# Best Practices from WisDOT Mega and ARRA Projects – Best Practice Catalog

**WisDOT Policy Research Program Project**
**Project ID: 0092-10-20**

## Final Report

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## INTRODUCTION

Since 2004, the Wisconsin Department of Transportation (WisDOT) has developed a number of new techniques, methods, processes and procedures for management of two types of transportation projects: megaprojects and projects funded through the American Recovery and Reinvestment Act of 2009 (ARRA). WisDOT completed a highly successful megaproject, the Marquette Interchange, in 2008 and delivered an equally successful ARRA construction program in 2009 and 2010. Many of the new processes and procedures developed and implemented for these projects were being referred to as "best practices". WisDOT's senior management felt that the department would greatly benefit from a review of these new practices to evaluate their effectiveness, determine if they had benefits for future use and, if so, investigate how they could be adopted by the department. Through WisDOT's Policy Research Program, the University of Wisconsin – Madison College of Engineering's Construction and Materials Support Center (CMSC) was enlisted to conduct a study of the best practices used in delivery of WisDOT's mega and ARRA projects. The study was to identify and evaluate the best practices used on these projects and develop an implementation methodology for the most effective best practices. The best practices research effort was limited to the construction phase of project delivery.

Based upon a review of the new WisDOT practices developed and employed for delivery of their megaprojects and ARRA program, a number of potential best practices were identified for use in management of future highway construction projects. Analysis of these practices resulted in recommending the continuation of 49 of these best practices. The selected best practices are detailed in this catalog. The purpose of this catalog is to assist WisDOT management and project staff in identifying and selecting specific best practices that will help deliver projects more efficiently and effectively. It documents the techniques, methods and practices that have proven themselves on past WisDOT projects. However, best practices should be viewed as being flexible and project staff should be encouraged to modify and adapt them to meet their specific project needs.

Each best practice is identified by the project management emphasis area (Project Management, Financial Reporting, Document Control, and Change Management) so that project managers can select a specific best practice based upon the project need or goals. Each best practice is also categorized as meeting primary and secondary objectives so that project teams can identify a specific best practice to meet a particular project management need. Each listed best practice identifies the relative cost to implement and the types of projects it is most applicable to.

For each of the best practices the following information is provided:

- Title
- Brief Description
- Additional Details (provided to aid in implementation)
- Objective
- When to Apply
- Cost Implications
- Conditions for Successful Application
- Cautions

Each best practice is also identified as meeting one or more of the following objectives:

- Cost Control
- Schedule Control
- Quality Control
- Issue Management
- Dispute Resolution
- Document Control
- Communication
- Safety
- Contract Compliance

A relative cost to implement each best practice is also identified. However, these need to be viewed and used with some degree of discretion. Many of the best practice costs were based upon implementing the best practice as described. However, there is a "scalability" component for many of these best practices. In other words, the best practice concept can be implemented without necessarily using all the bells and whistles described. For example, some of the best practices call for using proprietary software; however, the same best practice approach could be applied with a little creativity using commonly available spreadsheet or word processing software. Costs could also be cumulative. It may not be particularly costly or resource intensive to implement one or two of the best practices on a statewide basis, but implementing several of them at once may prove to be very resource intensive. Also, almost all of these best practices indicate some cost initially, or in the short run, but over time they should produce overall cost and time savings to the project and department.

The best practices selected and recommended for implementation based upon the results of this study are provided in Table 1. This table also identifies the functional area, the objectives, and the page number where more detailed material can be found for each individual best practice.

| Best Practice No. | Page No. | Description | Cost Control | Schedule Control | Quality Control | Issue Management | Dispute Resolution | Document Control | Communication | Safety | Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Objective** (P: Primary; S: Secondary) | | | | | | | | |
| **PM** | | **Project Management** | | | | | | | | | |
| PM-1 | 5 | Employ a defined hierarchy for decision making | S | S | | P | | | S | | |
| PM-2 | 7 | Use a Request for Information (RFI) form and process | | P | | S | S | | S | | |
| PM-3 | 11 | Contract with design firm to be available to the construction team | | P | | S | | | S | | |
| PM-4 | 13 | Hold Pre-Construction Planning and Submittal Workshops | | P | | S | S | | S | | |
| PM-5 | 15 | Require CPM scheduling software and conduct periodic schedule reviews | | P | | S | | | S | | |
| PM-6 | 17 | Require Use of Three-Week Look-Ahead Schedules | | P | | S | S | | S | | |
| PM-7 | 19 | Track productivity of key construction activities | | P | | S | | | S | | |
| PM-8 | 21 | Identify a WisDOT project specific Utility Coordinator and require the contractor to provide a Dedicated Utility Coordinator | S | P | | S | S | | S | | |
| PM-9 | 23 | Establish project Close-Out Procedures early in project and track progress | | P | | S | | | | | |
| PM-10 | 25 | Project management team is not tied to region day-to-day activities | | P | | S | | | S | | |
| PM-11 | 27 | Project Team prepare Cost-to-Complete budget projections | P | | | | | | S | | |
| PM-12 | 29 | Track overruns/underruns throughout project | P | | | | | | S | | |
| PM-13 | 31 | Perform project Earned Value Analysis | P | P | | | | | S | | |
| PM-14 | 33 | Establish project Reserve (contingency) Budgets | P | | | | | | | | |
| PM-15 | 35 | Use a Standing Dispute Review Board | | | | S | P | | | | |
| PM-16 | 37 | Assign a responsible party for resolution of issues at Project Progress Meetings | | S | | P | | | S | | |
| PM-17 | 39 | Make “Open Issues” a routine agenda item at Project Progress Meetings | S | S | | P | | | S | | |
| PM-18 | 41 | Involve DRB Chair in Partnering Meetings | | | | P | S | | | | |
| PM-19 | 43 | Use Third- Party Work Authorization Form (Third- Party WAF) | S | P | | S | | | P | | |
| PM-20 | 45 | Hold Specialty Group Meetings | S | P | | S | | | S | | |
| PM-21 | 47 | Use Work Authorization Form (WAF) | S | S | | S | S | S | P | | |
| PM-22 | 49 | Develop and maintain a project Construction Management Plan | S | S | S | S | S | S | P | S | |
| PM-23 | 51 | Develop a Project Responsibility and Accountability Matrix | | S | | | | | P | | |
| PM-24 | 53 | Develop a Project Materials Certification and Submittal Guide | | S | S | S | | | P | | |
| PM-25 | 55 | Develop and maintain a Project Website | | | | | | | P | | |
| PM-26 | 57 | Develop and maintain a project database of decisions made | | | | S | | | P | | |
| PM-27 | 59 | Monitor and track DBE participation and report on goal achievement progress | | | | | | | P | | |
| PM-28 | 61 | Encourage Third Party representation at Project Progress Meetings | | S | | S | | | P | | |
| PM-29 | 62 | Establish project goals for timely approval of documents | | P | | S | | | S | | |
| PM-30 | 64 | Designate Pay Plan Quantities for appropriate items of work | P | | | | | | | | |
| PM-31 | 65 | Utilize a Owner Controlled Insurance Program (OCIP) | S | | | S | | | | P | |
| PM-32 | 67 | Prepare Project Benchmark Performance Indicators | P | P | | | | | S | | |
| PM-33 | 69 | Execute contract Balancing Modifications to revise line item quantities to account for overrun/underrun quantities | P | S | | | | | | | |

| Best Practice No. | Page No. | Description | Cost Control | Schedule Control | Quality Control | Issue Management | Dispute Resolution | Document Control | Communication | Safety | Contract Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Objective** (P: Primary, S: Secondary) | | | | | | | | |
| **FR** | | **Financial Reporting** | | | | | | | | | |
| FR-1 | 71 | Implement a Project Financial Reporting System | P | | | | | | S | | |
| FR-2 | 73 | Utilize a statewide Construction Project Management Dashboard Report | | | | | | | P | | |
| | | | | | | | | | | | |
| **DC** | | **Document Control** | | | | | | | | | |
| DC-1 | 75 | Develop a standardized document control methodology | | | | | | P | S | | |
| DC-2 | 76 | Standardize all forms | | | | | | P | S | | |
| DC-3 | 77 | Document and track all issues using cross linkages | | | | | | P | | | |
| DC-4 | 78 | Develop Procedural Manual covering WisDOT Region processes | | | | | | | P | | |
| DC-5 | 80 | Use Civil Rights Compliance System to track DBE usage | | | | | | S | S | | P |
| DC-6 | 82 | Escrow bid documents | | | | | P | | | | |
| | | | | | | | | | | | |
| **CM** | | **Change Management** | | | | | | | | | |
| CM-1 | 84 | Establish Change Management Teams | P | S | | S | | | | | |
| CM-2 | 86 | Utilize a Senior Management Project Oversight Committee | S | S | | P | | | | S | |
| CM-3 | 88 | Conduct Risk Assessments to expose, monitor and mitigate risks | S | S | | P | | | | S | |
| CM-4 | 90 | Conduct Weekly Issues Meeting | S | S | | P | | | | S | |
| CM-5 | 92 | Utilize partnering with bi-weekly meetings between project personnel and contractor | S | S | S | P | S | | S | | |
| CM-6 | 94 | Use a Change Management Request Form | P | | | | | S | S | | |
| CM-7 | 96 | Develop a Change Management Log | P | | | | | | S | | |
| CM-8 | 98 | Identify and track significant project issues | S | P | | S | | | S | | |

Table 1: Best Practice Listing

## PM-1 Employ a defined hierarchy for decision making

**Description:**

Use a pre-defined hierarchy for decision making to promote timely project decision making and foster decision making at the lowest responsible level. The decision making hierarchy should have well-defined dollar thresholds based upon the authority level.

**Additional Details:**

Higher cost and higher risk decisions are placed in the hands of more experienced staff. Also, having the hierarchy clearly defined within the department ensures that all team members stay within their prescribed bounds. Suggested approval levels and time frames based upon past mega and American Recovery and Reinvestment Act (ARRA) projects are shown in the following table:

**CONSTRUCTION CONTRACT APPROVALS**

| | Project Leader | Project Manager | Supervisor | Chief |
|---|---|---|---|---|
| **Contract Mod Increase/Decrease** | ≤ $25,000 | ≤ $100,000 | ≤ $250,000 | ≤ $500,000 |
| **Timeframe for Decision** | 1-2 days | 2 days | 2 days | 5 days |

**Objective:**

Primary: Issue Management
Secondary: Schedule Control, Cost Control, Communication

**When to Apply:**

Best practice should be applied on all projects.

**Cost Implications:**

This practice will result in minimal cost impact.

**Conditions for Successful Application:**

This best practice requires that project level staff be given sufficient training on contract administration and upper levels of management are willing to trust lower levels to make correct decisions. The decision hierarchy should be presented at the project preconstruction meeting and agreement obtained between the contractor and project management staff regarding timeframes for making decisions.

**Cautions:**

Occasionally mistakes will occur, which could potentially result in added costs to the project. However, these must be accepted and then used as an opportunity to educate staff on the proper decision to be made.

