

Chapter 8: Non-Capacity Projects

Enhancement Program

The Transportation Enhancement Program was first included in the Federal Surface Transportation Bill of 1991, also referred to as ISTEA. The act required that ten percent of the Federal Surface Transportation Program (STP) monies apportioned to each state be set aside for the funding of enhancements to the transportation system. In 1998, TEA-21 replaced ISTEA. The Transportation Enhancement Program was continued under TEA-21 with the addition of two new Transportation Enhancement activities. (Reference Attachment 3)

Enhancement activities eligible for Transportation Enhancement Program funding include:

- Provision of facilities for pedestrians and bicycles
- Provision of safety and educational activities for pedestrians and bicyclists
- Acquisition of scenic easements and scenic or historic sites
- Scenic or historic highway programs (including the provision of tourist and welcome center facilities)
- Landscaping and other scenic beautification
- Historic preservation
- Rehabilitation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals)
- Preservation of abandoned rail corridors (including the conversion and use thereof for pedestrian or bicycle trails)
- Control and removal of outdoor advertising
- Archaeological planning and research
- Environmental mitigation of water pollution due to highway runoff or reduce vehicle caused wildlife mortality while maintaining habitat connectivity
- Establishment of transportation museums

The Transportation Enhancement Program was given to the states to administer. Each state is to develop a process to select eligible projects that meet the requirements of the program. The process must be open to the public. Local governments, state agencies, and federal agencies may submit applications for project funding. Private groups may apply for project funding, but must apply through a public entity or agency. Projects must be for one of the categories specified by law and must be related to surface transportation.

Projects are prioritized for funding by the Statewide Transportation Technical Advisory Committee (STTAC). Members of the STTAC represent a wide range of transportation interests, including several local, state and federal agencies (Attachment 2 denotes membership list). That area's Metropolitan Planning Organization (MPO) initially prioritizes projects from the urban areas of the state. A special subcommittee of the STTAC prioritizes projects from the non-

urban areas of the state. The STTAC approves and recommends to the State Transportation Board a final priority list of projects. Upon NDOT approval, the transportation enhancement projects are included in the Statewide Transportation Improvement Program (STIP).

The Transportation Enhancement Program is a reimbursable funding program, not a grant program. Federal regulations require a minimum match of five percent. The required match must come from the local sponsoring entity or agency. Current NDOT policy allows the Department to participate in meeting the match requirement where the proposed project is located on State interest highways and rights-of-way.

Enhancement Project Cost Over-Run

NDOT's policy on project cost over-run is intended to encourage accurate cost estimates for design, right-of-way, and construction. The cost over-run policy is as follows:

- If incurred costs increase by fifteen percent (15%) over the initial project, cost will be paid at a 95/5 ratio. Ninety-five percent (95%) through Enhancement funding and five percent (5%) by applicant.
- Cost increases above fifteen percent (15%) will be paid at a 50/50 ratio.
- Enhancement funds available for a project cost increase shall not exceed \$100,000.
- Projects or phases of projects are limited to \$600,000 annually.
- The balance of any additional cost increases will be the responsibility of the applicant.
- Project sponsors must be consulted prior to any cost increases being approved.

Bridge Replacement & Rehabilitation Program

Highway Bridge Replacement and Rehabilitation Program (HBRRP) funds are available to replace and rehabilitate substandard publicly owned highway bridges. While the primary focus of this program is to replace or rehabilitate bridges, HBRRP funds can also be used for:

- Conducting federally mandated inspection on all existing bridges.
- Compiling federally mandated inventory information on all existing bridges that can include development and operation of a Bridge Management System.
- Upgrading bridges to resist seismic activity.
- Mitigating potential scouring of bridge supports due to flooding.

Eligible expenses are funded at eighty percent HBRRP funds with a twenty percent match by the bridge's owner. Sixty-five percent of HBRRP funds must be applied to On-System bridges, fifteen percent to Off-System bridges, and twenty percent is optional. On and Off-System refers to the federal-aid system which is defined by the functional classification of the road. Nevada receives an appropriated amount of about eleven million yearly per federal legislation.

The Federal Highway Administration defines a bridge as having a span of twenty feet or more. A series of pipes or culverts can also be considered a bridge if their length is twenty feet or more when measured along the roadway. All highway bridges owned by public agencies are eligible for HBRRP Funds. Bridges that are privately owned, carry railroads, or are used exclusively for pedestrians or bicycles are not eligible. NDOT administers this program for all state, county, and city bridges. Bridges on federal and tribal lands are also eligible for HBRRP Funds but are not authorized and administered by NDOT.

