

# PARTNER FEEDBACK REPORT 2014



U.S. Department of Transportation  
Federal Highway Administration  
Eastern Federal Lands Highway Division

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## Introduction

The Federal Highway Administration (FHWA), Eastern Federal Lands Highway Division (EFLHD), is committed to serving the needs of our Partners and we have been engaged in an ongoing evaluation and improvement process since 1993. As part of that process, we have collected survey information from our Partner Agencies and used their responses to improve our products and services. This Report has been developed to provide a summary of the feedback we received in relation to our program and project delivery, including identification of proposed improvement actions, and to report on some of our significant accomplishments.

In Fiscal Year 2014, we distributed the following web-based surveys:

- Program Administration (Program Support Throughout Project Delivery)
- Environmental Collaboration
- Project Development (Design Process)
- Completed Projects (Construction Process)

The results from those surveys have been reviewed and actions have been implemented to correct and/or improve upon our Fiscal Year (FY) 2014 scores. We appreciate our many Partners; and value the feedback you provide. The adjustments and adaptations we implement are our efforts to better meet your needs in the delivery of your program of projects.

In FY 2014, we awarded 38 projects at over \$150 million in construction contracts from which survey solicitations were requested. We received comments from the following Agencies:

- National Park Service
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- State Departments of Transportation
- US Army Corps of Engineers
- Other Agencies

Comments are evaluated in consideration of the Program activity addressed and the partner representative from whom they were received. Our Staff often contacts the representatives to clarify individual comments.

We continue to reach out to our partner agencies through site visits, feedback sessions, program status updates, and teleconferences for the continual improvement of our program and project delivery services. In FY 2014, we had partner satisfaction scores above target for Project Development, Environmental Collaboration and Completed Construction surveys, while Program Administration stayed below target this year. The overall satisfaction score for 2014 is 86.2%, putting us a smidgeon above last year's value and again above our target of  $\geq 85\%$ .

We would like to take this opportunity to extend our thanks for your participation and support of our efforts toward continued improvement. Your feedback is vital in the successful delivery of the Federal Lands Highway Program (FLHP) and is greatly appreciated. If you have any questions, or additional comments, please contact Mr. John Dixon, Division Quality and System Manager, at 703-404-6370 or by email [John.Dixon@dot.gov](mailto:John.Dixon@dot.gov).

## Survey Approach

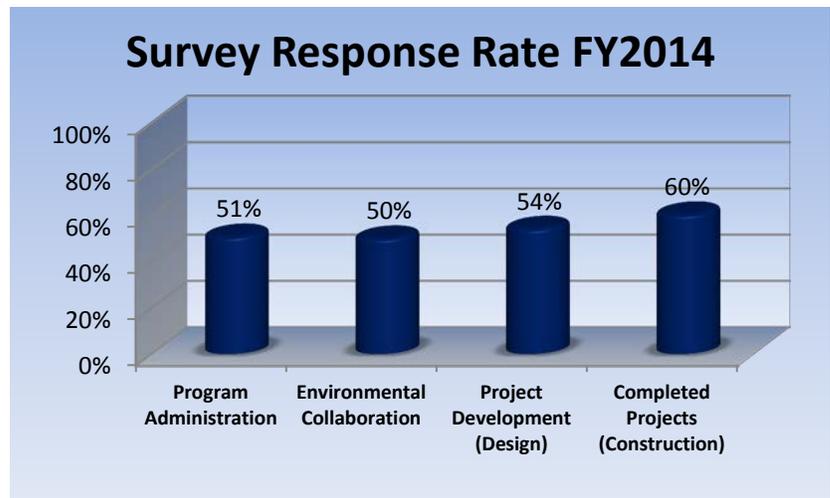
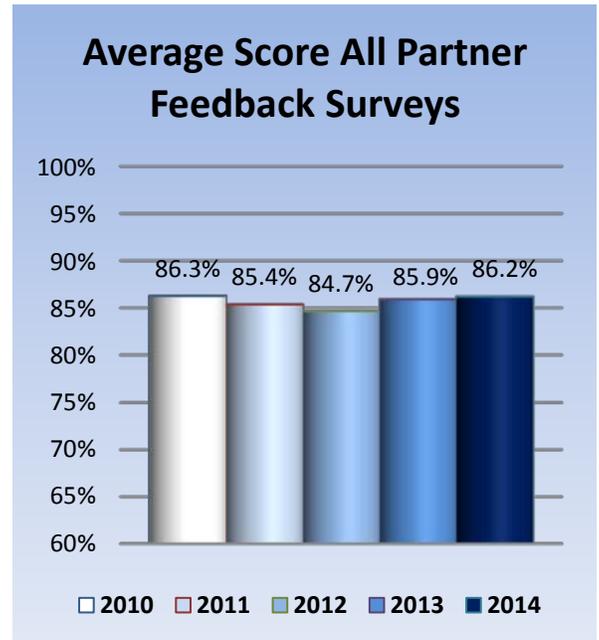
We measure the satisfaction of our Partner Agencies at the major milestones of the program and project delivery processes. The surveys are sent annually and at the completion of the environmental assessment, project design and construction phase, to gauge overall administrative support. Survey respondents include representatives of our Partners and other Agencies directly involved with delivery of the Program.

Survey scores have fluctuated minimally over the last five years and EFLHD's value of 86.2% in 2014 has continued this trend. While we are again above our goal of  $\geq 85\%$  and have improved over last year's score, the overall value has remained statistically the same for several years now. Each of the four components that comprise this overall score is addressed in detail on subsequent pages of this report.

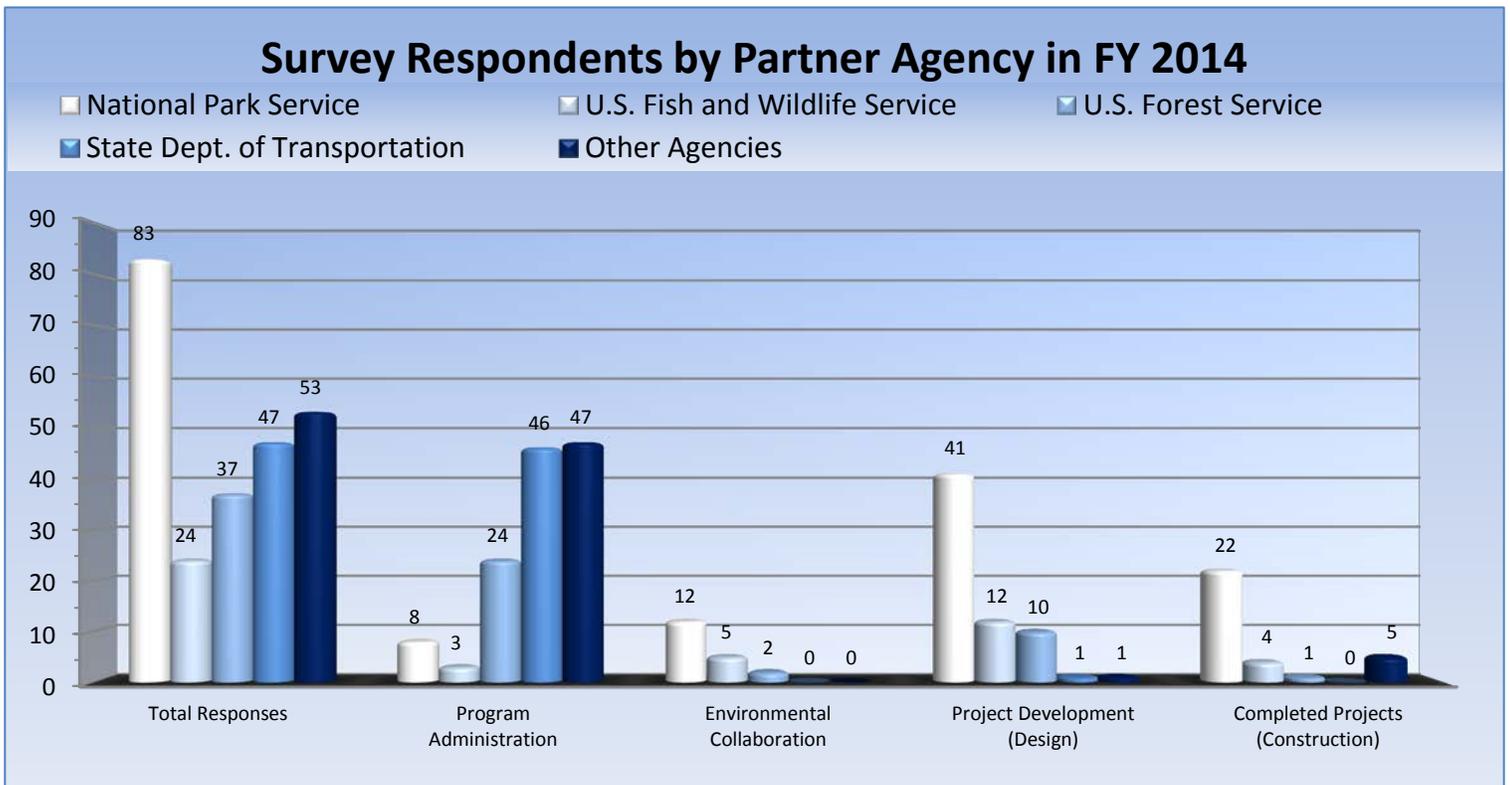
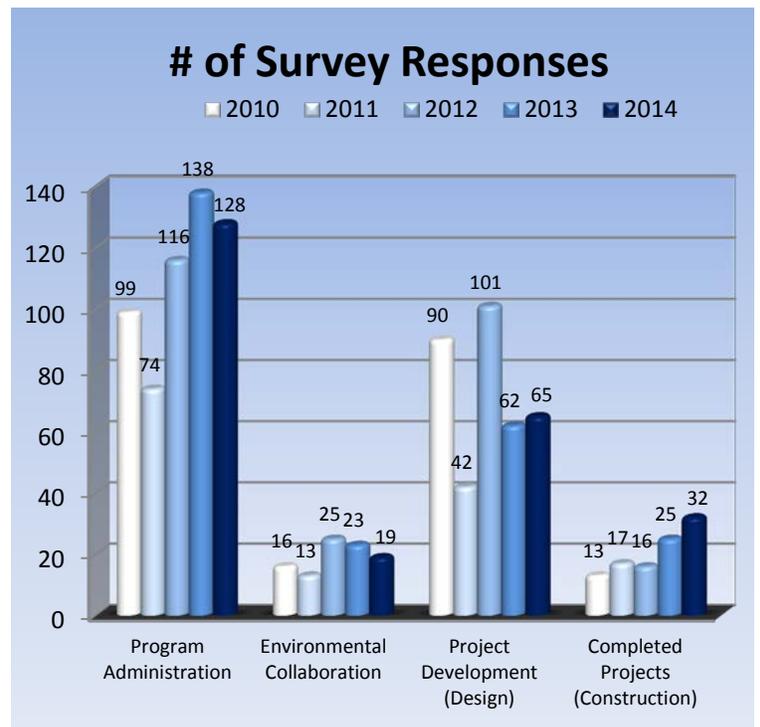
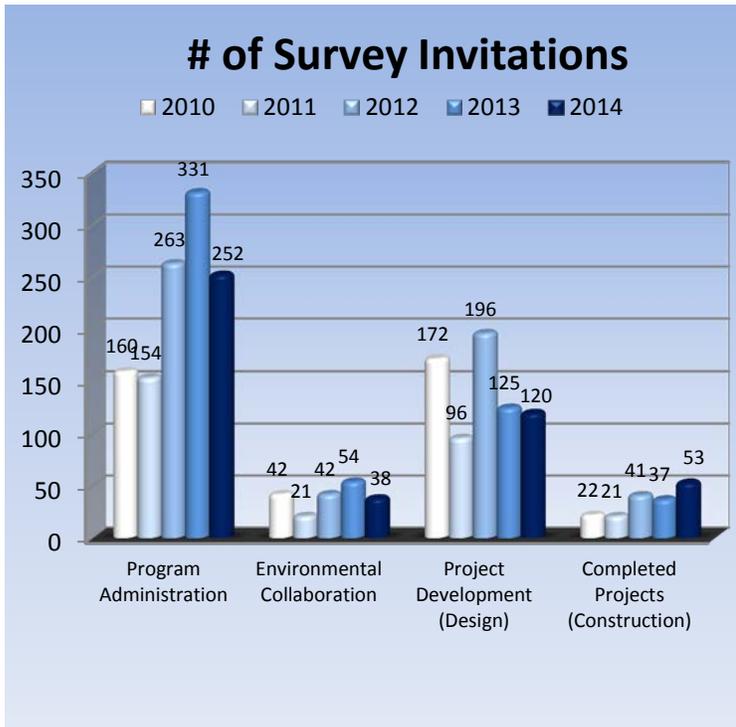
The average value for all partner surveys is composed of the 2014 Program Administration (Program Support throughout Project Delivery) at 78.0% with a response rate of 51%. The Environmental Collaboration Survey at 90.9% with responses of 50%. The Project Development (Design) survey returned results at 86.5% and a response rate of 54%, and the final component is the Completed Projects (Construction) Survey that contributed 89.3% and had a response rate at 60%.