## PM-2 Use a Request for Information (RFI) form and process

**Description:**

A Request for Information (RFI) form should be used by the prime contractor to obtain clarification of the plans, specifications, special provisions, or other contract documents for themselves or for their subcontractors. It provides a means to document and monitor questions that arise during construction, the answers provided, and the timing of the response. Use of an RFI form provides more structure to the issue identification process, more accountability for providing answers or decisions to questions, and a more formal documentation process for the issues identified. The RFI process should include a RFI Log to track the status of submitted RFIs.

**Additional Details:**

A Request for Information (RFI) form has standard entry spaces to allow the submitter to enter:

a) Date of submittal
b) Name of submitter
c) Division code or reason code
d) Information requested (a concise question with reasoning as to importance)
e) Date answer is required
f) Priority level of the issue (high, medium or low)
g) Unique tracking number

And the responder to enter:

h) Date the response is provided
i) Response (a concise answer to the question)
j) Name of the responder
k) Reason Code

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Dispute Resolution, Communication

**When to Apply:**

Best practice should be applied on all mega projects, backbone and 3R projects with construction costs in excess of $1 million.

**Cost Implications:**

This practice may result in significant costs if commercial software is used for RFI processing and tracking. Costs will be minimal if a simple Excel spreadsheet or Word document is used for submittals and tracking is done manually.

**Conditions for Successful Application:**

Metrics such as the number of RFIs per million dollars of contract work and average response times should be monitored. It is recommended practice that all sub-contractors submit RFIs to the prime contractor and the prime contractor screens the RFI before submittal to the DOT. RFI Logs should be shared and reviewed with the prime contractor frequently, possibly at the weekly project progress meetings. The joint RFI Log review results in discussions about specific RFI's, the timeline for a response and can help determine a priority. Management needs to make all effort to respond to RFI within the requested period. In successful projects 66 percent of RFIs were answered within the requested time period and project staff should strive to meet the requested times. WisDOT project teams have set a goal of responding to all RFI's within 7 days and they typically achieve that. Use of this timing goal should continue.

Construction contractors generally support use of an RFI system and voluntarily agree to use of the forms. A suggested RFI form is provided in Appendix C of the *Best Practices from WisDOT Mega and ARRA Projects – Final Report.*

The seven reason codes currently used by WisDOT to classify RFI's is felt to be too general and creates difficulties in deriving any meaningful conclusions to assist in improving the project delivery process. It is suggested that project RFI's be classified using the fifteen new reason codes created by the CMS team in order to identify improvement areas within the project development process. Those are provided in the following table:

| **Reason Code** | | **Description** |
|---|---|---|
| *Added Scope* | *AD* | Addition of items to the original project scope |
| *Construction Coordination* | *CC* | Organizing and coordinating construction related procedures, schedules, and safety items |

| | | |
|---|---|---|
| *Constructability Issues* | *CI* | Difficulty in constructing an item as detailed or designed |
| *Change of Staging/Phasing* | *CS* | Sequence of construction previously determined deemed inadequate or in need of reorganizing due to resource limitations and manpower organization |
| *Design Change* | *DC* | Request to implement an alternative design, modify a design to simplify efforts by construction team, or to correct an error in construction |
| *Design Clarification* | *DL* | Additional information requested to further understand and clarify components of the design and its related constituents |
| *Different Method* | *DM* | Change in installation technique or construction process |
| *Design Coordination* | *DR* | Organizing and coordinating the design and related documents between entities |
| *Deleted Scope* | *DS* | Scope or line items to be removed from the project |
| *Incomplete Plans/Specs* | *IP* | Error or omission in the plans/specifications |
| *Material Change* | *MC* | Different material requested to replace another than what is specified due to having an excess material readily available, or experience demonstrates another material has an improved performance |
| *Differing Site Conditions* | *SC* | Impediments discovered at the site that were previously unknown or were not in the condition as described in the contract |
| *Utility Conflict* | *UC* | Utility pipes, lines, or boxes prevent the construction strategy from proceeding as planned |

| | | |
|---|---|---|
| *Value Engineering* | *VE* | Cost-reduction and construction improvement techniques |
| *Other* | *OR* | Any justified RFI submitted that does not fit into one of the other 14 categories including but not limited to payment methods, certification requirements, penalties, warranties, and non-design related documents |

**Cautions:**

The RFI process can be abused by some contractors to establish a claim against DOT for slow response to RFI's or by submitting a high number of RFIs. The project leader and prime contractor should agree on the types of issues that will warrant submittals of RFI's prior to starting construction.

**Metrics**

For WisDOT megaprojects, the maximum expected number of RFIs occurs in the initial phases of the project, near the NTP date. The project team can then expect a decline in the number of RFIs submitted as the project continues. In order to estimate staffing levels needed to address RFI's, the following table provides the percent of RFI's that can be expected to be submitted at the NTP, 25, 50, and 75 percent complete stages of the project.

| Percent Complete (Payment Schedule) | Cumulative Percent of RFIs Submitted |
|---|---|
| NTP | 8% |
| 25% | 54% |
| 50% | 74% |
| 75% | 87% |
| 100% | 100% |

2.4 RFIs per million dollars of awarded contract can be expected based on the awarded contract value. The larger the contract, the closer to this expected value the number will be. Smaller contracts within the major projects can be expected to have more variation.

## PM-3 Contract with design firm to be available to the construction team

**Description:**

Provide the construction management team access to the consultant designer by contracting with the consultant design firm to compensate them for their consulting efforts regarding plan questions during construction. This provides the construction team ready access to the project designer for assistance in answering questions concerning plan clarifications or decision making regarding design changes needed in the field. Terms used to describe these contracts include Design Liaison Contracts or Design Transparency contracts.

**Additional Details:**

The design consultant should be engaged by WisDOT through either a two-party direct contract or work order to a master agreement. Project teams should use a Design Information Request (DIR) form to document questions going to the design firm and the responses so that there is no confusion with a Request for Information (RFI) that may come from the contractor to the construction Project Leader. An RFI may generate a DIR, but the two should be separate processes.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication

**When to Apply:**

Best practice should be applied on mega projects and large complex backbone projects.

**Cost Implications:**

Costs for the Design Liaison Contracts will be in the range of 0.1 percent to 0.5 percent of the total construction amount.

**Conditions for Successful Application:**

Standardized contract language and scopes of work for these contracts should be developed for the Facilities Development Manual (FDM) so that contracts can be quickly and efficiently be put

in place. Suggested Design Information Request (DIR) forms and a suggested project complexity evaluation form for identifying candidate projects are provided in the Evaluation of WisDOT's Design/Construction Transparency Effort- Final Report, Oct. 2010, http://cmsc.engr.wisc.edu/Transparency%20Final%20Report_WisDOT.pdf.

**Cautions:**

Project managers should review DIR forms after they have been answered to insure that the contracts are not abused and design consultants are not being compensated for answering questions that should be answered by the construction management team or been answered as part of the initial design contract.

## PM-4 Hold Pre-Construction Planning and Submittal Workshops

**Description:**

After contract award but prior to starting construction, hold workshops between the prime contractor, major subcontractors, and department staff on critical aspects of the project to discuss and answer questions regarding the critical areas of the project. The objectives of the workshops are to foster pre-construction communication and assist in identifying and mitigating potential impacts to cost and schedule early in the project.

**Additional Details:**

Workshops are mandatory for the contractor and identified in the project special provisions. Examples of workshop topics are:

- Initial Work Plan Workshop
- Critical Path Method Scheduling Workshop
- Utility Coordination Workshop
- Submittal Procedures, Requirements and Schedule Workshop
- Earthwork balancing or sequencing Workshop
- Cost Reduction Incentives Workshop
- Unique or unusual construction items (e.g. tunnels)

A standard agenda should be prepared and distributed to different parties prior to holding the workshops. WisDOT should lead and coordinate these meetings and distribute notes (meeting minutes) of the meeting to document and summarize the discussions, decisions, action items and responsible parties required for the action items.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Dispute Resolution, Communication

**When to Apply:**

Best practice should be applied on mega projects. On other WisDOT projects, these topics should be incorporated into project pre-construction meetings.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

Construction contracts need to include special provisions mandating contractor participation in the workshops. Involvement of all parties must be mandatory. All parties should come to workshops prepared to discuss the relevant issues. The meetings must be formal in terms of written objectives and expected outcomes.

**Cautions:**

Any action items decided in the workshops must be reviewed for consistency with contract language and specifications. All decisions need to be assessed for potential impact on project time, performance and cost.

Workshops need to be fast paced and kept to a reasonable length to time. Make sure that there are substantive issues to be discussed and that the workshops are warranted.

## PM-5 Require CPM scheduling software and conduct periodic schedule reviews

**Description:**

Require the contractor to utilize Critical Path Method Scheduling (CPM) software and submit a schedule that reflects the plan for their performance of the work within the contract completion deadlines, production rates, and the critical path of activities. At 25 percent, 50 percent, 75 percent and 90 percent completion milestones, conduct comparisons of the contractors updated current CPM schedule to the baseline schedule.

**Additional Details:**

To ensure compatibility with department's software, require use of specific commercially available software. At review points the contractor is required to show actual start dates for activities, completion percentages, remaining durations, current production rates, and actual finish dates. Such reviews provide opportunities to take corrective actions where needed.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication

**When to Apply:**

Best practice should be applied on mega projects and very large backbone and 3R projects.

**Cost Implications:**

This practice will result in moderate cost increases.

**Conditions for Successful Application:**

This best practice will require use of commercial construction scheduling software and project management staff training on how to interpret and analyze CPM schedules. It will also likely require use of specialized experts in construction scheduling.

Timely reviews must be done of both the initial schedule and all updates. A response timeframe should be agreed upon with the contractor. If a schedule is deemed not acceptable, a response must be provided with the rationale for why it was not accepted.

**Cautions:**

Contract special provisions need to specifically identify the scheduling inputs desired by the department.

There can be confusion as to what “acceptance” of a schedule and “approval” of a schedule means. These terms need to be clearly defined to eliminate confusion. Also, a resolution process should be established to resolve issues that may develop regarding the adequacy and acceptance of a schedule.

## PM-6 Require Use of Three-Week Look-Ahead Schedules

**Description:**

Require the contractor to weekly submit a three-week look-ahead schedule that includes the following:

1. Activities underway and as-built dates for the past week
2. Planned work for the upcoming two-week period
3. Potential impacts to traffic patterns, planned community activities, noise issues or other environmental aspects for upcoming two-week period

On a weekly basis, the department and the contractor agree on the as-built dates depicted in the three-week look-ahead schedule or resolve disagreements.

**Additional Details:**

The contractor is responsible for preparing and presenting the three-week, look-ahead schedule at weekly project meetings. Specific items that can be addressed in a look-ahead schedule include lane and ramp closures, current work activities, critical submittals/reviews, critical procurements, noise impacts, equipment needs, potential delays and other problems.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Dispute Resolution, Communication

**When to Apply:**

Best practice should be applied on mega projects, backbone and large to medium 3R projects.

**Cost Implications:**

This practice should result in minimal cost increases.

**Conditions for Successful Application:**

This best practice requires special provisions requiring the contractor to submit three-week look-ahead schedules and involvement of project management staff to critically review the submitted schedules and make discussions with the contractor a priority.

**Cautions:**

This practice requires the contractor to submit an accurate and comprehensive construction schedule at the beginning of the project and willingness to devote the time to developing and updating the three-week look-ahead schedules. This process can be used with a variety of scheduling tools such as CPM, Linear Schedules, Relationship Bar Charts, or Bar Charts.

