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FHWA Virginia
Division

Virginia
Department of
Transportation

Program Assessment



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Highway Safety Improvement Program (HSIP) Program Assessment

July 2017



FINAL REPORT



Table of Contents

Executive Summary	1
Background	3
Purpose and Objective	5
Team Members	6
Observations and Recommendations	7
Conclusion	13
Appendices	14
Appendix A: HSIP Regulations Compliance Check	15
Appendix B: HSIP Self-Assessment Workshop Summary.....	16
Appendix C: Railroad-Highway Grade Crossing Program (RHGC) Interview	27
Appendix D: Resources	34



Executive Summary

The FHWA Division Office is required to lead a Highway Safety Improvement Program (HSIP) Program Assessment at least every five years which can be tailored - a baseline assessment, a process review or even a peer review. This year we chose a baseline assessment of the HSIP program including the Rail-Highway Grade Crossing Program (RHGCP).

There are two objectives of this program assessment which are to:

- 1) determine if the Virginia HSIP meets all the requirements of the updated HSIP regulations, and
- 2) benchmark progress at the agency level for HSIP.

Through this assessment, FHWA determined that VDOT's HSIP and RHGCP meet, and in several aspects, exceed the regulatory program requirements. For HSIP, the requirement is a comprehensive data-driven Strategic Highway Safety Plan (SHSP) that identifies highway safety problems and produces a program of projects or strategies to significantly reduce serious injuries and fatalities on all public roadways. For RHGCP, the requirement is consideration of relative risk of public crossings and result in a program of projects for improvement.

It is also worth mentioning that the VDOT Safety Program is regularly sought out by others for their achievements in application of Highway Safety Manual. VDOT continually makes efforts to enhance and develop data analysis tools and other resources for VDOT Districts and localities to aid in their location identification and project development.

There are some areas for enhancement which are summarized below. VDOT has begun implementation of several of the recommendations.

Recommendations include the following for HSIP Program

- Review and update the VDOT HSIP Implementation Guidelines.
- Develop a methodology to effectively evaluate systemic safety improvements.
- Review existing practices on how all HSIP-funded projects are prioritized, including Penalty Transfer funds (commonly referred in Virginia as Open Container funds)
- Expand opportunities to evaluate the HSIP program effectiveness and to communicate the results to external and internal stakeholders
- Review and enhance RSA guidelines

Recommendations include the following for Rail-Highway Grade Crossing Program

- Review practices from other states on prioritizing rail-highway grade crossing locations.
- Review when R-HGCP projects are being reviewed at the different stages of development (proposal, project development, construction reviews) and document the procedures.



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- If RRs are requesting PE reimbursement, then set up procedures to develop RR agreements and PE authorizations so proper reimbursement can be made.
- Develop a Rail Safety Action Plan that will create the framework to meet safety goals and it will be the mechanism to implement an organizational strategy with stakeholders.

FHWA and VDOT held a Self-Assessment Workshop with VDOT, localities and other stakeholders to provide a benchmark for Leadership, Administration of the HSIP, Planning, Implementation and Evaluation on five different levels of adoption (Initiation to Integration). Overall Virginia DOT scored themselves in the Evaluation/Integration phase for most the areas and there were nine questions that were ranked as Execution or below.



Background

The overall purpose of the HSIP program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.

23 Code of Federal Regulations (CFR) §924 sets forth policy for the development and implementation of a comprehensive highway safety improvement program in each State. Each State is to develop and implement, on a continuing basis, a highway safety improvement program which has the overall objective of reducing the number and severity of accidents and decreasing the potential for accidents on all highways. 23 CFR §924 is in the rule making process.

The Virginia HSIP program receives an average annual apportionment of \$60M for HSIP and \$5M for Rail-Highway Grade Crossing Program. Since Virginia does not have in place an Open Container Law that meets the federal requirements, VDOT also receives Section 154 Funds that are split between VDOT and DMV Office of Safety for NHTSA-alcohol related activities. This annual amount can range between \$11M to \$20M depending on the split of funds.

Highway Safety Improvement Program – Program of Projects

VDOT Traffic Engineering Division- Highway Safety Programs Central Office administers the HSIP program and provides the VDOT District Offices with Targeted Safety Needs (TSN) intersections and segments based in the Highway Safety Manual Safety network screening methods. VDOT districts use this information with local knowledge to initiate further engineering studies of the locations and scope projects to be submitted in the annual HSIP call for projects.

The VDOT Districts coordinate the submittal of projects for their District, including the submission of local jurisdiction projects. Projects are submitted on Virginia's Smart Portal and the application includes the fields to calculate the benefit-cost ratio for spot and systemic improvements. There is also funding set aside for pedestrian/bicycle infrastructure improvement projects that is based on a risk-reduction method.

Depending on the scale and complexity of the project VDOT Districts conduct Road Safety Assessments. VDOT Highway Safety Programs is developing updated RSA guidelines to be released in Summer/Fall 2017).

VDOT has a six-year program of HSIP projects and during discussions with each district after project submittals they discuss the new proposals and reprioritize, if needed, the timeframe of the projects to be authorized in the current years. VDOT Highway Safety Programs provides access to the data through Tableau Crash Tool which has current crash data, traffic data, access to crash diagrams and redacted Crash Report forms (FR-300) (last two are available only within the VDOT Network).



VDOT conducts evaluation of projects completed and reports in the annual HSIP report to FHWA. VDOT is currently (Spring 2017) working on an evaluation of projects and determining Virginia-specific Crash Modification Factors (CMF). This will result in about 8-10 CMFs and they plan to provide more guidance to applicants on how to effectively use the CMF Clearinghouse to choose the most appropriate CMF for project submittals.

Rail-Highway Grade Crossing Program (Section 130)

The VDOT Highway Safety Programs administers the data collection for the FRA inventory and prioritization of the R-HGCP projects and then the projects are handed off to the VDOT Rail Program to coordinate the railroad agreements and project implementation.

VDOT HSP sends out a call for projects to the localities, VDOT districts, and railroads and they submit projects based on their local knowledge and needs. VDOT Highway Safety Programs reviews the list of projects and includes the Accident Prediction Model (APM) to prioritize needs. These locations are discussed with the railroads and together they determine the projects selected and submit those locations for VDOT Rail Program to administer project development.

VDOT Rail Program Manager coordinates the Railroad Agreement, Federal-aid Authorization and administration of the projects. The Rail Program is under new management and his team is proactively updating procedures to administer the program.

From the 2016 HSIP R-HGCP Report, there are 11 railroad companies, 2 are Class I railroads, operating on more than 3,500 miles of track in the Commonwealth. Over these track miles there are 2,977 public railway-highway crossings. 1118 of these crossings are public roadway grade separated railway-highway crossings while the remaining 1,859 are public at grade junctions. Since the inception of Section 130, VDOT has evaluated and upgraded 1513 (80%) of the crossings with active warning devices. The remaining 346 public at grade crossings (20%) remain passive.



Purpose and Objective

An HSIP Program Assessment is required at least every five years so the purpose of this assessment is to provide a baseline of all aspects of the HSIP program (Planning, Data, Implementation and Evaluation) and to verify all HSIP requirements are being met.

The Virginia Division Office had not conducted an assessment since 2010 so this will provide a baseline and, based on initial risk assessment, focus on if HSIP funds are maximizing opportunities to advance highway safety improvement projects that have the greatest potential to reduce the State's roadway fatalities and serious injuries (23 CFR 924.5)

The two objectives of this program assessment are to:

- 1) determine if the Virginia HSIP meets all the requirements of the updated HSIP regulations, and
- 2) benchmarking progress at the agency level for HSIP.

Scope and Methodology

The scope of the HSIP Program Assessment is to

- 1) do a compliance check of the VDOT HSIP program policies and guidance, including the Rail-Highway Grade Crossing Program, to the HSIP regulations and
- 2) to conduct a collaborative Self-Assessment Workshop.

The compliance check will provide assurance that VDOT is meeting or exceeding the requirements of the HSIP and the Self-Assessment will provide a benchmark of the following primary areas 1) Leadership, 2) Administration, 3) Planning, Implementation and 5) Evaluation.

The compliance check will involve a desk assessment of current VDOT policies and procedures as well as interviews of program staff. The Self-Assessment will be a one-day facilitated workshop.

