWA).



Funding

Q: How much money is set aside for replacing and rehabilitating deficient bridges each year?

→ The HBP is a fiscally constrained program. Each year, \$230M is available from the FHWA for both on and off-system HBP bridges. Of that total, \$60M is programmed for off-system bridges. The FHWA funds 80% of the program costs and requires a 20% match from other sources. In 1995, the Texas Transportation Commission began providing half the match amount, so that the current allocation of funding responsibility for an HBP project is: FHWA 80%, TxDOT 10%, and the local governmental entity, who provides the final 10%. There are three additional assistance programs designed to ease the financial burden on qualifying counties.

Q: How much do local governments have to pay for their participation in an off-system bridge replacement project?

The Participation Waived Project / Equivalent Match Project Program (PWP/EMP)

Under the PWP, the state provides local governments up to a 10% contribution towards a given project, provided the local government does structural improvement work on other deficient bridge(s) or cross-drainage structures in a dollar amount equal to their 10% match. These projects are referred to as **Equivalent-Match projects**. **A completed Advance Funding Agreement must be in place before any Equivalent Match project work is done in order for a local entity to be credited for that work.**

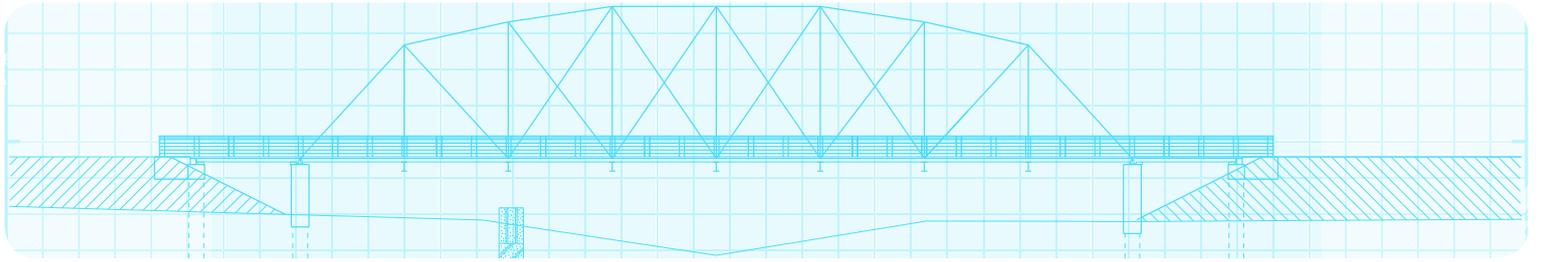
Q: What are the requirements for the Participation Waived Program?

