Reducing Construction Costs Through Effective Field Communication and Administration

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Reducing Construction Costs Through Effective Field Communication and Administration

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### Abstract

Falling Road Fund receipts have placed added strain on the Kentucky Transportation Cabinet’s (KYTC) already-underfunded highway program. Revenue declines have increased the urgency of improving the efficiency and cost-effectiveness of the Cabinet’s operations. One method KYTC can use to realize greater cost savings is improving the administration of construction projects. Effective field communication and administration helps control construction costs, enhances quality, and minimizes delays and claims. One challenge the Cabinet will need to confront to more effectively administer projects, however, is the loss of institutional knowledge associated with staff attrition. The report documents KYTC current methods for project staffing, communication, and partnering. It summarizes best practices for field communication and administration used throughout the private and public sector construction industries and discusses findings obtained through interviews with Cabinet staff and industry representatives on the issues in-house staff and external contractors routinely negotiate during projects. Based on analysis of these interviews and the literature reviewed, the report identifies five issues that are commonly encountered on KYTC construction projects and puts forward recommendations for ameliorating them. Additionally, it proposes a new initiative — Putting the Project First — which has as its goal the development of tools, practices, guidance, and training to meet stakeholder needs across all project types. Several recommendations, which can be enacted over the short-, intermediate-, and long-term are advanced to build a sound and practical foundation for all Putting the Project First activities. This initiative will strengthen relationships between the Cabinet and its contractors. It will also help build an institutional framework for conducting field communications and administration, one resilient in the face of staff turnover.

### Key Words

communication, administration, project management, staffing, organizational resiliency
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Executive Summary

Declines in Road Fund receipts have placed additional strain on the Kentucky Transportation Cabinet’s (KYTC) already-underfunded highway program. In response, the Cabinet has ratcheted up its focus on improving efficiency and finding areas in which to reduce costs. One method for realizing cost savings is through the improved administration of construction projects. Adopting effective field communication and administration strategies controls construction costs, enhances quality, and minimizes delays and claims. Staff attrition has diminished institutional knowledge of these practices, however.

This project reviewed KYTC practices for project staffing, communication, and partnering as well as best practices used throughout the public and private sector construction industries. Based on interviews with Cabinet staff and contractor personnel, this report provides practical guidance for managing staff levels, conducting effective field communication, and facilitating supplemental agreements in an efficient and fiscally judicious manner is provided.

Summary of Interviews and Recommendations
The Kentucky Transportation Center (KTC) research team analyzed the comments of interviewees to identify common themes and trends. Based on this evaluation, researchers pinpointed five major issues common to KYTC construction projects as well as corresponding recommendations for future improvement. These issues identified and recommendations for solving them are presented in the figure on the next page.

Projects not administered using the partnering philosophy commonly suffer from the first three issues captured. While there is no individual solution that will resolve all of these issues, all projects should have regularly scheduled update meetings, a documented and well-understood issue escalation procedure, and receive buy-in from all parties around a common set of project goals. For most projects — especially smaller ones — a brief discussion at the end of the Preconstruction Conference will suffice to accomplish these goals. The frequency of update meetings should be project-specific decision made by the Section Engineer and Contractor Field Superintendent. A generic template for an escalation ladder can be developed for smaller projects and modified in response to the specifics of each project. For larger or more complex projects, these processes may need to be more formal; an additional meeting before the project begins may also be necessary.

The final two issues speak to a need for more relevant construction experience among staff and the absence of an organizing management philosophy. Formal training and mentoring hold the most promise for addressing these challenges. At a minimum, these issues can be discussed and highlighted during Section Engineer Meetings, TEBM Meetings, and annual district training. Management support and emphasis on these issues is critical for achieving buy-in at the project level.

Researchers recommend a two-phase approach to resolve with these issues. First, formal training should be developed that includes tools to ameliorate each of the five issues presented. The training could be a standalone event or included as a module in the Construction Management Academy. Second, we recommend the development of a leadership-supported initiative that encourages the
administration of construction projects be oriented around a philosophy that emphasizes common project goals, fosters communication, and empowers field personnel to make decisions at the project level. Both recommendations are salient regardless of whether a project is inspected entirely by KYTC forces, supplemented by contract employees, or by consultants.

The programmatic solution discussed in Chapter 4 blends concepts from risk management, organizational behavior and management (i.e., soft skills), and partnering. Dubbed the Putting the Project First (PPF) initiative, the objective of this program is to develop tools, practices, guidance, and training to meet stakeholder needs across all project types. The object of PPF is to develop
tools, practices, guidance, and training to meet the needs of all stakeholders across all project types. An overview of the program and its contents can be found in the table below.
## Putting the Project First Overview

<table>
<thead>
<tr>
<th>Project Types</th>
<th>Small Project:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Medium Project:</td>
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<td></td>
<td>Large/Complex Project:</td>
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<tr>
<td>Stakeholder Guidance</td>
<td>KYTC &amp; Contractor</td>
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<td></td>
<td>Staff Level</td>
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<td>Advisory Level</td>
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<td>Management Level</td>
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<td></td>
<td>Executive Level</td>
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<tr>
<td>Tools, Practices, Guidance and/or Policy</td>
<td>Reboot of the Construction Management Academy</td>
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<td></td>
<td>Issue Documentation Matrix</td>
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<td></td>
<td>Issue Escalation Ladder</td>
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<td></td>
<td>Section Engineer Cheat Sheet</td>
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<td>Best Practices for Subject-Matter Experts:</td>
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<td></td>
<td>• Guidance for those providing technical and managerial support</td>
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<tr>
<td></td>
<td>Electronic Toolbox and Best Practices Guide:</td>
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<tr>
<td></td>
<td>• Examples of tools — Templates for Issue Documentation Matrix, Issue Escalation Ladder, form letters to contractors</td>
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<tr>
<td></td>
<td>• Examples of Best Practices — Communication Response Guide</td>
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<tr>
<td>Areas of Emphasis</td>
<td>Establish Project Goals and Objectives:</td>
</tr>
<tr>
<td></td>
<td>• Meeting Frequency</td>
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<tr>
<td></td>
<td>• Revisions to Preconstruction to deal with all of these bullets</td>
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<tr>
<td></td>
<td>• Section Engineer Field Visit Frequency</td>
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<td></td>
<td>• Schedule and Progress Meetings</td>
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<td>• Relationships, Respect, and Understanding</td>
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<td></td>
<td>Escalation and Empowerment:</td>
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<td></td>
<td>• Field decisions guidance</td>
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<tr>
<td></td>
<td>• Issue Escalation Ladder and guidance</td>
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<tr>
<td></td>
<td>Communication and Documentation:</td>
</tr>
<tr>
<td></td>
<td>• Meeting documentation with action items and due dates</td>
</tr>
<tr>
<td></td>
<td>• Issue Documentation Matrix</td>
</tr>
<tr>
<td></td>
<td>• Communication guidance (form and format)</td>
</tr>
<tr>
<td></td>
<td>Effective Management and Providing Subject-Matter Expertise:</td>
</tr>
<tr>
<td></td>
<td>• Section Engineer Orientation</td>
</tr>
<tr>
<td></td>
<td>• How to effectively provide subject-matter expert support</td>
</tr>
<tr>
<td></td>
<td>• Rebrand partnering philosophies (i.e., PPF)</td>
</tr>
</tbody>
</table>
1. Introduction and Background

The Kentucky Transportation Cabinet (KYTC) is responsible for constructing new roads, upgrading existing corridors, and maintaining the eighth largest state road system and the seventh largest inventory of state-maintained bridges in the United States. Such a large portfolio of assets demands a correspondingly well-staffed state transportation agency to oversee its development and maintenance. However, due to a variety of issues those staffing levels have not been attained. Figure 1 shows illustrates trends in construction spending and staffing levels at KYTC since 1990. Since 1990, spending has increased 92% while the number of employees has declined 31%. As contracts and project specifications grow more complex, reduced staffing levels more significantly impact project performance.

The loss of staff is complicated by the increasing rate of retirements. If positions vacated by retirees are backfilled, less experienced personnel occupy these roles. According to Kentucky Retirement Systems (KRS) data, the number of retirees in the pension system has increased from 1,385 in 2010 to 3,010 in 2018 [1, 2]. While these figures encompass all public employees, the Cabinet has witnessed similar trends. This presents an opportunity to attract new employees who will have opportunities for accelerated career advancement. However, stagnant salaries, deteriorating

Figure 1 KYTC Construction Spending vs. Staffing Levels (1990-2018)
benefits, and a robust and competitive private industry sector have steered prospective employees away from KYTC.

Maintaining effective project communication among all stakeholders is particularly critical when there are fewer and less experienced staff. Poor field communication can prompt disagreements, which may escalate to a dispute (Figure 2). Disputes and tensions strain the relationship between KYTC and its contractors and requires costly and timely dispute resolution measures. In North America in 2016, the average construction dispute lasted 15.6 months and cost $21 million [3].

![Conflict Life Cycle and Resulting Tension](image)

**Figure 2** Conflict Life Cycle and Resulting Tension. Adapted from Emmitt and Gorse, 2003 [4]

Despite the significant costs imposed by disputes, little attention has been paid to disseminating important information and helping employees build the skills that could help improve field communication on KYTC projects.
As part of this research, our Kentucky Transportation Center (KTC) research team interviewed current and former KYTC employees, as well as some of the agency’s major contractors, to understand existing challenges and identify strategies to strengthen relationships between the Cabinet and its construction partners. The primary objective of this work is to provide guidance for managing staff levels and field communication and facilitating supplemental agreements in an effective and fiscally judicious manner. To meet this primary objective, we pursued several secondary objectives:

- Identify successful strategies for conducting effective field administration during construction projects;
- Assess KYTC’s current level expertise in field administration and determine future training and guidance needs;
- Outline and begin preliminary development of KYTC-specific training and guidance for effective field administration of construction projects; and
- Work with KYTC leadership to develop a succession plan that ensures field administration skills are maintained regardless of personnel changes.

