

**INVEST Memorandum  
SR 179, I-17 Red Rock Vista  
Arizona Department of Transportation**



September 2019 **INVEST Score: Silver (49 points)**



## **Background**

The project is located along SR 179 from approximately MP 299 to MP 305 in Yavapai County, Arizona. The project length is approximately six (6) miles on SR 179 from MP 302.5 near Dry Beaver Creek Bridge and north through the project area is part of the National Scenic Byway System – Red Rock Scenic Byway. The project scope of work includes a variety of preservation activities such as pavement preservation, striping, rumble strips, guardrails, access turnouts and more. The project construction is estimated to cost \$5,520,000.

## **What is INVEST?**

INVEST (Infrastructure Voluntary Evaluation Sustainability Tool) was developed by the Federal Highway Administration (FHWA) as a practical, web-based, collection of voluntary best practices, called criteria, designed to help transportation agencies integrate sustainability into their programs (policies, processes, procedures, and practices) and projects.

The INVEST web-based tool allows users to self-evaluate programs or projects using these criteria to obtain a snapshot of the sustainability of the program or project in time. The tool also allows the user to include notes on scoring and implementation actions that can assist the user in integrating criteria and making progress over time. Although many agency efforts could already be considered sustainable, INVEST is focused on "above and beyond" efforts. Efforts that are typically required, such as National Environmental Policy Act (NEPA) resource analysis areas, are not included within the INVEST criteria.

INVEST considers the full lifecycle of projects and has four modules to self-evaluate the entire lifecycle of transportation services, including System Planning for States or Regions (SPS or SPR), Project Development (PD), and Operations and Maintenance (OM). Each of these modules is based on a separate collection of criteria and can be evaluated separately.

## **Purpose of the Memorandum**

ADOT, in partnership with FHWA has utilized the latest version of INVEST (1.3) on numerous agency projects and programs in varying stages of development to document, explore, and identify sustainability elements of projects for incorporation, as well as provide feedback on the current INVEST 1.3 version of the tool. The goal of this project INVEST memorandum is to document the use of the INVEST scoring application on the SR179, I-17 – Red Rock Vista pavement preservation project using the Project Development (PD) using the Rural Basic Scorecard.

## **INVEST Scoring**

INVEST may be used to score a project based on total points achieved. In the INVEST tool, FHWA does not recognize a project as having met the achievement level of sustainability based on scores; but rather recognizes that the user has self-evaluated their project and met the indicated achievement level.

The total points a project earns can be compared to several “achievement levels” that serve as relative benchmarks for sustainability accomplishments. The figure below shows the minimum number of points necessary to meet each achievement level for the PD module.

### **SR 179 INVEST PD Module Criteria Scoring Results and Basis for Scores**

According to the INVEST User Guide;

The Project Development module spans the entire project development process. It includes early project planning, alternatives analysis, environmental documentation, preliminary and final design, and construction. Although the criteria span all phases of project development, including construction activities, the project owner typically has control over the decisions and actions necessary to meet all of the criteria. Scoring The Project Development Module of INVEST has 7 project scorecards available for the evaluation of projects. This approach allows for flexibility, since not all of the criteria will apply to every project. Six of the scorecards are based on both the type of project (paving, basic, extended, or scenic/recreational) and the location (rural or urban) and include a defined subset of the 33 total criteria relevant to the type and location of the project. There is also a custom scorecard that includes 11 core criteria plus user-selected criteria to make a custom self-evaluation for projects that don't fit well into the five defined scorecards. The Project Development module contains the 33 criteria listed below, used in various combinations to create the 7 different scorecards.