## PM-7 Track productivity of key construction activities

**Description:**

Productivity is defined as input divided by output. Require the contractor to provide estimated and actual weekly production rates for key construction activities on a weekly basis. For each item, the contractor should show the actual daily production for the past week and the anticipated weekly production for the next week. Graphs of actual versus planned production should be plotted and analyzed to identify potential schedule problem areas.

**Additional Details:**

Plots should be posted in the construction field office so staff can quickly assess progress for key construction activities. Activities where production is tracked should be limited to a very few key activities that have the potential to impact the overall schedule. Examples of key activities include:

- Retaining walls (sq. ft. per eight-hour shift)
- Bridge Foundations (sq. ft. per eight-hour shift)
- Deck Formwork (sq. ft. per eight-hour shift)
- Deck Placement (sq. ft. per eight-hour shift)
- Base Material Placement (sq. ft. per eight-hour shift)
- Subgrade Preparation (sq. ft. per eight-hour shift)
- Asphalt Pavement Placement (sq. ft. per eight-hour shift)
- PCC Pavement Placement (sq. ft. per eight-hour shift)
- Earthwork (sq. ft. per eight-hour shift)

Project inspection staff should be consulted to verify actual productivity levels submitted by the contractor. This best practice is used in conjunction with best practice PM-5.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication

**When to Apply:**

Best practice should be applied on mega projects and large complex backbone and 3R projects.

**Cost Implications:**

This practice can substantially increase cost to the contractor and will result in a slight cost increase to DOT for verification. It will require the development of special provisions to require contractor to supply the needed productivity charts.

**Conditions for Successful Application:**

This best practice should be applied to construction activities with tangible and easy to measure outputs such as piles driven, square feet of formwork installed, bridge decks poured, square feet of retaining walls built, square yards of paving completed, etc.. It requires sufficient and accurate production rates from the contractor and a consistent method of measurement. Production charts should be prominently displayed in the field offices so everyone is aware of the key activities.

**Cautions:**

Successful application requires the contractor to provide production data so that it can be compared to the productivity assumed in the contractor's baseline schedule. This can be time consuming and costly for the contractor. Productivity tracking of activities needs to be done judiciously and limited to only key items of work that are on the critical path.

## PM-8 Identify a WisDOT project specific Utility Coordinator and require the contractor to provide a Dedicated Utility Coordinator

**Description:**

A full-time project utility coordinator should be assigned to the project team to focus on working with project leaders, consultants, contractors, utility companies and municipalities to address project-related utility conflicts, schedule requirements, and project utility costs. Mandate that the contractor provides a project utility coordinator with the responsibility of coordinating construction activities with the utility companies and communication between the department, contractor, and utility companies.

**Additional Details:**

An outside consultant can be hired on full-time basis or contract basis to handle the utility issues as needed. The utility coordinator should establish a chain of command for communication between the utility company, contractor and project team. The utility coordinator should coordinate billing and reimbursement procedures for each utility so that costs are tracked and budgets are managed.

**Objective:**

Primary: Schedule Control
Secondary: Cost Control, Communication, Issue Management, Dispute Resolution

**When to Apply:**

Best practice should be applied to mega projects with numerous and complex utility issues.

**Cost Implications:**

This practice will result in moderate cost impacts with additional project personnel required by both the department and the contractor.

**Conditions for Successful Application:**

Both WisDOT and the contractor need to utilize experienced utility coordinators that have knowledge of construction activities and the utilities involved on the project. In many situations, a utility coordinator needs to be on site and part of the design team well before the start of construction to fully understand all the utility issues and conflicts. The contractor's

utility coordinator position should be identified in the contract as a bid item rather than incidental to the contract.

**Cautions:**

Utility activities such as relocation should be shown on the project schedule as a communication tool to all project participants. Prime contractors may resist having to staff a full-time utility coordinator dedicated to the project. Also, if there are excessive utility conflicts, the utility coordinator may need to be supplemented with a full-time utility locator.

Insure that utility issues and risks that are the responsibility of WisDOT are not transferred to the contractor because of the utility coordinator requirement.

## PM-9 Establish project Close-Out Procedures early in project and track progress

**Description:**

Establish project close-out procedures with the contractor early in the construction phase of the project. Develop an agreed upon process for partial acceptance leading to final acceptance. Require the contractor to submit a schedule for completion of punch-list items. Conduct periodic review of preliminary finals to expedite final closeout items. Identify close-out items that can be worked on simultaneously or in parallel acceptance. Track closeout progress and assign action items as needed.

**Additional Details:**

Reviews of the finals progress/milestones should be done monthly until the process is essentially complete then quarterly until the project is closed. Expedited close-out procedures allow project staff to be assigned to other projects sooner and result in unspent project funds being released to other projects for better program management.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management

**When to Apply:**

Best practice should be applied on mega projects, backbone and large 3R projects or any project where traffic impacts economic activities.

**Cost Implications:**

This practice will result in no significant cost implication.

**Conditions for Successful Application:**

While the standard specifications define substantially complete, each project's unique circumstances and criteria should be discussed and agreed upon early in the project.

**Cautions:**

Poor definitions of project completion must be taken into account to prevent increased costs and time.

## PM-10 Project management team is not tied to region day-to-day activities

**Description:**

Establish a project management team that is assigned to the project and relieved of day-to-day activities of the Region. Locate all members of the construction project management team (department staff and consultants) in a single project office to facilitate project communication and decision making.

**Additional Details:**

Specialty functional area responsibilities (bridge engineering, geotechnical engineering, traffic engineering, utility coordination, etc.) may not be available for full-time project assignment and housed with the project team due to staffing limitations or project needs. In those cases, specialty area project responsibilities and duties versus Region responsibilities need to be clearly defined and highest priority be given to the project.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication

**When to Apply:**

Best practice should be applied only on large, complex mega projects.

**Cost Implications:**

This practice will be costly but necessary to implement as a result of bringing different expertise to join the project team and creation of project office facilities.

**Conditions for Successful Application:**

This best practice will require sufficient manpower to allow full-time project assignment, office space of sufficient size near the project to house the entire construction delivery team, and a well-defined organizational chart outlining responsibilities and duties of project personnel.

**Cautions:**

Personnel assigned to specific projects for long periods of time can feel they are removed from regional staff and operations. There can be concerns about reintegrating back into the Region upon completion of the project.

Utilizing the best people on specific high profile jobs away from the Region can leave voids in the Region for other activities and projects.

## PM-11 Project Team prepares Cost-to-Complete budget projections

**Description:**

The construction project delivery team prepares and submits a cost-to-complete projection. This estimate should take into account budgeted cost of work performed, budgeted cost of work scheduled, over/under-run quantities, approved contract modifications, and anticipated contract modifications. While it is an estimate, it should be as accurate as possible to provide decision makers assurances the project is progressing on budget and information regarding risks and opportunities for making the best decisions.

**Additional Details:**

Frequency of preparing the estimate is based upon the size and duration of the project. Very large multi-year mega projects should be reported monthly. Backbone and large to medium 3R projects should be reported quarterly.

**Objective:**

Primary: Cost Control
Secondary: Communication

**When to Apply:**

Best practice is highly recommended for mega projects, backbone and large to medium 3R projects.

**Cost Implications:**

This practice will result in minimal cost impacts. It will put additional demands on field staff and may require an increase in staffing levels to produce the estimates. It will require development of guidance language in the Construction and Materials Manual and possible creation of software to assist in preparing the estimate.

**Conditions for Successful Application:**

Successful application of this best practice will require active support from WisDOT management on the need for and use of this kind of information to successfully manage projects.

**Cautions:**

Estimates for work to be completed should be independent from the remaining budget and should be based on an estimate for the actual physical work to be completed for an activity and for the project.

## PM-12 Track overruns/underruns throughout project

**Description:**

Track and record overrun/underrun quantities on a monthly basis. Changes in quantities should be considered as one of the components in developing cost-to-complete estimates. Substantial changes should be discussed with the contractor to see if adjustments or plan changes can be made to mitigate large quantity increases.

**Additional Details:**

Substantial overrun in quantities can result in projects exceeding the construction budget and early identification of the issue can allow for exploration of alternatives to keep the project on budget. Substantial underrun of certain quantities may affect DBE usage and early identification of the issue can allow for exploration of alternatives to provide other opportunities of DBE participation on the project.

**Objective:**

Primary: Cost Control

**When to Apply:**

Best practice should be applied on mega, backbone, and 3R projects where the construction value is more than $500,000.

**Cost Implications:**

This practice will have minimal costs to implement. Some additional project construction manpower will be required to track the quantities. Also, some initial costs will be required to develop spreadsheet software that is linked to the field manager.

**Conditions for Successful Application:**

Reinforcement from WisDOT supervision that tracking of overrun/underrun quantities is an essential part of project cost management.

**Cautions:**

None

## PM-13 Perform project Earned Value Analysis

**Description:**

Earned Value Analysis (EVA) is a project control technique for measuring progress and performance in a regular manner. EVA has the ability to integrate time, cost and progress in a single system. EVA compares estimated cost, actual and earned.

**Additional Details:**

US DOT, FHWA requires that an EVA be performed on all designated mega projects. Three basic measurements are used in EVA and two variance values are calculated. Basic measurements are: Budgeted Cost of Work Schedule (BCWS), Budgeted Cost of Work Performed (BCWP) and Actual Cost of Work Performed (ACWP). The two variances are Schedule Performance Index (SPI) and Cost Performance Index (CPI). These indexes are compared to control point limits to assess project performance. On very large projects, perform the EVA monthly. For medium to large projects, perform the EVA at 25 percent, 50 percent, 75 percent, and 90 percent completion milestones.

An EVA can only be accomplished if the contractor develops and provides a detailed cost loaded schedule that is broken down to activity levels that relate to pay items.

**Objective:**

Primary: Cost Control, Schedule Control
Secondary: Communication

**When to Apply:**

Best practice should be applied on mega projects and all federally funded projects exceeding $500,000 per FHWA criteria.

**Cost Implications:**

Full implementation of EVA may require substantial cost to both the contractor and WisDOT.

**Conditions for Successful Application:**

This best practice requires accurate tracking of activities and percent complete in order to be successfully implemented. Special provision language should be included in contracts requiring cost loaded schedules with activity levels related to pay items. If the contractor provides schedules at too broad a level an accurate EVA cannot be done.

**Cautions:**

It should be noted that use of commercially available, computerized systems can impact the success of this practice and an accurate input of hours used under a particular activity is necessary. The various project activities need to be scoped and clearly defined and the system should be understood by all levels of management.

## PM-14 Establish project Reserve (contingency) Budgets

**Description:**

Establish project reserve (contingency) budgets to cover costs for unanticipated project costs, changed field conditions, design modifications, and required scope changes. Establishing a reserve budget sets expectations of the construction management team in regards to final construction costs. The reserve budget is divided equally between two groups: one-half is under direct control of the project leader and one-half controlled by the Change Management Team. Project leaders must gain approval of the Change Management Team to exceed their portion of the project reserve.

**Additional Details:**

Reserve (contingency) budget amounts can be based upon historical project overrun costs (typically in the range of 10 percent of the project award amount) or be set based upon project circumstances and risks. Reserve budget amounts are generally not publicized and are kept confidential.

