Construction Peer Network

A Guide to Collecting and Sharing Information to Improve Highway Construction Practices

April 2012

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A Note From the CPN Sponsors

Construction leaders & innovators –

We need your help to move transportation construction to the next level for Americans and our economy….and, why reinvent the wheel? Whatever we can learn from one another to become more effective is especially important as States and localities across the country seek to maximize the benefit of limited funding and resources.

With this in mind, AASHTO, ARTBA, AGC and FHWA have collaborated on the Construction Peer Network (CPN) as a structured approach to learn from one another. You are contributing to this landmark effort to gather and share exemplary construction practices.
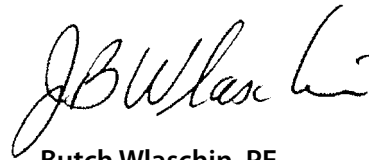
And the CPN represents just one piece of a larger effort by our organizations, working through our long-standing partnership, to better serve our customers through adoption of new technologies, improved processes, and innovative practices. While peer exchanges will produce very tangible benefits for a number of construction programs, the more important outcome is the transformation of the way we do business. Using a peer network approach to improve construction safety and quality, and to reduce time and cost, is simply smart. It's what our customers want and deserve.

Thank you for investing your time to support this initiative. We expect you will see a good return; both for your state and for our construction industry.

Michael P. Lewis, PE
Vice President, American Association of State Highway
and Transportation Officials
Director, Rhode Island Department of Transportation

Butch Wlaschin, PE
Director, Office of Asset Management
Federal Highway Administration

Brian Deery
Senior Director, Highway and Transportation Division
The Associated General Contractors of America

Rich Juliano
Vice President for Federal & State Relations
Managing Director, Contractors Division
American Road & Transportation Builders Association

CPN: What Is It, and Why Is It Needed?

The United States spends billions each year to construct and maintain our world class highways, yet the CPN appears to be one of the first efforts to take a comprehensive look at State DOT delivery processes, along with partner contributions, to seek out those that have proven most effective. The CPN provides a structured approach for capturing and sharing exemplary construction delivery practices (generally those after contract award), which should provide a significant return on investment when implemented.

FHWA partnered with AASHTO, along with its member State DOTs, AGC, and ARTBA to create the CPN. The CPN's basic objective is to improve the quality of construction and the delivery of highway projects brought about as construction professionals share successful practices and innovations among their peers. The partners' vision is to facilitate and encourage widespread deployment of such practices across the nation. Ultimately, the goal of the CPN is faster, more cost-effective construction of highway projects to benefit the American public and the nation's economy.

The CPN process involves two steps: 1) gathering State practices using a Program Information Tool (PI Tool) and 2) sharing those seen as having a high return on investment at Regional Peer Exchanges. These steps are discussed in more detail later in this document. Participation is voluntary.

Benefits of CPN

The CPN offers the opportunity for communicating, exchanging knowledge, and strengthening relationships among the various partners delivering construction projects.   It should benefit State DOTs and the contracting community by:

- Providing options to State DOTs for maximizing limited resources;

- Widely deploying proven practices and innovation across the nation;

- Promoting ways to use construction funding more effectively while positively impacting quality, cost, time, safety, and other important construction delivery metrics; and

- Developing or enhancing each participant's regional network of peers.

Ultimately, the CPN will lead to implementation of more effective practices and processes.

Figure 1. Construction Peer Network Process Flow

The CPN Process

 The CPN follows the two-step process shown in Figure 1 to focus on practices most relevant for a given geographic region. The PI Tool assists State construction professionals with gathering information on practices in six focus areas that comprise a typical construction delivery program:

1. Project Supervision and Staffing

2. Construction Safety

3. Construction Administration

4. Construction Quality

5. Innovation

6. Communications/Data/Information Sharing

Questions were designed and developed with input from construction practitioners and key stakeholders and address several key needs cited by the highway industry, including:

- The need for State agencies to have an opportunity to describe the specific processes that work best for them;

- The need for input from contractors as part of the CPN process; and

- The need for discussion on streamlining construction processes for the benefit of key metrics such as cost and time.

The information gathered from the PI Tool will lead directly into the second step of the process – information dissemination through regional peer exchanges. Discussion topics for the peer exchanges will be based on the information gathered from the PI Tool.

## The PI Tool – What Is It and How to Complete It

The PI Tool is a series of questions, prioritized by a CPN steering team, to focus on practices likely to have the greatest impact on DOT construction delivery. Input from contractor partners is also sought, and can be added via narrative responses.

The tool is presented in a matrix format that allows the user to input responses via radio buttons for various topics. It is designed to be easily completed, but also to capture detailed, valuable information that will help identify topics for each peer exchange. The PI Tool will allow users to submit results electronically. The entire PI Tool is presented at the end of this document.

Within the PI Tool there are questions for each of the six focus areas. The focus areas are further broken into core elements and functions, with the questions at the function level. A core element is a key process that occurs within a particular focus area, and a function is a direct action that is taken to implement the process. The core elements and functions that comprise the PI Tool are a result of a prioritization process the CPN steering team used to determine the final questions.

The PI Tool includes a set of matrices for each focus area and a matrix for every core element within a focus area.   In each matrix, functions are listed vertically on the left and questions are listed across the top horizontally. Radio buttons allow users to document their responses to the questions asked for each function. Figure 2 shows an example core element (Determine Levels of Staffing) and associated functions.
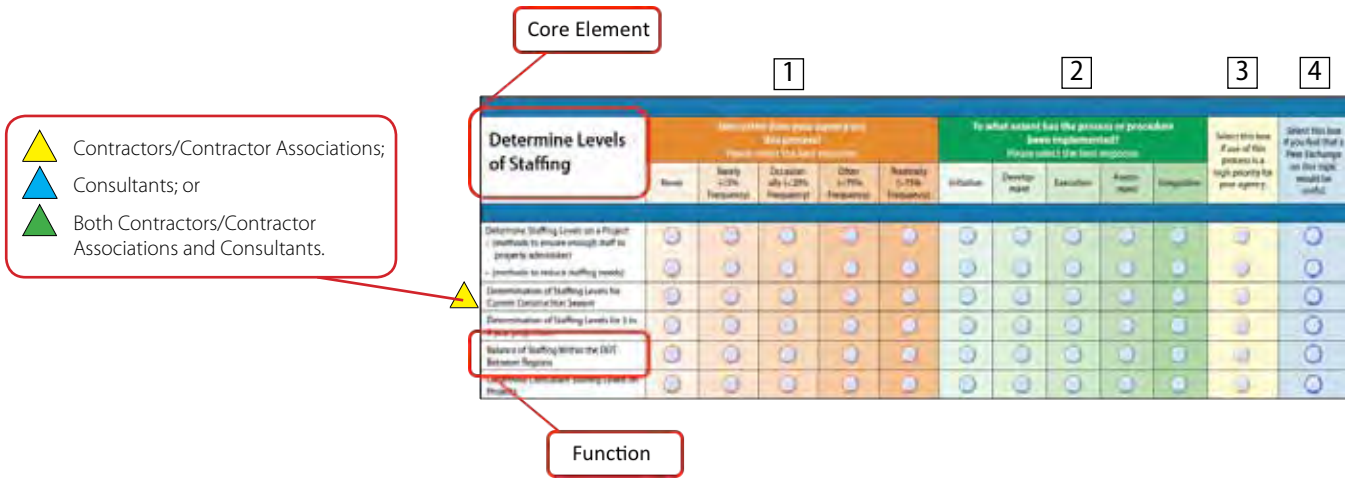
Figure 2. Example Matrix Identifying A Core Element and A Core Function within the Focus Area of Project Supervision and Staffing

