



OFF-SYSTEM BRIDGE PROGRAM



Guidelines

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PURPOSE

These Guidelines were developed in order to assist Local Agencies and Tribal Governments (Project Sponsors) with the ADOT process for federal funding of Off-System Bridge structures.

The Off-System Bridge Subprogram guidelines describe the basis of project selection, which will follow a performance-based approach to project programming. Each project will be rated by the ADOT Bridge Group and a Selection Committee based on criteria and a prioritization method that are described within this document. Programming of selected projects will follow established ADOT policy.

FUNDING OVERVIEW

On December 4, 2015, the President signed the FAST Act into law (Pub. L. 114-94). The FAST Act amended the Surface Transportation Program (STP) contained in 23 U.S.C. 133, and changed the program name to the Surface Transportation Block Grant Program (STBGP). As part of the STBGP, a special set-aside was designated for the funding of the Off-System Bridge Program.

The FAST Act continues (without change) the MAP-21 set-aside of a share of each State's STBGP apportionment for use on bridges not on the Federal-aid highway system ("Off-System Bridges"). The amount is to be not less than 15% of the State's FY 2009 Highway Bridge Program apportionment.

The Purpose of the Off-System Bridge Program is to fund the Design and/or Construction for replacement or rehabilitation of roadway bridges over waterways, other topographical barriers, other roadways, railroads, canals, ferry landings, etc. on bridges that are not on the Federal-aid highway system (local roads or rural minor collectors) when those bridges have been determined deficient because of structural deficiencies, physical deterioration, or functional obsolescence.

FUNDING AMOUNTS

All eligible project costs will be paid for with STBGP funds. Eligible bridge project costs are funded at 94.3% Federal share with a 5.7% local match, up to a maximum Federal amount of a \$1,000,000 per project. The Project Sponsor can work with their local planning entity to add additional federal funding, if available.

ELIGIBILITY

Bridges are defined as any highway structure with an opening measured along the centerline of roadway of more than 20 feet (6.1 m) between undercopings of abutments and spring lines of arches, or extreme ends of the openings of multiple boxes; it may include multiple pipes where the clear distance between openings is less than half of the smaller contiguous opening.

ELIGIBLE ACTIVITIES

- Replacement (including replacement with fill material)
- Rehabilitation
- Preservation/Preventative Maintenance (As identified under FHWA's Bridge Preservation Guide)
- Protection (including painting, scour countermeasures, seismic retrofits, impact protection measures, security countermeasures, and protection against extreme events)
- Real Property Interest Rights for required access and permits or other uses as needed as part of the Right of Way requirements needed for the project

ELIGIBILITY DETERMINATION

The eligibility determination has two steps:

Step I:

The bridge first must be classified as either structurally deficient or functionally obsolete as described below based on National Bridge Inspection Standards (NBIS) inspection.

Note: Any bridge classified as structurally deficient is excluded from the functionally obsolete category.

Step II:

After deficiency is established, the bridge is considered eligible for either replacement or rehabilitation depending on the value of the sufficiency rating.

- Sufficiency rating of 80 or less is eligible for rehabilitation
- Sufficiency rating of 50 or less is eligible for replacement

Exception: Deficient bridges with sufficiency ratings between 50 and 80 may be replaced if it can be shown to be more cost effective than rehabilitation using a life cycle cost analysis or if the cost for rehabilitation has reached 60% of cost of replacement. Since eligibility is not exempt from FHWA review, the analysis should be reviewed and approved by both ADOT and FHWA.

The ADOT Bridge Group maintains a list of bridges eligible for replacement and rehabilitation on its website www.azdot.gov/business/engineering-and-construction/bridge. Coding based on the NBIS inspection that defines a bridge as either structurally deficient or functionally obsolete are provided in the list for reference.

Any Off-System Bridge project request to use Federal funds for a bridge not on the selection list should be fully documented and justified to indicate that additional deficiencies have developed through some natural or unforeseen phenomenon. FHWA Division Office should evaluate each of the above cases on an individual basis.