This report documents our research methodology, findings, and recommendations. Chapter 2 reviews academic literature as well as department of transportation (DOT) policy manuals. Chapter 3 discusses the interviews of KYTC and contractor personnel. Chapter 4 presents recommendations growing out of our interviews and proposes the Putting the Project First initiative. A final chapter highlights conclusions.
2. Effective Communication Literature Review

2.1 The Importance of Effective Communication
In the construction industry, communication is defined as “the transmission of meaning from one person to another or many people, whether verbally or non-verbally.” [8] So critical is effective communication that many practitioners refer to it as the lifeblood of a project [9]. Strong communication is a must-have for any successful construction project, and therefore its importance should not be underestimated by any individual or project team. Given the nature of the industry and the large number of stakeholders involved on any project, communication conflicts are inevitable. According to Gómez-Ferrer [10], most communication problems that arise in the industry fall into one of the following categories: document management, informality of many communications, and early reductions in bid prices. Failure to resolve communications-related challenges early in a project significantly increase the cost of corrective action [11].

Feedback plays a key role in effective communication. When feedback is absent or delayed, interventions are necessary to bolster communication [12]. If feedback is missing, it can lead to misunderstandings and give rise to differing expectations among various stakeholders. It is imperative that receivers confirm to senders that they understand their message, because communication is ineffective without understanding [13]. The likelihood of having ineffective communication increases as the number of stakeholders involved in a project climbs. The added noise introduced by additional stakeholders occasions forgetfulness, laziness, and prejudices which can affect people’s goals and attitudes. Lastly, it is important to note that, while some might have good intentions with respect to communication, how they actually communicate sometimes thwarts those intentions [14].

If poor communication persists, conflict results. During a construction project, a trigger event often initiates a conflict and is typically the result of different issues, perspectives, understanding, beliefs, values, goals, or opinions. Figure 4 is a model of construction conflict development; it captures what happens following a trigger event. Parties will discuss their perspectives and ultimately decide to either defend their positions or explore their differences. If a stakeholder insists on sticking to their position, tension often results, which can lead to a fractured relationship. Conversely, if stakeholders explore their differences, relationships are often maintained at a high level, differences are worked through, and successful conflict management is the result [4].
2.2 Effective Communication Practices at Departments of Transportation

To evaluate the communication practices at DOTs across the country, we reviewed agency guidance on communication. Construction manuals, project management handbooks, and field communication handbooks from all DOTs were examined to understand current and best practices. Based on our review and analysis, we placed each DOT into one of four categories:

- Has a standalone communication handbook,
- Communication tools listed in the project management or construction manual,
- Communication mentioned but without any significant guidance, or
- No mention of communication in any manual (see results in Figure 5).

California is one agency that has a standalone communication handbook. The California DOT (Caltrans) *Project Communication Handbook* serves as a guide for effective communication throughout the life of a project. It is designed to assist a project team prepare a plan to improve communication among all stakeholders [15]. The handbook also discusses the use of communication tools such as work breakdown structures, project charters, and filing systems. It outlines a system that project teams can follow in conflict situations [15].

Twelve (12) out of the 50 DOTs list some communication tools in project management handbooks or the construction manuals. All 12 of these documents contain thorough sections on preconstruction meetings. Some also present additional communication tools. For example, the Florida DOT has developed an eight-page section dedicated to communication that provides tips for improving communication on the phone, in meetings, and in writing. It also offers tips for effective listening. The Nebraska DOT’s *Project Management Reference Guide* offers advice on internal and external communications. Best practices and examples are also provided [16]. The South Carolina DOT’s *Construction Manual* emphasizes partnering as a strategy to improve
project efficiency. The manual contains several tools, such as an agenda for the initial and follow-up workshops, and a detailed section on team charters [17].

Thirty (30) DOTs mention communication in their manuals but do not furnish substantive guidance. The states in this category provide generic guidelines for preconstruction meetings and touch on communication, but the analysis and recommendations are not much deeper than this. Finally, seven DOTs do not mention communication in their construction manuals or handbooks. Our findings are surprising given that ineffective communication has routinely been identified as key contributor to poor performance in the construction industry [18]. Each state will have to move toward issuing a separate communication handbook, similar to that of Caltrans, to improve construction efficiency and performance.

![Figure 5 Categorization of Communication Guidance in DOT Manuals](image)

**2.3 Effective Communication Practices in the Private Sector**

Compared to the highway construction industry, the private sector has been more open to providing methods for improving communication. Almost all of the research that has been conducted on effective communication in the private industry has focused on industrial and residential construction. Nonetheless, the highway industry can fruitfully adopt practices from other fields to improve its communication networks.

One research study on the Australian construction industry found that alliance contracting effectively facilitates communication between parties [14]. Since alliance contracting creates a single project delivery team instead of individual parties that might have conflicting interests, projects tend to run smoother than traditional contracts [14]. Some states have begun promoting alliance contracting. The Federal Highway Administration (FHWA) is also taking steps to promote
innovative contracting methods and tools that encourage collaboration in the highway construction industry. FHWA’s Every Day Counts 4 promoted several methods to establish relationships built on mutual trust, achieve equally beneficial goals, foster open communication, and institute a commitment to resolving issues and minimizing disputes [19]. If implemented correctly, these methods can bolster communication and hopefully project performance in the highway industry.

Weekly construction meetings are used to exchange information and monitor project progress. Frequent meetings between stakeholders can help resolve problems and disputes [20]. Such meetings are more common in the industrial and residential construction sectors than in the highway industry. Weekly meetings can forge open communication between management departments and field supervisors, which interactions are often hampered by poor communication. Typically, management teams are busy handling multiple projects at the same time, whereas field supervisors are focused on ensuring their projects stay on schedule, creating a gap in communication. The severity of this problem is exacerbated by recent graduates on engineering administration teams being less knowledgeable about the crafts and issues of the field [21]. Weekly cost and schedule meetings for labor supervisors provide a channel for both management and field supervisors to exchange information and notify all stakeholders of any problems that have been recorded or which are foreseen [21]. Having weekly meetings in the highway industry can help improve communication and reduce tensions which arise in the field between various stakeholders.
3. Project Stakeholder Interviews and Experience Assessment

To better understand KYTC’s field administration practices on construction projects, we interviewed highway contractors, district construction personnel, and consultant inspectors from across Kentucky. These interviews were semi-structured where a series of defined questions reviewed by the Study Advisory Committee (SAC) guided the conversations. Questions were purposely open-ended to encourage more discussion and ensure the topics covered were those the interviewees considered most important. We posed the same questions to all interviewees:

- Tell us about a past project (> $10M) that you considered successful.
  - What factors do you feel enabled this project to be successful?
  - What processes did the contractor include that contributed to the project success?
  - What processes did you as owner representative include that contributed to the project success?
  - Describe how communication between all stakeholders was ensured.
- Tell us about a past project (> $10M) that you considered NOT successful.
  - What factors do you feel caused this project to not be considered successful?
  - What did the contractor do/not do that contributed to the lack of project success?
  - What did you do/not do that contributed to the lack of project success?
  - Describe the communication between stakeholders.
- What administrative and communication processes are critical to a successful construction project? (and vice-versa)
- What areas do contractors need to improve to ensure a successful construction project? (Particularly in communication and working relationship with KYTC)
- What areas does KYTC need to improve to ensure a successful construction project? (Particularly in communication and working relationship with contractor)
- Is there anything else you would like to add that we haven’t discussed?

We continued interviewing stakeholders until distinct themes emerged and the responses became saturated. In total, we interviewed four contractors and four owner representatives (KYTC construction inspectors). We reviewed interview responses and synthesized answers, paying special attention to questions where multiple interviewees provided similar responses. A brief summary of the responses for each interview question, along with high-level conclusions, is provided in the following sections.
3.1 Successful Project
All parties agreed the following elements are critical to developing a successful project: regular project meetings, project-level decision-making authority, and the willingness of both the contractor and KYTC inspectors to take ownership of a project. Table 1 summarizes responses to this question.

Table 1 Factors Contributing to a Successful Project

<table>
<thead>
<tr>
<th>Contractor Responses</th>
<th>KYTC (Owner) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspectors empowered to make decisions</td>
<td>Inspector takes ownership of project</td>
</tr>
<tr>
<td>Available &amp; willing to discuss issues</td>
<td>Regular interaction and accountability</td>
</tr>
<tr>
<td>Regular progress meetings</td>
<td>Regular progress meetings with notes</td>
</tr>
<tr>
<td>Decision makers participate in progress meetings/discussions</td>
<td>Central Office availability and prompt responses to inquiries.</td>
</tr>
<tr>
<td>Willingness to tackle &quot;difficult&quot; issues</td>
<td>Frequent &quot;Tailgate Meetings&quot; on the project site</td>
</tr>
<tr>
<td>Agreement/notification before escalating an issue. No surprises!</td>
<td>Once a decision is made (good or bad) move on with project.</td>
</tr>
<tr>
<td></td>
<td>Contractor takes pride in work and KYTC acknowledges their right to a reasonable profit</td>
</tr>
<tr>
<td></td>
<td>Constant communication between Owner &amp; Contractor's project level decision makers</td>
</tr>
</tbody>
</table>
3.2 Unsuccessful Project
All interviewees cited lack of authority or willingness to make decisions at the project and/or district level, as well as a lack of consistent communication between parties, as major roadblocks to a project’s success. Contractors noted several other factors can hamper project success: long review times for submittals, change orders, and project closeout documentation. Table 2 summarizes responses to this question.