The Economically Disadvantaged Counties (EDC) Program

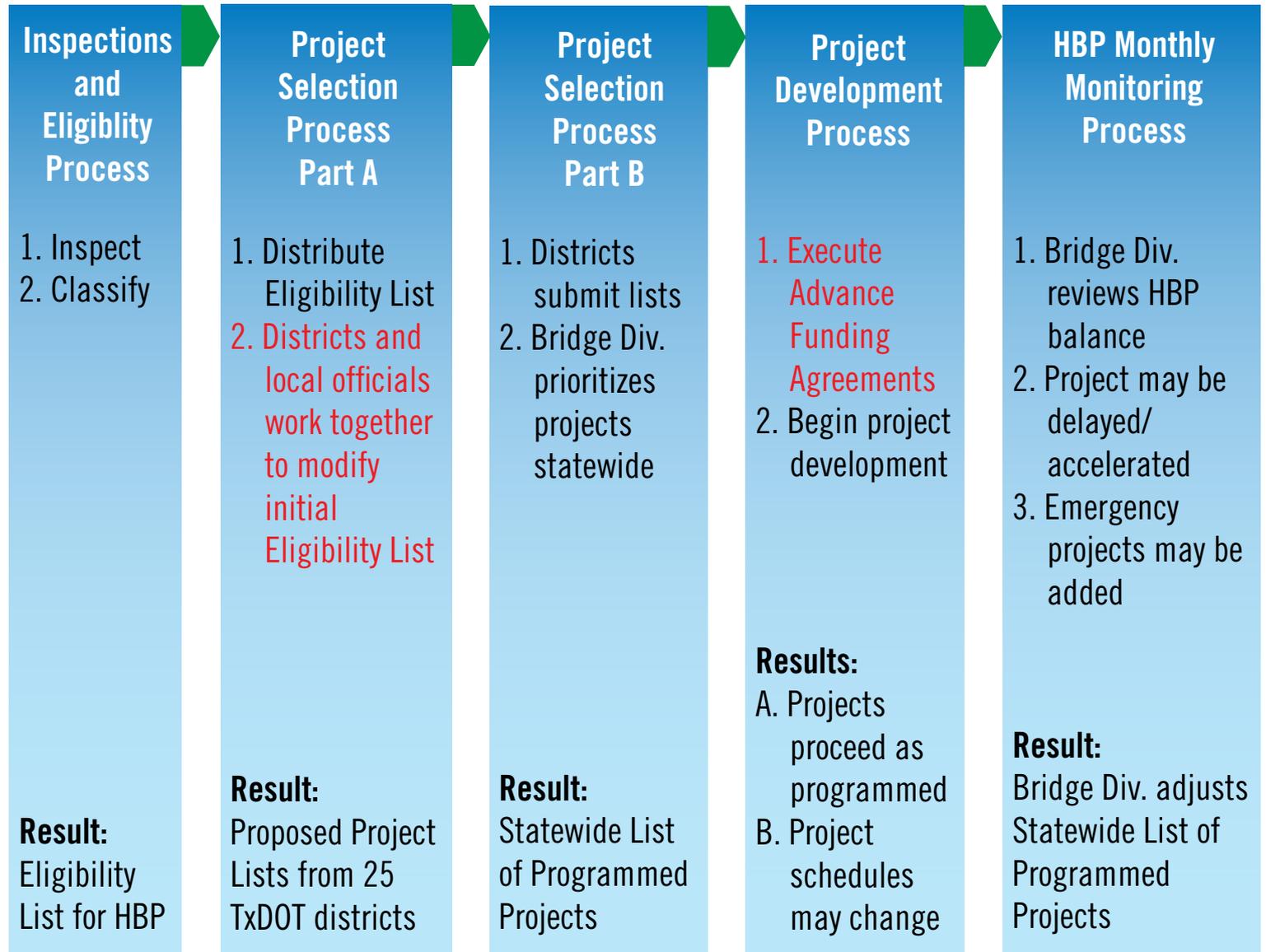
Established in 1998, the EDC program adjusts the local participation amount requirements based on the qualifying county's ability to provide matching funds.

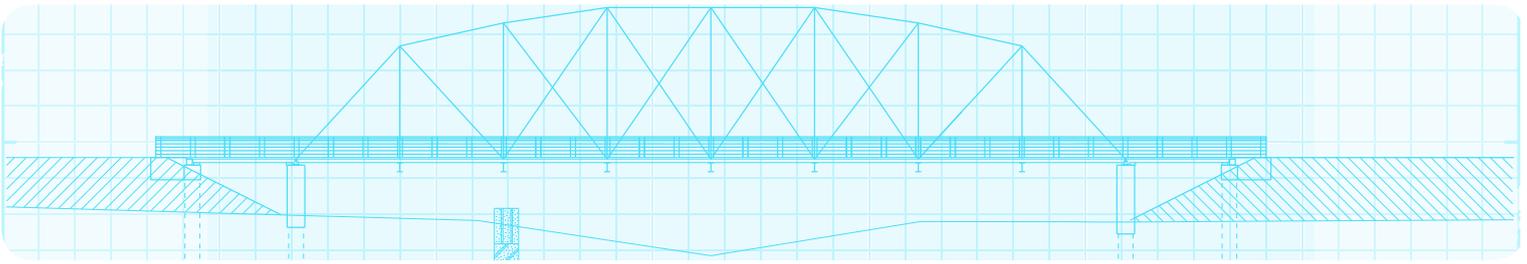
The State Infrastructure Bank (SIB)

The State Infrastructure Bank (SIB) is a revolving account in the State Highway Fund from which loans may be made to local governments for funding critical projects like bridges.