The decision to rehabilitate versus replace should be based on a study of alternatives considering cost, safety, service life, and level of service. Rehabilitation alternatives are necessary only when considered feasible. All deficiencies must be corrected including safety features; for example, bridge rail, approach rail, and transitions. (This requirement does not apply to projects which include only Preservation/Preventative Maintenance, seismic retrofit, or structural steel painting, although FHWA recommends safety defects be corrected, if possible.)

The standards by which deficiencies are determined depend on the system.

- National Highway System (NHS) - State Standards (Meets or exceeds the American Association of State Highway and Transportation Officials (AASHTO) Standards)
- Other State Highways - State Standards (Meets or exceeds AASHTO)
- Local Agency Roads - AASHTO or ADOT approved Local Standards

Geometric and structural features must meet current standards for replacement or rehabilitation, or deviations must be approved. Whenever a deficient bridge is replaced or its deficiency alleviated by a new bridge, the deficient bridge shall either be dismantled or demolished, or its use limited to the type and volume of traffic the structure can safely service over its remaining life. For example, if the only deficiency is inadequate roadway width and the combination of a new and existing bridge can be made to meet current standards; the existing bridge may remain in place and be incorporated into the system.

FUNCTIONAL CLASSIFICATIONS

Bridges are classified as "On" and "Off" the Federal-aid system by their functional classification. Local roads (National Bridge Inspection code 09 or 19) and rural minor collectors (NBI code 08) are "Off-System". Off-System Bridges are on a road that is not part of the designated state highway system and is under the direct jurisdiction of the local government (i.e. county roads & city streets).

The functional classification of a road is the class or group of roads to which the road belongs. There are three main functional classes as defined by the United States Federal Highway Administration: arterial, collector, and local.

Arterial:

Arterial roads generally provide the fastest method of travel and typically have low accessibility from neighboring roads. They are usually designed with long-distance travel in mind and are not as common as the other two functional classes of roads.

Codes and Definitions:

- 01 Rural-Principal Arterial, Interstate
- 02 Rural-Principal Arterial, Other Freeways & Expressways
- 06 Rural-Minor Arterial
- 11 Principle Arterial, Interstate
- 12 Principal Arterial, Other Freeways or Expressways
- 14 Other Principle Arterial
- 16 Minor Arterial

Collector:

Collector roads are the second most common and are used as a connection between local roads and arterial roads. They provide a balance between access and mobility.

Codes and Definitions:

- 07 Rural-Major Collector
- 08 Rural-Minor Collector
- 17 Urban-Collector

Local:

Local roads are the most common roads by far, but are also the slowest for travel. They are designed specifically to have high accessibility and to connect to collector and arterial roads, and are typically not used for through traffic.

Codes and Definitions:

- 09 Local Rural
- 19 Local Urban

FUNCTIONAL CLASSIFICATION TABLES

| Classification Code: | 01 | 02 | 06 | 07 | 08 | 09 | 11 | 12 | 14 | 16 | 17 | 19 |
|----------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| On-System: | X | X | X | X | | | X | X | X | X | X | |
| Off-System: | | | | | X | X | | | | | | X |

FUNCTIONALLY OBSOLETE

A functionally obsolete bridge is inadequate to properly accommodate traffic due to inadequate vertical or horizontal clearance, approach roadway alignment, structural condition, or waterway adequacy. A functionally obsolete bridge is determined from the following field inspection data items as entered on the Federal Structure Inventory and Appraisal (SI&A) Form, which is recorded and maintained by the ADOT Bridge Group.

- An appraisal rating of 3 or less for:
 - **Item 68** - Deck geometry, or
 - **Item 69** - Under clearances, or (Item 69 applies only if the last digit of Item 42 is coded 0, 1, 2, 4, 6, 7, or 8)
 - **Item 72** - Approach roadway

STRUCTURALLY DEFICIENT

A structurally deficient bridge is inadequate to carry legal loads, whether caused by obsolete design standards, structural deterioration, or waterway inadequacy. A structurally deficient classification is determined from the following field inspection data items as entered on the Federal Structure Inventory and Appraisal (SI&A) Form, which is recorded and maintained by the ADOT Bridge Group.