<table>
<thead>
<tr>
<th>Contractor Responses</th>
<th>KYTC (Owner) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributing Claim Form at Precon Meeting</td>
<td>KYTC assumed Contractor is trying to &quot;make-up&quot; for a previous job where they lost money</td>
</tr>
<tr>
<td>&quot;Boiler-Plate&quot; Format of Precon Meeting</td>
<td>No decision authority for Section Engineer. TEBM made all decisions</td>
</tr>
<tr>
<td>Awarded over EE estimate. Difficulty for KYTC to understand why bid was higher.</td>
<td>No communication with Contractor workforce.</td>
</tr>
<tr>
<td>MOT plans that are not safe. Difficult to get revised and slow response time.</td>
<td>Numerous personnel changes during the life of project. Excessive personnel turnover. Lack of experience.</td>
</tr>
<tr>
<td>Relationship issues when decisions are &quot;over-ruled&quot; by District or Central Office</td>
<td></td>
</tr>
<tr>
<td>No defined or accepted issue escalation procedure</td>
<td></td>
</tr>
<tr>
<td>Slow approval of Shop Drawings and falsework design</td>
<td></td>
</tr>
<tr>
<td>No willingness by KYTC to accept fault for mistakes</td>
<td></td>
</tr>
<tr>
<td>Ask contractor to &quot;cut corners&quot; on certain work items. Striping is a good example.</td>
<td></td>
</tr>
<tr>
<td>Work performed by KYTC Maintenance not communicated to contractor</td>
<td></td>
</tr>
<tr>
<td>Inefficiency still existing from the 2008 Re-Org</td>
<td></td>
</tr>
<tr>
<td>Adjacent projects in different districts. adds a &quot;layer&quot; of bureaucracy</td>
<td></td>
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<tr>
<td>Let change orders &quot;sit&quot; for too long before processing.</td>
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<tr>
<td>Material certification</td>
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<tr>
<td>Perceived double standard on meeting deadlines between Contractor and KYTC.</td>
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<tr>
<td>Holding change orders until a deduction to reduce net amount.</td>
<td></td>
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<tr>
<td>Change Orders perceived as attempts to &quot;make more money&quot; by KYTC</td>
<td></td>
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<tr>
<td>Lack of authority, willingness, and/or expertise to make decisions in field.</td>
<td></td>
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<tr>
<td>No ownership of projects by Section Engineers</td>
<td></td>
</tr>
<tr>
<td>&quot;Moving&quot; money among quantities to avoid a change order.</td>
<td></td>
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<tr>
<td>Deadlines for project documentation &amp; closeout.</td>
<td></td>
</tr>
<tr>
<td>RECOMMENDATION: Send periodic list of all open projects to Primes for review</td>
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</tr>
</tbody>
</table>
3.3 Critical Administrative and Communication Processes
Our question about the administrative and communication processes needed to ensure the success of a construction project generated numerous and varied responses from both contractors and KYTC. Major points emphasized in response to the first two questions reemerged in the context of this question. Interviewees commented that regular project meetings, project-level decision making authority, and ownership of a project by all parties are critical to project success. Interviewees also suggested tools to improve project administration and communication. Several of these ideas are quick wins and could be implemented right away while others require a change in culture, stretching their implementation over a longer time period. Table 3 summarizes responses to this question.
### Table 3 Administrative and Communication Practices Critical to a Successful Project

<table>
<thead>
<tr>
<th>Administrative &amp; Communication Practices That are Critical to a Successful Project</th>
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<tbody>
<tr>
<td><strong>Contractor Responses</strong></td>
</tr>
<tr>
<td>Need to take ownership of a problem and not focus on people involved. Inspectors with maintenance background don't get involved unless a maintenance issue. Document all communication for later reference. Maintain a list of &quot;action items&quot; and responsible party(s). Call before sending a dispute letter. No surprises. Mutual respect. Known when to and how escalate issues. Too much time and energy spent on trivial issues. Lack of subject matter expertise at the Central Office level. Too much use of email. Easy to misinterpret the &quot;tone&quot; of the discussion. Meet face-to-face on scheduling and project issues. This encourages accountability &amp; transparency. Both sides must take ownership in project schedules. Don't cry &quot;wolf&quot; over every issue. Contractor needs to present realistic schedule and KYTC needs to respect the submitted schedule. Better documentation and sharing of pre-construction meeting minutes. Understand the &quot;decision hierarchy&quot; of the contractor. Example: some allow field decisions by project Superintendent others don't. Subcontractors need to be involved in pre-construction conference. KYTC inspectors should not manage contractor personnel. Direct issues to foreman. Inspect work and measure/accept for payment but allow contractor to control the work. Means and methods. Regularly scheduled progress meetings. Frequency should be project specific. If resources for KYTC are an issue, request the Contractor to handle. Notes must be kept and distributed. Accountability for what is said and what needs to be done. Section Engineers need more office support. Need to emphasize the principles of informal partnering. District Office and Central Office need to back up decisions made in the field when possible. Put &quot;response needed by&quot; dates on all decisions. Biggest complaint was delay went decisions go to Frankfurt. Appears there is often an &quot;attitude of resentment&quot; from KYTC that the contractors are making too much money. Especially when bid is higher than estimate. Acceptable profit for Contractor is not only acceptable it should be expected. Assuming quality of work merits profit. Allow contractor to improve rideability at their own cost. KYTC has denied on the past. Public would benefit from a higher quality ride. Inspectors should interact with contractor and avoid &quot;sitting in the truck&quot;. Pre-approve pay estimates prior to processing to avoid needless delays. Allow contractor to review prior to submitting. If there are issues with pay estimate advise contractor ASAP. Notify Prime if a sub has not submitted certified payrolls. DBE documentation is very burdensome on contractor. Agreed pay schedule for lump sum items is important. Current format of Pre-construction Conference is not conducive to &quot;informal partnering philosophies&quot;. It has become a &quot;check the box&quot; meeting.</td>
</tr>
<tr>
<td>Explain common goals to new employees. RECOMMENDATION. Provide handouts such as Collaborative Goals of the Project, Expected Outcomes, &amp; Why Are These Good? Leadership needs to show respect to inspectors. It is human nature to not treat the contractors with more respect than you receive. &quot;After Meeting&quot; at Pre-Construction Conference is very productive. Regular project meetings. Section Engineer MUST visit and be updated on each project at least weekly. Section Engineer should not contradict inspector in front of others if possible. Also, don't show up after extended absence from job and proceed to relate all that is wrong with project. This just makes the inspector look bad and ticks off the Contractor. Develop generic agenda for regular project meetings that can be modified on a project specific basis. Realize that each district is different. There is no &quot;one size fits all&quot;. Specifications excluded! Realize it take time to develop new inspectors and provide guidance from past.</td>
</tr>
</tbody>
</table>

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**KTC Research Report** Reducing Costs Through Effective Field Communication and Administration
3.4 Areas for Contractor and KYTC Improvement
The next two questions asked the interviewees to discuss areas in which both KYTC and contractors can improve. During the interviews we emphasized that it was important for interviewees to offer honest and unfiltered responses, but we also stressed that overly critical responses would be counterproductive. Areas in which contractors and KYTC agreed there could be improvement included having both parties understand the partnering philosophy, maintaining consistent communication, recognizing the appropriate chain of command, and the overall experience. Many of these areas can be addressed through formal training for contractors and KYTC. However, the larger issues, such as taking ownership of the project and staff inexperience can only be improved over time with support from Cabinet leadership. Tables 4 and 5 summarize the responses of contractors and KYTC staff, respectively.

**Table 4 Areas of Improvement for Contractors**  
**Areas Contractors Need to Improve to Help Ensure a Successful Project**

<table>
<thead>
<tr>
<th>Contractor Responses</th>
<th>KYTC (Owner) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to view KYTC as their best customer.</td>
<td>Recognize that as the owner representative, KYTC needs to &quot;control the message&quot;.</td>
</tr>
<tr>
<td>Focus on customer service.</td>
<td>Realize that KYTC is INEXPERIENCED not INCOMPETENT. Doing so can prejudice a young inspectors perspective of contractors forever.</td>
</tr>
<tr>
<td>Have respect for KYTC and issues they must handle.</td>
<td>Make two phone calls and a non-threatening email before escalating issue. Contractors must realize that they have lost a lot of experience as well. Not just KYTC. Need to continue to develop field personnel so decisions can be made at the project level.</td>
</tr>
<tr>
<td>Improve Partnering ideology.</td>
<td>Communicating to KYTC their planned work schedule. Avoid last minute notice of beginning work, moving to a new location, or working weekends, etc.</td>
</tr>
<tr>
<td>Staying on top of submittals. KYTC is understaffed.</td>
<td></td>
</tr>
<tr>
<td>Request reasonable response times. Don't &quot;cry wolf&quot; and act like every issue is an emergency. Improve communication skills. Both in person and electronically. Follow up verbal discussions with a quick &quot;as-discussed&quot; email.</td>
<td></td>
</tr>
<tr>
<td>Contractors need to stay ahead of potential issues and notify KYTC early of potential problems. Don't sit back and wait for a decision and documentation. Be more proactive in obtaining replies.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 5 Areas of Improvement for KYTC