When engineering consultants are retained as project leaders, the reserve budget should be under control of the WisDOT project manager so that WisDOT retains direct control of this budget.

**Objective:**

Primary: Cost Control

**When to Apply:**

Best practice should be applied on all mega projects, backbone and large 3R projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

This best practice will require a clear definition of what spending authority is within the reserve budget of the project management team and which ones are assigned to the CMT. Prior to a

project leader receiving approval to exceed their project reserve and obtain additional funding, they must first account for all changes that were made within their responsibility.

**Cautions:**

Application of this best practice requires assigning reserve (contingency) budget on a project basis rather than on a program basis.

## PM-15 Use a Standing Dispute Review Board

**Description:**

Require the use of a Standing Dispute Review Board (DRB) to render decisions on unresolved claims as quickly and impartially as possible during construction of the project. The DRB issues findings and recommendations regarding claims and those findings can be binding or non-binding depending on the claim amount. Decisions made by the DRB are based upon contract language, specifications, and previous legal rulings. The DRB can also act in an advisory role to expedite the resolution of a dispute when requested by the construction team.

**Additional Details:**

The contractor and department cooperatively establish the DRB after execution of the contract. The DRB consists of one member appointed by the department and approved by the contractor, one member appointed by the contractor and approved by the department, and a third member appointed by the first two members and approved by both the department and contractor. The third member serves as the DRB chairperson and all costs and expenses are shared equally between the department and contractor.

**Objective:**

Primary: Dispute Resolution
Secondary: Issue Management

**When to Apply:**

Best practice should be applied on mega projects.

**Cost Implications:**

This practice will result in cost impacts ranging from slight to moderate depending on the expertise required for the DRB and their geographic location.

**Conditions for Successful Application:**

The DRB, project team and contractor agree on a meeting schedule (typically quarterly) and meetings involve a progress report from both the project manager and the contractors field manager and an opportunity for the DRB to ask questions regarding project progress and any

underlying issues that may potentially cause problems for the construction team. Issues to be resolved by the DRB are scheduled in advance. The meeting also includes a site tour to familiarize the DRB with current construction activities and progress since the last meeting. In advance of meetings, DRB members should be provided with a package of materials that include the following:

- Project Status Information Report
- Cost and Schedule Report ( Included Earned Value & production charts of key activities)
- Contract Modification Listing (Amount and Description)
- Current CPM Schedule
- Project status summary report

Monthly project updates should be sent to DRB members throughout the project. These updates should include schedule updates, RFI logs, and change management logs.

**Cautions:**

The project team needs to not become reliant on the DRB to resolve project issues and disputes. They can use the DRB as a sounding board to get informal opinions to assist in the resolution of issues but the project team should make every attempt to resolve disputes among themselves at the project level.

The DRB cannot commit state expenditures; however, it is recommended that the WisDOT honor the cost impact decisions made by the DRB and inform the contractors of this intention.

## PM-16 Assign a responsible party for resolution of issues at Project Progress Meetings

**Description:**

Weekly project progress meetings are conducted to: A) review construction progress and future work activities, identify potential delays as early as possible for mitigation planning, raise issues and bring them to resolution, and B) make subsequent action assignments when appropriate. Those given action assignments should be identified (referred to as "Ball in Court") in the meeting notes and assigned a date when resolution is due. The identified responsible party should be a person who is directly on the project and answers to the project team so that that person's work priorities are set by the team and will not be overridden by others.

**Additional Details:**

A standardized meeting note format should be followed to insure all issues brought up are documented, a responsible party is assigned for resolution of the issue, and the issue is brought to resolution.

**Objective:**

Primary: Issue Management
Secondary: Schedule Control, Communication

**When to Apply:**

Best practice should be applied to all mega, backbone and all 3R projects where construction project progress meetings are held.

**Cost Implications:**

This practice will result in minimal costs to implement. While use of standardized forms may be helpful, application does not require that the information be captured in any prescribed format.

**Conditions for Successful Application:**

Top management will need to reinforce the use of this best practice on projects for early resolution of any potential issues. Support from construction contractor's personnel on use of the best practice at the project level will enhance the likelihood of success.

**Cautions:**

None

## PM-17 Make "Open Issues" a routine agenda item at Project Progress Meetings

**Description:**

Weekly project progress meetings are conducted to: review construction progress and future work activities, identify potential delays as early as possible for mitigation planning, raise issues and bring them to resolution, and make subsequent action assignments when appropriate. All issues identified should be assigned a unique number, date it was brought up, a brief description of the item, status of the item (new, open, closed or for discussion), who is responsible for taking the lead in resolving the item, and when the resolution is due. All items are carried forward as "open" until meeting participants agree that resolution has been reached and the item can be closed. At each meeting, all "open issues" should be a standing item and have the responsible party report on the progress and the status.

**Additional Details:**

A standardized meeting note format should be followed to ensure all issues brought up are documented as well as the resolution of the issue is achieved in a timely manner.

**Objective:**

Primary: Issue Management
Secondary: Cost Control, Schedule Control, Communication

**When to Apply:**

Best practice should be applied on all mega projects and most 3R type projects. Shorter duration, straight forward type 3R projects would benefit from utilizing the concept but may not warrant utilizing the more complex proprietary document control and reporting software available.

**Cost Implications:**

This practice will result in low cost impacts.

**Conditions for Successful Application:**

Mega projects should utilize commercial software to allow electronic filing, tracking and search capabilities. Other projects could utilize standardized word processing templates as provided in the Project Communications Enhancement Effort (PCEE) Manual.

**Cautions:**

None

## PM-18 Involve DRB Chair in Partnering Meetings

**Description:**

Have the Dispute Review Board (DRB) chair participate in project partnering meetings so that they will have immediate knowledge of the progress and issues on the project. Thus, the DRB chair will be familiar with the background of a dispute should it be brought to the DRB for a formal hearing. With the DRB chair at the partnering meetings, they can also provide the partnering team with advice on how the DRB might look at an issue, i.e. providing an advisory DRB opinion as issues came up so that the group does not need to wait for a scheduled DRB meeting.

**Additional Details:**

None

**Objective:**

Primary: Issue Management
Secondary: Dispute Resolution

**When to Apply:**

Best practice should be applied to mega projects when there is both a DRB involved and the project is utilizing formal partnering.

**Cost Implications:**

This best practice will result in slight increases to cost if consultants need to be hired.

**Conditions for Successful Application:**

Contractors should be consulted and concur in the decision to have the DRB chair participate in the partnering meetings.

**Cautions:**

The project delivery team and contractors should not become too reliant upon the DRB chair to offer opinions in the partnering meetings. The partnering meetings are held so that those directly involved in project delivery work through issues together and develop a working

relationship.  Always deferring to the opinion of a third party could be harmful to the project in the long run.

## PM-19 Use a Third- Party Work Authorization Form (Third-Party WAF)

**Description:**

Use a third-party Work Authorization Form (WAF) for early identification and timely resolution of items and issues with cost or time implications to the project when modifications are required to be done by a third party. Primarily used to deal with utility changes but can involve other third-party entities such as a railroad, municipality or county.

**Additional Details:**

Information provided on the third-party WAF form should include:

1. Item to be changed
2. Reason for the modification
3. Justification
4. Design, cost and schedule implications
5. Criticality of the modification

**Objective:**

Primary: Schedule Control, Communication
Secondary: Issue Management, Cost Control

**When to Apply:**

Best practice should be applied only on large, complex mega projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

Effective use requires project delivery team to understand use of the form and it is linked with a comprehensive document management system for the project.

**Cautions:**

A revised form needs to be developed. The form and process used successfully on the Marquette Interchange was called a “Contract Change Notice,” but the concept has not been utilized on other major projects. Procedural details and agreements on work authorization approvals for specific third parties need to be developed on each individual project.

## PM-20 Hold Specialty Group Meetings

**Description:**

Project Specialty Group meetings should be held to improve communication among those involved with specific aspects of the work. It should include project personnel, contractors, outside agencies, WisDOT offices, municipalities, and other third-party groups as needed that are involved in the specific specialty area. Meetings should cover: construction progress, future work activities, and potential delays for mitigation planning, possible impacts to traffic or community events, issues that need resolution, and make action assignments when appropriate.

**Additional Details:**

Utility coordination, traffic operations, structures group, DBE compliance, etc. are examples of the specialty group meetings that should be held. These meetings are focused on a specific functional area and resolving issues related to that aspect of the project. They are separate meetings and NOT part of normal Project Progress meetings or Partnering meetings.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication, Cost Control

**When to Apply:**

Best practice should be applied on large, complex mega projects.

**Cost Implications:**

This practice will result in slight increases to cost.

**Conditions for Successful Application:**

Senior management must support the attendance of project staff and regional/statewide bureau functional area staff at the meetings. Often third parties, such as utility companies, county sheriffs, state patrol, municipalities, etc. will be required to attend and obtaining their commitment to the meeting is important. Meetings should be regularly scheduled, standing meetings organized and led by the construction project delivery staff.

**Cautions:**

None

## PM-21 Use Work Authorization Form (WAF)

**Description:**

Prior to receiving an Approval Justification Record (AJR), a Work Authorization Form (WAF) is used to direct and start contract modification work by the contractor. The WAF provides the contractor with a written document detailing the work to be performed and the basis of payment in advance of completion of the Contract Modification process.

**Additional Details:**

The WAF can also be used to document how the project team proposes to address a change and request the contractor to respond officially that the proposed action, payment method and time consequences are acceptable to them.

**Objective:**

Primary: Communication
Secondary: Cost Control, Schedule Control, Issue Management, Dispute Resolution, Document Control

**When to Apply:**

Best practice should be applied on mega projects, backbone and large to medium 3R projects. Consider standardizing this practice and using on all projects.

**Cost Implications:**

This practice will result in minimal cost increases.

**Conditions for Successful Application:**

This best practice requires development of a standardized form and the project management team being able to accurately define and detail the work to be done by the contractor. Payment and time considerations are typically agreed upon through negotiation prior to issuing the WAF.

**Cautions:**

If there is a disagreement regarding acceptance of the payment or time provisions detailed in the WAF, they need to be resolved promptly through negotiation or use of the pre-established dispute resolution process.

## PM-22 Develop and maintain a project Construction Management Plan

**Description:**

A project Construction Management Plan (CMP) is a written "how-to" guide to assist in management of the construction process and maintain fiscal control of project costs. It provides guidance to the project decision makers on project implementation to effectively manage the scope, costs, schedules, and quality. The plan defines the roles, responsibilities, relationships, and decision-making processes required to complete the project. The basis of the CMP is the Department's Construction & Materials Manual (CMM), but the project CMP details specific tools, techniques, and procedures to be used by the construction delivery team in management of the project.

**Additional Details:**

Preparation of the CMP should begin during the design phase of a project. The process of developing the project CMP provides a good opportunity to strategize and think through the delivery of the construction program and prepare for what is to come. Topics and chapters typically included in the CMP include the following:

- Project Description and Scope of Work.
- Project Organizational Chart, Roles, and Responsibilities
- **Contract Management Process**
- **Cost and Schedule Control**
- Project Reporting and Tracking
- **Internal Project and Stakeholder Communication**
- Quality Assurance/Quality Control (QA/QC)
- Environmental Monitoring
- Safety and Security
- Traffic Management
- Civil Rights Program
- Closeout Plan
- Project Documentation

**Objective:**

Primary: Communication
Secondary: Cost Control, Schedule Control, Quality, Issue Management, Dispute Resolution, Document Control, Safety

**When to Apply:**

Development of a CMP is a FHWA requirement for all major projects (estimated total cost of $500,000,000 or more). A project specific CMP should be developed for all mega projects. Backbone and 3R projects can rely on the published Construction and Materials Manual.