Our target value aligns with the Federal Lands Highway and FHWA goals which strive for an 85% or greater for all external Partner Satisfaction surveys.

The combined rate of return for all four survey areas in FY 2014 was 53%; this was an increase from the previous year's value of 45% and reversed a downward trend from our high of 59% in 2008. Solicitation efforts remained high with over 460 invitations for feedback distributed. The number of returned surveys grew for Project Development and Completed Projects with the latter increasing by 28% over last year. Our percentage returned is still below statistically desirable numbers so efforts to improve will continue. As with all surveys, the number of responses received is critical to the validity of the feedback. In 2015 branch office personnel will be contacting respondents to improve response rate over 2014 values. We continue to ask for your



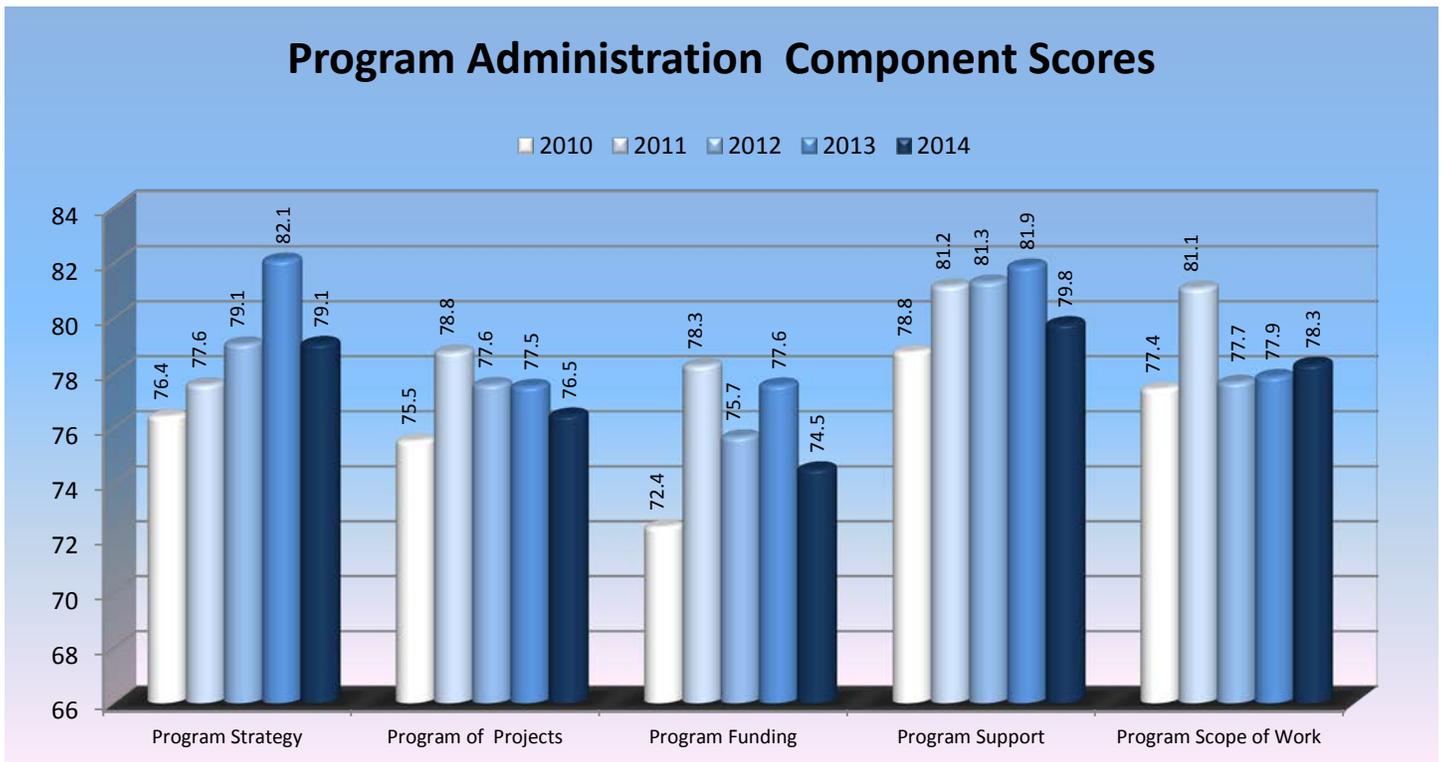
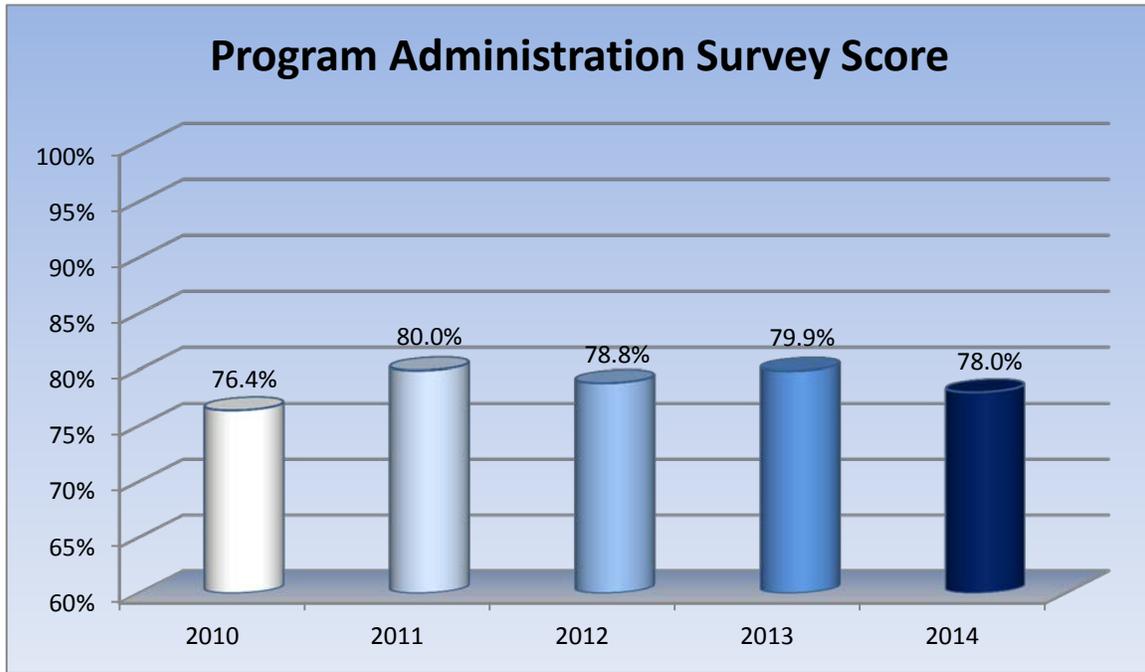
valued input to this improvement effort at EFLHD and welcome feedback that can assist us in increasing our customer satisfaction.