Overview: Inspection & Selection Process





Inspection

The HBP is structured around a set of ongoing processes beginning with bridge inspection. Bridge inspection is a continuous process on a two-year cycle. The inspection process yields a bridge's condition, expressed as a classification and a rating. A bridge may be classified according to FHWA standards as either Structurally Deficient (SD) or Functionally Obsolete (FO). A SD or FO bridge will also be rated using a complex formula that results in a Sufficiency Rating, a calculation that combines several different, weighted factors into one final score. Only SD and FO bridges are eligible for the HBP.

Q: What is a “structurally deficient” bridge?

Structurally Deficient (SD)

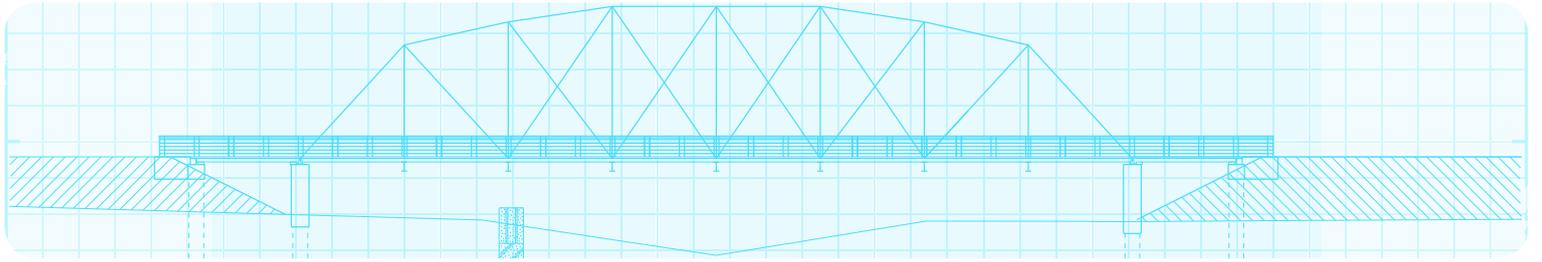
- Has an extreme restriction on load carrying capacity
- Has deterioration severe enough to reduce the load carrying capacity from original as-built levels
- Requires immediate rehabilitation to remain open
- Is closed
- Is frequently overtopped during flooding and creates severe traffic delays

Q: What is a “functionally obsolete” bridge?

Functionally Obsolete (FO)

A bridge is classified as functionally obsolete if it is unable to serve current traffic because of inadequate:

- Bridge width
- Load carrying capacity
- Vertical or horizontal clearances
- Alignment between bridge and approach roadway



Eligibility

In order for a bridge to be eligible for the HBP, it must have a Sufficiency Rating (SR) of 80 or less and must either be Structurally Deficient (SD) or Functionally Obsolete (FO). SD and FO bridges with a SR of 80 or less are eligible for rehabilitation. SD and FO bridges with a SR of 50 or less are eligible for replacement. Replacement of a bridge with a SR over 50 may be justified through economic analyses.

Q: What are the eligibility criteria for a bridge to be selected for the HBP?

Bridge Classification	Sufficiency Rating	Eligibility for HBP Funding
Not Deficient Bridge with acceptable condition, configuration and design	81-100	Not Eligible
Deficient Structurally Deficient (Bridge in poor condition) or Functionally Obsolete (Bridge with poor configuration and/or design)	50-80	Eligible for Rehabilitation
	0-49	Eligible for Replacement or Rehabilitation

Inspections and Eligibility Process

Inspection

- TxDOT inspects all bridges at least once every 24 months.
- Bridge inventory reported to FHWA

