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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 (FY) 2018, we distributed the following web-based surveys:
- Program Administration (Program Support Throughout Project Delivery)
- Environmental Collaboration
- Roadway Inventory Program
- Completed Projects (Construction Process)
- Project Development (Design Process)

The results from those surveys have been reviewed and actions have been implemented to correct and/or improve upon our FY 2018 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 2018, we awarded 49 projects at over $287.5 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 2018, we had partner satisfaction scores at or above target for Completed Projects and Road Inventory Program, while Environmental Collaboration, Project Development, and Program Administration summary values ended below target this year. The overall satisfaction score for combining all surveys for FY 2018 comes in at 82.4%, putting the overall score just below our target of ≥ 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 Ms. Aide Romero, Division Program Management Analyst and System Manager, at 703-404-6235 or by email Aide.Romero@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 throughout the calendar year 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 slightly over the last several years. EFLHD’s value of 82.4% in 2018 continued this trend. We are below our goal of ≥ 85%. The overall value has remained statistically the same for several years now. Each of the five 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 2018 Program Administration (Program Support throughout Project Delivery) at 78% with a response rate of 36%. The Environmental Collaboration Survey at 76.2% with responses of 18%. The Road Inventory Program Survey at 90.3% with responses of 16%. The Project Development (Design) survey at 81.1% and a response rate of 26%, and the final component is the Completed Projects (Construction) Survey that contributed 89% and had a response rate at 51%.

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 2018 was only at 28%; this was lower than the prior year value of 41%. Solicitation efforts remained high with 441 invitations for feedback distributed but only 124 were returned. At a population size nearing 400 we need to get an additional 75 responses for our percentage returned to be statistically desirable and have a confidence level of 95%, so efforts to improve will be continuing. In 2019 branch office personnel will be contacting respondents to improve response rate over 2018 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 ≥ 85%

Program Administration Survey Score

Program Administration Component Scores
Survey Results: Survey scores for the Program Administration Survey declined by 1.1 percentage points compared to last year’s score. The current score of 78.0% remains below our target level of 85. An analysis of the survey’s results by category yielded the following:

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Strategy</td>
<td>79.1</td>
<td>80.4</td>
<td>80.3</td>
<td>80.6</td>
<td>79.6</td>
<td>-1.0</td>
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<tr>
<td>Program of Projects</td>
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<td>77.6</td>
<td>77.2</td>
<td>-0.4</td>
</tr>
<tr>
<td>Program Funding</td>
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<td>79.4</td>
<td>74.1</td>
<td>75.9</td>
<td>74.2</td>
<td>-1.7</td>
</tr>
<tr>
<td>Program Scope of Work</td>
<td>78.3</td>
<td>77.4</td>
<td>73.9</td>
<td>77.6</td>
<td>80.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Program Support</td>
<td>79.8</td>
<td>81.5</td>
<td>79.9</td>
<td>81.3</td>
<td>75.1</td>
<td>-6.2</td>
</tr>
<tr>
<td><strong>Overall Score</strong></td>
<td><strong>78.0</strong></td>
<td><strong>79.8</strong></td>
<td><strong>77.7</strong></td>
<td><strong>79.1</strong></td>
<td><strong>78.0</strong></td>
<td><strong>-1.1</strong></td>
</tr>
</tbody>
</table>

Questions resulting in the lowest scores for this survey period were:
- **Program Strategy (FLTP):** The consistency between FLH’s and your agency's program policies. 46.6%
- **Funding:** The timeliness of funds distribution. 71.6%
- **Scope of Work:** The reliability of initial cost estimates. 71.9%
- **Program Strategy (FLTP):** The communication of program policy and goals. 73.3%

Question with the highest scores for the current survey period were:
- **Program Support:** Timeliness of approvals. 81.6%
- **Program Strategy (FLAP):** The communication of program policy and goals. 82.6%
- **Program Strategy (FLAP):** The consistency between FLH's and your agency's program policies. 83.1%
- **Program Support:** The responsiveness to questions from you. 84.7%

Our response rate for this year dropped to 36% from 41%, that was last year’s value. Our solicitation rate was 123 requests for feedback and 44 of those inquiries were answered and provided feedback for analysis. In addition to the low overall response rate, some programs were only represented by one or two responses. Division management analyst personnel will continue to undertake efforts to improve upon response rates for the 2019 survey cycle. A sampling of the written comments associated with this survey were:
- “Glad to be a part of and we (both agencies) do make a BIG DIFFERENCE one step at a time.”
- “Always a pleasure when doing business with EFLHD. Very attentive in a complex atmosphere of usually disaster related work.”
- “Project schedules can change due to unforeseen circumstances and we appreciate the ability to adjust the obligation plan as needed.”
- For the FLTP program: My Agency’s “mission is sometimes not understood by FLH and therefore planning requirement for the FLTP do not line up with our goals.”
- For the FLAP program: “Low funding vs. high cost of Administration”
**Action to Improve:** We have initiated the following actions to improve and maintain partner satisfaction this year:

- We have re-aligned some of the Program teams to provide better specialization in each Program. We anticipate that this will allow more time to focus on program goals and the overall partnership.
- For the FLAP program, we are considering a pilot program that would reduce the Stewardship and Oversight requirements to reduce some of the administrative burden of the Program.
- For the FLTP program, we will engage with our partner agencies through the Federal Lands Planning Program Council to better align the use of planning funds with the programming needs.