**Areas KYTC Needs to Improve to Help Ensure a Successful Project**

<table>
<thead>
<tr>
<th>Contractor Responses</th>
<th>KYTC (Owner) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce the &quot;cultural&quot; differences between districts. This impacts inspector attitudes</td>
<td>Reinforce to inspectors their job is not to save money. It is to get the best product</td>
</tr>
<tr>
<td>toward contractors. It is not uncommon for bids to be increased simply because of</td>
<td>for the money that is being spent. For example, make sure to get the best product for</td>
</tr>
<tr>
<td>historically bad relationships with certain districts.</td>
<td>$100 and not try to spend only $90 on a $100 budget.</td>
</tr>
<tr>
<td>Indecision between Section Engineer and Liaison. Learning from a bad decision is</td>
<td>KYTC needs to emphasize that applicable years of experience and total years of</td>
</tr>
<tr>
<td>better than constant indecision. If needed, say &quot;no&quot; and escalate. But accept if it</td>
<td>experience are not the same thing. Everyone is NOT interchangeable. This sends a</td>
</tr>
<tr>
<td>changes to &quot;yes&quot;.</td>
<td>confusing message to inspectors.</td>
</tr>
<tr>
<td>Funding issues at KYTC always causes perspective of contractors to deteriorate.</td>
<td>Ensure that field positions are backfilled as quickly as KYTC management positions.</td>
</tr>
<tr>
<td>When all possible require Central Office Liaisons to have experience as a Section</td>
<td>Doing otherwise sends the wrong message.</td>
</tr>
<tr>
<td>Engineer.</td>
<td>KYTC management should reinforce to field personnel that they are there to support</td>
</tr>
<tr>
<td>Section Engineer should refrain from telling contractor personnel what they should</td>
<td>and not act as a &quot;watch dog&quot;. If not, inspectors become reluctant to make decisions.</td>
</tr>
<tr>
<td>be doing. Direct comments to foreman.</td>
<td>Revolving door for field personnel is an issue. Consider allowing EITs to forgo the</td>
</tr>
<tr>
<td>Lack of experience is a major issue through several layers of KYTC. It appears to</td>
<td>rotation if they want to stay.</td>
</tr>
<tr>
<td>have worsened since the ReOrg in 2008. Small issues seem to elevate up the chain</td>
<td>Continue to work on ways to improve recruitment and retention of Technicians. They</td>
</tr>
<tr>
<td>instead of being resolved at a lower level.</td>
<td>are vital</td>
</tr>
<tr>
<td>Lack of trust between KYTC and Contractor and also between different levels at KYTC.</td>
<td>Stop holding change orders waiting for additional work items.</td>
</tr>
<tr>
<td>Requests made at pre-construction conference are often never carried out.</td>
<td></td>
</tr>
<tr>
<td>Delay in responses from KYTC management hurts the motivation of field personnel.</td>
<td></td>
</tr>
<tr>
<td>Take pride and ownership of each project.</td>
<td></td>
</tr>
<tr>
<td>Stay on top of submittals and where they are in the process.</td>
<td></td>
</tr>
<tr>
<td>Requiring justification for additional quantities/money for obvious plan errors.</td>
<td></td>
</tr>
<tr>
<td>Leadership should accept that field personnel will make mistakes and use them as</td>
<td></td>
</tr>
<tr>
<td>learning tools and not &quot;gotcha&quot; moments.</td>
<td></td>
</tr>
</tbody>
</table>
3.5 Additional Observations
The final interview question presented interviewees with the opportunity to add anything they felt would be helpful which had not been previously discussed. The responses mostly reinforced previously discussed ideas and issues. The need for consistent communication, mutual respect, timely review of submittals, and overall lack of experience again were deemed critical factors. Table 6 summarizes the responses for this question.

**Table 6 Additional Items of Note from Interviews**

<table>
<thead>
<tr>
<th>Contractor Responses</th>
<th>KYTC (Owner) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without mutual respect it is tough to have a successful project. Put yourselves in the other person's shoes. Personal attacks always end bad. Factors that impact respect: KYTC culture, Age &amp; Experience, Organizational Change, Organizational Policy (improving), Authority &amp; Responsibility (not enough in field), and Communication (too much email not enough face-to-face). Don't leave on Friday mad at each other or with outstanding issues. Even with verbal approval for change order to allow work to proceed, documentation still needs to happen promptly for payment. Materials is an issue. An apparent lack of understanding how much their work impacts the progress of the project. Timeliness of testing samples. Examples of samples taken and left in back of truck for days. Quality will naturally deteriorate and effect results. Difference in interpretation of specifications across districts is an issue. Experience is defined generically. For example, someone may be a 20 yr employee but that experience may not be relevant. Understanding of what needs to be reviewed in a submittal needs to be improved. A good example is shop drawings. Are they being reviewed or just received. There is a big difference.</td>
<td>With the new HT series, we need to ensure we have the appropriate experience inspecting road construction. Need to understand that quality may cost more up front, but will last longer and usually end up cheaper in the long run. If current trend continues, consultants will be inspecting the majority of road construction. Will the consultant industry less likely to argue with contractors for fear of losing future work? Need to learn to pick your battles. Don't have to win and/or be right every time. KYTC &amp; Contractors are partners. Contractors want to make money and KYTC wants good projects at reasonable costs. Must work together to make that happen. ProjectWise could be made more &quot;user-friendly&quot;. It's ok to make a mistake. But not ok to not make a decision.</td>
</tr>
</tbody>
</table>

KTC Research Report Reducing Costs Through Effective Field Communication and Administration
3.6 KYTC Experience Assessment
As the responses demonstrate, interviewees brought up staff inexperience multiple times and attributed many of the challenges that materialize during project administration to a lack of experience. Accordingly, we felt it would be informative to look at the average years of experience for various KYTC engineering levels over the last several years to identify trends. To do this, we took snapshots of the Cabinet engineering experience in 2007, 2012, and 2019. Engineering staff were categorized into the following groups: Staff Level; Advisory Level; Management Level; and Executive Level. Figure 6 presents the results of this analysis.

![KYTC Engineering Staff Average Levels of Service, 2007-2019](image_url)

**Figure 6** KYTC Engineering Staff Average Levels of Service, 2007-2019
From 2007 to 2012, the average years of experience across all groups declined by 20%. The only anomaly during this period was at the executive level, which saw an increase of 2%. Reductions at the other levels most likely resulted from an attractive retirement window at the end of 2007 as well as attrition resulting from mid-level engineers leaving the Cabinet for higher salaries in the private sector. Recognizing this trend, KYTC leadership instituted a salary increase for all merit engineering positions in 2014. The positive effects of this action are reflected in the average years of experience across all groups increasing 15% from 2012 to 2019. Trends at the executive level were again anomalous, as average years of experience fell 9%. While it cannot be the entire solution to maintaining experience and core competencies at KYTC, increasing salaries to retain employees appears to have a positive impact. Readers should note that this figure indicates overall experience for all engineering disciplines. Perhaps a more accurate measurement would be the relevant engineering experience for each discipline area, however, this was beyond the scope of the current project.

3.8 Summary and Recommendations
Based on our analysis of interview responses, we synthesized commonalities and trends. We identified five major issues common to KYTC construction projects and presented corresponding recommendations for future improvement. The top issues and corresponding recommendations are presented in Figure 7.
Projects not administered using the partnering philosophy commonly suffer from the first three issues captured in Figure 7. While there is no individual solution that will resolve all of these issues, all projects should have regularly scheduled update meetings, a documented and well-understood issue escalation procedure, and receive buy-in from all parties around a common set of project goals. For most projects — especially smaller ones — a brief discussion following the Preconstruction Conference will suffice to accomplish these goals. The frequency of update meetings should be project-specific decision made by the Section Engineer and Contractor Field

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**Figure 7 Top Five Issues and Recommendations**

1. Consistent and constructive communication is a necessity between inspection crews and contractors. Current practices hampering this objective:
   - The lack of regular project meetings.
   - Discussions or decisions are not documented.
   - Excessive response times.
   **Recommendation:** For each project, establish an agreed-upon frequency for progress meetings. Items discussed at meetings should be documented, shared, and approved by all parties.

2. A well-defined decision-making ladder is needed for project efficiency. Current practices hampering this objective:
   - There is no consistent decision-making authority at the project level.
   - Management is often perceived as more of an auditor than as a supporting agency.
   - Approval time of submittals and project requests is excessive.
   **Recommendation:** Devise an escalation ladder for decision-making authority based on project complexity and cost. Both Management and district offices should encourage and support decision making at the project level.

3. All stakeholders must be accountable for a project’s success. Current practices hampering this objective:
   - Inspectors often appear to take no ownership in their projects.
   - Potential issues are not addressed in a timely manner. Left unaddressed, these often become major issues.
   - Relationships with contractors are adversarial.
   **Recommendation:** Work with contractors to establish shared project goals and objectives.

4. Construction expertise and experience levels must increase. Pressing challenges:
   - Current staff are inexperienced — *not incompetent*.
   - There are no subject-matter experts to offer project-level guidance to field personnel.
   - Total years of experience should not be equated with total years of construction experience.
   **Recommendation:** Develop a Section Engineer training class to encourage mentorship and build experience and knowledge.