**Table 1.** INVEST User Guide P.4

Project Development by Criteria Scorecard							
	Paving	Urban Basic	Urban Extended	Rural Basic	Rural Extended	Scenic and Recreational	Custom Core Criteria <sup>(1)</sup>
PD-1 Economic Analyses			●		●		
PD-2 Life-Cycle Cost Analyses	●	●	●	●	●		●
PD-3 Context Sensitive Project Development		●	●	●	●	●	
PD-4 Highway and Traffic Safety	●	●	●	●	●	●	●
PD-5 Educational Outreach		●	●	●	●	●	
PD-6 Tracking Environmental Commitments	●	●	●	●	●	●	●
PD-7 Habitat Restoration		●	●	●	●	●	
PD-8 Stormwater Quality and Flow Control		●	●	●	●	●	
PD-9 Ecological Connectivity			●	●	●	●	
PD-10 Pedestrian Facilities		●	●			●	
PD-11 Bicycle Facilities		●	●			●	
PD-12 Transit & HOV Facilities		●	●			●	
PD-13 Freight Mobility			●		●		
PD-14 ITS for System Operations		●	●		●		
PD-15 Historical, Archaeological, and Cultural Preservation		●	●	●	●	●	
PD-16 Scenic, Natural, or Recreational Qualities			●	●	●	●	
PD-17 Energy Efficiency		●	●	●	●		
PD-18 Site Vegetation, Maintenance, and Irrigation		●	●	●	●	●	
PD-19 Reduce, Reuse, and Repurpose Materials	●	●	●	●	●	●	●
PD-20 Recycle Materials	●	●	●	●	●	●	●
PD-21 Earthwork Balance			●		●	●	
PD-22 Long-Life Pavement	●	●	●	●	●	●	●
PD-23 Reduced Energy and Emissions in Pavement Materials	●	●	●	●	●	●	●
PD-24 Permeable Pavement	●	●	●	●	●	●	●
PD-25 Construction Environmental Training		●	●	●	●	●	
PD-26 Construction Equipment Emission Reduction	●	●	●	●	●	●	●
PD-27 Construction Noise Mitigation		●	●			●	
PD-28 Construction Quality Control Plan	●	●	●	●	●	●	●
PD-29 Construction Waste Management	●	●	●	●	●	●	●
PD-30 Low Impact Development		●	●	●	●	●	
PD-31 Infrastructure Resiliency Planning and Design			●		●	●	
PD-32 Light Pollution		●	●	●	●		
PD-33 Noise Abatement		●	●				
<b>Total Number of Criteria in Scorecard</b>	<b>11</b>	<b>27</b>	<b>34</b>	<b>23</b>	<b>29</b>	<b>27</b>	<b>11</b>

(<sup>1</sup>) Indicates the core criteria that must be included in the custom scorecard. The user may choose as many additional criteria as desired.

The Project Development – Rural Basic Scorecard was used for the INVEST scoring of this project. Project Development (PD) is traditionally the second step in the lifecycle of a transportation project, where specific projects are planned, designed, and constructed. The PD module in the current INVEST tool includes a total of thirty-three criteria that are generally organized from planning to design to construction. The PD criteria are further organized into seven scorecards for the evaluation of projects. The scorecards are designed to identify applicable criteria based on the project type (paving, small/spot improvements, new facility/corridor project) and location (urban/rural). Six of these scorecards pre-identify criteria that are most likely to be applicable for the project type and location.

The Rural Basic scorecard is for small, rural reconstruction or rural bridge replacement projects that do not expand capacity of the roadway. As this project is a pavement preservation project with no new right-of-way, temporary construction easements, or major construction work needed, ADOT evaluated this based off the 23 criteria available for the scorecard.

Several notable points were documented for the following categories:

- **Context Sensitive Project Development:** Due to the fact that the project is located within an identified National Scenic Corridor (Red Rock All American Road) on Coconino National Forest, context sensitive project development was needed to ensure compliance with the US Forest Service scenic objectives, and compliance with the 2005 Corridor Management Plan. This design required consideration of color, texture, aesthetic considerations, and input from multiple federal agencies.
- **Habitat Restoration / Ecological Connectivity:** Biological, cultural, and visual analysis was a large focus for the ADOT design and environmental team since this the project was in an area with critical habitat and sensitive resources. The ADOT team designed the project to avoid impacts to sensitive water and biological resources during design.
- **Scenic, Natural, and Recreational Qualities:** As mentioned earlier, this project is located within a national Scenic Corridor (Red Rock All American Road) and required coordination with the Coconino National Forest to ensure efforts were made to preserve, protect, and enhance the features of the area during and after construction. Efforts for this were completed during final design and will be implemented as part of the project construction.
- **Long Life Pavement:** This criterion was met since the project is primarily pavement preservation and is focused on preservation of the pavement by application of long-lasting PCCP and overlaid with a rubber asphalt friction course. ADOT standard specifications include a pay incentive for pavement smoothness for both PCCP and the friction course as well.
- **Site Vegetation, Maintenance, and Irrigation:** Consideration and implementation of re-seeding with non-invasive and non-noxious species is a standard Best Management Practice (BMP) for ADOT and is followed for every project where needed. This is a success area for ADOT for many years, and was an especially important consideration on this project due to project area being within the Coconino National Forest and input from the Forest Service during the design phase.

## Summary

The evaluation of this project introduced opportunities for improvements in sustainability elements for future



projects within this area. Some opportunities that could be considered that were not in this final design stage include items such as recycling of materials and construction equipment emission reduction. Due to the location of this project within the Coconino National Forest and the limited scope of work, some of these criteria were difficult to implement because of the constraints of development, mobilization, and construction. However, the unique location of this project area could benefit from considerations of construction equipment emission reduction considerations, and a construction quality control plan since this area is in a highly scenic, biological, and cultural sensitive area. Additionally, an ADOT agency goal in future projects would be to introduce sustainability earlier into the early design concept and NEPA stage, with emphasis on education to internal engineering disciplines, the public, and resource agency stakeholders.

## Appendix: SR 179 PD Module Scorecard