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

- We worked with our partner agencies to encourage and facilitate the deployment of the MSAR software package for the ERFO program. We successfully used the software on several events during FY18 and found that it did streamline the DSR development and approval process. In addition, it provides centralized storage of all disaster related documentation.
- We identified several opportunities to enhance the communication with individual applicants and PDCs under the Federal Lands Access Program (FLAP). We anticipate that these changes will result in more timely follow up after the Call for Projects is complete.
- We have performed an evaluation of projects selected during the most recent Call For Projects cycle for the FLAP program. We have identified several improvements that will be discussed with each PDC committee for implementation in future cycles.
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 $\geq 85\%$

![Environmental Collaboration Survey Results](image1)

![Environmental Collaboration Component Scores (%)](image2)
**Survey Results:** The 2018 survey resulted in a reduction from last year’s value. We recognize that of the 38 surveys we sent out, we only received 7 back. The survey categories Regulatory Permits and Plans, Completeness and Adequacy of NEPA Documents and Environmental Collaboration and Compliance all experienced decreases. An analysis of the survey’s results by category area yielded the following:

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA Documents</td>
<td>92.0</td>
<td>85.0</td>
<td>96.7</td>
<td>76.7</td>
<td>80.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Regulatory Permits and Plans</td>
<td>90.0</td>
<td>74.6</td>
<td>96.7</td>
<td>80.0</td>
<td>80.0</td>
<td>0.00</td>
</tr>
<tr>
<td>Environmental Mitigation</td>
<td>92.5</td>
<td>89.7</td>
<td>91.7</td>
<td>92.4</td>
<td>74.0</td>
<td>-18.4</td>
</tr>
<tr>
<td>Interagency Coordination</td>
<td>90.0</td>
<td>92.0</td>
<td>95.6</td>
<td>96.9</td>
<td>78.2</td>
<td>-18.7</td>
</tr>
<tr>
<td>Environmental Collaboration and Compliance</td>
<td>89.5</td>
<td>84.0</td>
<td>96.7</td>
<td>95.0</td>
<td>70.0</td>
<td>-15.7</td>
</tr>
<tr>
<td><strong>Overall Score</strong></td>
<td>90.9</td>
<td>88.2</td>
<td>95.0</td>
<td>90.8</td>
<td>76.2</td>
<td>-14.6</td>
</tr>
</tbody>
</table>

Questions resulting in the lowest scores for this survey period were:
- **Overall Score:** Please rate your satisfaction with the collaboration with your agency to complete the environmental compliances.  
  70.0%
- **Environmental Mitigation:** Complete effective mitigation plans.  
  66.7%

Question with the highest scores for the current survey period were:
- **Environmental Mitigation:** Fulfilment of mitigation commitments.  
  84.0%
- **Interagency Coordination:** Timeliness of response to request from your agency.  
  86.7%
- **Completeness and Adequacy of NEPA Documents.**  
  80.0%
- **Completeness and Timeliness of Regulatory/Permits and Plans.**  
  80.0%

Our response rate for this year was 18% and is down from last year’s value of 41%. Division management analysis personnel are undertaking efforts to improve upon our response rates for the 2019 survey cycle. We will also try to clarify the subject of the survey. Some of the comments received appeared to be directed at ongoing efforts with our partners and not the specified project that was completed. Additionally, other comments seemed to be directed at other aspects of our program delivery and not strictly the environmental compliance component. A sampling of the relevant written comments associated with this survey were:
- “The Forest Service I think was expecting turn key NEPA.”
- “There is room for improvement on the coordination of information sharing, schedules, documents, etc.”

**Action to Improve:** We will initiate the following actions to improve and maintain partner satisfaction this year:
- Add a discussion point at EFLHD’s internal project kick-off meetings to reinforce roles regarding necessary environmental coordination and collaboration with partners throughout the life of the project.
- Evaluate the Permit Tracking Form process to determine if the form is providing the information needed during Construction or if further improvements are needed.
**Actions Taken:** We implemented the following actions last year:

- Updated project management templates to reflect the process improvements identified by the SWM Report to provide a more accurate estimate of project schedule impacts.
- Developed an EFLH Permit Tracking Form to better convey environmental commitments to construction staff.
- Compiled and provided access to an Environment Lessons Learned folder and provided training at EFLHD’s internal 2019 Project Delivery Winter Training.
- Continued to encourage appropriate Design Staff to pursue State Specific Training and Certifications for Erosion and Sediment. Three design staff and an additional Environmental staff received their Level I & II Certification in Erosion and Sediment Control from the Tennessee Department of Environment and Conservation. These certifications provide an opportunity for EFL to accelerate the acquisition of permits for projects in Tennessee.
Road Inventory Program Survey

The purpose of the Road Inventory Program Survey is to evaluate the degree to which our work provides the information necessary to support our partner’s asset management and program development processes.

EFLHD Overall Satisfaction Index Target ≥ 85%

Road Inventory Program Survey Score

Road Inventory Program Component Scores (%)

<table>
<thead>
<tr>
<th>Route ID</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Collection</td>
<td>88.0</td>
<td>90.0</td>
</tr>
<tr>
<td>Vehicle Collection</td>
<td>90.4</td>
<td>93.0</td>
</tr>
<tr>
<td>Data Delivery / Training</td>
<td>87.5</td>
<td>91.0</td>
</tr>
</tbody>
</table>
Survey Results: This is the second year that the Road Inventory Program Survey is included in the Partner Feedback report. The Overall Satisfaction scores for the Road Inventory Program Survey remained consistent with last year’s score at 90.3%. The current score continues to meet our target level of 85. An analysis of the survey’s results by category yielded the following:

<table>
<thead>
<tr>
<th>Category</th>
<th>2017</th>
<th>2018</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route ID</td>
<td>94.8</td>
<td>89.0</td>
<td>-5.8</td>
</tr>
<tr>
<td>Manual Collection</td>
<td>90.0</td>
<td>88.0</td>
<td>-2.0</td>
</tr>
<tr>
<td>Vehicle Collection</td>
<td>90.4</td>
<td>93.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Data Delivery / Training</td>
<td>87.5</td>
<td>91.0</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Overall Score</strong></td>
<td><strong>90.7</strong></td>
<td><strong>90.3</strong></td>
<td><strong>-0.43</strong></td>
</tr>
</tbody>
</table>

Questions resulting in the lowest scores for this survey period were:
- Manual Data Collection: Were you satisfied with the professionalism of the data collection team? 80%
- Manual Data Collection: What was your overall satisfaction of performance of the data collection team? 80%
- Route ID Meeting: Were you satisfied with how FHWA scheduled the Route ID web-conference meeting? 85.5%

Question with the highest scores for the current survey period were:
- Manual Data Collection: Were you satisfied with the scheduling and Coordination of the FHWA team's arrival for data collection? 100%
- Vehicle Collection: Were you satisfied with FHWA's ability to address any questions or concerns during the Data Collection Vehicle visit? 100%
- Route ID Meeting: Was the meeting conducted in a professional manner? 95.5%

A low response rate continues to be the biggest challenge with these surveys. Division management analyst personnel will continue to undertake efforts to improve upon response rates for the 2019 survey cycle. In addition to a low response rate, there was only one written comment:
- “Please include how to generate FMSS work orders from the Roads Portal in the web training.”