There are approximately 1623 bridges open to the public in Nevada. NDOT maintains 1005 bridges, other state agencies maintain 2, county and cities maintain 442, federal agencies maintain 56, and lastly, 8 are privately maintained. Of the 1623 state bridges, 1559 are eligible for HBRRP funding.

Most HBRRP funds are used for replacement projects. Funding levels are not high enough to replace and rehabilitate all eligible bridges. Bridges in need of replacement have a higher priority. Eligibility and the priority of replacement projects are based on a bridge's sufficiency rating. The sufficiency rating is a numerical formula that uses a compilation of inventory data and condition assessment inspections. The importance of a bridge to the transportation system and rate of deterioration are also considered when selecting a replacement project. Replacement projects are selected based on bridge sufficiency ratings as well as other various functional characteristics. Counties and cities can establish their own priority when they have more than one eligible bridge. However, they are advised that the sufficiency rating should be considered in setting their priorities. The sufficiency rating has a value that varies from 0 to 100. The rating of 100 represents a bridge with no deficiencies and 0 represents a completely insufficient bridge. For example, a bridge with a sufficiency rating over 80 is considered good. A bridge with a sufficiency rating between 50 and 80 is considered to be in fair condition and would be eligible for rehabilitation. Once the sufficiency rating drops below 50, a bridge is considered to be in poor condition and is eligible for replacement. In addition, in order to qualify for HBRRP funds, a bridge must also be considered to be either "structurally deficient or functionally obsolete." A bridge is structurally deficient when key elements of a bridge are in a severe state of deterioration. A bridge is functionally obsolete when it cannot adequately serve the road it carries.

Replacement and rehabilitation projects are designed and constructed according to NDOT policies and procedures. Replacement projects can be built within the same general highway corridor that the existing bridge serves. They do not have to be built at the same location as the old bridge. The old bridge however must be removed. Rehabilitation projects generally include widening and

strengthening. These projects must correct the deficiency making the bridge eligible for funding.

Costs eligible for HBRRP funds include preliminary engineering, right of way, actual construction, and construction engineering costs. Preliminary engineering includes all design work necessary to develop a set of construction drawings including surveying, aerial photography and mapping, analysis, design, plan preparation, and plan printing. Right of way includes right of way engineering, appraisal, and acquisition. It may also include utility relocations if the utility is situated there by a prior right. Actual construction is payment to contractors and can include all adjustments to a contract by change order or legal action. Construction engineering is the oversight of the construction and includes oversight by inspectors, testing of materials, and review of shop drawings.

State Highway Preservation

The Nevada Department of Transportation (NDOT) maintains 5,472 miles of highways. These highways carry 60 percent of Nevada's traffic and 90 percent of the heavy trucks. Today's cost to replace the pavement surface is estimated at \$3 billion; therefore, the state's investment in highways is substantial.

NDOT is responsible for protecting highway assets and preserving existing highways. Highway assets are managed using two systems: A pavement management system and a bridge inventory system. Both systems provide an inventory of existing assets, their condition, needed repairs, and repair priorities.

Pavement preservation funding is derived from highway-user taxes, fuel taxes, and vehicle registration fees. Typically, nearly \$190 million is spent annually on pavement preservation projects, of which \$66 million is federal funds for Interstate maintenance, and \$124 million is state funded. To preserve a high-quality state highway system at low cost, an action plan is needed that optimizes the use of available funds. NDOT's action plan in priority order is as follows:

Continue to maintain Nevada's Interstate system and high-volume roads at a high level of serviceability by applying timely overlays and reconstructing inferior segments.

- Continue to maintain Nevada's non-Interstate principal arterials, minor arterials, and other moderate-volume roads at a modest to high level of serviceability by applying timely overlays and reconstructing inferior segments.
- To further develop economically sound methods to improve low-volume roads and maintain them at a limited, but acceptable, level of serviceability.
- To continue coordinating and integrating routine pavement maintenance activities with planned overlay and reconstruction work.