**Cost Implications:**

This practice can result in moderate cost impacts due to the need that the CMP be project specific.

**Conditions for Successful Application:**

This best practice requires the project management team utilize the practices and procedures detailed in the CMP. The project CMP needs to be consistent with the statewide Construction and Materials Manual. The manual should be developed early enough in the project to achieve consistency and improve the learning curve of project management staff.

**Cautions:**

The CMP needs to be periodically updated to make sure it is up to date and reflects any changes in policy or direction. Contract administration practices should be monitored to insure team members follow what is written.

## PM-23 Develop a Project Responsibility and Accountability Matrix

**Description:**

Develop a project Responsibility and Accountability Matrix to provide information to members of the project delivery team on who is responsible for initiating various activities (e.g. project pre-con meetings, project progress meetings, payment estimates) and who is to be informed of the activity. The matrix also identifies who is responsible for initiating and approving various documents and contract items (e.g. Erosion Control Implementation Plan, RFI request, Work Inspection Reports), and how the communication of these actions occurs. Also, the matrix should provide information related to primary responsibility, joint responsibility, approval, consulted, review and audit.

**Additional Details:**

For each activity or document, those responsible for the following actions are identified in the matrix:

- Initiates
- Receives
- Approves
- Receives a copy
- Participates in/Supports/Reviews
- Prepares Notes
- Distributes

Typically the responsible parties are identified by position rather than name so that it can remain current throughout delivery of the project. It also includes all organizations involved in the delivery of the project, including project staff, regional staff, statewide bureaus, FHWA, contractors, and third parties.

**Objective:**

Primary: Communication
Secondary: Schedule Control

**When to Apply:**

Best practice should be applied on mega project, backbone and large 3R projects.

**Cost Implications:**

This practice will result in minimum cost impacts as once it is done for one project it can be replicated in other projects.

**Conditions for Successful Application:**

The matrix needs to reviewed and updated as changes occur to procedures or protocols. If a construction management plan is developed it should be incorporated into this document.

It should be noted that past mega projects have included planning, preliminary design, final design, utility coordination, environmental process, and civil rights compliance phases as well as construction in this type matrix.

**Cautions:**

This matrix can be helpful and prevent miscommunication among team members, but they can be put on the shelf and not utilized. It is important the project delivery team review the document periodically to make sure it is being followed and take corrective action if it is not.

## PM-24 Develop a Project Materials Certification and Submittal Guide

**Description:**

Develop a Materials Certification and Submittal Guide for the project. Based upon contract provisions, every required materials sample submittal, materials certification, document submittal, shop drawing submittal, plan submittal, etc. should be identified by item, process, timeline, submittal location and basis of acceptance so that all submittal requirements are documented for ease of reference by the project delivery team and the contractor.

**Additional Details:**

Most regions have a basic materials certification guide which covers materials submittal requirements for materials commonly used on projects, but this guide goes beyond that and includes incidental materials that may be unique to the project and all other types of plan and document submittals required for the project per the contract. It is also project specific detailing submittal locations and responsible parties.

**Objective:**

Primary: Communication
Secondary: Schedule Control, Issue Management, Quality Control

**When to Apply:**

Best practice should be applied to mega projects, backbone and large, complex 3R projects.

**Cost Implications:**

This practice will result in slight cost impacts.

**Conditions for Successful Application:**

This best practice requires knowledgeable materials and contract administration personnel to go through the contract documents to identify all submittal requirements and detail the various submittal processes and timelines in a single document.

**Cautions:**

Development of this guide is for use by the project team and contractor to give everyone advance notice of the various submittal requirements and timelines. However, it is not a contract document and it does not relieve the contractor of contract requirements should something be missed and not included in the guide.

## PM-25 Develop and maintain a Project Website

**Description:**

Develop a dedicated project webpage to disseminate important project information to the public. The website can include such details as: construction timeline and lane closure information, driving directions, community outreach initiatives, project history, relevant contact information, and news updates.

**Additional Details:**

Capabilities of the website can vary widely. It can include cameras installed in various locations to show the public project progress in real time, text message updates on alternative traffic routes and lane closures, route selection and mapping features. These are just a few examples of the website's potential use.

**Objective:**

Primary: Communication
Secondary:

**When to Apply:**

Best practice should be applied on mega projects, backbone and large 3R projects where a large population is impacted by the project.

**Cost Implications:**

This practice can result in varying costs ranging from moderate to significant cost increase depending on the website capabilities selected.

**Conditions for Successful Application:**

Approval of project stand alone websites must be obtained from the Departmental Web Oversight Committee. A process for updating the site is critical, out of date or wrong information will quickly dissuade users from using the website.

**Cautions:**

Need to identify early who is responsible for developing, maintaining and updating the website so that a budget can be developed and if necessary, procurement done in sufficient time to have the web site operational at the start of the project. Ownership of proprietary software developed for the project web site needs to be addressed.

## PM-26 Develop and maintain a project database of decisions made

**Description:**

Create a database of past decisions to avoid "reinventing the wheel" each time an issue develops. Providing ready access to a database of past decisions would allow for a reduction in the amount of time and resources consumed responding to future issues of a similar nature as well as help provide consistency in the decisions made.

**Additional Details:**

Documented decisions are generally field-level decisions made for construction issues where there are multiple construction project teams within a mega project. This allows consistency in decision making throughout the project. This database provides details on unique conditions or circumstances affecting the decision and relies upon input from RFI logs, Change Management logs, and input from field personnel. The database can also be a resource for transferring knowledge gained on the project to future projects and ultimately form the basis for a Best Practices for Successful Project Performance Manual.

**Objective:**

Primary: Communication
Secondary: Issue Management

**When to Apply:**

Best practice should be applied only on mega projects.

**Cost Implications:**

This practice will result in moderate cost impacts.

**Conditions for Successful Application:**

This best practice will require a searchable database with lists of pre-established key words for efficient utilization of the database. This database may require creation of a project server. This practice requires personnel to maintain and update the field decisions in order for successful implementation of the database.

**Cautions:**

Application of this best practice can appear to be a duplication of other project databases (e.g. RFI log, Change Management log, Issues log) but it is intended to document field decisions of problems encountered so that decisions required on future field problems are easily searched. Project teams need to guard against simply using these other databases to populate this database as they contain a wide variety of items, issues and conclusions and it will decrease the usefulness of this database. In addition, decisions must be reviewed with the contract documents for consistency before inclusion in the database.

## PM-27 Monitor and track DBE participation and report on goal achievement progress

**Description:**

Compile project costs monthly for each DBE firm. Compare the actual amounts to the budget amounts, and also compare the actual use percentage versus the contract percentage so that corrective action can be taken if goal achievement falls behind. Review potential for DBE participation on contract modifications and encourage DBE usage on contract modifications that increase the value of the total contract amount.

**Additional Details:**

Tracking and reporting of DBE usage for trucking can be difficult as those expenditures are not often tied directly to a bid item. In those cases, need to track DBE expenditures through payroll. Best Practice DC-5 calls for use of the Civil Rights Compliance System to track DBE utilization via the contractor's payroll but it is not necessary that this system be used as long as some methodology is used to monitor participation.

**Objective:**

Primary: Communication

**When to Apply:**

Best practice should be applied on mega, backbone and large 3R projects. It should be noted that the monitoring of DBE usage and compliance with contract requirements should be done on all projects but tracking expenditures by individual firms for tracking and monitoring is practical on only large projects.

**Cost Implications:**

This practice will result in moderate cots impacts as it will require additional field staff time to track and report expenditures by firm and time to coordinate and the prime contractor.

**Conditions for Successful Application:**

Application of this best practice requires a high level of coordination and communication with the prime contractor to look for opportunities to utilize DBE's when project changes affect the type of work or quantities. Often DBE involvement is at the end of the project and if there are

changes in quantities it may then be too late to make corrections if earlier opportunities are missed. Also, this practice requires support from prime contractor to obtain the data as it can be difficult to get information from second- and third-tier subcontractors and material suppliers.

**Cautions:**

Often DBE participation is scheduled for the end of the project and early progress reports may need to be accompanied with explanations of when the DBE expenditures are anticipated to occur.

## PM-28 Encourage Third- Party representation at Project Progress Meetings

**Description:**

Encourage third-party representatives to attend project progress meetings to facilitate dialog between the parties, clarify expectations, and acquire agreements on actions and target dates for completion. Examples of third parties would be utility companies, local units of government, local law enforcement agencies, external agencies such as the DNR, and railroads.

**Additional Details:**

This best practice can be used in conjunction with PM-20 (hold Specialty Group meetings) if project complexities require it, but it should be applied if PM-20 is not utilized.

**Objective:**

Primary: Communication
Secondary: Schedule Control, Issue Management

**When to Apply:**

Best practice should be applied on all projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

Meeting logistics are important and scheduling meetings to allow participation should be explored. This may include establishing teleconference lines or making web-based meeting participation possible.

**Cautions:**

Third-party participants may seek compensation for attendance and expectations regarding attendance need to be clarified up-front. Pressure may need to be exerted on third parties to ensure participation in relevant communication activities. Conversely, some third party participants can be disruptive to the process and caution needs to be exercised to ensure their involvement is controlled.

## PM-29 Establish project goals for timely approval of documents

**Description:**

Establish project team goals for responding to and turning around project documents and submittals, e.g. responding to all RFIs in seven days. These are non-binding, turn-around dates, but it provides contractors with an approximate time frame for when they can expect responses as well as gives the project team a goal response time to strive for to prevent documents from lingering without a response.

**Additional Details:**

Types of documents where response time goals could be established include RFI's, Shop Drawing Reviews, Materials Submittals, Correspondence, etc. Different response time goals can be established for each type of document or submittal. Time goals should be developed collaboratively with contractor.

**Objective:**

Primary: Schedule Control
Secondary: Issue Management, Communication

**When to Apply:**

Best practice should be applied to all projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

Project delivery staff must make realistic estimates of their expected response time based upon staffing levels and anticipated frequency and volume of submittals and documents. Then staff must make it a priority to meet or exceed these goals. Periodically the project team should measure performance and seek improvements if necessary.

**Cautions:**

It is possible that contractors may misuse requested turn-around time goals by demanding rapid response to all issues. Discussions should be held at the pre-construction meetings to establish criteria for urgent response items.

## PM-30 Designate Pay Plan Quantities for appropriate items of work

**Description:**

Designate items of work in the contract as Pay Plan Quantity (PPQ). These items are not measured in the field for payment, but rather the quantity shown in the schedule of items is defined as the contract quantity and is used as the basis of payment. The use of pay plan quantities eliminates the cost for making quantity measurements and the time required for resolving minor quantity variations.

**Additional Details:**

Item selected as pay plan quantity items should be items that can be estimated accurately, are not expected to vary during construction, and are measured linearly or by area. Guidance on selection of items is provided in the Facilities Development Manual (FDM 19-5-10).