The HSIP Compliance Check was completed by FHWA team members, the HSIP Railroad Grade Crossing Program Review Interviews were conducted on April 17 and the HSIP Self-Assessment was conducted on March 28.



Team Members

Karen King, FHWA Safety Engineer
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Greg Huffman, VDOT Rail Program Manager



Observations and Recommendations

Objective #1: Conduct a compliance check of VDOT's current HSIP program policies and guidance to the updated HSIP regulations (23 CFR 934)

FHWA staff reviewed current VDOT guidance and procedures as well as conducted interviews of program staff to identify best practices and any areas of concern with the HSIP program of projects and Rail-Highway Grade Crossing Program.

The compliance check report can be found in Appendix A. There are nine observations from the review and there are no major compliance issues with the regulations.

HSIP Program of Projects

Observation #1: VDOT has an HSIP Implementation Manual that primarily serves to guide stakeholders (locals, railroads, VDOT districts) on how to develop and submit to HSIP projects. It does not go in depth on how network screening, prioritization, crash analysis and overall HSIP program planning is performed. There have also been some updates and changes to the HSIP program since the manual was written.

Recommendation: Review the HSIP Implementation Manual and other HSIP guidance (e.g. crash analysis guidance, RSA guidelines, network screening methodology, program evaluation metrics). Update the Manual and decide on which other guidance to incorporate or reference in the Manual. The HSIP program manual should set the expectations and requirements for the entire HSIP program from planning, network screening, implementation to evaluation.

Compliance issue: Potentially if the good practices currently established are not carried forward if there is a change in staff or management.

Observation #2: Systemic safety projects are being implemented in several districts but it is not clear how these project improvements are tracked for evaluation purposes.

Recommendation: Develop a methodology to effectively evaluate systemic safety improvements considering time and resources to collect and maintain the data. Note- At the time of this assessment, VDOT initiated a task order to complete this recommendation.

Compliance Issue: None – Enhancement of program evaluation

Observation #3: VDOT has a sophisticated and reliable network screening process based on HSM methodology to identify potential sites to maximize the safety impact of HSIP funds. This data-driven process is used for the HSIP apportioned funds but not for additional funds such as penalty transfer funds (Section 154-Open Container). Section 154 funds follow the HSIP requirements but are required to be obligated in the same year as apportioned and the funding amount varies depending on how VDOT and DMV split the funds. Therefore, these funds are



ideal for systemic improvements that can be scalable and quick to implement and not large capital improvement projects.

Recommendation: Review existing practices on how all HSIP-funded projects are prioritized. Learn from other states that receive penalty transfer funds to see how they administer this program and address the challenges or obligating within the same year and variability of the funds.

Compliance Issue: If funds are used on projects that do not maximize safety then VDOT may not be meeting the requirement of the HSIP program focus the funds on highest safety needs.

Observation #4: Currently there is evaluation of safety at the project-level using before/after evaluation but limited evaluation and metrics of program-level HSIP effectiveness. VDOT tracks project implementation and timeliness and is in the process of developing Virginia-Specific CMFs. Within this information and the systemic evaluation of projects could all contribute to developing an overall HSIP program effectiveness. VDOT also has a communication plan in place to communicate results.

Recommendation: Continue to expand opportunities to evaluate the HSIP program effectiveness and to communicate the results to external and internal stakeholders.

Compliance Issue: None. Enhancement of evaluation program.

Observation #5: Each VDOT district has a District-Wide RSA Federal-Aid Project for scoping projects, but they are carried out in various degrees as some primarily do engineering studies and not comprehensive RSAs. VDOT is in the process of developing RSA guidelines and recently had a peer exchange with TnDOT that routinely does RSAs. VDOT is interested in creating a more robust RSA program

Recommendation: In the development of the RSA guidelines suggest incorporating pilot locations to use as case studies, incorporate training/workshops. Suggest developing an online repository where RSA photos/findings can be captured. Require Districts to document how the RSA/scoping funds are used.

Compliance Issue: None. Enhancement of evaluation program.

Rail-highway Grade Crossing Program – Inventory and Prioritization of Project

Observation #6: VDOT has a process-driven approach to identifying R-HGCP locations by sending a call for projects to railroads and local governments for suggested crossing improvements, however, the priority index is only used by VDOT after the projects are submitted. The concern of not providing the data to the stakeholders on a statewide basis is that some high-risk locations may not be identified through this process.



Recommendation: VDOT review practices from other states on prioritizing rail-highway grade crossing locations. The FHWA “Highway-Railway Grade Crossing Action Plan and Project Prioritization Noteworthy Practices” report has identified noteworthy practices which would be a good starting point. Some states prioritize high risk corridors or us a combination of process-driven and data. Update the HSIP Implementation Guideline with the desired practice.

Compliance Issue: None

Observation #7: There have been changes over the years as to when and how field reviews are conducted by HSIP staff to evaluate the crossing to confirm or adjust proposal as needed. This review considers sight distance, roadway geometry, adjacent land use.

Recommendation: Review and document when R-HGCP projects are being reviewed at the different stages of development (proposal, project development, construction reviews) and document the procedures. Document how the information gathered at the reviews is captured back into the inventory and/or project documentation.

Compliance Issue: None

Rail-highway Grade Crossing Program – RR Agreement and Project Development

Observation #8: There are no Federal-Aid Authorizations for PE work by the Rail Road but the RRs are completing PE and cost estimation to assemble the RR Agreement.

Recommendation: Review if the RR is requesting reimbursement for PE in the Construction Authorization. If this is not the case, then no additional action necessary. If RRs are requesting PE reimbursement, then set up procedures to develop RR agreements and PE authorizations so proper reimbursement can be made.

Compliance Issue: Potentially if work is being completed prior to authorization.

Observation #9: Find opportunities for additional collaboration among state partners. Currently State Corporation Commission focuses on track issues with the rail, but not RR crossings and is not involved in crossing field reviews. There is limited sharing of information on FRA inspections that may be useful in understanding issues at rail-highway crossings. The rail safety program could also benefit from increased collaboration between VDOT and DRPT.

Recommendation: Develop a Rail Safety Action Plan that will create the framework to meet safety goals and it will be the mechanism to implement an organizational strategy with stakeholders. A SAP will be required by FRA after FRA completes the rule making process so it would be beneficial for Virginia to develop a SAP.

Compliance Issue: None



Objective #2: Develop a baseline assessment of the HSIP program through a facilitated Self-Assessment Workshop

The HSIP Self-Assessment is a collaborative and facilitated group exercise and there was input from VDOT Highway Safety Program Staff, VDOT Planning, VDOT District Project Investment Managers, VDOT District Traffic Engineers, and Local Agencies. The assessment provided a benchmark for Leadership, Administration of the HSIP, Planning, Implementation and Evaluation on five different levels of adoption (Initiation to Integration).

The results of the assessment are in Appendix B and overall Virginia DOT scored themselves in the Evaluation/Integration phase for most the areas and there were nine questions that were ranked as Execution or below. These may be the areas that VDOT would like to dedicate time and resources to assess and track progress improving the effectiveness of the HSIP.

The following are the questions of the assessment that VDOT scored themselves at the Execution (7-9) or Development Level (4-6):

Leadership Question 4.1.4: Are the goals and objectives of the HSIP regularly discussed at the senior managerial level (Chief Engineer, Director, CEO, etc.) in the State transportation agency? Score: 8

Discussion: Not specific to HSIP program. Safety performance measures are discussed at the Quarterly Performance Management Meeting but this is only one metric. Need to establish higher level meetings for safety and possibly include other agencies. SHSP update has an Executive Committee established which is a starting point and could trickle down into senior-level management discussions as well.

Planning Question 4.3.2: Are crash, roadway and traffic data used in the screening process to identify potential HSIP project locations on the non-state roadway systems? Score: 8

Discussion: Locals use the raw data – export from Tableau. They also use citizen input and RSAs as a surrogate for data analysis. Local agencies do not have sophisticated network screening tools. Roanoke is using software and in process of upgrading software. Richmond focusing on systemic approach. Locals stated there is a need for State to understand data at local level to make “statewide” decisions for HSIP.

Planning Question 4.3.5: Does the HSIP consider a balance of spot location and systemic safety improvement projects in your state? Score: 8

Discussion: Last round of HSIP project applications there was about 20-30% systemic. Districts are not required. Culpeper and HR still submit most spot improvements.