5. Construction project administration requires a program management approach. Pressing challenges:
   - Inefficiencies from the 2008 reorganization linger due to inadequate staffing levels.
   - Too often the emphasis is only on saving money and not on getting the best value.
   - Projects should be constructed to achieve a 20- to 25-year service life rather than 5-10 years.
   **Recommendation:** Refresh and update Construction Management Academy modules focused on topics like construction conflicts and partnering.
Superintendent. A generic template for an escalation ladder can be developed for smaller projects and modified in response to the specifics of each project. For larger or more complex projects, these processes may need to be more formal; an additional meeting before the project begins may also be necessary.

The final two issues speak the lack of relevant construction experience among staff and the absence of an organizing management philosophy. Formal training and mentoring hold the most promise for addressing these challenges. At a minimum, these issues can be discussed and highlighted during Section Engineer Meetings, TEBM Meetings, and annual district training. Management support and emphasis on these issues is critical for achieving buy-in at the project level.

We recommend a two-phase approach to resolve with these issues. First, formal training should be developed that includes tools to ameliorate each of the five issues presented. The training could be a standalone event or included as a module in the Construction Management Academy. Second, we recommend the development of a leadership-supported initiative that encourages the administration of construction projects be oriented around a philosophy that emphasizes common project goals, fosters communication, and empowers field personnel to make decisions at the project level. Both recommendations are salient regardless of whether a project is inspected entirely by KYTC forces, supplemented by contract employees, or by consultants. The next chapter presents an outline of a recommended training module and a plan for implementing the Putting the Project First initiative.
4. Putting the Project First

4.1 Introduction
Our findings revealed that the emphasis placed on field communication skills has declined over time at KYTC, mainly due to inadequate staffing levels. Currently, both internal and external project stakeholders commonly experience dissatisfaction and frustration. Based on our interviews with internal and external project stakeholders, we have devised an approach to improve project communication. Our programmatic solution blends concepts from risk management, organizational behavior and management (i.e., soft skills), and partnering. Dubbed the Putting the Project First (PPF) initiative, the objective of this program is to develop tools, practices, guidance, and training to meet stakeholder needs across all project types. Some agencies, such as the Colorado DOT, use some of these approaches as a segment of their formalized partnering process to limit project conflict and establish tools to resolve conflicts and improve communication. Other concepts included within PPF are more general to management and best practices for negotiation.

While the use of formal partnering has waned at KYTC, partnering concepts and practices can nevertheless benefit the construction management process. Collecting and organizing these elements is a primary impetus of PPF. Although the scope of our current research does not allow for the full development and implementation of PPF, we have developed an implementation-ready contextual framework KYTC can leverage. The following sections discuss the context in which PPF will be implemented at the Cabinet. Successful implementation will require buy-in from stakeholders. Therefore, we present our approach as a series of recommendations. Once enacted, the recommendations will establish a foundation for developing the full PPF program.

4.2 Putting the Project First Scope and Overview
The PPF concept can be adapted and scaled to all KYTC project types and is applicable for various stakeholders. To accomplish this, the project types, stakeholders, tools, and areas for emphasis need to be identified. The following descriptions (Table 7) are starting points for development and adaptation because buy-in is imperative to the success of PPF. We present a strategy to achieve buy-in later in this chapter.

1 See https://www.codot.gov/business/designsupport/design-docs/project-first-on-construction-projects
| **Project Types** | Small Project:  
| Medium Project:  
| Large/Complex Project: |

| **Stakeholder Guidance** | KYTC & Contractor  
| Staff Level  
| Advisory Level  
| Management Level  
| Executive Level |

| **Tools, Practices, Guidance and/or Policy** | Reboot of the Construction Management Academy  
| Issue Documentation Matrix  
| Issue Escalation Ladder  
| Section Engineer Cheat Sheet  
| Best Practices for Subject-Matter Experts:  
  • Guidance for those providing technical and managerial support  
| Electronic Toolbox and Best Practices Guide:  
  • Examples of tools — Templates for Issue Documentation Matrix, Issue Escalation Ladder, form letters to contractors  
  • Examples of Best Practices — Communication Response Guide |

| **Areas of Emphasis** | Establish Project Goals and Objectives:  
  • Meeting Frequency  
  • Revisions to Preconstruction to deal with all of these bullets  
  • Section Engineer Field Visit Frequency  
  • Schedule and Progress Meetings  
  • Relationships, Respect, and Understanding  
| Escalation and Empowerment:  
  • Field decisions guidance  
  • Issue Escalation Ladder and guidance  
| Communication and Documentation:  
  • Meeting documentation with action items and due dates  
  • Issue Documentation Matrix  
  • Communication guidance (form and format)  
| Effective Management and Providing Subject-Matter Expertise:  
  • Section Engineer Orientation  
  • How to effectively provide subject-matter expert support  
  • Rebrand partnering philosophies (i.e., PPF) |
4.3 An Approach to Buy-In for Putting the Project First

Administering the introduction of programmatic changes can be difficult; staff expecting to feel the brunt of the changes may voice resistance. In the past, KYTC has implemented programmatic change with varying levels of success. Current and future recommended changes accompanying PPF are significant enough to consider them programmatic. As such, changes must be implemented with care. Guidance for implementing substantial change is offered from two sources. First, the Kaizen Institute has described six steps to achieve effective change:

1. Mobilize commitment to change through the joint diagnosis of business problems.
2. Develop a shared vision of how to organize and manage for competitiveness.
3. Foster consensus for the new vision, competence to enact it, and cohesion to move it along.
4. Spread revitalization to all departments without pushing it from the top.
5. Institutionalize revitalization through formal policies, systems, and structures.
6. Monitor and adjust strategies in response to problems in the revitalization process.

Key points that merit highlighting include the need to jointly diagnose problems and the importance of reaching consensus when formulating solutions. The interviewees we spoke with (see Chapter 3). An article from the Harvard Business Review also contained four useful practices for implementing changes:

1. Tell it like it is.
2. Break the initiative down into manageable chunks.
3. Hear employees out.
4. Reverse the flow.

Building off of these suggestions, we used information collected during our stakeholder interviews to break recommendations into manageable phases. We developed an informational brochure that summarizes the first batch of recommendations associated with PPF. Appendix A contains a copy of this brochure. We anticipate presenting and distributing the brochure at KYTC Section Engineer’s meetings and to the Kentucky contractor and consultant communities to solicit feedback. Based on their comments we intend to and revise the recommendations.

The process of implementing suggested changes will give those impacted by the changes an opportunity to provide their input and therefore attain some a level of buy-in into PPF. While the recommendations seem KYTC-centric, their goal is to improve relationships between the contracting community and the Cabinet. The principles outlined below apply to all inspection and field staff, including KYTC employees, consultant inspectors, and fully consulted construction engineering and inspection. The following sections elaborate on recommendations put forward in the PPF brochure according to their respective phase of implementation. Currently we envision this being a three-phase process (recommendations that can be implemented over the short-, medium-, and long-term). Once the brochure is distributed and feedback is received these recommendations may be altered, amended, or discarded.

2 https://in.kaizen.com/blog/post/2016/07/05/six-steps-to-effective-change.html
3 https://hbr.org/2008/02/how-to-win-the-buyin-setting-t-1
4.4 Short-Term Recommendations (Phase 1)
Recommendations that can be implemented in relatively short order include adopting useful tools and guidance that will carry through additional phases of the program. These recommendations are presented sequentially, in the order their implementation should be prioritized. Most of the recommendations for PPF are conceptual and nature and were developed following numerous discussions with KYTC project stakeholders.

4.4.1 Establishment of a Putting the Project First Taskforce
The first recommendation is to establish a PPF Taskforce consisting of Cabinet personnel at various levels (staff, advisory, management, and executive) and potentially representatives from other stakeholder groups (researchers, contractors, consultants). The taskforce would serve as the governing body of the PPF initiative. Its mission will be to improve field-level communications and relationships between stakeholders. Principal activities will include selecting and implementing components of PPF, working to ensure PPF is an initiative that continually improves by evaluating recommendations and making adjustments based on feedback, and rolling out new tools and guidance as needed. One potential approach to evaluating PPF at the project level is to include an evaluation tool or question in the post-construction review process or contractor and KYTC evaluation process. Although we (the KTC research team) would like to remain involved with this taskforce, especially in its early stages, Cabinet personnel at the management level should lead the taskforce’s efforts. As the primary decision-making body for PPF, the group will be a key source of information on the initiative. Much of the knowledge related to PPF will be disseminated via training, specifically through a revised Construction Management Academy.

4.4.2 Revised Construction Management Academy (CMA)
The CMA will be revised through development of a module on project communication and administration for Section Engineers. Under this scenario, the current CMA agenda will undergo restructuring so that elements related to effective communication and administration are grouped into single module. This module will likely add one day to the CMA. Additionally, consideration should be given to posting content online so stakeholders can refresh their knowledge (e.g., slides, notes, videos). Appendix B includes a recommended outline for the revised CMA.

As noted, we recommend developing training on field communication and the administration of construction projects. The audience for this training is Section Engineers, project inspectors, and consultant inspectors. It can be developed as a standalone course or included as a module in the CMA. Taking into account the scope of this project and information gathered during interviews, we propose the following outline for the training:

I. Conducting an Effective Preconstruction Conference
II. Project Update Meetings
III. Development and Implementation of an Issue Resolution Ladder
IV. Establishing Project Goals
V. Managing Projects to Achieve Best Value

After completing the course, participants should be able to:
- Plan and conduct an effective Preconstruction Conference,
• Organize project-specific update meetings with appropriate attendees, for which accurate records are kept,
• Understand and respect the lines of communication specific to each project and know when and how to escalate issues,
• Determine common project goals and recognize the importance of receiving buy-in from all project team members, and
• Differentiate lowest cost from best value and make project level decisions accordingly.