Action to Improve: We have initiated the following actions to improve and maintain partner satisfaction this year:
- We will focus on filling staff vacancies so we can accommodate increased workload from additional partners.
- We will implement continuous process improvement for manual data collection as we gain experience with additional partners and software platforms.
- We will provide PathView information and RIP training to NPS users throughout the year to ensure a smooth roll out of the new Pathweb system (online version of PathView).

Actions Taken: We implemented the following actions for program administration improvement last year:
- When we were unable to meet face-to-face during inspection visits due to staff availability or time constraints, we made efforts to contact partners by phone at the beginning of the collection effort to finalize scheduling and hear any unit concerns.
• We incorporated more live feedback opportunities into the RIP data training webinars that were conducted with each unit when data was delivered and incorporated this feedback into future training webinars.

• We studied the feasibility of using Pathweb and determined that it would allow a multitude of users to access data more easily than PathView. Feedback from various FLH Teams, NPS Roads Work Group, and the NPS Navigator Work Group is overwhelmingly positive. Partners appreciate the user-friendliness of Pathweb and the improved access to the NPS RIP data.
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 ≥ 85%

![Project Development Design Survey Results](image)

![Project Development Component Scores (%)](image)
Survey Results: The Project Development Survey was reconfigured for the 2016 collection cycle and the old five categories became six that better separate the survey into the various project design elements. The new categories are: Project Management Practices, Roadway and Safety Design, Hydraulic and Environmental Design, Structural Design, Final Design and lastly Advertisement and Award of Contracts. The scaling for this survey was also changed to a 1 to 10 scale versus a 5-increment scale. The current survey value of 81.1% comes in under target. This continues a downward trend from 2014. An analysis of the survey’s results by the category area yielded the following results.

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Project Management Practices</td>
<td>85.9</td>
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<td>84.6</td>
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<td>82.4</td>
<td>-2.9</td>
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<tr>
<td>Project Development Elements</td>
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</tr>
<tr>
<td>Roadway and Safety Design Elements</td>
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<td>Structural Design Elements</td>
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<td>81.6</td>
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<td>1.37</td>
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<td>Final Design</td>
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<td>84.6</td>
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<td>-2.93</td>
</tr>
<tr>
<td>Advertisement and Award of Contracts</td>
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<td>82.9</td>
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<tr>
<td>Overall Score</td>
<td>86.5</td>
<td>84.8</td>
<td>83.7</td>
<td>83.4</td>
<td>81.1</td>
<td>-2.3</td>
</tr>
</tbody>
</table>

Questions resulting in the lowest scores for this survey period were:
- Advertisement and Award of Contracts: Acquisition method selected (type of contract). 65.0%
- Advertisement and Award of Contracts: Selection of contractor. 66.4%
- Hydraulic and Environmental Design Elements: Stormwater management design (porous pavement, ponds, channels, ditches and swales). 73.0%
- Hydraulic and Environmental Design Elements: Hydraulic design for bridges and box culverts (clearance, capacity and scour). 74.0%

Question with the highest scores for the current survey period were:
- Roadway and Safety Design Elements: Utility and/or Railroad Coordination. 88.6%
- Project Management Practices: Level of involvement of your agency during project development. 88.4%
- Structural Design Elements: Bridge safety features (bridge rails, transitions, etc.) 87.7%
- Project Management Practices: Timeliness of responses to requests by your agency. 86.5%
Our satisfaction score continues to show a slight downward trend and be below the target value. Although still below target, Structural Design Elements and Roadway and Safety Design Elements showed the most improvement when compared to the previous year. The areas needing more attention are Hydraulic and Environmental Design Elements, Project Management Practices, Final Design, and the Advertisement and Award of Contracts which dropped from last year and comprised our lowest scores for this year’s results.

A sampling of the written comments representing positive themes from this survey were:

- “The clarity and completeness of the final PS&E package was exemplary. Throughout the process, the Highway Designer did an outstanding job of focusing on the important issues and to carefully track and incorporate comments into the final PS&E package.”
- “This project faced several NEPA issues early on which impacted the delivery dates of the project design. Concern was noted by both the NPS and EFL. EFL is recognized for patiently working with the NPS to resolve the NEPA issues and in successfully delivering the project within the funding deadlines.”
- “I really like summary pages that provide info on what work was scheduled for each structure. And, the Traffic Control Summary easily highlighted what kind of traffic control would be used for each structure.”
- “Very much appreciate FHWA’s diligence working through the solicitation process and vetting the contractors against the contract requirements.”
- “Project involves replacing concrete road panels on a historic road. FHWA was very sensitive to the historic materials and engineering alignment. The FHWA Project Manager and acquisitions team were very open to NPS concerns. FHWA explained options and risk to the NPS and provided continuous support throughout. The NPS was very pleased with project development, the contract package, and acquisition process.”

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

- “We understand the requirements for contracting but it would seem that there should be other options available to ensure that we get the best contractor at the best price for the job.”
- “Regarding funding, we had to add additional funds twice for PE due to inaccurate projections made by the EFL PM.”
- “The final design will work, and hopefully for a long time. However, I do not believe the design addressed all our concerns. Primarily, there was evidence of overland flow contributing to the side slope failure which stemmed from an inadequate ditch (rock bottom) above the failure area. This, in my opinion, was not addressed in a manner which will prevent this from potentially happening again. We were not kept in the loop for quite a few things, so our knowledge of these things was all after the fact. Overall, communication at all stages was not what it should have been.