Planning Question 4.3.8: Does the State highway agency consider all contributing factors (driver, vehicle, roadway, environment) when identifying appropriate countermeasures? Score 8



Discussion: Currently not much coordination between engineering and behavioral countermeasures. Some Regions have Safety Board.

Planning Question 4.3.9: Are RSAs used to support the HSIP engineering study and countermeasure identification process? Score: 6

Discussion: Some Districts don't use RSAs at all and some do RSA-lite. This may not be multi-disciplinary but it is a safety study. VDOT CO developing RSA guidelines to formalize the process and choose the right level of safety study for the type of project. Districts interested in RSA but lack the resources. Richmond conducts 10-12/year. VA LTAP developing a safety circuit rider which would conduct RSAs for locals.

Planning Question 4.3.12: Are planning partners outside the State highway agency involved in the HSIP planning process? Score: 5

Discussion: MPOs are invited but not involved in the reviewing of projects. Some Resident Administrators are doing this at board meetings but not at MPOs. Need to get key players together at least once a year to review District HSIP applications to weigh-in an get support. This is happening with Smart Scale. Richmond presents to the Richmond Safety Commission and gets them to pass a resolution on the projects.

Implementation Question 4.4.2: Are other funding sources leveraged to support the use of HSIP funds on safety projects in your state? Score: 9

Discussion: Leveraging funds occurs but not consistently statewide. Some districts use state maintenance funds to trench widen roads, City of Richmond leveraged private funds for a traffic signal at a private school. The safety category for Smart Scale has opened doors for Districts to use that funding stream for larger safety projects (e.g. roundabouts). Opportunity to adding a safety factor/component to CMAQ or Revenue Sharing projects to leverage funds without using the HSIP funds.

Evaluation Question 4.5.3: Does your agency's evaluation of safety projects and programs incorporate advanced statistical methodologies? Score: 8

Discussion: Research Council completed a few projects but in early stages of this research.

Evaluation Question 4.5.5: Does your agency develop its own crash modification factors (CMFs) based on completed HSIP projects?

Discussion: Currently in development through the Research Council.



Successful Practices

Virginia DOT Safety Program is continually making efforts to ensure the application of safety analysis knowledge and methodologies are used to maximize the effectiveness of safety funds. Below are a couple of the examples of noteworthy practices, although there are many other examples.

- VDOT network screening process using State-Specific Safety Performance Functions (SPF) Measures based on HSM methodology. VDOT has five years of SPFs and they use this information to identify potential safety improvement sites. Link to FHWA Case Study [here](#)
- Development of Safety Project Tracking Tool. Allows status tracking of projects and with proactive project monitoring, VDOT Safety Programs has helped increase delivery from 70% to 95% on time delivery. Link to VDOT presentation [here](#)
- Development of Crash Data Tool (Tableau). Allows access to safety partners (traffic engineers, enforcement, localities) to crash data linked to the roadway network (RNS). Crash Diagrams are available for VDOT employees and others with VDOT Network Access. Public access to the tool is [here](#).
- Virginia has a strong track record of consistently improvements at railroad-grade crossings. Virginia has evaluated and upgraded more than 80% of the public crossings with active warning devices.



Conclusion

Overall, the Virginia Highway Safety Improvement Program, including the Highway Rail Grade Crossing Program, meets the HSIP requirements and the VDOT Safety Programs Team is actively working to improve the program.

This Program Assessment identified recommendations for both the HSIP program of projects and Rail-Highway Grade Crossing Program which are listed below. Both programs will also require continued diligence and stewardship of the program funds to ensure the funding continues to be applied to projects to achieve a significant reduction in traffic fatalities and serious injuries.

Recommendations include the following for HSIP Program

- Review and update the VDOT HSIP Implementation Guidelines.
- Develop a methodology to effectively evaluate systemic safety improvements.
- Review existing practices on how all HSIP-funded projects are prioritized.
- Expand opportunities to evaluate the HSIP program effectiveness and to communicate the results to external and internal stakeholders
- Review and enhance RSA guidelines

Recommendations include the following for Rail-Highway Grade Crossing Program

- Review practices from other states on prioritizing rail-highway grade crossing locations.
- Review when R-HGCP projects are being reviewed at the different stages of development (proposal, project development, construction reviews) and document the procedures.
- If RRs are requesting PE reimbursement, then set up procedures to develop RR agreements and PE authorizations so proper reimbursement can be made.
- Develop a Rail Safety Action Plan that will create the framework to meet safety goals and it will be the mechanism to implement an organizational strategy with stakeholders.

FHWA Division office safety engineer will meet with VDOT Safety Programs regularly, at least quarterly, on the implementation of these recommendations and provide management updates until all the recommendations are followed through to completion or provide alternative actions.



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Appendices



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Appendix A: HSIP Regulations Compliance Check

Virginia Highway Safety Improvement Program (HSIP)

based on 23 CFR Part 924 Implementation Guidance

HSIP Section – 924.5 Policy	Current Practice	Gaps Identified	Additional Questions
23 CFR 924.5 - Each State shall develop, implement, and evaluate on an annual basis an HSIP that has the objective to significantly reduce fatalities and serious injuries resulting from crashes on all public roads			
To be eligible for HSIP funds, all highway safety improvement projects must: Address a SHSP priority, be identified through a data driven process, contribute to a reduction in fatalities and serious injuries	<ul style="list-style-type: none"> - HSIP projects prioritized through the HSIP program are evaluated by HSIP program team and evaluation criteria requires projects to address SHSP priority, be data driven and contribute to reducing fatalities and serious injuries - Evaluation criteria - Spot Improvements - B/C >1, high number of targeted crashes, PSI >1 and/or crash rate higher than ave-Systemic safety criteria – High targeted crashes, low-cost countermeasure, district plan for deployment and locations identified 	<ul style="list-style-type: none"> - Open Container Funded projects follow a separate process and are driven by agency priorities (e.g. Safety/Operations I-95 improvements). Projects are required to have a B/C ratio but typically do not result in a high B/C ratio or would be competitive with HSIP prioritization process. 	-
Safety improvements that are provided as part of a broader Federal-aid project should be funded from the same source as the broader project	<ul style="list-style-type: none"> - VDOT does fund safety improvements as part of a broader project but is starting to implement systemic improvements in conjunction with the paving program. 		
HSIP Section – 924.7 Program Structure	Current Practice	Gaps Identified	
The HSIP shall address all public roads in the State and include <u>separate processes</u> for the planning, implementation, and evaluation of the HSIP components described in section 924.7(a). These processes shall be developed by the States in cooperation with the FHWA Division administrator in accordance with this section and the requirements of 23 USC 148. Where appropriate, the processes shall be developed in consultation with other safety stakeholders and officials of the various units of local and Tribal governments	<ul style="list-style-type: none"> - <u>All public roads</u>- VDOT owns and operates 85% of the roadways and the network screening captures these roads. - <u>Planning</u> – HSM Network Screening using SPF and developing PSI locations/segments - <u>Implementation</u> – VDOT has an HSIP Implementation Manual for the Districts and Locals to follow - <u>Evaluation</u> – Done on an annual basis through the HSIP Annual Report 	<ul style="list-style-type: none"> - Were the HSIP implementation guidelines developed in consultation with stakeholders? - VDOT has an HSIP Implementation Manual but not an HSIP Program Manual describing the separate processes. 	What other evaluation is completed by VDOT in addition to the Annual Report?
HSIP Section – 924.9 Planning - Data	Current Practice	Gaps Identified	
Each State's HSIP planning process shall incorporate a process for collecting and maintaining safety data on all public roads	<ul style="list-style-type: none"> - VDOT receives all crash reports on public roads and performs quality assurance checks before distributing to stakeholders via Tableau Tool. 	<ul style="list-style-type: none"> - There is not a consistent process to receive crash reports on other public roads (e.g. federal lands) 	-
MIRE FDE: Roadway data shall include, at a minimum, the MIRE fundamental data elements as established in 23 CFR 924.17	<ul style="list-style-type: none"> - VDOT developing an implementation plan to include, at a minimum, the required MIRE FDEs. 		
Railway-highway Crossing: Data shall include all fields from the USDOT National Highway- Rail Crossing Inventory	<ul style="list-style-type: none"> - VDOT has a data collection program in place to collect all the fields required and submit to the USDOT Inventory. VDOT uses a combination of in-house staff and consultant (for SW region of state). 		