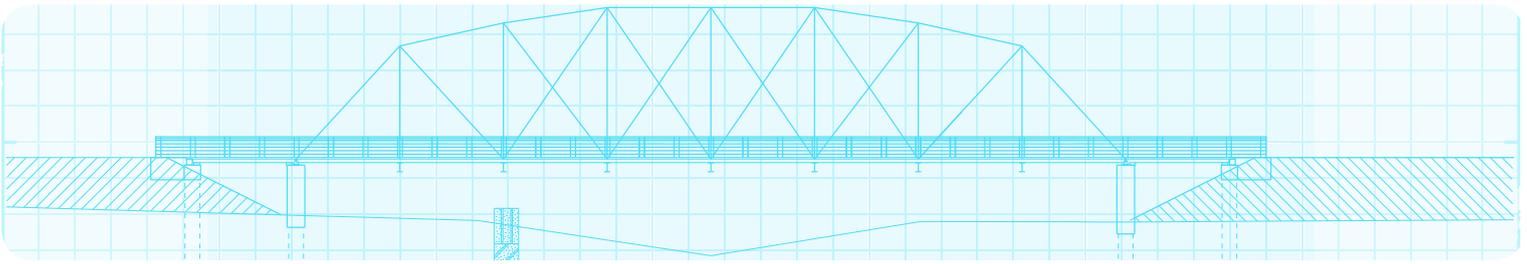
Classification

- Structurally Deficient (SD)
- Functionally Obsolete (FO)
- Sufficiency Rating (*23 CFR 650.409*)

Result = Eligibility List

Eligible bridges must:

- Be Structurally Deficient or Functionally Obsolete (*23 U.S.C. §144*)
- Have Sufficiency Rating of 80 or below (FHWA rules)



Once the classification process is complete for each year, the bridges are ranked according to their SR. The bridges with the lowest SR are given the highest priority, resulting in the HBP Eligibility List.

Project Selection

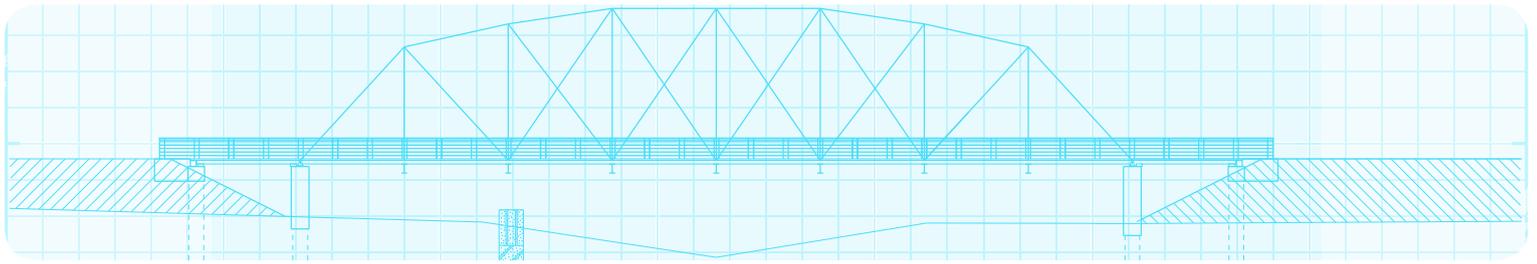
Project Selection begins after the end of each fiscal year when TxDOT can be certain which HBP projects have been let in the last fiscal year and which have not.

The first step in the selection process is that the Bridge Division sends the Eligibility List to all of TxDOT's 25 districts. The Bridge Coordinators in each district then work together with the local officials to modify the initial eligibility list.



Q: Are local wishes taken into account when selecting off-system bridge projects?

Over a period of about 60 days, districts and local officials work to accommodate the most important projects for each area. For example, bridges with higher SR rankings (in other words, which are less in need of repair) may, because of special considerations, be more important to



repair or replace than a bridge with a lower ranking. A special consideration bridge might be one that is the only route to a school or hospital, or that plays another such specific and important role in a community's transportation system. A special consideration project must prove to be very important because, if programmed, it will displace another project of higher priority (and a lower SR) to later in the four-year cycle. The result of this collaboration between TxDOT districts and local officials is a proposed project list from each district.

Project Selection Process: Part B

2 months

Districts submit lists

All 25 TxDOT Districts submit their **Proposed Project Lists** for each fiscal year to the Bridge Division.