Responders are asked the following five questions with regard to the specific functions listed on the left side of the matrix (the numbers above each column in Figure 2 correspond to the question and explanation provided below):

1. **How often does your agency use this practice (function)?**

   This question corresponds to the orange shaded columns shown in Figure 2 above. Select the radio button that appropriately describes how often the function is performed. Provide answers to all functions for each core element. The frequency of how often a function is performed may relate to time (i.e., how many times per year), or to the percent of overall projects. Consideration should be given to these metrics when providing a response.

2. **To what extent has the process or procedure been implemented?**

   This question corresponds to the green shaded columns in the example above, with five possible selections for the level of implementation for a specific function. It is important to determine the most appropriate response to each question based on input from discussions with key stakeholders. Table 1 shows the various levels of implementation and describes how to interpret each.

Table 1. Level of Implementation Descriptions

Level of Implementation	Description and Examples for Selection of Appropriate Implementation Level
Initiation	• Does agency management acknowledge the need for a particular item? • Has exploratory research taken place to assess the benefits of this item? • Does management support further development of this item's requirements?
Development	• Has the agency developed a plan or approach to address the item's requirements? • Has the agency started to investigate the feasibility of implementation? • Does the agency have standards and guidance to enable the item's implementation? • Does the agency have the approvals necessary for implementation? • Are resources in place to support the adoption of this item?

Table 1. Level of Implementation Descriptions (cont.)

Level of Implementation	Description and Examples for Selection of Appropriate Implementation Level
Execution	• Is the agency implementing the required activities to accomplish this item? • Is the item used statewide? Do the majority of State construction units use the item? • Has the agency allocated financial or staff resources necessary for the item's execution? • Have appropriate personnel been trained to execute the item's requirements? • Has a process owner been established?
Assessment	• Has the agency assessed how well this item performs? • Has the agency assessed the process for carrying out this item? • Has the agency implemented appropriate changes to the requirements of this item based on performance assessments?
Integration	• Has the agency integrated the requirements of this item into quality improvement processes? • Are the requirements of this item integrated into agency culture? • Are the requirements of this item included as part of the employee performance rating system?

3. **Select this box if use of this process is a high priority for your agency.**

    This question corresponds to the yellow column in the above example. Select this box to indicate that the agency would benefit from information and discussion on how to implement a particular function. This focuses on your State's priorities and will help determine areas of focus for the regional peer exchanges.

4. **Select this box if you feel that a Peer Exchange on this topic would be useful.**

    This question corresponds to the far right column in the above example shaded in blue. The response will help peer exchange planners determine if this is seen as a broader regional or national issue, or is generally a worthy discussion topic that will benefit the highway construction community.

5. **Supplemental Questions**

    Two supplemental questions are also included for each focus area, with one overall supplemental question at the end of the PI Tool to capture items not covered. An example supplemental question is shown in Figure 3. These questions allow for typed input to clarify matrix responses and to offer responders a chance to comment on topics that are not explicitly included in the matrix, such as:

    • Processes that have been implemented with exceptional results;

    • Areas of focus that should be a priority;

    • Areas of focus for peer exchanges that have not been identified in the matrices; and

    • Opportunities for streamlining or removing inefficient processes that would positively benefit cost, safety, and quality.

Focus Area No. 6: Communications/Data/Information Sharing

(To gain addition information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Communications/Data/Information Sharing

Figure 3. Sample Supplemental Question

Once all responses are completed, users should review the matrices and supplemental questions to ensure that all items have been adequately addressed. Users should ensure the information is correct and complete as it will be valuable in determining the discussion topics for the peer exchange.

Saving and Submitting PI Tool Responses

Users should save their work often while completing the PI Tool. It is important to save the file using a file name that identifies your State. To do this within Adobe Acrobat, click "file" and then click "save as" and save the file with your State name included (e.g., DistrictofColumbiaPITool2011.pdf).

Finished? When complete, click "Submit" to email your responses to FHWA automatically. Be sure to "save as" and include your state in the file name prior to submitting.

The "Submit" button at the end of the PI Tool matrices automatically generates an email message with the completed PI Tool as an attachment. There are two options for submitting the form: 1) directly sending the saved file to Christopher. Schneider@dot.gov or 2) clicking "submit" and then emailing the resulting attachment. It is anticipated one completed PI Tool response will be received from each State.

The Peer Exchange

The peer exchange completes the CPN process. It offers an opportunity for practitioners to learn about new practices and processes, discuss information from the PI Tool, and network with peers.

After the States' responses to the PI Tool are analyzed, a peer exchange for the region's participants will be conducted. The peer exchange will be held approximately 3 months after the submission of PI Tool responses and will engage approximately 50 participants for 2 days of meetings. Peer exchange topics will be determined based on priority areas identified by agencies and trends in the PI Tool results for each region. Lead state presentations on successful construction practices followed by facilitated roundtable discussions will be the focus of the peer exchange. A preliminary peer exchange agenda is shown below in Figure 4.

Day 1		
Time	**Topic**	**Speakers / Facilitators**
8:00am – 8:30am	Welcoming Remarks • Discuss purpose and expected outcomes	FHWA Coordinator, TBD, Moderator
8:30am – 8:45am	Self Introductions • To get to know one another better • Housekeeping Items	All Participants
8:45am – 9:30am	Host Agency Presentation • Introduction of Host Agency's Construction Program and its perspective on how the CPN can help the state and region	Presenter TBD
9:30am – 9:45am	Break	
9:45am – 10:30am	Lead Off Presentation – Exchange Topic #1 • A Lead agency presentation on a model process or practice. Set theme for topic. • with Facilitated Q&A	Presenter TBD
10:30am – 11:30am	Participant Roundtable Discussions – Exchange Topic #1	All Participants
11:30am – 12:30pm	Lunch	
12:30pm – 1:00pm	Summary and Preview of Next Session	Moderator
1:00pm – 1:45pm	Lead Off Presentation – Exchange Topic #2 • A Lead agency presentation on a model process or practice. Set theme for topic. • with Facilitated Q&A	Presenter TBD
1:45pm – 2:30pm	Participant Roundtable Discussions – All Participants Exchange Topic #2	All Participants
2:30pm – 2:45pm	Break	
2:45pm – 3:30pm	Continue Participant Roundtable Discussions – Exchange Topic #2	All Participants
3:30pm – 4:00pm	Summary and Preview of Next Day	Moderator
3:30pm – 4:00pm	Workshop Synthesis – Themes, Issues and Conclusions	Moderator
4:00pm	Adjourn	