<p>A process shall incorporate a process for advancing the State's capabilities for safety data collection and analysis by improving the <u>timeliness</u> and <u>accuracy</u>, <u>completeness</u>, <u>uniformity</u>, <u>integration</u>, and <u>accessibility</u> of its safety data on all public roads</p>	<ul style="list-style-type: none"> - The Virginia DMV Highway Safety Office chairs the TRCC. The TRCC is responsible for coordinating projects to advance state capabilities for data collection and analysis. 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> - Do all TRCC members have an opportunity to review the annual TRCC Strategic Plan? How does the TRCC prioritize projects from the multi-agency committee?
<p>HSIP Section 924.9 Planning - SHSP</p>	<p>Current Practice</p>	<p>Gaps Identified</p>	
<p>The HSIP planning process shall incorporate a process for updating the SHSP that identifies and analyzes highway safety problems and opportunities.</p> <ul style="list-style-type: none"> - No later than 5 years from date of previous approved version - Developed by State DOT in consultation with safety stakeholders - Provide a detailed description of update process – approved by DA - Approved by Governor of the State or responsible State agency official that is delegated by Governor - Adopt performance-based goals – consistent with safety performance measures established in accordance with 23 USC 150, coordinated with other State highway safety programs - Analyze and make effective use of safety data to address safety problems and opportunities on all public roads - Identify key emphasis areas with greatest potential to reduce fatalities and serious injuries - Address engineering, management, operations, education, enforcement, emergency services elements of highway safety - Consider results of State, regional, local and tribal transportation and highway safety planning processes and demonstrate mutual consultation among partners in development of transportation safety plans - Provide strategic direction for other State and local/tribal transportation plans such as HSIP, HSP, CVSP - Describe the process and potential resources for implementing strategies 	<ul style="list-style-type: none"> - Virginia updated the SHSP from October 2016 to March 2017 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> - How does the SHSP consider results of State, regional, local and tribal transportation and highway safety planning processes and demonstrate mutual consultation among partners in development of transportation safety plans? -
<p>HSIP Section 924.9 Planning – Data Analysis</p>	<p>Current Practice</p>	<p>Gaps Identified</p>	
<p>A process to analyze safety data to develop a program of highway safety improvement projects to reduce fatalities and serious injuries on all public roads – comprehensive program of systemic and spot safety improvements</p>	<ul style="list-style-type: none"> - From VDOT Business Plan Item – Low-Cost/High Benefit investment. VDOT will track annually the number/level of funding for these projects to encourage greater use 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> - How does VDOT decide the % of spot improvements vs systemic? - How and where is the



	<ul style="list-style-type: none"> - statewide. 		<ul style="list-style-type: none"> - report being published? - How will b/a results be captured? - How does VDOT track the systemic improvement locations for evaluation?
<p>Develop a Railway-Highway Crossing program that</p> <ul style="list-style-type: none"> A) considers the relative risk of public railway-highway crossings based on a hazard index formula, B) includes onsite inspection of public railway-highway crossings, C) results in a program of projects with special emphasis on <u>statutory requirement that all public crossings be provided with standard signing and marking.</u> 	<ul style="list-style-type: none"> - VDOT RHGCP sends out an annual call for projects to locals, railroads, VDOT districts which are evaluated using the hazard index formula - All public crossings have standard signing and marking. VDOT completed systemic projects through the R-HGCP 	<ul style="list-style-type: none"> - VDOT does not use the relative risk data to inform location network screening. This data is used after proposals are submitted 	
HSIP Section 924.9 Planning – Engineering Studies	Current Practice	Gaps Identified	
<p>A process to conduct engineering studies (RSA, other safety assessments/reviews) to develop HSIP projects. Studies are designed to accomplish 1) examine crash data to develop in-depth analysis to contributing crash factors 2) conduct a field review, 3) identify alternative solutions/countermeasures 4) assess effectiveness of individual/group of countermeasures</p>	<ul style="list-style-type: none"> - Each district has a Federal-aid Districtwide RSA project - STARS program evaluates locations using RSA process 	<ul style="list-style-type: none"> - Are the RSAs interdisciplinary? - How much field investigation is performed during RSAs? 	
HSIP Section 924.9 Planning – Prioritization	Current Practice	Gaps Identified	
<p>A process to establish priorities for projects that consider 1) Potential reduction in fatalities and serious injuries 2) Cost effectiveness of project and resources available 3) Priorities of SHSP</p>	<ul style="list-style-type: none"> - Virginia-Specific SPF - Top 100 intersections and segments provided to Districts 		<ul style="list-style-type: none"> - How could PSI information be used to inform other project development processes
<ul style="list-style-type: none"> - Quantitative methods for a single site, across multiple sites or for an entire network include based on benefit/cost ratio, on specific factors or using an optimization process (maximize safety based on budget and other constraints) 	<ul style="list-style-type: none"> - Worksheets developed for Spot Specific Benefit-Cost and systemic Benefit-Cost incorporated into application process 		
Describe the process in the HSIP manual			
HSIP Section 924.11 Implementation	Current Practice	Gaps Identified	
<p>MIRE FDE: Specific quantifiable and measurable anticipated improvements for the collection of MIRE fundamental data elements into their Traffic Records Strategic Plan by July 1, 2017. States shall have access to a complete collection of the MIRE fundamental data elements on all public roads by September 30, 2026</p>	<ul style="list-style-type: none"> - VDOT has the MIRE FDE on VDOT system except for Interchange and 		Note - Gaps will be identified in the MIRE Implementation Plan
<p>SHSP: The SHSP shall include, or be accompanied by, actions that address how the SHSP emphasis area strategies will be implemented</p>	<ul style="list-style-type: none"> - SHSP includes high-level action items. - As part of the updated SHSP, they are developing a means to track specific action items (TBD) 		
<p>RHCP: Funds set aside for the RHCP shall be used to implement railway-highway crossing safety projects on any public road. If a State demonstrates that it has met its needs for the installation of railway-highway crossing protective devices to the satisfaction of the FHWA Division</p>	<ul style="list-style-type: none"> - N/A 	<ul style="list-style-type: none"> - VDOT has not sent a letter demonstrating that it has met its needs for highway-grade crossing improvements, 	

<p>Administrator, the State may use funds made available under 23 USC 130 for other types of highway safety improvement projects</p>		<p>however, in latest six-year program VDOT chose not to program funds in the RHGCP and use that obligational authority on other programs. Approximately \$25M of RHGCP funds were also identified in a FAST LANE project but later determined that there were no grade crossings in that project to use the funds.</p> <ul style="list-style-type: none"> - The uncertainty of the RHGCP funding levels makes it difficult for the program to effectively program projects where the safety needs are. 	
<p>Federal Share: Except as provided in 23 USC 120 and 130, the Federal share of the cost of a highway safety improvement project carried out with funds apportioned to a State under 23 USC 104(b)(3) shall be 90 percent</p>			
<p>HSIP Section 924.13 Evaluation</p>	<p>Current Practice</p>	<p>Gaps Identified</p>	
<p>An evaluation process shall include a process to analyze and assess the results achieved by highway safety improvement projects – in terms of improved safety and attainment of safety performance targets.</p>	<ul style="list-style-type: none"> - Project-level evaluation included in the HSIP Annual Report - VDOT developed a communication plan to disseminate the results. Where is this information available? IS it available to outside stakeholders? 		
<p>Results from HSIP project evaluation shall be used to 1) update safety data used in the planning process, 2) for setting priorities for HSIP projects, 3) for accessing overall effectiveness of the HSIP and 4) for reporting required.</p>			
<p>SHSP: Evaluation of SHSP as part of the regularly recurring update process to confirm validity of emphasis areas and strategies based on current data, identify issues related to the SHSP process, implementation, progress to be considered for each subsequent update</p>	<ul style="list-style-type: none"> - Evaluate during the update process. - Plan to incorporate an evaluation component during the implementation of the SHSP 		
<p>HSIP Section 924.15 Reporting</p>	<p>Current Practice</p>	<p>Gaps Identified</p>	
<p>For the period of the previous reporting year, each State shall submit, via FHWA's HSIP online reporting tool, to the FHWA Division Administrator no later than August 31 of each year, a report describing the progress being made to implement the HSIP and a report describing progress being made to implement railway-highway crossing improvements in accordance with 23 USC 130(g) and the effectiveness of these improvements.</p>	<ul style="list-style-type: none"> - VDOT submits their HSIP Annual Report within the required timeframe - VDOT has improved it's project tracking and evaluation procedures to streamline the required reporting requirements. - VDOT will be providing performance targets for the first time this year. 		