## Program Administration Survey

The purpose of the Program Administration Survey is to determine whether the program needs of Federal Lands Highway (FLH) partner agencies are being met by FLH's administrative practices.

EFLHD Overall Satisfaction Index Target  $\geq 85\%$



**Survey Results:** Survey scores for the Program Administration Survey have slipped by 1.88 percentage points over last year’s score. The current score of 78.0% falls below our self-imposed target level. The category areas of Program Strategy, Program of Projects, Program Funding and Program Support all recorded lower values from the prior year’s scores. The “Program Scope of Work” category which covers the reliability of initial cost estimates and the Partner Agency involvement in defining project scopes of work recorded a slight increase over last year. An analysis of the survey’s results by category yielded the following:

Category	2010	2011	2012	2013	2014	Change
Program Strategy	76.42	77.58	79.07	82.11	79.08	-3.03
Program of Projects	75.53	78.77	77.59	77.52	76.48	-1.04
Program Funding	72.41	78.27	75.68	77.57	74.52	-3.05
Program Scope of Work	77.42	81.09	77.66	77.88	78.33	0.45
Program Support	78.76	81.17	81.32	81.90	79.80	-2.10
<b>Overall Score</b>	<b>76.44</b>	<b>79.95</b>	<b>78.83</b>	<b>79.90</b>	<b>78.02</b>	<b>-1.88</b>

Questions resulting in the lowest percentages for this survey period were:

- Funding: The timeliness of funds distribution. 72.13%
- Program of Projects: The stability of the multi-year program schedule. 72.89%  
(low for several years)
- Program Strategy: The consistency between FLH's and your agency's program policies. 74.36%

Question with the highest percentages for the current survey period were:

- Program Support: The effectiveness of program meetings. 82.02%
- Program Support: The responsiveness to questions from you. 82.60%  
(also high in FY13)
- Program Strategy: The communication of program policy and goals. 83.53%  
(also high in FY13)

Based upon the scores, we are still below our target goal for this survey. Our response rate for this year improved to 51% and is a welcome improvement over last year’s value. Our solicitation rate continued to be high with over 252 requests for feedback and 128 of those inquiries were answered and provided feedback for analysis. Efforts have been undertaken to increase our response rate in all survey areas and the increased communications are starting to provide results. Division quality personnel will continue to undertake efforts to improve upon response rates for the 2015 survey cycle. Written comments associated with this survey indicated:

- EFLHD has done an excellent job overall meeting and dealing with my agency. Their staff should be recognized for a “can-do” attitude and using innovative solutions to technically as well as politically challenging issues.
- The Eastern Division did a good job providing us with information on program support, through emails and conference calls.
- For the FL Access program, we only did the first call for project for one year. This will be changed to a multi-year call for projects next time – a very good idea.
- Overall program strategy is well thought out. We have a major disconnect in the allocation of funds to manage program in the eastern states where over 40% of the American

population is located.

- For ERFO disasters, it takes too long to get formal POP approvals. Repair projects are sometimes delayed because of this requiring time extensions to complete.
- It seems like there is a lot of emphasis on planning, oversight, and other activities that, in the end, reduce the funds that are available to put asphalt on the ground. It seems like there should be easier ways to get the work done without all the S&O for routing paving jobs.

**Action to Improve:** We have initiated the following actions to improve and maintain partner satisfaction this year:

- EFL has initiated a new milestone tracking system for ERFO events. This system will help us ensure that documents are being submitted and approved within the timeframes outlined in the ERFO manual.
- Since we have now experienced the current S&O process on a variety of projects with several different partners, we will hold outreach meetings with those partners to discuss how the process worked and to determine if there are improvements that can be made.
- EFL has initiated a four-year call-for-projects (CFP) for the FLAP. This will be supplemented with a rolling CFP for States which have remaining funds to be obligated after the 4 year CFP.

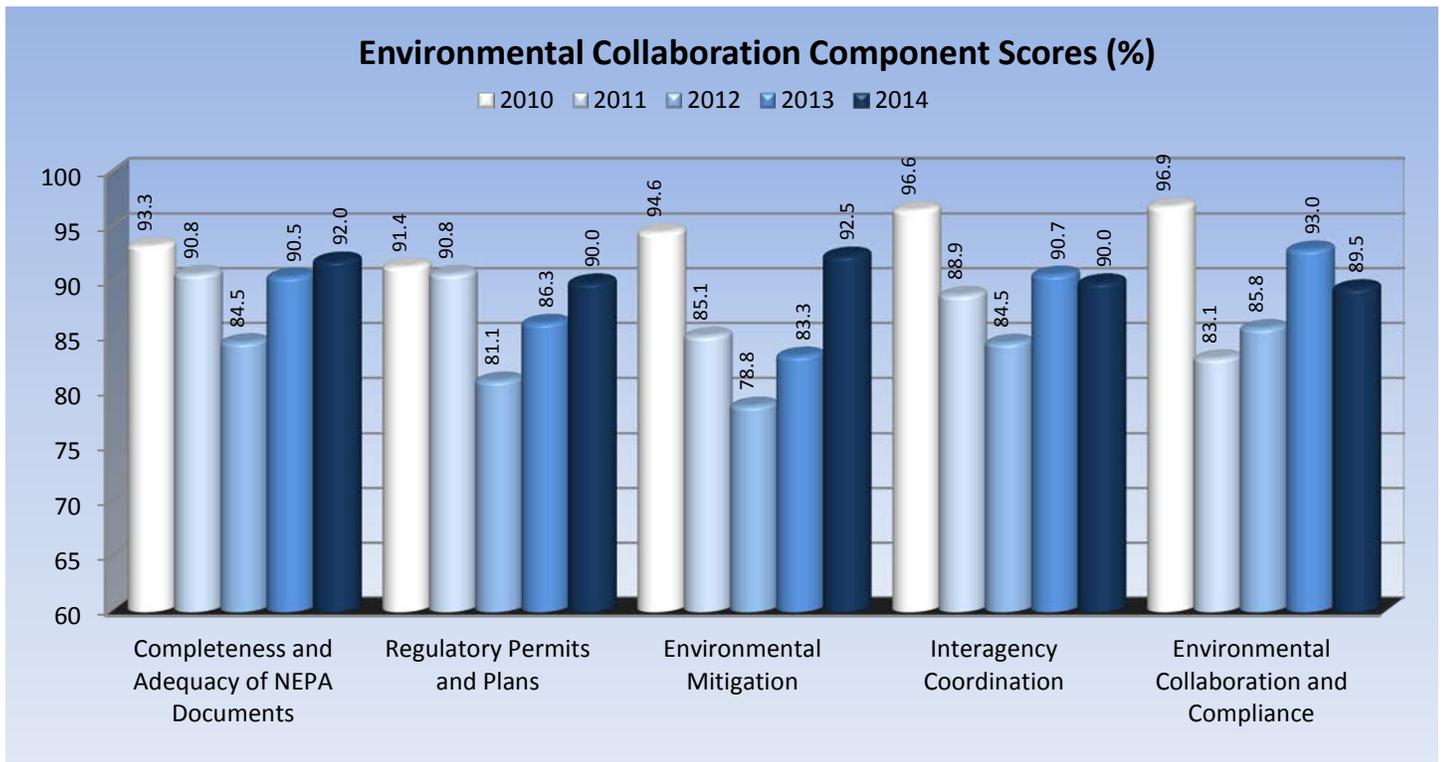
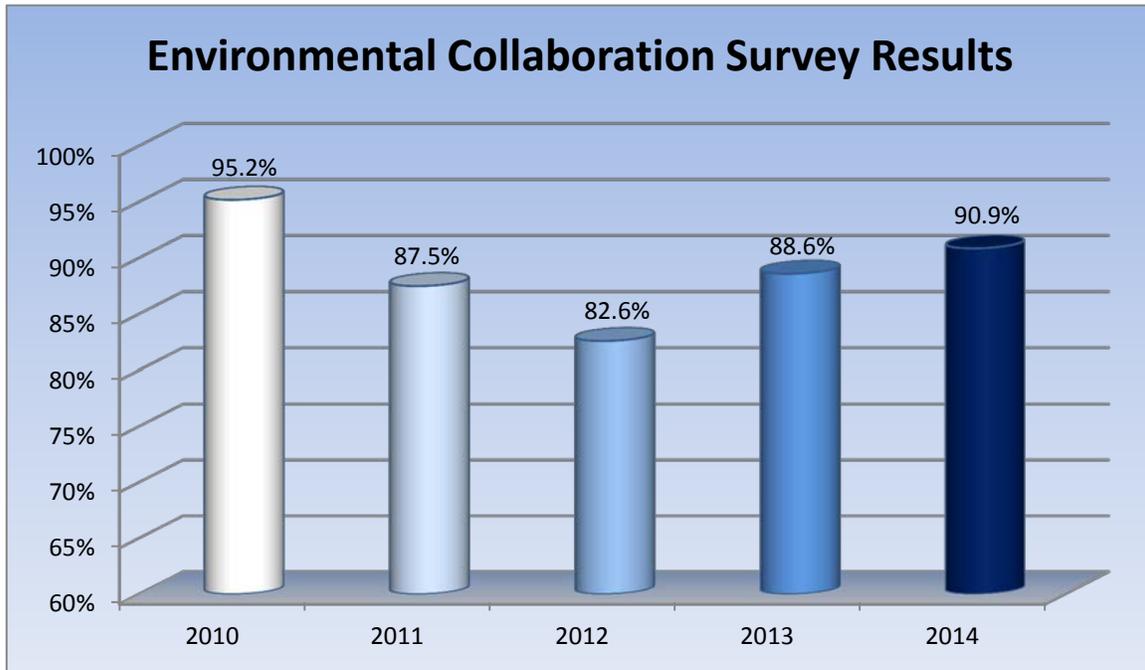
**Actions Taken:** We implemented the following actions for program administration improvement last year:

- We have developed Risk based project agreements for all projects, including those delivered by partners, which identify key staff and responsibilities / authorities for each agency. We believe that this has improved communication of project related issues and funding.
- Program Managers have organized regular conference calls and meetings with partner agencies to communicate program and funding status.
- EFL and the other FLH Divisions have been partnering with Federal Lands Headquarters Office to develop a new and improved FLAP website. This site will include interactive maps, State FLAP project fact sheets and other improvements. This site will go live early summer, 2015.
- EFL has conducted many conference calls with local, State and Federal agencies across the 33 states to educate the Partners on potential funding alternatives. This is a continuous effort as Partners change through the selection process.

## Environmental Collaboration Survey

The purpose of the Environmental Collaboration Survey is to evaluate the degree to which our work supports and is consistent with partner and resource agencies' environmental practices.

EFLHD Overall Satisfaction Index Target  $\geq 85\%$



**Survey Results:** The 2014 survey resulted in a 2.24 percentage point increase from 2013 bringing the current score to a level of 90.9%. This value continues the trend of very strong results for the Environmental Branch. Steady increases from 2012 to this year’s results elevated the Environmental Collaboration Survey above target and above the prior year’s value. The survey category “Environmental Mitigation” experienced a significant 9.1% increase from the prior year, with “Regulatory Permits and Plans” and “Completeness and Adequacy of NEPA Documents” also jumping slightly. The elevated results stem from an increased effort by the environment team personnel to address survey areas with weakened outcomes over the past few survey cycles. On the decreasing side are “Environmental Collaboration and Compliance” and “Interagency Coordination”. An analysis of the survey’s results by category area yielded the following:

Category	2010	2011	2012	2013	2014	Change
Completeness and Adequacy of NEPA Documents	93.33	90.77	84.55	90.53	92.00	1.47
Regulatory Permits and Plans	91.43	90.77	81.05	86.32	90.00	3.68
Environmental Mitigation	94.55	85.13	78.82	83.33	92.45	9.12
Interagency Coordination	96.60	88.85	84.49	90.71	90.00	-0.71
Environmental Collaboration and Compliance	96.92	83.08	85.83	93.00	89.47	-3.53
<b>Overall Score</b>	<b>95.15</b>	<b>87.54</b>	<b>82.61</b>	<b>88.63</b>	<b>90.87</b>	<b>2.24</b>

Questions resulting in the lowest percentages for this survey period were:

- Interagency Coordination: Timeliness for completion of environmental documents. 88.75%
- Environmental Mitigation: Quality of response to requests from your agency. 88.89%
- Overall: Please rate your satisfaction with the collaboration with your agency to complete the environmental compliances. 89.47%

Question with the highest percentages for the current survey period were:

- Interagency Coordination: Timeliness of response to request from your agency. 92.22% (also high in FY13)
- Environmental Mitigation: Monitoring / plans for mitigation commitments. 93.33%
- Environmental Mitigation: Protection of existing surface waters. 93.33% (including wetlands)

Our response rate for this year was 50% and is an improvement over last year’s value of 43%. The number of responses fell slightly below last year’s value, but our increased efforts at solicitation feedback have helped to bring up the overall rate. Division quality personnel are undertaking efforts to improve upon our response rates for the 2015 survey cycle. Written comments associated with this survey indicated:

- It is a huge advantage to the NPS in partnering with EFL for obtaining required permits.
- All agencies have strengths and weaknesses. EFL's strength in this arena is due in large part to the knowledge and expertise of the environmental staff. If not already in place, EFL should have a training program to expose others to the insight that EFL can offer.
- Staff did an excellent job working with state and local permitting agencies.

- The EFL Highway Design teams usually do a great job in the preparation of environmental mitigation plans but there seems to be a disconnect between Highway Design and Construction. Although Construction is made aware of the required mitigation, it is not always enforced to the degree needed. It is most noticeable in contracts where the contractor is not as responsive to the requirements as they need to be.
- Regulatory/ Permits and Plans - way too long to obtain/complete

**Action to Improve:** We will initiate the following actions to maintain higher partner satisfaction this year:

- Adopt the implementing quality environmental documentation (IQED) effort that began under EDC. The IQED recommends best practices to simplify and expedite the development of environmental documents.
- Evaluate the estimated durations used for NEPA and permit activities in the initial project schedules to more accurately predict the project advertisement and award dates.
- Emphasize identification of role and responsibilities of our partner agencies when they are delivering the NEPA compliance. Clearly identify these roles and responsibilities at the scoping meeting. (eg. Sec. 7 & SHPO).
- Further assess the constructability of the project during the design and environmental compliance process. This will help to prevent issues during construction as well as permitting.

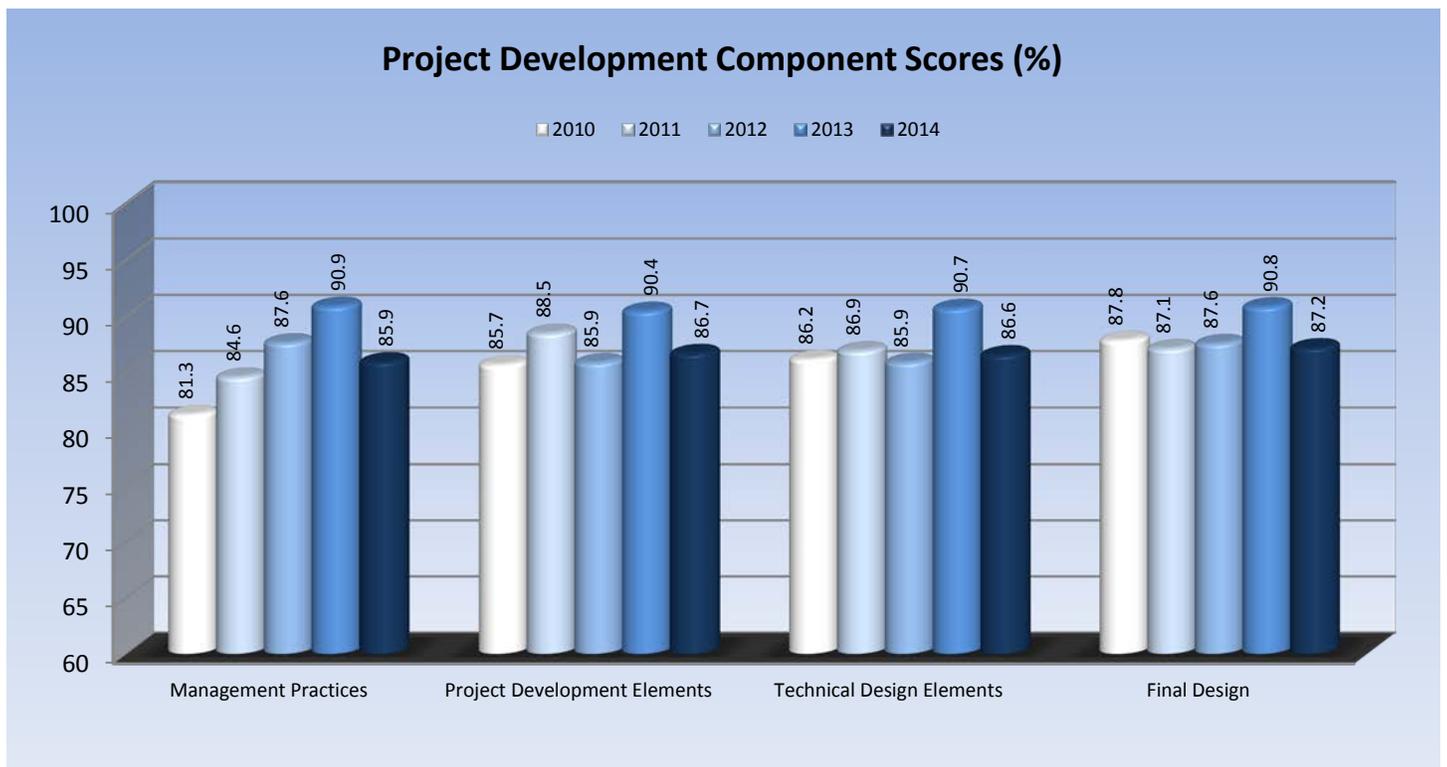
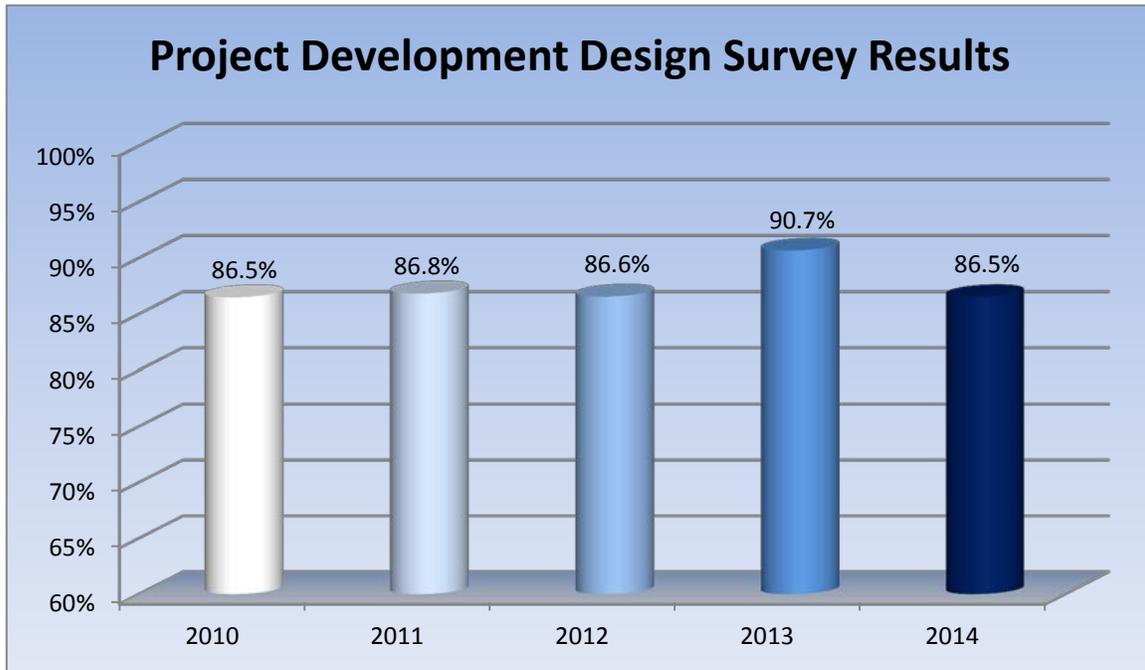
**Actions Taken:** We implemented the following actions last year:

- Worked with designers to revise and improve the details and notes for silt fence installation and revise the sediment log detail.
- Produced permit guidance documents to help designers prepare plans for submittal to Maryland, New Hampshire, Virginia and DC. The guidance document will help to improve our initial submittals to permitting agencies and improve our ability to respond to comments.
- Environmental commitments are incorporated into the project Design Narrative which is provided to the construction staff.
- Continued to foster the pre-scoping trip meetings to facilitate more effective scoping trips. The pre-scoping meetings have become a routine part of the project delivery process and have contributed positively to making sure the right people are included on each scoping trip.

## Project Development (Design) Survey

The purpose of the Project Development Survey is to assess the quality of all project design elements and FLH management practices that lead to final design.

EFLHD Overall Satisfaction Index Target  $\geq 85\%$



**Survey Results:** Survey scores for the Project Development Survey declined in all category areas this year, yet all categories remain above target. This decline brings the current score to 86.52%. This value is again over target and is more in alignment with prior year values. Survey categories experienced an adjustment of approximately 4.1 percentage points across all areas with “Project Development Elements” and “Final Design” showing a lesser impact. An analysis of the survey’s results by the category area yielded the following results.

Category	2010	2011	2012	2013	2014	Change
Management Practices	86.37	84.58	87.63	90.87	85.94	-4.93
Project Development Elements	86.15	88.47	85.86	90.43	86.68	-3.75
Technical Design Elements	86.33	86.92	85.89	90.68	86.57	-4.11
Final Design	87.84	87.11	87.56	90.82	87.19	-3.63
<b>Overall Score</b>	<b>86.49</b>	<b>86.83</b>	<b>86.56</b>	<b>90.67</b>	<b>86.52</b>	<b>-4.15</b>

Questions resulting in the lowest percentages for this survey period were:

- Project Development Elements: Aesthetic features. 84.07%
- Management Practices: FLH's management of design costs. 84.48%
- Management Practices: Consideration of alternative solutions to problems before recommendations were presented. 84.52%

Question with the highest percentages for the current survey period were:

- Technical Design Elements: Traffic control. 88.21%
- Management Practices: Outside permits, reviews, and approvals obtained in a timely manner. 88.39%
- Technical Design Elements: Utility coordination. 89.09%

Our satisfaction score continues to hold above our target and we have met this target in all survey categories in FY 2014.

The sample comments below represent a key positive theme of EFLHD’s responsiveness as reflected in this year’s ratings:

- EFLHD does a more cost-effective design job with bridges.
- EFL did an excellent job in researching available products and recommending to the Park which one should be selected.
- FHWA was very cooperative in achieving the highest quality aesthetic reconstruction of Alligator Back wall while improving the crash worthy standard of the wall.
- FLH has been an outstanding partner for DEWA [park] and helped in many emergency situations as well as normal business,

The following survey comments convey specific items within individual projects where we did not meet our partner’s expectations:

- Traffic control is often way in excess of what's needed at our typical locations. Requirements reflect high volumes, high speed, urban locations – not our rural, low volume settings. Requirements are often overly burdensome on our small contractors.
- Most of the Forests in Region 9 shy away from using Eastern for design because of high design costs, especially for simple rural/low-volume road designs.
- Only got information on status after sending an email and waiting to hear back. Would like regular status updates on projects.
- Resource Managers in the Park would like better research and more consideration of bioengineering solutions where plant sprigs and plant layering becomes more acceptable as a solution for stream bank erosion control.
- FHWA needs to keep researching hydrophobic sealants to ensure the driest possible results when drainage channels [tunnels] are reconstructed.

The above comments are extremely valuable and provide insight into various projects and issues encountered and how we can improve. To put our design costs in context, EFL costs currently average (for all projects) around 11%, much lower from past years and in line with many States. FLH design costs reflect more detailed design to satisfy both NEPA and local permit requirements, travel and per diem associated with on-site design staff, and the procurement of consultant and construction contracts. The larger the construction contract, the lower our design costs will be. While this cost can be higher on some smaller projects the level of detail and customer service is commensurate with what our partners have come to expect.

***Actions to Improve:*** We will implement the following in FY 2015:

- Reorganize and split its Highway Design and Special Projects Team into two separate branches: (1) Project Management Branch and (2) Highway Design Branch. This business model will better present our Project Managers as the face of FLH and should improve project communication both internally and externally.
- Implement new safety guidelines (see Actions Taken) to help planners and designers to plan, program, define and incorporate necessary, but appropriate, safety improvements in context with the type of project. Project safety improvements incorporated into our PS&Es in FY 14 are expected to reduce crashes by an average of 11%.
- Promote a performance-based practical design philosophy to help reduce cost when possible and achieve customer expectations. Performance-Based Practical Design approach focuses on the project purpose and need (not over-designing) with design for all users and life-cycle costs. Risk will be evaluated in project decisions and reasonable alternatives developed that consider the costs versus the performance benefits of modifying design elements to meet a standard.
- Reiterate to Project Management, Program and Construction staff the necessity of keeping our partners informed of project status and progress on a regular basis.

- Reiterate the need for and communicate product research and design alternatives to our partners.
- Ensure work zone traffic control is appropriate for the project type and context (location, traffic volume, speed, etc.).