Day 2		
8:00am – 8:30am	Recap of Day 1 Discussion, Issues and Themes	Moderator
8:30am – 9:15am	Lead Off Presentation – Exchange Topic #3 • A Lead agency presentation on a model process or practice. Set theme for topic. • with Facilitated Q&A	Presenter TBD
9:15am – 9:30am	Break	
9:30am – 11:00am	Participant Roundtable Discussions – Exchange Topic #3	All Participants
11:30am – 12:30pm	Lunch	
12:30pm – 1:15pm	Lead Off Presentation – Exchange Topic #4 • A Lead agency presentation on a model process or practice. Set theme for topic. • with Facilitated Q&A	Presenter TBD
1:15pm – 2:30pm	Break	
2:45pm – 3:30 pm	Participant Roundtable Discussions – Exchange Topic #5	All Participants
3:30pm – 4:00pm	Workshop Synthesis – Themes, Issues and Conclusions	Moderator
4:00pm	Adjourn	

Figure 3. CPN Peer Exchange Preliminary Agenda

Using a regional approach, peer exchanges will be conducted at approximately 4-month intervals following the initial CPN roll-out. Figure 5 shows the proposed grouping of States for five peer exchange regions. Host agencies for each regional peer exchange will be confirmed as the program is implemented.
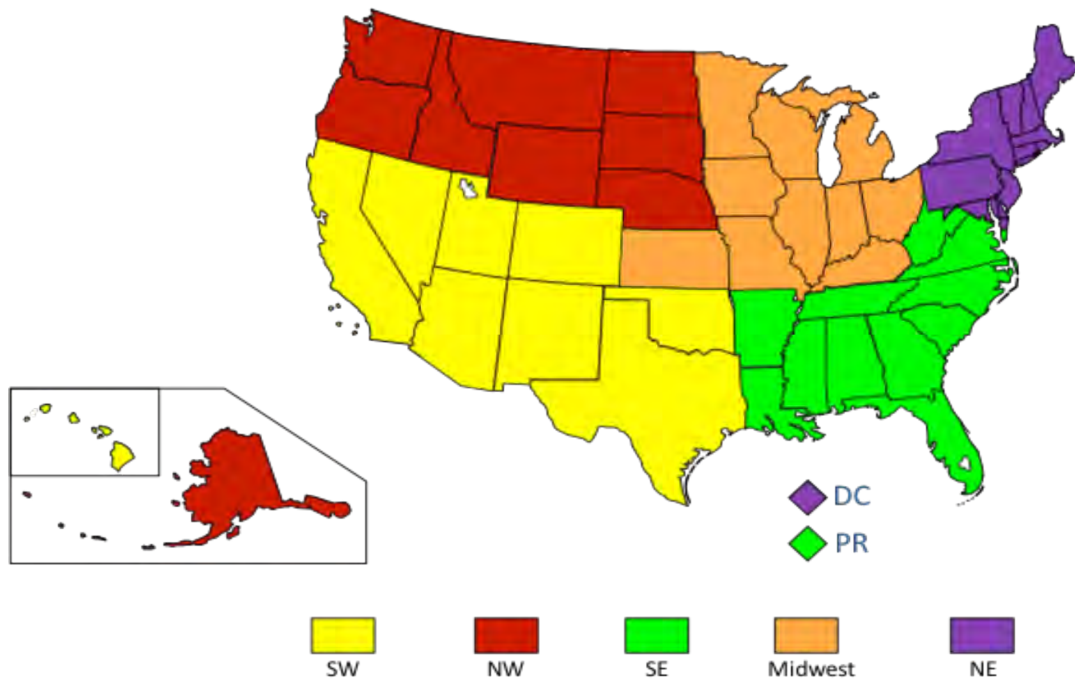
Figure 5. CPN Peer Exchanges - Proposed Regional Groups

CPN Products

The products of each peer exchange will include electronic presentations, discussion notes, action items, and plans for implementing practices. A summary report will be provided to each participant within 6 weeks of the peer exchange.

Responsibilities of the FHWA Division Office

For a State that wishes to participate, the FHWA Division Office has been asked to facilitate completion of the Pi Tool. It is recommended that the Division Office lead a structured discussion among stakeholders to develop a consensus on each question from the PI Tool matrices.   One method to begin discussion and work towards a consensus response is to have key stakeholders answer the PI Tool individually and compare or average the results.

The purpose of this discussion is not merely to document results, but to improve communication and gather information with the goal of improving processes and practices for the benefit of construction program delivery.

A meeting and consensus may be difficult to arrange, so it is left to each State to respond in the best manner it can, with an eye towards providing accurate information to support the peer exchange and benefit construction across the country.

The following ideas are presented to assist with the structure of any group discussion.

Possible questions for a stakeholder meeting

- Do all stakeholders have the same response regarding these issues?

- What steps have they taken to address these issues?

- Have contractors, contractor associations, and/or consultants provided input where appropriate?

- What are the ramifications of these issues for various stakeholders?

- What are some strategies that should be adopted to address these issues?

- Are there additional details (e.g. constraints, time frames, routines, etc.) that may help the group to better understand the response?

- What are some of the most effective and innovative practices in our state?

What the facilitator can do to manage a successful meeting

- Become familiar with the CPN User Guide and PI Tool matrices;

- Identify a group of agency stakeholders that represent the six focus areas;

- Invite stakeholders and provide them with the PI Tool matrices to review, and possibly complete, before the meeting; and

- Set an agenda that organizes discussion of the PI Tool and assigns expected time limits for each topic. Consider a multi-voting and averaging approach to gain rapid consensus after discussion. Assign a note taker to gather other comments for the supplemental responses.

Input from key stakeholder groups

Private sector groups play a key role in construction processes and will have valuable input on the responses to the PI Tool. To facilitate gathering this input, the PI Tool has color-coded functions where input from contractors, contractor associations, consultants, or a combination of these groups is recommended. Additional comments may be added in the boxes to clarify diverse answers or other partner perspectives on a question.

Contractors/Contractor Associations;

Consultants; or

Both Contractors/Contractor Associations and Consultants.

Frequently Asked CPN Questions and Answers

Q: How does the CPN differ from other ongoing initiatives, such as Every Day Counts, Highways for LIFE, the AASHTO-AGC-ARTBA-FHWA Work Group, Civil Integrated Management (CIM) workshops, etc.?
A: The CPN considers a state's entire set of construction delivery processes, generally after contract award, looking for exemplary practices, both leading edge and traditional. In general it does not focus on technologies. The CPN will be coordinated with other efforts so as to avoid duplication as much as possible.