**Objective:**

Primary: Cost Control

**When to Apply:**

Best practice should be applied to all projects.

**Cost Implications:**

This practice will have minimal cost implications.

**Conditions for Successful Application:**

PPQ should be applied only to items where quantities are understood and well known. Project management staff should be familiar with the concept and how to deal with changes in quantities that may occur due to changed field conditions or design errors.

**Cautions:**

Use of this best practice puts more risk on the design to accurately detail and estimate quantities being identified for PPQ. Application of PPQ can be overly used in an effort to streamline construction contractor administration. Use of PPQ's could lead to submittal of mathematically unbalanced bids.

## PM-31 Utilize a Owner Controlled Insurance Program (OCIP)

**Description:**

WisDOT provides project-specific insurance where risks of the owner, contractor, and subcontractors are insured under a single insurance package. These wrap-up insurance policies, called Owner Controlled Insurance Programs (OCIP), have all premiums paid by WisDOT. Contractors are required to deduct the cost of their individual insurance policies from the bid. Major advantages include cost savings from buying insurance "in bulk", eliminating overlapping coverage, more efficient claims handling, reduced litigation between contractors, stronger and more consistent safety programs throughout the project, and improved public relations by dealing with claims from the public in a prompt and fair manner.

**Additional Details:**

The OCIP insures multiple risks under the project wide insurance program. Coverage provided by WisDOT includes: workers compensation, general liability, excess liability, and builder's risk. OCIPs are administered through WisDOT's Risk Management Section and require the approval of the Department of Workforce Development. A feasibility study should be done to evaluate the cost of effectiveness of an OCIP based upon project specifics. A two-year timeframe is required in advance of project lettings to conduct the feasibility study, solicit for a program administrator, and secure all the insurance coverage. Due to expertise required and level of resources needed, OCIP's will require retaining an administrative consultant to oversee the program.

**Objective:**

Primary: Safety
Secondary: Cost Control, Issue Management

**When to Apply:**

Best practice should be applied to large mega projects.

**Cost Implications:**

This practice will result in moderate cost impacts. The OCIP program should be cost neutral but may require additional project staff to administer the program.

**Conditions for Successful Application:**

OCIP's are most applicable to projects that are $250 M or larger in size for either a single project or combination of related corridor projects. Projects should also be completed within a 4 year construction period. Pre-bid workshops should be held to make sure prospective bidders understand the program and the project requirements and how it will potentially affect their operations. This best practice requires senior management support for utilizing this type of insurance program.

**Cautions:**

OCIPS are large, complex insurance programs that require expertise to setup and manage. They can be controversial as generally construction contractors are not in favor of them. They feel OCIP's do not provide a cost savings and they have concerns with the return to work provisions often included in OCIP's. Contractors do, however, support and see value in the safety discussions, safety planning, and safety coordination activities that take place under an OCIP.

Precautions should be made to ensure that all covered insurance costs, including worker's compensation payments, are removed from the labor cost and other aspects of the contractor's bid.

## PM-32 Prepare Project Benchmark Performance Indicators

**Description:**

The construction project delivery team is required to report on the project status by providing the percent complete based on time and the percent complete based on cost. Research shows that there is a linear relationship and/or S-like curve between percent of time and percent of cost. For the linear relationship, there is a 45 degree slope i.e. if the project complete time is 40 percent then 40 percent or more of the cost should be expended for good performance. Comparisons to this benchmark provide project managers with approximation of whether the project is ahead or behind schedule.

**Additional Details:**

The percent complete based on cost is calculated by dividing the total amount paid to the contractor by the contract award amount plus or minus any approved contract modifications. The percent complete based on time is calculated by dividing the contract time elapsed by the total contract time plus or minus any approved contract modifications. It should be reported monthly for large projects and at the 33 percent and 66 percent time complete for smaller projects.

**Objective:**

Primary: Cost Control, Schedule Control
Secondary: Communication

**When to Apply:**

Best practice should be applied to all projects with construction costs greater than $500,000 in total.

**Cost Implications:**

This practice will result in slight cost impacts.

**Conditions for Successful Application:**

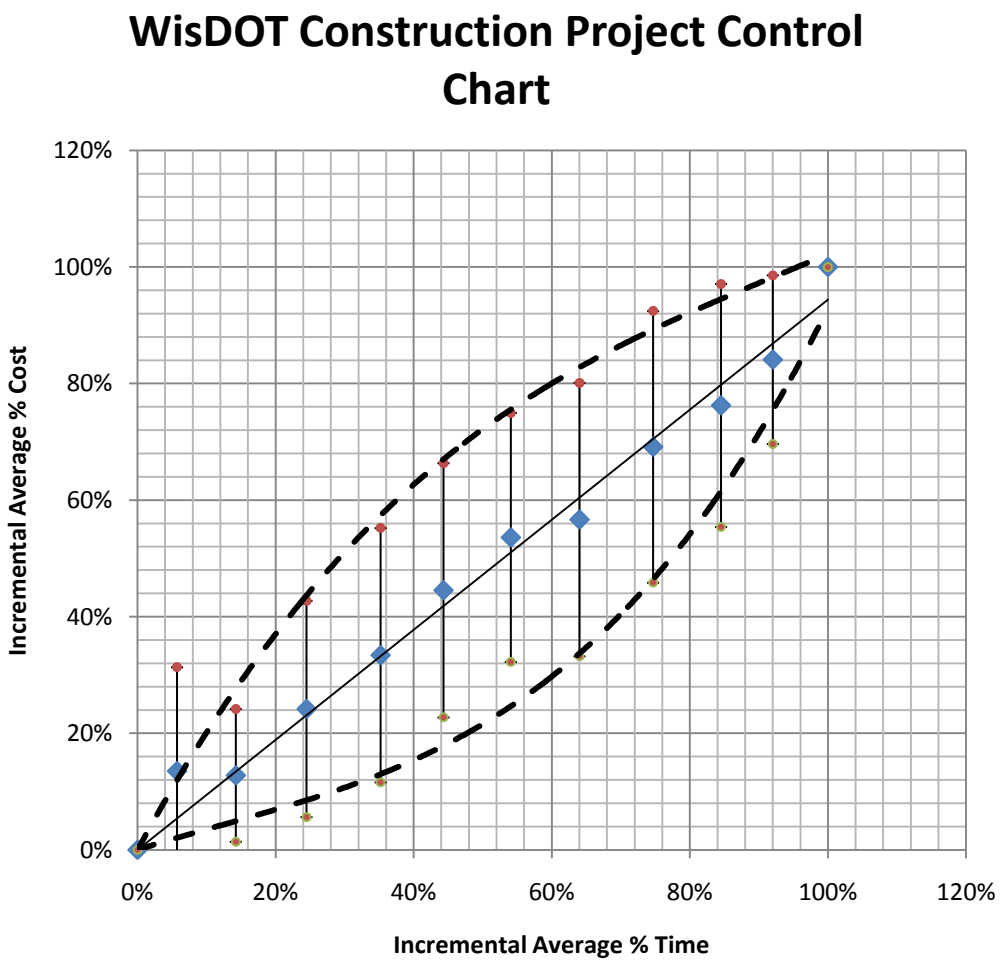
Pre-established benchmarking performance indicators should be generated from historic records (similar projects completed successfully).

**Cautions:**

Project constraints should be considered when comparing historic data to the current performance indicators. Project constraints may include site characteristics, utility interference, site logistics, weather and the project duration.

**Metrics:**

The percent complete based upon cost should be compared to the percent complete based upon time and compared to the control chart below. Projects falling outside of the dashed lines should be given extra scrutiny. Those projects that fall below the identified range should particularly be focused on to see if corrections can be made to bring the projects back on schedule.



## PM-33 Execute contract Balancing Modifications to revise line item quantities to account for overrun/underrun quantities

**Description:**

On multi-year duration projects process, execute a "balancing contract modification." to account for the overrun/underrun quantities and revise the contract quantities to account for these variations. It is used to obtain agreement on quantities as the project proceeds and to update the financial system to account for the changes in contract costs due to the variations in quantities.

**Additional Details:**

Use of balancing contract modifications is a work around to WisDOT's financial system for long-term projects. The current financial system has no methodology to allow for adjustments in the anticipated final construction cost except through executed contract modifications. When variations in quantities due to overrun/underrun quantities result in substantial changes in cost, it can be beneficial to account for these early in the project and not wait until project completion. The technique should be used only on multi-year projects when the overrun/underrun quantities result in significant cost changes and impacts to the project, typically on the order of 1 to 2 percent of the total contract value.

**Objective:**

Primary: Cost Control
Secondary: Issue Management

**When to Apply:**

Best practice should be applied only to multi-year mega projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

The prime contractor has to be in agreement with this technique and be willing to require their affected subcontractors participate in reviewing and verifying the quantities utilized on the

project at the time of the balancing modification. A balancing mod should be used only on quantities where there is a reasonable assurance that quantities will be either underrunning or overrunning at the completion of the project.

**Cautions:**

Requesting a balancing contract modification is best done during the off-season. During the construction season contractors are often too busy or do not have sufficient staff to review billings and cost estimates to verify the quantities used on the project. Some contractors may be unwilling to certify quantities midway through the contract as this activity is normally done at the end of the project.

## FR-1 Implement a Project Financial Reporting System

**Description:**

A project financial report should be utilized to track project expenditures and assist in project oversight to ensure project funding objectives and goals are met. Project managers should be empowered to actively manage projects in real time and periodic reporting of the project status provides them with tools to manage project costs. Such reports facilitate communication and dissemination of information and provide supervisors and Regional managers with key project data to monitor project performance and provide oversight. Items to be reported and tracked include:

1. Actual expenditures vs. budget
2. Percent of current budget expended
3. Anticipated cost-to-complete
4. Value of pending Contract Modifications (mods.)
5. Reserve balances (contingency budget)
6. Disadvantage Business Enterprise (DBE) expenditures vs. project commitment level

**Additional Details:**

Frequency of reporting is based upon the size and duration of the project. Very large, multi-year mega, backbone, and 3R (resurfacing, restoration and rehabilitation) projects should be reported monthly. Large to medium backbone and 3R projects with durations between 6 to 12 months should be reported monthly and smaller 3R projects with durations less than six months should report when the project has expended 33 percent and 66 percent of the contract time. It should be noted that percent of time should be correlated to percent of expenditure (Best Practice PM-32).

**Objective:**

Primary: Cost Control
Secondary: Communication

**When to Apply:**

Best practice should be applied on all projects where the construction costs are more than $200,000 in total.

**Cost Implications:**

This practice will result in moderate increase to departmental costs. It will require some technical training and direction to staff on the importance of developing and reporting the data and increase time commitments to report the data. It will also require some modifications to existing software and development of policy and guidance language for inclusion in the Construction and Materials Manual.

**Conditions for Successful Application:**

This best practice will require active support from WisDOT management on the need for and use of this kind of information to successfully manage projects.

**Cautions:**

It will be difficult to get timely information from project leaders given their current workload. This practice will require an organizational cultural change so that all levels of staff responsible for project management understand the value of this information and how it can assist in managing projects to a budget and are committed to recording it.