<p>Reporting on achieving safety outcomes and performance targets</p> <ul style="list-style-type: none">- Provide an overview of general highway safety trends. Fatalities and serious injuries (numbers and rates) on all public roads and to maximum extent practicable – by functional classification and roadway ownership.- Document the safety performance targets for the following calendar year. Include a discussion of the basis for each established target, how the established target supports SHSP goals.- In future years, documentation shall also include a discussion of any reasons for differences in actual outcomes and targets.- Present information related to the applicability of special rules			
HSIP Section 924.17 MIRE FDE	Current Practice	Gaps Identified	
<p>The MIRE fundamental data elements shall be collected on all public roads, as listed in Tables 1, 2, and 3 of this section. For the purpose of MIRE fundamental data elements applicability, the term open to public travel is consistent with 23 CFR 460.2(c).</p>	<ul style="list-style-type: none">- Will be documented in the MIRE FDE Implementation Plan		



Appendix B: HSIP Self-Assessment Workshop Summary

Workshop Date: March 28, 2017

Workshop Location:

Virginia Department of Transportation
Patrick Henry Building, East Conference Room

I. INTRODUCTION

The Highway Safety Improvement Program (HSIP) Self-Assessment Tool provides a mechanism for agencies to evaluate HSIP implementation efforts and consists of a number of questions designed to provide those with HSIP management responsibilities information to assess their programs, policies, and procedures against many of the recommended HSIP practices in use today.

The HSIP Self-Assessment Tool is intended to be a group exercise and, as such, invitations were extended to VDOT Highway Safety Program Staff, VDOT Planning, VDOT District Project Investment Managers, VDOT District Traffic Engineers, and Local Agencies as the assessment should be conducted with as many transportation safety stakeholder representatives as possible.

Among other things, the Self-Assessment Tool can be used to:

- Benchmark and track progress towards improving the effectiveness of the HSIP over the long term;
- Raise the level of awareness of HSIP-related practices and strategies;
- Identify gaps in existing HSIP efforts; and
- Generate strategies to improve HSIP-related practices.

The HSIP Self-Assessment Tool consists of a number of questions designed to provide those with HSIP management responsibilities information to assess their programs, policies, and procedures against many of the recommended HSIP practices in use today.

II. WORKSHOP PARTICIPANT LIST

Name	Position	<u>E-mail Address</u>
Tracy Turpin	HSIP Program Delivery Manager	tracy.turpin@vdot.virginia.gov
Deepak Koirala	Senior Traffic Engineer	deepak.koirala@vdot.virginia.gov
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Michael Wray	Rail Program Manager	michael.wray@vdot.virginia.gov
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Anne Booker	Salem District Traffic Engineer	Anne.Booker@VDOT.Virginia.gov
Robert Vilak	Richmond District Traffic Engineer	Robert.Vilak@vdot.virginia.gov
Michael Sawyer	Richmond City Engineer	Michael.Sawyer@richmondgov.com



Daniel Jean	Roanoke City Engineer	Daniel.Jean@roanokeva.gov
Ben Mannell	VDOT ADA - Transportation Planning	Ben.Mannell@VDOT.Virginia.gov
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In-Kyu Lim	Safety Data Manager	in-kyu.lim@vdot.virginia.gov
Sharad Uprety	Richmond District Traffic Engineer	sharad.uprety@vdot.virginia.gov
Elliott Moore	FHWA Area Engineer - NoVA/Fred	elliott.moore@dot.gov
Jose Granada	FHWA Area Engineer - HR/Richmond	jose.granada@dot.gov

Workshop invitations were also sent to the following personnel (unable to attend):

Greg Huffman	Rail and Utilities	gregory.huffman@vdot.virginia.gov
Ray Khoury	State Traffic Engineer	Raymond.Khoury@VDOT.Virginia.gov
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Kim Pryor	Infrastructure Investment - Director	Kimberly.Pryor@vdot.virginia.gov



III. FWHA'S HSIP ASSESSMENT SCORING GUIDELINES

Adoption Phase	Scoring Range	Description
Initiation	(0-3)	Agency has started to address the requirement described in the question. (Requirements include characteristics, feature, capability, element, policy, etc.) If the agency has not initiated any activities to address the requirement, record a response of "0."
Development	(4-6)	Agency has developed a plan or approach to address requirement described in the question.
Execution	(7-9)	Agency has executed an approach to meet the requirement described in the question.
Evaluation	(10-12)	Agency has assessed the performance of the requirement described in the question after it has been executed for a period of time.
Integration	(13-15)	Agency has integrated the requirement described in the question into agency culture.

VIRGINIA'S HSIP SELF-ASSESSMENT RESULTS

LEADERSHIP

The success of any program begins with leadership. It is important that the HSIP is led effectively, and that the program's goals and objectives are promoted by the agency's top management to ensure the program is given priority, resources, and consideration for the purpose of improving traffic safety. Leadership also is advanced by champions who regularly promote the goals of the program as well as other safety leaders who are authorized to make decisions regarding program implementation.

This section acknowledges the relationship between support from the highest levels of agency management and the effectiveness of the HSIP. Agency management support as well as consistent safety goal setting and the presence of safety champions combines to raise the visibility and importance of the HSIP. This helps to create an agency culture supportive of HSIP goals.



Table 1. Leadership

Question	Score	Comments
4.1.1: Is the Highway Safety Improvement Program (HSIP) connected to the Strategic Highway Safety Plan (SHSP) safety goals and objectives?	13	HSIP projects are required to be related to one of the SHSP emphasis areas (2012-2016 SHSP Roadway Departure/Intersection). Central Office needs to routinely educate Districts on how the SHSP and HSIP are tied together.
4.1.2: Does the State have a person responsible for leadership and oversight of the HSIP who is authorized to make decisions regarding program implementation?	14	HSIP Program Delivery Manager is Tracy Turpin. What does it mean to be authorized to make decisions? Are the districts aware of who has authority for decision-making?
4.1.3: Does the State highway agency have a champion (or champions) for highway safety who regularly promotes and advances HSIP goals and objectives with senior leadership (e.g., Chief Engineer, CEO, etc...)	12	Safety Engineer is Mark Cole and is the champion for safety. He meets routinely/ad hoc with Chief Engineer. Working to get more support from Chief Engineer – promote and advance HSIP
4.1.4: Are the goals and objectives of the HSIP regularly discussed at the senior managerial level (Chief Engineer, Director, CEO, etc.) in the State transportation agency?	8	<p>Not specific to HSIP program. Safety performance measures are discussed at the Quarterly Performance Management Meeting but this is only one metric.</p> <p>Need to establish higher level meetings for safety and possibly include other agencies.</p> <p>SHSP update has an Executive Committee established which is a starting point and could trickle down into senior-level management discussions as well.</p>
SECTION 1 TOTAL:	47	
SECTION 1 TOTAL POSSIBLE SCORE:	60	

Administration

A comprehensive set of administration elements are key to HSIP effectiveness. These elements include adequate staffing, established procedures, and clear guidance that define safety funding and eligibility features to maximize the effectiveness of the HSIP.



Effective administration of the HSIP is vital for program success. For example, documenting procedures ensures program continuity and consistency and reduces the impacts of staff turnover or leadership changes. Providing adequate staff, as well as clear eligibility policies and guidance, results in timely and consistent program administration.