Q: Is participation voluntary and, if so, why should a State do so?
A: Yes, participation in the CPN is voluntary. However, wide participation will contribute to a better understanding of the construction state of the practice, as well as provide an opportunity to participate in the peer exchange. The PI Tool will guide the agenda for peer exchanges, and States will benefit both from sharing best practices and from learning from neighbors. Maximizing participation will enhance the end result – better construction programs and products.

Q: Can I participate in more than one peer exchange?
A: We are planning peer exchanges by region of the country, and expect that participants from each region will attend the peer exchange for their particular region only.

Q: Do I need to complete the PI Tool prior to the peer exchange? How long will it take to complete?
A: Yes, we will use the results of the PI Tool to determine the highest priority topics for each peer exchange. We anticipate that the PI Tool will take approximately one-half day to complete.

Q: What will FHWA do with data? Will you compare States?
A: Primarily, we will use the data to support the development of each peer exchange, and use of the results will be guided by a steering team that includes representatives from States and AASHTO. We will not publish data identifying any State without their permission. If desired, we can help a State see where they stand with respect to the state of the practice in any particular area surveyed. Our action-oriented peer exchanges will encourage each State to implement one to three new practices. There is no compliance requirement for these activities.

Q: Will FHWA fund travel to peer exchanges?
A: Yes, the current plan is to fund travel for two representatives from each State DOT and one from each FHWA Division office. We recommend these be staff who complete the PI Tool and that regularly implement the State's construction processes.

Q: How will the success of the CPN be measured?
A: Success will be measured through feedback from participants, implementation of exemplary practices, and measured benefits such as cost/time/quality/resource optimization (to the extent that agencies have documentation of these benefits). We will administer evaluations for the PI Tool and Peer Exchanges. We will also follow up to assist States with implementation and determine lessons learned and successes.

Q: What are some of the other products of the CPN?
A: The peer exchange will include some action items and implementation planning that FHWA can follow up at regular intervals. Follow-up is not a requirement but will help with implementation. Those exemplary practices that are identified, and the results of peer exchanges, will be documented and made available to all participants. FHWA will help facilitate future contacts between States to assist in sharing detailed information for implementation, as necessary.

Q: How long will the CPN continue into the future?
A: Current plans are for 5 peer exchanges to cover all States (including Puerto Rico and the District of Columbia). See Figure 5 for a regional breakdown of the planned peer exchanges.

Additional help is available for any questions you may have or assistance you may need, including:

- Facilitating the PI Tool discussions and completing the PI Tool;

- Becoming a speaker for a peer exchange; and

- Hosting a peer exchange.

Please contact:
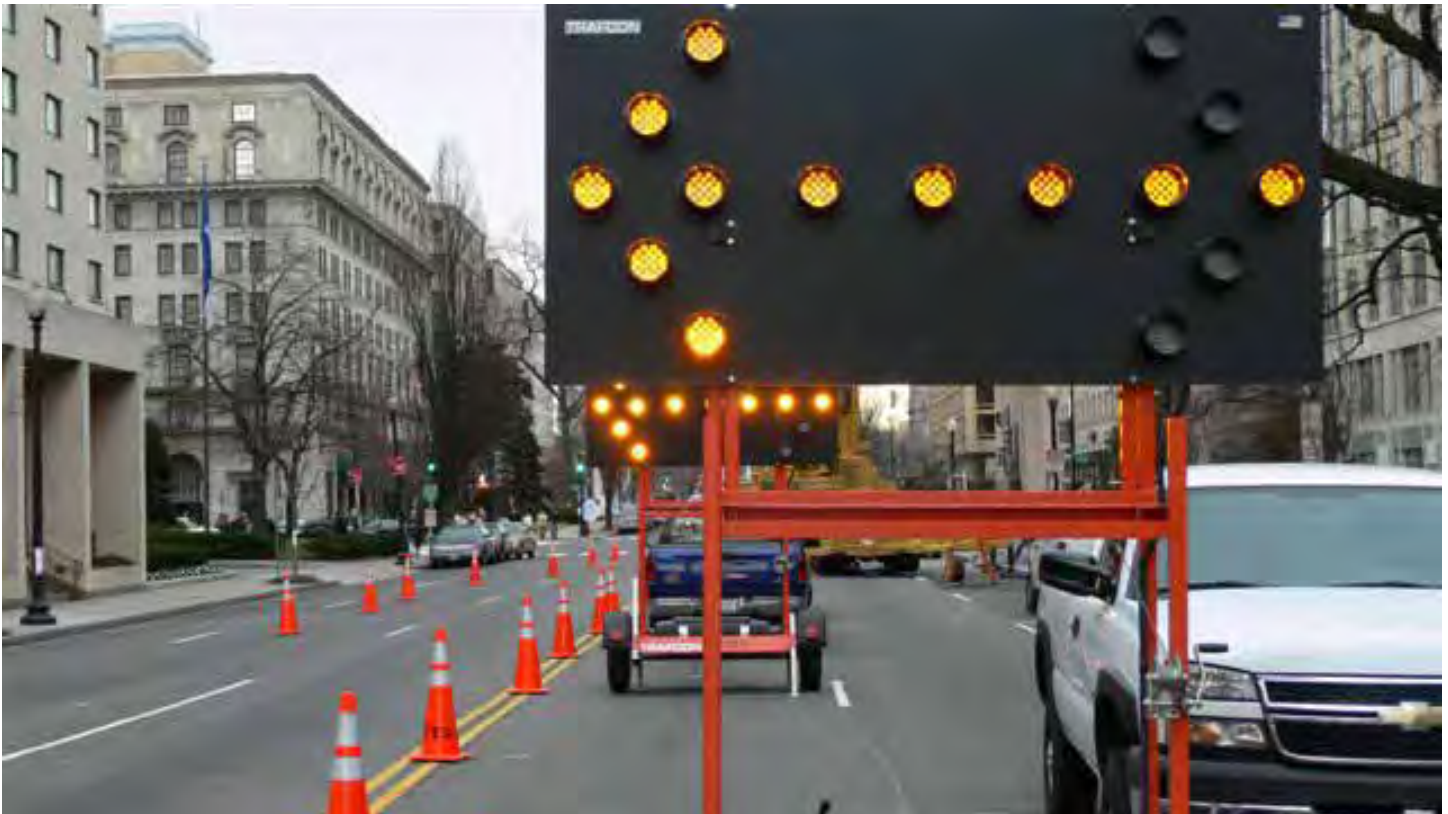
FHWA Headquarters

Chris Schneider
(202) 493-0551
christopher.schneider@dot.gov

FHWA Resource Center

David Unkefer
(404) 562-3669
david.unkefer@dot.gov

CPN Program Information Tool

Focus Area No. 1: Project Supervision and Staffing

Project supervision and staffing issues can affect the implementation, management, and outcomes of construction activities. Agencies manage staff both internal to the organization, as well as external staff such as consultants and contractors. The project team is comprised of the people who have assigned roles and responsibilities for managing the project. It is imperative that projects are adequately staffed with the appropriate level or number of staff as well as staff that is appropriately qualified.