**Actions to Improve:** We will implement the following in FY 2019:

- Contract Procurement Type & Contractor Selection – We are evaluating procurement methods on some of our projects, particularly in park, refuge and forest units where we have past issues with contractors, and consider having contractors submit technical proposals with their bid where they could be graded on their approach methods including temporary traffic control management. We are utilizing “sources sought” notices for projects in the area where we have not had many projects and supplement existing market information, to properly determine the procurement method. This approach helps us verify that there are qualified small businesses interested in the project before limiting our advertisement. In addition, we
are developing regional Construction Indefinite Delivery Indefinite Quantity Contract (IDIQC) that includes minor design work to execute task orders for small or emergency projects within a region. We will be using market research information to determine the geographic areas and procurement type for the regional IDIQCs.

- Project Communication – To better establish clear and consistent communication early, the PMs have been asked to confirm key partner stakeholders are present during the scoping requirements discussions, and come away from the meeting with a clear understanding of project requirements. During scoping, the PM will work with the partners to identify project risks such as work zone and in-stream water restrictions, permitting and NEPA impacts, and construction access, and contractor availability and capability. In addition to reducing the time from scoping to complete the project budget and schedule, we are focusing on utilizing a simplified project delivery method when the project scope is straightforward and it is possible to eliminate some of the design reviews. The need for stormwater management permit requirements will be determined as early as possible. The PMs are to communicate with the partner and other maintaining entities on schedule and budget effects of any scope changes quickly to determine cost and schedule impacts.

- Schedules and Budget – The most effective means to control project scope, schedule and budget is early coordination in the preliminary engineering phase. We are emphasizing to the PMs and design staff to work together to develop achievable project schedules with realistic activity durations and relationship logic, and identify critical needs of the project including simplified delivery, utility conflicts, stormwater management and permits.

- Final Design – We are emphasizing that all disciplines review the PS&E’s to make sure all comments are appropriately addressed and the latest versions of the documents are included, prior to distribution. In addition, the design teams consider lessons learned and construction issues on past similar projects, considering both improvement type and unit location. A successful final design PS&E starts during the scoping phase, and technical disciplines are encouraged to perform thorough site investigations to develop contract requirements.

- Structural Design Elements – Using innovative materials will continue to be implemented to further increase quality and durability of the structures. Use of prefabricated elements and ABC Construction methods have reduced construction durations and resulted with less interruptions to traffic and the public. Additionally, use of innovative materials such as Ultra High Performance Concrete is anticipated to increase durability of structural elements resulting in less future maintenance and prolonged life of the elements.

- Bridge Inspection Special Studies – Bridge Inspection has identified several bridges that may require special in-depth studies to help assess the condition of the bridges and properly scope the recommended work. These bridges are presently being scheduled for these studies.

- Bridge Management is in process of developing a Bridge Program Needs list for to assist in prioritizing and scheduling bridge replacements, bridge rehabilitation and bridge painting projects. The Bridge Program Needs will incorporate deterioration modeling which will help determine service life.

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

- Reducing Planning Cost Estimates Variance – During the development of Bridge Inspection Reports, Recommended Work and Cost Estimates are being developed with the input and certification of the EFL Bridge Design Staff. This has resulted in minimizing changes of scope during the project’s development.

- Project Management – We have emphasized within the division that the PM is to manage the project in total and be the consistent voice with our partners, through the design phase and construction during significant contract modification changes. In addition, we discuss procurement type and the required preliminary engineering activities during the project.
scoping phase and internal kickoff meetings to ensure unique project requirements are met, and realistic schedules and budget are developed. As an ongoing carryover action, the Program and Project Managers will continue to work with Regional FLMA FLTP staff to communicate program needs to improve program delivery. If potential scope changes are encountered on a project, the PM is to lead the discussion with the partner agency on schedule and budget impacts to the program.

- **Cost Emphasis** – During the scoping stage, the Project Manager continues to lead discussions with the project team in determining if the design can be advanced using a simplified delivery approach. The simplified delivery approach identifies low-risk projects that can be developed with minimal involvement from various technical resources to reduce delivery time and/or cost. PMs are working to reduce the time for approval of the initial project budget to improve cost awareness and control. This is a carryover action from the previous year’s partner feedback report.

- **ERFO Project Timelines** – During several site meetings, leadership is emphasizing to the partner the importance of receiving the approvals of the Damage Survey Reports (DSR) and Program of Projects (POP) as soon as possible to obtain the funding and proceed into design. When applicable, the simplified delivery approach is intended to reduce the design timeline.
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 ≥ 85%

Completed Projects Construction Survey Results

Completed Projects Component Scores (%)

- Management Practices
- Completed Project Elements
- Completed Project Aesthetics
- Conditions During Construction
- Environmental Sensitivity
- Overall Rating

2014: 86.5, 88.8, 83.1, 86.4, 86.2, 86.7
2015: 86.2, 88.7, 83.9, 86.0, 84.3, 89.0
2016: 87.5, 88.7, 81.7, 86.1, 82.7, 89.0
2017: 90.2, 90.1, 89.1, 87.0, 89.1, 89.0
2018: 91.4, 90.2, 90.1, 87.0, 89.1, 88.1

Average Ratings:
- 2014: 87.7%
- 2015: 86.9%
- 2016: 85.0%
- 2017: 83.7%
- 2018: 89.0%
Survey Results: Overall the Completed Projects Survey score came in above our target value at 89.0%. A concerted effort by the construction office personnel to contact partner agencies to improve survey feedback response rate was continued for 2018. The results of this work continue to improve rates from a low of 39% in 2012 to today’s value of 50%. For this year, all categories increased. An analysis of the survey’s results by the category area yielded the following results.