Table 2. Administration

Question	Score	Comments
4.2.1: Does your State highway agency have a staff member who devotes his/her time to management of the Highway Safety Improvement Program (HSIP)?	14	Central Office - Tracy is devoted to managing HSIP and has staff support. District Office – HSIP project development is a collateral duty. Rely on CO to provide data and prioritized lists and emphasis areas. Staunton and Culpeper have traffic engineer dedicated to safety. Local – Use data VDOT supplies and also take into account citizen complaints. Richmond does RSAs and utilizes Tableau Tool to find potential locations. Richmond has a Vision Zero pledge.
4.2.2: Does your agency have established and documented procedures for administering the HSIP?	11	HSIP Implementation Guidelines – Project development/eligibility, funding requirements. Updated/added Chapter 6 for Local Agency Safety in 2015. CO working on RSA guidance and “prompt list” for conducting RSAs. Opportunity for CO to provide consistency and outreach on what tools are available - Tableau, Potential for Safety Improvement (PSI) lists, understanding of HSM, systemic safety
4.2.3: Do HSIP eligibility policies focus on addressing the greatest safety needs, regardless of jurisdiction (i.e., State roads, locally-owned roads)?	14	Result of VDOT 2016 Business Plan Item – reassessed safety fund target distribution for VDOT roads. Formula based on Equivalent PDO crashes and rates. Local project target is 20% of total funds. Local project selection is prioritized within each jurisdiction, not statewide. Once the LRS includes local roadways there may be an opportunity to create a formula to



		align spending targets with severity of crashes.
4.2.4: Does your State have established criteria for HSIP eligibility (e.g., project size, specified countermeasures) in your State?	13	CO reviews all project submittals and assigns each project as green, yellow or red. Criteria based on benefit/cost ratio, systemic or hot spot, ROW impacts. For local projects, there is local agency specific criteria to mitigate potential issue of locality having more active projects than they can manage. CO encouraging more systemic projects and starting to see more of these proposed from the districts and localities.
SECTION 2 TOTAL	52	
SECTION 1 TOTAL POSSIBLE SCORE:	60	

Planning

The Planning area consists of features that assist in the identification of safety problems, the development of improvement strategies and countermeasures, and the programming of projects. The HSIP should be a data-driven process that considers a range of problems and solutions to maximize the return on scarce safety resources.

HSIP project planning consists of three primary areas: problem identification, countermeasure selection, and project prioritization. Since the HSIP is a data-driven program, quality data and data collection processes are important to the network screening process that identifies safety issues on the network. Once the high-risk locations are identified, it is important to identify contributing crash factors and select and prioritize effective crash countermeasures. The project prioritization process ends the planning process as HSIP projects are prioritized for implementation through a number of ranking and optimization approaches.

Table 3. Planning

Question	Score	Comments
4.3.1: Are crash, roadway and traffic data used in the screening process to identify potential HSIP project locations on the State-owned roadway system?	15	CO performs network screening on state-owned roads and provides locations to Districts.
4.3.2: Are crash, roadway and traffic data used in the screening process to identify potential HSIP project locations on the non-state roadway systems?	8	Locals use the raw data – export from Tableau. They also use citizen input and RSAs as a surrogate for data analysis.



		<p>Local agencies do not have sophisticated network screening tools. Roanoke is using software and in process of upgrading software. Richmond focusing on systemic approach.</p> <p>Locals stated there is a need for State to understand data at local level in order to make "statewide" decisions for HSIP.</p>
4.3.3: Does the HSIP network screening process in your State incorporate advanced statistical methodologies for determining locations of need?	11	Completed by CO for state-owned roads but not local roads.
4.3.4: Does your State highway agency evaluate and apply safety countermeasures not only at high-crash locations, but also at high-risk locations?	11	Chief Engineer attention is on targeted roadways. Currently only implementing on roadways where there is a crash history but ped/bike applications are risk-based. There is still a large need to do safety projects on high-crash locations and funding does not stretch far enough for high-risk locations.
4.3.5: Does the HSIP consider a balance of spot location and systemic safety improvement projects in your state?	8	Last round of HSIP project applications there was about 20-30% systemic. Districts are not required. Culpeper and HR still submit a majority of spot improvements.
4.3.6: Does your State highway agency adequately address rural road safety needs at a level consistent with their safety needs?	10	There is an approach but there is not enough funds to address all the issues. Many roads without adequate shoulder and at \$400k/mile funds do not cover many miles.
4.3.7: Does your State highway agency analyze location-specific safety-related information to determine the specific safety concerns at potential HSIP project locations?	13	CO gives Districts the top 100 segments and intersections based on PSI. From there the Districts perform location-specific assessments to determine highest need.
4.3.8: Does the State highway agency consider all contributing factors (driver, vehicle, roadway, environment) when identifying appropriate countermeasures?	8	Currently not much coordination between engineering and behavioral countermeasures. Some Regions have Safety Board
4.3.9: Are RSAs used to support the HSIP engineering study and countermeasure identification process?	6	Some Districts don't use RSAs at all and some do RSA-lite. This may not be multi-disciplinary but it is a safety study. VDOT CO developing RSA guidelines to formalize the process and choose the right level of safety study for the type of project.



		Districts interested in RSA but lack the resources. Richmond conducts 10-12/year. VA LTAP developing a safety circuit rider which would conduct RSAs for locals.
4.3.10: Does your State highway agency choose safety countermeasures supported by quantifiable safety benefits (i.e., crash modification factors)?	14	This is required in HSIP applications. VDOT CO and Research are working on a project to develop state-specific CMF.
4.3.11: Does your State highway agency use objective criteria to prioritize safety projects for programming?	15	This is incorporated in the CO review process of HSIP applications when the CO sets up calls with each district to discuss project programming.
4.3.12: Are planning partners outside the State highway agency involved in the HSIP planning process?	5	MPOs are invited but not involved in the reviewing of projects. Some Resident Administrators are doing this at board meetings but not at MPOs. Need to get key players together at least once a year to review District HSIP applications to weigh-in and get support. This is happening with Smart Scale. Richmond presents to the Richmond Safety Commission and gets them to pass a resolution on the projects.
4.3.13: Does your State highway agency consider SHSP priorities during project identification and prioritization?	14	This is a requirement for HSIP project applications.
SECTION 3 TOTAL	138	
SECTION 1 TOTAL POSSIBLE SCORE:	195	

Implementation

This section is designed to evaluate the extent to which safety funds are allocated and safety projects are managed to assure fulfillment of safety goals. Once a program of projects is developed, it is important to monitor implementation to ensure successful completion.

The implementation phase of the HSIP occurs after needs have been identified and countermeasures have been selected, as projects are prioritized for programming. Implementation, as described here, addresses funding sources, funding allocation issues, and project management during construction.



Table 4. Implementation

Question	Score	Comments
4.4.1: Is HSIP funding distributed to non-State roadway safety projects in your state proportionate to safety needs?	10	Funds are divided 80% State and 20% locality maintained. There are not enough localities that are advocating or applying for the funds available to them. Opportunity for VDOT do conduct outreach to localities – within the year LTAP will have a full-time Safety Circuit Rider to assist with this outreach.
4.4.2: Are other funding sources leveraged to support the use of HSIP funds on safety projects in your state?	9	Leveraging funds occurs but not consistently statewide. Some districts use state maintenance funds to trench widen roads, City of Richmond leveraged private funds for a traffic signal at a private school. The safety category for Smart Scale has opened doors for Districts to use that funding stream for larger safety projects (e.g. roundabouts). Opportunity to adding a safety factor/component to CMAQ or Revenue Sharing projects as a way to leverage funds without using the HSIP funds.
4.4.3: Does your State highway agency limit the use of HSIP funding to stand-alone safety projects only?	13	VDOT Safety Program does not allow comingling of safety funds with other projects although the requests occur regularly.
4.4.4: Has your State highway agency considered and implemented innovative programming practices to provide time and cost savings to HSIP-funded projects?	15	VDOT uses “groupings” in the STIP which allows projects within that group to move around. Localities have an additional administrative burden as the state law requires budgets to be approved by May 15 th and SYIP is approved in June. This requires localities to adjust budgets after SYIP approval.
4.4.5: Has your State highway agency considered and implemented innovative contracting practices to provide time and cost savings to HSIP-funded projects?	14	VDOT utilizes “on call”/IDIQ contracting methods. City of Richmond is looking into combining multiple scopes with different contractors into one project.