Bridge Division prioritizes projects

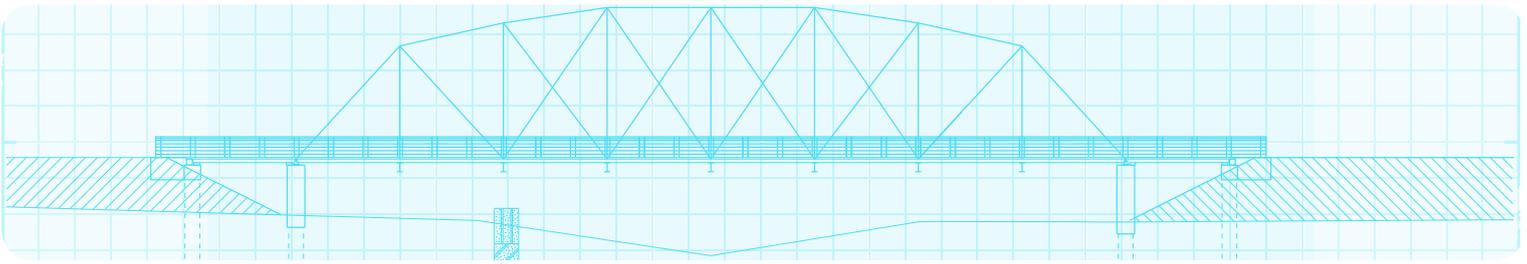
Bridge Division combines all 25 district **Proposed Project Lists** into one list for each fiscal year. Bridges are prioritized and programmed until funding is exhausted for each year.

Result = Statewide List of Programmed Projects

The next step in the selection process is that all 25 districts submit their proposed project lists to the Bridge Division which then combines, or programs, all 25 proposed lists into one statewide list of proposed projects. Programming of this list continues until the funding is exhausted.

Q: What determines how bridge projects will be prioritized?

Once projects are programmed into the four-year schedule, they are ready to be let in the year for which they are programmed. Letting is the process of putting a project out for construction bid.

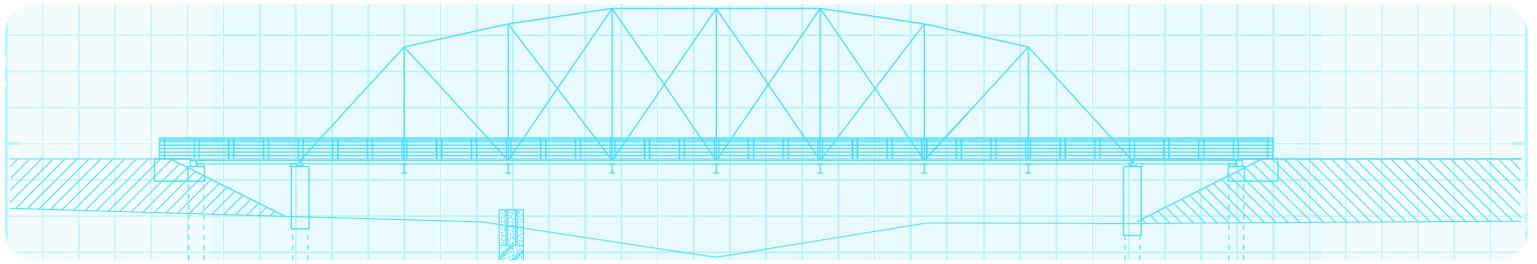


Project Development

Unlike rating or prioritizing a bridge project, project development can reveal the details of any given site or plan. These are the details which will determine the actual scope the project. Sometimes they reveal previously unknown conditions which can affect a project's schedule or cost. For example, once the National Environmental Policy Act (NEPA) clearance process begins, it could reveal a species habitat, watershed, wetlands, burial ground or other factor that must be considered in the implementation of the project. Other factors that affect project plans are changes in cost estimates, change orders and emergency projects. These are projects which may not have been programmed initially but, because of an intervening force like flood or hurricane damage, must now be added to the list and prioritized, often ahead of pre-existing projects.

If project development does not result in any major scope changes to the project, that project will proceed in the year it was programmed. If new factors or projects arise, the project schedule may change.