We recommend that the training last approximately six hours if it is a standalone course. This will allow sufficient travel time for participants. If included in the CMA, during instructional activities, staff in leadership positions could be on hand to provide comments that draw on their personal experiences. If the training is developed by contract, we recommend that KYTC guide and direct content development and provide a strong in-house presence during implementation.

4.4.3 Issue Escalation and Tracking Tools
One challenge mentioned by most of the interviewees is that project issues and questions tend to be drawn out over an extended period. The perception among these stakeholders was that decisions are avoided, or staff lack the experience necessary to make decisions. Other potential contributors are resource shortages and a lack of focus on prioritization. Reviewing approaches used by other states, we identified two useful tools that should be considered for immediate implementation: the Issue Escalation Ladder and Issue Documentation Matrix.

The Issue Escalation Ladder furnishes an approach to resolving project questions or problems, one that is mutually agreed to by KYTC and its contractors. In construction, time is a critical factor and when questions or issues are not resolved quickly there are associated costs. The Issue Escalation Ladder presents a define timeline and procedure for settling common questions or problems. If a problem arises, a fixed amount of time is set to attain a resolution at a personnel level. If it is not solved within the specified time period, the problem is automatically escalated to the next level for consideration. Use of this tool promotes timely decisions and prevents small, festering issues from becoming larger, more cumbersome ones. This approach is not an alternative to nor a tool to be used with the claims process. Appendix C includes an example template for the Issue Escalation Ladder. The template’s timelines and levels should be amended for individual projects. Project stakeholders should agree to the structure of the Issue Escalation Ladder at the Preconstruction Conference or beginning of a project.

In conjunction with an Issue Escalation Ladder, issues and questions must be documented as they emerge on a project. The daily work report has been the primary documentation for this purpose. However, because these reports are not typically available contractors in real-time, concern and uncertainty can crop up about issues and whether stakeholders are working toward resolution. For example, where KYTC is looking for issue resolution, there can be similar instances where the Cabinet is not provided with documentary evidence of an issue being resolved. The Issue Documentation Matrix is a project specific-form that serves as a record of communication between KYTC and a contractor; it furnishes evidence that either an issue is moving toward a resolution or that progress toward a resolution has stalled and therefore the issue potentially requires advancement on the Issue Escalation Ladder. Appendix D contains a template for an Issue
4.5 Intermediate Recommendations (Phase 2)
While the short-term recommendations will establish a foundation for the PPF program, the intermediate recommendations represent a second phase of the PPF initiative and likely will be adapted pursuant to stakeholder feedback and taskforce modifications. Broad outlines of the intermediate-term recommendations are sketched in this section.

4.5.1 Putting the Project First Scalability Matrix
Not all construction projects should be treated in the same manner. Using an administrative framework that has been adapted to an individual project’s context is a more efficient use of resources. By developing a tool to scale PPF to a project type, KYTC can build efficiency into the administration of their projects. Appendix E contains an example Project Scalability Matrix sourced from the International Partnering Institute. The PPF Taskforce can work to customize a Cabinet-specific tool based on this example.

4.5.2 Revisions to the KYTC Preconstruction Checklist and Instructions
The application of the Preconstruction Checklist exemplifies the need for scalability. As originally designed, only elements in the KYTC Preconstruction Checklist needed for a project are to be used; and those portions are to be completed prior to the Preconstruction Conference to facilitate discussions related to plans, schedule, and project concerns. However, because the checklist was developed in a comprehensive form so it is applicable to even the most complex Cabinet projects, it often distracts from the Preconstruction Conference. Discussions about plans, project work, and project concerns often get sidelined as secondary topics when attention shifts to the Preconstruction Checklist, even though discussing these issues should in fact be the primary focus of the meeting. The PPF Taskforce should prioritize revising KYTC’s Preconstruction Checklist based on a review of the comments collected during this study. The taskforce should also develop instructions and guidance for conducting a Preconstruction Conference and use of the Preconstruction Checklist. Potential revisions include setting frequencies for recurring meetings (if any) and modifying issue resolution forms previously discussed. Example guidance for using the Preconstruction Checklist is provided in Appendices F and G. The Kentucky Transportation Center is currently updating the KYTC Construction Guidance Manual and this information will be included.

4.5.3 Establishing a Putting the Project First Project Folder
A Putting the Project First Project Folder can aggregate information currently part of the Preconstruction Checklist, thereby making the Preconstruction Checklist a focal point on a project. This folder will collect project-specific contacts and forms (e.g., Issue Escalation Ladder) and serve as a hub for sharing communications and documentation between contractors and KYTC representatives. The folder could be hosted online any number of services and adopt a standard structure established by the PPF Taskforce. However, careful restrictions should be placed on what information can be placed in the folder — an information overload will diminish its usefulness. Examples of PPF Project Folder content include (these are all project specific/ adapted items):

- Contact list (see page one of the current Preconstruction Checklist)
• Issue Escalation Ladder
• Issue Documentation Matrix
• Subfolder for Scheduling Documents
• Subfolder for Meeting Minutes
• Communication Log

4.6 Long-Term Recommendations (Phase 3)
The long-term recommendations outlined in this section are described at a very conceptual level and may require significant development and refinement before they are implemented. When the PPF program reaches this stage of implementation, the recommendations presented here may no longer be valid. Nonetheless, they warrant consideration. As with all of our recommendations, the goal is to provide opportunities for collaboration, information sharing, and communication between KYTC project stakeholders.

4.6.1 Putting the Project First Portal
We recommend developing an online portal that will serve as a communications hub for projects. Significant time will be required to conceptualize and develop this initiative. However, there are programs and platforms that KYTC currently uses which could inform development of a Putting the Project First Portal, such as the project information within DataMart. Revising this information could make it even more useful to a project team. Below are some examples of how a PPF Portal benefit project communication and information sharing.

Revisions to the Project Dashboard
KYTC posts project information on its DataMart online portal, which can be accessed by the public. Figure 8 illustrates a project dashboard and indicates there is an electronic database that houses project-specific information. Most of the information available on DataMart is principally of use to the public and media outlets. With minor additions (e.g., adding contact information or contractor contacts), the platform could be more useful to a project team. The PPF Taskforce should determine what information, including graphics (e.g., earnings curve or progress curve), might serve as powerful communication tools and benefit a project team.
Data Entry Forms
If KYTC and the project contractor complete forms similar to page one of the Preconstruction Conference Checklist, this information could be uploaded to the PPF Portal. These forms will make available contact information, project dates, desired meeting frequencies, project concerns, and project milestones. This information could be compiled before the Preconstruction Conference. Once completed, the PPF Portal could generate project-specific tools (e.g., Issue Escalation Ladder, Meeting Schedule, Preconstruction Checklist) based on the information entered.

Putting the Project First Electronic Project Folder
 Included among the Phase 2 recommendations is development of a PPF Project Folder to facilitate project communication and information exchange. Through data entry forms and an electronic Preconstruction Conference Checklist, a significant portion of the development of Project Folder information could be automated. As use of PPF Program elements is standardized, automating information and making it easily accessible electronically will increase the efficiency of field communication.
5. Conclusions

This project sought to understand and propose solutions to resolve issues that arise during field communications between contractors and KYTC personnel. Its primary objective was to provide guidance for managing staff levels, field communication, and facilitating supplemental agreements in an effective and fiscally responsible manner. To meet this primary objective, we addressed the following secondary objectives:

- Identify successful strategies for effective field administration of construction projects;
- Assess KYTC’s current level expertise in field administration and determine future training and guidance needs;
- Outline and begin preliminary development of KYTC-specific training and guidance for effective field administration of construction projects; and
- Work with KYTC leadership to develop a succession plan to ensure field administration skills are maintained regardless of turnover or changes in personnel.

We collected data and conducted multiple interviews with KYTC personnel and contractors throughout the state. Based on our data collection and interviews, we presented the following findings in this report:

- The average experience (in years) of KYTC engineering staff waned significantly between 2007 and 2012 but is now slowly recovering.
- Field communication between KYTC and contractors is marred by indecision and the lack of consistent decision-making authority.
- Project performance is hampered by the lack of accountability and often adversarial relationship with the contractors.
- In response to our findings, we proposed the Putting the Project First (PPF) initiative. It focuses on establishing clear project expectations and empowering KYTC staff to become confident decision makers.
- We presented recommendations and an initial outline and anticipated contents of the PPF initiative.

As proposed here, the PPF initiative consists of short-term, intermediate-term, and long-term recommendations on the tools and processes that will need to be developed to move the Cabinet and its contractors toward more collaborative relationships defined by shared values and goals. Recommendations include the following themes with tools and guides:

Establish Project Goals and Objectives
- Meeting Frequency
- Revisions to Preconstruction to deal with all of these issues
- SE Field Visit Frequency
- Schedule and Progress Meetings
- Relationships, Respect, and Understanding

Escalation and Empowerment
- Field Decisions Guidance

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KTC Research Report Reducing Costs Through Effective Field Communication and Administration
• Issue Escalation Ladder and Guidance
Communication and Documentation
• Meeting Documentation with Action Items and Due Dates
• Issue Documentation Matrix
• Communication Guidance (Form and Format)
Effective Management and Providing Subject-Matter Expertise
• Section Engineer Orientation
• How To Effectively Provide SME Support
• Rebrand Partnering Philosophies (i.e., PPF)
6. References


Field Communication Study

A recent study by the Kentucky Transportation Center conducted interviews with highway contractors, district construction personnel, and consultant inspectors from across the state of Kentucky. These interviews used a series of defined questions to discuss the current state of relationships and communication among KYTC project stakeholders. Five distinct needs emerged from the interviews.