Ensuring adequate staffing levels and qualifications can be challenging in today's environment, and attention should be paid to the needs of both internal and external staff such as training, succession planning, and qualifications. With hiring freezes there are often an increased number of vacancies and with tight budgets there is often limited funding to hire consultants to fill the gaps. Further, many states are reporting higher turnover as staff retire or depart for higher paying consultant jobs. If vacancies are filled, then the newer staff does not often have the same level of experience and qualifications. Ensuring the projects have the proper number of appropriately qualified staff to administer the contract can be a challenge.

The purpose of this focus area is to identify creative practices and processes to address these challenges. Agencies often develop plans for how to handle attrition, qualifications of staff, training needs, and privatization practices. Once privatization occurs, agencies also communicate often with consultants and contractors, establish expectations, goals and objectives for a project, and assist the private sector by developing policies for certification and sources of training.

The core elements identified with project supervision and staffing have been identified as: determine staffing levels on projects; establish qualifications for staff, consultants, and contractors; and establish privatization practices.

1.1 Determine Levels of Staffing

To some degree staffing levels are determined for all projects. However, there are differences between State DOTs regarding the frequency and complexity of the staffing analysis. Staffing levels may be determined on a project-by-project basis, annually, and / or over an extended period of time such as 3 to 5 years. Sometimes it is done in a very simple manner based on availability of DOT staff and funds available for consultants. Sometimes it takes into account the staff experience and project complexity. Sometimes it may be a formal risk assessment process. In these challenging times of limited staff, training resources, and time, agencies develop creative ways to optimize the productivity of current staff members and prioritize needs. Existing staff may be used more efficiently by cross-training design and construction so construction staff can help design in the winter. Maintenance forces could supplement construction staff in the summer. Long-range planning may allow for staffing to be shifted from one Region to another. The need for consultants to supplement DOT staffing levels can be identified in advance and communicated. That way, consultants can better plan the workforce they need to meet the needs of the owner. Some may conduct an assessment of the feasibility of reducing staff using remote project monitoring, automated construction management, shifting responsibility to the contractor and/or a formal risk assessment to identify areas for reduced staffing.

Determine Levels of Staffing	How often does your agency use this process? Please select the best response.					To what extent has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Determine Staffing Levels on a Project • (methods to ensure enough staff) • (methods to reduce staffing needs)												
Determine Staffing Levels for Current Construction Season												
Determine Staffing Level Contingencies (based on contractor schedules, emergency projects, retirement, lag between award and construction)												
Determination of Staffing Levels for 3 to 5 year projections												
Balance of Staffing and/or Projects Within the DOT Between Regions												
Determine Sharing of Staffing and/ or Projects (construction using maintenance staffing, maintenance running construction projects)												
Determine Consultant Staffing Levels on Projects												

1.2 Establish Qualifications for Staff, Consultants, and Contractors

Agencies also use innovative practices to help mitigate issues with attrition due to a retiring work force. This can help maintain expertise and continuity of knowledge. Such practices may include requirements, policies, mentoring programs, succession plans, etc. The qualifications are much more than just the years of experience. Agencies are challenged with the need to ensure that project staff, consultants and contractors have the necessary experience and training to administer the project efficiently and successfully. There may be creative practices or processes. Project staffing qualifications may be developed that identify the field experience, mentoring, classroom training, and certification needed for success. Requirements may be established for certified construction inspectors, or requirements may be extended to include project engineers, resident engineers and construction engineers. Training can be developed on well documented processes and procedures to shorten the learning curve. Succession planning may be formally implemented so staff members understand the competencies needed for promotion and the DOT has a systematic program to allow employees to gain the necessary competencies. Contractor pre-qualification programs may also be shown to make improvements.

Establish Qualifications of Staff, Consultants, and Contractors	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Establish project staffing qualifications - adequate experience, training, certification												
Establish qualification requirements for Project Engineers, Resident Engineers, Construction Engineers												
Establish qualification requirements for Construction Technicians												
Establish qualifications for Contractors												
Perform succession planning												

1.3 Establish Privatization Practices

There is often a need to supplement DOT staff with consultants – a need which may require consultants to be on board quickly through the use of expedient contracting processes. In some cases the consultants may not be entirely familiar with the transportation construction projects and ensuring qualified consultants becomes a challenge. After hiring consultants, agencies must also administer the contract. There may be creative practices or processes to mitigate challenges such as delays in contracting in order to allow for a smooth transition to privatization of some roles and responsibilities. This may even include a plan within the DOT to determine the level of privatization in each of the disciplines to ensure that the DOT keeps a core competency of staff in house that can perform the work.

Establish Privatization Practices	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Establish procedures to administer consultant work												
Determine minimum expertise within the DOT as privatization occurs (in-house staff versus consultant staff ratio)												
Establish procedures to get on-call consultants under contract quickly												
Establish qualifications of consultants (training, mentoring, etc.)												

Focus Area No. 1: Project Supervision and Staffing Supplemental Questions
(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to project supervision and staffing.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Focus Area No. 2: Construction Safety

Construction safety management includes activities which determine polices, objectives, and responsibilities. These ensure a project is planned and executed in a manner that prevents or reduces accidents that could result in personal injury, fatalities, and/or property damage to those working on the site as well as those in the vicinity of the project. Safety of the workers and traveling public is the number one priority of the project staff.

For the Construction Safety focus area, the most important core elements include the agency safety culture, worker safety, and public safety. The purpose of this focus area is to identify creative practices and processes that have made improvements to traffic safety.

2.1 Agency Safety Culture

A safety culture exists within each DOT and the level of focus on safety is set by the leadership of the agency. The culture defines the resources available and used for safety purposes. There is an inherent cost with increasing the focus on safety and it takes commitment from the leadership within an organization to make it happen. However, there is an increased benefit of having a safety focus that can be quantified with appropriate performance measures.

Several examples of agency culture help define the core elements in this focus area. For example, the agency may create policies on cell phone use in vehicles, the use of personal protective equipment, and vehicle backing procedures to provide guidance on safe practices. Some DOTs have assigned Regional Safety Officers who work with the individuals and groups to emphasize best practices for safety. Guidance within some DOTs also includes assigning safety assessments as part of each employee's job description. Each employee is expected to spend time to assess the safety aspects of their job and make recommendations for improvement. Safety may also be tied to performance measures that provide the big-picture overview of how well the policies work. Construction safety data may be made visible at project sites and offices to further emphasize that safety must be a priority. The agency may also launch employee awareness campaigns and include incentives and/or disincentive programs.