Completed Advance Funding Agreements are also an important requirement for PWP/EMP projects. These agreements between TxDOT and local governments clarify which Equivalent-Match projects qualify for the Highway Bridge Program and must be in place before work begins on the Equivalent-Match projects.



Project Development Process

Execute Advance Funding Agreement

For applicable projects, Advance Funding Agreements must be executed.

Begin Project Development

Project development time varies depending on project complexity.

Result A = Projects proceed as programmed

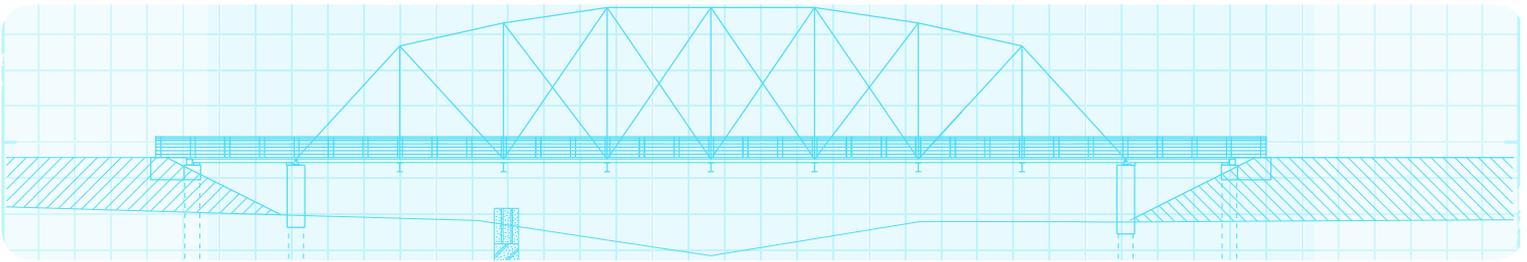
Result B = Project schedule may need to change

Factors affecting schedules include:

- Delays due to obtaining right of way or environmental clearance
- Emergency projects
- Over-runs/Under-runs of bids, revised estimates, change orders, etc.

Program Monitoring

Each month, the Bridge Division reviews the program list for factors that introduce changes to projects and adjusts the list accordingly. For example, when a district reports a delay, a cost over-run or under-run, a change order, or an emergency project, the Bridge Division adjusts the statewide lists. This frequently results in changes to the whole list as a repositioning of one project will introduce changes to the other projects, and so on.



HBP Monthly Monitoring Process

continuous with monthly assessment

Bridge Division reviews HBP Balance

Bridge Division reviews for under-runs and over-runs, changes from estimates, change orders, etc.

Project may be delayed or accelerated

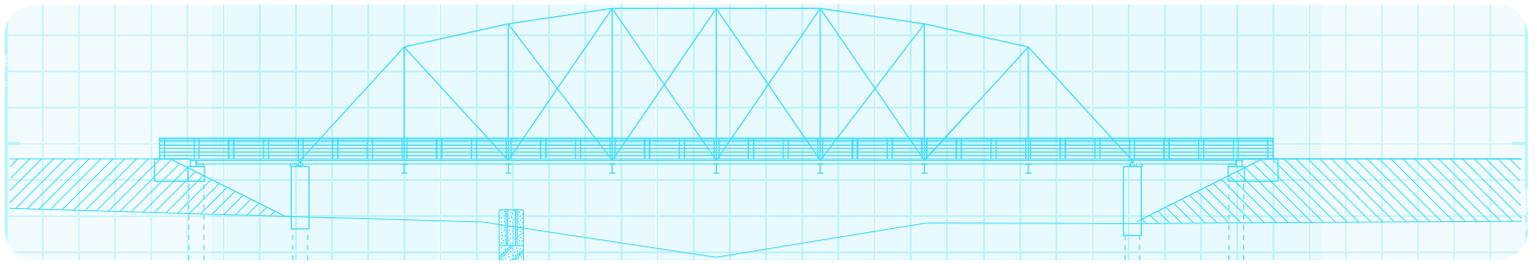
Emergency projects are introduced

Unexpected projects from weather- or accident-related damage are introduced.