## FR-2 Utilize a statewide Construction Project Management Dashboard Report

**Description:**

A Construction Project Management Dashboard report provides WisDOT's senior management with an "at-a-glance" view on the status of projects that are performing outside of pre-established performance levels or boundaries:

1. Cost-to-complete estimates exceeding base budgets by 10 percent
2. Project reserve (contingency) budgets falling below 50 percent of original value
3. Notice to Proceed (NTP) not issued within 60 days of project award
4. Revised schedules exceeding contract time by more than 10 percent
5. Projects not reaching "tentative final" stage within 90 days of project acceptance

The report only includes projects falling outside of performance levels identified and are included in the report. This report provides managers with critical information on projects potentially in trouble giving the ability to provide assistance or take corrective actions.

**Additional Details:**

Initial performance levels are based upon preliminary thoughts by the research team, levels need to be refined to reflect actual project performance criteria established by WisDOT management.

**Objective:**

Primary: Communication

**When to Apply:**

Best practice should be applied on all mega projects, backbone and the large to medium 3R projects.

**Cost Implications:**

This practice will result in moderate cost impacts. Initially it will require software development, standard formatting and recording procedures, and development of performance criteria. Additional staff will be necessary to accumulate and report data on a continuing basis.

**Conditions for Successful Application:**

This best practice requires that FR-1 be fully implemented.

**Cautions:**

None

## DC-1 Develop a standardized document control methodology

**Description:**

Develop a systematic and uniform procedure for filing and distributing all incoming and outgoing documents, communications and submissions within a project. This applies to all printed documents, emails, telephone conversation records, hard copy and electronic submittals, and communications.

**Additional Details:**

Incoming/outgoing documents should be entered into the document control system and assigned a document control number and file code. Paper documents should be scanned and entered electronically. A Document Control Log should be utilized to enable searches for documents based upon their assigned numbers or other attributes. Contractor's correspondence and submittals are required to be in electronic format.

**Objective:**

Primary: Document Control
Secondary: Communication

**When to Apply:**
Best practice should be applied on large, complex mega projects.

**Cost Implications:**

This practice will result in significant cost impacts. It will require additional manpower, use of proprietary software, training of staff on use of software and types of documents to be stored, and development of special provisions detailing submittal requirements complying to document control standards.

**Conditions for Successful Application:**

Successful application of this practice requires a dedicated staff that is focused on only document control.

**Cautions:**

The staff assigned to tracking the documents needs to understand and be familiar with the issues and items being tracked to correctly categorize and assign key words for future searches

## DC-2 Standardize all forms

**Description:**

Utilize standardized forms for all projects. Forms that should be standardized include: Request for Information, Design Issue Notices, Work Authorization Forms, Meeting Notes, Issue Logs, and Change Management Logs. Standardizing forms provides efficiency in that users become familiar with the information required and how to submit the needed information.

**Additional Details:**

Standardized forms should be available electronically and examples provided in the Construction Management Plan.

**Objective:**

Primary: Document Control
Secondary: Communications

**When to Apply:**

Best practice should be applied to all projects.

**Cost Implications:**

This practice will result in minimal cost impacts.

**Conditions for Successful Application:**

Best practice should have standardized forms available through the Construction Materials Manual and other readily accessed online sources. Standardized forms should be designed with space for written comments beyond the scope of the standard form.

**Cautions:**

Efficiencies are gained on the project when common forms are standardized. However, project teams are not encouraged to modify standard forms already approved for statewide use unless there is a unique project need. New forms that are not currently adopted for statewide use should be submitted for consideration of development and inclusion in the Construction and Materials Manual to provide consistency between Regions and adoption on all projects.

## DC-3 Document and track issues using cross linkages

**Description:**

Provide a unique tracking number for each significant project issue in order to track all major issues with cross linkages and to transfer necessary information between tracking logs. This will allow related documents and issues to be tracked, searched and linked across the submittal process, reviewed as necessary and provide a document trail for resolution of issues.

**Additional Details:**

Cross linkages should be created for Request for Information (RFI) Forms, Design Issue Notices (DIN), Meeting Notes issues, Issue Logs, Change Management Numbers, Contract Modifications, etc. Use of commercial software provides the intelligence to identify the linkages and do data searches. Identification and labeling of issues as being significant is based upon the judgment of the project team as to potential consequences and impact on the project.

**Objective:**

Primary: Document Control
Secondary: Issue Management

**When to Apply:**

Best practice should be applied on large, complex mega projects.

**Cost Implications:**

This practice will be moderately costly to implement due to the requirement of commercial software and additional staff to categorize, track and electronically file the various documents.

**Conditions for Successful Application:**

Identifying issues as being critical or significant allows the project management team to highlight and focus on resolution of these issues. Cross linkage and searching capabilities allow identification of the source issue.

**Cautions:**

Project management team needs to determine and define the types of issues that will be tracked. Tracking all issues can be burdensome and costly with little gain.

## DC-4 Develop Procedural Manual about WisDOT Region processes

**Description:**

Create a Procedural Manual for consultant engineers on how to do business in assisting the WisDOT Region in delivering the project. The goal of the manual is to establish uniformity in the application and enforcement of contract requirements by project personnel. Additionally, a secondary goal is to communicate Region's general policies, practices, and expectations as well as the various practices and process used within the Region in delivery of the project. It is also a "how to" manual on unique software used on the project and procedures to help users coordinate with existing department software. The intent of the manual is not to address every situation that could arise on a project; rather, provide guidance based on common contract administration practice for standard types of transportation construction work.

**Additional Details:**

The Procedure Manual should be reviewed annually in order to maintain effectiveness and also to make necessary changes and additions to bring procedures up-to-date with current practices, reporting procedures, and organizational structure.

**Objective:**

Primary: Communication

**When to Apply:**

Best practice should be applied to mega projects where there are numerous individual contracts and significant use of consultant engineering firms.

**Cost Implications:**

This practice will result in slight cost impact for any one project.

**Conditions for Successful Application:**

This best practice will require personnel experienced in project management practices, Regional processes, and statewide policies and procedures to be incorporated into the manual.

**Cautions:**

The focus of the manual is to detail the way the Region does business and assist the consultant community in quickly adapting to working within the Region on the project. However, these regional policies and practices must be consistent with WisDOT Departmental directives and manuals. Typically this manual would be used to supplement the Construction and Materials Manual (CMM) and caution needs to be exerted to make sure it does not conflict with or supersede it.

## DC-5 Use Civil Rights Compliance System to Track DBE usage

**Description:**

Utilize the Civil Rights Compliance System (CRCS) to track the Disadvantaged Business Enterprise (DBE) firms utilized on the project, monitor the DBE effort and progress toward achieving project participation goals. CRCS is a web-based software system designed for payment tracking and labor compliance management and was designed to fulfill and streamline various federal and state reporting and monitoring requirements.

**Additional Details:**

The system contains three major functions:

1. Payment Tracking – tracking and reporting actual payment transactions by prime and subcontractor.
2. Labor Compliance Management – provides electronic certified payroll and fringe benefit reporting by prime contractor and all subcontractors.
3. Uniform Certification Program (UCP) – tracks certification status and processes annual affidavits and re-certifications.

**Objective:**

Primary: Contract Compliance
Secondary: Communication, Document Control

**When to Apply:**

Best practice should be applied on mega projects, backbone and large 3R projects.

**Cost Implications:**

This practice cost will result in moderate cost impacts.

**Conditions for Successful Application:**

It will require software modifications and training for field staff on how to utilize the system.

**Cautions:**

Depends upon contractors to fully utilize CRCS and there can be issues with timely reporting, transmission of data, and summarizing information in a usable form. The system was developed for the specific purpose of tracking labor compliance issues and requires modifications for tracking DBE utilization purposes.

## DC-6 Escrow bid documents

**Description:**

The lowest responsible bidder is required to submit the documents they used to determine the costs shown in their bid. The documents are placed in escrow and remain sealed unless the bidder and department mutually agree to release the documents for use in resolving claims and disputes.

**Additional Details:**

Bid escrow documents include writings, working papers, computer printouts, charts, and data compilations that contain or reflect information, data, calculations or assumptions used by the bidder to determine the bid prices. They also include production rates, quantity takeoffs as well as rate schedules for direct costs of labor, construction equipment ownership and operating costs, subcontractors and insurance. For escrowing of bid documents to be a contract requirement, special provisions must be included in the proposal documents.

**Objective:**

Primary: Dispute Resolution

**When to Apply:**

Best practice should be applied to mega projects.

**Cost Implications:**

This practice will result in slight cost impacts.

**Conditions for Successful Application:**

This best practice requires experienced contract administration personnel to review the submitted documents to verify the contractor has provided sufficient detail to assist in determining the basis of the bid should the documents need to be reviewed for resolution of a claim.

**Cautions:**

A relatively short timeframe should be given for the contractor to comply with submittal of the documentation so as to obtain the original working documents used in preparation of the bid. Typically the three lowest bidders are required to submit their documentation until the contract has been awarded to the low bidder. Once the award has been made documents are returned to the non-low bidders. Consideration should be given to only requiring the as-read low bidder submit escrowed bid documents.

Construction contractors generally dislike this provision as they believe the escrowed documents will not provide sufficient information for resolution of a dispute.

## CM-1 Establish Change Management Teams

**Description:**

Change Management Teams (CMTs) are established to monitor and manage project issues or risks that have the possibility of affecting project scope, safety, schedule, and budget. CMTs are responsible for project cost control procedures and approval of modifications to project budget based upon pre-established threshold levels. CMTs are also charged with reviewing and monitoring project cost reports, cost trends, cost-to-complete projections and cost savings opportunities.

**Additional Details:**

*Project Level (Mega projects):*

- Comprised of Project Manager, Region Supervisor, Senior Management
- Manages changes greater than 50 percent of Reserve (contingency) Budget or $1,000,000
- Should meet bi-weekly with the project team to review cost overrun/underrun, scope changes, and contract modifications submitted by the project leader, as well as to ensure project expectations are met

*Region Level:*

- Comprised of Region Directors and Managers; however, it may include additional Region management specific to the project
- Manages changes more than 50 percent of Reserve Budget but less than 100 percent of the Reserve Budget or $500,000
- Should meet monthly to review the monthly report and change management requests, and report significant risks/issues

*Division Level:*

- Comprised of the region Directors, BPD Director and Division Administrators
- Manages changes over the Total Project Cost or $1,000,000
- Should meet monthly to review the monthly reports.

**Objective:**

Primary: Cost Control
Secondary: Schedule Control, Issue Management

**When to Apply:**

Best practices should be utilized on project-level CMTs for mega projects and regional-level teams for backbone and large to medium sized 3R projects.

**Cost Implications:**

This practice will result in moderate cost impacts with additional staff time required to attend CMT meetings and familiarize themselves with project conditions and needs.

**Conditions for Successful Application:**

Active participation and attendance at meetings by CMT members is required for successful application. It will be beneficial for some meetings to be held on site which will impact costs. It should be reinforced to Project Leaders that CMTs are there to assist them in making decisions having major impacts on cost to projects and that project decisions need to be made within the context of the need to deliver an overall program of projects within budget constraints.

**Cautions:**

Project leaders and managers may view this type oversight as a loss of decision making authority.