Agency Safety Culture	How often does your agency use this process? Please select the best response.					To what extent has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Create safety policies												
Create and staff a formal safety program												
Track construction safety statistics												
Create employee awareness programs with incentives and disincentives												

2.2 Worker Safety

Care should be taken to minimize DOT and contractor staff accident risks on construction projects. These accidents can be caused by driver error, exposure to traffic, or exposure to the construction activities. Attention to Occupational Safety and Health Administration (OSHA) requirements or the creation of internal practices like a girder erection plan for structures puts focus on the importance of safety.

Specific safety training for construction activities may be required by DOTs. This has often been tied to the OSHA requirements and in some cases may be tied to a requirement for promotion. Tailgate meetings, on-site meetings, job hazard analysis, pre-activity meetings, and other training are regular activities that indicate a strong focus on worker safety. The toolbox or tailgate meetings that occur on a daily basis are designed to bring recurring daily focus on the importance of safety. Depending on the project size and complexity there may be a requirement for a contractor's safety officer on a project. There may be independent safety inspections by third parties. Worker fatigue is considered for projects that have accelerated schedules or night work. There are methods to minimize on-site work in both the design and construction phases. Use of technologies such as 3D modeling, off-site prefabrication, and stakeless construction through automated machine guidance can minimize exposure. Techniques and products may be used to help protect the workers. These products include intrusion alarms, positive protection devices, photo radar, and use of uniformed police for work zone safety.

Worker Safety	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Require training for workers												
Plan safety as part of the project (Hold pre-activity meetings, Conduct independent safety inspection (owner and/or contractor), Address worker fatigue, etc.)												
Minimize on-site work (e.g. more prefabrication)												
Implement innovative products												

2.3 Public Safety

The safety of the traveling public through the work zone is very important. The traffic that flows through the work zone should be handled in a manner that protects motorists, pedestrians, motorcyclists, and workers. The method of handling traffic is designed with public safety in mind and includes strategies such as traffic control review inspections. Lane closure policies should be in place to best stage the project for the safety of the public. Performance measures can offer the big-picture overview of statewide performance related to injuries and fatalities in the work zone.

Some agencies perform statewide coordination of construction work zones. Identifying the traffic management limits often goes well beyond the project limits and needs to be given consideration. Traffic modeling using tools such as QuickZone and CA4PRS can help minimize impacts from construction.

Analysis of the planned flow versus the actual flow could be used to make adjustments if queue lengths become unacceptable. Pre-designed techniques that prompt contractors to make real-time adjustments for traffic flow may also be used. Programs to assess the overall safety with announced and unannounced traffic control reviews can be used to emphasize the importance of proper traffic control to all of the staff. Planning for incident management along with management of traffic during planned special events like concerts is proactive in addressing public safety. Collaboration with local emergency providers is also done proactively. There can also be better communication with the public regarding critical work zone information, including with the media, businesses, and community groups. For some large projects, a full-time safety team may be assigned.

Public Safety	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Coordinate construction work zones statewide												
Analyze planned vs. actual (flow, traffic limits, etc.)												
Perform announced and unannounced traffic control reviews to assess overall safety												
Communicate with stakeholders including the general public and emergency responders												

Focus Area No. 2: Construction Safety Supplemental Questions

(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Construction Safety.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Focus Area No. 3: Construction Administration

Construction Administration involves all those actions necessary to successfully manage an awarded construction contract and assure the project is constructed in accordance with all contract provisions as well as State and Federal laws. It also ensures that all project actions are documented properly, and that the contractor and approved subcontractors are paid on a timely basis. It is important to ensure that the requirements of Federal funding are met and the project is successfully managed in the areas of schedule, quality, and cost.

The core elements within this focus area include project documentation and record keeping, project conflicts and claims, management of contract terms and changes, and management of environmental requirements. The purpose of this focus area is to identify creative practices and processes that can significantly improve construction administration.

3.1 Documentation and Record Keeping

Project documentation and record keeping includes many factors important for successful contract administration. They are needed for accurate and comprehensive control of the construction project. Documents are needed from the time of award to the start of construction. After the start of construction there are documents for the day-to-day events, payments, quantities, traffic control plans and other items. Quantities of work completed are documented for progress and final payment as well as prompt payment

and retainage. Documentation also includes the project finals and the as-constructed plans. Many DOTs have implemented electronic project tracking and/or materials record systems to assist with documentation.

Some agencies are transitioning to the "digital jobsite" to automate record keeping. The use of electronics and automation for record keeping, project surveying, plan sets, and as-builts will be the basis for construction information management in the future. Some challenges may exist in capturing the important issues for disputes, keeping the original source documentation, and processing electronic submittals. Payment is another key process in this focus area. Challenges may exist in identifying whether the requirements have been met in a timely manner for prompt payment. Other issues include prompt payment requirements with contracts that require 100% completion for payment.
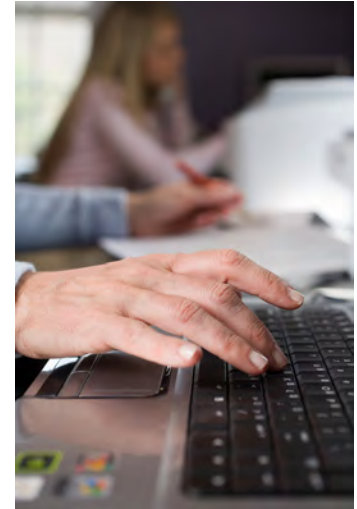
Documentation and Record Keeping	How often does your agency use this process? Please select the best response.					To what extent has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Implement the digital jobsite												
Administer progress payments and final payments												

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3.2 Management of Contract Terms and Contract Changes

Each project will have a detailed project schedule and may use the critical path method (CPM) or other tool to track the progress of the tasks and time. Changes to the contract can result in changes to costs, schedule, and project termini. Approval processes need to be in place for such changes. There may also be formal processes in place to evaluate the changes and track them for the identification of trends. Value engineering change proposals (VECP) may be initiated by the contractor and may impact the time and/or cost of the project. The use of liquidated damages is also included as part of the process for management of contract terms.

The use of project schedules has complications including the need for training on and consistency of software between the owner and contractors. Scheduling can take on different complexities from a simple hard copy without the links between activities to 2D electronic schedules to the use of alternative construction schedules (3D, 4D, and 5D modeling). Schedules should be cost and resource loaded. There are advantages and disadvantages

to each and project selection guidelines may be established to provide more of a formal process. Project staff must work with designers to ensure that changes will not adversely impact the overall project. This is especially critical with structural applications. Change orders impact the cost and time of the project. Adequate documentation of this information is required, but quick action to minimize the impact on the project is also important. Balancing these needs is critical. Guidelines for the use of liquidated damages include when they start and their application prior to the substantial completion date as well as during project closeout. VECP may be proposed during construction, and identification of best practices to overcome barriers may allow more successes and benefits. Contract administration also takes a new approach with the stewardship and oversight of Local Public Agency (LPA) projects. Some states have the staff to administer LPA projects while others may establish policies for oversight or stewardship of the program.