- A condition rating of 4 or less for:
 - Item 58-Deck, or
 - Item 59-Superstructure, or
 - Item 60-Substructure, or
 - Item 62-Culvert (Item 62 applies on if the last two digits of Item 43 are coded 07 or 19)

SUFFICIENCY RATING

The sufficiency rating formula provides a method of evaluating highway bridges by calculating four separate factors to obtain a numeric value which is indicative of bridge's ability to remain in service.

Sufficiency Rating = $S1 + S2 + S3 - S4$, where:

- S1= structural adequacy and Safety (55% max)
- S2= serviceability and functional obsolescence (30% max)
- S3= essentiality for public use (15% max)
- S4= special reductions (13% max)

Using this rating formula, a percentage is calculated on a scale ranging from 100 percent (an entirely sufficient bridge) to zero percent (an entirely deficient bridge).

FUNDING PARTICIPTION GUIDELINES

Under the previous Off-System Bridge program, reasonable touchdown points for bridge projects were recommended in order to keep the total length of approach work at less than 1,200 feet, not to exceed 15% of the total project cost. However, if the local agency determined that the required approach work total would exceed 1,200 feet, but all elements of the project were designed to the operating speed of the roadway (not exceeding the posted or statutory speed), a waiver request could be submitted, through the Department, to the FHWA for review. Under the new legislation, this waiver request process will remain the same, except the Department will have approval authority. Requests should be initiated through the ADOT LPA Section, and directed to the Bridge Group within ADOT.

Long approach fills, connecting roadways, interchanges, ramps, and other extensive structures, when constructed beyond the attainable touchdown point are, in general, ineligible for program participation in the Off-System Bridge program, however other federal funds can be used to pay for roadway work. Normal approach costs necessary to connect into the existing facility using appropriate design standards are considered eligible as long as they are not excessive or adversely affect the Department's annual program average goal of 15% roadwork funded by program funds. Roadway items are to be funded under other Federal fund categories, if applicable.

An exception can be accepted to use program funds for more roadway work if FHWA representatives concur that the bridge replacement or rehabilitation project is an isolated project without any roadway improvement proposed in the vicinity of the project area. In order to satisfy AASHTO Design Criteria to current design standards for roadway and bridge requirements, the proposed roadway and bridge work may be paid fully by program funds.

PROJECT SELECTION

Project selection will be competitive and done through a "Call for Projects" application process based on State Fiscal Year (July 1st-June 30th).

The "Call for Projects" notice will be sent by the ADOT LPA Section through the Council of Governments (COG) and Metropolitan Planning Organizations (MPO). Applications will require a description of work that includes scope of work, justification (system prioritization), schedule, and detailed cost estimates for Design and Construction phases. Entities submitting multiple applications will need to regionally prioritize projects and submit justification for the selected bridges.

The Selection Committee will review and prioritize all Off-System Bridge projects based on the submitted applications. The Selection Committee will prioritize and recommend projects based on scoring of each project application according to the rating factors that are described below. Projects are programmed according to rankings given to them by the Selection Committee, and available funding with the year identified in the application. Based on funding availability, certain phases of a project may have to move between fiscal years. If additional funding becomes available within the current programming cycle, the next project on the priority list may be programmed. Projects may be selected out of order to deplete the balance of the subprogram in the event that the cost of the next project on the list would exceed the amount of available funding. Project Sponsors will be notified whether or not their project is selected for funding. Projects that are not selected must be resubmitted to the Selection Committee in the next selection cycle in order to be considered.

Projects will be prioritized (ranked) statewide by ADOT Bridge Group based on:

- Overall condition of the bridge (bridge inspection reports)
- Amount of traffic
- Accident rates
- Vertical clearance
- Bridge geometry
- Load carrying capacity
- Age of bridge
- Weight restriction

EVALUATION OF CANDIDATE BRIDGES

The ADOT Bridge Management Section performs an initial review of the bridge data and ratings, the project prospectus and the preliminary estimate to resolve any insufficient and inconsistent data. The Selection Committee will perform a preliminary ranking and review, and may perform an on-site review of selected bridges as necessary. The review consists of evaluating the project scoping document which identifies the replacement or rehabilitation needs of the project and recommended action. The Selection Committee consists of bridge engineers from ADOT Bridge Group Administration, Bridge Design, Bridge Hydraulics, Bridge Geotechnical service, and any others as appropriate.