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</thead>
<tbody>
<tr>
<td>Management Practices</td>
<td>91.43</td>
<td>86.48</td>
<td>86.22</td>
<td>84.80</td>
<td>88.60</td>
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<td>88.67</td>
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<td>87.69</td>
<td>83.91</td>
<td>82.70</td>
<td>90.10</td>
<td>8.40</td>
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<tr>
<td>Conditions During Construction</td>
<td>86.42</td>
<td>86.00</td>
<td>86.14</td>
<td>83.70</td>
<td>87.70</td>
<td>7.00</td>
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<td>84.27</td>
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<tr>
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<td>84.98</td>
<td>83.70</td>
<td>89.0</td>
<td>7.30</td>
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Questions resulting in the lowest scores for this survey period were:
- FLH’s Management Practices: Timeliness of response to guidance and requests by your agency. 87.4%
- Conditions During Construction: Road conditions. 87.5%
- Conditions During Construction: Signage. 85.8%
- Environmental Sensitivity: Protection and preservation of natural, historical, and cultural resources. 87.2%

Question with the highest scores for the current survey period were:
- Completed Project Elements: Major structures (bridges, walls, etc.). 95.3%
- Completed Project Aesthetics: Alignment of guardrail, walls, and roadside appurtenance. 91.1%
- Completed Project Aesthetics: Major structures (bridges, walls, etc.). 95.3%
- Environmental Sensitivity: Preservation of existing vegetation. 91.2%

A sampling of the written comments associated with this survey were:
- “Working at GATE NRA can be very challenging in many ways. The park is literally an oasis within one of the largest urban environments in the country and also the world. EFL construction worked very well with the NPS to maintain sensitivity to NPS requirements although many, in many ways, would question why we require what we do. Special thanks to Francis Abreu for his ability to work so well with NPS partners. I would welcome the opportunity to work with him again in the future.”
- “If ever a perfect project occurred, this is certainly one of them. The project consisted of a pedestrian bridge located between the Mammoth Cave Visitor Center and Hotel. All project costs were directly paid for by the park, out of their RecFee program. There was one safety concern early on but EFL construction worked quickly to correct it and the result was a very safe project. Although the work zone was within the center of the most active area of the park, the contractor and EFL worked so well that the NPS hardly noticed the work was underway.”
- “EFL was fantastic partner in the Hurricane Maria response operation. The staff, from executives to administrative, were very professional and courteous. The work and the EFL
reputation speaks for itself and is illustrated by the constant requests for their continued partnering in Puerto Rico. The EFL contribution was so efficient and so effective that they are continuously sought out by FEMA, The Commonwealth and Other partners to perform a similar role in leading restoration on the island. It has been exciting to watch EFL exceed expectations while meeting every challenge.”

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

- We will provide traffic control related training (MUTCD) to project staff. This training will benefit the project staff to administer the construction contract for safety enforcement.
- We will provide concrete related trainings (Admixtures, repairs, best practices and common issues) to project staff. This training will enhance the skill of project staff during the inspection of bridge work.
- We will provide erosion control related training (SWPPP) to project staff. This training will benefit the project staff to administer the construction contract for environmental enforcement.
- We will continue providing in-depth training of EEBACS system and OneNote system. This training will enhance the skill of project staff for maintaining the electronic project records.

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

- We provided OSHA Safety Training (Confined Space) to project staff. This training would benefit the project staff to administer the construction contract for safety enforcement.
- We provided bridge painting training to project staff. This training would enhance the skill of project staff during the inspection of bridge painting work.
- We provided training to project staff on a case study of lesson learned from geotechnical issues including the slope failure and earth stabilization.
- We provided a design-build contract related training to project staff.
- We provided in-depth training of EEBACS system and OneNote system. This training would enhance the skill of project staff for maintaining the electronic project records.
Accomplishments for Fiscal Year 2018

Project Delivery

Foothills Parkway Capstone Project, Great Smoky Mountains National Park, Tennessee

The 16 remaining miles from Wear Valley to Walland, are complete and were officially opened to the public on November 10, 2018 for motorists and cyclists to enjoy. Great Smoky Mountains National Park officials were joined by Senator Lamar Alexander, Congressman John J. Duncan, Jr., Congressman Phil Roe, Governor Bill Haslam, and NPS Southeast Regional Director Bob Vogel to dedicate the long-awaited section of the Parkway. The public is now able to experience this new section of roadway for the first time since construction began in 1966, including the 1.65-mile section known as the ‘Missing Link’ which is now connected by a series of nine bridges.

The role of EFL was to provide engineering design and construction support services in an environmentally responsible, context-sensitive manner. These projects were delivered using both Design-Build delivery and conventional Design-Bid-Build delivery. As a result of context sensitive design and construction procedures, as well as re-vegetation efforts made around and beneath the bridges, the construction efforts for these projects resulted in minimal impact to the mountainside.

The Great Smoky Mountains National Park serves as one of the economic drivers in the community and with the increased development that has occurred in the surrounding counties, the investment of over $100 million for the construction of these recent projects has greatly benefitted the local economy and employed many. Its completion has provided an alternate means of transportation into and around the Wears Valley area, and will undoubtedly serve to increase tourism there as well as provide a destination for those who desire to see the dramatic views of the Smoky Mountains visible from the Parkway itself.
Beach Drive and Trail Reconstruction, Rock Creek Park, District of Columbia

The design and construction of this project, in challenging and environmentally sensitive terrain, required a unique approach to preserve the natural aesthetics in an urban parkway corridor. Work included: full depth pavement reconstruction, bridge and parking area rehabilitation, curb and gutter repair, drainage improvements including outlet protection at multiple culvert locations, scour repair at two bridges, storm drain and stormwater, Best Management Practices, traffic signal and street light replacement, vehicle safety improvements including rumble strips and aesthetic roadside barrier, and multi-use trail widening and rehabilitation for pedestrians and bicyclists.

Bridge Replacement, Entrance to Fort Pulaski National Monument, Georgia

1200-foot long bridge completed ($10M) included placement of new riprap on embankment slopes, reconstruction of bridge approaches, and other miscellaneous work.
Arlington Memorial Bridge, Washington DC/Arlington, Virginia

This Design-Build project awarded at $192M includes design and construction for the rehabilitation of the concrete approach spans, removal and replacement of the concrete deck, replacement of the bascule span at the center of the bridge, concrete repairs to the existing structure, rehabilitation of the bridge substructure, removal and resetting granite curb and railing, repairing and cleaning the bridge’s stone masonry and other miscellaneous work.