Management of Contract Terms and Contract Changes	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Maintain resource loaded project schedules												
Administer a formal process for change orders that considers impact on cost and schedule												
Encourage Value Engineering change proposals												
Provide oversight of LPA projects												

3.3 Contract Conflicts and Claims

Disputes, conflicts and claims may arise throughout the construction project. The contract documents may be interpreted differently by the owner and the contractor. Processes are in place to minimize potential for these conflicts and resolving these conflicts quickly if they do arise. It is important that these processes are clearly defined with clear outcomes.

The use of partnering is intended to develop a relationship between the contractor and owner at the beginning of the project and establish methods

for dispute resolution. Some agencies have had more success with this than others. The number of claims and the speed at which they are resolved is important for the individual projects and the overall construction program. The identification of false claims is also an important factor. Some states have adopted the use of dispute review boards to have claims settled by an independent third party.

Contract Conflicts and Claims	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Use innovative methods to resolve contract claims and disputes												
Use a formal partnering process to establish methods for dispute resolution												

3.4 Environmental Responsibility

During the administration of the contract there is a greater awareness and focus on environmental responsibility. Topics of concern that impact construction administration include erosion control, water pollution, hazardous materials, clean air and fugitive dust, and the use of recycled materials.

There is a need to be more proactive in this area than reactive. In many cases, violations occur and increase (after the fact) involvement in projects by environmental agencies, both at the Federal and State levels. Partnering with these regulatory agencies to ensure cost-effective compliance has been effective. This can be accomplished programmatically or on a project-specific basis. For larger and more environmentally sensitive projects, these meetings continue throughout construction at regular intervals. It is important that implementation of a project stays within the environmentally cleared footprint and that stakeholders understand the limits of the footprint. Clear, consistent, and repeatable processes need to be outlined so that contractors can effectively bid the project and Project Engineers can effectively administer the contract. During construction, an independent environmental manager may provide observations to the Project Engineer. There have been increased levels of monitoring of noise and air quality during construction with reports provided to contractors to meet specified standards. There are innovative statewide solutions for environmental items such as water quality and hazardous material disposal that provide opportunities for efficiencies and may occur on a project-by-project basis.

Environmental Responsibility	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Partner with regulatory agencies												
Ensure that environmental commitments (water, air and noise) are met												

Focus Area No. 3: Construction Administration Supplemental Questions
(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Construction Administration.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Focus Area No. 4: Construction Quality

Quality for construction projects is defined as conformance to or exceeding the standards and requirements as outlined by the customer. Quality management processes include all the activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project meets the requirements as intended. This can mean the same thing as completing the project in conformance with all of the original requirements.

For the Construction Quality focus area, the most important core elements include performance measures and metrics, quality assurance, and inspection and workmanship. The purpose of this focus area is to identify creative practices and processes that have made improvements to construction quality.

4.1 Performance Measures and Metrics

Use of performance measures and metrics is on the rise. Capturing the big-picture overview of a construction program in terms of cost and schedule performance is important information for DOT leadership, state legislature, and participating agencies such as FHWA. Understanding program costs, percent change of finalized contract (contract growth), and projects completed on time are important to understand for leadership to have confidence in the construction program.

It is important to identify goals and objectives such that measurement of construction project performance is done for the right reasons. In order to add value, performance measures must result in some revisions to policies and procedures, as appropriate. Mechanisms need to be in place to ensure that projects are completed on time and within budget. There is also a balance of cost, schedule, and quality. The balanced scorecard must take into account the inter-relationship of these three factors. Although cost and time are relatively easy to quantify, the quality is more difficult. There are many details associated with calculating metrics such as handling the cost and time associated with change orders, handling contract times, etc. These assumptions need to be documented for consistency. The application of performance measures to LPA projects should also be included in the process.

Performance Measures and Metrics	How often does your agency use this process? Please select the best response.					To what extent has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Develop and track meaningful performance measures												

4.2 Quality Assurance

Every DOT has a quality assurance (QA) program. This is an all encompassing concept that includes six main principles: quality control, acceptance, independent assurance, dispute resolution, laboratory accreditation and qualifications, and personnel qualifications. Although these principles are most commonly and formally applied to materials, they also have a role in design and construction. The contractor's quality control program includes application to plans and other submittals, reports, and records. These are provided at pre-paving, pre-construction, and pre-deck pour meetings and used by the contractor to verify the QC activities. This is a great opportunity to be proactive. The owner will have an acceptance program and it may utilize some of the contractor's QC program. There are lab qualification programs and personnel certification programs.

Contractors have requirements for QC plans for production, lay down, etc. The plans should have an approval process and then consequences for not following them. Some DOTs make sure that they are followed such that the plans don't just end up in a file to fulfill a requirement. The DOT's acceptance program may utilize the contractor's test results in decision making processes. This requires validation of the contractor's results. There are also dispute resolution procedures for test results. The Independent Assurance System can be system based or project based. Regulations are in place that require materials testers be certified, but some DOTs have also included inspector qualification programs as well.

Quality Assurance	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Establish agency's quality assurance program												
Utilize contractor's QC most effectively												
Effectively communicate QC and acceptance data between DOT and contractor												

4.3 Inspection and Workmanship

The DOT performs inspection to ensure the contractor's workmanship is acceptable. Steps are outlined for the best workmanship practices and inspectors measure the workmanship. The level of inspection is often tied to the risks associated with the item being inspected (such as potential impact to safety, cost, and/or schedule).

Most DOTs have formal inspection checklists that identify the item to be inspected and the steps the inspector should document. Some states have used a risk-based process and re-evaluated what should be inspected and

the appropriate frequency. These updated checklists allow more efficient use of the inspectors. There are several innovative practices for inspection. In some cases a roving "bridge deck team" travels to the project site to ensure the consistent quality of this item. In some cases inspectors are provided with new tools such as thermal imaging and ground penetrating radar to make their inspection more efficient and accurate.

Inspection and Workmanship	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Assess inspection levels of effort with risk-based processes												
Implement innovative practices and tools for inspection												

Focus Area No. 4: Construction Quality Supplemental Questions

(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Construction Quality.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Focus Area No. 5: Innovation

Innovation includes a range of new technologies, techniques, and methods designed to change the way decisions are made and how values are reflected in construction efforts. The use of contracting practices beyond design-bid-build is increasing. With the growth of technology there are more examples of innovative equipment, products and practices available.

For the Innovation focus area, the most important core elements include alternative contracting; innovative practices, processes, products and equipment; and recognition. The purpose of this focus area is to identify creative practices and processes that allow for innovation.

5.1 Alternative Contracting

The traditional design-bid-build projects are frequently used. However, alternative contracting tools are available and becoming more widely used. Depending on the project, the selection of an alternative contracting method can provide for a more efficient delivery of the project.