4.4.6: Does your State highway agency have an established procedure to minimize the impact of project scope increases (i.e., scope creep) on HSIP projects?	13	Some districts monitor and is cognoscente of scope increases. If significant increase they do reevaluate benefit/cost ratio.
4.4.7: Does your agency use a tracking system to monitor project implementation?	15	Uses Tableau Project Tracker to monitor project implementation and easier to follow up on projects that may need additional assistance.
SECTION 4 TOTAL:	89	
SECTION 4 TOTAL POSSIBLE SCORE:	105	

Evaluation

Evaluation provides feedback to policymakers and program managers regarding the effectiveness of the HSIP. Feedback provides a basis to continuously improve the program.

Once HSIP projects have been selected, constructed, and are in operation, it is important to evaluate their effectiveness. Depending on the benefits of each type of project, that same type of project can be expanded or eliminated from future programming to improving the cost-effective reductions of fatalities and serious injuries.

Table 5. Evaluation

4.5.1: Does your agency collect and analyze data to assess the benefits of HSIP-funded safety projects?	13	Project-level benefit analysis done projects and this is done through Tableau. How are safety benefits captured for local projects? Does VDOT conduct this analysis? What about systemic projects?
4.5.2: Does your agency collect and analyze data to assess overall program-level benefits of the HSIP?	13	Because of VDOT 2016 Business Plan VDOT created communications plans to highlight and communicate results of HSIP.
4.5.3: Does your agency's evaluation of safety projects and programs incorporate advanced statistical methodologies?	8	Research Council completed a few projects but in early stages of this research.
4.5.4: Does your agency modify policies, procedures, and countermeasures based on historical performance of HSIP-funded safety projects?	14	HSIP has served as an avenue to modify policies – High Friction Surface Treatment, bike-ped treatments and crossing guidance, 6" pavement markings. Also utilize what other states are doing well.
4.5.5: Does your agency develop its own crash modification factors (CMFs) based on completed HSIP projects?	8	Currently in development through the Research Council.



SECTION 5 TOTAL:	56	
SECTION 5 TOTAL POSSIBLE SCORE:	75	

IDEAS CAPTURED AT THE WORKSHOP

- Vision Zero Pledge –All employees sign a pledge.
- Conduct senior leadership meetings where the focus is on safety discussion or safety is a routine discussion item
- Share local and district best practices (RSAs)
- Addressing high risk location such as bike/ped. – VDOT developing a Pedestrian Infrastructure Plan
- Implementing Rumble Strip Guidelines for narrow shoulders
- Conduct District Roadshows – focus on sharing tools and exchanging information
- Increase 4E collaboration at the regional/local level as well as the state level
- Implementing Safety Circuit Rider through VA LTAP



Appendix C: Railroad-Highway Grade Crossing Program (RHGC) Interview

RHGC Program Interview Summary

Meeting date: April 17, 2017

Attendees:

Mike Wray – VDOT Highway Safety Programs, Rail-Highway Grade Crossing Program Manager

Tracey Turpin – VDOT Highway Safety Programs, HSIP Team Leader

Greg Huffman – Rail Project Management Section (RPMS), Rail Projects Program Manager

RPMS Staff - Debbie Haislip, Jamie Surface, Bonnie Gowans

FHWA - Karen King, Jose Granado, Elliott Moore

Purpose:

There are two objectives for this aspect of the HSIP Program Assessment concerning the RHGC Program. The first objective is for FHWA to better understand how VDOT implements the RHGC Program from railroad crossing inventory data collection to project implementation. The review team used a combination of interviews, document review and benchmarking with the current laws and regulations.

The second objective is to address observations from the 2017 FHWA Compliance Assessment Program (CAP) and develop action items to address these observations.

Background on VDOT Program:

- Virginia's grade crossing inventory presently consists of about 1,861 public at-grade crossings.
- Recently had a statewide project to upgrade the lenses to 12" lenses
- About 85% of the crossings statewide have active warning devices
- Typically 20-30 crossings funded each year.

Law and regulations:

23 USC Section 130, Railway-Highway Crossings

<http://uscode.house.gov/browse/prelim@title23/chapter1&edition=prelim>

23 USC 130(d), each State is required to conduct and maintain a survey of all highways to identify railroad crossings that may require separation, relocation, or protective devices, and establish and implement a schedule of projects. At a minimum, this schedule is to provide signs for all railway-highway crossings.

In accordance with 23 USC 130(g), States are required to submit annual reports on the progress of implementing their Railway-Highway Crossings program.



23 USC 130(l) requires States to update information for each public crossing in the DOT crossing inventory database, including information about warning devices and signage. The Federal Railroad Administration (FRA) maintains the Crossing Inventory.

23 CFR 924 – Highway Safety Improvement Program

- 23 CFR 924.9: Develop a Railway-Highway Crossing program that A) considers the relative risk of public railway-highway crossings based on a hazard index formula, B) includes onsite inspection of public railway-highway crossings, C) results in a program of projects with special emphasis on statutory requirement that all public crossings be provided with standard signing and marking.
- <https://www.ecfr.gov/cgi-bin/text-idx?SID=eb058cdbfa0f672a8f18775bc272eb58&mc=true&node=pt23.1.924&rgn=div5>

23 CFR 140(i) Reimbursement for Railroad Work

- Reimbursement basis, billings
- *(b) The company shall provide one final and complete billing of all incurred costs, or of the agreed-to lump sum, within one year following completion of the reimbursable railroad work. Otherwise, previous payments to the company may be considered final, except as agreed to between the SHA and the railroad.*
- <https://www.ecfr.gov/cgi-bin/text-idx?SID=74b7022d350ac148414f2d2986c83e38&mc=true&node=pt23.1.140&rgn=div5%23sp23.1.140.i#sp23.1.140.i>

23 CFR 646, Railroads Subpart B

- Funding, classification of projects and railroad share, design, general procedures (railroad forces, railroad agreement, authorization)
- https://www.ecfr.gov/cgi-bin/text-idx?SID=e1257e37a26552e0fd090c559d8909fd&mc=true&node=pt23.1.646&rgn=div5#se23.1.646_1216

The FHWA R-HGCP Handbook - https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/

- Railroad Components, Assessment of Crossing Safety and Operation, Identification of Alternatives, Selection of Alternatives, Implementation of Projects, Maintenance Program, Evaluation, Special Issues, Supporting Programs



Objective #1: Current VDOT Processes and Procedures for R-HGCP

Collection and Maintenance of Railroad Crossing Inventory:

- VDOT sets aside \$90,000 per year to collect and update the railroad crossing inventory. The collection is done mostly with in-house staff but consultant support is used for the far SW and Eastern Shore due to travel restrictions.
- The inventory is on a two-year cycle. If a locality upgrades a crossing with different funds, and those upgrades aren't communicated back to VDOT, so they capture these modifications in the statewide review
- VDOT uses a software to manage inventory. VDOT submits each inventory item separately to FRA and VDOT is currently in the process of updating the software to current FRA requirements.
- VDOT maintains a RR inventory and it is not yet available to public or partners. VDOT submits data to FRA.

VDOT HSIP Prioritization of crossing locations and application process:

- VDOT utilizes the FRA “Accident Prediction Model” for establishing a statewide crossing improvement priority listing. The procedure is a mathematical formula, and incorporates a factor for vehicle traffic, and number of trains that produce an “exposure index value.” Additional factors utilized to compute the “accident prediction value” include: trains per day, maximum timetable speed, number of main tracks, highway surface, travel lanes, crashes.
- VDOT HSIP Request for H-RGCP project applications
 - Request sent by September 1st and they are due December 1st. VDOT HSIP reviews and prioritizes by end of March so ready to go to CTB in April
 - The HSIP Implementation Guidelines state that VDOT HSIP staff provides the H-RGCP inventory list to localities, railroads, and VDOT Traffic Engineers and Residency Engineers for them to use in submitting potential projects. **However, through interviews with program staff, this inventory list is not sent out. This list is only used in-house once all proposals have been submitted.**
 - Proposals must include a Virginia registered PE signed and sealed engineering study documenting the purpose and need of any improvement that impacts the crossing surface, traffic operations, and new traffic control devices.
 - The HSIP Implementation Guidelines state that proposals are evaluated on a statewide basis using the APM which are adjusted to incorporated additional data identified in the engineering study and/or proposal form.
 - The HSIP Implementation Guidelines state that field reviews are conducted to evaluate the crossing to confirm or adjust proposal as needed. This review



considers sight distance, roadway geometry, adjacent land use. **However, through interviews, field review or diagnostic reviews are only conducted when there are crashes or other problems that cannot be resolved with the installation of automatic warning devices or upgrades to existing devices.**