Within the goals of NDOT's action plan, individual projects are prioritized based on pavement age, traffic volume, axle loads, and condition. From this analysis, an action list is formulated based on the financial consequences of not doing the project. Further assessment data is collected from field surveys in conjunction with district-engineer offices. Collaboratively, repair strategies are formulated along with an appropriate funding level to accomplish the Department's preservation and other goals

Safety Improvement Program

The overall objective of the Highway Safety Improvement Program is to implement effective safety measures that reduce the number and severity of accidents on Nevada highways. The Highway Safety Improvement Program consists of three components: planning, implementation, and evaluation.

The planning component consists of:

- A process for collecting and maintaining records on accidents, traffic and highway data.
- A process for analyzing highway locations and features to determine hazardous conditions.
- A process for conducting engineering studies of hazardous locations in order to develop highway safety improvements.
- A process for establishing priorities for implementing safety improvements.
- A methodology for classifying state, local, and federal projects.
- A process for programming and implementing highway safety improvement projects.
- An evaluation of cost and safety benefits derived from safety analysis to mitigate or eliminate roadway hazards.
- An evaluation of accidents before and after the implementation of a safety improvement.
- A methodology of determining the overall effectiveness of the prescribed safety improvement.

The Department's methodology in conducting a safety analysis is derived annually from the total number of reported traffic accidents. Traffic accidents are encoded into the Department's computer database, which classifies accidents by similarities. Traffic accidents are first classified according to severity and location, and then are grouped into one of the forty-one collisions or non-collision classification headings. Under the severity classification heading, accidents are classified as: fatal, nonfatal injury, or property damage. Under the location classification heading, accidents are classified according to: intersection,

mile-maker, mid-block, roadway, and then further subdivided by setting such as urban, rural, or industrial.

Over 99% of all crashes at public railroad highway crossings in Nevada occur at crossing with active warning devices. Railroad highway crossing improvement projects are selected for upgrading according to the Nevada Hazard Index, which includes crash data and crossing data and other engineering factors.

High accident locations are identified from the Department's database, using a three prong criteria, which measures: accident frequency, accident severity, and accident rate. The criterion developed filters all high accident locations, which are correctable through roadway improvements. Engineering analysis utilizing a multi-disciplinary team of safety engineers, design engineers, district engineers, local entities, and the Federal Highway Administration (FHWA) rate and review the listing of locations. From this listing, a report is generated specifying recommendation for action. In addition to the recommendations of the multi-disciplinary team, onsite field surveys, public input, and historical data is utilized to analyze proposed safety projects based on the anticipated reduction in the number and/or severity of accidents.

The results of these findings assist the Department in determining which high yield improvements will be programmed first. Projects that are selected using the above-mentioned methodology are classified as state, local or federal-aid projects. Projects that qualify for federal-aid are then submitted to the Department's administration for inclusion in the annual work program.

In order to achieve the most effective return in accident reduction per dollar spent, cost-effectiveness methodology is utilized to select highway safety improvement projects. Additionally, the Department sets aside \$400,000.00 annually for quick action response funding. This funding can be used towards matching local contributions or to augment a district's budget. Safety improvements of \$150,000.00 or less, such as pedestrian flashers, lighting, or increased signage is made available at the request of a local entity or in response to an event. Such funding is available on a first-come, first-serve basis.

The Surface Transportation Program (STP) provides for up to ten percent of its funding category to be allocated or set aside for safety projects such as hazard elimination and rail crossings. Railroad crossing projects, which are determined to qualify for federal-aid, are submitted to the Department's administration for inclusion in the annual work program.

The effectiveness of highway safety project selection is evaluated by a criterion of six functional procedures. They are as follows:

Function A - Develop an evaluation plan

Function B - Collect and reduce data

Function C - Compare measures of effectiveness (MOE's)

Function D - Perform tests of significance

Function E - Perform economic analysis

Function F - Prepare evaluation documentation

The findings of the highway safety evaluations are used to establish Nevada's statistics for accident reduction factors. These statistics are then reported to FHWA for incorporation into the national database referred to as the Annual Report to Congress.

Set-Aside for Economic Development

The Nevada Department of Transportation sets geographic equity as an important priority for the department. Residents of all counties throughout the state contribute to the department's budget through payment of gasoline taxes, Department of Motor Vehicle (DMV) fees, and DMV taxes. For this reason, the Department feels it is vital to contribute to economic development. One mechanism for accomplishing this is through the recognition that economic development is a viable and appropriate rationale for programming transportation projects in rural counties. This program is funded through the allocation of funds from the STP "areas under 5,000 population" program, enhanced with state dollars.