KYTC Project Communication Needs:
1. Have consistent and constructive communication between inspection crew and contractor
2. Have a well-defined decision-making “ladder”
3. Be accountable for success of project
4. Ask questions, be prepared, and bring experience to the project
5. Use a “program management” approach to administration of construction projects

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200 Meri St., Frankfort, KY 40622
Phone: 502-564-4890
https://transportation.ky.gov/construction

Appendix A Putting the Project First (PPF) Brochure
Putting the Project First

The PPF program is intended to be broadly adaptable and scalable to all KYTC project types and applicable for various stakeholders. The KYTC and Contractor stakeholders of staff, management, advisory, and executive levels must make a point to put the project first by placing opinions, agendas, and feelings aside. The PPF areas of emphasis are:

- Project Goals & Objectives
- Escalation & Empowerment
- Communication & Documentation
- Effective Management & Subject Matter Expertise

Within these areas, some of the tools to assist in PPF include:

- PPF Taskforce
- Issue Documentation Matrix
- Issue Escalation Ladder
- Revised Construction Management Academy
- Best Practices for Subject Matter Experts
- Guidance for those providing technical & managerial support
- Electronic Toolbox and Best Practices Guide

PPF Taskforce

The taskforce will be comprised of KYTC members at the various levels (staff, advisory, management, and executive) and representatives from other stakeholder groups (researchers, contractors, consultants). This group is the governing body of the PPF initiative. Their mission is the improvement of field level communication and relationships. Their main tasks are the selection and implementation of components for PPF, ensuring PPF is a continuously improving initiative by evaluating recommendations and making adjustments accordingly through garnered feedback, and rolling out new tools and guidance as needed. The PPF Taskforce will disseminate information and provide training through a revised Construction Management Academy and other courses and materials.

Issue Resolution

In construction, time is money. Issues need to be resolved before they become claims. The Issue Escalation Ladder is intended to provide an agreed upon (between KYTC and contractor) approach to resolving project questions or problems in a timely manner. The issue Escalation Ladder presents a defined timeline with which “common” questions or problems are to be resolved. Once the time for resolution expires at one level, it automatically moves to the next level for consideration. The use of the tool promotes timely decisions and decreases the fostering of small issues becoming larger ones.

The Issue Documentation Matrix provides a project specific form that serves as evidence and tracking for communication between KYTC and their contractor to ensure issues are working toward resolution or if they are not being progressed, shows the need for them to be elevated on the issue Escalation Ladder.

Your Feedback is Needed

Putting the Project First is a KYTC initiative advocating teamwork and partnership among all project stakeholders. The development and implementation of the initiative is also collaborative. Please provide feedback on the tools described herein or practices, tools, or guidance you feel should be part of the initiative. It’s a everyone’s project.

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https://transportation.ky.gov/construction

KTC Research Report Reducing Costs Through Effective Field Communication and Administration
## Appendix B Construction Management Academy (CMA) Outline

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMA Introduction &amp; Project Development</td>
<td>Office Management</td>
<td>Contract Administration</td>
<td>Project Kickoff</td>
</tr>
<tr>
<td><strong>Class Introductions/Overview</strong></td>
<td>Crew/District Organization</td>
<td>The CONTRACT</td>
<td>Survey Work</td>
</tr>
<tr>
<td>KYTC Organization Relative to Construction</td>
<td>Consultant Inspections (RATs, Paint, Steel)</td>
<td>Subcontracting/Rental Agreements</td>
<td>Plans and Project Proposals</td>
</tr>
<tr>
<td>General Overview of Construction and Project Scope (SE/District/Central Office)</td>
<td>Personnel Issues</td>
<td>DBE Program and Payrolls</td>
<td>Project Schedules</td>
</tr>
<tr>
<td>Construction Procurement &amp; Guidelines Prior to Letting/Contractor Prequal/Prebid Meetings</td>
<td>Vehicles &amp; Equipment</td>
<td>Official Orders</td>
<td>Preconstruction Meetings</td>
</tr>
<tr>
<td></td>
<td>Inspector Training</td>
<td>Project Estimates</td>
<td>Site Safety &amp; Traffic Control</td>
</tr>
<tr>
<td></td>
<td>Construction Project Reviews</td>
<td>Submittals &amp; Approvals</td>
<td>Public Relations/Information</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Utilities &amp; Railroads</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ADA &amp; Environmental</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Project Management &amp; Roles &amp; Responsibilities</td>
<td>Project Closeout &amp; Claims/Conflicts</td>
<td>Project Communication &amp; Partnership</td>
</tr>
<tr>
<td><strong>FHWA Roles in Construction</strong></td>
<td>Construction Conflicts</td>
<td>Professionalism &amp; Ethics</td>
</tr>
<tr>
<td><strong>Role of the &quot;Project Engineer&quot;</strong></td>
<td>Claims &amp; Liquidated Damages</td>
<td>Explanation/Critical Nature of Project Teams</td>
</tr>
<tr>
<td><strong>Role of the Inspector</strong></td>
<td>Post Construction Reviews</td>
<td>KY Association of Highway Contractors</td>
</tr>
<tr>
<td><strong>Completing DWR’s &amp; Proper Project Documentation</strong></td>
<td>Tort, Subpoena, &amp; Depositions</td>
<td>Partnering</td>
</tr>
<tr>
<td><strong>Construction Revisions &amp; Traffic Control Revisions</strong></td>
<td>Hearings &amp; Mediation</td>
<td>Proper Communication</td>
</tr>
<tr>
<td><strong>Change Orders</strong></td>
<td>Final Inspections (Central Office, District Office, and Others)</td>
<td>Conducting Effective Meetings &amp; Frequency</td>
</tr>
<tr>
<td><strong>Materials Acceptance</strong></td>
<td></td>
<td>Issue Resolution &amp; Tracking</td>
</tr>
<tr>
<td><strong>Value Engineering</strong></td>
<td>Corrective Work &amp; Formal Acceptance</td>
<td>Project Goals</td>
</tr>
<tr>
<td><strong>Cost Plus/Force Account</strong></td>
<td>Project Completion Requirements</td>
<td>Managing Projects for Best Value</td>
</tr>
<tr>
<td></td>
<td>As-Built Plans</td>
<td></td>
</tr>
</tbody>
</table>

KTC Research Report Reducing Costs Through Effective Field Communication and Administration
# Appendix C KYTC Escalation Ladder

<table>
<thead>
<tr>
<th>Level</th>
<th>KYTC</th>
<th>Contractor</th>
<th>Time to Escalation (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspector</td>
<td>Foreman/laborer/operator</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Staff Engineer</td>
<td>Superintendent</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Section Engineer</td>
<td>Project Manager</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>Team</td>
<td>Senior Engineer/Manager</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>District Chief</td>
<td>VP/Principal</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>State Highway Engineer</td>
<td>President/Owner</td>
<td>X</td>
</tr>
</tbody>
</table>

**Instructions**

1. Insert specific names next to titles.
2. KYTC and Contractor agree on time to escalate issues for each level.
3. This ladder is not to be used for issues and disputes per 105.13 once TC 63-32 is filed.
## Appendix D Sample KYTC Issue Documentation Matrix

<table>
<thead>
<tr>
<th>Contract ID:</th>
<th>KYTC Section Engineer:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue No.</th>
<th>Issue Status</th>
<th>Issue Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Need KYTC Action</td>
<td>Example</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### PI Horizontal Construction Project Partnering Scalability Matrix

Scale your Partnering: In order to determine the level of Partnering that you should apply to your construction project, take a moment to collaboratively assess your project risk factors. The higher the risk, the more intensive your Partnering efforts should be. When in doubt, scale your Partnering efforts upward to set your project up for success; you can always scale it back down once the project is underway.

#### Risk Factors

<table>
<thead>
<tr>
<th>Level</th>
<th>Project Value Complexity (Medium-high engineering, complex construction)</th>
<th>Political Significance (High)</th>
<th>Relationships (New Project Relationships, including sub-contractors, sub-agencies, new parties, high turnover rate of subs or other high-potential-for-conflict risk, previous litigation, high probability of claims)</th>
<th>Desired Level of Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4</strong></td>
<td>Very Large/Mega (multi-phased highway corridors, complex bridges and structures) ($250M-$500M+)</td>
<td>Highly Technical and Complex Design and Construction</td>
<td>High Visibility/over-sight of significant strategic project</td>
<td>Very High</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Large (new design, new contracting method, or challenging rehabilitation/renovation) ($100M-$250M)</td>
<td>High Complexity (short timeline/schedule constraints, uncommon materials, new supply chain, etc.)</td>
<td>Probable - Organizational image at stake</td>
<td>High</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Small ($5M - $10M)</td>
<td>Moderate Complexity</td>
<td>Unlikely, depending on the size of the client and place of importance</td>
<td>Moderate (seeking risk mitigation and project efficiencies)</td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>Micro ($1-$5M)</td>
<td>Low Complexity</td>
<td>Unlikely, depending on the size of the client and place of importance</td>
<td>Moderate/High (seeking risk mitigation and project efficiencies)</td>
</tr>
</tbody>
</table>

#### Partnering Structure and Elements

<table>
<thead>
<tr>
<th>Benefits and Approx. Cost**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional neutral facilitator</td>
</tr>
<tr>
<td>Multi-tiered Partnering (executive - core team - stakeholder)</td>
</tr>
<tr>
<td>Stakeholder on-boarding/off-boarding</td>
</tr>
<tr>
<td>Monthly surveys</td>
</tr>
<tr>
<td>Executive sponsorship</td>
</tr>
</tbody>
</table>