The 2,162-foot long by 94-foot wide National Monument spans the Potomac River.
Hurricanes Maria & Irma Emergency Repairs — Puerto Rico

On the morning of Wednesday, September 20, 2017, Hurricane Maria hit the island of Puerto Rico with 155 mph sustained winds and over 37 inches of rain. The Category 5 hurricane’s direct hit to Puerto Rico was the third-strongest storm to make landfall in the U.S. and was the worst atmospheric event Puerto Rico had experienced in the last 80 years. Hurricane Maria plowed across the island destroying homes, roads, and bridges. The storm knocked out power and communications across the entire island and triggered heavy flooding. After weeks without power, communications, and a stable road transportation network, the residents of the island suffered through food, water, and fuel shortages, water-related disease outbreaks, and lack of access to hospitals and banking systems.

On October 21, 2017, FEMA issued a $59.5M Mission Assignment to our Eastern Division for emergency repairs of Puerto Rico’s non-federal aid transportation infrastructure. The mission required EFL to restore safe and reliable travel to the Island’s secondary and tertiary road system of about 9,000 miles. To determine the locations and extent of the road damages, EFL sent three teams starting on October 25 to perform damage assessments. By November 10, 2017 a total of 140 sites had been identified. Between November 17 and November 29, 2017, EFL issued fourteen Design-Build letter contracts to 10 local highway construction contractors. By December 15, 2017, EFL with support from CFL and WFL deployed 8 bilingual project engineers and 3 construction inspectors under the supervision of EFL’s Construction Operations Engineer. The final scopes of work negotiated with contractors included the design and construction of 15 bridge replacements, 19 bridge repairs, and 59 roadway landslides/road embankment repairs. The first road repair site at PR-555 KM 4.3 was completed in 68 days; the first full replacement for bridge #1499 “Los Olvidados” was completed in 116 days.

Overall, the projects consisted of emergency repairs located in 34 out of the 78 municipalities. Repairs included, but were limited to: landslide repairs, construction of gabions, temporary bridge repairs, construction of low-water crossings, installation of pipe culverts, and design and installation of modular and other bridge systems. FLH work provided for the following technical assistance: professional engineering design services, survey, material testing and quality control, soil sedimentation and erosion control, maintenance of traffic, coordination with utility companies and utility work as needed, removal and disposal of existing damaged structures and debris, clearing and grubbing, excavation, backfilling, embankment construction, concrete placement, placement of pavement surface, installation of guardrails and terminals, placement of pavement markings and signing, and other miscellaneous work.

In total 93 sites were restored with 95% completed within 6 months. Through this mission, EFL delivered a total of $54.7M in work with about $3M of CE costs. In addition to FEMA Emergency Repairs, EFL also worked concurrently to deliver ERFO assistance to El Yunque National Forest, executing two letter contracts with one local contractor worth about $6.6M.

Hurricanes Maria & Irma Emergency Repairs — US Virgin Islands

The islands of St. Croix and St. Thomas in USVI were hit by category 5 Hurricane Irma on September 7, 2017, and within a span of two weeks hurricane Maria, hit the islands again. The two hurricanes brought unprecedented devastation on a massive scale. Power, communication,
and water supply was cut off and airports and sea ports were shut down. There were shortages of food, fuel, drinking water and other essentials on the islands. Asphalt and concrete plants were severely damaged, and rendered non-operational. After the hurricanes, EFL received emergency funds to immediately start the infrastructure remedial and restoration work. To start work immediately, EFL awarded letter contracts in St. Thomas and St. Croix to repair and restore slides, washed out roadways, and traffic signals that were blown away by the storms. In St. Thomas, washed out roadways, retaining walls, and slides were repaired at several locations for a total sum of $2.3M. Traffic signals at 21 different intersections were restored and rehabilitated for a total sum of $7.9M. In St. Croix, washed out roadways were restored for a total sum of $1.3M, and traffic signals at 20 different intersections were restored and rehabilitated for a total sum of $5M.

Innovation & Technology Deployment

**Collaborative Hydraulics: New Modeling Software — EDC 4 & 5**

FLH Hydraulic Teams have adopted SRH-2D hydraulic modeling software as general practice in design guidelines for major structure analysis and design. The SRH-2D modeling software provides a more comprehensive understanding of complex flow patterns at river crossings than previous traditional modeling techniques which only utilize 1-directional flow. Our designers have found that it facilitates better communication with partners and other technical disciplines when discussing hydraulic recommendations for projects. With this innovation, the hydraulic analysis is more accurate, resulting in a more cost-effective design process and ultimately, better quality design.

**Fiber Reinforced Asphalt Concrete: A More Cost-Effective Solution**

With the large network of roadways that our Partners manage under tight budgets, the need for more durable Hot Mix Asphalt (HMA) is clear. Budgets have not kept pace with construction inflation increases. Approximately 70% of project costs are typically in the HMA and aggregate base course work. As a solution, to ensure our Partners are getting the most out of their pavements, FLH proposed adding an aramid fiber combined with a polyolefin fiber to the HMA to produce a Fiber Reinforced Asphalt Concrete (FRAC). This proven, but underutilized innovation, helps to control and reduce thermal cracking, reflective cracking and rutting. FRAC provides an initial cost savings through reduced pavement layer thickness, providing the same durability as conventional mixes or a life-cycle cost reduction when placed at conventional asphalt pavement thickness, extending the pavement life. FRAC has been placed on Beach Drive from Rock Creek Parkway to the Maryland State Line within Rock Creek Park and on a project from Beaver Dam Road to MD 197 on the Baltimore-Washington Parkway. It is currently an active technology deployment under review, and funded by the Coordinated Technology Implementation Program (CTIP).

*Before/After FRAC application, closeup of aramid and polyolefin fibers used in the mix, Rock Creek Parkway, Washington, DC*
Introducing Mumble Strips

Mumble Strips, not unlike “Rumble Strips”, create an audible noise creating a warning for the motorist. Mumble Strips create less external noise that may be a nuisance to a nearby community. Both techniques are milled into the pavement, the difference is in the shape of the milling: rectangular shape for rumble strips, sinusoidal shape for the mumble strips. This technique was applied on the Baltimore-Washington Parkway in Maryland and is currently an active technology deployment under review, and funded by the Coordinated Technology Implementation Program (CTIP).