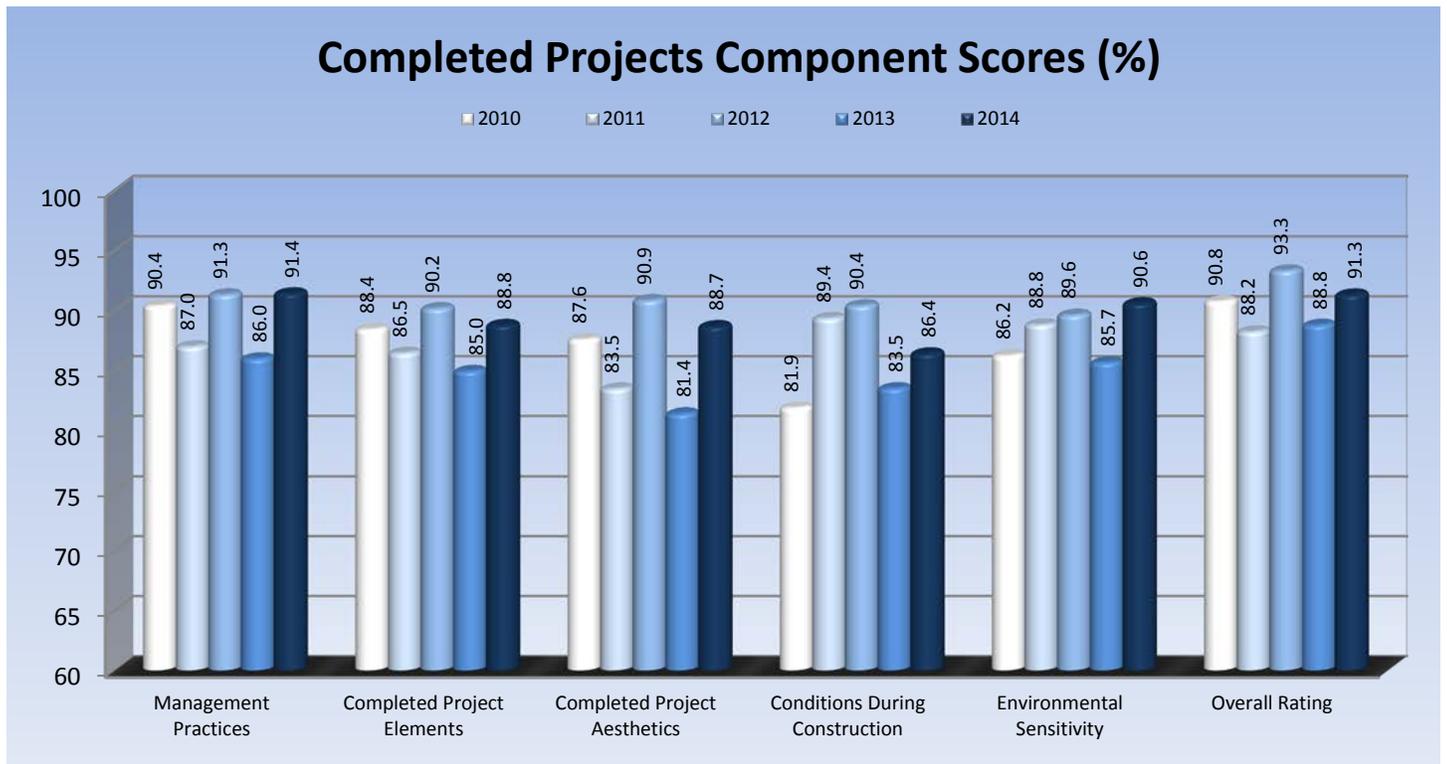
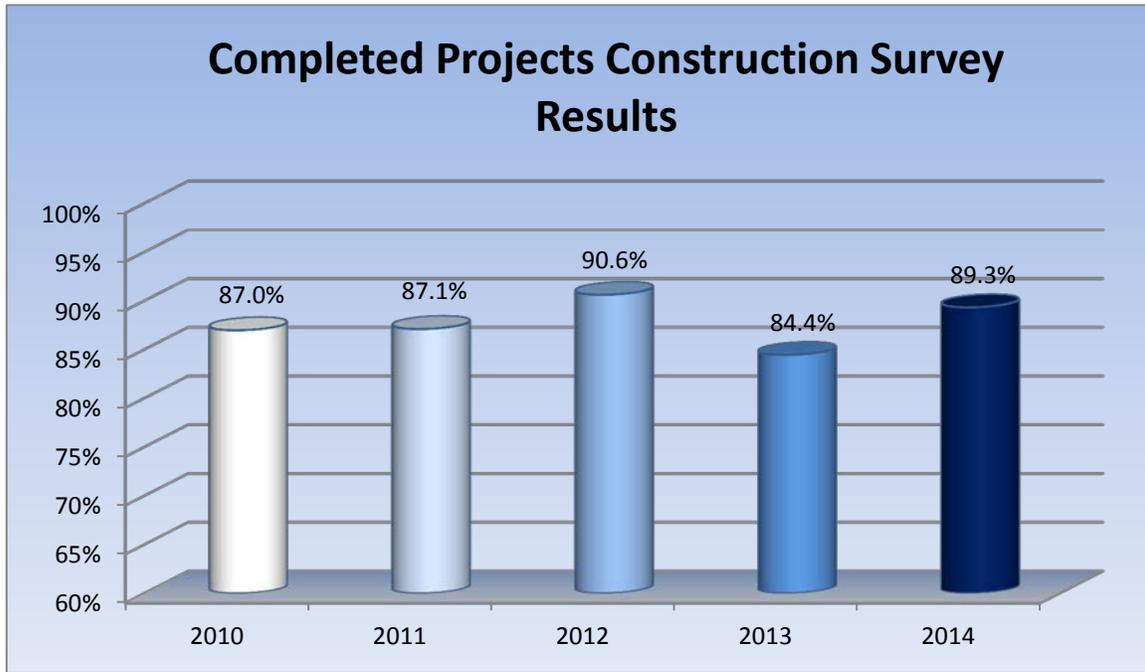
***Actions Taken:*** We implemented the following actions in FY 2014:

- Developed training (to be rolled out in FY 15) for staff, partners, and contractors to improve the quality of design and construction of high performance and latex modified concrete bridge overlays.
- Improved communication of available preventive maintenance treatments (treatment selection matrix) for pavements and bridges (bridge task force team formed) to help clarify partner expectations. Began the development of regional preventive maintenance contracts for both pavements and bridges for award in FY 15.
- Communicated and coordinated bridge preventive maintenance priorities with programmed pavement rehabilitation projects to improve both scoping, program estimates and work coordination.
- When alternative contracting methods are proposed, communicated and recommended alternative methods with our partners, project to project, to promote acceptance and pilot new methods.
- Improved the scoping template to incorporate a revised project risk register, traffic management plans, technology, and sustainability and livability checklists.
- Evaluated and developed safety guidelines for context sensitive solutions and counter measure alternatives which balance improved safety with resource preservation as follows:
  1. Developed new “Guidelines for Incorporating Safety in EFL Design Projects”.
  2. On-going development of a pavement marking material selection tool for use by FLH and FLMA staff that evaluates environmental and traffic information to aid in selecting the most appropriate marking material based on cost, durability and applicability.
  3. Through safety performance crash testing, determined the minimum W-beam guardrail height threshold is 24-inches for Test Level 2 (< 45 mph) conditions. This information will improve our evaluation of existing W-Beam guardrail in determining appropriate project safety improvements.
  4. Developing an FLH website (operational in FY 15) for bridge rails (9) approved for use within FLH.
  5. Evaluated and implemented low-cost safety improvements (profile edge markings, improved signing and delineation, etc.) for use on FLH projects.
- Worked with Construction staff to develop new EFLHD guidance on the development of Traffic Management Plans and to communicate special instructions to Construction staff in the design narrative related to traffic management objectives.

## Completed Projects (Construction) Survey

The purpose of the Completed Project Survey is to assess the quality of all completed construction projects and overall FLH management practices.

EFLHD Overall Satisfaction Index Target  $\geq 85\%$



**Survey Results:** Overall the Completed Projects Survey score comes in above target at 89.3%. A concerted effort by the construction office personnel to contact partner agencies to improve survey feedback response rate was continued for 2014. This work resulted in elevating the response rate from a low of 39% in 2012, to values of 68% and 60% in the past two years. This rate is the highest of the four surveys in 2014. This has strengthened the interpretation of construction office operations for the six category areas. “Completed Project Aesthetics” and “Management Practices” were impacted the most in this year’s results and every category showed improvement. An analysis of the survey’s results by the category area yielded the following results.

Category	2010	2011	2012	2013	2014	Change
Management Practices	90.39	87.00	91.33	86.00	91.43	5.43
Completed Project Elements	88.42	86.46	90.19	84.95	88.79	3.84
Completed Project Aesthetics	87.57	83.48	90.86	81.41	88.69	7.28
Conditions During Construction	81.87	89.35	90.42	83.51	86.42	2.91
Environmental Sensitivity	86.23	88.82	89.64	85.67	90.60	4.93
Overall Rating	90.77	88.24	93.33	88.80	91.33	2.53
<b>Overall Score</b>	<b>86.97</b>	<b>87.10</b>	<b>90.62</b>	<b>84.44</b>	<b>89.33</b>	<b>4.89</b>

Questions resulting in the lowest percentages for this survey period were:

- Conditions During Construction: Your perception of overall public reaction during construction. 83.08%
- Conditions During Construction: Detours and traffic flow. 83.85%
- Completed Project Elements: Maintainability (mowing, vegetation, snow removal, etc.) 84.80%

Question with the highest percentages for the current survey period were:

- Completed Project Aesthetics: Alignment of guardrail, walls, and roadside appurtenances. 93.33%
- FLH's Management Practices: Management of construction costs. 93.57%
- Environmental Sensitivity: Riparian (preservation and establishment of vegetation adjacent to streams). 94.00%

The impressive results received thru our 2014 solicitations were accompanied by Partner comments and the key themes expressed by those comments indicated:

- Good project and good communication between contractor, the project manager from Atlanta CORT and the Federal Highways staff. They did a good job on ensuring our park visitors and the general public was knowledgeable and aware of the project and how it might affect traffic flows throughout the park.
- Although project took longer than expected, mainly as a result of re-allocation of resources to address Sandy impacts, the expertise and capacity of EFLHD made it possible to complete the project more efficiently than had NPS.
- The aesthetics of this project is exceptionally excellent work. This was a difficult project to preserve aesthetics of the bridge but it was handled very professionally by FHWA and the contractor with more than satisfactory results.