PRIORITY RANKING OF CANDIDATE BRIDGES

For local agencies, the bridge projects to be included in the annual program are to be selected in accordance with FHWA's "Guidelines for Administration of Local Government Federal Aid Improvement Programs". The program consists of the following selection process and criteria:

- Concurrently with updates to the five-year Federal Aid Program, each COG and MPO should notify its local jurisdictions of the current bridge listing and request which bridge(s) a project sponsor intends to replace or rehabilitate by federal-aid reimbursement. The listing will reflect ADOT file data by each summer with eligibility subject to cooperative conformation by the FHWA
- The Project Sponsor will identify which of the following groups each project candidate resides:
 - Group I: Sufficiency Rating = 0.0-25.0
 - Group II: Sufficiency Rating = 25.1-50.0
 - Group III: Sufficiency Rating = 51.1-80.0
- A Project Sponsor submitting candidate projects to a COG/MPO for program inclusion should preferably select from Group I. The Project Sponsor may, however, submit a Group II bridge candidate but that candidate will not take precedence over a Group I candidate unless Group I candidates have failed to exhaust the available funds by February 1st or a request for an exemption has been received and approved by ADOT
- Group II bridges will be considered as candidates only if the total statewide cost of higher priority candidates is insufficient to use the available funding or a request for an exemption has been received and approved by ADOT
- Group III bridges will be considered as candidates for rehabilitation and/or replacement if the cost of rehabilitation is over 60% of the replacement. Priority will be behind Group I and II
- ADOT will monitor candidate projects for compliance with these guidelines prior to acceptance of the annual Federal-aid program

Bridge needs are determined by program objectives; these objectives, in turn, form the basis of a priority ranking system. If objectives are not specifically stated, they are implied by the factors and methods used in determining needs and priorities. A Bridge Management System can be any system or series of engineering and management functions which, when taken together, comprises the actions necessary to manage a bridge program.

These actions could be:

- Evaluating bridge problems
- Selecting bridge improvement projects
- Programming and initiating projects
- Inventorying and inspecting bridges
- Evaluating priorities
- Selecting and programming projects
- Improving bridges

Each Project Sponsor has its own unique reasons for the priority points and weights assigned to different need functions. For example, if project sponsors do not have posted bridges on their system, they may give low priority to load capacity and emphasize aspects of functional obsolescence, such as clear deck width and vertical clearance.

Those project sponsors with large numbers of posted bridges may be most concerned with load capacity and the associated user costs and safety concern created. Project sponsors experiencing severe highway funding shortages may be concerned with obtaining maximum bridge service life out of existing bridges; they therefore may choose to accept low levels of service.

For the State of Arizona, the sufficiency rating is widely used as a priority ranking formula in combination with other factors, such as scour vulnerability, seismic vulnerability, substandard railing, and safety issues, etc..

PROJECT SELECTION

If a project is selected for program funding, an eligibility letter will be sent to the Project Sponsor, COG/MPO, and ADOT Technical Groups letting them know that the project has been selected for funding.

PROJECT SELECTION FOR EMERGENCY SITUATIONS

In the event a bridge has been destroyed or substantially damaged, causing an emergency situation, and no other state or federal funds are available for its replacement or restoration; the agency may apply to have the bridge replaced or restored with program funds.

The ADOT Bridge Group will conduct an on-site inspection of the Bridge and determine:

- That no reasonable alternate detours are available
- That the structure had a valid inspection in the last two years
- That the structure failed or received a three-ton or less load rating causing closure and barricading

Emergency structures will take priority over other projects. If the emergency request is approved, another project may have to be delayed. The failed or damaged structure will be reevaluated by the ADOT Bridge Group and given a new Sufficiency Rating to reflect its new condition. A new technical ranking will be calculated, using the recalculated Sufficiency Rating.

PROGRAMMING

Once a project has been selected as a candidate bridge through the ADOT “Call for Projects” process, the Project Sponsor will need to work with their Regional COG/MPO to have the project programmed into a fiscally constrained program year in the Regional TIP.

Once the Regional TIP has been amended and submitted through ADOT and FHWA for approval, the Project Sponsor should work with the ADOT Local Public Agency Section to initiate the project and start the ADOT Development process.