Close-up of Rumble Strips, Baltimore-Washington Parkway, Maryland

Fiber Reinforced Polymer Used In Historic Bridge Rehabilitation

The condition of the deck and piles on Fishing Bridge, a historic timber bridge in Yellowstone National Park built during the 1930s, both warranted rehabilitation. The bridge consists of 19 — 28-foot spans and is constructed of timber members (piles, log beams, deck). The bridge is 532 feet long with a driving surface of only 25 feet curb to curb.

The timber piles were constructed utilizing Port Orford Cedar, which is very decay resistant, but is susceptible to abrasion due to ice loads. The Bridge is located downstream from the outlet of the Yellowstone Lake and experiences substantial ice flows off the lake during spring breakup. To protect the piles and restore structural capacity the piles were wrapped with a Fiber Reinforced Polymer (FRP) jacket and the annular space filled with marine epoxy grout. The FRP jackets were tinted to match the existing pile color for improved aesthetics.

Views of Fishing Bridge, Yellowstone National Park, Wyoming
The existing timber deck needed major repair or replacement as it was exhibiting isolated areas of failure and loss of section. The deck had been paved over and the pavement was exhibiting isolated failures and cracking over much of the surface. Due to the limited width of the bridge and the need to replace or rehabilitate the deck with a structural solution in a two to three week closure period in late October, an innovative approach was required. FRP deck panels were selected. Advantages of the FRP Deck Panels include: the ability to manufacture prior to the construction season at an offsite plant; panels arrive at the site with the wearing surface already attached; and panels can be produced in sizes that would make installation efficient. Panel sizes of roughly 38 feet long by 12 feet wide were produced. The panels are made of lightweight fiber-reinforced polymer with a unit weight of only 15 lbs-per square foot. The panels are designed for full HL-93 truck loading and to span between the existing log stringers. The asphalt overlay was stripped off and the panels were bolted to the top of the timber deck. This solution helped preserve the look of the historic timber bridge and restore its structural capacity.

Calcium Chloride Stabilization on Defense Access Roads, Montana

The 341st Missile Wing, housed on Malmstrom Air Force Base outside Great Falls, Montana, is responsible for the operation and maintenance of over 100 Intercontinental Ballistic Missile launch facilities. FLH assists under the Defense Access Roads Program by ensuring launch facilities are fully accessible.

Defense Access Roads or missile facility access roads are unpaved roads typically located in rural areas these unpaved roads are routinely in need of maintenance, due to the extremes of Montana winters and the usage of these roads by the Air Force, local ranchers and farmers. Recent innovations in road maintenance techniques have yielded many benefits. One innovation is the way we utilize Calcium Chloride (CaCl2) stabilization. CaCl2 stabilization is an important road construction technique used on unpaved roads that enables our partners to maintain quality and reliability while also keeping maintenance costs down.

The CaCl2 stabilization allows the aggregate road base to maintain integrity longer than it would without it. It does this by trapping moisture into the aggregate layer which holds onto the finer binding aggregate material. This helps prevent dust and gravel from leaving the roadway when cars drive over it, greatly reducing the need for maintenance, and increasing the longevity of the road.
Investigating Landslides, Denali National Park, Alaska

Denali Park Road provides sole road access into Denali National Park and Preserve and to private inholdings in Kantishna, Alaska near the end of the 92-mile road. The Pretty Rocks Landslide is located near the midpoint, along the length of the road, as it twists and turns up and over the scenic Polychrome Pass. At Pretty Rocks, road deformation has progressively worsened since the 1980s, where the road crosses a 400-foot wide part of a large landslide complex. The road is typically closed through the winter from mid-October to early May. Over the last three winters, the full road width across the landslide dropped between 1.5 and 3 feet and experienced additional subsidence during spring, summer and fall. A thorough geotechnical investigation and instrumentation program was performed to better understand and characterize the landslide, allow for modeling and to help develop conceptual design alternatives for the Park’s consideration.

Geophysical surveys completed in 2016, utilizing ohm-meter and seismic refraction methods, indicated that the landslide had ice-rich soils, allowing us to strategically plan the 2018 geotechnical investigation and instrumentation monitoring plan. The geotechnical investigation installed five deep-drill holes through the landslide materials into bedrock; two from the road grade and three more below the roadway. Prior to installing instrumentation, each drill hole had optical and acoustic televiewer geophysical surveys conducted to better characterize the subsurface materials. The drill-hole instrumentation that was selected to monitor the landslide included three ShapeAccelArrays (SAAs); two slope-inclinometer casings to monitor ground movement; five vibrating wire piezometers to monitor groundwater levels; five thermistor strings to measure ground temperature; a rain gauge to collect precipitation data; and an air-temperature gauge to collect air-temperature readings.
Data from all instruments is collected twice daily using an automated, on-site data collection system. Power and phone service are not available at the site so solar panels and satellite communications are used for power and data transmission. The data is sent to a server and can be viewed by the project engineering geologists and other interested parties. The data collection and transmission system allows monitoring of the data without travel to this remote location which is costly and difficult during the winter months. This site has been monitored since August 2018 and the nearly continuous data has allowed engineering geologists to draw preliminary conclusions about the relationships between landslide movement, precipitation and groundwater recharge, and the state of the degrading permafrost.

3D Rock Face Survey, Yellowstone National Park, Wyoming

In summer of 2018, the WFL Geomatics Group surveyed the westerly face of Golden Gate Rock, a formation along Grand Loop Road in Yellowstone National Park. This detailed rock-face survey was needed to analyze the existing mitigation work previously completed on the rock face and to assess future mitigation needs. Survey crew members used the Leica MS50 scan station to scan the rock surfaces to create a 3-dimensional point cloud. There were many challenges in collecting this data. The canyon is steep with the walls rising 200 to 300 feet above the roadway, making setup and collection very difficult. The many facets of the rock faces created shadows in the data set, facilitating the need for very precise planning in the scanning process. Also, the volume of traffic on the roadway and public curiosity in the project added yet another layer of difficulty. The result was a continuous point cloud of approximately 2000 linear feet of rock face yielding a very rich data set. Detailed geotechnical analysis of the rock features in this area are currently underway, and the point cloud data is allowing much of the analysis to be performed electronically.