- From planning, through design, to construction and final completion, everyone worked in a professional and cooperative manner. Our inputs were taken seriously and adequately addressed.
- The EFL Highway Design teams usually do a great job in the preparation of environmental mitigation plans but there seems to be a disconnect between Highway Design and Construction. Although Construction is made aware of the required mitigation, it is not always enforced to the degree needed. It is most noticeable in contracts where the contractor is not as responsive to the requirements as they need to be. (*Environmental Collaboration Survey comment*)

***Actions to Improve:*** We will continue to strive for higher partner satisfaction and will implement the following actions this year:

- Construction branch will provide training in FY15 for construction inspection and quality assurance. This will be aimed to enhance project administrative skills of the project staff.
- Construction branch will host a partnering session with the representatives of NPS and construction field staff to educate our staff in the building and maintaining of effective working relationships with the NPS. It will also serve to improve communication at the project level and help in project administration.
- Construction will provide in-depth training of EEBACS system, including the contractor's module so the plan for full implementation of the system this year will proceed without major problems.
- Construction will establish an electronic project records structure in concert with the other divisions and will provide a web-based training to field staff in its use.
- Educate project staff on the need for more attention toward the preservation of environmental safeguards at the annual training event, through NHI training courses on erosion and sediment control, through periodic training given for SWPPPs, through the project post mortem review process.
- Develop and implement a specification imposing penalties for failure to correct erosion and sediment control deficiencies in a timely manner

***Actions Taken:*** We implemented the following actions last year:

- The construction branch provided in-depth hot asphalt construction related training during the Construction Winter Training. This training was provided by the representatives of FHWA Resource Center and Asphalt Institute.
- Construction Engineer provided dissemination of information learned from Design-Construction Partnering meetings to field staff during the Construction Winter Training.
- Field staff was educated concerning the post construction review process so proper feedback could be obtained from the contractor and the project engineer.
- Construction worked with Acquisition and hosted training of claims and contract closeout procedures in FY14.

# Accomplishments for Fiscal Year 2014

## *Project Delivery*

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### **Foothills Parkway, Bridge 2**

#### **Great Smoky Mountains National Park, Tennessee**

#### ***Recipient of the 2014 Precast/Prestressed Concrete Institute (PCI) Award: Best Bridge with Span over 150 feet***

The designers choice of high-performance precast concrete was made to manage costs and to meet the National Park Service aesthetic requirements to mimic the mountain terrain geometrically and by coloring the concrete to match the native rock, gently blending it into the natural landscape. This project required a new approach that allowed various aspects of precast concrete construction to be performed concurrently. New methodology incorporated a temporary work trestle that provided access along the entire bridge alignment that could be reconfigured as work shifted from foundation and precast segmental piers to superstructure segment erection. A specialized segment walker placed segments in balanced cantilevers, significantly increasing progression over one-direction progressive placement methods. With the use of high-performance concrete this structure will have the expected life span of 75- to 100-years, ensuring lasting enjoyment of the unobstructed views of the Great Smoky Mountains.

*FLH Design Visualization  
prepared for use during planning stage*



*The completed bridge*



**Raymondskill Creek Bridge (US 209)**  
**Delaware Water Gap National Recreation Area**  
**Dingman Township, Pike County, Pennsylvania**  
*Recipient of the 2013-14 Association for Bridge Construction and Design (ABCD) Susquehanna Chapter Outstanding New Short Span Bridge*

The Raymondskill Creek Pedestrian Bridge project showcased Prefabricated Bridge Element Systems (PBES) technology as an economical solution by installing precast concrete abutments and a prefabricated truss superstructure. By using prefabricated elements, construction time was greatly reduced and there was minimal disturbance to the surrounding area. The new pedestrian bridge spans Raymondskill Creek and is adjacent to the U.S. Route 209 Bridge connecting with the Delaware Water Gap National Recreation Area trail system.



## **Newfound Gap Road Great Smoky Mountains National Park, North Carolina**

In September 2012, NPS personnel reported the discovery of a slide on Newfound Gap Road in the Great Smoky Mountains National Park. A subsurface investigation was completed in April 2013 and indicated that the slide was progressing in comparison to photos taken during the earlier October 2012 visit. Given the site characteristics, FLH recommended that repair work be completed during the winter season of 2013-2014; in advance of the next wet season. Three remediation alternatives were developed for NPS review as part of a Value Engineering Study. The recommended repair, a soldier pile drilled shaft anchored retaining wall with precast concrete lagging and exposed steel whalers, was developed and advertised in October 2013. A two-step procurement method was used to identify technically acceptable contractors that were then asked to submit bids. Construction began in December 2013.



*Newfound Gap Road, Great Smoky Mountains National Park, North Carolina*

**Fairfax County Parkway. Phases I, II & IV**  
**Fairfax County, Virginia**



*Recognized with a Merit Award from the Design-Build Awards Institute of America (DBIA).*

## *Emergency Relief for Federally Owned Roads (ERFO)*

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### **Fort Wadsworth, Gateway National Recreation Area Staten Island, New York**

During Hurricane Sandy the massive storm surge that swept through New York City hit Staten Island particularly hard, and with the damage, important history was nearly lost. Fort Wadsworth was built to protect New York City from attack by the sea. An important component of the Fort is Battery Weed, a substantial three tier cannon battery. The seawall that was built in 1845 was destroyed by Hurricane Sandy, undermining the already compromised foundations of Battery Weed. It was necessary to rebuild the seawall to protect and maintain the important historical aesthetics of Battery Weed. To accomplish this each stone block was collected, cleaned, and cataloged. The area behind the wall was excavated and open graded stone was placed in a fabric wrap to improve drainage and prevent future water pressure build up. The massive seawall stones were replaced and sealed together with a hidden epoxy to add structural integrity to the wall without changing the look. The worst areas of the wall had a reinforced concrete backing wall built and hidden with a layer of sand and stone to add heavy reinforcement against future extreme weather events and rising tides. The seawall now looks as it did during the Civil War and has added resiliency to protect this landmark for future generations.

*Resetting historic stones*



*Major Breach Area, Historic Boat Dock*



*Wall Repaired with Stone Backing*

## US Virgin Islands (ERFO)

The US Virgin Islands Department of Public Works (DPW) requested FLH assistance to provide an emergency access road in order to close an existing bridge off Route 405, located in St. Thomas. This multi-span concrete bridge was inspected by the Federal Lands Bridge inspection team and was found to be seriously deficient. DPW then contacted EFL and requested further assistance in providing a temporary access road so the deficient bridge could be closed. This bridge provided sole access to six properties off Route 405, and was in imminent danger of failure. It was imperative to quickly construct a temporary embankment and detour road in hilly terrain in order to remove traffic from the existing bridge. To address this situation, EFL put together a contract package on a fast track and awarded a letter contract. Construction work started on January 23, 2014, and was successfully completed on February 10, 2014, with a 21-foot wide detour road in place. The deficient bridge was closed to vehicular and pedestrian traffic and a public safety hazard was safely eliminated.



## Performance Management

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### Federal Lands Pavement Preservation Program

By applying a cost-effective treatment at the right time, costly rehabilitation and reconstruction can be postponed. Performing a series of successive pavement preservation treatments during the life of a pavement is less disruptive to tourist activity and traffic flow than is normally associated with reconstruction projects.



*FLH team site visit to assess pavement condition before the onset of serious damage.*

*Sleeping Bear Dunes National Lakeshore, Michigan*



## Full Depth Reclamation (FDR)

FDR is a rehabilitation technique in which the full thickness of the asphalt pavement and a predetermined portion of the underlying materials (base, subbase and/or subgrade) is uniformly pulverized and blended with an additive, such as cement, to provide an upgraded, homogenous base material. FDR can be performed at 4-12 inch depths depending on the nature of existing materials. By recycling and reusing existing pavement materials, FHWA has conserved non-renewable resources and conserved energy, besides saving tax payer dollars. Use of FDR has enhanced the structural performance of the pavement by improving its ability to carry the imposed traffic loads.



*One lane remains open during FDR*



*FDR application being observed by VDOT personnel*

*FDR on this project was performed at an 8 inch depth. The NPS was pleased with the process and the quality of the finished roadway and fully supports use of FDR on their future projects. Completed Roadway, Blue Ridge Parkway, Virginia*

## Knowledge Sharing

With the successful implementation of the FDR, FHWA was approached by the Virginia Department of Transportation (VDOT) and was requested to share knowledge gained and lessons learned so that VDOT can also successfully use FDR for their roadway rehabilitation projects. VDOT was invited to visit the Blue Ridge Parkway project site to see the construction operations first hand and get technical briefing by an FLH project engineer and division materials engineer. On three separate occasions during the summer of 2014, key VDOT personnel including state and district level asphalt and materials engineers, designers and project inspectors visited the site to see the work in progress. These visits also included group and individual discussions between VDOT and FLH project personnel as to the changes initiated by FLH to the industry standard reclamation

process and testing and how these changes raised the quality level of the work being performed. VDOT intends to use the lessons learned by Federal Lands and shared through these site visits as they modify their specifications and design their projects that will incorporate FDR work throughout the state.

### **National Bridge Inspection Standards and Compliance**

The FLH Bridge Office has been delegated to conduct oversight of the 19 federal bridge inspection programs throughout the country. The oversight is conducted at the Intermediate Level through a risk-based, data driven approach. This approach assesses an agency's level of compliance in 23 metrics relating to specific components of the National Bridge Inspection Standards such as inspection staff qualifications, inspection frequency, inspection procedures, inventory data, load rating and posting of bridges. As part of the review process, any metric determined to be Non-Compliant will require improvement through



approved Plans of Corrective Actions (PCA). The FLH Bridge Office also conducts annual assessments at the Minimum Level to follow up on the PCA implementation progress for non-compliant metrics. Out of 19 federal bridge inspection programs, the NBIS Compliance assessment at the Intermediate Level has been completed for 12 – Forest Service, USFWS, USACE, U.S. Navy, U.S. Army, BIA, U.S. Air Force, BOR, Tennessee Valley Authority (TVA), U.S. Department of Energy (USDOE), National Aeronautics and Space Administration (NASA), and NPS. The reviews of the remaining of 7 Federal agencies owning

bridges are currently in progress and will be completed in the first quarter of 2015. During 2014, the FLH Bridge Office has also completed the NBIS Compliance assessment at the Minimum Level for Forest Service, USACE, and U.S. Navy. These agencies have seen significant improvement of their bridge inspection program through PCA implementation. In addition to oversight of the federal bridge inspection programs, the FLH Bridge Office provides Federal bridge owners technical and managerial advice to assist them not only in complying with NBIS but also managing their program more efficiently. As part of this effort, the FLH Bridge Office was invited to attend the Forest Service national meeting which took place the week of January 27, 2014. The Forest Service then requested that FLH prepare an estimate to perform the inspection of all bridges on the Forest Service bridge network. A briefing conference was subsequently held with the FHWA Office of Infrastructure and with the Associate Administrator for FLH on February 25, 2014, to discuss the request and the status of the PCA. The FLH Bridge Office subsequently developed and transmitted an estimate for inspection services to Forest Service.