## CM-2 Utilize a Senior Management Project Oversight Committee

**Description:**

A Senior Management Oversight Committee is the highest authority level for project management. It consists of senior management from WisDOT's Secretary's Office, Division Offices, Regional Office and FHWA. It is responsible for setting project direction and making policy decisions for major issues involving funding, delivery schedules, risk management, human resources, community impacts, media outreach, and technical matters. The Senior Management Oversight Committee is also responsible for reviewing submitted change management requests where the cost threshold exceeds the Division Change Management's authority, which includes anticipated costs over the total project cost and greater than $1,000,000, or an expected modification of more than 10 working days.

**Additional Details:**

Meeting frequency depends on level of project activity and number of issues needing senior management input. Typically meetings are held bi-weekly or monthly.

**Objective:**

Primary: Issue Management
Secondary: Cost Control, Schedule Control, Communication

**When to Apply:**

Best practices should be applied to mega projects.

**Cost Implications:**

This practice will result in moderate cost impacts depending on the level of participation by senior management and meeting location.

**Conditions for Successful Application:**

This best practice requires that senior management be engaged in the project and committed to making meeting attendance a priority. The most successful applications have had the Senior Management Oversight Committee formed in the preliminary design phase so that senior

management is familiar with project issues and decisions made throughout the delivery process.

**Cautions:**

Application of this best practice needs to be limited to a very few key projects at any one time. If too many projects are included it becomes difficult for the senior management to remain engaged and provide consistent and meaningful oversight.

## CM-3 Conduct Risk Assessments to expose, monitor and mitigate risks

**Description:**

An assessment of potential problems ("risks") is performed before starting construction to identify, categorize and document the risks that could affect the project. Identified risks should be assessed as to their 1) likelihood of occurring and 2) the impact of the risk should it occur. Identified risks should be managed by listing on a Risk Tracking Log. When there are a significant number of risks, prioritize based upon severity, identify the "Top 10" and track those so that the focus is on the most significant project risks.

**Additional Details:**

The status of individual risks should be monitored throughout the duration of the project by assigning a team member the responsibility of tracking identified risks and regularly reporting the status of the risk to the project team. High priority risks need to be documented on the Risk Tracking Log, which identifies the risk, its status, if action is required, and who is responsible to take action or monitor the risk. The Risk Tracking Log should be reviewed at regular intervals to evaluate and update any changes to schedule or cost.

Mitigation plans should be prepared for high impact risks in the event the risk would occur. Such plans involve preparing all levels of management for the potential risk, holding meetings to discuss the risk threat and potential solutions, implementing risk reduction plans to lessen exposure to project, and conducting an analysis of alternative risk scenarios.

**Objective:**

Primary: Issue Management
Secondary: Cost Control, Schedule Control, Communication

**When to Apply:**

Best practice should be applied on mega projects.

**Cost Implications:**

This practice would result in a slight increase in cost.

**Conditions for Successful Application:**

The project management team and prime contractor should jointly conduct the risk assessment to identify all risks that would potentially impact the project.

**Cautions:**

Project management team should not confuse project issues with project risks. Project issues are those circumstances that if not fixed will have a definite impact on the project and risks are those circumstances that if not fixed may impact the project. Both issues and risks need to be identified and tracked, and mitigation strategies developed.

## CM-4 Conduct Weekly Issues Meeting

**Description:**

Implement weekly internal WisDOT project management team issue meetings to discuss status of project, scope, cost, schedule, and review any issues. Attendees for these meetings should include the construction project leader, DOT or local project manager, and as needed, the DOT or local project supervisor, and key construction team members. The weekly issue meeting should review the Issues tracking log to review/discuss/update the issues list for the project. The results from the weekly issue meeting should be reported to the Region Change Management team.

**Additional Details:**

Issues that should be considered for discussion at the weekly meeting are those that:

- Have the potential to generate significant negative press
- Have the potential to create negative external stakeholder impacts
- Have the potential to significantly impact major traffic patterns
- Are commitments made by the administration or that the administration has expressed interest in
- Are clearly risk issues for the Region/Bureau, Division, Department
- May set a precedent or change Departmental policies or procedures
- May exceed your resources to resolve issue
- Will challenge the project (legislative, political, business relationships, funding, community/public, outreach)

**Objective:**

Primary: Issue Management
Secondary: Schedule Control, Cost Control, Communication

**When to Apply:**

Best practice should be applied on the large, complex mega projects.

**Cost Implications:**

This practice will result in fairly low cost impacts. It may require additional manpower as it requires attendance at another meeting for project staff.

**Conditions for Successful Application:**

This best practice requires project leadership to support and attend this meeting. Often the items and topics will be discussed at other project meetings and this meeting can seem redundant if the importance of being able to discuss issues internally is not reinforced. Meetings should be regularly scheduled standing meetings. Meeting frequency (weekly or bi-weekly) depends upon project complexity.

**Cautions:**

To be effective requires the project delivery team to be functioning well as a team with participants being open and willing to share problems.

## CM-5 Utilize partnering with bi-weekly meetings between project personnel and contractor

**Description:**

Implement a formal partnering system on the project consisting of an initial partnering workshop and follow-up bi-weekly partnering meetings between WisDOT project management personnel and management from the prime contractor. Formal partnering provides a structured approach to communication to ensure that the project moves forward and that issues are resolved in a timely manner. It focuses on a collaborative approach to the project and recognition that project goals and objectives are the same for all parties involved.

**Additional Details:**

The first Partnering Workshop should be initiated by an experienced partnering facilitator. Attendees should include project level supervisory personnel, corporate/state level management personnel, and key project personnel of the contractor's principal subcontractors and suppliers. FHWA, local government representatives, environmental regulators, emergency service personnel, utility companies, and other significant stakeholders should also be encouraged to attend. Outcomes of the workshop should include a project partnering charter, dispute resolution process and commitments on how parties involved with the project will deal with each other.

Subsequent bi-weekly project partnering meetings are much smaller and can be a) "executive level" partnering that involves only key project supervisory personnel from WisDOT, the prime contractor, and senior management from the prime contractor or b) "project level" partnering that involves key people from the project including staff from WisDOT, the prime contractor, sub contractors and major stakeholders. These follow-up meetings should utilize a standardized agenda that includes a project status report, review of open or unresolved issues, identification of new issues and discussion of upcoming activities that may impact the project. Use of a partnering facilitator is encouraged, but may not be needed.

**Objective:**

Primary: Issue Management
Secondary: Schedule Control, Cost Control Quality, Dispute Resolution, Communication

**When to Apply:**

Best practice should be applied on mega projects and backbone projects. Also, this practice should be applied on any 3R project where there is complex staging, unique construction aspects, or a great deal of third party involvement.

**Cost Implications:**

This practice will result in minimal costs. Additional staff time will be required to attend the meetings and some meeting facilitation costs.

**Conditions for Successful Application:**

Project teams and participants who are willing to be open in discussions about project issues and attend meetings with a mindset to cooperatively resolve issues. Development of a Partnering Manual would assist project teams in implementing their partnering programs.

**Cautions:**

Partnering programs can become a reason to expect something for nothing from the other parties because they are "partners" on the project. Partnering is not a reason for doing something or taking an action, it is a process for seeking input from each other and solving problems together.

## CM-6 Use a Change Management Request form

**Description:**

A Change Management Request Form is required to be submitted for approval of project changes that will impact the construction project budget by increasing costs above a preset threshold. Various levels of approval and thresholds may be established. Proposed cost changes that exceed thresholds must first be approved by the designated approval authority.

**Additional Details:**

Items that must be contained in the request include: a) item to be changed, b) reason for the cost increase, c) justification, d) cost implication, and e) criticality of the modification. Suggested thresholds and approval levels are:

| Change Level | Approval Authority |
|---|---|
| Changes that are less than one-half of the project reserve percentage or up to $50,000 (the lesser of the two amounts) | Project Team |
| Changes between 50 percent – 100 percent of the project reserve percentage or less than $500,000 (the lesser of the two amounts) | Region Change Management Team |
| Changes that exceed the project reserve amount or $500,000 | Division Change Management Team |
| Changes that exceed $1,000,000 | Departmental Oversight Team |

**Objective:**

Primary: Cost Control
Secondary: Communication, Document Control

**When to Apply:**

Best practice should be applied to mega projects, backbone and large 3R projects.

**Cost Implications:**

This practice will result in slight increases to cost.

**Conditions for Successful Application:**

Use of the form should be detailed in the Construction Management Plan and project staff needs to utilize the form.

**Cautions:**

Change Management Request form should be consistent with contractor requirement in terms of notice requirements, detailed estimates, and payment and time provisions.

## CM-7 Develop a project Change Management Log

**Description:**

The Change Management Log provides a chronological documentation of significant issues that arise which have a cost and/or schedule implication for the project. Each issue is given a descriptive title and assigned a unique change management number which is crossed referenced with other attribute numbers (RFI or Contract Mod) as appropriate. Items are tracked as being open or closed and their cost impacts are tracked as more definitive estimates and final costs are known.

**Additional Details:**

Each item's cost is tracked as it progresses to closure. Costs are logged for:

1. Engineers initial cost estimate or "Rough Order of Magnitude" (ROM)
2. Contractor's initial proposed cost
3. Negotiated Approved Justification Report (AJR) amount
4. Final cost

The Change Management Log should also list the Division Code and Reason Code of each item to assist in future quality improvement efforts. Change order log should include the date submitted, description, who initiated, who authorized, associated RFI number if RFI issued and dollar value.

**Objective:**

Primary: Cost Control
Secondary: Communication

**When to Apply:**

Best practice should be applied on mega projects, backbone and large 3R projects.

**Cost Implications:**

This practice will result in minimal cost increases. In mega projects, an administrative assistant may be hired to ensure that change manufactured, RFI, and submittal process are being properly maintained.

**Conditions for Successful Application:**

Use of commercially available project management software is advised but not necessary. Use of the commercial software allows cross linkages and tracking of issues and the resulting resolution of the issue.

**Cautions:**

This best practice may require additional staff that are trained in use of the software and how to classify issues. The contract should be carefully reviewed for clauses that identify when compensation for changes should be awarded and the type of compensation permitted (time, cost or both). Also, many changes have a “notice” requirement.

## CM-8 Identify and track significant project issues

**Description:**

An issue assessment should be done before starting construction to identify, categorize and document the issues that are affecting the project. Identified issues should be tracked and managed with an Issues Tracking Log. When there are large numbers of significant issues, identify the "Top 10" and track those, so that the focus is on the most significant issues.

**Additional Details:**

Issues are those items that are known to be impacting the project and must be dealt with by the project team. The issue status should be monitored throughout the duration of the project by assigning a team member the responsibility of resolving or monitoring the identified issue and regularly reporting the status to the project team. The Issues Identification Log describes the issue, its status, action required, project impacts, anticipated resolution date, and who is responsible to take action. The Issue Log should be reviewed at regular intervals to evaluate and update any changes to identified impacts. As issues are resolved they are removed from the list and new high priority issues are added.

**Objective:**

Primary: Schedule Control
Secondary: Cost Control, Issue Management, Communication

**When to Apply:**

Best practice should be applied to mega projects, backbone and large 3R projects.

**Cost Implications:**

This practice will result in moderate cost impacts.

**Conditions for Successful Application:**

This practice requires the project management team to meet and identify project issues, develop strategies for dealing with issues, track progress on resolving those issues, and updating lists periodically.

**Cautions:**

None