A New Approach to Bridge Abutments: Tom Miner Creek and Rock Creek Bridges, Montana

The Tom Miner Creek and Rock Creek bridges were replaced due to undermining and structural damage. The new bridge decks are supported directly on Geosynthetic Reinforced Soil – Integrated Bridge System (GRS-IBS) abutments. These innovative abutments are constructed using reinforced soil backfill consisting of gravel with closely spaced layers of geotextile fabric and masonry block facing. Segmental Retaining Wall Units (SRWU) were utilized instead of generic concrete masonry units (CMU) due to challenges on past projects in meeting strength and freeze-thaw durability requirements for standard concrete facing blocks. The SRWU blocks are readily available and meet the required strength and freeze-thaw requirements. This approach provided additional benefits by having the SRWU manufacturer provide their standard products and details for corners and top-of-wall coping that have historically been complex to construct for standard CMU blocks. The bridge deck was constructed of precast voided slabs and required a mechanism to connect the panels into one system. Typical practice has been to use high-strength grout with welded plates or post-tensioning rods for the joint between the precast panels. This project was the first in FLH to use a grouted key-way design with Ultra-High Performance Concrete (UHPC) for the joints. UHPC forms an extremely strong adhesive bond with a prepared concrete surface, providing an excellent opportunity to use it in joints between precast concrete panels. Typical structural concrete performs best in compression; therefore, reinforcing steel is used to provide the tensile strength in the composite system. UHPC provides excellent tensile strength and allows us to eliminate installing transverse post-tensioning rods which are traditionally used to tie voided slabs together. Transverse post-tensioning rod installation is an
intricate operation; by eliminating them from the design, both design and construction were simplified. WFL currently has another project in design that will incorporate UHPC, and will continue to look to implement it on future projects with decked bulb tees or precast concrete deck panels.

**National Road Inventory Program Adds a New Partner**

After an initial pilot data collection effort in late 2017, Road Inventory Program (RIP) kicked off Cycle 1 for the BOR in February 2018. The RIP Team will work with BOR to compile road and parking inventories and perform condition assessments on the FLTP network. Data collection for all 5 BOR regions is expected to last through FY20. In FY18, data collection was completed in the Lower Colorado Region and started in the Upper Colorado Region. BOR joins the NPS and FWS as the three core partner agencies for the FHWA National RIP.

*Rip data collection at Bureau of Reclamation Lower Colorado Dams Area Office at Hoover, Davis, and Parker Dams*

**The FLH Office of Bridges and Structures**

With inspection teams located in all three FLH Divisions, the increased efficiency of the Bridge Inspection Program (BIP) has resulted in a combined total of 860 National Bridge and National Tunnel Inventory inspections completed in 2018. In addition, the team has conducted a detailed field investigation for NPS in support of a substructure study for the nearly one-mile long John Coffey Memorial Bridge on the Natchez Trace Parkway in Alabama. An in-depth inspection and detailed report for the USFS was performed on the Wallace Bridge, a suspension trail bridge in George Washington/Jefferson National Forest in Virginia. The team continues to provide specialized assistance in various ways by: assisting the National Highway Institute (NHI) on developing a new Tunnel Inspection Refresher course; working closely with our FLMAs and Tribal Agencies to further educate them on National Bridge Inspection Standards and National Bridge Inventory data submittal requirements; providing GRS-IBS Bridge Design guidance to the Resource Center/BIA. In addition our CFL and WFL staff met with a recipient of an
American Architectural Foundation fellowship from France who is gathering information on the preservation and maintenance of historic NPS bridges.

Closeup of bridge wingwalls (left), (right) Inspections require “hands-on” field work. This BIP team member shown climbing up a wingwall, earned the nickname “Spiderman”. Cuyahoga Valley National Park, Ohio

Floodplains, Geomorphology and Roadway Design: A Multi-Disciplinary Collaborative Approach, Larimer County Road, Colorado

In September 2013, heavy rains resulted in catastrophic flooding along Colorado’s Front Range including the North Fork of The Big Thompson River, severely damaging 10 miles of Larimer County Road 43 (LC 43). The severe damage and urgent need to re-establish and protect the roadway facility warranted highly accelerated design and contractual delivery strategies. Initial project development, including design, environment, permitting, and right-of-way acquisition was completed in less than 5 months, which allowed construction operations to commence in September 2014. Through interdependent teamwork and integrated project delivery, drainage was strategically reconstructed to optimize the resiliency of the roadway and river system. The design and construction approach was founded on integrating the transportation facility with the natural stream corridor, while considering in its entirety the long-term resilience of LC 43 and the North Fork of the Big Thompson watershed. The vision and expectation to not only complete the project in an accelerated timeline, but also improve the resiliency of the canyon required the project team to streamline project development, leverage available resources, and engage the construction industry as a project partner early in the process. Total project delivery was completed in less than 28 months with total project cost of under $50M with over 89% “funds on the ground”. Initial project schedules anticipated a 5-year delivery timeline with budgets exceeding $100M.

CFL hosted a state DOT and FHWA-wide Geotechnical Workshop that included a field trip to the Larimar County Road flood repair project to explain the innovation and cross-functionality this project required. The Workshop exhibited the same coordinated team effort that made the project a success, featuring presenters from multiple disciplines (Project Management, Environment, Hydraulics and Bridge) along with Geotech.
International Visitors Hosted from Japan & South Korea

In support of the FWHA Office of International Programs (OIP) the Eastern Division hosted study teams in January and November. Teams from the Japan National Institute for Land and Infrastructure Management and Infrastructure Development Industry were interested to learn about countermeasures and strategies to enhance productivity and quality assurance in the construction industry.

In June, we hosted a group from the Korea Express Corporation and participants in the FHWA Korean Research Fellows Program who were interested in learning about the FLH Bridge Inspection and Management Programs, RIP and Pavement Management Systems.

EFL Construction Manager provided the Japanese delegation with a presentation on the FLH Construction Process with time included for Q/A and general discussion.

Thank You for Your Feedback