#### Benefits and Approx. Cost**

- Professional neutral facilitator
- Partnering training required for all team members
- Project charter
- Multi-tiered Partnering (executive - core team - stakeholder)
- Monthly Partnering meetings (design through construction)
- Special task forces for specific issue resolution
- Stakeholder on-boarding/off-boarding
- Subcontractor on-boarding/off-boarding
- Monthly surveys
- Executive sponsorship
- Field-level decision making
- Issue resolution ladder and DRB
- Facilitated dispute resolution

- Professional neutral facilitator ($5M and above)
- Required kick-off (quarterly follow-ups recommended)
- Minimum 2 Partnering surveys (monthly recommended)
- Project charter
- Executive sponsorship
- Field-level decision making
- Inclusion of stakeholders
- Issue resolution ladder and DRB
- Facilitated dispute resolution

- Professional neutral facilitator optional
- Project charter
- Executive sponsorship
- Field-level decision making
- Stakeholder involvement
- Issue resolution ladder and DRB
- Facilitated dispute resolution

*Cost of facilitation based on $1,000/day and $500 per scenario.*

**Note: Please note that daily rates for facilitators can vary widely.**
Appendix F  Preconstruction Conference

1. Preconstruction Conference

1.1 General
As soon as possible, after a project has been awarded and the work order has been issued, the district TEBM for Project Delivery and Preservation (PDPBM) should arrange a Preconstruction Conference with the contractor and other interested parties to review items such as construction details and proposed schedules. The Preconstruction Conference is an important meeting and provides an opportunity to establish open and honest communication between KYTC, the contractor, and all involved parties. The Preconstruction Conference can also be used to establish frequency and subject matter of future project meetings, such as pre-pave meetings, pre-pour meetings, progress meetings, and informal partnering.

Before the meeting, the Section Engineer (SE) should study the plans and any special provisions or notes and make a field inspection of the project to get well acquainted with requirements and existing conditions.

To arrange the meeting at a time most convenient to everybody, it is suggested that the PDPBM contact the principal parties about their availability and preferences by telephone after which, formal notification will be made by letter.

1.2 Letter of Notification
The letter of notification is written to the prime contractor with copies distributed to all concerned parties (as shown below). This letter notifies the contractor of items on the agenda and any specific problems or contract requirements that require documentation or submittals at the meeting. The prime contractor should be strongly encouraged to bring any subcontractors of the project to the meeting.

Copies of the letter of notification will be sent to the following:
- FHWA (if applicable)
- All utility companies involved
- Municipal and/or county engineers (if applicable)
- Railroad (if applicable)
- Other specialized or interested parties as deemed necessary

Email notification of the letter will be sent to the following:
- District Executive Director (CDE)
- Director, Division of Construction
- Division of Construction Procurement
- EEO (if applicable)
- Wage Compliance Training (if applicable)
- Division of Maintenance
- Division of Materials
• District Personnel
• Utility Agent (if utilities are involved)
• District Materials Engineer
• District Traffic Engineer

1.3 Record of Meeting
Minutes should always be taken of the Preconstruction Conference and a record made of attendees and who they represent. Digitally record the conference with supplemental notes taken by the PDPBM or designee. The recording becomes a permanent verbal record of the meeting and is retained by the district project delivery and preservation office until the project files are closed out. A written record of the meeting is also prepared in letter form to the Director, Division of Construction, with copies sent to all participants, the District Executive Director’s Office (CDE), FHWA (if applicable), and the project file.

1.4 Utilities
Notices should be sent to all utility companies having utility adjustments to be made and those that have already relocated their facilities (particularly if these facilities remain within project limits). Every effort should be made to afford the contractor as much information as possible relative to the location of and timetable for relocating any utilities or, if the utilities have already been moved, the location of the new facilities as well as the old, provided they were abandoned and not removed.

In the event that high-pressure gas lines, telephone trunk lines, railroads, or other utilities of a critical nature are located within project limits, the representatives of these companies should be prepared at the meeting to give the name, address, telephone number, and other pertinent information of their nearest responsible representative.

The district utility agent can assist in making arrangements for the utility companies to attend the meeting, introducing the representatives at the meeting, and, in general, providing background information necessary to understand the overall situation relative to utilities within project limits.

Those items affecting utilities should be discussed immediately following the presentation of the contractor’s plan of operation and progress schedule. The utility companies may then be excused if they do not wish to remain for the detailed discussion of the contract work.

If the contractor's schedule conflicts with the removal or relocation of any utilities on the project, an effort should be made to revise the schedules of the utility company, the contractor, or both in a manner satisfactory to all and most advantageous to the work involved.

At every preconstruction conference it is very important that the contractor be advised of their responsibility to ensure that all utilities are marked and not disturbed by operations including lines owned or managed by the Department. The contractor should be made aware of the B.U.D (before you dig) service at 1-800-752-6007. They should be
informed that not all companies are part of this system and that the County Clerk’s office can assist in contacting other utility companies.

1.5 Subjects to be Discussed
The following topics shall be addressed in preparing an agenda for the preconstruction meeting:

- Prime contractor and principal personnel
- Project contract time
  - Completion date
  - Procedure for assessment of time
  - Proposed plan of operations
  - Progress schedule for the entire project
- Construction revisions
- Employee and public safety
- Erosion and pollution control requirements
  - BMP
  - Notice of Intent
  - Spill Prevention Plan (if applicable)
  - Other environmental issues
- Project staking
- Construction signing and traffic control
- Labor compliance provisions
  - Submission of payrolls
  - Necessary posters
  - EEO
  - Trainees
  - Minimum wages requirements
- Materials
  - Notification of material sources
  - Material sampling procedures
  - List of suppliers
- Excess material or borrow sites
  - Permits requirements
  - Archeological survey
  - Property owner agreement
- Subcontracts
- Equipment rental and lease agreements
- Contractor evaluation form
- Claims procedures
  - TC 63-32 form, Notice of Changed Condition/Disagreement
  - Discussion of process (Section 105.13 of the Standard Specifications)
- Work on or over railroad right of way
• Utility issues
• Project-specific issues and plan issues

This list is not all inclusive of the topics that should be covered for a particular project. Section 108.02 of the Standard Specifications contains a detailed description of the submittals are required at the Preconstruction Conference.

TC 63-64, Pre-Construction Conference Checklist, is located on KYTC’s website at: http://transportation.ky.gov/Organizational-Resources/Forms/TC%2063-64.docx

This checklist should be used as a guide and tentative agenda for the meeting. All items on the checklist will not apply (skip those). Page one should be sent to the contractor and completed prior to the conference.
Appendix G Preconstruction Checklist Guidance Slides
Preconstruction Meeting

Preparation

- Responsibility of T.E.B.M.
- Review Plans, Specifications
  - General Notes, Special Notes, Utilities, RR
- Review Design Documents
  - Aerial photography and videos
- Site Visit
  - Photographs
- Schedule received 48 hours prior to meeting
- Unapproved materials list
- Eliminate non-applicable (N/A) sections of checklist

Preconstruction Meeting

Invitations

- Who
  - Contractor, sub-contractors, FHWA, Utilities, Railroad, Central Office
  - Construction, Construction Procurement, Maintenance, Materials, District
  - CDE, Utility Agent, Materials, Traffic, Wage Compliance, EEO, Safety
  - Cellcon, Public Affairs
- What
  - Include agenda items
  - Special requirements from the contractor (most recent revisions of plans)
- When
  - Time of meeting (include time zone)
- Where
  - Street address, room number, contact information
Preconstruction Meeting
Room & Equipment

- Reserve an appropriate size room
- Provide sign-in sheet (printed names with signatures)
- Digital recording equipment (pen card)
  - Voice recorder
  - Extended microphone if required
- Projector (bar charts, photographs, etc.)
- Laptop (network connection if required)

Work Ahead of Project

- Review Plans for Future Problems
  - Anticipate questions from contractor.
  - Review utility relocation status.
  - Be aware of potential ROW issues.
  - Note railroad involvement.
  - Obtain NOI documents from District Design Staff.

Communication is Key

- Make Contact with Contractor Project Manager or Engineer before Preconstruction Meeting.
  - Request items to be submitted before meeting.
    - Subcontracts and/or lease agreements
    - Written Narrative
    - Know material issues, ie mix designs or experimental items.
  - Obtain list of all project contacts prior to avoid confusion.
  - Remember Contractor has been planning for project since bid opening.
Do Your Homework

- Be Familiar with Plans and Proposal.
  - General notes
  - Special notes
  - CAP notes
- Review checklist for items that do not apply to current project.
- Drive project to review in-field.

Have a Plan

- Modifying a Plan is Easier than Formulating One.
  - Section staffing on project
  - Material sampling procedures
  - Submittal procedures

Conduct an effective meeting

- DO NOT CONDUCT THE MEETING AFTER THE MEETING. MAKE SURE ALL QUESTIONS ARE ON RECORD.
Precons are meant to be a GOOD START!

1. Use the Precon Checklist so something important is not left out.
2. Do write up the minutes promptly so that all agreements or explanations are not forgotten.
3. Do send out ASAP so that everyone is in the loop with these agreements.
4. When the minutes are sent out, do include backup documentation such as the schedule, R/W agreements, etc.
5. Do send C.O. Construction a copy with CD recording and do place all in the appropriate Projectwise folder.

Any Questions?

We do appreciate your time and attention!