## Federal Lands Transportation Roads Performance Management and Data Collaboration Workshop

FLH hosted a “Federal Lands Transportation Roads Performance Management and Data Collaboration” workshop on June 4-6, 2014 in Shepherdstown, West Virginia. Over 40 individuals attended representing staff from NPS, USFWS, BLM, Forest Service, USACE, BIA, BOR, Department of Interior Office of the Secretary, Department of Transportation Geospatial Information Office, Volpe Center, FHWA Transportation Performance Management Office, FHWA Office of Policy and FLH.



The purpose of the workshop was to:

- reconcile concerns regarding the policy on public and FLTP transportation network definitions and their impact on FLTP funding eligibility
- draft minimum standards and processes for implementing route IDs
- develop timelines for updating FLTP inventory and data elements for collecting, analyzing, reporting, and storing road condition information for all partners
- draft standards for 1-100 road condition index, building on the experiences of NPS and USFWS
- draft an approach for collecting data beyond minimum standards and data elements, depending on individual partner needs.

During the workshop “Task Teams” at both the Agency and Interagency levels were developed. Official repository(ies) of inventory, condition data and official partner interface(s) and many corresponding short term actions were identified.

The partners came to several agreements as a result of Task Team discussion and a list of items were developed:

- public and FLTP network definitions
- a process for implementing route IDs for all partners and a plan to draft and approve minimum standards
- a process to propose, validate, and operationalize an index the partners agreed to conceptually based on a 0-100 road condition index
- timelines for completing route IDs and mapping condition data to a 0-100 road condition index



*Road Inventory Program Team Member recording data, Golden Gate National Historical Park, Point Bonita, California*



*Road Inventory Program Data Collection Vehicle, The PathRunner, Hawaii Volcanoes National Park, Hawaii*

The partners proposed official repositories for inventory and condition and agreed that initial road condition data will focus on pavement “between the white fog lines” and agreed to revisit data beyond minimum standards on a partner-by-partner basis at a future time. In addition, the FHWA Office of Policy provided a brief overview of the Transportation for the Nation Program and the reasoning behind All Road Network (ARNOLD). ARNOLD brings spatial data into one platform to limit duplication efforts and

provide an open source for most up to date data.

### Ultrasonic Shear Wave Tomography (MIRA) John Coffee Memorial Bridge, Natchez Trace Parkway, Tennessee

The John Coffee Memorial Bridge, built in 1964, is nearly a mile long bridge that carries Natchez Trace Parkway over the Tennessee River. The 2 lane, 38 span, two steel plate girder bridge provides a direct route for the traveling public from Tennessee to Mississippi. Due to the limited number of bridges spanning the Tennessee River in the region, closing this bridge would add a 25 mile detour to the travelling public. In the middle of a routine bridge maintenance project to repaint guardrails, replace bridge joints and repair some minor concrete spalls an unexpected problem was discovered. During the preparation work to fix the spalls it was discovered that there was severely deteriorated concrete of unknown extent several inches thick hidden under the minor spalls. The shotcrete layer had covered up the extent of the deteriorated concrete. Deterioration extended under one of the bearings of the plate girder. Repair work was stopped due to the extent of the deterioration. Determining the extent of the deterioration and whether the bridge needed to be closed for safety became the priority. An answer was needed fast, that preferably would not require a lot of coring or other time consuming tests. FLH turned to a non-destructive testing method, known as Ultrasonic Shear Wave Tomography (MIRA), to determine the extent of the deterioration.

FLH obtained MIRA testing equipment on loan from the FHWA Office of Asset Management, Pavements, and Construction to perform the investigation of the bridge piers. MIRA was used, to “see” through the sound shotcrete layer into the deteriorated concrete underneath, and to map the extent of the deterioration so a cost effective strategy could be developed to repair the piers. A cross section scan of a



*Ultrasonic Shear Wave Tomography analysis*



*John Coffee Memorial Bridge, Tennessee*



pier took less than 15 minutes to complete. MIRA scans of the concrete piers determined that only one section was damaged. Results were verified with concrete cores. MIRA allowed the targeting of resources to determine the extent of deterioration and to develop a cost effective plan to repair the piers while the bridge remained in service.

*Horizontal Concrete Coring or Concrete Core Drilling performed by FLH Bridge Inspection staff as part of the in-depth investigation into the condition of bridge piers on the John Coffee Bridge. The retrieved concrete samples were laboratory tested to evaluate the concrete and verify initial bridge inspection findings.*

## **Helical Piles**

### **Mount Vernon Trail Bridge Replacement, George Washington Memorial Parkway, Virginia**

This project utilized a unique foundation design to replace the 278 foot long, 10 foot wide pedestrian/bicycle timber bridge on the Mount Vernon Trail. Mount Vernon trail is an 18-mile long multi-use trail located next to the George Washington Memorial Parkway in Arlington County, Virginia. Existing piles were replaced with helical piles, a unique foundation design intended to minimize disturbance to wetland areas. Additional environmental protection measures



included the use of a turbidity barrier. Construction access for bridge work was limited to the footprint of the existing bridge and the contractor was required to provide timber matting over separation geotextile to protect existing ground and vegetation.

## **Geogrid Reinforced Soil (GRS) construction**

### **Blue Ridge Parkway Slide Repair, North Carolina**

As a result of above normal precipitation a major landslide occurred on the Blue Ridge Parkway in Buncombe County, North Carolina. Use of GRS construction was utilized in the Winter/Spring of 2014. By utilizing GRS slope construction, it was possible to reconstruct this section of roadway 275 feet long, 110 feet wide, and 38 feet high at a slope steeper than for soil embankments at 1 horizontal to 1 vertical slope. This project clearly showcases GRS technology by providing durable slide repairs using smaller footprint/less environmental disturbance and reducing construction time and materials.



**Use of Ground Penetrating Radar  
Trail Bridge Replacement, Delaware Water Gap National Recreation  
Area, Pennsylvania**

Ground Penetrating Radar was used for in place testing of precast wall elements. The nondestructive testing to confirm rebar type and location in the precast concrete sections allowed for immediate casting after contract award. This approach provided safeguards to ensure the quality of the finished product while greatly accelerating the construction process as compared to traditional quality assurance practices.



**Contractor Manager/General Contractor (CMGC) procurement  
Historical Reconstruction/Safety Improvement  
Blue Ridge Parkway, North Carolina**

This project along Blue Ridge Parkway required reconstruction of historical stone masonry retaining walls and replacement of stone masonry guardwalls with crashworthy stone faced concrete core guardwalls to meet safety requirements while maintaining the aesthetics of the parkway. Utilization of Contractor Manager/General Contractor (CMGC) procurement enabled FLH to select a contractor experienced with historic stone masonry repairs and with the local terrain. This method enabled more accurate constructability reviews and input into the design, reducing construction costs, optimizing the project budget, reducing risk for both government and the contractor, while also expediting the schedule. It was possible to provide the most efficient means of repair utilizing the most appropriate materials.



## Fiber Reinforced Polymer (FRP) Bridge Rehabilitation Wallops Island Causeway Bridge, Wallops Flight Facility NASA, Chincoteague, Virginia

FLH performed its first large scale use of FRP bridge rehabilitation at Wallops Flight Facility in Virginia. This structure is an early precast, prestressed concrete girder bridge built in 1960. The girders had delamination occurring in the bottom flanges that resulted in corrosion of the prestressing strands.



*Repair material being applied to bottom of beam*

Due to section loss and the load demand that NASA requires to transport its equipment to their facilities, the bridge required a solution that would restore the girders back to their original load carrying capacity as well as protect the strands from further corrosion. The proposed solution was to remove the bottom layer of

gunite to determine the extent of the prestressing strand section loss. Once this was determined, an analysis was performed by FLH to determine the number of layers of FRP that were required to restore the girder. After the FRP was installed, a protective layer was added and painted to match the existing beams. In all, 46 girders were rehabilitated with FRP, in addition to two spans that had external post-tension strands wrapped to protect them from the elements.



*Carbon Fiber Wrap being installed after repair*



**Rockfall Hazard Mitigation Techniques:  
Rock Bolt Installation  
Lehigh Gap, Appalachian Trail, Pennsylvania**

Heavy erosion along the Appalachian Trail resulted in massive rock falls onto not just the trail, but a major State Road and a railway below. The size of material and the geometry of the site required a hybrid rockfall netting system of nearly 10,000 square yards (according to materials supplier, reported to be one of the largest such installations in North America at the time). To pin the rest of the mountain back together hundreds of rock bolts were installed for long-term stability of the mountain's many fractured faces.



**Thank You for Your Feedback**