- Final Priority Index is determined, proposals are ranked and finding utilized.
- VDOT HSIP Staff considerations the following for prioritizing and evaluating project submittals
 - VDOT prioritizes signal and gate installs where there are currently none installed
 - Sometimes will fix grades if there are indications that there are issues
 - If needed, they will go out in the field to assess any unique issues (sometimes driven by local politics)
 - Will review accident data and also near misses
- Future updates to R-HGRP application process
 - Moving to “Smart Portal” for on-line application (same place for SMART SCALE, HSIP, etc)
 - Narrative-based application rather than check boxes
 - Applicants asked to attach any documentation to support their requests (e.g., if there is a safety concern, submit data to support that there is a safety issue)
 - Applications will have a cost estimate – VDOT will sometimes need to review the estimate to ensure that this program only funds the RR crossing portion

VDOT Project Development Process:

- Once a project is selected and included in the six-year program then the Rail Program takes over the management of the projects
- These are the general steps taken to develop a R-HGCP Project
 - Rail Projects Manager develops a schedule for each project both for internal purposes and also a schedule with the Railroad (Authorization to Close out)
 - Coordinates environmental review with respective District office. These projects are typically “Programmatic Categorical Exclusions (PCE)”. There is one statewide Federal Aid project agreement for VDOT environmental review.
 - Note: The existing Federal Aid project originated in 2001 (Federal Aid # 000S169/UPC 57844) and is in the process of being closed out. The new Statewide project for environmental review will be for a 3 year term and follow appropriate close out procedures
 - Typical time for environmental review is 60 days to 3 months
- Rail Program Manager coordinates with RR to develop the RR Agreement.



- Note: There is an existing Federal Aid project originated in 2003 for PE work associated with R-HGCP projects and is in the process of being closed out. The new Statewide project for PE review will be for a 3 year term and follow appropriate close out procedures.
- RR Agreement includes the following – Statement of work for each party, railroad share of cost (if any), itemized cost estimate, method to be used to perform the work (RR forces or contract), maintenance agreement, insurance needs, references to plans and specifications, ROW Certification (RR will certify that the ROW is clear)
 - Potential issue: If the RR charges work prior to authorization (e.g. PE work for the RR Agreement prior to Federal-Aid Authorization) then need to determine a process to properly fund those charges.
- VDOT reviews the estimate and schedule
 - RR typically uses actual cost when using own forces and lump sum when using contractor.
 - Currently VDOT bases cost estimate review on past knowledge, comparison to similar RR cost submittals or by highway construction projects
 - VDOT plans to set up procedures document cost estimate review
 - Contingencies are typically set by the RR company (e.g., CSX uses 10%)
- RR will re-submit cost estimate with a final design and price.
- VDOT RPMS will coordinate with District Environmental to ensure that everything is up-to-date
- VDOT RPMS coordinates with VDOT Finance for Request for Authorization of Federal-Aid Funds
- VDOT RPMS notifies RR in writing to proceed with work as described in agreement
 - New process being undertaken to improve VDOT project oversight – using permit process to ensure coordination occurs
 - RR will be required to request a no-cost VDOT permit to ensure coordination with Residency (currently being incorporated in VDOT's permit manual)
 - Permit will ensure VDOT and RR are coordinating to do necessary prep work (e.g. sight distance clearance, traffic control, detour, meeting MUTCD requirements)



- Require notification when 90% complete for VDOT to conduct field visit and determine if work satisfactory while RR crews are still on site
 - Close out process. New process implemented – RPMS Staff will conduct the final inspection or coordinate with the Residency to conduct the inspection
 - VDOT is moving to use a type of “C-5” final inspection document, although they haven’t finalized this document. A “C-5” does not quite work for the permit work.
 - Final billing is required within one year following completion of the reimbursable railroad work (23 CFR 140(i))
 - RR audit takes places 3-6 months after completion of the project which leaves 6-9 months for VDOT to complete final audit to close out project.

Objective #2: Address FHWA 2017 CAP Observations for R-HGCP Projects

The Compliance Assessment Program (CAP) is an annual review of randomly selected projects in coordination with the Virginia Department of Transportation (VDOT) at both the Central Office and applicable district offices. This is part of FHWA’s Risk-Based Stewardship and Oversight program. In 2016 there were 60 randomly selected active construction projects, five of which were R-HGCP projects. There are a core set of questions that are addressed in these reviews and from this review, there were two questions of which the R-HGCP had findings/observations. The plan of action to address these findings and develop an action plan is through this HSIP Program Assessment.

UPC	Federal-Aid	Project Description	Preliminary Plans	RR Agreement	Authorization	Cost
105509	52211108	Town of Gate City – Horton Street (NSRR)	4/21/2015	8/21/2015	8/27/2015	\$249,717
105565	5A27374	Route 643 (BBRR)	2/12/2015	3/19/2015	4/2/2015	\$218,495.80
105568	0687031	Route 1006 (BBRR)	12/15/2015	2/19/2016	3/11/2016	\$257,591.63
105620	5A03787	Route 622(Bay Coast RR)	8/1/2015	1/20/2016	2/11/2016	\$139,238.33
107509	0193035	Route 15 (BBRR)	12/15/2015	2/19/2016	3/18/2016	\$198,192



CAP Core Question #5: *Do the approved project plans and specifications include a Transportation Management Plan (TMP) or provisions for the Contractor to develop a plan? (Note: For projects or classes of projects that the State determines to have less than significant work zone impacts, the TMP may consist only of a TTC plan)*

Observation: The RR Agreement has a special provision for coordination between the RR and the VDOT Residency for traffic control needs and for project and final inspection/acceptance. It is not apparent that this is followed through at the residency level.

Corrective Action: VDOT has already begun implementing a new process where the RR will be required to request a no-cost VDOT permit to ensure coordination with Residency. This has been communicated to the Residencies and currently being incorporated in VDOT's permit manual. Permit will ensure VDOT and RR are coordinating to do necessary prep work (e.g. sight distance clearance, traffic control, detour, meeting MUTCD requirements)

Core Question #9: *Was the State's request for obligation of federal funds supported by a documented cost estimate that is based on the best estimate of cost?*

Finding: The VDOT cost estimate/verification consisted of a duplication of the prices in which the railroad submitted to do the work followed by the hand-written statement, "The costs of \$247,717 for the installation of flashing lights and gates is within the average costs. Therefore we recommend approval."

Corrective Action: FHWA notified VDOT that they need to document the verification of RR cost estimate rather than accepting the RR estimate.

Additional Follow up:

- VDOT requested information on how to streamline their RR grade crossing program. Construction agreement hasn't changed much in decades. Need to institutionalize processes to get RR involved early.
- Find opportunities for additional collaboration among state partners. Currently State Corporation Commission focuses on track issues with the rail, but not RR crossings and is not involved in crossing field reviews. There is limited sharing of information on FRA inspections that may be useful in understanding issues at rail-highway crossings.



Appendix D: Resources

Highway-Railway Grade Crossing Action Plan and Project Prioritization Noteworthy Practices, 2016 - State highway-rail grade crossing action plans identify specific solutions for improving safety at crossings; focus on crossings that have experienced multiple accidents or at high risk for such accidents; and cover a five-year period. FHWA and FRA developed this model grade crossing action plan for States that wish to update existing State Action Plans or develop a new State Action Plan to address grade crossing safety.

<https://safety.fhwa.dot.gov/hsip/xings/fhwasa16075/>

FHWA HSIP Self Assessment Tool, 2011- The HSIP Self Assessment Tool consists of a number of questions designed to provide those with HSIP management responsibilities information to assess their programs, policies, and procedures against many of the recommended HSIP practices in use today.

<https://safety.fhwa.dot.gov/hsip/resources/fhwasa11043/>

FHWA Highway Safety Improvement Program Website -

<https://safety.fhwa.dot.gov/hsip/hsip.cfm>

VDOT Highway Safety Improvement Program Website – Includes a link to the Virginia SHSP and the VDOT HSIP Implementation Guidelines

http://www.virginiadot.org/business/ted_app_pro.asp



U.S. Department
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