PROJECT DEVELOPMENT PROCESS

Once a project has been submitted and selected for Off-System Bridge funding, Project Sponsors will need to follow the ADOT Project Delivery Process for federal-aid programs as outlined in the ADOT LPA Manual (<https://www.azdot.gov/business/programs-and-partnerships/LocalPublicAgency/lpa-projects-manual>).

Throughout the Project Delivery Process, Project Sponsors will need to have the below items completed:

PROJECT ASSESSMENT: A project assessment that includes scope of work, justification, schedule, and detailed cost estimates for Design and Construction phases are required as part of the documentation needed for the project review and selection process.

PLANNING AND PROGRAMMING: Once a project has been selected for Off-System Bridge funds as defined previously in this document, a Project Sponsor must work with their COG/MPO to program the project into a fiscally constrained program year on the Regional TIP to be included in the STIP.

PROJECT INITIATION: Project Sponsor will prepare and submit a Project Initiation request to the ADOT LPA Section to request an ADOT Project and Federal ID numbers. Project Initiation request forms and supporting documentation forms can be found on the ADOT LPA Section's "One Stop Shop" webpage (<https://www.azdot.gov/business/programs-and-partnerships/local-public-agency/one-stop-shop>).

INTERGOVERNMENTAL AGREEMENT (IGA): Execute Intergovernmental Agreement. ADOT will prepare an Intergovernmental Agreement which outlines the funding for the project based on the final cost estimate.

PROJECT DEVELOPMENT ADMINISTRATION (PDA) FEES: All local governments will have an executed an IGA with ADOT that outlines procedures for ADOT to recover the design review and bid package preparation costs by ADOT to administer the development and advertisement for bid of local construction projects.

STRUCTURE SELECTION REPORT: Bridge projects require the submittal of a Structure Selection Report, after the Design Concept Report has been approved.

ENVIRONMENTAL ANALYSIS: An Environmental Determination will be made by ADOT regarding the type of Environmental Analysis required for the project. All federal-aid projects require an environmental analysis and an environmental clearance certification.

DESIGN MEMORANDUM: A Design Memorandum letter will be prepared and submitted by the Project Sponsor to the ADOT Project Manager after Environmental Clearance has been given for the project. After the Design Memorandum has been signed, final design work on the project can begin.

STAGE SUBMITTALS: Submit 30%, 60%, and 95%, Plans, Specifications, and Estimate: If the Project Sponsor is designing the project, requirements for the 30%, 60%, and 95% projects submittals are described in ADOT's Project Development Process.

RIGHT OF WAY (ROW) CLEARANCE: The Local Public Agency will provide the ADOT ROW Group with a Real Property Interest Certification upon completion for environmental clearance and completion of 95% plan submittal. All federal-aid projects regardless of new rights of way or not require a ROW clearance.

FINAL PLANS PACKAGE: Special Provisions shall be prepared in accordance with ADOT format and be submitted electronically. The ADOT Contracts and Specifications Section will prepare a PS&E package. Environmental Clearance, Right of Way Clearance and Utility Clearance letters should be submitted as part of the final plan package to ensure that the approval process will not delay bid advertisement.

CONSTRUCTION MATCHING FUNDS: The matching funds required for a local government project will be the amount shown on the project estimate recapitulation sheet provided by Contracts and Specifications Section in the project PS&E bid package plus a surcharge amount (for change order use).

PROJECT BID ADVERTISEMENT AND AWARD: Projects will be advertised for bid when Environmental Clearance, Right of Way and Utility Clearances are approved, PS&E package is approved and matching funds have been provided. Project is advertised, bid open, bids reviewed and certified and the project awarded by the State Transportation Board. This process requires a minimum of 2 months.

PROJECT CONSTRUCTION, POST DESIGN SERVICES: A local jurisdiction who has hired a consultant engineering firm to prepare plans, specifications, and estimate for their federal-aid highway construction project must retain the firm for post design work that may be required during the construction phase of the project.

FINAL PROJECT COST ACCOUNTING: At the conclusion of the construction phase of the project, a final accounting of project costs will be made. The local agency will be informed by the letter from ADOT Accounts Receivable Section, of the final construction costs for the project.