Numerous examples of alternative contracting exist such as design-build, cost plus time bidding, fixed price variable design, Construction Manager/General Contractor (CMGC), job order contracting, qualification-based short listing, batching routine bridges, public-private partnerships (PPP), and alternate bidding.

Some agencies have project selection guidelines so each project can be evaluated on a case-by-case basis to determine the most efficient type of alternative contracting for the project. Some states have created a risk assessment approach for selection of the most appropriate type of contracting for the project. Further, prior to advertisement of the project, some states conduct a risk assessment to ensure there were no oversights. When a project is only designed to a level of 30% at the time of advertisement, it is important to ensure that the critical information is included.

Alternative Contracting	How often does your agency use this process? Please select the best response.					To what extent has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Create a comprehensive innovative contracting process (to guide in the selection of the right contracting mechanism for projects)												
Assess the risk of using a particular contracting mechanism for a given project and then assess the risk prior to advertisement												

5.2 Innovative Practices and Products

Technology is constantly changing and increases opportunities to improve the way things are done. New practices or ways of doing things and new products are allowing the opportunity for increased efficiency. Innovative practices and products can be used to help improve construction delivery.

As a practical example, some agencies have compiled a summary of value engineering change proposals. Also, the lessons learned gathered from post-construction reviews provide ideas for innovation. On the technology side, new equipment and products are implemented such as real-time smoothness, field spectroscopy devices, infrared and ground-penetrating radar for uniform thickness measurements, intelligent compaction, and automated machine guidance. Prefabricated Bridges and other accelerated construction approaches are being used. Civil Integrated Management (CIM) is gaining usage for helping design and construction staff coordinate projects.

Innovative Practices and Products	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Implement innovative practices and products												

5.3 Innovative Construction Methods

Contractors are becoming more sophisticated. Additionally, as state DOTs and FHWA offices lose staff to budget cuts and retirements, the DOTs and FHWA are becoming increasingly more involved in managing the work rather than setting policy and providing leadership. For certain projects, the most efficient construction methods are often based on contractor innovations.

Innovative Construction Methods	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Allow contractors to develop and/or utilize innovative construction methods												

5.4 Recognition

When testing innovations, they do not always work the first time. A culture needs to be created to foster creativity and accept failures as part of the path of learning, not as a means that could potentially stifle creativity. A process exists where innovation is encouraged. When innovations are successful, they can be acknowledged and celebrated.

Awards are often given. Industry events highlight innovated practices. Reports are prepared and presented within the state and nationally to share success stories. National groups often recognize state DOT accomplishments through means such as quality awards.

Recognition	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Create a culture of recognition that fosters innovation												

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Focus Area No. 5: Innovation Supplemental Questions
(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Innovation.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Focus Area No. 6: Communications/Data/Information Sharing

Communication of the various transportation messages for projects can be one key to their success. The messages sent to the travelling public before and during construction impact their perception of the project. Also, communications during the environmental efforts, such as NEPA, can impact the flexibility that exists for the construction of the project. Communication between construction and all of the internal and external stakeholders allows relationships to be fostered that will enhance current projects and allow for the implementation of lessons learned for the benefit of future projects. Communication takes many forms and occurs across many stakeholder groups, and may include data and information about the project before construction, during construction, and after project completion. Internal stakeholder groups include those in design, structures, environmental, and maintenance. External stakeholders include FHWA, the general public, contractors, and consultants.

For this focus area, the most important core elements include public relations, the NEPA process, and internal and external feedback between construction staff and others. The purpose of this focus area is to identify creative practices and processes to that have made improvements in communications.

6.1 Public Relations

The traveling public is the end user of the construction project. Keeping them informed of the upcoming project and changes throughout the project is important.

A greater emphasis is being given to marketing the project to the end users. More often there are proactive media campaigns to deliver transportation's message to the public and raise awareness of transportations importance to the quality of life. Support of elected officials is also an effective strategy. A variety of methods exist to communicate information. These include radio, television, social media, internet, marketing (e.g. Carmageddon), and real-time traffic information.

Public Relations	**How often does your agency use this process?** Please select the best response.					**To what extent has the process or procedure been implemented?** Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Create an effective public relations program to mitigate public impact												

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6.2 NEPA Process

During the NEPA process, expectations are established for the construction of the project. Environmental commitments are made that need to be part of the construction process and final transportation facility. Documenting these commitments will help ensure that they are carried through in design and construction. It is important that these expectations are general enough to meet the environmental needs and yet allow innovation in the construction methods.

NEPA Process	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Ensure environmental commitments in the NEPA document are satisfied												
Communicate the needs of construction during the NEPA process to ensure innovative construction methods will be viable												

6.3 Types of Feedback Used to Share Data and Communicate Issues

Communication between construction and all of the internal and external stakeholders allows relationships to be fostered for the benefit of the overall program and projects. In some cases the design and construction coordination is done well with much communication. Meetings between the design and construction staff can clarify the intent of the design. In other cases it may be difficult for the designers to visit the project site during the design. Early constructability reviews involving key participants has been shown to improve the plans.

Pre-bid or post-bid meetings with the designer, consultant and contractor may be held to develop a shared vision of the project. Designing and building the project with maintenance in mind is important. Developing

and maintaining relationships with the contractor is important to build trust and respect. This goes beyond email communication. There is a need to have a collaborative team to handle issues and brainstorm solutions. The contractor and owner have a shared commitment to quality. After the project, post-construction reviews can document lessons learned and implement them for the benefit of future projects.

Types of Feedback Used to Share Data and Communicate Issues	How often does your agency use this process? Please select the best response.					To what extend has the process or procedure been implemented? Please select the best response.					Select this box if use of this process is a high priority for your agency.	Select this box if you feel that a Peer Exchange on this topic would be useful.
	Never	Rarely (<5% Frequency)	Occasion-ally (<20% Frequency)	Often (<75% Frequency)	Routinely (>75% Frequency)	Initiation	Develop-ment	Execution	Assess-ment	Integration		
Communication and data/information sharing between construction staff and internal stakeholders from design, through construction, to maintenance for current project and the implementation of lessons learned												
Foster relationships and trust with the contractor												
Conduct post-construction reviews and implement lessons learned												

Focus Area No. 6: Communications/Data/Information Sharing Supplemental Questions
(To gain additional information in this focus area, please provide your answers to each question below.)

Please tell us about any other exemplary practices or processes that your agency is currently implementing related to Communications/Data/Information Sharing.

Please tell us about any other practices or processes in this focus area that your agency would like to improve and learn more about through a peer exchange.

Please suggest any specific opportunities to streamline, integrate or automate processes for the benefit of construction delivery [e.g. concurrent activities, eliminate non-essential activities/requirements, coordination with environment/design/operations, project management software/systems].

Finished? When complete, click "Submit" to email your responses to FHWA automatically. Be sure to "save as" and include your state in the file name prior to submitting.