Result = Bridge Division adjusts the Statewide List of Programmed Projects to maintain Fiscally Constrained HBP

Results

Since the beginning of the HBP, the condition of Texas bridges has steadily and significantly improved. From 2001 to September 2012, the number of SD off-system bridges in Texas has decreased from 2,433 to 998.



Glossary

Bridge

A structure erected over a depression or an obstruction, such as water, a highway, or a railway, that carries traffic and has an opening of more than 20 feet between faces of abutments.

Bridge Division (BRG)

The Bridge Division oversees and provides assistance in bridge program and project development; structural and geotechnical design; plan development; plans, specifications and estimate (PS&E) review; safety inspection; and bridge construction and maintenance support to the districts.

Fiscal Year (FY)

A fiscal year is an accounting or expenditure period of 12 months. For the federal government, this would be October 1 through September 30. Texas' state fiscal year is from September 1 to August 31.

Functionally Obsolete Bridge (FO)

A bridge that is unable to serve current traffic because of inadequate bridge width, load carrying capacity, vertical or horizontal clearances, or alignment between bridge and approach roadway.

Highway Bridge Program (HBP)

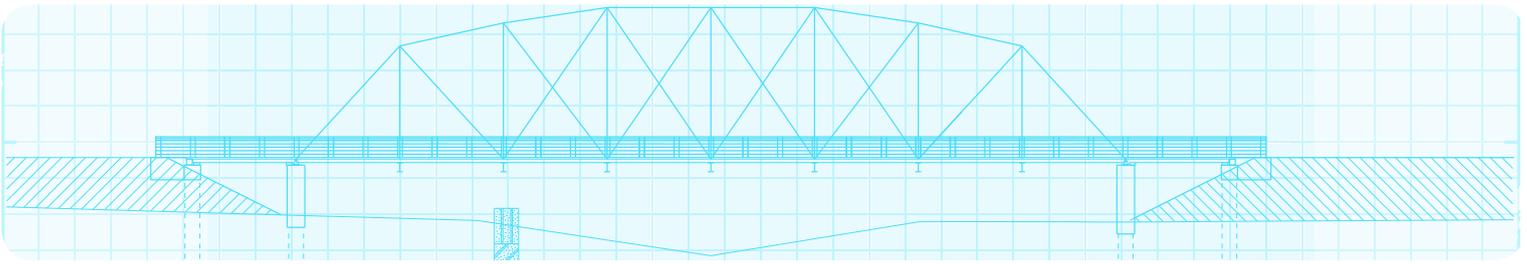
The HBP is a funding program to address the replacement or rehabilitation of deficient existing bridges located on the public highways, roads and streets in the state.

Letting

Letting is the process of providing notice, issuing proposals, receiving proposals and awarding contracts.

Off-system

Off-system routes are off the TxDOT-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.

**On-system**

On-system routes are on the TxDOT-designated state highway system and are administered by TxDOT.

Program

To evaluate and approve a project so that it can be advanced to the next step of development.

Rehabilitation

The major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects.

Replacement

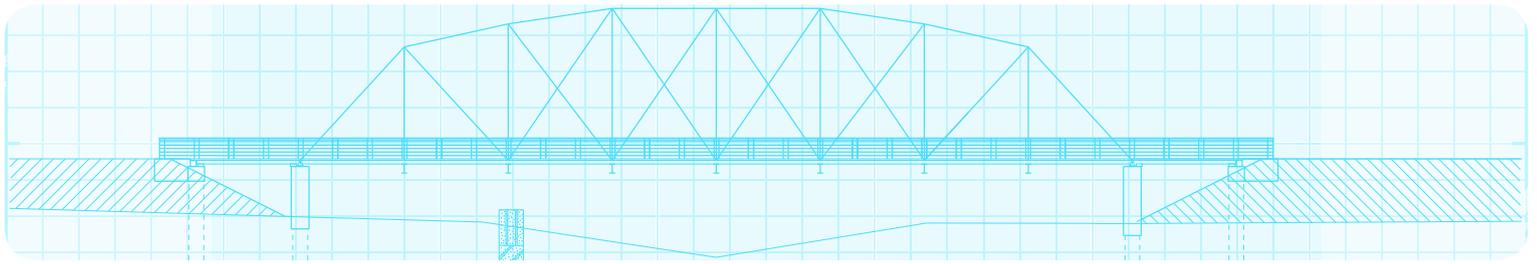
The total replacement of a structurally deficient or functionally obsolete bridge with a new facility constructed in the same general traffic corridor.

Structurally Deficient Bridge (SD)

A structurally deficient bridge has an extreme restriction on load carrying capacity, deterioration severe enough to reduce the load carrying capacity from original as-built levels, requires immediate rehabilitation to remain open, is closed, or is frequently overtopped during flooding and creates severe traffic delays.

Sufficiency Rating

The sufficiency rating of a bridge is a single numerical representation of the sufficiency of the bridge that ranges from 0 to 100. In calculating the rating, consideration is given to the structural adequacy and safety, serviceability and functional obsolescence, and essentiality of traffic service.

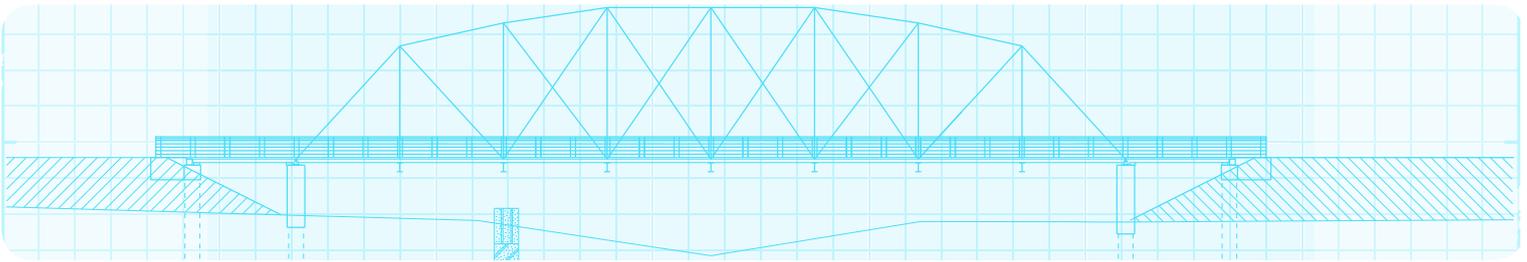


Appendix: Equivalent Match Project Details

An equivalent Match Project (EMP) is defined as a local government project that improves the structural load capacity or other safety condition of an off-state system bridge or other mainlane cross-drainage structure, including low water crossings (with or without conduit). This work may include, but is not limited to: providing improved structural capacity, improving hydraulics, increasing bridge roadway width, providing adequate bridge rail and providing adequate approach guardrail. The EMP work is required to take place at another location/structure that is not part of the Participation Waived Project(s) being developed by TxDOT. See the Texas Administrative Code: Title 43 Part 1 Chapter 15 Subchapter E Rule §15.52.

Examples of APPROVED EMP Work:

- Rehabilitation of an existing structure
 - Replacing bridge deck
 - Upgrading bridge rail
 - Repairing/replacing riprap (rock or concrete)
 - Repairing columns/beams
 - Repairing/improving the structural capacity
- Channel work at an existing structure (Work must be performed under the shadow of the structure or within 10-ft upstream and/or downstream of the structure)
 - Cleaning out debris, brush, sediment, etc.
 - Widening existing channel and improve flow
- Replace or construct a new cross-drainage structure



- Replacing the existing bridge
- Installing a tin-horn at a low water crossing
- Replacing a culvert (box or pipe)
- Other work as approved by the District Engineer/District Administrator or their representative

Examples of NON-APPROVED EMP Work:

- Roadway work/improvements (Including, but not limited to, approach roadway work within 150-ft of the structure)
- Cleaning out ditches along roadways (Including, but not limited to, approach roadway work within 150-ft of the structure)
- Channel work in excess of 10-feet upstream/downstream from an existing structure
- Work that will be, or has been, performed in conjunction with another EMP
- Culvert work in conjunction with a driveway or private roadway
- Other work defined by the District Engineer/District Administrator or their representative

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